



## Catalog 1118-4

# SmartSource® Compact Horizontal Water Source Heat Pump

Model GCH- Single Stage

Model GDH- Two Stage

Sizes 007 – 070 (1/2 thru 6 tons)



|  |           |  |           |
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## Model Nomenclature

|   |     |   |     |   |   |       |    |    |    |    |       |    |    |    |    |    |       |    |    |    |
|---|-----|---|-----|---|---|-------|----|----|----|----|-------|----|----|----|----|----|-------|----|----|----|
| 1 | 2-3 | 4 | 5-7 | 8 | 9 | 10-11 | 12 | 13 | 14 | 15 | 16-17 | 18 | 19 | 20 | 21 | 22 | 23-24 | 25 | 26 | 27 |
| W | GC  | H | 007 | E | 1 | LS    | S  | M  | T  | D  | WE    | 2  | 1  | P  |    |    | 75    | E  | D  | 3  |

| Category                | Code Option | Code Designation |   | Description                 |
|-------------------------|-------------|------------------|---|-----------------------------|
| <b>Product Category</b> | 1           | W                | = | Water Source Heat Pump      |
| <b>Model Type</b>       | 2-3         | GC               | = | Compact Single Stage        |
|                         |             | GD               | = | Compact Two Stage           |
| <b>Configuration</b>    | 4           | H                | = | Horizontal                  |
| <b>Nominal Capacity</b> | 5-7         | 007              | = | 7,000 Btuh Nominal Cooling  |
|                         |             | 009              | = | 9,000 Btuh Nominal Cooling  |
|                         |             | 012              | = | 12,000 Btuh Nominal Cooling |
|                         |             | 015              | = | 15,000 Btuh Nominal Cooling |
|                         |             | 019              | = | 19,000 Btuh Nominal Cooling |
|                         |             | 024              | = | 24,000 Btuh Nominal Cooling |
|                         |             | 030              | = | 30,000 Btuh Nominal Cooling |
|                         |             | 042              | = | 42,000 Btuh Nominal Cooling |
|                         |             | 048              | = | 48,000 Btuh Nominal Cooling |
|                         |             | 060              | = | 60,000 Btuh Nominal Cooling |
|                         |             | 070              | = | 70,000 Btuh Nominal Cooling |

## Nomenclature (Continued)

| 1 | 2-3 | 4 | 5-7 | 8 | 9 | 10-11 | 12 | 13 | 14 | 15 | 16-17 | 18 | 19 | 20 | 21 | 22 | 23-24 | 25 | 26 | 27 |
|---|-----|---|-----|---|---|-------|----|----|----|----|-------|----|----|----|----|----|-------|----|----|----|
| W | GC  | H | 007 | E | 1 | LS    | S  | M  | T  | D  | WE    | 2  | 1  | P  |    |    | 75    | E  | D  | 3  |

| Category  | Code Option | Code Designation | Description   |
|---|-------------|------------------|---|
| <b>Voltage</b>                                    | 8           | A                | = 115/60/1 (007-015)  |
|   |             | E                | = 208-230/60/1 (007-070)  |
|   |             | F                | = 208-230/60/3 (024-070)  |
|   |             | J                | = 265/60/1 (007-036)  |
|   |             | K                | = 460/60/3 (024-070)  |
|   |             | L                | = 575/60/3 (048-070)  |
| <b>Design Series (Vintage)</b>                    | 9           | 1                | = Revision / Design Series 1  |
| <b>Return Air / Discharge Air</b>                 | 10-11       | LS               | = Left Hand Return / Straight Discharge   |
|   |             | LE               | = Left Hand Return / End Discharge  |
|   |             | RS               | = Right Hand Return / Straight Discharge  |
|   |             | RE               | = Right Hand Return / End Discharge   |
| <b>Water Coil Type</b>                            | 12          | C                | = Copper Inner Tube   |
|   |             | S                | = Cupro-Nickel Inner Tube   |
|   |             | G                | = Geothermal - Copper Inner Tube  |
|   |             | J                | = Geothermal - Cupro-Nickel   |
| <b>Unit Control</b>                               | 13          | M                | = MicroTech III SmartSource Unit Controller   |
|   |             | L                | = MicroTech III Unit Controller + LON   |
|   |             | B                | = MicroTech III Unit Controller + BACnet  |
| <b>Fan Motor</b>                                  | 14          | P                | = PSC   |
|   |             | C                | = ECM Constant CFM  |
|   |             | T                | = ECM Constant Torque   |
| <b>Insulation<br/>(Compressor Side / Airside)</b> | 15          | B                | = Standard (1/2" Fiberglass, Entire Unit)   |
|   |             | I                | = IAQ (Closed Cell Foam, Entire Unit)   |
|   |             | D                | = Dual Layer Fiberglass (Entire Unit) (sizes 007-019)   |
|   |             | F                | = Sound Blanket + Standard (1/2" Fiberglass)(sizes 024-070)   |
|   |             | G                | = Sound Blanket + IAQ (Closed Cell Foam) (sizes 024-070)  |
|   |             | H                | = Sound Blanket + Sound Package (1" Fiberglass / Dual Layer Fiberglass) (sizes 024-070)                     |
| <b>Options</b>                                    | 16-17       | WE               | = Waterside Economizer  |
|   |             | HG               | = Hot Gas Reheat  |
| <b>Filter &amp; Racks</b>                         | 18          | 1                | = Standard 1" Rail - 1" Throwaway Filter  |
|   |             | 2                | = 2" Rack - 2" Filter (MERV 8)  |
|   |             | 4                | = 4" Rack - 4" Filter (MERV 13)   |
| <b>Piping Package</b>                             | 19          | 0                | = None  |
|   |             | 1                | = Isolation Valve (Normally Open) (Available only on sizes 015-070)   |
|   |             | 2                | = Isolation Valve (Normally Closed) (Available only on sizes 015-070)                                       |
| <b>Electric Heat</b>                              | 20          | 0                | = None  |
|   |             | P                | = Control for Electric Heat Single 24V Signal (Field Installed Duct Heater by Others)                       |
| <b>Additional Options</b>                         | 21          | 0                | = None  |
|   |             | F                | = Freeze Fault Protection   |
|   |             | A                | = Alarm Relay   |
|   |             | B                | = Alarm Relay and Freeze Fault Protection   |
|   |             | C                | = Water Pressure Differential Switch  |
|   |             | D                | = Freeze Fault Protection and Pressure Differential Switch  |
|   |             | E                | = Alarm Relay and Pressure Differential Switch  |
|   |             | G                | = Alarm Relay, Freeze Fault Protection and Pressure Differential Switch                                     |
| <b>Standard or Special</b>                        | 22          | S                | = Standard  |
|   |             | X                | = Special   |
| <b>Transformer</b>                                | 23-24       | 50               | = 50VA Transformer  |
|   |             | 75               | = 75VA Transformer  |
| <b>Corrosion Protection</b>                       | 25          | 0                | = None with Stainless Steel Drain Pan   |
|   |             | A                | = None with Plastic Drain Pan   |
|   |             | E                | = Corrosion Protection with Stainless Steel Drain Pan (Coated Air Coil Includes WSE and HGRH if applicable) |
|   |             | F                | = Corrosion Protection with Plastic Drain Pan (Coated Air Coil Includes WSE and HGRH if applicable)         |
| <b>Disconnect Switch</b>                          | 26          | 0                | = None  |
|   |             | D                | = Disconnect Switch   |

## Compact model GCH with PSC motor

Note: All data below rated in accordance with AHRI/ASHRAE/ISO Standard 13256-1. All ratings based on 208V operation.

| Unit Size | Motor Type | CFM   | GPM  | Water Loop (Boiler Tower) |      |         |     | Ground Loop (Geothermal) |      |         |     |
|-----------|------------|-------|------|---------------------------|------|---------|-----|--------------------------|------|---------|-----|
|           |            |       |      | Cooling                   |      | Heating |     | Cooling                  |      | Heating |     |
|           |            |       |      | Btu/hr                    | EER  | Btu/hr  | COP | Btu/hr                   | EER  | Btu/hr  | COP |
| 007       | PSC        | 250   | 1.75 | 6,200                     | 14.5 | 8,200   | 5.3 | 6,700                    | 17.4 | 4,900   | 3.3 |
| 009       |            | 300   | 2.25 | 9,400                     | 13.4 | 11,900  | 4.7 | 10,000                   | 16.0 | 7,600   | 3.4 |
| 012       |            | 400   | 3    | 11,600                    | 12.9 | 15,000  | 4.3 | 12,300                   | 15.0 | 9,600   | 3.2 |
| 015       |            | 500   | 3.5  | 14,400                    | 15.3 | 18,000  | 5.4 | 15,100                   | 18.1 | 11,100  | 3.8 |
| 019       |            | 600   | 4.5  | 17,100                    | 15.3 | 21,600  | 5.3 | 18,000                   | 17.9 | 13,600  | 3.8 |
| 024       |            | 800   | 6.0  | 23,500                    | 14.5 | 28,200  | 4.7 | 24,400                   | 16.5 | 18,000  | 3.3 |
| 030       |            | 1,000 | 7.5  | 28,000                    | 13.5 | 34,300  | 4.4 | 29,200                   | 15.5 | 22,600  | 3.2 |
| 036       |            | 1,200 | 9    | 36,000                    | 14.4 | 42,400  | 4.6 | 37,300                   | 16.5 | 27,100  | 3.2 |
| 042       |            | 1,400 | 10.5 | 40,800                    | 14.8 | 44,600  | 4.4 | 42,300                   | 16.6 | 30,200  | 3.2 |
| 048       |            | 1,600 | 12.0 | 47,400                    | 14.0 | 58,900  | 4.6 | 48,800                   | 16.1 | 38,600  | 3.5 |
| 060       |            | 2,000 | 15.0 | 60,000                    | 13.1 | 76,900  | 4.3 | 62,200                   | 14.9 | 49,300  | 3.2 |
| 070       |            | 2,300 | 18.0 | 68,100                    | 14.0 | 81,000  | 4.5 | 71,000                   | 15.9 | 53,300  | 3.3 |

## Compact model GCH with EC motor

| Unit Size | Motor Type | CFM   | GPM  | Water Loop (Boiler Tower) |      |         |     | Ground Loop (Geothermal) |      |         |     |
|-----------|------------|-------|------|---------------------------|------|---------|-----|--------------------------|------|---------|-----|
|           |            |       |      | Cooling                   |      | Heating |     | Cooling                  |      | Heating |     |
|           |            |       |      | Btu/hr                    | EER  | Btu/hr  | COP | Btu/hr                   | EER  | Btu/hr  | COP |
| 007       | ECM        | 250   | 1.75 | 6,300                     | 15.2 | 8,100   | 5.4 | 6,800                    | 18.3 | 4,800   | 3.5 |
| 009       |            | 300   | 2.25 | 9,300                     | 13.7 | 11,800  | 4.8 | 9,900                    | 16.2 | 7,500   | 3.5 |
| 012       |            | 400   | 3    | 11,800                    | 13.3 | 15,000  | 4.4 | 12,500                   | 15.4 | 9,500   | 3.2 |
| 015       |            | 500   | 3.5  | 14,500                    | 16.8 | 17,600  | 5.7 | 15,300                   | 19.9 | 10,700  | 3.9 |
| 019       |            | 600   | 4.5  | 17,400                    | 16.3 | 21,200  | 5.5 | 18,300                   | 19.0 | 13,200  | 3.9 |
| 024       |            | 800   | 6.0  | 23,700                    | 15.4 | 27,700  | 4.8 | 24,600                   | 17.6 | 17,500  | 3.3 |
| 030       |            | 1,000 | 7.5  | 28,300                    | 14.0 | 33,600  | 4.5 | 29,400                   | 16.0 | 21,400  | 3.3 |
| 036       |            | 1,200 | 9    | 36,200                    | 14.9 | 41,900  | 4.8 | 37,500                   | 17.2 | 26,600  | 3.3 |
| 042       |            | 1,400 | 10.5 | 41,100                    | 15.2 | 44,400  | 4.4 | 42,600                   | 17.0 | 30,000  | 3.2 |
| 048       |            | 1,600 | 12.0 | 47,600                    | 14.9 | 58,600  | 4.9 | 49,100                   | 17.1 | 38,400  | 3.7 |
| 060       |            | 2,000 | 15.0 | 60,500                    | 13.8 | 77,400  | 4.5 | 61,500                   | 15.5 | 49,800  | 3.4 |
| 070       |            | 2,300 | 18.0 | 68,500                    | 14.7 | 80,000  | 4.6 | 71,400                   | 16.9 | 52,300  | 3.4 |

## Compact model GDH (2-stage)

Note: 2-stage data presented at full load operation

| Unit Size | CFM   | GPM  | Water Loop (Boiler Tower) |      |         |     | Ground Loop (Geothermal) |      |         |     |
|-----------|-------|------|---------------------------|------|---------|-----|--------------------------|------|---------|-----|
|           |       |      | Cooling                   |      | Heating |     | Cooling                  |      | Heating |     |
|           |       |      | Btu/hr                    | EER  | Btu/hr  | COP | Btu/hr                   | EER  | Btu/hr  | COP |
| 024       | 800   | 6.0  | 24,000                    | 15.7 | 28,000  | 4.7 | 25,400                   | 18.3 | 17,500  | 3.4 |
| 030       | 1,000 | 7.5  | 28,000                    | 13.8 | 34,000  | 4.3 | 29,300                   | 15.7 | 22,000  | 3.2 |
| 036       | 1,200 | 9    | 36,400                    | 15.4 | 41,700  | 4.7 | 37,900                   | 17.6 | 26,200  | 3.3 |
| 042       | 1,400 | 10.5 | 41,600                    | 14.6 | 45,800  | 4.4 | 43,600                   | 16.9 | 30,800  | 3.3 |
| 048       | 1,600 | 12.0 | 47,000                    | 14.7 | 56,600  | 4.9 | 48,900                   | 16.8 | 36,800  | 3.6 |
| 060       | 2,000 | 15   | 54,300                    | 13.9 | 71,200  | 4.7 | 55,600                   | 15.5 | 46,700  | 3.6 |
| 070       | 2,250 | 18.0 | 68,500                    | 15.0 | 80,500  | 4.6 | 71,400                   | 17.0 | 51,700  | 3.4 |

**Legend:** Btuh = British Thermal Units per Hour  
EER = Energy Efficiency Ratio

CFM = Airflow Rate, Cubic Feet per Minute  
GPM = Gallons per Minute

COP = Coefficient of Performance  
\* = Constant torque EC motor only

### Water Loop:

1. Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 86°F (30°C) EWT.
2. Heating capacity is based on 68°F db, 59.0°F wb (20/15°C) EAT and 68°F (20°C) EWT.

### Ground Loop:

1. Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 77°F (25°C) EWT.
2. Heating capacity is based on 68°F db, 59.0°F wb (20/15°C) EAT and 32°F (0°C) EWT.

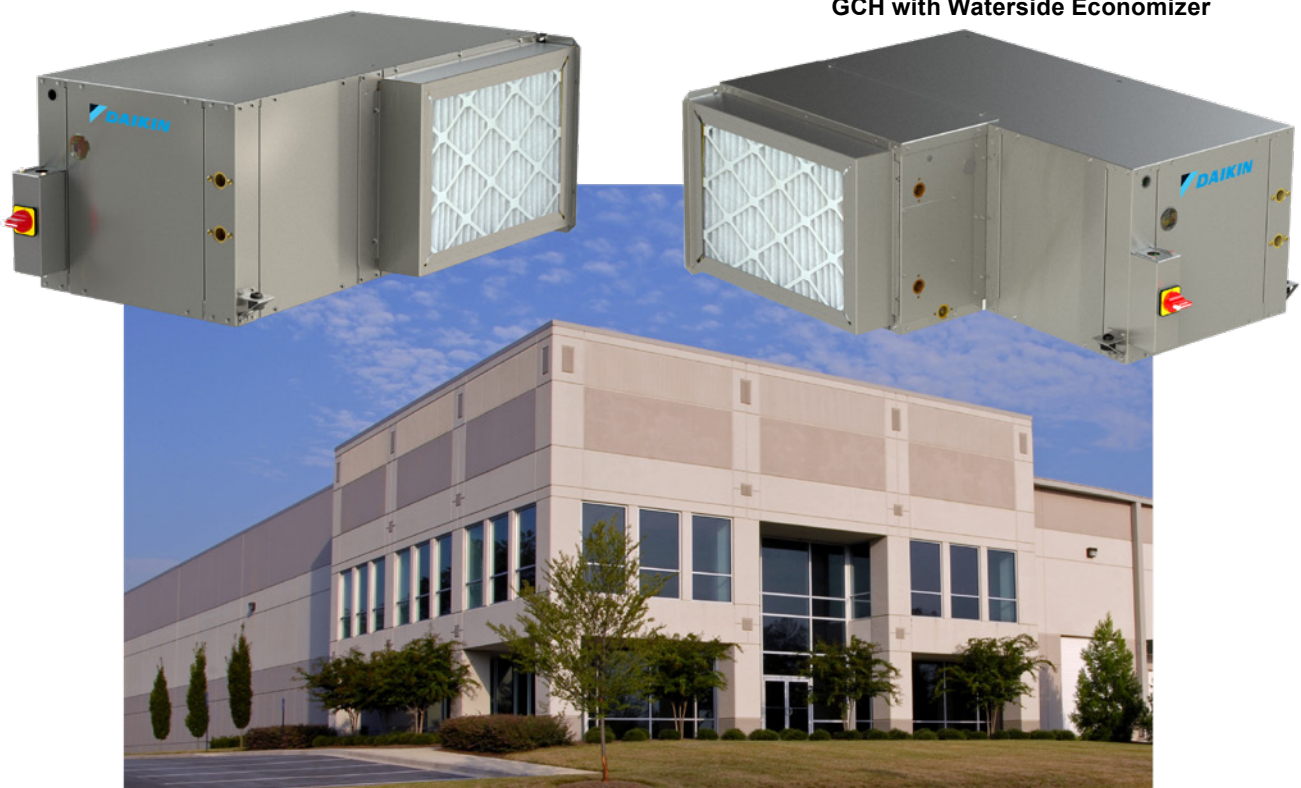
## SmartSource® Compact Horizontal Water Source Heat Pump - GCH

We at Daikin have lead the way for over 40 years in horizontal water source heat pump design, with a focus on small-scale, serviceable units that provide commercial building contractors and facility managers with a low-cost alternative to more expensive and larger water source heat pumps. Readily available in-stock, Compact units are ideal for new, existing, or replacement jobs where space is premium and budgets are constrained. They can be configured for boiler tower or geothermal applications often found in schools, offices, lodging, condominiums, and retail facilities.

Although small in size, Compact units deliver big in performance capabilities. Specifying engineers will appreciate all the high-performing features and options built into the Compact design; EC motors with adjustable air flow settings, dehumidification, and waterside economizer (typically found only in larger water source heat pumps), now fully selectable and available in this smaller packaged unit, and at a lower cost.

With so many performance design features and options available with the Compact unit, building owners can expect a quiet and more comfortable environment for occupants, in addition to a low first-installed cost, efficient, cost-saving operation, and lower energy bills each year.

### Compact Footprint, Large Unit Features at Low Cost



#### Contractors/Facility Managers:

- SmartSource Compact fits where there's limited, valuable space
- Designed for smooth quick installation

#### Specifying Engineers:

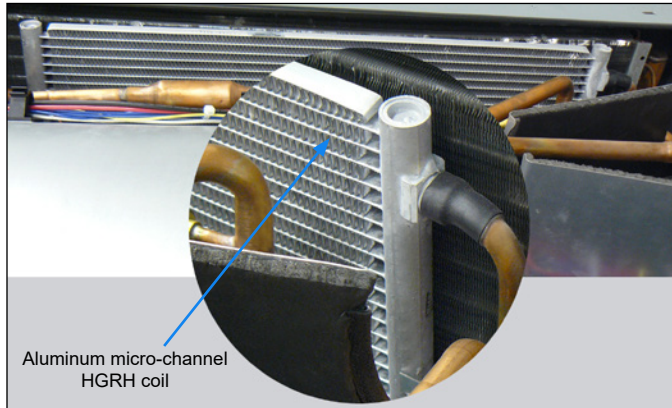
- Compact delivers high performance and quiet operation
- Boasts features and options typical of larger units, at a low price
- Has one of the smallest footprint in the industry

#### Building Owners:

- Compact design
- Quiet operation with improved comfort
- Low first-installed cost
- Reliable, efficient cost-saving operation.



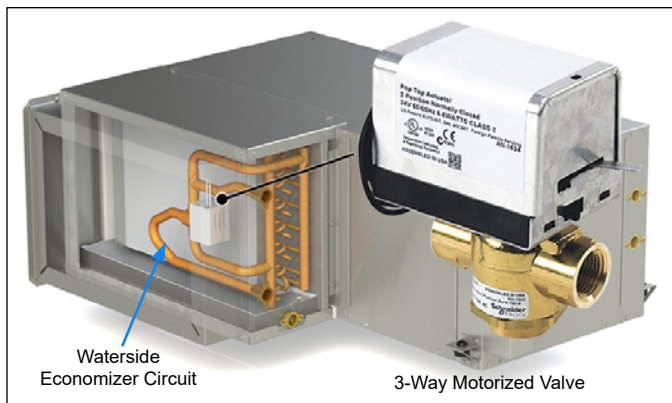
## Hot Gas Reheat Coil



For improved indoor climate control, Daikin Applied offers accurate and cost effective dehumidification control using a hot gas reheat option known as smart dehumidification. Hot gas reheat with smart dehumidification is an excellent solution for applications where maintaining low humidity in a space is crucial.

With smart dehumidification, once the space temperature is satisfied, the humidistat signal diverts the high temperature refrigerant gas to the reheat coil located downstream of the cooling coil. The conditioned and reheated air prevents over cooling of the space and maximizes moisture removal for improved indoor comfort. With the optional ECM fan system, the air flow is adjusted for optimal moisture removal, and helps keep sound levels at a minimum. It is especially effective during low load conditions when proper control is critical.

## Waterside Economizer



The waterside economizer option helps to reduce energy consumption by using cold loop water temperature to condition a space without energizing mechanical cooling. Even in the coldest weather a space can experience a build-up of ambient heat from people, equipment, lighting and the sun. Buildings benefit from the waterside economizer when loop temperatures are cool enough to provide air conditioning. The waterside economizer includes a hydronic cooling coil, 3-way motorized valve and an entering water sensor located upstream of the unit's evaporator coil.

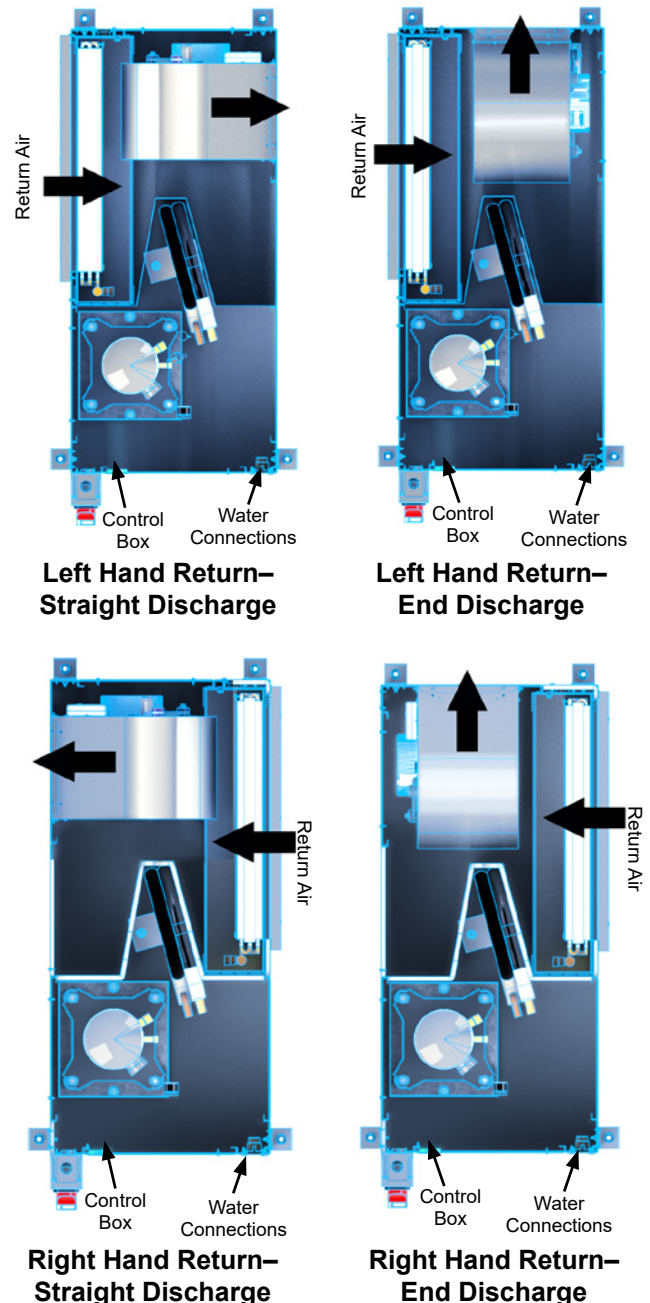
When entering water temperatures are between 40° to 70°F, a call for 1st-stage cooling will divert the cold water to the economizer coil. A call for 2nd-stage cooling will allow simultaneous compressor operation whenever the loop temperature is below the changeover temperature.

