

Job Name:

System Reference:

Date:

**460V Air To Water Heat Pump Chiller****Insider Header Model**

*R32 LOW GWP Heat  
Pump Air To Water  
Chiller Capable of  
Delivering Chilled and  
Hot Water for Building  
HVAC w/ Inside Header  
For Connection of Up  
To 6 Units In Group*

**UNIT OPTION**

- ☒ Standard Model.....EAHV-M040YCL-N  
☐ Seacoast (BS) Model.....EAHV-M040YCL-N-BS

**ACCESSORIES**

- ☐ Fin Guard..... EC-130FG  
☒ Piping KIT.....EC-01HK  
☒ Connection KIT.....EC-02HK  
☐ Remote Sens. (Requires 2 w/ Sys Leader).....TW-TH16-E  
☐ Remote Controller.....PAR-W31MAA

| Specification<br>Unit Type     |                           |                          | System<br>EAHV-M040YCL-N(-BS)        |
|--------------------------------|---------------------------|--------------------------|--------------------------------------|
| Power source                   |                           |                          | 3-phase 3-wire 460 V 50/60Hz, +/- 5% |
| Cooling capacity *1            |                           | BTU/h                    | 511,800                              |
|                                |                           | kW                       | 150.0                                |
|                                | Power input               | kW                       | 43.99                                |
|                                | EER                       | BTU/ (W × h)             | 11.64                                |
|                                |                           | kW/kW                    | 3.41                                 |
|                                | IPLV *4                   | BTU/ (W × h)             | 22.60                                |
|                                | Water flow rate           | GPM                      | 102.3                                |
|                                |                           | m <sup>3</sup> /h        | 23.24                                |
| Heating capacity *2            |                           | BTU/h                    | 511,800                              |
|                                |                           | kW                       | 150.0                                |
|                                | Power input               | kW                       | 48.07                                |
|                                | COP                       | BTU/ (W × h)             | 10.65                                |
|                                |                           | kW/kW                    | 3.12                                 |
|                                | Water flow rate           | GPM                      | 102.3                                |
|                                |                           | m <sup>3</sup> /h        | 23.24                                |
|                                | Current input             | Cooling current 460 V *1 | A                                    |
| Heating current 460 V *2       |                           | A                        | 68                                   |
| Maximum current                |                           | A                        | 120                                  |
| Water pressure drop *1         | Standard piping           | ftAq                     | 15.4                                 |
|                                |                           | psi                      | 6.7                                  |
|                                |                           | kPa                      | 46                                   |
|                                | Inside header piping      | ftAq                     | 37.1                                 |
|                                |                           | psi                      | 16.1                                 |
|                                |                           | kPa                      | 111                                  |
| Temperature range              | Outlet water (Cooling) *5 | °F                       | 39.20~86.00                          |
|                                |                           | °C                       | 4.00~30.00                           |
|                                | Outlet water (Heating) *5 | °F                       | 77.00~131.00                         |
|                                |                           | °C                       | 25.00~55.00                          |
|                                | Outdoor (Cooling) *5      | °F                       | 5.0~125.6                            |
|                                |                           | °C                       | -15.0~52.0                           |
|                                | Outdoor (Heating) *5      | °F                       | -4.0~109.4                           |
|                                |                           | °C                       | -20.0~43.0                           |
| Circulating water volume range |                           | GPM                      | 56.8~189                             |
|                                |                           | m <sup>3</sup> /h        | 12.9~43.0                            |
| Sound pressure level *1 *6     |                           | dB (A)                   | 67                                   |
| Sound power level *1           |                           | dB (A)                   | 89                                   |

