

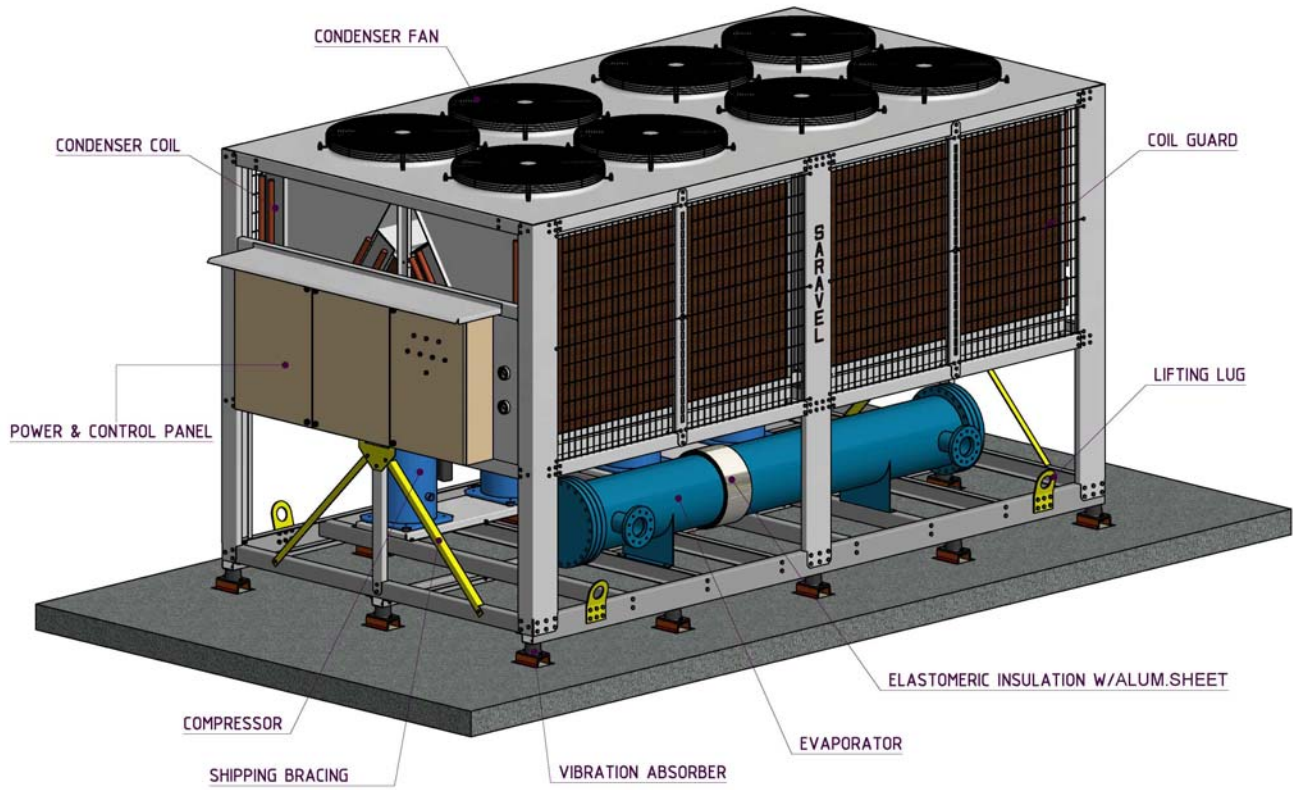


CAT-SPLCS-2020

# **SARAVEL PACKAGED AIR-COOLED SCROLL CHILLERS**

**10 TO 120 TONS  
(35 TO 420 kW)**







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## NOMENCLATURE

**S P L C S - 120 - 4 A - S A M X**

SARAVEL PACKAGED LIQUID CHILLER SCROLL      COOLING CAPACITY (NOMINAL)      NO OF COMPRESSORS      AIR-COOLED      S: STANDARD      A: R22      M: MINI PLC      X: AXIAL FAN

F: YEAR ROUND      B: R410A      P: PLC + HMI      V: AXIAL FAN + VSD  
C: FREE COOLING      C: OTHER  
B: BRINE APPLICATION



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# INTRODUCTION

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## INTRODUCTION

SARAVEL Air-cooled scroll chillers provide chilled water for air handling and terminal units in commercial and residential air conditioning applications. Units can be configured to flow and load requirements for brine, light process, and thermal storage applications. All units are completely self-contained and are designed for outdoor (roof or ground level) installation. Each unit includes hermetic scroll compressors, evaporator, air cooled condenser, a charge of refrigerant R22/R410A, and a weather resistant power and microprocessor control panel, all mounted on a rugged, formed-steel base.

## GENERAL

The 10-120 TR (35 - 420 KW) SPLCS models are shipped complete from the factory ready for installation and use.

The unit is inert gas pressure-tested, evacuated, and fully charged with R22/R-410A and includes an initial oil charge. After assembly, a full shift, complete operational test (Factory Acceptance Test) is performed with water flowing through the evaporator to assure performance to design conditions.

Units are constructed of heavy gauge galvanized fabricated steel profiles assembled on structural steel and are coated with epoxy paint. Units are provided with lifting eyes and suited for base rail mounting. The small footprint reduces the cost of pouring concrete pad.

The refrigerant circuit piping is pre-designed for die formed tube bending where only terminal connections are brazed, in order to minimize refrigerant leakage possibilities.

Free cooling is offered as a year round application suitable for data centers.

## COMPRESSORS

The compressors incorporate a scroll design that is compliant in both the axial and radial direction sealing. The motor is cooled by 100% of the suction gas flow. A large internal oil sump allows greater liquid handling. Compressor crankcase heaters are also included for extra protection against liquid migration. Suction and discharge service valves are provided for unit isolation and refrigerant recovery. Due to the unique orbital motion, gas delivery is continuous. Therefore, there is little inlet or

discharge pulsation. Consequently, scroll compressors are as much as 10 to 15 dBA quieter than comparable reciprocating compressors. Units are supplied with 2 tandem scroll compressors in 10 to 25 TR models and 4 tandem scroll compressors in 30 to 120 TR models which designed to run on 380V-3PH-50HZ electricity.

## EVAPORATOR

The multi circuit Direct Expansion (DX) cooler is designed for optimum efficiency. The refrigerant is fed through a Thermostatic Expansion Valve (TXV), and a series of baffles direct water over the refrigerant tubes in crossflow configuration. There is one independent refrigerant circuit per compressor.

The evaporator shell and low temperature lines are completely protected with closed-cell rubber foam fire retardant insulation with aluminum covering, for thermal insulation, condensation prevention, and vapor seal.

## CONDENSER

**Coils** – Fin and tube condenser coils of seamless, copper tubes are arranged in staggered rows, mechanically expanded into aluminum fins. Tube supports are die formed from galvanized steel sheet. The coils consist of 5/8" or 3/8" OD in 3 or 4 rows deep arrangement with fin spacing of 10 FPI (Fins Per Inch). Fin materials include aluminum and copper. All coil section include a subcooling circuit. The design working pressure of the coils are 350 PSIG (24 barg) for R22 and 450 PSIG (31 barg) for R410A.

### Post Coated Fin Condenser Coils

For corrosive environments the system designer can specify coil coating that protects fins and exposed copper tubes. SARAVEL offers Blygold® coil protection with extended 5 year warranty.

**Fans** – Condenser fan` tray panels have smooth radius outlet orifices to assure high efficiency and low noise level. All fans are recessed within bell mouth and have externally (or internally) driven electrical motor. The high efficiency and low noise fans used in units are covered with fan guards made from coated steel wire. Complete fan units are accessible and removable from the top of the chiller unit without any disturbance to the condenser coil space, for cleaning and service purposes.