## Cabinet Configurations

The SmartSource compact cabinet is fabricated from heavy gauge G-60 galvanized sheet metal.

Four cabinet configurations are available in either a left-hand or right-hand return air arrangement to provide the optimum return air location and service access.

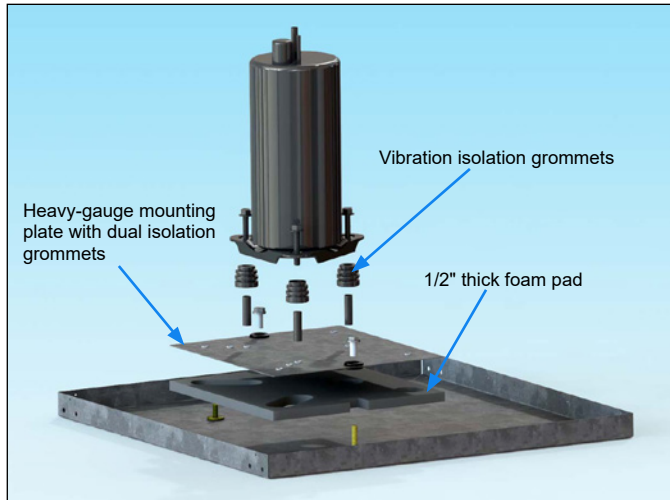
**Figure 1: Four horizontal unit configurations**



**Note:** Unit left or right hand is determined by facing the water connections (front) side of unit

## Designed-in Sound Reduction

Provided as standard, the unit has a unique dual-level vibration isolation system. A heavy-gauge mounting plate is isolated from the cabinet base with a 1/2" thick dense foam pad to minimize vibration transfer. The compressor is then isolated from the mounting plate with isolation grommets. The compressor is located in a well-insulated compartment separated from the air stream to minimize sound transmission.

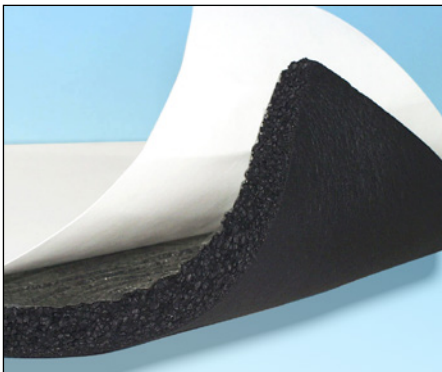


## Cabinet Insulation

Dual density 1/2" fiberglass insulation is standard on all Compact units for improved thermal and acoustic performance. The insulation meets NFPA 90A/90B requirements, air erosion and mold growth limits of UL-181, fungal resistance test per ASTM G21 or ASTM C 1338, and meets zero level bacteria growth per ASTM G22. All insulation has a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

## IAQ Insulation (Option)

Optional insulation is available with closed-cell non fibrous insulation for Indoor Air Quality (IAQ).



Closed cell foam insulation

## Sound Options

### Sound Package

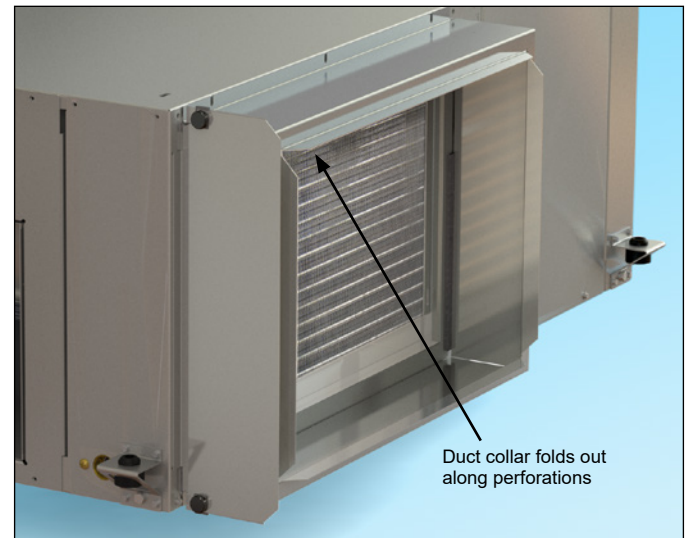
Available as a factory installed option, unit sizes 024-070 utilize sound attenuating compressor blankets combined with a dual layer of fiberglass insulation that is strategically placed in the air handling compartment. Unit sizes 007-019 have a dual layer of fiberglass insulation that is strategically placed in both the air handling and compressor compartments.

### Sound Options

Sound attenuating compressor blankets for unit sizes 024-070 are available. They may be ordered on non sound package units as well.

## Discharge & Return Fold Out Duct Collars

Optional 2-inch and 4-inch deep return air filter racks and the discharge air opening have duct collars that are perforated and easily bend out for connecting ductwork. This design helps to prevent damage during shipping and handling.



## Stainless Steel Drain Pan (Option)

The condensate drain pan is constructed of corrosion-resistant stainless steel. It is tilted from two directions toward the drain end using tapered foam strips on its underside that also help minimize sound transmission between the pan and partition plate. The entire bottom of the drain pan is covered with 1/4" insulated foam that helps reduce sweating. The drain pan includes an electronic condensate overflow protection sensor, more reliable than a mechanical float switch used with many competitor pans.



## Fan Motors

### Permanent Split Capacitor Motor (PSC)



All units are equipped standard with a 3-speed PSC motor. The motors are permanently lubricated and include thermal overload protection for years of maintenance free service. The motor is factory wired to maximize performance and efficiency. The motor is isolated from the fan housing using rubber isolators to minimize vibration transmission. All blower/motor assemblies have a removable orifice ring on the housing to accommodate motor and blower removal without disconnecting the unit from the ductwork.

### EC Constant Torque Fan Motor (Option)



Constant Torque EC  
Motor Sizes 007-012

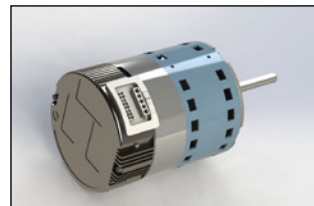


Constant Torque EC  
Motor Sizes 015-070

The optional constant torque EC blower motor offers increased efficiencies. This motor is similar in function to a PSC, but will deliver airflow at higher external static pressures. These motors are available for all sizes 007 to 070. Size 007 through 012 include a field adjustable 4-position fan speed selector switch. Unit sizes 015 through 070 offer five selectable motor speed taps. This EC motor option is an excellent choice for retrofit projects. These motors do not require a neutral wire for 460/3 electrical.

## EC Constant CFM Fan Motor (Option)

For unit sizes 015 – 070, the high efficiency EC constant airflow motor option provides constant airflow and economical performance over a wide static pressure range. This motor is an ideal option for high filtration applications, utilizing an optional MERV-13 air filter. One of the many benefits of the EC motor is a soft start/stop feature for quiet operation. The 4-speed fan selector switch allows for quick fan speed adjustment to optimize unit performance.



## Non-Fused Disconnect Switch (Option)

Compact units are available with an optional non-fused disconnect switch, located on the unit front corner post. The disconnect switch is used to break power to the unit for ease of field service and is provided with a lockout/tag out feature.



## High Efficiency Rotary or Scroll Compressor

Compressors are high efficiency rotary (sizes 007-019) and scroll (sizes 024-070) designed for heat pump duty. Mounted on a dual isolation system for reduced sound and vibration.



Horizontal Rotary



Vertical Rotary



Scroll

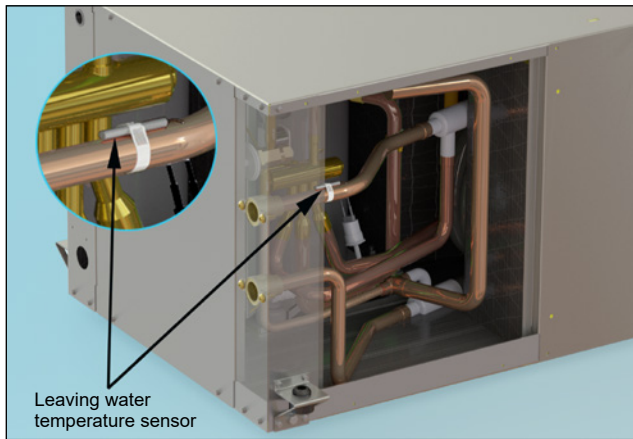
## Two-Stage Compressor (Option) - Sizes 024-070

The two-stage unloading scroll compressor provides excellent part load performance for improved humidity control and increased efficiency.



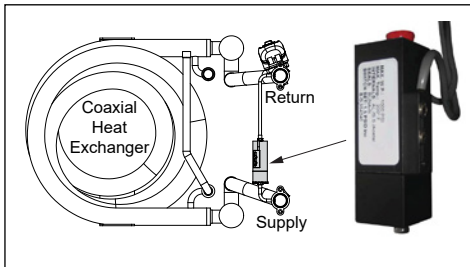
## Freeze Fault Protection (Option)

This factory installed option adds a leaving water temperature (LWT) sensor to disable compressor operation to protect against coil freeze-up.



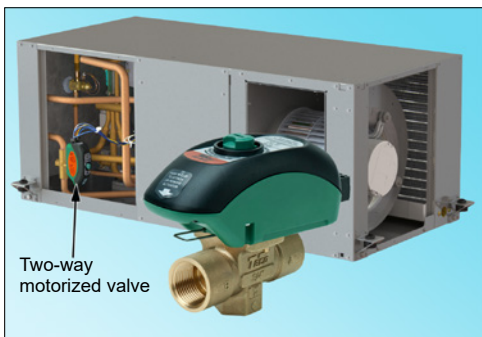
## Water Pressure Differential Switch

The pressure differential switch monitors water pressure drop across the heat exchanger and will disable compressor operation if flow is not detected. Selectable as a factory installed option internal to the cabinet.



## 2-Way Motorized Water Valves (Option)

2-way valves are used for variable pumping applications when more than one unit is installed on a common loop. These valves are also used to conserve water when used for ground water applications.



**Table 1: Available motorized valves**

| Type            | Sizes          | Connection |
|-----------------|----------------|------------|
| 2-Way Motorized | 1/2", 3/4", 1" | Sweat      |
|                 | 1/2", 3/4", 1" | NPT        |

## Water Connections

The water and condensate connections are FPT fittings, securely mounted flush to the corner post to allow for connection to a flexible hose without the use of a back-up wrench for easy installation.



## Service Valve Connections

Two service valves are located inside the lower-front access panel – one on the low side and one on the high side of the refrigeration circuit. Easily accessible for routine service.



## Air-to-Refrigerant Coil

The air-to-refrigerant heat exchanger has copper tubes and aluminum fins. The fins are lanced and mechanically bonded to the tubes using finned edges on the inside which expand during assembly to enhance heat transfer capabilities. The coil is designed for optimal performance in both heating and cooling while maintaining the benefit of a compact size. The coils can be coated with an optional inorganic, silicon-based nano-ceramic coating. This coating has a 3,000 hour salt spray rating per ASTM B-117.

## Coax Coil

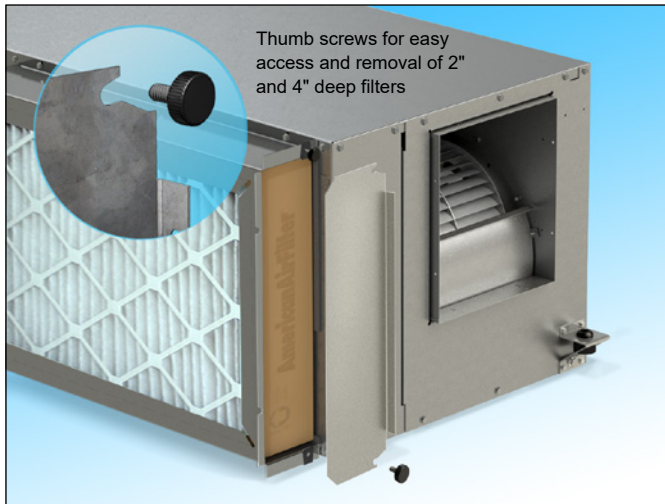
The water-to-refrigerant heat exchanger is a coaxial coil with a convoluted copper inner tube and a steel outer tube. The convoluted tube has increased heat transfer surface area per unit length for enhanced performance. The coil is rated for 500 psig on the water side and 600 psig on the refrigerant side. An optional cupro-nickel inner tube is available for applications with lower water quality.



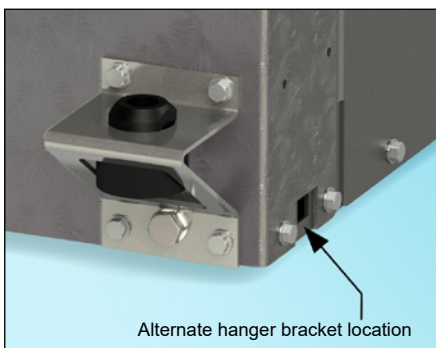
## Filters & Filter Racks

Units come standard with a 1" thick factory-installed disposable filter. The two-sided, (top and bottom) filter rails allow for the filter to be easily removed from either the left or right side.

An optional 2" deep (4-sided, low leak) filter rack is available as a factory-installed selectable option and accepts a MERV 8 filter. An optional 4" deep (4-sided, low leak) filter rack accepts a MERV 13 filter. These optional (low leak) racks include gaskets between the filter rack and cabinet that maintain the leakage rate below 4 CFM per square foot of filter area at .5" ESP. The 4-sided filter rack has a removable access door with thumb screws for easy filter access and change-out without the use of a tool.



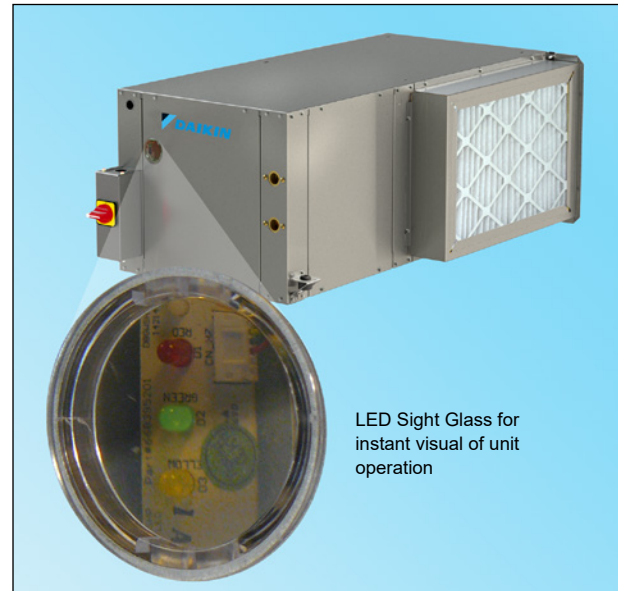
## Hanger Brackets



**Robust, interchangeable hanger brackets ship mounted on the unit.**

## LED Sight Glass

The LED status sight glass allows an instant visual of unit operation for quick troubleshooting and advanced diagnosis without removing the access panel.



## Fan Speed Selector Switch

Available on units with EC constant torque motor (sizes 007-012) and EC constant CFM motor (sizes 015-070).

A 4-position fan speed selector switch located in the control box allows CFM settings to be field adjustable. Fan speed control optimizes unit fan speed based on thermostat/room sensor inputs. The fan speed switch allows for manually setting an optimal fan speed specific to the application requirements. Each position on the fan speed switch represents settings 1-4. See [Table 2](#) below and [Table 13 on page 27](#) for a complete list of fan speed selector switch settings.



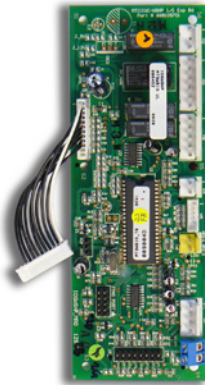
**Table 2: Single or two-stage units with constant CFM type EC motor - Fan speed selector switch settings example**

| Unit Size | MicroTech Unit Controller |                                    |                   |                   |                  |               | I/O Expansion Module |          |                      |
|-----------|---------------------------|------------------------------------|-------------------|-------------------|------------------|---------------|----------------------|----------|----------------------|
|           | Setting                   | Maximum ESP (in. wg.) <sup>2</sup> | Heat/Cool Stage 1 | Heat/Cool Stage 2 | Dehumidification | Electric Heat | Setting              | Fan Only | Waterside Economizer |
| 024       | 4 (High)                  | 0.7                                | 800               | 900               | 750              | 900           | A                    | 800      | 800                  |
|           | 3 (Standard)              |                                    | 700               | 800               | 650              | 900           | B                    | 700      | 700                  |
|           | 2 (Medium)                |                                    | 560               | 700               | 560              | 900           | C                    | 560      | 560                  |
|           | 1 (Low)                   |                                    | 560               | 560               | 560              | 900           | D                    | 450      | 560                  |

## MicroTech® Unit Control



MicroTech Controller



Expansion Module

The MicroTech controller is a microprocessor-based controller and is provided on every GCH unit. The controller monitors the safety devices to protect the unit from unsafe operating conditions, controls the reversing valve, compressor and fan operation for efficient unit operation. This controller also protects against freezing of the water to refrigerant and air to refrigerant heat exchanger as well as condensate overflow.

Safety Controls included as standard:

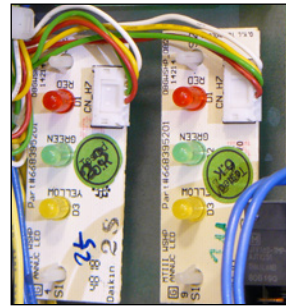
- High pressure switch located in the refrigerant discharge line.
- Low pressure switch located in the refrigerant suction line for loss of refrigerant charge protection.
- Low suction temperature sensor located in the compressor suction line to protect against coil freeze-up.
- Condensate overflow protection sensor is factory mounted in the drain pan of the unit.

The controller is accessible within the electrical control box through the front access panel.

For additional information on the MicroTech controller, see OM 1149.

Each option features direct quick-connect wiring to all unit-controlled components for “clean” wiring inside the control box. Each control circuit board receives power from a 50 VA or optional 75 VA transformer. The main board can be wired for 24-volt AC output to the wall thermostat by using terminals R & C.

## Built-in Diagnostics



Status LED annunciator lights are located on the interior of the unit, located below the fan speed switch and are easily viewable through the sight glass to quickly check the operating status of the unit. The I/O Expansion Module has an independent LED annunciator to identify operational fault conditions.

By adding a communication module, LonWorks or BACnet, network Building Automation System (BAS) integration is possible.

Three control choices are offered with the MicroTech SmartSource unit control system:

- MicroTech SmartSource unit controller (Standalone)
- MicroTech SmartSource unit controller with LonWorks® communication module
- MicroTech SmartSource unit controller with BACnet® communication module

## Controls Integration

For protocol information including, integration points list for LonWorks and BACnet networks, Refer to ED 15103.



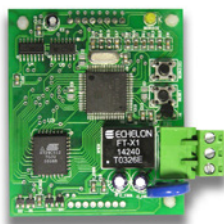
## MicroTech® SmartSource Controller with LONWORKS® Communication Module



Each Daikin water source heat pump can be equipped with a LONWORKS communication module that is LONMARK 3.4 certified. The controller is microprocessor-based and is designed to communicate over a LONWORKS communications network. It can be factory or field-installed.

For installation details of the field-installed kit, "Micro-Tech Water Source Heat Pump LONWORKS Communication Module", refer to IM 927.

The unit controller is programmed and tested with all the logic required to monitor and control the unit. An optional wall sensor may be used with the communication module to provide limited local control of the Water Source Heat Pump. The unit controller monitors water and air temperatures and passes information to the communication module. The module communicates with the BAS, to provide network control of the Water Source Heat Pump.



The MicroTech SmartSource unit controller with communication module includes a factory installed leaving water temperature sensor, field installed discharge air and return air temperature sensor. A Daikin wall-mounted temperature sensor may be used in place of the factory provided return air temperature sensor.

## MicroTech SmartSource Controller with BACnet® Communication Module



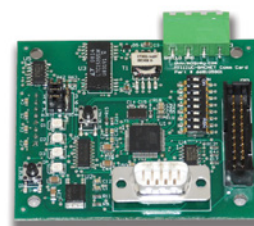
Daikin water source heat pumps are available with a BACnet MS/TP communication module that is designed to communicate over a BACnet MS/TP communications network to a building automation system (BAS). It can be factory or field-installed.

For installation details of the field-installed kit, "Micro-Tech Water Source Heat Pump LONWORKS Communication Module", refer to IM 928.

The unit controller is programmed and tested with all the logic required to monitor and control the unit. An optional wall sensor may be used with the communication module to provide limited local control of the water source heat pump. The unit controller monitors water and air temperatures and passes information to the communication module. The module communicates with the BAS, to provide network control of the water source heat pump.

The module makes operational data and commands available on a communications network using BACnet objects and properties:

- The network cable is a shielded twisted-pair cable
- Network communications run up to 76.8 Kbps
- DIP switches on the controller enable the MS/TP MAC address to be set in the range 0-127
- Four green status LEDs on the communication module indicate communication activity on the MS/TP communication network and with the unit controller



The MicroTech SmartSource unit controller with communication module includes a factory installed leaving water temperature sensor, field installed discharge air and return air temperature sensor. A Daikin wall-mounted temperature sensor may be used in place of the factory provided return air temperature sensor.



## Hoses, Hose Kits and Shutoff Ball Valves for SmartSource Water Source Heat Pumps

Daikin offers a variety of flexible supply, return and condensate hoses and hose assemblies for connecting its water source heat pumps to a building's hard piping system. See catalog 1196 for the complete hose and hose kit offering.

**Figure 2: Flexible, steel braided supply and return hoses**



Supply and return hoses have a swivel fitting at one end to facilitate removal of the unit for replacement or service. Standard supply and return fire-rated hoses have either a thermoplastic rubber or synthetic polymer core with a braided covering of stainless steel. Fittings are either plated steel or brass.

**Table 3: Available fire rated supply and return hoses**

| Description             | Connection Size (O.D.) | Length |
|-------------------------|------------------------|--------|
| Supply and Return Hoses | 1/2"                   | 24"    |
|                         |                        | 36"    |
|                         | 3/4"                   | 24"    |
|                         |                        | 36"    |
|                         | 1"                     | 24"    |
|                         |                        | 36"    |

## Supply and Return Hose Kits

**Figure 3: Supply and return hoses**



## Supply Hose - Combination Ball Valve and Strainer

The supply valve body is a combination Y-strainer full port shut-off valve and union for use in HVAC systems. Strainers are furnished with a 20 mesh stainless steel screen, hose end drain (blow down) valve for purging, one pressure/temperature port for commissioning, and one plugged bypass port. Three additional 1/4" taps are plugged and available for accessories when specified. A variety of pipe connections are available on both the fixed and union ends. Standard end connections are female pipe thread.

