

engineering manual

# Environmental Control



## Satellite

### Horizontal Precision A/C's 2-15 Tons

- 2 to 15 Tons, High Static Capacity
- Ceiling Mounted, Unit Fits Completely Indoors  
Perfect for Computer Room, Telecom & Medical Spaces
- Packaged & Split DX Air, Water/Glycol Cooled, Chilled Water Systems
- Fits thru 30" Doors, Ideal for Retro Fit



Excellence In Ceiling Mounted AC and Environmental Control Systems

800.625.7545 [www.Skil-air.com](http://www.Skil-air.com)

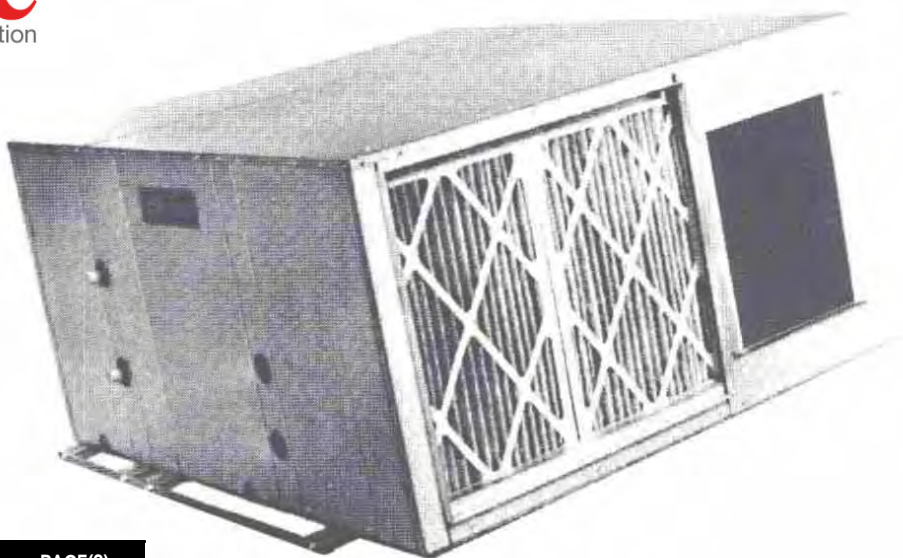
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Skil-aire™ We Hang Around All The Best Places.

# Do It Up!



**Skil-aire**  
A division of Tithe Corporation



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## Model Nomenclature

**SGC-120-H4-ECX**

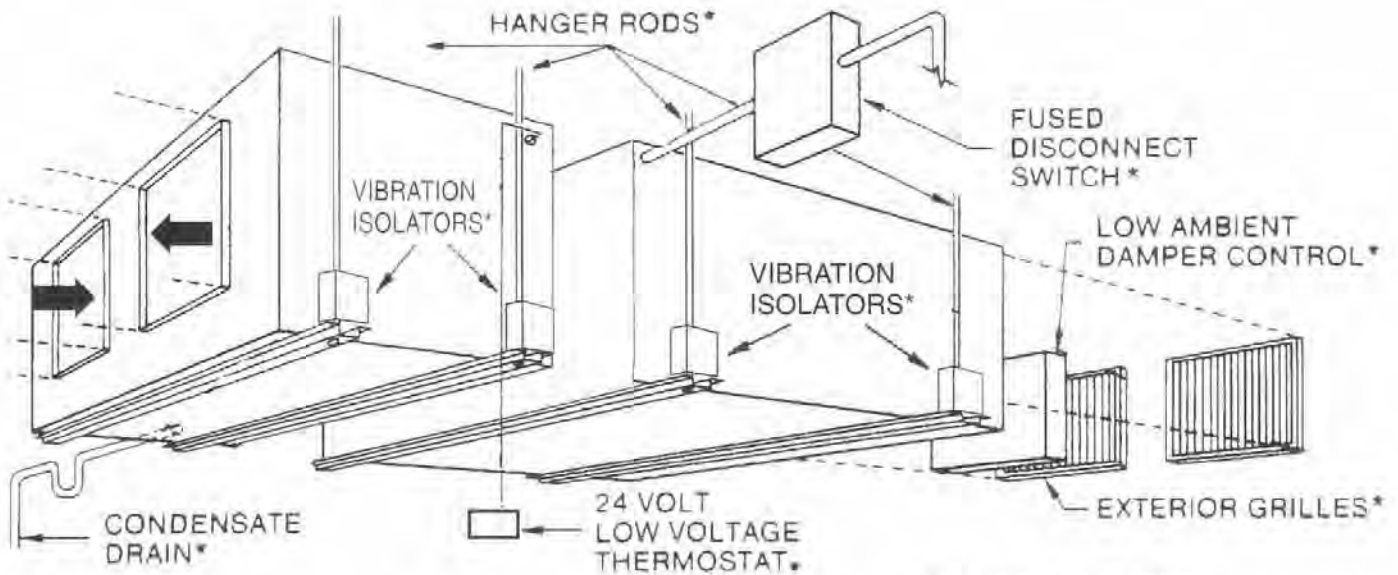
Satellite Series - S Evaporator Only - B Centrifugal Condenser - C	Air Cooled - A Chilled Water - C Water Cooled - W Glycol Cooled - G	1 - 206-230/1/60 3 - 206-230/3/60 4 - 460/3/60	ECX - Economizer Coil FU - Outdoor Propeller Fan Condensing Unit
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H - Horizontal

Computer/Environmental Use - C  
 024 - Nominal 2.0 Ton  
 038 - Nominal 3.0 Ton  
 048 - Nominal 4.0 Ton  
 060 - Nominal 5.0 Ton  
 072 - Nominal 6.0 Ton  
 096 - Nominal 8.0 Ton  
 120 - Nominal 10.0 Ton  
 144 - Nominal 12.0 Ton  
 180 - Nominal 15.0 Ton

# Satellite™

Skil-aire™ Built to Last With Design Features That Assure Superior Performance and Dependability.



\*Field installed by others.

The **Skil-aire Satellite™**, packaged or split air conditioners and heat pumps have high external static pressures. These compact units fit through standard 30" doors and are field splittable, up to 150 equivalent feet, without losing the factory tested refrigerant charge.\*

## Flexible Microprocessor Controls:



DigiSkil-100 & 200



MicroSkil-100 & 200

## Environmental Control:

- Steam Humidifier
- Electric, Hot Water or Steam Reheat
- High Efficiency Air Filtration



## Energy Saving Options:

- Air-Side Economizer/Free-Cooling
- ECX- Water/Glycol Side Economizer/Free-Cooling

## Head Pressure Control:

- Air Cooled - Choose from 0°F, -20°F and -30°F Low Ambient Options
- Water/Glycol Cooled - 2 and 3-way standard and high pressure regulating valve options



## High Static Belt-Drive Blowers:

- Ducted Systems Available with Up to 2.0" ESP.



## Capacity Modulation:

- Hot Gas Bypass

## Select Accessories:

- Condensate Pumps
- Non-Fused Disconnects
- Firestats
- Smoke Detectors
- Remote Water Detectors
- And more..



\*Note - with use of optional Stub-Kit

# MECHANICAL DATA : **Satellite™**

Nominal Tons		2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	15.0
Model Size		024	036	048	060	072	096	120	144	180
<b>DX - AIR COOLED @ 95°F Entering Condenser Air</b>										
<b>75°F DB, 50% RH</b>										
Total / Sensible	MBH	27.5 / 23.0	36.9 / 31.8	48.3 / 42.2	59.1 / 49.6	71.7 / 58.2	96.6 / 84.4	115.0 / 92.0	135.0 / 105.0	183.0 / 150.0
<b>72°F DB, 50% RH</b>										
Total / Sensible	MBH	26.1 / 22.5	35.1 / 31.2	45.6 / 41.1	56.1 / 48.3	66.9 / 55.6	91.2 / 82.2	112.2 / 96.6	133.2 / 117.6	154.2 / 138.6
<b>DX - WATER COOLED @ 85°F Entering Condenser Water</b>										
<b>75°F DB, 50% RH</b>										
Total / Sensible	MBH	30.2 / 24.3	40.5 / 33.6	53.7 / 43.9	63.4 / 51.7	78.4 / 61.6	107.4 / 87.6	126.8 / 103.4	146.2 / 122.8	165.6 / 142.2
<b>72°F DB, 50% RH</b>										
Total / Sensible	MBH	28.4 / 23.7	38.3 / 32.8	51.2 / 42.3	60.4 / 49.9	75.0 / 59.8	102.4 / 84.6	120.8 / 99.8	139.2 / 118.2	157.6 / 136.6
<b>DX - GLYCOL COOLED @ 110°F, 40% Entering Ethylene Glycol</b>										
<b>75°F DB, 50% RH</b>										
Total / Sensible	MBH	25.0 / 22.0	34.4 / 30.7	45.5 / 40.5	54.9 / 48.0	68.1 / 58.7	89.8 / 80.6	109.8 / 85.2	125.6 / 97.8	173.4 / 153.4
<b>72°F DB, 50% RH</b>										
Total / Sensible	MBH	23.5 / 21.4	32.5 / 29.8	42.9 / 39.3	52.0 / 46.8	64.3 / 57.2	85.4 / 77.8	104.3 / 81.0	119.3 / 92.9	164.7 / 145.7
<b>CHILLED WATER SYSTEMS @ 45°F Entering Water Temp.</b>										
<b>75°F DB, 50% RH</b>										
Total / Sensible	MBH	22.0 / 19.5	30.5 / 28.0	45.5 / 39.5	52.0 / 45.5	61.0 / 56.0	75.0 / 65.2	104.0 / 91.0	133.0 / 120.0	162.0 / 149.0
<b>72°F DB, 50% RH</b>										
Total / Sensible	MBH	20.3 / 18.6	28.0 / 26.6	39.9 / 37.5	47.8 / 45.0	56.0 / 53.2	68.0 / 64.0	95.6 / 90.0	122.6 / 117.0	149.6 / 144.0
Flow Rate	GPM	4.0	7.0	7.5	10.0	12.0	18.0	30.0	36.0	41.0
Pressure Drop	FT W.G.	2.5	7.1	2.2	3.9	4.0	7.6	8.4	11.6	14.7
Standard Valve		2-way, 150 psig - factory installed (3-way & High Pressure Valves are Optional)								