| Specification<br>Unit Type                       |                          |                     | System<br>EAHV-M040YCL-N(-BS)                                     |
|--------------------------------------------------|--------------------------|---------------------|-------------------------------------------------------------------|
| Diameter of water pipe<br>(Inside header piping) | Inlet                    | in.                 | 6B housing type joint                                             |
|                                                  |                          | mm                  | 150A housing type joint                                           |
|                                                  | Outlet                   | in.                 | 6B housing type joint                                             |
|                                                  |                          | mm                  | 150A housing type joint                                           |
| External finish                                  |                          |                     | Polyester powder coating steel plate                              |
| External dimension H × W × D                     |                          | in.                 | 92-17/32 × 133-27/32 × 42-17/32                                   |
|                                                  |                          | mm                  | 2350 × 3400 × 1080                                                |
| Net weight                                       | Standard piping          | lbs                 | 2921                                                              |
|                                                  |                          | kg                  | 1325                                                              |
|                                                  | Inside header piping     | lbs                 | 2981                                                              |
|                                                  |                          | kg                  | 1352                                                              |
| Design pressure                                  | R32                      | MPa                 | 4.15                                                              |
|                                                  |                          | psi                 | 602                                                               |
|                                                  | Water                    | MPa                 | 1.0                                                               |
|                                                  |                          | psi                 | 145                                                               |
| Heat exchanger                                   | Water side               |                     | Stainless steel plate and copper brazing                          |
|                                                  | Air side                 |                     | Salt-resistant cross fin & aluminium tube                         |
| Compressor                                       | Type                     |                     | Inverter scroll hermetic compressor                               |
|                                                  | Maker                    |                     | MITSUBISHI ELECTRIC CORPORATION                                   |
|                                                  | Starting method          |                     | Inverter                                                          |
|                                                  | Quantity                 |                     | 4                                                                 |
|                                                  | Motor output             | kW                  | 11.5 × 4                                                          |
|                                                  | Lubricant                |                     | MEL46EH                                                           |
| Fan                                              | Air flow rate            | cfm                 | 9534 × 4                                                          |
|                                                  |                          | m <sup>3</sup> /min | 270 × 4                                                           |
|                                                  |                          | L/s                 | 4500 × 4                                                          |
|                                                  | Type, Quantity           |                     | Propeller fan × 4                                                 |
|                                                  | Starting method          |                     | Inverter                                                          |
|                                                  | Motor output             | kW                  | 0.92×4                                                            |
|                                                  | External static pressure | psi                 | 0.0029                                                            |
|                                                  |                          | Pa                  | 20                                                                |
| Protection                                       | High pressure protection |                     | High pressure sensor & High pressure switch at 4.15 MPa (602 psi) |
|                                                  | Inverter circuit         |                     | Over-heat protection, Over current protection                     |
|                                                  | Compressor               |                     | Over-heat protection                                              |
| Refrigerant                                      | Type                     |                     | R32                                                               |
|                                                  | charge *3                | lbs                 | 25.4 × 4                                                          |
|                                                  |                          | kg                  | 11.5 × 4                                                          |
|                                                  | Control                  |                     | LEV                                                               |

## Notes:

\*1 Under normal cooling conditions at outdoor temp 95.00°F DB (35.00°C DB) outlet water temp 44.00°F (6.67°C) inlet water temp 54.00°F (12.22°C). Pump input is not included in cooling capacity and power input.

\*2 Under normal heating conditions at outdoor temp 47.00°F DB/43.00°F WB (8.33°C DB / 6.11°C WB) outlet water temp 120.00°F (48.89°C).

Pump input is not included in heating capacity and power input.

\*3 Amount of factory-charged refrigerant is 2.95 (kg) × 4. Please add the refrigerant at the field.

\*4 IPLV is calculated in accordance with AHRI 550/590.

\*Please don't use the steel material for the water piping.

\*Please always make water circulate, or pull the circulation water out completely when not in use.

\*Please do not use groundwater or well water in direct.

\*The water circuit must be closed circuit.

\*Due to continuous improvement, the above specifications may be subject to change without notice.

\*This model doesn't equip with a pump.

\*5 Refer to the following page(s) for detail. "Operation temperature range" (p. 64)

\*6 In anechoic room at 3.28 ft. (1m) from the service surface

## Unit converter

BTU/h = kW × 3,412.14

cfm = m<sup>3</sup>/min × 35.31

lbs = kg / 0.4536

\*Above specification data is subject to rounding variation.



## EAHV-M040, 050YCL-N(-BS)

Unit: mm (in.)

NOTE 1. CONNECT COOL (HOT) WATER PIPES WHILE MAKING SURE OF CONNECTING THE INLETS AND OUTLETS CORRECTLY.

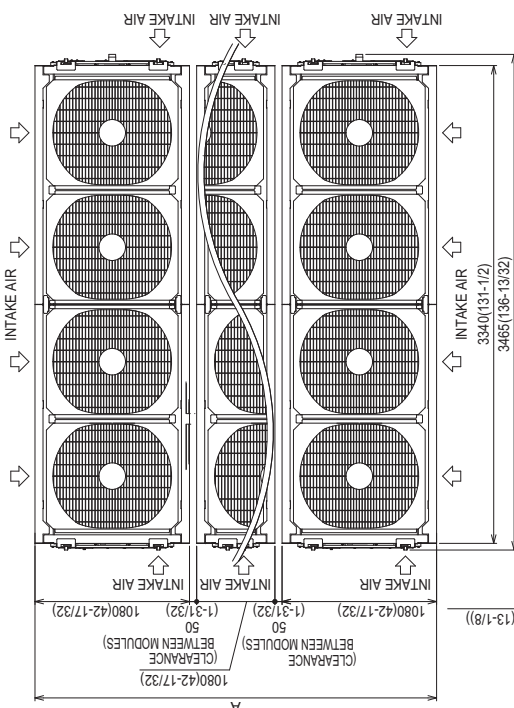
NOTE 2. INTRUSION OF FOREIGN MATERIALS INTO THE HEAT EXCHANGER MAY CAUSE PERFORMANCE DEGRADATION OR FREEZING.  
BE SURE TO INSTALL CLEANABLE STRAINER (20 MESH OR MORE) TO THE INLET OF COOL (HOT) WATER PIPES.

