



Installation Instructions

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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:

1. Shut off electrical power to unit.
2. Recover refrigerant to relieve all pressure from system using both high-pressure and low pressure ports.
3. 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.
4. 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.
5. 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.

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.

⚠ WARNING

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.

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.

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. See Fig. 4-6 for general layouts. See Fig. 7 and 8 for dimensional information.

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.

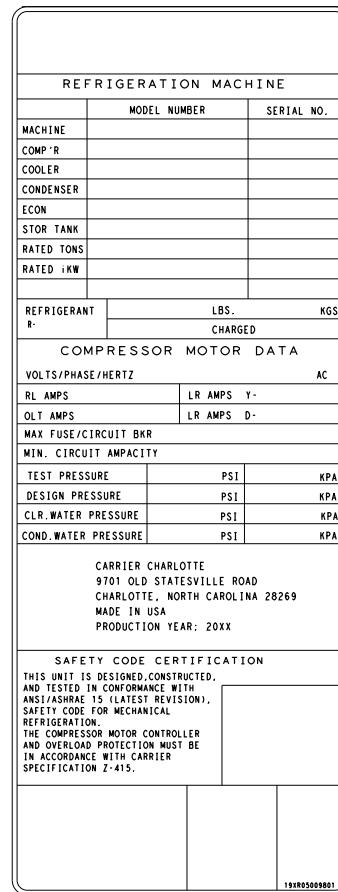


Fig. 1 — 19XR Refrigeration Machine Nameplate

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. 7 and 8.

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. See Fig. 9-14 for equipment rigging.

RIG MACHINE ASSEMBLY

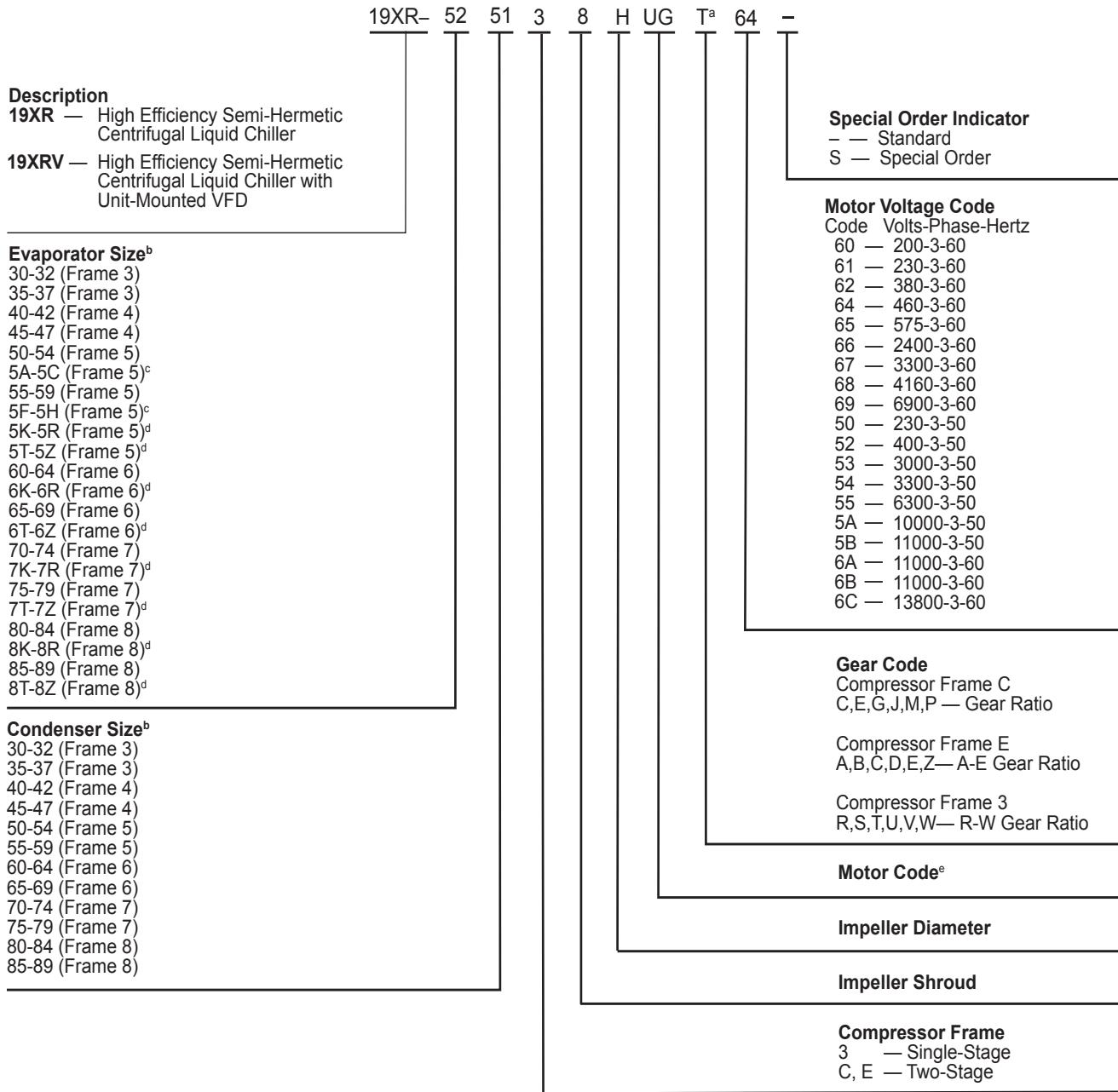
See rigging instructions on label attached to machine. Refer to rigging guide (Fig. 9-14), dimensions in Fig. 7 and 8, and physical data in Tables 1-34. *Lift machine only from the points indicated in rigging guide.* Each lifting cable or chain must be capable of supporting the entire weight of the machine.

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

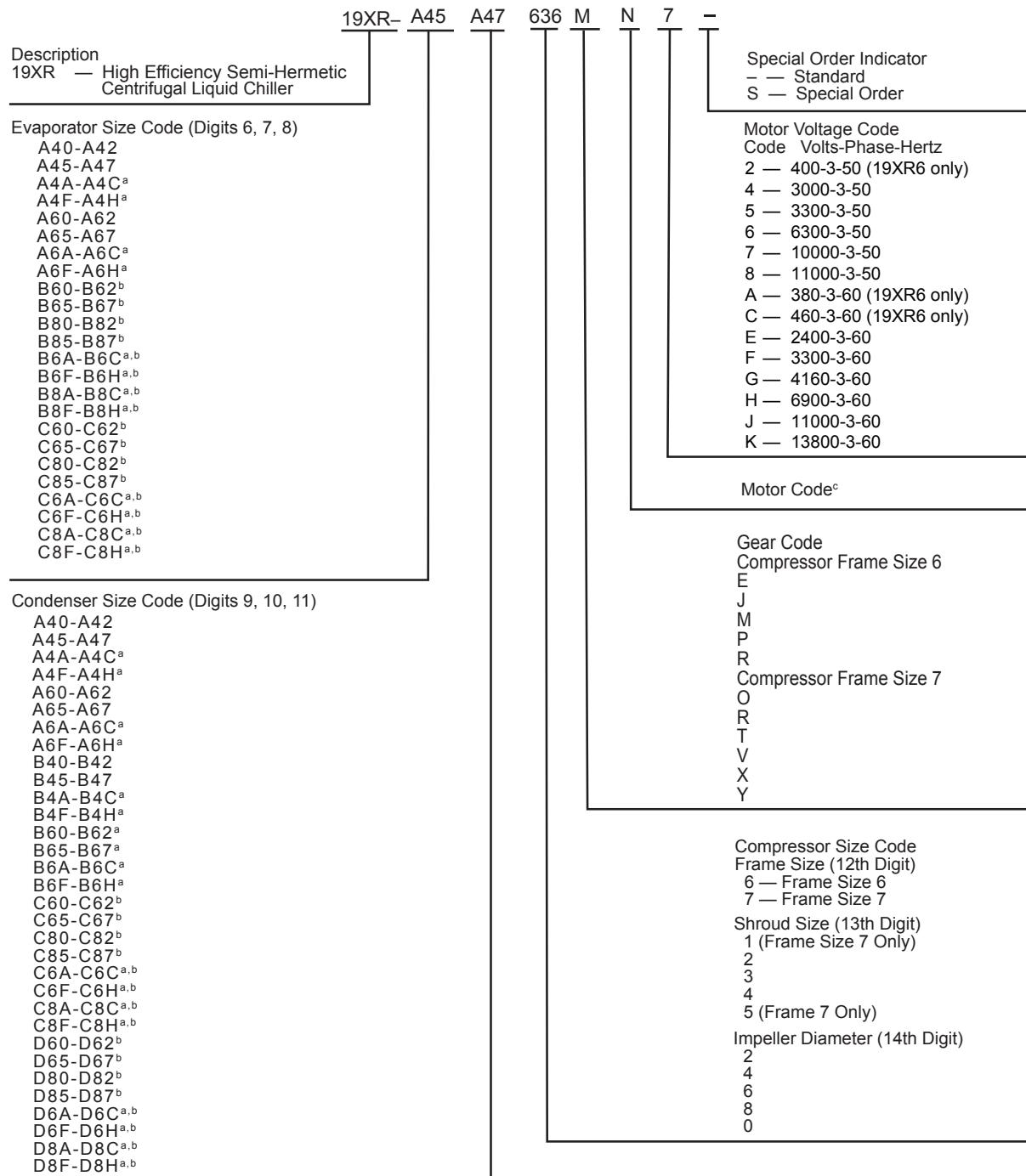
Lifting chiller or components from points other than those specified may result in serious damage to the machine or personal injury. Rigging equipment and procedures must be adequate for maximum chiller weight. See Fig. 9-14 for maximum chiller and component weights.



NOTE(S):

- a. Digit 15 will refer to the Gear Code.
- b. Frame sizes 3 through 4 available on single-stage units only.
- c. Refer to 19XR,XRV Computer Selection Program for details on these sizes.
- d. Frame sizes with K-R and T-Z are with 1-in. OD evaporator tubing.
- e. Refer to the 19XR,XRV Computer Selection Program for motor size details.

Fig. 2 — 19XR,XRV Single-Stage Compressor and Two-Stage Compressor Frame Size C and E



- a. Frame sizes with A-C and F-H are with 1-in. OD tubing.
- b. Heat exchanger available with frame 7 compressor only.
- c. Refer to the 19XR,XRV Computer Selection Program for motor size details.

SERIAL NUMBER BREAKDOWN

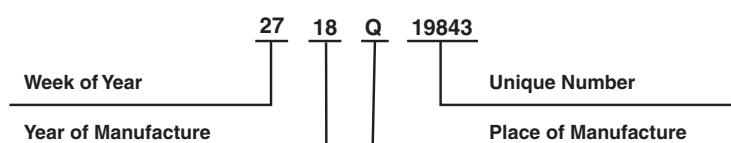
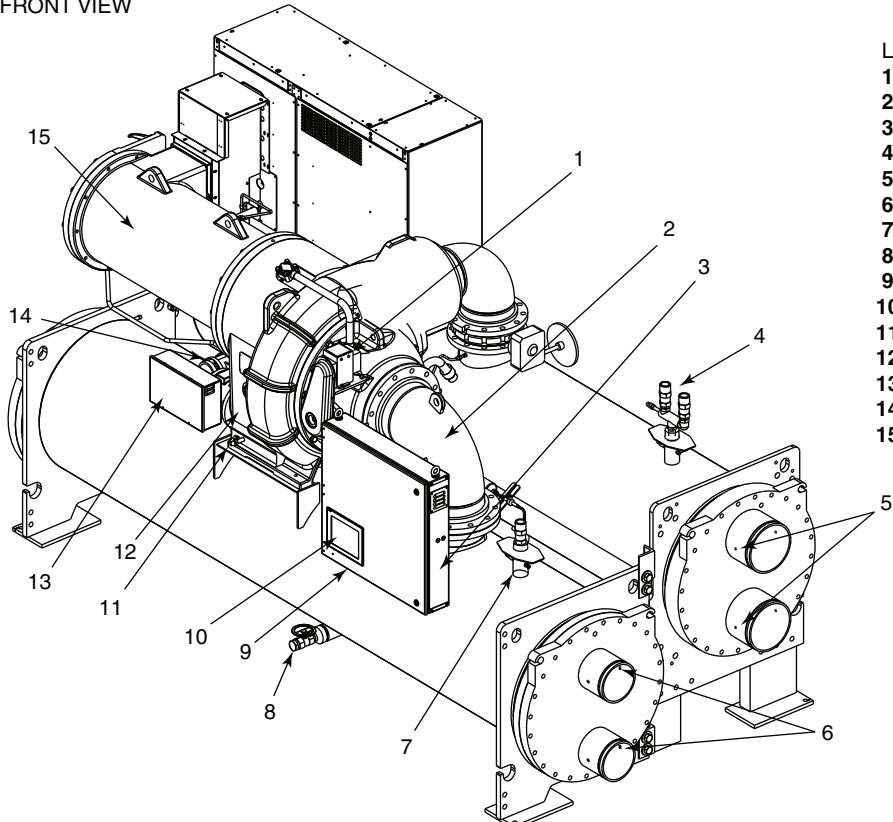


Fig. 3 — 19XR Two-Stage Compressor Frame Size 6 and 7

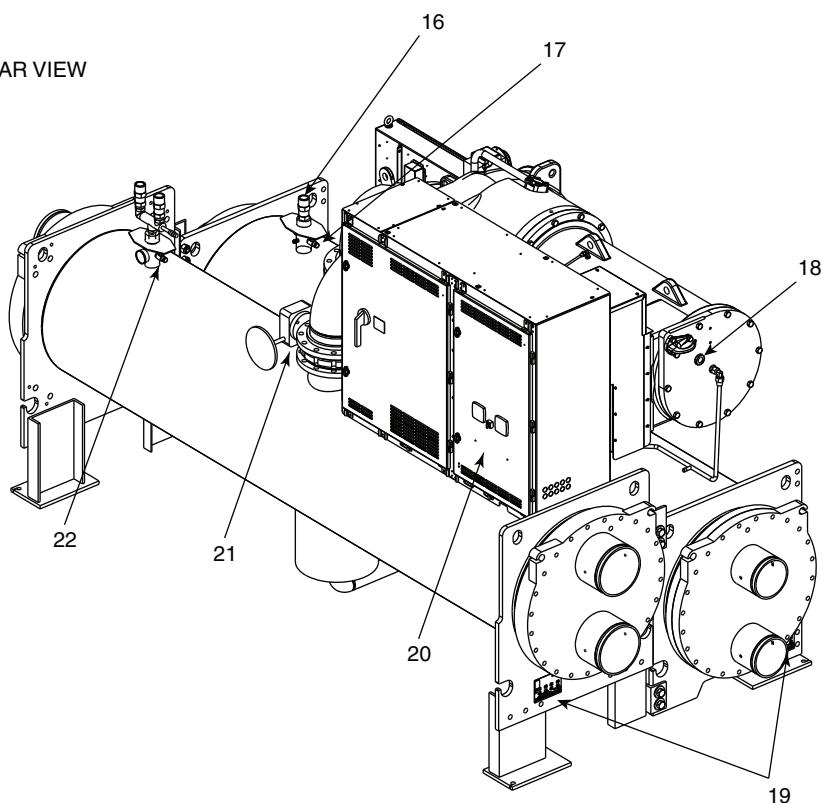
FRONT VIEW



LEGEND

- 1 — Guide Vane Actuator
- 2 — Suction Elbow
- 3 — Chiller Identification Nameplate
- 4 — Condenser Dual Relief Valves
- 5 — Condenser In/Out Temperature Thermistors
- 6 — Evaporator In/Out Temperature Thermistors
- 7 — Evaporator Pressure Transducer
- 8 — Refrigerant Storage Tank Connection
- 9 — Control Panel
- 10 — Carrier Controller HMI
- 11 — Oil Drain/Charger Valve
- 12 — Oil Level Sightglass
- 13 — Power Panel
- 14 — Refrigerant Oil Cooler (not shown)
- 15 — Compressor Motor Housing

REAR VIEW

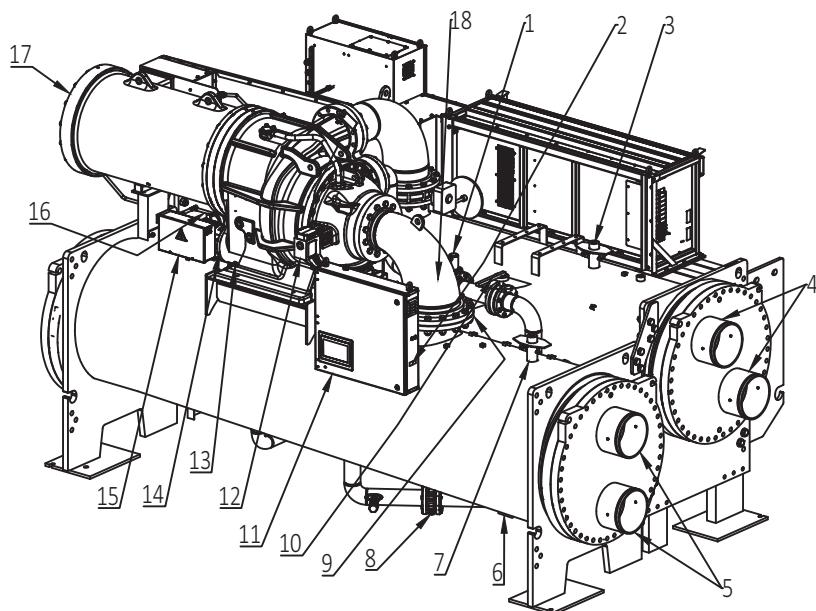


LEGEND

- 16 — Evaporator Relief Valve
- 17 — Refrigerant Charging Valve
- 18 — Motor Sightglass
- 19 — ASME Nameplates
- 20 — Starter/VFD
- 21 — Discharge Isolation Valve (Optional)
- 22 — Refrigerant Charging Valve/
Pump Out Connection

Fig. 4 — 19XR,XRV Single-Stage Compressor, Frame Size 3

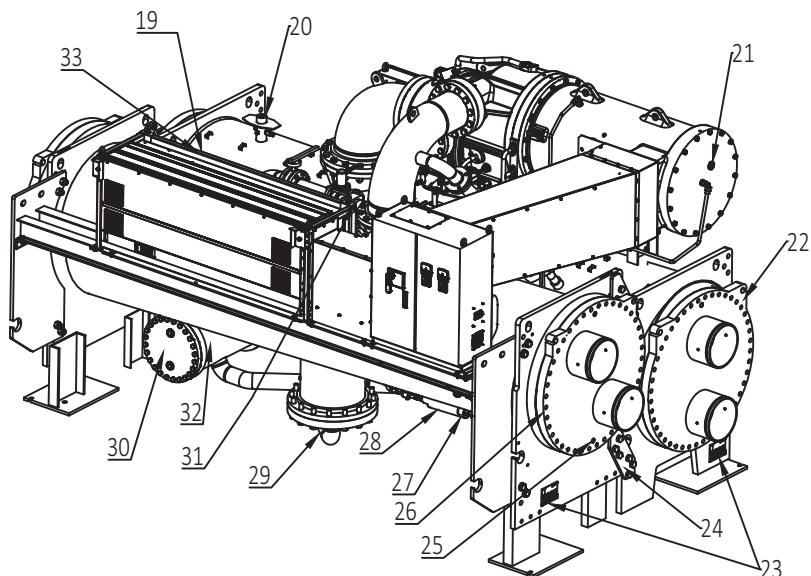
FRONT VIEW



LEGEND

- 1 — Suction Elbow
- 2 — Chiller Identification Nameplate
- 3 — Condenser Auto Reset Relief Valves
- 4 — Condenser In/Out Temperature Thermistors
- 5 — Evaporator In/Out Temperature Thermistors
- 6 — Refrigerant Storage Tank Connection Valve (barely visible)
- 7 — Evaporator Pressure Transducer
- 8 — Liquid Line Isolation Valve (optional)
- 9 — Typical Flange Connection
- 10 — Refrigerant Isolation Valve
- 11 — Control Panel (PIC6)
- 12 — Guide Vane Actuator
- 13 — Oil Level Sight Glasses
- 14 — Oil Drain Charging Valve
- 15 — Auxiliary Power Panel
- 16 — Refrigerant Oil Evaporator (hidden)
- 17 — Compressor Motor Housing
- 18 — Damper Valve

REAR VIEW

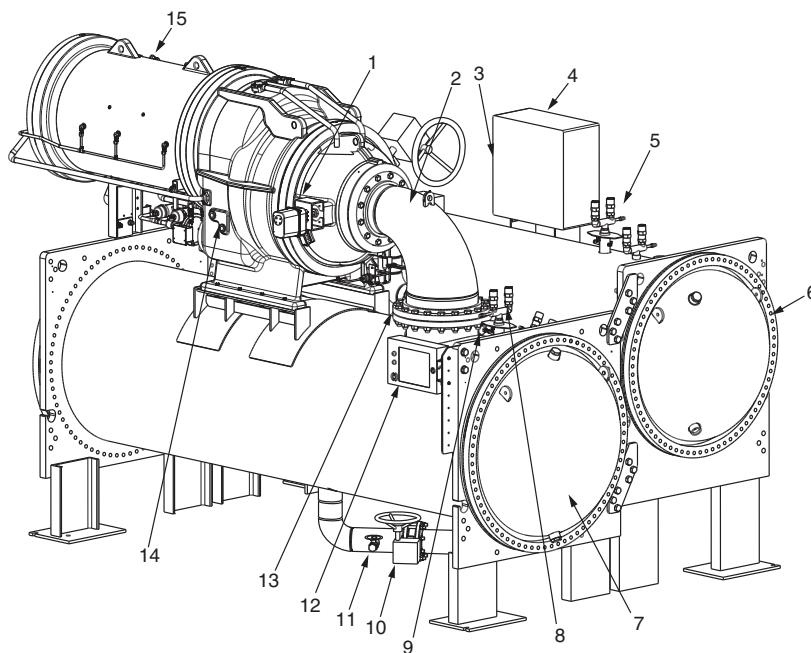


LEGEND

- 19 — Refrigerant Charging Valve/Pumpout Connection
- 20 — Evaporator Auto. Reset Relief Valves
- 21 — Motor Sight Glass
- 22 — Evaporator Waterbox Cover
- 23 — ASME Nameplate
- 24 — Vessel Take-Apart Connector
- 25 — Typical Waterbox Drain Port
- 26 — Condenser Waterbox Cover
- 27 — Refrigerant Moisture/Flow Indicator (hidden)
- 28 — Refrigerant Filter/Drier (hidden)
- 29 — Linear Float Valve Chamber Orifice
- 30 — Economizer Assembly
- 31 — Discharge Isolation Valve (optional)
- 32 — Economizer Float Ball Valve Assembly (far end of economizer assembly)
- 33 — Condenser Pressure Transducer

Fig. 5 — 19XR,XRV Two-Stage Compressor Frame Size C and E

FRONT VIEW

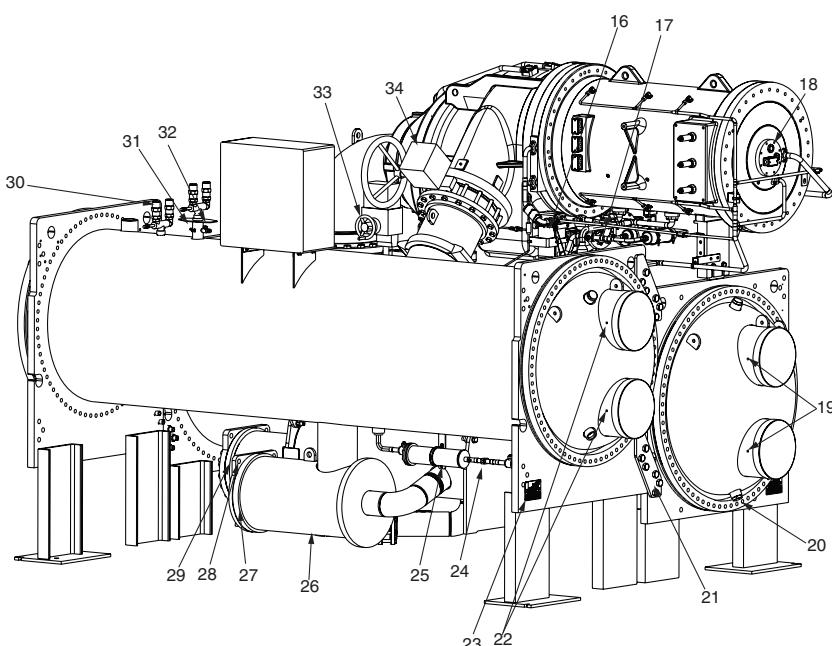


LEGEND

- 1 — Guide Vane Actuator*
- 2 — Suction Elbow
- 3 — Chiller Identification Nameplate
- 4 — Auxiliary Power Panel
- 5 — Condenser Auto. Reset Relief Valves
- 6 — Condenser Return End Waterbox Cover
- 7 — Evaporator Return End Waterbox Cover
- 8 — Evaporator Auto. Reset Relief Valves
- 9 — Evaporator 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

*See certified drawing for Frame 7 location.

REAR VIEW

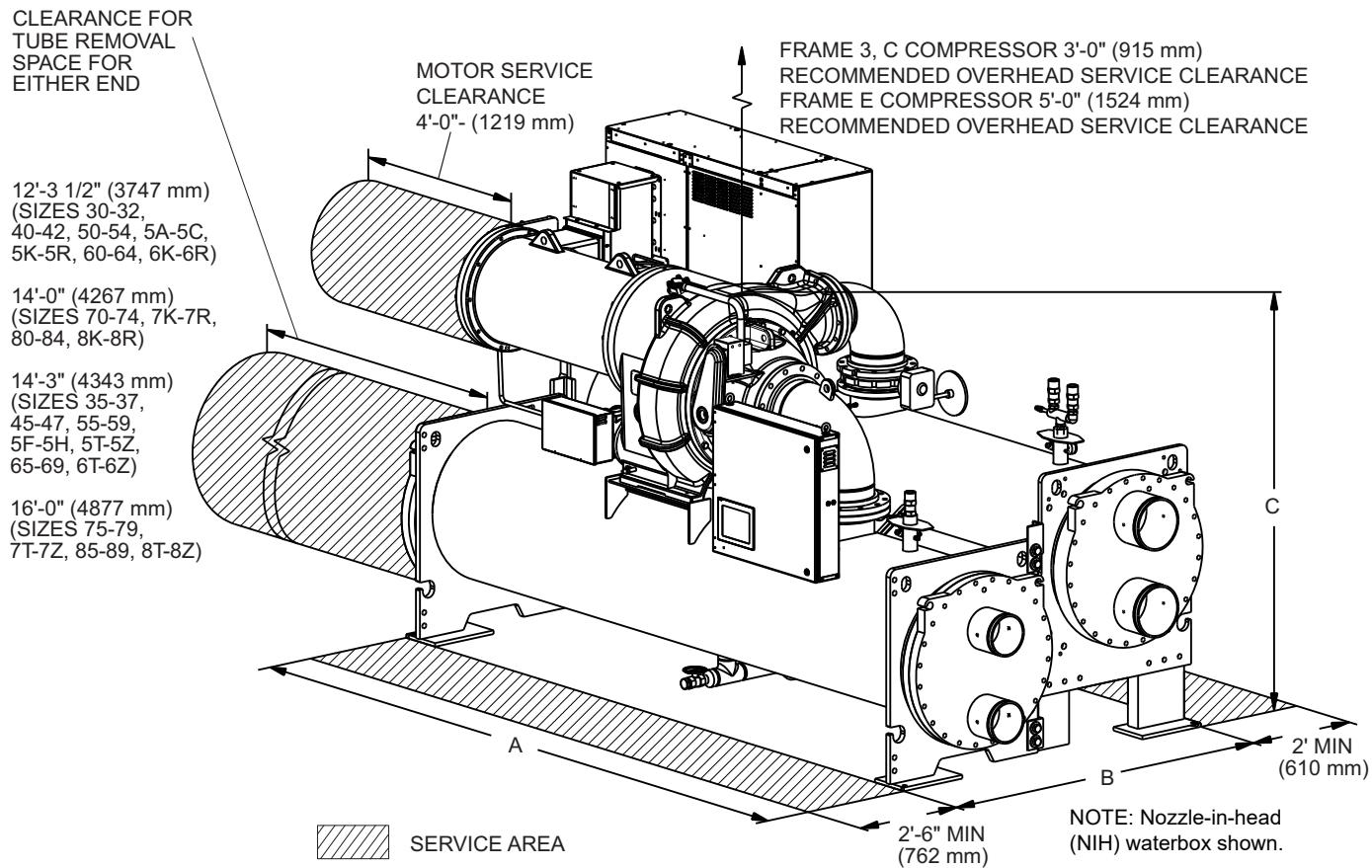


LEGEND

- 16 — Oil Evaporator
- 17 — Oil Drain Changing Valve (Hidden)
- 18 — Motor Sight Glass
- 19 — Evaporator 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 — Evaporator Auto. Reset Relief Valve
- 31 — Condenser Pressure Transducer
- 32 — Refrigerant Charging Valve/Pumpout
- 33 — Connection
- 34 — Damper Valve
- 35 — Discharge Isolation Valve (Optional)

NOTE: Frame 6 is shown.

Fig. 6 — 19XR Two-Stage Compressor Frame Sizes 6 and 7



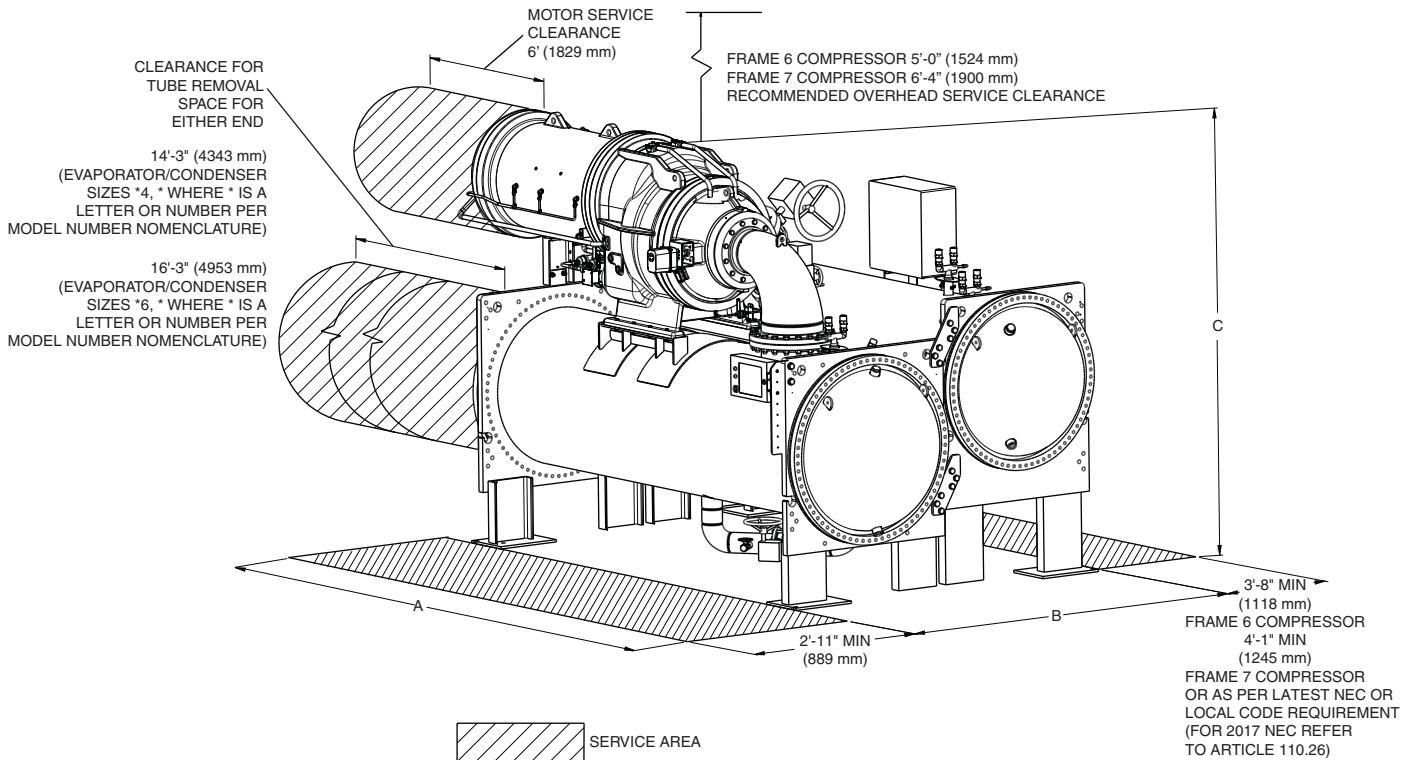
**19XR,XRV Dimensions — Single-Stage Compressor and Two-Stage Compressor
Frame Size C and E (Marine Waterbox)^{a,b,c,d,e,f,g}**

| HEAT EXCHANGER SIZE | A (LENGTH, MARINE WATERBOX) | | | | 19XR B WIDTH | | 19XRV B WIDTH | | 19XR,XRV C HEIGHT |
|------------------------|-----------------------------|------|--------------------------|------|-----------------|------|------------------|------|----------------------|
| | 2-Pass ^h | | 1 or 3-Pass ⁱ | | ft-in. | mm | ft-in. | mm | |
| 30 to 32 | 14-9 | 4496 | 16-4-3/4 | 4997 | 6-1-1/16 | 1856 | 6-1-1/16 | 1856 | |
| 35 to 37 | 16-5-1/2 | 5017 | 18-1-1/4 | 5518 | 6-1-1/16 | 1856 | 6-1-1/16 | 1856 | |
| 40 to 42 | 15-2-3/4 | 4642 | 16-8-1/4 | 5086 | 6-3-1/4 | 1911 | 6-3-1/4 | 1911 | |
| 45 to 47 | 16-11-1/4 | 5163 | 18-4-3/4 | 5607 | 6-3-1/4 | 1911 | 6-3-1/4 | 1911 | |
| 50 to 54, 5K to 5R | 15-3-1/2 | 4661 | 16-8-1/2 | 5093 | 6-8-7/8 | 2054 | 6-8-7/8 | 2054 | |
| 5A to 5C | 15-3-1/2 | 4661 | 16-8-1/2 | 5093 | 6-8-7/8 | 2054 | 6-8-7/8 | 2054 | |
| 55 to 59, 5T to 5Z | 17-0 | 5182 | 18-5 | 5613 | 6-8-7/8 | 2054 | 6-8-7/8 | 2054 | |
| 5F to 5H | 17-0 | 5182 | 18-5 | 5613 | 6-8-7/8 | 2054 | 6-8-7/8 | 2054 | |
| 60 to 64, 6K to 6R | 15-4-1/8 | 4677 | 16-8-3/4 | 5099 | 6-11-3/4 | 2127 | 6-11-3/4 | 2127 | |
| 65 to 69, 6T to 6Z | 17-0-5/8 | 5197 | 18-5-1/4 | 5620 | 6-11-3/4 | 2127 | 6-11-3/4 | 2127 | |
| 70 to 74, 7K to 7R | 18-3-5/8 | 5579 | 19-9-3/4 | 6039 | 8-8-1/8 | 2645 | 9-6-3/8 | 2905 | |
| 75 to 79, 7T to 7Z | 20-3-5/8 | 6188 | 21-9-3/4 | 6649 | 8-8-1/8 | 2645 | 9-6-3/8 | 2905 | |
| 80 to 84, 8K to 8R | 18-4 | 5583 | 19-10-1/2 | 6058 | 9-5-5/8 | 2886 | 10-5 | 3175 | |
| 85 to 89, 8T to 8Z | 20-4 | 6198 | 21-10-1/2 | 6668 | 9-5-5/8 | 2886 | 10-5 | 3175 | |

NOTE(S):

- a. 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.
- b. Allow at least 3 ft (915 mm) overhead clearance for service rigging for frame 3 compressor. Overhead clearance for service rigging and frame E compressor should be 5 ft (1524 mm).
- c. Dimensions are approximate. Certified drawings available upon request.
- d. Marine waterboxes may add 6 in. (152 mm) to the width of the machine. See certified drawings for details.
- e. 'A' length dimensions shown are for standard 150 psig (1034 kPa) design and Victaulic connections. The 300 psig (2068 kPa) design and/or flanges will add length. See certified drawings.
- f. 19XR,XRV heights can vary depending on the configuration. Check 19XR,XRV certified drawings for height information.
- g. Not all waterbox/pass combinations are available with unit-mounted VFD (variable frequency drive). Check selection program for availability.
- h. Assumes both evaporator and condenser nozzles on same end of chiller.
- i. 1 or 3-pass length applies if evaporator is a 1 or 3-pass design.

Fig. 7 — 19XRV Dimensions



NOTE: Compressor Frame Size 6, dished head waterbox shown.

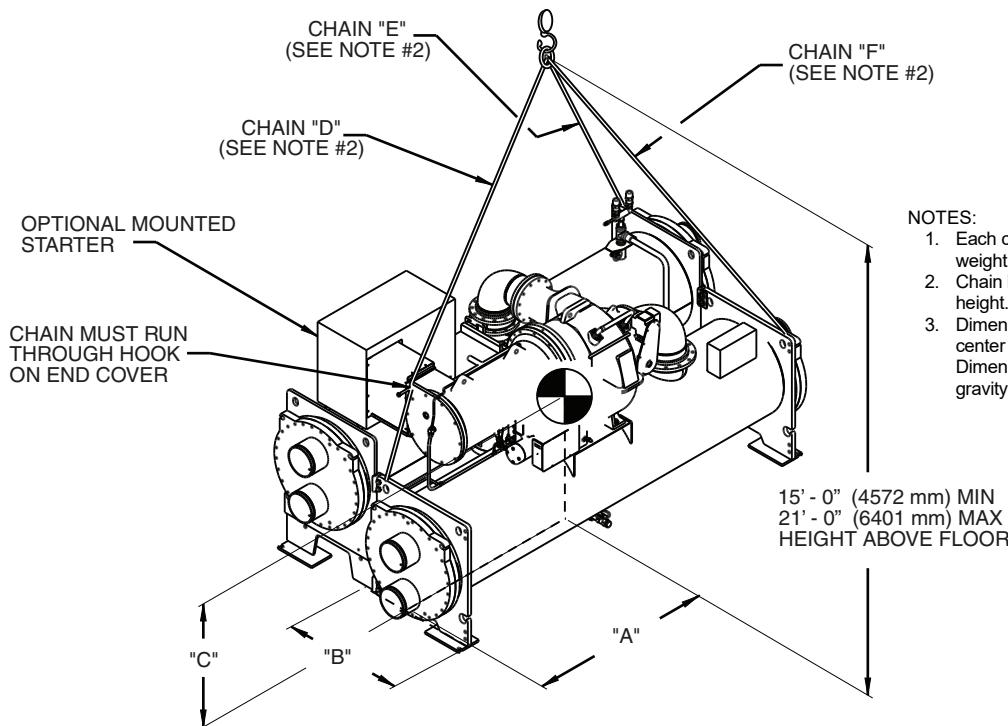
**19XR Dimensions — Two-Stage Compressor Frame Sizes 6 and 7
(Dished Head Waterbox)^{a,b,c,d,e,f}**

| EVAPORATOR 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 | ft-in. | mm | |
| A4 | A4 | 17- 8 | 5385 | 17- 6-3/4 | 5353 | 17- 6-3/4 | 5353 | 10- 3-1/8 | 3127 | See Note f |
| 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 | |
| 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 | |
| C8 | D8 | 20- 0 | 6096 | 21- 11-1/8 | 6684 | 21- 9 | 6629 | 13- 2 | 4013 | |

NOTE(S):

- 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.
- Allow at least 5 ft (1524 mm) overhead clearance for service rigging.
- Dimensions are approximate. Certified drawings available upon request.
- 'A' length dimensions shown are for standard 150 psig (1034 kPa) design and flanged connections.
- Table contains heat exchanger dimensions for largest type shown.
- 19XR heights can vary depending on the configuration. Check 19XR certified drawings for height information.

Fig. 8 — 19XR Dimensions — Two-Stage Compressor Frame Sizes 6 and 7



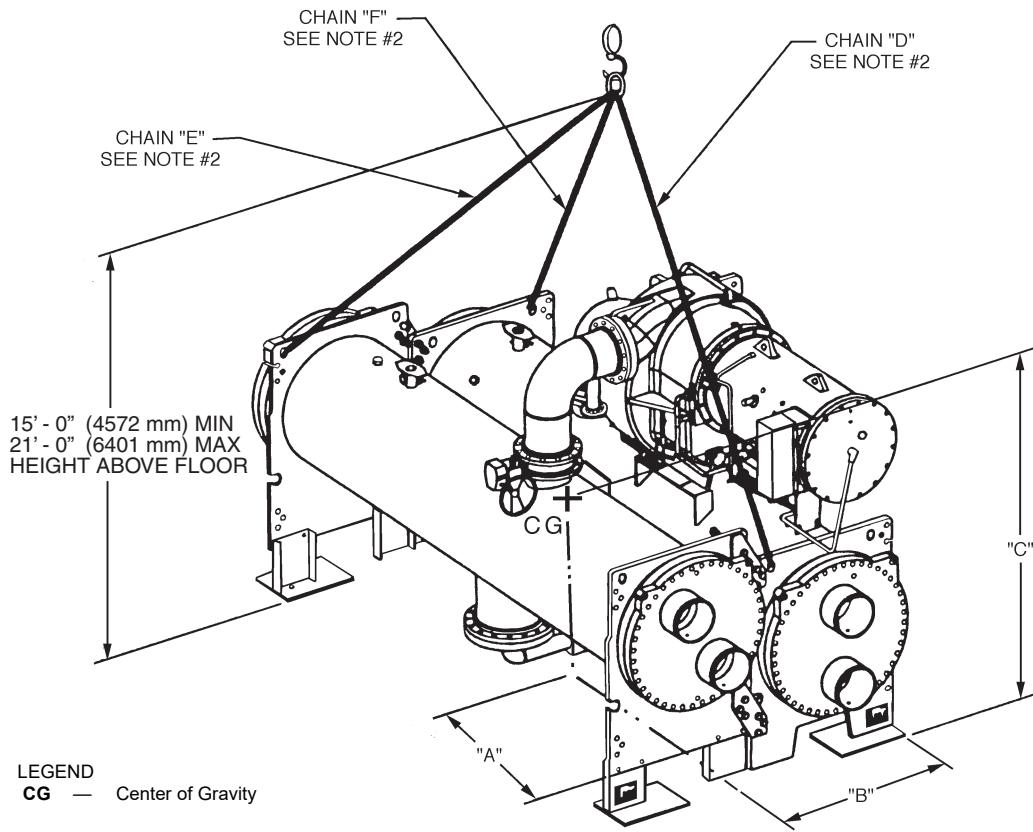
MACHINE RIGGING GUIDE

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 15' (4572 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.

| COMP FRAME SIZE | HEAT EXCH SIZE | MAXIMUM MACHINE WEIGHT FREE-STANDING Unit-Mounted Starter | | VESSEL LENGTH | DIM. "A" | | DIM. "B" | | DIM. "C" | | CHAIN LENGTH | | | | | | |
|-----------------------|----------------------|--|-------|------------------|----------|------|----------|------|----------|------|--------------|------|--------|------|--------|------|------|
| | | lb | kg | | ft | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | |
| 3 | 30-32 | 21,210 | 9620 | 12 | 3658 | 5-9 | 1753 | 2-6 | 762 | 3-6 | 1067 | 13-6 | 4115 | 13-2 | 4013 | 13-3 | 4039 |
| | 35-37 | 22,720 | 10306 | 14 | 4267 | 7-4 | 2235 | 2-6 | 762 | 3-6 | 1067 | 14-2 | 4318 | 13-4 | 4064 | 13-4 | 4064 |
| | 40-42 | 29,930 | 13576 | 12 | 3658 | 5-9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-8 | 3861 | 12-8 | 3861 | 13-4 | 4064 |
| | 45-47 | 32,040 | 14533 | 14 | 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-2 | 4013 | 13-8 | 4166 |
| | 50-54 | 31,603 | 14335 | 12 | 3658 | 5-9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-7 | 3835 | 12-9 | 3886 | 13-5 | 4089 |
| | 5K-5R | 31,603 | 14355 | 12 | 3658 | 5-9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-7 | 3835 | 12-9 | 3886 | 13-5 | 4089 |
| | 55-59 | 33,631 | 15255 | 14 | 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-3 | 4039 | 13-9 | 4191 |
| | 5T-5Z | 33,631 | 15255 | 14 | 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-3 | 4039 | 13-9 | 4191 |
| C | 50-54 | 27,868 | 12641 | 12 | 3658 | 5-10 | 1778 | 2-8 | 813 | 3-11 | 1194 | 12-8 | 3861 | 12-0 | 3658 | 12-8 | 3861 |
| | 5A-5C | 27,868 | 12641 | 12 | 3658 | 5-10 | 1778 | 2-8 | 813 | 3-11 | 1194 | 12-8 | 3861 | 12-0 | 3658 | 12-8 | 3861 |
| | 5K-5R | 27,868 | 12641 | 12 | 3658 | 5-10 | 1778 | 2-8 | 813 | 3-11 | 1194 | 12-8 | 3861 | 12-0 | 3658 | 12-8 | 3861 |
| | 55-59 | 29,311 | 13295 | 14 | 4267 | 6-6 | 1981 | 2-10 | 864 | 3-11 | 1194 | 13-1 | 3988 | 12-8 | 3861 | 13-2 | 4013 |
| | 5F-5H | 29,311 | 13295 | 14 | 4267 | 6-6 | 1981 | 2-10 | 864 | 3-11 | 1194 | 13-1 | 3988 | 12-8 | 3861 | 13-2 | 4013 |
| | 5T-5Z | 29,311 | 13295 | 14 | 4267 | 6-6 | 1981 | 2-10 | 864 | 3-11 | 1194 | 13-1 | 3988 | 12-8 | 3861 | 13-2 | 4013 |
| | 60-64 | 30,951 | 14039 | 12 | 3658 | 6-0 | 1829 | 3-0 | 914 | 4-6 | 1372 | 12-3 | 3734 | 11-4 | 3454 | 12-0 | 3658 |
| | 6K-6R | 30,951 | 14039 | 12 | 3658 | 6-0 | 1829 | 3-0 | 914 | 4-6 | 1372 | 12-3 | 3734 | 11-4 | 3454 | 12-0 | 3658 |
| | 65-69 | 32,906 | 14926 | 14 | 4267 | 6-7 | 2007 | 3-1 | 940 | 4-6 | 1372 | 12-8 | 3861 | 12-0 | 3658 | 12-8 | 3861 |
| | 6T-6Z | 32,906 | 14926 | 14 | 4267 | 6-7 | 2007 | 3-1 | 940 | 4-6 | 1372 | 12-8 | 3861 | 12-0 | 3658 | 12-8 | 3861 |
| | 70-74 | 44,023 | 19968 | 14 | 4267 | 6-11 | 2108 | 3-7 | 1092 | 4-4 | 1321 | 13-5 | 4089 | 12-0 | 1829 | 12-4 | 3759 |
| | 7K-7R | 44,023 | 19968 | 14 | 4267 | 6-11 | 2108 | 3-7 | 1092 | 4-4 | 1321 | 13-5 | 4089 | 12-0 | 1829 | 12-4 | 3759 |
| | 75-79 | 46,612 | 21143 | 16 | 7801 | 7-8 | 2337 | 3-8 | 1118 | 4-4 | 1321 | 14-1 | 4293 | 12-8 | 2032 | 13-1 | 3988 |
| | 7T-7Z | 46,612 | 21143 | 16 | 7801 | 7-8 | 2337 | 3-8 | 1118 | 4-4 | 1321 | 14-1 | 4293 | 12-8 | 2032 | 13-1 | 3988 |

Fig. 9 — Machine Rigging Guide (Heat Exchanger Size 30 Through 7Z) with Free-Standing or Unit-Mounted Starter



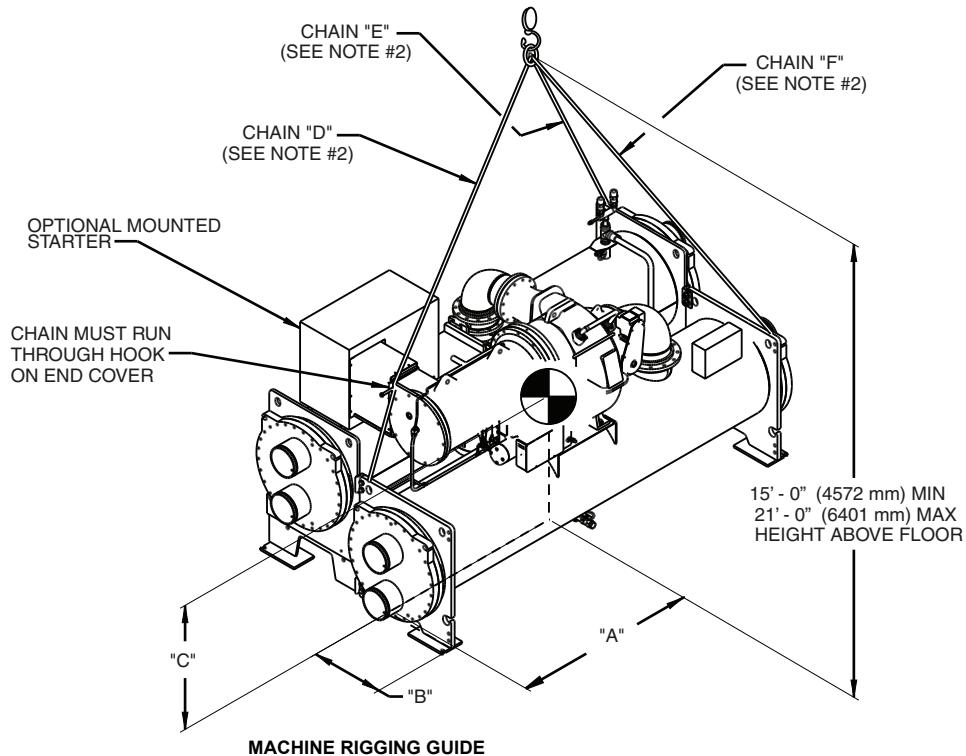
MACHINE RIGGING GUIDE

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 15' (4572 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.

| COMP FRAME SIZE | HEAT EXCH SIZE | MAXIMUM MACHINE WEIGHT | | VESSEL LENGTH | | DIM. "A" | | DIM. "B" | | DIM. "C" | | CHAIN LENGTH | | | | | |
|-----------------------|----------------------|------------------------------|-------|------------------|------|----------|------|----------|------|----------|------|--------------|------|--------|------|--------|------|
| | | lb | kg | ft | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm |
| E | 70-74 | 46,906 | 21276 | 14 | 4267 | 6-4 | 1930 | 3-11 | 1194 | 4-6 | 1372 | 11-5 | 3480 | 12-3 | 3734 | 12-6 | 3810 |
| | 7K-7R | 46,906 | 21276 | 14 | 4267 | 6-4 | 1930 | 3-11 | 1194 | 4-6 | 1372 | 11-5 | 3480 | 12-3 | 3734 | 12-6 | 3810 |
| | 75-79 | 50,693 | 22994 | 16 | 4877 | 7-5 | 2261 | 3-11 | 1194 | 4-6 | 1372 | 12-1 | 3683 | 12-9 | 3887 | 13-2 | 4013 |
| | 7T-7Z | 50,693 | 22994 | 16 | 4877 | 7-5 | 2261 | 3-11 | 1194 | 4-6 | 1372 | 12-1 | 3683 | 12-9 | 3887 | 13-2 | 4013 |
| | 80-84 | 56,870 | 25796 | 14 | 4267 | 6-4 | 1930 | 3-11 | 1194 | 4-6 | 1372 | 11-5 | 3480 | 12-3 | 3734 | 12-6 | 3810 |
| | 8K-8R | 56,870 | 25796 | 14 | 4267 | 6-4 | 1930 | 3-11 | 1194 | 4-6 | 1372 | 11-5 | 3480 | 12-3 | 3734 | 12-6 | 3810 |
| | 85-89 | 60,560 | 27470 | 16 | 4877 | 7-5 | 2261 | 3-11 | 1194 | 4-6 | 1372 | 12-1 | 3683 | 12-9 | 3887 | 13-2 | 4013 |
| | 8T-8Z | 60,560 | 27470 | 16 | 4877 | 7-5 | 2261 | 3-11 | 1194 | 4-6 | 1372 | 12-1 | 3683 | 12-9 | 3887 | 13-2 | 4013 |

Fig. 10 — Machine Rigging Guide (Heat Exchanger Size 70 Through 8Z) with Free-Standing or Unit-Mounted Starter



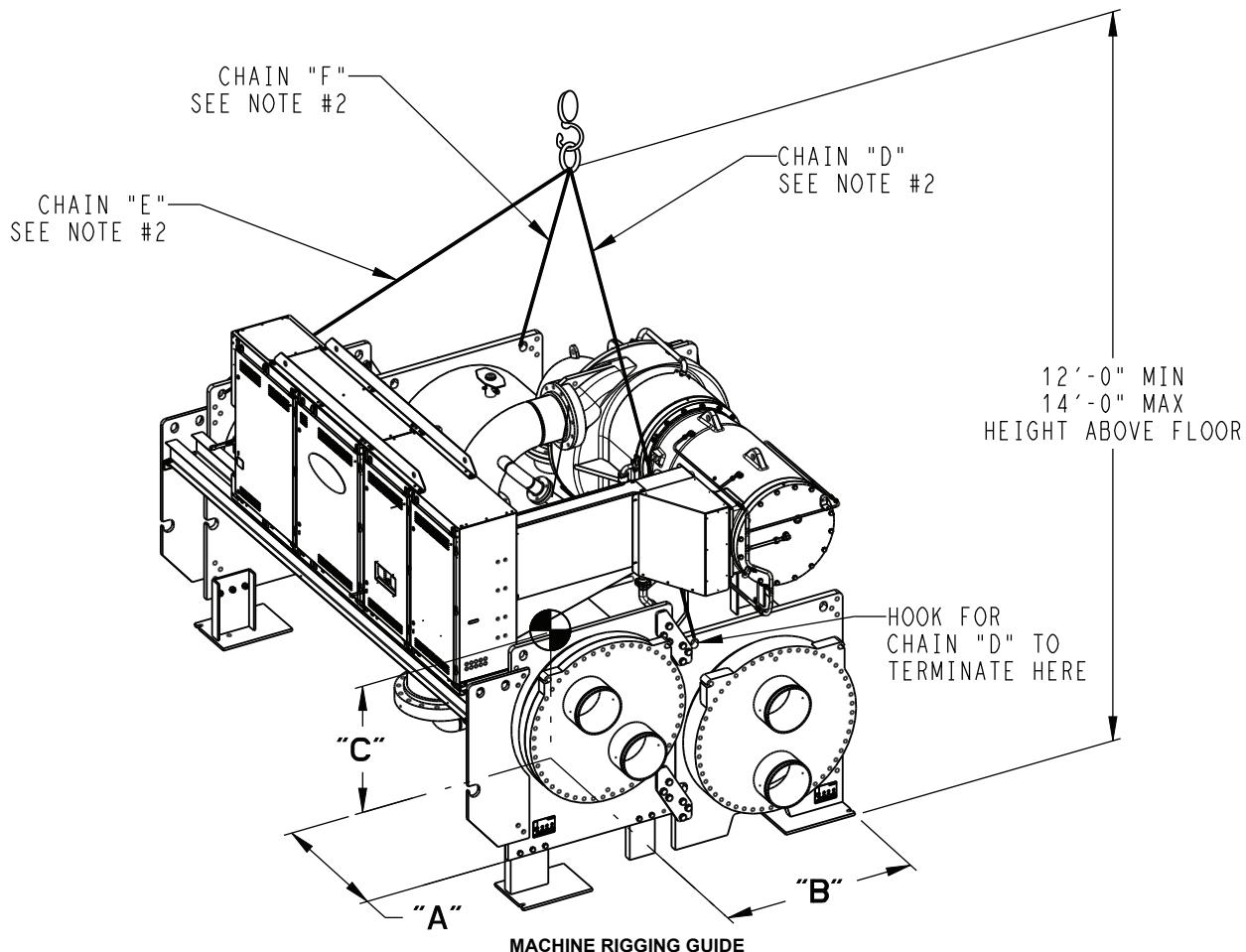
MACHINE RIGGING GUIDE

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 15' (4572 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.

| COMP FRAME SIZE | HEAT EXCH SIZE | MAXIMUM MACHINE WEIGHT | VESSEL LENGTH | DIM. "A" | | DIM. "B" | | DIM. "C" | | CHAIN LENGTH | | | | | |
|-----------------------|----------------------|------------------------------|------------------|----------|------|----------|------|----------|------|--------------|------|--------|------|--------|------|
| | | | | lb | kg | ft | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm |
| 3 | 30-32 | 24,510 11 118 | 12 3658 | 5- 9 | 1753 | 2-6 | 762 | 3-6 | 1067 | 13-6 | 4115 | 13-2 | 4013 | 13- 3 | 4039 |
| | 35-37 | 26,020 11 802 | 14 4267 | 7- 4 | 2235 | 2-6 | 762 | 3-6 | 1067 | 14-2 | 4318 | 13-4 | 4064 | 13- 4 | 4064 |
| | 40-42 | 33,230 15 073 | 12 3658 | 5- 9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-8 | 3861 | 12-8 | 3861 | 13- 4 | 4064 |
| | 45-47 | 35,340 16 030 | 14 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-2 | 4013 | 13- 8 | 4166 |
| | 50-54 | 34,103 15 481 | 12 3658 | 5- 9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-7 | 3835 | 12-9 | 3886 | 13- 5 | 4089 |
| | 5K-5R | 34,103 15 481 | 12 3658 | 5- 9 | 1753 | 2-7 | 787 | 3-2 | 965 | 12-7 | 3835 | 12-9 | 3886 | 13- 5 | 4089 |
| | 55-59 | 36,131 16 389 | 14 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-3 | 4039 | 13- 9 | 4191 |
| | 5T-5Z | 36,131 16 389 | 14 4267 | 6-10 | 2083 | 2-7 | 787 | 3-2 | 965 | 13-1 | 3988 | 13-3 | 4039 | 13- 9 | 4191 |
| C | 50-54 | 30,868 14 001 | 12 3658 | 6- 0 | 1829 | 3-4 | 1016 | 4-2 | 1270 | 12-8 | 3861 | 11-9 | 3581 | 12- 8 | 3861 |
| | 5A-5C | 30,868 14 001 | 12 3658 | 6- 0 | 1829 | 3-4 | 1016 | 4-2 | 1270 | 12-8 | 3861 | 11-9 | 3581 | 12- 8 | 3861 |
| | 5K-5R | 30,868 14 001 | 12 3658 | 6- 0 | 1829 | 3-4 | 1016 | 4-2 | 1270 | 12-8 | 3861 | 11-9 | 3581 | 12- 8 | 3861 |
| | 55-59 | 32,311 14 656 | 14 4267 | 6- 7 | 2007 | 3-4 | 1016 | 4-2 | 1270 | 13-1 | 3988 | 12-6 | 3810 | 13- 4 | 4064 |
| | 5F-5H | 32,311 14 656 | 14 4267 | 6- 7 | 2007 | 3-4 | 1016 | 4-2 | 1270 | 13-1 | 3988 | 12-6 | 3810 | 13- 4 | 4064 |
| | 5T-5Z | 32,311 14 656 | 14 4267 | 6- 7 | 2007 | 3-4 | 1016 | 4-2 | 1270 | 13-1 | 3988 | 12-6 | 3810 | 13- 4 | 4064 |
| | 60-64 | 33,951 15 400 | 12 3658 | 6- 0 | 1829 | 3-6 | 1067 | 4-8 | 1422 | 12-4 | 3759 | 11-4 | 3454 | 12- 4 | 3759 |
| | 6K-6R | 33,951 15 400 | 12 3658 | 6- 0 | 1829 | 3-6 | 1067 | 4-8 | 1422 | 12-4 | 3759 | 11-4 | 3454 | 12- 4 | 3759 |
| | 65-69 | 35,906 16 287 | 14 4267 | 6- 7 | 2007 | 3-6 | 1067 | 4-8 | 1422 | 12-8 | 3861 | 12-0 | 3759 | 12-10 | 3912 |
| | 6T-6Z | 35,906 16 287 | 14 4267 | 6- 7 | 2007 | 3-6 | 1067 | 4-8 | 1422 | 12-8 | 3861 | 12-0 | 3759 | 12-10 | 3912 |

Fig. 11 — Machine Rigging Guide (Heat Exchanger Size 30 Through 6Z) with LF2 VFD (442 or 608A), Standard Tier VFD (230, 335, 445A or DD588, DE658, DE745, DE800 Drives), or 575-v VFD



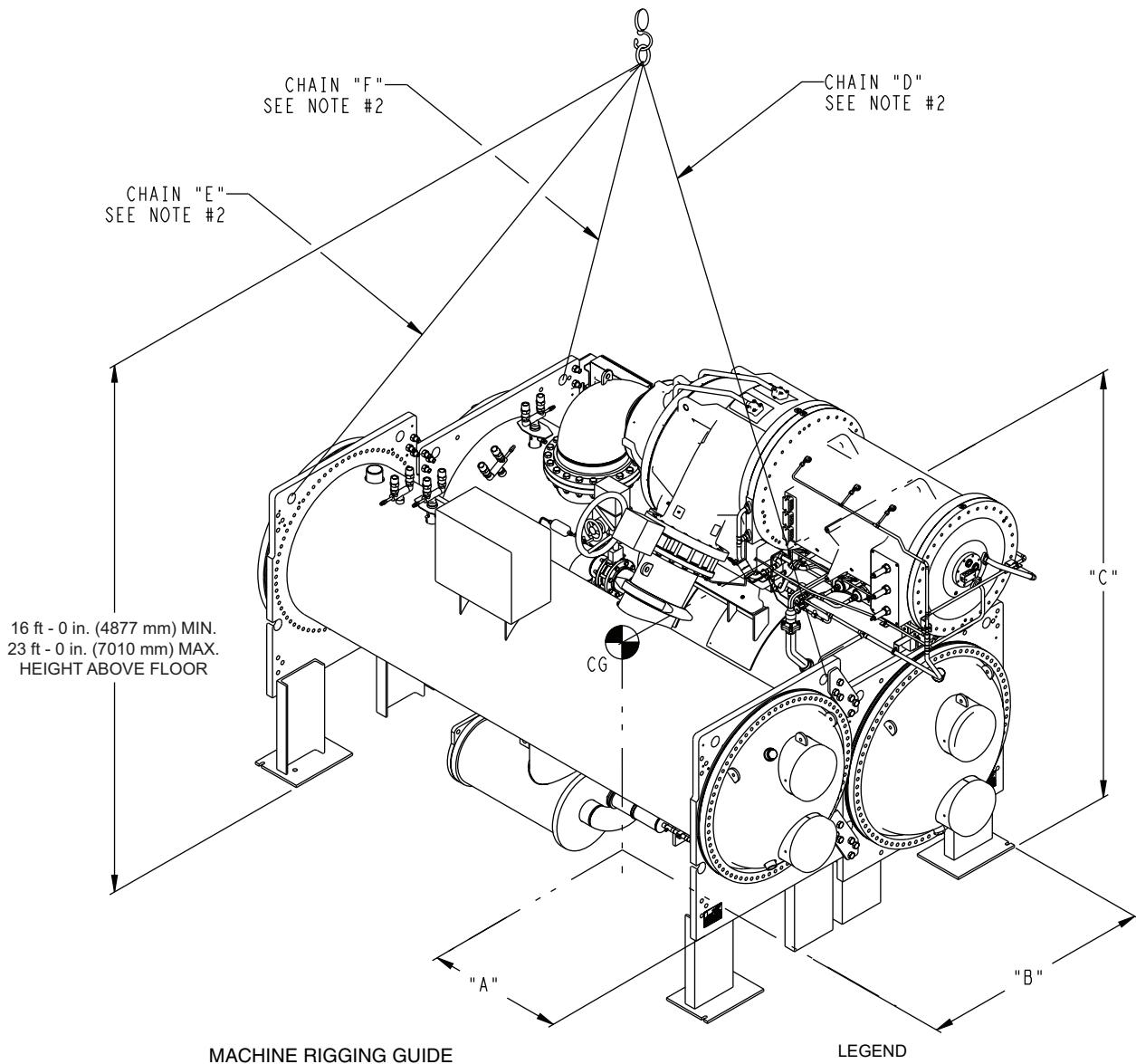
MACHINE RIGGING GUIDE

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 13' (3962 mm) lifting height. Some minor adjustments may be required.
3. Dimensions "A" and "B" define distance from machine center of gravity to tube sheet outer-most surfaces. Dimension "C" defines distance from machine center of gravity to floor.
4. Care must be taken to prevent damage to the machine while threading chain "D" between drive, conduit, and piping.

| COMP. FRAME | MACHINE CODE | MAXIMUM WEIGHT | | VESSEL LENGTH | | DIM. "A" | | DIM. "B" | | DIM. "C" | | CHAIN LENGTH | | | | | |
|----------------|-----------------|-------------------|-------|------------------|------|------------|------|----------|------|-----------|------|--------------|------|--------|------|---------|------|
| | | lb | kg | ft | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | | |
| C | 70-74, 7K-7R | 47,023 | 21329 | 14 | 4267 | 6 - 10-1/2 | 2096 | 4 | 1219 | 4 - 7 | 1397 | 10 - 3 | 3124 | 10 - 4 | 3150 | 10 - 10 | 3302 |
| | 75-79, 7T-7Z | 49,612 | 22504 | 16 | 4877 | 7 - 8 | 2337 | 4 | 1219 | 4 - 6-1/2 | 1384 | 10 - 9 | 3277 | 11 - 3 | 3429 | 11 - 9 | 3581 |
| E | 70-74, 7K-7R | 55,926 | 25368 | 14 | 4267 | 6 - 2 | 1880 | 4 - 7 | 1397 | 4 - 11 | 1499 | 9 - 9 | 2972 | 10 - 9 | 3277 | 11 - 7 | 3531 |
| | 75-79, 7T-7Z | 60,073 | 27249 | 16 | 4877 | 7 - 1 | 2159 | 4 - 7 | 1397 | 4 - 11 | 1499 | 10 - 4 | 3150 | 11 - 7 | 3531 | 12 - 4 | 3759 |
| | 80-84, 8K-8R | 65,750 | 29824 | 14 | 4267 | 6 - 2 | 1880 | 4 - 7 | 1397 | 4 - 11 | 1499 | 9 - 9 | 2972 | 10 - 9 | 3277 | 11 - 7 | 3531 |
| | 85-89, 8T-8Z | 69,835 | 31677 | 16 | 4877 | 7 - 1 | 2159 | 4 - 7 | 1397 | 4 - 11 | 1499 | 10 - 4 | 3150 | 11 - 7 | 3531 | 12 - 4 | 3759 |

Fig. 12 — Machine Rigging Guide (Compressor Frame C and E)



MACHINE RIGGING GUIDE

NOTES:

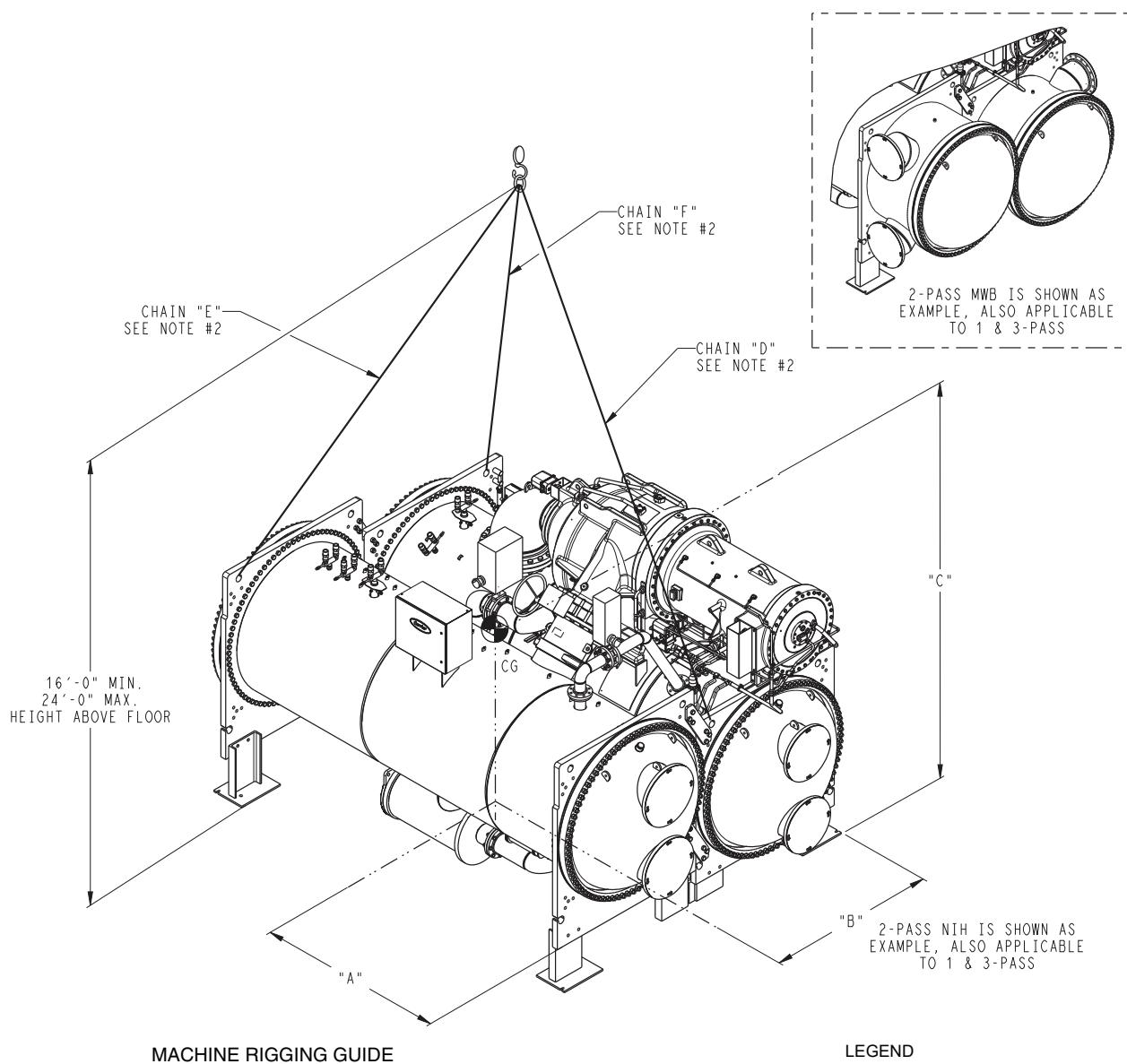
1. Each chain must be capable of supporting the entire weight of the machine. See chart for maximum weights.
2. Chain lengths shown are typical for 16' (4877 mm) lifting height. Some minor adjustments may be required.
3. Dimensions "A" and "B" define distance from machine center of gravity to tube sheet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

LEGEND

MWB — Marine Waterbox
NIH — Nozzle in Head

| HEAT EXCHANGER CODE (COOLER—CONDENSER) | COMPRESSOR FRAME | NIH 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 [29526] | 76,501 [34700] | 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 [31419] | 80,673 [36953] | 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 [30972] | 81,556 [36993] | 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 [33026] | 86,084 [39047] | 16 [4877] | 77.87 [1978] | 58.46 [1485] | 70.39 [1788] | 141.54 [3595] | 166.97 [4241] | 172.05 [4370] |

Fig. 13 — Machine Rigging Guide (Compressor Frame Size 6)



LEGEND

MWB — Marine Waterbox
NIH — Nozzle in Head

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.

| HEAT EXCHANGER CODE (COOLER— CONDENSER) | COMPRESSOR FRAME | NIH 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] |
| C8—D8 | 7 | 121,971 [55,325] | 146,897 [66,631] | 18 [5486] | 89.31 [2268] | 73.43 [1865] | 73.66 [1871] | 171.76 [4363] | 195.77 [4973] | 203.72 [5174] |

Fig. 14 — Machine Rigging Guide (Compressor Frame Size 7)

Table 1 — 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 |
| 3 | 10 | 8 | 6 | 10 | 8 | 6 |
| 4 | 10 | 8 | 6 | 10 | 8 | 6 |
| 5 | 10 | 8 | 6 | 10 | 10 | 8 |
| 6 | 10 | 10 | 8 | 10 | 10 | 8 |
| 7 | 14 | 12 | 10 | 14 | 12 | 12 |
| 8 | 14 | 14 | 12 | 14 | 14 | 12 |
| 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 2 — 19XRV Dimensions (Marine Waterbox)^{a,b,c,d,e,f,g,h}

| HEAT EXCHANGER SIZE | A (Length, Marine Waterbox) | | | | | | B WIDTH | | C HEIGHT | |
|------------------------|-----------------------------|------|---------------------|------|-----------|------|------------|------|------------|--|
| | 1-Pass | | 2-Pass ⁱ | | 3-Pass | | | | | |
| | ft-in. | mm | ft-in. | mm | ft-in. | mm | ft-in. | mm | | |
| 30 to 32 | 16- 4-3/4 | 4997 | 14- 9 | 4496 | 16- 4-3/4 | 4997 | 6- 1-1/16 | 1856 | See Note g | |
| 35 to 37 | 18- 1-1/4 | 5518 | 16- 5-1/2 | 5017 | 18- 1-1/4 | 5518 | 6- 1-1/16 | 1856 | | |
| 40 to 42 | 16- 8-1/4 | 5086 | 15- 2-3/4 | 4642 | 16- 8-1/4 | 5086 | 6- 3-1/4 | 1911 | | |
| 45 to 47 | 18- 4-3/4 | 5607 | 16-11-1/4 | 5163 | 18- 4-3/4 | 5607 | 6- 3-1/4 | 1911 | | |
| 50 to 54, 5K to 5R | 16- 8-1/2 | 5093 | 15- 3-1/2 | 4661 | 16- 8-1/2 | 5093 | 6- 8-7/8 | 2054 | | |
| 5A to 5C | 16- 8-1/2 | 5093 | 15- 3-1/2 | 4661 | 16- 8-1/2 | 5093 | 6- 8-7/8 | 2054 | | |
| 55 to 59, 5T to 5Z | 18- 5 | 5613 | 17- 0 | 5182 | 18- 5 | 5613 | 6- 8-7/8 | 2054 | | |
| 5F to 5H | 18- 5 | 5613 | 17- 0 | 5182 | 18- 5 | 5613 | 6- 8-7/8 | 2054 | | |
| 60 to 64, 6K to 6R | 16- 8-3/4 | 5099 | 15- 4-1/8 | 4677 | 16- 8-3/4 | 5099 | 6-11-3/4 | 2127 | | |
| 65 to 69, 6T to 6Z | 18- 5-1/4 | 5620 | 17- 0-5/8 | 5197 | 18- 5-1/4 | 5620 | 6-11-3/4 | 2127 | | |
| 70 to 74, 7K to 7R | 19- 9-3/4 | 6039 | 18- 3-5/8 | 5579 | 19- 9-3/4 | 6039 | 9- 6-3/8 | 2905 | | |
| 75 to 79, 7T to 7Z | 21- 9-3/4 | 6649 | 20- 3-5/8 | 6188 | 21- 9-3/4 | 6649 | 9- 6-3/8 | 2905 | | |
| 80 to 84, 8K to 8R | 19-10-1/2 | 6058 | 18- 4 | 5583 | 19-10-1/2 | 6058 | 10- 5 | 3175 | | |
| 85 to 87, 8T to 8Z | 21-10-1/2 | 6668 | 20- 4 | 6198 | 21-10-1/2 | 6668 | 10- 5 | 3175 | | |
| A4 | 23- 1-3/4 | 7055 | 21- 8-1/2 | 6617 | 20-11 | 6375 | 10- 6-3/8 | 3210 | | |
| A6 | 25- 1-3/4 | 7665 | 23- 8-1/2 | 7226 | 22-11 | 6985 | 10- 6-3/8 | 3210 | | |
| A4 | 23- 1-3/4 | 7055 | 22- 1-3/4 | 6750 | 21- 1-3/4 | 6446 | 11- 0-1/8 | 3356 | | |
| A6 | 25- 1-3/4 | 7665 | 24- 1-3/4 | 7360 | 23- 1-3/4 | 7055 | 11- 0-1/8 | 3356 | | |
| B6 | 26- 6-3/4 | 8097 | 25- 2-1/2 | 7680 | 24- 2-3/4 | 7385 | 12- 3-7/8 | 3756 | See Note e | |
| B8 | 28- 6-3/4 | 8706 | 27- 2-1/2 | 8293 | 26- 2-3/4 | 7994 | 12- 10-3/8 | 3921 | | |
| C6 | 26- 6-3/4 | 8097 | 25- 4-7/8 | 7744 | 24- 2-3/4 | 8097 | 12- 3-7/8 | 3756 | | |
| C6 | 26-11 | 8204 | 25- 7-1/8 | 7801 | 24- 7 | 7493 | 13- 6-5/8 | 4131 | | |

NOTE(S):

- a. Service access should be provided per ASHRAE 15, latest edition, NFPA 70, and local safety code.
- b. Allow at least 3 ft (915 mm) overhead clearance for service rigging for frame 3 compressor. 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).
- c. Dimensions are approximate. Certified drawings available upon request.
- d. Marine waterboxes may add 6 in. to the width of the machine. See certified drawings for details.
- e. 19XR height can vary depending on the configuration. Check 19XR certified drawings for height information.
- f. "A" length dimensions shown are for standard 150-psig design and Victaulic connections. The 300-psig design and/or flanges will add length. See certified drawings.
- g. The 19XRV height can vary depending on the configuration. Check 19XRV certified drawings for height information.
- h. 1 or 3-pass length applies if cooler is a 1 or 3-pass design.
- i. Assumes both cooler and condenser nozzles on same end of chiller.

Table 3 — 19XR Component Weights, Frame 3,C,E^{a,b,c}

| COMPONENT | FRAME 3 COMPRESSOR | | FRAME C COMPRESSOR | | FRAME E COMPRESSOR | |
|--|--------------------|-----|--------------------|------|--------------------|------|
| | lb | kg | lb | kg | lb | kg |
| Suction Elbow | 185 | 84 | 303 | 137 | 337 | 171 |
| Discharge Elbow | 125 | 57 | 245 | 111 | 427 | 194 |
| Control Panel^d | 92 | 72 | 92 | 42 | 92 | 42 |
| Optional Cooler Inlet Isolation Valve | 13 | 6 | 24 | 11 | 24 | 11 |
| Optional Discharge Isolation Valve | 46 | 21 | 93 | 42 | 93 | 42 |
| Std Tier VFD — 380, 400, and 460-v (230, 335, 445 A) | 650 | 295 | 650 | 295 | — | — |
| Std Tier VFD — 380, 400, and 460-v (DD588) | 275 | 125 | 275 | 125 | — | — |
| Std Tier VFD — 380, 400, and 460-v (DE658, DE745, DE800) | 650 | 295 | 650 | 295 | — | — |
| Std Tier VFD — 380, 400, and 460-v (DE800, DE990) | — | — | 700 | 318 | 700 | 318 |
| Std Tier VFD — 380, 400, and 460-v (DP1120, DP1260, DP1460) | — | — | 3000 | 1361 | 3000 | 1361 |
| Std Tier VFD — 380, 400, and 460-v (DP1670) | — | — | — | — | 3400 | 1542 |
| LiquiFloTMe 2 VFD — 380, 400, and 460-v (442 A) | 1600 | 726 | — | — | — | — |
| LiquiFlo 2 VFD — 380, 400, and 460-v (608 A) | 1600 | 726 | — | — | — | — |
| LiquiFlo 2 VFD — 380, 400, and 460-v (900 A) | — | — | 2800 | 1270 | 2800 | 1270 |
| LiquiFlo 2 VFD — 380, 400, and 460-v (1200 A) | — | — | 2850 | 1293 | 2850 | 1293 |
| LiquiFlo 2 VFD — 575-v (390 A) | 2200 | 998 | — | — | — | — |
| VFD Shelf (Rockwell VFD) | — | — | 1049 | 476 | 1049 | 476 |
| VFD Shelf (Danfoss VFD) | — | — | 1395 | 633 | 1499 | 680 |

NOTE(S):

- VFD sizes are available on select heat exchanger models; consult the 19XR,XRV Computer Selection program.
- VFD Power Panel (DD558, DE658, DE745, DE800, DE880, DE990) used on frames 3, C, E = 300 lb (136 kg).
- To determine compressor frame size, refer to 19XR,XRV Computer Selection Program.
- Included in total cooler weight.
- Third-party trademarks and logos are the property of their respective owners.

Table 4 — 19XR Component Weights, Frame 6,7^a

| 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 |

NOTE(S):

- Variable frequency drive (VFD) sizes are available on select heat exchanger models; consult the 19XR,XRV Computer Selection program.

Table 5 — 19XR,XRV Compressor and Motor Weights^a — High-Efficiency Motors, Compressor Frame Size 3^b

| MOTOR CODE | ENGLISH (lb) | | | | | | SI (kg) | | | | | |
|---|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|
| | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight |
| | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | |
| HIGH-EFFICIENCY MOTORS / LOW VOLTAGE (200-575 V) | | | | | | | | | | | | |
| KCH | 2816 | 1353 | 285 | 1381 | 291 | 274 | 1277 | 614 | 129 | 626 | 132 | 124 |
| KEH | 2816 | 1417 | 307 | 1441 | 313 | 274 | 1277 | 643 | 139 | 654 | 142 | 124 |
| KGH | 2816 | 1470 | 320 | 1505 | 333 | 274 | 1277 | 667 | 145 | 683 | 151 | 124 |
| KHH | 2816 | 1505 | 333 | — | — | 274 | 1277 | 683 | 151 | — | — | 124 |
| UC | 2816 | 1391 | 330 | 1419 | 344 | 274 | 1277 | 631 | 150 | 644 | 156 | 124 |
| UE | 2816 | 1455 | 372 | 1479 | 386 | 274 | 1277 | 660 | 169 | 671 | 175 | 124 |
| UG | 2816 | 1508 | 400 | 1543 | 421 | 274 | 1277 | 684 | 181 | 700 | 191 | 124 |
| UH | 2816 | 1543 | 421 | — | — | 274 | 1277 | 700 | 191 | — | — | 124 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.
- d. Stator weight includes the stator and shell.

Table 6 — 19XR,XRV Compressor and Motor Weights^a — High-Efficiency Motors, Compressor Frame Size C^b

| MOTOR CODE | ENGLISH (lb) | | | | | | SI (kg) | | | | | |
|--|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|
| | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight |
| | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | |
| HIGH EFFICIENCY MOTORS / LOW VOLTAGE (230 - 575 V) | | | | | | | | | | | | |
| VC | 3265 | 1936 | 474 | 2008 | 494 | 317 | 1481 | 878 | 215 | 911 | 224 | 144 |
| VE | 3265 | 2057 | 518 | 2092 | 534 | 317 | 1481 | 933 | 235 | 949 | 242 | 144 |
| VH | 3265 | 2200 | 591 | 2200 | 591 | 317 | 1481 | 998 | 268 | 998 | 268 | 144 |
| HIGH EFFICIENCY MOTORS / LOW VOLTAGE (400 V) | | | | | | | | | | | | |
| VC | 3678 | 2008 | 494 | — | — | 317 | 1668 | 911 | 224 | — | — | 144 |
| VE | 3678 | 2092 | 534 | — | — | 317 | 1668 | 949 | 242 | — | — | 144 |
| VH | 3678 | 2200 | 591 | — | — | 317 | 1668 | 998 | 268 | — | — | 144 |
| HIGH EFFICIENCY MOTORS / LOW VOLTAGE (380/3/60 or 460/3/60 or 575/3/60 V) | | | | | | | | | | | | |
| VC | 3678 | 1936 | 474 | — | — | 317 | 1668 | 878 | 215 | — | — | 144 |
| VE | 3678 | 2057 | 518 | — | — | 317 | 1668 | 933 | 235 | — | — | 144 |
| VH | 3678 | 2200 | 591 | — | — | 317 | 1668 | 998 | 268 | — | — | 144 |
| HIGH EFFICIENCY MOTORS / MEDIUM VOLTAGE (2400-6900 V) | | | | | | | | | | | | |
| DD | 3265 | 2025 | 429 | 2025 | 429 | 338 | 1481 | 919 | 195 | 919 | 195 | 153 |
| DH | 3265 | 2250 | 480 | 2380 | 522 | 338 | 1481 | 1021 | 218 | 1080 | 237 | 153 |
| HIGH EFFICIENCY MOTORS / HIGH VOLTAGE (10000 V) | | | | | | | | | | | | |
| LF | 3265 | — | — | 2665 | 646 | 413 | 1481 | — | — | 1209 | 293 | 187 |
| LH | 3265 | — | — | 2760 | 666 | 413 | 1481 | — | — | 1252 | 302 | 187 |
| HIGH EFFICIENCY MOTORS / HIGH VOLTAGE (11000 V) | | | | | | | | | | | | |
| LF | 3265 | — | — | 2659 | 646 | 413 | 1481 | — | — | 1209 | 293 | 187 |
| LH | 3265 | — | — | 2754 | 666 | 413 | 1481 | — | — | 1249 | 302 | 187 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only.
- d. Stator weight includes the stator and shell.

Table 7 — 19XR,XRV Compressor and Motor Weights^a —High-Efficiency Motors, Compressor Frame Size E^b

| MOTOR CODE | ENGLISH (lb) | | | | | | SI (kg) | | | | | |
|--|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|--------------------------------|----------------------------|--------------|----------------------------|--------------|-----------------------|
| | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight | Compressor Weight ^c | 60 Hz | | 50 Hz | | End Bell Cover Weight |
| | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | | | Stator Weight ^d | Rotor Weight | Stator Weight ^d | Rotor Weight | |
| HIGH-EFFICIENCY MOTORS / LOW VOLTAGE (400-460 v) | | | | | | | | | | | | |
| MCH | 4853 | 2873 | 672 | 2925 | 693 | 414 | 2201 | 1303 | 305 | 1327 | 314 | 188 |
| MEH | 4853 | 2956 | 704 | 3071 | 737 | 414 | 2201 | 1341 | 319 | 1392 | 334 | 188 |
| MFH | 4853 | 3034 | 724 | 3153 | 791 | 414 | 2201 | 1376 | 328 | 1430 | 359 | 188 |
| MGH | 4853 | 3071 | 737 | — | — | 414 | 2201 | 1393 | 334 | — | — | 188 |
| HIGH-EFFICIENCY MOTORS / MEDIUM VOLTAGE (2400-4160 v) | | | | | | | | | | | | |
| MBH | 4853 | 2890 | 670 | 2970 | 696 | 414 | 2201 | 1311 | 304 | 1347 | 316 | 188 |
| MDH | 4853 | 2970 | 696 | 3170 | 749 | 414 | 2201 | 1347 | 316 | 1438 | 340 | 188 |
| MFH | 4853 | 3170 | 749 | 3460 | 830 | 414 | 2201 | 1438 | 340 | 1569 | 376 | 188 |
| MGH | 4853 | 3270 | 791 | — | — | 414 | 2201 | 1483 | 359 | — | — | 188 |
| HIGH-EFFICIENCY MOTORS / MEDIUM VOLTAGE (6300-6900 v) | | | | | | | | | | | | |
| MBH | 4853 | 2970 | 696 | 3120 | 736 | 414 | 2201 | 1347 | 316 | 1415 | 334 | 188 |
| MDH | 4853 | 3170 | 749 | 3170 | 749 | 414 | 2201 | 1438 | 340 | 1438 | 340 | 188 |
| MFH | 4853 | 3170 | 749 | 3460 | 830 | 414 | 2201 | 1438 | 340 | 1569 | 376 | 188 |
| MGH | 4853 | 3410 | 817 | — | — | 414 | 2201 | 1547 | 371 | — | — | 188 |
| HIGH-EFFICIENCY MOTORS / HIGH VOLTAGE (10000-11000 v) | | | | | | | | | | | | |
| MDH | 4853 | — | — | 3956 | 678 | 414 | 2201 | — | — | 1794 | 308 | 188 |
| MFH | 4853 | — | — | 4062 | 719 | 414 | 2201 | — | — | 1842 | 326 | 188 |
| MHH | 4853 | 3820 | 657 | — | — | 414 | 2201 | 1733 | 298 | — | — | 188 |
| HIGH-EFFICIENCY MOTORS / HIGH VOLTAGE (13800 v) | | | | | | | | | | | | |
| MHH | 4853 | 3779 | 646 | — | — | 414 | 2201 | 1714 | 293 | — | — | 188 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.
- d. Stator weight includes the stator and shell.

**Table 8 — 19XR Compressor and Motor Weights^a — High-Efficiency Motors
Two-Stage Compressor Frame Size 6, 60 Hz^b**

| MOTOR CODE | ENGLISH (lb) | | | | SI (kg) | | | |
|---------------------------|--------------------------------|---------------------------|------------------------|-----------------------|--------------------------------|---------------------------|------------------------|-----------------------|
| | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight |
| Voltage: 380-3-60 | | | | | | | | |
| N | 10,287 | 1,153 | 5,928 | 1,021 | 4 666 | 2 689 | 523 | 463 |
| P | 10,287 | 1,153 | 5,928 | 1,021 | 4 666 | 2 689 | 523 | 463 |
| Q | 10,287 | 1,179 | 6,107 | 1,021 | 4 666 | 2 770 | 535 | 463 |
| R | 10,287 | 1,153 | 6,109 | 1,021 | 4 666 | 2 771 | 523 | 463 |
| S | 10,287 | 1,153 | 6,144 | 1,021 | 4 666 | 2 787 | 523 | 463 |
| T | 10,287 | 1,179 | 6,151 | 1,021 | 4 666 | 2 790 | 535 | 463 |
| Voltage: 460-3-60 | | | | | | | | |
| N | 10,287 | 1,153 | 5,946 | 1,021 | 4 666 | 2 697 | 523 | 463 |
| P | 10,287 | 1,153 | 5,948 | 1,021 | 4 666 | 2 698 | 523 | 463 |
| Q | 10,287 | 1,179 | 6,107 | 1,021 | 4 666 | 2 770 | 535 | 463 |
| R | 10,287 | 1,179 | 6,111 | 1,021 | 4 666 | 2 772 | 535 | 463 |
| S | 10,287 | 1,188 | 6,149 | 1,021 | 4 666 | 2 789 | 539 | 463 |
| T | 10,287 | 1,188 | 6,153 | 1,021 | 4 666 | 2 791 | 539 | 463 |
| Voltage: 2400-3-60 | | | | | | | | |
| N | 10,287 | 5,929 | 1,212 | 1,021 | 4 666 | 2 689 | 550 | 463 |
| P | 10,287 | 6,021 | 1,230 | 1,021 | 4 666 | 2 731 | 558 | 463 |
| Q | 10,287 | 6,112 | 1,248 | 1,021 | 4 666 | 2 772 | 566 | 463 |
| R | 10,287 | 6,190 | 1,264 | 1,021 | 4 666 | 2 808 | 573 | 463 |
| S | 10,287 | 6,268 | 1,280 | 1,021 | 4 666 | 2 843 | 581 | 463 |
| T | 10,287 | 6,259 | 1,280 | 1,021 | 4 666 | 2 839 | 581 | 463 |
| Voltage: 3300-3-60 | | | | | | | | |
| N | 10,287 | 5,927 | 1,212 | 1,021 | 4 666 | 2 688 | 550 | 463 |
| P | 10,287 | 6,019 | 1,230 | 1,021 | 4 666 | 2 730 | 558 | 463 |
| Q | 10,287 | 6,110 | 1,248 | 1,021 | 4 666 | 2 771 | 566 | 463 |
| R | 10,287 | 6,187 | 1,264 | 1,021 | 4 666 | 2 806 | 573 | 463 |
| S | 10,287 | 6,263 | 1,280 | 1,021 | 4 666 | 2 841 | 581 | 463 |
| T | 10,287 | 6,277 | 1,280 | 1,021 | 4 666 | 2 847 | 581 | 463 |
| Voltage: 4160-3-60 | | | | | | | | |
| N | 10,287 | 6,103 | 1,247 | 1,021 | 4 666 | 2 768 | 566 | 463 |
| P | 10,287 | 6,103 | 1,248 | 1,021 | 4 666 | 2 768 | 566 | 463 |
| Q | 10,287 | 6,103 | 1,248 | 1,021 | 4 666 | 2 768 | 566 | 463 |
| R | 10,287 | 6,185 | 1,264 | 1,021 | 4 666 | 2 805 | 573 | 463 |
| S | 10,287 | 6,268 | 1,280 | 1,021 | 4 666 | 2 843 | 581 | 463 |
| T | 10,287 | 6,268 | 1,280 | 1,021 | 4 666 | 2 843 | 581 | 463 |
| Voltage: 6900-3-60 | | | | | | | | |
| N | 10,287 | 6,558 | 1,316 | 1,021 | 4 666 | 2 975 | 600 | 463 |
| P | 10,287 | 6,559 | 1,316 | 1,021 | 4 666 | 2 975 | 600 | 463 |
| Q | 10,287 | 6,559 | 1,316 | 1,021 | 4 666 | 2 975 | 600 | 463 |
| R | 10,287 | 6,566 | 1,316 | 1,021 | 4 666 | 2 978 | 600 | 463 |
| S | 10,287 | 6,574 | 1,316 | 1,021 | 4 666 | 2 982 | 600 | 463 |
| T | 10,287 | 6,604 | 1,351 | 1,021 | 4 666 | 2 996 | 613 | 463 |

**Table 8 — 19XR Compressor and Motor Weights^a — High-Efficiency Motors
Two-Stage Compressor Frame Size 6, 60 Hz^b (cont)**

| MOTOR CODE | ENGLISH (lb) | | | | SI (kg) | | | |
|----------------------------|--------------------------------|---------------------------|------------------------|-----------------------|--------------------------------|---------------------------|------------------------|-----------------------|
| | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight |
| Voltage: 11000-3-60 | | | | | | | | |
| N | 10,287 | 6,587 | 1,351 | 1,021 | 4 666 | 2 988 | 613 | 463 |
| P | 10,287 | 6,587 | 1,351 | 1,021 | 4 666 | 2 988 | 613 | 463 |
| Q | 10,287 | 6,587 | 1,351 | 1,021 | 4 666 | 2 988 | 613 | 463 |
| R | 10,287 | 6,716 | 1,385 | 1,021 | 4 666 | 3 036 | 628 | 463 |
| S | 10,287 | 6,844 | 1,419 | 1,021 | 4 666 | 3 104 | 644 | 463 |
| T | 10,287 | 6,844 | 1,419 | 1,021 | 4 666 | 3 104 | 644 | 463 |
| Voltage: 13800-3-60 | | | | | | | | |
| N | 10,287 | 6,554 | 1,351 | 1,021 | 4 666 | 2 973 | 613 | 463 |
| P | 10,287 | 6,554 | 1,351 | 1,021 | 4 666 | 2 973 | 613 | 463 |
| Q | 10,287 | 6,554 | 1,351 | 1,021 | 4 666 | 2 973 | 613 | 463 |
| R | 10,287 | 6,709 | 1,385 | 1,021 | 4 666 | 3 043 | 628 | 463 |
| S | 10,287 | 6,864 | 1,419 | 1,021 | 4 666 | 3 113 | 644 | 463 |
| T | 10,287 | 6,864 | 1,419 | 1,021 | 4 666 | 3 113 | 644 | 463 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.

Table 9 — 19XR Compressor and Motor Weights^a — High-Efficiency Motors
Two-Stage Compressor Frame Size 6, 50 Hz^b

| MOTOR CODE | ENGLISH (lb) | | | | SI (kg) | | | |
|----------------------------|--------------------------------|---------------------------|------------------------|-----------------------|--------------------------------|---------------------------|------------------------|-----------------------|
| | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight |
| Voltage: 400-3-50 | | | | | | | | |
| N | 10,287 | 1,153 | 5,917 | 1,021 | 4 666 | 2 684 | 523 | 463 |
| P | 10,287 | 1,153 | 5,919 | 1,021 | 4 666 | 2 685 | 523 | 463 |
| Q | 10,287 | 1,179 | 6,105 | 1,021 | 4 666 | 2 769 | 535 | 463 |
| R | 10,287 | 1,179 | 6,107 | 1,021 | 4 666 | 2 770 | 535 | 463 |
| S | 10,287 | 1,188 | 6,149 | 1,021 | 4 666 | 2 789 | 539 | 463 |
| T | 10,287 | 1,188 | 6,151 | 1,021 | 4 666 | 2 790 | 539 | 463 |
| Voltage: 3000-3-50 | | | | | | | | |
| N | 10,287 | 5,918 | 1,212 | 1,021 | 4 666 | 2 684 | 550 | 463 |
| P | 10,287 | 6,006 | 1,230 | 1,021 | 4 666 | 2 724 | 558 | 463 |
| Q | 10,287 | 6,094 | 1,248 | 1,021 | 4 666 | 2 764 | 566 | 463 |
| R | 10,287 | 6,184 | 1,264 | 1,021 | 4 666 | 2 805 | 573 | 463 |
| S | 10,287 | 6,274 | 1,280 | 1,021 | 4 666 | 2 846 | 581 | 463 |
| T | 10,287 | 6,296 | 1,280 | 1,021 | 4 666 | 2 856 | 581 | 463 |
| Voltage: 3300-3-50 | | | | | | | | |
| N | 10,287 | 5,913 | 1,212 | 1,021 | 4 666 | 2 682 | 550 | 463 |
| P | 10,287 | 6,007 | 1,230 | 1,021 | 4 666 | 2 725 | 558 | 463 |
| Q | 10,287 | 6,101 | 1,248 | 1,021 | 4 666 | 2 767 | 566 | 463 |
| R | 10,287 | 6,192 | 1,264 | 1,021 | 4 666 | 2 809 | 573 | 463 |
| S | 10,287 | 6,283 | 1,280 | 1,021 | 4 666 | 2 850 | 581 | 463 |
| T | 10,287 | 6,266 | 1,280 | 1,021 | 4 666 | 2 842 | 581 | 463 |
| Voltage: 6300-3-50 | | | | | | | | |
| N | 10,287 | 6,277 | 1,280 | 1,021 | 4 666 | 2 847 | 581 | 463 |
| P | 10,287 | 6,333 | 1,298 | 1,021 | 4 666 | 2 873 | 589 | 463 |
| Q | 10,287 | 6,389 | 1,316 | 1,021 | 4 666 | 2 898 | 600 | 463 |
| R | 10,287 | 6,473 | 1,316 | 1,021 | 4 666 | 2 936 | 600 | 463 |
| S | 10,287 | 6,556 | 1,316 | 1,021 | 4 666 | 2 974 | 600 | 463 |
| T | 10,287 | 6,609 | 1,351 | 1,021 | 4 666 | 2 998 | 613 | 463 |
| Voltage: 10000-3-50 | | | | | | | | |
| N | 10,287 | 6,281 | 1,280 | 1,021 | 4 666 | 2 849 | 581 | 463 |
| P | 10,287 | 6,281 | 1,281 | 1,021 | 4 666 | 2 849 | 581 | 463 |
| Q | 10,287 | 6,281 | 1,281 | 1,021 | 4 666 | 2 849 | 581 | 463 |
| R | 10,287 | 6,441 | 1,316 | 1,021 | 4 666 | 2 922 | 600 | 463 |
| S | 10,287 | 6,600 | 1,351 | 1,021 | 4 666 | 2 994 | 613 | 463 |
| T | 10,287 | 6,156 | 1,351 | 1,021 | 4 666 | 2 792 | 613 | 463 |
| Voltage: 11000-3-50 | | | | | | | | |
| N | 10,287 | 6,600 | 1,351 | 1,021 | 4 666 | 2 994 | 613 | 463 |
| P | 10,287 | 6,600 | 1,351 | 1,021 | 4 666 | 2 994 | 613 | 463 |
| Q | 10,287 | 6,600 | 1,351 | 1,021 | 4 666 | 2 994 | 613 | 463 |
| R | 10,287 | 6,765 | 1,385 | 1,021 | 4 666 | 3 069 | 628 | 463 |
| S | 10,287 | 6,930 | 1,419 | 1,021 | 4 666 | 3 143 | 644 | 463 |
| T | 10,287 | 6,930 | 1,419 | 1,021 | 4 666 | 3 143 | 644 | 463 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.

**Table 10 — 19XR Compressor and Motor Weights^a — High-Efficiency Motors
Two-Stage Compressor Frame Size 7, 60 Hz^b**

| MOTOR CODE | ENGLISH (lb) | | | | SI (kg) | | | |
|----------------------------|--------------------------------|---------------------------|------------------------|-----------------------|--------------------------------|---------------------------|------------------------|-----------------------|
| | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight |
| Voltage: 2400-3-60 | | | | | | | | |
| U | 16,024 | 6,719 | 1,443 | 983 | 7 268 | 3 048 | 654 | 446 |
| V | 16,024 | 6,718 | 1,443 | 983 | 7 268 | 3 047 | 654 | 446 |
| W | 16,024 | 6,717 | 1,443 | 983 | 7 268 | 3 047 | 654 | 446 |
| X | 16,024 | 6,811 | 1,460 | 983 | 7 268 | 3 089 | 662 | 446 |
| Y | 16,024 | 6,906 | 1,476 | 983 | 7 268 | 3 132 | 670 | 446 |
| Z | 16,024 | 7,073 | 1,509 | 983 | 7 268 | 3 208 | 684 | 446 |
| Voltage: 3300-3-60 | | | | | | | | |
| U | 16,024 | 6,723 | 1,443 | 983 | 7 268 | 3 049 | 654 | 446 |
| V | 16,024 | 6,730 | 1,443 | 983 | 7 268 | 3 053 | 654 | 446 |
| W | 16,024 | 6,736 | 1,443 | 983 | 7 268 | 3 055 | 654 | 446 |
| X | 16,024 | 6,816 | 1,460 | 983 | 7 268 | 3 092 | 662 | 446 |
| Y | 16,024 | 6,895 | 1,476 | 983 | 7 268 | 3 128 | 670 | 446 |
| Z | 16,024 | 7,055 | 1,509 | 983 | 7 268 | 3 200 | 684 | 446 |
| Voltage: 4160-3-60 | | | | | | | | |
| U | 16,024 | 6,739 | 1,443 | 983 | 7 268 | 3 057 | 654 | 446 |
| V | 16,024 | 6,721 | 1,443 | 983 | 7 268 | 3 049 | 654 | 446 |
| W | 16,024 | 6,703 | 1,443 | 983 | 7 268 | 3 040 | 654 | 446 |
| X | 16,024 | 6,778 | 1,460 | 983 | 7 268 | 3 074 | 662 | 446 |
| Y | 16,024 | 6,853 | 1,476 | 983 | 7 268 | 3 108 | 670 | 446 |
| Z | 16,024 | 7,069 | 1,509 | 983 | 7 268 | 3 206 | 684 | 446 |
| Voltage: 6900-3-60 | | | | | | | | |
| U | 16,024 | 6,730 | 1,443 | 983 | 7 268 | 3 053 | 654 | 446 |
| V | 16,024 | 6,909 | 1,476 | 983 | 7 268 | 3 134 | 670 | 446 |
| W | 16,024 | 7,088 | 1,509 | 983 | 7 268 | 3 215 | 684 | 446 |
| X | 16,024 | 7,076 | 1,509 | 983 | 7 268 | 3 210 | 684 | 446 |
| Y | 16,024 | 7,064 | 1,509 | 983 | 7 268 | 3 204 | 684 | 446 |
| Z | 16,024 | 7,141 | 1,542 | 983 | 7 268 | 3 239 | 699 | 446 |
| Voltage: 11000-3-60 | | | | | | | | |
| G | 16,024 | 7,434 | 1,700 | 983 | 7 268 | 3 372 | 771 | 486 |
| H | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 486 |
| J | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 486 |
| K | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| L | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 486 |
| M | 16,024 | 7,767 | 1,837 | 983 | 7 268 | 3 523 | 833 | 486 |
| Voltage: 13800-3-60 | | | | | | | | |
| U | 16,024 | 7,073 | 1,509 | 983 | 7 268 | 3 208 | 684 | 446 |
| V | 16,024 | 7,109 | 1,526 | 983 | 7 268 | 3 225 | 692 | 446 |
| W | 16,024 | 7,146 | 1,542 | 983 | 7 268 | 3 241 | 699 | 446 |
| X | 16,024 | 7,146 | 1,542 | 983 | 7 268 | 3 241 | 699 | 446 |
| Y | 16,024 | 7,146 | 1,542 | 983 | 7 268 | 3 241 | 699 | 446 |
| Z | 16,024 | 7,295 | 1,575 | 983 | 7 268 | 3 309 | 714 | 446 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.

**Table 11 — 19XR Compressor and Motor Weights^a — High-Efficiency Motors
Two-Stage Compressor Frame Size 7, 50 Hz^b**

| MOTOR CODE | ENGLISH (lb) | | | | SI (kg) | | | |
|----------------------------|--------------------------------|---------------------------|------------------------|-----------------------|--------------------------------|---------------------------|------------------------|-----------------------|
| | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight | Compressor Weight ^c | Stator and Housing Weight | Rotor and Shaft Weight | End Bell Cover Weight |
| Voltage: 3000-3-50 | | | | | | | | |
| U | 16,024 | 6,725 | 1,443 | 983 | 7 268 | 3 050 | 654 | 446 |
| V | 16,024 | 6,716 | 1,443 | 983 | 7 268 | 3 046 | 654 | 446 |
| W | 16,024 | 6,706 | 1,443 | 983 | 7 268 | 3 042 | 654 | 446 |
| X | 16,024 | 6,802 | 1,460 | 983 | 7 268 | 3 085 | 662 | 446 |
| Y | 16,024 | 6,899 | 1,476 | 983 | 7 268 | 3 129 | 670 | 446 |
| Z | 16,024 | 7,066 | 1,509 | 983 | 7 268 | 3 205 | 684 | 446 |
| Voltage: 3300-3-50 | | | | | | | | |
| U | 16,024 | 6,743 | 1,443 | 983 | 7 268 | 3 059 | 654 | 446 |
| V | 16,024 | 6,739 | 1,443 | 983 | 7 268 | 3 057 | 654 | 446 |
| W | 16,024 | 6,734 | 1,443 | 983 | 7 268 | 3 054 | 654 | 446 |
| X | 16,024 | 6,826 | 1,460 | 983 | 7 268 | 3 096 | 662 | 446 |
| Y | 16,024 | 6,917 | 1,476 | 983 | 7 268 | 3 137 | 670 | 446 |
| Z | 16,024 | 7,075 | 1,509 | 983 | 7 268 | 3 209 | 684 | 446 |
| Voltage: 6300-3-50 | | | | | | | | |
| U | 16,024 | 6,743 | 1,443 | 983 | 7 268 | 3 059 | 654 | 446 |
| V | 16,024 | 6,900 | 1,476 | 983 | 7 268 | 3 130 | 670 | 446 |
| W | 16,024 | 7,058 | 1,509 | 983 | 7 268 | 3 201 | 684 | 446 |
| X | 16,024 | 7,130 | 1,526 | 983 | 7 268 | 3 234 | 692 | 446 |
| Y | 16,024 | 7,203 | 1,542 | 983 | 7 268 | 3 267 | 699 | 446 |
| Z | 16,024 | 7,203 | 1,542 | 983 | 7 268 | 3 267 | 699 | 446 |
| Voltage: 10000-3-50 | | | | | | | | |
| G | 16,024 | 7,269 | 1,631 | 983 | 7 268 | 3 297 | 740 | 446 |
| H | 16,024 | 7,269 | 1,631 | 983 | 7 268 | 3 297 | 740 | 446 |
| J | 16,024 | 7,269 | 1,631 | 983 | 7 268 | 3 297 | 740 | 446 |
| K | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| L | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| M | 16,024 | 7,769 | 1,837 | 983 | 7 268 | 3 523 | 833 | 446 |
| Voltage: 11000-3-50 | | | | | | | | |
| G | 16,024 | 7,434 | 1,700 | 983 | 7 268 | 3 372 | 771 | 446 |
| H | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| J | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| K | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| L | 16,024 | 7,602 | 1,768 | 983 | 7 268 | 3 448 | 802 | 446 |
| M | 16,024 | 7,767 | 1,837 | 983 | 7 268 | 3 523 | 833 | 446 |

NOTE(S):

- a. Total compressor weight is the sum of the compressor aerodynamic components (compressor weight column), stator, rotor, and end bell cover weights.
- b. See Model Number Nomenclature.
- c. Compressor aerodynamic component weight only, motor weight not included. Applicable to standard compressors only. For high lift compressors, contact Carrier Chiller Marketing for weights.

Table 12 — Economizer Weight^a

| FRAME SIZE | DRY WEIGHT (lb) | REFRIGERANT WEIGHT (lb) | OPERATION WEIGHT (lb) | DRY WEIGHT (kg) | REFRIGERANT WEIGHT (kg) | OPERATION WEIGHT (kg) |
|------------------------|-----------------|-------------------------|-----------------------|-----------------|-------------------------|-----------------------|
| XRC (fr 5 HX) | 1019 | 210 | 1229 | 462 | 95 | 557 |
| XRC (fr 6,7 HX) | 1252 | 250 | 1502 | 568 | 113 | 681 |
| XRE | 1054 | 283 | 1337 | 478 | 128 | 606 |
| XR6 | 1589 | 360 | 1949 | 721 | 163 | 884 |
| XR7 | 2749 | 646 | 3395 | 1247 | 293 | 1540 |

NOTE(S):

- a. Dry weight includes economizer weight and all connecting piping to compressor.

Table 13 — 19XR Additional Data for Marine Waterboxes (19XR3, C, E)^{a,b}

| HEAT EXCHANGER FRAME, PASS | ENGLISH | | | | SI | | | |
|-------------------------------|---------|---------------------|-----------|--------------------|-----------|------|---------------------|-----------|
| | psig | RIGGING WEIGHT (lb) | | WATER VOLUME (gal) | | kPa | RIGGING WEIGHT (kg) | |
| | | Evaporator | Condenser | Evaporator | Condenser | | Evaporator | Condenser |
| Frame 3, 1 and 3 Pass | 150 | 730 | — | 84 | — | 1034 | 331 | — |
| Frame 3, 2 Pass | | 365 | 365 | 42 | 42 | | 166 | 166 |
| Frame 4, 1 and 3 Pass | | 1888 | — | 109 | — | | 856 | — |
| Frame 4, 2 Pass | | 944 | 989 | 54 | 54 | | 428 | 449 |
| Frame 5, 1 and 3 Pass | | 2445 | — | 122 | — | | 1109 | — |
| Frame 5, 2 Pass | | 1223 | 1195 | 61 | 60 | | 555 | 542 |
| Frame 6, 1 and 3 Pass | | 2860 | — | 139 | — | | 1297 | — |
| Frame 6, 2 Pass | | 1430 | 1443 | 69 | 69 | | 649 | 655 |
| Frame 7, 1 and 3 Pass | | 3970 | — | 309 | — | | 1801 | — |
| Frame 7, 2 Pass | | 1720 | 1561 | 155 | 123 | | 780 | 708 |
| Frame 8, 1 and 3 Pass | | 5048 | — | 364 | — | | 2290 | — |
| Frame 8, 2 Pass | | 2182 | 1751 | 182 | 141 | | 990 | 794 |
| Frame 3, 1 and 3 Pass | 300 | 860 | — | 84 | — | 2068 | 390 | — |
| Frame 3, 2 Pass | | 430 | 430 | 42 | 42 | | 195 | 195 |
| Frame 4, 1 and 3 Pass | | 2162 | — | 109 | — | | 981 | — |
| Frame 4, 2 Pass | | 1552 | 1641 | 47 | 47 | | 704 | 744 |
| Frame 5, 1 and 3 Pass | | 2655 | — | 122 | — | | 1204 | — |
| Frame 5, 2 Pass | | 1965 | 1909 | 53 | 50 | | 891 | 866 |
| Frame 6, 1 and 3 Pass | | 3330 | — | 139 | — | | 1510 | — |
| Frame 6, 2 Pass | | 2425 | 2451 | 58 | 58 | | 1100 | 1112 |
| Frame 7, 1 and 3 Pass | | 5294 | — | 309 | — | | 2401 | — |
| Frame 7, 2 Pass | | 4140 | 4652 | 146 | 94 | | 1878 | 2110 |
| Frame 8, 1 and 3 Pass | | 6222 | — | 364 | — | | 2822 | — |
| Frame 8, 2 Pass | | 4952 | 4559 | 161 | 94 | | 2246 | 2068 |

NOTE(S):

a. Add to heat exchanger data for total weights or volumes.

b. For the total weight of a vessel with a marine waterbox, add these values to the heat exchanger weights (or volumes).

Table 14 — 19XRV Additional Data for Marine Waterboxes (19XR6/7)^{a,b}

| HEAT EXCHANGER FRAME, PASS | COUPLING TYPE | ENGLISH (lb) | | | | SI (kg) | | | | |
|-------------------------------|------------------|--------------|----------------|-----------|--------------|-----------|-------|----------------|-----------|-------|
| | | psig | Rigging Weight | | Water Weight | | kPa | Rigging Weight | | |
| | | | Evaporator | Condenser | Evaporator | Condenser | | Evaporator | Condenser | |
| Size 6, Frame A, 1 Pass | Victaulic | 2,794 | 2,582 | 6,515 | 5,648 | 150 | 1 267 | 1 171 | 2 955 | 2 562 |
| | Flange | 3,124 | 2,912 | | | | 1 417 | 1 321 | | |
| | Victaulic | 2,454 | 2,236 | | 2,979 | | 1 113 | 1 014 | | 1 185 |
| | Flange | 2,650 | 2,432 | | | | 1 202 | 1 103 | | |
| | Victaulic | 2,771 | 2,840 | | 4,190 | | 1 157 | 1 288 | | 1 792 |
| | Flange | 2,899 | 3,020 | | | | 1 315 | 1 370 | | |
| | Victaulic | — | 2,604 | — | 6,975 | | — | 1 181 | 3 162 | |
| | Flange | — | 2,934 | | | | — | 1 331 | | |
| | Victaulic | — | 2,459 | | — | | — | 1 115 | | 1 633 |
| | Flange | — | 2,719 | | | | — | 1 233 | | |
| | Victaulic | — | 2,770 | | — | | — | 1 256 | | 2 203 |
| | Flange | — | 2,950 | | 4,858 | | — | 1 338 | | |
| Size 6, Frame B, 1 Pass | Victaulic | 4,045 | — | 8,103 | — | 1034 | 1 835 | — | 3 675 | |
| | Flange | 4,375 | — | | | | 1 984 | — | | |
| | Victaulic | 3,648 | — | | 4,139 | | 1 655 | — | | — |
| | Flange | 3,908 | — | | | | 1 773 | — | | 1 877 |
| | Victaulic | 4,160 | — | | 5,633 | | 1 887 | — | | 2 555 |
| | Flange | 4,340 | — | | | | 1 969 | — | | |
| | Victaulic | 4,828 | 4,273 | 10,264 | 9,858 | | 2 190 | 1 938 | 4 655 | 4 472 |
| | Flange | 5,158 | 4,713 | | | | 2 340 | 2 138 | | |
| | Victaulic | 4,375 | 3,714 | | 5,201 | | 1 984 | 1 685 | | 2 359 |
| | Flange | 4,635 | 4,044 | | | | 2 102 | 1 834 | | 2 189 |
| | Victaulic | 4,957 | 4,434 | 7,144 | 6,819 | | 2 248 | 2 011 | | 3 240 |
| | Flange | 5,137 | 4,630 | | | | 2 330 | 2 100 | | 3 093 |
| Size 7, Frame C, 1 Pass | Victaulic | — | 4,863 | — | 12,530 | 2068 | — | 2 206 | — | 5 684 |
| | Flange | — | 5,303 | | | | — | 2 405 | | |
| | Victaulic | — | 4,243 | — | 6,074 | | — | 1 925 | — | 2 755 |
| | Flange | — | 4,573 | | | | — | 2 074 | | |
| | Victaulic | — | 5,079 | — | 8,659 | | — | 2 303 | | 3 928 |
| | Flange | — | 5,275 | | | | — | 2 393 | | |
| | Victaulic | 6,379 | 5,573 | 5,058 | 4,426 | | 2 893 | 2 528 | 2 294 | 2 008 |
| | Flange | 6,709 | 5,903 | | | | 3 043 | 2 678 | | |
| | Victaulic | 5,594 | 4,834 | | 2,101 | | 2 537 | 2 193 | | 953 |
| | Flange | 5,790 | 5,030 | | | | 2 626 | 2 282 | | 857 |
| | Victaulic | 6,031 | 5,310 | 3,005 | 2,688 | | 2 736 | 2 409 | | 1 363 |
| Size 6, Frame A, 3 Pass | Flange | 6,159 | 5,490 | | | | 2 794 | 2 490 | | 1 219 |
| | Victaulic | — | 7,084 | — | 5,509 | 300 | — | 3 213 | — | 2 499 |
| | Flange | — | 7,414 | | | | — | 3 363 | | |
| | Victaulic | — | 6,474 | — | 2,577 | | — | 2 937 | — | 1 169 |
| | Flange | — | 6,734 | | | | — | 3 054 | | |
| | Victaulic | — | 6,816 | — | 3,340 | | — | 3 092 | — | 1 515 |
| | Flange | — | 6,996 | | | | — | 3 173 | | |
| | Victaulic | 8,305 | — | 5,783 | — | | 3 767 | — | — | — |
| | Flange | 8,635 | — | | | | 3 917 | — | | 2 623 |
| | Victaulic | 7,426 | — | | 2,382 | | 3 368 | — | | — |
| | Flange | 7,686 | — | | | | 3 486 | — | | 1 080 |
| | Victaulic | 7,785 | — | | 3,268 | | 3 531 | — | | — |
| Size 6, Frame B, 3 Pass | Flange | 7,965 | — | | | 300 | 3 612 | — | | 1 482 |
| | Victaulic | 11,001 | 9,228 | 7,030 | 7,591 | | 4 990 | 4 186 | 3 188 | 3 443 |
| | Flange | 11,331 | 9,668 | | | | 5 140 | 4 385 | | |
| | Victaulic | 9,829 | 8,003 | 2,708 | 3,061 | | 4 458 | 3 630 | | 1 228 |
| | Flange | 10,089 | 8,333 | | | | 4 576 | 3 682 | | 1 388 |
| | Victaulic | 10,343 | 8,647 | 3,866 | 4,468 | | 4 692 | 3 922 | 1 753 | 2 027 |
| | Flange | 10,053 | 8,843 | | | | 4 773 | 6 069 | | |
| | Victaulic | — | 12,940 | — | 9,365 | | — | 5 869 | — | 4 248 |
| | Flange | — | 13,380 | | | | — | 5 927 | | |
| | Victaulic | — | 11,170 | — | 3,607 | | — | 5 067 | — | 1 925 |
| Size 7, Frame D, 1 Pass | Flange | — | 11,500 | | | | — | 5 102 | | |
| | Victaulic | — | 12,042 | — | 5,398 | | — | 5 462 | — | 2 448 |
| Size 7, Frame D, 2 Pass | Flange | — | 12,238 | | | | — | 5 551 | | |

NOTE(S):

- Add to heat exchanger data for total weights or volumes.
- For the total weight of a vessel with a marine waterbox, add these values to the heat exchanger weights (or volumes).

Table 15 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C and E — Drive End Entering Evaporator Water (English)^{a,b,c,d,e,f,g}

| CODE | DRY RIGGING WEIGHT (lb) | | MACHINE CHARGE | | | | | |
|------|-------------------------|----------------|-------------------------|--------|-----------|--------|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (lb) | | | | Water Weight (lb) | |
| | | | Evaporator | | Condenser | | Evaporator | Condenser |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| 30 | 4,071 | 3,694 | 510 | — | 308 | — | 464 | 464 |
| 31 | 4,253 | 3,899 | 565 | — | 308 | — | 531 | 543 |
| 32 | 4,445 | 4,100 | 626 | — | 308 | — | 601 | 621 |
| 35 | 4,343 | 4,606 | 577 | — | 349 | — | 511 | 513 |
| 36 | 4,551 | 4,840 | 639 | — | 349 | — | 587 | 603 |
| 37 | 4,769 | 5,069 | 709 | — | 349 | — | 667 | 692 |
| 40 | 4,908 | 5,039 | 726 | — | 338 | — | 863 | 915 |
| 41 | 5,078 | 5,232 | 783 | — | 338 | — | 930 | 995 |
| 42 | 5,226 | 5,424 | 840 | — | 338 | — | 990 | 1,074 |
| 45 | 5,363 | 5,602 | 821 | — | 383 | — | 938 | 998 |
| 46 | 5,559 | 5,824 | 874 | — | 383 | — | 1,014 | 1,088 |
| 47 | 5,730 | 6,044 | 949 | — | 383 | — | 1,083 | 1,179 |
| 50 | 5,713 | 6,090 | 897 | 374 | 446 | 410 | 1,101 | 1,225 |
| 51 | 5,940 | 6,283 | 974 | 406 | 446 | 410 | 1,192 | 1,304 |
| 52 | 6,083 | 6,464 | 1,021 | 426 | 446 | 410 | 1,248 | 1,379 |
| 53 | 6,141 | 6,529 | 1,010 | 421 | 446 | 410 | 1,277 | 1,409 |
| 54 | 6,192 | 6,591 | 987 | 412 | 446 | 410 | 1,302 | 1,439 |
| 55 | 6,257 | 6,785 | 1,014 | 423 | 504 | 464 | 1,201 | 1,339 |
| 56 | 6,517 | 7,007 | 1,101 | 459 | 504 | 464 | 1,304 | 1,429 |
| 57 | 6,682 | 7,215 | 1,154 | 482 | 504 | 464 | 1,369 | 1,514 |
| 58 | 6,751 | 7,291 | 1,143 | 477 | 504 | 464 | 1,401 | 1,550 |
| 59 | 6,811 | 7,363 | 1,116 | 466 | 504 | 464 | 1,430 | 1,583 |
| 5A | 5,124 | — | 491 | 205 | 446 | 410 | 1,023 | — |
| 5B | 5,177 | — | 510 | 213 | 446 | 410 | 1,050 | — |
| 5C | 5,243 | — | 532 | 222 | 446 | 410 | 1,079 | — |
| 5F | 5,577 | — | 553 | 231 | 504 | 464 | 1,113 | — |
| 5G | 5,640 | — | 575 | 240 | 504 | 464 | 1,143 | — |
| 5H | 5,716 | — | 600 | 250 | 504 | 464 | 1,176 | — |
| 5K | 4,993 | — | 673 | 281 | 446 | 410 | 1,067 | — |
| 5L | 5,090 | — | 706 | 295 | 446 | 410 | 1,118 | — |
| 5M | 5,165 | — | 742 | 310 | 446 | 410 | 1,162 | — |
| 5P | 5,041 | — | 641 | 268 | 446 | 410 | 1,111 | — |
| 5Q | 5,131 | — | 678 | 283 | 446 | 410 | 1,155 | — |
| 5R | 5,214 | — | 709 | 296 | 446 | 410 | 1,206 | — |
| 5T | 5,425 | — | 768 | 321 | 504 | 464 | 1,162 | — |
| 5U | 5,534 | — | 801 | 334 | 504 | 464 | 1,220 | — |
| 5V | 5,620 | — | 843 | 352 | 504 | 464 | 1,270 | — |
| 5X | 5,484 | — | 730 | 305 | 504 | 464 | 1,212 | — |
| 5Y | 5,584 | — | 769 | 321 | 504 | 464 | 1,262 | — |
| 5Z | 5,678 | — | 805 | 336 | 504 | 464 | 1,320 | — |
| 60 | 6,719 | 6,764 | 1,091 | 455 | 479 | 441 | 1,400 | 1,521 |
| 61 | 6,895 | 6,949 | 1,150 | 480 | 479 | 441 | 1,470 | 1,597 |
| 62 | 7,038 | 7,130 | 1,202 | 502 | 479 | 441 | 1,527 | 1,671 |
| 63 | 7,103 | 7,199 | 1,202 | 502 | 479 | 441 | 1,559 | 1,704 |
| 64 | 7,161 | 7,264 | 1,178 | 492 | 479 | 441 | 1,587 | 1,735 |
| 65 | 7,392 | 6,782 | 1,241 | 518 | 542 | 441 | 1,530 | 1,667 |
| 66 | 7,594 | 7,894 | 1,309 | 546 | 542 | 499 | 1,610 | 1,753 |
| 67 | 7,759 | 8,102 | 1,369 | 571 | 542 | 499 | 1,674 | 1,838 |
| 68 | 7,836 | 8,182 | 1,359 | 567 | 542 | 499 | 1,711 | 1,875 |
| 69 | 7,905 | 8,258 | 1,332 | 556 | 542 | 499 | 1,743 | 1,911 |
| 6K | 5,716 | — | 760 | 317 | 479 | 441 | 1,291 | — |
| 6L | 5,804 | — | 797 | 332 | 479 | 441 | 1,341 | — |
| 6M | 5,894 | — | 828 | 346 | 479 | 441 | 1,399 | — |
| 6P | 5,768 | — | 725 | 303 | 479 | 441 | 1,338 | — |
| 6Q | 5,852 | — | 764 | 319 | 479 | 441 | 1,385 | — |
| 6R | 5,938 | — | 798 | 333 | 479 | 441 | 1,439 | — |
| 6T | 6,230 | — | 863 | 360 | 542 | 499 | 1,405 | — |
| 6U | 6,330 | — | 905 | 378 | 542 | 499 | 1,462 | — |
| 6V | 6,433 | — | 941 | 393 | 542 | 499 | 1,528 | — |
| 6X | 6,293 | — | 823 | 343 | 542 | 499 | 1,459 | — |
| 6Y | 6,388 | — | 868 | 362 | 542 | 499 | 1,512 | — |
| 6Z | 6,487 | — | 906 | 378 | 542 | 499 | 1,574 | — |
| 70 | 9,942 | 10,786 | 1,409 | 588 | 840 | 773 | 2,008 | 2,225 |
| 71 | 10,330 | 11,211 | 1,539 | 642 | 840 | 773 | 2,164 | 2,389 |
| 72 | 10,632 | 11,622 | 1,646 | 687 | 840 | 773 | 2,286 | 2,548 |

Table 15 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C and E — Drive End Entering Evaporator Water (English)^{a,b,c,d,e,f,g} (cont)

| CODE | DRY RIGGING WEIGHT (lb) | | MACHINE CHARGE | | | | | |
|------|-------------------------|-------------------|-------------------------|-----------|--------|--------|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (lb) | | | | Water Weight (lb) | |
| | | | Evaporator | Condenser | R-513A | R-515B | Evaporator | Condenser |
| 73 | 10,715 | 11,737 | 1,622 | 1,492 | 840 | 773 | 2,328 | 2,604 |
| 74 | 10,790 | 11,775 | 1,584 | 1,457 | 840 | 773 | 2,366 | 2,622 |
| 75 | 10,840 | 11,859 | 1,599 | 1,471 | 950 | 874 | 2,183 | 2,431 |
| 76 | 11,289 | 12,345 | 1,747 | 1,607 | 950 | 874 | 2,361 | 2,619 |
| 77 | 11,638 | 12,814 | 1,869 | 1,719 | 950 | 874 | 2,501 | 2,801 |
| 78 | 11,738 | 12,949 | 1,849 | 1,701 | 950 | 874 | 2,548 | 2,864 |
| 79 | 11,828 | 12,994 | 1,806 | 1,662 | 950 | 874 | 2,592 | 2,885 |
| 7K | 8,728 | — | 1,047 | 963 | 840 | 773 | 1,948 | — |
| 7L | 8,959 | — | 1,132 | 1,041 | 840 | 773 | 2,094 | — |
| 7M | 9,161 | — | 1,214 | 1,117 | 840 | 773 | 2,229 | — |
| 7P | 8,792 | — | 1,002 | 922 | 840 | 773 | 2,010 | — |
| 7Q | 9,023 | — | 1,087 | 1,000 | 840 | 773 | 2,156 | — |
| 7R | 9,229 | — | 1,167 | 1,074 | 840 | 773 | 2,295 | — |
| 7T | 9,431 | — | 1,194 | 1,098 | 950 | 874 | 2,115 | — |
| 7U | 9,698 | — | 1,292 | 1,189 | 950 | 874 | 2,282 | — |
| 7V | 9,932 | — | 1,403 | 1,291 | 950 | 874 | 2,436 | — |
| 7X | 9,510 | — | 1,142 | 1,051 | 950 | 874 | 2,185 | — |
| 7Y | 9,777 | — | 1,240 | 1,141 | 950 | 874 | 2,352 | — |
| 7Z | 10,016 | — | 1,347 | 1,239 | 950 | 874 | 2,511 | — |
| 80 | 12,664 | 12,753 | 1,700 | 1,564 | 836 | 769 | 2,726 | 2,977 |
| 81 | 12,998 | 13,149 | 1,812 | 1,667 | 836 | 769 | 2,863 | 3,143 |
| 82 | 13,347 | 13,545 | 1,928 | 1,774 | 836 | 769 | 3,005 | 3,309 |
| 83 | 13,437 | 13,872 | 1,877 | 1,727 | 836 | 769 | 3,053 | 3,476 |
| 84 | 13,523 | 14,217 | 1,840 | 1,693 | 836 | 769 | 3,099 | 3,651 |
| 85 | 13,804 | 14,008 | 1,927 | 1,773 | 945 | 869 | 2,951 | 3,238 |
| 86 | 14,191 | 14,465 | 2,054 | 1,890 | 945 | 869 | 3,108 | 3,428 |
| 87 | 14,597 | 14,923 | 2,186 | 2,011 | 945 | 869 | 3,271 | 3,618 |
| 88 | 14,705 | 15,311 | 2,142 | 1,970 | 945 | 869 | 3,325 | 3,608 |
| 89 | 14,808 | 15,721 | 2,099 | 1,931 | 945 | 869 | 3,378 | 4,009 |
| 8K | 11,153 | — | 1,385 | 1,274 | 836 | 769 | 2,760 | — |
| 8L | 11,400 | — | 1,484 | 1,365 | 836 | 769 | 2,926 | — |
| 8M | 11,650 | — | 1,589 | 1,462 | 836 | 769 | 3,088 | — |
| 8P | 11,219 | — | 1,334 | 1,227 | 836 | 769 | 2,830 | — |
| 8Q | 11,470 | — | 1,430 | 1,316 | 836 | 769 | 2,999 | — |
| 8R | 11,719 | — | 1,535 | 1,412 | 836 | 769 | 3,161 | — |
| 8T | 12,069 | — | 1,580 | 1,454 | 945 | 869 | 2,991 | — |
| 8U | 12,357 | — | 1,694 | 1,694 | 945 | 869 | 3,180 | — |
| 8V | 12,645 | — | 1,814 | 1,669 | 945 | 869 | 3,365 | — |
| 8X | 12,152 | — | 1,522 | 1,400 | 945 | 869 | 3,070 | — |
| 8Y | 12,444 | — | 1,632 | 1,501 | 945 | 869 | 3,264 | — |
| 8Z | 12,733 | — | 1,752 | 1,612 | 945 | 869 | 3,448 | — |

NOTE(S):

- a. Evaporator includes the control panel (PIC6.1), the suction elbow, and the distribution piping to the economizer and two-pass Victaulic dished heads (half the distribution piping weight).
- b. Condenser includes the high side float chamber valve and sump, discharge elbow, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads (half the distribution piping weight).
- c. For special tubes refer to the 19XR,XRV Computer Selection Program.
- d. All weights for standard 2-pass NIH (nozzle-in-head) design.
- e. For "E" compressor, add 1,054 lb (478 kg) steel weight and 283 lb (128 kg) refrigerant weight for economizer assembly.
- f. Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
- g. See Model Number Nomenclature.

Table 16 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C and E — Drive End Entering Evaporator Water (SI)^{a,b,c,d,e,f,g}

| CODE | DRY RIGGING WEIGHT (kg) | | MACHINE CHARGE | | | | | |
|------|-------------------------|----------------|-------------------------|--------|-----------|-----|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (kg) | | | | Water Weight (kg) | |
| | | | Evaporator | | Condenser | | Evaporator | Condenser |
| | R-513A | R-515B | R-513A | R-515B | | | | |
| 30 | 1 847 | 1 676 | 231 | — | 140 | — | 210 | 210 |
| 31 | 1 929 | 1 769 | 256 | — | 140 | — | 241 | 246 |
| 32 | 2 016 | 1 860 | 284 | — | 140 | — | 273 | 282 |
| 35 | 1 970 | 2 089 | 262 | — | 158 | — | 232 | 233 |
| 36 | 2 064 | 2 195 | 290 | — | 158 | — | 266 | 274 |
| 37 | 2 163 | 2 299 | 322 | — | 158 | — | 303 | 314 |
| 40 | 2 226 | 2 286 | 329 | — | 153 | — | 391 | 415 |
| 41 | 2 303 | 2 373 | 355 | — | 153 | — | 422 | 451 |
| 42 | 2 370 | 2 460 | 381 | — | 153 | — | 449 | 487 |
| 45 | 2 433 | 2 541 | 372 | — | 174 | — | 425 | 453 |
| 46 | 2 522 | 2 642 | 396 | — | 174 | — | 460 | 494 |
| 47 | 2 599 | 2 742 | 430 | — | 174 | — | 491 | 535 |
| 50 | 2 591 | 2 762 | 407 | 170 | 202 | 186 | 499 | 556 |
| 51 | 2 694 | 2 850 | 442 | 184 | 202 | 186 | 541 | 591 |
| 52 | 2 759 | 2 932 | 463 | 193 | 202 | 186 | 566 | 626 |
| 53 | 2 786 | 2 962 | 458 | 191 | 202 | 186 | 579 | 639 |
| 54 | 2 809 | 2 990 | 448 | 187 | 202 | 186 | 591 | 653 |
| 55 | 2 838 | 3 078 | 460 | 192 | 229 | 210 | 545 | 607 |
| 56 | 2 956 | 3 178 | 499 | 208 | 229 | 210 | 591 | 648 |
| 57 | 3 031 | 3 273 | 523 | 219 | 229 | 210 | 621 | 687 |
| 58 | 3 062 | 3 307 | 518 | 216 | 229 | 210 | 635 | 703 |
| 59 | 3 089 | 3 340 | 506 | 211 | 229 | 210 | 649 | 718 |
| 5A | 2 324 | — | 223 | 93 | 202 | 186 | 464 | — |
| 5B | 2 348 | — | 231 | 97 | 202 | 186 | 476 | — |
| 5C | 2 378 | — | 241 | 101 | 202 | 186 | 489 | — |
| 5F | 2 530 | — | 251 | 105 | 229 | 210 | 505 | — |
| 5G | 2 558 | — | 261 | 109 | 229 | 210 | 518 | — |
| 5H | 2 593 | — | 272 | 113 | 229 | 210 | 533 | — |
| 5K | 2 265 | — | 305 | 127 | 202 | 186 | 484 | — |
| 5L | 2 309 | — | 320 | 134 | 202 | 186 | 507 | — |
| 5M | 2 343 | — | 337 | 141 | 202 | 186 | 527 | — |
| 5P | 2 287 | — | 291 | 122 | 202 | 186 | 504 | — |
| 5Q | 2 327 | — | 308 | 128 | 202 | 186 | 524 | — |
| 5R | 2 365 | — | 322 | 134 | 202 | 186 | 547 | — |
| 5T | 2 461 | — | 348 | 146 | 229 | 210 | 527 | — |
| 5U | 2 510 | — | 363 | 151 | 229 | 210 | 553 | — |
| 5V | 2 549 | — | 382 | 160 | 229 | 210 | 576 | — |
| 5X | 2 488 | — | 331 | 138 | 229 | 210 | 550 | — |
| 5Y | 2 533 | — | 349 | 146 | 229 | 210 | 572 | — |
| 5Z | 2 575 | — | 365 | 152 | 229 | 210 | 599 | — |
| 60 | 3 048 | 3 068 | 495 | 206 | 217 | 200 | 635 | 690 |
| 61 | 3 128 | 3 152 | 522 | 218 | 217 | 200 | 667 | 724 |
| 62 | 3 192 | 3 234 | 545 | 228 | 217 | 200 | 693 | 758 |
| 63 | 3 222 | 3 265 | 545 | 228 | 217 | 200 | 707 | 773 |
| 64 | 3 248 | 3 295 | 534 | 223 | 217 | 200 | 720 | 787 |
| 65 | 3 353 | 3 076 | 563 | 235 | 246 | 200 | 694 | 756 |
| 66 | 3 445 | 3 581 | 594 | 248 | 246 | 226 | 730 | 795 |
| 67 | 3 519 | 3 675 | 621 | 259 | 246 | 226 | 759 | 834 |
| 68 | 3 554 | 3 711 | 616 | 257 | 246 | 226 | 776 | 850 |
| 69 | 3 586 | 3 746 | 604 | 252 | 246 | 226 | 791 | 867 |
| 6K | 2 593 | — | 345 | 144 | 217 | 200 | 586 | — |
| 6L | 2 633 | — | 362 | 151 | 217 | 200 | 608 | — |
| 6M | 2 673 | — | 376 | 157 | 217 | 200 | 635 | — |
| 6P | 2 616 | — | 329 | 137 | 217 | 200 | 607 | — |
| 6Q | 2 654 | — | 347 | 145 | 217 | 200 | 628 | — |
| 6R | 2 693 | — | 362 | 151 | 217 | 200 | 653 | — |
| 6T | 2 826 | — | 391 | 163 | 246 | 226 | 637 | — |
| 6U | 2 871 | — | 411 | 171 | 246 | 226 | 663 | — |
| 6V | 2 918 | — | 427 | 178 | 246 | 226 | 693 | — |
| 6X | 2 854 | — | 373 | 156 | 246 | 226 | 662 | — |
| 6Y | 2 898 | — | 394 | 164 | 246 | 226 | 686 | — |
| 6Z | 2 942 | — | 411 | 171 | 246 | 226 | 714 | — |
| 70 | 4 510 | 4 892 | 639 | 267 | 381 | 351 | 911 | 1 009 |
| 71 | 4 686 | 5 085 | 698 | 291 | 381 | 351 | 982 | 1 084 |
| 72 | 4 823 | 5 272 | 747 | 312 | 381 | 351 | 1 037 | 1 156 |

Table 16 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C and E — Drive End Entering Evaporator Water (SI)^{a,b,c,d,e,f,g} (cont)

| CODE | DRY RIGGING WEIGHT (kg) | | MACHINE CHARGE | | | | | |
|------|-------------------------|----------------|-------------------------|-----------|-------------------|--------|------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (kg) | | Water Weight (kg) | | Evaporator | Condenser |
| | | | Evaporator | Condenser | R-513A | R-515B | | |
| 73 | 4 860 | 5 324 | 736 | 677 | 381 | 351 | 1 056 | 1 181 |
| 74 | 4 894 | 5 341 | 718 | 661 | 381 | 351 | 1 073 | 1 189 |
| 75 | 4 917 | 5 379 | 725 | 667 | 431 | 396 | 990 | 1 103 |
| 76 | 5 121 | 5 600 | 792 | 729 | 431 | 396 | 1 071 | 1 188 |
| 77 | 5 279 | 5 812 | 848 | 780 | 431 | 396 | 1 134 | 1 271 |
| 78 | 5 324 | 5 874 | 839 | 772 | 431 | 396 | 1 156 | 1 299 |
| 79 | 5 365 | 5 894 | 819 | 754 | 431 | 396 | 1 176 | 1 309 |
| 7K | 3 959 | — | 475 | 437 | 381 | 351 | 884 | — |
| 7L | 4 064 | — | 513 | 472 | 381 | 351 | 950 | — |
| 7M | 4 155 | — | 551 | 507 | 381 | 351 | 1 011 | — |
| 7P | 3 988 | — | 454 | 418 | 381 | 351 | 912 | — |
| 7Q | 4 093 | — | 493 | 454 | 381 | 351 | 978 | — |
| 7R | 4 186 | — | 529 | 487 | 381 | 351 | 1 041 | — |
| 7T | 4 278 | — | 542 | 498 | 431 | 396 | 959 | — |
| 7U | 4 399 | — | 586 | 539 | 431 | 396 | 1 035 | — |
| 7V | 4 505 | — | 636 | 586 | 431 | 396 | 1 105 | — |
| 7X | 4 314 | — | 518 | 477 | 431 | 396 | 991 | — |
| 7Y | 4 435 | — | 562 | 518 | 431 | 396 | 1 067 | — |
| 7Z | 4 543 | — | 611 | 562 | 431 | 396 | 1 139 | — |
| 80 | 5 744 | 5 785 | 771 | 709 | 379 | 349 | 1 236 | 1 350 |
| 81 | 5 896 | 5 964 | 822 | 756 | 379 | 349 | 1 299 | 1 426 |
| 82 | 6 054 | 6 144 | 875 | 805 | 379 | 349 | 1 363 | 1 501 |
| 83 | 6 095 | 6 292 | 851 | 783 | 379 | 349 | 1 385 | 1 577 |
| 84 | 6 134 | 6 449 | 835 | 768 | 379 | 349 | 1 406 | 1 656 |
| 85 | 6 261 | 6 354 | 874 | 804 | 429 | 394 | 1 339 | 1 469 |
| 86 | 6 437 | 6 561 | 932 | 857 | 429 | 394 | 1 410 | 1 555 |
| 87 | 6 621 | 6 769 | 992 | 912 | 429 | 394 | 1 484 | 1 641 |
| 88 | 6 670 | 6 945 | 972 | 894 | 429 | 394 | 1 508 | 1 637 |
| 89 | 6 717 | 7 131 | 952 | 876 | 429 | 394 | 1 532 | 1 818 |
| 8K | 5 059 | — | 628 | 578 | 379 | 349 | 1 252 | — |
| 8L | 5 171 | — | 673 | 619 | 379 | 349 | 1 327 | — |
| 8M | 5 284 | — | 721 | 663 | 379 | 349 | 1 401 | — |
| 8P | 5 089 | — | 605 | 557 | 379 | 349 | 1 284 | — |
| 8Q | 5 203 | — | 649 | 597 | 379 | 349 | 1 360 | — |
| 8R | 5 316 | — | 696 | 640 | 379 | 349 | 1 434 | — |
| 8T | 5 474 | — | 717 | 660 | 429 | 394 | 1 357 | — |
| 8U | 5 605 | — | 768 | 768 | 429 | 394 | 1 442 | — |
| 8V | 5 736 | — | 823 | 757 | 429 | 394 | 1 526 | — |
| 8X | 5 512 | — | 690 | 635 | 429 | 394 | 1 393 | — |
| 8Y | 5 645 | — | 740 | 681 | 429 | 394 | 1 481 | — |
| 8Z | 5 776 | — | 795 | 731 | 429 | 394 | 1 564 | — |

NOTE(S):

- a. Evaporator includes the control panel (PIC6.1), the suction elbow, and the distribution piping to the economizer and two-pass Victaulic dished heads (half the distribution piping weight).
- b. Condenser includes the high side float chamber valve and sump, discharge elbow, and the distribution piping weight from the economizer to the float chamber and two-pass Victaulic dished heads (half the distribution piping weight).
- c. For special tubes refer to the 19XR,XRV Computer Selection Program.
- d. All weights for standard 2-pass NIH (nozzle-in-head) design.
- e. For "E" compressor, add 1,054 lb (478 kg) steel weight and 283 lb (128 kg) refrigerant weight for economizer assembly.
- f. Rigging weights are for standard tubes of standard wall thickness (0.025-in. [0.635 mm] wall) and do not include refrigerant weight.
- g. See Model Number Nomenclature.

Table 17 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C, E — Compressor End Entering Evaporator Water (English)^{a,b,c,d,e}

| CODE ^f | DRY RIGGING WEIGHT ^g (lb) | | MACHINE CHARGE | | | | | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|-----------|-----|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (lb) | | | | Water Weight (lb) | |
| | | | Evaporator | | Condenser | | Evaporator | Condenser |
| | R-513A | R-515B | R-513A | R-515B | | | | |
| 30 | 4,071 | 3,694 | 350 | — | 260 | — | 464 | 464 |
| 31 | 4,253 | 3,899 | 420 | — | 260 | — | 531 | 543 |
| 32 | 4,445 | 4,100 | 490 | — | 260 | — | 601 | 621 |
| 35 | 4,343 | 4,606 | 400 | — | 310 | — | 511 | 513 |
| 36 | 4,551 | 4,840 | 480 | — | 310 | — | 587 | 603 |
| 37 | 4,769 | 5,069 | 550 | — | 310 | — | 667 | 692 |
| 40 | 4,908 | 5,039 | 560 | — | 338 | — | 863 | 915 |
| 41 | 5,078 | 5,232 | 630 | — | 338 | — | 930 | 995 |
| 42 | 5,226 | 5,424 | 690 | — | 338 | — | 990 | 1,074 |
| 45 | 5,363 | 5,602 | 640 | — | 383 | — | 938 | 998 |
| 46 | 5,559 | 5,824 | 720 | — | 383 | — | 1,014 | 1,088 |
| 47 | 5,730 | 6,044 | 790 | — | 383 | — | 1,083 | 1,179 |
| 50 | 5,713 | 6,090 | 750 | 690 | 446 | 410 | 1,101 | 1,225 |
| 51 | 5,940 | 6,283 | 840 | 773 | 446 | 410 | 1,192 | 1,304 |
| 52 | 6,083 | 6,464 | 900 | 828 | 446 | 410 | 1,248 | 1,379 |
| 53 | 6,141 | 6,529 | 900 | 828 | 446 | 410 | 1,277 | 1,409 |
| 54 | 6,192 | 6,591 | 900 | 828 | 446 | 410 | 1,302 | 1,439 |
| 55 | 6,257 | 6,785 | 870 | 800 | 504 | 464 | 1,201 | 1,339 |
| 56 | 6,517 | 7,007 | 940 | 865 | 504 | 464 | 1,304 | 1,429 |
| 57 | 6,682 | 7,215 | 980 | 902 | 504 | 464 | 1,369 | 1,514 |
| 58 | 6,751 | 7,291 | 980 | 902 | 504 | 464 | 1,401 | 1,550 |
| 59 | 6,811 | 7,363 | 980 | 902 | 504 | 464 | 1,430 | 1,583 |
| 5A | 5,124 | — | 500 | 460 | 446 | 410 | 1,023 | — |
| 5B | 5,177 | — | 520 | 478 | 446 | 410 | 1,050 | — |
| 5C | 5,243 | — | 550 | 506 | 446 | 410 | 1,079 | — |
| 5F | 5,577 | — | 550 | 506 | 504 | 464 | 1,113 | — |
| 5G | 5,640 | — | 570 | 524 | 504 | 464 | 1,143 | — |
| 5H | 5,716 | — | 600 | 552 | 504 | 464 | 1,176 | — |
| 5K | 4,993 | — | 673 | 619 | 446 | 410 | 1,067 | — |
| 5L | 5,090 | — | 706 | 650 | 446 | 410 | 1,118 | — |
| 5M | 5,165 | — | 742 | 683 | 446 | 410 | 1,162 | — |
| 5P | 5,041 | — | 641 | 590 | 446 | 410 | 1,111 | — |
| 5Q | 5,131 | — | 678 | 624 | 446 | 410 | 1,155 | — |
| 5R | 5,214 | — | 709 | 652 | 446 | 410 | 1,206 | — |
| 5T | 5,425 | — | 768 | 707 | 504 | 464 | 1,162 | — |
| 5U | 5,534 | — | 801 | 737 | 504 | 464 | 1,220 | — |
| 5V | 5,620 | — | 843 | 776 | 504 | 464 | 1,270 | — |
| 5X | 5,484 | — | 730 | 672 | 504 | 464 | 1,212 | — |
| 5Y | 5,584 | — | 769 | 707 | 504 | 464 | 1,262 | — |
| 5Z | 5,678 | — | 805 | 741 | 504 | 464 | 1,320 | — |
| 60 | 6,719 | 6,764 | 940 | 865 | 479 | 441 | 1,400 | 1,521 |
| 61 | 6,895 | 6,949 | 980 | 902 | 479 | 441 | 1,470 | 1,597 |
| 62 | 7,038 | 7,130 | 1,020 | 938 | 479 | 441 | 1,527 | 1,671 |
| 63 | 7,103 | 7,199 | 1,020 | 938 | 479 | 441 | 1,559 | 1,704 |
| 64 | 7,161 | 7,264 | 1,020 | 938 | 479 | 441 | 1,587 | 1,735 |
| 65 | 7,392 | 7,682 | 1,020 | 938 | 542 | 499 | 1,530 | 1,667 |
| 66 | 7,594 | 7,894 | 1,060 | 975 | 542 | 499 | 1,610 | 1,753 |
| 67 | 7,759 | 8,102 | 1,090 | 1,003 | 542 | 499 | 1,674 | 1,838 |
| 68 | 7,836 | 8,182 | 1,090 | 1,003 | 542 | 499 | 1,711 | 1,875 |
| 69 | 7,905 | 8,258 | 1,090 | 1,003 | 542 | 499 | 1,743 | 1,911 |
| 6K | 5,716 | — | 760 | 699 | 479 | 441 | 1,291 | — |
| 6L | 5,804 | — | 797 | 733 | 479 | 441 | 1,341 | — |
| 6M | 5,894 | — | 828 | 762 | 479 | 441 | 1,399 | — |
| 6P | 5,768 | — | 725 | 667 | 479 | 441 | 1,338 | — |
| 6Q | 5,852 | — | 764 | 703 | 479 | 441 | 1,385 | — |
| 6R | 5,938 | — | 798 | 734 | 479 | 441 | 1,439 | — |
| 6T | 6,230 | — | 863 | 794 | 542 | 499 | 1,405 | — |
| 6U | 6,330 | — | 905 | 833 | 542 | 499 | 1,462 | — |
| 6V | 6,433 | — | 941 | 866 | 542 | 499 | 1,528 | — |
| 6X | 6,293 | — | 823 | 757 | 542 | 499 | 1,459 | — |
| 6Y | 6,388 | — | 868 | 799 | 542 | 499 | 1,512 | — |
| 6Z | 6,487 | — | 906 | 834 | 542 | 499 | 1,574 | — |
| 70 | 9,942 | 10,786 | 1,220 | 1,122 | 840 | 773 | 2,008 | 2,225 |
| 71 | 10,330 | 11,211 | 1,340 | 1,233 | 840 | 773 | 2,164 | 2,389 |
| 72 | 10,632 | 11,622 | 1,440 | 1,325 | 840 | 773 | 2,286 | 2,548 |

Table 17 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C, E — Compressor End Entering Evaporator Water (English)^{a,b,c,d,e} (cont)

| CODE ^f | DRY RIGGING WEIGHT ^g (lb) | | MACHINE CHARGE | | | | | |
|-------------------|--------------------------------------|----------------|-------------------------|-----------|-------------------|--------|------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (lb) | | Water Weight (lb) | | Evaporator | Condenser |
| | | | Evaporator | Condenser | R-513A | R-515B | | |
| 73 | 10,715 | 11,737 | 1,440 | 1,325 | 840 | 773 | 2,328 | 2,604 |
| 74 | 10,790 | 11,775 | 1,440 | 1,325 | 840 | 773 | 2,366 | 2,622 |
| 75 | 10,840 | 11,859 | 1,365 | 1,256 | 950 | 874 | 2,183 | 2,431 |
| 76 | 11,289 | 12,345 | 1,505 | 1,385 | 950 | 874 | 2,361 | 2,619 |
| 77 | 11,638 | 12,814 | 1,625 | 1,495 | 950 | 874 | 2,501 | 2,801 |
| 78 | 11,738 | 12,949 | 1,625 | 1,495 | 950 | 874 | 2,548 | 2,864 |
| 79 | 11,828 | 12,994 | 1,625 | 1,495 | 950 | 874 | 2,592 | 2,885 |
| 7K | 8,728 | — | 1,047 | 963 | 840 | 773 | 1,948 | — |
| 7L | 8,959 | — | 1,132 | 1,041 | 840 | 773 | 2,094 | — |
| 7M | 9,161 | — | 1,214 | 1,117 | 840 | 773 | 2,229 | — |
| 7P | 8,792 | — | 1,002 | 922 | 840 | 773 | 2,010 | — |
| 7Q | 9,023 | — | 1,087 | 1,000 | 840 | 773 | 2,156 | — |
| 7R | 9,229 | — | 1,167 | 1,074 | 840 | 773 | 2,295 | — |
| 7T | 9,431 | — | 1,194 | 1,098 | 950 | 874 | 2,115 | — |
| 7U | 9,698 | — | 1,292 | 1,189 | 950 | 874 | 2,282 | — |
| 7V | 9,932 | — | 1,403 | 1,291 | 950 | 874 | 2,436 | — |
| 7X | 9,510 | — | 1,142 | 1,051 | 950 | 874 | 2,185 | — |
| 7Y | 9,777 | — | 1,240 | 1,141 | 950 | 874 | 2,352 | — |
| 7Z | 10,016 | — | 1,347 | 1,239 | 950 | 874 | 2,511 | — |
| 80 | 12,664 | 12,753 | 1,500 | 1,380 | 836 | 769 | 2,726 | 2,977 |
| 81 | 12,998 | 13,149 | 1,620 | 1,490 | 836 | 769 | 2,863 | 3,143 |
| 82 | 13,347 | 13,545 | 1,730 | 1,592 | 836 | 769 | 3,005 | 3,309 |
| 83 | 13,437 | 13,872 | 1,730 | 1,592 | 836 | 769 | 3,053 | 3,476 |
| 84 | 13,523 | 14,217 | 1,730 | 1,592 | 836 | 769 | 3,099 | 3,651 |
| 85 | 13,804 | 14,008 | 1,690 | 1,555 | 945 | 869 | 2,951 | 3,238 |
| 86 | 14,191 | 14,465 | 1,820 | 1,674 | 945 | 869 | 3,108 | 3,428 |
| 87 | 14,597 | 14,923 | 1,940 | 1,785 | 945 | 869 | 3,271 | 3,618 |
| 88 | 14,705 | 15,311 | 1,940 | 1,785 | 945 | 869 | 3,325 | 3,808 |
| 89 | 14,808 | 15,721 | 1,940 | 1,785 | 945 | 869 | 3,378 | 4,009 |
| 8K | 11,153 | — | 1,385 | 1,274 | 836 | 769 | 2,760 | — |
| 8L | 11,400 | — | 1,484 | 1,365 | 836 | 769 | 2,926 | — |
| 8M | 11,650 | — | 1,589 | 1,462 | 836 | 769 | 3,088 | — |
| 8P | 11,219 | — | 1,334 | 1,227 | 836 | 769 | 2,830 | — |
| 8Q | 11,470 | — | 1,430 | 1,316 | 836 | 769 | 2,999 | — |
| 8R | 11,719 | — | 1,535 | 1,412 | 836 | 769 | 3,161 | — |
| 8T | 12,069 | — | 1,580 | 1,454 | 945 | 869 | 2,991 | — |
| 8U | 12,357 | — | 1,694 | 1,558 | 945 | 869 | 3,180 | — |
| 8V | 12,645 | — | 1,814 | 1,669 | 945 | 869 | 3,365 | — |
| 8X | 12,152 | — | 1,522 | 1,400 | 945 | 869 | 3,070 | — |
| 8Y | 12,444 | — | 1,632 | 1,501 | 945 | 869 | 3,264 | — |
| 8Z | 12,733 | — | 1,752 | 1,612 | 945 | 869 | 3,448 | — |

NOTE(S):

- a. Evaporator includes the control panel (PIC6.1), suction elbow, and 1/2 the distribution piping weight.
- b. Condenser includes float valve and sump, discharge elbow, and 1/2 the distribution piping weight.
- c. For special tubes refer to the 19XR,XRV Computer Selection Program.
- d. All weights for standard 2-pass NIH (nozzle-in-head) design.
- e. For "E" compressor, add 1,054 lb (478 kg) steel weight and 283 lb (128 kg) refrigerant weight for economizer assembly.
- f. Heat exchanger frame sizes 3 through 4 available on single-stage chillers only.
- g. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

Table 18 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C, E — Compressor End Entering Evaporator Water (SI)^{a,b,c,d,e}

| CODE ^f | DRY RIGGING WEIGHT ^g (kg) | | MACHINE CHARGE | | | | | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|-----------|-----|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (kg) | | | | Water Weight (kg) | |
| | | | Evaporator | | Condenser | | Evaporator | Condenser |
| | R-513A | R-515B | R-513A | R-515B | | | | |
| 30 | 1 847 | 1 676 | 159 | — | 118 | — | 210 | 210 |
| 31 | 1 929 | 1 769 | 191 | — | 118 | — | 241 | 246 |
| 32 | 2 016 | 1 860 | 222 | — | 118 | — | 273 | 282 |
| 35 | 1 970 | 2 089 | 181 | — | 141 | — | 232 | 233 |
| 36 | 2 064 | 2 195 | 218 | — | 141 | — | 266 | 274 |
| 37 | 2 163 | 2 299 | 249 | — | 141 | — | 303 | 314 |
| 40 | 2 226 | 2 286 | 254 | — | 153 | — | 391 | 415 |
| 41 | 2 303 | 2 373 | 286 | — | 153 | — | 422 | 451 |
| 42 | 2 370 | 2 460 | 313 | — | 153 | — | 449 | 487 |
| 45 | 2 433 | 2 541 | 290 | — | 174 | — | 425 | 453 |
| 46 | 2 522 | 2 642 | 327 | — | 174 | — | 460 | 494 |
| 47 | 2 599 | 2 742 | 358 | — | 174 | — | 491 | 535 |
| 50 | 2 591 | 2 762 | 340 | 313 | 202 | 186 | 499 | 556 |
| 51 | 2 694 | 2 850 | 381 | 351 | 202 | 186 | 541 | 591 |
| 52 | 2 759 | 2 932 | 408 | 376 | 202 | 186 | 566 | 626 |
| 53 | 2 786 | 2 962 | 408 | 376 | 202 | 186 | 579 | 639 |
| 54 | 2 809 | 2 990 | 408 | 376 | 202 | 186 | 591 | 653 |
| 55 | 2 838 | 3 078 | 395 | 363 | 229 | 210 | 545 | 607 |
| 56 | 2 956 | 3 178 | 426 | 392 | 229 | 210 | 591 | 648 |
| 57 | 3 031 | 3 273 | 445 | 409 | 229 | 210 | 621 | 687 |
| 58 | 3 062 | 3 307 | 445 | 409 | 229 | 210 | 635 | 703 |
| 59 | 3 089 | 3 340 | 445 | 409 | 229 | 210 | 649 | 718 |
| 5A | 2 324 | — | 227 | 209 | 202 | 186 | 464 | — |
| 5B | 2 348 | — | 236 | 217 | 202 | 186 | 476 | — |
| 5C | 2 378 | — | 249 | 230 | 202 | 186 | 489 | — |
| 5F | 2 530 | — | 249 | 230 | 229 | 210 | 505 | — |
| 5G | 2 558 | — | 259 | 238 | 229 | 210 | 518 | — |
| 5H | 2 593 | — | 272 | 250 | 229 | 210 | 533 | — |
| 5K | 2 265 | — | 305 | 281 | 202 | 186 | 484 | — |
| 5L | 2 309 | — | 320 | 295 | 202 | 186 | 507 | — |
| 5M | 2 343 | — | 337 | 310 | 202 | 186 | 527 | — |
| 5P | 2 287 | — | 291 | 268 | 202 | 186 | 504 | — |
| 5Q | 2 327 | — | 308 | 283 | 202 | 186 | 524 | — |
| 5R | 2 365 | — | 322 | 296 | 202 | 186 | 547 | — |
| 5T | 2 461 | — | 348 | 321 | 229 | 210 | 527 | — |
| 5U | 2 510 | — | 363 | 334 | 229 | 210 | 553 | — |
| 5V | 2 549 | — | 382 | 352 | 229 | 210 | 576 | — |
| 5X | 2 488 | — | 331 | 305 | 229 | 210 | 550 | — |
| 5Y | 2 533 | — | 349 | 321 | 229 | 210 | 572 | — |
| 5Z | 2 575 | — | 365 | 336 | 229 | 210 | 599 | — |
| 60 | 3 048 | 3 068 | 426 | 392 | 217 | 200 | 635 | 690 |
| 61 | 3 128 | 3 152 | 445 | 409 | 217 | 200 | 667 | 724 |
| 62 | 3 192 | 3 234 | 463 | 425 | 217 | 200 | 693 | 758 |
| 63 | 3 222 | 3 265 | 463 | 425 | 217 | 200 | 707 | 773 |
| 64 | 3 248 | 3 295 | 463 | 425 | 217 | 200 | 720 | 787 |
| 65 | 3 353 | 3 484 | 463 | 425 | 246 | 226 | 694 | 756 |
| 66 | 3 445 | 3 581 | 481 | 442 | 246 | 226 | 730 | 795 |
| 67 | 3 519 | 3 675 | 494 | 455 | 246 | 226 | 759 | 834 |
| 68 | 3 554 | 3 711 | 494 | 455 | 246 | 226 | 776 | 850 |
| 69 | 3 586 | 3 746 | 494 | 455 | 246 | 226 | 791 | 867 |
| 6K | 2 593 | — | 345 | 317 | 217 | 200 | 586 | — |
| 6L | 2 633 | — | 362 | 332 | 217 | 200 | 608 | — |
| 6M | 2 673 | — | 376 | 346 | 217 | 200 | 635 | — |
| 6P | 2 616 | — | 329 | 303 | 217 | 200 | 607 | — |
| 6Q | 2 654 | — | 347 | 319 | 217 | 200 | 628 | — |
| 6R | 2 693 | — | 362 | 333 | 217 | 200 | 653 | — |
| 6T | 2 826 | — | 391 | 360 | 246 | 226 | 637 | — |
| 6U | 2 871 | — | 411 | 378 | 246 | 226 | 663 | — |
| 6V | 2 918 | — | 427 | 393 | 246 | 226 | 693 | — |
| 6X | 2 854 | — | 373 | 343 | 246 | 226 | 662 | — |
| 6Y | 2 898 | — | 394 | 362 | 246 | 226 | 686 | — |
| 6Z | 2 942 | — | 411 | 378 | 246 | 226 | 714 | — |
| 70 | 4 510 | 4 892 | 553 | 509 | 381 | 351 | 911 | 1 009 |
| 71 | 4 686 | 5 085 | 608 | 559 | 381 | 351 | 982 | 1 084 |
| 72 | 4 823 | 5 272 | 653 | 601 | 381 | 351 | 1 037 | 1 156 |

Table 18 — 19XR,XRV Heat Exchanger Weights — Single-Stage Compressor and Two-Stage Compressor Frame Size C, E — Compressor End Entering Evaporator Water (SI)^{a,b,c,d,e} (cont)

| CODE ^f | DRY RIGGING WEIGHT ^g (kg) | | MACHINE CHARGE | | | | | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|-----------|--------|-------------------|-----------|
| | Evaporator Only | Condenser Only | Refrigerant Weight (kg) | | | | Water Weight (kg) | |
| | | | Evaporator | | Condenser | | Evaporator | Condenser |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| 73 | 4 860 | 5 324 | 653 | 601 | 381 | 351 | 1 056 | 1 181 |
| 74 | 4 894 | 5 341 | 653 | 601 | 381 | 351 | 1 073 | 1 189 |
| 75 | 4 917 | 5 379 | 619 | 570 | 431 | 396 | 990 | 1 103 |
| 76 | 5 121 | 5 600 | 683 | 628 | 431 | 396 | 1 071 | 1 188 |
| 77 | 5 279 | 5 812 | 737 | 678 | 431 | 396 | 1 134 | 1 271 |
| 78 | 5 324 | 5 874 | 737 | 678 | 431 | 396 | 1 156 | 1 299 |
| 79 | 5 365 | 5 894 | 737 | 678 | 431 | 396 | 1 176 | 1 309 |
| 7K | 3 959 | — | 475 | 437 | 381 | 351 | 884 | — |
| 7L | 4 064 | — | 513 | 472 | 381 | 351 | 950 | — |
| 7M | 4 155 | — | 551 | 507 | 381 | 351 | 1 011 | — |
| 7P | 3 988 | — | 454 | 418 | 381 | 351 | 912 | — |
| 7Q | 4 093 | — | 493 | 454 | 381 | 351 | 978 | — |
| 7R | 4 186 | — | 529 | 487 | 381 | 351 | 1 041 | — |
| 7T | 4 278 | — | 542 | 498 | 431 | 396 | 959 | — |
| 7U | 4 399 | — | 586 | 539 | 431 | 396 | 1 035 | — |
| 7V | 4 505 | — | 636 | 586 | 431 | 396 | 1 105 | — |
| 7X | 4 314 | — | 518 | 477 | 431 | 396 | 991 | — |
| 7Y | 4 435 | — | 562 | 518 | 431 | 396 | 1 067 | — |
| 7Z | 4 543 | — | 611 | 562 | 431 | 396 | 1 139 | — |
| 80 | 5 744 | 5 785 | 680 | 626 | 379 | 349 | 1 236 | 1 350 |
| 81 | 5 896 | 5 964 | 735 | 676 | 379 | 349 | 1 299 | 1 426 |
| 82 | 6 054 | 6 144 | 785 | 722 | 379 | 349 | 1 363 | 1 501 |
| 83 | 6 095 | 6 292 | 785 | 722 | 379 | 349 | 1 385 | 1 577 |
| 84 | 6 134 | 6 449 | 785 | 722 | 379 | 349 | 1 406 | 1 656 |
| 85 | 6 261 | 6 354 | 767 | 705 | 429 | 394 | 1 339 | 1 469 |
| 86 | 6 437 | 6 561 | 826 | 759 | 429 | 394 | 1 410 | 1 555 |
| 87 | 6 621 | 6 769 | 880 | 810 | 429 | 394 | 1 484 | 1 641 |
| 88 | 6 670 | 6 945 | 880 | 810 | 429 | 394 | 1 508 | 1 727 |
| 89 | 6 717 | 7 131 | 880 | 810 | 429 | 394 | 1 532 | 1 818 |
| 8K | 5 059 | — | 628 | 578 | 379 | 349 | 1 252 | — |
| 8L | 5 171 | — | 673 | 619 | 379 | 349 | 1 327 | — |
| 8M | 5 284 | — | 721 | 663 | 379 | 349 | 1 401 | — |
| 8P | 5 089 | — | 605 | 557 | 379 | 349 | 1 284 | — |
| 8Q | 5 203 | — | 649 | 597 | 379 | 349 | 1 360 | — |
| 8R | 5 316 | — | 696 | 640 | 379 | 349 | 1 434 | — |
| 8T | 5 474 | — | 717 | 660 | 429 | 394 | 1 357 | — |
| 8U | 5 605 | — | 768 | 707 | 429 | 394 | 1 442 | — |
| 8V | 5 736 | — | 823 | 757 | 429 | 394 | 1 526 | — |
| 8X | 5 512 | — | 690 | 635 | 429 | 394 | 1 393 | — |
| 8Y | 5 645 | — | 740 | 681 | 429 | 394 | 1 481 | — |
| 8Z | 5 776 | — | 795 | 731 | 429 | 394 | 1 564 | — |

NOTE(S):

- a. Evaporator includes the control panel (PIC6.1), suction elbow, and 1/2 the distribution piping weight.
- b. Condenser includes float valve and sump, discharge elbow, and 1/2 the distribution piping weight.
- c. For special tubes refer to the 19XR,XRV Computer Selection Program.
- d. All weights for standard 2-pass NIH (nozzle-in-head) design.
- e. For "E" compressor, add 1,054 lb (478 kg) steel weight and 283 lb (128 kg) refrigerant weight for economizer assembly.
- f. Heat exchanger frame sizes 3 through 4 available on single-stage chillers only.
- g. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

**Table 19 — 19XR Two-Stage Compressor Frame Size 6
Heat Exchanger Weights (English)^{a,b}**

| CODE ^c | DRY RIGGING WEIGHT (lb) ^d | | REFRIGERANT WEIGHT (lb) | | | | WATER WEIGHT (lb) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| A40 | 16,877 | 18,542 | 1,647 | 1,690 | 927 | 853 | 4,328 | 4,553 |
| A41 | 17,270 | 19,062 | 1,773 | 1,631 | 927 | 853 | 4,557 | 4,890 |
| A42 | 17,690 | 19,565 | 1,887 | 1,736 | 927 | 853 | 4,816 | 5,213 |
| A45 | 16,968 | 18,493 | 1,599 | 1,471 | 927 | 853 | 4,453 | 4,582 |
| A46 | 17,371 | 19,063 | 1,714 | 1,577 | 927 | 853 | 4,701 | 4,949 |
| A47 | 17,761 | 19,578 | 1,837 | 1,690 | 927 | 853 | 4,941 | 5,281 |
| A60 | 18,354 | 20,139 | 1,878 | 1,728 | 1,074 | 988 | 4,721 | 5,029 |
| A61 | 18,807 | 20,745 | 2,022 | 1,860 | 1,074 | 988 | 4,984 | 5,415 |
| A62 | 19,295 | 21,330 | 2,152 | 1,980 | 1,074 | 988 | 5,280 | 5,786 |
| A65 | 18,469 | 20,095 | 1,823 | 1,677 | 1,074 | 988 | 4,859 | 5,060 |
| A66 | 18,936 | 20,758 | 1,954 | 1,798 | 1,074 | 988 | 5,144 | 5,482 |
| A67 | 19,389 | 21,357 | 2,095 | 1,927 | 1,074 | 988 | 5,419 | 5,862 |
| A4A | 15,540 | 17,089 | 1,681 | 1,547 | 861 | 792 | 4,183 | 4,524 |
| A4B | 15,794 | 17,472 | 1,792 | 1,649 | 861 | 792 | 4,392 | 4,859 |
| A4C | 16,063 | 17,812 | 1,897 | 1,745 | 861 | 792 | 4,615 | 5,137 |
| A4F | 15,592 | 17,076 | 1,626 | 1,496 | 861 | 792 | 4,322 | 4,588 |
| A4G | 15,845 | 17,405 | 1,736 | 1,597 | 861 | 792 | 4,531 | 4,867 |
| A4H | 16,249 | 17,821 | 1,890 | 1,739 | 861 | 792 | 4,865 | 5,219 |
| A6A | 16,465 | 18,359 | 1,917 | 1,764 | 998 | 918 | 4,555 | 4,996 |
| A6B | 16,758 | 18,806 | 2,044 | 1,880 | 998 | 918 | 4,794 | 5,368 |
| A6C | 17,070 | 19,202 | 2,164 | 1,991 | 998 | 918 | 5,050 | 5,698 |
| A6F | 16,535 | 18,356 | 1,854 | 1,706 | 998 | 918 | 4,709 | 5,068 |
| A6G | 16,829 | 18,739 | 1,979 | 1,821 | 998 | 918 | 4,948 | 5,387 |
| A6H | 17,296 | 19,225 | 2,156 | 1,984 | 998 | 918 | 5,331 | 6,156 |
| B40 | — | 21,217 | — | — | 1,233 | — | — | 5,850 |
| B41 | — | 21,965 | — | — | 1,233 | — | — | 6,333 |
| B42 | — | 22,581 | — | — | 1,233 | — | — | 6,729 |
| B45 | — | 21,173 | — | — | 1,233 | — | — | 5,904 |
| B46 | — | 21,909 | — | — | 1,233 | — | — | 6,379 |
| B47 | — | 22,653 | — | — | 1,233 | — | — | 6,859 |
| B60 | — | 23,061 | — | — | 1,423 | — | — | 6,464 |
| B61 | — | 23,932 | — | — | 1,423 | — | — | 7,018 |
| B62 | — | 24,649 | — | — | 1,423 | — | — | 7,473 |
| B65 | — | 23,022 | — | — | 1,423 | — | — | 6,521 |
| B66 | — | 23,879 | — | — | 1,423 | — | — | 7,066 |
| B67 | — | 24,745 | — | — | 1,423 | — | — | 7,617 |
| B4A | — | 19,217 | — | — | 1,148 | — | — | 5,756 |
| B4B | — | 19,793 | — | — | 1,148 | — | — | 6,243 |
| B4C | — | 20,254 | — | — | 1,148 | — | — | 6,633 |
| B4F | — | 19,217 | — | — | 1,148 | — | — | 5,852 |
| B4G | — | 19,721 | — | — | 1,148 | — | — | 6,279 |
| B4H | — | 20,318 | — | — | 1,148 | — | — | 6,785 |
| B6A | — | 20,794 | — | — | 1,326 | — | — | 6,357 |
| B6B | — | 21,465 | — | — | 1,326 | — | — | 6,915 |
| B6C | — | 22,002 | — | — | 1,326 | — | — | 7,362 |
| B6F | — | 20,806 | — | — | 1,326 | — | — | 6,462 |
| B6G | — | 21,393 | — | — | 1,326 | — | — | 6,951 |
| B6H | — | 22,088 | — | — | 1,326 | — | — | 8,379 |

NOTE(S):

- a. Evaporator weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
- b. 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.
- c. Heat exchanger frame sizes 3 through 4 available on single-stage chillers only.
- d. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

**Table 20 — 19XR Two-Stage Compressor Frame Size 6
Heat Exchanger Weights (SI)^{a,b}**

| CODE ^c | DRY RIGGING WEIGHT (kg) ^d | | REFRIGERANT WEIGHT (kg) | | | | WATER WEIGHT (kg) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| A40 | 7 655 | 8 411 | 747 | 767 | 420 | 387 | 1 963 | 2 065 |
| A41 | 7 834 | 8 646 | 804 | 740 | 420 | 387 | 2 067 | 2 218 |
| A42 | 8 024 | 8 875 | 856 | 787 | 420 | 387 | 2 185 | 2 365 |
| A45 | 7 697 | 8 388 | 725 | 667 | 420 | 387 | 2 020 | 2 078 |
| A46 | 7 879 | 8 647 | 777 | 715 | 420 | 387 | 2 132 | 2 245 |
| A47 | 8 056 | 8 880 | 833 | 767 | 420 | 387 | 2 241 | 2 395 |
| A60 | 8 325 | 9 135 | 852 | 784 | 487 | 448 | 2 141 | 2 281 |
| A61 | 8 531 | 9 410 | 917 | 844 | 487 | 448 | 2 261 | 2 456 |
| A62 | 8 752 | 9 675 | 976 | 898 | 487 | 448 | 2 395 | 2 624 |
| A65 | 8 377 | 9 115 | 827 | 761 | 487 | 448 | 2 204 | 2 295 |
| A66 | 8 589 | 9 416 | 886 | 816 | 487 | 448 | 2 333 | 2 487 |
| A67 | 8 795 | 9 687 | 950 | 874 | 487 | 448 | 2 458 | 2 659 |
| A4A | 7 049 | 7 751 | 762 | 702 | 391 | 359 | 1 897 | 2 052 |
| A4B | 7 164 | 7 925 | 813 | 748 | 391 | 359 | 1 992 | 2 204 |
| A4C | 7 286 | 8 079 | 860 | 792 | 391 | 359 | 2 093 | 2 330 |
| A4F | 7 072 | 7 746 | 738 | 679 | 391 | 359 | 1 960 | 2 081 |
| A4G | 7 187 | 7 895 | 787 | 724 | 391 | 359 | 2 055 | 2 208 |
| A4H | 7 370 | 8 083 | 857 | 789 | 391 | 359 | 2 207 | 2 367 |
| A6A | 7 468 | 8 328 | 870 | 800 | 453 | 416 | 2 066 | 2 266 |
| A6B | 7 601 | 8 530 | 927 | 853 | 453 | 416 | 2 175 | 2 435 |
| A6C | 7 743 | 8 710 | 982 | 903 | 453 | 416 | 2 291 | 2 585 |
| A6F | 7 500 | 8 326 | 841 | 774 | 453 | 416 | 2 136 | 2 299 |
| A6G | 7 634 | 8 500 | 898 | 826 | 453 | 416 | 2 244 | 2 444 |
| A6H | 7 845 | 8 720 | 978 | 900 | 453 | 416 | 2 418 | 2 792 |
| B40 | — | 9 624 | — | — | 559 | — | — | 2 654 |
| B41 | — | 9 963 | — | — | 559 | — | — | 2 873 |
| B42 | — | 10 243 | — | — | 559 | — | — | 3 052 |
| B45 | — | 9 604 | — | — | 559 | — | — | 2 678 |
| B46 | — | 9 938 | — | — | 559 | — | — | 2 893 |
| B47 | — | 10 275 | — | — | 559 | — | — | 3 111 |
| B60 | — | 10 460 | — | — | 645 | — | — | 2 932 |
| B61 | — | 10 855 | — | — | 645 | — | — | 3 183 |
| B62 | — | 11 181 | — | — | 645 | — | — | 3 390 |
| B65 | — | 10 443 | — | — | 645 | — | — | 2 958 |
| B66 | — | 10 831 | — | — | 645 | — | — | 3 205 |
| B67 | — | 11 224 | — | — | 645 | — | — | 3 455 |
| B4A | — | 8 717 | — | — | 521 | — | — | 2 611 |
| B4B | — | 8 978 | — | — | 521 | — | — | 2 832 |
| B4C | — | 9 187 | — | — | 521 | — | — | 3 009 |
| B4F | — | 8 717 | — | — | 521 | — | — | 2 654 |
| B4G | — | 8 945 | — | — | 521 | — | — | 2 848 |
| B4H | — | 9 216 | — | — | 521 | — | — | 3 078 |
| B6A | — | 9 432 | — | — | 601 | — | — | 2 883 |
| B6B | — | 9 736 | — | — | 601 | — | — | 3 137 |
| B6C | — | 9 980 | — | — | 601 | — | — | 3 339 |
| B6F | — | 9 437 | — | — | 601 | — | — | 2 931 |
| B6G | — | 9 704 | — | — | 601 | — | — | 3 153 |
| B6H | — | 10 019 | — | — | 601 | — | — | 3 801 |

NOTE(S):

- a. Evaporator weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
- b. 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.
- c. See Model Number Nomenclature for 19XR Two-Stage Compressor Frame Size 6 and 7.
- d. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

**Table 21 — 19XR Two-Stage Compressor Frame Size 7
Heat Exchanger Weights (English)^{a,b}**

| CODE ^c | DRY RIGGING WEIGHT (lb) ^d | | REFRIGERANT WEIGHT (lb) | | | | WATER WEIGHT (lb) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| B60 | 24,704 | — | 2,273 | 2,091 | — | — | 6,340 | — |
| B61 | 25,337 | — | 2,355 | 2,167 | — | — | 6,737 | — |
| B62 | 25,964 | — | 2,460 | 2,263 | — | — | 7,116 | — |
| B65 | 25,014 | — | 2,185 | 2,010 | — | — | 6,485 | — |
| B66 | 25,631 | — | 2,275 | 2,093 | — | — | 6,873 | — |
| B67 | 26,264 | — | 2,379 | 2,189 | — | — | 7,255 | — |
| B6A | 22,819 | — | 2,081 | 1,915 | — | — | 6,159 | — |
| B6B | 23,299 | — | 2,162 | 1,989 | — | — | 6,568 | — |
| B6C | 23,829 | — | 2,256 | 2,076 | — | — | 6,993 | — |
| B6F | 23,139 | — | 1,951 | 1,795 | — | — | 6,344 | — |
| B6G | 23,648 | — | 2,019 | 1,857 | — | — | 6,774 | — |
| B6H | 24,171 | — | 2,120 | 1,950 | — | — | 7,194 | — |
| B80 | 26,184 | — | 2,557 | 2,352 | — | — | 6,766 | — |
| B81 | 26,922 | — | 2,649 | 2,437 | — | — | 7,208 | — |
| B82 | 27,627 | — | 2,768 | 2,547 | — | — | 7,629 | — |
| B85 | 26,438 | — | 2,458 | 2,261 | — | — | 6,923 | — |
| B86 | 27,157 | — | 2,559 | 2,354 | — | — | 7,355 | — |
| B87 | 27,868 | — | 2,676 | 2,462 | — | — | 7,780 | — |
| B8A | 24,164 | — | 2,341 | 2,154 | — | — | 6,580 | — |
| B8B | 24,722 | — | 2,432 | 2,237 | — | — | 7,036 | — |
| B8C | 25,317 | — | 2,538 | 2,335 | — | — | 7,510 | — |
| B8F | 24,403 | — | 2,195 | 2,019 | — | — | 6,783 | — |
| B8G | 25,011 | — | 2,271 | 2,089 | — | — | 7,262 | — |
| B8H | 25,599 | — | 2,385 | 2,194 | — | — | 7,731 | — |
| C60 | 30,825 | 29,857 | 2,647 | 2,435 | 1,832 | 1,685 | 8,475 | 8,630 |
| C61 | 31,536 | 30,881 | 2,751 | 2,531 | 1,847 | 1,699 | 8,924 | 9,275 |
| C62 | 32,467 | 31,871 | 2,875 | 2,645 | 1,861 | 1,712 | 9,474 | 9,916 |
| C65 | 31,135 | 29,982 | 2,562 | 2,357 | 1,832 | 1,685 | 8,645 | 8,684 |
| C66 | 31,851 | 31,064 | 2,666 | 2,453 | 1,847 | 1,699 | 9,097 | 9,362 |
| C67 | 32,777 | 32,186 | 2,793 | 2,570 | 1,863 | 1,712 | 9,644 | 10,078 |
| C6A | 28,641 | 27,676 | 2,443 | 2,248 | 1,778 | 1,636 | 6,898 | 8,675 |
| C6B | 29,167 | 28,315 | 2,534 | 2,331 | 1,785 | 1,642 | 7,352 | 9,216 |
| C6C | 29,750 | 28,918 | 2,627 | 2,417 | 1,792 | 1,649 | 7,823 | 9,752 |
| C6F | 28,929 | 27,774 | 2,334 | 2,147 | 1,778 | 1,636 | 7,724 | 8,710 |
| C6G | 29,478 | 28,457 | 2,415 | 2,222 | 1,785 | 1,642 | 8,194 | 9,283 |
| C6H | 30,083 | 29,223 | 2,500 | 2,300 | 1,793 | 1,649 | 8,681 | 9,935 |
| C80 | 32,698 | 31,810 | 2,978 | 2,740 | 2,003 | 1,843 | 9,084 | 9,312 |
| C81 | 33,513 | 32,955 | 3,095 | 2,847 | 2,019 | 1,857 | 9,589 | 10,029 |
| C82 | 34,572 | 34,094 | 3,234 | 2,975 | 2,035 | 1,872 | 10,208 | 10,742 |
| C85 | 33,034 | 31,911 | 2,882 | 2,651 | 2,003 | 1,843 | 9,275 | 9,367 |
| C86 | 33,855 | 33,113 | 2,999 | 2,759 | 2,020 | 1,857 | 9,784 | 10,120 |
| C87 | 34,908 | 34,385 | 3,142 | 2,891 | 2,036 | 1,872 | 10,399 | 10,196 |
| C8A | 30,378 | 29,323 | 2,748 | 2,528 | 1,942 | 1,787 | 7,310 | 9,387 |
| C8B | 30,998 | 30,056 | 2,851 | 2,623 | 1,950 | 1,794 | 7,821 | 9,991 |
| C8C | 31,679 | 30,784 | 2,955 | 2,719 | 1,957 | 1,800 | 8,351 | 10,589 |
| C8F | 30,694 | 29,397 | 2,626 | 2,416 | 1,942 | 1,787 | 8,239 | 9,420 |
| C8G | 31,340 | 30,174 | 2,717 | 2,500 | 1,950 | 1,794 | 8,768 | 10,059 |
| C8H | 32,046 | 31,059 | 2,813 | 2,588 | 1,959 | 1,802 | 9,316 | 10,787 |
| D60 | — | 38,296 | — | — | 2,301 | 2,117 | — | 11,473 |
| D61 | — | 39,624 | — | — | 2,320 | 2,134 | — | 12,309 |
| D62 | — | 41,031 | — | — | 2,340 | 2,153 | — | 13,210 |
| D65 | — | 37,624 | — | — | 2,303 | 2,119 | — | 11,617 |
| D66 | — | 38,837 | — | — | 2,320 | 2,134 | — | 12,387 |
| D67 | — | 40,460 | — | — | 2,343 | 2,156 | — | 13,410 |
| D80 | — | 41,916 | — | — | 2,525 | 2,323 | — | 12,447 |
| D81 | — | 43,382 | — | — | 2,546 | 2,342 | — | 13,388 |
| D82 | — | 44,963 | — | — | 2,569 | 2,363 | — | 14,401 |
| D85 | — | 42,058 | — | — | 2,528 | 2,326 | — | 12,609 |
| D86 | — | 43,408 | — | — | 2,547 | 2,343 | — | 13,475 |
| D87 | — | 45,204 | — | — | 2,572 | 2,366 | — | 14,626 |
| D6A | — | 35,286 | — | — | 2,227 | 2,049 | — | 11,401 |
| D6B | — | 36,328 | — | — | 2,238 | 2,059 | — | 12,255 |
| D6C | — | 37,288 | — | — | 2,248 | 2,068 | — | 13,078 |
| D6F | — | 34,447 | — | — | 2,227 | 2,049 | — | 11,448 |
| D6G | — | 35,637 | — | — | 2,239 | 2,060 | — | 12,408 |
| D6H | — | 36,663 | — | — | 2,250 | 2,070 | — | 13,278 |

**Table 21 — 19XR Two-Stage Compressor Frame Size 7
Heat Exchanger Weights (English)^{a,b} (cont)**

| CODE ^c | DRY RIGGING WEIGHT (lb) ^d | | REFRIGERANT WEIGHT (lb) | | | | WATER WEIGHT (lb) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| D8A | — | 38,494 | — | — | 2,442 | 2,247 | — | 12,366 |
| D8B | — | 39,633 | — | — | 2,454 | 2,258 | — | 13,327 |
| D8C | — | 40,731 | — | — | 2,465 | 2,268 | — | 14,253 |
| D8F | — | 38,479 | — | — | 2,442 | 2,247 | — | 12,419 |
| D8G | — | 39,761 | — | — | 2,455 | 2,259 | — | 13,499 |
| D8H | — | 40,922 | — | — | 2,467 | 2,270 | — | 14,478 |

NOTE(S):

- a. Evaporator weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
- b. 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.
- c. See Model Number Nomenclature for 19XR Two-Stage Compressor Frame Size 6 and 7.
- d. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

**Table 22 — 19XR Two-Stage Compressor Frame Size 7
Heat Exchanger Weights (SI)^{a,b}**

| CODE ^c | DRY RIGGING WEIGHT (kg) ^d | | REFRIGERANT WEIGHT (kg) | | | | WATER WEIGHT (kg) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| B60 | 11 206 | — | 1 031 | 948 | — | — | 2 876 | — |
| B61 | 11 493 | — | 1 068 | 983 | — | — | 3 056 | — |
| B62 | 11 777 | — | 1 116 | 1 026 | — | — | 3 228 | — |
| B65 | 11 346 | — | 991 | 912 | — | — | 2 942 | — |
| B66 | 11 626 | — | 1 032 | 949 | — | — | 3 118 | — |
| B67 | 11 913 | — | 1 079 | 993 | — | — | 3 291 | — |
| B6A | 10 351 | — | 944 | 869 | — | — | 2 794 | — |
| B6B | 10 568 | — | 981 | 902 | — | — | 2 979 | — |
| B6C | 10 809 | — | 1 023 | 942 | — | — | 3 172 | — |
| B6F | 10 496 | — | 885 | 814 | — | — | 2 878 | — |
| B6G | 10 727 | — | 916 | 842 | — | — | 3 073 | — |
| B6H | 10 964 | — | 962 | 885 | — | — | 3 263 | — |
| B80 | 11 877 | — | 1 160 | 1 067 | — | — | 3 069 | — |
| B81 | 12 212 | — | 1 202 | 1 105 | — | — | 3 269 | — |
| B82 | 12 531 | — | 1 256 | 1 155 | — | — | 3 460 | — |
| B85 | 11 992 | — | 1 115 | 1 026 | — | — | 3 140 | — |
| B86 | 12 318 | — | 1 161 | 1 068 | — | — | 3 336 | — |
| B87 | 12 641 | — | 1 214 | 1 117 | — | — | 3 529 | — |
| B8A | 10 961 | — | 1 062 | 977 | — | — | 2 985 | — |
| B8B | 11 214 | — | 1 103 | 1 015 | — | — | 3 191 | — |
| B8C | 11 484 | — | 1 151 | 1 059 | — | — | 3 406 | — |
| B8F | 11 069 | — | 996 | 916 | — | — | 3 077 | — |
| B8G | 11 345 | — | 1 030 | 948 | — | — | 3 294 | — |
| B8H | 11 612 | — | 1 082 | 995 | — | — | 3 507 | — |
| C60 | — | 13 543 | — | — | 831 | — | — | 3 915 |
| C61 | — | 14 007 | — | — | 838 | — | — | 4 207 |
| C62 | — | 14 456 | — | — | 844 | — | — | 4 498 |
| C65 | — | 13 600 | — | — | 831 | — | — | 3 939 |
| C66 | — | 14 090 | — | — | 838 | — | — | 4 247 |
| C67 | — | 14 599 | — | — | 845 | — | — | 4 571 |
| C6A | — | 12 554 | — | — | 806 | — | — | 3 935 |
| C6B | — | 12 843 | — | — | 810 | — | — | 4 180 |
| C6C | — | 13 117 | — | — | 813 | — | — | 4 423 |
| C6F | — | 12 598 | — | — | 806 | — | — | 3 951 |
| C6G | — | 12 908 | — | — | 810 | — | — | 4 211 |
| C6H | — | 13 255 | — | — | 813 | — | — | 4 506 |
| C80 | — | 14 429 | — | — | 909 | — | — | 4 224 |
| C81 | — | 14 948 | — | — | 916 | — | — | 4 549 |
| C82 | — | 15 465 | — | — | 923 | — | — | 4 872 |
| C85 | — | 14 475 | — | — | 909 | — | — | 4 249 |
| C86 | — | 15 020 | — | — | 916 | — | — | 4 590 |
| C87 | — | 15 597 | — | — | 924 | — | — | 4 625 |
| C8A | — | 13 301 | — | — | 881 | — | — | 4 258 |
| C8B | — | 13 633 | — | — | 885 | — | — | 4 532 |
| C8C | — | 13 963 | — | — | 888 | — | — | 4 803 |
| C8F | — | 13 334 | — | — | 881 | — | — | 4 273 |
| C8G | — | 13 687 | — | — | 885 | — | — | 4 563 |
| C8H | — | 14 088 | — | — | 889 | — | — | 4 893 |
| D60 | — | 17 371 | — | — | 1 044 | 960 | — | 5 204 |
| D61 | — | 17 973 | — | — | 1 052 | 968 | — | 5 583 |
| D62 | — | 18 611 | — | — | 1 061 | 977 | — | 5 992 |
| D65 | — | 17 066 | — | — | 1 045 | 961 | — | 5 269 |
| D66 | — | 17 616 | — | — | 1 052 | 968 | — | 5 619 |
| D67 | — | 18 352 | — | — | 1 063 | 978 | — | 6 083 |
| D80 | — | 19 013 | — | — | 1 145 | 1 054 | — | 5 646 |
| D81 | — | 19 678 | — | — | 1 155 | 1 062 | — | 6 073 |
| D82 | — | 20 395 | — | — | 1 165 | 1 072 | — | 6 532 |
| D85 | — | 19 077 | — | — | 1 147 | 1 055 | — | 5 719 |
| D86 | — | 19 690 | — | — | 1 155 | 1 063 | — | 6 112 |
| D87 | — | 20 504 | — | — | 1 167 | 1 073 | — | 6 634 |
| D6A | — | 16 005 | — | — | 1 010 | 929 | — | 5 171 |
| D6B | — | 16 478 | — | — | 1 015 | 934 | — | 5 559 |
| D6C | — | 16 914 | — | — | 1 020 | 938 | — | 5 932 |
| D6F | — | 15 625 | — | — | 1 010 | 929 | — | 5 193 |
| D6G | — | 16 165 | — | — | 1 016 | 934 | — | 5 628 |
| D6H | — | 16 630 | — | — | 1 021 | 939 | — | 6 023 |

**Table 22 — 19XR Two-Stage Compressor Frame Size 7
Heat Exchanger Weights (SI)^{a,b} (cont)**

| CODE ^c | DRY RIGGING WEIGHT (kg) ^d | | REFRIGERANT WEIGHT (kg) | | | | WATER WEIGHT (kg) | |
|-------------------|--------------------------------------|----------------|-------------------------|--------|----------------|--------|-------------------|----------------|
| | Evaporator Only | Condenser Only | Evaporator Only | | Condenser Only | | Evaporator Only | Condenser Only |
| | | | R-513A | R-515B | R-513A | R-515B | | |
| D8A | — | 17 461 | — | — | 1 108 | 1 019 | — | 5 609 |
| D8B | — | 17 977 | — | — | 1 113 | 1 024 | — | 6 045 |
| D8C | — | 18 475 | — | — | 1 118 | 1 029 | — | 6 465 |
| D8F | — | 17 454 | — | — | 1 108 | 1 019 | — | 5 633 |
| D8G | — | 18 035 | — | — | 1 114 | 1 025 | — | 6 123 |
| D8H | — | 18 562 | — | — | 1 119 | 1 030 | — | 6 567 |

NOTE(S):

- a. Evaporator weight includes the suction elbow and the distribution piping to the economizer and two-pass Victaulic dished heads.
- b. 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.
- c. See Model Number Nomenclature for 19XR Two-Stage Compressor Frame Size 6 and 7.
- d. Rigging weights are for standard tubes of standard wall thickness (0.025 in. [0.635 mm] wall).

Table 23 — 19XR Waterbox Cover Weights Evaporator Frames 3^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | METRIC (kg) | |
|---|--------------|---------|-------------|---------|
| | EVAPORATOR | | EVAPORATOR | |
| | FRAME 3 | | FRAME 3 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 287 | 318 | 130 | 144 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 287 | 340 | 130 | 154 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 294 | 310 | 133 | 141 |
| MWB End Cover, 150 psig (1034 kPa) | 315 | 315 | 143 | 143 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 243 | 243 | 110 | 110 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 411 | 486 | 186 | 220 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 411 | 518 | 186 | 235 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 433 | 468 | 196 | 212 |
| NIH Plain End Cover, 300 psig (2068 kPa) | 291 | 291 | 132 | 132 |
| MWB End Cover, 300 psig (2068 kPa) | 619 | 619 | 281 | 281 |
| MWB Return Cover, 300 psig (2068 kPa) | 445 | 445 | 202 | 202 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 24 — 19XR Waterbox Cover Weights Condenser Frames 3^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | METRIC (kg) | |
|---|--------------|---------|-------------|---------|
| | CONDENSER | | CONDENSER | |
| | FRAME 3 | | FRAME 3 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 260 | 297 | 118 | 135 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 265 | 318 | 120 | 144 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 272 | 288 | 123 | 131 |
| MWB End Cover, 150 psig (1034 kPa) | 234 | 234 | 106 | 106 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 225 | 225 | 102 | 102 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 379 | 454 | 172 | 206 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 379 | 486 | 172 | 220 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 401 | 436 | 182 | 198 |
| NIH Plain End Cover, 300 psig (2068 kPa) | 270 | 270 | 122 | 122 |
| MWB End Cover, 300 psig (2068 kPa) | 474 | 474 | 215 | 215 |
| MWB Return Cover, 300 psig (2068 kPa) | 359 | 359 | 163 | 163 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 25 — 19XR Waterbox Cover Weights Evaporator Frames 4, 5^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | | | METRIC (kg) | | | |
|--|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | EVAPORATOR | | | | EVAPORATOR | | | |
| | FRAME 4 | | FRAME 5 | | FRAME 4 | | FRAME 5 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 148 | 185 | 168 | 229 | 67 | 84 | 76 | 104 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 202 | 256 | 224 | 276 | 92 | 116 | 102 | 125 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 473 | 489 | 617 | 634 | 215 | 222 | 280 | 288 |
| MWB End Cover, 150 psig (1034 kPa) | 317 | 317 | 393 | 393 | 144 | 144 | 178 | 178 |
| MWB Return Cover, 150 psig (1034 kPa) | 138 | 138 | 154 | 154 | 63 | 63 | 70 | 70 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 633 | 709 | 764 | 839 | 287 | 322 | 347 | 381 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 626 | 689 | 761 | 867 | 284 | 313 | 345 | 394 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 660 | 694 | 795 | 830 | 299 | 315 | 361 | 376 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 522 | 522 | 658 | 658 | 237 | 237 | 298 | 298 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 26 — 19XR Waterbox Cover Weights Condenser Frames 4, 5^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | | | METRIC (kg) | | | |
|--|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | CONDENSER | | | | CONDENSER | | | |
| | FRAME 4 | | FRAME 5 | | FRAME 4 | | FRAME 5 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 148 | 185 | 168 | 229 | 67 | 84 | 76 | 104 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 191 | 245 | 224 | 298 | 87 | 111 | 102 | 135 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 503 | 519 | 629 | 655 | 228 | 235 | 285 | 297 |
| MWB End Cover and Bolt-on End Cover, 150 psig (1034 kPa) | 317 | 317 | 393 | 393 | 144 | 144 | 178 | 178 |
| MWB Return Cover, 150 psig (1034 kPa) | 138 | 138 | 154 | 154 | 63 | 63 | 70 | 70 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 633 | 709 | 764 | 839 | 287 | 322 | 347 | 381 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 622 | 729 | 727 | 878 | 282 | 331 | 330 | 393 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 655 | 689 | 785 | 838 | 297 | 313 | 356 | 376 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 522 | 522 | 658 | 658 | 237 | 237 | 298 | 298 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 27 — 19XR Waterbox Cover Weights Evaporator Frames 6^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | METRIC (kg) | |
|---|--------------|---------|-------------|---------|
| | EVAPORATOR | | EVAPORATOR | |
| | FRAME 6 | | FRAME 6 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 187 | 223 | 85 | 101 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 257 | 330 | 117 | 150 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 765 | 791 | 347 | 359 |
| MWB End Cover, 150 psig (1034 kPa) | 487 | 487 | 221 | 221 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 172 | 172 | 78 | 78 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 978 | 1053 | 444 | 478 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 927 | 1078 | 420 | 489 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 997 | 1050 | 452 | 476 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 834 | 834 | 378 | 378 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 28 — 19XR Waterbox Cover Weights Condenser Frames 6^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | METRIC (kg) | |
|--|--------------|---------|-------------|---------|
| | CONDENSER | | CONDENSER | |
| | FRAME 6 | | FRAME 6 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 187 | 223 | 85 | 101 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 245 | 330 | 111 | 150 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 772 | 843 | 350 | 382 |
| MWB End Cover and Bolt-on End Cover, 150 psig (1034 kPa) | 487 | 487 | 221 | 221 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 172 | 172 | 78 | 78 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 978 | 1053 | 444 | 478 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 923 | 1074 | 419 | 487 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 995 | 1049 | 451 | 476 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 834 | 834 | 378 | 378 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 29 — 19XR Waterbox Cover Weights Evaporator Frame 7 and 8^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | | | METRIC (kg) | | | |
|---|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | EVAPORATOR | | | | EVAPORATOR | | | |
| | FRAME 7 | | FRAME 8 | | FRAME 7 | | FRAME 8 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 329 | 441 | 417 | 494 | 149 | 200 | 189 | 224 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 426 | 541 | 540 | 693 | 193 | 245 | 245 | 314 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 1250 | 1291 | 1629 | 1687 | 567 | 586 | 739 | 765 |
| MWB End Cover, 150 psig (1034 kPa) | 844 | 844 | 1125 | 1125 | 383 | 383 | 510 | 510 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 315 | 315 | 404 | 404 | 143 | 143 | 183 | 183 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 1712 | 1883 | 2359 | 2523 | 777 | 854 | 1070 | 1144 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 1662 | 1908 | 2369 | 2599 | 754 | 865 | 1075 | 1179 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 1724 | 1807 | 2353 | 2516 | 782 | 820 | 1067 | 1141 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 1378 | 1378 | 1951 | 1951 | 625 | 625 | 885 | 885 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

Table 30 — 19XR Waterbox Cover Weights Condenser Frame 7 and 8^a

| WATERBOX DESCRIPTION | ENGLISH (lb) | | | | METRIC (kg) | | | |
|--|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | CONDENSER | | | | CONDENSER | | | |
| | FRAME 7 | | FRAME 8 | | FRAME 7 | | FRAME 8 | |
| | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| NIH, 1 Pass Cover, 150 psig (1034 kPa) | 329 | 441 | 417 | 494 | 149 | 200 | 189 | 224 |
| NIH, 2 Pass Cover, 150 psig (1034 kPa) | 404 | 520 | 508 | 662 | 183 | 236 | 230 | 300 |
| NIH, 3 Pass Cover, 150 psig (1034 kPa) | 1222 | 1280 | 1469 | 1527 | 554 | 580 | 666 | 693 |
| MWB End Cover, 150 psig (1034 kPa) | 781 | 781 | 1007 | 1007 | 354 | 354 | 457 | 457 |
| Bolt-on MWB End Cover, 150 psig (1034 kPa) | 700 | 700 | 1307 | 1307 | 318 | 318 | 593 | 593 |
| NIH/MWB Return Cover, 150 psig (1034 kPa) | 315 | 315 | 404 | 404 | 143 | 143 | 183 | 183 |
| NIH, 1 Pass Cover, 300 psig (2068 kPa) | 1690 | 1851 | 1986 | 2151 | 767 | 840 | 901 | 976 |
| NIH, 2 Pass Cover, 300 psig (2068 kPa) | 1628 | 1862 | 1893 | 2222 | 738 | 845 | 859 | 1008 |
| NIH, 3 Pass Cover, 300 psig (2068 kPa) | 1714 | 1831 | 1993 | 2112 | 777 | 831 | 904 | 958 |
| NIH/MWB End Cover, 300 psig (2068 kPa) | 1276 | 1276 | 1675 | 1675 | 579 | 579 | 760 | 760 |

NOTE(S):

a. Weight for NIH 2-pass cover, 150 psig (1034 kPa), is included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

NIH — Nozzle-in-Head
MWB — Marine Waterbox
STD — Standard

**Table 31 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 6
Evaporator Frame A^{a,b}**

| WATERBOX DESCRIPTION | PASSES | ENGLISH (lb) | | METRIC (kg) | |
|---|--------|------------------|---------|------------------|---------|
| | | EVAPORATOR | | EVAPORATOR | |
| | | FRAME A | | FRAME A | |
| | | STANDARD NOZZLES | FLANGED | STANDARD NOZZLES | FLANGED |
| Dished Head, 150 psig | 1 | 1006 | 1171 | 456 | 531 |
| MWB End Cover, 150 psig | 1 | 976 | 976 | 443 | 443 |
| MWB End Cover (ASME), 300 psig | 1 | 2460 | 2460 | 1116 | 1116 |
| Dished Head, 150 psig | 2 | 1140 | 1336 | 517 | 606 |
| Dished Head (Return Cover), 150 psig | 2 | 976 | 976 | 443 | 443 |
| MWB End Cover, 150 psig | 2 | 1068 | 1068 | 484 | 484 |
| MWB End Cover (Return Cover), 150 psig | 2 | 976 | 976 | 443 | 443 |
| MWB End Cover (ASME), 300 psig | 2 | 2460 | 2460 | 1116 | 1116 |
| MWB End Cover (ASME) (Return Cover), 300 psig | 2 | 2460 | 2460 | 1116 | 1116 |
| Dished Head, 150 psig | 3 | 1048 | 1112 | 475 | 504 |
| MWB End Cover, 150 psig | 3 | 1030 | 1030 | 467 | 467 |
| MWB End Cover (ASME), 300 psig | 3 | 2460 | 2460 | 1116 | 1116 |

NOTE(S):

a. Consult factory for 1 and 3 pass data.

b. Weights for dished head cover and MWB end cover 150 psig (1034 kPa) are included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

ASME — American Society of Mechanical Engineers

MWB — Marine Waterbox

**Table 32 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 6
Condenser Frame A and B^{a,b}**

| WATERBOX DESCRIPTION | PASSES | ENGLISH (lb) | | | | METRIC (kg) | | | |
|--------------------------------------|--------|------------------|---------|------------------|---------|------------------|---------|------------------|---------|
| | | CONDENSER | | | | CONDENSER | | | |
| | | FRAME A | | FRAME B | | FRAME A | | FRAME B | |
| | | STANDARD NOZZLES | FLANGED |
| Dished Head, 150 psig | 1 | 895 | 1060 | 1006 | 1171 | 406 | 481 | 473 | 547 |
| MWB, 150 psig | 1 | 859 | 859 | 1075 | 1075 | 390 | 390 | 488 | 488 |
| MWB (ASME), 300 psig | 1 | 2117 | 2117 | 2744 | 2744 | 960 | 960 | 1292 | 1292 |
| Dished Head, 150 psig | 2 | 981 | 1179 | 1140 | 1400 | 445 | 535 | 574 | 633 |
| Dished Head (Return Cover), 150 psig | 2 | 824 | 824 | 976 | 976 | 374 | 374 | 481 | 481 |
| MWB 150 psig | 2 | 907 | 907 | 1075 | 1075 | 411 | 411 | 630 | 630 |
| MWB (Return), 150 psig | 2 | 824 | 824 | 976 | 976 | 374 | 411 | 488 | 488 |
| MWB (ASME), 300 psig | 2 | 2117 | 2117 | 2744 | 2744 | 960 | 1083 | 1440 | 1440 |
| MWB Return Cover (ASME), 300 psig | 2 | 2117 | 2117 | 2744 | 2744 | 960 | 960 | 1245 | 1245 |
| Dished Head, 150 psig | 3 | 1067 | 1157 | 1050 | 1140 | 484 | 525 | 476 | 517 |
| MWB End Cover, 150 psig | 3 | 942 | 942 | 1020 | 1020 | 427 | 427 | 463 | 463 |
| MWB End Cover (ASME), 300 psig | 3 | 2117 | 2177 | 2744 | 2744 | 960 | 987 | 1245 | 1245 |

NOTE(S):

a. Consult factory for 1 and 3 pass data.

b. Weights for dished head cover and MWB end cover 150 psig (1034 kPa) are included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

ASME — American Society of Mechanical Engineers

MWB — Marine Waterbox

Table 33 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 7, Evaporator Frames B, C^{a,b}

| WATERBOX DESCRIPTION | PASSES | ENGLISH (lb) | | | | METRIC (kg) | | | |
|---|--------|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | | EVAPORATOR | | | | EVAPORATOR | | | |
| | | FRAME B | | FRAME C | | FRAME B | | FRAME C | |
| | | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| Dished Head, 150 psig (1034 kPa) | 1 | 1380 | 1545 | 1849 | 2014 | 626 | 701 | 839 | 914 |
| MWB End Cover, 150 psig (1034 kPa) | 1 | 1366 | 1366 | 1835 | 1835 | 620 | 620 | 832 | 832 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 1 | 3425 | 3425 | 4805 | 4805 | 1554 | 1554 | 2180 | 2180 |
| Dished Head, 150 psig (1034 kPa) | 2 | 1589 | 1849 | 2076 | 2336 | 721 | 839 | 942 | 1060 |
| Dished Head (Return Cover), 150 psig (1034 kPa) | 2 | 1367 | 1367 | 1836 | 1836 | 620 | 620 | 833 | 833 |
| MWB End Cover, 150 psig (1034 kPa) | 2 | 1489 | 1489 | 1987 | 1987 | 675 | 675 | 901 | 901 |
| MWB (Return Cover), 150 psig (1034 kPa) | 2 | 1367 | 1367 | 1836 | 1836 | 620 | 620 | 833 | 833 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 2 | 3425 | 3425 | 4805 | 4805 | 1554 | 1554 | 2180 | 2180 |
| MWB (Return Cover), 300 psig (2068 kPa) | 2 | 3425 | 3425 | 4805 | 4805 | 1554 | 1554 | 2180 | 2180 |
| Dished Head, 150 psig (1034 kPa) | 3 | 1514 | 1604 | 2028 | 2118 | 687 | 728 | 920 | 961 |
| MWB End Cover, 150 psig (1034 kPa) | 3 | 1506 | 1506 | 1995 | 1995 | 683 | 683 | 905 | 905 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 3 | 3425 | 3425 | 4805 | 4805 | 1554 | 1554 | 2180 | 2180 |

NOTE(S):

a. Consult factory for 1 and 3 pass data.
b. Weights for dished head cover and MWB end cover 150 psig (1034 kPa) are included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox
STD — Standard

Table 34 — 19XR Waterbox Cover Weights, Two-Stage Compressor Frame 7, Condenser Frames C, D^{a,b}

| WATERBOX DESCRIPTION | PASSES | ENGLISH (lb) | | | | METRIC (kg) | | | |
|---|--------|--------------|---------|-------------|---------|-------------|---------|-------------|---------|
| | | CONDENSER | | | | CONDENSER | | | |
| | | FRAME C | | FRAME D | | FRAME C | | FRAME D | |
| | | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED | STD NOZZLES | FLANGED |
| Dished Head, 150 psig (1034 kPa) | 1 | 1380 | 1600 | 1849 | 2029 | 626 | 726 | 839 | 920 |
| MWB End Cover, 150 psig (1034 kPa) | 1 | 1367 | 1367 | 1835 | 1835 | 620 | 620 | 832 | 832 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 1 | 3639 | 3639 | 5249 | 5249 | 1651 | 1651 | 2353 | 2353 |
| Dished Head, 150 psig (1034 kPa) | 2 | 1589 | 1919 | 2076 | 2406 | 721 | 870 | 942 | 1091 |
| Dished Head (Return Cover), 150 psig (1034 kPa) | 2 | 1367 | 1367 | 1836 | 1836 | 620 | 620 | 833 | 833 |
| MWB End Cover, 150 psig (1034 kPa) | 2 | 1497 | 1497 | 1988 | 1988 | 679 | 679 | 902 | 902 |
| MWB (Return Cover), 150 psig (1034 kPa) | 2 | 1367 | 1367 | 1836 | 1836 | 620 | 620 | 833 | 833 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 2 | 3639 | 3639 | 5249 | 5249 | 1651 | 1651 | 2381 | 2381 |
| MWB (Return Cover) (ASME), 300 psig (2068 kPa) | 2 | 3639 | 3639 | 5249 | 5249 | 1651 | 1651 | 2381 | 2381 |
| Dished Head, 150 psig (1034 kPa) | 3 | 1514 | 1612 | 2028 | 2126 | 687 | 731 | 920 | 964 |
| MWB End Cover, 150 psig (1034 kPa) | 3 | 1493 | 1493 | 1993 | 1993 | 677 | 677 | 904 | 904 |
| MWB End Cover (ASME), 300 psig (2068 kPa) | 3 | 3639 | 3639 | 5249 | 5249 | 1651 | 1651 | 2381 | 2381 |

NOTE(S):

a. Consult factory for 1 and 3 pass data.
b. Weights for dished head cover and MWB end cover 150 psig (1034 kPa) are included in the heat exchanger weights shown in the heat exchanger weight tables.

LEGEND

ASME — American Society of Mechanical Engineers
MWB — Marine Waterbox
STD — Standard

19XR3-E RIG MACHINE COMPONENTS

Refer to instructions below to disassemble a chiller with an LF2 442A or 608A VFD or Standard Tier VFD (DD558, DE658, DE745, DE800, DE880, DE990, 445, 485, 550, 605, 680A). Special instructions for chillers with a 900A or 1200A LF2 VFD or Standard Tier VFD (765, 855, 960, 1070, 1275, 1530A) start on page 52.

Disassemble a Chiller with a 442A or 608A LF2 VFD or Standard Tier VFD (DD558, DE658, DE745, DE800, DE880, DE990, 445, 485, 550, 605, 680A)

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 entering the power panel to avoid unit damage.

Remove the VFD Enclosure

Confirm that the power supply disconnect is open and all safety procedures are observed before removing the VFD. This procedure minimizes the number of sensors and cables that need to be disconnected.

⚠ WARNING

Do not attempt to remove the VFD without first closing the refrigerant isolation valves. Failure to do so during VFD removal will result in an uncontrolled refrigerant leak. A refrigerant leak can damage the unit as well as displace oxygen, causing asphyxiation.

1. Close the 2 filter drier isolation valves and the VFD refrigerant drain isolation valve. Evacuate the VFD coldplate through the Schrader valve next to the filter/drier.
2. Remove any field wiring conduits that bring power to the VFD.
3. Remove the terminal box transition piece.
4. Label and disconnect the motor leads from the motor terminals. Note the position of the motor terminal cable lugs so they can be reinstalled with sufficient clearance away from the surrounding structure.
5. Remove the motor ground lead. Note the position of the ground lead so it can be reinstalled with sufficient clearance away from the surrounding structure.
6. Label and disconnect the power cables, interlock cable, and communication cable between the VFD enclosure and the power panel.
7. Remove the access panels on the back of the VFD enclosure and disconnect the VFD cooling lines. Cover all openings.

Lifting the VFD

Care should be used to prevent damage due to dropping or jolting when moving the VFD. A fork truck or similar means of lifting and transporting may be used. Sling the VFD in a manner that will equalize the load at the pickup joints. Use a spreader bar if the angle of the sling is less than 45 degrees relative to horizontal. Do not jolt while lifting.

Use the following procedure to lift the VFD:

1. Attach a sling to the four lifting holes in the lifting brackets (lifting brackets are factory-installed on top of the VFD enclosure). Make certain that the angle of the sling is not less than 45 degrees relative to horizontal.
2. Using an overhead or portable hoist (minimum 2 ton rated capacity), attach a free-fall chain to the sling secured to the drive. Take up any slack in the chain.
3. Rig the control center and remove the bolts that secure it to the VFD mounting brackets on the condenser. See Fig. 15.

NOTE: To reassemble, follow steps in reverse order. Connect sensors and cables after major components have been secured to reduce the risk of damaging them.

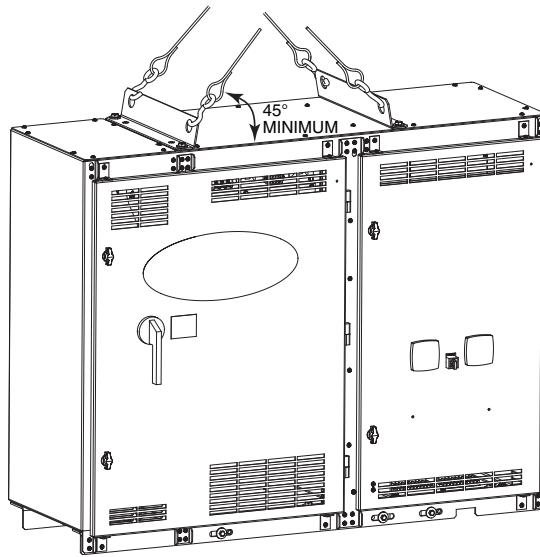


Fig. 15 — 442A and 608A LF2 VFD Enclosure Lifting Points

To Separate Cooler and Condenser

NOTE: If the cooler 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.

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

⚠ CAUTION

900A or 1200A LF2 VFD, Standard Tier VFD (DP1120, DP1260, DP1460, DP1670) — Do not separate the cooler and condenser until the VFD is removed. The VFD/condenser assembly has a high center of gravity and may tip over when the cooler and condenser are separated, which could result in equipment damage and/or serious personal injury. See page 52 for special instructions on VFD removal for these sizes.

1. Place a support plate under each tube sheet to keep each vessel level (Fig. 16, Item 4).
2. Cut the refrigerant motor cooling line at the location shown (Fig. 16, Item 2).
3. Disconnect the compressor discharge elbow at the compressor (Fig. 17, Item 6).
4. Unbolt the cooler liquid feed line at the location shown (Fig. 16, Item 8).
5. Cover all openings.

6. 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. 18, Item 5)
 - b. water-side transducer cables at the transducer (Fig. 18, Item 4)
 - c. condenser transducer cable at the transducer (Fig. 17, Item 7)
 - d. motor power wires at the motor terminal box (Fig. 16, Item 3)
 - e. wires and cable housings at the power panel that cross from the VFD to the power panel (Fig. 17, Item 2).
7. Install dowel pins before separating the heat exchangers at the tube sheet mounting brackets to ensure accurate alignment when reassembling.
8. Disconnect the tube sheet mounting brackets on the tube sheets (Fig. 16, Item 5).
9. Rig the vessels apart.

To Separate Compressor from Cooler

1. Unbolt the compressor suction and discharge elbows (Fig. 16, Items 1 and 10).
2. Cut the refrigerant motor cooling line at the location shown (Fig. 16, Item 2).
3. Disconnect the motor refrigerant return line (Fig. 16, Item 6).
4. Disconnect the following:
 - a. compressor oil sump temperature sensor cable (Fig. 19, Item 4)
 - b. bearing temperature sensor cable (Fig. 19, Item 2)
 - c. motor temperature sensor cable (Fig. 19, Item 1)
 - d. wires and cable housings that cross from the power panel to VFD and control panel (Fig. 17, Item 2)
 - e. discharge temperature sensor cable (Fig. 19, Item 6)
 - f. compressor oil sump pressure cable (Fig. 19, Item 3)

- g. compressor oil discharge pressure cable (Fig. 19, Item 5)
- h. guide vane actuator cable (Fig. 17, Item 1)
- i. diffuser actuator cable (Frame 5 compressor and Frame 4 units with split ring diffuser — Fig. 18, Item 2)
- j. diffuser pressure cable (Frame 5 compressor and Frame 4 units with split ring diffuser — Fig. 19, Item 8).
5. Disconnect the flared fitting for the oil reclaim line (Fig. 16, Item 9).
6. Unbolt the compressor discharge elbow (Fig. 17, Item 6).
7. Cover all openings.
8. Disconnect motor power cables at the VFD lugs (Fig. 16, Item 3).
9. Install dowel pins between the compressor base and mounting base before separating from the cooler to ensure accurate alignment when reassembling.
10. Unbolt the compressor mounting from the cooler (Fig. 16, Item 7).
11. Rig the compressor.

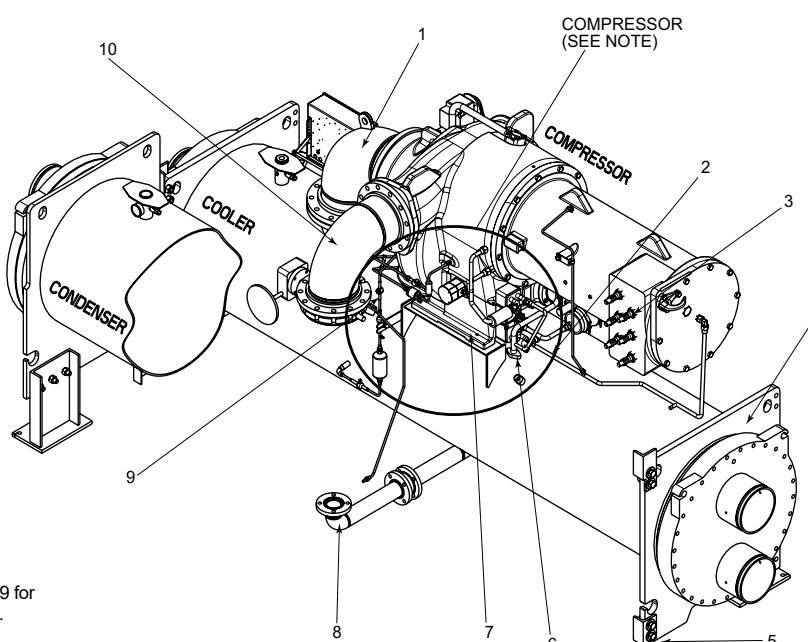
To Rig Compressor

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

1. Cut two 4 in. x 6 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 using the compressor base mounting holes.

Additional Notes

1. Use O-ring lubricant 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 the tube sheets of all 4 corners of the vessel.



NOTE: See Fig. 19 for compressor detail.

1 — Compressor Suction Elbow (Unbolt)
 2 — Motor Cooling Line (Cut)
 3 — Motor Terminal Box (Unbolt)
 4 — Tube Sheet
 5 — Tube Sheet Mounting Brackets (Unbolt — 4 Places)

6 — Motor Cooling Drain Line (Unbolt)
 7 — Compressor Mounting Bolt (Unbolt — 4 Places)
 8 — Cooler Liquid Feed Line (Unbolt)
 9 — Oil Reclaim Line (Unbolt)
 10 — Compressor Discharge Elbow (Unbolt)

Fig. 16 — Cooler, Side View

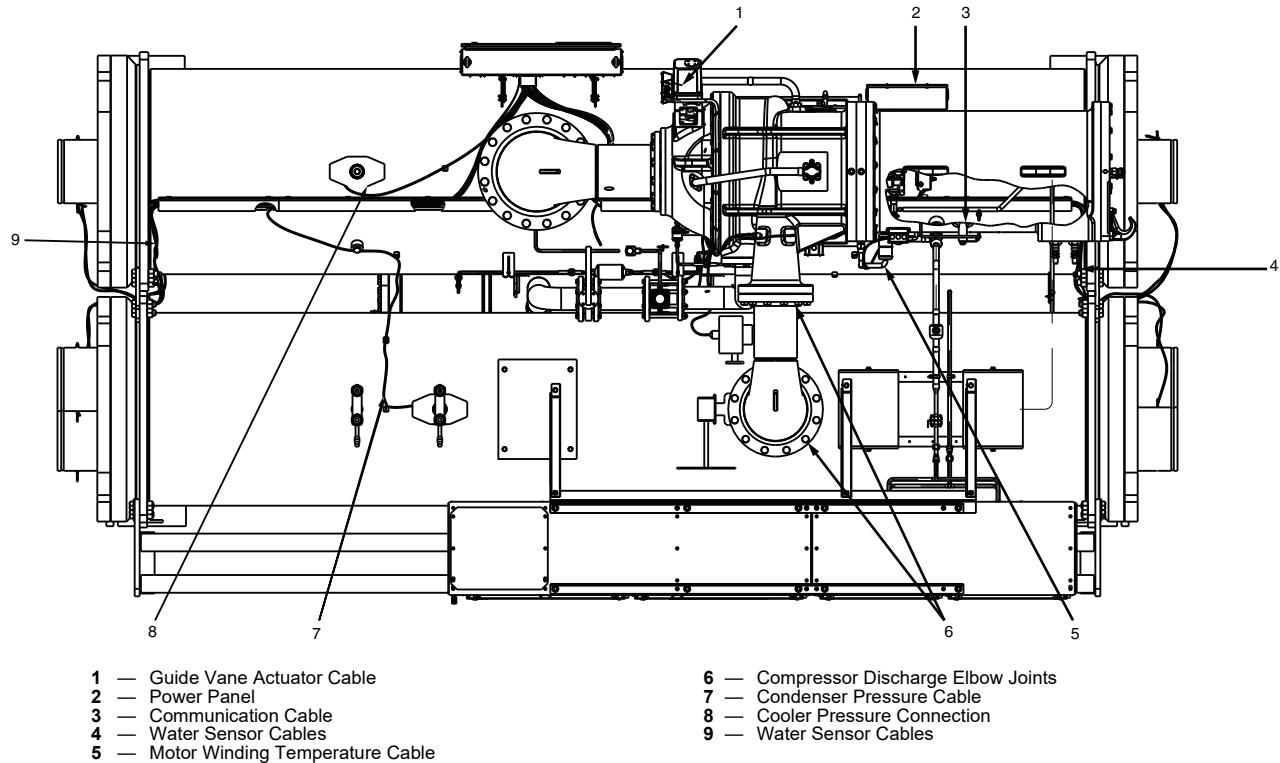


Fig. 17 — 19XRV Chiller Top View

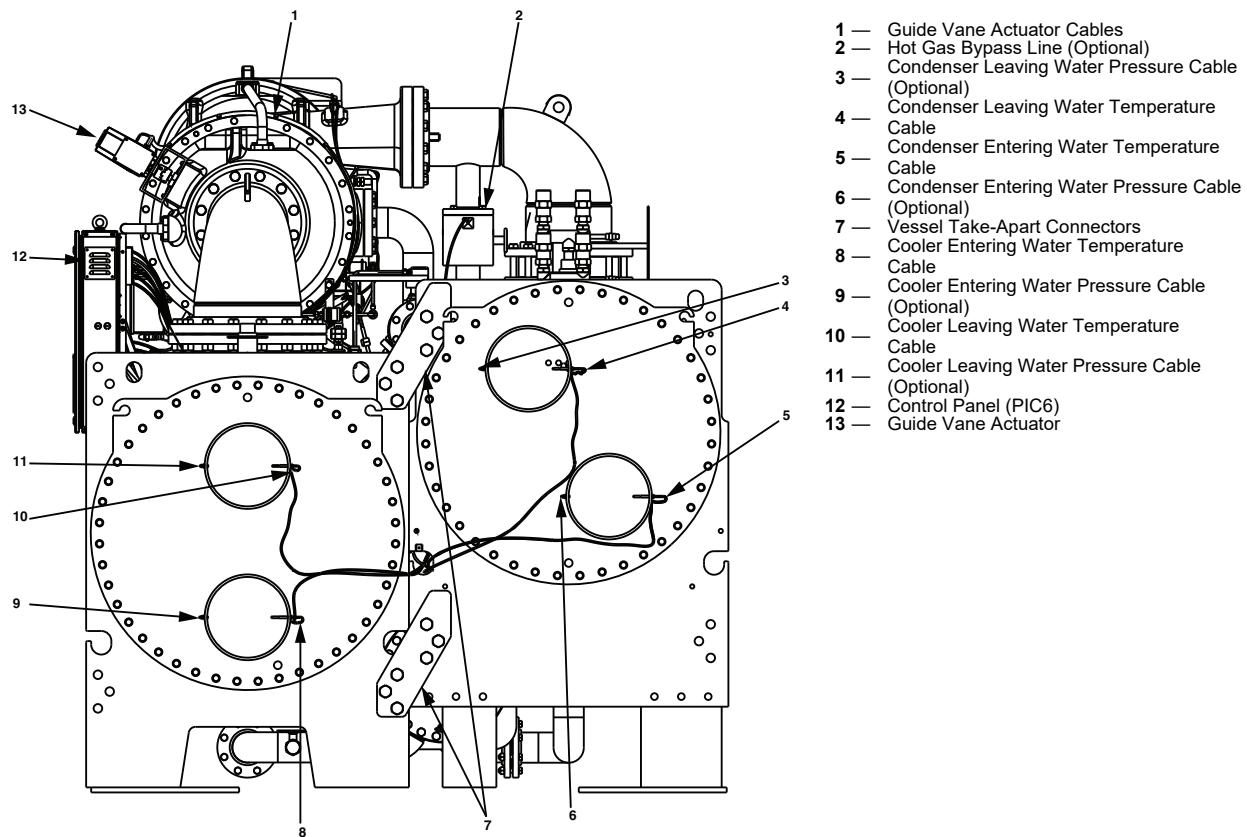


Fig. 18 — Chiller End View

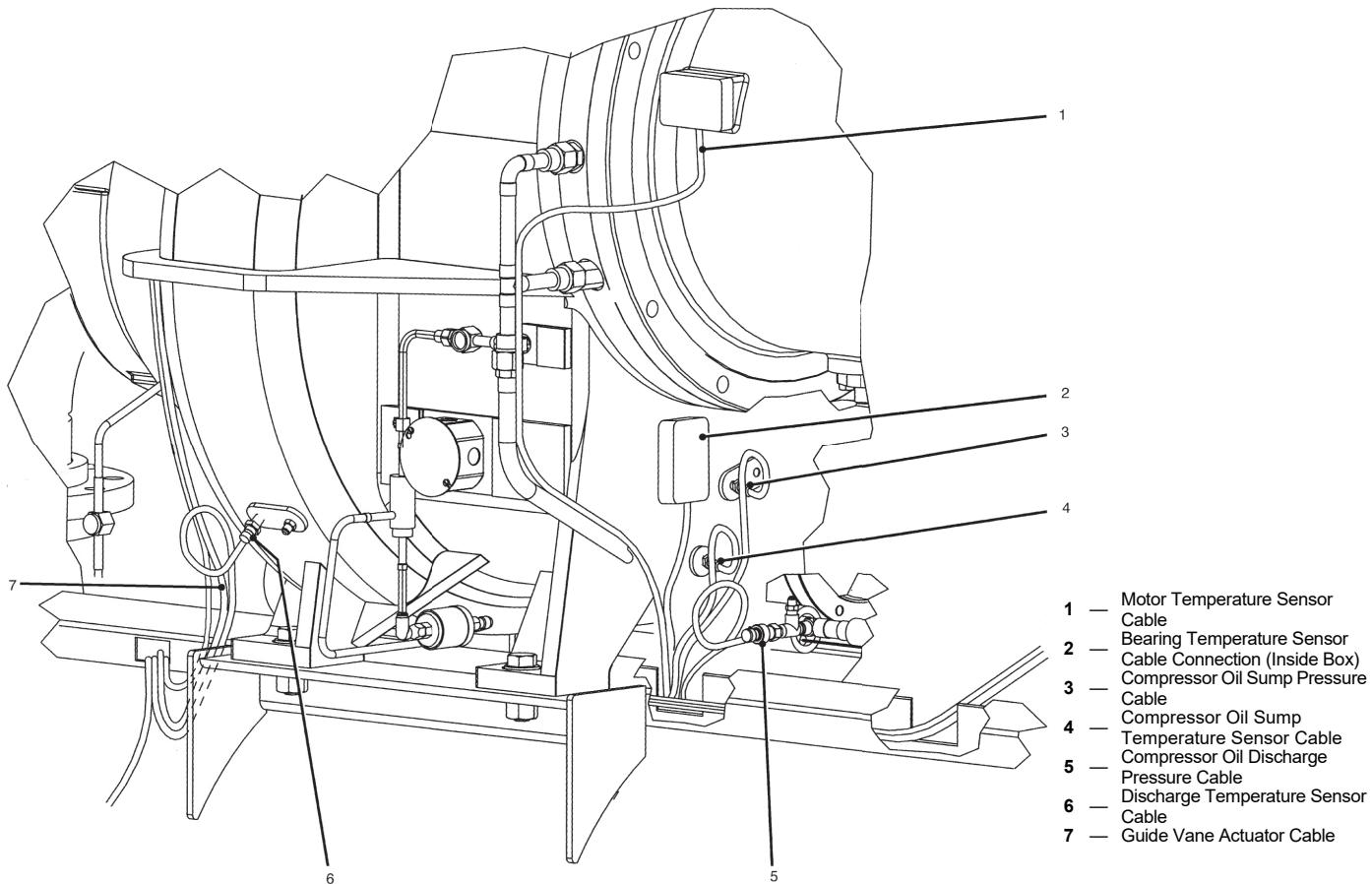


Fig. 19 – Compressor Detail

Special Instructions to Disassemble a Chiller with a 900A or 1200A LF2 VFD or Standard Tier VFD (DP1120, DP1260, DP1460, DP1670)

⚠ 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.

NOTE: Label each wire before removal when wiring must be disconnected. Clip all wire ties necessary when removing pressure and temperature sensors. Disconnect all pressure transducer wires at the sensor. Temperature sensors cannot be disconnected from their cables; remove temperature sensors from their thermowell and label as required.

⚠ WARNING

900A or 1200A LF2 VFD, Standard Tier VFD (765, 855, 960, 1070, 1275, 1530A, DP1120, DP1260, DP1460, DP1670) — Do not separate the cooler and condenser until the VFD enclosure is removed. The VFD/cooler assembly has a high center of gravity and may tip over when the cooler and condenser are separated which could result in equipment damage and/or serious personal injury. See Fig. 20.

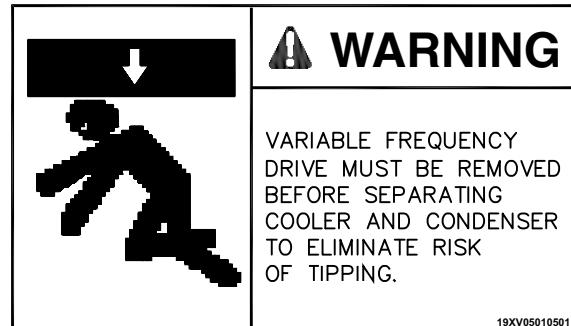


Fig. 20 – Removal Warning Label

Remove the VFD Enclosure from the Condenser

Confirm that the power supply disconnect is open and all safety procedures are observed before removing the VFD. This procedure minimizes the number of sensors and cables that need to be disconnected.

⚠ WARNING

Do not attempt to remove the VFD without first closing the VFD refrigerant isolation valves. Failure to do so during VFD removal will result in an uncontrolled refrigerant leak. A refrigerant leak can damage the unit as well as displace oxygen, causing asphyxiation.

1. Close the 2 filter drier isolation valves (Fig. 21) and the VFD refrigerant drain isolation valve. Evacuate the VFD coldplate through the Schrader valve (Fig. 21) next to the filter/drier.
2. Remove any conduits that bring power to VFD. See Fig. 21.

3. Remove the terminal box transition piece. See Fig. 21.
4. Label and disconnect the motor leads from the motor or VFD terminals (Fig. 22 and 23). Note the position of the motor terminal cable lugs so they can be reinstalled with sufficient clearance away from the surrounding structure. When reinstalling the VFD, assemble the back panel, floor, and tray of the motor terminal box transition piece prior to installing the motor leads.

CAUTION

Use a backing wrench when removing the nuts and bolts that secure the motor leads to the VFD bus bars to prevent damage to the bus bar insulators.

5. Remove the motor ground lead. Note the position of the ground lead so it can be reinstalled with sufficient clearance away from the surrounding structure.
6. Disconnect the power cables, interlock cable, and communication cable between the VFD enclosure and the power panel. See Fig. 21.
7. Remove the access panels on the back of the VFD enclosure and disconnect the VFD cooling lines (Fig. 24). Cover all openings.

Lifting the VFD

Care should be used to prevent damage due to dropping or jolting when moving the VFD enclosure. A fork truck or similar means of lifting and transporting may be used. Sling the VFD in a manner that will equalize the load at the pickup joints. Use a spreader bar

if the angle of the sling is less than 45 degrees relative to the horizontal. Do not jolt while lifting.

NOTE: The two lifting brackets for the VFD are not installed when they are shipped. They are bolted upside down to the bottom of the VFD support shelf. They must be unbolted and installed on the top of the VFD enclosure with ten 1 1/2-13 x 1.25-inch-long grade 5 bolts.

Use the following procedure to lift the control center:

1. Attach a sling to the 4 lifting holes in the installed lifting brackets. Make certain that the angle of the sling is not less than 45 degrees relative to horizontal.
2. Using an overhead or portable hoist (minimum 2-ton rated capacity), attach a free-fall chain to the sling secured drive. Take up any slack in the chain. See Fig. 25.
3. The VFD support assembly can be removed from the condenser if it is necessary to reduce the width of the condenser assembly. The eight 1 1/8-7 bolts that secure the VFD support assembly to the tubesheets should be torqued to 750 ft-lb (1017 N-m) when the support assembly is reinstalled. See Fig. 26.

NOTE: To reassemble, follow steps in reverse order. Connect sensors and cables after major components have been secured to reduce the risk of damaging them.

NOTE: If overhead space is limited following reinstallation of the VFD enclosure, the VFD enclosure lifting brackets (Fig. 25) may be removed from the top of the VFD and fastened to the bottom of the VFD support shelf (Fig. 27).

Reinstall the 1 1/2-13 x 1.25-inch-long grade 5 bolts into the top of the VFD enclosure to prevent debris from falling into the VFD.

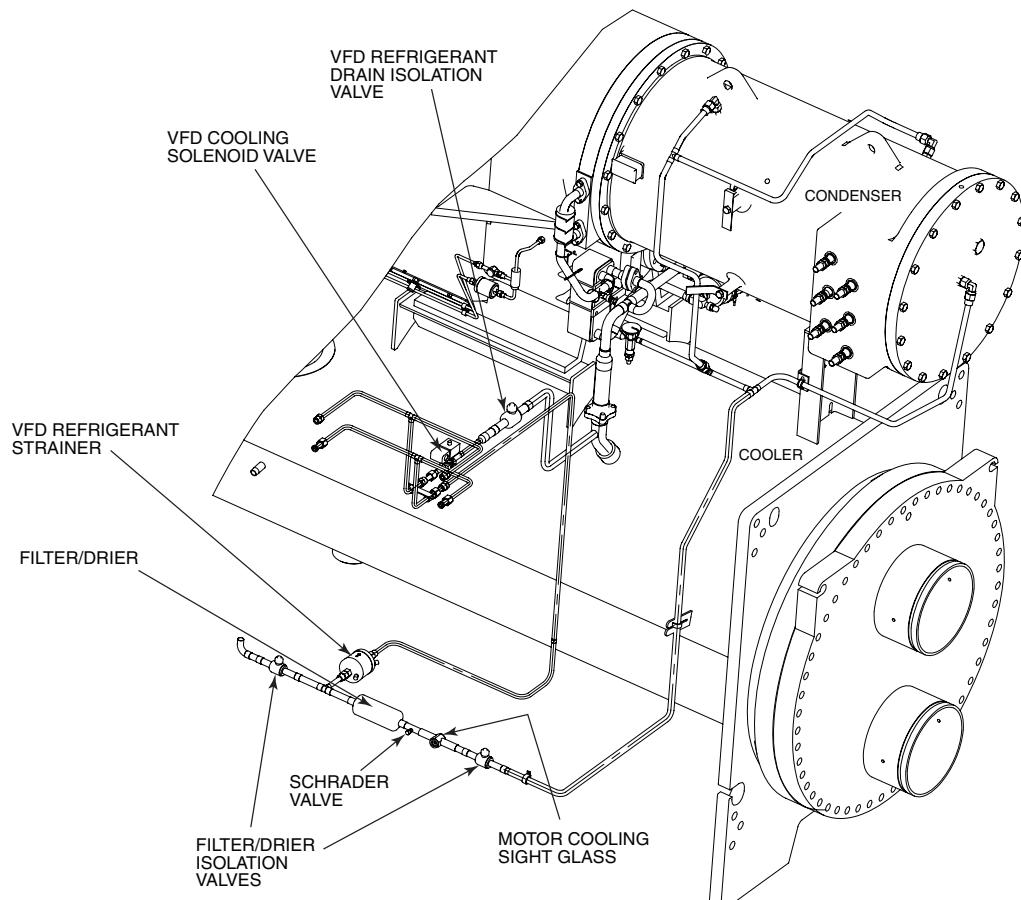
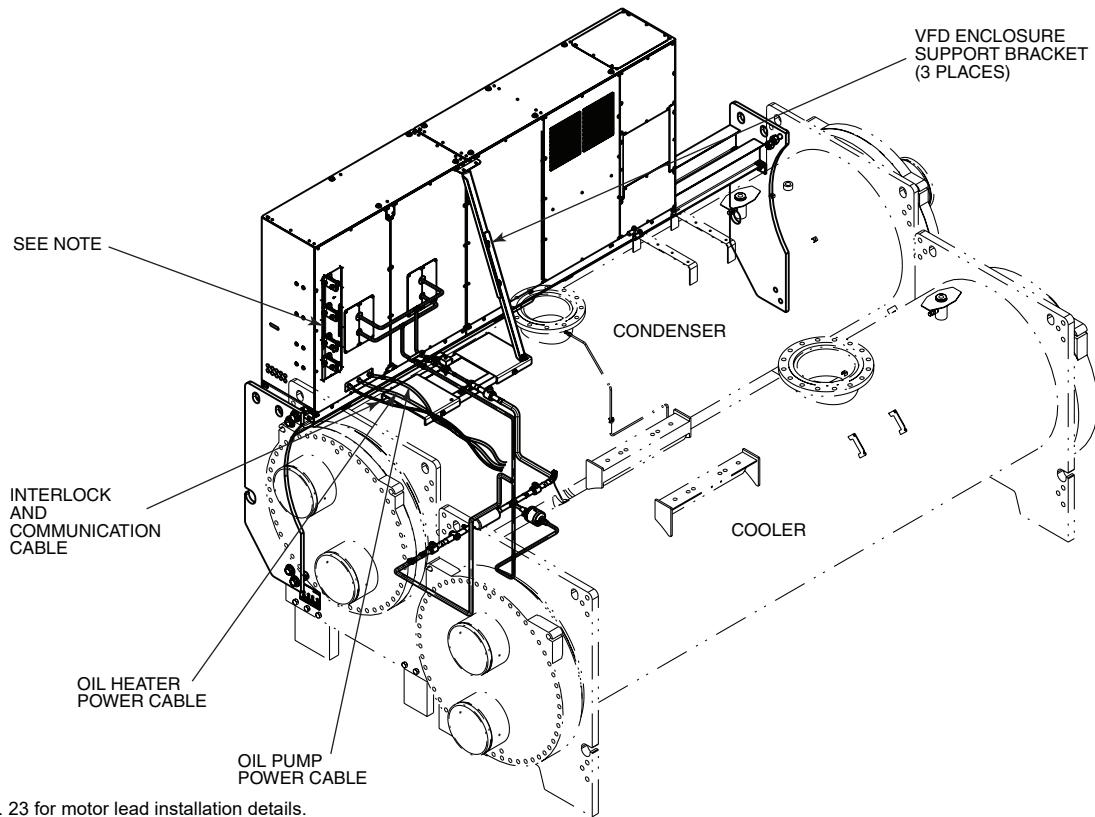


Fig. 21 — 900A or 1200A LF2 VFD — Typical



NOTE: See Fig. 23 for motor lead installation details.

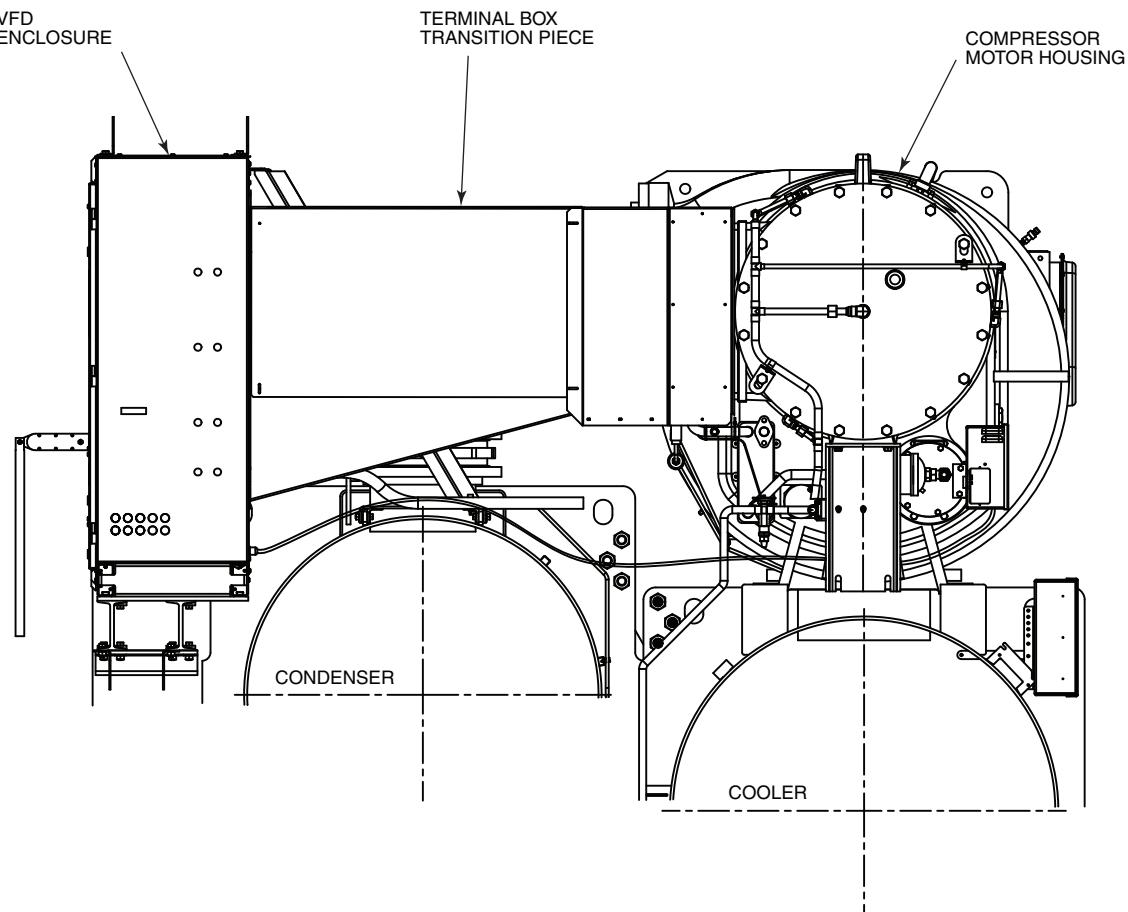


Fig. 21 — 900A or 1200A LF2 VFD — Typical (cont)

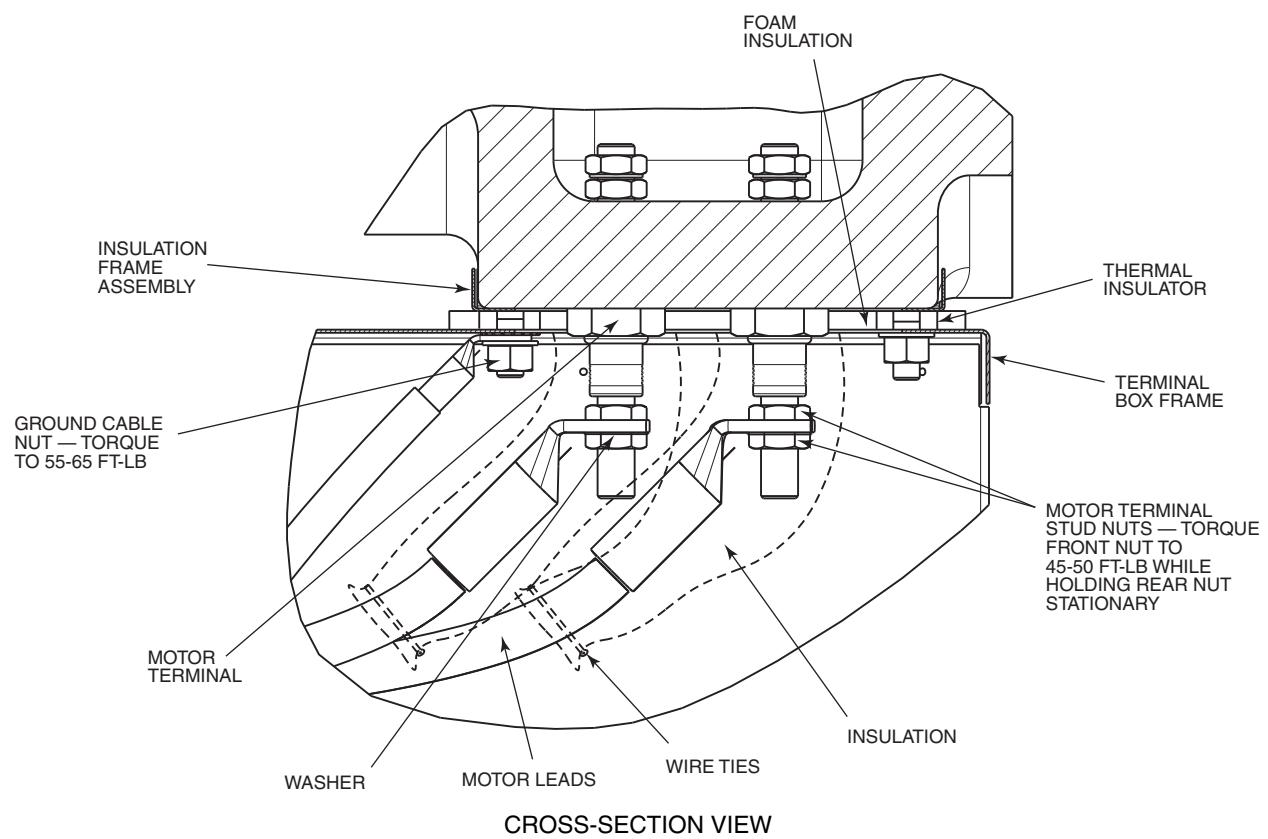
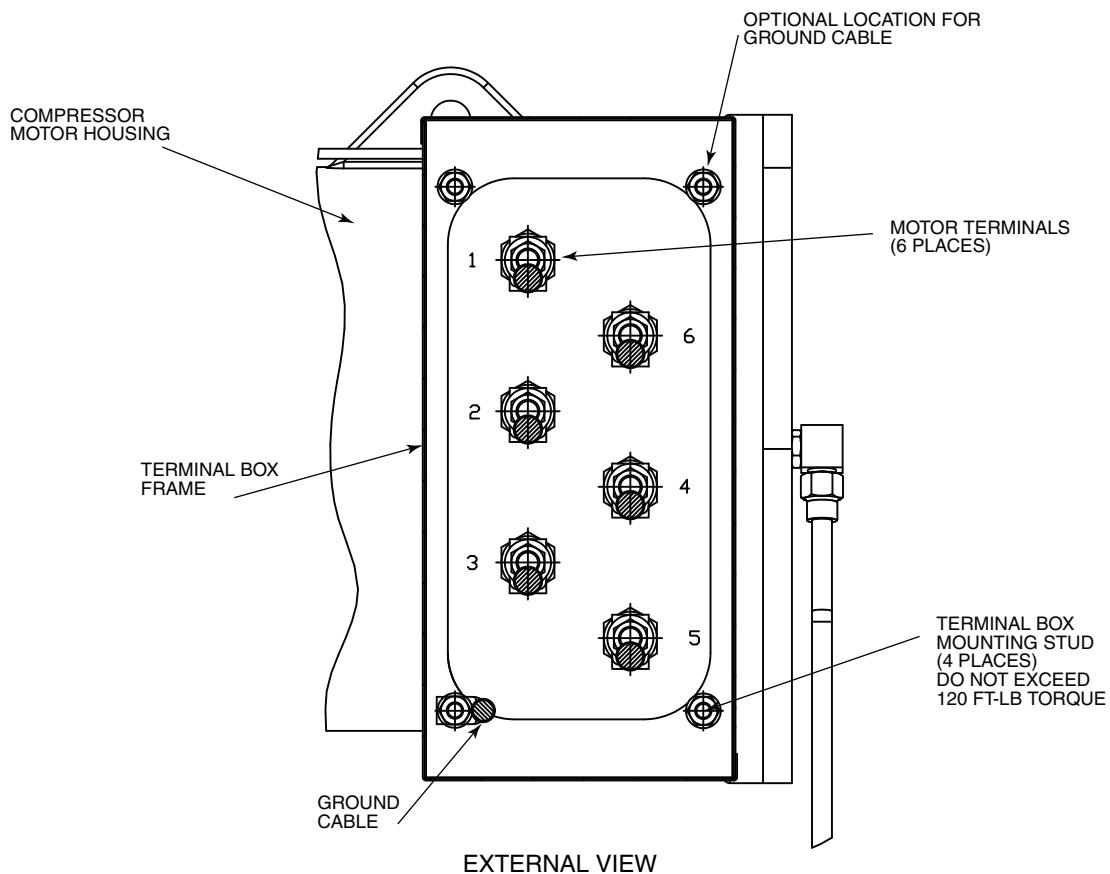


Fig. 22 — Compressor Motor Terminals (Typical)

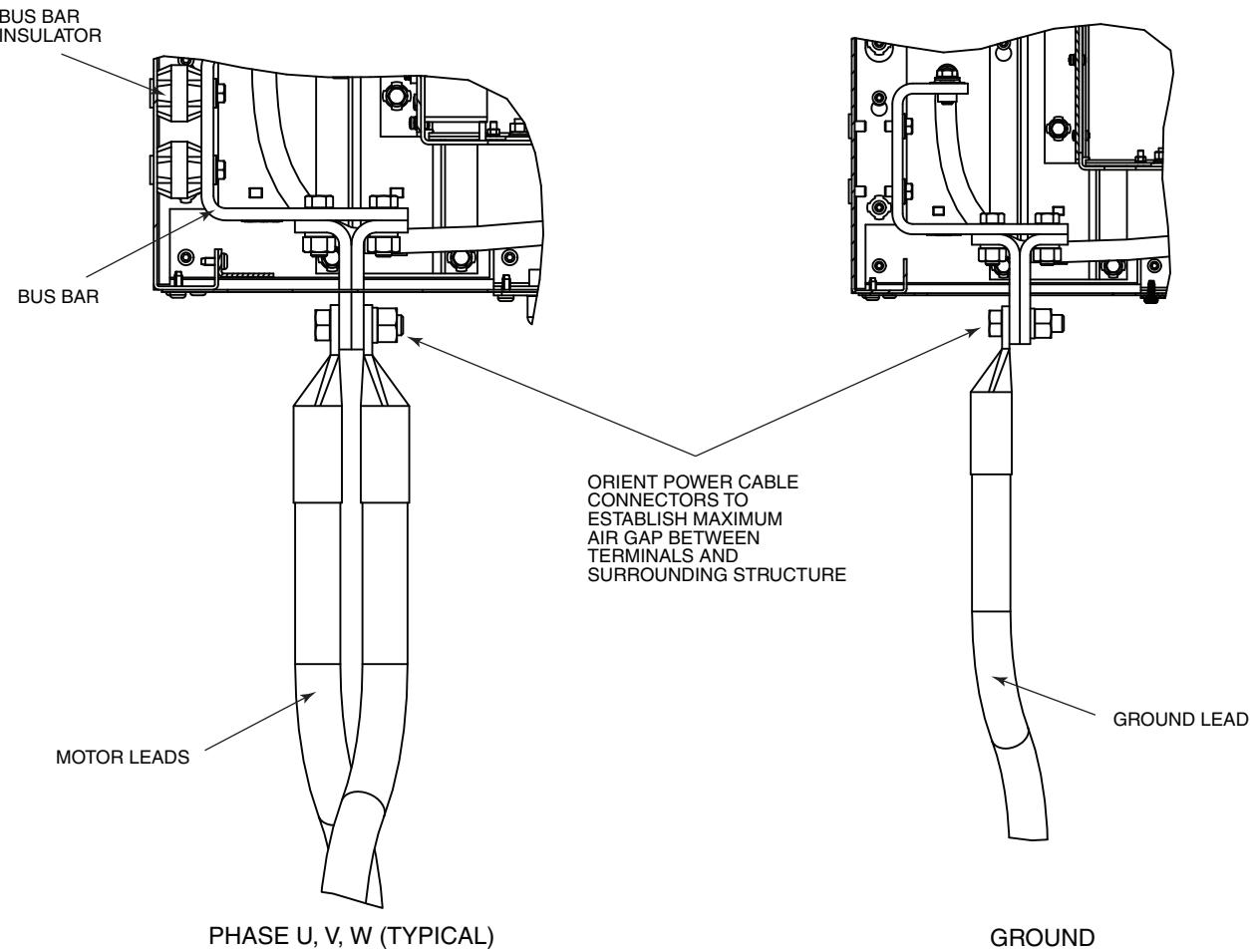


Fig. 23 — Motor Lead Installation (View Looking Down)

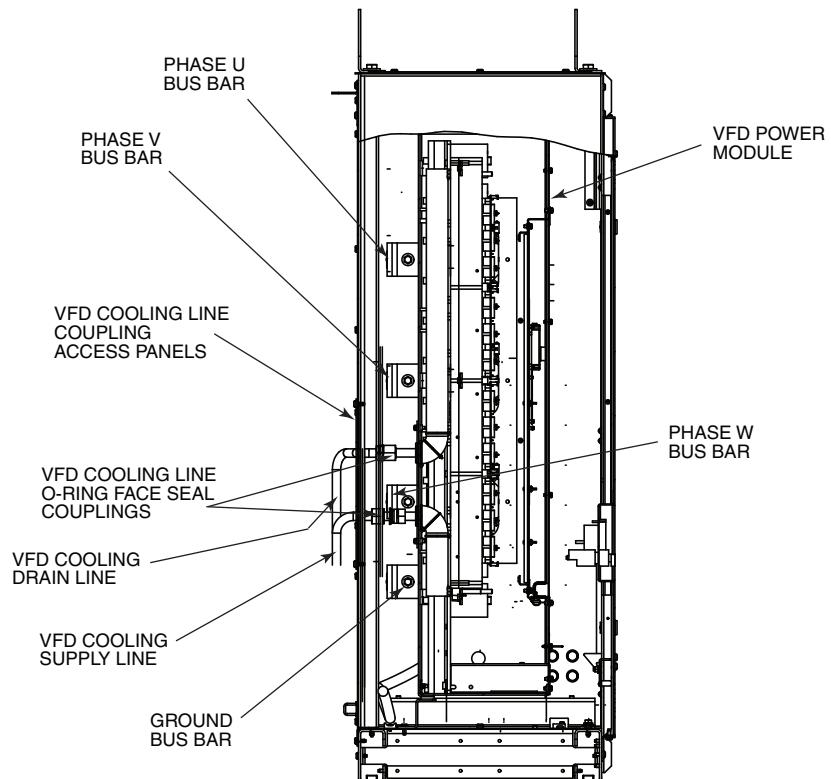


Fig. 24 — 900A or 1200A VFD Refrigerant Cooling Lines

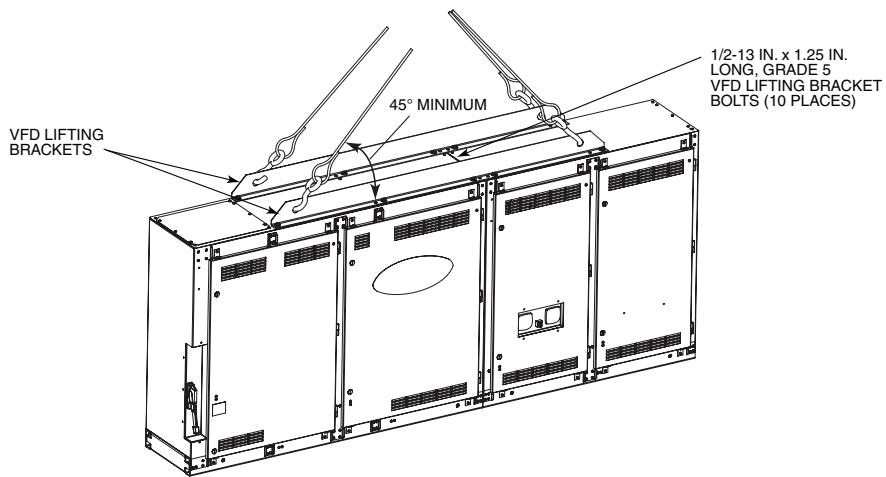


Fig. 25 – 900A or 1200A VFD Enclosure Lifting Points

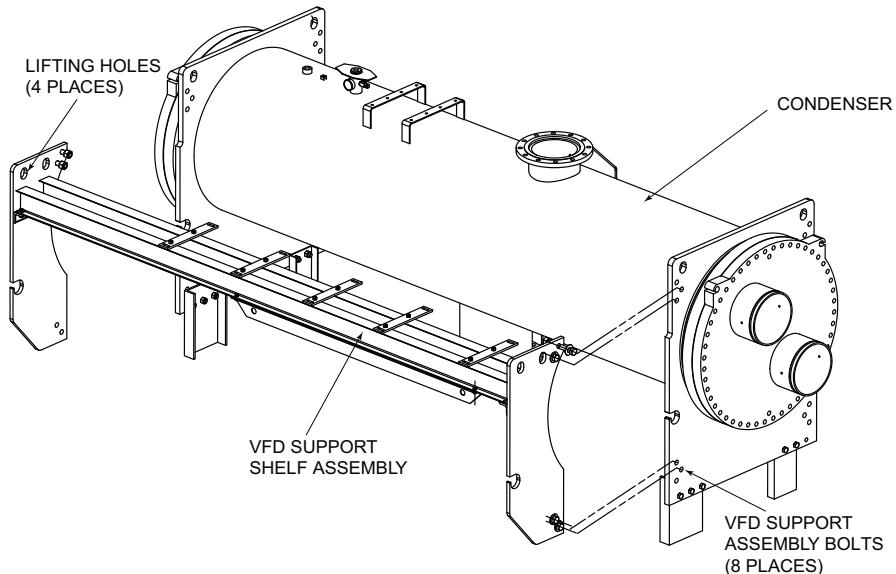


Fig. 26 – 900A or 1200A VFD Support Assembly Installation

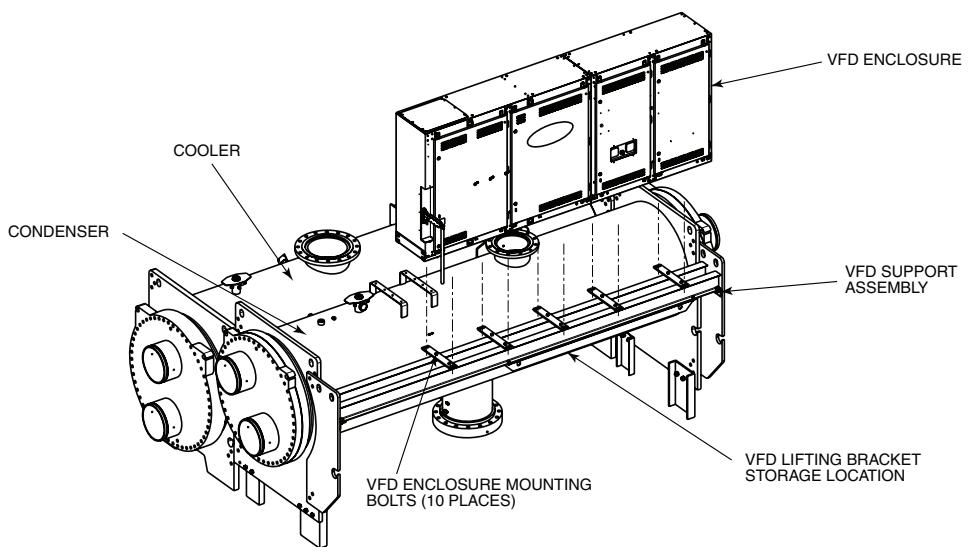


Fig. 27 – 900A or 1200A VFD Enclosure Installation

Install VFD

1. Install terminal box frame mounting studs into tapped holes using short threaded end. Do not exceed 120 ft-lb (163 N-m). See Fig. 22.
2. Install thermal insulators, insulation frame assembly, and terminal box frame prior to attaching motor power cables. Assemble the back panel, floor, and tray of the motor terminal box transition piece before installing the motor leads.
3. Tighten Frame 2 and Frame 3 motor terminals into the motor housing with 25 to 40 ft-lb (34 to 52 N-m) of torque.
4. There may be 1 or 2 motor power cables per terminal identified as T1, T2, and T3. Position motor end lugs on terminal studs with Belleville washer located against the front terminal lug with the convex side facing toward the front terminal nut. Clinch the two cables together with wire ties before tightening terminal nuts. Install front terminal nut finger tight. Hold rear terminal nut stationary while tightening front terminal nut to 45 to 50 ft-lb (61 to 68 N-m). See Fig. 22.
5. Check all terminal connections for proper installation.

IMPORTANT: Do not insulate terminals until wiring arrangement has been checked and approved by Carrier start-up personnel. Motor terminals must be insulated in acceptance with national and local electrical codes.

Insulate Motor Terminals and Lead Wire Ends

Locate heat shrink tubing (RCD P/N LF33MM114) over power connections so that they are completely covered and tubing is against motor housing. Shrink into position. Slide foam tubing (3 in. inner diameter closed cell vinyl, neoprene, or nitrile foam) partway over the heat shrink tubing. Apply adhesive for closed-cell foam insulation to motor-side end of the foam tubing, and push tubing the rest of the way over the terminal and against the sheet insulation on the motor side. Secure the opposite end of the foam tubing with a wire tie as shown in Fig. 22.

Alternate Insulation for Motor Terminals and Lead Wire Ends

Insulate compressor motor terminals, lead wire ends, and electrical wires to prevent moisture condensation and electrical arcing. Obtain Carrier-approved insulation material from RCD (Replacement Components Division), consisting of 3 rolls of insulation putty and one roll of vinyl tape.

- a. Insulate each terminal by wrapping with one layer of insulation putty (RCD P/N 19EA411-1102).
- b. Overwrap putty with 4 layers of vinyl tape.

6. Orient PE/ground lug as shown in Fig. 22. Assemble internal/external tooth lock washer between the terminal box frame and the PE/ground cable. Torque PE/ground lug nut to 55 to 65 ft-lb (75 to 89 N-m).
7. Complete assembly of the motor terminal box transition piece after all power and ground leads are installed. The motor terminal box transition piece must be adjusted to completely cover the opening on the back of the VFD enclosure. See Fig. 21.
8. Install O-rings on VFD refrigerant connections using silicone grease. Using two wrenches, tighten connector to 27 to 33 ft-lb (37 to 45 N-m). See Fig. 24.
9. Evacuate all piping between the VFD and the VFD isolation valves after assembly and tightening of VFD fittings. When dehydration/evacuation is complete, equalize VFD piping pressure with machine pressure if machine is charged with refrigerant. See Fig. 21.

19XR6/7 RIG MACHINE COMPONENTS

Refer to instructions below, Fig. 28-30, and Carrier Certified Prints for machine component disassembly.

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

⚠ 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.

⚠ 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. Either dispose of compressor oil and reinstall a new oil charge after dehydration, or store oil in a clean dry container designed for oil storage; keep the container sealed until ready to re-install oil.

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. 28).
2. Cut the refrigerant motor cooling line at the location shown (Item 4, Fig. 28).
3. Disconnect the compressor discharge pipe at the compressor (Item 14, Fig. 28).
4. Disconnect the coupling of the isolation valve near the damper valve as shown in Fig. 28 (Item 12).
5. Unbolt the cooler liquid feed line at the location indicated for liquid line isolation valve. Refer to Fig. 6 and 28, 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. 30 and Fig. 31, Compressor Detail A).
 - b. motor power wires at the starter (Item 1, Fig. 28).
 - c. wires and cable housings at the control panel that cross from the control panel to the cooler vessel (Fig. 29).
8. Install dowel pins before separating the heat exchangers at the tube sheet mounting brackets to ensure accurate alignment when reassembling.
9. Disconnect take-apart connectors on the tube sheets (Fig. 30).
10. Rig the vessels apart.

To Separate the Compressor from the Cooler:

1. Unbolt the compressor suction elbow at the cooler flange (Item 13, Fig. 28).
2. Cut the refrigerant motor cooling line at the location shown (Item 4, Fig. 28).
3. Disconnect the motor refrigerant return line (Item 6, Fig. 28).
4. Disconnect all wires going to the control panel.
5. Disconnect the following:
 - a. compressor oil sump temperature sensor cable (Fig. 31, Compressor Detail B)
 - b. bearing temperature sensor cables (Fig. 31, Compressor Detail B)
 - c. motor temperature sensor cable (Fig. 31, Compressor Detail A)
 - d. wires and cable housings that cross from the power panel to the starter and control panel (Fig. 29)
 - e. compressor discharge temperature sensor cable (Fig. 31, Compressor Detail A)
 - f. compressor oil sump pressure cable (Fig. 31, Compressor Detail B)
 - g. compressor oil supply pressure cable (Fig. 31, Compressor Detail A)
 - h. bearing displacement switch (Fig. 31, Compressor Detail D)
 - i. oil heater (Fig. 31, Compressor Detail B).
 - j. guide vane actuator cable (Fig. 31, Compressor Detail D)

6. Disconnect the flared fitting for the oil reclaim line (Item 11, Fig. 28).
7. Unbolt the compressor discharge coupling (Item 14, Fig. 28).
8. Cover all openings.
9. Disconnect motor power cables at the starter lugs (Item 1, Fig. 28).
10. Install dowel pins between the compressor base and mounting base before separating from the cooler to ensure accurate alignment when reassembling.
11. Unbolt the compressor mounting from the cooler (Item 7, Fig. 28).

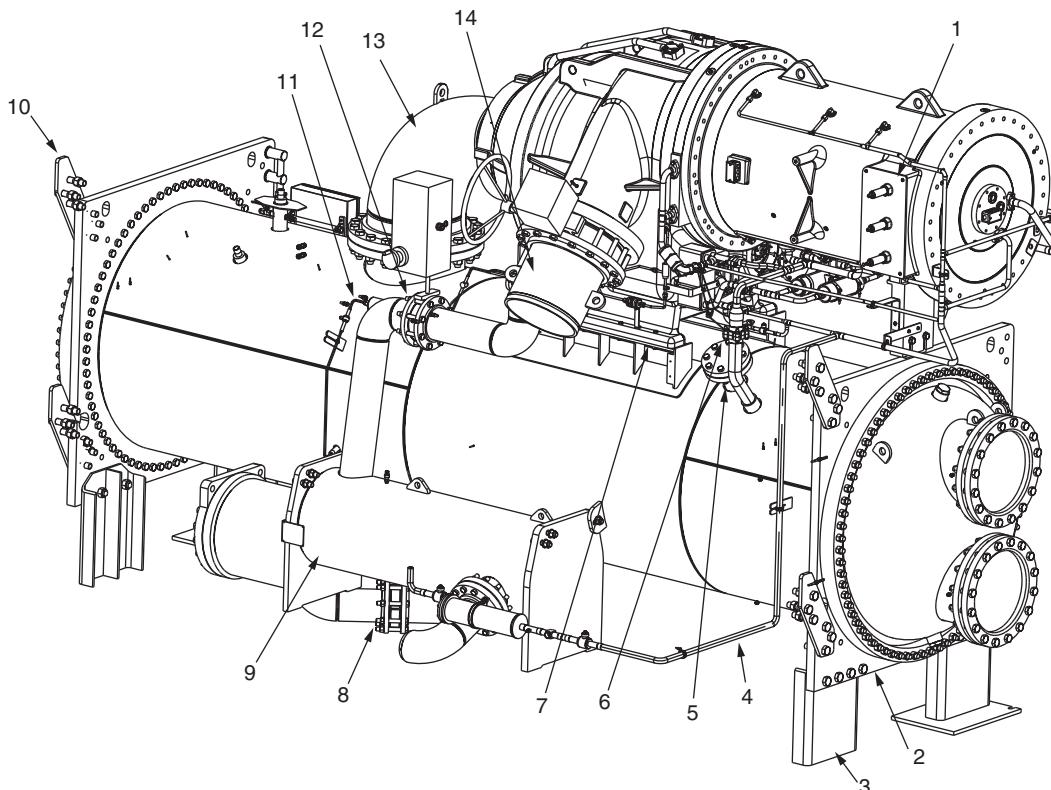
To Rig Compressor:

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.

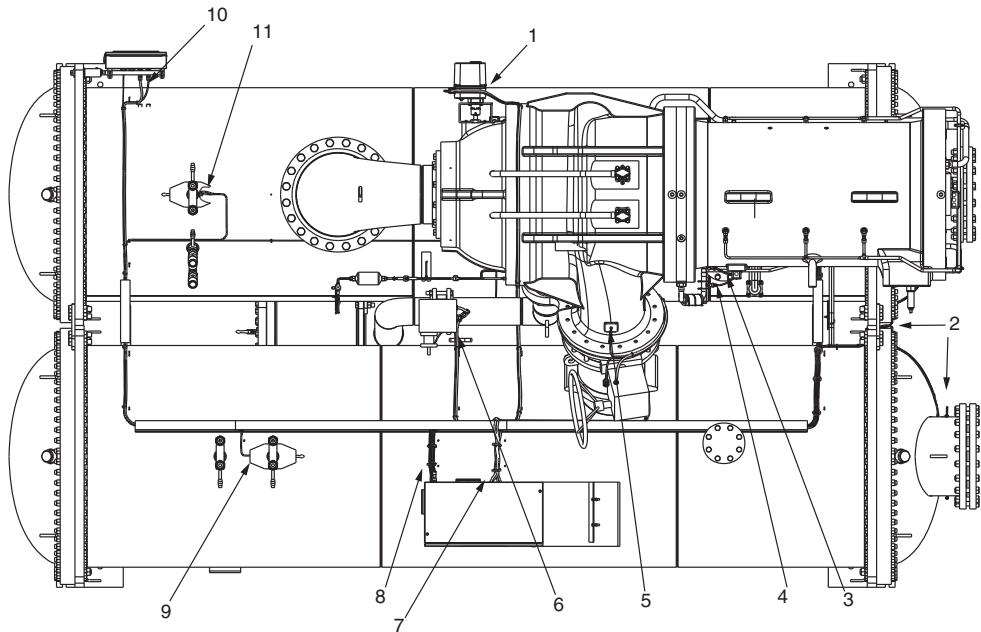
Additional Notes

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.



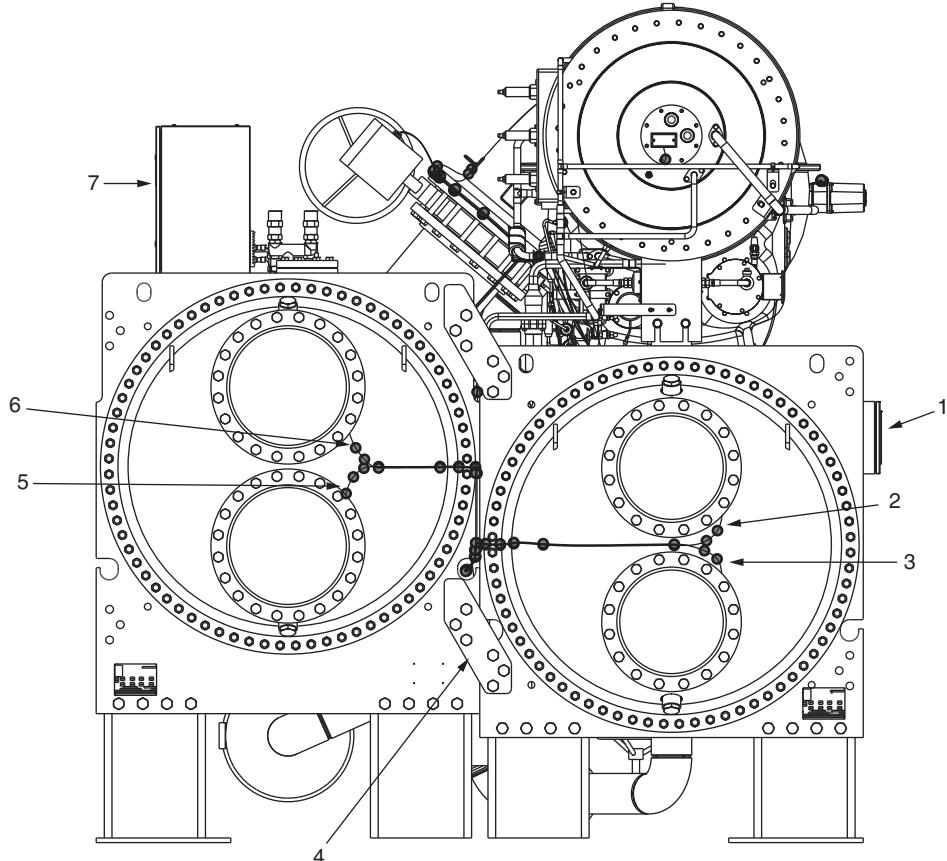
| | |
|--|----------------------------------|
| 1 — Starter Connector (Unbolt) | 8 — Cooler Liquid Feed Line |
| 2 — Tube Sheet | 9 — Economizer |
| 3 — Tube Sheet Leg Option (Unbolt) | 10 — Vessel Connectors (Unbolt) |
| 4 — Refrigerant Motor Cooling Line (Cut) | 11 — Oil Reclaim Line |
| 5 — Optional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

Fig. 28 — Cooler, Side View (Compressor Frame Size 6 Shown), 19XR6/7



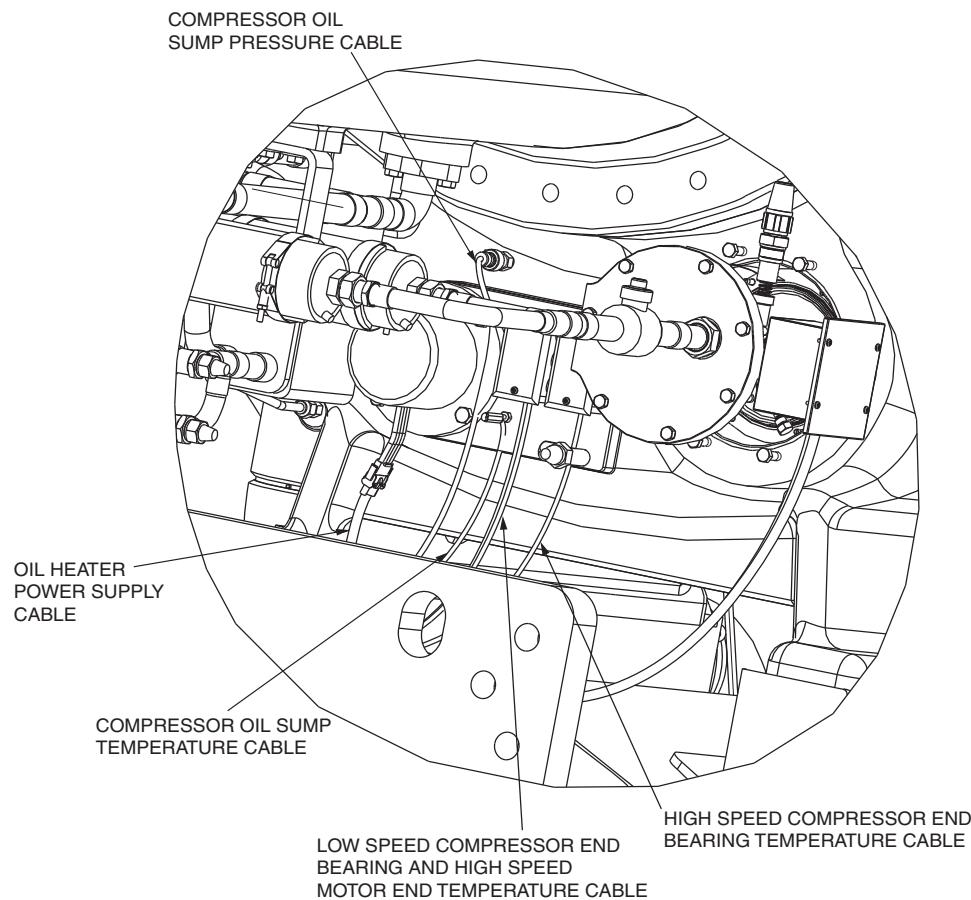
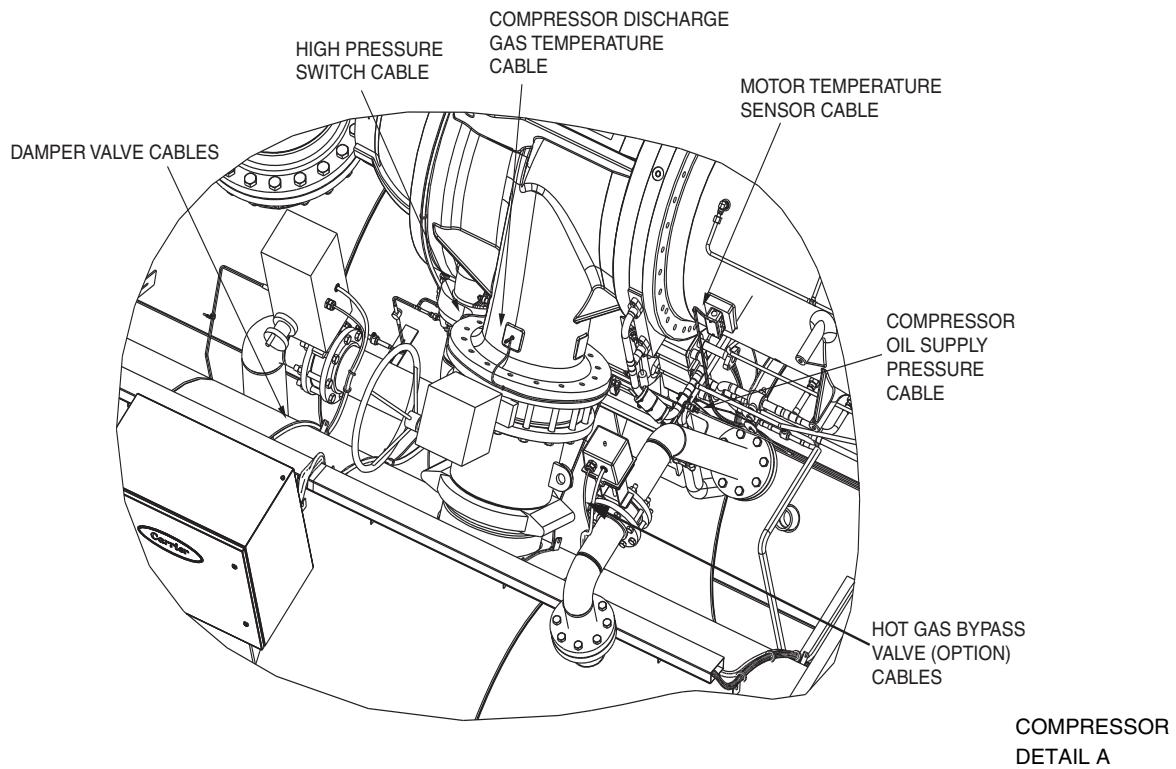
| | |
|---|---|
| 1 — Guide Vane Actuator Cable | 6 — Damper Valve Cables |
| 2 — Water Temperature Sensor Cables | 7 — Control Panel Power Supply Cables |
| 3 — Motor Winding Temperature Cables | 8 — Low Voltage Sensor Cables |
| 4 — Compressor Oil Supply Pressure Cable | 9 — Condenser Pressure Cable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

Fig. 29 — Chiller Top View (Compressor Frame Size 6 Shown), 19XR6/7



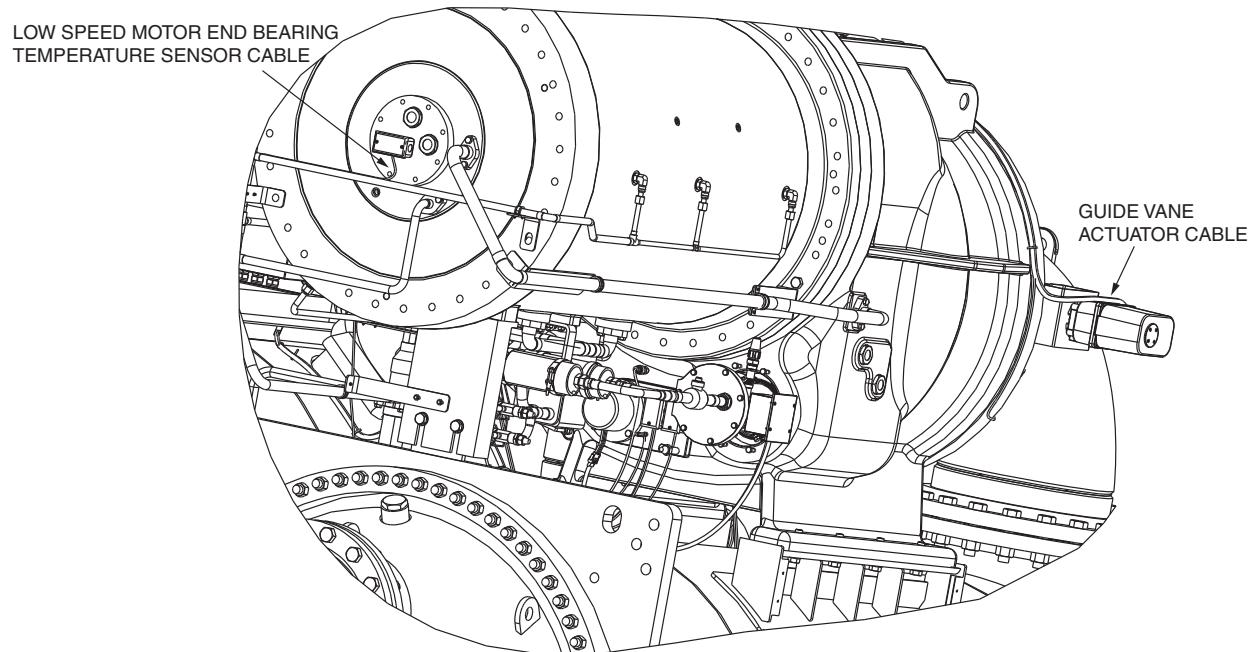
| | |
|---|--|
| 1 — HMI Control Box | 5 — Condenser Entering Water Temperature Cable |
| 2 — Cooler Leaving Water Temperature Cable | 6 — Condenser Leaving Water Temperature Cable |
| 3 — Cooler Entering Water Temperature Cable | 7 — Control Box |
| 4 — Vessel Take-Apart Connectors | |

Fig. 30 — Chiller End View

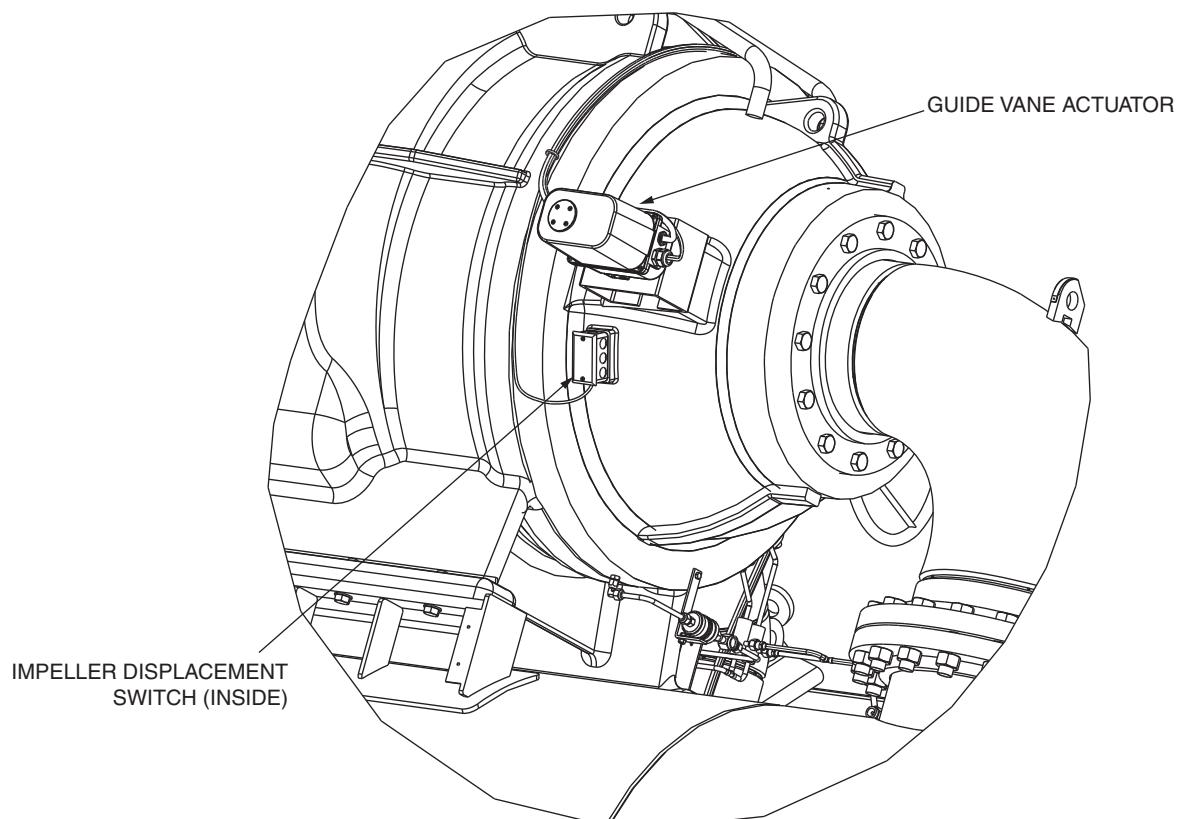


COMPRESSOR DETAIL B

Fig. 31 — 19XR6/7 Compressor Detail



COMPRESSOR
DETAIL C



COMPRESSOR
DETAIL D,

Fig. 31 — 19XR6/7 Compressor Detail (cont)

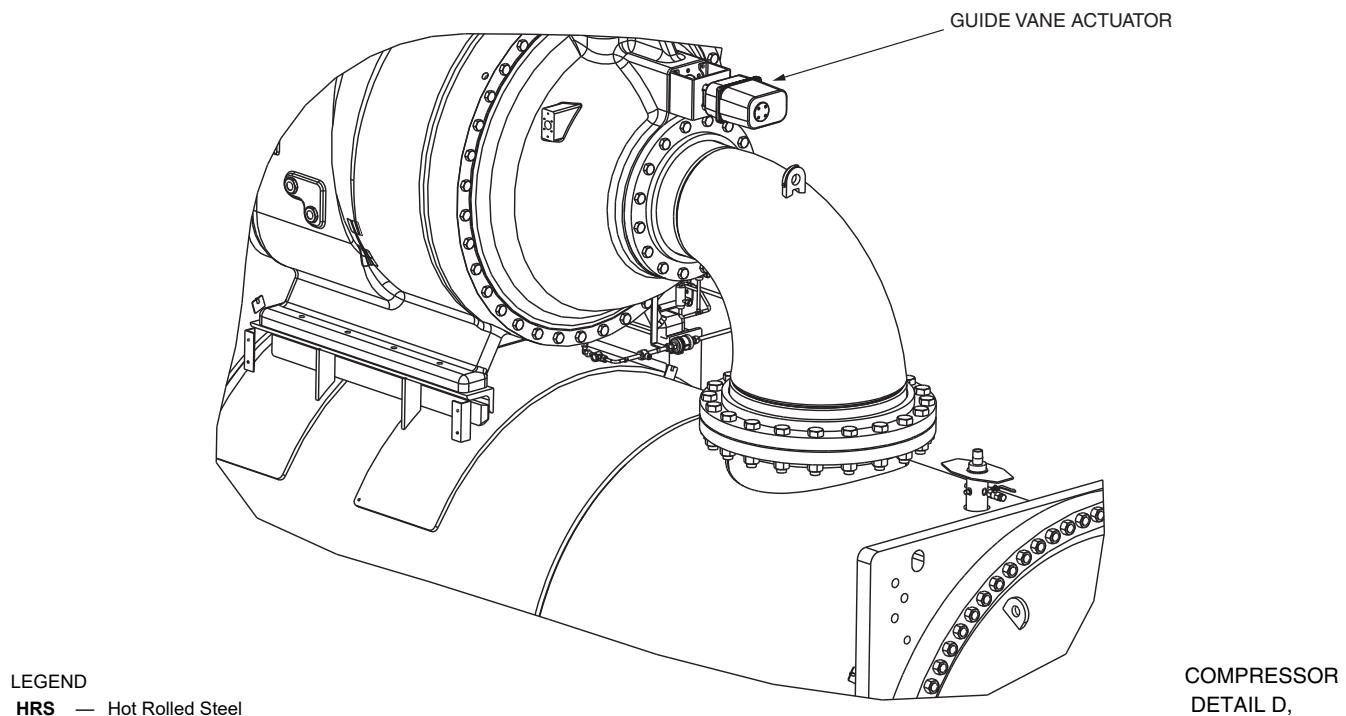


Fig. 31 — 19XR6/7 Compressor Detail (cont)

Step 3 – Install Machine Supports

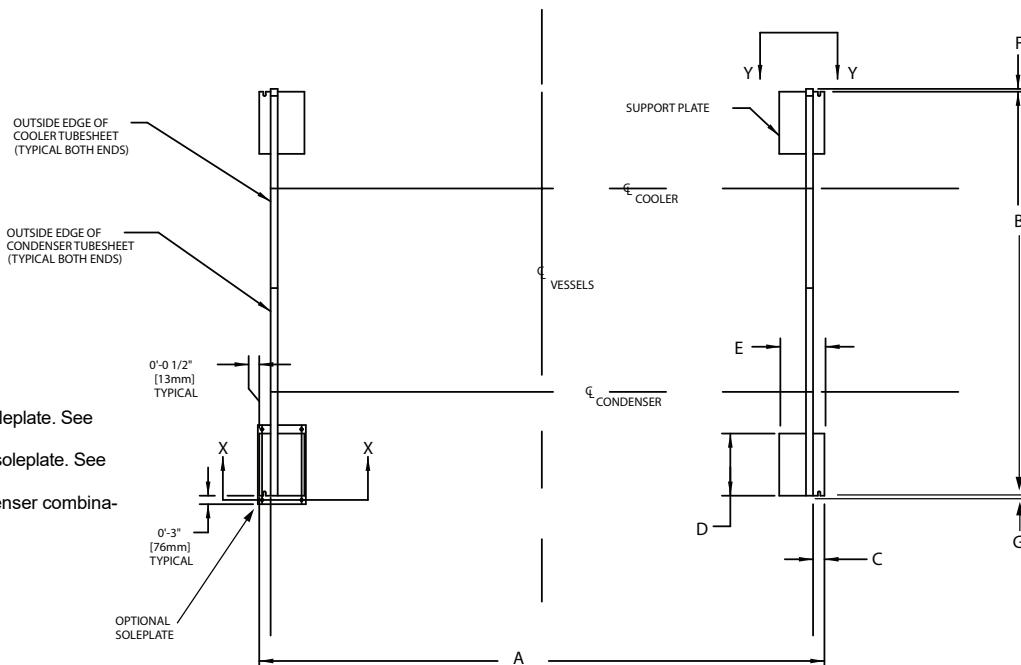
INSTALL STANDARD ISOLATION

Figures 32 and 33 show positions 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.

NOTES:

1. Y-Y dimension refers to standard soleplate. See Fig. 33.
2. X-X dimension refers to accessory soleplate. See Fig. 34.
3. For B6/C6 and C6/C6 cooler/condenser combination, add 0.3" [76mm] to the X-X dimension.



| 19XRV 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 | |
| 30-32 | 12-10-3/4 | 3931 | 5-5-1/4 | 1657 | 0 | 0 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 35-37 | 14-7-1/4 | 4451 | 5-5-1/4 | 1657 | 0 | 0 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 40-42 | 12-10-3/4 | 3931 | 6-0 | 1829 | 0-1-1/2 | 38 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 45-47 | 14-7-1/4 | 4451 | 6-0 | 1829 | 0-1-1/2 | 38 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 50-54, 5A-5C, 5K-5R | 12-10-3/4 | 3931 | 6-5-1/2 | 1969 | 0-1/2 | 13 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 55-59, 5F-5H, 5T-5Z | 14-7-1/4 | 4451 | 6-5-1/2 | 1969 | 0-1/2 | 13 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 60-64, 6K-6R | 12-10-3/4 | 3931 | 6-9-1/2 | 2070 | 0-1/2 | 13 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 65-69, 6T-6Z | 14-7-1/4 | 4451 | 6-9-1/2 | 2070 | 0-1/2 | 13 | 0-3-5/8 | 92 | 1-3-1/4 | 387 | 0-9 | 229 | 0-1/2 | 13 |
| 70-74, 7K-7R | 15-1-7/8 | 4620 | 7-10-1/2 | 2401 | 0-1/4 | 6 | 0-6-15/16 | 176 | 1-10 | 559 | 1-4 | 406 | 0-3/4 | 19 |
| 75-79, 7T-7Z | 17-1-7/8 | 5230 | 7-10-1/2 | 2401 | 0-1/4 | 6 | 0-6-15/16 | 176 | 1-10 | 559 | 1-4 | 406 | 0-3/4 | 19 |
| 80-84, 8K-8R | 15-1-7/8 | 4620 | 8-9-3/4 | 2686 | 0-15/16 | 24 | 0-6-15/16 | 176 | 1-10 | 559 | 1-4 | 406 | 0-1/16 | 2 |
| 85-89, 8T-8Z | 17-1-7/8 | 5230 | 8-9-3/4 | 2686 | 0-15/16 | 24 | 0-6-15/16 | 176 | 1-10 | 559 | 1-4 | 406 | 0-1/16 | 2 |
| 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 | 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 | — | — | — | — |
| C6 | 16-8 | 5080 | 11-11 | 3632 | 0-4 | 102 | 1-10 | 559 | 1-4 | 406 | — | — | 0-1 | 25 |
| C8 | 18-8 | 5690 | 11-11 | 3632 | 0-4 | 102 | 1-10 | 559 | 1-4 | 406 | — | — | 0-1 | 25 |
| 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 | — | — | — | — |
| C8 | 18-8 | 5691 | 13-2 | 4013 | 0-4 | 102 | 1-10 | 559 | 1-4 | 406 | — | — | — | — |
| D8 | 18-8 | 5691 | 13-2 | 4013 | 0-4 | 102 | 1-10 | 559 | 1-4 | 406 | — | — | — | — |

Fig. 32 – 19XR Machine Footprint

NOTES:

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

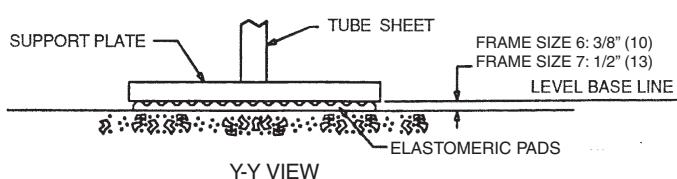


Fig. 33 – Standard Isolation

INSTALL ACCESSORY ISOLATION (IF REQUIRED)

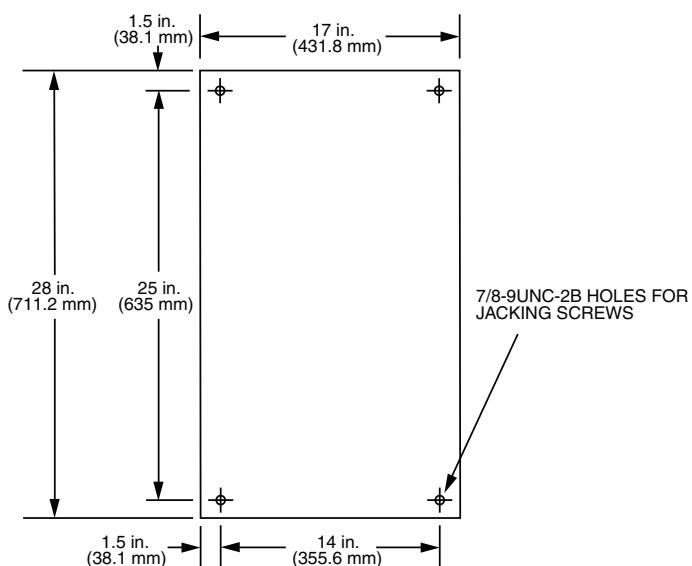
Uneven floors or other considerations may dictate the use of accessory soleplates (supplied by Carrier for field installation) and leveling pads. Refer to Fig. 34.

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

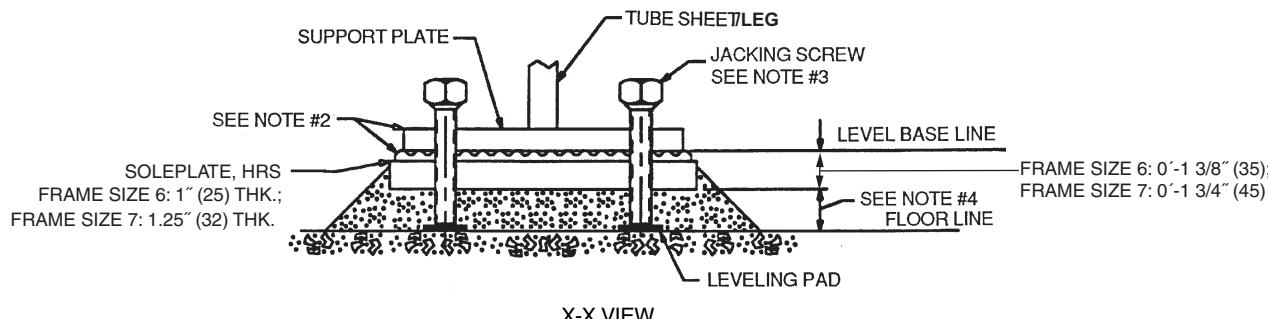
For adequate and long lasting machine support, proper grout selection and placement is essential. Carrier recommends that only pre-mixed, epoxy type, non-shrinking grout be used for machine installation. Follow manufacturer's instructions in applying grout.

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.

SOLEPLATE DIMENSIONS



ACCESSORY SOLEPLATE DETAIL



NOTES:

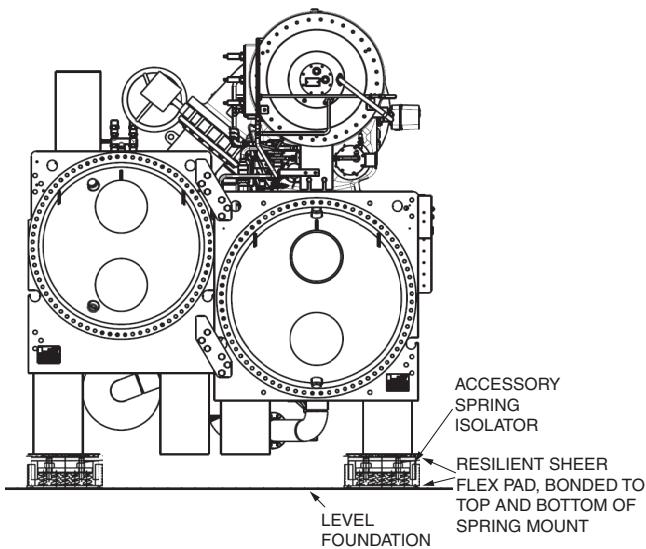
1. Dimensions in () are in millimeters.
2. Accessory (Carrier supplied, field installed) soleplate package includes 4 soleplates, 16 jacking screws and leveling pads. Isolation package is also required.
3. Jacking screws to be removed after grout has set.
4. Thickness of grout will vary, depending on the amount necessary to level chiller. Use only pre-mixed non-shrinking grout, MasterFlow¹ 885, 1-1/2 in. (38.1 mm) to 2-1/4 in. (57.2 mm) thick.

1.Third-party trademarks and logos are the property of their respective owners.

Fig. 34 — Accessory Isolation

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. See Fig. 35. Consult job data for specific arrangement. Low profile spring isolation assemblies can be field supplied to keep the machine at a convenient working height.



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

Fig. 35 — 19XR Accessory Spring Isolation (Shown with Accessory Soleplates)

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.

Step 4 — Connect Piping

INSTALL WATER PIPING TO HEAT EXCHANGERS

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. 30. 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. See Fig. 36 for typical nozzle piping. Water flow direction must be as specified in Fig. 37-39.

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. 40 and 41. See Tables 35 and 36 for dimensions.
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 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.

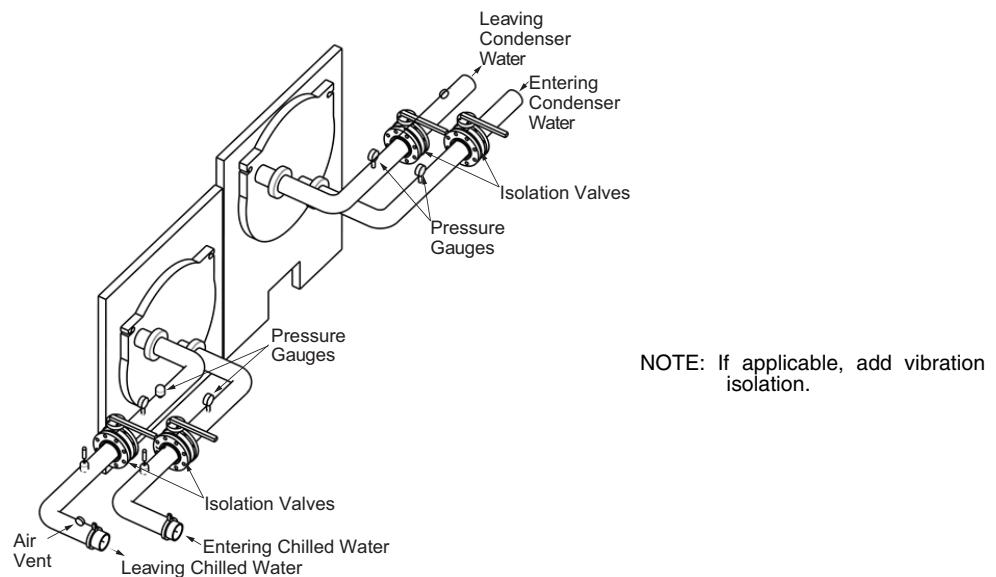
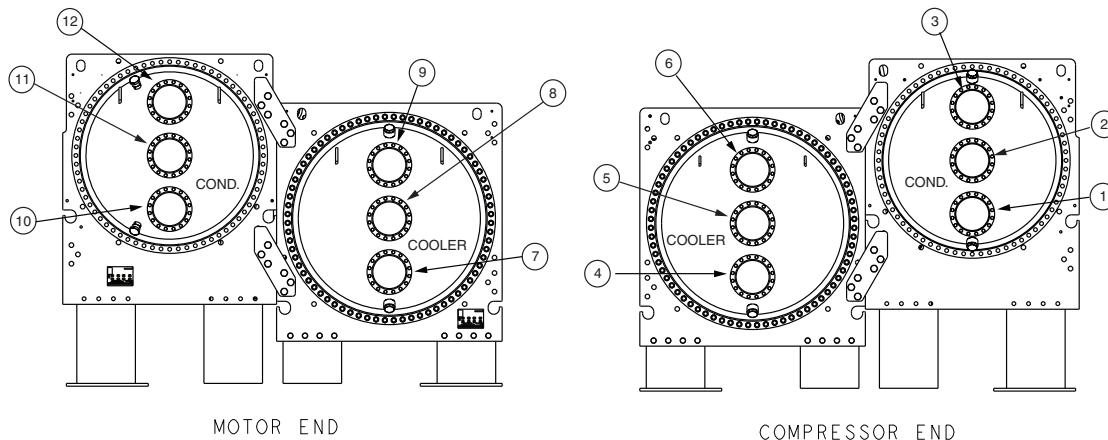


Fig. 36 — Typical Nozzle Piping

NOZZLE-IN-HEAD (NIH) WATERBOXES



NOZZLE ARRANGEMENT CODES

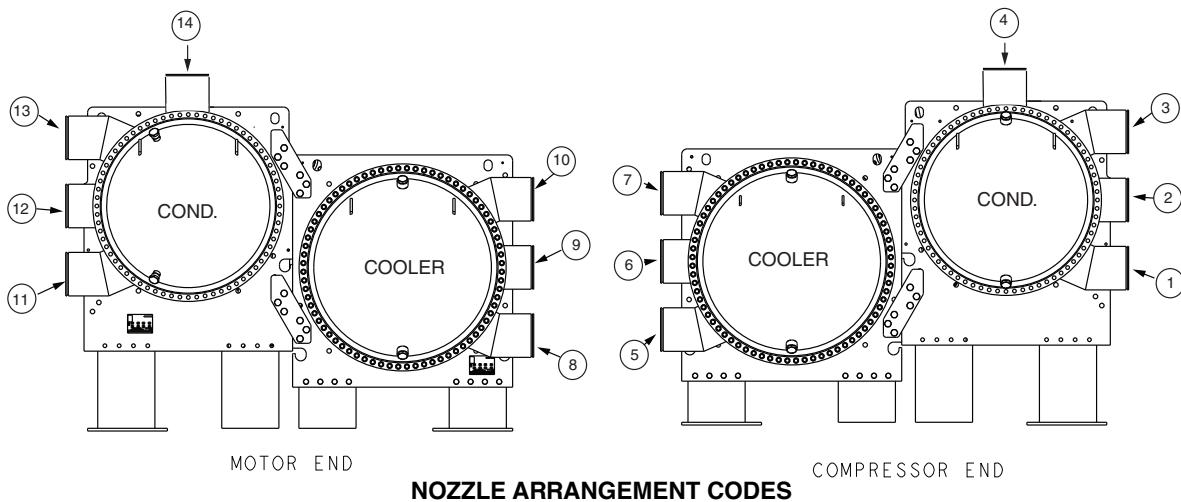
| PASS | COOLER WATERBOXES | | | CONDENSER WATERBOXES | | |
|------|-------------------|-----|-------------------------------|----------------------|-----|-------------------------------|
| | In | Out | Arrangement Code ^a | In | Out | Arrangement Code ^a |
| 1 | 8 | 5 | A | 11 | 2 | P |
| | 5 | 8 | 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 |

NOTE(S):

a. Refer to certified drawings.

Fig. 37 — 19XR Frame 3-8 (19XR3-E) and A-D (19XR6-7) Piping Flow Data (NIH)

MARINE WATERBOXES (MWB)



NOZZLE ARRANGEMENT CODES

COOLER MARINE WATERBOXES

| PASS | In | Out | Arrangement Code ^a |
|------|----|-----|-------------------------------|
| 1 | 9 | 6 | A |
| | 6 | 9 | B |
| 2 | 8 | 10 | C |
| | 5 | 7 | D |
| 3 | 8 | 7 | E |
| | 5 | 10 | F |

CONDENSER MARINE WATERBOXES

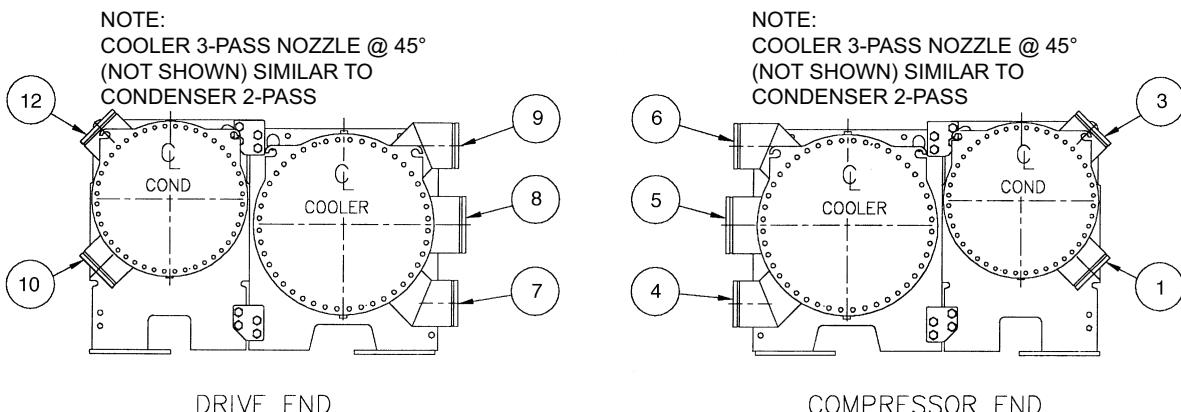
| PASS | In | Out | Arrangement Code ^a |
|------|----|-----|-------------------------------|
| 1 | 12 | 2 | P |
| | 2 | 12 | Q |
| 2 | 11 | 13 | R |
| | 1 | 3 | S |
| 3 | 11 | 14 | V |
| | 1 | 4 | W |

NOTE(S):

a. Refer to certified drawings. Note that not all nozzle arrangements are available as standard.

Fig. 38 — 19XR Frame 3-8 (19XR3-E) and A-D (19XR6-7) (MWB)

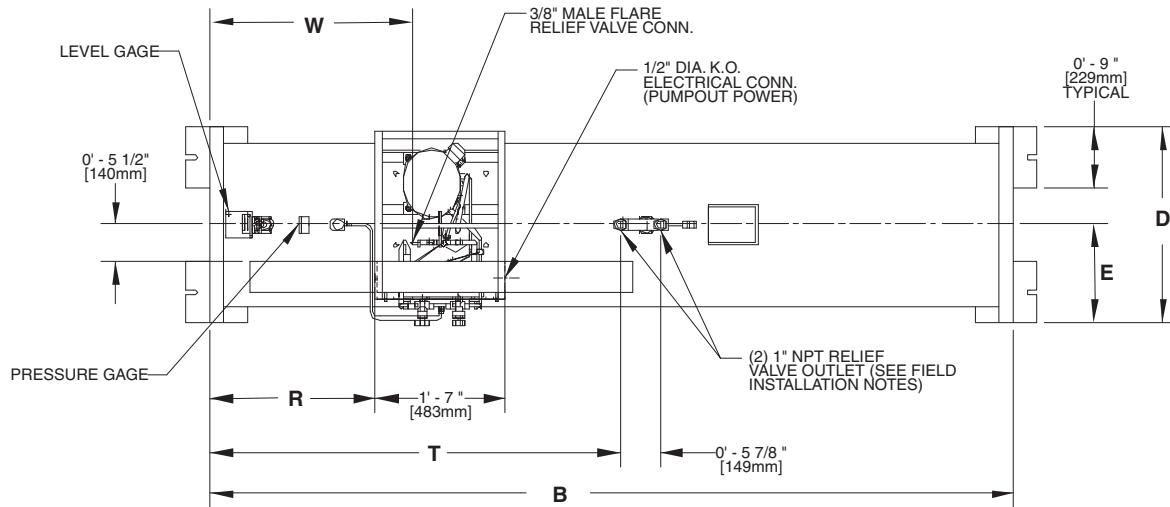
MARINE WATERBOXES (MWB)



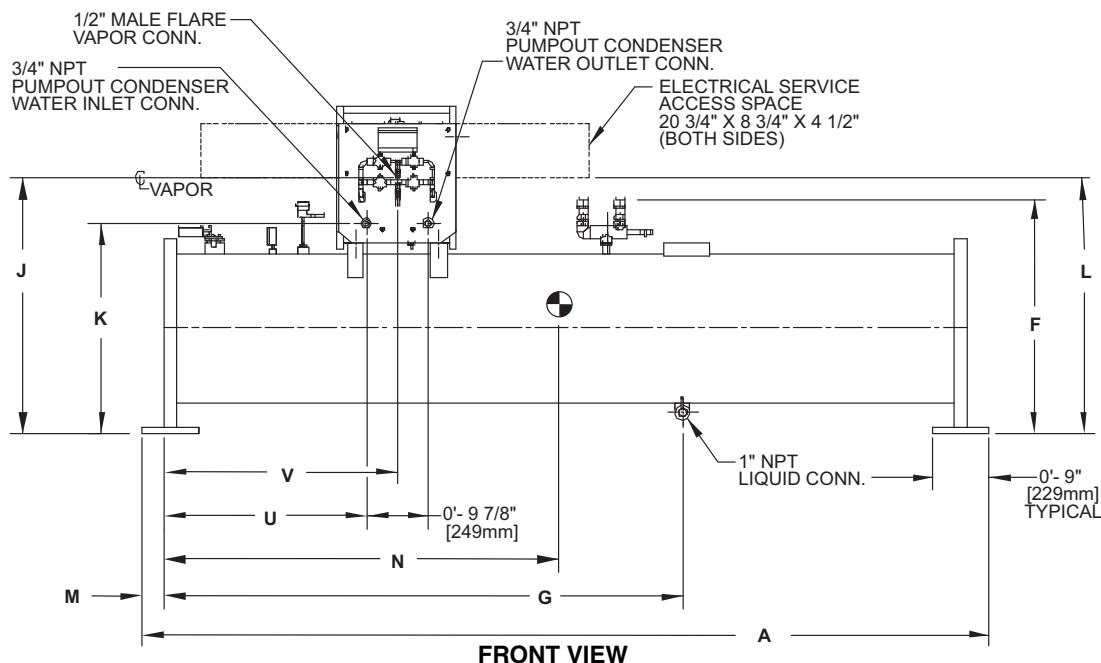
FRAME 3 NOZZLE ARRANGEMENT CODES

| PASS | COOLER WATERBOXES | | | CONDENSER WATERBOXES | | |
|------|-------------------|-----|------------------|----------------------|-----|------------------|
| | IN | OUT | ARRANGEMENT CODE | IN | OUT | ARRANGEMENT CODE |
| 1 | 8 | 5 | A | — | — | — |
| | 5 | 8 | B | — | — | — |
| 2 | 7 | 9 | C | 10 | 12 | R |
| | 4 | 6 | D | 1 | 3 | S |
| 3 | 7 | 6 | E | — | — | — |
| | 4 | 9 | F | — | — | — |

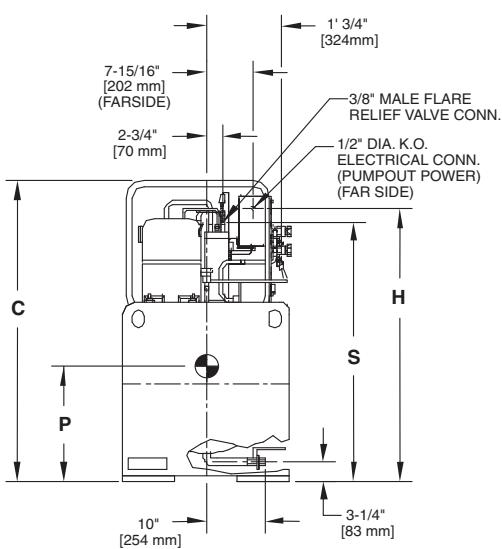
Fig. 39 — 19XR Frame 3 (19XR3) Piping Flow Data (MWB)



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 35 and 36 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. 40 – 19XR Optional Pumpout Unit

Table 35 — Pumpout Unit Dimensions (ft-in.)

| TANK SIZE ^a | 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 | 3-11/4 | 6-4-3/16 | 3-1-13/8 | 3-4-7/8 | 2-9-9/16 |
| 0452 | 14-1-11/4 | 14-4-1/2 | 4-8-1/4 | 2-8-1/2 | 1-4-1/4 | 3-41/2 | 7-2-1/4 | 4-3-1/4 | 3-8-3/4 | 3-1-7/16 |
| TANK SIZE ^a | L | M | N | P | R | S | T | U | V | W |
| 0428 | 3-4-5/8 | 3-1/2 | 4-9-1/2 | 1-7-7/8 | 2-3/8 | 3-9 | 5-1/4 | 2-5 | 2-9-7/8 | 2-5-3/4 |
| 0452 | 3-8-1/2 | 3-3/8 | 6-1-15/8 | 1-8-3/4 | 2-5/8 | 4-1 | 5-1/2 | 2-5-1/4 | 2-10-1/8 | 2-6 |

NOTE(S):

a. Refer to Fig. 40.

Table 36 — Pumpout Unit Dimensions (mm)

| TANK SIZE ^a | 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 ^a | 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 |

NOTE(S):

a. Refer to Fig. 40.

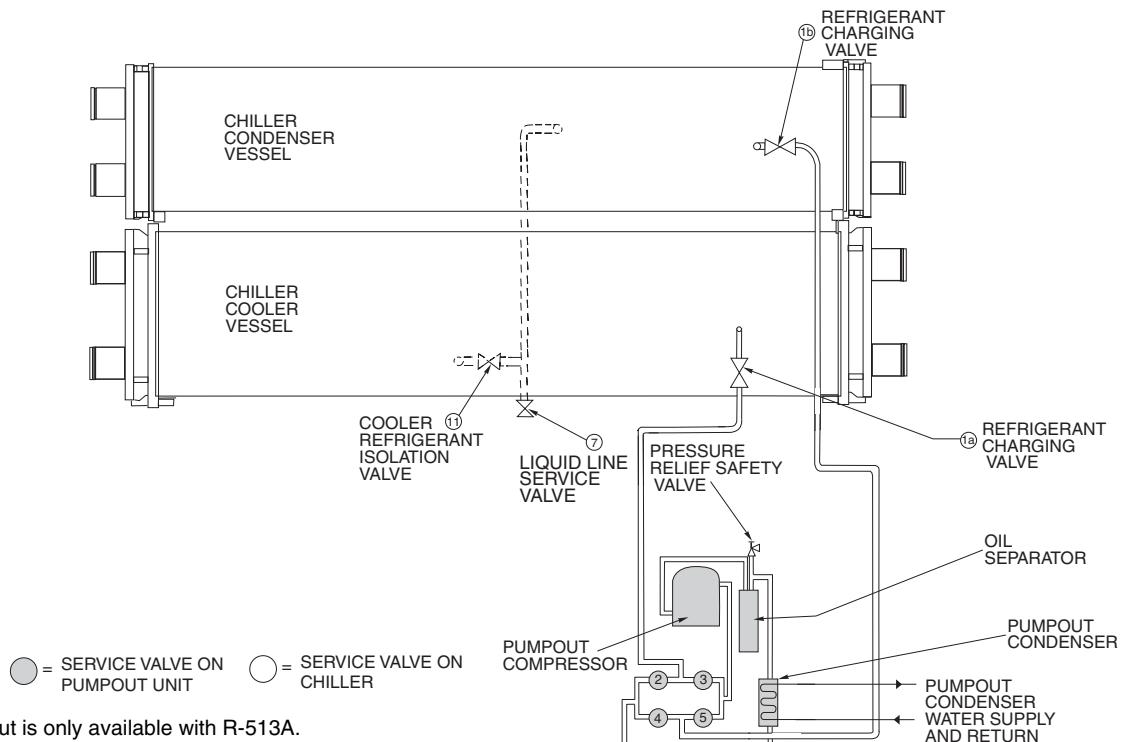


Fig. 41 — Optional Pumpout System Piping Schematic

INSTALL VENT PIPING TO RELIEF VALVES

The 19XR chiller is factory equipped with relief valves on the cooler and condenser shells. Refer to Tables 37 and 38 and Fig. 42-44 for size and location of relief devices, and Table 39 for cooler/relief valve arrangements. Vent relief devices (including fusible plugs) are to be vented 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 37 — 19XR 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 | 1-1/4-in. NPT Female Connector |

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

Table 38 — 19XRV Relief Valve Locations

| LOCATION | FRAME SIZE | RELIEF VALVE OUTLET SIZE | QUANTITY OF RELIEF VALVES | |
|-----------------------|------------|--------------------------------|---|--|
| | | | With Discharge and Cooler Inlet Isolation | Without Discharge and Cooler Inlet Isolation |
| COOLER | 3-6 | 1-1/4-in. NPT Female Connector | 1 | 2 |
| | 7,8 | 1-1/4-in. NPT Female Connector | 2 | 4 |
| CONDENSER | 3-6 | 1-1/4-in. NPT Female Connector | 2 | 2 |
| | 7,8 | 1-1/4-in. NPT Female Connector | 4 | 4 |
| OPTIONAL STORAGE TANK | — | 1-1/4-in. NPT Female Connector | 2 | |

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

Table 39 — Cooler/Relief Valve Arrangement

| HEAT EXCHANGER FRAME SIZE | COMPRESSOR FRAME SIZE | ISOLATION VALVES | COOLER ARRANGEMENT SEE FIGURE NO. | CONDENSER ARRANGEMENT SEE FIGURE NO. |
|---------------------------|-----------------------|------------------|-----------------------------------|--------------------------------------|
| 3 | 3 | Yes | 43A | 44E |
| | | No | 44C | 44E |
| 4 | 3 | Yes | 43A | 44E |
| | | No | 44C | 44E |
| 5 | 3 | Yes | 43A | 44E |
| | | No | 44C | 44E |
| | C | Yes | 43A | 44E |
| | | No | 44C | 44E |
| 6 | C | Yes | 43A | 44E |
| | | No | 44C | 44E |
| 7 | C | Yes | 43B | 44F |
| | | No | 44D | 44F |
| | E | Yes | 43B | 44F |
| | | No | 44D | 44F |
| 8 | E | Yes | 43B | 44F |
| | | No | 44D | 44F |

COOLER RELIEF VALVE ARRANGEMENT WITH OPTIONAL ISOLATION OF DISCHARGE AND COOLER (Fig. A, B)

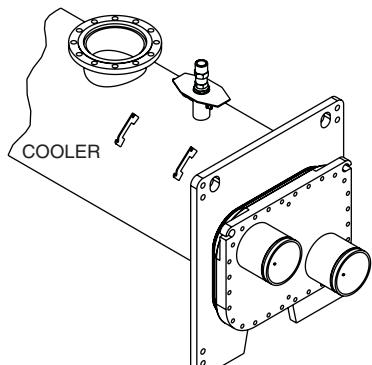


Fig. A

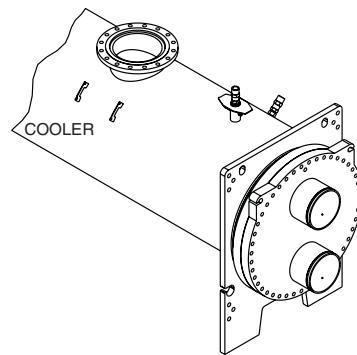


Fig. B

COOLER RELIEF VALVE ARRANGEMENT WITHOUT ISOLATION OPTION OF DISCHARGE AND COOLER (Fig. C, D)

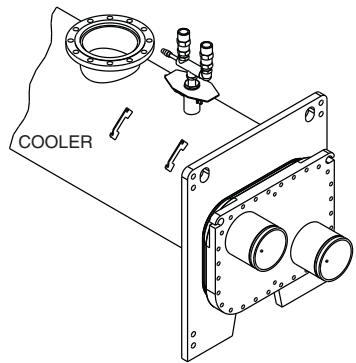


Fig. C

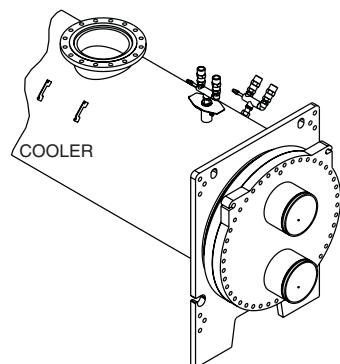


Fig. D

CONDENSER RELIEF VALVE ARRANGEMENT — WITH OR WITHOUT OPTIONAL ISOLATION (Fig. E, F)

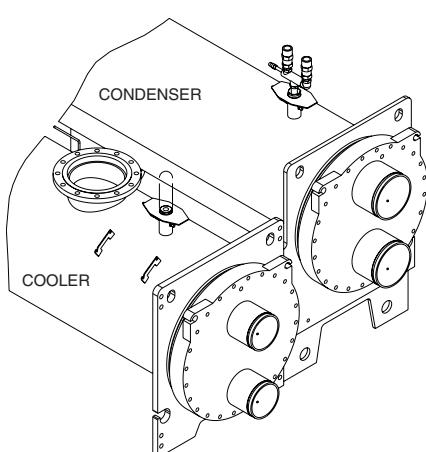


Fig. E

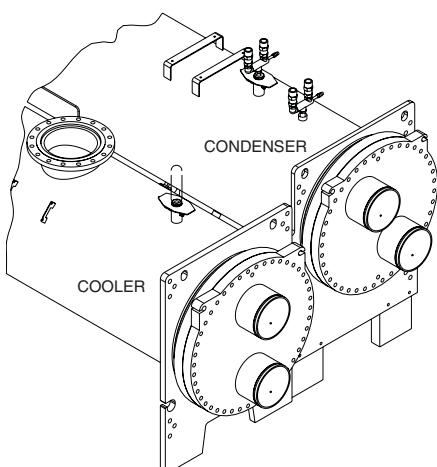
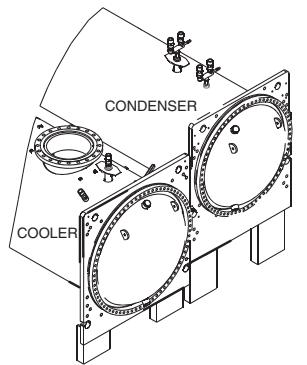
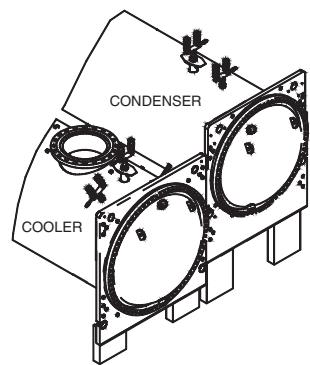


Fig. F

Fig. 42 — 19XRV Relief Valve Arrangements



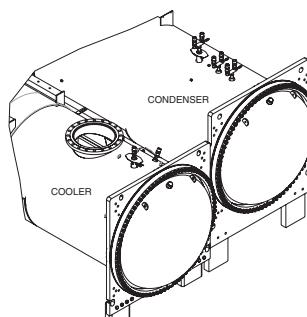
A — WITH ISOLATION VALVE



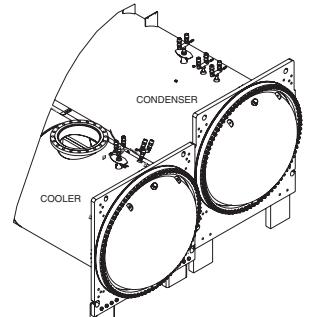
B — WITHOUT ISOLATION VALVE

| 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 |

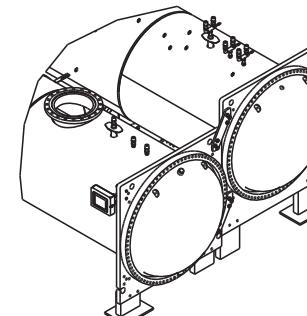
Fig. 43 — Relief Valve Arrangements, 19XR Two-Stage Compressor Frame Size 6



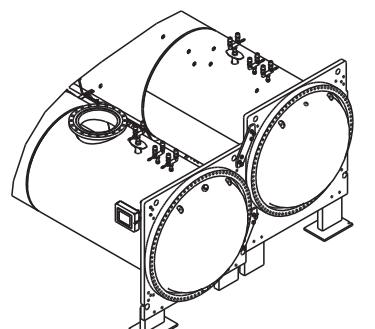
C — WITH ISOLATION VALVE



D — WITHOUT ISOLATION VALVE



E — WITH ISOLATION VALVE



F — 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 |
| C8 | C8 | With Optional Isolation Valve | E | 3 | 6 |
| | | Without Optional Isolation Valve | F | 6 | 6 |
| | D8 | With Optional Isolation Valve | E | 3 | 6 |
| | | Without Optional Isolation Valve | F | 6 | 6 |

Fig. 44 — 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 apply power to the compressor motor 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.

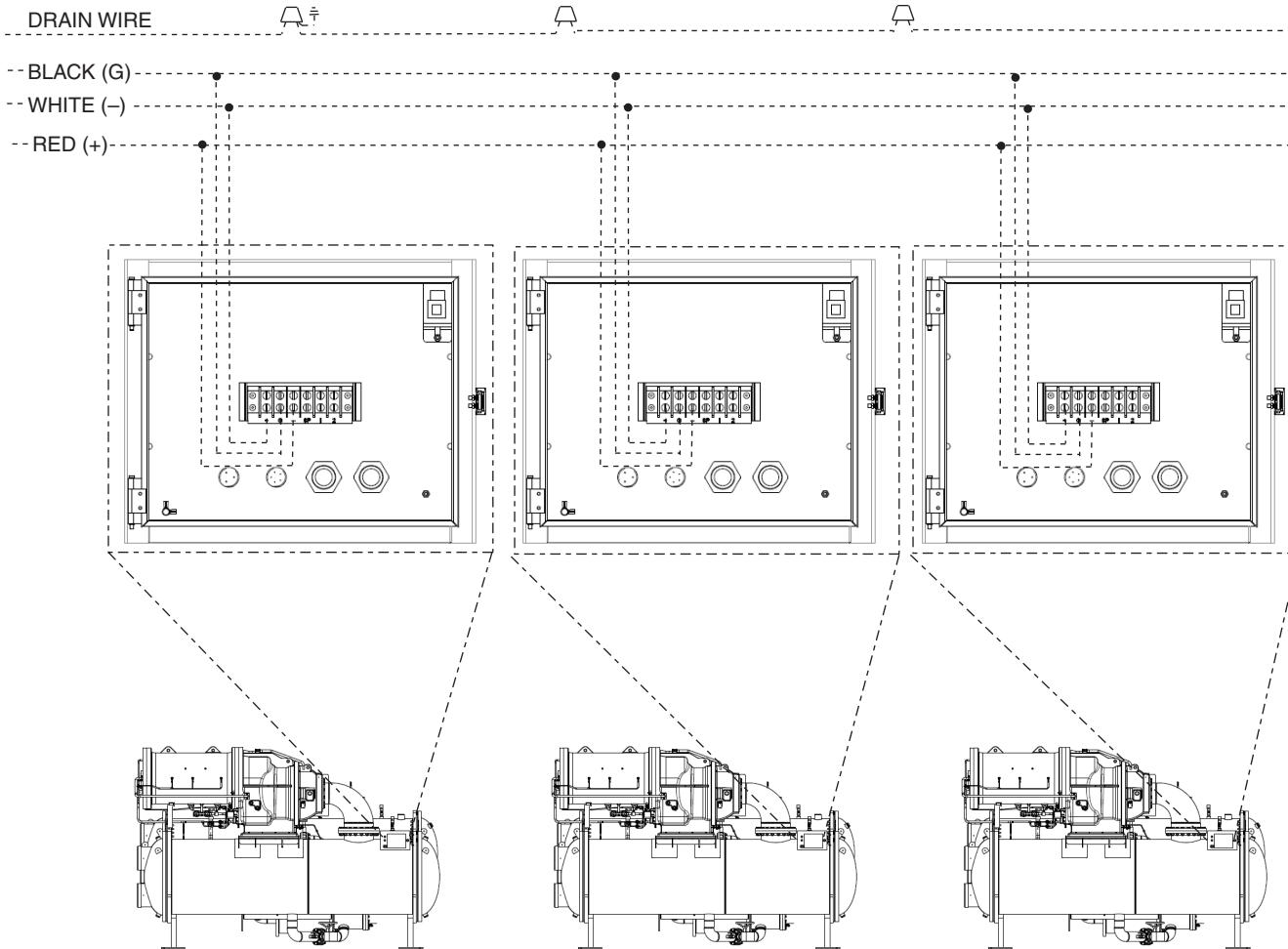
CONNECT CONTROL INPUTS

⚠ CAUTION

Install a relay, provided by the control contractor, at the starter/control panel to connect to the chiller inputs, such as remote start/stop and spare safety, to reduce the potential for electrical noise into the chiller controller.

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. 45. The control panel optional wiring and power panel component layout are shown in Fig. 46-51.

Both chiller control panel and power panel have knockouts available that fits trade size 1/2 in. conduit.



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

Fig. 45 — CCN Communication Wiring for Multiple Chillers (Typical for 19XR6/7 Chillers)

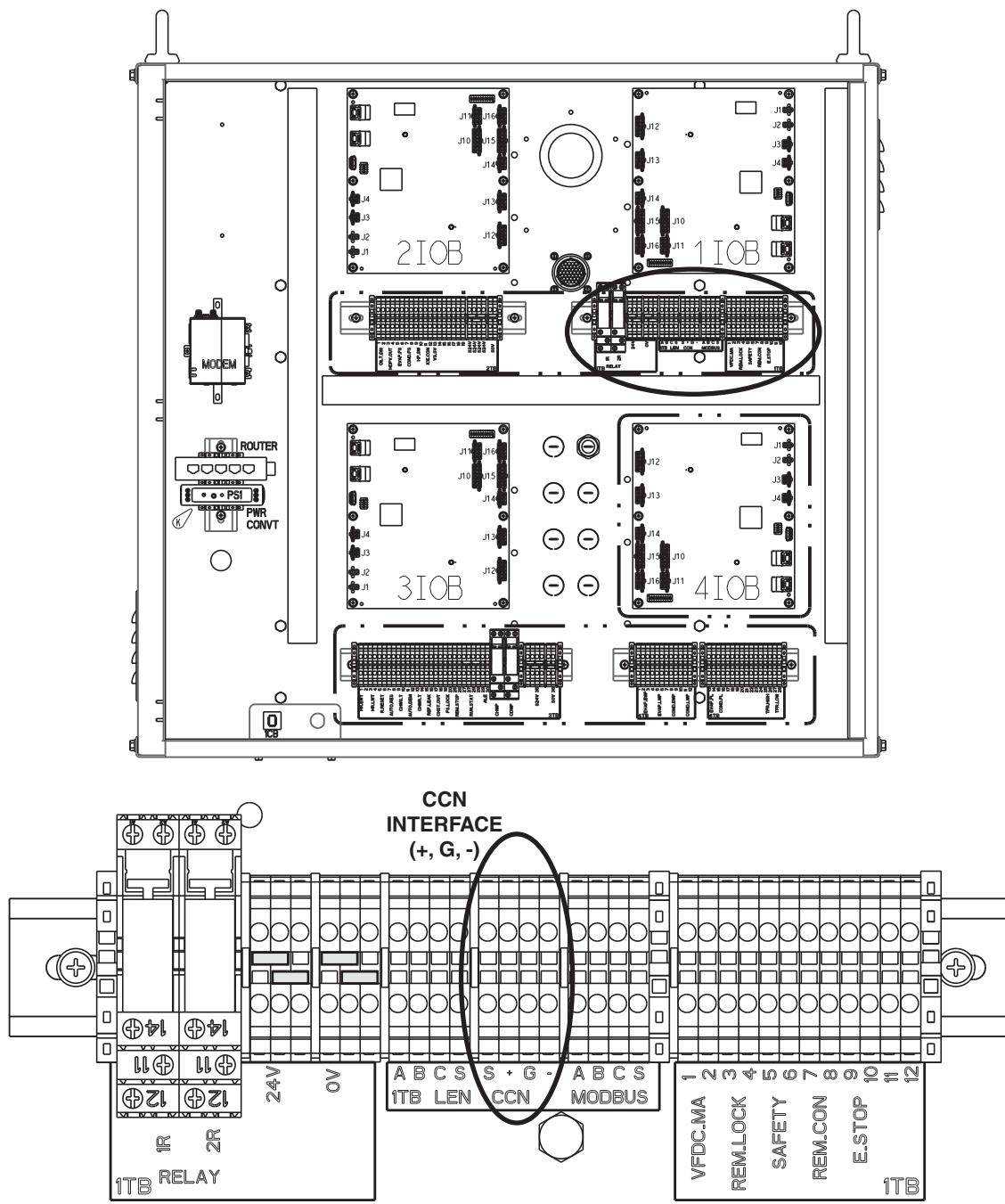


Fig. 46 – 19XR3-E Control Panel – CCN Communication Wiring for Multiple Chillers

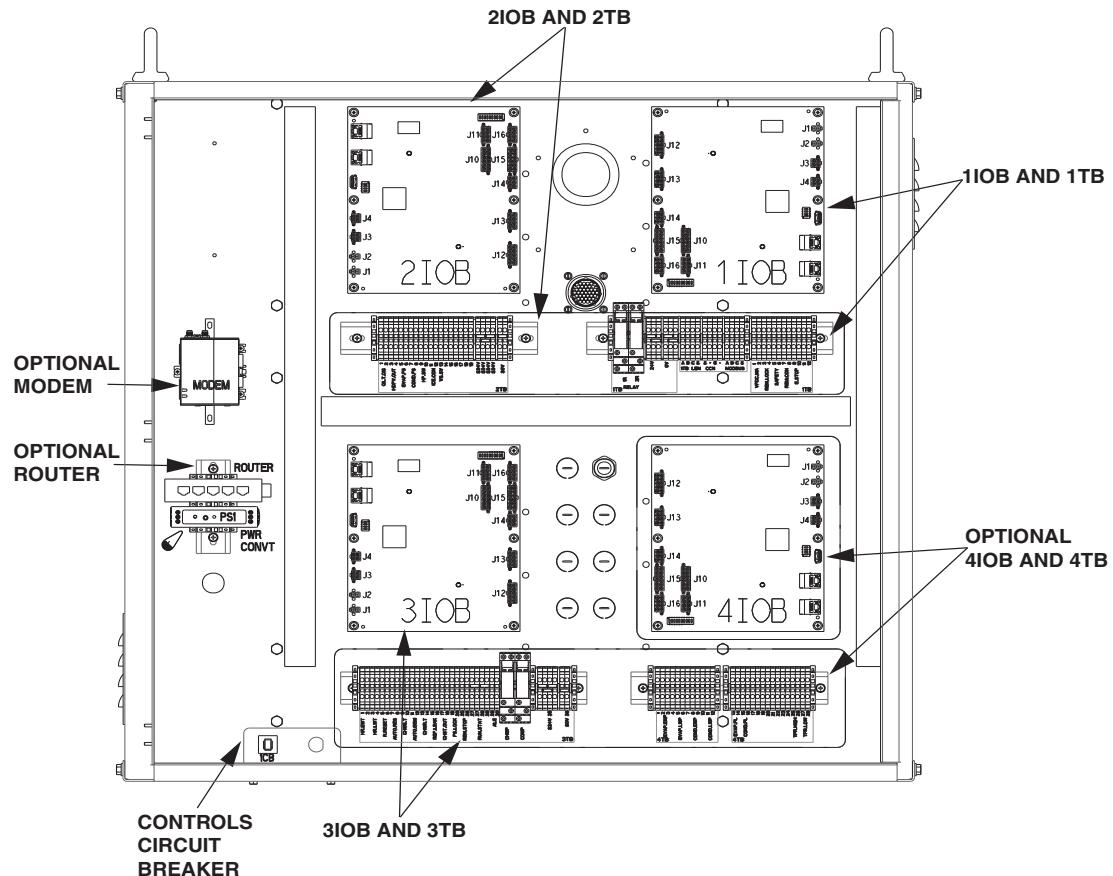


Fig. 47 – 19XR3-E Control Panel Layout and Field Connections

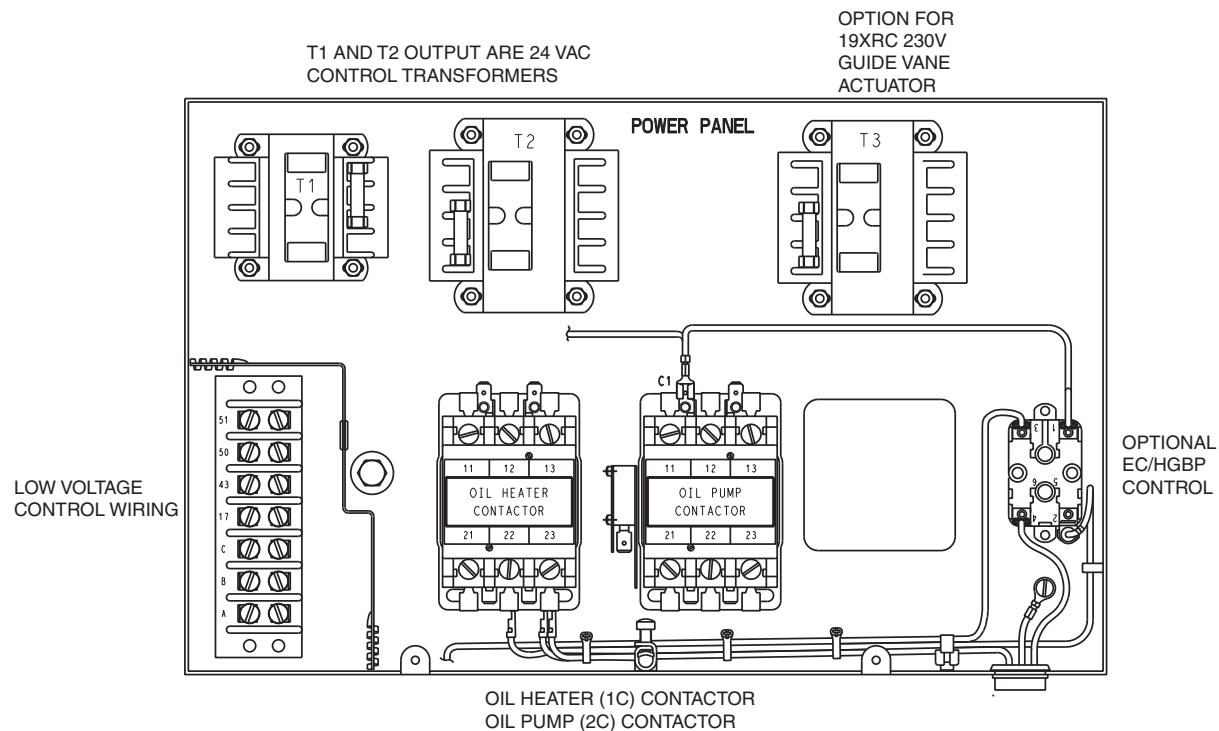


Fig. 48 – 19XR3-E Power Panel Layout

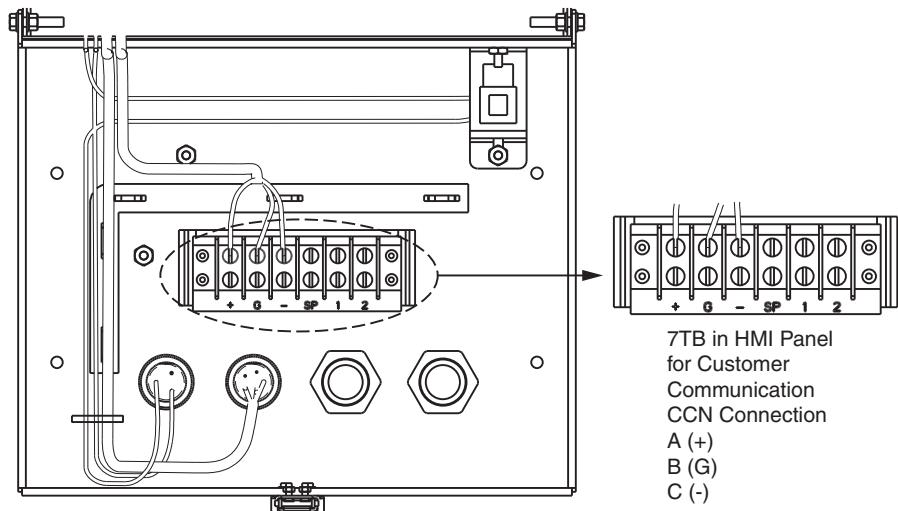


Fig. 49 — 19XR6/7 HMI Panel

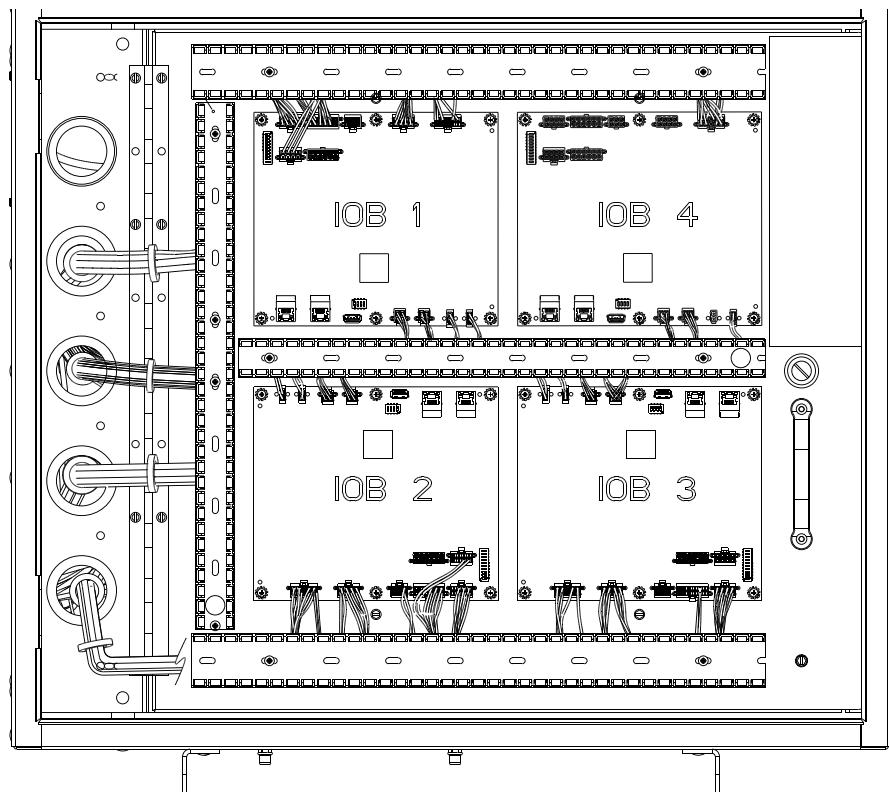


Fig. 50 — 19XR6/7 Control Panel, IOB Layer

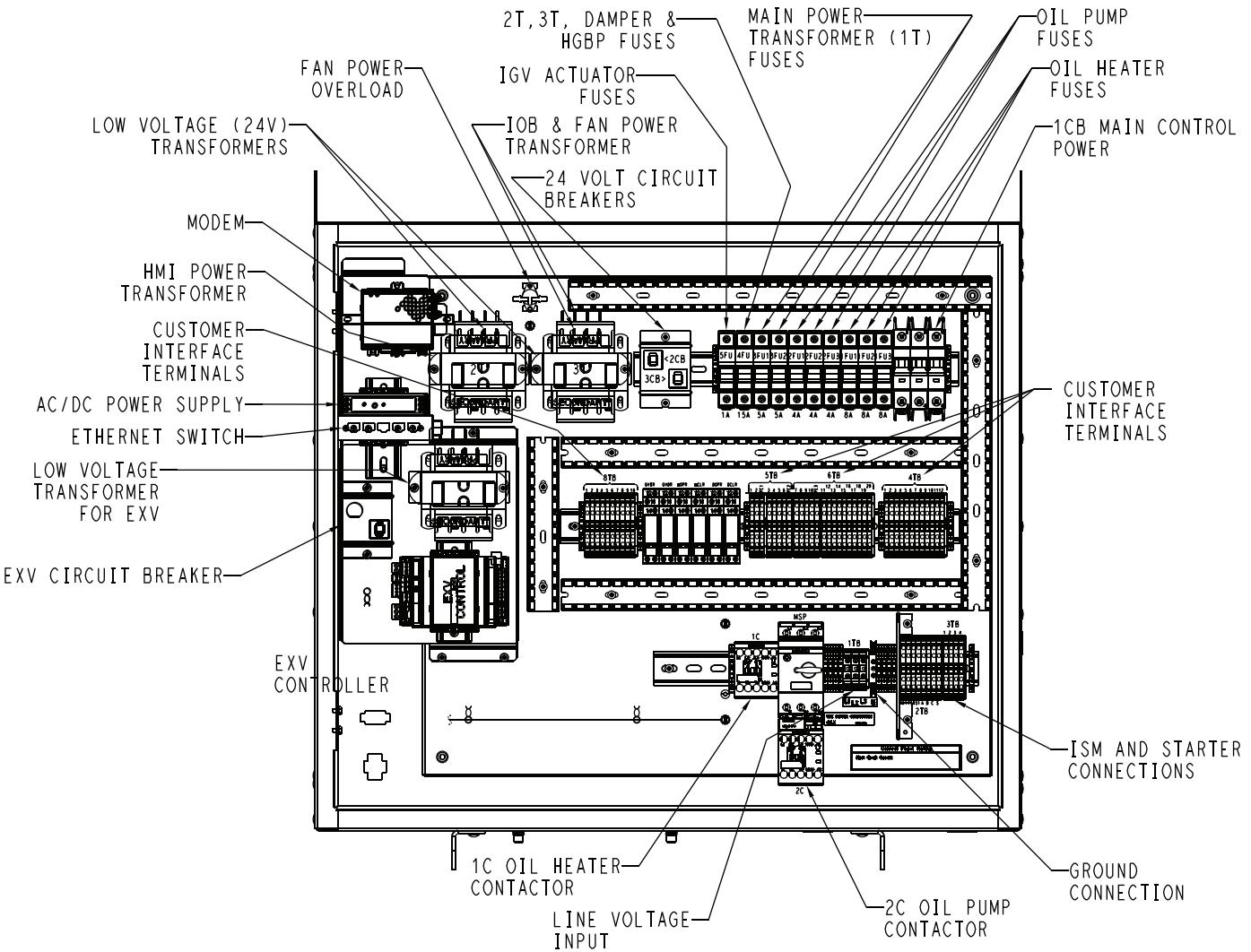


Fig. 51 — 19XR6/7 Control Panel, Bottom Layer

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 chiller is available with both unit mount and free-standing starters or VFD. Models 19XR3-E are available with both unit mount and free-standing fixed speed starters and VFDs. Models 19XR6-7 are available with free-standing starters or VFD only. Fig. 52 shows a 19XR chiller with free-standing starter.

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.

For free-standing starters assemble and install compressor terminal box in desired orientation, and cut necessary conduit openings in conduit support plates. See Fig. 52. 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. 53-64 for VFD (variable frequency drive), control, IOB (input/output board), and ISM (integrated starter module), MX3 starter wiring diagrams.

IMPORTANT: For free-standing starters do not insulate terminals until wiring arrangement has been checked and approved by Carrier start-up personnel. Refer to torque and connection instructions provided in the Start-up and Operations Manual for motor terminal wiring connections. Also, make sure correct phasing is followed for proper motor rotation.

FIELD WIRING

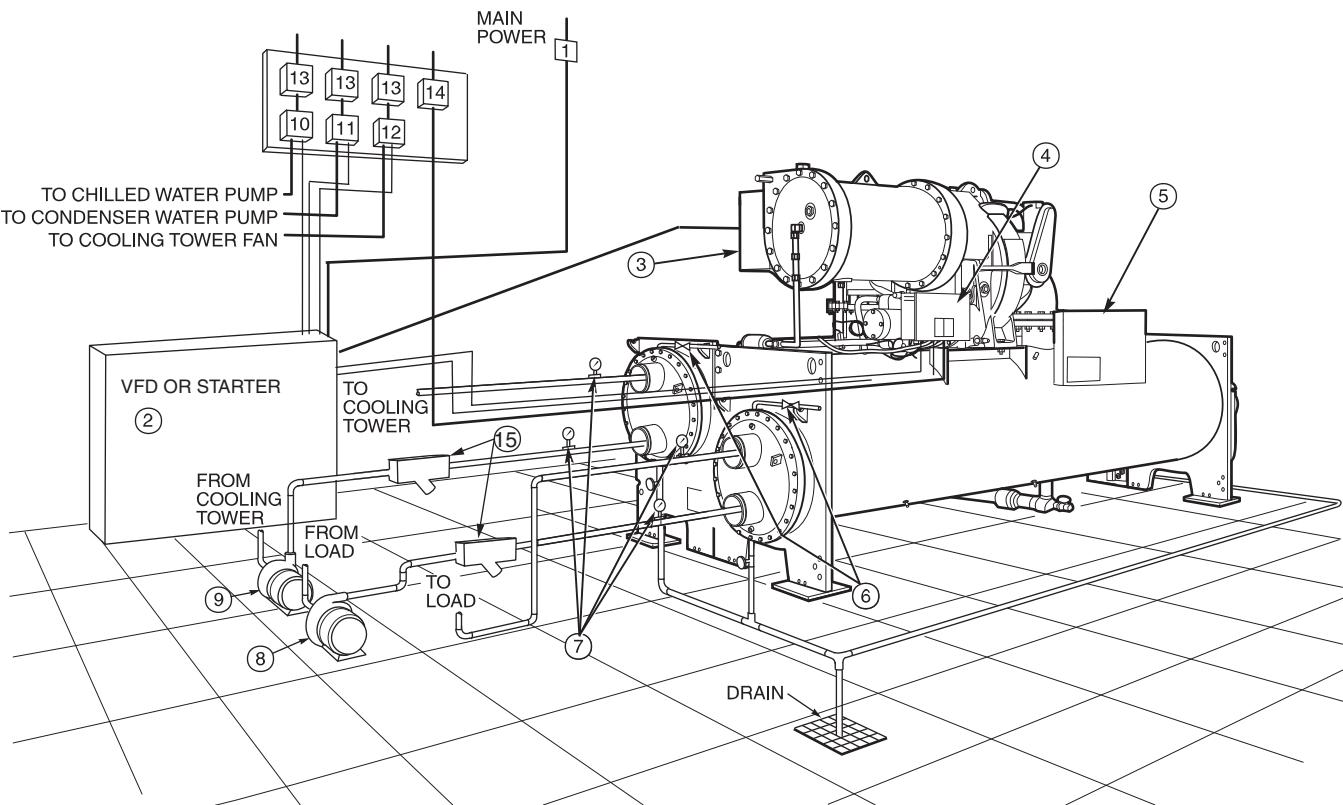
Use field wiring for the following configurations.

For 19XR3-E:

- Fixed speed low voltage - factory unit mounted starter
- Free-standing low voltage starter
- Free-standing low voltage VFD
- Free-standing medium/high voltage starter
- Free-standing medium voltage VFD
- Fixed speed or VFD - factory unit mounted (low voltage)
- Fixed speed - free-standing (low voltage)

For 19XR6-7:

- Free-standing fixed speed
- Free-standing VFD



LEGEND

- 1 — Disconnect
- 2 — 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 Pump 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 — regardless if free-standing or unit mounted 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. 52 — 19XR Chiller with Free-Standing Starter

LEGEND FOR FIG. 53

| REFERENCE NUMBER | EXPLANATION |
|------------------|--|
| | 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 |
| 1 | Control Power Transformer (3KVA) (Integral) |
| | Controls and Oil Heater Circuit Breaker (integral) |
| | Oil Pump Circuit Breaker (integral) |
| | 3 Phase Analog Volts/Amps Meter Package |
| | Power Factor Correction Package |
| | Lightning/Surge Arrestor Package |
| | Phase to Phase Ground Fault Detection |
| | 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) |
| J | See Note 3.1 [N.O.] — Field Control Wiring (Spare safety (N.O), Remote Start/Stop (N.O), Alarm |
| N | Lug Adapters See Note 2.1 |

NOTE: See Notes on page 82.

BRANCH DISCONNECT

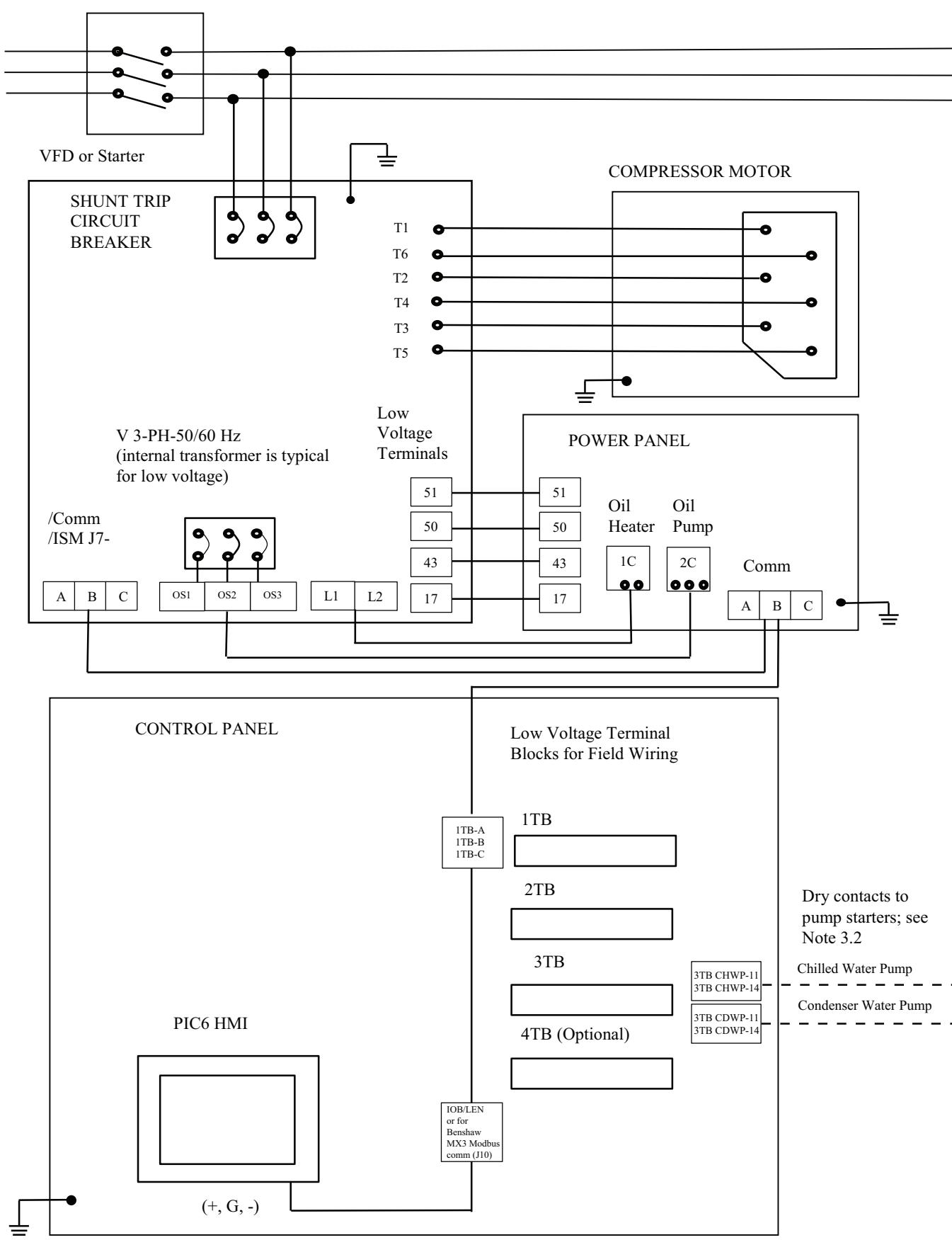


Fig. 53 – Typical 19XR3-E Fixed Speed or VFD – Factory Unit Mounted (Low Voltage) Unit with Integrated Starter Module (ISM) or Benshaw MX3

NOTES FOR Fig. 53
19XR3-E with Unit-Mounted Starter
19XR3-E Fixed Speed or VFD (with ISM) — Factory Unit Mounted (Low 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, and 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 the chiller shut down.
- 1.5 WARNING — Do not use aluminum conductors.**
- 1.6 Installer is responsible for any damage caused by improper wiring between starter and machine.

II. POWER WIRING TO STARTER

- 2.0 Provide a means of disconnecting power to starter.
- 2.1 Power conductor rating must meet minimum unit nameplate voltage and unit MCA (minimum circuit ampacity).
- 2.2 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required. Breaker lugs will accommodate the quantity (#) and size (MCM) cables (per phase) as indicated in tables below.

BENSHAW (SOLID-STATE)^a

| Starter RLA | Lug Capacity (Per Phase) | |
|-------------|--------------------------|-------------------|
| | # Conductors | Conductor Range |
| 95-200A | 1 | 6 AWG — 350 MCM |
| 201-480A | 2 | 3/0 AWG — 500 MCM |
| 481-640A | 3 | 1/0 AWG — 500 MCM |
| 641-739A | 4 | 250 — 500 MCM |
| 740-808 | 4 | 250 — 500 MCM |
| 809-978 | 5 | 300 — 600 MCM |
| 980-1390A | 2 | 3/0 AWG — 500 MCM |

BENSHAW (WYE-DELTA)^a

| Starter RLA | Lug Capacity (Per Phase) | |
|-------------|--------------------------|-------------------|
| | # Conductors | Conductor Range |
| 112-217 | 1 | 6 AWG — 350 MCM |
| 218-277 | 2 | 3/0 AWG — 500 MCM |
| 278-364 | 2 | 3/0 AWG — 500 MCM |
| 365-476 | 2 | 3/0 AWG — 500 MCM |
| 477-606 | 4 | 250 — 500 MCM |
| 607-779 | 4 | 250 — 500 MCM |
| 780-1143 | 5 | 300 — 600 MCM |
| 1144-1551 | 5 | 300 — 600 MCM |

NOTE(S):

- a. Benshaw unit-mounted starters communicate via Modbus between PIC6 and starter MX3.

- 2.3 Power conductors to starter must enter through top of enclosure. Flexible conduit should be used for the last few feet to the enclosure to provide unit vibration isolation.
- 2.4 Compressor motor and controls must be grounded by using equipment grounding lugs provided inside unit-mounted starter enclosure.
- 2.5 Starters with "Rated Load Amps" (RLA) greater than 740 require the assembly and the installation of a "Top Hat" (located inside enclosure) to provide the required wire bending space for incoming power leads.
- 2.6 Metering current transformers (CTs), if present, have an inner diameter of 2-3/4 inches. Caution should be taken when selecting power wiring so that all power cables can pass through the CTs.

III. CONTROL WIRING

- 3.0 Field-supplied control conductors to be at least 18 AWG or larger. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503.
- 3.3 For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow. Factory provides pilot relays CHWP and CHWP for field water pump connections.

⚠ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 For tower fan control IOB4 (option) must be enabled. If one single speed fan is used, connect fan control leads to control panel 4IOB-25 and 4IOB-26, jumper 4IOB-25 to 4IOB-27, and jumper 4IOB-26 to 4IOB-28. This will allow the fan to be actuated by closure of either "low fan" or "high fan" 4IOB channel contact.
- 3.5 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.
- 3.6 Control wiring between starter and power panel must be separate shielded cables with minimum rating of 600-v, 80°C. Ground shield at starter.
- 3.7 Head Pressure 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.

BRANCH DISCONNECT

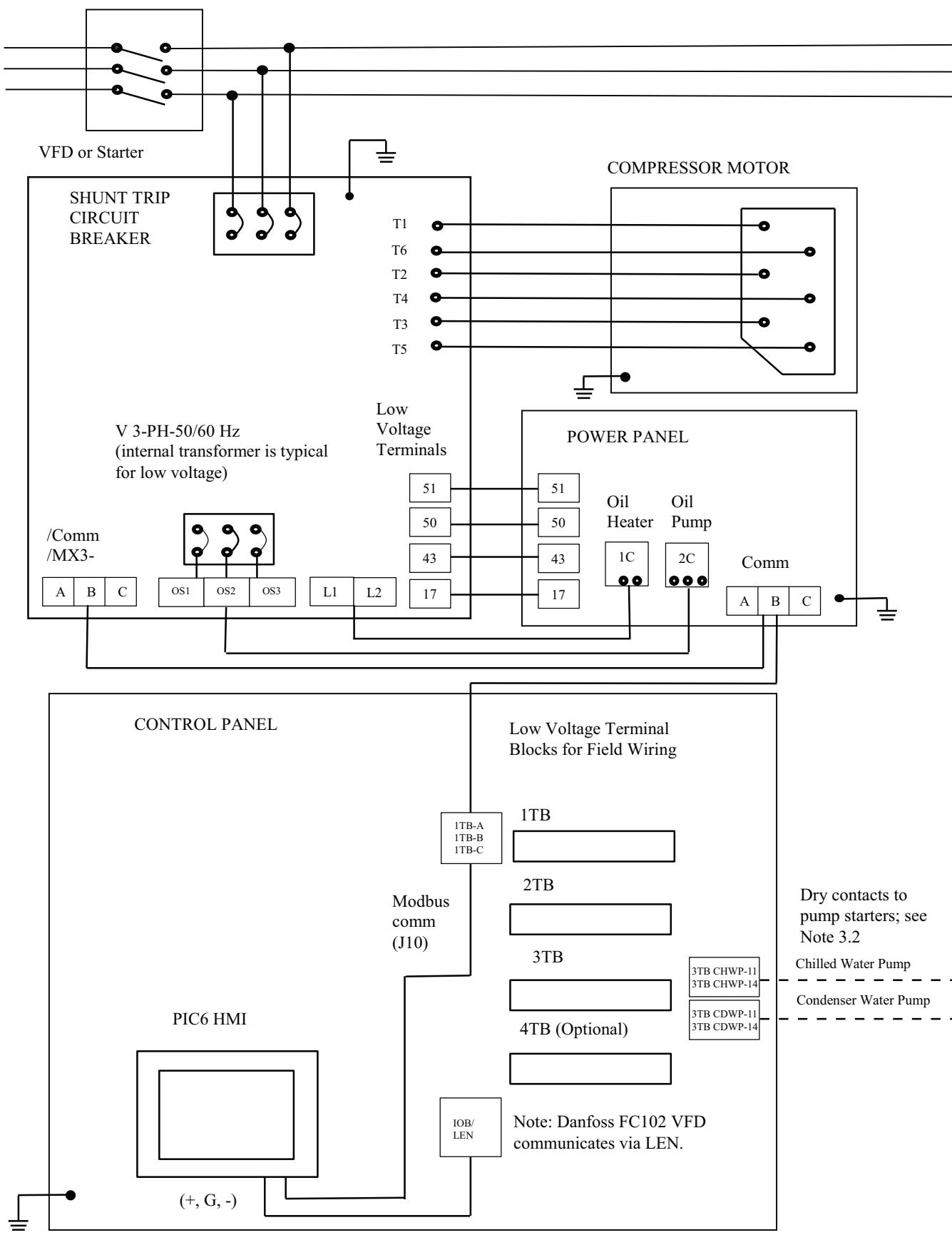


Fig. 54 — Typical 19XR3-E Fixed Speed or VFD — Factory Unit Mounted (Low Voltage) Unit with Modbus Communication between PIC6 HMI and Starter/VFD

NOTES FOR Fig. 54
19XR3-E Unit Mount VFD (Low Voltage)
19XR3-E Fixed Speed or VFD with Modbus Communication between PIC6 HMI and Starter/VFD
— Factory Unit Mounted (Low Voltage)

I GENERAL

- 1.0 Variable Frequency Drive (VFD) shall be designed and manufactured in accordance with Carrier engineering requirement Z-417 or Z-420. Fixed speed starters are designed and manufactured in accordance with Carrier engineering requirement Z-415.
- 1.1 All field-supplied conductors and devices must be compliant and be installed 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 shut down.
- 1.5 Warning — Do not use aluminum conductors.
- 1.6 Warning — Remove panel above VFD main circuit breaker before drilling. Do not drill into any other VFD cabinet panels.

II POWER WIRING TO VFD

- 2.0 Provide a means of disconnecting branch feeder power to VFD. Provide short circuit protection and interrupt capacity for branch feeder in compliance with all applicable codes.
- 2.1 Metal conduit must be used for the power wires from VFD to branch feeder.
- 2.2 Line side power conductor rating must meet VFD nameplate voltage and chiller full load amps (minimum circuit ampacity).
- 2.3 Lug adapters may be required if installation conditions dictate that conductors be sized beyond the minimum ampacity required. Circuit breaker lugs will accommodate the quantity (#) and size cables (per phase) as follows.

DANFOSS STANDARD TIER WIRE LUG SIZES

| CARRIER VFD FRAME | DANFOSS | | | MAX RATED (amp) | BREAKER | ABB LUG | LUG CABLE RANGE (kcmil) |
|-------------------|---------|------|-------|-----------------|-------------------|--------------|-------------------------|
| | TYPE | SIZE | DRIVE | | | | |
| DD588 | D | D2h | N315 | 570 | HH83ZZ031/800A | 1SDA113095R1 | (3) 2/0-400 |
| DE658 | E1 | E1h | N355 | 638 | HH83ZZ031/800A | 1SDA113095R1 | (3) 2/0-400 |
| DE745 | E1 | E1h | N400 | 722 | HH83ZZ031/800A | 1SDA113095R1 | (3) 2/0-400 |
| DE800 | E1 | E1h | N450 | 776 | HH83ZZ031/800A | 1SDA113095R1 | (3) 2/0-400 |
| DE880 | E2 | E2h | N500 | 853 | HH82ZZ003/2/1000A | 1SDA104758R1 | (4) 4/0-500 |
| DE990 | E2 | E2h | N560 | 960 | HH82ZZ003/2/1000A | 1SDA104758R1 | (4) 4/0-500 |
| DP1120 | DP | Da4 | N630 | 1086 | HH83ZZ009/1600A | K8TM | (6) 1/0-750 |
| DP1260 | DP | Da4 | N710 | 1222 | HH83ZZ009/1600A | K8TM | (6) 1/0-750 |
| DP1460 | DP | Da4 | N800 | 1416 | HH83ZZ011/2000A | K8TM | (6) 1/0-750 |
| DP1670 | DP | Da4 | N1M0 | 1619 | HH83ZZ011/2000A | K8TM | (6) 1/0-750 |

ROCKWELL LF2 WIRE LUGS

| VFD MAX INPUT AMPS | STANDARD 65KAIC LUG CAPACITY (PER PHASE) | | OPTIONAL 100KAIC LUG CAPACITY (PER PHASE) | |
|--------------------|--|-----------------|---|-----------------|
| | No. of Conductors | Conductor Range | No. of Conductors | Conductor Range |
| 442A | 3 | 2/0 — 400 MCM | 3 | 2/0 — 400 MCM |
| 608A | 3 | 2/0 — 400 MCM | 3 | 2/0 — 400 MCM |
| 900A | 4 | 1/0 — 750 MCM | 4 | 1/0 — 750 MCM |
| 1200A | 4 | 1/0 — 750 MCM | 4 | 1/0 — 750 MCM |

ROCKWELL/ALLEN BRADLEY STANDARD TIER WIRE LUGS

| CARRIER VFD MAX INPUT AMPS | VOLTAGE | STANDARD | | ALTERNATE | |
|----------------------------|-------------|----------|-------------------|-----------|-------------------|
| | | ABB LUG | LUG CABLE RANGE | ABB LUG | LUG CABLE RANGE |
| 230 | 480 | KT5400 | (2) 3/0 - 250 MCM | KT5300 | (1) 250 - 500 MCM |
| 335 | 480 | K6TJ | (3) 2/0 - 400 MCM | K6TH | (2) 250 - 500 MCM |
| 445 | 480 | K6TJ | (3) 2/0 - 400 MCM | K6TH | (2) 250 - 500 MCM |
| 230 | 380/404/415 | KT400 | (2) 3/0 - 250 MCM | KT5300 | (1) 250 - 500 MCM |
| 335 | 380/404/415 | K6TJ | (3) 2/0 - 400 MCM | K6TH | (2) 250 - 500 MCM |
| 445 | 380/404/415 | K6TJ | (3) 2/0 - 400 MCM | K6TH | (2) 250 - 500 MCM |
| 263 | 600 | KT400 | (2) 3/0 - 250 MCM | KT5300 | (1) 250 - 500 MCM |

If larger lugs are required, they can be purchased from the manufacturer of the circuit breaker.

- 2.4 Compressor motor and controls must be grounded by using equipment grounding lug provided inside unit-mounted VFD enclosure.

III CONTROL WIRING

- 3.0 Field-supplied control conductors to be at least 18 AWG or larger. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional Input device contacts (devices not supplied by Carrier) must have 24 vac rating. Max current is 60 mA; nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 annunciation devices rated 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503.
- 3.3 For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow. Factory provides pilot relays CHWP and CHWP for field water pump connections.

CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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

- 3.4 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.
- 3.5 Spare 4 to 20 mA output signal is designed for controllers with a non-grounded 4 to 20 mA input signal and a maximum input impedance of 500 ohms.

BRANCH DISCONNECT

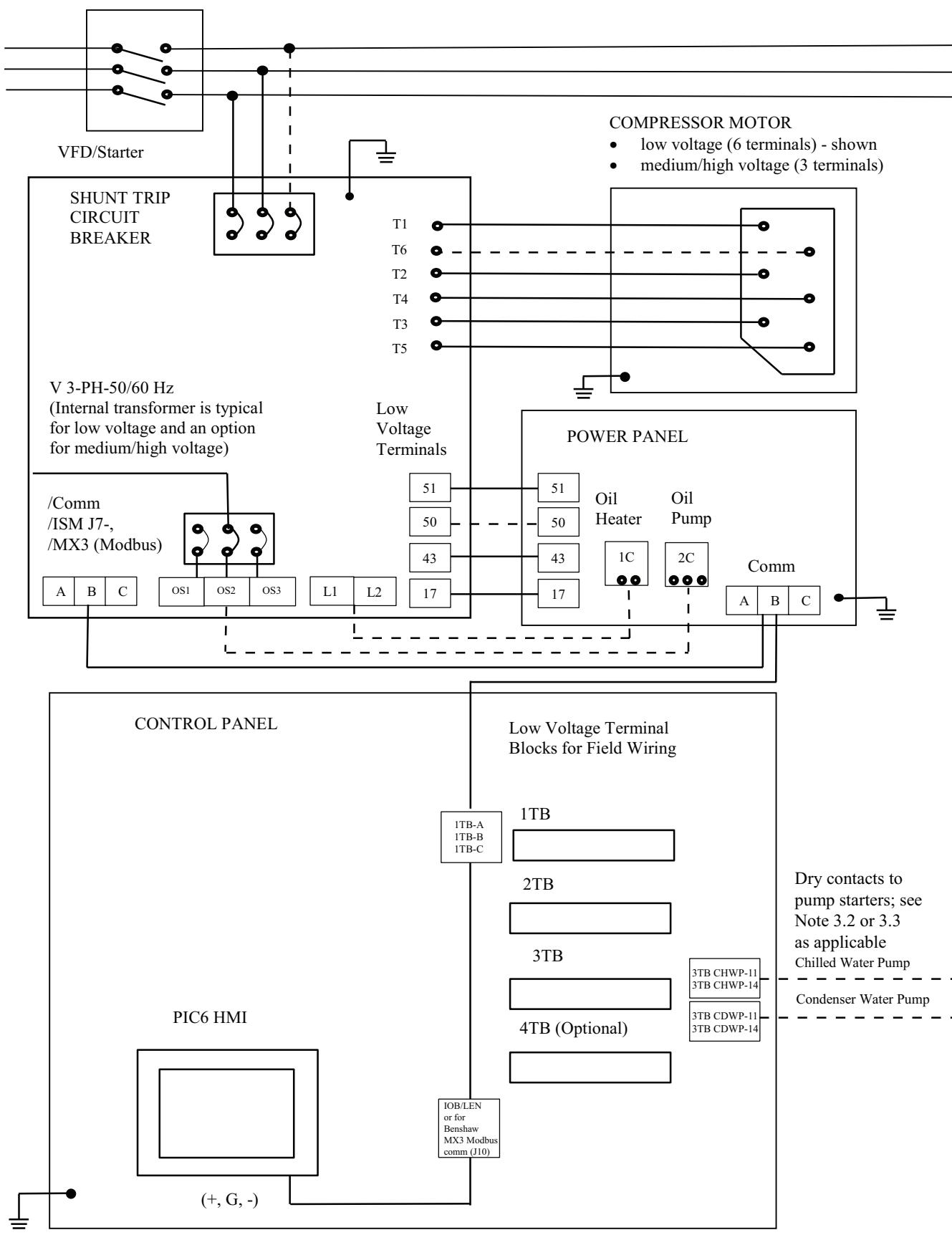


Fig. 55 — 19XR3-E with Free-Standing Low Voltage Starter; 19XR3-E with Free-Standing Low Voltage VFD; 19XRC-E with Free-Standing Medium Voltage Starter with Integrated Starter Module (ISM)

NOTES FOR Fig. 55
19XR3-E with Free-Standing Low Voltage Starter

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 the chiller shut down.
- 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. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 annunciation devices rated 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503.
- 3.3 For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow. Factory provides pilot relays CHWP and CHWP for field water pump connections.

⚠ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 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.
- 3.5 Control wiring between starter and power panel must be separate shielded cables with minimum rating 600-v, 80°C. Ground shield at starter.
- 3.6 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.
- 3.7 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.
- 3.8 Head Pressure 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.
- 3.9 For Benshaw MX3 starters, use Belden 3106A (RS-485 cable) for the communication cable between Carrier power panel and Benshaw starter (Modbus communication).

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

- 4.0 Low voltage (600 v or less) compressor motors have (6) 5/8 in. terminal studs (lead connectors not supplied by Carrier). Either 3 or 6 conductors must be run between compressor motor and starter, depending on the size of the conductors or the type of motor starter employed. If only 3 leads are utilized, jumper motor terminals as follows: 1 to 6, 2 to 4, 3 to 5. Center to center distance between terminals is 3-5/32 inches.
- 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 = 0.721 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 the following phases (conductor) must be installed in each conduit to prevent excessive heating.
 Inside delta starters: 1, 3, or multiples of 3 conduits are required. (For example: conductors to motor terminals 1, 2, 3, 4, 5 and 6 in a single conduit or conductors to motor terminals 1 and 4 in one conduit, conductors to motor terminals 2 and 5 in one conduit and conductors to motor terminals 3 and 6 in one conduit.)
 For all other starters: 1, 2, or multiples of 2 are required. (For example: conductors to motor terminals 1, 2, and 3 in one conduit, and conductors to motor terminals 4, 5, and 6 in one conduit.)
- 4.3 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 or 12 conductors larger than 500 MCM may require an oversize (special) motor terminal box (not supplied by Carrier). Lead connections between 3-phase motors and their starters must not be insulated until Carrier personnel have checked compressor and oil pump rotations.

- 4.4 Compressor motor frame to be grounded in accordance with the National Electrical Code (NFPA-70) and applicable codes. Means for grounding compressor motor is pressure connector for #4 AWG to 500 MCM wire, supplied and located in the lower left side 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 45 lb-ft max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.

**NOTES FOR Fig. 55
19XR3-E with Free-Standing Low 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. Knockouts are provided on the 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 the chiller shut down.
- 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 local 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. Refer to VFD dimensional drawings for lug information.
- 2.2 Compressor motor and controls must be grounded by using equipment grounding lugs provided inside VFD enclosure.

III. CONTROL WIRING

- 3.0 Field supplied control conductors to be at least 18 AWG or larger. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional input device contacts must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 annunciation devices rated 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503. For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow.
- 3.3 Factory provides pilot relays CHWP and CHWP for field water pump connections.

⚠ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 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.
- 3.5 Control wiring between starter and power panel must be separate shielded cables with minimum rating 60-v, 80°C. Ground shield at starter.
- 3.6 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.
- 3.7 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.
- 3.8 Head Pressure 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 Low voltage (600-v or less) compressor motors have (6) 5/8 in. terminal studs with 19XR frame 2 and 3 compressor or (6) 7/8 in. terminal studs with 19XR frame 4 and 5 compressor (lead connectors not supplied by Carrier). Either 3 or 6 leads must be run between compressor motor and VFD, depending on the size of the conductors or the type of motor starter employed. If only 3 leads are utilized, jumper motor terminals as follows: 1 to 6, 2 to 4, 3 to 5. Center to center distance between frame 2 and 3 compressor terminals is 3-5/32 inches. Center to center distance between frame 4 and 5 compressor terminals is 4-13/16 inches. Compressor motor VFD 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 = $1.25 \times \text{compressor RLA}$
When 6 conductors are used:
Minimum ampacity per conductor = $1.25 \times \text{compressor RLA} / 2$.
- 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 conductors to motor terminals 4, 5, and 6 in another.)
- 4.3 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 or 12 conductors larger than 500 MCM may require an oversize (special) motor terminal box (not supplied by Carrier). Lead connections between 3-phase motors and VFD must not be insulated until Carrier personnel have checked compressor and oil pump rotations.
- 4.4 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 pressure connector for #4 AWG to wire, supplied and located in the lower left side 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 45 lb-ft max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.
- 4.7 Do not exceed 100 ft maximum power cable length between the VFD and motor terminals without consulting Carrier for special requirements.

**NOTES FOR Fig. 55
19XRC-E 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. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional Input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 annunciation devices rated 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503. For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow.
- 3.3 Factory provides pilot relays CHWP and CHWP for field water pump connections.

⚠ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 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.
- 3.5 Control wiring between starter and power panel must be separate shielded cables with minimum rating 600-v, 80°C. Ground shield at starter.
- 3.6 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.
- 3.7 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.
- 3.8 Head Pressure 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.
- 3.9 For Benshaw MX3 starters, use Belden 3106A (RS-485 cable) for the communication cable between Carrier power panel and Benshaw starter (Modbus communication).

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

- 4.0 Medium voltage (over 600 volts) compressor motors have (3) terminals. Connections are 9/16-in. threaded stud. Use the 3 supplied adapters for a NEMA lug size connection. These connectors ensure adequate electrical contact between stud and field wiring. 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 = $1.25 \times$ 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.)

- 4.3 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).

- 4.4 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 side 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 max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.

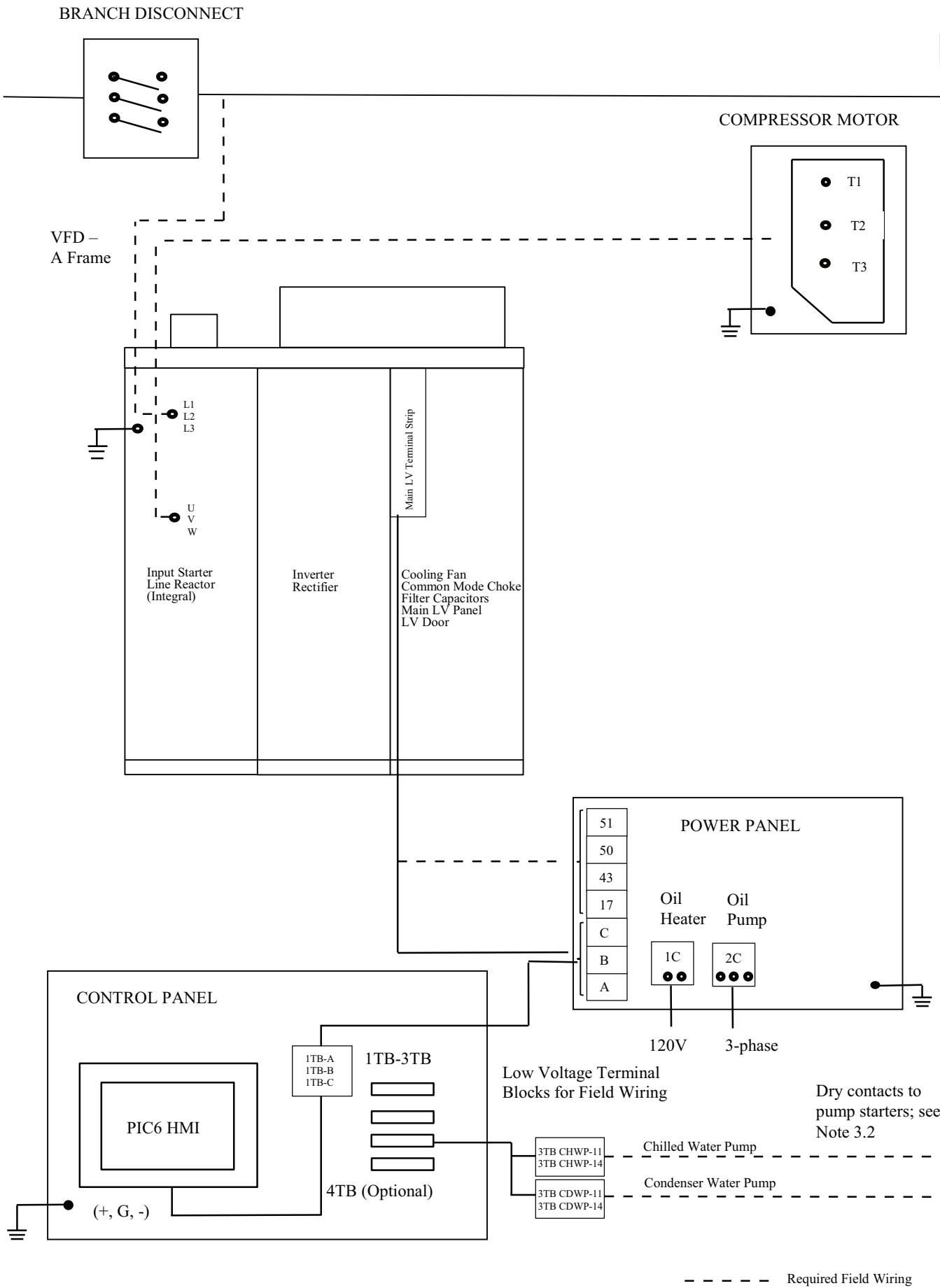


Fig. 56 — 19XRC and E Typical Field Wiring with Free-Standing Medium-Voltage VFD

NOTES FOR FIG. 56
19XRC and E with Free-Standing 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. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional controls Input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503. For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow.
- 3.3 Factory provides pilot relays CHWP and CHWP for field water pump connections.

⚠ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 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.
- 3.5 Control wiring between VFD and power panel must be separate shielded cables with minimum rating 600-v, 80°C. Ground shield at VFD.
- 3.6 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.
- 3.7 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.
- 3.8 Head Pressure 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. Connections are 9/16-in. threaded stud. A compression lug with a single 9/16-in. diameter hole can be connected directly to the stud or 3 adapters are supplied for connecting a NEMA lug. Use suitable connectors and insulation for high voltage alternating current cable terminations (these items are not supplied by Carrier).
- 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 = $1.25 \times \text{compressor RLA}$

When 6 conductors are used:

Minimum ampacity per conductor = $1.25 \times \text{compressor RLA}/2$

- 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.)
- 4.3 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).

- 4.4 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 side corner of the compressor motor terminal box.

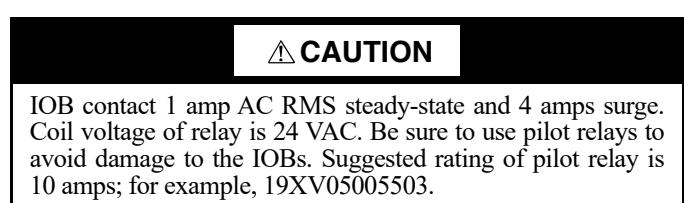
- 4.5 Do not allow motor terminals to support weight of wire cables. Use cable supports and strain reliefs as required.

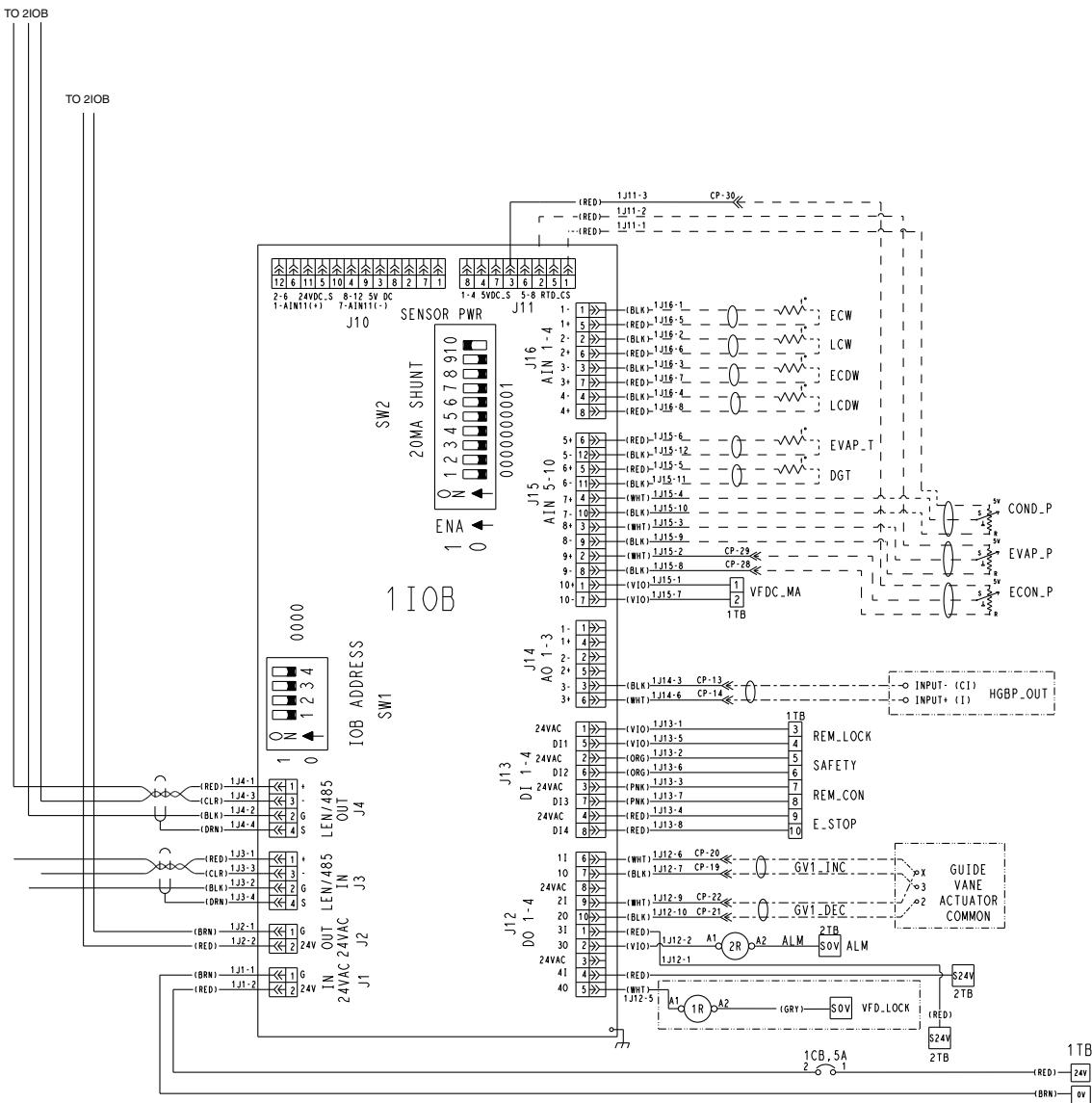
- 4.6 Use backup wrench when tightening lead connectors to motor terminal studs. Torque to 30-35 ft-lb max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.

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

LEGEND FOR Fig. 57
19XR3-E Chiller Control Schematic

| | | | |
|--------------|--|-----------|------------------------------------|
| 1-4IOB | — Carrier Input Output Board 1-4 | OIL_HEAT | — Oil Heater Relay |
| 1-4TB | — Terminal Block 1-4 | OIL_PUMP | — Oil Pump Relay |
| 1C | — Oil Heater Contactor | OILP_DIS | — Oil Supply Pressure |
| 1CB | — Circuit Breaker 1 | OILP_SMP | — Oil Sump Pressure |
| 1FU | — Fuse, 5A | OILT_DIS | — Oil Supply Temperature |
| 2C | — Oil Pump Contactor | OILT_SMP | — Oil Sump Temperature |
| 2FU | — Fuse, 10A | POW_FDB | — Power Request Feedback |
| 3C | — EC Valve Solenoid Open Relay | POW_REQ | — Power Request Output |
| ALE | — Chiller Alert Relay | R_RESET | — Remote Reset Sensor |
| ALM | — Chiller Alarm Relay | REF_LEAK | — Refrigerant Leak Sensor |
| AUTO_DEM | — Auto Demand Limit Input | REM_CON | — Remote Contact Input |
| AUTO_RES | — Auto Water Temp Reset | REM_LOCK | — Chiller Lockout Input |
| CB2/3 | — Circuit Breaker 2/3 | SAFETY | — Spare Safety |
| CDW_DP | — Cond Water Pressure Difference | T1/2 | — Transformer 1/2 |
| CDWP | — Condenser Water Pump | TFR_HIGH | — Tower Fan High |
| CDWP_V | — Condenser Water Pump (Variable Speed) | TFR_LOW | — Tower Fan Low |
| CHRS | — Chiller Run Status | TOW_FAN | — Tower Fan (Variable Speed) |
| CHST_OUT | — Chiller Status Output mA | VFD_LOCK | — Compressor VFD/Starter Interlock |
| CHW_DP | — Chilled Water Pressure Difference | VFDC_MA | — FS VFD Load Current |
| CHWP | — Chilled Water Pump | VS_SV | — Vapor Source SV |
| CHWP_V | — Chilled Water Pump (Variable Speed) | | |
| CHWR_T | — Common Chilled Water Return Temperature | | |
| CHWS_T | — Common Chilled Water Supply Temperature | | |
| COND_EWP | — Entering Cond Water Pressure | | |
| COND_FL | — Cond Water Flow Measurement | ○ | Power Panel Terminal Block |
| COND_FS | — Cond Water Flow Switch | →○← | Conductor Male/Female Conductor |
| COND_LH | — Cond Sump Level High | +++ | Crossover |
| COND_LL | — Cond Sump Level Low | — | Panel Wiring (Internal) |
| COND_LWP | — Leaving Cond Water Pressure | - - - | Field Wiring |
| COND_P | — Condenser Pressure | - - - - | Optional Wiring |
| CUS_ALE | — Customer Alert | - - - - - | Component / Panel Enclosure |
| DGT | — Compressor Discharge Temperature | • | Control Panel Terminal Block |
| DIFF_OUT | — Diffuser Output | △ | Oil Pump Terminal |
| DIFF_P | — Diffuser Pressure | ● | Wire Splice |
| E_STOP | — Remote Emergency Stop Input | ○ | Component Terminal |
| EC_VALVE | — Envelope Control Valve | * * | Motor Starter Panel Conn |
| ECDW | — Entering Condenser Water Temperature | | Thermistor |
| ECON_P | — Economizer Pressure | | Contactor / Relay Coil |
| ECW | — Entering Chilled Water Temperature | | Contactor Contact (N.O.) |
| EVAP_EWP | — Evaporator Entering Water Pressure | | High Pressure Switch |
| EVAP_FL | — Evap Water Flow Measurement | | Pressure Transducer |
| EVAP_FS | — Evap Water Flow Switch | | Oil Heater |
| EVAP_LWP | — Evaporator Leaving Water Pressure | | Circuit Breaker |
| EVAP_P | — Evaporator Pressure | BLK | Black |
| EVAP_T | — Evap Refrigerant Liquid Temperature | BLU | Blue |
| FC_MODE | — Free Cooling Mode | BRN | Brown |
| FC_SS | — Free Cooling Start Switch | GRN | Green |
| FS_LOCK | — Fire Security Interlock | GRY | Gray |
| GV1_DEC | — Stage 1 IGV Decrease | RED | Red |
| GV1_INC | — Stage 1 IGV Increase | WHT | White |
| GV1_OUT | — Guide Vane 1 Output | YEL | Yellow |
| GV1_POS | — Guide Vane 1 Actual Position | Y/G | Yellow/green |
| HDpv_OUT | — Head Pressure Output | ORG | Orange |
| HGBP_MA | — EC Valve Feedback | | |
| HGBP_OP | — EC Valve Solenoid/Open | | |
| HGBP_OUT | — EC Valve Output mA | | |
| HGBP_VLV | — Hot Gas Bypass Valve | | |
| HMI | — Human Machine Interface (Touch Screen) | | |
| HP_SW | — High Pressure Switch | | |
| HR_EWT | — Heat Reclaim Entering Temperature | | |
| HR_LWT | — Heat Reclaim Leaving Temperature | | |
| ICE_CON | — Ice Build Contact | | |
| IGV | — Integrated Guide Vane | | |
| LCDW | — Leaving Condenser Water Temperature | | |
| LCW | — Leaving Chilled Water Temperature | | |
| LOWLIFT_ECBY | — Liquid Low Lift Economizer Bypass Valve | | |
| LOWLIFT_OUT | — Liquid Low Lift Economizer Bypass Valve Output | | |
| MTRB_OIL | — Thrust Bearing Oil Temperature | | |
| MTRW1 | — Motor Winding Temperature 1 | | |
| MTRW2 | — Motor Winding Temperature 2 | | |
| MTRW3 | — Motor Winding Temperature 3 | | |
| OIL_EXVO | — Oil EVX Output | | |



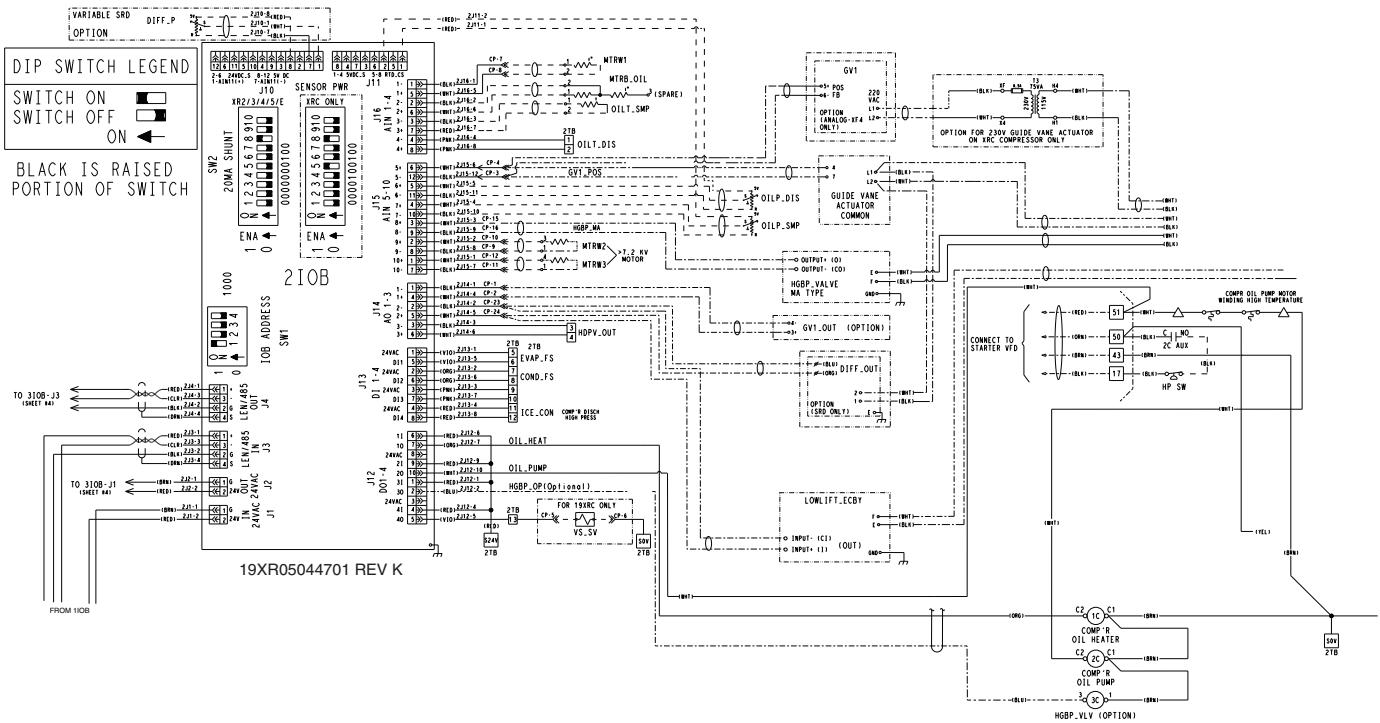


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Field Terminals for 1TB, Fig. 57

| | DESCRIPTION | POINT NAME | TYPE | NOTES |
|-----|---|------------|---------|--|
| 1TB | Carrier Comfort Network (CCN) communication | CCN com | COM | Use for CCN communication devices. |
| | Local Equipment Network (LEN) (IOB and starter/ISM communication) | LEN com | COM | For starters with ISM or FC102 VFD. For free-standing starters field connection between ISM and control panel communication is required. |
| | Modbus Modbus com COM | LEN com | COM | For unit mounted VFDs and Benshaw freestanding starters with MX3 (no ISM). |
| | Free Standing VFD LOAD CURRENT | VFDC_MA | 4-20 mA | Optional input; FS VFD load current |
| | Remote Lockout Input | REM_LOCK | 24 VAC | Optional input; open/Close (dry contact); when closed chiller cannot be started |
| | Spare Safety | SAFETY | 24 VAC | Optional input; Open/Close (dry contact); normally open (closed indicate safety shutdown condition). |
| | Remote Contact Input | REM_CON | 24 VAC | Optional input; Open/Close (dry contact); normally open (closed indicate start chiller signal). |
| | Emergency Stop Input | E_STOP | 24 VAC | Optional Input; Open/Close (dry contact); normally open (closed indicate emergency stop). |
| | CHILLER ALARM RELAY (2R) | ALM | 24 VAC | Optional output; 24 VAC indicates alarm condition. |
| | Danfoss VFD Interlock (1R) | vfd_lock | 24 VAC | Interlock location |

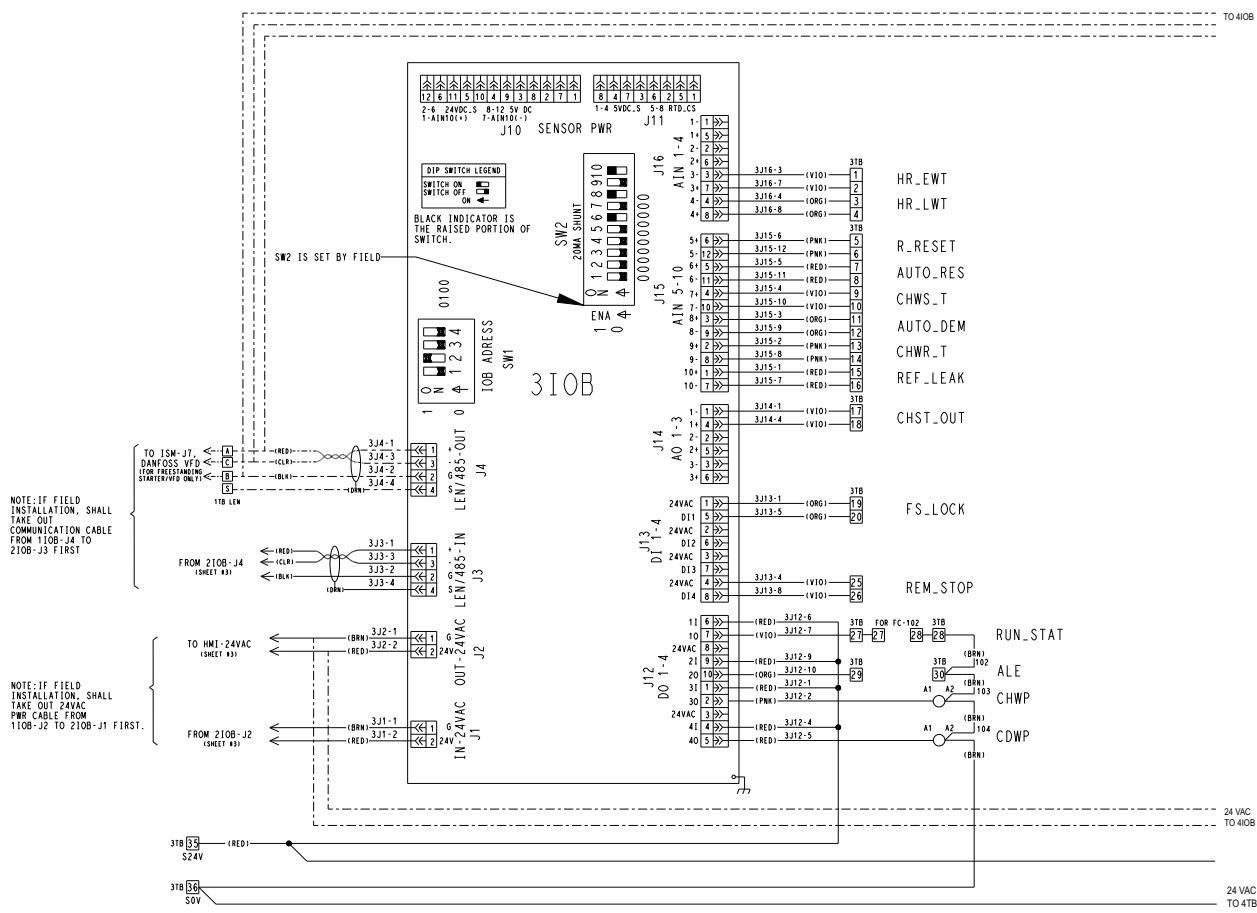
Fig. 57 — 19XR3-E Chiller Control Schematic



Field Terminals for 2TB, Fig. 57

| DESCRIPTION | | POINT NAME | TYPE | NOTES |
|-------------|---|------------------------------|----------|--|
| 2TB | 3 | Head Pressure Output | HDPV_OUT | 4-20 mA Optional Output; If used set dip switch to On for IOB2 channel 8. |
| | 4 | | | |
| | 5 | Evaporator water flow switch | EVAP_FS | 24 VAC Optional Input; open/closed switch |
| | 6 | | | |
| | 7 | Condenser water flow switch | COND_FS | 24 VAC Optional Input; open/closed switch |
| | 8 | | | |
| | 1 | Ice build contact | ICE_CON | 24 VAC Optional Input; open/closed switch |
| | 1 | | | |
| | 2 | | | |

Fig. 57 — 19XR3-E Chiller Control Schematic (cont)

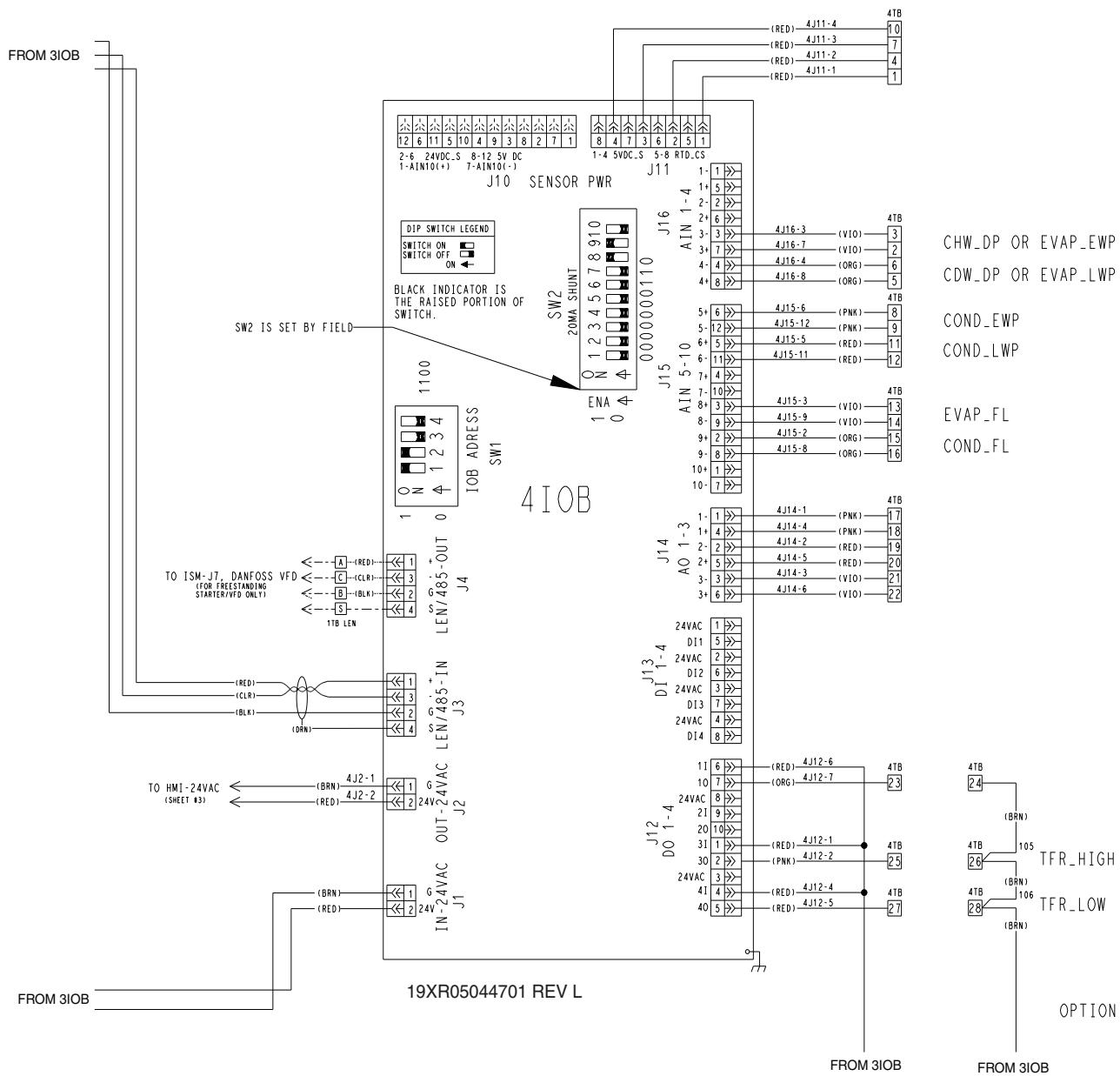


| | | DESCRIPTION | POINT NAME | TYPE | NOTES |
|------------------|---|-------------|------------|------|---|
| 5 | Remote Reset Sensor | R_RESET | 5 kOhm | | Optional input |
| 6 | | | | | |
| 7 | Auto Water Temp Reset | AUTO_RES | 4-20 mA | | Optional; If used set dip switch to On for IOB3 channel 6 |
| 8 | | | | | |
| 9 | Common Chilled Water Supply Temperature | CHWS_T | 5 kOhm | | Optional input |
| 10 | | | | | |
| 11 | Auto Demand Limit Input | AUTO_DEM | 4-20 mA | | Optional; If used set dip switch to On for IOB3 channel 8 |
| 12 | | | | | |
| 13 | Common Chilled Water Return Temperature | CHWR_T | 5 kOhm | | Optional |
| 14 | | | | | |
| 15 | Refrigerant Leak Sensor | REF_LEAK | 4-20 mA | | Optional; If used set dip switch to On for IOB3 channel 10 |
| 16 | | | | | |
| 17 | Chiller Status Output mA | CHST_OUT | 4-20 mA | | Optional; (ON=20mA, OFF=4mA, TRIPOUT=8mA, Not Off and Compressor not running=12mA) |
| 18 | | | | | |
| 19 | Fire Security Interlock | FS_LOCK | 24 VAC | | Optional Input; Normally open dry contact. If closed compressor will shut down under fire security alarm. |
| 20 | | | | | |
| 21 | Customer Alert | CUS_ALE | 24 VAC | | Optional Input; Must be enabled and alert will show on PIC if contact is not closed. |
| 22 | | | | | |
| 23 | Free Cooling Start Switch | FC_SS | 24 VAC | | Optional Input; Normally open dry contact. |
| 24 | | | | | |
| 25 | Remote Stop | REM_STOP | 24 VAC | | Optional Input; If in Remote mode and Contact=Enable, then chiller will stop when contact is closed. |
| 26 | | | | | |
| 27 | Chiller Run Status | RUN_STAT | 24 VAC | | Optional Output; Normally open dry contact |
| 28 | | | | | |
| 29 | Chiller Alert Relay | ALE | 24 VAC | | Optional Output; Normally open dry contact |
| 30 | | | | | |
| 3TB ^a | CHWP, Chilled Water Pump | CHWP | 24 VAC | | Output; Normally open dry contact |
| 11 | | | | | |
| 14 | CDWP, Condenser Water Pump | CDWP | 24 VAC | | Output; Normally open dry contact |
| 11 | | | | | |
| 14 | | | | | |

NOTE(S):

a. Terminals for CHWP and CDWP refer to the terminals on 3TB marked CHWP and CDWP respectively.