## COMMON FEATURES

<b>Evaporator Airflow - @ 0.75" E.S.P., Belt Drive Centrifugal</b>										
Discharge	CFM	1,100	1,600	2,200	2,500	2,800	4,000	4,000	4,800	5,400
Fan Motor	HP	3/4	1	1-1/2	2	2	3	3	5	5
Fan Diameter	IN	10 X 7	10 X 7	12 X 9	12 X 9	12 X 9	12 X 9	15 X 9	15 X 9	15 X 9
<b>Evaporator Coil - Aluminum Fin, Copper Tube</b>										
Rows	NO	4	4	4	4	5	5	3	3	3
Face Area	FT <sup>2</sup>	2.5	2.5	4.1	4.1	4.9	4.9	8.2	8.2	8.2
Face Velocity	FPM	440	640	536	609	571	816	489	585	659
<b>Air Filtration - @ 40% NBS Dust Spot</b>										
Nominal Size	(NO) IN	(1)20x24x2	(1)20x24x2	(2)16x25x2	(2)16x25x2	(2)16x25x2	(2)16x25x2	(3)16x25x2	(3)16x25x2	(3)16x25x2
<b>Compressor - Heat Pump Duty Hermetic</b>										
	(NO) HP	(1) 2.0	(1) 3.0	(1) 4.0	(1) 5.0	(2) 3.0	(2) 4.0	(2) 5.0	(3) 4.0	(3) 5.0
<b>Electric Reheat - includes evaporator motor heat, (Optional)</b>										
Capacity	MBH	18.9	37.8	55.5	55.5	55.5	55.5	75.5	75.5	75.5
	KW	5.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0
Stages	NO	1	2	2	2	2	2	2	2	2
<b>Steam Canister Humidifier - (Optional)</b>										
Steam Canister	LBS/HR	5	5	10	10	15	15	15	15	15
<b>Connection Sizes - Copper</b>										
Condensate Drain	FPT IN	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier Inlet	FLARE IN	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

# MECHANICAL DATA : Satellite™

## Condenser Data

Nominal Tons	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	15.0
Model Size	024	036	048	060	072	096	120	144	180

### DX - AIR COOLED CONDENSER DATA

Indoor / Outdoor, Centrifugal Air Cooled Condensing Unit Data - (SAC & CAA models)										
Discharge	CFM	1,600	2,200	2,700	3,200	4,000	4,000	6,000	6,000	6,300
	IN ESP	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Blower Motor	HP	3/4	1	1	1-1/2	2	3	5	5	5
Fan Diameter	IN	12 x 9	12 x 9	15 x 9	15 x 9	15 x 9	15 x 9	15 x 15	15 x 15	15 x 15
Blower Type		Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Coil Face Area	FT <sup>2</sup>	4.2	4.2	6.7	6.7	7.0	7.0	9.3	9.3	9.3
Rows	NO	4	4	4	4	5	5	5	5	5
Outdoor, Remote Air Cooled Condensing Unit - (FU models)										
Discharge	CFM	1,400	2,000	3,000	3,000	(2) 2,000	(2) 3,000	(2) 3,000	(3) 3,000	(3) 3,000
	IN ESP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fan Motor	(NO) HP	(1) 1/8	(1) 1/5	(1) 1/3	(1) 1/3	(2) 1/5	(2) 1/3	(2) 1/3	(3) 1/3	(3) 1/3
Fan Type		Propeller	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller	Propeller

### DX - WATER COOLED CONDENSER DATA

Water Cooled Condenser Data - (SWC models)										
Flow @ 85°F EWT	GPM	6.1	8.8	12.6	14.3	17.6	23.0	28.6	37.8	42.9
Water Press. Drop	FT W.G.	7.1	9.7	14.0	10.8	14.0	10.6	12.5	14.0	10.8
Water Reg. Valve		2-Way, 150 psig - factory installed, (3-way & High Pressure Valves are Optional)								

### DX - GLYCOL COOLED CONDENSER DATA

Glycol Cooled Condenser Data - @ 40% Ethylene Glycol (SGC models)										
Flow @ 110°F EGT	GPM	7.1	10.6	13.8	17.8	21.2	26.3	35.6	41.4	53.4
Glycol Press. Drop	FT W.G.	9.6	13.8	14.5	16.0	16.0	13.8	18.0	14.5	16.0
Glycol Reg. Valve		2-Way, 150 psig - factory installed, (3-way & High Pressure Valves are Optional)								

## Connection Sizes

Nominal Tons	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	15.0
Model Size	024	036	048	060	072	096	120	144	180

### DX - AIR COOLED REFRIGERANT CONNECTION DATA

(Note: Satellite™ dx evap-cond systems include as a standard refrigerant quick disconnects fittings. BAC or CAA only units require field sweat connection.)

DX Air Handling Units - (BAC models only, condensing unit by others)										
Liquid Line	OD IN	(1) 3/8	(1) 3/8	(1) 1/2	(1) 1/2	(2) 3/8	(2) 1/2	(2) 1/2	(3) 1/2	(3) 1/2
Suction Line	OD IN	(1) 5/8	(1) 7/8	(1) 7/8	(1) 7/8	(2) 7/8	(2) 7/8	(2) 7/8	(3) 7/8	(3) 7/8
Outdoor, Propeller Remote Air Cooled Condensing Units - (FU models)										
Liquid Line	OD IN	(1) 3/8	(1) 3/8	(1) 3/8	(1) 3/8	(2) 3/8	(2) 3/8	(2) 3/8	(3) 3/8	(3) 3/8
Suction Line	OD IN	(1) 3/4	(1) 3/4	(1) 7/8	(1) 7/8	(2) 3/4	(2) 7/8	(2) 7/8	(3) 7/8	(3) 7/8
Indoor, Centrifugal Remote Air Cooled Condensing Units - (CAA models, dx air handling unit by others)										
Liquid Line	OD IN	(1) 3/8	(1) 3/8	(1) 1/2	(1) 1/2	(2) 3/8	(2) 1/2	(2) 1/2	(3) 1/2	(3) 1/2
Suction Line	OD IN	(1) 5/8	(1) 7/8	(1) 7/8	(1) 7/8	(2) 7/8	(2) 7/8	(2) 7/8	(3) 7/8	(3) 7/8

### DX - WATER COOLED CONDENSER CONNECTION DATA

Water Cooled Condenser Data - (SWC models)										
Water IN/OUT	OD IN	5/8	3/4	7/8	7/8	1	1 1/4	1 1/4	1 1/2	1 1/2

### DX - GLYCOL COOLED CONDENSER CONNECTION DATA

Glycol Cooled Condenser Data - @ 40% Ethylene Glycol (SGC models)										
Glycol IN/OUT	OD IN	7/8	7/8	7/8	1 1/8	1 1/4	1 1/4	1 5/8	1 1/2	2

### CHILLED WATER SYSTEMS CONNECTION DATA

Chilled Water System Data - (SCC models)										
Chilled Water IN/OUT	OD IN	1/2	1	1	1	1	1 1/2	2	2	2

# TYPICAL ELECTRICAL DATA: **Satellite™**

## Air Cooled, Self-Contained

(FLA = Full Load Amps / MCA = Min Circuit Amps / MFS = Max Fuse Size) \* see notes 1-3 below

REHEAT	None, Hot Water or Steam Reheat (No Electric Reheat)				None, Hot Water or Steam Reheat (No Electric Reheat)				Electric Reheat				Electric Reheat			
HUMIDIFICATION	None				Steam Canister Humidifier				None				Steam Canister Humidifier			
DX - AIR COOLED SELF-CONTAINED																
Power Supply	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60
<b>SAC-024</b>																
FLA	21.1	16.0	17.1	7.8	29.3	22.2	25.3	11.5	41.9	34.0	31.0	14.1	41.9	34.0	31.0	14.1
MCA	23.7	17.9	19.8	8.9	31.9	24.1	28.0	12.6	49.7	40.5	37.1	16.7	49.7	40.5	37.1	16.7
MFS	30	25	30	15	40	30	35	15	50	45	40	20	50	45	40	20
<b>SAC-036</b>																
FLA	28.7	21.7	17.9	8.9	36.9	27.9	26.1	12.6	70.4	57.8	45.7	21.5	70.4	57.8	45.7	21.5
MCA	32.7	24.6	20.6	10.2	40.9	30.8	28.8	13.9	84.7	65.1	55.2	25.8	84.7	69.8	55.2	25.8
MFS	45	35	30	15	50	40	35	15	90	70	60	30	90	70	60	30
<b>SAC-048</b>																
FLA	Consult Factory	Consult Factory	22.6	11.5	Consult Factory	Consult Factory	39.0	18.9	Consult Factory	Consult Factory	64.2	30.3	Consult Factory	Consult Factory	64.2	30.3
MCA			26.2	13.3			42.6	20.7			78.3	36.8			78.3	36.8
MFS			40	20			50	25			80	40			80	40
<b>SAC-060</b>																
FLA	Consult Factory	Consult Factory	26.8	15.4	Consult Factory	Consult Factory	43.2	22.8	Consult Factory	Consult Factory	68.4	34.2	Consult Factory	Consult Factory	68.4	34.2
MCA			30.9	17.9			47.3	25.3			83.0	41.4			83.0	41.4
MFS			45	25			60	35			90	45			90	45
<b>SAC-072</b>																
FLA	N/A	N/A	32.9	16.1	N/A	N/A	47.1	22.5	N/A	N/A	74.5	34.9	N/A	N/A	74.5	34.9
MCA			35.6	17.4			49.8	23.8			87.6	40.9			87.6	40.9
MFS			45	20			60	25			90	45			90	45
<b>SAC-096</b>																
FLA	N/A	N/A	45.5	22.9	N/A	N/A	59.7	29.3	N/A	N/A	87.1	41.7	N/A	N/A	87.1	41.7
MCA			49.1	24.7			63.3	31.1			101.2	48.2			101.2	48.2
MFS			60	30			70	35			110	50			110	50
<b>SAC-120</b>																
FLA	N/A	N/A	54.7	31.1	N/A	N/A	68.9	37.5	N/A	N/A	110.2	56.2	N/A	N/A	110.2	56.2
MCA			58.8	33.6			73.0	40.0			128.2	65.0			128.2	65.0
MFS			75	40			80	50			150	70			150	70
<b>SAC-144</b>																
FLA	N/A	N/A	70.4	35.3	N/A	N/A	84.6	41.7	N/A	N/A	125.9	60.4	N/A	N/A	125.9	60.4
MCA			77.7	38.9			91.9	45.3			147.0	70.3			147.0	70.3
MFS			100	50			100	50			150	80			150	80
<b>SAC-180</b>																
FLA	N/A	N/A	76.4	43.7	N/A	N/A	90.6	50.1	N/A	N/A	131.9	68.8	N/A	N/A	131.9	68.8
MCA			84.7	48.7			98.9	55.1			154.0	80.1			154.0	80.1
MFS			100	60			125	70			175	90			175	90

**\* Notes:**

- 1) 277V available via field installed step-down transformer.
- 2) The above unit electrical data is reflective of the standard performance data and standard options as shown on pages 4 & 5.
- 3) Due to a policy of continuous improvement, Skil-aire reserves the right to change specifications without notice and without incurring any liability. Always consult equipment name plate for exact electrical requirements.

