



CAT – PAU –99(2)
SUPERSEDES CAT.NO.200-95



SARAVEL PACKAGED AIR CONDITIONING UNITS



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INTRODUCTION

BENEFITS AND FEATURES

SARAVEL packaged air conditioning units are compact systems intended for applications in new or existing stores, restaurants, offices, schools, computer rooms, airports, and industrial plants. Available in cooling capacities from 5 to 80 tons in a single unit, these units provide significant installation versatility and economy in that they can be used to supply the total cooling requirements in a variety of commercial, institutional, and industrial applications.

Units can be selected with air or water-cooled condensers in rooftop, indoor, and in case of air-cooled versions in split or packaged arrangements. Furthermore, the units can be used for free delivery or ducted applications. For ease of installation, the units can be in vertical or horizontal configuration.

SARAVEL packaged units can provide year round air conditioning with hot water, steam or electric heating coil during the cold season. They can also be used to supplement central systems, permitting zone control at low load conditions without the expense of central systems.

Each unit is factory assembled, wired and shipped as a package. This greatly reduces installation time and assures the optimum positioning of the components.

In the areas where water supply is either unavailable or scarce, the air cooled units can be used. The air-cooled split unit requires only the addition of the remotely located SARAVEL Air Cooled Condenser for complete air conditioning.

All components in SARAVEL packaged units are designed for maximum performance and reliability.

The basic component of the SARAVEL packaged unit is a semi-hermetic type multi-cylinder com-pressor designed to run on 380 volt, 3 phase, 50 cycle power input. Motor protection on these units is comprised of three sensors mounted internally in the motor windings which in case of charges in motor temperature shuts off the compressor. An oil safety switch provides protection against loss of oil pressure. All controls and factory wiring are protected within galvanized steel enclosures.

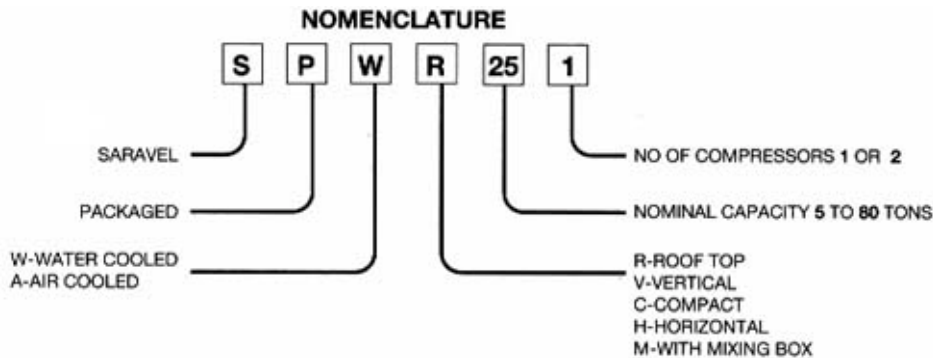
The DX cooling coil is designed and rated according to ARI-410 Standard. To maximize performance, a venturi flow distributor assures even distribution of flow into the cooling coil tubes. Suction line piping is insulated with closed cell insulation to prevent moisture condensation. The DX coil section is insulated with 19mm rock wool panel with aluminum foil cover.

The water cooled condenser is a shell and tube type heat exchanger, sized sufficiently to hold the total refrigerant charge on pump down operations. An integrated sub-cooling section allows system capacity increase without an increase in power.

The condenser shell design meets the ASME- Section VIII, DiV.1, Boiler & Pressure Vessel Code requirements in addition to TEMA Standards.

The air-cooled condenser is configured so that air discharge is directed upward thus carrying heat away from the unit and minimizing directional sound. The fan is statically and dynamically balanced therefore assuring smooth and quiet operation.

For industrial process cooling and year round air conditioning, custom built units can also be designed and constructed.





PHYSICAL DATA

TABLE 1. PHYSICAL DATA

UNIT SP	W	A	W	A	W	A	W	A	W	A	W	A	W	A	W	A		
	5-1		8-1		10-1		15-1		20-1		25-1		30-1		35-1		40-1	
COMPRESSOR CAPACITY (Tons)	5		8		10		15		20		25		30		35		40	
NO OF COMPRESSORS	1		1		1		1		1		1		1		1		1	
REFRIGERANT R-22 Operating charge (kg)	6.0	2.5	5.5	2.2	6.5	2.8	11.7	4.8	11.7	4.9	11.8	6.7	17.0	7.0	27.6	11.0	27.6	11.5
EVAPORATOR COIL	4		4		4		4		4		4		4		4		4	
Number of rows	8		8		8		8		8		8		8		8		8	
Fins per inch	5/8		5/8		5/8		5/8		5/8		5/8		5/8		5/8		5/8	
Tube O.D (in)	4		6.4		8.0		12		16		20		23.4		28.0		32.0	
Total face area (sq.ft)																		
EVAPORATOR FAN	1		1		1		1		1		1		2		2		2	
Number	13		14		14		16		17		19		17		17		17	
Size (in)	2000		3200		4000		6000		8000		10000		12000		14000		16000	
Nominal CFM																		
STANDARD MOTOR	0.75		2.0		2.0		4.0		5.5		5.5		7.5		7.5		10.0	
Horsepower @ 1450 RPM																		
RETURN-AIR FILTER	5.2		7.6		8.3		12.5		17.7		23.6		26.6		29.2		38.2	
Total face area (sq.ft)	2		2		2		2		2		2		2		2		2	
Thickness (in)																		
CONDENSER (watercooled)	1 x 6		1 x 6		1 x 6		1 x 6		1 x 8		1 x 8		1 x 10		1 x 10		1 x 10	
No x shell diam. (in)	3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4	
Integrally finned tube O.D. (in)																		
OPERATING WEIGHT (Kg)	441	341	523	420	615	492	700	559	780	631	846	686	931	745	1100	872	1200	969

TABLE 2. PHYSICAL DATA

UNIT SP	W	A	W	A	W	A	W	A	W	A	W	A	W	A	W	A		
	10-2		15-2		20-2		30-2		40-2		50-2		60-2		70-2		80-2	
NOMINAL CAPACITY (Tons)	5		7.5		10		15		20		25		30		35		40	
NO OF COMPRESSORS	2		2		2		2		2		2		2		2		2	
REFRIGERANT R-22 Operating charge (kg)	11.5	4.5	11.0	4.0	12.7	5.5	24.4	10.5	24.4	10.8	27.6	11.2	33.9	14.0	56.2	23.1	55.1	23.1
EVAPORATOR COIL	4		4		4		4		4		4		4		4		4	
Number of rows	8		8		8		8		8		8		8		8		8	
Fins per inch	5/8		5/8		5/8		5/8		5/8		5/8		5/8		5/8		5/8	
Tube O.D (in)	8.0		12.0		16.0		24.0		32.0		40.0		48.0		57.6		62.0	
Total face area (sp.ft)																		
EVAPORATOR FAN	1		1		1		2		2		2		2		2		2	
Number	14		16		17		17		17		17		19		22		22	
Size (in)	4000		6000		8000		12000		16000		20000		24000		28000		32000	
Nominal CFM																		
STANDARD MOTOR	2.0		4.0		5.5		7.5		10.0		15.0		15.0		15.0		20.0	
Horsepower @ 1450 RPM																		
RETURN-AIR FILTER	10.4		13.0		17.7		25.0		36.5		43.9		55.9		63.9		67.9	
Total face area (sp.ft)	2		2		2		2		2		2		2		2		2	
Thickness (in)																		
CONDENSER (watercooled)	2 x 6		2 x 6		2 x 6		2 x 6		2 x 8		2 x 8		2 x 10		2 x 10		2 x 10	
No x shell diam. (in)	3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4		3/4	
Integrally finned tube O.D. (in)																		
OPERATING WEIGHT (Kg)	670	473	920	706	1100	831	1230	952	1400	1087	1550	1233	1780	1407	2100	1664	2300	1815

Notes:

- 1- All units are shipped with a holding charge. However, operating charge dose not include charge for remote air-cooled condenser or refrigerant connection piping. Operating charge values are approximate.
- 2- Fan size in TABLES 1& 2 is selected for nominal conditions. Addition of special filters and other accessories will vary the fan size requirement.



SELECTION PROCEDURE

EXAMPLE 1 Air Cooled Model

Given:

SUMMER CONDITISION:

Total Cooling Load(TC).....720 MBH
 Sensible Heat Capacity(SHC).....530 MBH
 Air Flow Rate.....24000 CFM
 Entering Dry Bulb Temp. (EDB).....80 °F
 Entering Wet Bulb Temp. (EWB).....67 °F
 Air Entering Condenser Temp. (AEC).....90°F
 Condensing Temp. (CT).....125 °F

WINTER CONDITION

Total Heating Load.....800 MBH
 Entering Air Temp. EDB.....50 °F
 Entering Hot Water Temp. EHT.....160 °F
 Temperature Drop.....10 °F
 Air Flow Rate.....24000 CFM
 External Static Pressure.....0.5" w.g.
 Altitude.....Sea Level

Find:

- a) Unit size and capacity.
- b) Total heat rejection.
- c) Leaving dry/wet bulb temperatures.
- d) Heating capacity.
- e) Fan speed and HP.

a) Consider Model SPA-70-2 from [TABLE 38](#),
 Interpolating between 23040 and 25920 CFM at 67 °F
 EWB, results in the following quantities:

Total Cooling Capacity (TC) = 725.9 MBH
 Sensible Heat Capacity (SHC) = 539.3 MBH
 Compressor Power Consumption = 62.6 KW

b) To determine the Total Heat Rejection, THR, enter
[TABLE 38](#) with CT = 125 °F and interpolate between
 23040 and 25920 CFM. The THR is then found to be:

$$THR = 939.6 \text{ MBH}$$

Next, to select an air cooled condenser, refer to the
 Total Heat Rejection Chart in the *SARAVEL* Air
 Cooled Condenser Catalog with:

$$TD = 125 - 90 = 35 \text{ °F}$$

Model SAC-550-R can be selected to appropriately
 reject the total heat.

c)The Leaving Dry Bulb temperature can be calcu-
 lated using the following relation:

$$LDB = EDB - \frac{SHC}{1.087 \times CFM}$$

$$LDB = 80 \text{ °F} - \frac{539300}{1.087 \times 24000} = 59.3 \text{ °F}$$

The Leaving Wet Bulb temperature can be calculated
 according to the following method:

$$H_2 = H_1 - \frac{TC \times 1000}{4.5 \times CFM}$$

$$= 31.62 - \frac{725.9 \times 1000}{4.5 \times 24000} = 24.9 \text{ BTU/lb}$$

From [TABLE 64](#), at 0 altitude interpolate between
 24.48 and 25.12 BTU/lb to read LWB = 57.7 °F

d) From the Heating Coil Ratings in [TABLE 45](#), for
 Model SPA-70-2,a 1 row heating coil (Full Circuit-
 8 FPI) with the following specifications can be
 selected:

$$\begin{aligned} \text{Heating Capacity} &= 1,001,800 \text{ BTU/hr} \\ \text{Air Flow Rate} &= 28000 \text{ CFM} \end{aligned}$$

Since the CFM listed in the table is not equal to the
 design CFM, a correction factor must be applied.

$$\frac{CFM}{\text{Nominal CFM}} = \frac{24000}{28000} = 85.7 \%$$

From [TABLE 42](#), interpolating between 80% and
 90%, a correction factor of 0.92 is obtained. Next, a
 hot water coil correction factor must be determined.
 Enter Figure 1 at 50 °F EDB and moving vertically
 upward to 160 °F EHT, the correction factor can be
 found to be 0.93 The actual heating capacity is then:

$$\begin{aligned} \text{Actual Heating Capacity} &= 1,001, 800 \times 0.92 \times 0.93 \\ &= 857,200 \text{ BTU/hr} \end{aligned}$$

e) From [TABLE 43](#), for a 1 row coil, the internal static
 pressure is found by interpolation to be 0.07" w.g.
 Similarly for a 4-row cooling coil, the static pressure
 drop is found to be 0.4" w.g. The total system
 pressure drop is:

$$\begin{aligned} \Delta P_{\text{Total}} &= \Delta P_{\text{internal}} + \Delta P_{\text{external}} \\ &= (0.07" + 0.4") + 0.5" \\ &= 0.97" \text{ w.g.} \end{aligned}$$



SELECTION PROCEDURE

From the Fan Performance Chart on [TABLE 49](#), for Model SPA-70-2 with a static pressure of 0.97" w.g., 24000 CFM, and interpolating between 0.75" and 1" static pressure the following quantities can be selected for the fan:

$$\begin{aligned} \text{RPM} &= 512 \\ \text{HP} &= 10 \end{aligned}$$

EXAMPLE 2 Water Cooled Model

Given:

SUMMER CONDITION

Total Cooling Load (TC).....	206 MBH
Sensible Heat Capacity (SHC).....	103 MBH
Air Flow Rate.....	5500 CFM
Entering Dry Bulb Temp. (EDB).....	80 °F
Entering Wet Bulb Temp. (EWB).....	72 °F
Condenser Entering Water Temp. (EWT).....	85 °F

WINTER CONDITION

Total Heating Load.....	270 MBH
Entering Dry Bulb Temp. (EDB).....	60 °F
Entering Hot Water Temp. (EWT).....	160 °F
Temperature Drop.....	20 °F
Air Flow Rate.....	5500 °F
External Static Pressure.....	0.5" w.g.
Altitude.....	Sea Level

Fined:

- Unit size and capacity.
- Condenser water flow rate.
- Condenser pressure drop.
- Leaving dry/wet bulb temperatures.
- Heating capacity.
- Fan speed and HP.

a) Consider Model SPW-15-1 from [TABLE 7](#), interpolating between 5400 and 6000 CFM at 72 °F EWB, Permits the determination of the following quantities:

Total Capacity (TC) = 207.6 MBH
Sensible Heat Capacity (SHC) = 105.7 MBH
Compressor Power Consumption = 10.2 KW

b) From [TABLE 7](#), the condenser water flow rate is:

$$\text{GPM} = 45.1$$

c) From [TABLE 7](#), the condenser pressure drop is

$$\text{PD} = 16.2 \text{ ft. water}$$

d) The Leaving Dry Bulb temperature is calculated according to the following relation:

$$\text{LDB} = \text{EDB} - \frac{\text{SHC}}{1.087 \times \text{CFM}}$$

$$\text{LDB} = 80 \text{ °F} - \frac{105700}{1.087 \times 5500} = 62.3 \text{ °F}$$

The Leaving Wet Bulb temperature can be calculated according to the following method:

$$H_2 = H_1 - \frac{\text{TC} \times 1000}{4.5 \times \text{CFM}}$$

$$= 35.83 - \frac{207.6 \times 1000}{4.5 \times 5500} = 27.4 \text{ BTU/lb}$$

From [TABLE 64](#), interpolating between 27.85 and 28.57 BTU/lb result in LWB = 61.4 °F.

e) The Heating Coil Capacity for Model SPW-15-1 configured with a 2-row coil (Full Circuit-8 FPI) and EDB = 60 °F, from [TABLE 45](#), is:

$$\text{Heating Capacity} = 338.7 \text{ MBH}$$

Next, the hot water coil correction factor of 0.85 can be read from Figure 1 at the intersection of a vertically projected line from 60 °F entering air temperature up to the 160 °F entering water temperature line and projection horizontally to the left to correction factor axis.

Since the CFM in the table is not equal to the design CFM, a correction factor must be applied.

$$\frac{\text{CFM}}{\text{Nominal CFM}} = \frac{5500}{6000} = 91.7 \%$$

Interpolating between 90% and 100% in [TABLE 42](#), a correction factor 0.96 is obtained. Applying the hot water and CFM correction factors to obtain the actual heating capacity as:

$$\begin{aligned} \text{Actual Heating Capacity} &= 338700 \times 0.85 \times 0.96 \\ &= 276.4 \text{ MBH} \end{aligned}$$

f) The total static pressure, fan speed, and horse power are calculated similar to the procedure outlined in part e) of [EXAMPLE 1](#) as:

$$\begin{aligned} \Delta P_{\text{Total}} &= 1.1" \text{ w.g.} \\ \text{RPM} &= 780 \\ \text{HP} &= 3 \end{aligned}$$



SELECTION PROCEDURE

Notes:

Air cooled condensers must operate under different ambient conditions in order to provide sufficient heat rejection from the air conditioning cycle. All manufacturers therefore publish condenser ratings under a standard condition. For any condition other than the standard condition stated by the manufacturer, correction factors must be applied to the total heat rejection in the packaged rating tables. One such correction factor is altitude correction factor given in the table below which must be applied to the total heat rejected from the air cooled packaged unit in order to select the appropriate air cooled condenser.

TABLE 3. ALTIYUDE CORRECTION FACTOR

ALTITUDE (meter)	CF	ALTITUDE (meter)	CF
0	1.000	1400	1.107
310	1.023	1550	1.119
625	1.047	1720	1.132
940	1.070	1880	1.145
1250	1.095	2000	1.158

EXAMPLE 3: Altitude Correction Factor

Suppose the air cooled condenser of [EXAMPLE 1](#) is to operate under the same summer and winter condition except at the location stated below:

Geographic Location: Tehran
Altitude: 1190 meters

The unit selection and the calculation of the Total Heat Rejection (THR) is identical to the steps **a)** and **b)** in [EXAMPLE 1](#). Hence:

Model SPA-70-2
THR = 939.6 MBH

From [TABLE 3](#), the Correction Factor CF = 1.0902 by interpolation. Applying CF to the Total Heat Rejection leads to the new value for THR:

$$THR_{New} = THR \times 1.0902 = 939.6 \times 1.0902 = 1024 \text{ MBH}$$

From *SARAVEL* Air Cooled Condenser Catalog for TD = 35 °F and THR_{New} = 1024 MBH, air cooled condenser Model SAC-700-R can be selected.

EXAMPLE 4: Non Standard Condition Water Cooled Model

Given:

SUMMER CONDITION
Total Cooling Load (TC).....260 MBH

Sensible Heat Capacity (SHC).....140 MBH
Air Flow Rate.....8800 MBH
Entering Dry Bulb Temp. (EDB).....83 °F
Entering Wet Bulb Temp. (EWB).....67 °F
Condenser Entering Water Temp. (EWT).....85 °F
Design Leaving Dry Bulb Temp. (DLDB).....66 °F
Coil Face Area (FA).....16.0 FT²
Altitude.....0 FT

Select SPW-20-1 from [TABLE 8](#), with TC=240.8 MBH and SHC=186 MBH at 80 °F EDB. The face velocity, FV, is calculated according to the following relation:

$$FV = \frac{CFM}{FA} = \frac{8800}{16.0} = 550 \text{ fpm}$$

Where the face area, FA, for packaged units is listed in [TABLE 1](#). With the calculated face velocity enter [TABLE 40](#), under the 4-row coil the Bypass Factor, BF, is given as 0.26. Next, enter [TABLE 41](#), at 83 °F EDB and interpolate between 0.25 and 0.30 BF. The CF is then calculated as 2.42. The corrected TC and SHC for EDB=83 °F can be determined according to:

$$TC = 240800 + 8800 \times 2.42 = 262000 \text{ BTUH}$$

$$SHC = 186000 + 8800 \times 2.42 = 207000 \text{ BTUH}$$

Since the calculated TC and SHC can satisfactorily meet the given load, the leaving dry bulb temperature can be calculated as:

$$LDB = 83 \text{ °F} - \frac{207000}{1.087 \times 8800} = 61.4 \text{ °F}$$

It can thus be seen that the design leaving dry bulb temperature of 66 °F can be attained.

The leaving Wet Bulb temperature can be calculated according to the following method:

$$H_2 = H_1 - \frac{TC}{4.5 \times CFM}$$

$$= 35.83 - \frac{262000}{4.5 \times 8800} = 29.2 \text{ BTU/lb}$$

From [TABLE 64](#) at 0 altitude interpolate between 29.31 and 28.57 BTU/lb to read LWB =63.8 °F.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 4. SPW-5-1 RATINGS

EWT (°F)	CONDENSER		CFM	1600			1800			2000			2200		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	15.7	8.2	TC (MBH)	73.5	66.4	59.9	75.3	68.1	61.4	76.8	69.4	62.5	78.0	70.5	63.5
			SHC (MBH)	35.8	43.5	51.2	37.3	45.8	53.9	38.6	48.0	57.0	40.0	49.9	59.6
			Input Power (KW)	2.5	2.6	2.7	2.5	2.6	2.7	2.5	2.6	2.6	2.5	2.6	2.6
			Current (AMP.)	5.7	5.8	5.8	5.6	5.7	5.8	5.6	5.7	5.8	5.6	5.7	5.8
85	15.3	7.8	TC (MBH)	70.7	63.8	57.3	72.3	65.3	58.8	73.7	66.5	59.8	74.8	67.6	60.8
			SHC (MBH)	34.7	42.4	50.1	36.1	44.5	52.9	37.6	46.8	55.7	38.8	48.7	58.5
			Input Power (KW)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
			Current (AMP.)	6.2	6.3	6.3	6.2	6.2	6.3	6.2	6.2	6.3	6.2	6.2	6.3
95	15.0	7.5	TC (MBH)	67.7	61.1	54.8	69.2	62.5	56.1	70.4	63.6	57.1	71.5	64.6	58.1
			SHC (MBH)	33.6	41.1	48.8	35.0	43.5	51.7	36.4	45.5	54.6	37.6	47.6	57.6
			Input Power (KW)	3.4	3.4	3.40	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
			Current (AMP.)	6.8	6.8	6.7	6.8	6.8	6.7	6.8	6.8	6.7	6.8	6.8	6.7

TABLE 5. SPW-8-1 RATINGS

EWT (°F)	CONDENSER		CFM	2560			2880			3200			3520		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	24.4	13.4	TC (MBH)	110.5	99.9	90.6	112.4	102.1	92.5	113.9	103.8	94.5	115.7	105.8	95.4
			SHC (MBH)	54.4	66.8	78.9	56.6	70.3	83.6	58.5	73.6	87.5	60.2	76.5	92.3
			Input Power (KW)	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.3	5.4	5.4
			Current (AMP.)	10.4	10.5	10.5	10.4	10.5	10.5	10.4	10.5	10.5	10.4	10.5	10.5
85	24.0	13.0	TC (MBH)	106.8	96.7	87.4	109.0	98.8	89.2	111.1	100.6	91.1	113.6	102.8	92.0
			SHC (MBH)	53.2	65.6	77.3	55.3	68.8	82.1	57.6	72.4	86.2	59.5	75.3	91.4
			Input Power (KW)	5.8	5.7	5.6	5.8	5.7	5.6	5.8	5.7	5.6	5.8	5.7	5.6
			Current (AMP.)	11.2	11.1	10.9	11.2	11.1	10.9	11.3	11.1	11.0	11.3	11.1	11.0
95	23.5	12.4	TC (MBH)	102.4	92.9	83.9	105.0	94.8	85.6	106.3	96.2	87.3	107.3	98.1	88.7
			SHC (MBH)	51.8	63.9	75.9	54.0	67.3	80.5	55.9	71.0	85.3	57.5	73.4	88.7
			Input Power (KW)	6.4	6.3	6.1	6.4	6.3	6.2	6.5	6.3	6.2	6.5	6.4	6.2
			Current (AMP.)	12.2	12.0	11.8	12.3	12.0	11.8	12.3	12.1	11.9	12.3	12.1	11.9

TABLE 6. SPW-10-1 RATINGS

EWT (°F)	CONDENSER		CFM	3200			3600			4000			4400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	33.3	16.5	TC (MBH)	152.0	137.4	124.3	155.7	140.9	127.4	158.7	143.7	129.8	161.5	146.2	131.8
			SHC (MBH)	73.6	89.0	104.0	76.5	93.4	109.9	79.4	97.7	115.6	81.9	101.7	121.2
			Input Power (KW)	6.7	6.7	6.6	6.7	6.7	6.7	6.6	6.7	6.7	6.6	6.7	6.7
			Current (AMP.)	13.0	13.0	12.9	12.9	13.0	12.9	12.9	13.0	13.0	12.9	13.0	13.0
85	32.5	15.7	TC (MBH)	144.9	130.8	118.2	148.3	133.9	120.9	150.9	136.6	123.0	153.5	138.9	124.9
			SHC (MBH)	70.7	86.1	101.1	73.7	90.5	107.0	76.4	94.6	112.9	78.9	98.6	118.0
			Input Power (KW)	7.6	7.6	7.5	7.6	7.6	7.5	7.6	7.6	7.5	7.6	7.6	7.5
			Current (AMP.)	14.4	14.3	14.1	14.4	14.3	14.2	14.4	14.3	14.2	14.4	14.3	14.2
95	31.8	15.1	TC (MBH)	138.1	124.7	112.5	141.3	127.5	115.0	143.7	130	117.0	146.0	132.1	118.9
			SHC (MBH)	68.1	83.6	98.4	71.0	88.0	104.2	73.7	92.0	110.1	76.1	96.0	115.3
			Input Power (KW)	8.5	8.4	8.2	8.6	8.5	8.3	8.6	8.5	8.3	8.6	8.5	8.3
			Current (AMP.)	15.8	15.6	15.3	15.8	15.6	15.4	15.8	15.7	15.4	15.8	15.7	15.5

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 7. SPW-15-1 RATINGS

EWT (°F)	CONDENSER		CFM	4800			5400			6000			6600			
			FACE VELOCITY (FPM)	400			450			500			550			
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62	
75	45.8	16.7	TC (MBH)	210.7	190.6	172.3	215.4	195.0	176.2	219.3	198.8	179.4	222.7	201.8	181.3	
			SHC (MBH)	103.9	127.1	149.8	107.8	133.6	158.8	112.0	139.8	167.0	115.9	146.1	176.0	
			Input Power (KW)	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
			Current (AMP.)	17.6	17.6	17.5	17.6	17.6	17.5	17.5	17.6	17.6	17.6	17.5	17.6	17.6
85	45.1	16.2	TC (MBH)	202.7	183.2	165.5	207.0	187.2	169.1	210.6	190.9	171.4	213.7	193.6	174.7	
			SHC (MBH)	100.6	124.1	146.5	105.0	130.6	155.6	108.9	136.5	164.7	113.1	142.4	172.7	
			Input Power (KW)	10.2	10.1	10.0	10.2	10.2	10.0	10.3	10.2	10.0	10.3	10.2	10.1	
			Current (AMP.)	19.6	19.4	19.2	19.6	19.5	19.3	19.6	19.5	19.3	19.6	19.5	19.3	
95	44.3	15.7	TC (MBH)	194.3	175.7	158.5	198.4	179.2	153.8	201.6	182.7	164.4	204.5	185.2	167.8	
			SHC (MBH)	97.5	120.6	143.5	101.7	127.4	152.6	105.7	133.2	160.7	109.5	139.4	167.7	
			Input Power (KW)	11.5	11.3	11.1	11.6	11.4	11.1	11.6	11.4	11.2	11.6	11.5	11.2	
			Current (AMP.)	21.7	21.3	20.9	21.7	21.4	21.0	21.8	21.5	21.1	21.8	21.5	21.2	

TABLE 8. SPW-20-1 RATINGS

EWT (°F)	CONDENSER		CFM	6400			7200			8000			8800		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	57.1	17.0	TC (MBH)	260.9	237.7	216.0	265.9	242.5	220.2	270.3	246.3	223.5	273.7	249.7	227.4
			SHC (MBH)	133.1	164.7	196.1	138.8	173.5	207.9	143.8	181.9	219.5	149.1	189.9	227.4
			Input Power (KW)	9.8	10.0	10.1	9.8	10.0	10.0	9.8	9.9	10.0	9.8	9.9	10.0
			Current (AMP.)	19.5	19.7	19.8	19.4	19.7	19.8	19.4	19.6	19.8	19.4	19.6	19.7
85	56.4	16.6	TC (MBH)	252.4	229.2	207.6	257.3	233.9	211.3	261.5	237.6	215.1	264.6	240.8	219.7
			SHC (MBH)	130.0	161.2	191.9	135.5	169.4	204.6	140.4	178.1	215.1	146.0	186.0	219.7
			Input Power (KW)	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
			Current (AMP.)	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4	21.4
95	55.3	15.9	TC (MBH)	241.6	219.4	198.3	246.1	223.7	201.9	249.9	227.1	206.7	252.5	230.0	211.7
			SHC (MBH)	125.7	157.0	188.2	131.4	165.3	200.1	136.7	173.9	206.7	142.4	181.7	211.7
			Input Power (KW)	12.9	12.8	12.6	12.9	12.8	12.6	12.9	12.8	12.7	12.9	12.8	12.7
			Current (AMP.)	23.5	23.4	23.2	23.5	23.4	23.2	23.5	23.5	23.3	23.5	23.5	23.3

TABLE 9. SPW-25-1 RATINGS

EWT (°F)	CONDENSER		CFM	8000			9000			10000			11000		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	71.1	23.8	TC (MBH)	329.9	299.7	272.1	336.4	305.8	277.1	341.8	311.3	280.4	346.3	315.5	285.7
			SHC (MBH)	165.0	203.9	242.1	171.7	214.8	257.2	178.0	224.7	272.0	184.5	234.6	285.2
			Input Power (KW)	12.9	13.0	13.1	12.9	13.0	13.1	12.9	13.0	13.1	12.9	13.0	13.1
			Current (AMP.)	24.4	24.5	24.6	24.3	24.5	24.6	24.3	24.5	24.6	24.3	24.5	24.6
85	70.3	23.4	TC (MBH)	320.1	290.1	262.6	326.5	295.9	266.8	331.8	301.2	270.9	335.9	305.4	277.1
			SHC (MBH)	161.0	200.0	237.5	168.4	210.4	252.8	174.4	220.9	267.3	161.7	229.8	277.1
			Input Power (KW)	14.8	14.7	14.6	14.8	14.7	14.7	14.8	14.8	14.7	14.8	14.8	14.7
			Current (AMP.)	26.9	26.9	26.7	26.9	26.9	26.8	26.9	26.9	26.8	26.9	26.9	26.8
95	69.0	22.5	TC (MBH)	306.6	277.7	250.7	312.3	283.1	255.5	317.4	287.9	260.6	320.4	291.9	267.2
			SHC (MBH)	155.8	195.0	233.0	162.8	205.9	247.6	169.2	215.9	260.1	176.6	225.0	267.2
			Input Power (KW)	16.8	16.6	16.3	16.8	16.6	16.4	16.8	16.7	16.4	16.8	16.7	16.5
			Current (AMP.)	29.7	29.5	29.1	29.8	29.5	29.2	29.8	29.6	29.3	29.8	29.6	29.4

