AquaEdge® 19XR
Two-Stage Semi-Hermetic Centrifugal Liquid Chillers with PIC 5 Controls and HFC-134a 50/60 Hz

Installation Instructions

SAFETY CONSIDERATIONS

Centrifugal liquid chillers are designed to provide safe and reliable service when operated within design specifications. When operating this equipment, use good judgment and safety precautions to avoid damage to equipment and property or injury to personnel.

Be sure you understand and follow the procedures and safety precautions contained in the machine instructions, as well as those listed in this guide.

⚠ DANGER

Failure to follow these procedures will result in severe personal injury or death.

DO NOT VENT refrigerant relief devices within a building. Outlet from rupture disc or relief valve must be vented outdoors in accordance with the latest edition of ANSI/ASHRAE 15 (American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers) (Safety Code for Mechanical Refrigeration). The accumulation of refrigerant in an enclosed space can displace oxygen and cause asphyxiation.

PROVIDE adequate ventilation in accordance with ANSI/ASHRAE 15, especially for enclosed and low overhead spaces. Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness, or death. Intentional misuse can be fatal. Vapor is heavier than air and reduces the amount of oxygen available for breathing. Product causes eye and skin irritation. Decomposition products are hazardous.

DO NOT USE OXYGEN to purge lines or to pressurize a machine for any purpose. Oxygen gas reacts violently with oil, grease, and other common substances.

DO NOT USE air to leak test. Use only refrigerant or dry nitrogen.

NEVER EXCEED specified test pressures. VERIFY the allowable test pressure by checking the instruction literature and the design pressures on the equipment nameplate.

DO NOT VALVE OFF any safety device.

BE SURE that all pressure relief devices are properly installed and functioning before operating any machine.

RISK OF INJURY OR DEATH by electrocution. High voltage is present on motor leads even though the motor is not running when a solid state or inside-delta mechanical starter is used. Open the power supply disconnect before touching motor leads or terminals.

⚠ WARNING

Failure to follow these procedures may result in personal injury or death.

DO NOT USE TORCH to remove any component. System contains oil and refrigerant under pressure.

To remove a component, wear protective gloves and goggles and proceed as follows:

a. Shut off electrical power to unit.

b. Recover refrigerant to relieve all pressure from system using both high-pressure and low pressure ports.

c. Traces of vapor should be displaced with nitrogen and the work area should be well ventilated. Refrigerant in contact with an open flame produces toxic gases.

d. Cut component connection tubing with tubing cutter and remove component from unit. Use a pan to catch any oil that may come out of the lines and as a gage for how much oil to add to the system.

e. Carefully unsweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame.

DO NOT USE eyebolts or eyebolt holes to rig machine sections or the entire assembly.

DO NOT work on high-voltage equipment unless you are a qualified electrician.

DO NOT WORK ON electrical components, including control panels, switches, starters, or oil heater until you are sure ALL POWER IS OFF and no residual voltage can leak from capacitors or solid-state components.

LOCK OPEN AND TAG electrical circuits during servicing. IF WORK IS INTERRUPTED, confirm that all circuits are de-energized before resuming work.

AVOID SPILLING liquid refrigerant on skin or getting it into the eyes. USE SAFETY GOGGLES. Wash any spills from the skin with soap and water. If liquid refrigerant enters the eyes, IMMEDIATELY FLUSH EYES with water and consult a physician.

NEVER APPLY an open flame or live steam to a refrigerant cylinder. Dangerous over pressure can result. When it is necessary to heat refrigerant, use only warm (110 F [43 C]) water.

DO NOT REUSE disposable (nonreturnable) cylinders or attempt to refill them. It is DANGEROUS AND ILLEGAL. When cylinder is emptied, evacuate remaining gas pressure, loosen the collar, and unscrew and discard the valve stem. DO NOT INCINERATE.

CHECK THE REFRIGERANT TYPE before adding refrigerant to the machine. The introduction of the wrong refrigerant can cause machine damage or malfunction.

(Warnings continued on next page.)

⚠ WARNING

Operation of this equipment with refrigerants other than those cited herein should comply with ANSI/ASHRAE 15 (latest edition). Contact Carrier for further information on use of this machine with other refrigerants.

BEFORE ADDING OIL to the compressor, be sure to check the oil type. Using the wrong type of oil could result in damage to the unit.

DO NOT ATTEMPT TO REMOVE fittings, covers, etc., while machine is under pressure or while machine is running. Be sure pressure is at 0 psig (0 kPa) before breaking any refrigerant connection.

CAREFULLY INSPECT all relief valves, rupture discs, and other relief devices AT LEAST ONCE A YEAR. If machine operates in a corrosive atmosphere, inspect the devices at more frequent intervals.

DO NOT ATTEMPT TO REPAIR OR RECONDITION any relief valve when corrosion or build-up of foreign material (rust, dirt, scale, etc.) is found within the valve body or mechanism. Replace the valve.

DO NOT install relief devices in series or backwards.

USE CARE when working near or in line with a compressed spring. Sudden release of the spring can cause it and objects in its path to act as projectiles.

Prior to installing or servicing this equipment ensure that personal protective equipment (PPE) is worn as required per OSHA or other local regulations.

For servicing or installing components where there is a risk of arc flash the technicians must wear personal protective equipment as identified in NFPA (National Fire Protection Association) 70E or other local country-specific requirements for arc flash protection.

⚠ CAUTION

Failure to follow these procedures may result in personal injury or damage to equipment.

DO NOT STEP on refrigerant lines. Broken lines can whip about and release refrigerant, causing personal injury.

DO NOT climb over a machine. Use platform, catwalk, or staging. Follow safe practices when using ladders.

USE MECHANICAL EQUIPMENT (crane, hoist, etc.) to lift or move inspection covers or other heavy components. Even if components are light, use mechanical equipment when there is a risk of slipping or losing your balance.

BE AWARE that certain automatic start arrangements CAN ENGAGE THE STARTER, TOWER FAN, OR PUMPS. Open the disconnect *ahead of* the starter, tower fan, and pumps. Shut off the machine or pump before servicing equipment.

USE only repaired or replacement parts that meet the code requirements of the original equipment.

DO NOT VENT OR DRAIN waterboxes containing industrial brines, liquid, gases, or semisolids without the permission of your process control group.

DO NOT LOOSEN waterbox cover bolts until the waterbox has been completely drained.

DOUBLE-CHECK that coupling nut wrenches, dial indicators, or other items have been removed before rotating any shafts.

DO NOT LOOSEN a packing gland nut before checking that the nut has a positive thread engagement.

PERIODICALLY INSPECT all valves, fittings, and piping for corrosion, rust, leaks, or damage.

PROVIDE A DRAIN connection in the vent line near each pressure relief device to prevent a build-up of condensate or rain water.

DO NOT re-use compressor oil or any oil that has been exposed to the atmosphere. Dispose of oil per local codes and regulations.

DO NOT leave refrigerant system open to air any longer than the actual time required to service the equipment. Seal circuits being serviced and charge with dry nitrogen to prevent oil contamination when timely repairs cannot be completed.

CONTENTS

INTRODUCTION

General — The 19XR machine is factory assembled, wired, and leak tested. Installation (not by Carrier) consists primarily of establishing water and electrical services to the machine. The rigging, installation, field wiring, field piping, and insulation of waterbox covers are the responsibility of the contractor and/or customer. Carrier has no installation responsibilities for the equipment.

Job Data

Necessary information consists of:
- job contract or specifications
- machine location prints
- rigging information
- piping prints and details
- field wiring drawings
- starter manufacturer's installation details
- Carrier certified print

INSTALLATION

Step 1 — Receive the Machine

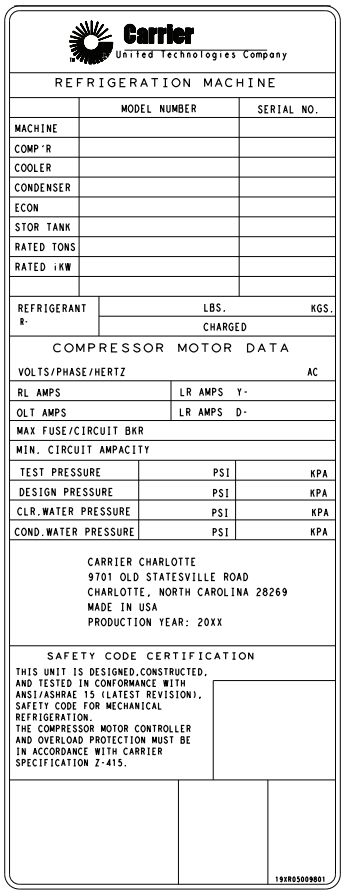
INSPECT SHIPMENT

⚠ CAUTION

Do not open any valves or loosen any connections. The 19XR machine may be shipped with a nitrogen holding charge in both modules. Damage to machine may result.

1. Inspect for shipping damage while machine is still on shipping conveyance. If machine appears to be damaged or has been torn loose from its anchorage, have it examined by transportation inspectors before removal. Forward claim papers directly to transportation company. *Manufacturer is not responsible for any damage incurred in transit.*
2. Check all items against shipping list. Immediately notify the nearest Carrier representative if any item is missing.
3. To prevent loss or damage, leave all parts in original packages until beginning installation. All openings are closed with covers or plugs to prevent dirt and debris from entering machine components during shipping. A full operating oil charge is placed in the oil sump before shipment.

IDENTIFY MACHINE — The machine model number, serial number, and heat exchanger sizes are stamped on machine identification nameplate (Fig. 1-3). Check this information against shipping papers and job data.


Carrier
United Technologies Company

REFRIGERATION MACHINE

	MODEL NUMBER	SERIAL NO.
MACHINE		
COMP'R		
COOLER		
CONDENSER		
ECON		
STOR TANK		
RATED TONS		
RATED KW		

REFRIGERANT R-	LBS. CHARGED	KGS.

COMPRESSOR MOTOR DATA

VOLTS/PHASE/HERTZ		AC
RL AMPS	LR AMPS Y-	
OLT AMPS	LR AMPS D-	
MAX FUSE/CIRCUIT BKR		
MIN. CIRCUIT AMPACITY		

TEST PRESSURE	PSI	KPA
DESIGN PRESSURE	PSI	KPA
CLR.WATER PRESSURE	PSI	KPA
COND.WATER PRESSURE	PSI	KPA

CARRIER CHARLOTTE
9701 OLD STATESVILLE ROAD
CHARLOTTE, NORTH CAROLINA 28269
MADE IN USA
PRODUCTION YEAR: 20XX

SAFETY CODE CERTIFICATION

THIS UNIT IS DESIGNED,CONSTRUCTED, AND TESTED IN CONFORMANCE WITH ANSI/ASHRAE 15 (LATEST REVISION), SAFETY CODE FOR MECHANICAL REFRIGERATION.
THE COMPRESSOR MOTOR CONTROLLER AND OVERLOAD PROTECTION MUST BE IN ACCORDANCE WITH CARRIER SPECIFICATION Z-415.

19XR05009801

Fig. 1 — 19XR Refrigeration Machine Nameplate

INSTALLATION REQUIREMENTS — Prior to starting the chiller's electrical installation, certain requirements should be checked. Input power wire sizes, branch circuit protection, and control wiring are all areas that need to be evaluated.

Determine Wire Size Requirements — Wire size should be determined based on the size of the conduit openings, and applicable local, national, and international codes (e.g., NEC [National Electric Code]/CEC [California Energy Commission] regulations). General recommendations are included in the Carrier field wiring drawings.

Conduit Entry Size — It is important to determine the size of the conduit openings in the enclosure power entry plate so that the wire planned for a specific entry point will fit through the opening. Do NOT punch holes or drill into the top surface of control panels. Knockouts are provided on the enclosure.

Recommended Control and Signal Wire Sizes — The recommended minimum size wire to connect I/O signals to the control terminal blocks is 18 AWG (American Wire Gage). Recommended terminal tightening torque is 7 to 9 in.-lb (0.79 to 1.02 N-m).

Recommended Airflow Clearances — Be sure there is adequate clearance for air circulation around the enclosure. A 6-in. (152.4 mm) minimum clearance is required wherever vents are located in the control enclosures.

Service Clearances — Verify that there are adequate service clearances as identified in Fig. 4.

Verify Adequate Power Supply — It is important to verify that the building power will meet the input power requirements of the Machine Electrical Data nameplate input power rating. Be sure the input power to the chiller corresponds to the chiller's nameplate voltage, current, and frequency.

PROVIDE MACHINE PROTECTION — Store machine and starter indoors, protected from construction dirt and moisture. Inspect under shipping tarps, bags, or crates to be sure that water has not collected during transit. Keep protective shipping covers in place until machine is ready for installation.

⚠ CAUTION

Freezing water can damage equipment. If machine can be or possibly has been exposed to freezing temperatures after water circuits have been installed, open waterbox drains and remove all water from cooler and condenser. Leave drains open until system is filled.

It is important to properly plan before installing a 19XR unit to ensure that the environmental and operating conditions are satisfactory and the machine is protected. The installation must comply with all requirements in the certified prints.

Operating Environment — Chiller should be installed in an indoor environment where the ambient temperature is between 40 and 104 F (4 and 40 C) with a relative humidity of 95% or less, non-condensing. To ensure that electrical components operate properly, do not locate the chiller in an area exposed to dust, dirt, corrosive fumes, or excessive heat and humidity.

NOTE: NEMA Type 1 enclosures are constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dirt. This type of enclosure does not protect against water, dust, moisture or airborne contaminants.

Step 2 — Rig the Machine — The 19XR machine can be rigged as an entire assembly. It also has flanged connections that allow the compressor, cooler, and condenser sections to be separated and rigged individually.

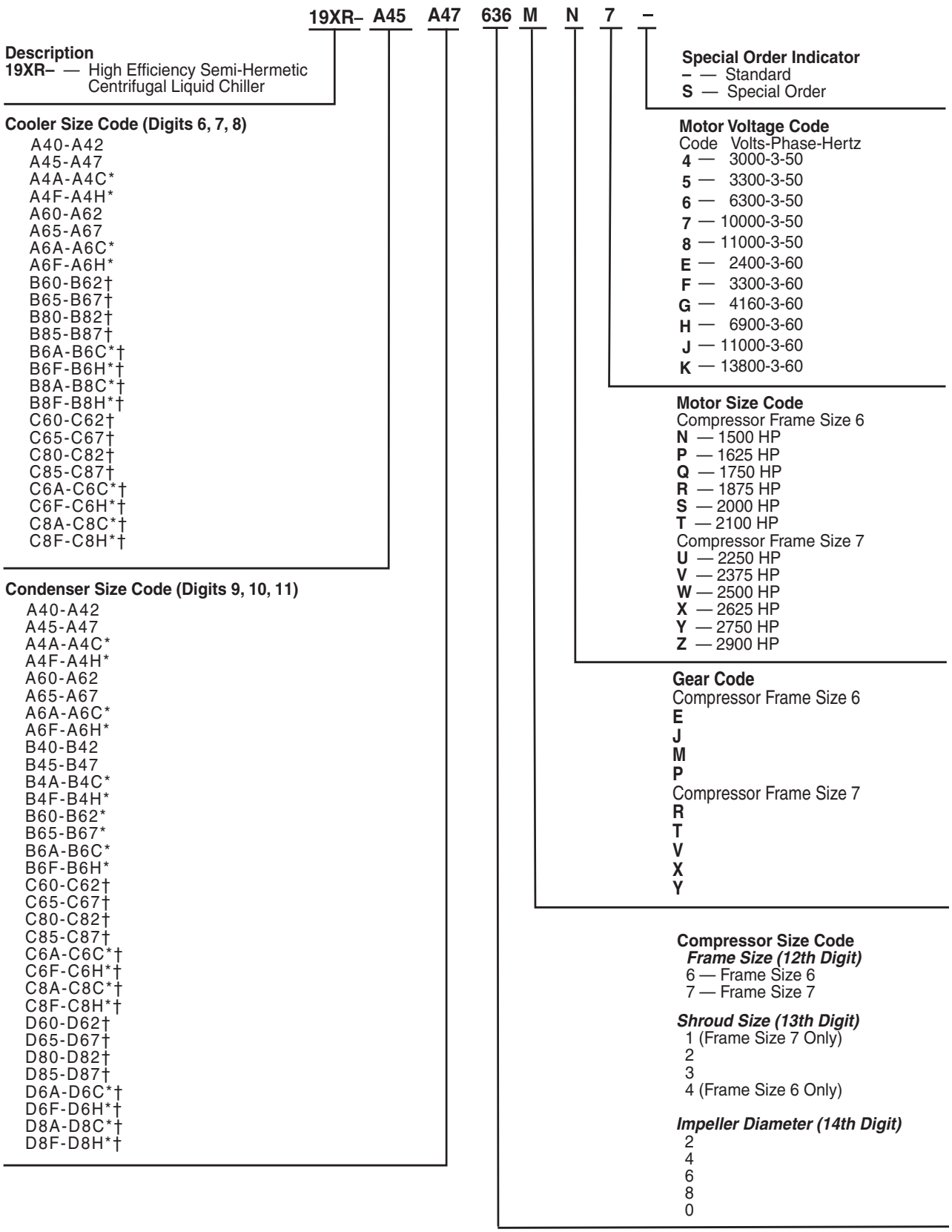
RIG MACHINE ASSEMBLY — See rigging instructions on label attached to machine. Refer to rigging guide (Fig. 5 and 6), dimensions in Fig. 4, and physical data in Tables 1-26. *Lift machine only from the points indicated in rigging guide.* Each lifting cable or chain must be capable of supporting the entire weight of the machine.

Contractors are not authorized to disassemble any part of the chiller without Carrier's supervision. Any request otherwise must be approved in writing by the Carrier Technical Service Manager.

NOTE: Carrier suggests that a structural engineer be consulted if transmission of vibrations from mechanical equipment is of concern.

⚠ WARNING

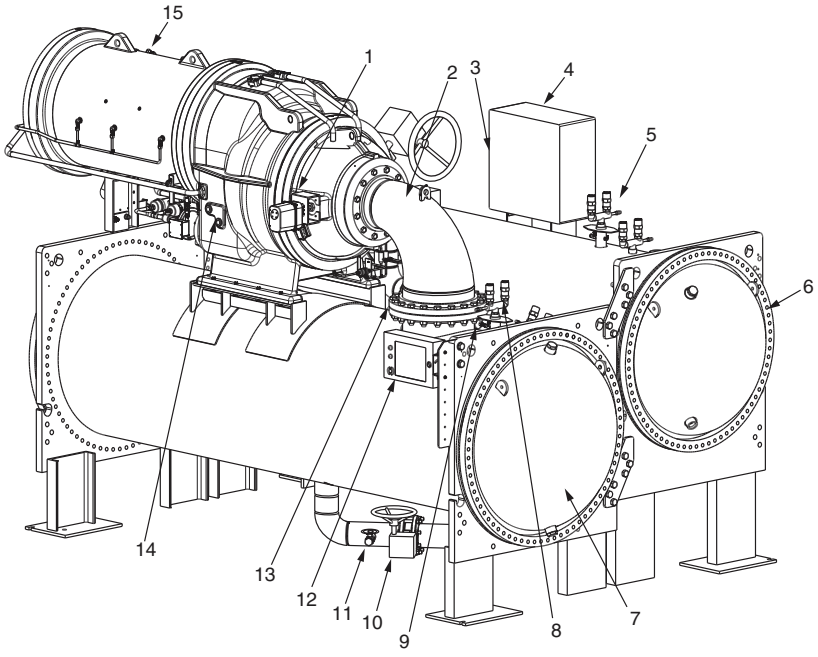
Lifting chiller or components from points other than those specified may result in serious damage to the machine or personal injury. Rigging equipment and procedures must be adequate for maximum chiller weight. See Fig. 5 and 6 for maximum chiller and component weights.



*Cooler/Condenser sizes with A-C and F-H in digit 8 or 11 are with 1-in. OD evaporator.
†Heat exchanger available with frame 7 compressor only.

Fig. 2 — 19XR Two-Stage Chiller Model Number Identification

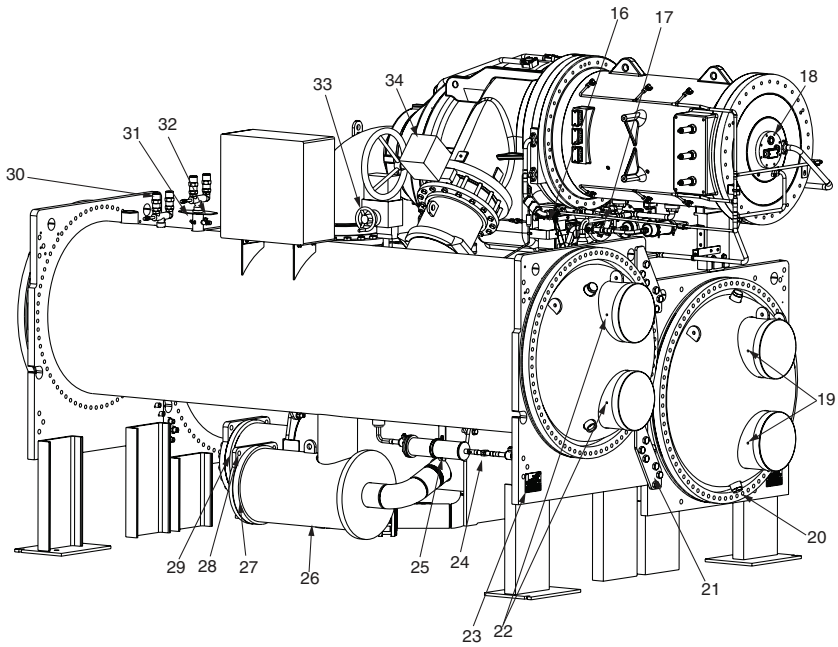
FRONT VIEW



LEGEND

1 — Guide Vane Actuator
2 — Suction Elbow
3 — Chiller Identification Nameplate
4 — Control Panel
5 — Condenser Auto. Reset Relief Valves
6 — Condenser Return End Waterbox Cover
7 — Cooler Return End Waterbox Cover
8 — Cooler Auto. Reset Relief Valves
9 — Cooler Pressure Transducer
10 — Liquid Line Isolation Valve (Optional)
11 — Refrigerant Storage Tank Connection Valve
12 — HMI (Human Machine Interface) Panel
13 — Typical Flange Connection
14 — Oil Level Sight Glasses
15 — Compressor Motor Housing

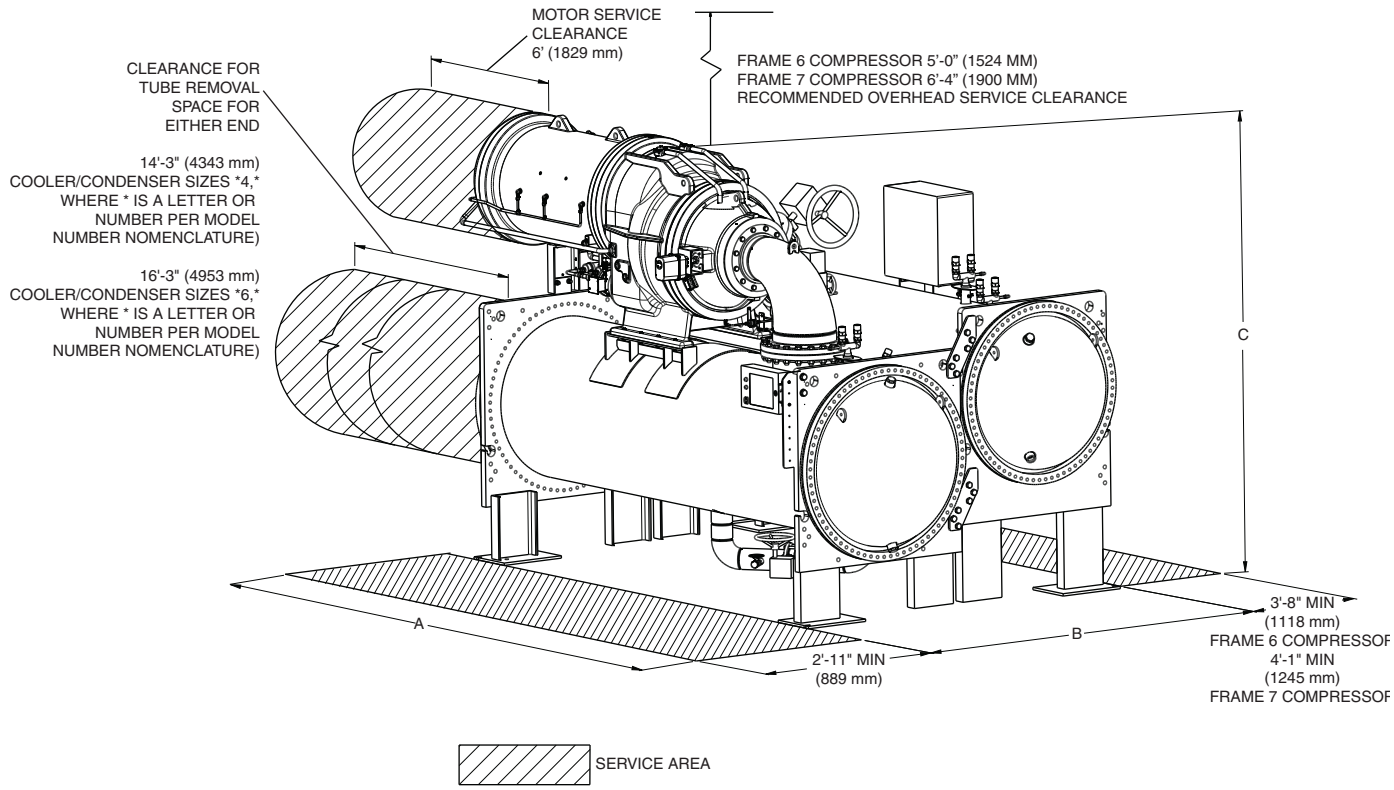
REAR VIEW



LEGEND

16 — Oil Cooler
17 — Oil Drain Changing Valve (Hidden)
18 — Motor Sight Glass
19 — Cooler In/Out Temperature Thermistors
20 — Typical Waterbox Drain Port
21 — Vessel Take-Apart Connector
22 — Condenser In/Out Temperature Thermistors
23 — ASME Nameplate
24 — Refrigerant Moisture/Flow Indicator
25 — Refrigerant Filter/Drier
26 — High Side Float Chamber
27 — High Side Float Ball Valve Assembly (Inside)
28 — Economizer Assembly
29 — Economizer Float Ball Assembly (Inside)
30 — Cooler Auto. Reset Relief Valve
31 — Condenser Pressure Transducer
32 — Refrigerant Charging Valve/Pumpout Connection
33 — Damper Valve
34 — Discharge Isolation Valve (Optional)

Fig. 3 — Typical 19XR 1500-3000 Ton Two-Stage Compressor Chiller Components (XR6 Shown)



NOTES:
1. Dished head waterbox shown.
2. Service areas shown are minimum space required. For major compressor service it is desirable to have an 8 ft (2.4 m) wide service area on the cooler or condenser side to allow the compressor to be positioned on the floor next to the chiller, unless arrangements are made that allow for rigging the compressor elsewhere.

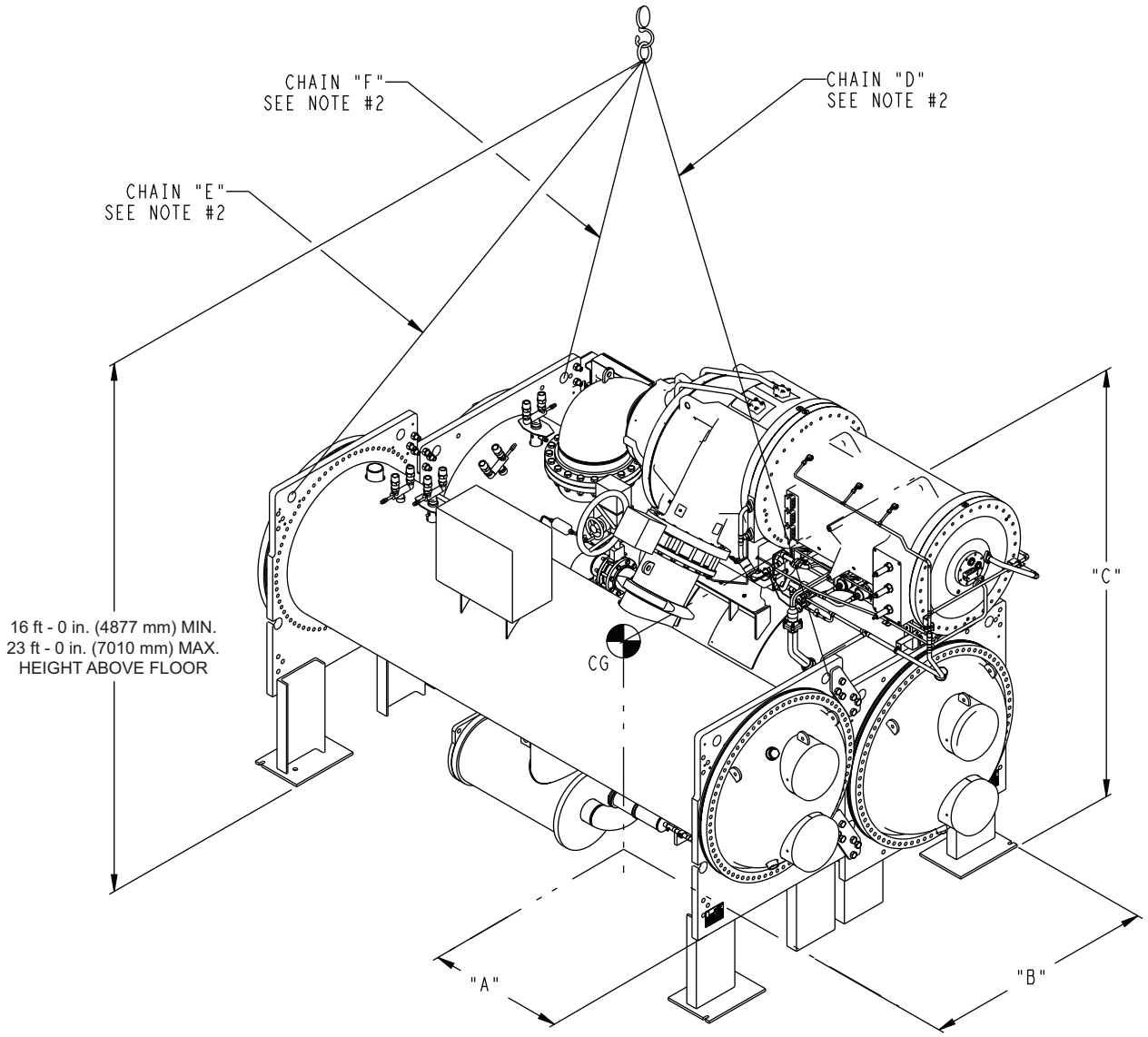
Fig. 4 —19XR 1500-3000 Ton Two-Stage Chiller Dimensions

Table 1 — 19XR Dimensions (Nozzle-In-Head Waterbox)

COOLER HEAT EXCHANGER SIZE	CONDENSER HEAT EXCHANGER SIZE	A (Length, Dished Head Waterbox)						19XR B WIDTH		19XR C HEIGHT
		1-Pass		2-Pass		3-Pass				
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	
A4*	**A4***	17- 8	5385	17- 6 3/4	5353	17- 6 3/4	5353	10- 3 1/8	3127	
A6*	**A6***	19- 8	5994	19- 6 3/4	5962	19- 6 3/4	5962	10- 3 1/8	3127	
A4*	**B4***	17- 8	5385	17- 7 3/8	5369	17- 7 3/8	5369	10- 8 1/2	3264	
A6*	**B6***	19- 8	5994	19- 7 3/8	5978	19- 7 3/8	5978	10- 8 1/2	3264	See Note 6
B6*	**C6***	20- 0	6096	19-11 1/8	6074	19- 9	6120	12- 0 5/8	3674	
B8*	**C8***	22- 0	6096	21-11 1/8	6684	21- 9	6629	12- 5 1/2	3797	
C6*	**C6***	20- 4 1/4	6204	19-11 1/8	6074	19-11 3/4	6090	12- 5 1/2	3797	
C6*	**D6***	20- 4 1/4	6204	20- 0	6096	20- 0 1/2	6109	13- 2	4013	

*Assumes both cooler and condenser nozzles on same end of chiller.
NOTES:
1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging compressor frame size 6 should be at least 5 ft (1524 mm). Overhead clearance for service rigging frame 7 compressor should be 6 ft 4 in. (1930 mm).
3. Dimensions are approximate. Certified drawings available upon request.
4. Marine waterboxes typically add to the width of the machine. See certified drawings for details.
5. 'A' length dimensions shown are for standard 150 psig (1034 kPa) design and Victaulic connections. The 300 psig design and/or flanges will add length. See certified drawings.
6. 19XR heights can vary depending on the configuration. Check 19XR certified drawings for height information.
7. Table contains heat exchanger dimensions. For arrangements where the compressor motor housing extends past the waterbox, consult the 19XR certified drawings.
8. Consult factory for configurations not listed in the above table.