# TYPICAL ELECTRICAL DATA: **Satellite™**

## Water & Glycol Cooled, Self-Contained

(FLA = Full Load Amps / MCA = Min Circuit Amps / MFS = Max Fuse Size) \* see notes 1-3 below

REHEAT	None, Hot Water or Steam Reheat (No Electric Reheat)				None, Hot Water or Steam Reheat (No Electric Reheat)				Electric Reheat				Electric Reheat			
HUMIDIFICATION	None				Steam Canister Humidifier				None				Steam Canister Humidifier			
DX - WATER & GLYCOL COOLED, SELF-CONTAINED																
Power Supply	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60
<b>SWC &amp; SGC-024</b>																
FLA	16.0	12.1	14.1	6.3	24.2	18.3	22.3	10.0	40.0	30.2	28.0	12.6	40.8	30.2	28.0	12.6
MCA	18.6	14.1	16.8	7.4	26.8	20.3	25.0	11.1	48.6	36.7	34.1	15.2	51.0	36.7	34.1	15.2
MFS	25	20	25	15	35	25	35	15	50	40	40	20	60	40	40	20
<b>SWC &amp; SGC-036</b>																
FLA	22.5	17.0	14.5	7.2	30.7	23.2	22.7	10.9	70.6	53.1	42.3	19.8	70.6	53.1	42.3	19.8
MCA	26.5	20.0	17.2	8.5	34.7	26.2	25.4	12.2	86.5	65.1	51.8	24.1	86.5	65.1	51.8	24.1
MFS	40	30	25	15	50	35	35	15	90	70	60	25	90	70	60	25
<b>SWC &amp; SGC-048</b>																
FLA	Consult Factory	Consult Factory	19.2	9.8	Consult Factory	Consult Factory	35.6	17.2	Consult Factory	Consult Factory	60.8	28.6	Consult Factory	Consult Factory	60.8	28.6
MCA			22.8	11.6			39.2	19.0			74.9	35.1			74.9	35.1
MFS			35	20			50	25			80	40			80	40
<b>SWC &amp; SGC-060</b>																
FLA	Consult Factory	Consult Factory	22.6	13.3	Consult Factory	Consult Factory	39.0	20.7	Consult Factory	Consult Factory	64.2	32.1	Consult Factory	Consult Factory	64.2	32.1
MCA			26.7	15.8			43.1	23.2			78.8	39.3			78.8	39.3
MFS			45	25			50	30			80	40			80	40
<b>SWC &amp; SGC-072</b>																
FLA	N/A	N/A	27.3	13.3	N/A	N/A	41.5	19.7	N/A	N/A	68.9	32.1	N/A	N/A	68.9	32.1
MCA			30.0	14.6			44.2	21.0			82.0	38.1			82.0	38.1
MFS			40	20			50	25			90	40			90	40
<b>SWC &amp; SGC-096</b>																
FLA	N/A	N/A	37.5	18.9	N/A	N/A	51.7	25.3	N/A	N/A	79.1	37.7	N/A	N/A	79.1	37.7
MCA			41.1	20.7			55.3	27.1			93.2	44.2			93.2	44.2
MFS			50	25			60	30			100	45			100	45
<b>SWC &amp; SGC-120</b>																
FLA	N/A	N/A	41.5	24.5	N/A	N/A	55.7	30.9	N/A	N/A	97.0	49.6	N/A	N/A	97.0	49.6
MCA			45.6	27.0			59.8	33.4			115.0	58.4			115.0	58.4
MFS			60	35			70	40			125	60			125	60
<b>SWC &amp; SGC-144</b>																
FLA	N/A	N/A	57.2	28.7	N/A	N/A	71.4	35.1	N/A	N/A	112.7	53.8	N/A	N/A	112.7	53.8
MCA			64.5	32.3			78.7	38.7			133.8	63.7			133.8	63.7
MFS			90	45			100	50			150	70			150	70
<b>SWC &amp; SGC-180</b>																
FLA	N/A	N/A	63.2	37.1	N/A	N/A	77.4	43.5	N/A	N/A	118.7	62.2	N/A	N/A	118.7	62.2
MCA			71.5	42.1			85.7	48.5			140.8	73.5			140.8	73.5
MFS			100	60			100	60			150	80			150	80

**\* Notes:**

- 1) 277V available via field installed step-down transformer.
- 2) The above unit electrical data is reflective of the standard performance data and standard options as shown on pages 4 & 5.
- 3) Due to a policy of continuous improvement, Skil-air reserves the right to change specifications without notice and without incurring any liability. Always consult equipment name plate for exact electrical requirements.

# TYPICAL ELECTRICAL DATA: Satellite™

## DX and Chilled Water Air Handling Units

(FLA = Full Load Amps / MCA = Min Circuit Amps / MFS = Max Fuse Size) \* see notes 1-3 below

REHEAT	None, Hot Water or Steam Reheat (No Electric Reheat)				None, Hot Water or Steam Reheat (No Electric Reheat)				Electric Reheat				Electric Reheat			
HUMIDIFICATION	None				Steam Canister Humidifier				None				Steam Canister Humidifier			
SPLIT DX AIR HANDLING UNITS ONLY & CHILLED WATER SYSTEMS																
Power Supply	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60	208/1/60	277/1/60	208/3/60	460/3/60
<b>BAC &amp; SCC-024</b>																
FLA	5.6	4.3	3.5	2.0	13.8	10.5	11.7	5.7	26.4	22.4	17.4	8.3	34.6	28.6	25.6	12.0
MCA	7.0	5.4	4.4	2.5	17.3	13.2	14.6	7.1	33.0	28.0	21.7	10.3	43.3	35.7	32.0	15.0
MFS	15	15	15	15	20	15	15	15	35	30	25	15	45	40	35	20
<b>BAC &amp; SCC-036</b>																
FLA	6.7	5.2	3.9	2.2	14.9	11.4	12.1	5.9	48.4	41.3	31.7	14.8	56.6	47.5	39.9	18.5
MCA	8.4	6.4	4.9	2.8	18.6	14.2	15.1	7.4	60.5	51.6	39.6	18.4	70.7	59.3	49.8	23.1
MFS	15	15	15	15	20	15	20	15	70	60	40	20	80	60	50	25
<b>BAC &amp; SCC-048</b>																
FLA	Consult Factory	Consult Factory	4.7	2.6	Consult Factory	Consult Factory	21.1	10.0	C95.9 99.1 120	Consult Factory	46.3	21.4	95.9 F 99.1 120	Consult Factory	62.7	28.8
MCA			5.9	3.3			26.4	12.5			57.9	26.8			78.4	36.0
MFS			15	15			30	15			60	30			80	40
<b>BAC &amp; SCC-060</b>																
FLA	Consult Factory	Consult Factory	6.1	3.3	Consult Factory	Consult Factory	22.5	10.7	Consult Factory	Consult Factory	47.7	22.1	Consult Factory	Consult Factory	64.1	29.5
MCA			7.6	4.1			28.1	13.4			59.7	27.7			80.2	36.9
MFS			15	15			30	15			60	30			90	40
<b>BAC &amp; SCC-072</b>																
FLA	N/A	N/A	6.1	3.3	N/A	N/A	20.3	9.7	N/A	N/A	47.7	22.1	N/A	N/A	61.9	28.5
MCA			7.6	4.1			25.4	12.1			59.7	27.7			77.4	35.7
MFS			15	15			30	15			60	30			80	40
<b>BAC &amp; SCC-096</b>																
FLA	N/A	N/A	8.5	4.5	N/A	N/A	22.7	10.9	N/A	N/A	50.1	23.3	N/A	N/A	64.3	29.7
MCA			10.6	5.6			28.4	13.6			62.7	29.2			80.4	37.2
MFS			15	15			30	15			70	30			90	40
<b>BAC &amp; SCC-120</b>																
FLA	N/A	N/A	8.5	4.5	N/A	N/A	22.7	10.9	N/A	N/A	64.0	29.6	N/A	N/A	78.2	36.0
MCA			10.6	5.6			28.4	13.6			80.0	37.0			97.8	45.0
MFS			15	15			30	15			90	40			100	50
<b>BAC &amp; SCC-144</b>																
FLA	N/A	N/A	13.7	7.1	N/A	N/A	27.9	13.5	N/A	N/A	69.2	32.2	N/A	N/A	83.4	38.6
MCA			17.1	8.9			34.9	16.9			86.5	40.3			104.3	48.3
MFS			30	15			40	20			90	45			110	50
<b>BAC &amp; SCC-180</b>																
FLA	N/A	N/A	13.7	7.1	N/A	N/A	27.9	13.5	N/A	N/A	69.2	32.2	N/A	N/A	83.4	38.6
MCA			17.1	8.9			34.9	16.9			86.5	40.3			104.3	48.3
MFS			30	15			40	20			90	45			110	50

**\* Notes:**

- 1) 277V available via field installed step-down transformer.
- 2) The above unit electrical data is reflective of the standard performance data and standard options as shown on pages 4 & 5.
- 3) Due to a policy of continuous improvement, Skil-air reserves the right to change specifications without notice and without incurring any liability. Always consult equipment name plate for exact electrical requirements.



