



# Product Data



**Fig. 1 – 18K**



**Fig. 2 – 24K and 30K**



**Fig. 3 – 36K and 48K**

NOTE: Images for illustration purposes only. Actual models may be slightly different.

## INDUSTRY LEADING FEATURES / BENEFITS

**A competitively priced and creative solution to design problems.**

The 38MGR ductless inverter driven multi-zone system provides individual comfort control for up to 5 separate zones. Two, three, four or five space-saving High Wall, Cassette, Slim Ducted or Floor Console fan coils can be matched with one outdoor heat pump. The indoor fan coils are connected to the outdoor unit by refrigerant tubing and wires.

The different styles of indoor units can be mounted in several locations to accommodate the application. This selection of fan coils permits inexpensive and creative solutions to design problems such as:

- When adding air conditioning to spaces that are heated by hydronic or electric heat and have no ductwork.
- Historical renovations or any application where preserving the look of the original structure is essential.
- Commercial add-on jobs where the existing air conditioning system cannot be stretched.

These compact indoor fan coil units take up very little space in the room and do not obstruct windows. The fan coils are attractively styled to blend with most room decors.

Advanced system components incorporate innovative technology to provide reliable cooling and heating performance at low sound levels.

## TABLE OF CONTENTS

|   | PAGE |
|---|------|
| MODEL NUMBER NOMENCLATURE .....                   | 3    |
| STANDARD FEATURES AND ACCESSORIES .....           | 4    |
| DIMENSIONS .....                                  | 5    |
| CLEARANCES .....                                  | 9    |
| COMPATIBILITY .....                               | 10   |
| PHYSICAL DATA .....                               | 11   |
| COOLING PERFORMANCE NON-DUCTED COMBINATIONS       | 12   |
| HEATING PERFORMANCE NON-DUCTED COMBINATIONS .     | 13   |
| COOLING PERFORMANCE DUCTED COMBINATIONS . . . . . | 14   |
| HEATING PERFORMANCE DUCTED COMBINATIONS . . . . . | 15   |
| PIPING REQUIREMENTS .....                         | 16   |
| APPLICATION DATA .....                            | 16   |
| UNIT MOUNTING (OUTDOOR) .....                     | 21   |
| WIRING .....                                      | 21   |
| AIRFLOW DATA .....                                | 23   |
| SOUND PRESSURE .....                              | 23   |
| SOUND POWER IN OCTAVE BANDS .....                 | 23   |
| FAN AND MOTOR SPECIFICATIONS .....                | 24   |
| ELECTRICAL DATA .....                             | 24   |
| WIRING DIAGRAMS .....                             | 25   |
| GUIDE SPECIFICATIONS .....                        | 32   |

## **Inverter Technology**

The inverter driven compressor is designed to run at various input power frequencies (Hz) which controls the compressor's motor speed.

**Even Temperature** – The control package, including the inverter, monitors the outdoor and indoor temperatures as they relate to the selected indoor set point and adjusts the compressor speed to match the load and keep the system operating continuously rather than cycling and creating temperature swings. This translates to higher comfort levels for the occupants.

**Rapid Pull Down/Warm-Up** – Comfort is increased by the inverter system's ability to ramp up the compressor speed enabling the system to reach the user selected room temperature set point quicker.

**Humidity Control** – Running the system for longer periods and continuously varying the compressor speed enhances the humidity control.

## **Individual Room Comfort**

Maximum comfort is provided because each space can be controlled individually based on the usage pattern.

## **Low Sound Levels**

When noise is a concern, ductless systems are the answer. The indoor units are whisper quiet. There are no compressors indoors, either in the conditioned space or directly over it, and there is none of the noise usually generated by air being forced through the ductwork.

When sound ordinances and proximity to neighbors demand quiet operation, the 38MGR unit is the right choice. With the inverter technology, these units run at lower speeds most of the time resulting in reduced sound levels.

## **Inverter Technology – Enhanced Economical Operation**

Ductless systems are inherently economical to operate. Individual rooms are heated or cooled only when required, and since the air is delivered directly to the space, there is no need to use additional energy to move the air in the ductwork. This economical operation is enhanced further when the inverter system output matches the load resulting in a more efficient system.

## **Easy-To-Use Controls**

The multi-zone systems have microprocessor-based controls to provide the ultimate in comfort and efficiency. The user friendly wired and wireless remote controls provide the interface between the user and the unit.

## **Secure Operation**

If security is an issue, outdoor and indoor units are connected only by refrigerant piping and wiring to prevent intruders from crawling through ductwork or wall openings. In addition, since the 38MGR can be installed close to an outside wall, coils are protected from vandals and severe weather.

## **Fast Installation**

This compact ductless system is simple to install. A mounting bracket is included with the indoor units and only wires and piping need to run between the indoor and outdoor units. These units are fast and easy to install ensuring minimal disruption to customers in homes or the workplace. This makes the 38MGR systems the equipment of choice for retrofit applications.

## **Simple Servicing and Maintenance**

Removing the top panel of the outdoor unit provides immediate access to the control compartment, providing the service technician access to the diagnostic LEDs to facilitate the troubleshooting process. In addition, the draw-thru design of the outdoor unit means that dirt accumulates on the outside surface of the coil. Coils can be cleaned quickly from the inside using a pressure hose and detergent.

On the indoor units, service and maintenance expense is reduced due to the permanent easy to clean filters. Also, error codes are displayed on the front panel to alert the user to certain system malfunctions

## **Built-in Reliability**

Ductless system indoor and outdoor units are designed to provide years of trouble-free operation.

Both the indoor and outdoor units are well protected. Whenever the microprocessor detects abnormal conditions, the unit stops and an error code appears.

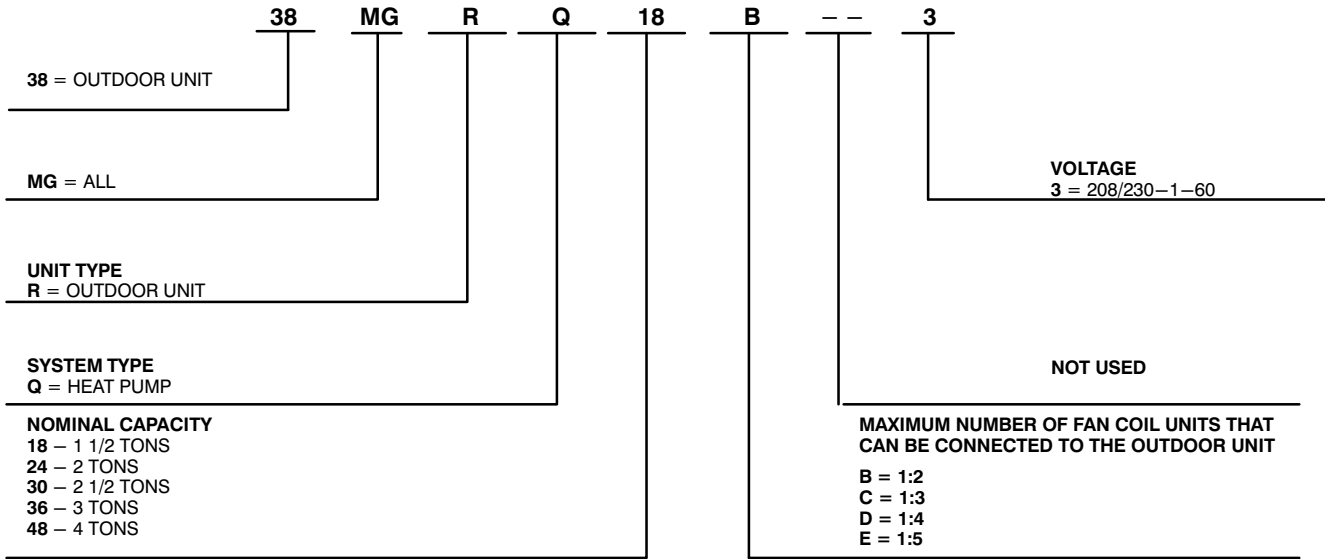
Inverter systems provide additional reliability due to the soft start. This refers to the ability of the inverter to start the compressor motor using reduced voltage and reduced current. This feature is beneficial from an electrical standpoint (eliminates current spikes) as well as an overall reliability standpoint due to reduced stress on all associated system components.

## **Agency Listings**

All systems are listed with AHRI (Air conditioning, Heating, and Refrigeration Institute) and are ETL certified per UL 1995 standard.

# MODEL NUMBER NOMENCLATURE

## OUTDOOR UNIT



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to [www.ahridirectory.org](http://www.ahridirectory.org).



## STANDARD FEATURES AND ACCESSORIES

| <b>Ease of Installation</b>                 |   |
|---|---|
| Low Voltage Controls                        | S |
| <b>Comfort Features</b>                     |   |
| Microprocessor Control                      | S |
| Auto Restart Function                       | S |
| Auto Changeover                             | S |
| Low Ambient Cooling                         | S |
| Low Ambient Heating                         | S |
| <b>Energy Saving Features</b>               |   |
| Inverter Driven Compressor                  | S |
| 46° F Heating Mode (Heating Setback)        | S |
| <b>Safety And Reliability</b>               |   |
| 3 Minute Time Delay For Compressor          | S |
| High Compressor Discharge Temperature       | S |
| Low Voltage Protection                      | S |
| Compressor Overload Protection              | S |
| Compressor Over Current Protection          | S |
| IPM Module Protection                       | S |
| Aluminum Golden Hydrophilic pre-coated fins | S |
| <b>Ease of Service</b>                      |   |
| Diagnostic                                  | S |
| Error Messages Displayed On Front Panel     | S |
| <b>Application Flexibility</b>              |   |
| Crankcase Heater                            | S |
| Basepan Heater                              | S |

### Legend

- S Standard
- A Accessory

## Outdoor Units

### Crankcase Heater

The crankcase heater is standard on all unit sizes. Heater clamps must be placed around the compressor oil stump.

### Base pan Heater

The base pan heater is standard on all unit sizes.

## Accessories

| Outdoor Unit Model Number    | Basepan Base Rubber Plugs RCD Part Number | Quantity per unit |
|------------------------------|---|-------------------|
| 38MGRQ18B--3                 | 12600801A00077                            | 25                |
| 38MGRQ24C--3<br>38MGRQ30D--3 | 12600801A00117                            | 5                 |
| 38MGRQ36D--3<br>38MGRQ48E--3 | 12600801A00118                            | 5                 |

**NOTE:** Basepan built in with multiple holes for proper draining during defrost. For applications where is required to seal these holes, and re-direct the condensate drain, rubber plugs are available through RCD.

# DIMENSIONS

| UNIT SIZE  |          | 18K         | 24K         | 30K         | 36K           | 48K           |
|------------|----------|-------------|-------------|-------------|---------------|---------------|
| Height     | in (mm)  | 27.6 (703)  | 31.89 (810) | 31.89 (810) | 52.48 (1333)  | 52.48 (1333)  |
| Width      | in (mm)  | 33.27 (845) | 37.24 (946) | 37.24 (946) | 41.14 (1045)  | 41.14 (1045)  |
| Depth      | in (mm)  | 13.19 (335) | 15.20 (386) | 15.20 (386) | 14.96 (380)   | 14.96 (380)   |
| Weight—Net | lbs (kg) | 105.8 (48)  | 149.9 (68)  | 156.5 (71)  | 223.8 (101.5) | 223.8 (101.5) |

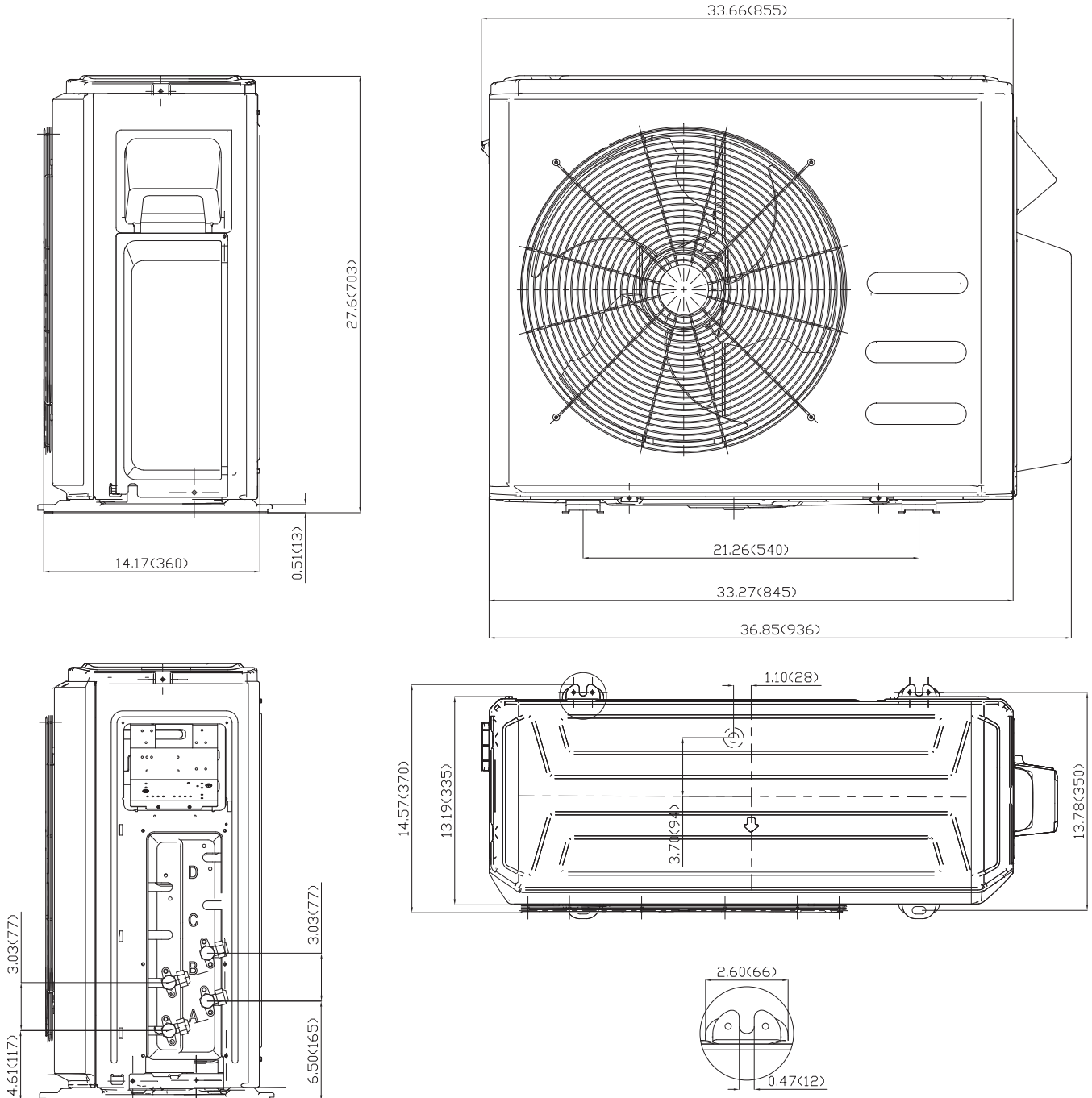
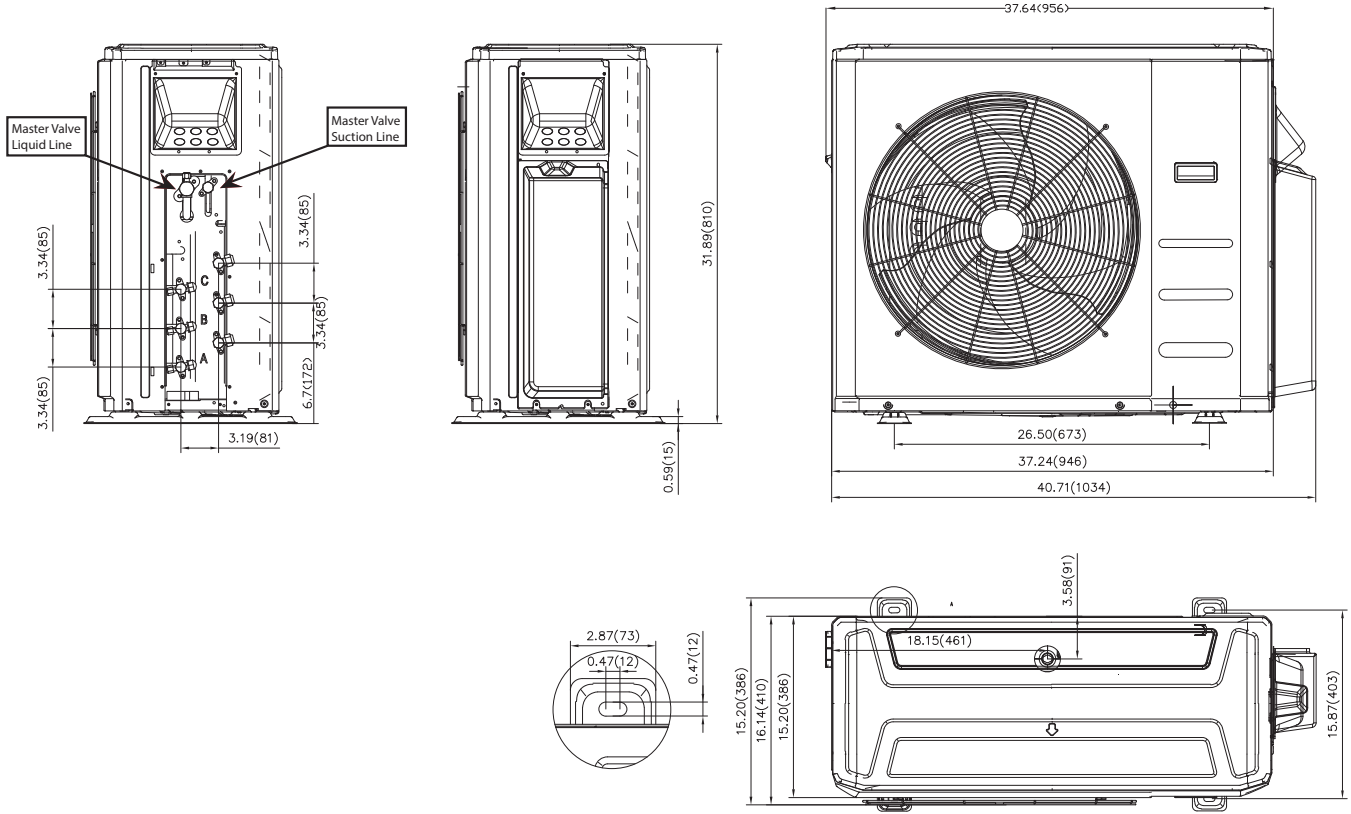


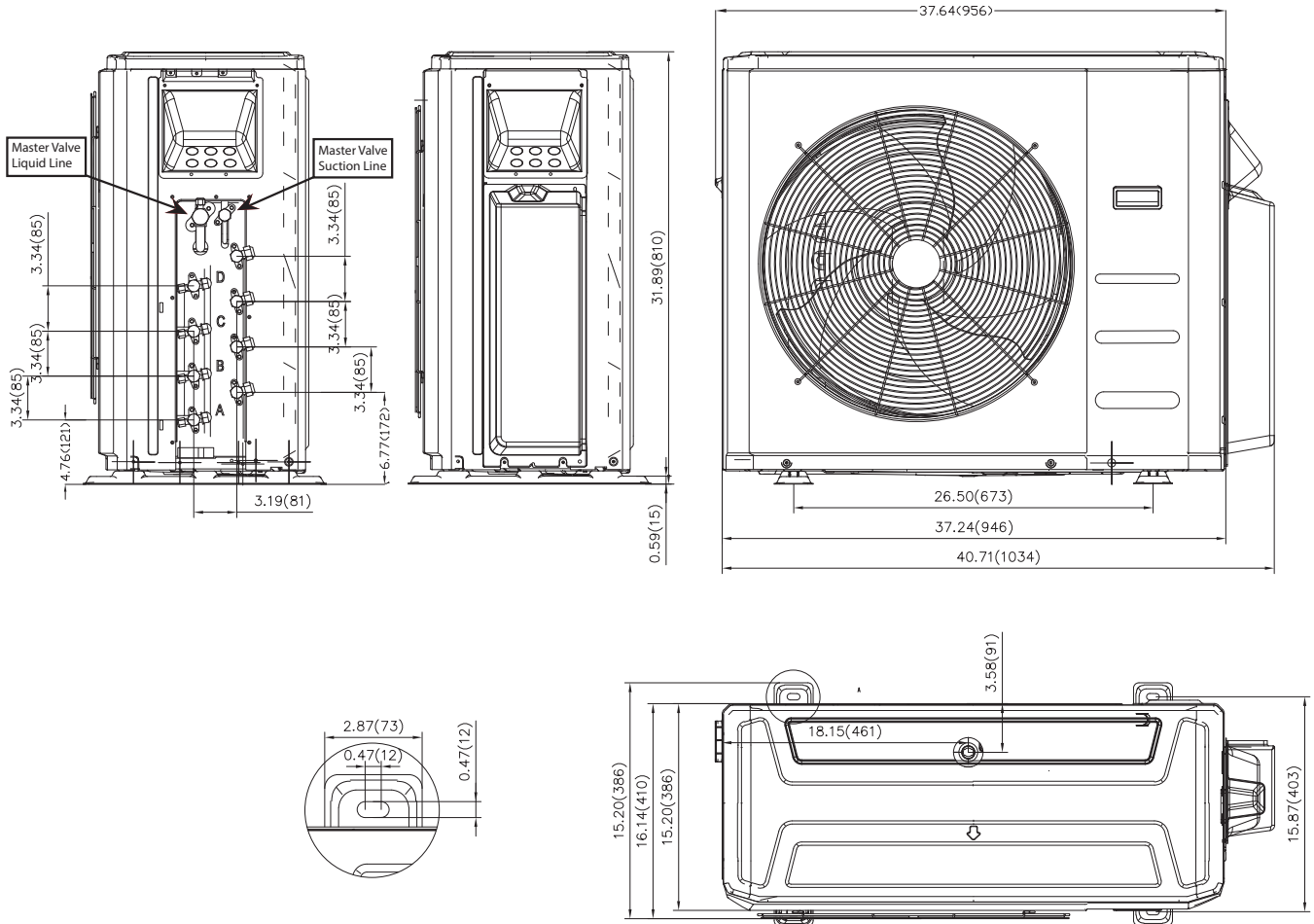
Fig. 4 – Outdoor Dimensions Size 18K

NOTE: Master valves are not available on the size 18 unit.

