Installation and Operation Instructions

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

CONTENTS

INTRODUCTION

The chilled water storage tank accessory permits a storage tank to be mounted under the 30RC 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 accessory part 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 30RC
30RA-900---050	010,015
30RA-900---051	020-030
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. See Tables 2 and 3 for tank unit weights and requirements. See Fig. 1 and 2 for rigging details and weight distribution.

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 for rigging details.

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 30RC unit together. Ensure that the location supports the filled weight of the tank system and the chiller. See Table 2 for tank capacities. See Fig. 2-5 for unit weights and dimensions. Since the 30RC 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) of 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 for unit dimensions, mounting holes and accessory locations. 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 30RC chiller mounted on top.

Table 2 — Tank Capacities/Weights

PART NO. 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.

MOUNTING UNIT TO ACCESSORY TANK

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

The 30RC chiller mounts on top of the rails of the tank accessory. The 30RC 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 30RC chiller on vibration isolation pads between the 30RC chiller and the tank accessory is allowed but is not required. See Table 3 for unit sizes and weight requirements.

Table 3 — Unit Weights

MCHX with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	666	688	636	619	2610	**10**	302	312	288	281	1182
15	678	700	646	629	2654	**15**	307	317	293	285	1202
20	961	857	799	881	3498	**20**	435	388	362	399	1585
25	997	889	832	920	2338	**25**	451	403	377	417	1648
30	1006	897	839	929	3671	**30**	456	406	380	421	1663
35	1781	1861	1537	1492	6670	**35**	807	843	696	676	3022
40	1835	1829	1514	1518	6696	**40**	831	829	686	688	3033
45	1814	1899	1557	1509	6778	**45**	822	860	705	683	3070
50	1871	1862	1530	1536	6799	**50**	848	843	693	696	3080
55	1900	1891	1554	1559	6904	**55**	861	856	704	706	3128
60	1928	1919	1577	1582	7007	**60**	874	869	714	717	3174

MCHX, Single Pump with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	691	745	690	647	2773	**10**	313	337	313	293	1256
15	704	757	700	657	2817	**15**	319	343	317	297	1276
20	1002	898	838	922	3661	**20**	454	407	380	418	1658
25	1040	933	870	958	3801	**25**	471	422	394	434	1722
30	1049	941	878	966	3834	**30**	475	426	398	438	1737
35	1869	1945	1623	1577	7014	**35**	847	881	735	714	3177
40	1922	1915	1599	1604	7040	**40**	871	867	724	727	3189
45	1944	1937	1618	1623	7122	**45**	881	878	733	735	3226
50	1950	1943	1622	1627	7142	**50**	883	880	735	737	3235
55	1979	1971	1646	1652	7248	**55**	896	893	746	748	3283
60	1980	1972	1647	1652	7251	**60**	897	893	746	748	3285

MCHX, Dual Pump with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	718	801	743	673	2935	**10**	325	363	337	305	1330
15	729	813	754	684	2979	**15**	330	368	342	310	1349
20	1042	940	878	964	3823	**20**	472	426	398	437	1732
25	1080	974	910	999	3963	**25**	489	441	412	452	1795
30	1089	982	917	1007	3996	**30**	493	445	416	456	1810
35	1957	2030	1709	1662	7357	**35**	886	920	774	753	3333
40	2009	2000	1684	1690	7383	**40**	910	906	763	766	3344
45	2031	2022	1703	1709	7465	**45**	920	916	771	774	3382
50	2037	2028	1708	1714	7486	**50**	923	918	774	776	3391
55	2065	2056	1732	1738	7591	**55**	936	931	784	787	3439
60	2066	2057	1732	1739	7594	**60**	936	932	785	788	3440

Table 3 — Unit Weights (cont)

RTPF with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	682	704	650	634	2670	**10**	309	319	295	287	1210
15	694	716	661	644	2714	**15**	314	324	299	292	1229
20	981	875	816	899	3570	**20**	444	396	369	407	1617
25	1021	911	853	943	3728	**25**	463	412	386	427	1689
30	1031	918	859	952	3760	**30**	467	416	389	431	1703
35	1820	1901	1570	1524	6815	**35**	824	861	711	690	3087
40	1875	1869	1547	1551	6841	**40**	849	846	701	703	3099
45	1862	1949	1598	1548	6957	**45**	843	883	724	701	3152
50	1920	1911	1570	1576	6977	**50**	870	866	711	714	3161
55	1949	1940	1594	1600	7083	**55**	883	879	722	725	3209
60	1978	1968	1618	1623	7186	**60**	896	891	733	735	3255

RTPF, Single Pump with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	706	761	705	660	2832	**10**	320	345	319	299	1283
15	719	773	714	670	2876	**15**	326	350	324	304	1303
20	1022	916	855	940	3733	**20**	463	415	387	426	1691
25	1065	954	891	980	3890	**25**	482	432	404	444	1762
30	1074	962	898	988	3923	**30**	486	436	407	448	1777
35	1908	1986	1656	1609	7159	**35**	864	900	750	729	3243
40	1962	1954	1632	1637	7185	**40**	889	885	739	742	3255
45	1993	1986	1658	1663	7300	**45**	903	899	751	754	3307
50	1999	1991	1663	1668	7321	**50**	905	902	753	756	3316
55	2028	2020	1687	1692	7427	**55**	919	915	764	767	3364
60	2056	2048	1710	1716	7530	**60**	931	928	775	777	3411

RTPF, Dual Pump with Accessory Tank

30RC	POUNDS					30RC	KILOGRAMS				
	A	B	C	D	Total Weight		A	B	C	D	Total Weight
10	733	817	758	687	2995	**10**	332	370	343	311	1357
15	743	829	769	697	3039	**15**	337	376	348	316	1377
20	1062	957	894	982	3895	**20**	481	434	405	445	1764
25	1105	996	931	1022	4053	**25**	501	451	422	463	1836
30	1114	1004	938	1030	4085	**30**	504	455	425	466	1851
35	1995	2070	1742	1695	7502	**35**	904	938	789	768	3398
40	2048	2039	1717	1724	7528	**40**	928	924	778	781	3410
45	2080	2070	1744	1750	7644	**45**	942	938	790	793	3463
50	2086	2076	1749	1755	7665	**50**	945	940	792	795	3472
55	2114	2104	1773	1779	7770	**55**	958	953	803	806	3520
60	2142	2132	1796	1803	7873	**60**	970	966	814	817	3566