# TYPICAL ELECTRICAL DATA: Satellite™

## Air Cooled, Remote Condensing Units

(FLA = Full Load Amps / MCA = Min Circuit Amps / MFS = Max Fuse Size) \* see notes 1-3 below

CAA - Indoor Centrifugal Blower Air Cooled Remote Condensing Units				
Power Supply	208/1/60	277/1/60	208/3/60	460/3/60
<b>CAA-024</b>				
FLA	16.0	12.1	14.1	6.3
MCA	18.6	14.1	16.8	7.4
MFS	25	20	25	15
<b>CAA-036</b>				
FLA	22.5	17.0	14.5	7.2
MCA	26.5	20.0	17.2	8.5
MFS	40	30	25	15
<b>CAA-048</b>				
FLA	36.7	Consult Factory	18.4	9.4
MCA	44.2		22.0	11.2
MFS	55.0		35	15
<b>CAA-060</b>				
FLA	36.7 44.2 55.0	Consult Factory	21.2	12.6
MCA			25.3	15.1
MFS			40	25
<b>CAA-072</b>				
FLA	N/A	N/A	27.3	13.3
MCA			30.0	14.6
MFS			40	15
<b>CAA-096</b>				
FLA	N/A	N/A	37.5	18.9
MCA			41.1	20.7
MFS			50	25
<b>CAA-120</b>				
FLA	N/A	N/A	46.7	27.1
MCA			50.8	29.6
MFS			60	35
<b>CAA-144</b>				
FLA	N/A	N/A	57.2	28.7
MCA			64.5	32.3
MFS			90	45
<b>CAA-180</b>				
FLA	N/A	N/A	63.2	37.1
MCA			71.5	42.1
MFS			100	60

FU - Outdoor Propeller Fan Air Cooled Remote Condensing Units				
Power Supply	208/1/60	277/1/60	208/3/60	460/3/60
<b>024 / FU</b>				
FLA	11.9	N/A	N/A	N/A
MCA	14.6			
MFS	20			
<b>036 / FU</b>				
FLA	12.7	N/A	10.5	Consult Factory
MCA	15.5		12.7	
MFS	20		20	
<b>048 / FU</b>				
FLA	19.7	N/A	14.0	6.6
MCA	24.2		17.2	8.0
MFS	40		20	15
<b>060 / FU</b>				
FLA	26.1	N/A	18.4	7.3
MCA	32.3		22.7	9.0
MFS	50		40	15

Qty. one FU condensing unit is provided per circuit.

- SAC-072 units are provided with qty. 2 x 036-FU units
- SAC-096 units are provided with qty. 2 x 048-FU units
- SAC-120 units are provided with qty. 2 x 060-FU units
- SAC-144 units are provided with qty. 3 x 048-FU units
- SAC-180 units are provided with qty. 3 x 060-FU units

**\*Notes:**

- 1) 277V available via field installed step-down transformer.
- 2) The above unit electrical data is reflective of the standard performance data and standard options as shown on pages 4 & 5.
- 3) Due to a policy of continuous improvement, Skil-air reserves the right to change specifications without notice and without incurring any liability. Always consult equipment name plate for exact electrical requirements.

## Approximate Ship Weights (lbs.)

UNIT SIZE	MODEL TYPE									
	SAC			BCA	CAA	FU	SWC & SGC			SCC
	Evap	Cond	Packaged				Evap	Cond	Packaged	
<b>024</b>	160	420	580	160	420	182	160	385	545	225
<b>036</b>	175	455	630	175	455	214	175	405	580	305
<b>048</b>	210	525	735	210	525	198	210	445	655	360
<b>060</b>	225	555	780	225	555	242	225	470	695	375
<b>072</b>	240	585	825	240	585	182 x 2	240	500	740	380
<b>096</b>	255	615	870	255	615	198 x 2	255	545	800	390
<b>120</b>	350	760	1,110	350	760	242 x 2	350	670	1,020	600
<b>144</b>	350	875	1,225	350	875	198 x 3	350	700	1,035	700
<b>180</b>	350	975	1,325	350	975	242 x 3	350	770	1,120	700

**Notes:**

- 1) 024-096 SAC, SWC & SGC Evap & Cond sections ship from factory as a 1-piece unit, unless requested for split system shipping.

## 1.0 GENERAL

### 1.1 SUMMARY

These specifications describe requirements for an air conditioning system. The system shall be designed to maintain temperature and relative humidity conditions within the specified room. The manufacturer shall design and furnish all equipment to be fully compatible with the heat dissipation requirements of the site.

The system shall be manufactured by Skil-aire, a division of Tite Corporation, in Baltimore, Maryland U.S.A. The system shall be approved and labeled by Underwriters Laboratories, Inc. (UL). The system shall be New York City MEA (MEA-386-90-E) and Chicago Code Approved.

### 1.2 DESIGN REQUIREMENTS

The environmental control system shall be a Skil-aire factory assembled Satellite™ model ceiling mounted system. The evaporator section shall be specifically designed for above ceiling installation, unless specified otherwise.

The system shall have a total cooling capacity of \_\_\_\_\_ BTUH and a sensible cooling capacity of \_\_\_\_\_ BTUH based on an entering air temperature of \_\_\_\_\_ °F DB and \_\_\_\_\_ °F WB. The unit shall be supplied with \_\_\_\_\_ volt, \_\_\_\_\_ phase, \_\_\_\_\_ Hz electrical service. The system model number shall be \_\_\_\_\_.

## 2.0 PRODUCTS

### 2.1 STANDARD FEATURES / ALL SYSTEMS

#### 2.1.1 CABINET

The cabinet and access panels shall be fabricated from sturdy heavy gauge galvanized steel. The panels shall be lined with 2 lb. density thermal/acoustical insulation for whisper quiet operation. The evaporator cabinet shall be equipped with a full condensate pan constructed of stainless steel. Large removable side panels shall provide ease of installation, service and maintenance on the system.

#### 2.1.2 BLOWER ASSEMBLIES

Blowers shall be belt driven double-inlet, dynamically balanced with multiple forward curved blades mounted on a solid steel keyed shaft. A heavy-duty V-belt fan drive (sized for 200% of motor nameplate horsepower) with adjustable cast iron pulleys keyed and secured to the blower shaft shall be provided for adjusting fan speed to system requirements.

#### 2.1.3 MOTOR ASSEMBLIES

All fan motors shall be permanently mounted, 1750 or 3450 RPM, with overload protection. Motors shall have

permanently lubricated ball bearings and be resiliently mounted to an adjustable motor frame. Motor pulleys shall be cast iron, keyed, with variable pitch design to allow for field adjustment of specific airflow and static requirements.

#### 2.1.4 AIR PATTERN - DUCTED

Evaporators and indoor air cooled remote condensing unit sections shall be designed for ducted air distribution. Air inlet and outlet connections shall include factory provided turned-out duct angles for ease of field duct connection.

#### 2.1.5 FILTERS

The system shall be provided with 2" extended surface pleated disposable type filters rated for a 40% average dust-spot efficiency. The filters shall be removable without shutting down the system.

#### 2.1.6 ELECTRICAL CIRCUITS

The system shall be provided with a factory installed main electrical enclosure per NEC code requirements. A low voltage transformer with integral protection shall be provided to supply 24 VAC to the control circuit. The 24 volt control circuit terminal strips shall be clearly labeled for thermostat wiring and interlock. The fan motor(s), compressor, humidifier and electric heater (if applicable) shall each have their own contactor. A float switch shall be provided in the evaporator section to sense a clogged condensate drain and shall shut unit down to prevent water damage.

**Self-Contained Systems:** (single point power)

Self-Contained systems shall be designed for single point main power connection.

**Split DX Systems:** (separate power)

Split systems shall require separate main power supplies to the evaporator and condensing unit sections. The evaporator and condensing unit sections shall be electrically interlocked by a field wired 24 volt control signal.

## 2.2 DIRECT EXPANSION SYSTEM COMPONENTS

### 2.2.1 EVAPORATOR COILS

The evaporator coil shall be quality construction of seamless drawn ribbed copper tube, mechanically bonded to tempered aluminum fins with galvanized coil end plates. The coil shall have \_\_\_\_\_ sq. ft. face area, \_\_\_\_\_ rows deep. The coil shall be factory pressure tested and the refrigeration system sealed prior to shipment. A stainless steel drain pan shall be provided to cover the entire coil area.

### 2.2.2 COMPRESSORS

Each compressor shall be the heat pump duty scroll. Each compressor shall be mounted on vibration isolators and located in the condensing section out of the evaporator airstream.

Each compressor shall be complete with reversible positive oil pump, charging and service ports, internal spring isolation, and discharge gas vibration eliminator.

## 2.2.3 REFRIGERATION CIRCUIT

Each refrigeration circuit shall be pre-piped with type "L" refrigerant copper tubing. Each refrigeration system shall include, but not be limited to: expansion valve with external equalizer and rapid bleed-through capacity. Features shall include filter dryer, sight glass, pressure fittings and high pressure/low pressure safety cutouts.

## 2.3 CHILLED WATER SYSTEMS

### 2.3.1 CHILLED WATER AIR HANDLERS (Models SCC)

The system shall be a chilled water air handling unit. The chilled water coil shall be of quality construction of seamless drawn rolled copper tube, mechanically bonded to tempered aluminum fins with galvanized coil end plates. The coil shall be factory pressure tested. The coil shall have \_\_\_ sq. ft. face area, \_\_\_ rows deep. A stainless steel drain pan shall be provided to cover the entire coil area. The coil shall be controlled by a factory installed 2-way chilled water control valve. The coil shall be designed to distribute water into the entire coil face area. The coil shall be supplied with \_\_\_ °F entering water temperature with a \_\_\_ °F temperature rise. The coil shall require \_\_\_ GPM of chilled water and the pressure drop shall not exceed \_\_\_ Ft. w.g.

