



Installation and Operation Instructions

Part No: 30RA-900---050; 30RA-900---051; 30RA-900---052

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INTRODUCTION

The chilled water storage tank accessory permits a storage tank to be mounted under the 30RAP chiller. Chilled water storage is recommended on some applications to maintain a desired loop volume, allowing the chiller to achieve the desired performance and control compressor cycling. See Table 1 for usage.

Located in the control box included with the accessory are fasteners to attach the chiller to the accessory tank. In addition to the parts supplied with the accessory package, the following material must be field-supplied:

- Water piping between the tank system and the chiller
- Tubing insulation (length determined by installation)

Table 1 — Package Usage

ACCESSORY PART NO.	UNIT SIZE 30RAP
30RA-900---050	010,015
30RA-900---051	018-030
30RA-900---052	035-060

SAFETY CONSIDERATIONS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components and equipment location.

Only trained, qualified installers and service technicians should install, start up, and service this equipment.

When installing this accessory, observe precautions in the literature and on any labels attached to the equipment, and all other safety precautions that may apply.

⚠ WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Keep quenching cloth and fire extinguisher nearby when brazing.
- Use care in handling, rigging, and setting bulky equipment. Refer to Table 2 for tank weights and Fig. 1 and 2 for rigging and weight information.

INSTALLATION

⚠ WARNING

Before beginning installation of this equipment, be sure all power to the unit is disconnected, and that tags are properly placed to alert others. Electrical shock can cause personal injury and death.

Step 1 — Rig and Place the Tank

RIGGING

Use spreader bars to rig the unit at a single point with 4 cables and hooks. Refer to the rigging label on the accessory for details concerning rigging options, shipping weights, distance between lifting holes, and center of gravity. See Fig. 1.

If overhead rigging is not possible, the accessory may be lifted from either end, but care must be taken to align forks to slots provided in each rail for support. Care must be taken not to hit or damage insulated tanks with forks.

PLACING ACCESSORY TANK

Determine the location of the accessory and 30RAP unit together. Ensure that the location supports the filled weight of the tank system and the chiller. See Table 2 and Fig. 2-5 for weights and dimensions. Since the 30RAP chiller mounts on top of the accessory, there must be at least 3 ft (0.9 m) for servicing and for unrestricted airflow on all non-coil sides of the unit, and a minimum of 3.5 ft (1.1 m) clear air space on coil sides. For multiple units, allow 8 ft (2.5 m) separation between units for airflow and service.

MOUNTING ACCESSORY TANK

When the accessory is in the proper location, the use of mounting holes in base rails is recommended for securing the accessory to supporting structure, or for mounting the accessory on vibration isolators if required. See Fig 3-5. Fasteners for mounting the accessory are field supplied. Be sure the accessory is level to within 1/8 in. per foot for proper oil return in the 30RAP chiller mounted on top.

Table 2 — Tank Capacities/Weights

30RA-900---	VOLUME		WEIGHT (FILLED ^a)		WEIGHT (UNFILLED)	
	Gal.	L	lb	kg	lb	kg
050	83	314	1673	759	980	445
051	119	450	2193	995	1200	544
052	241	912	4361	1979	2350	1066

NOTE(S):

a. Weights when filled with water.

NOTE: Remove all packaging before mounting the accessory tank to the unit.

MOUNTING UNIT TO ACCESSORY TANK

The 30RAP chiller mounts on top of the rails of the tank accessory. The 30RAP chiller piping connections should be located near the end of the accessory tank that has the piping connections. This will minimize field piping between the chiller and the accessory tank. The use of mounting holes in chiller base rails to the tank accessory is required. Fasteners for mounting the chiller to the tank accessory are provided and can be located in the control box. Mounting the 30RAP chiller on vibration isolation pads between the 30RAP chiller and the tank accessory is allowed but is not required.



CAUTION-NOTICE TO RIGGERS:

ALL PANELS MUST BE IN PLACE WHEN RIGGING.

1. 2.5 in. dia. [63.5mm] holes provided for lifting unit with pipe.

2. FOR OPTION #1

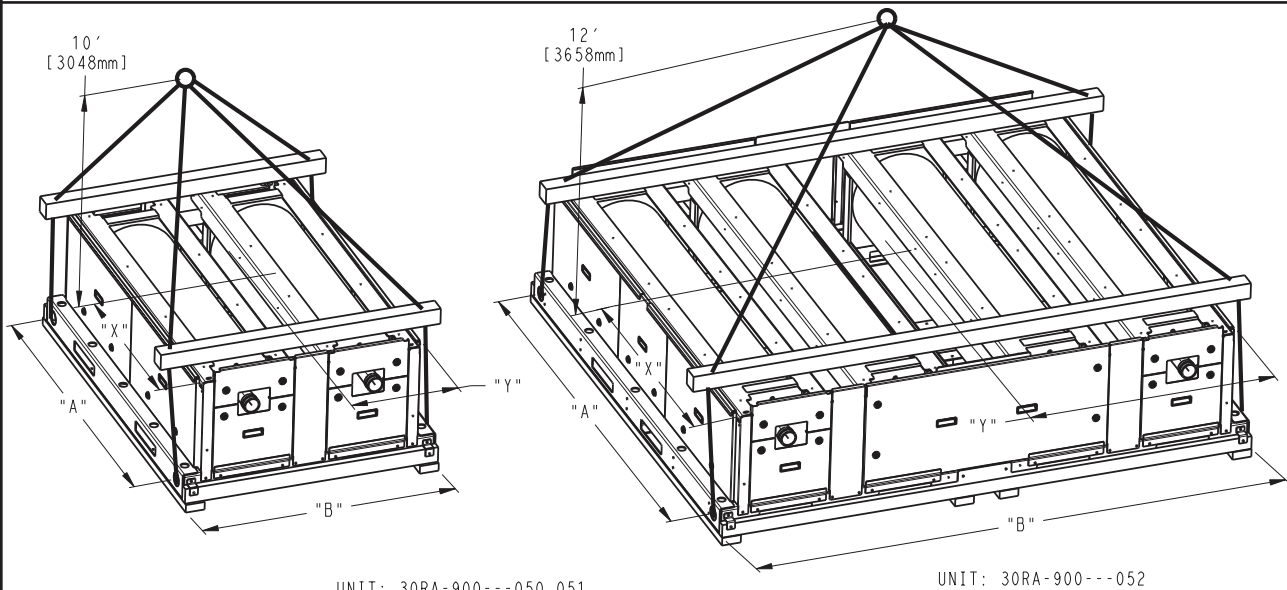
- * Rig with four cables using a minimum of 20 ft.[6096mm] length for 30RA-900---050,051 sizes, and 24 ft.[7315mm] length for 30RA-900---052 sizes.
- * Central lifting point must be a minimum of 10 ft.[3048mm] for 30RA-900---050,051 sizes and 12 ft.[3658mm] for 30RA-900---052 sizes above the top of unit.
- * (2) Spreader bars made from steel or double nailed, 2x6's approximately 5 ft.[1524mm] for 30RA-900---050,051 or 2x6's approximately 8.5 ft.[2591mm] for 30RA-900---052 in length and must be placed just above the top of unit on each end, to reduce damage to any sheet metal parts.
- * 2" diameter, schedule 40 pipes should be used in the unit rigging holes.