All condenser fan motors are 380V-3PH-50Hz run at 950RPM and thermally insulated at Class F with IP-55 degree of protection.

**Motors** – The fan motors are Totally Enclosed Air-Over, squirrel-cage type, current protected. It features ball bearings that are double-sealed and permanently lubricated. Standard control of condenser fan motors is ON/OFF cycling according to discharge pressure stages. Alternatively, variable speed drive for fan speed control is offered for energy savings and year round operations.

## CONTROLS

SARAVEL air cooled scroll chillers utilize an IP-54 rated panel enclosure that includes power and control panels with gasketed door. All panel enclosures are ventilated by 24VDC fan. The panel enclosure is fabricated of galvanized steel sheet and painted with air dried enamel.

**Power Panel** – Includes:

- Main fused disconnect switch
- Compressor power terminals
- Compressor motor starting contactors
- Fan contactors and overload current protection

The power wiring is fully contained inside the unit and secured in place.

## Standard Control Panel

Saravel also offers microprocessor controller with a two line Liquid Crystal Display (LCD) panel that monitors and displays the following:

- Number of compressors running
- Day, date, and time
- Anti-recycle timer (compressor start cycle time)
- Phase control status
- Return and leaving liquid temperatures
- Flow status
- Freeze protection status
- Low suction pressure cutout status
- High discharge pressure cutout status
- History of fault shutdown data for up to the last six fault shutdown conditions
- Operating data logging
- English or metric data

The operating program is stored on non-volatile memory to enable chiller start after AC power failure. Programmed setpoints are stored in the memory for up to 2 years.

With network connection adaptability through Ethernet, the microprocessor controller can easily be integrated within Building Management Systems (BMS).

## HMI Control Panel

Human Machine Interface is the next generation of machine controls offered in SARAVEL line of air-cooled chiller products. The full functional capabilities of a standard control panel are incorporated into a fully graphic, menu-driven touch panel. Ethernet type and other network communication allow FTP, e-mail, VCN remote monitoring, and NTP (Network Time Protocols). These features allow remote monitoring of the chillers.



A full color, high resolution LCD touchscreen backlit with LED, allows operations, diagnostics, and monitoring of all chiller operating parameters. The display panel is protected by a sun shield in addition to a gasketed and hinged panel door to prevent water ingress. The language selections are English and Persian.

Full power monitoring of compressor and condenser fans through menu driven navigation is featured in the HMI panel. In addition, if VSD driven condenser fans are utilized, individual fan speeds and drawn power are also displayed.



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# EXAMPLES

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## SELECTION GUIDE

Capacity ratings for the SARAVEL Packaged Air-Cooled Liquid Chillers, shown on *pages 9 through 16* cover the entire range of comfort air conditioning applications and are based on AHRI-550/590 Standard. For special applications like year round industrial process cooling, please consult with SARAVEL CORP. Sales Office.

A liquid chiller is selected to deliver a required flow of chilled water at a certain temperature with a specified range temperature range, for a given cooling load. In selecting packaged air cooled chiller units, the designer must be familiar with the following terms and definitions:

**Saturated Condensing Temperature (°F):**  
Saturated discharge temperature corresponding to the discharge pressure at the outlet of the compressors or the temperature at which the refrigerant vapor condenses.

**Capacity (TR):** Chiller actual cooling capacity in Tons of Refrigeration (1 TR = 12000 BTU/Hr) and it should usually be equal or slightly higher than the required cooling load demand.

**Input Power (KW):** Input power consumed by compressors at design conditions.

**Chilled water flow rate (GPM):** Volumetric flow rate of water expressed in Gallons Per Minute required to satisfy the cooling load. In special year round operations like industrial process cooling or operations during winter, to prevent freeze up in the evaporator, brine solutions (ethylene glycol or propylene glycol) are used and consequently correction factors should be applied to ratings.

**Total Heat Rejection (MBH):** The sum total of building heat absorbed in the evaporator and the heat of compression that is expelled by the air cooled condenser into the ambient air, it the Total Heat Rejection of the chiller unit.

$$THR = [CAPACITY (TR) \times 12] + [(KW) \times 3.413]$$

**Air Cooled Condenser Temperature Difference (TD) in °F:** To transfer THR from the high temperature discharge gas, into the ambient air, the Temperature Difference is the driving motive and expressed as follows:

$$TD (°F) = \text{Saturated Condensing Temperature} - \text{Ambient Air Temperature}$$

Based on AHRI-550/590 standard allowable TD range for air cooled condensers is 10°F to 40°F and TD=20°F(11°C) is commonly used in air cooled chiller rating conditions. Corresponding ambient (air on condenser) temperature according to the standard is 95°F(35°C) resulting in saturated condensing temperature of 115°F(46°C).

**Chilled Water ΔT (Range in °F):** The difference between the entering and leaving water temperatures flowing through the evaporator.

**ΔP Water Side Pressure Drop (Ft of H<sub>2</sub>O).** The pressure drop of fluid flowing through the evaporator. This in addition to piping, valves, and terminal unit losses is used in calculating the required pump head for the chiller.

Saravel Scroll liquid chiller rating data presented on *pages 9 through 16*. indicate the capacity of the chiller at the conditions listed below:

- Chiller water flow rate based on 2.4 GPM per Ton assuming 10 °F chilled water temperature range.

- Pure water as primary coolant that is cooled in evaporator.
- Refrigerant R-22 / R-410A.

NOTE: Interpolation is allowed within tabulated values but never extrapolate



# EXAMPLES

To select a Saravel Packaged Air-Cooled Liquid Chiller, the following data must be known:

1. Design Capacity in tons of refrigeration (TR).
2. Entering and Leaving chilled water Temperatures.
3. Outside ambient air temperature in °F.
4. GPM of chilled liquid.

Brine Correction Factors – The following factors are to be applied to the standard ratings for chillers cooling ethylene / propylene glycol Tables A, B.

Determine capacity requirements from the following formula:

$$GPM = \frac{TR \times 24}{\Delta T(^{\circ}F)}$$

ETHYLENE GLYCOL CORRECTON FACTORS				
WEIGHT %	TONS	POWER KW	GPM °F / TON	FREEZING POINT(°F)
10	0.996	0.999	24.3	26.2
20	0.991	0.998	25.1	17.9
30	0.984	0.997	25.9	6.7
40	0.976	0.995	26.9	-8.1
50	0.968	0.994	28	-28.9

Table A Ethylene Glycol Correction Factors.

PROPYLENE GLYCOL CORRECTON FACTORS				
WEIGHT %	TONS	POWER KW	GPM °F / TON	FREEZING POINT(°F)
10	0.995	0.999	24	26
20	0.984	0.997	24.3	19
30	0.973	0.994	24.9	9
40	0.960	0.992	25.6	-6
50	0.943	0.989	26.6	-28

Table B Propylene Glycol Correction Factors.