HEAT EXCHANGER CODE (COOLER—CONDENSER)	COMPRESSOR FRAME	NH MAX. WEIGHT LB [kg]	MWB MAX WEIGHT LB [kg]	VESSEL LENGTH ft [mm]	DIM. "A" in. [mm]	DIM. "B" in. [mm]	DIM. "C" in. [mm]	CHAIN LENGTH		
								"D" in. [mm]	"E" in. [mm]	"F" in. [mm]
A4—A4	6	65,094 [29,526]	76,501 [34,700]	14 [4267]	68.31 [1735]	53.98 [1371]	72.96 [1853]	136.50 [3467]	156.73 [3981]	161.42 [4100]
A4—B4	6	69,266 [31,419]	80,673 [36,593]	14 [4267]	69.09 [1755]	57.56 [1462]	71.26 [1810]	137.01 [3480]	157.28 [3995]	162.01 [4115]
A6—A6	6	68,282 [30,972]	81,556 [36,993]	16 [4877]	76.61 [1946]	54.69 [1389]	72.16 [1833]	140.83 [3577]	166.93 [4240]	171.77 [4363]
A6—B6	6	72,810 [33,026]	86,084 [39,047]	16 [4877]	77.87 [1978]	58.46 [1485]	70.39 [1788]	141.54 [3595]	166.97 [4241]	172.05 [4370]

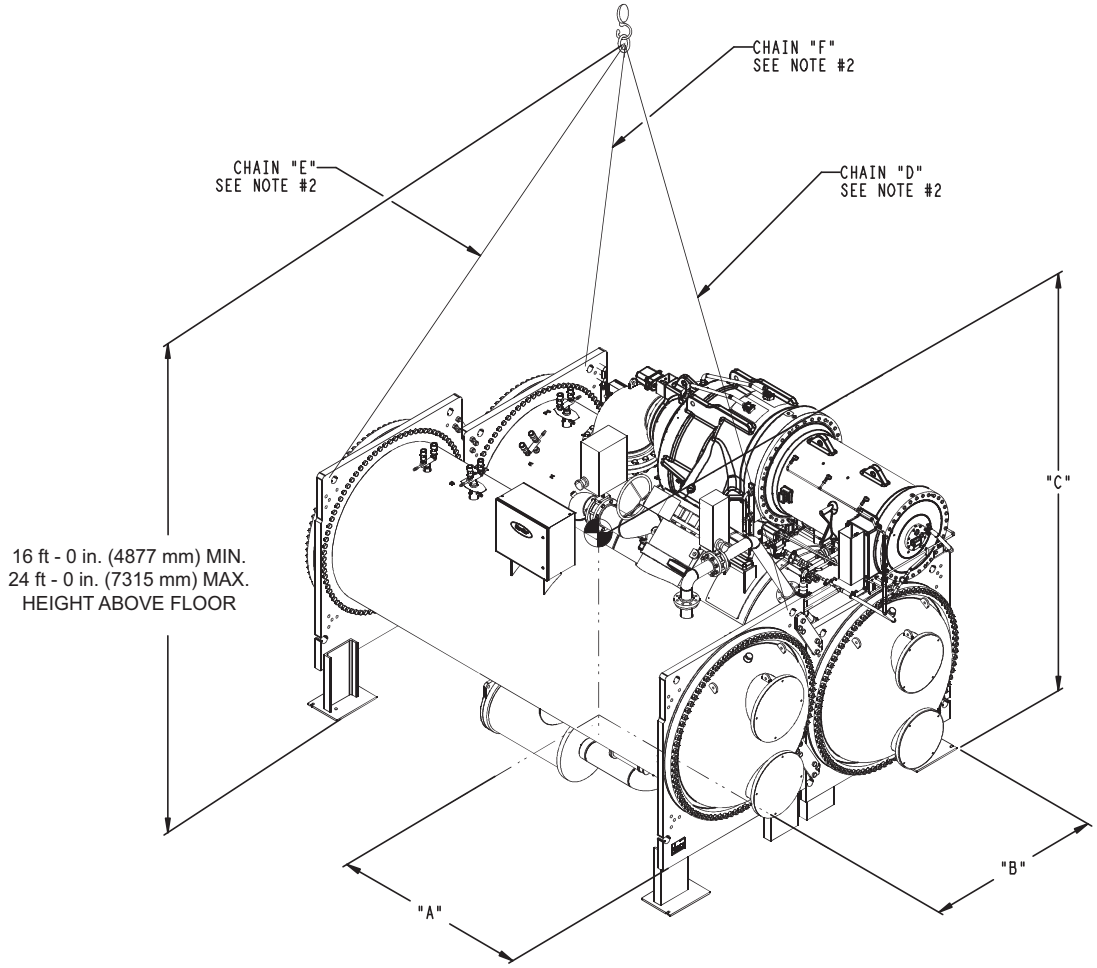


MACHINE RIGGING GUIDE

NOTES:
1. Each chain must be capable of supporting the entire weight of the machine. See chart for maximum weights.
2. Chain lengths shown are typical for 16′ (4877 mm) lifting height. Some minor adjustments may be required.
3. Dimensions "A" and "B" define distance from machine center of gravity to tube sheet outermost surfaces. Dimension "C" defines distance from machine center of gravity to floor.

Fig. 5 —Machine Rigging Guide (Compressor Frame Size 6)

HEAT EXCHANGER CODE (COOLER—CONDENSER)	COMPRESSOR FRAME	NH MAX. WEIGHT lb [kg]	MWB MAX. WEIGHT [kg]	VESSEL LENGTH ft [mm]	DIM. "A" in. [mm]	DIM. "B" in. [mm]	DIM. "C" in. [mm]	CHAIN LENGTH		
								"D" in. [mm]	"E" in. [mm]	"F" in. [mm]
B6—C6	7	94,574 [42,898]	112,911 [51,216]	16 [4877]	73.98 [1879]	64.65 [1642]	76.81 [1951]	167.01 [4242]	188.70 [4793]	198.23 [5035]
B8—C8	7	98,876 [44,849]	117,213 [53,167]	18 [5486]	83.23 [2114]	64.65 [1642]	76.81 [1951]	171.55 [4357]	197.90 [5027]	206.85 [5254]
C6—C6	7	101,110 [45,863]	121,448 [55,088]	16 [4877]	79.33 [2015]	66.69 [1694]	75.28 [1912]	166.57 [4231]	186.81 [4745]	193.62 [4918]
C6—D6	7	109,798 [49,803]	133,108 [60,377]	16 [4877]	82.32 [2091]	73.43 [1865]	73.66 [1871]	168.03 [4268]	185.63 [4715]	194.02 [4928]



MACHINE RIGGING GUIDE

NOTES:
1. Each chain must be capable of supporting the entire weight of the machine. See chart for maximum weights.
2. Chain lengths shown are typical for 20′ (6096 mm) lifting height. Some minor adjustments may be required.
3. Dimensions "A" and "B" define distance from machine center of gravity to tube sheet outermost surfaces. Dimension "C" defines distance from machine center of gravity to floor.

Fig. 6 — Machine Rigging Guide (Compressor Frame Size 7)

Table 2 — 19XR Nozzle Size

HEAT EXCHANGER FRAME SIZE	NOZZLE SIZE (in.) (NOMINAL PIPE SIZE)					
	COOLER			CONDENSER		
	1-PASS	2-PASS	3-PASS	1-PASS	2-PASS	3-PASS
A	20	16	12	20	16	14
B	20	18	14	20	18	14
C	20	18	14	24	20	16
D	—	—	—	24	20	16

Table 3 — 19XR Dimensions (Marine Waterbox, 150 psig)

COOLER HEAT EXCHANGER SIZE	CONDENSER HEAT EXCHANGER SIZE	A (LENGTH, MARINE WATERBOX)						19XR B WIDTH		19XR C HEIGHT
		1-Pass		2-Pass		3-Pass				
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	
A4*	A4*	23- 1 3/4	7055	21- 8 1/2	6617	20-11	6375	10- 6 3/8	3210	See Note 5
A6*	A6*	25- 1 3/4	7665	23- 8 1/2	7226	22-11	6985	10- 6 3/8	3210	
A4*	B4*	23- 1 3/4	7055	22- 1 3/4	6750	21- 1 3/4	6446	11- 0 1/8	3356	
A6*	B6*	25- 1 3/4	7665	24- 1 3/4	7360	23- 1 3/4	7055	11- 0 1/8	3356	
B6*	C6*	26- 6 3/4	8097	25- 2 1/2	7680	24- 2 3/4	7385†	12- 3 7/8	3756	
B8*	C8*	28- 6 3/4	8706	27- 2 1/2	8293	26- 2 3/4	7994	12- 10 3/8	3921	
C6*	C6*	26- 6 3/4	8097	25- 4 7/8	7744	24- 2 3/4	8097	12- 3 7/8	3756	
C6*	D6*	26-11	8204	25- 7 1/8	25705	24- 7	7493	13- 6 5/8	4131	

*Assumes both cooler and condenser nozzles on same end of chiller.

NOTES:
1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging frame 6 compressor should be 5 ft (1524 mm). Overhead clearance for service rigging frame 7 compressor should be 6 ft 4 in. (1930 mm).
3. Dimensions are approximate. Certified drawings available upon request.
4. Marine waterboxes typically add to the width of the machine. See certified drawings for details.
5. 19XR height can vary depending on the configuration. Check 19XR certified drawings for height information.
6. The table does not take into account compressor overhang or nozzle configurations with nozzles on opposite ends of chiller. See certified drawings for final unit dimensions.

Table 4 — 19XR Dimensions (Marine Waterbox, ASME Certified 300 psig)

COOLER HEAT EXCHANGER SIZE	CONDENSER HEAT EXCHANGER SIZE	A (Length, Marine Waterbox)						19XR B WIDTH		19XR C HEIGHT
		1-Pass		2-Pass		3-Pass				
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	
A4*	A4*	21- 5 1/2	6541	20- 5	6223	19- 5 1/2	5931	10- 8 5/8	3267	See Note 5
A6*	A6*	23- 5 1/2	7150	22- 5	6833	21- 5 1/2	6541	10- 8 5/8	3267	
A4*	B4*	21- 5 1/2	6541	20- 7 1/2	6287	19- 5 1/2	5931	11- 2 3/8	3413	
A6*	B6*	23- 5 1/2	7150	22- 7 1/2	6287	21- 5 1/2	6541	11- 2 7/8	3426	
B6*	C6*	24- 5 3/4	7462	23- 1 3/4	7055	22- 1 3/4	6750	12- 6 1/8	3813	
C6*	C6*	24- 5 3/4	7462	23- 2 1/2	7068	22- 1 3/4	6750	13- 0 7/8	3884	
B8*	C8*	26- 5 3/4	8071	25- 1 3/4	7055	24- 1 3/4	7360	12- 6 1/8	3813	
C6*	D6*	24- 7 3/4	7512	23- 3 1/2	7099	22- 3 3/4	6801	13- 9 1/2	4204	

ASME — American Society of Mechanical Engineers

*Assumes both cooler and condenser nozzles on same end of chiller.

†Consult factory for dimensions.

NOTES:
1. Service access should be provided per American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) 15, latest edition, National Fire Protection Association (NFPA) 70, and local safety code.
2. Overhead clearance for service rigging frame 6 compressor should be 5 ft (1524 mm). Overhead clearance for service rigging frame 7 compressor should be 6 ft 4 in. (1930 mm).
3. Dimensions are approximate. Certified drawings available upon request.
4. Marine waterboxes typically add to the width of the machine. See certified drawings for details.
5. 19XR height can vary depending on the configuration. Check 19XR certified drawings for height information.
6. The table does not take into account compressor overhang or nozzle configurations with nozzles on opposite ends of chiller. See certified drawings for final unit dimensions.

Table 5 — Component Weights

COMPONENT	FRAME 6 COMPRESSOR		FRAME 7 COMPRESSOR	
	lb	kg	lb	kg
SUCTION PIPE ASSEMBLY (INCLUDES FLANGES)	486	220	613	278
OPTIONAL COOLER INLET ISOLATION VALVE	26	12	28	13
OPTIONAL DISCHARGE ISOLATION VALVE	277	91	324	147
HMI PANEL	25	11	25	11
CONTROL PANEL	190	86	190	86
ECONOMIZER COVER	132	60	182	83
HIGH SIDE FLOAT CHAMBER COVER	132	60	182	83

Table 6 — 19XR Compressor and Motor Weights* — High-Efficiency Motors Two-Stage Compressor Frame Size 6, 50 Hz

MOTOR CODE	ENGLISH				SI			
	COMPRESSOR WEIGHT† (lb)	STATOR AND HOUSING WEIGHT (lb)	ROTOR AND SHAFT WEIGHT (lb)	END BELL COVER WEIGHT (lb)	COMPRESSOR WEIGHT† (kg)	STATOR AND HOUSING WEIGHT (kg)	ROTOR AND SHAFT WEIGHT (kg)	END BELL COVER WEIGHT (kg)
Voltage: 3000-3-50								
N	10,287	5918	1212	1021	4666	2684	550	463
P	10,287	6006	1230	1021	4666	2724	558	463
Q	10,287	6094	1248	1021	4666	2764	566	463
R	10,287	6184	1264	1021	4666	2805	573	463
S	10,287	6274	1280	1021	4666	2846	581	463
T	10,287	6296	1280	1021	4666	2856	581	463
Voltage: 3300-3-50								
N	10,287	5913	1212	1021	4666	2682	550	463
P	10,287	6007	1230	1021	4666	2725	558	463
Q	10,287	6101	1248	1021	4666	2767	566	463
R	10,287	6192	1264	1021	4666	2809	573	463
S	10,287	6283	1280	1021	4666	2850	581	463
T	10,287	6266	1280	1021	4666	2842	581	463
Voltage: 6300-3-50								
N	10,287	6277	1280	1021	4666	2847	581	463
P	10,287	6333	1298	1021	4666	2873	589	463
Q	10,287	6389	1316	1021	4666	2898	600	463
R	10,287	6473	1316	1021	4666	2936	600	463
S	10,287	6556	1316	1021	4666	2974	600	463
T	10,287	6609	1351	1021	4666	2998	613	463
Voltage: 10000-3-50								
N	10,287	6281	1280	1021	4666	2849	581	463
P	10,287	6281	1281	1021	4666	2849	581	463
Q	10,287	6281	1281	1021	4666	2849	581	463
R	10,287	6441	1316	1021	4666	2922	600	463
S	10,287	6600	1351	1021	4666	2994	613	463
T	10,287	6156	1351	1021	4666	2792	613	463
Voltage: 11000-3-50								
N	10,287	6600	1351	1021	4666	2994	613	463
P	10,287	6600	1351	1021	4666	2994	613	463
Q	10,287	6600	1351	1021	4666	2994	613	463
R	10,287	6765	1385	1021	4666	3069	628	463
S	10,287	6930	1419	1021	4666	3143	644	463
T	10,287	6930	1419	1021	4666	3143	644	463

*Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.

†Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only.

Table 7 — 19XR Compressor and Motor Weights* — High-Efficiency Motors
Two-Stage Compressor Frame Size 6, 60 Hz

MOTOR CODE	ENGLISH				SI			
	COMPRESSOR WEIGHT† (lb)	STATOR AND HOUSING WEIGHT (lb)	ROTOR AND SHAFT WEIGHT (lb)	END BELL COVER WEIGHT (lb)	COMPRESSOR WEIGHT† (kg)	STATOR AND HOUSING WEIGHT (kg)	ROTOR AND SHAFT WEIGHT (kg)	END BELL COVER WEIGHT (kg)
Voltage: 2400-3-60								
N	10,287	5929	1212	1021	4666	2689	550	463
P	10,287	6021	1230	1021	4666	2731	558	463
Q	10,287	6112	1248	1021	4666	2772	566	463
R	10,287	6190	1264	1021	4666	2808	573	463
S	10,287	6268	1280	1021	4666	2843	581	463
T	10,287	6259	1280	1021	4666	2839	581	463
Voltage: 3300-3-60								
N	10,287	5927	1212	1021	4666	2688	550	463
P	10,287	6019	1230	1021	4666	2730	558	463
Q	10,287	6110	1248	1021	4666	2771	566	463
R	10,287	6187	1264	1021	4666	2806	573	463
S	10,287	6263	1280	1021	4666	2841	581	463
T	10,287	6277	1280	1021	4666	2847	581	463
Voltage: 4160-3-60								
N	10,287	6103	1247	1021	4666	2768	566	463
P	10,287	6103	1248	1021	4666	2768	566	463
Q	10,287	6103	1248	1021	4666	2768	566	463
R	10,287	6185	1264	1021	4666	2805	573	463
S	10,287	6268	1280	1021	4666	2843	581	463
T	10,287	6268	1280	1021	4666	2843	581	463
Voltage: 6900-3-60								
N	10,287	6558	1316	1021	4666	2975	600	463
P	10,287	6559	1316	1021	4666	2975	600	463
Q	10,287	6559	1316	1021	4666	2975	600	463
R	10,287	6566	1316	1021	4666	2978	600	463
S	10,287	6574	1316	1021	4666	2982	600	463
T	10,287	6604	1351	1021	4666	2996	613	463
Voltage: 11000-3-60								
N	10,287	6587	1351	1021	4666	2988	613	463
P	10,287	6587	1351	1021	4666	2988	613	463
Q	10,287	6587	1351	1021	4666	2988	613	463
R	10,287	6716	1385	1021	4666	3036	628	463
S	10,287	6844	1419	1021	4666	3104	644	463
T	10,287	6844	1419	1021	4666	3104	644	463
Voltage: 13800-3-60								
N	10,287	6554	1351	1021	4666	2973	613	463
P	10,287	6554	1351	1021	4666	2973	613	463
Q	10,287	6554	1351	1021	4666	2973	613	463
R	10,287	6709	1385	1021	4666	3043	628	463
S	10,287	6864	1419	1021	4666	3113	644	463
T	10,287	6864	1419	1021	4666	3113	644	463

*Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.

†Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only.

Table 8 — 19XR Compressor and Motor Weights* — High-Efficiency Motors
Two-Stage Compressor Frame Size 7, 50 Hz

MOTOR CODE	ENGLISH				SI			
	COMPRESSOR WEIGHT† (lb)	STATOR AND HOUSING WEIGHT (lb)	ROTOR AND SHAFT WEIGHT (lb)	END BELL COVER WEIGHT (lb)	COMPRESSOR WEIGHT† (kg)	STATOR AND HOUSING WEIGHT (kg)	ROTOR AND SHAFT WEIGHT (kg)	END BELL COVER WEIGHT (kg)
Voltage: 3000-3-50								
U	16,024	6725	1443	983	7268	3050	654	446
V	16,024	6716	1443	983	7268	3046	654	446
W	16,024	6706	1443	983	7268	3042	654	446
X	16,024	6802	1460	983	7268	3085	662	446
Y	16,024	6899	1476	983	7268	3129	670	446
Z	16,024	7066	1509	983	7268	3205	684	446
Voltage: 3300-3-50								
U	16,024	6743	1443	983	7268	3059	654	446
V	16,024	6739	1443	983	7268	3057	654	446
W	16,024	6734	1443	983	7268	3054	654	446
X	16,024	6826	1460	983	7268	3096	662	446
Y	16,024	6917	1476	983	7268	3137	670	446
Z	16,024	7075	1509	983	7268	3209	684	446
Voltage: 6300-3-50								
U	16,024	6743	1443	983	7268	3059	654	446
V	16,024	6900	1476	983	7268	3130	670	446
W	16,024	7058	1509	983	7268	3201	684	446
X	16,024	7130	1526	983	7268	3234	692	446
Y	16,024	7203	1542	983	7268	3267	699	446
Z	16,024	7203	1542	983	7268	3267	699	446
Voltage: 10000-3-50								
G	16,024	7269	1631	983	7268	3297	740	446
H	16,024	7269	1631	983	7268	3297	740	446
J	16,024	7269	1631	983	7268	3297	740	446
K	16,024	7602	1768	983	7268	3448	802	446
L	16,024	7602	1768	983	7268	3448	802	446
M	16,024	7769	1837	983	7268	3523	833	446
U	16,024	6904	1476	983	7268	3132	670	446
V	16,024	6907	1476	983	7268	3133	670	446
W	16,024	6910	1476	983	7268	3134	670	446
X	16,024	7074	1509	983	7268	3209	684	446
Y	16,024	7238	1542	983	7268	3283	699	446
Z	16,024	7401	1575	983	7268	3357	714	446
Voltage: 11000-3-50								
G	16,024	7434	1700	983	7268	3372	771	446
H	16,024	7602	1768	983	7268	3448	802	446
J	16,024	7602	1768	983	7268	3448	802	446
K	16,024	7602	1768	983	7268	3448	802	446
L	16,024	7602	1768	983	7268	3448	802	446
M	16,024	7767	1837	983	7268	3523	833	446
U	16,024	7139	1509	983	7268	3238	684	446
V	16,024	7186	1526	983	7268	3260	692	446
W	16,024	7234	1542	983	7268	3281	699	446
X	16,024	7234	1542	983	7268	3281	699	446
Y	16,024	7234	1542	983	7268	3281	699	446
Z	16,024	7383	1575	983	7268	3349	714	446

*Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.

†Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only.

Table 9 — 19XR Compressor and Motor Weights* — High-Efficiency Motors
Two-Stage Compressor Frame Size 7, 60 Hz

MOTOR CODE	ENGLISH				SI			
	COMPRESSOR WEIGHT† (lb)	STATOR AND HOUSING WEIGHT (lb)	ROTOR AND SHAFT WEIGHT (lb)	END BELL COVER WEIGHT (lb)	COMPRESSOR WEIGHT† (kg)	STATOR AND HOUSING WEIGHT (kg)	ROTOR AND SHAFT WEIGHT (kg)	END BELL COVER WEIGHT (kg)
Voltage: 2400-3-60								
U	16,024	6719	1443	983	7268	3048	654	446
V	16,024	6718	1443	983	7268	3047	654	446
W	16,024	6717	1443	983	7268	3047	654	446
X	16,024	6811	1460	983	7268	3089	662	446
Y	16,024	6906	1476	983	7268	3132	670	446
Z	16,024	7073	1509	983	7268	3208	684	446
Voltage: 3300-3-60								
U	16,024	6723	1443	983	7268	3049	654	446
V	16,024	6730	1443	983	7268	3053	654	446
W	16,024	6736	1443	983	7268	3055	654	446
X	16,024	6816	1460	983	7268	3092	662	446
Y	16,024	6895	1476	983	7268	3128	670	446
Z	16,024	7055	1509	983	7268	3200	684	446
Voltage: 4160-3-60								
U	16,024	6739	1443	983	7268	3057	654	446
V	16,024	6721	1443	983	7268	3049	654	446
W	16,024	6703	1443	983	7268	3040	654	446
X	16,024	6778	1460	983	7268	3074	662	446
Y	16,024	6853	1476	983	7268	3108	670	446
Z	16,024	7069	1509	983	7268	3206	684	446
Voltage: 6900-3-60								
U	16,024	6730	1443	983	7268	3053	654	446
V	16,024	6909	1476	983	7268	3134	670	446
W	16,024	7088	1509	983	7268	3215	684	446
X	16,024	7076	1509	983	7268	3210	684	446
Y	16,024	7064	1509	983	7268	3204	684	446
Z	16,024	7141	1542	983	7268	3239	699	446
Voltage: 11000-3-60								
G	16,024	7434	1700	983	7268	3372	771	486
H	16,024	7602	1768	983	7268	3448	802	486
J	16,024	7602	1768	983	7268	3448	802	486
K	16,024	7602	1768	983	7268	3448	802	446
L	16,024	7602	1768	983	7268	3448	802	486
M	16,024	7767	1837	983	7268	3523	833	486
U	16,024	7042	1509	983	7268	3194	684	446
V	16,024	7085	1526	983	7268	3214	692	446
W	16,024	7128	1542	983	7268	3233	699	446
X	16,024	7131	1542	983	7268	3235	699	446
Y	16,024	7135	1542	983	7268	3236	699	446
Z	16,024	7313	1575	983	7268	3317	714	446
Voltage: 13800-3-60								
U	16,024	7073	1509	983	7268	3208	684	446
V	16,024	7109	1526	983	7268	3225	692	446
W	16,024	7146	1542	983	7268	3241	699	446
X	16,024	7146	1542	983	7268	3241	699	446
Y	16,024	7146	1542	983	7268	3241	699	446
Z	16,024	7295	1575	983	7268	3309	714	446

*Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.

†Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only.

Table 10 — 19XR Two-Stage Compressor Frame Size 6 Heat Exchanger Weights (English)

CODE†	DRY RIGGING WEIGHT (lb)*		REFRIGERANT WEIGHT (lb)		WATER WEIGHT (lb)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
A40	16,877	18542	1647	927	4328	4553
A41	17,270	19062	1773	927	4557	4890
A42	17,690	19565	1887	927	4816	5213
A45	16,968	18493	1599	927	4453	4582
A46	17,371	19063	1714	927	4701	4949
A47	17,761	19578	1837	927	4941	5281
A60	18,354	20,139	1878	1074	4721	5029
A61	18,807	20,745	2022	1074	4984	5415
A62	19,295	21,330	2152	1074	5280	5786
A65	18,469	20,095	1823	1074	4859	5060
A66	18,936	20,758	1954	1074	5144	5482
A67	19,389	21,357	2095	1074	5419	5862
A4A	15,540	17,089	1681	861	4183	4524
A4B	15,794	17,472	1792	861	4392	4859
A4C	16,063	17,812	1897	861	4615	5137
A4F	15,592	17,076	1626	861	4322	4588
A4G	15,845	17,405	1736	861	4531	4867
A4H	16,249	17,821	1890	861	4865	5219
A6A	16,465	18,359	1917	998	4555	4996
A6B	16,758	18,806	2044	998	4794	5368
A6C	17,070	19,202	2164	998	5050	5698
A6F	16,535	18,356	1854	998	4709	5068
A6G	16,829	18,739	1979	998	4948	5387
A6H	17,296	19,225	2156	998	5331	6156
B40	—	21,217	—	1233	—	5850
B41	—	21,965	—	1233	—	6333
B42	—	22,581	—	1233	—	6729
B45	—	21,173	—	1233	—	5904
B46	—	21,909	—	1233	—	6379
B47	—	22,653	—	1233	—	6859
B60	—	23,061	—	1423	—	6464
B61	—	23,932	—	1423	—	7018
B62	—	24,649	—	1423	—	7473
B65	—	23,022	—	1423	—	6521
B66	—	23,879	—	1423	—	7066
B67	—	24,745	—	1423	—	7617
B4A	—	19,217	—	1148	—	5756
B4B	—	19,793	—	1148	—	6243
B4C	—	20,254	—	1148	—	6633
B4F	—	19,217	—	1148	—	5852
B4G	—	19,721	—	1148	—	6279
B4H	—	20,318	—	1148	—	6785
B6A	—	20,794	—	1326	—	6357
B6B	—	21,465	—	1326	—	6915
B6C	—	22,002	—	1326	—	7362
B6F	—	20,806	—	1326	—	6462
B6G	—	21,393	—	1326	—	6951
B6H	—	22,088	—	1326	—	8379

*Rigging weights are for standard Super B5 and Super C5 tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
†See Model Number Nomenclature on page 5.

NOTES:
1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 11 — 19XR Two-Stage Compressor Frame Size 6 Heat Exchanger Weights (SI)

CODE†	DRY RIGGING WEIGHT (kg)*		REFRIGERANT WEIGHT (kg)		WATER WEIGHT (kg)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
A40	7655	8410	747	420	1963	2065
A41	7833	8646	804	420	2067	2218
A42	8024	8875	856	420	2184	2365
A45	7697	8388	725	420	2020	2078
A46	7879	8647	777	420	2132	2245
A47	8056	8880	833	420	2241	2395
A60	8325	9135	852	487	2141	2281
A61	8531	9410	917	487	2261	2456
A62	8752	9675	976	487	2395	2624
A65	8377	9115	827	487	2204	2295
A66	8589	9416	886	487	2333	2487
A67	8795	9687	950	487	2458	2659
A4A	7049	7751	762	391	1897	2052
A4B	7164	7925	813	391	1992	2204
A4C	7286	8079	860	391	2093	2330
A4F	7072	7746	738	391	1960	2081
A4G	7187	7895	787	391	2055	2208
A4H	7370	8083	857	391	2207	2367
A6A	7468	8328	870	453	2066	2266
A6B	7601	8530	927	453	2175	2435
A6C	7743	8710	982	453	2291	2585
A6F	7500	8326	841	453	2136	2299
A6G	7633	8500	898	453	2244	2444
A6H	7845	8730	978	453	2418	2792
B40	—	9624	—	559	—	2653
B41	—	9963	—	559	—	2873
B42	—	10,243	—	559	—	3052
B45	—	9604	—	559	—	2678
B46	—	9938	—	559	—	2893
B47	—	10,275	—	559	—	3111
B60	—	10,460	—	645	—	2932
B61	—	10,855	—	645	—	3183
B62	—	11,181	—	645	—	3390
B65	—	10,442	—	645	—	2958
B66	—	10,831	—	645	—	3205
B67	—	11,224	—	645	—	3455
B4A	—	8717	—	521	—	2611
B4B	—	8978	—	521	—	2832
B4C	—	9187	—	521	—	3009
B4F	—	8717	—	521	—	2654
B4G	—	8945	—	521	—	2848
B4H	—	9216	—	521	—	3078
B6A	—	9432	—	601	—	2883
B6B	—	9736	—	601	—	3137
B6C	—	9980	—	601	—	3339
B6F	—	9487	—	601	—	2931
B6G	—	9704	—	601	—	3153
B6H	—	10,019	—	601	—	3801

*Rigging weights are for standard Super B5 and Super C5 tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.

