



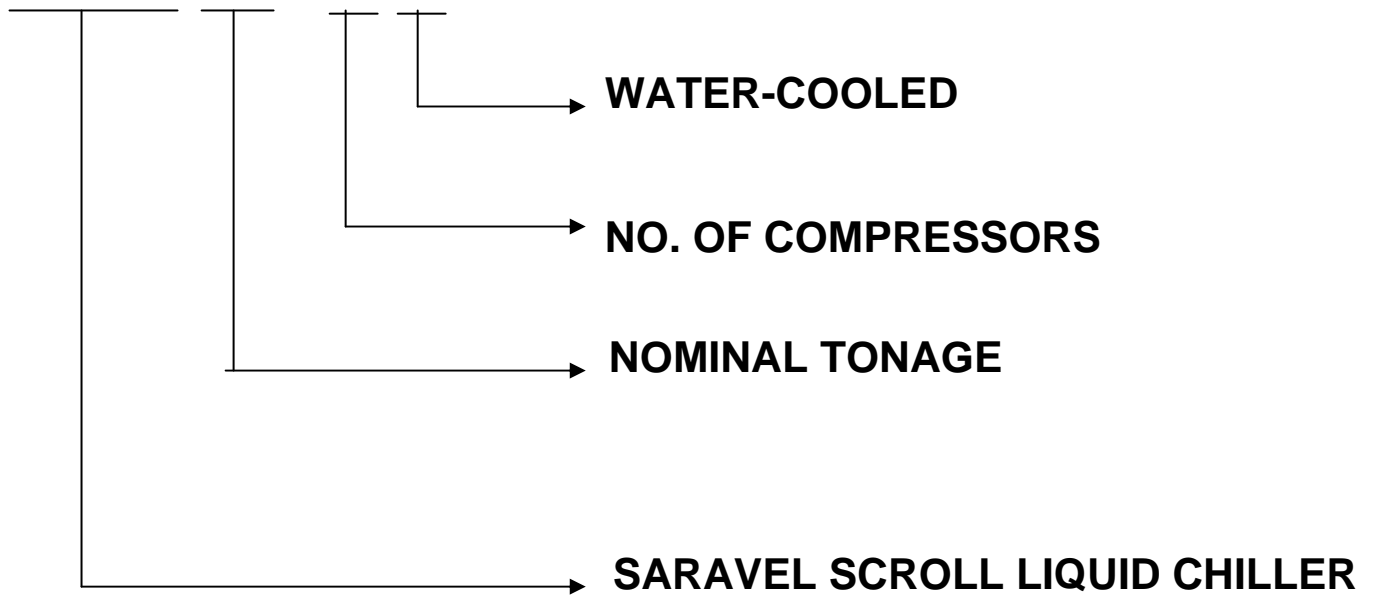
**SARAVEL SCROLL
LIQUID CHILLERS
(10 to 100 tons)**

(WATER-COOLED)

**FEATURED WITH
TANDEM SCROLL COMPRESSOR
COMPACT BRAZED PLATE EVAPORATOR (CBE)
DIGITAL LOGIC CONTROL**

NOMENCLATURE:

SLCS-XX-XW



Introduction:

The Technology For the Third Millennium.

SARAVEL scroll water-cooled liquid chillers are designed to suit the complete scope of commercial, institutional, and residential applications as well as industrial process fluid cooling. Units are offered in capacities ranging from 10 to 100 Tons.

SARAVEL scroll liquid chillers are designed and built to provide reliable and efficient performance and are completely factory assembled for peak performance and high operating efficiency.

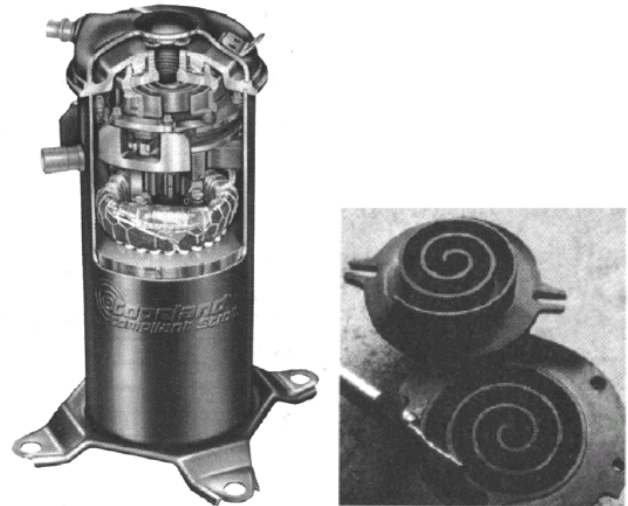
Units are supplied with 2 tandem scroll compressors in 10 to 25 tons models and 4 tandem scroll compressors in 10 to 25 tons models which designed to run on 380 volt,3 phase, 50 cycle electricity, a direct expansion type liquid cooler along with complete interconnecting piping, insulated low temperature lines, electrical wiring and control panel. With one or two tandem compressor sets easily cycle compressors off in partial load, provide higher efficiency.

At heart of the SARVEL Scroll chiller a hermetically sealed scroll compressor is mounted, which is comprised of two machined, involutes spirals that mesh together. One orbits about the other, forming pockets that get progressively smaller as they travel from the outer to inner regions of the involutes, compressing the gas. Scroll compressors offer a number of advantages over vane and reciprocating designs. Among them: Scroll compressors do not have inlet or discharge valves because the meshed scrolls physically separate the inlet and discharge ports. This eliminates associated valve losses, which ordinarily result in lower efficiency in reciprocating compressors. The lack of valves also results in quieter operation, and fewer parts ensure higher reliability.

Unlike vane and reciprocating designs, the scroll compressor has no clearance volume to re-expand which generates losses. Scroll compressors run with true rotary motion and are dynamically balanced for smooth, quiet, vibration free operation.

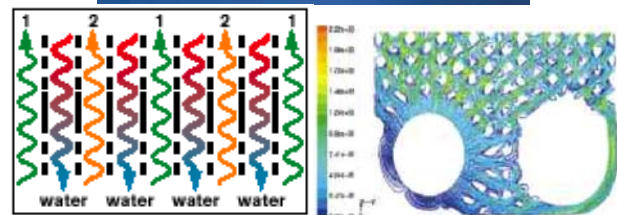
Due to the unique orbital motion, gas delivery is continuous. Therefore, there is little inlet or discharge pulsation. Consequently, scroll compressors are as much as 10 to 15 dBA quieter than comparable reciprocating compressors.