## 2.4 STANDARD FEATURES - INDIVIDUAL SYSTEMS

### 2.4.1 AIR COOLED SYSTEMS

#### 2.4.1.1 AIR COOLED, SELF-CONTAINED (Models SAC)

The system shall be self-contained with integral factory installed air cooled condensing unit. The condensing unit shall be a belt driven, centrifugal blower type. The condenser coil shall be constructed of copper tubes and aluminum fins. The condensing unit shall be sized for full heat of rejection at 95°F ambient and be capable of operation to \_\_\_ °F low ambient air temperature. The condensing unit shall be factory tested, charged with refrigerant, sealed and be capable of being connected to the evaporator section directly when the units are close coupled or using pre-charged refrigerant lines sets when the condensing unit is mounted remote from the evaporator.

Models SAC-024/096 shall ship from the factory as a one-piece unit as standard. Models SAC-120/180 shall ship split from the factory for field rigging purposes.

*(Note: SAC-024/096 packaged units are designed to be field converted to split systems via refrigerant quick disconnects and Stub-Kit Option for field provided interconnecting piping.)*

### 2.4.1.2 OUTDOOR, REMOTE PROPELLER FAN, AIR COOLED CONDENSING UNIT (FU models)

The remote air cooled condensing unit shall be an outdoor mounted direct drive, propeller fan type arranged for vertical air discharge. The condensing unit shall be sized for full heat of rejection at 95°F ambient and be capable of operation to \_\_\_ ° F. The condenser coil shall be constructed of copper tube and aluminum fins. The coil shall be factory tested, and refrigeration system sealed prior to shipment. The condenser fan motor shall have permanently lubricated bearings and inherent internal overload protection.

### 2.4.1.3 DX - AIR HANDLING UNIT ONLY (Models BAC)

The system shall be a split DX - Air Handling Unit designed for field connection to a remote condensing unit. The air handling unit shall include, but not be limited to: evaporator coil, stainless steel condensate drain pan, adjustable belt-driven blower, blower motor, thermal expansion valve with external equalizer, refrigerant service valves, refrigerant sight glass / moisture indicator, filter drier, refrigerant quick connect fittings, 24 volt terminal connection and 2" filters.

*(Note: When purchased without a Skil-aire™ condensing unit, BAC systems ship from the factory with a dry nitrogen holding charge. When purchased with a Skil-aire™ condensing unit, BAC systems ship from the factory with a full refrigerant operating charge.)*

### 2.4.1.4 INDOOR (OPTIONAL OUTDOOR) REMOTE CENTRIFUGAL BLOWER AIR COOLED CONDENSING UNIT (Models CAA)

The system shall be an indoor (*outdoor - optional*) remote air cooled condensing unit designed for field connection to a dx air handling unit. The condensing unit shall be a belt driven, centrifugal blower type. The condensing unit shall be sized for full heat of rejection at 95°F ambient and be capable of operation to \_\_\_ °F low ambient air temperature. The condensing unit shall be factory tested, charged with refrigerant, sealed and be capable of being connected to the evaporator section directly when the units are close coupled or using pre-charged refrigerant lines sets when the condensing unit is mounted remote from the evaporator.

*(Note-1: When purchased without a Skil-aire™ evaporator unit, CAA systems ship from the factory with a dry nitrogen holding charge. When purchased with a Skil-aire™ evaporator unit, CAA systems ship from the factory with a full refrigerant operating charge.)*

*Note-2: CAA condensing units can be configured for outdoor installation via outdoor weather protection kit option.)*

### 2.4.2 WATER COOLED CONDENSERS (SWC models)

Water cooled systems shall have a coaxial, counter flow liquid condenser with adjustable 2-way water regulating

valve per circuit to maintain head pressure with condenser water flow. The unit shall require \_\_\_ GPM of \_\_\_ °F water and have a maximum pressure drop of \_\_\_ Ft. w.g.

## 2.4.3 GLYCOL COOLED CONDENSER (SGC models)

Glycol cooled systems shall have a coaxial, counter flow liquid condenser with adjustable 2-way glycol regulating valve to maintain head pressure with condenser glycol flow. The unit shall require \_\_\_ GPM of \_\_\_ °F glycol and have a maximum pressure drop of \_\_\_ Ft. w.g.

## 2.4.4 DRY COOLER & SIMPLEX PUMP PACKAGE (FCPP models)

The drycooler shall be complete with field mounted expansion tank and aquastat to control fan motor operation. The coil shall have seamless copper tubes bonded to aluminum fins for high transfer efficiency. The motor(s) shall have permanently lubricated bearings with inherent overload protection on 1 Phase motors and three coil overloads on 3 Phase motors.

The pump package shall include controls to operate the drycooler and the pump. The pump package shall be enclosed in a weatherproof housing. The pump shall be rated for \_\_\_ GPM at \_\_\_ Ft. of head, and operate on \_\_\_ volt, \_\_\_ PH, 60Hz.

## 2.5 OPTIONS

### 2.5.1 AIR COOLED CONDENSER - LOW AMBIENT CONTROL

#### 2.5.1.1 0°F AMBIENT - FAN CYCLING (FU Propeller Fan Models)

Condenser fan cycling controls shall be factory provided for field installation to allow for low ambient condenser operation to 0°F minimum air temperature.

#### 2.5.1.2 0°F - LOW AMBIENT DAMPER (SAC, CAA Centrifugal Blower Condensing Units)

A low ambient inlet damper shall be provided for the condenser section to allow operation to 0°F minimum air temperature. The damper shall include an actuator that is controlled directly by the condensed liquid line pressure. The damper shall be field mounted with all control piping furnished by the installer.

#### 2.5.1.3 -20°F VARIABLE SPEED FAN (FU Propeller Fan Models)

Variable speed head pressure controls shall be factory provided for field installation to allow for low ambient condenser operation to -20°F minimum air temperature.

### 2.5.1.4 -30°F FLOODED CONDENSER (SAC, CAA & FU Models)

A flooded condenser system shall be provided to allow for low ambient condenser operation to -30°F. The flooded system shall include a factory installed liquid refrigerant receiver and head pressure control valve.

### 2.5.2 WATER / GLYCOL COOLED - HEAD PRESSURE CONTROL VALVES

#### 2.5.2.1 3-WAY WATER / GLYCOL HEAD PRESSURE CONTROL VALVES (PWA & PGA Models)

Each refrigerant circuit's head pressure shall be controlled by a factory provided 3-way water/glycol regulating valve rated for 150 psig w.w.p.

#### 2.5.2.2 350 PSI HIGH PRESSURE - WATER/GLYCOL HEAD PRESSURE CONTROL VALVES

Each refrigerant circuit's head pressure shall be controlled by a factory provided high pressure rated \_\_\_ (2 or 3) -way water/glycol regulating valve rated for 350 psig w.w.p.

### 2.5.3 CONTROL OPTIONS

#### 2.5.3.1 DigiSkil-100™ : *Remote Wall Mounted, Non-Programmable Digital Thermostat*

A DigiSkil-100™ model remote wall mounted single stage heat / cool non-programmable thermostat with digital display shall be factory provided for field installation. The thermostat shall include FAN AUTO-ON and COOL-OFF-HEAT selector switches.

#### 2.5.3.2 DigiSkil-200™ : *7-Day Programmable Wall Mounted Digital Heat / Cool Thermostat*

A DigiSkil-200™ model remote wall mounted deluxe 7-day programmable heat pump ready thermostat with digital display shall be factory provided for field installation. The thermostat shall include FAN AUTO-ON, COOL-OFF-HEAT-EM (emergency heat), SET and PROG/MAN selector switches.

#### 2.5.3.3 MicroSkil-100™ : *Microprocessor Temperature Humidity Controller with Alarms*

The system shall be provided with a MicroSkil-100™ model Microprocessor based Temperature and Humidity controller with Alarms. Centered in the remote wall mounted controller shall be a graphic LCD display with characters to show the operating mode, time, set points and actual readings. The temperature and humidity sensors shall be internal to the remote display. The controller shall be capable of three different set points: normal, temporary and night per day, 7 days per week.

The controllers shall include the following visual and audible alarm indications (if applicable):

- High and Low Temperature
- High and Low Humidity
- Dirty Filter
- Sensor Failure
- Common Alarm Failure

The controller shall include the following system operations (if applicable):

- Unit Operational Status Indication - Cooling, Heating, Humidifying, Dehumidifying (if applicable)
- Fan - continuous or on demand
- Auto-restart upon power loss
- Remote stop/start connection
- Short cycle protection
- Cold start time delay
- Heat pump operation with aux. heat

### 2.5.3.4 **MicroSkil-200™, Advanced Microprocessor Temperature & Humidity Controller with Alarms**

The system shall be provided with a MicroSkil-200™ advanced microprocessor based temperature and humidity controller with alarms.

#### **Select Features/Benefits:**

- 4x20 Character Liquid Crystal Alpha-numerical Display
- User Configurable
- Run-Time Hours
- Current Unit Mode Status
- Alarm Status
- Digital & Analog Inputs / Outputs
- Temperature Anticipation
- Remote Stop / Start Contact
- Summary Alarm Contact
- Automatic or Manual (selectable) Restart After Power Loss
- Sequential Load After Restart
- Recovery Delay
- Compressor Short Cycle Timers
- Cold Start Time Delay
- Security Password Access
- Self-Diagnostics
- Service Mode

#### **Unit Status Display**

The control system shall display current unit functions and room status (if applicable):

- Current Dry Bulb Temp Set Point
- Current Relative Humidity Set Point
- System ON/OFF
- Cooling
- Heating
- Humidifying
- Dehumidifying
- Reheating
- Actual Room DB Temperature
- Actual Room Relative Humidity

#### **Alarm Conditions:**

Alarm conditions activate an audible and visual indicator plus close a summary alarm dry contact connection. The control system shall alert to the following alarm conditions (if applicable):

- High Temperature
- Low Temperature
- High Humidity
- Low Humidity
- High Head Press
- Loss of Air Flow
- Loss of Power
- Dirty Filter
- Smoke Detection
- Firestat
- Leak Detection
- Sensor Failure
- Summary Failure

#### **Digital & Analog Control Inputs / Outputs:**

The control system shall be capable of both digital (ON/OFF) and analog (proportional integral, PI) input and output control.