## Shutoff Ball Valves with Memory Stop

Constructed of brass and rated at 400 psig (2758 kPa) maximum working pressure. Valves have a built-in adjustable memory stop to eliminate rebalancing. Valves have FPT connections on both ends for connection to the water hose and to the field piping.

**Figure 4: Shutoff ball valve with memory stop**



## Wall-Mounted Programmable Electronic Thermostats for MicroTech III Unit Controller – Standalone Operation

For 2-stage or 3-stage heating, 2-stage or 3-stage cooling, dehumidification, and boilerless electric heat control. These electronic, programmable and Wi-Fi thermostats provide simple control capabilities, with alarm fault clearing, a timed override button and unit status LED. They easily interface to the MicroTech III SmartSource controller for both automatic and manual changeover capability, and can be connected to the accessory remote temperature sensor.

**Note:** See Table 4 on page 16 for Thermostat specific features and applications.



### Programmable Electronic Thermostats

- 2 Heat/2 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193126
- 2 Heat/3 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193127
- 3 Heat/2 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193128
- 2 Heat/2 Cool, 7-Day Programmable, Dehumidification, Auto Changeover, Hardwired – P/N 910193129

### Wi-Fi Programmable Electronic Thermostats

- 2 Heat/2 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193131
- 2 Heat/3 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193132
- 3 Heat/2 Cool, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193133
- 2 Heat/2 Cool, Dehumidification, 7-Day Programmable, Auto Changeover, Hardwired – P/N 910193134

## Programmable and Non-Programmable Thermostats, 2 Stage Heat/2 Stage Cool

**Note:** Refer to 910121748 and 910121746 Install Manuals for details



Programmable

Non-Programmable

For 2-stage heating, 2-stage cooling, both the Programmable and Non-Programmable thermostats provide simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, these thermostats provide an easy interface to the MicroTech III unit controls for both automatic and manual changeover capabilities. Each can be connected to the accessory remote temperature sensor.

## Remote Room Sensor used with the Programmable and Non-Programmable Thermostats



The remote indoor temperature sensor provides the ability to measure room temperature remotely, from the thermostat location.

## Room Temperature Sensors for MicroTech Unit Controller – Building Automated System (BAS) Operation

A MicroTech Water Source Heat Pump Room Temperature Sensor is required when connecting a Compact GCH unit to a Building Automation System (BAS) using either the LONWORKS or BACnet Communication Module. All MicroTech water source heat pump room temperature sensors provide electronic sensing of the room temperature for single or multiple-stage cooling and heating control, unit status annunciation, timed tenant override, and fault clearing capabilities.

### Digitally Adjustable Display Sensor

**Note:** Refer to IM 1171 for details



The display sensor is used in conjunction with MicroTech equipped units. This digitally adjustable sensor displays room temperature, room humidity, fan speed (AUTO/ON), system mode (HEAT/COOL/AUTO/OFF/DHUM), ALARM, Override and occupancy.

De-humidification output contact has an adjustable setpoint and configurable deadband.

This output operates automatically using the RH setpoint and deadband in the system "AUTO" mode or in the "DHUM" mode.

### Digitally Adjustable Display Sensor

**Note:** Refer to IM 1237 for details



The display sensor is used in conjunction with MicroTech equipped units. The sensor has a digital display for temperature, occupancy, alarm, setpoint and status indication. Controls include four buttons for setpoint, occupied/unoccupied request, and override reset.

### Basic Room Sensor

**Note:** Refer to IM 1238 for details



The basic room sensor is used in conjunction with MicroTech equipped units. The sensor has an output for temperature, and LED status indication and includes an override reset button.

### Basic Room Sensor With Cool to Warm

**Note:** Refer to IM 1238 for details



The basic room sensor with adjustment (cool to warm) is used in conjunction with MicroTech equipped units. The sensor has an output for temperature, and LED status indication and includes an override reset button.

### Adjustable Cool/Warm Sensor with Occupancy Switch



The Adjustable Cool/Warm Sensor with Occupancy Switch can be used for 2-stage heating, 2-stage cooling. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button.

Changing the system mode, fan mode and occupancy is easily accomplished through the slider switches.

### Adjustable 55° to 95°F or +/-3°F Sensors



Adjustable 55° to 95°F Sensor

The adjustable 55° to 95°F or +/- 3°F sensors can be used for 2-stage heating, 2-stage cooling. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button. Changing the system or fan mode is easily accomplished through the slider switches.



+/-3°F Sensor

### Basic Sensor












The basic sensor provides simple room temperature sensing for 2-stage heating, 2-stage cooling applications. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button.

### CAUTION

When an optional wall-mounted room temperature sensor is connected to the unit controller, the Return Air Temperature (RAT) sensor MUST NOT be installed. A wall-mounted room temperature sensor and the return air temperature sensor must not be connected simultaneously or the unit will not operate properly.

**Table 4: Thermostats & remote room sensors for standalone operation**

| Thermostats & Remote Sensors Used with MicroTech III –Standalone Operation |  | Thermostats   |   |  |   |   |   | Remote Room Sensor  |   |   |
|--|--|---|---|--|---|---|---|---|---|---|
|  |  | Programmable / Non-Programmable   |   |  |   | Non-Programmable  | Programmable  |   |   |   |
|  |  |  |  |  |  |  |  |  |  |  |
| Standard   | Part #: 910193126<br>Part #: 910193131 | Part #: 910193127<br>Part #: 910193132  | Part #: 910193128<br>Part #: 910193133  | Part #: 910193129<br>Part #: 910193134   | Part #:<br>910121746  | Part #:<br>910121748  | Part #:<br>667720401  | Part #:<br>107096001  | Part #:<br>107096010  |   |
| Feature  |  | Used With Thermostats   |   |  |   |   |   |   |   |   |
| Display  | Room Temp. & Setpoint                  | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
|  | Room Humidity & Setpoint               |   |   |  | ●   |   |   |   |   |   |
| Changeover   | Manual                                 | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
|  | Automatic                              | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
| Stages   | Heating                                | 2   | 2   | 3  | 2   | 2   |   |   |   |   |
|  | Cooling                                | 2   | 3   | 2  | 2   | 2   |   |   |   |   |
| Operating Modes  | System                                 | Cool-Off-Heat-Auto  | Cool-Off-Heat-Auto  | Cool-Off-Heat-Auto   | Cool-Off-Heat-Auto  | Cool-Off-Heat-Auto  | Cool-Off-Heat-Auto  |   |   |   |
|  | Fan                                    | On-Auto-Hourly  | On-Auto-Hourly  | On-Auto-Hourly   | On-Auto-Hourly  | On-Auto   | On-Auto   |   |   |   |
| Annunciation   | Status LED 5VDC                        |   |   |  |   | ●   |   |   |   |   |
|  | Alarm Fault LED 24 VAC                 | ●   | ●   | ●  | ●   | ●   |   |   |   | ●   |
| Reset  | Alarm                                  | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
|  | Override                               | ●   | ●   | ●  | ●   | ●   |   |   |   | ●   |
| Remote Sensors   | Indoor                                 | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
|  |  |   |   |  |   |   |   |   |   |   |
| Application  |  |   |   |  |   |   |   |   |   |   |
| Dehumidification   | Smart Dehumid.                         |   |   |  | ●   |   |   |   |   |   |
|  | Simplified Humidistat Controlled       |   | ●   |  | ●   |   |   |   |   |   |
|  | Dehumid. Only                          |   |   |  | ●   |   |   |   |   |   |
|  | Boilerless                             | ●   | ●   | ●  | ●   | ●   |   |   |   | ●   |
| Electric Heat  | Supplemental                           | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
|  | Primary                                | ●   | ●   | ●  | ●   | ●   |   |   |   | ●   |
|  | Emergency                              | ●   | ●   | ●  | ●   | ●   |   |   |   | ●   |
| Waterside Economizer   | -                                      | ●   | ●   | ●  | ●   | ●   |   |   |   |   |
| Hydronic Heat  | -                                      | ●   | ●   | ●  | ●   | ●   |   |   |   |   |

910193126  
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910193131  
910193132  
910193133  
910193134

910121746 &  
910121748



Table 5: Room temperature sensors for BAS operation









| Sensors used with Compact GCH Units – Building Automated System (BAS) Operation |                             | Room Temperature Sensors   |   |  |   |
|---|-----------------------------|--|---|--|---|
|   |                             | Digitally Adjustable   | Digitally Adjustable Display Sensor   | Basic Room Sensor With Cool to Warm Adjust   | Basic Room Sensor   |
|   |                             |                 |  |                     |  |
|   |                             | With Temperature & Humidity Display for Smart Dehumidification or Waterside Economizer Operation | With Temperature Display, Indicates, ALARM, Override and Occupancy.               | Senses Temperature, With Temperature Adjust Cool to Warm, LED Status Indication, Override Reset Button | Senses Temperature, LED Status Indication, Override Reset Button                    |
|   |                             | Part No. 910121754   | Part No. 910152147  | Part No. 910171464   | Part No. 910152149  |
| Feature   |                             |  |   |  |   |
| Setpoint Adjustment   |                             | Digitally Adjustable   | Digitally Adjustable  | Cool to Warm   | None  |
| Display   | Room Temperature & Setpoint | ●  | ●   |  |   |
|   | Room Humidity & Setpoint    | ●  |   |  |   |
| Stages  | Heating                     | 4  | 4   | 4  | 4   |
|   | Cooling                     | 3  | 3   | 3  | 3   |
| Operating Modes   | System                      | Heat-Cool-Auto-Off-Dehum   |   |  |   |
|   | Fan                         | Auto-On  |   |  |   |
|   | Occupancy                   | LCD Display of Occupied-Unoccupied Icon  | LCD Display of Occupied-Unoccupied Icon   |  |   |
| Annunciation  | Status LED                  | LCD Display of Unit Status   | LCD Display of Unit Status  | ●  | ●   |
|   | LCD Alarm Display           | ●  | ●   |  |   |
| Reset   | Alarm                       | ●  | ●   | ●  | ●   |
|   | Setback Override            | ●  | ●   | ●  | ●   |
| Application   |                             |  |   |  |   |
| Dehumidification  |                             | ●  |   |  |   |
| Electric Heat   | Boilerless                  | ●  | ●   | ●  | ●   |
|   | Supplemental                | ●  | ●   | ●  | ●   |
|   | Primary                     | ●  | ●   | ●  | ●   |
| Waterside Economizer  | –                           | ●  | ●   | ●  | ●   |
| Hydronic Heat   | –                           | ●  | ●   | ●  | ●   |

Table 6: Room temperature sensors for BAS operation

| Sensors used with Compact GCH Units – Building Automated System (BAS) Operation |                             | Room Temperature Sensors  |   |   |   |
|---|-----------------------------|---|---|---|---|
|   |                             | Adjustable Cool/Warm with Occupancy Switch  | Adjustable 55°F to 95°F   | Adjustable +/- 3°F (+/- 1.5°C)  | Basic Sensor  |
|   |                             |  |  |  |  |
|   |                             | Part No. 910121753  | Part No. 669529101  | Part No. 669529201  | Part No. 669529001  |
| Feature   |                             |   |   |   |   |
| Setpoint Adjustment   |                             | Cool to Warm  | 55°F to 95°F (13° to 35°C)  | -3° to +3°F (-1.5° to +1.5°C)   | None  |
| Display   | Room Temperature & Setpoint |   |   |   |   |
|   | Room Humidity & Setpoint    |   |   |   |   |
| Stages  | Heating                     | 4   | 4   | 4   | 4   |
|   | Cooling                     | 3   | 3   | 3   | 3   |
| Operating Modes   | System                      | Cool-Auto-Heat  | Cool-Auto-Heat  | Cool-Auto-Heat  |   |
|   | Fan                         | Auto-On   | Auto-On   | Auto-On   |   |
|   | Occupancy                   | Occ-Unoc-Off  |   |   |   |
| Annunciation  | Status LED                  | ●   | ●   | ●   | ●   |
|   | LCD Alarm Display           |   |   |   |   |
| Reset   | Alarm                       | ●   | ●   | ●   | ●   |
|   | Setback Override            | ●   | ●   | ●   | ●   |
| Application   |                             |   |   |   |   |
| Dehumidification  |                             |   |   |   |   |
| Waterside Economizer  | –                           | ●   | ●   | ●   | ●   |
| Electric Heat   | Boilerless                  | ●   | ●   | ●   | ●   |
|   | Supplemental                | ●   | ●   | ●   | ●   |
|   | Primary                     | ●   | ●   | ●   | ●   |
| Hydronic Heat   | –                           | ●   | ●   | ●   | ●   |

## Typical Horizontal Installation

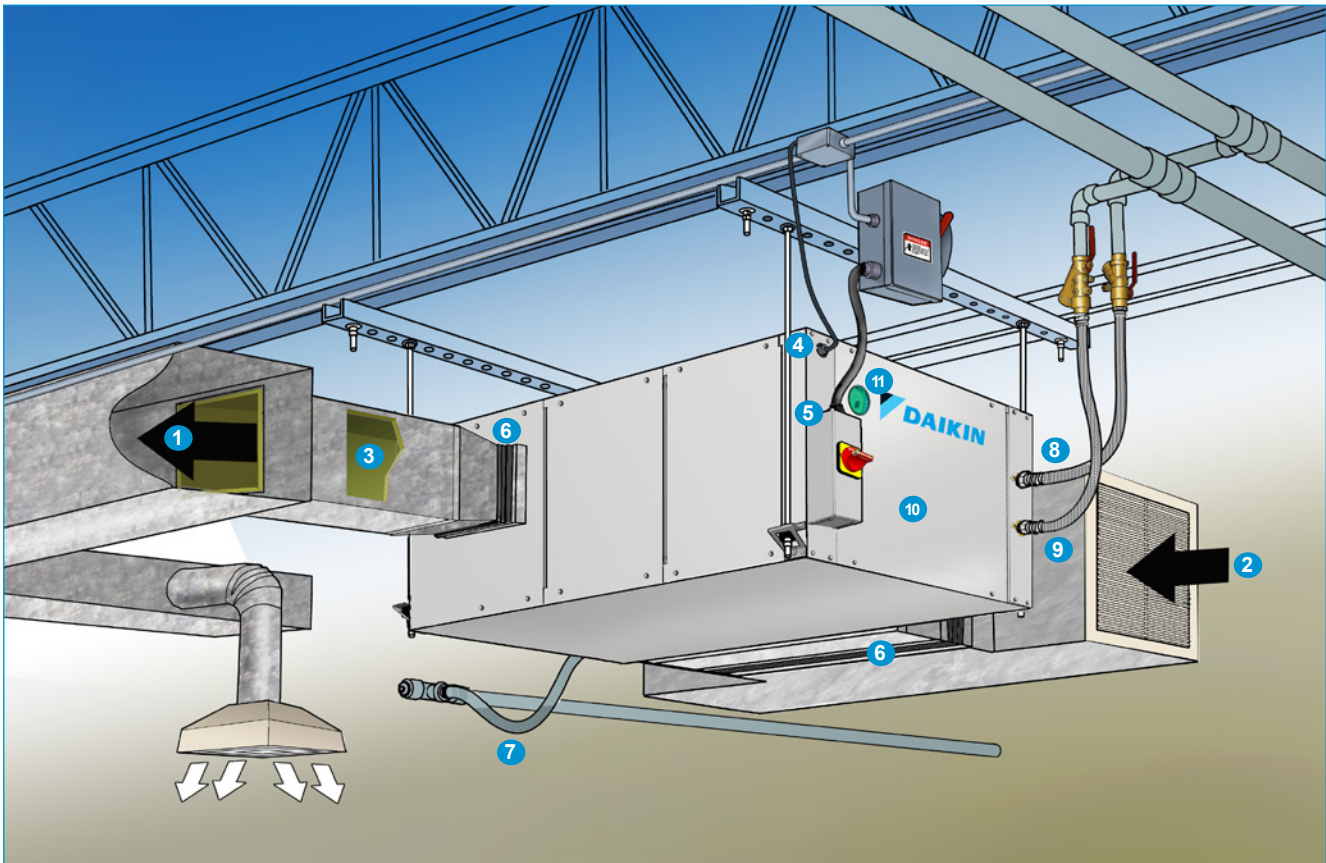
### Unit Location

It is important to leave enough space for service personnel to perform maintenance or repair. Locate the horizontal unit to allow for easy removal of the filter and access panels. Allow a minimum of 18" (46 cm) clearance on each side of the unit for service and maintenance access and do not install the unit above any piping. Always be sure to leave at least one side of the filter rack unobstructed so that the service personnel will be able to slide the filter out. Each unit is suspended from the ceiling by four 3/8" threaded rods fastened to the unit by a hanger bracket and rubber isolator. The design should place the unit directly below the structural members so that it is securely anchored. The unit should be hung level as the drain pan is internally pitched.

Avoid installing units directly above spaces where building occupants will reside (e.g. above office desks or classrooms) to reduce the requirement for noise attenuation. Do not place units above high traffic areas because service access may be limited during occupied hours. For example, units are typically installed above the hallway drop ceiling in schools and the supply and return air is routed directly into classrooms. Local code may require fire dampers to be used with this application.

1. Discharge air
2. Return air
3. Acoustic thermal duct lining - 10 feet
4. Low voltage wiring to unit control box
5. Line voltage to optional non-fused disconnect switch
6. Flexible duct collar(s)
7. Condensate drain with trap
8. Flexible, braided, stainless steel return hose with flow controller/ball valve with port
9. Flexible, braided, stainless steel supply hose with Y-strainer/ball valve with port
10. Access to unit control box
11. LED annunciator lights sight glass to view unit operation status and faults

Figure 5: Typical ceiling installation



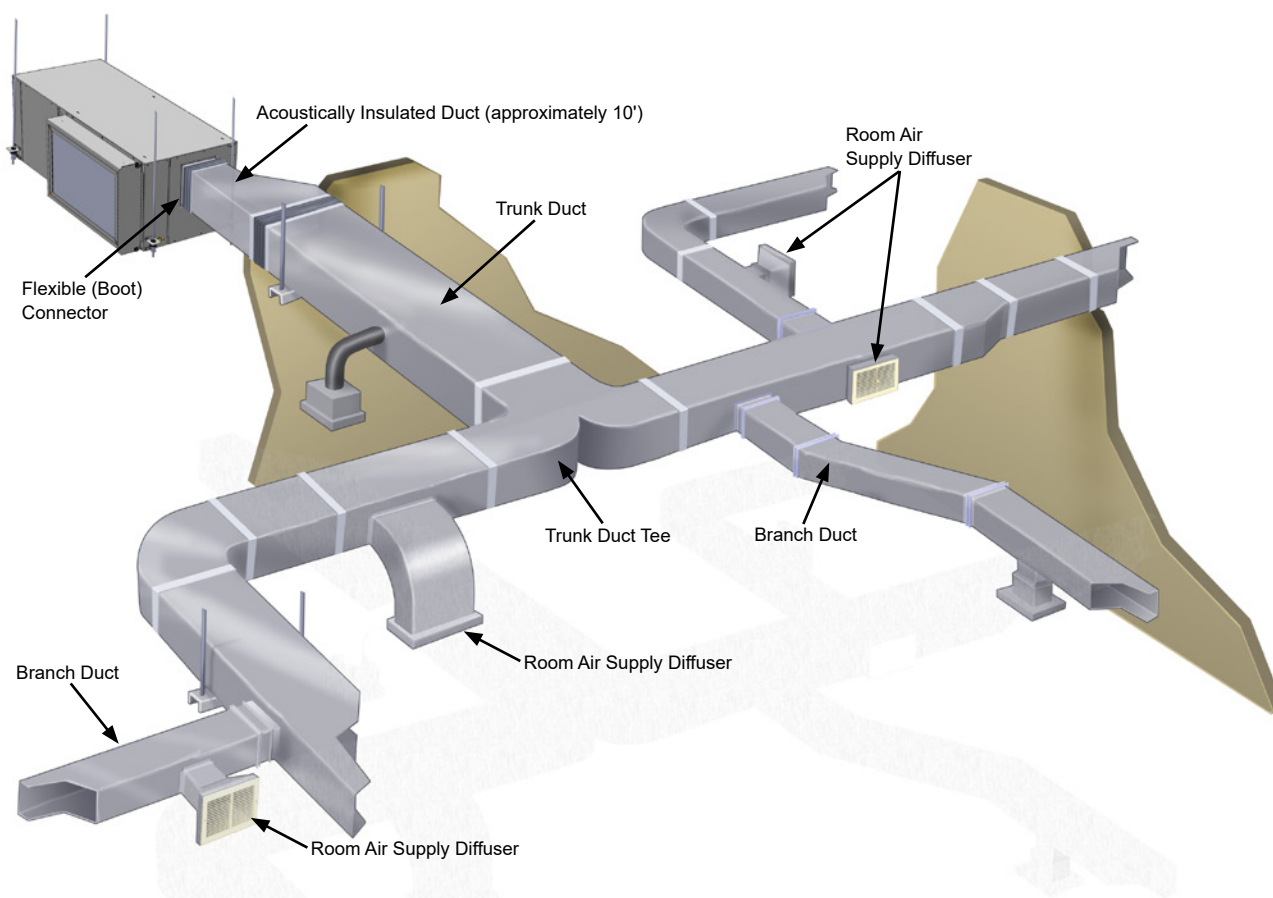
## Ductwork and Attenuation

### Horizontal Unit

Ductwork is normally applied to ceiling-mounted heat pumps on the discharge side of the unit. A discharge collar is provided on all horizontal unit models for fastening the ductwork. Use a flexible connector between the discharge collar and the duct transformation to help reduce vibration transmission from the cabinet and to simplify disconnection of the unit from the ceiling ductwork. If return ductwork is to be used, attach a flexible connector to the filter rack collar to help reduce vibration transmission and removal of the unit. Return plenum ducting should be at least 12 inches away from the coil so that the coil is evenly loaded with return air.

As a general recommendation, duct interiors should have an acoustic / thermal lining at least 1/2 inch thick over the entire duct run. For better sound attenuation, line the last five diameters of duct before each register with a one-inch thick sound blanket. Elbows, tees and dampers can create turbulence or distortion in the airflow. Place a straight length of duct, 5 to 10 times the duct width, before the next fitting to smooth out airflow. Diffusers that are located in the bottom of a trunk duct can also produce noise. For this same reason, volume control dampers should be located several duct widths upstream from an air outlet.