†See Model Number Nomenclature on page 5.

NOTES:

1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 12 — 19XR Two-Stage Compressor Frame Size 7 Heat Exchanger Weights (English)

CODE†	DRY RIGGING WEIGHT (lb)*		REFRIGERANT WEIGHT (lb)		WATER WEIGHT (lb)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
B60	24,704	—	2273	—	6,340	—
B61	25,337	—	2355	—	6,737	—
B62	25,964	—	2460	—	7,116	—
B65	25,014	—	2185	—	6,485	—
B66	25,631	—	2275	—	6,873	—
B67	26,264	—	2379	—	7,255	—
B6A	22,819	—	2081	—	6,159	—
B6B	23,299	—	2162	—	6,568	—
B6C	23,829	—	2256	—	6,993	—
B6F	23,139	—	1951	—	6,344	—
B6G	23,648	—	2019	—	6,774	—
B6H	24,171	—	2120	—	7,194	—
B80	26,184	—	2557	—	6,766	—
B81	26,922	—	2649	—	7,208	—
B82	27,627	—	2768	—	7,629	—
B85	26,438	—	2458	—	6,923	—
B86	27,157	—	2559	—	7,355	—
B87	27,868	—	2676	—	7,780	—
B8A	24,164	—	2341	—	6,580	—
B8B	24,722	—	2432	—	7,036	—
B8C	25,317	—	2538	—	7,510	—
B8F	24,403	—	2195	—	6,783	—
B8G	25,011	—	2271	—	7,262	—
B8H	25,599	—	2385	—	7,731	—
C60	30,825	29,857	2647	1610	8,475	8,630
C61	31,536	30,881	2751	1610	8,924	9,275
C62	32,467	31,871	2875	1610	9,474	9,916
C65	31,135	29,982	2562	1610	8,645	8,684
C66	31,851	31,064	2666	1610	9,097	9,362
C67	32,777	32,186	2793	1610	9,644	10,078
C6A	28,641	27,676	2443	1497	6,898	8,675
C6B	29,167	28,315	2534	1497	7,352	9,216
C6C	29,750	28,918	2627	1497	7,823	9,752
C6F	28,929	27,774	2334	1497	7,724	8,710
C6G	29,478	28,457	2415	1497	8,194	9,283
C6H	30,083	29,223	2500	1497	8,681	9,935
C80	22,433	31,810	2978	1811	9,084	9,312
C81	22,315	32,955	3095	1811	9,589	10,029
C82	22,231	34,094	3234	1811	10,208	10,742
C85	22,534	31,911	2882	1811	9,275	9,367
C86	22,416	33,113	2999	1811	9,784	10,120
C87	22,332	34,385	3142	1811	10,399	10,196
C8A	22,432	19,664	2748	1684	7,310	9,387
C8B	22,314	19,548	2851	1684	7,821	9,991
C8C	22,230	19,463	2955	1684	8,351	10,589
C8F	22,533	19,763	2626	1684	8,239	9,420
C8G	22,415	19,641	2717	1684	8,768	10,059
C8H	22,331	19,503	2813	1684	9,316	10,787

*Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
†See Model Number Nomenclature on page 5.

NOTES:
1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 12 — 19XR Two-Stage Compressor Frame Size 7 Heat Exchanger Weights (English) (cont)

CODE†	DRY RIGGING WEIGHT (lb)*		REFRIGERANT WEIGHT (lb)		WATER WEIGHT (lb)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
D60	—	38,296	—	2097	—	11,473
D61	—	39,624	—	2097	—	12,309
D62	—	41,031	—	2097	—	13,210
D65	—	37,624	—	2097	—	11,617
D66	—	38,837	—	2097	—	12,387
D67	—	40,460	—	2097	—	13,410
D80	—	41,916	—	2359	—	12,447
D81	—	43,382	—	2359	—	13,388
D82	—	44,963	—	2359	—	14,401
D85	—	42,058	—	2359	—	12,609
D86	—	43,408	—	2359	—	13,475
D87	—	45,204	—	2359	—	14,626
D6A	—	35,286	—	1947	—	11,401
D6B	—	36,328	—	1947	—	12,255
D6C	—	37,288	—	1947	—	13,078
D6F	—	34,447	—	1947	—	11,448
D6G	—	35,637	—	1947	—	12,408
D6H	—	36,663	—	1947	—	13,278
D8A	—	38,494	—	2190	—	12,366
D8B	—	39,633	—	2190	—	13,327
D8C	—	40,731	—	2190	—	14,253
D8F	—	38,479	—	2190	—	12,419
D8G	—	39,761	—	2190	—	13,499
D8H	—	40,922	—	2190	—	14,478

*Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
†See Model Number Nomenclature on page 5.

NOTES:
1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 13 — 19XR Two-Stage Compressor Frame Size 7 Heat Exchanger Weights (SI)

CODE†	DRY RIGGING WEIGHT (kg)*		REFRIGERANT WEIGHT (kg)		WATER WEIGHT (kg)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
B60	11 206	—	1031	—	2876	—
B61	11 493	—	1068	—	3056	—
B62	11 777	—	1116	—	3228	—
B65	11 346	—	991	—	2941	—
B66	11 626	—	1032	—	3118	—
B67	11 913	—	1079	—	3291	—
B6A	10 351	—	944	—	2794	—
B6B	10 568	—	981	—	2979	—
B6C	10 809	—	1023	—	3172	—
B6F	10 496	—	885	—	2878	—
B6G	10 727	—	916	—	3073	—
B6H	10 964	—	962	—	3263	—
B80	11 877	—	1160	—	3069	—
B81	12 212	—	1202	—	3269	—
B82	12 531	—	1256	—	3460	—
B85	11 992	—	1115	—	3141	—
B86	12 318	—	1161	—	3336	—
B87	11 214	—	1214	—	3529	—
B8A	10 952	—	1062	—	2885	—
B8B	11 214	—	1103	—	3191	—
B8C	11 484	—	1151	—	3406	—
B8F	11 069	—	996	—	3077	—
B8G	11 345	—	1030	—	3294	—
B8H	11 612	—	1082	—	3507	—
C60	13 982	13 543	1201	730	3841	3914
C61	14 304	14 007	1248	730	4048	4207
C62	14 727	14 456	1304	730	4297	4498
C65	14 123	13 600	1162	730	3921	3939
C66	14 447	14 090	1209	730	4126	4247
C67	14 867	14 599	1267	730	4374	4571
C6A	12 991	12 554	1108	679	3129	3935
C6B	13 230	12 843	1149	679	3325	4180
C6C	13 494	13 117	1192	679	3553	4423
C6F	13 222	12 508	1059	679	3504	3951
C6G	13 371	12 908	1095	679	3717	4211
C6H	13 645	13 255	1134	679	3938	4506
C80	10 175	14 429	1351	821	4120	4224
C81	10 122	14 948	1404	821	4349	4549
C82	10 084	15 465	1467	821	4630	4872
C85	10 221	14 475	1307	821	4207	4249
C86	10 168	14 020	1360	821	4438	4590
C87	10 130	15 597	1425	821	4717	4625
C8A	10 175	8 919	1246	764	3316	4258
C8B	10 121	8 867	1293	764	3548	4532
C8C	10 083	8 816	1340	764	3788	4803
C8F	10 221	8 964	1191	764	3737	4273
C8G	10 167	8 909	1232	764	3977	4563
C8H	10 129	8 846	1276	764	4226	4893

*Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
†See Model Number Nomenclature on page 5.

NOTES:
1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 13 — 19XR Two-Stage Compressor Frame Size 7 Heat Exchanger Weights (SI) (cont)

CODE†	DRY RIGGING WEIGHT (kg)*		REFRIGERANT WEIGHT (kg)		WATER WEIGHT (kg)	
	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY	COOLER ONLY	CONDENSER ONLY
D60	—	17 371	—	951	—	5204
D61	—	17 973	—	951	—	5583
D62	—	18 611	—	951	—	5992
D65	—	17 066	—	951	—	5269
D66	—	17 616	—	951	—	5619
D67	—	18 352	—	951	—	6083
D80	—	19 013	—	1070	—	5646
D81	—	19 678	—	1070	—	6073
D82	—	20 395	—	1070	—	6532
D85	—	19 077	—	1070	—	5719
D86	—	19 690	—	1070	—	6112
D87	—	20 504	—	1070	—	6634
D6A	—	16 005	—	883	—	5171
D6B	—	16 478	—	883	—	5559
D6C	—	16 914	—	883	—	5932
D6F	—	15 625	—	883	—	5193
D6G	—	16 165	—	883	—	5628
D6H	—	16 630	—	883	—	6023
D8A	—	17 461	—	993	—	5609
D8B	—	17 977	—	993	—	6045
D8C	—	18 475	—	993	—	6465
D8F	—	17 454	—	993	—	5633
D8G	—	18 035	—	993	—	6123
D8H	—	18 562	—	993	—	6567

*Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
†See Model Number Nomenclature on page 5.

NOTES:
1. Cooler weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
2. Condenser weight includes the high side float chamber, discharge pipe, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads.

Table 14 — 19XR Two-Stage Compressor Frame Sizes 6 and 7 Economizer Weight

FRAME SIZE	DRY WEIGHT (lb)*	REFRIGERANT WEIGHT (lb)	OPERATION WEIGHT (lb)	DRY WEIGHT (kg)*	REFRIGERANT WEIGHT (kg)	OPERATION WEIGHT (kg)
XR6	1589	360	1949	721	163	884
XR7	2749	646	3395	1247	293	1540

*Includes economizer weight and all connecting piping to compressor.

Table 15 — Additional Weights for 19XR 150 psig (1034 kPa) Marine Waterboxes* Two-Stage Compressors, Frame Size 6† — English (lb)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
A	1	2794	3124	6515	2582	2912	5648
	2	2454	2650	2979	2236	2432	2613
	3	2771	2899	4190	2840	3020	3950
B	1	—	—	—	2604	2934	6975
	2	—	—	—	2459	2719	3600
	3	—	—	—	2770	2950	4858

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

†Values are for Victaulic nozzles, two-pass dished head design.

Table 16 —Additional Weights for 19XR 150 psig (1034 kPa) Marine Waterboxes* Two-Stage Compressors, Frame Size 6† — SI (kg)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
A	1	1267	1417	2955	1171	1321	2562
	2	1113	1202	2979	1014	1103	1185
	3	1157	1315	1900	1288	1370	1792
B	1	—	—	—	1181	1331	3162
	2	—	—	—	1115	1233	1633
	3	—	—	—	1256	1338	2203

*Add to cooler and condenser weights for total weights. Condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

†Values are for Victaulic nozzles, two-pass dished head design.

Table 17 — Additional Weights for 19XR 300 psig (2068 kPa) ASME Marine Waterboxes* Two-Stage Compressors, Frame Size 6 — English (lb)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
A	1	6379	6709	5058	5573	5903	4426
	2	5594	5790	2101	4834	5030	1890
	3	6031	6159	3005	5310	5490	2688
B	1	—	—	—	7084	7414	5509
	2	—	—	—	6474	6734	2577
	3	—	—	—	6816	6996	3340

ASME — American Society of Mechanical Engineers

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

Table 18 — Additional Weights for 19XR 300 psig (2068 kPa) ASME Marine Waterboxes* Two-Stage Compressors, Frame Size 6 — SI (kg)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
A	1	2893	3043	2294	2528	2678	2008
	2	2537	2626	953	2193	2282	857
	3	2736	2794	1363	2409	2490	1219
B	1	—	—	—	3213	3363	2499
	2	—	—	—	2937	3054	1169
	3	—	—	—	3092	3173	1515

ASME — American Society of Mechanical Engineers

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

Table 19 — Additional Weights for 19XR 150 psig (1034 kPa) Marine Waterboxes* Two-Stage Compressors, Frame Size 7† — English (lb)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
B	1	4045	4375	8103	—	—	—
	2	3648	3908	4139	—	—	—
	3	4160	4340	5633	—	—	—
C	1	4828	5158	10,264	4273	4713	9858
	2	4375	4635	5201	3714	4044	4826
	3	4957	5137	7144	4434	4630	6819
D	1	—	—	—	4863	5303	12,530
	2	—	—	—	4243	4573	6074
	3	—	—	—	5079	5275	8659

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

†Values are for Victaulic nozzles, two-pass dished head design.

Table 20 —Additional Weights for 19XR 150 psig (1034 kPa) Marine Waterboxes* Two-Stage Compressors, Frame Size 7† — SI (kg)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
B	1	1835	1984	3675	—	—	—
	2	1655	1773	1877	—	—	—
	3	1887	1969	2555	—	—	—
C	1	2190	2340	4655	1938	2138	4472
	2	1984	2102	2359	1685	1834	2189
	3	2248	2330	3240	2011	2100	3093
D	1	—	—	—	2206	2405	5684
	2	—	—	—	1925	2074	2755
	3	—	—	—	2303	2393	3928

*Add to cooler and condenser weights for total weights. Condenser weights may be found in the Heat Exchanger Weights tables on pages 32-35. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

†Values are for Victaulic nozzles, two-pass dished head design.

Table 21 — Additional Weights for 19XR 300 psig (2068 kPa) ASME Marine Waterboxes* Two-Stage Compressors, Frame Size 7 — English (lb)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
B	1	8305	8635	5783	—	—	—
	2	7426	7686	2382	—	—	—
	3	7785	7965	3268	—	—	—
C	1	11,001	11,331	7030	9228	9668	7591
	2	9829	10,089	2708	8003	8333	3061
	3	10,343	10,053	3866	8647	8843	4468
D	1	—	—	—	12,940	13,380	9365
	2	—	—	—	11,170	11,500	3607
	3	—	—	—	12,042	12,238	5398

ASME — American Society of Mechanical Engineers

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

Table 22 — Additional Weights for 19XR 300 psig (2068 kPa) ASME Marine Waterboxes* Two-Stage Compressors, Frame Size 7 — SI (kg)

FRAME	NUMBER OF PASSES	COOLER			CONDENSER		
		Rigging Wgt		Water Wgt	Rigging Wgt		Water Wgt
		Victaulic	Flange		Victaulic	Flange	
B	1	3767	3917	2623	—	—	—
	2	3368	3486	1080	—	—	—
	3	3531	3612	1482	—	—	—
C	1	4990	5140	3188	4186	4385	3443
	2	4458	4576	1228	3630	3682	1388
	3	4692	4773	1753	3922	6069	2027
D	1	—	—	—	5869	5927	4248
	2	—	—	—	5067	5102	1925
	3	—	—	—	5462	5551	2448

ASME — American Society of Mechanical Engineers

*Add to cooler and condenser weights for total weights. Cooler and condenser weights may be found in Tables 10-13. The first digit of the heat exchanger code (first column) is the heat exchanger frame size.

Table 23 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 6 — English (lb)

Two-Stage Compressor Frame 6; Cooler Frame A

WATERBOX DESCRIPTION	PASSES	COOLER	
		FRAME A	
		STANDARD NOZZLES	FLANGED
Dished Head, 150 psig	1	1006	1171
MWB End Cover, 150 psig	1	976	976
MWB End Cover (ASME), 300 psig	1	2460	2460
Dished Head, 150 psig	2	1140	1336
Dished Head (Return Cover), 150 psig	2	976	976
MWB End Cover, 150 psig	2	1068	1068
MWB End Cover (Return Cover), 150 psig	2	976	976
MWB End Cover (ASME), 300 psig	2	2460	2460
MWB End Cover (ASME) (Return Cover), 300 psig	2	2460	2460
Dished Head, 150 psig	3	1048	1112
MWB End Cover, 150 psig	3	1030	1030
MWB End Cover (ASME), 300 psig	3	2460	2460

Two-Stage Compressor Frame 6; Condenser Frame A and B

WATERBOX DESCRIPTION	PASSES	CONDENSER			
		FRAME A		FRAME B	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 150 psig	1	895	1060	1006	1171
MWB, 150 psig	1	859	859	1075	1075
MWB (ASME), 300 psig	1	2117	2117	2744	2744
Dished Head, 150 psig	2	981	1179	1140	1400
Dished Head (Return Cover), 150 psig	2	824	824	976	976
MWB 150 psig	2	907	907	1075	1075
MWB (Return), 150 psig	2	824	824	976	976
MWB (ASME), 300 psig	2	2117	2117	2744	2744
MWB Return Cover (ASME), 300 psig	2	2117	2117	2744	2744
Dished Head, 150 psig	3	1067	1157	1050	1140
MWB End Cover, 150 psig	3	942	942	1020	1020
MWB End Cover (ASME), 300 psig	3	2117	2177	2744	2744

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox

NOTE: Weights for dished head cover and MWB end cover 150 psig are included in the heat exchanger weights shown on page 15.

Table 24 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 6 — SI (kg)

Two-Stage Compressor Frame 6; Cooler Frame A

WATERBOX DESCRIPTION	PASSES	CONDENSER	
		FRAME A	
		STANDARD NOZZLES	FLANGED
Dished Head, 150 psig	1	456	531
MWB End Cover, 150 psig	1	443	443
MWB End Cover (ASME), 300 psig	1	1116	1116
Dished Head, 150 psig	2	517	606
Dished Head (Return Cover), 150 psig	2	443	443
MWB End Cover, 150 psig	2	484	484
MWB End Cover (Return Cover), 150 psig	2	443	443
MWB End Cover (ASME), 300 psig	2	1116	1116
MWB End Cover (ASME) (Return Cover), 300 psig	2	1116	1116
Dished Head, 150 psig	3	475	504
MWB End Cover, 150 psig	3	467	467
MWB End Cover (ASME), 300 psig	3	1116	1116

Two-Stage Compressor Frame 6; Condenser Frame A and B

WATERBOX DESCRIPTION	PASSES	CONDENSER			
		FRAME A		FRAME B	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 150 psig	1	406	481	473	547
MWB, 150 psig	1	390	390	488	488
MWB (ASME), 300 psig	1	960	960	1292	1292
Dished Head, 150 psig	2	445	535	574	633
Dished Head (Return Cover), 150 psig	2	374	374	481	481
MWB 150 psig	2	411	411	630	630
MWB End Cover, 150 psig	2	374	411	488	488
MWB (ASME), 300 psig	2	960	1083	1440	1440
MWB Return Cover (ASME), 300 psig	2	960	960	1245	1245
Dished Head, 150 psig	3	484	525	476	517
MWB End Cover, 150 psig	3	427	427	463	463
MWB End Cover (ASME), 300 psig	3	960	987	1245	1245

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox

NOTE: Weights for dished head cover and MWB end cover 1034 kPa are included in the heat exchanger weights shown on page 16.

Table 25 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 7 — English (lb)

Two-Stage Compressor Frame 7; Cooler Frames B, C

WATERBOX DESCRIPTION	PASSES	COOLER			
		FRAME B		FRAME C	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 150 psig	1	1380	1545	1849	2014
MWB End Cover, 150 psig	1	1366	1366	1835	1835
MWB End Cover (ASME), 300 psig	1	3425	3425	4805	4805
Dished Head, 150 psig	2	1589	1849	2076	2336
Dished Head (Return Cover), 150 psig	2	1367	1367	1836	1836
MWB End Cover, 150 psig	2	1489	1489	1987	1987
MWB (Return Cover), 150 psig	2	1367	1367	1836	1836
MWB End Cover (ASME), 300 psig	2	3425	3425	4805	4805
MWB (Return Cover), 300 psig	2	3425	3425	4805	4805
Dished Head, 150 psig	3	1514	1604	2028	2118
MWB End Cover, 150 psig	3	1506	1506	1995	1995
MWB End Cover (ASME), 300 psig	3	3425	3425	4805	4805

Two-Stage Compressor Frame 7; Condenser Frames C, D

WATERBOX DESCRIPTION	PASSES	CONDENSER			
		FRAME C		FRAME D	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 150 psi	1	1380	1600	1849	2029
MWB End Cover, 150 psi	1	1367	1367	1835	1835
MWB End Cover (ASME), 300 psi	1	3639	3639	5249	5249
Dished Head, 150 psig	2	1589	1919	2076	2406
Dished Head (Return Cover), 150 psig	2	1367	1367	1836	1836
MWB End Cover, 150 psig	2	1497	1497	1988	1988
MWB (Return Cover), 150 psi	2	1367	1367	1836	1836
MWB End Cover (ASME), 300 psig	2	3639	3639	5249	5249
MWB (Return Cover) (ASME), 300 psig	2	3639	3639	5249	5249
Dished Head, 150 psi	3	1514	1612	2028	2126
MWB End Cover, 150 psig	3	1493	1493	1993	1993
MWB End Cover (ASME), 300 psig	3	3639	3639	5249	5249

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox

NOTE: Weights for dished head cover and MWB end cover 150 psig are included in the heat exchanger weights shown on page 17.

Table 26 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 7 — SI (kg)

Two-Stage Compressor Frame 7; Cooler Frames B, C

WATERBOX DESCRIPTION	PASSES	COOLER			
		FRAME B		FRAME C	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 1034 kPa	1	626	701	839	914
MWB End Cover, 1034 kPa	1	620	620	832	832
MWB End Cover (ASME), 2068 kPa	1	1554	1554	2180	2180
Dished Head, 1034 kPa	2	721	839	942	1060
Dished Head (Return Cover), 1034 kPa	2	620	620	833	833
MWB End Cover, 1034 kPa	2	675	675	901	901
MWB (Return Cover), 1034 kPa	2	620	620	833	833
MWB End Cover (ASME),2068 kPa	2	1554	1554	2180	2180
MWB (Return Cover), 2068 kPa	2	1554	1554	2180	2180
Dished Head, 1034 kPa	3	687	728	920	961
MWB End Cover, 1034 kPa	3	683	683	905	905
MWB End Cover (ASME), 2068 kPa	3	1554	1554	2180	2180

Two-Stage Compressor Frame 7; Condenser Frames C, D

WATERBOX DESCRIPTION	PASSES	CONDENSER			
		FRAME C		FRAME D	
		STANDARD NOZZLES	FLANGED	STANDARD NOZZLES	FLANGED
Dished Head, 150 psi	1	626	726	839	920
MWB End Cover, 150 psi	1	620	620	832	832
MWB End Cover (ASME), 300 psi	1	1651	1651	2353	2353
Dished Head, 150 psig	2	721	870	942	1091
Dished Head (Return Cover), 150 psig	2	620	620	833	833
MWB End Cover, 150 psig	2	679	679	902	902
MWB (Return Cover), 150 psi	2	620	620	833	833
MWB End Cover (ASME), 300 psig	2	1651	1651	2381	2381
MWB (Return Cover) (ASME), 300 psig	2	1651	1651	2381	2381
Dished Head, 150 psi	3	687	731	920	964
MWB End Cover, 150 psig	3	677	677	904	904
MWB End Cover (ASME), 300 psig	3	1651	1651	2381	2381

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox

NOTE: Weights for dished head cover and MWB end cover 1034 kPa are included in the heat exchanger weights shown on page 19.

RIG MACHINE COMPONENTS — Refer to instructions below, Fig. 7-9, and Carrier Certified Prints for machine component disassembly.

IMPORTANT: Only a qualified service technician should perform this operation.

⚠ WARNING

Do not attempt to disconnect flanges while the machine is under pressure. Failure to relieve pressure can result in personal injury or damage to the unit.

⚠ CAUTION

Before rigging the compressor, disconnect all wires connected to the control panel to avoid damage to electrical components.

NOTE: If the cooler, economizer, and condenser vessels must be separated, the heat exchangers should be kept level by placing a support plate under the tube sheets. The support plate will also help to keep the vessels level and aligned when the vessels are bolted back together.

NOTE: The compressor oil is hygroscopic and absorbs moisture from the atmosphere. Remove the oil charge from the compressor. Store the oil in a clean dry container designed for the purpose of storing oil; keep the container sealed until it is time for reinstallation of the oil. Or, dispose of the compressor oil and reinstall a new oil charge after dehydration.

NOTE: Wiring must also be disconnected. Label each wire before removal (see Carrier Certified Prints). In order to disconnect the starter from the machine, remove wiring for the oil pump, oil heater, control wiring at the power panel, and the main motor leads at the starter lugs.

Remove all transducer and sensor wires at the sensor. Clip all wire ties necessary to pull heat exchangers apart.

To Separate Cooler and Condenser:

1. Place a support plate under each tube sheet leg to keep each vessel level (Item 3, Fig. 7).
2. Cut the refrigerant motor cooling line at the location shown (Item 4, Fig. 7).
3. Disconnect the compressor discharge pipe at the compressor (Item 14, Fig. 7).
4. Disconnect the coupling of the isolation valve near the damper valve as shown in Fig. 7 (Item 12).
5. Unbolt the cooler liquid feed line at the location indicated for liquid line isolation valve. Refer to Fig. 3 and 7, Item 8.
6. Cover all openings.
7. Disconnect all wires and cables that cross from the cooler side of the machine to the condenser side, including:
   a. temperature sensor cable at the waterbox (Fig. 9 and Fig. 10, Compressor Detail A).
   b. motor power wires at the starter (Item 1, Fig. 7).
   c. wires and cable housings at the control panel that cross from the control panel to the cooler vessel. (Fig. 8).
8. Disconnect the take-apart connectors on the tube sheets (Fig. 9).
9. Rig the vessels apart.

To Separate the Compressor from the Cooler:

1. Unbolt the compressor suction elbow at the cooler flange (Item 13, Fig. 7).
2. Cut the refrigerant motor cooling line at the location shown (Item 4, Fig. 7).
3. Disconnect the motor refrigerant return line (Item 6, Fig. 7).
4. Disconnect all wires going to the control panel.
5. Disconnect the following:
   a. compressor oil sump temperature sensor cable (Fig. 10, Compressor Detail B)
   b. bearing temperature sensor cables (Fig. 10, Compressor Detail B)
   c. motor temperature sensor cable (Fig. 10, Compressor Detail A)
   d. wires and cable housings that cross from the power panel to the starter and control panel (Fig. 8)
   e. compressor discharge temperature sensor cable (Fig. 10, Compressor Detail A)
   f. compressor oil sump pressure cable (Fig. 10, Compressor Detail B)
   g. compressor oil supply pressure cable (Fig. 10, Compressor Detail A)
   h. bearing displacement switch (Fig. 10, Compressor Detail D)
   i. oil heater (Fig. 10, Compressor Detail B).
   j. guide vane actuator cable (Fig. 10, Compressor Detail D)
6. Disconnect the flared fitting for the oil reclaim line (Item 11, Fig. 7).
7. Unbolt the compressor discharge coupling (Item 14, Fig. 7).
8. Cover all openings.
9. Disconnect motor power cables at the starter lugs (Item 1, Fig. 7).
10. Unbolt the compressor mounting from the cooler (Item 7, Fig. 7).

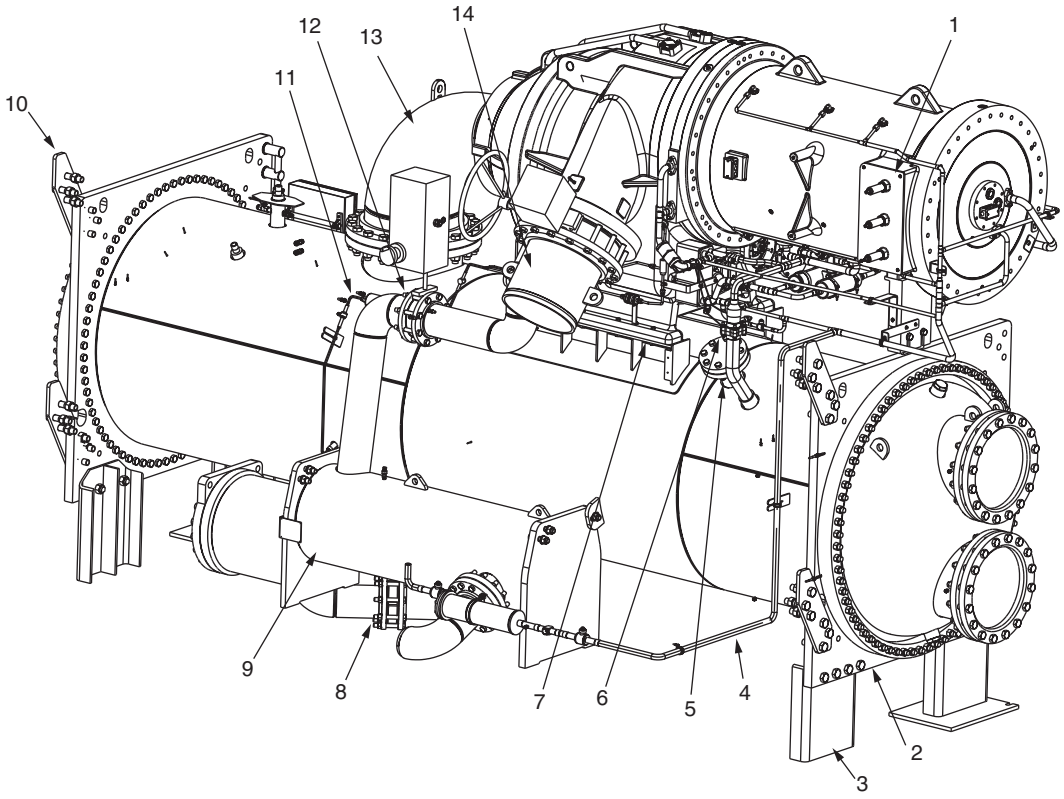
To Rig Compressor:

NOTE: The motor end of the 19XR compressor is heavy and will tip backwards unless these directions are followed:

1. Cut two 6 in. x 8 in. wooden beams to the same length as the compressor.
2. Drill holes into the beams and bolt them to the base of the compressor.

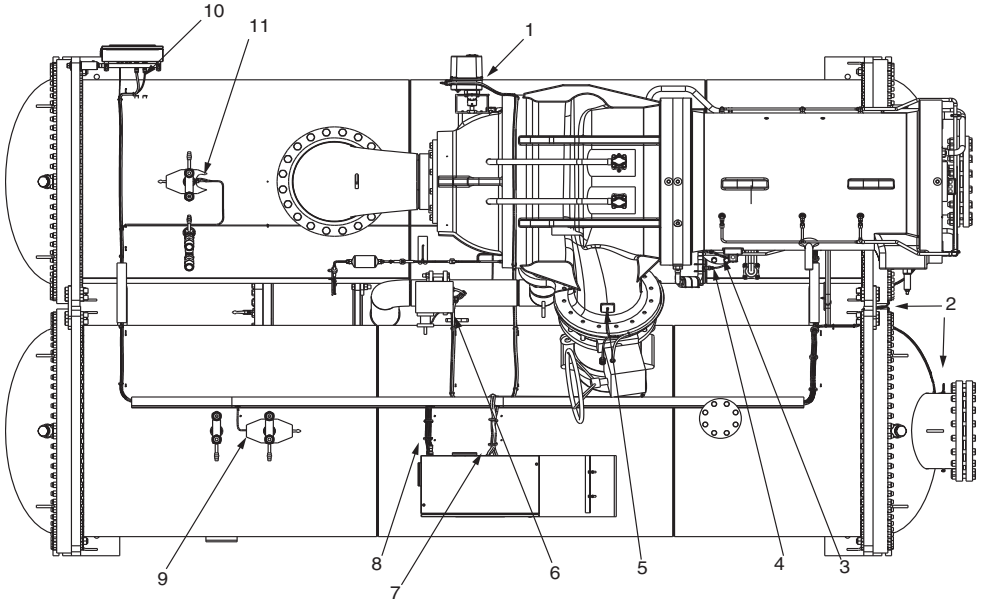
Additional Notes

1. Use silicone grease on new O-rings when refitting.
2. Use gasket sealant on new gaskets when refitting.
3. Cooler and condenser vessels may be rigged vertically. Rigging should be fixed to all 4 corners of the tube sheet.