NOTE 3. FOR HOW TO DRAW IN POWER CABLES OR CONNECT COOL (HOT) WATER PIPES, REFER TO THE SEPARATE DOCUMENT.

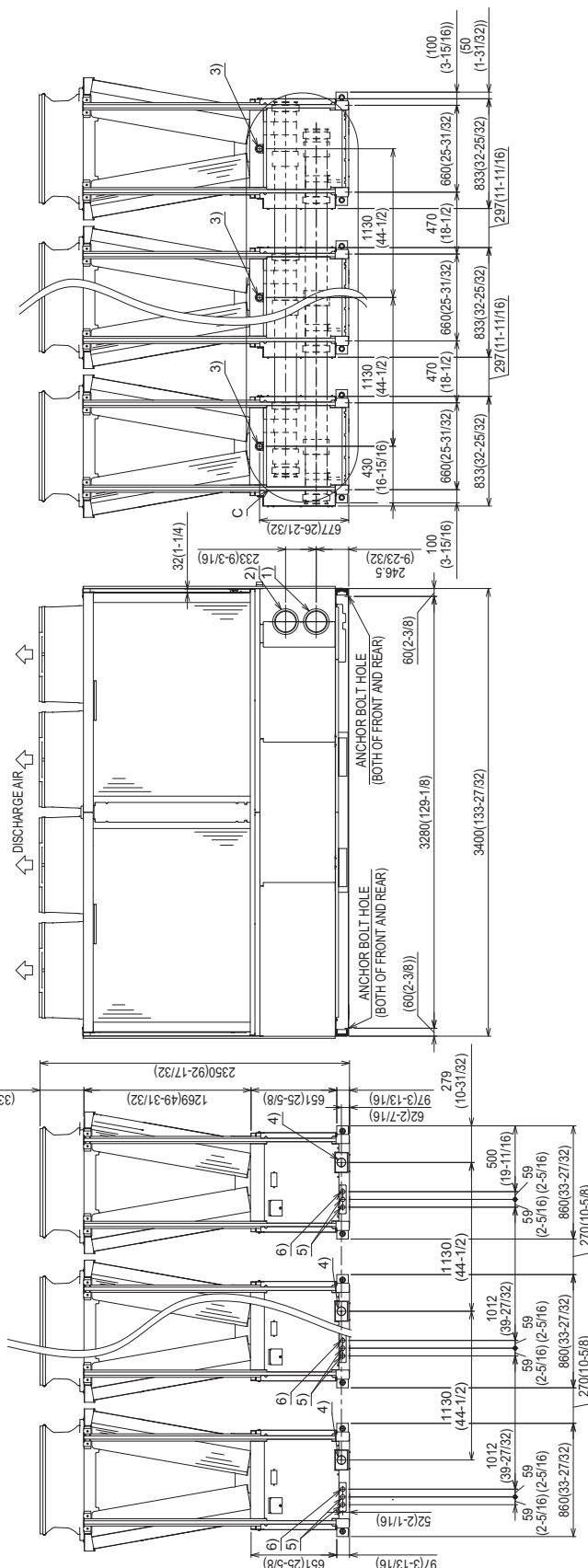
NOTE 4. THE HOUSING TYPE JOINTS FOR CONNECTING A COOL (HOT) WATER INLET AND OUTLET SHOULD BE PREPARED ON SITE.