The scroll compressor is integrated with a direct expansion type liquid cooler along with complete Interconnecting piping insulated low temperature lines, electrical wiring and control panel.



The direct expansion cooler designed for highest efficiency features. This evaporator cooler is stainless steel brazed plate heat exchanger which so compact and high efficient and reliable. The evaporator and low temperature lines are completely protected with closed-cell foam rubber fire retardant insulation for thermal insulating, condensation prevention, and vapor seal.

The water cooled condenser is a shell and tube heat exchanger with integrally finned tubes. The condenser is sized sufficiently to hold the total refrigerant charge on pump down operation.



The safety controls include high and low pressure cut-outs, oil pressure safety cut-out, flow switch, and anti-freeze control all selected from the most reliable and recognized brand names in the air conditioning and refrigeration industry.

All SARVEL scroll chillers have digital logic control system.



A liquid chiller is selected to deliver a required flow of chiller water at certain temperature at a specified range of water temperature drop. In addition for the water cooled condenser, the cooling water have to be specified.

SARAVEL Scroll liquid chiller rating data presented in TABLES 1 through 11 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 drop.
- Condenser water flow based on 3 gpm per ton, assuming 10 °F water temperature rise.
- 0.00025 Ft² Hr °F / BTU condenser and 0.0001 Ft² Hr °F / BTU cooler water fouling factor as ARI Standard.

For conditions other than those listed above, use the chilled water correction factors tabulated below:

Evaporator:

Water Range °F	Fouling Factor Ft ² Hr °F / BTU			
	0.0001		0.00025	
	Tons	KW	Tons	KW
6	0.992	0.995	0.985	0.993
8	0.995	0.997	0.988	0.995
10	1.000	1.000	0.993	0.998
12	1.005	1.002	0.998	1.000
14	1.010	1.005	1.003	1.003
16	1.014	1.007	1.007	1.005

Condenser:

Water Range °F	Fouling Factor Ft ² Hr °F / BTU			
	0.00025		0.00075	
	Tons	KW	Tons	KW
6	1.003	0.999	0.984	1.035
8	1.002	1.000	0.982	1.037
10	1.000	1.000	0.980	1.038
12	0.984	0.973	0.977	1.042
14	0.976	0.960	0.963	1.067
16	0.968	0.946	0.948	1.092

SAMPLE SELECTION

Given:

Chill 150 gpm of water from 54 °F to 44°F and standard fouling factor specified for the cooler with 85°F to 95 °F condenser water available and standard fouling factor is also specified for the condenser.

Find:

- Unit model and size
- Unit actual capacity
- KW
- Cooler/Condenser water pressure drop

Solution:

1. Chilled Water and Condenser Water Range:

Chilled Water Range: 54–44 = 10 °F

Condenser Water Range: 95–85 = 10 °F

2. Capacity (tons):

$$\text{TONS} = (\text{GPM} \times \text{Chilled Water Range})/24$$

$$(150 \times 10)/24 = 62.5 \text{ Tons}$$

3. Select Model: From the ratings tables 2 through 9, a Model SLCS- 80-4W (Table 10) has the capacity of 65.4 Tons at the given condenser and cooler leaving water temperatures.

$$\text{TONS} = 65.4$$

$$\text{KW} = 51.8$$

4. Determine Average Full Load KW at 62.5 Tons:

$$\text{KW}_{\text{avg}} = (62.5/65.4) \times 51.8 = 49.5$$

5. Determine Condenser Heat Rejection:

$$\text{Heat Rejection (MBH)} = (\text{Tons} \times 12) + (\text{KW}_{\text{avg}} \times 3.415)$$

$$= (62.5 \times 12) + (49.5 \times 3.415) = 919$$

6. Determine Condenser Water Flow Rate: the water flow rate through the condenser may be determined using the following equation:

$$\text{GPM}_{\text{cw}} = (\text{Heat Rejection (MBH)} \times 2) / \text{Condenser Water Range}$$

$$= (919 \times 2) / 10 = 184$$

Where GPM_{cw} = Condenser Water Flow Rate

7. Determine Cooler/Condenser Pressure Drops:

From the curves in Figure 1, the pressure drops with 150 GPM through the cooler and 184

GPM through the condenser of a SLCS-80-4W

are:

Cooler Pressure Drops at 150 GPM = 11.5 ft. w.

Condenser Pressure Drop at 184 GPM = 3.6 ft. w.

TABLE 1: General Data

Model:	SLCS -	10-2W	15-2W	20-2W	25-2W
Nominal Tonnage		10	15	20	25
Capacity Tons, (KW) *		8.6 (30)	12.3 (43.3)	17.3 (60.8)	21.4 (75.2)
Power KW *		6.5	9.7	13.3	16.7
EER (COP) *, **		15.9 (4.7)	15.3 (4.5)	15.6 (4.6)	15.4 (4.5)
Max KW /Amp for wiring		7.6/24	11.2/34	15/44	18.8/54
Sound Pressure Level @ 1 m		70	70	71	72
No. of Circuit / (Capacity steps)		1 / (100%, 50%)			
Refrigerant and Oil ***		R22 with Mineral Oil (R407C with Ester Oil as Option)			
Compressor Quantity x Type		2 (1 Tandem) x Scroll Hermetic			
Compressor Motor HP, (KW)		5 (3.8)	7.5 (5.6)	10 (7.5)	12.5 (9.4)
Compressor Rated Load Amp (Name Plate)		12	17	22	27
Compressor Lock Rotor Amp		66	99	127	198
Evaporator Quantity x Type		1 x Single Circuit CBE Stainless-Steel Brazed Plate			
Evaporator Water Flow GPM (LPM) *		21 (78)	30 (112)	42 (158)	51 (195)
Evaporator Water Pressure Drop Ft w (m w) *		5.7 (1.7)	7.6 (2.3)	6 (1.8)	6.4 (2)
Condenser Quantity x Type		1 x Shell & Tube			
Condenser Water Flow GPM (LPM) *		25 (95)	36 (137)	51 (192)	63 (239)
Condenser Water Pressure Drop Ft w (m w) *		2 (0.6)	1.9 (0.6)	3.6 (1.1)	3.2 (1)
Length mm		2300			
Width mm		700			
Height mm		1410			
Shipping Weight Kg		550	570	600	650
Operating Weight Kg		565	590	620	680

TABLE 1: Continue...