# DIMENSIONS (CONT)

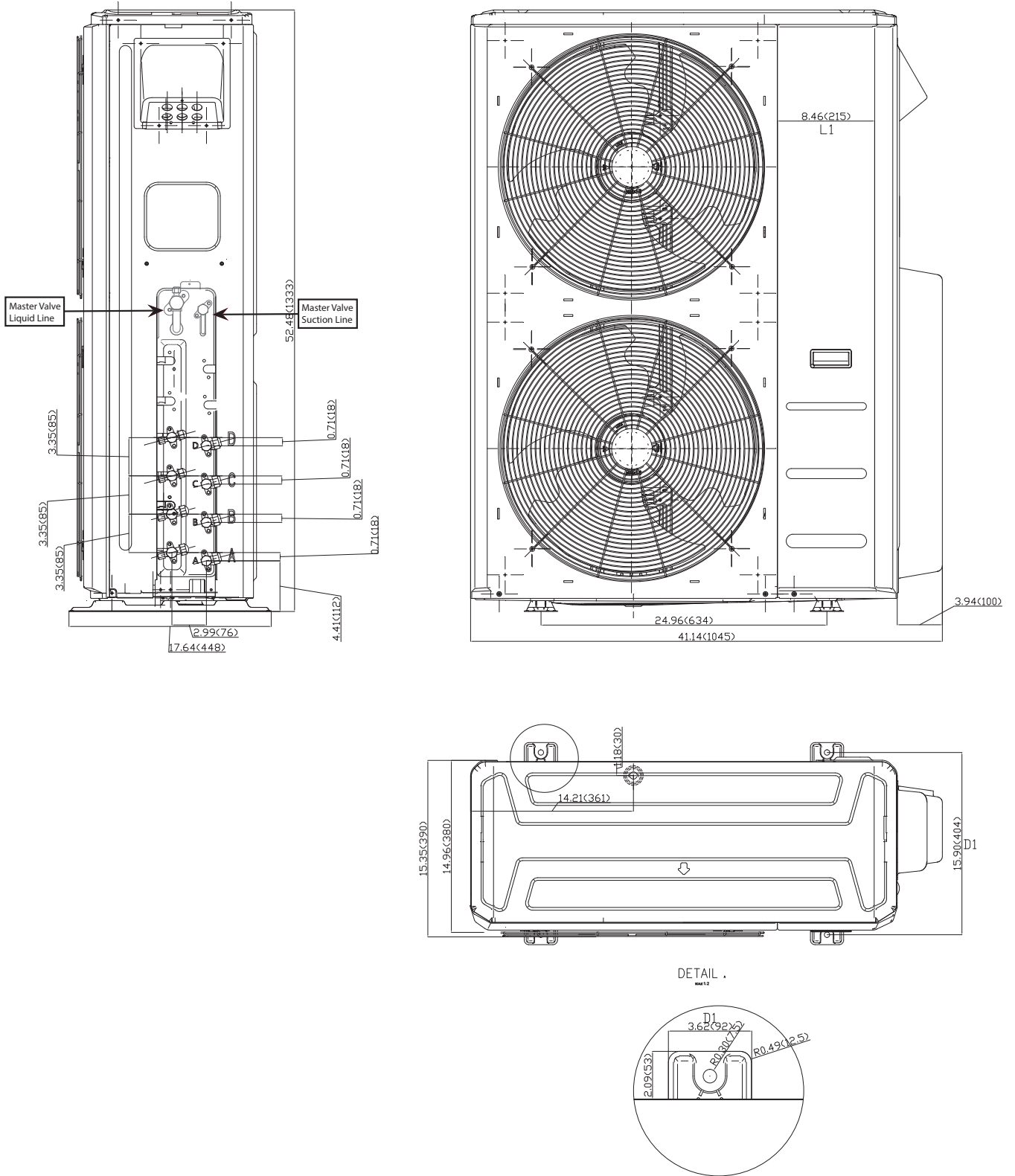


**Fig. 5 – Outdoor Dimensions Size 24K**



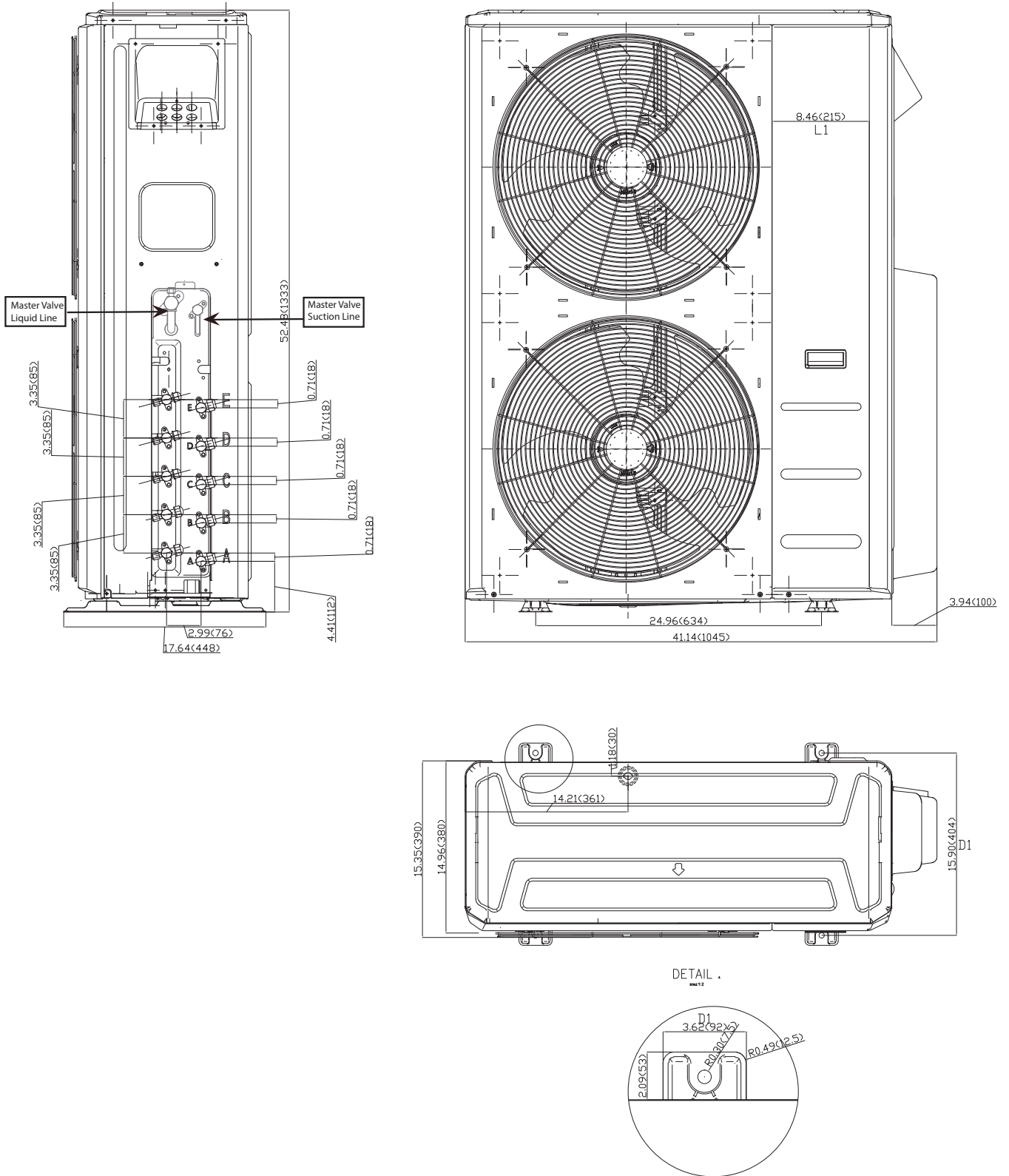
**Fig. 6 – Outdoor Dimensions Size 30K**

**DIMENSIONS (CONT)**



**Fig. 7 – Outdoor Dimensions Size 36K**

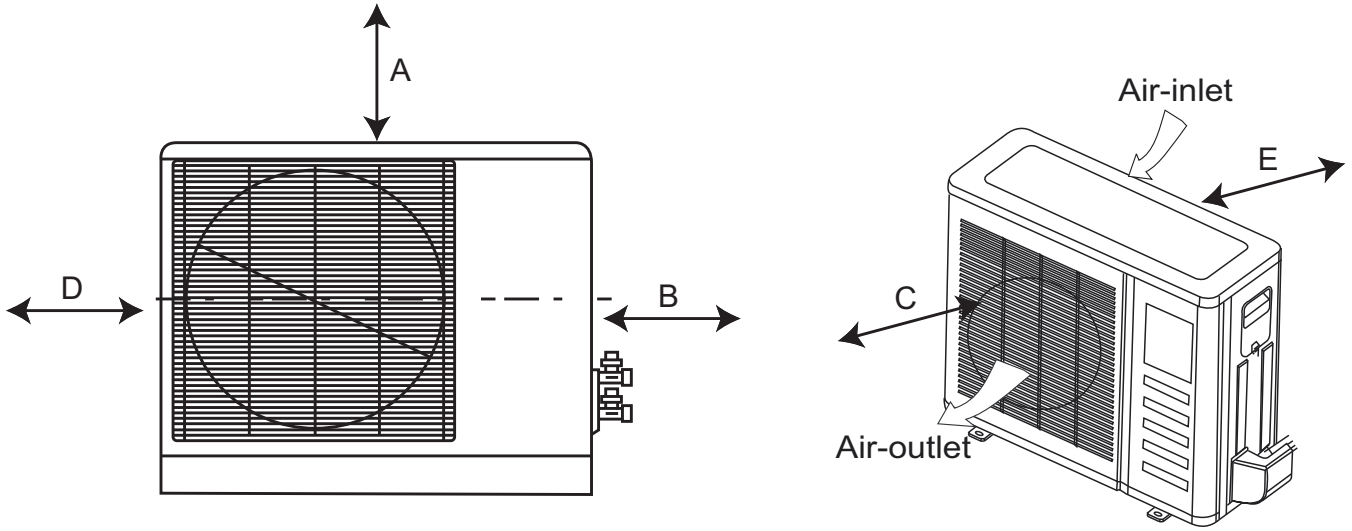
# DIMENSIONS (CONT)



**Fig. 8 – Outdoor Dimensions Size 48K**



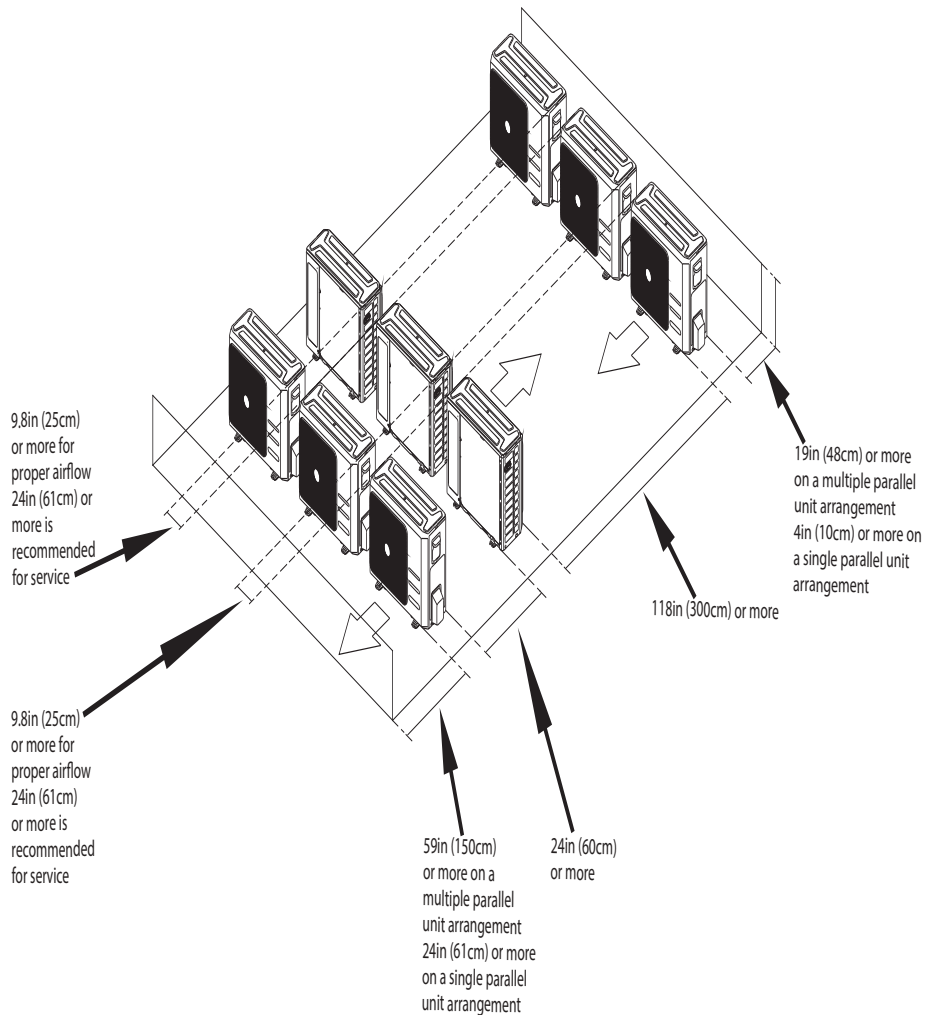
# CLEARANCES



**Fig. 9 – Clearances Outdoor**

| UNIT | MINIMUM VALUE – in. (mm) |
|------|--------------------------|
| A    | 24 (609)                 |
| B    | 24 (609)                 |
| C    | 24 (609)                 |
| D    | 4 (101)                  |
| E    | 6 (152)                  |

**NOTE:** Outdoor Unit must be mounted at least 2in (50mm) above the maximum anticipated snow depth.



**Fig. 10 – Clearances for multiple units**

## COMPATIBILITY

| INDOOR UNIT   |               | OUTDOOR UNIT  |               |               |               |               |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|               |               | 38MGRQ18B---3 | 38MGRQ24C---3 | 38MGRQ30D---3 | 38MGRQ36D---3 | 38MGRQ48E---3 |
| High Wall     | 619PHAQ09XA3  | •             | •             | •             | •             | •             |
|               | 619PHAQ12XA3  | •             | •             | •             | •             | •             |
|               | 619PEQ009BBMA | •             | •             | •             | •             | •             |
|               | 619PEQ012BBMA | •             | •             | •             | •             | •             |
|               | 619PEQ024BBMA |               | •             | •             | •             | •             |
|               | 40MAQB24B---3 |               |               | •             | •             | •             |
|               | 40MHHQ09---3  | •             | •             | •             | •             | •             |
|               | 40MHHQ12---3  | •             | •             | •             | •             | •             |
|               | 40MHHQ18---3  |               | •             | •             | •             | •             |
|               | 40MHHQ24---3  |               |               | •             | •             | •             |
| Cassette      | 40MBCQ09---3  | •             | •             | •             | •             | •             |
|               | 40MBCQ12---3  | •             | •             | •             | •             | •             |
|               | 40MBCQ18---3  |               | •             | •             | •             | •             |
|               | 40MBCQ24---3  |               |               | •             | •             | •             |
| Ducted        | 40MBDQ09---3  | •             | •             | •             | •             | •             |
|               | 40MBDQ12---3  | •             | •             | •             | •             | •             |
|               | 40MBDQ18---3  |               | •             | •             | •             | •             |
|               | 40MBDQ24---3  |               |               | •             | •             | •             |
| Floor Console | 40MBFQ09---3  | •             | •             | •             | •             | •             |
|               | 40MBFQ12---3  | •             | •             | •             | •             | •             |
|               | 40MBFQ18---3  |               | •             | •             | •             | •             |
|               | 40MBFQ24---3  |               |               | •             | •             | •             |

NOTE: Backward compatible with 40MBQB\*C Cassette, 40MBQB\*D Ducted, 40MBQB\*F Floor Console Systems.

# PHYSICAL DATA

|   |                                | Heat Pump      |                                       |                              |                              |                              |                  |
|---|--------------------------------|----------------|---------------------------------------|------------------------------|------------------------------|------------------------------|------------------|
| System  | Size                           |                | 18                                    | 24                           | 30                           | 36                           | 48               |
|   | Outdoor Model                  |                | 38MGRQ18B--3                          | 38MGRQ24C--3                 | 38MGRQ30D--3                 | 38MGRQ36D--3                 | 38MGRQ48E--3     |
|   | Max Number of Zones            |                | 2                                     | 3                            | 4                            | 4                            | 5                |
| Performance Non-Ducted                        | Energy Star                    |                | YES                                   | YES                          | YES                          | YES                          | YES              |
|   | Cooling System Tons            |                | 1.5                                   | 2.0                          | 2.5                          | 3.0                          | 4.0              |
|   | Cooling Rated Capacity         | Btu/h          | 18,000                                | 24,000                       | 30,000                       | 36,000                       | 48,000           |
|   | Cooling Cap. Range Min - Max   | Btu/h          | 5810~21940                            | 7880~33510                   | 8090~41470                   | 8560~45020                   | 8560~53160       |
|   | SEER                           |                | 22.5                                  | 23                           | 23.8                         | 21.5                         | 22.4             |
|   | EER                            |                | 12.5                                  | 12.5                         | 12.5                         | 13.5                         | 12.5             |
|   | Heating Rated Capacity (47°F)  | Btu/h          | 19,000                                | 23,000                       | 28,000                       | 36,000                       | 48,000           |
|   | Heating Maximum Capacity (5°F) | Btu/h          | 13,900                                | 23,000                       | 28,000                       | 36,000                       | 36,000           |
|   | Heating Cap. Range Min - Max   | Btu/h          | 5760~24480                            | 6010~36180                   | 6350~41950                   | 7210~50350                   | 7210~55820       |
|   | HSPF                           |                | 10.3                                  | 10.0                         | 10.0                         | 10.5                         | 10.2             |
| COP (47°F)                                    | W/W                            | 3.6            | 3.9                                   | 3.8                          | 3.8                          | 3.6                          |                  |
| COP (5°F)                                     | W/W                            | 2.2            | 2.1                                   | 2.0                          | 1.8                          | 2.0                          |                  |
| Performance Combination Ducted and Non-Ducted | Energy Star                    |                | NO                                    | YES                          | NO                           | NO                           | NO               |
|   | Cooling System Tons            |                | 1.5                                   | 1.9                          | 2.4                          | 3.0                          | 4.0              |
|   | Cooling Rated Capacity         | Btu/h          | 18,000                                | 23,000                       | 29,000                       | 35,500                       | 48,000           |
|   | Cooling Cap. Range Min - Max   | Btu/h          | 5795~20708                            | 7765~31955                   | 8060~39990                   | 8510~42635                   | 8510~52580       |
|   | SEER                           |                | 20.45                                 | 21                           | 21.65                        | 19.25                        | 20               |
|   | EER                            |                | 12.15                                 | 12.5                         | 12                           | 12.15                        | 11.3             |
|   | Heating Rated Capacity (47°F)  | Btu/h          | 18,750                                | 22,000                       | 28,000                       | 36,000                       | 49,000           |
|   | Heating Maximum Capacity (5°F) | Btu/h          | 14,150                                | 22,000                       | 28,000                       | 35,500                       | 36,400           |
|   | Heating Cap. Range Min - Max   | Btu/h          | 5650~24365                            | 5980~36190                   | 6275~42305                   | 7045~47800                   | 7045~54935       |
|   | HSPF                           |                | 9.9                                   | 9.4                          | 9.5                          | 9.9                          | 10.2             |
| COP (47°F)                                    | W/W                            | 3.7            | 3.9                                   | 3.7                          | 3.7                          | 3.5                          |                  |
| COP (5°F)                                     | W/W                            | 2.1            | 2.0                                   | 2.0                          | 1.8                          | 1.9                          |                  |
| Performance Ducted                            | Energy Star                    |                | NO                                    | YES                          | NO                           | NO                           | NO               |
|   | Cooling System Tons            |                | 1.5                                   | 1.8                          | 2.3                          | 2.9                          | 4.0              |
|   | Cooling Rated Capacity         | Btu/h          | 18,000                                | 22,000                       | 28,000                       | 35,000                       | 48,000           |
|   | Cooling Cap. Range Min - Max   | Btu/h          | 5780~19476                            | 7650~30400                   | 8030~38510                   | 8460~40250                   | 8460~52000       |
|   | SEER                           |                | 18.4                                  | 19                           | 19.5                         | 17                           | 17.6             |
|   | EER                            |                | 11.8                                  | 12.5                         | 11.5                         | 10.8                         | 10.1             |
|   | Heating Rated Capacity (47°F)  | Btu/h          | 18,500                                | 21,000                       | 28,000                       | 36,000                       | 50,000           |
|   | Heating Maximum Capacity (5°F) | Btu/h          | 14,400                                | 21,000                       | 28,000                       | 35,000                       | 36,800           |
|   | Heating Cap. Range Min - Max   | Btu/h          | 5539~24249                            | 5950~36200                   | 6200~42660                   | 6880~45250                   | 6880~54050       |
|   | HSPF                           |                | 9.4                                   | 8.8                          | 9.0                          | 9.2                          | 10.1             |
| COP (47°F)                                    | W/W                            | 3.8            | 3.8                                   | 3.6                          | 3.6                          | 3.4                          |                  |
| COP (5°F)                                     | W/W                            | 2.1            | 2.0                                   | 2.0                          | 1.7                          | 1.8                          |                  |
| Operating Range                               | Cooling Outdoor DB Min - Max   | ° F (° C)      | -13~122 (-25~50)                      | -13~122 (-25~50)             | -13~122 (-25~50)             | -13~122 (-25~50)             | -13~122 (-25~50) |
|   | Heating Outdoor DB Min - Max   | ° F (° C)      | -22~86 (-30~30)                       | -22~86 (-30~30)              | -22~86 (-30~30)              | -22~86 (-30~30)              | -22~86 (-30~30)  |
| Piping  | Total Piping Length            | ft (m)         | 131(40)                               | 197(60)                      | 263(80)                      | 328(100)                     | 328(100)         |
|   | Piping to furthest FCU         | ft (m)         | 82 (25)                               | 98 (30)                      | 115(35)                      | 115(35)                      | 115 (35)         |
|   | Drop (OD above ID)             | ft (m)         | 49(15)                                | 49(15)                       | 49(15)                       | 65(20)                       | 65(20)           |
|   | Lift (OD below ID)             | ft (m)         | 49(15)                                | 49(15)                       | 49(15)                       | 65(20)                       | 65(20)           |
|   | Pipe Connection Size - Liquid  | in (mm)        | 1/4"2 (6.35*2)                        | 1/4"3 (6.35*3)               | 1/4"4 (6.35*4)               | 1/4"4 (6.35*4)               | 1/4"5 (6.35*5)   |
| Pipe Connection Size - Suction                | in (mm)                        | 3/8"2 (9.52*2) | 3/8"3 (9.52*3)                        | 1/2"1+ 3/8"3 (12.7"1+9.52*3) | 1/2"2+ 3/8"2 (12.7"2+9.52*2) | 1/2"2+ 3/8"3 (12.7"2+9.52*3) |                  |
| Refrigerant                                   | Type                           |                | R410A                                 | R410A                        | R410A                        | R410A                        | R410A            |
|   | Charge                         | lbs (kg)       | 4.41 (2.0)                            | 6.17(2.8)                    | 6.61 (3.0)                   | 10.13 (4.6)                  | 10.13 (4.6)      |
| Electrical                                    | Voltage, Phase, Cycle          | V/Ph/Hz        | 208/230-1-60                          | 208/230-1-60                 | 208/230-1-60                 | 208/230-1-60                 | 208/230-1-60     |
|   | Power Supply                   |                | Indoor unit powered from outdoor unit |                              |                              |                              |                  |
|   | MCA                            | A.             | 18                                    | 25                           | 30                           | 35                           | 35               |
|   | MOCP - Fuse Rating             | A.             | 25                                    | 35                           | 45                           | 50                           | 50               |
| Compressor Outdoor                            | Type                           |                | Rotary Inverter                       | Rotary Inverter              | Rotary Inverter              | Rotary Inverter              | Rotary Inverter  |
|   | Unit Width                     | in (mm)        | 37.31 (948)                           | 41.22 (1047)                 | 41.22 (1047)                 | 41.15 (1045)                 | 41.15 (1045)     |
|   | Unit Height                    | in (mm)        | 27.64 (702)                           | 31.88 (810)                  | 31.88 (810)                  | 52.48 (1333)                 | 52.48 (1333)     |
|   | Unit Depth                     | in (mm)        | 14.82 (376)                           | 17.91 (455)                  | 17.91 (455)                  | 17.63 (448)                  | 17.63 (448)      |
|   | Net Weight                     | lbs (kg)       | 105.8 (48)                            | 149.9 (68)                   | 156.5 (71)                   | 221.6 (100.5)                | 223.8 (101.5)    |
|   | Airflow                        | CFM            | 1,390                                 | 2,130                        | 2,130                        | 4,500                        | 4,500            |
|   | Sound Pressure                 | dB(A)          | 62                                    | 63                           | 62                           | 64                           | 64               |