**Figure 6: Horizontal unit duct example**





## Piping

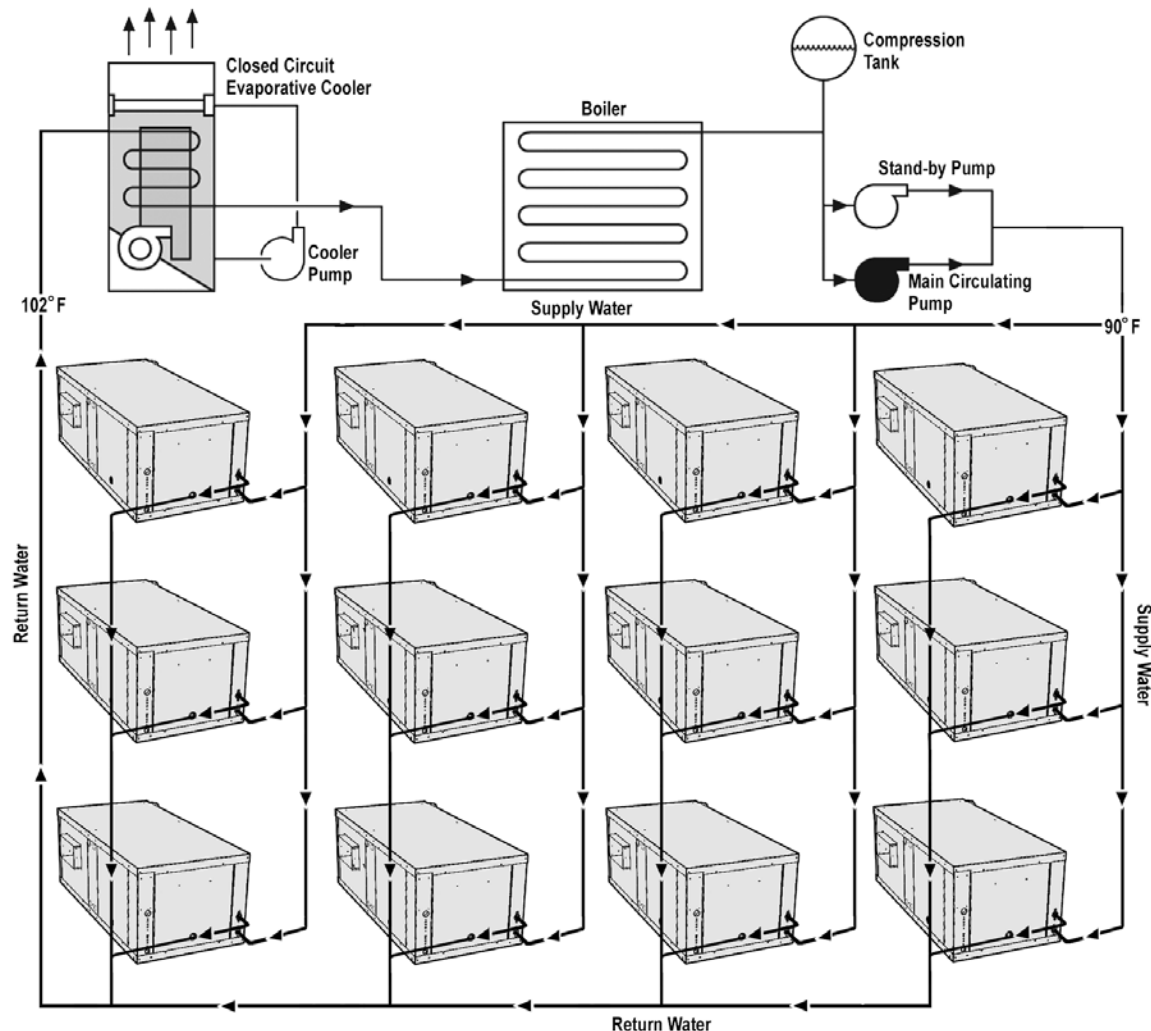
The water source heat pump unit is typically connected to the supply / return piping using a “reverse return” piping system which includes a flow control device so that flow requirements are met for each zone. A short, high pressure “flexible hose” is used to connect the unit to the building’s hard piping and acts as a sound attenuator for both the unit operating noise and hydronic pumping noise. One end of the hose has a swivel fitting to facilitate removal of the unit for replacement or service. Include supply and return shutoff valves in the design to allow removal of a unit without the need to shut down the entire heat pump system. The return valve may be used for balancing and will typically have a “memory stop” so that it can be reopened to the proper position for the flow required. Fixed flow devices are commercially available and can be installed to eliminate the need for memory stop shut off valves. Include Pressure / Temperature ports to allow the service technician to measure water flow and unit operation.

Daikin has available optional hose kit combinations to better facilitate system flow balancing. These flexible hoses reduce vibration between the unit and the rigid piping system.

Polyolester Oil, commonly known as POE oil is a synthetic oil used in many refrigeration systems. POE oil, if ever in contact with PVC/CPVC will coat the inside wall of PVC/CPVC pipe causing environmental stress fractures.

Please keep this in mind when selecting piping materials for your application, as system failure and property damage could result. For these reasons Daikin Applied does not recommend the use of PVC/CPVC water piping.

**Figure 7: Reverse return piping system**



## Water System Quality

The cleaning, flushing and chemical treatment of a water source heat pump system is fundamental to efficient operation and the life expectancy of the system.

Potential system problems produced by the use of water fall into three general categories:

- Scale formation** – Mineral deposits which result from the crystallization and precipitation of dissolved salts in the water. The deposits form an insulating barrier, reducing the heat transfer rate and impeding the circulation of fluids due to increased pressure drop.
- Corrosion** – Decomposition of the metal caused by absorption of gases from the air. Corrosion may occur in any metal component of the system.
- Organic growths** – Slime and algae which form under certain environmental conditions, and can reduce the heat transfer rate by forming an insulating coating or can promote corrosion by pitting.

The system water should be evaluated for degrees of impurity, with testing available from independent testing labs, health departments or state agencies.

Table 7 is a list of water characteristics, the potential impurities and their results and the recommended treatment.

### Avoiding Potential Problems

As shown in Table 7, all water contains some degree of impurities which may affect the performance of a heat pump system. The use of a cupro-nickel coil can help avoid potential problems. Water flow rates should:

- Be high enough that the temperature rise through the heat exchanger does not exceed 10° F when operating in the cooling mode.
- Not exceed 4 GPM per nominal ton. Flow rates that have velocities of 10 feet per second or more may cause pipe erosion and heat exchanger failure.

**Table 7: Water impurities, result & recommended water system application**

| Impurity  | Copper Coils  | Cupro-nickel Coils | Result  | Application  |   |
|---|---|--------------------|---|--|---|
|   |   |                    |   | Open Recirculating   | Closed Recirculating  |
| <b>Calcium &amp; Magnesium Salts (hardness)</b> | Less than 350 ppm   | 350 ppm Sea Water  | Scaling   | 1. Bleed-off<br>2. Surface active agents such as polyphosphates.<br>3. Addition of acid.<br>4. pH adjustment.<br><i>Other considerations:</i><br>• Adequate fouling factor<br>• Surface temperature<br>• Water temperature<br>• Clean system | No treatment required   |
| <b>Ironoxide</b>                                | Low levels only   | Moderate levels    | Corrosion   | 1. Corrosion inhibitors in high concentrations (200 to 500 ppm).<br>2. Corrosion inhibitors in low concentrations (20 to 80 ppm).<br>3. pH control.<br>4. Proper materials of construction.  | Corrosion inhibitors in high concentrations.<br>Proper materials of construction. |
| <b>pH</b>                                       | 7 - 9   | 5 - 10             |   |  |   |
| <b>Hydrogen Sulfide</b>                         | Less than 10 ppm  | 10 - 50 ppm        |   |  |   |
| <b>CO<sub>2</sub></b>                           | Less than 50 ppm  | 50 - 75 ppm        |   |  |   |
| <b>Chloride</b>                                 | Less than 300 ppm   | 300 - 600 ppm      |   |  |   |
| <b>Total Dissolved Solids</b>                   | Less than 1000 ppm  | 1000 - 1500 ppm    |   |  |   |
| <b>Slime &amp; Algae</b>                        | Slime and algae can form under certain environmental conditions |                    | Reduced heat transfer due to forming of insulating coating, or pitting due to corrosion | Chlorinated phenols.<br>Other biocides.<br>Chlorine by hypochlorites or by liquid chlorine   | No treatment required   |

**Notes:**

- The tremendous variety in water quality around the country makes the recommendation of a single best method of treatment impossible. Consult a local water treatment specialist for specific treatment recommendations.
- Cupro-Nickel is recommended if iron bacteria is present, suspended solids or dissolved oxygen levels are high.
- If the concentration of these corrosives exceeds the maximum tabulated in the cupro-nickel column, then the potential for serious corrosion problems exists.

## Condensate Drain

Compact horizontal units have a 3/4-inch FPT condensate drain connection, flush to the unit. The drain pan is internally pitched. The field installed condensate piping must include a trap after the connection and be pitched away from the unit not less than 1/4" per foot. A vent is required after the trap so that the condensate will drain away from the unit. The vent can also act as a clean out if the trap becomes clogged. To avoid having waste gases entering the building, the condensate drain should not be directly piped to a drain/waste/vent stack. See local codes for the correct application of condensate piping to drains.

Improper trapping can lead to several problems. If the trap is too tall, negative pressure will prevent drainage, causing condensate backup. If the trap is too short the seal will be destroyed or nonexistent, producing the same effect as a non-trapped system.

Construct the trap of 7/8" clear plastic piping. The condensate piping from the drain trap must be sloped to facilitate proper drainage. The clear plastic trap should be clamped and removable for cleaning. It may be necessary to manually fill the trap at system startup, or to run the unit for sufficient time to build a condensate seal. The condensate trap and condensate piping drainage should be free of any foreign debris. Debris can prevent proper drainage and unit operation and result in condensate buildup.

## Operating Limits

**Table 8: Air limits in °F (°C)**

| Air Limits                        | Standard Range Units   |             | Extended Range (Geothermal) Units |             |
|-----------------------------------|------------------------|-------------|-----------------------------------|-------------|
|                                   | Cooling (DB/WB)        | Heating     | Cooling (DB/WB)                   | Heating     |
| Minimum Ambient Air <sup>1</sup>  | 50°F (10°C)            | 50°F (10°C) | 40°F (4°C)                        | 40°F (4°C)  |
| Maximum Ambient Air <sup>2</sup>  | 100°F/77°F (38°C/25°C) | 85°F (29°C) | 100°F/77°F (38°C/25°C)            | 85°F (29°C) |
| Minimum Entering Air <sup>1</sup> | 65°F/55°F (18°C/13°C)  | 50°F (10°C) | 65°F/55°F (18°C/13°C)             | 50°F (10°C) |
| Common Design Entering Air        | 75°F/63°F (24°C/17°C)  | 70°F (21°C) | 75°F/63°F (24°C/17°C)             | 70°F (21°C) |
| Maximum Entering Air <sup>2</sup> | 85°F/71°F (29°C/22°C)  | 80°F (27°C) | 85°F/71°F (29°C/22°C)             | 80°F (27°C) |

**Table 9: Fluid limits**

| Fluid Limits                 | Standard Range Units |             | Extended Range (Geothermal) Units |                    |
|------------------------------|----------------------|-------------|-----------------------------------|--------------------|
|                              | Cooling              | Heating     | Cooling                           | Heating            |
| Minimum Entering Fluid       | 55°F (13°C)          | 55°F (13°C) | 30°F (-1°C)                       | 20°F (-6°C)        |
| Common Design Entering Fluid | 85-90°F (29-32°C)    | 70°F (21°C) | 90°F (32°C)                       | 35-60°F (1.5-16°C) |
| Maximum Entering Fluid       | 120°F (43°C)         | 90°F (32°C) | 120°F (43°C)                      | 90°F (32°C)        |
| Minimum GPM/Ton              | 1.5                  |             |                                   |                    |
| Nominal GPM/Ton              | 3.0                  |             |                                   |                    |
| Maximum GPM/Ton              | 4.0                  |             |                                   |                    |

- Notes:**
- <sup>1</sup> Maximum and minimum values may not be combined. If one value is at maximum or minimum, the other two conditions may not exceed the normal condition for standard units. Extended range units may combine any two maximum conditions, but not more than two, with all other conditions being normal conditions.
  - <sup>2</sup> This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.
  - <sup>3</sup> Unit with waterside economizer option can operate in economizer cooling mode down to 40°F (4°C).

## Fan Performance for Standard PSC Motor – 208V Operation

**Table 10: PSC motor CFM values**

| Unit Size     | Setting | Rated Airflow | External Static Pressure (in-H2O) [Dry Coil and Standard Filter] (inches of water column) |      |      |      |      |      |      |      |      |      |      |      |      |      |
|---------------|---------|---------------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|
|               |         |               | .05   | .10  | .20  | .30  | .40  | .45  | .50  | .60  | .70  | .80  | .90  | 1.0  | 1.1  | 1.2  |
| 007           | High    | 250           | 430   | 422  | 407  | 389  | 364  | 349  | 331  | 288  | 233  |      |      |      |      |      |
|               | Medium  |               | 347   | 340  | 327  | 312  | 291  | 278  | 262  | 224  | 177  |      |      |      |      |      |
|               | Low     |               | 302   | 295  | 282  | 266  | 245  | 233  | 218  | 183  |      |      |      |      |      |      |
| 009           | High    | 300           | 430   | 422  | 407  | 389  | 364  | 349  | 331  | 288  | 233  |      |      |      |      |      |
|               | Medium  |               | 347   | 340  | 327  | 312  | 291  | 278  | 262  | 224  |      |      |      |      |      |      |
|               | Low     |               | 302   | 295  | 282  | 266  | 245  | 233  | 218  |      |      |      |      |      |      |      |
| 012           | High    | 400           | 430   | 422  | 407  | 389  | 364  | 349  | 331  | 288  |      |      |      |      |      |      |
|               | Medium  |               | 347   | 340  | 327  | 312  | 291  |      |      |      |      |      |      |      |      |      |
|               | Low     |               | 302   | 295  | 282  |      |      |      |      |      |      |      |      |      |      |      |
| 015           | High    | 500           | 906   | 886  | 862  | 830  | 769  | 723  | 667  | 525  | 352  |      |      |      |      |      |
|               | Medium  |               | 730   | 715  | 695  | 666  | 611  | 571  | 522  | 401  |      |      |      |      |      |      |
|               | Low     |               | 655   | 642  | 621  | 587  | 524  | 481  | 431  |      |      |      |      |      |      |      |
| 019           | High    | 600           | 924   | 912  | 873  | 832  | 791  | 768  | 739  | 647  | 469  |      |      |      |      |      |
|               | Medium  |               | 734   | 719  | 700  | 674  | 626  | 591  | 548  | 439  |      |      |      |      |      |      |
|               | Low     |               | 659   | 648  | 627  | 591  | 529  | 489  | 443  |      |      |      |      |      |      |      |
| 024           | High    | 800           | 967   | 958  | 945  | 925  | 885  | 855  | 817  | 718  | 591  |      |      |      |      |      |
|               | Medium  |               | 829   | 826  | 824  | 814  | 783  | 757  | 723  | 633  |      |      |      |      |      |      |
|               | Low     |               | 703   | 704  | 708  | 703  | 680  | 659  | 632  |      |      |      |      |      |      |      |
| 030           | High    | 1000          | 1307  | 1280 | 1210 | 1136 | 1066 | 1031 | 995  | 906  | 769  |      |      |      |      |      |
|               | Medium  |               | 1274  | 1249 | 1181 | 1107 | 1039 | 1006 | 972  | 885  | 745  |      |      |      |      |      |
|               | Low     |               | 1220  | 1198 | 1136 | 1069 | 1005 | 973  | 939  | 853  | 713  |      |      |      |      |      |
| 036           | High    | 1200          | 1517  | 1455 | 1399 | 1382 | 1352 | 1321 | 1274 | 1130 | 914  |      |      |      |      |      |
|               | Medium  |               | 1450  | 1404 | 1353 | 1321 | 1278 | 1243 | 1198 | 1068 | 880  |      |      |      |      |      |
|               | Low     |               | 1335  | 1303 | 1269 | 1246 | 1207 | 1176 | 1134 | 1014 | 841  |      |      |      |      |      |
| 036<br>(265V) | High    | 1200          | 1453  | 1425 | 1352 | 1271 | 1192 | 1151 | 1106 | 994  |      |      |      |      |      |      |
|               | Medium  |               | 1384  | 1360 | 1298 | 1228 | 1155 | 1116 | 1073 | 963  |      |      |      |      |      |      |
|               | Low     |               | 1282  | 1267 | 1217 | 1157 | 1094 | 1060 | 1022 | 922  |      |      |      |      |      |      |
| 042<br>(208V) | High    | 1400          | 1641  | 1615 | 1587 | 1570 | 1545 | 1523 | 1494 | 1407 | 1277 | 1101 |      |      |      |      |
|               | Medium  |               | 1442  | 1430 | 1425 | 1423 | 1405 | 1385 | 1357 | 1268 | 1138 |      |      |      |      |      |
|               | Low     |               | 1245  | 1244 | 1245 | 1246 | 1235 | 1223 | 1205 | 1144 | 1042 |      |      |      |      |      |
| 042<br>(460V) | High    | 1400          | 1754  | 1732 | 1693 | 1654 | 1607 | 1577 | 1541 | 1446 | 1312 | 1125 |      |      |      |      |
|               | Medium  |               | 1615  | 1594 | 1573 | 1557 | 1528 | 1503 | 1470 | 1372 | 1230 | 1042 |      |      |      |      |
|               | Low     |               | 1456  | 1441 | 1432 | 1429 | 1407 | 1386 | 1354 | 1260 | 1125 |      |      |      |      |      |
| 048           | High    | 1600          | 1789  | 1780 | 1751 | 1713 | 1668 | 1644 | 1618 | 1559 | 1483 | 1379 | 1230 |      |      |      |
|               | Medium  |               | 1492  | 1499 | 1490 | 1467 | 1440 | 1426 | 1412 | 1378 | 1325 | 1234 |      |      |      |      |
|               | Low     |               | 1256  | 1265 | 1268 | 1261 | 1252 | 1246 | 1238 | 1214 | 1162 |      |      |      |      |      |
| 060           | High    | 2000          | 2356  | 2323 | 2261 | 2199 | 2126 | 2084 | 2038 | 1930 | 1804 | 1661 | 1507 |      |      |      |
|               | Medium  |               | 2132  | 2109 | 2066 | 2020 | 1963 | 1928 | 1889 | 1795 | 1682 | 1553 | 1415 |      |      |      |
|               | Low     |               | 1861  | 1848 | 1823 | 1793 | 1750 | 1722 | 1690 | 1612 | 1516 | 1406 |      |      |      |      |
| 070           | High    | 2300          | 2539  | 2533 | 2518 | 2498 | 2470 | 2452 | 2430 | 2377 | 2309 | 2223 | 2121 | 2001 | 1864 | 1710 |
|               | Medium  |               | 2177  | 2175 | 2169 | 2161 | 2146 | 2137 | 2124 | 2093 | 2049 | 1991 | 1918 | 1827 | 1716 |      |
|               | Low     |               | 1873  | 1872 | 1868 | 1861 | 1849 | 1841 | 1832 | 1809 | 1777 | 1734 |      |      |      |      |

- Notes:**
1. Speed adjustment is done at terminal strip on the motor. Refer to unit schematic.
  2. Gray tinted areas, outside recommended operating range.
  3. Refer to schematic supplied with the unit for wiring as supplied by the factory. Wire colors BK = hi, BL = med & RD = low.



## Fan Performance For Optional Constant Torque EC Motor (Sizes 007–012)

**Table 11: Constant torque EC motor CFM values**

| Unit Size | Setting   | Function          | External Static Pressure (in-H2O) [Dry Coil and Standard Filter] (inches of water column) |      |     |      |     |      |     |      |     |      |     |      |     |
|-----------|-----------|-------------------|---|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
|           |           |                   | 0.1   | 0.15 | 0.2 | 0.25 | 0.3 | 0.35 | 0.4 | 0.45 | 0.5 | 0.55 | 0.6 | 0.65 | 0.7 |
| 007       | Setting 4 | Stage 1           | 324   | 311  | 297 | 281  | 266 | 250  | 236 | 221  | 208 | 194  | 180 | 165  |     |
|           | Setting 3 |                   | 300   | 286  | 270 | 252  | 235 | 218  | 202 | 186  | 172 |      |     |      |     |
|           | Setting 2 |                   | 274   | 259  | 242 | 223  | 204 | 185  | 167 |      |     |      |     |      |     |
|           | Setting 1 |                   | 274   | 259  | 242 | 223  | 204 | 185  | 167 |      |     |      |     |      |     |
|           | Setting 4 | Stage 2           | 345   | 335  | 324 | 312  | 299 | 285  | 270 | 255  | 239 | 223  | 206 | 190  | 174 |
|           | Setting 3 |                   | 324   | 311  | 297 | 281  | 266 | 250  | 236 | 221  | 208 | 194  | 180 | 165  |     |
|           | Setting 2 |                   | 300   | 286  | 270 | 252  | 235 | 218  | 202 | 186  | 172 |      |     |      |     |
|           | Setting 1 |                   | 274   | 259  | 242 | 223  | 204 | 185  | 167 |      |     |      |     |      |     |
|           | A         | Fan Only, and WSE | 274   | 259  | 242 | 223  | 204 | 185  | 167 |      |     |      |     |      |     |
|           | B         |                   | 274   | 259  | 242 | 223  | 204 | 185  | 167 |      |     |      |     |      |     |
|           | C         |                   | 231   | 213  | 192 | 171  |     |      |     |      |     |      |     |      |     |
|           | D*        |                   | 231   | 213  | 192 | 171  |     |      |     |      |     |      |     |      |     |
| 009       | Setting 4 | Stage 1           | 357   | 348  | 337 | 326  | 314 | 301  | 287 | 272  | 257 | 240  | 224 |      |     |
|           | Setting 3 |                   | 330   | 318  | 304 | 290  | 275 | 260  | 245 | 231  | 216 |      |     |      |     |
|           | Setting 2 |                   | 296   | 282  | 266 | 248  | 231 | 213  |     |      |     |      |     |      |     |
|           | Setting 1 |                   | 296   | 282  | 266 | 248  | 231 | 213  |     |      |     |      |     |      |     |
|           | Setting 4 | Stage 2           | 385   | 375  | 365 | 354  | 342 | 330  | 319 | 306  | 294 | 281  | 267 | 252  | 236 |
|           | Setting 3 |                   | 357   | 348  | 337 | 326  | 314 | 301  | 287 | 272  | 257 | 240  | 224 |      |     |
|           | Setting 2 |                   | 330   | 318  | 304 | 290  | 275 | 260  | 245 | 231  | 216 |      |     |      |     |
|           | Setting 1 |                   | 296   | 282  | 266 | 248  | 231 | 213  |     |      |     |      |     |      |     |
|           | A         | Fan Only, and WSE | 296   | 282  | 266 | 248  | 231 | 213  |     |      |     |      |     |      |     |
|           | B         |                   | 296   | 282  | 266 | 248  | 231 | 213  |     |      |     |      |     |      |     |
|           | C         |                   | 246   | 228  |     |      |     |      |     |      |     |      |     |      |     |
|           | D*        |                   | 246   | 228  |     |      |     |      |     |      |     |      |     |      |     |
| 012       | Setting 4 | Stage 1           | 409   | 399  | 388 | 376  | 365 | 354  | 344 | 333  | 323 | 312  | 300 | 287  |     |
|           | Setting 3 |                   | 376   | 366  | 356 | 345  | 333 | 321  | 308 | 295  | 281 |      |     |      |     |
|           | Setting 2 |                   | 345   | 335  | 324 | 312  | 299 | 285  |     |      |     |      |     |      |     |
|           | Setting 1 |                   | 345   | 335  | 324 | 312  | 299 | 285  |     |      |     |      |     |      |     |
|           | Setting 4 | Stage 2           | 449   | 438  | 426 | 414  | 403 | 392  | 381 | 372  | 362 | 353  | 343 | 331  | 317 |
|           | Setting 3 |                   | 409   | 399  | 388 | 376  | 365 | 354  | 344 | 333  | 323 | 312  | 300 | 287  |     |
|           | Setting 2 |                   | 376   | 366  | 356 | 345  | 333 | 321  | 308 | 295  | 281 |      |     |      |     |
|           | Setting 1 |                   | 345   | 335  | 324 | 312  | 299 | 285  |     |      |     |      |     |      |     |
|           | A         | Fan Only, and WSE | 345   | 335  | 324 | 312  | 299 | 285  | 270 | 255  | 239 | 223  | 206 | 190  |     |
|           | B         |                   | 345   | 335  | 324 | 312  | 299 | 285  | 270 | 255  | 239 | 223  | 206 | 190  |     |
|           | C         |                   | 296   | 282  | 266 | 248  | 231 | 213  | 197 | 181  |     |      |     |      |     |
|           | D*        |                   | 296   | 282  | 266 | 248  | 231 | 213  | 197 | 181  |     |      |     |      |     |

**Notes:** 1. Gray tinted areas, outside recommended operating range.

2. Units are shipped at setting 3 (standard). Speed adjustment is done by 4-position switch in the control box.

3. The unit is capable of high-low fan performance through the use of a 2-stage thermostat wired to specific terminals for High-Low CFM fan performance. Standard operation with a 1-stage thermostat is indicated as stage 2 fan performance.