Model:	SLCS -	30-4W	40-4W	50-4W	60-4W	80-4W	100-4W
Nominal Tonnage		30	40	50	60	80	100
Capacity Tons, (KW) *		24.7 (86.5)	34.7 (121.6)	42.8 (150.2)	50.8 (178.4)	66.7 (233.9)	82.3 (288.9)
Power KW *		19.4/68	26.6	33.4	40	52	62.2
EER (COP) *, **		15.3 (4.5)	15.6 (4.6)	15.4 (4.5)	15.2 (4.5)	15.4 (4.5)	15.9 (4.6)
Max KW /Amp for wiring		22.4	30/88	37.6/108	45.2/128	60/156	75.2/200
Sound Pressure Level @ 1 m		73	74	75	75	78	80
No. of Circuit / (Capacity steps)		2 / (100%, 75%, 50%, 25%)					
Refrigerant and Oil ***		R22 with Mineral Oil (R407C with Ester Oil as Option)					
Compressor Quantity x Type		4 (2 Tandem) x Scroll Hermetic					
Compressor Motor HP, (KW)		7.5 (5.6)	10 (7.5)	12.5 (9.4)	15 (11.3)	20 (15)	25 (18.8)
Compressor Rated Load Amp (Name Plate)		17	22	27	32	39	50
Compressor Lock Rotor Amp		99	127	198	198	225	270
Evaporator Quantity x Type		1 x Dual Circuit CBE Stainless-Steel Brazed Plate					
Evaporator Water Flow GPM (LPM) *		59 (224)	83 (315)	103 (390)	122 (462)	160 (606)	197 (749)
Evaporator Water Pressure Drop Ft w (m w) *		4.6 (1.4)	7.2 (2.2)	9.9 (3)	11.7 (3.6)	13 (4)	16.4 (5)
Condenser Quantity x Type		2 x Shell & Tube					
Condenser Water Flow GPM (LPM) *		73 (276)	101 (385)	126 (477)	150 (567)	196 (743)	240 (912)
Condenser Water Pressure Drop Ft w (m w) *		1.9 (0.6)	3.6 (1.1)	3.2 (1)	4.6 (1.4)	3.8 (1.2)	5.8 (1.8)
Length mm		2400				2575	
Width mm		950				1100	
Height mm		1410				1500	
Shipping Weight Kg		1150	1200	1250	1300	1700	1850
Operating Weight Kg		1180	1240	1300	1350	1800	2000

* Data based on 2.4 gpm/ton 55°F-45°F evaporator water, 3 gpm/ton 95°F-85°F condenser water and full load.

** EER: Energy Efficiency Ratio, COP: Coefficient of Performance

*** All chillers are refrigerant and oil factory charged. For recharging or replacement requirements consult SARAVEL.

TABLE 2A: Rating (IP unit) for SLCS-10-2W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	8.2	5.8	16.8	8.0	6.1	15.7	7.8	6.3	14.7	7.6	6.6	13.7	7.4	6.9	12.8
42	8.5	5.9	17.3	8.3	6.1	16.2	8.1	6.4	15.2	7.9	6.6	14.2	7.6	6.9	13.3
44	8.8	5.9	17.9	8.6	6.2	16.8	8.4	6.4	15.7	8.2	6.7	14.7	7.9	7.0	13.7
45	9.0	5.9	18.2	8.8	6.2	17.0	8.6	6.5	15.9	8.3	6.7	14.9	8.1	7.0	13.9
46	9.2	6.0	18.5	8.9	6.2	17.3	8.7	6.5	16.2	8.5	6.7	15.1	8.2	7.0	14.1
48	9.5	6.0	19.0	9.3	6.2	17.8	9.0	6.5	16.7	8.8	6.8	15.6	8.6	7.1	14.6
50	9.9	6.0	19.6	9.6	6.3	18.4	9.4	6.5	17.2	9.1	6.8	16.1	8.9	7.1	15.0

TABLE 2B: Rating (SI unit) for SLCS-10-2W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	28.6	5.8	4.9	28.0	6.1	4.6	27.3	6.3	4.3	26.5	6.6	4.0	25.8	6.9	3.8
5.5	29.8	5.9	5.1	29.1	6.1	4.7	28.3	6.4	4.4	27.6	6.6	4.1	26.8	6.9	3.9
6.5	31.0	5.9	5.2	30.2	6.2	4.9	29.5	6.4	4.6	28.7	6.7	4.3	27.9	7.0	4.0
7	31.6	5.9	5.3	30.8	6.2	5.0	30.0	6.5	4.7	29.2	6.7	4.4	28.4	7.0	4.1
8	32.1	6.0	5.4	31.4	6.2	5.1	30.6	6.5	4.7	29.8	6.7	4.4	28.9	7.0	4.1
9	33.3	6.0	5.6	32.5	6.2	5.2	31.7	6.5	4.9	30.9	6.8	4.6	30.0	7.1	4.3
10	34.6	6.0	5.7	33.7	6.3	5.4	32.9	6.5	5.0	32.0	6.8	4.7	31.1	7.1	4.4

TABLE 3A: Rating (IP unit) for SLCS-15-2W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	11.8	8.8	16.1	11.5	9.1	15.1	11.2	9.5	14.1	10.9	9.9	13.2	10.6	10.3	12.3
42	12.2	8.8	16.6	11.9	9.2	15.5	11.6	9.6	14.5	11.3	10.0	13.6	11.0	10.4	12.7
44	12.7	8.9	17.2	12.4	9.3	16.1	12.1	9.7	15.0	11.8	10.1	14.0	11.4	10.5	13.1
45	13.0	8.9	17.4	12.6	9.3	16.3	12.3	9.7	15.3	12.0	10.1	14.3	11.7	10.5	13.3
46	13.2	8.9	17.7	12.9	9.3	16.6	12.6	9.7	15.5	12.2	10.1	14.5	11.9	10.5	13.5
48	13.7	9.0	18.2	13.4	9.4	17.1	13.0	9.8	16.0	12.7	10.2	14.9	12.3	10.6	13.9
50	14.2	9.1	18.8	13.8	9.4	17.6	13.5	9.8	16.5	13.1	10.2	15.4	12.8	10.7	14.4

