AquaForce® 30XA140-352 Variable Speed Air-Cooled Liquid Chillers with Greenspeed® Intelligence

Installation Instructions

CONTENTS

Page

SAFETY CONSIDERATIONS 1,2
INTRODUCTION 2
INSTALLATION 2-90
Storage 2
Step 1 — Inspect Shipment 2
Step 2 — Place, Mount and Rig Unit 2
- PLACING UNIT
- MOUNTING UNIT
- RIGGING UNIT

Step 3 — Make Refrigerant, Cooler Fluid and Drain Piping Connections 70
- GENERAL
- FLOODED COOLER UNITS
- DX COOLER UNITS
- PREPARATION FOR YEAR-ROUND OPERATION

Step 4 — Fill the Chilled Water Loop 80
- WATER SYSTEM CLEANING
- WATER TREATMENT
- SYSTEM PRESSURIZATION
- FILLING THE SYSTEM
- SET WATER FLOW RATE
- FREEZE PROTECTION
- PREPARATION FOR WINTER SHUTDOWN

Step 5 — Make Electrical Connections 82
- POWER SUPPLY
- FIELD POWER CONNECTIONS
- POWER WIRING
- FIELD CONTROL POWER CONNECTIONS
- CARRIER COMFORT NETWORK® COMMUNICATION BUS WIRING
- NON-CCN COMMUNICATION WIRING
- FIELD CONTROL OPTION WIRING
- DUAL CHILLER LEAVING WATER SENSOR

Step 6 — Install Accessories 90
- ENERGY MANAGEMENT MODULE
- REMOTE ENHANCED DISPLAY
- LOW AMBIENT TEMPERATURE OPERATION
- MINIMUM LOAD ACCESSORY
- UNIT SECURITY/PROTECTION ACCESSORIES
- COMMUNICATION ACCESSORIES
- SERVICE OPTIONS

Step 7 — Leak Test Unit 90
Step 8 — Refrigerant Charging 90
- DEHYDRATION
- REFRIGERANT CHARGE

SAFETY CONSIDERATIONS

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

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

⚠ 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.

Catalog No. 04-53300133-01 Printed in U.S.A. Form 30XA-100SI Pg 1 7-14 Replaces: New

⚠ CAUTION

This unit uses a microprocessor control system. Do not short or jumper between terminations on circuit boards or modules; control or board failure may result.

Be aware of electrostatic discharge (static electricity) when handling or making contact with circuit boards or module connections. Always touch a chassis (grounded) part to dissipate body electrostatic charge before working inside control center.

Use extreme care when handling tools near boards and when connecting or disconnecting terminal plugs. Circuit boards can easily be damaged. Always hold boards by the edges and avoid touching components and connections.

This equipment uses, and can radiate, radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to International Standard in North America EN 61000-2/3 which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Always store and transport replacement or defective boards in anti-static shipping bag.

⚠ CAUTION

To prevent potential damage to heat exchanger tubes, always run fluid through heat exchanger when adding or removing refrigerant charge. Use appropriate antifreeze solutions in cooler fluid loop to prevent the freezing of heat exchanger or interconnecting piping when the equipment is exposed to temperatures below 32 F (0° C). Proof of flow switch is factory installed on all models. Do NOT remove power from this chiller during winter shut down periods without taking precaution to remove all water from heat exchanger. Failure to properly protect the system from freezing may constitute abuse and may void warranty.

INTRODUCTION

These instructions cover installation of 30XA140-352 air-cooled liquid chillers with Greenspeed® intelligence and electronic controls, and units with factory-installed options (FIOPs). See Fig. 1.

INSTALLATION

Storage — If the unit is to be stored for a period of time before installation or start-up, be sure to protect the machine from construction dirt. Keep protective shipping covers in place until the machine is ready for installation.

Step 1 — Inspect Shipment — Inspect unit for damage upon arrival. If damage is found, immediately file a claim with the shipping company, and contact your local Carrier representative.

Step 2 — Place, Mount, and Rig the Unit — When considering a location for the unit, be sure to consult NEC (National Electrical Code, U.S.A.) and/or local code requirements. Allow sufficient space for airflow, wiring, piping, and service. See Fig. 2-12.

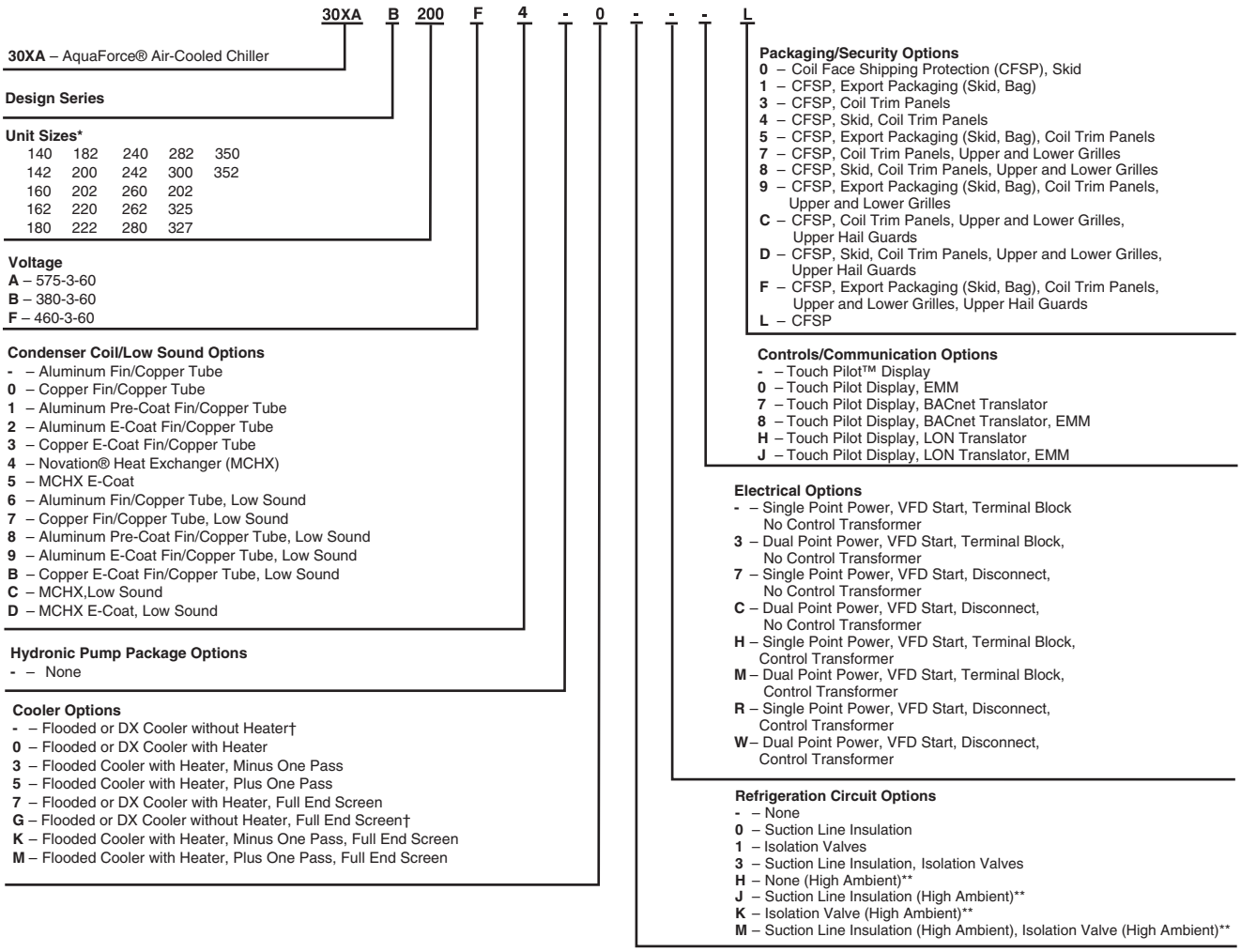
NOTE: To facilitate refrigerant vent piping, all units have fusible plugs with 1/4 in. SAE (Society of Automotive Engineers) flares and pressure reliefs with 3/4 in. NPT fittings (if required by local codes).

PLACING UNIT — Locate the unit so that the condenser airflow is unrestricted both above and on the sides of the unit. Airflow and service clearances are 6 ft (1.8 m) around the unit. Acceptable clearance on the sides or ends without control boxes or VFDs can be reduced to 3 ft (1 m) without sacrificing performance as long as the remaining three sides are unrestricted. Acceptable clearance on the side with a control box or VFD can be reduced to 4 ft (1.3 m) due to NEC regulations, without sacrificing performance as long as the remaining three sides are unrestricted. Provide ample room for servicing and removing the cooler. See Fig. 2-12 for required clearances. Local codes for clearances take precedence over the manufacturer's recommendations when local codes call for greater clearances.

If multiple units are installed at the same site, a minimum separation of 10 ft (3 m) between the sides of the machines is required to maintain proper airflow and minimize the chances of condenser air recirculation.

MOUNTING UNIT — The unit may be mounted on a level pad directly on the base rails, on a raised mounting rail around the unit, or on vibration isolation springs. For all units, ensure placement area is strong enough to support unit operating weight. See Tables 1-3. Mounting holes are provided for securing the unit to the pad, mounting rail or vibration isolation springs. Bolt the unit securely to pad or rails. If vibration isolators (field-supplied) are required for a particular installation, refer to unit weight distribution in Fig. 13-15 to aid in the proper selection of isolators. The 30XA units can be mounted directly on spring isolators. Once installed, the unit must be level to within 1/8-in. per ft (1 cm per meter) along the long axis of the oil separator. This is required for oil return to the compressor(s). For more details about physical data, see Tables 4 and 5.

NOTE: For units that are point loaded, such as those using rubber and shear isolators, the base rail must be supported with a 24 x 4 in. (610 x 102 mm) plate at each mounting location, or base rail deflection may result. Fasten the unit to the plates using the mounting holes. This precaution is not necessary for spring isolators.



LEGEND

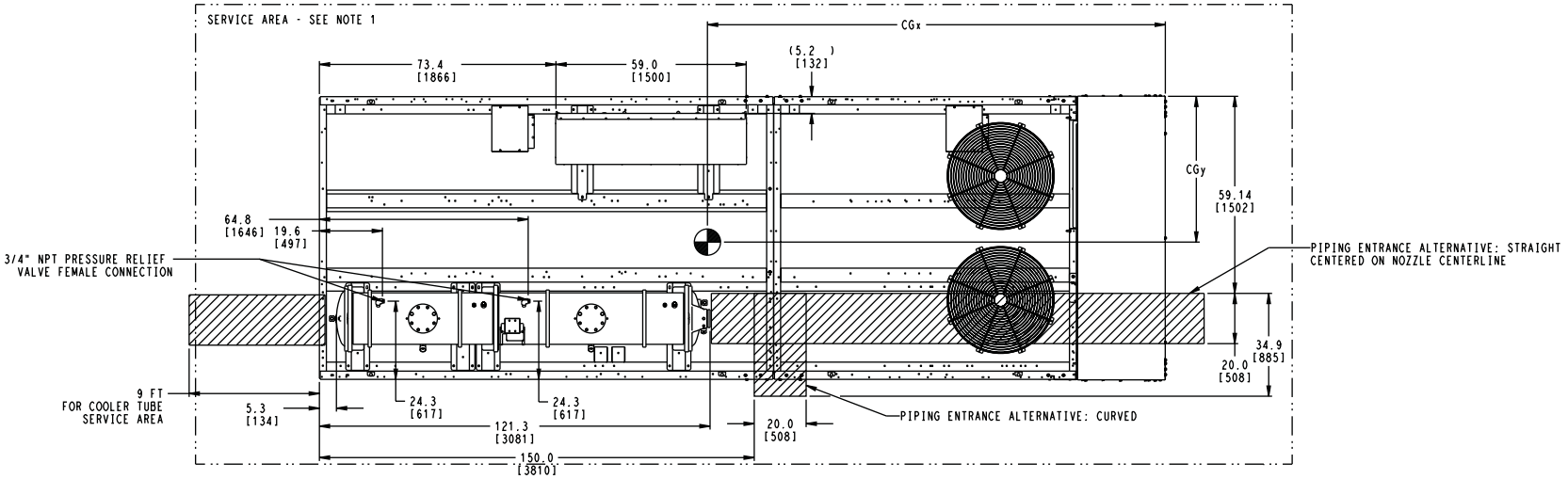
CFSP	—	Coil Face Shipping Protection
EMM	—	Energy Management Module
LON	—	Local Operating Network
MCHX	—	Microchannel Heat Exchanger
VFD	—	Variable Frequency Drive

* Unit sizes ending in 0 or 5 have flooded coolers. Unit sizes ending in 2 or 7 have direct expansion (DX) coolers.
†Flooded cooler witihout heater available in Middle East only.
**Available in Middle East only.

Fig. 1 — AquaForce® Chiller with GreenSpeed® Intelligence Model Number Designation

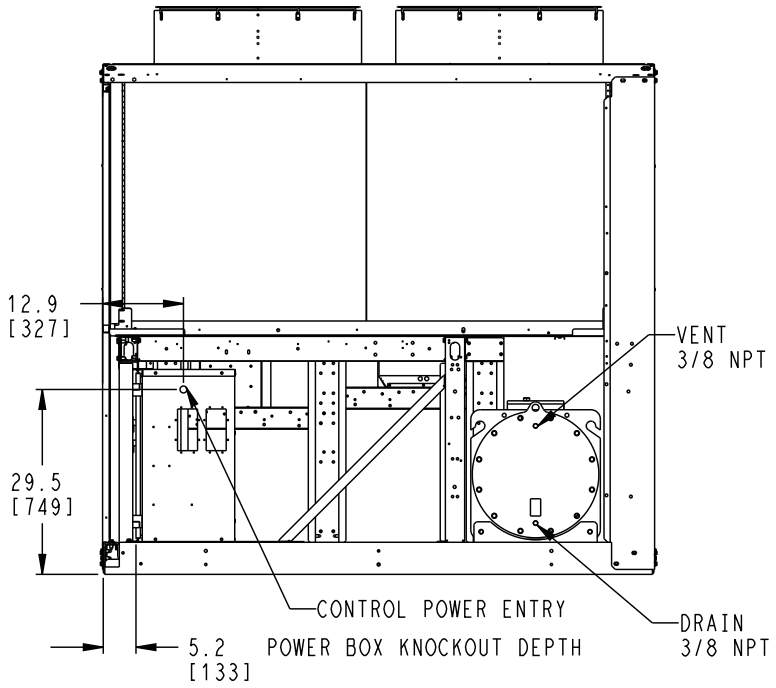
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. 3/8-in. NPT vents and drains located in each cooler head at each end of cooler.
4. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
5. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
140 (MCHX and Al/Cu)	140.4 [3566]	44.1 [1121]
140 (Cu/Cu)	140.6 [3571]	44.2 [1124]
160 (MCHX and Al/Cu)	140.7 [3573]	44.1 [1121]
160 (Cu/Cu)	141.0 [3581]	44.1 [1121]

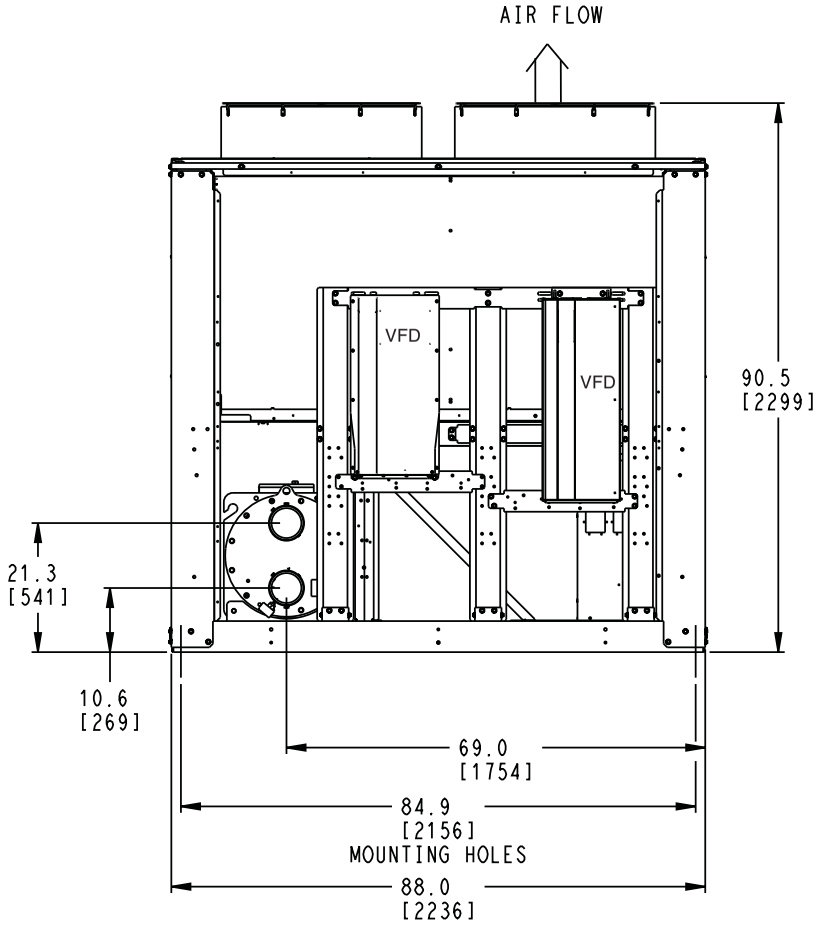


TOP VIEW

Fig. 2 — 30XA140,160 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler)

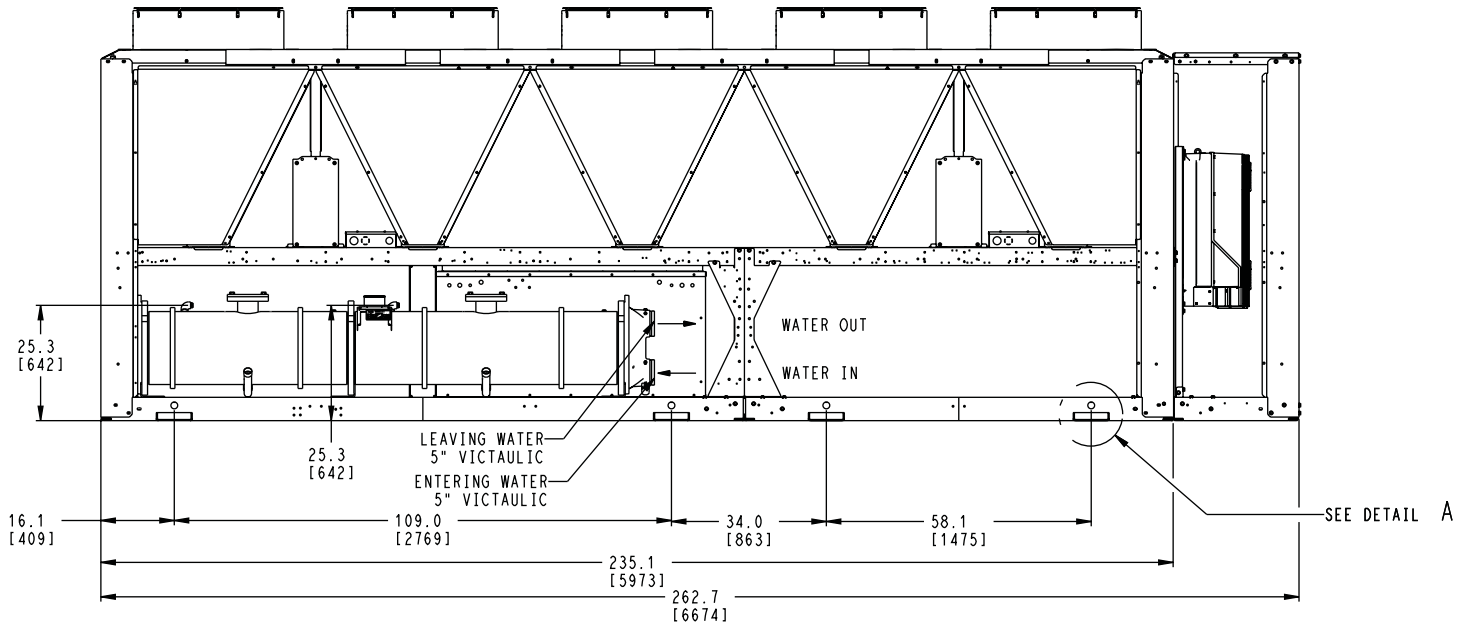


LEFT END VIEW

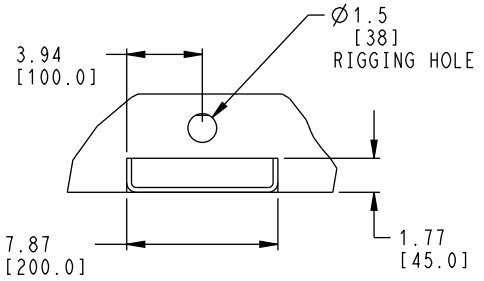


RIGHT END VIEW

Fig. 2 — 30XA140,160 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

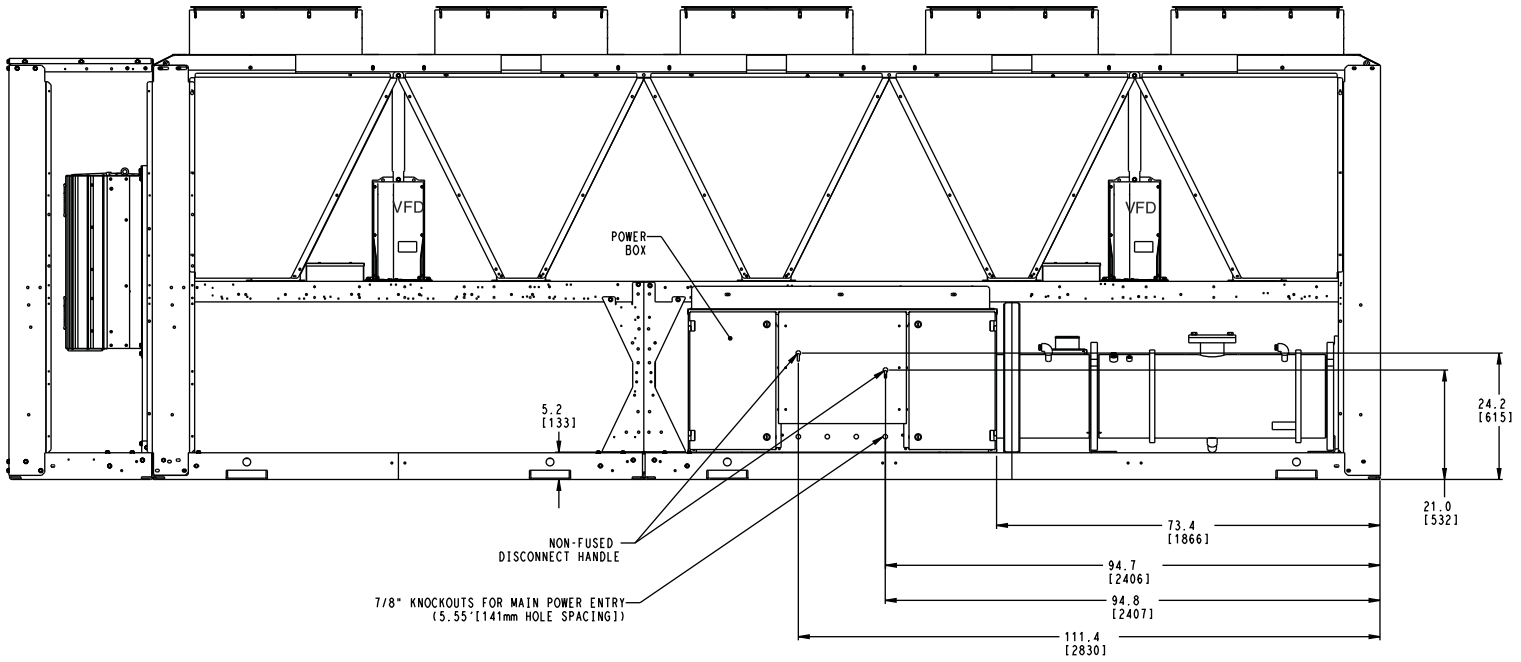


FRONT VIEW



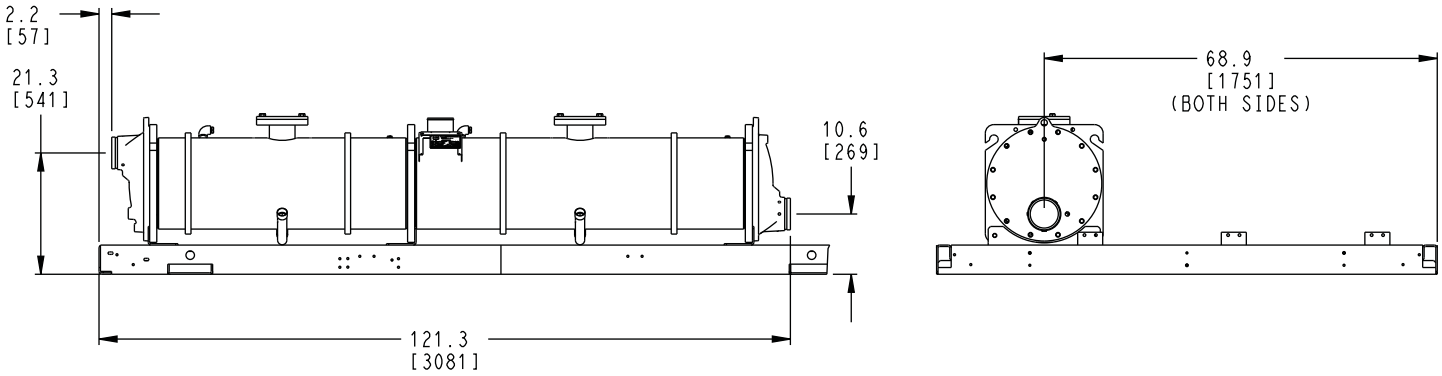
DETAIL A

Fig. 2 — 30XA140,160 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

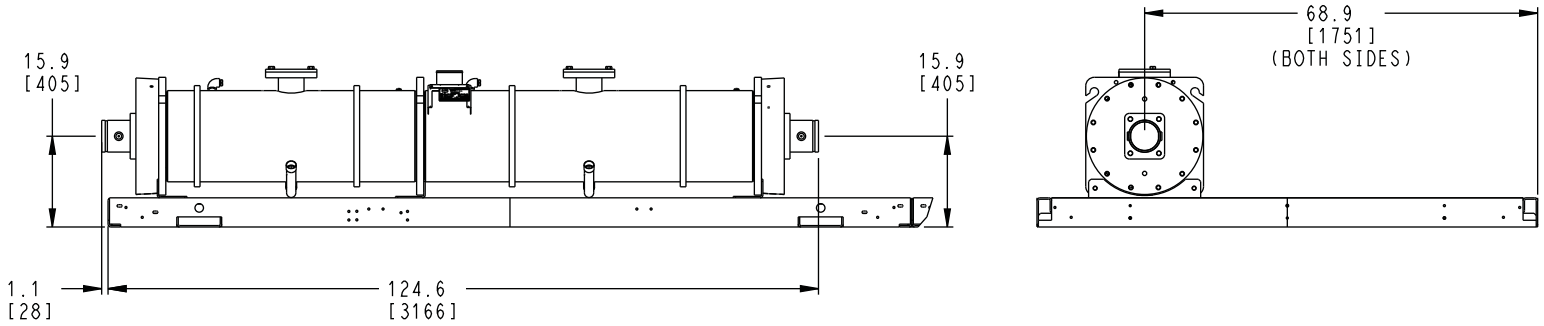


BACK VIEW

Fig. 2 — 30XA140,160 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)



PLUS-ONE-PASS COOLER

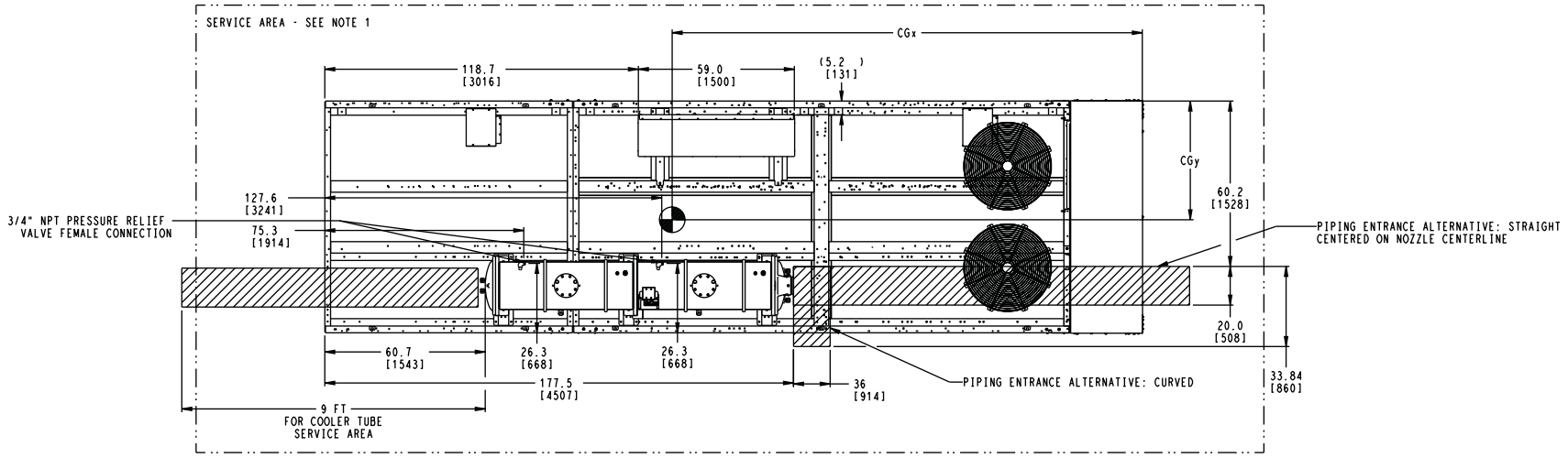


MINUS-ONE-PASS COOLER

Fig. 2 — 30XA140,160 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

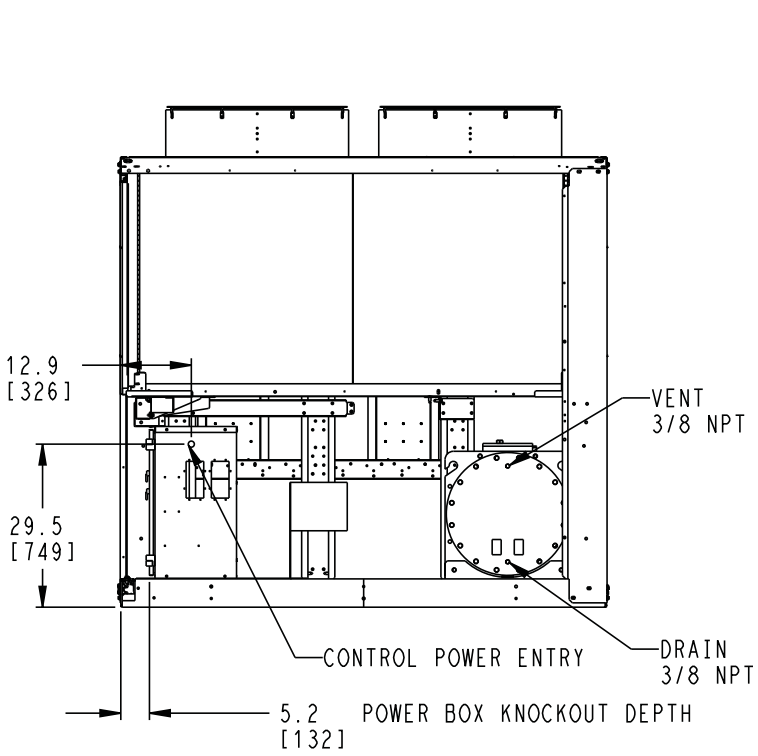
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. 3/8-in. NPT vents and drains located in each cooler head at each end of cooler.
4. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
5. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
180 (MCHX and Al/Cu)	159.7 [4055]	45.6 [1158]
180 (Cu/Cu)	160.5 [4076]	45.5 [1157]
200 (MCHX and Al/Cu)	159.8 [4059]	45.6 [1158]
200 (Cu/Cu)	160.6 [4080]	45.5 [1157]

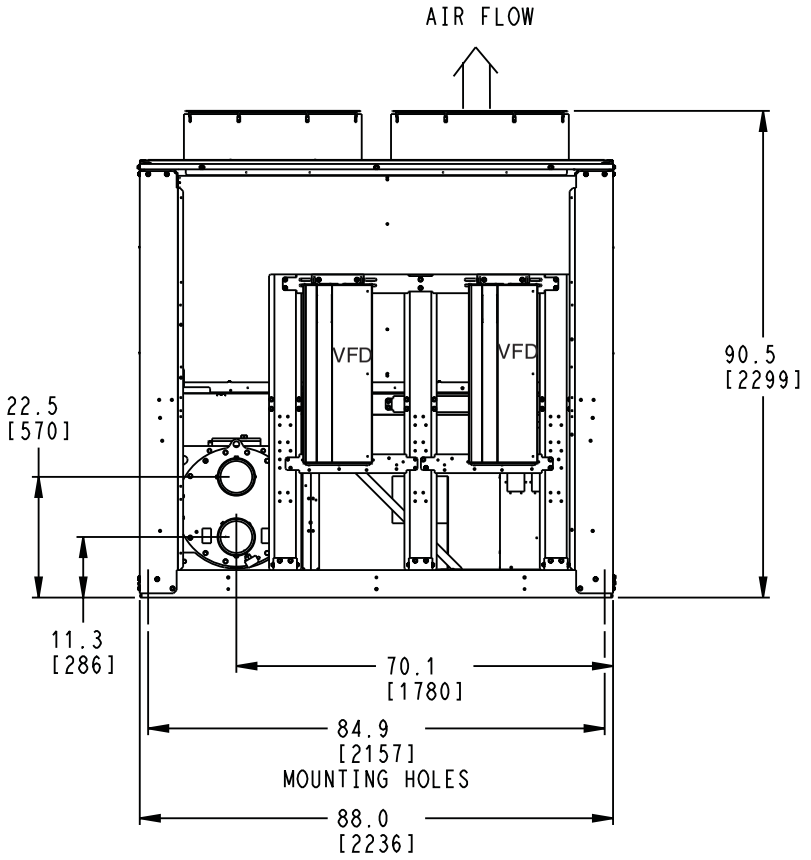


TOP VIEW

Fig. 3 — 30XA180,200 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler)