# COOLING PERFORMANCE NON-DUCTED COMBINATIONS

| MODEL | COOLING           |                | OUTDOOR CONDITIONS (DB) |                |               |              |              |              |             |              |              |              |               |               |               |
|-------|-------------------|----------------|-------------------------|----------------|---------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|---------------|---------------|---------------|
|       | Indoor Conditions |                | TC                      | -13F<br>(-25C) | -4F<br>(-20C) | 0F<br>(-17C) | 5F<br>(-15C) | 17F<br>(-8C) | 47F<br>(8C) | 77F<br>(25C) | 86F<br>(30C) | 95F<br>(35C) | 104F<br>(40C) | 113F<br>(45C) | 122F<br>(50C) |
|       | DB                | WB             |                         |                |               |              |              |              |             |              |              |              |               |               |               |
| 18    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 19.12          | 19.86         | 19.66        | 19.26        | 18.87        | 20.69       | 21.78        | 19.94        | 17.92        | 12.00         | 11.58         | 9.89          |
|       |                   |                | SC                      | 15.11          | 15.49         | 15.34        | 15.03        | 14.72        | 16.14       | 17.00        | 15.95        | 15.23        | 12.00         | 11.58         | 9.89          |
|       |                   |                | Input                   | 1.37           | 1.41          | 1.48         | 1.53         | 1.57         | 1.60        | 1.63         | 1.79         | 1.96         | 1.47          | 1.52          | 1.32          |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 20.54          | 21.45         | 21.23        | 20.81        | 20.38        | 22.35       | 23.52        | 21.54        | 19.35        | 12.96         | 12.51         | 10.13         |
|       |                   |                | SC                      | 15.35          | 15.61         | 15.29        | 15.40        | 15.28        | 16.98       | 18.35        | 17.01        | 15.87        | 11.53         | 11.88         | 9.93          |
|       |                   |                | Input                   | 1.40           | 1.46          | 1.53         | 1.58         | 1.62         | 1.65        | 1.68         | 1.84         | 2.01         | 1.50          | 1.54          | 1.35          |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 21.91          | 22.46         | 22.18        | 22.53        | 22.85        | 24.15       | 25.11        | 23.85        | 21.54        | 14.82         | 14.22         | 10.40         |
|       |                   |                | SC                      | 16.44          | 16.85         | 16.64        | 18.05        | 17.14        | 18.11       | 18.33        | 17.89        | 16.16        | 14.52         | 14.08         | 10.40         |
|       |                   |                | Input                   | 1.41           | 1.45          | 1.51         | 1.58         | 1.62         | 1.65        | 1.68         | 1.88         | 2.05         | 1.52          | 1.57          | 1.36          |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 23.89          | 24.48         | 24.18        | 24.56        | 24.91        | 26.32       | 27.37        | 26.00        | 23.48        | 16.15         | 15.50         | 11.34         |
|       |                   |                | SC                      | 17.20          | 17.63         | 17.65        | 18.17        | 18.68        | 19.22       | 22.44        | 21.84        | 20.19        | 15.18         | 14.88         | 11.11         |
|       |                   |                | Input                   | 1.46           | 1.50          | 1.56         | 1.63         | 1.67         | 1.72        | 1.73         | 1.93         | 2.14         | 1.57          | 1.62          | 1.41          |
| 24    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 31.96          | 32.76         | 32.58        | 32.60        | 32.15        | 32.75       | 32.44        | 26.94        | 24.46        | 19.98         | 17.56         | 15.45         |
|       |                   |                | SC                      | 22.38          | 22.94         | 22.81        | 22.82        | 22.51        | 22.93       | 25.47        | 22.82        | 21.70        | 19.42         | 17.21         | 15.45         |
|       |                   |                | Input                   | 2.26           | 2.32          | 2.31         | 2.34         | 2.36         | 2.38        | 2.41         | 2.26         | 2.50         | 2.39          | 2.58          | 2.62          |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 34.53          | 35.39         | 35.19        | 35.21        | 34.72        | 35.37       | 35.04        | 29.10        | 26.42        | 21.58         | 18.96         | 16.69         |
|       |                   |                | SC                      | 24.17          | 24.77         | 24.63        | 24.65        | 24.31        | 24.76       | 26.28        | 23.86        | 22.72        | 19.42         | 18.02         | 16.52         |
|       |                   |                | Input                   | 2.30           | 2.36          | 2.35         | 2.38         | 2.40         | 2.42        | 2.45         | 2.30         | 2.54         | 2.43          | 2.60          | 2.66          |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 36.25          | 37.15         | 37.24        | 37.08        | 37.51        | 37.68       | 37.53        | 35.39        | 32.75        | 24.71         | 23.96         | 20.15         |
|       |                   |                | SC                      | 25.38          | 26.01         | 26.07        | 25.96        | 26.26        | 26.38       | 26.95        | 26.08        | 25.06        | 22.09         | 23.84         | 20.05         |
|       |                   |                | Input                   | 2.20           | 2.25          | 2.28         | 2.34         | 2.35         | 2.41        | 2.47         | 2.75         | 3.04         | 2.48          | 2.62          | 2.74          |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 38.78          | 39.75         | 39.85        | 39.68        | 40.14        | 40.32       | 40.16        | 37.87        | 35.04        | 26.44         | 25.64         | 21.56         |
|       |                   |                | SC                      | 27.15          | 27.83         | 27.89        | 27.77        | 28.09        | 30.64       | 32.93        | 32.19        | 31.19        | 24.32         | 24.61         | 21.56         |
|       |                   |                | Input                   | 2.26           | 2.32          | 2.35         | 2.38         | 2.42         | 2.48        | 2.54         | 2.82         | 3.11         | 2.55          | 2.69          | 2.81          |
| 30    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 39.15          | 40.12         | 40.28        | 39.54        | 39.18        | 40.81       | 39.79        | 37.98        | 36.16        | 28.21         | 26.56         | 23.46         |
|       |                   |                | SC                      | 27.40          | 28.08         | 28.20        | 27.68        | 27.43        | 30.61       | 31.57        | 30.73        | 29.86        | 26.40         | 26.18         | 23.12         |
|       |                   |                | Input                   | 3.08           | 3.16          | 3.18         | 3.12         | 3.21         | 3.24        | 3.28         | 3.62         | 3.99         | 3.13          | 3.25          | 2.66          |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 40.32          | 41.32         | 41.49        | 40.73        | 40.36        | 42.03       | 41.38        | 41.02        | 39.05        | 30.47         | 28.68         | 25.34         |
|       |                   |                | SC                      | 28.23          | 28.93         | 29.04        | 28.51        | 28.25        | 31.53       | 33.93        | 36.10        | 35.15        | 28.03         | 27.25         | 24.83         |
|       |                   |                | Input                   | 3.13           | 3.21          | 3.23         | 3.17         | 3.26         | 3.29        | 3.33         | 3.67         | 4.04         | 3.18          | 3.30          | 2.71          |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 41.13          | 42.15         | 42.51        | 42.61        | 42.10        | 42.61       | 42.41        | 40.63        | 38.82        | 32.17         | 30.47         | 27.53         |
|       |                   |                | SC                      | 28.79          | 29.51         | 29.76        | 29.83        | 29.47        | 31.96       | 32.30        | 31.45        | 30.57        | 28.30         | 30.18         | 27.25         |
|       |                   |                | Input                   | 3.13           | 3.21          | 3.25         | 3.29         | 3.31         | 3.38        | 3.42         | 3.67         | 4.05         | 3.21          | 3.31          | 2.76          |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 44.41          | 45.52         | 45.91        | 46.02        | 45.47        | 46.02       | 45.80        | 43.88        | 41.93        | 34.74         | 32.91         | 29.73         |
|       |                   |                | SC                      | 31.10          | 31.87         | 32.14        | 32.21        | 31.83        | 34.51       | 37.56        | 38.61        | 37.73        | 31.96         | 31.26         | 29.73         |
|       |                   |                | Input                   | 3.19           | 3.27          | 3.31         | 3.35         | 3.37         | 3.44        | 3.48         | 3.73         | 4.11         | 3.27          | 3.37          | 2.82          |
| 36    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 37.82          | 38.76         | 38.32        | 39.02        | 39.41        | 40.44       | 40.91        | 36.89        | 33.97        | 27.85         | 25.60         | 23.33         |
|       |                   |                | SC                      | 26.47          | 27.13         | 26.82        | 27.31        | 28.38        | 30.33       | 31.91        | 30.25        | 28.88        | 24.50         | 23.55         | 22.40         |
|       |                   |                | Input                   | 2.69           | 2.76          | 2.83         | 2.87         | 2.91         | 2.98        | 3.03         | 3.39         | 3.79         | 3.68          | 3.76          | 3.41          |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 38.96          | 39.93         | 39.47        | 40.19        | 40.59        | 41.65       | 42.54        | 39.84        | 36.69        | 30.07         | 27.65         | 25.20         |
|       |                   |                | SC                      | 27.27          | 27.95         | 27.63        | 28.13        | 28.42        | 31.24       | 34.88        | 35.06        | 33.02        | 27.67         | 26.26         | 24.69         |
|       |                   |                | Input                   | 2.74           | 2.81          | 2.88         | 2.92         | 2.96         | 3.03        | 3.08         | 3.44         | 3.84         | 3.73          | 3.81          | 3.46          |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 42.58          | 43.64         | 43.31        | 44.15        | 44.54        | 45.02       | 45.94        | 43.73        | 41.49        | 34.44         | 31.93         | 27.16         |
|       |                   |                | SC                      | 29.81          | 30.55         | 30.32        | 30.91        | 31.18        | 33.77       | 35.83        | 34.99        | 35.26        | 31.00         | 30.33         | 26.62         |
|       |                   |                | Input                   | 2.79           | 2.86          | 2.89         | 2.91         | 2.95         | 3.06        | 3.10         | 3.48         | 3.91         | 3.80          | 3.85          | 3.47          |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 45.98          | 47.13         | 46.78        | 47.68        | 48.10        | 48.63       | 49.61        | 47.23        | 44.80        | 37.20         | 34.48         | 29.34         |
|       |                   |                | SC                      | 32.19          | 32.99         | 32.74        | 33.38        | 33.67        | 36.47       | 40.68        | 41.56        | 40.32        | 34.22         | 32.76         | 29.34         |
|       |                   |                | Input                   | 2.85           | 2.92          | 2.95         | 2.97         | 3.01         | 3.12        | 3.16         | 3.54         | 3.97         | 3.86          | 3.91          | 3.53          |
| 48    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 41.22          | 42.25         | 42.51        | 41.87        | 41.24        | 41.97       | 41.47        | 39.32        | 36.26        | 32.97         | 29.86         | 26.54         |
|       |                   |                | SC                      | 28.86          | 29.58         | 29.76        | 29.31        | 28.87        | 30.64       | 37.24        | 36.86        | 35.53        | 32.97         | 29.86         | 26.54         |
|       |                   |                | Input                   | 2.19           | 2.24          | 2.28         | 2.35         | 2.38         | 2.41        | 2.46         | 2.78         | 3.11         | 3.45          | 3.64          | 3.08          |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 44.52          | 45.63         | 45.91        | 45.22        | 44.54        | 45.33       | 44.79        | 42.47        | 39.16        | 35.61         | 32.25         | 28.66         |
|       |                   |                | SC                      | 32.50          | 33.31         | 33.51        | 33.01        | 32.51        | 34.90       | 37.17        | 36.10        | 34.07        | 32.05         | 32.25         | 28.66         |
|       |                   |                | Input                   | 2.25           | 2.31          | 2.35         | 2.42         | 2.45         | 2.48        | 2.53         | 2.85         | 3.18         | 3.52          | 3.71          | 3.15          |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 53.80          | 55.14         | 54.68        | 55.31        | 56.15        | 56.72       | 60.26        | 56.82        | 53.16        | 40.95         | 38.57         | 35.24         |
|       |                   |                | SC                      | 40.35          | 41.36         | 41.01        | 42.12        | 42.11        | 42.54       | 46.04        | 44.49        | 42.79        | 37.95         | 38.57         | 35.24         |
|       |                   |                | Input                   | 2.99           | 3.06          | 3.15         | 3.25         | 3.29         | 3.46        | 3.94         | 4.36         | 4.80         | 3.79          | 3.98          | 3.43          |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 56.49          | 57.90         | 57.41        | 58.08        | 58.96        | 59.56       | 63.27        | 59.66        | 55.82        | 43.00         | 40.50         | 37.04         |
|       |                   |                | SC                      | 41.80          | 42.84         | 42.49        | 42.98        | 43.63        | 46.45       | 52.52        | 51.31        | 50.24        | 40.85         | 40.50         | 37.04         |
|       |                   |                | Input                   | 3.05           | 3.13          | 3.22         | 3.32         | 3.36         | 3.53        | 4.01         | 4.43         | 4.87         | 3.86          | 4.05          | 3.50          |

**LEGEND**

DB – Dry Bulb

WB – Wet Bulb

TC – Total Net Cooling Capacity (1000 Btu/hour)

SC – Sensible Capacity (1000 Btu/hour)

Input – Total Power (kW)

# HEATING PERFORMANCE NON-DUCTED COMBINATIONS

| MODEL | HEATING              |       | OUTDOOR CONDITIONS (DB) |                |               |              |              |              |                |                |             |               |               |                |
|-------|----------------------|-------|-------------------------|----------------|---------------|--------------|--------------|--------------|----------------|----------------|-------------|---------------|---------------|----------------|
|       | Indoor Conditions DB |       | -22F<br>(-30C)          | -13F<br>(-25C) | -4F<br>(-20C) | 0F<br>(-17C) | 5F<br>(-15C) | 17F<br>(-8C) | 19.4F<br>(-7C) | 24.8F<br>(-4C) | 32F<br>(0C) | 39.2F<br>(4C) | 44.6F<br>(7C) | 53.6F<br>(12C) |
| 18    | 59F<br>(15C)         | TC    | 7.74                    | 9.54           | 11.60         | 12.54        | 14.40        | 19.21        | 19.46          | 20.59          | 20.74       | 21.67         | 25.82         | 27.35          |
|       |                      | Input | 1.67                    | 1.71           | 1.76          | 1.80         | 1.87         | 1.93         | 1.95           | 2.01           | 1.60        | 1.66          | 1.79          | 1.87           |
|       |                      | COP   | 1.36                    | 1.64           | 1.93          | 2.04         | 2.19         | 2.92         | 2.92           | 3.00           | 3.80        | 3.83          | 4.21          | 4.28           |
|       | 64.4F<br>(18C)       | TC    | 7.63                    | 9.40           | 11.43         | 12.35        | 14.01        | 18.92        | 19.17          | 20.28          | 20.43       | 21.34         | 25.43         | 26.94          |
|       |                      | Input | 1.70                    | 1.74           | 1.79          | 1.83         | 1.90         | 1.96         | 1.98           | 2.04           | 1.63        | 1.69          | 1.82          | 1.90           |
|       |                      | COP   | 1.31                    | 1.58           | 1.87          | 1.98         | 2.16         | 2.83         | 2.84           | 2.91           | 3.67        | 3.70          | 4.10          | 4.16           |
|       | 69F<br>(20.5C)       | TC    | 5.52                    | 6.54           | 7.69          | 8.14         | 13.99        | 15.02        | 15.94          | 17.13          | 18.93       | 19.66         | 23.96         | 26.67          |
|       |                      | Input | 1.41                    | 1.44           | 1.46          | 1.47         | 1.91         | 1.63         | 1.68           | 1.76           | 1.80        | 1.88          | 1.95          | 1.97           |
|       |                      | COP   | 1.15                    | 1.33           | 1.54          | 1.62         | 2.15         | 2.70         | 2.78           | 2.85           | 3.08        | 3.05          | 3.59          | 3.96           |
|       | 71.6F<br>(22C)       | TC    | 5.84                    | 6.44           | 7.57          | 8.02         | 13.65        | 14.79        | 15.70          | 16.87          | 18.65       | 19.37         | 23.60         | 26.27          |
|       |                      | Input | 1.44                    | 1.47           | 1.49          | 1.50         | 2.01         | 1.66         | 1.71           | 1.79           | 1.83        | 1.91          | 1.98          | 2.00           |
|       |                      | COP   | 1.19                    | 1.28           | 1.49          | 1.57         | 1.99         | 2.61         | 2.69           | 2.76           | 2.99        | 2.97          | 3.49          | 3.85           |
| 24    | 59F<br>(15C)         | TC    | 14.13                   | 17.95          | 20.25         | 22.73        | 24.45        | 25.66        | 26.04          | 28.31          | 30.43       | 32.22         | 36.92         | 40.88          |
|       |                      | Input | 2.93                    | 3.19           | 3.23          | 3.45         | 3.63         | 2.66         | 2.79           | 2.87           | 2.65        | 2.78          | 2.96          | 2.71           |
|       |                      | COP   | 1.41                    | 1.65           | 1.84          | 1.93         | 1.98         | 2.83         | 2.74           | 2.89           | 3.37        | 3.40          | 3.65          | 4.43           |
|       | 64.4F<br>(18C)       | TC    | 13.95                   | 17.73          | 20.00         | 22.45        | 24.35        | 25.34        | 25.72          | 27.96          | 30.12       | 31.89         | 36.37         | 40.27          |
|       |                      | Input | 3.00                    | 3.27           | 3.31          | 3.53         | 3.74         | 2.73         | 2.86           | 2.94           | 2.72        | 2.89          | 2.99          | 2.74           |
|       |                      | COP   | 1.36                    | 1.59           | 1.77          | 1.86         | 1.91         | 2.73         | 2.64           | 2.79           | 3.25        | 3.23          | 3.56          | 4.31           |
|       | 69F<br>(20.5C)       | TC    | 13.85                   | 17.59          | 19.84         | 22.28        | 24.17        | 25.15        | 25.52          | 27.74          | 29.89       | 31.21         | 36.22         | 40.71          |
|       |                      | Input | 3.07                    | 3.34           | 3.38          | 3.61         | 3.90         | 2.79         | 2.92           | 3.01           | 2.77        | 2.96          | 3.04          | 3.17           |
|       |                      | COP   | 1.32                    | 1.54           | 1.72          | 1.81         | 1.81         | 2.65         | 2.56           | 2.71           | 3.16        | 3.09          | 3.49          | 3.76           |
|       | 71.6F<br>(22C)       | TC    | 13.78                   | 17.50          | 19.75         | 22.16        | 23.55        | 25.02        | 25.39          | 27.60          | 29.74       | 30.78         | 35.68         | 40.10          |
|       |                      | Input | 3.14                    | 3.42           | 3.46          | 3.70         | 3.83         | 2.85         | 2.99           | 3.08           | 2.84        | 3.01          | 3.07          | 3.20           |
|       |                      | COP   | 1.29                    | 1.50           | 1.67          | 1.76         | 1.80         | 2.57         | 2.49           | 2.63           | 3.07        | 3.00          | 3.41          | 3.67           |
| 30    | 59F<br>(15C)         | TC    | 18.66                   | 22.54          | 24.52         | 26.84        | 29.23        | 31.77        | 32.06          | 33.46          | 35.15       | 37.09         | 38.47         | 41.89          |
|       |                      | Input | 3.39                    | 3.46           | 3.45          | 3.62         | 3.74         | 3.71         | 3.73           | 3.79           | 3.08        | 3.12          | 3.27          | 3.37           |
|       |                      | COP   | 1.61                    | 1.91           | 2.08          | 2.17         | 2.29         | 2.51         | 2.52           | 2.59           | 3.34        | 3.48          | 3.45          | 3.64           |
|       | 64.4F<br>(18C)       | TC    | 18.41                   | 22.23          | 24.18         | 26.47        | 28.74        | 31.31        | 31.59          | 32.97          | 34.64       | 36.55         | 37.89         | 41.26          |
|       |                      | Input | 3.42                    | 3.49           | 3.53          | 3.75         | 3.86         | 3.84         | 3.86           | 3.92           | 3.11        | 3.15          | 3.30          | 3.40           |
|       |                      | COP   | 1.58                    | 1.87           | 2.01          | 2.07         | 2.18         | 2.39         | 2.40           | 2.47           | 3.26        | 3.40          | 3.37          | 3.56           |
|       | 69F<br>(20.5C)       | TC    | 16.70                   | 20.65          | 22.05         | 24.02        | 28.22        | 27.67        | 28.13          | 31.86          | 33.96       | 36.08         | 37.21         | 40.27          |
|       |                      | Input | 3.51                    | 3.58           | 3.64          | 3.76         | 4.05         | 3.85         | 3.90           | 4.04           | 3.14        | 3.18          | 3.21          | 3.30           |
|       |                      | COP   | 1.39                    | 1.69           | 1.78          | 1.87         | 2.04         | 2.11         | 2.11           | 2.31           | 3.17        | 3.33          | 3.40          | 3.58           |
|       | 71.6F<br>(22C)       | TC    | 15.51                   | 19.42          | 21.79         | 23.73        | 25.99        | 27.27        | 27.72          | 31.38          | 33.45       | 35.54         | 36.65         | 39.67          |
|       |                      | Input | 3.64                    | 3.61           | 3.77          | 3.79         | 3.81         | 3.88         | 3.93           | 4.07           | 3.17        | 3.21          | 3.24          | 3.33           |
|       |                      | COP   | 1.25                    | 1.58           | 1.69          | 1.84         | 2.00         | 2.06         | 2.07           | 2.26           | 3.09        | 3.24          | 3.32          | 3.49           |
| 36    | 59F<br>(15C)         | TC    | 23.82                   | 28.67          | 30.78         | 33.61        | 36.66        | 39.29        | 39.91          | 41.15          | 43.10       | 45.78         | 56.86         | 62.85          |
|       |                      | Input | 4.91                    | 5.02           | 5.17          | 5.20         | 5.24         | 5.11         | 5.13           | 5.21           | 4.56        | 4.73          | 4.90          | 4.56           |
|       |                      | COP   | 1.42                    | 1.67           | 1.74          | 1.89         | 2.05         | 2.25         | 2.28           | 2.31           | 2.77        | 2.84          | 3.40          | 4.04           |
|       | 64.4F<br>(18C)       | TC    | 23.52                   | 28.29          | 30.37         | 33.15        | 36.15        | 38.70        | 39.31          | 40.53          | 42.46       | 45.09         | 56.01         | 61.91          |
|       |                      | Input | 4.97                    | 5.08           | 5.23          | 5.26         | 5.33         | 5.17         | 5.19           | 5.27           | 4.62        | 4.79          | 4.96          | 4.62           |
|       |                      | COP   | 1.39                    | 1.63           | 1.70          | 1.85         | 2.00         | 2.19         | 2.22           | 2.25           | 2.70        | 2.76          | 3.31          | 3.93           |
|       | 69F<br>(20.5C)       | TC    | 23.03                   | 27.69          | 29.04         | 31.77        | 36.08        | 37.41        | 37.75          | 39.77          | 42.39       | 46.46         | 50.54         | 54.37          |
|       |                      | Input | 5.04                    | 5.15           | 5.24          | 5.27         | 5.39         | 5.25         | 5.27           | 5.35           | 4.62        | 4.96          | 4.66          | 4.30           |
|       |                      | COP   | 1.34                    | 1.58           | 1.62          | 1.77         | 1.96         | 2.09         | 2.10           | 2.18           | 2.69        | 2.74          | 3.18          | 3.71           |
|       | 71.6F<br>(22C)       | TC    | 22.63                   | 27.20          | 28.52         | 31.20        | 34.64        | 36.66        | 36.99          | 38.97          | 41.54       | 45.53         | 49.53         | 53.28          |
|       |                      | Input | 5.09                    | 5.20           | 5.29          | 5.32         | 5.34         | 5.30         | 5.32           | 5.40           | 4.67        | 5.01          | 4.71          | 4.35           |
|       |                      | COP   | 1.30                    | 1.53           | 1.58          | 1.72         | 1.90         | 2.03         | 2.04           | 2.11           | 2.61        | 2.66          | 3.08          | 3.59           |
| 48    | 59F<br>(15C)         | TC    | 23.97                   | 28.85          | 30.97         | 33.82        | 37.29        | 39.53        | 40.16          | 41.41          | 43.37       | 46.06         | 57.21         | 67.67          |
|       |                      | Input | 4.96                    | 5.07           | 5.22          | 5.25         | 5.33         | 5.16         | 5.18           | 5.26           | 4.61        | 4.78          | 4.95          | 4.61           |
|       |                      | COP   | 1.42                    | 1.67           | 1.74          | 1.89         | 2.05         | 2.24         | 2.27           | 2.31           | 2.76        | 2.83          | 3.39          | 4.31           |
|       | 64.4F<br>(18C)       | TC    | 23.71                   | 28.52          | 30.61         | 33.42        | 36.84        | 39.01        | 39.62          | 40.85          | 42.80       | 45.45         | 56.46         | 66.65          |
|       |                      | Input | 5.07                    | 5.18           | 5.33          | 5.37         | 5.51         | 5.27         | 5.29           | 5.38           | 4.71        | 4.89          | 5.06          | 4.71           |
|       |                      | COP   | 1.37                    | 1.61           | 1.68          | 1.83         | 1.98         | 2.17         | 2.19           | 2.23           | 2.66        | 2.73          | 3.27          | 4.15           |
|       | 69F<br>(20.5C)       | TC    | 23.33                   | 28.05          | 29.42         | 32.18        | 36.34        | 37.90        | 38.24          | 40.29          | 42.94       | 47.06         | 55.83         | 65.74          |
|       |                      | Input | 5.10                    | 5.21           | 5.30          | 5.33         | 5.39         | 5.31         | 5.33           | 5.41           | 4.68        | 4.63          | 4.71          | 5.04           |
|       |                      | COP   | 1.34                    | 1.58           | 1.63          | 1.77         | 1.96         | 2.09         | 2.10           | 2.18           | 2.69        | 2.98          | 3.47          | 3.82           |
|       | 71.6F<br>(22C)       | TC    | 22.88                   | 27.50          | 28.83         | 31.54        | 35.02        | 37.06        | 37.40          | 39.40          | 42.00       | 46.03         | 54.71         | 64.43          |
|       |                      | Input | 5.15                    | 5.26           | 5.35          | 5.38         | 5.40         | 5.36         | 5.38           | 5.46           | 4.73        | 5.07          | 4.76          | 5.09           |
|       |                      | COP   | 1.30                    | 1.53           | 1.58          | 1.72         | 1.90         | 2.03         | 2.04           | 2.11           | 2.60        | 2.66          | 3.37          | 3.71           |

**LEGEND**

DB – Dry Bulb  
 WB – Wet Bulb  
 TC – Total Net Heating Capacity (1000 Btu/hour)  
 Input – Total Power (kW)  
 COP – W/W

