Installation and Maintenance Manual	IM 1033-4
	Group: **Chillers**
	Part Number: **331499601**
	Date: **November 2012**
	Supersedes: **May 2012**

Magnitude™ Magnetic Bearing Centrifugal Chillers

Model WME

400 to 700 tons (1400 to 2461 kW)

3/60/380-575

3/50/380-415

DAIKIN

Note: The unit shown is for the default configuration; your unit may be configured differently. Refer to your selection for configuration.

Contents

Safety labels used in this manual:

⚠ CAUTION

Cautions indicate potentially hazardous situations, which can result in personal injury or equipment damage if not avoided.

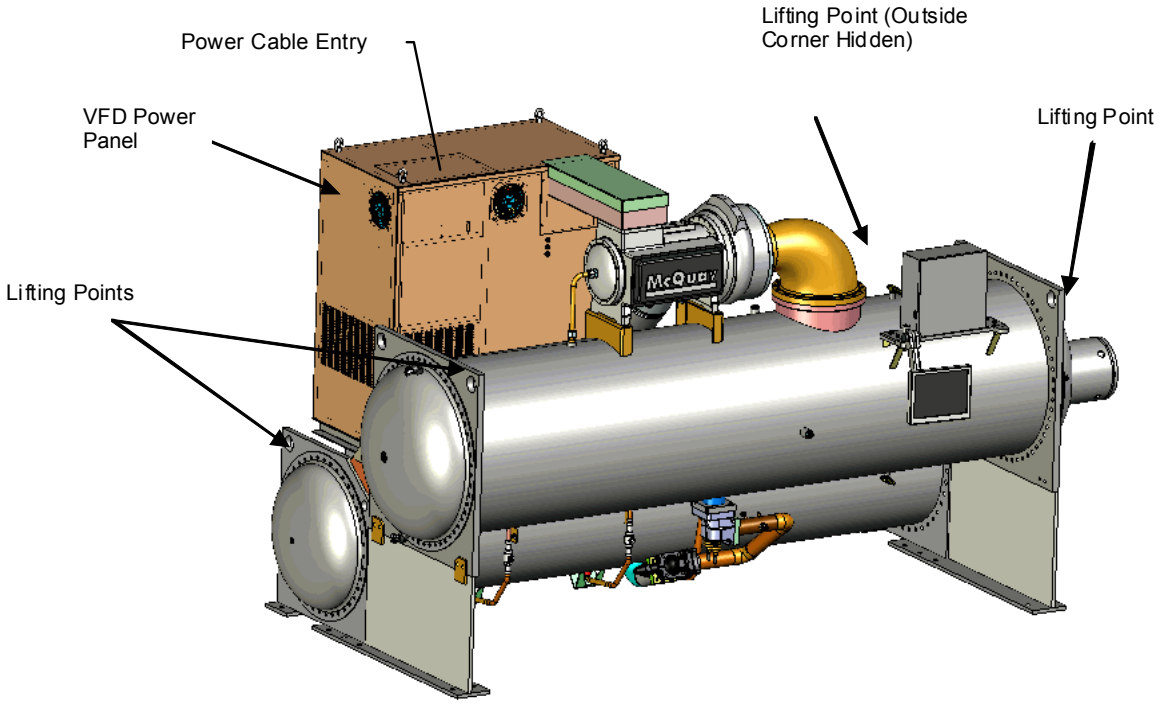
⚠ WARNING

Warnings indicate potentially hazardous situations, which can result in property damage, severe personal injury, or death if not avoided.

⚠ DANGER

Dangers indicate a hazardous situation which will result in death or serious injury if not avoided.

Figure 1: Required Lifting Arrangement



Note: This drawing is for general reference only. Refer to dimension drawings for actual location of components. On some units the control panel and interface panel may be on the opposite side, adjacent to the VFD power panel.

General Description

Daikin Magnitude model WME frictionless centrifugal chillers are complete, self-contained, automatically controlled fluid chilling units. Each unit is completely assembled and factory tested before shipment. Model WME is cooling-only.

Each Magnitude Model WME unit features one compressor connected to a condenser and evaporator. The chillers use refrigerant R-134a to reduce the size and weight of the package compared to negative pressure refrigerants and since R-134a operates at a positive pressure over the entire operation range, no purge system is required. The controls are pre-wired, adjusted and tested. Only normal field connections such as piping, electrical and interlocks, etc. are required, thereby simplifying installation and increasing reliability. Most necessary equipment protections and operating controls are factory-installed in the control panel.

The chillers are designed for indoor, non-freezing locations. If indoor freezing temperatures are possible, special procedures described in this manual must be followed to drain the unit. Outdoor locations require a special weatherproof design. For WME chillers selected with optional Retrofit Knockdown, refer to IM Knockdown, available on www.DaikinApplied.com for detailed dimensions and installation instructions.

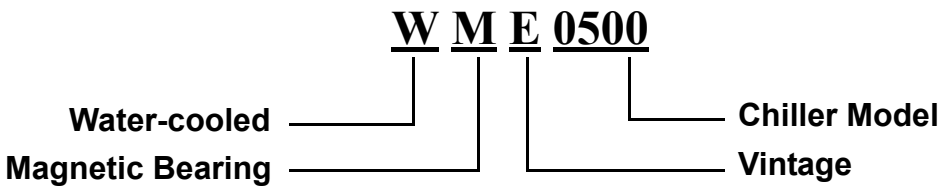
Application

The procedures presented in this manual apply to standard Model WME chillers. Refer to the Operating Manual, OMM 1034 for detailed information about chiller operation and the MicroTech-E unit controller.

All Daikin centrifugal chillers are factory tested prior to shipment and must be initially started at the job site by a factory trained Daikin service technician. Failure to follow this startup procedure can affect the equipment warranty.

The standard limited warranty on this equipment covers parts that prove defective in material or workmanship. Specific details of this warranty can be found in the warranty statement furnished with the equipment.

Figure 2: Nomenclature



Installation

Receiving and Handling

The unit should be inspected immediately after receipt for possible damage.

All Daikin centrifugal water chillers are shipped FOB factory and all claims for handling and shipping damage are the responsibility of the consignee.

Insulation corners from the evaporator's rigging hole locations are shipped loose and should be glued in place after the unit is finally placed. Neoprene vibration pads are also shipped loose. Check that these items have been delivered with the unit.

If so equipped, leave the shipping skid in place until the unit is in its final position. This will aid in handling the equipment.

Extreme care must be used when rigging the equipment to prevent damage to the control panels or refrigerant piping. See the certified dimension drawings included in the job submittal for the center of gravity of the unit. Consult the local Daikin sales office for assistance if the drawings are not available.

The unit can be lifted by fastening the rigging hooks to the four outside corners of the unit where the rigging eyes are located. Lengthwise and crossway spreader bars must be used between the rigging lines to prevent damage to the control panels, piping and especially the large Variable Frequency Drive (VFD) power panel located at one end of the unit. See Figure 1, page 4. Chiller weights are on Table 12, page 31.

Location and Mounting

The unit must be mounted on a level concrete or steel base and must be located to provide service clearance at one end of the unit for possible removal of evaporator tubes and/or condenser tubes. The length of the vessel should be allowed at one end for this purpose. Doors or removable wall sections can be utilized for tube clearance. Evaporator and condenser tubes are rolled into the tube sheets to permit replacement if necessary. Minimum clearance at all other points, including the top, is 3 feet (1 meter) unless greater clearance is required by other codes or job conditions. The National Electric Code (NEC) can require four feet or more clearance in and around electrical components and must be checked.

Location

The WME chillers are intended only for installation in an indoor or weather protected area consistent with the NEMA 1 rating on the chiller, controls, and electrical panels. Equipment room temperature for operating and standby conditions is 40°F to 104°F (4.4°C to 40°C).

Vibration Pads

The shipped-loose neoprene vibration pads should be located under the corners of the unit (unless the job specifications state otherwise). They are installed to be flush with the sides and outside edge of the feet. Most Model WME units have six mounting feet although only the outer four are required. Six pads are shipped and the installer can place pads under the middle feet if desired.

Mounting

Make sure that the floor or structural support is adequate to support the full operating weight of the unit.

It is usually not necessary to bolt the unit to the mounting slab or framework; but should this be desirable, 1 1/8" (28.5 mm) mounting holes are provided in the unit support at the four corners.

⚠ CAUTION

Note: Units are shipped with refrigerant valves closed to isolate the refrigerant for shipment. Valves must remain closed until start-up by the Daikin technician.

Nameplates

There are several identification nameplates on the chiller:

"The unit nameplate is located on the side of the VFD panel. This plate also lists the unit refrigerant charge, electrical data and the unit model number and serial number, which should be used when communicating with Daikin.

"Vessel nameplates are located on the evaporator and condenser. Along with other information, they have a National Board Number (NB) and serial number, either of which identifies the vessel (but not the entire unit).

"A compressor nameplate is located on the compressor itself and contains identification numbers.

System Water Volume

All chilled water systems need adequate time to recognize a load change, respond to that load change and stabilize, without undesirable short cycling of the compressors or loss of control. In air conditioning systems, the potential for short cycling usually exists when the building load falls below the minimum chiller plant capacity or on close-coupled systems with very small water volumes.

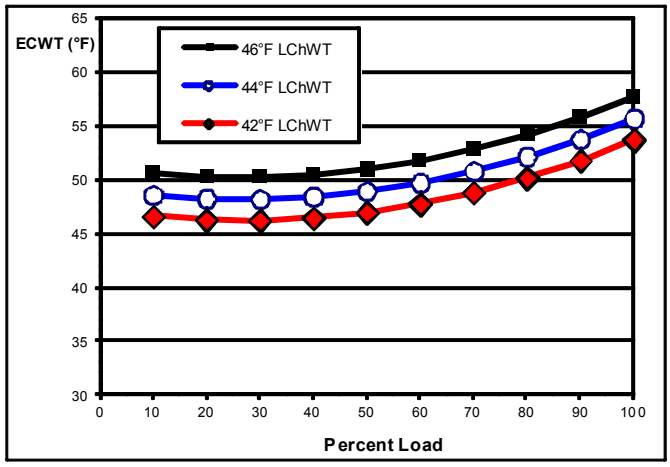
Some of the things the designer should consider when looking at water volume are the minimum cooling load, the minimum chiller plant capacity during the low load period and the desired cycle time for the compressors.

Assuming that there are no sudden load changes and that the chiller plant has reasonable turndown, a rule of thumb of "gallons of water volume equal to two to three times the chilled water gpm flow rate" is often used.

A properly designed storage tank should be added if the system components do not provide sufficient water volume.

Condenser Water Temperature

Figure 3: MODEL WME Minimum Entering Condenser Water Temperature (10 F Range at Full Load)



When the ambient wet bulb temperature is lower than design, the entering condenser water temperature of Magnitude model WME chillers can be lowered to improve chiller performance.

Chillers can start with entering condenser water temperatures as low as 40°F (4.4°C). For short periods of time during startup, the entering condenser water temperature can even be lower than the leaving chilled water temperature.

Magnitude model WME chillers are equipped with electronic expansion valves (EXV) and will run with entering condenser water temperatures as low as shown in Figure 2 or as calculated from the following equation on which the curves are based:

MECWT = 5.25+(LWT)-0.75*DTFL*(PLD/100)+14 *(PLD/100)2

Where:

MECWT = Min entering condenser water temperature

LWT = Leaving chilled water temperature

DTFL = Chilled Water Delta-T at full load

PLD = The percent chiller load point to be checked

For example; at 44°F LWT, 10°F Delta-T at full load, and 50% full load operation, the entering condenser water temperature could be as low as 49°F. This provides excellent operation with water-side economizer systems.

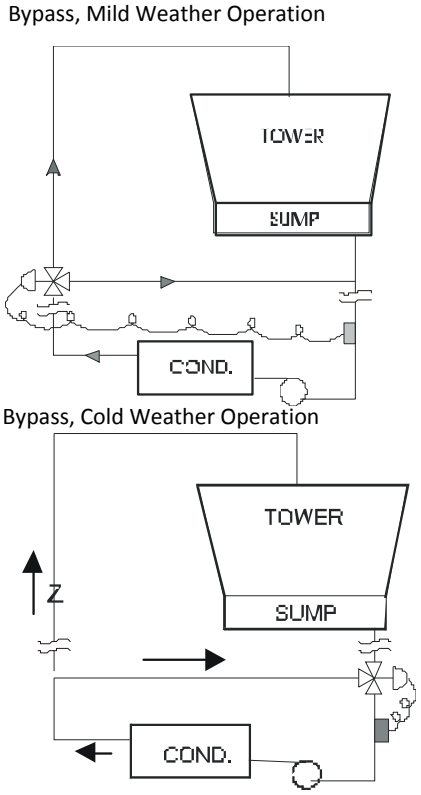
Depending on local climatic conditions, using the lowest possible entering condenser water temperature may be more costly in total system power consumed than the expected savings in chiller power would suggest, due to the excessive fan power required.

In this scenario, cooling tower fans would continue to operate at 100% capacity at low wet bulb temperatures. The trade-off between better chiller efficiency and fan power should be analyzed for best overall system efficiency. Daikin's Energy Analyzer program can optimize the chiller/tower operation for specific buildings in specific locales.

Even with tower fan control, some form of water flow control, such as tower bypass, is recommended.

Figure 4 illustrates two temperature-actuated tower bypass arrangements. The "Cold Weather" scheme provides better startup under cold ambient air temperature conditions. The bypass valve and piping are indoors and thus warmer, allowing for warmer water to be immediately available to the condenser. The check valve may be required to prevent air at the pump inlet.

Figure 4: Possible Bypass Arrangements



Condenser water temperature control

The standard MicroTech controller is capable of three stages of tower fan control plus an analog control of either a three-way tower-bypass valve or variable speed tower-fan motor. Stages are controlled from condenser-water temperature. The three-way valve can be controlled to a different water temperature or track the current tower stage. This allows optimum chilled water plant performance based upon specific job requirements.

Pumps

The condenser water pump(s) must be cycled off when the last compressor of the system cycles off. This will keep cold condenser water from migrating refrigerant to the condenser. Cold liquid refrigerant in the condenser can make start-up

difficult. In addition, turning off the condenser water pump(s) when the chillers are not operating will conserve energy.

Include thermometers and pressure gauges at the chiller inlet and outlet connections and install air vents at the high points of piping. Where noise and vibration are critical and the unit is mounted on spring isolators, flexible piping and conduit connections are necessary.

Variable Fluid Flow Rates and Tube Velocities

Many chiller system control and energy optimization strategies require significant changes in evaporator flow rates. The Magnitude model WME chiller line is particularly well suited to take full advantage of these energy saving opportunities provided that the maximum and minimum fluid flow rates are taken into consideration for a specific application. The sales engineer has the flexibility to use different combinations of shell size, number of tubes, and pass arrangements to select the optimum chiller for each specific application.

Both excessively high and excessively low fluid flow rates should be avoided. Excessively high fluid flow rates and correspondingly high tube velocities will result in high fluid pressure drops, high pumping power, and potentially tube corrosion and or tube corrosion damage. Excessively low fluid flow rates and correspondingly low velocities should also be avoided as they will result in poor heat transfer, high compressor power, sedimentation and tube fouling. Excessively high and low tube velocities can be particularly problematic and damaging in open loop systems.

