Airstack®
By MULTISTACK

Air Cooled Medical Chiller
Product Data Catalog

For Modules: ASM002X, ASM003X, ASM005X, ASM008X, ASM010X, ASM015X, ASM020X, ASM030X

AHRI CERTIFIED™
www.ahridirectory.org
Air-Cooled Chillers
AHRI Standard 550/590

Multistack products are ideal for many mission critical and high-tech applications such as data centers, linear accelerators and industrial processes. They're also a good choice for medical applications including MRI and surgical suites. Multistack Model ASM medical chillers are designed from the ground up with reliability, redundancy, quality and efficiency.

- Three through 30-ton capacities in standalone non-modular configurations
- Available with single- and dual-refrigeration circuits. 7 mm micro-groove condenser coils. Electronic expansion valves provide precise control, reliable operation
- Variable speed scroll compressors available in some sizes for precise leaving temperature control
- EC fan motors with latest fan blade technology
- Microprocessor, non-proprietary controls interoperable with all major control protocols
- Thermal dispersion proof-of-flow
- Web-based remote monitoring and diagnostics
- Available in all stainless steel construction, stainless steel components, or with epoxy paints and coil coatings

Model Number Nomenclature

ASM 030 X C/N 1 1 H A L 1 A A A E S S -410A

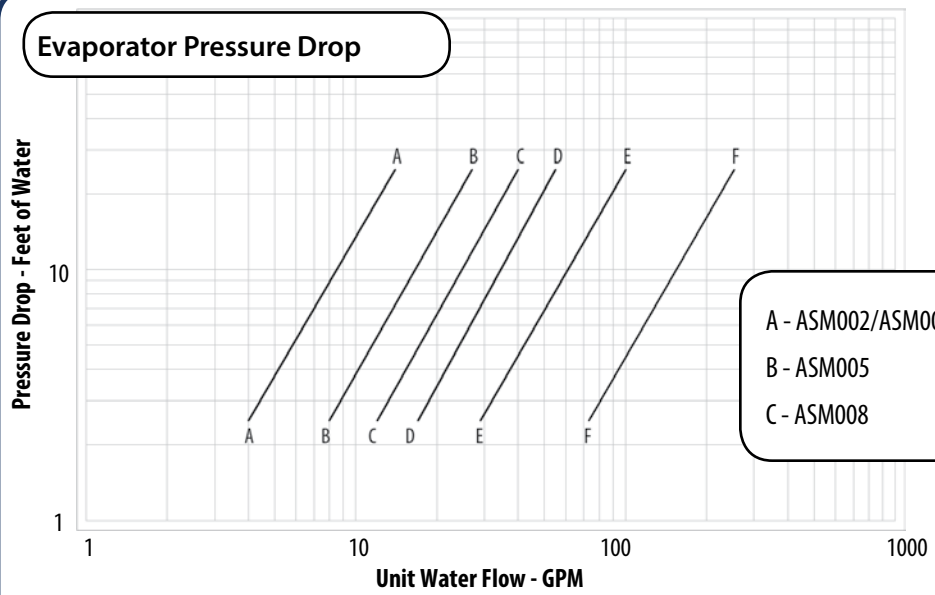
- -410A: Refrigerant
- S: Tank[8]
- S: Pump[7]
- E: Fan Configuration[6]
- A: Condenser Coating[5]
- A: Condenser[4]
- A: Evaporator[3]
- 1: AHRI Version
- L: Ambient (L - Low, S - Standard, H - high, C - low & high)
- A: Application[2]
- H: Voltage (see voltage codes)
- 1: Frame Designation 1 - 32 x 58, 2 - 36 x 72, 3 - 36 x 84, 4 - 72 x 84, 5 - other)
- 1: No. of Refrigerant Circuits (1 - single , 2 - dual, 4 - four)
- C/N: AHRI Certified (C - certified, N - Not certified)
- X: Compressor Type[1]
- 030: Module Nominal Capacity (003-030 tons, needs 3 digits)
- ASM: Series

[2]X - Copeland Scroll (ZP), A - Copeland Scroll (ZR), D-Copeland Digital Scroll, N - none, Q - quasi variable speed Copeland, V - true variable speed Copeland)
[3]A - Air Cooled, C - Remote Condenser, D - Cond Unit, H-Heat Recovery, R - Heat Pump (ASA and ARA are H - heat recovery)
[4] A - Brazed SS, B - Brazed SMO, C- S&T copper, D - S&T cu-Ni, O - remote by others,R-Remote by MS, V - Other, N-None
[5]A - Cu tube Al fin, B - Cu tube Cu fin, C- Microchannel, V - Other
[6]A - None, B - Bronzeglow, H - Heresite, E - Electrofin, S - Standard, V - Other
[7]E-ECM Fan, H - High static, L -Single Fan, S - standard, V -Other
[8]A - brazed SS, B - brazed SMO, E - double wall brazed, N - none, V - other
[9]R-410A, R-134a, 407c

General Data Table of Air Cooled Standard –X Modules with a Single Compressor					
Compressor	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Type	SCROLL				
Nominal Capacity (per compressor)	2	3	5	7.5	10
Quantity	1	1	1	1	1
Evaporator	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Type	BRAZED PLATE				
Weight	11	11	17	22	31
Evap Water Storage (gallons each)	0.2	0.2	0.5	0.7	1.1
Quantity	1	1	1	1	1
Condenser Fans	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Motor Type	EC				
kW	.25	.25	.75	2.0	3.0
Quantity	1	1	1	1	1
Fan Type	Axial				
Fan Material	Aluminum				
Air Flow (cfm) (per module)	2,000	3,000	5,000	7,500	7,500
Condenser Coils*	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Fin Material	Aluminum				
Tube Material	Copper				
Tube Diameter (in.)	7 mm				
Number of Rows	4	4	4	4	4
Coil Dimensions (Quantity)	42" x 30"	42" x 30"	42" x 30"	42" x 40"	42" x 40"
Tank	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Material	304 Stainless Steel				
Nominal Capacity (gallons)	20	40	40	60	60
Pump	**ASP002**	**ASM003**	**ASP005**	**ASP008**	**ASP010X**
Material	316 Stainless Steel				
HP	1.5	2	2	2	2
Refrigerant Type	R410A				
Charge (lbs./circuit)					
Number of Circuits	1	1	1	1	1

General Data Table of Air Cooled Standard –X Modules with Two Compressors					
Compressor	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Type	SCROLL				
Nominal Capacity (per compressor)	3.25	5	7.5	10	15
Quantity	2	2	2	2	2
Evaporator	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Type	BRAZED PLATE				
Weight	22	46	60	75	
Evap Water Storage (gallons each)	0.7	0.9	1.4	1.9	
Quantity	1	1	1	1	1
Condenser Fans	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Motor Type	EC				
kW	2.0	3.0	2.0	5.0	6.0
Quantity	1	1	1	1	1
Fan Type	Axial				
Fan Material	Aluminum				
Air Flow (cfm) (per module)	10,000	10,000	11,000	16,000	22,000
Condenser Coils*	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Fin Material	Aluminum				
Tube Material	Copper				
Tube Diameter (in.)	7 mm				
Number of Rows	6	6	6	6	6
Coil Dimensions (Quantity)	42" x 40"	42" x 40"	42" x 60"	42" x 60"	42" x 78"
Tank	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Material	304 Stainless Steel				
Nominal Capacity (gallons)	60	60	100	100	120
Pump	**ASP008X**	**ASM010X**	**ASP015X**	**ASP020X**	**ASP030X**
Material	316 Stainless Steel				
HP	1.5	2	2	2	2
Refrigerant Type	R410A				
Charge (lbs./circuit)					
Number of Circuits	2	2	2	2	2

Evaporator Pressure Drop



ELECTRICAL DATA

Model	Number of Compressors	RLA per Compressor		Number of Fan Motors	FLA per Fan Motor		Pump HP	FLA per Pump	
		3 phase	1 phase		3 phase	1 phase		3 phase	1 phase
		208/460/575V	230V		208/460/575V	230V		208/460/575V	230V
ASM002X	1	7.9/3.6/2.9	10.6	1	10.6/9.6/TBD	3.5	1.5	6.6/3/2.4	10.0
ASM003X	1	11.6/5.3/4.2	15.3	1	10.6/9.6/TBD	3.5	2	7.5/3.4/2.7	12.0
ASM005X	1	17.5/7.9/6.4	25.9	1	10.6/9.6/TBD	3.5	2	7.5/3.4/2.7	12.0
ASM008X	1	26.2/12.1/9.8	N/A	1	10.6/9.6/TBD	N/A	2	7.5/3.4/2.7	12.0
ASM008X	2	13.5/6.1/4.8	18.2	1	10.6/9.6/TBD	3.5	2	7.5/3.4/2.7	12.0
ASM010X	1	19.5/8.7/7.2	N/A	1	10.6/9.6/TBD	N/A	2	7.5/3.4/2.7	12.0
ASM010X	2	17.5/7.9/6.4	25.9	1	10.6/9.6/TBD	3.5	2	7.5/3.4/2.7	12.0
ASM015X	2	26.2/12.1/9.8	N/A	2	10.6/9.6/TBD	N/A	3	10.6/4.8/3.9	17.0
ASM020X	2	34.3/16.2/12.5	N/A	2	10.6/9.6/TBD	N/A	5	16.7/7.6/6.1	28.0
ASM030X	2	55.0/26.0/21.0	N/A	2	10.6/9.6/TBD	N/A	5	16.7/7.6/6.1	28.0

WIRING SIZING (MCA= MINIMUM CIRCUIT AMPACITY)
MCA = (1.25 x RLA1*) + RLA2 + RLA3 . . .

FUSE SIZING (MFS = MAXIMUM FUSE SIZE)
MFS = (2.25 x RLA1*) + RLA2 + RLA3 . . .
Where MFS does not equal a standard size fuse, the next larger fuse should be used.

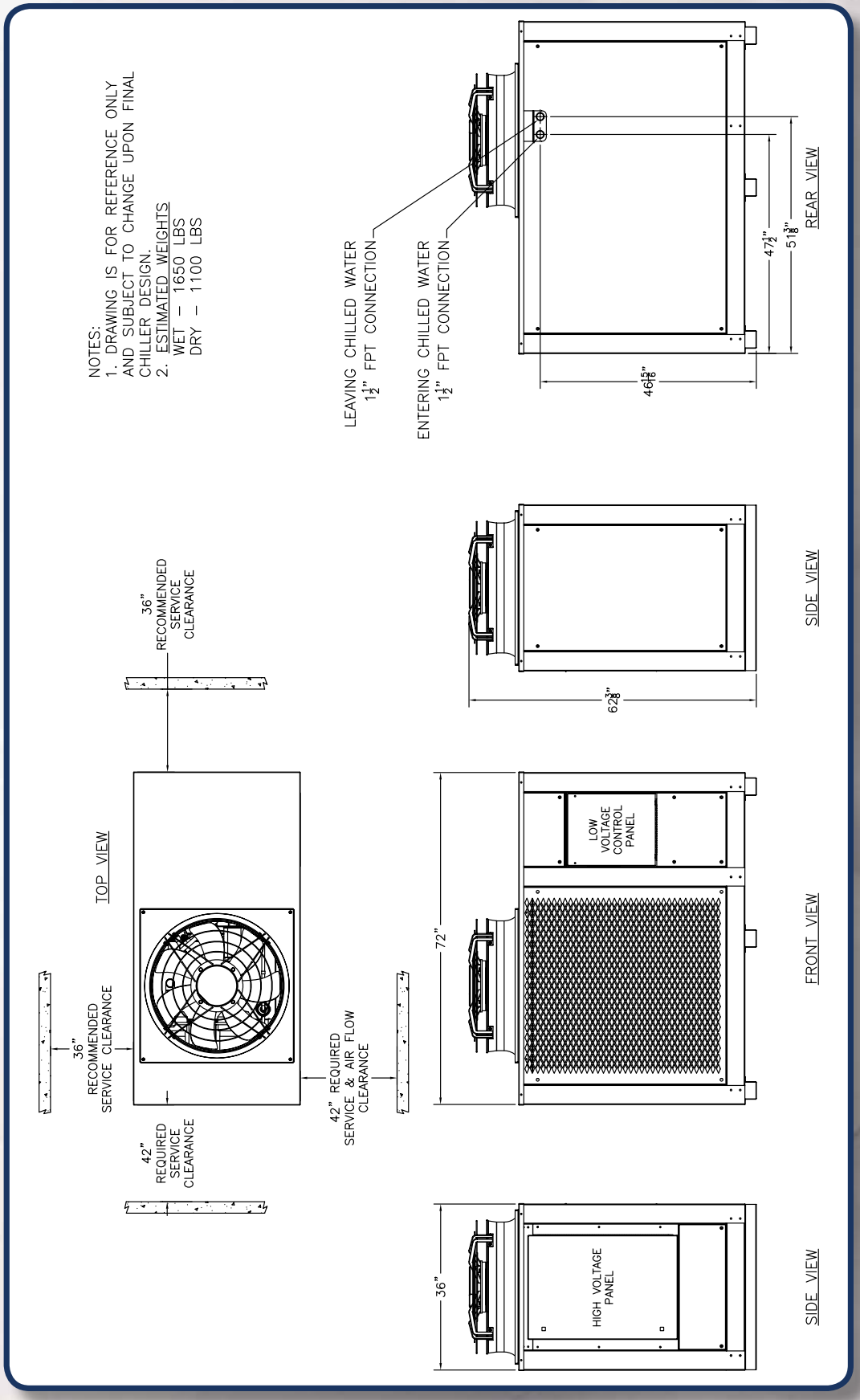
NOTES:

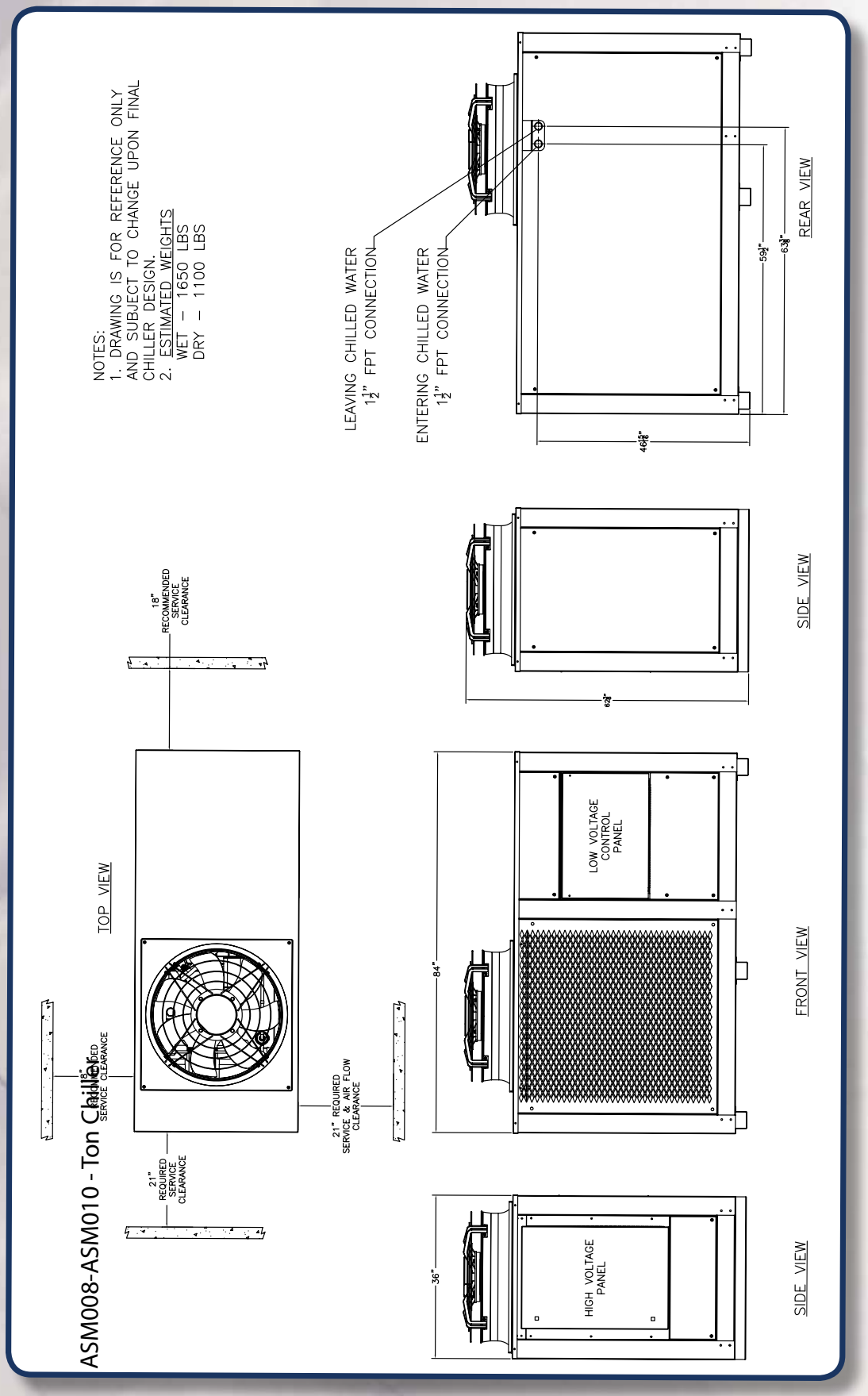
1. Compressor Rated Load Amps (RLA) are based on 125°F Saturated Condensing Temperature.
2. *RLA1 = RLA of the largest motor in the system. RLA2 & RLA3 = RLA of other motors in the system.
3. Wire sizing is based on Nat. Electr. Code (NEC)rating for 75°C wire, with 3 wires per conduit.
4. Wiring distance from branch circuit shall not exceed 100 feet.

MCA	WIRE SIZE (AWG) 75° (3 Conductors/1Conduit)
50	8
65	6
85	4
100	3
115	2
130	1
150	1/0
175	2/0
200	3/0
230	4/0
255	250 MCM
285	300 MCM
310	350 MCM
335	400 MCM
380	500 MCM
420	600 MCM

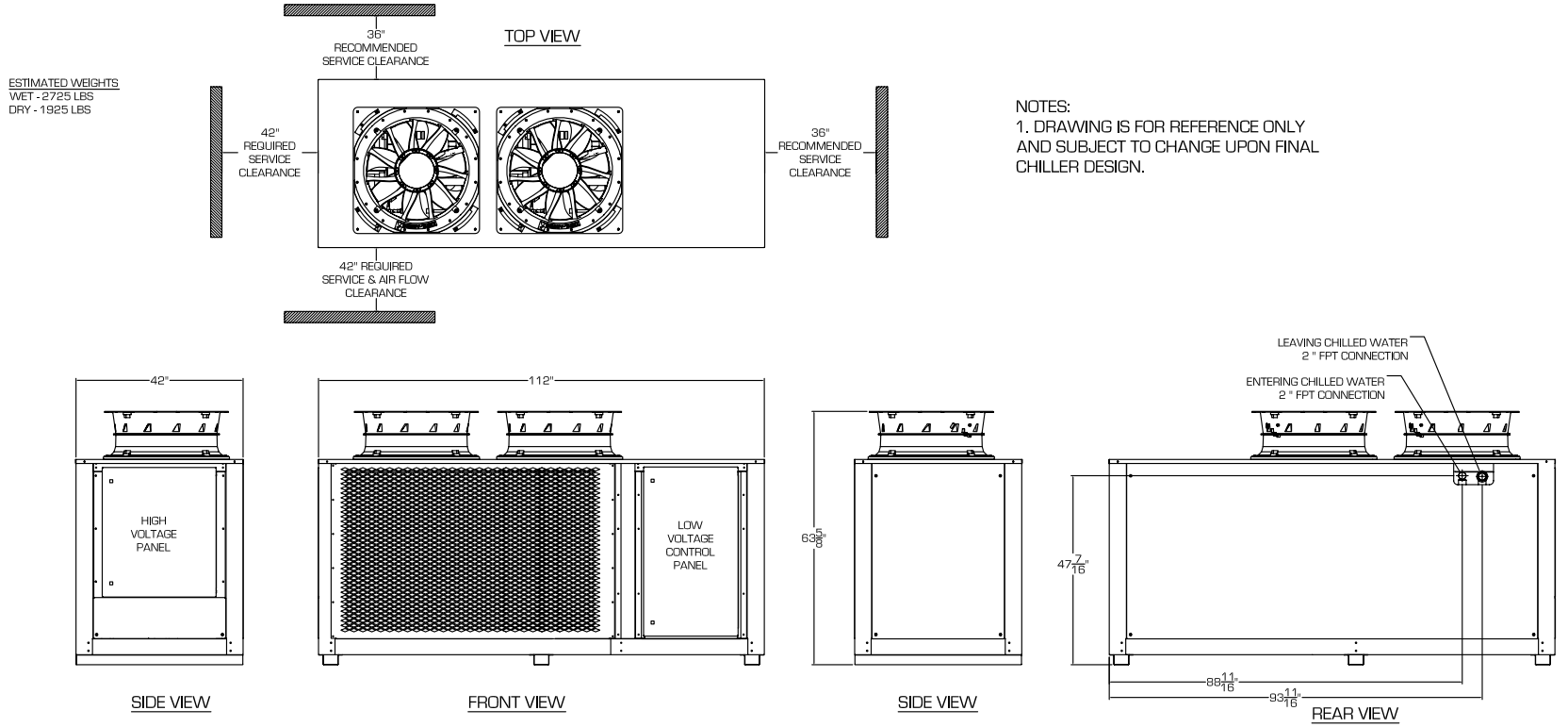
MCA	WIRE SIZE (AWG) 75° (6 Conductors/2Conduit)
510	250 MCM
570	300 MCM
620	350 MCM
670	400 MCM
760	500 MCM
800	600 MCM

ASM003-ASM0055 - Ton Chiller

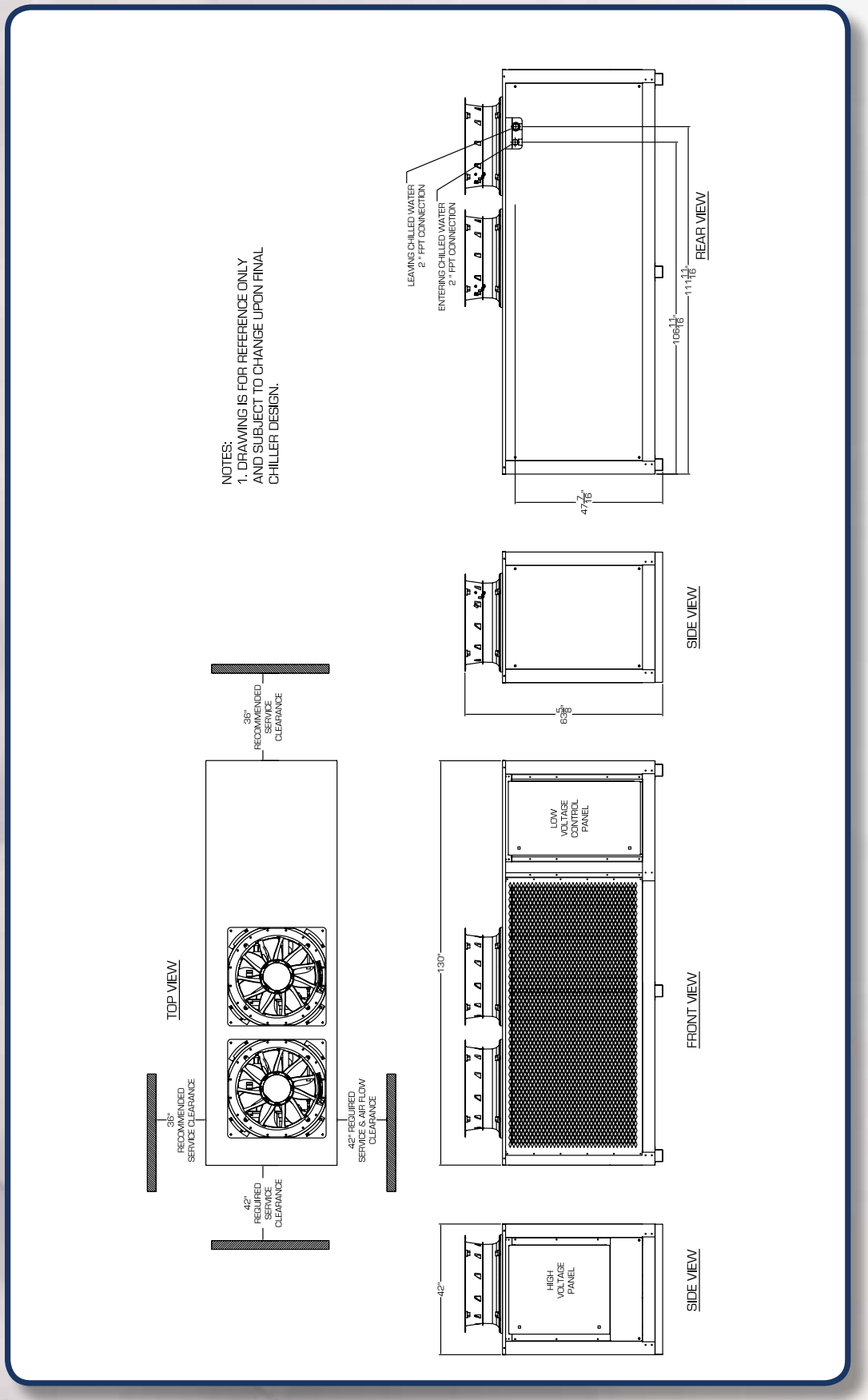



ASM008-ASM010 - Ton Chiller
NOTES:
1. DRAWING IS FOR REFERENCE ONLY AND SUBJECT TO CHANGE UPON FINAL CHILLER DESIGN.
2. ESTIMATED WEIGHTS
WET – 1650 LBS
DRY – 1100 LBS
LEAVING CHILLED WATER
1½" FPT CONNECTION
ENTERING CHILLED WATER
1½" FPT CONNECTION
REAR VIEW
SIDE VIEW
FRONT VIEW
SIDE VIEW
TOP VIEW
LOW VOLTAGE CONTROL PANEL
HIGH VOLTAGE PANEL
18" RECOMMENDED SERVICE CLEARANCE
21" REQUIRED SERVICE CLEARANCE
21" REQUIRED SERVICE & AIR FLOW CLEARANCE
18" RECOMMENDED SERVICE CLEARANCE
84"
36"

ASM015-ASM020 - Ton Chiller



ASM030 - Ton Chiller



AIR-COOLED PACKAGED CHILLER GUIDE SPECIFICATION(ASM)
SECTION 15400
MECHANICAL CHILLER

PART 2 PRODUCTS

2.01 Operating Conditions

A. Provide outdoor packaged air-cooled liquid chiller with the capacity as scheduled on drawings at job site elevation listed in Section 15050.
B. Chiller shall be designed to operate using R-410a Refrigerant.
C. The liquid to be chilled will be water containing corrosion inhibitors and antifreeze solution as required.
D. Chiller shall be designed to operate using _____volt, 3 phase, _____ Hz electrical power supply.

2.02 Outdoor Packaged Air-Cooled Chiller

A. Approved manufacturer is AIRSTACK or approved equal.

Note: There will be no deviation to system design or material choices. All manufacturers must comply with design criteria. Substitutions are not acceptable. In the event that submitted equipment is deemed non compliant the contractor shall provide at no additional expense to the owner/client equipment that is compliant with specification.

B. System Description: Chiller shall incorporate a Scroll type Compressor(s) and consist of a single independent refrigerant circuit. Each refrigerant circuit shall consist of an individual compressor(s), evaporator, electronic expansion valve, liquid line solenoid valve, filter drier, fin and tube condenser, and control system. The entire system shall be mounted on a heavy steel base.

C. General
1. Chiller Modules shall be ETL listed in accordance with UL Standard 1995, CSA certified per Standard C22.2#236.
2. System shall ship wired and charged with refrigerant and shall be factory run tested prior to shipment.
3. Compressor, heat exchanger, piping and controls shall be mounted on a heavy gauge steel frame. Electrical controls, contactors, and relays for each system shall be mounted within the system cabinet.

D. Evaporator: Each evaporator shall be a brazed plate heat exchangers constructed of 316 stainless steel; designed, tested, and stamped in accordance with ASME code for 400 psig water-side working pressure. Evaporator heat exchanger shall not be mounted above the compressor, to prevent the effect of migration of refrigerant to the cold evaporator with consequent liquid slugging on start-up.
E. Compressor: Each chiller shall contain one (two) hermetic scroll compressors mounted to the chiller with rubber-in-shear isolators. Each system also includes high discharge pressure and low suction pressure safety cut-outs.
F. Condenser: Each chiller shall contain a single fan. Blades are aluminum construction owlet design 7-blade axial fan with integral EC motor (direct drives with external VFD driven motors are not acceptable). Efficiency exceeds criteria set out in the ErP 2015 directive. Individual fans are factory tested. Encapsulation required. Encapsulation is a process of filling a complete electronic assembly with a solid compound for resistance to shock and vibration, and for exclusion of moisture and corrosive agents. Fan motors shall all be pressure controlled and suitable for outdoor use. Condenser coils shall be finned tube design. Coil shall be constructed using copper tubes and aluminum fins with integral subcooling.
G. Central Control System.
1. Chiller shall have microprocessor based controls. System shall include entering chilled water control and provide head pressure control for the condenser fan.
2. Safeties shall include low leaving chilled water temperature safety for freeze protection.

H. Refrigerant circuit shall include all refrigerant specialties to provide reliable operation down to 40°F Ambient.

OPTIONAL: LOW AMBIENT TO -20°F
Chiller shall incorporate appropriate refrigerant specialties including a properly sized refrigerant receiver and flooded head pressure control valves for operation to -20°F.

I. Chiller shall be provided with a single point power connection.

J. PUMP Provide integral chilled water Pump of size and capacity indicated on the drawings and schedules. Pump shall be a single centrifugal pump. Pump impeller shall be stainless steel. Pump housing shall be constructed of stainless steel. Pump starters and controls shall be provided. In addition, in the event of a loss-of-flow failure of the chilled water system, the system shall shut down and provide a failure output.

OPTIONAL: DUAL PUMPS Dual pumps shall be provided for N+1 redundancy. In the event of a pump failure the back-up pump shall automatically be enabled..

K. TANK An integral 20 (40, 60, 100, 120) -gallon stainless steel chilled water tank shall be provided integral to the system piping. Tank shall be pressure rated at 125 psi minimum.

2.03 SAFETIES, CONTROLS AND OPERATION

A. The chiller safety controls shall be provided (minimum) as follows:
1. Low evaporator refrigerant pressure
2. Loss of water flow through the evaporator
3. High condenser refrigerant pressure
4. High compressor motor temperature
5. Low suction gas temperature
6. Low leaving evaporator water temperature

B. Failure of chiller to start or chiller shutdown due to any of the above safety cutouts shall enable a fault output from the integral controls system.

C. The chiller shall be furnished with a Master Controller as an integral portion of the chiller control circuitry to provide the following functions:
1. Provide automatic chiller shutdown during periods when the load level decreases below the normal operating requirements of the chiller. Upon an increase in load, the chiller shall automatically restart.
2. Provisions for connection to automatically enable the chiller from a remote energy management system.

D. Normal Chiller Operation
1. When chiller is enabled, the factory supplied Master Controller modulates the chiller capacity from minimum to maximum as required by building load.
2. The Chiller control system shall respond to Entering Water Temperature and will have an integral reset based on entering water temperature to provide for efficient operation at part-load conditions.

PART 3 INSTALLATION

3.01 PIPING SYSTEM FLUSHING PROCEDURE

A. Prior to connecting the chiller to the building chilled water loop, the piping shall be flushed with a detergent and hot water (110-130° F) mixture to remove previously accumulated dirt and other organic residue. In old piping systems with heavy encrustation of inorganic materials consult a water treatment specialist for proper passivation and/or removal of these contaminants.

B. During the flushing a 30 mesh (max.) Y-strainers (or acceptable equivalent) shall be in place in the system piping and examined periodically as necessary to remove collected residue. The use of on board chiller strainers shall not be acceptable. The flushing process shall take no less than 6 hours or until the strainers, when examined after each flushing, are clean. Old systems with heavy encrustation shall be flushed for a minimum of 24 hours and may take as long as 48 hours before the filters run clean. Detergent and acid concentrations shall be used in strict accordance with the respective chemical manufacturers instructions. After flushing with the detergent and/or dilute acid concentrations the system loop shall be purged with clean water for at least one hour to ensure that all residual cleaning chemicals have been flushed out.

C. Prior to supplying water to the chiller the Water Treatment Specification shall be consulted for requirements regarding the water quality during chiller operation. The appropriate chiller manufacturer's service literature shall be available to the operator and/or service contractor and consulted for guidelines concerning preventative maintenance and off-season shutdown procedures.

3.02 Water Treatment Requirements

A. Supply water for the chilled water circuit shall be analyzed and treated by a professional water treatment specialist who is familiar with the operating conditions and materials of construction specified for the chiller's heat exchangers, headers and associated piping. Cycles of concentration shall be controlled such that recirculated water quality for modular chillers using 316 stainless steel brazed plate heat exchangers and carbon steel headers is maintained within the following parameters:

1.	pH	Greater than 7 and less than 9
2.	Total Dissolved Solids (TDS)	Less than 1000 ppm
3.	Hardness as CaCO3	30 to 500 ppm
4.	Alkalinity as Ca CO3	30 to 500 ppm
5.	Chlorides	Less than 200 ppm
6.	Sulfates	Less than 200 ppm

3.03 Warranty and Start-Up

A. Manufacturer's Warranty: Manufacturer shall provide full parts-only warranty coverage for entire chiller for a period of one year. All parts shall be wa ranted against defects in material and workmanship. Similar parts-only coverage shall be provided for the chillers compressors for a period of five years. The warranty period shall commence either on the equipment start-up date or six months after shipment, whichever is earlier.

B. Manufacturer shall provide the services of a Factory Authorized Service Engineer to provide complete start-up supervision. Factory Authorized Service Engineer shall also be responsible for assembly of the chillers cabinetry package and electrical bus bar system. After start-up a Manufacturer's Repre-senttive shall provide a minimum of 8-hours of operator training to the owner's designated representative(s).

MULTISTACK®

1065 Maple Avenue P.O. Box 510 Sparta, WI 54656

Phone 608-366-2400 • Fax 608-366-2450

www.multistack.com