TABLE 3B: Rating (SI unit) for SLCS-15-2W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	41.3	8.8	4.7	40.3	9.1	4.4	39.3	9.5	4.1	38.2	9.9	3.9	37.2	10.3	3.6
5.5	42.9	8.8	4.9	41.9	9.2	4.5	40.8	9.6	4.3	39.7	10.0	4.0	38.6	10.4	3.7
6.5	44.6	8.9	5.0	43.5	9.3	4.7	42.4	9.7	4.4	41.3	10.1	4.1	40.2	10.5	3.8
7	45.5	8.9	5.1	44.4	9.3	4.8	43.3	9.7	4.5	42.1	10.1	4.2	40.9	10.5	3.9
8	46.3	8.9	5.2	45.2	9.3	4.8	44.1	9.7	4.5	42.9	10.1	4.2	41.7	10.5	4.0
9	48.0	9.0	5.3	46.9	9.4	5.0	45.7	9.8	4.7	44.5	10.2	4.4	43.2	10.6	4.1
10	49.8	9.1	5.5	48.6	9.4	5.1	47.4	9.8	4.8	46.1	10.2	4.5	44.8	10.7	4.2

TABLE 4A: Rating (IP unit) for SLCS-20-2W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	16.5	12.0	16.5	16.1	12.5	15.4	15.7	13.1	14.4	15.3	13.6	13.5	14.9	14.2	12.6
42	17.2	12.1	17.0	16.8	12.6	15.9	16.4	13.2	14.9	15.9	13.7	13.9	15.5	14.3	13.0
44	17.9	12.2	17.6	17.4	12.7	16.5	17.0	13.3	15.4	16.5	13.8	14.4	16.1	14.4	13.4
45	18.2	12.2	17.9	17.8	12.8	16.7	17.3	13.3	15.6	16.9	13.8	14.6	16.4	14.4	13.7
46	18.5	12.3	18.1	18.1	12.8	17.0	17.6	13.3	15.9	17.2	13.9	14.8	16.7	14.5	13.9
48	19.2	12.3	18.7	18.8	12.9	17.5	18.3	13.4	16.4	17.8	14.0	15.3	17.3	14.5	14.3
50	19.9	12.4	19.3	19.5	12.9	18.0	19.0	13.5	16.9	18.5	14.0	15.8	18.0	14.6	14.7

TABLE 4B: Rating (SI unit) for SLCS-20-2W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	58.0	12.0	4.8	56.6	12.5	4.5	55.2	13.1	4.2	53.7	13.6	3.9	52.2	14.2	3.7
5.5	60.3	12.1	5.0	58.8	12.6	4.7	57.4	13.2	4.4	55.8	13.7	4.1	54.3	14.3	3.8
6.5	62.7	12.2	5.1	61.2	12.7	4.8	59.7	13.3	4.5	58.0	13.8	4.2	56.4	14.4	3.9
7	63.9	12.2	5.2	62.3	12.8	4.9	60.8	13.3	4.6	59.2	13.8	4.3	57.5	14.4	4.0
8	65.1	12.3	5.3	63.5	12.8	5.0	61.9	13.3	4.6	60.2	13.9	4.3	58.6	14.5	4.1
9	67.5	12.3	5.5	65.9	12.9	5.1	64.2	13.4	4.8	62.5	14.0	4.5	60.8	14.5	4.2
10	70.0	12.4	5.6	68.3	12.9	5.3	66.6	13.5	4.9	64.8	14.0	4.6	63.0	14.6	4.3

TABLE 5A: Rating (IP unit) for SLCS-25-2W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	20.4	15.1	16.2	19.9	15.7	15.2	19.4	16.4	14.2	18.9	17.1	13.3	18.4	17.8	12.4
42	21.2	15.2	16.8	20.7	15.9	15.7	20.2	16.5	14.7	19.7	17.2	13.7	19.1	17.9	12.8
44	22.1	15.3	17.3	21.5	16.0	16.2	21.0	16.6	15.2	20.4	17.3	14.2	19.9	18.0	13.2
45	22.5	15.4	17.6	22.0	16.0	16.5	21.4	16.7	15.4	20.8	17.4	14.4	20.3	18.1	13.4
46	22.9	15.4	17.9	22.4	16.1	16.7	21.8	16.7	15.6	21.2	17.4	14.6	20.6	18.2	13.6
48	23.8	15.5	18.4	23.2	16.2	17.2	22.6	16.8	16.1	22.0	17.5	15.1	21.4	18.3	14.1
50	24.7	15.6	19.0	24.1	16.3	17.8	23.5	17.0	16.6	22.8	17.6	15.5	22.2	18.4	14.5

TABLE 5B: Rating (SI unit) for SLCS-25-2W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	71.7	15.1	4.7	69.9	15.7	4.4	68.2	16.4	4.2	66.4	17.1	3.9	64.5	17.8	3.6
5.5	74.5	15.2	4.9	72.7	15.9	4.6	70.9	16.5	4.3	69.0	17.2	4.0	67.1	17.9	3.7
6.5	77.5	15.3	5.1	75.6	16.0	4.7	73.7	16.6	4.4	71.7	17.3	4.1	69.8	18.0	3.9
7	79.0	15.4	5.1	77.1	16.0	4.8	75.2	16.7	4.5	73.1	17.4	4.2	71.1	18.1	3.9
8	80.4	15.4	5.2	78.5	16.1	4.9	76.5	16.7	4.6	74.5	17.4	4.3	72.4	18.2	4.0
9	83.4	15.5	5.4	81.4	16.2	5.0	79.4	16.8	4.7	77.2	17.5	4.4	75.1	18.3	4.1
10	86.5	15.6	5.5	84.4	16.3	5.2	82.3	17.0	4.9	80.1	17.6	4.5	77.9	18.4	4.2