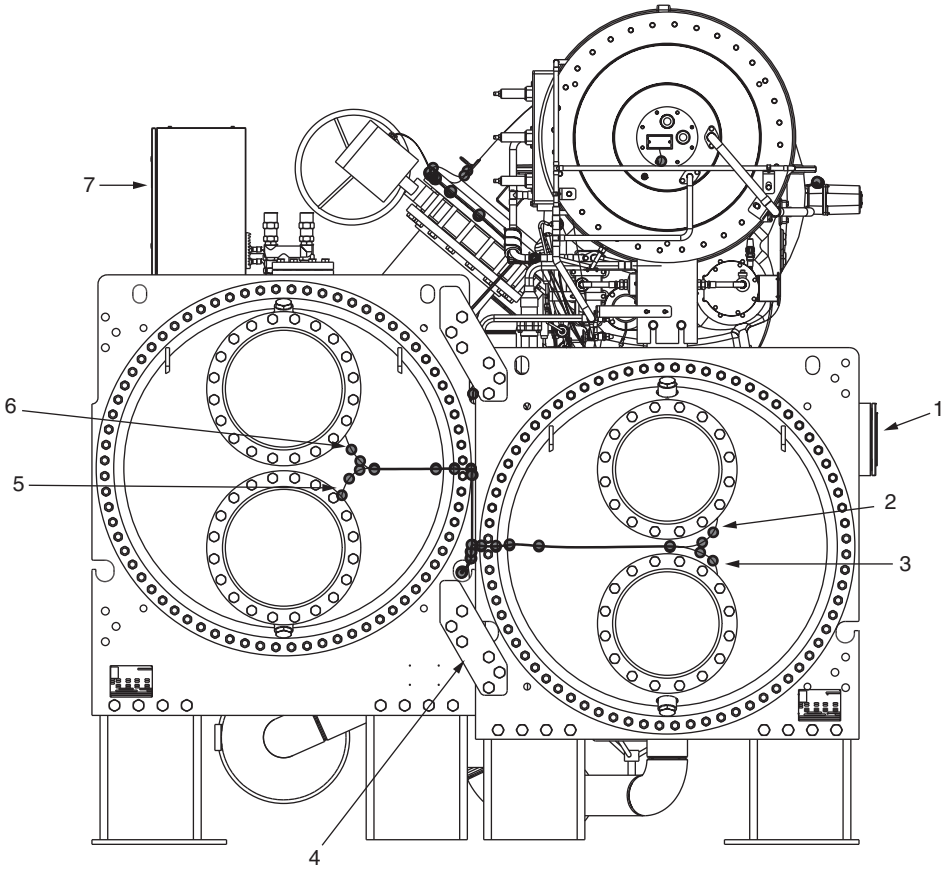
1 — Starter Connector (Unbolt)
2 — Tube Sheet
3 — Tube Sheet Leg Option (Unbolt)
4 — Refrigerant Motor Cooling Line (Cut)
5 — Optional Hot Gas Bypass (Unbolt)
6 — Motor Drain
7 — Compressor Mounting
8 — Cooler Liquid Feed Line
9 — Economizer
10 — Vessel Connectors (Unbolt)
11 — Oil Reclaim Line
12 — Refrigerant Isolation Valve
13 — Compressor Suction Elbow
14 — Compressor Discharge Pipe

Fig. 7 — Cooler, Side View (Compressor Frame Size 6 Shown)



1 — Guide Vane Actuator Cable
2 — Water Temperature Sensor Cables
3 — Motor Winding Temperature Cables
4 — Compressor Oil Supply Pressure Cable
5 — Compressor Discharge Temperature Sensor Cable
6 — Damper Valve Cables
7 — Control Panel Power Supply Cables
8 — Low Voltage Sensor Cables
9 — Condenser Pressure Cable
10 — HMI Communications and Power Supply Cables
11 — Cooler Pressure cable

Fig. 8 — Chiller Top View (Compressor Frame Size 6 Shown)



1 — HMI Control Box
2 — Cooler Leaving Water Temperature Cable
3 — Cooler Entering Water Temperature Cable
4 — Vessel Take-Apart Connectors
5 — Condenser Entering Water Temperature Cable
6 — Condenser Leaving Water Temperature Cable
7 — Control Box

Fig. 9 — Chiller End View

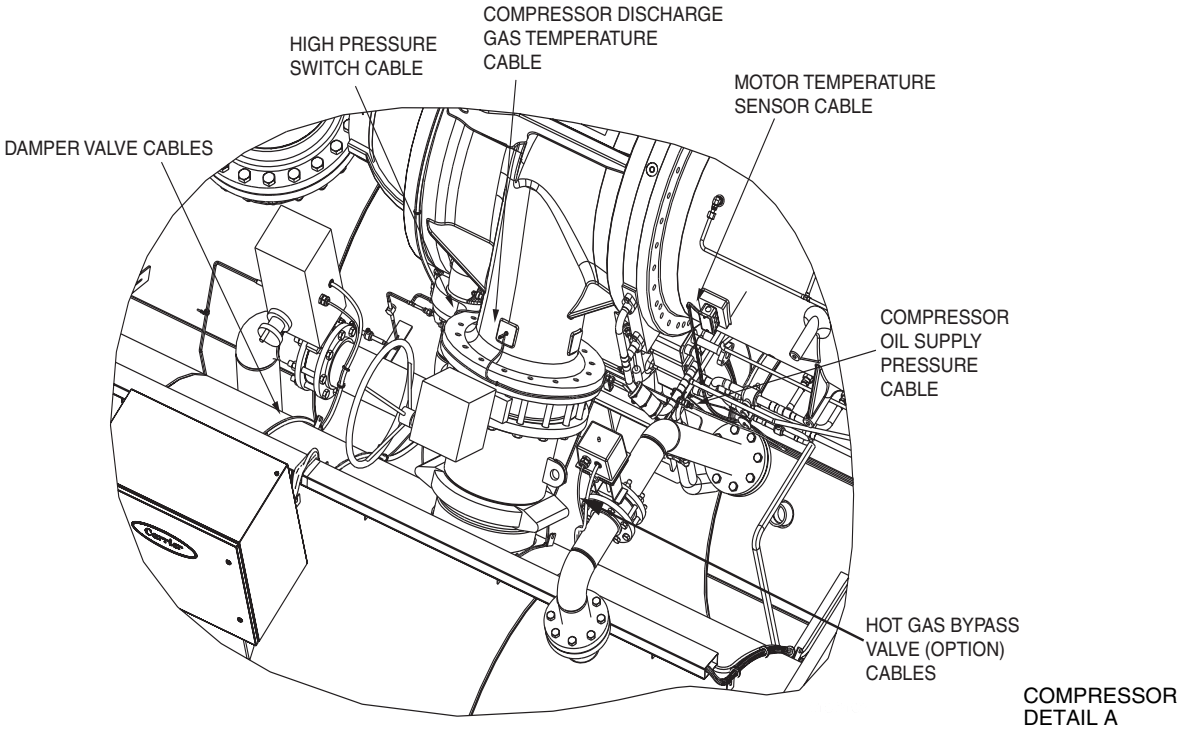
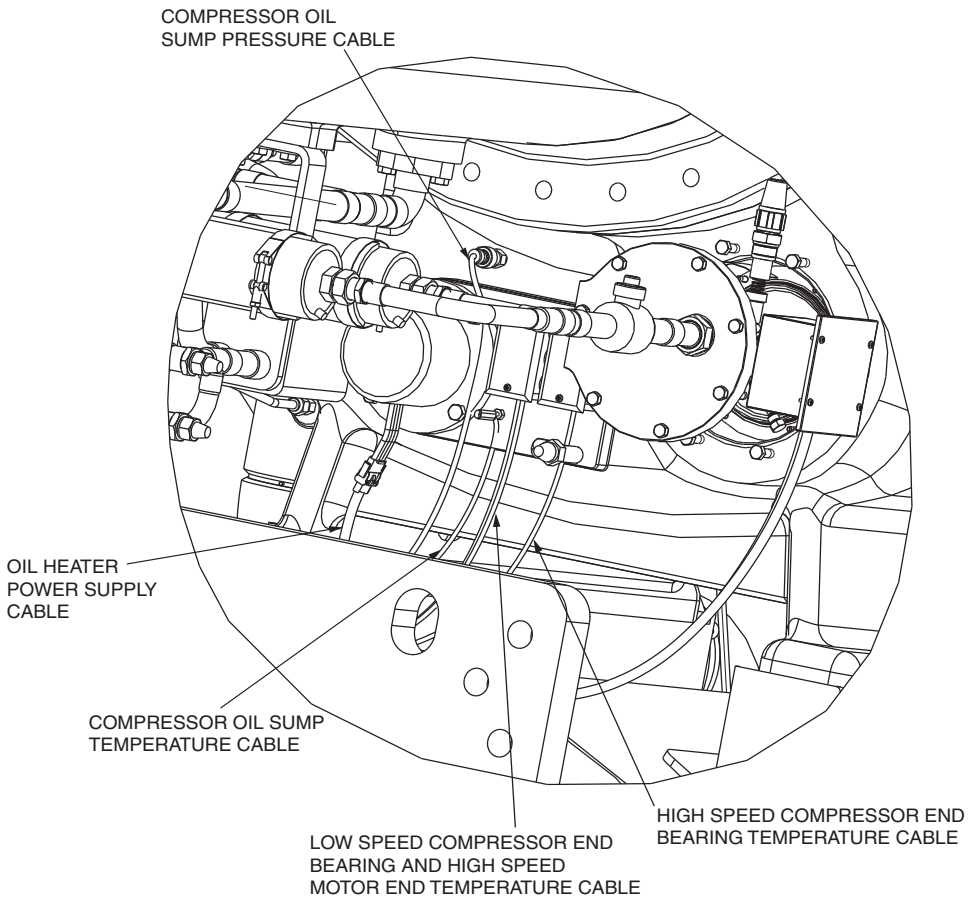
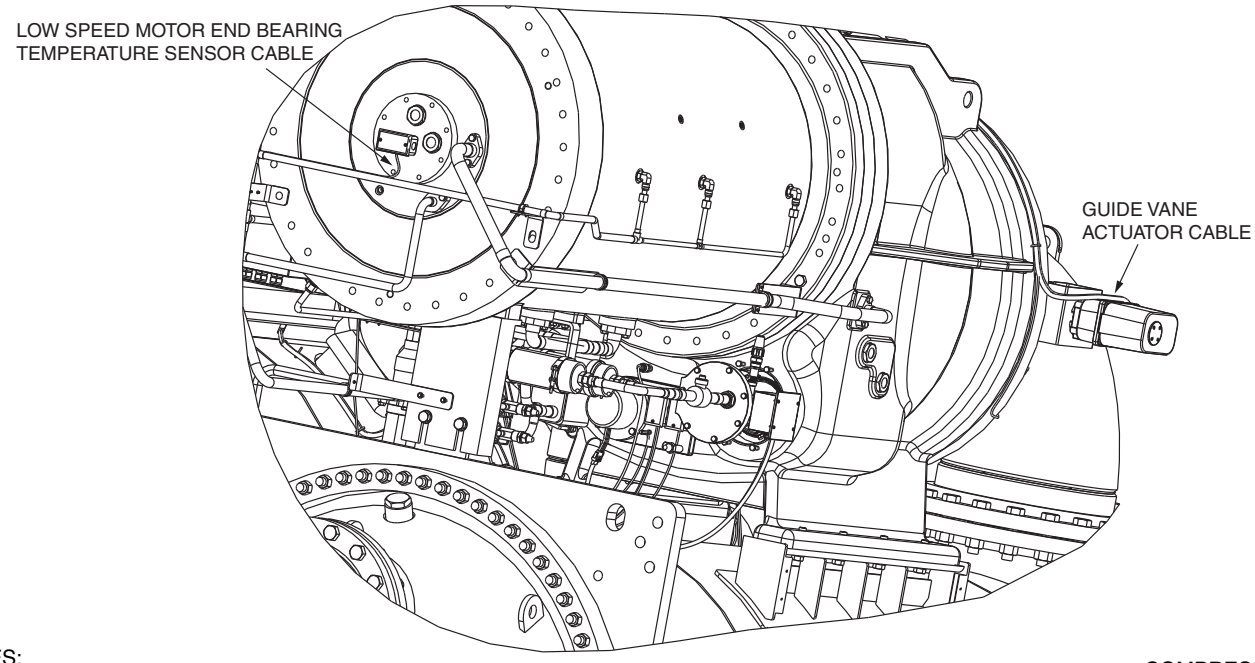


Fig. 10 — Compressor Detail



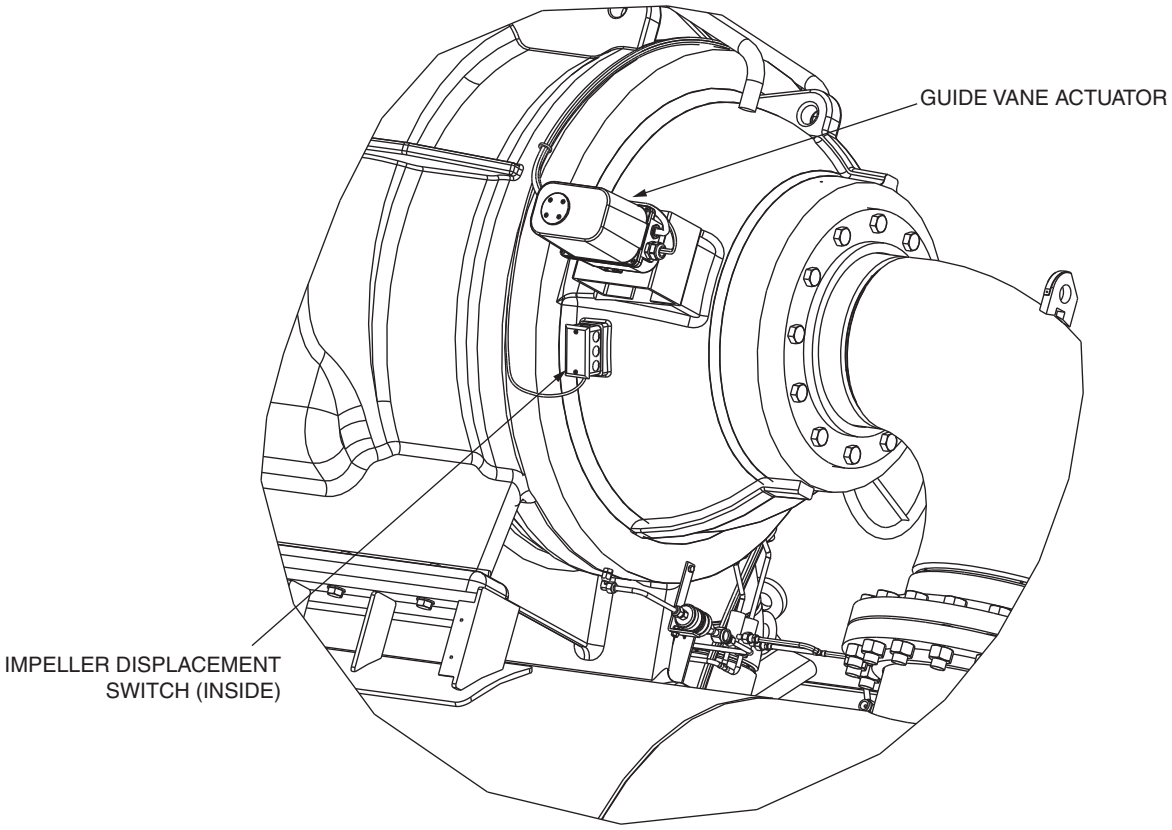
COMPRESSOR
DETAIL B



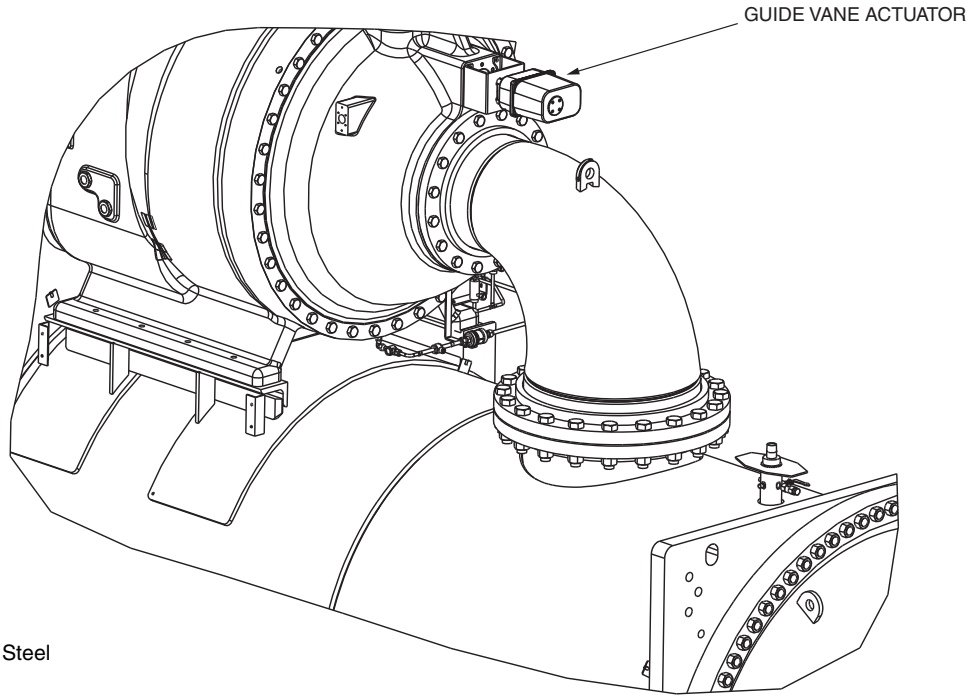
COMPRESSOR
DETAIL C

NOTES:
1. Y-Y dimension refers to standard soleplate. See Fig. 12.
2. X-X dimension refers to accessory soleplate. See Fig. 13.
3. For B6/C6 and C6/C6 cooler/condenser combinations, the tubesheet overhangs the foot plates.

Fig. 10 — Compressor Detail (cont)



COMPRESSOR DETAIL D, FRAME SIZE 6



LEGEND
HRS — Hot Rolled Steel

COMPRESSOR DETAIL D, FRAME SIZE 7

Fig. 10 — Compressor Detail (cont)

Step 3 — Install Machine Supports

INSTALL STANDARD ISOLATION — Figures 11 and 12 show the position of support plates and shear flex pads, which together form the standard machine support system.

IMPORTANT: Chiller housekeeping pad, anchor bolts, and attachment points that are designed by others must be in accordance with all applicable national and local codes.

INSTALL ACCESSORY ISOLATION (IF REQUIRED) — Uneven floors or other considerations may dictate the use of accessory soleplates (supplied by Carrier for field installation) and leveling pads. Refer to Fig. 13 and 14.

Level machine by using jacking screws in isolation soleplates. Use a level at least 24 in. (600 mm) long.

For adequate and long lasting machine support, proper grout selection and placement is essential. Carrier recommends that only pre-mixed, epoxy type, non-shrinking grout be used for machine installation. Follow manufacturer's instructions in applying grout.

1. Check machine location prints for required grout thickness.
2. Carefully wax jacking screws for easy removal from grout.
3. Grout must extend above the base of the soleplate and there must be no voids in grout beneath the plates.
4. Allow grout to set and harden, per manufacturer's instructions, before starting machine.
5. Remove jacking screws from leveling pads after grout has hardened.

19XR HEAT EXCHANGER SIZE		DIMENSIONS													
		A		B		C		D		E		F		G	
		ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm	ft-in.	mm
COOLER	CONDENSER														
A4	A4	14- 8 7/8	4492	10- 0 1/8	3051	0-4 7/16	113	1-10	559	1-4	406	—	—	—	—
	B4	14- 8 7/8	4492	10- 5 3/8	3177	0-4 7/16	113	1-10	559	1-4	406	—	—	—	—
A6	A6	16- 8 7/8	5102	10- 0 1/8	3051	0-4 7/16	113	1-10	559	1-4	406	—	—	—	—
	B6	16 -8 7/8	5102	10- 5 3/8	3177	0-4 7/16	113	1-10	559	1-4	406	—	—	—	—
B6	C6	16 -8	5080	11-11	3632	0-4	102	1-10	559	1-4	406	—	—	0-1	25
B8	C8	18-8	5690	11-11	3632	0-4	102	1-10	559	1-4	406	—	—	0-1	25
C6	C6	16 -8	5080	12- 4 1/2	3662	0-4	102	1-10	559	1-4	406	—	—	0-1	25
	D6	16 -8	5080	13- 2	4013	0-4	102	1-10	559	1-4	406	—	—	—	—

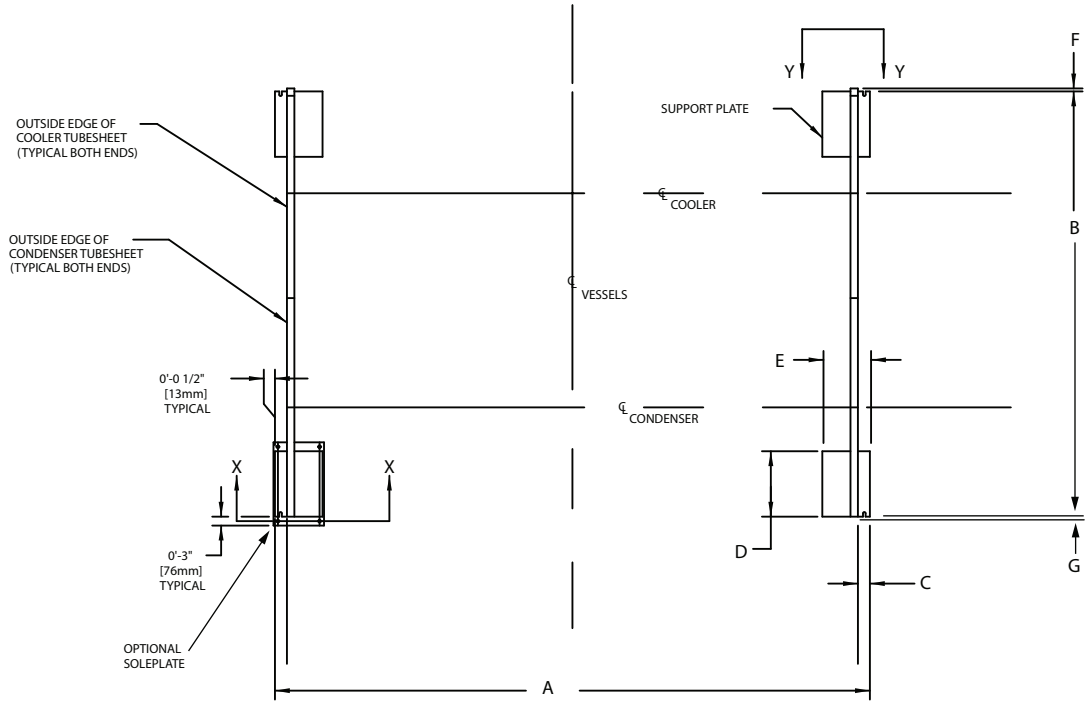


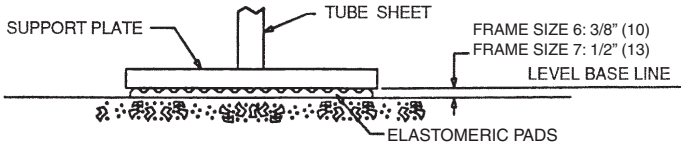
Fig. 11 — 19XR Machine Footprint

INSTALL SPRING ISOLATION — Spring isolation may be purchased as an accessory from Carrier for field installation. It may also be field supplied and installed. Spring isolators may be placed directly under machine support plates or located under machine soleplates. See Fig. 14. Consult job data for specific arrangement. Low profile spring isolation assemblies can be field supplied to keep the machine at a convenient working height.

Obtain specific details on spring mounting and machine weight distribution from job data. Also, check job data for methods to support and isolate pipes that are attached to spring isolated machines.

NOTE: It is recommended that any installation other than the ground floor should have spring isolation for the chiller and piping vibration isolation.

NOTE: These isolators are not intended for seismic duty, but are intended to reduce the vibration and noise levels transmitted from the chiller to the surrounding environment. For installations adjacent to areas that are sensitive to noise and/or vibration, use the services of a qualified consulting engineer or acoustics expert to determine whether these springs will provide adequate noise/vibration suppression.

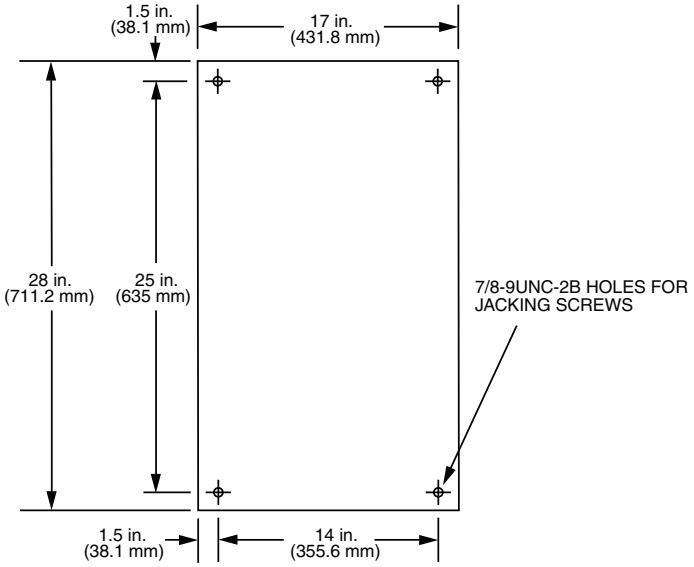


Y-Y VIEW

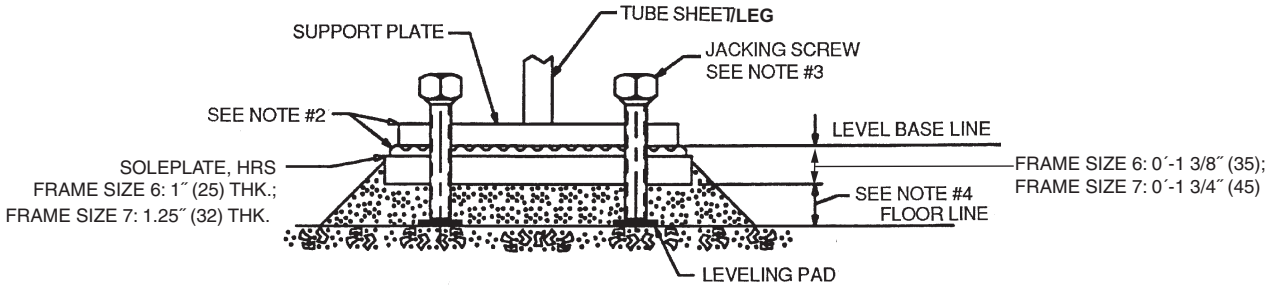
NOTES:
1. Dimensions in ( ) are in millimeters.
2. Isolation package includes 4 elastomeric pads.

Fig. 12 — Standard Isolation

SOLEPLATE DIMENSIONS



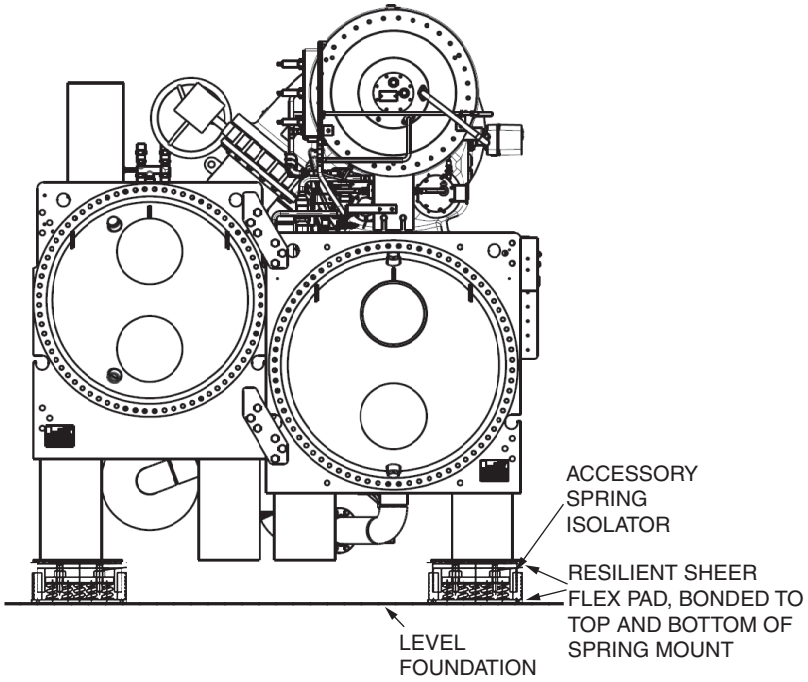
ACCESSORY SOLEPLATE DETAIL



X-X VIEW

NOTES:
1. Dimensions in ( ) are in millimeters.
2. Accessory (Carrier supplied, field installed) soleplate package includes 4 soleplates, 16 jacking screws and leveling pads. Isolation package is also required.
3. Jacking screws to be removed after grout has set.
4. Thickness of grout will vary, depending on the amount necessary to level chiller. Use only pre-mixed non-shrinking grout, Ceilcote 748 or Embeco 636 Plus Grout, 1½ in. (38.1 mm) to 2¼ in. (57.2 mm) thick.

Fig. 13 —Accessory Isolation



NOTE: The accessory spring isolators are supplied by Carrier for installation in the field if the accessory is purchased.

Fig. 14 — 19XR Accessory Spring Isolation (Shown with Accessory Soleplates)

Step 4 — Connect Piping

INSTALL WATER PIPING TO HEAT EXCHANGERS — Refer to Table 27 for nozzle sizes. Install piping using job data, piping drawings, and procedures outlined below. A typical piping installation is shown in Fig. 15.

⚠ CAUTION

Factory-supplied insulation is not flammable but can be damaged by welding sparks and open flame. Protect insulation with a wet canvas cover.