\* Exception - WSE operates at row "C" airflows.

**Note:** See Table 14 on page 28 for jumper configuration location.

# Fan Performance For Optional Constant Torque EC Motor (Sizes 015–070)

**Table 12: Constant torque EC motor CFM values**

| Unit Size                 | Setting              | Rated Airflow | External Static Pressure (in-H <sub>2</sub> O) [Dry Coil and STD Filter] (inches of water column) |      |      |      |      |      |      |      |      |      |      |      |
|---------------------------|----------------------|---------------|---|------|------|------|------|------|------|------|------|------|------|------|
|                           |                      |               | .05   | .10  | .20  | .30  | .40  | .45  | .50  | .60  | .70  | .80  | .90  | 1.0  |
| 015                       | Setting 5 (High)     | 500           | 810   | 784  | 761  | 754  | 741  | 728  | 708  | 644  | 547  | 420  |      |      |
|                           | Setting 4 (High)     |               | 765   | 745  | 709  | 675  | 639  | 620  | 598  | 549  | 489  | 415  |      |      |
|                           | Setting 3 (Standard) |               | 694   | 679  | 639  | 592  | 543  | 518  | 494  | 446  | 397  |      |      |      |
|                           | Setting 2 (Medium)   |               | 632   | 602  | 549  | 500  | 452  | 427  | 402  |      |      |      |      |      |
|                           | Setting 1 (Low)      |               | 576   | 537  | 463  | 397  |      |      |      |      |      |      |      |      |
| 019                       | Setting 5 (High)     | 600           | 881   | 851  | 833  | 838  | 835  | 824  | 803  | 730  | 613  | 460  |      |      |
|                           | Setting 4 (High)     |               | 822   | 796  | 768  | 752  | 734  | 720  | 700  | 644  | 562  | 454  |      |      |
|                           | Setting 3 (Standard) |               | 751   | 729  | 697  | 670  | 639  | 620  | 598  | 541  | 467  |      |      |      |
|                           | Setting 2 (Medium)   |               | 685   | 668  | 628  | 584  | 539  | 516  | 494  | 447  |      |      |      |      |
|                           | Setting 1 (Low)      |               | 631   | 609  | 554  | 495  | 436  |      |      |      |      |      |      |      |
| 024<br>208/230V<br>& 277V | Setting 5 (High)     | 800           | 1197  | 1183 | 1140 | 1086 | 1029 | 999  | 968  | 896  | 798  | 654  |      |      |
|                           | Setting 4 (High)     |               | 1068  | 1056 | 1034 | 1010 | 980  | 962  | 939  | 875  | 779  | 637  |      |      |
|                           | Setting 3 (Standard) |               | 932   | 918  | 883  | 852  | 830  | 821  | 812  | 787  | 730  | 610  |      |      |
|                           | Setting 2 (Medium)   |               | 893   | 882  | 843  | 804  | 778  | 771  | 765  | 747  | 688  |      |      |      |
|                           | Setting 1 (Low)      |               | 830   | 814  | 775  | 738  | 710  | 699  | 689  | 663  | 611  |      |      |      |
| 024<br>460V               | Setting 5 (High)     | 1000          | 1272  | 1243 | 1181 | 1113 | 1042 | 1005 | 965  | 877  | 770  | 633  |      |      |
|                           | Setting 4 (High)     |               | 1063  | 1052 | 1032 | 1011 | 978  | 955  | 927  | 851  | 744  | 604  |      |      |
|                           | Setting 3 (Standard) |               | 925   | 912  | 883  | 855  | 831  | 819  | 806  | 772  | 710  | 601  |      |      |
|                           | Setting 2 (Medium)   |               | 874   | 861  | 833  | 804  | 776  | 762  | 748  | 718  | 683  | 636  |      |      |
|                           | Setting 1 (Low)      |               | 819   | 805  | 776  | 745  | 714  | 699  | 683  | 652  | 619  | 582  |      |      |
| 030                       | Setting 5 (High)     | 1200          | 1222  | 1198 | 1142 | 1071 | 980  | 926  | 866  | 731  |      |      |      |      |
|                           | Setting 4 (High)     |               | 1198  | 1170 | 1123 | 1069 | 990  | 939  | 879  | 735  |      |      |      |      |
|                           | Setting 3 (Standard) |               | 1187  | 1168 | 1125 | 1063 | 975  | 920  | 858  | 715  |      |      |      |      |
|                           | Setting 2 (Medium)   |               | 1085  | 1076 | 1058 | 1022 | 954  | 906  | 847  | 705  |      |      |      |      |
|                           | Setting 1 (Low)      |               | 1020  | 1013 | 1002 | 974  | 916  | 874  | 822  |      |      |      |      |      |
| 036                       | Setting 5 (High)     | 1400          | 1480  | 1461 | 1404 | 1341 | 1282 | 1254 | 1223 | 1143 | 1009 |      |      |      |
|                           | Setting 4 (High)     |               | 1445  | 1434 | 1387 | 1328 | 1269 | 1240 | 1208 | 1128 | 997  |      |      |      |
|                           | Setting 3 (Standard) |               | 1404  | 1393 | 1353 | 1305 | 1256 | 1231 | 1202 | 1123 | 991  |      |      |      |
|                           | Setting 2 (Medium)   |               | 1269  | 1256 | 1227 | 1201 | 1180 | 1168 | 1152 | 1098 | 984  |      |      |      |
|                           | Setting 1 (Low)      |               | 1222  | 1208 | 1171 | 1139 | 1118 | 1110 | 1101 | 1064 | 970  |      |      |      |
| 042                       | Setting 5 (High)     | 1600          | 1868  | 1843 | 1777 | 1699 | 1613 | 1568 | 1522 | 1426 | 1321 | 1198 | 1048 |      |
|                           | Setting 4 (High)     |               | 1785  | 1774 | 1727 | 1658 | 1578 | 1536 | 1492 | 1401 | 1302 | 1185 | 1038 |      |
|                           | Setting 3 (Standard) |               | 1532  | 1514 | 1491 | 1471 | 1446 | 1428 | 1406 | 1342 | 1251 | 1128 |      |      |
|                           | Setting 2 (Medium)   |               | 1482  | 1465 | 1437 | 1414 | 1390 | 1375 | 1358 | 1310 | 1239 | 1117 |      |      |
|                           | Setting 1 (Low)      |               | 1434  | 1420 | 1389 | 1358 | 1328 | 1314 | 1298 | 1262 | 1211 | 1091 |      |      |
| 048                       | Setting 5 (High)     | 2000          | 1852  | 1841 | 1809 | 1775 | 1747 | 1735 | 1725 | 1704 | 1670 | 1601 | 1468 | 1236 |
|                           | Setting 4 (High)     |               | 1811  | 1800 | 1764 | 1725 | 1692 | 1680 | 1669 | 1650 | 1621 | 1561 | 1438 | 1215 |
|                           | Setting 3 (Standard) |               | 1739  | 1731 | 1695 | 1651 | 1614 | 1601 | 1590 | 1574 | 1553 | 1507 | 1404 | 1206 |
|                           | Setting 2 (Medium)   |               | 1683  | 1676 | 1637 | 1588 | 1548 | 1533 | 1523 | 1512 | 1501 | 1468 | 1377 | 1184 |
|                           | Setting 1 (Low)      |               | 1635  | 1624 | 1581 | 1531 | 1489 | 1474 | 1464 | 1452 | 1441 | 1412 | 1334 | 1168 |
| 060                       | Setting 5 (High)     | 2300          | 2316  | 2298 | 2257 | 2208 | 2149 | 2114 | 2076 | 1988 | 1882 | 1756 | 1607 | 1432 |
|                           | Setting 4 (High)     |               | 2246  | 2229 | 2195 | 2155 | 2105 | 2075 | 2040 | 1958 | 1856 | 1732 | 1586 | 1418 |
|                           | Setting 3 (Standard) |               | 2163  | 2145 | 2114 | 2083 | 2045 | 2021 | 1994 | 1926 | 1838 | 1725 | 1586 | 1421 |
|                           | Setting 2 (Medium)   |               | 2101  | 2078 | 2040 | 2007 | 1974 | 1956 | 1935 | 1884 | 1815 | 1720 | 1594 | 1430 |
|                           | Setting 1 (Low)      |               | 2019  | 2003 | 1966 | 1925 | 1885 | 1865 | 1845 | 1802 | 1751 | 1680 | 1579 | 1429 |
| 070                       | Setting 5 (High)     | 2300          | 2489  | 2467 | 2426 | 2387 | 2351 | 2333 | 2315 | 2276 | 2228 | 2164 | 2075 | 1950 |
|                           | Setting 4 (High)     |               | 2474  | 2453 | 2413 | 2377 | 2342 | 2324 | 2305 | 2264 | 2212 | 2144 | 2053 | 1929 |
|                           | Setting 3 (Standard) |               | 2464  | 2444 | 2406 | 2370 | 2336 | 2319 | 2302 | 2263 | 2216 | 2152 | 2063 | 1939 |
|                           | Setting 2 (Medium)   |               | 2408  | 2388 | 2345 | 2304 | 2265 | 2247 | 2229 | 2193 | 2151 | 2098 | 2023 | 1913 |
|                           | Setting 1 (Low)      |               | 2310  | 2293 | 2256 | 2218 | 2181 | 2163 | 2145 | 2108 | 2066 | 2014 | 1944 | 1847 |

- Notes:**
1. Gray tinted areas, outside recommended operating range.
  2. Units are shipped at setting 3 (standard), setting 5 (high) for unit size 070. Speed adjustment is done at motor terminal strip
  3. Motor speed adjustments can be made by moving wire to appropriate motor tap 1-5.

## Fan Performance For Optional Constant CFM EC Motor (Sizes 015–070)

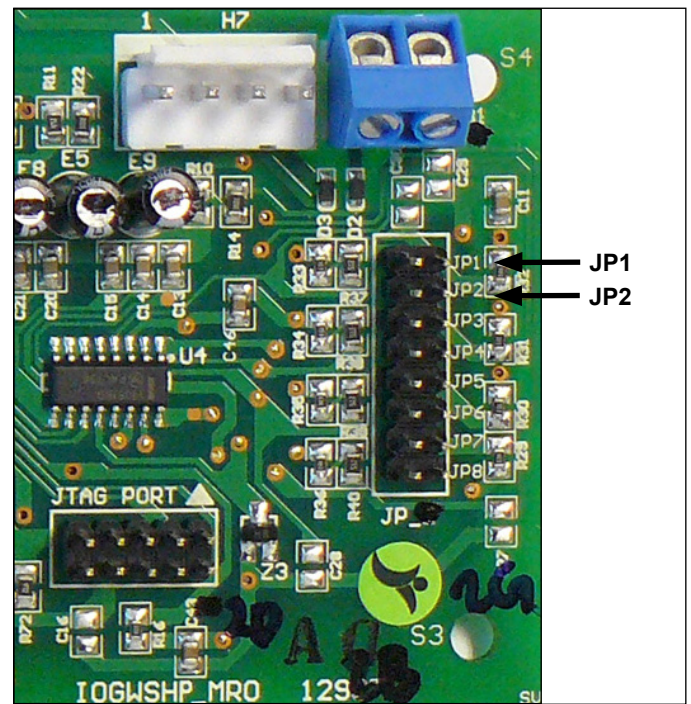
**Table 13: Single or two-stage units with constant CFM EC motor**

| Unit Size | MicroTech Unit Controller |                                    |                                   |                   |         |               | I/O Expansion Module |          |                      |
|-----------|---------------------------|------------------------------------|-----------------------------------|-------------------|---------|---------------|----------------------|----------|----------------------|
|           | Setting                   | Maximum ESP (in. wg.) <sup>2</sup> | Heat/Cool Stage 1 + Hydronic Coil | Heat/Cool Stage 2 | Dehumid | Electric Heat | Setting              | Fan Only | Waterside Economizer |
| 015       | 4 (High)                  | 0.7                                | 500                               | 565               | 470     | 565           | A                    | 500      | 500                  |
|           | 3 (Standard)              |                                    | 435                               | 500               | 405     | 565           | B                    | 435      | 435                  |
|           | 2 (Medium)                |                                    | 375                               | 435               | 375     | 565           | C                    | 375      | 375                  |
|           | 1 (Low)                   |                                    | 375                               | 375               | 375     | 565           | D                    | 280      | 375                  |
| 019       | 4 (High)                  | 0.7                                | 600                               | 675               | 560     | 675           | A                    | 600      | 600                  |
|           | 3 (Standard)              |                                    | 525                               | 600               | 485     | 675           | B                    | 525      | 525                  |
|           | 2 (Medium)                |                                    | 450                               | 525               | 450     | 675           | C                    | 450      | 450                  |
|           | 1 (Low)                   |                                    | 450                               | 450               | 450     | 675           | D                    | 335      | 450                  |
| 024       | 4 (High)                  | 0.7                                | 800                               | 900               | 750     | 900           | A                    | 800      | 800                  |
|           | 3 (Standard)              |                                    | 700                               | 800               | 650     | 900           | B                    | 700      | 700                  |
|           | 2 (Medium)                |                                    | 560                               | 700               | 560     | 900           | C                    | 560      | 560                  |
|           | 1 (Low)                   |                                    | 560                               | 560               | 560     | 900           | D                    | 450      | 560                  |
| 030       | 4 (High)                  | 0.7 (except * = 0.5)               | 1000                              | 1075*             | 935     | 1075*         | A                    | 1000     | 1000                 |
|           | 3 (Standard)              |                                    | 875                               | 1000              | 810     | 1075*         | B                    | 875      | 875                  |
|           | 2 (Medium)                |                                    | 750                               | 875               | 750     | 1075*         | C                    | 750      | 750                  |
|           | 1 (Low)                   |                                    | 750                               | 750               | 750     | 1075*         | D                    | 560      | 750                  |
| 036       | 4 (High)                  | 0.7                                | 1200                              | 1350              | 1125    | 1350          | A                    | 1200     | 1200                 |
|           | 3 (Standard)              |                                    | 1050                              | 1200              | 975     | 1350          | B                    | 1050     | 1050                 |
|           | 2 (Medium)                |                                    | 900                               | 1050              | 900     | 1350          | C                    | 900      | 900                  |
|           | 1 (Low)                   |                                    | 900                               | 900               | 900     | 1350          | D                    | 670      | 900                  |
| 042       | 4 (High)                  | 0.7                                | 1400                              | 1575              | 1310    | 1575          | A                    | 1400     | 1400                 |
|           | 3 (Standard)              |                                    | 1225                              | 1400              | 1135    | 1575          | B                    | 1225     | 1225                 |
|           | 2 (Medium)                |                                    | 1050                              | 1225              | 1050    | 1575          | C                    | 1050     | 1050                 |
|           | 1 (Low)                   |                                    | 1050                              | 1050              | 1050    | 1575          | D                    | 785      | 1050                 |
| 048       | 4 (High)                  | 0.7                                | 1600                              | 1800              | 1500    | 1800          | A                    | 1600     | 1600                 |
|           | 3 (Standard)              |                                    | 1400                              | 1600              | 1300    | 1800          | B                    | 1400     | 1400                 |
|           | 2 (Medium)                |                                    | 1200                              | 1400              | 1200    | 1800          | C                    | 1200     | 1200                 |
|           | 1 (Low)                   |                                    | 1200                              | 1200              | 1200    | 1800          | D                    | 895      | 1200                 |
| 060       | 4 (High)                  | 0.7                                | 2000                              | 2250              | 1875    | 2250          | A                    | 2000     | 2000                 |
|           | 3 (Standard)              |                                    | 1750                              | 2000              | 1625    | 2250          | B                    | 1750     | 1750                 |
|           | 2 (Medium)                |                                    | 1495                              | 1750              | 1495    | 2250          | C                    | 1495     | 1495                 |
|           | 1 (Low)                   |                                    | 1495                              | 1495              | 1495    | 2250          | D                    | 1120     | 1495                 |
| 070       | 4 (High)                  | 0.7 (except * = 0.5)               | 2300                              | 2450*             | 2155    | 2450*         | A                    | 2300     | 2300                 |
|           | 3 (Standard)              |                                    | 2010                              | 2300              | 1865    | 2450*         | B                    | 2010     | 2010                 |
|           | 2 (Medium)                |                                    | 1720                              | 2010              | 1720    | 2450*         | C                    | 1720     | 1720                 |
|           | 1 (Low)                   |                                    | 1720                              | 1720              | 1720    | 2450*         | D                    | 1290     | 1720                 |

**Table 14: I/O expansion module jumper configuration**

| I/O Expansion module configuration |         |         |
|------------------------------------|---------|---------|
| Setting                            | JP1     | JP2     |
| A                                  | Open    | Open    |
| B                                  | Shorted | Open    |
| C                                  | Open    | Shorted |
| D                                  | Shorted | Shorted |

**Note:** Refer to [Figure 8](#) for jumper configuration location.

**Figure 8: JP1 & JP2 location on the I/O expansion module**


# GCH Waterside Economizer Cooling Capacity

**Table 15: Model GCH 250 to 600 CFM<sup>1</sup> – Unit Sizes 007 through 019**

| Unit Size | GPM         | CFM   |          |       |          |       |          |       |          |       |          | 3WPD ft. of wc. |
|-----------|-------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-----------------|
|           |             | 250   |          | 300   |          | 400   |          | 500   |          | 600   |          |                 |
|           |             | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible |                 |
| 007-12    | 1.5         | 5000  | 4600     | 5400  | 5100     | 6200  | 6100     |       |          |       |          | 0.3             |
|           | 2           | 5800  | 5000     | 6200  | 5500     | 7000  | 6600     |       |          |       |          | 0.5             |
|           | 3           | 7500  | 5900     | 7900  | 6400     | 8700  | 7400     |       |          |       |          | 1.2             |
|           | 4           | 9200  | 6700     | 9600  | 7200     | 10400 | 8300     |       |          |       |          | 2.2             |
|           | 2PD (" wc.) | 0.03  |          | 0.04  |          | 0.06  |          |       |          |       |          |                 |
| 015-019   | 2           |       |          |       |          | 8100  | 7800     | 9000  | 8900     | 9900  | 10000    | 0.7             |
|           | 3           |       |          |       |          | 9900  | 8600     | 10800 | 9700     | 11600 | 10800    | 1.5             |
|           | 4           |       |          |       |          | 11700 | 9400     | 12500 | 10500    | 13400 | 11600    | 2.6             |
|           | 5           |       |          |       |          | 13500 | 10200    | 14300 | 11300    | 15200 | 15400    | 4.1             |
|           | 2PD (" wc.) |       |          |       |          | 0.04  |          | 0.06  |          | 0.08  |          |                 |

**Table 16: Model GCH, 600 to 1400 CFM<sup>1</sup> – Unit Sizes 024 through 042**

| Unit Size | GPM         | CFM   |          |       |          |       |          |       |          |       |          | 3WPD ft. of wc. |
|-----------|-------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-----------------|
|           |             | 600   |          | 800   |          | 1000  |          | 1200  |          | 1400  |          |                 |
|           |             | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible |                 |
| 024-030   | 4.5         | 15300 | 12700    | 17000 | 14700    | 18700 | 16700    | 20500 | 18700    |       |          | 0.8             |
|           | 6           | 17400 | 13600    | 19100 | 15600    | 20900 | 17600    | 22600 | 19600    |       |          | 1.5             |
|           | 7.5         | 19500 | 14600    | 21300 | 16600    | 23000 | 18600    | 24700 | 20600    |       |          | 2.5             |
|           | 2PD (" wc.) | 0.07  |          | 0.11  |          | 0.16  |          | 0.22  |          |       |          |                 |
| 036       | 6           |       |          | 20600 | 16600    | 22400 | 18600    | 24100 | 20500    | 25800 | 22400    | 1.6             |
|           | 7.5         |       |          | 22600 | 17500    | 24300 | 19400    | 26000 | 21800    | 27800 | 23200    | 2.7             |
|           | 9           |       |          | 24600 | 18300    | 26300 | 20200    | 28000 | 22100    | 29700 | 24000    | 4.0             |
|           | 2PD (" wc.) |       |          | 0.05  |          | 0.08  |          | 0.10  |          | 0.13  |          |                 |
| 042       | 8           |       |          |       |          | 26100 | 20300    | 27200 | 22100    | 29400 | 24000    | 3.1             |
|           | 10.5        |       |          |       |          | 29100 | 21500    | 30700 | 23400    | 32400 | 25200    | 5.7             |
|           | 12          |       |          |       |          | 30900 | 22300    | 32500 | 24100    | 34200 | 25900    | 7.6             |
|           | 2PD (" wc.) |       |          |       |          | 0.08  |          | 0.13  |          | 0.13  |          |                 |

**Table 17: Model GCH, 1200 to 2000 CFM<sup>1</sup> – Unit Sizes 048 through 060**

| Unit Size | GPM         | CFM   |          |       |          |       |          |       |          |       |          | 3WPD ft. of wc. |
|-----------|-------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-----------------|
|           |             | 1200  |          | 1400  |          | 1600  |          | 1800  |          | 2000  |          |                 |
|           |             | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible |                 |
| 048       | 8           | 29100 | 23900    | 30900 | 25900    | 32700 | 27800    |       |          |       |          | 4.1             |
|           | 10          | 31800 | 25000    | 33600 | 27000    | 35400 | 28900    |       |          |       |          | 6.0             |
|           | 12          | 34400 | 26100    | 36200 | 28100    | 38000 | 30100    |       |          |       |          | 8.2             |
|           | 2PD (" wc.) | 0.08  |          | 0.10  |          | 0.12  |          |       |          |       |          |                 |
| 060       | 10          |       |          |       |          | 36900 | 30800    | 38500 | 32600    | 40100 | 34400    | 4.8             |
|           | 12.5        |       |          |       |          | 39700 | 31900    | 41400 | 33700    | 43000 | 35500    | 7.8             |
|           | 15          |       |          |       |          | 42600 | 33100    | 44200 | 34900    | 45800 | 36700    | 11.8            |
|           | 2PD (" wc.) |       |          |       |          | 0.12  |          | 0.15  |          | 0.17  |          |                 |

**Table 18: Model GCH, 1600 to 2400 CFM<sup>1</sup> – Unit Size 070**

| Unit Size | GPM         | CFM   |          |       |          |       |          |       |          |       |          | 3WPD ft. of wc. |
|-----------|-------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|----------|-----------------|
|           |             | 1600  |          | 1800  |          | 2000  |          | 2200  |          | 2400  |          |                 |
|           |             | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible | Total | Sensible |                 |
| 070       | 12.5        | 42100 | 35500    | 43800 | 37200    | 45500 | 39000    | 47100 | 40700    | 48800 | 42500    | 7.8             |
|           | 15          | 45100 | 36700    | 46800 | 38400    | 48500 | 40200    | 50100 | 4200     | 51800 | 43700    | 10.8            |
|           | 18          | 48700 | 38100    | 50400 | 39900    | 52100 | 41700    | 53700 | 43400    | 55400 | 45200    | 14.8            |
|           | 2PD (" wc.) | 0.17  |          | 0.20  |          | 0.24  |          | 0.29  |          | 0.32  |          |                 |

**Notes:** <sup>1</sup> Capacity is based on 80/67°F entering air and 45°F entering water temperatures. Total and sensible capacities are btuh.

<sup>2</sup> Air PD is air pressure drop in inches of water column wet coil.

<sup>3</sup> WPD is water side pressure drop in feet of water. Coil pressure drop only.