TABLE 6A: Rating (IP unit) for SLCS-30-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	23.5	17.5	16.1	22.9	18.3	15.1	22.4	19.1	14.1	21.8	19.8	13.2	21.2	20.7	12.3
42	24.5	17.7	16.6	23.9	18.4	15.5	23.3	19.2	14.5	22.6	20.0	13.6	22.0	20.8	12.7
44	25.4	17.8	17.2	24.8	18.5	16.1	24.2	19.3	15.0	23.5	20.1	14.0	22.9	20.9	13.1
45	25.9	17.8	17.4	25.3	18.6	16.3	24.7	19.4	15.3	24.0	20.2	14.3	23.3	21.0	13.3
46	26.4	17.9	17.7	25.7	18.7	16.6	25.1	19.5	15.5	24.4	20.3	14.5	23.8	21.1	13.5
48	27.4	18.0	18.2	26.7	18.8	17.1	26.0	19.6	16.0	25.3	20.4	14.9	24.6	21.2	13.9
50	28.4	18.1	18.8	27.7	18.9	17.6	27.0	19.7	16.5	26.3	20.5	15.4	25.6	21.3	14.4

TABLE 6B: Rating (SI unit) for SLCS-30-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	82.5	17.5	4.7	80.5	18.3	4.4	78.5	19.1	4.1	76.4	19.8	3.9	74.3	20.7	3.6
5.5	85.8	17.7	4.9	83.7	18.4	4.5	81.7	19.2	4.3	79.4	20.0	4.0	77.3	20.8	3.7
6.5	89.2	17.8	5.0	87.0	18.5	4.7	84.9	19.3	4.4	82.6	20.1	4.1	80.3	20.9	3.8
7	90.9	17.8	5.1	88.7	18.6	4.8	86.5	19.4	4.5	84.2	20.2	4.2	81.9	21.0	3.9
8	92.6	17.9	5.2	90.3	18.7	4.8	88.1	19.5	4.5	85.7	20.3	4.2	83.4	21.1	4.0
9	96.1	18.0	5.3	93.7	18.8	5.0	91.4	19.6	4.7	88.9	20.4	4.4	86.5	21.2	4.1
10	99.6	18.1	5.5	97.2	18.9	5.1	94.8	19.7	4.8	92.2	20.5	4.5	89.7	21.3	4.2

TABLE 7A: Rating (IP unit) for SLCS-40-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	33.1	24.0	16.5	32.3	25.1	15.4	31.5	26.1	14.4	30.6	27.2	13.5	29.8	28.3	12.6
42	34.4	24.2	17.0	33.5	25.3	15.9	32.7	26.3	14.9	31.8	27.4	13.9	30.9	28.5	13.0
44	35.7	24.4	17.6	34.9	25.4	16.5	34.0	26.5	15.4	33.1	27.6	14.4	32.2	28.7	13.4
45	36.4	24.5	17.9	35.5	25.5	16.7	34.7	26.6	15.6	33.7	27.7	14.6	32.8	28.8	13.7
46	37.1	24.5	18.1	36.2	25.6	17.0	35.3	26.7	15.9	34.3	27.8	14.8	33.4	28.9	13.9
48	38.5	24.7	18.7	37.5	25.7	17.5	36.6	26.8	16.4	35.6	27.9	15.3	34.6	29.1	14.3
50	39.9	24.8	19.3	38.9	25.9	18.0	38.0	27.0	16.9	36.9	28.1	15.8	35.9	29.3	14.7

TABLE 7B: Rating (SI unit) for SLCS-40-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	116.0	24.0	4.8	113.2	25.1	4.5	110.4	26.1	4.2	107.4	27.2	3.9	104.4	28.3	3.7
5.5	120.6	24.2	5.0	117.7	25.3	4.7	114.8	26.3	4.4	111.7	27.4	4.1	108.6	28.5	3.8
6.5	125.4	24.4	5.1	122.3	25.4	4.8	119.3	26.5	4.5	116.1	27.6	4.2	112.9	28.7	3.9
7	127.8	24.5	5.2	124.7	25.5	4.9	121.6	26.6	4.6	118.3	27.7	4.3	115.1	28.8	4.0
8	130.1	24.5	5.3	127.0	25.6	5.0	123.8	26.7	4.6	120.5	27.8	4.3	117.2	28.9	4.1
9	135.0	24.7	5.5	131.7	25.7	5.1	128.5	26.8	4.8	125.0	27.9	4.5	121.6	29.1	4.2
10	140.0	24.8	5.6	136.6	25.9	5.3	133.2	27.0	4.9	129.6	28.1	4.6	126.0	29.3	4.3

TABLE 8A: Rating (IP unit) for SLCS-50-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	40.8	30.2	16.2	39.8	31.5	15.2	38.8	32.8	14.2	37.8	34.2	13.3	36.8	35.6	12.4
42	42.4	30.4	16.7	41.4	31.7	15.7	40.4	33.1	14.7	39.3	34.4	13.7	38.2	35.8	12.8
44	44.1	30.6	17.3	43.0	31.9	16.2	42.0	33.3	15.1	40.8	34.6	14.2	39.7	36.1	13.2
45	45.0	30.7	17.6	43.9	32.0	16.4	42.8	33.4	15.4	41.6	34.8	14.4	40.5	36.2	13.4
46	45.8	30.8	17.8	44.7	32.1	16.7	43.6	33.5	15.6	42.4	34.9	14.6	41.2	36.3	13.6
48	47.5	31.0	18.4	46.4	32.3	17.2	45.2	33.7	16.1	44.0	35.1	15.0	42.8	36.5	14.1
50	49.3	31.2	19.0	48.1	32.5	17.7	46.9	33.9	16.6	45.6	35.3	15.5	44.4	36.7	14.5