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 10. SPW-30-1 RATINGS

EWT (°F)	CONDENSER		CFM	9360			10530			11700			12870			
			FACE VELOCITY (FPM)	400			450			500			550			
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62	
75	84.7	21.5	TC (MBH)	390.9	354.9	321.9	398.7	362.3	328.6	405.5	368.6	332.1	411.0	373.9	337.7	
			SHC (MBH)	193.9	240.1	284.4	202.4	253.2	301.4	210.1	264.5	320.0	217.3	276.3	335.8	
			Input Power (KW)	16.0	16.1	16.0	16.0	16.1	16.0	16.0	16.1	16.0	16.0	16.0	16.0	16.0
			Current (AMP.)	27.8	27.9	27.8	27.8	27.9	27.8	27.8	27.9	27.9	27.8	27.9	27.9	27.9
85	83.6	20.8	TC (MBH)	379.1	343.0	310.7	386.6	350.2	315.5	393.0	356.3	319.9	398.7	361.3	326.8	
			SHC (MBH)	190.2	234.9	278.2	197.7	247.6	297.1	205.1	259.6	314.0	213.2	271.1	326.8	
			Input Power (KW)	18.2	18.1	17.9	18.2	18.1	17.9	18.2	18.1	17.9	18.2	18.1	18.0	
			Current (AMP.)	31.0	30.8	30.5	31.0	30.9	30.6	31.0	30.9	30.6	31.0	31.0	30.7	
95	82.0	20.2	TC (MBH)	362.8	328.1	296.0	369.6	334.7	301.5	375.8	340.3	307.1	380.6	344.9	314.7	
			SHC (MBH)	183.8	229.0	273.2	192.1	241.0	290.7	199.5	253.4	307.1	206.8	262.0	314.7	
			Input Power (KW)	20.5	20.2	19.9	20.6	20.3	19.9	20.6	20.4	20.0	20.6	20.4	20.1	
			Current (AMP.)	34.5	34.0	33.5	34.5	34.1	33.6	34.5	34.2	33.7	34.5	34.3	33.8	

TABLE 11. SPW-35-1 RATINGS

EWT (°F)	CONDENSER		CFM	11200			12600			14000			15400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	103.1	19.9	TC (MBH)	471.9	429.3	390.6	481.5	439.4	398.3	489.8	446.2	403.9	497.2	452.1	407.9
			SHC (MBH)	234.3	289.2	342.7	243.8	304.2	362.8	253.0	317.6	383.0	260.8	331.9	403.0
			Input Power (KW)	20.2	20.3	20.3	20.2	20.3	20.3	20.2	20.3	20.3	20.2	20.3	20.3
			Current (AMP.)	38.4	38.6	38.5	38.3	38.5	38.5	38.3	38.5	38.6	38.3	38.5	38.6
85	101.8	19.5	TC (MBH)	457.1	414.7	375.9	466.5	424.6	382.5	474.1	430.9	389.1	481.7	436.7	394.4
			SHC (MBH)	228.8	283.6	336.0	238.4	297.2	356.8	247.3	311.7	376.0	254.0	326.3	394.4
			Input Power (KW)	23.0	22.9	22.7	23.0	22.9	22.7	23.0	22.9	22.7	23.0	23.0	22.8
			Current (AMP.)	42.5	42.3	42.0	42.5	42.4	42.1	42.5	42.4	42.1	42.5	42.4	42.2
95	99.7	18.7	TC (MBH)	436.7	396.1	358.3	445.4	404.6	365.1	451.8	410.6	372.2	459.7	416.3	379.6
			SHC (MBH)	221.8	275.3	328.3	230.6	290.1	348.7	240.2	304.2	372.2	246.2	317.3	379.6
			Input Power (KW)	26.0	25.7	25.2	26.0	25.8	25.3	26.0	25.8	25.4	26.0	25.9	25.5
			Current (AMP.)	47.0	46.5	45.8	47.0	46.6	46.0	47.0	46.7	46.1	47.0	46.8	46.2

TABLE 12. SPW-40-1 RATINGS

EWT (°F)	CONDENSER		CFM	12800			14400			16000			17600		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	123.1	22.7	TC (MBH)	563.8	512.0	465.0	575.9	523.2	475.1	586.2	533.4	482.6	595.6	540.8	486.4
			SHC (MBH)	279.4	339.7	400.2	291.1	357.0	423.9	301.9	372.6	446.6	311.0	389.2	476.2
			Input Power (KW)	24.1	24.1	24.1	24.0	24.1	24.1	24.0	24.1	24.1	23.9	24.1	24.1
			Current (AMP.)	43.0	43.1	43.1	42.9	43.1	43.1	42.9	43.1	43.1	42.8	43.1	43.1
85	121.4	22.1	TC (MBH)	545.3	493.6	446.7	557.1	504.3	456.0	567.0	514.3	462.9	576.3	521.5	467.7
			SHC (MBH)	270.6	331.3	391.4	281.4	349.3	414.9	294.0	364.8	441.0	303.0	381.4	466.6
			Input Power (KW)	27.3	24.2	26.8	27.3	27.2	26.9	27.3	27.2	27.0	27.3	27.2	27.0
			Current (AMP.)	47.2	47.0	46.6	47.2	47.0	46.7	47.2	47.1	46.8	47.2	47.1	46.8
95	118.8	21.1	TC (MBH)	520.9	471.3	425.8	531.8	481.0	433.7	540.8	489.8	441.4	549.7	496.9	448.1
			SHC (MBH)	260.8	322.1	382.3	271.9	340.1	409.0	285.0	355.9	427.8	293.0	371.8	448.1
			Input Power (KW)	30.9	30.4	29.9	30.9	30.5	30.0	30.9	30.6	30.1	30.9	30.7	30.2
			Current (AMP.)	51.8	51.3	50.5	51.9	51.4	50.7	52.0	51.5	50.8	52.0	51.6	50.9

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 13. SPW-10-2 RATINGS

EWT (°F)	CONDENSER		CFM	3200			3600			4000			4400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	31.7	8.2	TC (MBH)	148.8	134.4	121.2	152.4	137.6	124.1	155.5	140.6	126.6	158.2	143.0	128.6
			SHC (MBH)	72.4	87.8	103.0	75.4	92.4	109.0	78.1	96.8	114.4	80.6	100.8	120.0
			Input Power (KW)	5.1	5.2	5.3	5.0	5.2	5.3	5.0	5.2	5.3	5.0	5.1	5.3
			Current (AMP.)	11.3	11.5	11.6	11.3	11.5	11.6	11.2	11.4	11.6	11.2	11.4	11.5
85	31.1	7.8	TC (MBH)	143.0	129.0	116.2	146.4	132.2	119.0	149.2	134.8	121.2	151.8	137.0	123.2
			SHC (MBH)	70.0	85.4	100.6	73.2	90.0	106.4	75.6	94.2	112.0	78.2	98.0	117.4
			Input Power (KW)	6.0	6.1	6.1	6.0	6.0	6.1	6.0	6.0	6.1	5.9	6.0	6.1
			Current (AMP.)	12.4	12.5	12.5	12.4	12.5	12.5	12.4	12.5	12.5	12.3	12.5	12.5
95	30.5	7.5	TC (MBH)	137.0	123.6	111.0	140.2	126.4	113.6	142.8	128.8	115.8	145.0	131.0	117.6
			SHC (MBH)	68.0	83.0	98.2	70.8	87.6	104.2	73.4	92.0	109.6	76.0	95.8	116.0
			Input Power (KW)	6.9	6.9	6.1	6.9	6.9	6.8	6.9	6.9	6.8	6.8	6.9	6.8
			Current (AMP.)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5

TABLE 14. SPW-15-2 RATINGS

EWT (°F)	CONDENSER		CFM	4800			5400			6000			6400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	47.9	13.4	TC (MBH)	215.1	193.9	176.2	219.9	198.6	180.1	223.2	202.2	183.2	225.8	205.4	186.0
			SHC (MBH)	105.5	129.1	151.7	109.5	135.5	160.6	113.4	141.6	169.2	114.6	144.5	173.6
			Input Power (KW)	10.8	10.9	10.9	10.8	10.9	10.9	10.8	10.9	10.8	10.7	10.9	10.9
			Current (AMP.)	20.9	21.0	21.0	20.9	21.0	21.0	20.9	21.0	21.0	20.8	21.0	21.0
85	46.9	13.0	TC (MBH)	207.7	188.2	170.0	212.3	192.1	173.6	215.9	195.7	176.8	219.2	198.8	179.7
			SHC (MBH)	102.7	125.9	148.9	106.8	132.7	157.7	110.8	138.9	166.1	112.5	141.8	170.5
			Input Power (KW)	11.5	11.3	11.1	11.5	11.3	11.1	11.6	11.4	11.2	11.6	11.4	11.2
			Current (AMP.)	22.3	22.0	21.7	22.4	22.1	21.8	22.5	22.2	21.8	22.5	22.2	21.9
95	46.2	12.4	TC (MBH)	199.7	180.9	163.2	204.0	184.5	166.6	208.1	187.8	169.7	210.8	190.8	172.7
			SHC (MBH)	99.5	122.9	145.8	103.6	129.6	154.6	108.0	136.0	163.0	109.8	138.5	172.7
			Input Power (KW)	12.8	12.5	12.2	12.8	12.6	12.3	12.9	12.6	12.3	12.9	12.6	12.4
			Current (AMP.)	24.3	23.9	23.4	24.4	24.0	23.5	24.5	24.1	23.6	24.6	24.1	23.7

TABLE 15. SPW-20-2 RATINGS

EWT (°F)	CONDENSER		CFM	6400			7200			8000			8800		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	66.6	16.5	TC (MBH)	304.1	274.7	248.6	311.4	281.7	254.7	317.5	287.5	259.5	323.0	292.4	263.6
			SHC (MBH)	147.2	178.2	208.2	152.9	186.9	214.5	158.8	195.3	231.2	163.8	203.4	242.4
			Input Power (KW)	13.3	13.4	13.3	13.3	13.4	13.3	13.3	13.4	13.3	13.3	13.4	13.3
			Current (AMP.)	25.9	26.0	25.8	25.9	26.0	25.9	25.9	26.0	25.9	25.8	26.0	25.9
85	65.0	15.7	TC (MBH)	289.7	261.7	236.3	296.5	267.8	241.8	301.9	273.2	246.1	307.0	227.8	249.9
			SHC (MBH)	141.5	172.2	202.2	147.0	181.0	214.0	152.8	189.2	225.8	157.9	197.3	36.1
			Input Power (KW)	15.3	15.1	14.9	15.3	15.2	15.0	15.3	15.2	15.0	15.3	15.2	15.1
			Current (AMP.)	28.8	28.6	28.3	28.8	28.6	28.4	28.8	28.7	28.4	28.8	28.7	28.5
95	63.6	15.1	TC (MBH)	276.3	249.4	225.0	282.5	255.1	230.0	287.4	260.0	234.0	292.0	264.2	237.7
			SHC (MBH)	137.6	167.1	196.9	142.0	176.0	208.5	147.5	184.1	220.1	152.3	192.0	230.6
			Input Power (KW)	17.1	16.8	16.5	17.1	16.9	16.6	17.2	17.0	16.6	17.2	17.0	16.7
			Current (AMP.)	31.6	31.2	30.7	31.6	31.3	30.8	31.7	31.4	30.9	31.7	31.4	30.9

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 16. SPW-30-2 RATINGS

EWT (°F)	CONDENSER		CFM	9600			10800			12000			13200			
			FACE VELOCITY (FPM)	400			450			500			550			
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62	
75	89.4	16.7	TC (MBH)	409.9	371.2	335.6	419.0	379.1	342.7	426.5	386.3	348.4	432.6	392.3	353.9	
			SHC (MBH)	202.2	247.9	292.8	210.7	261.3	310.0	218.3	272.8	326.5	226.0	284.8	341.5	
			Input Power (KW)	17.8	17.8	17.7	17.8	17.8	17.7	17.8	17.8	17.8	17.8	17.8	17.8	17.8
			Current (AMP.)	35.2	35.2	35.0	35.2	35.2	35.0	35.1	35.2	35.1	35.1	35.1	35.2	35.1
85	88.1	16.2	TC (MBH)	394.4	357.1	322.3	402.8	364.4	328.9	409.7	371.2	334.3	415.3	376.7	339.7	
			SHC (MBH)	196.2	241.7	286.3	204.4	254.7	303.8	212.0	267.0	320.2	219.8	277.9	336.3	
			Input Power (KW)	20.4	20.2	19.9	20.4	20.3	20.0	20.5	20.3	20.0	20.5	20.3	20.1	
			Current (AMP.)	39.1	38.8	38.3	39.2	38.9	38.4	39.2	39.0	38.5	39.3	39.0	38.6	
95	86.5	15.7	TC (MBH)	378.5	342.4	308.6	385.7	349.4	314.6	392.4	355.2	319.9	397.4	360.4	326.5	
			SHC (MBH)	190.1	235.6	280.7	198.8	248.2	297.7	205.7	260.5	316.3	213.6	271.1	326.5	
			Input Power (KW)	23.0	22.6	22.0	23.1	22.7	22.1	23.1	22.7	22.2	23.2	22.8	22.3	
			Current (AMP.)	43.2	42.5	41.6	43.3	42.7	41.8	43.4	42.8	41.9	43.5	42.9	42.1	

TABLE 17. SPW-40-2 RATINGS

EWT (°F)	CONDENSER		CFM	4800			5400			6000			6400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	111.0	17.0	TC (MBH)	516.6	470.0	427.0	526.5	479.3	435.4	534.5	487.3	442.3	541.6	493.6	448.9
			SHC (MBH)	258.7	322.0	383.1	269.5	338.9	405.6	279.2	354.2	427.5	289.1	370.0	448.8
			Input Power (KW)	19.7	20.0	20.1	19.7	20.0	20.1	19.6	19.9	20.1	19.6	19.9	20.1
			Current (AMP.)	39.1	39.4	39.6	39.0	39.4	39.6	38.9	39.3	39.5	38.8	39.3	39.5
85	109.4	16.6	TC (MBH)	499.5	453.1	410.2	509.1	462.2	418.3	516.9	469.9	425.9	523.5	475.8	434.7
			SHC (MBH)	252.0	314.7	375.3	263.3	331.0	398.0	273.1	347.0	421.6	283.1	362.9	434.6
			Input Power (KW)	22.6	22.6	22.5	22.6	22.6	22.6	22.6	22.6	22.6	22.5	22.6	22.6
			Current (AMP.)	42.8	42.9	42.8	42.8	42.9	42.8	42.8	42.9	42.8	42.7	42.9	42.9
95	107.3	15.9	TC (MBH)	478.0	433.6	392.5	487.0	442.1	400.2	494.0	449.1	409.2	499.9	454.3	418.8
			SHC (MBH)	244.2	306.9	367.4	255.1	323.2	390.0	265.1	338.7	408.6	275.5	354.8	418.8
			Input Power (KW)	25.7	25.5	25.2	25.7	25.6	25.3	25.8	25.6	25.3	25.8	25.6	25.4
			Current (AMP.)	47.1	46.8	46.3	47.1	46.8	46.4	47.1	46.9	46.5	47.1	46.9	46.6

TABLE 18. SPW-50-2 RATINGS

EWT (°F)	CONDENSER		CFM	16000			18000			20000			22000		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	140.4	23.8	TC (MBH)	649.8	590.5	535.8	662.6	602.6	546.6	673.0	612.8	555.5	682.0	620.9	565.0
			SHC (MBH)	325.2	403.7	479.6	339.6	424.8	509.1	353.0	445.0	536.4	364.2	464.8	565.0
			Input Power (KW)	25.9	26.1	26.1	25.8	26.1	26.2	25.8	26.1	26.2	25.7	26.0	26.1
			Current (AMP.)	48.8	49.1	49.2	48.7	49.1	49.2	48.6	49.0	49.2	48.5	49.0	49.2
85	138.7	23.4	TC (MBH)	630.3	571.2	516.5	642.7	582.9	526.8	652.8	592.8	533.9	661.3	600.5	547.3
			SHC (MBH)	318.2	396.2	472.1	331.9	416.9	499.7	344.8	437.0	533.9	357.0	457.0	547.3
			Input Power (KW)	29.5	29.5	29.2	29.5	29.5	29.3	29.5	29.5	29.3	29.5	29.5	29.4
			Current (AMP.)	53.9	53.8	53.4	53.9	53.8	53.5	53.8	53.8	53.6	53.8	53.8	53.7
95	136.1	22.5	TC (MBH)	603.6	547.2	495.1	615.1	557.8	500.5	624.2	566.9	514.9	631.8	573.9	527.2
			SHC (MBH)	308.4	386.0	460.5	322.6	407.2	494.4	334.7	425.7	514.9	347.0	446.5	527.2
			Input Power (KW)	33.5	33.3	32.6	33.6	33.2	32.7	33.6	33.3	32.8	33.6	33.3	32.9
			Current (AMP.)	59.4	59.1	58.1	59.5	59.0	58.2	59.5	59.1	58.5	59.5	59.2	58.6

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 19. SPW-60-2 RATINGS

EWT (°F)	CONDENSER		CFM	19200			21600			24000			26400		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	172.2	21.5	TC (MBH)	795.5	723.8	655.7	813.3	738.6	669.2	826.9	751.6	680.0	837.1	762.3	691.9
			SHC (MBH)	398.0	490.4	582.7	413.5	516.9	618.0	430.4	540.6	651.4	444.0	565.2	691.9
			Input Power (KW)	32.0	32.1	32.0	31.9	32.1	32.1	31.9	32.1	32.1	31.9	32.1	32.1
			Current (AMP.)	55.6	55.8	55.7	55.5	55.8	55.7	55.5	55.8	55.8	55.5	55.7	55.8
85	170.2	20.8	TC (MBH)	771.7	700.2	631.4	788.4	714.2	647.0	802.2	726.9	656.5	811.3	737.3	669.4
			SHC (MBH)	389.6	479.7	572.6	404.7	506.7	607.0	420.4	531.3	637.9	436.3	555.8	665.7
			Input Power (KW)	36.4	36.2	36.2	36.4	36.3	35.9	36.4	36.3	36.0	36.4	36.3	36.0
			Current (AMP.)	62.1	61.8	61.8	62.1	61.9	61.3	62.1	61.9	61.4	62.1	62.0	61.6
95	166.7	20.2	TC (MBH)	738.7	669.8	603.5	753.4	682.6	616.8	766.4	694.2	629.1	774.0	703.7	642.3
			SHC (MBH)	375.9	468.3	559.8	392.1	495.3	592.6	408.3	518.1	624.5	428.0	541.1	642.3
			Input Power (KW)	41.2	40.6	39.8	41.2	40.7	40.0	41.2	40.8	40.2	41.2	40.9	40.3
			Current (AMP.)	69.1	68.3	67.2	69.1	68.5	67.4	69.1	68.6	67.6	69.1	68.7	67.9

TABLE 20. SPW-70-2 RATINGS

EWT (°F)	CONDENSER		CFM	23040			25920			28800			31680		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	208.2	19.9	TC (MBH)	954.5	869.5	790.3	975.4	887.8	805.0	991.1	902.6	818.7	1003.0	915.5	831.8
			SHC (MBH)	476.2	589.4	700.0	494.2	619.9	743.2	514.0	649.5	781.9	534.0	675.9	818.7
			Input Power (KW)	40.5	40.7	40.7	40.4	40.7	40.7	40.4	40.6	40.7	40.4	40.6	40.7
			Current (AMP.)	76.7	77.1	77.1	76.6	77.0	77.1	76.6	77.0	77.1	76.6	76.9	77.1
85	205.7	19.5	TC (MBH)	924.6	840.2	760.2	854.6	857.6	774.6	960.0	871.7	789.3	972.2	884.3	803.7
			SHC (MBH)	466.4	576.4	685.6	484.8	606.6	728.9	503.4	635.7	765.9	524.0	663.8	798.6
			Input Power (KW)	46.0	45.8	45.9	46.0	45.9	45.5	46.0	45.9	45.6	46.0	45.9	45.7
			Current (AMP.)	85.0	84.7	84.9	85.0	84.8	84.2	85.0	84.9	84.4	85.0	84.9	84.5
95	201.5	18.7	TC (MBH)	883.2	802.3	727.2	900.4	818.1	739.7	915.9	831.1	754.9	924.0	842.9	770.5
			SHC (MBH)	450.2	562.3	672.1	469.6	591.1	711.3	487.0	621.0	748.2	508.0	647.4	770.5
			Input Power (KW)	52.1	51.5	50.6	52.1	51.6	50.8	52.1	51.7	50.9	52.1	51.8	51.1
			Current (AMP.)	94.1	93.3	91.8	94.1	93.4	92.1	94.1	93.5	92.4	94.1	93.7	92.6

Note: All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.



WATER COOLED PACKAGED UNIT RATINGS

TABLE 21. SPW-80-2 RATINGS

EWT (°F)	CONDENSER		CFM	24800			27900			31000			341		
			FACE VELOCITY (FPM)	400			450			500			550		
	GPM	PD(ft)	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
75	245.5	22.7	TC (MBH)	1121.9	1018.6	925.4	1149.0	1042.9	947.1	1169.2	1062.7	964.2	1187.9	1080.1	976.0
			SHC (MBH)	548.0	671.6	788.0	568.5	704.6	833.8	589.4	737.1	877.2	609.6	766.6	923.1
			Input Power (KW)	48.1	48.3	48.1	48.1	48.3	48.2	48.0	48.3	48.2	47.9	48.2	48.3
			Current (AMP.)	86.0	86.3	86.1	85.9	86.2	86.2	85.8	86.2	86.2	85.7	86.2	86.2
85	242.1	22.1	TC (MBH)	1085.2	982.6	889.2	1111.8	1006.1	909.5	1131.2	1024.8	924.4	1148.7	1041.5	938.1
			SHC (MBH)	535.9	654.0	772.8	555.7	687.9	815.7	577.8	720.2	861.8	596.8	751.1	902.9
			Input Power (KW)	54.6	54.3	53.6	54.6	54.4	53.8	54.6	54.4	53.9	54.6	54.5	54.0
			Current (AMP.)	94.4	93.9	93.2	94.4	94.1	93.4	94.4	94.2	93.5	94.4	94.2	93.6
95	237.1	21.1	TC (MBH)	1037.0	939.1	848.0	1061.4	960.2	865.0	1079.4	976.8	880.7	1094.4	992.1	895.7
			SHC (MBH)	516.4	636.2	752.1	535.7	669.6	799.4	558.2	702.4	840.2	578.3	731.9	881.7
			Input Power (KW)	61.7	60.8	59.7	61.9	61.0	59.9	61.9	61.2	60.1	61.9	61.3	60.3
			Current (AMP.)	103.6	102.5	101.0	103.9	102.8	101.3	103.9	138.0	101.6	103.9	103.2	101.8

Rating Table Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has not been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80 °F EDB according to ARI standards 310-90 and 360-86.

Formulas, (At sea level):

$$LDB = EDB - \frac{SHC (BTU/hr)}{1.087 \times CFM} \quad \text{(For cooling and heating coils)}$$

$$H_2 = H_1 - \frac{TC (BTU/hr)}{4.45 \times CFM} \quad \text{(For cooling coil)}$$

$$GPM = \frac{THR (BTU/hr)}{500 \times \Delta T} \quad \text{(Water Flow Rate)}$$

THR (MBH) = Gross Total Capacity (MBH) + 3.413 x Compressor Power Input (KW) (For suction cooled compressors)



AIR COOLED PACKAGED UNIT RATINGS

TABLE 22. SPA-5-1 RATINGS

CT (°F)	CFM	1600			1800			2000			2200		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	67.7	61.1	54.8	69.2	62.5	56.1	70.4	63.6	57.1	71.5	64.6	58.1
	SHC (MBH)	33.6	41.1	48.8	35.0	43.5	51.7	36.4	45.5	54.6	37.6	47.6	57.6
	INPUT POWER (KW)	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
	CURRENT (AMP.)	6.8	6.8	6.7	6.8	6.8	6.7	6.8	6.8	6.7	6.8	6.8	6.7
	THR (MBH)	79.4	72.8	58.2	80.9	74.2	67.7	82.2	75.3	68.8	83.2	76.3	69.7
115	TC (MBH)	64.6	58.3	52.3	66.0	59.5	53.5	67.1	60.6	54.3	68.1	61.5	55.6
	SHC (MBH)	32.5	40.0	47.5	33.9	42.4	50.5	35.2	44.3	53.4	36.5	46.3	55.6
	INPUT POWER (KW)	3.9	3.8	3.7	3.9	3.8	3.8	3.9	3.8	3.8	3.9	3.8	3.8
	CURRENT (AMP.)	7.3	7.3	7.2	7.3	7.3	7.2	7.3	7.3	7.2	7.3	7.3	7.2
	THR (MBH)	77.8	71.3	65.1	79.2	72.6	66.3	80.3	73.7	67.2	81.4	74.6	68.5
125	TC (MBH)	61.5	55.4	49.7	62.7	56.5	50.6	63.7	57.5	51.9	64.6	58.3	53.2
	SHC (MBH)	31.3	38.8	46.3	32.7	41.1	49.2	34.0	43.2	51.9	35.3	45.2	53.2
	INPUT POWER (KW)	4.3	4.2	4.1	4.3	4.2	4.1	4.3	4.2	4.1	4.3	4.2	4.2
	CURRENT (AMP.)	7.9	7.8	7.6	7.9	7.8	7.7	7.9	7.8	7.7	7.9	7.8	7.7
	THR (MBH)	76.1	69.7	63.7	77.4	70.9	64.6	78.5	71.9	66.0	79.3	72.8	67.4
135	TC (MBH)	58.3	52.4	46.9	59.3	53.4	48.2	60.3	54.3	49.6	61.0	55	50.8
	SHC (MBH)	30.0	37.7	45.2	31.5	39.8	48.0	32.8	41.9	49.5	34.0	43.9	50.8
	INPUT POWER (KW)	4.7	4.6	4.4	4.7	4.6	4.5	4.7	4.6	4.5	4.7	4.6	4.5
	CURRENT (AMP.)	8.4	8.3	8.1	8.5	8.3	8.1	8.5	8.3	8.2	8.5	8.4	8.2
	THR (MBH)	74.3	68.0	62.0	75.4	69.1	63.4	76.4	70.0	64.9	77.2	70.8	66.3

TABLE 23. SPA-8-1 RATINGS

CT (°F)	CFM	2560			2880			3200			3520		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	102.4	92.9	83.9	105.3	94.8	85.6	106.3	96.2	87.3	107.3	98.1	88.7
	SHC (MBH)	51.8	63.9	75.9	54.0	67.3	80.5	55.9	71.0	85.3	57.5	73.4	88.7
	INPUT POWER (KW)	6.4	6.3	6.1	6.4	6.3	6.2	6.5	6.3	6.2	6.5	6.4	6.2
	CURRENT (AMP.)	12.2	12.0	11.8	12.3	12.0	11.8	12.3	12.1	11.9	12.3	12.1	11.9
	THR (MBH)	124.3	114.4	104.9	127.0	116.4	106.7	128.4	117.8	108.4	129.5	119.8	109.9
115	TC (MBH)	98.0	88.8	80.1	99.9	90.5	81.7	101.4	91.6	84.0	102.9	93.5	85.3
	SHC (MBH)	50.1	62.1	74.1	52.2	65.6	78.6	54.2	69.3	82.1	55.9	71.6	85.3
	INPUT POWER (KW)	7.1	6.9	6.7	7.1	6.9	6.7	7.1	6.9	6.8	7.1	7.0	6.8
	CURRENT (AMP.)	13.3	14.2	12.6	13.3	13.0	12.7	13.4	13.0	12.8	13.4	13.1	12.8
	THR (MBH)	122.1	112.3	102.9	124.1	114.2	104.7	125.8	115.3	107.2	127.3	117.3	105.6
125	TC (MBH)	92.9	84.2	75.9	94.7	85.7	77.6	96.1	86.7	80.4	97.3	88.3	81.5
	SHC (MBH)	48.1	60.3	72.4	50.3	63.6	77.0	52.3	67.3	81.4	54.2	69.9	85.5
	INPUT POWER (KW)	7.7	7.5	7.2	7.8	7.5	7.3	8.8	7.6	7.4	8.8	7.6	7.4
	CURRENT (AMP.)	14.3	13.9	13.5	14.4	14.0	13.6	15.9	14.0	13.3	15.9	14.1	13.8
	THR (MBH)	119.3	109.7	100.6	121.1	111.5	102.5	126.1	112.5	103.0	127.3	114.2	106.9
135	TC (MBH)	87.1	78.9	71.3	88.4	80.3	73.4	89.6	81.4	76.2	90.2	82.4	77.2
	SHC (MBH)	46.1	58.2	70.8	48.1	61.5	73.4	49.7	65.0	74.3	51.6	68.0	77.2
	INPUT POWER (KW)	8.4	8.1	7.8	8.4	8.1	7.9	8.4	8.2	8.0	8.4	8.2	8.0
	CURRENT (AMP.)	15.4	14.9	14.4	15.4	15.0	14.6	15.4	15.0	14.7	15.4	15.1	14.8
	THR (MBH)	115.7	106.5	98	117.1	108.1	100.4	118.3	109.3	103.5	118.9	110.5	104.7