NOTE 5. THE VALUES OF A AND B IN THE FIGURE ARE AS FOLLOWS.

| NO. | NAME                                    | DESCRIPTION                          |
|-----|-----------------------------------------|--------------------------------------|
| 1)  | COOL (HOT) WATER INLET                  | 6B HOUSING TYPE JOINT ATTACHED (x 1) |
| 2)  | COOL (HOT) WATER OUTLET                 | 6B HOUSING TYPE JOINT ATTACHED (x 1) |
| 3)  | DRAIN OPENING                           | R1½ EXTERNAL THREAD                  |
| 4)  | POWER CABLE INLET                       | ø66(2-19/32) x 1 OR ø69(3-1/2) x 1   |
| 5)  | SIGNAL CABLE INLET (LOW CURRENT CABLE)  | ø34(1-11/32) x 2                     |
| 6)  | SIGNAL CABLE INLET (HIGH CURRENT CABLE) | ø34(1-11/32)                         |

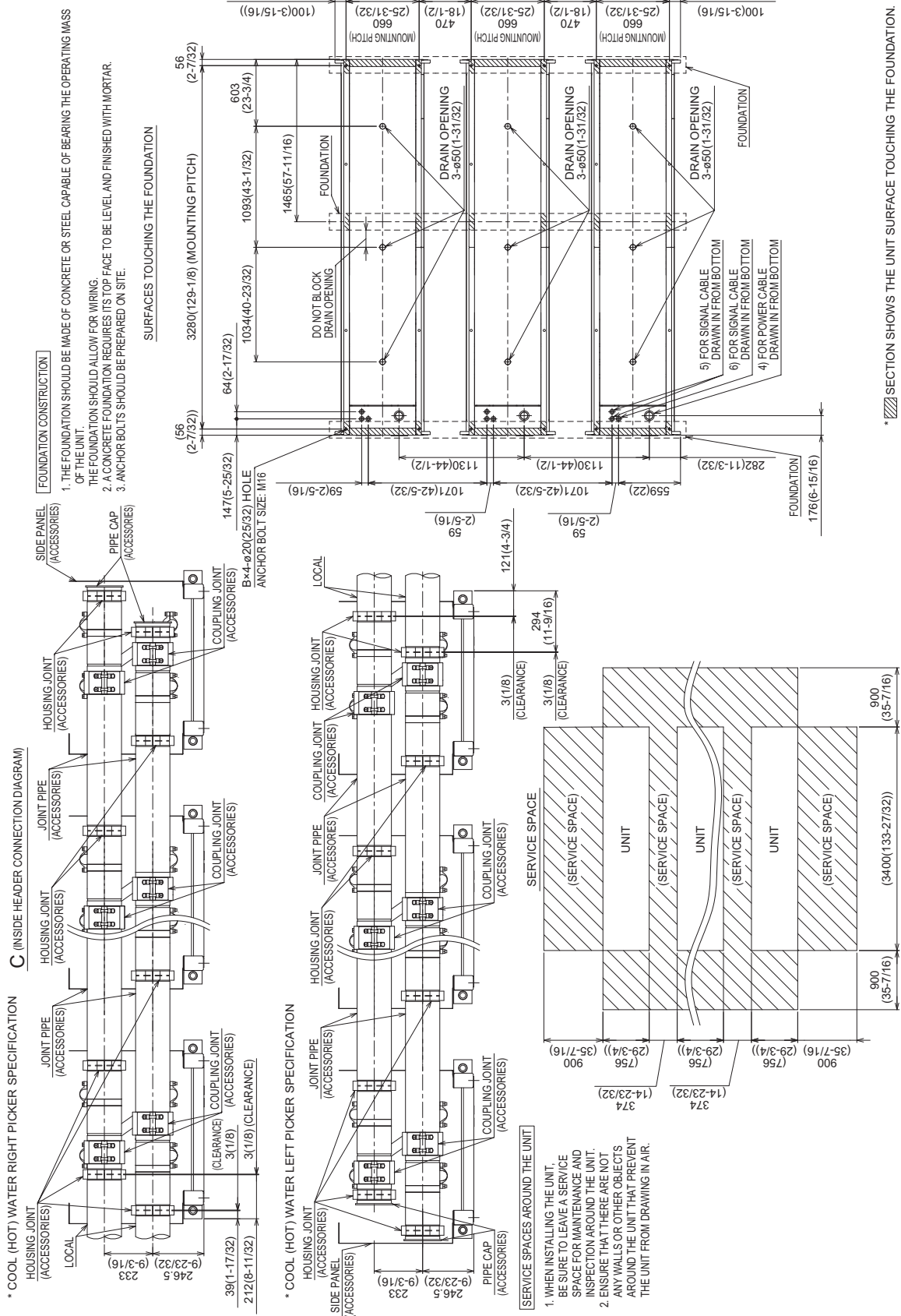


| MODULE COUNT | A               | B (FOUNDATION HOLE COUNT) |
|--------------|-----------------|---------------------------|
| 1 MODULE     | 1080(42-17/32)  | 1                         |
| 2 MODULES    | 2210(87)        | 2                         |
| 3 MODULES    | 3340(131-1/2)   | 3                         |
| 4 MODULES    | 4470(175-31/32) | 4                         |
| 5 MODULES    | 5600(220-15/32) | 5                         |
| 6 MODULES    | 6730(264-31/32) | 6                         |



## EAHV-M040, 050YCL-N(-BS)

Unit: mm (in.)