⚠ CAUTION-NOTICE TO RIGGERS:

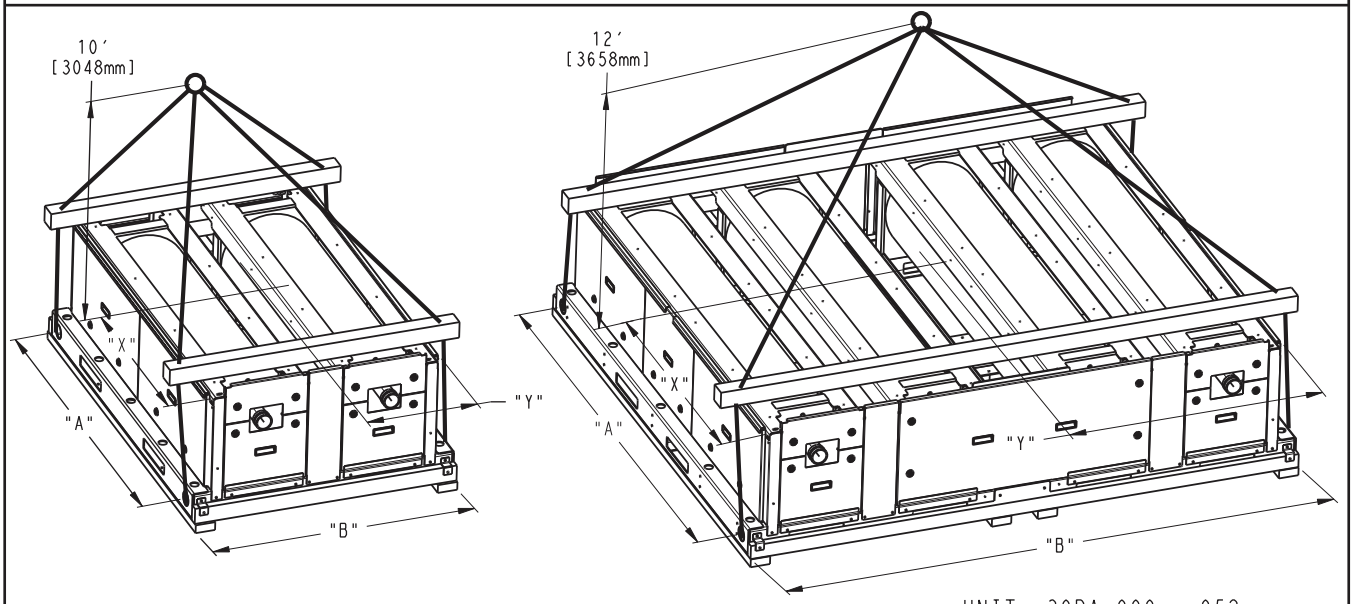
ALL PANELS MUST BE IN PLACE WHEN RIGGING.

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 form 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 A IN	A MM	B IN	B MM	CENTER OF GRAVITY X IN	X MM	Y IN	Y 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

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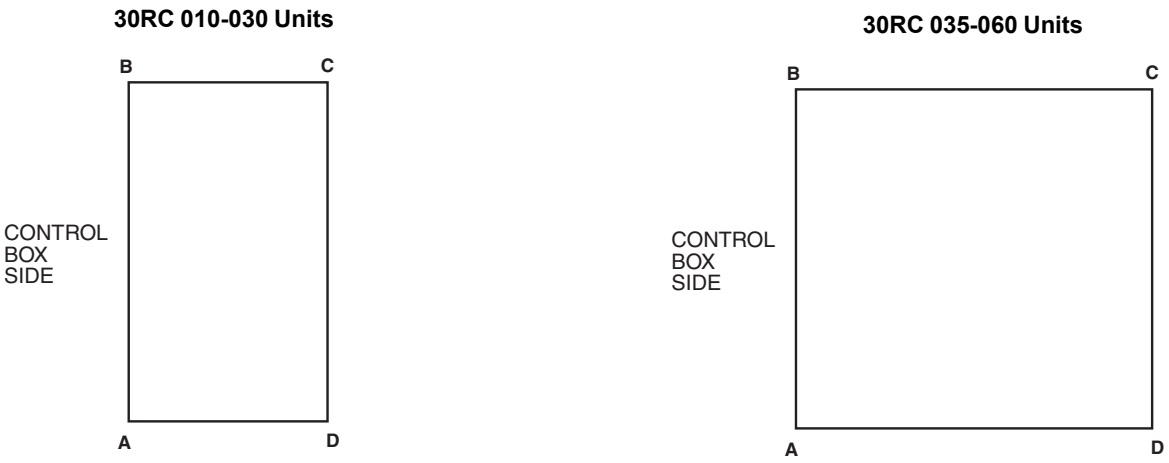
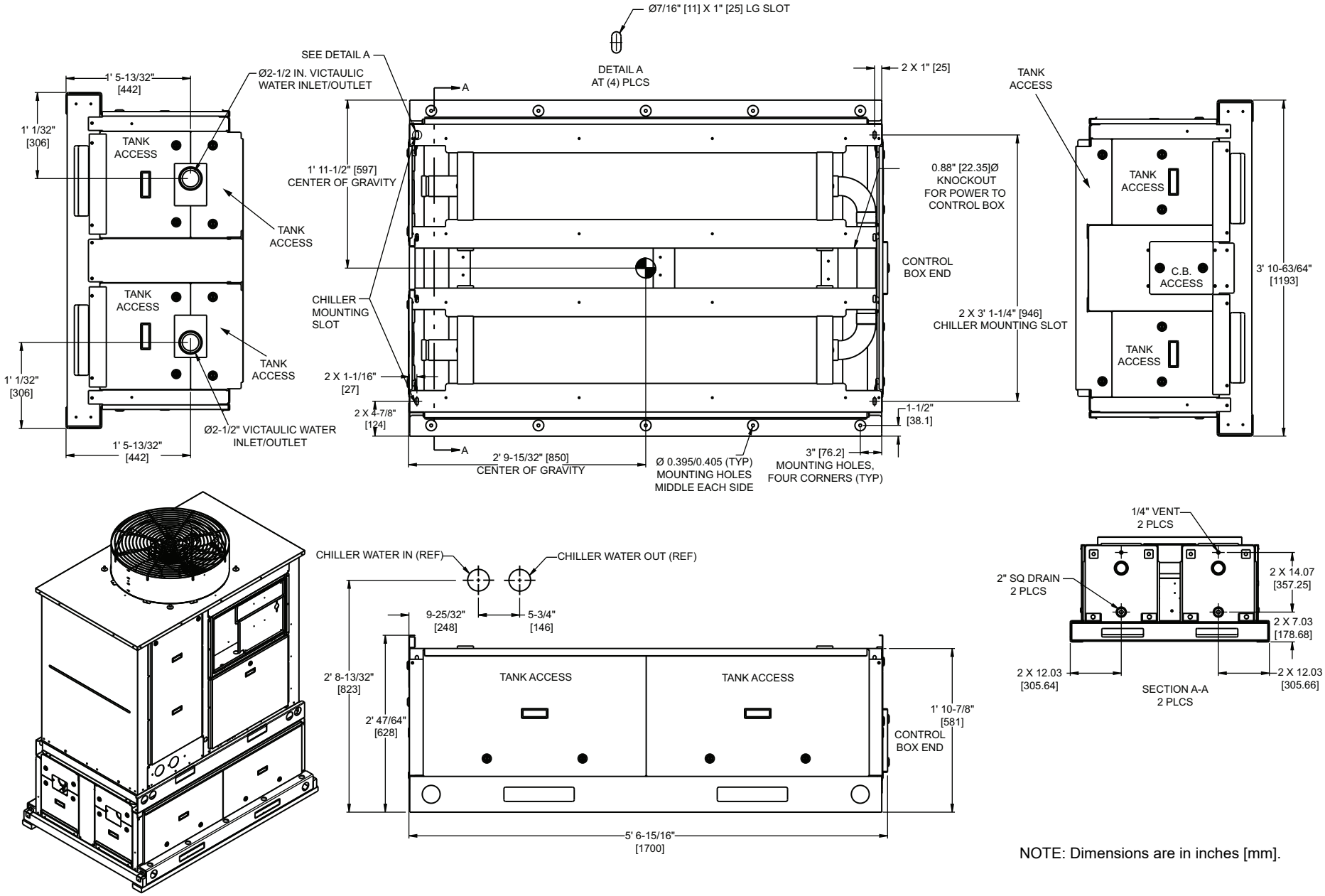
Fig. 1 — Accessory Rigging Label Detail



