



CLIMATEWORX  
INTERNATIONAL

MISSION CRITICAL Air Conditioning Systems

# Series 11, Ceiling Units

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*Installation Manual*

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## **Site Preparation**

In order to maximize operating efficiency and performance, the following areas should be observed at the site-planning stage:

- The room should be surrounded with a vapor seal to eliminate moisture migration through the building structure. Windows should be sealed and at least double-glazed to prevent sweating. All door jams should fit tightly and should not have any grilles in them. Polyethylene film type ceiling, vinyl wallpaper or plastic based paint on the walls and slabs are recommended to minimize absorption and transmission of moisture into the room.
- Owing to a generally small population, a typical room should have fresh air kept at only about 5% of the re-circulated 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.

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## **Location Consideration**

### **Positioning of Indoor units**

The Series 11 unit is designed for ceiling mounting in or above a suspended T-bar ceiling grid. Care should be taken to ensure that the supply and return air-paths are not blocked by equipment; preferably the unit should be located over a clear floor space for ease of service. Additionally the units contain water and as a result should not be mounted above equipment that could be damaged by water. It is recommended that a field supplied drain pan complete with drain be installed beneath ducted units and all water and glycol condensing units / condensers.

The unit should be mounted in such a way that the side panels can be easily accessed through the surrounding ceiling tiles for service.

For spot cooling units (fully packaged) care should be taken in orienting the air grille supplied. The filter grille (return air to the unit) should be located under the evaporator and the three way grill located under the supply air section. The louvers on the supply air grill should be directed away from the return air to avoid short circuiting of air.

The unit should be mounted above the flange of the T-Bar ceiling grid using the foam insulation provided with the grille to seal to the bottom of the unit.

## Hanging the Unit

Before hanging the unit, ensure the mounting surface is capable of supporting the unit's weight. Refer to Table 1 for unit weights.

Model	1 Ton (Weight lbs)	1.5 Ton (Weight lbs)	2 Ton (Weight lbs)	2.5 Ton (Weight lbs)	3 Ton (Weight lbs)	4 Ton (Weight lbs)	5 Ton (Weight lbs)
Air-cooled self contained	235	240	245	250	N/A	N/A	N/A
DX Air-cooled	175	180	185	190	230	475	490
Air Handling Unit	110	110	110	110	140	415	430
Water-cooled self-contained	215	220	225	230	275	545	560
Glycol-cooled self-contained	215	220	225	230	275	545	560
Chilled water	110	110	110	110	140	415	430
Dual Cooled CW+CW	N/A	N/A	N/A	N/A	N/A	515	530
Dual Cooled CW + DX Air	N/A	N/A	N/A	N/A	N/A	575	590
Dual Cooled CW + DX Water	N/A	N/A	N/A	N/A	N/A	645	660
Dual Cooled CW + DX Glycol	N/A	N/A	N/A	N/A	N/A	645	660
Free Cooling	N/A	N/A	N/A	N/A	N/A	665	680

Table 1: Unit Weights

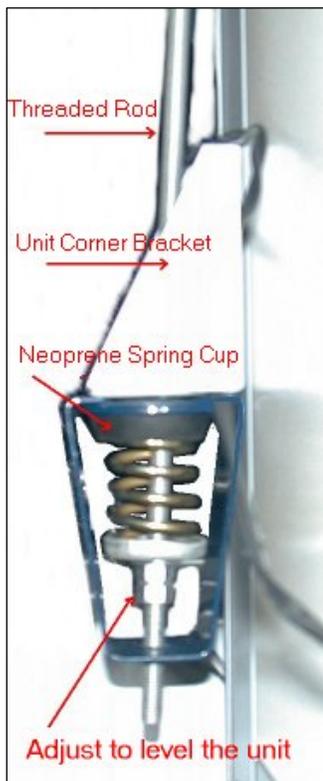


Figure 1

Attach the corner brackets to the corner posts of the unit. Remove all the access panels and lift the unit into the selected position. Using threaded hanging rod (3/8" diameter) secure the unit in place using nuts and washers (all field supplied).

For units supplied with vibration isolating spring mounts place spring under corner bracket and attach locking hardware. After hanging the unit, adjust spring tensions to level the unit, shown in Figure 1.

## Positioning of Condensers or Condensing Units

Condensing units should be located as close to the indoor unit as possible. From a security and environment standpoint, outdoor air-cooled condensing units should be installed away from public access and occupied spaces where low ambient sound level is required. Indoor air-cooled condensers or condensing units should be located in areas where normal unit operating sound will not disturb the working environment. Water and glycol condensing units should not be located above sensitive equipment that could be damaged by water.

In order to avoid air short circuiting and inter unit re-circulation, air-cooled condensing units/condensers should be located at least 1m (3 ft.) away from any walls, obstructions or adjacent units. To ensure maintenance-free operation, air cooled condensing units/condensers should be located away from the areas that are continuously exposed to loose dirt and foreign materials that may clog the coil.

Indoor condensing units / condenser should be hung following the procedure outlined earlier. Outdoor units should be firmly secured on steel supports or concrete plinths.

For packaged units the condenser fan box is supplied loose. To attach, position evaporator section, then bring the fan box in from below and place the lip (Figure 2) inside the top cover lip (on evaporator unit). Push the condenser fan box from the bottom until it fits snugly. Use hardware provided to attach the fan box to the evaporator section.



Figure 2

## **Positioning of Remote Controller Unit**

The remote mounted controller should be located in an easily accessible area within reach of operating personnel. For proper operation the thermostat should be located on an inside wall. In addition its position must be at least 18" (46 cm) from any outside wall, and approximately 5' (1.5m) above the floor in an area with freely circulating air of average room temperature. In addition the following locations should be avoided:

1. Behind doors or in corners where freely circulating air is unavailable.
2. Where direct sunlight or radiant heat might affect readings.
3. On outside walls
4. Adjacent to or in line with conditioned air discharge grilles, stairwells or outside doors.
5. Where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition, or by an unheated /uncooled area behind the thermostat.
6. Where its operation will be affected by the supply air of an adjacent unit.

Consideration should be given to interconnecting wiring between indoor unit and controller. The maximum distance between indoor unit and controller should be 50'.

## **Positioning of Remote Temperature/ Humidity Sensor**

The remote mounted Temperature/ Humidity sensor should be located in an easily accessible area within reach of maintenance personnel. Its position must be at least 18" (46 cm) from any outside wall, and approximately 5' (1.5m) above the floor in an area with freely circulating air of average room temperature. In addition the following locations should be avoided:

1. Behind doors or in corners where freely circulating air is unavailable.
2. Where direct sunlight or radiant heat might affect readings.
3. On outside walls
4. Adjacent to or in line with conditioned air discharge grilles, stairwells or outside doors.
5. Where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition, or by an unheated /uncooled area behind the sensor.
6. Where its operation will be affected by the supply air of an adjacent unit.

Consideration should be given to interconnecting wiring between the M52 Remote Supervisory panel and the Remote T/H sensor. The Remote T/H sensor is provided with 25' of cable from the connection point within the Remote Supervisory panel.

## Electrical Installation

### Power Feeding

All models are fitted with a 3-terminal connection block. Single-phase power should be connected to the line side of the connection block. A ground lug is provided near the main power connection block for ground connection. (3 phase is an option on some units). Entering service cable should be fed through the hole on the side of the unit marked "Power".

The power cables should be sized in accordance with local and national codes. Refer to the unit nameplate for circuit ampacity.

### Interconnecting Wiring

#### Thermostat Control

Field supplied thermostat grade 5 conductor cable to be used between evaporating section and the wall mount thermostat.

#### M52 Controller

Pre-made control cable sets are supplied with each unit fitted with the M52 Controller, for connecting both the outdoor unit and remote mounted controller to the indoor unit. Standard cable lengths are 25 feet between the evaporator section and wall mount controller, and 25 feet between the evaporator section and condenser/condensing unit. Each cable will be clearly marked and care should be taken to ensure cables are connected correctly.

#### Packaged unit condenser fans

The condenser fan is supplied with a 3' length conduit/cable assembly. Attach conduit connector through the 1" hole located at the bulkhead at the top left hand corner of the electrical panel (Figure 3). Connect the two cables as per wiring diagram to the loom marked condenser fan.

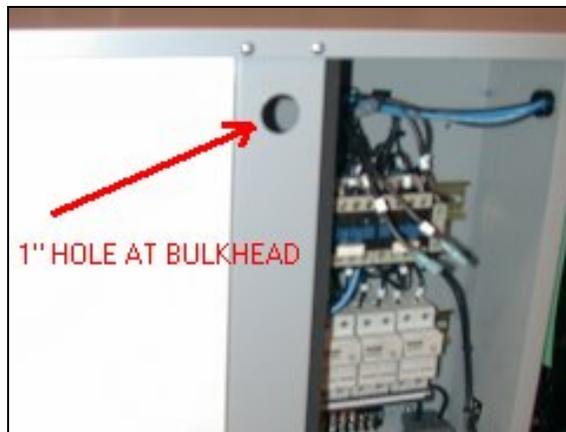


Figure 3

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## ***Piping Connections***

### **Condensate Drain**

For proper drainage a P-trap MUST be installed. Total height for the trap should be measured from the bottom of the drain pan (4" above unit bottom), to the bottom of the "U" in the trap. Minimum recommended height is 3.5" to ensure proper drainage.

### **Refrigerant Piping**

For self contained (packaged) systems no refrigerant connections are required.

Good practice should always be followed when connecting refrigerant piping in direct expansion 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:

- Use clean and dehydrated refrigeration quality tubing with both ends sealed.
- Cut and form tubes carefully to avoid getting dirt or metal particles into the refrigeration lines. Never use a hacksaw to cut the tubing.
- Once the system is open, 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.
- 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.
- It is recommended that quality refrigeration solder (95% tin, 5% silver) is used for its excellent capillary action.
- Use minimum amount of solder flux to prevent internal contamination of the piping. Use flux with care as it is usually acidic in nature.
- Install a trap at the bottom of every on the vertical riser of a hot gas or suction line and one for every 6m (20ft.) in elevation to collect refrigerant and lubrication oil during off cycle.
- Insulate the suction line.
- Insulate liquid lines that may be subjected to high heat gains. Insulate low level discharge lines to avoid burning due to accidental contact.

- Design and arrange refrigerant piping for the remote condenser in such 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 Condensing Units**

<b>Model</b>	<b>1 Ton</b>	<b>1.5 Ton</b>	<b>2 Ton</b>	<b>2.5 Ton</b>	<b>3 Ton</b>	<b>4 Ton</b>	<b>5 Ton</b>
<u>Liquid Line</u>							
50 ft. equivalent pipe length	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"
<u>Suction Line</u>							
50 ft. equivalent pipe length	5/8"	5/8"	3/4"	3/4"	7/8"	7/8"	1 1/8"

### **Recommended Pipe Size for Remote Condensers**

<b>Model</b>	<b>1 Ton</b>	<b>1.5 Ton</b>	<b>2 Ton</b>	<b>2.5 Ton</b>	<b>3 Ton</b>	<b>4 Ton</b>	<b>5 Ton</b>
<u>Hot Gas Line</u>							
50 ft. equivalent pipe length	1/2"	1/2"	5/8"	5/8"	5/8"	3/4"	3/4"
100 ft. equivalent pipe length	1/2"	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"
150 ft. equivalent pipe length	5/8"	5/8"	3/4"	3/4"	3/4"	7/8"	7/8"
175 ft. equivalent pipe length	N/A	N/A	3/4"	3/4"	7/8"	7/8"	1 1/8"
200 ft. equivalent pipe length	N/A	N/A	N/A	3/4"	7/8"	7/8"	1 1/8"
<u>Liquid Line</u>							
50 ft. equivalent pipe length	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"
100 ft. equivalent pipe length	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"
150 ft. equivalent pipe length	3/8"	3/8"	1/2"	1/2"	1/2"	5/8"	5/8"
175 ft. equivalent pipe length	N/A	N/A	1/2"	1/2"	1/2"	5/8"	5/8"
200 ft. equivalent pipe length	N/A	N/A	N/A	1/2"	1/2"	5/8"	5/8"

### **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.
2. Connect a gauge manifold to the compressor suction and discharge access 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 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 charge the system with vapor R22/R407c (see spec label for unit refrigerant) through the discharge side of the compressor. It is a good practice to weigh the charge that is put into the system.
11. Allow the pressure to equalize.

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## Charging

Proper performance of the system depends largely 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 the compressor.
2. Close the main isolator and allow the compressor crankcase heater (where applicable) to operate for at least one hour.
3. Connect the gauge manifold to both discharge and suction access valves, with a common connection to the refrigerant cylinder. Purge the lines and open the refrigerant cylinder vapor valve.
4. Start the compressor using the test mode to energize the main fan.
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.
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 temperature. Continue charging until the liquid line temperature is approximately 5°F below the condensing temperature.

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## Operating the Thermostat

### Setting the Current Day and Time

1. Press the **CLOCK** Button. The display will flash a day of the week.
2. Press the up or down arrow buttons until the current day shows.
3. Press the **CLOCK** button again. The display will flash the hour. (Note the AM/ PM indicator.)
4. Press the up or down arrow buttons until the current hour shows.
5. Press the **CLOCK** button again. The display will flash the minutes.
6. Press the up or down arrow buttons until the current minutes show.
7. Press the **CLOCK** button and the current day and time are now set.

\* Note: If a button is not pushed in 15 seconds, the thermostat will automatically return to normal operation.

### Setting your Program Temperatures

With your specific program determined, you are ready to begin programming. You will now enter the individual program period temperatures for the heating program.

1. Press the **MODE** button until **HEAT** is displayed.
2. Press the **SET TEMP** button. The first program period (Morning) will be displayed.
3. Press the up or down arrow buttons to adjust that program period's temperature for heating.
4. Repeat Steps 2 and 3 for the Day, Evening and Night program periods. Remember, if your thermostat was set for two program periods, you will only have to repeat Steps 2 and 3 for the Night program period.
5. Press the **MODE** button until **COOL** is displayed. You now will enter the individual program period temperatures for the cooling program.
6. Repeat Steps 2, 3 and 4 for the cooling temperatures.
7. Press the **MODE** button until your desired mode of operation appears: HEAT- AUTO- OFF- COOL.
8. Press the **RESUME** button to return to normal operation.

Note: If a button is not pushed in 15 seconds, the thermostat will automatically return to normal operation. You may go back into the programming portion simply by repeatedly pressing the **SET TEMP** button until you get back to where you left off.

## Setting your Program Times

Referring to your Schedule Planner, you now will enter the times for the program periods.

1. Press the **PROGRAM** button. The display will flash a day of the week.
2. Press the up or down arrow buttons to select the day you wish to program. (We suggest starting with Monday.)
3. Press the **PROGRAM** button. The display will flash the hour of the first period (Morning). (Note the AM/ PM indicator.)
4. Press the up or down arrow buttons to adjust the desired hour for the first program period.
5. Press the **PROGRAM** button again. The display will flash the minutes.
6. Press the up or down arrow buttons to adjust the desired minutes for the first period. (Note the minutes are in increments of 10.)
7. Repeat Steps 3- 6 for the Day, Evening and Night periods. Remember that if your thermostat was set for two program periods, you will only have to repeat Steps 3- 6 for the Night period.
8. After entering the Night period, press the **PROGRAM** button. **COPY** will be displayed. The copy function will allow program times to be copied to sequential days. If you do not wish to copy the program times to another day (or block of days), proceed to Step 11.
9. Press the up or down arrow buttons to select the next individual day, or block of days, to copy the program times to.
10. Press the **PROGRAM** button to copy the program times to the selected days of the week.
11. Repeat Steps 1- 10 for any remaining unprogrammed days of the week.
12. When finished, you can verify that all program periods are programmed correctly by repeatedly pressing the **PROGRAM** button. When **COPY** appears, press the **PROGRAM** button to skip to the next day.

\* Note: If a button is not pushed in 15 seconds, the thermostat will automatically return to normal operation. You may go back into the programming portion simply by repeatedly pressing the **PROGRAM** button until you get back to where you left off.

## Temperature Override

### Temporary Override (3 hours)

You may change the temperature setting temporarily at any time without affecting the program. Press the up or down arrow buttons. The current event temperature and mode of operation will be displayed. Press the up or down arrow buttons again to adjust the temperature. This temperature will be maintained for three hours. To cancel, simply press the **RESUME** button.

### **Temporary Override with Keyboard Locked (1 hour) (300- 225, 300- 227, 300- 229)**

You may change the temperature setting temporarily at any time without affecting the program, even though the keypad is locked.

- Press the up or down buttons. The display will show the temperature for the first event. Press the up or down buttons again to adjust the temperature +/- 3 degrees. This temperature will be maintained for one hour.

### **Continuous Override (Hold)**

You also may maintain a constant temperature setting at any time without affecting the program.

1. Press and release the **MODE** button until the desired mode is displayed (HEAT – AUTO – OFF – COOL)
2. Press and release the **HOLD** button. **HOLD** will be displayed.
3. Press the up or down buttons to adjust the temperature. This temperature will be maintained indefinitely. To cancel, simply press the **RESUME** button.

Note: If the auto mode is used, press the **MODE** button, then press the up or down buttons to select a heating setpoint. Press the **MODE** button, and then press the up or down buttons to select a cooling setpoint.

## **Changing Fahrenheit (°F) to Celsius (°C)**

This thermostat is preset to display the temperature in Fahrenheit. You may change the display to Celsius. To change from one to the other, simultaneously press the up and down buttons. The display will change automatically.

## **Changing 12 Hour Time to 24 Hour Time**

This thermostat is preset to display the standard 12 hour time format. You may change the display to the 24 hour time format. To change from one to the other, press and release the **CLOCK** button, then press the **MODE** button. The display will change automatically.

## **Power Failures**

This Robertshaw thermostat will maintain the program settings during any type of power failure. If power fails, **AC** will be displayed for 30 minutes. After 30 minutes, the display will go blank. If power is restored within the first 30 minutes, the thermostat will resume normal operation. If power is restored after 30 minutes, **12: 00 AM** will flash, and the thermostat will control to the night event set point until the clock is reset. Once the clock is reset, the thermostat will resume normal operation.

