

QUICK START GUIDE

Cold Climate Heat Pump

Thank you for choosing our product.
Please read this Quick Start Guide carefully before
operation and retain it for future reference.

To download an electric version of this manual visit
www.borealheatpumps.com/enermaxx-quick-start-guide.pdf

PLEASE READ FIRST

Although very similar to traditional unitary heat pump systems, the ENERMAXX Heat Pump Systems have a few key installation differences.

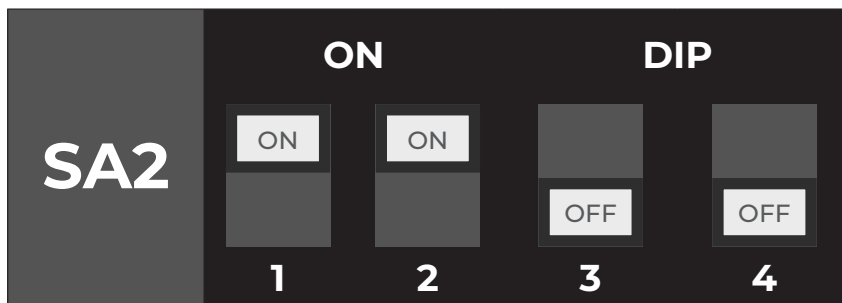
1. Each outdoor unit has two capacity and blower settings available on their corresponding control boards. (Detailed on the next page)
 - The 36kBtu models are rated for either 24kBtu or 36kBtu, nominal.
 - The 60kBtu models are rated for either 48kBtu or 60kBtu, nominal.
 - The efficiency ratings may change with a change in the capacity rating.
 - The outdoor and indoor capacities must match.
2. Both outdoor and indoor units feature service (shut-off) valves on both the liquid and gas (suction) valves.
 - The indoor unit does not contain a nitrogen charge, but a small amount (0.55lbs) of R-410A refrigerant.
 - Do not release this refrigerant to the atmosphere.
 - When evacuating (pulling a vacuum), **pull from both the liquid and gas (suction) valves.** This will ensure a proper evacuation has been performed and no air or other contaminants are in the refrigeration system. This will also mean proper evacuation takes less time.
3. The “W1” terminal activates the electric heat kit (if equipped).
 - The W1/DH terminal must be connected at the indoor and outdoor unit, and at the thermostat.
 - The heat kit is activated during defrost by the outdoor unit’s “D” terminal. (Some models may have “W1” instead of “D.”)
 - For a heat pump application, not straight cooling or dual fuel, the “W1” control wire will connect to “W2” or “AUX” on the thermostat
4. This system contains PVE oil, not POE. Cross-contamination is prohibited.
 - Replace or flush existing line sets and/or coils in a retrofit application

 DO NOT DISCARD. STORE THIS INFORMATION IN A SAFE PLACE FOR FUTURE REFERENCE.

OUTDOOR UNIT DIP SWITCH SETTINGS

NOTE

- ENERMAXX outdoor units are configurable by a set of dip switches located in the upper right hand corner of the Main Control Board.
- By default, the capacity is set at the larger capacity. Defrost, Power Mode, and Energy Savings are all set for the Standard, by default.
- Power must be shut off prior to changing the dip switch settings.
- The outdoor unit capacity must match the indoor unit capacity. The Power Mode and Energy Saving modes cannot be set simultaneously.



NOTE

The ON position of the switch is towards the word "ON" located on the dip switch bank for the ENERMAXX outdoor unit.

| Capacity | | DIP#1 | Capacity | | DIP#1 |
|---------------|--------------------------------|-------|---------------|--------------------------------|-------|
| ENVBR36HPJ1OA | 36kBtu Configuration (Default) | | ENVBR60HPJ1OA | 60kBtu Configuration (Default) | |
| | 24kBtu Configuration | | | 48kBtu Configuration | |

| Defrost | | DIP#2 | Operating Modes | | DIP#3 | DIP#4 |
|--------------------------------|--------------------|-------|--------------------------------|--------------------|-------|-------|
| ENVBR36HPJ1OA ENVBR60HPJ1OA | Standard (Default) | | ENVBR36HPJ1OA ENVBR60HPJ1OA | Standard (Default) | | |
| | Strong Defrost | | | Energy Saving | | |
| | | | Strong Mode | | | |