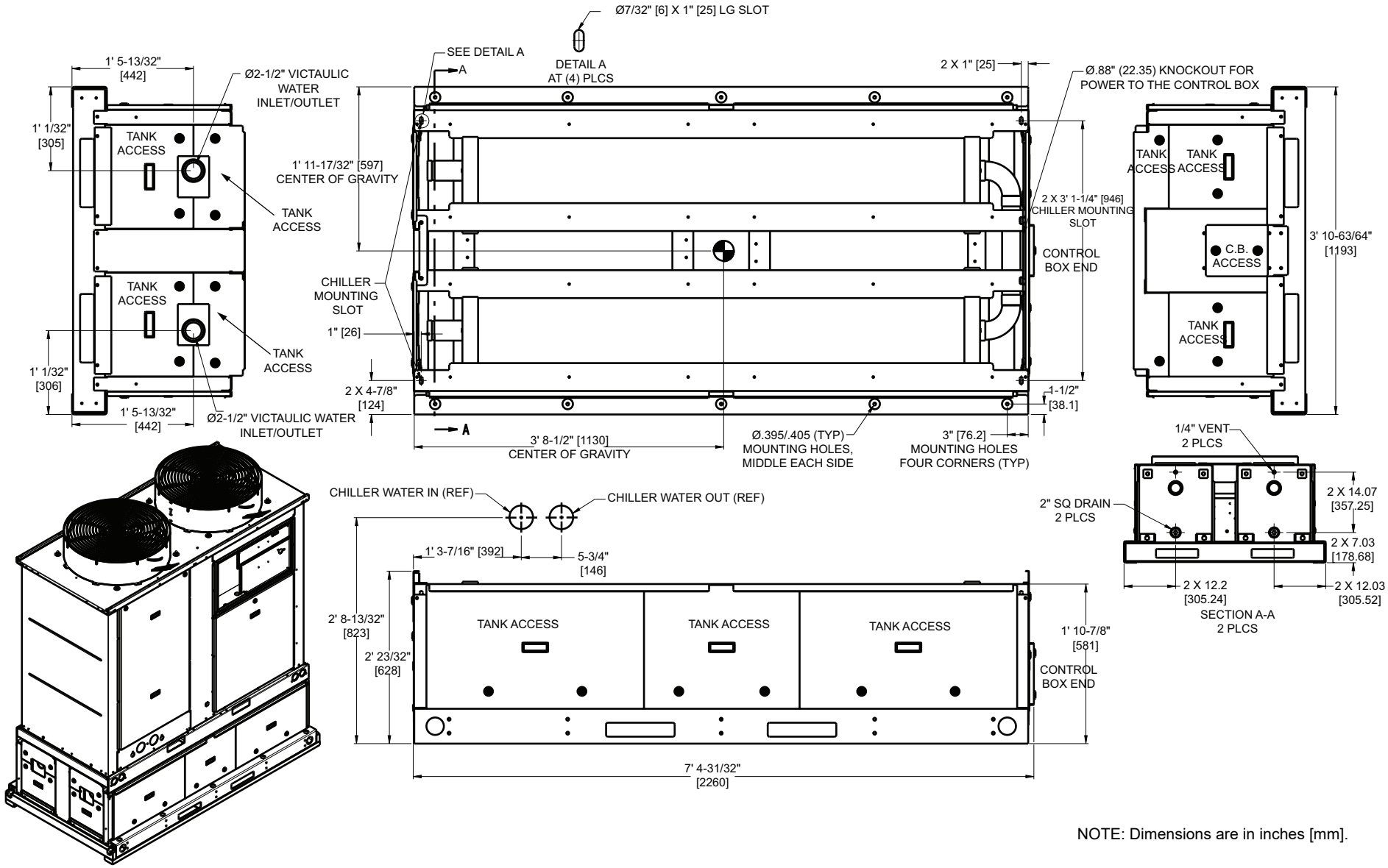
NOTE: Even with the storage tank, all 30RC chillers require only 4-point support. All weights include water.