⚠ CAUTION

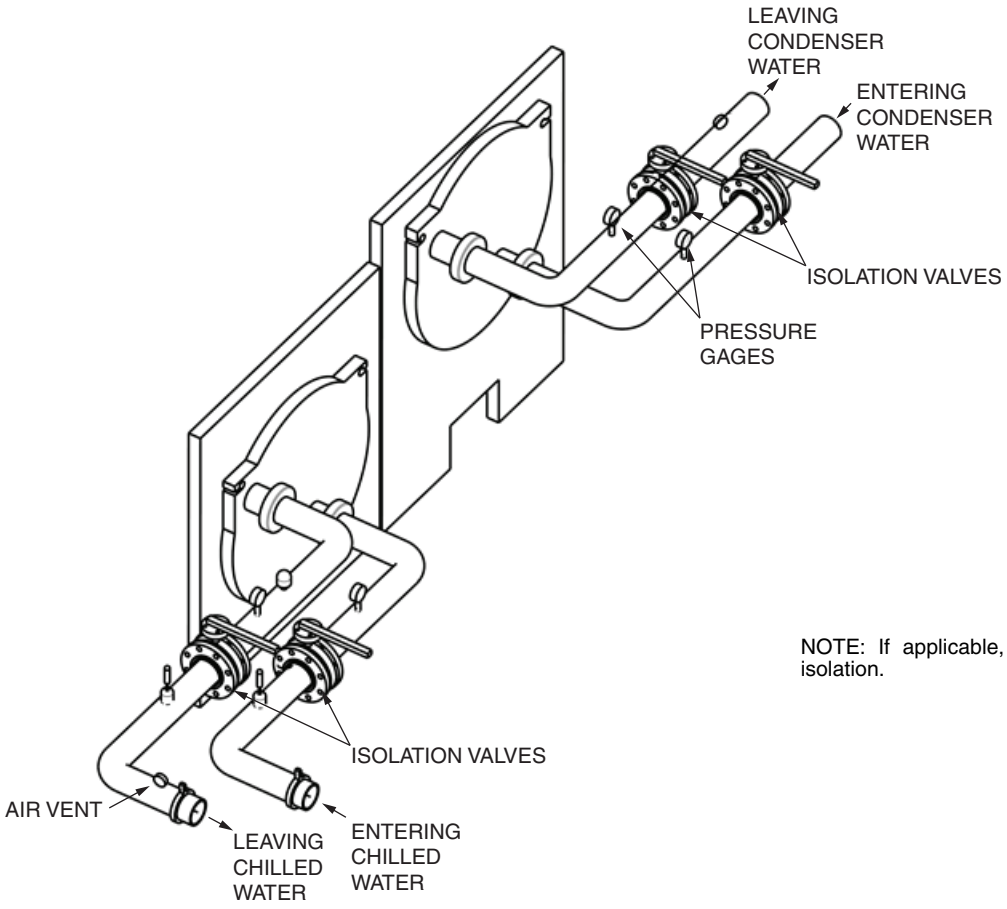
To prevent damage to sensors, remove cooler and condenser water temperature sensors before welding connecting piping to water nozzles. Refer to Fig. 9. Replace sensors after welding is complete.

⚠ CAUTION

When flushing the water systems, isolate the chiller from the water circuits to prevent damage to the heat exchanger tubes.

1. Offset pipe flanges to permit removal of waterbox cover for maintenance and to provide clearance for pipe cleaning. No flanges are necessary with marine waterbox option; however, water piping should not cross in front of the waterbox or compressor because service access will be blocked.
2. Provide openings in water piping for required pressure gages and thermometers. For thorough mixing and temperature stabilization, wells in the leaving water pipe should extend inside pipe at least 2 in. (50 mm).
3. Install air vents at all high points in piping to remove air and prevent water hammer.
4. Field-installed piping must be arranged and supported to avoid stress on the equipment and transmission of vibration from the equipment. Piping must be installed to prevent interference with routine access for the reading, adjusting, and servicing of the equipment. Provisions should be made for adjusting the piping in each plane for periodic and major servicing of the equipment.
5. Water flow direction must be as specified in Fig. 16 and 17.

   NOTE: Entering water is always the lower of the 2 nozzles. Leaving water is always the upper nozzle for cooler or condenser.
6. Install waterbox vent and drain piping in accordance with individual job data. Consult certified drawings for connection size.
7. Install waterbox drain plugs in the unused waterbox drains and vent openings.
8. Install optional pumpout system as shown in Fig. 18 and 19. See Tables 28 and 29.
9. Isolation valves are recommended on the cooler and condenser piping to each chiller for service.
10. Apply appropriate torque on the retaining bolts in a crisscross pattern for the water box covers before insulating the water box cover. The gasket can relax during transportation and storage and the water box cover requires retightening of the bolts.



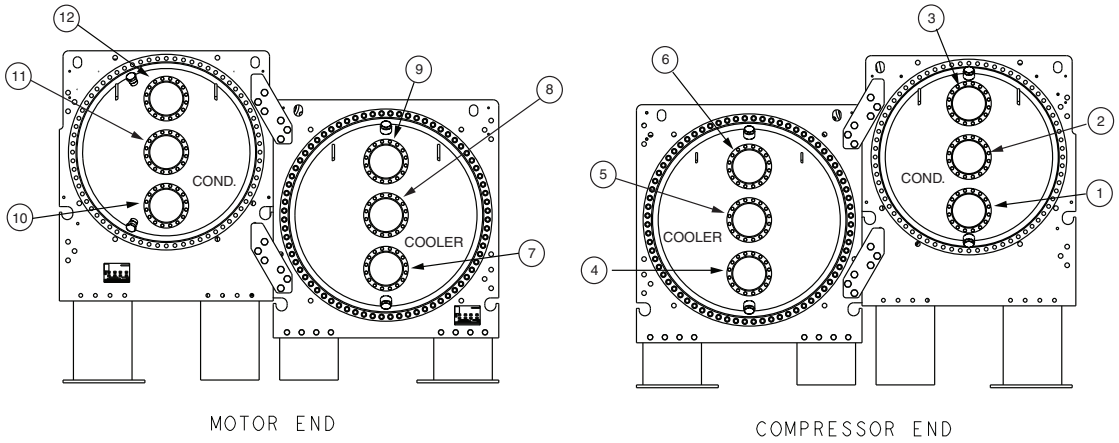
NOTE: If applicable, add vibration isolation.

Fig. 15 — Typical Nozzle Piping

Table 27 — 19XR Waterbox Nozzle Sizes

HEAT EXCHANGER FRAME SIZE	NOZZLE SIZE (in.) (NOMINAL PIPE SIZE)					
	COOLER			CONDENSER		
	1-PASS	2-PASS	3-PASS	1-PASS	2-PASS	3-PASS
A	20	16	12	20	16	14
B	20	18	14	20	18	14
C	20	18	14	24	20	16
D	—	—	—	24	20	16

NOZZLE-IN HEAD (NIH) WATERBOXES



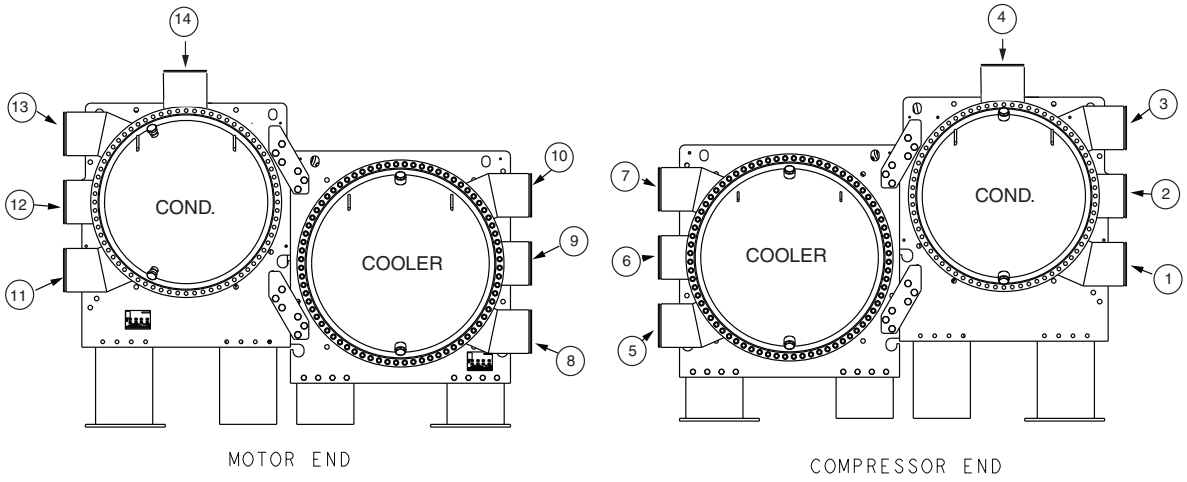
NOZZLE ARRANGEMENT CODES

PASS	COOLER WATERBOXES			CONDENSER WATERBOXES		
	IN	OUT	ARRANGEMENT CODE*	IN	OUT	ARRANGEMENT CODE*
1	8	5	A	11	2	P
	5	8	B	2	11	Q
2	7	9	C	10	12	R
	4	6	D	1	3	S
3	7	6	E	10	3	T
	4	9	F	1	12	U

*Refer to certified drawings.

Fig. 16 — 19XR Two-Stage Compressors Frame Sizes 6 and 7 Piping Flow Data (NIH)

MARINE WATERBOXES (MWB)



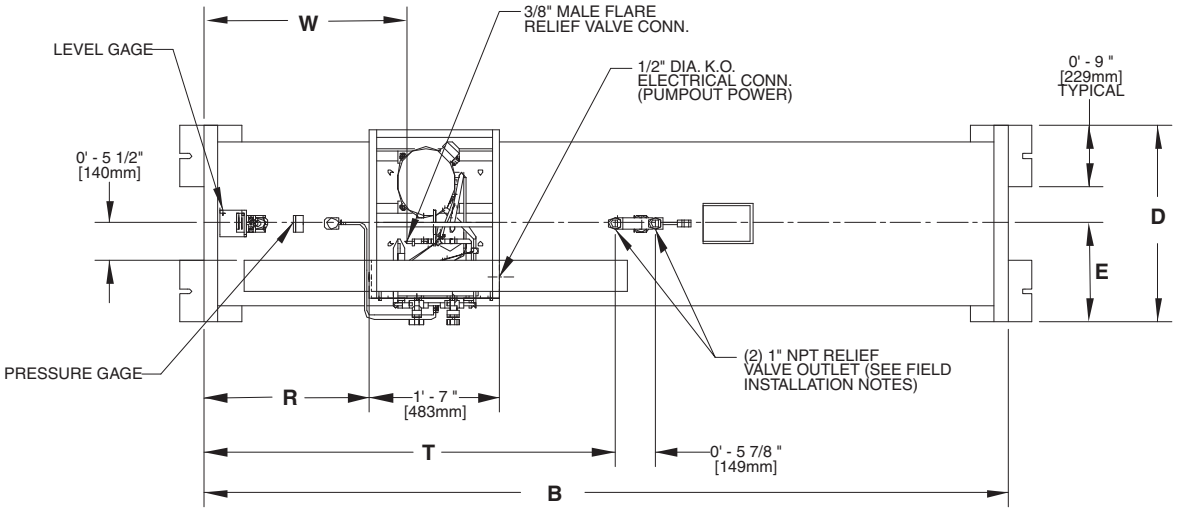
NOZZLE ARRANGEMENT CODES

COOLER MARINE WATERBOXES			
PASS	In	Out	Arrangement Code*
1	9	6	A
	6	9	B
2	8	10	C
	5	7	D
3	8	7	E
	5	10	F

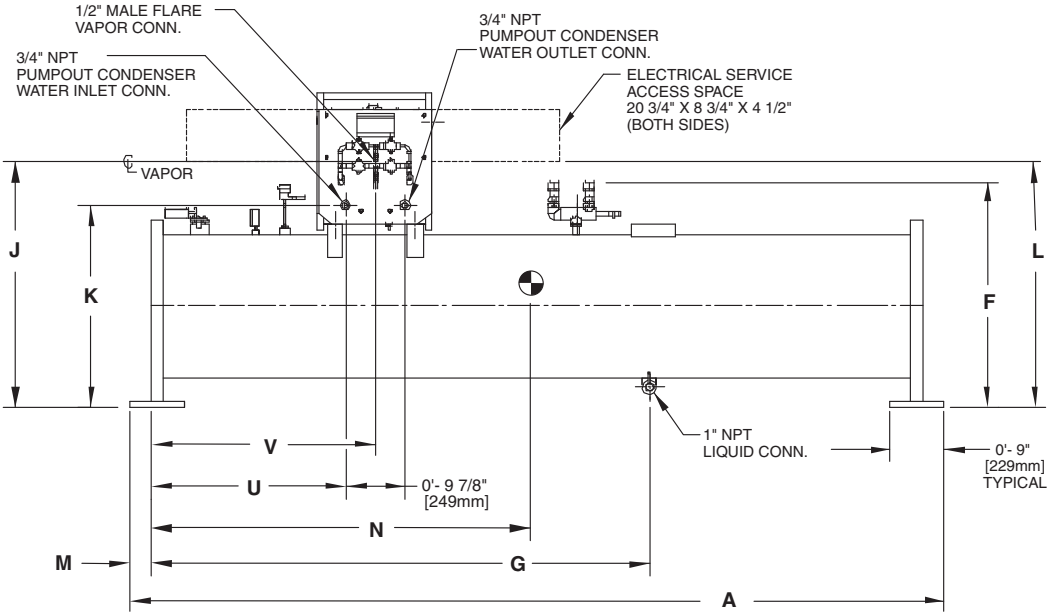
CONDENSER MARINE WATERBOXES			
PASS	In	Out	Arrangement Code*
1	12	2	P
	2	12	Q
2	11	13	R
	1	3	S
	11	14	V
	1	4	W
3	11	3	T
	1	13	U

*Refer to certified drawings.

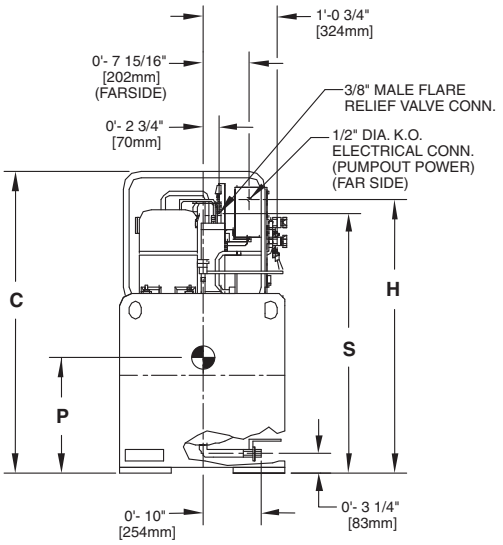
Fig. 17 — 19XR Two-Stage Compressors Frame Sizes 6 and 7 (MWB)



TOP VIEW



FRONT VIEW



LEFT SIDE VIEW

AVAILABLE CONDUIT
KNOCKOUT SIZES

TRADE SIZE	QTY	LOCATION
1/2"	1	TOP
3/4"	1	BOTTOM
1"	1	MIDDLE
1 1/4"	1	MIDDLE

NOTES:
1. See Tables 28 and 29 for pumpout unit dimensions.
2. Denotes center of gravity.
3. Dimensions in [ ] are in millimeters.
4. For additional information on the pumpout unit, see certified drawings.
5. Conduit knockout is located on the side of the control box.

Fig. 18 — Optional Pumpout Unit

Table 28 — Pumpout Unit Dimensions (ft-in.)

TANK SIZE	A*	B*	C*	D*	E*	F*	G*	H*	J*	K*
0428	10- 5	9-10	4-4 1/4	2-4 3/4	1-2 3/8	3-1 1/4	6-4 3/16	3-11 3/8	3-4 7/8	2-9 9/16
0452	14-11 1/4	14- 4 1/2	4-8 1/4	2-8 1/2	1-4 1/4	3-4 1/2	7-2 1/4	4- 3 1/4	3-8 3/4	3-1 7/16

TANK SIZE	L*	M*	N*	P*	R*	S*	T*	U*	V*	W*
0428	3-4 5/8	0-3 1/2	4- 9 1/2	1-7 7/8	2-0 3/8	3-9	5-0 1/4	2-5	2- 9 7/8	2-5 3/4
0452	3-8 1/2	0-3 3/8	6-11 5/8	1-8 3/4	2-0 5/8	4-1	5-0 1/2	2-5 1/4	2-10 1/8	2-6

*Refer to Fig. 18.

Table 29 — Pumpout Unit Dimensions (mm)

TANK SIZE	A*	B*	C*	D*	E*	F*	G*	H*	J*	K*
0428	3175	2997	1327	730	365	946	1935	1203	1038	852
0452	4553	4381	1429	826	413	1029	2191	1302	1137	951

TANK SIZE	L*	M*	N*	P*	R*	S*	T*	U*	V*	W*
0428	1032	89	1451	505	619	1143	1530	737	860	756
0452	1130	86	2124	527	625	1225	1537	742	867	762

*Refer to Fig. 18.

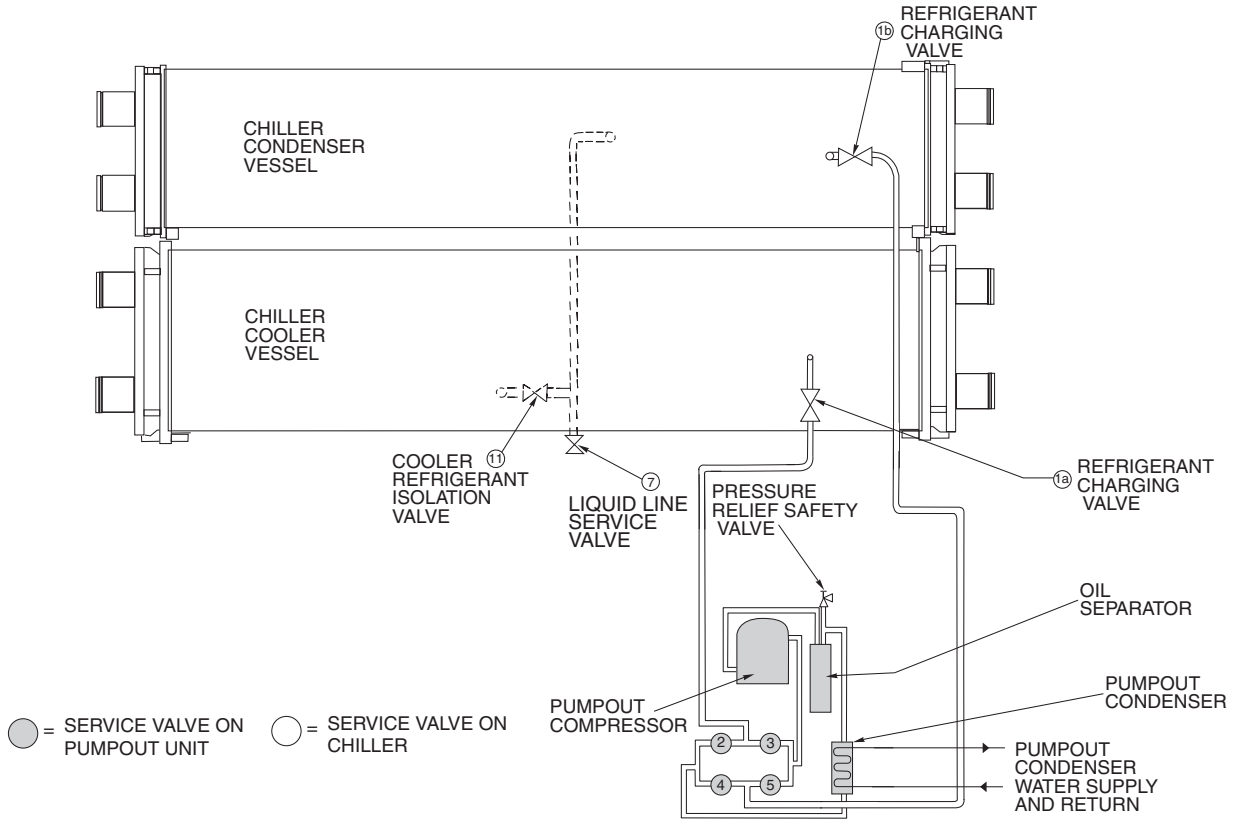


Fig. 19 — Optional Pumpout System Piping Schematic

INSTALL VENT PIPING TO RELIEF VALVES — The 19XR chiller is factory equipped with relief valves on the cooler and condenser shells. Refer to Table 30 and Fig. 20 and 21 for size and location of relief devices. Vent relief devices to the outdoors in accordance with ANSI/ASHRAE 15 (latest edition) Safety Code for Mechanical Refrigeration and all other applicable codes.

⚠ DANGER

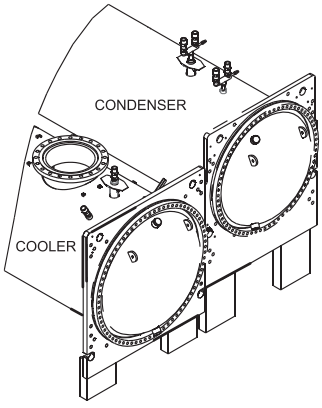
Refrigerant discharged into confined spaces can displace oxygen and cause asphyxiation.

1. If relief devices are manifolded, the cross-sectional area of the relief pipe must at least equal the sum of the areas required for individual relief pipes.
2. Provide a pipe plug near outlet side of each relief device for leak testing. Provide pipe fittings that allow vent piping to be disconnected periodically for inspection of valve mechanism.
3. Piping to relief devices must not apply stress to the device. Adequately support piping. A length of flexible tubing or piping near the device is essential on spring-isolated machines.
4. Cover the outdoor vent with a rain cap and place a condensation drain at the low point in the vent piping to prevent water build-up on the atmospheric side of the relief device.

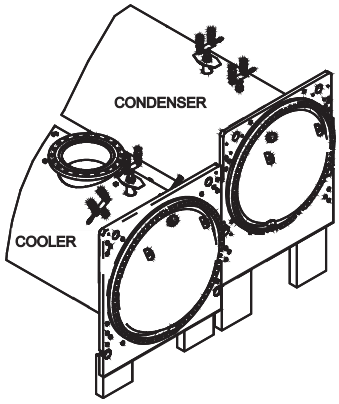
Table 30 — Relief Valve Locations

LOCATION	FRAME SIZE	RELIEF VALVE OUTLET SIZE
COOLER	Two-Stage 6—A	1 1/4-in. NPT FEMALE CONNECTOR
	Two-Stage 7—B	1 1/4-in. NPT FEMALE CONNECTOR
	Two-Stage 7—C	1 1/4-in. NPT FEMALE CONNECTOR
CONDENSER	Two-Stage 6—A	1 1/4-in. NPT FEMALE CONNECTOR
	Two-Stage 6—B	1 1/4-in. NPT FEMALE CONNECTOR
	Two-Stage 7—C	1 1/4-in. NPT FEMALE CONNECTOR
	Two-Stage 7—D	1 1/4-in. NPT FEMALE CONNECTOR
OPTIONAL STORAGE TANK	N/A	1-in. NPT FEMALE CONNECTOR

NOTE: All valves relieve at 185 psig (1275 kPa).



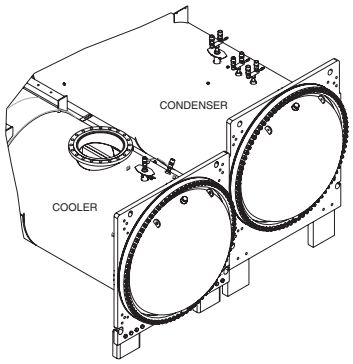
A — WITH ISOLATION VALVE



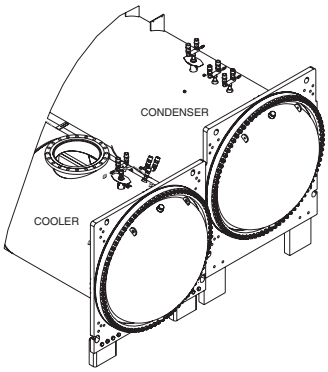
B — WITHOUT ISOLATION VALVE

COOLER HEAT EXCHANGER FRAME SIZE	CONDENSER HEAT EXCHANGER FRAME SIZE	WITH/WITHOUT DISCHARGE ISOLATION VALVE	VIEW CODE	COOLER NO. VALVES	CONDENSER NO. VALVES
A4	A4	With Optional Isolation Valve	A	2	4
		Without Optional Isolation Valve	B	4	4
	B4	With Optional Isolation Valve	A	2	4
		Without Optional Isolation Valve	B	4	4
A6	A6	With Optional Isolation Valve	A	2	4
		Without Optional Isolation Valve	B	4	4
	B6	With Optional Isolation Valve	A	2	4
		Without Optional Isolation Valve	B	4	4

Fig. 20 — Relief Valve Arrangements, 19XR Two-Stage Compressor Frame Size 6



C — WITH ISOLATION VALVE



D — WITHOUT ISOLATION VALVE

COOLER HEAT EXCHANGER FRAME SIZE	CONDENSER HEAT EXCHANGER FRAME SIZE	WITH/WITHOUT DISCHARGE ISOLATION VALVE	VIEW CODE	COOLER NO. VALVES	CONDENSER NO. VALVES
B6/B8	C6/C8	With Optional Isolation Valve	C	2	6
		Without Optional Isolation Valve	D	4	6
C6	C6	With Optional Isolation Valve	C	2	6
		Without Optional Isolation Valve	D	4	6
	D6	With Optional Isolation Valve	C	2	6
		Without Optional Isolation Valve	D	4	6

Fig. 21 — Relief Valve Arrangements, 19XR Two-Stage Compressor Frame Size 7

Step 5 — Make Electrical Connections — Field wiring must be installed in accordance with job wiring diagrams and all applicable electrical codes.

⚠ CAUTION

Do not run any hazardous voltage wiring in the control panel sections associated with extra-low voltage wiring. Damage to machine could occur as a result.

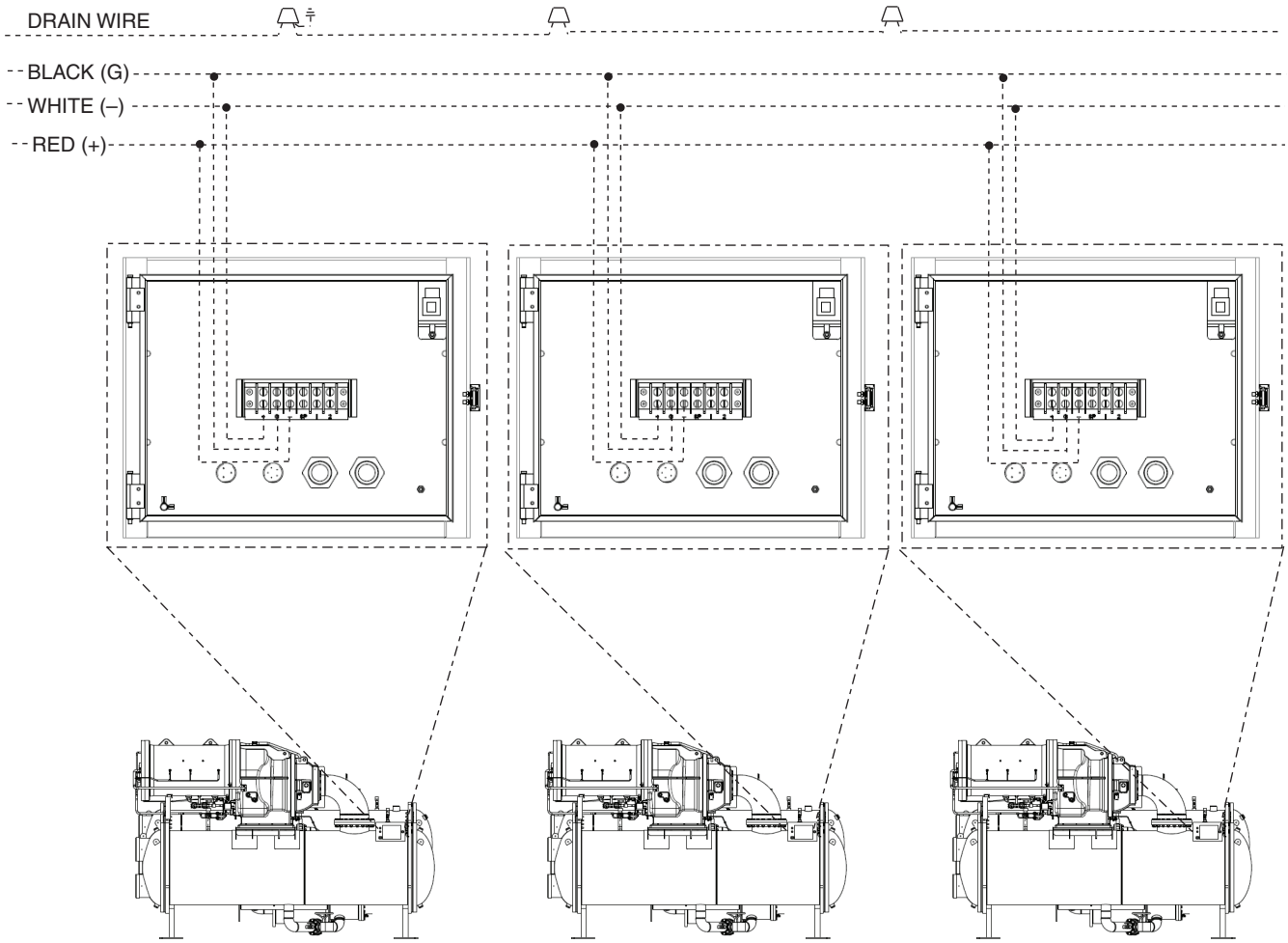
Wiring diagrams in this publication are for reference only and are not intended for use during actual installation; follow job specific wiring diagrams.

⚠ CAUTION

Do not attempt to start compressor or oil pump (even for a rotation check) or apply test voltage of any kind while either chiller module is under dehydration vacuum. Motor insulation breakdown and serious damage may result.

NOTE: The dry contacts for the inputs should be located as close to the starter as possible. The wiring should be capable of preventing electrical noise or induced voltage and should not be routed with any wires with voltage over 50 v.

CONNECT CONTROL INPUTS — Wiring may be specified for a spare safety switch, and a remote start/stop contact can be wired to the starter terminal strip. Additional spare sensors and Carrier Comfort Network® modules may be specified as well. These are wired to the machine control panel as indicated in Fig. 22. The control panel optional wiring and power panel component layout are shown in Fig. 23-25.



NOTE: Field-supplied terminal strip must be located in control panel.