DEFROST

- **Standard Defrost Mode** is the default setting from the factory.
- **Strong Defrost Mode** is used in cold but high humidity environments such as areas near large bodies of water. Select Strong Defrost Mode if it is common practice to extend defrost timing or increase the frequency of defrost cycles in the area where the system is installed.
- In other cases where Standard Defrost Mode has been deemed insufficient, ensure the system is in good working order, the outdoor coil is clean, and the system is charged properly before changing the defrost setting to Strong Defrost Mode.

STRONG MODE

- In **Strong Defrost Mode**, the compressor will increase its speed at a higher rate than in **Standard Defrost Mode**, to reduce the ramp up time.
- **Strong Defrost Mode** may be enabled if **Standard Defrost Mode** is deemed insufficient by the customer but note it is less efficient.
- Always ensure the system is in good working order before enabling **Strong Defrost Mode**.

ENERGY SAVING MODE

- In **Energy Saving Mode**, the compressor will increase its speed at a lower slower rate. This can increase efficiency of the unit and provide additional dehumidification than the **Standard** or **Strong** modes.
- Example: **Energy Saving Mode** may be used when the new system is replacing a system that was a half-ton smaller than the ENERMAXX being installed. (The ENERMAXX is not available in 1.5, 2.5 or 3.5 ton capacities, therefore ENERMAXX would be set for the next highest capacity such as 2, 3 or 4 ton.)
- The indoor CFM rating should also be reduced to match a normal CFM rating for the half-ton system design. This would mean that the set point would most likely be satisfied before reaching the system's full rated nominal capacity, reducing energy usage and improving dehumidification in cooling mode.

NOTE

Strong Mode and Energy Saving Mode cannot be enabled at the same time. Only one mode can be enabled.

REFRIGERANT CHARGING

- It is recommended to install a new 3/8" X 3/4" line set.
- Filter driers are not recommended. Follow industry best practices for refrigerant piping.

| ENERMAXX 2/3 Ton - ENVBR36HPJ10A | | | |
|----------------------------------|------------|---------------------------|-------------|
| Model | Add: | Total Length of Line Set: | Add: |
| Less than 31 Feet | None | 96 to 98 Feet | 1 lb 7 Oz. |
| 32 Feet | 2 Oz. | 99 to 101 Feet | 1 lb 8 Oz. |
| 33 to 35 Feet | 3 Oz. | 102 to 104 Feet | 1 lb 9 Oz. |
| 36 to 39 Feet | 4 Oz. | 105 to 107 Feet | 1 lb 10 Oz. |
| 40 to 42 Feet | 5 Oz. | 108 to 110 Feet | 1 lb 11 Oz. |
| 43 to 45 Feet | 6 Oz. | 111 to 114 Feet | 1 lb 12 Oz. |
| 46 to 48 Feet | 7 Oz. | 115 to 117 Feet | 1 lb 13 Oz. |
| 49 to 51 Feet | 8 Oz. | 118 to 120 Feet | 1 lb 14 Oz. |
| 52 to 54 Feet | 9 Oz. | 121 to 123 Feet | 1 lb 15 Oz. |
| 55 to 57 Feet | 10 Oz. | 124 to 126 Feet | 2 lb |
| 58 to 60 Feet | 11 Oz. | 127 to 129 Feet | 2 lb 1 Oz. |
| 61 to 64 Feet | 12 Oz. | 130 to 132 Feet | 2 lb 2 Oz. |
| 65 to 67 Feet | 13 Oz. | 133 to 135 Feet | 2 lb 3 Oz. |
| 68 to 70 Feet | 14 Oz. | 136 to 139 Feet | 2 lb 4 Oz. |
| 71 to 73 Feet | 15 Oz. | 140 to 142 Feet | 2 lb 5 Oz. |
| 74 to 76 Feet | 1 lb | 143 to 145 Feet | 2 lb 6 Oz. |
| 77 to 79 Feet | 1 lb 1 Oz. | 146 to 148 Feet | 2 lb 7 Oz. |
| 80 to 82 Feet | 1 lb 2 Oz. | 149 to 151 Feet | 2 lb 8 Oz. |
| 83 to 85 Feet | 1 lb 3 Oz. | 152 to 154 Feet | 2 lb 9 Oz. |
| 86 to 89 Feet | 1 lb 4 Oz. | 155 to 157 Feet | 2 lb 10 Oz. |
| 90 to 92 Feet | 1 lb 5 Oz. | 158 to 160 Feet | 2 lb 11 Oz. |
| 93 to 95 Feet | 1 lb 6 Oz. | 161 to 164 Feet | 2 lb 12 Oz. |
| 164 Feet is Max. Length | | | |