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (kw), the heat generated by the evaporator fan has not been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86
- 5-Standard air cooled condenser rating are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 24. SPA-10-1 RATINGS

CT (°F)	CFM	3200			3600			4000			4400		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	138.1	124.7	112.5	141.3	127.5	115.0	143.7	130	117	146.0	132.1	118.9
	SHC (MBH)	68.1	83.6	98.4	71.0	88.0	104.2	73.7	92.0	110.1	76.1	96.0	115.3
	INPUT POWER (KW)	8.5	8.4	8.3	8.6	8.5	8.3	8.6	8.5	8.3	8.6	8.5	8.3
	CURRENT (AMP.)	15.8	15.6	15.3	15.8	15.6	15.4	15.8	15.7	15.4	15.8	15.7	15.5
	THR (MBH)	167.3	153.4	140.7	170.5	170.1	143.3	173.0	158.9	145.4	175.3	161.1	147.4
115	TC (MBH)	131.2	118.5	106.8	134.1	121.1	109.0	136.4	123.3	110.9	138.3	125.2	112.8
	SHC (MBH)	65.6	81.0	95.8	68.2	85.3	101.6	70.9	89.4	107.2	73.5	93.1	112.7
	INPUT POWER (KW)	9.4	9.2	9.0	9.5	9.3	9.0	9.5	9.3	9.0	9.5	9.3	9.1
	Current (AMP.)	17.2	16.9	16.5	17.2	16.9	16.6	17.2	17	16.6	17.3	17.0	16.7
	THR (MBH)	163.4	150.0	137.5	166.4	152.7	139.9	168.8	155.0	141.9	170.8	157.0	144
125	TC (MBH)	124.2	112.2	101.0	126.8	114.5	102.9	128.9	116.4	104.8	130.5	118.1	107.7
	SHC (MBH)	62.9	78.3	93.1	65.6	82.6	99.2	68.3	86.6	104.8	70.9	90.6	107.7
	INPUT POWER (KW)	10.3	10.0	9.7	10.3	10.1	9.8	10.3	10.1	9.8	10.4	10.1	9.9
	Current (AMP.)	18.5	18.1	17.6	18.6	18.2	17.7	18.6	18.2	17.8	18.7	18.3	17.9
	THR (MBH)	152.3	146.4	134.2	162.0	148.9	136.3	164.2	150.9	138.4	165.9	152.7	141.4
135	TC (MBH)	117.2	105.8	95.2	119.4	107.8	97.2	121.3	109.4	100	122.7	110.9	102.5
	SHC (MBH)	60.5	75.6	90.7	63.0	80.1	97.2	65.6	84	100	68.1	87.8	102.5
	INPUT POWER (KW)	11.1	10.7	10.4	11.1	10.8	10.5	11.2	10.9	10.6	11.2	10.9	10.6
	Current (AMP.)	19.8	19.3	18.7	19.9	19.4	18.8	20	19.5	19.6	20.0	19.55	19.1
	THR (MBH)	154.9	142.5	130.8	157.4	144.7	132.9	159.4	146.5	136.1	160.9	148.1	138.8

TABLE 25. SPA-15-1 RATINGS

CT (°F)	CFM	4800			5400			6000			6600		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	194.3	175.7	158.5	198.4	179.2	153.8	201.6	182.7	164.4	204.5	185.2	167.8
	SHC (MBH)	97.5	120.6	143.5	101.7	127.4	152.6	105.7	133.2	160.7	109.5	139.4	167.7
	INPUT POWER (KW)	11.5	11.3	11.1	11.6	11.4	11.1	11.6	11.4	11.2	11.6	11.5	11.2
	CURRENT (AMP.)	21.7	21.3	20.9	21.7	21.4	21.0	21.8	21.5	21.1	21.8	21.5	21.2
	THR (MBH)	233.8	214.4	196.4	237.9	218.1	191.8	241.3	221.7	202.5	244.2	224.3	206.1
115	TC (MBH)	185.8	167.9	151.3	189.5	171.1	153.8	192.5	174.2	157.4	195.6	176.6	161.3
	SHC (MBH)	94.4	117.6	140.1	98.6	124.2	149.6	102.3	129.9	157.3	105.6	137.0	161.6
	INPUT POWER (KW)	12.8	12.5	12.2	12.9	12.6	12.2	12.9	12.6	12.3	12.9	12.7	12.4
	CURRENT (AMP.)	23.8	23.3	22.7	23.9	23.4	22.8	23.9	23.5	22.9	23.9	23.5	23.0
	THR (MBH)	229.6	210.7	192.8	233.5	214.1	195.6	236.0	217.3	199.4	239.7	219.9	203.5
125	TC (MBH)	176.9	159.9	143.1	180.3	162.8	146.8	183.6	165.5	150.9	186.5	167.7	154.8
	SHC (MBH)	91.5	114.3	137.8	95.1	120.7	146.7	98.6	126.9	151.3	101.4	132.6	154.8
	INPUT POWER (KW)	14.1	13.7	13.2	14.2	13.8	13.3	14.2	13.8	13.4	14.2	13.9	13.5
	CURRENT (AMP.)	25.9	25.2	24.4	26.0	25.3	24.6	26.0	25.5	24.8	26.0	25.5	25.0
	THR (MBH)	225.1	206.6	188.2	228.7	209.8	192.3	232.1	212.7	196.8	235.0	215.1	201.1
135	TC (MBH)	167.8	151.6	136.0	170.9	154.4	140.3	174.5	156.5	144.5	177.1	158.4	148.0
	SHC (MBH)	87.9	110.9	133.9	91.8	117.1	140.7	94.0	123.5	144.5	96.9	129.6	148.0
	INPUT POWER (KW)	15.4	14.8	14.2	15.4	14.9	14.4	15.4	15.0	14.6	15.4	15.1	14.7
	CURRENT (AMP.)	28.1	27.2	26.2	28.1	27.3	26.5	28.1	27.5	26.7	28.1	27.6	26.9
	THR (MBH)	220.2	202.2	184.7	223.4	205.3	189.6	227.0	207.7	194.2	229.5	209.8	198.2

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 26 SPA-20-1 RATINGS

CT (°F)	CFM	6400			7200			8000			8800		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	241.6	219.4	198.3	246.1	223.7	201.9	249.9	227.1	206.7	252.5	230.0	211.7
	SHC (MBH)	125.8	157.0	188.2	131.4	165.3	200.1	136.7	173.9	206.7	142.4	181.7	211.7
	INPUT POWER (KW)	12.9	12.8	12.6	12.9	12.8	12.6	12.9	12.8	12.7	12.9	12.8	12.7
	CURRENT (AMP.)	23.5	23.4	23.2	23.5	23.4	23.2	23.5	23.5	23.3	23.5	23.5	23.3
	THR (MBH)	285.5	263.0	241.4	290.1	267.4	245.1	293.9	270.8	250.0	296.5	273.8	255.1
115	TC (MBH)	230.6	209.4	188.5	234.7	213.1	193.3	238.1	216.2	198.6	240.2	218.7	203.1
	SHC (MBH)	121.6	152.6	188.5	126.9	161.1	193.3	132.2	169.4	198.6	138.2	177.6	203.1
	INPUT POWER (KW)	14.4	14.2	13.9	14.4	14.2	14.0	14.4	14.3	14.1	14.4	14.3	14.1
	CURRENT (AMP.)	25.7	25.4	24.9	25.7	25.4	25.1	25.7	25.5	25.2	25.7	25.5	25.3
	THR (MBH)	279.8	257.9	235.9	283.9	261.7	241.1	287.4	265.0	246.6	289.4	267.6	251.3
125	TC (MBH)	219.1	198.7	179.6	222.8	202.2	185.2	225.7	205.0	190.4	227.1	207.2	194.7
	SHC (MBH)	117.4	148.6	179.6	122.5	156.9	185.2	128.3	164.7	190.4	135.0	173.4	194.7
	INPUT POWER (KW)	15.9	15.6	15.2	15.9	15.7	15.3	15.9	15.7	15.4	15.9	15.7	15.5
	CURRENT (AMP.)	27.8	27.4	26.8	27.8	27.4	27.0	27.8	27.5	27.1	27.8	27.6	27.3
	THR (MBH)	273.4	251.9	231.5	277.0	255.6	237.5	280.0	258.6	243.1	281.3	260.9	247.7
135	TC (MBH)	207.4	187.8	171.4	210.7	190.9	177.0	213.2	193.3	181.6	214.0	195.3	185.7
	SHC (MBH)	112.6	144.2	171.4	118.2	152.5	177.0	123.7	160.8	181.6	130.9	168.7	185.7
	INPUT POWER (KW)	17.3	16.9	16.5	17.3	17.0	16.7	17.3	17.1	16.8	17.3	17.1	16.9
	CURRENT (AMP.)	29.8	29.3	28.7	29.8	29.5	28.9	29.8	29.6	29.1	29.8	29.6	29.3
	THR (MBH)	266.4	245.6	227.7	269.7	249.0	233.9	272.2	251.7	238.9	273.0	253.8	243.4

TABLE 27. SPA-25-1 RATINGS

CT (°F)	CFM	8000			9000			10000			11000		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	306.6	277.7	250.7	312.3	283.1	255.5	317.4	287.9	260.6	320.4	291.9	267.2
	SHC (MBH)	155.8	195.0	233.0	162.8	205.9	247.6	169.2	215.9	260.6	176.6	225.0	267.2
	INPUT POWER (KW)	16.8	16.6	16.3	16.8	16.6	16.4	16.8	16.7	16.4	16.8	16.7	16.5
	CURRENT (AMP.)	29.7	29.5	29.1	29.8	29.5	29.2	29.8	29.6	29.3	29.8	29.6	29.4
	THR (MBH)	363.8	334.4	306.5	369.6	339.9	311.5	374.7	344.8	316.7	377.7	348.9	323.6
115	TC (MBH)	292.4	264.9	239.1	297.4	269.7	244.5	302.3	274.1	250.6	304.2	277.6	256.8
	SHC (MBH)	151.3	189.4	227.7	157.7	200.3	242.7	163.4	209.8	250.6	172.1	219.9	256.8
	INPUT POWER (KW)	18.7	18.4	18.0	18.7	18.5	18.1	18.7	18.5	18.2	18.7	18.6	18.3
	CURRENT (AMP.)	32.5	32.0	31.4	32.5	32.1	31.6	32.5	32.2	31.4	32.5	32.3	31.9
	THR (MBH)	356.2	327.7	300.5	361.4	332.7	306.3	366.2	337.4	312.7	368.1	340.9	319.2
125	TC (MBH)	277.5	251.3	227.7	282.1	255.9	233.7	286.7	259.7	240.0	287.2	262.6	245.7
	SHC (MBH)	145.6	184.4	221.4	152.5	194.8	233.5	157.4	205.0	240.0	167.6	214.6	245.7
	INPUT POWER (KW)	20.5	20.1	19.6	20.5	20.2	19.8	20.5	20.3	19.9	20.5	20.4	20.4
	CURRENT (AMP.)	35.1	34.5	33.8	35.1	34.7	34.0	35.1	34.8	34.2	35.1	34.8	34.4
	THR (MBH)	347.6	320.1	294.6	352.2	325.0	301.2	356.8	329.0	308.0	357.3	332.2	314.1
135	TC (MBH)	261.6	237.1	215.9	265.6	241.3	222.8	270.5	244.5	228.8	269.4	247.0	233.9
	SHC (MBH)	140.6	178.6	215.9	147.6	189.2	22.8	151.4	199.2	228.8	164.1	208.6	233.9
	INPUT POWER (KW)	22.2	21.8	21.2	22.2	22.0	21.4	22.2	22.0	21.6	22.2	22.1	21.8
	CURRENT (AMP.)	37.5	37.0	36.0	37.5	37.1	36.4	37.5	37.3	36.6	37.5	37.3	36.8
	THR (MBH)	337.6	311.7	288.3	341.5	316.2	295.9	346.5	319.7	302.5	345.3	322.4	308.2

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87) .



AIR COOLED PACKAGED UNIT RATINGS

TABLE 28 SPA-30-1 RATINGS

CT (°F)	CFM	9360			10530			11700			12870		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	362.8	328.1	296.0	369.6	334.7	301.5	375.8	340.3	307.1	380.6	344.9	314.7
	SHC (MBH)	183.8	229.0	273.2	192.1	241.0	290.7	199.5	253.4	307.1	206.8	262.0	314.7
	INPUT POWER (KW)	20.5	20.2	19.9	20.6	20.3	19.9	20.6	20.4	20.0	20.6	20.4	20.1
	CURRENT (AMP.)	34.5	34.0	33.5	34.5	34.1	33.6	34.5	34.2	33.7	34.5	34.3	33.8
	THR (MBH)	432.9	397.1	363.9	439.9	404.0	369.5	446.0	409.8	375.3	450.8	414.5	383.3
115	TC (MBH)	345.6	312.5	281.7	351.9	318.5	287.9	357.4	323.7	294.8	362.1	327.8	302.3
	SHC (MBH)	177.8	222.8	266.8	185.3	235.5	285.0	192.5	246.8	294.8	199.9	258.1	302.3
	INPUT POWER (KW)	22.8	22.3	21.8	22.8	22.4	21.9	22.8	22.5	22.0	22.8	22.6	22.2
	CURRENT (AMP.)	37.9	37.1	36.3	37.9	37.3	36.5	37.9	37.4	36.7	37.9	37.5	36.9
	THR (MBH)	423.5	388.8	356.0	429.8	395.0	362.6	435.3	400.5	370.0	439.9	404.9	377.9
125	TC (MBH)	327.7	296.3	267.6	333.4	301.4	274.4	338.1	306.1	282.2	342.3	309.9	288.9
	SHC (MBH)	171.3	216.4	259.6	179.5	228.8	274.4	186.5	240.1	282.2	193.1	251.8	288.9
	INPUT POWER (KW)	24.9	24.4	23.6	24.9	24.5	23.8	24.9	24.6	24.0	24.9	24.7	24.2
	CURRENT (AMP.)	41.0	40.1	39.1	41.0	40.3	39.4	41.0	40.5	39.6	41.0	40.6	39.9
	THR (MBH)	412.7	379.4	348.4	418.4	385.0	355.8	423.1	390.1	364.2	427.3	394.1	371.5
135	TC (MBH)	308.5	279.1	253.2	313.5	283.6	261.3	317.9	287.7	268.5	321.8	291.0	274.7
	SHC (MBH)	164.8	209.4	253.2	172.4	222.0	261.4	179.4	233.0	268.5	186.3	243.7	274.7
	INPUT POWER (KW)	26.8	26.3	25.5	26.8	26.4	25.7	26.8	26.6	26.0	26.8	26.7	26.2
	CURRENT (AMP.)	43.8	43.0	41.8	43.8	43.3	42.2	43.8	43.4	42.6	43.8	43.6	42.9
	THR (MBH)	400.1	368.9	340.1	405.2	379.9	349.2	409.6	378.4	357.1	413.4	382.0	364.0

TABLE 29. SPA-35-1 RATINGS

CT (°F)	CFM	11200			12600			14000			15400		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	436.7	396.1	358.3	445.4	404.6	365.1	451.8	410.6	372.2	459.7	416.3	379.6
	SHC (MBH)	221.8	275.3	328.3	230.6	290.1	348.7	240.2	304.2	372.2	246.2	317.3	379.6
	INPUT POWER (KW)	26.0	25.7	25.2	26.0	25.8	25.3	26.0	25.8	25.4	26.0	25.9	25.5
	CURRENT (AMP.)	47.0	46.5	45.8	47.0	46.6	46.0	47.0	46.7	46.1	47.0	46.8	46.2
	THR (MBH)	525.5	483.8	444.4	534.4	492.5	451.5	540.7	498.8	458.9	548.6	504.6	466.6
115	TC (MBH)	415.6	376.9	340.8	423.7	384.4	347.9	428.7	390.1	355.6	437.3	395.3	364.0
	SHC (MBH)	213.5	266.9	320.1	223.3	282.0	341.7	232.0	296.0	354.9	237.0	309.7	364.0
	INPUT POWER (KW)	29.0	28.4	27.8	29.0	28.6	27.9	29.0	28.6	28.1	29.0	28.7	28.2
	CURRENT (AMP.)	51.4	50.6	49.6	51.4	50.8	49.8	51.4	50.9	50.1	51.4	51.1	50.3
	THR (MBH)	514.5	474.0	435.6	522.2	481.9	443.2	527.6	487.9	451.4	536.2	493.3	460.2
125	TC (MBH)	393.9	357.1	323.3	401.2	363.8	330.8	404.6	368.9	339.6	443.7	373.5	347.7
	SHC (MBH)	205.4	259.7	311.4	213.9	273.9	329.8	225.0	287.6	339.6	228.0	300.9	347.7
	INPUT POWER (KW)	31.8	31.1	30.3	31.8	31.3	30.5	31.8	31.4	30.7	31.8	31.5	30.9
	CURRENT (AMP.)	55.7	54.7	53.4	55.7	55.0	53.7	55.7	55.1	54.1	55.7	55.3	54.4
	THR (MBH)	502.4	463.4	426.6	509.6	470.7	434.8	513.0	476.2	444.5	522.1	481.1	453.2
135	TC (MBH)	371.3	336.4	305.7	378.1	342.3	314.8	379.8	347.0	323.3	390.0	350.9	330.6
	SHC (MBH)	197.4	251.4	303.9	205.0	265.9	314.8	219.0	279.9	323.3	219.3	292.5	330.6
	INPUT POWER (KW)	34.4	33.8	32.8	34.4	34.0	33.1	34.4	34.2	33.4	34.4	34.3	33.6
	CURRENT (AMP.)	59.7	58.8	57.2	59.7	59.1	57.7	59.7	59.3	58.1	59.7	59.5	58.5
	THR (MBH)	488.8	451.9	417.5	495.7	458.4	427.7	497.3	463.5	437.2	507.5	467.9	445.4

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 30 SPA-40-1 RATINGS

CT (°F)	CFM	12800			14400			16000			17600		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	520.9	471.3	425.8	531.8	481.0	433.7	540.8	489.8	441.4	549.7	496.9	448.1
	SHC (MBH)	260.8	322.1	382.3	271.9	340.1	409.0	285.0	355.9	427.8	293.0	371.8	448.1
	INPUT POWER (KW)	30.9	30.4	29.9	30.9	30.5	30.0	30.9	30.6	30.1	30.9	30.7	30.2
	CURRENT (AMP.)	51.8	51.3	50.5	51.9	51.4	50.7	52.0	51.5	50.8	52.0	51.6	50.9
	THR (MBH)	626.2	575.2	527.7	637.4	585.2	536.0	646.4	594.2	544.1	655.3	601.6	551.0
115	TC (MBH)	496.4	449.0	404.7	506.6	458.0	412.8	514.5	465.9	421.3	523.2	472.5	430.2
	SHC (MBH)	251.0	313.1	372.8	264.5	330.3	395.8	275.0	345.7	421.3	283.3	361.0	430.2
	INPUT POWER (KW)	34.4	33.7	32.8	34.4	33.8	33.0	34.4	33.9	33.2	34.4	34.0	33.3
	CURRENT (AMP.)	56.5	55.5	54.4	56.6	55.7	54.7	56.6	55.9	54.9	56.6	56.0	55.1
	THR (MBH)	613.8	563.9	516.8	624.1	573.4	525.5	632.1	581.8	534.5	640.8	588.7	544.0
125	TC (MBH)	471.1	425.9	383.8	480.5	434.4	392.3	487.4	441.2	401.6	496.0	447.1	411.5
	SHC (MBH)	242.2	303.5	362.8	254.9	320.9	392.3	266.0	337.1	401.6	272.5	351.6	411.5
	INPUT POWER (KW)	37.8	36.9	35.8	37.8	37.1	36.0	37.8	37.2	36.3	37.8	37.4	36.5
	CURRENT (AMP.)	61.0	59.8	58.3	61.0	60.1	58.7	61.0	60.3	59.0	61.0	60.5	59.4
	THR (MBH)	600.0	551.7	505.9	609.4	561.0	515.2	616.3	568.2	525.3	624.9	574.6	536.2
135	TC (MBH)	445.0	402.0	363.0	453.7	409.6	372.1	459.7	415.7	382.1	468.6	420.9	392.0
	SHC (MBH)	232.3	294.1	354.4	244.7	310.4	372.1	263.0	326.2	382.1	266.0	342.1	392.0
	INPUT POWER (KW)	40.9	40.0	38.7	40.9	40.2	39.0	40.9	40.4	39.3	40.9	40.6	39.7
	CURRENT (AMP.)	65.4	64.1	62.3	65.4	64.4	62.7	65.4	64.7	63.2	65.4	64.9	63.7
	THR (MBH)	584.7	538.6	495.0	593.4	547.0	505.3	599.4	553.7	516.4	608.2	559.5	527.5

TABLE 31. SPA-10-2 RATINGS

CT (°F)	CFM	3200			3600			4000			4400		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	137.0	123.6	111.0	140.2	126.4	113.6	142.8	128.8	115.8	145.0	131.0	117.6
	SHC (MBH)	68.0	83.0	98.2	70.8	87.6	104.2	73.4	92.0	109.6	76.0	95.8	116.0
	INPUT POWER (KW)	6.9	6.9	6.1	6.9	6.9	6.8	6.9	6.9	6.8	6.8	6.9	6.8
	CURRENT (AMP.)	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5
	THR (MBH)	160.4	147.0	131.8	163.6	149.8	136.9	166.2	152.2	139.1	168.3	154.4	140.9
115	TC (MBH)	130.8	118.0	106.0	133.6	120.6	108.2	136.2	122.8	110.2	138.2	124.6	112.4
	SHC (MBH)	65.8	80.8	96.0	68.4	85.2	101.6	70.8	89.2	107.0	73.4	93.2	112.0
	INPUT POWER (KW)	7.7	7.6	7.5	7.7	7.7	7.5	7.8	7.7	7.6	7.8	7.7	7.6
	CURRENT (AMP.)	14.7	14.6	14.4	14.7	14.6	14.4	14.7	14.6	14.7	14.7	14.6	14.5
	THR (MBH)	157.2	144.1	131.7	160.0	146.7	133.9	162.7	149.0	136.0	164.7	150.9	138.3
125	TC (MBH)	124.4	112.0	100.6	127.0	114.4	102.6	129.4	116.4	105.0	131.2	118.0	107.4
	SHC (MBH)	63.2	78.4	93.2	66.0	82.6	99.2	68.6	86.6	104.4	70.8	90.4	107.4
	INPUT POWER (KW)	8.6	8.4	8.2	8.6	8.4	8.2	8.6	8.5	8.3	8.6	8.5	8.3
	Current (AMP.)	15.8	15.6	15.3	15.8	15.6	15.4	15.9	15.7	15.4	15.9	15.7	15.5
	THR (MBH)	153.7	140.7	128.6	156.4	143.2	130.7	158.8	145.3	133.3	160.7	147.0	135.9
135	TC (MBH)	118.0	106.1	94.8	120.2	108.2	97.2	122.2	110.0	100.0	124.0	111.4	102.6
	SHC (MBH)	60.8	75.8	90.8	63.6	80.2	96.8	66.2	84.4	100.0	68.4	88.4	102.6
	INPUT POWER (KW)	9.4	9.2	8.9	9.5	9.2	8.9	9.5	9.2	9.0	9.5	9.3	9.1
	CURRENT t (AMP.)	16.9	16.6	16.2	17.0	16.7	16.3	17.0	16.7	16.4	17.0	16.8	16.5
	THR (MBH)	151.4	137.4	125.1	152.5	139.7	127.7	154.6	141.5	130.8	156.4	141.9	133.6

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 32 SPA-15-2 RATINGS

CT (°F)	CFM	4800			5400			6000			6400		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	199.7	180.9	163.2	204.0	184.5	166.6	208.1	187.8	169.7	210.8	190.8	172.7
	SHC (MBH)	99.5	122.9	145.8	103.6	129.6	154.6	108.0	136.0	163.0	109.8	138.5	172.7
	INPUT POWER (KW)	12.8	12.5	12.2	12.8	12.6	12.3	12.9	12.6	12.3	12.9	12.6	12.4
	CURRENT (AMP.)	24.3	23.9	23.4	24.4	24.0	23.5	24.5	24.1	23.6	24.6	24.1	23.7
	THR (MBH)	243.3	223.6	204.8	247.8	227.4	208.5	252.0	230.8	211.8	254.8	233.9	214.9
115	TC (MBH)	190.9	172.8	155.8	194.8	176.2	159.0	197.8	179.2	162.1	200.4	181.8	165.7
	SHC (MBH)	96.2	119.5	142.4	100.7	126.4	151.2	104.7	132.4	162.1	106.1	135.1	165.7
	INPUT POWER (KW)	14.0	13.7	13.3	14.1	13.8	13.4	14.2	13.8	13.4	14.2	13.9	13.5
	CURRENT (AMP.)	26.4	25.7	25.1	26.5	25.9	25.2	26.6	26.0	25.4	26.7	26.1	25.5
	THR (MBH)	238.8	219.5	201.2	243.0	223.1	204.7	246.2	226.4	208.0	248.9	229.1	211.8
125	TC (MBH)	181.2	163.8	147.7	184.6	166.9	150.7	187.3	169.6	154.5	189.7	171.9	158.4
	SHC (MBH)	92.7	116.1	138.8	97.0	122.5	150.7	100.9	128.8	154.5	102.2	131.6	158.4
	INPUT POWER (KW)	15.3	14.9	14.4	15.4	14.94	14.5	15.5	15.0	14.6	15.5	15.1	14.7
	CURRENT (AMP.)	28.4	27.6	26.8	28.6	27.8	27.0	28.7	27.9	27.2	28.8	28.0	27.4
	THR (MBH)	233.5	214.5	196.8	237.1	217.9	200.1	240.2	220.9	204.3	242.7	223.4	208.5
135	TC (MBH)	170.4	153.7	138.7	173.1	156.4	142.6	175.2	158.7	146.6	177.1	160.7	150.2
	SHC (MBH)	88.8	112.1	134.8	92.8	118.2	142.6	96.6	124.5	146.6	98.0	127.7	150.2
	INPUT POWER (KW)	16.6	16.0	15.5	16.7	16.1	15.6	16.8	16.2	15.8	16.8	16.3	15.9
	CURRENT (AMP.)	30.5	29.6	28.6	30.7	29.7	28.8	30.8	29.9	29.1	30.9	30.0	29.3
	THR (MBH)	227.1	208.4	191.5	230.1	211.4	195.9	232.4	214.1	200.5	234.4	216.3	204.5

TABLE 33. SPA-20-2 RATINGS

CT (°F)	CFM	6400			7200			8000			8800		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	276.3	249.4	225.0	282.5	255.1	230.0	287.4	260.0	234.0	292.0	264.2	237.7
	SHC (MBH)	137.6	167.1	196.9	142.0	176.0	208.5	147.5	184.1	220.1	152.3	192.0	230.6
	INPUT POWER (KW)	17.1	16.8	16.5	17.1	16.9	16.6	17.2	17.0	16.6	17.2	17.0	16.7
	CURRENT (AMP.)	31.6	31.2	30.7	31.6	31.3	30.8	31.7	31.4	30.9	31.7	31.4	30.9
	THR (MBH)	334.6	306.9	281.3	341.0	312.8	286.6	346.0	317.8	290.8	350.7	322.2	294.7
115	TC (MBH)	262.5	237.0	213.5	268.1	242.1	218.0	272.8	246.5	221.8	276.7	250.3	225.6
	SHC (MBH)	131.5	162.1	191.7	136.7	170.5	203.6	141.8	178.9	214.4	149.2	186.2	225.6
	INPUT POWER (KW)	18.9	18.5	18.0	18.9	18.6	18.1	19.0	18.6	18.2	19.0	18.7	18.3
	CURRENT (AMP.)	34.3	33.7	33.0	34.4	33.9	33.1	34.5	34.0	33.3	34.6	34.1	33.4
	THR (MBH)	326.8	300.0	275.0	332.7	305.5	279.8	337.5	310.1	283.8	341.5	314.1	288.0
125	TC (MBH)	248.4	224.4	202.0	253.6	229.0	205.8	257.8	232.8	209.6	261.1	236.2	215.3
	SHC (MBH)	125.9	156.3	186.3	131.2	165.2	198.5	136.6	173.3	209.6	141.9	181.2	215.3
	INPUT POWER (KW)	20.5	20.0	19.4	20.6	20.1	19.5	20.7	20.2	19.7	20.7	20.3	19.8
	CURRENT (AMP.)	37.0	36.2	35.3	37.2	36.4	35.4	37.3	36.5	35.6	37.4	36.6	35.8
	THR (MBH)	318.5	292.7	268.4	324.0	297.8	272.5	328.4	301.8	276.7	331.9	305.9	282.9
135	TC (MBH)	234.4	211.6	190.4	238.9	215.6	194.3	242.5	218.8	200.0	245.3	221.8	204.9
	SHC (MBH)	120.9	151.2	181.3	126.1	160.2	194.3	131.2	167.9	200.0	136.5	175.6	204.9
	INPUT POWER (KW)	22.1	21.5	20.8	22.2	21.6	20.9	22.3	21.7	21.1	22.4	21.8	21.3
	CURRENT (AMP.)	39.6	38.6	37.5	39.8	38.8	37.7	39.9	39.0	38.0	40.0	39.1	38.3
	THR (MBH)	309.9	285.0	261.5	314.8	289.3	265.8	318.7	293.0	272.1	321.7	296.2	277.6