Fig. 22 — CCN Communication Wiring for Multiple Chillers (Typical)

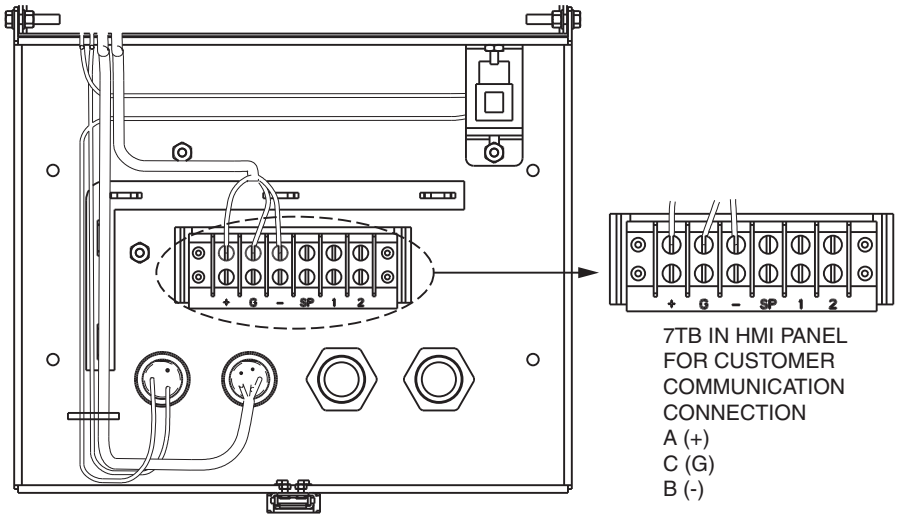


Fig. 23 — HMI Panel

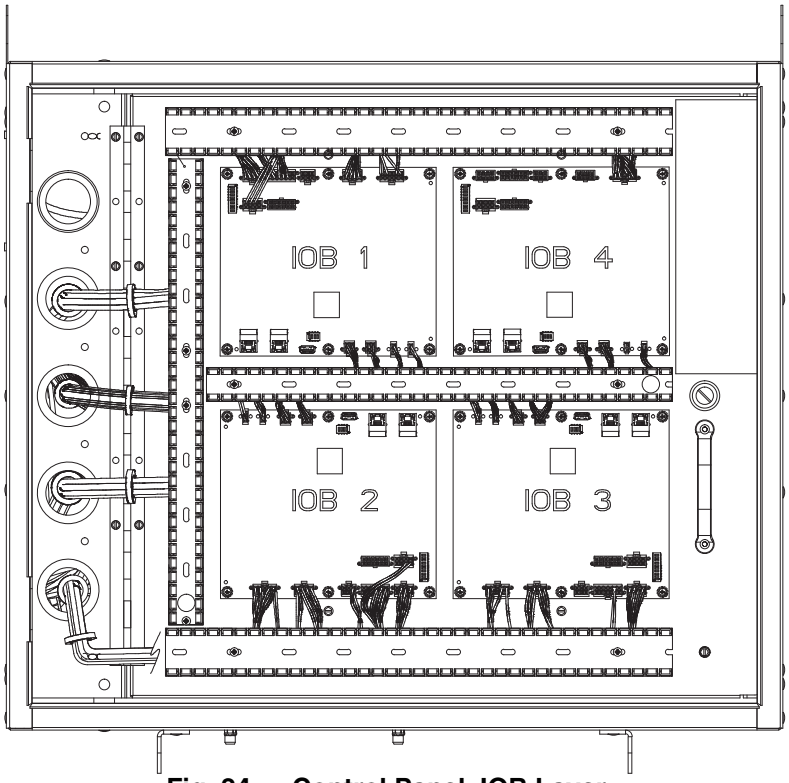
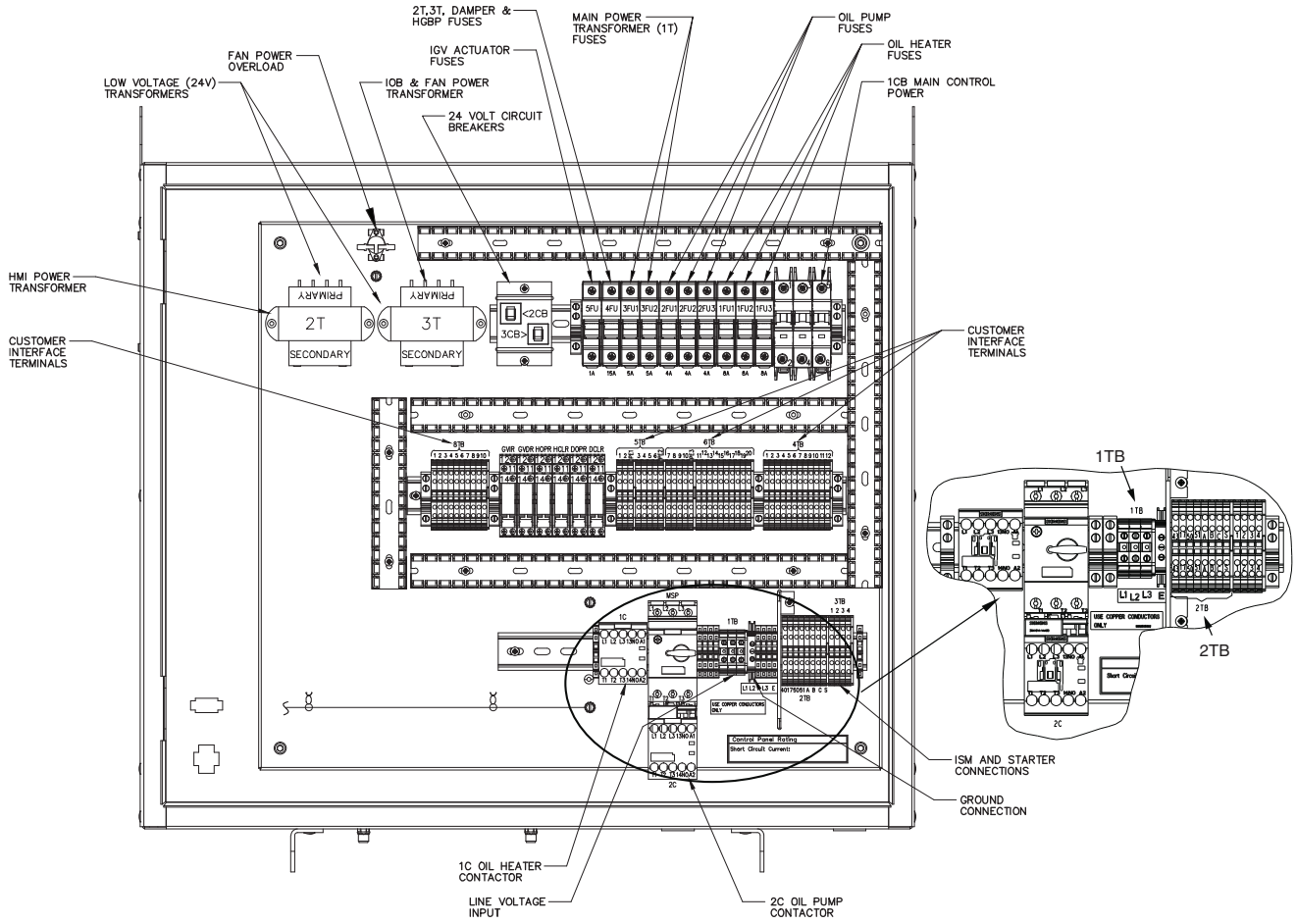


Fig. 24 — Control Panel, IOB Layer



1TB — CUSTOMER 3-PHASE POWER CONNECTION FOR CONTROL PANEL

2TB — FIELD WIRING CONNECTION FROM STARTER

Fig. 25 — Control Panel, Bottom Layer

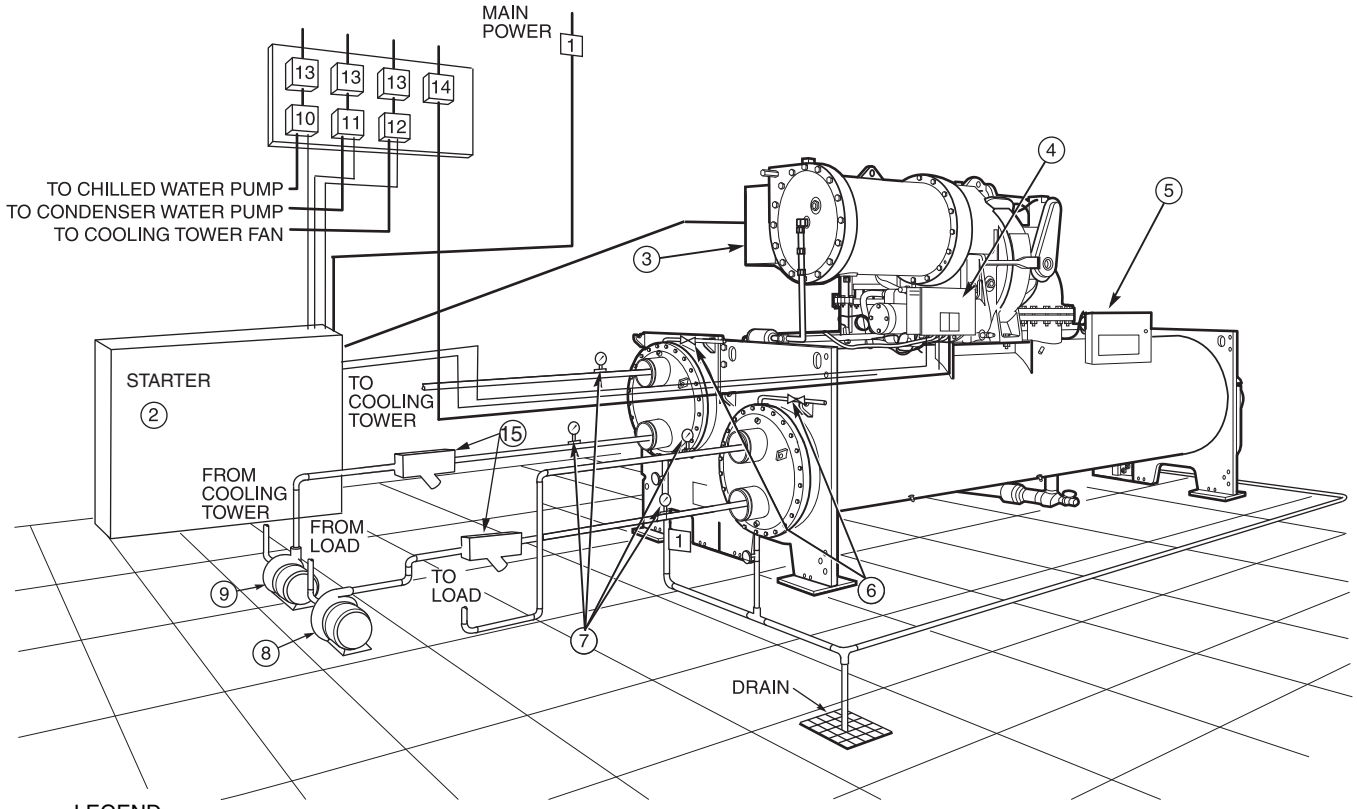
CONNECT CONTROL OUTPUTS — Connect auxiliary equipment, chilled and condenser water pumps, and spare alarms as required and indicated on job wiring drawings.

CONNECT STARTER — The 19XR two-stage chiller is available with a free-standing, field-installed starter or VFD (Fig. 26).

IMPORTANT: Be sure to ground the power circuit in accordance with the National Electrical Code (NEC), applicable local codes, and job wiring diagrams. Also, make sure correct phasing is observed for proper rotation.

Assemble and install compressor terminal box in desired orientation, and cut necessary conduit openings in conduit support plates. See Fig. 26 and 27. Attach power leads to compressor terminals in accordance with job wiring drawings, observing caution label in terminal box. Use only copper conductors. The motor must be grounded in accordance with NEC, applicable local codes, and job wiring diagrams. Installer is responsible for any damage caused by improper wiring between starter and compressor motor. See Fig. 28-34 for VFD (variable frequency drive), control, IOB (input/output board), and ISM (integrated starter module) starter wiring diagrams.

IMPORTANT: Do not insulate terminals until wiring arrangement has been checked and approved by Carrier start-up personnel. Also, make sure correct phasing is followed for proper motor rotation.



LEGEND

1 — Disconnect
2 — Free-standing Compressor Motor Starter
3 — Compressor Motor Terminal Box
4 — Power Panel
5 — Control Panel
6 — Vents
7 — Pressure Gages
8 — Chilled Water Pump
9 — Condenser Water Pump
10 — Chilled Water Pump Starter
11 — Condensing Water Pump Starter
12 — Cooling Tower Fan Starter (Low Fan, High Fan)
13 — Disconnect
14 — Oil Pump Disconnect (See Note 4)
15 — Strainer

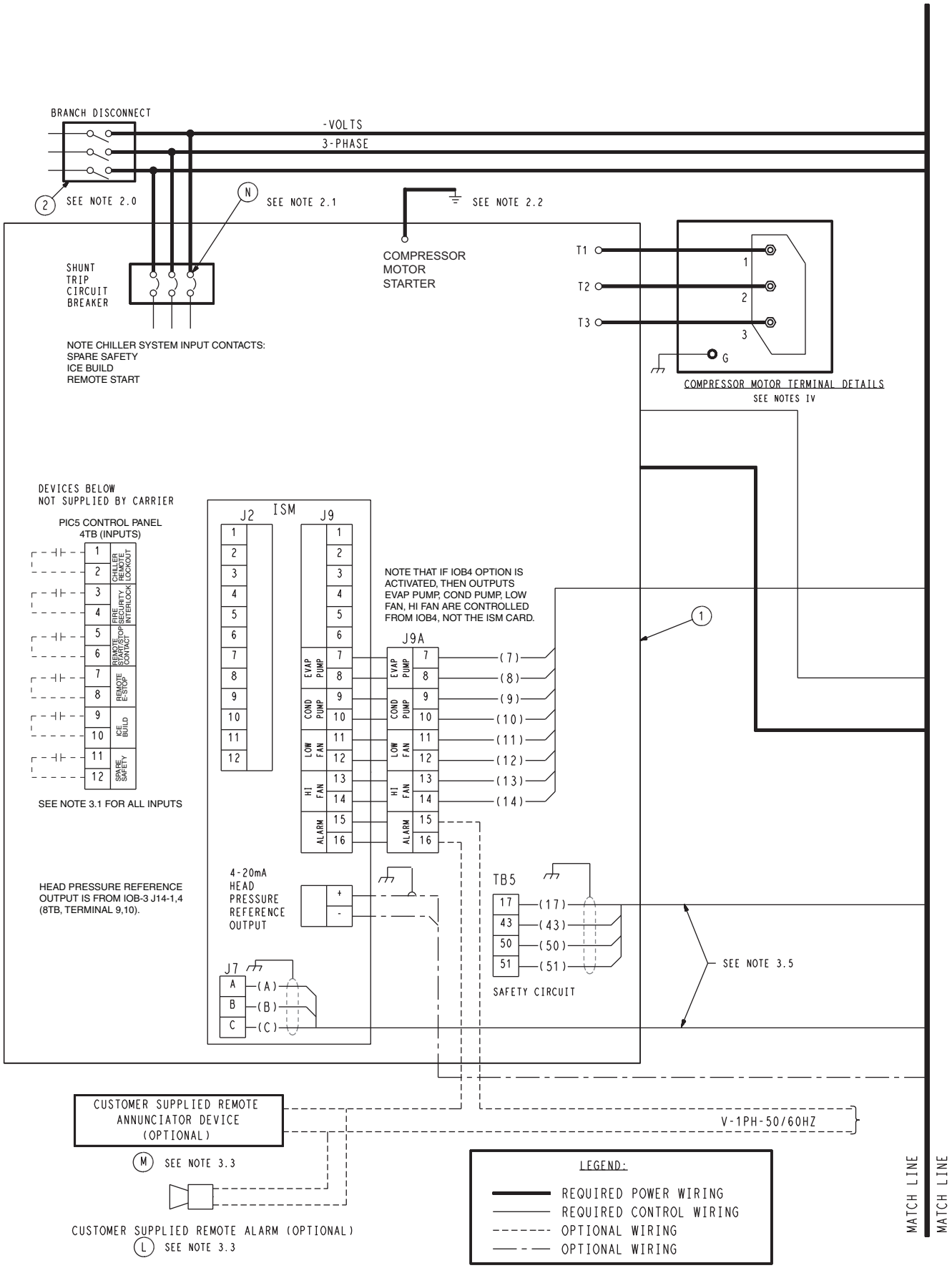
Piping
Control Wiring
Power Wiring

NOTES:
1. Wiring and piping shown are for general point-of-connection only and are not intended to show details for a specific installation. Certified field wiring and dimensional diagrams are available on request.
2. All wiring must comply with applicable codes.
3. Wiring not shown for optional devices such as:
   • Remote Start/Stop
   • Remote Alarms
   • Optional Safety Device
   • 4 to 20 mA Resets
   • Optional Remote Sensors
4. Oil pump disconnect may be located within the enclosure of Item 2 — Free-standing Compressor Motor Starter.
5. IMPORTANT: Carrier suggests that a structural engineer be consulted if transmission of vibrations from mechanical equipment is of concern.
6. Isolation valves are recommended on the cooler and condenser piping to each chiller for service.
7. Operating environment — Chiller should be installed in an indoor environment where the ambient temperature is 40 to 104 F (4 to 40 C) with a relative humidity (non-condensing) of 95% or less. To ensure that electrical components operate properly, do not locate the chiller in an area exposed to dust, dirt, corrosive fumes, or excessive heat and humidity.

Fig. 26 — 19XR Chiller with Free-Standing Starter

LEGEND FOR FIG. 27
19XR with Free-Standing Starter (Medium Voltage)

REFERENCE NUMBER	EXPLANATION
1	3 Phase Under/Over Voltage
	Phase Loss/Imbalance/Reversal
	Motor Overload Protection
	Frequency Shift
	kW Transducer/kW Hours/Demand kW
	Single Cycle Dropout
	Motor/Starter Overcurrent
	Control Power Transformer (3KVA) (Integral)
	Controls and Oil Heater Circuit Breaker (integral)
	Oil Pump Circuit Breaker
	Oil Pump Circuit Breaker with Transformer
	3 Phase Analog Volts/Amps Meter Package
	Power Factor Correction Package
	Lightning/Surge Arrestor Package
	Auxiliary Run Status Contacts N.O./N.C.
	Run Indicating Light
	Emergency Stop Switch
	Phase to Ground Fault Detection
2	Compressor Motor Starter Branch Disconnect
A	Evaporator Liquid Pump Starter Disconnect
B	Evaporator Liquid Pump Motor Starter
C	Condenser Liquid Pump Starter Disconnect
D	Condenser Liquid Pump Motor Starter
E	Cooling Tower Fan Motor Starter Disconnect (Low Fan/#1)
F	Cooling Tower Fan Motor Starter (Low Fan/#1)
G	Cooling Tower Fan Motor Starter Disconnect (High/#2)
H	Cooling Tower Fan Motor Starter (High Fan/#2)
L	Remote Alarm See Note 3.3
M	Remote Annunciator See Note 3.3
N	Lug Adapters See Note 2.1



NOTE: See Legend on page 45.

Fig. 27 — 19XR Typical Field Wiring with Free-Standing Starter (Medium Voltage)

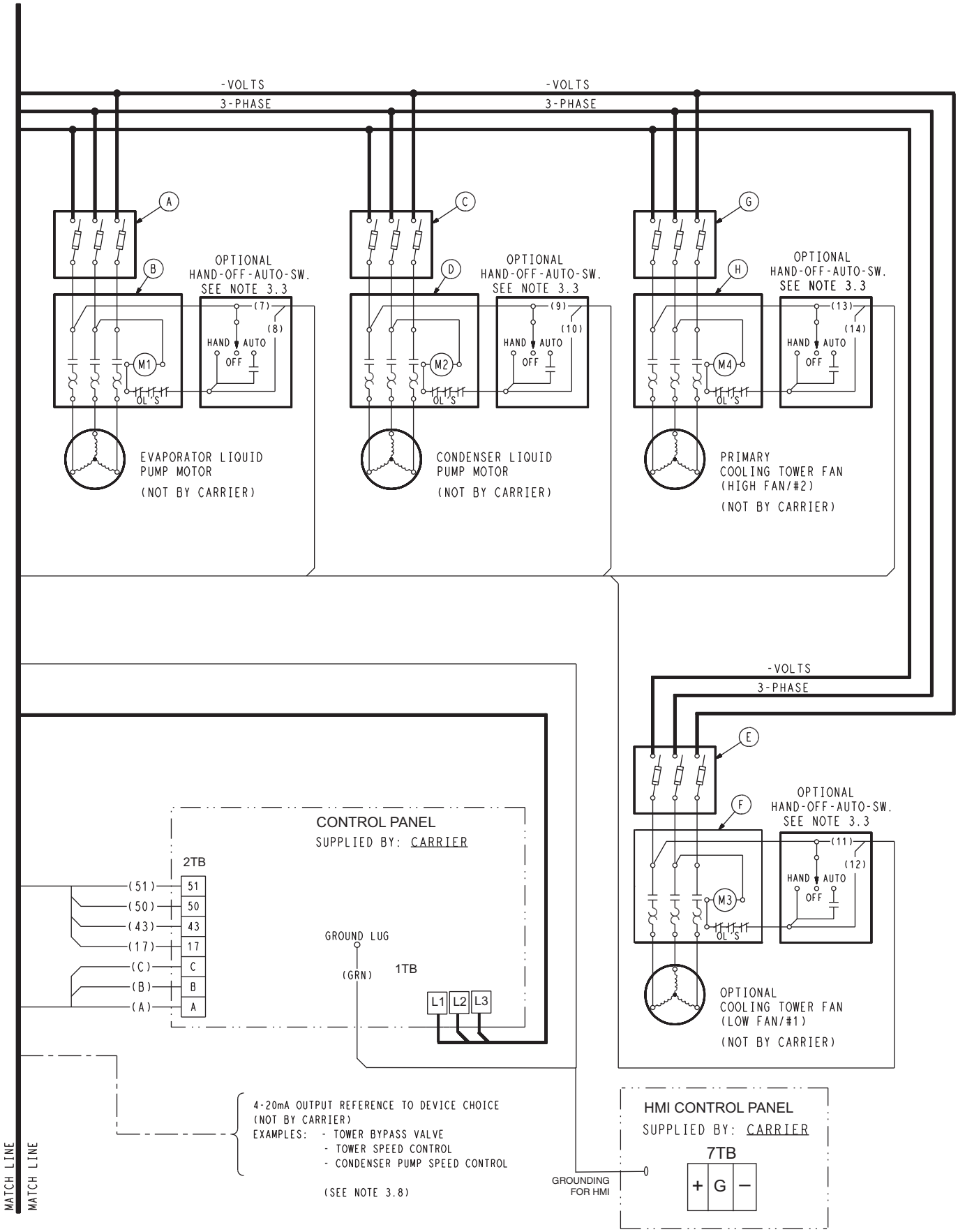


Fig. 27 — 19XR Typical Field Wiring with Free-Standing Starter (Medium Voltage) (cont)

NOTES FOR FIG. 27
19XR with Free-Standing Starter (Medium Voltage)

I. GENERAL

1.0 Starters shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-415.

1.1 All field-supplied conductors, devices, and the field installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.

⚠ CAUTION

To prevent damage to machine, do NOT punch holes or drill into the top surface of the starter enclosure for field wiring. Knockouts are provided on the side of the starter enclosure for field wiring connections.

1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.

1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.

1.4 Contacts and switches are shown in the position they would assume with the circuit de-energized and chiller shutdown.

1.5 WARNING — Do not use aluminum conductors.

1.6 Installer is responsible for any damage caused by improper wiring between starter and machine.

1.7 All field-installed wiring is field-supplied.

II. POWER WIRING TO STARTER

2.0 Provide a means of disconnecting power to starter.

2.1 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required. Contact starter supplier for lug information.

2.2 Compressor motor and controls must be grounded by using equipment grounding lug provided inside starter enclosure.

III. CONTROL WIRING

3.0 Field supplied control conductors to be at least 18 AWG or larger.

3.1 Ice build start/terminate device contacts, remote start/stop device contacts, and spare safety device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. Switches with gold plated bifurcated contacts are recommended.

3.2 Each integrated contact output can control loads (VA) for evaporator pump, condenser pump, tower fan low, tower fan high, and alarm annunciator devices rated 5 amps at 115 VAC and up to 3 amps at 277 VAC.

⚠ CAUTION

Control wiring for Carrier to start pumps and tower fan motors and establish flows must be provided to assure machine protection. If primary pump, tower fan, and flow control is by other means, also provide parallel means for control by Carrier. Failure to do so could result in machine freeze-up or overpressure.

Do not use control transformers in the control center as the power source for external or field-supplied contactor coils, actuator motors or any other loads.

3.3 Do not route control wiring carrying 30 v or less within a conduit which has wires carrying 50 v or higher or along side wires carrying 50 v or higher.

3.4 Control wiring between starter and power panel must be separate shielded cables with minimum rating 600 v, 80 C. Ground shield at starter.

3.5 If optional circuit breaker is not supplied within the starter enclosure, it must be located within sight of machine with wiring routed to suit.

3.6 When providing conductors for oil pump motor and oil heater power, refer to sizing data on label located on the chiller power panel, equipment submittal documentation, or equipment product data catalog.

3.7 Spare 4-20 mA output signal is designed for controllers with a non-grounded 4-20 mA input signal and a maximum input impedance of 500 ohms.

IV. POWER WIRING BETWEEN FREE-STANDING STARTER AND COMPRESSOR MOTOR

4.0 Medium voltage (over 600 volts) compressor motors have (3) terminals. Motor terminal connections below 5 kV are $^{3}/_{4}$-in threaded and above 5 kV they are $^{9}/_{16}$-in. threaded stud. A compression lug with a single hole can be connected directly to the stud or 3 adapters are supplied for connecting a NEMA lug for two $^{1}/_{2}$-in. stud connections per phase. Use suitable connectors and insulation for high voltage alternating current cable terminations (these items are not supplied by Carrier). Compressor motor starter must have nameplate stamped as to conforming with Carrier Engineering requirement "Z-415."

4.1 Power conductor rating must meet minimum unit nameplate voltage and compressor motor RLA. Refer to the label located on the side of the chiller control panel, equipment submittal documentation, or equipment product data catalog for conductor sizing data. (Conductor as defined below may be a single lead or multiple smaller ampacity leads in parallel for the purpose of carrying the equivalent or higher current of a single larger lead.)

When (3) conductors are used:

Minimum ampacity per conductor = 1.25 x compressor RLA

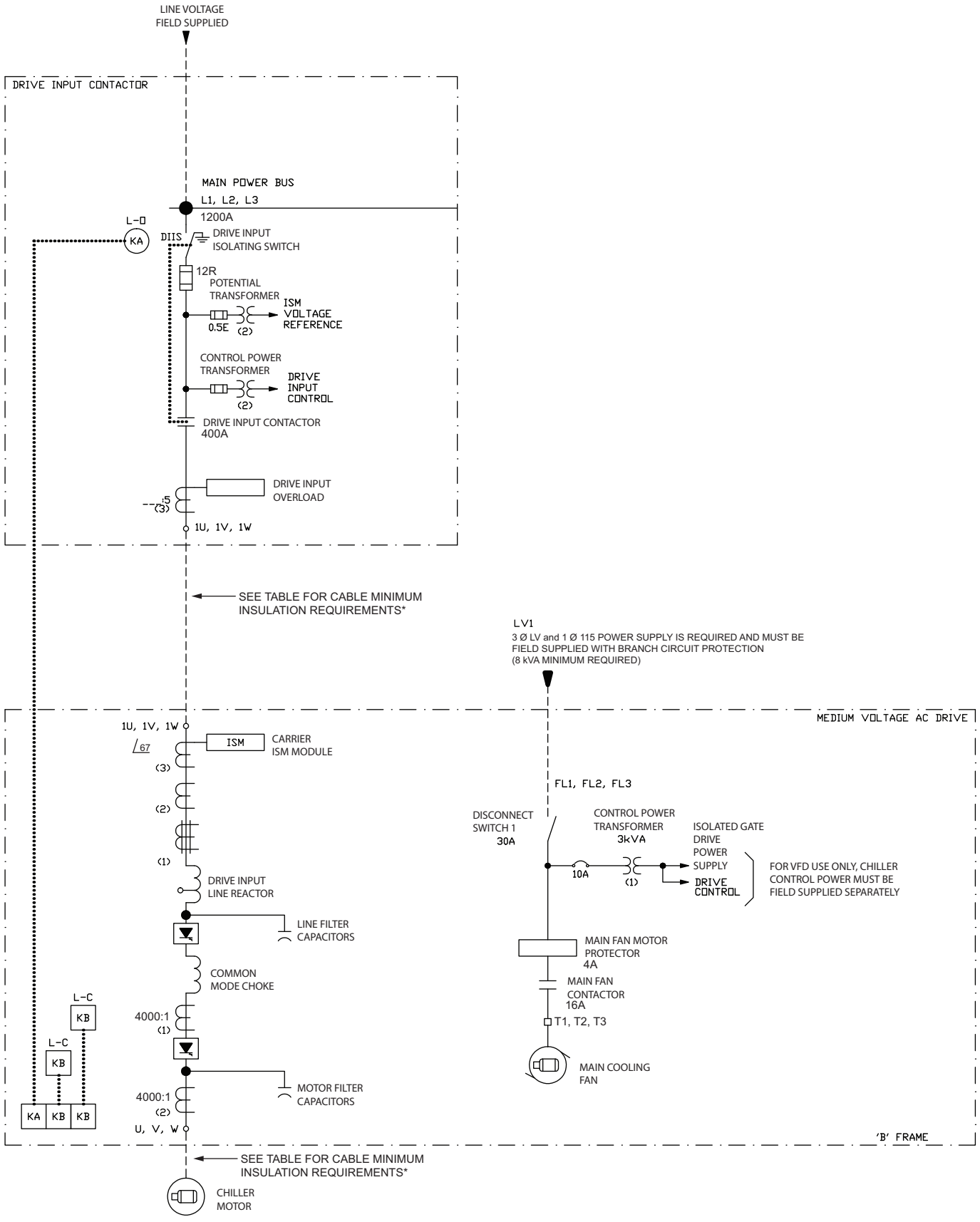
4.2 When more than one conduit is used to run conductors from starter to compressor motor terminal box, an equal number of leads from each phase (conductor) must be in each conduit to prevent excessive heating. (For example, conductors to motor terminals 1, 2, and 3 in one conduit, and those to 4, 5, and 6 in another.)

4.4 Compressor motor power conductors may enter terminal box through top, left side, or bottom left using holes cut by contractor to suit conduit. Flexible conduit should be used for the last few feet to the terminal box for unit vibration isolation. Use of stress cones may require an oversize (special) motor terminal box (not supplied by Carrier).

4.3 Compressor motor frame to be grounded in accordance with the National Electrical Code (NFPA-70) and applicable codes. Means for grounding compressor motor is a #4 AWG to 500 MCM pressure connector, supplied and located in the lower left corner of the compressor motor terminal box.

4.5 Do not allow motor terminals to support weight of wire cables. Use cable supports and strain reliefs as required.

4.6 Use backup wrench when tightening lead connectors to motor terminal studs. Torque to 30-35 ft-lb for the $^{9}/_{16}$ in. stud and 35-40 ft-lb for the ¾ in. stud.



*See page 53.

Fig. 28 — 19XR Typical Field Wiring with Free-Standing Variable Frequency Drive (VFD) (Medium Voltage)

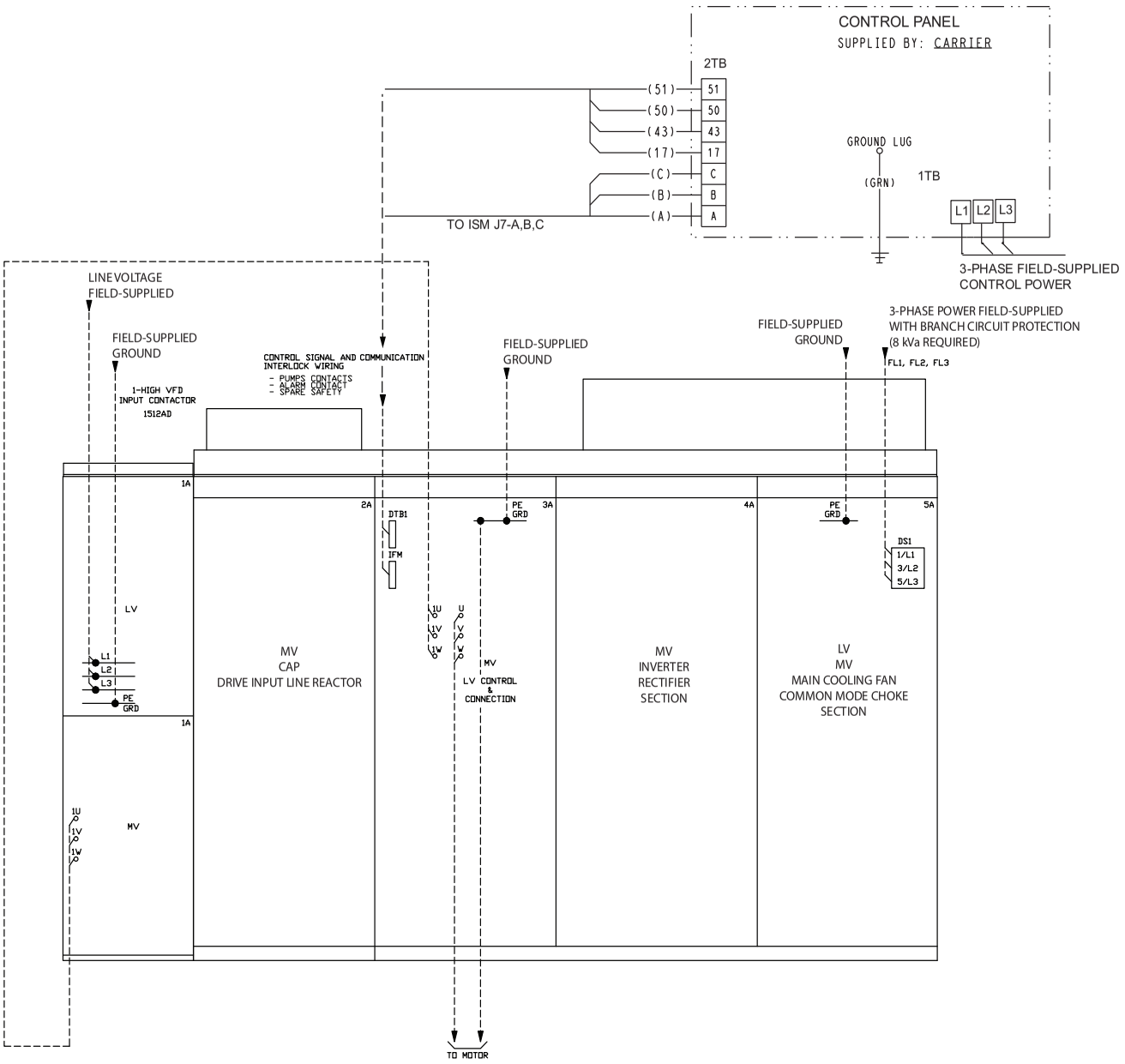
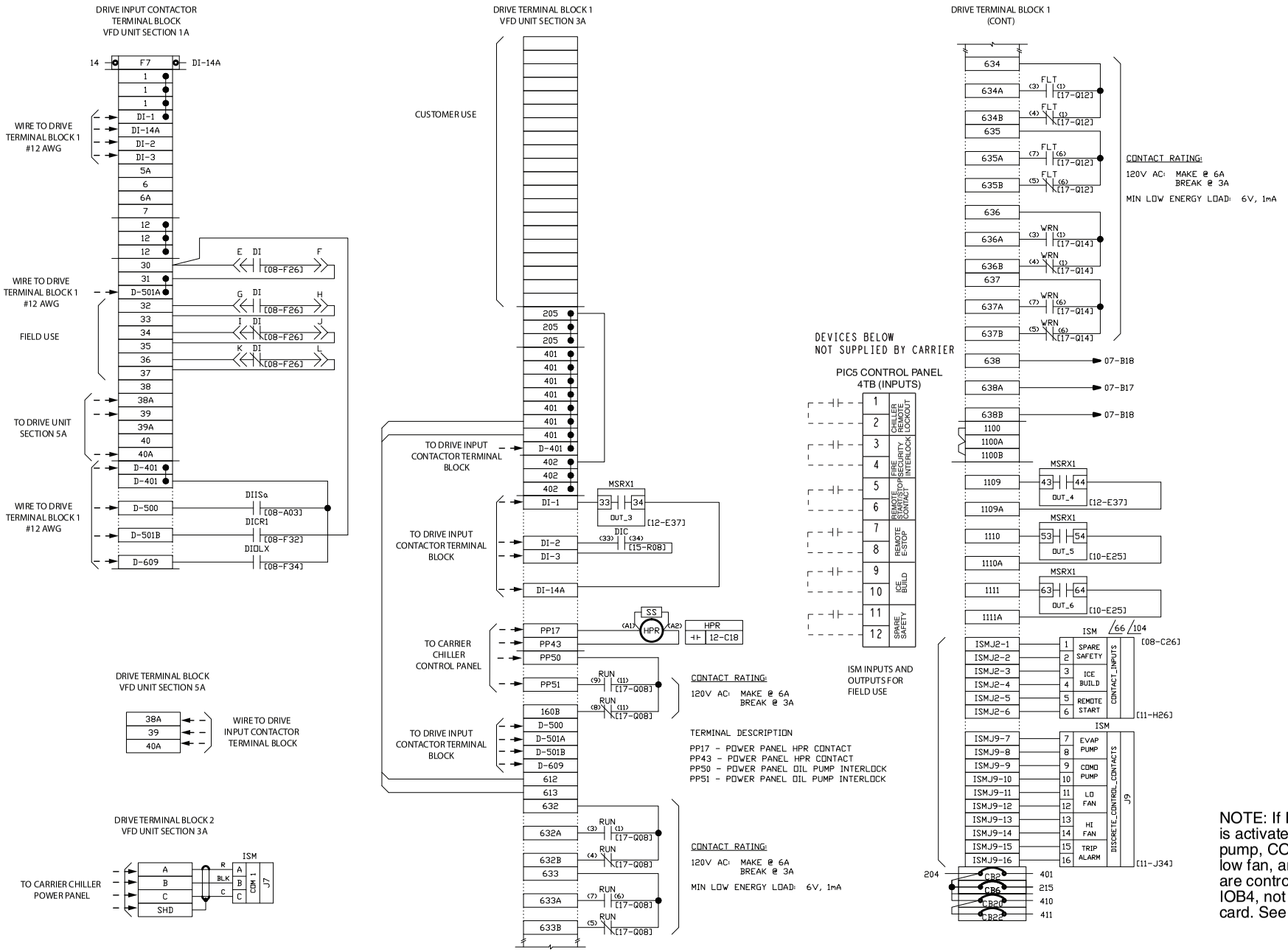


Fig. 28 — 19XR Typical Field Wiring with Free-Standing Variable Frequency Drive (VFD) (Medium Voltage) (cont)



NOTE: If IOB4 option is activated, EVAP pump, COND pump, low fan, and high fan are controlled from IOB4, not the ISM card. See Fig. 27.

Fig. 28 — 19XR Typical Field Wiring with Medium Voltage Variable Frequency Drive (VFD) (cont)

LEGEND FOR FIG. 28
19XR with Medium Voltage VFD

AWG — American Wire Gage
CBx — Circuit Breaker
DI — Drive Input Contactor
DIC — Drive Input Control Relay
DICR1 — Drive Input Contactor Pilot Relay
DIIS — Drive Input Isolating Switch
DIOLx — Drive Input Overload Auxiliary Relay
DITB — Drive Input Contactor Terminal Blocks
DSx — Disconnect Switch
FLT — Fault Relay
GRD — Ground
HPR — High Pressure Relay
IFM — Interface Module
ISM — Integrated Starter Module
L-C — Locked Closed
L-O — Locked Open
LV — Low Voltage
LVx — External Low Voltage Supply
MSRXx — Monitoring Safety Relay Auxiliary Relay x
MV — Medium Voltage
PE — Earth Ground
RUN — Run Relay
SS — Surge Suppressor
TB — Terminal Block
VFD — Variable Frequency Drive
WRN — Warning Relay

67 Components sized for load data provided.

WIRING

Factory Wiring

Field Wiring

Mechanically Connected

Conductor, Crossing of Paths or Conductors Not Connected

Conductor, Junction of Connected Paths, Conductors or Wires

Conductor, Separable or Jacks Engaged

Terminal

Terminal (Rockwell Automation use only)

Terminal Blocks
— Barrier

2-A01 Wired To/From Destination

SWITCHES AND INPUT DEVICES

Contact Normally Open (Make)

Contact Normally Closed (Break)

OUTPUT DEVICES

Fan (3 Phase Induction Motor)

Induction Machine

RESISTORS, CAPS, WINDINGS AND GROUND

Capacitor

Winding

Transformer, Current

PROTECTION

Circuit Breaker, Control/Power

Fuse, Control/Power

SS Surge Suppressor

POWER ELECTRONIC DEVICES

Symmetrical Gate-Commutated Thyristor and Gate Driver Board

MISCELLANEOUS

Note Number Indicator

RELAY 4▸ 02- A01
CONTACT TYPE SHEET ZONE
Contact Location Description

[2-A01]
SHEET ZONE
Relay Location Description

Key Interlock on Isolation Switch

K Key Interlock on MV Door

K K Multiple Barrel Key Interlock on Isolation Switch

K K Multiple Barrel Key Interlock on MV Door

K K K K Transfer Block

See Notes on page 53.

NOTES FOR FIG. 28
19XR with Medium Voltage VFD

I. GENERAL

1.0 Variable Frequency Drive (VFD) shall be designed and manufactured in accordance with Carrier Engineering Requirement Z-416.

1.1 All field-supplied conductors, devices, and the field installation wiring, termination of conductors and devices, must be in compliance with all applicable codes and job specifications.

⚠ CAUTION

To prevent damage to machine, do NOT punch holes or drill into the top surface of the VFD enclosure for field wiring. Field wiring knockouts are provided on the top and side of the VFD enclosure for field wiring connections.

1.2 The routing of field-installed conduit and conductors and the location of field-installed devices must not interfere with equipment access or the reading, adjusting, or servicing of any component.

1.3 Equipment installation and all starting and control devices, must comply with details in equipment submittal drawings and literature.

1.4 Contacts and switches are shown in the position they would assume with the circuit de-energized and chiller shutdown.

1.5 WARNING - Do not use aluminum conductors.

1.6 Installer is responsible for any damage caused by improper wiring between VFD and machine.

1.7 All field-installed wiring is field-supplied.

II. POWER WIRING TO VFD

2.0 Provide a means of disconnecting power to VFD.

2.1 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required. Contact VFD supplier for lug information.

2.2 Compressor motor and controls must be grounded by using equipment grounding lug provided inside VFD enclosure.

III. CONTROL WIRING

3.0 Field-supplied control conductors to be at least 18 AWG or larger.

3.1 Optional ice build start/terminate device contacts, optional remote start/stop device contacts, and optional spare safety device contacts (devices not supplied by Carrier) must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. Switches with gold plated bifurcated contacts are recommended.

3.2 Each integrated contact output can control loads (VA) for evaporator pump, condenser pump, tower fan low, tower fan high, and alarm annunciator devices rated 5 amps at 115 VAC and up to 3 amps at 277 VAC.

⚠ CAUTION

Control wiring for Carrier to start pumps and tower fan motors and establish flows must be provided to assure machine protection. If primary pump, tower fan, and flow control is by other means, also provide parallel means for control by Carrier. Failure to do so could result in machine freeze-up or overpressure.

Do not use control transformers in the control center as the power source for external or field-supplied contactor coils, actuator motors or any other loads.

3.3 Do not route control wiring carrying 30 v or less within a conduit which has wires carrying 50 v or higher or along side wires carrying 50 v or higher.

3.4 Control wiring between VFD and power panel must be separate shielded cables with minimum rating 600 v, 80 C. Ground shield at VFD.

3.5 If optional pumpout/oil pump circuit breaker is not supplied within the starter enclosure, it must be located within sight of machine with wiring routed to suit.

3.6 When providing conductors for oil pump motor and oil heater power, refer to sizing data on label located on the chiller power panel, equipment submittal documentation, or equipment product data catalog.

3.7 Spare 4-20 mA output signal is designed for controllers with a non-grounded 4-20 mA input signal and a maximum input impedance of 500 ohms.

IV. POWER WIRING BETWEEN FREE-STANDING VFD AND COMPRESSOR MOTOR

4.0 Medium voltage (over 600 volts) compressor motors have (3) terminals. Motor terminal connections below 5 kV are $^{3}/_{4}$-in threaded and above 5 kV they are $^{9}/_{16}$-in. threaded stud. A compression lug with a single hole can be connected directly to the stud or 3 adapters are supplied for connecting a NEMA lug for two $^{1}/_{2}$-in. stud connections per phase. Use suitable connectors and insulation for high voltage alternating current cable terminations (these items are not supplied by Carrier). Compressor motor starter must have nameplate stamped as to conforming with Carrier Engineering requirement "Z-416."

4.1 Power conductor rating must meet minimum unit nameplate voltage and compressor motor RLA. Refer to the label located on the side of the chiller control panel, equipment submittal documentation, or equipment product data catalog for conductor sizing data. (Conductor as defined below may be a single lead or multiple smaller ampacity leads in parallel for the purpose of carrying the equivalent or higher current of a single larger lead.)

When (3) conductors are used:

Minimum ampacity per conductor = 1.25 x compressor RLA

When (6) conductors are used:

Minimum ampacity per conductor = 1.25 x compressor RLA/2

4.2 When more than one conduit is used to run conductors from VFD to compressor motor terminal box, an equal number of leads from each phase (conductor) must be in each conduit to prevent excessive heating. (For example, conductors to motor terminals 1, 2, and 3 in one conduit, and to 1, 2, and 3 in another conduit.)

4.4 Compressor motor power conductors may enter terminal box through top, left side, or bottom left using holes cut by contractor to suit conduit. Flexible conduit should be used for the last few feet to the terminal box for unit vibration isolation. Use of stress cones may require an oversize (special) motor terminal box (not supplied by Carrier).

4.3 Compressor motor frame to be grounded in accordance with the National Electrical Code (NFPA-70) and applicable codes. Means for grounding compressor motor is a #4 AWG to 500 MCM pressure connector, supplied and located in the lower left corner of the compressor motor terminal box.

4.5 Do not allow motor terminals to support weight of wire cables. Use cable supports and strain reliefs as required.

4.6 Use backup wrench when tightening lead connectors to motor terminal studs. Torque to 30-35 ft-lb for the $^{9}/_{16}$ in. stud and 35-40 ft-lb for the ¾ in. stud.

4.7 Do not exceed 100 ft. maximum power cable length between the VFD and motor terminals without consulting Carrier for special requirements.

CABLE INSULATION REQUIREMENTS

SYSTEM VOLTAGE	CABLE INSULATION RATING (kV) (MAX. PEAK LINE-TO-GROUND)	
	LINE SIDE	MACHINE SIDE
2400	> 2.20	> 2.20
3000	> 2.75	> 2.75
3300	> 3.00	> 3.00
4160	> 3.80	> 3.80
6000	> 5.50	> 5.50
6300	> 5.80	> 5.80
6600	> 6.00	> 6.00

LEGEND AND NOTES FOR FIG. 29-34

Control Abbreviations — Fig. 29-34

CDWP — Condenser Water Pump
CDWP-V — Condenser Water Pump (Variable)
CHWP — Chilled Water Pump
CHWP_V — Chilled Water Pump (Variable)
COND_EWP — Entering Condenser Water Pressure
COND_FL — Condenser Water Flow Measurement
COND_FS — Condenser Water Flow Switch
COND_LWP — Leaving Condenser Water Pressure
COND_P — Condenser Pressure
DGT — Compressor Discharge Temperature
DMP_CL — Economizer Damper Valve Close
DMP_FC — Damper Valve Feedback Fully Close
DMP_FO — Damper Valve Feedback Fully Open
DMP_OP — Economizer Damper Valve Open
ECDW — Entering Condenser Water Temperature
ECON_P — Economizer Pressure
ECW — Entering Chilled Water Temperature
EVAP_EWP — Entering Evaporator Water Pressure
EVAP_FL — Evaporator Water Flow Measurement
EVAP_LWP — Leaving Evaporator Water Pressure
EVAP_P — Evaporator Pressure
EVAP_T — Evaporator Refrigerant Temperature
FS_LOCK — Fire Alarm Interlock
GV1-ACT — IGV1 Position Input
HDPV_OUT — Head Pressure Output
HGBP_CL — Hot Gas Bypass (HGBP) Valve Close
HGBP_FC — Hot Gas Bypass Valve Feedback Fully Close
HGBP_FO — Hot Gas Bypass Valve Feedback Fully Open
HGBP_OP — Hot Gas Bypass Valve Open
HP_SW — High Pressure Switch
ICE_CON — Ice Build Contact
LCDW — Leaving Condenser Water Temperature
LCW — Leaving Chilled Water Temperature
MTRB1 — Low Speed Motor End Bearing Temperature (Thermistor/PT100)
MTRB2 — Low Speed Compressor End Bearing Temperature (Thermistor/PT100)
MTRB3 — High Speed Motor End Bearing Temperature (Thermistor/PT100)
MTRB4 — High Speed Compressor End Bearing Temperature (Thermistor/PT100)
MTRW1 — Motor Winding Temperature 1
MTRW2 — Motor Winding Temperature 2
MTRW3 — Motor Winding Temperature 3
OIL_HEAT — Oil Heater On/Off
OIL_PUMP — Oil Pump On/Off
OILP_DIS — Oil Pump Discharge Pressure
OILP_SMP — Oil Sump Pressure
OILT_SMP — Oil Sump Temperature
REM_CON — Remote Connect Input
REM_LOCK — Chiller Lockout Input
REM_STP — Remote Stop Lock
SAFETY — Spare Safety
SHFT_DIS — Bearing Shaft Displacement Switch
TFR_HIGH — Tower Fan High
TFR_LOW — Tower Fan Low
TOW_FAN — Tower Fan (Variable)

Wiring Codes — Fig. 29-34

1C — Oil Heater Contactor
2C — Oil Pump Contactor
1CB — Micro Circuit Breaker, Control Box
2CB — Micro Circuit Breaker, HMI
3FU1,2 — Transformer 1 Primary Fuse
3FU3,4 — Transformer 1 Secondary Fuse
1R — Alarm Relay
1T — Transformer 1
2T — Transformer 2
3T — Transformer 3
1TB — Terminal Block for Customer Power Connection
2TB — Terminal Block for Field Connection
3TB — Terminal Block for Customer Optional Connection
4TB — HMI Terminal Block Field CCN Connection
5TB — Terminal Block for Control Panel Internal Connection
6TB — Terminal Block for Guide Vane, HGBP amd Damper Valve
7TB — Terminal Block for Guide Vane Actuator (220 v)
A01 — IGV/Stage 1 IGV
A03 — Discharge Gas Temperature Thermistor
A04 — High Pressure Switch
A06 — Bearing Displacement Switch
C11 — HGBP Valve Actuator
E01 — Evaporator Pressure Transducer
E03 — Leaving Chilled Water Temperature Thermistor
E05 — Evaporator Refrigerant Liquid Temperature Thermistor
EC01 — Economizer Pressure Transducer
EC06 — Damper Valve Actuator
HMI — Human Interface Panel
ISM — Integrated Starter Module
M01 — Motor Winding Temperature 1 (Thermistor/PT100)
M02 — Motor Winding Temperature 2 (Thermistor/PT100)
M03 — Motor Winding Temperature 3 (Thermistor/PT100)
MSP — Motor Starter Protection
SAIA — SAIA Touch Screen and Main Board
T01 — Low Speed Motor End Bearing Temperature (Thermistor/PT100)
T02 — Low Speed Compressor End Bearing Temperature (Thermistor/PT100)
T03 — High Speed Motor End Bearing Temperature (Thermistor/PT100)
T04 — High Speed Compressor End Bearing Temperature (Thermistor/PT100)
T05 — Oil Sump Temperature Thermistor
T07 — Oil Sump Pressure Transducer
T08 — Oil Pump Discharge Pressure Transducer
T10 — Oil Heater
T11 — Oil Pump

NOTE: For customer-supplied 24 vac coil relays, Carrier recommends relays with contacts rated at a minimum of 10 amps sealed and 100 amps inrush.

LEGEND — FIG. 29-34

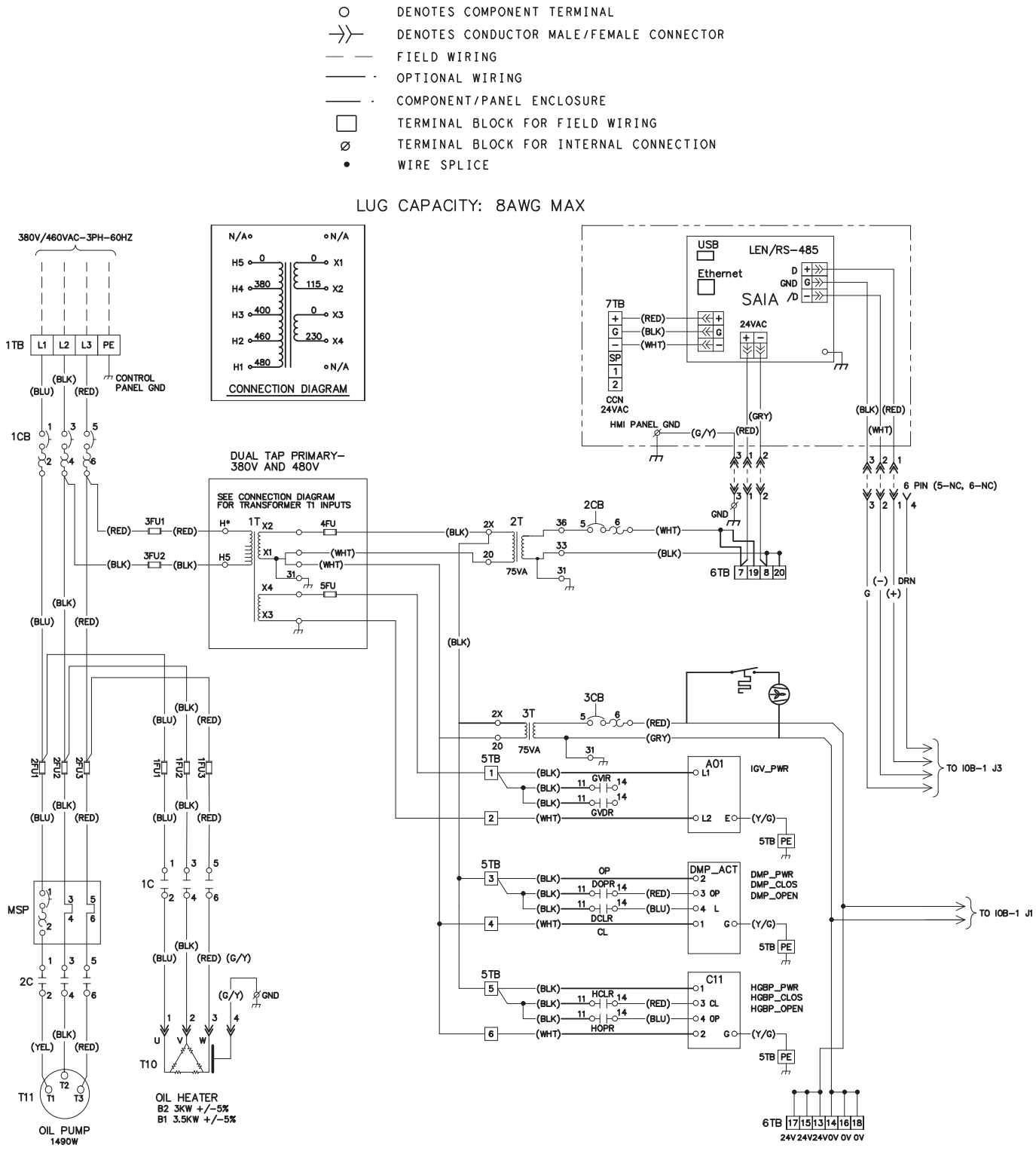


Fig. 29 — Controls Diagram

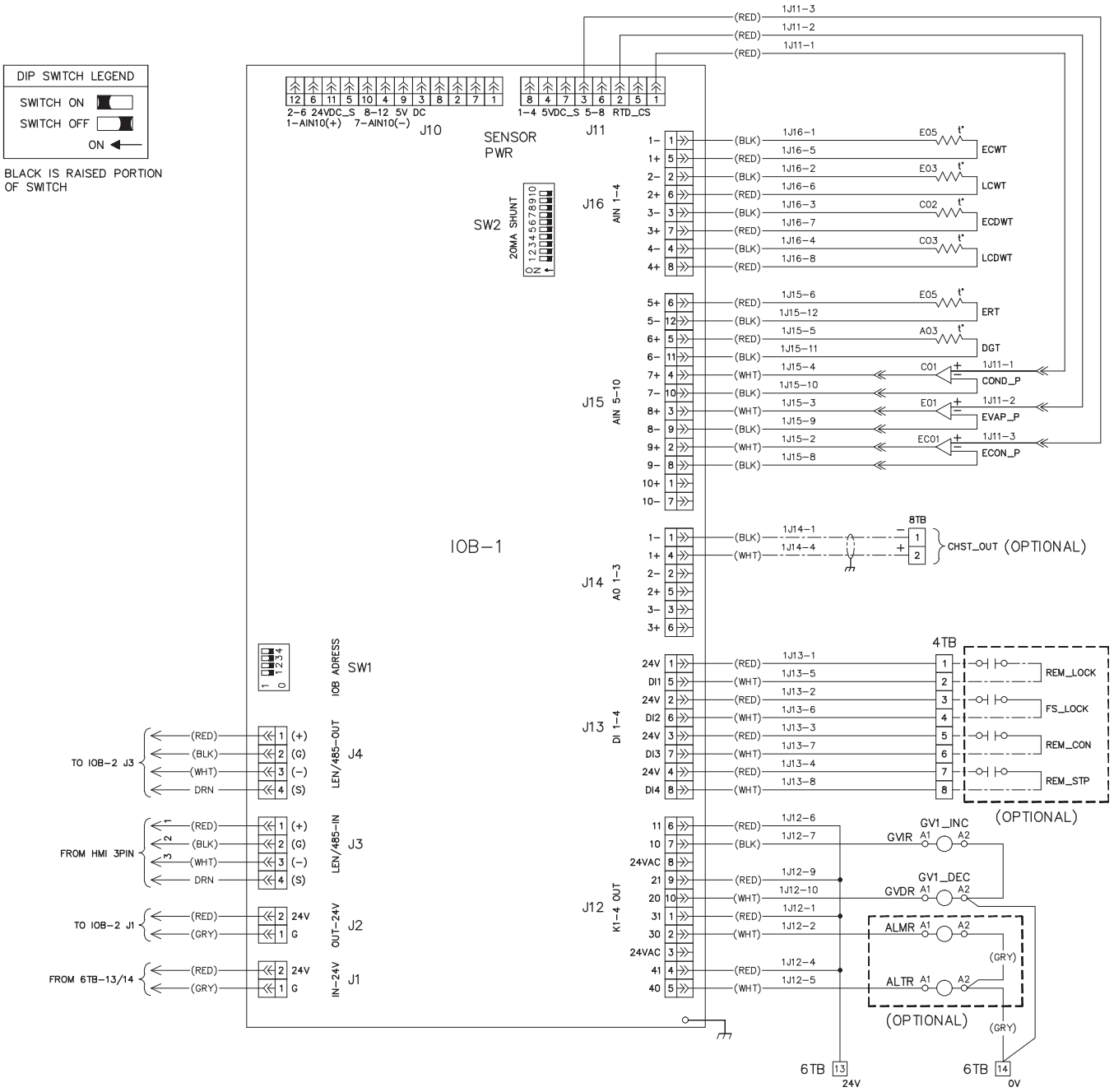

DIP SWITCH LEGEND
SWITCH ON
SWITCH OFF
ON
BLACK IS RAISED PORTION OF SWITCH
IOB–1
J10
2–6 24VDC_S 8–12 5V DC
1–AIN10(+) 7–AIN10(–)
J11
1–4 5VDC_S 5–8 RTD_CS
SENSOR PWR
SW2
20MA SHUNT
J16
AIN 1–4
ECWT
LCWT
ECDWT
LCDWT
J15
AIN 5–10
ERT
DGT
COND_P
EVAP_P
ECON_P
J14
AO 1–3
CHST_OUT (OPTIONAL)
SW1
IOB ADRESS
J13
DI 1–4
REM_LOCK
FS_LOCK
REM_CON
REM_STP
(OPTIONAL)
J12
K1–4 OUT
GV1_INC
GV1_DEC
GVIR
GVDR
ALMR
ALTR
(OPTIONAL)
TO IOB–2 J3
J4
LEN/485–OUT
FROM HMI 3PIN
J3
LEN/485–IN
TO IOB–2 J1
J2
OUT–24V
FROM 6TB–13/14
J1
IN–24V
6TB 13 24V
6TB 14 0V