| ENERMAXX 4/5 Ton - ENVBR60HPJ10A | | | |
|----------------------------------|--------|---------------------------|------------|
| Model | Add: | Total Length of Line Set: | Add: |
| Less than 31 Feet | None | 65 to 67 Feet | 13 Oz. |
| 32 Feet | 2 Oz. | 68 to 70 Feet | 14 Oz. |
| 33 to 35 Feet | 3 Oz. | 71 to 73 Feet | 15 Oz. |
| 36 to 39 Feet | 4 Oz. | 74 to 76 Feet | 1 lb |
| 40 to 42 Feet | 5 Oz. | 77 to 79 Feet | 1 lb 1 Oz. |
| 43 to 45 Feet | 6 Oz. | 80 to 82 Feet | 1 lb 2 Oz. |
| 46 to 48 Feet | 7 Oz. | 83 to 85 Feet | 1 lb 3 Oz. |
| 49 to 51 Feet | 8 Oz. | 86 to 89 Feet | 1 lb 4 Oz. |
| 52 to 54 Feet | 9 Oz. | 90 to 92 Feet | 1 lb 5 Oz. |
| 55 to 57 Feet | 10 Oz. | 93 to 95 Feet | 1 lb 6 Oz. |
| 58 to 60 Feet | 11 Oz. | 96 to 98 Feet | 1 lb 7 Oz. |
| 61 to 64 Feet | 12 Oz. | | |
| 98 Feet is Max. Length | | | |

COLD WEATHER STARTUP

The ENERMAXX outdoor unit is factory equipped with a crankcase heater.

- In outdoor temperatures below 32°F (0°C), ensure that power is applied to the outdoor unit for a minimum of 8 hours prior to startup.
- Upon power application, check the operation of the crankcase heater by removing the front access panel, opening the compressor blanket, and checking to see if the crankcase heater is hot.
- The crankcase heater ensures that liquid refrigerant is not present in the compressor before startup.
- Liquid refrigerant is not compressible and will force the compressor oil out of the compressor. This will damage the compressor.

INSTALLATION TIP

To make the best use of the 8 hour preheat, do the following:

1. Set the outdoor and indoor units
2. Install the refrigerant piping
3. Perform a leak check
4. Pull a 500 micron vacuum
5. Connect line voltage to the outdoor unit
6. Weigh in additional charge, if needed
7. Open the indoor and outdoor shutoff valves
8. Power on the outdoor unit
9. Complete all other installation items once power is applied to the outdoor unit

ELECTRIC HEAT KIT PRECAUTIONS

⚠ ANY FIELD WIRING, IF PRESENT, ON L1/L2 MUST BE DISCONNECTED PERMANENTLY PRIOR TO HEAT KIT INSTALLATION!

ALL POWER FOR THE AIR HANDLER WILL BE PROVIDED THROUGH THE HEAT KIT BREAKER!

FAILURE TO DISCONNECT ALL FIELD WIRING ON THE L1/L2 TERMINAL CAN RESULT IN FIRE!

AIR HANDLER DIP SWITCH SETTINGS

NOTE

- The ENERMAXX Air Handlers are configurable by a set of dip switches located on the main control board. For proper operation, ensure that the air handler blower settings match the outdoor unit capacity and ducting design. Power must be off prior to changing the dip switch settings.
- There are 8 static pressure settings for the blower.
- Air handler's control box Dip Switches are located on the Main Control Board inside the air handler control box.
- By default, the blower is set at Speed 4.
- Dip switch settings are on the following two pages.
- As with all air handling equipment, a duct system with a design that exceeds the capabilities of the installed equipment will result in customer discomfort, limited performance, and reduced equipment life.