Vibration Mounting

The Magnitude model WME chillers are almost vibration-free. Consequently, floor mounted spring isolators are not usually required. Rubber mounting pads are shipped with each unit. It is wise to continue to use piping flexible connectors to reduce sound transmitted into the pipe and to allow for expansion and contraction.

System Analysis

The Daikin Energy Analyzer program is an excellent tool to investigate the entire system efficiency, quickly and accurately. It is especially good at comparing different system types and operating parameters. Contact your local Daikin sales office for assistance on your particular application.

Water Piping

Vessel Drains at Start-up

Unit vessels are drained of water in the factory and are shipped with the drain plugs in the heads removed and stored in the control panel or with open ball valves in the drain hole. Be sure to replace plugs or close the valves prior to filling the vessel with fluid.

Evaporator and Condenser Water Piping

All evaporators and condensers come standard with ANSI/AWWA C-606 grooved nozzles (also suitable for welding), or optional flange connections. The installing contractor must provide matching mechanical connections or transitions of the size and type required.

⚠ CAUTION

If welding is to be performed on the mechanical or flange connections, remove temperature sensors and thermal dispersion flow switch from the nozzles to prevent damage to those components. Also properly ground the unit or severe damage to the MicroTech E unit controller can occur.

Water pressure gauge connection taps and gauges must be provided in the field piping at the inlet and outlet connections of both vessels for measuring the water pressure drops. The pressure drops and flow rates for the various evaporators and condensers are job specific and the original job documentation can be consulted for this information.

Be sure that water inlet and outlet connections match certified drawings and stenciled nozzle markings. The condenser is connected with the coolest water entering at the bottom to maximize subcooling.

⚠ CAUTION

When common piping is used for both heating and cooling modes, care must be taken to provide that water flowing through the evaporator cannot exceed 110°F which can cause the relief valve to discharge refrigerant or damage controls.

The piping must be supported to eliminate weight and strain on the fittings and connections. Chilled water piping must also be adequately insulated. If a pump strainer is not close to a vessel, a cleanable 20-mesh water strainer must be installed in the water inlet line. Sufficient shutoff valves must be installed to permit draining the water from the evaporator or condenser without draining the complete system.

⚠ CAUTION

Freeze Notice: Neither the evaporator nor the condenser is self-draining; Both must be blown out to help avoid damage from freezing if an adequite anti-freeze solution is not used.

The piping should also include thermometers at the inlet and outlet connections and air vents at the high points.

The water heads can be interchanged (end for end) so that the water connections can be made at either end of the unit. If this is done, new head gaskets must be used and control sensors relocated.

In cases where the water pump noise can be objectionable, vibration isolation sections are recommended at both the inlet and outlet of the pump. In most cases, it will not be necessary to provide vibration eliminator sections in the condenser inlet

and outlet water lines. But they can be required where noise and vibration are critical.

Mechanical Clamped Couplings

Use the following steps when installing clamped couplings:

1. Check for smooth pipe between the pipe end and the groove. Remove any indentations, projections, or weld seams. Failure to do this can result in a leaking joint.

2. Apply a thin coat of Victaulic or silicon lubricant to the gasket lips and exterior.

3. Position the gasket over the pipe end without overhanging the pipe.

4. Join the pipes together and slide the gasket into position, centering it between the groves.

5. Install the housing halves over the gasket, making sure that the housing' keys engage the groves on both pipes.

6. Install the bolts and thread the nuts on hand tight. Make sure that the oval heads of the bolts seat properly in the bolt holes.

7. Tighten the nuts evenly by alternating sides until metal to metal contact is made on the housing bolt pads. Make sure that the housing keys completely engage the pipe grooves.

Tower Filtering and Treatment

Owners and operators must be aware that if the unit is operating with a cooling tower, cleaning and flushing the cooling tower is required. Make sure tower blow-down or bleed-off is operating. Atmospheric air contains many contaminants, which increases the need for water treatment.

⚠ CAUTION

The use of untreated water will result in corrosion, erosion, slime buildup, scaling, or algae formation. Water treatment service must be used. Daikin is not responsible for damage or faulty operation from untreated or improperly treated water.

Special care must be taken when utilizing open system water that is usually not treated (such as lakes, rivers, and ponds). Special tube and water head material may be required to reduce damage from corrosion.

Flow Switches

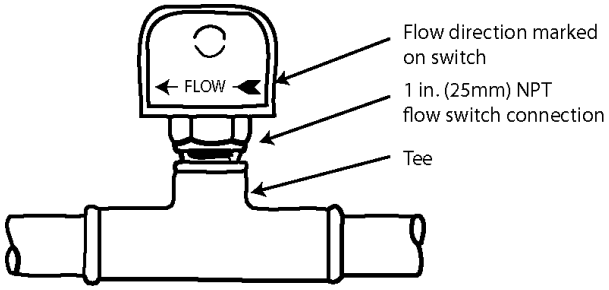
Factory-mounted thermal dispersion flow switches are provided as standard.

An additional paddle-type flow switch can be installed in the vessel outlet piping as an added precaution to signal the presence of adequate water flow to the vessels before the unit can start. They also serve to shut down the unit in the event that water flow is interrupted to guard against evaporator freeze-up or excessive discharge pressure. They are not necessary for unit operation.

Figure 5: Flow Switch Options

Factory Mounted Flow Switch

Optional field-supplied paddle-type Flow Switch



If field-mounted flow switches (normally paddle-type) are being used, electrical connections in the Unit Control Panel must be made per the field wiring diagram on page 14. The normally open contacts of the flow switch must be wired between the terminals. Flow switch contact quality must be suitable for 24 VAC, low current (16ma). Wire switches in separate conduit from any high voltage conductors (115 VAC and higher).

System Pumps

Operation of the chilled water pump can be to:

1. Cycle the pump when the unit is enabled to run
2. Operate continuously
3. Start automatically by a remote source

The condenser water pump must cycle with the compressors and shut off when the last compressor cycles off. The holding coil of the cooling tower pump motor starter must be rated at 115 volts, 60 Hz, with a maximum volt-amperage rating of 100. A control relay is required if the voltage-amperage rating is exceeded. See the Field Wiring Diagram or in the cover of control panel for proper connections.

All interlock contacts must be rated for no less than 10 inductive amps. The alarm circuit provided in the control center utilizes 115-volts AC. The alarm used must not draw more than 10 volt amperes.

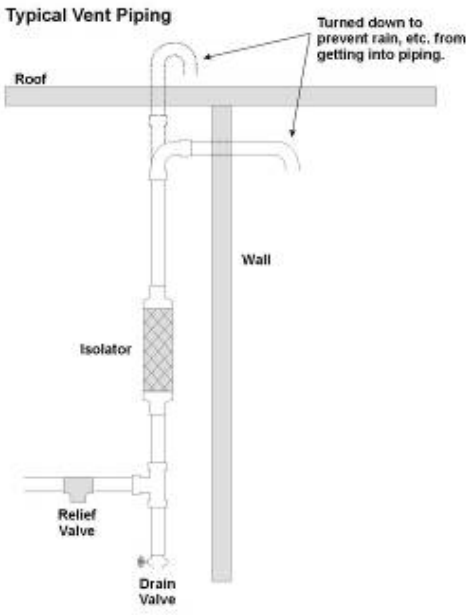
Field Insulation Guide

Factory insulation is an available option (0.75" or 1.5"). If field insulated, the following components should be insulated to prevent condensation on Magnitude model WME chillers.

- Evaporator
- Motor-cooling lines
- Suction elbow
- Expansion valve
- Liquid line and outlet piping
- VFD cooling line
- Option-discharge line for sound reduction

Relief Valves

Figure 6: Typical Vent Piping

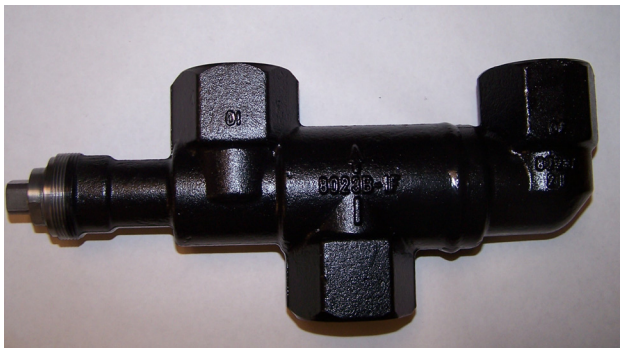


As a safety precaution and to meet code requirements, each chiller is equipped with pressure relief valves located on the condenser and evaporator vessels for the purpose of relieving excessive refrigerant pressure (caused by equipment malfunction, fire, etc.) to the atmosphere. Most codes require that relief valves be vented to the outside of a building, and this is a desirable practice for all installations. Relief piping connections to the relief valves must have flexible connectors.

Note: Remove plastic shipping plugs (if installed) from the inside of the valves prior to making pipe connections. Whenever vent piping is installed, the lines must be run in accordance with local code requirements; where local codes do not apply, the latest issue of ANSI/ASHRAE Standard 15 code recommendations must be followed.

Condensers have two relief valves connected as a set with a three-way valve separating the two relief valves. One valve remains active at all times and the second valve acts as a standby.

Figure 7: Condenser 3-way Valve



Back seat valve to open the far port connection . Front seat valve to open near port connection . Valve must be completely front or back seated.

Table 1: Relief Valve Data

Model	Relief Valve	Location	Pressure Setting	Discharge Cap.	Conn. Size	No. of Valves
WME	Evaporator	Top of Evaporator	200 psi	75.5 lb air/min	1 in. FPT	1
	Condenser	Top of Condenser	200 psi	75.5 lb air/min	1 in. FPT	2

Refrigerant Vent Piping

Twin relief valves mounted on a transfer valve are used on the condenser so that one relief valve can be shut off and removed, leaving the other in operation. Only one of the two is in operation at any time.

Vent piping is sized for only one valve of the set since only one can be in operation at a time. In no case would a combination of evaporator and condenser sizes require more refrigerant than the pumpdown capacity of the condenser. Condenser pumpdown capacities are based on the current ANSI/ASHRAE Standard 15 that recommends 90% full at 90°F (32°C). To convert values to the older AHRI standard, multiply pumpdown capacity by 0.888.

Sizing Vent Piping (ASHRAE Method)

Relief valve pipe sizing is based on the discharge capacity for the given evaporator or condenser and the length of piping to be run. Discharge capacity for R-134a vessels is calculated using a complicated equation that accounts for equivalent length of pipe, valve capacity, Moody friction factor, pipe ID,

outlet pressure and back pressure. The formula, and tables derived from it, are contained in ASHRAE Standard 15-2001.

Using the ASHRAE formula and basing calculations on the 225 psi design yields a conservative pipe size, which is summarized in Table 2. The table gives the pipe size required per relief valve. When valves are piped together, the common piping must follow the rules set out in the following paragraph on common piping.

Table 2: Relief Valve Piping Sizes

Equivalent length (ft)	2.2	18.5	105.8	296.7	973.6	4117.4
Pipe Size inch (NPT)	1 1/4	1 1/2	2	2 1/2	3	4
Moody Factor	0.0209	0.0202	0.0190	0.0182	0.0173	0.0163

NOTE: A 1-inch pipe is too small for the flow from the valves. A pipe increaser must always be installed at the valve outlet.

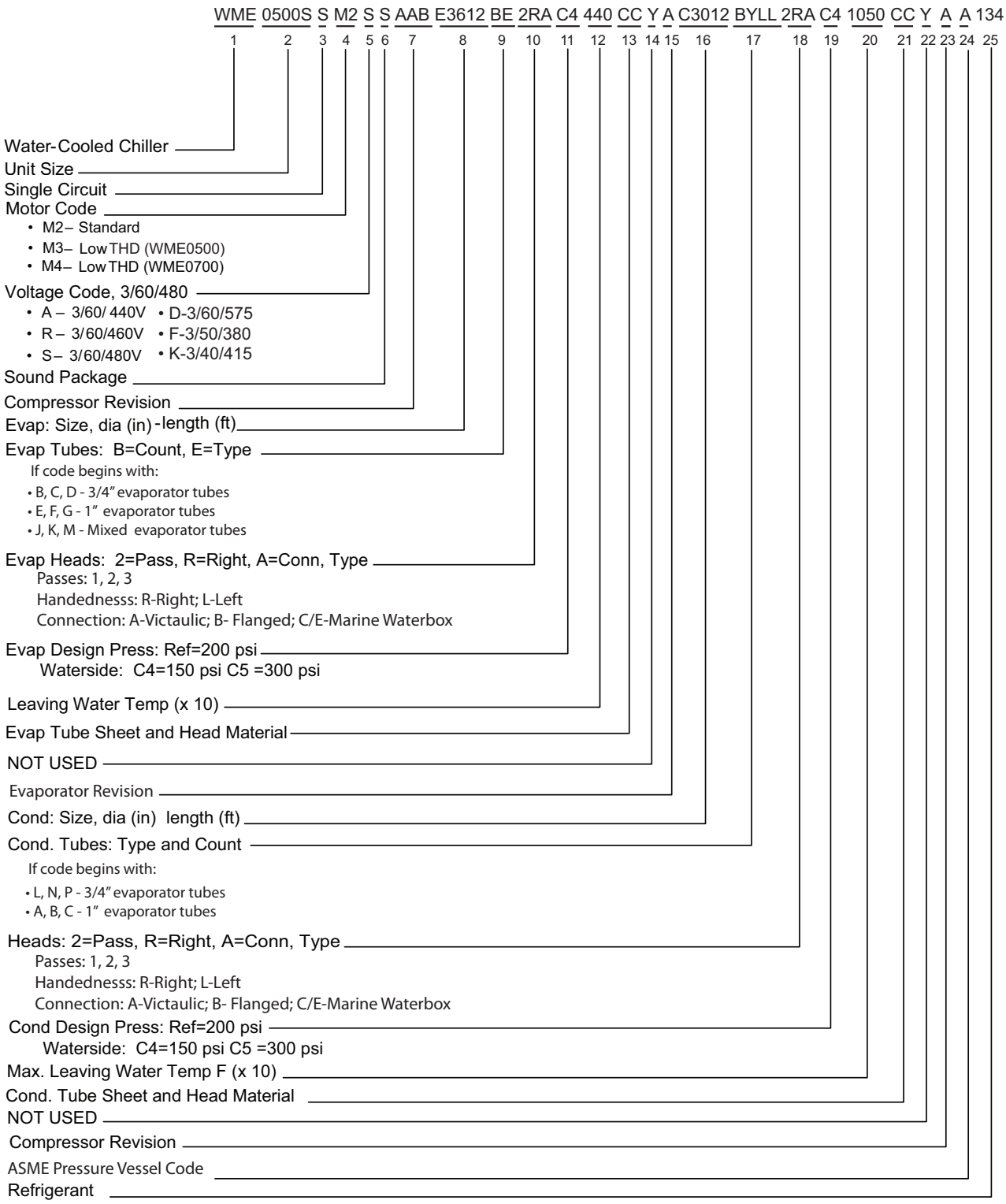
Common Relief Valve Piping

According to ASHRAE Standard 15, the pipe size cannot be less than the relief valve outlet size. The discharge from more than one relief valve can be run into a common header, the area of which cannot be less than the sum of the areas of the connected pipes. For further details, refer to ASHRAE Standard 15. The common header can be calculated by the formula:

$$D_{Common} = \left(D_1^2 + D_2^2 .... D_n^2 \right)^{0.5}$$

The above information is a guide only. Consult local codes and/or latest version of ASHRAE Standard 15 for sizing data.