Fig. 2 — Weight Distribution



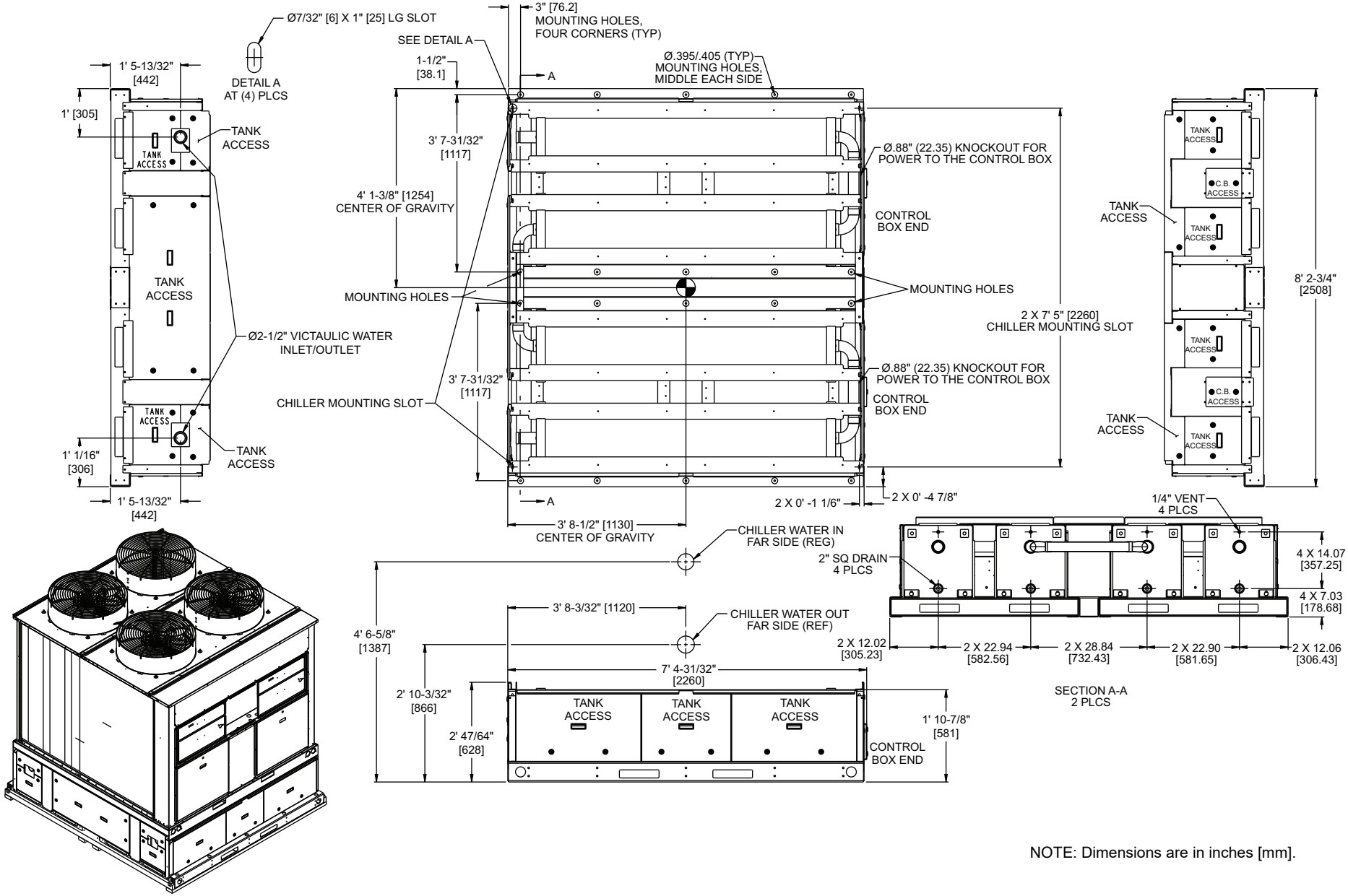
NOTE: Dimensions are in inches [mm].

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



NOTE: Dimensions are in inches [mm].

Fig. 4 — Dimensions 30RA-900---051 (Unit Sizes 020-030)



NOTE: Dimensions are in inches [mm].

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 for chiller or tank piping scheme. 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 an 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 antifreeze 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.

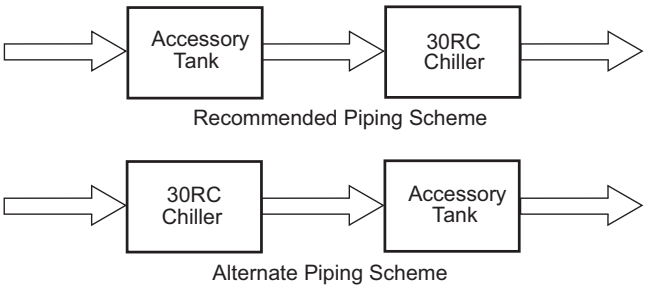


Fig. 6 — Typical Chiller/Tank Setup

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 antifreeze 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.