NOTE

- Only the “HEAT (SA2)” dip switches are adjusted.
- The “COOL (SA1)” dip switches must remain in the “ON” position.

| Model | ENVBR24HPJ1IB | | Model | ENVBR36HPJ1IB | |
|---------|---------------|------------|---------|---------------|------------|
| | HEAT (SA2) | COOL (SA1) | | HEAT (SA2) | COOL (SA1) |
| Speed 1 | | | Speed 1 | | |
| Speed 2 | | | Speed 2 | | |
| Speed 3 | | | Speed 3 | | |
| Speed 4 | | | Speed 4 | | |
| Speed 5 | | | Speed 5 | | |
| Speed 6 | | | Speed 6 | | |
| Speed 7 | | | Speed 7 | | |
| Speed 8 | | | Speed 8 | | |

| Model | ENVBR48HPJ1IB | | Model | ENVBR60HPJ1IB | |
|---------|---------------|------------|---------|---------------|------------|
| | HEAT (SA2) | COOL (SA1) | | HEAT (SA2) | COOL (SA1) |
| Speed 1 | | | Speed 1 | | |
| Speed 2 | | | Speed 2 | | |
| Speed 3 | | | Speed 3 | | |
| Speed 4 | | | Speed 4 | | |
| Speed 5 | | | Speed 5 | | |
| Speed 6 | | | Speed 6 | | |
| Speed 7 | | | Speed 7 | | |
| Speed 8 | | | Speed 8 | | |