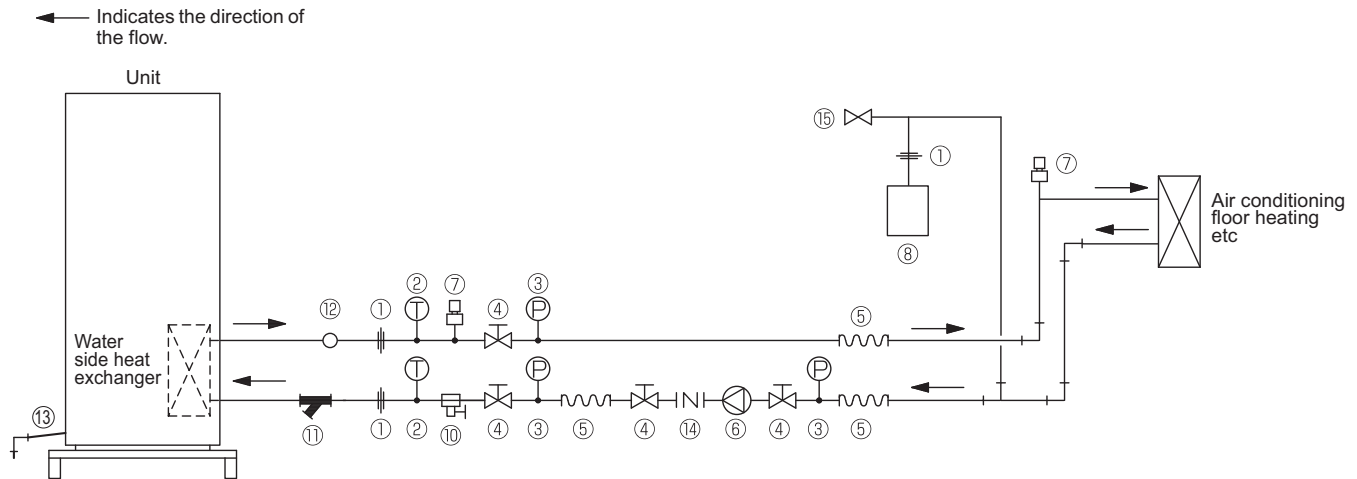
## Water circuit

**Please build the water circuit so that it is a closed system.**

Do not use water directly for showers or other applications.

Do not allow other heat source water to mix with the water circuit.

Build a water circuit as inlet water temperature fluctuation is within 5°C/10 minutes.



|                              |                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ① Union joints/flange joints | Required to allow for a replacement of equipment.                                                                                                                                                                                                                                                                                                               |
| ② Thermometer                | Required to check the performance and monitor the operation of the units.                                                                                                                                                                                                                                                                                       |
| ③ Water pressure gauge       | Recommended for checking the operation status.                                                                                                                                                                                                                                                                                                                  |
| ④ Valve                      | Required to allow for a replacement or cleaning of the flow adjuster.                                                                                                                                                                                                                                                                                           |
| ⑤ Flexible joint             | Recommended to prevent the noise and vibration from the pump from being transmitted.                                                                                                                                                                                                                                                                            |
| ⑥ Pump                       | Use a pump that is large enough to compensate for the total water pressure loss and supply sufficient water to the unit.                                                                                                                                                                                                                                        |
| ⑦ Automatic air vent valve   | Install automatic air vent valves where air accumulates.<br>Even in the case of a failure of the water-side heat exchanger in the unit, the refrigerant may leak from the automatic air vent valve.<br>To prevent accidents resulted from refrigerant leakage, install the unit where leaked refrigerant will not accumulate, such as outdoors.                 |
| ⑧ Closed expansion tank      | Install a closed expansion tank to accommodate expanded water and to supply water.                                                                                                                                                                                                                                                                              |
| ⑨ Water pipe                 | Use pipes that allow for easy air purging, and provide adequate insulation.                                                                                                                                                                                                                                                                                     |
| ⑩ Drain valve                | Install drain valves so that water can be drained for servicing.                                                                                                                                                                                                                                                                                                |
| ⑪ Strainer                   | Install a strainer near the unit to keep foreign materials from entering the water-side head exchanger.                                                                                                                                                                                                                                                         |
| ⑫ Flow switch                | Required to protect the unit.                                                                                                                                                                                                                                                                                                                                   |
| ⑬ Drain pipe                 | Install the drain pipe with a downward inclination of between 1/100 and 1/200.<br>To prevent drain water from freezing in winter, install the drain pipe as steep an angle as practically possible and minimize the straight line.<br>For cold climate installation, take an appropriate measure (e.g., drain heater) to prevent the drain water from freezing. |
| ⑭ Check valve                | Required to prevent the backward flow.                                                                                                                                                                                                                                                                                                                          |
| ⑮ Safety valve               | Install a safety valve near the closed expansion tank.<br>Even in the case of a failure of the water-side heat exchanger in the unit, the refrigerant may leak from the safety valve.<br>To prevent accidents resulted from refrigerant leakage, install the unit where leaked refrigerant will not accumulate, such as outdoors.                               |