#### **Select Options:**

- Multi-Unit Sequencing (Optional)
- BMS Communications (Optional)

#### **RS 485 Serial Port Connection: (Optional)**

An RS 485 Serial Port Connection shall be provided for remote communications to BSM and/or Modem.

## 2.5.4 REHEAT OPTIONS

### 2.5.4.1 ELECTRIC REHEAT

The electric heat shall be a factory installed heater with nichrome open wire elements (finned tubed on select models), contactors and limit controls. The electric element shall be UL approved. The electric heat shall have a capacity of \_\_\_\_\_ BTUH and a KW rating of \_\_\_\_\_ KW.

### 2.5.4.2 STEAM REHEAT

The steam heat coil shall have copper tubes and aluminum fins with capacity of \_\_\_\_\_ BTUH with \_\_\_\_\_ Ft. w.g. steam. The system shall be factory pre-piped with a 2-way steam control valve.

### 2.5.4.3 HOT WATER REHEAT

The hot water reheat coil shall have copper tubes and aluminum fins with a capacity of \_\_\_\_\_ BTUH when supplied with \_\_\_\_\_ °F entering water temperature, \_\_\_\_\_ GPM at \_\_\_\_\_ Ft. w.g. The system shall be shipped with a 2-way hot water control valve for field installation.

## 2.5.5 STEAM GENERATING HUMIDIFIER

The humidification system shall be an electrode canister type, complete with fill valve, drain valve, adjustable humidity output, and automatic flush cycle. The humidifier shall have a steam output capacity of \_\_\_\_\_ lbs/hr.

## 2.5.6 CONDENSATE PUMP

A condensate pump shall be factory provided for field

installation. The condensate pump shall have the capacity of \_\_\_ GPH at \_\_\_ Ft. of head. The condensate pump shall be complete with integral float switch, pump and motor assembly, check valve and reservoir.

## **2.5.7 HOT GAS BYPASS** (DX Systems)

Each refrigerant circuit shall be provided with a hot gas bypass system for evaporator freeze-protection and capacity modulation during low load conditions.

## **2.5.8 VARIABLE AIR VOLUME (VAV) OPTION KIT**

The system shall be designed for evaporator supply air control for application with a variable air volume (VAV) system. The shall incorporate Skil-air's VAV Option Kit which shall include, but not be limited to:

- Variable Frequency Drive - factory installed
- Static Pressure Sensor / Transducer - field installed
- MicroSkil-200, Advanced Microprocessor Controller w/ Supply Air Control Algorithm
- Circuit 1: Modulating (0-10 Vdc) Hot Gas Bypass
- Circuit 2: Standard Hot Gas Bypass

## **2.5.9 MAIN POWER NON-FUSED DISCONNECT**

A main power non-fused disconnect shall be factory provided for field installation.

## **2.5.10 FIRESTAT**

A restat shall be factory provided. The restat shall immediately shut down the environmental control system when activated. The restat shall be mounted with sensing element in the return air duct, and wired by the installer to unit control panel.

## **2.5.11 SMOKE DETECTOR**

A duct mounted type smoke detector shall be factory provided. The smoke detector shall immediately shut down the environmental control system when activated. The smoke detector shall be mounted in the return air duct by the installer and wired to the unit control panel.

## **2.5.12 AIR SIDE ECONOMIZER** (All Model Types)

The system shall be provided with an Air-Side Economizer to include factory provided and field installed air side economizer mixing box and controls per the following sequence of control:

On call for cooling by the indoor space thermostat, the indoor fan and the economizer shall be energized. The outdoor air control shall determine whether the outdoor air is suitable for "free/economizer-cooling". If the outdoor air is suitable, mechanical cooling shall be locked out by the outdoor enthalpy control. The motor actuator shall be energized, operating the outdoor air and the return air dampers. The motor actuator shall be regulated by the mixed air sensor to maintain proper discharge air temperature.

When outdoor air is not suitable for "free/economizer-cooling", the Economizer shall be locked out and the outdoor air damper shall maintain minimum position while the indoor fan is operating. Upon unit shutdown or power loss, the spring return motor actuator shall close the outdoor air damper.

The Economizer shall be automatically locked out during the heat mode (if applicable).

The Air Side Economizer shall include: prewired modulating spring return motor actuator, compressor lockout, minimum position potentiometer, outdoor air control (enthalpy), mixed air sensor, multi-tap transformer and damper linkage.

The Air-Side Economizer and Controls shall ship separately from the unit for field installation.

*(Note: Refer to supplemental Air Side Economizer dimensional data for more information.)*

## **2.5.13 ECX - ECONOMIZER / FREE-COOLING CYCLE** (Models SAC/SWC/SGC-ECX)

The system shall be provided with an auxiliary Skil-air™ ECX economizer cooling coil with a factory mounted 3-way control valve. The ECX coil shall be capable of providing rated sensible capacity without compressor operation when entering water/glycol fluid temperatures are 45°F or below.

*(Note: ECX option includes external filter rack for 10-15 ton systems and upgraded fan motor for select models as required. Consult your local sales representative for details.)*

## **2.5.14 REFRIGERANT STUB KITS** (Split DX Systems)

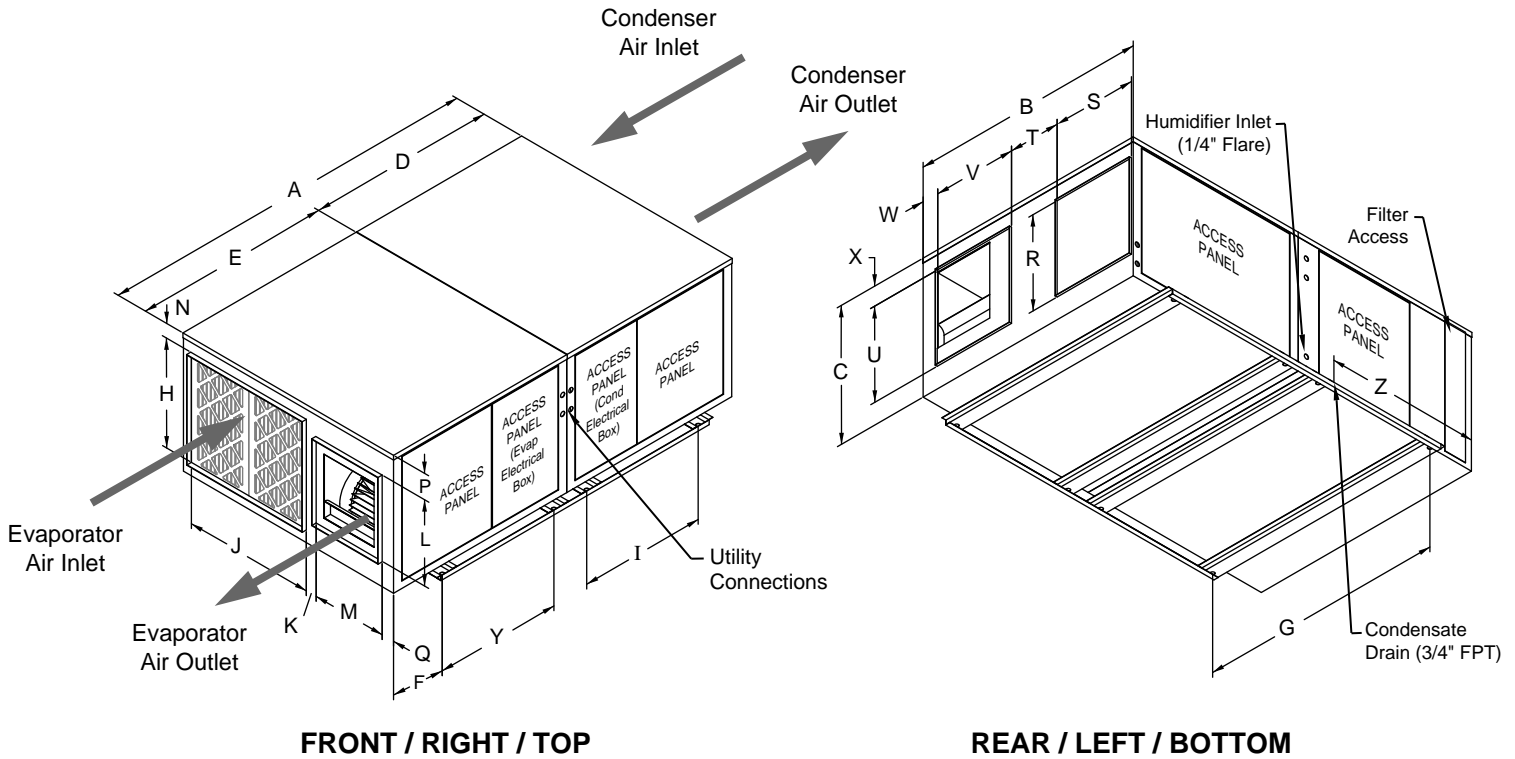
Each refrigerant circuit shall be factory provided with refrigerant stub kits for ease of field refrigerant piping installation. Each stub kit shall include a pair of male and female Suction & Liquid Line refrigerant quick connect couplings matching the couplings factory installed to each respective evaporator and/or condenser section refrigerant circuit.

*(Note: In addition to standard Refrigerant Suction and Liquid Line Connections, Stub Kits are available for the Hot Gas Bypass Option Line as well.)*

## **2.5.15 REFRIGERANT LINE-SETS** (Split DX Systems)

Refrigerant line-sets shall be factory provided complete with full operating charge and refrigerant quick disconnect end couplings. The refrigerant line-sets shall be \_\_\_ Ft. in length.