## Dimensional Details

The following tables summarize the dimensional detail drawing number for Series 11 units with standard options. For units with a special option or configuration, please consult factory for details.

<b>Model</b>	<b>-10</b>	<b>-15</b>	<b>-20</b>	<b>-25</b>
Self-contained air-cooled unit	S11DD101	S11DD101	S11DD101	S11DD101
Ducted self-contained air-cooled unit	S11DD152	S11DD152	S11DD152	S11DD152
Self-contained water/glycol unit	S11DD111	S11DD111	S11DD111	S11DD111
Chilled water unit	S11DD121	S11DD121	S11DD121	S11DD121
Indoor evap. section w/compressor	S11DD131	S11DD131	S11DD131	S11DD131
Indoor evap. section	S11DD141	S11DD141	S11DD141	S11DD141
Ducted evaporator connections	S11DD151	S11DD151	S11DD151	S11DD151

### Condenser/Condensing Unit

Outdoor condenser/condensing unit	S11DD202	S11DD202	S11DD202	S11DD202
Indoor condenser/condensing unit	S11DD161	S11DD161	S11DD161	S11DD161

<b>Model</b>	<b>-30</b>	<b>-40</b>	<b>-50</b>
Self-contained unit	S11D-BB-300	N/A	N/A
Ducted self-contained unit	S11-D-DD-300	S11DD501	S11DD501
Chilled water unit	S11D-BB-300	N/A	N/A
Ducted Chilled Water unit	S11D-DD-300	S11DD501	S11DD501
Indoor evap. section	S11D-BB-300	N/A	N/A
Ducted Indoor evap. section	S11D-DD-300	S11DD501	S11DD501

### Condenser/ Condensing Unit

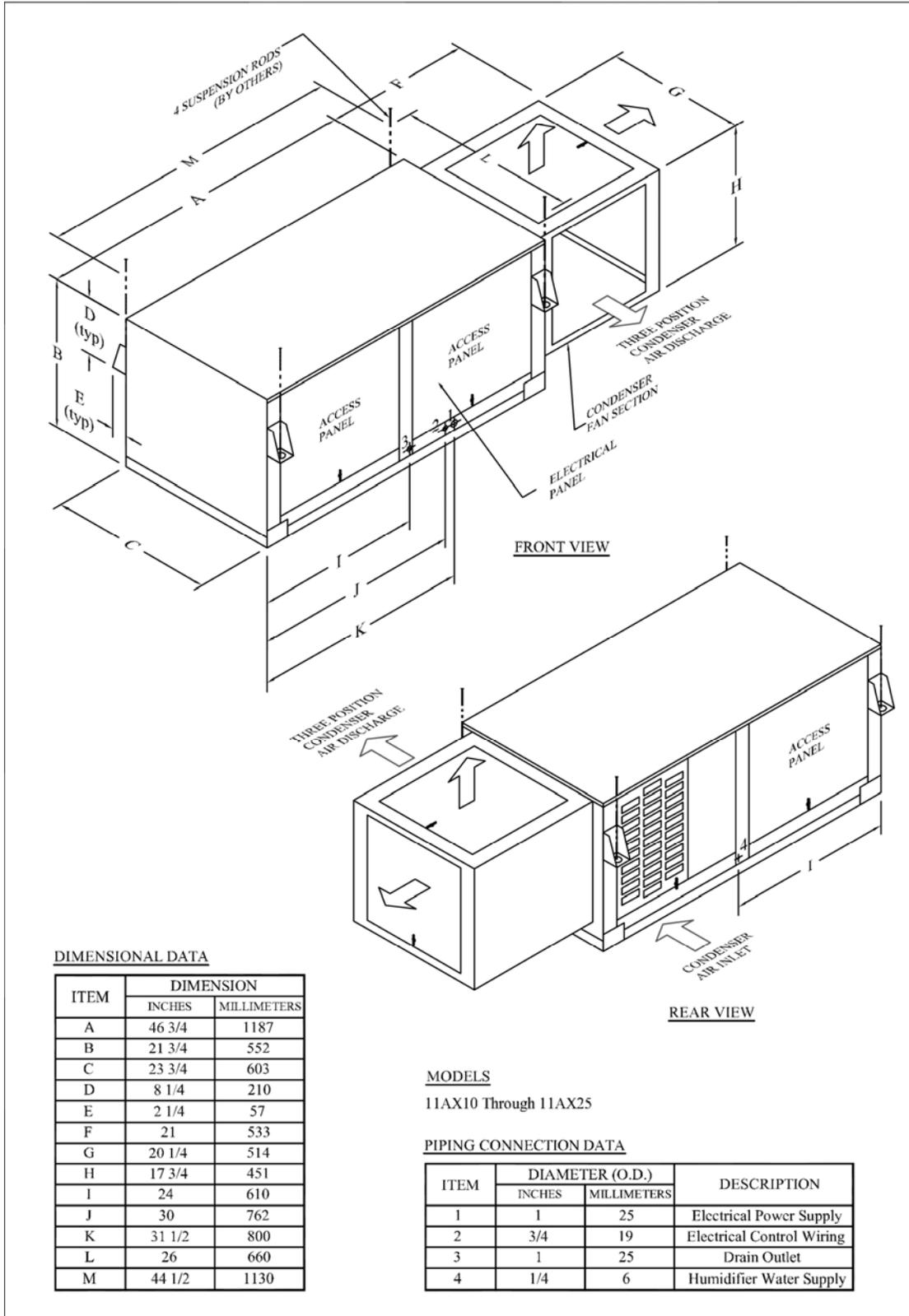
Outdoor condenser Horizontal*	KS-F_H_R407C	KS-F_H_R407C	KS-F_H_R407C
Outdoor condenser Vertical*	KS-F_V_R407C	KS-F_V_R407C	KS-F_V_R407C
Outdoor condenser w/ Receiver Kit*	KS-H_V_R407C MOD.KS11-065-01	KS-H_V_R407C MOD.KS11-065-01	KS-H_V_R407C MOD.KS11-078-01
Outdoor condensing unit	S11DD202	N/A	N/A
Indoor condenser WC/GC	S11DD301	S11DD301	S11DD301
Indoor condensing unit WC/GC	S11DD301	S11DD301	S11DD301
Indoor condenser unit Air Cooled	S11DD301	S11DD301	S11DD301
Indoor condensing unit Air Cooled	S11D-DD-300-004	S11D-DD-300-004	S11D-DD-300-004

## Appendix A: Dimensional Drawings

<u>Drawing Title</u>	<u>Drawing No.</u>	<u>Page No.</u>
SERIES 11 – Self-contained air-cooled unit-1 to 2.5 tons	S11DD101	16
SERIES 11 – Ducted self-contained air-cooled unit-1 to 2.5 tons	S11DD152	17
SERIES 11 – Self-contained water/glycol-cooled unit-1 to 2.5 tons	S11DD111	18
SERIES 11 – Chilled water unit-1 to 2.5 tons	S11DD121	19
SERIES 11 – Indoor evaporator section w/compressor-1 to 2.5 tons	S11DD131	20
SERIES 11 – Indoor evaporator section-1 to 2.5 tons	S11DD141	21
SERIES 11 – Ducted evaporator connections-1 to 2.5 tons	S11DD151	22
SERIES 11 – Outdoor condenser/condensing unit-1 to 2.5 tons	S11DD202	23
SERIES 11 – Indoor condenser/condensing unit-1 to 2.5 tons	S11DD161	24
SERIES 11 – Grille Air Distribution-1 to 3 tons	S11DD171	25
SERIES 11 – Self-contained/ chilled water/ evaporator-3 ton	S11D-BB-300	26
SERIES 11 – Ducted chilled water/ evaporator-3 ton	S11D-DD-300	26
SERIES 11 –Ducted chilled water / evaporator-4/ 5 ton	S11DD501	27
SERIES 11 – Indoor condenser WC/GC-3 to 5 tons	S11DD301	28
SERIES 11 – Indoor condensing unit WC/GC-3 to 5 tons	S11DD301	28
SERIES 11 – Indoor condenser/condensing unit-3 to 5 tons	S11D-DD-A-300-004	29



**SERIES 11- CEILING MOUNTED UNIT  
SELF-CONTAINED AIR-COOLED UNIT**



**DIMENSIONAL DATA**

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	21 3/4	552
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	21	533
G	20 1/4	514
H	17 3/4	451
I	24	610
J	30	762
K	31 1/2	800
L	26	660
M	44 1/2	1130

**MODELS**

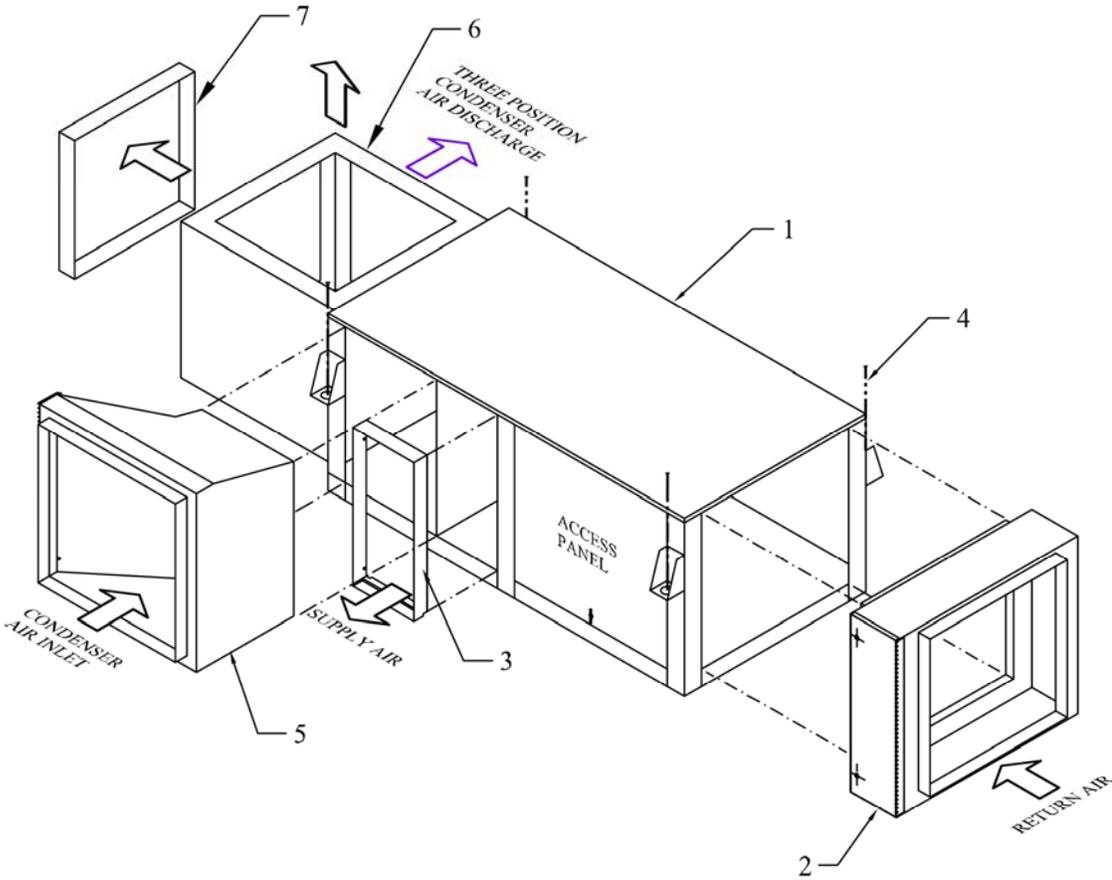
11AX10 Through 11AX25

**PIPING CONNECTION DATA**

ITEM	DIAMETER (O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1	25	Electrical Power Supply
2	3/4	19	Electrical Control Wiring
3	1	25	Drain Outlet
4	1/4	6	Humidifier Water Supply



SERIES 11- CEILING MOUNTED UNIT  
DUCTED EVAPORATOR AND CONDENSER CONNECTIONS



REAR VIEW

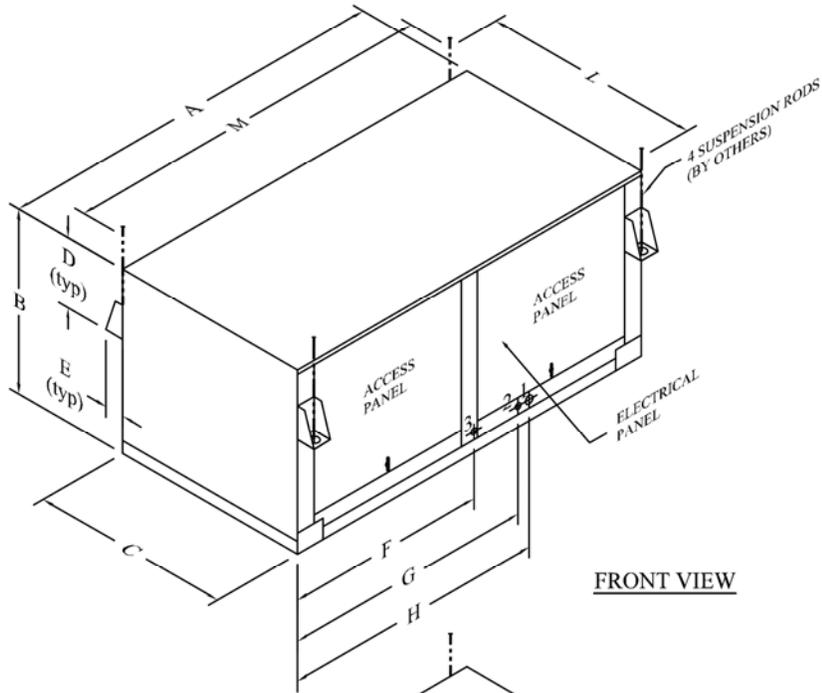
ITEM	DESCRIPTION	DUCT CONNECTION SIZE	
		INCHES	MILLIMETERS
1	Main Unit	--	--
2	Return Air Filter Box for Evaporator	18 x 18	457 x 457
3	Supply Air Duct Collar	8 x 18	203 x 457
4	Suspension Rods (By Others)	--	--
5	Return Air Filter Box for Condenser	18 x 18	457 x 457
6	In Door Air-cooled Fan Box	--	--
7	Discharge Air Duct Collar	15 3/4 x 15 3/4	400 x 400

MODELS

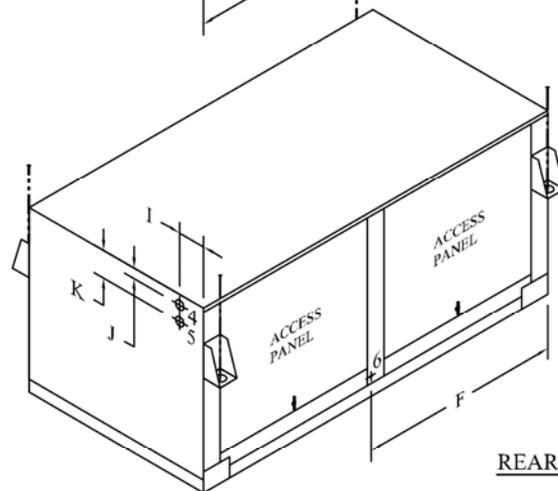
Applicable for all Series 11 units, size 10 through 25



**SERIES 11- CEILING MOUNTED UNIT  
SELF-CONTAINED WATER/GLYCOL-COOLED UNIT**



**FRONT VIEW**



**REAR VIEW**

**DIMENSIONAL DATA**

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	21 3/4	552
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	24	610
G	30	762
H	31 1/2	800
I	3 1/4	83
J	1 1/4	32
K	3 1/4	83
L	26	660
M	44 1/2	1130

**PIPING CONNECTION DATA**

ITEM	DIAMETER (O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1	25	Electrical Power Supply
2	3/4	19	Electrical Control Wiring
3	1	25	Drain Outlet
4	1 1/8	32	Water/Glycol Supply
5	1 1/8	32	Water/Glycol Return
6	1/4	6	Humidifier Water Supply

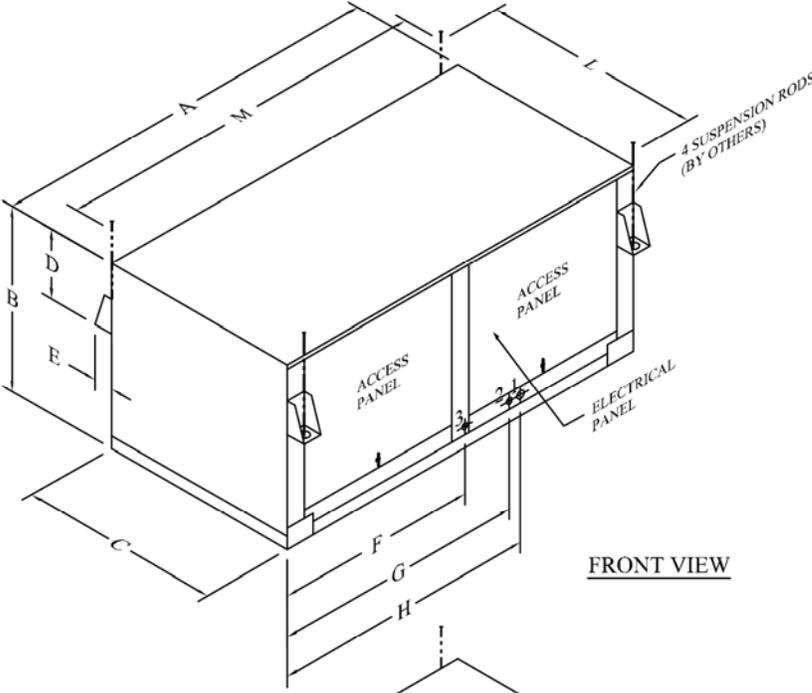
**MODELS**

11WX10 through 11WX25  
11GX10 through 11GX25

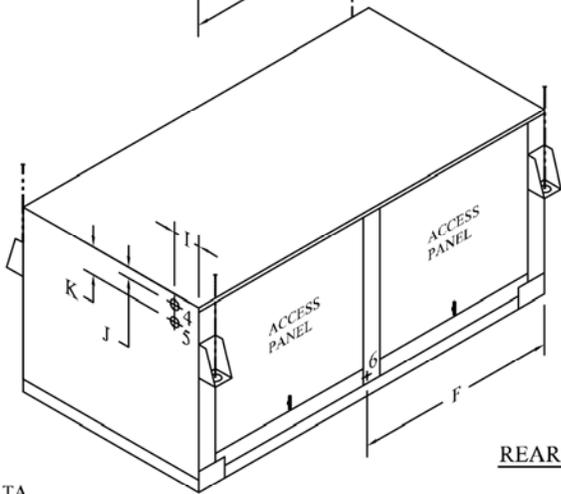


CLIMATEWORX  
INTERNATIONAL

SERIES 11- CEILING MOUNTED UNIT  
CHILLED WATER UNIT



FRONT VIEW



REAR VIEW

DIMENSIONAL DATA

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	21 3/4	552
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	24	610
G	30	762
H	31 1/2	800
I	3 1/4	83
J	1 1/4	32
K	3 1/4	83
L	26	660
M	44 1/2	1130