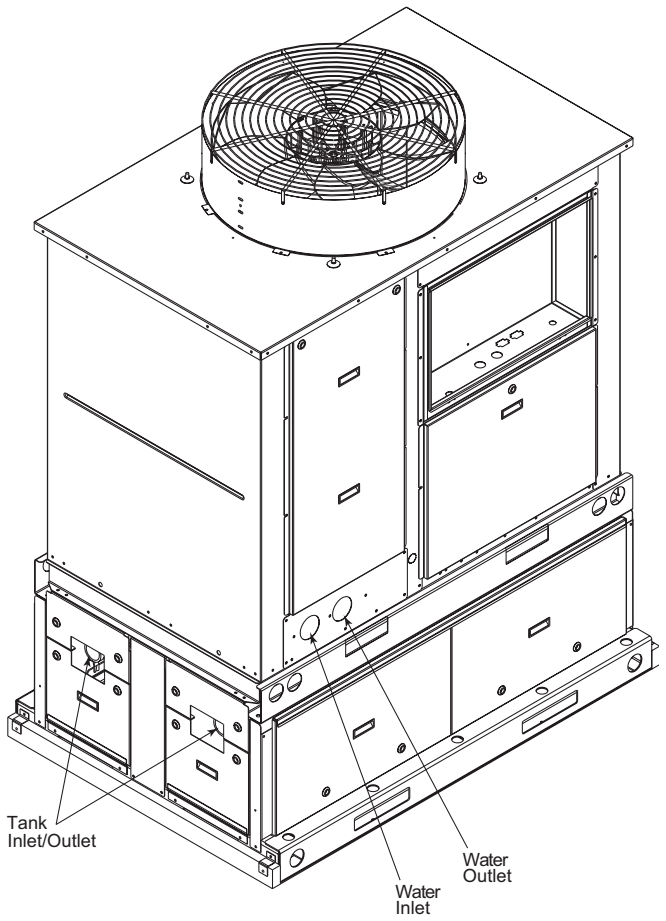


Fig. 7 — Typical Piping Layout — 30RA-900---050,051

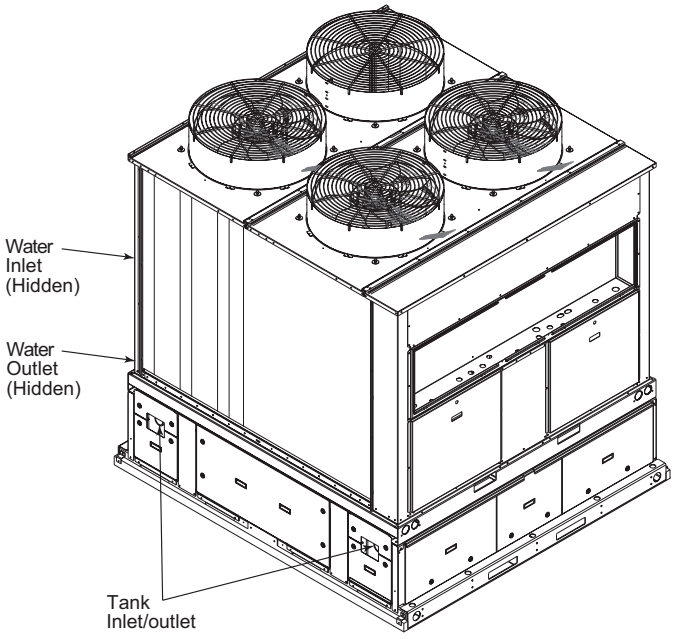


Fig. 8 — Typical Piping Layout — 30RA-900---052

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 Steps 1-13 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 for entry location.
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 for tank wiring details. Accessories are shipped from the factory for high voltage wiring and if applied at 208/230-v, 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 warning details. 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 for wiring details.

   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 for wiring details.
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 4 and Fig. 17 for required breaker and wring connection examples.
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 4 — Compressor Circuit Breakers

30RC UNIT SIZE	CONNECTION	
	BLK WIRE	YEL WIRE
010,015	CCB-1-21	CCB-1-22
020-030	CCB-1-21	CCB-1-22
035-060	CCB-3-21	CCB-3-22