3. FOR OPTION #2

- * Rig with four cables using a minimum of 20 ft.[6069mm] length for 30RA-900---050,051 sizes, and 24 ft.[7315mm] length for 30RA-900---052 sizes.
- * Central lifting point must be a minimum of 10 ft.[3048mm] for 30RA-900---050,051 sizes and 12 ft.[3658mm] for 30RA-900---052 sizes above the top of unit.
- * (2) Spreader bars made from steel or double nailed, 2x6's approximately 5 ft.[1524mm] for 30RA-900---050,051 or 2x6's approximately 8.5 ft.[2591mm] for 30RA-900---052 in length and must be placed just above the top of unit on each end, to reduce damage to any sheet metal parts.
- * (4) cables or chains approximately 2.5 ft.[762mm] in length attached to each end of the spreader bars can be attached directly to the unit at each corner with grab hooks at the 2.5"[63.5mm] holes provided in the base rails.

4. FOR OPTION #3

- * Units can be forked from either end, but care must be taken to align forks to slots provided in each rail for support, extreme care should be taken not to hit or damage insulated tanks with forks!!! 30RA-900---052 Should only be forked through middle two holes.



UNIT: 30RA-900---050,051

UNIT: 30RA-900---052

MODEL NUMBER	MAX. SHIP. WT. W/PACKAGING LBS KGS	LIFTING HOLES				CENTER OF GRAVITY			
		A		B		X		Y	
		IN	MM	IN	MM	IN	MM	IN	MM
30RA-900---050	980 444.5	60.0	1524	47.0	1193	33.5	850	23.5	597
30RA-900---051	1200 544.3	82.0	2083	47.0	1193	44.5	1130	23.5	597
30RA-900---052	2350 1065.9	82.0	2083	98.7	2508	44.5	1130	49.4	1254

Fig. 1 — Accessory Rigging Label Detail

Unit Weights

Standard Units with Accessory Tank

30RAP SIZE	POUNDS				
	A	B	C	D	Total Weight
010	607	627	579	564	2377
015	611	631	582	567	2391
018	912	812	758	836	3318
020	914	815	760	838	3326
025	941	839	786	869	3435
030	953	849	794	880	3476
035	1742	1820	1503	1459	6524
040	1794	1788	1480	1484	6546
045	1766	1849	1516	1469	6599
050	1823	1814	1491	1496	6624
055	1834	1852	1527	1517	6730
060	1836	1852	1528	1519	6736

30RAP SIZE	KILOGRAMS				
	A	B	C	D	Total Weight
010	275.2	284.3	262.8	255.8	1078.2
015	277.4	286.1	263.8	257.1	1084.4
018	413.6	368.5	343.6	379.3	1505.0
020	414.5	369.5	344.5	380.2	1508.7
025	427.0	380.5	356.4	394.4	1558.2
030	432.3	385.0	360.3	399.0	1576.7
035	790.2	825.5	681.8	661.8	2959.3
040	813.9	810.9	671.4	673.1	2969.2
045	800.9	838.5	687.5	666.4	2993.3
050	826.7	823.0	676.4	678.4	3004.5
055	831.9	840.1	692.7	688.0	3052.7
060	833.0	840.3	693.2	689.0	3055.4

Single Pump Units with Accessory Tank

30RAP SIZE	POUNDS				
	A	B	C	D	Total Weight
010	633	682	632	592	2539
015	638	686	634	595	2553
018	953	854	797	877	3481
020	955	856	799	879	3489
025	982	880	825	910	3598
030	994	890	834	921	3639
035	1830	1905	1589	1544	6868
040	1881	1874	1565	1570	6890
045	1854	1933	1602	1554	6943
050	1909	1900	1576	1582	6967
055	1921	1938	1612	1602	7074
060	1924	1938	1613	1605	7080

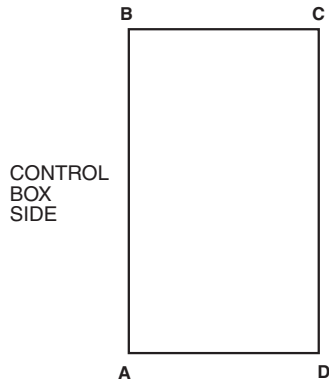
30RAP SIZE	KILOGRAMS				
	A	B	C	D	Total Weight
010	287.4	309.5	286.5	268.6	1151.9
015	289.5	311.3	287.4	269.9	1158.1
018	432.1	387.3	361.5	397.9	1578.8
020	433.0	388.3	362.4	398.8	1582.4
025	445.6	399.2	374.2	412.9	1631.9
030	450.9	403.8	378.2	417.6	1650.4
035	830.2	863.9	720.9	700.2	3115.1
040	853.3	849.8	709.9	712.1	3125.1
045	840.9	876.9	726.6	704.8	3149.1
050	866.1	861.9	714.9	717.4	3160.3
055	871.5	878.9	731.4	726.9	3208.6
060	872.5	879.1	731.9	727.8	3211.3