PIPING CONNECTION DATA

ITEM	DIAMETER ( O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1	25	Electrical Power Supply
2	3/4	19	Electrical Control Wiring
3	1	25	Drain Outlet
4	1 1/8	32	Chilled Water Supply
5	1 1/8	32	Chilled Water Return
6	1/4	6	Humidifier Water Supply

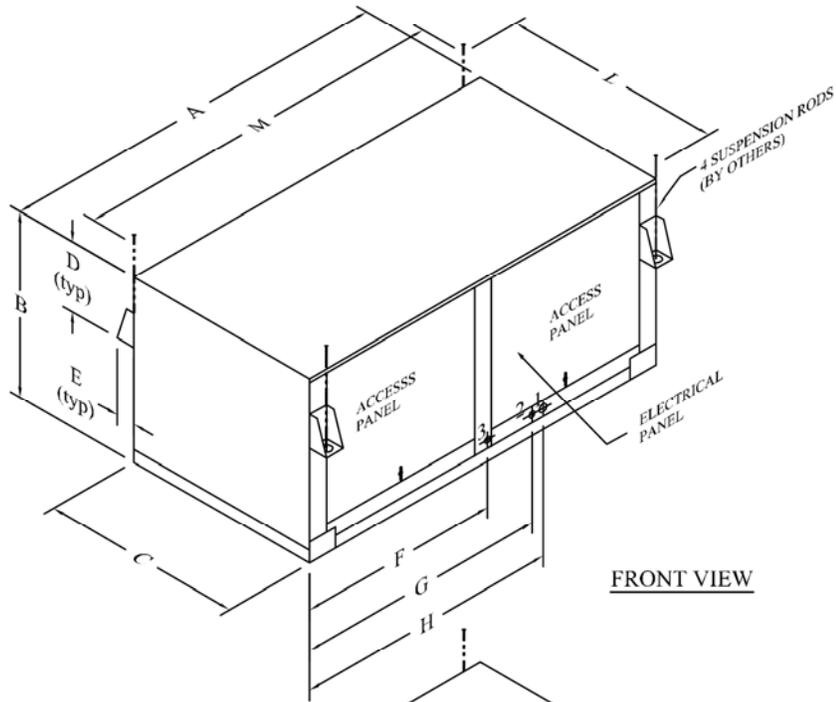
MODELS

11CW10 through 11CW25

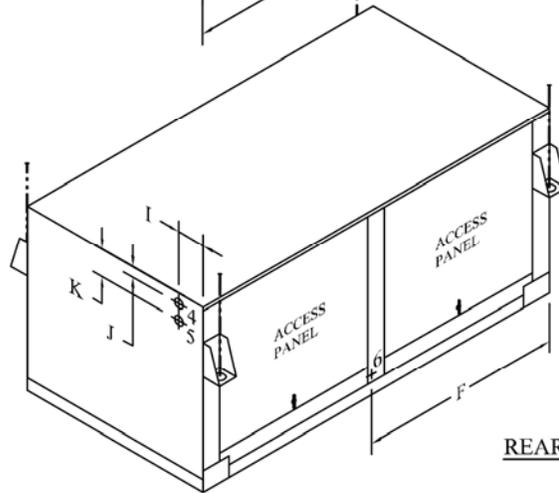


CLIMATEWORX  
INTERNATIONAL

SERIES 11- CEILING MOUNTED UNIT  
INDOOR EVAPORATOR SECTION w/ COMPRESSOR



FRONT VIEW



REAR VIEW

DIMENSIONAL DATA

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	21 3/4	552
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	24	610
G	30	762
H	31 1/2	800
I	3 1/4	83
J	1 1/4	32
K	3 1/4	83
L	26	660
M	44 1/2	1130

PIPING CONNECTION DATA

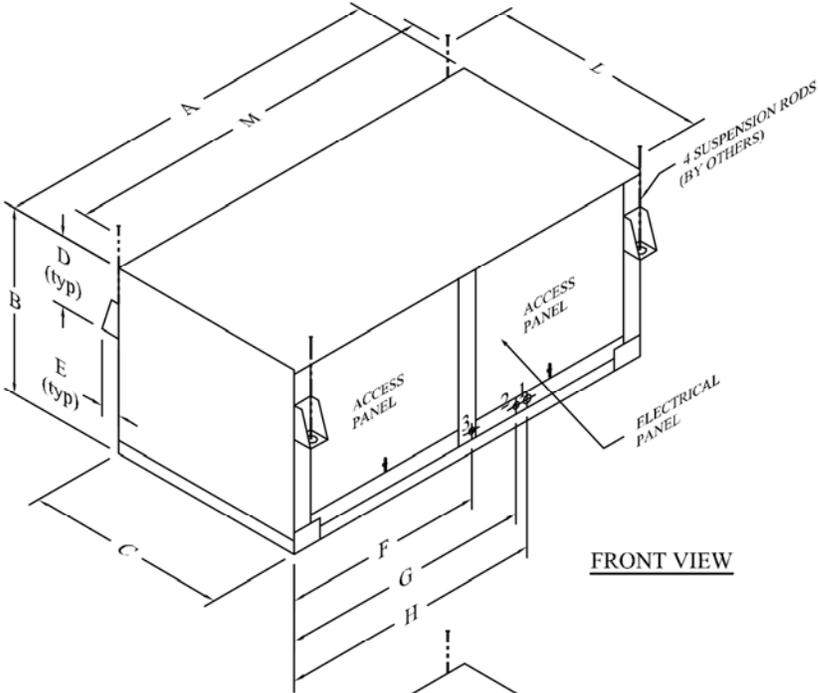
ITEM	DIAMETER (O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1	25	Electrical Power Supply
2	3/4	19	Electrical Control Wiring
3	1	25	Drain Outlet
4	3/8	10	Liquid Line
5	1/2	13	Hot Gas Line
6	1/4	6	Humidifier Water Supply

MODELS

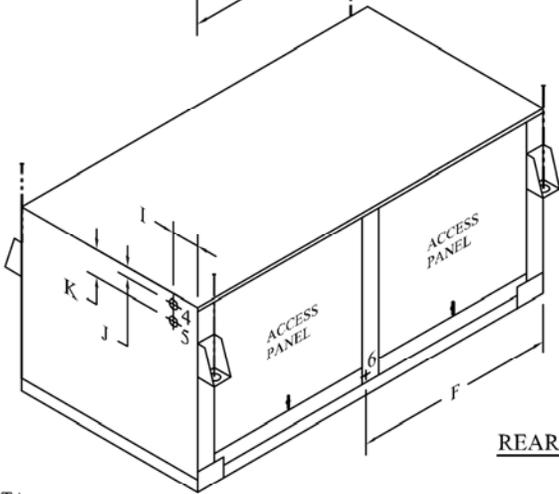
11DX10 through 11DX25



SERIES 11- CEILING MOUNTED UNIT  
INDOOR EVAPORATOR SECTION



FRONT VIEW



REAR VIEW

DIMENSIONAL DATA

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	21 3/4	552
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	24	610
G	30	762
H	31 1/2	800
I	3 1/4	83
J	1 1/4	32
K	3 1/4	83
L	26	660
M	44 1/2	1130

PIPING CONNECTION DATA

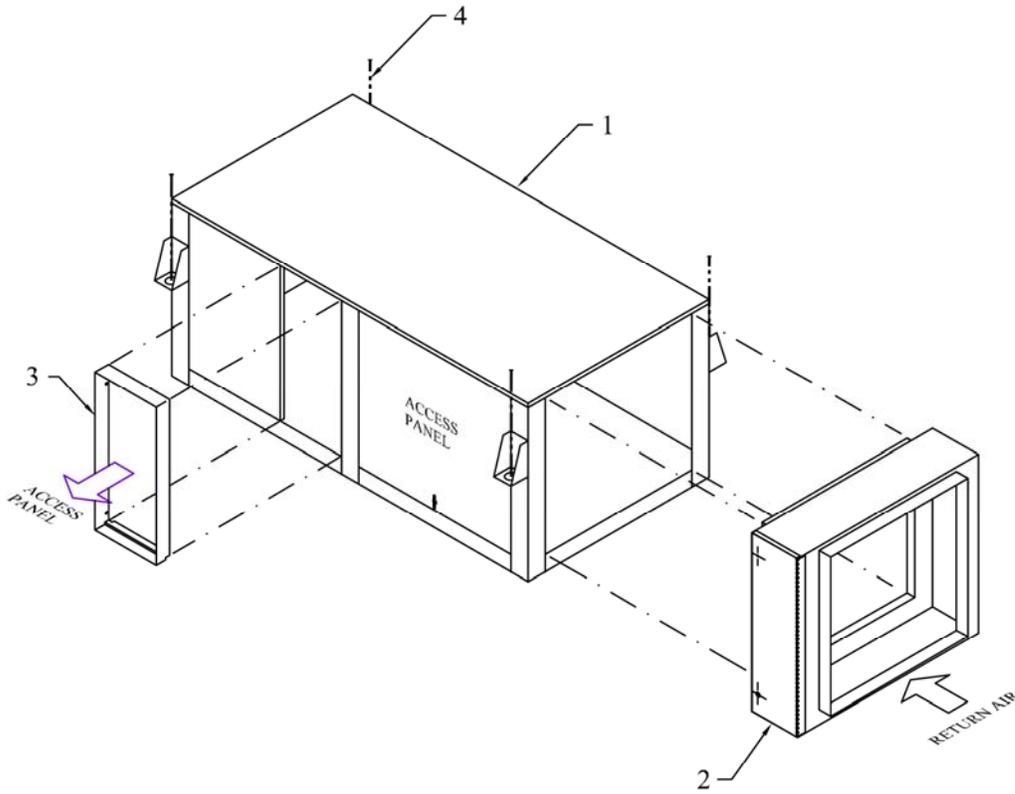
ITEM	DIAMETER (O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1	25	Electrical Power Supply
2	3/4	19	Electrical Control Wiring
3	1	25	Drain Outlet
4	3/8	10	Liquid Line
5	5/8	16	Suction Line
6	1/4	6	Humidifier Water Supply

MODELS

11AH10 through 11AH25



SERIES 11- CEILING MOUNTED UNIT  
DUCTED EVAPORATOR CONNECTIONS



REAR VIEW

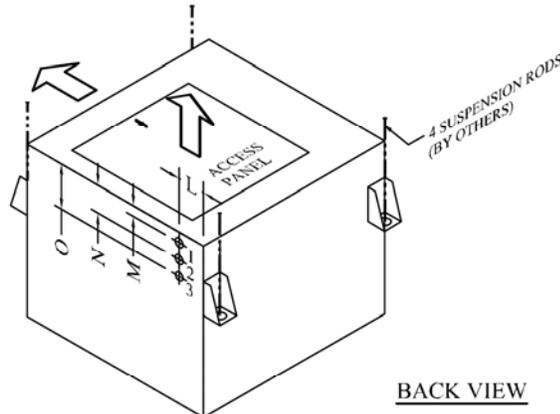
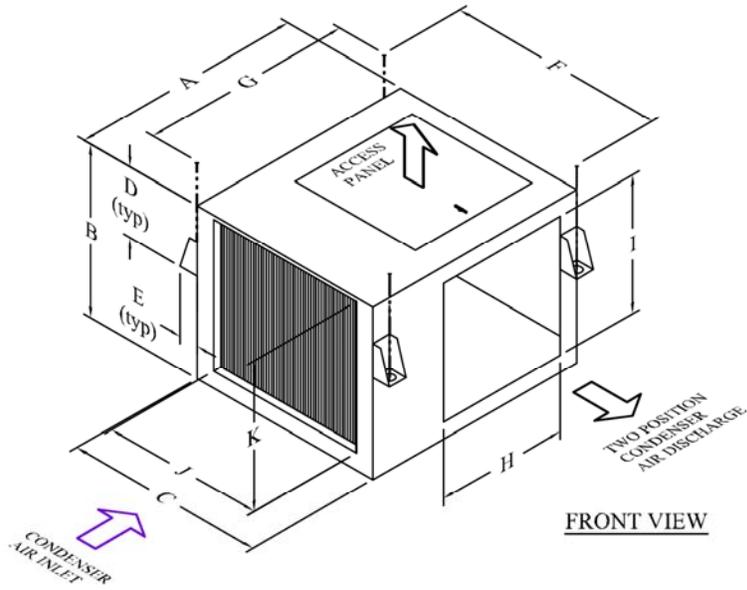
ITEM	DESCRIPTION	DUCT COLLAR CONNECTION SIZE	
		INCHES	MILLIMETERS
1	Main Unit	--	--
2	Return Air Filter Box	18 x 18	457 x 457
3	Supply Air Duct Collar	8 x 18	203 x 457
4	Suspension Rods (By Others)	--	--

MODELS

Applicable for all Series 11 units, size 10 through 25



SERIES 11- CEILING MOUNTED UNIT  
INDOOR CONDENSING UNIT/ CONDENSER



**DIMENSIONAL DATA**

ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	24 1/2	622
B	20 1/4	514
C	23 3/4	603
D	8 1/4	210
E	2 1/4	57
F	26	660
G	25 1/4	641
H	20	508
I	17 1/4	438
J	19 1/4	489
K	17 3/4	451
L	3 1/4	83
M	1 1/4	32
N	3 1/4	83
O	5 1/4	133

**PIPING CONNECTION DATA**

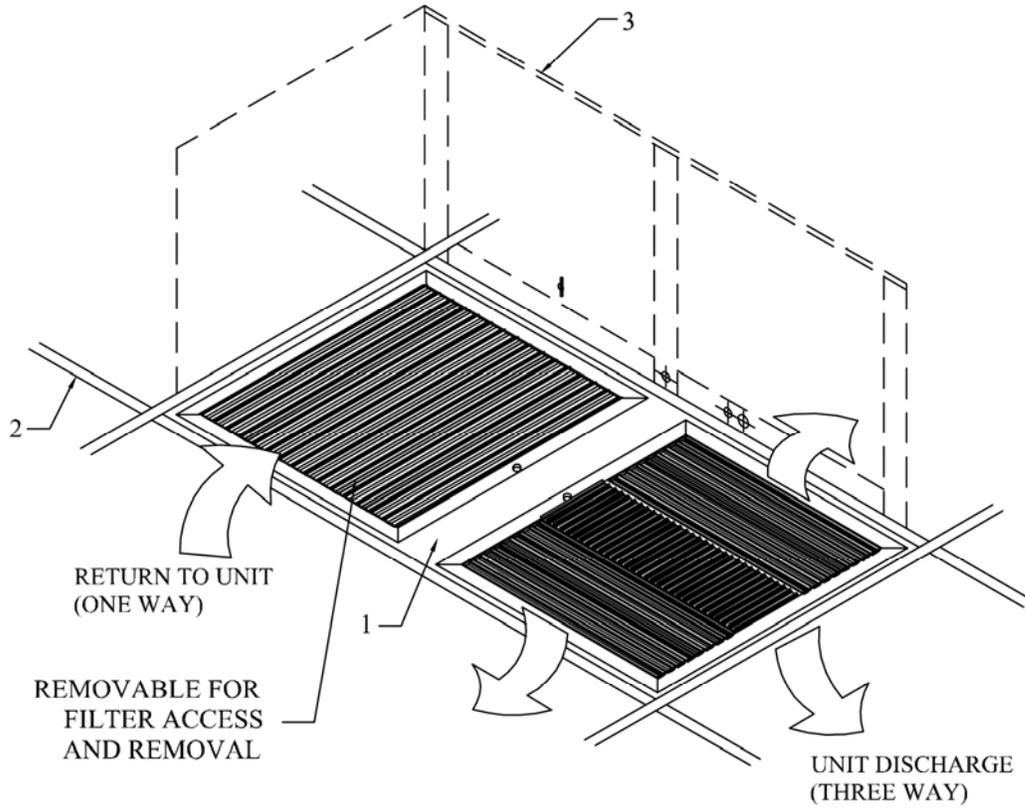
ITEM	DIAMETER (O.D.)		DESCRIPTION
	INCHES	MILLIMETERS	
1	3/8	10	Liquid Line
2	1/2	13	Discharge Line
	5/8	16	Suction Line
3	1	25	Electrical Power Supply