## EXAMPLES

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### EXAMPLE 1 – WATER CHILLING – STANDARD RATING CONDITIONS:

1. Given: Provide a capacity of 50 tons at 46°F leaving water at 10°F range, 95°F air on the condenser, refrigerant R-22 and Aluminum fin material.
2. Find: Unit Size, Compressor KW Input
3. Select: From Table 12 (**SPLCS-60-4A**) with R-22 refrigerant

At 46°F leaving chilled water temperature, with ambient air temperature = 95°F:

Chiller cooling capacity = 52.2 Ton  
Input power = 46 KW  
Chilled water flow rate = 125.3 GPM  
Evaporator water side pressure drop = 4.5 Ft H<sub>2</sub>O

### EXAMPLE 2 – BRINE CHILLING – NON STANDARD RATING CONDITIONS:

1. Given: Provide a capacity of 30 tons cooling, 30% by weight Ethylene Glycol from 54°F to 44°F, 105°F air on the condenser, R-410A refrigerant and copper fin material.
2. Determine:
  - a. Unit Size
  - b. KW Input
  - c. Ethylene Glycol GPM
  - d. Evaporator water side Pressure Drop

Ethylene Glycol Correction Factors, for 30% by weight ethylene glycol from table B are:

0.984 Tons Factor

0.997 Compr. KW factor

25.9 Gal °F/ Min / Tons Factor

Chiller cooling capacity at standard conditions =  $30 \times 0.984 = 29.5$  Ton  
From the Table 10 at 44°F leaving chilled water temperature, with ambient air temperature = 105°F, model (**SPLCS-40-4A**) with the following standard rating conditions can be selected :

Chiller cooling capacity = 31.4 Ton  
Input power = 35.6 KW  
Chilled water flow rate = 75.7 GPM  
Evaporator water side pressure drop (pure water) = 2.6 Ft H<sub>2</sub>O

Chiller compressors power input at actual conditions =  $(35.6) \div (0.997 \times 0.95) = 37.6$  KW  
Calculate chilled water flow rate at actual condition as follow:

$$GPM = \frac{Ton \times Gal^{\circ}F / min / TonFactor}{RANGE(^{\circ}F)}$$

GPM =  $31.4 \times 25.9 / 10 = 79.8$  GPM  
Evaporator water side pressure drop (from Figure 1 on page 17) = 3 Ft H<sub>2</sub>O





# UNIT PHYSICAL DATA

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**Table 1. R22 Refrigerant**

Model		10-2	15-2	20-2	25-2	30-4	40-4	50-4	60-4	80-4	100-4	120-4
Compressor	No. of Compressors	2	2	2	2	4	4	4	4	4	4	4
	Motor HP(each comp)	5	7.5	10	12.5	7.5	10	12.5	15	20	25	30
	Steps of Capacity Control	2	2	2	2	4	4	4	4	4	4	4
Evaporator	No. of evaporators	1	1	1	1	1	1	1	1	1	1	1
	Shell Nominal Diameter(inch)	8	8	8	8	12	12	12	16	16	16	16
	Water Volume(Gals)	21	28	35	44	50	75	93	109	152	185	218
	Water Inlet/Outlet Flange(inch)	2	2	2 1/2	2 1/2	3	3	3	3	4	4	4
Condenser	No. of Coils	2	2	2	2	2	2	4	4	4	8	8
	No. of Fans	2	2	4	4	6	6	6	6	6	8	8
	Fan Diam. (mm)	710	710	710	710	710	710	710	710	800	800	800
	Coil Rows	3	3	3	3	3	3	3	3	3	3	4
	Fins Per Inch	10	10	10	10	10	10	10	10	10	10	10
	Fin Type	Al	Al	AL	Al	Al	Al	Al	Al	Al	AL	Al
Operating Charges	Oil(liters)	1.6	3.3	3.3	4	3.3	3.3	4	6.2	8	8	8.4
	Refrigerant R-410A (kg)	17	22	30	35	42	50	65	75	120	140	180
Operating Weight	Total Operating Weight (kg)	1000	1300	1400	1500	1800	2000	2200	2500	2800	3500	3800
	L (Length) mm	1900	2400	2800	2800	3100	3400	3100	3400	3400	4600	4600
Overall Dimension	W (Width) mm	2200	2200	2200	2200	2200	2200	2400	2400	2500	2500	2500

**Table 2. R410A Refrigerant**

Model		10-2	15-2	20-2	25-2	30-4	40-4	50-4	60-4	80-4	100-4	120-4
Compressor	No. of Compressors	2	2	2	2	4	4	4	4	4	4	4
	Motor HP(each comp)	5	7.5	10	12.5	7.5	10	12.5	15	20	25	30
	Steps of Capacity Control	2	2	2	2	4	4	4	4	4	4	4
Evaporator	No. of evaporators	1	1	1	1	1	1	1	1	1	1	1
	Shell Nominal Diameter(inch)	8	8	8	8	12	12	12	16	16	16	16
	Water Volume(Gals)	21	28	35	44	50	75	93	109	152	185	218
	Water Inlet/Outlet Flange(inch)	2	2	2 1/2	2 1/2	3	3	4	4	4	4	4
Condenser	No. of Coils	2	2	2	2	2	2	4	4	4	8	8
	No. of Fans	2	2	2	4	6	6	8	8	12	12	12
	Fan Diam. (mm)	710	710	710	710	710	710	710	710	800	800	800
	Coil Rows	3	3	3	3	3	3	3	3	3	3	4
	Fin per Inch	10	10	10	10	10	10	10	10	10	10	10
	Fin Type	Al	Al	Al	Al	Al	Al	Al	Al	Al	AL	Al
Operating Charges	Oil(liters)	1.57	3.25	3.25	4	3.25	3.25	4	6.2	8	8	8.4
	Refrigerant R-410A (kg)	17	22	30	35	42	50	65	75	120	140	180
Operating Weight	Total Operating Weight (kg)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
	L (Length) mm	1900	2400	2800	2800	3100	3400	3100	3400	3400	4600	4600
Overall Dimension	W (Width) mm	2200	2200	2200	2200	2200	2200	2400	2400	2500	2500	2500
	H (Height) mm	1720	2000	2000	2000	2100	2100	2460	2460	2460	2460	2500



# UNIT ELECTRICAL DATA

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**Table 3. R22 Refrigerant**

Model		10-2	15-2	20-2	25-2	30-4	40-4	50-4	60-4	80-4	100-4	120-4
Compressor	No of compressors	2	2	2	2	4	4	4	4	4	4	4
	Max. power input(kW)	7.2	11.04	15.02	19.44	22.08	30.04	38.88	45.96	61.64	77.32	92.96
	Max. Operating current(amps)	19.2	13.2	41.4	45.8	52.8	82.8	91.6	108.8	142.8	197.2	225
	Locked rotor current(amps)	140	196	260	290	392	520	580	784	860	1080	1280
System	Max. Operating current(amps)	60	73.6	119	130	147.2	238	260	345.6	413.6	521.2	576
	Max. Starting current(amps)	172.8	237.6	372.6	408.2	475.2	745.2	824.4	979.2	1285	1774	2535
Wire sizing required(Amps)		39	50	68	77	90	120	146	175	209	260	333

**Table 4. R410A Refrigerant**

Model		10-2	15-2	20-2	25-2	30-4	40-4	50-4	60-4	80-4	100-4	120-4
Compressor	No of Compressors	2	2	2	2	4	4	4	4	4	4	4
	Max. Power Input(kW)	8.06	12.08	15.9	20.26	24.16	31.8	40.52	46.48	61.84	75.44	95
	Max. Operating Current(amps)	21.6	28.6	41.4	47.2	57.2	82.8	94.4	110.4	145.6	185.6	261.6
	Locked Rotor Current(amps)	160	196	284	316	392	568	632	788	860	1040	1280
System	Max. Operating Current(amps)	60	76	110	135.6	152	220	315.2	348.8	419.2	499.2	579.2
	Max. Starting Current(amps)	172.8	257.4	372.6	424.8	514.8	745.2	849.6	993.6	1310.4	1670.4	2030.4
Wire Sizing Required(Amps)		40	50	68	79	108	140	156	188	230	290	340



# UNIT RATING - R22 Refrigerant

**Table 5. SPLCS-10-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	8.2	6.4	19.6	0.7	8.0	6.8	19.1	0.7	7.8	7.2	18.6	0.7	7.5	7.6	18.1	0.6	7.3	8.0	17.5	0.6
44	8.5	6.4	20.4	0.8	8.3	6.8	19.9	0.7	8.1	7.2	19.4	0.7	7.8	7.6	18.8	0.7	7.6	8.1	18.2	0.6
45	8.7	6.4	20.8	0.8	8.5	6.8	20.3	0.8	8.2	7.2	19.8	0.7	8.0	7.6	19.2	0.7	7.8	8.1	18.6	0.7
46	8.8	6.5	21.2	0.8	8.6	6.8	20.7	0.8	8.4	7.2	20.1	0.8	8.2	7.6	19.6	0.7	7.9	8.1	19.0	0.7