TABLE 8B: Rating (SI unit) for SLCS-50-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	143.2	30.2	4.7	139.8	31.5	4.4	136.3	32.8	4.2	132.6	34.2	3.9	129.0	35.6	3.6
5.5	148.9	30.4	4.9	145.3	31.7	4.6	141.7	33.1	4.3	137.9	34.4	4.0	134.1	35.8	3.7
6.5	154.8	30.6	5.1	151.0	31.9	4.7	147.3	33.3	4.4	143.3	34.6	4.1	139.4	36.1	3.9
7	157.8	30.7	5.1	154.0	32.0	4.8	150.2	33.4	4.5	146.1	34.8	4.2	142.1	36.2	3.9
8	160.7	30.8	5.2	156.8	32.1	4.9	152.9	33.5	4.6	148.8	34.9	4.3	144.7	36.3	4.0
9	166.7	31.0	5.4	162.7	32.3	5.0	158.6	33.7	4.7	154.3	35.1	4.4	150.1	36.5	4.1
10	172.9	31.2	5.5	168.7	32.5	5.2	164.5	33.9	4.9	160.0	35.3	4.5	155.6	36.7	4.2

TABLE 9A: Rating (IP unit) for SLCS-60-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	48.5	36.2	16.1	47.3	37.7	15.1	46.1	39.3	14.1	44.9	40.9	13.2	43.6	42.6	12.3
42	50.4	36.4	16.6	49.2	38.0	15.5	48.0	39.6	14.5	46.7	41.2	13.6	45.4	42.9	12.7
44	52.4	36.7	17.2	51.1	38.2	16.0	49.9	39.9	15.0	48.5	41.5	14.0	47.2	43.2	13.1
45	53.4	36.8	17.4	52.1	38.4	16.3	50.8	40.0	15.2	49.4	41.6	14.3	48.1	43.3	13.3
46	54.4	36.9	17.7	53.1	38.5	16.5	51.8	40.1	15.5	50.4	41.8	14.5	49.0	43.5	13.5
48	56.4	37.1	18.2	55.1	38.7	17.1	53.7	40.4	16.0	52.2	42.0	14.9	50.8	43.7	13.9
50	58.5	37.3	18.8	57.1	38.9	17.6	55.7	40.6	16.5	54.2	42.3	15.4	52.7	44.0	14.4

TABLE 9B: Rating (SI unit) for SLCS-60-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	170.1	36.2	4.7	166.0	37.7	4.4	161.9	39.3	4.1	157.5	40.9	3.8	153.2	42.6	3.6
5.5	176.9	36.4	4.9	172.6	38.0	4.5	168.3	39.6	4.3	163.8	41.2	4.0	159.3	42.9	3.7
6.5	183.9	36.7	5.0	179.4	38.2	4.7	175.0	39.9	4.4	170.2	41.5	4.1	165.5	43.2	3.8
7	187.4	36.8	5.1	182.9	38.4	4.8	178.4	40.0	4.5	173.5	41.6	4.2	168.8	43.3	3.9
8	190.9	36.9	5.2	186.2	38.5	4.8	181.6	40.1	4.5	176.7	41.8	4.2	171.8	43.5	4.0
9	198.0	37.1	5.3	193.2	38.7	5.0	188.4	40.4	4.7	183.3	42.0	4.4	178.3	43.7	4.1
10	205.3	37.3	5.5	200.3	38.9	5.1	195.4	40.6	4.8	190.0	42.3	4.5	184.8	44.0	4.2

TABLE 10A: Rating (IP unit) for SLCS-80-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	63.6	47.0	16.2	62.0	49.0	15.2	60.5	51.1	14.2	58.9	53.2	13.3	57.2	55.4	12.4
42	66.1	47.4	16.8	64.5	49.4	15.7	62.9	51.5	14.7	61.2	53.6	13.7	59.5	55.8	12.8
44	68.7	47.7	17.3	67.0	49.7	16.2	65.4	51.8	15.1	63.6	53.9	14.2	61.9	56.1	13.2
45	70.1	47.8	17.6	68.3	49.9	16.4	66.7	52.0	15.4	64.8	54.1	14.4	63.1	56.4	13.4
46	71.3	48.0	17.8	69.6	50.0	16.7	67.9	52.2	15.6	66.0	54.3	14.6	64.2	56.5	13.6
48	74.0	48.3	18.4	72.2	50.3	17.2	70.4	52.5	16.1	68.5	54.6	15.1	66.6	56.9	14.1
50	76.7	48.5	19.0	74.9	50.6	17.7	73.0	52.8	16.6	71.0	54.9	15.5	69.1	57.2	14.5

TABLE 10B: Rating (SI unit) for SLCS-80-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	223.1	47.0	4.7	217.7	49.0	4.4	212.3	51.1	4.2	206.5	53.2	3.9	200.9	55.4	3.6
5.5	232.0	47.4	4.9	226.3	49.4	4.6	220.7	51.5	4.3	214.8	53.6	4.0	208.9	55.8	3.7
6.5	241.1	47.7	5.1	235.2	49.7	4.7	229.4	51.8	4.4	223.2	53.9	4.1	217.1	56.1	3.9
7	245.8	47.8	5.1	239.8	49.9	4.8	233.9	52.0	4.5	227.6	54.1	4.2	221.3	56.4	3.9
8	250.3	48.0	5.2	244.2	50.0	4.9	238.2	52.2	4.6	231.7	54.3	4.3	225.4	56.5	4.0
9	259.7	48.3	5.4	253.3	50.3	5.0	247.1	52.5	4.7	240.4	54.6	4.4	233.8	56.9	4.1
10	269.2	48.5	5.5	262.7	50.6	5.2	256.2	52.8	4.9	249.2	54.9	4.5	242.4	57.2	4.2

TABLE 11A: Rating (IP unit) for SLCS-100-4W

Cooler leaving water temp. °F	Condenser leaving water temp. °F														
	85			90			95			100			105		
	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER	Cap. TONS	Input KW	EER
40	78.5	56.2	16.8	76.6	58.6	15.7	74.7	61.1	14.7	72.7	63.6	13.7	70.7	66.2	12.8
42	81.7	56.6	17.3	79.7	59.0	16.2	77.7	61.5	15.2	75.6	64.0	14.2	73.5	66.7	13.2
44	84.9	57.0	17.9	82.8	59.4	16.7	80.8	61.9	15.6	78.6	64.5	14.6	76.4	67.1	13.7
45	86.5	57.2	18.2	84.4	59.6	17.0	82.3	62.2	15.9	80.1	64.7	14.9	77.9	67.4	13.9
46	88.1	57.3	18.4	86.0	59.8	17.2	83.8	62.3	16.1	81.6	64.9	15.1	79.3	67.6	14.1
48	91.4	57.7	19.0	89.2	60.2	17.8	87.0	62.7	16.6	84.6	65.3	15.6	82.3	68.0	14.5
50	94.8	58.0	19.6	92.5	60.5	18.3	90.2	63.1	17.2	87.7	65.7	16.0	85.3	68.4	15.0

TABLE 11B: Rating (SI unit) for SLCS-100-4W

Cooler leaving water temp. °C	Condenser leaving water temp. °C														
	29.5			32			35			38			40.5		
	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP	Cap. KW	Input KW	COP
4.5	275.5	56.2	4.9	268.8	58.6	4.6	262.2	61.1	4.3	255.1	63.6	4.0	248.1	66.2	3.7
5.5	286.5	56.6	5.1	279.5	59.0	4.7	272.6	61.5	4.4	265.2	64.0	4.1	258.0	66.7	3.9
6.5	297.8	57.0	5.2	290.5	59.4	4.9	283.4	61.9	4.6	275.7	64.5	4.3	268.1	67.1	4.0
7	303.6	57.2	5.3	296.2	59.6	5.0	288.9	62.2	4.6	281.0	64.7	4.3	273.3	67.4	4.1
8	309.1	57.3	5.4	301.6	59.8	5.0	294.2	62.3	4.7	286.2	64.9	4.4	278.3	67.6	4.1
9	320.7	57.7	5.6	312.9	60.2	5.2	305.2	62.7	4.9	296.9	65.3	4.5	288.7	68.0	4.2
10	332.5	58.0	5.7	324.4	60.5	5.4	316.4	63.1	5.0	307.8	65.7	4.7	299.4	68.4	4.4

FIGURE 1: WATER PRESSURE DROP

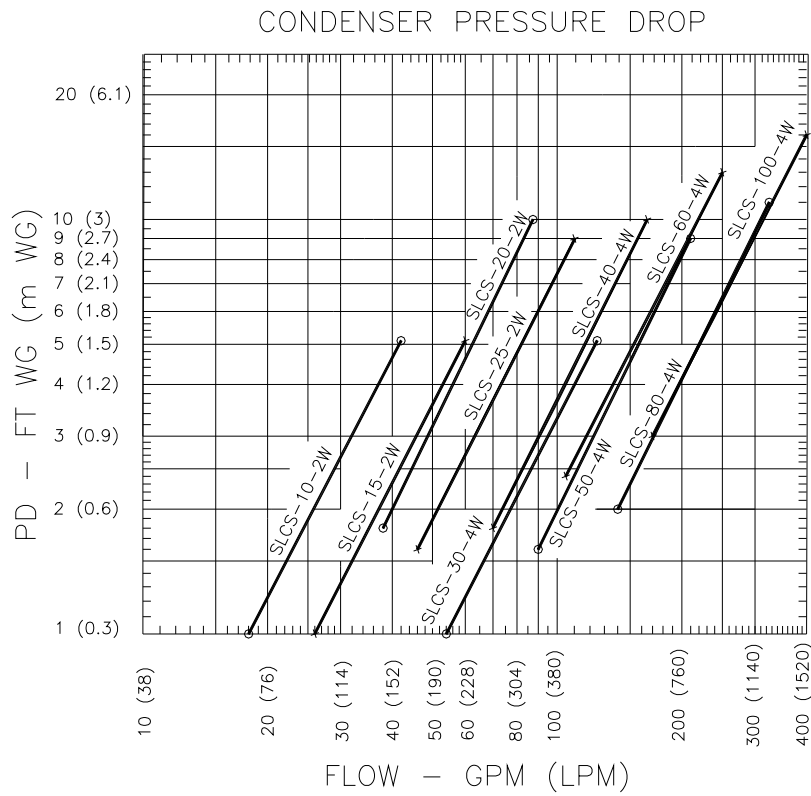
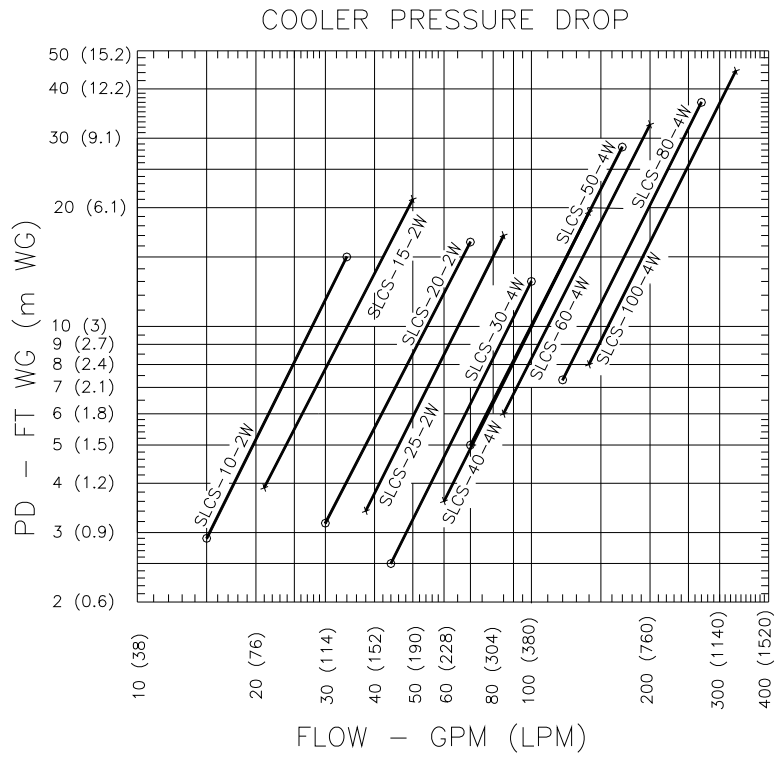
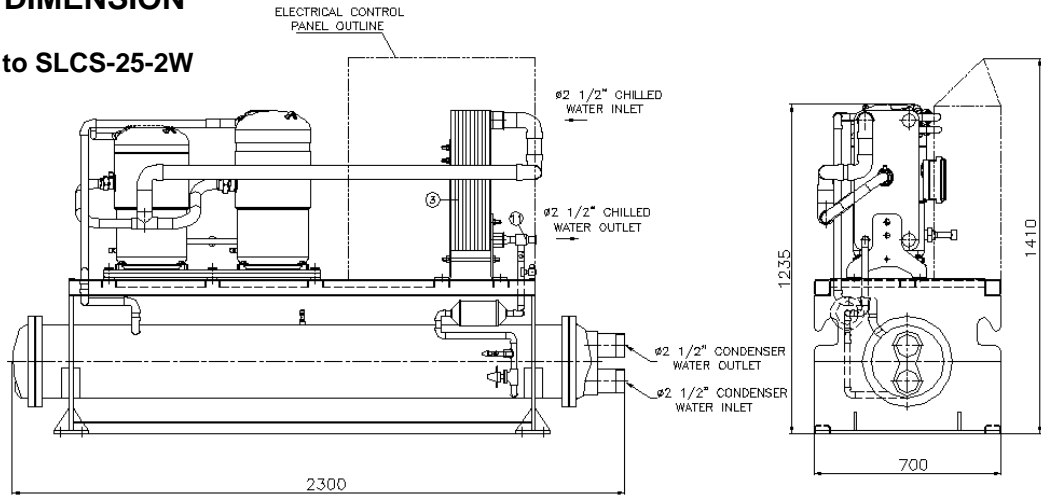
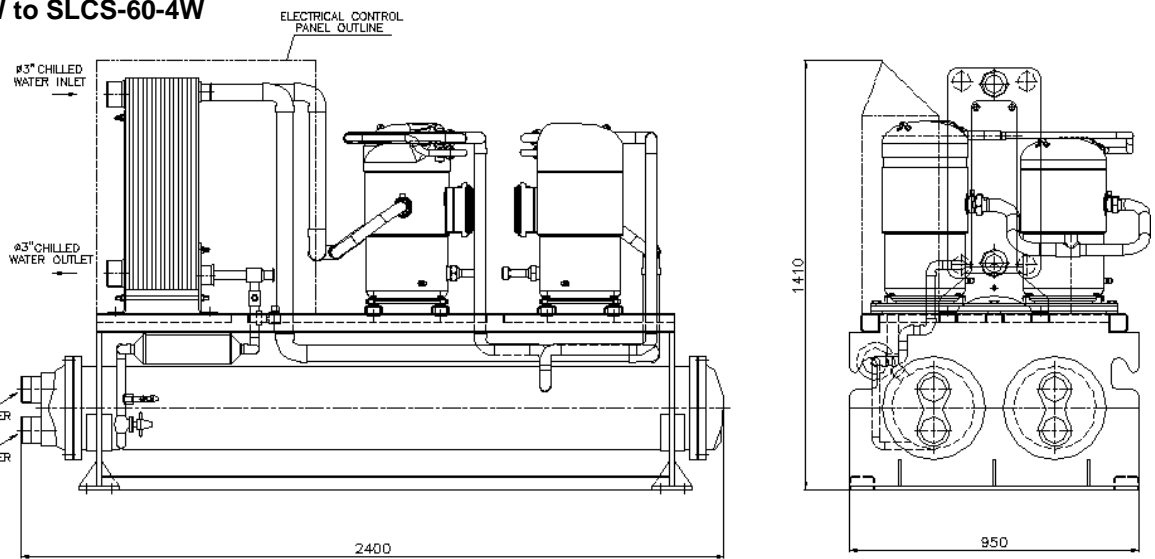


FIGURE 2: DIMENSION

SLCS-10-2W to SLCS-25-2W

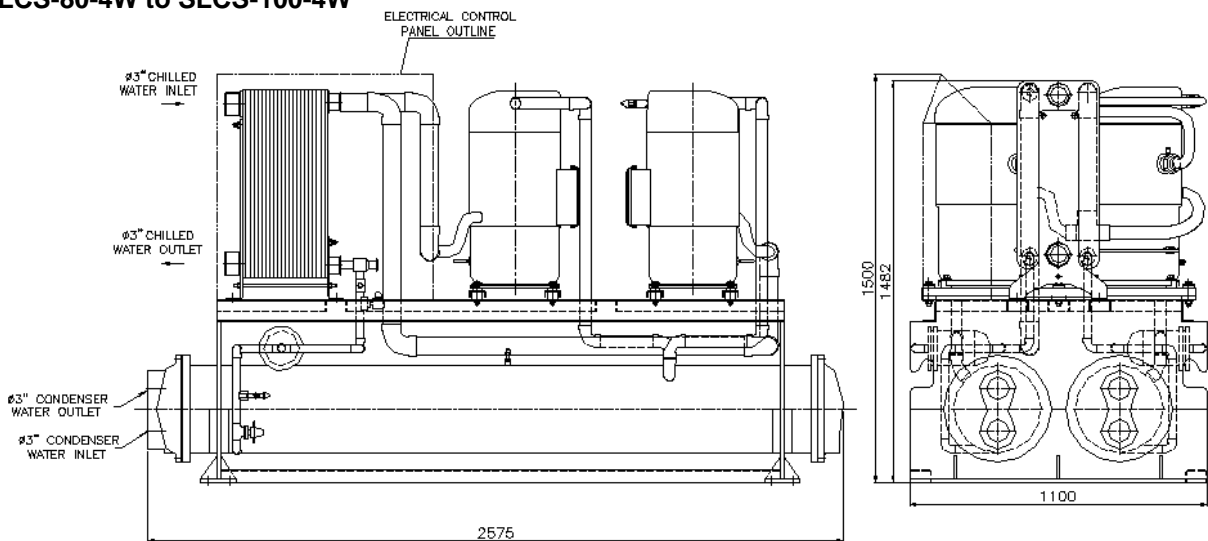


SLCS-30-4W to SLCS-60-4W



**condenser connections for SLCS-60-4W are 3"

SLCS-80-4W to SLCS-100-4W





SARAVEL CORP.
Oct. 2004

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

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