# COOLING PERFORMANCE DUCTED COMBINATIONS

| MODEL | COOLING           |                | OUTDOOR CONDITIONS (DB) |        |        |        |        |       |       |       |       |       |       |       |       |
|-------|-------------------|----------------|-------------------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | Indoor Conditions |                |                         | -13F   | -4F    | 0F     | 5F     | 17F   | 47F   | 77F   | 86F   | 95F   | 104F  | 113F  | 122F  |
|       | DB                | WB             |                         | (-25C) | (-20C) | (-17C) | (-15C) | (-8C) | (8C)  | (25C) | (30C) | (35C) | (40C) | (45C) | (50C) |
| 18    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 18.3   | 18.65  | 18.43  | 18.75  | 18.88 | 19.12 | 20.26 | 18.47 | 16.53 | 11.28 | 10.64 | 9.86  |
|       |                   |                | SC                      | 12.81  | 13.06  | 12.90  | 13.13  | 13.22 | 13.38 | 15.17 | 14.04 | 13.10 | 10.91 | 10.24 | 9.73  |
|       |                   |                | Input                   | 1.38   | 1.41   | 1.43   | 1.46   | 1.51  | 1.54  | 1.57  | 1.71  | 1.87  | 1.43  | 1.49  | 1.54  |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 19.76  | 20.14  | 19.90  | 20.25  | 20.39 | 20.65 | 21.88 | 19.95 | 17.85 | 12.18 | 11.49 | 10.13 |
|       |                   |                | SC                      | 13.83  | 14.10  | 14.33  | 14.99  | 15.29 | 15.69 | 17.07 | 15.76 | 14.64 | 10.84 | 10.92 | 9.93  |
|       |                   |                | Input                   | 1.43   | 1.46   | 1.48   | 1.51   | 1.56  | 1.59  | 1.62  | 1.76  | 1.92  | 1.50  | 1.54  | 1.35  |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 21.14  | 21.54  | 21.61  | 21.69  | 21.86 | 22.06 | 23.06 | 21.85 | 20.53 | 13.72 | 11.56 | 10.61 |
|       |                   |                | SC                      | 14.8   | 15.08  | 15.13  | 15.18  | 15.30 | 15.44 | 16.14 | 15.30 | 14.67 | 12.11 | 11.18 | 10.49 |
|       |                   |                | Input                   | 1.5    | 1.53   | 1.55   | 1.57   | 1.59  | 1.60  | 1.61  | 1.79  | 1.97  | 1.45  | 1.53  | 1.58  |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 23.04  | 23.48  | 23.55  | 23.64  | 23.83 | 24.05 | 25.14 | 23.82 | 22.38 | 14.95 | 12.60 | 11.56 |
|       |                   |                | SC                      | 16.58  | 16.90  | 17.20  | 17.50  | 17.87 | 17.55 | 20.61 | 20.01 | 19.24 | 14.06 | 12.10 | 11.33 |
|       |                   |                | Input                   | 1.55   | 1.58   | 1.60   | 1.62   | 1.64  | 1.72  | 1.66  | 1.84  | 2.14  | 1.50  | 1.58  | 1.63  |
| 24    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 27.01  | 27.53  | 27.42  | 27.46  | 27.23 | 27.56 | 27.05 | 25.22 | 22.79 | 18.48 | 16.18 | 14.26 |
|       |                   |                | SC                      | 18.91  | 19.27  | 19.19  | 19.22  | 19.06 | 19.29 | 20.83 | 19.93 | 18.92 | 16.82 | 15.86 | 14.16 |
|       |                   |                | Input                   | 1.94   | 1.98   | 2.01   | 2.02   | 2.04  | 2.05  | 2.06  | 2.28  | 2.51  | 2.40  | 2.48  | 2.56  |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 29.17  | 29.73  | 29.61  | 29.66  | 29.41 | 29.76 | 29.21 | 27.24 | 24.61 | 19.96 | 17.47 | 15.40 |
|       |                   |                | SC                      | 20.42  | 20.81  | 20.73  | 20.76  | 20.59 | 20.84 | 21.91 | 22.33 | 21.17 | 17.96 | 16.60 | 15.25 |
|       |                   |                | Input                   | 1.98   | 2.02   | 2.05   | 2.06   | 2.08  | 2.09  | 2.10  | 2.32  | 2.55  | 2.44  | 2.60  | 2.60  |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 32.9   | 33.53  | 33.43  | 33.22  | 33.18 | 33.42 | 33.40 | 31.64 | 29.45 | 22.61 | 20.56 | 18.47 |
|       |                   |                | SC                      | 23.03  | 23.47  | 23.40  | 23.25  | 23.23 | 23.39 | 23.04 | 22.47 | 21.50 | 18.76 | 20.28 | 18.38 |
|       |                   |                | Input                   | 2.11   | 2.15   | 2.20   | 2.34   | 3.38  | 2.42  | 2.45  | 2.72  | 3.03  | 2.49  | 2.54  | 2.63  |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 35.21  | 35.88  | 35.77  | 35.55  | 35.50 | 35.76 | 35.74 | 33.85 | 31.51 | 24.19 | 22.00 | 19.76 |
|       |                   |                | SC                      | 24.64  | 25.11  | 25.04  | 24.88  | 24.85 | 27.18 | 29.31 | 28.78 | 28.05 | 22.26 | 21.12 | 19.76 |
|       |                   |                | Input                   | 2.18   | 2.22   | 2.27   | 2.38   | 3.45  | 2.49  | 2.52  | 2.79  | 3.10  | 2.56  | 2.61  | 2.70  |
| 30    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 34.76  | 35.43  | 35.18  | 35.62  | 36.15 | 36.20 | 36.96 | 35.27 | 33.22 | 24.93 | 22.56 | 20.15 |
|       |                   |                | SC                      | 24.33  | 24.80  | 24.63  | 24.93  | 25.31 | 25.34 | 27.94 | 27.17 | 26.27 | 22.53 | 21.98 | 19.49 |
|       |                   |                | Input                   | 3.26   | 3.32   | 3.41   | 3.48   | 3.52  | 3.60  | 3.64  | 3.69  | 4.04  | 3.15  | 3.20  | 2.86  |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 35.8   | 36.49  | 36.24  | 36.69  | 37.23 | 37.29 | 38.44 | 38.09 | 35.88 | 26.92 | 24.36 | 21.76 |
|       |                   |                | SC                      | 25.07  | 25.55  | 25.36  | 25.68  | 26.06 | 27.96 | 31.52 | 33.52 | 32.29 | 24.77 | 23.15 | 21.33 |
|       |                   |                | Input                   | 3.31   | 3.37   | 3.46   | 3.53   | 3.57  | 3.65  | 3.69  | 3.74  | 4.09  | 3.20  | 3.25  | 2.91  |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 39.77  | 40.53  | 40.42  | 41.20  | 41.08 | 40.62 | 40.12 | 38.91 | 37.11 | 29.31 | 27.14 | 23.53 |
|       |                   |                | SC                      | 27.84  | 28.37  | 28.29  | 28.56  | 28.76 | 28.43 | 30.33 | 27.74 | 27.09 | 24.22 | 26.06 | 23.06 |
|       |                   |                | Input                   | 3.34   | 3.40   | 3.49   | 3.56   | 3.60  | 3.68  | 3.72  | 3.76  | 4.14  | 3.26  | 3.29  | 2.79  |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 42.95  | 43.77  | 43.65  | 44.49  | 44.37 | 43.87 | 43.33 | 42.02 | 40.08 | 31.65 | 29.31 | 25.41 |
|       |                   |                | SC                      | 30.06  | 30.64  | 30.56  | 31.14  | 31.06 | 32.90 | 35.53 | 36.98 | 36.07 | 29.12 | 27.85 | 25.41 |
|       |                   |                | Input                   | 3.39   | 3.46   | 3.55   | 3.62   | 3.66  | 3.74  | 3.78  | 3.82  | 4.20  | 3.32  | 3.35  | 2.85  |
| 36    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 35.88  | 36.57  | 36.15  | 36.81  | 37.18 | 38.15 | 38.59 | 34.80 | 32.05 | 26.27 | 24.15 | 22.01 |
|       |                   |                | SC                      | 25.12  | 25.60  | 25.31  | 25.77  | 26.03 | 26.71 | 28.94 | 26.73 | 25.64 | 23.09 | 24.07 | 22.01 |
|       |                   |                | Input                   | 2.77   | 2.82   | 2.89   | 2.93   | 2.97  | 3.04  | 3.09  | 3.46  | 3.87  | 3.76  | 3.84  | 3.48  |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 38.76  | 39.50  | 39.04  | 39.75  | 40.15 | 41.20 | 41.68 | 37.58 | 34.61 | 28.37 | 26.08 | 23.77 |
|       |                   |                | SC                      | 28.29  | 28.83  | 28.50  | 29.02  | 29.31 | 31.73 | 34.59 | 31.95 | 30.11 | 25.53 | 26.08 | 23.77 |
|       |                   |                | Input                   | 2.84   | 2.89   | 2.96   | 3.00   | 3.04  | 3.11  | 3.16  | 3.53  | 3.94  | 3.83  | 3.91  | 3.55  |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 40.78  | 41.56  | 41.25  | 42.05  | 42.42 | 42.88 | 43.75 | 41.65 | 39.51 | 32.80 | 30.41 | 25.87 |
|       |                   |                | SC                      | 28.54  | 29.09  | 28.88  | 29.44  | 29.69 | 30.02 | 31.06 | 29.98 | 28.45 | 25.78 | 30.28 | 25.87 |
|       |                   |                | Input                   | 2.87   | 2.92   | 2.95   | 2.97   | 3.01  | 3.12  | 3.16  | 3.55  | 3.99  | 3.88  | 3.93  | 3.54  |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 42.82  | 43.64  | 43.31  | 44.15  | 44.54 | 45.02 | 45.94 | 43.73 | 41.49 | 34.44 | 31.93 | 27.19 |
|       |                   |                | SC                      | 31.68  | 32.29  | 32.05  | 32.67  | 32.96 | 35.12 | 38.13 | 37.61 | 37.34 | 32.72 | 31.93 | 27.19 |
|       |                   |                | Input                   | 2.93   | 2.99   | 3.02   | 3.04   | 3.08  | 3.19  | 3.23  | 3.62  | 4.06  | 3.95  | 4.00  | 3.61  |
| 48    | 69.8F<br>(21C)    | 59F<br>(15C)   | TC                      | 39.49  | 40.25  | 40.41  | 40.87  | 40.14 | 40.97 | 40.25 | 38.41 | 35.24 | 31.42 | 27.98 | 25.48 |
|       |                   |                | SC                      | 27.65  | 28.18  | 28.29  | 28.61  | 28.10 | 29.91 | 36.89 | 35.46 | 34.61 | 30.86 | 27.98 | 25.48 |
|       |                   |                | Input                   | 2.2    | 2.24   | 2.28   | 2.35   | 2.38  | 2.41  | 2.46  | 2.78  | 3.11  | 3.45  | 3.64  | 3.08  |
|       | 75.2F<br>(24C)    | 62.6F<br>(17C) | TC                      | 42.65  | 43.47  | 43.64  | 44.14  | 43.35 | 44.25 | 43.47 | 41.48 | 38.06 | 33.93 | 30.22 | 27.52 |
|       |                   |                | SC                      | 31.13  | 31.73  | 31.86  | 32.22  | 31.65 | 34.07 | 36.08 | 35.26 | 33.11 | 30.54 | 30.22 | 27.52 |
|       |                   |                | Input                   | 2.27   | 2.31   | 2.35   | 2.42   | 2.45  | 2.48  | 2.53  | 2.85  | 3.18  | 3.52  | 3.71  | 3.15  |
|       | 80.6F<br>(27C)    | 66.2F<br>(19C) | TC                      | 51.77  | 52.76  | 52.93  | 52.85  | 52.41 | 52.56 | 52.55 | 49.63 | 46.29 | 38.92 | 36.56 | 32.12 |
|       |                   |                | SC                      | 36.24  | 36.93  | 37.05  | 37.00  | 36.69 | 36.79 | 37.31 | 36.23 | 34.72 | 36.30 | 35.75 | 32.12 |
|       |                   |                | Input                   | 3.57   | 3.64   | 3.69   | 3.75   | 3.81  | 3.86  | 3.96  | 4.44  | 4.94  | 3.90  | 4.12  | 3.68  |
|       | 89.6F<br>(32C)    | 73.4F<br>(23C) | TC                      | 54.36  | 55.40  | 55.58  | 55.49  | 55.03 | 55.19 | 55.18 | 52.11 | 48.60 | 40.87 | 38.39 | 33.76 |
|       |                   |                | SC                      | 40.22  | 40.99  | 41.13  | 41.06  | 40.72 | 43.05 | 45.80 | 44.82 | 43.74 | 38.82 | 38.39 | 33.76 |
|       |                   |                | Input                   | 3.64   | 3.71   | 3.76   | 3.82   | 3.88  | 3.93  | 4.03  | 4.51  | 5.01  | 3.97  | 4.19  | 3.75  |

**LEGEND**

DB – Dry Bulb  
 WB – Wet Bulb  
 TC – Total Net Heating Capacity (1000 Btu/hour)  
 SC – Sensible Capacity (1000 Btu/hour)  
 Input – Total Power (kW)

# HEATING PERFORMANCE DUCTED COMBINATIONS

| MODEL | HEATING              |       | OUTDOOR CONDITIONS (DB) |                |               |              |              |              |                |                |             |               |               |                |
|-------|----------------------|-------|-------------------------|----------------|---------------|--------------|--------------|--------------|----------------|----------------|-------------|---------------|---------------|----------------|
|       | Indoor Conditions DB |       | -22F<br>(-30C)          | -13F<br>(-25C) | -4F<br>(-20C) | 0F<br>(-17C) | 5F<br>(-15C) | 17F<br>(-8C) | 19.4F<br>(-7C) | 24.8F<br>(-4C) | 32F<br>(0C) | 39.2F<br>(4C) | 44.6F<br>(7C) | 53.6F<br>(12C) |
| 18    | 59F<br>(15C)         | TC    | 7.25                    | 9.05           | 11.18         | 12.58        | 14.73        | 16.91        | 17.12          | 17.64          | 18.36       | 19.67         | 23.68         | 25.16          |
|       |                      | Input | 1.65                    | 1.69           | 1.81          | 1.83         | 1.98         | 1.87         | 1.88           | 1.93           | 1.65        | 1.76          | 2.02          | 1.86           |
|       |                      | COP   | 1.29                    | 1.57           | 1.81          | 2.01         | 2.18         | 2.65         | 2.67           | 2.68           | 3.26        | 3.28          | 3.44          | 3.96           |
|       | 64.4F<br>(18C)       | TC    | 7.14                    | 8.91           | 11.01         | 12.39        | 14.56        | 16.66        | 16.86          | 17.38          | 18.08       | 19.37         | 23.32         | 24.78          |
|       |                      | Input | 1.68                    | 1.72           | 1.84          | 1.86         | 2.02         | 1.90         | 1.91           | 1.96           | 1.68        | 1.79          | 2.05          | 1.89           |
|       |                      | COP   | 1.24                    | 1.52           | 1.75          | 1.95         | 2.11         | 2.57         | 2.59           | 2.60           | 3.15        | 3.17          | 3.33          | 3.84           |
|       | 69F<br>(20.5C)       | TC    | 5.31                    | 6.16           | 7.02          | 8.13         | 14.40        | 13.39        | 13.48          | 16.58          | 17.86       | 18.05         | 20.60         | 20.09          |
|       |                      | Input | 1.46                    | 1.49           | 1.54          | 1.55         | 2.01         | 1.68         | 1.71           | 1.88           | 1.86        | 1.94          | 2.00          | 1.59           |
|       |                      | COP   | 1.07                    | 1.21           | 1.34          | 1.54         | 2.10         | 2.34         | 2.31           | 2.58           | 2.81        | 2.73          | 3.02          | 3.70           |
|       | 71.6F<br>(22C)       | TC    | 5.23                    | 6.07           | 6.91          | 8.01         | 13.56        | 13.19        | 13.28          | 16.33          | 17.59       | 17.78         | 20.29         | 19.79          |
|       |                      | Input | 1.49                    | 1.52           | 1.57          | 1.58         | 2.05         | 1.71         | 1.74           | 1.91           | 1.89        | 1.97          | 2.03          | 1.62           |
|       |                      | COP   | 1.03                    | 1.17           | 1.29          | 1.49         | 1.94         | 2.26         | 2.24           | 2.51           | 2.73        | 2.65          | 2.93          | 3.58           |
| 24    | 59F<br>(15C)         | TC    | 13.95                   | 17.73          | 20.00         | 22.45        | 23.85        | 25.34        | 25.72          | 27.96          | 30.05       | 31.82         | 36.46         | 40.37          |
|       |                      | Input | 2.97                    | 3.24           | 3.28          | 3.50         | 3.62         | 2.70         | 2.83           | 2.91           | 2.69        | 2.82          | 3.00          | 2.75           |
|       |                      | COP   | 1.38                    | 1.60           | 1.79          | 1.88         | 1.93         | 2.75         | 2.66           | 2.81           | 3.27        | 3.31          | 3.56          | 4.30           |
|       | 64.4F<br>(18C)       | TC    | 13.78                   | 17.51          | 19.75         | 22.17        | 23.55        | 25.03        | 25.40          | 27.61          | 29.75       | 31.49         | 35.92         | 39.77          |
|       |                      | Input | 3.05                    | 3.32           | 3.36          | 3.59         | 3.71         | 2.77         | 2.90           | 2.98           | 2.76        | 2.93          | 3.03          | 2.78           |
|       |                      | COP   | 1.33                    | 1.55           | 1.72          | 1.81         | 1.86         | 2.65         | 2.57           | 2.71           | 3.16        | 3.15          | 3.47          | 4.19           |
|       | 69F<br>(20.5C)       | TC    | 13.68                   | 17.37          | 19.60         | 22.00        | 23.37        | 24.83        | 25.20          | 27.40          | 29.52       | 30.82         | 35.77         | 40.21          |
|       |                      | Input | 3.11                    | 3.39           | 3.43          | 3.67         | 3.79         | 2.83         | 2.97           | 3.05           | 2.82        | 3.00          | 3.09          | 3.22           |
|       |                      | COP   | 1.29                    | 1.50           | 1.67          | 1.76         | 1.81         | 2.57         | 2.49           | 2.63           | 3.07        | 3.01          | 3.40          | 3.66           |
|       | 71.6F<br>(22C)       | TC    | 13.61                   | 17.29          | 19.50         | 21.89        | 23.26        | 24.71        | 25.08          | 27.26          | 29.37       | 30.40         | 35.24         | 39.60          |
|       |                      | Input | 3.19                    | 3.47           | 3.51          | 3.75         | 3.88         | 2.89         | 3.03           | 3.12           | 2.88        | 3.06          | 3.12          | 3.25           |
|       |                      | COP   | 1.25                    | 1.46           | 1.63          | 1.71         | 1.76         | 2.50         | 2.42           | 2.56           | 2.99        | 2.92          | 3.31          | 3.57           |
| 30    | 59F<br>(15C)         | TC    | 18.43                   | 22.26          | 24.22         | 26.51        | 27.98        | 31.38        | 31.66          | 33.05          | 34.71       | 36.63         | 37.99         | 41.37          |
|       |                      | Input | 3.44                    | 3.51           | 3.50          | 3.67         | 3.68         | 3.77         | 3.79           | 3.85           | 3.13        | 3.17          | 3.32          | 3.42           |
|       |                      | COP   | 1.57                    | 1.86           | 2.03          | 2.11         | 2.23         | 2.44         | 2.45           | 2.52           | 3.25        | 3.39          | 3.35          | 3.54           |
|       | 64.4F<br>(18C)       | TC    | 18.18                   | 21.95          | 23.88         | 26.14        | 27.59        | 30.92        | 31.20          | 32.56          | 34.21       | 36.10         | 37.42         | 40.75          |
|       |                      | Input | 3.47                    | 3.54           | 3.58          | 3.81         | 3.82         | 3.90         | 3.92           | 3.98           | 3.16        | 3.20          | 3.35          | 3.45           |
|       |                      | COP   | 1.54                    | 1.82           | 1.95          | 2.01         | 2.12         | 2.33         | 2.33           | 2.40           | 3.18        | 3.31          | 3.27          | 3.46           |
|       | 69F<br>(20.5C)       | TC    | 16.49                   | 20.39          | 21.78         | 23.72        | 25.98        | 27.33        | 27.78          | 31.46          | 33.54       | 35.63         | 36.75         | 39.77          |
|       |                      | Input | 3.56                    | 3.63           | 3.69          | 3.82         | 3.84         | 3.91         | 3.96           | 4.10           | 3.19        | 3.23          | 3.26          | 3.35           |
|       |                      | COP   | 1.36                    | 1.64           | 1.73          | 1.82         | 1.98         | 2.05         | 2.06           | 2.25           | 3.08        | 3.24          | 3.31          | 3.48           |
|       | 71.6F<br>(22C)       | TC    | 15.32                   | 19.18          | 21.52         | 23.44        | 25.67        | 26.93        | 27.38          | 30.99          | 33.04       | 35.10         | 36.20         | 39.18          |
|       |                      | Input | 3.69                    | 3.66           | 3.83          | 3.85         | 3.87         | 3.94         | 3.99           | 4.13           | 3.22        | 3.26          | 3.29          | 3.38           |
|       |                      | COP   | 1.22                    | 1.53           | 1.65          | 1.79         | 1.95         | 2.00         | 2.01           | 2.20           | 3.01        | 3.16          | 3.23          | 3.40           |
| 36    | 59F<br>(15C)         | TC    | 23.05                   | 27.74          | 29.78         | 32.52        | 35.47        | 38.02        | 38.62          | 39.82          | 41.70       | 44.30         | 55.02         | 60.81          |
|       |                      | Input | 4.98                    | 5.10           | 5.25          | 5.28         | 5.31         | 5.19         | 5.21           | 5.29           | 4.63        | 4.80          | 4.97          | 4.63           |
|       |                      | COP   | 1.36                    | 1.60           | 1.66          | 1.81         | 1.96         | 2.15         | 2.17           | 2.21           | 2.64        | 2.70          | 3.24          | 3.85           |
|       | 64.4F<br>(18C)       | TC    | 22.76                   | 27.38          | 29.39         | 32.08        | 35.29        | 37.45        | 38.04          | 39.22          | 41.09       | 43.64         | 54.21         | 59.92          |
|       |                      | Input | 5.04                    | 5.16           | 5.31          | 5.34         | 5.37         | 5.25         | 5.27           | 5.35           | 4.69        | 4.86          | 5.03          | 4.69           |
|       |                      | COP   | 1.32                    | 1.56           | 1.62          | 1.76         | 1.93         | 2.09         | 2.12           | 2.15           | 2.57        | 2.63          | 3.16          | 3.74           |
|       | 69F<br>(20.5C)       | TC    | 22.29                   | 26.80          | 28.10         | 30.75        | 35.14        | 36.21        | 36.53          | 38.49          | 41.03       | 44.96         | 48.91         | 52.62          |
|       |                      | Input | 5.12                    | 5.23           | 5.32          | 5.35         | 5.37         | 5.33         | 5.35           | 5.43           | 4.69        | 5.03          | 4.73          | 4.36           |
|       |                      | COP   | 1.28                    | 1.50           | 1.55          | 1.68         | 1.92         | 1.99         | 2.00           | 2.08           | 2.56        | 2.62          | 3.03          | 3.53           |
|       | 71.6F<br>(22C)       | TC    | 21.90                   | 26.32          | 27.60         | 30.20        | 34.52        | 35.48        | 35.80          | 37.72          | 40.20       | 44.06         | 47.94         | 51.56          |
|       |                      | Input | 5.17                    | 5.28           | 5.37          | 5.40         | 5.42         | 5.38         | 5.40           | 5.48           | 4.74        | 5.09          | 4.78          | 4.42           |
|       |                      | COP   | 1.24                    | 1.46           | 1.51          | 1.64         | 1.87         | 1.93         | 1.94           | 2.02           | 2.49        | 2.54          | 2.94          | 3.42           |
| 48    | 59F<br>(15C)         | TC    | 23.20                   | 27.92          | 29.97         | 32.73        | 36.70        | 38.26        | 38.86          | 40.07          | 41.97       | 44.58         | 55.37         | 65.49          |
|       |                      | Input | 5.03                    | 5.15           | 5.30          | 5.33         | 5.36         | 5.24         | 5.26           | 5.34           | 4.67        | 4.85          | 5.02          | 4.67           |
|       |                      | COP   | 1.35                    | 1.59           | 1.66          | 1.80         | 2.01         | 2.14         | 2.17           | 2.20           | 2.63        | 2.69          | 3.23          | 4.11           |
|       | 64.4F<br>(18C)       | TC    | 22.94                   | 27.60          | 29.63         | 32.34        | 36.27        | 37.75        | 38.35          | 39.54          | 41.42       | 43.99         | 54.64         | 64.50          |
|       |                      | Input | 5.15                    | 5.26           | 5.41          | 5.45         | 5.48         | 5.35         | 5.37           | 5.46           | 4.78        | 4.96          | 5.14          | 4.78           |
|       |                      | COP   | 1.31                    | 1.54           | 1.60          | 1.74         | 1.94         | 2.07         | 2.09           | 2.12           | 2.54        | 2.60          | 3.12          | 3.95           |
|       | 69F<br>(20.5C)       | TC    | 22.58                   | 27.15          | 28.47         | 31.15        | 36.13        | 36.68        | 37.01          | 38.99          | 41.56       | 45.55         | 54.03         | 63.62          |
|       |                      | Input | 5.18                    | 5.29           | 5.38          | 5.41         | 5.50         | 5.39         | 5.41           | 5.50           | 4.75        | 4.70          | 4.78          | 5.12           |
|       |                      | COP   | 1.28                    | 1.50           | 1.55          | 1.69         | 1.93         | 1.99         | 2.00           | 2.08           | 2.57        | 2.84          | 3.31          | 3.65           |
|       | 71.6F<br>(22C)       | TC    | 22.14                   | 26.61          | 27.91         | 30.53        | 35.09        | 35.87        | 36.19          | 38.13          | 40.64       | 44.55         | 52.95         | 62.36          |
|       |                      | Input | 5.23                    | 5.34           | 5.43          | 5.46         | 5.52         | 5.44         | 5.46           | 5.55           | 4.80        | 5.15          | 4.83          | 5.17           |
|       |                      | COP   | 1.24                    | 1.46           | 1.51          | 1.64         | 1.86         | 1.93         | 1.94           | 2.01           | 2.48        | 2.54          | 3.21          | 3.54           |