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 6. SPLCS-15-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	12.2	9.9	29.2	1.6	11.9	10.5	28.5	1.5	11.5	11.1	27.7	1.4	11.2	11.7	26.9	1.3	10.9	12.4	26.1	1.3
44	12.7	9.9	30.4	1.7	12.4	10.4	29.7	1.6	12.0	11.1	28.9	1.5	11.7	11.7	28.0	1.5	11.3	12.4	27.2	1.4
45	12.9	9.9	31.0	1.8	12.6	10.4	30.3	1.7	12.3	11.1	29.5	1.6	11.9	11.7	28.6	1.5	11.6	12.4	27.7	1.4
46	13.2	9.9	31.7	1.8	12.9	10.4	30.9	1.8	12.5	11.0	30.1	1.7	12.2	11.7	29.2	1.6	11.8	12.4	28.3	1.5

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 7. SPLCS-20-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	16.9	13.3	40.5	1.5	16.5	14.2	39.5	1.5	16.0	15.0	38.4	1.4	15.5	16.0	37.3	1.3	15.1	17.0	36.2	1.2
44	17.6	13.3	42.2	1.7	17.1	14.2	41.1	1.6	16.7	15.0	40.0	1.5	16.2	16.0	38.8	1.4	15.7	16.9	37.7	1.3
45	17.9	13.3	43.0	1.7	17.5	14.1	41.9	1.6	17.0	15.0	40.8	1.5	16.5	15.9	39.6	1.5	16.0	16.9	38.4	1.4
46	18.3	13.3	43.9	1.8	17.8	14.1	42.8	1.7	17.3	15.0	41.6	1.6	16.8	15.9	40.4	1.5	16.3	16.9	39.2	1.4

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



# UNIT RATING - R22 Refrigerant

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**Table 8. SPLCS-25-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	21.8	17.3	52.3	2.5	21.2	18.3	51.0	2.4	20.7	19.4	49.6	2.3	20.1	20.6	48.2	2.2	19.5	21.8	46.8	2.0
44	22.7	17.3	54.4	2.7	22.1	18.4	53.0	2.6	21.5	19.4	51.7	2.5	20.9	20.6	50.2	2.3	20.3	21.8	48.7	2.2
45	23.1	17.3	55.5	2.8	22.5	18.4	54.1	2.7	22.0	19.5	52.7	2.6	21.3	20.6	51.2	2.4	20.7	21.8	49.7	2.3
46	23.6	17.4	56.5	2.9	23.0	18.4	55.2	2.8	22.4	19.5	53.8	2.7	21.8	20.6	52.3	2.5	21.1	21.9	50.7	2.4

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 9. SPLCS-30-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	24.3	19.7	58.4	1.5	23.7	20.9	56.9	1.5	23.1	22.1	55.4	1.4	22.4	23.4	53.8	1.3	21.7	24.8	52.1	1.2
44	25.3	19.7	60.8	1.7	24.7	20.9	59.3	1.6	24.0	22.1	57.7	1.5	23.4	23.4	56.1	1.4	22.6	24.8	54.3	1.3
45	25.9	19.7	62.1	1.7	25.2	20.9	60.5	1.7	24.5	22.1	58.9	1.6	23.8	23.4	57.2	1.5	23.1	24.8	55.4	1.4
46	26.4	19.7	63.3	1.8	25.7	20.9	61.8	1.7	25.1	22.1	60.1	1.6	24.3	23.4	58.4	1.5	23.6	24.8	56.6	1.5

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 10. SPLCS-40-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	33.8	26.7	81.1	2.9	32.9	28.3	79.0	2.8	32.0	30.1	76.8	2.6	31.1	31.9	74.6	2.5	30.1	33.9	72.3	2.3
44	35.2	26.7	84.4	3.2	34.3	28.3	82.2	3.0	33.3	30.0	80.0	2.8	32.4	31.9	77.7	2.7	31.4	33.9	75.3	2.5
45	35.9	26.7	86.0	3.3	34.9	28.3	83.9	3.1	34.0	30.0	81.6	3.0	33.0	31.9	79.3	2.8	32.0	33.9	76.8	2.6
46	36.6	26.7	87.7	3.4	35.6	28.3	85.5	3.2	34.7	30.0	83.2	3.1	33.7	31.9	80.9	2.9	32.7	33.8	78.4	2.7

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



# UNIT RATING - R22 Refrigerant

**Table 11. SPLCS-50-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	43.6	34.6	104.6	3.2	42.5	36.7	101.9	3.0	41.4	38.8	99.3	2.9	40.2	41.2	96.5	2.7	39.0	43.7	93.6	2.6
44	45.3	34.7	108.8	3.4	44.2	36.7	106.1	3.3	43.1	38.9	103.3	3.1	41.9	41.2	100.5	2.9	40.6	43.7	97.5	2.8
45	46.2	34.7	110.9	3.6	45.1	36.7	108.2	3.4	43.9	38.9	105.4	3.2	42.7	41.2	102.5	3.0	41.4	43.7	99.4	2.9
46	47.1	34.7	113.1	3.7	46.0	36.8	110.4	3.5	44.8	38.9	107.5	3.3	43.6	41.2	104.5	3.2	42.3	43.7	101.4	3.0

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 12. SPLCS-60-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	50.7	41.0	121.7	4.3	49.5	43.4	118.7	4.1	48.2	45.9	115.7	3.9	46.9	48.5	112.5	3.7	45.5	51.3	109.2	3.4
44	52.8	41.1	126.6	4.6	51.5	43.4	123.6	4.4	50.2	45.9	120.4	4.2	48.8	48.6	117.1	3.9	47.4	51.4	113.7	3.7
45	53.8	41.1	129.2	4.8	52.5	43.5	126.1	4.5	51.2	46.0	122.9	4.3	49.8	48.6	119.5	4.1	48.3	51.4	116.0	3.9
46	54.9	41.2	131.7	4.9	53.6	43.5	128.6	4.7	52.2	46.0	125.3	4.5	50.8	48.6	121.9	4.3	49.3	51.5	118.3	4.0

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 13. SPLCS-80-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	68.5	55.4	164.3	4.1	66.7	58.3	160.2	3.9	64.9	61.4	155.9	3.7	63.1	64.7	151.5	3.5	61.3	68.2	147.2	3.3
44	71.2	55.7	171.0	4.4	69.5	58.6	166.7	4.2	67.6	61.7	162.2	4.0	65.7	64.9	157.7	3.8	63.8	68.4	153.1	3.6
45	72.7	55.8	174.4	4.6	70.8	58.7	170.0	4.4	69.0	61.8	165.5	4.1	67.0	65.0	160.9	3.9	65.1	68.5	156.2	3.7
46	74.1	55.9	177.8	4.8	72.2	58.8	173.4	4.5	70.3	61.9	168.8	4.3	68.4	65.2	164.1	4.1	66.4	68.7	159.3	3.9

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



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**Table 14. SPLCS-100-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	87.8	69.7	210.6	7.5	85.4	73.2	205.0	7.1	83.0	76.9	199.3	6.7	80.6	80.8	193.4	6.3	78.1	85.0	187.4	6.0
44	91.4	70.2	219.4	8.1	89.0	73.6	213.6	7.7	86.5	77.3	207.7	7.3	84.0	81.3	201.5	6.9	81.4	85.5	195.3	6.5
45	93.3	70.4	223.9	8.4	90.8	73.9	218.0	8.0	88.3	77.6	212.0	7.6	85.7	81.5	205.7	7.2	83.0	85.7	199.3	6.7
46	95.2	70.7	228.4	8.8	92.7	74.1	222.5	8.3	90.1	77.8	216.3	7.9	87.5	81.7	210.0	7.4	84.8	85.9	203.4	7.0

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 15. SPLCS-120-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	105.5	83.8	253.2	8.9	102.9	88.1	247.0	8.5	100.2	92.5	240.6	8.1	97.5	97.3	234.0	7.7	94.7	102.5	227.2	7.2
44	109.7	84.3	263.3	9.7	107.0	88.5	256.9	9.2	104.3	92.9	250.3	8.7	101.4	97.7	243.4	8.3	98.5	102.8	236.3	7.8
45	111.8	84.5	268.4	10.0	109.1	88.7	261.9	9.6	106.3	93.1	255.2	9.1	103.4	97.9	248.2	8.6	100.4	103.0	241.0	8.1
46	114.0	84.7	273.6	10.4	111.3	88.9	267.1	9.9	108.4	93.3	260.2	9.4	105.5	98.1	253.1	8.9	102.4	103.2	245.8	8.4

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



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**Table 16. SPLCS-10-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	8.6	7.2	20.6	0.7	8.3	7.6	19.9	0.7	8.1	8.1	19.4	0.7	7.8	8.6	18.7	0.6	7.5	9.1	18.0	0.6
44	9.0	7.2	21.6	0.7	8.7	7.6	20.9	0.7	8.4	8.1	20.1	0.7	8.1	8.6	19.5	0.7	7.8	9.1	18.7	0.6
45	9.1	7.2	21.8	0.9	8.8	7.6	21.1	0.9	8.6	8.1	20.5	0.7	8.3	8.6	19.8	0.7	8.0	9.1	19.1	0.7
46	9.3	7.2	22.3	1.0	9.0	7.6	21.6	1.0	8.7	8.1	20.9	0.8	8.4	8.5	20.2	0.7	8.1	9.1	19.5	0.7

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 17. SPLCS-15-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	13.0	10.8	31.2	1.8	12.6	11.4	30.2	1.7	12.2	12.1	29.2	1.6	11.7	12.8	28.1	1.5	11.3	13.5	27.1	1.4
44	13.5	10.9	32.5	1.9	13.1	11.5	31.5	1.8	12.7	12.1	30.4	1.7	12.2	12.8	29.3	1.6	11.7	13.5	28.2	1.5
45	13.8	10.9	33.2	2.0	13.4	11.5	32.1	1.9	12.9	12.1	31.0	1.8	12.5	12.8	29.9	1.6	12.0	13.5	28.8	1.5
46	14.1	10.9	33.8	2.1	13.6	11.5	32.7	2.0	13.2	12.1	31.6	1.8	12.7	12.8	30.5	1.7	12.2	13.5	29.3	1.6

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 18. SPLCS-20-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	17.5	14.2	42.0	1.6	16.9	15.0	40.6	1.5	16.4	15.9	39.3	1.4	15.8	16.8	37.8	1.3	15.1	17.8	36.4	1.2
44	18.2	14.3	43.7	1.8	17.6	15.1	42.3	1.7	17.0	15.9	40.9	1.6	16.4	16.8	39.4	1.4	15.8	17.8	37.9	1.3
45	18.6	14.3	44.6	1.8	18.0	15.1	43.2	1.7	17.4	15.9	41.7	1.6	16.7	16.8	40.2	1.5	16.1	17.8	38.6	1.4
46	18.9	14.3	45.5	1.9	18.3	15.1	44.0	1.8	17.7	15.9	42.5	1.7	17.1	16.9	41.0	1.6	16.4	17.8	39.4	1.4

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



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**Table 19. SPLCS-25-2A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	22.7	18.0	54.5	2.7	22.0	19.1	52.9	2.6	21.3	20.2	51.1	2.4	20.5	21.5	49.2	2.2	19.6	22.9	47.2	2.1
44	23.6	18.0	56.7	3.0	22.9	19.1	55.0	2.8	22.1	20.3	53.1	2.6	21.3	21.5	51.2	2.4	20.5	22.9	49.1	2.2
45	24.1	18.1	57.9	3.1	23.4	19.1	56.1	2.9	22.6	20.3	54.2	2.7	21.8	21.5	52.2	2.5	20.9	22.9	50.1	2.3
46	24.6	18.1	59.0	3.2	23.8	19.1	57.2	3.0	23.0	20.3	55.3	2.8	22.2	21.5	53.2	2.6	21.3	22.9	51.1	2.4

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 20. SPLCS-30-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	26.0	21.7	62.5	1.8	25.2	22.9	60.5	1.7	24.3	24.1	58.4	1.5	23.5	25.5	56.3	1.4	22.5	27.0	54.1	1.3
44	27.1	21.7	65.0	1.9	26.2	22.9	63.0	1.8	25.3	24.2	60.8	1.7	24.4	25.6	58.6	1.6	23.5	27.0	56.4	1.4
45	27.6	21.7	66.3	2.0	26.8	22.9	64.2	1.9	25.8	24.2	62.0	1.7	24.9	25.6	59.8	1.6	24.0	27.1	57.5	1.5
46	28.2	21.8	67.7	2.1	27.3	23.0	65.5	1.9	26.4	24.2	63.3	1.8	25.4	25.6	61.0	1.7	24.5	27.1	58.7	1.6

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 21. SPLCS-40-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	35.0	28.4	83.9	3.1	33.9	30.0	81.3	2.9	32.7	31.7	78.5	2.7	31.5	33.6	75.7	2.6	30.3	35.5	72.7	2.4
44	36.4	28.5	87.4	3.4	35.3	30.1	84.6	3.2	34.1	31.8	81.7	3.0	32.8	33.6	78.8	2.8	31.6	35.6	75.7	2.6
45	37.1	28.5	89.1	3.5	36.0	30.1	86.3	3.3	34.7	31.8	83.4	3.1	33.5	33.7	80.4	2.9	32.2	35.6	77.3	2.7
46	37.9	28.6	90.9	3.7	36.7	30.2	88.0	3.4	35.4	31.9	85.0	3.2	34.2	33.7	82.0	3.0	32.9	35.7	78.8	2.8

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.





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**Table 22. SPLCS-50-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	45.4	36.0	109.1	3.4	44.0	38.2	105.7	3.2	42.6	40.5	102.2	3.0	41.0	43.0	98.4	2.8	39.3	45.7	94.3	2.6
44	47.3	36.1	113.5	3.7	45.8	38.2	110.0	3.5	44.3	40.5	106.3	3.3	42.7	43.0	102.4	3.0	40.9	45.7	98.2	2.8
45	48.2	36.1	115.7	3.9	46.7	38.3	112.1	3.6	45.2	40.5	108.4	3.4	43.5	43.0	104.4	3.2	41.8	45.7	100.2	2.9
46	49.2	36.2	118.0	4.0	47.6	38.3	114.3	3.8	46.0	40.6	110.5	3.5	44.4	43.0	106.5	3.3	42.6	45.7	102.2	3.0

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 23. SPLCS-60-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	52.1	41.8	125.0	4.5	50.5	44.0	121.2	4.2	48.9	46.3	117.3	4.0	47.1	48.8	113.2	3.7	45.4	51.5	108.9	3.4
44	54.1	42.0	130.0	4.8	52.5	44.2	126.0	4.5	50.8	46.5	121.9	4.3	49.0	49.0	117.6	4.0	47.2	51.6	113.2	3.7
45	55.2	42.1	132.5	5.0	53.5	44.3	128.4	4.7	51.8	46.6	124.3	4.4	50.0	49.0	119.9	4.1	48.1	51.7	115.5	3.8
46	56.3	42.2	135.1	5.2	54.6	44.3	130.9	4.9	52.8	46.6	126.7	4.6	50.9	49.1	122.3	4.3	49.0	51.8	117.7	4.0

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 24. SPLCS-80-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	69.8	54.9	167.5	4.2	67.7	58.2	162.4	4.0	65.4	61.8	157.0	3.7	63.1	65.6	151.4	3.5	60.7	69.6	145.6	3.2
44	72.6	55.0	174.1	4.6	70.3	58.3	168.8	4.3	68.0	61.8	163.2	4.0	65.6	65.6	157.4	3.8	63.1	69.7	151.4	3.5
45	74.0	55.0	177.5	4.8	71.7	58.3	172.0	4.5	69.3	61.9	166.3	4.2	66.9	65.7	160.4	3.9	64.3	69.7	154.4	3.6
46	75.4	55.1	180.9	4.9	73.1	58.4	175.3	4.6	70.6	61.9	169.5	4.3	68.2	65.7	163.6	4.1	65.6	69.7	157.4	3.8

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



# UNIT RATING – R410 Refrigerant

**Table 25. SPLCS-100-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	85.5	67.2	205.2	7.1	82.8	71.1	198.8	6.7	80.0	75.4	192.1	6.3	77.1	79.8	185.1	5.8	74.1	84.6	177.9	5.4
44	88.9	67.4	213.3	7.7	86.1	71.3	206.6	7.2	83.2	75.5	199.7	6.8	80.2	79.9	192.6	6.3	77.2	84.7	185.2	5.8
45	90.6	67.4	217.5	8.0	87.8	71.3	210.6	7.5	84.8	75.5	203.6	7.0	81.8	80.0	196.3	6.5	78.7	84.8	188.9	6.1
46	92.4	67.5	221.7	8.3	89.5	71.4	214.7	7.8	86.5	75.6	207.6	7.3	83.4	80.0	200.2	6.8	80.3	84.8	192.6	6.3

For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.

**Table 26. SPLCS-120-4A**

OUTLET CHILLED WATER TEMP. (°F)	AIR TEMPERATURE OVER CONDENSER COIL(°F)																			
	85				90				95				100				105			
	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)	Cap (TON)	Power (KW)	GPM	PD (Ft.H <sub>2</sub> O)
42	105.2	85.0	252.6	8.9	102.0	89.7	244.9	8.4	98.7	94.9	236.9	7.8	95.2	100.3	228.4	7.3	91.5	106.2	219.6	6.8
44	109.5	85.2	262.7	9.6	106.1	89.9	254.7	9.1	102.6	95.0	246.4	8.5	99.0	100.4	237.7	7.9	95.3	106.3	228.6	7.3
45	111.6	85.2	267.9	10.0	108.2	90.0	259.7	9.4	104.7	95.1	251.2	8.8	101.0	100.5	242.4	8.2	97.2	106.3	233.2	7.6
46	113.8	85.3	273.2	10.4	110.3	90.1	264.8	9.8	106.7	95.1	256.1	9.2	103.0	100.6	247.2	8.5	99.1	106.4	237.9	7.9

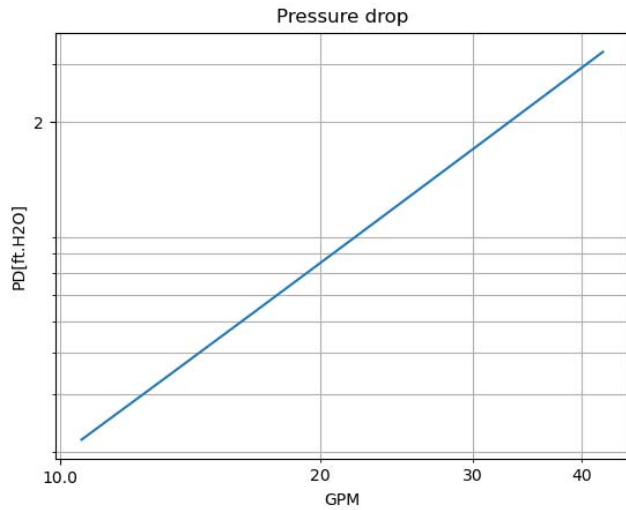
For brine and free cooling ratings, contact SARAVEL Corp. Sales Office.



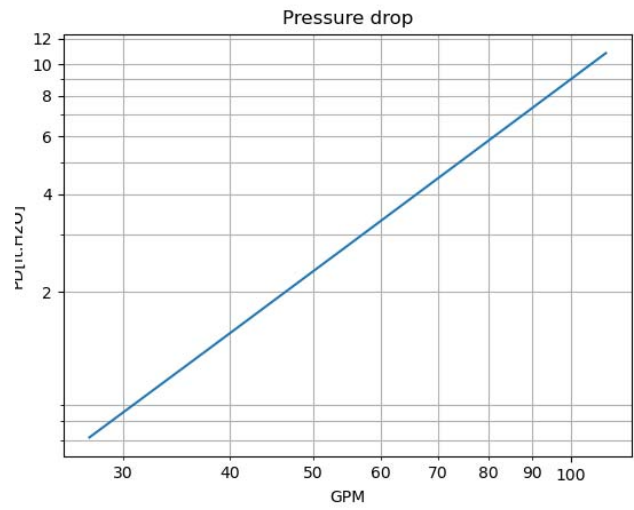
# PRESSURE DROP CURVES

Use these curves in order to estimate the correct pressure drop in different flow rates of chilled water passing through evaporator of the chiller.

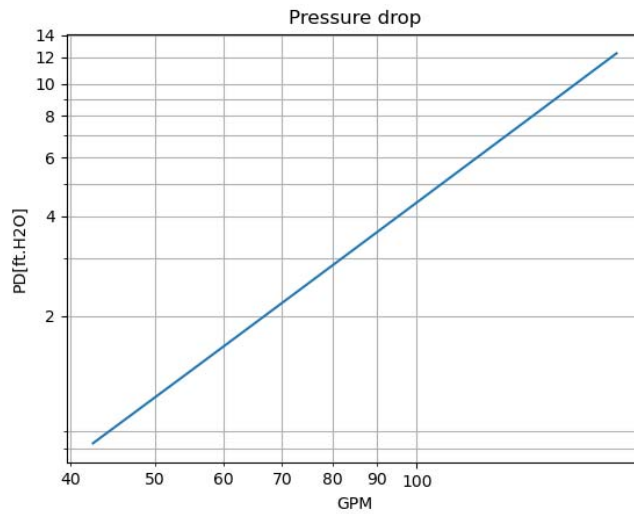
Figure 1 - Chilled Water Pressure Drop Curves



SPLCS-10-2A  
SPLCS-15-2A



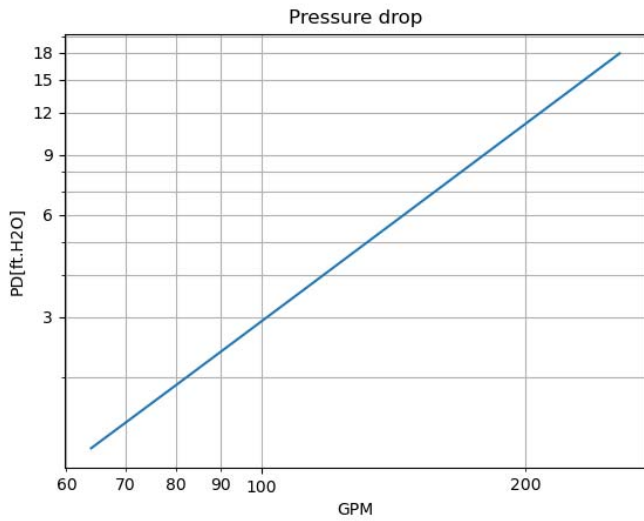
SPLCS-20-2A  
SPLCS-25-2A



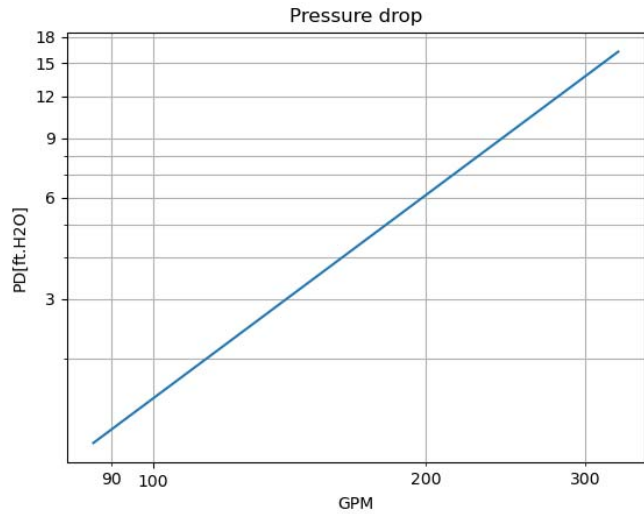
SPLCS-30-4A  
SPLCS-40-4A



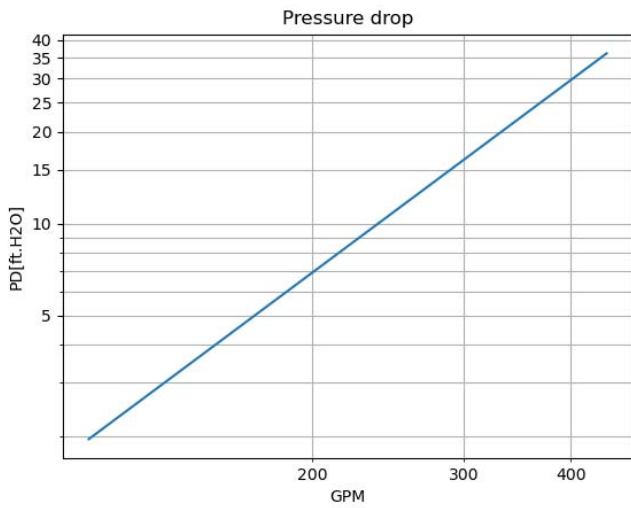
# PRESSURE DROP CURVES



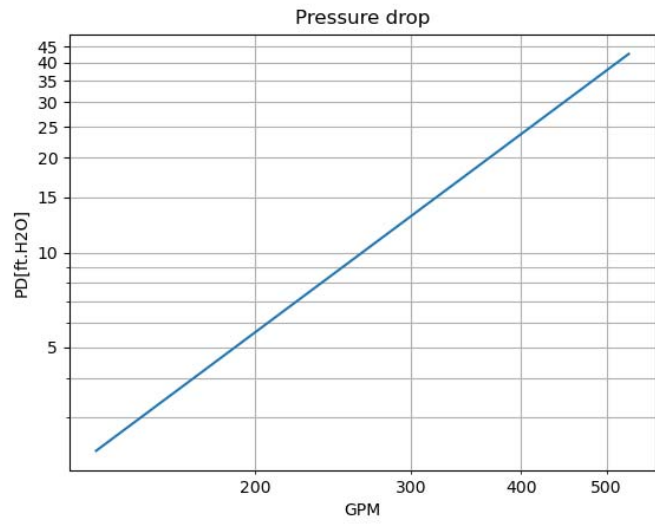
SPLCS-50-4A  
SPLCS-60-4A



SPLCS-80-4A



SPLCS-100-4A

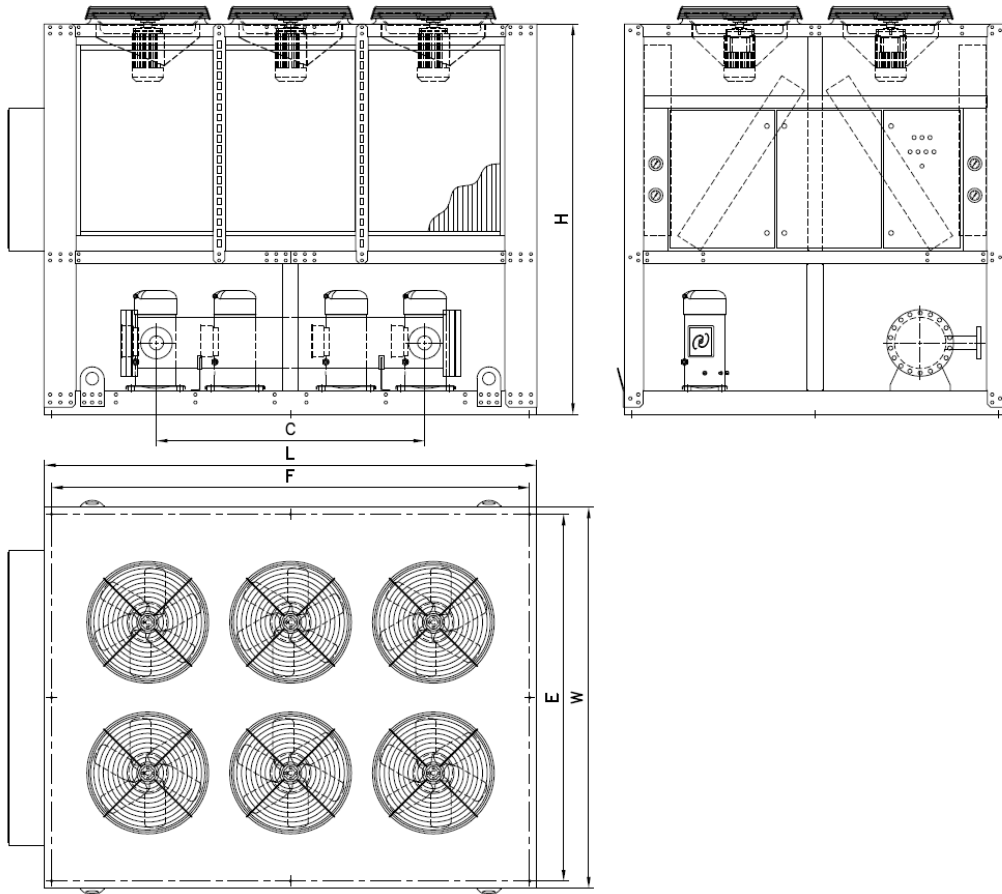


SPLCS-120-4A

# DIMENSIONS

MODEL	L	W	H	C	F	E
SPLCS-10-2A	1900	2200	1720	1280	1840	2140
SPLCS-15-2A	2400	2200	2000	1280	2340	2140
SPLCS-20-2A	2800	2200	2000	1760	2740	2140
SPLCS-25-2A	2800	2200	2000	1760	2740	2140
SPLCS-30-4A	3100	2200	2100	1690	3012	2112
SPLCS-40-4A	3400	2200	2100	1690	3312	2112
SPLCS-50-4A	3100	2400	2460	1690	3012	2312
SPLCS-60-4A	3400	2400	2460	1800	3312	2312
SPLCS-80-4A	3400	2500	2460	1800	3312	2412
SPLCS-100-4A	4600	2500	2460	2630	4512	2412
SPLCS-120-4A	4600	2500	2500	2630	4512	2412

L = LENGTH  
W = WIDTH  
H = HEIGHT  
C = EVAPORATOR FLANGES  
CENTER TO CENTER DISTANCE  
F/E = STRUCTURAL BASE  
INERTIAL AXES





# INSTALLATION RECOMMENDATIONS

## SPACE AND LOCATION REQUIREMENTS

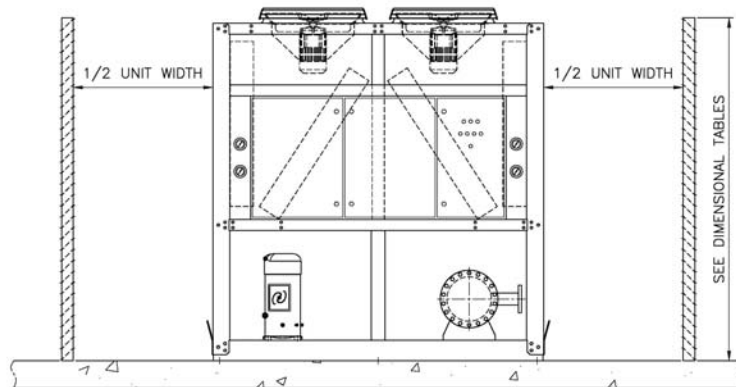
The most important consideration when selecting the Location of air cooled liquid chiller, is the provision for A supply of ambient air to the condenser, and removal of the heated air from the condenser coils for this purpose SARAVEL recommends the minimum space requirements illustrated below. Failure to adhere to these requirements will result in higher condensing temperature, which can cause unsafe operation of the condenser and the possible

failure of the compressor. Units must not be located in the vicinity of steam, hot air or fume exhausts. Another important consideration is that the unit should be mounted away from noise sensitive spaces and must have adequate support to prevent vibration and noise transmission into the building. Units can be installed over corridors, utility areas, rest rooms and other auxiliary areas where high levels of sound are not an important factor.

## WALLS OR OBSTRUCTIONS

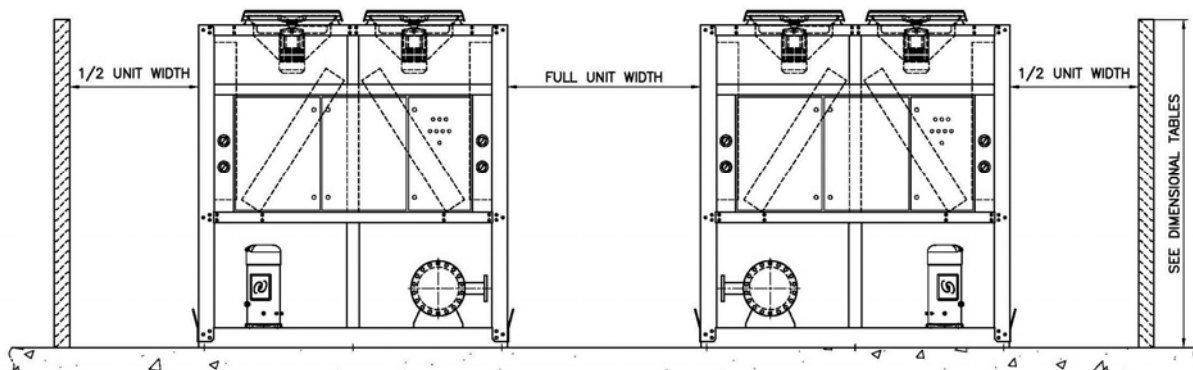
Units should be located so that air may circulate freely and not be recirculated. For proper air flow and access, all sides of the units must be  $\frac{1}{2}$  unit width away from any wall or obstructions.

It is preferred that this distance be longer whenever possible. Sufficient room should be left for maintenance work through access doors and panels. Overhead obstructions are not permitted.



## MULTIPLE UNITS

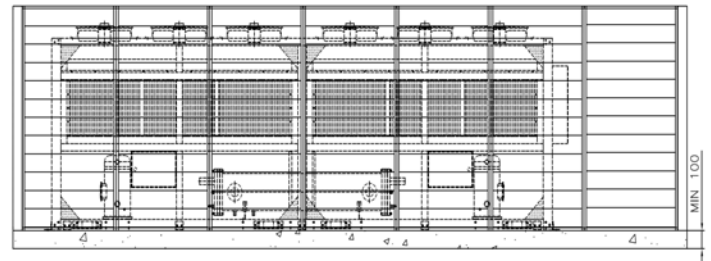
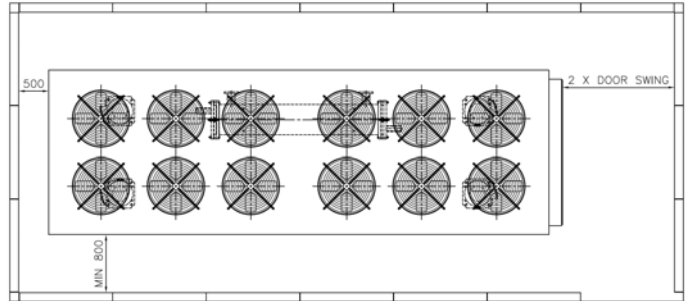
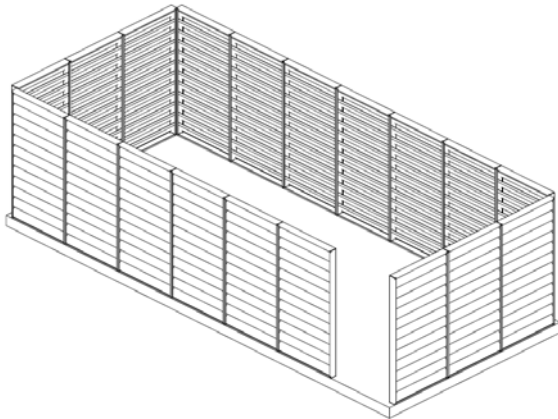
For units placed side by side, the minimum distance between units must be full unit width.



# INSTALLATION RECOMMENDATIONS

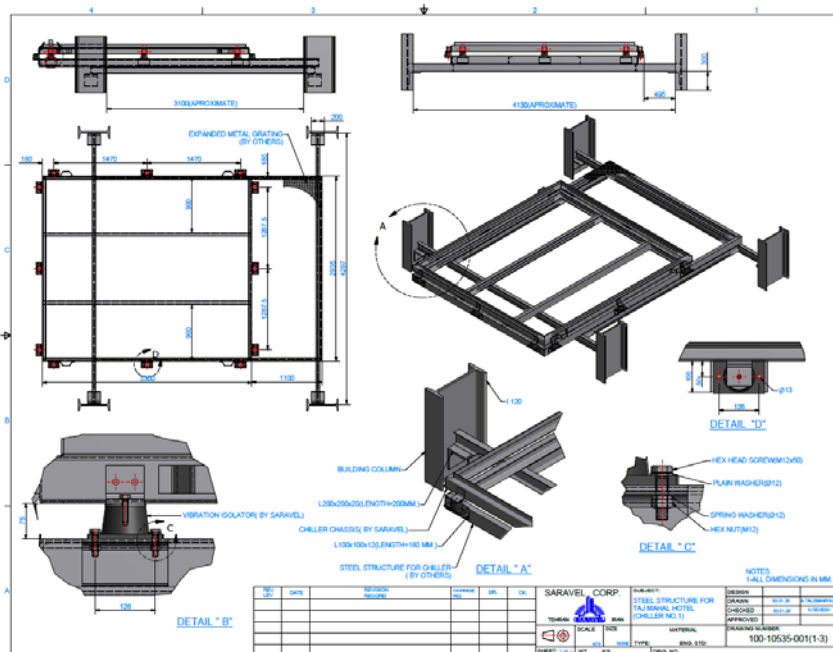
## Louvered Ground Level Installation

This is recommended for a courtyard level, open area dedicated to chiller installation, whereby a louvered enclosure is designed for the unit. See side elevation and plan views.



## Rooftop Installation

Units selected for rooftop installation must be supported by structural members as shown below. Consult with structural engineers for detailed chassis design to be supported by structural columns.





**SARAVEL CORP.**

Apr. 2020

Manufacturer reserves the right to make changes in design and construction, without notice.

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