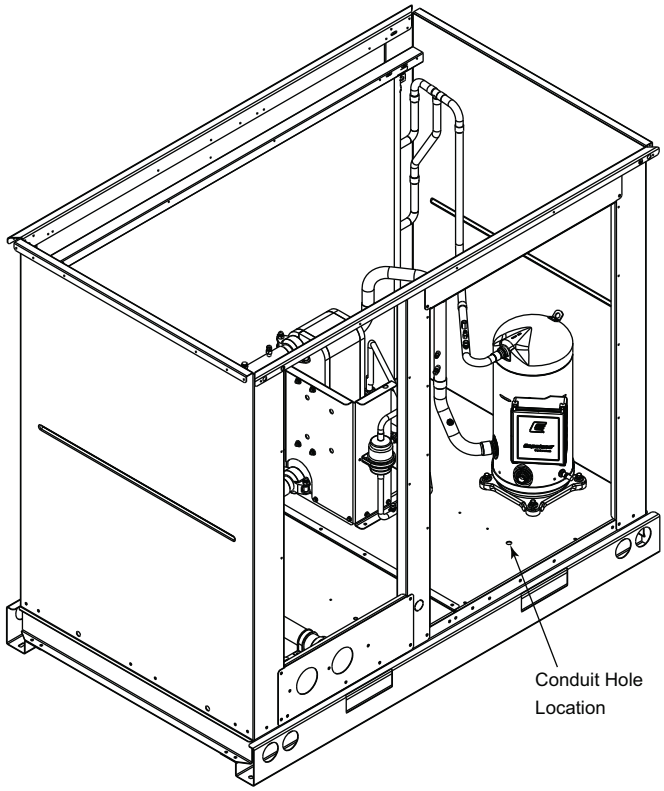


Fig. 9 — Conduit Hole Location — 30RC 010-015

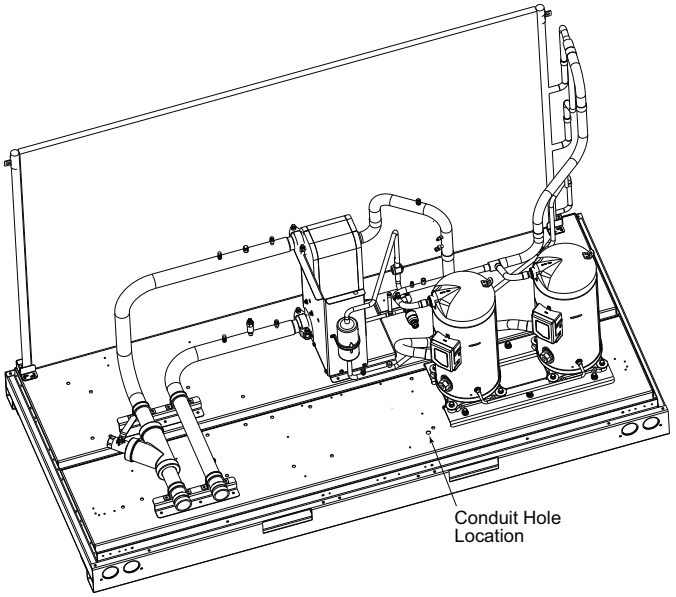


Fig. 10 — Conduit Hole Location — 30RC 020-030

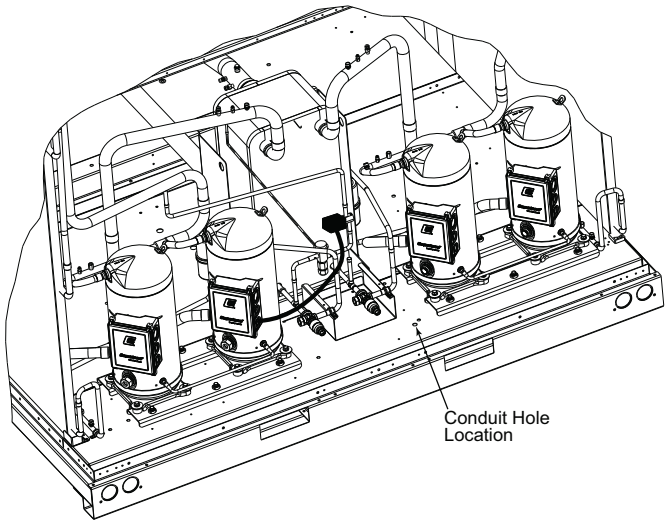


Fig. 11 — Conduit Hole Location — 30RC 035-060

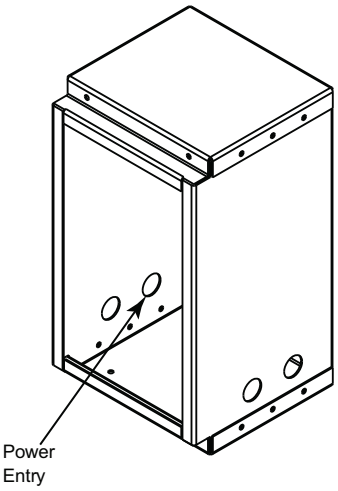
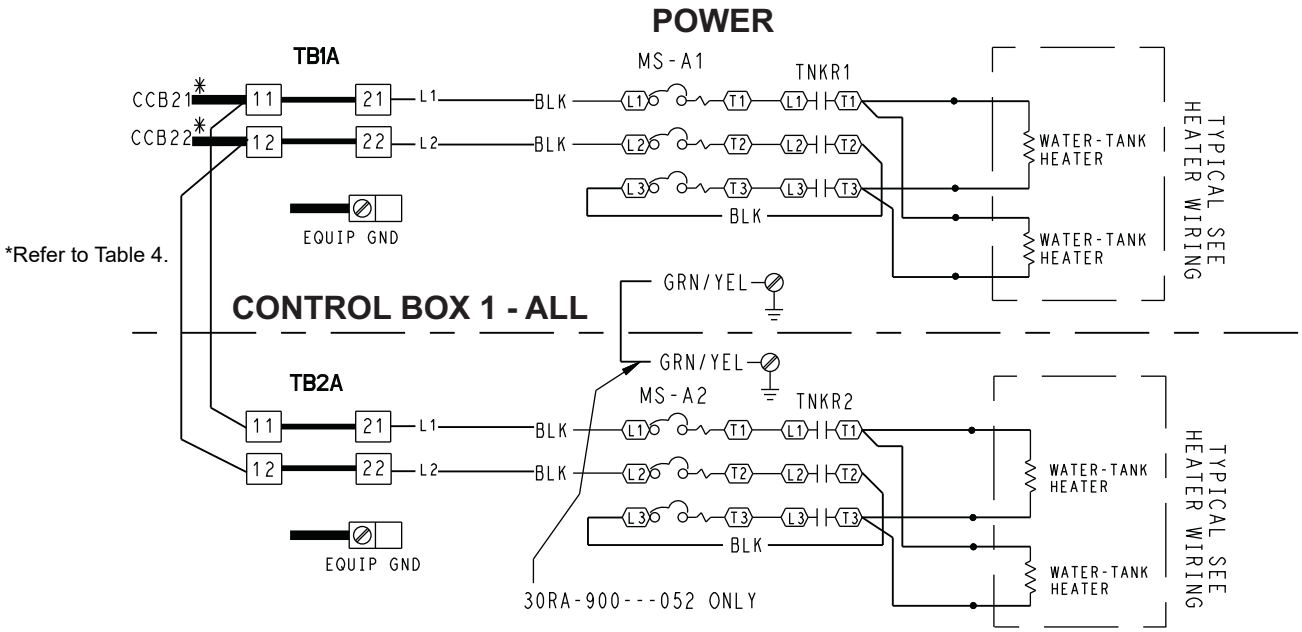
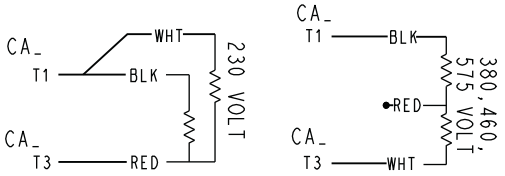


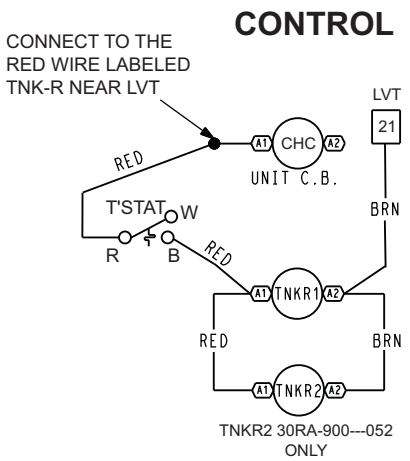
Fig. 12 — Tank Heater Control Box Power Entry

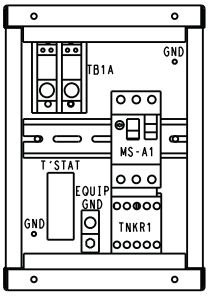




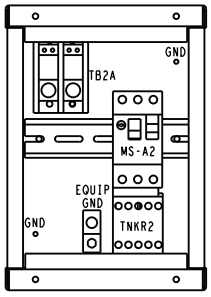
NOTE 1:
*CCB : 10-15
*CCB1: 20-30
*CCB3: 35-60