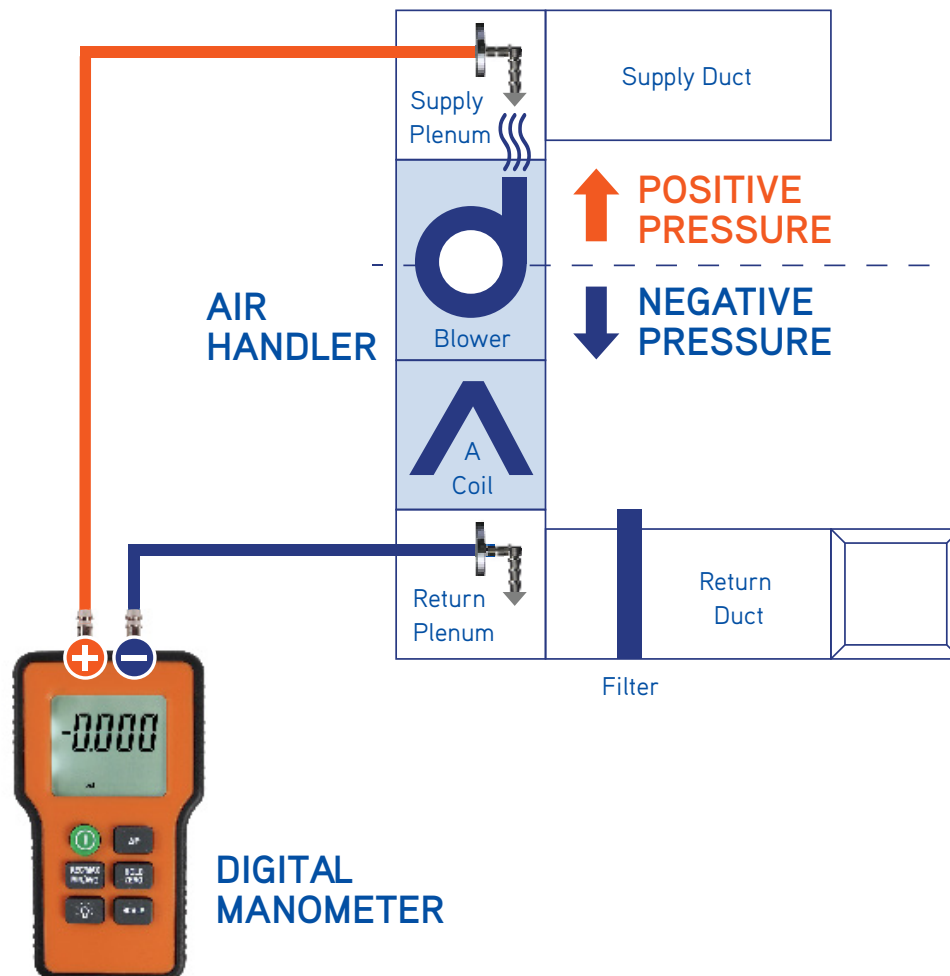
CHECKING STATIC PRESSURE

To properly utilize the below fan charts it is required to determine Total Static.

- Supply static must be measured in the supply trunk after the air handler and before branch ducts or registers in the airflow stream as shown in the figure above
- Return static must be measured in the return trunk towards the air handler after any branch returns, return grilles or filters
- Keep in mind static pressure drop will increase with a wet coil (cooling mode) vs dry coil (fan on or heating mode)

NOTE

- Total static includes everything the air handler is working against, supply duct return duct, branch duct, register boots, elbows, filter grille, filter and so on.
- Total Static is the difference between supply positive pressure and return negative pressure.



AIR HANDLER AIRFLOW RATINGS

The following CFM ratings are with a dry coil and included filter. For wet coil ratings, use 0.92 as the correction factor for the CFM.

| Model | ENVBR24HPJ1IB | | | | | | | | | | | |
|---------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|-----|
| Level | Static Pressure (In W.c.) and CFM | | | | | | | | | | | |
| | 0 | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| Speed 1 | 1030 | 900 | 840 | - | - | - | - | - | - | - | - | - |
| Speed 2 | 1080 | 960 | 900 | 840 | - | - | - | - | - | - | - | - |
| Speed 3 | 1220 | 1120 | 1060 | 990 | 850 | - | - | - | - | - | - | - |
| Speed 4 | 1390 | 1290 | 1240 | 1180 | 1070 | 960 | - | - | - | - | - | - |
| Speed 5 | 1580 | 1490 | 1440 | 1390 | 1290 | 1180 | 1090 | 970 | 830 | - | - | - |
| Speed 6 | 1720 | 1640 | 1600 | 1550 | 1450 | 1360 | 1250 | 1130 | 960 | - | - | - |
| Speed 7 | 1800 | 1730 | 1680 | 1630 | 1550 | 1460 | 1370 | 1270 | 1150 | 970 | 830 | - |
| Speed 8 | 1850 | 1820 | 1790 | 1740 | 1660 | 1580 | 1500 | 1410 | 1340 | 1200 | 1080 | 930 |