Dual Pump Units with Accessory Tank

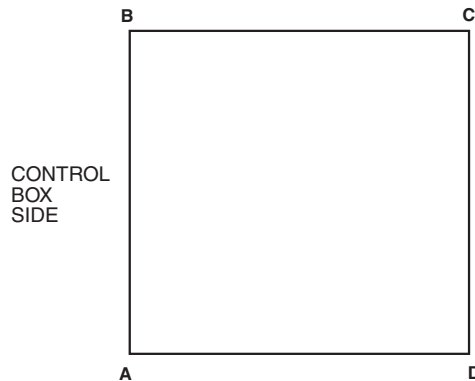
30RAP SIZE	POUNDS				
	A	B	C	D	Total Weight
010	661	737	684	620	2702
015	665	741	686	623	2716
018	993	895	836	918	3643
020	995	897	838	920	3651
025	1023	921	865	951	3760
030	1035	931	873	961	3801
035	1918	1990	1675	1629	7211
040	1968	1959	1650	1656	7233
045	1942	2018	1688	1639	7286
050	1996	1986	1661	1668	7311
055	2008	2023	1698	1688	7417
060	2011	2024	1699	1690	7423

30RAP SIZE	KILOGRAMS				
	A	B	C	D	Total Weight
010	299.7	334.5	310.2	281.2	1225.6
015	301.8	336.3	311.2	282.5	1231.8
018	450.6	406.1	379.4	416.4	1652.5
020	451.6	407.0	380.3	417.3	1656.1
025	464.2	417.9	392.2	431.4	1705.6
030	469.5	422.5	396.1	436.0	1724.1
035	870.0	902.5	759.8	738.7	3271.0
040	892.7	888.8	748.5	751.0	3281.0
045	880.7	915.4	765.6	743.3	3305.0
050	905.5	900.9	753.4	756.4	3316.2
055	911.0	917.7	770.1	765.7	3364.5
060	912.0	917.9	770.5	766.7	3367.2

30RAP010-030 Units



30RAP035-060 Units



NOTE: Even with the storage tank, all 30RAP chillers require only 4-point support. All weights include water.

Fig. 2 — Weight Distribution

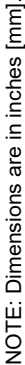


Fig. 3 — Dimensions 30RA-900---050 (Unit Sizes 010,015)

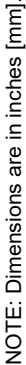


Fig. 4 — Dimensions 30RA-900---051 (Unit Sizes 018-030)

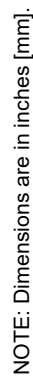


Fig. 5 — Dimensions 30RA-900---052 (Unit Sizes 035-060)

Step 2 — Connect Cooler Fluid and Drain Piping

The piping between the chiller and the accessory tank can be done to allow the tank to be on the return side of the chiller (tank piped to chiller inlet) or the supply side of the chiller (tank piped to the chiller outlet). See Fig. 6. However, it is recommended that the tank be piped to the return side of the chiller to buffer any changes in load to allow more stable chiller operation. For digital compressor applications, it is recommended that the tank be piped to the supply side of the chiller to provide a more stable supply temperature. See Fig. 7 and 8 for examples of piping layouts.

All sizes have 2-1/2 in. Victaulic connections. Provide a means of venting air from the high point of the field-installed piping as required. All sizes also have 2 in. drains at the bottom of each end of the storage tanks. This size has been provided to allow cleaning of foreign material that may collect at the bottom of the tanks.

After field piping is complete, freeze protection is recommended using inhibited ethylene glycol or other suitable inhibited anti-freeze solution and electric heat tapes in area where piping is exposed to low ambient temperatures (34°F [1°C] or below). Heat tapes should be rated for area ambient temperatures and be covered with a suitable thickness of closed-cell insulation. Route power for heating tapes from a separately fused disconnect. Identify disconnect as heat tape power source with a warning that power must not be turned off except when unit is being serviced.

PREPARATION FOR YEAR-ROUND OPERATION

If unit is in operation year-round, add sufficient inhibited ethylene glycol or other suitable inhibited antifreeze solution to chilled water to prevent freezing under low-ambient operating conditions.

Consult local water treatment specialist on characteristics of water and recommended inhibitor.

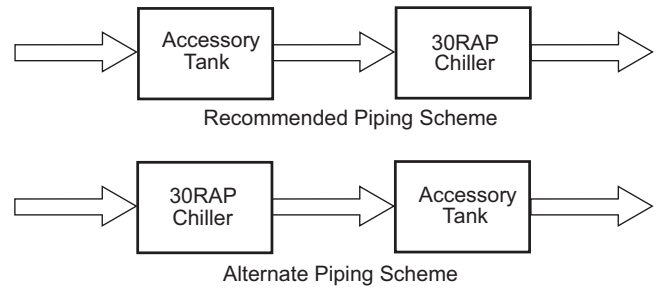


Fig. 6 — Typical Chiller/Tank Setup

PREPARATION FOR WINTER SHUTDOWN

Do not shut off electrical disconnect during off-season shutdown.
At end of cooling season:

1. Make sure LOCAL/OFF/REMOTE switch is in the OFF position on the chiller.
2. Drain water from the accessory tank system.
3. Replace drain plugs and fill tanks with a rust inhibiting anti-freeze solution to prevent freezing of residual water and rust build-up.
4. At beginning of the each cooling season, refill cooler and add recommended inhibitor.