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling.
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 34 SPA-30-2 RATINGS

CT (°F)	CFM	9600			10800			12000			13200		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	378.5	342.4	308.6	385.7	349.4	314.6	392.4	355.2	319.9	397.4	360.4	326.5
	SHC (MBH)	190.1	235.6	280.7	198.8	248.2	297.7	205.7	260.5	316.3	213.6	271.1	326.5
	INPUT POWER (KW)	23.0	22.6	22.0	23.1	22.7	22.1	23.1	22.7	22.2	23.2	22.8	22.3
	CURRENT t (AMP.)	43.2	42.5	41.6	43.3	42.7	41.8	43.4	42.8	41.9	43.5	42.9	42.1
	THR (MBH)	457.0	419.4	383.8	464.4	426.7	390.1	471.3	432.8	395.7	476.6	438.2	402.6
115	TC (MBH)	361.7	327.0	294.7	368.3	333.4	299.8	374.6	338.8	306.5	379.1	343.5	314.1
	SHC (MBH)	184.1	230.0	273.9	192.4	242.0	291.7	199.5	254.3	306.5	207.4	265.3	314.1
	INPUT POWER (KW)	25.5	24.9	24.1	25.6	25.0	24.3	25.7	25.1	24.4	25.8	25.2	24.6
	CURRENT (AMP.)	47.2	46.2	45.0	47.5	46.5	45.2	47.6	46.6	45.5	47.8	46.8	45.8
	THR (MBH)	448.8	411.9	377.0	455.7	418.7	382.6	462.4	424.5	389.8	467.1	429.5	398.1
125	TC (MBH)	344.4	311.2	280.4	350.5	317.0	284.6	356.0	321.9	294.2	360.3	326.2	301.4
	SHC (MBH)	178.3	223.1	267.9	186.5	236.2	284.6	193.5	247.5	294.2	200.8	258.6	301.4
	INPUT POWER (KW)	28.0	27.1	26.2	28.1	27.3	26.3	28.3	27.4	26.6	28.4	27.5	26.9
	CURRENT t (AMP.)	51.5	50.0	48.5	51.7	50.3	48.7	51.9	50.5	49.2	52.1	50.7	49.5
	THR (MBH)	439.9	403.8	369.8	446.6	410.1	374.5	452.5	415.6	385.1	457.1	420.2	393.1
135	TC (MBH)	326.6	294.9	266.3	332.3	300.1	273.8	337.5	304.5	281.4	341.1	308.2	288.1
	SHC (MBH)	171.9	229.9	263.5	179.7	230.2	273.9	186.8	241.4	281.4	193.6	251.8	288.1
	INPUT POWER (KW)	30.4	29.4	28.3	30.6	29.6	28.6	30.7	29.7	28.9	30.7	29.8	29.1
	CURRENT (AMP.)	55.7	53.8	51.9	56.0	54.1	52.5	56.2	54.4	53.0	56.2	54.6	53.4
	THR (MBH)	430.5	395.1	362.8	436.8	401.0	371.4	442.4	406.0	380.0	446.1	410.1	387.5

TABLE 35 SPA-40-2 RATINGS

CT (°F)	CFM	12800			14400			16000			17600		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	478.0	433.6	392.5	487.0	442.1	400.2	494.0	449.1	409.2	499.9	454.3	418.8
	SHC (MBH)	244.2	306.9	367.4	255.1	323.2	390.0	265.1	338.7	408.6	275.5	354.8	418.8
	INPUT POWER (KW)	25.7	25.5	25.2	25.7	25.6	25.3	25.8	25.6	25.3	25.8	25.6	25.4
	CURRENT (AMP.)	47.1	58.8	46.3	47.1	46.8	46.4	47.1	46.9	46.5	47.1	46.9	46.6
	THR (MBH)	565.8	520.7	478.5	574.8	529.3	486.5	583.9	536.5	495.7	587.8	541.8	505.6
115	TC (MBH)	456.1	413.5	374.0	464.0	421.3	383.0	470.5	427.5	392.9	475.7	432.3	402.3
	SHC (MBH)	236.6	299.0	359.6	247.8	315.4	382.0	258.3	331.0	392.0	267.4	346.4	402.3
	INPUT POWER (KW)	28.8	28.3	27.8	28.8	28.4	27.9	28.8	28.5	28.1	28.8	28.6	28.2
	CURRENT (AMP.)	51.3	50.7	49.9	51.4	50.8	62.9	51.4	50.9	50.3	51.4	51.0	50.5
	THR (MBH)	554.4	510.2	468.8	562.4	518.4	478.3	569.0	524.8	488.7	574.1	529.8	498.6
125	TC (MBH)	433.2	392.8	356.1	440.2	398.4	366.5	445.9	405.1	376.7	450.2	409.4	385.2
	SHC (MBH)	229.3	290.8	354.3	240.0	307.2	366.4	249.3	323.5	376.5	260.6	338.4	385.2
	INPUT POWER (KW)	31.8	31.1	30.3	31.8	31.2	30.6	31.8	31.3	30.8	31.8	31.4	31.0
	CURRENT (AMP.)	55.6	54.6	53.5	55.6	54.8	53.8	55.6	54.9	54.1	55.6	55.0	54.4
	THR (MBH)	541.7	499.0	459.7	548.8	506.4	470.8	554.4	512.0	481.8	558.6	516.5	490.9
135	TC (MBH)	409.5	371.5	339.4	415.6	377.5	350.4	420.9	382.0	359.4	424.4	385.7	367.3
	SHC (MBH)	221.2	282.1	339.4	231.5	298.4	350.0	241.8	313.9	359.3	253.0	329.5	367.3
	INPUT POWER (KW)	34.6	33.8	32.9	34.6	34.0	33.2	34.6	34.1	33.5	34.6	34.2	33.7
	CURRENT (AMP.)	59.7	58.5	57.2	59.7	58.8	57.7	59.7	58.9	58.1	59.7	59.1	58.4
	THR (MBH)	527.4	486.9	451.7	533.5	493.4	463.8	538.9	498.3	473.6	542.3	502.3	482.2

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 36 SPA-50-2 RATINGS

CT (°F)	CFM	16000			18000			20000			22000		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	603.6	547.2	495.1	615.1	557.8	500.5	624.2	566.9	514.9	631.8	573.9	527.2
	SHC (MBH)	308.4	386.0	460.5	322.6	407.2	494.4	334.7	425.7	514.9	347.0	446.5	527.2
	INPUT POWER (KW)	33.5	33.3	32.6	33.6	33.2	32.7	33.6	33.3	32.8	33.6	33.3	32.9
	CURRENT (AMP.)	59.4	59.1	58.1	59.5	59.0	58.2	59.5	59.1	58.5	59.5	59.2	58.6
	THR (MBH)	718.0	660.7	606.4	693.6	671.2	612.0	738.8	680.4	627.0	746.4	687.7	639.6
115	TC (MBH)	575.7	521.9	470.1	586.3	531.5	481.3	594.4	539.7	495.0	601.0	546.2	507.1
	SHC (MBH)	298.7	375.8	453.0	311.3	396.4	481.2	324.5	416.0	495.0	336.7	435.3	506.4
	INPUT POWER (KW)	37.4	36.7	35.8	37.4	36.8	36.1	37.4	36.9	36.3	37.4	37.0	36.5
	CURRENT (AMP.)	64.9	63.9	62.7	65.0	64.1	63.0	65.0	64.3	63.3	65.0	64.4	63.6
	THR (MBH)	703.3	647.2	592.4	714.0	657.2	604.4	722.2	665.7	619.0	728.8	672.6	631.6
125	TC (MBH)	546.2	495.4	447.5	555.8	504.0	461.4	563.0	510.9	474.0	569.2	516.6	484.9
	SHC (MBH)	288.6	365.4	446.1	301.4	386.6	461.4	314.2	406.0	474.0	327.0	424.8	484.9
	INPUT POWER (KW)	41.1	40.2	39.0	41.1	40.3	39.4	41.1	40.5	39.7	41.1	40.5	39.9
	CURRENT (AMP.)	70.2	68.8	67.2	70.2	69.1	67.7	70.2	69.3	68.2	70.2	69.4	68.5
	THR (MBH)	686.4	632.4	580.8	696.0	641.7	595.8	703.2	649.1	609.4	709.4	654.9	621.3
135	TC (MBH)	515.3	467.3	426.2	524.0	475.1	440.1	529.8	480.6	451.7	535	485.6	461.7
	SHC (MBH)	277.8	353.4	426.2	289.9	374.2	440.1	302.7	395.2	451.7	316.3	413.8	461.7
	INPUT POWER (KW)	44.5	43.5	42.2	44.5	43.7	42.7	44.5	43.9	43.0	44.5	44.0	43.3
	CURRENT (AMP.)	75.1	73.7	71.8	75.1	74.0	72.5	75.1	74.2	73.0	75.1	74.4	73.4
	THR (MBH)	667.1	615.8	570.4	675.9	624.3	585.7	681.6	630.4	598.6	686.8	635.8	609.7

TABLE 37. SPA-60-2 RATINGS

CT (°F)	CFM	19200			21600			24000			26400		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	738.7	669.8	603.5	753.4	682.6	616.8	766.4	694.2	624.5	774.0	703.7	642.3
	SHC (MBH)	375.9	468.3	559.8	392.1	495.3	592.6	408.3	518.1	629.1	428.0	541.1	642.3
	INPUT POWER (KW)	41.2	40.6	39.8	41.2	40.7	40.0	41.2	40.8	40.2	41.2	40.9	40.3
	CURRENT t (AMP.)	69.1	68.3	67.2	69.1	68.5	67.4	69.1	68.6	67.6	69.1	68.7	67.9
	THR (MBH)	879.1	808.4	738.7	893.9	821.6	753.4	906.8	833.6	766.2	914.5	843.4	799.9
115	TC (MBH)	704.6	637.6	574.9	716.9	649.5	588.2	729.7	659.7	602.4	735.3	668.6	617.1
	SHC (MBH)	363.2	455.0	545.6	381.0	480.6	581.0	393.8	504.5	602.4	412.0	529.3	617.1
	INPUT POWER (KW)	45.6	44.9	43.8	45.6	45.1	44.0	45.6	45.2	44.3	45.6	45.3	44.5
	CURRENT (AMP.)	75.7	74.6	73.0	75.7	74.9	73.3	75.7	75.1	73.7	75.7	75.3	74.1
	THR (MBH)	860.4	790.8	724.3	872.6	803.3	738.4	885.4	814.0	753.6	885.0	823.3	769.2
125	TC (MBH)	668.8	603.7	545.6	677.9	614.8	560.1	690.4	623.7	575.8	693.6	631.7	589.7
	SHC (MBH)	347.6	442.3	531.2	367.4	468.2	560.1	380.4	492.4	575.8	400.0	514.0	589.7
	INPUT POWER (KW)	49.8	49.0	47.6	49.8	49.2	48.0	49.8	49.4	48.3	49.8	49.6	48.7
	CURRENT (AMP.)	81.9	80.7	78.6	81.9	81.0	79.2	81.9	81.3	79.7	81.9	81.6	80.2
	THR (MBH)	838.9	770.9	708.0	847.9	782.8	723.8	860.5	792.4	740.8	863.7	800.9	755.7
135	TC (MBH)	632.0	568.4	516.4	637.1	578.0	533.2	649.8	585.8	547.8	650.6	592.6	560.5
	SHC (MBH)	332.8	428.4	516.4	355.5	453.2	533.2	364.2	478.6	547.8	388.0	501.3	560.5
	INPUT POWER (KW)	53.7	52.9	51.3	53.7	53.2	51.8	53.7	53.4	52.3	53.7	53.6	52.7
	CURRENT (AMP.)	87.7	86.6	84.1	87.7	87.0	85.0	87.7	87.3	85.6	87.7	87.6	86.2
	THR (MBH)	815.3	749.0	691.5	820.4	759.6	710.2	833.1	768.1	726.3	833.8	775.6	740.3

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling
- 4 - All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



AIR COOLED PACKAGED UNIT RATINGS

TABLE 38 SPA-70-2 RATINGS

CT (°F)	CFM	23040			25920			28800			31680		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	883.2	802.3	727.2	900.4	818.1	739.7	915.9	831.1	748.2	924.0	842.9	770.5
	SHC (MBH)	450.2	562.3	672.1	469.6	591.1	711.3	487.0	621.0	754.9	508.0	647.4	770.5
	INPUT POWER (KW)	52.1	51.5	50.6	52.1	51.6	50.8	52.1	51.7	50.9	52.1	51.8	51.1
	CURRENT (AMP.)	94.1	93.3	91.8	94.1	93.4	92.1	94.1	93.5	92.4	94.1	93.7	92.6
	THR (MBH)	1061.0	978.1	899.8	1078.2	994.2	912.9	1093.7	1007.7	928.8	1101.9	1019.7	944.9
115	TC (MBH)	840.4	762.7	690.0	854.8	777.3	704.8	870.5	789.4	720.5	875.5	800.0	738.9
	SHC (MBH)	434.4	545.9	653.9	457.0	575.1	696.5	470.6	603.2	720.5	492.0	632.1	738.9
	INPUT POWER (KW)	58.0	57.0	55.7	58.0	57.3	56.0	58.0	57.4	56.3	58.0	57.6	56.6
	CURRENT (AMP.)	102.9	101.5	99.5	102.9	101.8	99.9	102.9	102.1	100.4	102.9	102.3	100.9
	THR (MBH)	1038.0	957.3	880.1	1052.1	972.7	895.9	1068.4	985.4	912.6	1073.3	996.6	932.2
125	TC (MBH)	795.9	721.3	654.5	806.6	735.1	670.0	826.1	746.2	689.4	827.5	755.4	705.6
	SHC (MBH)	418.4	529.4	636.3	438.0	559.1	670.0	452.0	587.9	689.4	480.0	614.0	705.6
	INPUT POWER (KW)	63.5	62.5	60.8	63.5	62.8	61.2	63.5	63.1	61.7	63.5	63.3	62.1
	CURRENT (AMP.)	111.3	109.7	107.1	111.3	110.2	107.8	111.3	110.6	108.5	111.3	110.9	109.1
	THR (MBH)	1013.0	934.6	861.8	1023.4	949.5	878.8	1043.0	961.4	900.0	1044.4	971.3	917.6
135	TC (MBH)	750.1	680.2	618.4	757.0	691.5	639.0	775.1	701.4	656.1	772.6	709.3	671.0
	SHC (MBH)	402.2	513.2	618.4	424.0	542.9	638.9	436.0	570.0	656.1	468	599.2	671.0
	INPUT POWER (KW)	68.9	67.9	65.8	68.9	68.2	66.5	68.9	68.5	67.1	68.9	68.8	67.6
	CURRENT (AMP.)	119.4	117.9	114.7	119.4	118.5	115.8	119.4	118.9	116.7	119.4	119.3	117.4
	THR (MBH)	985.2	911.9	842.8	992.1	924.4	866.0	1010.2	935.3	885.0	1011.0	944.0	901.7

TABLE 39. SPA-80-2 RATINGS

CT (°F)	CFM	24800			27900			31000			34100		
	FACE VELOCITY (FPM)	400			450			500			550		
	EWB (°F)	72	67	62	72	67	62	72	67	62	72	67	62
105	TC (MBH)	1037.0	939.1	848.0	1061.4	960.2	865.0	1079.4	976.8	840.2	1094.4	992.1	895.7
	SHC (MBH)	516.4	636.2	752.1	535.7	669.6	799.4	558.2	702.4	880.7	578.3	731.9	881.7
	INPUT POWER (KW)	61.7	60.8	59.7	61.9	61.0	59.9	61.9	61.2	60.1	61.9	61.3	60.3
	CURRENT (AMP.)	103.6	102.5	101.0	103.9	102.8	101.3	103.9	138.0	101.6	103.9	103.2	101.8
	THR (MBH)	1247.5	1146.7	1051.7	1272.5	1168.6	1069.5	1290.6	1185.7	1086.0	1305.7	1202.8	101.6
115	TC (MBH)	988.6	895.3	806.6	1010.3	914.2	822.7	1027.7	929.1	839.2	1039.6	943.0	855.7
	SHC (MBH)	499.3	616.0	733.2	519.7	649.3	778.7	539.0	681.8	822.9	561.5	712.4	852.5
	INPUT POWER (KW)	68.7	67.3	65.6	68.9	67.6	66.0	68.9	67.9	66.3	68.9	68.1	66.6
	CURRENT (AMP.)	112.9	148.9	108.8	113.2	111.5	109.2	113.2	111.8	109.7	113.2	112.1	110.1
	THR (MBH)	1223.1	1125.0	1030.6	1245.4	1145.0	1047.8	1262.8	1160.7	1065.5	1274.7	1175.3	1083.0
125	TC (MBH)	938.6	849.3	764.8	957.0	866.5	781.0	974.4	880.2	798.2	984.5	893.0	817.3
	SHC (MBH)	480.0	599.0	714.8	501.2	631.3	758.0	518.9	663.3	795.1	545.8	691.7	817.2
	INPUT POWER (KW)	75.5	73.7	71.5	75.5	74.1	71.9	75.5	74.4	72.4	75.5	74.7	72.9
	CURRENT (AMP.)	122.1	119.6	116.6	122.1	120.1	117.2	122.1	120.6	117.8	122.1	121.0	118.5
	THR (MBH)	1196.3	1100.8	1008.7	1214.8	1119.4	1026.5	1232.1	1134.1	1045.3	1242.3	1147.9	1066.1
135	TC (MBH)	886.9	801.2	722.7	901.5	817.1	739.6	919.7	829.7	760.0	923.8	841.1	778.7
	SHC (MBH)	461.9	579.5	693.8	485.6	611.4	737.2	499.0	643.8	760.0	528.1	672.8	778.7
	INPUT POWER (KW)	81.9	79.9	77.2	81.9	80.4	77.8	81.9	80.8	78.6	81.9	81.2	79.2
	CURRENT (AMP.)	130.7	128.1	124.4	130.7	128.8	125.8	130.7	129.3	126.2	130.7	129.8	127.1
	THR (MBH)	1166.3	1074.0	986.2	1180.9	1091.7	1005.3	1199.1	1105.5	1028.2	1203.1	1118.1	1049.0

Rating Tables Notes:

- 1- Direct interpolation is permissible but do not extrapolate.
- 2- In calculating the cooling load and power input (KW), the heat generated by the evaporator fan has been taken into account.
- 3- Ratings are based on 10 °F subcooling
- 4- All ratings are based on 80°F EDB according to ARI standards 310-90 and 360-86.
- 5- Standard air cooled condenser ratings are based on 125 °F condensing temperature according to ARI Standard 460-(87).



CORRECTION FACTORS

TABLE 40. BYPASS FACTORS*

COIL FACE VELOCITY FPM	4 ROW	5 ROW	6 RO
400	0.20	0.14	0.10
450	0.21	0.15	0.11
500	0.23	0.17	0.12
550	0.26	0.19	0.13
600	0.27	0.20	0.14

* FOR 8 FPI COIL

TABLE 41. SENSIBLE CAPACITY CORRECTION FACTOR*

COIL BYPASS FACTORS	EVAPORATOR ENTERING AIR DRY BULB TEMPERATUR °F						
	79	78	77	76	74	72	70
	81	82	83	84	86	88	90
0.05	1.03	2.07	3.09	4.13	6.19	8.26	10.33
0.10	0.98	1.96	2.94	3.91	5.87	7.83	9.78
0.15	0.92	1.85	2.77	3.69	5.54	7.39	9.24
0.20	0.87	1.74	2.61	3.48	5.22	6.96	8.69
0.25	0.82	1.63	2.45	3.26	4.89	6.52	8.15
0.30	0.76	1.52	2.28	3.04	4.57	6.09	7.61

* SHC RATINGS ARE BASED ON 80 °F EDB TEMPERATURE OF AIR ENTERING EVAPORATOR COIL.
 BELOW 80 °F → CORRECTED SHC = SHC (FROM RATING TABLES) – CFM x CORRECTION FACTOR FROM TABLE 41
 ABOVE 80 °F → CORRECTED SHC = SHC (FROM RATING TABLES) + CFM x CORRECTION FACTOR FROM TABLE 41

TABLE 42. CAPACITY CORRECTION FACTOR FOR FLOW RATE

CFM / NOM. CFM	80%	90%	100%	110%	120%
HEATING CAPACITY	0.89	0.95	1.00	1.02	1.05

TABLE 43. COIL AIR SIDE PRESSURE DROP (inch, water)

CFM / NOM. CFM		80%	90%	100%	110%	120%
COOLING COIL 4-ROW	WET	0.32	0.39	0.45	0.51	0.57
	DRY	0.19	0.24	0.29	0.34	0.38
HEATING COIL	1-ROW	0.06	0.07	0.08	0.09	0.11
	2-ROW	0.12	0.15	0.17	0.21	0.23

TABLE 44. WATER SIDE PRESSURE DROP CORRECTION FACTOR

AVERAGE HOT WATER TEMP. °F	100	120	140	150	160	180	200	200	250
CORRECTION FACTOR	0.89	0.86	0.83	0.81	0.80	0.79	0.77	0.76	0.76

ΔP (FROM TABLE 46, 46A) x CORRECTION FACTOR FROM TABLE 44 = CORRECTED PRESSURE DROP



HEATING COIL RATINGS

TABLE 45 . HOT WATER HEATING COIL RATINGS (MBH)

MODEL	NOMINAL CFM	EDB (°F)	CIRCUIT	8FPI		14FPI	
				1ROW	2ROW	1ROW	2ROW
SPW,A 5-1	2000	40	F	66.3	129.6	98.4	179.0
			H	75.3	138.4	113.1	191.4
		50	F	60.0	118.5	88.8	163.7
			H	68.8	127.1	103.2	176.0
		60	F	53.6	107.4	79.3	148.5
			H	62.3	115.9	93.4	160.6
70	F	47.3	96.3	69.9	133.3		
	H	55.8	104.6	83.5	145.1		
SPW,A 8-1	3200	40	F	106.2	206.1	158.3	285.8
			H	119.5	219.0	180.0	304.1
		50	F	96.2	188.6	143.1	261.6
			H	109.2	201.3	164.4	279.7
		60	F	86.3	171.1	128.1	237.5
			H	99.0	183.6	148.8	255.3
70	F	76.3	153.6	113.2	213.3		
	H	88.7	165.9	133.4	230.9		
SPW,A 10-1	4000	40	F	138.6	263.9	207.0	365.6
			H	152.3	277.1	229.3	384.3
		50	F	125.9	241.8	187.8	335.2
			H	139.3	254.8	209.7	353.7
		60	F	113.2	219.7	168.7	304.8
			H	126.4	232.5	190.1	323.0
70	F	100.7	197.7	149.7	274.4		
	H	113.4	210.2	170.6	292.3		
SPW,A 15-1	6000	40	F	216.4	405.8	323.5	561.2
			H	236.5	425.1	356.3	588.3
		50	F	197.0	372.3	294.2	515.1
			H	216.7	391.2	326.4	541.8
		60	F	177.6	338.7	265.1	469.0
			H	197.0	357.3	296.5	495.3
70	F	158.3	305.2	236.0	422.9		
	H	177.2	323.4	266.7	448.8		
SPW,A 20-1	8000	40	F	298.9	550.8	448.3	762.2
			H	322.5	573.3	486.8	793.7
		50	F	272.8	506.0	409.0	700.6
			H	296.0	528.0	446.8	731.6
		60	F	246.7	461.0	369.7	639.0
			H	269.5	482.8	406.7	669.5
70	F	220.8	416.2	330.5	577.3		
	H	243.0	437.5	366.8	607.5		
SPW,A 25-1	10000	40	F	371.6	685.6	557.8	950.0
			H	399.6	712.2	603.3	986.9
		50	F	339.2	629.7	508.8	872.7
			H	366.6	655.9	553.5	909.6
		60	F	306.8	573.8	460.0	795.9
			H	333.8	599.5	503.8	832.2
70	F	274.6	518.0	411.2	719.1		
	H	300.8	543.2	454.1	754.9		
SPW,A 30-1	12000	40	F	436.5	808.2	656.6	1123.5
			H	469.6	839.8	710.4	1168.1
		50	F	398.4	742.3	598.8	1032.5
			H	430.8	773.3	651.7	1076.5
		60	F	360.3	676.3	541.3	941.5
			H	392.1	706.9	593.2	984.9
70	F	322.5	610.5	483.8	850.5		
	H	353.4	640.5	534.6	893.3		

Notes:

1- All ratings TABLE 45 are based on 180°F entering water temp., 160°F leaving water temp. For conditions other than 180°F entering 160°F leaving water temperatures apply correction from FIGURE 1.

2- Heating coils with single row and full circuiting have opposite coil connections.



HEATING COIL RATINGS

TABLE 45 . HOT WATER HEATING COIL RATINGS (MBH) (Continued)

MODEL	NOMINAL CFM	EDB (°F)	CIRCUIT	8FPI		14FPI	
				1ROW	2ROW	1ROW	2ROW
SPW,A 35-1	14000	40	F	527.6	962.2	795.0	1336.5
			H	560.0	993.0	847.8	1379.8
		50	F	482.5	884.6	726.9	1229.7
			H	514.3	915.0	778.8	1272.4
		60	F	437.6	807.1	658.9	1122.9
			H	468.8	837.0	709.8	1165.0
70	F	392.7	729.6	591.0	1016.1		
	H	423.3	758.9	640.9	1057.6		
SPW,A 40-1	16000	40	F	611.1	1111.2	920.0	1540.6
			H	647.9	1146.0	979.9	1589.4
		50	F	559.1	1021.8	841.4	1417.7
			H	595.2	1056.0	900.2	1765.8
		60	F	507.1	932.4	762.9	1294.7
			H	542.5	966.1	820.6	1342.3
70	F	455.2	843.0	684.5	1171.8		
	H	489.9	876.1	741.1	1218.6		
SPW,A 10-2	4000	40	F	139.4	265.9	207.8	367.5
			H	154.8	280.6	232.8	388.4
		50	F	126.6	243.5	188.5	336.9
			H	141.7	258.1	213.0	357.4
		60	F	113.8	221.3	169.2	306.2
			H	128.5	235.5	193.2	326.5
70	F	101.0	199.0	150.0	275.6		
	H	115.4	213.0	173.4	295.5		
SPW,A 15-2	6000	40	F	223.2	413.8	334.0	571.3
			H	241.8	431.4	364.1	595.9
		50	F	203.5	379.9	304.3	524.8
			H	221.7	397.2	333.8	549.1
		60	F	183.9	345.9	274.7	478.3
			H	201.7	362.9	303.6	502.2
70	F	164.2	312.0	245.2	431.8		
	H	181.6	328.7	273.4	455.4		
SPW,A 20-2	8000	40	F	296.3	546.3	445.1	757.5
			H	318.1	567.0	480.7	786.7
		50	F	270.5	501.8	406.1	696.3
			H	291.9	522.2	441.1	725.1
		60	F	244.7	457.3	367.3	635.1
			H	265.7	477.4	401.5	663.5
70	F	219.1	412.9	328.5	573.9		
	H	239.6	432.6	362.0	601.9		
SPW,A 30-2	12000	40	F	432.2	798.2	652.1	1114.0
			H	462.2	827.0	701.3	1154.9
		50	F	394.8	733.3	595.4	1024.2
			H	424.3	761.7	643.8	1064.6
		60	F	357.5	668.6	538.8	934.4
			H	386.3	696.4	586.2	974.3
70	F	320.3	603.8	482.4	844.6		
	H	348.5	631.2	528.7	883.9		
SPW,A 40-2	16000	40	F	603.0	1099.7	908.6	1527.5
			H	640.0	1134.8	968.9	1577.0
		50	F	551.5	1011.1	830.8	1405.4
			H	587.9	1045.7	890.1	1454.3
		60	F	500.1	922.5	753.0	1283.3
			H	535.8	956.5	811.2	1331.5
70	F	448.9	833.9	675.5	1161.3		
	H	483.7	867.4	732.5	1208.7		

Notes:

- 1- All ratings TABLE 45 are based on 180 °F entering water temp., 160°F leaving water temp. For conditions other 180 °F entering 160 °F leaving water temperatures apply correction factor from FIGURE1.
- 2- Heating coils with single row and full circuiting have opposite coil connections.