LEFT END VIEW



RIGHT END VIEW

Fig. 3 — 30XA180,200 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

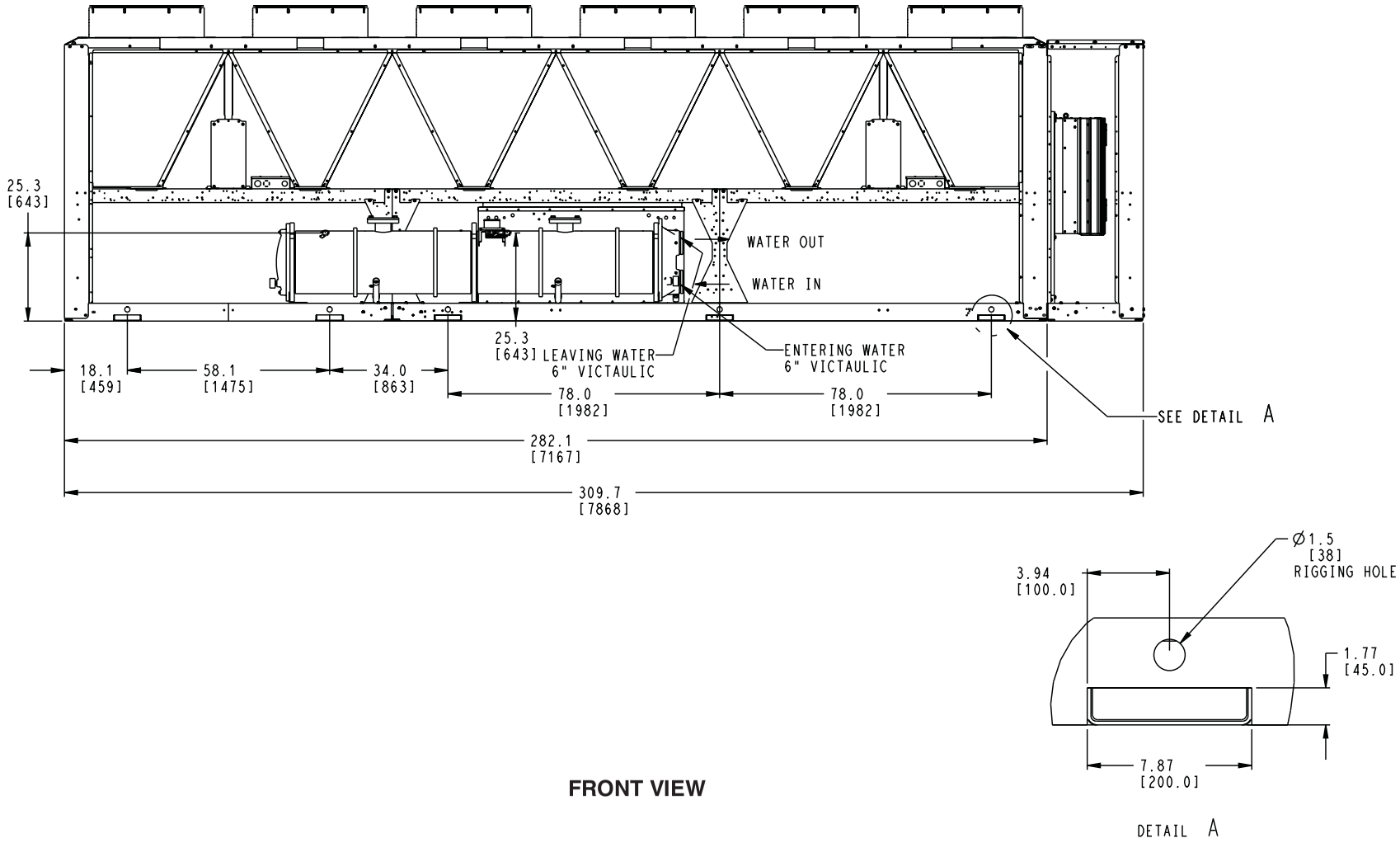
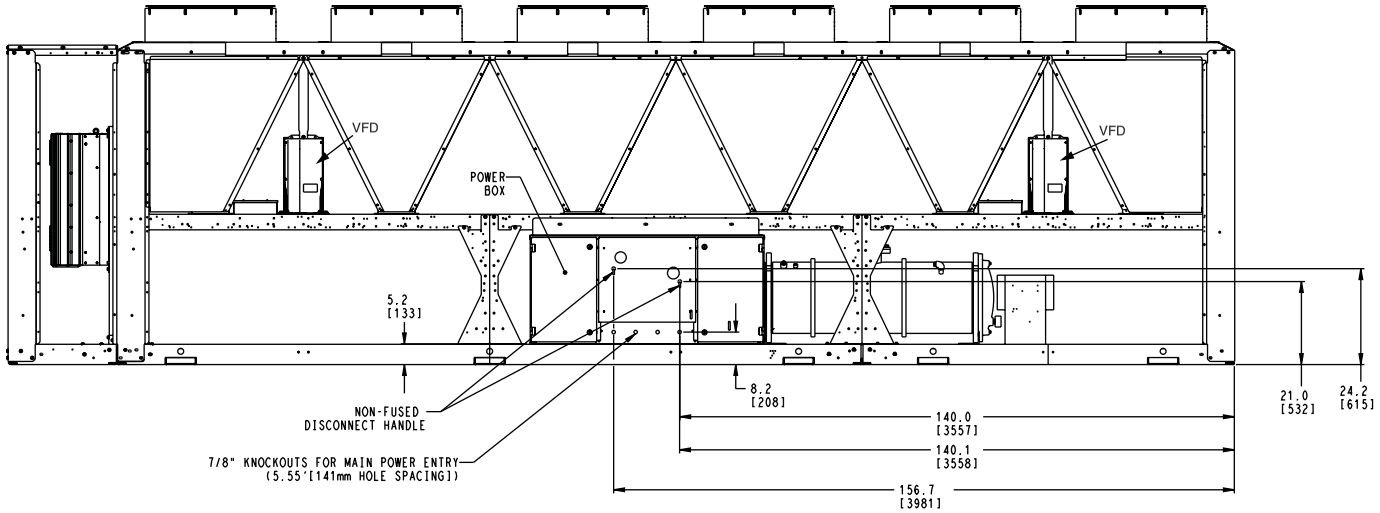
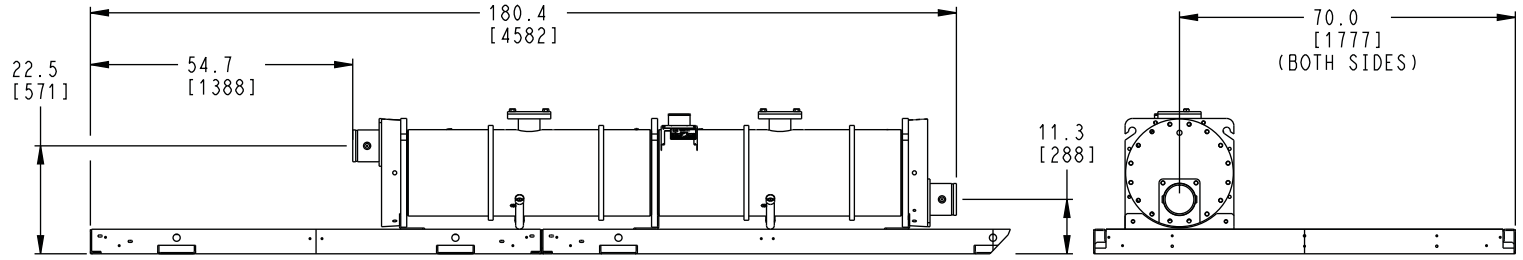


Fig. 3 — 30XA180,200 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

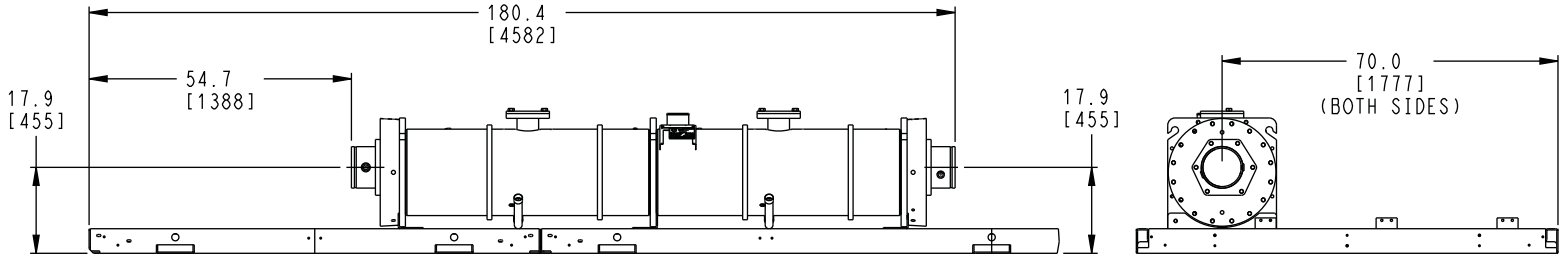


BACK VIEW

Fig. 3 — 30XA180,200 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)



PLUS-ONE-PASS COOLER

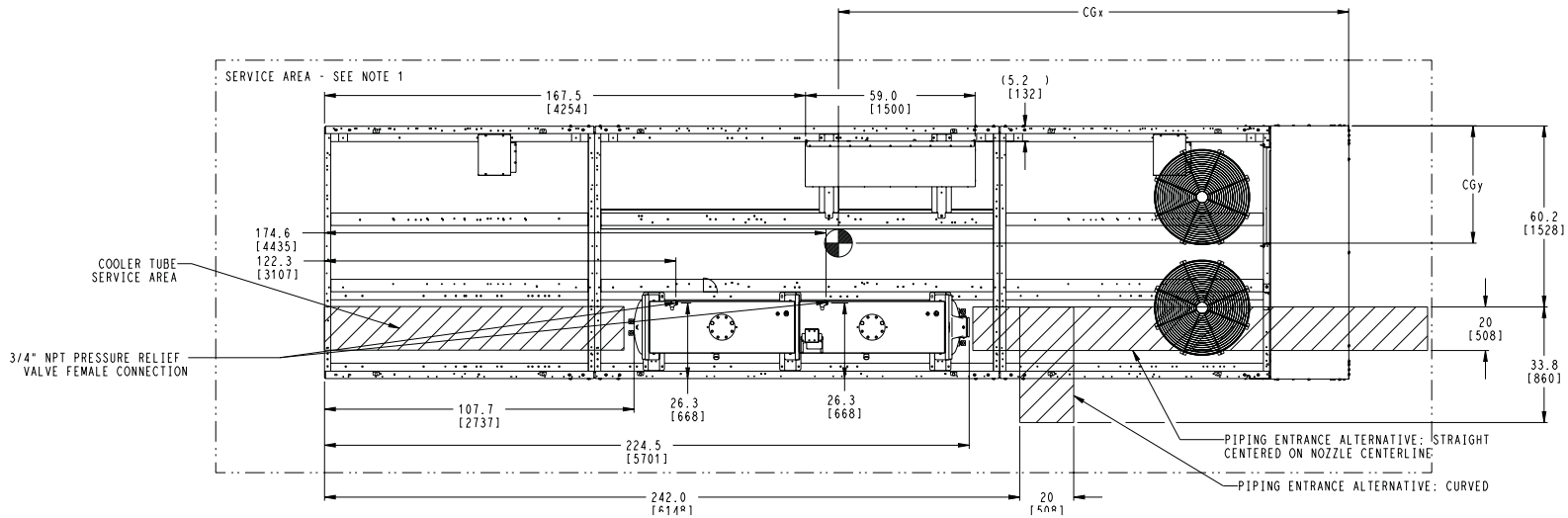


MINUS-ONE-PASS COOLER

Fig. 3 — 30XA180,200 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

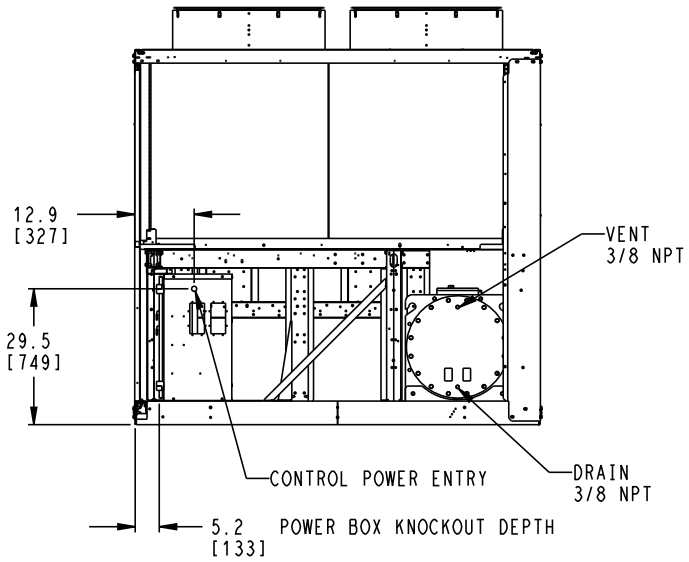
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. 3/8-in. NPT vents and drains located in each cooler head at each end of cooler.
4. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
5. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
220 (MCHX and Al/Cu)	178.1 [4523]	45.7 [1161]
220 (Cu/Cu)	179.3 [4554]	45.6 [1158]
240 (MCHX and Al/Cu)	178.7 [4539]	45.7 [1161]
240 (Cu/Cu)	179.9 [4571]	45.7 [1161]

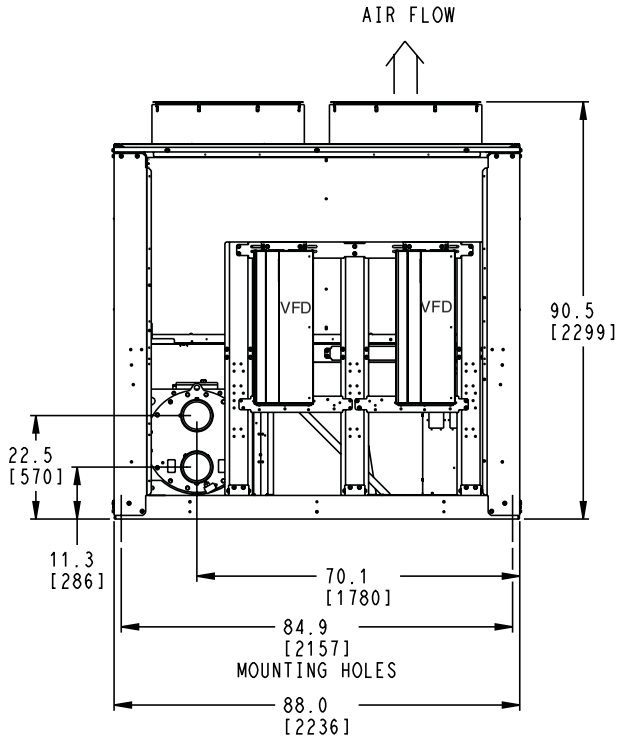


TOP VIEW

Fig. 4 — 30XA220,240 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler)



LEFT END VIEW



RIGHT END VIEW

Fig. 4 — 30XA220,240 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

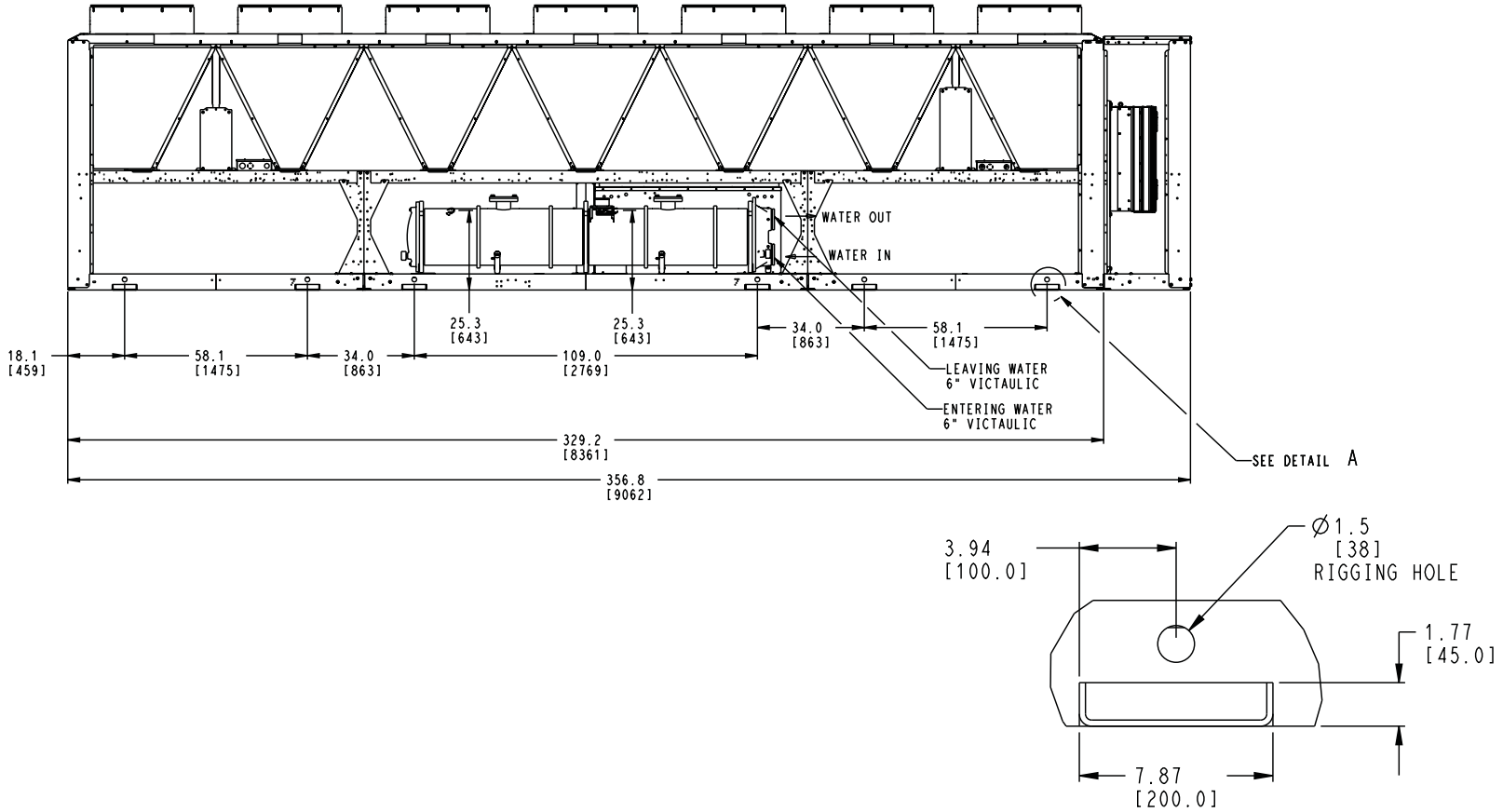
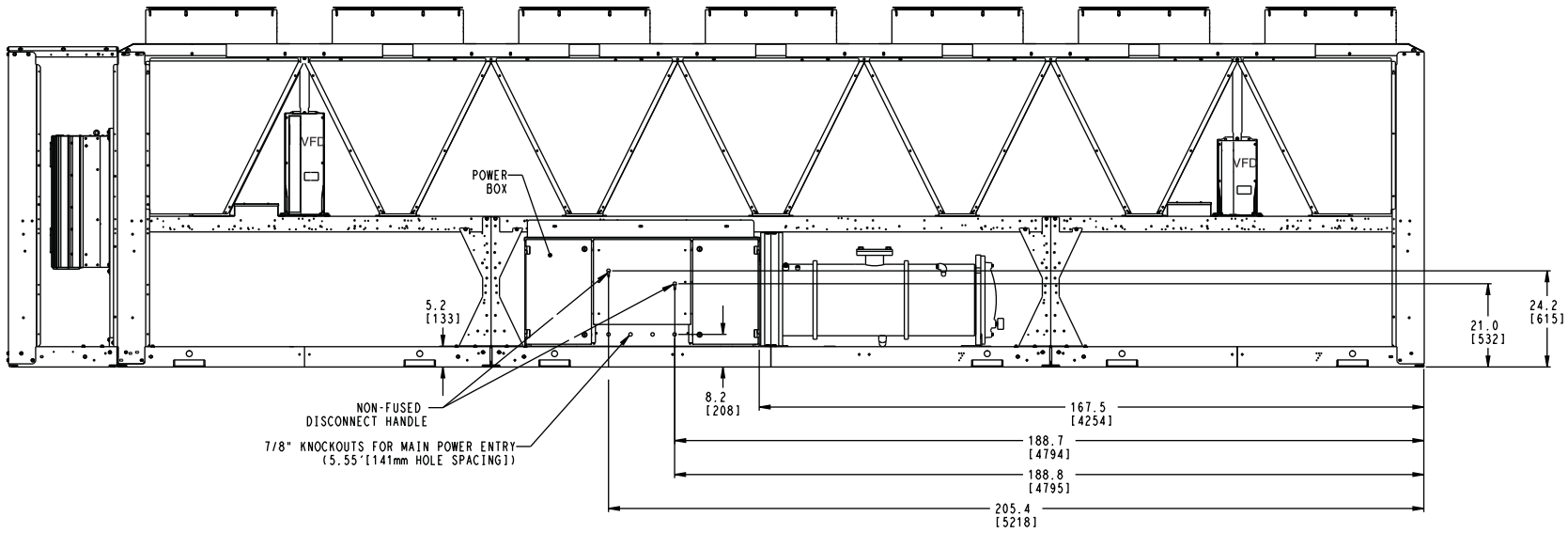
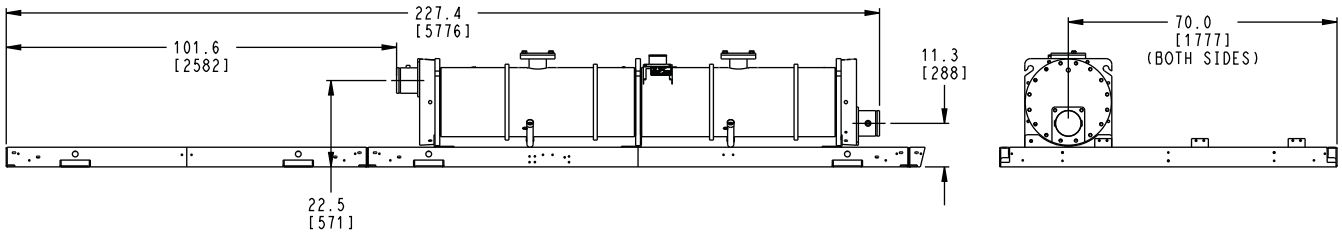


Fig. 4 — 30XA220,240 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

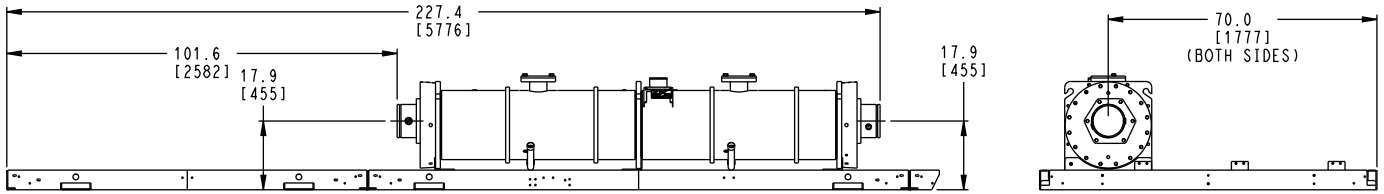


BACK VIEW

Fig. 4 — 30XA220,240 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)



PLUS-ONE-PASS COOLER

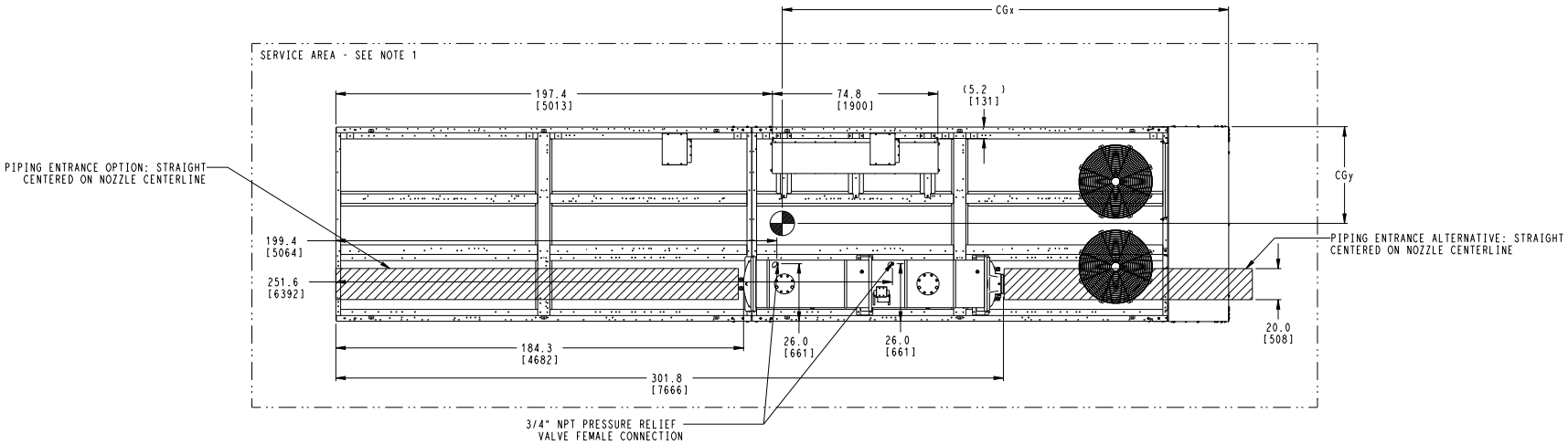


MINUS-ONE-PASS COOLER

Fig. 4 — 30XA220,240 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

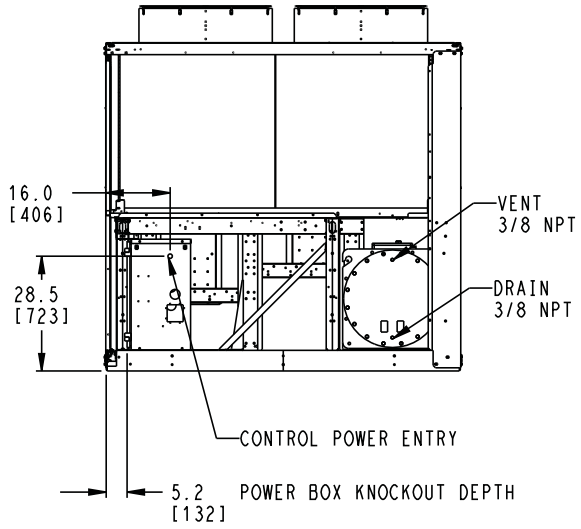
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. 3/8-in. NPT vents and drains located in each cooler head at each end of cooler.
4. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
5. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
260 (MCHX and Al/Cu)	179.7 [4565]	43.7 [1109]
260 (Cu/Cu)	183.0 [4649]	43.8 [1113]
280 (MCHX and Al/Cu)	180.1 [4574]	43.8 [1112]
280 (Cu/Cu)	183.4 [4658]	43.9 [1116]
300 (MCHX and Al/Cu)	180.0 [4573]	43.8 [1112]
300 (Cu/Cu)	183.4 [4658]	43.9 [1116]

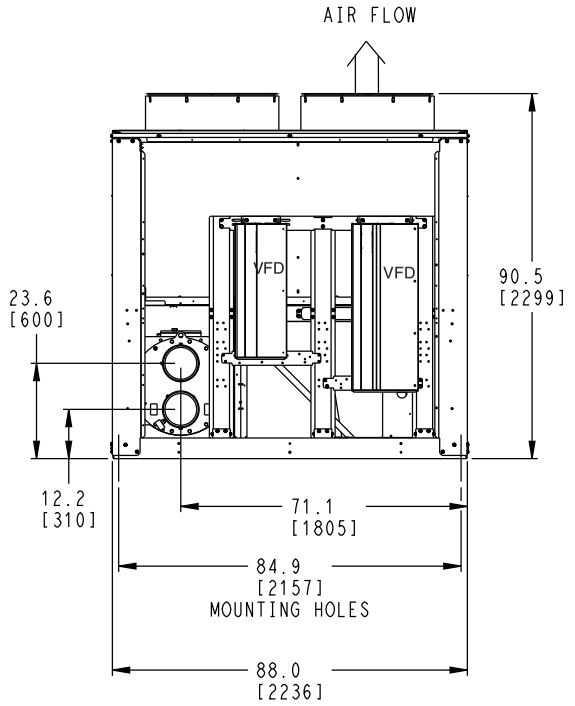


TOP VIEW

Fig. 5 — 30XA260, 280, 300 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler)



LEFT END VIEW



RIGHT END VIEW

Fig. 5 — 30XA260, 280, 300 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

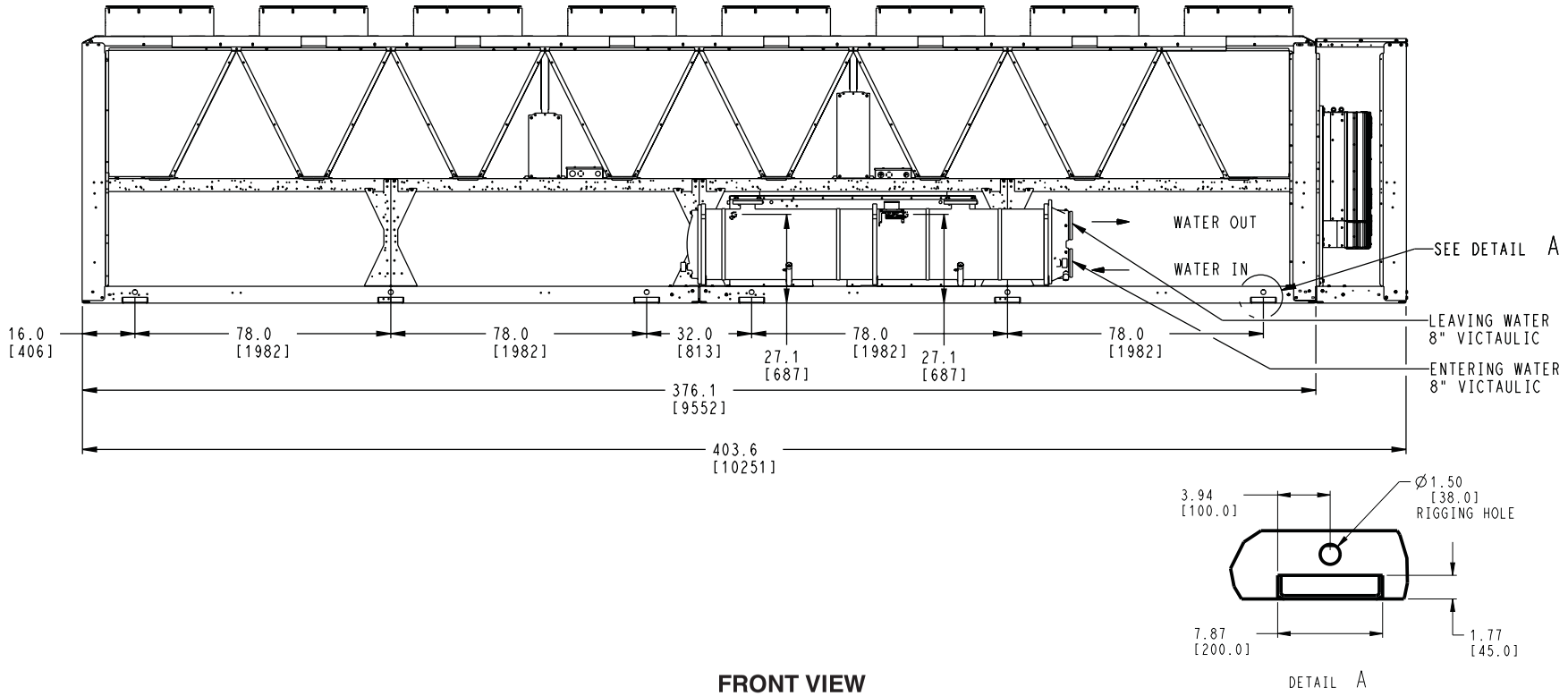
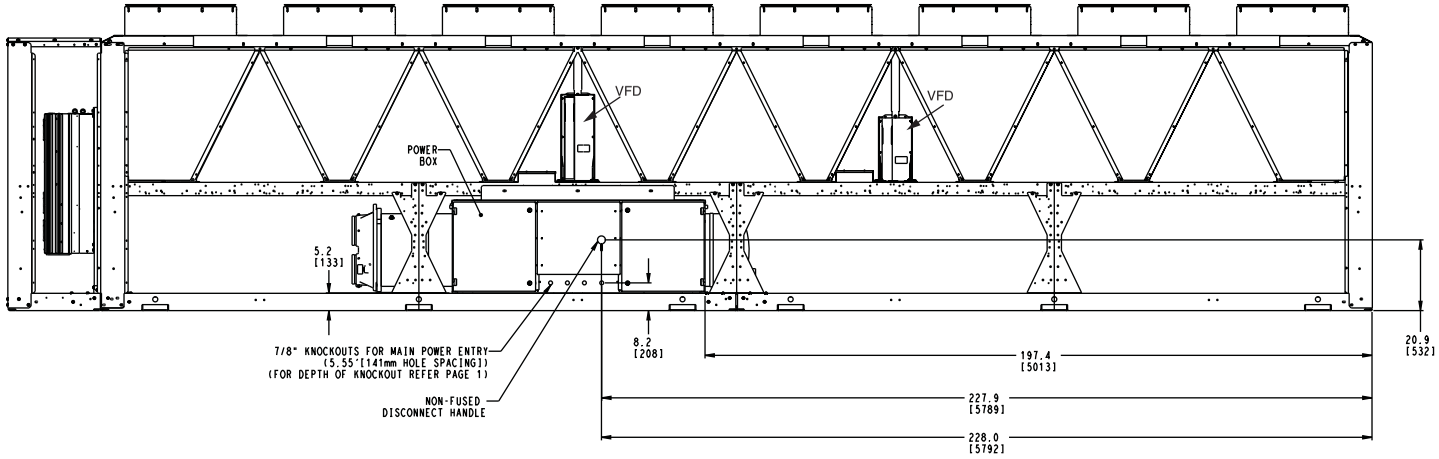
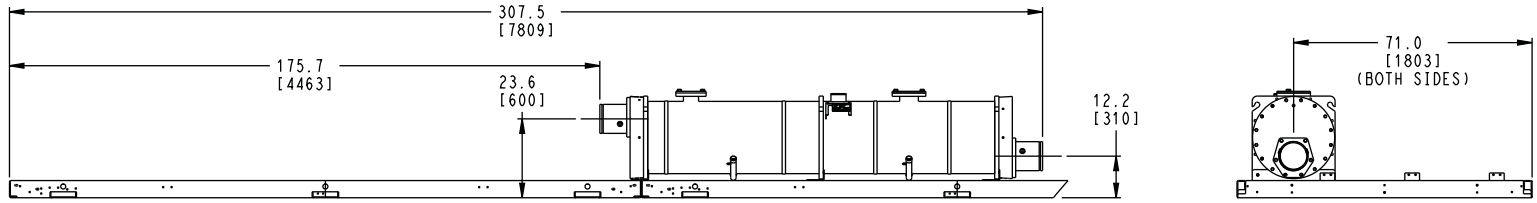


Fig. 5 — 30XA260, 280, 300 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

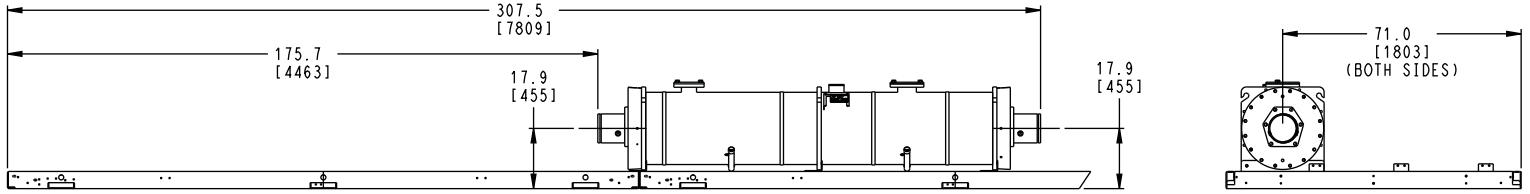


BACK VIEW

Fig. 5 — 30XA260, 280, 300 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)



PLUS-ONE-PASS COOLER

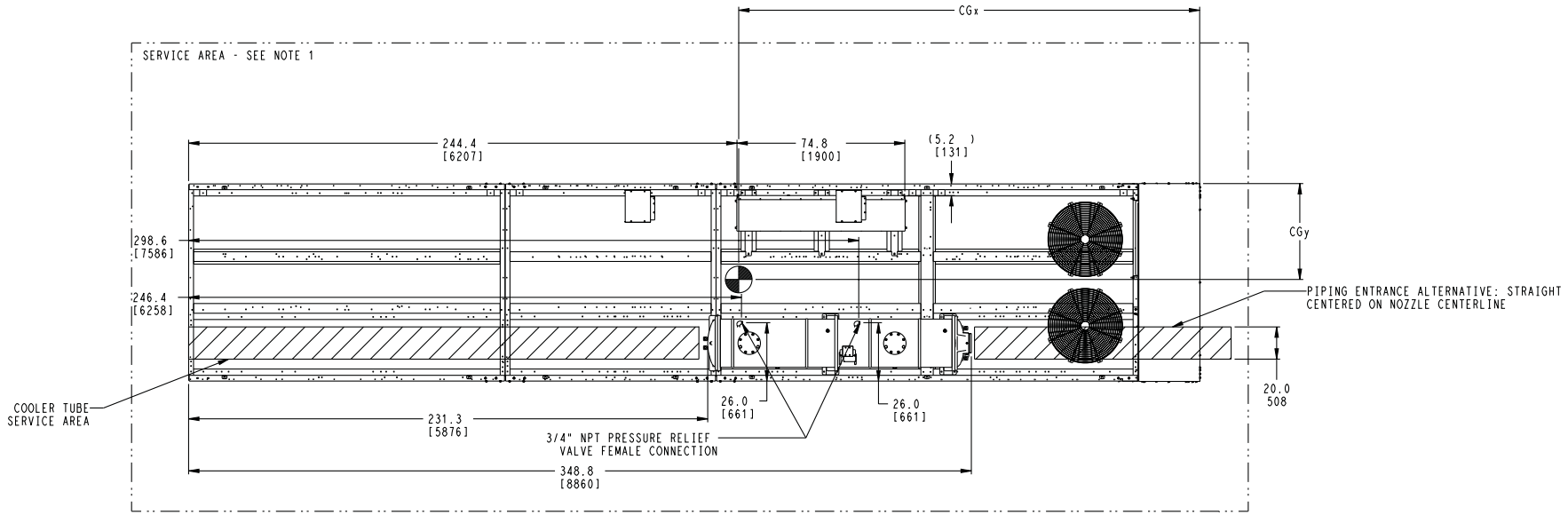


MINUS-ONE-PASS COOLER

Fig. 5 — 30XA260, 280, 300 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

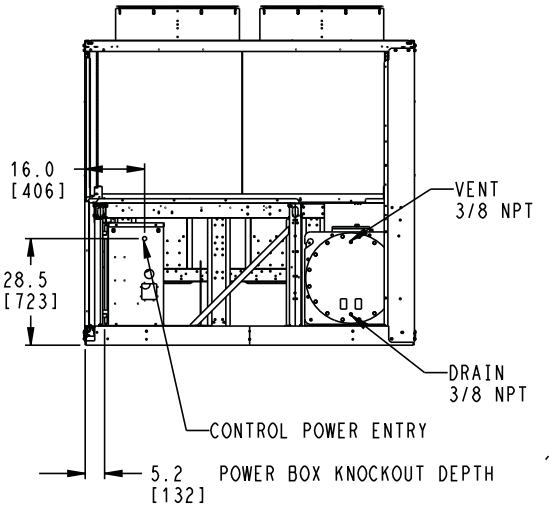
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. 3/8-in. NPT vents and drains located in each cooler head at each end of cooler.
4. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
5. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
325 (MCHX and Al/Cu)	195.6 [4969]	42.3 [1075]
325 (Cu/Cu)	200.0 [5079]	42.6 [1082]
350 (MCHX and Al/Cu)	195.3 [4960]	42.3 [1075]
350 (Cu/Cu)	199.6 [5069]	42.6 [1082]

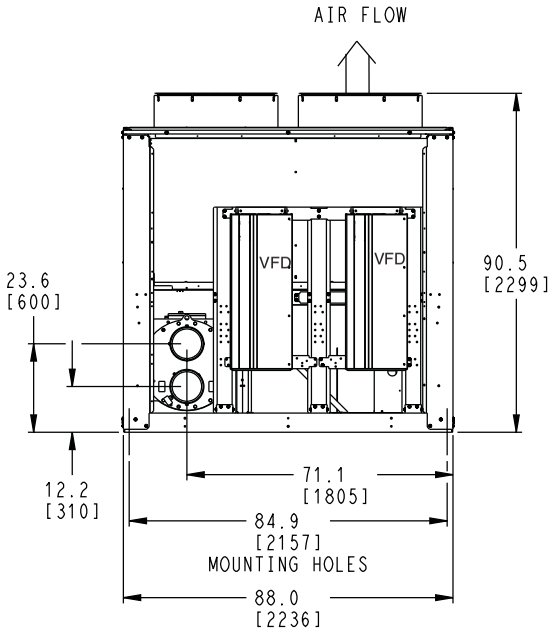


TOP VIEW

Fig. 6 — 30XA325,350 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler)



LEFT END VIEW



RIGHT END VIEW

Fig. 6 — 30XA325,350 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

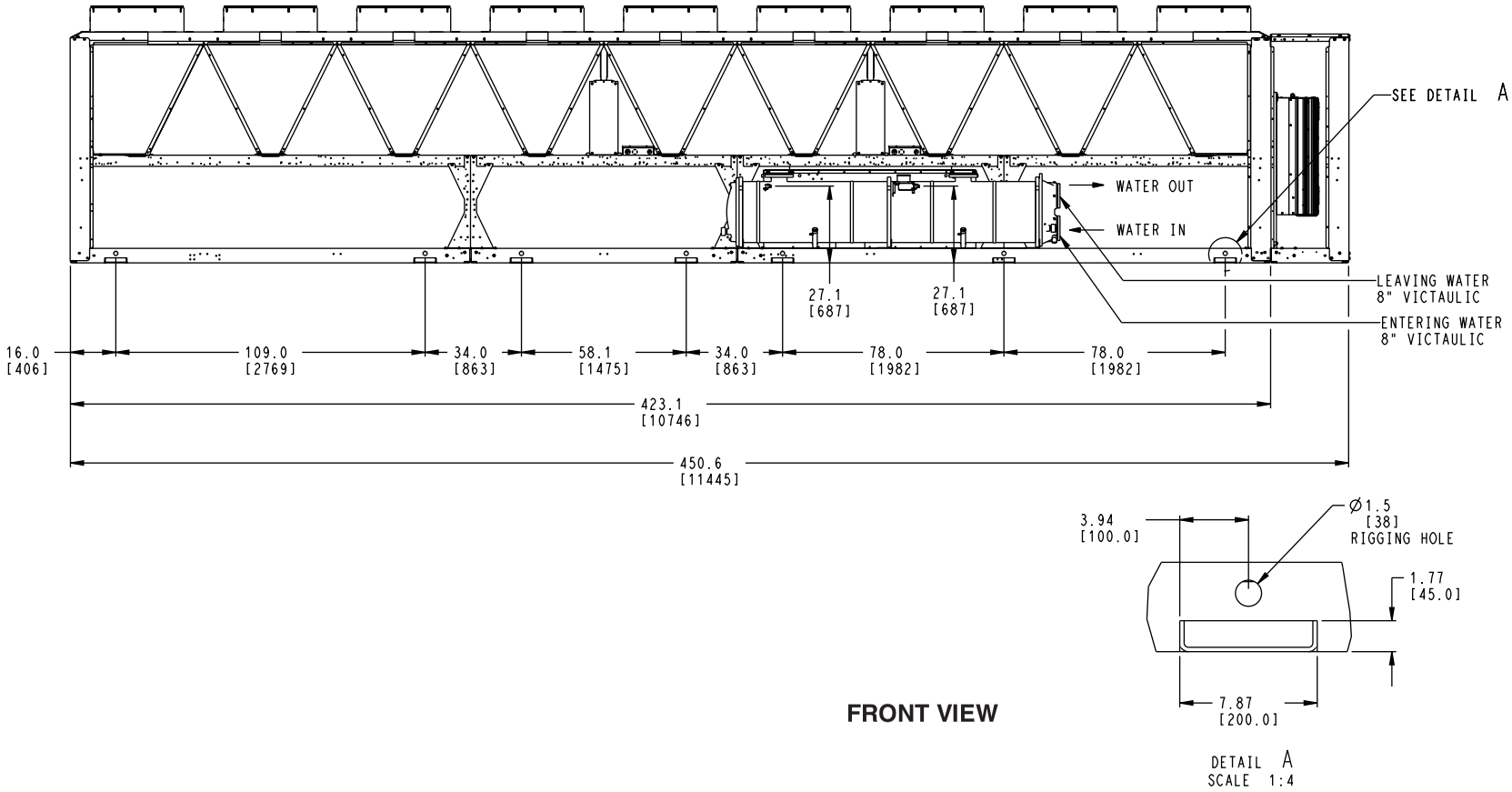
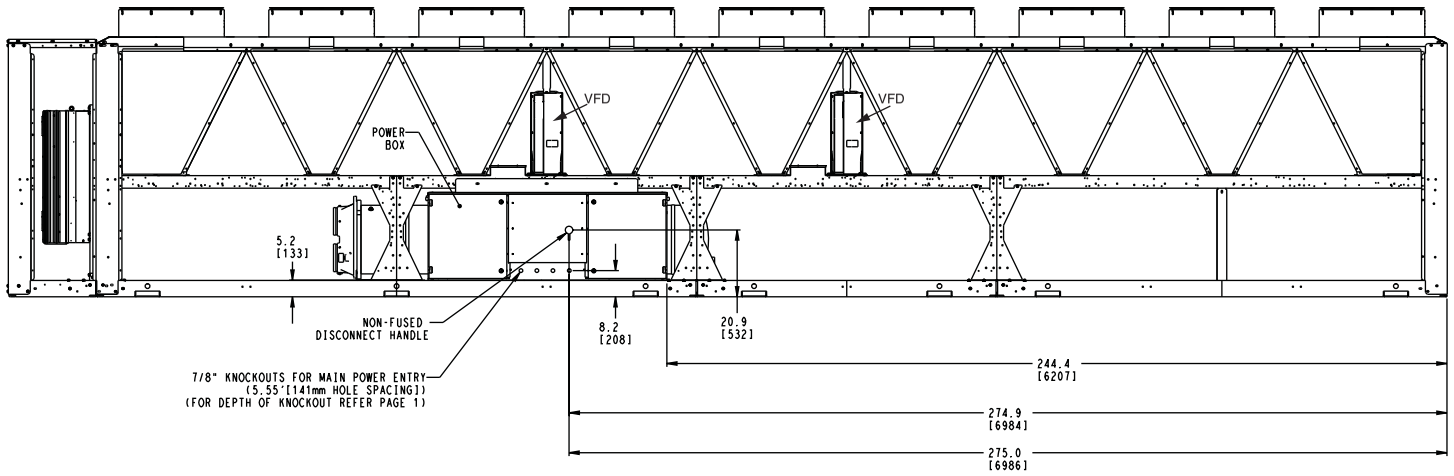
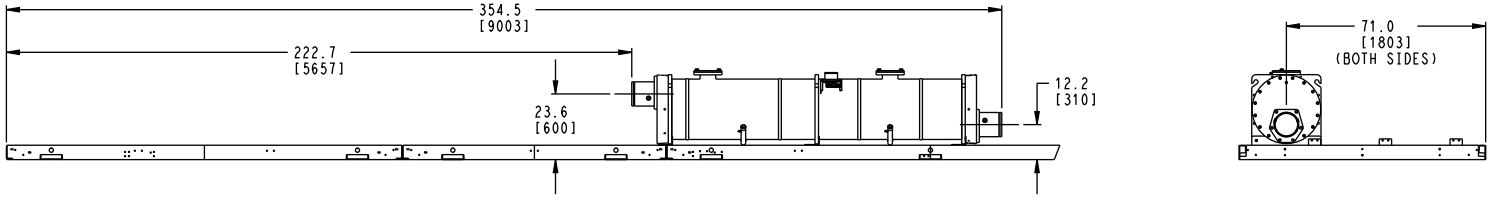


Fig. 6 — 30XA325,350 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

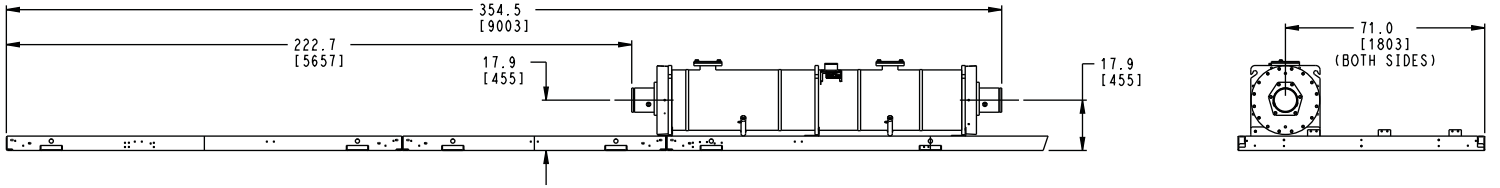


BACK VIEW

Fig. 6 — 30XA325,350 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)



PLUS-ONE-PASS COOLER



MINUS-ONE-PASS COOLER

Fig. 6 — 30XA325,350 Air-Cooled Liquid Chiller Dimensions (Flooded Cooler) (cont)

NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
142 (MCHX and Al/Cu)	140.4 [3566]	44.1 [1120]
142 (Cu/Cu)	140.6 [3571]	44.2 [1124]
162(MCHX and Al/Cu)	140.7 [3573]	44.1 [1121]
162 (Cu/Cu)	141.0 [3581]	44.1 [1121]

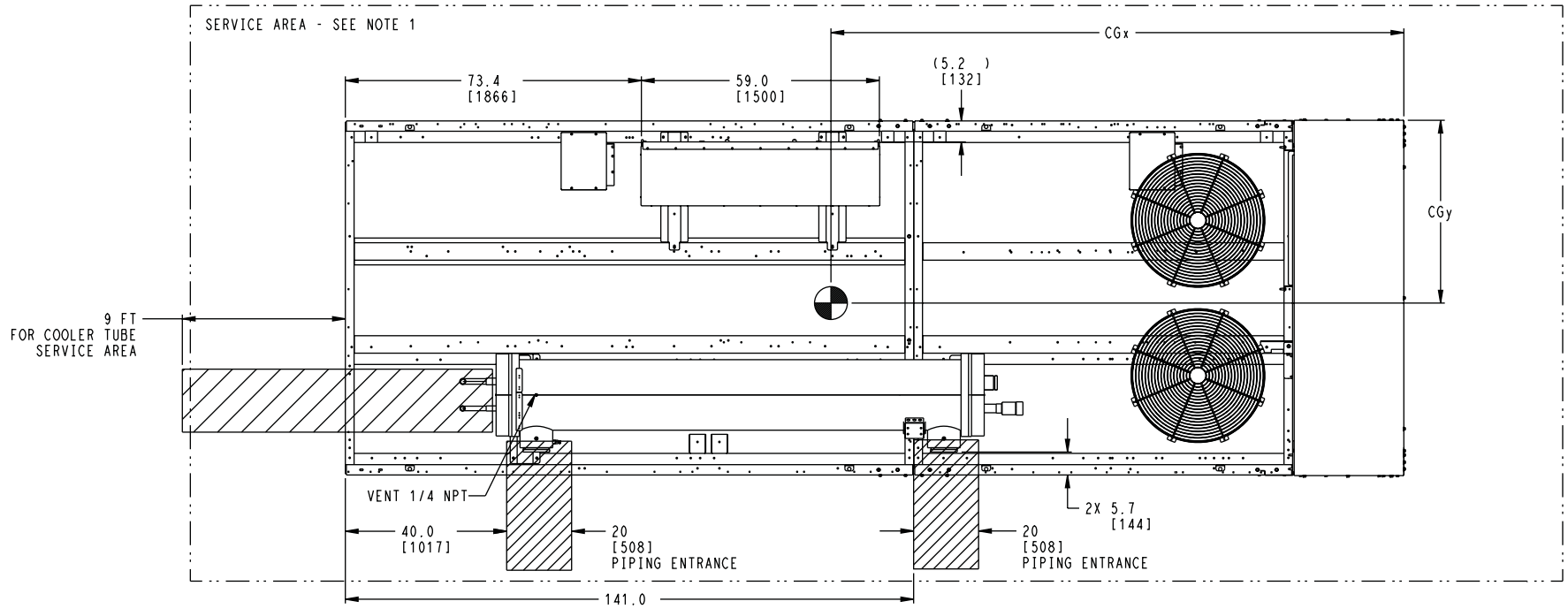
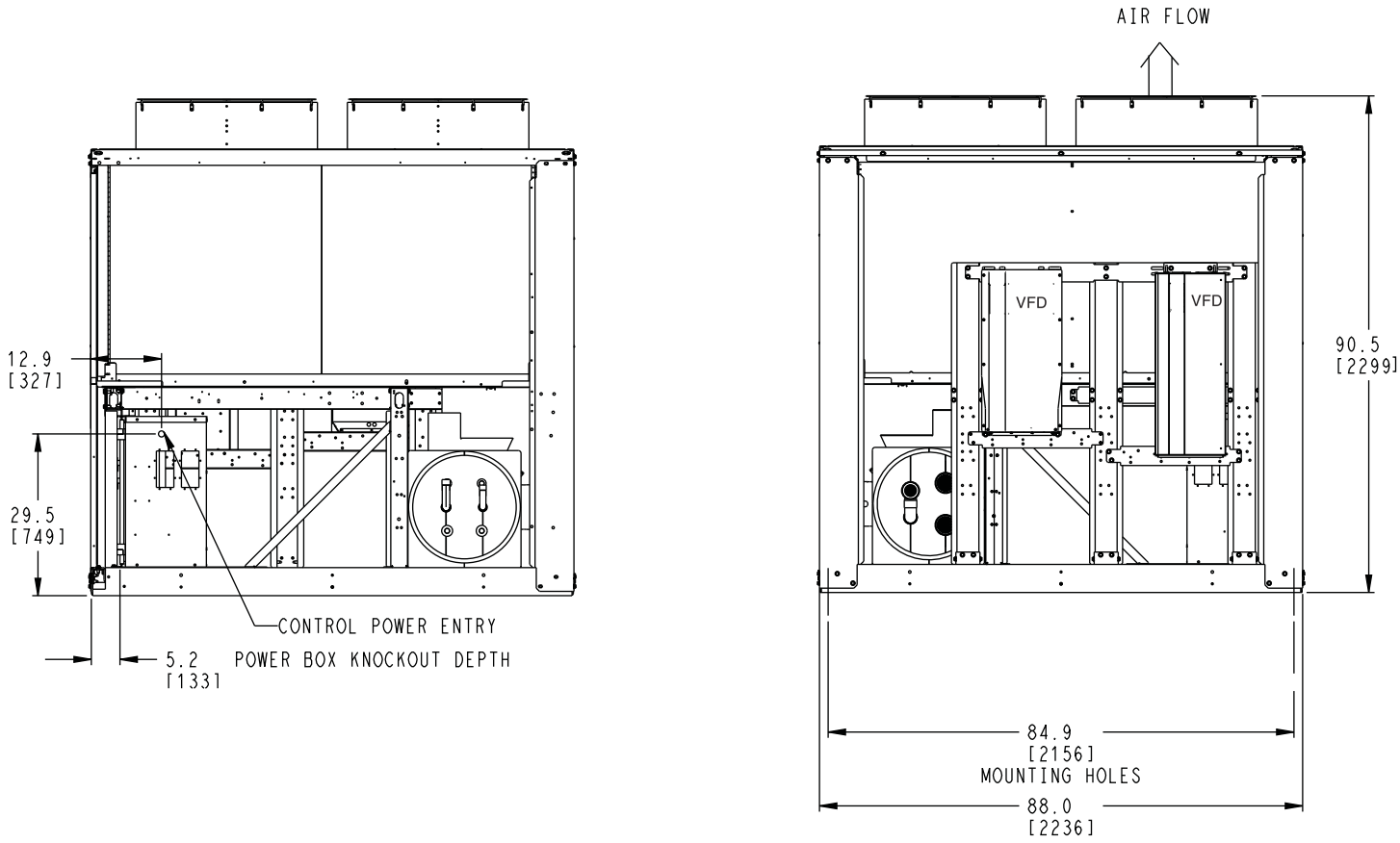


Fig. 7 — 30XA142,162 Air-Cooled Liquid Chiller Dimensions (DX Cooler)

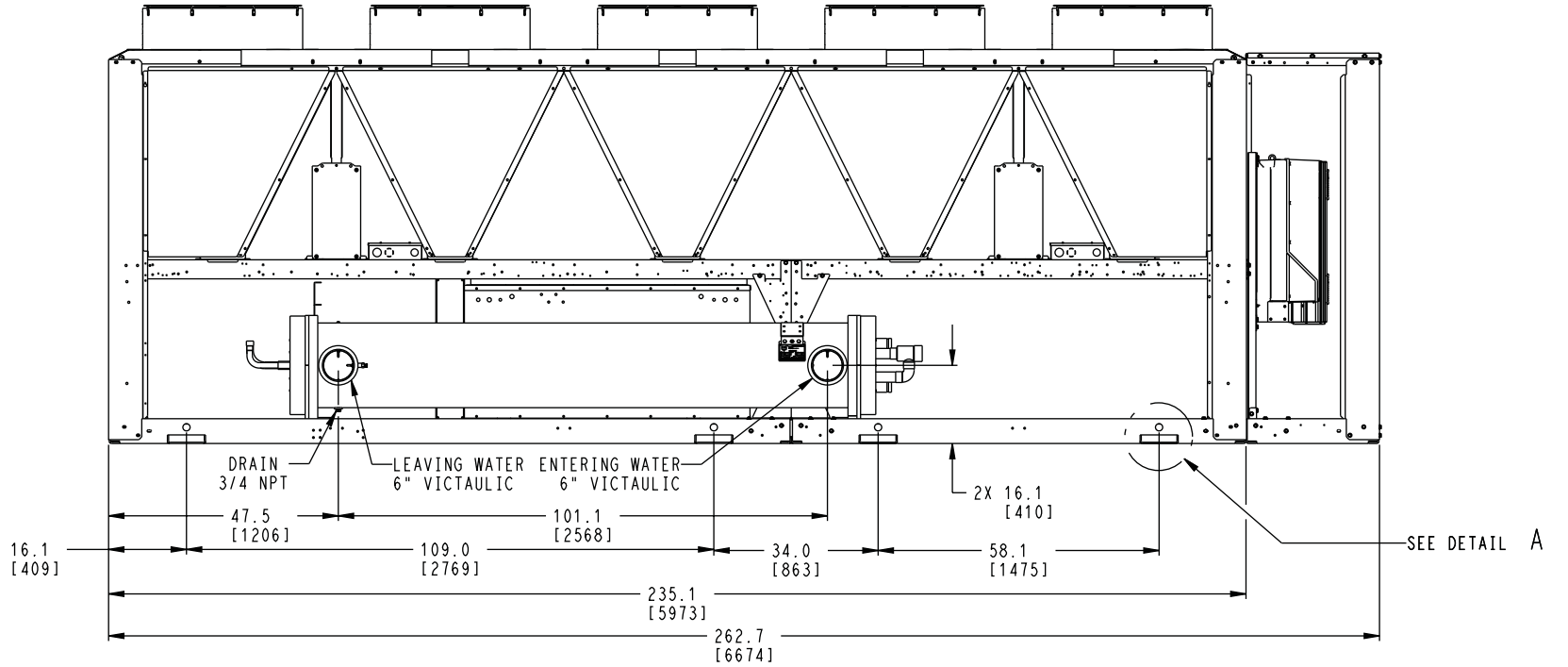


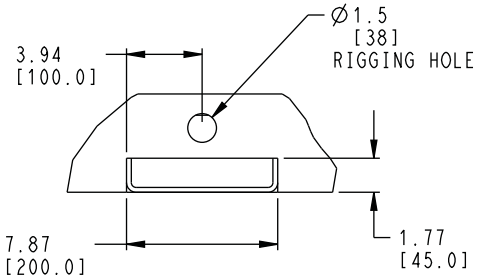
LEFT END VIEW

RIGHT END VIEW

TOP VIEW

Fig. 7 — 30XA142,162 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

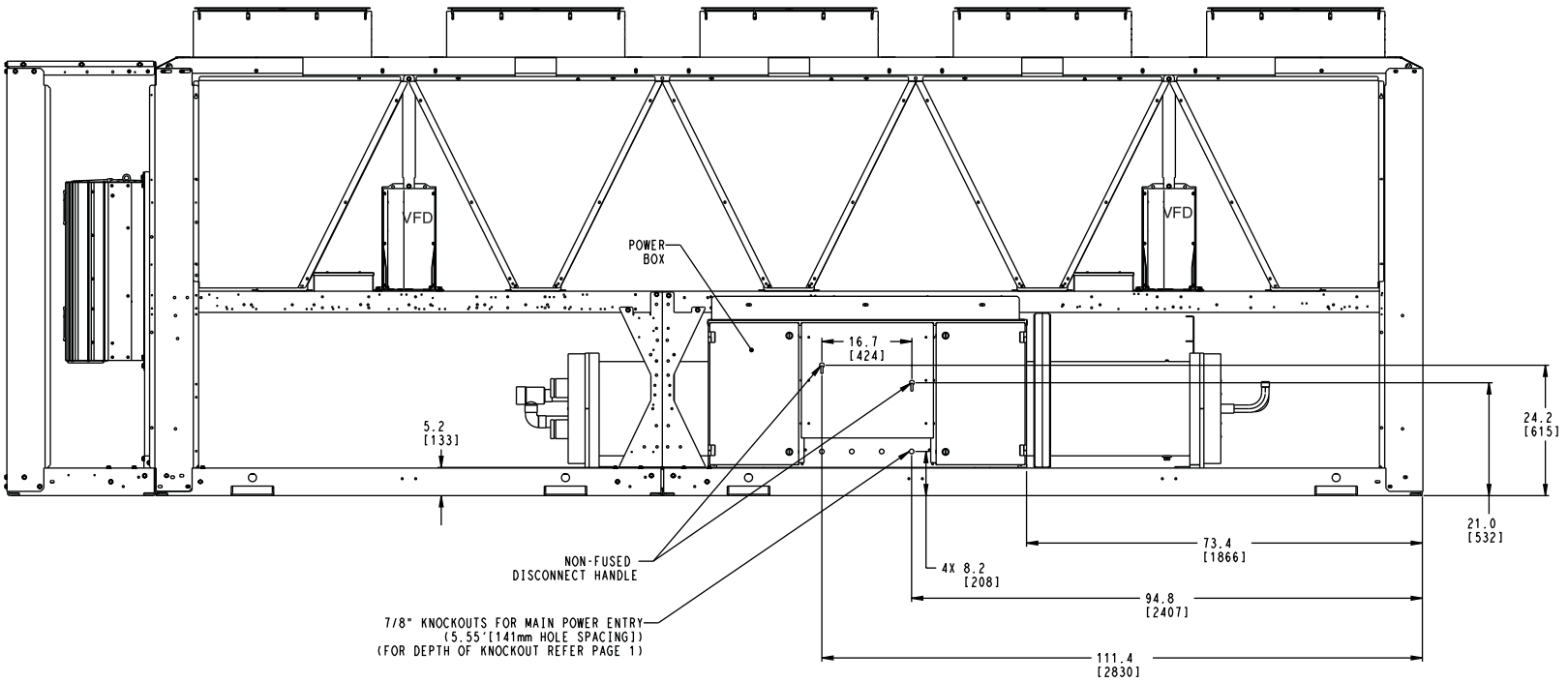




FRONT VIEW

DETAIL A
SCALE 1:5

Fig. 7 — 30XA142,162 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

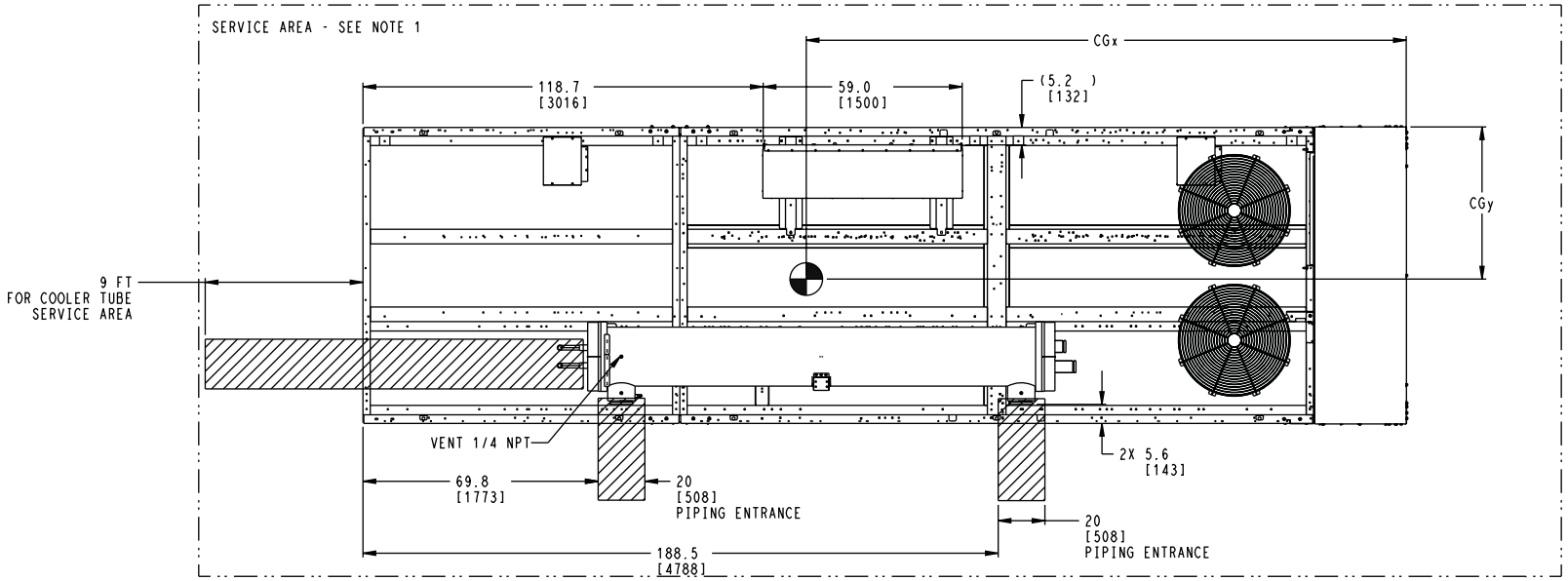


BACK VIEW

Fig. 7 — 30XA142,162 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

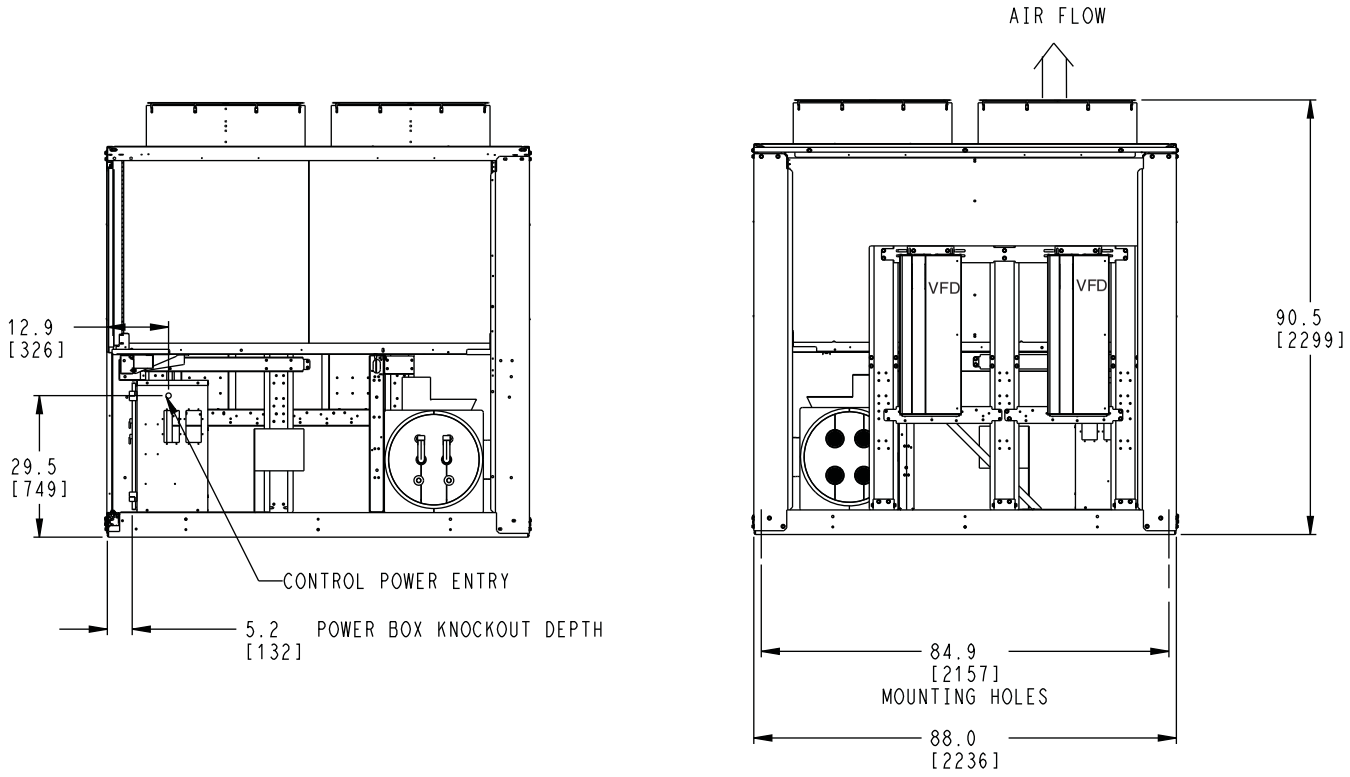
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
182 (MCHX and Al/Cu)	159.7 [4055]	45.6 [1158]
182 (Cu/Cu)	160.5 [4076]	45.5 [1157]
202 (MCHX and Al/Cu)	159.8 [4059]	45.6 [1158]
202 (Cu/Cu)	160.6 [4080]	45.5 [1157]



TOP VIEW

Fig. 8 — 30XA182,202 Air-Cooled Liquid Chiller Dimensions (DX Cooler)



LEFT END VIEW

RIGHT END VIEW

Fig. 8 — 30XA182,202 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

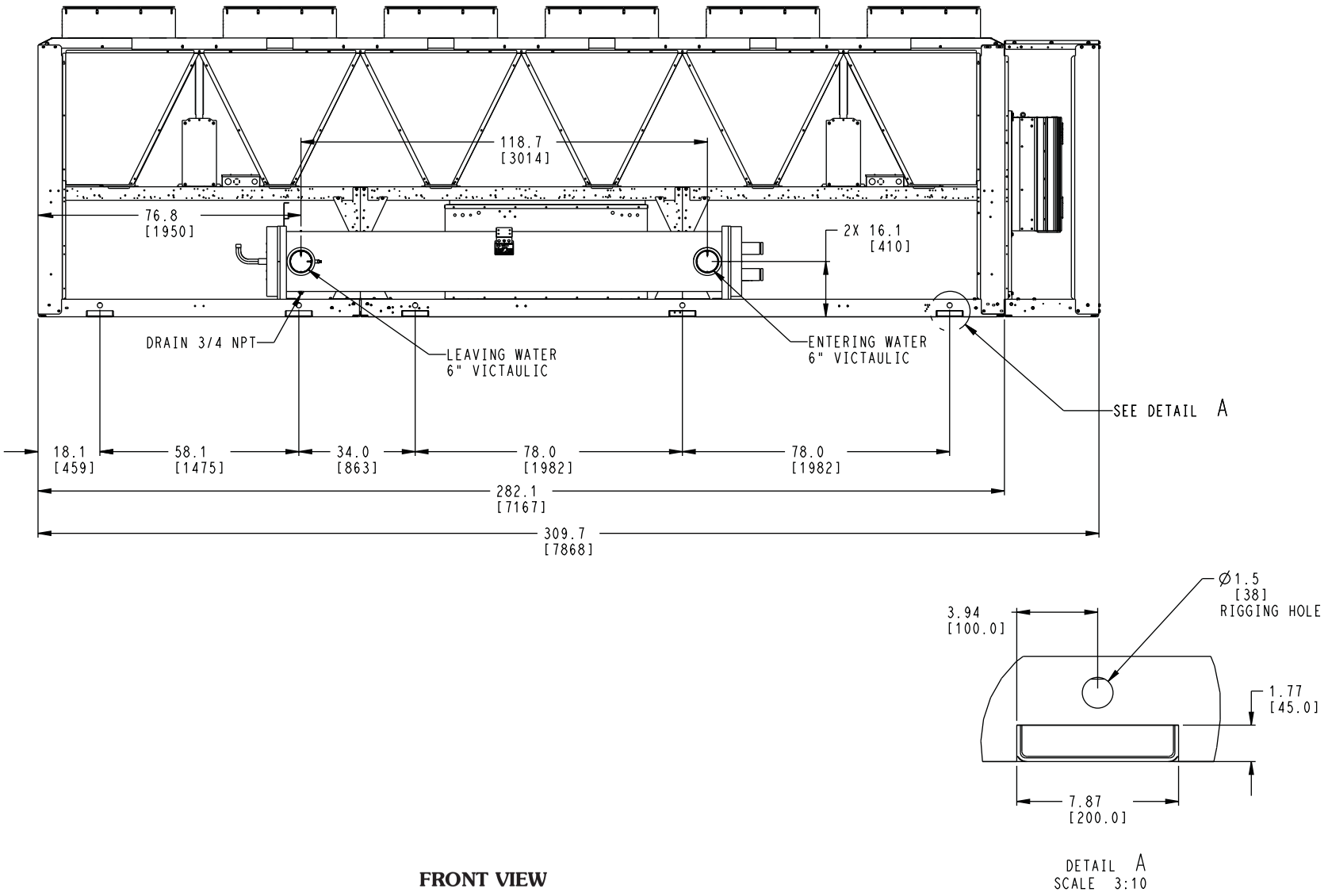
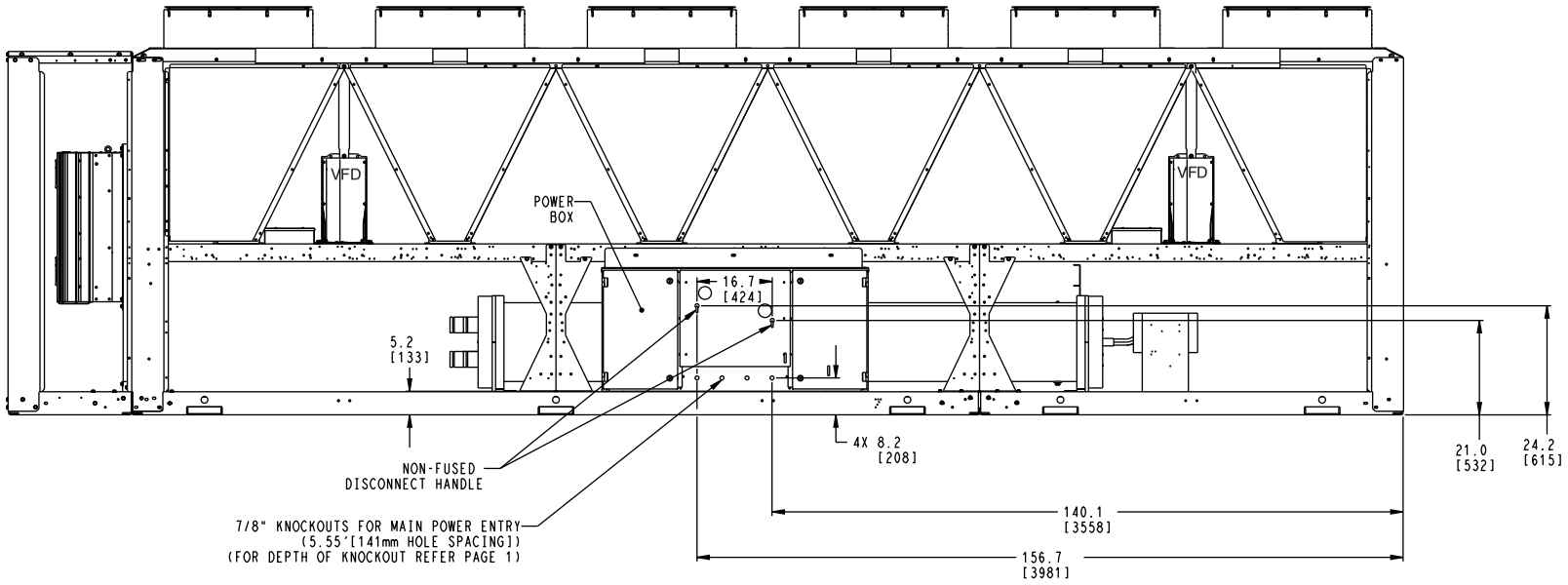


Fig. 8 — 30XA182,202 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

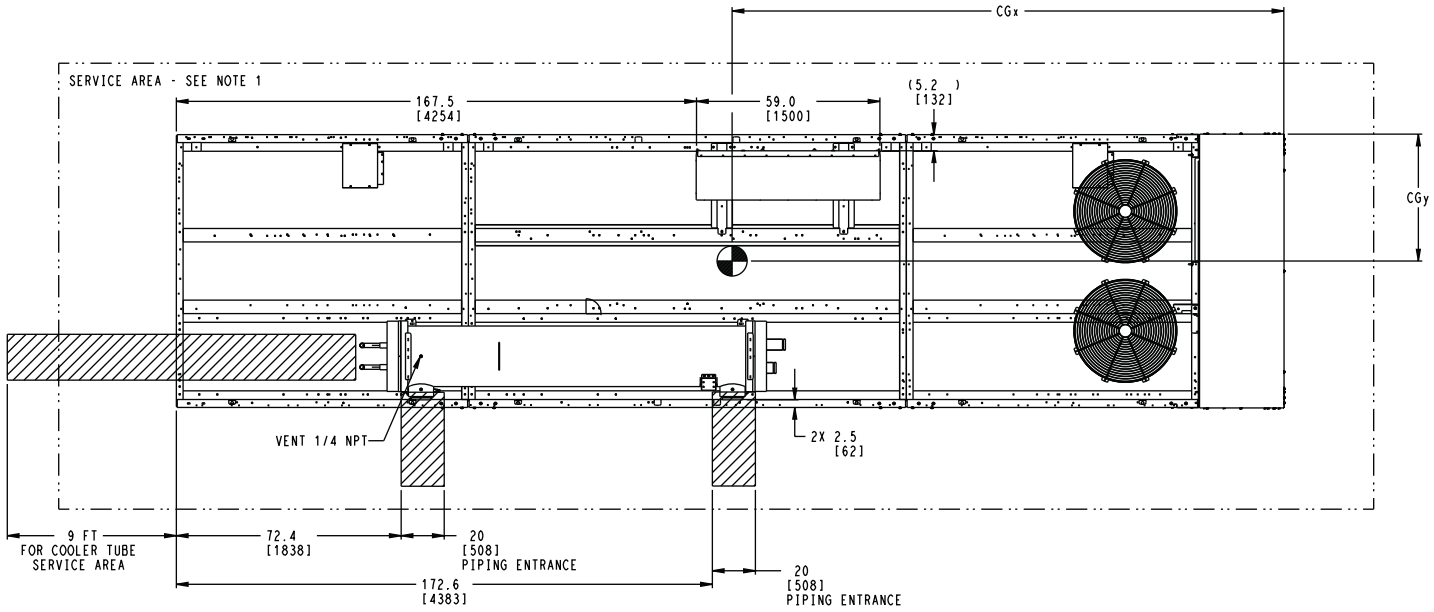


BACK VIEW

Fig. 8 — 30XA182,202 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

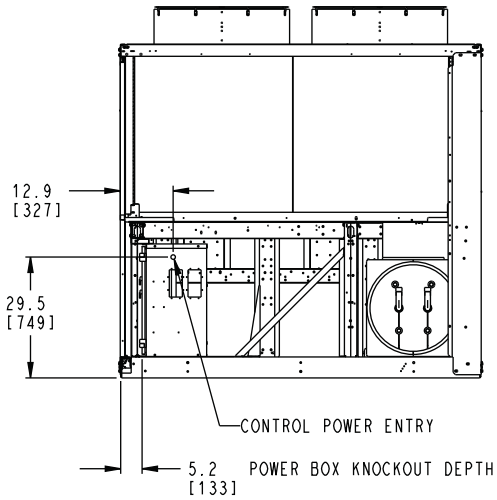
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
222 (MCHX and Al/Cu)	178.1 [4523]	45.7 [1161]
222 (Cu/Cu)	179.3 [4554]	45.6 [1158]
242 (MCHX and Al/Cu)	178.7 [4539]	45.7 [1162]
242 (Cu/Cu)	179.9 [4571]	45.7 [1162]

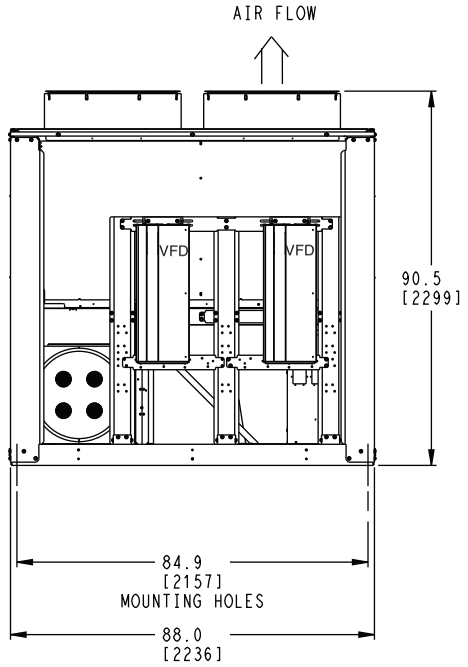


TOP VIEW

Fig. 9 — 30XA222,242 Air-Cooled Liquid Chiller Dimensions (DX Cooler)

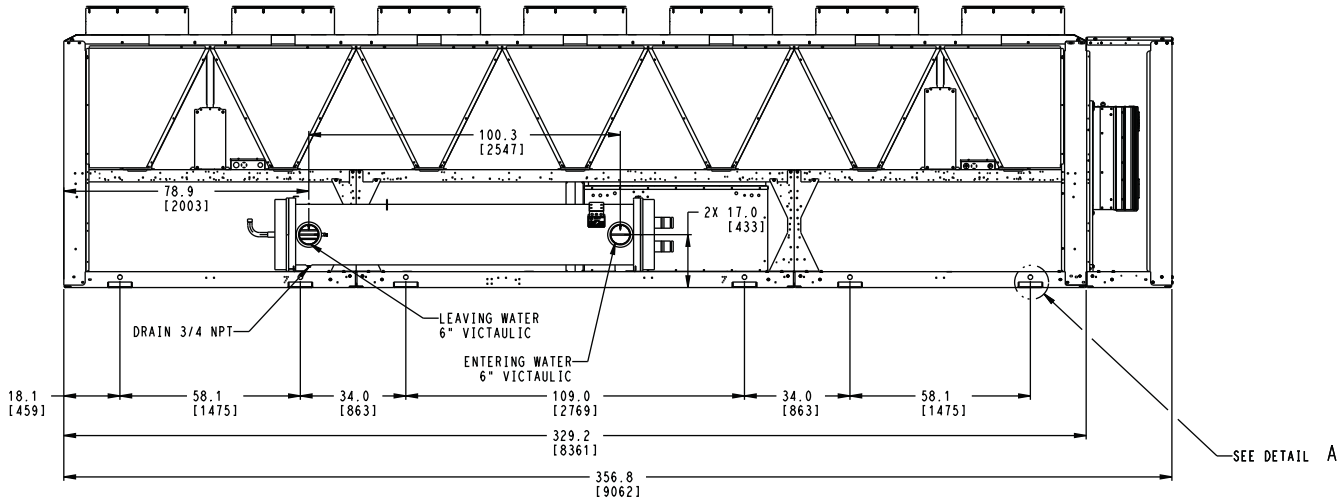


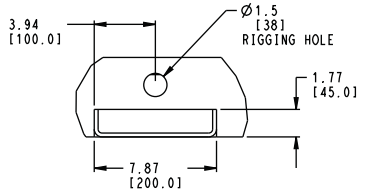
LEFT END VIEW



RIGHT END VIEW

Fig. 9 — 30XA222,242 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

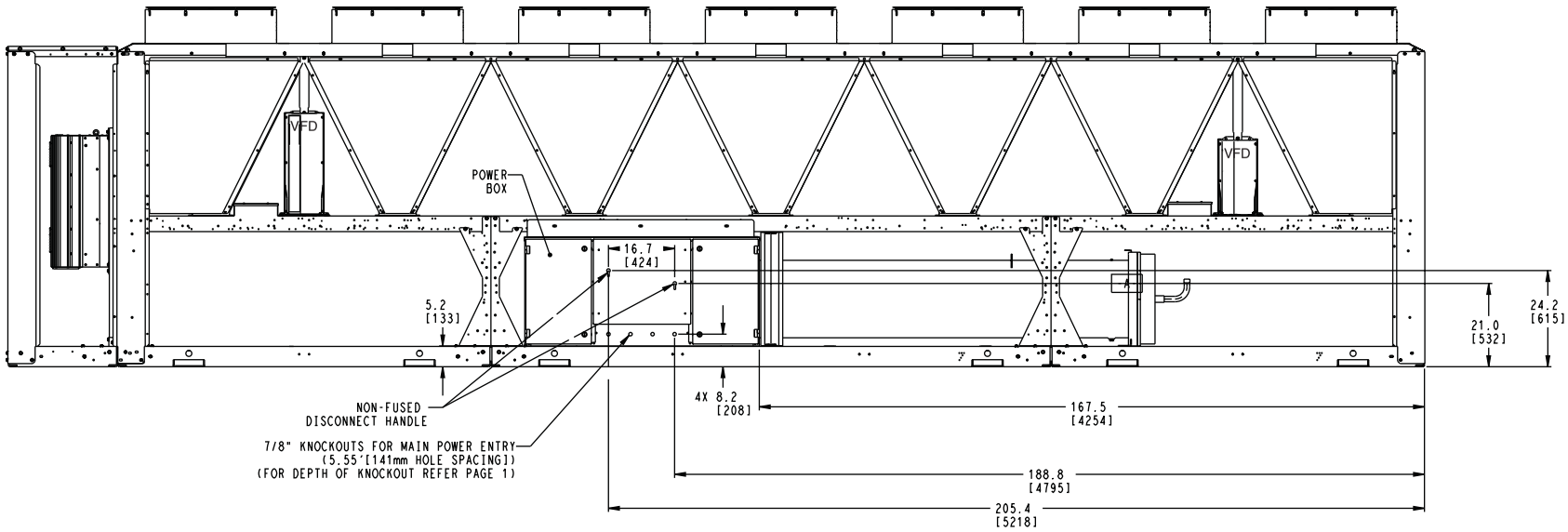




DETAIL A
SCALE 1:4

FRONT VIEW

Fig. 9 — 30XA222,242 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

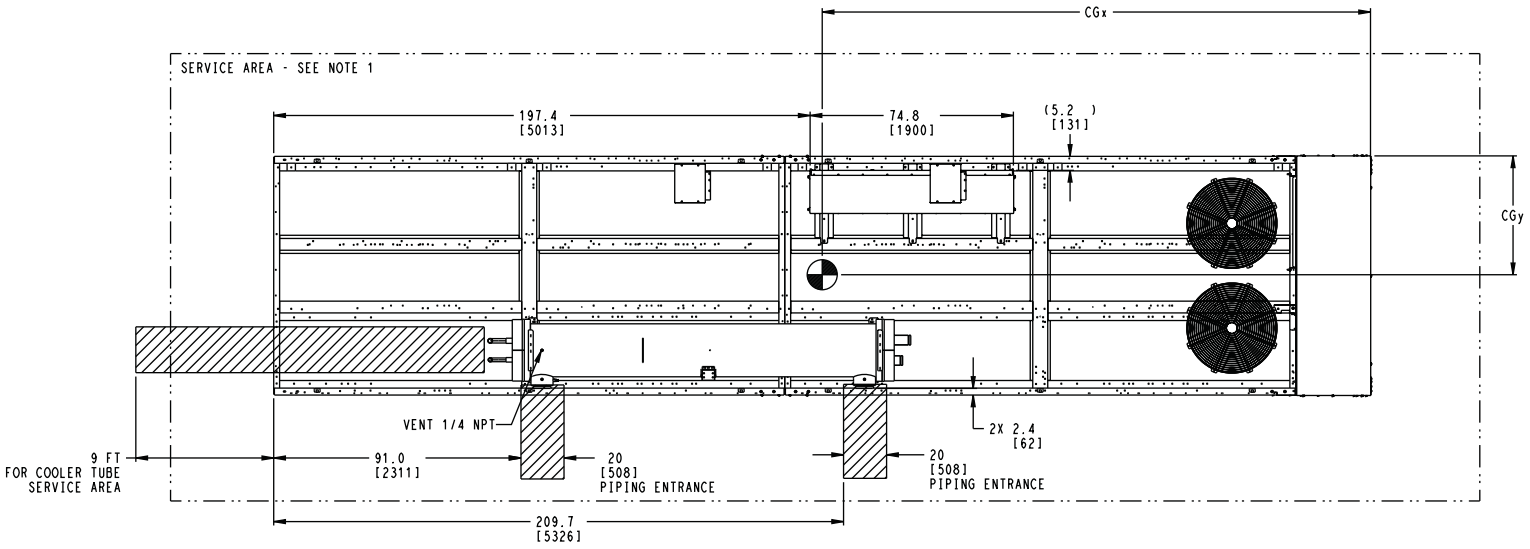


BACK VIEW

Fig. 9 — 30XA222,242 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

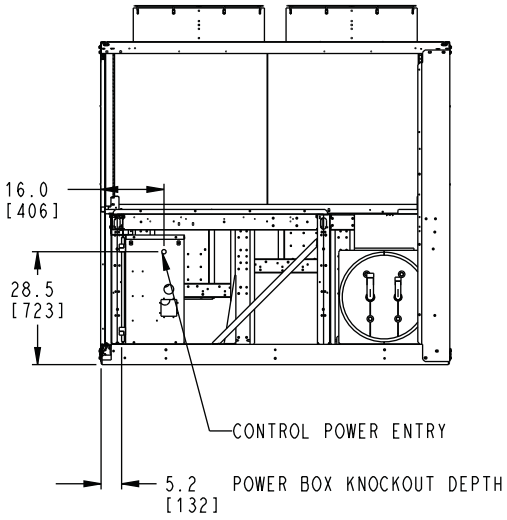
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
262 (MCHX and Al/Cu)	179.7 [4565]	43.7 [1109]
262 (Cu/Cu)	183.0 [4649]	43.8 [1113]
282 (MCHX and Al/Cu)	180.1 [4574]	43.8 [1112]
282 (Cu/Cu)	183.4 [4658]	43.9 [1116]

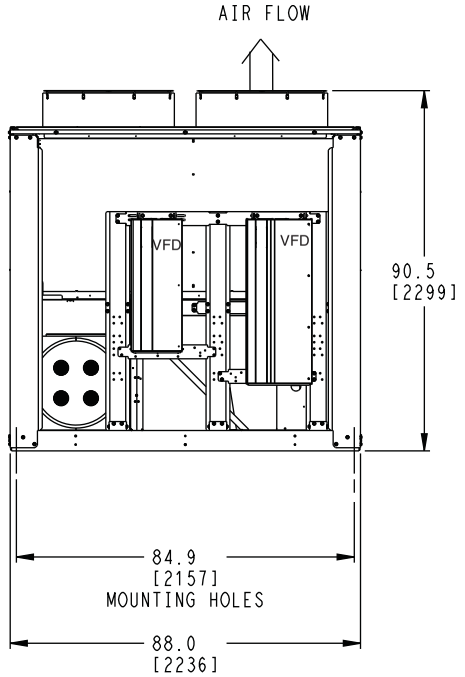


TOP VIEW

Fig. 10 — 30XA262,282 Air-Cooled Liquid Chiller Dimensions (DX Cooler)

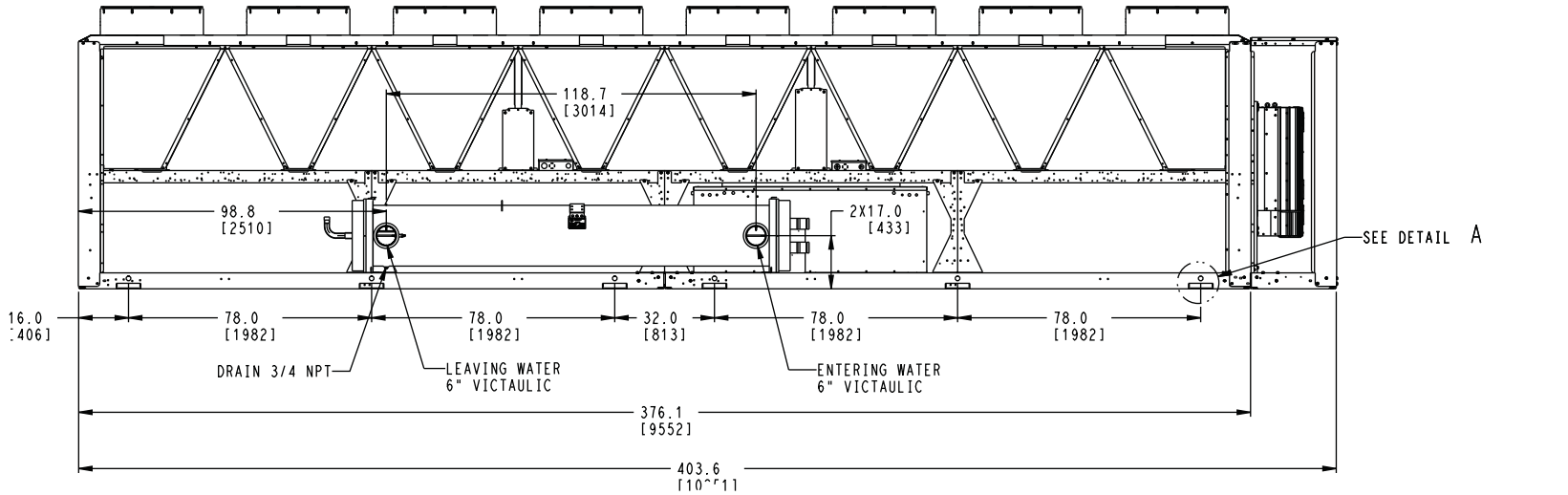


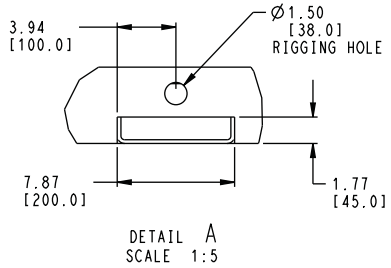
LEFT END VIEW



RIGHT END VIEW

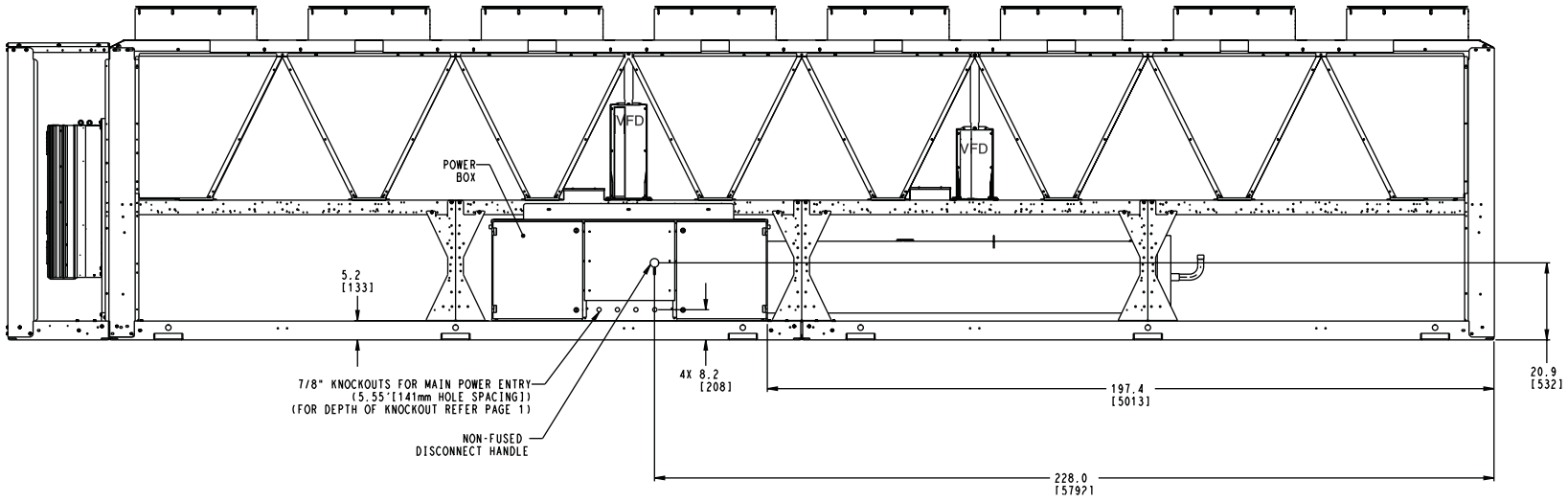
Fig. 10 — 30XA262,282 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)





FRONT VIEW

Fig. 10 — 30XA262,282 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

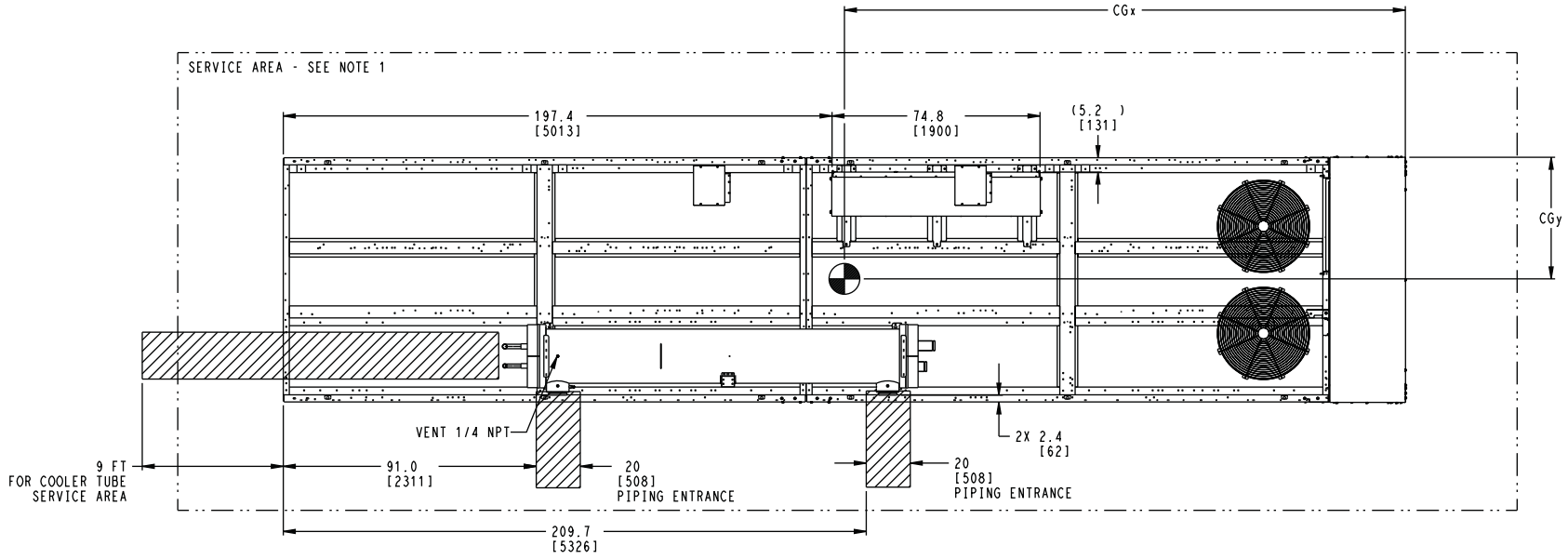


BACK VIEW

Fig. 10 — 30XA262,282 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

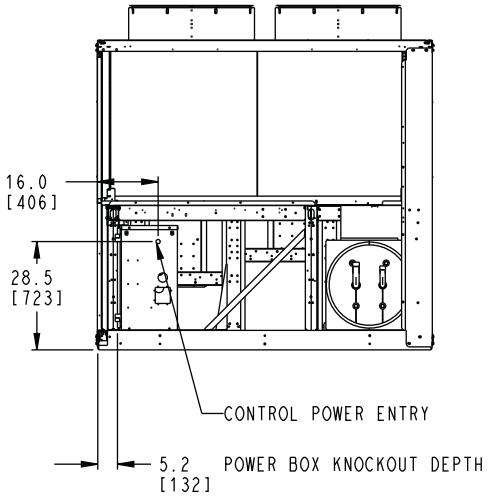
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
302 (MCHX and Al/Cu)	180.0 [4573]	43.8 [1112]
302 (Cu/Cu)	183.4 [4659]	43.9 [1116]

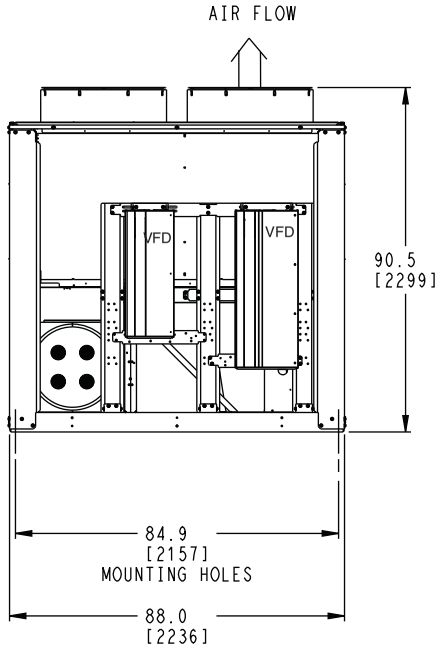


TOP VIEW

Fig. 11 — 30XA302 Air-Cooled Liquid Chiller Dimensions (DX Cooler)

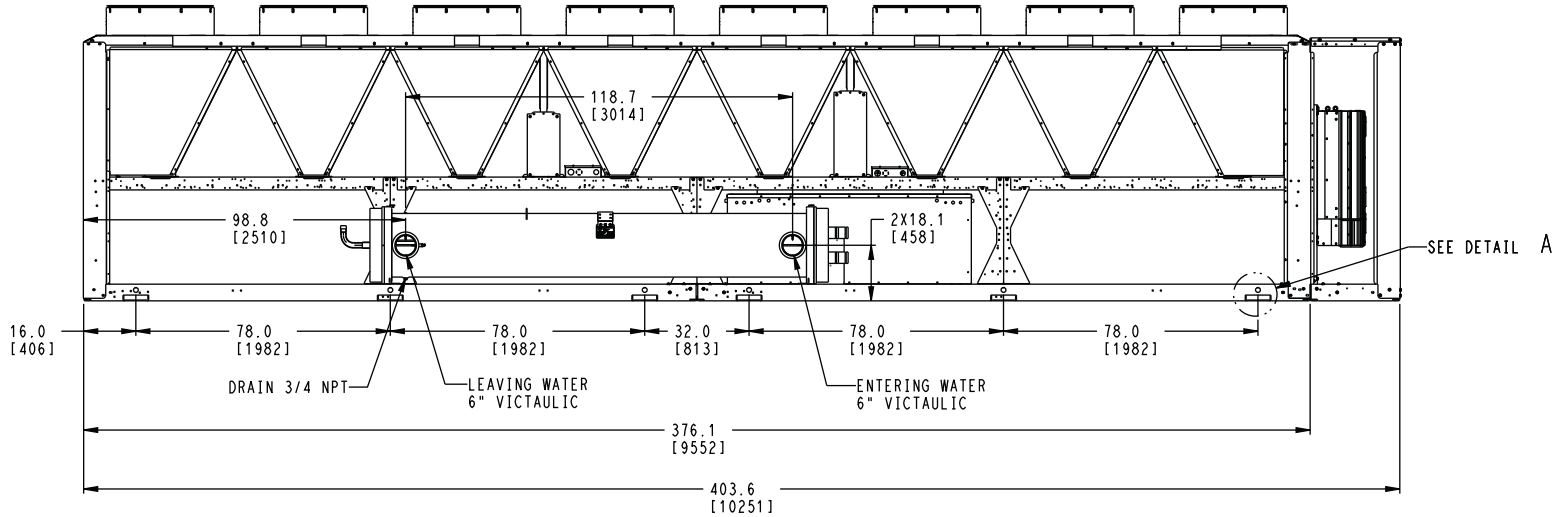


LEFT END VIEW

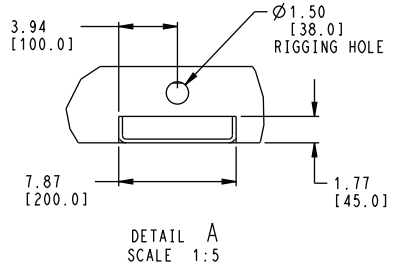


RIGHT END VIEW

Fig. 11 — 30XA302 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

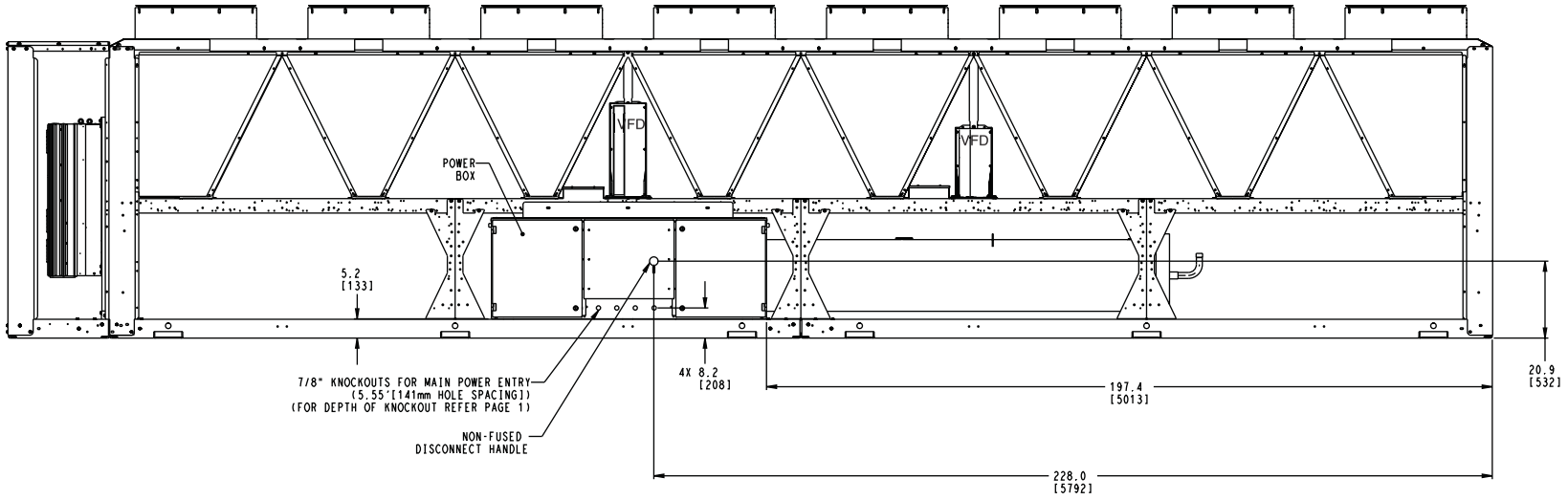


FRONT VIEW



DETAIL A
SCALE 1:5

Fig. 11 — 30XA302 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

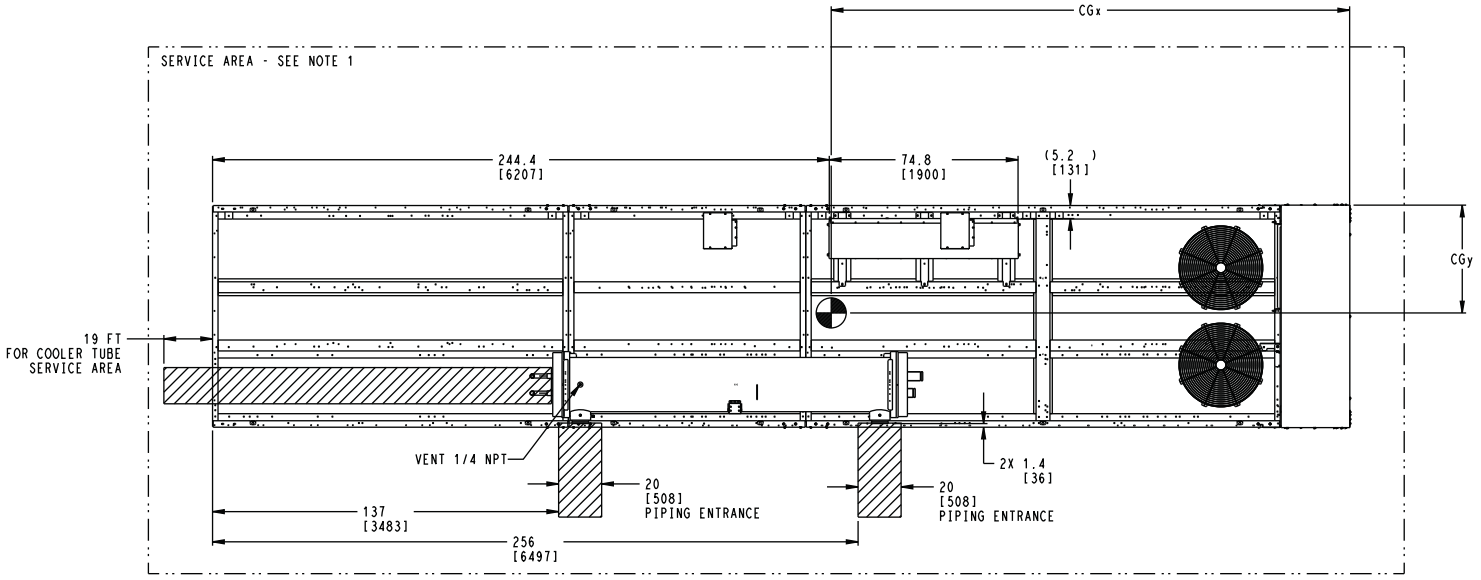


BACK VIEW

Fig. 11 — 30XA302 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

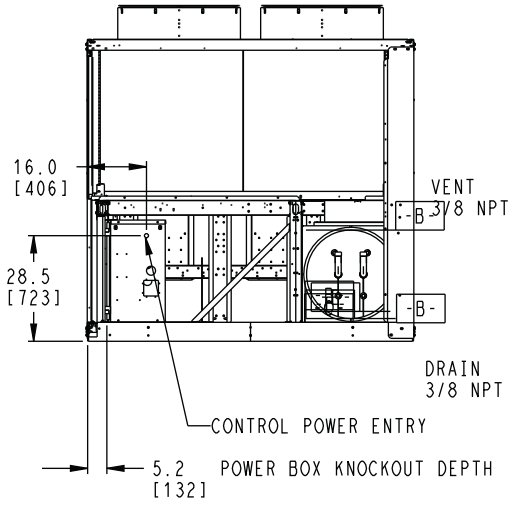
NOTES:
1. Unit must have clearances as follows:
   Top — Do not restrict
   Sides and Ends — 6 ft (1.8 m) from solid surface for airflow.
   Side — 8 ft (2.4 m) required for coil service on the control box side of the unit.
2. Temperature relief devices are located on liquid line and economizer assemblies and have 1/4-in. flare connection.
3. Pressure relief devices are located on the cooler (3/4-in. NPT female connection) and on each oil separator (3/8-in. flare connection).
4. Dimensions are shown in inches. Dimensions in [ ] are in millimeters.

30XA UNIT	CGx	CGy
327 (MCHX and Al/Cu)	195.6 [4969]	42.3 [1075]
327 (Cu/Cu)	200.0 [5079]	42.6 [1082]
352 (MCHX and Al/Cu	195.3 [4960]	42.3 [1075]
352 (Cu/Cu)	183.4 [4659]	43.9 [1116]

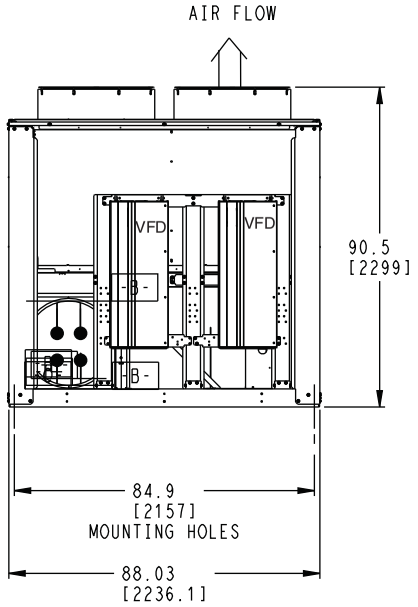


TOP VIEW

Fig. 12 — 30XA327,352 Air-Cooled Liquid Chiller Dimensions (DX Cooler)



LEFT END VIEW



RIGHT END VIEW

Fig. 12 — 30XA327,352 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

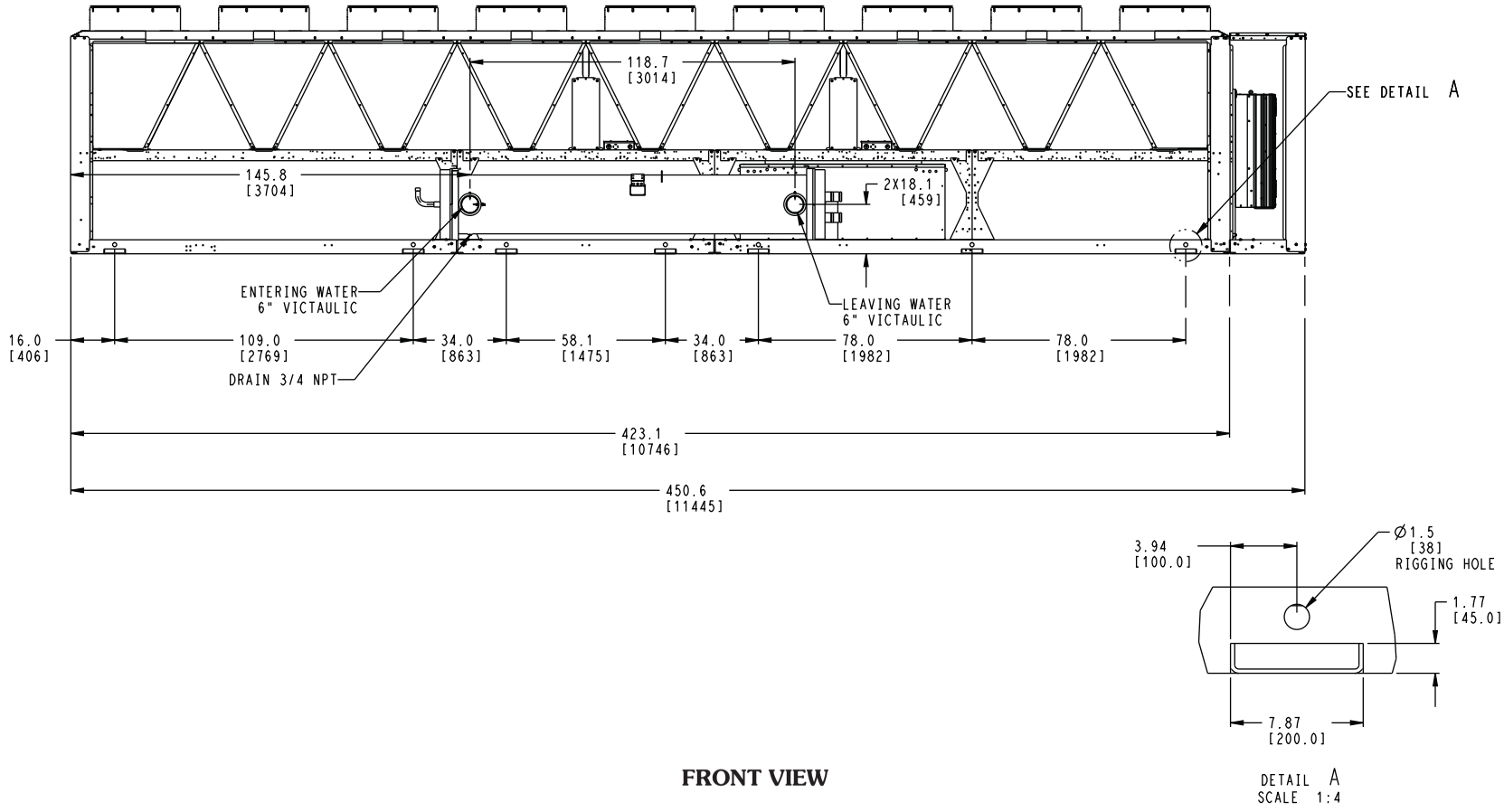
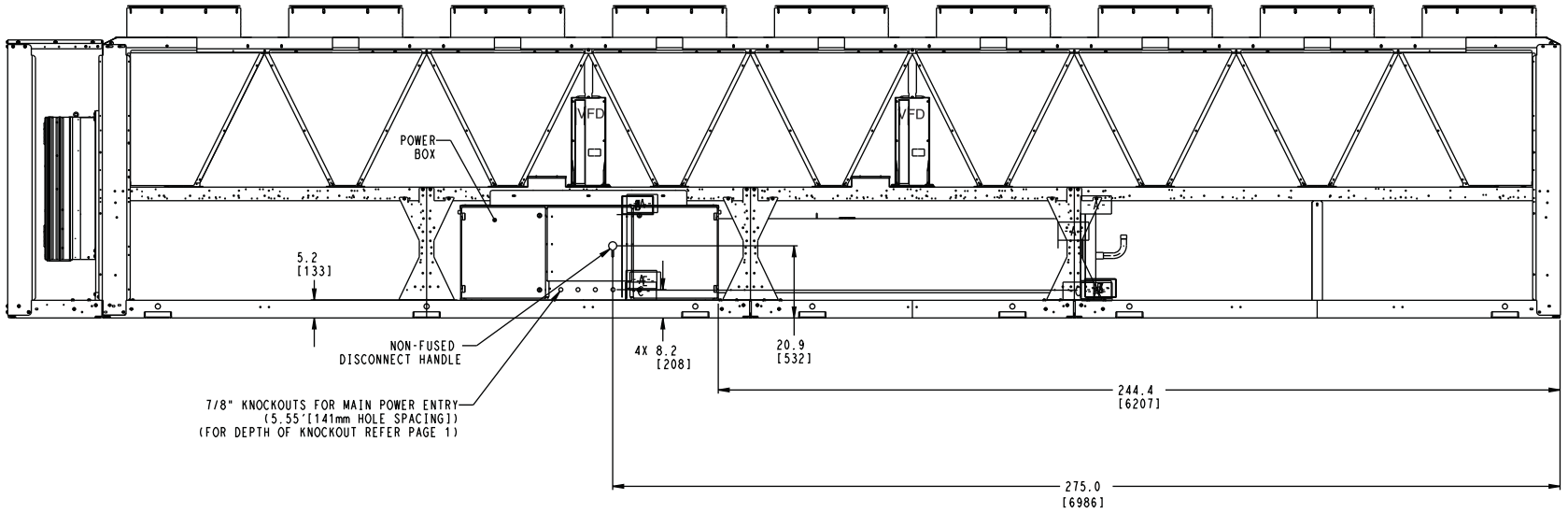


Fig. 12 — 30XA327,352 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)



BACK VIEW

Fig. 12 — 30XA327,352 Air-Cooled Liquid Chiller Dimensions (DX Cooler) (cont)

Table 1 — Mounting Weights, Units with MCHX Condenser Coils

English

30XA UNIT SIZE	MOUNTING WEIGHT (lb) MCHX CONDENSER COILS								
	A	B	C	D	E	F	G	H	Total
140	1897	1444	864	1525	1561	982	1683	1699	11,653
142	1977	1505	901	1575	1613	1019	1750	1771	12,110
160	1949	1469	878	1550	1590	998	1702	1750	11,885
162	2024	1526	912	1597	1638	1033	1764	1818	12,311

30XA UNIT SIZE	MOUNTING WEIGHT (lb) MCHX CONDENSER COILS										
	A	B	C	D	E	F	G	H	I	J	Total
180	905	1484	1164	1849	1527	1564	1937	909	1358	888	13,585
182	930	1524	1196	1899	1559	1597	1988	932	1393	912	13,930
200	909	1499	1188	1870	1532	1572	1948	917	1368	893	13,696
202	930	1534	1216	1914	1560	1601	1992	937	1399	914	13,998

30XA UNIT SIZE	MOUNTING WEIGHT (lb) MCHX CONDENSER COILS												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	813	1196	1592	1498	828	1556	1599	900	1415	1115	1289	832	14,634
222	833	1226	1632	1535	849	1586	1630	921	1449	1143	1320	853	14,978
240	829	1218	1617	1520	830	1558	1601	902	1422	1124	1312	849	14,783
242	849	1248	1657	1558	851	1588	1632	923	1457	1152	1343	870	15,127
260	495	1431	1630	763	2465	1423	1938	2444	864	1397	1450	495	16,797
262	501	1449	1651	773	2497	1436	1958	2475	874	1414	1468	501	16,999
280	497	1451	1663	771	2497	1425	1940	2454	867	1422	1470	497	16,955
282	503	1469	1684	781	2529	1438	1959	2484	877	1439	1488	503	17,157
300	502	1465	1686	786	2568	1437	1967	2518	875	1431	1481	502	17,218
302	517	1508	1735	809	2643	1467	2012	2590	899	1471	1522	517	17,690

30XA UNIT SIZE	MOUNTING WEIGHT (lb) MCHX CONDENSER COILS														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	742	742	978	1531	783	2546	1547	2043	2411	881	1723	1324	742	742	18,735
327	762	762	1004	1572	804	2615	1576	2085	2474	903	1767	1358	762	762	19,207
350	745	745	982	1546	792	2598	1557	2069	2463	885	1728	1326	745	745	18,927
352	765	765	1008	1587	813	2667	1586	2111	2527	907	1772	1359	765	765	19,399

SI

30XA UNIT SIZE	MOUNTING WEIGHT (kg) MCHX CONDENSER COILS								
	A	B	C	D	E	F	G	H	Total
140	860	655	392	692	708	445	763	771	5,286
142	897	683	409	714	732	462	794	803	5,493
160	884	666	396	703	721	452	772	794	5,391
162	918	692	414	724	743	468	800	825	5,584

30XA UNIT SIZE	MOUNTING WEIGHT (kg) MCHX CONDENSER COILS										
	A	B	C	D	E	F	G	H	I	J	Total
180	410	673	528	839	693	709	878	412	616	403	6,162
182	422	691	542	861	707	724	902	423	632	414	6,319
200	412	680	539	848	695	713	883	416	620	405	6,212
202	422	696	552	868	708	726	903	425	634	415	6,349

30XA UNIT SIZE	MOUNTING WEIGHT (kg) MCHX CONDENSER COILS												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	369	542	722	679	376	706	725	408	642	506	584	377	6,638
222	378	556	740	696	385	719	739	418	657	518	599	387	6,794
240	376	552	733	689	376	707	726	409	645	510	595	385	6,705
242	385	566	752	707	386	720	740	418	661	522	609	395	6,862
260	225	649	739	346	1118	645	879	1109	392	634	658	225	7,619
262	227	657	749	351	1133	651	888	1123	397	642	666	227	7,711
280	225	658	754	350	1133	646	880	1113	393	645	667	225	7,691
282	228	666	764	354	1147	652	889	1127	398	653	675	228	7,782
300	228	665	765	357	1165	652	892	1142	397	649	672	228	7,810
302	235	684	787	367	1199	665	913	1175	408	667	690	235	8,024

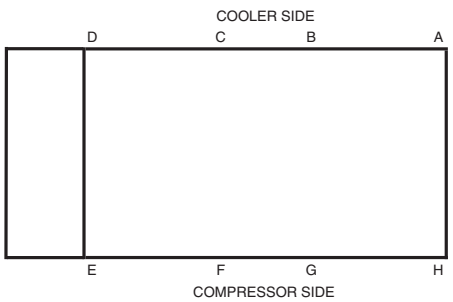
30XA UNIT SIZE	MOUNTING WEIGHT (kg) MCHX CONDENSER COILS														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	337	337	444	694	355	1155	702	927	1094	400	782	601	337	337	8,498
327	346	346	455	713	365	1186	715	946	1122	410	802	616	346	346	8,712
350	338	338	445	701	359	1178	706	938	1117	401	784	601	338	338	8,585
352	347	347	457	720	369	1210	719	958	1146	411	804	616	347	347	8,799

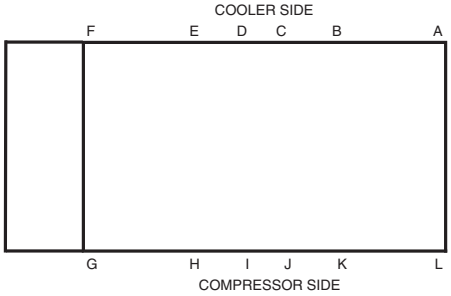
LEGEND

MCHX — Microchannel Heat Exchanger

NOTES
1. See Fig. 13 for mounting weight reference points.
2. See Tables 4 and 5 for operating weights.

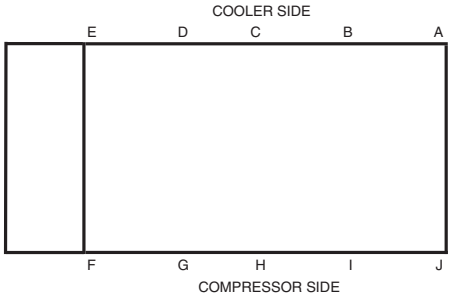
30XA140-162

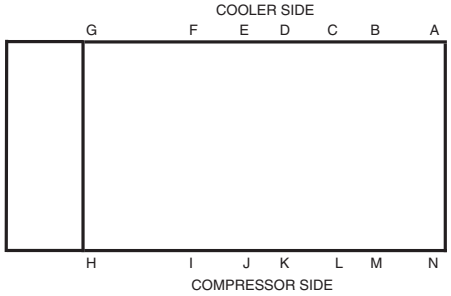




30XA220-302

30XA180-202





30XA325-352

LEGEND
MCHX — Microchannel Heat Exchanger

NOTE: See Table 1 for mounting weight at each reference point.

Fig. 13 — Unit Mounting Weight Reference Points (Units with MCHX Condenser Coils)

Table 2 — Mounting Weights, Units with Al/Cu Condenser Coils

English

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Al/Cu								
	A	B	C	D	E	F	G	H	Total
140	2007	1554	938	1598	16735	1056	1794	1809	12,390
142	2087	1616	975	1648	1686	1094	1861	1881	12,847
160	2061	1581	953	1625	1665	1073	1814	1862	12,633
162	2136	1638	988	1671	1713	1108	1876	1930	13,059

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Al/Cu										
	A	B	C	D	E	F	G	H	I	J	Total
180	979	1558	1239	1998	1601	1638	2085	984	1432	962	14,476
182	1004	1598	1270	2049	1633	1671	2136	1007	1467	986	14,821
200	984	1574	1263	2020	1607	1648	2098	992	1444	968	14,598
202	1006	1609	1291	2065	1635	1677	2143	1012	1474	989	14,900

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Al/Cu												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	883	1266	1697	1603	898	1626	1669	970	1520	1221	1359	902	15,613
222	904	1296	1737	1640	919	1656	1700	991	1558	1248	1389	923	15,957
240	900	1288	1723	1626	901	1629	1671	973	1529	1231	1383	920	15,773
242	921	1318	1763	1664	922	1659	1702	994	1563	1258	1414	941	16,117
260	566	1572	1701	834	2607	1494	2009	2585	935	1468	1592	566	17,930
262	573	1591	1721	844	2638	1507	2028	2615	945	1485	1610	573	18,132
280	569	1594	1734	843	2640	1497	2011	2597	939	1493	1613	569	18,099
282	576	1613	1755	853	2671	1510	2030	2627	949	1510	1631	576	18,301
300	578	1617	1762	862	2720	1513	2043	2671	951	1508	1634	578	18,439
302	594	1661	1810	885	2794	1543	2087	2742	975	1547	1677	594	18,911

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Al/Cu														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	856	856	1054	1607	859	2697	1623	2119	2562	957	1799	1399	856	856	20,102
327	877	877	1080	1647	881	2765	1652	2160	2624	979	1842	1432	877	877	20,574
350	860	860	1059	1623	869	2752	1633	2146	2616	962	1804	1403	860	860	20,308
352	881	881	1085	1663	891	2820	1662	2187	2679	984	1847	1436	881	881	20,780

SI

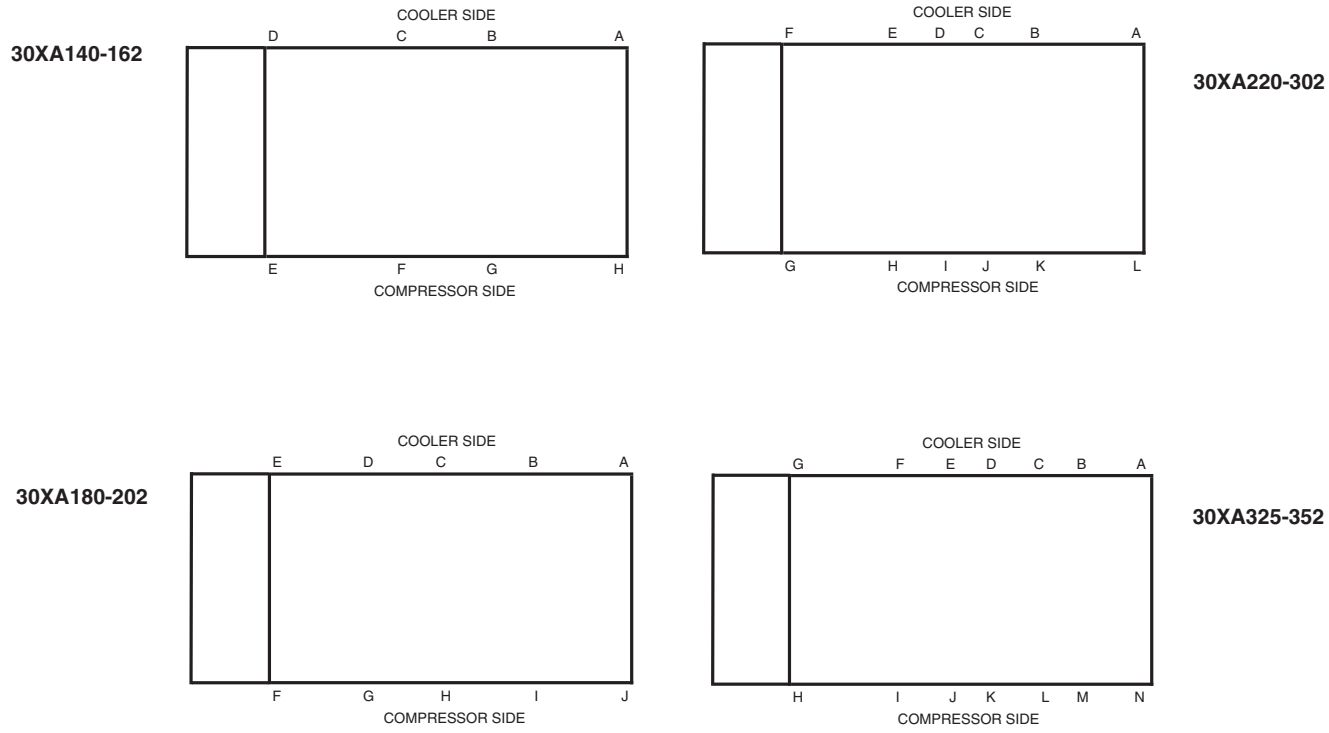
30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Al/Cu								
	A	B	C	D	E	F	G	H	Total
140	910	705	425	725	742	479	814	821	5620
142	947	733	442	748	765	496	844	853	5,827
160	935	717	432	737	755	487	823	845	5730
162	969	743	448	758	777	502	851	875	5,924

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Al/Cu*										
	A	B	C	D	E	F	G	H	I	J	Total
180	444	707	562	906	726	743	946	446	649	436	6566
182	455	725	576	929	741	758	969	457	665	447	6,723
200	446	714	573	916	729	748	952	450	655	439	6622
202	456	730	586	937	742	761	972	459	668	449	6,759

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Al/Cu												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	401	574	770	727	407	738	757	440	689	554	616	409	7082
222	410	588	788	744	417	751	771	449	705	566	630	419	7,238
240	408	584	782	738	409	739	758	441	693	558	627	417	7155
242	418	598	800	755	418	753	772	451	709	570	641	427	7,311
260	257	713	772	378	1183	678	911	1173	424	666	722	257	8133
262	260	722	781	383	1197	684	920	1186	429	674	730	260	8,225
280	258	723	787	382	1197	679	912	1178	426	677	732	258	8210
282	261	732	796	387	1212	685	921	1192	431	685	740	261	8,301
300	262	733	799	391	1234	686	927	1212	431	684	741	262	8 364
302	269	753	821	401	1267	700	947	1244	442	702	761	269	8,578

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Al/Cu														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	388	388	478	729	390	1223	736	961	1162	434	816	635	388	388	9118
327	398	398	490	747	400	1254	749	980	1190	444	836	650	398	398	9,332
350	390	390	480	736	394	1248	741	973	1187	436	818	636	390	390	9212
352	400	400	492	754	404	1279	754	992	1215	446	838	651	400	400	9,426

NOTES
1. Al/Cu condenser coils have aluminum fins/copper tubing.
2. See Fig. 14 for mounting weight reference points.
3. See Tables 4 and 5 for operating weights.



NOTE: See Table 2 for mounting weight at each reference point.

Fig. 14 — Unit Mounting Weight Reference Points (Units with Al/Cu Condenser Coils)

Table 3 — Mounting Weights, Units with Cu/Cu Condenser Coils — English

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Cu/Cu								
	A	B	C	D	E	F	G	H	Total
140	2188	1735	1058	1719	1755	1177	1975	1990	13,596
142	2267	1797	1096	1768	1806	1216	2042	2061	14,053
160	2242	1762	1074	1745	1786	1194	1995	2043	13,839
162	2316	1820	1109	1791	1833	1230	2057	2110	14,265

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Cu/Cu										
	A	B	C	D	E	F	G	H	I	J	Total
180	1099	1679	1359	2239	1722	1759	2327	1104	1552	1083	15,923
182	1124	1717	1390	2290	1754	1792	2379	1128	1586	1108	16,268
200	1105	1695	1384	2261	1728	1768	2340	1113	1564	1089	16,045
202	1127	1729	1412	2306	1756	1796	2385	1134	1594	1111	16,347

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Cu/Cu												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	995	1378	1865	1771	1010	1738	1781	1082	1688	1389	1471	1014	17,181
222	1016	1407	1904	1808	1031	1767	1811	1104	1723	1417	1501	1035	17,525
240	1012	1400	1891	1794	1013	1741	1783	1085	1697	1399	1495	1032	17,341
242	1033	1429	1930	1831	1034	1770	1813	1107	1731	1427	1525	1054	17,685
260	679	1798	1814	947	2833	1607	2122	2812	1048	1581	1818	679	19,739
262	686	1817	1834	957	2864	1620	2140	2842	1059	1597	1837	686	19,941
280	682	1820	1847	956	2866	1610	2125	2823	1052	1606	1839	682	19,908
282	689	1839	1867	966	2897	1623	2143	2853	1063	1623	1858	689	20,110
300	699	1858	1883	983	2962	1634	2164	2912	1072	1628	1875.3	699	20,369
302	716	1903	1929	1007	3034	1664	2207	2982	1097	1666	1919	716	20,841

30XA UNIT SIZE	MOUNTING WEIGHT (lb) — Cu/Cu														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	1037	1037	1175	1728	980	2939	1743	2240	2804	1078	1919	1520	1037	1037	22,273
327	1060	1060	1201	1767	1002	3005	1771	2280	2865	1100	1960	1552	1060	1060	22,745
350	1041	1041	1180	1743	990	2993	1754	2266	2857	1083	1925	1524	1041	1041	22,479
352	1064	1064	1206	1782	1012	3060	1782	2306	2919	1105	1966	1556	1064	1064	22,951

SI

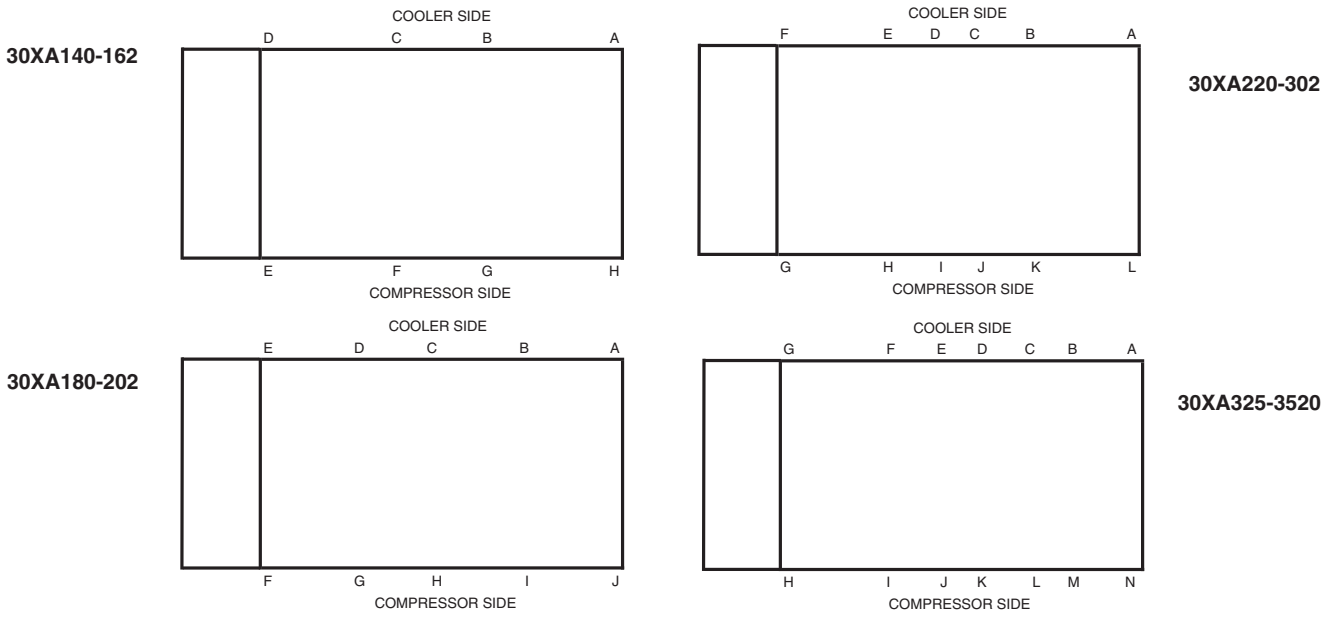
30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Cu/Cu								
	A	B	C	D	E	F	G	H	Total
140	992	787	480	780	796	534	896	903	6167
142	1028	815	497	802	819	551	926	935	6374
160	1017	799	487	792	810	541	905	927	6277
162	1051	826	503	812	831	558	933	957	6,471

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Cu/Cu										
	A	B	C	D	E	F	G	H	I	J	Total
180	498	762	616	1016	781	798	1055	501	704	492	7223
182	510	779	630	1039	796	813	1079	512	719	503	7,379
200	501	769	628	1026	784	802	1061	505	709	494	7278
202	511	784	640	1046	797	815	1082	514	723	504	7,415

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Cu/Cu												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
220	451	625	846	803	458	788	808	491	765	630	667	460	7793
222	461	638	864	820	468	801	821	501	781	643	681	469	7,949
240	459	635	858	814	459	790	809	492	770	634	678	468	7866
242	469	648	875	831	469	803	822	502	785	647	692	478	8,022
260	308	816	823	430	1285	729	963	1276	475	717	825	308	8953
262	311	824	832	434	1299	735	971	1289	480	725	833	311	9,045
280	309	826	838	434	1300	730	964	1281	477	729	834	309	9030
282	313	834	847	438	1314	736	972	1294	482	736	843	313	9,122
300	317	843	854	446	1344	741	982	1321	486	739	851	317	9239
302	325	863	875	457	1376	755	1001	1353	498	756	871	325	9,453

30XA UNIT SIZE	MOUNTING WEIGHT (kg) — Cu/Cu														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
325	470	470	533	784	445	1333	791	1016	1272	489	870	689	470	470	10,103
327	481	481	545	801	454	1363	803	1034	1300	499	889	704	481	481	10,317
350	472	472	535	791	449	1358	796	1028	1296	491	873	691	472	472	10,196
353	483	483	547	808	459	1388	808	1046	1324	501	892	706	483	483	10,410

NOTES
1. Cu/Cu condenser coils have copper fins/copper tubing.
2. See Fig. 15 for mounting weight reference points.
3. See Tables 4 and 5 for operating weights.



NOTE: See Table 3 for mounting weight at each reference point.

Fig. 15 — Unit Mounting Weight Reference Points (Units with Cu/Cu Condenser Coils)

Table 4 — Physical Data — English

UNIT 30XA WITH FLOODED COOLER	140	160	180	200	220
OPERATING WEIGHT (lb)*					
Al-Cu Condenser Coils	12,390	12,633	14,476	14,598	15,613
Cu-Cu Condenser Coils	13,596	13,839	15,923	16,045	17,181
MCHX Condenser Coils	11,653	11,885	13,585	13,696	14,634
REFRIGERANT TYPE	R-134a, EXV Controlled System				
Refrigerant Charge (lb) Ckt A/Ckt B	202/121	225/159	205/205	225/225	270/225
Refrigerant Charge (lb) Ckt A/Ckt B (MCHX)	128/90	126/94	132/132	152/152	159.5/152
COMPRESSORS	Semi-Hermetic Twin Rotary Screws				
Quantity	2	2	2	2	2
Speed (rpm)	3500				
(Qty) Compressor Model Number Ckt A	(1) 06TT-266	(1) 06TT-301	(1) 06TT-266	(1) 06TT-301	(1) 06TT-356
(Qty) Compressor Model Number Ckt B	(1) 06TS-155	(1) 06TS-186	(1) 06TT-266	(1) 06TT-301	(1) 06TT-301
Oil Charge (gal), Ckt A/Ckt B	6.25/5.5	6.25/5.5	6.25/6.25	6.25/6.25	6.75/6.25
Minimum Capacity Step (%)	12	12	12	12	12
COOLER	Flooded, Shell and Tube Type				
Net Fluid Volume (gal.)	25.5	27.5	31.5	34.0	37.0
Maximum Refrigerant Pressure (psig)	220	220	220	220	220
Maximum Water-Side Pressure without Pumps (psig)	300	300	300	300	300
WATER CONNECTIONS					
Drain (NPT, in.)	3/8	3/8	3/8	3/8	3/8
Standard, Inlet and Outlet, Victaulic (in.)	5	5	6	6	6
Number of Passes	2	2	2	2	2
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	5	5	8	8	8
Number of Passes	1	1	1	1	1
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	5	5	6	6	6
Number of Passes	3	3	3	3	3
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge				
Fan Speed (rpm)	1140	1140	1140	1140	1140
No. Blades...Diameter (in.)	9...30	9...30	9...30	9...30	9...30
No. Fans (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6
Total Airflow (cfm)	124,000	124,000	148,800	148,800	161,200
CONDENSER COILS					
No. Coils (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6
Total Face Area (sq ft)	234	234	281	281	305
CHASSIS DIMENSIONS (ft-in.)					
Length	22-0		25-11		29-10
Width	7-4 3/4				
Height	7-6 7/16				

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 4 — Physical Data — English (cont)

UNIT 30XA WITH FLOODED COOLER	240	260	280	300	325	350
OPERATING WEIGHT (lb)*						
Al-Cu Condenser Coils	15,773	17,930	18,099	18,439	20,102	20,308
Cu-Cu Condenser Coils	17,341	19,739	19,908	20,369	22,273	22,479
MCHX Condenser Coils	14,783	16,797	16,955	17,218	18,735	18,927
REFRIGERANT TYPE	R-134a, EXV Controlled System					
Refrigerant Charge (lb) Ckt A/Ckt B	270/270	375/220	375/270	415/270	375/375	415/375
Refrigerant Charge (lb) Ckt A/Ckt B (MCHX)	159.5/159	233.5/156	226.5/159.5	230/161	226.5/226.5	231.5/226.5
COMPRESSORS	Semi-Hermetic Twin Rotary Screws					
Quantity	2	2	2	2	2	2
Speed (rpm)	3500					
(Qty) Compressor Model Number Ckt A	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483	(1) 06TU-554	(1) 06TU-483	(1) 06TU-554
(Qty) Compressor Model Number Ckt B	(1) 06TT-356	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483
Oil Charge (gal), Ckt A/Ckt B	6.75/6.75	7.5/6.75	7.5/6.75	7.5/6.75	7.5/7.5	7.5/7.5
Minimum Capacity Step (%)	12	12	12	12	12	12
COOLER	Flooded, Shell and Tube Type					
Net Fluid Volume (gal.)	39.0	42.0	44.0	48.5	50.5	53.4
Maximum Refrigerant Pressure (psig)	220	220	220	220	220	220
Maximum Water-Side Pressure without Pumps (psig)	300	300	300	300	300	300
WATER CONNECTIONS						
Drain (NPT, in.)	3/8	3/8	3/8	3/8	3/8	3/8
Standard, Inlet and Outlet, Victaulic (in.)	6	8	8	8	8	8
Number of Passes	2	2	2	2	2	2
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	8	8	8	8	8	8
Number of Passes	1	1	1	1	1	1
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	6	8	8	8	8	8
Number of Passes	3	3	3	3	3	3
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge					
Fan Speed (rpm)	1140	1140	1140	1140	1140	1140
No. Blades...Diameter (in.)	9...30	9...30	9...30	9...30	9...30	9...30
No. Fans (Ckt A/Ckt B	7/6	9/6	9/7	10/6	9/9	9/9
Total Airflow (cfm)	161,200	186,000	198,400	198,400	223,200	223,200
CONDENSER COILS						
No. Coils (Ckt A/Ckt B	7/6	9/6	9/7	10/6	9/9	9/9
Total Face Area (sq ft)	305	352	375	375	422	422
CHASSIS DIMENSIONS (ft-in.)						
Length	29-10	33-9			37-8	
Width	7-4 3/4					
Height	7-6 7/16					

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 4 — Physical Data — English (cont)

UNIT 30XA WITH DX COOLER	142	162	182	202	222	242
OPERATING WEIGHT (lb)*						
Al-Cu Condenser Coils	12,847	13,059	14,821	14,900	15,957	16,117
Cu-Cu Condenser Coils	14,052	14,265	16,268	16,347	17,525	17,685
MCHX Condenser Coils	12,110	12,311	13,930	13,998	14,978	15,127
REFRIGERANT TYPE	R-134a, EXV Controlled System					
Refrigerant Charge (lb) Ckt A/Ckt B	177/103	201/126	181/181	201/201	246/198	246/246
Refrigerant Charge (lb) Ckt A/Ckt B (MCHX)	101/59	102/61	131/131	123/123	135/125	135/135
COMPRESSORS	Semi-Hermetic Twin Rotary Screws					
Quantity	2	2	2	2	2	2
Speed (rpm)	3500					
(Qty) Compressor Model Number Ckt A	(1) 06TT-266	(1) 06TT-301	(1) 06TT-266	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356
(Qty) Compressor Model Number Ckt B	(1) 06TS-155	(1) 06TS-186	(1) 06TT-266	(1) 06TT-301	(1) 06TT-301	(1) 06TT-356
Oil Charge (gal), Ckt A/Ckt B	6.25/5.5	6.25/5.5	6.25/6.25	6.25/6.25	6.75/6.25	6.75/6.75
Minimum Capacity Step (%)	12	12	12	12	12	12
COOLER	Direct Expansion					
Net Fluid Volume (gal.)	63.5	63.5	73.5	73.5	71.0	71.0
Maximum Refrigerant Press. (psig)	220	220	220	220	220	220
Maximum Water-Side Press. without Pumps (psig)	300	300	300	300	300	300
WATER CONNECTIONS						
Drain (NPT, in.)	3/4	3/4	3/4	3/4	3/4	3/4
Standard, Inlet and Outlet, Victaulic (in.)	6	6	6	6	6	6
Number of Passes	—	—	—	—	—	—
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—	—
Number of Passes	—	—	—	—	—	—
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—	—
Number of Passes	—	—	—	—	—	—
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge					
Fan Speed (rpm)	1140	1140	1140	1140	1140	1140
No. Blades...Diameter (in.)	9...30	9...30	9...30	9...30	9...30	9...30
No. Fans (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6	7/6
Total Airflow (cfm)	124,000	124,000	148,800	148,800	161,200	161,200
CONDENSER COILS						
No. Coils (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6	7/6
Total Face Area (sq ft)	234	234	281	281	305	305
CHASSIS DIMENSIONS (ft-in.)						
Length	22-0		25-11		29-10	
Width	7-4 3/4					
Height	7-6 7/16					

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 4 — Physical Data — English (cont)

UNIT 30XA WITH DX COOLER	262	282	302	327	352
OPERATING WEIGHT (lb)*					
Al-Cu Condenser Coils	18,132	18,301	18,911	20,574	20,780
Cu-Cu Condenser Coils	19,941	20,110	20,841	22,745	22,951
MCHX Condenser Coils	16,999	17,157	17,690	19,207	19,399
REFRIGERANT TYPE	R-134a, EXV Controlled System				
Refrigerant Charge (lb) Ckt A/Ckt B	330/206	330/256	386/261	344/344	384/344
Refrigerant Charge (lb) Ckt A/Ckt B (MCHX)	188/142	181/145	201/152	195/195	200/195
COMPRESSORS	Semi-Hermetic Twin Rotary Screws				
Quantity	2	2	2	2	2
Speed (rpm)	3500				
(Qty) Compressor Model Number Ckt A	(1) 06TU-483	(1) 06TU-483	(1) 06TU-554	(1) 06TU-483	(1) 06TU-554
(Qty) Compressor Model Number Ckt B	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483
Oil Charge (gal), Ckt A/Ckt B	7.5/6.75	7.5/6.75	7.5/6.75	7.5/7.5	7.5/7.5
Minimum Capacity Step (%)	12	12	12	12	12
COOLER	Direct Expansion				
Net Fluid Volume (gal.)	82.8	82.8	108.0	108.0	108.0
Maximum Refrigerant Press. (psig)	220	220	220	220	220
Maximum Water-Side Press. without Pumps (psig)	300	300	300	300	300
WATER CONNECTIONS					
Drain (NPT, in.)	3/4	3/4	3/4	3/4	3/4
Standard, Inlet and Outlet, Victaulic (in.)	6	6	6	6	6
Number of Passes	—	—	—	—	—
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—
Number of Passes	—	—	—	—	—
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—
Number of Passes	—	—	—	—	—
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge				
Fan Speed (rpm)	1140	1140	1140	1140	1140
No. Blades...Diameter (in.)	9...30	9...30	9...30	9...30	9...30
No. Fans (Ckt A/Ckt B)	9/6	9/7	10/6	9/9	9/9
Total Airflow (cfm)	186,000	198,400	198,400	223,200	223,200
CONDENSER COILS					
No. Coils (Ckt A/Ckt B)	9/6	9/7	10/6	9/9	9/9
Total Face Area (sq ft)	352	375	375	442	442
CHASSIS DIMENSIONS (ft-in.)					
Length		33-9		29-10	
Width			7-4 3/4		
Height			7-6 7/16		

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 5 — Physical Data — SI

UNIT 30XA WITH FLOODED COOLER	140	160	180	200	220
OPERATING WEIGHT (kg)*					
Al-Cu Condenser Coils	5 620	5 730	6 566	6 622	7 082
Cu-Cu Condenser Coils	6 167	6 277	7 223	7 278	7 793
MCHX Condenser Coils	5 286	5 391	6 162	6 213	6 638
REFRIGERANT TYPE	R-134a, EXV Controlled System				
Refrigerant Charge (kg) Ckt A/Ckt B	92/55	102/72	93/93	102/10	112/102
Refrigerant Charge (kg) Ckt A/Ckt B (MCHX)	58.0/40.8	57.2/42.6	59.9/59.9	68.9/68.9	72.3/68.9
COMPRESSORS	Semi-Hermetic Twin Rotary Screws				
Quantity	2	2	2	2	2
Speed (r/s)			58.3		
(Qty) Compressor Model Number Ckt A	(1) 06TT-266	(1) 06TT-301	(1) 06TT-266	(1) 06TT-301	(1) 06TT-356
(Qty) Compressor Model Number Ckt B	(1) 06TS-155	(1) 06TS-186	(1) 06TT-266	(1) 06TT-301	(1) 06TT-301
Oil Charge (liters), Ckt A/Ckt B	23.7/20.8	23.7/23.7	23.7/23.7	23.7/23.7	25.6/23.7
Minimum Capacity Step (%)	12	12	12	12	12
COOLER	Flooded, Shell and Tube Type				
Net Fluid Volume (liters)	96.5	104.1	119.2	128.7	140.1
Maximum Refrigerant Press. (kPa)	1516.8	1516.8	1516.8	1516.8	1516.8
Maximum Water-Side Press. without Pumps (kPa)	2 068	2 068	2 068	2 068	2 068
WATER CONNECTIONS					
Drain (NPT, in.)	3/8	3/8	3/8	3/8	3/8
Standard, Inlet and Outlet, Victaulic (in.)	5	5	6	6	6
Number of Passes	2	2	2	2	2
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	5	5	8	8	8
Number of Passes	1	1	1	1	1
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	5	5	6	6	6
Number of Passes	3	3	3	3	3
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge				
Fan Speed (r/s)	19.0	19.0	19.0	19.0	19.0
No. Blades...Diameter (mm)	9...762	9...762	9...762	9...762	9...762
No. Fans (Ckt A/Ckt B	6/4	6/4	6/6	6/6	7/6
Total Airflow (L/s)	58 522	58 522	70 226	70 226	76 078
CONDENSER COILS					
No. Coils (Ckt A/Ckt B	6/4	6/4	6/6	6/6	7/6
Total Face Area (sq m)	22	22	26	26	28
CHASSIS DIMENSIONS (mm)					
Length	6 693		7 887		9 081
Width	2255				
Height	2300				

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 5 — Physical Data — SI (cont)

UNIT 30XA WITH FLOODED COOLER	240	260	280	300	325	350
OPERATING WEIGHT (kg)*						
Al-Cu Condenser Coils	7 155	8 133	8 210	8 365	9 118	9 211
Cu-Cu Condenser Coils	7 866	8 954	9 031	9 240	10 103	10 196
MCHX Condenser Coils	6 706	7 619	7 691	7 811	8 498	8 585
REFRIGERANT TYPE	R-134a, EXV Controlled System					
Refrigerant Charge (kg) Ckt A/Ckt B	122.5/122.5	170.1/99.8	170.1/122.5	188.3/122.5	170.1/170.1	188.3/170.1
Refrigerant Charge (kg) Ckt A/Ckt B (MCHX)	72.3/72.1	105.9/70.8	102.7/72.3	104.3/73.0	102.7/102.7	105.0/102.7
COMPRESSORS	Semi-Hermetic Twin Rotary Screws					
Quantity	2	2	2	2	2	2
Speed (r/s)	58.3					
(Qty) Compressor Model Number Ckt A	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483	(1) 06TU-554	(1) 06TU-483	(1) 06TU-554
(Qty) Compressor Model Number Ckt B	(1) 06TT-356	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483
Oil Charge (liter), Ckt A/Ckt B	25.6/25.6	28.4/25.6	28.4/25.6	28.4/25.6	28.4/28.4	28.4/28.4
Minimum Capacity Step (%)	12	12	12	12	12	12
COOLER	Flooded, Shell and Tube Type					
Net Fluid Volume (liters)	147.6	159.0	166.6	183.6	191.2	202.1
Maximum Refrigerant Press. (kPa)	1516.8	1516.8	1516.8	1516.8	1516.8	1516.8
Maximum Water-Side Press. without Pumps (kPa)	2 068	2 068	2 068	2 068	2 068	2 068
WATER CONNECTIONS						
Drain (NPT, in.)	3/8	3/8	3/8	3/8	3/8	3/8
Standard, Inlet and Outlet, Victaulic (in.)	6	8	8	8	8	8
Number of Passes	2	2	2	2	2	2
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	8	8	8	8	8	8
Number of Passes	1	1	1	1	1	1
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	6	8	8	8	8	8
Number of Passes	3	3	3	3	3	3
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge					
Fan Speed (r/s) Standard	19.0	19.0	19.0	19.0	19.0	19.0
No. Blades...Diameter (mm)	9...762	9...762	9...762	9...762	9...762	9...762
No. Fans (Ckt A/Ckt B)	7/6	9/6	9/7	10/6	9/9	9/9
Total Airflow (L/s)	76 078	87 782	93 634	93 634	93 634	105 339
CONDENSER COILS						
No. Coils (Ckt A/Ckt B)	7/6	9/6	9/7/	10/6	9/9	9/9
Total Face Area (sq m)	28	33	35	35	39	39
CHASSIS DIMENSIONS (mm)						
Length	9 081	10 275			11 469	
Width	2 255					
Height	2 300					

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 5 — Physical Data — SI (cont)

UNIT 30XA WITH DX COOLER	142	162	182	202	222	242
OPERATING WEIGHT (kg)*						
Al-Cu Condenser Coils	5 827	5 923	6 723	6 759	7 238	7 311
Cu-Cu Condenser Coils	6 374	6 470	7 379	7 415	7 949	8 022
MCHX Condenser Coils	5 493	5 584	6 319	6 350	6 794	6 861
REFRIGERANT TYPE	R-134a, EXV Controlled System					
Refrigerant Charge (kg) Ckt A/Ckt B	80/47	91/57	82/82	91/91	112/90	112/112
Refrigerant Charge (kg) Ckt A/Ckt B (MCHX)	46/27	46/28	51/51	56/56	61/57	61/61
COMPRESSORS	Semi-Hermetic Twin Rotary Screws					
Quantity	2	2	2	2	2	2
Speed (r/s)	58.3					
(Qty) Compressor Model Number Ckt A	(1) 06TT-266	(1) 06TT-301	(1) 06TT-266	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356
(Qty) Compressor Model Number Ckt B	(1) 06TS-155	(1) 06TS-186	(1) 06TT-266	(1) 06TT-301	(1) 06TT-301	(1) 06TT-356
Oil Charge (liter), Ckt A/Ckt B	23.7/20.8	23.7/23.7	23.7/23.7	23.7/23.7	25.6/23.7	25.6/25.6
Minimum Capacity Step (%)	12	12	12	12	12	12
COOLER	Direct Expansion					
Net Fluid Volume (liters)	240	240	278	278	269	269
Maximum Refrigerant Press. (kPa)	1516.8	1516.8	1516.8	1516.8	1516.8	1516.8
Maximum Water-Side Press. without Pumps (kPa)	2 068	2 068	2 068	2 068	2 068	2 068
WATER CONNECTIONS						
Drain (NPT, in.)	3/4	3/4	3/4	3/4	3/4	3/4
Standard, Inlet and Outlet, Victaulic (in.)	6	6	6	6	6	6
Number of Passes	—	—	—	—	—	—
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—	—
Number of Passes	—	—	—	—	—	—
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—	—
Number of Passes	—	—	—	—	—	—
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge					
Fan Speed (r/s) Standard	19.0	19.0	19.0	19.0	19.0	19.0
No. Blades...Diameter (mm)	9...762	9...762	9...762	9...762	9...762	9...762
No. Fans (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6	7/6
Total Airflow (L/s)	58 522	58 522	70 226	70 226	76 078	76 078
CONDENSER COILS						
No. Coils (Ckt A/Ckt B)	6/4	6/4	6/6	6/6	7/6	7/6
Total Face Area (sq m)	22	22	26	26	28	28
CHASSIS DIMENSIONS (mm)						
Length	6 693		7 887		9 081	
Width	2 255					
Height	2 300					

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

Table 5 — Physical Data — SI (cont)

UNIT 30XA WITH DX COOLER	262	282	302	327	352
OPERATING WEIGHT (kg)*					
Al-Cu Condenser Coils	8 225	8 302	8 578	9 332	9 425
Cu-Cu Condenser Coils	9 045	9 122	9 454	10 317	10 410
MCHX Condenser Coils	7 711	7 783	8 024	8 712	8 799
REFRIGERANT TYPE	R-134a, EXV Controlled System				
Refrigerant Charge (kg) Ckt A/Ckt B	150/93	150/116	175/118	156/156	174/156
Refrigerant Charge (kg) Ckt A/Ckt B (MCHX)	85/64	82/66	175/118	88/88	91/88
COMPRESSORS	Semi-Hermetic Twin Rotary Screws				
Quantity	2	2	2	2	2
Speed (r/s)	58.3				
(Qty) Compressor Model Number Ckt A	(1) 06TU-483	(1) 06TU-483	(1) 06TU-554	(1) 06TU-483	(1) 06TU-554
(Qty) Compressor Model Number Ckt B	(1) 06TT-301	(1) 06TT-356	(1) 06TT-356	(1) 06TU-483	(1) 06TU-483
Oil Charge (liter), Ckt A/Ckt B	28.4/25.6	28.4/25.6	28.4/25.6	28.4/28.4	28.4/28.4
Minimum Capacity Step (%)	12	12	12	12	12
COOLER	Direct Expansion				
Net Fluid Volume (liters)	313	313	409	409	409
Maximum Refrigerant Press. (kPa)	1516.8	1516.8	1516.8	1516.8	1516.8
Maximum Water-Side Press. without Pumps (kPa)	2 068	2 068	2 068	2 068	2 068
WATER CONNECTIONS					
Drain (NPT, in.)	3/4	3/4	3/4	3/4	3/4
Standard, Inlet and Outlet, Victaulic (in.)	6	6	6	6	6
Number of Passes	—	—	—	—	—
Minus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—
Number of Passes	—	—	—	—	—
Plus 1 Pass, Inlet and Outlet, Victaulic (in.)	—	—	—	—	—
Number of Passes	—	—	—	—	—
CONDENSER FANS	Shrouded Axial Type, Vertical Discharge				
Fan Speed (r/s) Standard	19.0	19.0	19.0	19.0	19.0
No. Blades...Diameter (mm)	9...762	9...762	9...762	9...762	9...762
No. Fans (Ckt A/Ckt B)	9/6	9/7	10/6/	9/9	9/9
Total Airflow (L/s)	87 782	93 634	93 634	93 634	105, 339
CONDENSER COILS					
No. Coils (Ckt A/Ckt B)	9/6	9/7	10/6	9/9	9/9
Total Face Area (sq m)	33	35	35	39	39
CHASSIS DIMENSIONS (mm)					
Length		10 275		11 469	
Width			2 255		
Height			2 300		

LEGEND

Cu — Copper
Al — Aluminum
EXV — Electronic Expansion Valve
MCHX — Microchannel Heat Exchanger

*Operating weights include coil trim panels. See pages 53-58 mounting weight details.

RIGGING UNIT (See Fig. 16 and 17) — The 30XA units with Greenspeed® intelligence are designed for overhead rigging and it is important that this method be used. Holes are provided in frame base channels, marked for rigging (see rigging label on unit). Field-supplied shackles are required to facilitate lifting. Secure the shackles to the base rails at the points noted on the rigging label. See Table 6 for the number of lifting points for each unit.

Do not use a forklift truck to move the units.

Use spreader bars to keep cables or chains clear of unit sides. As further protection, plywood sheets may be placed against sides of unit, behind cables or chains. Run cables or chains to a central suspension point so that angle from horizontal is not less than 45 degrees. Raise and set unit down carefully. See Fig. 16 and 17 for rigging centers of gravity.

For shipping, some domestic units and all export units are mounted on a wooden skid under entire base of unit. Skid can be removed before unit is moved to installation site. Lift the unit from above to remove skid. See Fig. 16 and 17 for rigging centers of gravity. On export units, the top skid can be used as the spreader bars. If the unit was shipped with a shipping bag, the bag must be removed to gain access to the rigging holes in the base rail.

If overhead rigging is not available, the unit can be moved on rollers or dragged. When unit is moved on rollers, the unit skid, if equipped, must be removed. To lift the unit, use jacks at the rigging points. Use a minimum number of rollers to distribute the load such that the rollers are no more than 6 ft (1.8 m) apart. If the unit is to be dragged, lift the unit as described above, and place unit on a pad. Apply moving force to the pad, and not the unit. When in its final location, raise the unit and remove the pad. If the unit was shipped with protection, it must be removed before start-up. The shipping bag for export units must be removed before start-up.

Table 6 — Number of Lifting Points for 30XA140-352

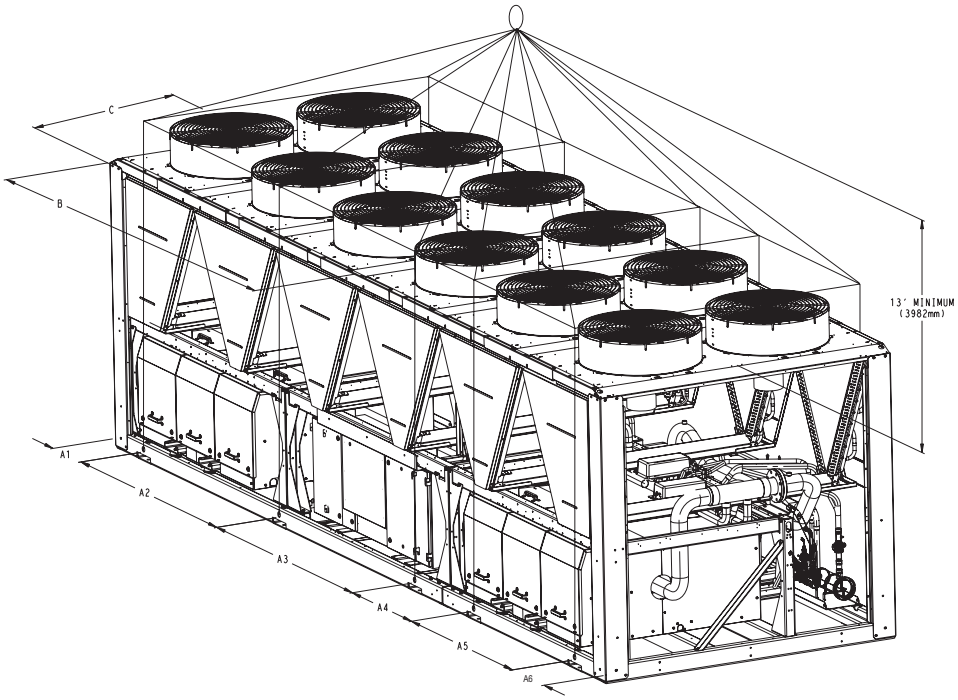
30XA UNIT SIZE	NUMBER OF LIFTING POINTS
140-162	8
180-202	10
220-352	12

⚠ CAUTION - NOTICE TO RIGGERS:

ALL PANELS MUST BE IN PLACE WHEN RIGGING. DO NOT ATTEMPT TO FORK THESE UNITS IF NO SKID IS SUPPLIED.

NOTES:

1. 1.50 dia. (38.1mm) lifting holes provided for field supplied clevis.
2. Rig with a minimum of 25 ft (7620mm) length chains or cables.
3. If central lifting point is used, it must be a minimum of 13 ft. (3962mm) above the top of the unit.
4. Spreader bars made from steel or double nailed, and notched 2x6's approximately 8 ft. (2438mm) long, must be placed just above the top of the unit (and stacks) to reduce the risk of damage to the top of the unit and coils.
5. If overhead rigging is not available, the unit can be moved on rollers or dragged. When unit is moved on rollers, the unit skid, if equipped, must be removed. To lift the unit, use jacks at the rigging points. Use a minimum of one roller every 6 ft. (1829mm) to distribute the load. If the unit is to be dragged, lift the unit as described above, and place unit on a pad. Apply moving force to the pad, not the unit. When in its final location, raise the unit and remove the pad.
6. Check bill of lading for shipping weight of unit.



Use this table for units with model number position 9 = A, B, or F

Model Number	Max Shipping Wt w/o Packaging		Max Shipping Wt w/ Packaging		Lifting Holes												Center of gravity			
					A1		A2		A3		A4		A5		A6		B		C	
	lbs	kgs	lbs	kgs	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
30XA140,142	14102	6397	14608	6626	43,6	1107,4	62,0	1575	32,0	813	109,0	2769	---	---	16,1	409	140,4	3566	44,1	1120
30XA140,142-CU	15011	6809	15517	7038	43.6	1107.4	62.0	1575	32.0	813	109.0	2769	---	---	16.1	409	140.6	3571	44.2	1124
30XA160,162	14314	6493	14820	6722	43.6	1107.4	62.0	1575	32.0	813	109.0	2769	---	---	16.1	409	140.7	3573	44.1	1121
30XA160,162-CU	15223	6905	15729	7135	43.6	1107.4	62.0	1575	32.0	813	109.0	2769	---	---	16.1	409	141.0	3581	44.1	1121
30XA180,182	14821	6723	15399	6985	43,6	1107,4	78,0	1982	78,0	1982	32,0	813	62,0	1575	16,1	409	159,7	4055	45,6	1158
30XA180,182-CU	16268	7379	16846	7641	43,6	1107,4	78,0	1982	78,0	1982	32,0	813	62,0	1575	16,1	409	160,5	4076	45,5	1157
30XA 200,202	14900	6759	15478	7021	43.6	1107.4	78.0	1982	78.0	1982	32.0	813	62.0	1575	16.1	409	159.8	4059	45.6	1158
30XA 200,202-CU	16347	7415	16925	7677	43.6	1107.4	78.0	1982	78.0	1982	32.0	813	62.0	1575	16.1	409	160.6	4080	45.5	1157

00PSN500148300A Rev D

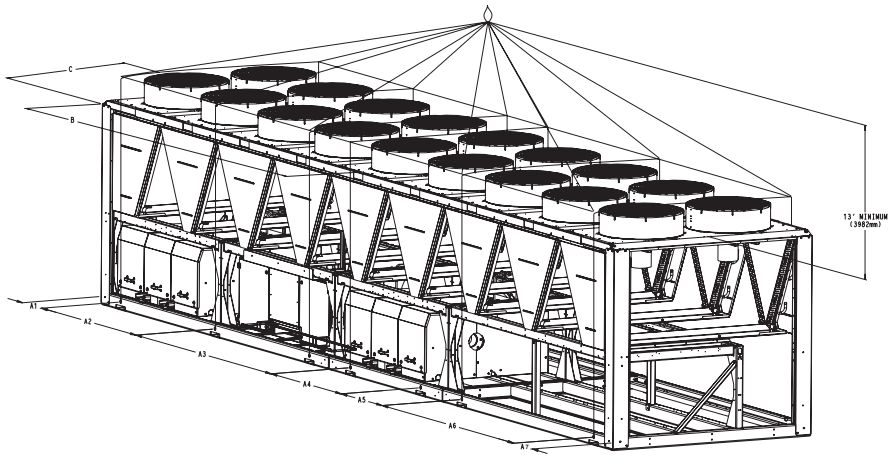
Fig. 16 — Unit Rigging Label Detail 30XA140-202

⚠ CAUTION - NOTICE TO RIGGERS:

ALL PANELS MUST BE IN PLACE WHEN RIGGING. DO NOT ATTEMPT TO FORK THESE UNITS IF NO SKID IS SUPPLIED.

NOTES:

1. 1.50 dia. (38.1mm) lifting holes provided for field supplied clevis.
2. Rig with a minimum of 25 ft (7620mm) length chains or cables.
3. If central lifting point is used, it must be a minimum of 13 ft. (3962mm) above the top of the unit.
4. Spreader bars made from steel or double nailed, and notched 2x6's approximately 8 ft. (2438mm) long, must be placed just above the top of the unit (and stacks) to reduce the risk of damage to the top of the unit and coils.
5. If overhead rigging is not available, the unit can be moved on rollers or dragged. When unit is moved on rollers, the unit skid, if equipped, must be removed. To lift the unit, use jacks at the rigging points. Use a minimum of one roller every 6 ft. (1829mm) to distribute the load. If the unit is to be dragged, lift the unit as described above, and place unit on a pad. Apply moving force to the pad, not the unit. When in its final location, raise the unit and remove the pad.
6. Check bill of lading for shipping weight of unit.



Use this table for units with model number position 9 = A, B, or F

Model Number	Max Shipping Wt w/o Packaging		Max Shipping Wt w/ Packaging		Lifting Holes														Center of gravity			
					A1		A2		A3		A4		A5		A6		A7		B		C	
	lbs	kgs	lbs	kgs	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
30XA220,222	15957	7238	16607	7533	43,6	1107	62,0	1575	32,0	813	109,0	2769	32,0	813	62,0	1575	16,1	409	178,1	4523	45,7	1161
30XA220,222-CU	17525	7949	18175	8244	43,6	1107	62,0	1575	32,0	813	109,0	2769	32,0	813	62,0	1575	16,1	409	179,3	4554	45,6	1158
30XA240,242	16117	7311	16767	7606	43,6	1107	62,0	1575	32,0	813	109,0	2769	32,0	813	62,0	1575	16,1	409	178,7	4539	45,7	1162
30XA240,242-CU	17685	8022	18335	8317	43,6	1107	62,0	1575	32,0	813	109,0	2769	32,0	813	62,0	1575	16,1	409	179,9	4571	45,7	1160
30XA 260,262	18132	8225	18854	8552	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	179,7	4565	43,7	1109
30XA 260,262-CU	19941	9045	20663	9373	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	183,0	4649	43,8	1113
30XA 280,282	18301	8301	19023	8629	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	180,1	4574	43,8	1112
30XA 280,282-CU	20110	9122	20832	9449	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	183,4	4658	43,9	1116
30XA 300,302	18911	8578	19633	8906	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	180,0	4573	43,8	1112
30XA 300,302-CU	20841	9453	21563	9781	43,6	1107	78,0	1982	78,0	1982	32,0	813	78,0	1982	78,0	1982	16,1	409	183,4	4659	43,9	1116
30XA 325,327	20574	9332	21368	9693	43,6	1107	78,0	1982	110,0	2795	62,0	1575	32,0	813	109,0	2769	16,1	409	195,6	4969	42,3	1075
30XA 325,327-CU	22745	10317	23539	10677	43,6	1107	78,0	1982	110,0	2795	62,0	1575	32,0	813	109,0	2769	16,1	409	200,0	5079	42,6	1082
30XA 350,352	20780	9426	21574	9786	43,6	1107	78,0	1982	110,0	2795	62,0	1575	32,0	813	109,0	2769	16,1	409	195,3	4960	42,3	1075
30XA 350,352-CU	22951	10410	23745	10771	43,6	1107	78,0	1982	110,0	2795	62,0	1575	32,0	813	109,0	2769	16,1	409	199,6	5069	42,6	1082

00PSN500148400A B

Fig. 17 — Unit Rigging Label Detail 30XA220-352

Step 3 — Make Refrigerant, Cooler Fluid and Drain Piping Connections

⚠ CAUTION

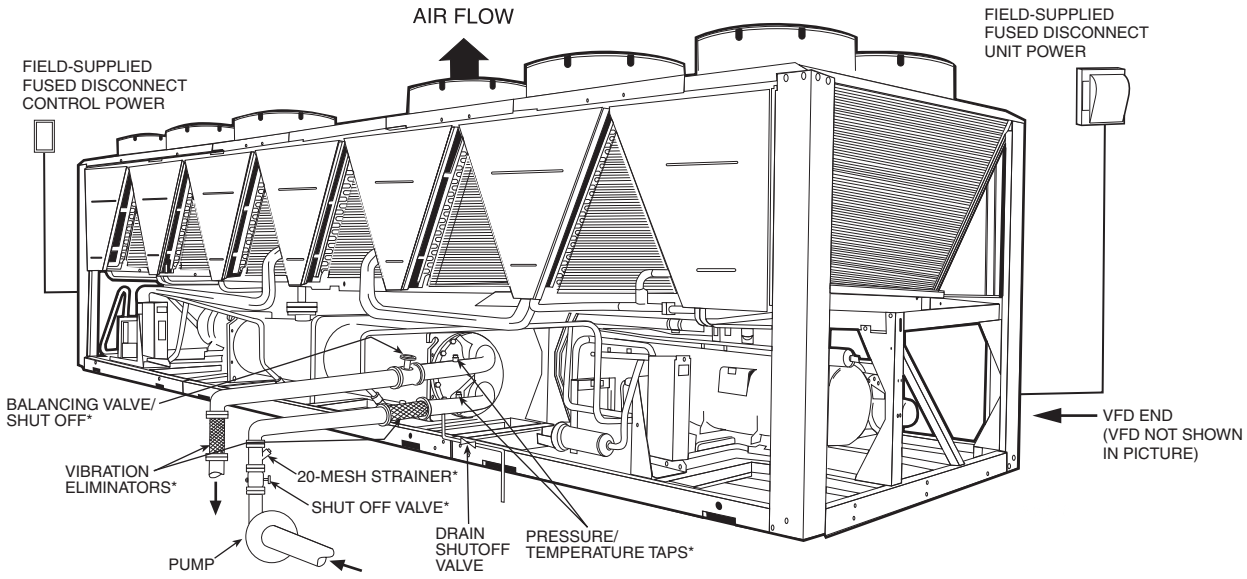
Remove the chilled water flow switch, entering and leaving water thermistors before welding connecting piping. Reinstall flow switch and thermistors after welding is complete. Failure to remove these devices may cause unit damage.

GENERAL — See Fig. 18 and 19 for typical piping and wiring. The Victaulic connections allow clamp-on connection of water lines to the coolers in all 30XA units. See Table 7 for 30XA unit operating range. See Fig. 20 for cooler option dimensions. A flow sensor is factory-installed in the side of the entering fluid nozzle for flooded cooler units and is located in the leaving fluid nozzle for direct expansion (DX) cooler units. See Fig. 21.

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, applications where high stability is critical, or operation at ambient temperatures below 32 F (0° C) is expected, 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 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. 22.

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. Figures 23 and 24 show a typical installation and components.



LEGEND

FD — Fused Disconnect

Airflow Through Condenser

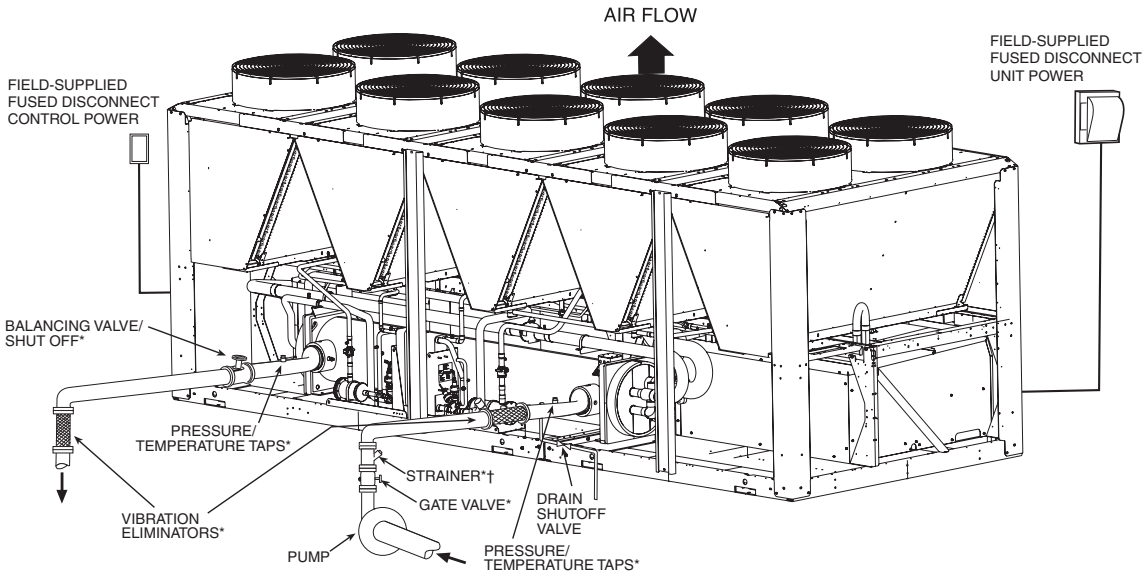
Chilled Water Piping

Power Wiring

*Field-installed.

NOTES:
1. Chiller must be installed level to maintain proper compressor oil return.
2. Piping shown are general points-of-connection guides only and are not intended for a specific installation. Wiring and piping shown are for a quick overview of system and are not in accordance with recognized standards.
3. All wiring must comply with applicable local and national codes.
4. All piping must follow standard piping techniques. Refer to Carrier System Design Manual or appropriate ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) handbook for details.
5. A 20 mesh strainer is required within 10 ft (3 m) of the cooler.

Fig. 18 — 30XA Flooded Cooler Typical Piping and Wiring



LEGEND

Airflow Through Condenser

Power Wiring

Chilled Water Piping

*Field-installed.

NOTES:
1. Chiller must be installed level to maintain proper compressor oil return.
2. Piping shown are general points-of-connection guides only and are not intended for a specific installation. Wiring and piping shown are for a quick overview of system and are not in accordance with recognized standards.
3. All wiring must comply with applicable local and national codes.
4. All piping must follow standard piping techniques. Refer to Carrier System Design Manual or appropriate ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) handbook for details.
5. A 20 mesh strainer is required within 10 ft (3 m) of the cooler.

Fig. 19 — 30XA DX Cooler Typical Piping and Wiring

ENGLISH

30XA UNIT SIZE*	STANDARD COOLER					
	Distance to Leaving Water Connection (in.)	Height Leaving Water Connection (in.)	Distance to Leaving/Entering Water Connection (in.)	Distance to Entering Water Connection (in.)	Height Entering Water Connection (in.)	Victaulic Connection Size (in.)
140	121.5	21.3	69.1	121.5	10.6	5.0
160	121.5	21.3	69.1	121.5	10.6	5.0
180	177.7	22.5	70.2	177.7	11.3	6.0
200	177.3	22.5	70.2	177.3	11.3	6.0
220	224.7	22.5	70.2	224.7	11.3	6.0
240	224.7	22.5	70.2	224.7	11.3	6.0
260	304.7	23.6	71.1	304.7	12.2	8.0
280	304.7	23.6	71.1	304.7	12.2	8.0
300	304.7	23.6	71.1	304.7	12.2	8.0
325	349.0	23.6	71.1	349.0	12.2	8.0
350	349.0	23.6	71.1	349.0	12.2	8.0

30XA UNIT SIZE*	PLUS ONE PASS COOLER						MINUS ONE PASS COOLER					
	Distance to Leaving Water Connection (in.)	Height Leaving Water Connection (in.)	Distance to Leaving/ Entering Water Connection (in.)	Distance to Entering Water Connection (in.)	Height Entering Water Connection (in.)	Victaulic Connection Size (in.)	Distance to Leaving Water Connection (in.)	Height Leaving Water Connection (in.)	Distance to Leaving/ Entering Water Connection (in.)	Distance to Entering Water Connection (in.)	Height Entering Water Connection (in.)	Victaulic Connection Size (in.)
140	1.2	21.3	69.1	121.5	10.6	5.0	–2.2	15.9	69.1	124.8	15.9	6.0
160	1.2	21.3	69.1	121.5	10.6	5.0	–2.2	15.9	69.1	124.8	15.9	6.0
180	53.6	22.4	70.2	180.6	11.4	6.0	53.6	13.2	70.2	180.6	13.2	8.0
200	53.2	22.4	70.2	180.2	11.4	6.0	53.2	13.2	70.2	180.2	13.2	8.0
220	100.6	22.4	70.2	227.6	11.4	6.0	100.6	13.2	70.2	227.6	13.2	8.0
240	100.6	22.4	70.2	227.6	11.4	6.0	100.6	13.2	70.2	227.6	13.2	8.0
260	180.3	23.4	71.1	310.3	12.5	8.0	180.3	16.3	71.1	310.3	16.3	8.0
280	180.3	23.4	71.1	310.3	12.5	8.0	180.3	16.3	71.1	310.3	16.3	8.0
300	180.3	23.4	71.1	310.3	12.5	8.0	180.3	16.3	71.1	310.3	16.3	8.0
325	224.7	23.4	71.1	354.7	12.5	8.0	224.7	16.3	71.1	354.7	16.3	8.0
350	224.7	23.4	71.1	354.7	12.5	8.0	224.7	16.3	71.1	354.7	16.3	8.0

SI

30XA UNIT SIZE*	STANDARD COOLER					
	Distance to Leaving Water Connection (mm)	Height Leaving Water Connection (mm)	Distance to Leaving/ Entering Water Connection (mm)	Distance to Entering Water Connection (mm)	Height Entering Water Connection (mm)	Victaulic Connection Size (mm)
140	3085.8	540.5	1756.2	3085.8	268.7	127.0
160	3085.8	540.5	1756.2	3085.8	268.7	127.0
180	4512.3	571.0	1782.1	4512.3	287.0	152.4
200	4502.4	571.0	1782.1	4502.4	287.0	152.4
220	5706.2	571.0	1782.1	5706.2	287.0	152.4
240	5706.2	571.0	1782.1	5706.2	287.0	152.4
260	7739.6	600.2	1804.9	7739.6	310.1	203.2
280	7739.6	600.2	1804.9	7739.6	310.1	203.2
300	7739.6	600.2	1804.9	7739.6	310.1	203.2
325	8865.1	600.2	1804.9	8865.1	310.1	203.2
350	8865.1	600.2	1804.9	8865.1	310.1	203.2

30XA UNIT SIZE*	PLUS ONE PASS COOLER						MINUS ONE PASS COOLER					
	Distance to Leaving Water Connection (mm)	Height Leaving Water Connection (mm)	Distance to Leaving/ Entering Water Connection (mm)	Distance to Entering Water Connection (mm)	Height Entering Water Connection (mm)	Victaulic Connection Size (mm)	Distance to Leaving Water Connection (mm)	Height Leaving Water Connection (mm)	Distance to Leaving/ Entering Water Connection (mm)	Distance to Entering Water Connection (mm)	Height Entering Water Connection (mm)	Victaulic Connection Size (mm)
140	30.1	540.5	1756.2	3085.8	268.7	127.0	–55.0	404.6	1756.2	3170.8	404.6	152.4
160	30.1	540.5	1756.2	3085.8	268.7	127.0	–55.0	404.6	1756.2	3170.8	404.6	152.4
180	1361.4	569.5	1782.1	4587.2	288.5	152.4	1361.4	336.0	1782.1	4587.2	336.0	203.2
200	1351.6	569.5	1782.1	4577.4	288.5	152.4	1351.6	336.0	1782.1	4577.4	336.0	203.2
220	2555.3	569.5	1782.1	5781.1	288.5	152.4	2555.3	336.0	1782.1	5781.1	336.0	203.2
240	2555.3	569.5	1782.1	5781.1	288.5	152.4	2555.3	336.0	1782.1	5781.1	336.0	203.2
260	4580.8	593.9	1804.9	7882.8	316.5	203.2	4580.8	413.3	1804.9	7882.8	413.3	203.2
280	4580.8	593.9	1804.9	7882.8	316.5	203.2	4580.8	413.3	1804.9	7882.8	413.3	203.2
300	4580.8	593.9	1804.9	7882.8	316.5	203.2	4580.8	413.3	1804.9	7882.8	413.3	203.2
325	5706.4	593.9	1804.9	9008.4	316.5	203.2	5706.4	413.3	1804.9	9008.4	413.3	203.2
350	5706.4	593.9	1804.9	9008.4	316.5	203.2	5706.4	413.3	1804.9	9008.4	413.3	203.2

NOTE: Refer to dimensional drawings for all other unit dimensions.

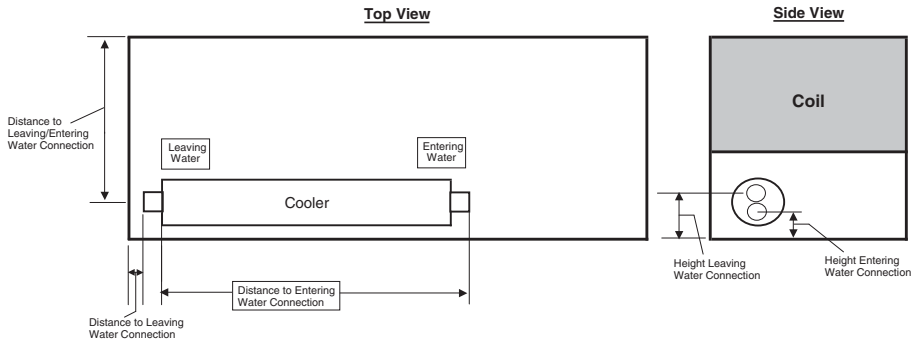


Fig. 20 — Flooded Cooler Option Dimensions

Table 7 —30XA Minimum and Maximum Cooler Flow Rates

ITEM					MINIMUM		MAXIMUM	
Cooler Leaving Water Temperature*					40 F (4.4 C)		60 F (15 C)	
Cooler Entering Water Temperature†					45 F (7.2 C)		70 F (21.1 C)	
30XA UNIT SIZE	Nominal Flow Rate		Cooler	Number of Passes	Minimum Flow Rate**		Maximum Flow Rate	
	(gpm)	(L/s)			(gpm)	(L/s)	(gpm)	(L/s)
140	318	20.1	Standard, Flooded	2	134	8.5	538	33.9
			Plus One Pass, Flooded	3	73	4.6	293	18.5
			Minus One Pass, Flooded	1	324	20.4	1296	81.8
142	303.5	19.1	DX Cooler	—	152	9.6	607	38.2
160	365	23	Standard, Flooded	2	165	10.4	660	41.6
			Plus One Pass, Flooded	3	98	6.2	391	24.7
			Minus One Pass, Flooded	1	354	22.3	1418	89.5
162	347	21.9	DX Cooler	—	174	10.9	694	43.7
180	410	25.9	Standard, Flooded	2	202	12.7	807	50.9
			Plus One Pass, Flooded	3	73	4.6	391	24.7
			Minus One Pass, Flooded	1	416	26.2	1662	104.9
182	401.7	25.3	DX Cooler	—	201	12.6	803	50.6
200	464	29.3	Standard, Flooded	2	223	14.1	892	56.3
			Plus One Pass, Flooded	3	98	6.2	391	24.7
			Minus One Pass, Flooded	1	458	28.9	1833	115.6
202	447.1	28.2	DX Cooler	—	224	14.1	894	56.3
220	506	31.9	Standard, Flooded	2	235	14.8	941	59.4
			Plus One Pass, Flooded	3	122	7.7	489	30.9
			Minus One Pass, Flooded	1	501	31.6	2004	126.4
222	493	31.1	DX Cooler	—	246	15.5	950	59.9
240	546	34.4	Standard, Flooded	2	266	16.8	1063	67.1
			Plus One Pass, Flooded	3	147	9.3	587	37
			Minus One Pass, Flooded	1	538	33.9	2151	135.7
242	530	33.5	DX Cooler	—	265	16.7	950	59.9
260	600	37.9	Standard, Flooded	2	257	16.2	1027	64.8
			Plus One Pass, Flooded	3	141	8.9	562	35.5
			Minus One Pass, Flooded	1	584	36.8	2334	147.3
262	583	36.8	DX Cooler	—	292	18.4	950	59.9
280	642	40.5	Standard, Flooded	2	293	18.5	1173	74
			Plus One Pass, Flooded	3	141	8.9	562	35.5
			Minus One Pass, Flooded	1	620	39.1	2481	156.5
282	627	39.5	DX Cooler	—	313	19.8	950	59.9
300	687	43.4	Standard, Flooded	2	327	20.6	1308	82.5
			Plus One Pass, Flooded	3	174	11	697	44
			Minus One Pass, Flooded	1	687	43.3	2750	173.5
302	665	42.0	DX Cooler	—	333	21.0	1331	83.9
325	733	46.3	Standard, Flooded	2	361	22.8	1442	91
			Plus One Pass, Flooded	3	211	13.3	843	53.2
			Minus One Pass, Flooded	1	724	45.7	2897	182.8
327	720	45.4	DX Cooler	—	360	22.7	1440	90.8
350	775	48.9	Standard, Flooded	2	379	23.9	1516	95.6
			Plus One Pass, Flooded	3	244	15.4	978	61.7
			Minus One Pass, Flooded	1	767	48.4	3068	193.6
352	757	47.8	DX Cooler	—	379	23.9	1514	95.5

*For applications requiring cooler leaving water temperature operation at less than 40 F (4.4 C), the units require the use of antifreeze and application may require the brine option. Contact your local Carrier representative for more information.
†For applications requiring cooler entering water temperature operation at less than 45 F (7.2 C), contact your local Carrier representative for unit selection using the Carrier electronic catalog.
** For minimum cooler flow rate with brine applications, refer to E-CAT software performance.

NOTES:
1. The 30XA units will start and pull down with loop temperatures up to 95 F (35 C).
2. Nominal flow rates required at AHRI (Air-Conditioning, Heating, and Refrigeration Institute) conditions 44 F (7 C) leaving fluid temperature, 54 F (12 C) entering water temperature, 95 F (35 C) ambient. Fouling factor 0.00010 ft^2-hr-F/Btu (0.000018 m^2-K/kW).
3. To obtain proper temperature control, cooler loop fluid volume must be at least 3 gal/ton (3.23 L/kW) of chiller nominal capacity for air conditioning and at least 6 gal/ton (6.5 L/kW) for process applications or systems that must operate in low ambient temperatures (below 32 F [0° C]).

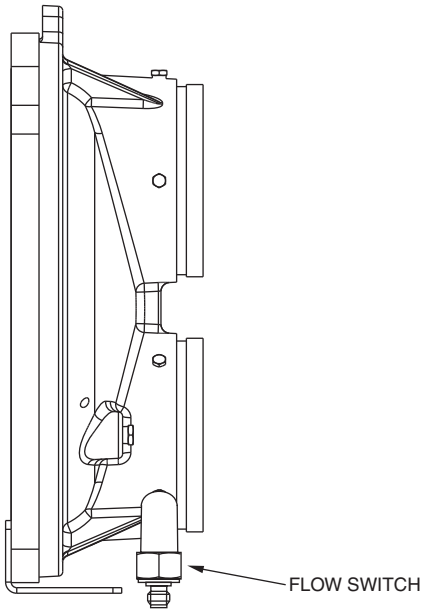


Fig. 21 — Flow Switch Location

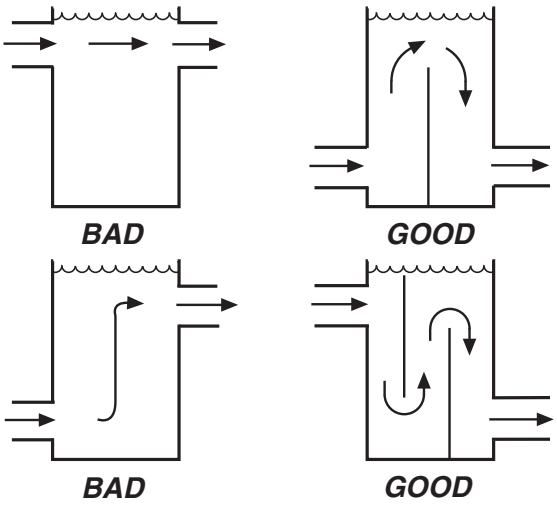


Fig. 22 — Tank Baffling

FLOODED COOLER UNITS

Flooded Cooler Air Separation — For proper system operation, it is essential that water loops be installed with proper means to manage air in the system. Free air in the system can cause noise, reduce terminal output, stop flow, or even cause pump failure due to pump cavitation. For closed systems, equipment should be provided to eliminate all air from the system.

The amount of air that water can hold in solution depends on the pressure and temperature of the water/air mixture. Air is less soluble at higher temperatures and at lower pressures. Therefore, separation can best be done at the point of highest water temperature and lowest pressure. Typically, this point would be on the suction side of the pump as the water is returning from the system or terminals. This is generally the optimal place to install an air separator, if possible.

1. Install automatic air vents at all high points in the system. (If the 30XA unit is located at the high point of the system, a vent can be installed on the piping leaving the heat exchanger on the 1/4 in. NPT female port.)
2. Install an air separator in the water loop, at the place where the water is at higher temperatures and lower pressures — usually in the chilled water return piping. On a primary-secondary system, the highest temperature water is normally in the secondary loop, close to the decoupler. Preference should be given to that point on the system (see Fig. 23). In-line or centrifugal air separators are readily available in the field.

If it is not possible to install air separators at the place of the highest temperature and lowest pressure, preference should be given to the points of highest temperature. It is important that the pipe be sized correctly so that free air can be moved to the point of separation. Generally, a water velocity of at least 2 feet per second (0.6 m per second) will keep free air entrained and prevent it from forming air pockets.

Automatic vents should be installed at all physically elevated points in the system so that air can be eliminated during system operation. Provisions should also be made for manual venting during the water loop fill.

Flooded Cooler Units Field Piping — When facing the cooler side of the unit, the inlet (return) water connection is on the bottom. It is required that a field-supplied strainer with a minimum size of 20 mesh be installed within 10 ft (3.05 m) of the cooler inlet to prevent debris from damaging internal tubes of the cooler. The outlet (supply) water connection is on the top. The cooler has water-side victaulic-type connections (follow connection directions as provided by the coupling manufacturer). Provide proper support for the piping. If accessory security grilles have been added, holes must be cut in the grilles for field piping and insulation. See Fig. 24 for a typical piping diagram of a 30XA unit with Greenspeed® intelligence. A drain connection is located at the leaving water (supply) end of cooler. See Fig. 2-6 for connection location. Insulate the drain piping (in the same manner as the chilled water piping) for at least 12 in. (305 mm) from the unit.

Flooded Cooler Dual Chiller Control — The Touch Pilot™ 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 Touch Pilot feature requires a communication link between the 2 chillers on the CCN Bus.

There are several advantages to this type of control:

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

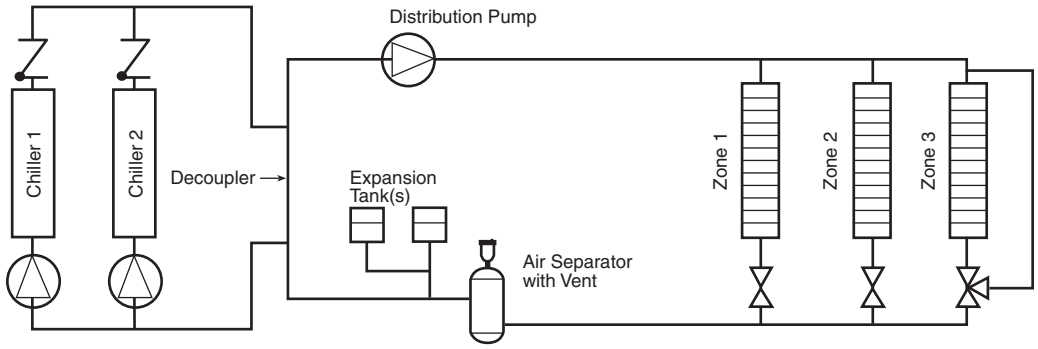
Flooded Cooler Dual Chiller Leaving Water Sensor — If the dual chiller algorithm is used, and the machines are installed in parallel, a dual chilled water sensor must be installed for each module. Install the well in the common leaving water header. See Fig. 25.

Flooded Cooler Parallel Dual Chiller Operation — 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 module, for this function to operate properly.

Consider adding additional isolation valves to isolate each chiller to allow for service on a machine, and still allow for partial capacity from the other chiller. See Fig 25.

Flooded Cooler Series Dual Chiller Operation — Series chiller operation is an alternate control method supported by the Touch Pilot control system. Certain applications might require that the two chillers be connected in series. For nominal 10º F (5.6º C) cooler ranges, use the minus 1 pass cooler arrangements to reduce the fluid-side pressure drop. Use the standard cooler pass arrangement for low flow, high cooler temperature rise applications.

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. See Fig. 26.



NOTE: Expansion tanks for 30XA hydronic kits must be installed for chillers piped in parallel in the primary water loop.

Fig. 23 —Typical Air Separator and Expansion Tank Location on Primary-Secondary Systems

LEGEND

D — Drain, 3/4-in. NPT
FS — Flow Switch
PP — Pipe Plug, 1/4-in. NPT
T1 — Leaving Water Thermistor
T2 — Entering Water Thermistor
V — Vent, 3/8-in. NPT

— 20 Mesh Strainer required within 10 ft (3 m) of cooler

— Relief Valve

Fig. 24 — Typical Piping Diagram for 30XA Units with Greenspeed® Intelligence

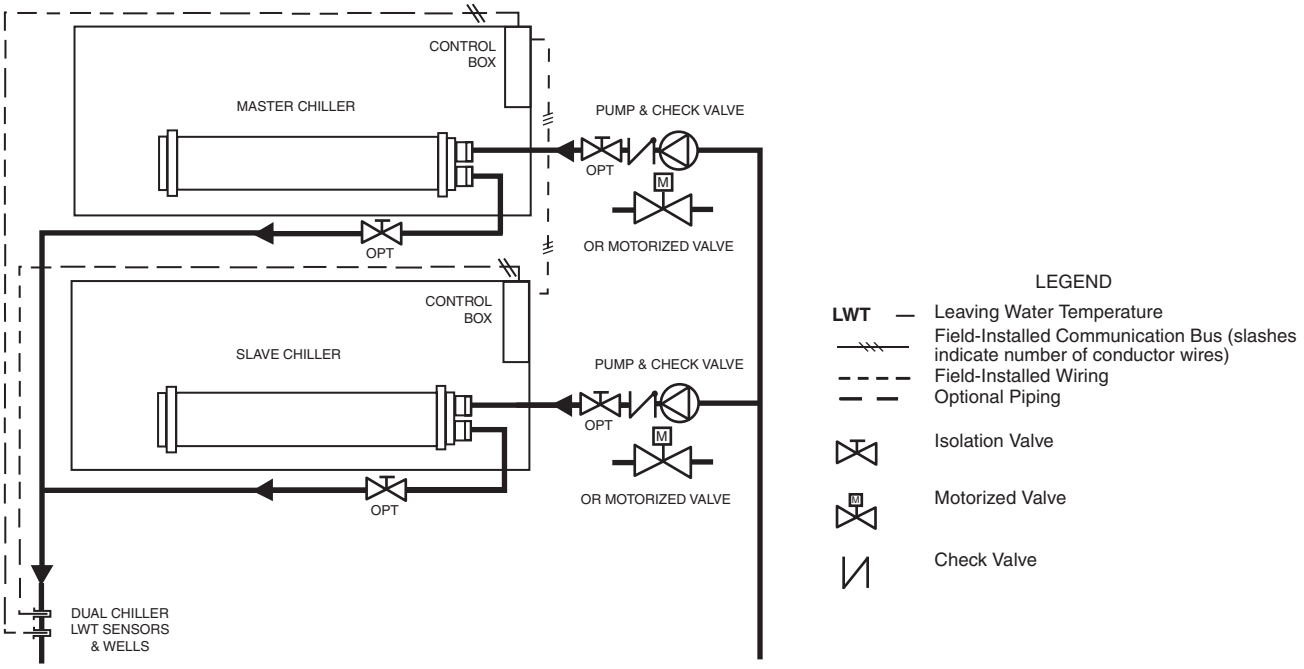


Fig. 25 — Parallel Dual Chiller Operation

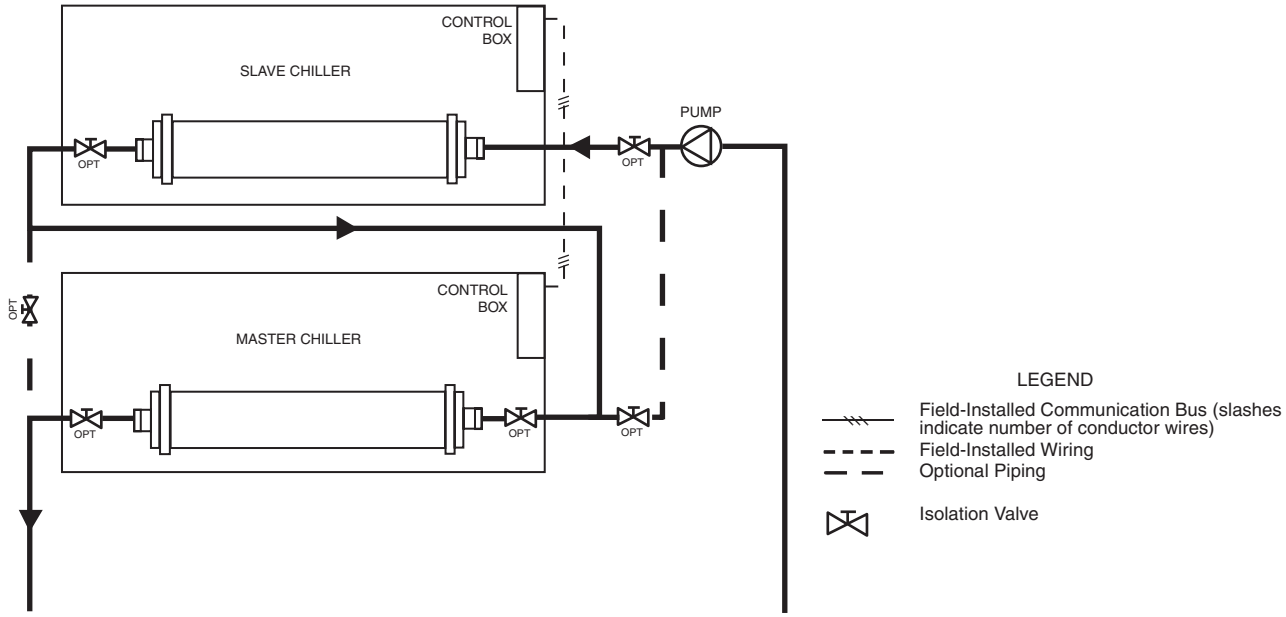


Fig. 26 — Series Dual Chiller Operation (Not Recommended for DX Cooler)

IMPORTANT: Automatic vents should be located in accessible locations for maintenance purposes and protected from freezing.

Flooded Cooler Cooler Pump Control —

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

⚠ CAUTION

Applications that utilize fresh water as the circulated fluid require that the circulating pump be controlled directly by the chiller. Operation with fresh water is not fail-safe should there be a loss of power to the chiller or to the circulating pump. Freeze damage due to power loss or disabling chiller pump control in fresh water systems will impair or otherwise negatively affect the warranty.

Refer to the control and power wiring schematic on page 83 for proper connection of the cooler pump (PMP1 and PMP2). The cooler pump output will remain energized for 30 seconds after all compressors stop due to an OFF command. In the event a freeze protection alarm is generated, the cooler pump output will be energized regardless of the cooler pump control software configuration. The cooler pump output is also

energized when certain alarms are generated. A thermal flow sensor is factory installed in the entering fluid nozzle to prevent operation without flow through the cooler. See Fig. 27. The flow sensor is factory wired.

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

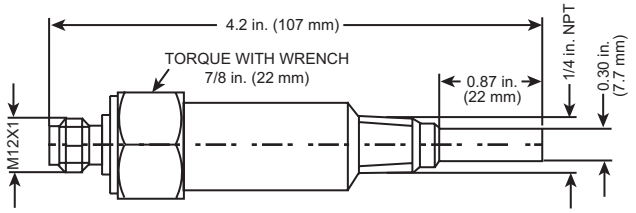


Fig. 27 — Thermal Flow Sensor

Flooded Cooler Brine Units — For operating units with fluid temperatures less than 40 F (4.4 C), add sufficient inhibited glycol or other suitable corrosion-resistant anti-freeze solution to prevent cooler freeze-up.

DX COOLER UNITS

DX Cooler Air Separation — For proper system operation, it is essential that water loops be installed with proper means to manage air in the system. Free air in the system can cause noise, reduce terminal output, stop flow, or even cause pump failure due to pump cavitation. For closed systems, equipment should be provided to eliminate all air from the system.

The amount of air that water can hold in solution depends on the pressure and temperature of the water/air mixture. Air is less soluble at higher temperatures and at lower pressures. Therefore, separation can best be done at the point of highest water temperature and lowest pressure. Typically, this point would be on the suction side of the pump as the water is returning from the system or terminals. This is generally the optimal place to install an air separator, if possible.

1. Install automatic air vents at all high points in the system. (If the 30XA unit is located at the high point of the system, a vent can be installed on the cooler shell on the $^1/_4$ in. NPT female port.)
2. Install an air separator in the water loop, at the place where the water is at higher temperatures and lower pressures — usually in the chilled water return piping. On a primary-secondary system, the highest temperature water is normally in the secondary loop, close to the decoupler. Preference should be given to that point on the system (see Fig. 23). In-line or centrifugal air separators are readily available in the field.

It may not be possible to install air separators at the place of the highest temperature and lowest pressure. In such cases, preference should be given to the points of highest temperature. It is important that the pipe be sized correctly so that free air can be moved to the point of separation. Generally, a water velocity of at least 2 feet per second (0.6 m per second) will keep free air entrained and prevent it from forming air pockets.

Automatic vents should be installed at all physically elevated points in the system so that air can be eliminated during system operation. Provisions should also be made for manual venting during the water loop fill.

DX Cooler Units Field Piping — When facing the cooler side of the unit, the inlet (return) water connection is located on the right side of cooler. It is required that a field-supplied strainer with a minimum size of 20 mesh be installed within 10 ft (3.05 m) of the cooler inlet to prevent debris from damaging internal tubes of the cooler. The outlet (supply) water connection is on the left side of cooler. The cooler has water-side Victaulic-type connections (follow connection directions as provided by the coupling manufacturer). Provide proper support for the piping. If accessory security grilles have been added, holes must be cut in the grilles for field piping and insulation. See Fig. 28 for a typical piping diagram of a 30XA unit with DX cooler.

A drain connection is located at the bottom of the cooler shell near thewater outlet end of the cooler. See Fig. 7-12 for connection location. Insulate the drain piping (in the same manner as the chilled water piping) for at least 12 in. (305 mm) from the unit.

DX Cooler Dual Chiller Control — The Touch Pilot™ controller allows two 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 Touch Pilot feature requires a communication link between the two chillers on the CCN Bus.

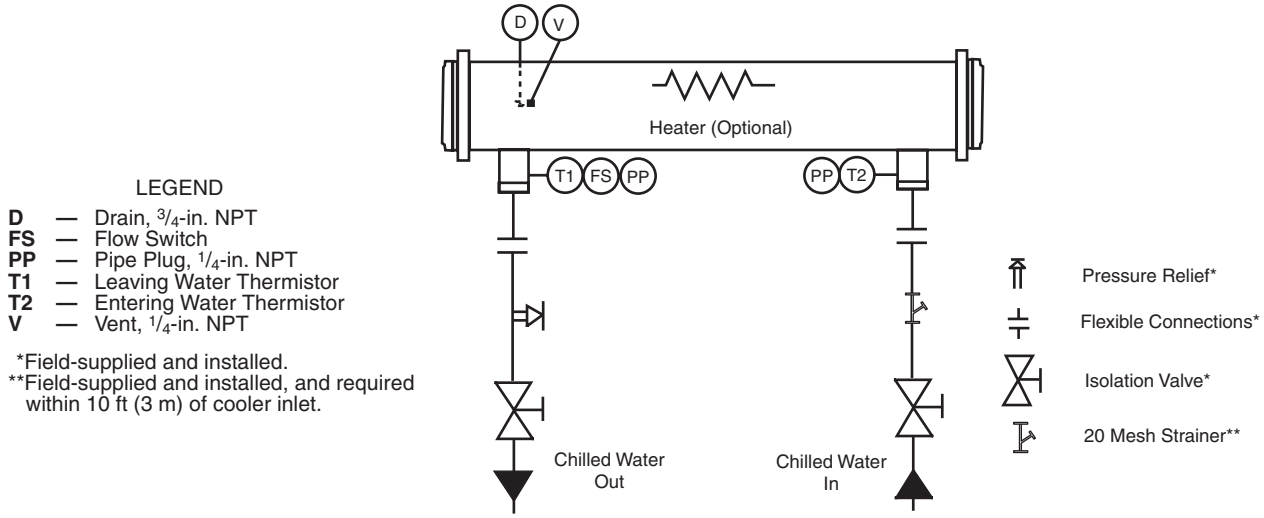


Fig. 28 — Typical Piping Diagram on 30XA142,162,182, 202

There are several advantages to this type of control:
- redundancy (multiple circuits)
- better low load control, (lower tonnage capability)
- lower rigging lift weights (two machines rather than one large machine)
- chiller lead-lag operation (evens the wear between the two machines)

DX Cooler 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 well in the common leaving water header. See Fig. 25.

DX Cooler Parallel Dual Chiller Operation — 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 insure proper flow in each chiller. Two field-supplied and installed dual chiller leaving water temperature sensors are required, one for each module for this function to operate properly.

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

DX Cooler Series Dual Chiller Operation — Series chiller operation is an alternate method supported by the Touch Pilot control system but is not recommended for DX applications. Certain applications with high temperature rise across the units may require that two chillers be connected in series.

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

DX Cooler Pump Control — It is recommended that cooler pump control be utilized on all chillers unless the chilled water pump runs continuously or the chilled water system contains a suitable antifreeze solution.

⚠ CAUTION

Operation with fresh water is not fail-safe should there be a loss of power to the chiller or to the circulating pump. Freeze damage due to power loss or disabling chiller pump control in fresh water systems will impair or otherwise negatively affect the warranty.

If cooler pump control is not utilized, it is required that the chiller be electrically interlocked with the chilled water pump starter. The interlock should be wired to terminals TB5-1 and TB5-2. It is also recommended that the cooler pump output be used as an override to the chilled water pump control circuit to provide additional freeze protection.

Refer to the control and power wiring sections beginning on page 82 for proper connection of the cooler pump output (PMP1 and PMP2). The cooler pump output will remain energized for 30 seconds after all compressors stop due to an OFF command. In the event a freeze protection alarm is generated, the cooler pump output will be energized regardless of the cooler pump control software configuration. The cooler 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 leaving fluid nozzle to prevent operation without flow through the cooler. See Fig. 27. The flow sensor is factory wired.

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

DX Cooler Brine Units — For operating units with fluid temperatures less than 40 F (4.4 C), add sufficient inhibited glycol or other suitable corrosion-resistant antifreeze solution to prevent cooler 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 required using inhibited glycol or other suitable corrosion-resistant antifreeze solution and electric heater tapes. Heater tapes on piping 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 (National Electric Code) codes. Identify disconnect at heater tape power source with a warning that power must not be turned off except when servicing unit.

IMPORTANT: Adding antifreeze solution is the only certain means of protecting the unit from freeze-up if heater fails or electrical power is interrupted or lost while temperatures are below 32 F (0° C).

A drain connection is located at the bottom of the cooler head for units with a flooded cooler and on the bottom of the cooler shell for units with a DX cooler. See Fig. 7-12 for connection location. Install shut-off valves to the drain line before filling the system with fluid.

Low Ambient Temperature Head Pressure Control — For units intended to operate in low ambient conditions, field-fabricated and field-installed wind baffles are required if the wind velocity is anticipated to be greater than 5 mph (8 km/h). Wind baffles should be constructed with minimum 18-gage galvanized sheet metal or other suitable corrosion-resistance material with cross breaks for strength. See Fig. 29. Use field-supplied screws to attach baffles to the corner posts of the machine. Be sure to hem or turn a flange on all edges to eliminate sharp edges on the baffles.

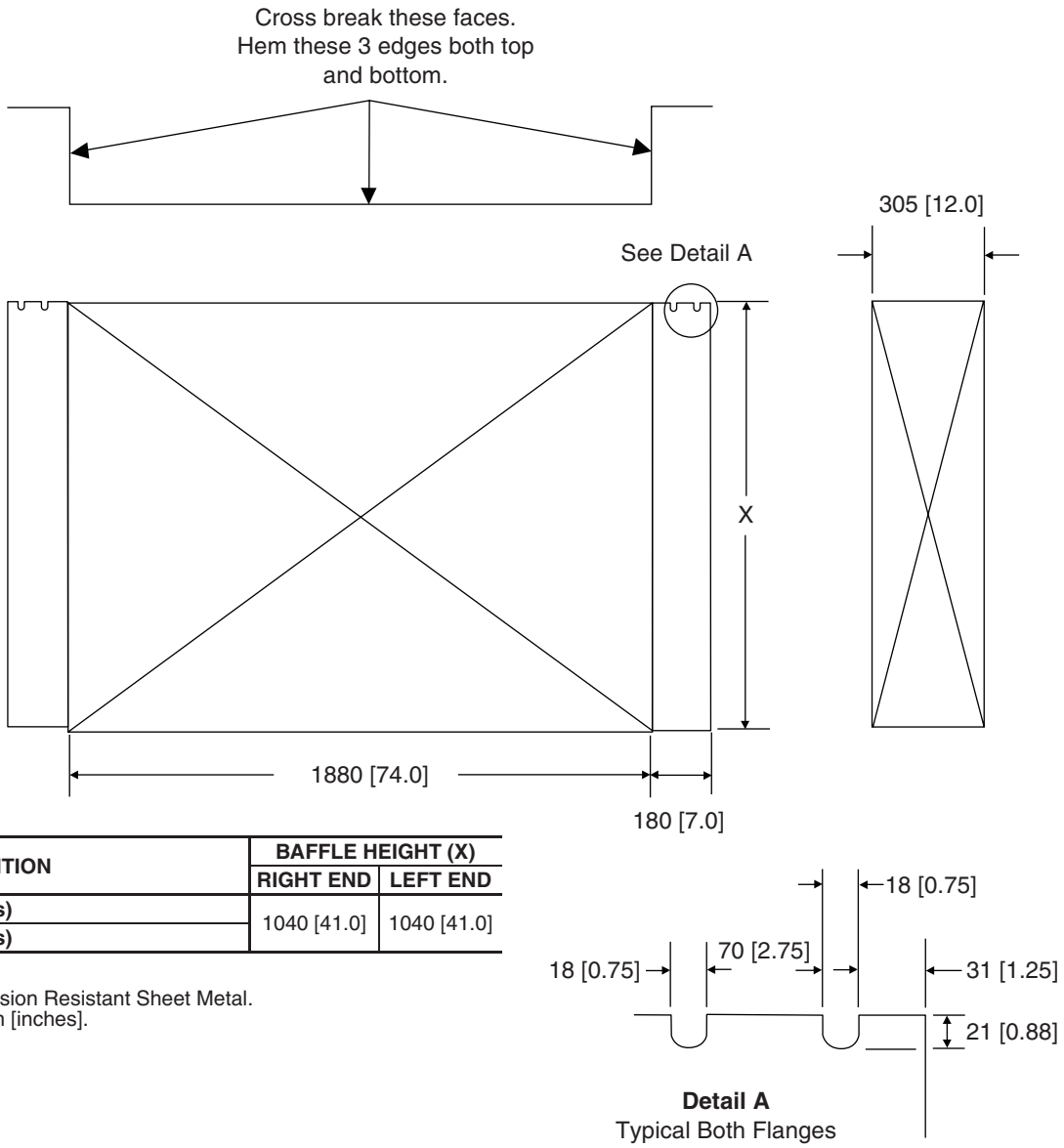
⚠ WARNING

Disconnect all power to the unit before performing maintenance or service. Electrical shock and personal injury could result.

⚠ CAUTION

To avoid damage to the refrigerant coils and electrical components, use extreme care when drilling screw holes and screwing in fasteners.

Mount baffle on control box end. It is recommended that the upper notches be used for mounting the baffles. This reduces the risk of damaging the coil while drilling a mounting hole. Loosen the upper corner post bolts and slide the baffle under the bolt and washer. Tighten the bolt. Drill holes in the bottom of the flange of the baffle and mount with two screws to secure the bottom of the baffle to the corner post. Repeat the process for the opposite end. See Fig. 29.



POSITION	BAFFLE HEIGHT (X)	
	RIGHT END	LEFT END
30XA140-202 (Both ends)	1040 [41.0]	1040 [41.0]
30XA220-352 (Both ends)		

NOTES:
1. Material: 18 ga. Corrosion Resistant Sheet Metal.
2. Dimensions are in mm [inches].

Fig. 29 —Field-Fabricated and Field-Installed Wind Baffles

Step 4 — Fill the Chilled Water Loop

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

⚠ WARNING

In low ambient (below 32 F [0° C]) and/or low leaving fluid temperature applications (below 40 F [4.4° C]), a suitable antifreeze solution of the proper concentration for the specific operating conditions must be used as the fluid circulated through the cooler to prevent freezing and damage to the system. Failure to operate the system with an antifreeze solution of the proper concentration will impair or otherwise negatively affect the warranty should damage result from freezing.

The maximum cooler water side pressure is 300 psig (2068 kPa). Check the pressure rating for all of the chilled water devices installed. Do not exceed the lowest pressure rated device.

WATER SYSTEM CLEANING — Proper water system cleaning is of vital importance. Excessive particulates in the water system can cause excessive pump seal wear, reduce or stop flow, and cause damage of other components. Ideally, the chilled water loop will be cleaned before the unit is connected.

1. Install a temporary bypass around the chiller to avoid circulating dirty water and particulates into the chiller during the flush. Use a temporary circulating pump during the cleaning process. Also, be sure that there is capability to fully drain the system after cleaning. See Fig. 30.
2. Be sure to use a cleaning agent that is compatible with all system materials. Be especially careful if the system contains any galvanized or aluminum components. Both detergent-dispersant and alkaline-dispersant cleaning agents are available.
3. It is recommended to fill the system through a water meter. This provides a reference point for the future for loop volume readings, and it also establishes the correct quantity of cleaner needed in order to reach the required concentration.
4. Use a feeder/transfer pump to mix the solution and fill the system. Circulate the cleaning system for the length of time recommended by the cleaning agent manufacturer.
   a. After cleaning, drain the cleaning fluid and flush the system with fresh water.
   b. A slight amount of cleaning residue in the system can help keep the desired, slightly alkaline, water pH of 8 to 9. Avoid a pH greater than 10, since this will adversely affect pump seal components.
   c. A side stream filter is recommended (see Fig. 31) during the cleaning process. Filter side flow rate should be enough to filter the entire water volume every 3 to 4 hours. Change filters as often as necessary during the cleaning process.
   d. Remove temporary bypass when cleaning is complete.

WATER TREATMENT — Fill the fluid loop with water (or brine) and a corrosion-resistant inhibitor suitable for the water of the area. Consult the local water treatment specialist for characteristics of system water and a recommended inhibitor for the cooler fluid loop.

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.

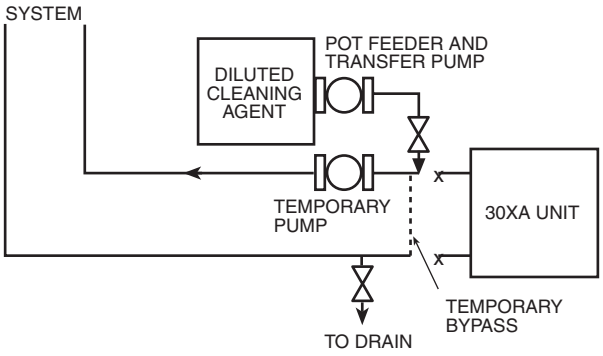


Fig. 30 — Typical Set Up for Cleaning Process

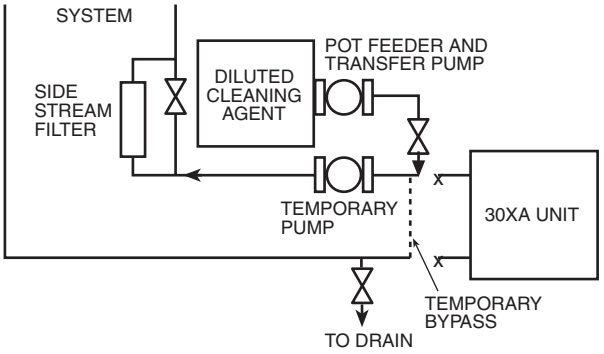


Fig. 31 — Cleaning Using a Side Stream Filter

⚠ 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.

SYSTEM PRESSURIZATION — A proper initial cold fill pressure must be established before filling of the unit. The initial cold fill pressure is the pressure applied at the filling point to fill a system to its highest point, plus a minimum pressure at the top of the system (4 psig minimum [27.6 kPa]) to operate air vents and positively pressurize the system. The expansion tank is very important to system pressurization. The expansion tank serves several purposes:

1. Provides NPSHR (Net Positive Suction Head Required) for the pump to operate satisfactorily.
2. Sets system pressure.
3. Accommodates expansion/contraction of water due to temperature changes.
4. Acts as a pressure reference for the pump.

The expansion tank pressure must be set BEFORE the system is filled. Follow the manufacturer's recommendation for instructions on setting the pressure in the expansion tank.

Once the system is pressurized, the pressure at the connection point of the expansion tank to water piping will not change unless the water loop volume changes (either due to addition/subtraction of water or temperature expansion/contraction).

The pressure at this point remains the same regardless of whether or not the pump is running.

Since the expansion tank acts as a reference point for the pump, there cannot be two reference points (two expansion tanks) in a system, unless manifolded together as seen in Fig. 23. It is permissible to install the expansion tank(s) in a portion of the return water line that is common to all pumps, providing that the tank is properly sized for combined system volume.

If the application involves two or more chillers in a primary-secondary system, a common place for mounting the expansion tank is in the chilled water return line, just before the decoupler. See Fig. 23 for placement of expansion tank in primary-secondary systems.

If a diaphragm expansion tank is utilized (a flexible diaphragm physically separates the water/air interface) it is not recommended to have any air in the water loop. See the section on air separation on page 74 and page 77 for instructions on providing air separation equipment.

FILLING THE SYSTEM — The initial fill of the chilled water system must accomplish three goals:

1. The entire piping system must be filled with water.
2. The pressure at the top of the system must be high enough to vent air from the system (usually 4 psig [27.6 kPa] is adequate for most vents).
3. The pressure at all points in the system must be high enough to prevent flashing in the piping or cavitation in the pump.

The pressure created by an operating pump affects system pressure at all points except one — the connection of the expansion tank to the system. This is the only location in the system where pump operation will not give erroneous pressure indications during the fill. Therefore, the best location to install the fill connection is close to the expansion tank. An air vent should be installed close by to help eliminate air that enters during the fill procedure.

When filling the system, ensure the following:

1. Remove temporary bypass piping and cleaning/flushing equipment.
2. Check to make sure all drain plugs are installed.

Normally, a closed system needs to be filled only once. The actual filling process is a fairly simple procedure. All air should be purged or vented from the system. Thorough venting at high points and circulation at room temperature for several hours is highly recommended.

NOTE: Local codes concerning backflow devices and other protection of the city water system should be consulted and followed to prevent contamination of the public water supply. This is critical when antifreeze is used in the system.

SET WATER FLOW RATE — Once the system is cleaned, pressurized, and filled, the flow rate through the chiller needs to be established. Follow the manufacturer's recommendations for setting the balancing valve. Local codes may prohibit restricting the amount of water using the balancing valve for a given motor horsepower.

NOTE: Carrier recommends a differential pressure gage when measuring pressures across the pumps or balancing valves. This provides for greater accuracy and reduces error build-up that often occurs when subtracting pressures made by different gages.

A rough estimate of water flow can also be obtained from the pressure gages across the 30XA heat exchanger.

The Controls, Start-Up Operation, Service, and Troubleshooting guide includes graphs that show the relationship between gpm and heat exchanger pressure drop. It should be noted that these curves are for fresh water and "clean" heat exchangers; they do not apply to heat exchangers with fouling.

FREEZE PROTECTION — The 30XA with Greenspeed® intelligence units are provided with a flow switch to protect against freezing situations that occur from no water flow. While the flow switch is helpful in preventing freezing during no-flow situations, it does not protect the chiller in case of power failure during sub-freezing ambient temperatures, or in other cases where water temperature falls below the freezing mark. Appropriate concentrations of inhibited propylene or ethylene glycol or other suitable inhibited antifreeze solution should be considered for chiller protection where ambient temperatures are expected to fall below 32 F (0° C). Consult a local water treatment specialist on characteristics of the system water and add a recommended inhibitor to the chilled water. The Carrier warranty does not cover damage due to freezing.

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.

Use an electric heater tape for the external piping, if unit will be exposed to freezing temperatures.

Ensure that power is available to the chiller at all times, even during the off-season, so that the cooler heaters have power. Also make sure that the piping heater tape has power.

Flooded cooler units only — All units are equipped with cooler heaters. Units are protected from freezing down to 0° F (–18 C) through the cooler heaters and control algorithms. If the unit controls the chilled water pump and valves, allowing flow through the cooler, the unit is protected from freezing down to –20 F (–29 C). The Carrier warranty does not cover damage due to freezing.

PREPARATION FOR WINTER SHUTDOWN — If the unit is not operational during the winter months, at the end of cooling season complete the following steps.

⚠ CAUTION

Failure to remove power before draining heater equipped coolers can result in heater damage.

1. If the cooler will not be drained, do not shut off power disconnect during off-season shutdown. If cooler is drained, open the circuit breaker for the heater, CB-13 or shut off power during off-season shutdown.
2. Draining the fluid from the system is highly recommended. Units have a drain plug mounted on the bottom of the cooler head at each end of the cooler on flooded cooler units or at the bottom of the shell on DX cooler units.
3. Isolate the cooler from the rest of the system with water shutoff valves.
4. Replace the drain plug and completely fill the cooler with a mixture of water and a suitable corrosion-inhibited antifreeze solution such as propylene glycol. The concentration should be adequate to provide freeze protection to 15° F (8.3° C) below the expected low ambient temperature conditions. Antifreeze can be added through the vent on top of the cooler head for flooded cooler units or the vent on top of the cooler shell for DX cooler units.

5. Leave the cooler filled with the antifreeze solution for the winter, or drain antifreeze solution if desired. Be sure to deenergize heaters (if installed) as explained in Step 1 to prevent damage if the cooler is drained. Use an approved method of disposal when removing antifreeze solution.

At the beginning of the next cooling season, be sure that there is refrigerant pressure on each circuit before refilling cooler, add recommended inhibitor, and reset the CB-HT (circuit breaker heater) (if opened) or restore power.

Step 5 — Make Electrical Connections

⚠ WARNING

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

POWER SUPPLY — The electrical characteristics of the available power supply must agree with the unit nameplate rating. Supply voltage must be within the limits shown. See Tables 8-10 for electrical and configuration data.

FIELD POWER CONNECTIONS (See Fig. 32) — 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 (U.S.A.). See Tables 8-10 for unit electrical data.

IMPORTANT: The 30XA with Greenspeed® intelligence 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 non-fused disconnect since no terminal blocks are supplied.

Maximum wire size that the unit terminal block or non-fused disconnect will accept is 500 kcmil.

POWER WIRING — All power wiring must comply with applicable local and national codes. Install field-supplied branch circuit fused disconnect per NEC of a type that can be locked OFF or OPEN. Disconnect must be within sight and readily accessible from the unit in compliance with NEC Article 440-14. In the power box, $^{7}/_{8}$ in. holes are provided for power entry. The holes will need to bee enlarged to accept the appropriate conduit. NEC also requires all conduits from a conditioned space to the power box(es) be sealed to prevent airflow and moisture into the control box.

The 30XA units with Greenspeed intelligence require 1 or 2 power supplies, depending on the unit and circuit voltage. See Tables 8-10 for chiller electrical data. Cooler heaters, if factory-installed, are wired in the control circuit. Heaters on chillers with the optional control transformer will be capable of operation only when the main power supply to the chiller is on. On chillers with separate control power, the heaters are capable of operation whenever the control power is supplied.

FIELD CONTROL POWER CONNECTIONS (See Fig. 32) — All units require 115-1-60 control circuit power, unless the control transformer option is installed.

A field-supplied remote on-off switch or control relay can be wired into TB5-9 and TB5-10. Contacts must be rated for dry-circuit applications capable of handling a 24-vac at 50 mA load.

⚠ CAUTION

Do not use interlocks or other safety device contacts connected between TB5-9 and TB5-10 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. 32. Failure to wire the remote on-off as recommended may result in tube freeze damage.

CARRIER COMFORT NETWORK® COMMUNICATION BUS WIRING (See Fig. 33) — 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. 33.

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 11 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).

*Registered trademark of Dupont.

LEGEND

A	—	Alarm
AWG	—	American Wire Gage
EMM	—	Energy Management
NEC	—	National Electric Code
TB	—	Terminal Block

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 75 C minimum. Use copper for all units.
   Incoming wire size range for the terminal block is #4 AWG to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA from 600 to 799.99 amps is 1/0 to 500 kcmil.
   Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.99 amps is 250 to 500 kcmil.
   For clearance between multiple units, refer to product data.
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 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 24V. Field power supply is not required.
5. 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 of handling a 24 VAC load up to 50 mA.
6. Terminal blocks TB5 and TB6 are located in the display panel box for all units. Refer to the certified dimensional drawing for each unit to get the exact locations.
7. Refer to certified dimensional drawings for exact locations of the main power and control power entrance locations.
8. J3-24 and 25 of EMM board are for run relay and shutdown relay. The maximum load allowed for the run and shutdown relay is 10 VA sealed, 25 VA inrush at 24V.

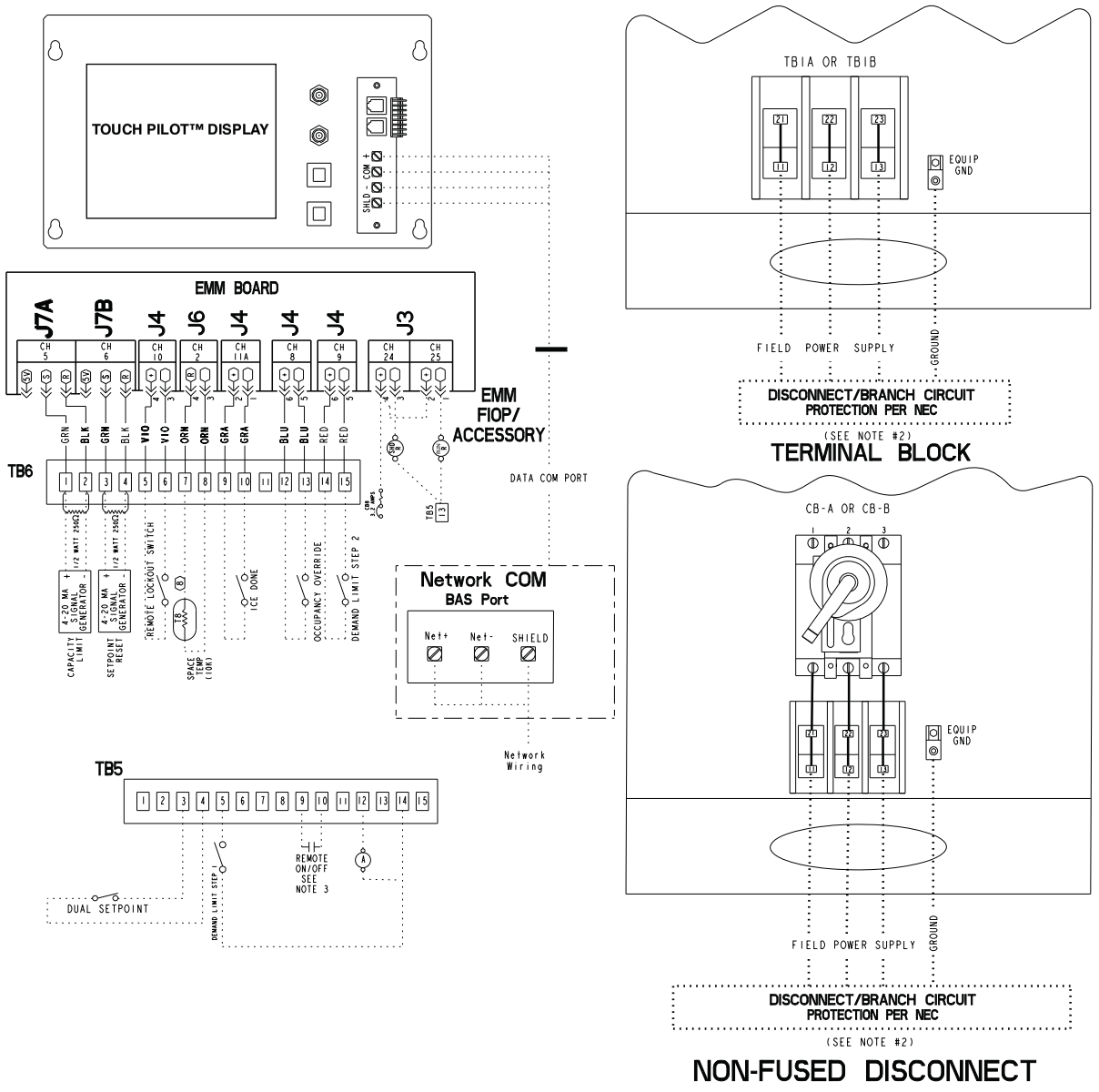


Fig. 32 — Field Control and Power Wiring

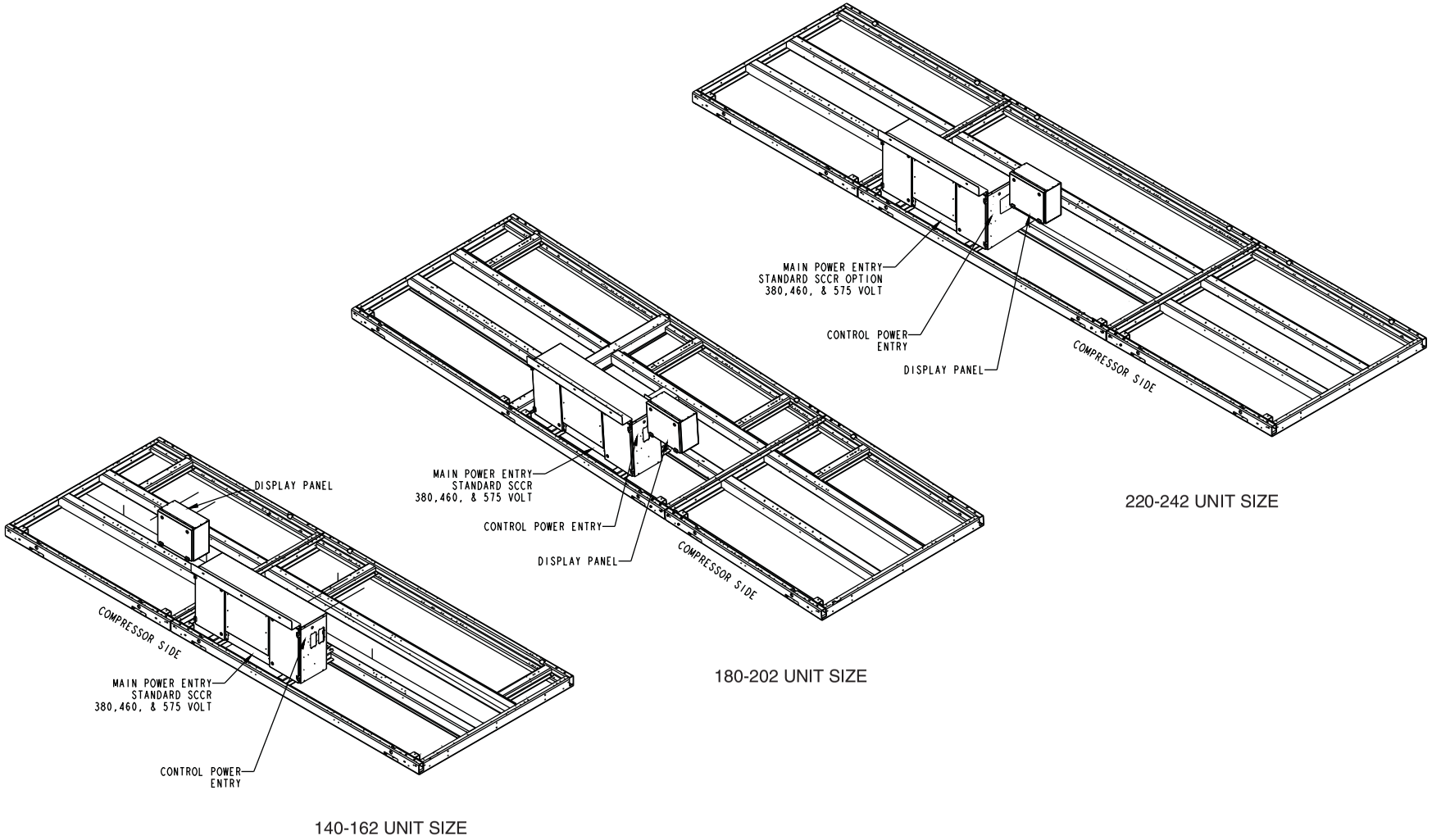


Fig. 32 — Field Control and Power Wiring (cont)

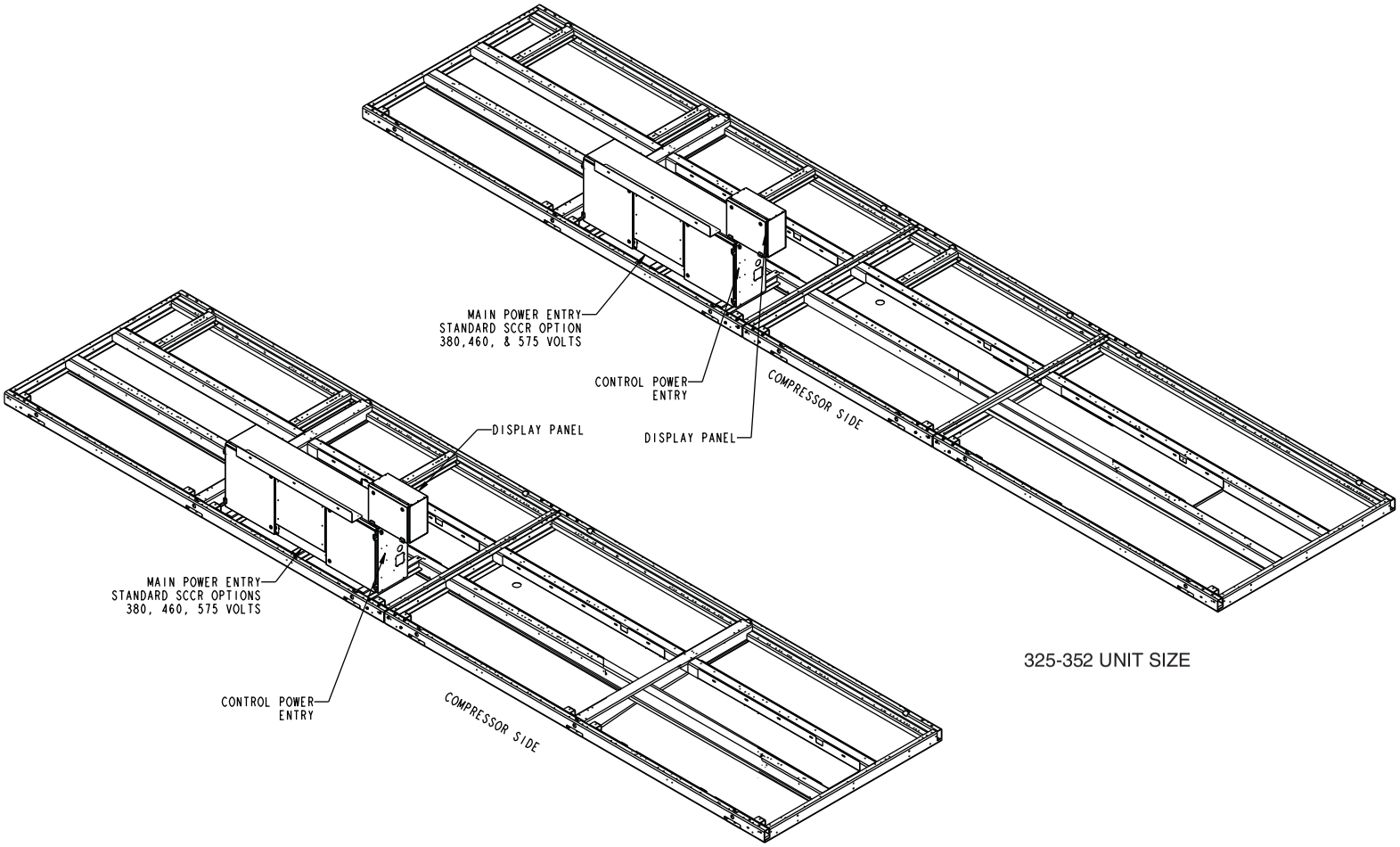


Fig. 32 — Field Control and Power Wiring (cont)

Table 8 — 30XA140-352 Electrical Data, Single Point

UNIT 30XA	UNIT VOLTAGE			MCA	MOCP	Rec Fuse Size	CONTROL CIRCUIT	
	V-Hz (3 Ph)	Supplied					Voltage 1 PH, 60 Hz	MCA and MOCP
		Min	Max					
140, 142	460-60	414	506	281.0	400	350	115	40
	575-60	518	633	216.3	300	250	115	40
	380-60	342	418	328.3	450	400	115	40
160, 162	460-60	414	506	320.5	450	400	115	40
	575-60	518	633	247.2	350	300	115	40
	380-60	342	418	374.9	500	450	115	40
180,182	460-60	414	506	351.9	450	400	115	60
	575-60	518	633	271.1	350	300	115	60
	380-60	342	418	410.8	500	450	115	60
200, 202	460-60	414	506	396.9	500	450	115	60
	575-60	518	633	305.8	400	350	115	60
	380-60	342	418	463.8	600	600	115	60
220, 222	460-60	414	506	438.0	600	500	115	60
	575-60	518	633	337.6	450	400	115	60
	380-60	342	418	511.5	700	600	115	60
240, 242	460-60	414	506	466.5	600	600	115	60
	575-60	518	633	359.5	450	400	115	60
	380-60	342	418	544.4	700	600	115	60
260, 262	460-60	414	506	529.1	700	600	115	60
	575-60	518	633	407.4	500	500	115	60
	380-60	342	418	616.7	800	700	115	60
280, 282	460-60	414	506	563.0	800	700	115	60
	575-60	518	633	433.6	600	500	115	60
	380-60	342	418	656.2	800	800	115	60
300, 302	460-60	414	506	619.6	800	700	115	60
	575-60	518	633	476.7	600	600	115	60
	380-60	342	418	722.3	1000	1000	115	60
325, 327	460-60	414	506	638.1	800	700	115	60
	575-60	518	633	491.2	600	600	115	60
	380-60	342	418	743.0	1000	1000	115	60
350, 352	460-60	414	506	694.6	800	800	115	60
	575-60	518	633	534.2	700	600	115	60
	380-60	342	418	809.1	1000	1000	115	60

LEGEND

MCA — Minimum Circuit Amps

MOCP — Maximum Overcurrent Protection

NOTES:

1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
2. Cooler heater (where applicable) is wired into the control circuit so it is always operable as long as the control power supply disconnect is on, even if any safety device is open.
3. For MCA that is less than or equal to 380 amps, 3 conductors are required.
   For MCA between 381-760 amps, 6 conductors are required.
   For MCA between 761-1140 amps, 9 conductors are required.
   For MCA between 1141-1520 amps, 12 conductors are required.
   Calculation of conductors required is based on 75 C copper wire.
4. Based on the operational characteristics of a VFD, the “inrush” current normally associated with a chiller is limited and will be lower than the MCA rating of the chiller.
5. Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
   a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
   b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
   c. Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
   d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.

Table 9 — 30XA140-352 Electrical Data, Dual Point

UNIT 30XA	UNIT VOLTAGE			MCA	MOCP	Rec Fuse Size	CONTROL CIRCUIT	
	V-Hz (3 Ph)	Supplied					Voltage 1 PH, 60 Hz	MCA and MOCP
		Min	Max					
140, 142	460-60	414	506	191.9/105.9	300/150	225/125	115	40
	575-60	518	633	147.7/ 81.4	225/125	175/100	115	40
	380-60	342	418	223.9/124.0	350/200	300/150	115	40
160, 162	460-60	414	506	216.9/124.1	350/200	300/150	115	40
	575-60	518	633	167.0/ 95.9	250/150	200/125	115	40
	380-60	342	418	253.3/145.4	400/225	300/175	115	40
180, 182	460-60	414	506	191.9/191.9	300/300	225/225	115	60
	575-60	518	633	147.7/147.7	225/225	175/175	115	60
	380-60	342	418	223.9/223.9	350/350	300/300	115	60
200, 202	460-60	414	506	216.9/216.9	350/350	300/300	115	60
	575-60	518	633	167.0/167.0	250/250	200/200	115	60
	380-60	342	418	253.3/253.3	400/400	300/300	115	60
220, 222	460-60	414	506	258.0/216.9	400/350	350/300	115	60
	575-60	518	633	198.8/167.0	300/250	250/200	115	60
	380-60	342	418	301.0/253.3	500/400	400/300	115	60
240, 242	460-60	414	506	258.0/252.6	400/400	350/300	115	60
	575-60	518	633	198.8/194.5	300/300	250/250	115	60
	380-60	342	418	301.0/294.5	500/450	400/350	115	60
260, 262	460-60	414	506	349.1/216.9	500/350	450/300	115	60
	575-60	518	633	268.6/167.0	450/250	350/200	115	60
	380-60	342	418	406.2/253.3	600/400	500/300	115	60
280, 282	460-60	414	506	349.1/258.0	500/400	450/350	115	60
	575-60	518	633	268.6/198.8	450/300	350/250	115	60
	380-60	342	418	406.2/301.0	600/500	500/400	115	60
300, 302	460-60	414	506	411.0/252.6	600/400	500/300	115	60
	575-60	518	633	315.9/194.5	500/300	400/250	115	60
	380-60	342	418	478.9/294.5	800/450	600/350	115	60
325, 327	460-60	414	506	349.1/349.1	500/500	450/450	115	60
	575-60	518	633	268.6/268.6	450/450	350/350	115	60
	380-60	342	418	406.2/406.2	600/600	500/500	115	60
350, 352	460-60	414	506	405.6/349.1	600/500	500/450	115	60
	575-60	518	633	311.6/268.6	500/450	400/350	115	60
	380-60	342	418	472.4/406.2	800/600	600/500	115	60

LEGEND

MCA — Minimum Circuit Amps

MOCP — Maximum Overcurrent Protection

NOTES:

1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
2. Cooler heater (where applicable) is wired into the control circuit so it is always operable as long as the control power supply disconnect is on, even if any safety device is open.
3. For MCA that is less than or equal to 380 amps, 3 conductors are required.
   For MCA between 381-760 amps, 6 conductors are required.
   For MCA between 761-1140 amps, 9 conductors are required.
   For MCA between 1141-1520 amps, 12 conductors are required.
   Calculation of conductors required is based on 75 C copper wire.
4. Based on the operational characteristics of a VFD, the “inrush” current normally associated with a chiller is limited and will be lower than the MCA rating of the chiller
5. Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
   a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
   b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
   c. Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
   d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.

Table 10 — Compressor and Fan Electrical Data

30XA UNIT SIZE	UNIT VOLTAGE V-Hz (3 Ph, 60 Hz)	NUMBER OF CONDENSER FANS		COMPRESSOR			
				A		B	
		Single Point	Dual Point	LRA	RLA	LRA	RLA
140, 142	380	10	6/4	1126	147.7	660	78.3
	460	10	6/4	930	127.6	545	67.5
	575	10	6/4	744	97.5	436	51.3
160, 162	380	10	6/4	1441	171.3	660	95.4
	460	10	6/4	1190	147.6	545	82.0
	575	10	6/4	952	112.9	436	62.9
180, 182	380	12	6/6	1126	147.7	1126	147.7
	460	12	6/6	930	127.6	930	127.6
	575	12	6/6	744	97.5	744	97.5
200, 202	380	12	6/6	1441	171.3	1441	171.3
	460	12	6/6	1190	147.6	1190	147.6
	575	12	6/6	952	112.9	952	112.9
220, 222	380	13	7/6	1441	204.2	1441	171.3
	460	13	7/6	1190	176.1	1190	147.6
	575	13	7/6	952	134.8	952	112.9
240, 242	380	13	7/6	1441	204.2	1441	204.2
	460	13	7/6	1190	176.1	1190	176.1
	575	13	7/6	952	134.8	952	134.8
260, 262	380	15	9/6	2179	277.9	1441	171.3
	460	15	9/6	1800	240.4	1190	147.6
	575	15	9/6	1440	183.7	952	112.9
280, 282	380	16	9/7	2179	277.9	1441	204.2
	460	16	9/7	1800	240.4	1190	176.1
	575	16	9/7	1440	183.7	952	134.8
300, 302	380	16	10/6	2179	330.8	1441	204.2
	460	16	10/6	1800	285.6	1190	176.1
	575	16	10/6	1440	218.2	952	134.8
325, 327	380	18	9/9	2179	277.9	2179	277.9
	460	18	9/9	1800	240.4	1800	240.4
	575	18	9/9	1440	183.7	1440	183.7
350, 352	380	18	9/9	2179	330.8	2179	277.9
	460	18	9/9	1800	285.6	1800	240.4
	575	18	9/9	1440	218.2	1440	183.7

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps

NOTE: For 30XA140-352 units with dual power supply, main power supply 1 uses refrigerant circuit A components to calculate MCA and MOCP. Main power supply 2 uses refrigerant circuit B components to calculate MCA and MOCP.

Table 11 — 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	—

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 30XA units with Greenspeed® intelligence offer several non-CCN translators. Refer to the separate installation instructions for additional wiring steps.

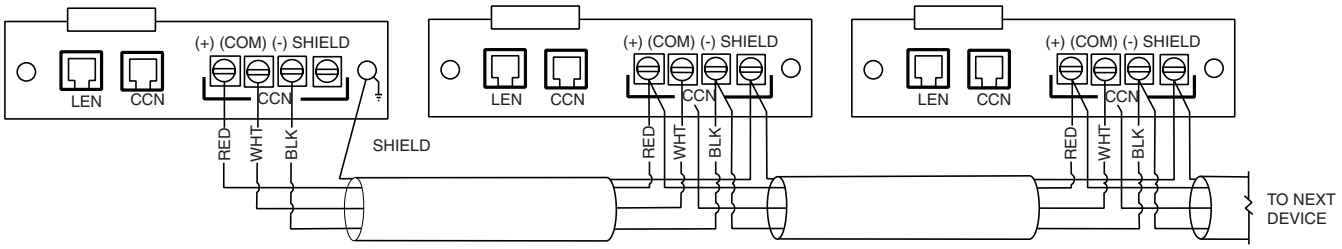
FIELD CONTROL OPTION WIRING — Install field control wiring options. Some options, such as 4 to 20 mA demand limit that requires the energy management module, may require that accessories be installed first (if not factory installed) for terminal connections.

DUAL CHILLER LEAVING WATER SENSOR — If the dual chiller algorithm is used and the machines are installed in parallel, an additional chilled water sensor must be installed for each chiller. Install the wells in the common leaving water header. See Fig 34. 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. 34.

For dual chiller control a CCN bus must be connected between the two modules (Fig. 33). See the Carrier Comfort Network Communication Bus Wiring section for additional information.



LEGEND
CCN — Carrier Comfort Network®
LEN — Local Equipment Network

Fig. 33 — TB3 — CCN Wiring

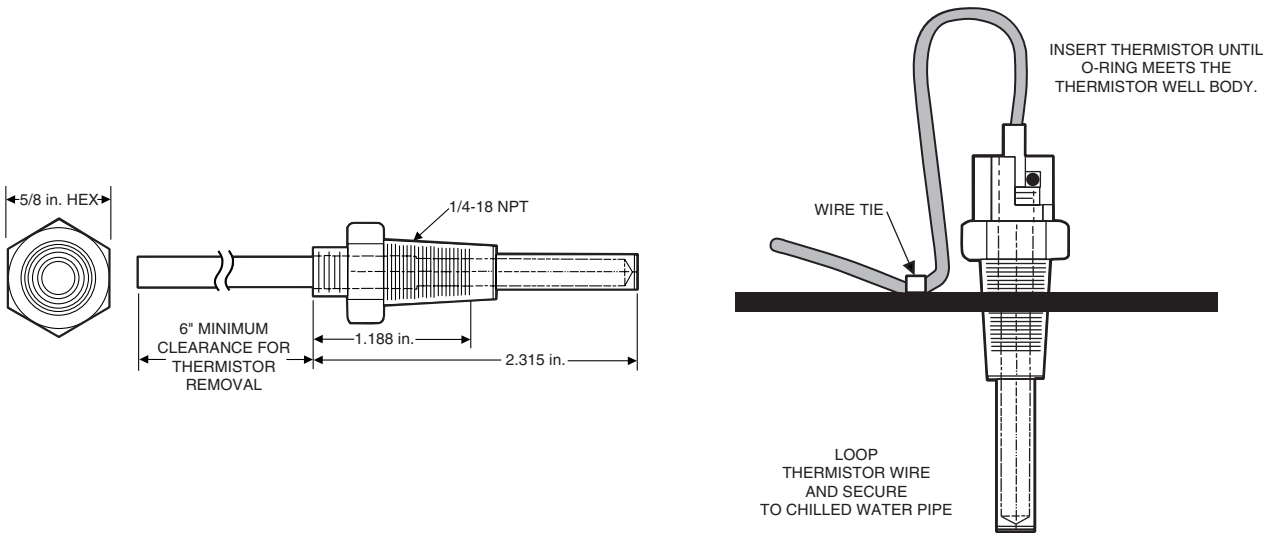


Fig. 34 — Dual Chiller Accessory Kit Leaving Water Thermistor and Well (Part No. 00EFN900044000A)

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 capacity 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
- 10k 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).

UNIT SECURITY/PROTECTION ACCESSORIES — For applications with unique security and/or protection requirements, several options are available for unit protection. Security grilles and hail guards are available. Contact your local Carrier representative for more details. For installation details, refer to separate installation instructions supplied with the accessory package.

COMMUNICATION ACCESSORIES — A number of communication options are available to meet any requirement. Contact your local Carrier representative for more details. For installation details, refer to separate installation instructions supplied with the accessory package.

SERVICE OPTIONS — A ground fault convenience outlet (GFI-CO) accessory is available to aid in servicing 30XA units with Greenspeed intelligence. The GFI-CO is a convenience outlet with a 4-amp GFI receptacle.

Contact your local Carrier representative for more details. For installation details, refer to separate installation instructions supplied with the accessory package.

Step 7 — Leak Test Unit — The 30XA chiller with Greenspeed® intelligence units are shipped with a complete operating charge of R-134a (see Tables 4 and 5) and should be under sufficient pressure to conduct a leak test.

IMPORTANT: These units are designed for use with R-134a only. DO NOT USE ANY OTHER refrigerant in these units.

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 utilized in the oil line piping. If a leak is detected at any of these fittings, open the system and inspect the O-ring surface for foreign matter or damage. Do not re-use O-rings. Repair any leak found following good refrigeration practice.

⚠ CAUTION

DO NOT OVERTIGHTEN THESE FITTINGS. Overtightening will result in O-ring damage.

Refer to the Controls, Start-Up, Operation, Service and Troubleshooting manual for additional information.

Step 8 — Refrigerant Charging

DEHYDRATION — Refer to Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants, Sections 6 and 7 for details. Do not use compressor to evacuate system.

REFRIGERANT CHARGE — The 30XA chiller with Greenspeed intelligence units are shipped from the factory with a full charge of R-134a. The unit should not need to be charged at installation unless a leak was detected in Step 7 — Leak Test Unit section. If dehydration and recharging is necessary, use industry standard practices or refer to Carrier Standard Service Techniques Manual as required.

IMPORTANT: These units are designed for use with R-134a only. DO NOT USE ANY OTHER refrigerant in these units.

⚠ CAUTION

When charging, circulate water through the cooler at all times to prevent freezing. Freezing damage is considered abuse and may void the Carrier warranty.

⚠ CAUTION

DO NOT OVERCHARGE system. Overcharging results in higher discharge pressure with higher power consumption and possible compressor damage.

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

Catalog No. 04-53300133-01 Printed in U.S.A. Form 30XA-100SI Pg 92 11-14A 7-14 Replaces: New