TANK HEATER WIRING





CONTROL BOX 1



CONTROL BOX 2
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

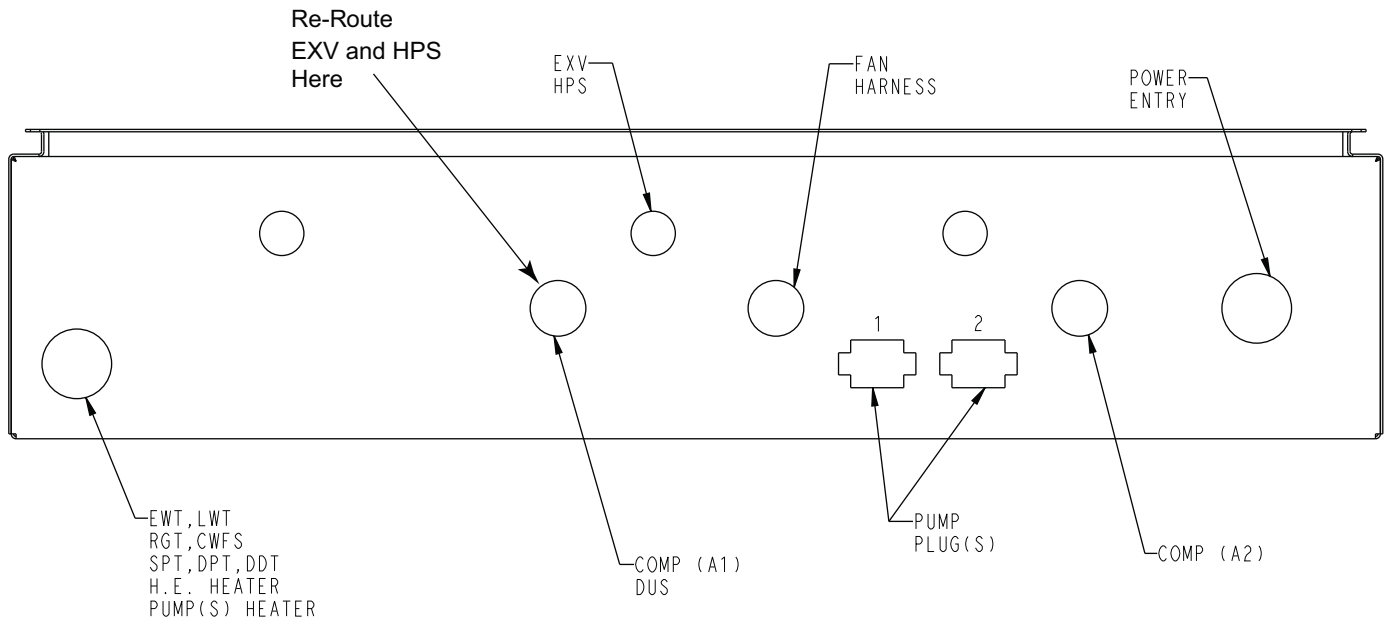


Fig. 15 — Re-Route Hole Location — 30RC 020-030

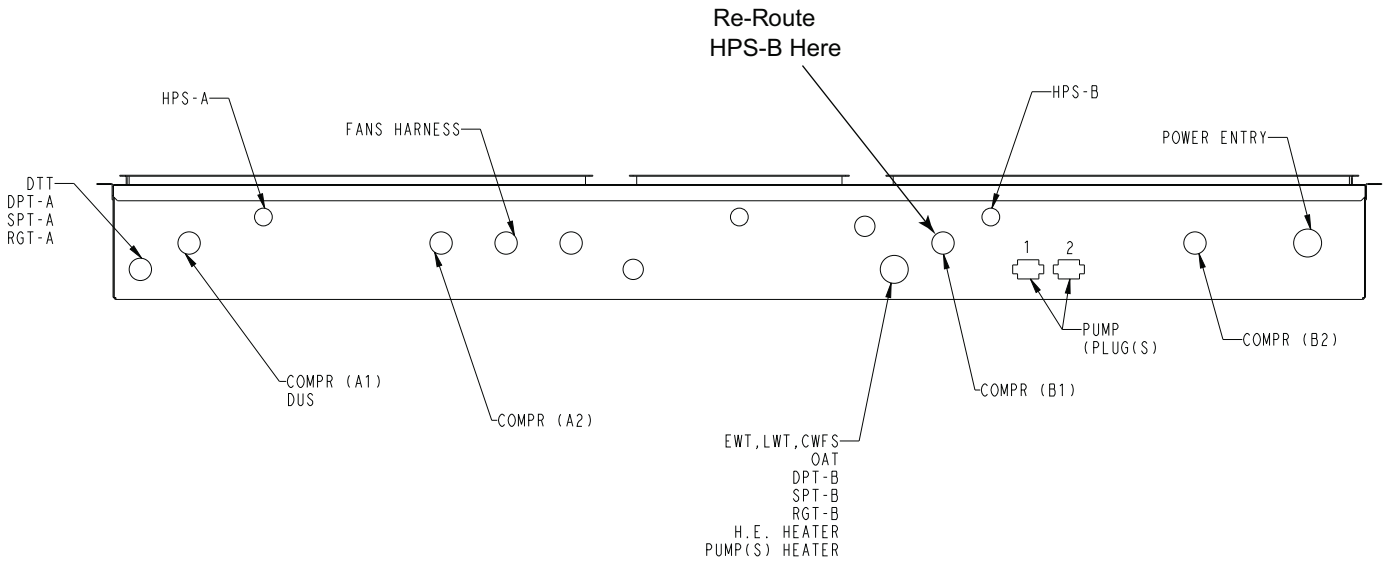


Fig. 16 — Re-Route Hole Location — 30RC 035-060