## SAC-024/144 (Self-Contained Air Cooled)



SAC(-) MODEL SIZE	DIMENSIONS (inches)												
	A	B	C	D	E	F	G	H	I	J	K	L	M
024 & 036	72 7/8	43 1/8	22	34 1/2	38 3/8	13	44 3/4	18	27 3/16	20	2 3/4	14	12
	N	P	Q	R	S	T	U	V	W	X	Y	Z	
	1 1/4	2 1/4	5 13/16	16	16	5 1/2	16	16	5 1/2	13/16	22 5/8	24	
048, 060, 072 096	82 1/2	51 1/4	29	40 1/4	42 1/4	11	53	23	27 3/16	28	2 1/2	18	16
	N	P	Q	R	S	T	U	V	W	X	Y	Z	
	3 1/4	5 11/16	2 7/8	20	18	11 1/4	20	18	3 1/2	4 3/16	27 1/4	25	
120, 144	89 1/2	70	29	55	34 1/2	7 1/2	71 1/2	25	42 3/4	46	2 1/2	20	18
	N	P	Q	R	S	T	U	V	W	X	Y	Z	
	1 1/4	2	1 3/4	24	30	12 1/4	24	24	3 1/2	2	24 3/4	20 1/2	

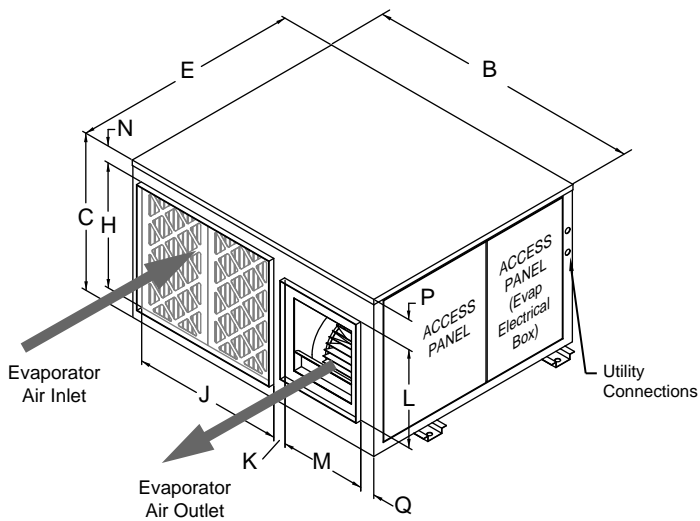
**Notes:**

1) Models SAC-024/096 shall ship from the factory as a one-piece unit as standard.

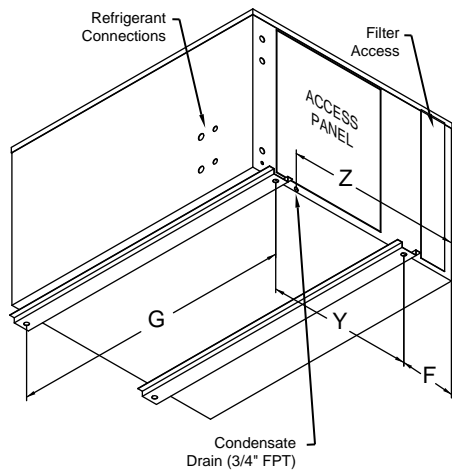
2) If site conditions require, SAC-024/096 packaged units are designed to be field converted to split systems via standard unit refrigerant quick disconnects and Stub-Kit Option for field provided interconnecting piping.

## BAC & SCC-024/180

(DX Split & Chilled Water Air Handlers)



**FRONT / RIGHT / TOP**



**REAR / LEFT / BOTTOM**

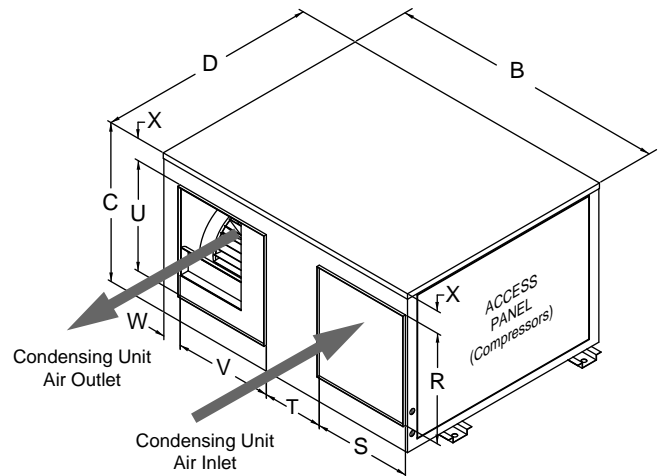
BAC & SCC(-) MODEL SIZE	DIMENSIONS (inches)							
	B	C	E	F	G	H	J	K
024 & 036	43 1/8	22	38 3/8	13	44 3/4	18	20	2 3/4
	L	M	N	P	Q	Y	Z	
	14	12	1 1/4	2 1/4	5 13/16	22 5/8	24	

048, 060, 072 & 096	B	C	E	F	G	H	J	K
	51 1/4	29	42 1/4	11	53	23	28	2 1/2
	L	M	N	P	Q	Y	Z	
	18	16	3 1/4	5 11/16	2 7/8	27 1/4	25	

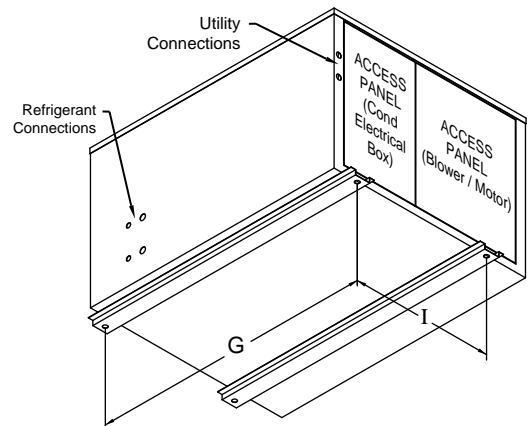
120, 144, 180	B	C	E	F	G	H	J	K
	70	29	34 1/2	7 1/2	71 1/2	25	46	2 1/2
	L	M	N	P	Q	Y	Z	
	20	18	1 1/4	2	1 3/4	24 3/4	20 1/2	

## CAA-024/180

(Remote Centrifugal Blower, Indoor/  
Outdoor Air Cooled Condensing Units)



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**REAR / LEFT / BOTTOM**

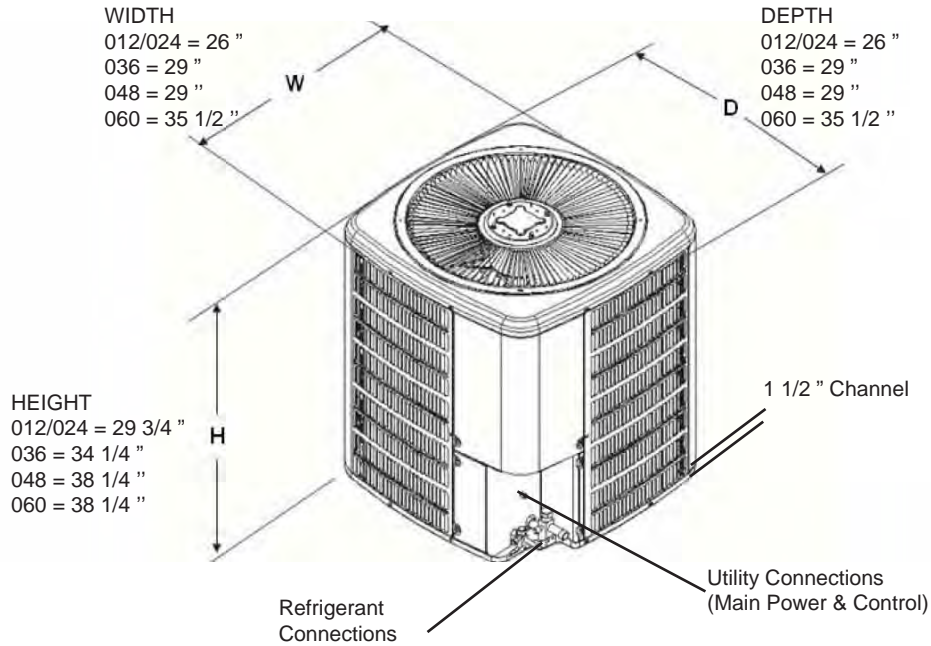
CAA(-) MODEL SIZE	DIMENSIONS (inches)					
	B	C	D	G	I	R
024 & 036	43 1/8	22	34 1/2	44 3/4	27 3/16	16
	S	T	U	V	W	X
	16	5 1/2	16	16	5 1/2	13/16

048, 060, 072 & 096	B	C	D	G	I	R
	51 1/4	29	40 1/4	53	27 3/16	20
	S	T	U	V	W	X
	18	11 1/4	20	18	3 1/2	4 3/16

120, 144, 180	B	C	D	G	I	R
	70	29	55	71 1/2	42 3/4	24
	S	T	U	V	W	X
	30	12 1/4	24	24	3 1/4	2



## 024/180-FU (Remote Propeller Fan, Outdoor Air Cooled Condensing Units)



**Note:**

Qty. one FU condensing unit is provided per circuit:

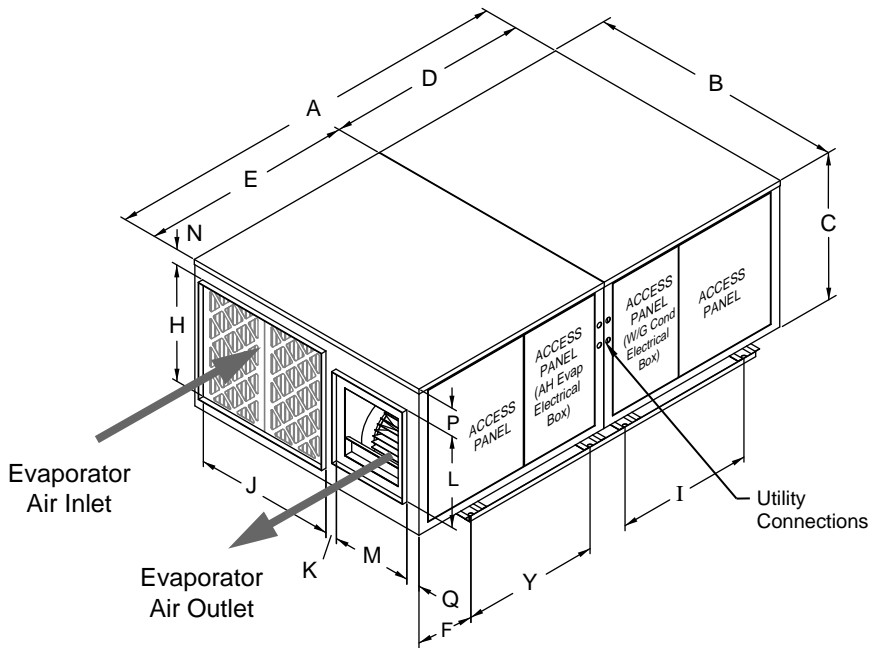
- SAC-072 units are provided with qty. 2 x 036-FU units
- SAC-096 units are provided with qty. 2 x 048-FU units
- SAC-120 units are provided with qty. 2 x 060-FU units
- SAC-144 units are provided with qty. 3 x 048-FU units
- SAC-180 units are provided with qty. 3 x 060-FU units

## Recommended Refrigerant Piping Line Sizing (Compressor(s) located with Condensing Unit Section)

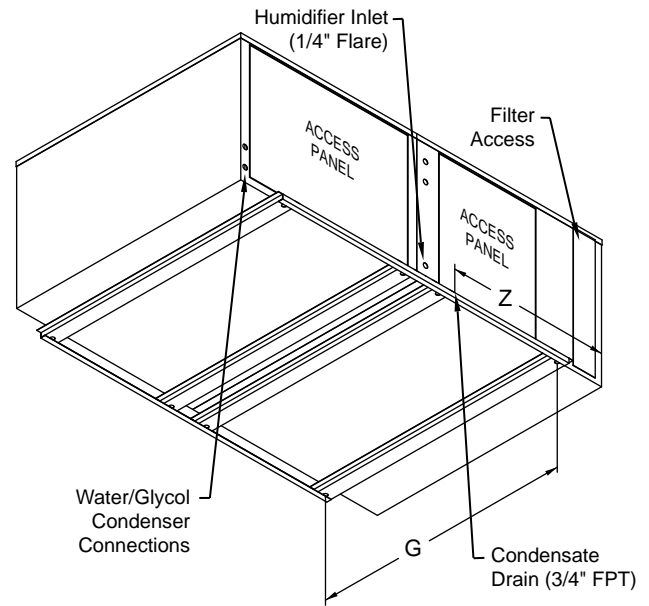
Size	Compressors	Suction Line				Liquid Line	
		Evap lower than Condensing Unit (max lift 40 Ft)		Evap higher than or on same level as Condensing Unit			
		Up to 100 Ft	Over 100 Ft	Up to 100 Ft	Over 100 Ft	Up to 100 Ft	Over 100 Ft
<b>2 Ton</b>	(1) 2T Comp	3/4	3/4	3/4	7/8	3/8	3/8
<b>3 Ton</b>	(1) 3T Comp	3/4	7/8	7/8	1-1/8	3/8	3/8
<b>4 Ton</b>	(1) 4T Comp	7/8	7/8	1-1/8	1-1/8	3/8	1/2
<b>5 Ton</b>	(1) 5T Comp	7/8	1-1/8	1-1/8	1-3/8	1/2	5/8
<b>6 Ton</b>	(2) 3T Comp	(2) 3/4	(2) 7/8	(2) 7/8	(2) 1-1/8	(2) 3/8	(2) 3/8
<b>8 Ton</b>	(2) 4T Comp	(2) 7/8	(2) 7/8	(2) 1-1/8	(2) 1-1/8	(2) 3/8	(2) 1/2
<b>10 Ton</b>	(2) 5T Comp	(2) 7/8	(2) 1-1/8	(2) 1-1/8	(2) 1-3/8	(2) 1/2	(2) 5/8
<b>12 Ton</b>	(3) 4T Comp	(3) 7/8	(3) 7/8	(3) 1-1/8	(3) 1-1/8	(3) 3/8	(3) 1/2
<b>15 Ton</b>	(3) 5T Comp	(3) 7/8	(3) 1-1/8	(3) 1-1/8	(3) 1-3/8	(3) 1/2	(3) 5/8

**Note:** Distances based on total field calculated equivalent refrigerant piping length.

## SWC & SGC-024/180 (Self-Contained Water / Glycol Cooled)



**FRONT / RIGHT / TOP**



**REAR / LEFT / BOTTOM**

SWC/SGC(-) MODEL SIZE	DIMENSIONS (inches)								
	A	B	C	D	E	F	G	H	I
024 & 036	72 7/8	43 1/8	22	34 1/2	38 3/8	13	44 3/4	18	27 3/16
	J	K	L	M	N	P	Q	Y	Z
	20	2 3/4	14	12	1 1/4	2 1/4	5 13/16	22 5/8	24

048, 060, 072 & 096	A	B	C	D	E	F	G	H	I
	82 1/2	51 1/4	29	40 1/4	42 1/4	11	53	23	27 3/16
J	K	L	M	N	P	Q	Y	Z	
28	2 1/2	18	16	3 1/4	5 11/16	2 7/8	27 1/4	25	

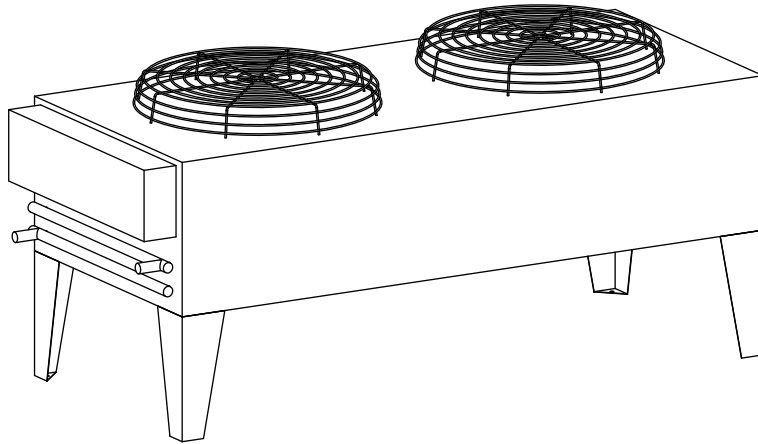
120, 144, 180	A	B	C	D	E	F	G	H	I
	89 1/2	70	29	55	34 1/2	7 1/2	71 1/2	25	42 3/4
J	K	L	M	N	P	Q	Y	Z	
46	2 1/2	20	18	1 1/4	2	1 3/4	24 3/4	20 1/2	

**Notes:**

- 1) Models SWC & SGC-024/096 shall ship from the factory as a one-piece unit as standard.
- 2) If site conditions require, SWC & SGC-024/096 packaged units are designed to be eld converted to split systems via standard unit refrigerant quick disconnects and Stub-Kit Option for eld provided interconnecting piping.

## Glycol Drycooler/Fluid Cooler

(For SGC-024/180 Glycol Cooled Systems)

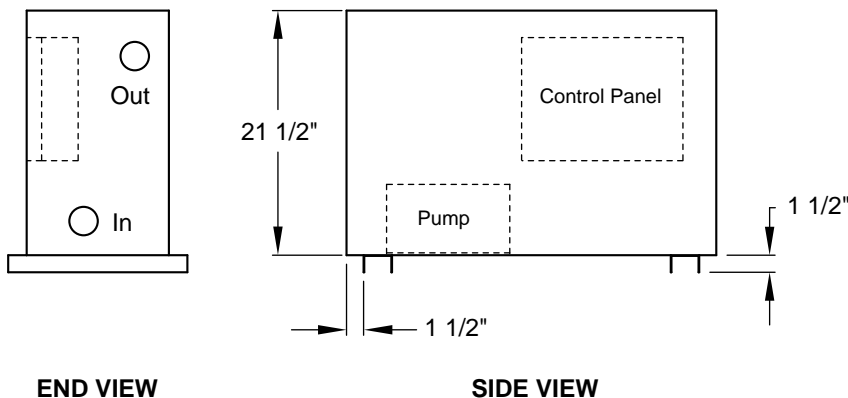
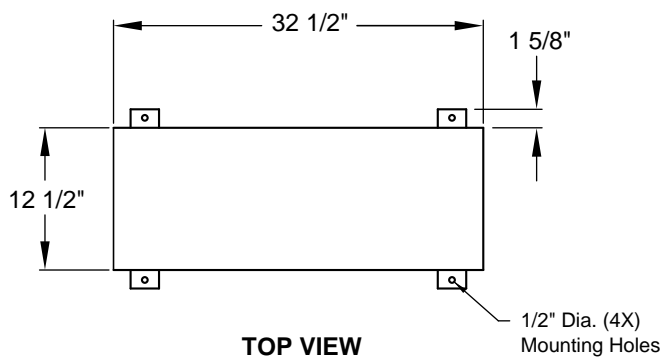


Refer to Skil-air Glycol Drycooler Engineering Manual for Dimensional & Performance Selection Details.

## Glycol Pump Packages

Simplex Pump Package Technical Data

Pump Model	HP	GPM	Total Head	Power Supply (V / PH / HZ)	FLA
PP-005	1/2	5	70 Ft.	208-230/1/60	5.3
PP-075	3/4	10	70 Ft.	208-230/1/60	7.4
PP-010	1	20	85 Ft.	208-230/1/60	8.5
PP-015	1 1/2	40	88 Ft.	208-230/1/60	9.9
				208-230/3/60	6.5
				460/3/60	3.0



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MANUFACTURERS HANOVER TRUST	RIKERS ISLAND	CONEDISON
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