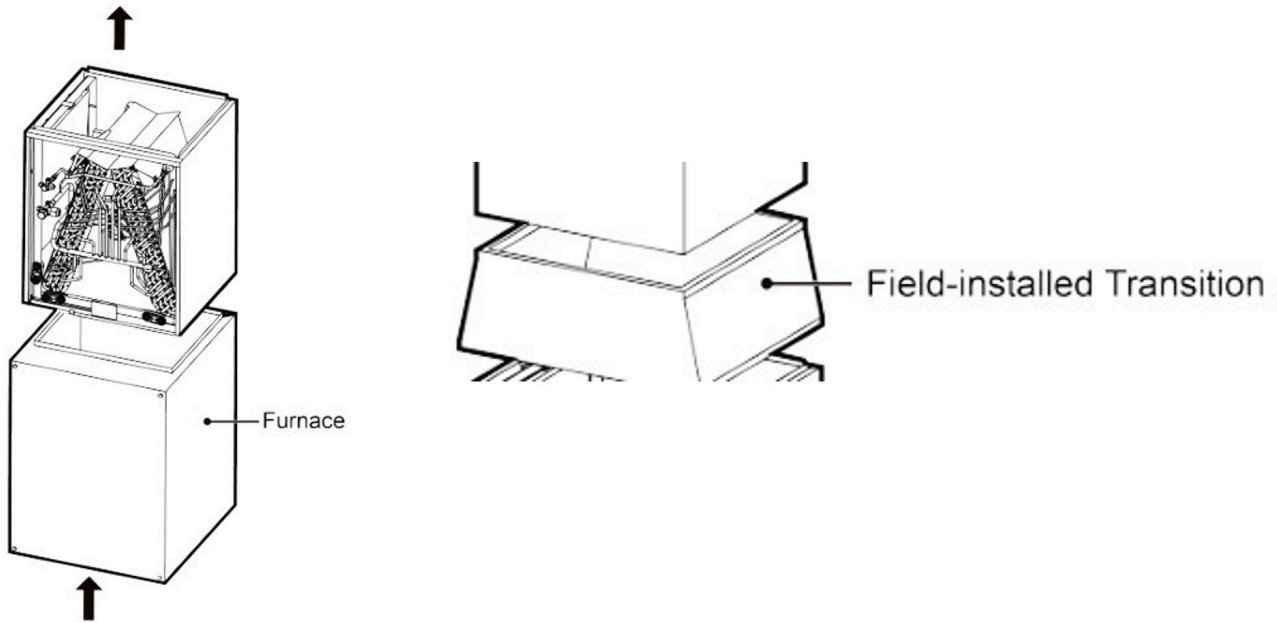
| Model | ENVBR36HPJ1IB | | | | | | | | | | | |
|---------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Level | Static Pressure (In W.c.) and CFM | | | | | | | | | | | |
| | 0 | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| Speed 1 | 1150 | 1050 | 950 | 880 | - | - | - | - | - | - | - | - |
| Speed 2 | 1200 | 1100 | 1000 | 940 | 850 | - | - | - | - | - | - | - |
| Speed 3 | 1380 | 1260 | 1200 | 1100 | 950 | - | - | - | - | - | - | - |
| Speed 4 | 1550 | 1460 | 1390 | 1310 | 1160 | 1010 | 830 | - | - | - | - | - |
| Speed 5 | 1710 | 1650 | 1600 | 1560 | 1480 | 1400 | 1310 | 1210 | 1080 | 930 | - | - |
| Speed 6 | 1840 | 1800 | 1750 | 1710 | 1640 | 1590 | 1500 | 1420 | 1330 | 1220 | 1100 | 960 |
| Speed 7 | 1870 | 1830 | 1810 | 1800 | 1760 | 1690 | 1620 | 1520 | 1440 | 1350 | 1250 | 1150 |
| Speed 8 | 1900 | 1860 | 1840 | 1830 | 1790 | 1720 | 1660 | 1600 | 1540 | 1440 | 1320 | 1220 |

| Model | ENVBR48HPJ1IB | | | | | | | | | | | |
|---------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Level | Static Pressure (In W.c.) and CFM | | | | | | | | | | | |
| | 0 | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| Speed 1 | 1640 | 1500 | 1450 | 1350 | - | - | - | - | - | - | - | - |
| Speed 2 | 1680 | 1560 | 1500 | 1380 | 1300 | - | - | - | - | - | - | - |
| Speed 3 | 1810 | 1690 | 1620 | 1550 | 1380 | - | - | - | - | - | - | - |
| Speed 4 | 1930 | 1830 | 1770 | 1710 | 1580 | 1430 | 1280 | - | - | - | - | - |
| Speed 5 | 2200 | 2110 | 2040 | 1980 | 1860 | 1720 | 1620 | 1490 | 1380 | - | - | - |
| Speed 6 | 2240 | 2190 | 2145 | 2100 | 2010 | 1870 | 1750 | 1615 | 1500 | 1380 | - | - |
| Speed 7 | 2280 | 2240 | 2200 | 2180 | 2130 | 2080 | 2000 | 1880 | 1750 | 1600 | 1420 | - |
| Speed 8 | 2300 | 2260 | 2220 | 2190 | 2140 | 2090 | 2040 | 1980 | 1930 | 1800 | 1700 | 1550 |