HEATING COIL RATINGS

TABLE 45. HOT WATER HEATING COIL RATINGS (MBH) (Continued)

MODEL	NOMINAL CFM	EDB (°F)	CIRCUIT	8FPI		14FPI	
				1ROW	2ROW	1ROW	2ROW
SPW,A 50-2	20000	40	F	768.5	1391.6	1158.5	1930.9
			H	811.0	1431.8	1227.7	1987.3
		50	F	703.6	1280.0	1060.3	1777.5
			H	745.3	1319.6	1128.4	1833.2
		60	F	638.8	1168.6	962.3	1624.5
			H	679.7	1207.5	1029.1	1679.1
		70	F	574.1	1057.1	864.5	1470.7
			H	614.1	1095.4	929.9	1524.8
SPW,A 60-2	24000	40	F	931.4	1683.6	1402.6	2332.1
			H	982.8	1732.1	1486.2	2399.9
		50	F	852.7	1548.8	1283.8	2146.9
			H	903.2	1596.5	1366.0	2213.9
		60	F	774.1	1413.9	1165.2	1961.7
			H	823.7	1460.9	1245.9	2027.8
		70	F	695.7	1279.1	1046.7	1776.5
			H	744.2	1325.3	1125.8	1841.7
SPW,A 70-2	28000	40	F	1094.1	1975.5	1646.6	2733.1
			H	1154.5	2032.3	1744.6	2812.3
		50	F	1001.8	1817.3	1507.2	2516.1
			H	1061.0	1873.2	1603.5	2594.3
		60	F	909.5	1659.1	1367.9	2299.2
			H	967.6	1714.2	1462.6	2376.4
		70	F	817.4	1501.0	1229.0	2082.2
			H	874.2	1555.1	1321.7	2158.3
SPW,A 80-2	32000	40	F	1210.9	2198.4	1828.3	3058.6
			H	1278.2	2262.3	1938.0	3148.5
		50	F	1108.6	2022.2	1673.3	2815.4
			H	1174.6	2085.0	1781.1	2904.2
		60	F	1006.5	1846.0	1518.5	2572.3
			H	1071.2	1907.8	1624.3	2659.8
		70	F	904.3	1669.8	1364.0	2329.0
			H	967.7	1730.5	1467.7	2415.4

Notes:

- 1- All ratings TABLE 45 are based on 180°F entering water temp., 160°F leaving water temp. For conditions other 180°F entering 160°F leaving water temperatures apply correction factor from FIGURE 1.
- 2- Heating coils with single row and full circuiting have opposite coil connections.

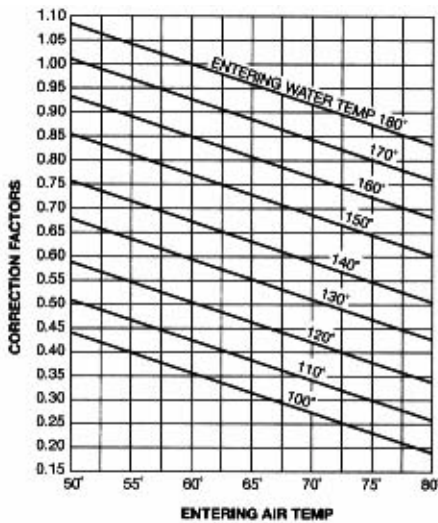


FIGURE 1. HOT WATER COIL LOAD CORRECTION FACTOR
Corrected load = load from TABLE 45 x correction factor from FIGURE 1



HEATING COIL DATA

TABLE 46. HEATING COIL (FULL CIRCUIT) WATER SIDE PRESSURE DROP* (feet, water)

SPU MODEL	ROW	WATER FLOW RATE (GPM)															
		5	10	20	30	40	50	60	70	80	90	100	120	140	160	180	200
5-1	1	0.1	0.3	0.9	2	3.3	4.9	6.9									
	2	0.1	0.4	1.2	2.6	4.3	6.5	9									
8-1	1		0.1	0.5	1.1	1.8	2.7	3.8	5	6.4	7.9						
	2		0.2	0.7	1.4	2.4	3.6	5	6.7	8.5	10.5						
10-1	1		0.1	0.5	1.0	1.7	2.5	3.5	4.6	5.8	7.2	8.7					
	2		0.2	0.6	1.3	2.2	3.4	4.7	6.2	7.9	9.7	11.8					
15-1	1		0.1	0.3	0.6	1.0	1.5	2.1	2.8	3.6	4.4	5.3	7.4				
	2		0.1	0.4	0.8	1.4	2.1	2.9	3.8	4.9	6.1	7.3	10.2				
20-1	1			0.3	0.6	1.0	1.5	2.1	2.7	3.5	4.3	5.2	7.2	9.6			
	2			0.4	0.8	1.4	2.1	2.9	3.8	4.9	6.1	7.3	10.2	13.4			
25-1	1			0.2	0.4	0.7	1.0	1.4	1.9	2.4	2.9	3.5	4.9	6.5	8.3		
	2			0.3	0.6	1.0	1.4	2.0	2.6	3.3	4.1	5.0	6.9	9.1	11.6		
30-1	1				0.3	0.5	0.8	1.1	1.4	1.8	2.3	2.7	3.8	5.0	6.4	7.9	9.6
	2				0.4	0.7	1.1	1.5	2.0	2.6	3.2	3.8	5.3	7.1	9.0	11.1	13.4
35-1	1				0.4	0.6	0.9	1.3	1.7	2.2	2.7	3.3	4.6	6.1	7.8	9.6	
	2				0.5	0.9	1.4	1.9	2.5	3.2	4.0	4.8	6.7	8.8	11.2	13.9	
40-1	1				0.3	0.5	0.7	1.0	1.4	1.7	2.2	2.6	3.6	4.8	6.1	7.6	9.1
	2				0.4	0.7	1.1	1.5	2.0	2.5	3.1	3.8	5.3	6.9	8.8	10.9	13.2
10-2	1		0.1	0.4	0.9	1.5	2.2	3.1	4.0	5.1	6.4	7.7					
	2		0.2	0.6	1.2	2.0	3.0	4.1	5.4	6.9	8.5	10.3					
15-2	1		0.1	0.4	0.8	1.3	1.9	2.7	3.5	4.5	5.5	6.7	9.3				
	2		0.1	0.5	1.1	1.8	2.6	3.7	4.9	6.2	7.7	9.3	12.9				
20-2	1			0.3	0.7	1.1	1.6	2.3	3.0	3.8	4.7	5.7	8.0				
	2			0.4	0.9	1.5	2.3	3.2	4.2	5.4	6.7	8.1	11.2				
30-2	1				0.4	0.7	1.0	1.4	1.9	2.4	3.0	3.6	5.1	6.7	8.5		
	2				0.6	1.0	1.5	2.1	2.7	3.5	4.3	5.2	7.2	9.5	12.1		
40-2	1				0.3	0.5	0.7	1.0	1.4	1.7	2.2	2.6	3.6	4.8	6.1	7.6	9.1
	2				0.4	0.7	1.1	1.5	2.0	2.5	3.1	3.8	5.3	6.9	8.8	10.9	13.2
MODEL	ROW	WATER FLOW RATE (GPM)															
		40	50	60	70	80	90	100	120	140	160	180	200	230	260	290	320
50-2	1	0.4	0.6	0.9	1.2	1.5	1.8	2.2	3.1	4.0	5.1	6.4	7.7	9.9			
	2	0.6	0.9	1.3	1.7	2.2	2.7	3.2	4.5	5.9	7.5	9.3	11.3	14.5			
60-2	1	0.3	0.4	0.6	0.8	1.0	1.3	1.5	2.1	2.8	3.6	4.4	5.3	6.9	8.6	10.5	
	2	0.4	0.6	0.9	1.2	1.5	1.9	2.2	3.1	4.1	5.3	6.5	7.9	10.1	12.6	15.4	
70-2	1		0.3	0.4	0.6	0.8	0.9	1.1	1.6	2.1	2.6	3.3	4.0	5.1	6.4	7.7	9.2
	2		0.5	0.7	0.9	1.1	1.4	1.7	2.3	3.1	3.9	4.8	5.8	7.5	9.3	11.4	13.6
80-2	1		0.3	0.4	0.5	0.7	0.8	1.0	1.4	1.8	2.3	2.9	3.5	4.5	5.6	6.8	8.1
	2		0.4	0.6	0.8	1.0	1.2	1.5	2.0	2.7	3.4	4.2	5.1	6.5	8.2	9.9	11.9

* All ratings are based on standard water velocity range (1-8 FPS).



HEATING COIL DATA

TABLE 46A. HEATING COIL (HALF CIRCUIT) WATER SIDE PRESSURE DROP* (feet, water)

SPU MODEL	ROW	WATER FLOW RATE (GPM)																		
		5	10	20	30	40	50	60	70	80	90	100	120	140	160	180	200			
5-1	1	0.4	1.2	4.3	9															
	2	0.5	1.8	6.4	13.3															
8-1	1	0.2	0.7	2.4	5.0	8.5														
	2	0.3	1.0	3.6	7.5	12.6														
10-1	1	0.6		2.2	4.7	7.9	11.8													
10-2	2	1.0		3.4	7.1	11.9	17.8													
15-1	1	0.4		1.4	2.9	4.9	7.3		10.2											
15-2	2	0.6		2.2	4.5	7.5	11.3		15.7											
20-1	1	0.4		1.4	2.9	4.9	7.3		10.2	13.4										
20-2	2	0.6		2.2	4.6	7.7	11.5		16.1	21.2										
25-1	1	1.0			2.0	3.3	5.0		6.9	9.1	11.6									
25-2	2	1.5			3.1	5.2	7.9		10.9	14.4	18.4									
30-1	1	0.7			1.5	2.6	3.8		5.3	7.1	9.0		11.1	13.4						
30-2	2	1.2			2.4	4.1	6.1		8.4	11.1	14.2		17.5	21.2						
35-1	1	0.9			1.9	3.2	4.8		6.7	8.8	11.2		13.9							
	2	1.5			3.1	5.2	7.8		10.8	14.3	18.2		22.5							
40-1	1	0.7			1.5	2.5	3.8		5.3	6.9	8.8		10.9	13.2						
	2	1.2			2.4	4.1	6.1		8.5	11.2	14.3		17.7	21.4						
10-2	1	0.6		2.0	4.1	6.9	10.3													
	2	0.9		3.0	6.2	10.4	15.6													
15-2	1	0.5		1.8	3.7	6.2	9.3		12.9											
	2	0.8		2.8	5.7	9.7	14.4		20.1											
20-2	1	0.4		1.5	3.2	5.4	8.1		11.2											
	2	0.7		2.4	5.1	8.5	12.8		17.8											
30-2	1	1.0			2.1	3.5	5.2		7.2	9.5	12.1									
	2	1.6			3.3	5.5	8.3		11.5	15.2	19.3									
40-2	1	0.7			1.5	2.5	3.8		5.3	6.9	8.8		10.9	13.2						
	2	1.2			2.4	4.1	6.1		8.5	11.2	14.3		17.7	21.4						
MODEL	ROW	WATER FLOW RATE (GPM)																		
		40	50	60	70	80	90	100	120	140	160	180	200	230	260	290	320			
50-2	1	2.2	3.2	4.5	5.9	7.5	9.3	11.3	15.7											
	2	3.5	5.3	7.4	9.7	12.4	15.3	18.5	25.7											
60-2	1	1.5	2.2	3.1	4.1	5.3	6.5	7.9	10.9	14.4										
	2	2.5	3.7	5.1	6.8	8.6	10.6	12.9	17.9	23.7										
70-2	1	1.1	1.7	2.3	3.1	3.9	4.8	5.8	8.1	10.7		13.6								
	2	1.8	2.7	3.8	5.0	6.4	7.9	9.5	13.2	17.5		22.3								
80-2	1	1.0	1.5	2.0	2.7	3.4	4.2	5.1	7.1	9.3		11.9	14.7							
	2	1.6	2.4	3.3	4.4	5.6	6.9	8.3	11.6	15.3		19.5	24.1							

* All ratings are based on standard water velocity range (1-8 FPS).

TABLE 47. HEATING COIL CONNECTION SIZES

MODEL	1 ROW	2 ROWS	MODEL	1 ROW	2 ROWS
5-1	3/4"	1"	10-2	1"	1 1/4"
8-1	3/4"	1"	15-2	1 1/4"	1 1/4"
10-1	1"	1 1/4"	20-2	1 1/4"	2"
15-1	1 1/4"	1 1/2"	30-2	1 1/2"	2 x 1 1/2"
20-1	2 x 1"	2 x 1 1/4"	40-2	2 x 1 1/4"	2 x 1 1/2"
25-1	2 x 1"	2 x 1 1/4"	50-2	2 x 1 1/2"	2 x 2"
30-1	2 x 1 1/4"	2 x 1 1/2"	60-2	2 x 1 1/2"	2 x 2"
35-1	2 x 1 1/2"	2 x 2"	70-2	2 x 2"	2 x 2"
40-1	2 x 1 1/2"	2 x 2"	80-2	2 x 2"	2 x 2 1/2"



FAN RATINGS

TABLE 48. FAN RATINGS

MODEL SPW,A	FAN SIZE	CFM	TOTAL STATIC PRESSURE (inch of water gage)													
			0.5		0.75		1		1.25		1.5		1.75		2	
			RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
5-1	1x13"	1500	581	0.25	700	0.5	819	0.5	928	0.75	-	-	-	-	-	-
		1700	600	0.33	703	0.5	808	0.5	913	0.75	1010	1	-	-	-	-
		1900	625	0.5	717	0.5	809	0.75	903	0.75	997	1	-	-	-	-
		2100	653	0.5	737	0.75	819	0.75	903	1	989	1	1072	1.5	1154	1.5
		2300	683	0.5	762	0.75	837	0.75	913	1	990	1.5	1068	1.5	1145	1.5
		2500	714	0.75	790	0.75	860	1	929	1	999	1.50	1070	1.5	1141	1.5
8-1 10-1 10-2	1x14"	2400	532	0.5	611	0.75	690	0.75	760	1	840	1.5	-	-	-	-
		2700	560	0.75	632	0.75	701	1	769	1	840	1.5	907	1.5	974	2
		3000	590	0.75	657	1	719	1	782	1.5	845	1.5	908	2	970	2
		3300	621	1	685	1	743	1.5	801	1.5	857	2.	915	2	972	2
		3600	653	1	715	1.5	771	1.5	824	2	875	2	928	2	980	3
		3900	685	1.5	746	1.5	800	2	850	2	898	2	946	3	995	3
		4200	717	1.5	778	2	831	2	879	2	924	3	969	3	1014	3
		4500	750	2	810	2	862	3	909	3	953	3	995	3	1037	4
		4800	-	-	842	3	893	3	939	3	983	3	1023	4	1063	4
		5100	-	-	874	3	925	3	971	4	1013	4	1052	4	1091	4
15-1 15-2	1x16"	4500	596	1.5	642	1.5	691	2	737	2	782	3	828	3	874	3
		4800	642	1.5	664	2	712	2	757	3	799	3	842	3	885	3
		5100	-	-	686	2	734	3	777	3	818	3	858	3	898	4
		5400	-	-	709	3	756	3	799	3	838	3	876	4	915	4
		5700	-	-	732	3	778	3	821	3	859	4	896	4	933	4
		6000	-	-	756	3	801	4	843	4	881	4	916	4	952	5.5
		6300	-	-	781	4	824	4	865	4	903	4	938	5.5	973	5.5
		6600	-	-	-	-	847	4	888	4	925	5.5	959	5.5	994	5.5
		6900	-	-	-	-	871	4	911	5.5	947	5.5	981	5.5	1015	5.5
		7200	-	-	-	-	-	-	934	5.5	970	5.5	1004	7.5	1037	7.5
7500	-	-	-	-	-	-	957	5.5	993	7.5	1026	7.5	1059	7.5		
20-1 20-2	1x17"	6000	564	2	615	3	658	3	698	3	735	4	773	4	810	4
		6500	-	-	643	3	686	3	725	4	760	4	795	4	830	5.5
		7000	-	-	672	4	714	4	752	4	786	4	820	5.5	853	5.5
		7500	-	-	701	4	742	4	780	5.5	814	5.5	846	5.5	878	5.5
		8000	-	-	-	-	770	5.5	808	5.5	842	5.5	873	7.5	904	7.5
		8500	-	-	-	-	800	5.5	836	7.5	870	7.5	901	7.5	931	7.5
		9000	-	-	-	-	-	-	865	7.5	899	7.5	929	7.5	959	10
		9500	-	-	-	-	-	-	895	7.5	927	10	957	10	987	10
		10000	-	-	-	-	-	-	-	-	957	10	986	10	1015	10
25-1	1x19"	7500	-	-	522	3	568	3	610	4	653	4	696	4	739	5.5
		8000	-	-	538	3	583	4	623	4	664	4	704	5.5	744	5.5
		8500	-	-	554	3	598	4	637	4	676	5.5	714	5.5	752	5.5
		9000	-	-	569	4	614	4	653	5.5	689	5.5	725	5.5	761	7.5
		9500	-	-	585	4	630	5.5	668	5.5	704	5.5	738	7.5	773	7.5
		10000	-	-	-	-	647	5.5	685	5.5	719	7.5	752	7.5	785	7.5
		10500	-	-	-	-	664	5.5	701	7.5	735	7.5	767	7.5	799	7.5
		11000	-	-	-	-	-	-	717	7.5	751	7.5	782	10	814	10
		11500	-	-	-	-	-	-	733	7.5	767	10	798	10	829	10
		12000	-	-	-	-	-	-	-	-	783	10	814	10	844	10
12500	-	-	-	-	-	-	-	-	-	-	-	-	860	15		

Notes:

1- Ratings are based on standard air (Density = 0.075 Lbs/ft³ at sea level 70 °F, 29.921 inches of mercury barometric pressure.)

2- Shaded regions denote unstable surge conditions.



FAN RATINGS

TABLE 48. FAN RATINGS (CONTINUED)

TOTAL STATIC PRESSURE (inch of water gage)															
2.25		2.5		2.75		3		3.25		3.5		3.75		4	
RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1220	2	1295	2	-	-	-	-	-	-	-	-	-	-	-	-
1212	2	1283	2	1353	3	1422	3	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1028	3	1084	3	-	-	-	-	-	-	-	-	-	-	-	-
1033	3	1085	3	1136	3	1186	4	-	-	-	-	-	-	-	-
1043	3	1091	3	1139	4	1187	4	1234	4	1280	4	-	-	-	-
1058	3	1103	4	1148	4	1193	4	1237	5.5	1281	5.5	1325	5.5	1368	5.5
1079	4	1120	4	1162	4	1204	4	1245	5.5	1287	5.5	1328	5.5	1369	5.5
1102	4	1141	4	1180	5.5	1219	5.5	1258	5.5	1297	5.5	1336	5.5	1375	7.5
1128	4	1165	5.5	1202	5.5	1239	5.5	1275	5.5	1311	5.5	1348	7.5	1385	7.5
921	3	967	4	1014	4	1061	4	1108	5.5	1156	5.5	1200	5.5	1244	5.5
928	4	971	4	1015	4	1059	5.5	1104	5.5	1148	5.5	1191	5.5	1234	7.5
939	4	979	4	1020	4	1061	5.5	1103	5.5	1144	5.5	1185	7.5	1227	7.5
953	4	991	4	1029	5.5	1067	5.5	1106	5.5	1144	7.5	1184	7.5	1223	7.5
969	4	1004	5.5	1040	5.5	1076	5.5	1112	5.5	1149	7.5	1186	7.5	1224	7.5
986	5.5	1021	5.5	1054	5.5	1088	7.5	1122	7.5	1157	7.5	1192	7.5	1227	7.5
1006	5.5	1038	5.5	1071	7.5	1103	7.5	1135	7.5	1168	7.5	1201	7.5	1234	7.5
1026	5.5	1058	7.5	1088	7.5	1119	7.5	1150	7.5	1181	7.5	1212	10	1243	10
1047	7.5	1078	7.5	1108	7.5	1137	7.5	1167	7.5	1196	10	1226	10	1255	10
1068	7.5	1098	7.5	1127	7.5	1157	7.5	1185	10	1213	10	1241	10	1269	10
1090	7.5	1120	7.5	1148	10	1177	10	1204	10	1232	10	1259	10	1285	10
848	4	886	5.5	925	5.5	964	5.5	1002	7.5	1041	7.5	1078	7.5	1116	7.5
864	5.5	899	5.5	934	5.5	969	7.5	1005	7.5	1041	7.5	1076	7.5	1111	10
885	5.5	917	7.5	949	7.5	981	7.5	1014	7.5	1047	7.5	1080	10	1113	10
908	7.5	938	7.5	968	7.5	998	7.5	1028	7.5	1059	10	1089	10	1119	10
933	7.5	962	7.5	990	7.5	1018	10	1046	10	1075	10	1103	10	1131	10
959	7.5	987	10	1014	10	1041	10	1067	10	1094	10	1120	10	1147	15
986	10	1014	10	1039	10	1065	10	1090	10	1116	15	1141	15	1166	15
1014	10	1041	10	1066	10	1091	15	1115	15	1140	15	1163	15	1187	15
1042	15	1068	15	1093	15	1118	15	1141	15	1165	15	1188	15	1211	15
783	5.5	826	7.5	869	7.5	913	7.5	954	7.5	996	10	1034	10	1073	10
784	5.5	825	7.5	866	7.5	907	7.5	947	10	987	10	1026	10	1065	10
789	7.5	827	7.5	866	7.5	904	10	942	10	981	10	1019	10	1057	15
797	7.5	832	7.5	868	7.5	904	10	940	10	977	10	1013	10	1050	15
806	7.5	840	7.5	873	10	907	10	941	10	975	10	1010	15	1045	15
817	7.5	849	10	881	10	913	10	945	10	977	15	1010	15	1043	15
830	10	861	10	891	10	921	10	951	15	981	15	1013	15	1044	15
843	10	873	10	902	10	931	15	960	15	988	15	1018	15	1047	15
858	10	887	10	915	15	943	15	970	15	997	15	1025	15	1053	15
873	15	901	15	928	15	956	15	982	15	1008	15	1035	15	1061	15
888	15	916	15	943	15	970	15	995	15	1020	15	1046	20	1071	20



FAN RATINGS

TABLE 48. FAN RATINGS (Continued)

MODEL SPW,A	FAN SIZE	CFM	TOTAL STATIC PRESSURE (inch of water gage)													
			0.5		0.75		1		1.25		1.5		1.75		2	
			RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
30-1 35-1 30-2 40-1 40-2 50-2	2"x17"	9000	479	2	533	3	583	3	633	4	686	4	737	5.5	788	5.5
		9500	493	3	546	3	594	4	641	4	691	5.5	739	5.5	787	7.5
		10000	507	3	559	3	605	4	650	4	697	5.5	742	5.5	787	7.5
		10500	522	3	573	4	618	4	661	5.5	704	5.5	747	7.5	790	7.5
		11000	536	3	587	4	631	4	672	5.5	714	5.5	755	7.5	795	7.5
		11500	550	4	601	4	644	5.5	685	7.5	724	7.5	763	7.5	802	7.5
		12000	564	4	615	5.5	658	5.5	698	5.5	735	7.5	773	7.5	810	7.5
		12500	-	-	629	5.5	672	5.5	711	7.5	747	7.5	783	7.5	819	10
		13000	-	-	643	5.5	686	7.5	725	7.5	760	7.5	795	10	830	10
		13500	-	-	657	7.5	700	7.5	738	7.5	773	10	807	10	841	10
		14000	-	-	672	7.5	714	7.5	752	7.5	786	10	820	10	853	10
		14500	-	-	686	7.5	728	7.5	766	10	800	10	833	10	865	10
		15000	-	-	701	7.5	742	10	780	10	814	10	846	10	878	15
		15500	-	-	-	-	756	10	794	10	828	10	859	15	891	15
		16000	-	-	-	-	770	10	808	10	842	15	873	15	904	15
		16500	-	-	-	-	785	10	822	15	856	15	887	15	918	15
		17000	-	-	-	-	800	15	836	15	870	15	901	15	931	15
		17500	-	-	-	-	-	-	851	15	884	15	915	15	945	15
		18000	-	-	-	-	-	-	865	15	899	15	929	15	959	20
		18500	-	-	-	-	-	-	880	15	913	15	943	20	973	20
		19000	-	-	-	-	-	-	895	15	927	20	957	20	987	20
		19500	-	-	-	-	-	-	-	-	942	20	972	20	1001	20
		20000	-	-	-	-	-	-	-	-	957	20	986	20	1015	20
		20500	-	-	-	-	-	-	-	-	972	20	1001	20	1029	25
		21000	-	-	-	-	-	-	-	-	987	20	1015	25	1043	25
21500	-	-	-	-	-	-	-	-	1003	25	1030	25	1058	25		
22000	-	-	-	-	-	-	-	-	-	-	-	-	1072	25		
22500	-	-	-	-	-	-	-	-	-	-	-	-	1087	30		
23000	-	-	-	-	-	-	-	-	-	-	-	-	1101	30		
23500	-	-	-	-	-	-	-	-	-	-	-	-	1116	30		
24000	-	-	-	-	-	-	-	-	-	-	-	-	1131	30		
24500	-	-	-	-	-	-	-	-	-	-	-	-	1147	30		
25000	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
60-2	2"x19"	18000	-	-	569	7.5	614	10	653	10	689	10	725	15	761	15
		18500	-	-	577	7.5	622	10	660	10	697	10	732	15	767	15
		19000	-	-	585	10	630	10	668	10	704	15	738	15	773	15
		19500	-	-	593	10	639	10	676	10	712	15	745	15	779	15
		20000	-	-	-	-	647	10	685	15	719	15	752	15	785	15
		20500	-	-	-	-	656	10	693	15	727	15	760	15	792	15
		21000	-	-	-	-	664	15	701	15	735	15	767	15	799	15
		21500	-	-	-	-	-	-	709	15	743	15	775	15	806	20
		22000	-	-	-	-	-	-	717	15	751	15	782	20	814	20
		22500	-	-	-	-	-	-	725	15	759	15	790	20	821	20
		23000	-	-	-	-	-	-	733	15	767	20	798	20	829	20
		23500	-	-	-	-	-	-	-	-	775	20	806	20	837	20
		24000	-	-	-	-	-	-	-	-	783	20	814	20	844	20
		24500	-	-	-	-	-	-	-	-	791	20	822	20	852	25
		25000	-	-	-	-	-	-	-	-	-	-	-	-	860	25
		25500	-	-	-	-	-	-	-	-	-	-	-	-	869	25
		26000	-	-	-	-	-	-	-	-	-	-	-	-	877	25
		26500	-	-	-	-	-	-	-	-	-	-	-	-	885	25
		27000	-	-	-	-	-	-	-	-	-	-	-	-	893	30
		27500	-	-	-	-	-	-	-	-	-	-	-	-	902	30
28000	-	-	-	-	-	-	-	-	-	-	-	-	910	30		
28500	-	-	-	-	-	-	-	-	-	-	-	-	918	30		
29000	-	-	-	-	-	-	-	-	-	-	-	-	927	30		
29500	-	-	-	-	-	-	-	-	-	-	-	-	936	30		
30000	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Notes:

1- Ratings are based on standard air (Density = 0.075 Lbs/ft³ at sea level 70 °F, 29.921 inches of mercury barometric pressure.)

2- Shaded regions denote unstable surge conditions.

* TWO FANS with one electric motor on each model.