## Unit With Standard PSC Motor

**Table 19: Unit with standard PSC motor**

| Unit Size | Power            | Compressor |       | Fan Motor FLA | Total Unit FLA | Minimum Voltage | Minimum Circuit Amps | Maximum Fuse or HACR Breaker Size |
|-----------|------------------|------------|-------|---------------|----------------|-----------------|----------------------|-----------------------------------|
|           | Voltage/Hz/Phase | RLA        | LRA   |               |                |                 |                      |                                   |
| 007       | 115/60/1         | 5.0        | 36.2  | 1.3           | 6.3            | 104             | 7.6                  | 15                                |
|           | 208-230/60/1     | 2.5        | 17.7  | 0.8           | 3.3            | 197             | 3.9                  | 15                                |
|           | 265-277/60/1     | 2.1        | 13.5  | 0.5           | 2.6            | 240             | 3.1                  | 15                                |
| 009       | 115/60/1         | 8.3        | 45.6  | 1.3           | 9.6            | 104             | 11.7                 | 15                                |
|           | 208-230/60/1     | 4.0        | 22.0  | 0.8           | 4.8            | 197             | 5.8                  | 15                                |
|           | 265-277/60/1     | 3.3        | 18.8  | 0.5           | 3.8            | 240             | 4.7                  | 15                                |
| 012       | 208-230/60/1     | 5.6        | 32.5  | 0.8           | 6.4            | 197             | 7.8                  | 15                                |
|           | 265/60/1         | 4.7        | 20.0  | 0.5           | 5.2            | 240             | 6.4                  | 15                                |
| 015       | 115/60/1         | 10.5       | 54.5  | 1.0           | 11.5           | 104             | 14.1                 | 20                                |
|           | 208-230/60/1     | 5.1        | 29.5  | 1.0           | 6.1            | 197             | 7.4                  | 15                                |
|           | 265-277/60/1     | 4.3        | 23.5  | 1.0           | 5.3            | 240             | 6.4                  | 15                                |
| 019       | 208-230/60/1     | 6.2        | 31.5  | 1.0           | 7.2            | 197             | 8.8                  | 15                                |
|           | 265-277/60/1     | 5.3        | 28.0  | 1.0           | 6.3            | 240             | 7.6                  | 15                                |
| 024       | 208-230/60/1     | 13.5       | 58.3  | 1.3           | 14.8           | 197             | 18.2                 | 30                                |
|           | 265-277/60/1     | 9.0        | 54.0  | 1.0           | 10.0           | 240             | 12.3                 | 20                                |
|           | 208-230/60/3     | 7.1        | 55.4  | 1.3           | 8.4            | 197             | 10.2                 | 15                                |
|           | 460/60/3         | 3.5        | 28.0  | 0.6           | 4.1            | 416             | 5.0                  | 15                                |
| 030       | 208-230/60/1     | 14.1       | 73.0  | 3.3           | 17.4           | 197             | 20.9                 | 30                                |
|           | 265-277/60/1     | 10.9       | 60.0  | 2.5           | 13.4           | 240             | 16.1                 | 25                                |
|           | 208-230/60/3     | 8.9        | 58.0  | 3.3           | 12.2           | 197             | 14.4                 | 20                                |
|           | 460/60/3         | 4.2        | 28.0  | 1.8           | 6.0            | 416             | 7.1                  | 15                                |
| 036       | 208-230/60/1     | 16.7       | 79.0  | 3.3           | 20.0           | 197             | 24.2                 | 40                                |
|           | 265-277/60/1     | 13.5       | 72.0  | 2.5           | 16.0           | 240             | 19.4                 | 30                                |
|           | 208-230/60/3     | 10.4       | 73.0  | 3.3           | 13.7           | 197             | 16.3                 | 25                                |
|           | 460/60/3         | 5.8        | 38.0  | 1.8           | 7.6            | 416             | 9.1                  | 15                                |
| 042       | 208-230/60/1     | 17.9       | 112.0 | 3.3           | 21.2           | 197             | 25.7                 | 40                                |
|           | 208-230/60/3     | 13.2       | 88.0  | 3.3           | 16.5           | 197             | 19.8                 | 30                                |
|           | 460/60/3         | 6.0        | 44.0  | 1.8           | 7.8            | 416             | 9.3                  | 15                                |
| 048       | 208-230/60/1     | 21.8       | 117.0 | 3.3           | 25.1           | 197             | 30.6                 | 50                                |
|           | 208-230/60/3     | 13.7       | 83.1  | 3.3           | 17.0           | 197             | 20.4                 | 30                                |
|           | 460/60/3         | 6.2        | 41.0  | 1.8           | 8.0            | 416             | 9.6                  | 15                                |
|           | 575/60/3         | 4.8        | 33.0  | 1.2           | 6.0            | 520             | 7.2                  | 15                                |
| 060       | 208-230/60/1     | 26.3       | 134.0 | 5.5           | 31.8           | 197             | 38.4                 | 60                                |
|           | 208-230/60/3     | 15.6       | 110.0 | 5.5           | 21.1           | 197             | 25.0                 | 40                                |
|           | 460/60/3         | 7.8        | 52.0  | 2.4           | 10.2           | 416             | 12.2                 | 15                                |
|           | 575/60/3         | 5.8        | 38.9  | 1.7           | 7.5            | 520             | 9.0                  | 15                                |
| 070       | 208-230/60/1     | 30.8       | 178.0 | 5.5           | 36.3           | 197             | 44.0                 | 60                                |
|           | 208-230/60/3     | 19.6       | 136.0 | 5.5           | 25.1           | 197             | 30.0                 | 45                                |
|           | 460/60/3         | 8.2        | 66.1  | 2.4           | 10.6           | 416             | 12.7                 | 20                                |
|           | 575/60/3         | 6.6        | 55.3  | 1.7           | 8.3            | 520             | 10.0                 | 15                                |

## Unit With Optional EC Constant Torque Motor

**Table 20: Unit with optional EC constant torque motor**

| Unit Size | Power            | Compressor |       | Fan Motor FLA | Total Unit FLA | Minimum Voltage | Minimum Circuit Amps | Maximum Fuse or HACR Breaker Size |
|-----------|------------------|------------|-------|---------------|----------------|-----------------|----------------------|-----------------------------------|
|           | Voltage/Hz/Phase | RLA        | LRA   |               |                |                 |                      |                                   |
| 007       | 115/60/1         | 5.0        | 36.2  | 1.8           | 6.8            | 104             | 8.0                  | 15                                |
|           | 208-230/60/1     | 2.5        | 17.7  | 0.9           | 3.4            | 197             | 4.1                  | 15                                |
|           | 265-277/60/1     | 2.1        | 13.5  | 0.8           | 2.9            | 240             | 3.4                  | 15                                |
| 009       | 115/60/1         | 8.3        | 45.6  | 1.8           | 10.1           | 104             | 12.1                 | 20                                |
|           | 208-230/60/1     | 4.0        | 22.0  | 0.9           | 4.9            | 197             | 5.9                  | 15                                |
|           | 265-277/60/1     | 3.3        | 18.8  | 0.8           | 4.1            | 240             | 4.9                  | 15                                |
| 012       | 208-230/60/1     | 5.6        | 32.5  | 0.9           | 6.5            | 197             | 7.9                  | 15                                |
|           | 265-277/60/1     | 4.7        | 20.0  | 0.8           | 5.5            | 240             | 6.6                  | 15                                |
| 015       | 115/60/1         | 10.5       | 54.5  | 4.8           | 15.3           | 104             | 17.9                 | 25                                |
|           | 208-230/60/1     | 5.1        | 29.5  | 2.9           | 8.0            | 197             | 9.3                  | 15                                |
|           | 265-277/60/1     | 4.3        | 23.5  | 2.6           | 6.9            | 240             | 8.0                  | 15                                |
| 019       | 208-230/60/1     | 6.2        | 31.5  | 2.9           | 9.1            | 197             | 10.7                 | 15                                |
|           | 265-277/60/1     | 5.3        | 28.0  | 2.6           | 7.9            | 240             | 9.2                  | 15                                |
| 024       | 208-230/60/1     | 13.5       | 58.3  | 2.9           | 16.4           | 197             | 19.8                 | 30                                |
|           | 265-277/60/1     | 9.0        | 54.0  | 2.6           | 11.6           | 240             | 13.9                 | 20                                |
|           | 208-230/60/3     | 7.1        | 55.4  | 2.9           | 10.0           | 197             | 11.8                 | 15                                |
|           | 460/60/3         | 3.5        | 28.0  | 2.1           | 5.6            | 416             | 6.5                  | 15                                |
| 030       | 208-230/60/1     | 14.1       | 73.0  | 4.1           | 18.2           | 197             | 21.7                 | 35                                |
|           | 265-277/60/1     | 10.9       | 60.0  | 3.6           | 14.5           | 240             | 17.2                 | 25                                |
|           | 208-230/60/3     | 8.9        | 58.0  | 4.1           | 13.0           | 197             | 15.2                 | 20                                |
|           | 460/60/3         | 4.2        | 28.0  | 2.1           | 6.3            | 416             | 7.4                  | 15                                |
| 036       | 208-230/60/1     | 16.7       | 79.0  | 4.1           | 20.8           | 197             | 25.0                 | 40                                |
|           | 265-277/60/1     | 13.5       | 72.0  | 3.6           | 17.1           | 240             | 20.5                 | 30                                |
|           | 208-230/60/3     | 10.4       | 73.0  | 4.1           | 14.5           | 197             | 17.1                 | 25                                |
|           | 460/60/3         | 5.8        | 38.0  | 2.1           | 7.9            | 416             | 9.4                  | 15                                |
| 042       | 208-230/60/1     | 17.9       | 112.0 | 6.0           | 23.9           | 197             | 28.4                 | 45                                |
|           | 208-230/60/3     | 13.2       | 88.0  | 6.0           | 19.2           | 197             | 22.5                 | 35                                |
|           | 460/60/3         | 6.0        | 44.0  | 3.2           | 9.2            | 416             | 10.7                 | 15                                |
| 048       | 208-230/60/1     | 21.8       | 117.0 | 6.0           | 27.8           | 197             | 33.3                 | 50                                |
|           | 208-230/60/3     | 13.7       | 83.1  | 6.0           | 19.7           | 197             | 23.1                 | 35                                |
|           | 460/60/3         | 6.2        | 41.0  | 3.2           | 9.4            | 416             | 11.0                 | 15                                |
| 060       | 208-230/60/1     | 26.3       | 134.0 | 7.6           | 33.9           | 197             | 40.5                 | 60                                |
|           | 208-230/60/3     | 15.6       | 110.0 | 7.6           | 23.2           | 197             | 27.1                 | 40                                |
|           | 460/60/3         | 7.8        | 52.0  | 4.0           | 11.8           | 416             | 13.8                 | 20                                |
| 070       | 208-230/60/1     | 30.8       | 178.0 | 7.6           | 38.4           | 197             | 46.1                 | 60                                |
|           | 208-230/60/3     | 19.6       | 136.0 | 7.6           | 27.2           | 197             | 32.1                 | 50                                |
|           | 460/60/3         | 8.2        | 66.1  | 4.0           | 12.2           | 416             | 14.3                 | 20                                |

# Unit With Optional EC Constant CFM Motor

**Table 21: Unit with optional EC constant CFM motor**

| Unit Size | # Stages | Power            | Compressor |       | Fan Motor FLA | Total Unit FLA | Minimum Voltage | Minimum Circuit Amps | Maximum Fuse or HACR Breaker Size |
|-----------|----------|------------------|------------|-------|---------------|----------------|-----------------|----------------------|-----------------------------------|
|           |          | Voltage/Hz/Phase | RLA        | LRA   |               |                |                 |                      |                                   |
| 015       | 1        | 115/60/1         | 10.5       | 54.5  | 4.0           | 14.5           | 104             | 17.1                 | 25                                |
|           |          | 208-230/60/1     | 5.1        | 29.5  | 2.8           | 7.9            | 197             | 9.2                  | 15                                |
|           |          | 265-277/60/1     | 4.3        | 23.5  | 2.4           | 6.7            | 240             | 7.8                  | 15                                |
| 019       | 1        | 208-230/60/1     | 6.2        | 31.5  | 2.8           | 9.0            | 197             | 10.6                 | 15                                |
|           |          | 265-277/60/1     | 5.3        | 28.0  | 2.4           | 7.7            | 240             | 9.0                  | 15                                |
| 024       | 1        | 208-230/60/1     | 13.5       | 58.3  | 2.8           | 16.3           | 197             | 19.7                 | 30                                |
|           |          | 265-277/60/1     | 9.0        | 54.0  | 2.4           | 11.4           | 240             | 13.7                 | 20                                |
|           |          | 208-230/60/3     | 7.1        | 55.4  | 2.8           | 9.9            | 197             | 11.7                 | 15                                |
|           |          | *460/60/3        | 3.5        | 28.0  | 2.4           | 5.9            | 416             | 6.8                  | 15                                |
|           | 2        | 208-230/60/1     | 11.7       | 58.3  | 2.8           | 14.5           | 197             | 17.4                 | 25                                |
|           |          | 265-277/60/1     | 9.1        | 54.0  | 2.4           | 11.5           | 240             | 13.8                 | 20                                |
|           |          | 208-230/60/3     | 6.5        | 55.4  | 2.8           | 9.3            | 197             | 10.9                 | 15                                |
|           |          | *460/60/3        | 3.5        | 28.0  | 2.4           | 5.9            | 416             | 6.8                  | 15                                |
| 030       | 1        | 208-230/60/1     | 14.1       | 73.0  | 2.8           | 16.9           | 197             | 20.4                 | 30                                |
|           |          | 265-277/60/1     | 10.9       | 60.0  | 2.4           | 13.3           | 240             | 16.0                 | 25                                |
|           |          | 208-230/60/3     | 8.9        | 58.0  | 2.8           | 11.7           | 197             | 13.9                 | 20                                |
|           |          | *460/60/3        | 4.2        | 28.0  | 2.4           | 6.6            | 416             | 7.7                  | 15                                |
|           | 2        | 208-230/60/1     | 13.1       | 73.0  | 2.8           | 15.9           | 197             | 19.2                 | 30                                |
|           |          | 265-277/60/1     | 10.2       | 60.0  | 2.4           | 12.6           | 240             | 15.2                 | 25                                |
|           |          | 208-230/60/3     | 8.7        | 58.0  | 2.8           | 11.5           | 197             | 13.7                 | 20                                |
|           |          | *460/60/3        | 4.3        | 28.0  | 2.4           | 6.7            | 416             | 7.8                  | 15                                |
| 036       | 1        | 208-230/60/1     | 16.7       | 79.0  | 4.0           | 20.7           | 197             | 24.9                 | 40                                |
|           |          | 265-277/60/1     | 13.5       | 72.0  | 3.4           | 16.9           | 240             | 20.3                 | 30                                |
|           |          | 208-230/60/3     | 10.4       | 73.0  | 4.0           | 14.4           | 197             | 17.0                 | 25                                |
|           |          | *460/60/3        | 5.8        | 38.0  | 3.4           | 9.2            | 416             | 10.7                 | 15                                |
|           | 2        | 208-230/60/1     | 15.6       | 83.0  | 4.0           | 19.6           | 197             | 23.5                 | 35                                |
|           |          | 265-277/60/1     | 13.0       | 72.0  | 3.4           | 16.4           | 240             | 19.7                 | 30                                |
|           |          | 208-230/60/3     | 11.6       | 73.0  | 4.0           | 15.6           | 197             | 18.5                 | 30                                |
|           |          | *460/60/3        | 5.7        | 38.0  | 3.4           | 9.1            | 416             | 10.5                 | 15                                |
| 042       | 1        | 208-230/60/1     | 17.9       | 112.0 | 5.9           | 23.8           | 197             | 28.3                 | 45                                |
|           |          | 208-230/60/3     | 13.2       | 88.0  | 5.9           | 19.1           | 197             | 22.4                 | 35                                |
|           |          | *460/60/3        | 6.0        | 44.0  | 4.8           | 10.8           | 416             | 12.3                 | 15                                |
|           | 2        | 208-230/60/1     | 17.9       | 96.0  | 5.9           | 23.8           | 197             | 28.3                 | 45                                |
|           |          | 208-230/60/3     | 14.2       | 88.0  | 5.9           | 20.1           | 197             | 23.7                 | 35                                |
|           |          | *460/60/3        | 6.2        | 44.0  | 4.8           | 11.0           | 416             | 12.6                 | 15                                |
| 048       | 1        | 208-230/60/1     | 21.8       | 117.0 | 5.9           | 27.7           | 197             | 33.2                 | 50                                |
|           |          | 208-230/60/3     | 13.7       | 83.1  | 5.9           | 19.6           | 197             | 23.0                 | 35                                |
|           |          | *460/60/3        | 6.2        | 41.0  | 4.8           | 11.0           | 416             | 12.6                 | 15                                |
|           | 2        | 208-230/60/1     | 21.2       | 104.0 | 5.9           | 27.1           | 197             | 32.4                 | 50                                |
|           |          | 208-230/60/3     | 14.0       | 83.1  | 5.9           | 19.9           | 197             | 23.4                 | 35                                |
|           |          | *460/60/3        | 6.4        | 41.0  | 4.8           | 11.2           | 416             | 12.8                 | 15                                |
| 060       | 1        | 208-230/60/1     | 26.3       | 134.0 | 7.4           | 33.7           | 197             | 40.3                 | 60                                |
|           |          | 208-230/60/3     | 15.6       | 110.0 | 7.4           | 23.0           | 197             | 26.9                 | 40                                |
|           |          | *460/60/3        | 7.8        | 52.0  | 6.2           | 14.0           | 416             | 16.0                 | 20                                |
|           | 2        | 208-230/60/1     | 26.9       | 139.9 | 7.4           | 34.3           | 197             | 41.0                 | 60                                |
|           |          | 208-230/60/3     | 16.5       | 110.0 | 7.4           | 23.9           | 197             | 28.0                 | 40                                |
|           |          | *460/60/3        | 7.2        | 52.0  | 6.2           | 13.4           | 416             | 15.2                 | 20                                |
| 070       | 1        | 208-230/60/1     | 30.8       | 178.0 | 7.4           | 38.2           | 197             | 45.9                 | 60                                |
|           |          | 208-230/60/3     | 19.6       | 136.0 | 7.4           | 27.0           | 197             | 31.9                 | 50                                |
|           |          | *460/60/3        | 8.2        | 66.1  | 6.2           | 14.4           | 416             | 16.5                 | 20                                |
|           | 2        | 208-230/60/1     | 29.7       | 179.2 | 7.4           | 37.1           | 197             | 44.5                 | 60                                |
|           |          | 208-230/60/3     | 17.6       | 136.0 | 7.4           | 25.0           | 197             | 29.4                 | 45                                |
|           |          | *460/60/3        | 8.5        | 66.1  | 6.2           | 14.7           | 416             | 16.8                 | 25                                |

**Notes:** \*All 460/60/3 units require 4-wire power which includes a neutral wire providing 265 volts to the fan motor.

## GCH Units

**Table 22: Unit sizes 007 through 030**

| Description                                    |              | Unit Size      |               |      |              |        |                    |     |
|--|--------------|----------------|---------------|------|--------------|--------|--------------------|-----|
|  |              | 007            | 009           | 012  | 015          | 019    | 024                | 030 |
| Compressor Type                                |              | Rotary         |               |      |              | Scroll |                    |     |
| Refrigeration Charge (Oz.)                     | Single Stage | 16             | 208V-21.5 ozs | 28   | 34           | 37     | 36                 |     |
|  |              |                | 265V-18 ozs   |      |              |        |                    |     |
|  |              | Two Stage      | N/A           |      |              |        | 37                 | 34  |
| HGRH Refrigeration Charge Adder (Oz.)          |              | N/A            |               |      | 6            |        | 7                  |     |
| Fan Wheel (D x W)                              |              | 6" x 8"        |               |      | 9" x 7"      |        |                    |     |
| PSC Fan Motor HP                               |              | 1/8            |               |      | 1/6          |        | 1/4                | 1/3 |
| EC Constant Torque Motor HP                    |              | 1/10           |               |      | 1/3          |        | 1/3 (1/2 for 460V) |     |
| EC Constant CFM Motor HP                       |              | N/A            |               |      | 1/3          |        | 1/3                |     |
| Water Connection Size (FPT)                    |              | 1/2"           |               |      |              | 3/4"   |                    |     |
| Coax Volume (Gal. @ 70°F)                      |              | 0.10           |               | 0.12 |              |        | 0.22               |     |
| Condensate Connection Size (FPT)               |              | 3/4            |               |      |              |        |                    |     |
| Air Coil Face Area (Sq. Ft.)                   |              | 1.16           |               |      | 2.38         |        | 2.33               |     |
| Filter Size, Standard 1" deep (inches) (W x H) |              | 20" x 10"      |               |      | 25" x 16"    |        | 24" x 16"          |     |
| Operating Weight (Lbs.)                        |              | 99             |               | 103  | 142          | 150    | 182                |     |
| Shipping Weight (Lbs.)                         |              | 123            | 123           | 128  | 168          | 176    | 209                |     |
| Overall Cabinet Dimensions (W x D x H)         |              | 19 x 34 x 11.5 |               |      | 19 x 42 x 17 |        | 19 x 43 x 17.3     |     |
| Packaging + Pallet Weight (Lbs.)               |              | 28.47          |               |      |              |        |                    |     |
| Waterside Economizer Section (Lbs.)            |              | 22             |               |      | 33           |        | 41                 |     |
| Waterside Economizer Coil Volume (Gal.)        |              | .24            |               |      | .55          |        | .62                |     |
| Hot Gas Reheat (HGRH) Adder (Lbs.)             |              | N/A            |               |      | 3.93         |        | 6.26               |     |

**Table 23: Unit sizes 036 through 070**

| Description                                    |              | Unit Size      |          |                   |           |                   |
|--|--------------|----------------|----------|-------------------|-----------|-------------------|
|  |              | 036            | 042      | 048               | 060       | 070               |
| Compressor Type                                |              | Scroll         |          |                   |           |                   |
| Refrigeration Charge (Oz.)                     | Single Stage | 50             | 48       | 54                | 60        | 69                |
|  | Two Stage    | 49             | 48       | 51                | 59        | 69                |
| HGRH Refrigeration Charge Adder (Oz.)          |              | 19             |          | 20                |           | 26                |
| Fan Wheel (D x W)                              |              | 9" x 7"        | 10" x 8" |                   | 11" x 10" |                   |
| PSC Fan Motor HP                               |              | 1/3            | 1/2      |                   | 3/4       |                   |
| EC Constant Torque Motor HP                    |              | 1/2            |          | 3/4               | 1         |                   |
| EC Constant CFM Motor HP                       |              | 1/2            | 3/4      |                   | 1         |                   |
| Water Connection Size (FPT)                    |              | 3/4"           |          | 1"                |           |                   |
| Coax Volume (Gal. @ 70°F)                      |              | 0.43           |          | 0.48              | 0.82      |                   |
| Condensate Connection Size (FPT)               |              | 3/4            |          |                   |           |                   |
| Air Coil Face Area (Sq. Ft.)                   |              | 3.34           |          | 4.09              |           | 5.54              |
| Filter Size, Standard 1" deep (inches) (W x H) |              | 30" x 18"      |          | 16" x 20" (Qty 2) |           | 22" x 20" (Qty 2) |
| Operating Weight                               |              | 218            | 236      | 296               | 313       | 332               |
| Shipping Weight                                |              | 255            | 273      | 331               | 345       | 379               |
| Overall Cabinet Dimensions (W x D x H)         |              | 21.5 x 49 x 19 |          | 24 x 54 x 21      |           | 24 x 65 x 21      |
| Packaging + Pallet Weight (Lbs.)               |              | 28.47          |          | 34.7              |           |                   |
| Waterside Economizer Section (Lbs.)            |              | 50             |          | 53                |           | 60                |
| Waterside Economizer Coil Volume (Gal.)        |              | .82            |          | 1.15              |           | 1.1               |
| Hot Gas Reheat (HGRH) Adder (Lbs.)             |              | 7.41           |          | 10.08             |           | 12.46             |



# GCH Unit, Left and Right Hand, End and Straight Discharge – 007-036

## Cabinet Dimensions, Pipe Connections, Left and Right Hand, End and Straight Discharge – 007-036

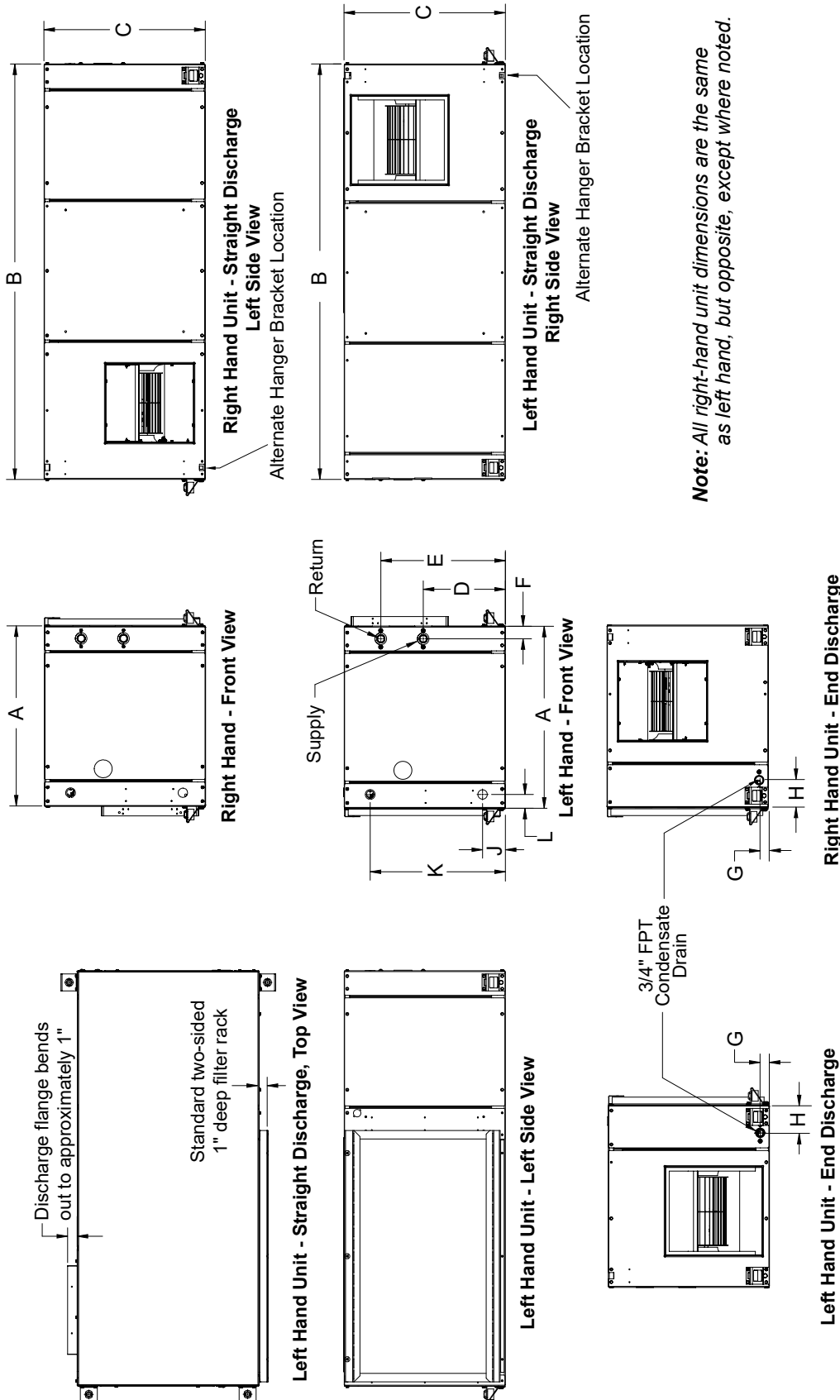


Table 24: GCH unit, left and right hand, end and straight discharge - 007-036

| Unit Size | Overall Cabinet Dimensions<br>(in inches) |           |            | Pipe Connections (in inches) |     |      |        |        | 3/4" FPT Condensate Drain |     |                  |                 | Electrical Entry Locations |  |  |
|-----------|---|-----------|------------|------------------------------|-----|------|--------|--------|---------------------------|-----|------------------|-----------------|----------------------------|--|--|
|           |   |           |            | Connection<br>Size (FPT)     | D   | E    | F      |        |                           |     |                  |                 |                            |  |  |
|           | A = Width                                 | B = Depth | C = Height |                              |     |      | Supply | Return | G                         | H   | J (Line Voltage) | K (Low Voltage) | L                          |  |  |
| 007, 009  | 18.9                                      | 33.9      | 11.5       | 0.5                          | 1.6 | 10.3 | 2.4    | 1.3    | 0.9                       | 3.3 | 2.7              | 10.4            | 1.6                        |  |  |
| 012       | 18.9                                      | 33.9      | 11.5       | 0.5                          | 1.2 | 9.7  | 1.2    | 1.4    | 0.9                       | 3.3 | 2.7              | 10.4            | 1.6                        |  |  |
| 015, 019  | 18.9                                      | 41.9      | 17.0       | 0.5                          | 7.9 | 11.4 | 1.5    | 1.5    | 1.4                       | 3.3 | 2.7              | 15.7            | 1.6                        |  |  |
| 024, 030  | 19.9                                      | 42.9      | 17.3       | 0.75                         | 7.1 | 11.2 | 1.5    | 1.5    | 1.4                       | 3.3 | 2.7              | 15.9            | 1.6                        |  |  |
| 036       | 21.4                                      | 48.9      | 19.0       | 0.75                         | 9.7 | 14.6 | 1.5    | 1.5    | 1.4                       | 3.3 | 2.7              | 15.9            | 1.6                        |  |  |

# GCH Unit, Left and Right Hand, End and Straight Discharge - 042-070

## Cabinet Dimensions, Pipe Connections, Condensate Drain, Electrical Locations

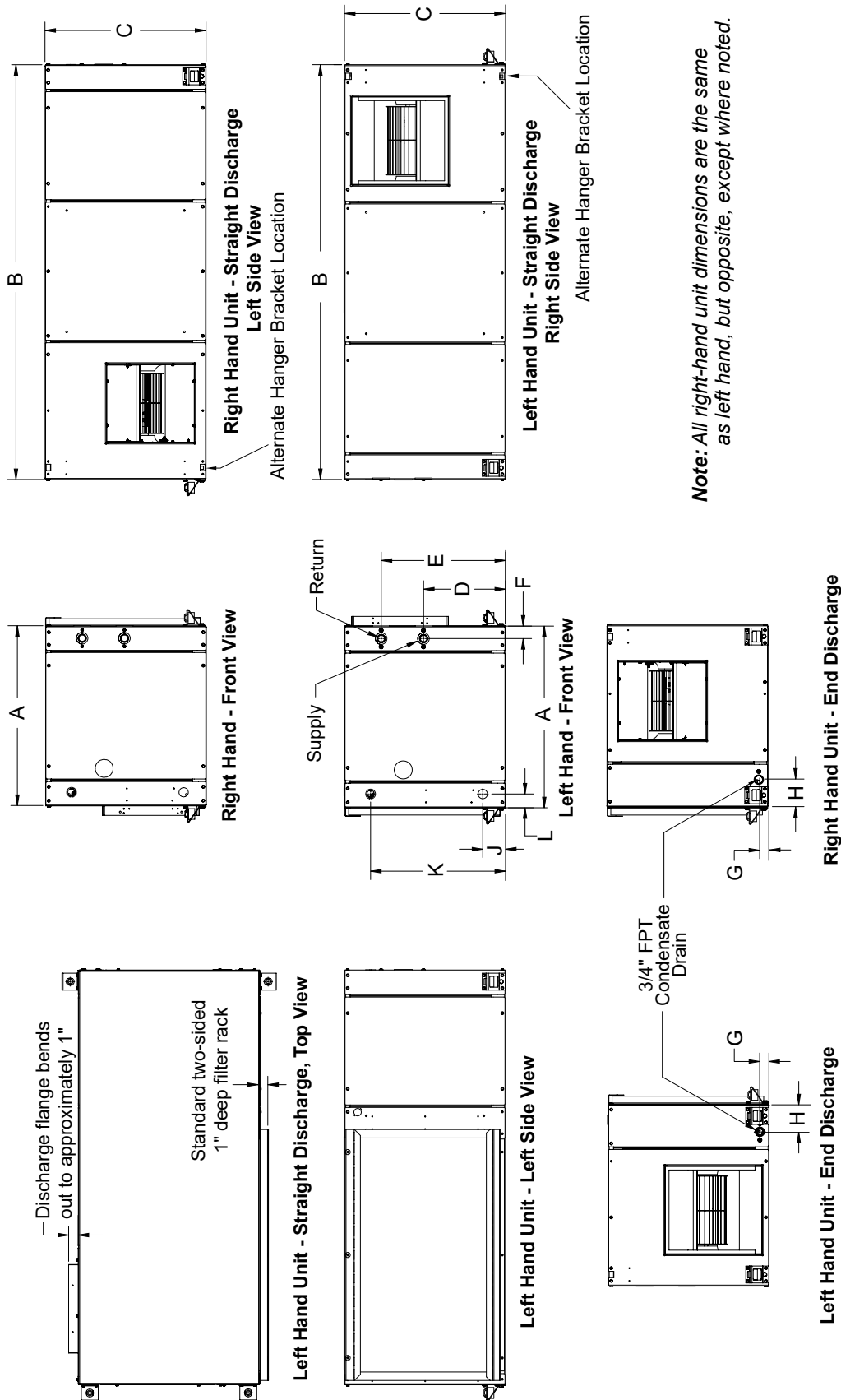
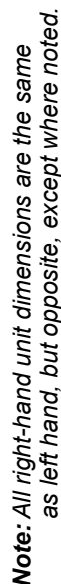


Table 25: GCH unit, left and right hand, end and straight discharge - 042-070

| Unit Size | Overall Cabinet Dimensions<br>(in inches) |           |            | Pipe Connections (in inches) |      |      |                    | 3/4" FPT Condensate Drain |     |                  |                 | Electrical Entry Locations |  |  |
|-----------|---|-----------|------------|------------------------------|------|------|--------------------|---------------------------|-----|------------------|-----------------|----------------------------|--|--|
|           | A = Width                                 | B = Depth | C = Height | Connection<br>Size (FPT)     | D    | E    | F<br>Supply Return | G                         | H   | J (Line Voltage) | K (Low Voltage) | L                          |  |  |
| 042       | 21.4                                      | 48.9      | 19.0       | 0.75                         | 9.7  | 14.6 | 1.5 1.5            | 1.1                       | 3.3 | 2.7              | 15.9            | 1.6                        |  |  |
| 048       | 23.9                                      | 53.9      | 21.0       | 1.0                          | 10.8 | 14.6 | 1.5 1.5            | 1.4                       | 3.3 | 2.7              | 17.7            | 1.6                        |  |  |
| 060       | 23.9                                      | 53.9      | 21.0       | 1.0                          | 10.8 | 14.6 | 1.5 1.5            | 1.4                       | 3.3 | 2.7              | 17.7            | 1.6                        |  |  |
| 070       | 23.9                                      | 64.9      | 21.0       | 1.0                          | 10.8 | 16.1 | 1.5 1.5            | 1.4                       | 3.3 | 2.7              | 17.7            | 1.6                        |  |  |

## Discharge Opening, Filter Rack Dimensions, Hanger Brackets Locations



**Table 26: GCH unit, left and right hand, end and straight discharge - 007-036**

| Unit Size     | *Discharge Opening (in inches) |     |     |     |     |     |     | Standard Filter Rails Location<br>(in inches) |     |      |     |      | Hanger Bracket Locations |      |     |     |     |  |  |
|---------------|--------------------------------|-----|-----|-----|-----|-----|-----|---|-----|------|-----|------|--------------------------|------|-----|-----|-----|--|--|
|               | M                              | N   | NR  | NN  | NNR | O   | P   | Q   | R   | S    | T   | U    | V                        | W    | X   | Y   | Z   |  |  |
| 007, 009, 012 | 4.9                            | 1.3 | 5.3 | 5.3 | 1.3 | 3.0 | 9.4 | 18.4  | 0.5 | 10.3 | 1.0 | 33.6 | 16.8                     | 20.9 | 1.0 | 1.0 | 1.1 |  |  |
| 015, 019      | 10.4                           | 1.1 | 5.7 | 5.7 | 1.1 | 3.0 | 9.3 | 24.9  | 0.5 | 16.3 | 1.6 | 41.6 | 16.2                     | 20.9 | 1.0 | 1.0 | 1.4 |  |  |
| 024, 030      | 10.4                           | 1.2 | 5.8 | 5.8 | 1.2 | 3.4 | 9.3 | 23.9  | 0.5 | 16.3 | 1.0 | 42.6 | 17.2                     | 21.9 | 1.0 | 1.0 | 1.4 |  |  |
| 036           | 10.4                           | 1.4 | 7.3 | 7.3 | 1.4 | 4.4 | 9.3 | 29.6  | 0.5 | 18.3 | 0.6 | 48.6 | 18.7                     | 23.4 | 1.0 | 1.0 | 1.4 |  |  |

\* Discharge opening dimensions are to the outside edge of flanges bent out to 90 degrees at perforations. Dimensions are approximate and dependent on degree of bend.

# GCH Unit, Left and Right Hand, End and Straight Discharge - 042-070

## Discharge Opening, Filter Rack Dimensions, Hanger Brackets Locations

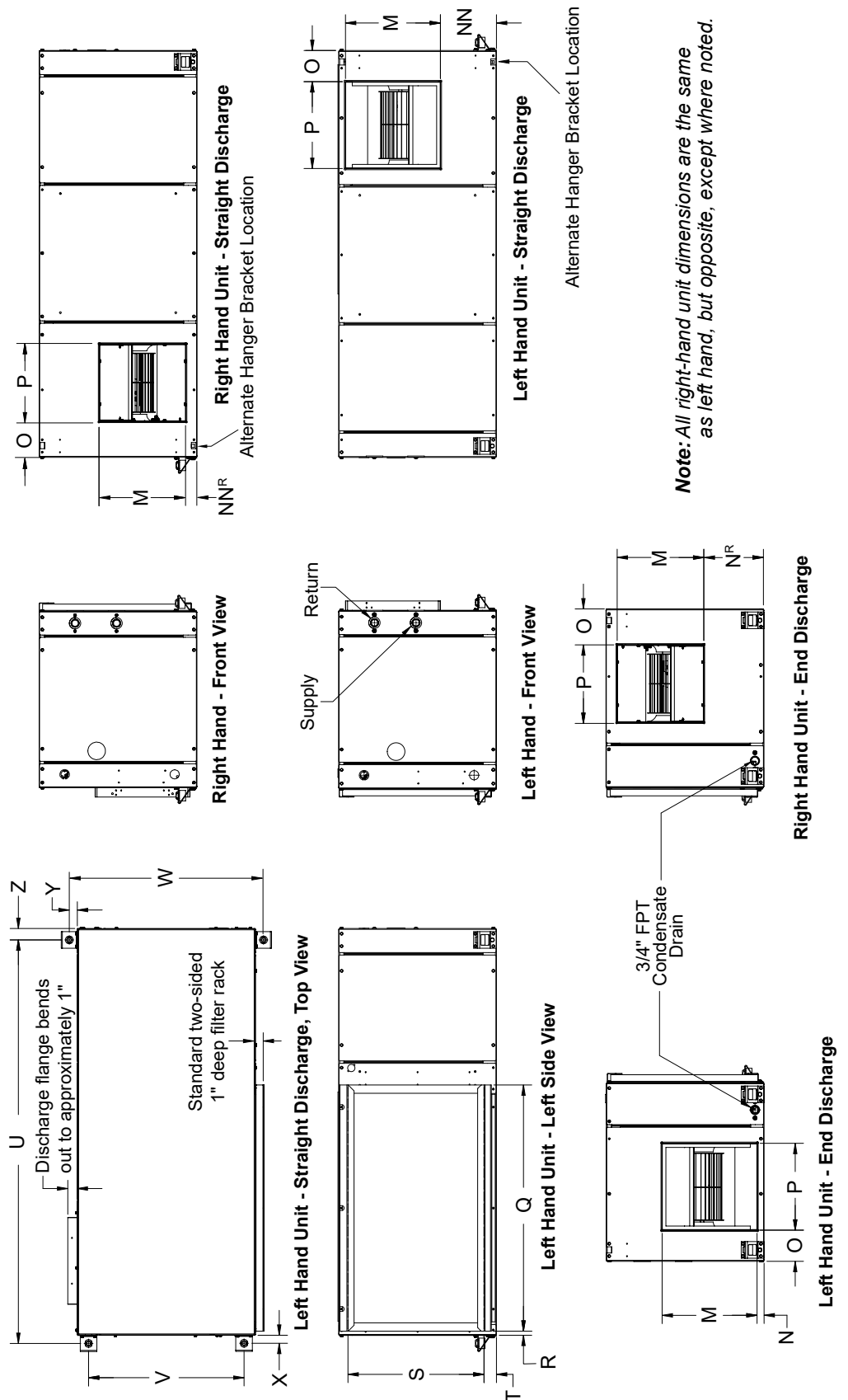


Table 27: GCH unit, left and right hand, end and straight discharge - 042-070

| Unit Size | *Discharge Opening (in inches) |     |                |     |                 |     |      |      | Standard Filter Rails Location (in inches) |      |     |      |      |      | Hanger Bracket Locations |     |     |  |  |  |  |  |
|-----------|--------------------------------|-----|----------------|-----|-----------------|-----|------|------|--|------|-----|------|------|------|--------------------------|-----|-----|--|--|--|--|--|
|           | M                              | N   | N <sup>R</sup> | NN  | NN <sup>R</sup> | O   | P    | Q    | R  | S    | T   | U    | V    | W    | X                        | Y   | Z   |  |  |  |  |  |
| 042       | 11.4                           | 0.8 | 6.7            | 6.7 | 0.8             | 3.8 | 10.4 | 29.6 | 0.5  | 18.3 | 0.6 | 48.6 | 18.7 | 23.4 | 1.0                      | 1.0 | 1.4 |  |  |  |  |  |
| 048       | 11.4                           | 3.0 | 6.7            | 6.7 | 3.0             | 5.3 | 10.4 | 32.2 | 1.3  | 20.3 | 0.6 | 53.6 | 21.2 | 25.9 | 1.0                      | 1.0 | 1.4 |  |  |  |  |  |
| 060       | 13.6                           | 2.4 | 5.0            | 5.0 | 2.4             | 4.5 | 13.1 | 32.2 | 1.3  | 20.3 | 0.6 | 53.6 | 21.2 | 25.9 | 1.0                      | 1.0 | 1.4 |  |  |  |  |  |
| 070       | 13.6                           | 2.4 | 5.0            | 5.0 | 2.4             | 6.4 | 13.1 | 44.3 | 0.5  | 20.3 | 0.6 | 64.6 | 21.2 | 25.9 | 1.0                      | 1.0 | 1.4 |  |  |  |  |  |

\* Discharge opening dimensions are to the outside edge of flanges bent out to 90 degrees at perforations. Dimensions are approximate and dependent on degree of bend.



## Optional Filter Racks Dimensions

Figure 9: Optional filter racks dimensions (left hand unit shown)

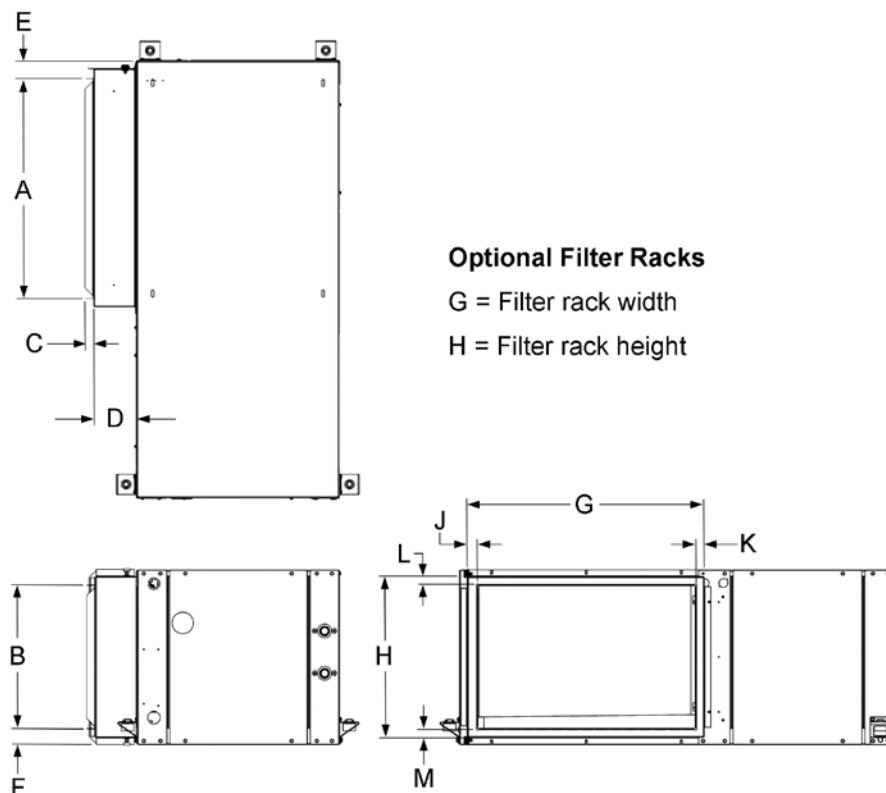


Table 28: Optional filter racks letter dimensions for Figure 9

| Unit Size     | *A   | *B   | C   | D      |        | E   | F   | G    | H    | *J  | *K  | *L  | *M  |
|---------------|------|------|-----|--------|--------|-----|-----|------|------|-----|-----|-----|-----|
|               |      |      |     | 2-inch | 4-inch |     |     |      |      |     |     |     |     |
| 007, 009, 012 | 16.2 | 8.5  | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 17.9 | 10.0 | 1.0 | 0.8 | 0.8 | 0.8 |
| 015, 019      | 22.2 | 14.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 23.9 | 15.6 | 1.0 | 0.8 | 0.8 | 0.8 |
| 024, 030      | 21.7 | 14.4 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 23.4 | 15.9 | 1.0 | 0.8 | 0.8 | 0.8 |
| 036           | 27.2 | 16.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 28.9 | 17.6 | 1.0 | 0.8 | 0.8 | 0.8 |
| 042           | 27.2 | 16.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 28.9 | 17.6 | 1.0 | 0.8 | 0.8 | 0.8 |
| 048           | 31.4 | 18.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 33.2 | 19.6 | 1.0 | 0.8 | 0.8 | 0.8 |
| 060           | 31.4 | 18.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 33.2 | 19.6 | 1.0 | 0.8 | 0.8 | 0.8 |
| 070           | 44.3 | 18.1 | 0.9 | 2.2    | 4.2    | 1.7 | 1.5 | 45.7 | 19.6 | 1.0 | 0.8 | 0.8 | 0.8 |

**Notes:** \*Filter rack flange dimensions are to the outside edge of the flange when bent out to 90 degrees at perforations.  
Dimensions are approximate and dependent on degree of bend.

## Optional Disconnect Switch Location Dimensions

Figure 10: Optional disconnect switch location dimensions (right hand unit shown)

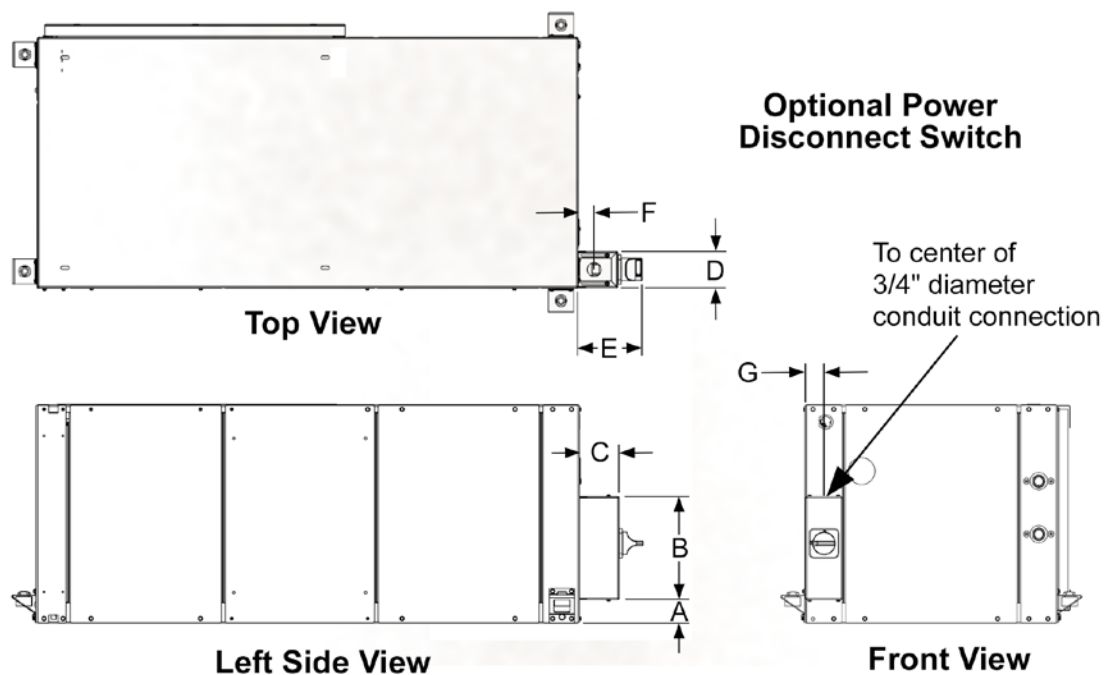
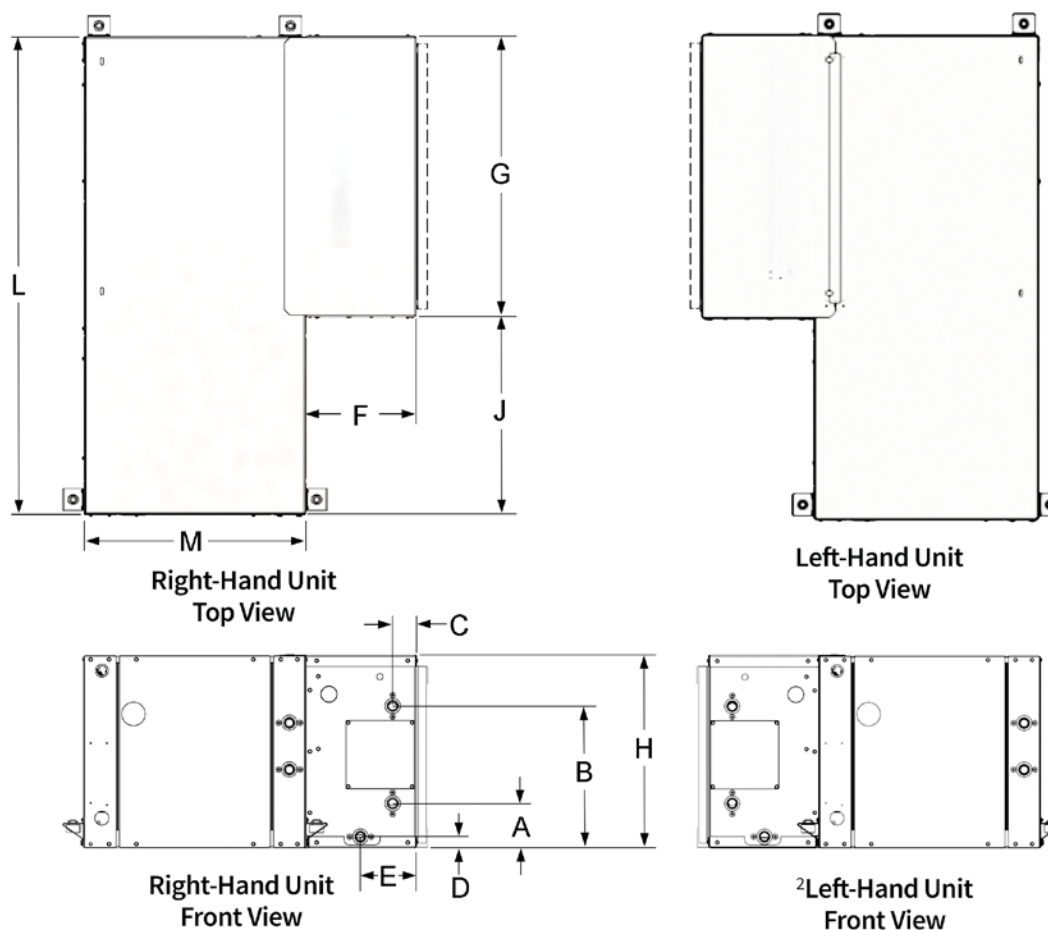


Table 29: Letter dimensions for Figure 10

| Unit Size     | A   | B   | C   | D   | E   | F   | G   |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| 007, 009, 012 | 1.7 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 015, 019      | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 024, 030      | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 036           | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 042           | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 048           | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 060           | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |
| 070           | 1.9 | 8.1 | 3.1 | 2.9 | 5.1 | 1.3 | 1.5 |

## Model GCH Unit With Waterside Economizer Dimensions



**Table 30: Model GCH unit with waterside economizer - dimensions**

| Unit Size     | Supply & Return Connections |            |            |     | 3/4" FPT Condensate Drain |     | Waterside Economizer Overall Cabinet Section |      |      | J    | L    | M    |
|---------------|-----------------------------|------------|------------|-----|---------------------------|-----|--|------|------|------|------|------|
|               | Connection Size (FPT)       | A (Supply) | B (Return) | C   | D                         | E   | F  | G    | H    |      |      |      |
| 007, 009, 012 | 0.75                        | 2.8        | 9.7        | 2.6 | 1.0                       | 5.0 | 9.9  | 19.4 | 11.6 | 14.7 | 33.9 | 18.9 |
| 015, 019      | 0.75                        | 4.0        | 12.5       | 2.1 | 1.0                       | 5.0 | 9.9  | 25.6 | 17.1 | 16.4 | 42.0 | 18.9 |
| 024, 030      | 0.75                        | 4.0        | 12.8       | 2.1 | 1.0                       | 5.0 | 9.9  | 25.1 | 17.4 | 17.8 | 43.0 | 19.9 |
| 036, 042      | 0.75                        | 3.5        | 13.5       | 2.1 | 1.0                       | 5.0 | 9.9  | 30.6 | 19.1 | 18.4 | 49.0 | 21.4 |
| 048, 060      | 0.75                        | 3.5        | 15.5       | 1.4 | 1.0                       | 4.5 | 9.9  | 34.9 | 21.1 | 19.1 | 53.9 | 23.9 |
| 070           | 0.75                        | 3.5        | 15.5       | 2.3 | 1.0                       | 5.0 | 9.9  | 46.5 | 21.1 | 18.5 | 65.0 | 23.9 |

**Notes:** 1. All dimensions within  $\pm 0.10$  inches (2.5 mm).

2. Left-hand waterside economizer connections same as right-hand but opposite.

## General

Units shall be supplied completely factory assembled, piped, internally wired, fully charged with R-410A, horizontal unit and capable of operating over an entering water temperature range from 55°F to 110°F on water loop (boiler/tower) models, and 20° to 110°F on ground loop (geothermal) models. All equipment must be AHRI rated and certified in accordance with Standard 920 and must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-60335-2-40 Version 2 for the US and CAN/CSA-C22.2 NO. 60335-2-40 Version 2 for Canada. Each unit shall be ETL and ETLC Listed. Each unit shall be run tested at the factory. The installing contractor shall be responsible for furnishing and installing Water Source Heat Pumps as indicated on the plans and per installation instructions.

All water loop (boiler/tower) units shall include a:

- Low refrigerant suction line temperature safety device (freeze protection)

All ground loop (geothermal) units shall have:

- Insulated water-to-refrigerant heat exchanger
- Insulated water and refrigerant piping, designed to prevent sweating
- Low refrigerant suction line temperature safety device (freeze protection)

## Electrical

The control box shall be located within the unit and shall contain controls for compressor, reversing valve and fan motor operation and shall have either a factory-installed 50VA or a selectable 75VA transformer (for added electrical capacity). Unit shall be name-plated to accept time delay fuses or HACR circuit breaker for branch over-current protection of the power source. Unit control system shall provide heating or cooling as required by the set points of the wall thermostat or sensor. The unit control scheme shall provide for fan operation simultaneous with compressor operation (fan interlock) regardless of the thermostat type. The unit shall be capable of providing an output signal to an LED on the thermostat or sensor to indicate a "fault" condition from the activation of any one of the safety devices.

## Casing and Cabinet

Unit cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal. Interior surfaces shall be lined with ½-inch, 1½ lb. dual density coated fiberglass insulation. All insulation shall have edges sealed or tucked in order to prevent introduction of fibers into the discharge air. Standard cabinet insulation must meet NFPA 90A/90B requirements, air erosion and mold growth limits of UL-181, fungi resistance per ASTM G21 or

ASTM C 1338, and bacterial resistance per ASTM G22. All insulation shall have a flame spread of less than 25 and a smoke developed classification of less than 50 per ASTM E-84 and UL 723.

Cabinets shall have separate openings and knockouts for entrance of line voltage and low voltage control wiring. Supply and return water connections shall be FPT fittings and shall be securely mounted flush to the cabinet corner post allowing for connection to a flexible hose without the use of a back-up wrench.

Three access panels, two for the compressor compartment and one for the blower compartment. Unit shall have an insulated panel separating the blower compartment from the compressor compartment.

Units shall have a ¾" fold-out discharge duct collar for connection of supply air ductwork.

## Unit Insulation Option

- Indoor Air Quality (IAQ) closed cell foam on entire unit; replaces standard fiberglass

## Sound Attenuation Options

### ■ Sound Blanket

- For additional sound attenuation on unit sizes 024 - 070, a compressor blanket constructed from high performance Duracoustic sound material with superior sound absorption and deadening properties shall be provided. The sound rated material has a density of 1.5 lb./ft³ and is made from a loaded vinyl reinforced barrier and is embedded with 0.5" urethane foam

### ■ Sound Package

- 1-inch dual layer insulation on entire unit (Unit Sizes 007 - 019)
- 1-inch dual layer insulation in air handling section (Unit Sizes 024 - 070), 1/2-inch dual-density fiberglass insulation in the compressor section and compressor sound blanket (Unit Sizes 024 - 070)

## Filter Rack and Filters

Units shall have factory-installed, one inch thick filter rails on the top and bottom for filter support with 1" inch thick disposable standard filter(s) and ¾" inch fold-out duct collar for connection of return air ductwork.

## Filter Options

### ■ Factory-installed 2-inch thick MERV 8 filter

- Factory-installed in a low leakage 2-inch, 4-sided combination filter rack with ¾" return air duct collar and removable, tool-less access door with thumb screws. Gasketing shall prevent air leakage between the filter rack and unit casing



■ **Factory-installed 4-inch thick MERV 13 filter**

- Factory-installed in a low leakage 4-inch, 4-sided combination filter rack with ¾" return air duct collar and removable, tool-less access door with thumb screws. Gasketing shall prevent air leakage between the filter rack and unit casing

**Supply and return, condenser water connections**

Shall be FPT fittings, brazed copper water tubes and securely flush mounted to the cabinet corner post allowing for connection to a flexible hose without the use of a back-up wrench.

**Drain Pan**

The condensate pan shall be constructed of high density polypropylene to prevent corrosion and sweating. The bottom of the drain pan shall be sloped on two planes to provide complete drainage of water from the pan to meet IAQ requirements. The water source heat pump unit as standard shall be supplied with electronic condensate overflow protection. A mechanical float switch will not be accepted.

**Optional Stainless Steel Drain Pan**

Unit shall utilize a corrosion resistant, stainless steel, insulated drain pan. Drain pan connection shall be ¾" FPT flush threaded fitting. The drain pan shall be designed to ensure no pooling of condensate water per ASHRAE 62.2.

**Refrigerant Circuit**

Units shall have a R-410A sealed refrigerant circuit, which includes a rotary or scroll compressor, thermostatic expansion valve, an aluminum lanced-fin and rifled copper tube refrigerant-to-air heat exchanger, reversing valve, and coaxial, tube-in-tube, refrigerant-to-water heat exchanger. The airside coil shall be rated at 600 psig working pressure. The coaxial coil shall be made of a copper inner tube and a painted steel outer tube and be rated at 500 psig working pressure on the waterside and 600 psig working pressure on the refrigerant side. The compressor shall have thermal overload protection.

The compressor shall have a dual level vibration isolation system. The compressor will be mounted on vibration isolation grommets to a heavy gauge compressor mounting plate, which is then isolated from the cabinet base to minimize vibration transfer.

Safety controls shall include a minimum of 3 safety devices; high refrigerant pressure switch, low refrigerant pressure switch and a low refrigerant suction temperature sensor. The low refrigerant suction temperature sensor shall provide freeze protection for the water coil and the air coil. Refrigerant gauge access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent the compressor from operating via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the unit disconnect switch.

- **Cupro-Nickel coil option:** The coaxial coil shall be made of cupro-nickel inner tube and a painted steel outer tube
- **Coated air coil option:** All air coils shall be coated with an optional inorganic, silicon-based nano-ceramic coating that must pass a ASTM B-117 3,000 hour salt spray test to provide protection against corrosion due to acids, solvents, and salt found in the environment

**Fan and Motor Assembly**

Unit shall have a direct drive centrifugal fan motor assembly. The fan housing shall have a removable orifice ring to facilitate fan motor and fan wheel removal. The fan motor shall be 3-speed, permanently lubricated, PSC type, with internal thermal overload protection.

**Optional Fan Motors**

- **Constant Torque motor (sizes 007-012)**
  - The fan motor shall be permanently lubricated, constant torque electronically commutated for improved operation. Field adjustable CFM settings shall be accomplished from a 4-position switch in the control box
- **Constant Torque motor (sizes 015-070)**
  - The fan motor shall be permanently lubricated, constant torque electronically commutated for improved operation. These motors shall feature 5 pre-programmed torque settings that can be changed in the field to match design airflow requirements
- **Constant CFM motor (unit sizes 015-070)**
  - The fan motor shall be permanently lubricated, variable speed, constant CFM, electronically commutated for improved operation. Field adjustable CFM settings shall be accomplished from a 4-position switch in the control box. The constant CFM EC motor shall have the ability to reduce the CFM as the space temperature approaches the thermostat setpoint for improved dehumidification. Units with 460/60/3 power require the 4th wire neutral

### **Hot Gas Reheat Smart Dehumidification Option**

The optional factory-installed hot gas reheat coil shall be used as part of a dehumidification operating sequence. Hot gas reheat shall be enabled when the space humidity level is above a user selectable set point. Superheated refrigerant gas shall be diverted to the reheat coil and unit fan shall operate at dehumidification fan speed upon a call for dehumidification. This option includes an aluminum microchannel hot gas reheat coil and a solenoid actuated 3-way valve. A corrosion resistant coated hot gas reheat coil shall be available as an option.

### **Waterside Economizer**

A factory mounted and wired waterside economizer shall consist of a hydronic cooling coil located between the unit filter rack and evaporator, a 2-position 3-way diverting valve, a manual air vent, and an entering fluid sensor. The cabinet shall be fabricated from heavy gauge G-60 galvanized sheet metal with the top and bottom interior surfaces lined with a minimum 3/8-inch thick closed-cell non-fibrous IAQ insulation and 1/8-inch thick closed-cell non fibrous insulation on the interior side walls. Components shall be accessible without removing economizer. An insulated stainless steel drain pan compliant with ASHRAE 62.1 including electronic condensate overflow protection shall be provided. Economizer flush mounted piping connections shall be on the same side as the WSHP unit piping connections. For corrosive environment applications, a corrosion resistant coated coil shall be available. The unit mounted control system shall allow economizer operation for either supplemental to mechanical unit cooling or independent, based on entering fluid temperature. Economizer operation shall be permitted when entering fluid temperature is below the adjustable range from 50°F to 70°F. Default setting is 55°F. Economizer operation shall be initiated from a multi-stage remote thermostat or sensor. Economizer operation will be permitted with entering fluid temperature down to 35°F.

### **Microprocessor-Based Control System**

MicroTech SmartSource Control System - Unit shall have a microprocessor- based control system. The unit control logic shall provide cooling, heating, smart dehumidification, and/or economizer operation as required by the thermostat and/or sensor. The control system shall provide the following for stand-alone operation:

1. The use of standard non-programmable or programmable wall thermostats.
2. Fan operation simultaneous with the compressor (fan interlock) regardless of thermostat logic.
3. Time delay compressor operation.
4. Compressor short cycle protection of a minimum of three minutes before restart is possible.
5. Random unit start-up
6. Single grounded wire connection for activation of the unoccupied or unit shutdown modes.
7. Night setback temperature setpoint input signal from the wall thermostat.
8. Override signal from wall thermostat to override unoccupied mode for 2 hours.
9. Brownout protection to suspend unit operation if the supply voltage drops below 80% of normal.
10. Condensate overflow protection to suspend cooling operation in an event of a full drain pan.
11. Suspended compressor operation upon activation of the high refrigerant pressure switch.
12. Suspended compressor operation upon activation of the low refrigerant pressure switch.
13. Suspended compressor operation upon activation of the low refrigerant suction temperature switch.
14. Cooling operation activated for 60 seconds upon activation of the low suction temperature sensor – defrost cycle.
15. Method of defeating compressor, reversing valve and fan time delays for fast service diagnostics.
16. Remote Alarm reset - Provides ability to remotely reset the unit upon a fault condition.
17. Intelligent Reset attempts to clear faults the first two times they occur within a 24-hour period and locks-out compressor operation upon the third fault.
18. Control shall be configurable to accommodate thermostat or sensor based control.
19. Unit mounted LED annunciators aid in diagnosing unit operation by indicating the water source heat pump operating mode and alarm conditions.
20. Freeze fault protection (option): Unit shall be equipped with an additional sensor located on the leaving water piping to be used to help protect the unit from excessively low water coil and air coil temperatures.
21. Electric heat control output (option): Unit shall be equipped with a 24-volt control signal to activate a field-installed electric heater.

**MicroTech® III Control with LONWORKS communication module** – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a LONMARK communications network. The unit controller is factory programmed [LONMARK® 3.4 certified Application Code the current standard for new applications] and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a LONMARK communications network. Units with the MicroTech and LONWORKS communication module include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor.

**MicroTech SmartSource Control with BACnet Communication module** – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a BACnet communications network. The BACnet communication module shall incorporate an Atmel ARM7 Thumb series MCU and be capable of supporting a full MSTP BACnet implementation. The microprocessor shall also support SPI compatible communications with the MCU of the MicroTech Smart-Source controller. The physical interface to a BACnet BAS network shall be through an industry standard RS-485 transceiver capable of existing on an RS-485 network of up to 64 nodes. The unit controller is factory programmed and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a BACnet communications network. Units outfitted with MicroTech and BACnet Communication modules include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room temperature sensor.

Each communicating unit controller performs the following unit operations:

- Enable heating and cooling to maintain space temperature set point at the room sensor
- Enable fan and compressor operation
- Monitor all safety controls (see Safety Controls)
- Monitor discharge and return air temperature
- Monitor leaving water temperature
- Relay status of all vital unit functions
- Support optional control outputs

If there are no current alarm conditions, a green LED on the annunciator board will indicate occupied unit operating mode. If an alarm condition exists, the MicroTech Smart-Source unit controller will send the fault condition to the LED annunciator, which will assist in troubleshooting the unit. Heat pumps with the MicroTech SmartSource unit controller with a LONWORKS Communication Module is designed to be linked with a centralized Building Automation System (BAS) through a LONMARK communications network for centralized scheduling and management of multiple heat pumps. Wall-mounted room sensors are available to control the operation of each MicroTech Water Source Heat Pump.

## **Safety Controls – Standard**

Safety controls shall include as standard, a minimum of 3 safety devices. Activation of any safety device shall prevent the compressor from operating via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the unit disconnect switch.

- High pressure switch located in the refrigerant discharge line
- Low pressure switch located in the refrigerant suction line shall protect against loss of refrigerant charge
- Low suction temperature sensor, located in the compressor suction line shall protect the water coil and the air coil against freeze-up

Refrigerant gauge access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service.

- Condensate overflow protection sensor shall be factory installed in the drain pan of the unit

## **Safety Controls – Optional**

Unit shall be equipped with an additional sensor located on the leaving water piping and used to help protect the unit from excessively low water coil and air coil temperatures.

### **Water Pressure Differential Switch**

The optional, factory-mounted pressure differential switch monitors the water pressure drop across the heat exchanger and shall disable compressor operation if flow is not detected. Selectable as a factory installed option internal to the cabinet.

### **Non-Fused Disconnect Switch**

This factory installed option shall include the addition of a 3-pole switch mounted on the unit. The switch shall have a lockout/tag out feature. The switch shall be rated to handle all the voltages available for the unit.

## Warranty

### **Standard Warranty**

- The standard unit warranty covers all parts for a period of 1 year after start-up, or 18 months after shipment; whichever occurs first

### **Optional Warranty**

- An optional 1 or 4-year extended compressor warranty covers the compressor from the date at which the unit ships from the factory
- An optional 1 or 4-year extended refrigeration circuit warranty covers the entire refrigeration circuit and related components
- An optional 1 or 4-year extended complete unit warranty covers the entire unit and related components

## Field Installed Accessories

### **Wall-Mounted Thermostats:**

- Programmable Touch Screen Thermostat with optional humidity sensing
  1. Optional Remote Room Sensor
  2. Optional Outdoor Temperature Sensor
- Non-Programmable Thermostat
  1. Optional Remote Room Sensor
- Programmable Thermostat
  1. Optional Remote Room Sensor

### **Wall Mounted Room Temperature Sensors for BAC-net and LonWORKS Communications:**

- Digitally Adjustable Wall Sensor with Temperature and Humidity Display
- Adjustable Cool/Warm with Occupancy Switch, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable 55°F to 95°F and 12°C to 33°C, Override/Reset Button, Status LED, Fan and System Switch
- Adjustable -5°F to +5°F and -21°C to -15°C, Override/Reset Button, Status LED, Fan and System Switch
- Basic Sensor, Override/Reset Button, Status LED

## Hose Kits

### **Supply and Return Hose Kits**

Two fire-rated flexible hoses with ASTM ratings of Flame Spread 25, Fuel Contribution 25 and Smoke Density 50 for connection to unit and field piping. Hoses shall be covered with stainless steel braiding to prevent damage. The automatic flow hose kit shall include an automatic flow control valve, two ball valves, two flexible hoses, a high flow Y-strainer, and may include a strainer blow-down and various other accessories. The automatic flow control valve shall be factory set to a rated flow, and shall automatically control the flow to within 10% of the rated value over a 40 to 1 differential pressure, operating range (2 to 80 PSID). Operational temperature shall be rated from fluid freezing, to 225°F. The valve body shall be constructed from hot forged brass UNS C37700 per ASTM B-283 latest revision. For details on hose kits refer to catalog 1196.

### **Jumper Hose Kit**

#### **(Used with Waterside Economizer)**

The jumper hose kit used with waterside economizer shall include a single UL-94 VO fire rated hose with 1-inch male JIC x 90 degree male pipe plated steel adapter.

### **Condensate Hose Kits**

- Optional plastic hose including fittings
- Optional fire-rated, braided steel hose including fittings

### **Motorized Valve and Ball Valve Kits**

- Optional 2-way, Normally Open (N.O.) or Normally Closed (N.C.) motorized valves
- Optional 2-way, mechanical ball valve

### **Replacement Filters**

2-inch MERV 8, 4 inch MERV 13, and 1-inch disposable filters shall be available as direct replacement to factory-installed filters.



### ***Daikin Applied Training and Development***

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin HVAC products, please visit us at [www.DaikinApplied.com](http://www.DaikinApplied.com) and click on Training, or call 540-248-9646 and ask for the Training Department.

### ***Warranty***

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

### ***Aftermarket Services***

To find your local parts office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-37PARTS (800-377-2787). To find your local service office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

Products manufactured in an ISO Certified Facility.