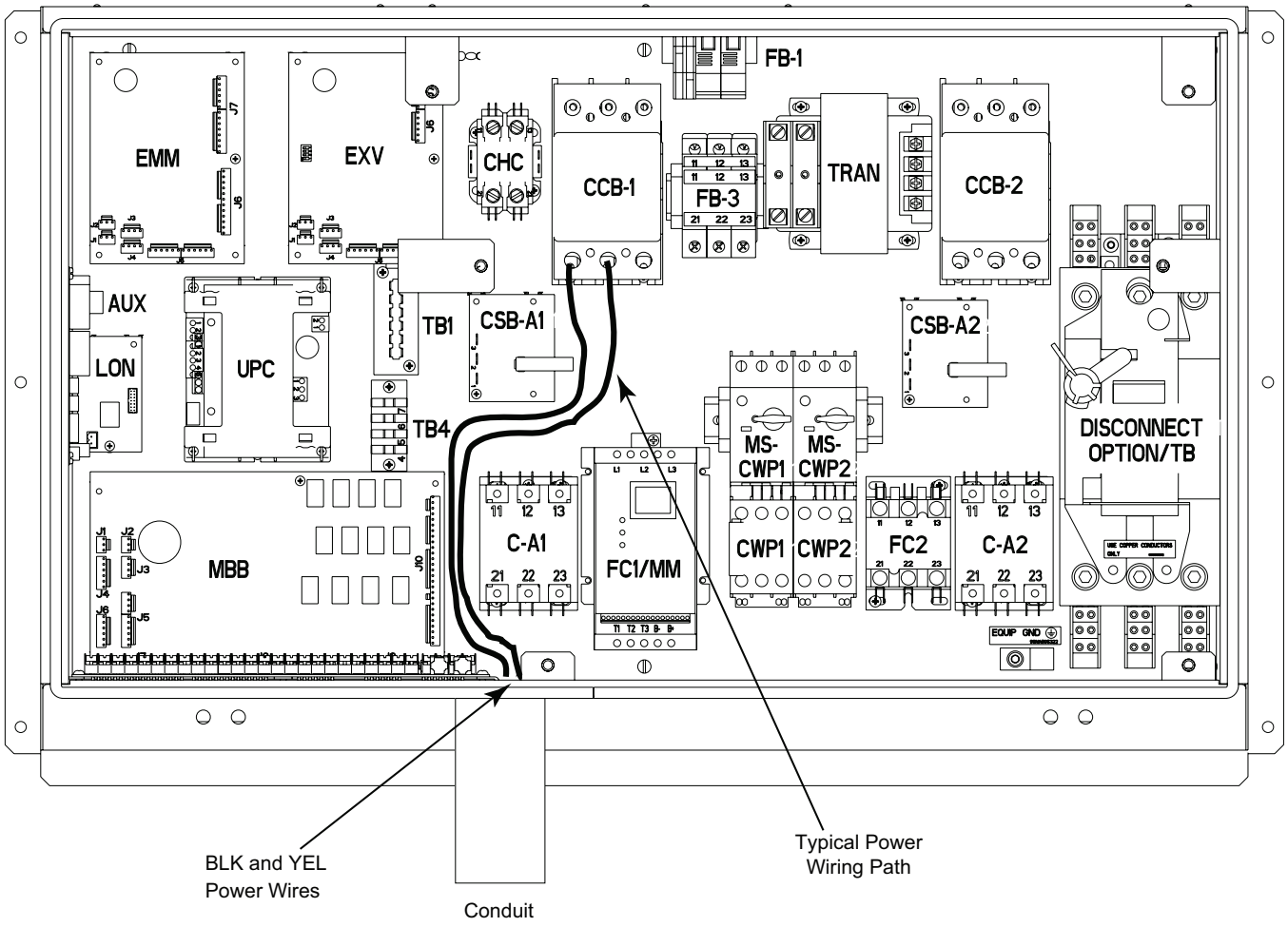


Fig. 17 — Tank Power Connections

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 curves are shown in Fig. 18.

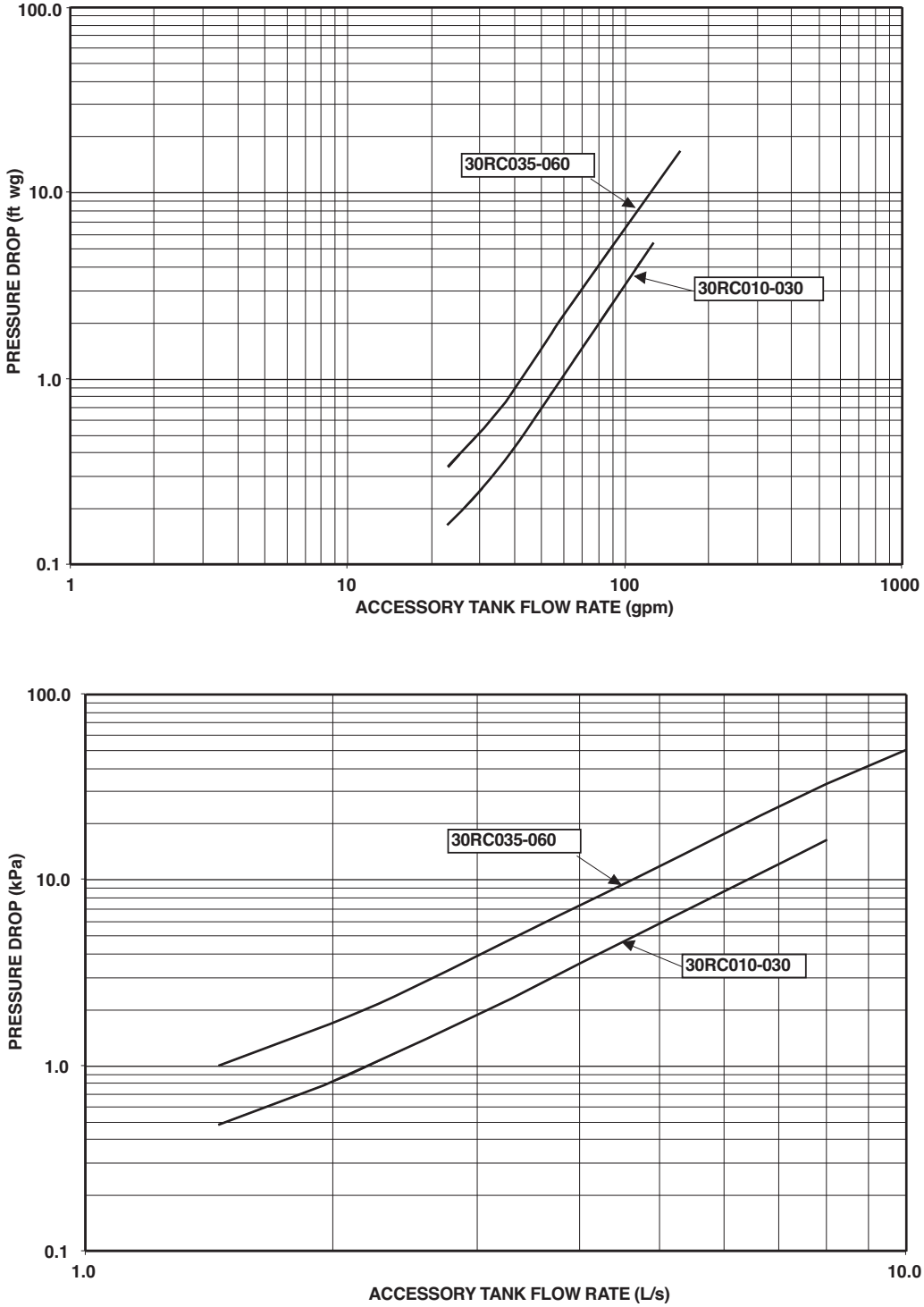


Fig. 18 — Storage Tank Pressure Drop Curves