FAN RATINGS

TABLE 48. FAN RATINGS (Continued)

TOTAL STATIC PRESSURE (inch of water gage)															
2.25		2.5		2.75		3		3.25		3.5		3.75		4	
RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
839	7.5	889	7.5	-	-	-	-	-	-	-	-	-	-	-	-
835	7.5	884	7.5	931	10	977	10	-	-	-	-	-	-	-	-
834	7.5	881	7.5	926	10	972	10	1017	10	1062	15	-	-	-	-
835	7.5	879	10	924	10	968	10	1010	15	1053	15	-	-	-	-
838	7.5	880	10	922	10	964	10	1006	15	1047	15	1088	15	1128	15
842	10	882	10	923	10	963	10	1003	15	1043	15	1082	15	1121	15
848	10	886	10	925	10	964	15	1002	15	1041	15	1078	15	1116	15
856	10	892	10	929	15	966	15	1003	15	1040	15	1077	15	1113	15
864	10	899	10	934	15	969	15	1005	15	1041	15	1076	15	1111	20
874	10	907	15	941	15	975	15	1009	15	1043	15	1077	15	1111	20
885	15	917	15	949	15	981	15	1014	15	1047	15	1080	20	1113	20
896	15	927	15	958	15	989	15	1021	15	1053	15	1084	20	1115	20
908	15	938	15	968	15	998	15	1028	15	1059	20	1089	20	1119	20
920	15	950	15	979	15	1008	15	1037	20	1066	20	1095	20	1125	20
933	15	962	15	990	15	1018	20	1046	20	1075	20	1103	20	1131	20
946	15	974	15	1002	20	1029	20	1056	20	1084	20	1111	20	1138	20
959	15	987	20	1014	20	1041	20	1067	20	1094	20	1120	20	1147	25
973	20	1000	20	1027	20	1053	20	1079	20	1104	20	1130	25	1156	25
986	20	1014	20	1039	20	1065	20	1090	20	1116	25	1141	25	1166	25
1000	20	1027	20	1053	20	1078	25	1103	25	1127	25	1152	25	1176	25
1014	20	1041	20	1066	25	1091	25	1115	25	1140	25	1163	25	1187	25
1028	20	1054	25	1079	25	1104	25	1128	25	1152	25	1175	30	1199	30
1042	25	1068	25	1093	25	1118	25	1141	25	1165	30	1188	30	1211	30
1056	25	1082	25	1107	25	1131	25	1155	30	1178	30	1201	30	1223	30
1070	25	1096	25	1121	30	1145	30	1168	30	1192	30	1214	30	1236	30
1084	25	1110	30	1135	30	1159	30	1182	30	1205	30	1227	40	1249	40
1098	30	1124	30	1149	30	1173	30	1196	30	1219	40	1240	40	1262	40
1113	30	1139	30	1163	30	1187	30	1210	40	1233	40	1254	40	1275	40
1127	30	1153	30	1177	30	1201	30	1223	40	1246	40	1268	40	1289	40
1142	30	1167	30	1191	40	1215	40	1237	40	1260	40	1281	40	1302	40
1157	30	1182	40	1205	40	1229	40	1251	40	1274	40	1295	40	1315	40
1171	40	1196	40	1220	40	1243	40	1265	40	1288	40	1308	40	1329	50
-	-	1211	40	1234	40	1258	40	1279	40	1301	40	1322	50	1342	50
797	15	832	15	868	15	904	20	940	20	977	20	1013	25	1050	25
801	15	836	15	870	20	905	20	940	20	967	20	1011	25	1047	25
806	15	840	15	873	20	907	20	941	20	975	20	1010	25	1045	25
812	15	844	20	877	20	910	20	943	20	976	25	1010	25	1044	25
817	15	849	20	881	20	913	20	945	20	977	25	1010	25	1043	25
823	20	855	20	886	20	917	20	948	25	979	25	1011	25	1043	25
830	20	861	20	891	20	921	20	951	25	981	25	1013	25	1044	30
837	20	867	20	896	20	926	25	955	25	985	25	1015	25	1045	30
843	20	873	20	902	20	931	25	960	25	988	25	1018	30	1047	30
851	20	880	20	908	25	937	25	965	25	993	25	1021	30	1050	30
858	20	887	25	915	25	943	25	970	25	997	30	1025	30	1053	30
865	20	894	25	922	25	949	25	976	30	1003	30	1030	30	1057	30
873	25	901	25	928	25	956	25	982	30	1008	30	1035	30	1061	30
881	25	909	25	936	25	962	25	988	30	1014	30	1040	30	1066	30
888	25	916	25	943	30	970	30	995	30	1020	30	1046	30	1071	40
896	25	924	25	950	30	977	30	1002	30	1027	30	1052	40	1077	40
904	25	932	30	958	30	984	30	1009	30	1034	30	1058	40	1083	40
912	30	939	30	965	30	991	30	1016	30	1040	40	1065	40	1089	40
920	30	947	30	973	30	999	30	1023	40	1047	40	1071	40	1095	40
928	30	955	30	980	30	1006	40	1030	40	1055	40	1078	40	1102	40
936	30	963	30	988	30	1013	40	1038	40	1062	40	1085	40	1108	40
944	30	970	40	996	40	1021	40	1045	40	1069	40	1092	40	1115	40
953	30	978	40	1003	40	1028	40	1052	40	1076	40	1099	40	1122	50
961	40	986	40	1010	40	1035	40	1059	40	1083	40	1106	40	1129	50
-	-	993	40	1018	40	1042	40	1066	40	1090	40	1113	50	1135	50



FAN RATINGS

TABLE 48. FAN RATINGS (Continued)

MODEL SPW,A	FAN SIZE	CFM	TOTAL STATIC PRESSURE (inch of water gage)													
			0.5		0.75		1		1.25		1.5		1.75		2	
			RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
70-2 80-2	2"x22"	21000	409	7.5	449	7.5	487	10	522	10	558	10	594	15	630	15
		22000	421	7.5	460	7.5	496	10	531	10	564	15	599	15	633	15
		23000	433	7.5	471	10	506	10	540	15	572	15	605	15	637	15
		24000	446	10	482	10	516	15	549	15	580	15	611	15	643	20
		25000	459	10	493	10	527	15	559	15	589	15	619	15	649	20
		26000	472	10	505	15	537	15	569	15	598	15	627	20	656	20
		27000	-	-	517	15	548	15	579	15	608	20	636	20	664	20
		28000	-	-	530	15	559	15	590	20	618	20	645	20	673	20
		29000	-	-	543	15	571	20	600	20	628	20	655	20	681	25
		30000	-	-	-	-	582	20	611	20	638	20	665	25	691	25
		31000	-	-	-	-	595	20	622	20	649	25	675	25	700	25
		32000	-	-	-	-	607	20	634	25	660	25	685	25	710	30
		33000	-	-	-	-	620	25	646	25	671	25	696	30	720	30
		34000	-	-	-	-	-	-	657	25	682	30	706	30	731	30
		35000	-	-	-	-	-	-	670	30	693	30	717	30	741	30
		36000	-	-	-	-	-	-	682	30	705	30	728	30	752	40
		37000	-	-	-	-	-	-	695	30	716	40	739	40	763	40
38000	-	-	-	-	-	-	-	-	728	40	751	40	774	40		
39000	-	-	-	-	-	-	-	-	740	40	763	40	785	40		
40000	-	-	-	-	-	-	-	-	-	-	-	-	796	50		

Notes:

1- Ratings are based on standard air (Density = 0.075 Lbs/ft³ at sea level 70 °F, 29.921 inches of mercury barometric pressure.)

2- Shaded regions denote unstable surge conditions.

* **TWO FANS** with one electric motor on each model.



FAN RATINGS

TABLE 48. FAN RATINGS (Continued)

TOTAL STATIC PRESSURE (inch of water gage)															
2.25		2.5		2.75		3		3.25		3.5		3.75		4	
RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP	RPM	HP
666	15	702	20	737	20	772	20	807	25	841	25	875	25	908	30
667	20	702	20	736	20	770	20	803	25	837	25	870	30	902	30
670	20	703	20	736	20	769	25	801	25	833	25	865	30	897	30
674	20	706	20	737	25	769	25	800	25	831	30	862	30	893	30
679	20	709	20	740	25	770	25	800	25	830	30	860	30	890	30
685	20	714	25	743	25	772	25	801	30	830	30	859	30	888	40
692	25	719	25	747	25	775	25	803	30	831	30	859	30	887	40
699	25	726	25	753	25	780	30	806	30	833	30	860	40	887	40
707	25	733	25	759	30	785	30	811	30	836	40	862	40	888	40
716	25	741	30	766	30	791	30	815	30	840	40	865	40	890	40
725	30	749	30	773	30	797	40	821	40	845	40	870	40	894	40
734	30	758	30	781	30	804	40	828	40	851	40	874	40	898	40
744	30	767	30	790	40	812	40	835	40	858	40	880	40	903	50
754	30	777	40	799	40	820	40	843	40	865	40	887	50	909	50
764	40	787	40	808	40	829	40	851	40	872	50	894	50	915	50
774	40	797	40	818	40	838	40	859	50	880	50	901	50	922	50
785	40	807	40	828	40	848	50	869	50	889	50	909	50	930	50
796	40	818	40	838	50	858	50	878	50	898	50	918	50	938	60
807	50	828	50	848	50	868	50	888	50	907	50	927	60	946	60
818	50	839	50	859	50	878	50	898	60	917	60	936	60	955	60



ELECTRIC HEATING COIL DATA

TABLE 49. ELECTRIC HEATING COIL SPECIFICATION

AVAILABLE CAPACITIES (KW)	NUMBER OF CIRCUITES	NUMBER OF CIRCUITES x KW	THERMOSTAT STAGES
12	1	1 x 12	1
18	1	1 x 18	1
24	1	1 x 24	1
30	2	(1 x 12) + (1 x 18)	2
36	2	(2 x 18)	2
42	3	(2 x 12) + (1 x 18)	3
48	3	(1 x 12) + (2 x 18)	3
54	3	3 x 18	3
60	3	(2 x 18) + (1 x 24)	3
66	3	1 x 18 + 2 x 24	3
72	3	3 x 24	3
78	4	(1 x 12) + (1 x 18) + (2 x 24)	4
84	4	(2 x 18) + (2 x 24)	4
90	4	(1 x 18) + (3 x 24)	4
96	4	4 x 24	4

TABLE 50. ELECTRIC HEATING ELEMENT DATA

ELECTRICAL ELEMENT POWER (KW)	AMPS *
12	18.1
18	27.2
24	36.6

* 380 V – 3 Phase – 50 Cycle, star connection

Note :

- 1- For ducted applications of SARAVEL Packaged Units with electric heating coils, an automatic air flow switch will be supplied separately. Before starting up the unit, the air flow switch must be installed in the duct and wired to the electrical control panel as per electrical wiring diagram instructions. Failure to do so will cause damage to the electric heating elements and void the guarantee.
- 2- Before switching unit to winter season application, system pump down must be performed.



ELECTRICAL DATA

TABLE 51. WATER COOLED PACKAGED UNITS*

MODEL	COMPRESSOR		EVAPORATOR FAN MOTOR		TOTAL	
	INPUT (KW)	AMPS.	HP	FLA	POWER (KW)	AMPS.
SPW-5-1	3.4	6.8	0.75	1.7	4.0	8.5
SPW-8-1	6.3	11.9	2	4	7.8	15.9
SPW-10-1	8.5	15.6	2	4	10.0	19.6
SPW-15-1	11.2	21.2	4	7.5	14.2	28.7
SPW-20-1	12.7	23.3	5.5	8.8	16.8	32.1
SPW-25-1	16.4	29.2	5.5	8.8	20.5	38.0
SPW-30-1	20.0	33.7	7.5	12.2	25.6	45.9
SPW-35-1	25.4	46.0	7.5	12.2	31.0	58.2
SPW-40-1	30.1	50.9	10	16.5	37.6	67.4
SPW-10-2	6.8	13.6	2	4	8.3	17.6
SPW-15-2	12.6	23.8	4	7.5	15.6	31.3
SPW-20-2	17.0	31.2	5.5	8.8	21.1	40.0
SPW-30-2	22.4	42.2	7.5	12.2	28.0	54.4
SPW-40-2	25.4	46.6	10	16.5	32.9	63.1
SPW-50-2	32.8	58.4	15	23.8	44.1	82.2
SPW-60-2	40.0	67.4	15	23.8	51.3	91.2
SPW-70-2	50.8	92.0	15	23.8	62.1	115.8
SPW-80-2	60.2	101.8	20	32	75.2	133.8

*All data are based on 105°F condensing, 45°F evaporating temperature.

TABLE 52. AIR COOLED SPLIT TYPE PACKAGED UNITS*

MODEL	COMPRESSOR		EVAPORATOR FAN MOTOR		TOTAL	
	INPUT (KW)	AMPS.	HP	FLA	POWER (KW)	AMPS.
SPA-5-1	4.2	7.7	0.75	1.7	4.8	9.4
SPA-8-1	7.4	13.7	2	4	8.9	17.7
SPA-10-1	9.9	18.0	2	4	11.4	22.0
SPA-15-1	13.3	24.6	4	7.5	16.3	32.1
SPA-20-1	15.2	26.8	5.5	8.8	19.3	35.6
SPA-25-1	19.6	33.7	5.5	8.8	23.7	42.5
SPA-30-1	23.6	39.0	7.5	12.2	29.2	51.2
SPA-35-1	30.2	53.3	7.5	12.2	35.8	65.5
SPA-40-1	35.8	58.4	10	16.5	43.3	74.9
SPA-10-2	8.4	15.4	2	4	9.9	19.4
SPA-15-2	14.8	27.4	4	7.5	17.8	34.9
SPA-20-2	19.8	36.0	5.5	8.8	23.9	44.8
SPA-30-2	26.6	49.2	7.5	12.2	32.2	61.4
SPA-40-2	30.4	53.6	10	16.5	37.9	70.1
SPA-50-2	39.2	67.4	15	23.8	50.5	91.2
SPA-60-2	47.2	78.0	15	23.8	58.5	101.8
SPA-70-2	60.4	106.6	15	23.8	71.7	130.4
SPA-80-2	71.6	116.8	20	32	86.6	148.8

*All data are based on 105°F condensing, 45°F evaporating temperature.

Notes:

- 1- Compressor circuit breakers are current sensitive and temperature compensated to ensure compressor cutoff if current draw becomes excessive. Breakers must be reset manually.
- 2- Internal protection with automatic reset de-energizes the control circuit if extreme compressor motor temperature should occur from excessive return gas temperature or motor overloading.
- 3- High and low pressure controls automatically shut off compressor(s) if refrigerant pressure exceeds switch settings. This action protects against loss of charge.
- 4- All compressors are 380/420 volts – 3 phase – 50 cycles.



ROOF TOP UNIT DIMENSIONS

TABLE 53. AIR COOLED ROOF TOP PACKAGED UNIT*

MODEL	A	B	C	D	DD	E	F	G	GG	H	L	J
SPAR-5-1	2800	1200	1300	445	-	411	415	1200	700	450	1200	100
SPAR -8-1	2800	1400	1400	470	-	466	470	1300	700	600	1300	100
SPAR -10-1	2800	1450	1600	570	-	466	470	1500	800	650	1500	100
SPAR -15-1	3350	1700	1800	640	-	515	519	1700	800	850	1700	120
SPAR -20-1	3600	1800	2200	820	-	561	566	2100	900	860	2100	120
SPAR -25-1	3800	2100	2200	790	-	616	621	2100	900	1050	2100	120
SPAR -30-1	4000	2150	2200	240	500	561	566	2100	900	1200	2100	140
SPAR -35-1	4000	2100	2700	490	600	561	566	2600	1000	1150	2600	140
SPAR -40-1	4250	2250	2750	515	600	561	566	2650	1000	1300	2650	140
SPAR -10-2	2850	1500	1550	540	-	466	470	1450	700	670	1450	100
SPAR -15-2	2900	1650	2000	740	-	515	519	1900	700	750	1900	120
SPAR -20-2	3600	1800	2250	845	-	561	566	2150	800	820	2150	120
SPAR -30-2	3800	2000	2400	340	500	561	566	2300	800	1050	2300	140
SPAR -40-2	4150	2300	2700	490	600	561	566	2600	900	1350	2600	140
SPAR -50-2	5300	2450	3000	640	600	561	566	2900	900	1500	2900	140
SPAR -60-2	5300	2800	3000	560	650	616	621	2900	900	1800	2900	140
SPAR -70-2	5450	3250	3000	405	740	725	730	2900	1000	2100	2900	140
SPAR -80-2	5450	3400	3000	405	740	725	730	2900	1000	2250	2900	140

Notes:

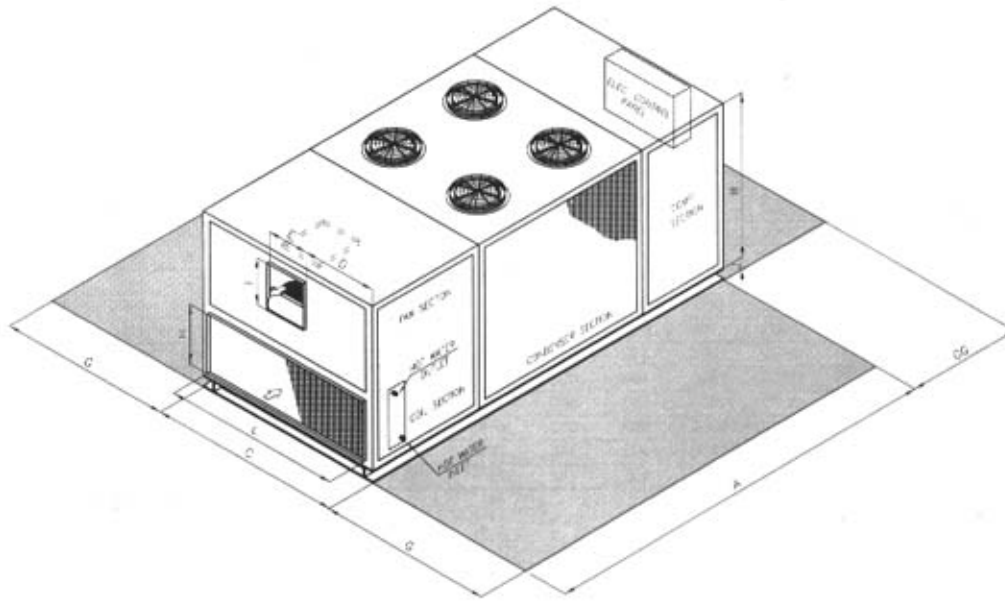
- All dimensions are in mm.
- All dimensions are subject to change without notice.
- All dimensions indicated are for front discharge only.
- Top discharge units are also available as special request.
- Fan installation for single and double fan applications are illustrated for front discharge models.
- Refrigerator and water piping connections for vertical, air-cooled and water-cooled models are also applicable to horizontal units.
- Unit width (C) will vary according to the electric heating element capacity requirements.

TABLE 54. AIR COOLED ROOF TOP PACKAGED UNITS ELECTRICAL DATA

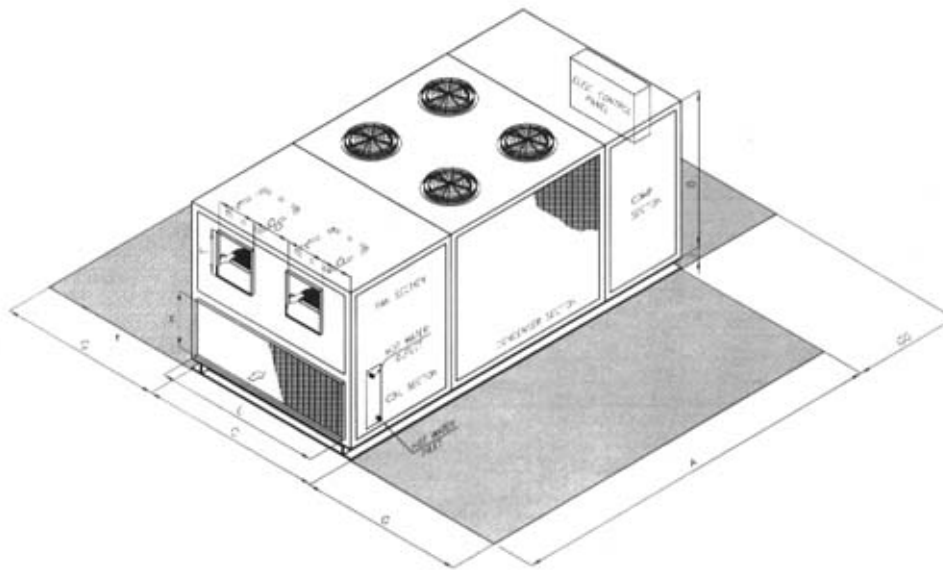
MODEL	COMPRESSOR		EVAPORATOR	FAN MOTOR	CONDENSER	FAN MOTOR	TOTAL	
	INPUT (KW)	AMPS.	HP	FLA	NO x HP	FLA	POWER (KW)	AMPS.
SPAR -5-1	4.2	7.7	0.75	1.7	1x1.5	3.2	5.9	12.6
SPAR -8-1	7.4	13.7	2	4	1x4.0	7.7	11.9	25.4
SPAR -10-1	9.9	18.0	2	4	1x4.0	7.7	14.4	29.7
SPAR -15-1	13.3	24.6	4	7.5	2x4.0	15.4	22.2	47.5
SPAR -20-1	15.2	26.8	5.5	8.8	2x4.0	15.4	25.3	51.0
SPAR -25-1	19.6	33.7	5.5	8.8	4x1.5	12.8	28.2	55.3
SPAR -30-1	23.6	39.0	7.5	12.2	5x1.5	16.0	34.8	67.2
SPAR -35-1	30.2	53.3	7.5	12.2	5x1.5	16.0	41.4	81.5
SPAR -40-1	35.8	58.4	10	16.5	4x4.0	30.8	55.2	105.7
SPAR -10-2	8.4	15.4	2	4	1x4.0	7.7	12.9	27.1
SPAR -15-2	14.8	27.4	4	7.5	1x4.0	7.7	20.8	42.6
SPAR -20-2	19.8	36.0	5.5	8.8	2x4.0	15.4	29.9	60.2
SPAR -30-2	26.6	49.2	7.5	12.2	4x1.5	12.8	36.7	74.2
SPAR -40-2	30.4	53.6	10	16.5	4x4.0	30.8	49.8	100.9
SPAR -50-2	39.2	67.4	15	23.8	6x4.0	46.2	68.3	137.4
SPAR -60-2	47.2	78.0	15	23.8	6x4.0	46.2	76.3	148.0
SPAR -70-2	60.4	106.6	15	23.8	6x4.0	46.2	89.5	176.6
SPAR -80-2	71.6	116.8	20	32	6x4.0	46.2	104.4	195.0

Notes:

- Compressor circuit breakers are current sensitive and temperature compensated to ensure compressor cutoff if current draw becomes excessive. Breakers must be reset manually.
- Internal protection with automatic reset de-energizes the control circuit if extreme compressor motor temperature should occur from excessive return gas temperature or motor overloading.
- High and low pressure control, automatically shut off compressor(s) if refrigerant pressure exceed switch settings. This action protects compressor against loss of charge or damaged caused by excessive pressures.
- All data are based on 125 °F condensing, 45 °F evaporating & 95 °F ambient air temperature.
- All compressor are 380/420 Volts-3 phase-50 cycles.



FFIGURE 2. SINGLE FAN MODELS



FFIGURE 3. DOUBLE FAN MODELS



VERTICAL UNIT DIMENSIONS

TABLE 55. WATER COOLED

MODEL	A	B	C	D	DD	E	F	G	GG	H	L	J
SPWV-5-1	1300	1800	900	445	-	411	415	1200	700	450	1200	100
SPWV-8-1	1400	2000	900	470	-	466	470	1300	700	600	1300	100
SPWV-10-1	1600	2000	900	570	-	466	470	1500	800	650	1500	100
SPWV-15-1	1800	2300	900	640	-	515	519	1700	800	850	1700	120
SPWV-20-1	2200	2450	1050	820	-	561	566	2100	900	860	2100	120
SPWV-25-1	2200	3000	1050	790	-	616	621	2100	900	1050	2100	120
SPWV-30-1	2200	3000	1050	240	500	561	566	2100	900	1200	2100	140
SPWV-35-1	2700	3000	1100	490	600	561	566	2600	1000	1150	2600	140
SPWV-40-1	2750	3200	1200	515	600	561	566	2650	1000	1300	2650	140
SPWV-10-2	1550	2100	900	540	-	466	470	1450	700	670	1450	100
SPWV-15-2	2000	2200	900	740	-	515	519	1900	700	750	1900	120
SPWV-20-2	2250	2400	1100	845	-	561	566	2150	800	820	2150	120
SPWV-30-2	2400	3100	1200	340	500	561	566	2300	800	1050	2300	120
SPWV-40-2	2700	3350	1300	490	600	561	566	2600	900	1350	2600	140
SPWV-50-2	3000	3500	1300	640	600	561	566	2900	900	1500	2900	140
SPWV-60-2	3000	3900	1300	560	650	616	621	2900	900	1800	2900	140
SPWV-70-2	4000	4300	1400	405	740	725	730	2900	1000	2100	2900	140
SPWV-80-2	4000	4500	1500	405	740	725	730	2900	1000	2250	2900	140

- 1- All dimensions are in mm.
- 2- All dimensions are subject to change without notice.

TABLE 56. AIR COOLED (SPLIT TYPE)

MODEL	A	B	C	D	DD	E	F	G	GG	H	L	J
SPAV-5-1	1300	1800	800	445	-	411	415	1200	700	450	1200	100
SPAV-8-1	1400	2000	850	470	-	466	470	1300	700	600	1300	100
SPAV-10-1	1600	2000	850	570	-	466	470	1500	800	650	1500	100
SPAV-15-1	1800	2300	900	640	-	515	519	1700	800	850	1700	120
SPAV-20-1	2200	2450	1000	820	-	561	566	2100	900	860	2100	120
SPAV-25-1	2200	3000	1000	790	-	616	621	2100	900	1050	2100	120
SPAV-30-1	2200	3000	1000	240	500	561	566	2100	900	1200	2100	140
SPAV-35-1	2700	3000	1000	490	600	561	566	2600	1000	1150	2600	140
SPAV-40-1	2750	3200	1100	515	600	561	566	2650	1000	1300	2650	140
SPAV-10-2	1550	2100	850	540	-	466	470	1450	700	670	1450	100
SPAV-15-2	2000	2200	900	740	-	515	519	1900	700	750	1900	120
SPAV-20-2	2250	2400	1000	845	-	561	566	2150	800	820	2150	120
SPAV-30-2	2400	3000	1000	340	500	561	566	2300	800	1050	2300	120
SPAV-40-2	2700	3250	1000	490	600	561	566	2600	900	1350	2600	140
SPAV-50-2	3000	3400	1000	640	600	561	566	2900	900	1500	2900	140
SPAV-60-2	3000	3800	1000	560	650	616	621	2900	900	1800	2900	140
SPAV-70-2	4000	4200	1200	405	740	725	730	2900	1000	2100	2900	140
SPAV-80-2	4000	4400	1200	405	740	725	730	2900	1000	2250	2900	140

Notes:

- 1- All dimensions are in mm.
- 2- All dimensions are subject to change without notice.
- 3- All dimensions indicated are for front discharge only.
- 4- Top discharge units are also available as special request.
- 5- Fan installation for single and double fan applications are illustrated for front discharge models.
- 6- Refrigerator and water piping connections for vertical, air-cooled and water-cooled models are also applicable to horizontal units.
- 7- Unit width (C) will vary according to the electric heating element capacity requirements

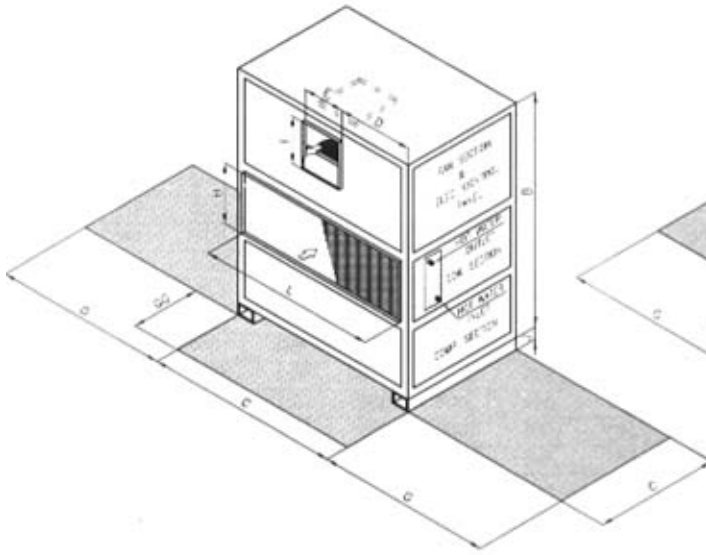


FIGURE 4. SINGLE FAN TYPE

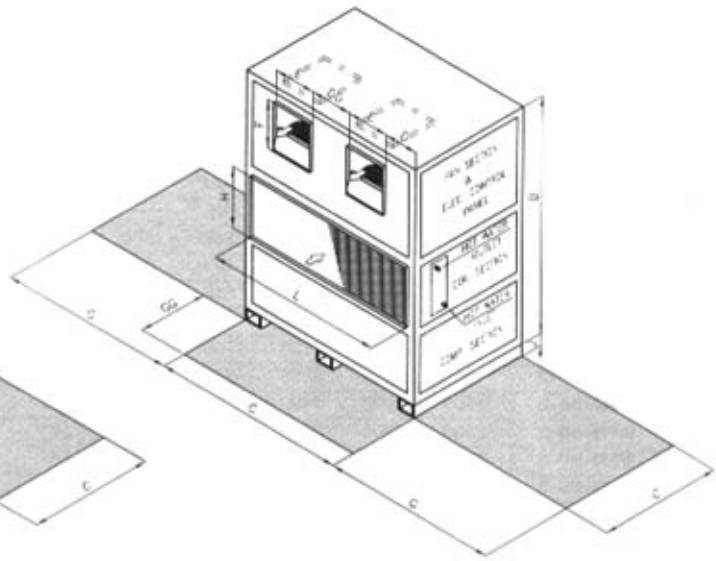


FIGURE 5. DOUBLE FAN TYPE

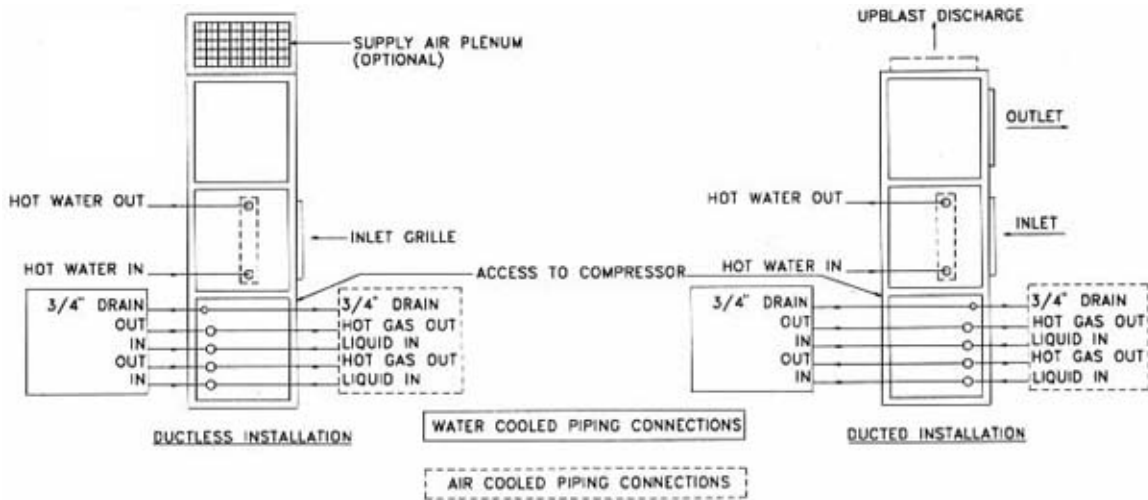


FIGURE 6. VERTICAL PACKAGED UNITS CONNECTIONS



HORIZONTAL COMPACT UNIT DIMENSIONS

TABLE 57. WATER COOLED

MODEL	A	B	C	D	DD	E	F	G	GG	H	L	J
SPWC-5-1	1700	1200	1300	445	-	411	415	1200	700	450	1200	100
SPWC-8-1	1800	1400	1400	470	-	466	470	1300	700	600	1300	100
SPWC-10-1	1800	1450	1600	570	-	466	470	1500	800	650	1500	100
SPWC-15-1	1850	1700	1800	640	-	515	519	1700	800	850	1700	120
SPWC-20-1	2000	1800	2200	820	-	561	566	2100	900	860	2100	120
SPWC-25-1	2100	2100	2200	790	-	616	621	2100	900	1050	2100	120
SPWC-30-1	2100	2200	2200	240	500	561	566	2100	900	1200	2100	140
SPWC-35-1	2100	2100	2700	490	600	561	566	2600	1000	1150	2600	140
SPWC-40-1	2150	2250	2750	515	600	561	566	2650	1000	1300	2650	140
SPWC-10-2	1800	1500	1550	540	-	466	470	1450	700	670	1450	100
SPWC-15-2	1850	1650	2000	740	-	515	519	1900	700	750	1900	120
SPWC-20-2	1900	1800	2250	845	-	561	566	2150	800	820	2150	120
SPWC-30-2	1900	2000	2400	340	500	561	566	2300	800	1050	2300	120
SPWC-40-2	2000	2300	2700	490	600	561	566	2600	900	1350	2600	140
SPWC-50-2	2100	2450	3000	640	600	561	566	2900	900	1500	2900	140
SPWC-60-2	2150	2800	3000	560	650	616	621	2900	900	1800	2900	140
SPWC-70-2	2300	3300	3000	405	740	725	730	2900	1000	2100	2900	140
SPWC-80-2	2300	3400	3000	405	740	725	730	2900	1000	2250	2900	140

1- All dimensions are in mm.
 2- All dimensions are subject to change without notice.

TABLE 58. AIR COOLED (SPLIT TYPE)

MODEL	A	B	C	D	DD	E	F	G	GG	H	L	J
SPAC-5-1	1500	1200	1300	445	-	411	415	1200	700	450	1200	100
SPAC-8-1	1600	1400	1400	470	-	466	470	1300	700	600	1300	100
SPAC-10-1	1600	1450	1600	570	-	466	470	1500	800	650	1500	100
SPAC-15-1	1650	1700	1800	640	-	515	519	1700	800	850	1700	120
SPAC-20-1	1850	1800	2200	820	-	561	566	2100	900	860	2100	120
SPAC-25-1	1900	2100	2200	790	-	616	621	2100	900	1050	2100	120
SPAC-30-1	1900	2200	2200	240	500	561	566	2100	900	1200	2100	140
SPAC-35-1	1900	2100	2700	490	600	561	566	2600	1000	1150	2600	140
SPAC-40-1	1950	2250	2750	515	600	561	566	2650	1000	1300	2650	140
SPAC-10-2	1600	1500	1550	540	-	466	470	1450	700	670	1450	100
SPAC-15-2	1650	1650	2000	740	-	515	519	1900	700	750	1900	120
SPAC-20-2	1700	1800	2250	845	-	561	566	2150	800	820	2150	120
SPAC-30-2	1700	2000	2400	340	500	561	566	2300	800	1050	2300	120
SPAC-40-2	1850	2300	2700	490	600	561	566	2600	900	1350	2600	140
SPAC-50-2	1850	2450	3000	640	600	561	566	2900	900	1500	2900	140
SPAC-60-2	1950	2800	3000	560	650	616	621	2900	900	1800	2900	140
SPAC-70-2	2100	3300	3000	405	740	725	730	2900	1000	2100	2900	140
SPAC-80-2	2100	3400	3000	405	740	725	730	2900	1000	2250	2900	140

Notes:
 1- All dimensions are in mm.
 2- All dimensions are subject to change without notice.
 3- All dimensions indicated are for front discharge only.
 4- Top discharge units are also available as special request.
 5- Fan installation for single and double fan applications are illustrated for front discharge models.
 6- Refrigerator and water piping connections for vertical, air-cooled and water-cooled models are also applicable to horizontal units.
 7- Unit width (C) will vary according to the electric heating element capacity requirements

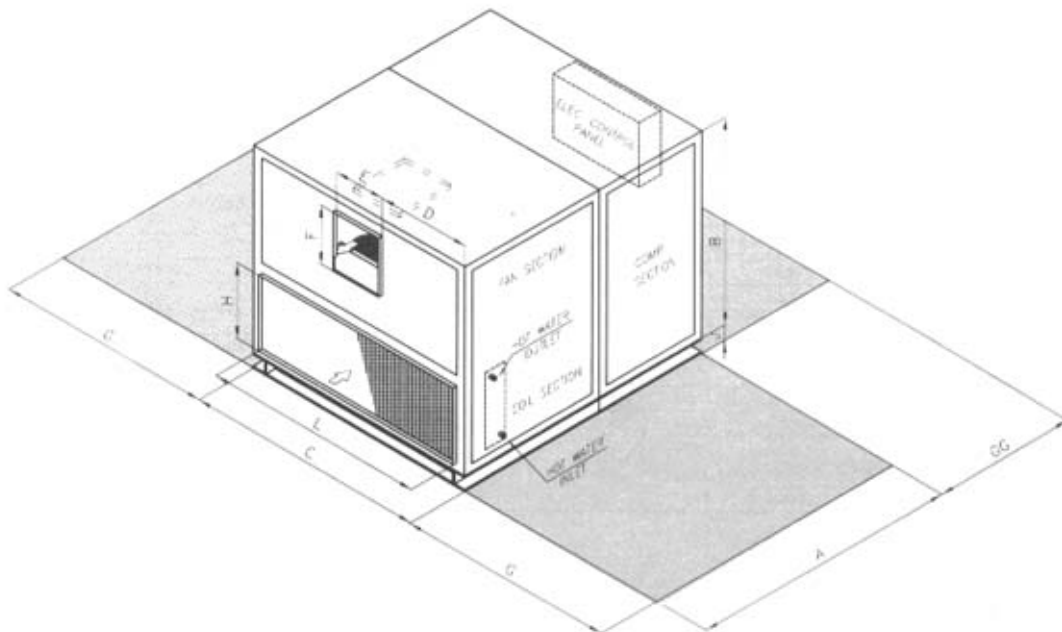


FIGURE 7. SINGLE FAN TYPE

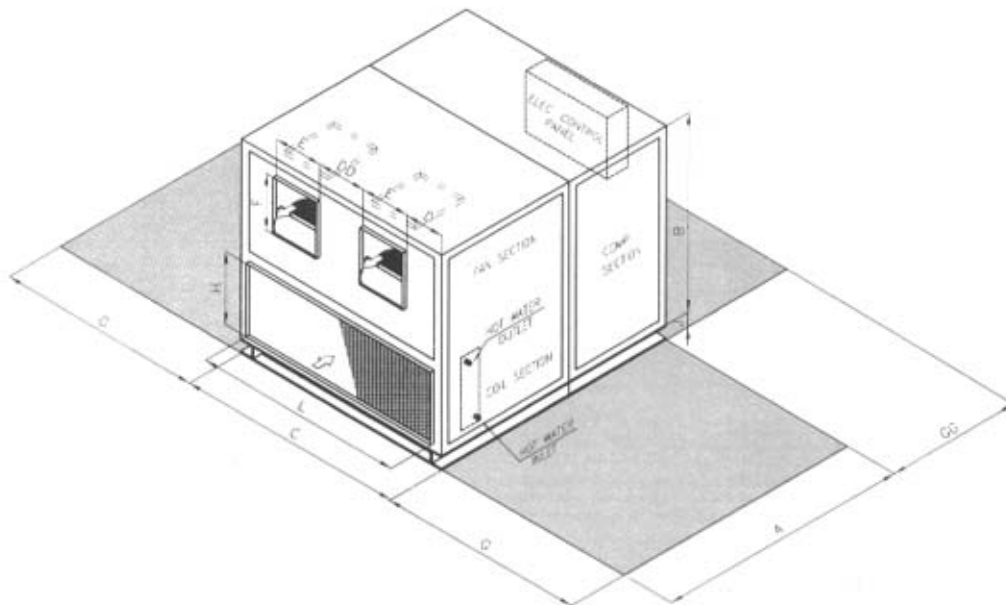


FIGURE 8. DOUBLE FAN TYPE



HORIZONTAL UNIT DIMENSIONS

TABLE 59. WATER COOLED

MODEL	A	B	C	D	DD	E	F	G	GG	J
SPWH5-1	2650	700	1300	445	-	411	415	1200	700	100
SPWH -8-1	2750	800	1400	470	-	466	470	1300	700	100
SPWH -10-1	2750	800	1600	570	-	466	470	1500	800	100
SPWH -15-1	2800	1000	1800	640	-	515	519	1700	800	120
SPWH -20-1	3000	1000	2200	820	-	561	566	2100	900	120
SPWH -25-1	3000	1200	2200	790	-	616	621	2100	900	120
SPWH -30-1	3000	1350	2200	240	500	561	566	2100	900	140
SPWH -35-1	3100	1300	2700	490	600	561	566	2600	1000	140
SPWH -40-1	3100	1400	2750	515	600	561	566	2650	1000	140
SPWH-10-2	2750	900	1550	540	-	466	470	1450	700	100
SPWH -15-2	2800	950	2000	740	-	515	519	1900	700	120
SPWH -20-2	2850	1000	2250	845	-	561	566	2150	800	120
SPWH -30-2	2850	1200	2400	340	500	561	566	2300	800	120
SPWH -40-2	3000	1500	2700	490	600	561	566	2600	900	140
SPWH -50-2	3000	1650	3000	640	600	561	566	2900	900	140
SPWH -60-2	3100	1950	3000	560	650	616	621	2900	900	140
SPWH -70-2	3250	2300	3000	405	740	725	730	2900	1000	140
SPWH -80-2	3250	2400	3000	405	740	725	730	2900	1000	140

1. All dimensions are in mm.
2. All dimensions are subject to change without notice.

TABLE 60. AIR COOLED (SPLIT TYPE)

MODEL	A	B	C	D	DD	E	F	G	GG	J
SPAH-5-1	2450	700	1300	445	-	411	415	1200	700	100
SPAH-8-1	2550	800	1400	470	-	466	470	1300	700	100
SPAH-10-1	2550	800	1600	570	-	466	470	1500	800	100
SPAH-15-1	2600	1000	1800	640	-	515	519	1700	800	120
SPAH-20-1	2800	1000	2200	820	-	561	566	2100	900	120
SPAH-25-1	2850	1200	2200	790	-	616	621	2100	900	120
SPAH-30-1	2850	1350	2200	240	500	561	566	2100	900	140
SPAH-35-1	2850	1300	2700	490	600	561	566	2600	1000	140
SPAH-40-1	2900	1300	2750	515	600	561	566	2650	1000	140
SPAH-10-2	2550	900	1550	540	-	466	470	1450	700	100
SPAH-15-2	2600	900	2000	740	-	515	519	1900	700	120
SPAH-20-2	2650	1000	2250	845	-	561	566	2150	800	120
SPAH-30-2	2650	1200	2400	340	500	561	566	2300	800	120
SPAH-40-2	2800	1500	2700	490	600	561	566	2600	900	140
SPAH-50-2	2800	1650	3000	640	600	561	566	2900	900	140
SPAH-60-2	2900	1950	3000	560	650	616	621	2900	900	140
SPAH-70-2	3050	2300	3000	405	740	725	730	2900	1000	140
SPAH-80-2	3050	2400	3000	405	740	725	730	2900	1000	140

Notes:

- 1- All dimensions are in mm.
- 2- All dimensions are subject to change without notice.
- 3- All dimensions indicated are for front discharge only.
- 4- Top discharge units are also available as special request.
- 5- Fan installation for single and double fan applications are illustrated for front discharge models.
- 6- Refrigerator and water piping connections for vertical, air-cooled and water-cooled models are also applicable to horizontal units.
- 7- Unit width (C) will vary according to the electric heating element capacity requirements

HORIZONTAL UNIT DIMENSIONS

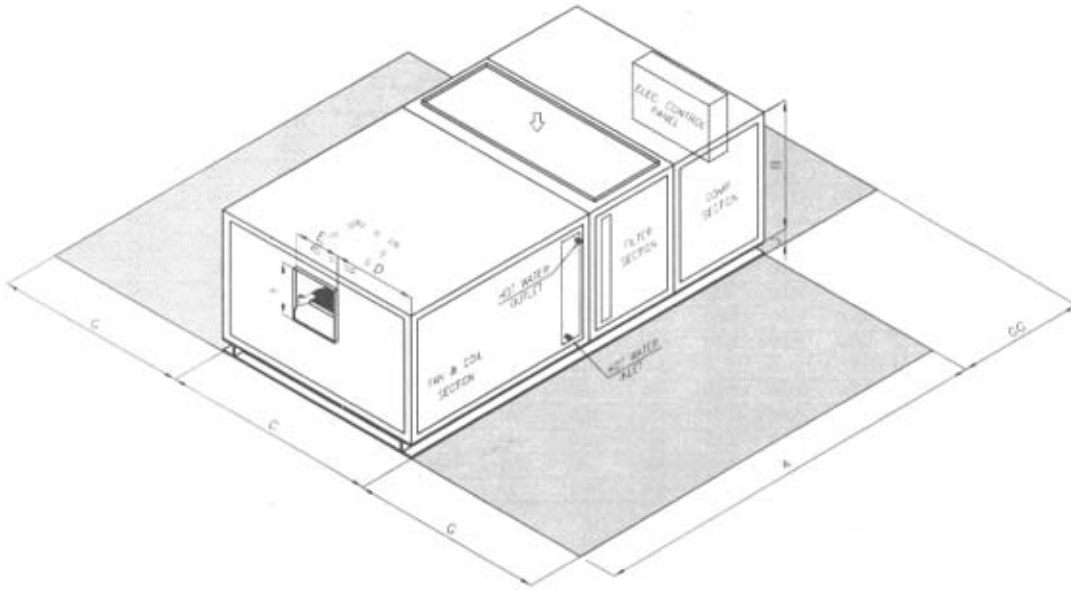


FIGURE 9. SINGLE FAN TYPE

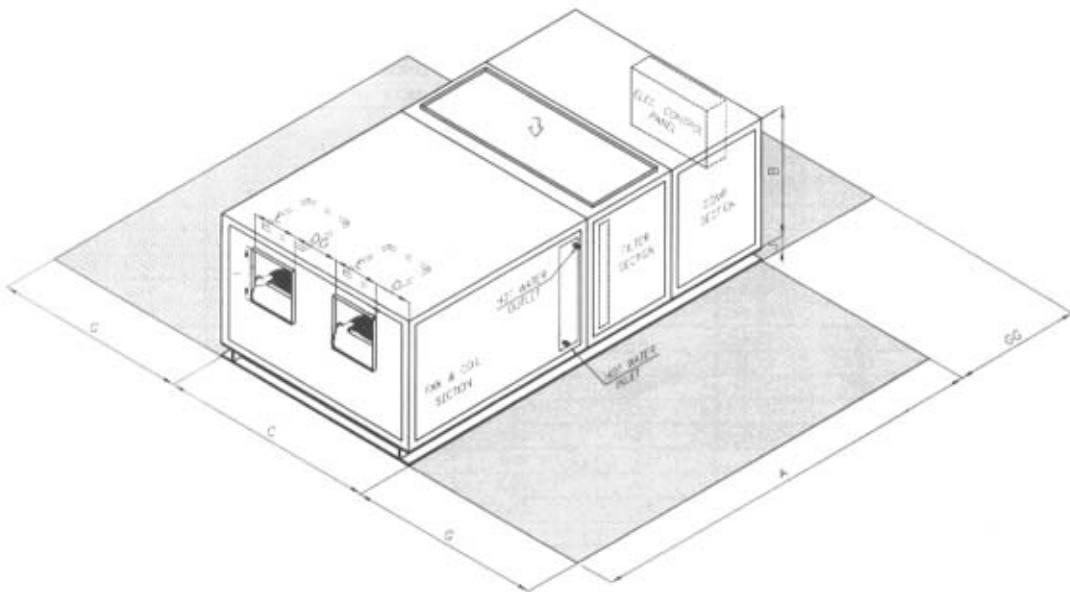


FIGURE 10. DOUBLE FAN TYPE



PACKAGED UNIT (WITH MIXING BOX) DIMENSIONS

TABLE 61. AIR COOLED ROOF TOP PACKAGED UNIT (WITH MIXING BOX)

MODEL	A	B	C	D	DD	E	F	G	GG	K	L	M	J
SPAM-5-1	3850	1250	1300	445	-	411	415	1200	700	600	1100	410	100
SPAM-8-1	3800	1350	1400	470	-	466	470	1300	700	650	1200	410	100
SPAM-10-1	3850	1350	1600	570	-	466	470	1500	800	650	1400	410	100
SPAM-15-1	4500	1550	1800	640	-	515	519	1700	800	700	1600	410	120
SPAM-20-1	4700	1550	2200	820	-	561	566	2100	900	800	2000	410	120
SPAM-25-1	5100	1750	2200	790	-	616	621	2100	900	800	2000	410	120
SPAM-30-1	5300	1900	2200	240	500	561	566	2100	900	800	2000	410	140
SPAM-35-1	5350	1900	2700	490	600	561	566	2600	1000	800	2500	410	140
SPAM-40-1	5600	2000	2750	515	600	561	566	2650	1000	800	2550	410	140
SPAM-10-2	3850	1350	1550	540	-	466	470	1450	700	650	1350	410	100
SPAM-15-2	4000	1450	2000	740	-	515	519	1900	700	700	1800	410	120
SPAM-20-2	4700	1550	2250	845	-	561	566	2150	800	800	2050	410	120
SPAM-30-2	5100	1750	2400	340	500	561	566	2300	800	800	2200	410	120
SPAM-40-2	5500	2100	2700	490	600	561	566	2600	900	800	2500	410	140
SPAM-50-2	6600	2200	3000	640	600	561	566	2900	900	800	2800	410	140
SPAM-60-2	6700	2500	3000	560	650	616	621	2900	900	800	2800	410	140
SPAM-70-2	6800	2800	3000	405	740	725	730	2900	1000	1000	2800	410	140
SPAM-80-2	7000	2950	3000	405	740	725	730	2900	1000	1000	2800	410	140

Notes:

- 1- All dimensions are in mm.
- 2- All dimensions are subject to change without notice.
- 3- All dimensions indicated are for front discharge only.
- 4- Top discharge units are also available as special request.
- 5- Fan installation for single and double fan applications are illustrated for front discharge models.
- 6- Refrigerator and water piping connections for vertical, air-cooled and water-cooled models are also applicable to horizontal units.
- 7- Unit width (C) will vary according to the electric heating element capacity requirements

TABLE 62. AIR COOLED PACKAGED UNITS(WITH MIXING BOX) ELECTRI

MODEL	COMPRESSOR		EVAPORATOR	FAN MOTOR	CONDENSER	FAN MOTOR	TOTAL	
	INPUT (KW)	AMPS	HP	FLA	NO x HP	FLA	POWER (KW)	AMPS
SPAM-5-1	4.2	7.7	0.75	1.7	1x1.5	3.2	5.9	12.6
SPAM-8-1	7.4	13.7	2	4	1x4.0	7.7	11.9	25.4
SPAM-10-1	9.9	18.0	2	4	1x4.0	7.7	14.4	29.7
SPAM-15-1	13.3	24.6	4	7.5	2x4.0	15.4	22.2	47.5
SPAM-20-1	15.2	26.8	5.5	8.8	2x4.0	15.4	25.3	51.0
SPAM-25-1	19.6	33.7	5.5	8.8	4x1.5	12.8	28.2	55.3
SPAM-30-1	23.6	39.0	7.5	12.2	5x1.5	16.0	34.8	67.2
SPAM-35-1	30.2	53.3	7.5	12.2	5x1.5	16.0	41.4	81.5
SPAM-40-1	35.8	58.4	10	16.5	4x4.0	30.8	55.2	105.7
SPAM-10-2	8.4	15.4	2	4	1x4.0	7.7	12.9	27.1
SPAM-15-2	14.8	27.4	4	7.5	1x4.0	7.7	20.8	42.6
SPAM-20-2	19.8	36.0	5.5	8.8	2x4.0	15.4	29.9	60.2
SPAM-30-2	26.6	49.2	7.5	12.2	4x1.5	12.8	36.7	74.2
SPAM-40-2	30.4	53.6	10	16.5	4x4.0	30.8	49.8	100.9
SPAM-50-2	39.2	67.4	15	23.8	6x4.0	46.2	68.3	137.4
SPAM-60-2	47.2	78.0	15	23.8	6x4.0	46.2	76.3	148.0
SPAM-70-2	60.4	106.6	15	23.8	6x4.0	46.2	89.5	176.6
SPAM-80-2	71.6	116.8	20	32	6x4.0	46.2	104.4	195.0

Notes:

- 1- Compressor circuit breakers are current sensitive and temperature compensated to ensure compressor cutoff if current draw becomes excessive. Breakers must be reset manually.
- 2- Internal protection with automatic reset de-energizes the control circuit if extreme compressor motor temperature should occur from excessive return gas temperature or motor overloading.
- 3- High and low pressure controls, automatically shut off compressor(s) if refrigerant pressure exceed switch settings. This action protects compressor against loss of charge or damaged caused by excessive pressures.
- 4- All data are based on 125 °F condensing, 45 °F evaporating & 95 °F ambient air temperature.
- 5- All compressors are 380/420 Volts-3 phase-50 cycles.

PACKAGED UNIT (WITH MIXING BOX) DIMENSIONS

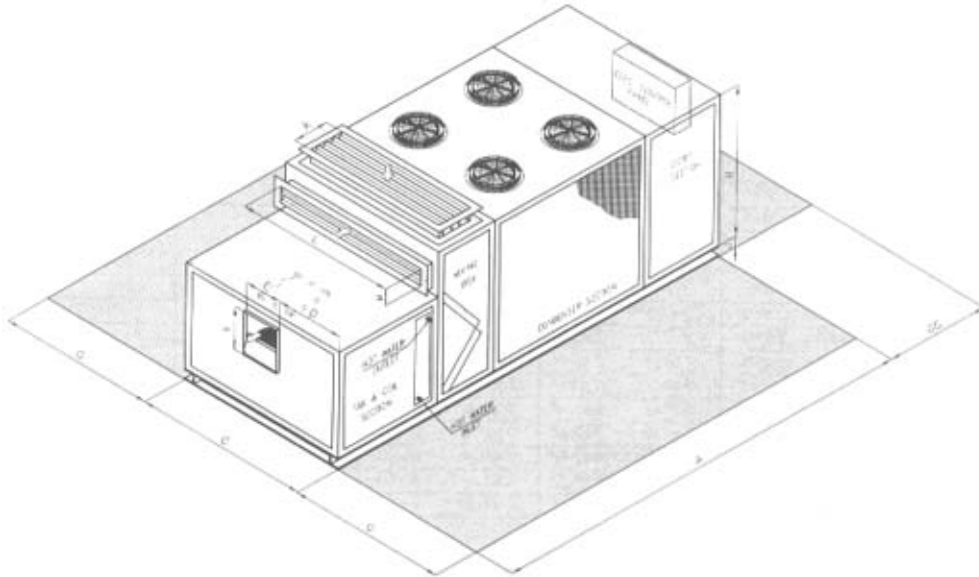


FIGURE 11. SINGLE FAN TYPE

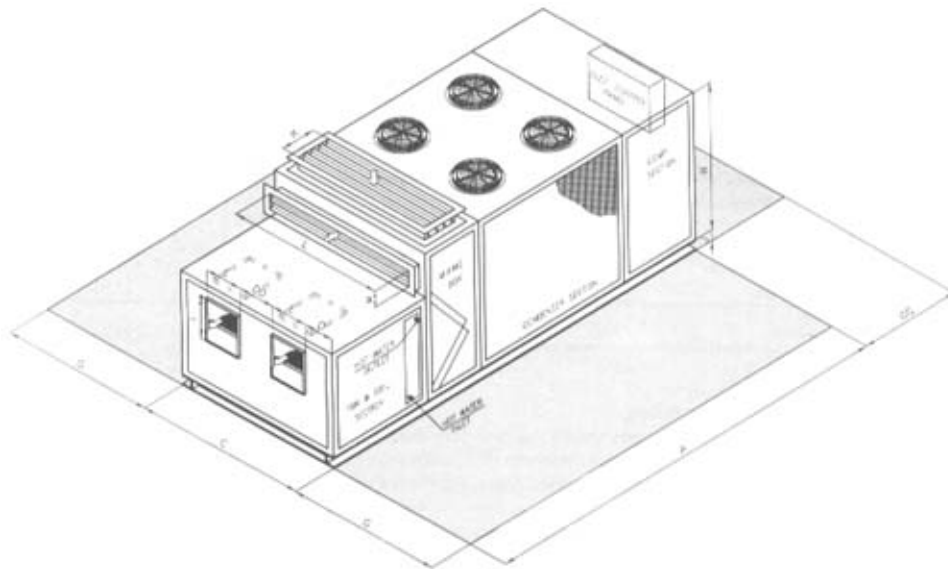


FIGURE 12. DOUBLE FAN TYPE



PACKAGED UNIT PIPING

TABLE 63. PIPE SIZING* FOR SPLIT TYPE AIR COOLED CONDENSER

Leq **	32 ft (10m)		64 ft (20m)		96 ft (30m)		120 ft (40m)		160 ft (50m)	
Model	Discharge	liquid	Discharge	liquid	Discharge	liquid	Discharge	liquid	Discharge	liquid
SPA-5-1	3/4"	1/2"	7/8"	1/2"	7/8"	1/2"	7/8"	5/8"	7/8"	5/8"
SPA-8-1	7/8"	1/2"	1 1/8"	5/8"	1 1/8"	5/8"	1 1/8"	3/4"	1 1/8"	3/4"
SPA-10-1	7/8"	5/8"	1 1/8"	5/8"	1 1/8"	5/8"	1 1/8"	3/4"	1 1/8"	3/4"
SPA-15-1	1 1/8"	5/8"	1 1/8"	3/4"	1 3/8"	3/4"	1 3/8"	7/8"	1 3/8"	7/8"
SPA-20-1	1 1/8"	5/8"	1 1/8"	3/4"	1 3/8"	3/4"	1 3/8"	7/8"	1 3/8"	7/8"
SPA-25-1	1 1/8"	3/4"	1 3/8"	7/8"	1 3/8"	7/8"	1 5/8"	1 1/8"	1 5/8"	1 1/8"
SPA-30-1	1 1/8"	3/4"	1 3/8"	7/8"	1 5/8"	1 1/8"	1 5/8"	1 1/8"	1 5/8"	1 1/8"
SPA-35-1	1 3/8"	7/8"	1 3/8"	7/8"	1 5/8"	1 1/8"	1 5/8"	1 1/8"	1 5/8"	1 1/8"
SPA-40-1	1 3/8"	7/8"	1 5/8"	1 1/8"	2 1/8"	1 1/8"	2 1/8"	1 1/8"	2 1/8"	1 3/8"
SPA-10-2	2 x 3/4"	2 x 1/2"	2 x 7/8"	2 x 1/2"	2 x 7/8"	2 x 1/2"	2 x 7/8"	2 x 3/4"	2 x 7/8"	2 x 5/8"
SPA-15-2	2 x 7/8"	2 x 1/2"	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 3/4"	2 x 1 1/8"	2 x 3/4"
SPA-20-2	2 x 7/8"	2 x 5/8"	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 7/8"	2 x 1 1/8"	2 x 3/4"
SPA-30-2	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 3/4"	2 x 1 3/8"	2 x 3/4"	2 x 1 3/8"	2 x 7/8"	2 x 1 3/8"	2 x 7/8"
SPA-40-2	2 x 1 1/8"	2 x 5/8"	2 x 1 1/8"	2 x 3/4"	2 x 1 3/8"	2 x 3/4"	2 x 1 3/8"	2 x 7/8"	2 x 1 1/3"	2 x 7/8"
SPA-50-2	2 x 1 1/8"	2 x 3/4"	2 x 1 1/8"	2 x 7/8"	2 x 1 3/8"	2 x 7/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 1 5/8"	2 x 1 1/8"
SPA-60-2	2 x 1 1/8"	2 x 3/4"	2 x 1 3/8"	2 x 7/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 1 5/8"	2 x 1 1/8"
SPA-70-2	2 x 1 3/8"	2 x 7/8"	2 x 1 3/8"	2 x 7/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 1 5/8"	2 x 1 1/8"
SPA-80-2	2 x 1 3/8"	2 x 7/8"	2 x 1 5/8"	2 x 1 1/8"	2 x 2 1/8"	2 x 1 1/8"	2 x 2 1/8"	2 x 1 1/8"	2 x 2 1/8"	2 x 1 3/8"

*All pipe size at standard condition (CT =125 °F, FV = 500 FPM, EWB = 67 °F)

** L_{eq} = Equivalent length of pipe from package to condenser ft (meter)

TABLE 64. EQUIVALENT LENGTH IN PIPE DIAMETERS (Leq / D*) OF VARIOS AND FITTINGS

DESCRIPTION OF PRODUCT		EQUIVALENT LENGTH IN PIPE DIAMETERS (L/D)
Fittings	90 Degree standard elbow	30
	45 Degree standard elbow	16
	90 Degree long radius elbow	20
	90 Degree street elbow	50
	45 Degree street elbow	26
	Square corner elbow	57
Standard tee (with flow through run)	Standard tee (with flow through run)	20
	Standard tee (with flow through branch)	60
Check Valves	Close pattern return bend	50
	Conventional swing	0.5 † ... Fully open
	Clearway swing	0.5 † ... Fully open
	Globe lift or stop; Y-pattern	2.0 † ... Fully open
	Angle lift or stop	2.0 † ... Fully open
	In-line ball	2.5 vertical and 0.25 horizontal † ... Fully open

*L_{eq} = Equivalent length (feet)

D = Internal diameter of pipe (feet)

† Minimum calculated pressure differential (psi) across the valve to fully lift the disc.

Remote Air Cooled Condenser Notes:

- 1-Refrigerant piping design must accommodate the flow of both refrigerant and oil. Proper return of oil to the crankcase is accomplished by ensuring a minimum refrigerant velocity not less than 500 fpm in horizontal lines and not less than 1500 fpm in vertical refrigerant risers. Horizontal refrigerant lines must be pitched in the direction of refrigerant flow.
- 2- Copper tubing installed in remote air cooled condenser systems should be entirely free of dirt, scale, and oxides. The liquid line from the condenser should be maintained dry.
- 3- Current practice limits the maximum pressure drop in liquid lines corresponding to a change of saturated temperature $\Delta T_{suc} = 1 \text{ }^\circ\text{F}$ as 3.05 psi at a condensing temperature of 105 °F.

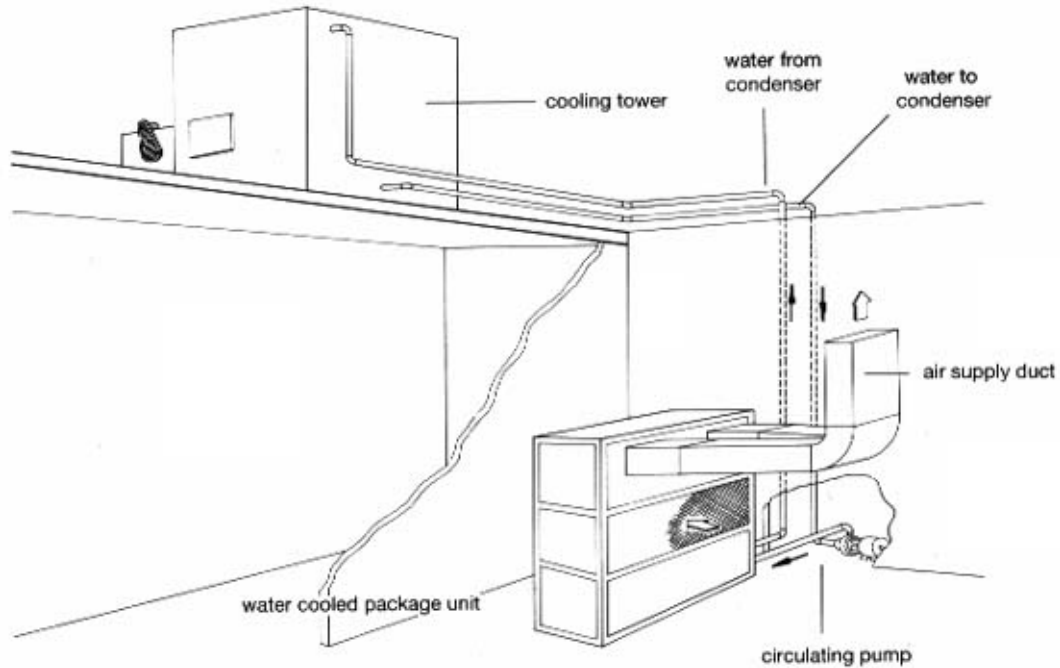


FIGURE 13. WATER COOLED CONDENSER PIPING DETAIL

The above diagram is intended as a general guideline for connection points and equipment arrangement for water cooled condenser applications and is not a proposed detail for a specific installation. All piping and duct work must follow standard techniques and all wiring must comply with applicable codes.

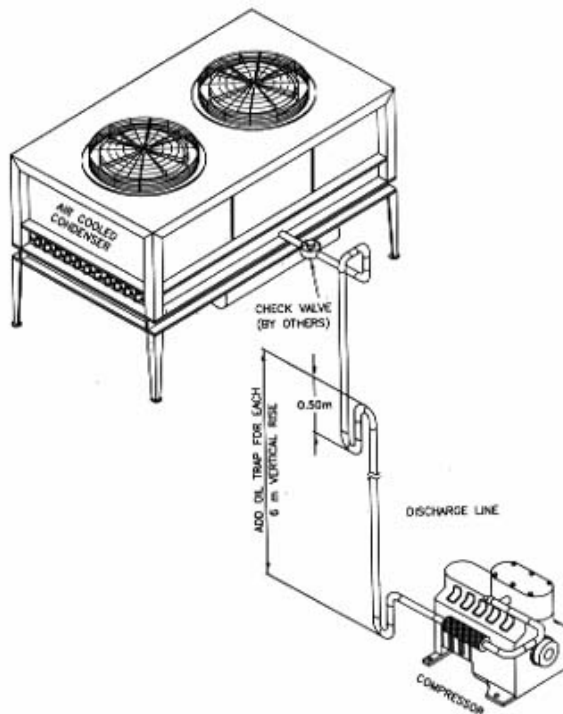


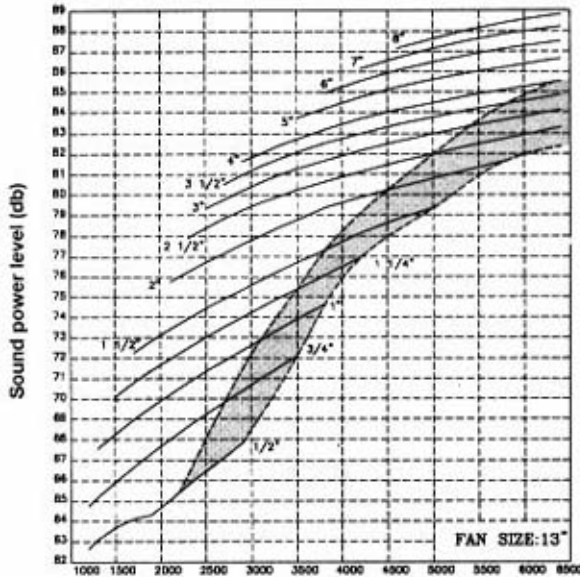
FIGURE 14. DISCHARGE PIPING CONNECTIONS TO REMOTE AIR COOLED CONDENSER

NOTES:

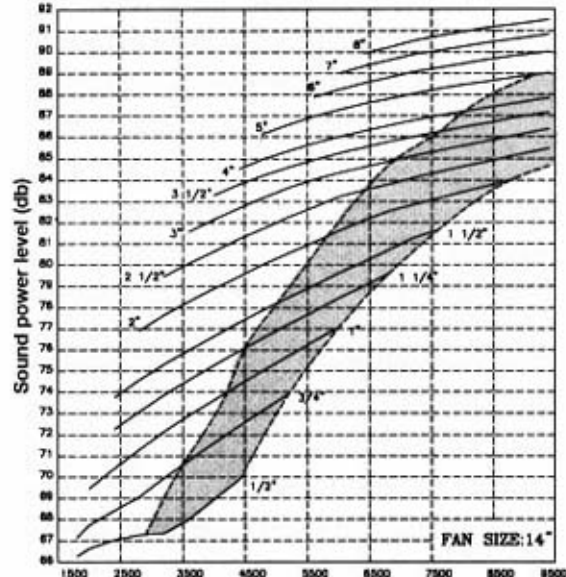
- 1- when vertical lift exceeds 7.5 meters, install oil traps at every 6 meters.
- 2- Discharge check valves must be installed on remote air-cooled condenser applications to prevent refrigerant migration during off cycle.
- 3- "Over Traps" on top of risers must not be less than 150 mm.
- 4- Oil separators are mandatory on systems where distance between packaged unit and remote air-cooled condenser exceeds 20 meters.



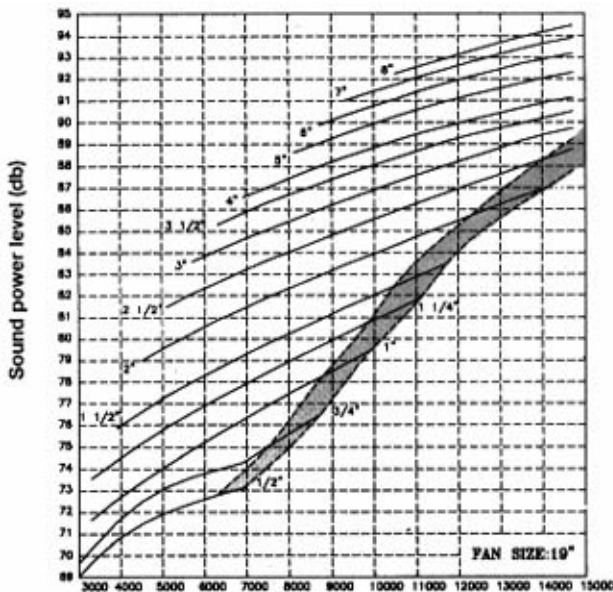
FAN SOUND RATINGS



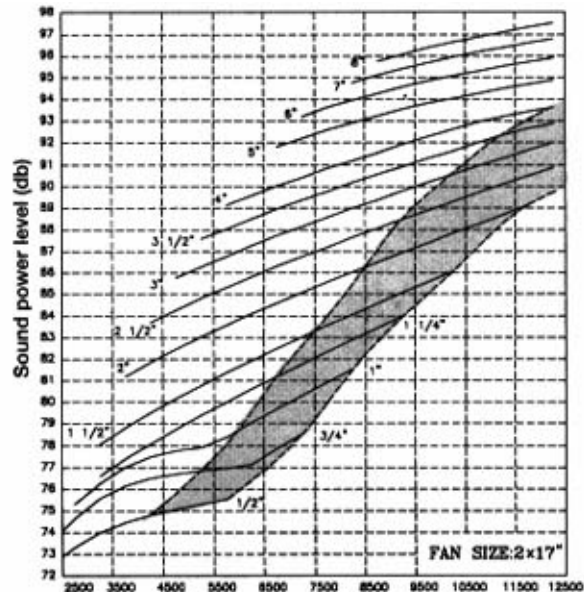
Volumetric air flow rate(CFM)
SPW,A-5-1



Volumetric air flow rate(CFM)
SPW,A-8-1
SPW,A-10-1
SPW,A-10-2



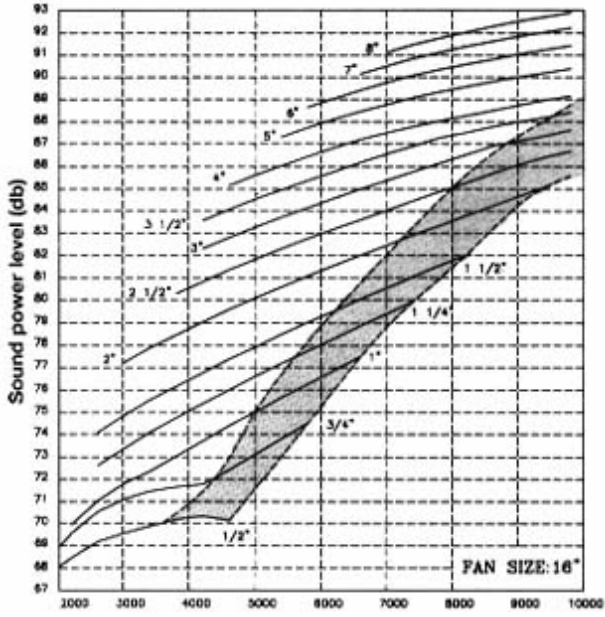
Volumetric air flow rate(CFM)
SPW,A-25-1



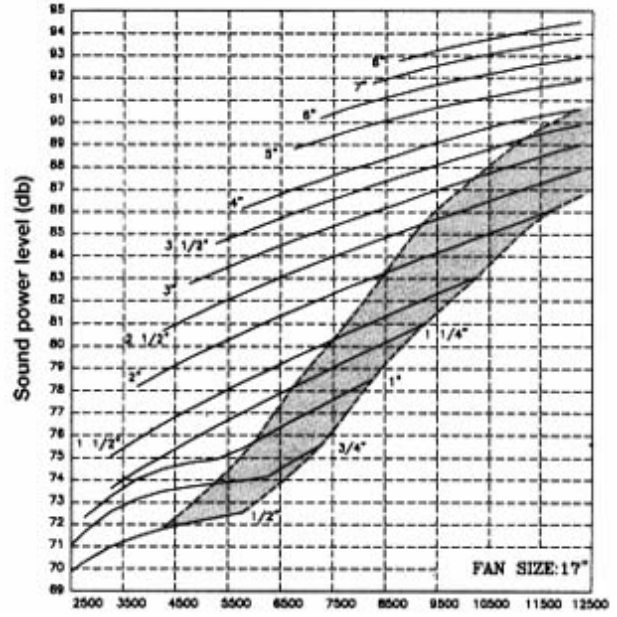
Volumetric air flow rate(CFM)
SPW,A-30-1 SPW,A-35-1
SPW,A-30-2 SPW,A-40-2
SPW,A-50-2

Notes:

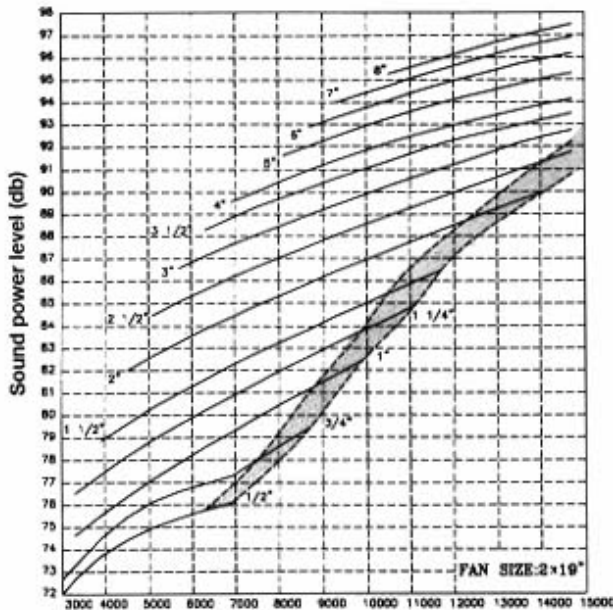
1. When sound power level falls within the shaded area, add 3 to 6 db to the given sound power level from left to right boundary respectively.
2. Sound ratings are based on a distance of 1m from the unit



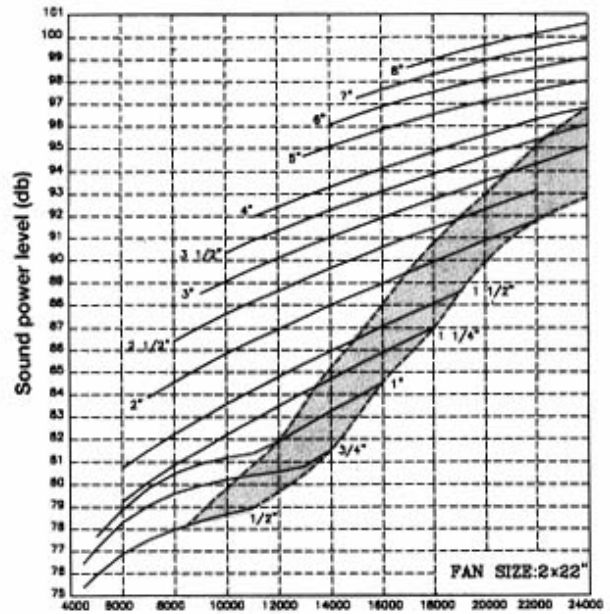
Volumetric air flow rate(CFM)
 SPW,A-15-1
 SPW,A-15-2



Volumetric air flow rate(CFM)
 SPW,A-20-1
 SPW,A-20-2



Volumetric air flow rate(CFM)
 SPW,A-60-2



Volumetric air flow rate(CFM)
 SPW,A-70-2
 SPW,A-80-2

Notes:

1. When sound power level falls within the shaded area, add 3 to 6 db to the given sound power level from left to right boundary respectively.
2. Sound ratings are based on a distance of 1m from the unit



AIR ENTHALPY & DENSITY

TABLE 65. ENTHALPY vs ALTITUDE

WET BULB TEMP. °F	ALTITUDE					
	0	1000(ft)	2000(ft)	3000(ft)	4000(ft)	5000(ft)
	0	315(m)	625(m)	940(m)	1250(m)	1560(m)
ENTHALPY OF AIR (BTU/lb)						
35	13.0	13.18	13.36	13.54	13.74	13.94
36	13.4	13.62	13.80	14.00	14.20	14.41
37	13.8	14.06	14.25	14.46	14.67	14.89
38	14.3	14.51	14.71	14.92	15.14	15.37
39	14.7	14.97	15.18	15.40	15.63	15.87
40	15.2	15.44	15.66	15.89	16.12	16.37
41	15.7	15.92	16.14	16.38	16.63	16.89
42	16.1	16.42	16.64	16.88	17.14	17.41
43	16.6	16.89	17.14	17.39	17.66	14.94
44	17.1	17.39	17.65	17.92	18.20	18.49
45	17.6	17.91	18.17	18.45	18.74	19.04
46	18.1	18.43	18.70	18.99	19.29	19.61
47	18.6	18.96	19.25	19.55	19.86	20.19
48	19.2	19.50	19.80	20.11	20.44	20.78
49	19.7	20.05	20.36	20.69	21.03	21.38
50	20.3	20.61	20.94	21.27	21.63	22.00
51	20.8	21.19	21.52	21.87	22.24	22.62
52	21.4	21.77	22.12	22.49	22.87	23.27
53	22.0	22.37	22.73	23.11	23.51	23.92
54	22.6	22.98	23.36	23.75	24.16	24.59
55	23.2	23.60	23.99	24.40	24.83	25.28
56	23.8	24.24	24.64	25.07	25.51	25.98
57	24.4	24.88	25.31	25.75	26.21	26.69
58	25.1	25.55	25.99	26.44	26.92	27.42
59	25.7	26.22	26.68	27.15	27.65	28.17
60	26.4	26.92	27.39	27.88	28.40	28.94
61	27.1	27.62	28.11	28.62	29.16	29.72
62	27.8	28.34	28.85	29.39	29.94	30.52
63	28.5	29.08	29.61	30.16	30.74	31.35
64	29.3	29.84	30.39	30.96	31.56	32.19
65	30.0	30.61	31.18	31.77	32.39	33.05
66	30.8	31.40	31.99	32.61	33.25	33.93
67	31.6	32.21	32.82	33.46	34.13	34.83
68	32.4	33.03	33.67	34.33	35.03	35.75
69	33.2	33.88	34.54	35.32	35.95	36.70
70	34.0	34.74	35.43	36.14	36.89	37.67
71	34.9	35.63	36.34	37.08	37.85	38.67
72	35.8	36.54	37.27	38.04	38.84	39.69
73	36.7	37.46	38.23	39.02	39.86	40.73
74	37.6	38.42	39.20	40.03	40.89	41.80
75	38.6	39.39	40.21	41.06	41.96	42.90
76	39.5	40.39	41.23	42.12	43.05	44.02
77	40.5	41.41	42.29	43.21	44.17	45.18
78	41.5	42.45	43.36	44.32	45.32	46.36
79	42.6	43.53	44.47	45.46	46.49	47.58
80	43.6	44.62	45.60	46.63	47.70	48.83
81	44.7	45.75	46.76	47.83	48.94	50.10
82	45.9	46.91	47.95	49.05	50.21	51.42
83	47.0	48.09	49.18	50.32	51.51	52.76
84	48.2	49.30	50.43	51.61	52.85	54.15
85	49.4	50.33	51.71	52.94	54.22	55.57

TABLE 65. ENTHALPY vs ALTITUDE

ALTITUDE FEET(m)	DENSITY	
	Lb/ft.	RATIO
0	0.075	1.000
500 (156)	0.0737	0.982
1000 (315)	0.0724	0.96
1500 (469)	0.0710	0.947
2000 (625)	0.0697	0.930
2500 (781)	0.0685	0.913
3000 (940)	0.0672	0.896
3500 (1094)	0.0660	0.880
4000 (1250)	0.0648	0.864
4500 (1400)	0.0636	0.848
5000 (1560)	0.0624	0.832
5500 (1720)	0.0613	0.817
6000 (1875)	0.0601	0.801
6500 (2031)	0.0590	0.786
7000 (2190)	0.0579	0.772
7500 (2344)	0.0568	0.757
8000 (2500)	0.0557	0.743
8500 (2656)	0.0547	0.729
9000 (2813)	0.0536	0.715
9500 (2970)	0.0526	0.701
10000 (3125)	0.0516	0.688



GENERAL

Furnish and install SARAVEL Packaged Air Conditioning unit(s) utilizing reciprocating industrial-duty semi-hermetic compressor(s). Unit shall supply air through ductwork based on the schedule of capacities as shown on the contract drawings and the following specifications.

The unit shall consist of serviceable semi-hermetic compressors(s), coil section complete with direct-expansion coil, condensate drain pan, liquid receiver, filter rack, fan section, factory wiring, and controls. A holding charge of (R-22) shall be furnished. All units shall be rated to ARI Standards 310 and 360.

CASINGS

The enclosure shall be of heavy gage galvanized steel sheet panels, cleaned and finished with baked enamel. The inside of the panels shall be completely insulated with 19 mm rock wool panel with aluminum foil cover. Panels shall be removable for access to the components.

FAN SECTION

Double-inlet centrifugal fan wheel with forward curved blades shall be designed for continuous operation at maximum fan speed. Fan wheel shall be constructed of galvanized steel sheets and shall be statically and dynamically balanced for smooth running and quiet operation. Fan shall be belt driven and mounted on a solid steel shaft with greasable ball bearings. Fan shaft shall be phosphatized.

FAN MOTOR

The electric motor shall be totally enclosed, fan cooled motor selected to match the fan bhp. The motor shall operate at 1450 rpm suitable for 380 volts, 3 phase and 50 cycle operation. Fan motor shall have V-Belt driven, with oversized V-Belt for long life. The motor base shall be adjustable for belt tension control. The driven shall incorporate multi-roove sheave and pulley.

COOLING COIL

The cooling coil shall be multi-row, direct expansion type, designed and tested in accordance with ANSI/ASHRAE 15 Safety Code for Mechanical Refrigeration. Primary surface is 5/8" (16mm) O.D. seamless copper tube with all joints brazed. Secondary surface shall be aluminum/copper fin plates in spacings of 8/14 fins per inch. A filter frame designed to accept standard 2" cleanable aluminum mesh filter shall be installed upstream of the DX-Cooling Coil.

HEATING COIL

Hot water heating coils shall be factory tested for leakage at 350 psig air pressure with the coil submerged in water. Electric heating coil shall be constructed of stainless steel heating elements and interlocked with the supply fan.

CONDENSATE PAN

Condensate pan shall be of heavy gage galvanized steel sheet with a coating of bitumen. The pan shall be equipped with drain connection.

CONDENSER (Water Cooled Only)

The condenser shall be shell and tube type with removable steel heads. The tubes shall be integrally finned copper tubes. The tubes shall be designed for a working pressure of 250 psig and tested in accordance with ASME Section VIII, Div. 1 code requirements. Each condenser shall be constructed to provide subcooling of the liquid refrigerant. The condenser shall be equipped with a safety relief valve mounted on the shell for safe operation.

CONDENSER COIL (Air Cooled Only)

Air cooled condenser coils shall be rated according to ARI 460 and constructed 5/8" O.D. seamless copper tube with secondary surface consisting of a choice of aluminum/copper fin plates in spacings of 8/14 fins per inch.

REFRIGERATION CIRCUIT

Refrigeration control provided by thermal expansion valve. Sight glass shall be installed upstream of the expansion valve. All models shall be equipped with back seating shutoff valve in liquid lines. Filter-drier and operating charge of R-22 shall be standard.

RECEIVER

Liquid refrigerant receiver shall be sized to hold refrigerant charge on pump down application as per ASHRAE 15 and designed, fabricated, and tested to ASME Section VIII, Div. 1 requirements.

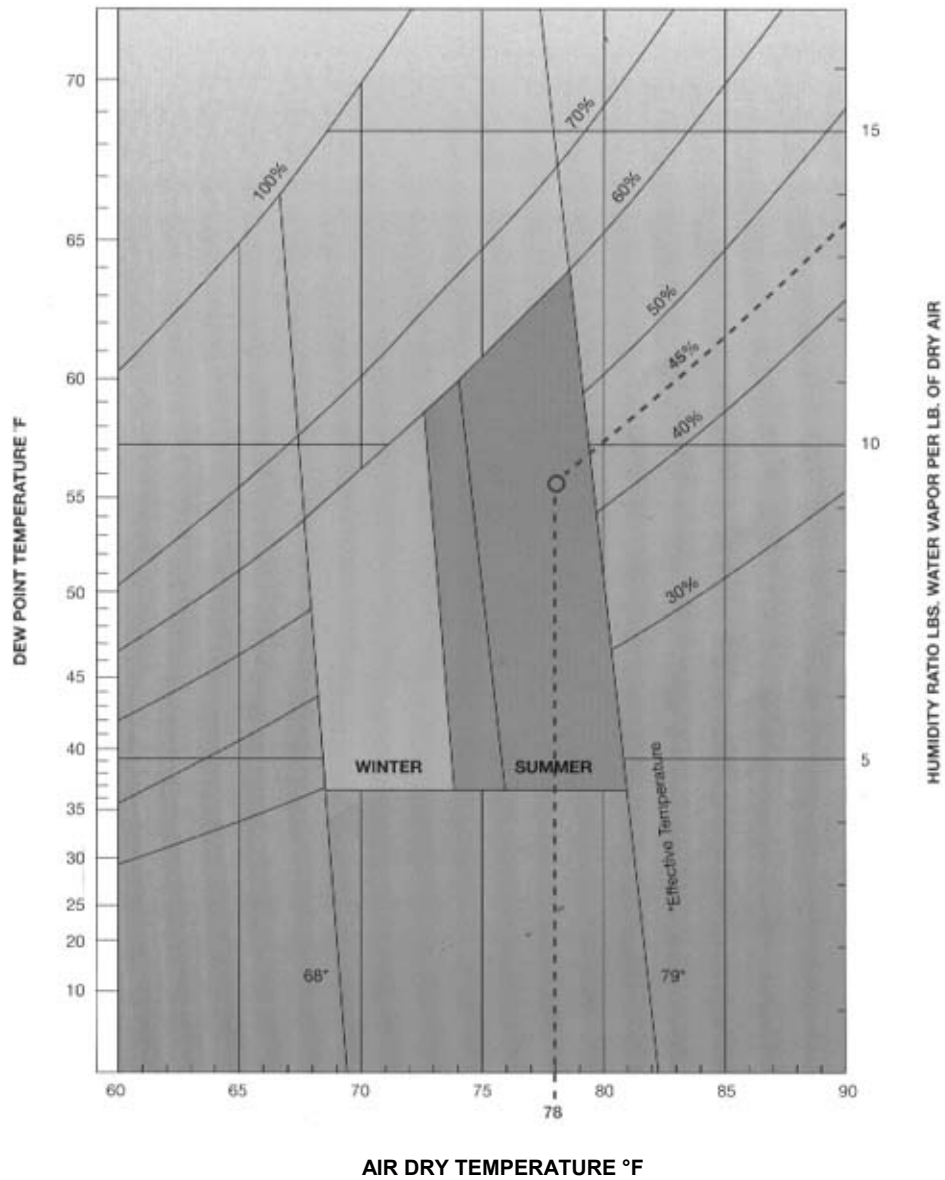
CONTROLS AND SAFETIES

All control circuits shall be 220V-50Hz-single phase. A single/multi stage thermostat shall provide capacity modulation by cycling compressor(s) ON/OFF along with control of condenser fan(s). An electrical interlock for remote condenser fan shall be provided. Contactors plus overload protections shall be provided for all motors. The compressor shall be provided with the following controls: high pressure, low pressure, overtemperature, overcurrent, and short cycle in addition to oil pressure safety cut out.



NOMENCLATURE

AEC	.....	Air Entering Condenser Temperature (°F)
AC	.....	Air-Cooled
CFM	.....	Air Flow Rate (Ft . ³ /min)
CF	.....	Correction Factor for Entering Air Temperature
CT	.....	Condensing Temperature (°F)
EAT	.....	Entering Air Temperature (°F)
EDB	.....	Entering Dry Bulb Temperature (°F)
EHT	.....	Entering Hot Water Temperature (°F)
EWB	.....	Entering Wet Bulb Temperature (°F)
EWT	.....	Entering Water Temperature (°F)
FA	.....	Coil Face Area Sq..Ft
FLA	.....	Full Load Amps
FV	.....	Face Velocity (Ft/min)
GPM	.....	Condenser Water Flow Rate
HP	.....	Normal Horse Power
H1	.....	Entering of Air Entering Evaporator Coil (Btu/Lb)
H2	.....	Enthalpy of Air Leaving Evaporator Coil (Btu/Lb)
HZ	.....	Network Frequency (s ⁻¹)
KW	.....	Compressor Power Input (Kw)
LDB	.....	Leaving Dry Bulb Temperature (°F)
Leq	.....	Equivalent Length of Pipe From Package to Condenser Ft. (meter)
LRA	.....	Locked Rotor Amps
PD	.....	Pressure Drop (Feet of water)
PH	.....	Phase
RLA	.....	Rated Load Amps
SC	.....	Starting Current Amps
SHC	.....	Sensible Heat Capacity (MBH)
SP	.....	Static Pressure (Inch of Water)
TC	.....	Total Capacity (MBH)
THR	.....	Total Heat Rejection (MBH)
V	.....	Voltage
W.C.	.....	Water - Cooled



Research conducted over 50 years by ASHREA was consolidated in the 1993 edition of the ASHREA Handbook of Fundamentals. It shows that during the summer months, the majority of the population is most comfortable between temperatures of 74 and

80°F with coincident relative humidities between 25 and 60%. The center of that comfort zone – the most comfortable point for the majority of the population – is 78°F and 45% rh.



SARAVEL CORP.

Sales Office:

No. 43, North Sheikh Bahai Avenue, Tehran 19917, IRAN

Tel: (+98-21) 8046921 (6 lines) Fax: (+98-21) 8046920

E-mail: sales@saravel.com

<http://www.saravel.com>

SARAVEL reserves the right to make changes to products and specifications without notice and without incurring obligations.