**MODELS**

11RC10 Through 11RC25  
11RU10 Through 11RU25



SERIES 11- CEILING MOUNTED UNIT  
GRILLE AIR DISTRIBUTION



FRONT VIEW

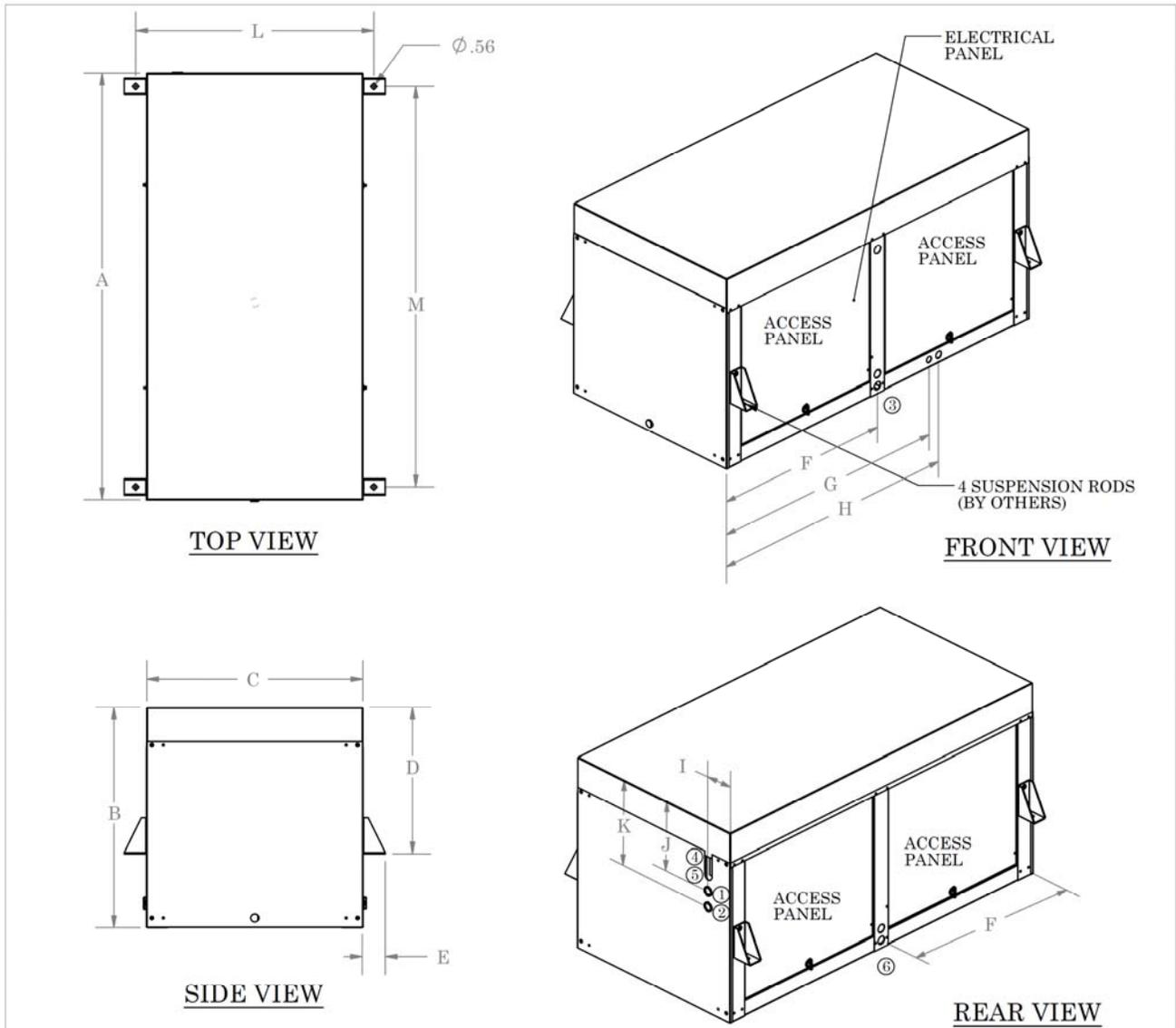
ITEM	DESCRIPTION
1	Grille
2	Suspension T- Bar
3	Main Unit

MODELS

Available for all Series 11 units, Size 10 through 25



**SERIES 11, 3 TONS - CEILING MOUNTED UNIT  
BOTTOM SUPPLY - BOTTOM RETURN**



ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	24	610
C	23 3/4	603
D	16	406
E	2 1/2	64
F	23 1/2	597
G	31 1/2	800
H	33	838
I	3 1/4	83
J	8 3/4	222
K	10 3/4	273
L	26	660
M	44	1118

**MODELS**

11DX30, 11WX30  
11CW30, 11GX30  
11AH30

ITEM	DIAMETER (OD)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1/2 - 3/4	12 - 19	Electrical Power Supply
2	1/2 - 3/4	12 - 19	Electrical Control Wiring
3	3/4	19	Drain Outlet Bottom
4	7/8 DIA	22	Condenser Water/Glycol Supply
	1/2 DIA	12	Liquid line
	7/8 DIA	22	Chilled Water Supply
5	7/8 DIA	22	Condenser Water/Glycol Return
	7/8 DIA	22	Suction line
	5/8 DIA	16	Hot gas line
	7/8 DIA	22	Chilled Water Return
6	1/4 SUPPLY LINE	6	Humidifier Water Supply

File Location: V:\CANATAL\Series 11 BMP drawings\SUBMITTAL DRAWINGS\

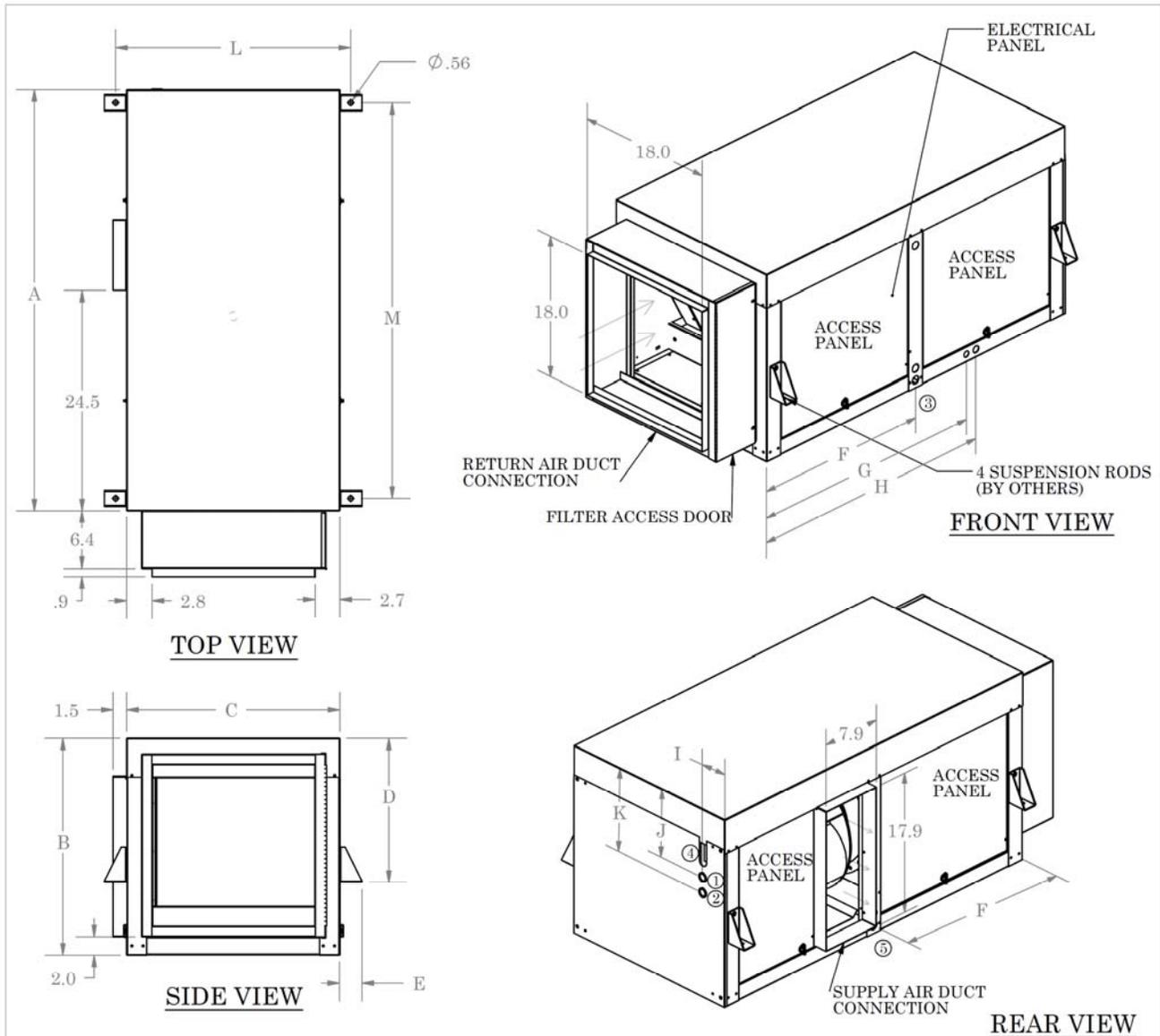
S11D-BB-300

25 JUNE 2010

NOT TO SCALE



**SERIES 11, 3 TONS - CEILING MOUNTED UNIT  
DUCTED SUPPLY - DUCTED RETURN**



ITEM	DIMENSION	
	INCHES	MILLIMETERS
A	46 3/4	1187
B	24	610
C	23 3/4	603
D	16	406
E	2 1/2	64
F	23 1/2	597
G	31 1/2	800
H	33	838
I	3 1/4	83
J	8 3/4	222
K	10 3/4	273
L	26	660
M	44	1118

**MODELS**

11DX30, 11WX30  
11CW30, 11GX30  
11AH30

ITEM	DIAMETER (OD)		DESCRIPTION
	INCHES	MILLIMETERS	
1	1/2 - 3/4	12 - 19	Electrical Power Supply
2	1/2 - 3/4	12 - 19	Electrical Control Wiring
3	3/4	19	Drain Outlet Bottom
4	7/8 DIA	22	Condenser Water/Glycol Supply
	1/2 DIA	12	Liquid line
	7/8 DIA	22	Chilled Water Supply
	7/8 DIA	22	Condenser Water/Glycol Return
	7/8 DIA	22	Suction line
	5/8 DIA	16	Hot gas line
	7/8 DIA	22	Chilled Water Return
5	1/4 SUPPLY LINE	6	Humidifier Water Supply

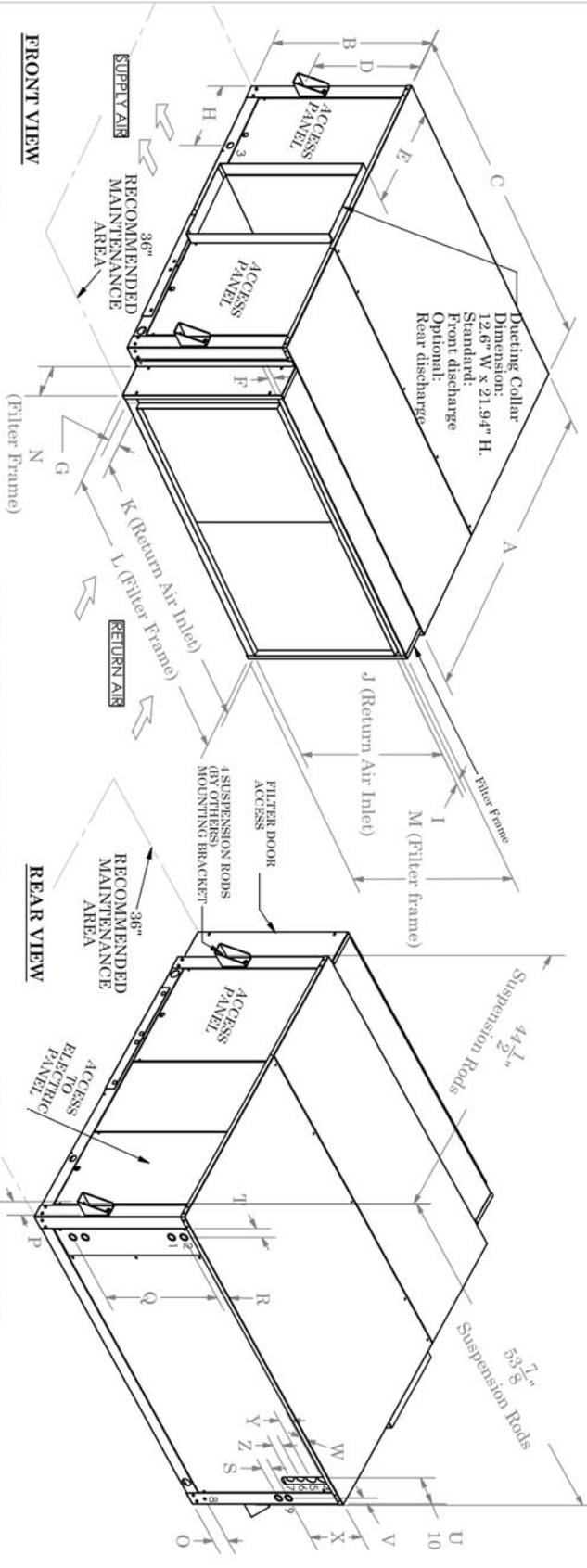
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S11D-DD-300

26 MAY 2010

NOT TO SCALE



**SERIES 11 - CEILING MOUNT UNIT  
4 & 5 TON**



**DIMENSIONAL DATA**

ITEM	DIMENSION		ITEM	DIMENSION	
	INCHES	MILLIMETERS		INCHES	MILLIMETERS
A	46.3/4	1187	N	5.3/8	137
B	24 1/2	622	O	2 1/2	64
C	51 1/2	1308	P	2 1/2	64
D	16.3/8	416	Q	1/8	457
E	15.3/8	391	R	2	51
F	7/8	22	S	1.5/8	41
G	2	51	T	1 1/2	38
H	10 1/2	267	U	4.3/8	111
I	1	25	V	1 1/8	29
J	21 1/2	546	W	1.5/8	41
K	44 1/8	1121	X	8 1/4	210
L	47	1194	Y	1.7/8	48
M	24.3/8	619	Z	1.5/8	41

**ELECTRICAL CONNECTION DATA**

ITEM	DIAMETER (O.D.)	DESCRIPTION
1	1/2 - 3/4	Electrical Power Supply
2	1/2 - 3/4	Electrical Control Wiring

**MODELS**

MODEL	DIAMETER (O.D.)	DESCRIPTION
11AH40	1/2 - 25	Electrical Power Supply
11WX40	1/2 - 25	Electrical Control Wiring
11GX40	1/2 - 25	Electrical Control Wiring
11DX40	1/2 - 25	Electrical Control Wiring
11FX40	1/2 - 25	Electrical Control Wiring
11CX40	1/2 - 25	Electrical Control Wiring
11AD40	1/2 - 25	Electrical Control Wiring
11WD40	1/2 - 25	Electrical Control Wiring
11GD40	1/2 - 25	Electrical Control Wiring

**PIPING CONNECTION DATA**

ITEM	DIAMETER (O.D.)	DESCRIPTION
3	3/4	Humidifier & Condensate Drain Outlet*
4	1 1/8	Liquid Line
4	1 1/8	Condenser Water Supply
4	1 1/8	Condenser Glycol Supply
5	5/8	Hot Gas Line
5	1 1/8	Condenser Water Return
5	1 1/8	Condenser Glycol Return
6	1 1/8	Chilled Water Supply
6	1 1/8	Chilled Water Return
7	1 1/8	Chilled Water Return
8	1/4	Humidifier Supply Line
9	5/8	Reheat Coil Water Supply
9	5/8	Reheat Coil Water Return
10	5/8	Reheat Coil Water Return

\* UNITS WITH HIGH TEMPERATURE, HIGH LIFT CONDENSATE PUMP HAS 3/8" O.D.