| Model | ENVBR60HPJ1IB | | | | | | | | | | | |
|---------|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Level | Static Pressure (In W.c.) and CFM | | | | | | | | | | | |
| | 0 | 0.1 | 0.15 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| Speed 1 | 1660 | 1540 | 1470 | 1400 | - | - | - | - | - | - | - | - |
| Speed 2 | 1850 | 1720 | 1650 | 1600 | 1400 | - | - | - | - | - | - | - |
| Speed 3 | 1920 | 1800 | 1730 | 1650 | 1480 | 1315 | - | - | - | - | - | - |
| Speed 4 | 2110 | 2000 | 1950 | 1860 | 1760 | 1640 | 1490 | 1325 | - | - | - | - |
| Speed 5 | 2250 | 2200 | 2190 | 2140 | 2040 | 1930 | 1800 | 1670 | 1520 | 1370 | - | - |
| Speed 6 | 2260 | 2220 | 2200 | 2170 | 2090 | 2010 | 1910 | 1760 | 1650 | 1550 | 1430 | 1380 |
| Speed 7 | 2300 | 2260 | 2230 | 2200 | 2150 | 2115 | 2050 | 1990 | 1920 | 1840 | 1750 | 1660 |
| Speed 8 | 2320 | 2280 | 2250 | 2230 | 2190 | 2140 | 2080 | 2040 | 2000 | 1950 | 1920 | 1890 |

FIELD INSTALLED TRANSITION

It is recommended to add a Field-installed Transition when the coil does not have same dimensions as the furnace. Please see the illustration below.

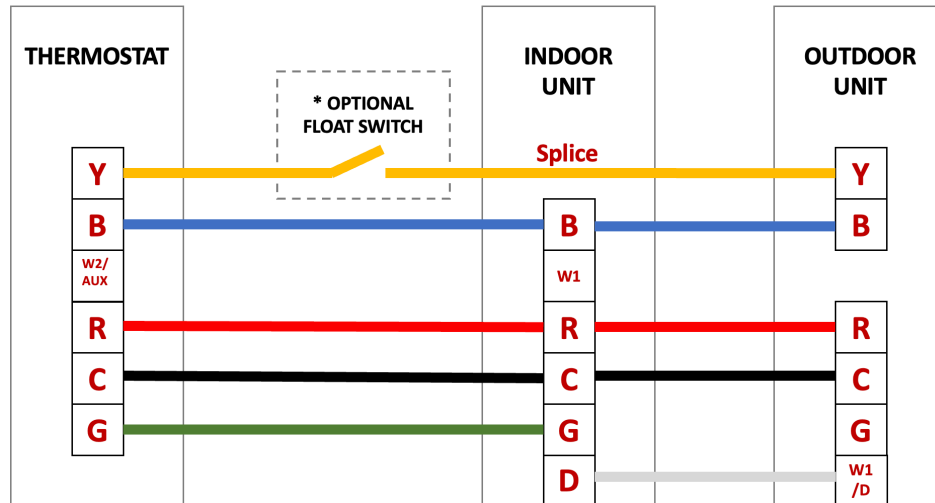


NOTE

Adding a proper Field-installed Transition will ensure proper airflow across the entire coil and allow space for inspecting the coil and heat exchanger.

24V CONTROL WIRING SCHEMATIC

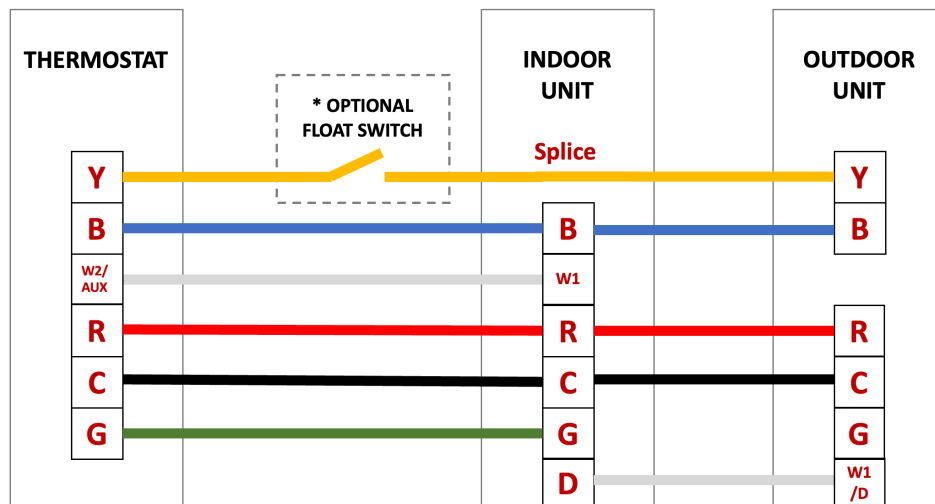
Thermostat wiring without heat kit-B Revision
Blower shutdown during defrost



NOTE

Blower shuts down during defrost to prevent cold air in the space.