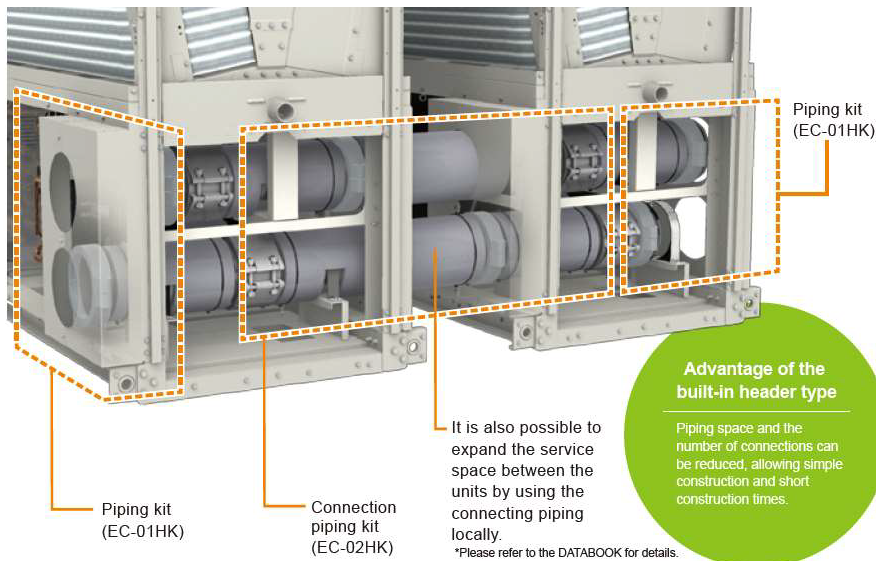
## Performance Points rated at AHRI Ambient Relief

| Unit    |        |              |                |                          | Evaporator     |                                     |                               | Condenser                    | Altitude ft |
|---------|--------|--------------|----------------|--------------------------|----------------|-------------------------------------|-------------------------------|------------------------------|-------------|
| Point # | % Load | Capacity ton | Input Power kW | Efficiency (EER) Btu/W.h | Fluid Flow gpm | Pressure Drop [ft H <sub>2</sub> O] | Entering Fluid Temperature °F | Leaving Fluid Temperature °F |             |
| 1       | 100    | 42.9         | 44             | 11.6                     | 114.5          | 45.5                                | 53.6                          | 44.6                         | 0           |
| 2       | 90     | 38.6         | 34             | 13.4                     | 114.5          | 45.5                                | 52.7                          | 44.6                         | 0           |
| 3       | 80     | 34.3         | 26             | 15.6                     | 114.5          | 45.5                                | 51.8                          | 44.6                         | 0           |
| 4       | 70     | 30.0         | 20             | 18.2                     | 114.5          | 45.5                                | 50.9                          | 44.6                         | 0           |
| 5       | 60     | 25.7         | 14             | 21.5                     | 114.5          | 45.5                                | 50.0                          | 44.6                         | 0           |
| 6       | 50     | 21.5         | 10             | 26.4                     | 114.5          | 45.5                                | 49.1                          | 44.6                         | 0           |
| 7       | 40     | 17.2         | 8              | 26.6                     | 114.5          | 45.5                                | 48.2                          | 44.6                         | 0           |
| 8       | 30     | 12.9         | 5              | 28.7                     | 114.5          | 45.5                                | 47.3                          | 44.6                         | 0           |
| 9       | 20     | 8.6          | 3              | 36.7                     | 114.5          | 45.5                                | 46.4                          | 44.6                         | 0           |
| 10      | 10     | 4.3          | 0              | 157.8                    | 114.5          | 45.5                                | 45.5                          | 44.6                         | 0           |

## Performance Points rated at Constant Ambient Temperature

| Unit    |        |              |                |                          | Evaporator     |                                     |                               | Condenser                    | Altitude ft |
|---------|--------|--------------|----------------|--------------------------|----------------|-------------------------------------|-------------------------------|------------------------------|-------------|
| Point # | % Load | Capacity ton | Input Power kW | Efficiency (EER) Btu/W.h | Fluid Flow gpm | Pressure Drop [ft H <sub>2</sub> O] | Entering Fluid Temperature °F | Leaving Fluid Temperature °F |             |
| 1       | 100    | 42.9         | 44             | 11.6                     | 114.5          | 45.5                                | 53.6                          | 44.6                         | 0           |
| 2       | 90     | 38.6         | 38             | 12.2                     | 114.5          | 45.5                                | 52.7                          | 44.6                         | 0           |
| 3       | 80     | 34.3         | 32             | 12.8                     | 114.5          | 45.5                                | 51.8                          | 44.6                         | 0           |
| 4       | 70     | 30.0         | 27             | 13.3                     | 114.5          | 45.5                                | 50.9                          | 44.6                         | 0           |
| 5       | 60     | 25.7         | 22             | 13.8                     | 114.5          | 45.5                                | 50.0                          | 44.6                         | 0           |
| 6       | 50     | 21.5         | 18             | 14.2                     | 114.5          | 45.5                                | 49.1                          | 44.6                         | 0           |
| 7       | 40     | 17.2         | 14             | 14.7                     | 114.5          | 45.5                                | 48.2                          | 44.6                         | 0           |
| 8       | 30     | 12.9         | 10             | 15.6                     | 114.5          | 45.5                                | 47.3                          | 44.6                         | 0           |
| 9       | 20     | 8.6          | 7              | 15.0                     | 114.5          | 45.5                                | 46.4                          | 44.6                         | 0           |
| 10      | 10     | 4.3          | 3              | 16.2                     | 114.5          | 45.5                                | 45.5                          | 44.6                         | 0           |

\* IPLV reflects AHRI standard rating conditions and does not change with user defined conditions

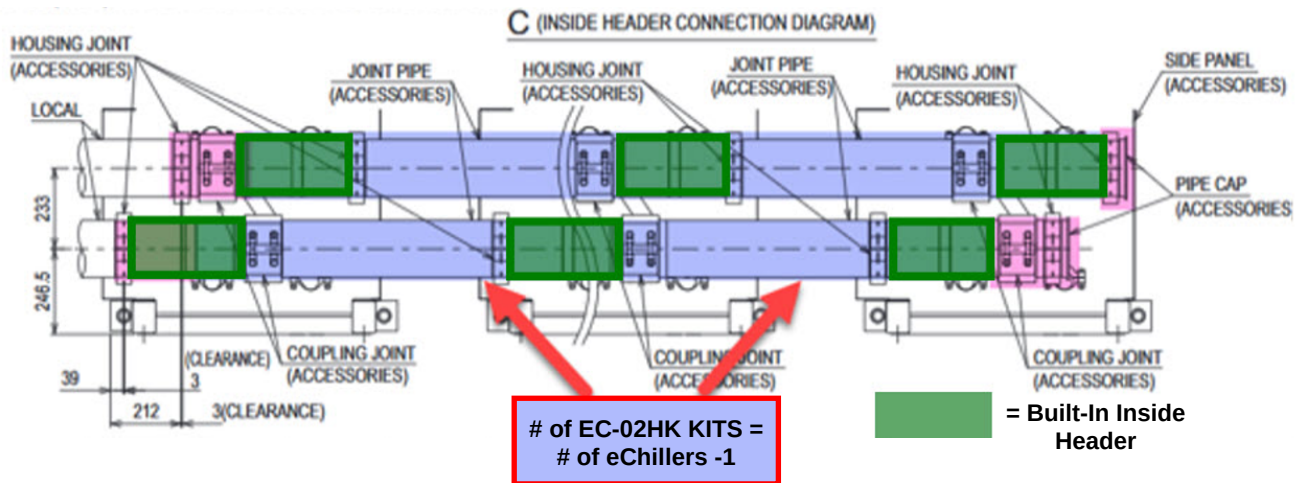


The inside header kit components allow for combined installation of chiller modules (-N models ONLY) up to 6 modules in consecutive group maximum.

There are two kit components that must be applied to combine the modules:

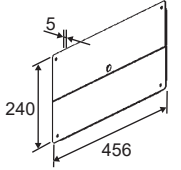
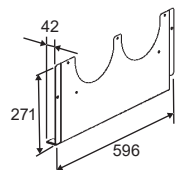
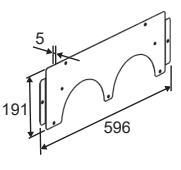
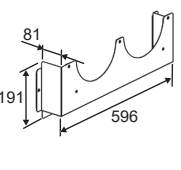
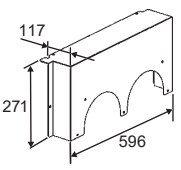
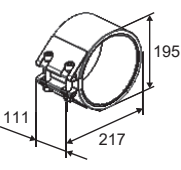
The "Piping KIT" is for the end connections of the group (EC-01HK).

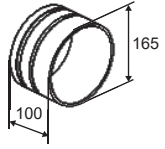
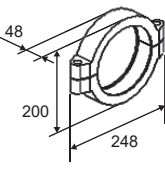
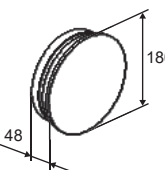
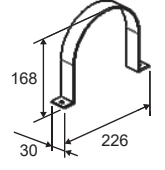
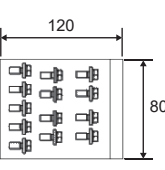
The "Connection KIT" is for the interconnection of modules (EC-02HK).



**# of EC-01HK KITS = 1 Per Group of Chillers Combined (Max of 6 Modules In Group)**

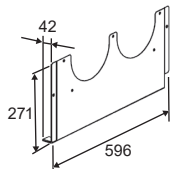
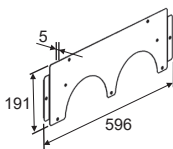
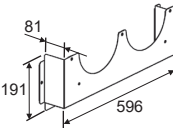
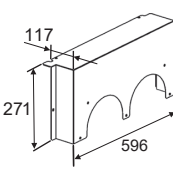
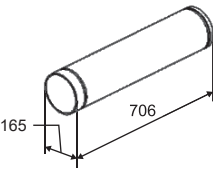
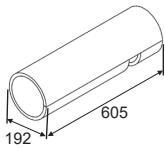
## EC-01HK (Piping Kit)

| Unit: mm |               |                                                                                     |          |
|----------|---------------|-------------------------------------------------------------------------------------|----------|
| No.      | Parts name    | Size and shape                                                                      | Quantity |
| 1        | SIDE PANEL    |    | 1        |
| 2        | PANEL BL      |    | 1        |
| 3        | PANEL BR      |    | 1        |
| 4        | PANEL SL      |   | 1        |
| 5        | PANEL SR      |  | 1        |
| 6        | PIPE COUPLING |  | 2        |

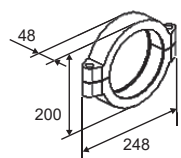
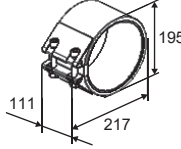
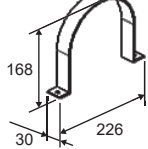
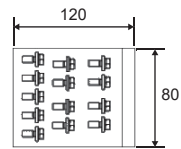
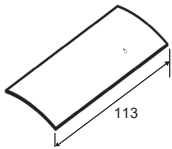
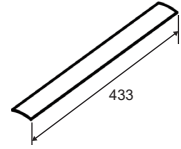
| Unit: mm |                    |                                                                                       |          |
|----------|--------------------|---------------------------------------------------------------------------------------|----------|
| No.      | Parts name         | Size and shape                                                                        | Quantity |
| 7        | JOINT PIPE (SHORT) |    | 2        |
| 8        | HOUSING JOINT      |    | 4        |
| 9        | PIPE CAP           |    | 2        |
| 10       | SADDLE             |   | 1        |
| 11       | BOLT M5            |  | 1        |

## EC-02HK (Connection Piping Kit)

Unit: mm

| No. | Parts name        | Size and shape                                                                      | Quantity |
|-----|-------------------|-------------------------------------------------------------------------------------|----------|
| 1   | PANEL BL          |    | 1        |
| 2   | PANEL BR          |    | 1        |
| 3   | PANEL SL          |    | 1        |
| 4   | PANEL SR          |   | 1        |
| 5   | JOINT PIPE (LONG) |  | 2        |
| 6   | PIPE COVER        |  | 2        |

Unit: mm

| No. | Parts name    | Size and shape                                                                        | Quantity |
|-----|---------------|---------------------------------------------------------------------------------------|----------|
| 7   | HOUSING JOINT |    | 2        |
| 8   | PIPE COUPLING |    | 2        |
| 9   | SADDLE        |    | 1        |
| 10  | BOLT M5       |   | 1        |
| 11  | TAPE 1        |  | 2        |
| 12  | TAPE 2        |  | 2        |