**LEGEND**

DB – Dry Bulb  
 WB – Wet Bulb  
 TC – Total Net Heating Capacity (1000 Btu/hour)  
 Input – Total Power (kW)  
 COP – (W/W)

# PIPING REQUIREMENTS

| SYSTEM SIZE |   |             | 18K            | 24K            | 30K                         | 36K                        | 48K                         |
|-------------|---|-------------|----------------|----------------|-----------------------------|----------------------------|-----------------------------|
| Piping      | Min. Piping Length per each indoor unit   | ft (m)      | 10 (3)         | 10 (3)         | 10 (3)                      | 10 (3)                     | 10 (3)                      |
|             | Standard Piping Length per each indoor unit   | ft (m)      | 25 (7.5)       | 25 (7.5)       | 25 (7.5)                    | 25 (7.5)                   | 25 (7.5)                    |
|             | Max. outdoor–indoor height difference (OU higher than IU)   | ft (m)      | 49 (15)        | 49 (15)        | 49 (15)                     | 65 (20)                    | 65 (20)                     |
|             | Max. outdoor–indoor height difference (IU higher than OU)   | ft (m)      | 49 (15)        | 49 (15)        | 49 (15)                     | 65 (20)                    | 65 (20)                     |
|             | Max. height different between indoor units  | ft (m)      | 32 (10)        | 32 (10)        | 32 (10)                     | 32 (10)                    | 32 (10)                     |
|             | Max. Length per each indoor unit  | ft (m)      | 82 (25)        | 98 (30)        | 115 (35)                    | 115 (35)                   | 115 (35)                    |
|             | Max. Piping Length with no additional refrigerant charge per System (Standard Piping length x No. of Zones) | ft (m)      | 49 (15)        | 74 (22.5)      | 98 (30)                     | 123 (37.5)                 | 123 (37.5)                  |
|             | Total Maximum Piping Length per system  | ft (m)      | 131 (40)       | 197 (60)       | 263 (80)                    | 328 (100)                  | 328 (100)                   |
|             | Additional refrigerant charge (between Standard – Max piping length)  | Oz/ft (g/m) | 0.16 (15)      | 0.16 (15)      | 0.16 (15)                   | 0.16 (15)                  | 0.16 (15)                   |
|             | Suction Pipe Size   | in (mm)     | 3/8*2 (9.52*2) | 3/8*3 (9.52*3) | 1/2*1+3/8*3 (12.7*1+9.52*3) | 1/2*2+3/8*2 (12.7*2+9.5*2) | 1/2*2+3/8*3 (12.7*2+9.52*3) |
|             | Liquid Pipe Size  | in (mm)     | 1/4 *2 (6.3*2) | 1/4 *3 (6.3*3) | 1/4 *4 (6.3*4)              | 1/4 *4 (6.3*4)             | 1/4 *5 (6.3*5)              |
| Refrigerant | Refrigerant Type  |             | R410A          | R410A          | R410A                       | R410A                      | R410A                       |
|             | Charge Amount   | Lbs (kg)    | 4.41 (2.0)     | 6.17 (2.8)     | 6.61 (3.0)                  | 10.14 (4.6)                | 10.14 (4.6)                 |

**NOTE: The refrigerant charge included is adequate for the outdoor unit’s maximum number of zones multiplied by the standard piping length per zone.**

## APPLICATION DATA

### Unit Selection

When selecting a variable speed system match the system capacity range to the anticipated load range. Since a variable speed system can accommodate a wide range of loads it is important to understand the percentage of time that the system will be required to run at both the maximum and the minimum load points. This differential is most evident when a residential application is compared with a commercial application.

Generally there will be more load diversification in the residential application (shifting from low load to high load). The commercial application tends to be more steady during the normal day time hours, and will go to low load levels after normal business hours. If it is anticipated that the system needs to run at the maximum load point for the majority of the time, the next larger system capacity should be selected.

The Application Data table on the following page is a guideline for selecting the proper size for the application.



# APPLICATION DATA

| Size        | No. of Zones | Cooling Capacity (Btu/h) |        |        |        |        | Heating Capacity (Btu/h) |        |        |        |        |  |
|-------------|--------------|--------------------------|--------|--------|--------|--------|--------------------------|--------|--------|--------|--------|--|
|             |              | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 |  |
| <b>18K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 9,000                    | 9,000  |        |        |        | 9,500                    | 9,500  |        |        |        |  |
| 9+12        |              | 8,500                    | 10,500 |        |        |        | 9,000                    | 11,000 |        |        |        |  |
| 12+12       |              | 9,500                    | 9,500  |        |        |        | 10,000                   | 10,000 |        |        |        |  |
| <b>24K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 9,500                    | 9,500  |        |        |        | 10,000                   | 10,000 |        |        |        |  |
| 9+12        |              | 9,500                    | 12,000 |        |        |        | 10,000                   | 13,000 |        |        |        |  |
| 9+18        |              | 8,400                    | 16,600 |        |        |        | 9,000                    | 18,000 |        |        |        |  |
| 12+12       |              | 12,000                   | 12,000 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 10,000                   | 15,000 |        |        |        | 11,200                   | 16,800 |        |        |        |  |
| 18+18       |              | 14,000                   | 14,000 |        |        |        | 15,000                   | 15,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 9,000                    | 9,000  | 9,000  |        |        | 9,500                    | 9,500  | 9,500  |        |        |  |
| 9+9+12      |              | 8,667                    | 8,667  | 11,667 |        |        | 9,500                    | 9,500  | 12,000 |        |        |  |
| 9+9+18      |              | 8,333                    | 8,333  | 13,333 |        |        | 9,000                    | 9,000  | 14,000 |        |        |  |
| 9+12+12     |              | 8,500                    | 10,000 | 10,000 |        |        | 8,500                    | 11,000 | 11,000 |        |        |  |
| 12+12+12    |              | 9,667                    | 9,667  | 9,667  |        |        | 10,667                   | 10,667 | 10,667 |        |        |  |
| <b>30K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 10,000                   | 10,000 |        |        |        | 10,500                   | 10,500 |        |        |        |  |
| 9+12        |              | 9,500                    | 12,000 |        |        |        | 10,000                   | 13,000 |        |        |        |  |
| 9+18        |              | 9,500                    | 17,500 |        |        |        | 10,000                   | 18,000 |        |        |        |  |
| 9+24        |              | 9,000                    | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |  |
| 12+12       |              | 12,000                   | 12,000 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 18,000 |        |        |        |  |
| 12+24       |              | 11,000                   | 23,000 |        |        |        | 12,000                   | 24,000 |        |        |        |  |
| 18+18       |              | 16,500                   | 16,500 |        |        |        | 17,000                   | 17,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 9,333                    | 9,333  | 9,333  |        |        | 9,667                    | 9,667  | 9,667  |        |        |  |
| 9+9+12      |              | 9,000                    | 9,000  | 12,000 |        |        | 9,500                    | 9,500  | 12,500 |        |        |  |
| 9+9+18      |              | 8,000                    | 8,000  | 16,000 |        |        | 8,500                    | 8,500  | 17,000 |        |        |  |
| 9+9+24      |              | 7,500                    | 7,500  | 20,000 |        |        | 8,000                    | 8,000  | 21,000 |        |        |  |
| 9+12+12     |              | 8,500                    | 11,500 | 11,500 |        |        | 9,000                    | 12,000 | 12,000 |        |        |  |
| 9+12+18     |              | 8,000                    | 11,000 | 15,000 |        |        | 8,500                    | 11,500 | 16,000 |        |        |  |
| 9+18+18     |              | 8,000                    | 14,000 | 14,000 |        |        | 8,500                    | 14,500 | 14,500 |        |        |  |
| 12+12+12    |              | 11,333                   | 11,333 | 11,333 |        |        | 12,000                   | 12,000 | 12,000 |        |        |  |
| 12+12+18    |              | 11,000                   | 11,000 | 14,000 |        |        | 12,000                   | 12,000 | 15,000 |        |        |  |
| 12+18+18    |              | 9,333                    | 13,333 | 13,333 |        |        | 10,000                   | 14,500 | 14,500 |        |        |  |
| 12+12+24    |              | 8,000                    | 8,000  | 20,000 |        |        | 9,000                    | 9,000  | 21,000 |        |        |  |
| 9+9+9+9     |              | 4-Zone                   | 9,000  | 9,000  | 9,000  | 9,000  |                          | 9,500  | 9,500  | 9,500  | 9,500  |  |
| 9+9+9+12    | 8,500        |                          | 8,500  | 8,500  | 11,500 |        | 9,000                    | 9,000  | 9,000  | 12,000 |        |  |
| 9+9+9+18    | 8,000        |                          | 8,000  | 8,000  | 14,000 |        | 8,500                    | 8,500  | 8,500  | 14,000 |        |  |
| 9+9+12+12   | 8,000        |                          | 8,000  | 10,500 | 10,500 |        | 8,500                    | 8,500  | 11,000 | 11,000 |        |  |
| 9+9+12+18   | 7,500        |                          | 7,500  | 9,000  | 14,000 |        | 8,000                    | 8,000  | 9,500  | 14,500 |        |  |
| 9+12+12+12  | 7,000        |                          | 10,000 | 10,000 | 10,000 |        | 8,000                    | 10,500 | 10,500 | 10,500 |        |  |
| 9+12+12+18  | 9,500        |                          | 9,500  | 9,500  | 9,500  |        | 10,000                   | 10,000 | 10,000 | 10,000 |        |  |
| 12+12+12+12 |              |                          |        |        |        |        |                          |        |        |        |        |  |
| <b>36K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+18        | 2-Zone       | 9,500                    | 18,000 |        |        |        | 10,000                   | 18,000 |        |        |        |  |
| 9+24        |              | 9,500                    | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |  |
| 12+12       |              | 12,500                   | 12,500 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 19,000 |        |        |        |  |
| 12+24       |              | 12,000                   | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |  |
| 18+18       |              | 18,500                   | 18,500 |        |        |        | 19,000                   | 19,000 |        |        |        |  |
| 18+24       |              | 17,500                   | 22,500 |        |        |        | 18,000                   | 23,000 |        |        |        |  |
| 24+24       |              | 21,000                   | 21,000 |        |        |        | 22,000                   | 22,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 9,500                    | 9,500  | 9,500  |        |        | 11,000                   | 11,000 | 11,000 |        |        |  |
| 9+9+12      |              | 9,500                    | 9,500  | 12,000 |        |        | 10,000                   | 10,000 | 13,000 |        |        |  |
| 9+9+18      |              | 9,500                    | 9,500  | 18,000 |        |        | 10,000                   | 10,000 | 19,000 |        |        |  |
| 9+9+24      |              | 9,000                    | 9,000  | 22,500 |        |        | 9,500                    | 9,500  | 23,500 |        |        |  |
| 9+12+12     |              | 9,500                    | 12,500 | 12,500 |        |        | 10,000                   | 10,000 | 13,000 |        |        |  |
| 9+12+18     |              | 9,000                    | 12,000 | 18,000 |        |        | 9,500                    | 9,500  | 19,000 |        |        |  |
| 9+12+24     |              | 9,000                    | 12,000 | 21,500 |        |        | 9,500                    | 12,500 | 22,000 |        |        |  |
| 9+18+18     |              | 9,000                    | 18,000 | 18,000 |        |        | 9,500                    | 18,500 | 18,500 |        |        |  |
| 9+18+24     |              | 8,500                    | 15,500 | 21,000 |        |        | 9,000                    | 16,000 | 21,500 |        |        |  |
| 9+24+24     |              | 8,000                    | 20,000 | 20,000 |        |        | 8,500                    | 21,000 | 21,000 |        |        |  |
| 12+12+12    |              | 12,000                   | 12,000 | 12,000 |        |        | 13,000                   | 13,000 | 13,000 |        |        |  |
| 12+12+18    |              | 12,000                   | 12,000 | 17,000 |        |        | 12,500                   | 12,500 | 18,000 |        |        |  |
| 12+12+24    |              | 11,000                   | 11,000 | 22,000 |        |        | 11,500                   | 11,500 | 23,000 |        |        |  |
| 12+18+18    |              | 11,000                   | 16,500 | 16,500 |        |        | 11,500                   | 17,000 | 17,000 |        |        |  |
| 12+18+24    |              | 10,500                   | 15,500 | 21,500 |        |        | 11,000                   | 16,000 | 22,000 |        |        |  |
| 12+24+24    |              | 10,000                   | 20,000 | 20,000 |        |        | 11,000                   | 20,500 | 20,500 |        |        |  |
| 18+18+18    |              | 16,000                   | 16,000 | 16,000 |        |        | 16,500                   | 16,500 | 16,500 |        |        |  |
| 18+18+24    |              | 15,000                   | 15,000 | 20,000 |        |        | 15,500                   | 15,500 | 21,000 |        |        |  |
| 9+9+9+9     |              | 4-Zone                   | 9,250  | 9,250  | 9,250  | 9,250  |                          | 9,500  | 9,500  | 9,500  | 9,500  |  |
| 9+9+9+12    |              |                          | 9,000  | 9,000  | 9,000  | 12,000 |                          | 9,500  | 9,500  | 9,500  | 12,500 |  |
| 9+9+9+18    | 9,000        |                          | 9,000  | 9,000  | 17,000 |        | 9,500                    | 9,500  | 9,500  | 17,500 |        |  |
| 9+9+9+24    | 8,500        |                          | 8,500  | 8,500  | 20,500 |        | 9,000                    | 9,000  | 9,000  | 21,000 |        |  |
| 9+9+12+12   | 9,000        |                          | 9,000  | 12,000 | 12,000 |        | 9,500                    | 9,500  | 13,000 | 13,000 |        |  |
| 9+9+12+18   | 9,000        |                          | 9,000  | 11,000 | 17,000 |        | 9,500                    | 9,500  | 11,500 | 17,500 |        |  |
| 9+9+12+24   | 8,500        |                          | 8,500  | 10,500 | 20,500 |        | 9,000                    | 9,000  | 11,100 | 21,000 |        |  |
| 9+9+18+18   | 8,500        |                          | 8,500  | 15,500 | 15,500 |        | 9,000                    | 9,000  | 16,000 | 16,000 |        |  |
| 9+9+18+24   | 8,000        |                          | 8,000  | 14,500 | 20,000 |        | 8,500                    | 8,500  | 15,000 | 20,000 |        |  |
| 9+12+12+12  | 9,000        |                          | 12,000 | 12,000 | 12,000 |        | 9,500                    | 12,500 | 12,500 | 12,500 |        |  |
| 9+12+12+18  | 9,000        |                          | 11,000 | 11,000 | 16,000 |        | 9,500                    | 11,500 | 11,500 | 16,500 |        |  |
| 9+12+12+24  | 8,500        |                          | 10,000 | 10,000 | 20,000 |        | 9,000                    | 10,500 | 10,500 | 20,500 |        |  |
| 9+12+18+18  | 8,500        |                          | 10,000 | 15,000 | 15,000 |        | 9,000                    | 10,500 | 15,500 | 15,500 |        |  |
| 9+18+18+18  | 8,000        |                          | 14,000 | 14,000 | 14,000 |        | 8,500                    | 14,500 | 14,500 | 14,500 |        |  |
| 12+12+12+12 | 12,000       |                          | 12,000 | 12,000 | 12,000 |        | 12,500                   | 12,500 | 12,500 | 12,500 |        |  |
| 12+12+12+18 | 11,000       |                          | 11,000 | 11,000 | 16,000 |        | 11,500                   | 11,500 | 11,500 | 16,500 |        |  |
| 12+12+12+24 | 10,000       | 10,000                   | 10,000 | 20,000 |        | 10,500 | 10,500                   | 10,500 | 20,500 |        |        |  |
| 12+12+18+18 | 10,000       | 10,000                   | 15,000 | 15,000 |        | 10,500 | 10,500                   | 15,500 | 15,500 |        |        |  |

# APPLICATION DATA (CONT)

| Size           | No. of Zones | Cooling Capacity (Btu/h) |        |        |        |        | Heating Capacity (Btu/h) |        |        |        |        |        |
|----------------|--------------|--------------------------|--------|--------|--------|--------|--------------------------|--------|--------|--------|--------|--------|
|                |              | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 |        |
| 48K            |              |                          |        |        |        |        |                          |        |        |        |        |        |
| 9+18           | 2-Zone       | 9,500                    | 18,000 |        |        |        | 10,000                   | 18,000 |        |        |        |        |
| 9+24           |              | 9,500                    | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |        |
| 12+12          |              | 12,500                   | 12,500 |        |        |        | 13,000                   | 13,000 |        |        |        |        |
| 12+18          |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 19,000 |        |        |        |        |
| 12+24          |              | 12,000                   | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |        |
| 18+18          |              | 18,500                   | 18,500 |        |        |        | 19,000                   | 19,000 |        |        |        |        |
| 18+24          |              | 17,500                   | 22,500 |        |        |        | 18,000                   | 23,000 |        |        |        |        |
| 24+24          |              | 21,000                   | 21,000 |        |        |        | 22,000                   | 22,000 |        |        |        |        |
| 9+9+9          |              | 3-Zone                   | 9,500  | 9,500  | 9,500  |        |                          | 11,000 | 11,000 | 11,000 |        |        |
| 9+9+12         |              |                          | 9,500  | 9,500  | 12,000 |        |                          | 10,000 | 10,000 | 13,000 |        |        |
| 9+9+18         | 9,500        |                          | 9,500  | 18,000 |        |        | 10,000                   | 10,000 | 19,000 |        |        |        |
| 9+9+24         | 9,000        |                          | 9,000  | 22,500 |        |        | 9,500                    | 9,500  | 23,500 |        |        |        |
| 9+12+12        | 9,500        |                          | 12,500 | 12,500 |        |        | 10,000                   | 10,000 | 13,000 |        |        |        |
| 9+12+18        | 9,000        |                          | 12,000 | 18,000 |        |        | 9,500                    | 9,500  | 19,000 |        |        |        |
| 9+12+24        | 9,000        |                          | 12,000 | 21,500 |        |        | 9,500                    | 12,500 | 22,000 |        |        |        |
| 9+18+18        | 9,000        |                          | 18,000 | 18,000 |        |        | 9,500                    | 18,500 | 18,500 |        |        |        |
| 9+18+24        | 8,500        |                          | 15,500 | 21,000 |        |        | 9,000                    | 16,000 | 21,500 |        |        |        |
| 9+24+24        | 8,000        |                          | 20,000 | 20,000 |        |        | 8,500                    | 21,000 | 21,000 |        |        |        |
| 12+12+12       | 12,000       |                          | 12,000 | 12,000 |        |        | 13,000                   | 13,000 | 13,000 |        |        |        |
| 12+12+18       | 12,000       |                          | 12,000 | 17,000 |        |        | 12,500                   | 12,500 | 18,000 |        |        |        |
| 12+12+24       | 11,000       |                          | 11,000 | 22,000 |        |        | 11,500                   | 11,500 | 23,000 |        |        |        |
| 12+18+18       | 11,000       |                          | 16,500 | 16,500 |        |        | 11,500                   | 17,000 | 17,000 |        |        |        |
| 12+18+24       | 10,500       |                          | 15,500 | 21,500 |        |        | 11,000                   | 16,000 | 22,000 |        |        |        |
| 12+24+24       | 10,000       |                          | 20,000 | 20,000 |        |        | 11,000                   | 20,500 | 20,500 |        |        |        |
| 18+18+18       | 16,000       |                          | 16,000 | 16,000 |        |        | 16,500                   | 16,500 | 16,500 |        |        |        |
| 18+18+24       | 15,000       |                          | 15,000 | 20,000 |        |        | 15,500                   | 15,500 | 21,000 |        |        |        |
| 9+9+9+9        | 4-Zone       |                          | 9,250  | 9,250  | 9,250  | 9,250  |                          | 9,500  | 9,500  | 9,500  | 9,500  |        |
| 9+9+9+12       |              |                          | 9,000  | 9,000  | 9,000  | 12,000 |                          | 9,500  | 9,500  | 9,500  | 12,500 |        |
| 9+9+9+18       |              | 9,000                    | 9,000  | 9,000  | 17,000 |        | 9,500                    | 9,500  | 9,500  | 17,500 |        |        |
| 9+9+9+24       |              | 8,500                    | 8,500  | 8,500  | 20,500 |        | 9,000                    | 9,000  | 9,000  | 21,000 |        |        |
| 9+9+12+12      |              | 9,000                    | 9,000  | 12,000 | 12,000 |        | 9,500                    | 9,500  | 13,000 | 13,000 |        |        |
| 9+9+12+18      |              | 9,000                    | 9,000  | 11,000 | 17,000 |        | 9,500                    | 9,500  | 11,500 | 17,500 |        |        |
| 9+9+12+24      |              | 8,500                    | 8,500  | 10,500 | 20,500 |        | 9,000                    | 9,000  | 11,100 | 21,000 |        |        |
| 9+9+18+18      |              | 8,500                    | 8,500  | 15,500 | 15,500 |        | 9,000                    | 9,000  | 16,000 | 16,000 |        |        |
| 9+9+18+24      |              | 8,000                    | 8,000  | 14,500 | 20,000 |        | 8,500                    | 8,500  | 15,000 | 20,000 |        |        |
| 9+12+12+12     |              | 9,000                    | 12,000 | 12,000 | 12,000 |        | 9,500                    | 12,500 | 12,500 | 12,500 |        |        |
| 9+12+12+18     |              | 9,000                    | 11,000 | 11,000 | 16,000 |        | 9,500                    | 11,500 | 11,500 | 16,500 |        |        |
| 9+12+12+24     |              | 8,500                    | 10,000 | 10,000 | 20,000 |        | 9,000                    | 10,500 | 10,500 | 20,500 |        |        |
| 9+12+18+18     |              | 8,500                    | 10,000 | 15,000 | 15,000 |        | 9,000                    | 10,500 | 15,500 | 15,500 |        |        |
| 9+18+18+18     |              | 8,000                    | 14,000 | 14,000 | 14,000 |        | 8,500                    | 14,500 | 14,500 | 14,500 |        |        |
| 12+12+12+12    |              | 12,000                   | 12,000 | 12,000 | 12,000 |        | 12,500                   | 12,500 | 12,500 | 12,500 |        |        |
| 12+12+12+18    |              | 11,000                   | 11,000 | 11,000 | 16,000 |        | 11,500                   | 11,500 | 11,500 | 16,500 |        |        |
| 12+12+12+24    |              | 10,000                   | 10,000 | 10,000 | 20,000 |        | 10,500                   | 10,500 | 10,500 | 20,500 |        |        |
| 12+12+18+18    |              | 10,000                   | 10,000 | 15,000 | 15,000 |        | 10,500                   | 10,500 | 15,500 | 15,500 |        |        |
| 9+9+9+9+9      |              | 5-Zone                   | 9,000  | 9,000  | 9,000  | 9,000  | 9,000                    | 9,500  | 9,500  | 9,500  | 9,500  | 9,500  |
| 9+9+9+9+12     |              |                          | 9,000  | 9,000  | 9,000  | 9,000  | 12,000                   | 9,500  | 9,500  | 9,500  | 9,500  | 13,000 |
| 9+9+9+9+18     | 8,500        |                          | 8,500  | 8,500  | 8,500  | 16,000 | 9,000                    | 9,000  | 9,000  | 9,000  | 16,500 |        |
| 9+9+9+9+24     | 7,750        |                          | 7,750  | 7,750  | 7,750  | 19,500 | 8,000                    | 8,000  | 8,000  | 8,000  | 20,000 |        |
| 9+9+9+12+12    | 9,000        |                          | 9,000  | 9,000  | 11,500 | 11,500 | 9,500                    | 9,500  | 9,500  | 12,000 | 12,000 |        |
| 9+9+9+12+18    | 8,000        |                          | 8,000  | 8,000  | 11,000 | 16,000 | 8,500                    | 8,500  | 8,500  | 11,500 | 16,500 |        |
| 9+9+9+18+18    | 8,000        |                          | 8,000  | 8,000  | 11,000 | 16,000 | 8,500                    | 8,500  | 8,500  | 16,500 | 16,500 |        |
| 9+9+12+12+12   | 8,500        |                          | 8,500  | 11,000 | 11,000 | 11,000 | 9,000                    | 9,000  | 12,000 | 12,000 | 12,000 |        |
| 9+9+12+12+18   | 8,500        |                          | 8,500  | 10,000 | 10,000 | 15,000 | 8,500                    | 8,500  | 10,500 | 10,500 | 15,500 |        |
| 9+12+12+12+12  | 8,000        |                          | 11,000 | 11,000 | 11,000 | 11,000 | 8,500                    | 11,500 | 11,500 | 11,500 | 11,500 |        |
| 9+12+12+12+18  | 7,500        |                          | 10,000 | 10,000 | 10,000 | 14,500 | 8,000                    | 10,500 | 10,500 | 10,500 | 15,000 |        |
| 12+12+12+12+12 | 10,500       |                          | 10,500 | 10,500 | 10,500 | 10,500 | 11,000                   | 11,000 | 11,000 | 11,000 | 11,000 |        |

# APPLICATION DATA (USING 40MHHQ HIGH WALL)

| Size        | No. of Zones | Cooling Capacity (Btu/h) |        |        |        |        | Heating Capacity (Btu/h) |        |        |        |        |  |
|-------------|--------------|--------------------------|--------|--------|--------|--------|--------------------------|--------|--------|--------|--------|--|
|             |              | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 |  |
| <b>18K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 8,000                    | 8,000  |        |        |        | 8,500                    | 8,500  |        |        |        |  |
| 9+12        |              | 8,000                    | 10,500 |        |        |        | 8,000                    | 11,000 |        |        |        |  |
| 12+12       |              | 10,000                   | 10,000 |        |        |        | 10,000                   | 10,000 |        |        |        |  |
| <b>24K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 8,500                    | 8,500  |        |        |        | 9,000                    | 9,000  |        |        |        |  |
| 9+12        |              | 8,500                    | 12,000 |        |        |        | 9,000                    | 13,000 |        |        |        |  |
| 9+18        |              | 7,400                    | 16,600 |        |        |        | 800                      | 18,000 |        |        |        |  |
| 12+12       |              | 12,000                   | 12,000 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 10,000                   | 15,000 |        |        |        | 11,200                   | 16,800 |        |        |        |  |
| 18+18       |              | 14,000                   | 14,000 |        |        |        | 15,000                   | 15,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 8,000                    | 8,000  | 8,000  |        |        | 8,500                    | 8,500  | 8,500  |        |        |  |
| 9+9+12      |              | 7,600                    | 7,600  | 11,667 |        |        | 8,500                    | 8,500  | 12,000 |        |        |  |
| 9+9+18      |              | 7,300                    | 7,300  | 13,333 |        |        | 8,000                    | 8,000  | 14,000 |        |        |  |
| 9+12+12     |              | 7,500                    | 10,000 | 10,000 |        |        | 7,500                    | 11,000 | 11,000 |        |        |  |
| 12+12+12    |              | 9,667                    | 9,667  | 9,667  |        |        | 10,667                   | 10,667 | 10,667 |        |        |  |
| <b>30K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+9         | 2-Zone       | 9,000                    | 9,000  |        |        |        | 9,500                    | 9,500  |        |        |        |  |
| 9+12        |              | 8,500                    | 12,000 |        |        |        | 9,000                    | 13,000 |        |        |        |  |
| 9+18        |              | 8,500                    | 17,500 |        |        |        | 9,000                    | 18,000 |        |        |        |  |
| 9+24        |              | 8,000                    | 24,000 |        |        |        | 9,000                    | 25,000 |        |        |        |  |
| 12+12       |              | 12,000                   | 12,000 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 18,000 |        |        |        |  |
| 12+24       |              | 11,000                   | 23,000 |        |        |        | 12,000                   | 24,000 |        |        |        |  |
| 18+18       |              | 16,500                   | 16,500 |        |        |        | 17,000                   | 17,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 8,300                    | 8,300  | 8,300  |        |        | 8,700                    | 8,700  | 8,700  |        |        |  |
| 9+9+12      |              | 8,000                    | 8,000  | 12,000 |        |        | 8,500                    | 8,500  | 12,500 |        |        |  |
| 9+9+18      |              | 7,000                    | 7,000  | 16,000 |        |        | 7,500                    | 7,500  | 17,000 |        |        |  |
| 9+9+24      |              | 7,000                    | 7,000  | 20,000 |        |        | 7,300                    | 7,300  | 22,000 |        |        |  |
| 9+12+12     |              | 7,500                    | 11,500 | 11,500 |        |        | 8,000                    | 12,000 | 12,000 |        |        |  |
| 9+12+18     |              | 7,000                    | 11,000 | 15,000 |        |        | 7,500                    | 11,500 | 16,000 |        |        |  |
| 9+18+18     |              | 7,000                    | 14,000 | 14,000 |        |        | 7,500                    | 14,500 | 14,500 |        |        |  |
| 12+12+12    |              | 11,333                   | 11,333 | 11,333 |        |        | 12,000                   | 12,000 | 12,000 |        |        |  |
| 12+12+18    |              | 11,000                   | 11,000 | 14,000 |        |        | 12,000                   | 12,000 | 15,000 |        |        |  |
| 12+18+18    |              | 9,333                    | 13,333 | 13,333 |        |        | 10,000                   | 14,500 | 14,500 |        |        |  |
| 12+12+24    | 8,000        | 8,000                    | 20,000 |        |        | 9,000  | 9,000                    | 21,000 |        |        |        |  |
| 9+9+9+9     | 4-Zone       | 8,000                    | 8,000  | 8,000  | 8,000  |        | 8,500                    | 8,500  | 8,500  | 8,500  |        |  |
| 9+9+9+12    |              | 7,500                    | 7,500  | 7,500  | 11,500 |        | 8,000                    | 8,000  | 8,000  | 12,000 |        |  |
| 9+9+9+18    |              | 7,000                    | 7,000  | 7,000  | 14,000 |        | 7,500                    | 7,500  | 7,500  | 14,000 |        |  |
| 9+9+12+12   |              | 7,000                    | 7,000  | 10,500 | 10,500 |        | 7,500                    | 7,500  | 11,000 | 11,000 |        |  |
| 9+9+12+18   |              | 6,600                    | 6,600  | 9,000  | 14,000 |        | 7,000                    | 7,000  | 9,500  | 14,500 |        |  |
| 9+12+12+12  |              | 6,300                    | 10,000 | 10,000 | 10,000 |        | 7,000                    | 10,500 | 10,500 | 10,500 |        |  |
| 12+12+12+12 |              | 9,500                    | 9,500  | 9,500  | 9,500  |        | 10,000                   | 10,000 | 10,000 | 10,000 |        |  |
| <b>36K</b>  |              |                          |        |        |        |        |                          |        |        |        |        |  |
| 9+18        | 2-Zone       | 8,500                    | 18,000 |        |        |        | 9,000                    | 18,000 |        |        |        |  |
| 9+24        |              | 8,500                    | 24,000 |        |        |        | 9,000                    | 25,000 |        |        |        |  |
| 12+12       |              | 12,500                   | 12,500 |        |        |        | 13,000                   | 13,000 |        |        |        |  |
| 12+18       |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 19,000 |        |        |        |  |
| 12+24       |              | 12,000                   | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |  |
| 18+18       |              | 18,500                   | 18,500 |        |        |        | 19,000                   | 19,000 |        |        |        |  |
| 18+24       |              | 17,500                   | 22,500 |        |        |        | 18,000                   | 23,000 |        |        |        |  |
| 24+24       |              | 21,000                   | 21,000 |        |        |        | 22,000                   | 22,000 |        |        |        |  |
| 9+9+9       | 3-Zone       | 8,500                    | 8,500  | 8,500  |        |        | 10,000                   | 10,000 | 10,000 |        |        |  |
| 9+9+12      |              | 8,500                    | 8,500  | 12,000 |        |        | 9,000                    | 9,000  | 13,000 |        |        |  |
| 9+9+18      |              | 8,500                    | 8,500  | 18,000 |        |        | 9,000                    | 9,000  | 19,000 |        |        |  |
| 9+9+24      |              | 8,000                    | 8,000  | 22,500 |        |        | 8,500                    | 8,500  | 23,500 |        |        |  |
| 9+12+12     |              | 8,500                    | 12,500 | 12,500 |        |        | 9,000                    | 13,000 | 13,000 |        |        |  |
| 9+12+18     |              | 8,000                    | 12,000 | 18,000 |        |        | 8,500                    | 13,000 | 19,000 |        |        |  |
| 9+12+24     |              | 8,000                    | 12,000 | 21,500 |        |        | 8,500                    | 12,500 | 22,000 |        |        |  |
| 9+18+18     |              | 8,000                    | 18,000 | 18,000 |        |        | 8,500                    | 18,500 | 18,500 |        |        |  |
| 9+18+24     |              | 7,500                    | 15,500 | 21,000 |        |        | 8,000                    | 16,000 | 21,500 |        |        |  |
| 9+24+24     |              | 7,000                    | 20,000 | 20,000 |        |        | 7,500                    | 21,000 | 21,000 |        |        |  |
| 12+12+12    |              | 12,000                   | 12,000 | 12,000 |        |        | 13,000                   | 13,000 | 13,000 |        |        |  |
| 12+12+18    |              | 12,000                   | 12,000 | 17,000 |        |        | 12,500                   | 12,500 | 18,000 |        |        |  |
| 12+12+24    |              | 11,000                   | 11,000 | 22,000 |        |        | 11,500                   | 11,500 | 23,000 |        |        |  |
| 12+18+18    |              | 11,000                   | 16,500 | 16,500 |        |        | 11,500                   | 17,000 | 17,000 |        |        |  |
| 12+18+24    |              | 10,500                   | 15,500 | 21,500 |        |        | 11,000                   | 16,000 | 22,000 |        |        |  |
| 12+24+24    |              | 10,000                   | 20,000 | 20,000 |        |        | 11,000                   | 20,500 | 20,500 |        |        |  |
| 18+18+18    |              | 16,000                   | 16,000 | 16,000 |        |        | 16,500                   | 16,500 | 16,500 |        |        |  |
| 18+18+24    |              | 15,000                   | 15,000 | 20,000 |        |        | 15,500                   | 15,500 | 21,000 |        |        |  |
| 9+9+9+9     |              | 4-Zone                   | 8,250  | 8,250  | 8,250  | 8,250  |                          | 8,500  | 8,500  | 8,500  | 8,500  |  |
| 9+9+9+12    |              |                          | 8,000  | 8,000  | 8,000  | 12,000 |                          | 8,500  | 8,500  | 8,500  | 12,500 |  |
| 9+9+9+18    | 8,000        |                          | 8,000  | 8,000  | 17,000 |        | 8,500                    | 8,500  | 8,500  | 17,500 |        |  |
| 9+9+9+24    | 7,500        |                          | 7,500  | 7,500  | 20,500 |        | 8,000                    | 8,000  | 8,000  | 21,000 |        |  |
| 9+9+12+12   | 8,000        |                          | 8,000  | 12,000 | 12,000 |        | 8,500                    | 8,500  | 13,000 | 13,000 |        |  |
| 9+9+12+18   | 8,000        |                          | 8,000  | 11,000 | 17,000 |        | 8,500                    | 8,500  | 11,500 | 17,500 |        |  |
| 9+9+12+24   | 7,500        |                          | 7,500  | 10,500 | 20,500 |        | 8,000                    | 8,000  | 11,100 | 21,000 |        |  |
| 9+9+18+18   | 7,500        |                          | 7,500  | 15,500 | 15,500 |        | 8,000                    | 8,000  | 16,000 | 16,000 |        |  |
| 9+9+18+24   | 7,000        |                          | 8,000  | 14,500 | 20,000 |        | 7,500                    | 7,500  | 15,000 | 20,000 |        |  |
| 9+12+12+12  | 8,000        |                          | 12,000 | 12,000 | 12,000 |        | 8,500                    | 12,500 | 12,500 | 12,500 |        |  |
| 9+12+12+18  | 8,000        |                          | 11,000 | 11,000 | 16,000 |        | 8,500                    | 11,500 | 11,500 | 16,500 |        |  |
| 9+12+12+24  | 7,500        |                          | 10,000 | 10,000 | 20,000 |        | 8,000                    | 10,500 | 10,500 | 20,500 |        |  |
| 9+12+18+18  | 7,500        |                          | 10,000 | 15,000 | 15,000 |        | 8,000                    | 10,500 | 15,500 | 15,500 |        |  |
| 9+18+18+18  | 8,000        |                          | 14,000 | 14,000 | 14,000 |        | 7,500                    | 14,500 | 14,500 | 14,500 |        |  |
| 12+12+12+12 | 12,000       |                          | 12,000 | 12,000 | 12,000 |        | 12,500                   | 12,500 | 12,500 | 12,500 |        |  |
| 12+12+12+18 | 11,000       |                          | 11,000 | 11,000 | 16,000 |        | 11,500                   | 11,500 | 11,500 | 16,500 |        |  |
| 12+12+12+24 | 10,000       | 10,000                   | 10,000 | 20,000 |        | 10,500 | 10,500                   | 10,500 | 20,500 |        |        |  |
| 12+12+18+18 | 10,000       | 10,000                   | 15,000 | 15,000 |        | 10,500 | 10,500                   | 15,500 | 15,500 |        |        |  |

# APPLICATION DATA (USING 40MHHQ HIGH WALL)(CONT)

| Size           | No. of Zones | Cooling Capacity (Btu/h) |        |        |        |        | Heating Capacity (Btu/h) |        |        |        |        |        |
|----------------|--------------|--------------------------|--------|--------|--------|--------|--------------------------|--------|--------|--------|--------|--------|
|                |              | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 | Zone 1                   | Zone 2 | Zone 3 | Zone 4 | Zone 5 |        |
| 48K            |              |                          |        |        |        |        |                          |        |        |        |        |        |
| 9+18           | 2-Zone       | 8,500                    | 18,000 |        |        |        | 9,000                    | 18,000 |        |        |        |        |
| 9+24           |              | 8,500                    | 24,000 |        |        |        | 9,000                    | 25,000 |        |        |        |        |
| 12+12          |              | 12,500                   | 12,500 |        |        |        | 13,000                   | 13,000 |        |        |        |        |
| 12+18          |              | 12,000                   | 18,000 |        |        |        | 13,000                   | 19,000 |        |        |        |        |
| 12+24          |              | 12,000                   | 24,000 |        |        |        | 10,000                   | 25,000 |        |        |        |        |
| 18+18          |              | 18,500                   | 18,500 |        |        |        | 19,000                   | 19,000 |        |        |        |        |
| 18+24          |              | 17,500                   | 22,500 |        |        |        | 18,000                   | 23,000 |        |        |        |        |
| 24+24          |              | 21,000                   | 21,000 |        |        |        | 22,000                   | 22,000 |        |        |        |        |
| 9+9+9          |              | 3-Zone                   | 8,500  | 8,500  | 8,500  |        |                          | 10,000 | 10,000 | 10,000 |        |        |
| 9+9+12         |              |                          | 8,500  | 8,500  | 12,000 |        |                          | 9,000  | 9,000  | 13,000 |        |        |
| 9+9+18         | 8,500        |                          | 8,500  | 18,000 |        |        | 9,000                    | 9,000  | 19,000 |        |        |        |
| 9+9+24         | 8,000        |                          | 8,000  | 22,500 |        |        | 8,500                    | 8,500  | 23,500 |        |        |        |
| 9+12+12        | 8,500        |                          | 12,500 | 12,500 |        |        | 9,000                    | 13,000 | 13,000 |        |        |        |
| 9+12+18        | 8,000        |                          | 12,000 | 18,000 |        |        | 8,500                    | 13,000 | 19,000 |        |        |        |
| 9+12+24        | 8,000        |                          | 12,000 | 21,500 |        |        | 8,500                    | 12,500 | 22,000 |        |        |        |
| 9+18+18        | 8,000        |                          | 18,000 | 18,000 |        |        | 8,500                    | 18,500 | 18,500 |        |        |        |
| 9+18+24        | 7,500        |                          | 15,500 | 21,000 |        |        | 8,000                    | 16,000 | 21,500 |        |        |        |
| 9+24+24        | 7,000        |                          | 20,000 | 20,000 |        |        | 7,500                    | 21,000 | 21,000 |        |        |        |
| 12+12+12       | 12,000       |                          | 12,000 | 12,000 |        |        | 13,000                   | 13,000 | 13,000 |        |        |        |
| 12+12+18       | 12,000       |                          | 12,000 | 17,000 |        |        | 12,500                   | 12,500 | 18,000 |        |        |        |
| 12+12+24       | 11,000       |                          | 11,000 | 22,000 |        |        | 11,500                   | 11,500 | 23,000 |        |        |        |
| 12+18+18       | 11,000       |                          | 16,500 | 16,500 |        |        | 11,500                   | 17,000 | 17,000 |        |        |        |
| 12+18+24       | 10,500       |                          | 15,500 | 21,500 |        |        | 11,000                   | 16,000 | 22,000 |        |        |        |
| 12+24+24       | 10,000       |                          | 20,000 | 20,000 |        |        | 11,000                   | 20,500 | 20,500 |        |        |        |
| 18+18+18       | 16,000       |                          | 16,000 | 16,000 |        |        | 16,500                   | 16,500 | 16,500 |        |        |        |
| 18+18+24       | 15,000       |                          | 15,000 | 20,000 |        |        | 15,500                   | 15,500 | 21,000 |        |        |        |
| 9+9+9+9        | 4-Zone       |                          | 8,250  | 8,250  | 8,250  | 8,250  |                          | 8,500  | 8,500  | 8,500  | 8,500  |        |
| 9+9+9+12       |              |                          | 8,000  | 8,000  | 8,000  | 12,000 |                          | 8,500  | 8,500  | 8,500  | 12,500 |        |
| 9+9+9+18       |              | 8,000                    | 8,000  | 8,000  | 17,000 |        | 8,500                    | 8,500  | 8,500  | 17,500 |        |        |
| 9+9+9+24       |              | 7,500                    | 7,500  | 7,500  | 20,500 |        | 8,000                    | 8,000  | 8,000  | 21,000 |        |        |
| 9+9+12+12      |              | 8,000                    | 8,000  | 12,000 | 12,000 |        | 8,500                    | 8,500  | 13,000 | 13,000 |        |        |
| 9+9+12+18      |              | 8,000                    | 8,000  | 11,000 | 17,000 |        | 8,500                    | 8,500  | 11,500 | 17,500 |        |        |
| 9+9+12+24      |              | 7,500                    | 7,500  | 10,500 | 20,500 |        | 8,000                    | 8,000  | 11,100 | 21,000 |        |        |
| 9+9+18+18      |              | 7,500                    | 7,500  | 15,500 | 15,500 |        | 8,000                    | 8,000  | 16,000 | 16,000 |        |        |
| 9+9+18+24      |              | 7,000                    | 7,000  | 14,500 | 20,000 |        | 7,500                    | 7,500  | 15,000 | 20,000 |        |        |
| 9+12+12+12     |              | 8,000                    | 12,000 | 12,000 | 12,000 |        | 8,500                    | 12,500 | 12,500 | 12,500 |        |        |
| 9+12+12+18     |              | 8,000                    | 11,000 | 11,000 | 16,000 |        | 8,500                    | 11,500 | 11,500 | 16,500 |        |        |
| 9+12+12+24     |              | 7,500                    | 10,000 | 10,000 | 20,000 |        | 8,000                    | 10,500 | 10,500 | 20,500 |        |        |
| 9+12+18+18     |              | 7,500                    | 10,000 | 15,000 | 15,000 |        | 8,000                    | 10,500 | 15,500 | 15,500 |        |        |
| 9+18+18+18     |              | 7,000                    | 14,000 | 14,000 | 14,000 |        | 7,500                    | 14,500 | 14,500 | 14,500 |        |        |
| 12+12+12+12    |              | 12,000                   | 12,000 | 12,000 | 12,000 |        | 12,500                   | 12,500 | 12,500 | 12,500 |        |        |
| 12+12+12+18    |              | 11,000                   | 11,000 | 11,000 | 16,000 |        | 11,500                   | 11,500 | 11,500 | 16,500 |        |        |
| 12+12+12+24    |              | 10,000                   | 10,000 | 10,000 | 20,000 |        | 10,500                   | 10,500 | 10,500 | 20,500 |        |        |
| 12+12+18+18    |              | 10,000                   | 10,000 | 15,000 | 15,000 |        | 10,500                   | 10,500 | 15,500 | 15,500 |        |        |
| 9+9+9+9+9      |              | 5-Zone                   | 8,000  | 8,000  | 8,000  | 8,000  | 8,000                    | 8,500  | 8,500  | 8,500  | 8,500  | 8,500  |
| 9+9+9+9+12     |              |                          | 8,000  | 8,000  | 8,000  | 8,000  | 12,000                   | 8,500  | 8,500  | 8,500  | 8,500  | 13,000 |
| 9+9+9+9+18     | 7,500        |                          | 7,500  | 7,500  | 7,500  | 16,000 | 8,000                    | 8,000  | 8,000  | 8,000  | 16,500 |        |
| 9+9+9+9+24     | 6,750        |                          | 6,750  | 6,750  | 6,750  | 19,500 | 7,000                    | 7,000  | 7,000  | 7,000  | 20,000 |        |
| 9+9+9+12+12    | 8,000        |                          | 8,000  | 8,000  | 11,500 | 11,500 | 8,500                    | 8,500  | 8,500  | 12,000 | 12,000 |        |
| 9+9+9+12+18    | 7,000        |                          | 7,000  | 7,000  | 11,000 | 16,000 | 7,500                    | 7,500  | 7,500  | 11,500 | 16,500 |        |
| 9+9+9+18+18    | 7,000        |                          | 7,000  | 7,000  | 11,000 | 16,000 | 7,500                    | 7,500  | 7,500  | 16,500 | 16,500 |        |
| 9+9+12+12+12   | 7,500        |                          | 7,500  | 11,000 | 11,000 | 11,000 | 8,000                    | 8,000  | 12,000 | 12,000 | 12,000 |        |
| 9+9+12+12+18   | 7,500        |                          | 7,500  | 10,000 | 10,000 | 15,000 | 7,500                    | 7,500  | 10,500 | 10,500 | 15,500 |        |
| 9+12+12+12+12  | 7,000        |                          | 11,000 | 11,000 | 11,000 | 11,000 | 7,500                    | 11,500 | 11,500 | 11,500 | 11,500 |        |
| 9+12+12+12+18  | 6,500        |                          | 10,000 | 10,000 | 10,000 | 14,500 | 7,000                    | 10,500 | 10,500 | 10,500 | 15,000 |        |
| 12+12+12+12+12 | 10,500       |                          | 10,500 | 10,500 | 10,500 | 10,500 | 11,000                   | 11,000 | 11,000 | 11,000 | 11,000 |        |

## UNIT MOUNTING (OUTDOOR)

Refer to the unit's installation instructions for further details.

**Support** – A location which can bear the weight of outdoor unit. Refer to the Physical Data section for weights, and base dimensional drawings.

**Unit Leveling** – For reliable operation, units should be level in all planes.

**Clearances** – Minimum clearances, as shown in Fig. 9, must be provided for airflow. The outdoor units are designed for free-blow applications. Air inlets and outlets should not be restricted.

**Unit location** – A location which is convenient to installation and not exposed to strong wind.

**NOTE: Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your sales representative.**

### System Operating Conditions

| OPERATING RANGE (Min / Max °F (°C)) |                      |                     |
|-------------------------------------|----------------------|---------------------|
|                                     | Cooling              | Heating             |
| Outdoor DB                          | -13 / 122 (-25 / 50) | -22 / 86 (-30 / 30) |

### Metering Devices

The outdoor unit has multiple electronic expansion valves to manage the refrigerant flow to the different indoor fan coils connected to that unit.

### Refrigerant Lines

#### General Guidelines:

1. The outdoor units are shipped with a full charge of R-410A refrigerant. All charges, line sizing, and capacities are based on runs of 25 ft. (7.6 m). For runs over 25 ft. (7.6m), consult long-line section on this page for proper charge adjustments.
2. Refrigerant lines should not be buried in the ground. If it is necessary to bury the lines, do not bury more than 36 inches (914 mm). Provide a minimum of 6 inch (152 mm) vertical rise to the service valves to prevent refrigerant migration.
3. Both lines must be insulated. Use a minimum of ½-inch (12.7 mm) thick insulation. Closed-cell insulation is recommended in all long-line applications.
4. Special consideration should be given to isolating the interconnecting tubing from the building structure. Isolate the tubing so vibration or noise does not transmit into the structure.

#### Long Line Applications:

- No change in line sizing is required.

| Unit Size | Zones | Charge oz. (kg.) | Additional Charge Required After ft. (m) | Additional Charge oz./ft. (g/m) | Total Maximum Piping Length ft. (m.) |
|-----------|-------|------------------|--|---------------------------------|--------------------------------------|
| 18        | 2     | 70.55 (2.0)      | 49 (15)                                  | 0.16 (15)                       | 131 (40)                             |
| 24        | 3     | 98.76 (2.8)      | 74 (22.5)                                | 0.16 (15)                       | 197 (60)                             |
| 30        | 4     | 105.82 (3.0)     | 98 (30)                                  | 0.16 (15)                       | 263 (80)                             |
| 36        | 4     | 162.26 (4.6)     | 123 (37.5)                               | 0.16 (15)                       | 328 (100)                            |
| 48        | 5     | 162.26 (4.6)     | 123 (37.5)                               | 0.16 (15)                       | 328 (100)                            |

**NOTE: Additional Refrigerant Calculation Sum Total Liquid Pipe ft. (m) Additional Charge Required After ft. (m.) x Additional Charge oz./ft. (g/m) 0.16 (15).**

**NOTE: If the calculation results in a negative number, no additional refrigerant is required.**

### Drain Connections

Install drains that meet the local sanitation codes.

## WIRING

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use Electrical Data table MCA (minimum circuit amps) and MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

### Recommended Connection Method for Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 stranded wire with ground with a 600 volt insulation rating, power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) and the other is a ground wire. Wiring between indoor and outdoor unit is polarity sensitive. The use of BX wire is NOT recommended.

If installed in a high Electromagnetic field (EMF) area and communication issues exists, a 14/2 stranded shielded wire can be used to replace L2 and (S) between outdoor unit and indoor unit landing the shield onto ground in the outdoor unit only.

## CAUTION

**EQUIPMENT DAMAGE HAZARD**

Failure to follow this caution may result in equipment damage or improper operation.

Wires should be sized based on NEC and local codes.

## CAUTION

**EQUIPMENT DAMAGE HAZARD**

Failure to follow this caution may result in equipment damage or improper operation.

Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit.

Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.

No wire should touch the refrigerant tubing, compressor or any moving parts.

Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.

Connecting cable with conduit shall be routed through the hole in the conduit panel.

## Control System

The 38MGR unit is equipped with a microprocessor control to operate the system and give optimum levels of comfort and operating efficiency. There are microprocessor boards and thermistors located in both the indoor and outdoor units. The thermistors monitor the system operation and control the operating mode.

## Sequence of Operation

**NOTE: Simultaneous heating and cooling is not allowed.**

The Heating Mode is the priority in the system and controls the mode of operation for the rest of the indoor units connected to the same outdoor unit. If any unit in the system is set into Heating Mode the system switches to Heat. If any unit is setup in **COOLING**, while any unit in the system is setup as Heating, the ones on **COOLING** would enter in conflict mode and an error message would appear on the units set as **COOLING**.

All units must be set in cooling or fan mode for the system to cool. When a unit is set to **COOL**, **HEAT** or the **DRY** mode, the electronic expansion valve is first initialized (closed) and then is opened to a preset position.

Superheat heating for each fan coil (the ones that are energized) is monitored and the position of the electronic expansion valve is adjusted to ensure that each fan coil gets the appropriate amount of refrigerant to maintain the required superheat. In the **COOLING** mode, after the set point is satisfied, the electronic expansion valve remains open for a specified time to ensure the system pressures equalize. In the **HEATING** mode, after the set point is satisfied, the electronic expansion valve remains open to ensure proper oil flow back and keep low pressure.

When the system is set for **COOL**, **HEAT** or **DRY** mode, the compressor speed is varied by comparing the indoor air temperature with the set point and continuously adjusting the compressor speed (to keep the compressor running as long as possible) in an effort to maintain the greatest comfort possible.

The indoor fan can run in either the **MANUAL** or **AUTO** mode. When the fan is runs in the **AUTO** mode, the speed is determined by comparing the room temperature to the set point.

For High Walls and Floor Consoles Fan Coils, when the set point is satisfied, the fan speed is reduced. For Cassettes and Ducted Fan Coils when the set point is satisfied, the fan continues to run. The Fan Coils are not de-energized.

When the unit goes through the defrost cycle, the indoor fans are de-energized and the refrigerant is circulated through all the fan coils (even if they were off or on standby before the defrost cycle) to maximize the heat transfer surface area available for defrost operation.



## WARNING

AUTO mode is recommended to be used on single zone applications **ONLY**, it is **NOT** recommended to be used on Multi-zone Applications.

Using AUTO changeover on Multi-zone applications could set an indoor unit on Standby, indicated as (—) on the display, turning off this indoor unit until all the indoor units are on the same Mode (Cooling or Heating).

HEATING Mode is the priority in the system.

Simultaneous HEATING and COOLING is not allowed.

## AIRFLOW DATA

| OUTDOOR MULTI-ZONE |      |      |      |      |      |
|--------------------|------|------|------|------|------|
| SYSTEM SIZE        | 18K  | 24K  | 30K  | 36K  | 48K  |
| Outdoor (CFM)      | 1390 | 2130 | 2130 | 2130 | 3500 |

## SOUND PRESSURE

| OUTDOOR MULTI-ZONE           |       |      |      |      |     |     |
|------------------------------|-------|------|------|------|-----|-----|
| SYSTEM SIZE                  |       | 18K  | 24K  | 30K  | 36K | 48K |
| Outdoor Sound Pressure Level | DB(A) | 62.4 | 63.4 | 62.3 | 63  | 64  |

## SOUND POWER IN OCTAVE BANDS

|            | Frequency (Hz) | 63   | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
|------------|----------------|------|------|------|------|------|------|------|------|
| 2 ZONE 18K | Cooling dB(A)  | 53.9 | 52.0 | 55.4 | 48.9 | 44.5 | 40.4 | 36.3 | 30.8 |
|            | Heating dB(A)  | 57.0 | 55.8 | 59.3 | 52.8 | 49.5 | 45.2 | 41.6 | 38.6 |
| 3 ZONE 24K | Cooling dB(A)  | 62.0 | 63.2 | 58.5 | 56.0 | 54.7 | 49.3 | 46.3 | 41.8 |
|            | Heating dB(A)  | 64.4 | 65.9 | 65.4 | 58.5 | 57.7 | 52.7 | 50.3 | 52.2 |
| 4 ZONE 30K | Cooling dB(A)  | 58.4 | 60.1 | 58.3 | 52.6 | 51.0 | 47.6 | 44.2 | 38.7 |
|            | Heating dB(A)  | 62.1 | 62.7 | 61.8 | 56.4 | 55.5 | 51.5 | 49.8 | 46.0 |
| 4 ZONE 36K | Cooling dB(A)  | 67.9 | 64.6 | 58.7 | 58.3 | 55.4 | 50.3 | 44.7 | 38.5 |
|            | Heating dB(A)  | 65.1 | 61.8 | 62.4 | 59.0 | 56.7 | 52.2 | 45.5 | 41.6 |
| 5 ZONE 48K | Cooling dB(A)  | 68.4 | 65.8 | 58.6 | 58.3 | 55.5 | 51.8 | 45.3 | 44.2 |
|            | Heating dB(A)  | 68.5 | 62.3 | 62.4 | 61.3 | 59.1 | 54.0 | 48.7 | 44.0 |

## OUTDOOR UNIT SOUND PRESSURE TEST CONDITIONS

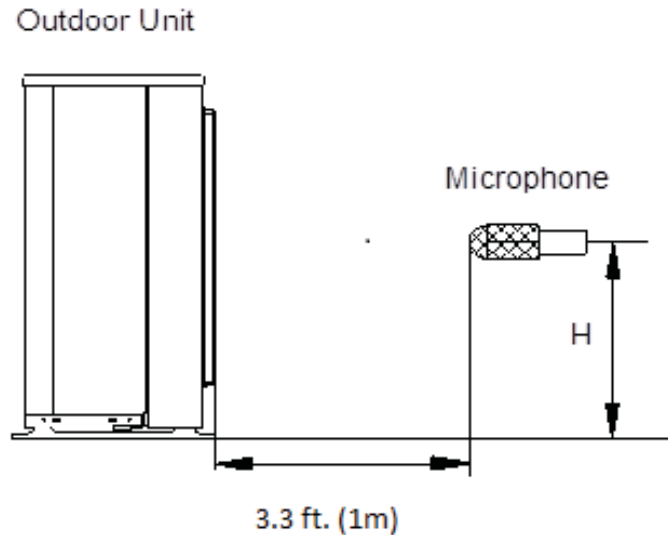


Fig. 11 – Outdoor Unit Sound Pressure Test Conditions

NOTE:  $H=0.5 \times$  Height of the outdoor unit.

|         | INDOOR CONDITION |             | OUTDOOR CONDITION |             |
|---------|------------------|-------------|-------------------|-------------|
|         | DB               | WB          | DB                | WB          |
| Cooling | 80.6F (27C)      | 66.2F (19C) | 95F (35C)         | 75.2F (24C) |
| Heating | 68F (20C)        | 59F (15C)   | 44.6F (7C)        | 42.8F (6C)  |

# FAN AND MOTOR SPECIFICATIONS

|                         |                  | 18K<br>(208/230 V) | 24K<br>(208/230 V) | 30K<br>(208/230 V) | 36K<br>(208/230 V) | 48K<br>(208/230 V) |
|-------------------------|------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Outdoor                 | Material         | AS                 | AS                 | AS                 | AS                 | AS                 |
|                         | Type             | ZL490*151*12-3KN   | ZL560*139*12-3KN   | ZL560*139*12-3KN   | ZL554*148*12-3KFN  | ZL554*148*12-3KFN  |
|                         | Diameter         | inch 490           | 560                | 560                | 554                | 554                |
|                         | Height           | inch 151           | 139                | 139                | 148                | 148                |
| Outdoor<br>Fan<br>Motor | Model            | ZKFN-50-8-2        | ZKFN-120-8-2       | ZKFN-120-8-2       | ZKFN-85-8-22       | ZKFN-85-8-22       |
|                         | Volts            | V 208/230          | 208/230            | 208/230            | 208/230            | 208/230            |
|                         | Phase            | 1                  | 1                  | 1                  | 1                  | 1                  |
|                         | Hertz            | Hz 60              | 60                 | 60                 | 60                 | 60                 |
|                         | FLA              | 0.74               | 0.9                | 1.3                | 1.0x2              | 1.0x2              |
|                         | Rated HP         | HP 0.07            | 0.16               | 0.16               | 0.11               | 0.11               |
|                         | Output           | W 50               | 120                | 120                | 85                 | 85                 |
|                         | Type             | DC                 | DC                 | DC                 | DC                 | DC                 |
|                         | Insulation class | A                  |                    |                    |                    |                    |
|                         | Safe class       | IPX4               |                    |                    |                    |                    |
|                         | Input            | W 115              | 156                | 156                | 108                | 108                |
|                         | Range of current | Amps 0.41 ± 10%    | 1.34 ± 10%         | 1.34 ± 10%         | 0.92 ± 10%         | 0.92 ± 10%         |
|                         | Rated current    | Amps 0.41          | 1.34               | 1.34               | 0.92               | 0.92               |
|                         | Capacitor        | μF                 | No Capacitor       |                    |                    |                    |
| Speed                   | rev/min 850~150  | 1000~150           | 1000~150           | 870~300            | 870~300            |                    |
| Rated RPM               | rev/min 800      | 900                | 900                | 800                | 800                |                    |
| Max. input              | W 130            | 173                | 173                | 126                | 126                |                    |

## ELECTRICAL DATA

| UNIT SIZE | SYSTEM VOLTAGE    | OPERATING VOLTAGE | COMPRESSOR | OUTDOOR FAN |      |     |    | MCA | MOCP |
|-----------|-------------------|-------------------|------------|-------------|------|-----|----|-----|------|
|           | VOLT / PHASE / HZ | MAX / MIN*        | RLA        | FLA         | HP   | W   |    |     |      |
| 18K       | 208-230/1/60      | 253 / 187         | 10         | 0.74        | 0.07 | 50  | 18 | 25  |      |
| 24K       |                   |                   | 15         | 0.9         | 0.16 | 120 | 25 | 35  |      |
| 30K       |                   |                   | 19         | 1.3         | 0.16 | 120 | 30 | 45  |      |
| 36K       |                   |                   | 21         | 1.0x2       | 0.11 | 85  | 35 | 50  |      |
| 48K       |                   |                   | 21         | 1.0x2       | 0.11 | 85  | 35 | 50  |      |

\*Permissible limits of the voltage range at which the unit will operate satisfactorily.

### LEGEND

FLA – Full Load Amps

MCA – Minimum Circuit Amps

MOCP – Maximum Over Current Protection

RLA – Rated Load Amps



# WIRING DIAGRAMS

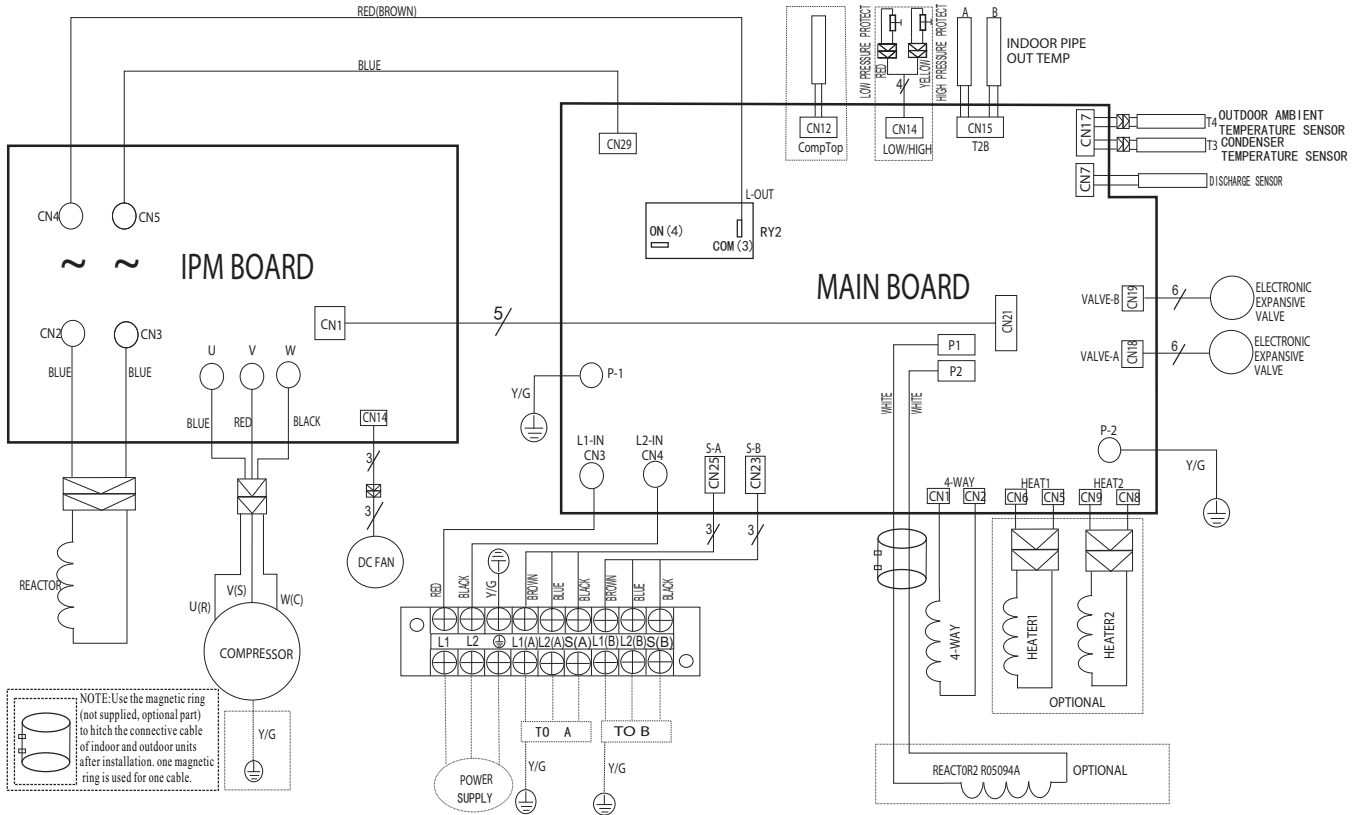
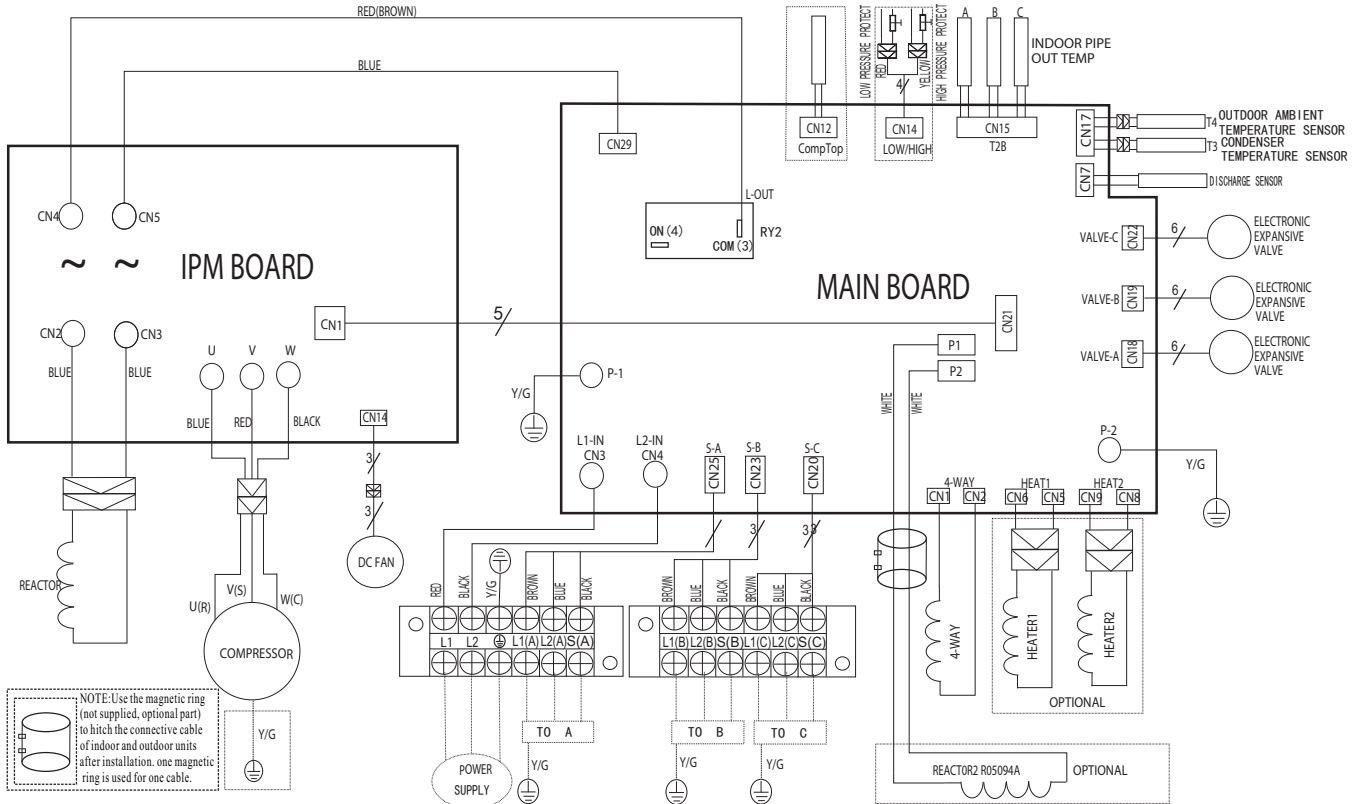


Fig. 12 – Wiring Diagram 18K – 2 Zone

| OUTDOOR UNIT MAIN BOARD |  |
|-------------------------|--|
| CODE                    | PART NAME  |
| CN3~CN4                 | Input: 230VAC High voltage   |
| CN23,CN25               | Output: Pin1 (Connection of the high voltage)---“S”Pin2~Pin3 (230VAC High voltage)---“L1 & L2” |
| P1~P2                   | Output: Connection of the REACTOR  |
| CN1~CN2                 | Output: 230VAC High voltage ----4 Way Valve  |
| CN5~CN6                 | Output: 230VAC High voltage----Compressor Crankcase Heater                                     |
| CN8~CN9                 | Output: 230VAC High voltage----Chassis Crankcase Heater  |
| P-1~P-2                 | Connection to the earth  |
| CN18, CN19              | Output: Pin1~Pin4: Pulse waveform (0~12VDC), Pin5, Pin6 (12VDC) --EEV                          |
| CN7                     | Input:Pin1 (0~5VDC), Pin2 (5VDC) -- Discharge Sensor   |
| CN17                    | Input: Pin3, Pin4 (5VDC), Pin2 (0VDC), Pin1, Pin5 (0~5VDC) --Cond. and Ambient Temperature     |
| CN15                    | Input: Pin1, Pin3, Pin5 (5VDC) Pin2, Pin4, Pin6 (0~5VDC) --IDU Pipe Temp                       |
| CN14                    | Input: Pin2, Pin4 (0VDC), Pin1, Pin3 (0~5VDC) ---H/L Pressure Switches                         |
| CN12                    | Input: Pin1 (0~5VDC), Pin2 (5VDC) --Compressor Temp  |
| CN29~L-OUT              | Output: 230VAC High voltage-- to IPM Board   |
| CN 21                   | Connect to IPM BOARD   |

| OUTDOOR UNIT IPM BOARD |  |
|------------------------|--|
| CODE                   | PART NAME  |
| CN4~CN5                | Input: 230VAC High voltage---from the Main Board       |
| CN2~CN3                | Output: Connection of the REACTOR                      |
| U~V~W                  | Connection to compressor voltage among phases 0~200VAC |
| CN14                   | Connection to DC FAN                                   |
| CN1                    | Connection to MAIN BOARD                               |

# WIRING DIAGRAMS (CONT)



**Fig. 13 – Wiring Diagrams 24K – 3 Zone Max**

| OUTDOOR UNIT MAIN BOARD |  |
|-------------------------|--|
| CODE                    | PART NAME  |
| CN3~CN4                 | Input: 230VAC High voltage   |
| CN20,CN23,CN25          | Output: Pin1 (Connection of the high voltage)---“S” Signal Pin2~Pin3 (230VAC High voltage)---IDU Power |
| P1~P2                   | Output: Connection of the REACTOR  |
| CN1~CN2                 | Output: 230VAC High voltage---4 way Valve  |
| CN5~CN6                 | Output: 230VAC High voltage---Compressor Crankcase Heater  |
| CN8~CN9                 | Output: 230VAC High voltage---Chassis Crankcase Heater   |
| P-1~P-2                 | Connection to the earth  |
| CN18,CN19,CN22          | Output: Pin1~Pin4: Pulse waveform (0~12VDC), Pin5, Pin6 (12VDC)---EEV                                  |
| CN7                     | Input: Pin1 (0~5VDC), Pin2 (5VDC) --- Discharge Temp   |
| CN17                    | Input: Pin3, Pin4 (5VDC), Pin2 (0VDC), Pin1, Pin5 (0~5VDC)---Conditioner and Ambient Temperature       |
| CN15                    | Input: Pin1, Pin3, Pin5 (5VDC) Pin2, Pin4, Pin6 (0~5VDC) --- IDU Pipe Temp                             |
| CN14                    | Input: Pin2, Pin4 (0VDC), Pin1, Pin3 (0~5VDC) --- H/L Pressure Switch                                  |
| CN12                    | Input: Pin1 (0~5VDC), Pin2 (5VDC) --- Compressor Temp  |
| CN29~L-OUT              | Output: 230VAC High voltage to IPM Board   |
| Cn21                    | Connect to the IPM BOARD   |

| OUTDOOR UNIT IPM BOARD |   |
|------------------------|---|
| CODE                   | PART NAME   |
| CN4~CN5                | Input: 230VAC High voltage                          |
| CN2~CN3                | Output: Connection of the REACTOR                   |
| U~V~W                  | Connect to compressor voltage among phases 0~200VAC |
| CN14                   | Connect to the DC FAN                               |
| CN1                    | Connect to the MAIN BOARD                           |

# WIRING DIAGRAMS (CONT)

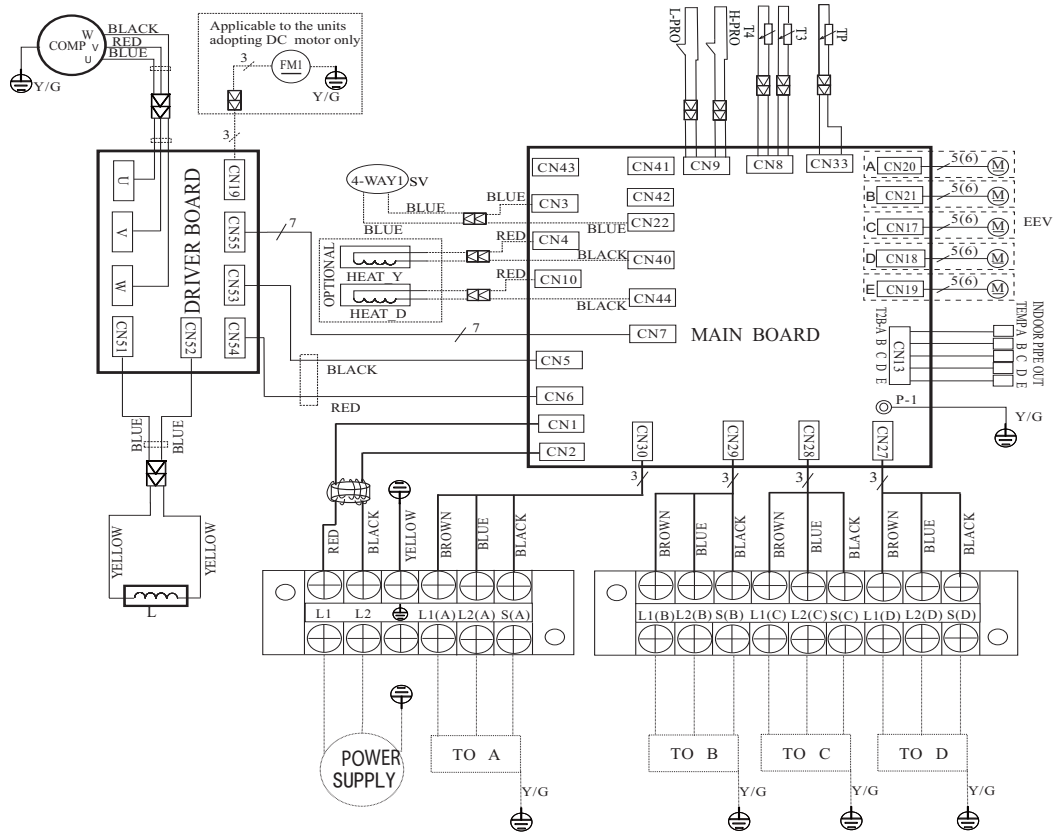


Fig. 14 – Wiring Diagrams 30K – 4 Zone Max

| OUTDOOR UNIT MAIN BOARD |   |
|-------------------------|---|
| CODE                    | PART NAME   |
| CN1~CN2                 | Input: 230VAC High voltage  |
| CN5~CN6                 | Output: 230VAC High voltage   |
| P-1                     | Connection to the earth   |
| CN10~CN44               | Output: 230VAC High voltage Chassis Crankcase Heater                        |
| CN4~CN40                | Output: 230VAC High voltage Compressor Crankcase Heater                     |
| CN3~CN22                | Output: 230VAC High voltage   |
| CN17~CN21               | Output: Pin1~Pin4: Pulse waveform (0~12VDC), Pin5, Pin6 (12VDC)             |
| CN7                     | Output: Pin1 (12VDC), Pin2 (5VDC), Pin3 (EARTH)                             |
| CN27~CN30               | Output: Pin 2~Pin 3 (230VAC High voltage) – IDU Power & "S"                 |
| CN13                    | Pin1, Pin3, Pin5, Pin7, Pin9 (5VDC); Pin2, Pin4, Pin6, Pin8, Pin10 (0~5VDC) |
| CN33                    | Input: Pin1 (0~5VDC), Pin2 (5VDC) – Discharge Temp                          |
| CN8                     | Input: Pin3, Pin4 (5VDC), Pin2 (0VDC), Pin1, Pin5 (0~5VDC) T3 & T4          |
| CN9                     | Input: Pin2, Pin4 (0VDC), Pin1, Pin3 (0~5VDC) H/L Pressure Switches         |

| OUTDOOR UNIT PFC & IPM BOARD |   |
|------------------------------|---|
| CODE                         | PART NAME   |
| CN53~CN54                    | Input: 230VAC High voltage                              |
| CN55                         | Output: Pin1 (12VDC), Pin2 (5VDC), Pin3 (EARTH)         |
| CN19                         | Pin1~Pin3: Connect to FAN voltage among phases 0~200VAC |
| U~V~W                        | Connect to compressor voltage among phases 0~200VAC     |
| CN51~CN52                    | CN51~EARTH, CN52~EARTH Output: 224~380VDC High voltage  |

| CODE  | PART NAME                  | CODE  | PART NAME                          |
|-------|----------------------------|-------|------------------------------------|
| COMP  | COMPRESSOR                 | L     | PFC INDUCTOR                       |
| CAP1  | FAN MOTOR CAPACITOR        | L-PRO | LOW PRESSURE SWITCH                |
| HEAT  | CRANKCASE HEATING          | TP    | EXHAUST TEMPERATURE SENSOR         |
| FM1   | OUTDOOR DC FAN             | SV    | 4-WAY VALVE                        |
| FAN1  | OUTDOOR AC FAN             | T3    | CONDENSER TEMPERATURE SENSOR       |
| EEV   | ELECTRONIC EXPANSION VALVE | T4    | OUTDOOR AMBIENT TEMPERATURE SENSOR |
| H-PRO | HIGH PRESSURE SWITCH       | TH    | HEATSINK TEMPERATURE SENSOR        |

# WIRING DIAGRAMS (CONT)

Notes: -----  
 This symbol indicates the element is optional, the actual shape shall be prevail.

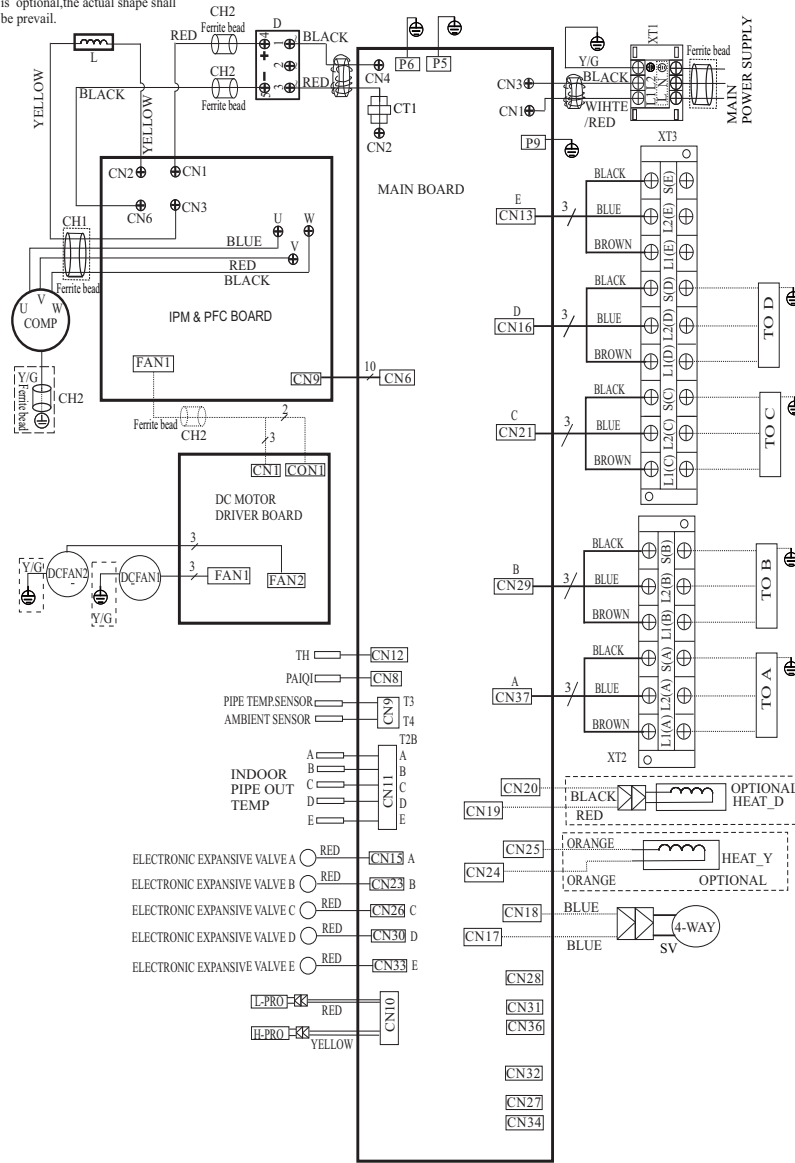


Fig. 15 – Wiring Diagrams 36K – 4 Zone Max

| OUTDOOR UNIT MAIN BOARD      |   |
|------------------------------|---|
| CODE                         | PART NAME   |
| CN1~CN3                      | Input: 230VAC High voltage  |
| CN13, CN16, CN21, CN29, CN37 | Output: Pin1(Connection of the high voltage) "S" Pin2~ Pin3 (230VAC High voltage)"L1&L2"                              |
| P5, P6, P9                   | Connection to the earth   |
| CN22                         | Output: -24VDC-24VDC  |
| CN17~CN18                    | Output: 230VAC High voltage to 4 way valve  |
| CN19~CN20                    | Output: 230VAC High voltage Compressor Crankcase Heater   |
| CN24~CN25                    | Output: 230VAC High voltage Chassis Crankcase Heater  |
| CN11                         | Input: Pin1, Pin3, Pin5, Pin7, Pin9 (5VDC) Pin2, Pin4, Pin6, Pin8, Pin10 (0-5VDC) indoor pipe out sensor              |
| CN12                         | Input: Pin1 (0-5VDC), Pin2 (5VDC) Heatsink Temperature Sensor   |
| CN8                          | Input: Pin1 (0-5VDC), Pin2 (5VDC) Compressor top sensor(PAIQI)  |
| CN9                          | Input: Pin3, Pin4 (5VDC), Pin2 (0VDC), Pin1, Pin5 (0-5VDC) Pipe sensor and ambient sensor                             |
| CN15, CN23, CN26, CN30, CN33 | Output: Pin1-Pin4: Pulse waveform (0-12VDC), Pin5, Pin6 (12VDC) to EEV  |
| CN6                          | Communication: Pin1-Pin6: Pulse waveform (0-5VDC), Pin7, Pin9 (0VDC) Pin8 (0-5VDC), Pin10 (5VDC) --to IPM & PFC board |
| CN2~CN4                      | Output: 230VAC High voltage to IPM & PFC Board  |
| CN10                         | Input: Pin2, Pin4 (0VDC), Pin1, Pin3 (0-5VDC) --H/L Pressure switch   |

## WIRING DIAGRAMS (CONT)

| OUTDOOR UNIT PFC and IPM BOARD |   |
|--------------------------------|---|
| CODE                           | PART NAME   |
| CN1~CN6                        | Output: 224~380VDC High voltage   |
| CN2~CN6                        | Output: 224~380VDC High voltage   |
| CN3~CN6                        | Output: 224~380VDC High voltage   |
| U~V~W                          | Connect to compressor voltage among phases 0~200VAC   |
| CN9                            | Communication: Pin1~Pin6: Pulse waveform (0~5VDC), Pin7, Pin9 (0VDC), Pin8 (0~5VDC), Pin10 (5VDC) to the main board         |
| FAN1                           | Output: Pin1~Pin2: High voltage (224~380VDC), Pin4 (0~15VDC) Pin5 (0~5.6VDC), Pin6: Pulse waveform (0~15VDC) to drive board |

| OUTDOOR UNIT DC MOTOR DRIVER BOARD |   |
|------------------------------------|---|
| CODE                               | PART NAME   |
| CON1                               | Output: Pin1~Pin2:High voltage (224~380VDC)                                     |
| CN1                                | Input:Pin4: Pulse waveform (0~15VDC), Pin3 (0~6.5VDC) Pin2 (0VDC), Pin1 (15VDC) |
| FAN1                               | Pin1~Pin3: Connect to FAN voltage among phases 0~200VAC                         |
| FAN2                               | Pin1~Pin3: Connect to FAN voltage among phases 0~200VAC                         |

| CODE          | PART NAME                          |
|---------------|------------------------------------|
| COMP          | COMPRESSOR                         |
| CAP1,CAP2     | FAN MOTOR CAPACITOR                |
| CT1           | AC CURRENT DETECTOR                |
| D             | DIODE MODULE                       |
| EEV           | ELECTRONIC EXPANSION VALVE         |
| FM1, FM2      | OUTDOOR DC FAN                     |
| FAN1, FAN2    | OUTDOOR AC FAN                     |
| HEAT          | CRANKCASE HEATING                  |
| H~PRO         | HIGH PRESSURE SWITCH               |
| L             | PFC INDUCTOR                       |
| L~PRO         | LOW PRESSURE SWITCH                |
| KM            | AC CONTACTOR                       |
| SV            | 4~WAY VALVE                        |
| TP            | EXHAUST TEMPERATURE SENSOR         |
| T3            | CONDENSER TEMPERATURE SENSOR       |
| T4            | OUTDOOR AMBIENT TEMPERATURE SENSOR |
| TH            | HEATSINK TEMPERATURE SENSOR        |
| PAIQI         | COMPRESSOR TOP SENSOR(GAS PIPE)    |
| CH1, CH2, CH3 | FERRITE BEAD                       |

# WIRING DIAGRAMS (CONT)

Notes: - - - - -

This symbol indicates the element is optional, the actual shape shall be prevail.

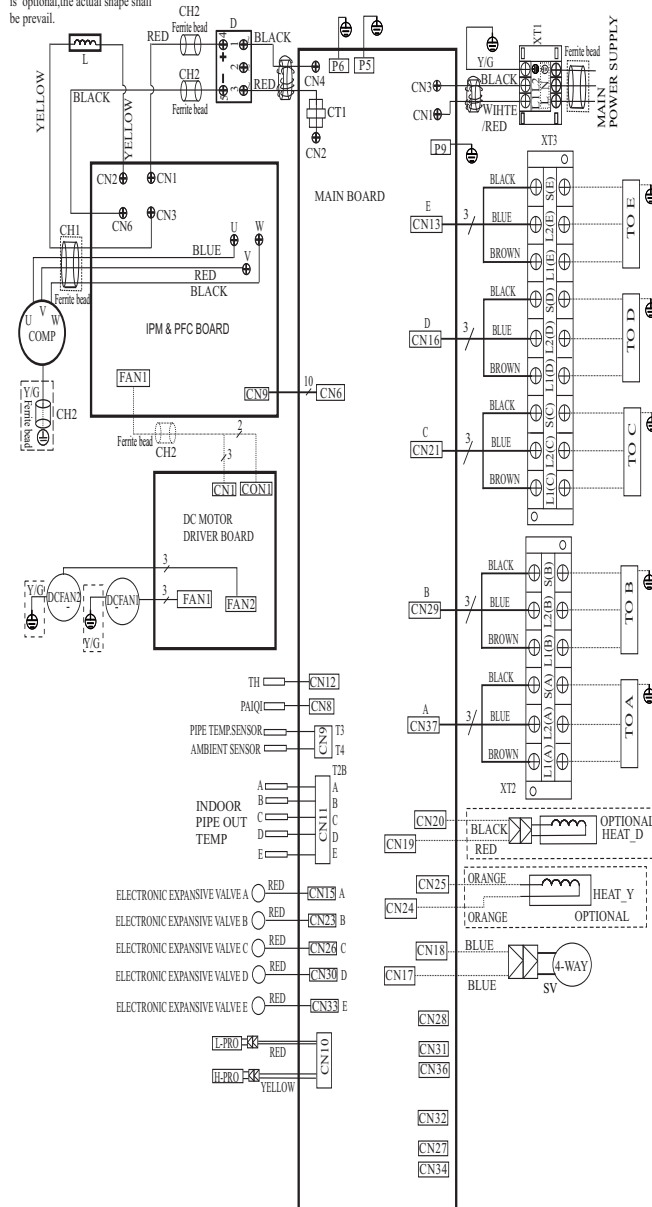


Fig. 16 – Wiring Diagrams 48K – 5 Zone Max

| OUTDOOR UNIT MAIN BOARD  |   |
|--------------------------|---|
| CODE                     | PART NAME   |
| CN1~CN3                  | Input: 230VAC High voltage  |
| CN13,CN16,CN21,CN29,CN37 | Output: Pin1 (Connection of the high voltage) "S" Pin2~Pin3 (230VAC High voltage) "L1&L2"                         |
| P5,P6,P9                 | Connection to the earth   |
| CN22                     | Output: -24VDC-24VDC  |
| CN17~CN18                | Output: 230VAC High voltage to 4 way valve  |
| CN19~CN20                | Output: 230VAC High voltage Compressor Crankcase Heater   |
| CN24~CN25                | Output: 230VAC High voltage Chassis Crankcase Heater  |
| CN11                     | Input: Pin1, Pin3, Pin5, Pin7, Pin9 (5VDC) Pin2, Pin4, Pin6, Pin8, Pin10 (0-5VDC) indoor pipe out sensor          |
| CN12                     | Input: Pin1 (0-5VDC), Pin2 (5VDC) Heatsink Temperature Sensor   |
| CN8                      | Input: Pin1 (0-5VDC), Pin2 (5VDC) Compressor top sensor (PAIQI)   |
| CN9                      | Input: Pin3, Pin4 (5VDC), Pin2 (0VDC), Pin1, Pin5 (0-5VDC) Pipe sensor and ambient sensor                         |
| CN15,CN23,CN26,CN30,CN33 | Output: Pin1-Pin4: Pulse waveform (0-12VDC), Pin5, Pin6 (12VDC) to EEV  |
| CN6                      | Communication: Pin1-Pin6: Pulse waveform(0-5VDC), Pin7, Pin9 (0VDC) Pin8 (0-5VDC), Pin10 (5VDC)--to IPM&PFC board |
| CN2~CN4                  | Output: 230VAC High voltage to IPM & PFC Board  |
| CN10                     | Input: Pin2, Pin4 (0VDC), Pin1, Pin3 (0-5VDC)--H/L Pressure switch  |

## WIRING DIAGRAMS (CONT)

| OUTDOOR UNIT PFC and IPM BOARD |   |
|--------------------------------|---|
| CODE                           | PART NAME   |
| CN1~CN6                        | Output: 224~380VDC High voltage   |
| CN2~CN6                        | Output: 224~380VDC High voltage   |
| CN3~CN6                        | Output: 224~380VDC High voltage   |
| U~V~W                          | Connect to compressor voltage among phases 0~200VAC   |
| CN9                            | Communication: Pin1~Pin6: Pulse waveform (0~5VDC), Pin7, Pin9 (0VDC), Pin8 (0~5VDC), Pin10 (5VDC) to the main board         |
| FAN1                           | Output: Pin1~Pin2: High voltage (224~380VDC) ,Pin4 (0~15VDC) Pin5 (0~5.6VDC), Pin6: Pulse waveform (0~15VDC) to drive board |

| OUTDOOR UNIT DC MOTOR DRIVER BOARD |   |
|------------------------------------|---|
| CODE                               | PART NAME   |
| CON1                               | Output: Pin1~Pin2: High voltage (224~380VDC)                                    |
| CN1                                | Input: Pin4: Pulse waveform (0~15VDC), Pin3 (0~6.5VDC) Pin2 (0VDC),Pin1 (15VDC) |
| FAN1                               | Pin1~Pin3:Connect to FAN voltage among phases 0~200VAC                          |
| FAN2                               | Pin1~Pin3:Connect to FAN voltage among phases 0~200VAC                          |

| CODE             | PART NAME                          |
|------------------|------------------------------------|
| COMP             | COMPRESSOR                         |
| CAP1,CAP2        | FAN MOTOR CAPACITOR                |
| CT1              | AC CURRENT DETECTOR                |
| D                | DIODE MODULE                       |
| EEV              | ELECTRONIC EXPANSION VALVE         |
| FM1, FM2         | OUTDOOR DC FAN                     |
| FAN1,FAN2        | OUTDOOR AC FAN                     |
| HEAT             | CRANKCASE HEATING                  |
| H-PRO            | HIGH PRESSURE SWITCH               |
| L                | PFC INDUCTOR                       |
| L-PRO            | LOW PRESSURE SWITCH                |
| KM               | AC CONTACTOR                       |
| SV               | 4-WAY VALVE                        |
| TP               | EXHAUST TEMPERATURE SENSOR         |
| T3               | CONDENSER TEMPERATURE SENSOR       |
| T4               | OUTDOOR AMBIENT TEMPERATURE SENSOR |
| TH               | HEATSINK TEMPERATURE SENSOR        |
| PAIQI            | COMPRESSOR TOP SENSOR (GAS PIPE)   |
| CH 1, CH 2, CH 3 | FERRITE BEAD                       |

# GUIDE SPECIFICATIONS

## HORIZONTAL DISCHARGE OUTDOOR UNITS

Size Range: 1 1/2, 2, 2 1/2, 3 and 4 Ton Nominal Cooling and Heating Capacity

Model Number: 38MGR

### PART 1 – GENERAL

#### 1.01 System Description

- A. Outdoor air-cooled split system compressor sections suitable for on-the-ground, rooftop, wall hung or balcony mounting. Units consist of a variable speed rotary compressor, an air-cooled coil, propeller-type draw-through outdoor fan, reversing valve, accumulator, electronic expansion valves, multiple service valves, and controls that allows multiple indoor units to be connected to the outdoor unit. Units discharge horizontally as shown on the contract drawings. Units function as the outdoor component of an air-to-air heat pump system.
- B. Units are designed to be used in a refrigeration circuit matched to two, three, four, or five multi style heat pump fan coil units.

#### 1.02 Agency Listings

- A. Unit construction complies with ANSI/ASHRAE 15, latest revision, and with NEC.
- B. Units are evaluated in accordance with UL standard 1995.
- C. Units are listed in CEC directory.
- D. Unit cabinet is capable of withstanding 500-hour salt spray test per Federal Test Standard no. 141 (method 6061).
- E. Air-cooled condenser coils are leak tested at 550 psig.

#### 1.03 Delivery, Storage, And Handling

Units are shipped in one piece and are stored and handled per the manufacturer's recommendations.

#### 1.04 Warranty (For Inclusion By Specifying Engineer)

### PART 2 – PRODUCTS

#### 2.01 Equipment

##### **A. General:**

Factory assembled, single piece, air-cooled outdoor unit. Contained within the enclosure are the factory wiring, piping, controls, and compressor.

##### **B. Unit Cabinet:**

1. The unit cabinet is constructed of galvanized steel, bonderized and coated with baked-enamel finish on inside and outside.
2. The unit access panel is removable with the minimal screws and provides full access to the compressor, fan, and control components.
3. The outdoor compartment is isolated and has an acoustic lining to assure quiet operation.

##### **C. Fans:**

1. The outdoor fans are direct-drive propeller type, and discharge air horizontally. The fan draws air through the outdoor coil.
2. Outdoor fan motors are multi-speed, totally-enclosed, single phase motors with permanently lubricated ball bearings. The motor is protected by internal thermal overload protection.
3. The shaft has an inherent corrosion resistance.
4. Outdoor fan openings are equipped with metal/mesh PVC coated protection grille over fan.

##### **D. Compressor**

1. The compressor is fully hermetic variable speed rotary type.
2. The compressor is inverter driven.
3. The compressor is equipped with an oil system, operating oil charge, and motor.
4. The motor is suitable for operation in a refrigerant and oil atmosphere.
5. The compressor assembly is installed on rubber vibration isolators.
6. The inverter and compressor are protected against over temperature and over current.

##### **E. Outdoor Coil:**

The coil is constructed of aluminum golden hydrophilic pre-coated fins mechanically bonded to seamless copper tubes, which are cleaned, dehydrated and sealed.

##### **F. Refrigerant Components:**

Refrigerant circuit components include multiple brass external liquid line service valves with service gauge connection port, multiple suction line service valves with a service gage connection port, accumulator, reversing valve, electronic expansion valves.

##### **G. Safeties:**

Operating safeties are factory selected, assembled, and tested. The minimum functions include the following:

1. Compressor discharge over temperature protection.
2. System low voltage protection.
3. Compressor overload protection.
4. Compressor over current protection.
5. IPM module protection.

##### **H. Electrical Requirements:**

1. Units shall operate on single-phase, 60 Hz power at 208/230v.
2. The unit electrical power is a single point connection.
3. All power and control wiring must be installed per NEC and all local electrical codes.
4. Units have multiple terminal blocks to connect to multiple indoor units.