AMERICANCHILLERS
& Cooling Tower Systems

SPPC SERIES
COLD PLUNGE CHILLER

Installation & Maintenance Manual

AMERICAN CHILLERS & COOLING TOWER SYSTEMS
105 Columbia Ave, West Columbia, SC 29170

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Your New American Chiller

Thank you for buying an American Chiller!

American Chillers LLC provides our customers with durable, dependable, and maintenance free chilling systems available at any price. After all, we know you have many choices of vendors to fulfill your chilling requirement. We hope you will recognize that the quality of materials and workmanship and our courteous, professional manners will prove that you made the right choice.

Our engineering goal is to provide you with more capacity and better performance than you ask for or expect. All refrigeration and electrical components have been selected for their reputation of quality and their availability in the open marketplace. All the components, or aftermarket replacements, are readily available at most refrigeration distributors nationwide.

Any trained refrigeration/chiller technician will be able to maintain and repair your American chiller. If maintenance or troubleshooting a problem is necessary, lifetime technical support is available at no charge via telephone and/or email.

Please read the information about installation and startup of your chiller carefully. Heed all warnings of potential problems if specific directions are not followed. If you or your installer have questions regarding any statements or omissions in these instructions, please call for clarification before installing and starting your chiller.

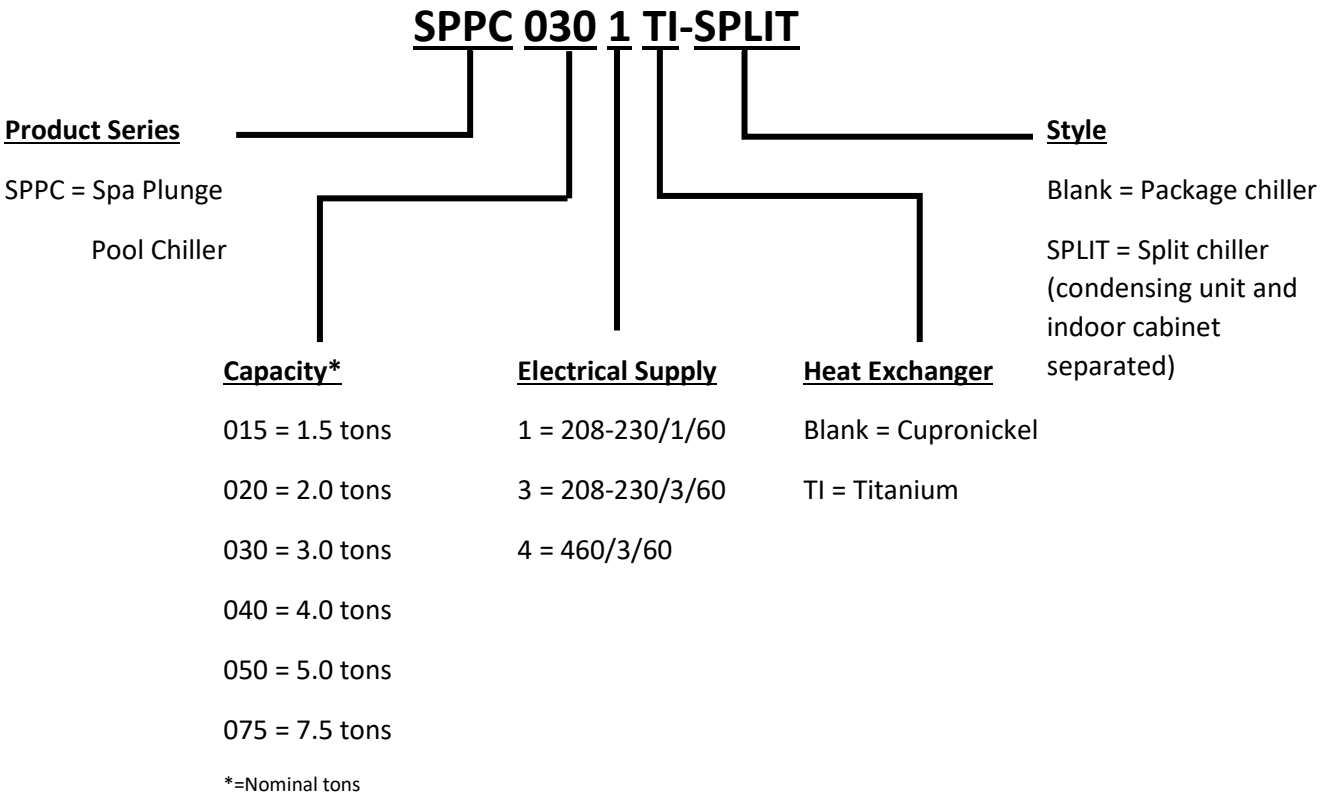
Once again, thank you for choosing American Chillers.

Sincerely,

Chapman Fairey
President

1. Chiller Specifications

1.1 Nomenclature



1.2 General Specification Sheets

SPPC Series Cold Plunge Pool Chiller

Standard Features

- U.L. Listed, and EPA Compliant, R410a eco-friendly refrigeration complies with latest codes
- Single refrigeration circuit with separate and independent thermostat controls and safeties
- Air cooled, high ambient, vertical discharge, condensers for 100°F ambient
- Suitable for outdoor installation (for areas that maintain outdoor temperatures above freezing)
- Weather proof electrical panel with single point power connection to distribution block
- 24 vac control circuit with component sequenced terminal strip for easy troubleshooting
- One stage of compressor control with digital temperature controller
- Control mounted on chiller
- Cupronickel coaxial heat exchanger for chlorine pools
- Externally equalized thermal expansion valve with filter drier and sight glass
- Non ferrous water lines with FPT connections and insulated with 1/2” closed cell insulation
- Water flow safety switch locks out compressors on low flow to evaporator
- Powder coated cabinet
- Warranty: One (1) years limited parts, five (5) years limited compressor warranty
- Systems leak checked, pressure tested, and run tested under load prior to shipment

Options & Accessories

- Split system for outdoor condenser installation (for areas with outdoor temps below freezing)
- Cabinet mounted, glycerin filled refrigeration pressure gauges
- Castors for portability
- Factory authorized technician for startup, training & service
- Factory authorized contractor for installation
- Condenser coil coating for corrosion protection in coastal areas
- Titanium heat exchanger for saltwater pools
- Other voltages and options available upon request

Plunge Pool Chiller Sizing Guide			
Pool Volume (Gallons)	**Chiller Capacity**	**Chiller H.P @ 50F LWT**	**Chiller H.P. @ 45F LWT**
100 to 300	1 Ton	1.0	1.5
300 to 450	1-1/2 Ton	1.5	2.0
450 to 650	2 Ton	2.0	2.5
650 to 950	3 Ton	3.0	3.5
950 to 1,200			
1,200 to 1,500	4 Ton	4.0	5.0
1,500 to 2,000	5 Ton	5.0	6.3
2,000 to 2,700	6 Ton	6.3	7.0
2,700 to 3,500	7 Ton	7.5	8.0

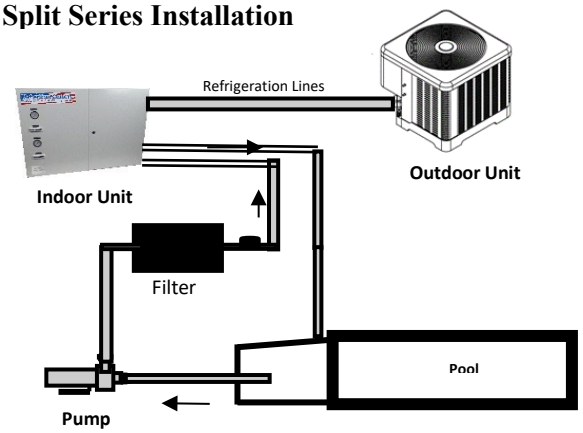
Consider Upsizing Chiller If…

- Piping runs are long, uninsulated, or run under heated floors.
- Filter system adds heat.
- Pool is used for long durations or
- repeatedly with minimum recovery time
- between usage.
- Pool is used for full body immersion.
- Pool is in an outdoor or warm location.
- Pool will be turned on/off with limited cooldown period (may significantly increase chiller size - consult factory).

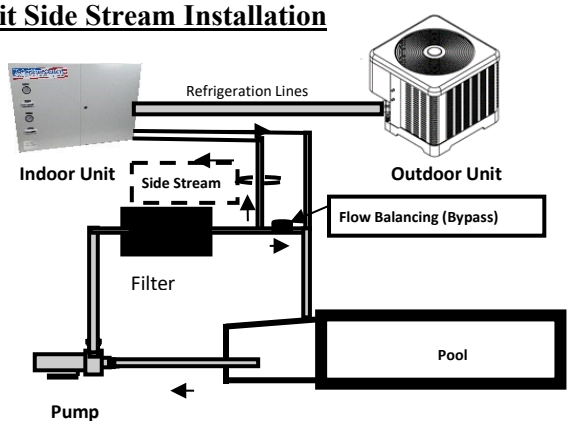
Our clients include many professional sports teams like the Kansas City Chiefs, Oklahoma City Thunder, Denver Nuggets and Chicago Bears plus spa's, cruise ships and residences.

Typical Site Installations

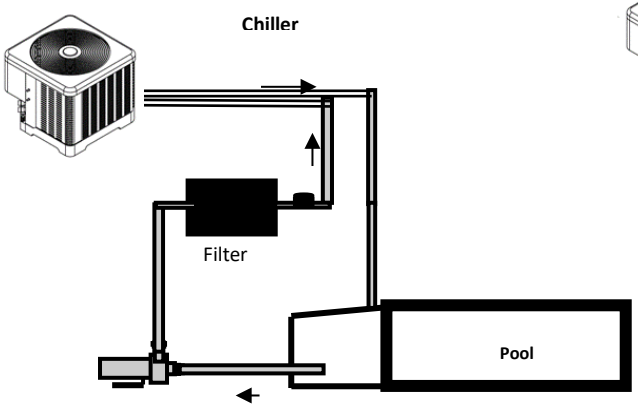
Split Series Installation



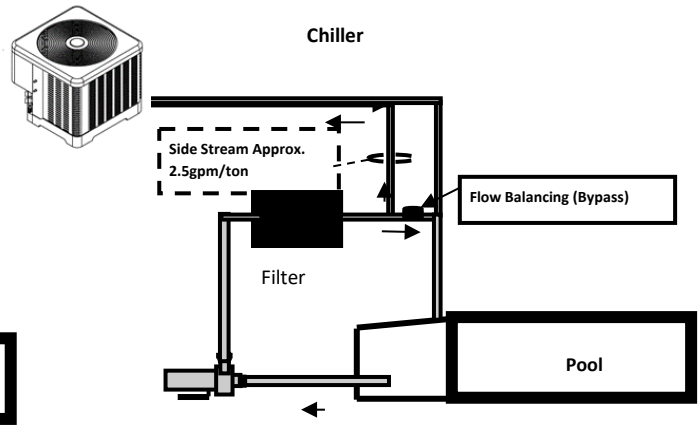
Split Side Stream Installation



Series Installation



Side Stream Installation



SPPC Series

General Data																
Model (i.e. SPPC0151)		0151	0201	0251	0301	0401	0501	0303	0403	0503	0753	0304	0404	0504	0754
Nominal Tons Cooling		1.5	2	2.5	3	4	5	3	4	5	7.5	3	4	5	7.5
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Electrical Data																
Supply Power	Voltage	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	460	460	460	460
	Phase	1	1	1	1	1	1	3	3	3	3	3	3	3	3
	Frequency (Hz)	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Compressor	Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Rated Load Amps (RLA)	9	12	14	13	18	26	9	13.1	16	25	5.6	6.1	7.8	12.2
	Locked Rotor Amps (LRA)	43	60	68	83	102	150	71	83.1	110	164	38	41	60	100
Fan Motor	Quantity	1	1	1	1	1	1	1	1	1	2	1	1	1	2
	Full Load Amps (FLA)	0.8	0.8	0.8	0.8	1	2.8	0.8	1.2	1	1.5	0.5	0.6	0.5	0.8
Total Circuit	Full Load Amps (FLA)	9.8	12.8	14.8	13.8	19	28.8	9.8	14.3	17	28	6.1	6.7	8.3	13.8
	Min Circuit Ampacity (MCA)	14	18	19	20	24	40	13	18	21	35	8	9	11	16.9
	Max Overcurr. Protect. (MOP)	20	25	30	30	40	60	20	30	35	50	15	15	15	25
Physical Data																
Outdoor Unit Size (in)	Length (L)	30	34	34	34	34	36	34	36	36	60	34	36	36	60
	Width (W)	30	34	34	34	34	36	34	36	36	46	34	36	36	46
	Height (H)	25	25	27	31	35	51	27	31	51	44	27	31	51	44
Weight (lb)	Dry	165	219	245	256	305	352	256	305	352	600	250	305	352	600
	Ship	263	363	380	392	461	513	392	461	513	915	417	461	513	915
Air Clearance Required (in)	Sides	12	12	12	12	12	12	12	12	12	36 / 12	12	12	12	36 / 12
	Service	24	24	24	24	24	24	24	24	24	36	24	24	24	36
	Top	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Connection Sizes	Water (FPT)	3/4	3/4	3/4	1	1	1	1	1	1	1-1/4	1	1	1	1-1/4
	Refrig. Liquid Line OD (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1/2	3/8	3/8	3/8	1/2
	Refrig. Suction Line OD (in)	3/4	3/4	3/4	3/4	7/8	7/8	3/4	7/8	7/8	1-1/8	3/4	7/8	7/8	1-1/8
Sound	dBA	70.7	75.7	76.8	76.1	74	75.8	76.1	74	75.8	85	76.1	74	75.8	85

SPPC TI Series

General Data															
Model (i.e. SPPC0151TI)		0151TI	0201TI	0251TI	0301TI	0401TI	0501TI	0303TI	0403TI	0503TI	0753TI	0304TI	0404TI	0504TI	0754TI
Nominal Tons Cooling		1.5	2	2.5	3	4	5	3	4	5	7.5	3	4	5	7.5
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Electrical Data															
Supply Power	Voltage	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	460	460	460	460
	Phase	1	1	1	1	1	1	3	3	3	3	3	3	3	3
	Frequency (Hz)	60	60	60	60	60	60	60	60	60	60	60	60	60	60
Compressor	Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Rated Load Amps (RLA)	6.1	8.4	11.6	16	19.9	25.6	10.5	13.1	16	25	5.6	6.1	7.8	12.2
	Locked Rotor Amps (LRA)	35.1	41.2	59	91.9	110	150	71	83.1	110	164	38	41	52	100
Fan Motor	Quantity	1	1	1	1	1	1	1	1	1	2	1	1	1	2
	Full Load Amps (FLA)	0.7	0.7	0.95	0.95	1.3	1.3	1.4	1.4	1.4	1.5	0.7	0.7	0.7	0.8
Total Circuit	Full Load Amps (FLA)	6.8	9.1	12.55	16.95	21.2	26.9	11.9	14.5	17.4	28	6.3	6.8	8.5	13.8
	Min Circuit Ampacity (MCA)	8.3	11.2	15.5	21	26.2	33.3	14.5	17.8	21.4	35	7.7	8.3	10.5	16.8
	Max Overcurr. Protect. (MOP)	15	15	25	35	45	50	20	30	30	50	15	15	15	25
Physical Data															
Unit Size (in)	Length (L)	27	27	30	36	36	44	27	32	44	60	27	32	44	60
	Width (W)	27	27	30	36	36	36	27	32	32	48	27	32	32	48
	Height (H)	59.5	65	72	69	72	69	65	69	62	44	65	69	62	44
Weight (lb)	Dry	290	300	325	343	450	644	470	520	615	650	470	520	615	650
	Ship	470	500	550	576	720	907	700	765	900	950	700	765	900	950
Air Clearance Required (in)	Sides	12	12	12	12	12	12	12" - 6"	12" - 6"	12" - 6"	42 / 18	12" / 6"	12" / 6"	12" / 6"	42 / 12
	Service	18	18	18	18	18	18	24	24	24	39	24	24	24	39
	Top	60	60	60	60	60	60	48	48	48	60	48	48	48	60
Connection Sizes	Water (FPT)	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Refrig. Liquid Line OD (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1-1/2	3/8	3/8	3/8	1-1/2
	Refrig. Suction Line OD (in)	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	7/8"	7/8	7/8	1-1/8
Sound	dBA	71	72	72	72	73	75	75	80	79	85	75	80	79	85

SPPC-Split Series

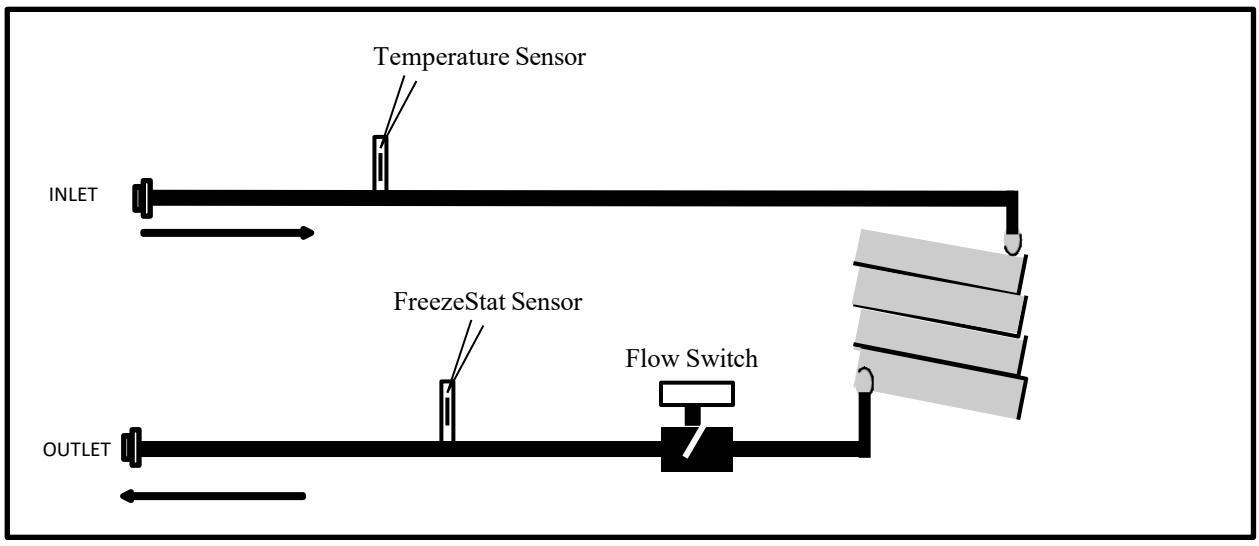
General Data														
Model (i.e. SPPC0151)		0151-Split	0201-Split	0301-Split	0401-Split	0501-Split	0303-Split	0403-Split	0503-Split	0753-Split	0304-Split	0404-Split	0504-Split	0754-Split
Nominal Tons Cooling		1.5	2	3	4	5	3	4	5	7.5	3	4	5	7.5
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Electrical Data														
Supply Power	Voltage	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	460	460	460	460
	Phase	1	1	1	1	1	3	3	3	3	3	3	3	3
	Frequency (Hz)	60	60	60	60	60	60	60	60	60	60	60	60	60
Compressor	Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1
	Rated Load Amps (RLA)	6.1	8.4	16	19.9	25.6	10.5	13.1	16	25	5.6	6.1	7.8	12.2
	Locked Rotor Amps (LRA)	35.1	41.2	91.9	110	150	71	83.1	110	164	38	41	52	100
Fan Motor	Quantity	1	1	1	1	1	1	1	1	2	1	1	1	2
	Full Load Amps (FLA)	0.7	0.7	0.95	1.3	1.3	1.4	1.4	1.4	1.5	0.7	0.7	0.7	0.8
Total Circuit	Full Load Amps (FLA)	6.8	9.1	16.95	21.2	26.9	11.9	14.5	17.4	28	6.3	6.8	8.5	13.8
	Min Circuit Amp (MCA)	8.3	11.2	21	26.2	33.3	14.5	17.8	21.4	35	7.7	8.3	10.5	16.8
	Max Overcurr. Prot (MOP)	15	15	35	45	50	20	30	30	50	15	15	15	25
Physical Data														
Outdoor Unit Size (in)	Length (L)	26	26	35.5	35.5	35.5	25-3/4	31-3/16	31-3/16	59.42	25-3/4	31-3/16	31-3/16	59.42
	Width (W)	26	26	35.5	35.5	35.5	25-3/4	31-3/16	31-3/16	45.86	25-3/4	31-3/16	31-3/16	45.86
	Height (H)	27	32.5	35.75	39.5	36.5	31-13/16	35-3/4	29	42-3/8	31-13/16	35-3/4	29	42-3/8
Indoor Unit Size (in)	Length (L)	32	32	32	32	32	32	32	32	32	32	32	32	32
	Width (W)	12	12	12	12	12	12	12	12	12	12	12	12	12
	Height (H)	24	24	24	24	24	24	24	24	24	24	24	24	24
Weight (lb)	Outdoor Unit (dry)	123	145	195	236	266	150	195	205	400	150	195	205	400
	Indoor Unit (dry)	105	115	125	130	135	125	130	135	150	120	120	135	150
	Total Ship	436	467	506	590	647	450	555	600	750	510	555	600	750
Air Clearance Required (in)	Sides	12	12	12	12	12	12	12	12	36 / 12	12	12	12	36 / 12
	Service	24	24	24	24	24	24	24	24	39	24	24	24	39
	Top	60	60	60	60	60	60	60	60	60	60	60	60	60
Connection Sizes	Water (FPT)	1	1	1	1	1	1	1	1	1-1/4	1	1	1	1-1/4
	Refrig. Liquid Line OD (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1-1/2"	3/8	3/8	3/8	1-1/2"
	Refrig. Suction Line OD (in)	3/4	3/4	7/8	7/8	7/8	3/4	7/8	7/8	1-1/8	3/4	7/8	7/8	1-1/8
Sound	dBA	70.7	75.7	76.1	74	75.8	76	76	74.8	85	76	76	74.8	85

SPPC TI-Split Series

General Data															
Model (i.e. SPPC0151TI-Split)		0151TI-S	0201TI-S	0301TI-S	0401TI-S	0501TI-S	0303TI-S	0403TI-S	0503TI-S	0753TI-S	0304TI-S	0404TI-S	0504TI-S	0754TI-S
Nominal Tons Cooling		1.5	2	3	4	5	3	4	5	7.5	3	4	5	7.5
Refrigerant		R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
Electrical Data														
Supply Power	Voltage	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	208-230	460	460	460	460
	Phase	1	1	1	1	1	3	3	3	3	3	3	3	3
	Frequency (Hz)	60	60	60	60	60	60	60	60	60	60	60	60	60
Compressor	Quantity	1	1	1	1	1	1	1	1	1	1	1	1	1
	Rated Load Amps (RLA)	6.1	8.4	16	19.9	25.6	10.5	13.1	16	25	5.6	6.1	7.8	12.2
	Locked Rotor Amps (LRA)	35.1	41.2	91.9	110	150	71	83.1	110	164	38	41	52	100
Fan Motor	Quantity	1	1	1	1	1	1	1	1	2	1	1	1	2
	Full Load Amps (FLA)	0.7	0.7	0.95	1.3	1.3	1.4	1.4	1.4	1.5	0.7	0.7	0.7	0.8
Total Circuit	Full Load Amps (FLA)	6.8	9.1	16.95	21.2	26.9	11.9	14.5	17.4	28	6.3	6.8	8.5	13.8
	Min Circuit Ampacity (MCA)	8.3	11.2	21	26.2	33.3	14.5	17.8	21.4	35	7.7	8.3	10.5	16.8
	Max Overcurr. Protect. (MOP)	15	15	35	45	50	20	30	30	50	15	15	15	25
Physical Data														
Outdoor Unit Size (in)	Length (L)	26	26	35.5	35.5	35.5	26	31.5	31.5	59.5	26	31.5	31.5	59.5
	Width (W)	26	26	35.5	35.5	35.5	26	31.5	31.5	46	26	31.5	31.5	46
	Height (H)	27	32.5	35.75	39.5	36.5	32	36	29	42.5	32	36	29	42.5
Indoor Unit Size (in)	Length (L)	28	28	28	28	44	28	28	44	48	28	28	44	48
	Width (W)	24	24	24	24	32	24	24	32	32	24	24	32	32
	Height (H)	32	32	32	32	34	32	32	34	34	32	32	34	34
Weight (lb)	Outdoor Unit (Dry)	123	145	195	236	266	150	195	215	400	150	195	205	400
	Indoor Unit (Dry)	155	160	175	185	320	175	185	320	350	175	185	320	350
	Total Ship	480	525	600	685	800	545	640	815	950	545	640	740	950
Air Clearance Required (in)	Sides	12	12	12	12	12	12 / 6	12 / 6	12 / 6	42 / 18	12 / 6	12 / 6	12 / 6	42 / 18
	Service	24	24	24	24	24	24	24	24	39	24	24	24	39
	Top	60	60	60	60	60	48	48	48	60	48	48	48	60
Connection Sizes	Water (FPT)	2	2	2	2	2	2	2	2	2	2	2	2	2
	Refrig. Liquid Line OD (in)	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	1-1/2	3/8	3/8	3/8	1-1/2
	Refrig. Suction Line OD (in)	3/4	3/4	7/8	7/8	7/8	7/8	7/8	7/8	1-1/8	7/8	7/8	7/8	1-1/8
Sound	dBA	71	72	72	73	75	75	80	79	85	75	80	79	85

1.3 Fluid Circuit Diagrams

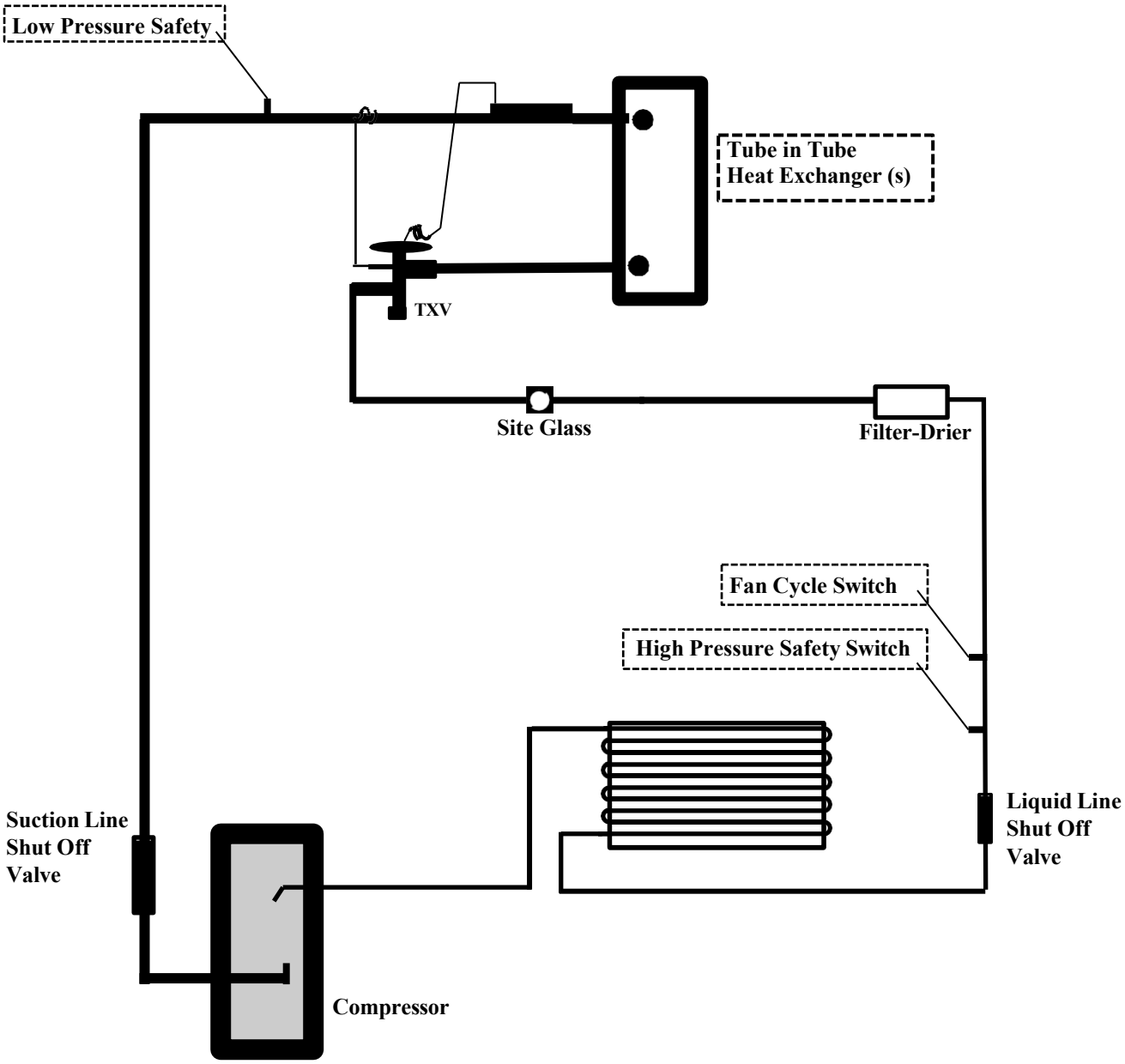
Fluid Circuit (1.5 Ton – 7.5 Ton) Example



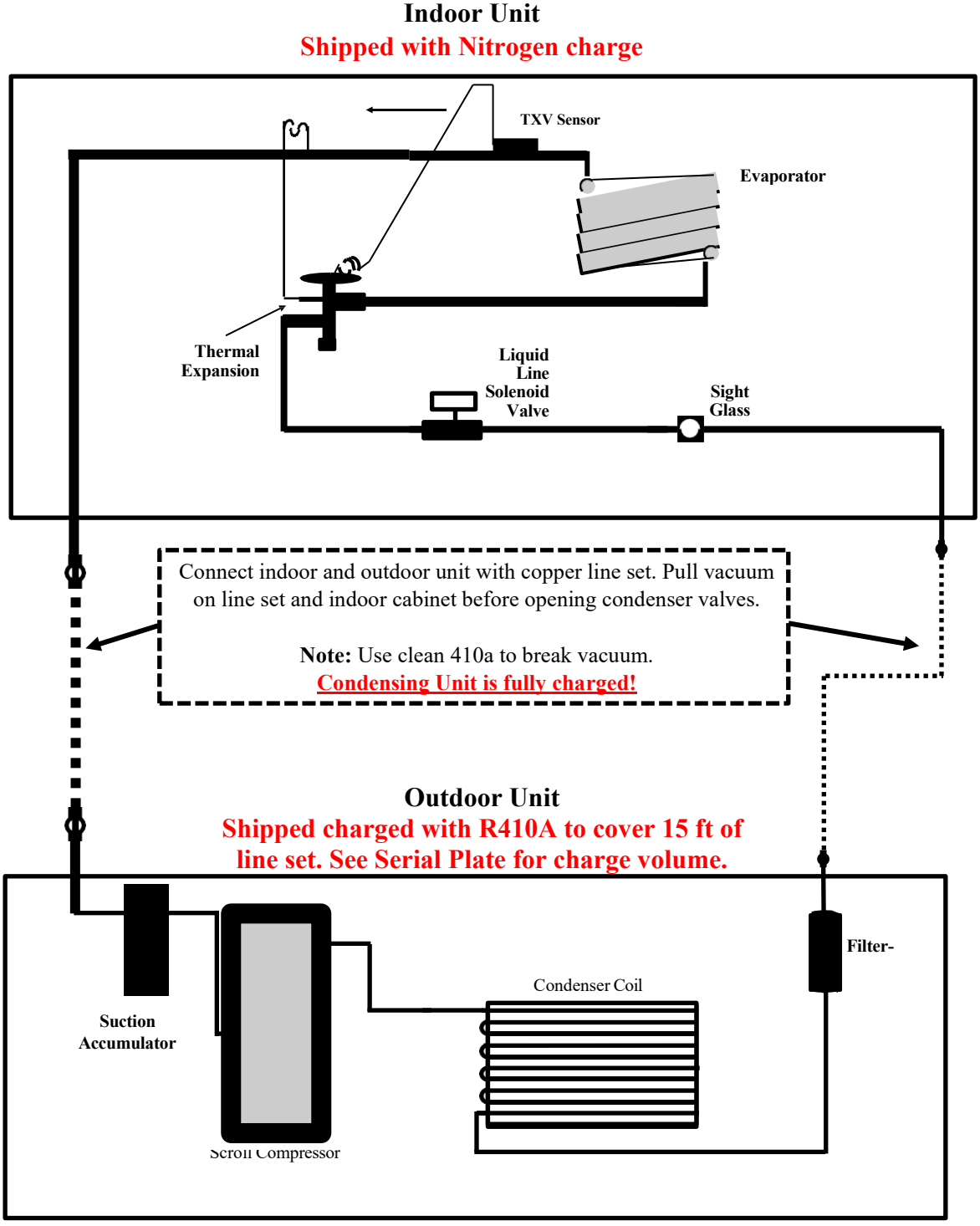
Model	Size (Nom. Tons)	Inlet/Outlet (FPT)	Flow Switch Location
SPPC (Std)	1.5 to 3	¾”	Outlet
	4 to 5	1”	Inlet
	7.5	1-1/4”	Outlet
SPPC-Split (Std)	1.5 to 3	¾”	Outlet
	4 to 5	1”	
	7.5	1-1/4”	
SPPC TI	1.5 to 3	2”	Inlet
	4 to 5	2”	Outlet
	7.5	2-1/2”	Outlet
SPPC TI-Split	1.5 to 3	2”	Inlet
	4 to 5	2”	Outlet
	7.5	2-1/2”	Outlet

1.4 Refrigeration Circuit Diagrams

Models: SPPC, SPPCTI



Models: SPPC-SPLIT, SPPCTI-SPLIT



1.5 Electrical Diagrams

SPPC0151-0501-Split—Mounted Control Panel

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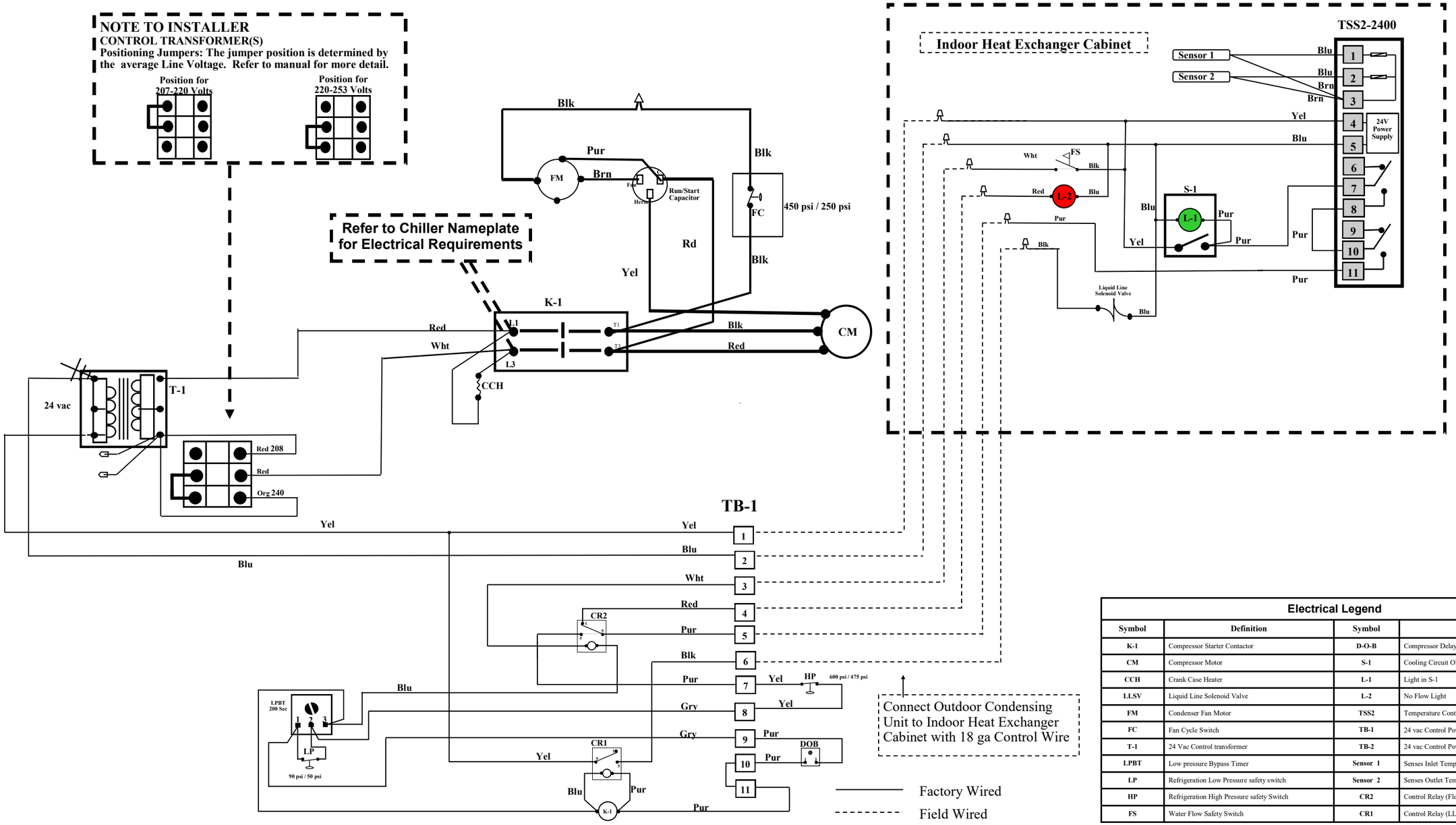


Electrical Legend			
Symbol	**Definition**	**Symbol**	**Definition**
K-1	Compressor Starter Contactor	**D-O-B**	Compressor Delay On Break Timer
CM	Compressor Motor	**S-1**	Cooling Circuit ON/Off Switch
CCH	Crank Case Heater	**L-1**	Light in S-1
LLSV	Liquid Line Solenoid Valve	**L-2**	No Flow Light
FM	Condenser Fan Motor	**TSS2**	Temperature Controller/FreezeStat
FC	Fan Cycle Switch	**TB-1**	24 vac Control Power Terminal Block (Condenser)
T-1	24 Vac Control transformer	**TB-2**	24 vac Control Power Terminal Block (Indoor Unit)
LPBT	Low pressure Bypass Timer	**Sensor 1**	Senses Inlet Temperature
LP	Refrigeration Low Pressure safety switch	**Sensor 2**	Senses Outlet Temperature
HP	Refrigeration High Pressure safety Switch	**CR2**	Control Relay (Flow Switch)
FS	Water Flow Safety Switch	**CR1**	Control Relay (LLSV)

2. Installation & Startup Instructions

2.1 Inspection Upon Delivery

Chiller Inspection

Inspect your chiller very carefully for any damage before installing. Damage to the condenser fins may cause a reduction in efficiency. Make sure there are no punctures or oil-soaked areas on the chiller. This would indicate damage to the refrigeration and must be checked.

Location

The cold plunge chiller utilizes an air-cooled condenser to expel the heat from the refrigerant. Please check the attached diagrams and pay close attention to the clearances all around for sufficient air flow.

Also notice which side requires the primary access for servicing the chiller. A 30” clearance for electrical component access is code in most locales.

Outdoor locations in addition to clearances should be selected for optimum fresh air availability. Do not place next to or within 10 feet of hot discharges from boilers, dryers, exhaust fans, or other vents.

Indoor installations must observe the same clearance rules as well as the top discharge clearance space. The chiller may be elevated or at floor level. Do not install in basements or pits with inadequate air flow, both supply and exhaust.

A corrosion protected condenser coil should be utilized in salt air or other corrosive atmosphere. Corrosion protection can be field applied, check with engineering.

Electrical Connections

All wiring and electrical connections must be performed by a qualified electrician. Installation must be in accordance with local and national codes.

Substandard wiring could result in overheating and damage to the compressor. Make sure the wire size is adequate for the current draw and distance from the power source.

An electrical schematic is furnished inside the electrical panel. A single point power connection is furnished either to the compressor contactor or an electrical distribution block.

The remote control panel, if equipped, must be connected to the chiller terminal block with thermostat wire.

Need Help? Have Questions?
Call 803-822-3860 & ask for Technical Support.
Have your Model & Serial Number ready.

2.1 Site Installation & Clearances

Codes & Regulations

This product is designed and manufactured to comply with national codes. Installation in accordance with such codes and/ or prevailing local codes/regulations is the responsibility of the installer. The manufacturer assumes no responsibility for equipment installed in violation of any codes or regulations. Rated performance is achieved after 20 hours of operation. Rated performance is delivered at the specified airflow.

The United States Environmental Protection Agency (EPA) has issued various regulations regarding the introduction and disposal of refrigerants. Failure to follow these regulations may harm the environment and can lead to the imposition of substantial fines. Should you have any questions please contact the local office of the EPA.

If replacing a condensing unit or air handler, the system must be manufacturer approved and Air Conditioning, Heating and Refrigeration Institute (AHRI) matched. NOTE: Installation of unmatched systems is strongly discouraged.

Damage to the unit caused by operating the unit in a structure that is not complete (either as part of new construction or renovation) is not covered under the warranty.

Installation Clearances

Special consideration must be given to location of the condensing unit(s) in regard to structures, obstructions, other units, and any/all other factors that may interfere with air circulation. Where possible, the top of the unit should be completely unobstructed; however, if vertical conditions require placement beneath an obstruction there should be a minimum of 60 inches between the top of the unit and the obstruction(s). The specified dimensions meet requirements for air circulation only. Consult all appropriate regulatory codes prior to determining final clearances.

Another important consideration in selecting a location for the unit(s) is the angle to obstructions. Either side adjacent the valves be placed toward the structure provided the side away from the structure maintains minimum service clearance. Corner installations are strongly discouraged.

SPPC Series Clearances			
Size	**Side**	**Electrical**	**Top**
1.5 – 5 Tons	12”	36”	60”
7.5 Tons	36” / 12” (one side)	36”	60”

This unit can be located at ground floor level or on flat roofs. At ground floor level, the unit must be on a solid, level foundation that will not shift or settle. To reduce the possibility of sound transmission, the foundation slab should not be in contact with or be an integral part of the building foundation. Ensure the foundation is sufficient to support the unit. A concrete slab raised

above ground level provides a suitable base.

Rooftop Installation

If it is necessary to install this unit on a roof structure, ensure the roof structure can support the weight and that proper consideration is given to the weather-tight integrity of the roof. Since the unit can vibrate during operation, sound vibration transmission should be considered when installing the unit. Vibration absorbing pads or springs can be installed between the condensing unit legs or frame and the roof mounting assembly to reduce noise vibration.

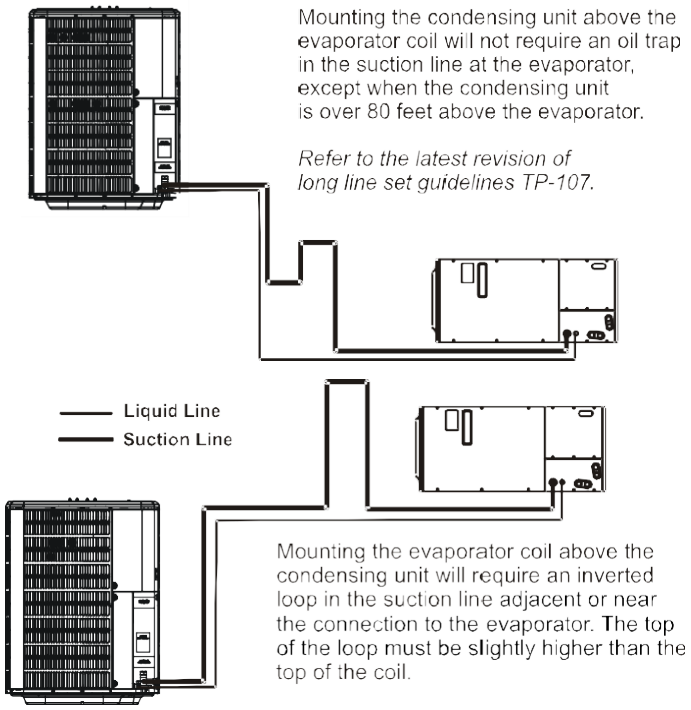
2.2 Refrigerant Lines

Use only refrigerant grade (dehydrated and sealed) copper tubing to connect the condensing unit with the indoor evaporator. After cutting the tubing, install plugs to keep refrigerant tubing clean and dry prior to and during installation. Tubing should always be cut square keeping ends round and free from burrs. Clean the tubing to prevent contamination.

DO NOT let refrigerant lines come in direct contact with plumbing, ductwork, floor joists, wall studs, floors, and walls. When running refrigerant lines through a foundation or wall, openings should allow for sound and vibration absorbing material to be placed or installed between tubing and foundation. Any gap between foundation or wall and refrigerant lines should be filled with a pliable silicon-based caulk, RTV or a vibration damping material. Avoid suspending refrigerant tubing from joists and studs with rigid wire or straps that would come in contact with the tubing. Use an insulated or suspension type hanger. Keep both lines separate and always insulate the suction line.

RECOMMENDED INTERCONNECTING TUBING (Ft)						
Cond Unit Tons	0-24		25-49		50-79*	
	Line Diameter (In. OD)					
	Suct	Liq	Suct	Liq	Suct	Liq
1 1/2	5/8	1/4	3/4	3/8	3/4	3/8
2	5/8	1/4	3/4	3/8	3/4	3/8
2 1/2	5/8	1/4	3/4	3/8	7/8	3/8
3	3/4	3/8	7/8	3/8	1 1/8	3/8
3 1/2	7/8	3/8	1 1/8	3/8	1 1/8	3/8
4	7/8	3/8	1 1/8	3/8	1 1/8	3/8
5	7/8	3/8	1 1/8	3/8	1 1/8	3/8

*Lines greater than 79 feet in length or vertical elevation changes more than 50 feet **please contact the factory for our R-410A Long Line Set Application Guidelines.**



Insulation is necessary to prevent condensation from forming and dropping from the suction line. Armflex (or satisfactory equivalent) with 3/8" min. wall thickness is recommended. In severe conditions (hot, high humidity areas) 1/2" insulation may be required. Insulation must be installed in a manner which protects tubing from damage and contamination.

Burying Refrigeration Lines

If burying refrigerant lines can not be avoided, use the following checklist.

1. Insulate liquid and suction lines separately.
2. Enclose all underground portions of the refrigerant lines in waterproof material (conduit or pipe) sealing the ends where tubing enters/exits the enclosure.
3. If the lines must pass under or through a concrete slab, ensure lines are adequately protected and sealed.

Refrigerant Line Connections

To avoid overheating the service valve, TXV valve, or filter drier while brazing, wrap the component with a wet rag, or use a thermal heat trap compound. Be sure to follow the manufacturer's instruction when using the heat trap compound. Note: Remove Schrader valves from service valves before brazing tubes to the valves. Use a brazing alloy of 2% minimum silver content. Do not use flux.

Torch heat required to braze tubes of various sizes is proportional to the size of the tube. Tubes of smaller size require less heat to bring the tube to brazing temperature before adding brazing alloy. Applying too much heat to any tube can melt the tube. Service personnel must use the appropriate heat level for the size of the tube being brazed. Note: The use of a heat shield when brazing is recommended to avoid burning the serial plate or the finish on the unit.

1. The ends of the refrigerant lines must be cut square, deburred, cleaned, and be round and free from nicks or dents. Any other condition increases the chance of a refrigerant leak.
2. "Sweep" the refrigerant line with nitrogen or inert gas during brazing to prevent the formation of copper-oxide inside the refrigerant lines. The POE oils used in R-410A applications will clean any copper-oxide present from the inside of the refrigerant lines and spread it throughout the system. This may cause a blockage or failure of the metering device.
3. After brazing, quench the joints with water or a wet cloth to prevent overheating of the service valve.
4. Ensure the filter drier paint finish is intact after brazing. If the paint of the steel filter drier has been burned or chipped, repaint or treat with a rust preventative. This is especially important on suction line filter driers which are continually wet when the unit is operating.

NOTE: Be careful not to kink or dent refrigerant lines. Kinked or dented lines will cause poor performance or compressor damage.

Do NOT make final refrigerant line connection until plugs are removed from refrigerant tubing.

Leak Testing (Nitrogen or Nitrogen-Traced)

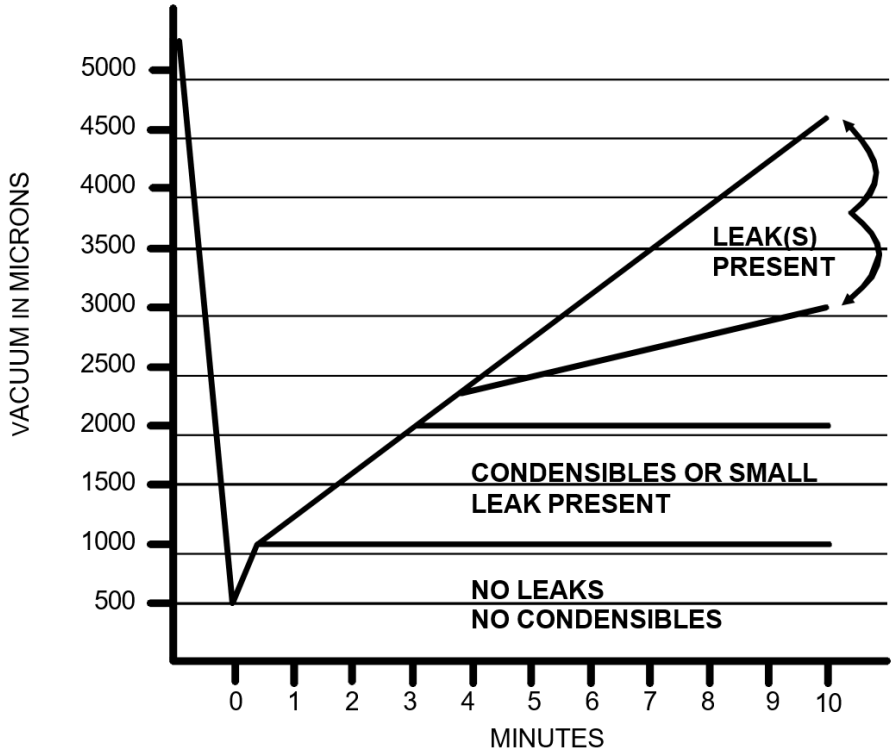
Pressure test the system using dry nitrogen and soapy water to locate leaks. If you wish to use a leak detector, charge the system to 10 psi using the appropriate refrigerant then use nitrogen to finish charging the system to working pressure then apply the detector to suspect areas. If leaks are found, repair them. After repair, repeat the pressure test. If no leaks exist, proceed to system evacuation.

System Evacuation

Condensing unit liquid and suction valves are closed to contain the charge within the unit. The unit is shipped with the valve stems closed and caps installed. Do not open valves until the system is evacuated.

NOTE: Scroll compressors should never be used to evacuate or pump down an SPPC chiller system.

1. Connect the vacuum pump with 250 micron capability to the service valves.
2. Evacuate the system to 250 microns or less using suction and liquid service valves. Using both valves is necessary as some compressors create a mechanical seal separating the sides of the system.
3. Close pump valve and hold vacuum for 10 minutes. Typically pressure will rise during this period.
4. If the pressure rises to 1000 microns or less and remains steady the system is considered leak-free; proceed to startup.



- If pressure rises above 1000 microns but holds steady below 2000 microns, moisture and/or noncondensibles may be present or the system may have a small leak. Return to step 2: If the same result is encountered check for leaks as previously indicated and repair as necessary then repeat evacuation.
- If pressure rises above 2000 microns, a leak is present. Check for leaks as previously indicated and repair as necessary then repeat evacuation.

2.3 Water Piping Connections

WARNING

The internal piping and the cabinet connections are SCH80 PVC.

DO NOT OVERTIGHTEN.

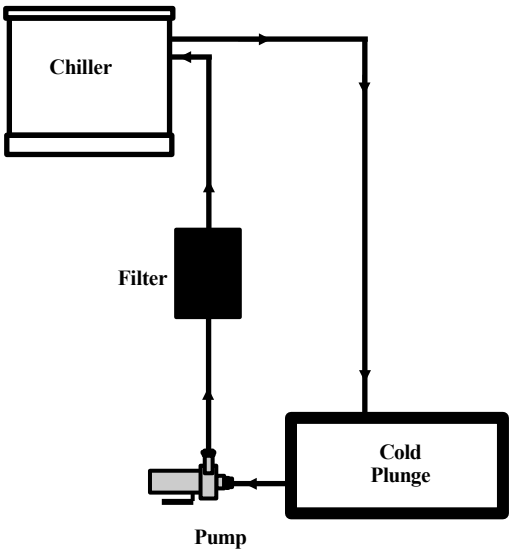
Follow all local codes to make your plumbing connections. Use external pipe supports to prevent stress on chiller pipes and connections.

Pool chillers are intended to be connected with PVC, cupronickel, or other non-ferrous piping. Copper or steel piping will not provide good service life as the chlorinated pool water will corrode them quickly.

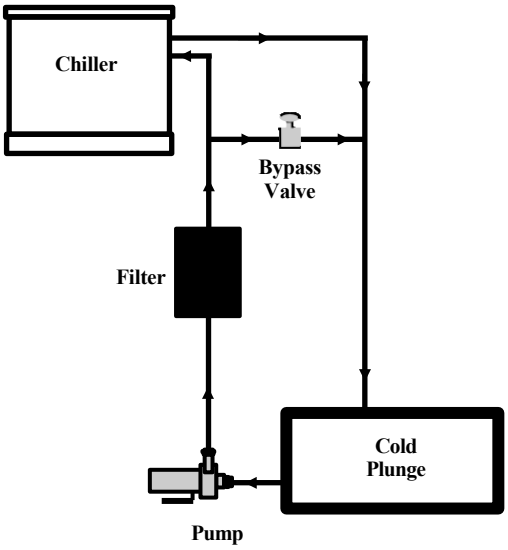
The maximum pressure rating of the chiller is 60psi. If these parameters are not high enough, the chiller should be installed in a side stream with balancing valves to regulate the flow and pressure.

Insulate the water lines with a minimum of 1/2" thick quality insulation. The heat absorbed from plumbing and in-floor piping can reduce the capacity of a small chiller to a point of limited effectiveness.

Series Installation



Side Stream Installation



2.4 Chiller Startup Procedure

APPLY POWER TO CHILLER A MINIMUM OF 12 HOURS BEFORE STARTING COMPRESSOR
Failure to do will void compressor warranty.

FOR 3 PHASE UNITS ONLY

Check the proper rotation of the compressor before running the chiller. Bump the compressor by pushing in the contactor manually momentarily and listening for a "Growl" and "Shudder" from the compressor. If you have refrigeration gauges, the pressure will rise if the compressor is turning in the correct direction.

Important Start Up Considerations

1. Startup Packet:

All American Chillers include a Startup Packet that must be filled out by the installer and signed by the property owner. This packet documents the installation and startup procedure. American Chillers reserves the right to deny warranty claims if this Startup Packet is not completed correctly.

2. Power Connections:

Refer to the chiller name plate to make the appropriate power connections. It is very important to check the line voltage and record it in the chiller start up sheet.

After determining the line voltage average record here_____. The jumper is factory positioned for 220-253 volts. If the voltage is between 207-220 volts move jumper up. For voltage lower than 207 volts or higher than 253 volts contact American Chillers for further assistance.

3. Flow Safety Switch:

A flow switch is in the water outlet line. This is a paddle type safety. You must have adequate flow before the switch will close and allow the control circuit to start the compressor. Normally, (1.5 GPM/ton) is required as minimum flow.

4. Temperature Controller:

Set for 40 to 55°F water. The sensor is located on the inlet water line. This will mean that when the cold plunge is 3 degrees warmer than the set point, the compressor will start running. When the cold plunge (chilled water inlet) is cooled to set point, the compressor shuts off. **A delay time will not allow the compressor to run again until a minimum off cycle has elapsed**. This is designed to protect the compressor and keep it from short cycling. Normally this delay is 2 to 3 minutes.

5. FreezeStat Controller:

Typically set for 38°F. This measures the temperature of the water leaving the chiller and is designed as an additional safety to prevent the heat exchanger from freezing.

6. Refrigeration Pressures:

The refrigeration pressures should be checked for normal operation. The suction temperature should be approximately 10 degrees cooler than the leaving water temperature when the leaving water temperature is near set point. The pressure could be much higher when the water temperature is high, especially at start up.

The refrigeration high pressure will depend on the ambient air temperature and the loading of the compressor. If the ambient air temperature entering the condenser coil is below

70°F, it is possible that the fan cycling switch will cycle the fan between 450 psi and 250 psi.

7. Water Pressures:

The maximum water pressure is 60 psi. If it is above this entering the chiller it will be necessary to install a Pressure Reducing Valve (PRV) on the inlet to reduce the pressure. The minimum water pressure is 15 psi. This minimum pressure is necessary to keep the evaporator shell flooded during operation.

8. Water Flow Rate:

Minimum flow rates must be observed. See chart below for flow rate guidelines.

Model	Size (tons)	Avg. Flowrate	Temp. Delta
SPPC (Standard)	1.5 – 7.5	2.5 GPM/Ton	8-10˚F
SPPC-TI (Titanium)	1.5 – 4	25-55 GPM	1-2˚F
	5 – 7.5	55-110 GPM	1-2˚F

9. Compressor Cycling:

The compressor should cycle on the thermostat set point and differential. The compressor will start at set point plus differential (3 degrees factory default).

The compressor time delay (DOB) will prevent the compressor from short cycling. After the compressor shuts off, the DOB starts to time out. The off cycle is set at 2 minutes. When the timer times out it will close the internal switch and allow the control power to pass through to the compressor contactor.

10. Condenser Air Flow:

Check that the condenser air flow is not obstructed. **Condenser fans are not designed to push or pull against static pressure (resistance).** If the head pressure runs high, check for debris in the coil or external obstructions.

3. Operating Instructions

3.1 Controller Instructions

Models: SPPC, SPPC-TI

Remote Control panel is factory programmed & ready for operation.

TEMPERATURES

- Sd1 = Water temperature entering chiller from pool. Normally displayed on controller screen
- Sd2 = Water temperature leaving chiller (colder). Can be viewed by pressing SET & UP at the same time.

SETPOINTS

- Press SET to view OUT1 set point.
- Use the UP or Down arrows to change setpoint.
- Press SET to save and OUT2 setpoint will be displayed.
- OUT2 is the low temperature cutout/FreezeStat.

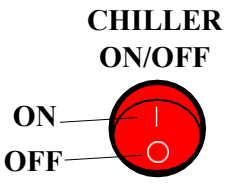
OUTPUTS

Out 1: Chiller Temperature Control
When displayed the temperature is above the setpoint (SP1) plus differential. See next page for factory settings.

Out 2: Low Temp Cutout/FreezeStat
When displayed the temperature is above setpoint 2 (SP2) plus differential. See next page for factory settings.

ON/OFF Switch

- Switch will be red or black with a light
- Switch as shown is in the OFF position



No Flow Light

- The No Flow Light will illuminate when there is insufficient flow in the chiller system. Correct flow problem. Do not run pump for a long period in a no flow condition.

Models: SPPC, SPPC-TI

WIRING INSTRUCTIONS

Wiring diagram is displayed on the inside cover of the unit and in Figure 1.
NOTICE: If length of the probe cables is greater than100 meters, a recalibration must be made (parameter P1).

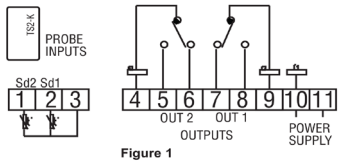


Figure 1

PROGRAMMING PARAMETERS

In order to adjust parameter values, parameter lock jumper must be set in unlocked position (Figure 2).

Figure 2

Access only to Set Points SP1 and SP2 (without code protection):

- Press SET key. Out1 LED and out1 set point value will flash on the display.
- Modify the out1 set point value using the UP and DOWN keys.
- Press SET key to store the out1 set point value and advance to out2 set point value.
- Modify the out2 set point value using the UP and DOWN keys.
- Press SET key to store the value and return to home screen.

Access to all parameters (code protected):

- Press SET key. Out1 LED and out1 set point value will flash on the display.
- Modify the out1 set point value using the UP and DOWN keys.
- Press SET key to store the out1 set point value and advance to out2 set point value.
- Modify the out2 set point value using the UP and DOWN keys.
- Press SET key to store the value and return to home screen.

Resetting the Parameter

The parameter code can be set to zero by holding the SET key and turning the controller off then on again.

Led Indications

Out1: Indicates relay 1 On or Off as per parameter H2. If H2=dir, with relay 1 On, LED lit, if H2=inv, with relay 1 On, LED off. It blinks when SP1 is displayed.
Out2: Indicates relay 2 On or Off as per parameter H3. If H3=dir, with relay 2 On, LED lit, if H3=inv, with relay 2 On, LED off. It blinks when SP2 is displayed.

ERROR MESSAGES

Under normal operation, the temperature of the probe selected by P4 will be displayed, the following messages may also appear:

- Err Memory reading error.
- ErP Error of the probe not shown on the display.
- AH1 Maximum temperature alarm, probe 1.
- AL1 Minimum temperature alarm, probe 1.
- AH2 Maximum temperature alarm, probe 2.
- AL2 Minimum temperature alarm, probe 2.

- ooo Open probe.
- --- Shorted probe.

Pressing SET and UP keys simultaneously will display the temperature of the probe not selected by P4 will be displayed. When the probe not selected by P4 is dis- played, it alternates its value with message Sd1 or Sd2 depending if it is probe 1 or probe 2. Pressing SET and DOWN keys simultaneously will cancel. The display blinks when waiting for a value confirmation.

Silence the Buzzer

Pressing the SET and DOWN keys simultaneously silences the buzzer. The message of alarm continues appearing in the display.

Setting Parameters to Factory Values

- Access parameter H0 as explained in programming parameters.
- Value 0 will be displayed.
- Press SET for 8 seconds. Pro will be displayed if they have been setup correctly.
- Press SET + DOWN to exit setup or wait for 1 minute.

PARAMETER LIST

Pa.	Description	Units	Range	Cupronickel Chiller	Titanium Chiller
SP1	Set point 1	Degrees	r4 to r6	45.0	45
SP2	Set point 2	Degrees	r5 to r7	35.0	38.0
r0	Dependency SP1 to SP2	Option	Ind or dep	Ind	Ind
r1	Differential for SP1	Degrees	0.1 to 20.0	3.0	3.0
r2	Differential for SP2	Degrees	0.1 to 20.0	3.0	3.0
r3	Band differential	Degrees	0.1 to 20.0	1.0	1.0
r4	Lowest value for SP1	Degrees	-99.9 to r6	45.0	40.0
r5	Lowest value for SP2	Degrees	-99.7 to r7	35.0	35.0
r6	Highest value for SP1	Degrees	r4 to 302	60.0	60.0
r7	Highest value for SP2	Degrees	r5 to 302	60.0	60.0
r8	Regulation or Operating Mode	Option	On1, On2, nEU	On2	On2
A0	Alarm Differential	Degrees	0.1 to 20.0	0.5	0.5
A1	Maximum alarm probe 1	Degrees	0.1 to 99.9	99.9	99.9
A2	Maximum alarm probe 2	Degrees	0.1 to 99.9	99.9	99.9
A3	Minimum alarm probe 1	Degrees	0.1 to 99.9	99.9	99.9
A4	Minimum alarm probe 2	Degrees	0.1 to 99.9	99.6	99.6
A5	Alarm verification time	h-m(*)	0.0 to 18.0	00.2	00.2
A6	Alarm probe 1 selection	Option	AHL, Ano, AH, AL	AHL	AHL
A7	Alarm probe 2 selection	Option	AHL, Ano, AH, AL	AHL	AHL
c0	Minimum relay stop time	Minutes	0 to 240	O	O
c1	Operation relay 1	Option	dir or inv	dir	dir
c2	Operation relay 2	Option	dir or inv	dir	dir
c3	Fail Safe Operation relay 1	Option	Opn or Clo	Opn	Opn
c4	Fail Safe Operation relay 2	Option	Opn or Clo	Opn	Opn
P0	Temperature Units Selection	Option	°C or °F	°F	°F
P1	Calibration Probe 1	Degrees	-20 to 20	0.0	0.0
P2	Calibration Probe 2	Degrees	-20 to 20	0.0	0.0
P3	Decimal Point	Option	no or yes	yes	yes
P4	Probe to be displayed	Option	sd1 or sd2	sd1	sd1
P5	Number of Probes	Option	1 or 2	2	2
H0	Factory Reset Values	Option	0	0	0
H1	Keypad tamper protection	Option	no or yes	no	no
H2	Operation of Out1 LED	Option	dir or inv	dir	dir
H3	Operation of Out2 LED	Option	dir or inv	dir	dir
H4	Address for serial communication	Range	0-999	0	0
H5	Access code to parameters	Range	0-999	0	0
H6	Probe Type Selection	Option	Ptc or ntc	PTC	PTC

(*)h-m are data in format XX.Y where XX are hours and Y tens of minutes.

PARAMETER DESCRIPTIONS

- **SP1**=Setpoint of relay1. Variable between r4 and r6.
- **SP2**=Setpoint of relay 2. Variable between r5 and r7.
- **r0**=Dependency between SP1 and SP2. Only for mode ONOFF1
  Ind=set point for relay 2, SP2. dep=set point for relay 2, SP1+SP2.
- **r1**=Differential or hysteresis for relay 1. Temperature differential between ON/OFF of relay 1 in ON/OFF control.
- **r2**=Differential or hysteresis for relay 2. Temperature differential between ON/OFF of relay 2 in ON/OFF control.
- **r3**=Band differential. Temperature differential between ON/OFF of relays 1 and 2 in neutral area control. For relay 1 it is added to SP1 and for relay 2 it is subtracted from SP1.
- **r4**=Lowest value for SP1.
- **r5**=Lowest value for SP2.
- **r6**=Highest value for SP1.
- **r7**=Highest value for SP2.
- **r8**=Regulation or operating mode. Selection of the operating mode.
- **A0**=Alarm differential. It is the temperature differential between the alarm On and Off cycle.
- **A1**=Maximum alarm probe1.
  Maximum alarm ON when probe 1 higher than SP1+A2 Maximum alarm OFF when probe 1 lower than SP1+A2-A0.
- **A2**=Maximum alarm probe2.
  Maximum alarm ON when probe 2 higher than SP2+A2 Maximum alarm OFF when probe 2 lower than SP2+A2-A0.
- **A3**=Minimum alarm probe1.
- Minimum alarm ON when probe 1 lower than SP1-A3 Minimum alarm OFF when probe 1 higher than SP1-A3+A0.
- **A4**=Minimum alarm probe2.
- Minimum alarm ON when probe 2 lower than SP2-A4 Minimum alarm OFF when probe 2 higher than SP2-A4+A0.
- **A5**=Alarm verification time. Time from the alarm event until it trips.
- **A6**=Alarm probe 1 selection. (See Figure 3).
  AHL=Maximum and minimum alarm probe 1 enabled. Ano=No alarms probe 1.
  AH=Maximum alarm probe 1 enabled. AL=Minimum alarm probe 1 enabled.
- **A7**=Alarm probe 2 selection. (See Figure 3).
  AHL=Maximum and minimum alarm probe 2 enabled. Ano=No alarms probe 2.
  AH=Maximum alarm probe 2 enabled. AL=Minimum alarm probe 2 enable
- **c0** = Minimum relay stop time. Minimum time from the disconnection of a relay until it can be switched on again.
- **c1** = Operation relay 1. Selection between direct or reverse operation for relay 1. **c2** = Operation relay 2. Selection between direct or reverse operation for relay 2. **c3** = Default operation relay 1. In case of failure of probe 1:
  oPn= relay 1 will remain open. Clo= relay 1 will remain closed.
- **c4** = Default operation relay 2. In case of failure of probe 1 (for all modes except- ing ON OFF2) or in case of failure of probe 2 (for mode ON OFF2):
  oPn= relay 2 will remain open. Clo= relay 2 will remain closed.
- **P0** = Temperature scale selection.
- **P1** = Calibration of probe 1. Offset degrees to be added to probe 1.
- **P2** = Calibration of probe 2. Offset degrees to be added to probe 2.
- **P3** = Decimal point. If the displayed value of the probes is desired with decimals or not.
- **P4** = Probe to be displayed. Probe always on the display. The other probe can be seen pressing the keys SET+UP. // sd1= probe 1. // sd2= probe 2.
- **P5** = Number of probes. If P5=1, there is no ONOFF2 mode. If selected, it will oper- ate as ONOFF1.
- **H0** = Reprogramming. Parameter to reprogram the thermostat.
- **H1** = Keyboard protection. To change the settings, enter into parameter and exit again. The protection setting is momentarily released. It switches on again 1 minute after the last time a key was pressed.
  Yes = Keyboard Protected. No = Keyboard non protected.
- **H2** = Operation of LED OUT1. // dir = On when relay 1 is ON. inv = On when relay 1 is OFF.
- **H3** = Operation of LED OUT2. // dir = On when relay 2 is ON. inv = On when relay 2 is OFF.
- **H4** = Serial communication address. Address for computer connection.
- **H5** = Parameter entry code. Factory set as 0.

3.2 Maintenance Checklist

Recommended Monthly

1. Check all wiring to make sure there are no loose wires. Tighten any loose wires. If the wire looks damaged from being loose (burned, etc.), replace it. Loose or damaged wires can cause electrical components and motors to fail.

2. Check high and low voltages and amps (and make a record of them for comparison during your next maintenance check). If any voltages are out of range, there could be an issue. Contact us. Extreme voltages can cause serious damage to electrical components and motors.

3. Visually inspect the refrigeration and water piping. Look for leaks and/or missing insulation. Repair if needed.

4. Connect refrigeration gauges – check the pressures. Pressures that are not correct can cause the chiller to run improperly and inefficiently and may also be an early sign of a refrigeration leak.

5. Clean any debris that may be blocking the condenser / condenser air flow. A condenser coil that isn't kept clean will reduce the efficiency of the chiller.

6. Clean strainer or clean/replace filter, making sure that any debris in the pipes is not allowed through to the evaporator. Flow problems often occur due to a clogged strainer or evaporator. If you have flow issues, NEVER operate without

7. Check flow switch. Valve off pump. Make sure that compressor stops immediately when flow is stopped. The flow switch helps to protect the chiller from freezing due to low water flow through the evaporator.

8. Check pump (if applicable). Check flow, psi, amps and actual power at motor.

9. Check glycol (if applicable). Check glycol percentage and fluid quality. Glycol percentage should be based on the coldest winter ambient temperature or 15F degrees colder than the fluid set point. Poor fluid quality will reduce chiller efficiency and can cause permanent damage to the evaporator.

10. Check tank heater (if applicable) and heater safeties. Safeties include high temperature control and float level switch.

11. Check tank fluid level. Top off with the appropriate fluid.

4. Terms of Sale

4.1 Terms & Conditions

The Terms and Conditions of Sale and the Limited Warranty outlined below shall apply to any goods and services supplied by American Chillers LLC ("Seller"). The customer ("Buyer") shall be deemed to have full knowledge of this Agreement.

1. **QUOTATIONS -** Unless otherwise stated by the Seller, all quotations will have a maximum validity of 30 days or the quotation validity date, whichever comes first.
2. **PRICES -** Unless expressly stated, all prices exclude transportation costs, insurance costs, duties and taxes.
3. **ORDERS -** All orders received are subject to acceptance by the Seller. Orders must identify quantity, model, applicable price, requested delivery date and ship-to information for the goods being purchased. Orders may not be canceled or rescheduled without the Seller's approval and confirmation.
4. **TAXES -** Unless expressly stated, prices do not include any form of taxes.
5. **PAYMENT TERMS -** Unless expressly stated, payment terms are 50% deposit to initiate order and 50% before shipment of the final product.
6. **TITLE OF GOODS -** Title to goods shall remain with the Seller until Invoice is paid in full.
7. **DELIVERY -** Delivery dates are approximate and not guaranteed. Seller is not liable for loss of business related to delays in product shipment.
8. **DELAYED SHIPPING FEES -** If the Buyer requests a delay in the shipment date, Buyer will be subject to storage fees.
9. **PATENT INDEMNITY -** If specifications and designs are provided by the Buyer, the Buyer agrees to indemnify the Seller against all claims, demands, loss and liability, including costs or fees resulting from actual or alleged infringements of any U.S. or foreign patent, trademark or copyright, by reason of the manufacture of the goods.
10. **ORDER CANCELLATION -** All cancellations must be approved by the Seller. Restocking charges will be assessed by the Seller on a case-by-case basis.
11. **RETURN GOODS -** No goods should be returned to the Seller without prior written authorization. All returns for warranty consideration must be adequately packaged to handle normal rigors of transportation and handling. Return transportation will be at the Buyer's expense.
12. **WARRANTY LIABILITY** - The Seller's liability shall be limited to the Seller's published manufacturer's warranty, provided the Buyer submits written notice within the warranty period.
13. **FORCE MAJEURE -** Neither party shall be liable for any delay or failure in performance (other than failure with respect to payment obligations) due to acts beyond their control including, but not limited to, acts of God, war, warlike conditions, blockade, embargoes, riots, governmental restriction, labor disturbances, resultant disruption in supplies, transportation or loading facilities, wrecks, epidemics and quarantines, fire, flood, earthquakes or any other causes beyond it's reasonable control.

4.2 Limited Warranty

1) **This warranty begins with the shipping date to the original purchaser (end user):**
All parts are guaranteed to be free of defects in material and workmanship for 12 months. Compressors are guaranteed to be free of defects in material and workmanship for 60 months. This warranty **does not cover** damage as result of freezing harmful chemicals. Poly tanks are guaranteed against material failure for a period of 10 years from original purchase date. This guarantee does not cover leaks from bulkhead fittings or the bulkhead fittings and gaskets or punctures.

2) **This warranty does NOT cover**:
- Damages caused by accident, abuse, negligence, misuse, war, fire, riot, flood, Acts of God
- Damages caused by operating the product in a corrosive environment
- Damages caused by an un-authorized alteration or repair of the product which affects the product's reliability or performance
- Damages caused by improper matching of product with components in the application
- Damages by failing to provide routine and proper maintenance to the product
- Products lost or stolen
- Expenses related to erecting, disconnecting or dismantling the product
- Products no longer at the site of the original installation
- Stress, power problems, or conditions external to the chiller
- Improper installation, start up, operation, or application of the chiller
- Freezing of the component or chiller for any reason
- Any kind of negligence, or use of unauthorized glycols or chemicals or reimbursement for parts purchased locally to expedite the return to service of the chiller without prior approval.
- Parts not returned in good condition with adequate packaging and parts not returned within 30 days of receipt of the replacement.
- Glycol, anti-freeze
- Refrigerant
- Labor to repair, service calls and truck charges
- Loss of business

3) **General Policy Regarding Replacement Parts:**
American Chillers will repair or replace a covered part, with a new or reconditioned part, **upon return of the defective part, shipping prepaid, to American Chillers** . During the first 30 days of service, American Chillers will pay the normal shipping expenses both ways for the replacement and return part. Express or next day shipping costs are not included.

4) **Payment of Parts:**
All parts must be paid for at time of shipping unless the distributor has an open account in good standing. No parts will be sent to an end user without full payment prior to shipment, including the shipping cost.

5) **Shipping Damages:**
- Damages occurring or resulting during shipping are not covered by this warranty.
- You must inspect for damage before signing the delivery bill of lading and note any damages on the bill.
- Then, arrange an inspection with the delivering carrier, and apply for recovery of repairs or replacement.

6) **Call for Assistance:**
Please have the model, serial number, and understanding of the problem when you call.
Call: 803-822-3860