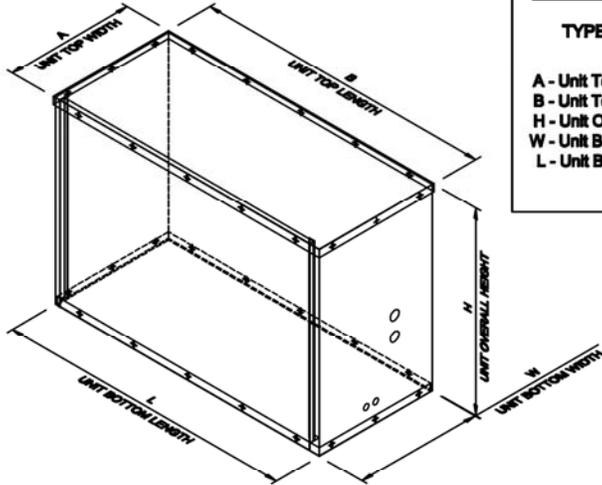
S11DD501A

30 SEPTEMBER 2009

NOT TO SCALE



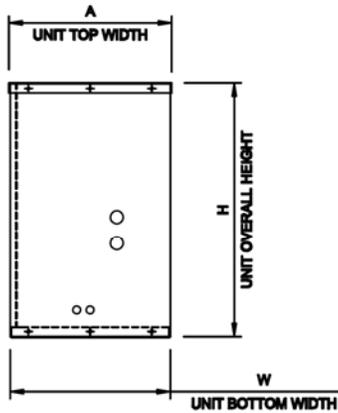
## SERIES 11 - DIMENSIONAL DETAIL WATER/GLYCOL COOLED CONDENSING UNIT



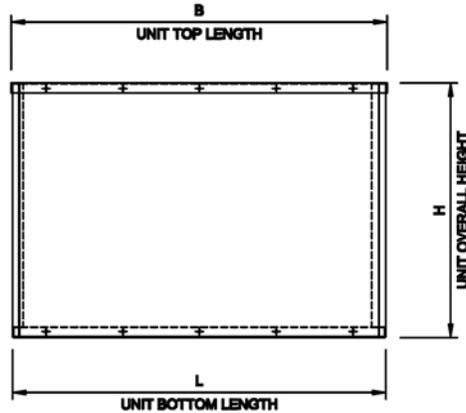
**ISOMETRIC DETAIL**

### CONDENSER DIMENSIONS

TYPE	WATER COOLED	GLYCOL COOLED	4 & 5 TON WATER/GLYCOL COOLED
A - Unit Top Width	13-3/4"	13-3/4"	13-3/4"
B - Unit Top Length	25-1/4"	28-1/4"	34-1/4"
H - Unit Overall Height	16"	19"	22"
W - Unit Bottom Width	12"	12"	12"
L - Unit Bottom Length	25"	28"	34"



**SIDE PANEL DETAIL**



**FRONT PANEL DETAIL**

### PIPING CONNECTION SIZE

MODEL NO. SUFFIX		11WC10-25	11WC40-50	11GC10-25	11GC40-50
Liquid Line	-ODM in	3/8"	1/2"	3/8"	1/2"
Suction Line	-ODM in	5/8"	3/4"	5/8"	3/4"
Condenser Water	-ODM in	7/8"	1 1/8"	-	-
Glycol Solution	-ODM in	-	-	7/8"	1 5/8"

ODM - Outside Diameter of copper pipe in inches for soldering

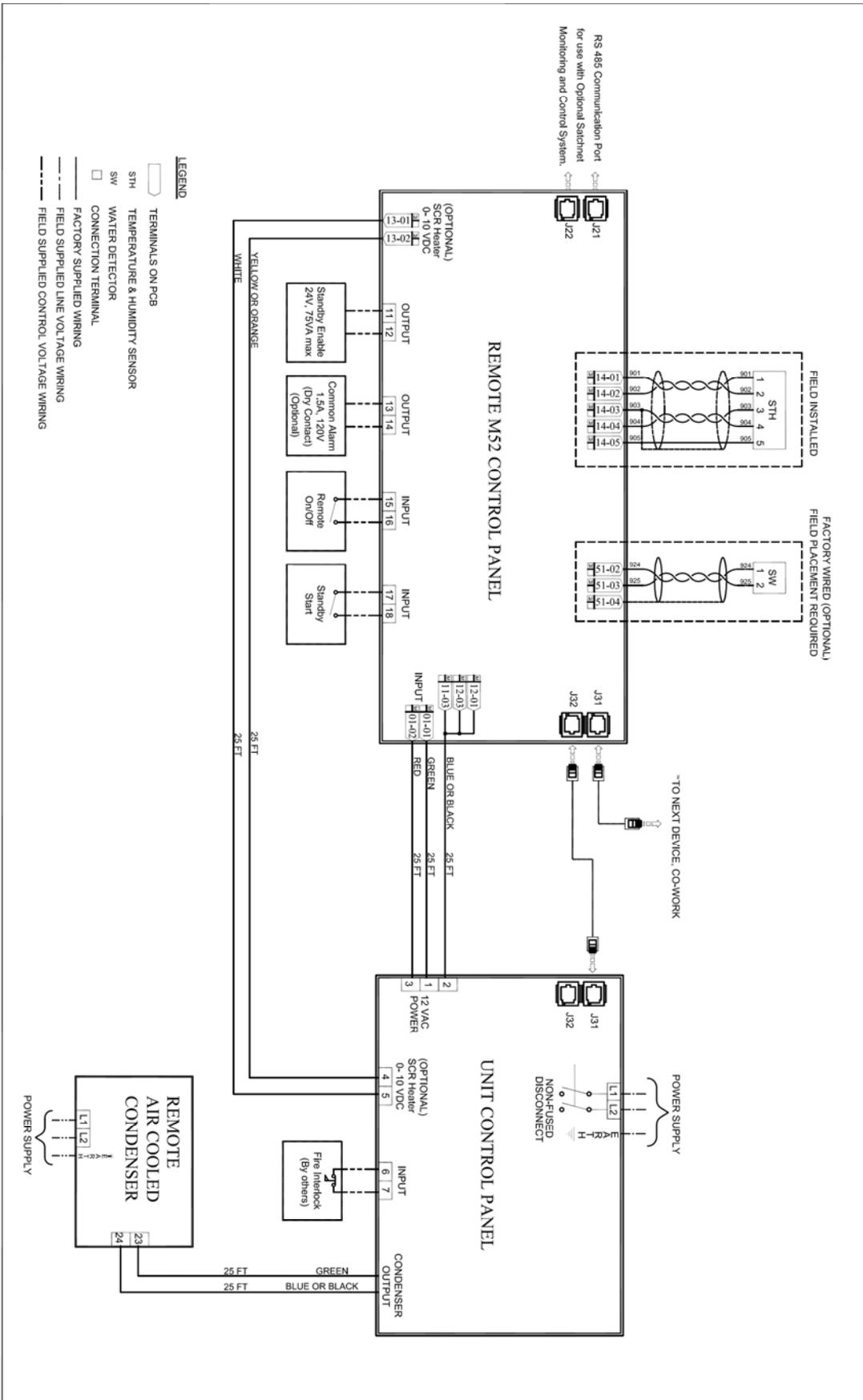


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## **Appendix B: Electrical Schematic Drawings**

<u>Drawing Title</u>	<u>Drawing No.</u>	<u>Page No.</u>
SERIES 11- Electrical Schematic with standard thermostat	S11ES101	31
SERIES 11 – Master Air Cooled Unit M52 Control Panel	S11EDN101	32
SERIES 11 – Master Air Cooled Unit M52 Control Panel w/ Condensing Unit	S11EDN102	33
SERIES 11 – Master Unit M52 Control Panel for Dual/Free/Water/Glycol Cooled Unit	S11EDN201	34
SERIES 11 - Electric Schematic – Co-Work I2C Interconnection Link	M52ES13	35
SERIES 11 – Electric Schematic – Field Wiring Standby Start Standby Enable, For automatic change over	M52ES05	36
SERIES 11 - Electric Schematic – Embedded Web Browser Connection, Serial to Ethernet Communication Link	M52ES20	37
SERIES 11 - Electric Schematic – Embedded Connection, Serial to Ethernet Communication Link	M52ES25	38
SERIES 11 - Electric Schematic – Embedded Connection, Serial to Ethernet (Lonworks) Communication Link	M52ES26	39
SERIES 11 - Electric Schematic – Embedded Connection, Serial to Serial Communication Link	M52ES27	40





S11EDN101C

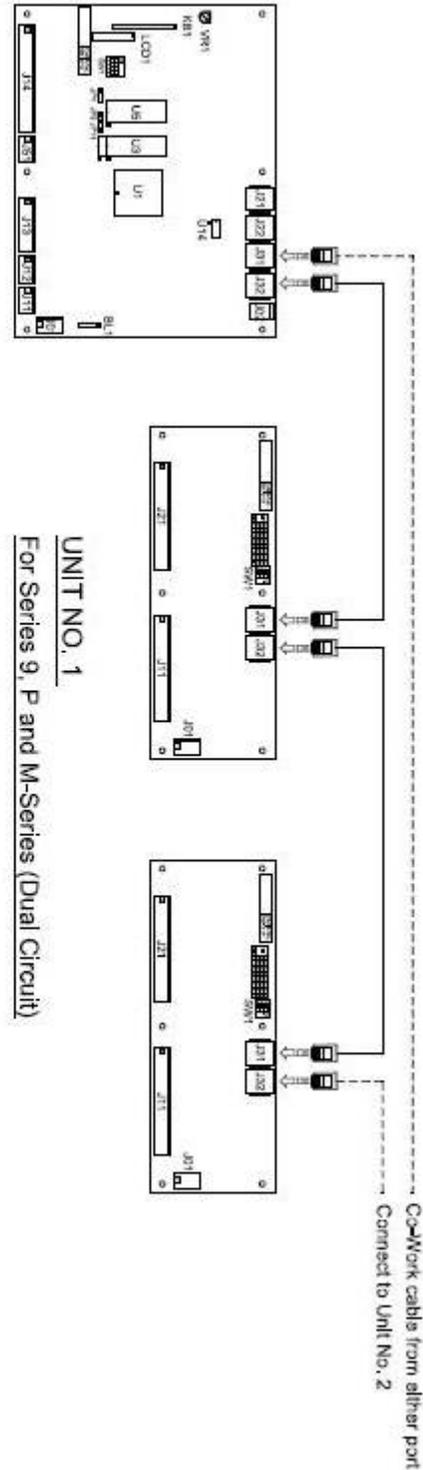
SEPTEMBER 11, 2012



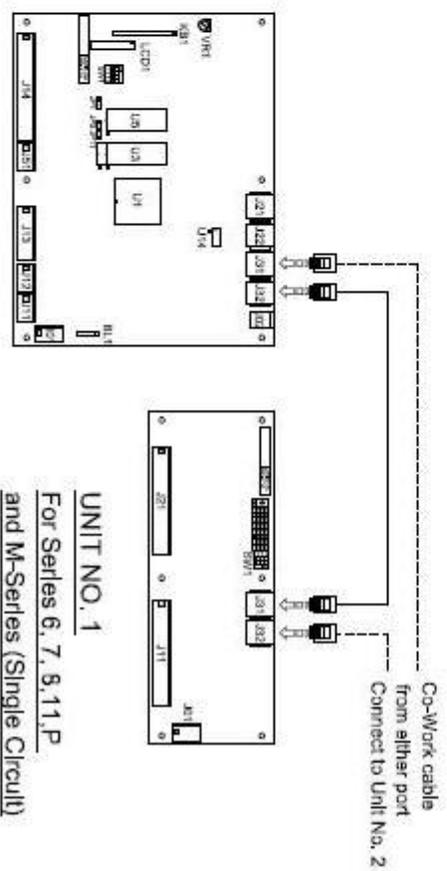




**M52 CONTROL SYSTEM**  
Co-Work 12C Interconnection Link



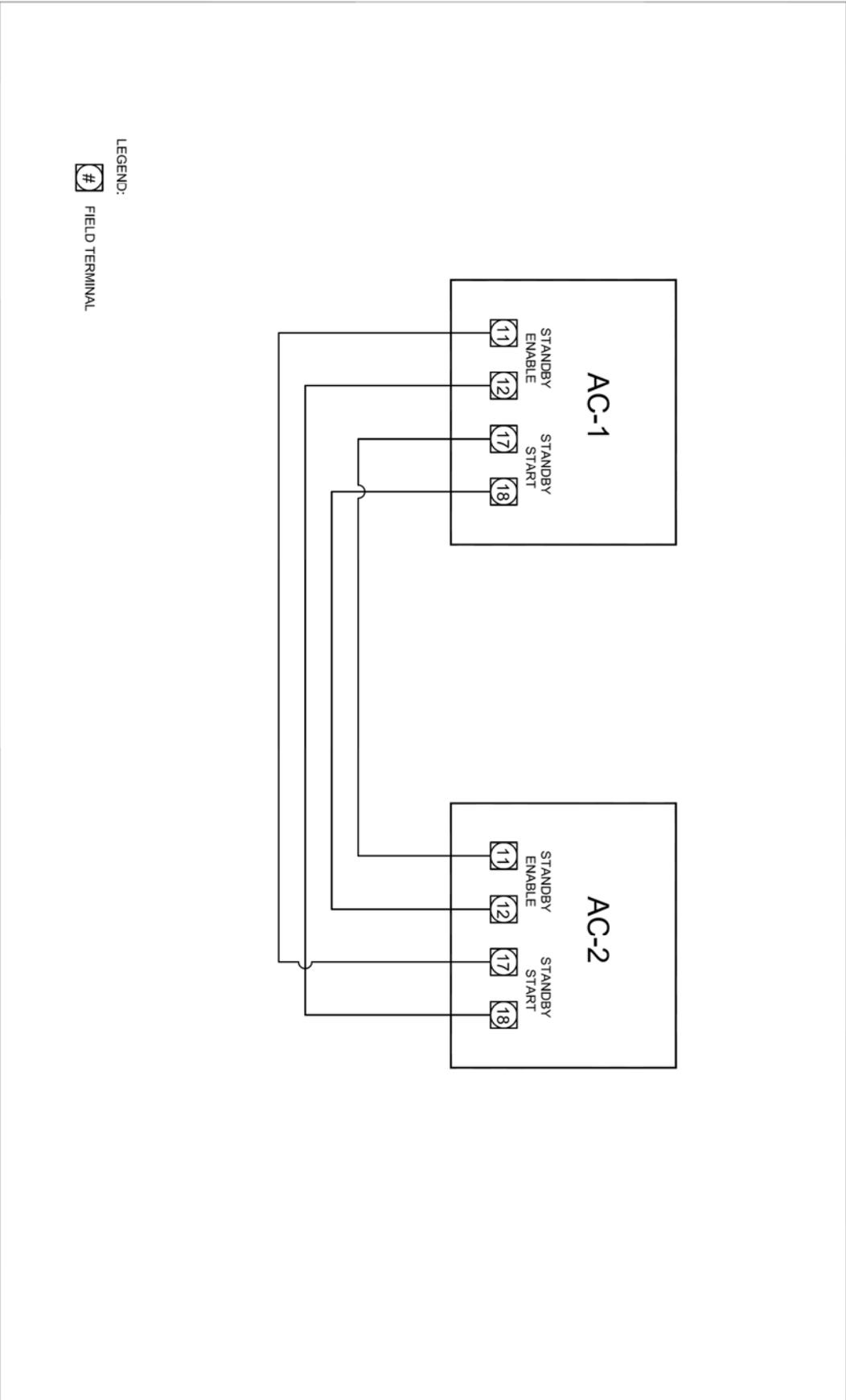
**UNIT NO. 1**  
For Series 9, P and M-Series (Dual Circuit)



M52E513E

17 JULY 2013

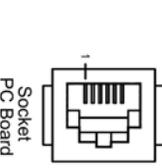
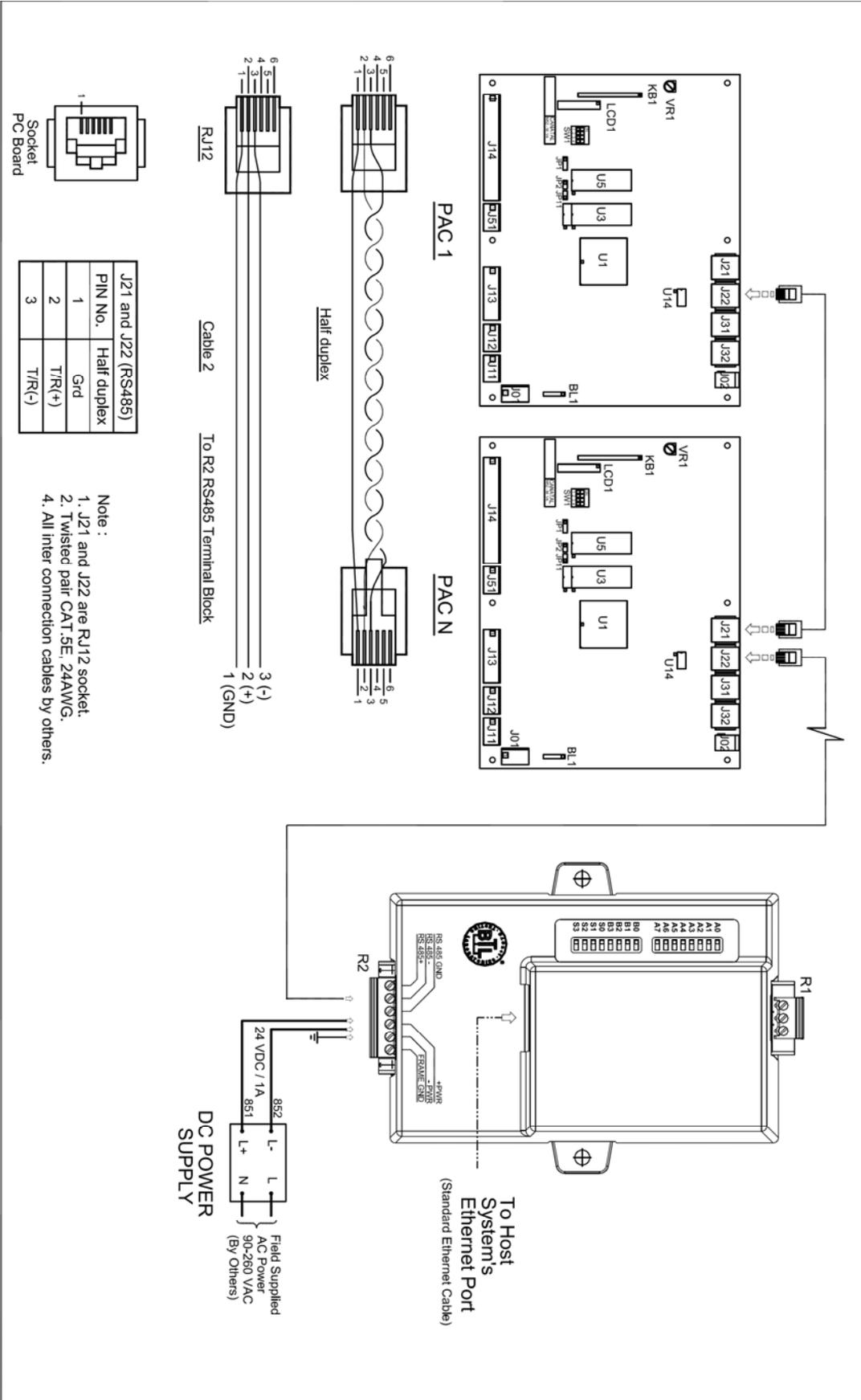
Dimension: Not to scale



M5ZES05C

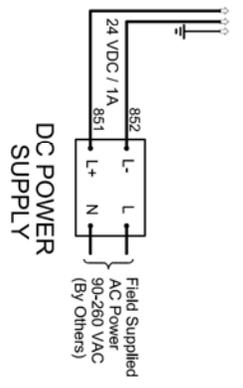
29 MAY 2002





J21 and J22 (RS485)	Half duplex
1	Gnd
2	T/R(+)
3	T/R(-)

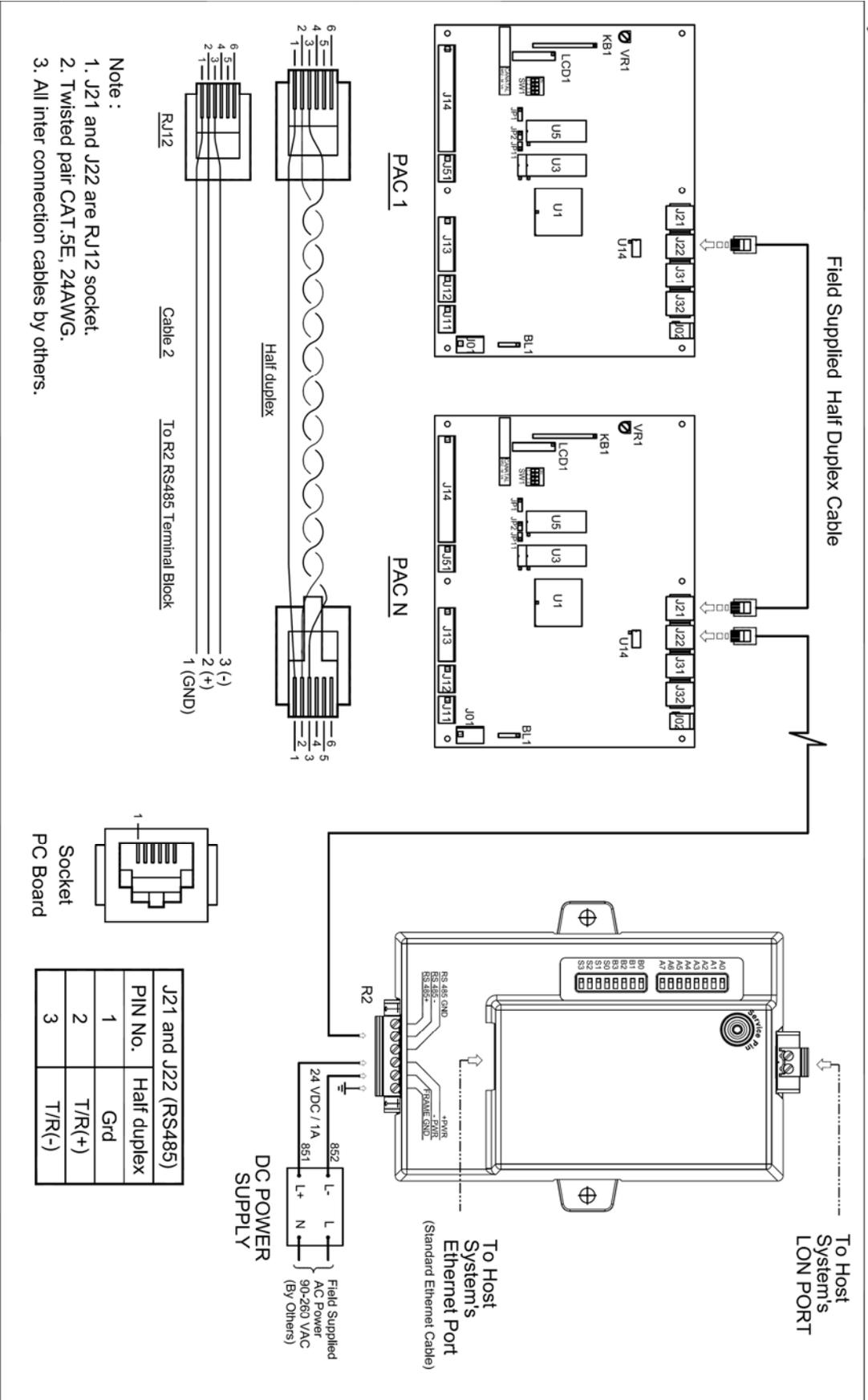
Note :  
 1. J21 and J22 are RJ112 socket.  
 2. Twisted pair CAT.5E, 24AWG.  
 4. All inter connection cables by others.



M52ES25A

30 APR 2012

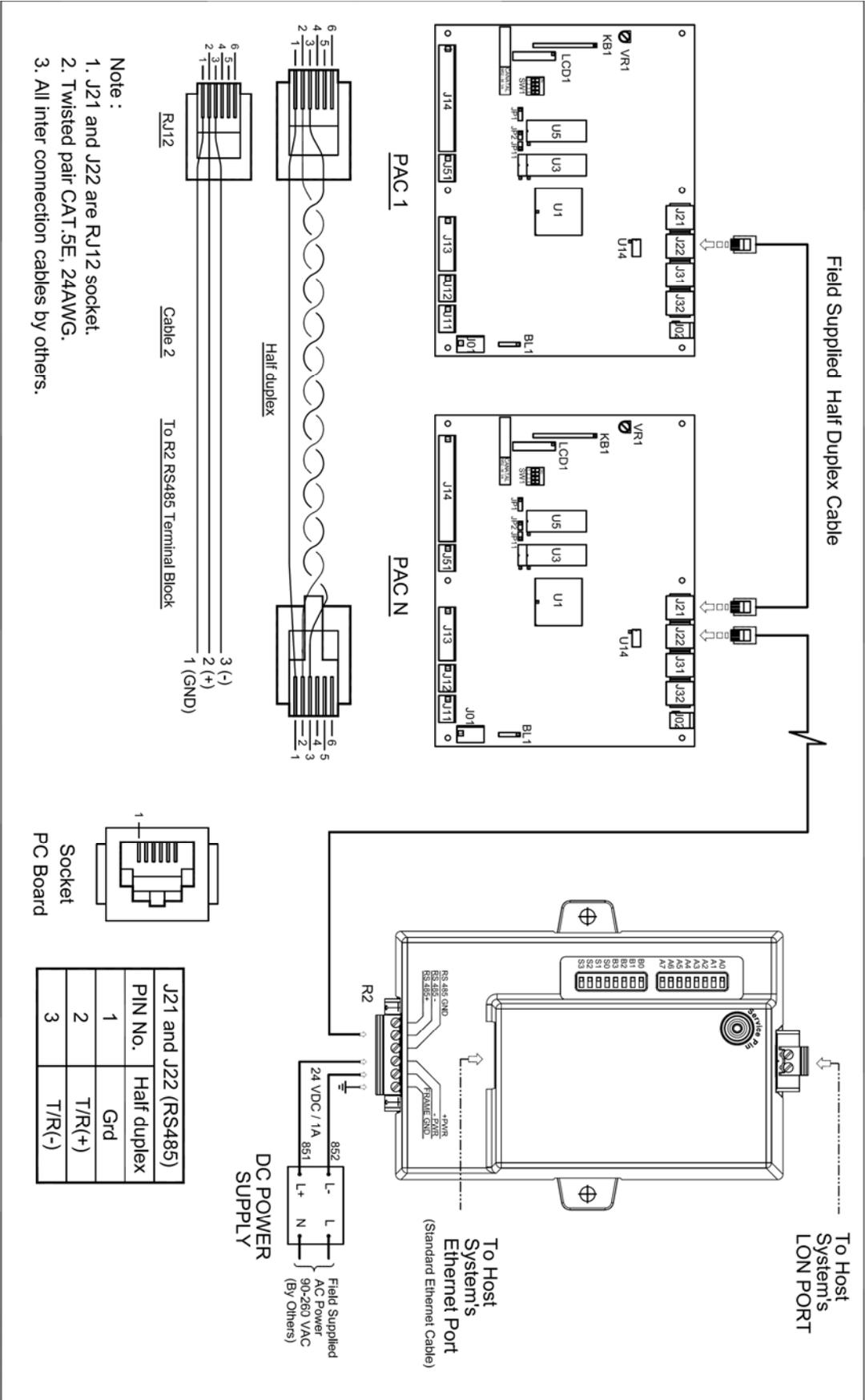
Dimension: Not to scale



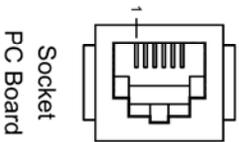
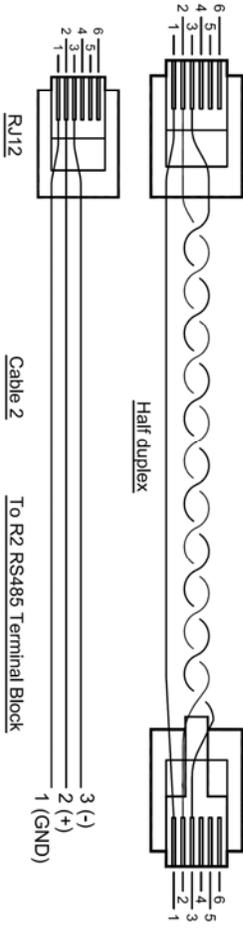
- Note :
1. J21 and J22 are RJ12 socket.
  2. Twisted pair CAT.5E, 24AWG.
  3. All inter connection cables by others.

M52ES26B

30 APR 2012

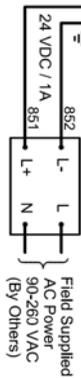


- Note:
1. J21 and J22 are RJ12 sockets.
  2. Twisted pair CAT.5E, 24AWG.
  3. All inter connection cables by others.



J21 and J22 (RS485)	Half duplex
1	Grd
2	T/R(+)
3	T/R(-)

**DC POWER SUPPLY**



M52ES26B

30 APR 2012

Dimension: Not to scale

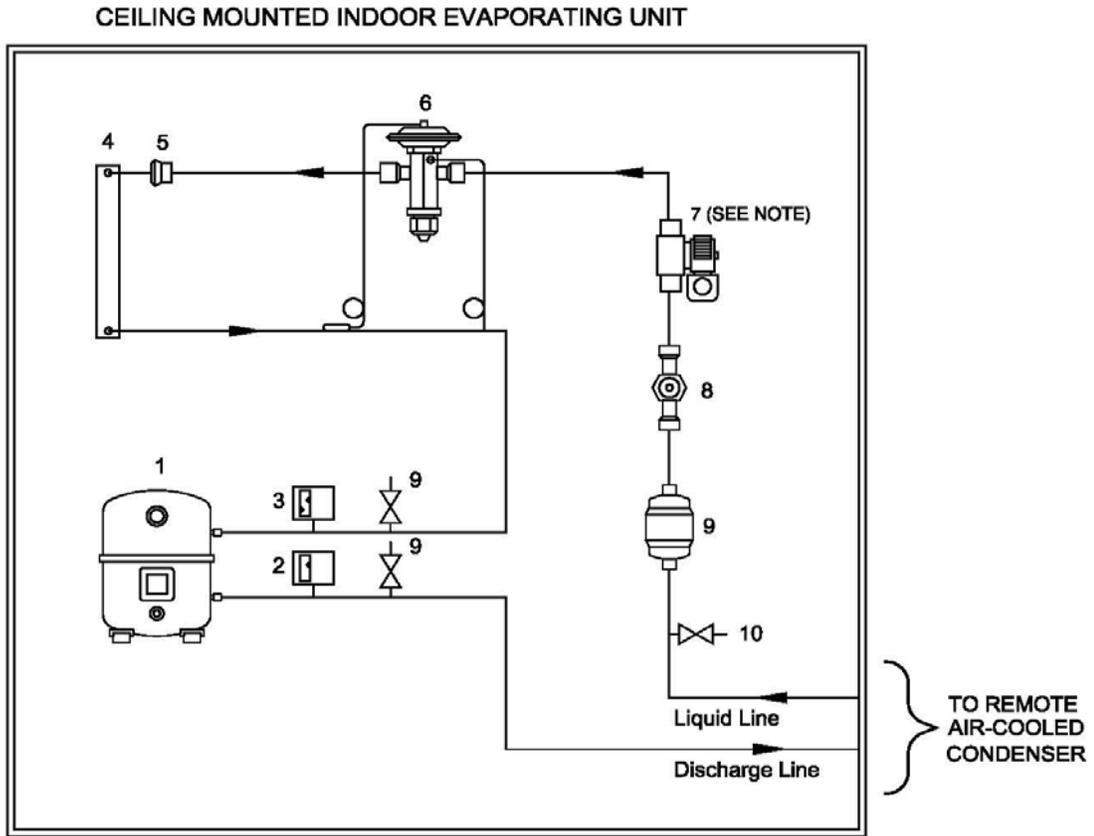
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## Appendix C: Piping Schematic Drawings

<u>Drawing Title</u>	<u>Drawing No.</u>	<u>Page No.</u>
SERIES 11- Air Cooled Unit with Condenser	S11DS100	42
SERIES 11- Air Cooled Unit with Condensing unit (w/ Head Pressure Control)	S11DS102	43
SERIES 11- Water Cooled Unit (Self contained)	S11DS200	44
SERIES 11- Water Cooled Unit with Condensing Unit	S11DS201	45
SERIES 11- Glycol Cooled Unit (Self contained)	S11DS300	46
SERIES 11- Glycol Cooled Unit with Condensing Unit	S11DS301	47
SERIES 11- Chilled Water Unit	S11DS401	48
SERIES 11- Dual Cooled CW + CW Unit	S11DS502	49
SERIES 11- Dual Cooled CW + DX WC Unit	S11DS503	50
SERIES 11- Dual Cooled CW + DX GC Unit	S11DS504	51
SERIES 11- Dual Cooled CW + DX Air Cooled Unit	S11DS505	52
SERIES 11- Free Cooling Unit	S11DS501	53



**SERIES 11 - PIPING SCHEMATIC DIAGRAM  
AIR-COOLED SYSTEM (W/ CONDENSER)**



**COMPONENTS:**

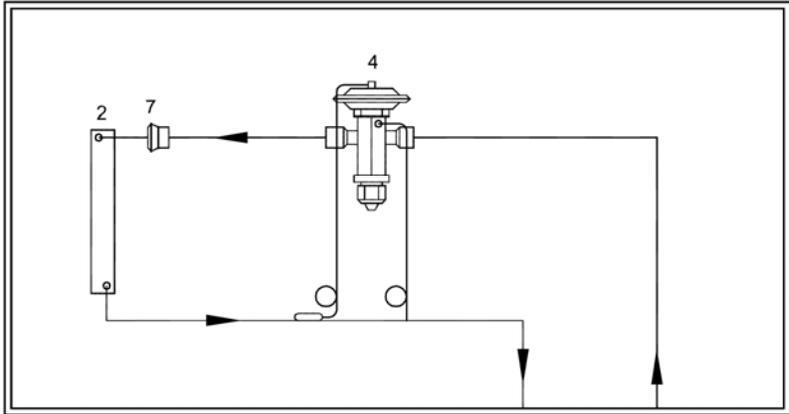
- 1 Compressor
- 2 High pressure switch
- 3 Low pressure switch
- 4 Evaporator
- 5 Refrigerator distributor
- 6 Thermostatic expansion valve
- 7 Liquid line solenoid valve (4-5 TON ONLY)
- 8 Sight glass
- 9 Filter-drier
- 10 Access valve



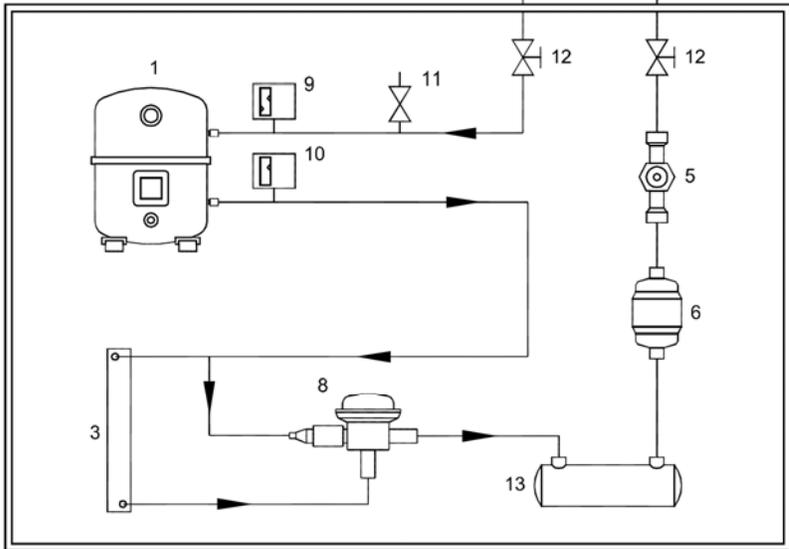
SERIES 11 - PIPING SCHEMATIC DIAGRAM

AIR-COOLED SYSTEM WITH HEAD PRESS. CONTROL (W/ CONDENSING UNIT)

CEILING MOUNTED INDOOR EVAPORATING UNIT



Field Connection



OUTDOOR CONDENSING UNIT

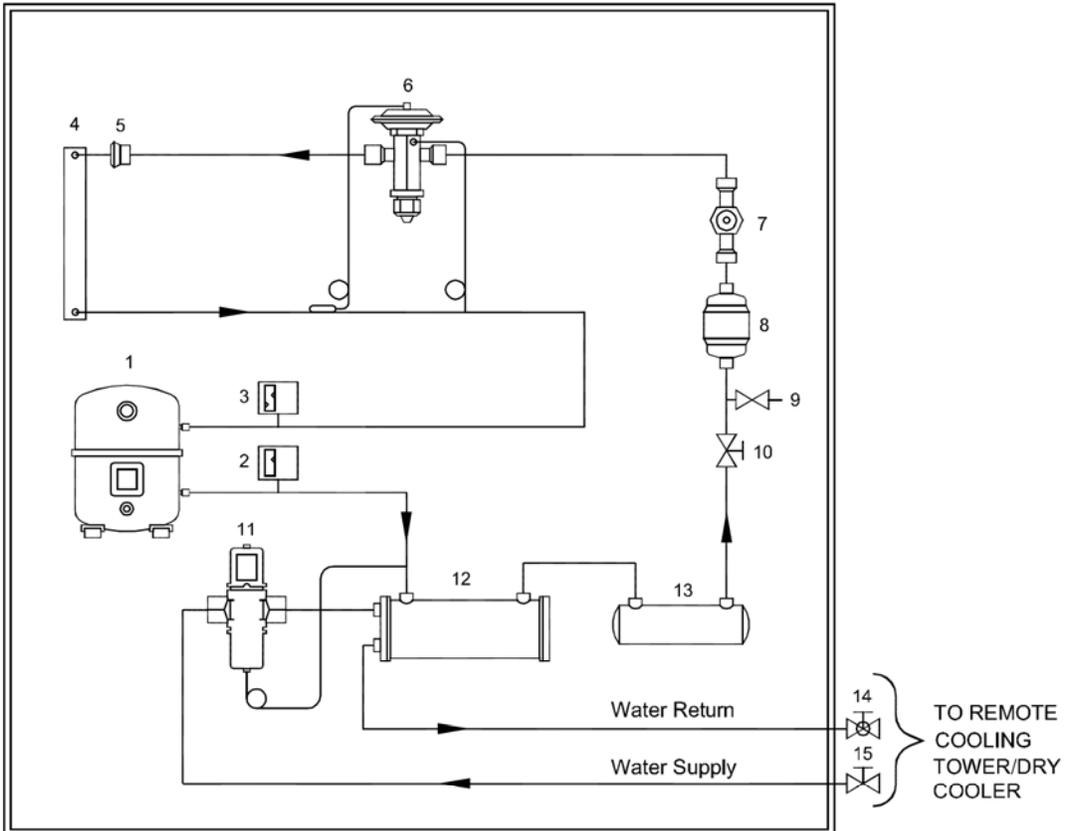
COMPONENTS

- |   |                              |    |                                    |
|---|------------------------------|----|------------------------------------|
| 1 | Compressor                   | 8  | Head Pressure Control Valve (OROA) |
| 2 | Evaporator Coil              | 9  | Low Pressure Switch                |
| 3 | Condenser Coil               | 10 | High Pressure Switch               |
| 4 | Thermostatic Expansion Valve | 11 | Access Valve                       |
| 5 | Sight Glass                  | 12 | Isolation Valve                    |
| 6 | Filter-Drier                 | 13 | Receiver                           |
| 7 | Refrigerant Distributor      |    |                                    |



SERIES 11 - PIPING SCHEMATIC DIAGRAM  
WATER COOLED SELF-CONTAINED SYSTEM

CEILING MOUNTED INDOOR EVAPORATING UNIT

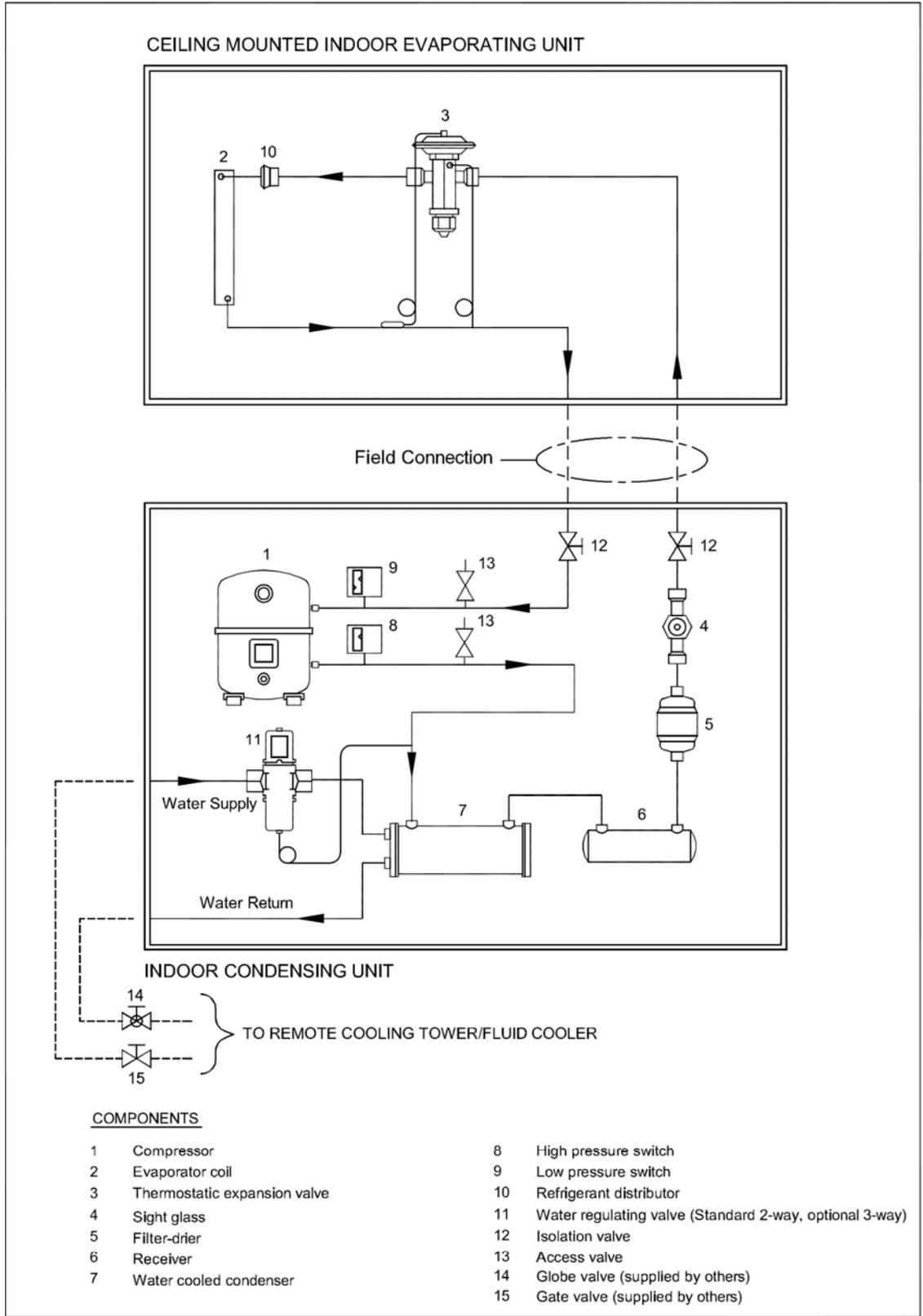


COMPONENTS:

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



SERIES 11 - PIPING SCHEMATIC DIAGRAM  
WATER COOLED SYSTEM (W/ CONDENSING UNIT)



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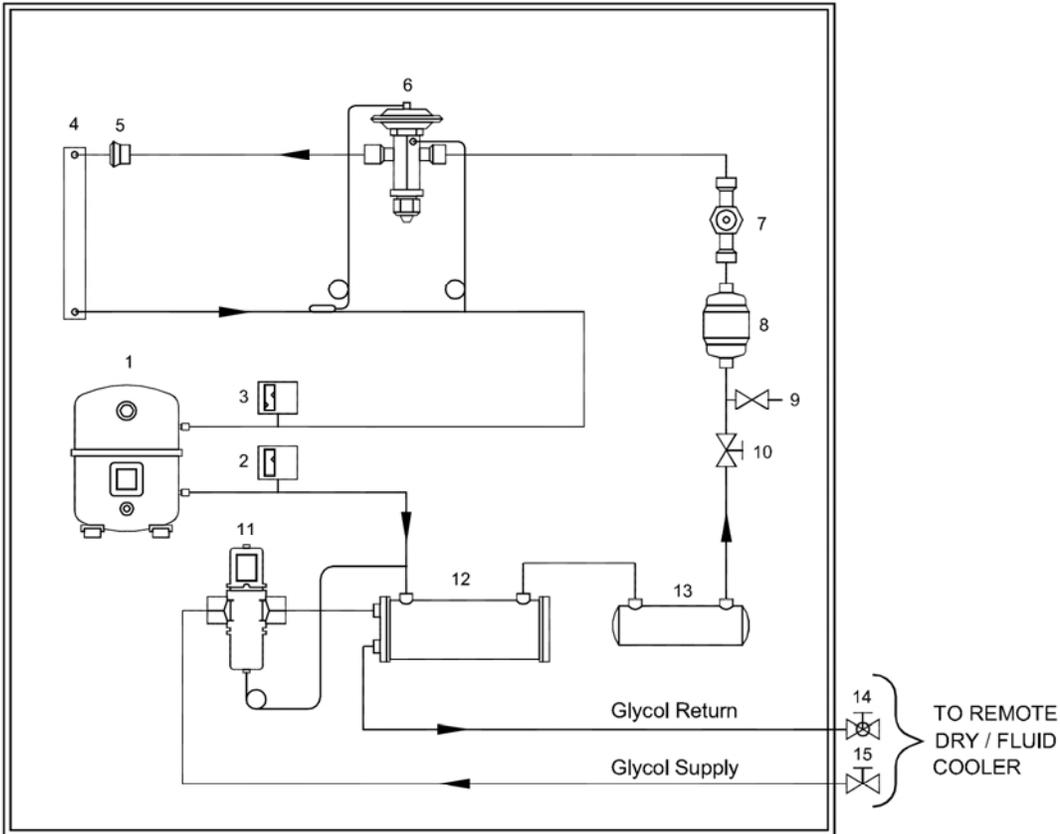
20 AUGUST 2003

NOT TO SCALE



SERIES 11 - PIPING SCHEMATIC DIAGRAM  
GLYCOL COOLED SELF-CONTAINED SYSTEM

CEILING MOUNTED INDOOR EVAPORATING UNIT

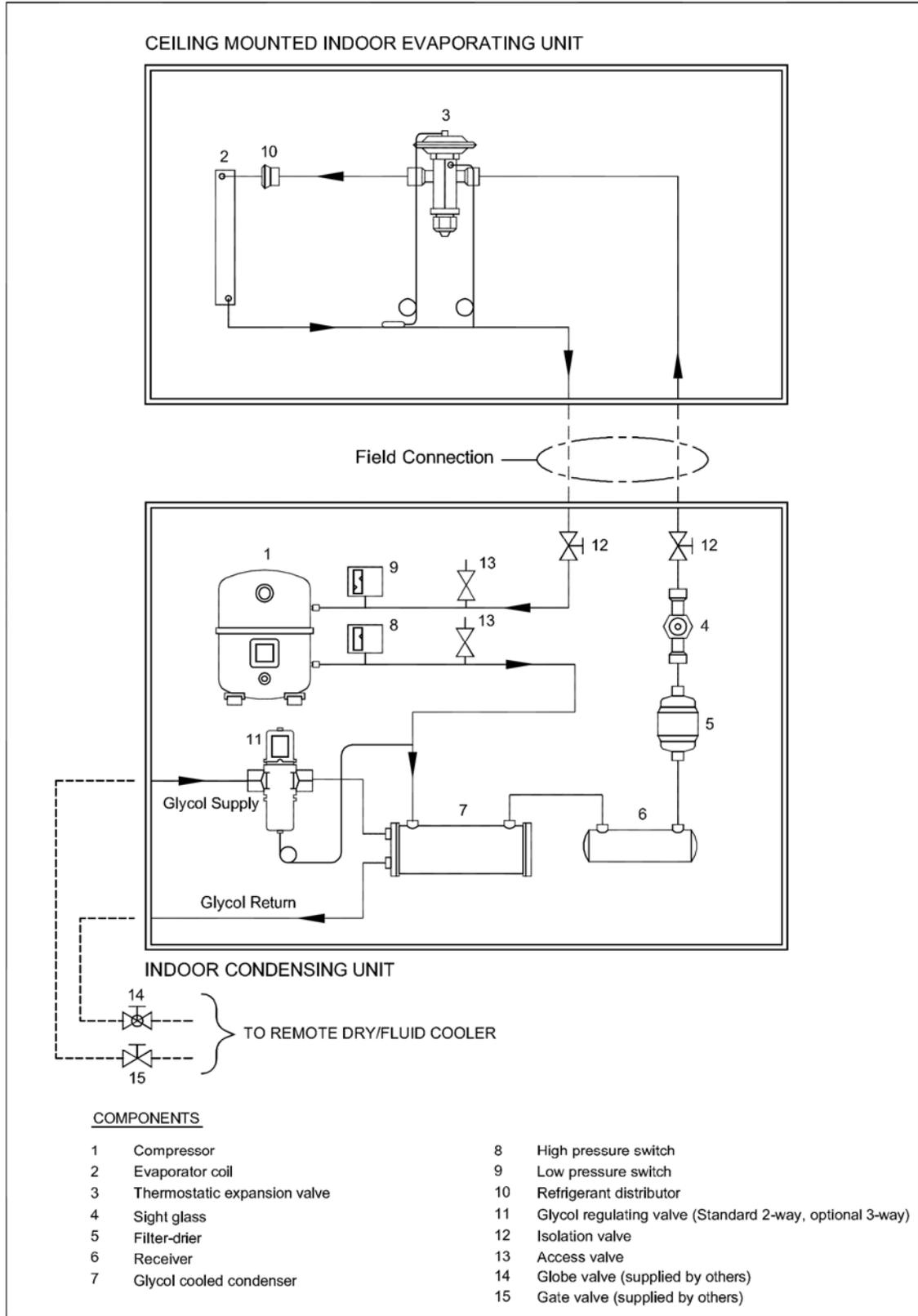


COMPONENTS:

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



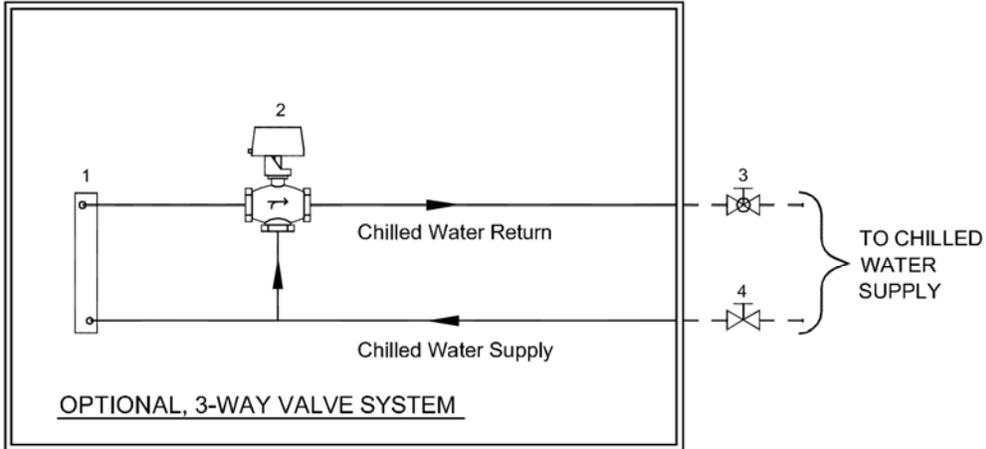
SERIES 11 - PIPING SCHEMATIC DIAGRAM  
GLYCOL COOLED SYSTEM (W/ CONDENSING UNIT)





SERIES 11 - PIPING SCHEMATIC DIAGRAM  
CHILLED WATER SYSTEM

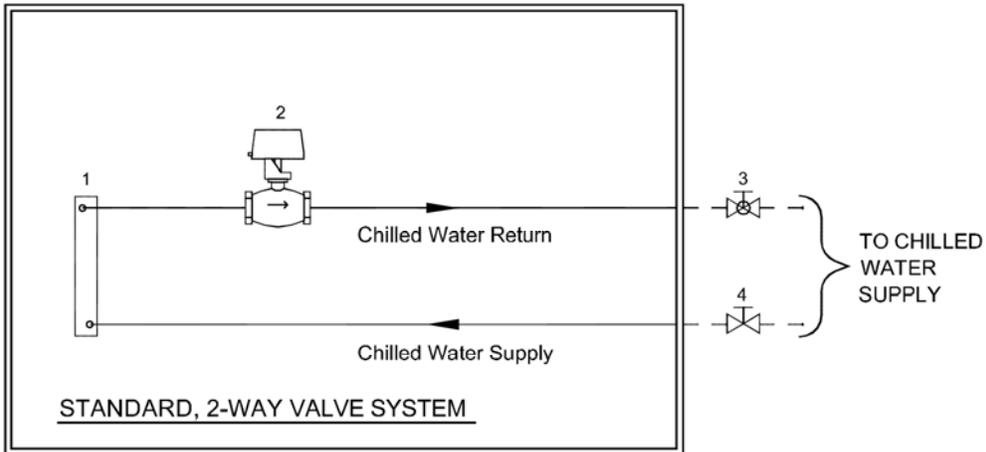
CEILING MOUNTED UNIT



COMPONENTS:

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

CEILING MOUNTED UNIT

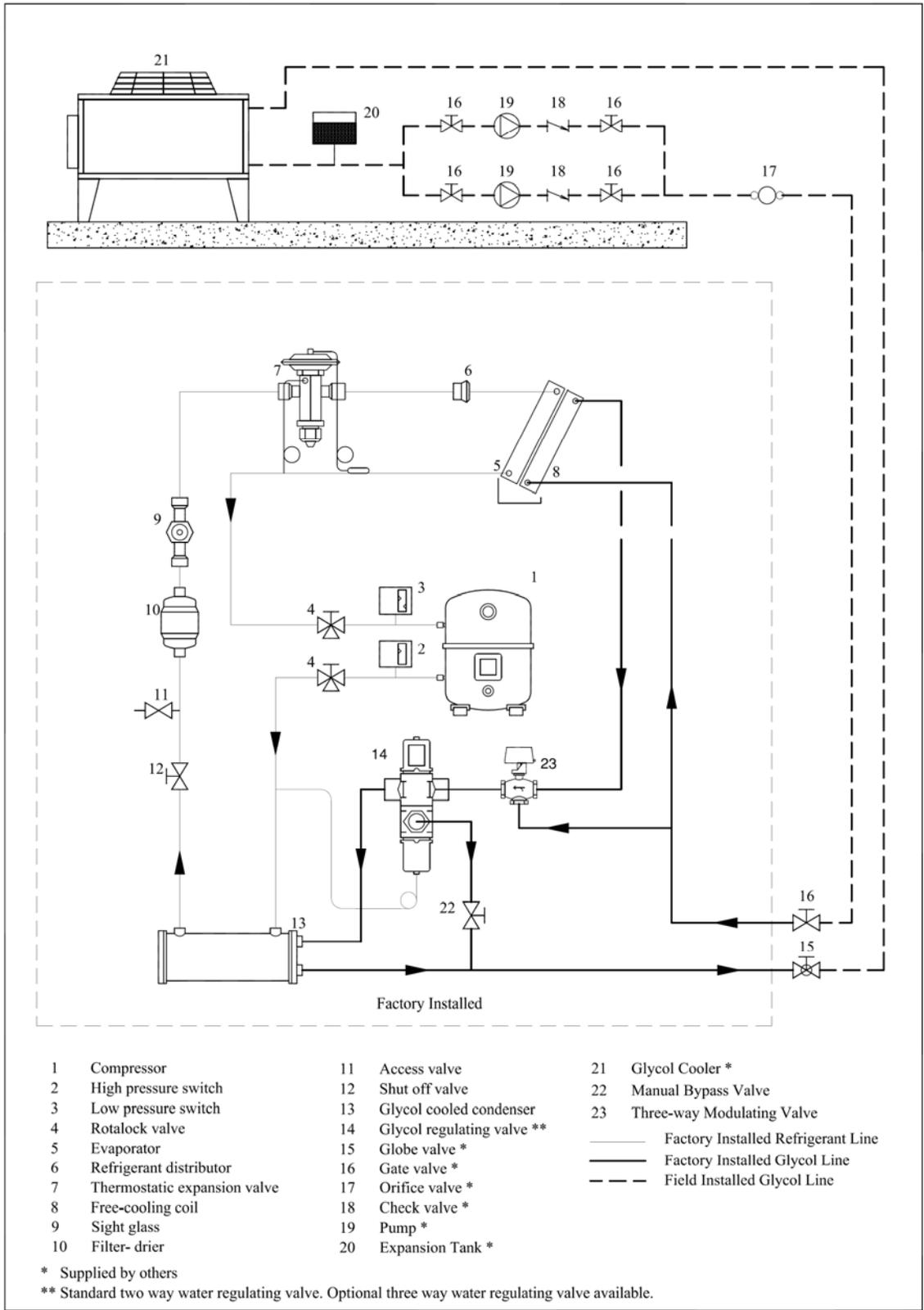


COMPONENTS:

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

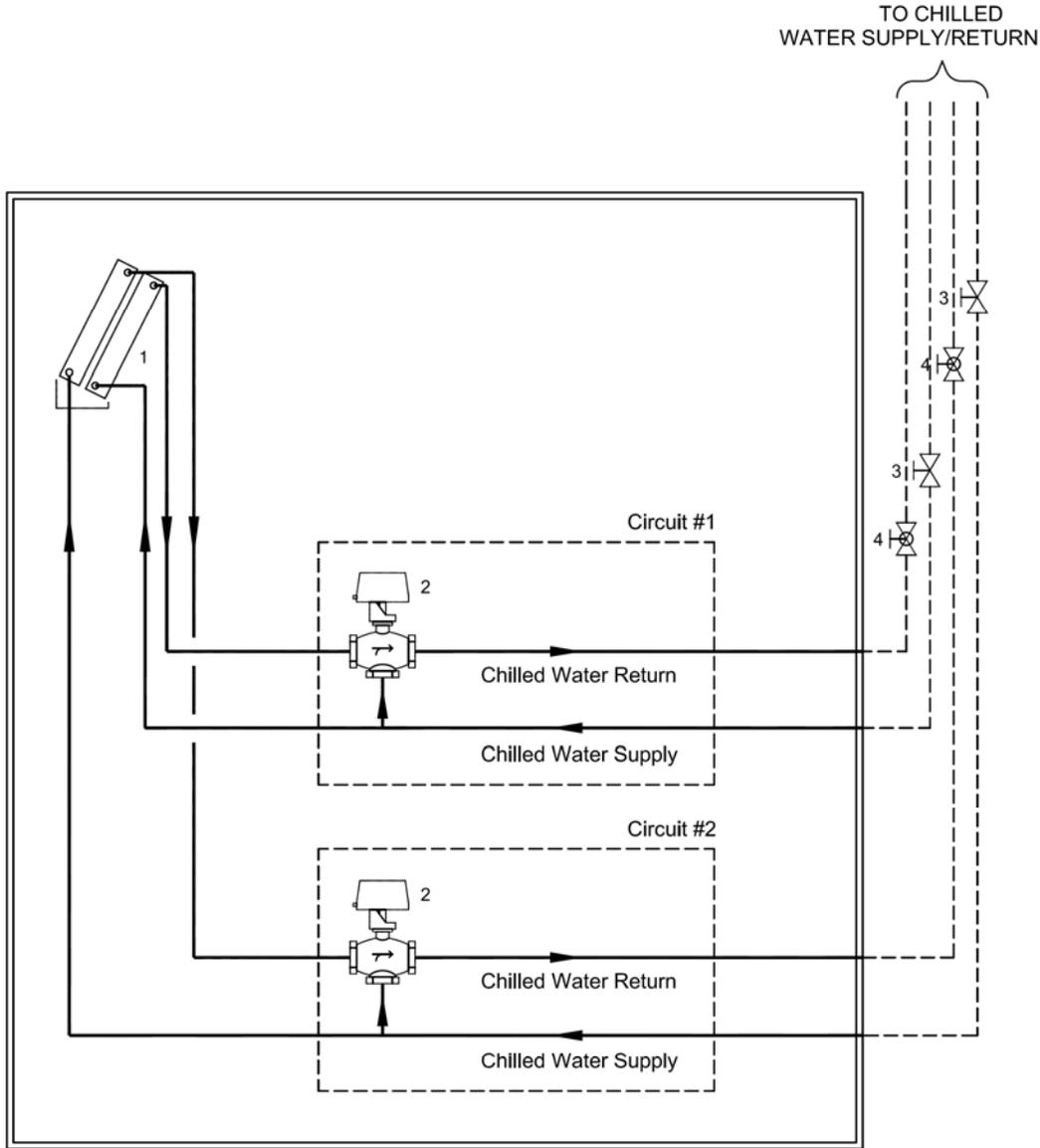


SERIES 11  
Glycol Free Cooled System Schematic





SERIES 11 - PIPING SCHEMATIC DIAGRAM  
DUAL CHILLED WATER COOLED SYSTEM



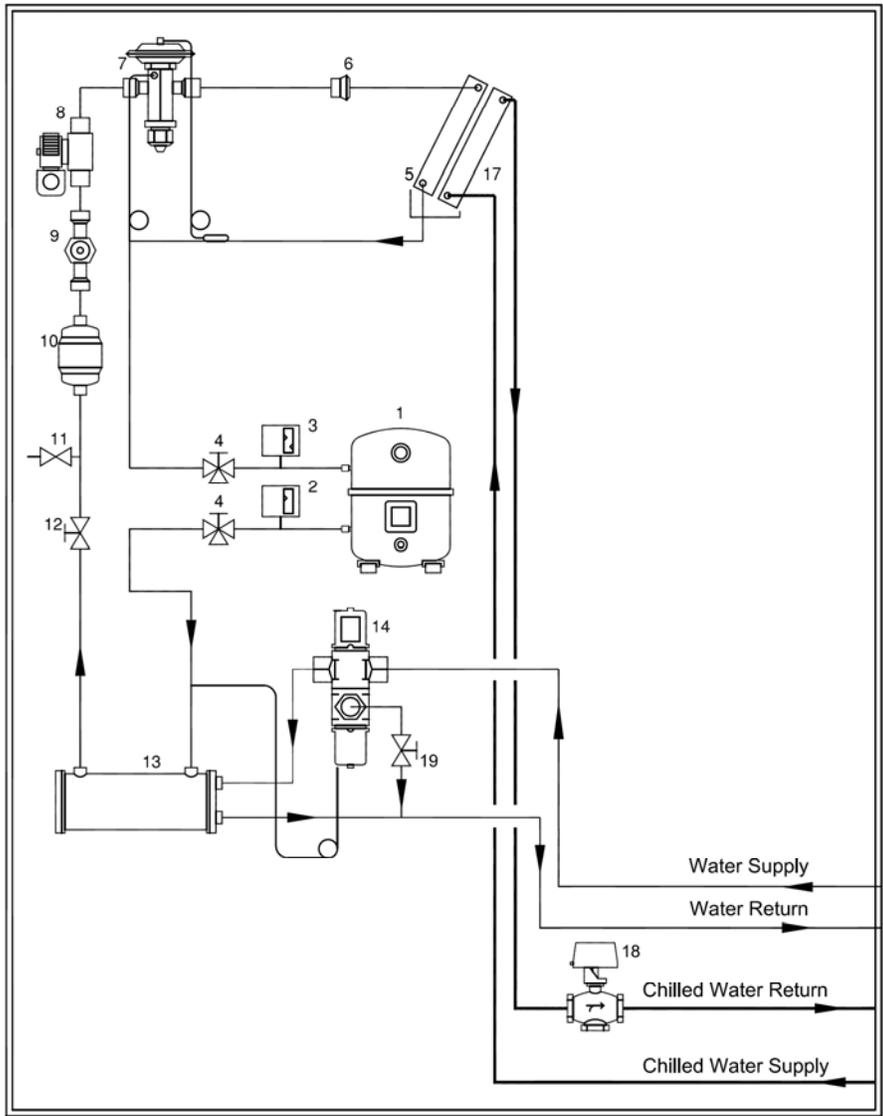
DUAL CHILLED WATER COILS

- COMPONENTS:**
- 1 Chilled water cooling coil
  - 2 2-way modulating valve (optional 3-way valve)
  - 3 Gate valve (Supplied by others)
  - 4 Globe valve (Supplied by others)



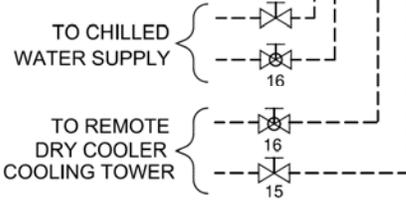
**SERIES 11 - PIPING SCHEMATIC DIAGRAM**  
 WATER DUAL COOLED SYSTEM (2-WAY REG VALVE)

**CEILING MOUNTED INDOOR UNIT**



**COMPONENTS:**

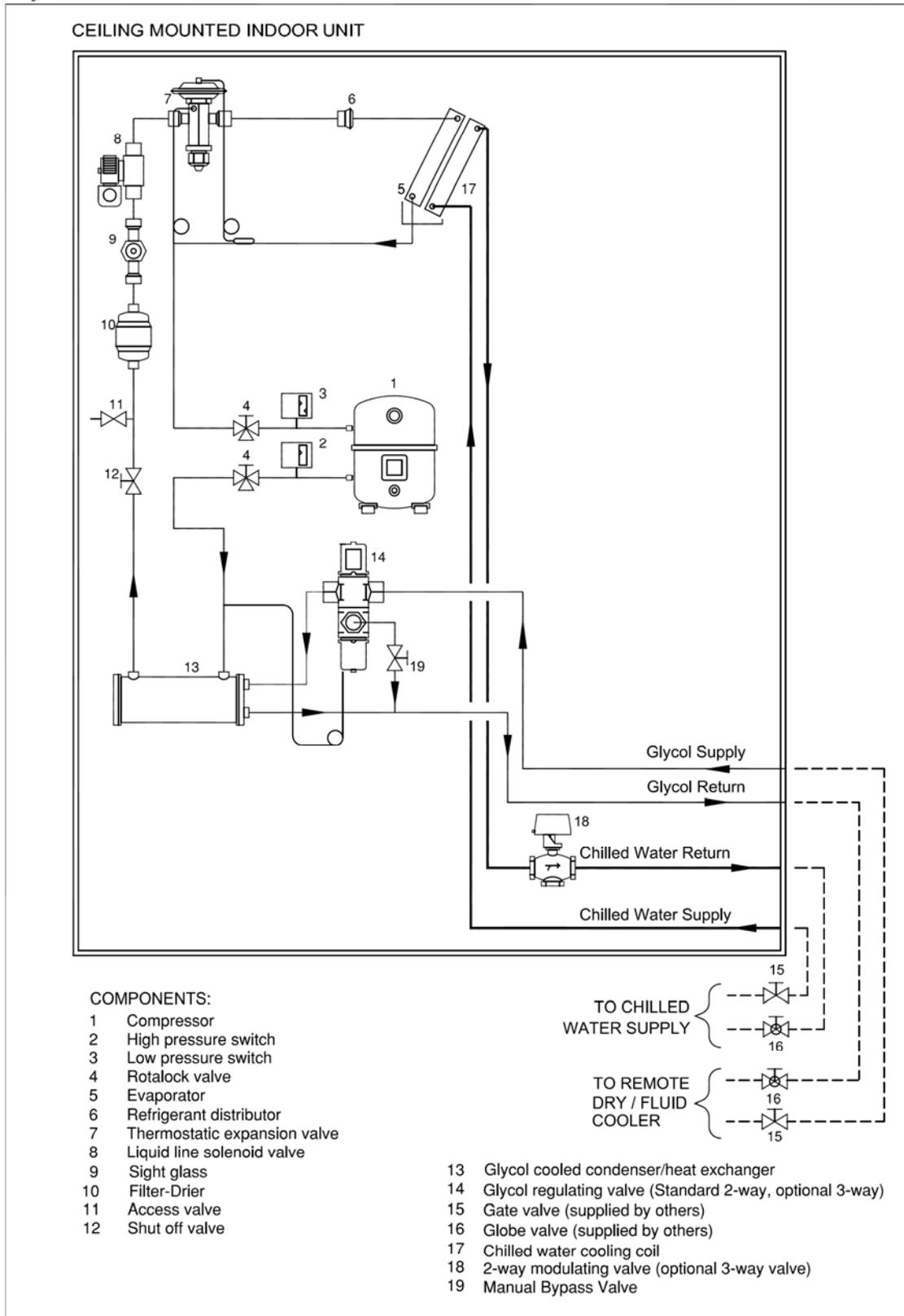
- 1 Compressor
- 2 High pressure switch
- 3 Low pressure switch
- 4 Rotalock valve
- 5 Evaporator
- 6 Refrigerant distributor
- 7 Thermostatic expansion valve
- 8 Liquid line solenoid valve
- 9 Sight glass
- 10 Filter-Drier
- 11 Access valve
- 12 Shut off valve



- 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)
- 19 Manual Bypass Valve



**SERIES 11 - PIPING SCHEMATIC DIAGRAM**  
GLYCOL DUAL COOLED SYSTEM (2-WAY REG VALVE)



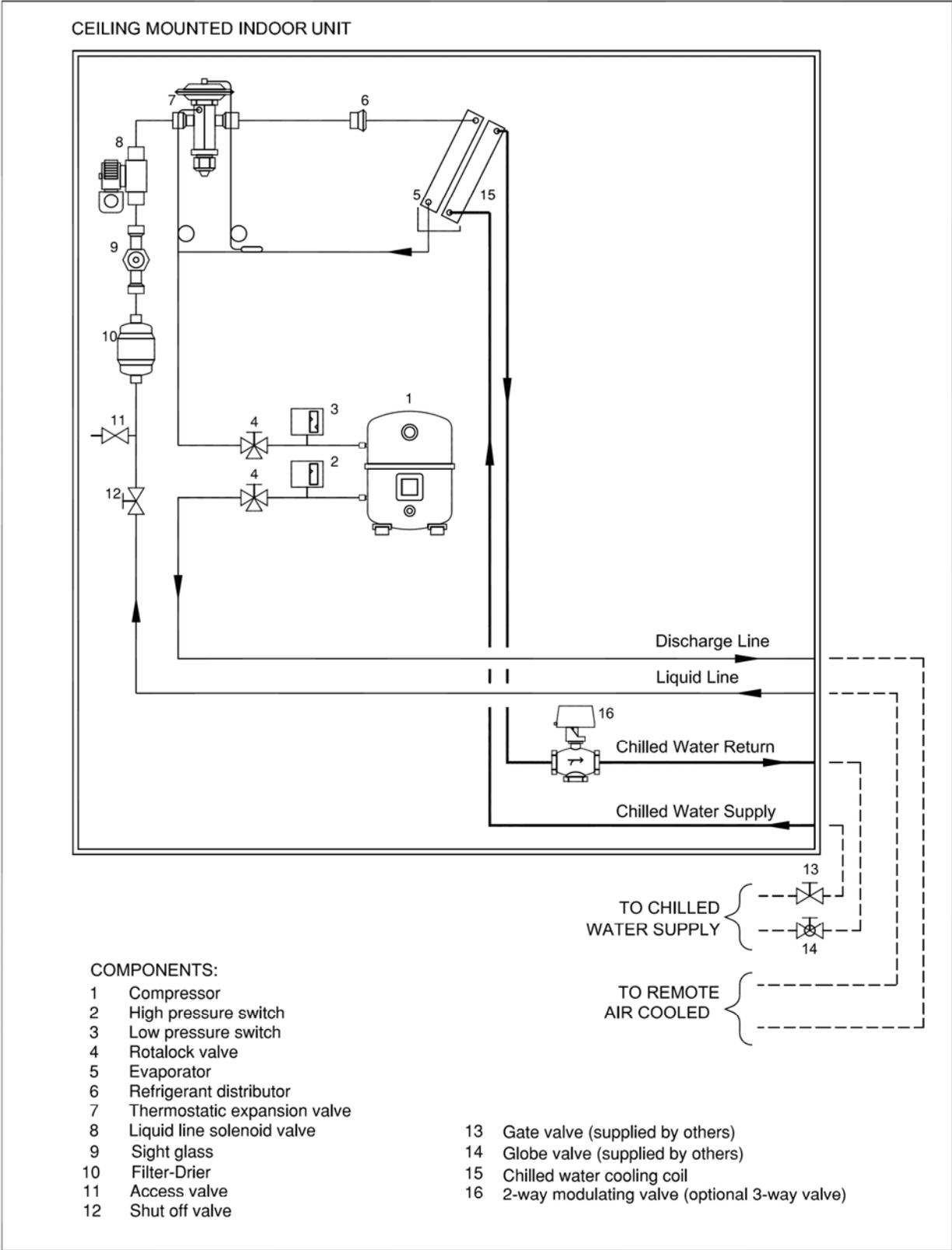
S11DS504

07 DECEMBER 2011

NOT TO SCALE



SERIES 11 - PIPING SCHEMATIC DIAGRAM  
AIR DUAL COOLED SYSTEM



S11DS505

07 DECEMBER 2011

NOT TO SCALE