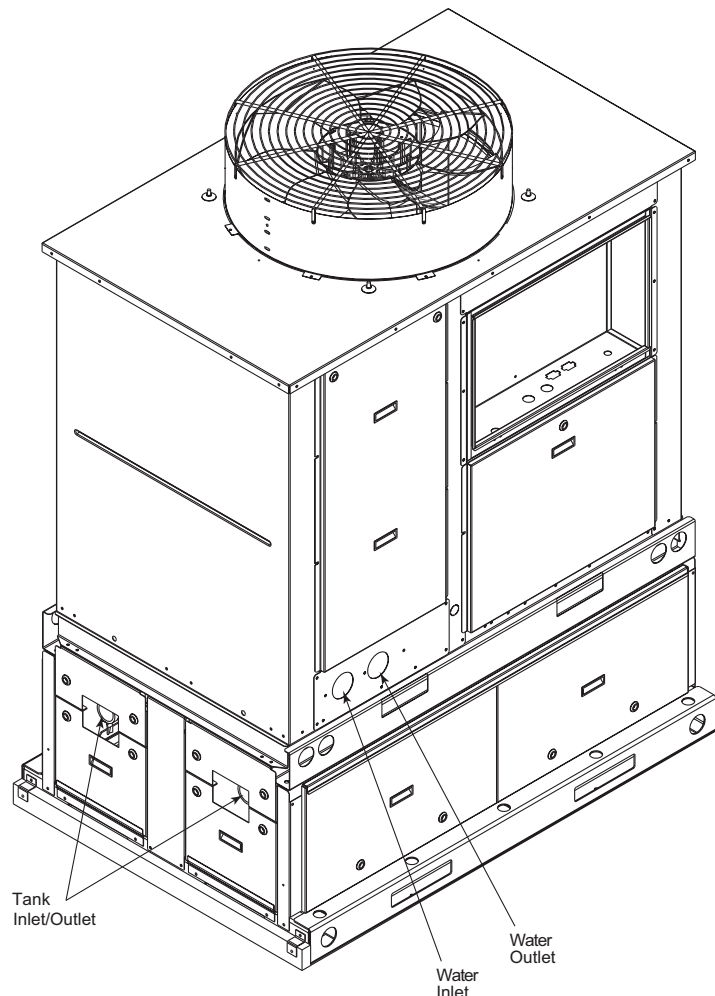


Fig. 7 — Typical Piping Layout — 30RA-900---050,051

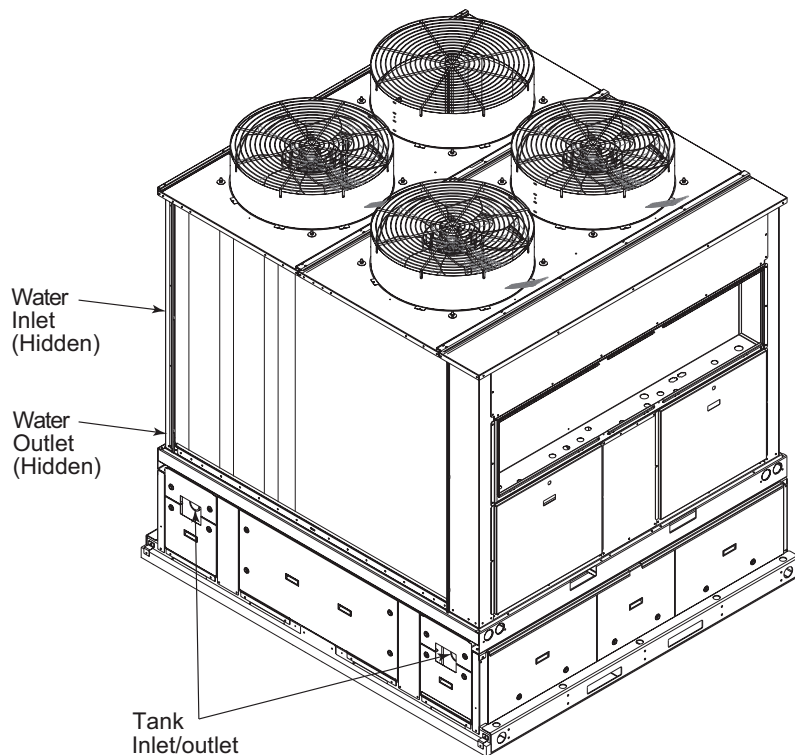


Fig. 8 — Typical Piping Layout — 30RA-900---052

Step 3 — Make Electrical Connections

POWER SUPPLY

The storage tank does not require a power connection to the tank heater if the chilled fluid has been properly treated with a suitable anti-freeze solution or the chilled fluid is drained during the winter season. If this is the case, installation is complete and the tank electric heater is not used.

ELECTRIC HEAT

The water storage tanks are provided with electric heaters to prevent freeze-up during low ambient temperature conditions. The heaters will provide freeze protection to -20°F (-28.9°C). Care must be taken to prevent freeze-up in the event of a power loss.

CONDUIT CONNECTION

The tank power is provided from the main unit control box. Conduit is supplied in the accessory kit which needs to be installed between the main control box and the tank heater control box. Perform the following steps to install the conduit:

1. Make a 0.75 in. (19 mm) diameter hole using a drill or punch per Fig. 9-11.
2. Knock out the conduit entry hole in the tank control box. See Fig. 12.
3. Remove the conduit connector from the end of the conduit opposite the end with ring terminals.
4. From inside the compressor section of the unit, feed the conduit through 0.75 in. (19 mm) hole made in Step 1.
5. Route the conduit between storage tanks to the storage control box and install connector removed in Step 3.
6. Make conduit connection to power entry hole in tank control box shown in Fig. 12.
7. Make power connections in tank control box to TB1A. Connect black wire to terminal 11. Connect yellow wire to terminal 12. Connect green wire to ground connection.

8. Connect red and brown control wires from conduit to red and brown wires in tank control box using wire nuts supplied in hardware kit.
9. Check tank heater wiring for proper termination. See Fig. 13. Accessories are shipped from the factory for high voltage wiring and if applied at 208/230 volts, will not have freeze protection down to -20°F (-28.9°C). A warning label is affixed to the tank to alert installers if the power supply is 208/230 volts. See Fig. 14. For 208/230 v units, the heater elements must be wired in parallel instead of series. Reconnect the black, red, and white wires in the tank heater wiring. See Fig. 13.

NOTE: Tank heater wiring in both control boxes (control box 1 and 2) must be changed for the 30RA-900---052 accessory.