Fig. 30 — IOB 1

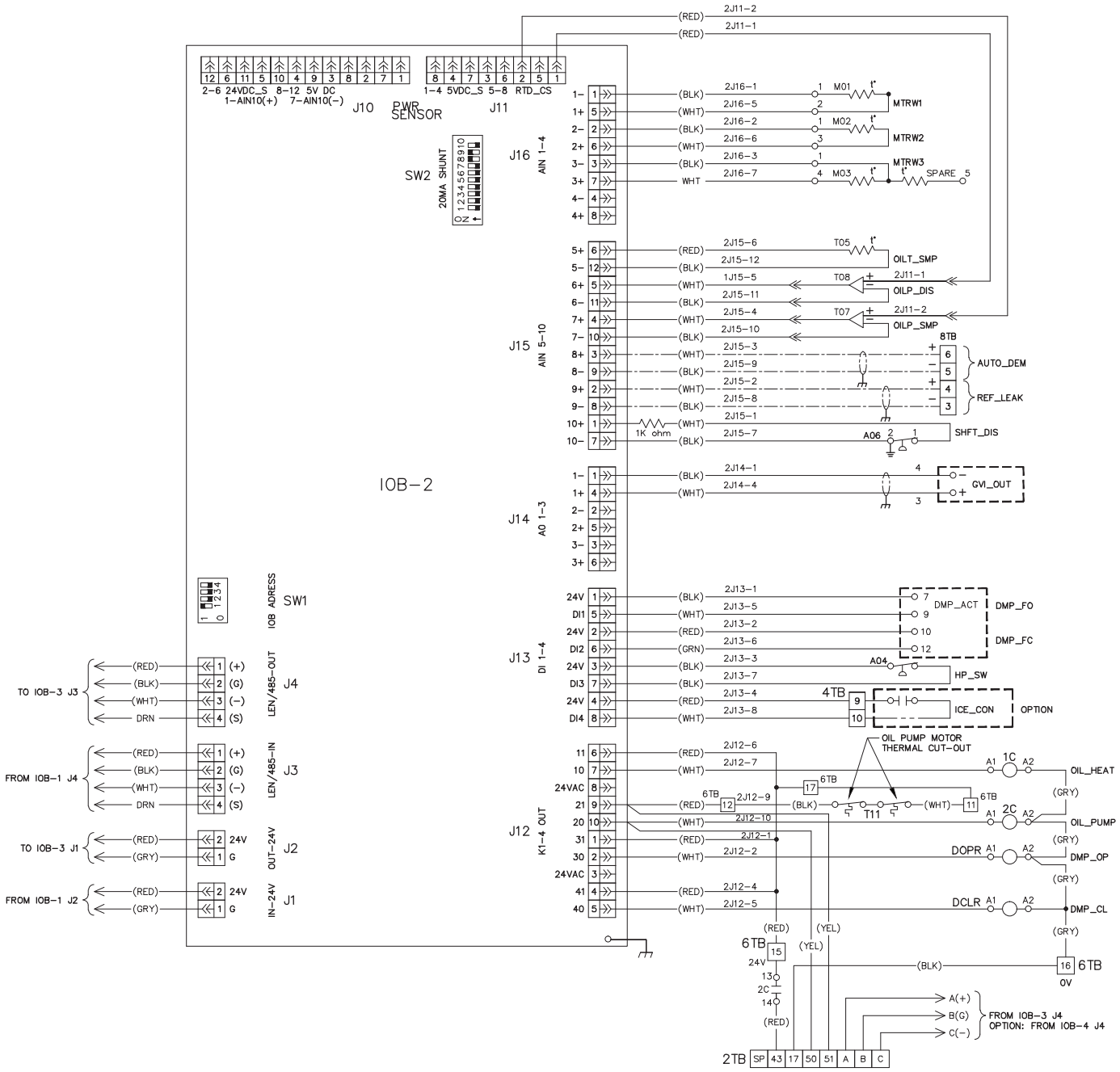

IOB-2
J10 PWR SENSOR
J11
2-6 24VDC_S 8-12 5V DC
1-AIN10(+) 7-AIN10(-)
1-4 5VDC_S 5-8 RTD_CS
SW2 20MA SHUNT
J16 AIN 1-4
J15 AIN 5-10
J14 AO 1-3
J13 DI 1-4
J12 K1-4 OUT
SW1 IOB ADRESS
J4 LEN/485-OUT
J3 LEN/485-IN
J2 OUT-24V
J1 IN-24V
TO IOB-3 J3
FROM IOB-1 J4
TO IOB-3 J1
FROM IOB-1 J2
MTRW1
MTRW2
MTRW3
SPARE
OILT_SMP
OILP_DIS
OILP_SMP
AUTO_DEM
REF_LEAK
SHFT_DIS
GVI_OUT
DMP_ACT
DMP_FO
DMP_FC
HP_SW
ICE_CON
OPTION
OIL PUMP MOTOR THERMAL CUT-OUT
OIL_HEAT
OIL_PUMP
DMP_OP
DMP_CL
1K ohm
FROM IOB-3 J4
OPTION: FROM IOB-4 J4
2TB SP 43 17 50 51 A B C

Fig. 31 — IOB 2

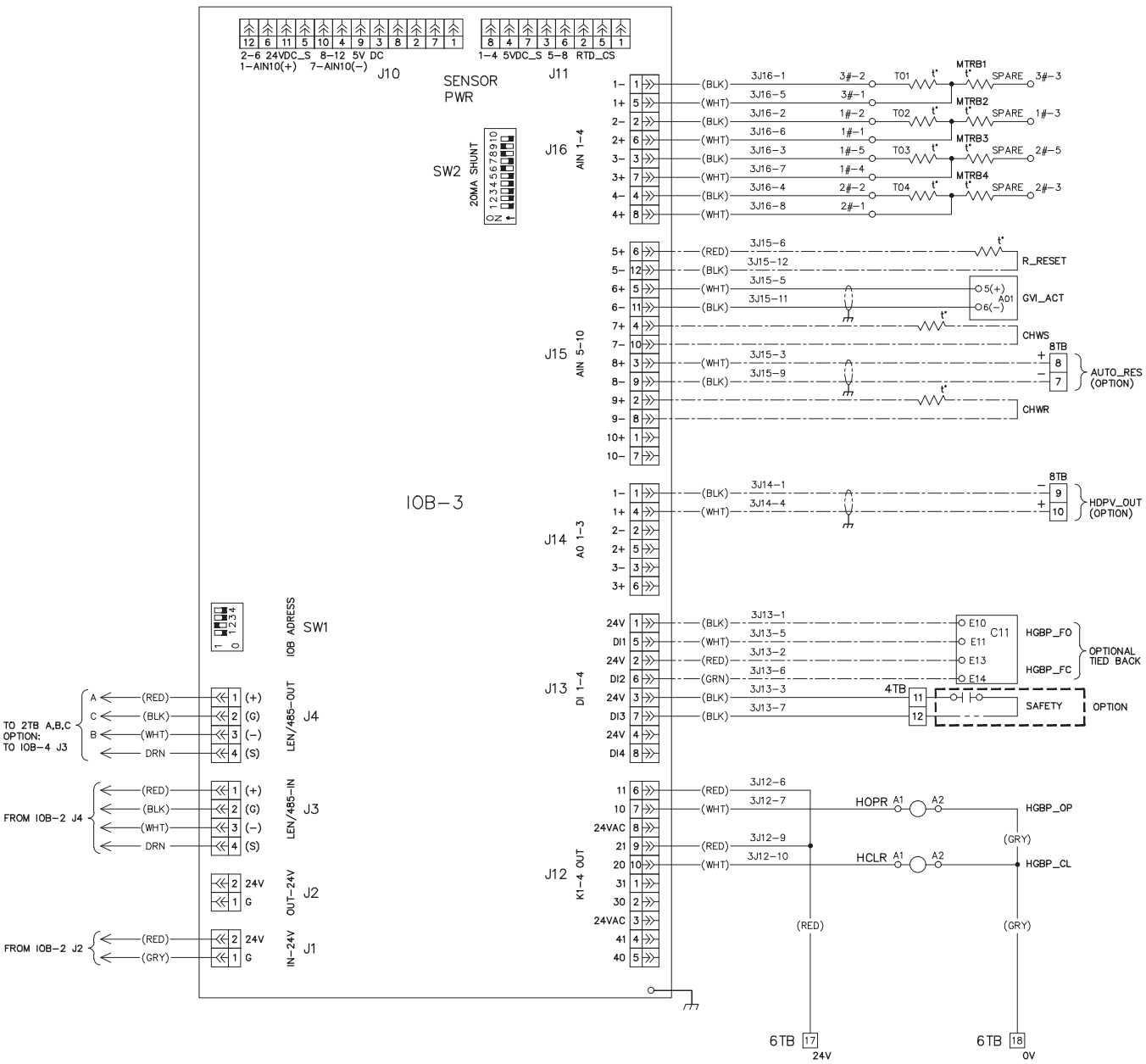

CONNECTORS TO DAMPER VALVE – FERRULE
CONNECTOR TO IGV – #16–22 FORK TERMINAL.
J10
2–6 24VDC_S 8–12 5V DC
1–AIN10(+) 7–AIN10(–)
J11
1–4 5VDC_S 5–8 RTD_CS
SENSOR PWR
SW2
20MA SHUNT
J16 AIN 1–4
J15 AIN 5–10
J14 AO 1–3
J13 DI 1–4
J12 K1–4 OUT
IOB–3
SW1
IOB ADRESS
J4 LEN/485–OUT
J3 LEN/485–IN
J2 OUT–24V
J1 IN–24V
TO 2TB A,B,C
OPTION:
TO IOB–4 J3
FROM IOB–2 J4
FROM IOB–2 J2
MTRB1
MTRB2
MTRB3
MTRB4
SPARE
R_RESET
GVI_ACT
CHWS
CHWR
AUTO_RES (OPTION)
HDPV_OUT (OPTION)
HGBP_FO
HGBP_FC
OPTIONAL TIED BACK
SAFETY
OPTION
HOPR
HCLR
HGBP_OP
HGBP_CL
6TB 17 24V
6TB 18 0V

Fig. 32 — IOB 3

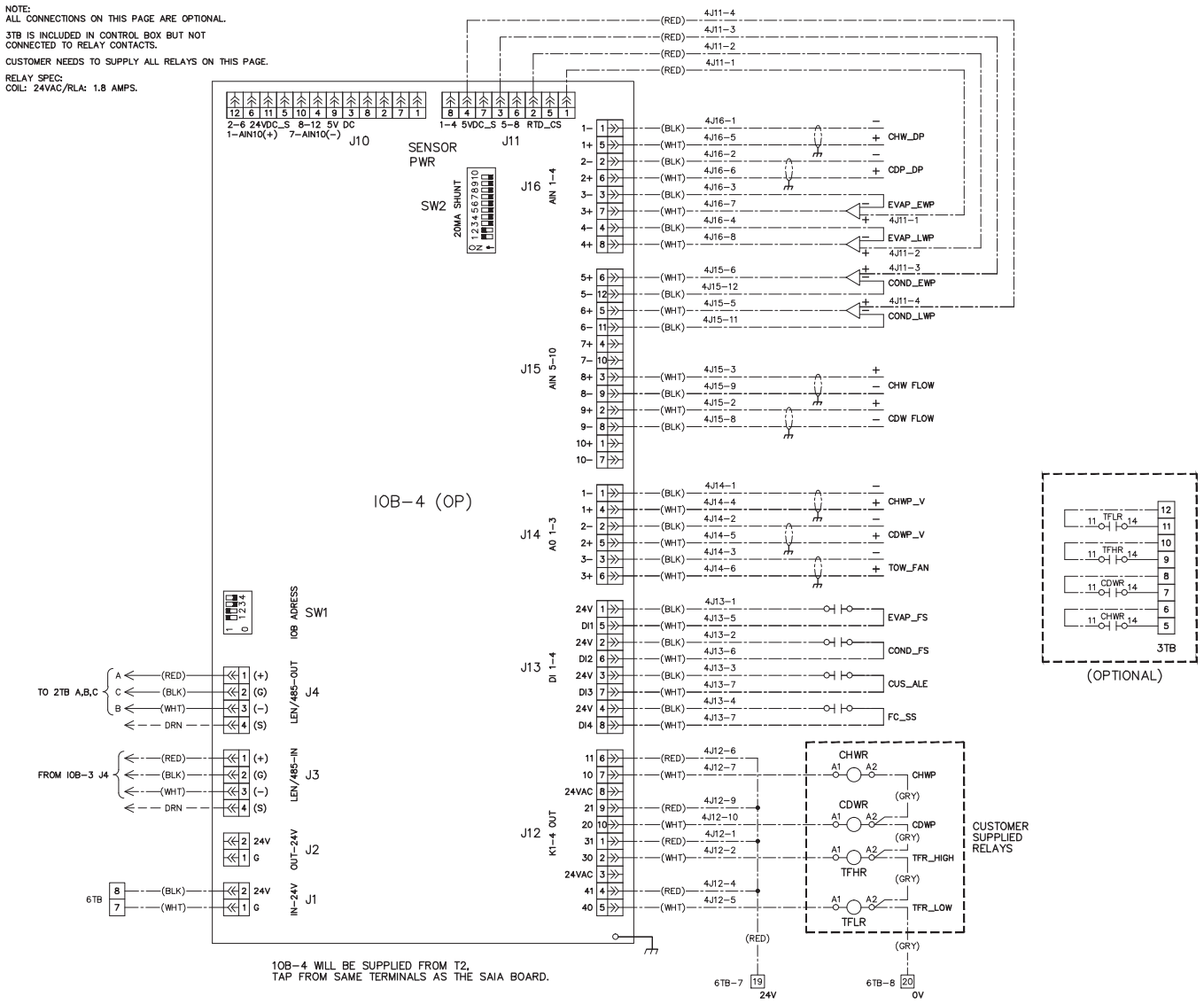
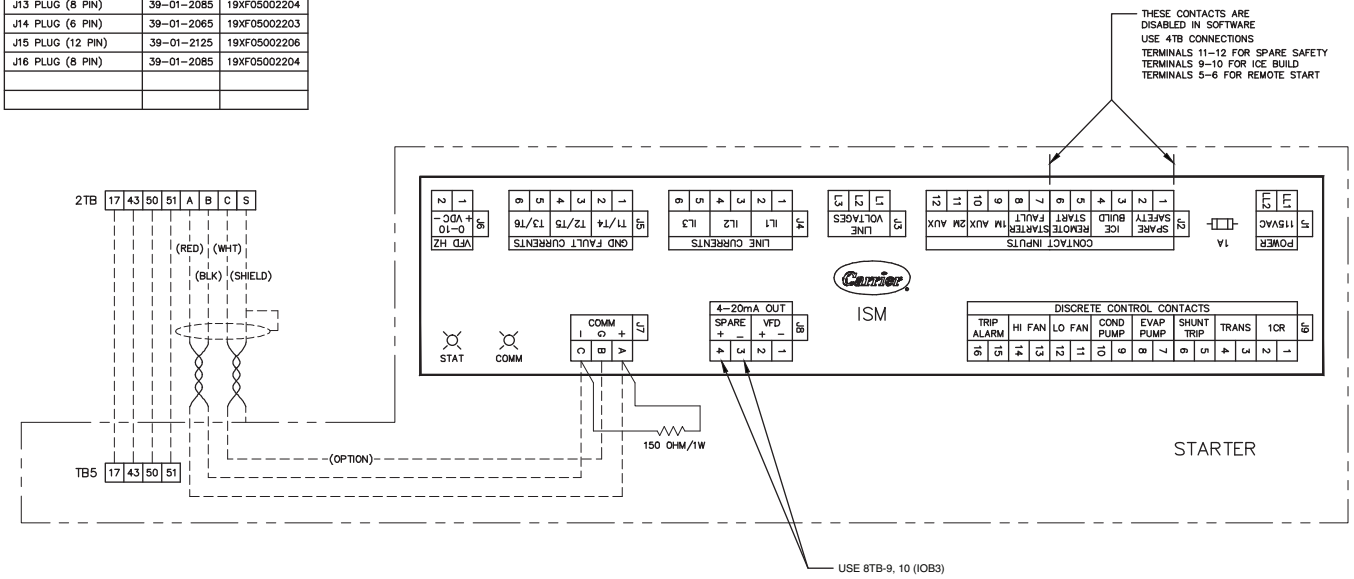

NOTE:
ALL CONNECTIONS ON THIS PAGE ARE OPTIONAL.
3TB IS INCLUDED IN CONTROL BOX BUT NOT CONNECTED TO RELAY CONTACTS.
CUSTOMER NEEDS TO SUPPLY ALL RELAYS ON THIS PAGE.
RELAY SPEC:
COIL: 24VAC/RLA: 1.8 AMPS.
J10
2-6 24VDC_S 8-12 5V DC
1-AIN10(+) 7-AIN10(-)
J11
1-4 5VDC_S 5-8 RTD_CS
SENSOR PWR
SW2
20MA SHUNT
J16 AIN 1-4
CHW_DP
CDP_DP
EVAP_EWP
EVAP_LWP
COND_EWP
COND_LWP
J15 AIN 5-10
CHW FLOW
CDW FLOW
IOB-4 (OP)
J14 AO 1-3
CHWP_V
CDWP_V
TOW_FAN
SW1
IOB ADRESS
J13 DI 1-4
EVAP_FS
COND_FS
CUS_ALE
FC_SS
TO 2TB A,B,C
J4
LEN/485-OUT
FROM IOB-3 J4
J3
LEN/485-IN
J2
OUT-24V
6TB
J1
IN-24V
J12 K1-4 OUT
CHWR
CDWR
TFHR
TFLR
CHWP
CDWP
TFR_HIGH
TFR_LOW
CUSTOMER SUPPLIED RELAYS
3TB
(OPTIONAL)
6TB-7 19 24V
6TB-8 20 0V
10B-4 WILL BE SUPPLIED FROM T2.
TAP FROM SAME TERMINALS AS THE SAIA BOARD.

Fig. 33 — IOB 4

FOR CUSTOMER SUPPLIED CONNECTION POINTS
USE MOLEX CONNECTOR AND FEMALE PIN SHOWN HERE.

CUSTOMER OPTIONAL PLUG CONNECTOR P/N		
ITEM	MOLEX P/N	CARRIER P/N
PIN REMOVAL TOOL	11–03–0044	--
FEMALE PIN	46018–1541	19XF05002401
J1 PLUG (2 PIN)	39–01–2025	19XF05002201
J3 PLUG (4 PIN)	39–01–2045	19XF05002202
J11 PLUG (8PIN–BLACK)	50–36–1713	19XF05002207
J12 PLUG (10 PIN)	39–01–2105	19XF05002205
J13 PLUG (8 PIN)	39–01–2085	19XF05002204
J14 PLUG (6 PIN)	39–01–2065	19XF05002203
J15 PLUG (12 PIN)	39–01–2125	19XF05002206
J16 PLUG (8 PIN)	39–01–2085	19XF05002204



NOTE: For medium voltage free-standing VFD, TB5 is Drive Terminal Block 1 located in section 3A. See Fig. 28.

Fig. 34 — Starter Wiring

Insulate Motor Terminals and Lead Wire Ends — Insulate compressor motor terminals, lead wire ends, and electrical wires to prevent moisture condensation and electrical arcing.

Medium Voltage Units — Medium-voltage units require special terminal preparation. Follow local electrical codes for high-voltage installation. Vinyl tape is not acceptable; a high voltage terminal method must be used.

High Voltage Units (7000 Motor Volts and Higher) — These units require additional components for terminal isolation. The isolators (cap sleeve insulators) are ordered automatically for units that require the additional insulators. See Fig. 35 for an example.

NOTE: Wiring must be installed for the oil pump power supply and oil heater supply, along with interconnecting control wiring from the power panel to the starter.

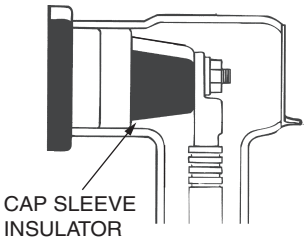


Fig. 35 — Cap Sleeve Insulation to Prevent Arcing

Connect Power Wires to Oil Pump Starter — See Fig. 36. Connect power wires to power input terminals in the control panel. If required, use separate fused disconnect or circuit breaker as shown on job wiring diagrams. Check that power supply voltage agrees with oil pump voltage. Follow correct phasing for proper motor rotation.

⚠ CAUTION

Do not punch holes or drill into the top surface of power panel. Damage to machine could result. Use knockouts provided in the bottom of the power panels for wiring connections.

Connect Power Wires to Oil Heater Contactor — Connect control power wiring between the oil heater contactor terminals and terminals LL1 and LL2 on the field wiring strip in the compressor motor starter. Refer to Fig. 36 and wiring label.

⚠ WARNING

When voltage to L1, L2, L3 in the control panel is supplied from a control transformer in a starter built to Carrier specifications, do not connect an outside source of control power to the compressor motor starter. An outside power source will produce dangerous voltage at the line side of the starter, because supplying voltage at the transformer secondary terminals produces input level voltage at the transformer primary terminals. Severe injury could result.

Connect Wiring from Starter to Power Panel — Connect control wiring from main motor starter to the machine power panel. All control wiring must use shielded cable. Also, connect the communications cable. Refer to the job wiring diagrams for cable type and cable number. Make sure the control circuit is grounded in accordance with applicable electrical codes and instructions on machine control wiring label.

CARRIER COMFORT NETWORK INTERFACE — The Carrier Comfort Network® (CCN) communication bus wiring is supplied and installed by the electrical contractor. It consists of shielded, 3-conductor cable with drain wire.

The system elements are connected to the communication bus in a daisy chain arrangement. The positive pin of each system element communication connector must be wired to the positive pins of the system element on either side of it. The negative pins must be wired to the negative pins. The signal ground pins must be wired to the signal ground pins. See Fig. 22 for location of the CCN network connections on the terminal strip labeled CCN.

NOTE: Conductors and drain wire must be 20 AWG (American Wire Gage) minimum stranded, tinned copper. Individual conductors must be insulated with PVC, PVC/nylon, vinyl, Teflon*, or polyethylene. An aluminum/polyester 100% foil shield and an outer jacket of PVC, PVC/nylon, chrome vinyl, or Teflon with a minimum operating temperature range of –4 F to 140 F (–20 C to 60 C) is required. See table below for cables that meet the requirements.

MANUFACTURER	CABLE NO.
ALPHA	2413 or 5463
AMERICAN	A22503
BELDEN	8772
COLUMBIA	02525

When connecting the CCN communication bus to a system element, a color code system for the entire network is recommended to simplify installation and checkout. The following color code is recommended:

SIGNAL TYPE	CCN BUS CONDUCTOR INSULATION COLOR	CCN NETWORK INTERFACE (CONTROL PANEL)
+	Red	+
GROUND	White	G
–	Black	–

If a cable with a different color scheme is selected, a similar color code should be adopted for the entire network.

At each system element, the shields of its communication bus cables must be tied together. If the communication bus is entirely within one building, the resulting continuous shield must be connected to ground at only one single point. See Fig. 22. If the communication bus cable exits from one building and enters another, the shields must be connected to ground at the lightning suppressor in each building where the cable enters or exits the building (one point only).

To connect the 19XR chiller to the network, proceed as follows (see Fig. 22):

1. Route wire through knockout in back of control panel.
2. Strip back leads.
3. Crimp one no. 8 size spring spade terminal on each conductor.
4. Attach red to "+" terminal and white to "G" terminal and black to "–" terminal of CCN Network interface located in the control panel.

*Registered trademark of Dupont.

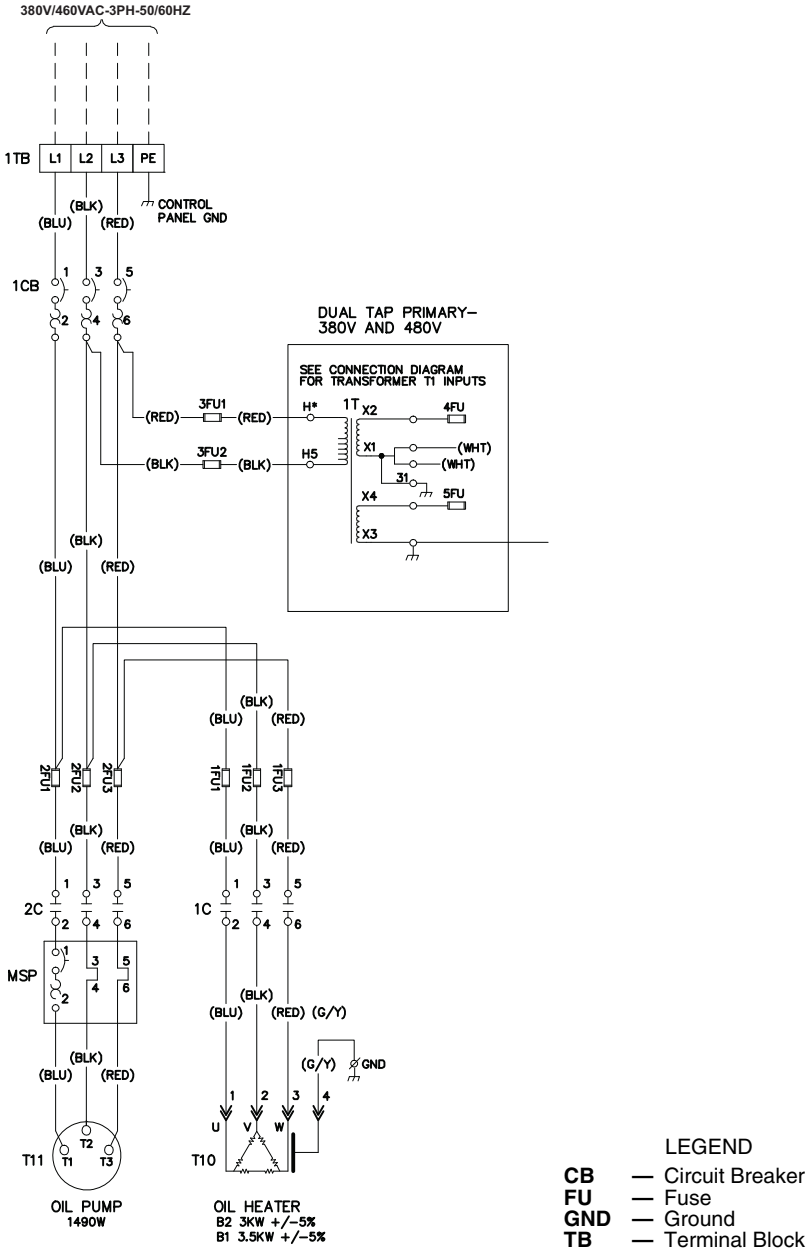


Fig. 36 — Oil Pump/Oil Heater Wiring

Step 6 — Install Field Insulation

⚠ CAUTION

Protect insulation from weld heat damage and weld splatter. Cover with wet canvas cover during water piping installation.

When installing insulation at the jobsite, insulate the following components:

- compressor motor
- economizer
- cooler shell
- cooler tube sheets
- suction piping
- motor cooling drain
- oil reclaim piping
- oil cooler refrigerant side tubing
- refrigerant liquid line to cooler

NOTE: Insulation of the waterbox covers is applied only at the jobsite by the contractor. When insulating the covers, make sure there is access for removal of waterbox covers for servicing. See Fig. 37.

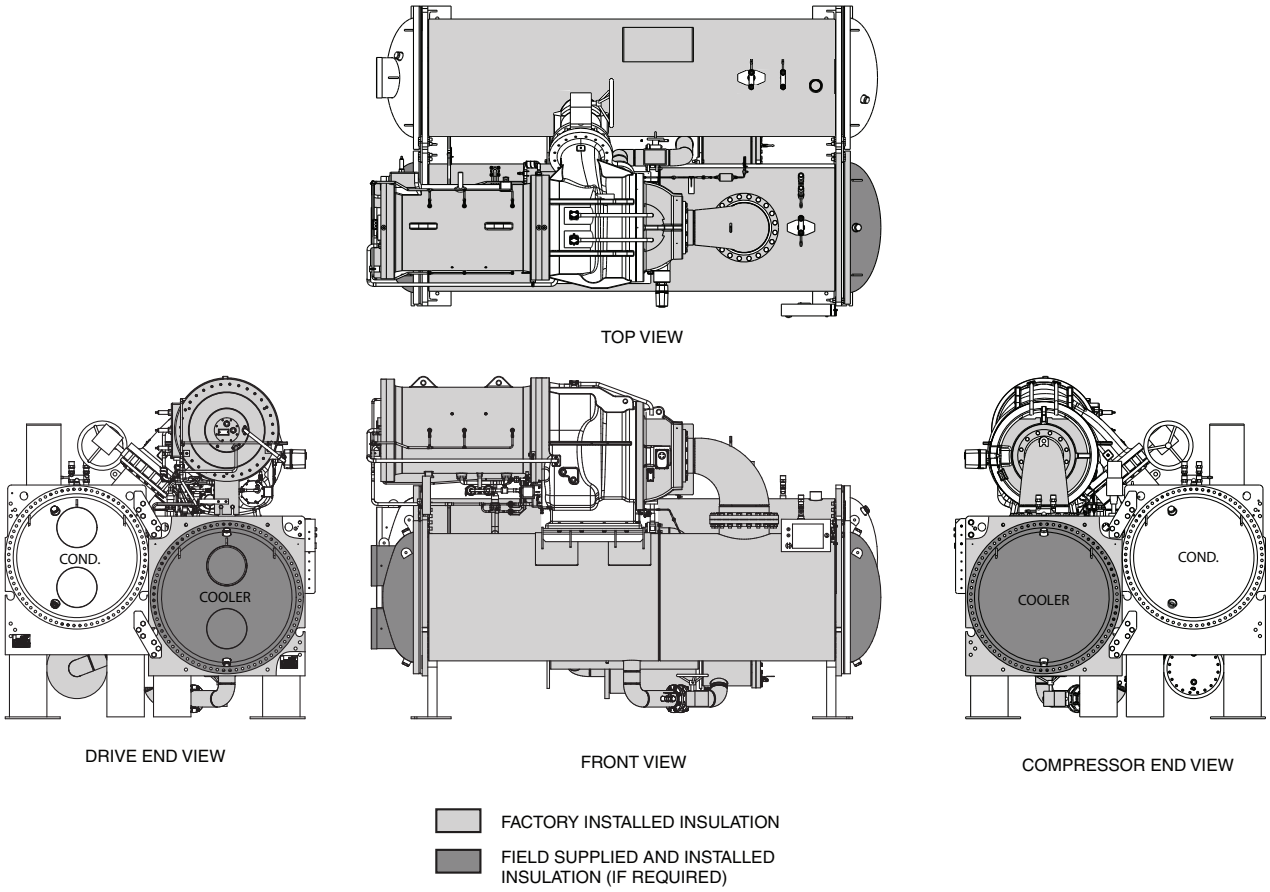


Fig. 37 — 19XR Insulation Area

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Catalog No. 04-53190039-01 Printed in U.S.A. Form 19XR-CLT-15SI Pg 66 10-16 Replaces: 19XR-CLT-14SI

INSTALLATION START-UP REQUEST CHECKLIST

NOTE: To avoid injury to personnel and damage to equipment or property when completing the procedures listed in this start-up checklist, use good judgment, follow safe practices and adhere to the safety considerations/information as outlined in preceding sections of this Installation Instructions document.

Machine Model Number: _____ 19XR Serial Number: _____

To: _____

Date _____

_____

Attn: _____

_____
Project Name

_____
Carrier Job Number

NOTE: For units with medium voltage freestanding VFD, consult latest pre-commissioning Rockwell Powerflex 7000 checklist for the applicable VFD frame size. The checklist is available at http://www.literature.rockwellautomation.com.

The following information provides the status of the chiller installation.

	YES/NO (N/A)	DATE TO BE COMPLETED
1. The machine is level.	_____	_____
2. The machine components are installed and connected in accordance with the installation instructions.	_____	_____
3. The isolation package and grouting (if necessary) are installed.	_____	_____
4. The relief valves are piped to the atmosphere.	_____	_____
5. All piping is installed and supported. Direction of flow is indicated in accordance with the installation instructions and job prints.		
a. Chilled water piping	_____	_____
b. Condenser water piping	_____	_____
c. Waterbox drain piping	_____	_____
d. Pumpout unit condenser piping (if installed)	_____	_____
e. Other _____	_____	_____
6. Gages are installed as called for on the job prints required to establish design flow for the cooler and condenser.		
a. Water pressure gages IN and OUT	_____	_____
b. Water temperature gages IN and OUT	_____	_____

7. The machine's starter wiring is complete. The wiring is installed per installation instructions and certified prints.

    a. Power wiring to compressor motor. (Motor leads will not be taped until the Carrier technician Megger tests the motor.) _____ _____
    b. 3-phase power wiring to control box _____ _____
    c. Carrier controls can independently energize water pumps and tower fan. _____ _____
    d. Line side voltage is within ±10% of chiller nameplate voltage. _____ _____
    e. Other _____ _____ _____

8. The motor starter has not been supplied by Carrier. It has been installed according to the manufacturer's instructions. _____ _____

9. Inspect installation location. Does the starter/controls/VFD enclosure protection rating match the installation site environment? _____ _____

    NOTE: NEMA Type 1 enclosures are constructed for indoor use to provide a degree of protection to personnel against incidental contact with the enclosed equipment and to provide a degree of protection against falling dirt. This type of enclosure does not protect against water, dust, moisture, or airborne contaminants.

COMMENTS:

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE