AQUAFORCE®
30XW150-400
Water-Cooled Liquid Chillers

Installation Instructions

CONTENTS

SAFETY CONSIDERATIONS

IMPORTANT: This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with these instructions, this equipment may cause radio interference. The equipment has been tested and found to comply with the limits of a Class A computing device as defined by the FCC (Federal Communications Commission, U.S.A.) Regulations, Subpart J of Part 15, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location. Only trained, qualified installers and service mechanics should install, start up, and service this equipment.

When working on the equipment, observe precautions in the literature, and on tags, stickers, and labels attached to the equipment.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling, rigging, and setting bulky equipment.

⚠ WARNING

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

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

a. Shut off electrical power to unit.

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

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

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

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

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

⚠ CAUTION

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. Failure to follow these procedures may result in damage to equipment.

INTRODUCTION

These instructions cover installation of 30XW liquid chillers with electronic controls and units with factory-installed options (FIOPs).

System Design

SYSTEM PIPING — Proper system design and installation procedures should be followed closely. The system must be constructed with pressure tight components and thoroughly tested for installation leaks.

Installation of water systems should follow sound engineering practice as well as applicable local and industry standards.

Improperly designed or installed systems may cause unsatisfactory operation and/or system failure. Consult a water treatment specialist or appropriate literature for information regarding filtration, water treatment, and control devices.

MINIMUM LOOP VOLUME — The preferred minimum loop volume is dependent on the type of application. In order to obtain leaving water temperature stability for comfort cooling applications, a minimum of 3 gallons per ton (3.25 liters per kW) is required on all unit sizes. For process cooling applications or applications where high stability is critical, the loop volume should be increased to 6 to 10 gallons per ton (6.46 to 10.76 liters per kW) of cooling. In order to achieve this volume, it may be necessary to add a water storage tank to the water loop. If a storage tank is added to the system, it should be installed on the return/entering fluid side and properly vented so that the tank can be completely filled and all air eliminated. Failure to do so could cause lack of pump stability and poor system operation. Any storage tank that is placed in the water loop should have internal baffles to allow thorough mixing of the fluid. See Fig. 1.

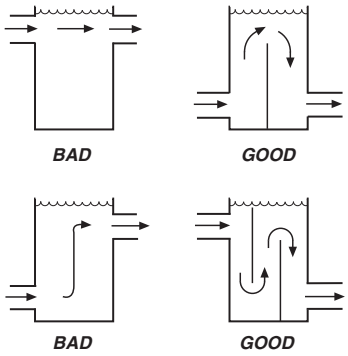


Fig. 1 — Tank Baffling

INSTALLATION

Step 1 — Inspect Shipment — Inspect unit for damage upon arrival. If damage is found, immediately file a claim with the shipping company. Verify proper unit delivery by checking unit nameplate data and the model number nomenclature shown in Fig. 2. Do not store units in an area exposed to weather because of sensitive control mechanisms and electronic devices. Chiller should be stored indoors, protected from construction dirt and moisture and with temperatures between 40 F (4.4 C) and 120 F (48.9 C) and relative humidity between 10% and 80% (non-condensing).

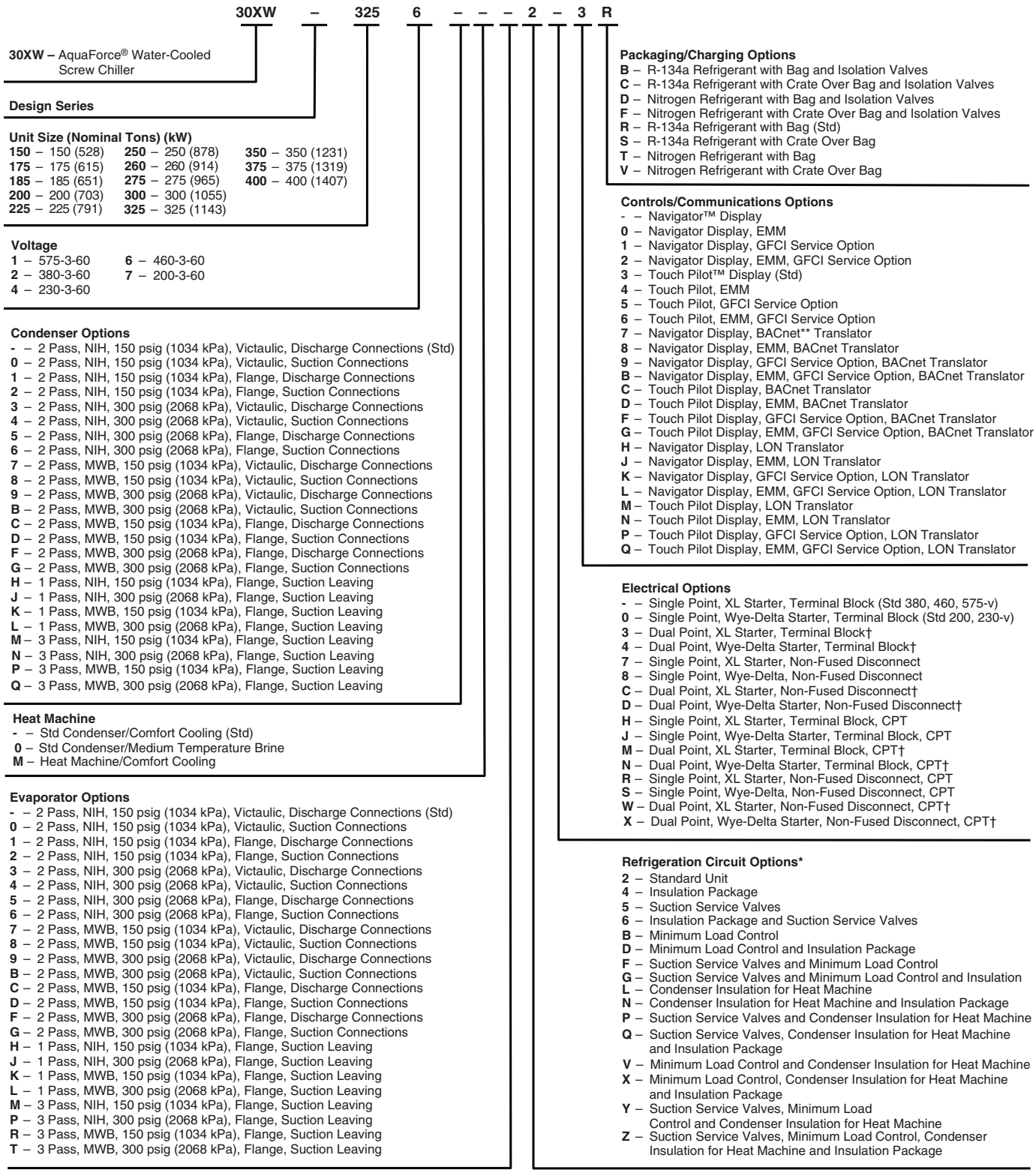
Step 2 — Prepare Installation Site — Locate unit indoors. When considering unit location, consult National Electrical Code (NEC, U.S.A.) and local code requirements. Allow sufficient space for wiring, piping, and service. Install unit in an area which will not be exposed to ambient temperatures below 50 F (10 C).

Be sure surface beneath unit is level and is capable of supporting the operating weight of the unit. See Tables 1 and 2 and Fig. 3-7 for unit mounting and operating weights.

If necessary, add supporting structure (steel beams or reinforced concrete slabs) to floor to transfer weight to nearest beams. See Fig. 3-5 for clearance details.

Allow the following clearances for service access:

Front . . . . . 3 ft (914 mm)
Rear . . . . . 3 ft (914 mm)
Top . . . . . 2 ft (610 mm)
Ends. . . . . .tube length at one (either) end;
3 ft (914 mm) at opposite end.



LEGEND

CPT — Control Power Transformer
EMM — Energy Management Module
GFCI — Ground Fault Circuit Interrupter
LON — Local Operating Network
MWB — Marine Waterbox
NIH — Nozzle-In-Head
XL — Across-the-Line Start

*Evaporator insulation is standard.
†Available on unit sizes 325-400 only.
**Sponsored by ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers).

Fig. 2 — Unit Model Number Nomenclature

Table 1 — 30XW150-400 Unit Physical Data — English

30XW UNIT SIZE	150	175	185	200	225	250
NOMINAL CAPACITY (tons)	150	175	185	200	225	250
UNIT WEIGHT (lb) (Operating/Shipping)	7281/6826	7421/6966	7356/6901	7551/7096	9936/9217	10,010/9,291
COMPRESSORS	Semi-hermetic, twin screw					
Compressor Speed (rpm)	3500					
Compressor Model Number (qty)	06TU483 (1)	06TU483 (1)	06TU554 (1)	06TU554 (1)	06TV680 (1)	06TV680 (1)
Unloading Type	Slide Valve					
Minimum Step Capacity % (standard)	15%					
Minimum Step Capacity % (heat machine)	30%	30%	30%	30%	20%	20%
Minimum Step Capacity % (standard with optional minimum load control)	10%					
Minimum Step Capacity % (heat machine with optional minimum load control)	20%	20%	20%	20%	15%	15%
Economizer	No	Yes	No	Yes	No	Yes
Temperature Relief Valve Connection (in. SAE Flare) (2 per circuit)	—	3/8	—	3/8	—	3/8
REFRIGERANT	HFC, R-134a					
Charge (lb) Circuit A	290	300	290	300	420	430
Charge (lb) Circuit B	—	—	—	—	—	—
OIL	POE, SW-220					
Charge (gal.) Circuit A	6	6	6	6	8	8
Charge (gal.) Circuit B	—	—	—	—	—	—
EVAPORATOR						
Net Fluid Volume (gal.)	33.2	33.2	33.2	33.2	46.3	46.3
Maximum Refrigerant Pressure (psig)	220					
Maximum Fluid Side Pressure (psig)						
Standard	150					
Optional	300					
Fluid Connections						
Inlet and Outlet (in.)						
1-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH Victaulic (standard)	6	6	6	6	8	8
2-Pass MWB Victaulic (optional)	6					
3-Pass NIH or MWB Flange (optional)	6					
Drain (in. NPT)	3/8					
Relief Valve Connection (in. NPTF)	3/4					
Quantity Per Circuit	1					
Relief Valve Setting (psig)	220					
Flow Rate (lb air/min)	31.7					
CONDENSER						
Net Fluid Volume (gal.)	33.5	33.5	33.5	33.5	52.0	52.0
Maximum Refrigerant Pressure (psig)						
Standard Condenser	220					
Heat Machine	300					
Maximum Fluid Side Pressure (psig)						
Standard	150					
Optional	300					
Heat Machine	300					
Fluid Connections						
Inlet and Outlet (in.)						
1-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH Victaulic (standard)	6	6	6	6	8	8
2-Pass MWB Victaulic (optional)	6					
3-Pass NIH Flange (optional)	4	4	4	4	6	6
3-Pass MWB Flange (optional)	6					
Drain (in. NPT)	3/8					
Relief Valve Connection (in. NPTF) (Standard/Heat Machine)	3/4 / 3/4					
Quantity Per Circuit	2/2					
Relief Valve Setting (psig)	220/300					
Flow Rate (lb air/min)	31.7/46.6					
Temperature Relief Valve Connection (in. SAE Flare)	1/4					
Discharge Line (Qty per Circuit)	1					
Liquid Line (Qty per Circuit)	1					
CHASSIS DIMENSIONS (ft-in.)						
Length	10 - 7/8				10 - 10 11/16	
Width	3 - 7 3/8				4 - 0	
Height	5 - 10 7/8				6 - 6 13/16	

LEGEND

HFC — Hydrofluorocarbon
MWB — Marine Waterbox
NIH — Nozzle-In-Head
NPTF — National Pipe Thread Female
POE — Polyolester
SAE — Society of Automotive Engineers

NOTE: Weights are shown for standard chiller (2-pass, nozzle-in-head, Victaulic water boxes).

Table 1 — 30XW150-400 Unit Physical Data — English (cont)

30XW UNIT SIZE	260	275	300	325	350	375	400
NOMINAL CAPACITY (tons)	260	275	300	325	350	375	400
UNIT WEIGHT (lb) (Operating/Shipping)	9956/9237	10,029/9,311	10,043/9,324	14,319/ 13,173	14,515/ 13,369	14,468/ 13,323	14,759/ 13,614
COMPRESSORS	Semi-hermetic, twin screw						
Compressor Speed (rpm)	3500						
Compressor Model Number (qty)	06TV753 (1)	06TV753 (1)	06TV819 (1)	06TU483 (2)	06TU483 (2)	06TU554 (2)	06TU554 (2)
Unloading Type	Slide Valve						
Minimum Step Capacity % (standard)	15%	15%	15%	8%	8%	8%	8%
Minimum Step Capacity % (heat machine)	20%						
Minimum Step Capacity % (standard with optional minimum load control)	10%	10%	10%	5.5%	5.5%	5.5%	5.5%
Minimum Step Capacity % (heat machine with optional minimum load control)	15%						
Economizer	No	Yes	Yes	No	Yes	No	Yes
Temperature Relief Valve Connection (in. SAE Flare) (2 per circuit)	—	3/8	3/8	—	3/8	—	3/8
REFRIGERANT	HFC, R-134a						
Charge (lb) Circuit A	420	430	430	260	270	260	270
Charge (lb) Circuit B	—	—	—	260	270	260	270
OIL	POE, SW-220						
Charge (gal.) Circuit A	8	8	8	6	6	6	6
Charge (gal.) Circuit B	—	—	—	6	6	6	6
EVAPORATOR							
Net Fluid Volume (gal.)	46.3	46.3	46.3	76.0	76.0	76.0	76.0
Maximum Refrigerant Pressure (psig)	220						
Maximum Fluid Side Pressure (psig)							
Standard	150						
Optional	300						
Fluid Connections							
Inlet and Outlet (in.)							
1-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH Victaulic (standard)	8						
2-Pass MWB Victaulic (optional)	6						
3-Pass NIH or MWB Flange (optional)	6						
Drain (in. NPT)	3/8						
Relief Valve Connection (in. NPTF)	3/4						
Quantity Per Circuit	1						
Relief Valve Setting (psig)	220						
Flow Rate (lb air/min)	31.7						
CONDENSER							
Net Fluid Volume (gal.)	52.0	52.0	52.0	82.6	82.6	82.6	82.6
Maximum Refrigerant Pressure (psig)							
Standard Condenser	220						
Heat Machine	300						
Maximum Fluid Side Pressure (psig)							
Standard	150						
Optional	300						
Heat Machine	300						
Fluid Connections							
Inlet and Outlet (in.)							
1-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH Victaulic (standard)	8						
2-Pass MWB Victaulic (optional)	6						
3-Pass NIH Flange (optional)	6						
3-Pass MWB Flange (optional)	6						
Drain (in. NPT)	3/8						
Relief Valve Connection (in. NPTF) (Standard/Heat Machine)	3/4 / 3/4						
Quantity Per Circuit	2/2						
Relief Valve Setting (psig)	220/300						
Flow Rate (lb air/min)	31.7/46.6						
Temperature Relief Valve Connection (in. SAE Flare)	1/4						
Discharge Line (Qty per Circuit)	1						
Liquid Line (Qty per Circuit)	1						
CHASSIS DIMENSIONS (ft-in.)							
Length		10 - 10 11/16			13 - 3 3/4		
Width		4 - 0			4 - 0		
Height		6 - 6 13/16			6 - 6 11/16		

LEGEND

HFC — Hydrofluorocarbon
MWB — Marine Waterbox
NIH — Nozzle-In-Head
NPTF — National Pipe Thread Female
POE — Polyolester
SAE — Society of Automotive Engineers

NOTE: Weights are shown for standard chiller (2-pass, nozzle-in-head, Victaulic water boxes).

Table 2 — 30XW150-400 Unit Physical Data — SI

30XW UNIT SIZE	150	175	185	200	225	250
NOMINAL CAPACITY (kW)	528	615	651	703	791	878
UNIT WEIGHT (kg) (Operating/Shipping)	3303/3096	3366/3160	3337/3130	3425/3219	4507/4181	4540/4214
COMPRESSORS	Semi-hermetic, twin screw					
Compressor Speed (r/s)	58.3					
Compressor Model Number (qty)	06TU483 (1)	06TU483 (1)	06TU554 (1)	06TU554 (1)	06TV680 (1)	06TV680 (1)
Unloading Type	Slide Valve					
Minimum Step Capacity % (standard)	15%					
Minimum Step Capacity % (heat machine)	30%	30%	30%	30%	20%	20%
Minimum Step Capacity % (standard with optional minimum load control)	10%					
Minimum Step Capacity % (heat machine with optional minimum load control)	20%	20%	20%	20%	15%	15%
Economizer	No	Yes	No	Yes	No	Yes
Temperature Relief Valve Connection (in. SAE Flare) (2 per circuit)	—	3/8	—	3/8	—	3/8
REFRIGERANT	HFC, R-134a					
Charge (kg) Circuit A	131.5	136.1	131.5	136.1	190.5	195.0
Charge (kg) Circuit B	—	—	—	—	—	—
OIL	POE, SW-220					
Charge (L) Circuit A	22.7	22.7	22.7	22.7	30.3	30.3
Charge (L) Circuit B	—	—	—	—	—	—
EVAPORATOR						
Net Fluid Volume (L)	125.7	125.7	125.7	125.7	175.3	175.3
Maximum Refrigerant Pressure (kPa)	1517					
Maximum Fluid Side Pressure (kPa)						
Standard	1034					
Optional	2068					
Fluid Connections						
Inlet and Outlet (in.)						
1-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH Victaulic (standard)	6	6	6	6	8	8
2-Pass MWB Victaulic (optional)	6					
3-Pass NIH or MWB Flange (optional)	6					
Drain (in. NPT)	3/8					
Relief Valve Connection (in. NPTF)	3/4					
Quantity Per Circuit	1					
Relief Valve Setting (kPa)	1517					
Flow Rate (kg air/min)	14.38					
CONDENSER						
Net Fluid Volume (L)	126.8	126.8	126.8	126.8	196.8	196.8
Maximum Refrigerant Pressure (kPa)						
Standard Condenser	1517					
Heat Machine	2068					
Maximum Fluid Side Pressure (kPa)						
Standard	1034					
Optional	2068					
Heat Machine	2068					
Fluid Connections						
Inlet and Outlet (in.)						
1-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH or MWB Flange (optional)	6					
2-Pass NIH Victaulic (standard)	6	6	6	6	8	8
2-Pass MWB Victaulic (optional)	6					
3-Pass NIH Flange (optional)	4	4	4	4	6	6
3-Pass MWB Flange (optional)	6					
Drain (in. NPT)	3/8					
Relief Valve Connection (in. NPTF) (Standard/Heat Machine)	3/4 / 3/4					
Quantity Per Circuit	2/2					
Relief Valve Setting (kPa)	1517/2068					
Flow Rate (kg air/min)	14.38/21.1					
Temperature Relief Valve Connection (in. SAE Flare)	1/4					
Discharge Line (Qty per Circuit)	1					
Liquid Line (Qty per Circuit)	1					
CHASSIS DIMENSIONS (mm)						
Length	3070.2				3319.5	
Width	1139.8				1219.2	
Height	1806.6				2001.8	

LEGEND

HFC — Hydrofluorocarbon
MWB — Marine Waterbox
NIH — Nozzle-In-Head
NPTF — National Pipe Thread Female
POE — Polyolester
SAE — Society of Automotive Engineers

NOTE: Weights are shown for standard chiller (2-pass, nozzle-in-head, Victaulic water boxes).

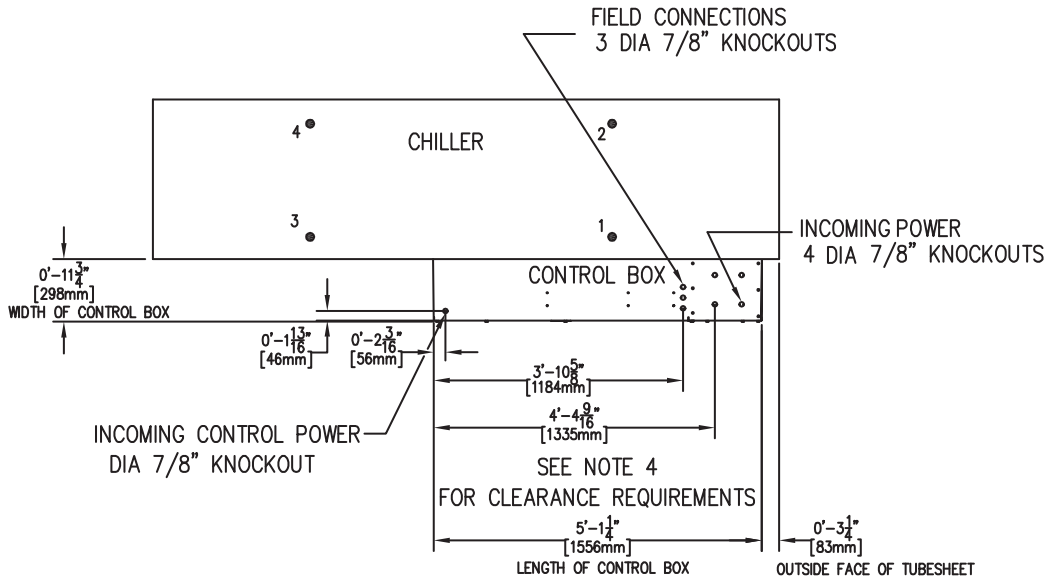
Table 2 — 30XW150-400 Unit Physical Data — SI (cont)

30XW UNIT SIZE	260	275	300	325	350	375	400
NOMINAL CAPACITY (kW)	914	965	1053	1143	1231	1319	1407
UNIT WEIGHT (kg) (Operating/Shipping)	4516/4190	4549/4223	4555/4229	6495/5975	6584/6064	6563/6043	6695/6175
COMPRESSORS	Semi-hermetic, twin screw						
Compressor Speed (r/s)	58.3						
Compressor Model Number (qty)	06TV753 (1)	06TV753 (1)	06TV819 (1)	06TU483 (2)	06TU483 (2)	06TU554 (2)	06TU554 (2)
Unloading Type	Slide Valve						
Minimum Step Capacity % (standard)	15%	15%	15%	8%	8%	8%	8%
Minimum Step Capacity % (heat machine)	20%						
Minimum Step Capacity % (standard with optional minimum load control)	10%	10%	10%	5.5%	5.5%	5.5%	5.5%
Minimum Step Capacity % (heat machine with optional minimum load control)	15%						
Economizer	No	Yes	Yes	No	Yes	No	Yes
Temperature Relief Valve Connection (in. SAE Flare) (2 per circuit)	—	3/8	3/8	—	3/8	—	3/8
REFRIGERANT	HFC, R-134a						
Charge (kg) Circuit A	190.5	195.0	195.0	117.9	122.5	117.9	122.5
Charge (kg) Circuit B	—	—	—	117.9	122.5	117.9	122.5
OIL	POE, SW-220						
Charge (L) Circuit A	30.3	30.3	30.3	22.7	22.7	22.7	22.7
Charge (L) Circuit B	—	—	—	22.7	22.7	22.7	22.7
EVAPORATOR							
Net Fluid Volume (L)	175.3	175.3	175.3	287.7	287.7	287.7	287.7
Maximum Refrigerant Pressure (kPa)	1517						
Maximum Fluid Side Pressure (kPa)							
Standard	1034						
Optional	2068						
Fluid Connections							
Inlet and Outlet (in.)							
1-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH Victaulic (standard)	8						
2-Pass MWB Victaulic (optional)	6						
3-Pass NIH or MWB Flange (optional)	6						
Drain (in. NPT)	3/8						
Relief Valve Connection (in. NPTF)	3/4						
Quantity Per Circuit	1						
Relief Valve Setting (kPa)	1517						
Flow Rate (kg air/min)	14.38						
CONDENSER							
Net Fluid Volume (L)	196.8	196.8	196.8	312.7	312.7	312.7	312.7
Maximum Refrigerant Pressure (kPa)							
Standard Condenser	1517						
Heat Machine	2068						
Maximum Fluid Side Pressure (kPa)							
Standard	1034						
Optional	2068						
Heat Machine	2068						
Fluid Connections							
Inlet and Outlet (in.)							
1-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH or MWB Flange (optional)	6						
2-Pass NIH Victaulic (standard)	8						
2-Pass MWB Victaulic (optional)	6						
3-Pass NIH Flange (optional)	6						
3-Pass MWB Flange (optional)	6						
Drain (in. NPT)	3/8						
Relief Valve Connection (in. NPTF) (Standard/Heat Machine)	3/4 / 3/4						
Quantity Per Circuit	2/2						
Relief Valve Setting (kPa)	1517/2068						
Flow Rate (kg air/min)	14.38/21.1						
Temperature Relief Valve Connection (in. SAE Flare)	1/4						
Discharge Line (Qty per Circuit)	1						
Liquid Line (Qty per Circuit)	1						
CHASSIS DIMENSIONS (mm)							
Length	3319.5			4057.7			
Width	1219.2			1215.0			
Height	2001.8			1998.7			

LEGEND

HFC — Hydrofluorocarbon
MWB — Marine Waterbox
NIH — Nozzle-In-Head
NPTF — National Pipe Thread Female
POE — Polyolester
SAE — Society of Automotive Engineers

NOTE: Weights are shown for standard chiller (2-pass, nozzle-in-head, Victaulic water boxes).



STANDARD 30XW150-200 UNIT DIMENSIONS

30XW UNIT SIZE	OPERATING WEIGHT		MOUNTING LOCATION WEIGHT							
			1		2		3		4	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
150	7281	3303	1312	595	1772	804	1785	810	2411	1094
175	7421	3366	1338	607	1806	819	1820	825	2457	1115
185	7356	3336	1326	601	1790	812	1804	818	2436	1105
200	7551	3425	1361	617	1838	834	1852	840	2500	1134

NOTE: Weights shown for standard chiller (2 pass with NIH, victaulic waterboxes).

30XW150-200 UNIT AND WATERBOX SPECIFICATIONS

A	**Evaporator Heat Exchanger Length — 9'-1 1/16" [2770 mm]**	**C**
B	**Condenser Heat Exchanger Length — 9'-1 1/16" [2770 mm]**	**D**

Overall Length = Larger of A or B + 9'-1 1/16 " [2770 mm] + larger of C or D, where:
A = evaporator discharge end water box length B = condenser discharge end water box length
C = evaporator suction end water box length D = condenser suction end water box length

TYPE	WATER BOX ADDITIONAL LENGTH ADDERS				WATER BOX WEIGHT ADDERS			
	EVAP		COND		EVAP		COND	
	ft-in.	mm	ft-in.	mm	lb	kg	lb	kg
Return Cover	0-4 1/16	103	0-4 3/8	111	Std	Std	Std	Std
NIH 2 Pass Vic	0-7 1/8	181	0-7 7/16	189	Std	Std	Std	Std
NIH 2 Pass FL	0-4 5/8	117	1-1 7/8	352	137	62.1	146	66.2
NIH 1 Pass FL	1-0 5/8	321	1-1 7/8	352	188	85.3	244	110.7
NIH 3 Pass FL	1-0 5/8	321	1-1 7/8	352	198	89.8	185	83.9
MWB 2 Pass Vic	1-4 5/16	414	1-4 5/16	414	232	105.2	274	124.3
MWB 2 Pass FL	1-4 5/16	414	1-4 5/16	414	265	120.2	357	161.9
MWB 1 Pass FL	1-4 5/16	414	1-4 5/16	414	508	230.4	598	271.3
MWB 3 Pass FL	1-4 5/16	414	1-4 5/16	414	539	244.5	706	320.2

LEGEND

MWB —Marine Waterbox
NIH —Nozzle-In-Head

NOTES:
1. Add the additional weight to the standard unit operating weight to find the total weight of the unit.
2. ◔ Denotes center of gravity.
3. Dimensions shown in ft-in. [mm] unless noted.
4. The recommended service clearance for the machine is 3 ft [914 mm] at the front and rear, 2 ft [610 mm] at the top, and the tube length at one end and 3 ft [914 mm] at the opposite end. Consult local electrical codes for minimum clearance requirements on control panel side.
5. Victaulic nozzles are standard on all units. A flow switch is factory-installed in evaporator inlet victaulic nozzle.
6. Maximum fluid side pressure of condenser or evaporator is 150 psig [1034 kPa] (standard) or 300 psig [2068 kPa] (optional).
7. Operating weight includes weight of water, refrigerant, and oil.

Fig. 3 — 30XW150-200 Unit Dimensions

FRONT VIEW — DISCHARGE END

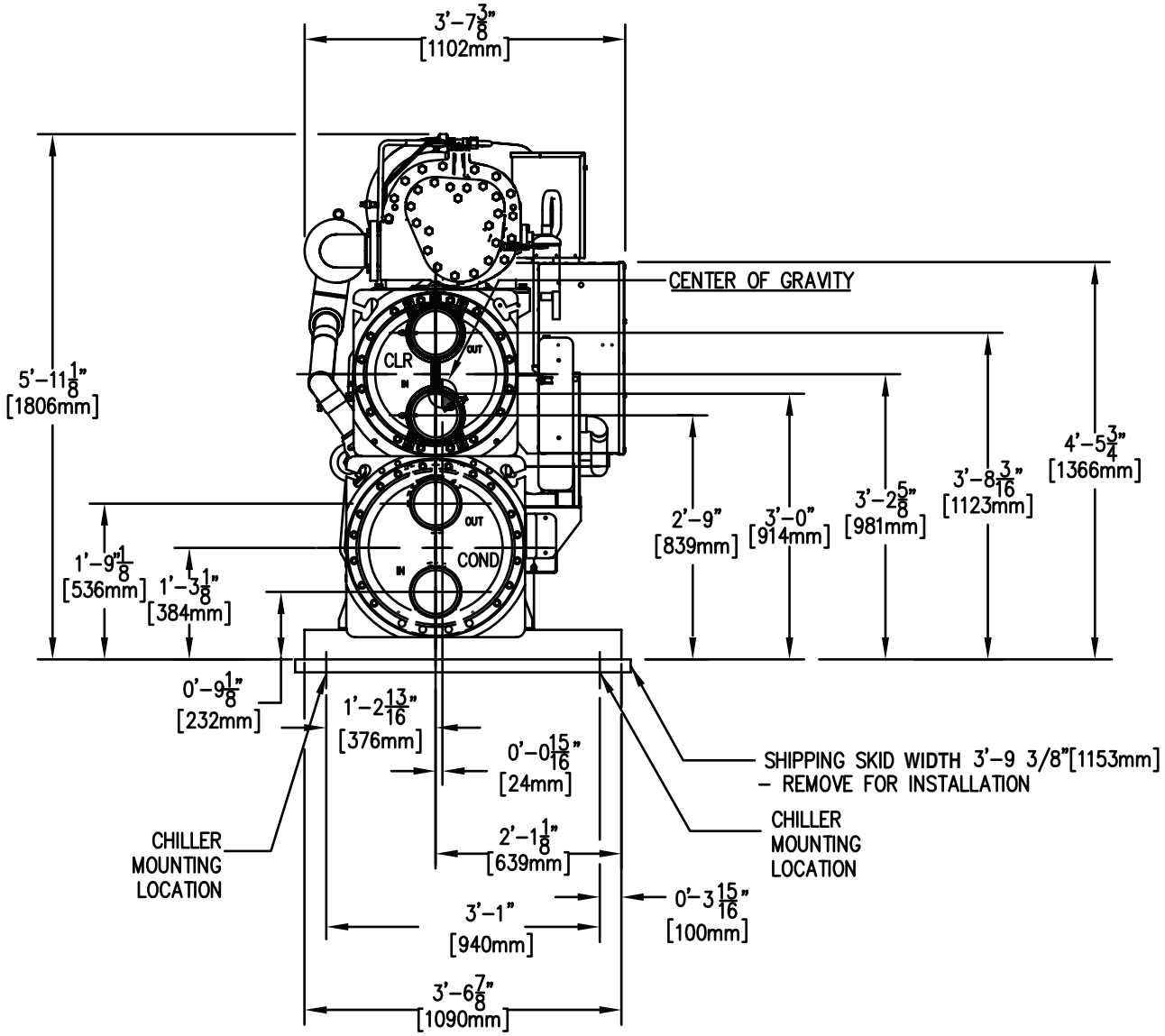
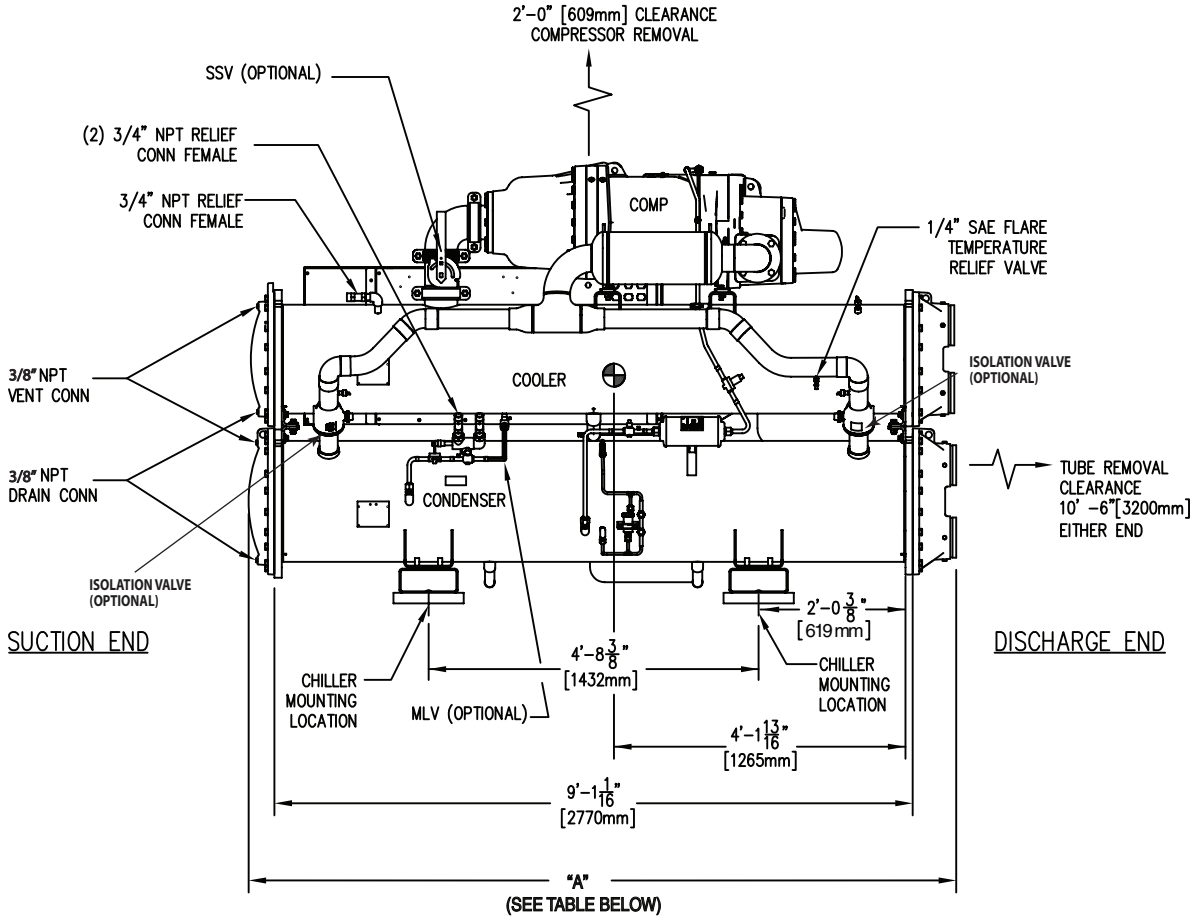


Fig. 3 — 30XW150-200 Unit Dimensions (cont)

SIDE VIEW



CHILLER DIMENSIONS

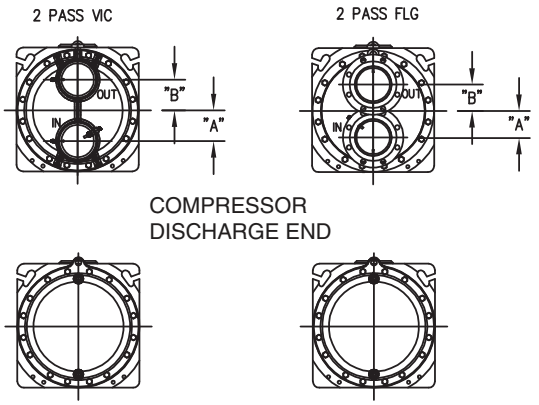
CONNECTION	PASSES COOLER/ COND	WATER BOX COOLER/ COND	PRESSURE PSIG	NOZZLE TYPE	"A" ft-in. [mm]	ADDED WGT lb [kg]
STD ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	10- 0 7/8 [3071]	0
STD ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	10-10 1/16 [3304]	283 [128]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	10- 9 13/16 [3297]	274 [124]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	10- 9 13/16 [3297]	357 [162]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	10- 9 13/16 [3297]	231 [105]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	10- 9 13/16 [3297]	265 [120]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	10- 9 13/16 [3297]	505 [229]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	FLG	10- 9 13/16 [3297]	621 [282]
STD ENDS	2P / 3P	NIH / NIH	150 or 300	FLG	11- 4 5/8 [3469]	322 [146]
STD ENDS	2P / 3P	NIH / MWB	150 or 300	FLG	11- 9 3/4 [3600]	843 [382]
OPP ENDS	1P / 1P	NIH / NIH	150 or 300	FLG	11- 4 13/16 [3474]	432 [196]
OPP ENDS	1P / 1P	NIH / MWB	150 or 300	FLG	11- 9 3/4 [3600]	787 [357]
OPP ENDS	1P / 1P	MWB / NIH	150 or 300	FLG	11- 9 3/4 [3600]	751 [341]
OPP ENDS	1P / 1P	MWB / MWB	150 or 300	FLG	11- 9 3/4 [3600]	1106 [502]
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	10- 0 7/8 [3071]	0
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	10-10 1/16 [3304]	283 [128]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	10- 9 13/16 [3297]	274 [124]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	10- 9 13/16 [3297]	357 [162]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	10- 9 13/16 [3297]	231 [105]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	10- 9 13/16 [3297]	265 [120]
OPP ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	10- 9 13/16 [3297]	505 [229]
OPP ENDS	2P / 2P	MWB / MWB	150 or 300	FLG	10- 9 13/16 [3297]	621 [282]
OPP ENDS	3P / 1P	NIH / NIH	150 or 300	FLG	11- 4 13/16 [3474]	442 [200]
OPP ENDS	3P / 1P	NIH / MWB	150 or 300	FLG	11- 9 3/4 [3600]	796 [361]
OPP ENDS	3P / 1P	MWB / NIH	150 or 300	FLG	11- 9 3/4 [3600]	783 [355]
OPP ENDS	3P / 1P	MWB / MWB	150 or 300	FLG	11- 9 3/4 [3600]	1138 [516]

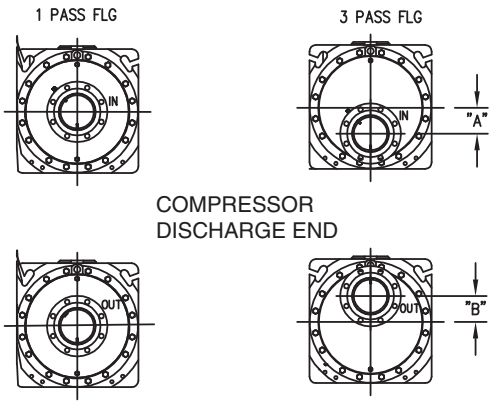
LEGEND

1P	—	1 Pass
2P	—	2 Pass
3P	—	3 Pass
FLG	—	Flange
MLV	—	Minimum Load Valve
MWB	—	Marine Water Box
NIH	—	Nozzle-In-Head
OPP ENDS	—	Opposite Ends
SAE	—	Society of Automotive Engineers
SSV	—	Suction Service Valve
STD ENDS	—	Standard Ends
VIC	—	Victaulic

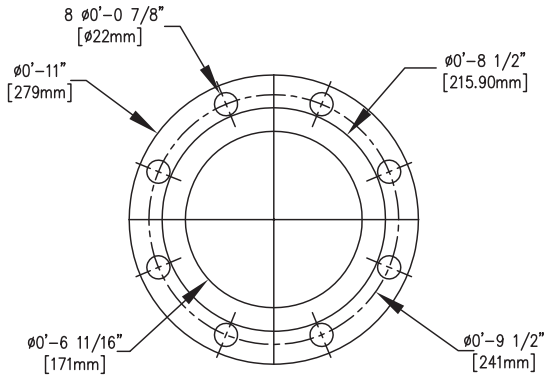
Fig. 3 — 30XW150-200 Unit Dimensions (cont)

NIH EVAPORATOR





WATERBOX FLANGE DETAIL

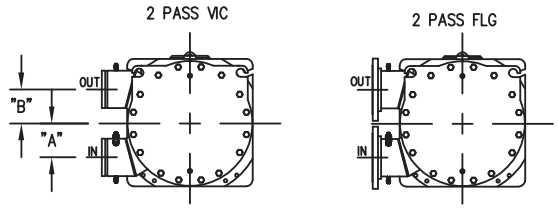


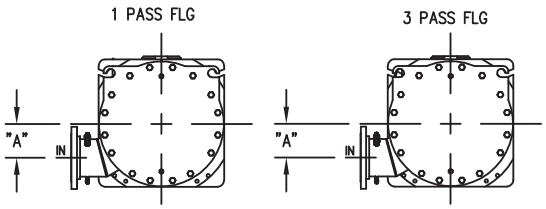
NIH EVAPORATOR

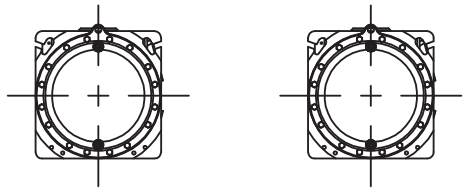
30XW UNIT SIZE	NUMBER OF PASSES	VICTAULIC		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
150-200	2	$5^{9}/_{16}$ (142)	$5^{9}/_{16}$ (142)	6 (152)
	1	—	—	—
	3	—	—	—

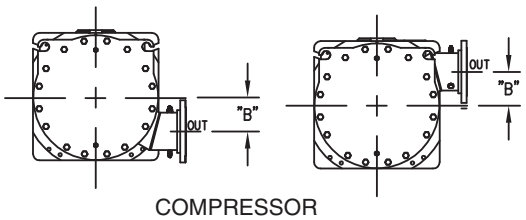
30XW UNIT SIZE	NUMBER OF PASSES	FLANGE		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
150-200	2	$4^{13}/_{16}$ (122)	$4^{13}/_{16}$ (122))	6 (152)
	1	0 (0)	0 (0)	6 (152)
	3	$4^{11}/_{16}$ (119)	$4^{11}/_{16}$ (119)	6 (152)

MARINE EVAPORATOR









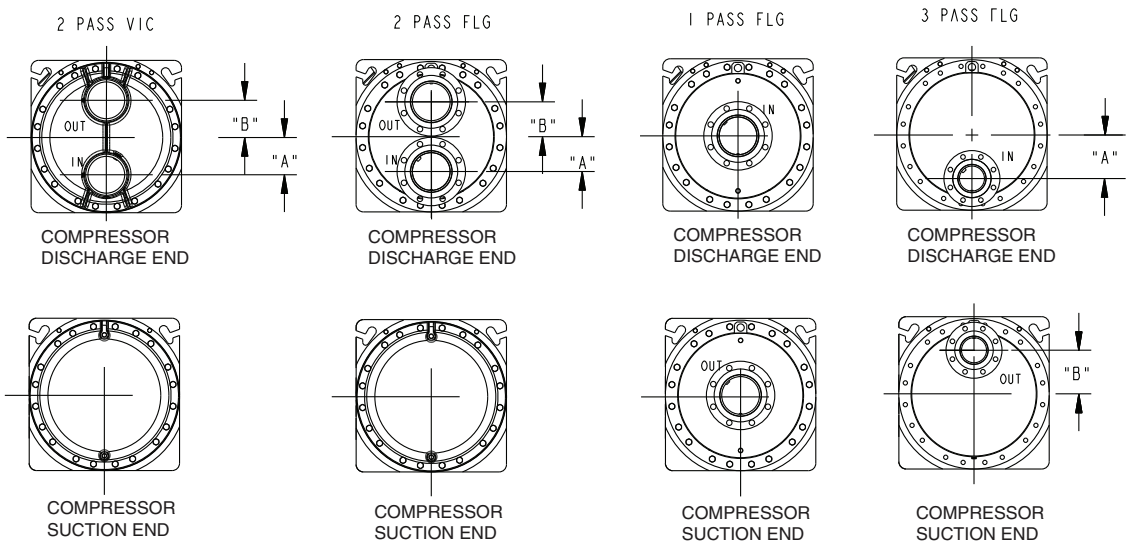
MARINE EVAPORATOR

30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
150-200	2	6 (152)	6 (152)	6 (152)
	1*	6 (152)	6 (152)	6 (152)
	3*	6 (152)	6 (152)	6 (152)

* Flange only. Not available on Victaulic.

Fig. 3 — 30XW150-200 Unit Dimensions (cont)

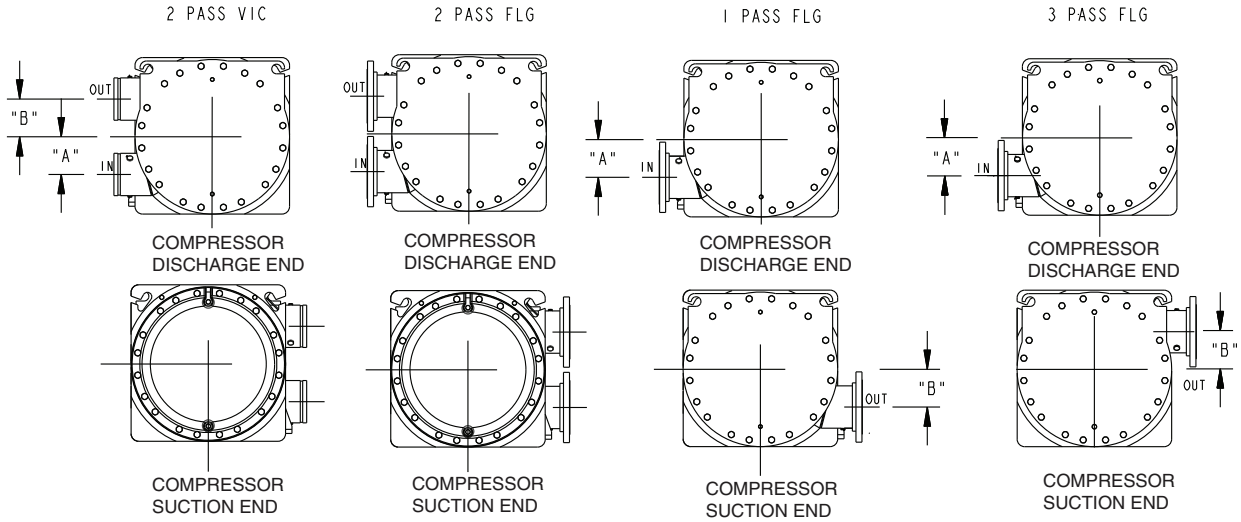
NIH CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
150-200	2	6 (152)	$5^5/_8$ (142)	6 (152)
	1*	0 (0)	0 (0)	6 (152)
	3*	7 (178)	7 (178)	4 (102)

* Flange only. Not available on Victaulic.

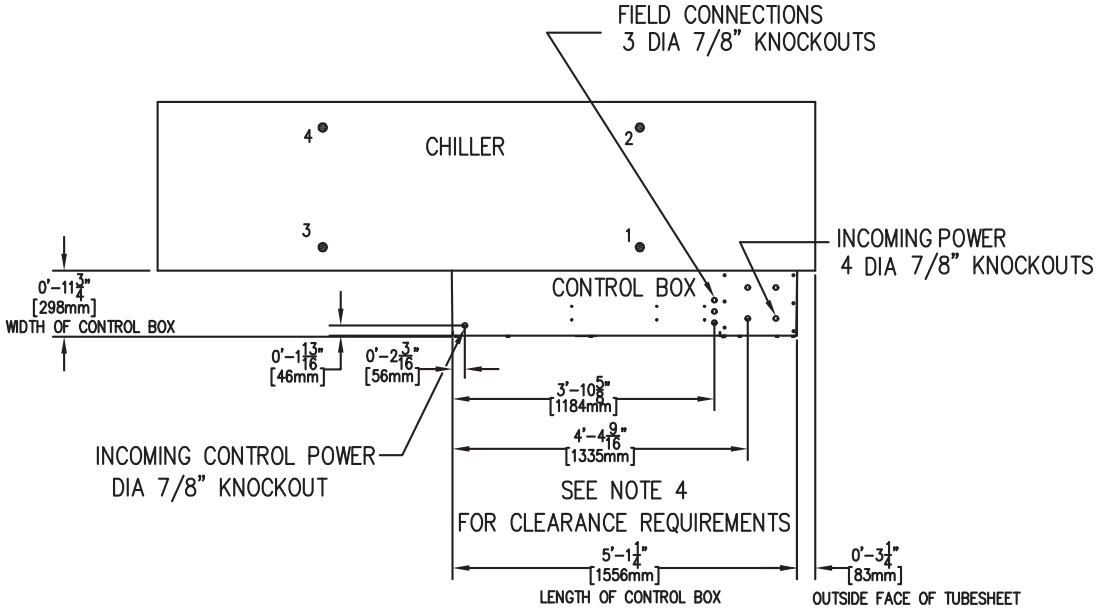
MARINE CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
150-200	2	$5^7/_8$ (149)	$5^7/_8$ (149)	6 (152)
	1*	$5^7/_8$ (149)	$5^7/_8$ (149)	6 (152)
	3*	$5^7/_8$ (149)	$5^7/_8$ (149)	6 (152)

* Flange only. Not available on Victaulic.

Fig. 3 — 30XW150-200 Unit Dimensions (cont)



STANDARD 30XW225-300 UNIT DIMENSIONS

30XW UNIT SIZE	OPERATING WEIGHT		MOUNTING LOCATION WEIGHT							
			1		2		3		4	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
225	9,936	4506	1901	862	2390	1084	2501	1134	3144	1426
250	10,010	4541	1915	869	2408	1092	2520	1143	3168	1437
260	9,956	4516	1905	864	2395	1086	2506	1137	3151	1429
275	10,029	4549	1919	870	2412	1094	2524	1145	3174	1440
300	10,043	4557	1921	872	2416	1096	2528	1147	3178	1442

NOTE: Weights shown for standard chiller (2 pass with NIH, victaulic waterboxes).

30XW225-300 UNIT AND WATERBOX SPECIFICATIONS

A	**Evaporator Heat Exchanger Length — 9' - 8 $^{15}/_{16}$" [2970 mm]**	**C**
B	**Condenser Heat Exchanger Length — 9' - 8 $^{15}/_{16}$" [2970 mm]**	**D**

Overall Length = Larger of A or B + 9'- 8 $^{15}/_{16}$" [2970] + larger of C or D, where:
A = evaporator discharge end water box length B = condenser discharge end water box length
C = evaporator suction end water box length D = condenser suction end water box length

TYPE	WATER BOX ADDITIONAL LENGTH ADDERS				WATER BOX WEIGHT ADDERS			
	EVAP		COND		EVAP		COND	
	ft-in.	mm	ft-in.	mm	lb	kg	lb	kg
Return Cover	0-4 $^{3}/_{8}$	111	0-5 $^{1}/_{4}$	133	Std	Std	Std	Std
NIH 2 Pass Vic	0-7 $^{7}/_{16}$	189	0-8 $^{1}/_{2}$	216	Std	Std	Std	Std
NIH 2 Pass FL	1-1 $^{7}/_{8}$	352	1-1 $^{7}/_{8}$	352	151	68.5	170	77.1
NIH 1 Pass FL	1-1 $^{7}/_{8}$	352	1-1 $^{7}/_{8}$	352	224	101.6	268	121.6
NIH 3 Pass FL	1-1 $^{7}/_{8}$	352	1-1 $^{7}/_{8}$	352	237	107.6	319	144.7
MWB 2 Pass Vic	1-4 $^{5}/_{16}$	414	1-4 $^{5}/_{16}$	414	278	126.1	285	129.3
MWB 2 Pass FL	1-4 $^{5}/_{16}$	414	1-4 $^{5}/_{16}$	414	311	141.1	335	152.0
MWB 1 Pass FL	1-4 $^{5}/_{16}$	414	1-4 $^{5}/_{16}$	414	600	272.2	607	275.3
MWB 3 Pass FL	1-4 $^{5}/_{16}$	414	1-4 $^{5}/_{16}$	414	635	288.0	929	421.4

LEGEND

MWB —Marine Waterbox
NIH —Nozzle-In-Head

NOTES:
1. Add the additional weight to the standard unit operating weight to find the total weight of the unit.
2. ◔ Denotes center of gravity.
3. Dimensions shown in ft-in. [mm] unless noted.
4. The recommended service clearance for the machine is 3 ft [914 mm] at the front and rear, 2 ft [610 mm] at the top, and the tube length at one end and 3 ft [914 mm] at the opposite end. Consult local electrical codes for minimum clearance requirements on control panel side.
5. Victaulic nozzles are standard on all units. A flow switch is factory-installed in evaporator inlet victaulic nozzle.
6. Maximum fluid side pressure of condenser or evaporator is 150 psig [1034 kPa] (standard) or 300 psig [2068 kPa] (optional).
7. Operating weight includes weight of water, refrigerant, and oil.

Fig. 4 — 30XW225-300 Unit Dimensions

FRONT VIEW — DISCHARGE END

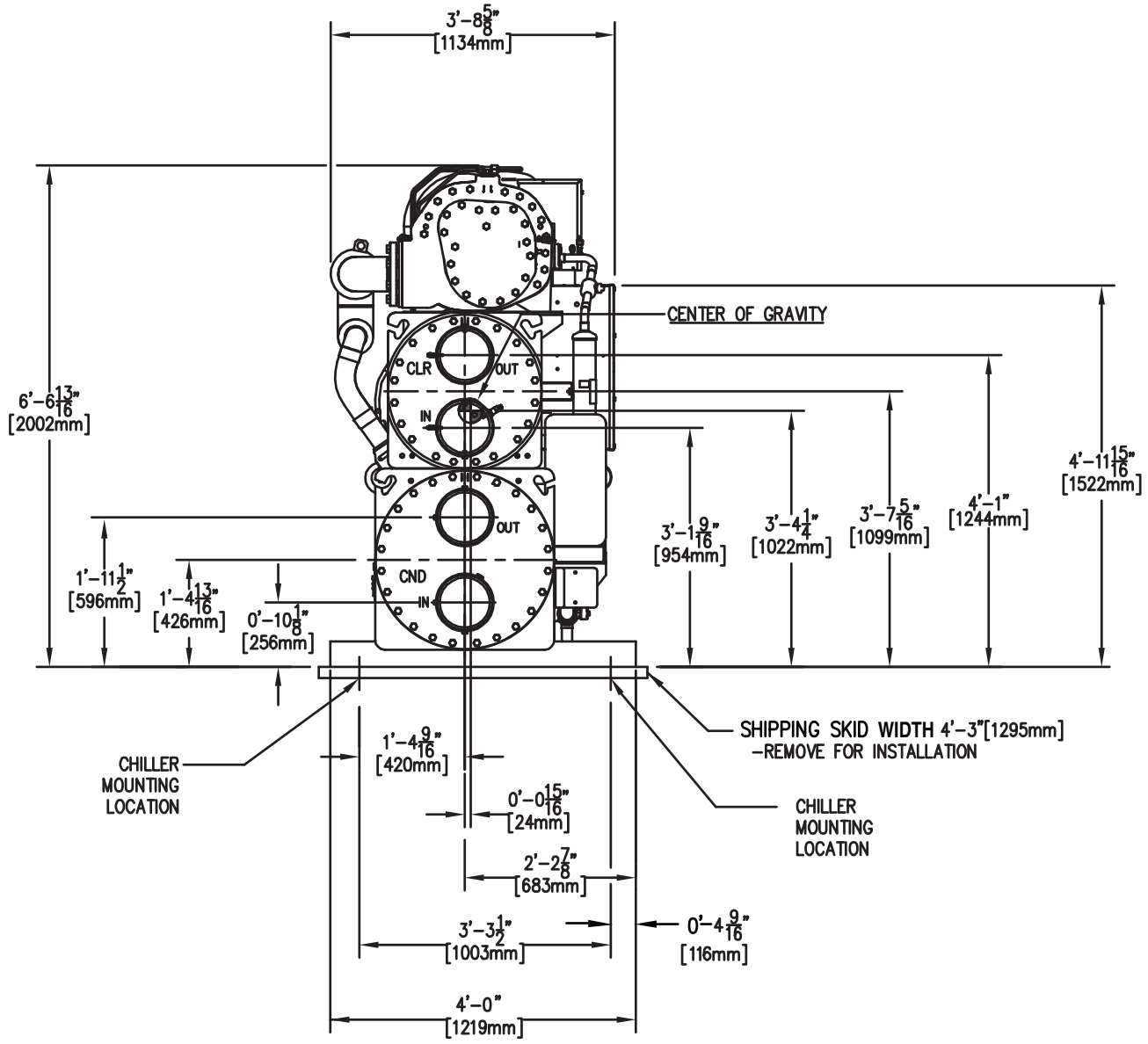
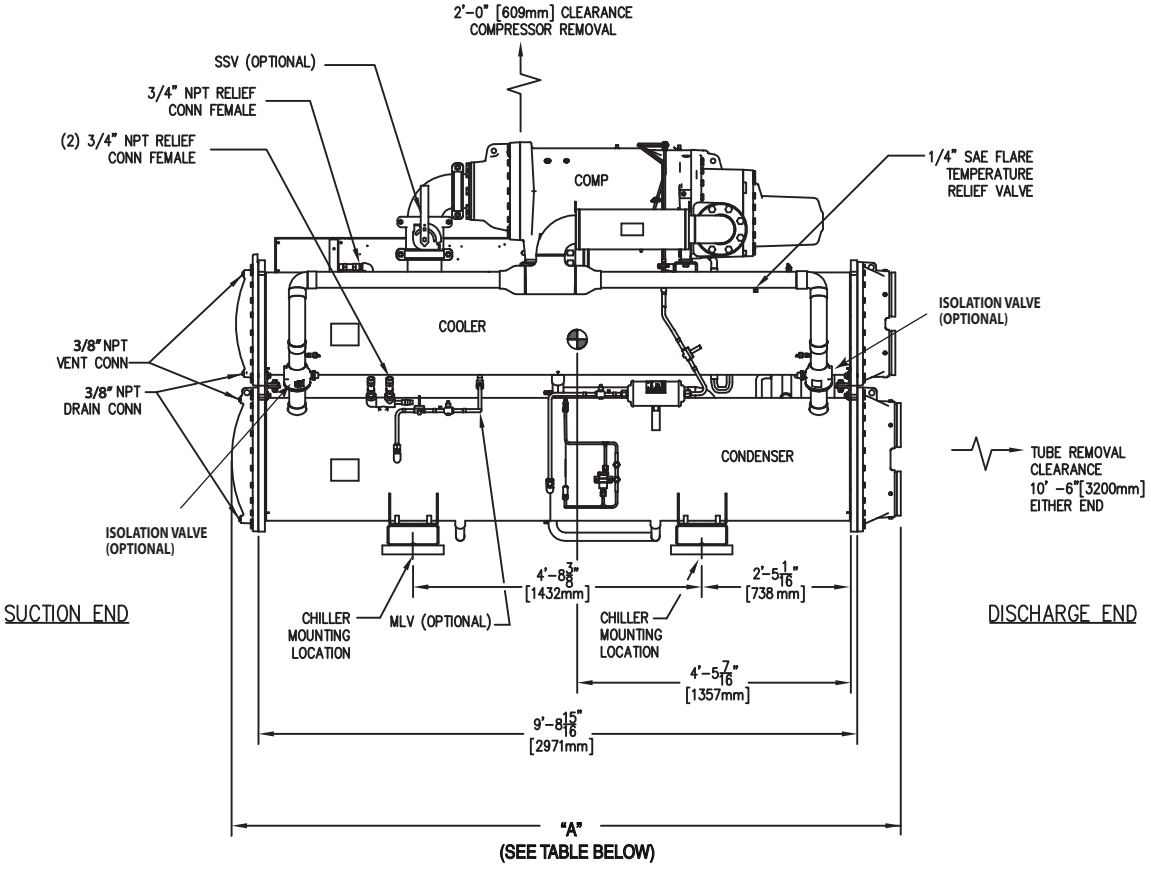


Fig. 4 — 30XW225-300 Unit Dimensions (cont)

SIDE VIEW



CHILLER DIMENSIONS

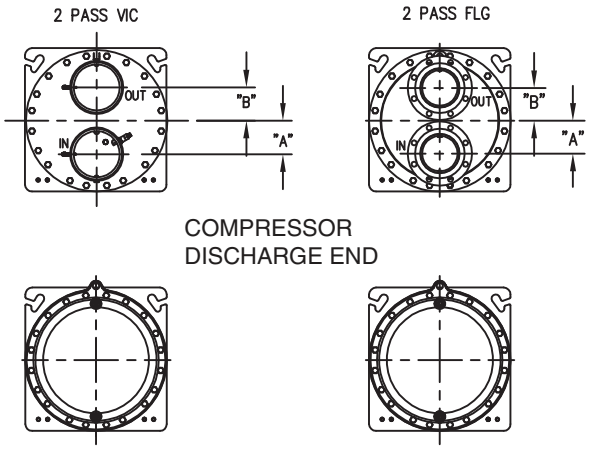
CONNECTION	PASSES COOLER/ COND	WATER BOX COOLER/ COND	PRESSURE PSIG	NOZZLE TYPE	"A" ft-in. [mm]	ADDED WGT lb [kg]
STD ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	10-10 11/16 [3320]	0
STD ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	11- 4 5/16 [3463]	320 [145]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	11- 6 9/16 [3519]	285 [129]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	11- 6 9/16 [3519]	335 [152]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	11- 6 9/16 [3519]	278 [126]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	11- 6 9/16 [3519]	311 [141]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	11- 6 9/16 [3519]	563 [255]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	FLG	11- 6 9/16 [3519]	646 [293]
STD ENDS	2P / 3P	NIH / NIH	150 or 300	FLG	12- 0 1/2 [3670]	470 [213]
STD ENDS	2P / 3P	NIH / MWB	150 or 300	FLG	12- 5 5/8 [3800]	1080 [490]
OPP ENDS	1P / 1P	NIH / NIH	150 or 300	FLG	12- 0 11/16 [3676]	492 [223]
OPP ENDS	1P / 1P	NIH / MWB	150 or 300	FLG	12- 5 5/8 [3800]	831 [377]
OPP ENDS	1P / 1P	MWB / NIH	150 or 300	FLG	12- 5 5/8 [3800]	768 [394]
OPP ENDS	1P / 1P	MWB / MWB	150 or 300	FLG	12- 5 5/8 [3800]	1207 [547]
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	10-10 11/16 [3320]	0
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	11- 4 5/16 [3463]	320 [145]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	11- 6 9/16 [3519]	285 [129]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	11- 6 9/16 [3519]	335 [152]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	11- 6 9/16 [3519]	278 [126]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	11- 6 9/16 [3519]	311 [141]
OPP ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	11- 6 9/16 [3519]	563 [255]
OPP ENDS	2P / 2P	MWB / MWB	150 or 300	FLG	11- 6 9/16 [3519]	646 [293]
OPP ENDS	3P / 1P	NIH / NIH	150 or 300	FLG	12- 0 11/16 [3676]	505 [229]
OPP ENDS	3P / 1P	NIH / MWB	150 or 300	FLG	12- 5 5/8 [3800]	844 [383]
OPP ENDS	3P / 1P	MWB / NIH	150 or 300	FLG	12- 5 5/8 [3800]	903 [410]
OPP ENDS	3P / 1P	MWB / MWB	150 or 300	FLG	12- 5 5/8 [3800]	1242 [470]

LEGEND

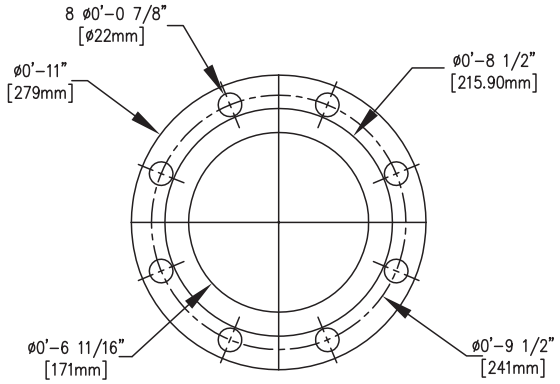
1P — 1 Pass
2P — 2 Pass
3P — 3 Pass
MLV — Minimum Load Valve
NIH — Nozzle-In-Head
OPP ENDS — Opposite Ends
SAE — Society of Automotive Engineers
SSV — Suction Service Valve
STD ENDS — Standard Ends

Fig. 4 — 30XW225-300 Unit Dimensions (cont)

NIH EVAPORATOR



WATERBOX FLANGE DETAIL

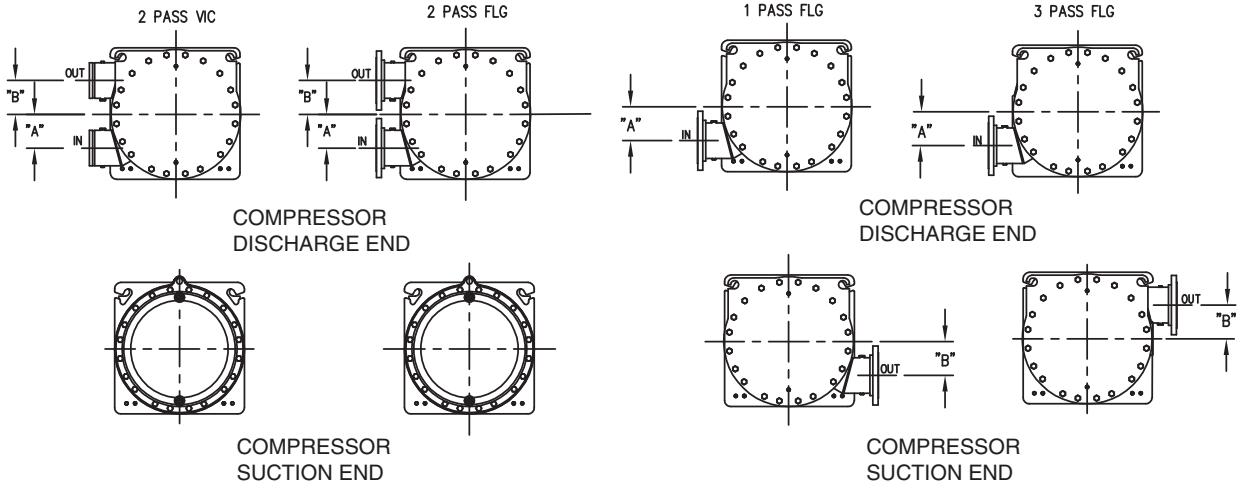


NIH EVAPORATOR

30XW UNIT SIZE	NUMBER OF PASSES	VICTAULIC		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
225-300	2	$5^{11}/_{16}$ (145)	$5^{11}/_{16}$ (145)	8 (203)
	1	—	—	—
	3	—	—	—

30XW UNIT SIZE	NUMBER OF PASSES	FLANGE		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
225-300	2	$5^{5}/_{8}$ (142)	$5^{5}/_{8}$ (142)	6 (152)
	1	0 (0)	0 (0)	6 (152)
	3	$5^{1}/_{2}$ (140)	$5^{1}/_{2}$ (140)	6 (152)

MARINE EVAPORATOR



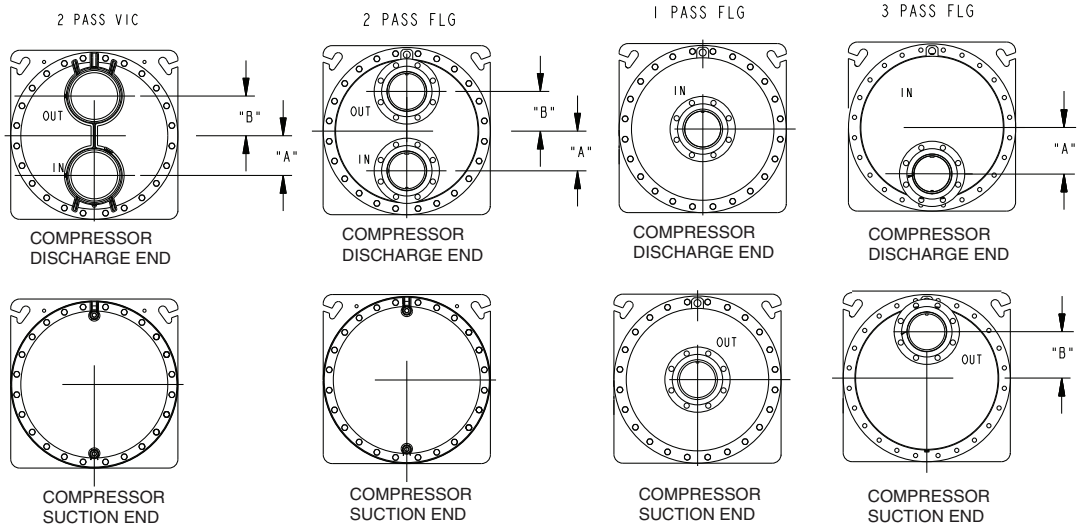
MARINE EVAPORATOR

30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
225-300	2	$6^{5}/_{16}$ (160)	$6^{5}/_{16}$ (160)	6 (152)
	1*	$6^{5}/_{16}$ (160)	$6^{5}/_{16}$ (160)	6 (152)
	3*	$6^{5}/_{16}$ (160)	$6^{5}/_{16}$ (160)	6 (152)

* Flange only. Not available on Victaulic.

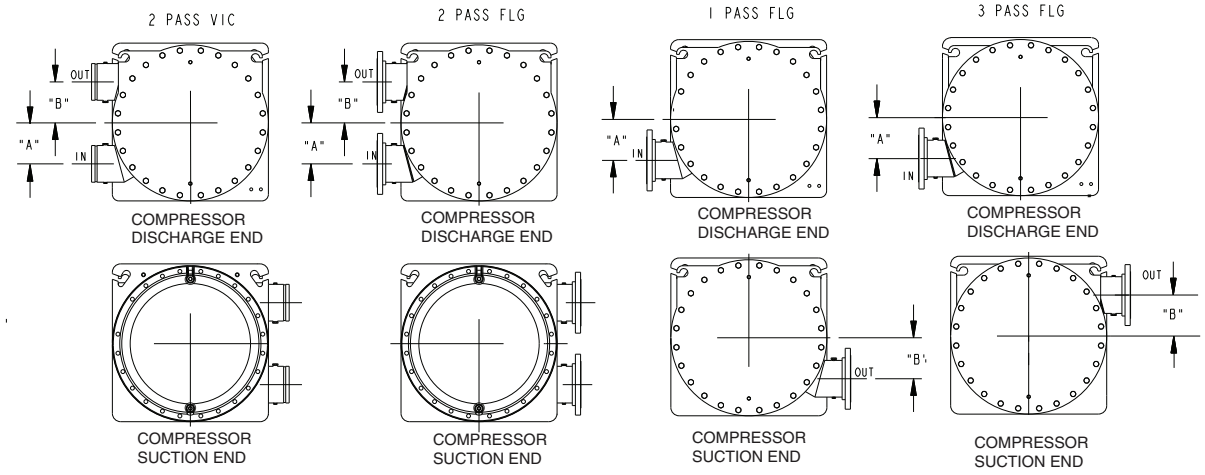
Fig. 4 — 30XW225-300 Unit Dimensions (cont)

NIH CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)	
				Flange	Victaulic
325-400	2	$6^{11}/_{16}$ (170)	$6^{11}/_{16}$ (170)	6 (152)	8 (203)
	1	0 (0)	0 (0)	6 (152)	—
	3	$7^{3}/_{16}$ (198)	$7^{3}/_{16}$ (198)	6 (152)	—

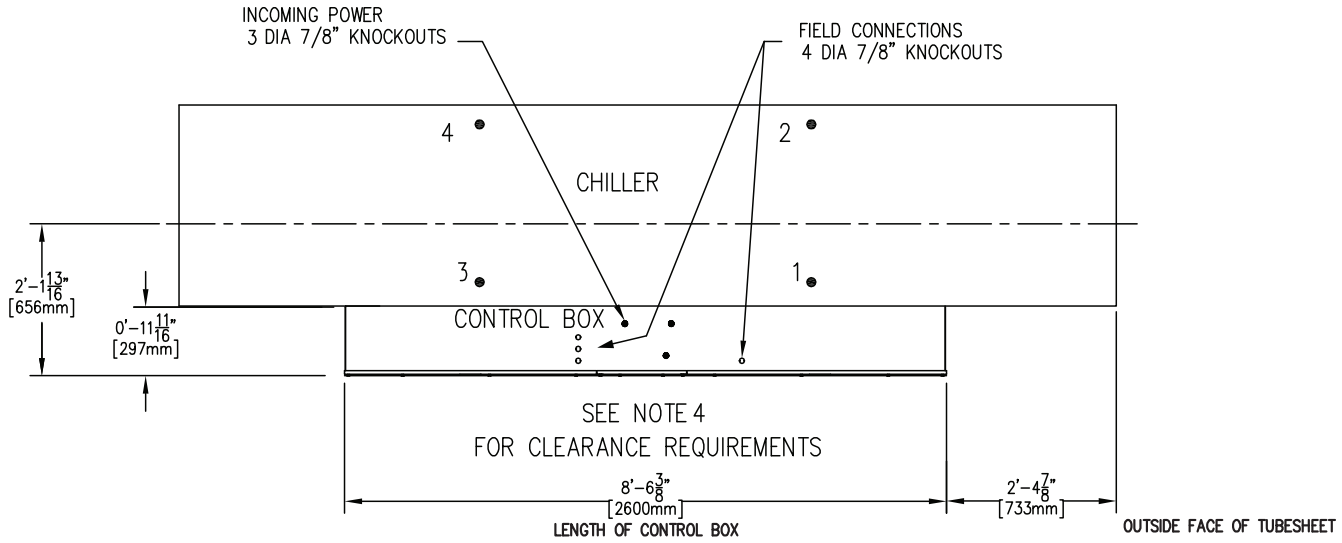
MARINE CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
225-300	2	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)
	1*	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)
	3*	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)

* Flange only. Not available on Victaulic.

Fig. 4 — 30XW225-300 Unit Dimensions (cont)



STANDARD 30XW325-400 UNIT DIMENSIONS

30XW UNIT SIZE	OPERATING WEIGHT		MOUNTING LOCATION WEIGHT							
			1		2		3		4	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
325	14,319	6495	3770	1710	3891	1765	3277	1486	3381	1534
350	14,515	6584	3822	1734	3944	1789	3322	1507	3428	1555
375	14,468	6563	3810	1728	3931	1783	3311	1502	3417	1550
400	14,759	6695	3886	1763	4010	1819	3378	1532	3485	1581

NOTE: Weights shown for standard chiller (2 pass with NIH, victaulic waterboxes).

30XW325-400 UNIT AND WATERBOX SPECIFICATIONS

A	**Evaporator Heat Exchanger Length — 12' - 2" [3708 mm]**	**C**
B	**Condenser Heat Exchanger Length — 12' - 2" [3708 mm]**	**D**

Overall Length = Larger of A or B + 12'- 2" [3708] + larger of C or D, where:
A = evaporator discharge end water box length B = condenser discharge end water box length
C = evaporator suction end water box length D = condenser suction end water box length

TYPE	WATER BOX ADDITIONAL LENGTH ADDERS				WATER BOX WEIGHT ADDERS			
	EVAP		COND		EVAP		COND	
	ft-in.	mm	ft-in.	mm	lb	kg	lb	kg
Return Cover	0-4 7/8	124	0-5 1/4	133	Std	Std	Std	Std
NIH 2 Pass Vic	0-7 13/16	198	0-8 1/2	216	Std	Std	Std	Std
NIH 2 Pass FL	1-0 5/8	321	1-1 7/8	352	158	71.7	174	78.9
NIH 1 Pass FL	1-0 5/8	321	1-1 7/8	352	241	109.3	268	121.6
NIH 3 Pass FL	1-0 5/8	321	1-1 7/8	352	253	114.8	318	144.2
MWB 2 Pass Vic	1-4 5/16	414	1-4 5/16	414	276	125.2	278	126.1
MWB 2 Pass FL	1-4 5/16	414	1-4 5/16	414	355	161.0	362	164.2
MWB 1 Pass FL	1-4 5/16	414	1-4 5/16	414	611	277.1	651	295.3
MWB 3 Pass FL	1-4 5/16	414	1-4 5/16	414	657	298.0	928	420.9

LEGEND

MWB —Marine Waterbox
NIH —Nozzle-In-Head

NOTES:
1. Add the additional weight to the standard unit operating weight to find the total weight of the unit.
2. ◔ Denotes center of gravity.
3. Dimensions shown in ft-in. [mm] unless noted.
4. The recommended service clearance for the machine is 3 ft [914 mm] at the front and rear, 2 ft [610 mm] at the top and the tube length at one end and 3 ft [914 mm] at the opposite end. Consult local electrical codes for minimum clearance requirements on control panel side.
5. Victaulic nozzles are standard on all units. A flow switch is factory-installed in evaporator inlet victaulic nozzle.
6. Maximum fluid side pressure of condenser or evaporator is 150 psig [1034 kPa] (standard) or 300 psig [2068 kPa] (optional).
7. Operating weight includes weight of water, refrigerant, and oil.

Fig. 5 — 30XW325-400 Unit Dimensions

FRONT VIEW — DISCHARGE END

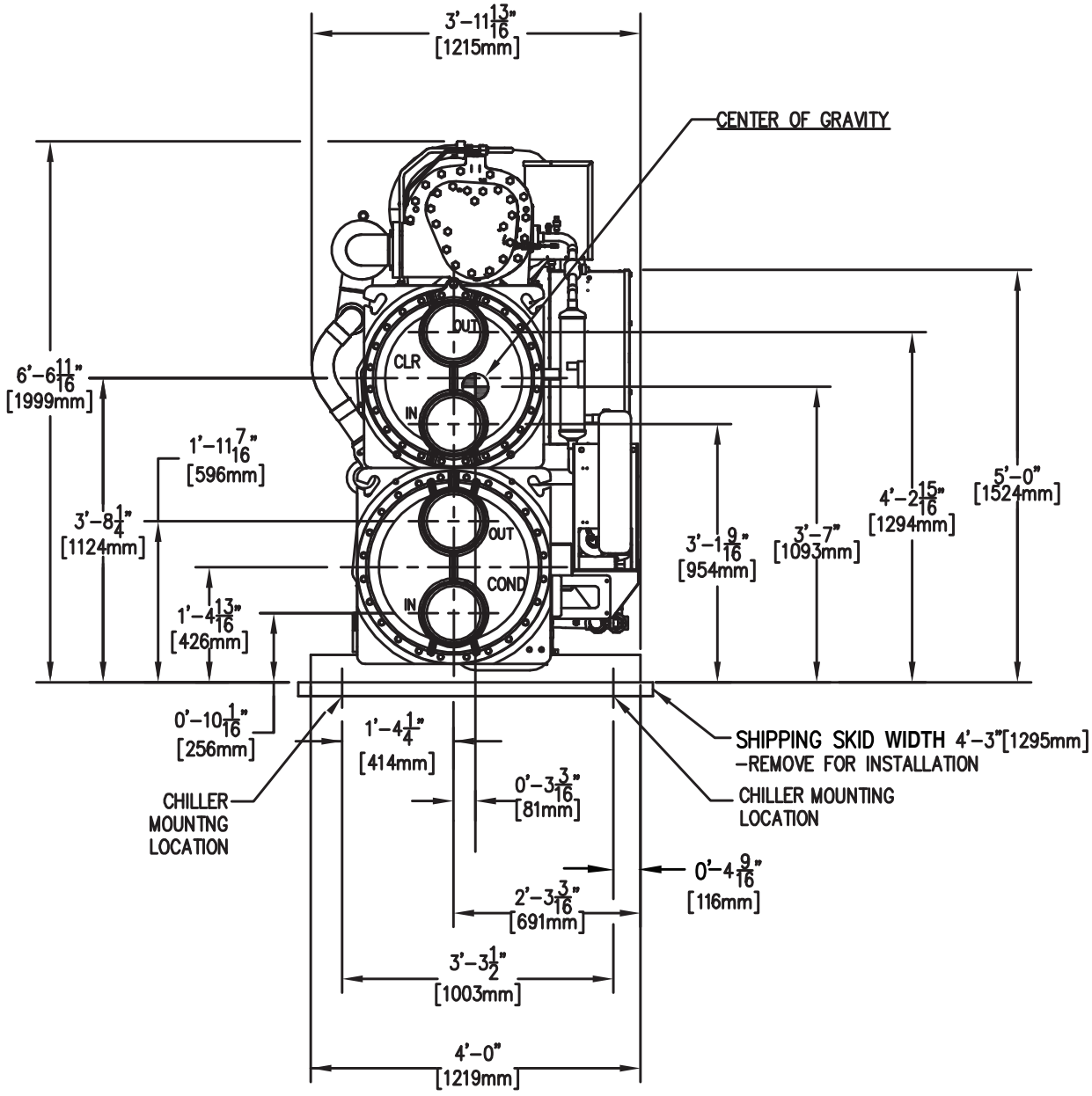
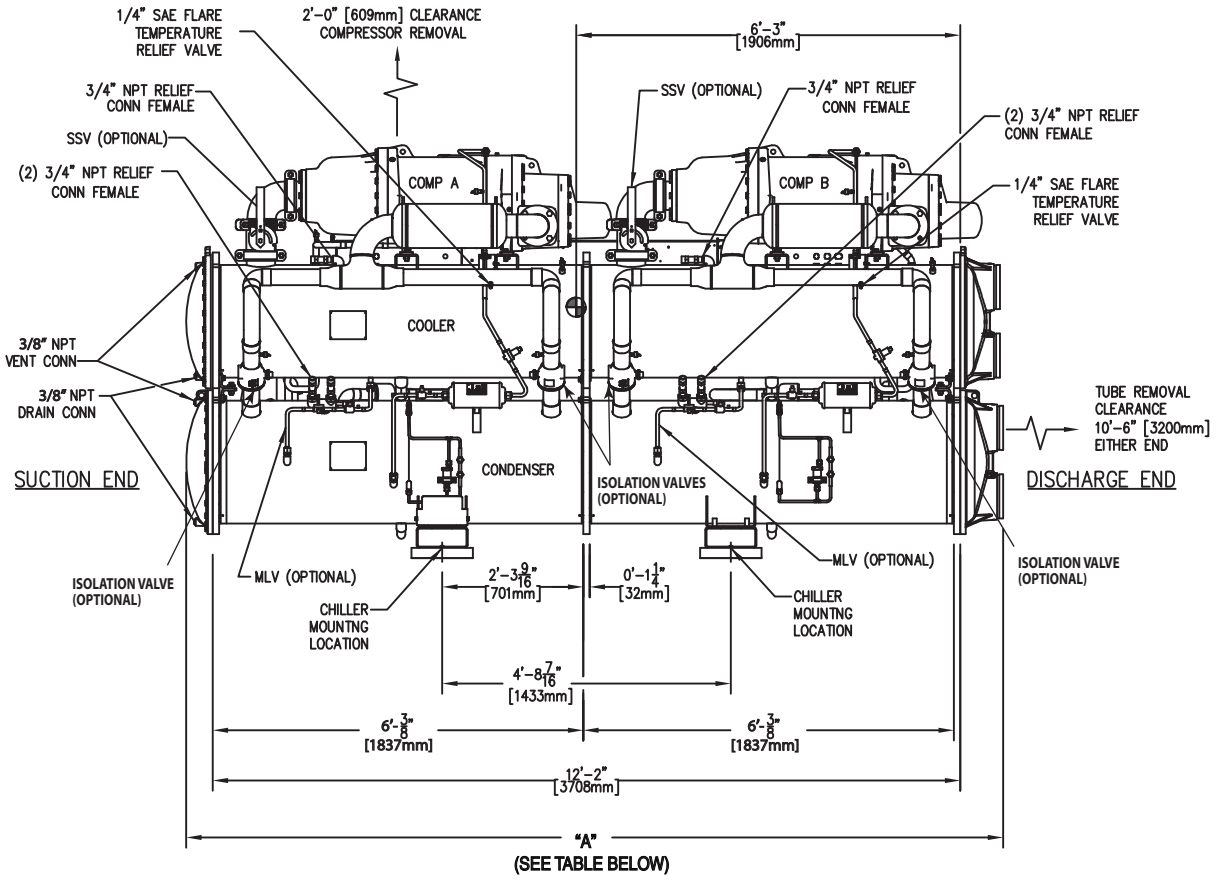


Fig. 5 — 30XW325-400 Unit Dimensions (cont)

SIDE VIEW



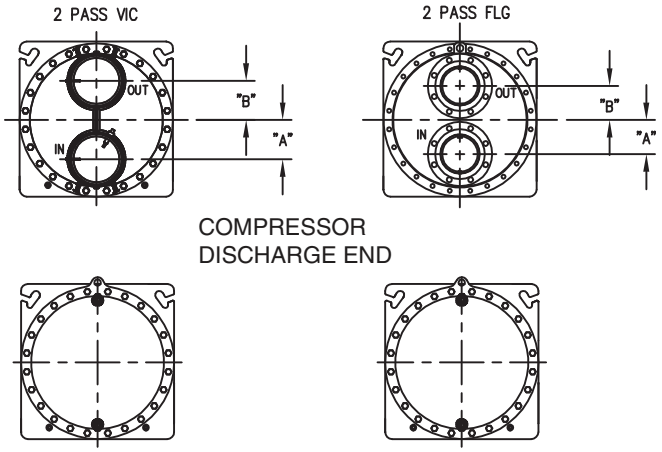
CHILLER DIMENSIONS						
CONNECTION	PASSES COOLER/ COND	WATER BOX COOLER/ COND	PRESSURE PSIG	NOZZLE TYPE	"A" ft-in. [mm]	ADDED WGT lb [kg]
STD ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	13- 3 3/4 [4058]	0
STD ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	13- 9 1/16 [4193]	331 [150]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	13-11 9/16 [4256]	278 [126]
STD ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	13-11 9/16 [4256]	362 [164]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	13-11 9/16 [4256]	276 [125]
STD ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	13-11 9/16 [4256]	355 [161]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	13-11 9/16 [4256]	555 [252]
STD ENDS	2P / 2P	MWB / MWB	150 or 300	FLG	13-11 9/16 [4256]	717 [325]
STD ENDS	2P / 3P	NIH / NIH	150 or 300	FLG	14- 5 9/16 [4406]	476 [216]
STD ENDS	2P / 3P	NIH / MWB	150 or 300	FLG	14-10 9/16 [4535]	1086 [493]
OPP ENDS	1P / 1P	NIH / NIH	150 or 300	FLG	14- 5 5/8 [4410]	509 [231]
OPP ENDS	1P / 1P	NIH / MWB	150 or 300	FLG	14-10 9/16 [4535]	892 [405]
OPP ENDS	1P / 1P	MWB / NIH	150 or 300	FLG	14-10 9/16 [4535]	880 [399]
OPP ENDS	1P / 1P	MWB / MWB	150 or 300	FLG	14-10 9/16 [4535]	1262 [572]
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	VIC	13- 3 3/4 [4058]	0
OPP ENDS	2P / 2P	NIH / NIH	150 or 300	FLG	13- 9 1/16 [4193]	331 [150]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	VIC	13-11 9/16 [4256]	278 [126]
OPP ENDS	2P / 2P	NIH / MWB	150 or 300	FLG	13-11 9/16 [4256]	362 [164]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	VIC	13-11 9/16 [4256]	276 [125]
OPP ENDS	2P / 2P	MWB / NIH	150 or 300	FLG	13-11 9/16 [4256]	355 [161]
OPP ENDS	2P / 2P	MWB / MWB	150 or 300	VIC	13-11 9/16 [4256]	555 [252]
OPP ENDS	2P / 2P	NWB / MWB	150 or 300	FLG	13-11 9/16 [4256]	717 [325]
OPP ENDS	3P / 1P	NIH / NIH	150 or 300	FLG	14- 5 5/8 [4410]	521 [236]
OPP ENDS	3P / 1P	NIH / MWB	150 or 300	FLG	14-10 9/16 [4535]	904 [410]
OPP ENDS	3P / 1P	MWB / NIH	150 or 300	FLG	14-10 9/16 [4535]	925 [420]
OPP ENDS	3P / 1P	MWB / MWB	150 or 300	FLG	14-10 9/16 [4535]	1308 [593]

LEGEND

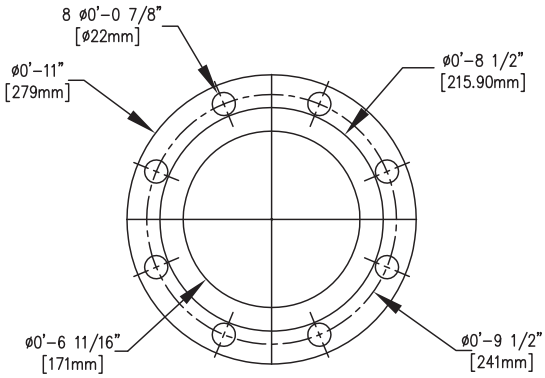
1P — 1 Pass
2P — 2 Pass
3P — 3 Pass
FLG — Flange
MLV — Minimum Load Valve
MWB — Marine Water Box
NIH — Nozzle-In-Head
OPP ENDS — Opposite Ends
SAE — Society of Automotive Engineers
SSV — Suction Service Valve
STD ENDS — Standard Ends
VIC — Victaulic

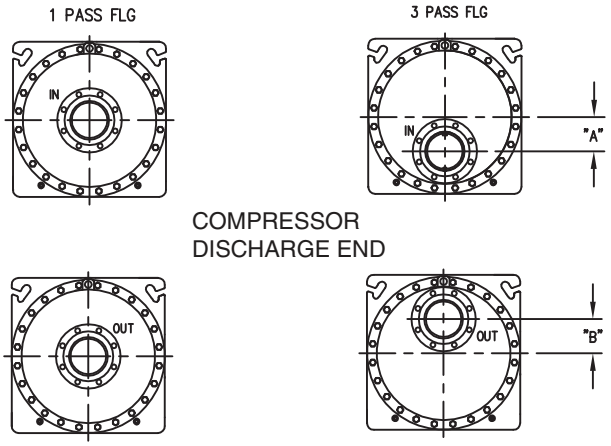
Fig. 5 — 30XW325-400 Unit Dimensions (cont)

NIH EVAPORATOR



WATERBOX FLANGE DETAIL



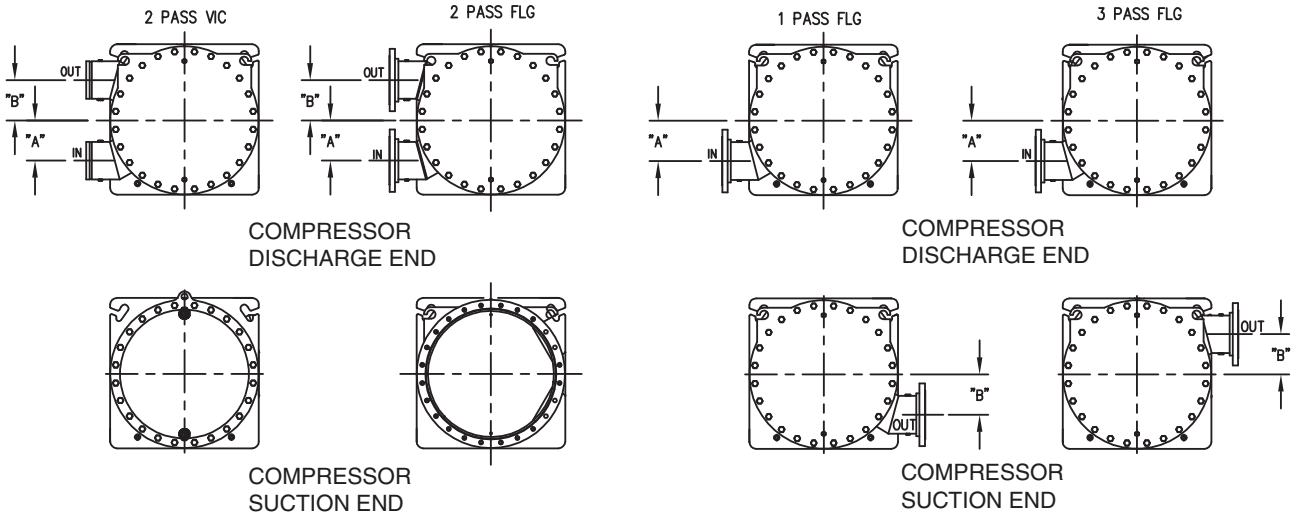


NIH EVAPORATOR

30XW UNIT SIZE	NUMBER OF PASSES	VICTAULIC		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
325-400	2	$6^{11}/_{16}$ (170)	$6^{11}/_{16}$ (170)	8 (203)
	1	—	—	—
	3	—	—	—

30XW UNIT SIZE	NUMBER OF PASSES	FLANGE		
		A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
325-400	2	$5^{13}/_{16}$ (148)	$5^{13}/_{16}$ (148)	6 (152)
	1	0 (0)	0 (0)	6 (152)
	3	$5^{13}/_{16}$ (148)	$5^{13}/_{16}$ (148)	6 (152)

MARINE EVAPORATOR



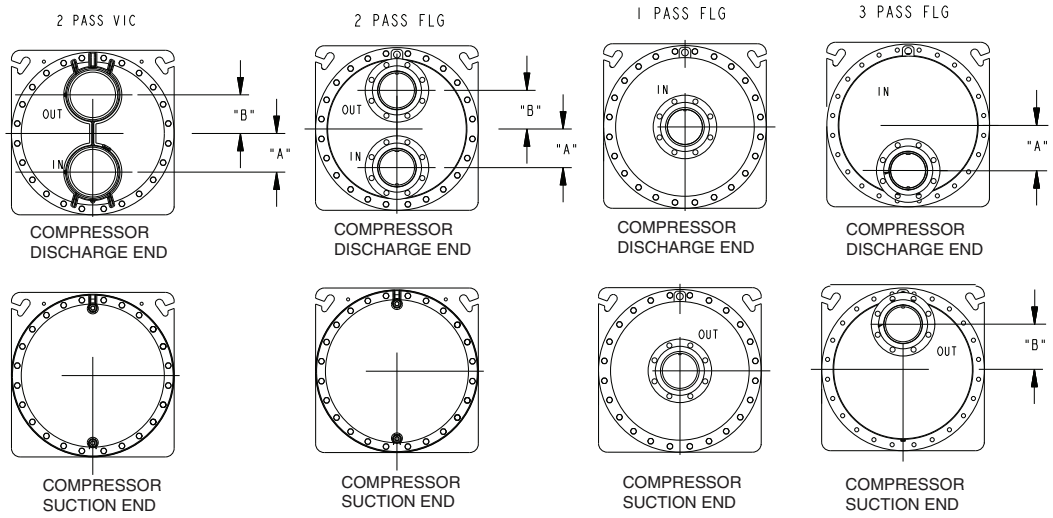
MARINE EVAPORATOR

30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
325-400	2	$7^{1}/_{8}$ (180)	$7^{1}/_{8}$ (180)	6 (152)
	1*	$7^{1}/_{8}$ (180)	$7^{1}/_{8}$ (180)	6 (152)
	3*	$7^{1}/_{8}$ (180)	$7^{1}/_{8}$ (180)	6 (152)

* Flange only. Not available on Victaulic.

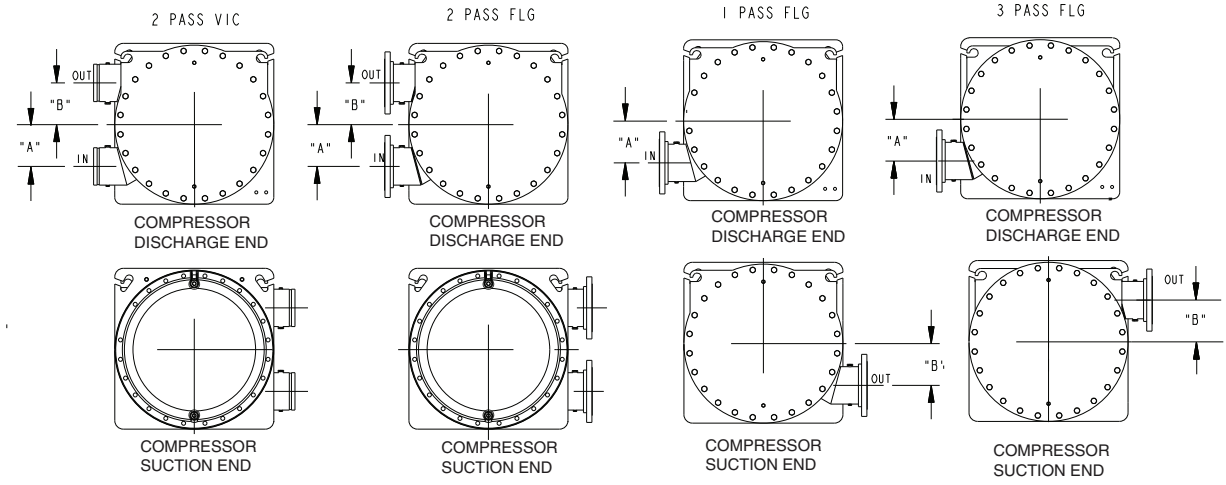
Fig. 5 — 30XW325-400 Unit Dimensions (cont)

NIH CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)	
				Flange	Victaulic
325-400	2	$6^{11}/_{16}$ (170)	$6^{11}/_{16}$ (170)	6 (152)	8 (203)
	1	0 (0)	0 (0)	6 (152)	—
	3	$7^{3}/_{16}$ (198)	$7^{3}/_{16}$ (198)	6 (152)	—

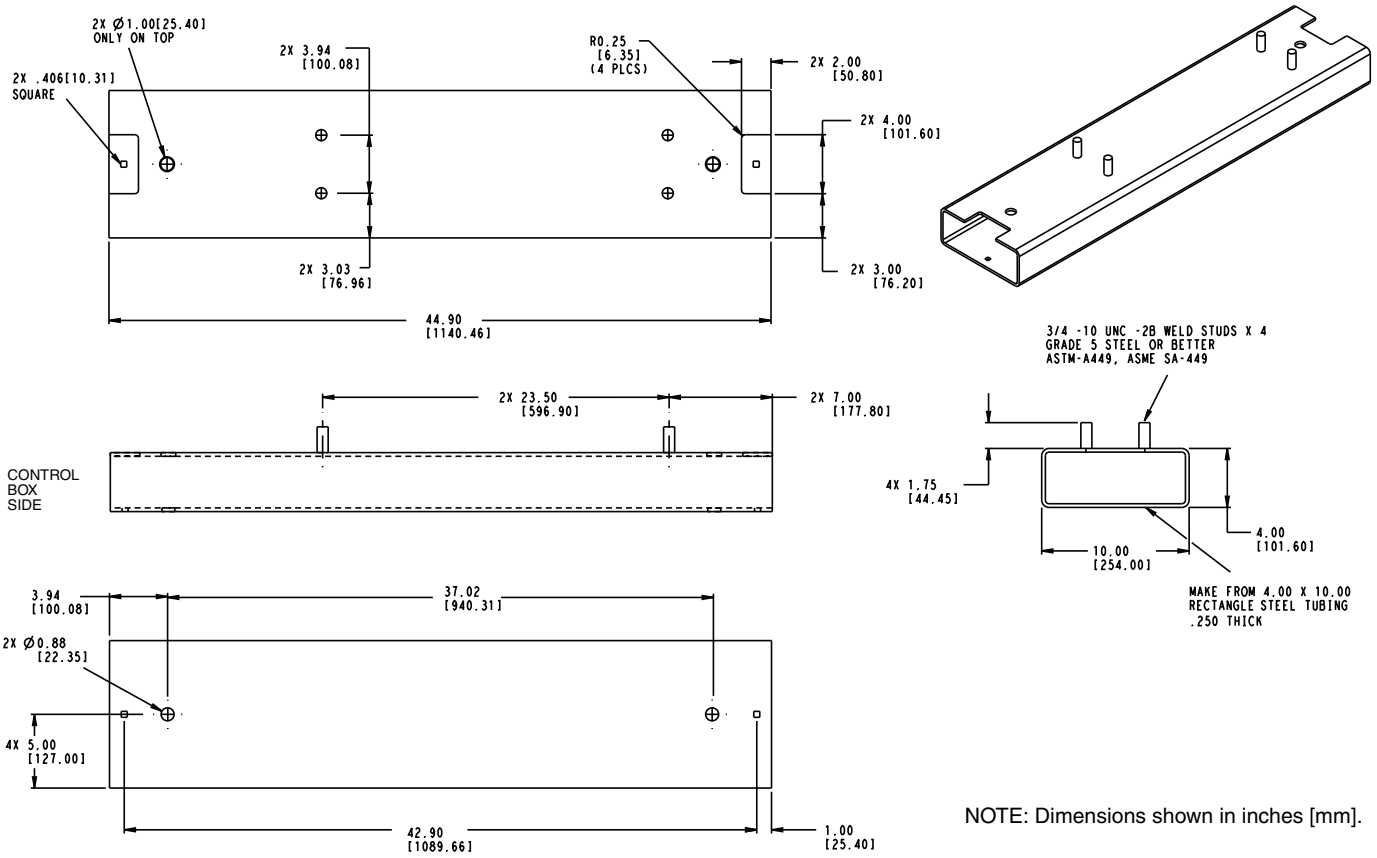
MARINE CONDENSER



30XW UNIT SIZE	NUMBER OF PASSES	A in. (mm)	B in. (mm)	CONNECTION SIZE, in. (mm)
325-400	2	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)
	1*	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)
	3*	$7^{3}/_{8}$ (188)	$7^{3}/_{8}$ (188)	6 (152)

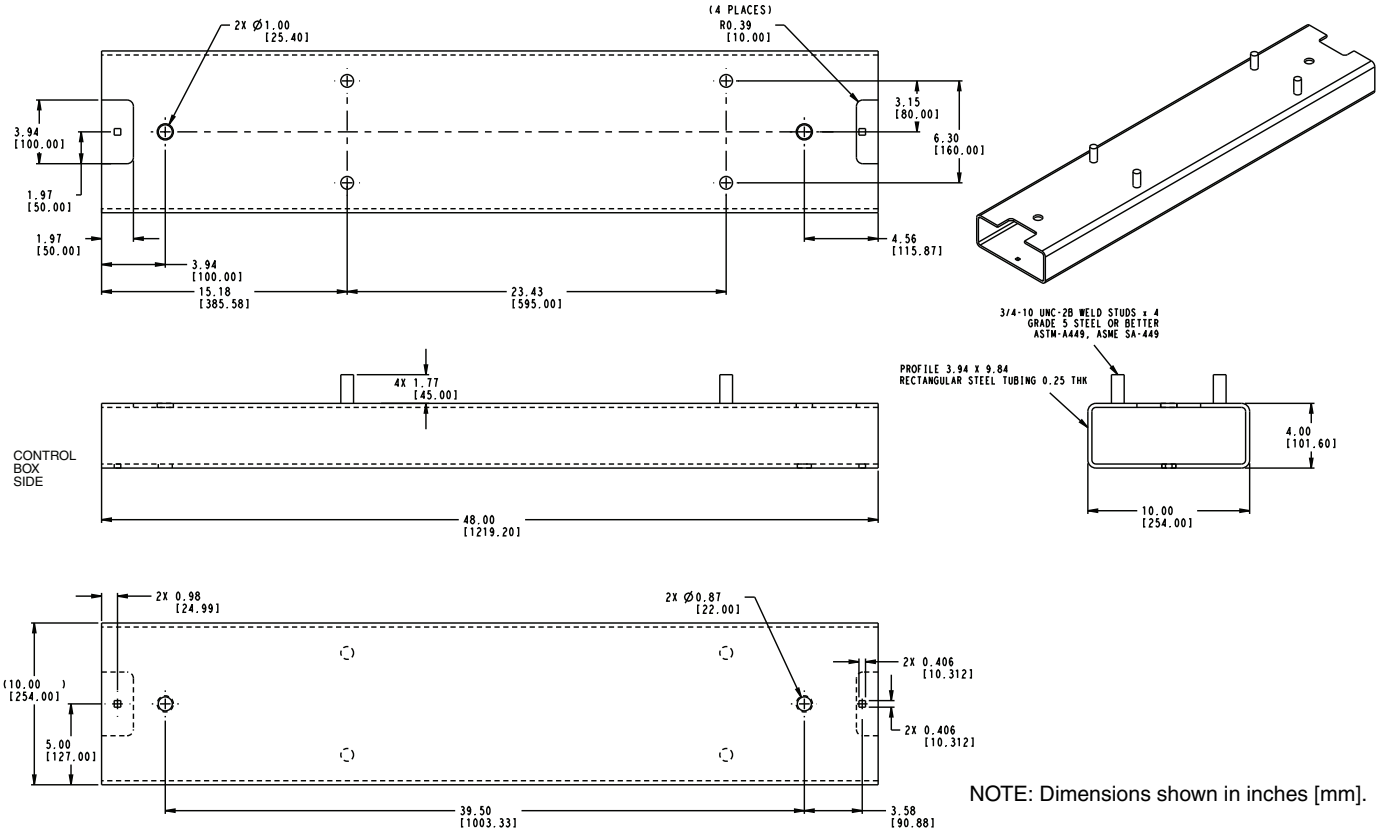
* Flange only. Not available on Victaulic.

Fig. 5 — 30XW325-400 Unit Dimensions (cont)



NOTE: Dimensions shown in inches [mm].

Fig. 6 — 30XW150-200 Unit Mounting Feet Dimensions



NOTE: Dimensions shown in inches [mm].

Fig. 7 — 30XW225-400 Unit Mounting Feet Dimensions

Step 3 — Rig and Place Unit

⚠ CAUTION

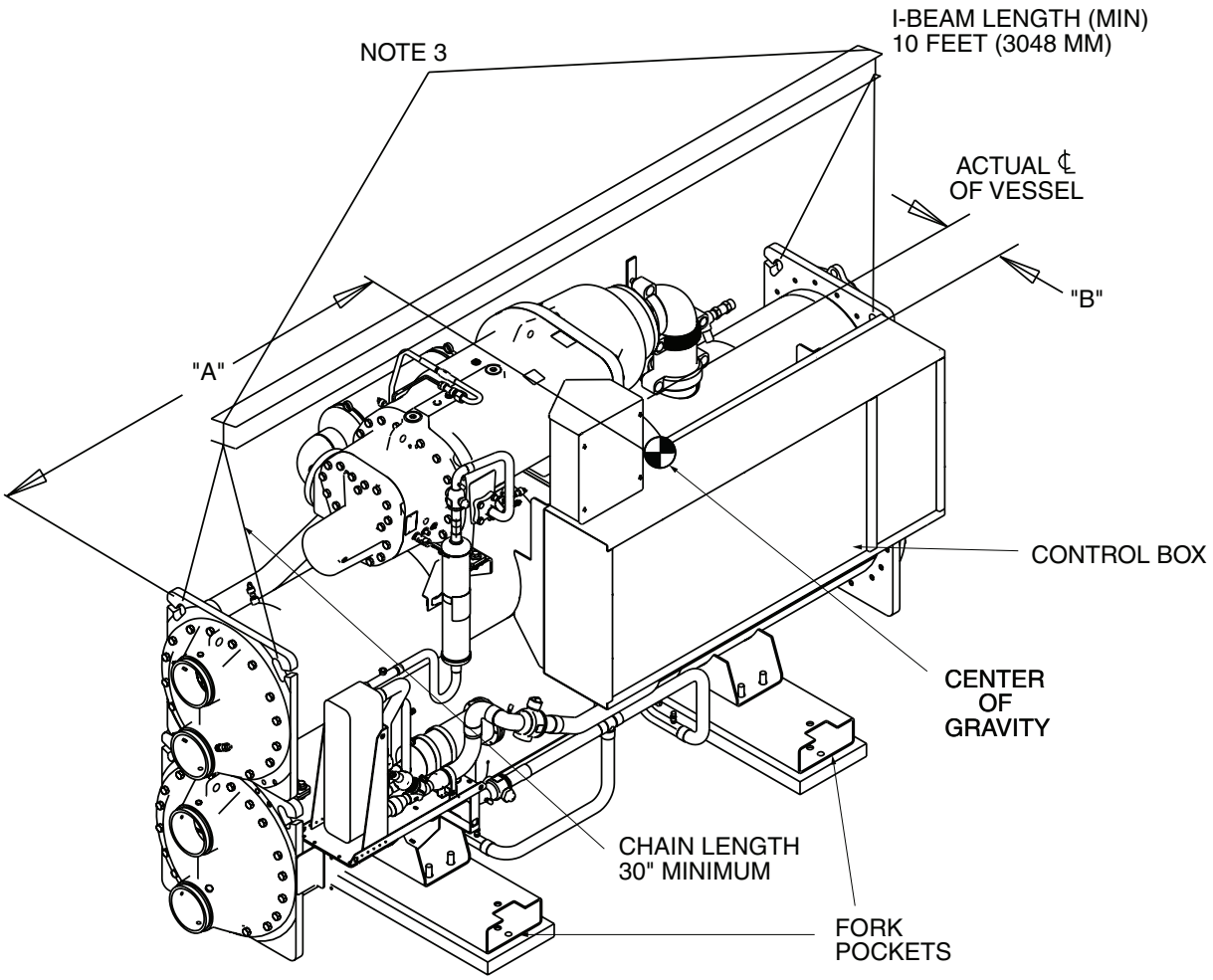
Rig unit from the top heat exchanger only. Rigging from the bottom heat exchanger will cause the unit to be lifted unsafely. Personal injury or damage to the unit may occur.

IMPORTANT: Install unit in area which will not be exposed to ambient temperatures below 50 F (10 C).

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

Do not remove the shipping blocks or packaging until the unit is in its final position. Units can be moved with a fork lift truck, as long as the forks are positioned in the correct and direction using the fork pockets on either side of the unit. Rig from the rigging holes provided in the top heat exchanger. See Fig. 3-9 for rigging and center of gravity information. Lower the unit carefully onto the floor. Do not tilt the unit more than 15 degrees.

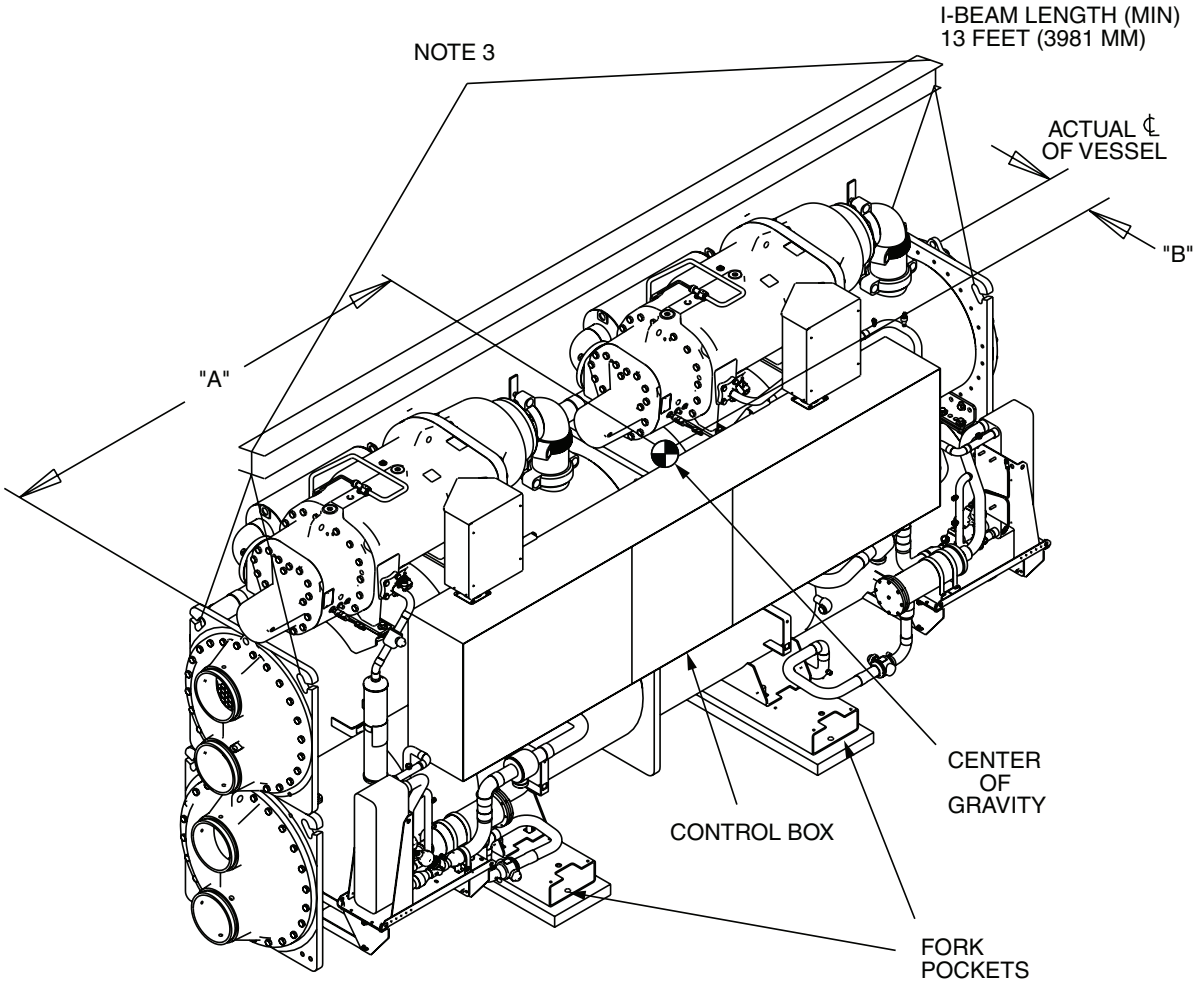
Areas where unit mounting points will be located must be level to within $^{1}/_{16}$ in. per ft (5 mm per m) along the long axis of the unit. Once unit is in place and level, bolt unit to the floor or mounting pad. Use isolation pads under the unit to aid in vibration isolation as required.



30XW UNIT SIZE	A in. (mm)	B in. (mm)
150-200	49.80 (1265)	0.94 (24)
225-300	53.44 (1357)	0.94 (24)

NOTES:
1. $1^{1}/_{2}$ in. (38 mm) holes are provided for lifting unit.
2. Rig with cables as shown.
3. Run rigging cables to a central suspension point.
4. Check bill of lading for shipping weight of unit.
5. For vertical location of center of gravity, see Fig. 3 and 4.

Fig. 8 — 30XW150-300 Unit Rigging



30XW UNIT SIZE	A in. (mm)	B in. (mm)
325-400	75.03 (1906)	3.18 (81)

NOTES:
1. $1^1/_2$ in. (38 mm) holes are provided for lifting unit.
2. Rig with cables as shown.
3. Run rigging cables to a central suspension point.
4. Check bill of lading for shipping weight of unit.
5. For vertical location of center of gravity, see Fig. 5.

Fig. 9 — 30XW325-400 Unit Rigging

Step 4 — Connect Piping

⚠ CAUTION

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

See Fig. 10-12 for typical piping diagram and applications.

EVAPORATOR FLUID, CONDENSER FLUID, VENT, AND DRAIN PIPING — Plan the piping arrangement in accordance with good piping practices. Use flexible connections on evaporator and condenser piping to reduce vibration transmission. Offset the piping to permit removal of the evaporator head for maintenance. Install pipe hangers where needed. Make sure no weight or stress is placed on the water nozzle.

A screen strainer with a minimum of 20 mesh must be installed ahead of the evaporator and condenser inlet (within 10 ft [3.05 m]) to prevent debris from damaging internal tubes.

Field-supplied shutoff and balancing valves should also be installed to facilitate servicing and flow balancing. Locate valves in return and supply fluid lines as close to the chiller as possible.

Provide openings in fluid piping for pressure gages and thermometers (if used). These openings should be 5 to 10 pipe diameters from the unit water nozzles. For thorough mixing and temperature stabilization, wells in the leaving water piping should extend at least 2 in. (50 mm) into the pipe. Water flow direction must be as specified by inlet and outlet connections shown in Fig. 3-5.

NOTE: Outlet (supply) fluid connection is always the upper nozzle of the 2 evaporator connections. Inlet (return) fluid connection is always the lower nozzle.

The evaporator flow switch (CWFS) is factory installed in the inlet nozzle and wired.

Install air vents at all high points in piping to remove air and prevent water hammer. See Fig. 10 and 11. Provide drain connections at all low points to permit complete drainage of the system.

*Control power supply is not required for chillers ordered with the control power transformer option.

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 upon request. The 30XW units should be installed using certified drawings.
2. All wiring must comply with applicable codes.
3. Refer to Carrier System Design Manual for details regarding piping techniques.
4. Piping, wiring, switches, valves, vent gages, strainers, drain, and vibration isolation are all field supplied.
5. Water connections are shown on left side of control box in this figure. Actual connections can be on either side according to chiller configuration ordered.

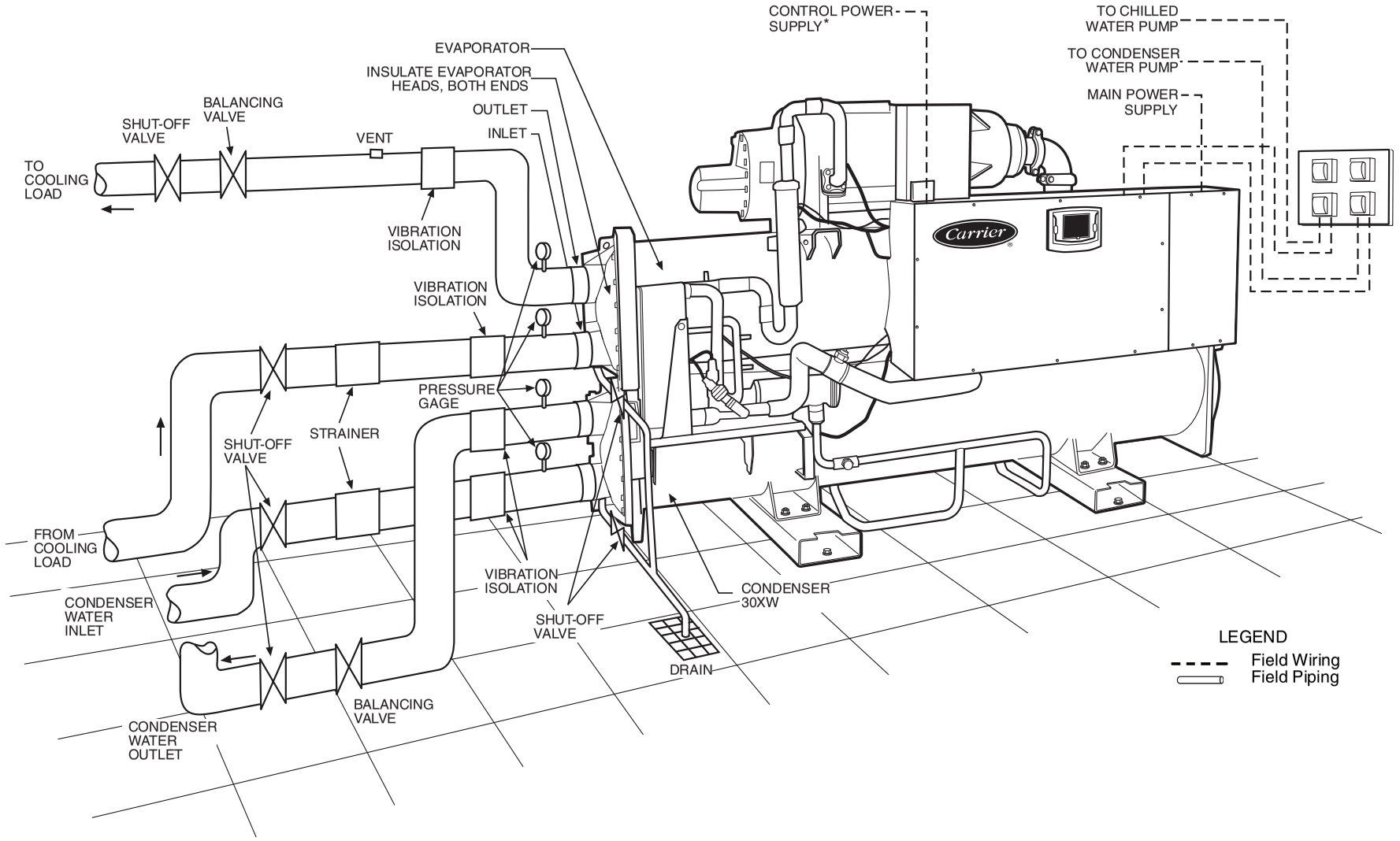


Fig. 10 — Typical Evaporator and Condenser Piping and Wiring — 30XW150-300

*Control power supply is not required for chillers ordered with the control power transformer option.
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 upon request. The 30XW units should be installed using certified drawings.
2. All wiring must comply with applicable codes.
3. Refer to Carrier System Design Manual for details regarding piping techniques.
4. Piping, wiring, switches, valves, vent gages, strainers, drain, and vibration isolation are all field supplied.
5. Water connections are shown on left side of control box in this figure. Actual connections can be on either side according to chiller configuration ordered.

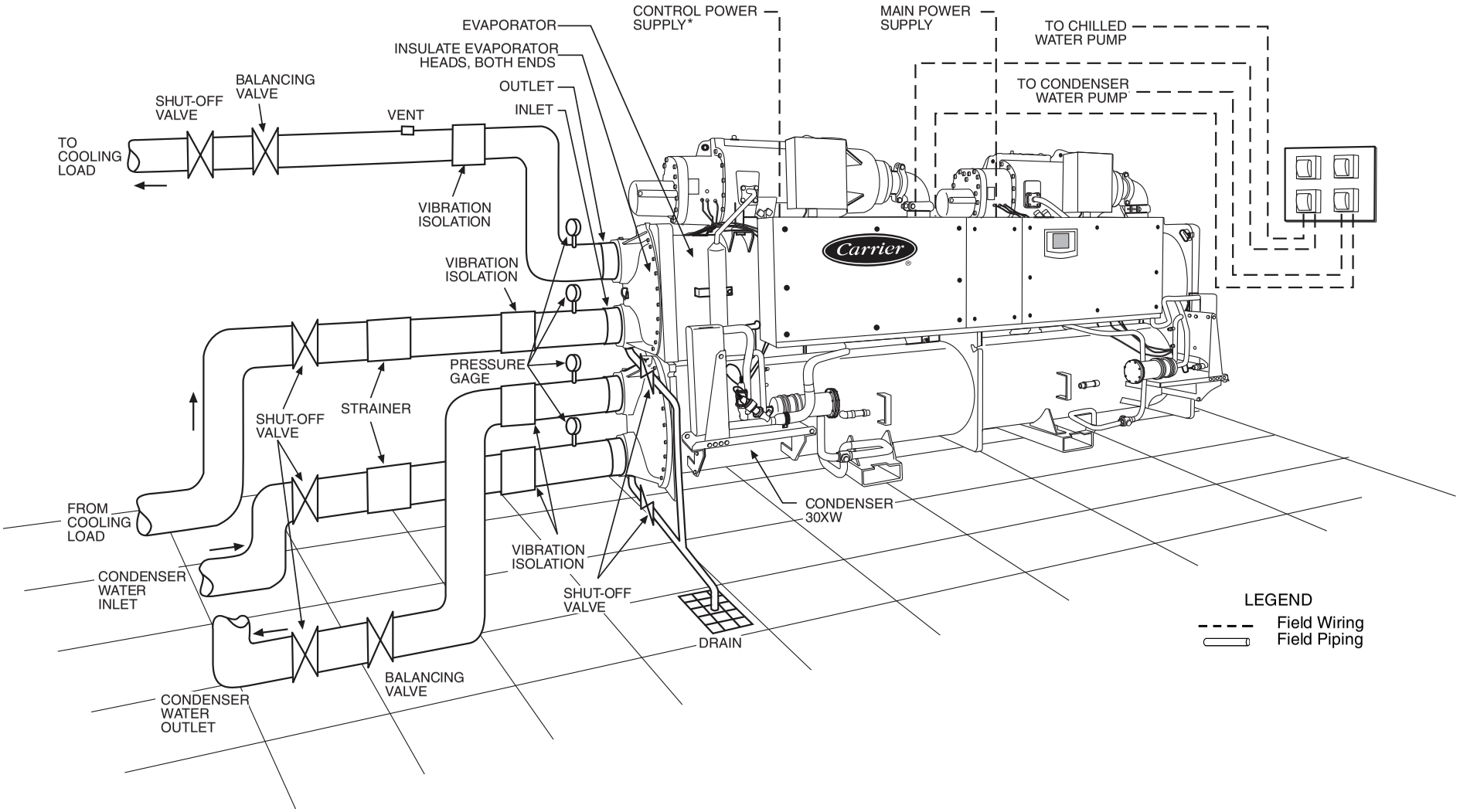
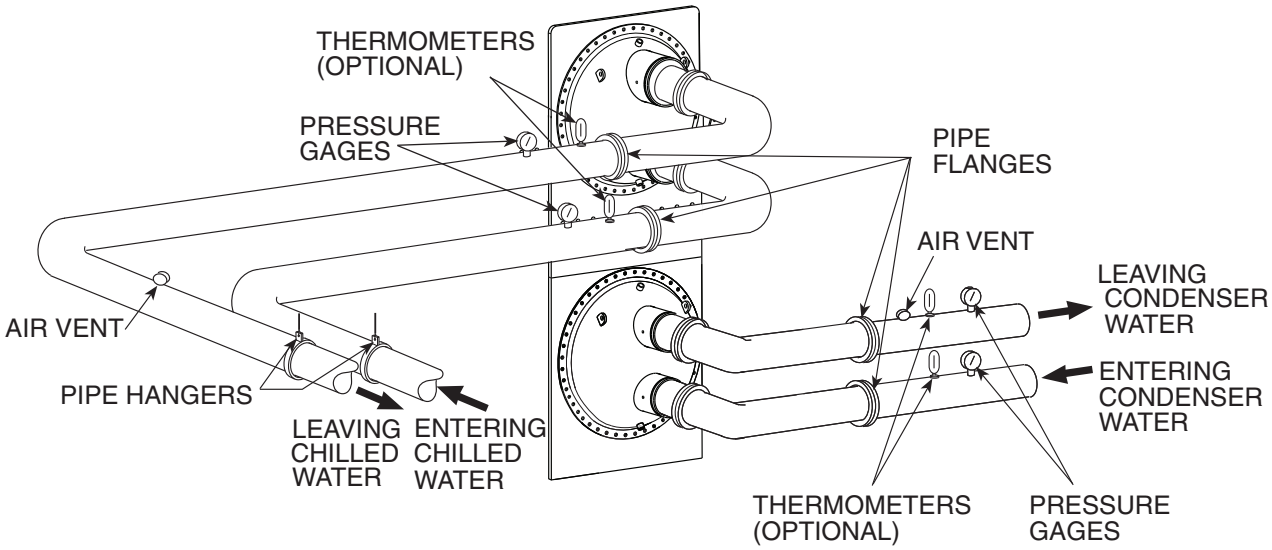


Fig. 11 — Typical Evaporator and Condenser Piping and Wiring — 30XW325-400



NOTES:
1. Chilled water flow switch is factory installed in the evaporator inlet nozzle.
2. Entering and leaving water thermistors are located in the evaporator inlet and outlet nozzles.
3. A $^{3}/_{8}$ in. NPT vent plug is located in the top of the evaporator and condenser outlet nozzle.
4. A $^{3}/_{8}$ in. NPT drain plug is located in the bottom of the evaporator and condenser inlet nozzle.
5. Condenser water flow switch is factory installed in the condenser inlet nozzle on units with heat machine option only.
6. Entering and leaving water thermistors are located in the condenser inlet and outlet nozzles on units with heat machine option only.

Fig. 12 — Typical NIH Piping

CONDENSER FLUID CONTROL VALVE — For installations where entering condensing fluid temperature could be below 65 F (18.3 C), a field-supplied control valve is required. Operation below 65 F (18.3 C) without this valve may cause the unit to shut down on low oil pressure alarms.

NOTE: A valve that can be controlled by a 0 to 10 vdc signal is supported by the *Comfort*Link control system. Figure 13 shows the installation details for the regulating valve.

IMPORTANT: A separate, field-supplied power supply must be used with the condenser fluid control valve. Failure to use a separate power supply may result in damage to the electronic chiller components.

INSTALL PRESSURE RELIEF REFRIGERANT VENT PIPING — The 30XW chiller is factory equipped with relief valves on the evaporator and condenser shells. There is one relief valve per circuit on the evaporator and two relief valves per circuit on the condenser. Make the vent connection to the low side relief valve by installing a male NPT to copper OD braze adapter. Braze a 90-degree short-radius elbow to the adapter. This will allow enough space to make vent connections to the elbow. An additional relief valve is located on the liquid line and the economizer assembly, if equipped, for each circuit. Refer to Tables 1 and 2 for connection size information. If the unit is equipped with an optional isolation service valve, an additional relief valve is located on the discharge line. See Fig. 3-5 for location and connection size information. See Fig. 14 for location of temperature relief valves on the economizer assembly. Vent relief devices to the outdoors in accordance with ANSI/ASHRAE (American National Standards Institute/American Society of Heating, Refrigerating and Air Conditioning Engineers) 15 Safety Code for Mechanical Refrigeration (latest edition) and all other applicable codes.

⚠ DANGER

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

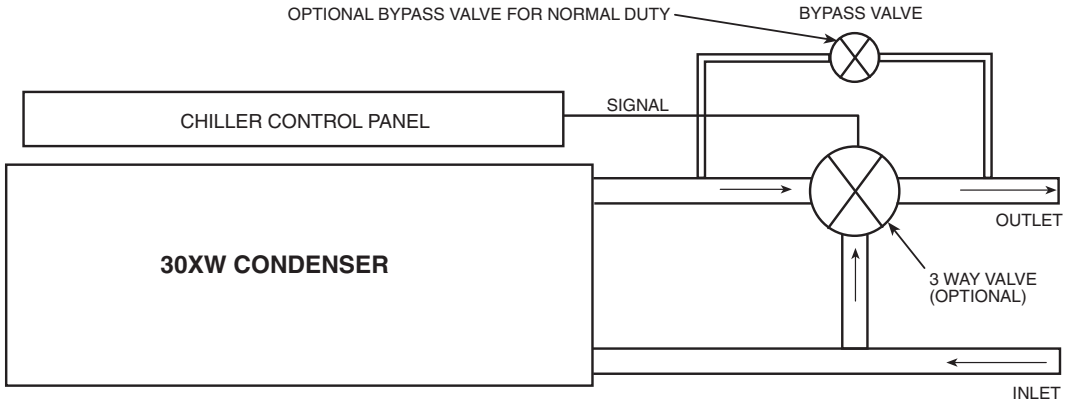
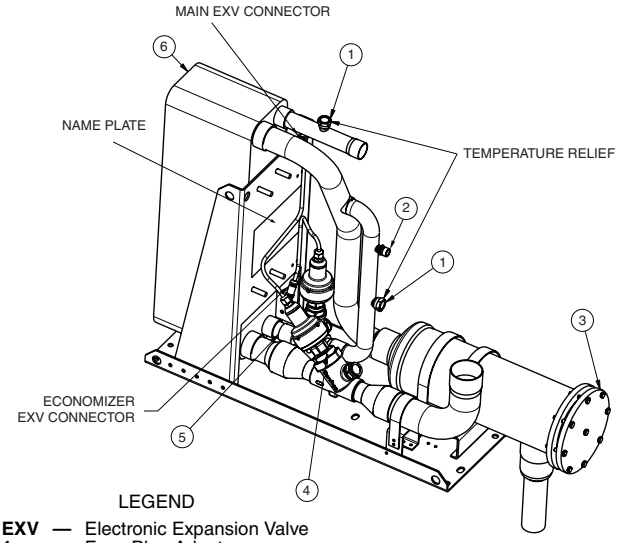


Fig. 13 — Condenser Fluid Control Valve Installation



LEGEND

EXV — Electronic Expansion Valve
1 — Fuse Plug Adapter
2 — High Flow Access Fitting
3 — Filter Drier
4 — Main Expansion Valve
5 — Economizer Expansion Valve
6 — Brazed Plate Heat Exchanger

Fig. 14 — Typical Economizer Assembly

Dual pressure relief valves mounted on three-way valves are located on the condenser to allow testing and repair without transferring the refrigerant charge. Three-way valve shafts should be turned either fully clockwise or fully counterclockwise so only one relief valve is exposed to refrigerant pressure at a time.

The flow area of discharge piping routed from more than one relief valve, or more than one heat exchanger, must be greater than the sum of the outlet areas of all relief valves that are expected to discharge simultaneously. All relief valves within a machinery room that are exposed to refrigerant may discharge simultaneously in the event of a fire. Discharge piping should lead to the point of final release as directly as possible with consideration of pressure drop in all sections downstream of the relief valves.

Provide a pipe plug in the vent piping 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. Piping to relief devices must not apply stress to the device. Adequately support piping. A length of flexible tubing or piping near the relief device is essential on spring-isolated machines.

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.

FILL FLUID LOOP — Fill the fluid loop with water (or suitable corrosion-resistant antifreeze solution) and a corrosion-resistant inhibitor suitable for the water of the area. Consult the local water authority for characteristics of area water and a recommended inhibitor for the evaporator fluid loop.

A drain connection is located at the bottom of the evaporator head. See Fig. 3-5 for connection location. Install shut-off valves to the drain line before filling the system with fluid.

IMPORTANT: Before starting the unit, be sure all of the air has been purged from the system.

WATER TREATMENT — Untreated or improperly treated water may result in corrosion, scaling, erosion, or algae. The services of a qualified water treatment specialist should be obtained to develop and monitor a treatment program.

⚠ CAUTION

Water must be within design flow limits, clean, and treated to ensure proper chiller performance and reduce the potential of tube damage due to corrosion, scaling, erosion, and algae. Carrier assumes no responsibility for chiller damage resulting from untreated or improperly treated water.

NOTE: Do not use automobile anti-freeze or any other fluid that is not approved for heat exchanger duty. Only use appropriately inhibited glycols, concentrated to provide adequate protection for the temperature considered.

BRINE UNITS — Special factory modifications to the units are required to allow them to operate at fluid temperatures less than 40 F (4.4 C). Be sure that the fluid has sufficient inhibited ethylene glycol or other suitable corrosion-resistant antifreeze solution to prevent cooler freeze-up. Condenser water flow must be maintained to prevent freeze-up on unit applications where condenser water does not contain antifreeze.

IMPORTANT: On brine applications where leaving cooler water is less than 40 F (4.4 C), a minimum water flow of 0.75 gpm/ton (0.14 L/s per kW) should be maintained through the condenser at all times. In addition to the factory-installed chilled water flow switch, a factory-supplied condenser water flow switch must be installed per the switch manufacturer's instructions. The chiller must control both the chilled water pump and the condenser pump and utilize cooler and condenser pump interlocks. The cooler pump must operate for a minimum of 10 minutes after the chiller has shut down and the condenser pump must operate for 30 minutes after the chiller has shut down. In the event of loss of condenser water flow, the flow of chilled fluid to the evaporator must be stopped or an isolation valve must be closed. Condenser head pressure control valve must be coordinated with condenser flow switch to ensure the minimum valve position does not prevent flow detection. This is necessary to reduce the possibility of condenser freeze-up.

PREPARATION FOR YEAR-ROUND OPERATION — In areas where the piping or unit is exposed to 32 F (0° C) or lower ambient temperatures, freeze-up protection is recommended using inhibited ethylene glycol or other suitable corrosion-resistant antifreeze solution and electric heater tapes (field supplied and installed). Heater tapes should have a rating for area ambient temperatures and be covered with a suitable thickness of closed-cell insulation. Route power for the heater tapes from a separately fused disconnect. Mount the disconnect within sight from the unit per local or NEC codes. Identify disconnect as heater tape power source with warning that power must not be turned off except when servicing unit.

IMPORTANT: Use of electric heat will not prevent freeze up in the event of a power failure.

DUAL CHILLER CONTROL — The *Comfort*Link controller allows 2 chillers (piped in parallel or series) to operate as a single chilled water plant with standard control functions coordinated through the master chiller controller. This standard *Comfort*Link feature requires a communication link between the 2 chillers.

There are several advantages to this type of control:

- redundancy (multiple circuits)
- better low load control, (lower tonnage capability)
- lower rigging lift weights (2 machines rather than one large machine)
- chiller lead-lag operation (evens the wear between the two machines)

Parallel Dual Chiller Operation (See Fig. 15) — Parallel chiller operation is the recommended option for dual chiller control. In this case, each chiller must control its own dedicated pump or isolation valve. Balancing valves are recommended to ensure proper flow in each chiller. Two field-supplied and installed dual chiller leaving water temperature sensors are required, one for each chiller for this function to operate properly.

Consider adding additional shutoff valves to isolate each chiller to allow for service on a machine, and still allow for partial capacity from the other chiller.

Series Dual Chiller Operation (See Fig. 16) — Series chiller operation is an alternate control method supported by the *Comfort*Link control system. Certain applications might require that the two chillers be connected in series. For nominal 10º F (5.6º C) evaporator ranges, use the 1-pass evaporator arrangements to reduce the fluid-side pressure drop. Use the 2-pass arrangement for low flow, high evaporator temperature rise applications. See Table 3.

Consider adding additional piping and isolation valves to isolate each chiller to allow for service on a machine, and still allow for partial capacity from the other chiller.

Dual Chiller Leaving Water Sensor — If the dual chiller algorithm is used, and the machines are installed in parallel, a dual chilled water sensor must be installed for each module. Install the wells in the common leaving water header. See Fig. 15, 17 and 18. DO NOT relocate the chiller's leaving water thermistors. They must remain in place for the unit to operate properly.

The thermistor well is a $^1/_4$ in. NPT fitting for securing the well in the piping. The piping must be drilled and tapped for the well. Select a location that will allow for removal of the thermistor without any restrictions.

Once the well is inserted, install the thermistors. Insert the thermistor into the well until the O-ring reaches the well body. Use the nut on the thermistor to secure the thermistor in place. Once the thermistor is in place, it is recommended that a thermistor wire loop be made and secured with a wire tie to the chilled water pipe. See Fig. 18.

The series dual chiller application is shown in Fig. 16. Additional sensors are not required for series dual chiller applications. For dual chiller control a CCN bus must be connected between the two chillers. See the Carrier Comfort Network® Communication Bus Wiring section for additional information.

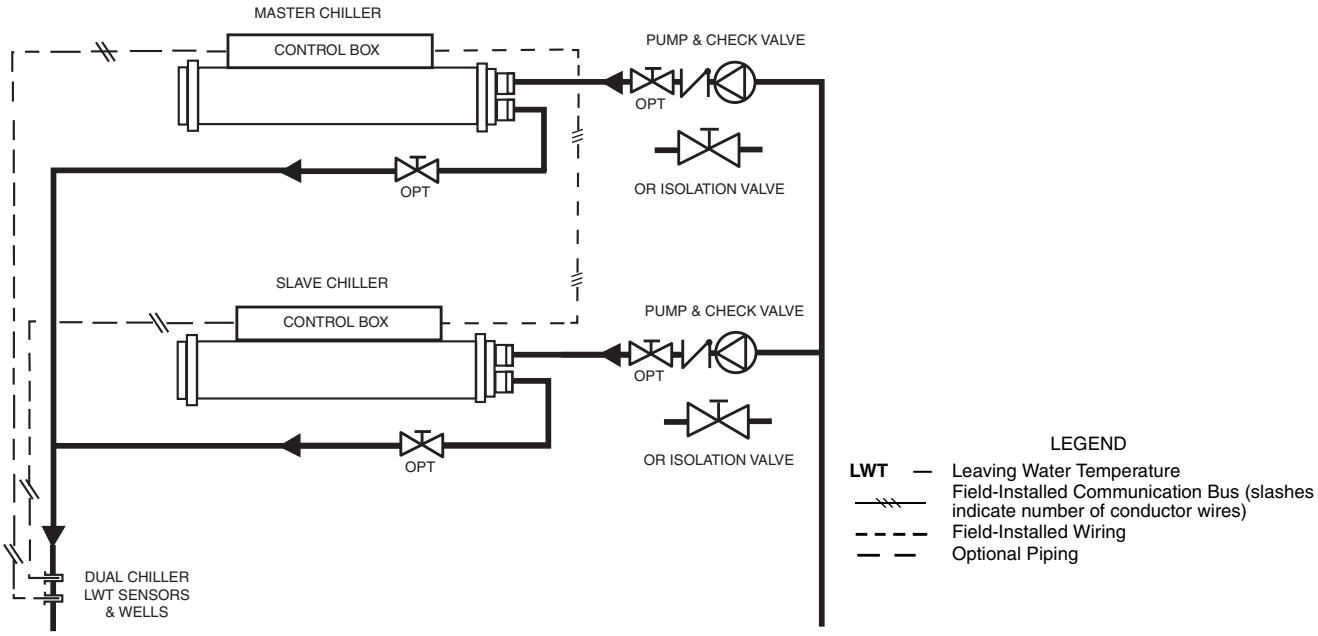


Fig. 15 — Parallel Dual Chiller Operation

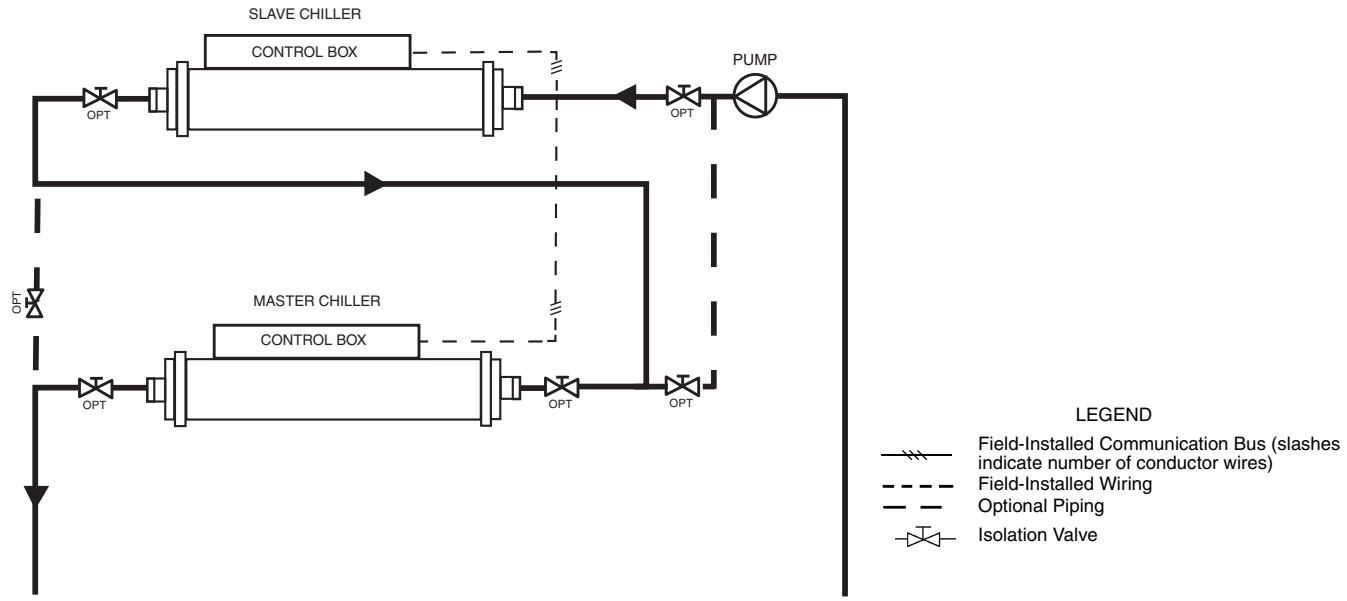


Fig. 16 — Series Dual Chiller Operation

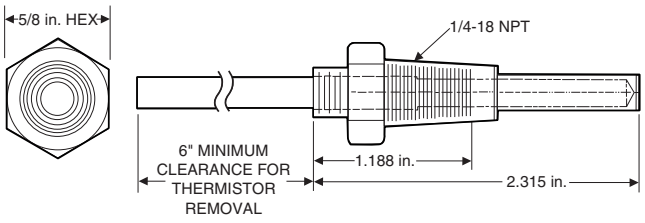


Fig. 17 — Dual Chiller Leaving Water Thermistor Well (Part No. 00PPG000008000A)

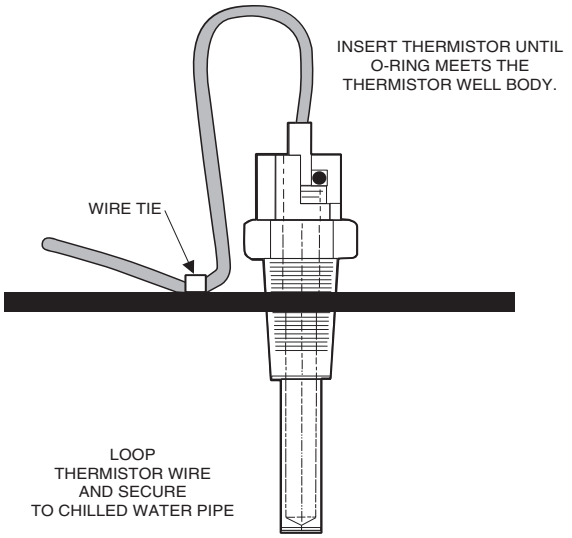


Fig. 18 — Dual Chiller Leaving Water Thermistor (Part No. 30RB660036)

Table 3 — Evaporator and Condenser Flow Rates

30XW UNIT		EVAPORATOR				CONDENSER				NOMINAL			
		Leaving Fluid/Entering Fluid				Leaving Fluid/Entering Fluid				Evaporator		Condenser	
		Minimum		Maximum		Minimum		Maximum*					
		40 F (4.4 C)/ 45 F (7.2 C)		60 F (15.6 C)/ 70 F (21.1 C)		70 F (21.1 C)/ 65 F (18.3 C)		118 F (47.8 C)/ 110 F (43.3 C)					
		Minimum Flow Rate		Maximum Flow Rate		Minimum Flow Rate		Maximum Flow Rate		Nominal Flow Rate		Nominal Flow Rate	
		GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s	GPM	L/s
150	Two pass	200	12.6	720	45.4	240	15.1	960	60.6	384	24.2	480	30.3
	One pass	384	24.2	1520	95.9	480	30.3	1600	100.9	384	24.2	480	30.3
	Three pass	120	7.6	480	30.3	160	10.1	528	33.3	384	24.2	480	30.3
175	Two pass	213	13.4	765	48.3	255	16.1	1021	64.4	408	25.8	510	32.2
	One pass	408	25.8	1616	102.0	510	32.2	1701	107.3	408	25.8	510	32.2
	Three pass	128	8.0	510	32.2	170	10.7	561	35.4	408	25.8	510	32.2
185	Two pass	223	14.1	802	50.6	267	16.9	1069	67.5	428	27.0	535	33.7
	One pass	428	27.0	1693	106.8	535	33.7	1782	112.4	428	27.0	535	33.7
	Three pass	134	8.4	535	33.7	178	11.2	588	37.1	428	27.0	535	33.7
200	Two pass	239	15.1	860	54.3	287	18.1	1147	72.3	459	28.9	573	36.2
	One pass	459	28.9	1815	114.5	573	36.2	1911	120.6	459	28.9	573	36.2
	Three pass	143	9.0	573	36.2	191	12.1	631	39.8	459	28.9	573	36.2
225	Two pass	278	17.5	1001	63.2	334	21.1	1335	84.2	534	33.7	668	42.1
	One pass	534	33.7	2114	133.4	668	42.1	2225	140.4	534	33.7	668	42.1
	Three pass	167	10.5	668	42.1	223	14.0	734	46.3	543	33.7	668	42.1
250	Two pass	301	19.0	1085	68.4	362	22.8	1447	91.3	579	36.5	723	45.6
	One pass	579	36.5	2290	144.5	723	45.6	2411	152.1	579	36.5	723	45.6
	Three pass	181	11.4	723	45.6	241	15.2	796	50.2	579	36.5	723	45.6
260	Two pass	306	19.3	1102	69.5	367	23.2	1469	92.7	588	37.1	734	46.3
	One pass	588	37.1	2326	146.7	734	46.3	2448	154.4	588	37.1	734	46.3
	Three pass	184	11.6	734	46.3	245	15.4	808	51.0	588	37.1	734	46.3
275	Two pass	329	20.7	1183	74.6	394	24.9	1577	99.5	631	39.8	788	49.7
	One pass	631	39.8	2497	157.5	788	49.7	2628	165.8	631	39.8	788	49.7
	Three pass	197	12.4	788	49.7	263	16.6	867	54.7	631	39.8	788	49.7
300	Two pass	357	22.5	1285	81.1	428	27.0	1713	108.1	685	43.2	857	54.0
	One pass	685	43.2	2712	171.1	857	54.0	2855	180.1	685	43.2	857	54.0
	Three pass	214	13.5	857	54.0	286	18.0	942	59.4	685	43.2	857	54.0
325	Two pass	403	25.4	1450	91.4	483	30.5	1933	122.0	773	48.8	967	61.0
	One pass	773	48.8	3061	193.0	967	61.0	3222	203.3	773	48.8	967	61.0
	Three pass	242	15.2	967	61.0	322	20.3	1063	67.1	773	48.8	967	61.0
350	Two pass	429	27.0	1544	97.4	515	32.5	2058	129.8	823	51.9	1029	64.9
	One pass	823	51.9	3259	205.6	1029	64.9	3430	216.4	823	51.9	1029	64.9
	Three pass	257	16.2	1029	64.9	343	21.6	1132	71.4	823	51.9	1029	64.9
375	Two pass	455	28.7	1639	103.4	546	34.5	2186	137.9	874	55.2	1093	69.0
	One pass	874	55.2	3461	218.3	1093	69.0	3643	229.8	874	55.2	1093	69.0
	Three pass	273	17.2	1093	69.0	364	23.0	1202	75.8	874	55.2	1093	69.0
400	Two pass	481	30.4	1733	109.3	578	36.4	2310	145.7	924	58.3	1155	72.9
	One pass	924	58.3	3658	230.8	1155	72.9	3850	242.9	924	58.3	1155	72.9
	Three pass	289	18.2	1155	72.9	385	24.3	1271	80.2	924	58.3	1155	72.9

*Maximum condenser fluid temperature shown for standard condensing option. High condensing or heat machine option may have leaving fluid temperatures up to 140 F (60 C) and entering up to 128 F (53.3 C).

Step 5 — Make Electrical Connections — The electrical characteristics of the available power supply must agree with the unit nameplate rating. Supply voltage must be within the limits shown.

FIELD POWER CONNECTIONS — All units are supplied with $^{7}/_{8}$ in. pilot holes for field power conduit connections.

All power wiring must comply with applicable local and national codes. Install field-supplied, branch circuit fused disconnect(s) of a type that can be locked off or open. Disconnect(s) must be located within sight and readily accessible from the unit in compliance with NEC Article 440-14. See Table 4 for compressor electrical data. See Tables 5 and 6 for unit electrical data. See Fig. 19 for field wiring diagram.

IMPORTANT: The 30XW units have a factory-installed option available for a non-fused disconnect for unit power supply. If the unit is equipped with this option, all field power wiring should be made to the terminal blocks or bus bars supplied.

All units have a single location for power entry to simplify the field power wiring. Maximum wire size that the unit terminal block or non-fused disconnect will accept is 500 kcmil.

FIELD CONTROL POWER CONNECTIONS (See Fig. 19) — All units require a separate 115-1-60 control circuit power supply. A factory-installed control power transformer option is available for all voltages. A separate power supply is NOT required for units ordered with this option. Field control power connections are made at terminals T1 and T2 of CB-13.

A field-installed dry contact wired into TB5-9 and TB5-10 can be used to start the chiller. See Fig. 19 for remote on-off and PMPI wiring. Contacts must be capable of handling a 24-vac to 50 mA.

⚠ CAUTION

Do not use interlocks or other safety device contacts connected between TB5 terminals 9 and 10 as remote on-off. Connection of safeties or other interlocks between these 2 terminals will result in an electrical bypass if the enable-off-remote contact switch is in the Enable position. If remote on-off unit control is required, a field-supplied relay must be installed in the unit control box and wired as shown in Fig. 19. Failure to wire the remote on-off as recommended will result in tube freeze damage.

Terminals 12 and 13 of TB5 have been provided for a field-supplied remote alarm (ALM). If an audible alarm is installed, an alarm shutoff is also recommended. Power for a field-supplied relay coil is limited to 10-va sealed, 25-va inrush. See Fig. 19.

A field-supplied condenser pump relay must be connected to main base board channel 22, connector J2C. A connector is factory supplied. Power for the field-supplied relay coil is limited to 10-va sealed and 25-va inrush. See Fig. 19.

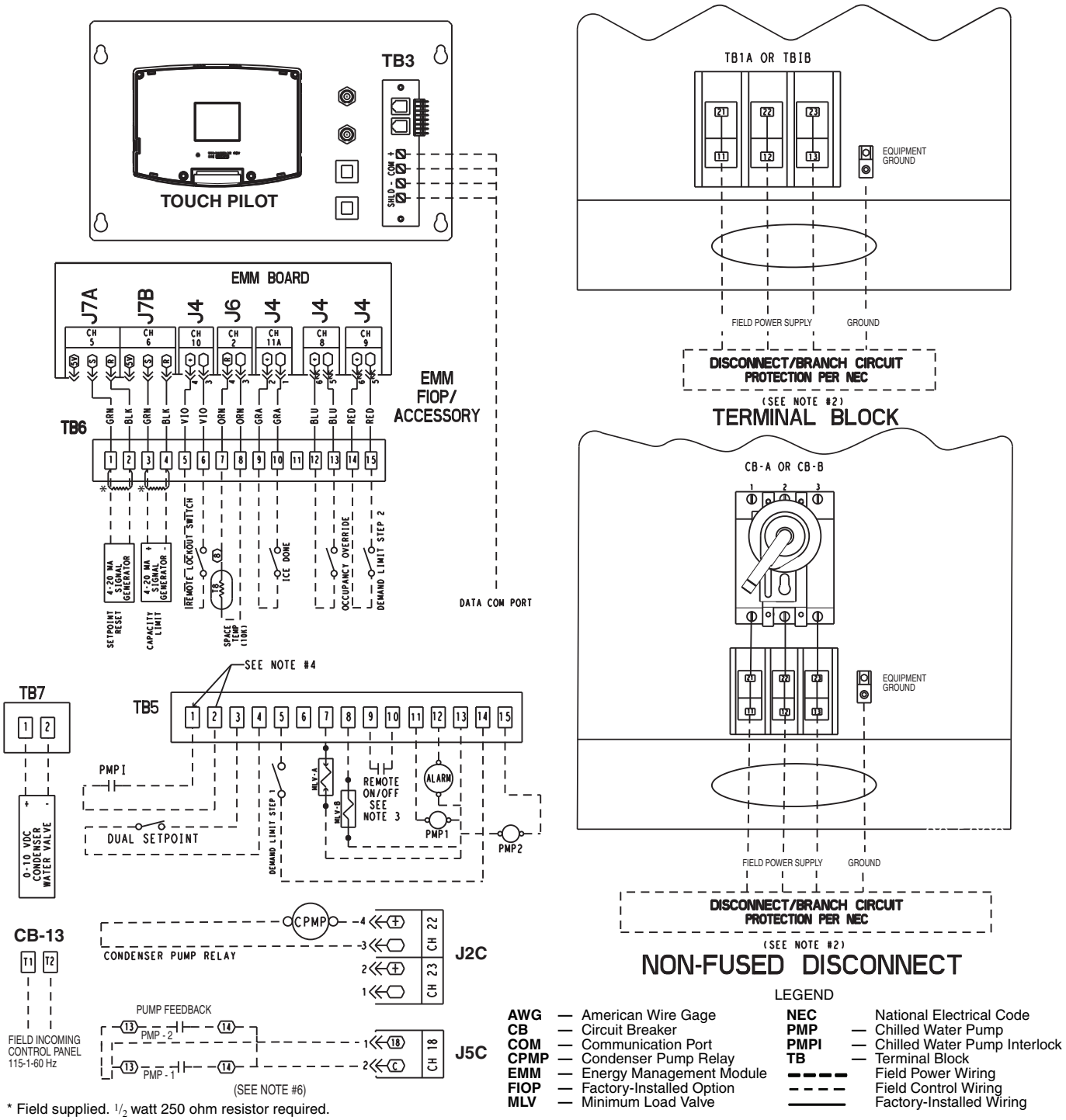
EVAPORATOR PUMP CONTROL — It is required that evaporator pump control be utilized on all chillers unless the chilled water pump runs continuously or the chilled water system contains a suitable antifreeze solution.

There are two interlocks required for pump control. It is required that the chiller be electrically interlocked with the chilled water pump starter to provide additional protection. Terminals TB5-1 and TB5-2 are provided for field installation of a chilled water (fluid) pump interlock (PMPI). Contacts must be capable of handling a 24-vac load up to 50 mA.Terminals 11 and 13 of TB5 have been provided for a field-supplied chilled water (fluid) pump relay (PMP1). Terminals 15 and 13 of TB5 have been provided for a field-supplied chilled water (fluid) pump relay (PMP2). Power for the field-supplied relay coil is limited to 10-va sealed and 25-va inrush. See Fig. 19.

It is also required that the evaporator pump output be used as an override to the chilled water pump control circuit to provide additional freeze protection, if required. This input works in conjunction with the flow switch for more protection. If the pump control outputs are used from the control system, an additional dry contact must be made to the MBB (main base board), channel 18, connector J5C. Normally open contacts from PMP1 and PMP2 must be connected to the violet and pink wires in the MBB J5C - channel 18. Contacts should not be wired to TB5 terminals 1 and 2.

Refer to Fig. 19 for proper connection of the evaporator pump output. The evaporator pump output will remain energized for 30 seconds after all compressors stop because of an OFF command. In the event a freeze protection alarm is generated, the evaporator pump output will be energized regardless of the evaporator pump control software configuration. The evaporator pump output is also energized anytime a compressor is started and when certain alarms are generated. A thermal flow sensor is factory installed in the entering fluid nozzle to prevent operation without flow through the evaporator. See Fig. 20. The flow sensor is factory wired.

Proper software configuration of the evaporator pump control parameters is required to prevent possible evaporator freeze-up. Refer to the Controls, Start-Up, Operation, Service and Troubleshooting guide for more information.



LEGEND

AWG	— American Wire Gage	**NEC**	National Electrical Code
CB	— Circuit Breaker	**PMP**	— Chilled Water Pump
COM	— Communication Port	**PMPI**	— Chilled Water Pump Interlock
CPMP	— Condenser Pump Relay	**TB**	— Terminal Block
EMM	— Energy Management Module	▬ ▬ ▬	Field Power Wiring
FIOP	— Factory-Installed Option	- - - -	Field Control Wiring
MLV	— Minimum Load Valve	———	Factory-Installed Wiring

* Field supplied. 1/2 watt 250 ohm resistor required.

NOTES:
1. Factory wiring is in accordance with UL 1995 standards. Field modifications or additions must be in compliance with all applicable codes.
2. Wiring for main field supply must be rated 75C minimum. Use copper for all units. Incoming wire size range for the terminal block is #4 AWG to 500 kcmil for single point power (two conductors per phase). Incoming wire size range for the terminal blocks for dual point power option is #4 AWG to 500 kcmil for single point power (one conductor per phase). Incoming wire size range for 200 and 230-v models is 3/0 to 500 kcmil for single point power (one conductor per phase). Unit sizes 150-300 are available only with single point power connections.
3. Terminals 9 and 10 of TB5 are for field external connections for remote on-off. The contacts must be rated for dry circuit application capable of handling a 24-vac load up to 50 mA.
4. Terminals 1 and 2 of TB5 are for external connections of chilled water pump interlock. The contacts must be rated for dry circuit application capable of handling a 24-vac load up to 50 mA.
5. Terminals 11 and 13 of TB5 are for control of chilled water pump 1 (PMP 1) starter. Terminals 15 and 13 of TB5 are for control of chilled water pump 2 (PMP 2) starter. Remove factory-installed jumper when using pump interlock. The maximum load allowed for the chilled water pump relay is 10-va sealed, 25-va inrush at 24-v. Field power supply is not required.
6. For control of chilled water pumps, a set of normally open contacts rated for dry circuit application must be supplied from field-supplied pump starter relay. Connect contacts directly to connector at main base board J5C channel 18.
7. Terminals 12 and 13 of TB5 are for an alarm relay. The maximum load allowed for the alarm relay is 10-va sealed, 25-va inrush at 24-v. Field power supply is not required.
8. Make appropriate connections to TB6 as shown for energy management board options. The contacts for occupancy override, demand limit, and ice done options must be rated for dry circuit application capable for handling a 24-vac load up to 50 mA.
9. Terminal blocks TB5 and TB6 are located in the display panel box for all units. Refer to certified dimensional drawing for each unit to get the exact locations.
10. Refer to certified dimensional drawings for exact locations of the main power and control power entrance locations.
11. For control of condenser pump, connect field-supplied relay (max 10-va sealed, 25-va inrush at 24-v) directly to terminals 3 and 4 (channel 22) of J2C on the main base board.
12. Terminals 1 and 2 of TB7 provide 0 to 10-vdc signal for head pressure control. Refer to controls manual for configuration of field-supplied water regulating valve control parameters.

Fig. 19 — 30XW Unit Field Wiring

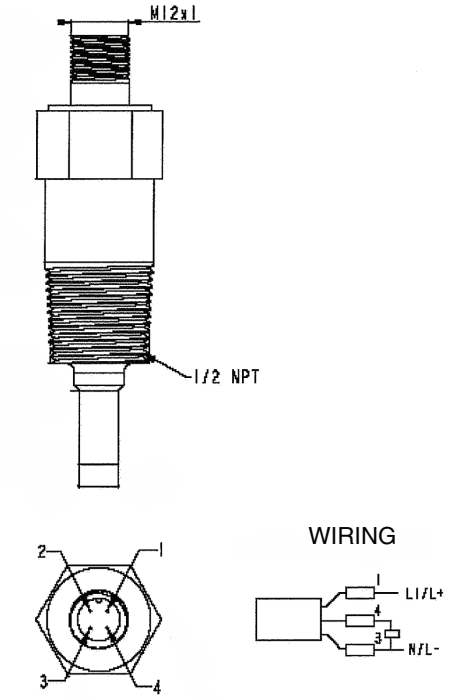


Fig. 20 — Chilled Water and Condenser (Optional) Flow Switch

CARRIER COMFORT NETWORK® COMMUNICATION BUS WIRING (See Fig. 21) — The communication bus wiring is a shielded, 3-conductor cable with drain wire and is field supplied and installed in the field.

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 elements on either side of it. This is also required for the negative and signal ground pins of each system element. Wiring connections for CCN (Carrier Comfort Network) should be made at TB (terminal block) 3. Consult the CCN Contractor's Manual for further information. See Fig. 21.

NOTE: Conductors and drain wire must be 20 AWG (American Wire Gage) minimum stranded, tinned copper. Individual conductors must be insulated with PVC, PVC/nylon, vinyl, Teflon, or polyethylene. An aluminum/polyester 100% foil shield and an outer jacket of PVC, PVC/nylon, chrome vinyl, or Teflon with a minimum operating temperature range of –4 F (–20 C) to 140 F (60 C) is required. See Table 7 for a list of manufacturers that produce CCN bus wiring that meet these requirements.

It is important when connecting to a CCN communication bus that a color coding scheme be used for the entire network to simplify the installation. It is recommended that red be used for the signal positive, black for the signal negative, and white for the signal ground. Use a similar scheme for cables containing different colored wires. 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 a ground at one point only. If the communication bus cable exits from one building and enters another, the shields must be connected to grounds at the lightning suppressor in each building where the cable enters or exits the building (one point per building only).

To connect the unit to the network:

1. Turn off power to the control box.
2. Cut the CCN wire and strip the ends of the red (+), white (ground), and black (–) conductors. Substitute appropriate colors for different colored cables.
3. Connect the red wire to (+) terminal on TB3 of the plug, the white wire to COM terminal, and the black wire to the (–) terminal.
4. The RJ14 CCN connector on TB3 can also be used, but is only intended for temporary connection (for example, a laptop computer running service tool).

IMPORTANT: A shorted CCN bus cable will prevent some routines from running and may prevent the unit from starting. If abnormal conditions occur, disconnect the machine from the CCN. If conditions return to normal, check the CCN connector and cable. Run new cable if necessary. A short in one section of the bus can cause problems with all system elements on the bus.

NON-CCN COMMUNICATION WIRING — The 30XW units offer several non-CCN translators. Refer to the separate installation instructions for additional wiring steps.

FIELD CONTROL OPTION WIRING — Install field control wiring options. Some options, such as 4 to 20 mA demand limit that requires the energy management module, may require that accessories be installed first (if not factory installed) for terminal connections.

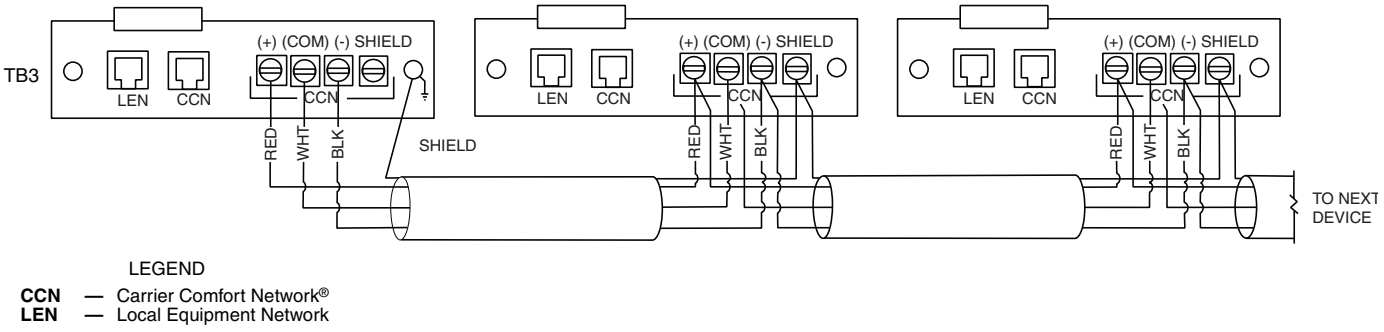


Fig. 21 — TB3 — CCN Wiring

Table 4 — Compressor Electrical Data

30XW UNIT SIZE	VOLTAGE V-Ph-Hz	COMPRESSOR	COMPRESSOR A			COMPRESSOR B (SIZES 325-400 ONLY)		
			RLA	LRA (WD)	LRA (XL)	RLA	LRA (WD)	LRA (XL)
150, 325	200-3-60	06TU483	409.0	938	—	409.0	938	—
	230-3-60	06TU483	355.1	816	—	355.1	816	—
	380-3-60	06TU483	216.7	494	1537	216.7	494	1537
	460-3-60	06TU483	178.2	408	1270	178.2	408	1270
	575-3-60	06TU483	141.0	326	1016	141.0	326	1016
150, 325 HM	200-3-60	06TU483	519.2	1329	—	519.2	1329	—
	230-3-60	06TU483	452.6	1156	—	452.6	1156	—
	380-3-60	06TU483	273.1	700	2179	273.1	700	2179
	460-3-60	06TU483	227.0	578	1800	227.0	578	1800
	575-3-60	06TU483	180.8	462‘	1440	180.8	462	1440
175, 350	200-3-60	06TU483	409.0	938	—	409.0	938	—
	230-3-60	06TU483	355.1	816	—	355.1	816	—
	380-3-60	06TU483	216.7	494	1537	216.7	494	1537
	460-3-60	06TU483	178.2	408	1270	178.2	408	1270
	575-3-60	06TU483	141.0	326	1016	141.0	326	1016
175, 350 HM	200-3-60	06TU483	519.2	1329	—	519.2	1329	—
	230-3-60	06TU483	452.6	1156	—	452.6	1156	—
	380-3-60	06TU483	273.1	700	2179	273.1	700	2179
	460-3-60	06TU483	227.0	578	1800	227.0	578	1800
	575-3-60	06TU483	180.8	462	1440	180.8	462	1440
185, 200, 375, 400	200-3-60	06TU554	462.8	938	—	462.8	938	—
	230-3-60	06TU554	401.3	816	—	401.3	816	—
	380-3-60	06TU554	242.3	494	1537	242.3	494	1537
	460-3-60	06TU554	201.3	408	1270	201.3	408	1270
	575-3-60	06TU554	162.8	326	1016	162.8	326	1016
185, 200, 375, 400 HM	200-3-60	06TU554	591.0	1329	—	588.5	1329	—
	230-3-60	06TU554	514.1	1156	—	512.8	1156	—
	380-3-60	06TU554	311.5	700	2179	309.0	700	2179
	460-3-60	06TU554	257.7	578	1800	256.4	578	1800
	575-3-60	06TU554	206.4	462	1440	203.8	462	1440
225, 250	200-3-60	06TV680	550.0	1329	—	—	—	—
	230-3-60	06TV680	478.2	1156	—	—	—	—
	380-3-60	06TV680	288.5	700	2179	—	—	—
	460-3-60	06TV680	239.7	578	1800	—	—	—
	575-3-60	06TV680	191.0	462	1440	—	—	—
225, 250 HM	200-3-60	06TV680	—	—	—	—	—	—
	230-3-60	06TV680	—	—	—	—	—	—
	380-3-60	06TV680	378.2	758	—	—	—	—
	460-3-60	06TV680	311.5	625	1906	—	—	—
	575-3-60	06TV680	247.4	498	1521	—	—	—
260, 275	200-3-60	06TV753	609.0	1329	—	—	—	—
	230-3-60	06TV753	529.5	1156	—	—	—	—
	380-3-60	06TV753	319.2	700	2179	—	—	—
	460-3-60	06TV753	265.4	578	1800	—	—	—
	575-3-60	06TV753	211.5	462	1440	—	—	—
260, 275 HM	200-3-60	06TV753	—	—	—	—	—	—
	230-3-60	06TV753	—	—	—	—	—	—
	380-3-60	06TV753	419.2	758	—	—	—	—
	460-3-60	06TV753	344.9	625	1906	—	—	—
	575-3-60	06TV753	275.6	498	1521	—	—	—
300	200-3-60	06TV819	650.0	1329	—	—	—	—
	230-3-60	06TV819	565.4	1156	—	—	—	—
	380-3-60	06TV819	342.3	700	2179	—	—	—
	460-3-60	06TV819	283.3	578	1800	—	—	—
	575-3-60	06TV819	224.4	462	1440	—	—	—
300 HM	200-3-60	06TV819	—	—	—	—	—	—
	230-3-60	06TV819	—	—	—	—	—	—
	380-3-60	06TV819	444.9	758	—	—	—	—
	460-3-60	06TV819	367.9	625	1906	—	—	—
	575-3-60	06TV819	293.6	498	1521	—	—	—

LEGEND

HM — Heat Machine Units
LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta
XL — Across-the-Line

Table 5 — Standard Single Input Power Configuration Electrical Data

30XW UNIT SIZE	UNIT VOLTAGE			NO. POWER SUPPLY CONDUCTORS	MCA	MOCP	ICF		REC FUSE SIZE	CONTROL CIRCUIT	
	V-Ph-Hz	Supplied								VOLTAGE 1 PH, 60Hz	MCA and MOCP
		Min	Max				WD	XL			
150	200-3-60	187	220	6	511.3	800	938.0	—	700	115	20
	230-3-60	207	253	6	443.9	700	816.0	—	600	115	20
	380-3-60	342	418	3	270.9	450	494.0	1537	350	115	20
	460-3-60	414	506	3	222.8	400	408.0	1270	300	115	20
	575-3-60	518	633	3	176.3	300	326.0	1016	225	115	20
150 HM	200-3-60	187	220	6	649.0	1000	1329.0	—	800	115	20
	230-3-60	207	253	6	565.8	1000	1156.0	—	700	115	20
	380-3-60	342	418	3	341.4	600	700.0	2179	450	115	20
	460-3-60	414	506	3	283.8	500	578.0	1800	350	115	20
	575-3-60	518	633	3	226.0	400	462.0	1440	300	115	20
175	200-3-60	187	220	6	511.3	800	938.0	—	700	115	20
	230-3-60	207	253	6	443.9	700	816.0	—	600	115	20
	380-3-60	342	418	3	270.9	450	494.0	1537	350	115	20
	460-3-60	414	506	3	222.8	400	408.0	1270	300	115	20
	575-3-60	518	633	3	176.3	300	326.0	1016	225	115	20
175 HM	200-3-60	187	220	6	649.0	1000	1329.0	—	800	115	20
	230-3-60	207	253	6	565.8	1000	1156.0	—	700	115	20
	380-3-60	342	418	3	341.4	600	700.0	2179	450	115	20
	460-3-60	414	506	3	283.8	500	578.0	1800	350	115	20
	575-3-60	518	633	3	226.0	400	462.0	1440	300	115	20
185	200-3-60	187	220	6	578.5	1000	938.0	—	700	115	20
	230-3-60	207	253	6	501.6	800	816.0	—	700	115	20
	380-3-60	342	418	3	302.9	500	494.0	1537	400	115	20
	460-3-60	414	506	3	251.6	450	408.0	1270	350	115	20
	575-3-60	518	633	3	203.5	350	326.0	1016	250	115	20
185 HM	200-3-60	187	220	6	738.8	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	642.6	1000	1156.0	—	800	115	20
	380-3-60	342	418	6	389.4	700	700.0	2179	500	115	20
	460-3-60	414	506	3	322.1	500	578.0	1800	400	115	20
	575-3-60	518	633	3	258.0	450	462.0	1440	350	115	20
200	200-3-60	187	220	6	578.5	1000	938.0	—	700	115	20
	230-3-60	207	253	6	501.6	800	816.0	—	700	115	20
	380-3-60	342	418	3	302.9	500	494.0	1537	400	115	20
	460-3-60	414	506	3	251.6	450	408.0	1270	350	115	20
	575-3-60	518	633	3	203.5	350	326.0	1016	250	115	20
200 HM	200-3-60	187	220	6	738.8	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	642.6	1000	1156.0	—	800	115	20
	380-3-60	342	418	6	389.4	700	700.0	2179	500	115	20
	460-3-60	414	506	3	322.1	500	578.0	1800	400	115	20
	575-3-60	518	633	3	258.0	450	462.0	1440	350	115	20
225	200-3-60	187	220	6	687.5	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	597.8	1000	1156.0	—	800	115	20
	380-3-60	342	418	3	360.6	600	700.0	2179	450	115	20
	460-3-60	414	506	3	299.6	500	578.0	1800	400	115	20
	575-3-60	518	633	3	238.8	400	462.0	1440	300	115	20
225 HM	200-3-60	187	220	—	—	—	—	—	—	—	—
	230-3-60	207	253	—	—	—	—	—	—	—	—
	380-3-60	342	418	3	472.8	800	758.0	—	600	115	20
	460-3-60	414	506	3	389.4	700	625.0	1906	500	115	20
	575-3-60	518	633	3	309.3	500	498.0	1521	400	115	20
250	200-3-60	187	220	6	687.5	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	597.8	1000	1156.0	—	800	115	20
	380-3-60	342	418	3	360.6	600	700.0	2179	450	115	20
	460-3-60	414	506	3	299.6	500	578.0	1800	400	115	20
	575-3-60	518	633	3	238.8	400	462.0	1440	300	115	20
250 HM	200-3-60	187	220	—	—	—	—	—	—	—	—
	230-3-60	207	253	—	—	—	—	—	—	—	—
	380-3-60	342	418	3	472.8	800	758.0	—	600	115	20
	460-3-60	414	506	3	389.4	700	625.0	1906	500	115	20
	575-3-60	518	633	3	309.3	500	498.0	1521	400	115	20
260	200-3-60	187	220	9	761.3	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	661.9	1000	1156.0	—	800	115	20
	380-3-60	342	418	6	399.0	700	700.0	2179	500	115	20
	460-3-60	414	506	3	331.8	500	578.0	1800	400	115	20
	575-3-60	518	633	3	264.4	450	462.0	1440	350	115	20
260 HM	200-3-60	187	220	—	—	—	—	—	—	—	—
	230-3-60	207	253	—	—	—	—	—	—	—	—
	380-3-60	342	418	6	524.0	800	758.0	—	700	115	20
	460-3-60	414	506	3	431.1	700	625.0	1906	600	115	20
	575-3-60	518	633	3	344.5	600	498.0	1521	450	115	20

NOTE: See legend and notes on page 38.

Table 5 — Standard Single Input Power Configuration Electrical Data (cont)

30XW UNIT SIZE	UNIT VOLTAGE			NO. POWER SUPPLY CONDUCTORS	MCA	MOCP	ICF		REC FUSE SIZE	CONTROL CIRCUIT	
	V-Ph-Hz	Supplied					WD	XL		VOLTAGE 1 PH, 60Hz	MCA and MOCP
		Min	Max								
275	200-3-60	187	220	9	761.3	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	661.9	1000	1156.0	—	800	115	20
	380-3-60	342	418	6	399.0	700	700.0	2179	500	115	20
	460-3-60	414	506	3	331.8	500	578.0	1800	400	115	20
	575-3-60	518	633	3	264.4	450	462.0	1440	350	115	20
275 HM	200-3-60	187	220	—	—	—	—	—	—	—	—
	230-3-60	207	253	—	—	—	—	—	—	—	—
	380-3-60	342	418	6	524.0	800	758.0	—	700	115	20
	460-3-60	414	506	3	431.1	700	625.0	1906.0	600	115	20
	575-3-60	518	633	3	344.5	600	498.0	1521.0	450	115	20
300	200-3-60	187	220	9	812.5	1200	1329.0	—	1000	115	20
	230-3-60	207	253	6	706.8	1200	1156.0	—	1000	115	20
	380-3-60	342	418	6	427.9	700	700.0	2179.0	600	115	20
	460-3-60	414	506	3	354.1	600	578.0	1800.0	450	115	20
	575-3-60	518	633	3	280.5	500	462.0	1440.0	350	115	20
300 HM	200-3-60	187	220	—	—	—	—	—	—	—	—
	230-3-60	207	253	—	—	—	—	—	—	—	—
	380-3-60	342	418	6	556.1	1000	758.0	—	700	115	20
	460-3-60	414	506	3	459.9	800	625.0	1906.0	600	115	20
	575-3-60	518	633	3	367.0	600	498.0	1521.0	450	115	20
325	200-3-60	187	220	9	920.3	1200	1347.0	—	1200	115	20
	230-3-60	207	253	9	799.0	1000	1171.1	—	1000	115	20
	380-3-60	342	418	6	487.6	700	710.7	1753.7	600	115	20
	460-3-60	414	506	6	401.0	500	586.2	1448.2	450	115	20
	575-3-60	518	633	3	317.3	450	467.0	1157.0	400	115	20
325 HM	200-3-60	187	220	12	1168.2	1600	1848.2	—	1600	115	20
	230-3-60	207	253	9	1018.4	1200	1608.6	—	1200	115	20
	380-3-60	342	418	6	614.5	800	973.1	2452.1	700	115	20
	460-3-60	414	506	6	510.8	700	805.0	2027.0	600	115	20
	575-3-60	518	633	6	406.8	500	642.8	1620.8	500	115	20
350	200-3-60	187	220	9	920.3	1200	1347.0	—	1200	115	20
	230-3-60	207	253	9	799.0	1000	1171.1	—	1000	115	20
	380-3-60	342	418	6	487.6	700	710.7	1753.7	600	115	20
	460-3-60	414	506	6	401.0	500	586.2	1448.2	450	115	20
	575-3-60	518	633	3	317.3	450	467.0	1157.0	400	115	20
350 HM	200-3-60	187	220	12	1168.2	1600	1848.2	—	1600	115	20
	230-3-60	207	253	9	1018.4	1200	1608.6	—	1200	115	20
	380-3-60	342	418	6	614.5	800	973.1	2452.1	700	115	20
	460-3-60	414	506	6	510.8	700	805.0	2027.0	600	115	20
	575-3-60	518	633	6	406.8	500	642.8	1620.8	500	115	20
375	200-3-60	187	220	9	1041.3	1200	1400.8	—	1200	115	20
	230-3-60	207	253	9	902.9	1200	1217.3	—	1200	115	20
	380-3-60	342	418	6	545.2	700	736.3	1779.3	700	115	20
	460-3-60	414	506	6	452.9	600	609.3	1471.3	600	115	20
	575-3-60	518	633	3	366.3	500	488.8	1178.8	450	115	20
375 HM	200-3-60	187	220	12	1329.8	1600	1920.0	—	1600	115	20
	230-3-60	207	253	12	1156.7	1600	1670.1	—	1600	115	20
	380-3-60	342	418	6	700.9	1000	1011.5	2490.5	800	115	20
	460-3-60	414	506	6	579.8	800	835.7	2057.7	700	115	20
	575-3-60	518	633	6	464.4	600	668.4	1646.4	600	115	20
400	200-3-60	187	220	9	1041.3	1200	1400.8	—	1200	115	20
	230-3-60	207	253	9	902.9	1200	1217.3	—	1200	115	20
	380-3-60	342	418	6	545.2	700	736.3	1779.3	700	115	20
	460-3-60	414	506	6	452.9	600	609.3	1471.3	600	115	20
	575-3-60	518	633	3	366.3	500	488.8	1178.8	450	115	20
400 HM	200-3-60	187	220	12	1329.8	1600	1920.0	—	1600	115	20
	230-3-60	207	253	12	1156.7	1600	1670.1	—	1600	115	20
	380-3-60	342	418	6	700.9	1000	1011.5	2490.5	800	115	20
	460-3-60	414	506	6	579.8	800	835.7	2057.7	700	115	20
	575-3-60	518	633	6	464.4	600	668.4	1646.4	600	115	20

LEGEND

HM — Heat Machine Units
ICF — Maximum Instantaneous Current Flow
LRA — Locked Rotor Amps
MCA — Minimum Circuit Ampacity (for wire sizing)
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

NOTES:
1. Each main power source must be supplied from a field-supplied fused electrical service with a (factory-installed or field-installed) disconnect located in sight from the unit.
2. Control circuit power must be supplied from a separate source through a field-supplied disconnect. An optional control transformer may be used to provide control circuit power from the main unit power supply.
3. Maximum instantaneous current flow (ICF) during start-up is the point in the starting sequence where the sum of the LRA for the start-up compressor, plus the total RLA for all running compressors is at a maximum.
4. Maximum incoming wire size for each terminal block is 500 kcmil.
5. Maximum allowable phase imbalance is: voltage, 2%; amps, 5%.
6. Use copper conductors only.
7. The MOCP is calculated as follows:
   MOCP = (2.25) (largest RLA) + the sum of the other RLAs. Size the fuse one size down from the result. The RLAs are listed on the nameplate. The recommended fuse size in amps (RFA) is calculated as follows: RFA = (1.50) (largest RLA) + the sum of the other RLAs. Size the fuse one size up from the result. The RLAs are listed on the nameplate.

Table 6 — Optional Dual Input Power Configuration Electrical Data

30XW UNIT SIZE	UNIT VOLTAGE			NO. POWER SUPPLY CONDUCTORS	MCA	MOCP	ICF		REC FUSE SIZE	CONTROL CIRCUIT	
	V-Ph-Hz	Supplied								V-Ph-Hz	MCA and MOCP
		Min	Max				WD	XL			
325	200-3-60	187	220	6/6	511.3/511.3	800/800	938/938	—	700/700	115-1-60	20
	230-3-60	207	253	6/6	443.9/443.9	700/700	816/816	—	600/600	115-1-60	20
	380-3-60	342	418	3/3	270.9/270.9	450/450	494/494	1537/1537	350/350	115-1-60	20
	460-3-60	414	506	3/3	222.8/222.8	400/400	408/408	1270/1270	300/300	115-1-60	20
	575-3-60	518	633	3/3	176.3/176.3	300/300	326/326	1016/1016	225/225	115-1-60	20
325 HM	200-3-60	187	220	6/6	649.0/649.0	1000/1000	1329/1329	—	800/800	115-1-60	20
	230-3-60	207	253	6/6	565.8/565.8	1000/1000	1156/1156	—	700/700	115-1-60	20
	380-3-60	342	418	3/3	341.4/341.4	600/600	700/700	2179/2179	450/450	115-1-60	20
	460-3-60	414	506	3/3	283.8/283.8	500/500	578/578	1800/1800	350/350	115-1-60	20
	575-3-60	518	633	3/3	226.0/226.0	400/400	462/462	1440/1440	300/300	115-1-60	20
350	200-3-60	187	220	6/6	511.3/511.3	800/800	938/938	—	700/700	115-1-60	20
	230-3-60	207	253	6/6	443.9/443.9	700/700	816/816	—	600/600	115-1-60	20
	380-3-60	342	418	3/3	270.9/270.9	450/450	494/494	1537/1537	350/350	115-1-60	20
	460-3-60	414	506	3/3	222.8/222.8	400/400	408/408	1270/1270	300/300	115-1-60	20
	575-3-60	518	633	3/3	176.3/176.3	300/300	326/326	1016/1016	225/225	115-1-60	20
350 HM	200-3-60	187	220	6/6	649.0/649.0	1000/1000	1329/1329	—	800/800	115-1-60	20
	230-3-60	207	253	6/6	565.8/565.8	1000/1000	1156/1156	—	700/700	115-1-60	20
	380-3-60	342	418	3/3	341.4/341.4	600/600	700/700	2179/2179	450/450	115-1-60	20
	460-3-60	414	506	3/3	283.8/283.8	500/500	578/578	1800/1800	350/350	115-1-60	20
	575-3-60	518	633	3/3	226.0/226.0	400/400	462/462	1440/1440	300/300	115-1-60	20
375	200-3-60	187	220	6/6	578.5/578.5	1000/1000	938/938	—	700/700	115-1-60	20
	230-3-60	207	253	6/6	501.6/501.6	800/800	816/816	—	700/700	115-1-60	20
	380-3-60	342	418	3/3	302.9/302.9	500/500	494/494	1537/1537	400/400	115-1-60	20
	460-3-60	414	506	3/3	251.6/251.6	450/450	408/408	1270/1270	350/350	115-1-60	20
	575-3-60	518	633	3/3	203.5/203.5	350/350	326/326	1016/1016	250/250	115-1-60	20
375 HM	200-3-60	187	220	6/6	738.8/738.8	1200/1200	1329/1329	—	1000/1000	115-1-60	20
	230-3-60	207	253	6/6	642.6/642.6	1000/1000	1156/1156	—	800/800	115-1-60	20
	380-3-60	342	418	6/6	389.4/389.4	700/700	700/700	2179/2179	500/500	115-1-60	20
	460-3-60	414	506	3/3	322.1/322.1	500/500	578/578	1800/1800	400/400	115-1-60	20
	575-3-60	518	633	3/3	258.0/258.0	450/450	462/462	1440/1440	350/350	115-1-60	20
400	200-3-60	187	220	6/6	578.5/578.5	1000/1000	938/938	—	700/700	115-1-60	20
	230-3-60	207	253	6/6	501.6/501.6	800/800	816/816	—	700/700	115-1-60	20
	380-3-60	342	418	3/3	302.9/302.9	500/500	494/494	1537/1537	400/400	115-1-60	20
	460-3-60	414	506	3/3	251.6/251.6	450/450	408/408	1270/1270	350/350	115-1-60	20
	575-3-60	518	633	3/3	203.5/203.5	350/350	326/326	1016/1016	250/250	115-1-60	20
400 HM	200-3-60	187	220	6/6	738.8/738.8	1200/1200	1329/1329	—	1000/1000	115-1-60	20
	230-3-60	207	253	6/6	642.6/642.6	1000/1000	1156/1156	—	800/800	115-1-60	20
	380-3-60	342	418	6/6	389.4/389.4	600/600	700/700	2179/2179	500/500	115-1-60	20
	460-3-60	414	506	3/3	322.1/322.1	500/500	578/578	1800/1800	400/400	115-1-60	20
	575-3-60	518	633	3/3	258.0/258.0	450/450	462/462	1440/1440	350/350	115-1-60	20

LEGEND

HM — Heat Machine Units
ICF — Maximum Instantaneous Current Flow
LRA — Locked Rotor Amps
MCA — Minimum Circuit Ampacity (for wire sizing)
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

NOTES:
1. Unit sizes 150-300 are only available with single point power connections.
2. Each main power source must be supplied from a field-supplied fused electrical service with a (factory-installed or field-installed) disconnect located in sight from the unit.
3. Control circuit power must be supplied from a separate source through a field-supplied disconnect. An optional control transformer may be used to provide control circuit power from the main unit power supply.
4. Maximum instantaneous current flow (ICF) during start-up is the point in the starting sequence where the sum of the LRA for the start-up compressor, plus the total RLA for all running compressors is at a maximum. See Table 4 for LRA and RLA values.
5. Maximum incoming wire size for each terminal block is 500 kcmil.
6. Maximum allowable phase imbalance is: voltage, 2%; amps, 5%.
7. Use copper conductors only.
8. The MOCP is calculated as follows:
   MOCP = (2.25) (largest RLA) + the sum of the other RLAs. Size the fuse one size down from the result. The RLAs are listed on the nameplate. See Table 4 for RLA values.
   The recommended fuse size in amps (RFA) is calculated as follows:
   RFA = (1.50) (largest RLA) + the sum of the other RLAs. Size the fuse one size up from the result. The RLAs are listed on the nameplate.

Table 7 — CCN Communication Bus Wiring

MANUFACTURER	PART NUMBER	
	Regular Wiring	Plenum Wiring
Alpha	1895	—
American	A21451	A48301
Belden	8205	884421
Columbia	D6451	—
Manhatten	M13402	M64430
Quabik	6130	—

Step 6 — Install Accessories — A number of accessories are available to provide the following optional features (for details, refer to the Controls, Start-Up, Operation, Service, and Troubleshooting guide shipped with the unit).

ENERGY MANAGEMENT MODULE — The energy management module is used for any of the following types of temperature reset, demand limit and ice features:

- 4 to 20 mA inputs for cooling set point reset and demand limit (requires field-supplied 4 to 20 mA generator)
- 0 to 10 v output for percentage total capacity running
- 24 v discrete outputs for shutdown and running relays
- 10 k space temperature input
- Discrete inputs for occupancy override, demand limit switch 2 (step 1 demand limit is wired to the base board, requires field-supplied dry contacts), remote lockout switch and ice done switch (requires field-supplied dry contacts).

REMOTE ENHANCED DISPLAY (OR TOUCH PILOT™ DISPLAY) — For applications where remote monitoring of the equipment is required; the remote enhanced display (or Touch Pilot display) provides an indoor display, capable of monitoring any equipment on the Carrier Comfort Network® (CCN) bus. A CCN bus is required.

CONTROL ACCESSORIES — Several optional control accessories are available to provide the following features:

- BACnet translator
- Local Operating Network (LON) translator
- Carrier Comfort Network (CCN) system
- Energy management module (EMM)

Refer to Controls, Start-Up, Operation, Service, and Troubleshooting guide and separate accessory installation instructions for additional information.

MISCELLANEOUS ACCESSORIES — For applications requiring special accessories, the following packages are available: sound blanket, external vibration isolation, and temperature reset sensor. Refer to individual accessory installation instructions for installation details.

Step 7 — Leak Test Unit — The 30XW units are shipped from the factory with a full charge of R-134a or a nitrogen holding charge (see Tables 1 and 2). Perform a leak test to ensure that leaks have not developed during unit shipment. Dehydration of the system is not required unless the entire refrigerant charge has been lost.

There are several O-ring face seal fittings used in the refrigerant and lubrication piping. If a leak is detected at any of these fittings, tighten the O-ring face seal nut to 85 to 118 in.-lb (9.5 to 12.4 Nm). Always use a back up wrench when tightening the O-ring face seal nut. If a leak is still detected, evacuate and open system to inspect O-ring surface for foreign matter or damage. Do not re-use O-rings. Repair any leak found using good refrigeration practice.

Step 8 — Charge Unit — The standard 30XW chiller is shipped with a full charge of R-134a in the vessels. However, the 30XW may be ordered with a nitrogen holding charge of 15 psig (103 kPa). In this case, evacuate the nitrogen from entire chiller. It is recommended that a vacuum of at least 500 microns (0.5 mm Hg) be obtained. Use industry standard practices or refer to Carrier Standard Service Techniques Manual or the Controls, Start-up, Operation, Service and Troubleshooting guide as required. Charge the chiller from refrigerant cylinders.

IMPORTANT: These units are designed for use with R-134a only. DO NOT USE ANY OTHER REFRIGERANT in these units without first consulting your Carrier representative.

NOTE: The liquid charging method is recommended if the system pressure is above 35 psig (241 kPa) for complete charging or when additional charge is required.

⚠ CAUTION

When adding or removing charge, circulate water through the condenser and evaporator at all times to prevent freeze-up. Never charge liquid R-134a into the chiller if the pressure is less than 35 psig (241 kPa). Charge as gas only until 35 psig (241 kPa) is reached. Flashing of liquid refrigerant at low pressures can cause tube freeze-up and considerable damage. Freeze damage is considered abuse and may negatively affect the Carrier warranty.

⚠ CAUTION

DO NOT OVERCHARGE system. Overcharging can result in higher discharge pressure at most operating conditions, possible compressor damage, and higher power consumption.

The refrigerant can then be added through the refrigerant charging valve located at the bottom of the evaporator and condenser. Charge the refrigerant as a gas until the system pressure exceeds 35 psig (241 kPa) for R-134a. After the chiller is beyond this pressure, charge the refrigerant as a liquid until all the refrigerant charge as listed on the unit nameplate has been added. Refer to Table 8 for evaporator refrigerant storage capacity.

IMPORTANT: Failure to properly evacuate the nitrogen holding charge from the unit before charging with refrigerant will result in poor operating performance because of non-condensables in the refrigeration system.

Table 8 — Evaporator Refrigerant Storage Capacity

UNIT SIZE 30XW	CKT	TOTAL VOLUME		REFRIGERANT STORAGE CAPACITY (R-134a)	
		cu ft	cu m	lb	kg
150-200	A	10.748	0.304	662	300.3
225-300	A	13.407	0.380	825	374.2
325-400	A	9.343	0.265	575	260.8
	B	9.343	0.265	575	260.8

NOTE: This table represents 80% volume allowance at 44 F (6.7 C) saturated liquid conditions.

Step 9 — Install Field Insulation and Lagging — Field insulation is required for several components. Refer to Table 9 for field insulation requirements.

When installing insulation at the job site, insulate the following components:

- compressor suction housing (if not equipped from factory)
- suction piping (if not equipped from factory)
- evaporator tubesheets
- evaporator water heads

Once the evaporator fluid lines, drain and vent lines have been installed and checked for leaks, insulate the evaporator heads with a suitable thickness of closed-cell insulation.

This will minimize the amount of condensation that forms on the evaporator heads. When insulating the evaporator heads, allow for service access and removal of heads. Additionally, it is recommended that the first 12 in. of the drain line, if field installed, should be insulated to minimize any condensation that may form.

NOTE: Insulation of the waterbox return covers and water heads is applied only at the job site by the contractor. When insulating the covers, make sure there is access for removal of waterbox covers for servicing (Fig. 22).

For heat machines, additional insulation is required as follows:

- discharge pipe assembly
- oil lines and filter
- minimum load valve lines (if equipped)
- condenser tubesheets
- condenser water heads

Refer to Table 9 for field insulation requirements.

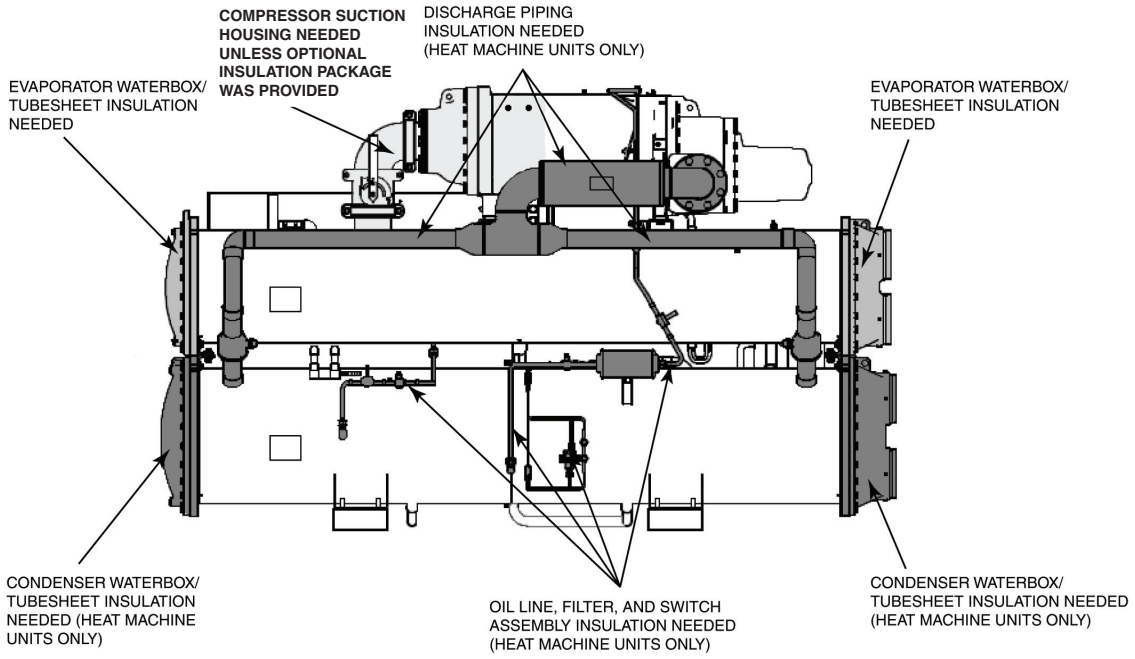
Table 9 — Field Insulation Requirements

Field Insulation Requirements Tubesheet and Head												
Water Box Type	30XW150-200				30XW225-300				30XW325-400			
	Evaporator		Condenser*		Evaporator		Condenser*		Evaporator		Condenser*	
	sq ft	sq m	sq ft	sq m	sq ft	sq m	sq ft	sq m	sq ft	sq m	sq ft	sq m
Return Cover	6	0.6	7	0.7	7	0.7	9	0.8	8	0.8	9	0.8
Nozzle-In-Head	7	0.7	8	0.8	8	0.8	10	0.9	9	0.8	10	0.9
Marine Waterbox	12	1.1	13	1.2	13	1.2	16	1.5	14	1.3	16	1.5

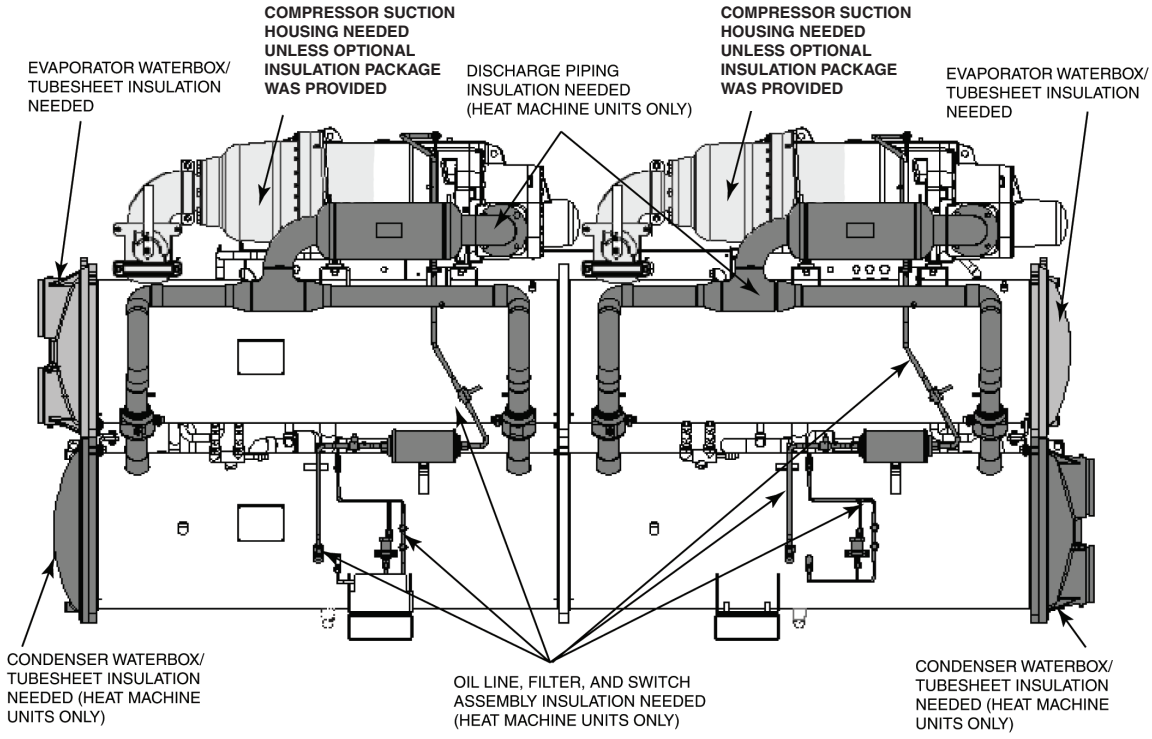
Field Insulation Requirements Heat Machine						
Duty	Component	Type	30XW150-300		30XW325-400	
			sq ft	sq m	sq ft	sq m
Standard and Heat Machine	Compressor†		25	2.3	50	4.6
	Suction Line†		7	0.7	14	1.4
Heat Machine Only	Discharge Line	$3\frac{3}{8}$ in. Tubular	15	1.4	30	2.8
	Discharge Line		14	1.3	28	2.6
	Oil Lines	$\frac{5}{8}$ in. Tubular	12	1.1	24	2.2
	Oil Lines	$\frac{3}{8}$ in. Tubular	6	0.6	12	1.2
	MLV Lines	$\frac{5}{8}$ in. Tubular	3	0.3	6	0.6
	Oil Filter		1.2	0.1	2.4	0.2

* Condenser insulation required for Heat Machine only.
† Not required if insulation package option selected.

30XW150-300 UNITS



30XW325-400 UNITS



NOTES:
1. Field-installed insulation for standard units shown in medium gray.
2. Field-installed insulation for heat machine units shown in dark gray.
3. Factory-installed insulation for optional insulation kit shown in light gray.
4. Back of the unit shown.

Fig. 22 — 30XW Field Insulation