10. Relocate HPS and EXV wires for sizes 015-030 and HPS-B wires for sizes 035-060 to compressor wire entry. See Fig. 15 and 16.
11. Route the end of the conduit assembly through the hole used for the HPS entry into the control box. Use the adapter washer provided with the hardware kit.
12. Make power connections to appropriate compressor circuit breaker as required. See Table 3 and Fig. 17.
13. Make control wire connection with RED and BROWN wires from conduit to wires labeled TNKR-HTR (RED) and TNKR-COM (BRN) located next to the low voltage terminal strip in main control box.

Table 3 — Compressor Circuit Breakers

30RAP UNIT SIZE	CONNECTION	
	BLK WIRE	YEL WIRE
010,015	CCB-1-21	CCB-1-22
018-030	CCB-1-21	CCB-1-22
035-060	CCB-3-21	CCB-3-22

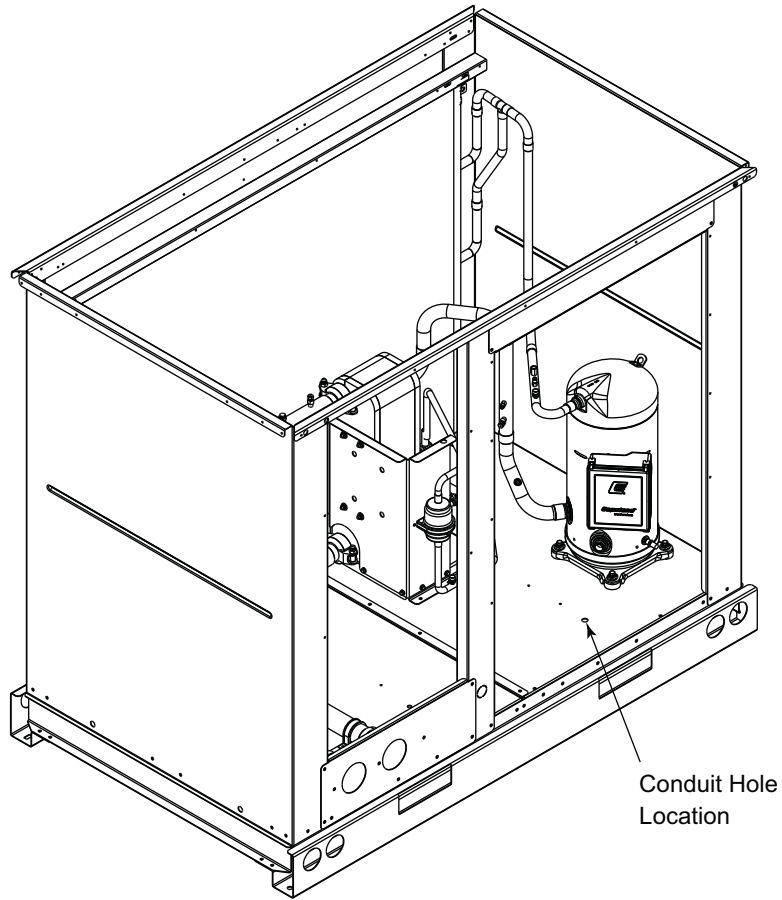


Fig. 9 — Conduit Hole Location — 30RAP010-015

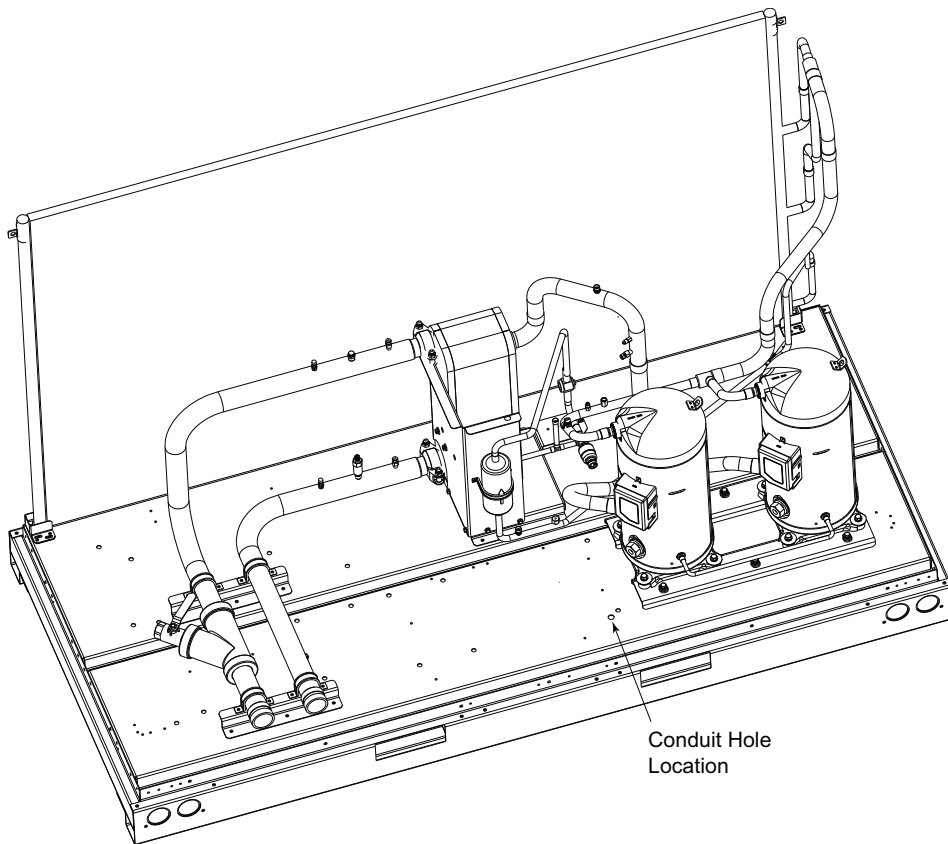


Fig. 10 — Conduit Hole Location — 30RAP018-030

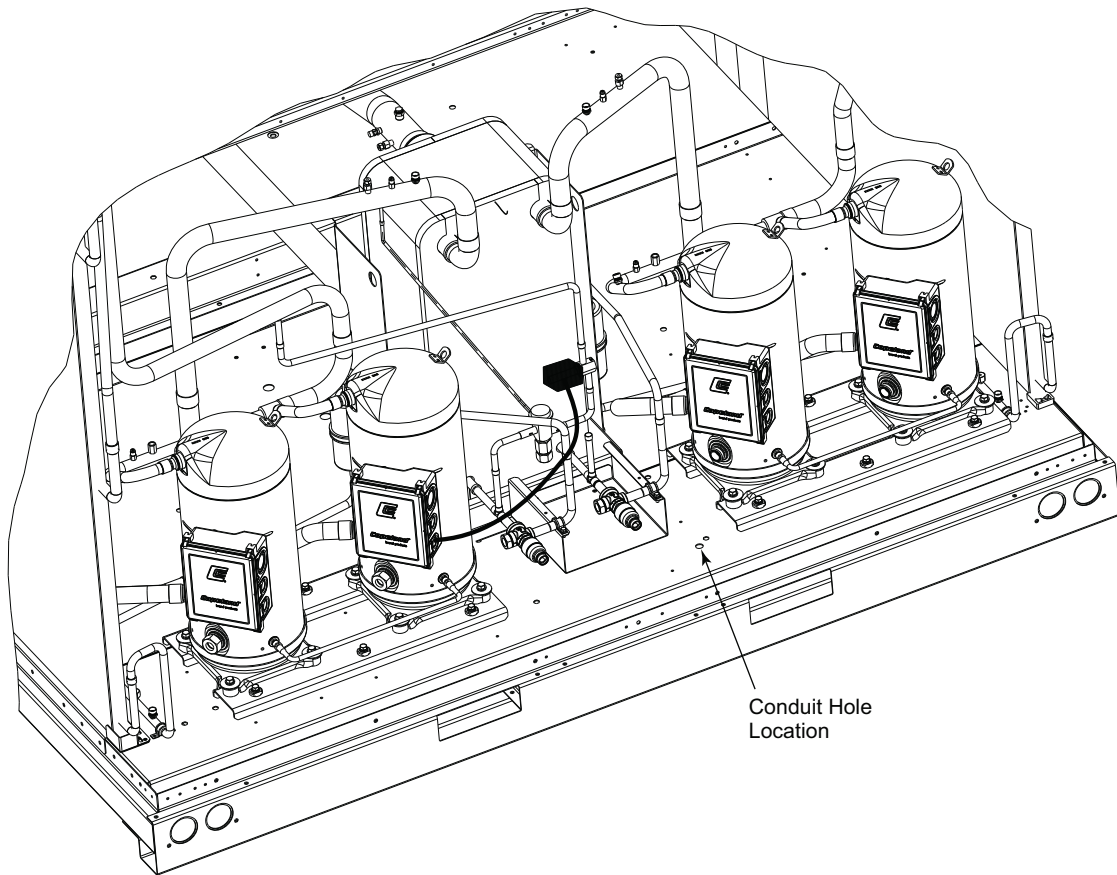


Fig. 11 — Conduit Hole Location — 30RAP035-060

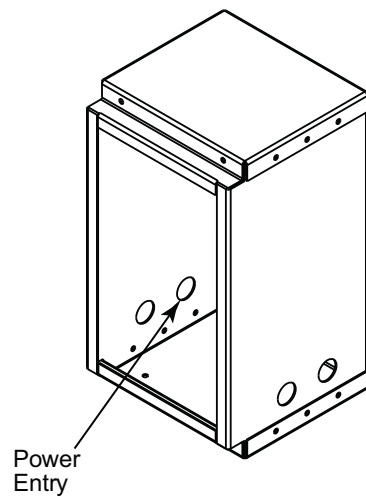
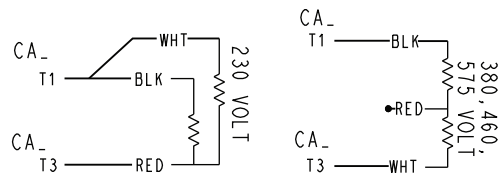
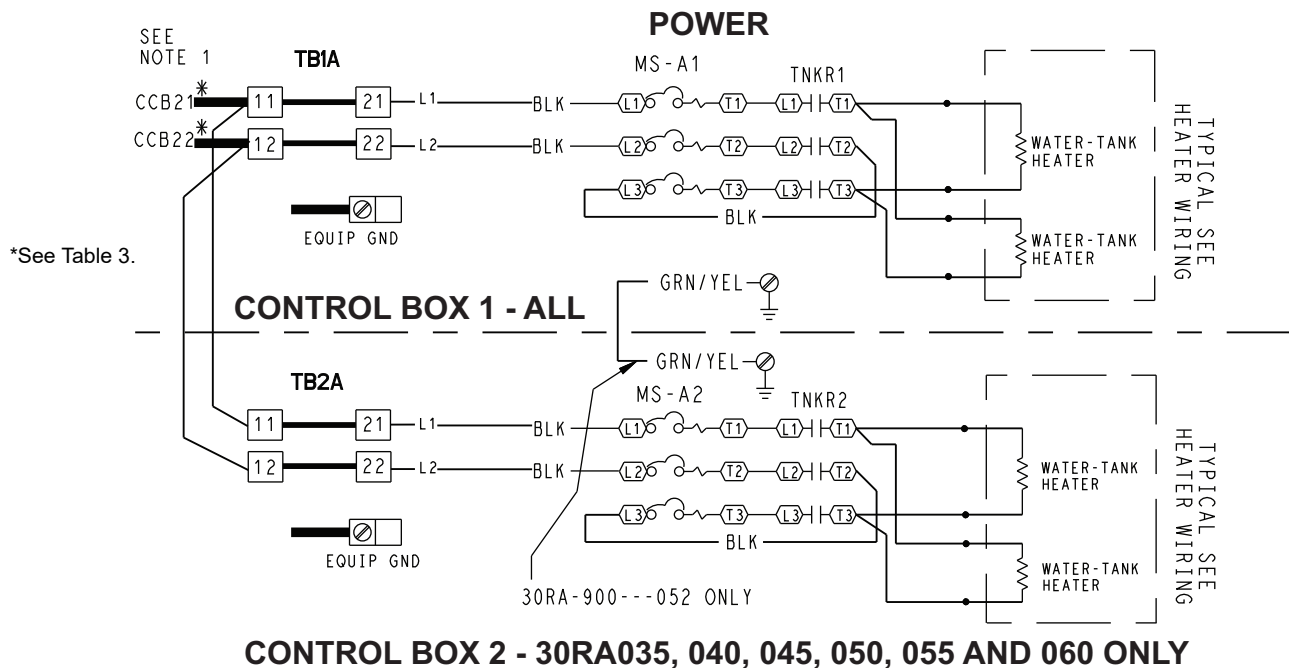