Fig. 57 – 19XR3-E Chiller Control Schematic (cont)



Field Terminals for 4TB, Fig. 57

| | DESCRIPTION | POINT NAME | TYPE | NOTES |
|-----|--|--------------------------|---------|---|
| 4TB | 1 Chilled Water Pressure Difference 2 or 3 Evap Entering Water Pressure | CHW_DP or EVAP_EWP | 5 VDC | Optional Input |
| | 4 Condenser Water Pressure Difference 5 or 6 Evap Leaving Water Pressure | CDW_DP or EVAP_LWP | 5 VDC | Optional Input |
| | 7 Condenser Entering Water Pressure | COND_EWP | 5 VDC | Optional Input |
| | 8 | | | |
| | 9 | | | |
| | 10 Condenser Leaving water temperature | COND_LWP | 5 VDC | Optional Input |
| | 11 | | | |
| | 12 | | | |
| | 13 Evaporator Water Flow Measurement | EVAP_FL | 4-20 mA | Optional Input; If used set dip switch to On for IOB4 channel 8 |
| | 14 | | | |
| | 15 Condenser Water Flow Measurement | COND_FL | 4-20 mA | Optional Input; If used set dip switch to On for IOB4 channel 9 |
| | 16 | | | |
| | 25 Tower Fan High | TFR_HIGH | 24 VAC | Optional Output; dry contact |
| | 26 | | | |
| | 27 Tower Fan Low | TFR_LOW | 24 VAC | Optional Output; dry contact |
| | 28 | | | |

Fig. 57 – 19XR3-E Chiller Control Schematic (cont)

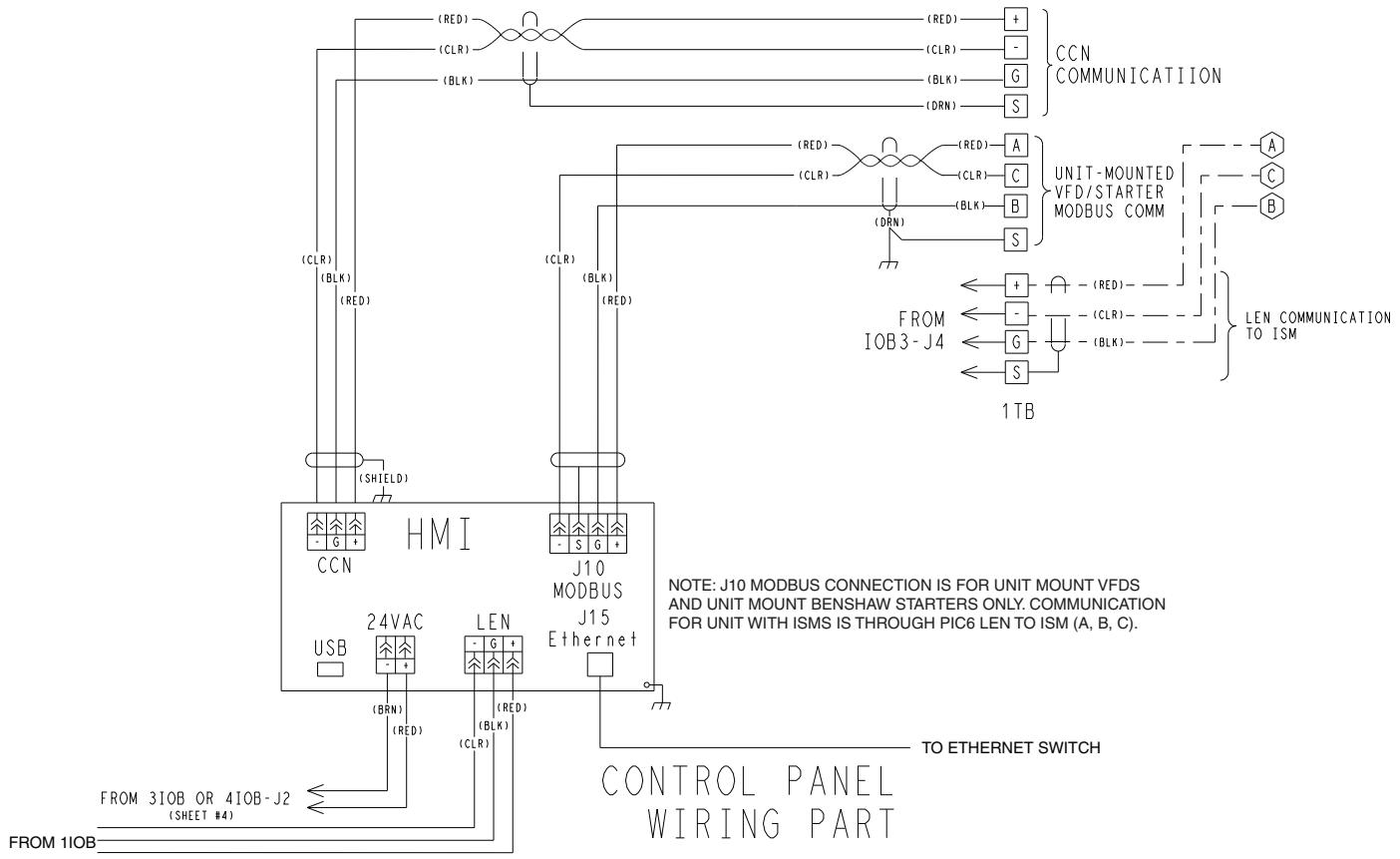
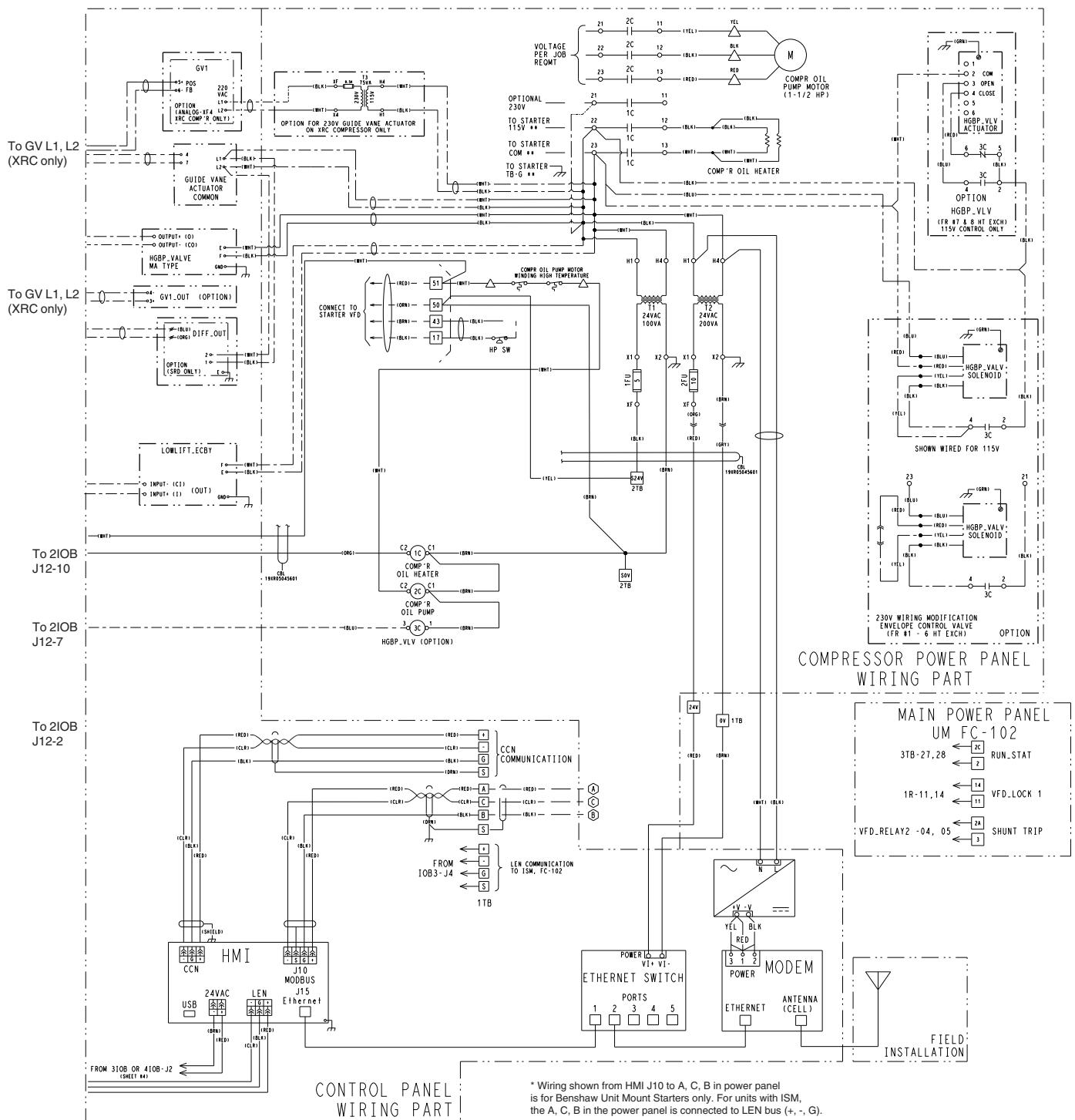
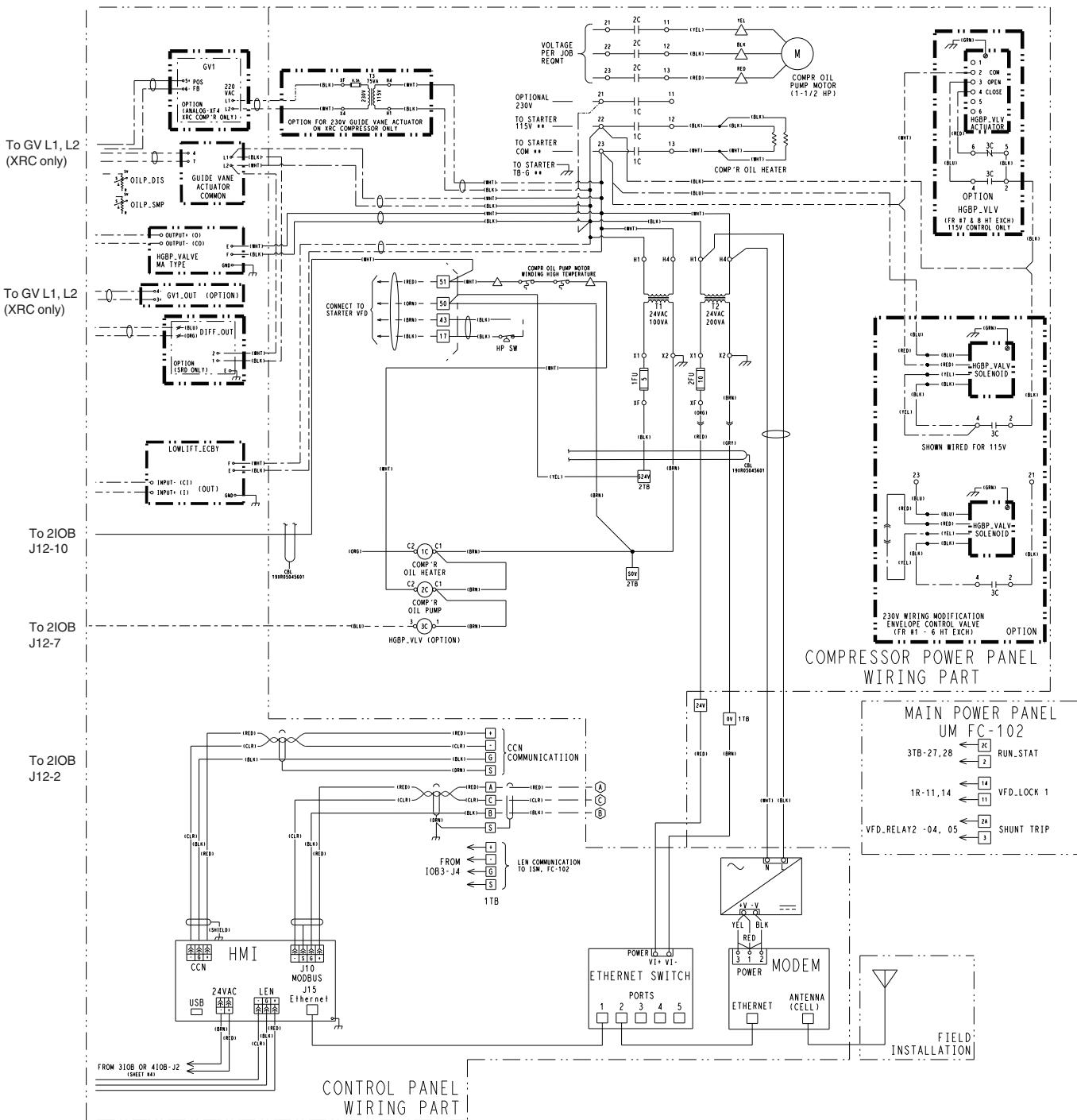


Fig. 57 – 19XR3-E Chiller Control Schematic (cont)

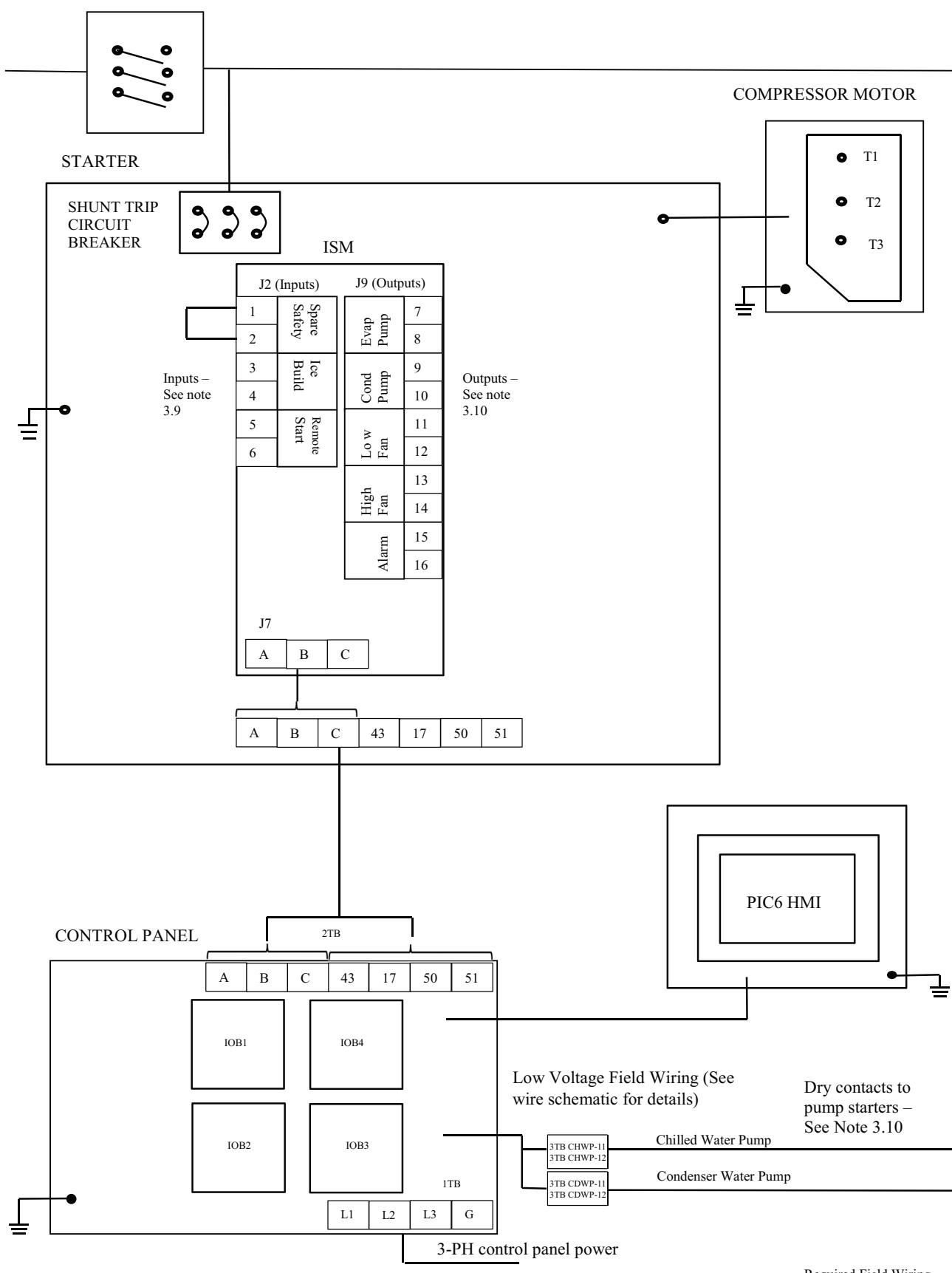


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Fig. 58 – 19XR3-E Chiller Control Schematic for Non-Unit Mount VFD Chiller (Fixed Speed Chiller and Free-standing VFD)



BRANCH DISCONNECT



**NOTES FOR Fig. 60
19XR6/7 with Free-Standing Starter or Low Voltage VFD (Low or 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. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional Input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. Switches with gold plated bifurcated contacts are recommended.
- 3.2 Remove jumper wire between J2-1 and J2-2 before connecting auxiliary safeties between these terminals.
- 3.3 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 water pumps 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 and loss of warranty.

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.

- 3.4 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.
- 3.5 Control wiring between starter and power panel must be separate shielded cables with minimum rating 600-v, 80°C. Ground shield at starter.
- 3.6 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.
- 3.7 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.

- 3.8 Head Pressure 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. Output is only available from Control Panel IOB - see wiring diagram.
- 3.9 ISM inputs Spare Safety, Ice Build, and Remote Start are active if ISM Input Enable has been set = Enable in **Main Menu → Configuration → IOB Configuration** (default ISM Input Enable = Disable, which means that the IOBx inputs are active — see wiring schematic).
- 3.10 Evap and Cond Pump, Lo and Hi Fan, and Alarm outputs are available from both J-9 ISM outputs and IOB assuming IOBx is enabled (see wiring schematic). Each integrated contact output can control loads (VA) for evaporator pump, condenser pump, tower fan low, tower fan high, and alarm annunciator devices rated 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503.
- 3.11 For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow. Pilot relays are field supplied.

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

- 4.0 Low voltage (under 600 volts) compressor motors have (6) terminals. Connections are 1-1/2 in. threaded stud. Use the supplied low voltage terminal box. This terminal box allow up to four (4) lugs to be attached to each of the six (6) motor terminals. Each busbar has four (4) 0.53 in. (13.5 mm) holes spaced 1.75 in. (44.5 mm) apart. This allow for installation of up to four (4) field supplied copper compression one-hole lugs suited for a 1/2 in. stud.

Medium voltage (over 600 volts) compressor motors have (3) terminals. Connections are 9/16-in. threaded stud. Use the 3 supplied adapters for a NEMA lug size connection. These connectors ensure adequate electrical contact between stud and field wiring. Use suitable connectors and insulation for high voltage alternating current cable terminations (these items are not supplied by Carrier).

- 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 = $1.25 \times \text{compressor RLA}$

- 4.2 For low voltage there will always be multiple leads in parallel. The quantity of conductors should be a multiple of (6) in order to balance the load for motor terminal T1-T6. 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.)

- 4.3 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).

- 4.4 Compressor motor frame to be grounded in accordance with the National Electrical Code (NFPA-70) and applicable codes. Medium voltage means for grounding compressor motor is a #4 AWG to 500 MCM pressure connector, supplied and located in the lower left side corner of the compressor motor terminal box. Low voltage terminal box includes a grounding bus bar with eight (8) 0.56 in. (14.2 mm) through holes spaced 1.9 in. (48.3 mm) apart. Compression lug connectors are not factory supplied.

- 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 max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.

BRANCH DISCONNECT

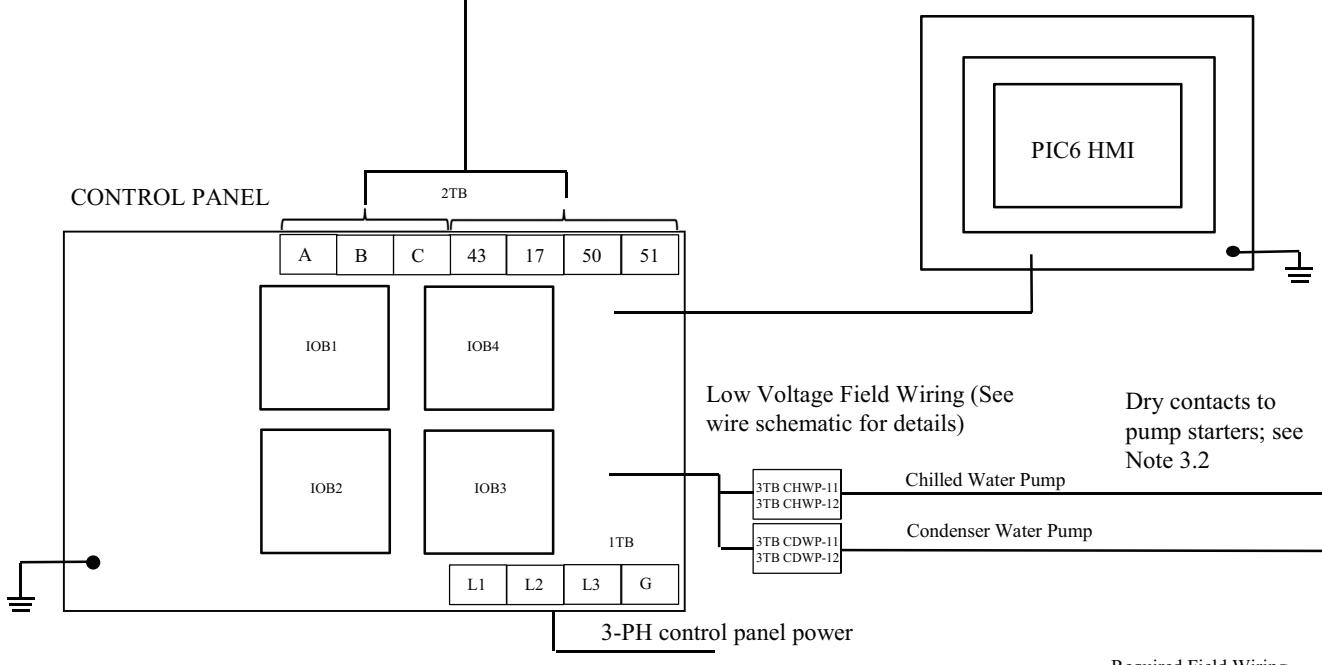
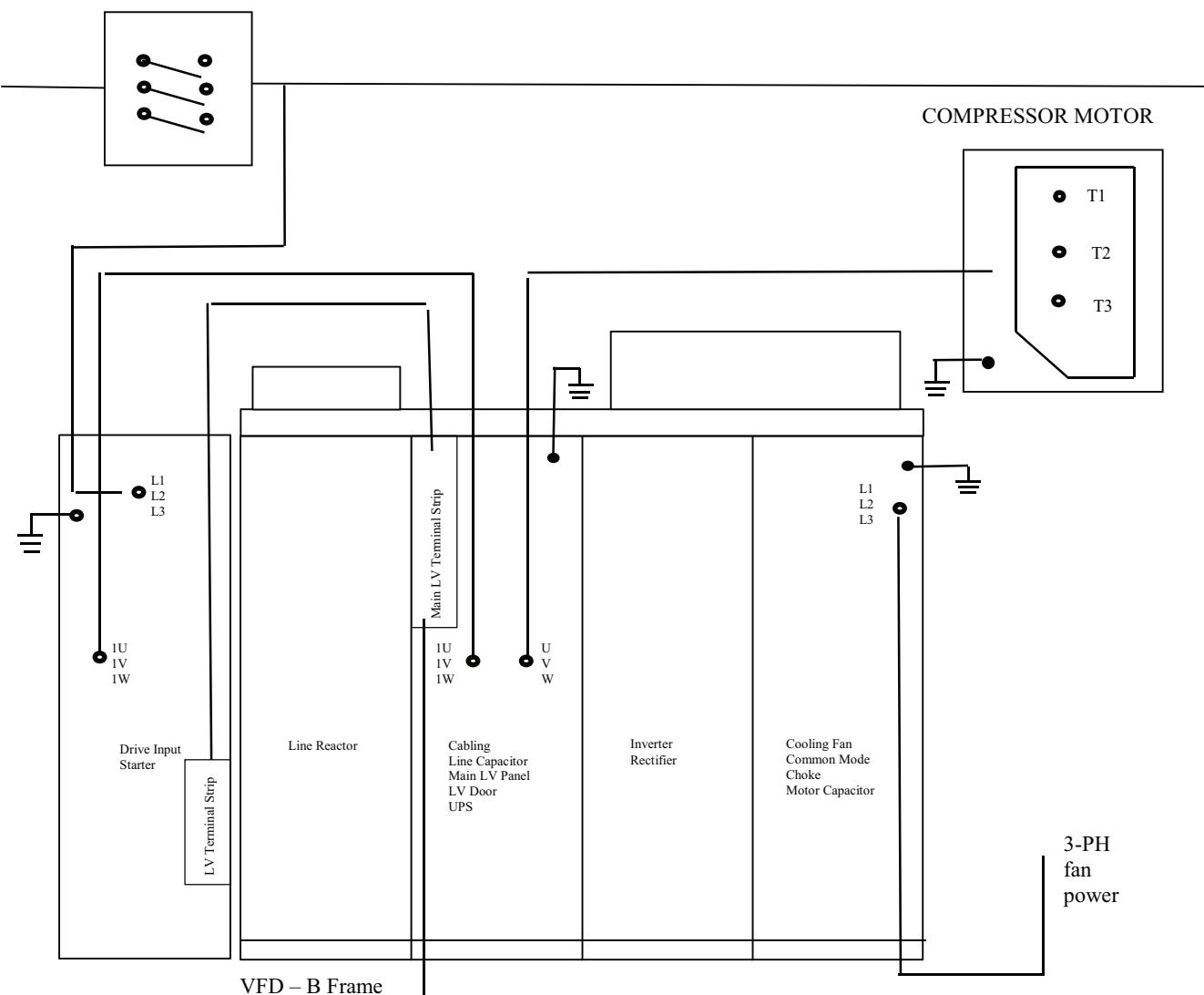


Fig. 61 — 19XR6/7 Typical Field Wiring with Free-Standing Variable Frequency Drive (VFD) (Medium Voltage)

**NOTES FOR Fig. 61
19XR6/7 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. It is recommended to connect all input/output field control wiring to Carrier Input/Output boards (IOBs) inside Carrier control panel.
- 3.1 Optional controls Input device contacts (devices not supplied by Carrier), must have 24 VAC rating. MAX current is 60 mA, nominal current is 10 mA. The field wiring should be designed/installed in such a manner as to prevent electrical noise from being introduced into the chiller controller. 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 1 amp AC RMS steady-state and 4 amps surge. Coil voltage of relay is 24 vac. Be sure to use pilot relays to avoid damage to the IOBs. Suggested rating of pilot relay is 10 amps; for example, 19XV05005503.
- 3.3 For water pump control, either hardwire from chiller controls or alternatively the chiller controls must be interlocked with the building automation system so chiller controls can start/stop the water flow. Pilot relays are field supplied.

△ CAUTION

Control wiring for Carrier to start water pumps 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 and loss of warranty.

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.

- 3.4 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.

- 3.6 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.
- 3.7 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.
- 3.8 Head Pressure 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. Connections are 9/16-in. threaded stud. A compression lug with a single 9/16-in. diameter hole can be connected directly to the stud or 3 adapters are supplied for connecting a NEMA lug. Use suitable connectors and insulation for high voltage alternating current cable terminations (these items are not supplied by Carrier).
- 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 = $1.25 \times$ compressor RLA
- When 6 conductors are used:
Minimum ampacity per conductor = $1.25 \times$ 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.)
- 4.3 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).
- 4.4 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 side 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 max. Use the instructions provided in the Startup and Operations Manual for additional detail for wire connections to the motor terminals.
- 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. 62-64

Control Abbreviations — Fig. 62-64

| | |
|----------|--|
| ALE | — Chiller Alert |
| ALM | — Chiller Alarm |
| AUTO_DEM | — Demand Limit Input |
| AUTO_RES | — Auto Water Temp Reset |
| CHST_OUT | — Chiller Running (On/Off/Ready) |
| CHW_DP | — Chilled Water Pressure Difference |
| CHWP | — Chilled Water Pump |
| CHWP_V | — Chilled Water Pump (Variable) |
| CHWR | — Chilled Water Return |
| CHWS | — Chilled Water Supply |
| 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 |
| CUS_ALE | — Customer Alert |
| 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 |
| ERT | — Evaporator Refrigerant Temperature |
| EVAP_EWP | — Entering Evaporator Water Pressure |
| EVAP_FL | — Evaporator Water Flow Measurement |
| EVAP_LWP | — Leaving Evaporator Water Pressure |
| EVAP_P | — Evaporator Pressure |
| FS-SS | — Free Cooling Start Switch |
| GV1-ACT | — IGV1 Position Input |
| GV1_OUT | — IGV1 Control Signal |
| 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. 62-64

| | |
|--------|--|
| 1C | — Oil Heater Contactor |
| 1CB | — Micro Circuit Breaker, Control Box |
| 1R | — Alarm Relay |
| 1T | — Transformer 1 |
| 1TB | — Terminal Block for Customer Power Connection |
| 2C | — Oil Pump Contactor |
| 2CB | — Micro Circuit Breaker, HMI |
| 2T | — Transformer 2 |
| 2TB | — Terminal Block for Field Connection |
| 3FU1,2 | — Transformer 1 Primary Fuse |
| 3FU3,4 | — Transformer 1 Secondary Fuse |
| 3T | — Transformer 3 |
| 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 and 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. 62-64

- DENOTES COMPONENT TERMINAL
- DENOTES CONDUCTOR MALE/FEMALE CONNECTOR
- — FIELD WIRING
- - OPTIONAL WIRING
- - COMPONENT/PANEL ENCLOSURE
- TERMINAL BLOCK FOR FIELD WIRING
- Ø TERMINAL BLOCK FOR INTERNAL CONNECTION
- WIRE SPLICER

LUG CAPACITY: 8AWG MAX

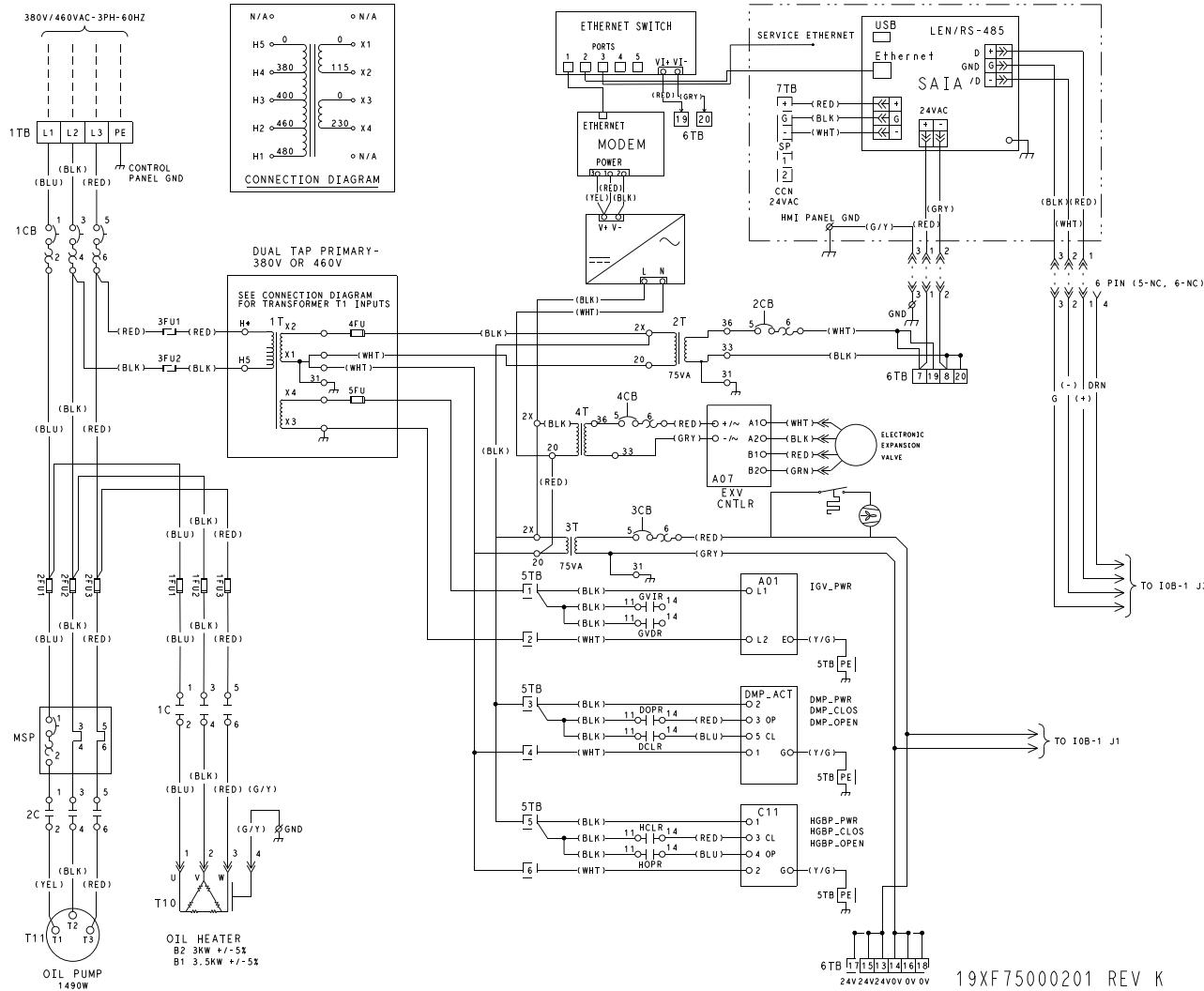


Fig. 62 — 19XR6-7 Controls Diagram

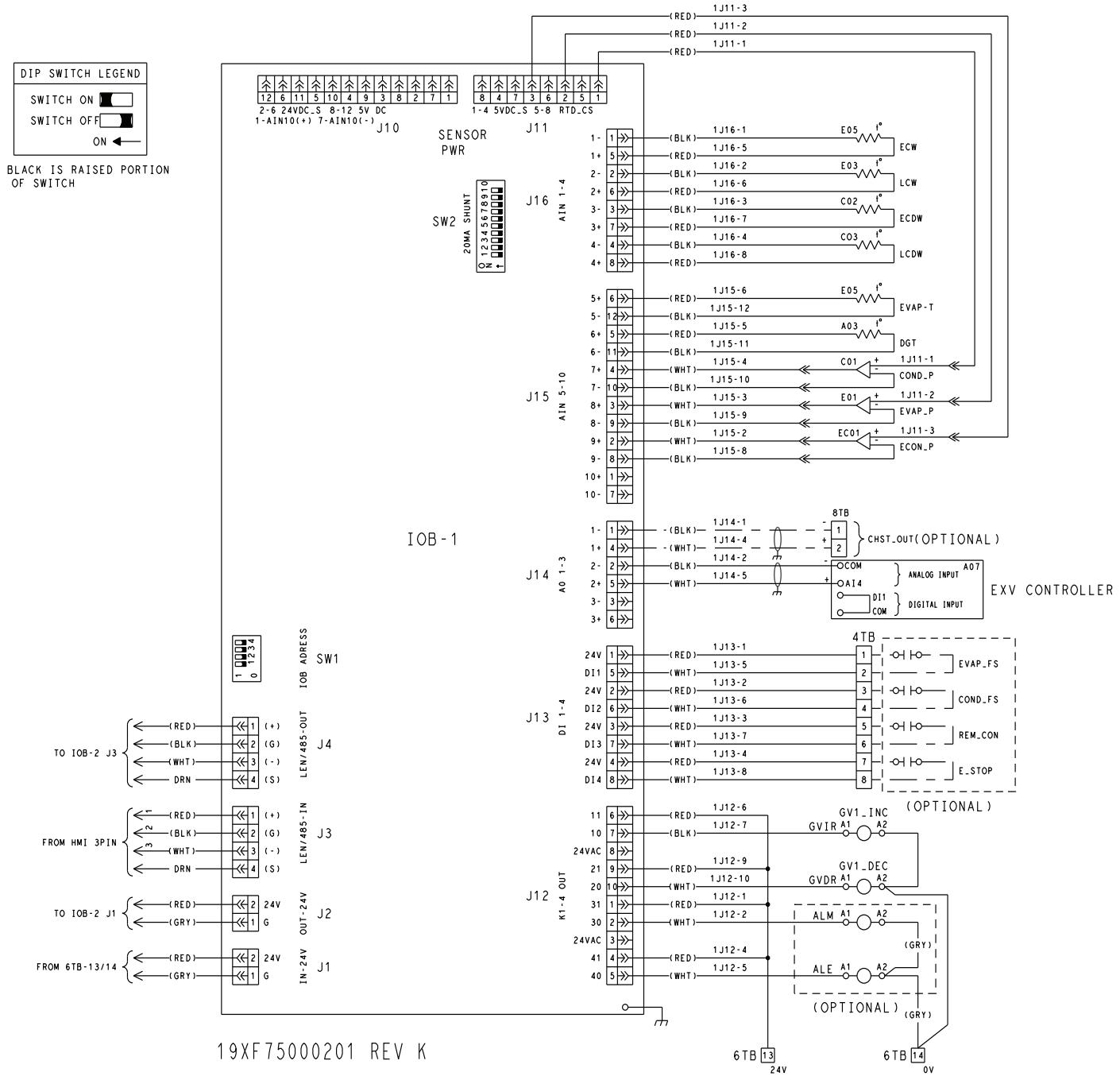


Fig. 63 – 19XR6-7 Chiller Control Schematic

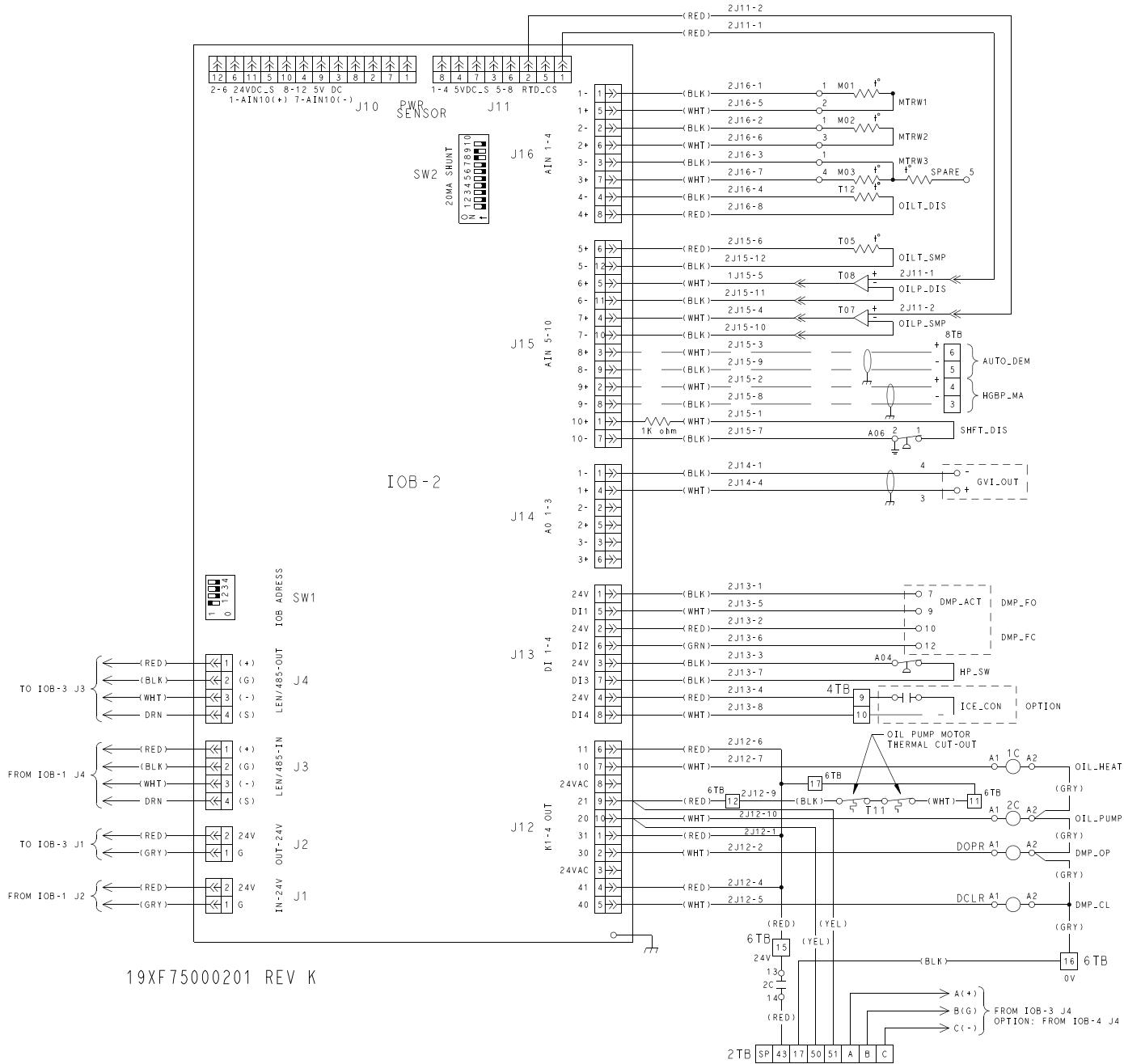


Fig. 63 – 19XR6-7 Chiller Control Schematic (cont)

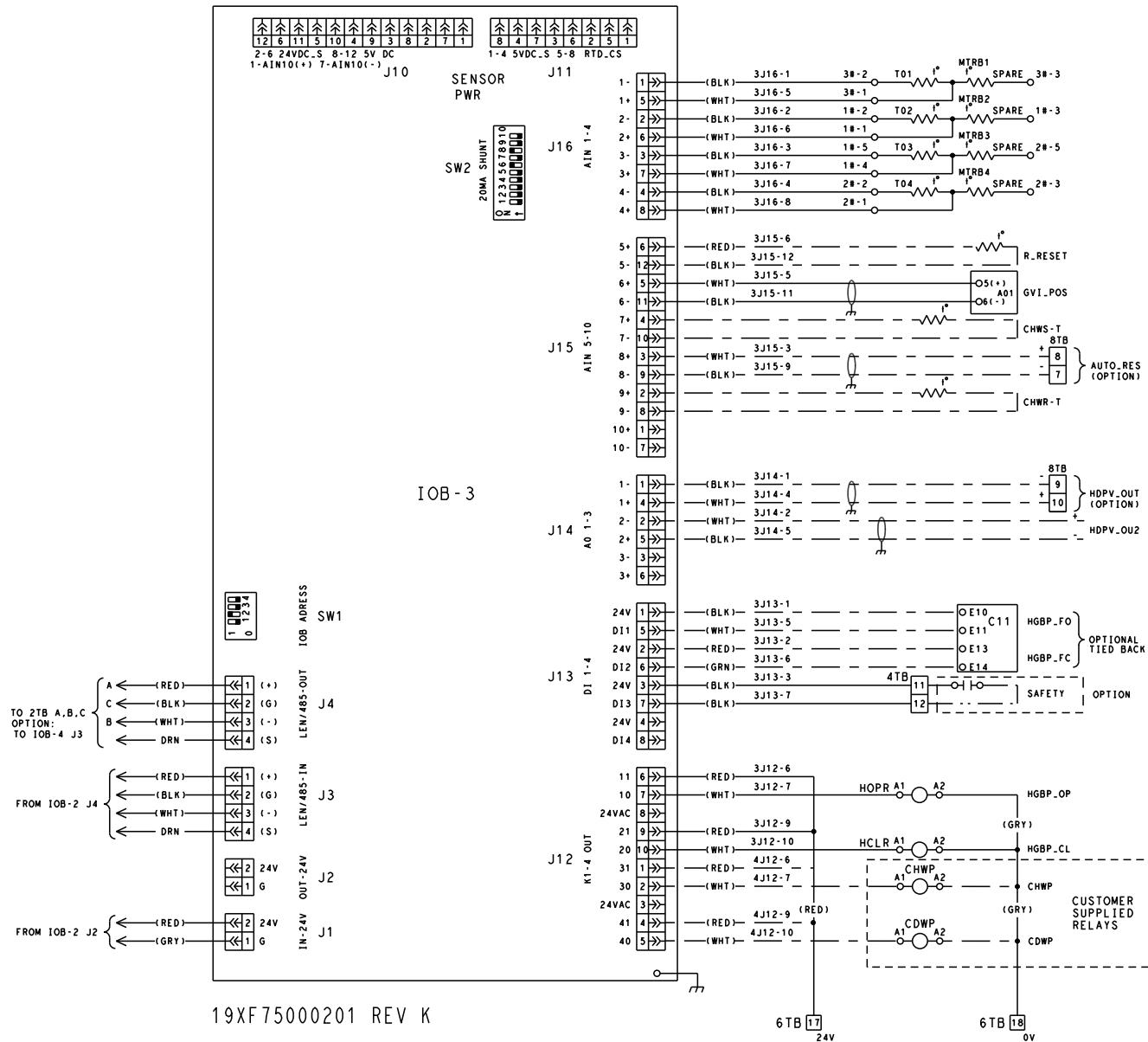


Fig. 63 — 19XR6-7 Chiller Control Schematic (cont)

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.

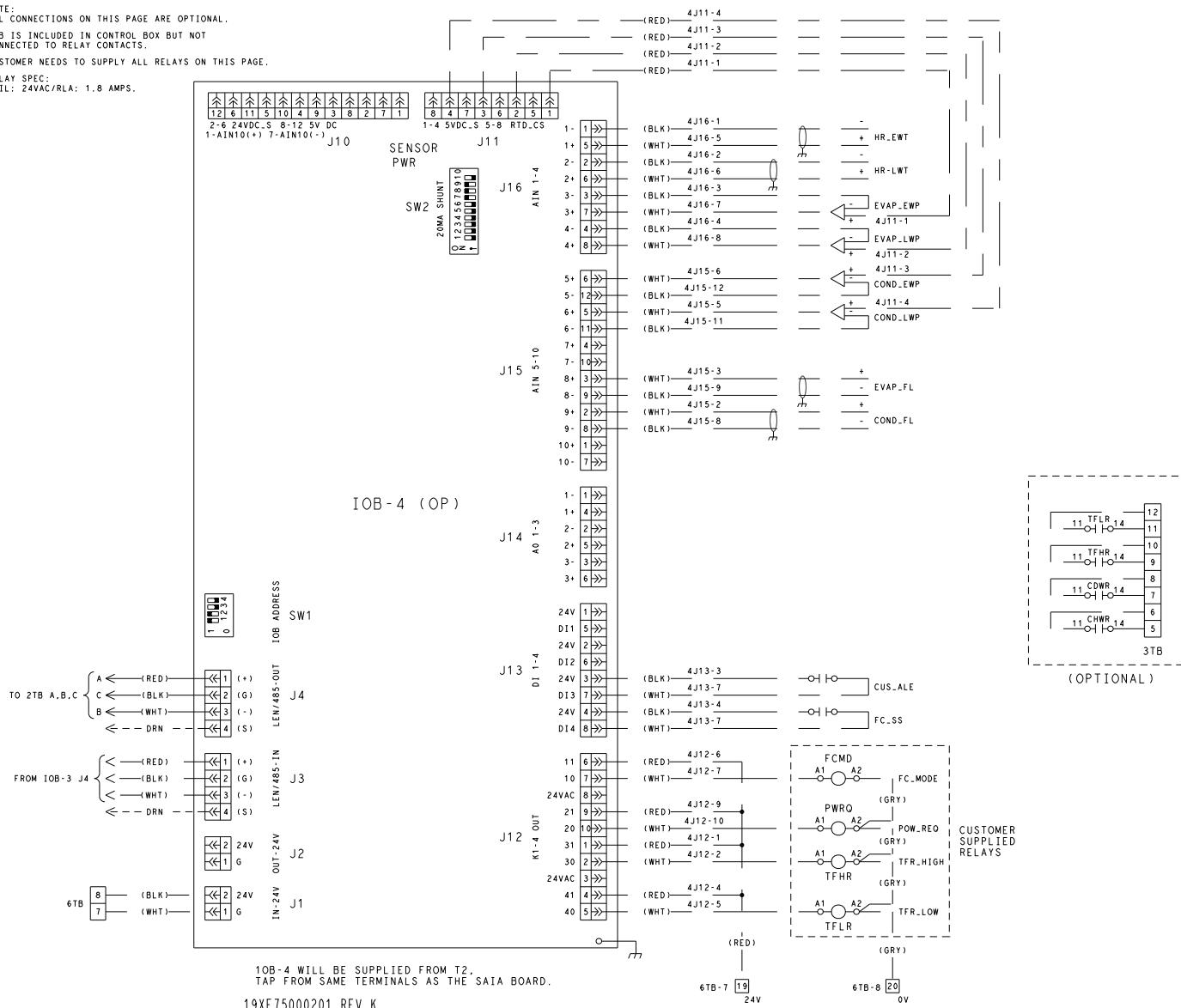
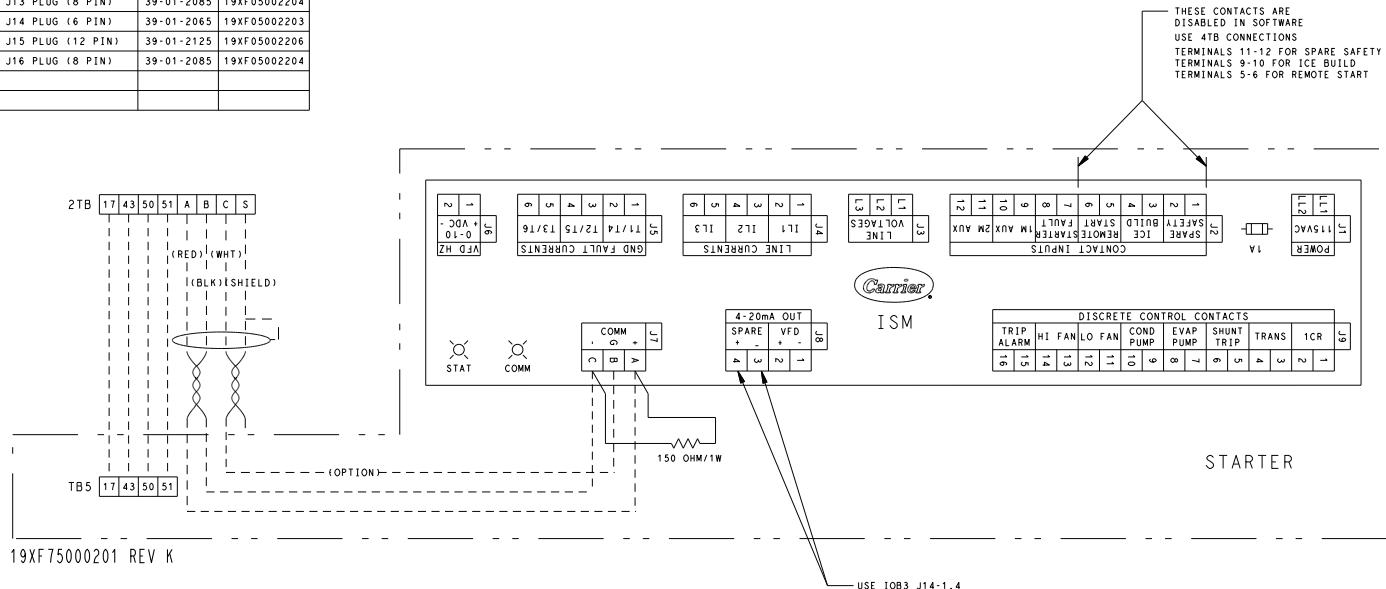


Fig. 63 – 19XR6-7 Chiller Control Schematic (cont)

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

| 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) | 150-36-1713 | 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 |

THESE CONTACTS ARE
DISABLED IN SOFTWARE
USE 4TB CONNECTIONS
TERMINALS 11-12 FOR SPARE SAFETY
TERMINALS 9-10 FOR ICE BUILD
TERMINALS 5-6 FOR REMOTE START



NOTE: For medium voltage free-standing VFD, TB5 is identified as drive terminal block 1 and is located at the low voltage terminal strip.

Fig. 64 — 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. 65 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.

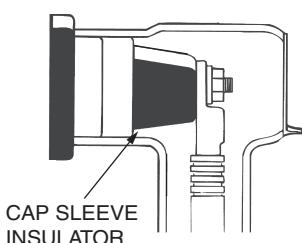


Fig. 65 — Cap Sleeve Insulation to Prevent Arcing

Connect Power Wires to Oil Pump Starter (For 19XR3-E, if required)

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 (For 19XR3-E, if required)

Connect control power wiring between the oil heater contactor terminals and terminals L1 and L2 on the field wiring strip in the compressor motor starter.

For 19XR6-7 connect 3-phase power (per job requirement) to terminal block 1TB in the control panel. This power controls the heater and oil pump.

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. 45 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, Teflon¹, 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 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. 45. 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. 45):

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.

1. Third-party trademarks and logos are the property of their respective owners.

Step 6 — Install Field Insulation

19XR

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. 66.

19XRV

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
- 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. 67.

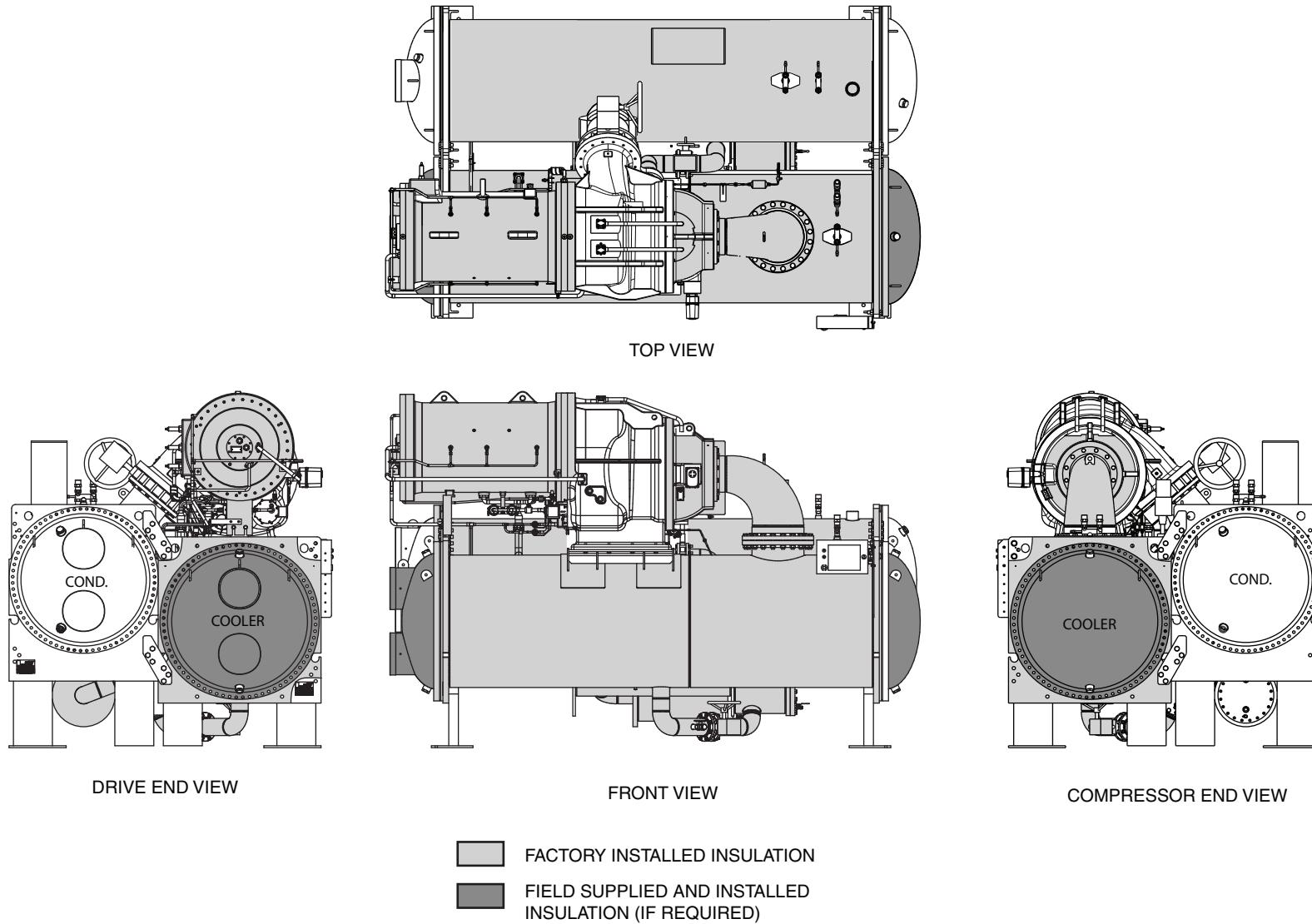


Fig. 66 — 19XR Insulation Area (Typical Unit with Economizer)

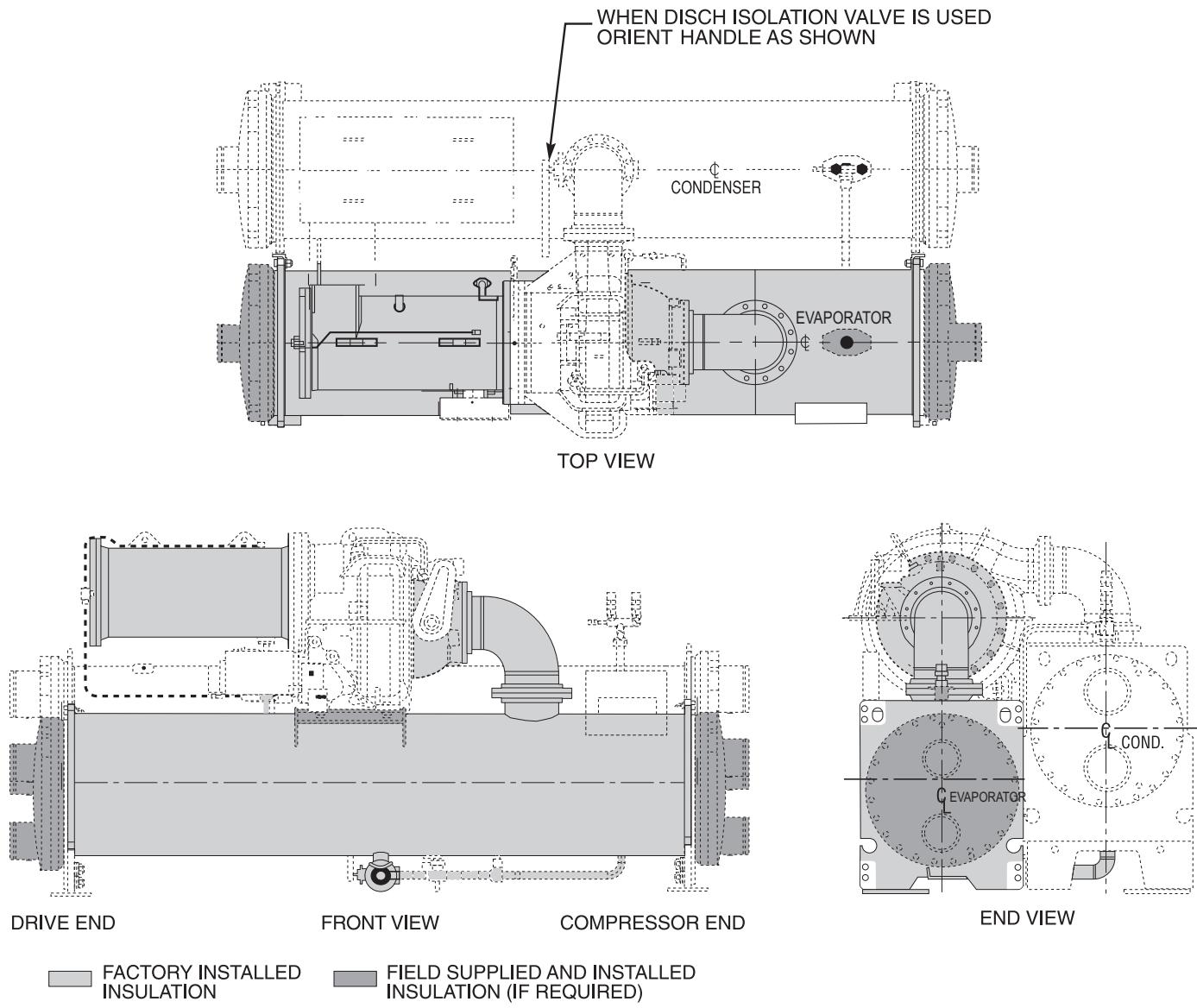


Fig. 67 — 19XR Insulation Area (Typical Unit without Economizer)

19XR 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 free-standing 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 and fusible plugs 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/VFD wiring is complete. The wiring is installed per installation instructions and certified prints.

a. Power wiring to compressor motor. (If free-standing starter/VFD or disassembly job the motor leads will not be taped until the Carrier technician Megger tests the motor.) _____

b. Consult wiring diagram. Oil pump, heater, controls, and communication is per wiring diagrams. _____

c. Carrier controls can independently energize water pumps. _____

d. Line side voltage is within $\pm 10\%$ 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? _____

10. Note controls need to be powered for a substantial time prior to startup in order to obtain suitable oil temperature. _____

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:

| <u>TESTING</u> | YES/NO | DATE TO BE COMPLETED |
|--|--------|----------------------|
| 1. The cooling tower fan has been checked for blade pitch and proper operation. | _____ | _____ |
| 2. The chilled water and condenser water lines have been: | _____ | _____ |
| a. Filled | _____ | _____ |
| b. Tested | _____ | _____ |
| c. Flushed | _____ | _____ |
| d. Vented | _____ | _____ |
| e. Strainers cleaned | _____ | _____ |
| 3. The chilled water and condenser water pumps have been checked for proper rotation and flow. | _____ | _____ |
| 4. The following cooling load will be available for start-up: | _____ | _____ |
| a. 25% | _____ | _____ |
| b. 50% | _____ | _____ |
| c. 75% | _____ | _____ |
| d. 100% | _____ | _____ |
| 5. Unless factory charged, the refrigerant charge is at the machine. | _____ | _____ |
| 6. Services such as electrical power and control air will be available at start-up. | _____ | _____ |
| 7. The electrical and mechanical representatives will be available to assist in commissioning the machine. | _____ | _____ |
| 8. The customers operators will be available to receive instructions for proper operation of the chiller after start-up. | _____ | _____ |
| 9. Is the building automation system complete and ready for use when the chiller is started? | _____ | _____ |

Concerns about the installation/request for additional assistance:

I am aware that the start-up time for a Carrier chiller can take between 2 and 6 days depending on the model of the machine and the options and accessories used with it.

Your contact at the jobsite will be _____

Phone number _____

e-mail _____

In accordance with our contract, we hereby request the services of your technician to render start-up services per contract terms for this job on _____ (Date). I understand that the technicians time will be charged as extra services due to correcting items in this checklist that are incomplete.

Signature of Purchaser _____

Signature of Jobsite Supervisor _____

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE