CLIMATEWORX INTERNATIONAL

MISSION CRITICAL Air Conditioning Systems

Series 9, Vertical Floor-Mount Units

Installation Manual

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Site Preparation

In order to maximize operation efficiency and performance, the following areas should be observed in the site planning stage:

- A vapor seal to eliminate moisture migration through the building structure should surround the room. Windows should be sealed and at least double-glazed to prevent sweating. All doors jams should fit tightly and should not have any grilles in them. Polyethylene film type ceiling, vinyl wallpaper or plastic base paint on the walls and slab are recommended to minimize absorption and transmission of moisture into the room.

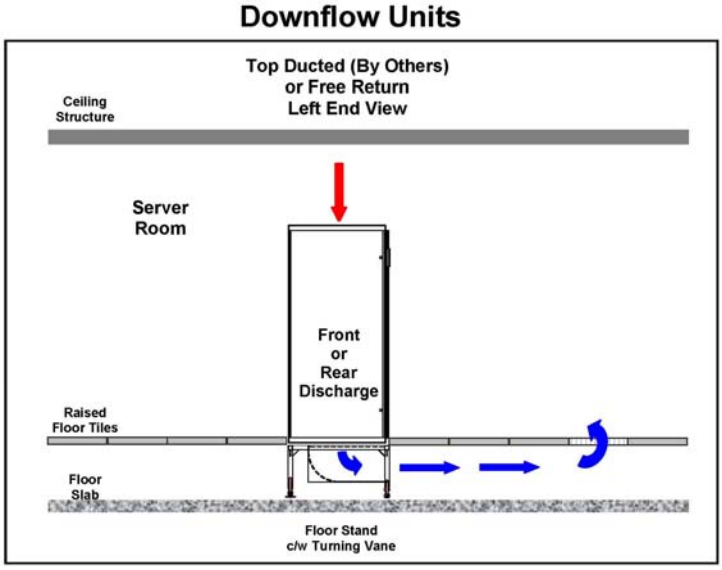
- Owing to the general nature of small population, a typical room should have outdoor fresh air kept at only about 5% of the recirculated air. This provides enough ventilation for personnel and pressurizes the room to prevent dust from entering through leaks. The incoming fresh air must be filtered very closely, and preferably pretreated. Otherwise heating, cooling, humidifying and dehumidifying loads of the incoming fresh air should be taken into account in determining total loading requirements.

- All cables and piping should be carefully routed to lower resistance to the distribution of conditioned air and to avoid the blockage of air-path to any portion of the room. As a good practice, all cables and piping running under the raised floor should be mounted horizontally and whenever possible, routed to run in parallel with the air-path.

- In order to obtain the most effective air distribution, units should not be located too close together. Attention should be taken to avoid locating the units in an alcove or an extreme end of a long narrow room.

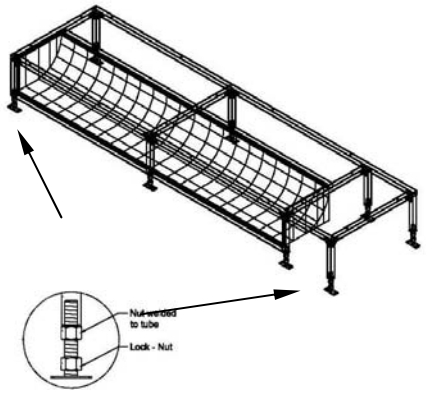
Location Consideration

Positioning of Indoor units



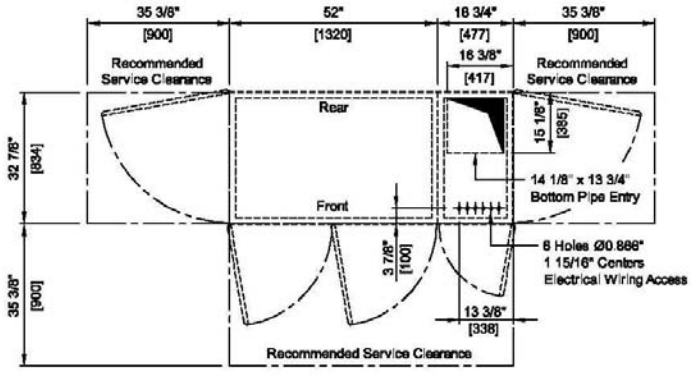
Typical Downflow Series 9 on Raised Floor System

The Series 9 units are designed to be free standing on an accessible raised flooring system provided with sufficient pedestal supports underneath. A minimum raised floor height of 300 mm (12”) is required. However, **it is highly recommended to use a separate floorstand as a support,** which is independent of the raised flooring system. This allows the unit to be installed prior to erecting the raised flooring system thus providing much easier access to piping and electrical connections. The floor stand or unit should be isolated using a suitable isolation method.



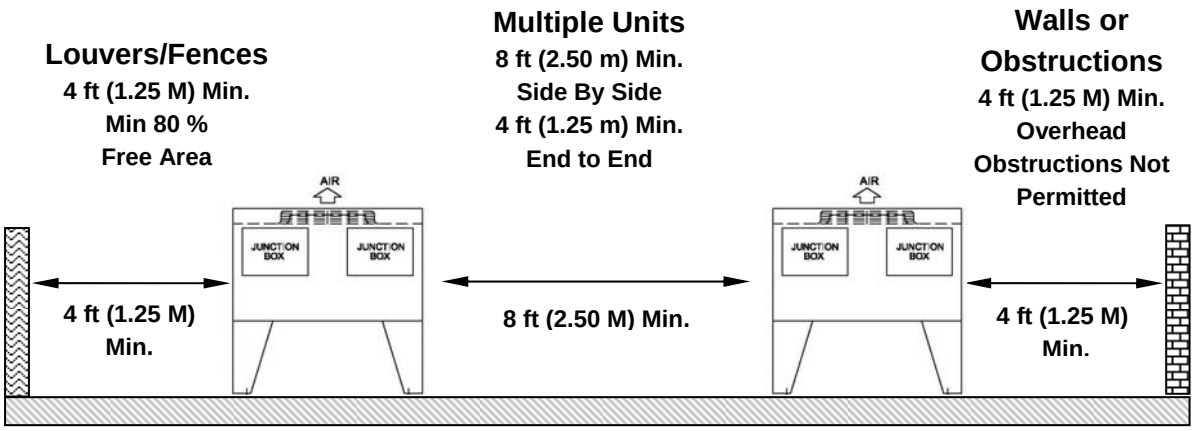
ClimateWorx OEM floor stands use a two-nut system for the floor stand feet. Use both nuts, the top nut for leveling and the bottom nut to lock the leveling nut in place.

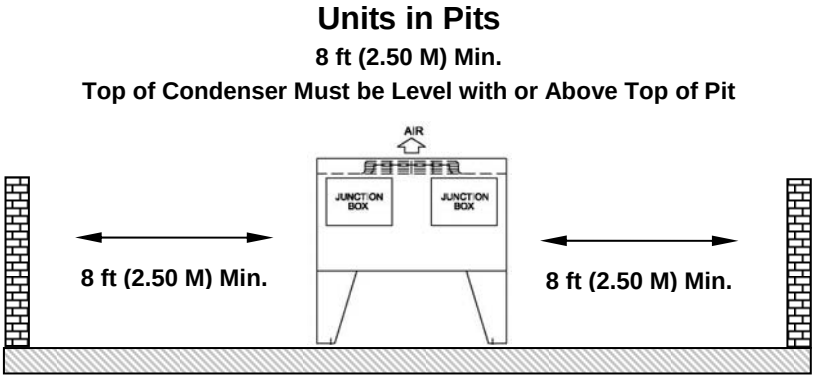
The room layout should provide **898 mm (35 3/8”) service clearance** in the front and the two sides of the unit for routine service and maintenance.



Positioning of Outdoor Heat Rejection Devices

The outdoor heat rejection devices such as air-cooled condensers and glycol coolers should be located as close to the indoor unit as possible. From a security and environment standpoint, the outdoor heat rejection devices should be installed away from public access and occupied spaces where low ambient sound level is required.





In order to avoid short-circuiting and inter unit recirculation, outdoor heat rejection devices should be located as per above**.** To ensure maintenance-free operation, outdoor heat rejection devices should be located away from areas continuously exposed to loose dirt and foreign materials that may clog the coil.

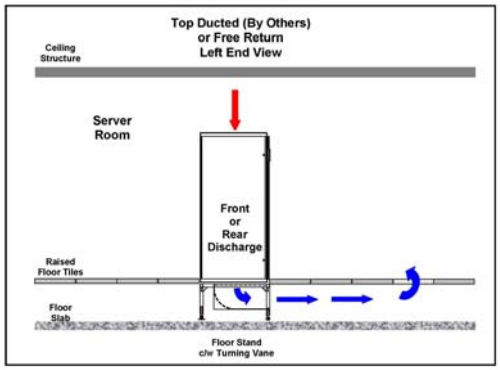
The outdoor heat rejection devices should be firmly secured on steel supports or concrete plinths.

Dimensional Details

The following tables summarized the dimensional details drawing no. for Series 9 units with standard options. Please refer to Appendix “A” for the dimensional details drawings.

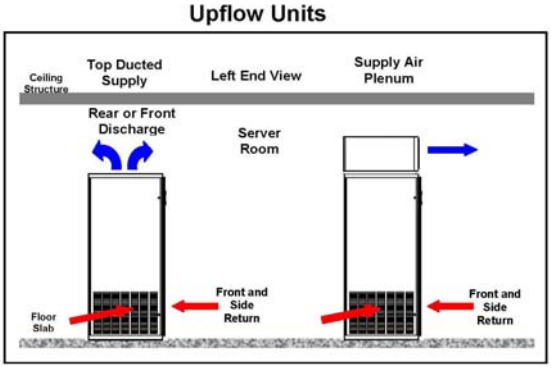
For units with special options or configuration, please consult factory for details.

Downflow Units

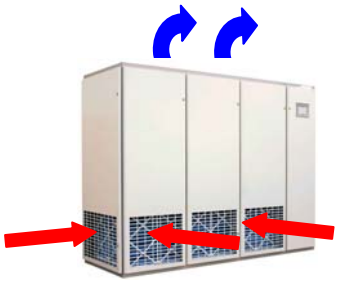


Model	-06/08/12	14 - 22	26-30
9AD	S9DD202A	S9DD302B	S9DD402B
9WD	S9DD202A	S9DD302B	S9DD402B
9GD	S9DD202A	S9DD302B	S9DD402B
9CD	S9DD202A	S9DD302B	S9DD402B
9FD	S9DD226A	S9DD326A	S9DD426A
9DD	S9DD226A	S9DD326A	S9DD426A
9HD	S9DD226A	S9DD326A	S9DD426A
9ED	S9DD226A	S9DD326A	S9DD426A

Upflow Units



Model	-06/08/12	14 - 22	26 – 30
9AU	S9DD201A	S9DD301B	S9DD401B
9WU	S9DD201A	S9DD301B	S9DD401B
9GU	S9DD201A	S9DD301B	S9DD401B
9CU	S9DD201A	S9DD301B	S9DD401B
9FU	S9DD225A	S9DD325A	S9DD425B
9DU	S9DD225A	S9DD325A	S9DD425B
9HU	S9DD225A	S9DD325A	S9DD425B
9EU	S9DD225A	S9DD325A	S9DD425B



Electrical Installation

Power Feeding

Typical Electrical Power Panel

All models are fitted with a **3-pole mains isolator**, neutral and earth terminal, which are located at the lower left corner of the electrical power panel (see Illustration to the left and below) .

The isolator and terminals will accept cables up to #2 AWG (35 mm²). The power cables should be sized in accordance with local and national codes. Refer to the "Electrical Data" section in the Technical Data Manual for current requirements.

Interconnecting Wiring

All Series 9 internal wiring are completed and tested prior to delivery. A **numbered terminal block** for field installed control wiring is provided at the upper area of the electrical power panel (see above).

The numbered terminal block will accept control wiring up to #12 AWG (4 mm²). The terminal assignment is listed as follows:

Terminal	Function	Requirement
11-12	**Standby enable**	**25VA max. normally open triac output**
13-14	**Common alarm**	**25VA max. normally open dry contact output (NAonly) or triac**
15-16	**Remote on / off**	**Normally open dry contact input**
17-18	**Standby start**	**Normally open dry contact input**
19-20	**Fire alarm**	**Normally closed dry contact input**
21-22	**Chilled water valve**	**0-10Vdc control signal**
23 thru 28	**Condenser interlock**	**10A max. normally open dry contact output**
29 - 30	**Fault 1**	**Normally closed dry contact input**
31-32	**Chiller ready**	**Normally open dry contact input**
33-34	**Compressor disable**	**Normally open dry contact input**
35-36	**Humidity Setback**	**Normally open dry contact input**

Refrigerant Pipework Installation

Good practices should always be followed when connecting refrigerant piping in 9A and 9D systems.

As many of the operational problems encountered in a refrigeration system can be traced back to improper design and installation of refrigerant piping, it is essential that the following guidelines be observed:

1. Use clean and dehydrated refrigeration quality tubing purchased with both ends sealed.

2. Cut and form tubes carefully to avoid getting dirt or metal particles into the refrigeration lines. Never use a hacksaw to cut the tubing.

3. Once opening the system, complete the work as quickly as possible to minimize ingress of moisture and dirt into the system. Always put caps on ends of tubes and parts not being worked on.

4. To prevent scaling and oxidation inside the tubing, pass an inert gas such as nitrogen through the line while carrying out brazing, silver soldering or any other welding processes.

5. It is recommended that refrigeration quality solder (95% tin, 5% silver) be used for its excellent capillary action.

6. Use minimum amount of solder flux to prevent internal contamination of the piping. Use flux with care as it is usually acidic in nature.

7. Install a trap at the bottom of the vertical riser of a hot gas line and a trap for every 6m (20ft.) in elevation to collect refrigerant and lubrication oil during off cycle.

8. Insulate liquid lines probably subjected to high heat gains. Insulate low level discharge lines to avoid burning due to accidental contact.

9. Design and arrange refrigerant piping for remote condenser in a way so that adequate velocity of refrigerant can be maintained to prevent oil trapping. Recommended pipe sizes are tabulated as follows:

Recommended Pipe Size for Remote Condenser

Hot Gas Line

Model - 9AD / 9AU	-06	-08	-12	-14	-16	-18	-20	-22	-26	-30
50 ft. equivalent pipe length	7/8	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
100 ft. equivalent pipe length	7/8	7/8	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8
150 ft. equivalent pipe length	7/8	7/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
200 ft. equivalent pipe length	7/8	1 1/8	1 1/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8

Liquid Line

Model - 9AD / 9AU	-06	-08	-12	-14	-16	-18	-20	-22	-26	-30
50 ft. equivalent pipe length	1/2	1/2	1/2	5/8	5/8	5/8	7/8	7/8	7/8	7/8
100 ft. equivalent pipe length	1/2	5/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
150 ft. equivalent pipe length	1/2	5/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
200 ft. equivalent pipe length	1/2	5/8	5/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8

Evacuation

The procedure for leakage testing and evacuation of the system is as follows:

1. Disconnect all line voltage fuses except the fuses for control transformers. Using the test mode, energize fan and all solenoid valves. (See M52 User's Guide) Open liquid line hand valve.

2. Connect a gauge manifold to the compressor suction and discharge rotalock valve.

3. Close the compressor discharge and suction ports and open all service valves.

4. Charge the system with dry nitrogen to approximately 150 psig.

5. Leave pressure in system for at least 12 hours. If pressure holds, continue with next step. If the pressure drops detect and seal leak before continuing.

6. Release all pressure.

7. Connect a vacuum pump to the compressor suction and discharge rotalock valves with refrigerant or high vacuum hoses. Provide an isolating valve and a pressure gauge for pressure checking.

8. Evacuate the system to an absolute pressure not exceeding 1500 microns. Break the vacuum to 2psig with dry nitrogen. Repeat the evacuation process and then re-break the vacuum with dry nitrogen.

9. Open the compressor discharge and suction ports. Evacuate to an absolute pressure not exceeding 500 microns. Let the vacuum pump run without interruption for minimum two hours.

10. Stop the vacuum pump. Break the vacuum and weigh in the system charge with vapor R22 /R407C, (see nameplate for operating gas) through the discharge side of the compressor.

11. Allow the pressure to equalize.

Fan Speed Control System

The fan speed control system maintains not only a constant condensing pressure over a wide range of climatic conditions, but also high sensible cooling for the evaporator so that re-humidification is rarely required throughout the year.

A pressure-sensitive fan speed controller is employed in the fan speed control system. It regulates the condenser head pressure at low ambient temperatures by varying the airflow volume through the condenser.

Upon engaging the interlock contact in the indoor unit, the fan speed controller will directly sense the changes in the refrigerant head pressure and vary the output voltage from 15% to 97% of the applied voltage.

Charging

Proper performance of the system depends greatly on proper charging. Adhere to the following guidelines for charging:

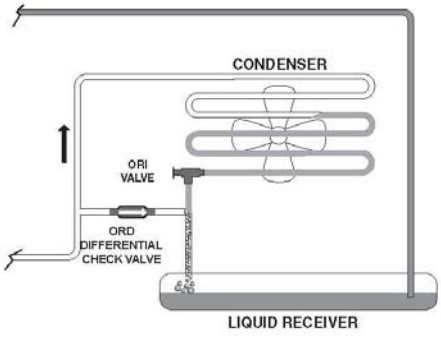
1. Open the main isolator and insert the fuses for the fans, control transformers and one of the compressors.
2. Close the main isolator and allow the compressor crankcase heater to operate for at least one hour .
3. Connect the gauge manifold to both discharge and suction rotalock valves, with the common connection to the refrigerant drum. Purge the lines and open the refrigerant drum vapor valve.
4. Start the compressor using the test mode to energize the main fan and compressor.
5. Open the suction connection on the gauge manifold. Modulate the rate of charging with the gauge manifold valve. Watch the discharge pressure closely during the charging operation to ensure that the system is not overcharged. It is good practice to weigh the amount of gas being added.
6. Charge the system until the sight glass is just clear of bubbles.
7. Compare the temperature of the liquid line leaving the condenser with the saturation temperature equivalent to the condensing pressure. Continue charging until the liquid line temperature is approximately 5°F below the condensing temperature.

Head Pressure Control System

For condensers possibly subjected to extremely low ambient temperatures, head pressure control is recommended to be installed. This will

1. Avoid starving the evaporator coil with the consequence of oil logging
2. Short cycling on low pressure control
3. Reduction of the system capacity and
4. Erratic expansion valve operation.

A drop in the condensing pressure often occurs in air-cooled systems as a result of low ambient conditions encountered during fall-winter-spring operation. Head pressure control renders part of the condenser surface inactive. The reduction of active condensing surface results in a rise in condensing pressure and hence provides a sufficient liquid line pressure for normal system operation. The head pressure control system allows operation at extremely low ambient temperatures down to -40°F.



ORI / ORD CONDENSER PRESSURE CONTROL

Canatal uses a two-valve head pressure control, (for each circuit, each with a heated receiver) on factory ordered condensers. The ORI is located in the liquid drain line between the condenser and the receiver and the ORD is located in a hot gas line bypassing the condenser (See Illustration Above).

During periods of low ambient temperature, the condensing pressure falls until it approaches the setting of the ORI valve. The ORI then throttles, restricting the flow of liquid from the condenser. This causes refrigerant to back up in the condenser thus reducing the active condenser surface. This raises the condensing pressure. Since it is really the receiver pressure that needs to be maintained, the bypass line with the ORD is required.

The ORD opens after the ORI has offered enough restriction to cause the differential between condensing pressure and receiver pressure to exceed 20 psi. The hot gas flowing through the ORD serves to heat up the cold liquid being passed by the ORI. Thus the liquid reaches the receiver warm and with sufficient pressure to assure proper expansion valve operation. As long as sufficient refrigerant charge is in the system, the two valves modulate the flow automatically to maintain proper receiver pressure regardless of outside ambient.

Charging

When head pressure control is utilized, there must be enough refrigerant to flood the condenser at the lowest expected ambient and still have enough charge in the system for proper operation. After completing the evacuation procedures as in the fan speed control system, follow the following guidelines for charging:

1. Open the main isolator and insert the fuses for the fans, control transformers and one of the compressors.
2. Close the main power and allow the compressor crankcase heater to operate for at least one hour.
3. Connect the gauge manifold to both discharge and suction rotalock valves, with the common connection to the refrigerant drum. Purge the lines and open the refrigerant drum vapor valve.
4. Start the compressor using the test mode to energize the main fan and compressor.
5. Open the suction connection on the gauge manifold. Modulate the rate of charging with the gauge manifold valve. Watch the discharge pressure closely during the charging operation to ensure that the system is not overcharged. It is good practice to weigh the amount of gas added.
6. Charge the system until the sight glass is just clear of bubbles. The system is now correctly charged for operating under head pressure control at the ambient temperature charging is being carried out.
7. If the system is designed to operate at ambient below the ambient that exists during charging, additional charge will have to be added now.

Method to Determine Additional Refrigerant Charge to Operate to an Expected Minimum Ambient Temperature

Ambient Temp (°F)	% of Condenser to be Flooded
70	0
65	0
60	10
55	24
50	33
45	41
40	46
35	52
30	55
25	59
20	62
10	66
0	70
-10	73
-20	76
-30	77
-40	79

Example for KS11-078-1 Ambient Temp at Time of Charging = 60°F
to Operate to -30°F

Step 1. At the ambient temperature at the time of charging the system (e.g 60°F)
Read from the table – % of Condenser to be Flooded (e.g - 10 %)

Step 2. At the expected minimum ambient Temperature (e.g - - 30 °F)
Read from the table - % of the Condenser to be Flooded (e.g - 77 %)

Step 3. Calculate the difference of the above two values
(77 % - 10 % = 67 %)

Step 4. From the " Air Cooled Condenser Guide" read Winter Flooded (-40°F)
Refrigerant Charge (6.4 lbs)

Step 5. Multiply the value found in Step 4 by the difference in %'s calculated in Step 3.

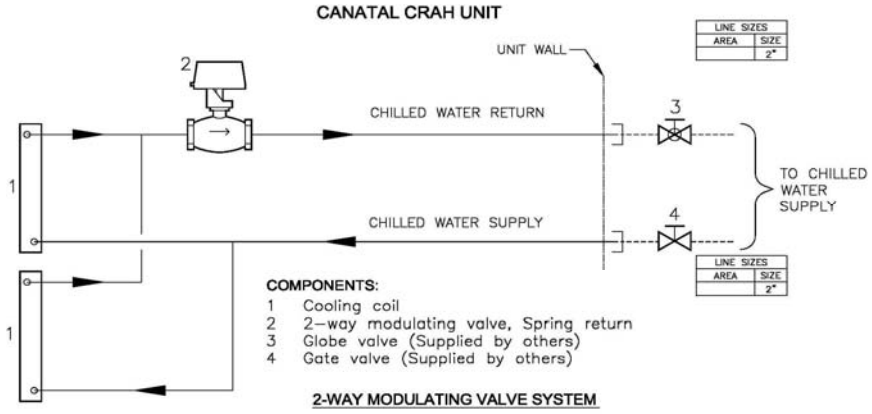
Additional Required Charge = 6.4 lb * (67 %) = 4.30 lb / Condenser
(If Two (2) Circuit Condenser 2.15 lb / Ref Circuit)

11. Fill in the additional required charge to the receiver.
12. Switch off the main power. Remove the fuse for the compressor and insert the one for the second compressor.
13. Repeat steps 2 through 11 for the second refrigeration circuit if applicable (i.e Two (2) Circuit Condensers).

Water / Glycol / Chilled-water Pipework Installation

The Water / Glycol / Chilled-water pipework in 9W, 9G, 9F, 9D, 9H and 9E systems should be installed in accordance with the following recommendations:

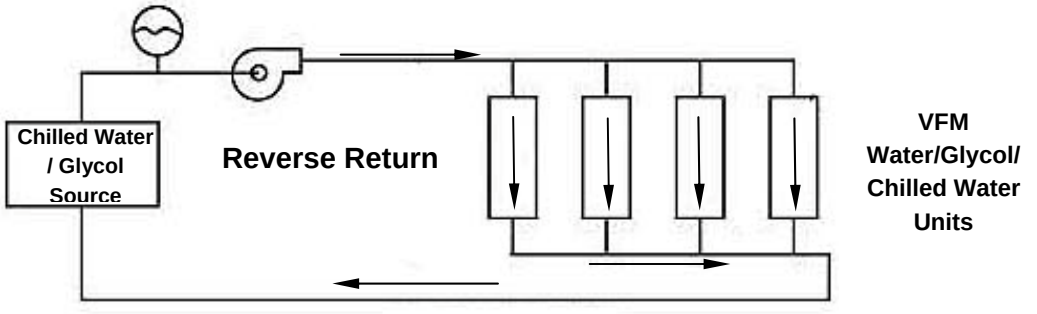
1. **A manual shut-off valve should be installed at the supply and return pipes of each indoor unit for routine service and emergency isolation of the unit.**



2. **Joints installed inside the room must be kept to a minimum. The system drain discharge point should be installed outside the room.**

3. **Piping inside the building should be insulated to eliminate the possibility of condensation under low ambient conditions.**

4. **Always use the reverse return system when two or more indoor units are served by the same source.**



5. **For condensing water supplied from a cooling tower which is located in a poor environment or when water quality is poor, adequate filtration and an inhibitor should be added at a correct quantity to prevent the formation of scale and corrosion.**

6. **Only ethylene glycol containing a corrosion inhibitor should be used. Automotive anti-freeze is unacceptable and must not be used in the Glycol system.**

7. **Concentration of glycol required depends on the minimum ambient temperature. The following glycol concentration is recommended:**

% of Ethylene Glycol by Weight	**10**	**20**	**30**	**40**	**50**
Minimum Operating Temp °C (°F)	**0 (32)**	**- 5 (23)**	**-11.6 (11)**	**- 20 (-4)**	**- 32.2 (-26)**

Piping Connection Sizes

Model no. Suffix		06	08	12	14	16	18	20	22	26	30
Liquid Refrigerant	-ODM	1/2	1/2	1/2	5/8	5/8	5/8	5/8	5/8	7/8	7/8
Hot Gaseous Refrigerant	-ODM	7/8	7/8	7/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-3/8	1-3/8
Hot Water	-ODM	3/4	1	1	1	1	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Steam	-MPT	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8	7/8
Steam Condensate	-ODM	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM	1-1/8	1-1/8	1-5/8	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM	1-1/8	1-1/8	1-3/8	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8	2-1/8	2-1/8
Glycol Solution	-ODM	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8

Glycol Water Make-up and Charging

The following outlines the procedure for the initial charge and subsequent make-up of glycol water for the 9G, 9F and 9E systems:

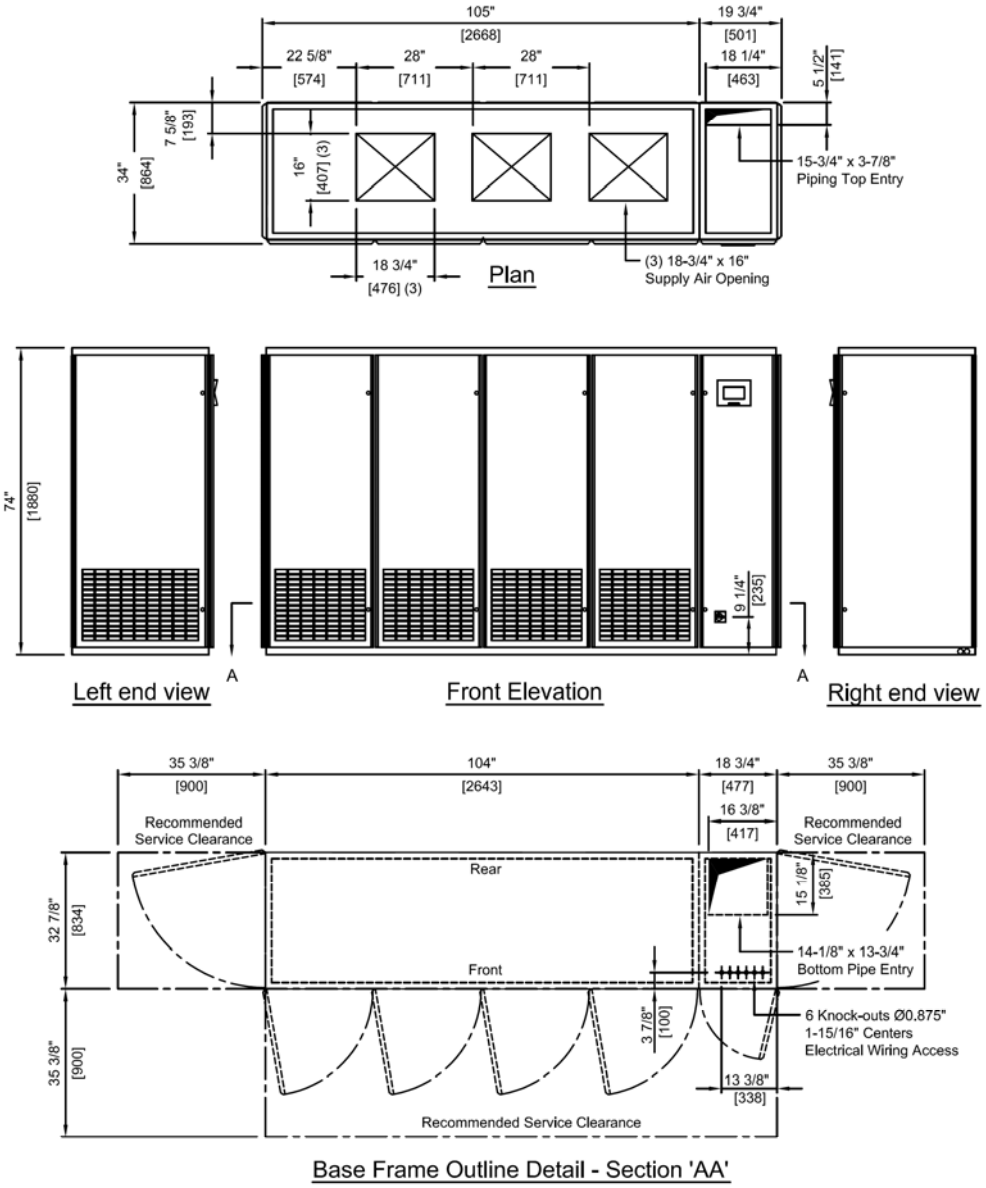
1. Pressurize the system with water and observe any leakage or pressure drop in the system.
2. After making sure that the system is leak free, drain out the water and if the volume of the system is unknown, measure the volume of water used.
3. If the filling or subsequent making-up volume of water is considerable, provide a meter to measure the water volume so that correct amount of glycol required can be calculated.
4. Calculate the volume of glycol required.
5. Open all the manual bleed valves.
6. With a pump, charge glycol and water through the lowest point of the system. Following the fluid flow, shut off the various manual bleed valves once the fluid reaches them.
7. After completing the filling, start the system pump and intermittently open the manual bleed valves to release the entrapped air.
8. Close all the manual bleed valves and the system is ready to operate.

Appendix A: Dimensional Drawings

Drawing Title	Drawing No.	Page No.
SERIES 9 - Upflow System (26-30 Ton) Standard Cooling Module	S9DD401	16
SERIES 9 - Upflow System (14-22 Ton) Standard Cooling Module	S9DD301	17
SERIES 9 - Upflow System (6-12 Ton) Standard Cooling Module	S9DD201	18
SERIES 9 - Downflow System (26-30 Ton) Standard Cooling Module	S9DD402	19
SERIES 9 - Downflow System (14-22 Ton) Standard Cooling Module	S9DD302	20
SERIES 9 - Downflow System (6-12 Ton) Standard Cooling Module	S9DD202	21
SERIES 9 - Upflow System (26-30 Ton) Standard Cooling Module (Rear Duct Connection	S9DD403	22
SERIES 9 - Upflow System (14-22 Ton) Standard Cooling Module (Rear Duct Connection)	S9DD303	23
SERIES 9 -Upflow System (6-12 Ton) Standard Cooling Module (Rear Duct Connection)	S9DD203	24
SERIES 9 - Upflow System (30 Ton) Dual Cooling Module	S9DD425	25
SERIES 9 - Upflow System (14-22 Ton) Dual Cooling Module	S9DD325	26
SERIES 9 - Upflow System (6-12 Ton) Dual Cooling Module	S9DD225	27
SERIES 9 - Downflow System (30 Ton) Dual Cooling Module	S9DD426	28
SERIES 9 - Downflow System (14-22 Ton) Dual Cooling Module	S9DD326	29
SERIES 9 - Downflow System (6-12 Ton) Dual Cooling Module	S9DD226	30
SERIES 9 - Upflow System (30 Ton) Dual Cooling Module (Rear Duct Connection)	S9DD427	31
SERIES 9 - Upflow System (14-22 Ton) Dual Cooling Module (Rear Duct Connection)	S9DD327	32
SERIES 9 -Upflow System (6-12 Ton) Standard/Dual Cooling Module (Rear Duct Connection)	S9DD227	33

CLIMATEWORX INTERNATIONAL

SERIES 9-VERTICAL FLOOR MOUNT UPFLOW UNIT
STANDARD COOLING (4+1) "A" MODULE UNIT



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

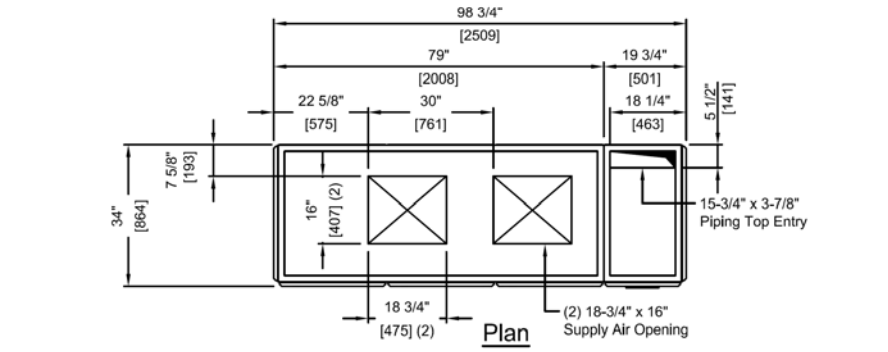
MODEL NO. SUFFIX		**26	**30	26	30
Liquid Refrigerant	-ODM in	7/8	7/8	7/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8	1-3/8	1-3/8
Hot Water / Steam	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8
Steam Condensate	-ODM in	7/8	7/8	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	-	-	2-1/8	2-1/8
Condensing Water	-ODM in	-	-	2-1/8	2-1/8
Glycol Solution	-ODM in	-	-	2-1/8	2-1/8

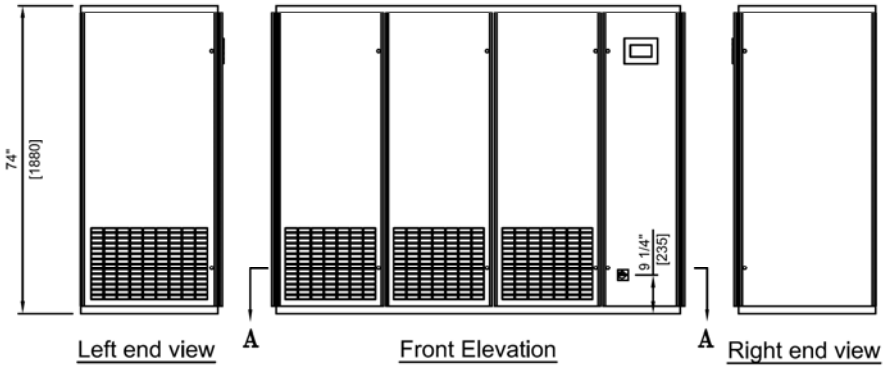
ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread ** - Air Cooled Only

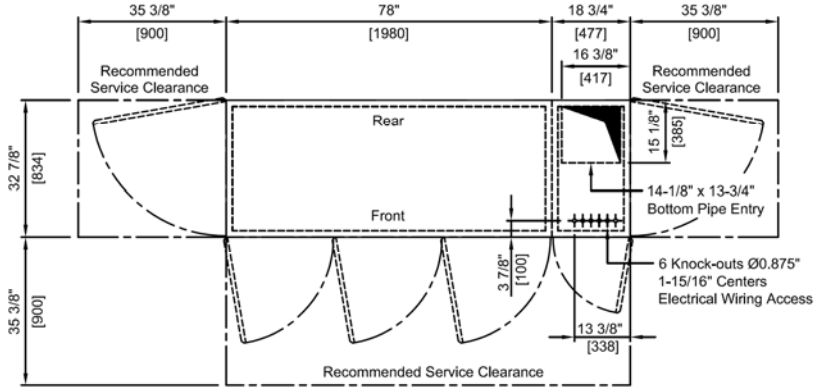
S9DD401D 19 APRIL 2007 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9-VERTICAL FLOOR MOUNT UPFLOW UNIT
STANDARD COOLING (3+1) "A" MODULE UNIT







Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

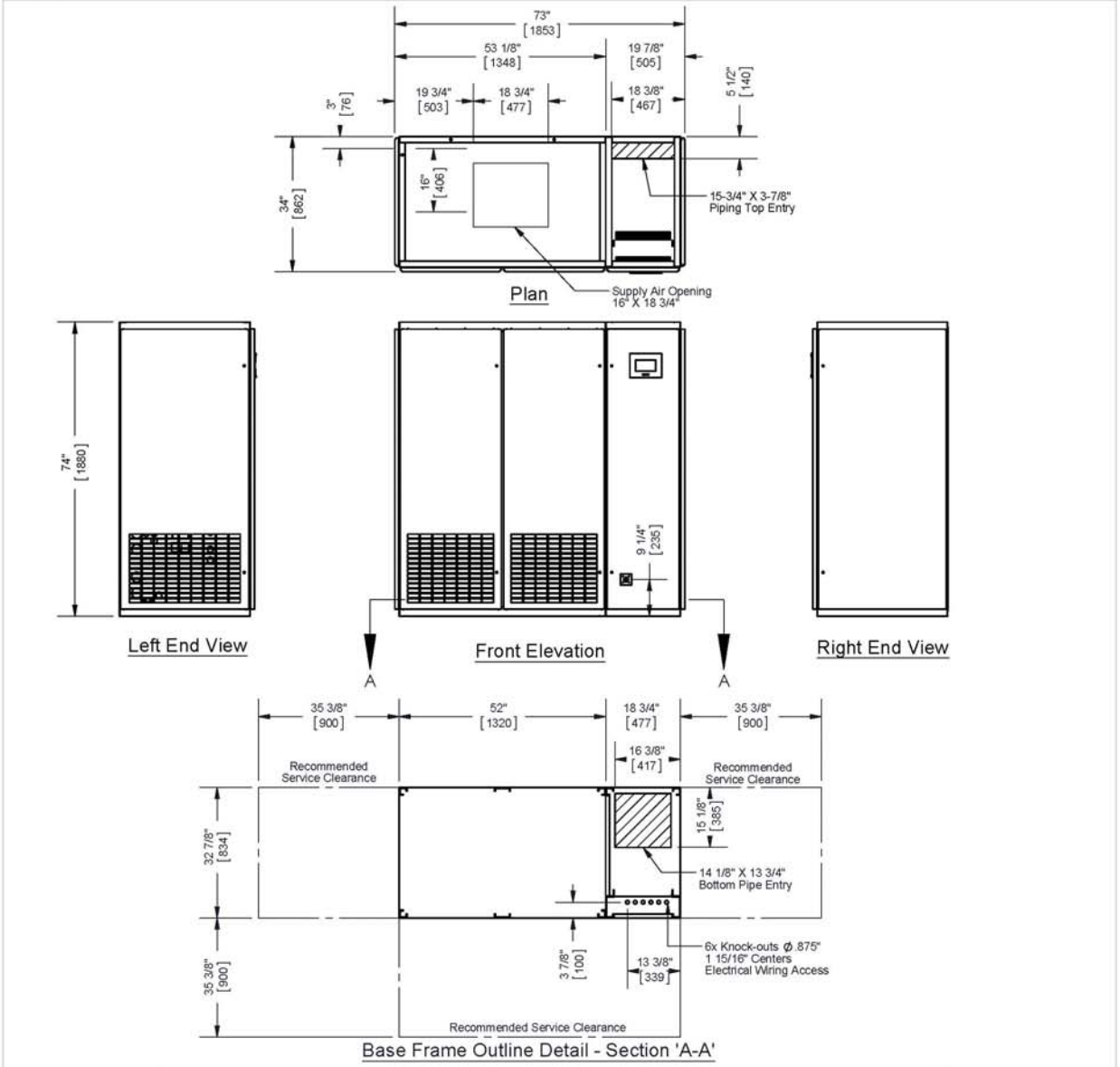
MODEL NO. SUFFIX		14	16	18	20	22	*25
Liquid Refrigerant	-ODM in	5/8	5/8	5/8	5/8	5/8	-
Hot Gaseous Refrigerant	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	-
Hot Water / Steam	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM in	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	-
Glycol Solution	-ODM in	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	-

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread * - Chilled Water Only

S9DD301D 19 APRIL 2007 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - VERTICAL FLOOR MOUNT UPFLOW UNIT
STANDARD COOLING (2+1) "A" MODULE UNIT



PIPING CONNECTION SIZE

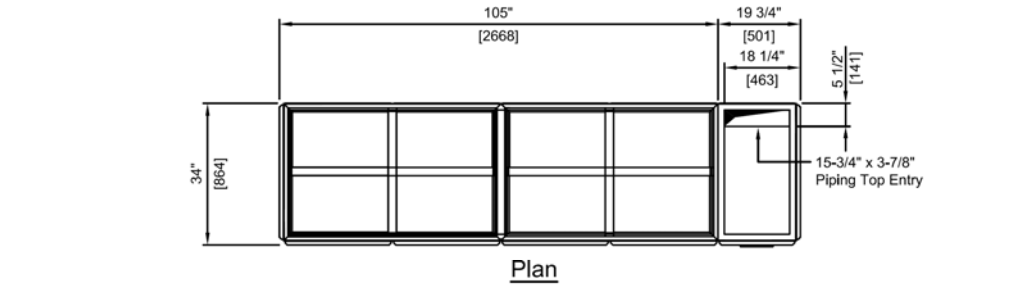
MODEL NO. SUFFIX		06	08	12
Liquid Refrigerant	-ODM in	1/2	1/2	1/2
Hot Gaseous Refrigerant	-ODM in	7/8	7/8	7/8
Hot Water	-ODM in	3/4	1	1
Steam	-MPT in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Chilled Water	-ODM in	1 1/8	1 1/8	1 5/8
Condensing Water	-ODM in	1 1/8	1 1/8	1 3/8
Glycol Solution	-ODM in	1 5/8	1 5/8	2 1/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

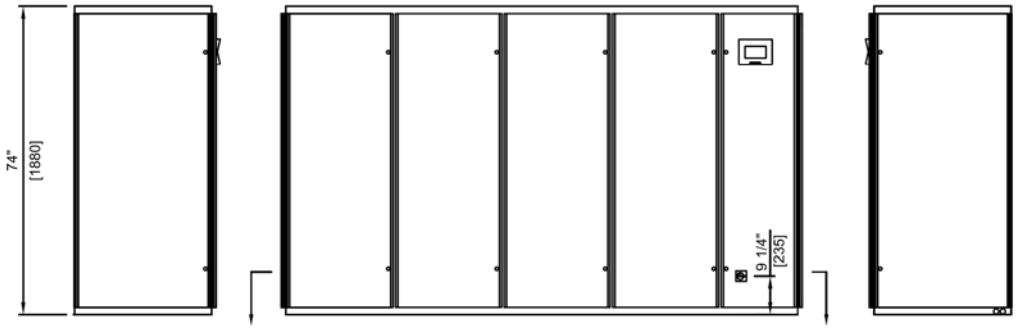
S9DD201C DATE 2014-01-28 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

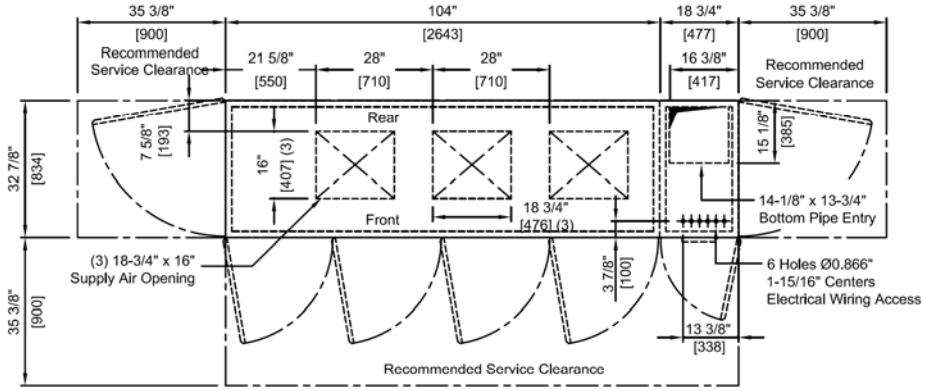
SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT
STANDARD COOLING (4+1) "A" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

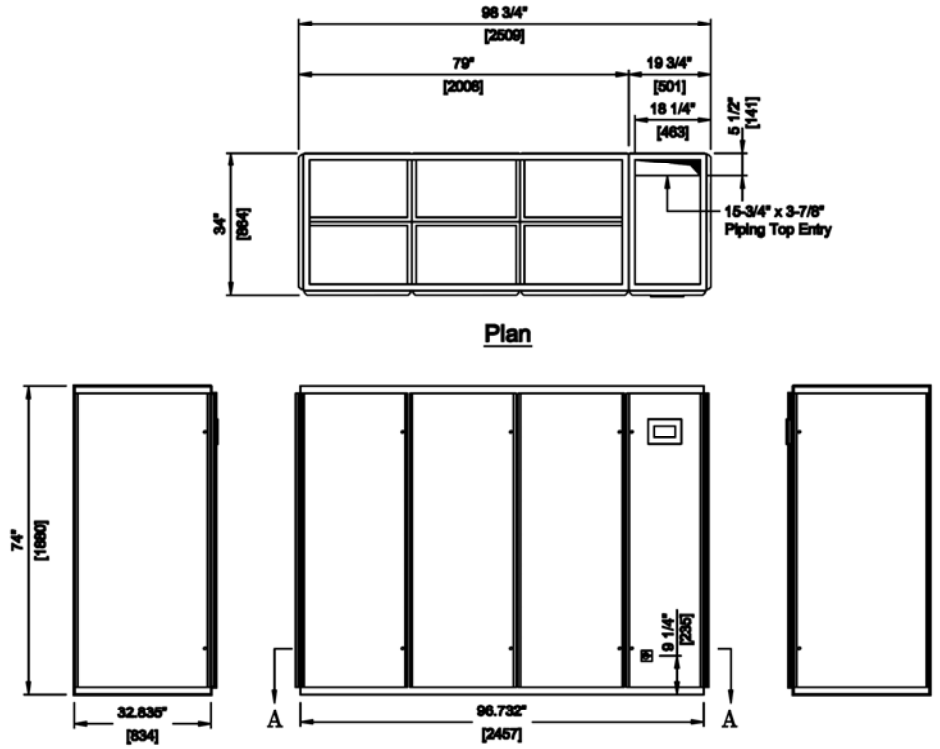
MODEL NO. SUFFIX		**26	**30	26	30
Liquid Refrigerant	-ODM in	7/8	7/8	7/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8	1-3/8	1-3/8
Hot Water	-ODM in	7/8	7/8	7/8	7/8
Steam	-MPT in	7/8	7/8	7/8	7/8
Steam Condensate	-ODM in	7/8	7/8	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	-	-	2-1/8	2-1/8
Condensing Water	-ODM in	-	-	2-1/8	2-1/8
Glycol Solution	-ODM in	-	-	2-1/8	2-1/8

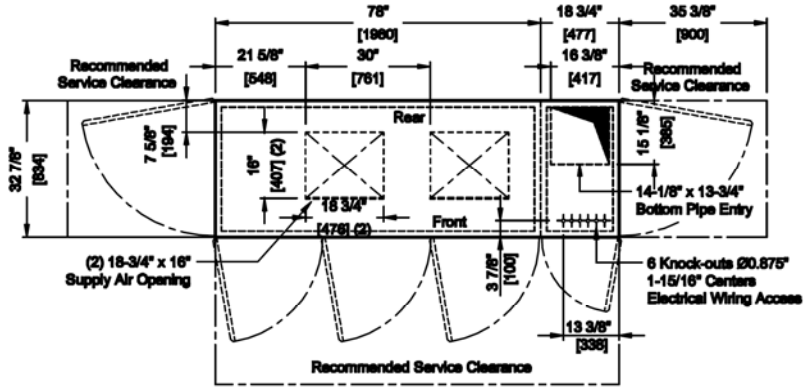
ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread ** - Air Cooled Only

S9DD402D 07 MARCH 2006 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT
STANDARD COOLING (3+1) "A" MODULE UNIT





Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

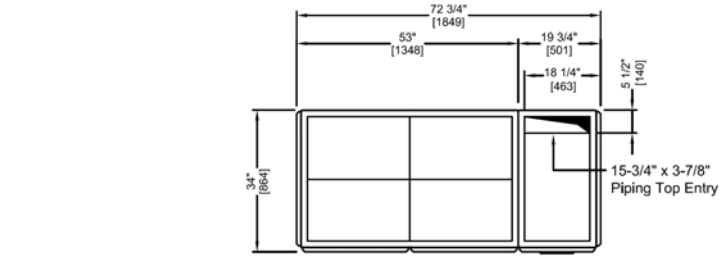
MODEL NO. SUFFIX		14	16	18	20	22	*25
Liquid Refrigerant	-ODM in	5/8	5/8	5/8	5/8	5/8	-
Hot Gaseous Refrigerant	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	-
Hot Water / Steam	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM in	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	-
Glycol Solution	-ODM in	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	-

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread * - Chilled Water Only

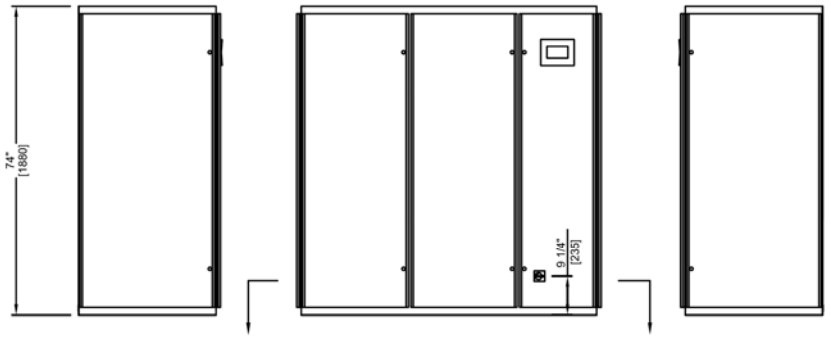
S9DD302E 24 AUGUST 2007 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

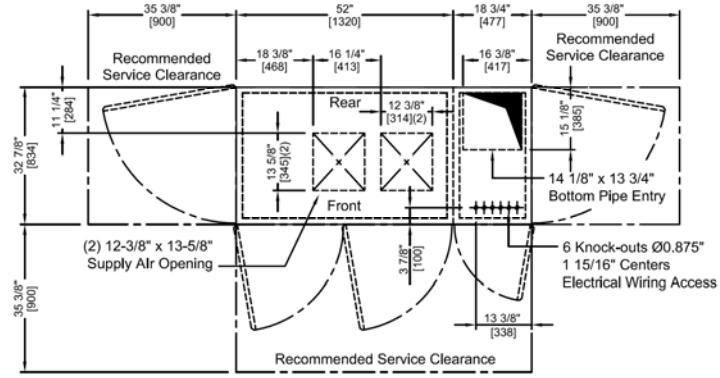
SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT
STANDARD COOLING (2+1) "A" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

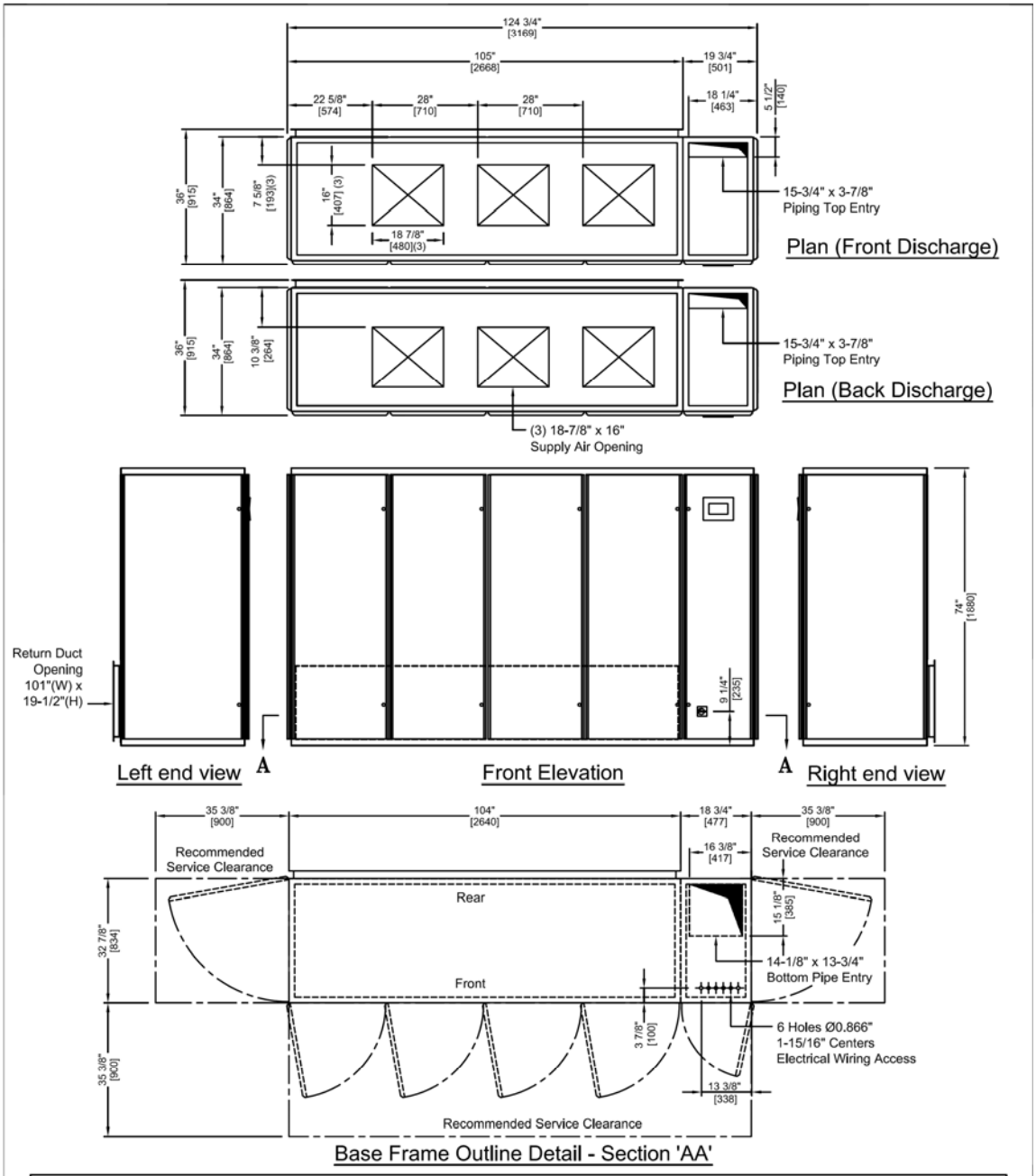
MODEL NO. SUFFIX		06	08	12
Liquid Refrigerant	-ODM in	1/2	1/2	1/2
Hot Gaseous Refrigerant	-ODM in	7/8	7/8	7/8
Hot Water	-ODM in	7/8	7/8	7/8
Steam	-MPT in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8
Condensing Water	-ODM in	1-1/8	1-1/8	1-3/8
Glycol Solution	-ODM in	1-1/8	1-1/8	1-3/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

S9DD202B 21 APRIL 2006 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9- VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN STD. COOLING (4+1) "A" MODULE UNIT



PIPING CONNECTION SIZE

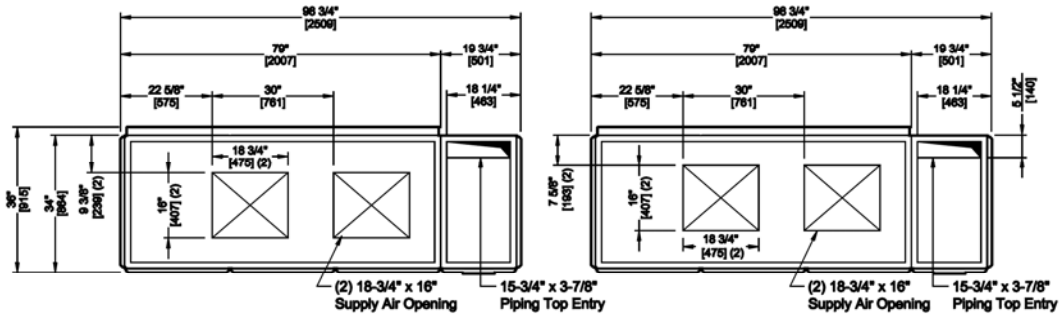
MODEL NO. SUFFIX		**26	**30	26	30
Liquid Refrigerant	-ODM in	7/8	7/8	7/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8	1-3/8	1-3/8
Hot Water	-ODM in	7/8	7/8	7/8	7/8
Steam	-MPT in	7/8	7/8	7/8	7/8
Steam Condensate	-ODM in	7/8	7/8	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	-	-	2-1/8	2-1/8
Condensing Water	-ODM in	-	-	2-1/8	2-1/8
Glycol Solution	-ODM in	-	-	2-1/8	2-1/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread ** - Air Cooled Only

S9DD403D 07 MARCH 2006 NOT TO SCALE

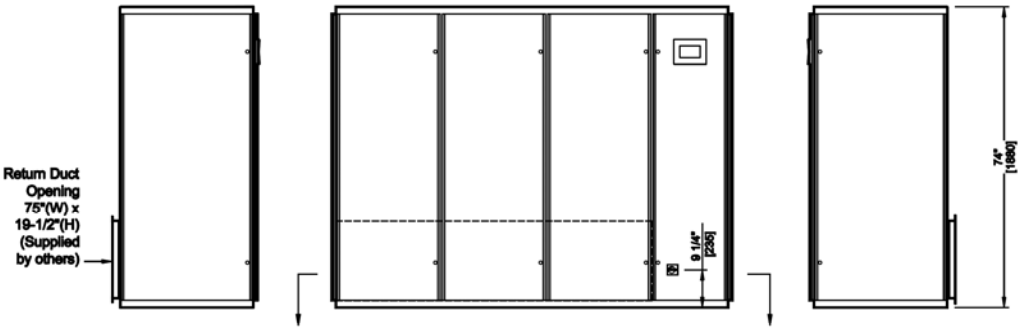
CLIMATEWORX INTERNATIONAL

SERIES 9- VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN STD. COOLING (3+1) "A" MODULE UNIT



Plan (Back Discharge)

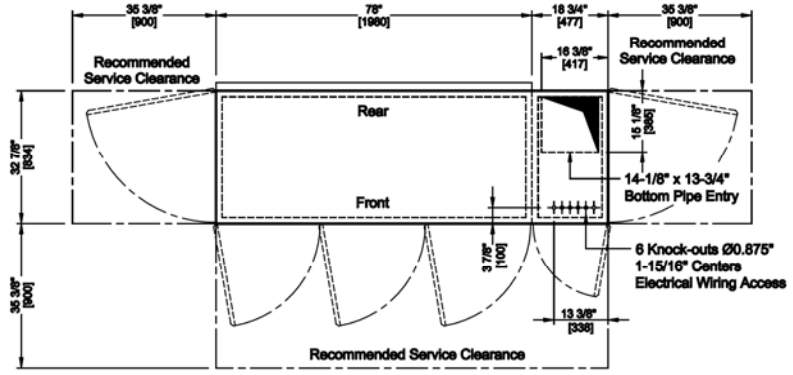
Plan (Front Discharge)



Left end view

Front Elevation

Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

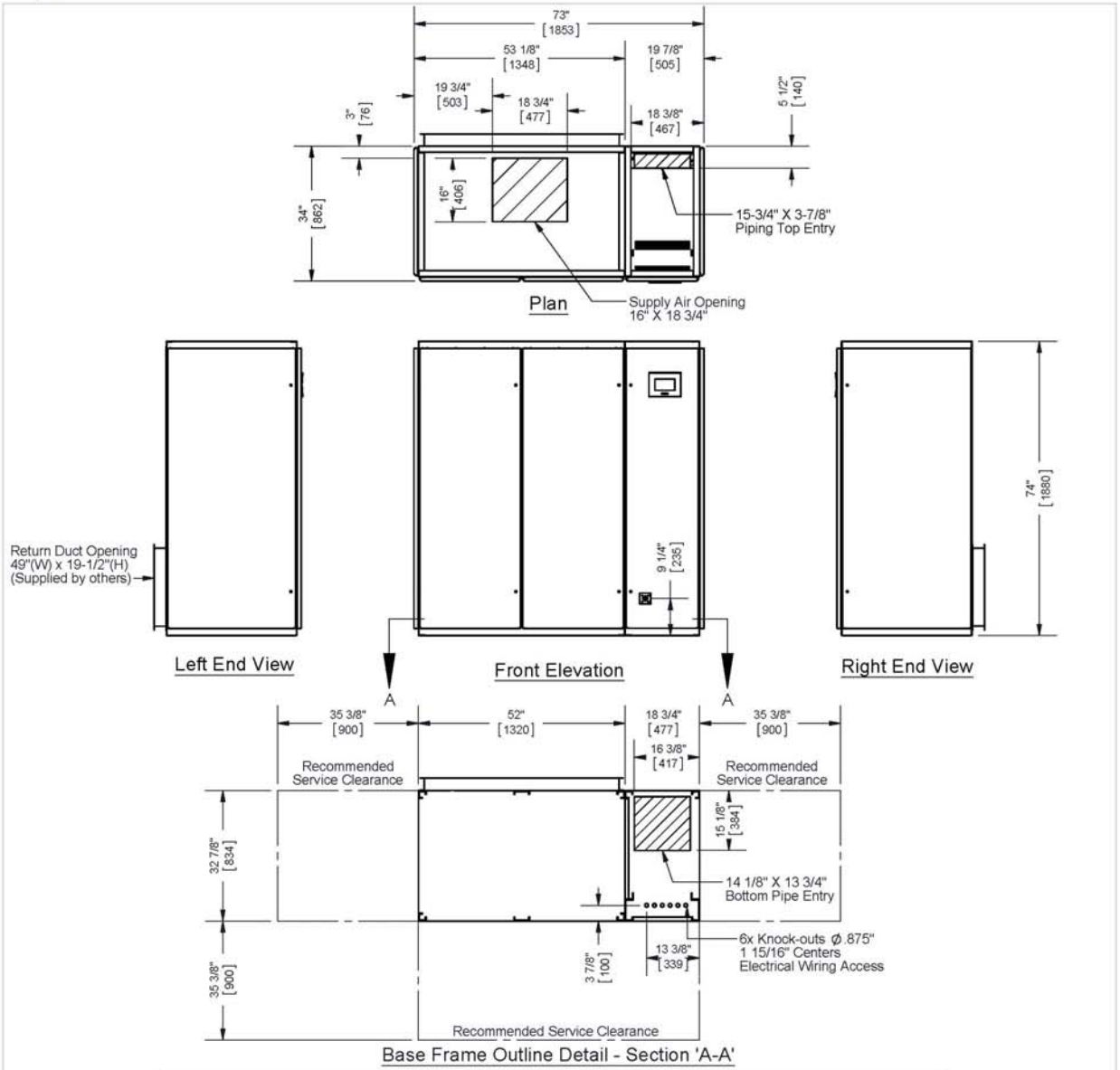
MODEL NO. SUFFIX		14	16	18	20	22	*25
Liquid Refrigerant	-ODM in	5/8	5/8	5/8	5/8	5/8	-
Hot Gaseous Refrigerant	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	-
Hot Water / Steam	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM in	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8	-
Glycol Solution	-ODM in	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8	-

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread * - Chilled Water Only

S9DD303D 19 APRIL 2007 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN STD. COOLING (2+1) "A" MODULE UNIT



PIPING CONNECTION SIZE

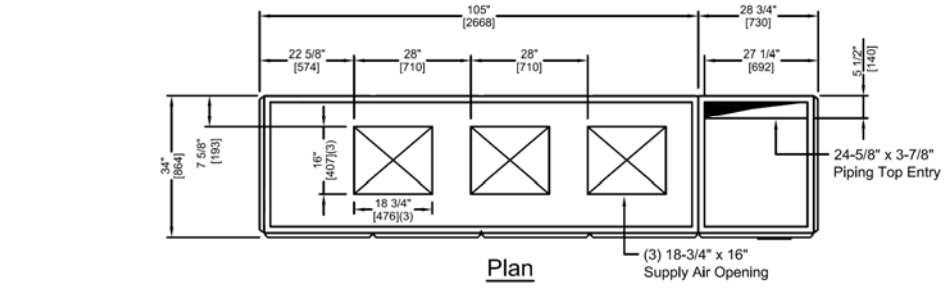
MODEL NO. SUFFIX		06	08	12
Liquid Refrigerant	-ODM in	1/2	1/2	1/2
Hot Gaseous Refrigerant	-ODM in	7/8	7/8	7/8
Hot Water	-ODM in	3/4	1	1
Steam	-MPT in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Chilled Water	-ODM in	1 1/8	1 1/8	1 5/8
Condensing Water	-ODM in	1 1/8	1 1/8	1 3/8
Glycol Solution	-ODM in	1 5/8	1 5/8	2 1/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

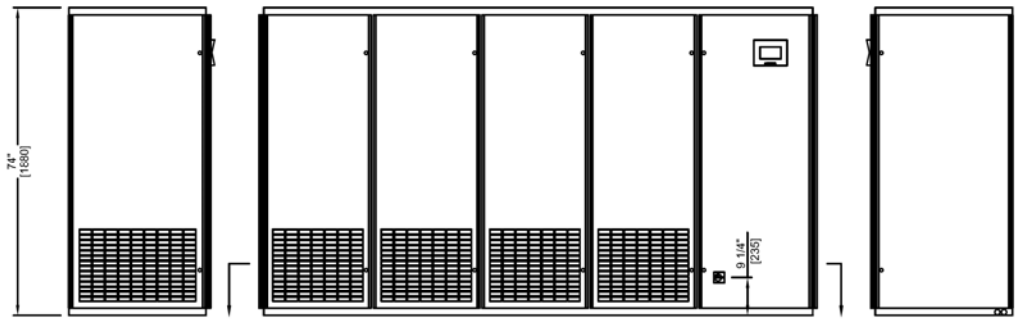
S9DD203C DATE 2014-01-28 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

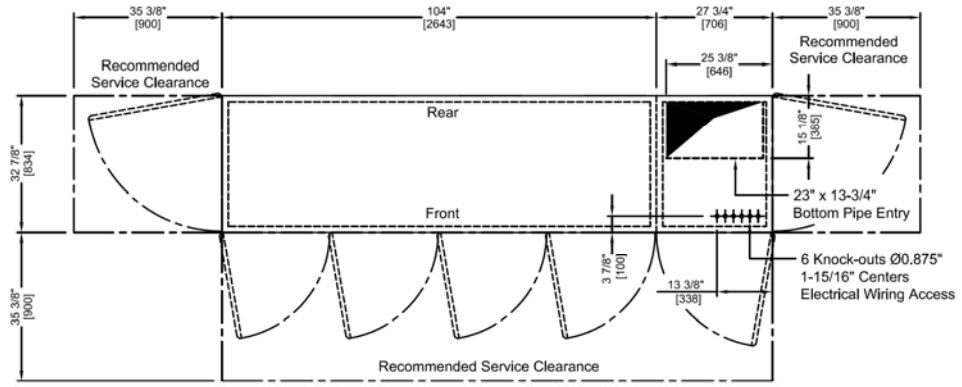
SERIES 9-VERTICAL FLOOR MOUNT UPFLOW UNIT DUAL AND FREE COOLING (4+1) "B" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

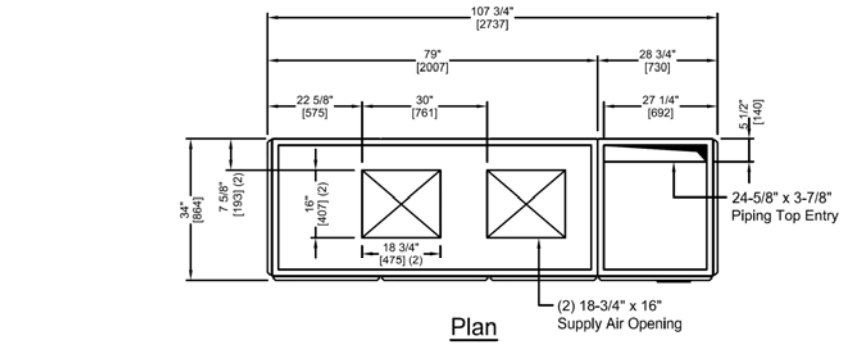
MODEL NO. SUFFIX		**30	30
Liquid Refrigerant	-ODM in	5/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8
Hot Water	-ODM in	7/8	7/8
Steam	-MPT in	7/8	7/8
Steam Condensate	-ODM in	7/8	3/4
Humidifier Water	-ODM in	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4
Chilled Water	-ODM in	-	2-1/8
Condensing Water	-ODM in	-	2-1/8
Glycol Solution	-ODM in	-	2-1/8

ODM - Outside Diameter of copper pipe in inches for solderingMPT - Male Pipe Thread ** - Air Cooled Only

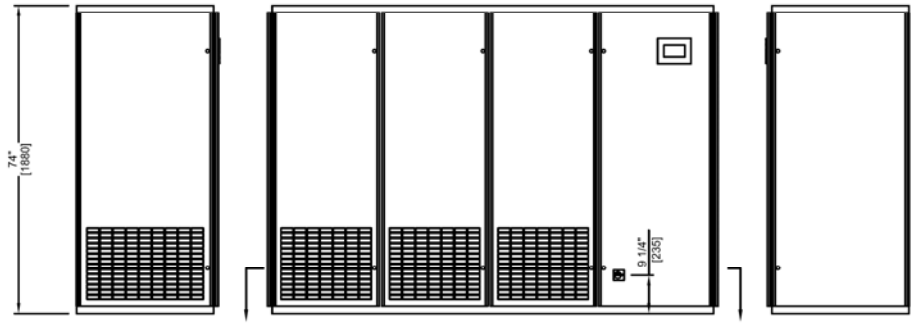
S9DD425G | 27 SEPTEMBER 2012 | NOT TO SCALE

CLIMATEWORX INTERNATIONAL

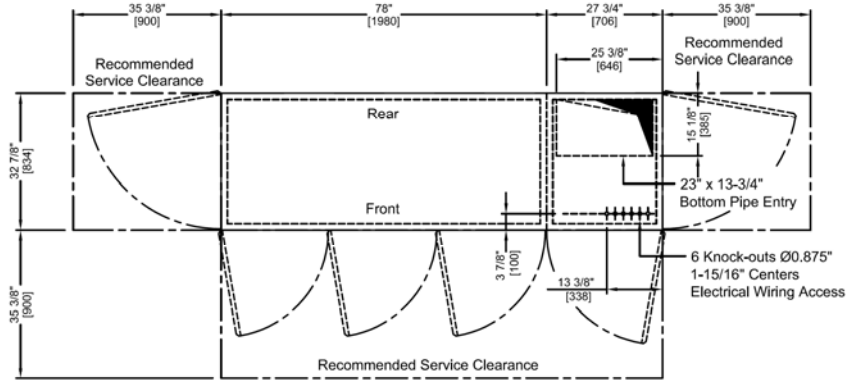
SERIES 9-VERTICAL FLOOR MOUNT UPFLOW UNIT DUAL AND FREE COOLING (3+1) "B" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

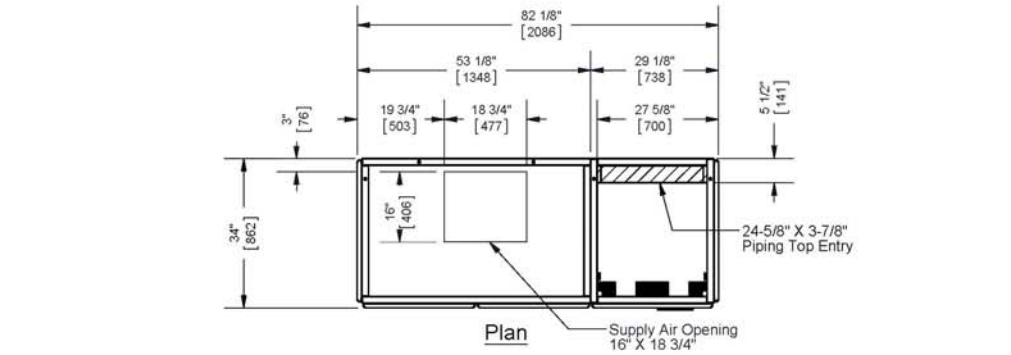
MODEL NO. SUFFIX		14	16	18	20	22
Liquid Refrigerant	-ODM in	5/8	5/8	5/8	5/8	5/8
Hot Gaseous Refrigerant	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Hot Water / Steam	-ODM in	7/8	7/8	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Condensing Water	-ODM in	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8
Glycol Solution	-ODM in	1-5/8	1-5/8	1-5/8	1-5/8	1-5/8

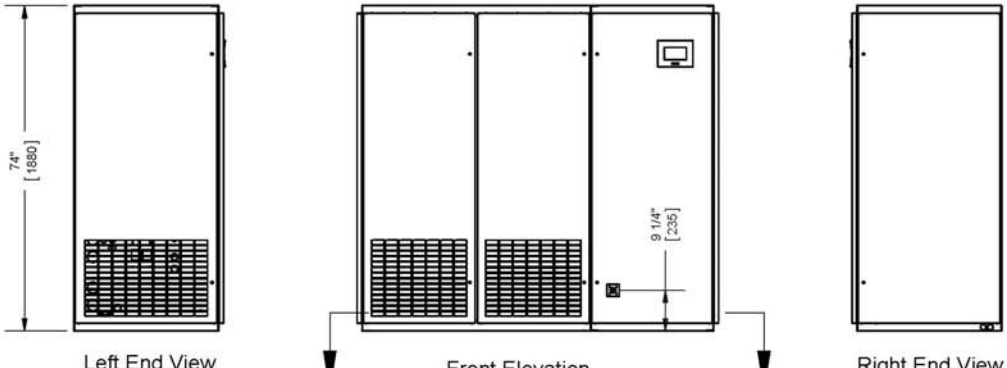
ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

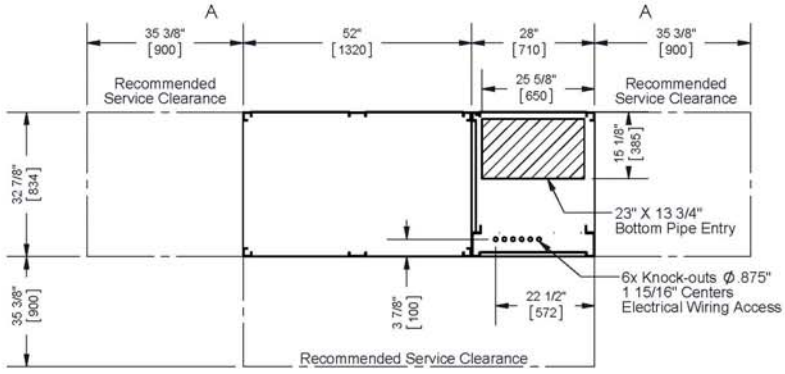
S9DD325E 27 SEPTEMBER 2012 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - VERTICAL FLOOR MOUNT UPFLOW UNIT
DUAL AND FREE COOLING (2+1) "B" MODULE UNIT







Base Frame Outline Detail - Section 'A-A'

PIPING CONNECTION SIZE

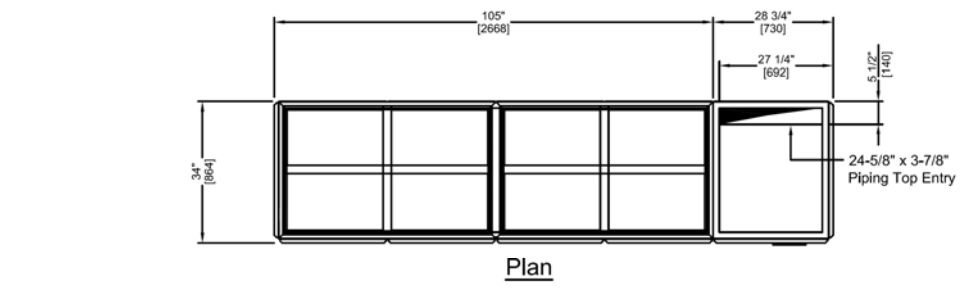
MODEL NO. SUFFIX		06	08	12
Liquid Refrigerant	-ODM in	1/2	1/2	1/2
Hot Gaseous Refrigerant	-ODM in	7/8	7/8	7/8
Hot Water / Steam	-ODM in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Condensing Water	-ODM in	1 1/8	1 1/8	1 3/8
Glycol Solution	-ODM in	1 1/8	1 1/8	1 5/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

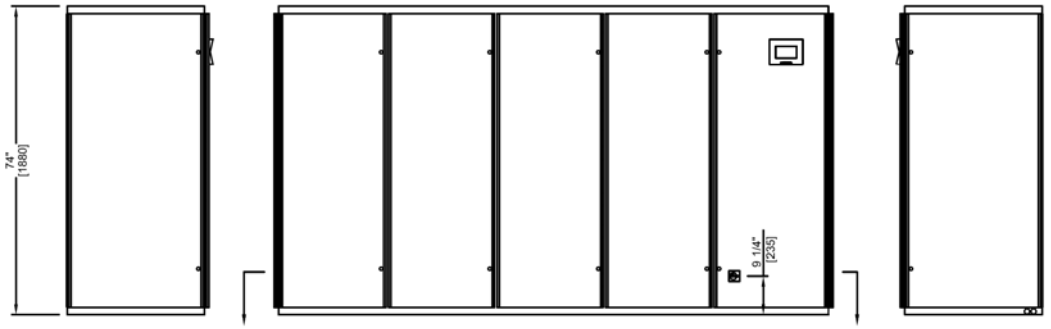
S9DD225F DATE 2014-01-28 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

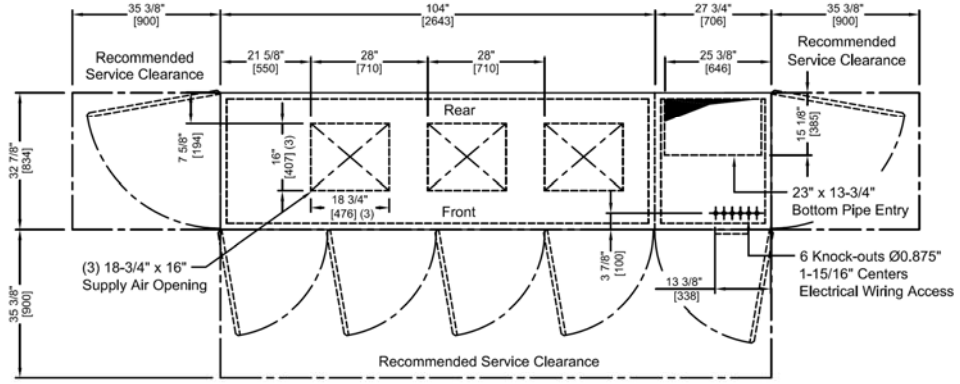
SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT
DUAL AND FREE COOLING (4+1) "B" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

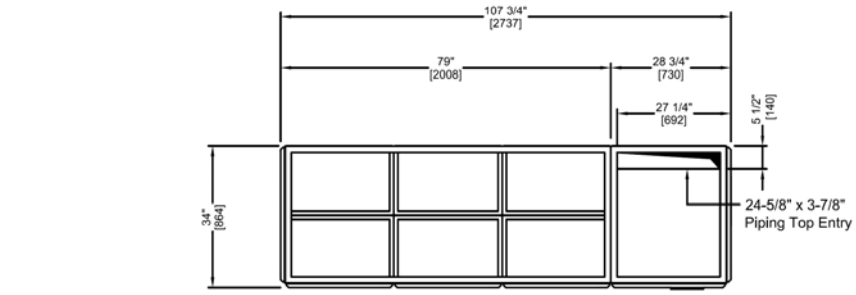
MODEL NO. SUFFIX		**30	30
Liquid Refrigerant	-ODM in	5/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8
Hot Water	-ODM in	7/8	7/8
Steam	-MPT in	7/8	7/8
Steam Condensate	-ODM in	7/8	3/4
Humidifier Water	-ODM in	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4
Chilled Water	-ODM in	-	2-1/8
Condensing Water	-ODM in	-	2-1/8
Glycol Solution	-ODM in	-	2-1/8

ODM - Outside Diameter of copper pipe in inches for solderingMPT - Male Pipe Thread ** - Air Cooled Only

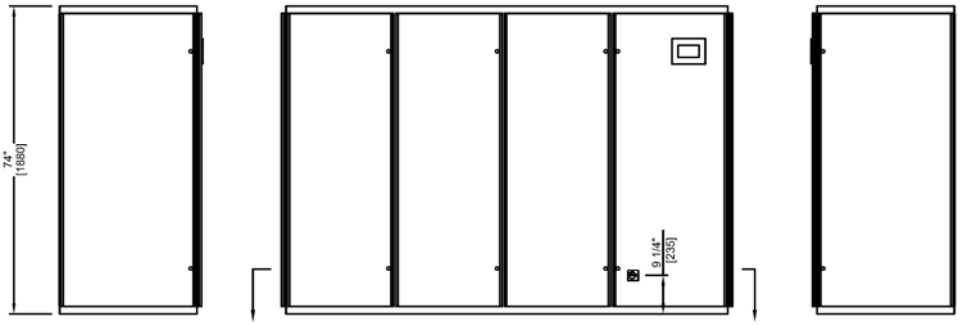
S9DD426F | 27 SEPTEMBER 2012 | NOT TO SCALE

CLIMATEWORX INTERNATIONAL

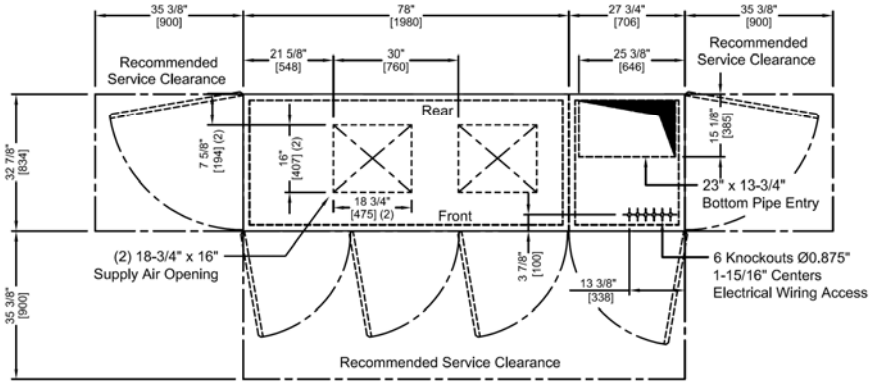
SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT DUAL AND FREE COOLING (3+1) "B" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

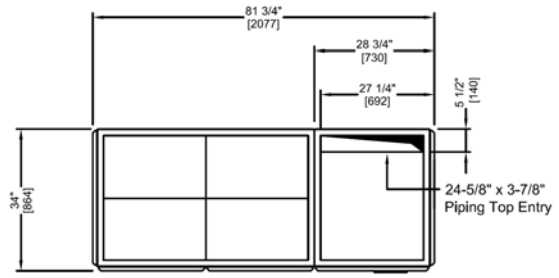
MODEL NO. SUFFIX		14	16	18	20	22
Hot Water / Steam	-ODM in	7/8	7/8	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM in	1-3/8	1-3/8	1-5/8	1-5/8	1-5/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread UF-Upflow DF-Downflow

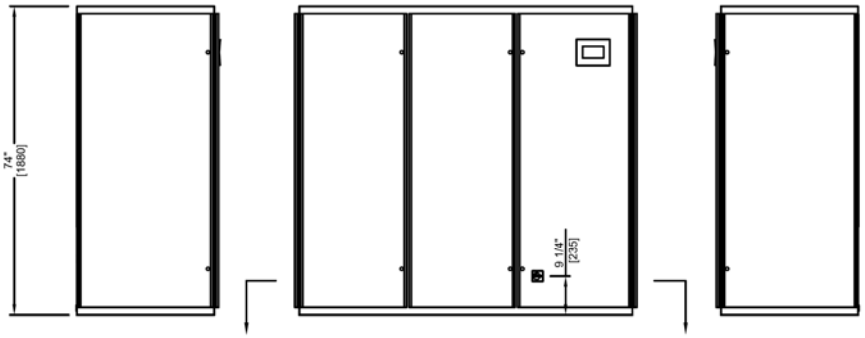
S9DD326E 27 SEPTEMBER 2012 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

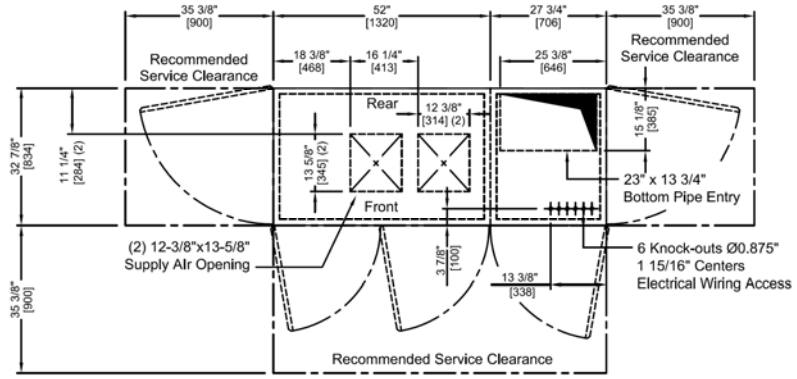
SERIES 9-VERTICAL FLOOR MOUNT DOWNFLOW UNIT DUAL AND FREE COOLING (2+1) "B" MODULE UNIT



Plan



Left end view | Front Elevation | Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

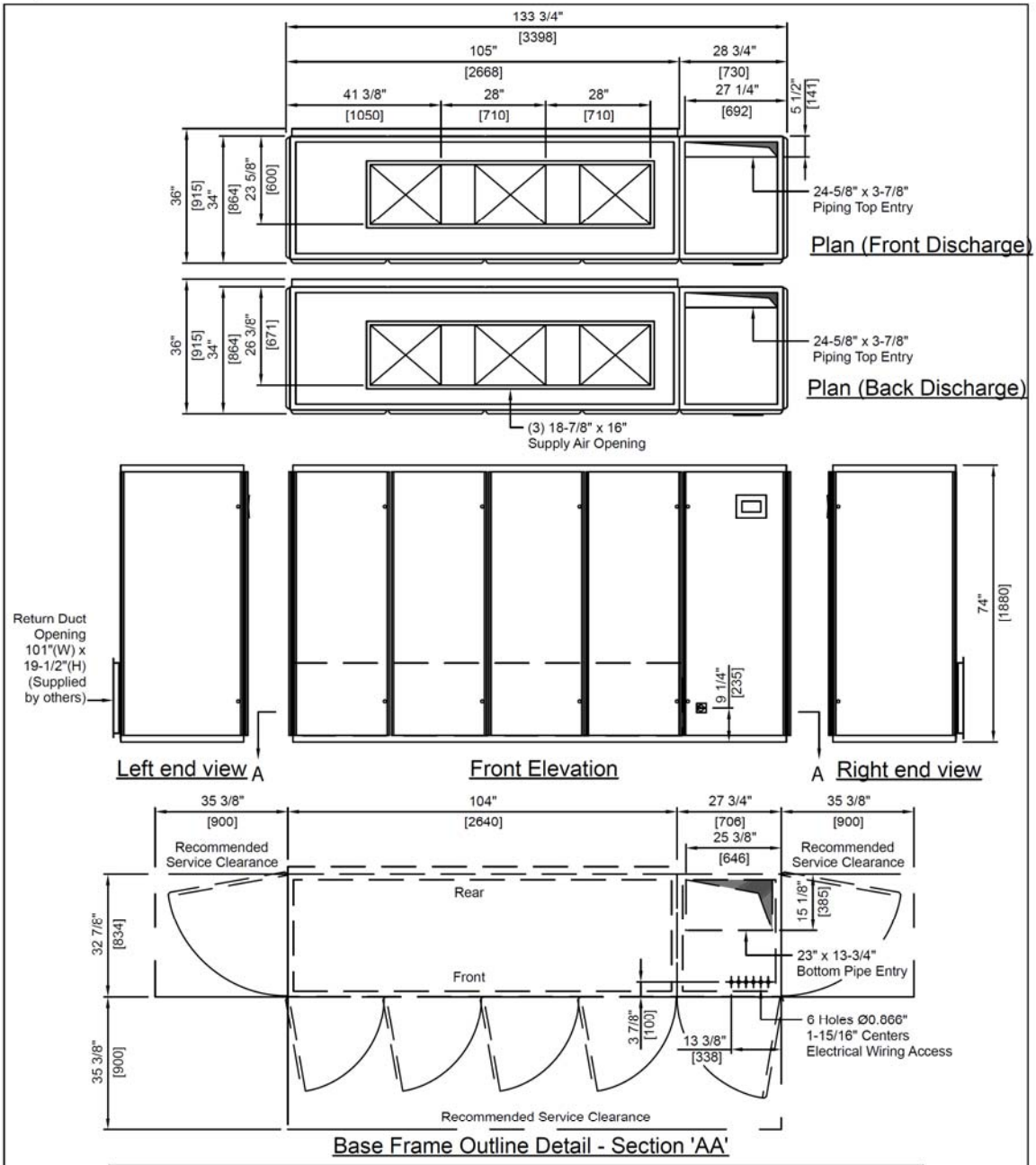
MODEL NO. SUFFIX		06	08	12
Hot Water / Steam	-ODM in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8
Condensing Water	-ODM in	1-1/8	1-1/8	1-3/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

S9DD226E 27 SEPTEMBER 2012 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9- VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN DUAL COOLING FOUR MODULE UNIT



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

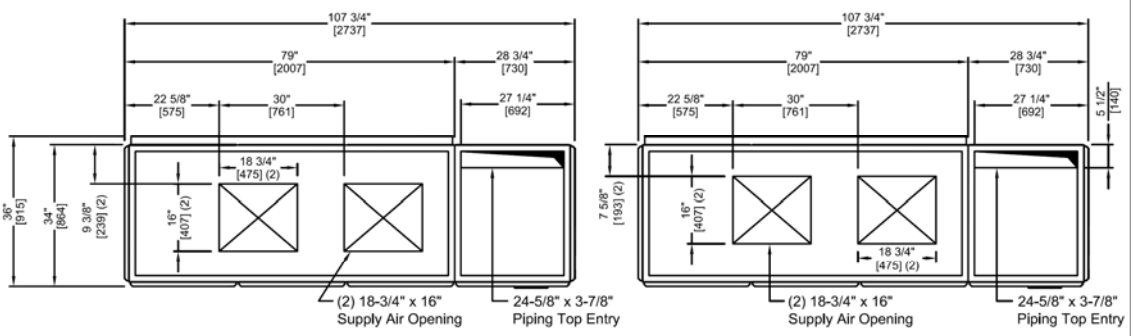
MODEL NO. SUFFIX		**30	30
Liquid Refrigerant	-ODM in	5/8	7/8
Hot Gaseous Refrigerant	-ODM in	1-3/8	1-3/8
Hot Water	-ODM in	7/8	7/8
Steam	-MPT in	7/8	7/8
Steam Condensate	-ODM in	7/8	3/4
Humidifier Water	-ODM in	1/4	1/4
Condensate Drain	-ODM in	3/4	3/4
Chilled Water	-ODM in	-	2-1/8
Condensing Water	-ODM in	-	2-1/8
Glycol Solution	-ODM in	-	2-1/8

ODM - Outside Diameter of copper pipe in inches for solderingMPT - Male Pipe Thread ** - Air Cooled Only

S9DD427B 07 February 2002 NOT TO SCALE

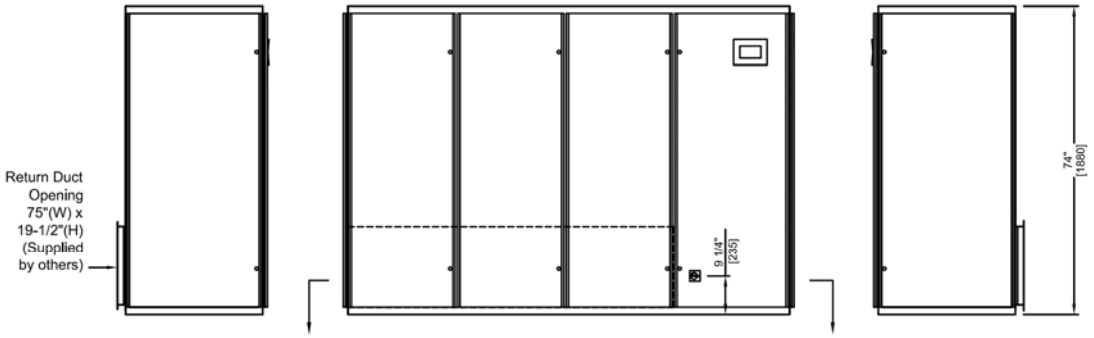
CLIMATEWORX INTERNATIONAL

SERIES 9- VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN DUAL COOLING (3+1) "B" MODULE UNIT



Plan (Back Discharge)

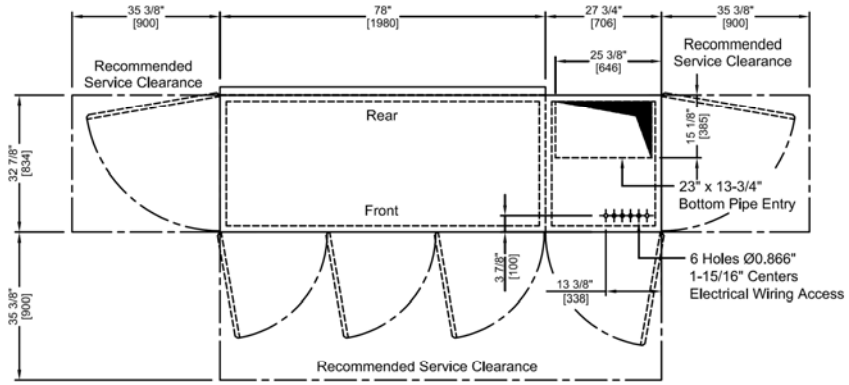
Plan (Front Discharge)



Left end view

Front Elevation

Right end view



Base Frame Outline Detail - Section 'AA'

PIPING CONNECTION SIZE

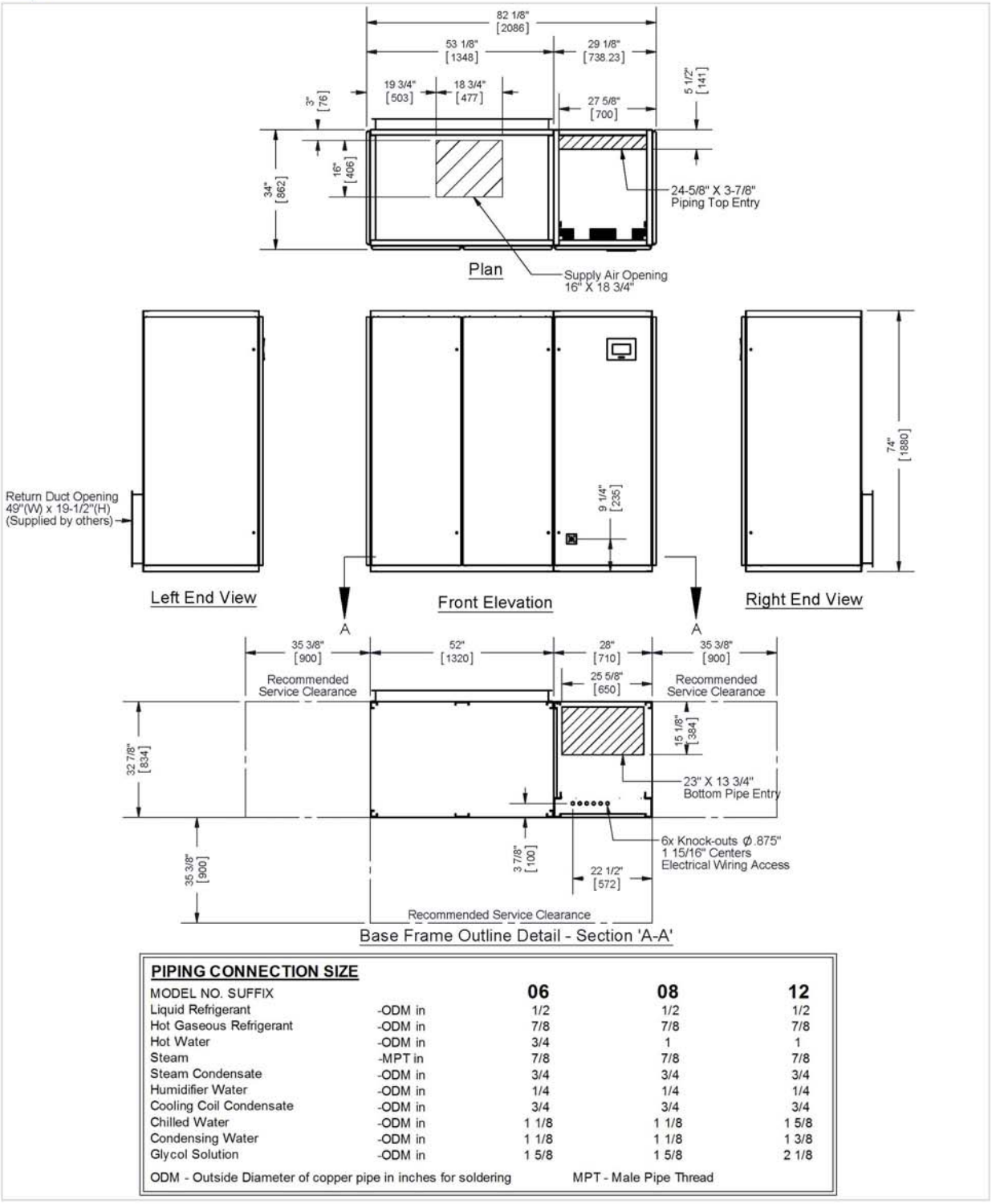
MODEL NO. SUFFIX		14	16	18	20	22
Liquid Refrigerant	-ODM in	5/8	5/8	5/8	5/8	5/8
Hot Gaseous Refrigerant	-ODM in	1-1/8	1-1/8	1-1/8	1-1/8	1-1/8
Hot Water	-ODM in	1	1	1-1/8	1-1/8	1-1/8
Steam	-MPT in	7/8	7/8	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4	3/4	3/4
Chilled Water	-ODM in	1-5/8	1-5/8	2-1/8	2-1/8	2-1/8
Condensing Water	-ODM in	1-3/8	1-3/8	1-3/8	1-5/8	1-5/8
Glycol Solution	-ODM in	2-1/8	2-1/8	2-1/8	2-1/8	2-1/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

S9DD327B 07 MARCH 2006 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - VERTICAL FLOOR MOUNT UPFLOW UNIT
REAR RETURN DUAL COOLING TWO MODULE UNIT



PIPING CONNECTION SIZE

MODEL NO. SUFFIX		06	08	12
Liquid Refrigerant	-ODM in	1/2	1/2	1/2
Hot Gaseous Refrigerant	-ODM in	7/8	7/8	7/8
Hot Water	-ODM in	3/4	1	1
Steam	-MPT in	7/8	7/8	7/8
Steam Condensate	-ODM in	3/4	3/4	3/4
Humidifier Water	-ODM in	1/4	1/4	1/4
Cooling Coil Condensate	-ODM in	3/4	3/4	3/4
Chilled Water	-ODM in	1 1/8	1 1/8	1 5/8
Condensing Water	-ODM in	1 1/8	1 1/8	1 3/8
Glycol Solution	-ODM in	1 5/8	1 5/8	2 1/8

ODM - Outside Diameter of copper pipe in inches for soldering MPT - Male Pipe Thread

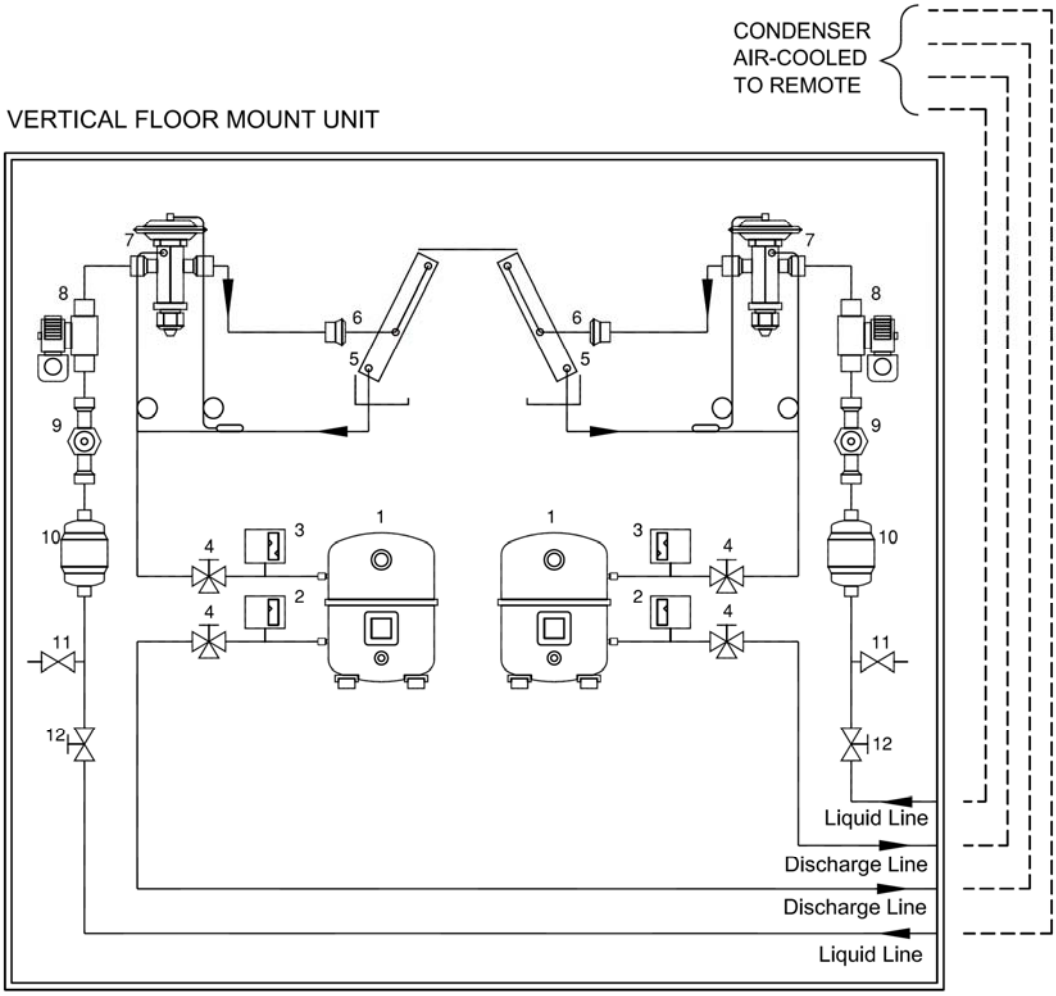
S9DD227B DATE 2014-01-28 NOT TO SCALE

Appendix B: Piping Schematic Diagrams

Drawing Title	Drawing No.	Page No.
SERIES 9 – Air-Cooled System Schematic	S9DS101	35
SERIES 9 – Water-Cooled System Schematic	S9DS201	36
SERIES 9 – Glycol-Cooled System Schematic	S9DS301	37
SERIES 9 – Chilled Water System Piping Schematic	S9DS401	38
SERIES 9 – Free-Cooling System Piping Schematic	S9DS501	39
SERIES 9 – Air Dual Cooling System Piping Schematic	S9DS121	40
SERIES 9 – Water Dual Cooling System Piping Schematic	S9DS221	41
SEREIS 9 – Glycol Dual Cooling System Piping Schematic	S9DS321	42

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
AIR COOLED SYSTEM



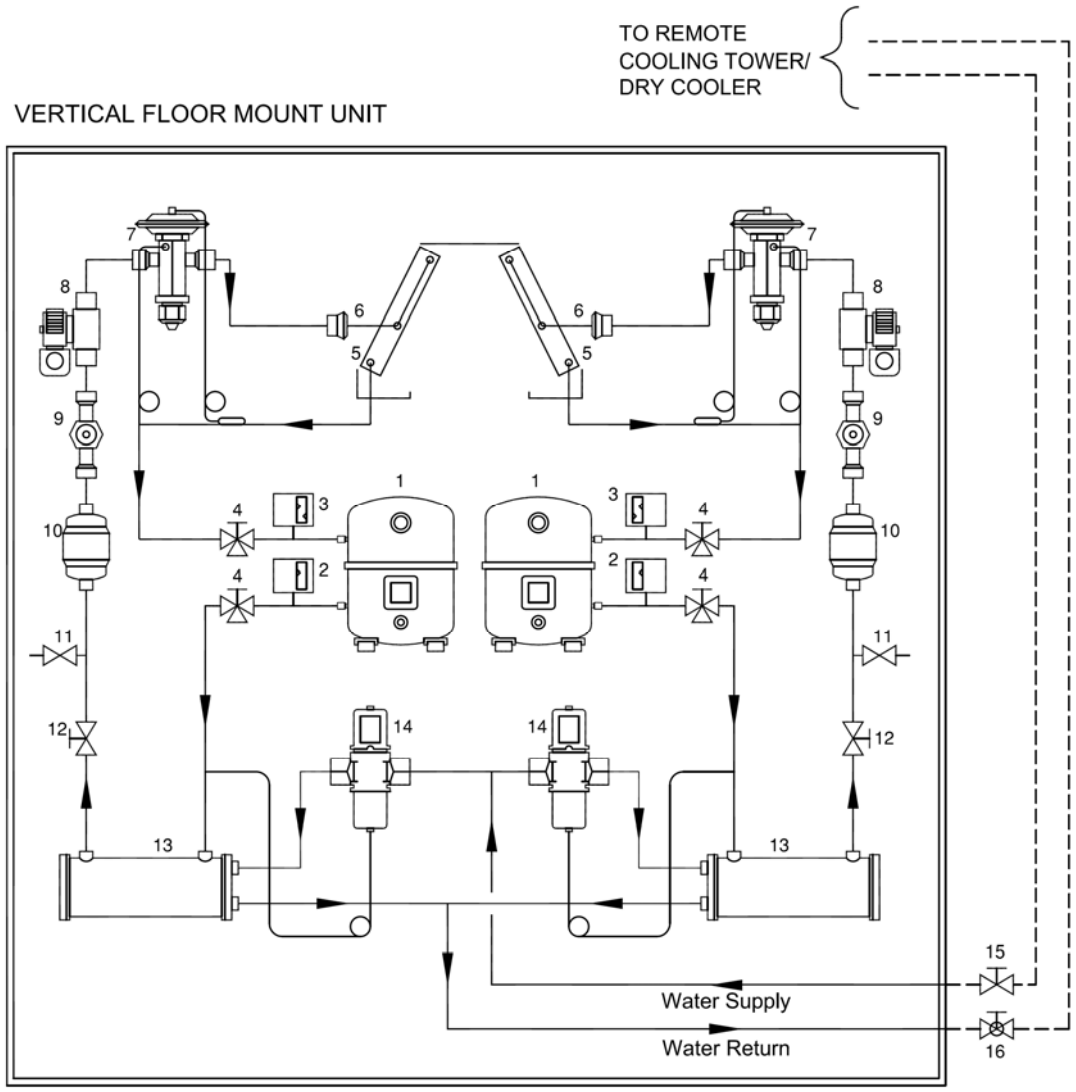
COMPONENTS:

1 Compressor
2 High pressure switch
3 Low pressure switch
4 Rotalock valve
5 Evaporator
6 Refrigerant distributor
7 Thermostatic expansion valve
8 Liquid line solenoid valve
9 Sight glass
10 Filter- drier
11 Access valve
12 Shut off valve

S9DS101F 05 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
WATER COOLED SYSTEM (2-WAY VALVE)



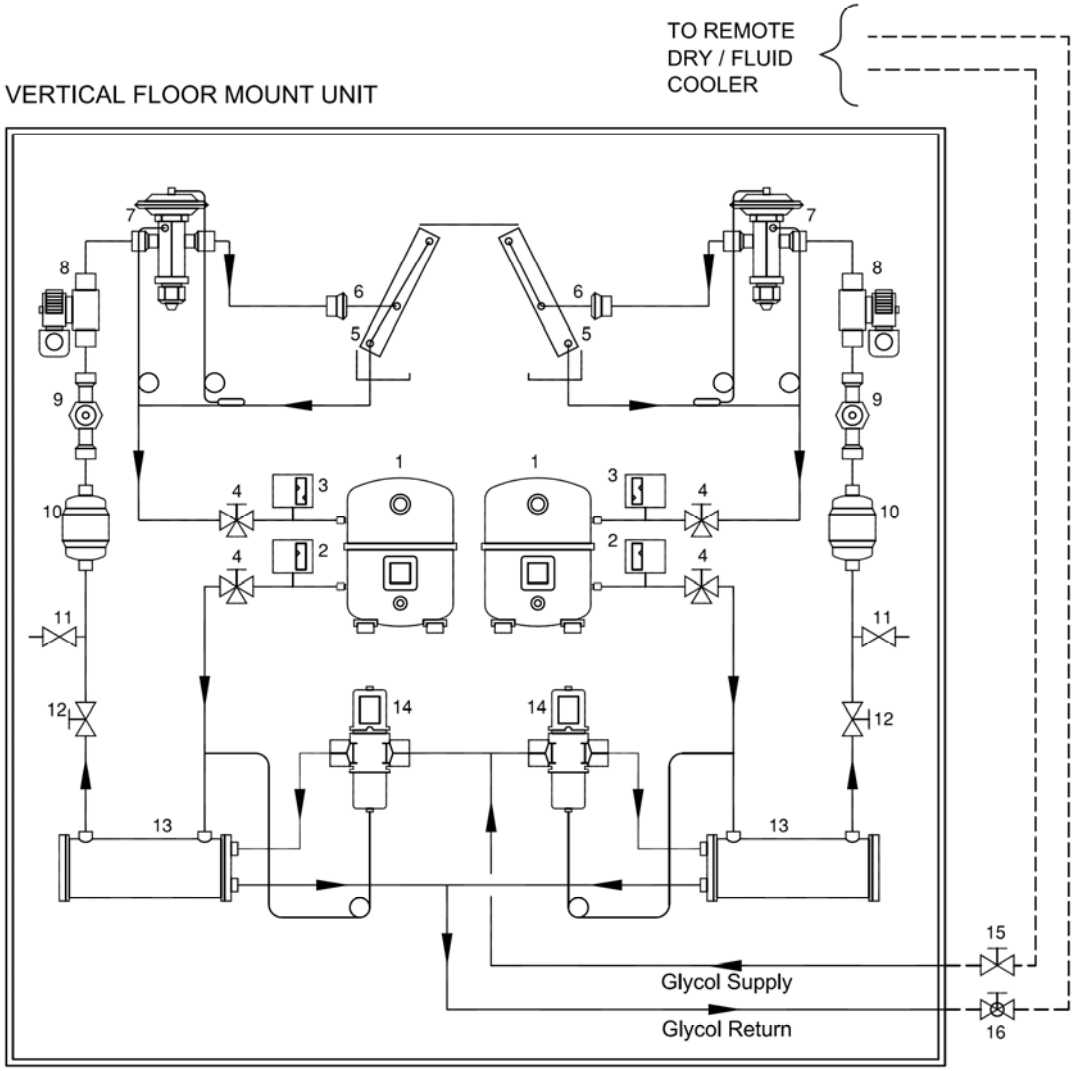
COMPONENTS:

1 Compressor
2 High pressure switch
3 Low pressure switch
4 Rotalock valve
5 Evaporator
6 Refrigerant distributor
7 Thermostatic expansion valve
8 Liquid line solenoid valve
9 Sight glass
10 Filter- drier
11 Access valve
12 Shut off valve
13 Water cooled condenser/heat exchanger
14 Water regulating valve (Standard 2-way, optional 3-way)
15 Gate valve (supplied by others)
16 Globe valve (supplied by others)

S9DS201F 05 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
GLYCOL COOLED SYSTEM (2-WAY VALVE)



COMPONENTS:

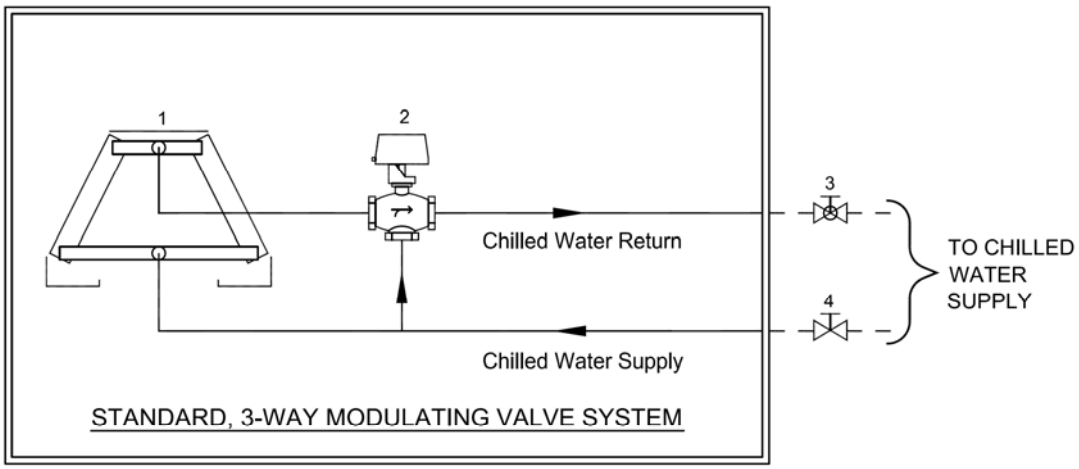
1 Compressor
2 High pressure switch
3 Low pressure switch
4 Rotalock valve
5 Evaporator
6 Refrigerant distributor
7 Thermostatic expansion valve
8 Liquid line solenoid valve
9 Sight glass
10 Filter- drier
11 Access valve
12 Shut off valve
13 Glycol cooled condenser/heat exchanger
14 Glycol regulating valve (Standard 2-way, optional 3-way)
15 Gate valve (supplied by others)
16 Globe valve (supplied by others)

S9DS301F 08 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
CHILLED WATER SYSTEM

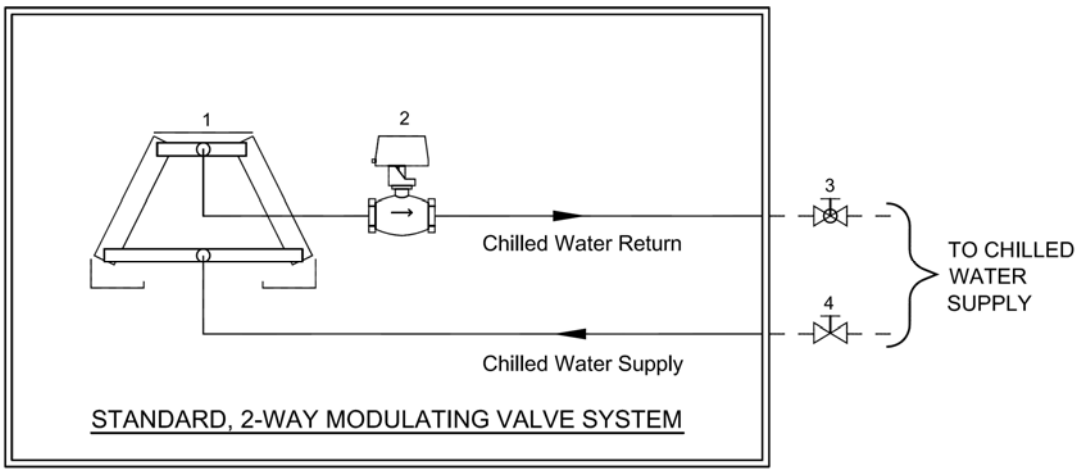
VERTICAL FLOOR MOUNT UNIT



COMPONENTS:

1 Cooling coil
2 3-way modulating valve
3 Globe valve (Supplied by others)
4 Gate valve (Supplied by others)

VERTICAL FLOOR MOUNT UNIT



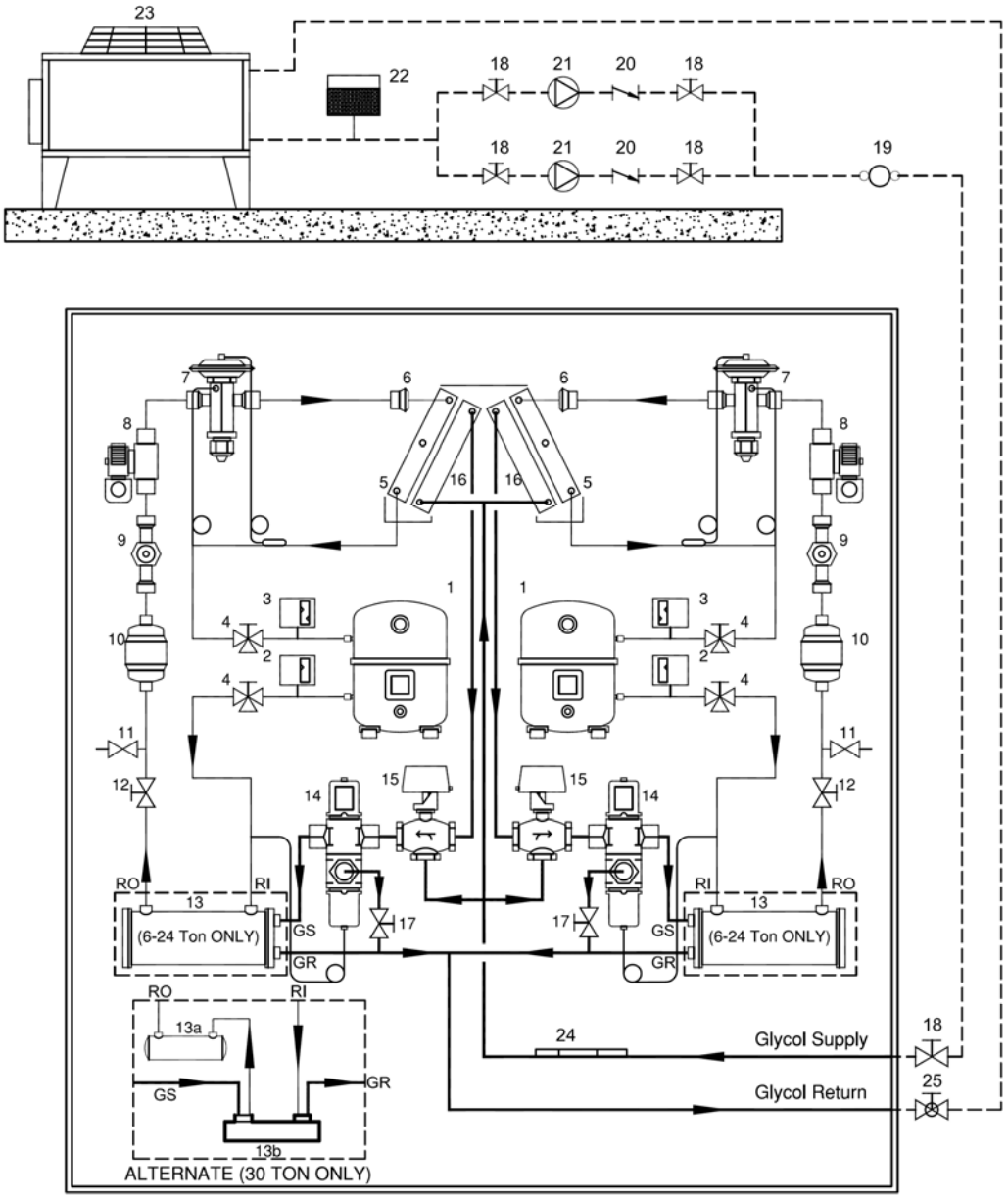
COMPONENTS:

1 Cooling coil
2 2-way modulating valve
3 Globe valve (Supplied by others)
4 Gate valve (Supplied by others)

S9DS401B 08 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
FREE COOLING SYSTEM



COMPONENTS:

1. Compressor
2. High pressure switch
3. Low pressure switch
4. Rotalock valve
5. Evaporator
6. Refrigerant distributor
7. Thermostatic expansion valve
8. Liquid line solenoid valve
9. Sight glass
10. Filter drier
11. Access valve
12. Shut off valve
13. Glycol cooled condenser (Shell and Tube) - for 6 to 24 Tons
13a. Receiver - For 30 Ton Only
13b. Glycol cooled condenser (Brazed plate) - for 30 Tons Only
14. 3-way water regulating valve
15. 3-way free-cooling valve
16. Free-cooling coil
17. Manual bypass valve
18. Gate valve *
19. Orifice valve *
20. Check valve *
21. Pump *
22. Expansion tank *
23. Glycol Cooler *
24. T2 sensor (shipped loose and installed by others)
25. Globe valve *

* Typical Components Supplied by others

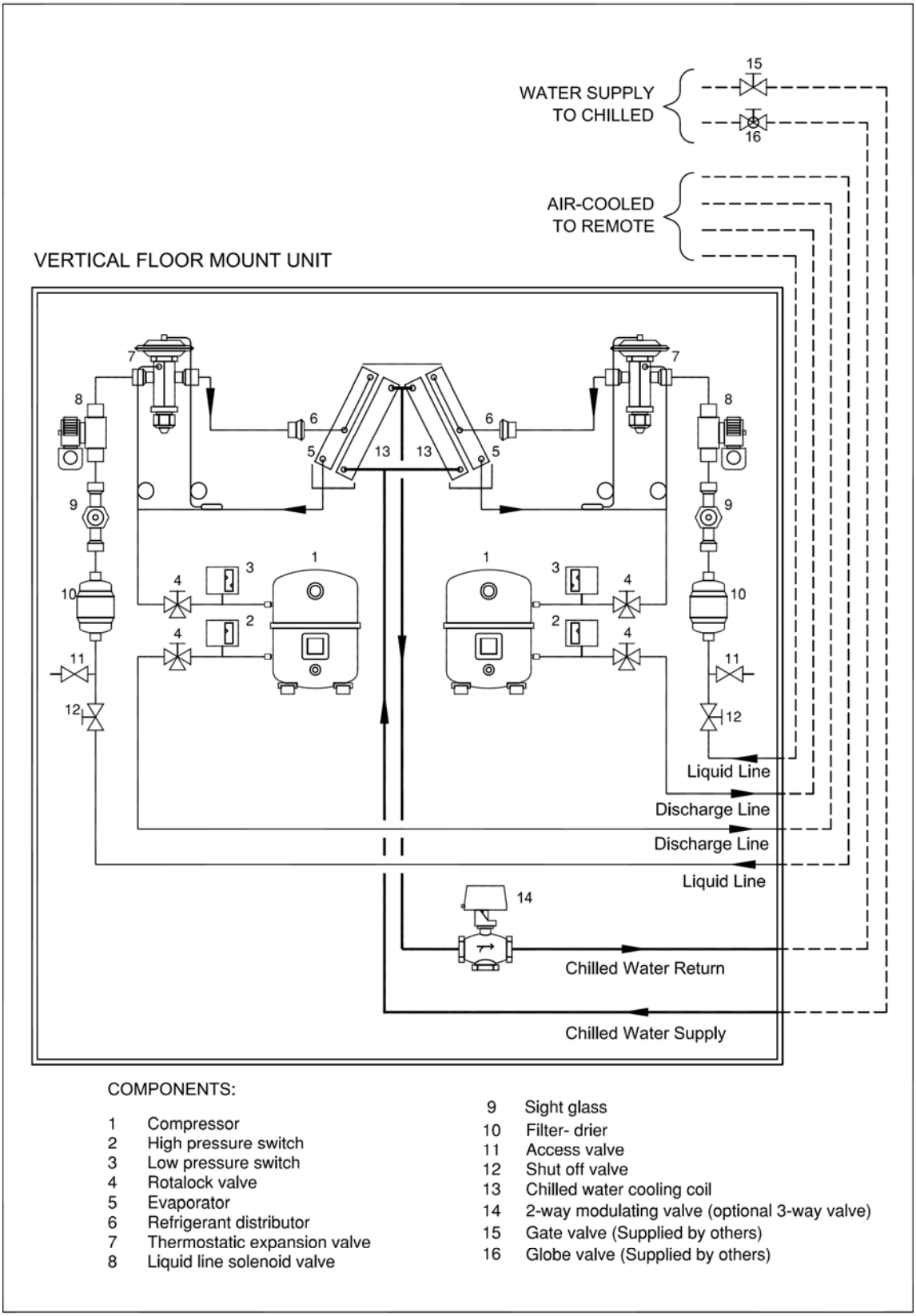
RI = Refrigerant Inlet
RO = Refrigerant Outlet
GS = Glycol Supply
GR = Glycol Return

Factory Installed Refrigerant Line
Factory Installed Glycol Line
Field Installed Glycol Line

S9DS501I 08 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM
AIR DUAL COOLED SYSTEM



COMPONENTS:

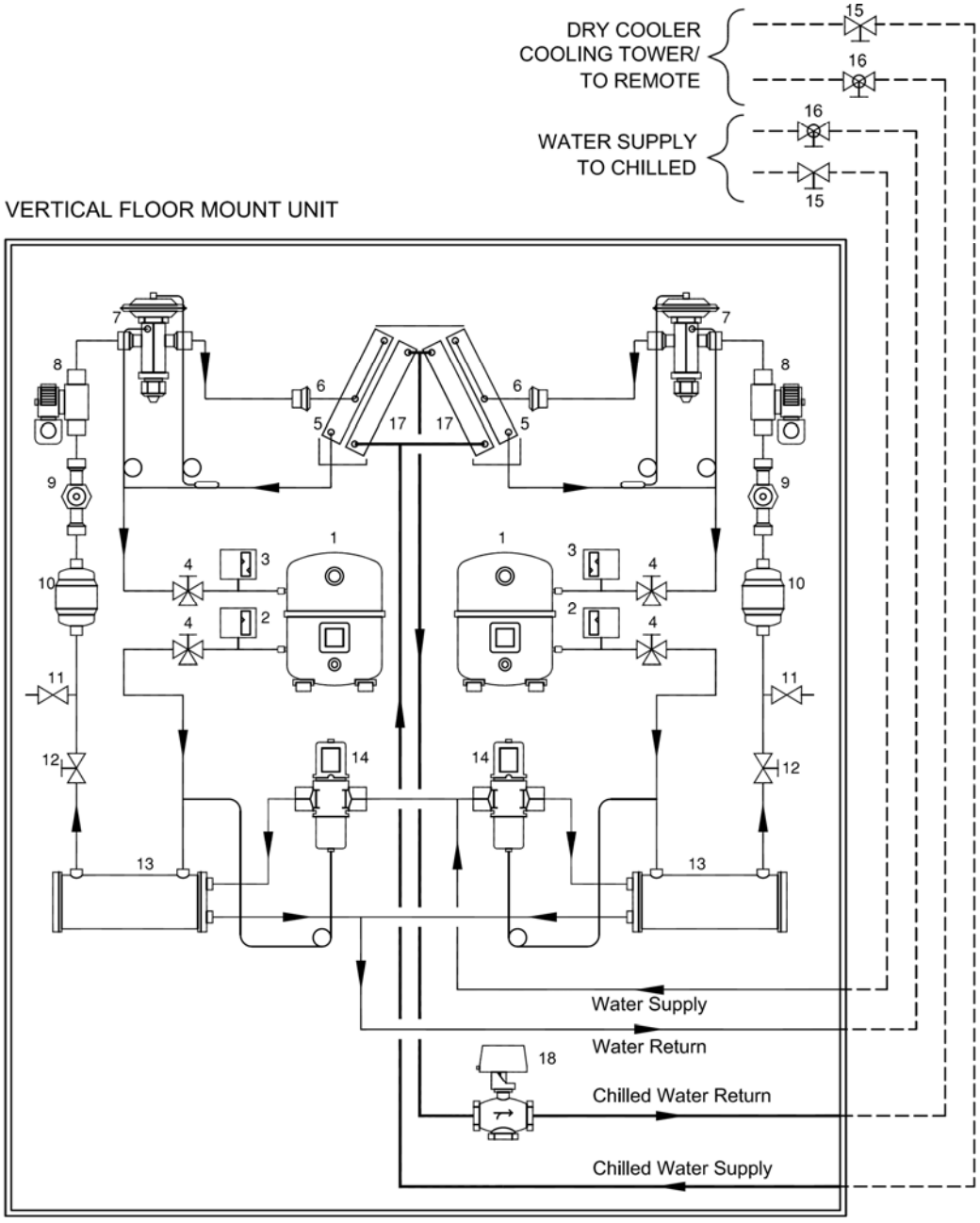
1	Compressor
2	High pressure switch
3	Low pressure switch
4	Rotalock valve
5	Evaporator
6	Refrigerant distributor
7	Thermostatic expansion valve
8	Liquid line solenoid valve
9	Sight glass
10	Filter- drier
11	Access valve
12	Shut off valve
13	Chilled water cooling coil
14	2-way modulating valve (optional 3-way valve)
15	Gate valve (Supplied by others)
16	Globe valve (Supplied by others)

S9DS121G 05 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM

WATER DUAL COOLED SYSTEM (2-WAY REG VALVES)



COMPONENTS:

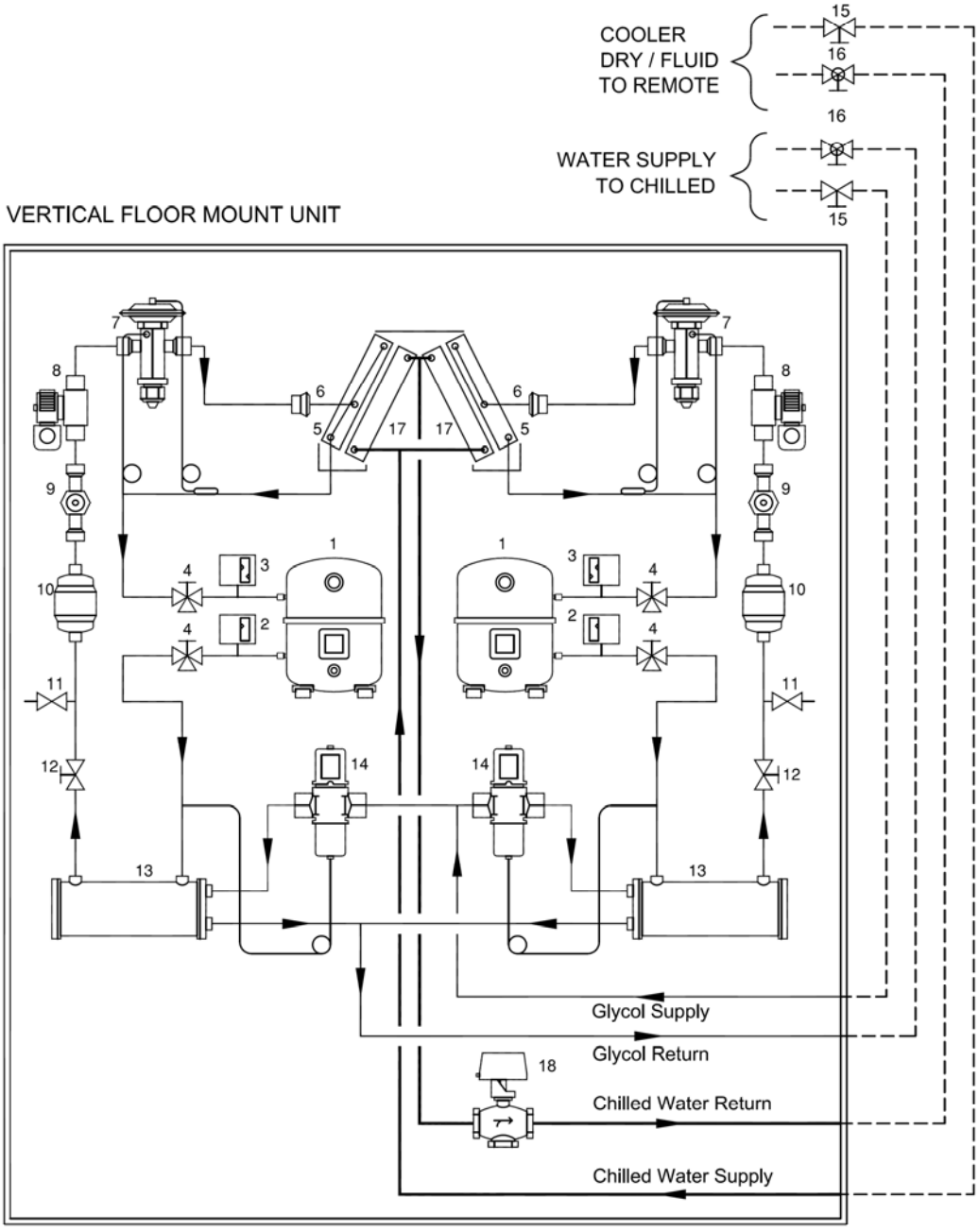
1 Compressor
2 High pressure switch
3 Low pressure switch
4 Rotalock valve
5 Evaporator
6 Refrigerant distributor
7 Thermostatic expansion valve
8 Liquid line solenoid valve
9 Sight glass
10 Filter- drier
11 Access valve
12 Shut off valve
13 Water cooled condenser/heat exchanger
14 Water regulating valve (Standard 2-way, optional 3-way)
15 Gate valve (supplied by others)
16 Globe valve (supplied by others)
17 Chilled water cooling coil
18 2-way modulating valve (optional 3-way valve)

S9DS221H 05 APRIL 2013 NOT TO SCALE

CLIMATEWORX INTERNATIONAL

SERIES 9 - PIPING SCHEMATIC DIAGRAM

GLYCOL DUAL COOLED SYSTEM (2-WAY REG VALVE)



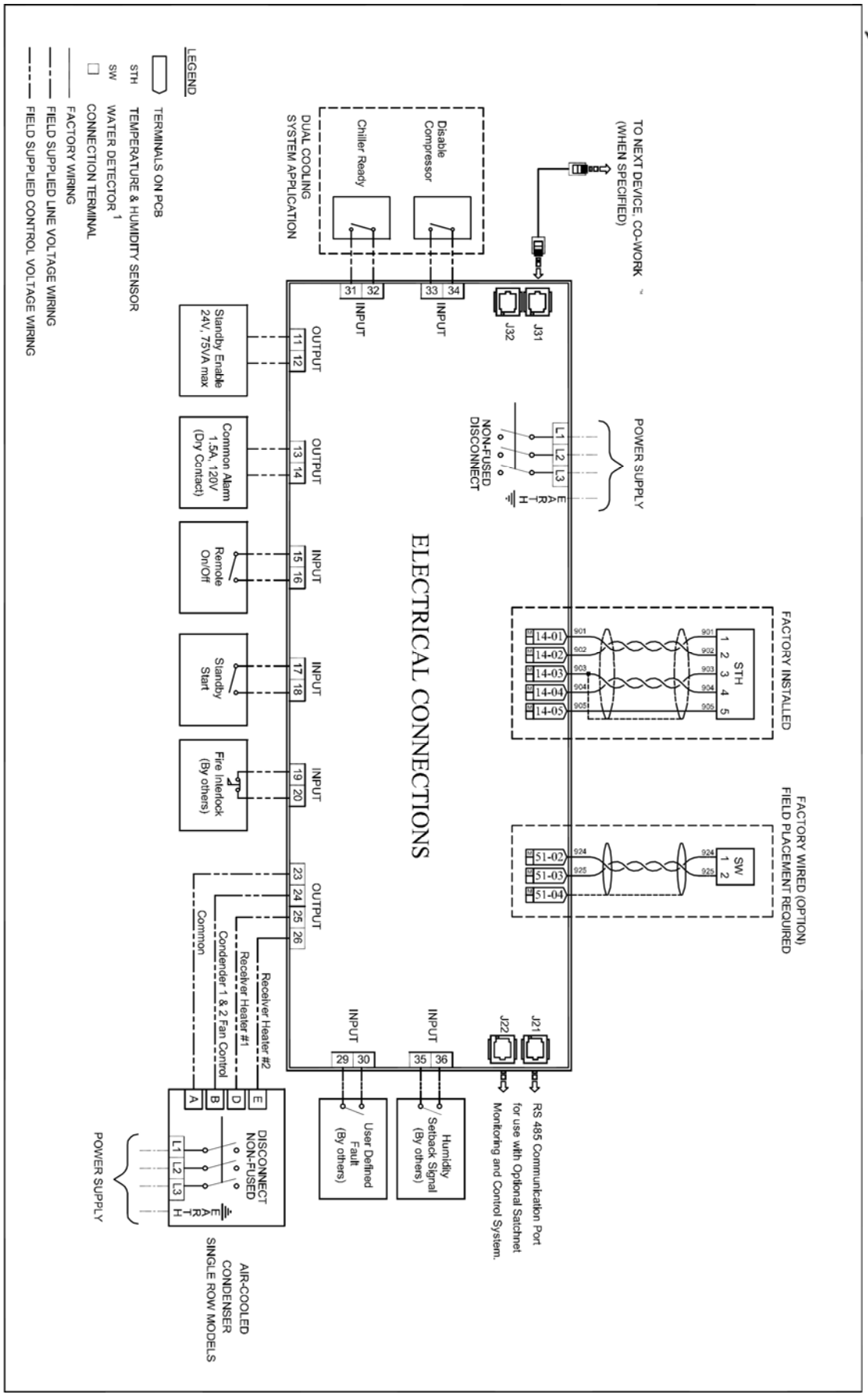
COMPONENTS:

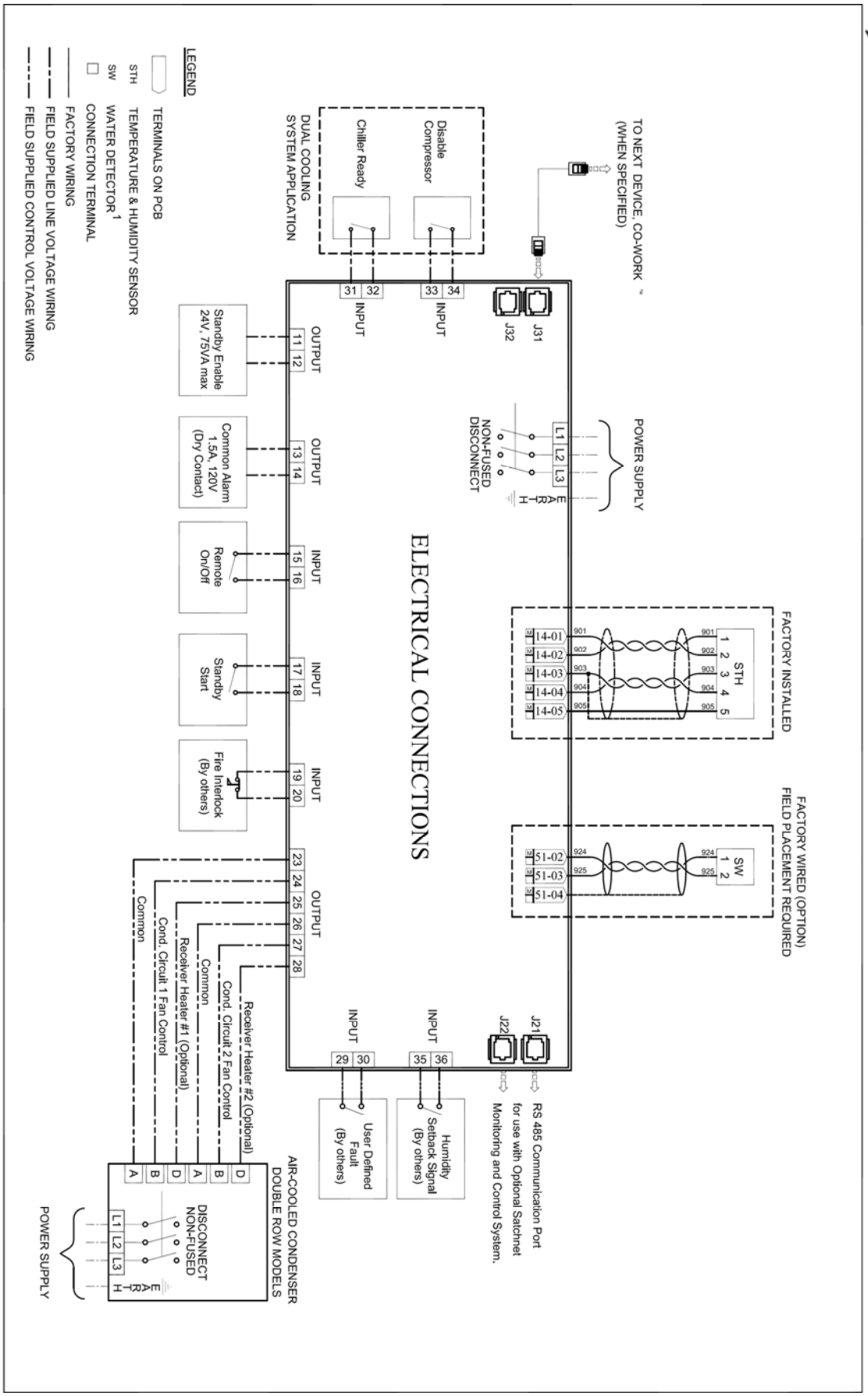
1 Compressor
2 High pressure switch
3 Low pressure switch
4 Rotalock valve
5 Evaporator
6 Refrigerant distributor
7 Thermostatic expansion valve
8 Liquid line solenoid valve
9 Sight glass
10 Filter- drier
11 Access valve
12 Shut off valve
13 Glycol cooled condenser/heat exchanger
14 Glycol regulating valve (Standard 2-way, optional 3-way)
15 Gate valve (supplied by others)
16 Globe valve (supplied by others)
17 Chilled water cooling coil
18 2-way modulating valve (optional 3-way valve)

S9DS321G 08 APRIL 2013 NOT TO SCALE

Appendix C: Electrical Schematic Diagrams

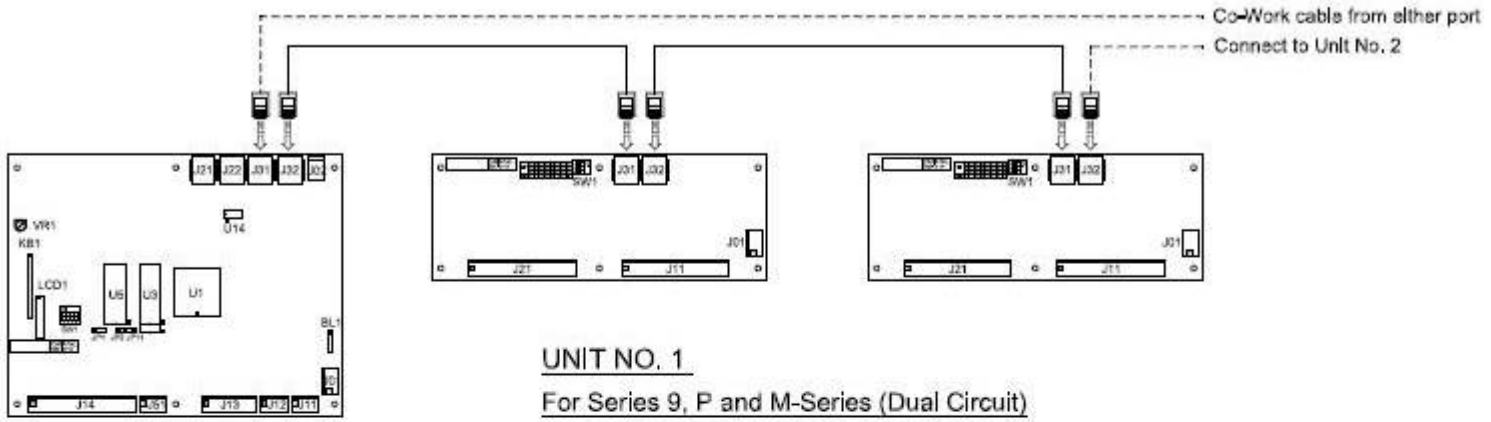
Drawing Title	Drawing No.	Page No.
SERIES 9 – Electrical Schematic (single row)-General, Master Control Panel	S9EDN101	44
SERIES 9 – Electrical Schematic (double row)-General, Master Control Panel	S9EDN151	45
SERIES 9 - Electric Schematic – Co-Work I2C Interconnection Link	M52ES13	46
SERIES 9 – Electric Schematic – Field Wiring Standby Start/ Standby Enable, For automatic change over	M52ES05	47
SERIES 9 - Electric Schematic – Embedded Web Browser Connection, Serial to Ethernet Communication Link	M52ES20	48
SERIES 9 - Electric Schematic – Embedded Connection, Serial to Ethernet Communication Link	M52ES25	49
SERIES 9 - Electric Schematic – Embedded Connection, Serial to Ethernet (Lonworks) Communication Link	M52ES26	50
SERIES 9 - Electric Schematic – Embedded Connection, Serial to Serial Communication	M52ES27	51


CLIMATEWORX INTERNATIONAL
SERIES 9 - GENERAL ELECTRICAL CONNECTION DIAGRAM
MASTER - AIR-COOLED UNIT W/ SINGLE ROW CONDENSER MODEL
ELECTRICAL CONNECTIONS
TO NEXT DEVICE CO-WORK (WHEN SPECIFIED)
POWER SUPPLY
NON-FUSED DISCONNECT
FACTORY INSTALLED
FACTORY WIRED (OPTION) FIELD PLACEMENT REQUIRED
STH
SW
J31
J32
J21
J22
Disable Compressor
Chiller Ready
DUAL COOLING SYSTEM APPLICATION
Standby Enable 24V, 75VA max
Common Alarm 1.5A, 120V (Dry Contact)
Remote On/Off
Standby Start
Fire Interlock (By others)
Receiver Heater #2
Receiver Heater #1
Condenser 1 & 2 Fan Control
Common
Humidity Setback Signal (By others)
User Defined Fault (By others)
RS 485 Communication Port for use with Optional Satchnet Monitoring and Control System.
DISCONNECT NON-FUSED
AIR-COOLED CONDENSER SINGLE ROW MODELS
LEGEND
TERMINALS ON PCB
TEMPERATURE & HUMIDITY SENSOR
WATER DETECTOR 1
CONNECTION TERMINAL
FACTORY WIRING
FIELD SUPPLIED LINE VOLTAGE WIRING
FIELD SUPPLIED CONTROL VOLTAGE WIRING
S9EDN101B
5 FEBRUARY 2002
NORTH AMERICA


CLIMATEWORX INTERNATIONAL
SERIES 9 - GENERAL ELECTRICAL CONNECTION DIAGRAM
MASTER - AIR-COOLED UNIT W/ DOUBLE ROW CONDENSER MODEL
ELECTRICAL CONNECTIONS
FACTORY INSTALLED
FACTORY WIRED (OPTION)
FIELD PLACEMENT REQUIRED
TO NEXT DEVICE, CO-WORK (WHEN SPECIFIED)
POWER SUPPLY
NON-FUSED DISCONNECT
L1 L2 L3 EARTH
STH
SW
J31
J32
J21
J22
Disable Compressor
Chiller Ready
DUAL COOLING SYSTEM APPLICATION
INPUT
OUTPUT
Standby Enable 24V, 75VA max
Common Alarm 1.5A, 120V (Dry Contact)
Remote On/Off
Standby Start
Fire Interlock (By others)
Receiver Heater #2 (Optional)
Cond. Circuit 2 Fan Control
Receiver Heater #1 (Optional)
Cond. Circuit 1 Fan Control
Common
Humidity Setback Signal (By others)
User Defined Fault (By others)
RS 485 Communication Port for use with Optional Satchnet Monitoring and Control System.
AIR-COOLED CONDENSER DOUBLE ROW MODELS
DISCONNECT NON-FUSED
POWER SUPPLY
LEGEND
TERMINALS ON PCB
STH TEMPERATURE & HUMIDITY SENSOR
SW WATER DETECTOR 1
CONNECTION TERMINAL
FACTORY WIRING
FIELD SUPPLIED LINE VOLTAGE WIRING
FIELD SUPPLIED CONTROL VOLTAGE WIRING
S9EDN151A
5 FEBRUARY 2002

CLIMATEWORX INTERNATIONAL

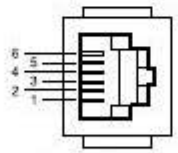
M52 CONTROL SYSTEM
Co-Work I2C Interconnection Link



UNIT NO. 1

For Series 9, P and M-Series (Dual Circuit)

J31 and J32 (I2C)	
P/N No.	Signal
1	GRD
2	SDA
3	GRD
4	SCL
5	GRD
6	PWR



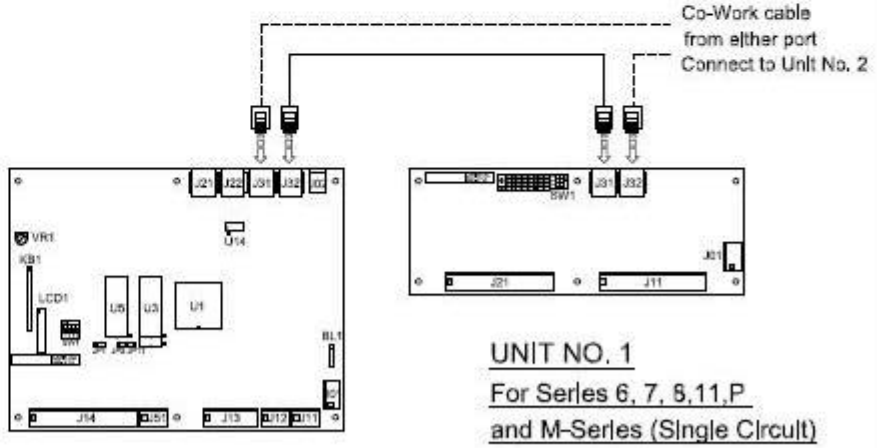
Socket PC Board

Note :
1. J31 and J32 are RJ12 socket.

Communication Cable Specification ClimateWorx P/N 20100196:

Four twisted pair, Category 5, 24 AWG (0.2 m²) run in dedicated EMT or flexible metal BX conduit which is properly connected to the unit electrical box at both ends. Using approved strain relief.

Note :
The use of an EMI filter such as a broad band EMI Ferrit is recommended for each end of the cable. ClimateWorx P/N 20400990

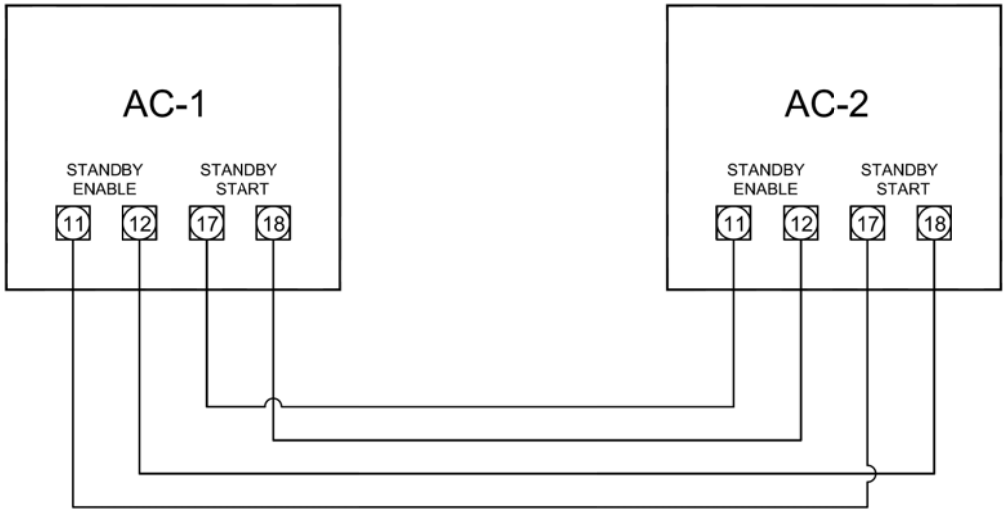


UNIT NO. 1

For Series 6, 7, 8,11,P

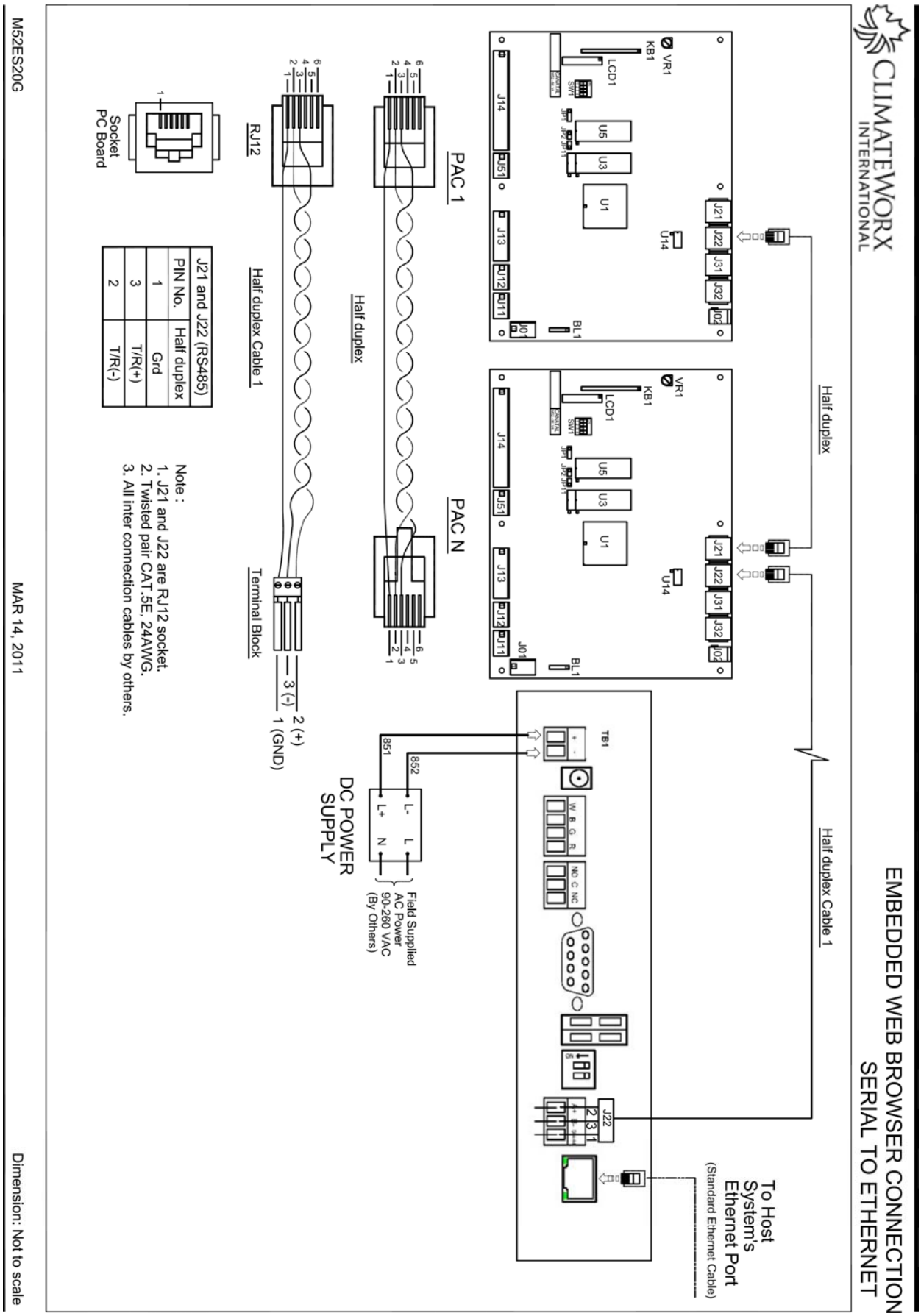
and M-Series (Single Circuit)

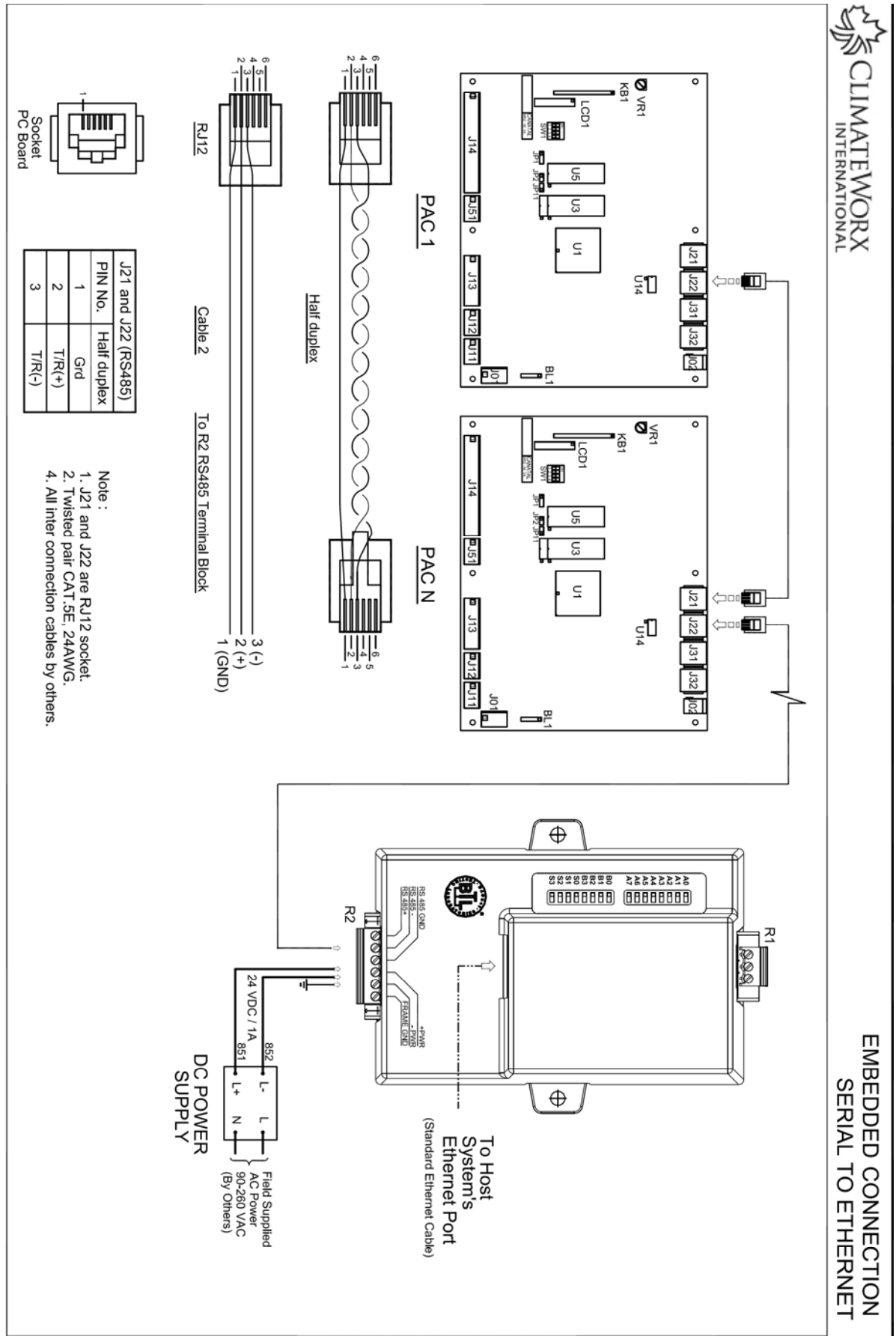
For Automatic Change Over
Field Wiring Standby Start/Standby Enable



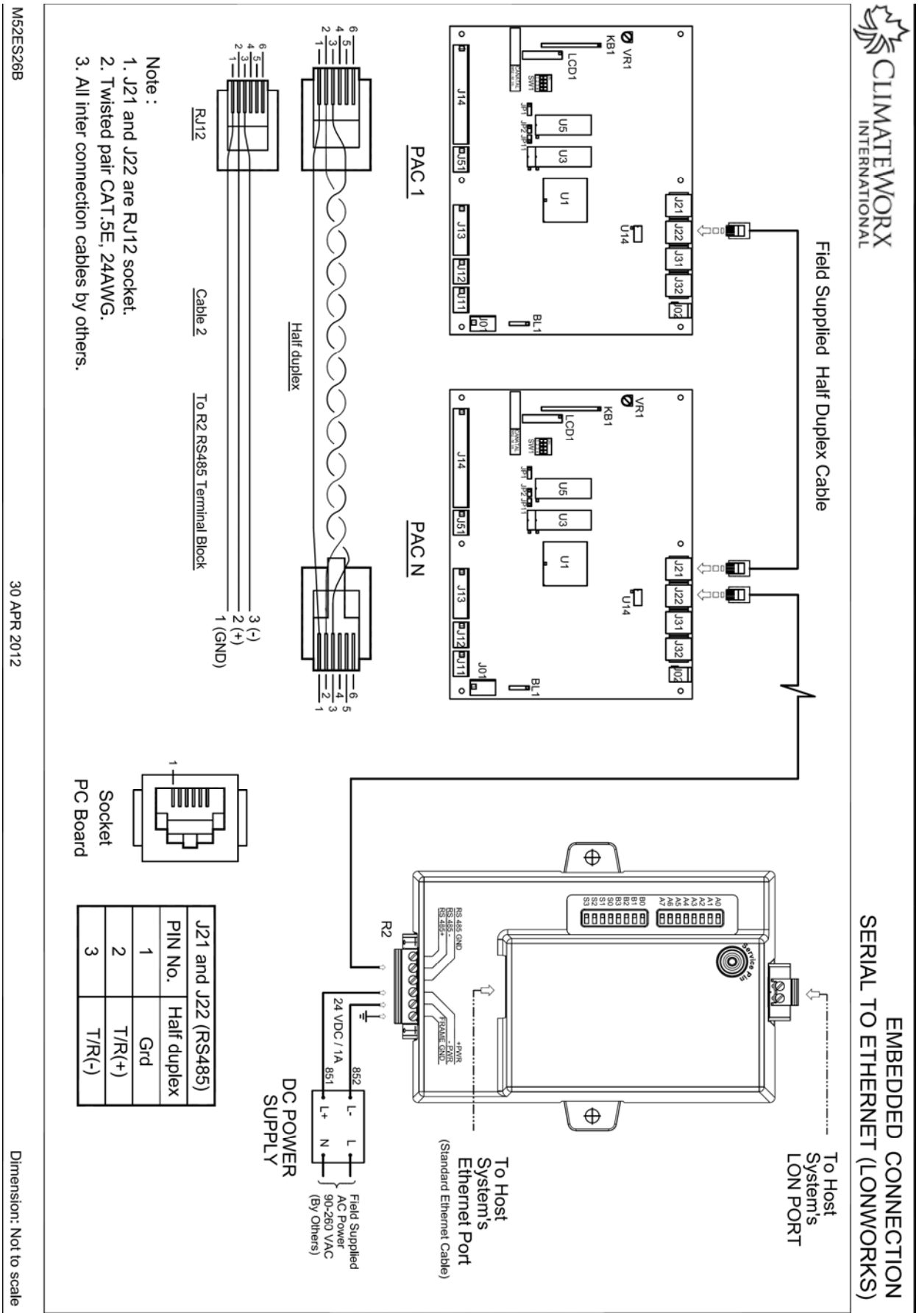
LEGEND:

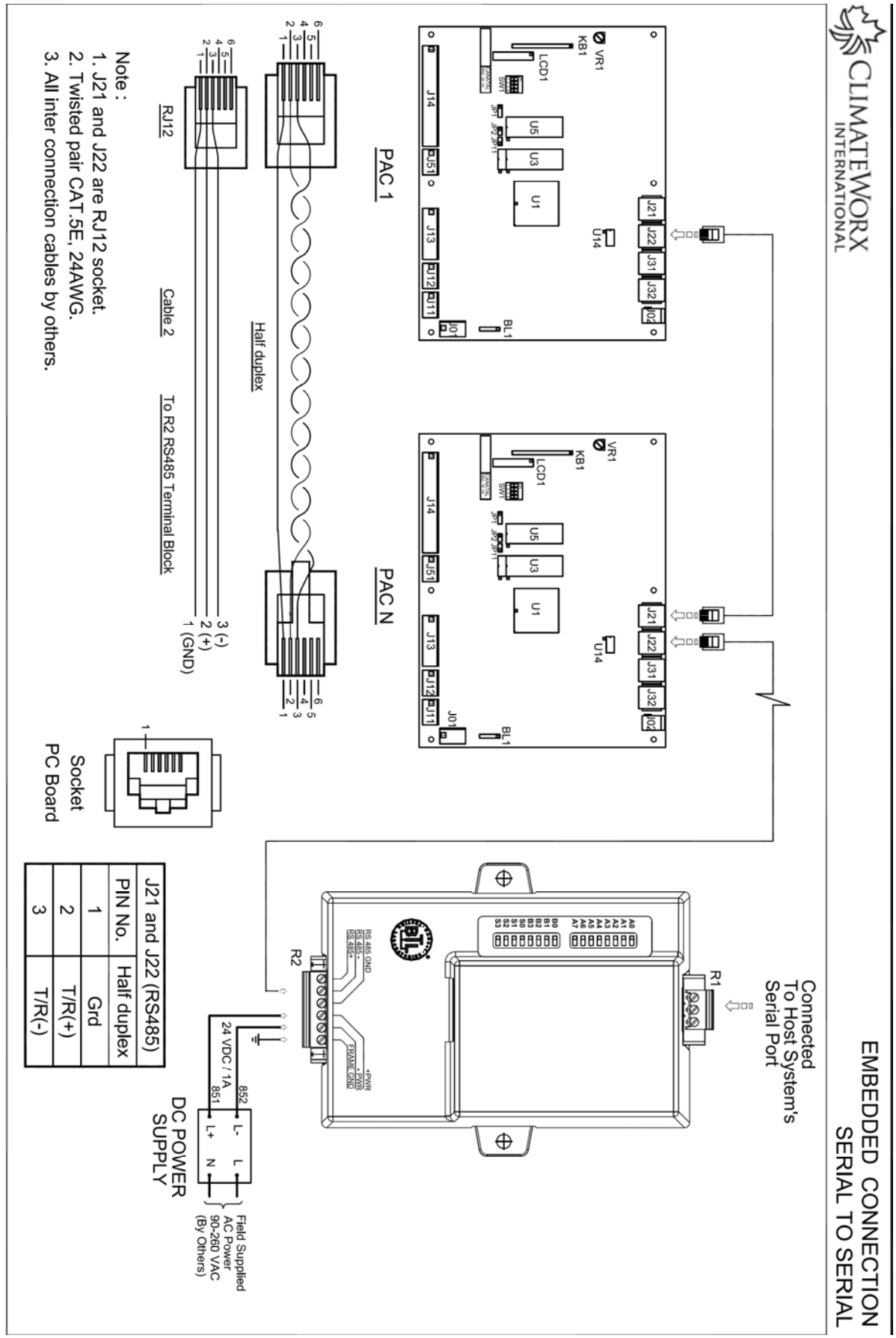
(#) FIELD TERMINAL


CLIMATEWORX INTERNATIONAL
EMBEDDED WEB BROWSER CONNECTION
SERIAL TO ETHERNET
Half duplex
Half duplex Cable 1
PAC 1
PAC N
Half duplex
Half duplex Cable 1
Terminal Block
RJ12
To Host System's Ethernet Port
(Standard Ethernet Cable)
DC POWER SUPPLY
Field Supplied AC Power 90-260 VAC (By Others)
3 (-)
2 (+)
1 (GND)
Socket PC Board
J21 and J22 (RS485)
PIN No. | Half duplex
1 | Grd
3 | T/R(+)
2 | T/R(-)
Note :
1. J21 and J22 are RJ12 socket.
2. Twisted pair CAT.5E, 24AWG.
3. All inter connection cables by others.
M52ES20G
MAR 14, 2011
Dimension: Not to scale



J21 and J22 (RS485)	
PIN No.	Half duplex
1	Grd
2	T/R(+)
3	T/R(-)


CLIMATEWORX INTERNATIONAL
EMBEDDED CONNECTION
SERIAL TO ETHERNET (LONWORKS)
Field Supplied Half Duplex Cable
PAC 1
PAC N
To Host System's LON PORT
To Host System's Ethernet Port
(Standard Ethernet Cable)
DC POWER SUPPLY
24 VDC / 1A
Field Supplied AC Power 90-260 VAC (By Others)
Half duplex
Cable 2
To R2 RS485 Terminal Block
RJ12
3 (-)
2 (+)
1 (GND)
Socket PC Board
Note :
1. J21 and J22 are RJ12 socket.
2. Twisted pair CAT.5E, 24AWG.
3. All inter connection cables by others.
J21 and J22 (RS485)
PIN No. | Half duplex
1 | Grd
2 | T/R(+)
3 | T/R(-)
M52ES26B
30 APR 2012
Dimension: Not to scale


CLIMATEWORX INTERNATIONAL
EMBEDDED CONNECTION
SERIAL TO SERIAL
Connected
To Host System's
Serial Port
PAC 1
PAC N
Half duplex
Cable 2
To R2 RS485 Terminal Block
RJ12
Note :
1. J21 and J22 are RJ12 socket.
2. Twisted pair CAT.5E, 24AWG.
3. All inter connection cables by others.
Socket
PC Board
DC POWER
SUPPLY
24 VDC / 1A
Field Supplied
AC Power
90-260 VAC
(By Others)
J21 and J22 (RS485)
PIN No. | Half duplex
1 | Grd
2 | T/R(+)
3 | T/R(-)
M52ES27B
30 APR 2012
Dimension: Not to scale