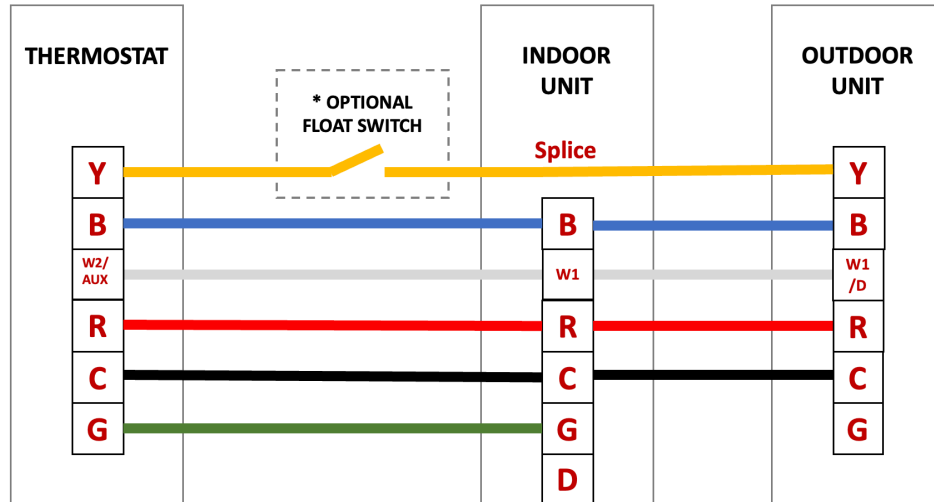
Thermostat wiring with heat kit-B Revision
Blower shutdown during defrost



NOTE

Blower shuts down and heat kit does not activate.

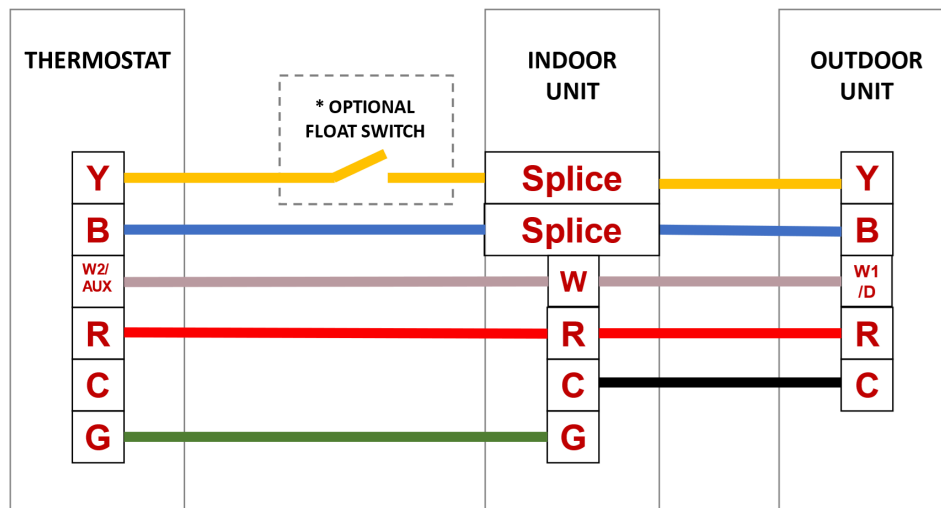
Thermostat wiring without heat kit-B Revision
 Activate heat kit during defrost



NOTE

Heat kit and blower runs during defrost.

Thermostat wiring for Dual Fuel



NOTE

Dual Fuel Capable Thermostat is required so that the Furnace and the Heat Pump cannot run at the same time other than when the Heat Pump is in defrost.



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