Figure 8: Magnitude Code String Chiller Identification



Chiller Identification

Figure 9: Magnitude Code String Chiller Identification

Electrical

Power Wiring

Wiring, fuse and wire size must be in accordance with the National Electric Code (NEC).

Important: Voltage unbalance not to exceed 2% with a resultant current unbalance of 6 to 10 times the voltage unbalance per NEMA MG-1, 1998 Standard. This is an important restriction that must be adhered to.

Power entrance is on top of the enclosure. Remove cover plate when making hole to avoid entrance of foreign material into the enclosure.

Power connection lug size range is 3/0 AWG - 500kcmil, three conductors per phase

The ground connection is a stand-off adjacent to the circuit breaker, marked "MGND". Field provide a 3/8-16 x ¾ in. screw with a flat washer and lock washer and appropriate "O" terminal.

⚠ CAUTION

Qualified and licensed electricians must perform wiring. Shock hazard exists.

⚠ CAUTION

Connections to terminals must be made with copper lugs and copper wire.

Use only copper supply wires with ampacity based on 75°C conductor rating. (Exception: for equipment rated over 2000 volts, 90°C or 105°C rated conductors should be used).

The VFD nameplate will indicate the RLA setting required in the MicroTech-E controller. The RLA setting is for the VFD output amps not the input amps. Follow name plate values for output RLA.

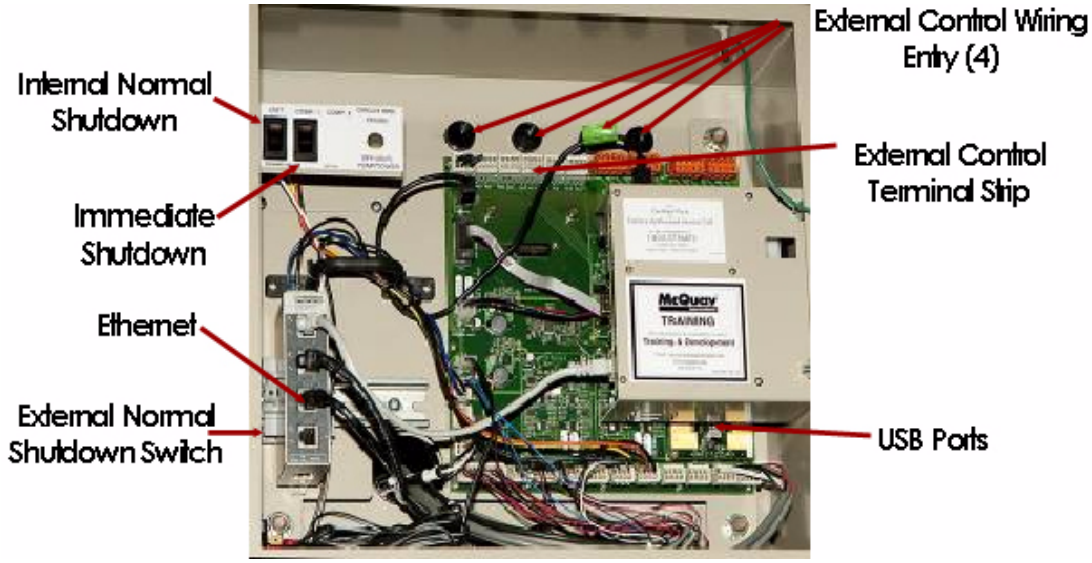
Power Factor Correction Capacitors

Do not use power factor correction capacitors with WME chillers. They can cause harmful electrical resonance in the system. Correction capacitors are not necessary since VFDs inherently maintain high power factors.

Control Wiring

The control circuit power on Magnitude model WME chillers is supplied by the unit-mounted VFD.

Figure 10: Unit Control Panel



Electrical Notes

1. Input power options:
   3ph 380V 50/60Hz
   3ph 400V 50/60Hz
   3ph 415V 50/60Hz
   3ph 460V 60Hz
   3ph 480V 60Hz
   3ph 575V 60Hz
2. Wiring, fuse and wire size must be in accordance with the National Electric Code (NEC).
3. Important: Voltage unbalance not to exceed 2%.

Short Circuit Current Ratings

The standard short circuit rating. plus optional high and ultra high ratings are show in the table below.

Motor	Voltage	Standard Panel	Optional High SCCR	Optional Ultra High SCCR
3-Ph	380V-480V	35 kA	65 kA	100 kA
	575V	25 kA	50 kA	N/A
6-Ph	380V-480V	35 kA	65 kA	100 kA
	575V	N/A	N/A	N/A

3-Phase vs. 6-phase Motors

WME 500 motors are designated as M2 or M3.

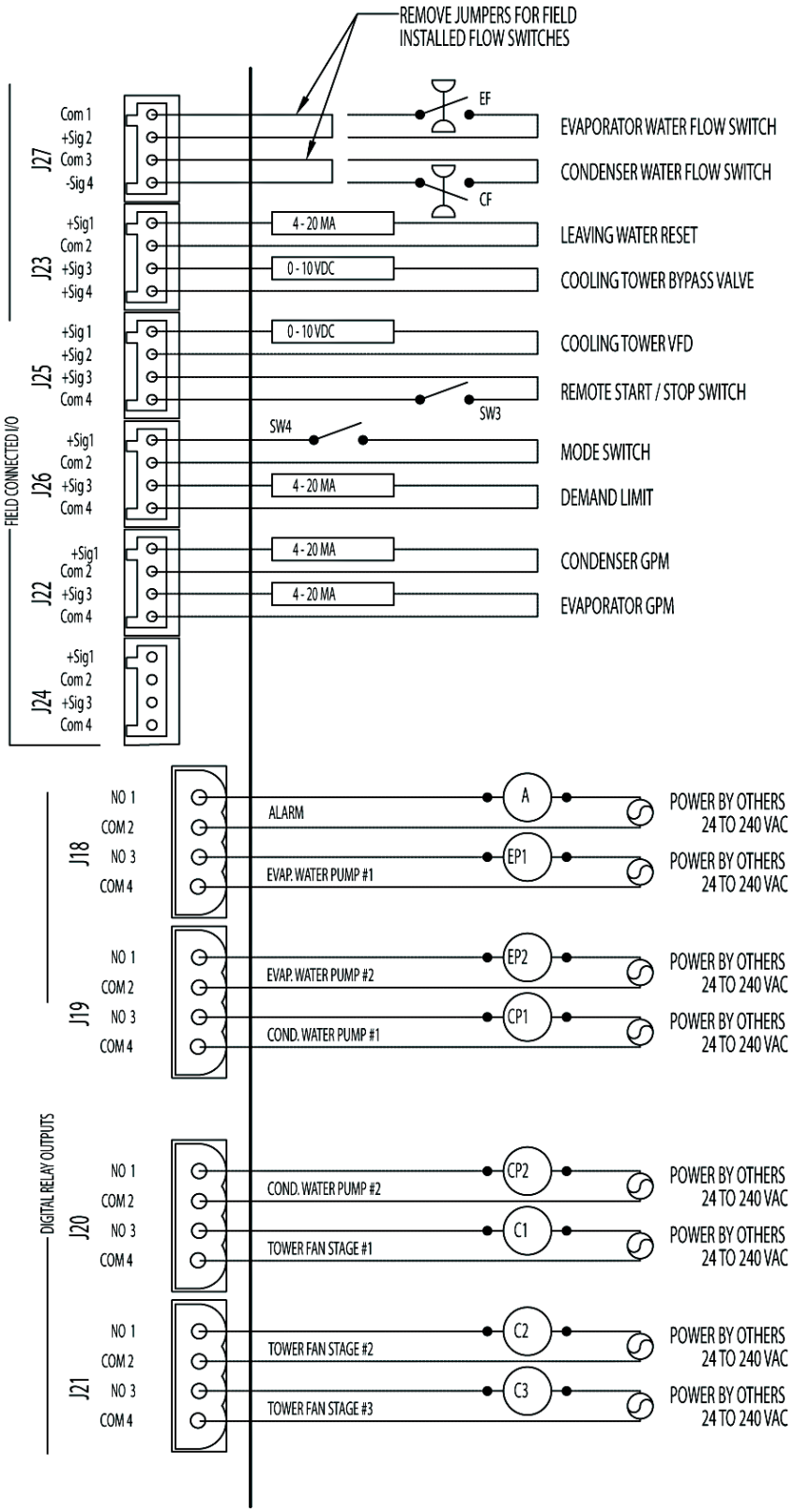
- M2 motors are standard 3-phase and the VFD performs similar to a 6-pulse drive.
- M3 motors are 6-phase (connected to a 3-phase power supply) and the VFD performs similar to a 12-pulse drive. They provide increased protection against harmonic distortion, but are not required on most applications.

WME 700 motors are 6-phase and designated as M4. The VFD performs similar to a 12-pulse drive.

Notes for field wiring diagram

1. **Optional Flow Switches**; If field supplied pressure differential flow switches are used, they must be installed across the vessel and not the pump. They must provide isolated dry contacts at J27. Removing the factory jumpers will correctly put the field switches in series with the factory-mounted switches.
2. **CW Reset & Demand Limit;** External 4-20mA signals can be wired to J23 for leaving (chilled) water reset and to J26 for demand limit.
3. **Tower Bypass Valve & Tower Fan VFD**; 0-10VDC analog outputs to these devices.
4. **Chiller Remote On/Off Control** of unit can be accomplished by connecting a set of isolated dry contacts at J25.
5. **Mode Switch**; Switch used for ice mode currently not available on WME chillers.
6. **Condenser & Evaporator GPM**; Connections for 4-20 ma flow signal from field-supplied devices.
7. **Alarm Relay**; A customer furnished 24 to 240 Vac power for controller alarm relay may be connected at J18. Maximum rating of the alarm relay coil is 25 VA.
8. **Evap Water Pump #1 & #2**; A digital output for a optional customer supplied 25 VA maximum coil rated, chilled water pump relay. One or two may be wired as shown. This option will cycle the chilled water pump in response to chiller demand.
9. **Cond Water Pump #1 & #2**; The condenser water pump must cycle with the unit. A customer supplied 25 VA maximum coil rated, condenser water pump relay (one or two) must be wired as shown. Units used in a free-cooling application must have condenser water above 50°F before starting.
10. **Tower Fan Staging #1, #2 & #3**; Digital outputs for optional customer supplied 25 VA maximum coil rated cooling tower fan relays may be wired as shown. This option will cycle the cooling tower fans as prescribed by the tower control set points.
11. **Terminal Locations**; See control panel layout on previous page.

Figure 11: Field Wiring Diagram (See previous page for notes)



Drawing Notes

1 All dimensions are in inches [millimeters] unless noted otherwise.

2 Final connections must allow for 0.5 inch +/- (12.7mm) manufacturing tolerances.

3 1.00-inch FPT [25.4 mm] evaporator and condenser relief valves must be piped per ANSI / ASHRAE 15. Number of relief valves is 1 per evaporator and 2 per condenser.

4 The 0.375 inch [9 mm] suction nozzle relief valve must be piped per ANSI / ASHRAE 15.

5 MinimumClearances (See Figure 12):

- Installation layout should be designed by qualified personnel familiar with local codes.
- Allow a minimum of 3 ft. on back, ends, and top of the chiller to allow for service access.
- Provide a minimum of 14 ft. clearance on one end of the chiller for tube removal.

6 Electric Panels- Most codes require 48 inches (1219 mm) clearance in front of control boxes and electrical panels. Check codes for your location.

7 3.25-inch [83mm] diameter lifting holes are provided. See installation manual IM 1033 (available on www.DaikinApplied.com) for lifting instructions.

8 All water connections are given in standard U.S. pipe sizes. Standard connections are suitable for welding or victaulic couplings.

9 Unit shown has standard right-hand water connections. Left-hand connections are available for either vessel. For right hand evaporator the inlet and outlet nozzles are reversed. ANSI-flanged connections are available upon request. When using ANSI-flanged connections add 0.5 inch [13 mm] to each flanged end.

10 Dimensions shown are for units (evaporator / condenser) with standard design pressures. The waterside design pressure is 150 PSI {1034 kPa}. Consult the factory for unit dimensions with higher design pressures.

11 The unit vibration isolator pads are provided for field installation and when fully loaded are 0.250 inches [6 mm] thick.

12 These values are for units with standard wall thickness copper tubing only.

13 The shipping skid adds 4.00 inches [105 mm] to the overall unit height.

14 If main power wiring is brought up through the floor, this wiring must be outside the envelope of the unit.

15 The unit is shipped with an operating charge of refrigerant.

16 Optional marine water box connections are available upon request.

17 When equipped with the factory-mounted harmonic filter WME 500 units with the M2 motor have the two-door power panel as shown in Figure 14 and Figure 16.

18 Dimension drawings in this manual are for initial layout purposes only. Obtain certified job drawings from the local Daikin sales office for final construction .

Figure 12: Minimum Clearances

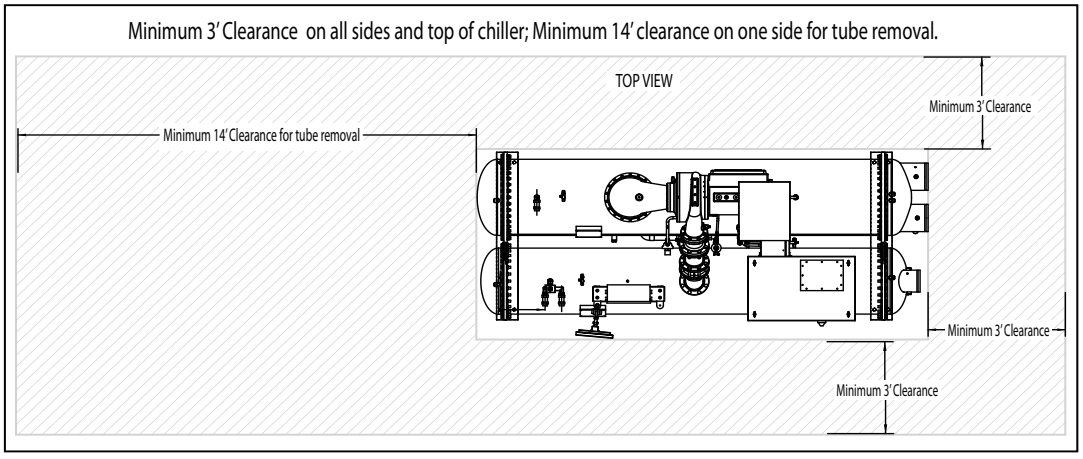
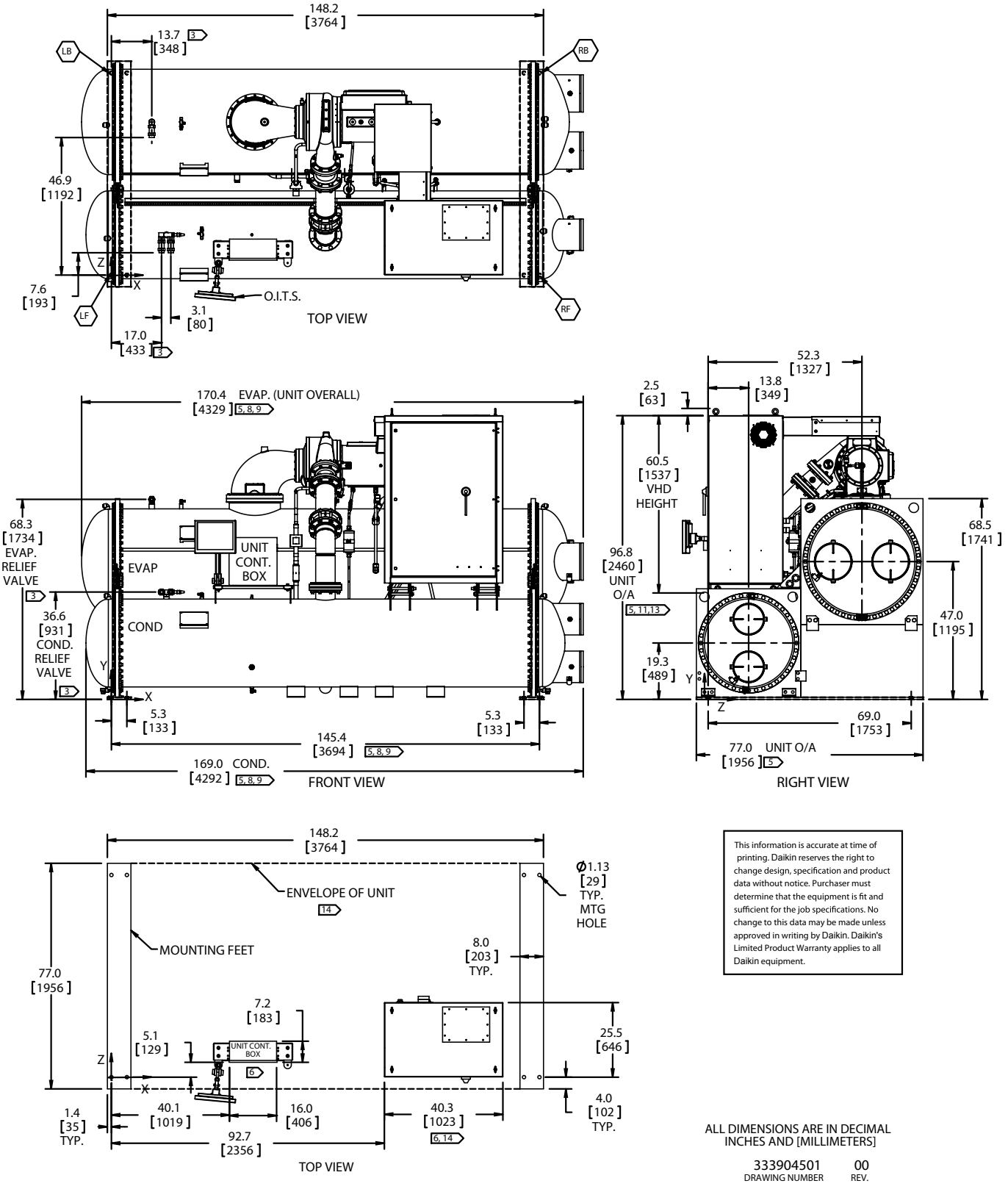


Figure 13: WME0500 - E3612/C3012 - 2-pass - M2 Standard Motor (60Hz - 440/460/480V) (See page 16 for drawing notes.)

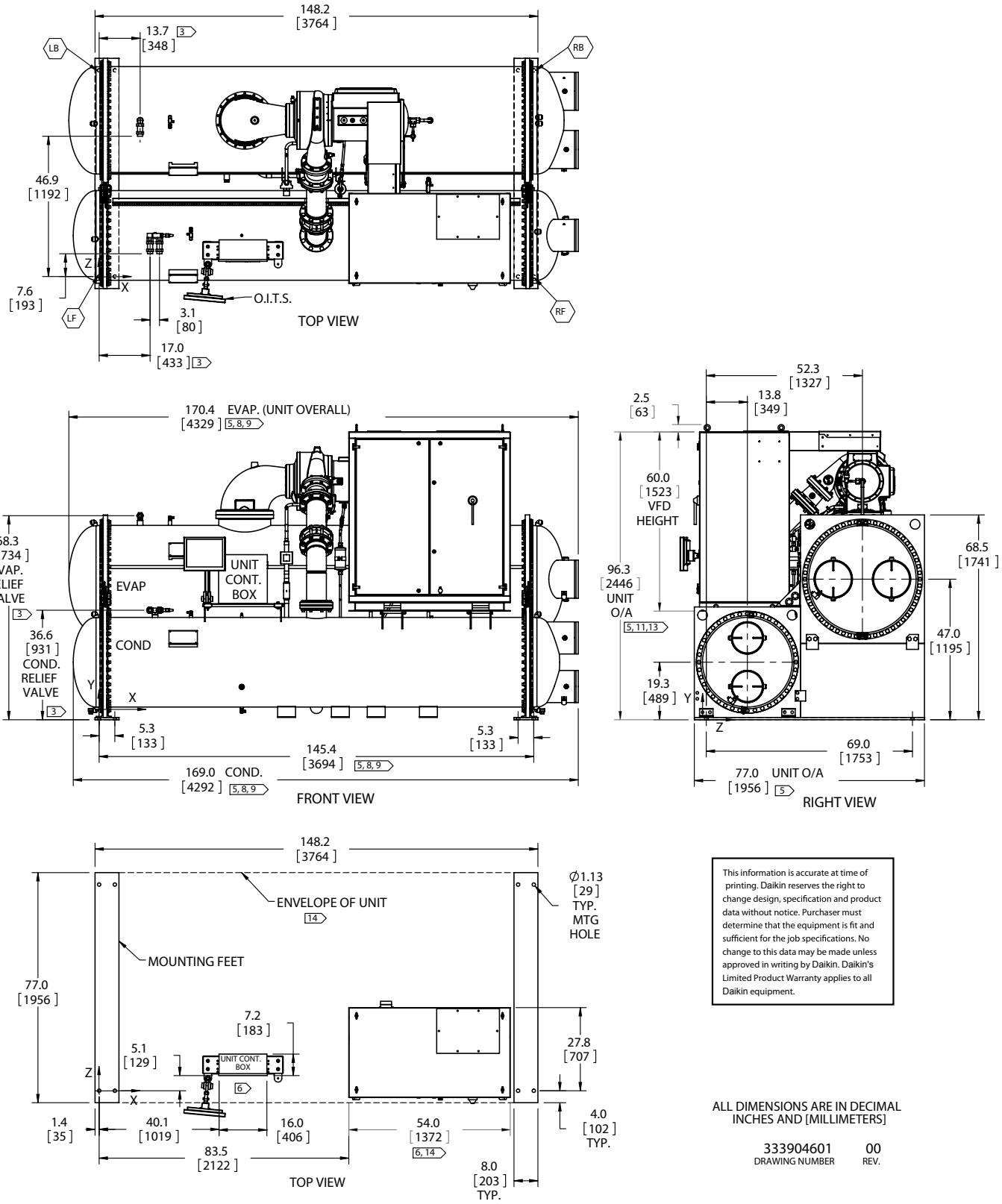


ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

333904501 DRAWING NUMBER 00 REV.

Dimension Drawings

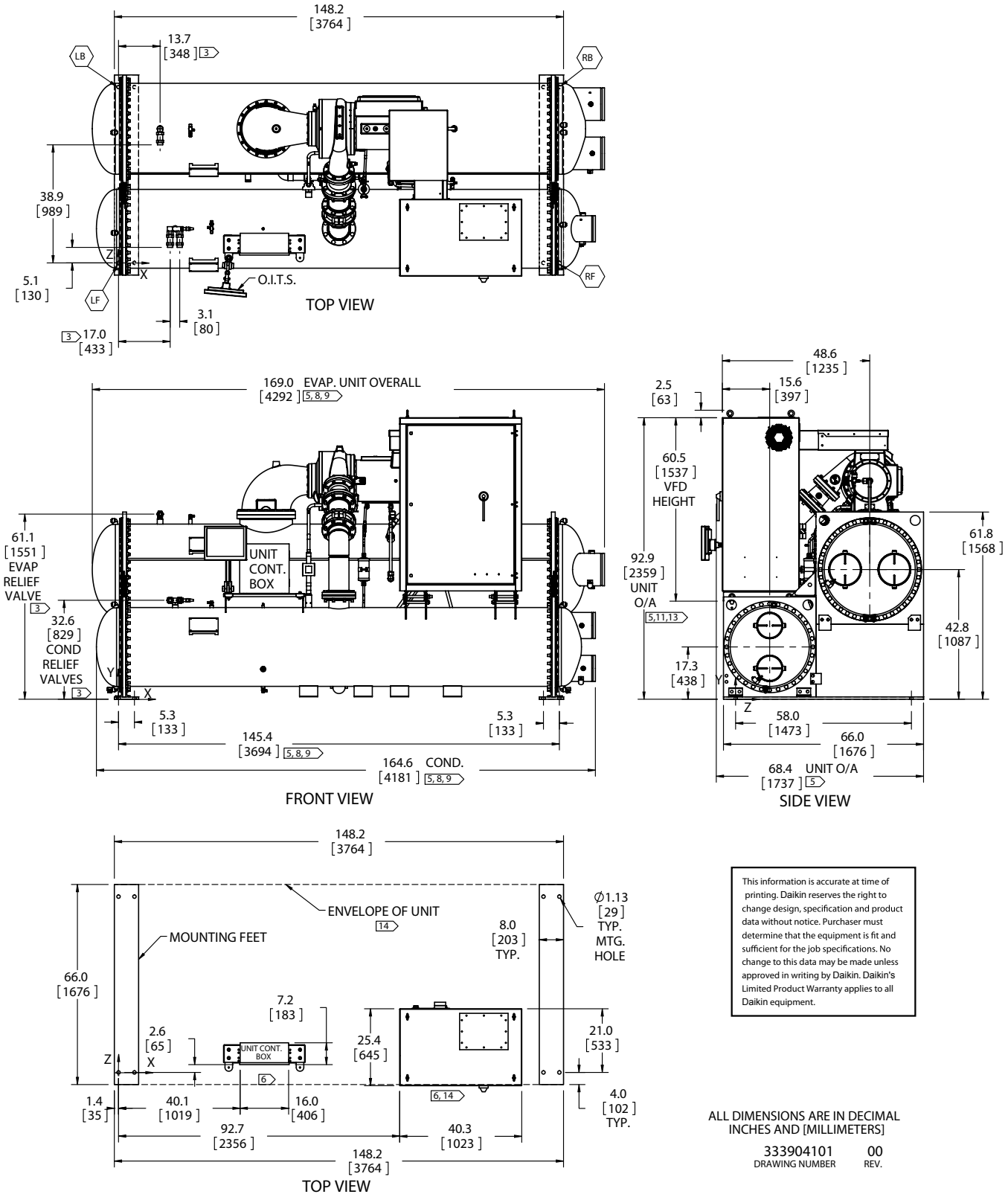
Figure 14: WME0500 - E3612/C3012 - 2-pass - M2 Standard Motor (50Hz 380/400/415V - 60Hz 380/575V)
WME0500 - E3612/C3012 - 2-pass - M3 Low THD Motor (50Hz 380/400/415V - 60Hz 380/440/460/480/575V)
WME0500 - E3612/C3012 - 2-pass - M2 Standard Motor (60Hz 380/460V) with Factory-mounted Harmonic Filter
(See page 16 for drawing notes.)



ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

333904601 DRAWING NUMBER 00 REV.

Figure 15: WME0500 - E3012/C2612 -2-pass, M2 Standard Motor (60 Hz 440/460/480V) (See page 16 for drawing notes.)



This information is accurate at time of printing. Daikin reserves the right to change design, specification and product data without notice. Purchaser must determine that the equipment is fit and sufficient for the job specifications. No change to this data may be made unless approved in writing by Daikin. Daikin's Limited Product Warranty applies to all Daikin equipment.

ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

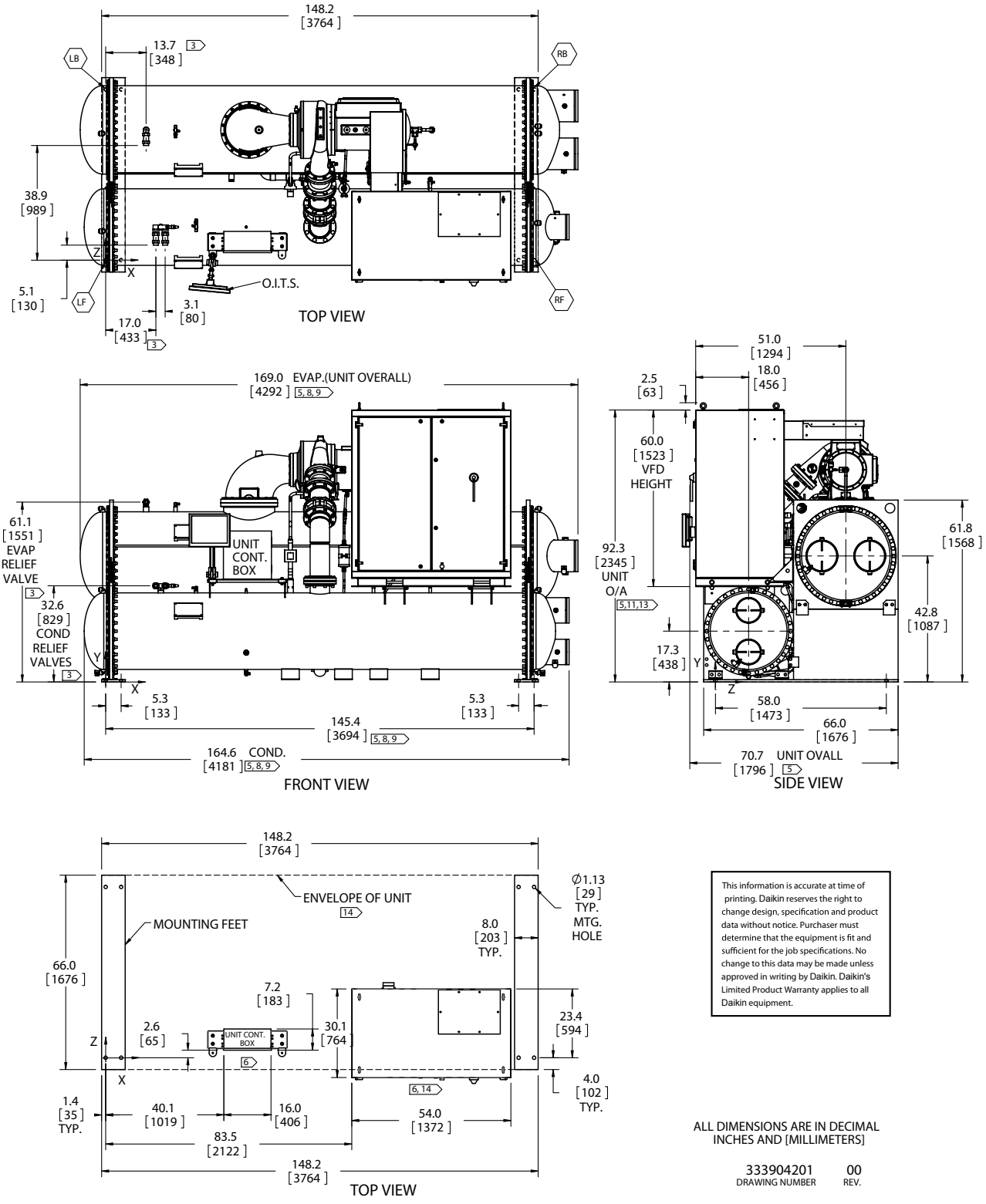
333904101 DRAWING NUMBER

00 REV.

Dimension Drawings

Figure 16: WME0500 - E3012/C2612 - 2-pass M2 Standard Motor (50Hz 380/400/415V) (60Hz 380/575V)
WME0500 - E3012/C2612 - 2-pass M3 Low THD Motor (50Hz 380/400/415) (60Hz 380/440/460/480/575V)
WME0500 - E3012/C2612 - 2-pass M2 Standard Motor (50Hz 380/400/460V) with Factory-mounted Harmonic Filter

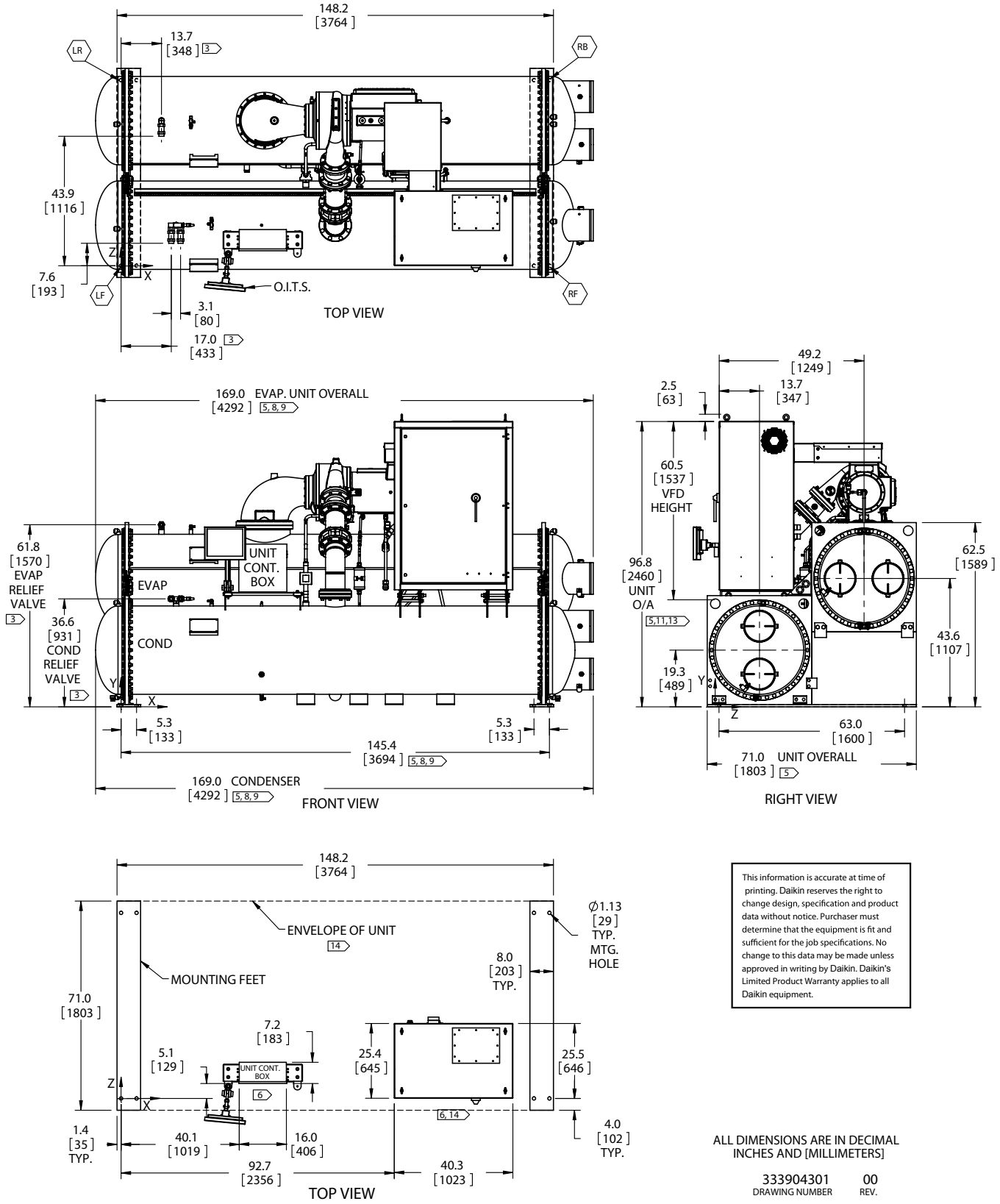
(See page 16 for drawing notes.)



ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

333904201 DRAWING NUMBER 00 REV.

Figure 17: WME0500 - E30C30 - 2 pass, M2 Standard Motor (60Hz 440/460/480V (See page 16 for drawing notes.)

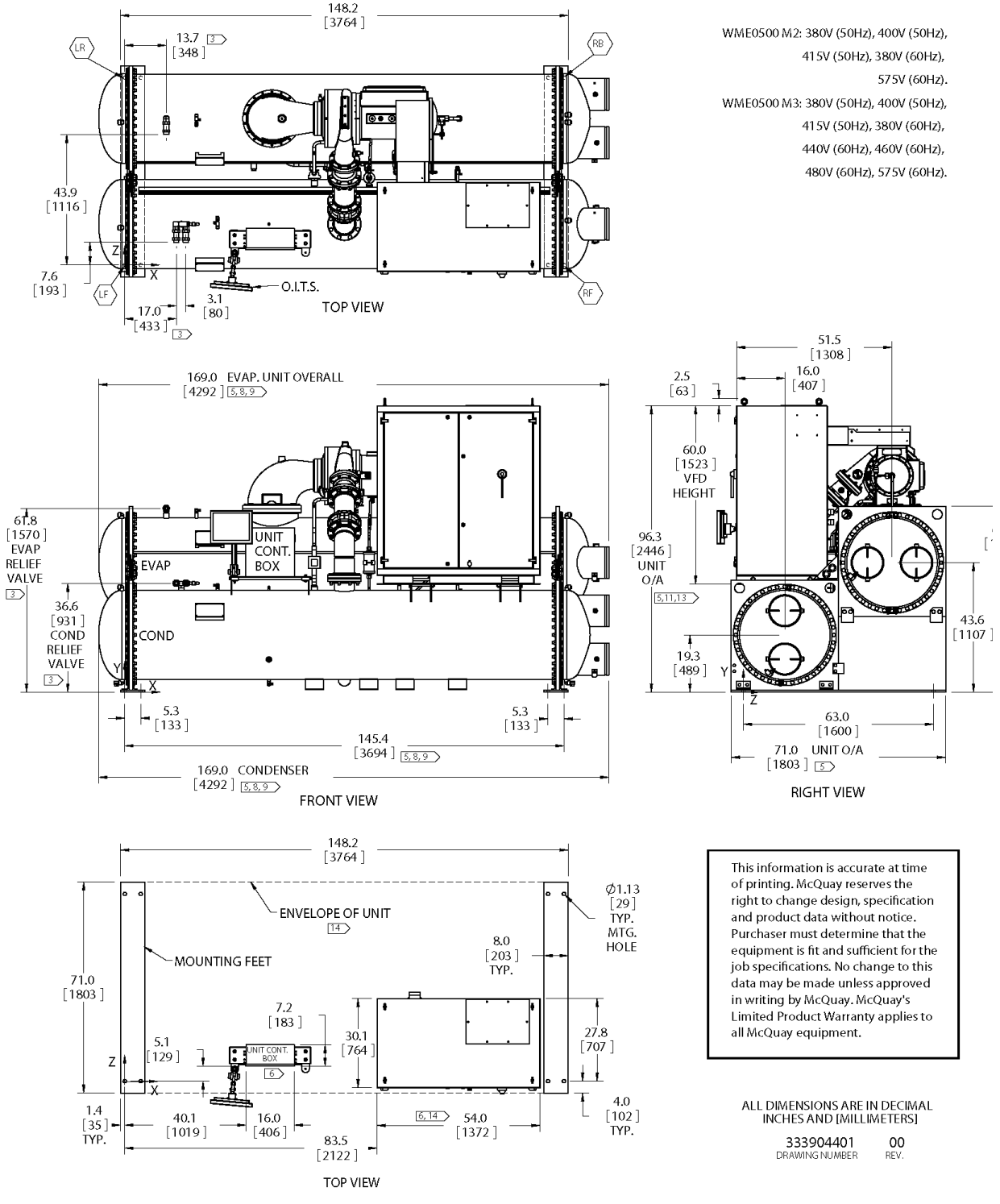


ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

333904301 DRAWING NUMBER 00 REV.

Dimension Drawings

Figure 18: WME500 E3012/C3012, M2 Motor (50 Hz, 380-415V / 60Hz, 380-575V)
WME500 E3012/C3012, M3 Motor (50 Hz, 400-415 / (60 Hz, 380-575V)
WME500 E3012/C3012, M2 Motor with Internal Harmonic Filter (60 Hz, 380-460V)



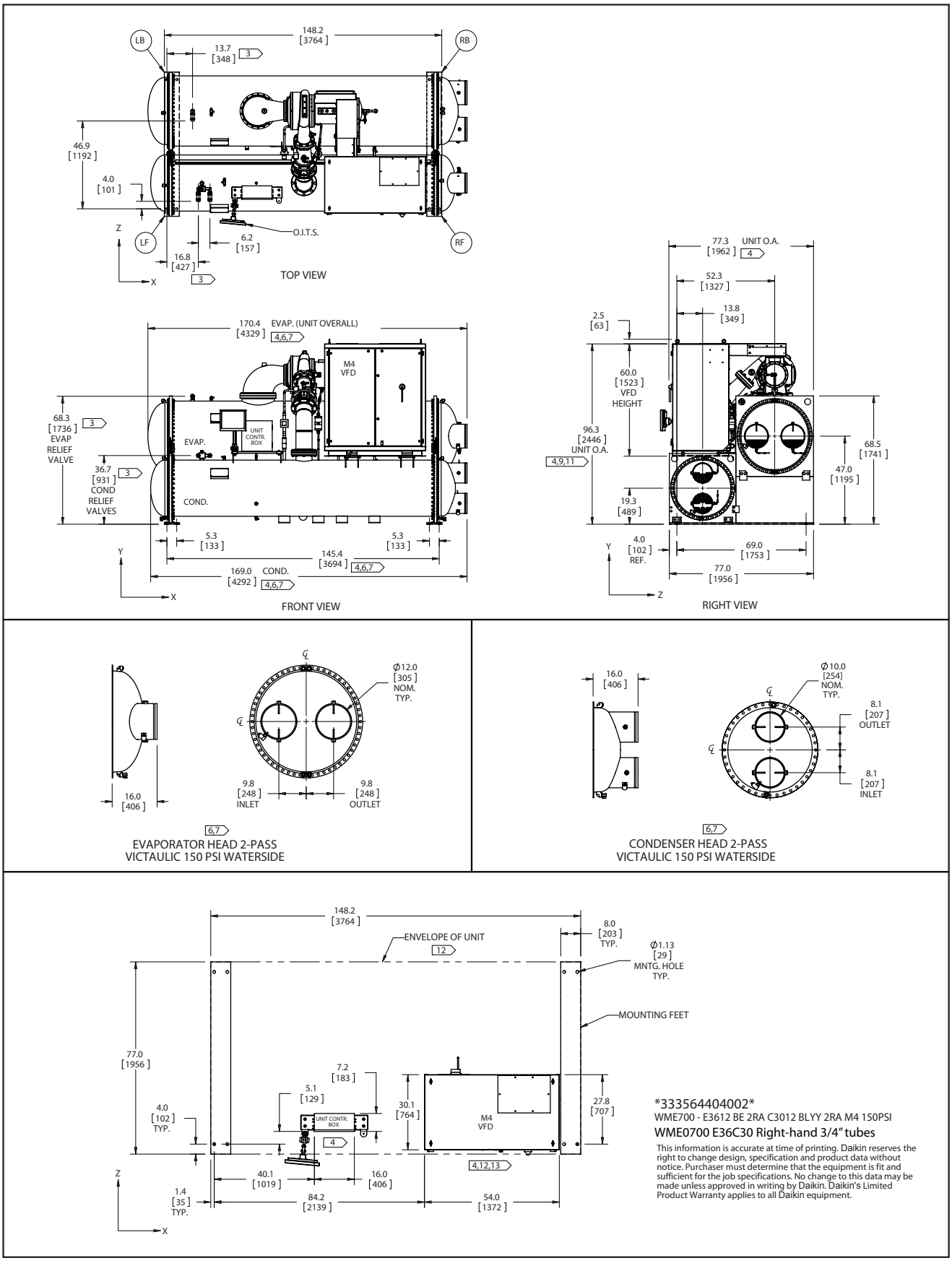
WME0500 M2: 380V (50Hz), 400V (50Hz), 415V (50Hz), 380V (60Hz), 575V (60Hz).

WME0500 M3: 380V (50Hz), 400V (50Hz), 415V (50Hz), 380V (60Hz), 440V (60Hz), 460V (60Hz), 480V (60Hz), 575V (60Hz).

ALL DIMENSIONS ARE IN DECIMAL INCHES AND [MILLIMETERS]

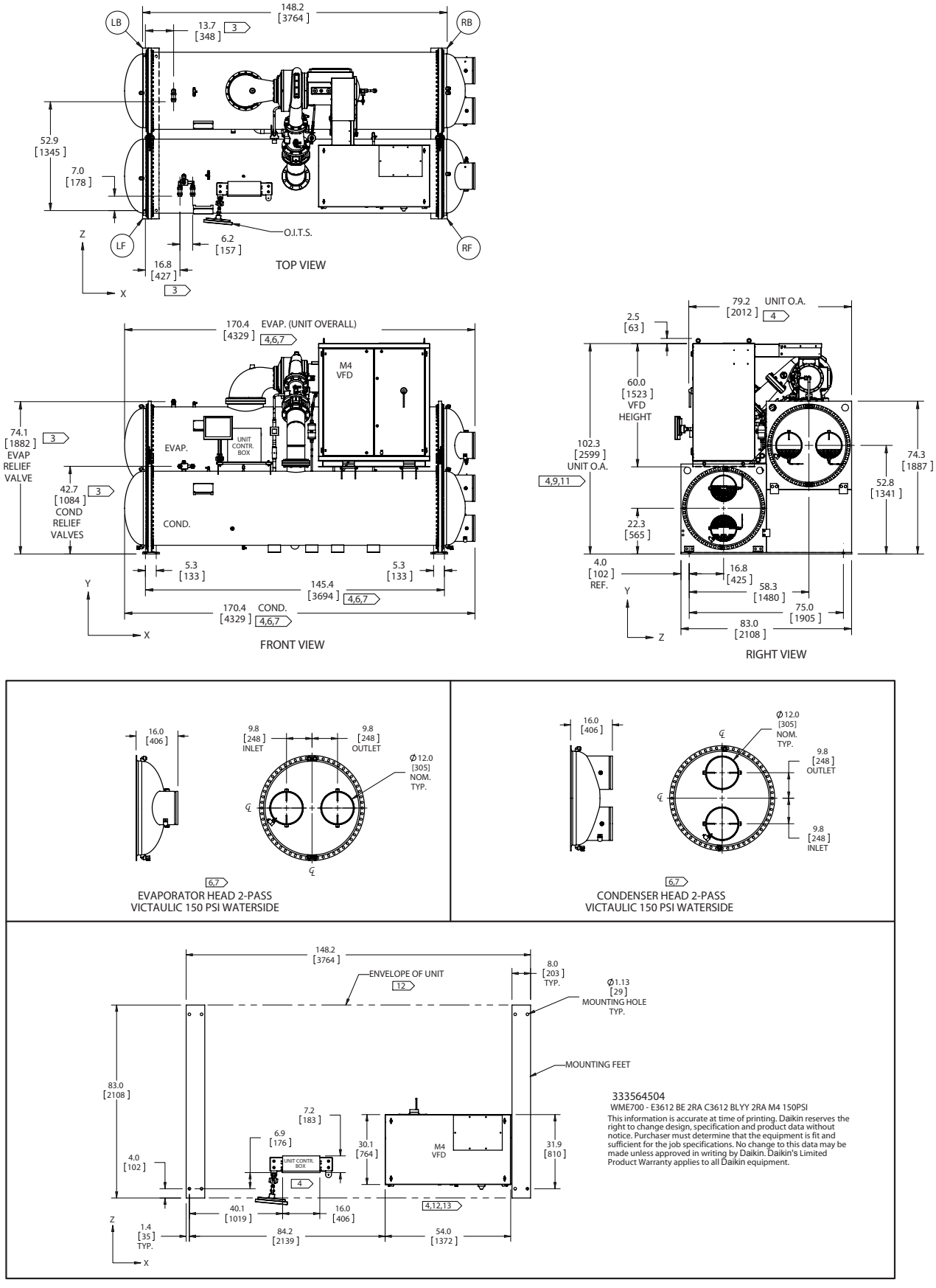
333904401 DRAWING NUMBER 00 REV.

Figure 19: Model WME0700 - E3612/C3012 - 2-pass, M4 motor



Dimension Drawings

Figure 20: Model WME0700 - E3612/C3612 - 2-pass, M4 motor



Standard Head Connection Dimensions

Figure 21: Standard Dished Head Connection Dimensions (Victaulic and Flanged)

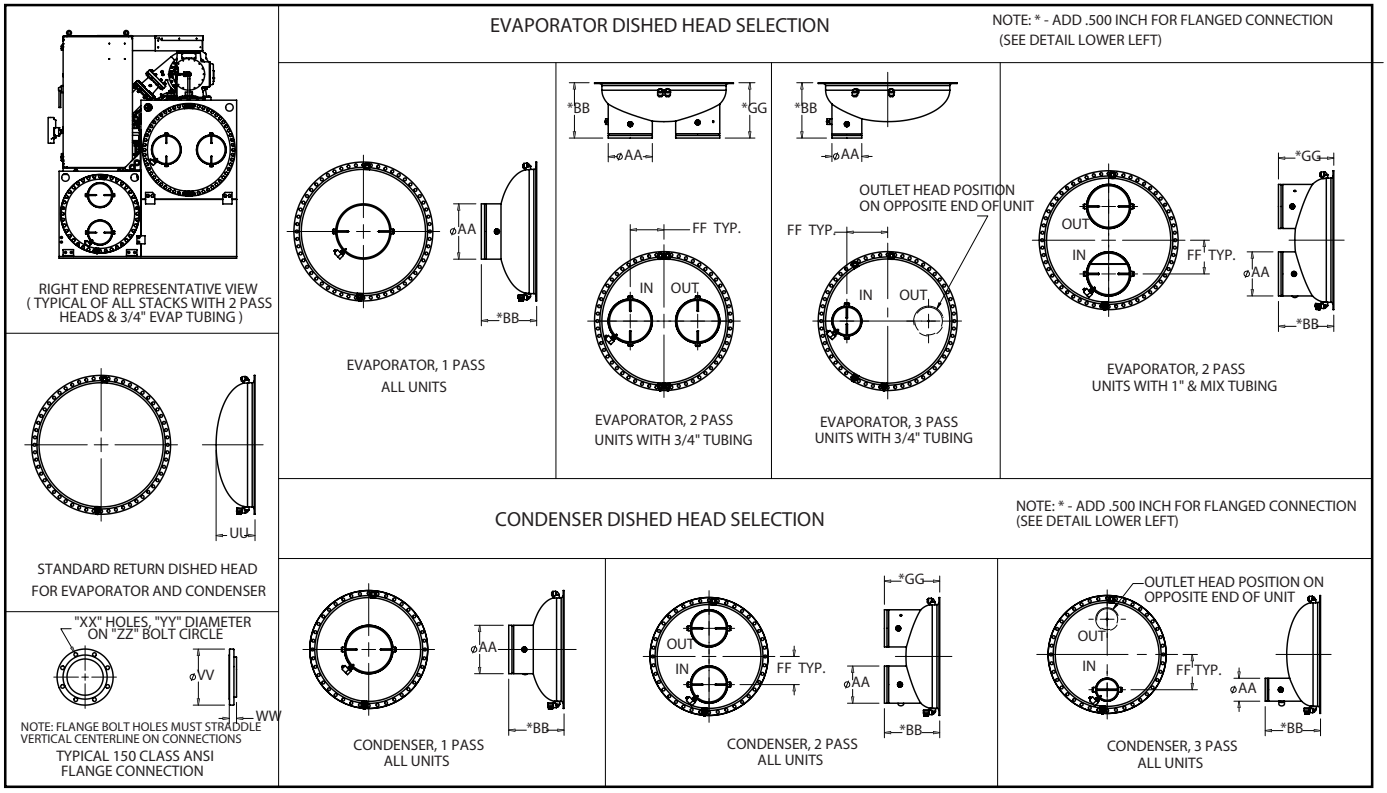


Table 3: Standard Dished Head Connection Dimensions - Victaulic Connections

Diameter	1 Pass		2 Pass				3 Pass			Return Head
Evap	AA	BB	AA	BB	FF	GG	AA	BB	FF	UU
E30	14.00	16.00	10.75	16.00	8.13	16.00	6.63	16.00	10.19	9.78
E36	16.00	16.00	12.75	16.00	9.75	16.00	8.63	16.00	11.81	11.26
Cond	AA	BB	AA	BB	FF	GG	AA	BB	FF	UU
C26	10.75	13.00	8.63	13.00	7.07	13.00	6.63	13.00	8.07	8.38
C30	14.00	16.00	10.75	16.00	8.13	16.00	6.63	16.00	10.19	9.78
C36	16.00	16.00	12.75	16.00	9.75	16.00	8.63	16.00	11.81	11.26

Table 4: Standard Dished Head Connection Dimensions - Flanged Connections

Diameter	1 Pass		2 Pass				3 Pass			Return Head
Evap	AA	BB	AA	BB	FF	GG	AA	BB	FF	UU
E30	14.00	16.50	10.75	16.50	8.13	16.50	6.63	16.50	10.19	9.78
E36	16.00	16.50	12.75	16.50	9.75	16.50	8.63	16.50	11.81	11.26
Cond	AA	BB	AA	BB	FF	GG	AA	BB	FF	UU
C26	10.75	13.50	8.63	13.50	7.07	13.50	6.63	13.50	8.07	8.38
C30	14.00	16.50	10.75	16.50	8.13	16.50	6.63	16.50	10.19	9.78
C36	16.00	16.50	12.75	16.50	9.75	16.50	8.63	16.50	11.81	11.26

Table 5: 150 Class ANSI Flange Connection Dimensions (Detail from Figure 21)

Nozzle Dia.	VV	WW	XX	YY	ZZ
6.63	11.00	1.56	8.00	0.88	9.50
8.63	13.50	1.75	8.00	0.88	11.75
10.75	16.00	1.94	12.00	1.00	14.25
12.75	19.00	2.19	12.00	1.00	17.00
14.00	21.00	2.25	12.00	1.12	18.75
16.00	23.50	2.50	16.00	1.12	21.25

Drawing & Dimension Notes:

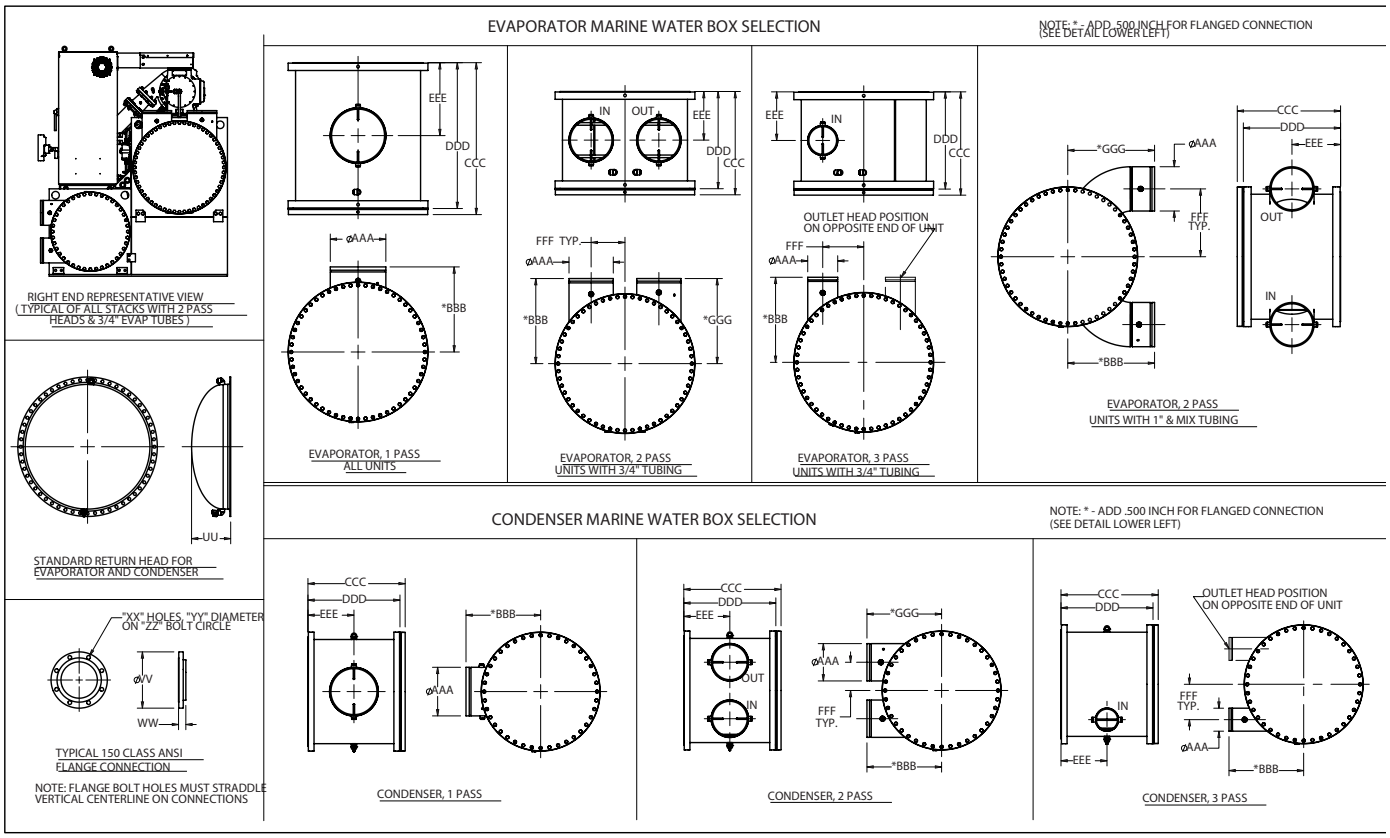
1. Dimensions in inches.
2. Flanges are ANSI raised face. Mating flanges by others.
3. Some condensers with flanges can have staggered connections due to flange interference. Consult factory.
4. Flanges add 0.5 inches to the distance from the vertical centerline to the flange face compared to Victaulic.

Dimension Drawings

Marine Water Box Dimensions

Marine water boxes with removable end covers are an available option on all evaporator and condenser sizes.

Figure 22: Marine Water Box Dimensions with Victaulic or Flanged Connections



Note: On certain models connection dimensions may vary; some models will have rear-facing MWB connections. Consult your local Daikin sales office for unit-specific configuration and dimensions. ***Table 6:***

Marine Waterbox Dimensions - Victaulic Connections

Diameter	1 Pass					2 Pass							3 Pass						Return Head
Evap	AAA	BBB	CCC	DDD	EEE	AAA	BBB	CCC	DDD	EEE	FFF	GGG	AAA	BBB	CCC	DDD	EEE	FFF	UU
E30	14.00	21.00	27.75	26.50	13.25	10.75	21.00	27.75	26.50	13.25	8.13	21.00	6.63	21.00	27.75	26.50	13.25	10.19	9.78
E36	16.00	24.00	43.50	42.00	21.00	12.75	24.00	29.50	28.00	14.00	9.75	24.00	8.63	24.00	29.50	28.00	14.00	11.81	11.26
Cond	AAA	BBB	CCC	DDD	EEE	AAA	BBB	CCC	DDD	EEE	FFF	GGG	AAA	BBB	CCC	DDD	EEE	FFF	UU
C26	10.75	19.00	21.25	20.00	10.00	8.63	19.00	21.25	20.00	10.00	7.07	19.00	6.63	19.00	21.25	20.00	10.00	8.07	8.38
C30	14.00	21.00	27.75	26.50	13.25	10.75	21.00	27.75	26.50	13.25	8.13	21.00	6.63	21.00	27.75	26.50	13.25	10.19	9.78
C36	16.00	24.00	43.50	42.00	21.00	12.75	24.00	29.50	28.00	14.00	9.75	24.00	8.63	24.00	29.50	28.00	14.00	11.81	11.26

Table 7: Marine Waterbox Dimensions - Flanged Connections

Diameter	1 Pass					2 Pass							3 Pass						Return Head
Evap	AAA	BBB	CCC	DDD	EEE	AAA	BBB	CCC	DDD	EEE	FFF	GGG	AAA	BBB	CCC	DDD	EEE	FFF	UU
E30	14.00	21.50	27.75	26.50	13.25	10.75	21.50	27.75	26.50	13.25	8.13	21.50	6.63	21.50	27.75	26.50	13.25	10.19	9.78
E36	16.00	24.50	43.50	42.00	21.00	12.75	24.50	29.50	28.00	14.00	9.75	24.50	8.63	24.50	29.50	28.00	14.00	11.81	11.26
Cond	AAA	BBB	CCC	DDD	EEE	AAA	BBB	CCC	DDD	EEE	FFF	GGG	AAA	BBB	CCC	DDD	EEE	FFF	UU
C26	10.75	19.50	21.25	20.00	10.00	8.63	19.50	21.25	20.00	10.00	7.07	19.50	6.63	19.50	21.25	20.00	10.00	8.07	8.38
C30	14.00	21.50	27.75	26.50	13.25	10.75	21.50	27.75	26.50	13.25	8.13	21.50	6.63	21.50	27.75	26.50	13.25	10.19	9.78
C36	16.00	24.50	43.50	42.00	21.00	12.75	24.50	29.50	28.00	14.00	9.75	24.50	8.63	24.50	29.50	28.00	14.00	11.81	11.26

Table 8: 150 Class ANSI Flange Connection Dimensions (Detail from Figure 22)

Nozzle Dia.	VV	WW	XX	YY	ZZ
6.63	11.00	1.56	8.00	0.88	9.50
8.63	13.50	1.75	8.00	0.88	11.75
10.75	16.00	1.94	12.00	1.00	14.25
12.75	19.00	2.19	12.00	1.00	17.00
14.00	21.00	2.25	12.00	1.12	18.75
16.00	23.50	2.50	16.00	1.12	21.25

Drawing & Dimension Notes:

1. Dimensions in inches.
2. Flanges are ANSI raised face. Mating flanges by others.
3. Some condensers with flanges can have staggered connections due to flange interference. Consult factory.
4. Flanges add 0.5 inches to the distance from the vertical centerline to the flange face compared to Victaulic.

Optional External Harmonic Filter Dimensions

Figure 23: Model AUHF 300, 350, 400, Free Standing, 460Volt, Harmonic Filter

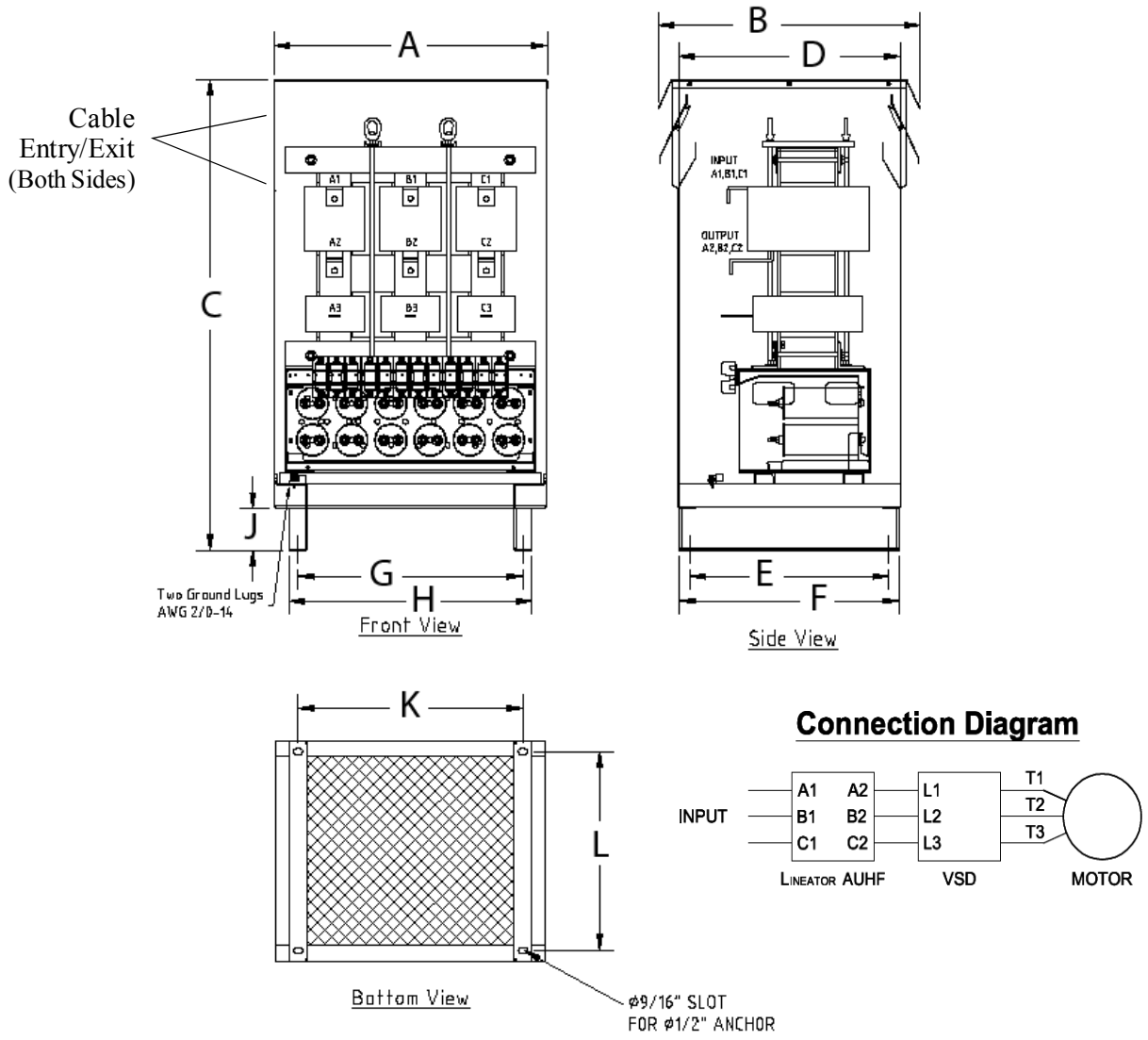


Table 9: Model AUHF Dimensions from Figure 23

MODEL		A	B	C	D	E	F	G	H	J	K	L	WEIGHT
AUHF 300-460V	in. (mm)	26.2 (664)	25.0 (636)	45.0 (1143)	21.2 (538)	19.0 (483)	21.0 (533)	21.5 (546)	23.3 (591)	4.0 (102)	21.5 (546)	19.0 (483)	585 lbs 266 kg
AUHF 350-460V	in. (mm)	32.0 (813)	29.5 (749)	51.5 (1308)	25.6 (651)	23.5 (597)	25.5 (648)	23.5 (597)	25.2 (641)	6.4 (164)	23.5 (597)	23.5 (597)	800 lbs 363 kg
AUHF 400-460V	in. (mm)	32.0 (813)	29.5 (749)	51.5 (1308)	25.6 (651)	23.5 (597)	25.5 (648)	23.5 (597)	25.2 (641)	6.4 (164)	23.5 (597)	23.5 (597)	946 lbs 429 kg

Notes:

1 Requires front access only.

2 Allow 6-inches at rear for ventilation.

Dimension Drawings

Figure 24: Model ATL 300, 350, 400, Free Standing, 600Volt, Auto Transformer Harmonic Filter

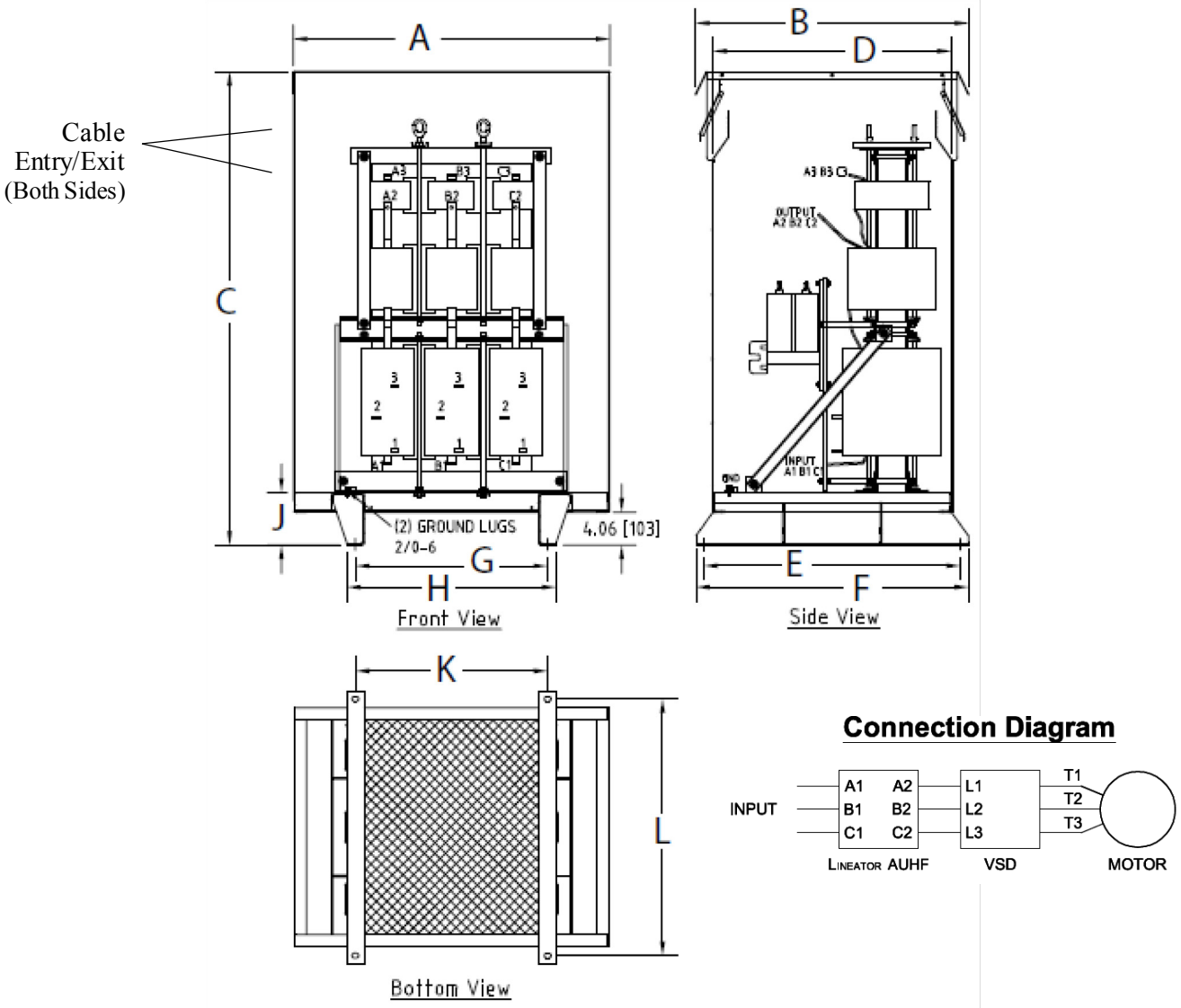


Table 10: Model ATL Dimensions & Weights, 60Hz; 380V, 440V, 600V, from Figure 24

MODEL		A	B	C	D	E	F	G	H	J	K	L	WEIGHT
ATL 300	in.	39.5	34.1	59.0	29.8	32.0	34.0	24.0	26.1	6.6	24.0	32.0	1690 lbs
	(mm)	(1004)	(867)	(1499)	(756)	(813)	(864)	(610)	(663)	(167)	(610)	(813)	(767 kg)
ATL 350V	in.	44.0	38.0	66.0	33.7	36.0	38.0	26..0	28.1	6.6	26.0	36.0	1890 lbs
	(mm)	(1119)	(965)	(1676)	(855)	(914)	(965)	(660)	(714)	(167)	(660)	(914)	(857 kg)
ATL 400V	in.	44.0	38.0	66.0	33.7	36.0	38.0	26..0	28.1	6.6	26.0	36.0	2210 lbs
	(mm)	(1119)	(965)	(1676)	(855)	(914)	(965)	(660)	(714)	(167)	(660)	(914)	(1002 kg)

Table 11: Model ATL Dimensions & Weights, 50Hz, 380/400V, from Figure 24

MODEL		A	B	C	D	E	F	G	H	J	K	L	WEIGHT
ATL 300	in.	44.0	38.0	66.0	33.7	36.0	38.0	26..0	28.1	6.6	26.0	36.0	1900 lbs
	(mm)	(1119)	(965)	(1676)	(855)	(914)	(965)	(660)	(714)	(167)	(660)	(914)	(862 kg)
ATL 350	in.	44.0	38.0	66.0	33.7	36.0	38.0	26.0	28.1	6.6	26.0	36.0	2318 lbs
	(mm)	(1119)	(965)	(1676)	(855)	(914)	(965)	(660)	(714)	(167)	(660)	(914)	(1052 kg)
ATL 400	in.	44.0	38.0	66.0	33.7	36.0	38.0	26..0	28.1	6.6	26.0	36.0	2475 lbs
	(mm)	(1119)	(965)	(1676)	(855)	(914)	(965)	(660)	(714)	(167)	(660)	(914)	(1122 kg)

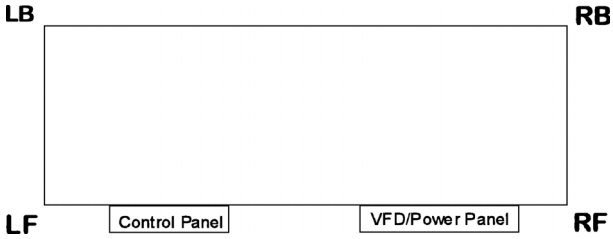
Notes:

1 Requires front access only.

2 Allow 6-inches at rear for ventilation.

Lifting and Mounting Weights

Figure 25: Corner Identification



NOTES:

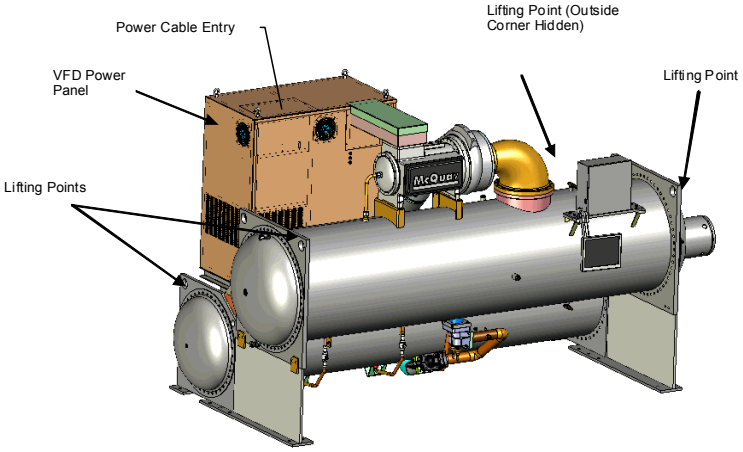
1. The block shown above is the mounting footprint, not the entire unit footprint.
2. Lifting holes in the top of the tube sheets are 3.25-inch (83 mm) diameter.
3. Mounting holes in the feet are 1.125-inch diameter. See unit dimension diagram for mounting hole lcations.
4. Weights are based on standard configuration; actual weight may vary based on options selected. Consult Certified Drawing.

Table 12: Lifting and Mounting Weights and Centes of Gravity

WME Model	Vessel Models	Motor Code	Lifting (Shipping) Weight, lbs (kg)					Center of Gravity in. (mm)		
			LB	LF	RB	RF	Total	X	Y	Z
500	E3012/C2612	M2	2682 (1217)	3380 (1533)	3263 (1480)	4113 (1866)	13438 (6095)	79.8 (2028)	35.1 (891)	25.7 (652)
500	E3012/C2612	M3	2652 (1203)	3667 (1663)	3472 (1575)	4801 (2178)	14592 (6619)	82.5 (2094)	36.6 (929)	24.3 (618)
500	E3012/C3012	M2	2953 (1339)	3769 (1710)	3546 (1609)	4527 (2053)	14795 (6711)	79.4 (2016)	34.7 (881)	27.7 (703)
500	E3012/C3012	M3	2948 (1337)	4031 (1829)	3789 (1719)	5182 (2350)	15950 (7235)	81.8 (2078)	36.4 (924)	26.6 (676)
500	E3612/C3012	M2	3537 (1604)	4314 (1957)	4149 (1882)	5060 (2295)	17060 (7738)	80.7 (2050)	38.1 (969)	29.9 (760)
500	E3612/C3012	M3	3519 (1596)	4591 (2082)	4385 (1989)	5721 (2595)	18216 (8263)	80.7 (2050)	38.1 (969)	29.9 (760)
700	E3612/C3012	M4	3635 (1649)	4598 (2086)	4543 (2061)	5746 (2606)	18522 (8401)	80.8 (2052)	39.4 (1000)	30.5 (774)
700	E3612/C3612	M4	4102 (1861)	5370 (2436)	4995 (2266)	6539 (2966)	21006 (9528)	79.9 (2028)	40.2 (1022)	32.5 (825)
WME Model	Vessel Models	Motor Code	Mounting (Operating) Weight, lbs (kg)					Center of Gravity in. (mm)		
			LB	LF	RB	RF	Total	X	Y	Z
500	E3012/C2612	M2	3263 (1480)	3896 (1767)	3902 (1770)	4660 (2114)	15721 (7131)	79.2 (2012)	34.8 (883)	26.4 (671)
500	E3012/C2612	M3	3228 (1464)	4189 (1900)	4117 (1867)	5343 (2424)	16877 (7655)	81.5 (2071)	36.1 (916)	25.2 (641)
500	E3012/C3012	M2	3612 (1638)	4446 (2017)	4272 (1938)	5257 (2385)	17587 (7977)	78.8 (2001)	34.2 (868)	28.2 (717)
500	E3012/C3012	M3	3604 (1635)	4712 (2137)	4518 (2049)	5908 (2680)	18742 (8501)	80.9 (2055)	35.6 (905)	27.3 (693)
500	E3612/C3012	M2	4437 (2013)	5077 (2303)	5132 (2328)	5872 (2663)	20518 (9307)	78.0 (1981)	36.7 (933)	32.2 (817)
500	E3612/C3012	M3	4412 (2001)	5359 (2431)	5374 (2438)	6527 (2961)	21672 (9830)	79.9 (2028)	37.9 (962)	31.2 (791)
700	E3612/C3012	M4	4529 (2054)	5366 (2434)	5532 (2509)	6553 (2972)	21980 (9970)	80.0 (2031)	38.9 (989)	31.6 (802)
700	E3612/C3612	M4	5150 (2336)	6461 (2931)	6130 (2781)	7691 (3489)	25432 (11536)	79.0 (2007)	39.7 (1008)	33.3 (845)

Physical Data & Weights

Figure 26: Lifting Points - See Installation Manual IM 1033 for handling information.



Note: This drawing is for general reference only. On some units the control panel and customer interface panel may be on the other side adjacent to the VFD Power Panel.

Physical Data - Evaporator

Refrigerant-side maximum working pressure is 200psig. Water-side is 150 psi (1034 kPa) with 300 psi (2068 kPa) available as an option. Approximate total square footage of insulation surface required for individual packaged chillers is tabulated by evaporator code and can be found below. The suction elbow and compressor also require insulation. Factory-installed insulation on cold surfaces, ¾ or 1 ½ inch thick is an available option.

Table 13: Evaporator Physical Data

WME Model	Evaporator Model	Tube Length	Evaporator Water Volume, gal (L)	Insulation Area sq. ft. (m^2)	Number of Relief Valves
0500	E3012	12 ft.	147 (555)	115 (11)	1
0500	E3612	12 ft.	191 (723)	129 (12)	1
0700	E3612	12 ft.	214 (809)	129 (12)	1

Note: Refrigerant charge will depend on a number of variables. Actual charge will be shown on the unit nameplate.
Note: Water capacity is based on standard tube configuration and standard dished heads, and may change depending on your configuration. Consult Certified Drawing.

Physical Data - Condenser

With positive pressure systems, the pressure variance with temperature is always predictable and the vessel design and pressure relief protection are based upon pure refrigerant characteristics. R-134a requires ASME vessel design, inspection and testing and uses spring-loaded pressure relief valves. When an over-pressure condition occurs, spring-loaded relief valves release only that quantity of refrigerant required to reduce system pressure to the valve's set pressure and then close.Refrigerant-side design pressure is 200 psi; Water-side design is 150 psi with 300 psi available as an option. .

Table 14: Condenser Physical Data

WMC Model	Condenser Model	Tube Length	Maximum Pumpdown Capacity lb. (kg)	Water Volume gal. (L)	Number of Relief Valves
0500	C2612	12 ft.	1656 (751)	111 (419)	2
0500	C3012	12 ft.	2148 (975)	144 (545)	2
0700	C3012	12 ft.	2060 (934)	214 (808)	2
0700	C3612	12 ft.	2814 (1276)	337 (1276)	2

Note: Condenser pumpdown capacity based on 90% full at 90°F.
Note: Water capacity based on standard configuration and standard heads, and may change depending on your configuration. Consult Certified Drawing.
Note: See Relief Valves section of IM 1033 (available on www.DaikinApplied.com) for additional information.

The optional field-mounted harmonic filter is also available factory mounted, which requires no field installation. This section pertains to the remote, field installed option.

Optional External Harmonic Filter

There are two types of optional harmonic filters:

- Model AUHF for 460 volt applications
- Model ALT for 600 volt applications (includes auto-transformer)

Both models require only field setting and connection to the incoming chiller supply power and output wiring to the chiller electrical panel.

Inspection

The harmonic filter should be inspected for any damage incurred during shipment. Conduct an internal inspection before energizing looking for loose or broken connectors, damaged parts, cracked insulators, dirt and moisture.

Handling

The harmonic filter should be thoroughly protected against the entrance of dust, rain or snow when handled outdoors.

When lifting the unit, the lifting cables should be held apart by a spreader. The unit may be skidded or moved on rollers but care must be taken not to damage the base or tip it over. When rollers are used, use skids to distribute the stress over the base.

Grounding

Consideration must be given to equipment grounding (case and core) and must be made in accordance with all applicable electrical codes. Grounding lugs are located in the lower left side of the filter enclosure.

Dimensions

Filter dimensions are located in the Dimension section of this catalog.

Location

Location of the harmonic filter should be indoors and made with consideration given to accessibility, ventilation and atmospheric conditions. It requires front access and at least 6 in. (155mm) clearance at the rear ventilation openings. In enclosed rooms, minimum air circulation of 100 cfm per kilowatt of transformer loss should be provided.

Installation locations should be free of contaminants including dust, excessive moisture, corrosive gases, flammable materials or chemical fumes. Filtered air may be considered to reduce maintenance where air born contaminants are a problem. Enclosures are NEMA 3R and intended for indoor use.

Do not stack units or install above heat producing equipment.

It is usually convenient to locate the harmonic filter as close to the chiller as possible.

Wiring

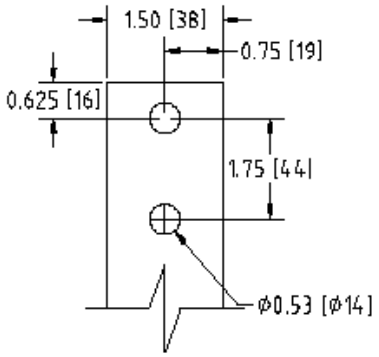
All wiring must meet national and local electrical codes. Use only copper connectors.

Wiring between the harmonic filter and the chiller unit is the same size as the power supply to the unit.

Input terminals are A1, B1, C1 and output terminals are A2, B2, and C2.

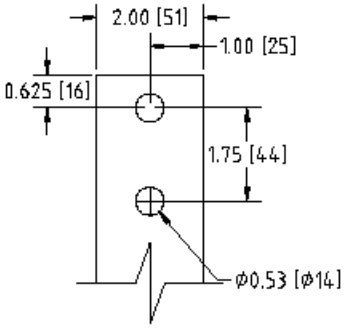
Figure 1: Filter Terminals

AUHF 300 In & Out
AUHF 350 In & Out
ATL 300 In & Out
ATL 350 In



THICKNESS: 1/4"

ATL 350 Out
ATL 400 In & Out
AUHF 400 In & Out



THICKNESS: 1/4"

Figure 2: Power Wiring

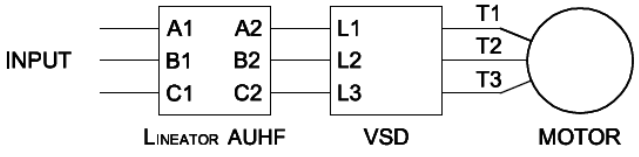


Figure 3: Prestart System Checklist

Prestart System Checklist

	Yes	No	N/A
Chilled Water Piping complete	☐	☐	☐
Water system filled, vented.....	☐	☐	☐
Pumps installed, (rotation checked), strainers cleaned	☐	☐	☐
Controls (3-way, face and bypass dampers, bypass valves, etc.) operable	☐	☐	☐
Water system operated and flow balanced to meet unit design requirements	☐	☐	☐
Condenser Water (*)			
Cooling tower flushed, filled and vented	☐	☐	☐
Pumps installed, (rotation checked), strainers cleaned	☐	☐	☐
Controls (3-way, bypass valves, etc.) operable	☐	☐	☐
Water system operated and flow balanced to meet unit requirements	☐	☐	☐
Electrical			
Power leads connected.....	☐	☐	☐
Control interlock wiring complete and complies with specifications	☐	☐	☐
Pump starters and interlock wired	☐	☐	☐
Cooling tower fans and controls wired	☐	☐	☐
Wiring complies with National Electrical Code and local codes ..	☐	☐	☐
Condenser pump starting relay (CWR) installed and wired	☐	☐	☐
Miscellaneous			
Relief valve piping complete	☐	☐	☐
Thermowells, thermometers, gauges, control wells, controls, etc., installed	☐	☐	☐
Minimum system load of 80% of machine capacity available for testing and adjusting controls	☐	☐	☐

Job Name/Location _____

Daikin Order Number_____ Date

_____

Signature _____

Note: This checklist must be completed and sent to the local Daikin service location two weeks prior to start-up.

Operation

Operator Responsibilities

It is important that the operator become familiar with the equipment and the system before attempting to operate the chiller. In addition to reading this manual, the operator should study operation manual OM 1034 available at www.DaikinApplied.com and the control diagram furnished with the unit before starting, operating, or shutting it down.

During the initial startup of the chiller the Daikin technician will be available to answer any questions and instruct in the proper operating procedures.

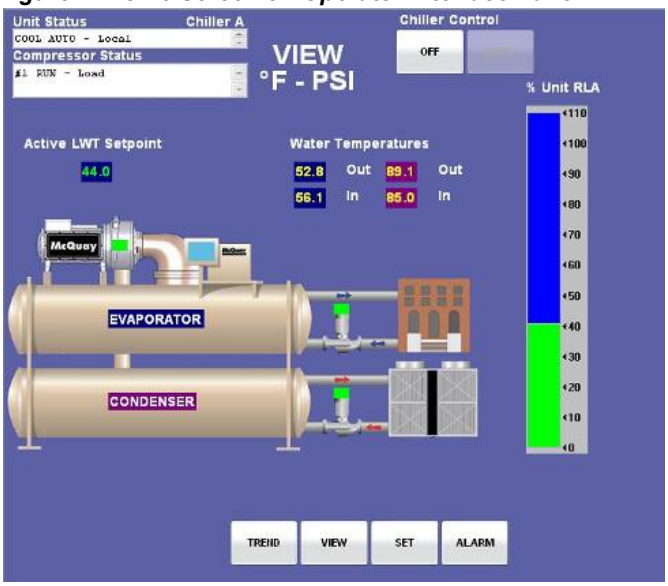
It is recommended that the operator maintain an operating log for each individual chiller unit. In addition, a separate maintenance log should be kept of the periodic maintenance and servicing activities.

This Daikin centrifugal chiller represents a substantial investment and deserves the attention and care normally given to keep this equipment in good working order. If the operator encounters abnormal or unusual operating conditions, it is recommended that a Daikin service technician be consulted.

Daikin conducts training for centrifugal operators at its factory Training Center in Staunton, Virginia, several times a year. These sessions are structured to provide basic classroom instruction and include hands-on operating and troubleshooting exercises. For further information, contact your Daikin representative.

MocrpTech 3 Control

Figure 4: Home Screen on Operator Interface Panel



All chillers are equipped with the Daikin MicroTech E control system consisting of:

- Operator 15-inch color touchscreen interface panel (sample screen shown above).
- Unit Control Panel containing the MicroTech E controller, USB interface and miscellaneous switches and field connection terminals.
- Compressor Controller in the compressor housing, containing the bearing controls and I/O points for the compressor.
- VFD power panel containing various drive components and incoming power connections.

Note: Detailed information on the operation of the MicroTech E control is contained in OMM 1034.

Long Term Storage

This information applies to new units being stored waiting for startup or to existing units that may be inoperative for an extended period of time.

The chiller must be stored in a dry location indoors and protected from any damage or sources of corrosion. A Daikin Factory Service representative must perform an inspection and leak test of the unit on minimum quarterly schedule, to be paid by the owner or contractor. Daikin International will not be responsible for any refrigerant loss during the storage time or repairs to unit during period of storage, or while moving the unit from original location to a storage facility and back to any new installation location.

The following tasks must be performed:

1. As discussed above, the first and foremost task is to leak test the unit when it is in its final storage location. If any leaks exist, repair them immediately. After the unit is stored, perform a periodic leak test.
2. It is possible that the unit could be bumped, hit or otherwise damaged while in storage; so in addition to leak testing, a visual inspection should be done.
3. If there is concern about the possibilities of damage and loss of charge during storage, the customer can pay to have the charge removed and stored in recovery cylinders. If this is done, pressurize the chiller to about 20 psi with nitrogen. Monitor and maintain the pressure. Install a pressure gauge that can easily be read or tie in a remote alarm that can be monitored if pressure decays. This is desirable if the unit is stored with refrigerant or with a nitrogen holding charge.
4. If the unit has been shipped and not yet installed, keep it pumped down (as shipped from the factory) with all refrigerant valves closed and capped.
5. Clean and dry the unit and look for any chipped paint. Touch up as required to prevent rust.
6. If the storage area is subject to a high humidity, consider a shrink wrap or water resistant covering. Desiccants must be placed inside electrical panels and starters (mounted or shipped loose) and be renewed as recommended by manufacturer.
7. The operator touchscreen monitor, which is shipped loose, should be stored in a secure dry area. They are subject to pilferage.
8. Regardless of the temperature of the storage area, make sure all vessel tubes are drained and blown dry of any water to prevent pitting or corrosion.
9. Restart by Daikin Factory Service technicians will be required and paid to Daikin by the owner or contractor. It is prudent to take photos when the unit is stored to show that the conditions of storage have been met. Document all inspection reports and abnormal conditions found. If the unit has been in operation, the run-time hours and number of starts must be documented prior to storage, along with the date the unit was taken out of operation. The extended warranty coverage can be suspended during the storage period-not to exceed 30 months. The remaining warranty time will restart once unit is reinstalled and officially re-commissioned by Daikin Factory Service.

Daikin Training and Development

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin products, please visit www.DaikinApplied.com/training, or call 540-248-9646 to speak with the Training Department.

Warranty

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Representative for warranty details. Refer to Form 933-43285Y. To find your local Daikin Representative, go to www.DaikinApplied.com.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.DaikinApplied.com.