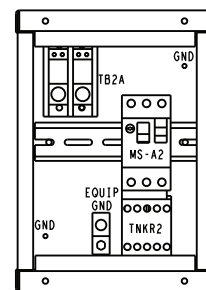
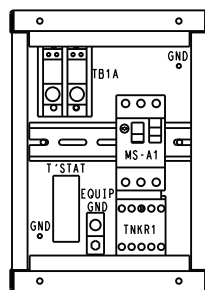
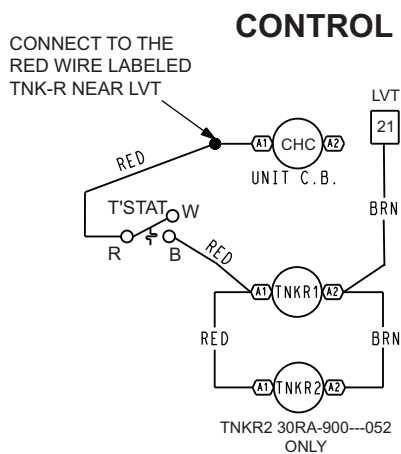
Fig. 12 — Tank Heater Control Box Power Entry



NOTE 1:

- *CCB : 10-15
- *CCB1 : 18-30
- *CCB3 : 35-60

TANK HEATER WIRING



30RA-900---052 ONLY

LEGEND

CA — Contactor, Storage Tank Heater

C.B. — Control Box

CCB — Compressor Circuit Breaker

GND — Ground

LVT — Low Voltage Terminal

MS — Manual Starter

TB — Terminal Block

TNKR — Tank Heater Relay

T'STAT — Thermostat

Fig. 13 — Accessory Tank Wiring

WARNING

TANK WIRED FOR 460/575/380V.
FOR 208/230V CONSULT
INSTALLATION INSTRUCTIONS.

Fig. 14 — Tank Warning Label

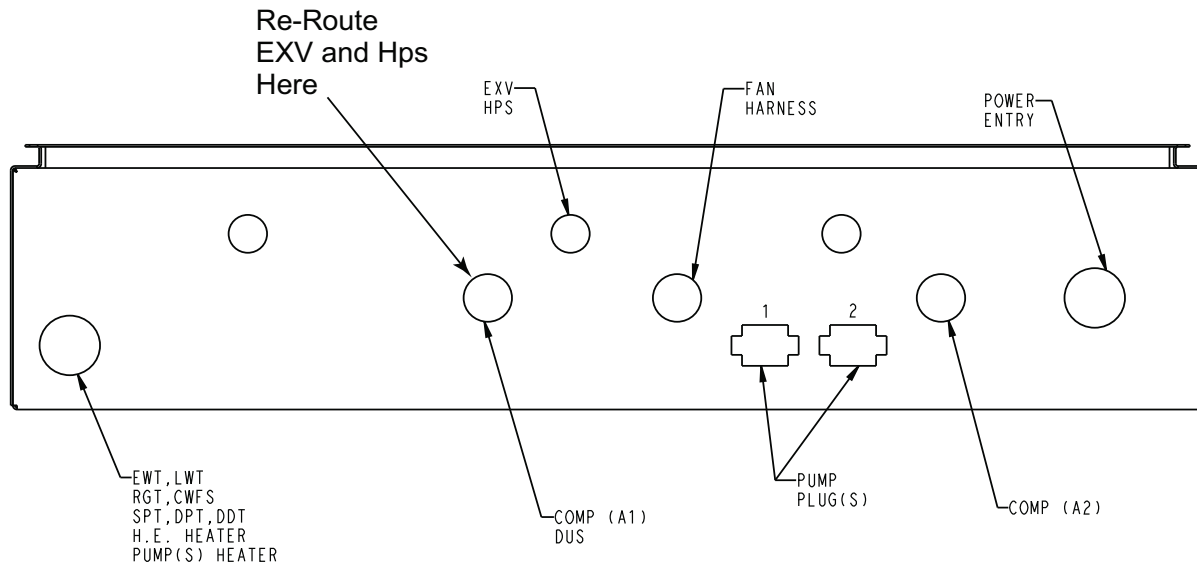


Fig. 15 — Re-Route Hole Location — 30RAP018-030

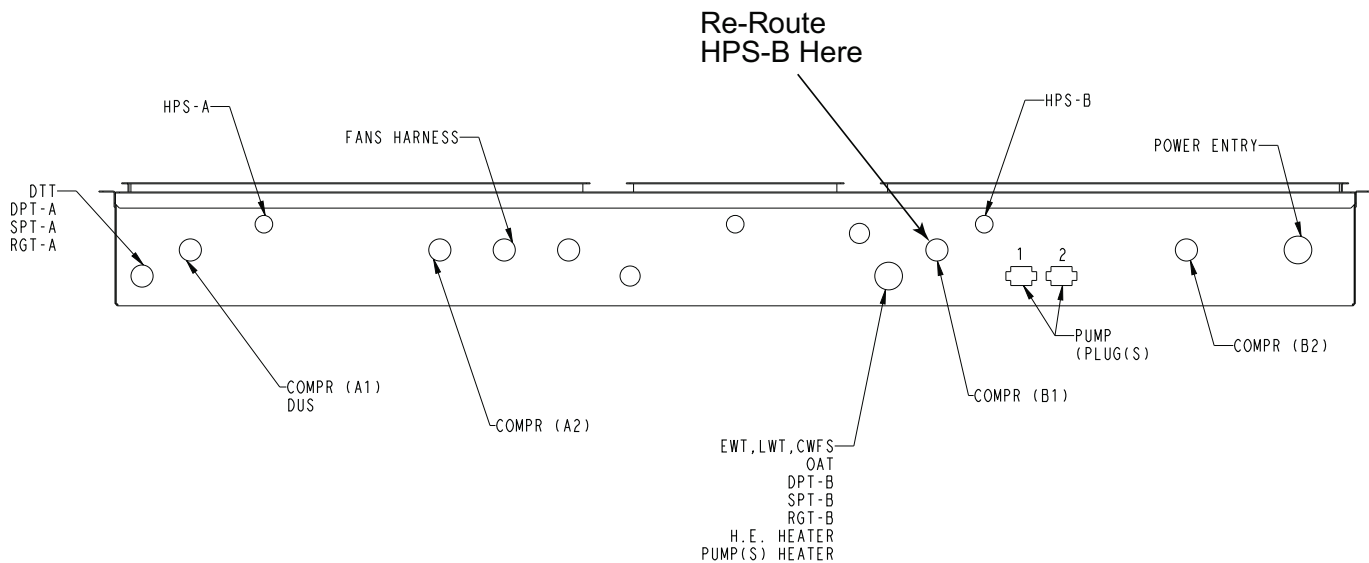


Fig. 16 — Re-Route Hole Location — 30RAP035-060

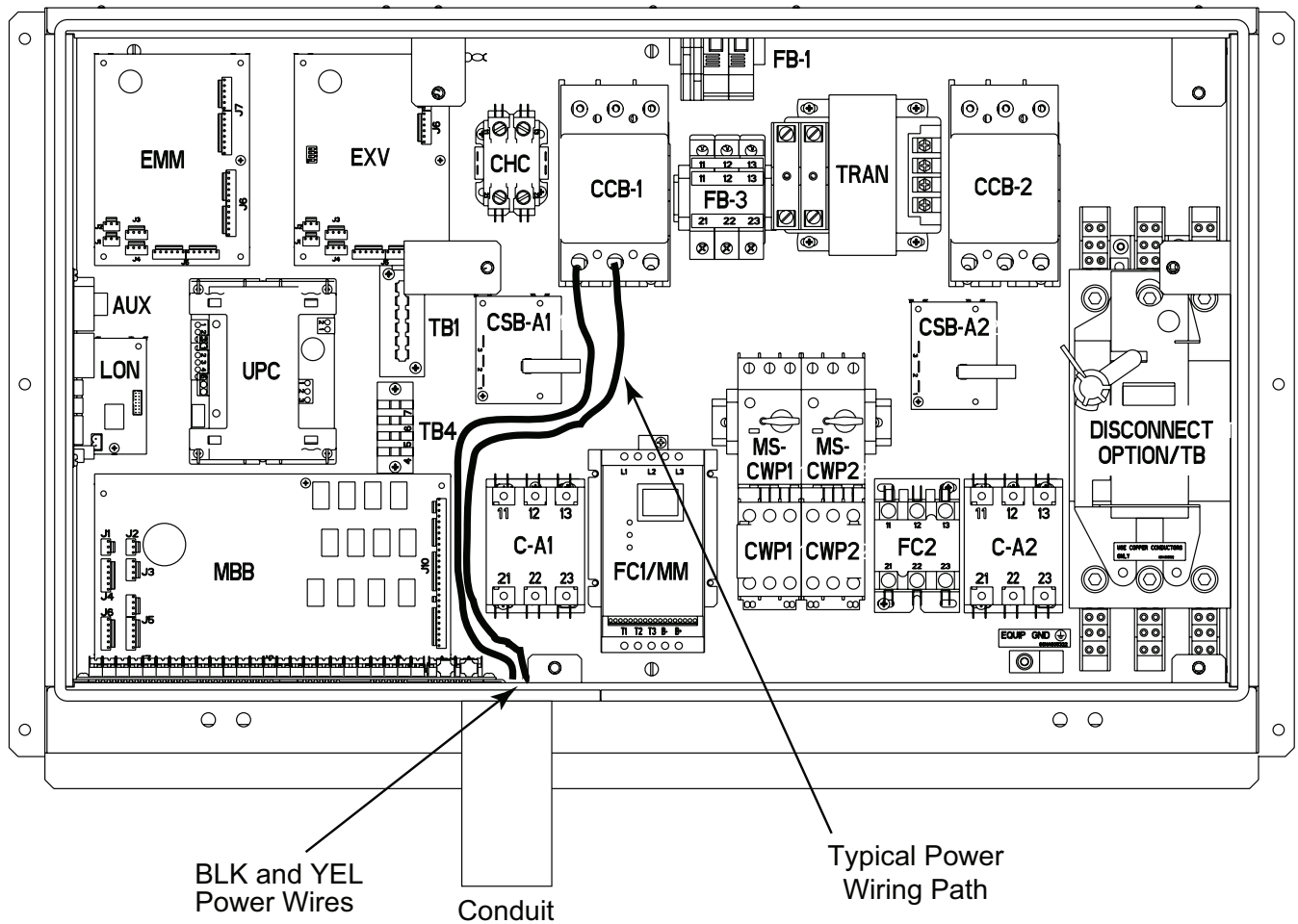


Fig. 17 — Tank Power Connections

OPERATION

A thermostat is mounted within the tank heater control box to regulate the water temperature. The thermostat is set to 55°F with a deadband of 5°F. When a call for the heating is made, the heater will turn on at 50°F and off at 55°F.

Restore power to the main unit and check heaters for proper operation. The tank heaters are in an operative state when the Emergency On-Off switch on the chiller is in the OFF position, and the thermostat is in closed position.

The tank heaters are wired in the control circuit so that they are operable as long as the main power to the chiller is ON. A factory-installed and set overload device protects them.

NOTE: The field-supplied disconnect should never be off except when the tank accessory and/or chiller are being serviced or are to be down for a prolonged period, in which case the accessory tank and chiller should be drained.

Storage tank pressure drop pressure drop curves are shown in Appendix A.

APPENDIX A — PRESSURE DROP CURVES

Storage Tank Pressure Drop Curves

