



# Evergreen® IM Indoor Blower Motor Installation Guide

Regal Beloit America, Inc.  
1325 Heil Quaker Blvd.  
LaVergne, TN 37086  
Customer Service: 800 672 6495  
thedealertools.com  
www.regalrexnord.com

**FORM**  
**G0127E**  
**Revised**  
**April 2023**

**⚠ WARNING** indicates a hazard which, if not avoided, could result in serious injury or death.

**⚠ CAUTION** indicates a hazard which, if not avoided, could result in minor or moderate personal injury.

## ⚠ WARNING

- Read and follow all instructions carefully.
- Disconnect and lock out the main power from the unit being serviced before installing the Evergreen IM motor. It is also a good practice to confirm that the power is disconnected with a voltmeter.
- Do not operate equipment without guards in place.
- Improper installation, adjustment, alteration, service, maintenance, or use could cause explosion, fire, electrical shock, or other conditions. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use the supplied or recommended parts when installing or servicing this product.
- Installation and service of this Evergreen IM motor should be performed only by trained service technicians familiar with these products.
- After installing the Evergreen IM motor, it is the responsibility of the installing technician to verify the HVAC system matches the manufacturer's requirements for proper operation, capacity, efficiency and safety.

## ⚠ CAUTION

- Periodic inspections should be performed. Failure to perform proper maintenance could result in premature product failure, in addition to minor or moderate injury.
- This Evergreen IM motor should be installed in accordance with accepted practices and installation instructions, and in compliance with all national and local codes.

### This installation guide covers Evergreen IM indoor blower motor models 6005 and 6010.

Page 1	Application Notes
Page 2	Application Notes; Pre-Installation Notes; Installation and Connection
Page 3 & 4	Wiring Diagrams
Page 5	Start-Up and Commissioning; Electrical Connections and Operation Overview
Page 6	Electrical Connections and Operation Overview
Page 7	Diagnostics; Changing Rotation
Page 8	Changing Rotation
Page 9	Mechanical Installation
Page 10	Specifications and Ratings; Technical Support

## APPLICATION NOTES

1. The Evergreen IM motor is designed to replace direct drive Permanent Split Capacitor (PSC) induction motors found in HVAC indoor blower motor applications with forward curved (squirrel cage) blower wheels.

**NOTE:** The Evergreen IM motor is not designed to replace Electronically Commutated Motors (ECM) including constant torque or constant airflow (variable speed). It is also not designed for outdoor applications. To find an Evergreen motor for any application for which the Evergreen IM motor is not designed, please visit [ECMMadeEasy.com](http://ECMMadeEasy.com).

2. The Evergreen IM motor is pre-programmed. There is no programming necessary at the time of installation.



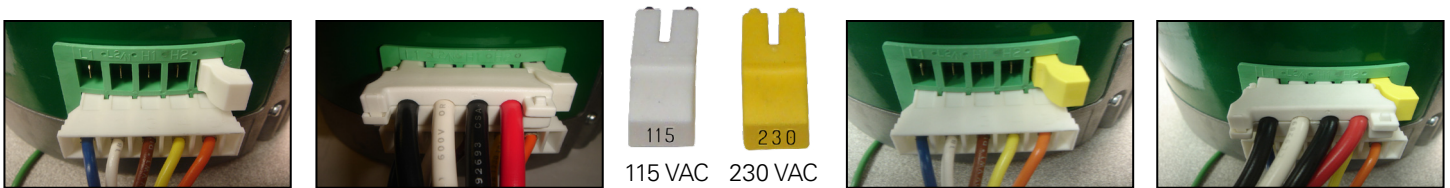
## APPLICATION NOTES (CONT.)

- Confirm the ratings of the selected Evergreen® IM motor match the ratings of the failed motor. See page 10 for SPECIFICATIONS AND RATINGS if needed.
- PSC motors rated 1/2 HP can be replaced by either stock # 6005 or 6010. The chart on the right will help select the motor that best matches the HVAC application.

1.5 - 3 Ton A/C	}	Stock # 6005
40 - 95k BTU Furnace		
3.5 - 5 Ton A/C	}	Stock # 6010
100 - 150k BTU Furnace		

### Evergreen IM Motor: Pre-Installation Notes

- The motor harness, wires and plugs described in this manual are provided with the Evergreen IM motor including:
  - (1) 5-wire harness
  - (1) 4-wire harness
  - (1) 115 VAC voltage plug
  - (1) 208-230 VAC voltage plug
  - (2) Jumper wires
  - (2) 1/4" fast on Y terminals
- Before installing the new Evergreen IM motor, install the voltage plug from the parts bag to match the voltage rating of the failed motor. For 115 VAC applications install the WHITE plug, for 208-230 VAC applications install the YELLOW plug. After the voltage plug is installed, connect both the 5-pin and 4-pin harness provided to the motor.



### Evergreen IM Motor: Installation and Connection

- Disconnect AC power from the HVAC system. **WARNING!** With a voltmeter, confirm the power is disconnected.
- Disconnect the wires or plugs connected to the failed motor.
- Install the new motor. See page 9 "MECHANICAL INSTALLATION" for mounting information, if needed.
- Connect the wires from the Evergreen IM harness to the HVAC system controls using the wiring diagrams on following pages.

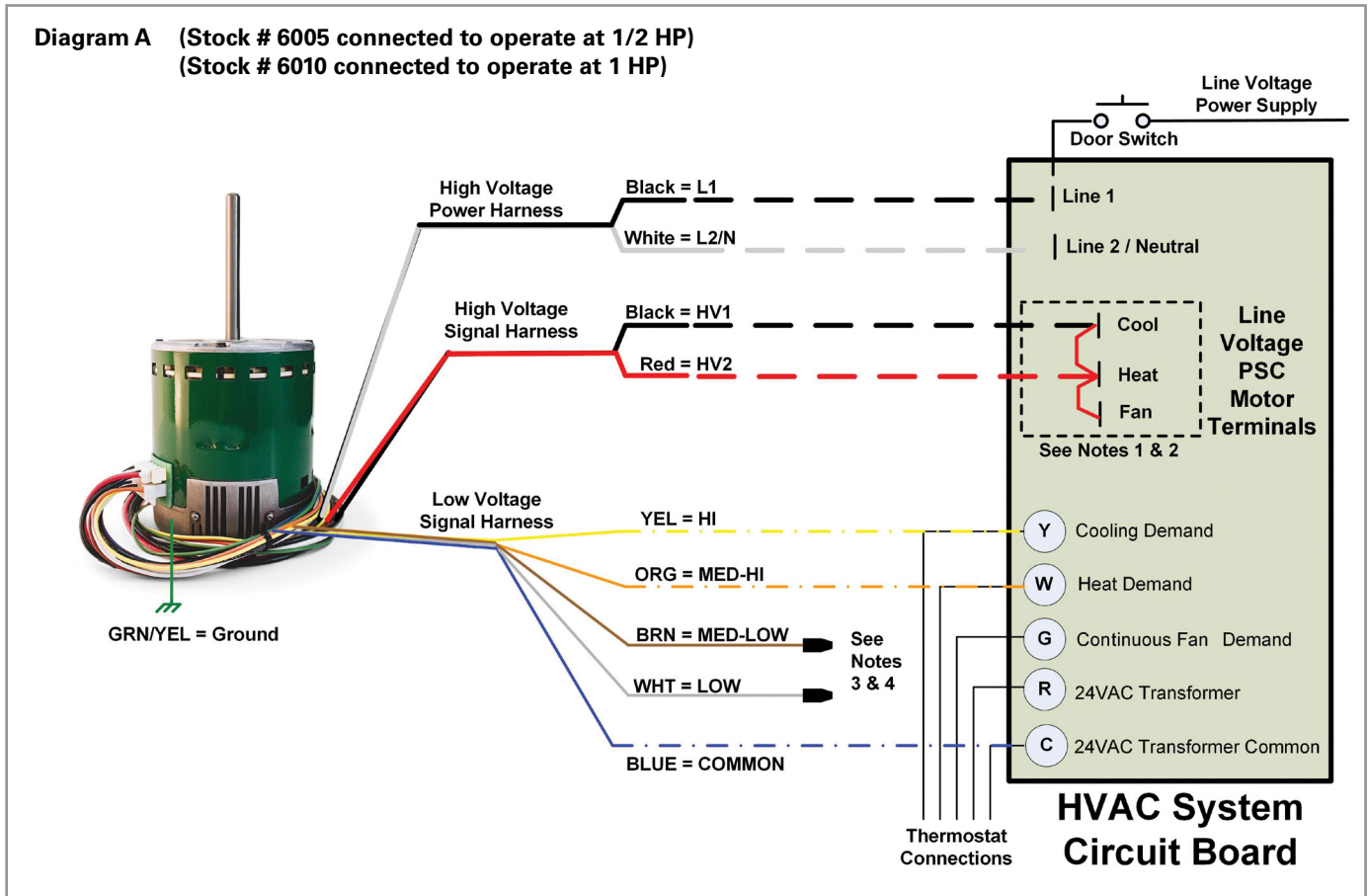
**NOTE:** See chart to the right for the correct diagram related to the stock number of the motor you are using and the horsepower required for the application. Each motor is capable of operating at three different horsepower ratings.

Diagram	Page #	Stock #	HP
A	3	6010	1
B	4	6010	3/4
C	4	6010	1/2
A	3	6005	1/2
B	4	6005	1/3
C	4	6005	1/5-1/4

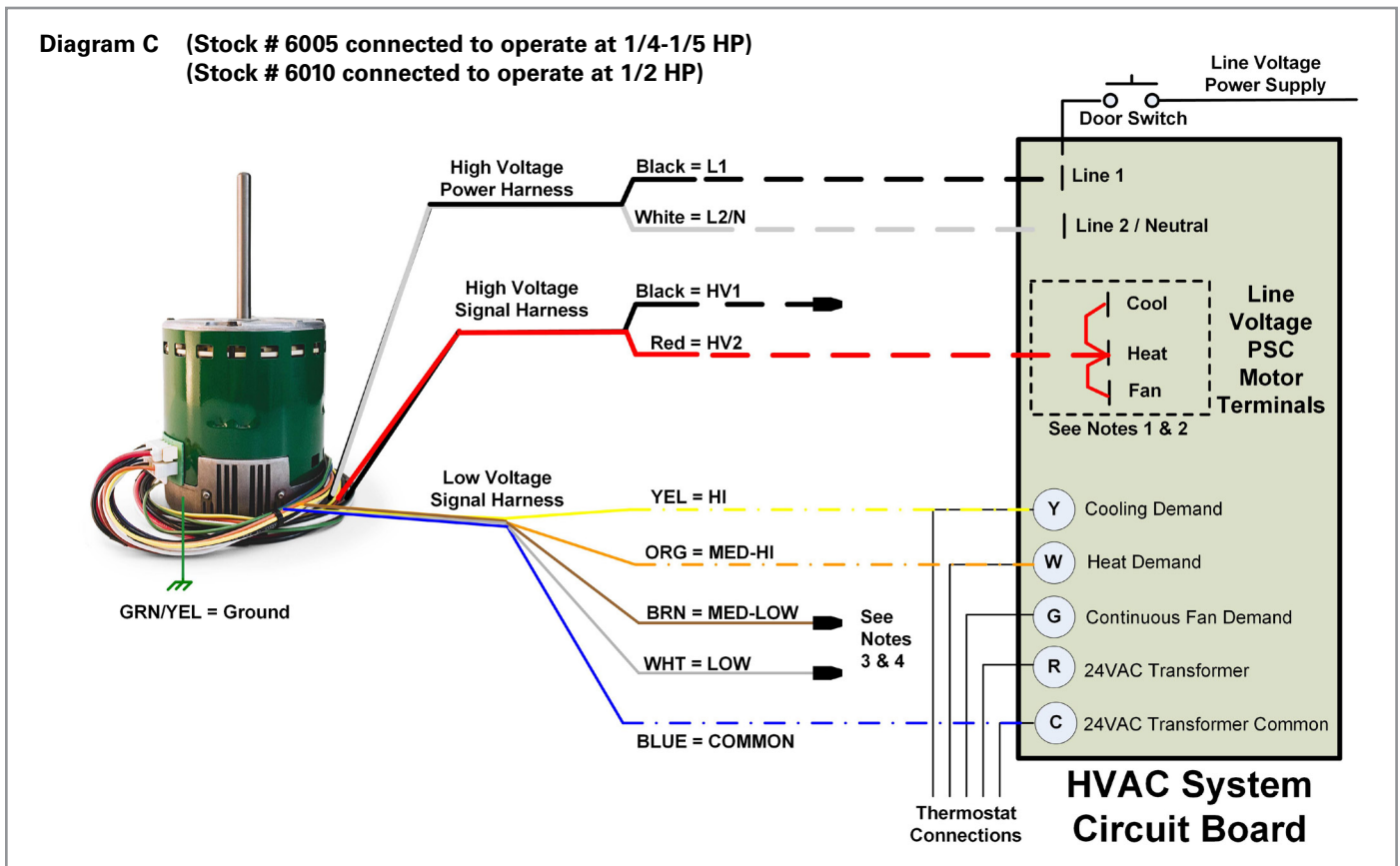
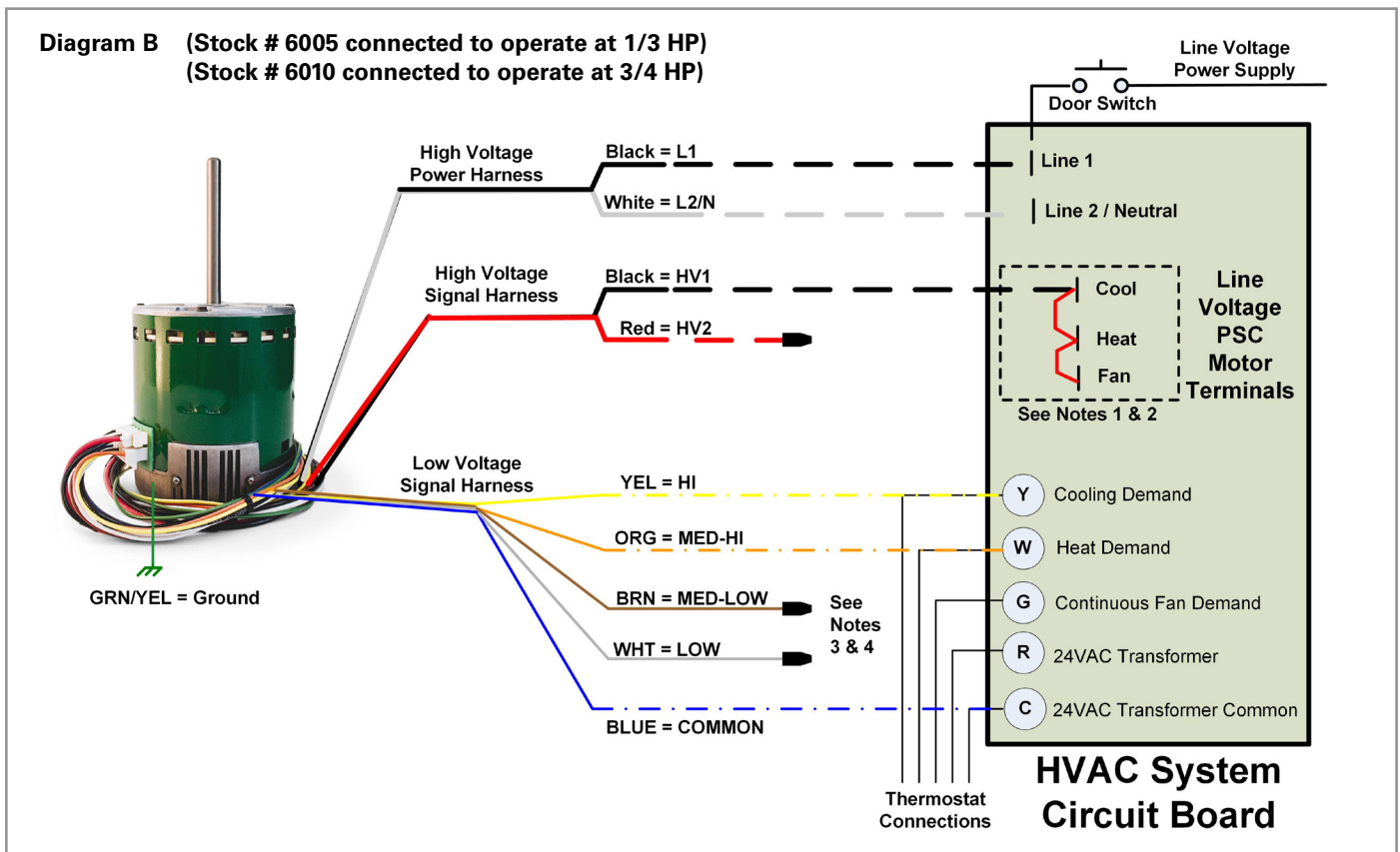
- See page 5 "START-UP AND COMMISSIONING" for information about rotation sensing and airflow selections before energizing the motor.

## Notes for Diagrams A, B and C

1. The line voltage continuous fan tap may be labeled "FAN," "CF" or "CONT."
2. Jumper LOW HEAT and HIGH HEAT or LOW COOL and HIGH COOL together with the FAN terminals and HIGH VOLTAGE SIGNAL WIRE(S) on applicable two stage systems.
3. Adjust speed selections per demand for proper airflow.
4. Do not connect a motor speed to (G) for the lowest continuous fan speed.



See "Notes for Diagrams A, B and C" on the top of page 3.



## START-UP AND COMMISSIONING

### Rotation Sensing

The first time the Evergreen® IM motor is powered up and receives an input on one or both of the HIGH VOLTAGE SIGNAL wires, it will perform the rotation sensing process. With this feature, the motor will automatically determine the proper operating direction of the blower wheel.

**NOTE:** Do not bench test this motor. The first time it is energized it should be mounted in the blower housing. Do not disconnect the power from the HVAC unit until the motor continues to run in one direction for more than a minute.

During the rotation sensing process, the motor will run in both directions, up to four times if necessary, to determine the proper direction of rotation. If the proper direction cannot be determined after the fourth sequence, the motor will operate in the default direction of Counter Clockwise (CCW) as viewed from the lead end.

When the motor continues to run in one direction for more than one minute, the rotation sensing process is complete and the feature is locked out. The motor will also noticeably increase speed (up to the speed input that is powered). The motor will now operate in this direction without performing rotation sensing even if the line voltage power is disconnected. If the motor direction of rotation needs to be reversed after the rotation sensing process is complete, see page 7 "CHANGING ROTATION".

### Speed Tap Selections

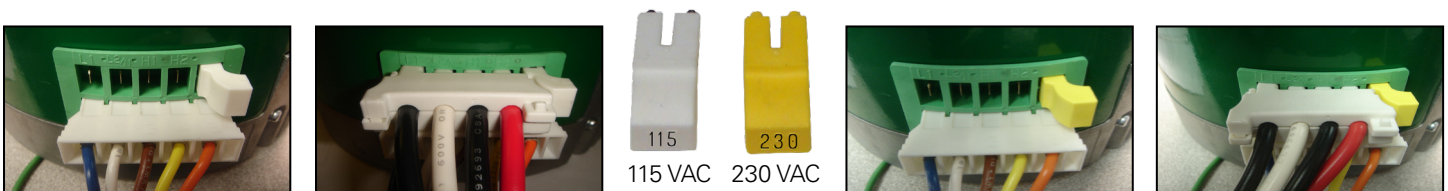
The speed tap VALUES (LOW-HIGH speed) of this motor may not exactly match the speed taps of the original motor. It is highly recommended to operate the HVAC system in all modes of operation. Measure airflow and adjust the speeds to match the system performance guidelines in the HVAC system's manual or unit rating plate.

**NOTE:** Install the system ID label, which is included with the motor kit, on the HVAC system near the existing wiring diagram.

## ELECTRICAL CONNECTIONS AND OPERATION OVERVIEW

### High Voltage Power Input

This motor is designed to be operated with continuous line voltage power connected to the HIGH VOLTAGE POWER wires. See wiring diagram on page 6. This motor can be operated at 115 VAC or 208-230 VAC. Install the voltage plug from the parts bag to match the voltage rating of the failed motor. For 115 VAC applications install the WHITE plug. For 208-230 VAC applications install the YELLOW plug. After the voltage plug is installed connect both the 5-pin and 4-pin harness provided to the motor.



### High Voltage Signal Input

When line voltage is supplied to either or both of the HIGH VOLTAGE SIGNAL inputs, two motor functions are controlled:

1. On/Off command, this input alone determines when the motor turns on and off.
2. Horsepower, this input determines the rated horsepower of the motor. See wiring diagram on page 6.

**NOTE:** The line voltage connected to the HIGH VOLTAGE SIGNAL inputs should be of the same polarity as the line voltage connected to the "BLACK" HIGH VOLTAGE POWER wire.

## ELECTRICAL CONNECTIONS AND OPERATION OVERVIEW (CONT.)

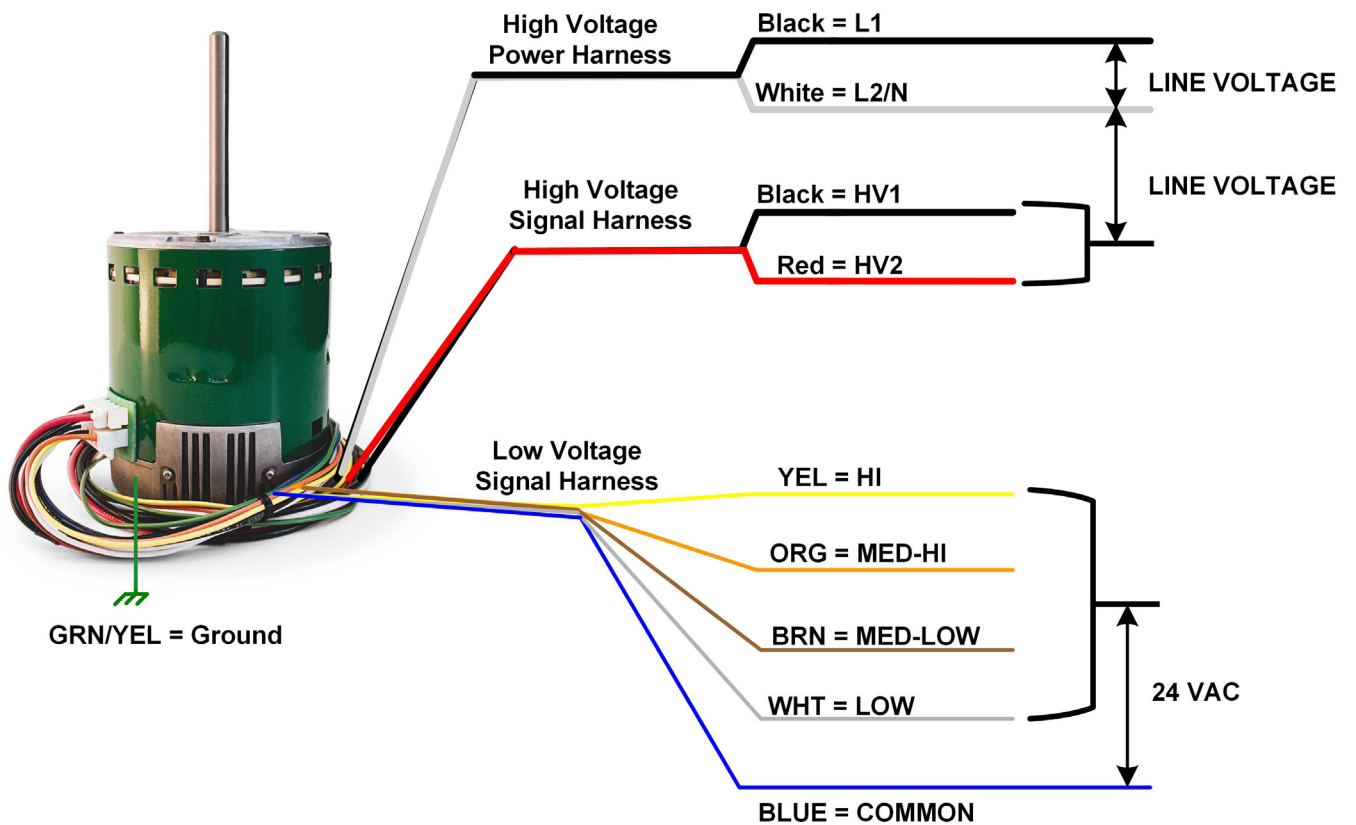
### Low Voltage Signal Input

When 24 VAC is supplied to one of the LOW VOLTAGE SIGNAL inputs, the motor will operate at that speed if there is line voltage present at the HIGH VOLTAGE POWER and HIGH VOLTAGE SIGNAL inputs.

There are four speed selections. However, the motor has five speed outputs. The fifth speed is the default continuous fan speed. This is the speed the motor will operate at when the LOW VOLTAGE SIGNAL inputs are not powered but the HIGH VOLTAGE SIGNAL INPUTS are powered. This speed is approximately 50% of the maximum operating speed of the motor. The four LOW VOLTAGE SIGNAL input speeds were selected to mimic the operating speeds of a 1075 RPM rated PSC motor.

This motor supports multiple LOW VOLTAGE SIGNAL inputs without the need for an isolation relay. If more than one speed is energized, the hierarchy goes to tap with the higher value, i.e. High would take precedence over all others and so on.

This motor is built with on/off ramping and state to state ramping. The motor will slowly change RPM from one speed to another, from off to on and on to off.



**HIGH VOLTAGE SIGNAL INPUT CHART**

Stock # 6005	Line Voltage Connection	Stock # 6010
1/2 HP	<b>Black (HV1) and Red (HV2)</b>	1 HP
1/3 HP	<b>Black (HV1)</b>	3/4 HP
1/4 - 1/5 HP	<b>Red (HV2)</b>	1/2 HP

## DIAGNOSTICS

### If the motor does not operate:

The Evergreen® IM motor will only operate with line voltage connected to the HIGH VOLTAGE POWER and HIGH VOLTAGE SIGNAL inputs. See wiring diagram on page 6.

1. Measure the the voltage between the BLACK and WHITE HIGH VOLTAGE POWER wires. if proper voltage is not present, solve the issue with the HVAC system controls and/or power supply. If proper voltage is present go to the next step.
  - If the motor is connected to a 115 VAC power supply and the WHITE voltage plug is installed, the voltage measured here should be 115 VAC.
  - If the motor is connected to a 208-230 VAC power supply and the YELLOW voltage plug is installed, the voltage measured here should be 208-230 VAC.

**NOTE:** The motor will operate and will not be harmed if the YELLOW 230 VAC plug is installed and the motor is connected to 115 VAC power supply. However, if the WHITE 115 VAC plug is installed and the motor is connected to a 208-230 VAC power supply, the motor will fail immediatly.

2. Measure the voltage between either or both (whichever is connected to the HVAC controls) of the HIGH VOLTAGE SIGNAL inputs and the WHITE HIGH VOLTAGE POWER wire.
  - If the motor is connected to a 115 VAC power supply and the WHITE voltage plug is installed, the voltage measured here should be 115 VAC.
  - If the motor is connected to a 208-230 VAC power supply and the YELLOW voltage plug is installed, the voltage measured here should be 208-230 VAC.
  - If the correct voltage is not present, solve the issue with the HVAC system controls.
  - If the correct voltage is present, and the correct voltage is present in step 1, and the motor does not operate, the motor is failed. Before replacing the motor please call our tech support (see page 10) if possible to confirm your diagnosis.

### If the airflow needs to be adjusted:

1. Confirm the horsepower selected matches the horsepower rating of the HVAC system. Increasing the horsepower selection will increase the airflow provided by each low voltage speed tap input.
2. Change the speed tap selection up or down for more or less airflow. Confirm the speed tap is receiving 24 VAC by measuring the voltage between the speed tap (wire) and the BLUE LOW VOLTAGE SINGAL wire. See wiring diagram on page 6. If the highest speed is selected and the highest hosepower selection is connected and there are still airflow issues:
  - If the motor is operating in the wrong direction, there will be low airflow on all speed taps and very low amperage. See below for instructions to change the rotation.
  - If the motor is connected to a 115 VAC power source, and the YELLOW 230 VAC voltage plug is installed in the motor, the motor output will be greatly reduced. Install the WHITE 115 VAC voltage plug to solve the issue.
  - If these issues have been corrected or ruled out and there is still insufficient airflow, measure the static pressure and/or solve any air side restrictions such as a dirty filter or indoor coil and closed registers or dampers.

## CHANGING ROTATION

If the motor has been operating in one direction for more than one minute and is not operating in the correct direction continue below. If the motor has not been operating for more than a minute, energize the motor and wait for it to complete the rotation sensing process described on page 5. If the motor is operating in the wrong direction of rotation after the rotation sensing process is complete continue below.

**Change rotation with the reversing harness.** The Evergreen rotation reversing harness is available wherever Evergreen products are sold, catalog # 5K016. The installation instructions are included with the part.

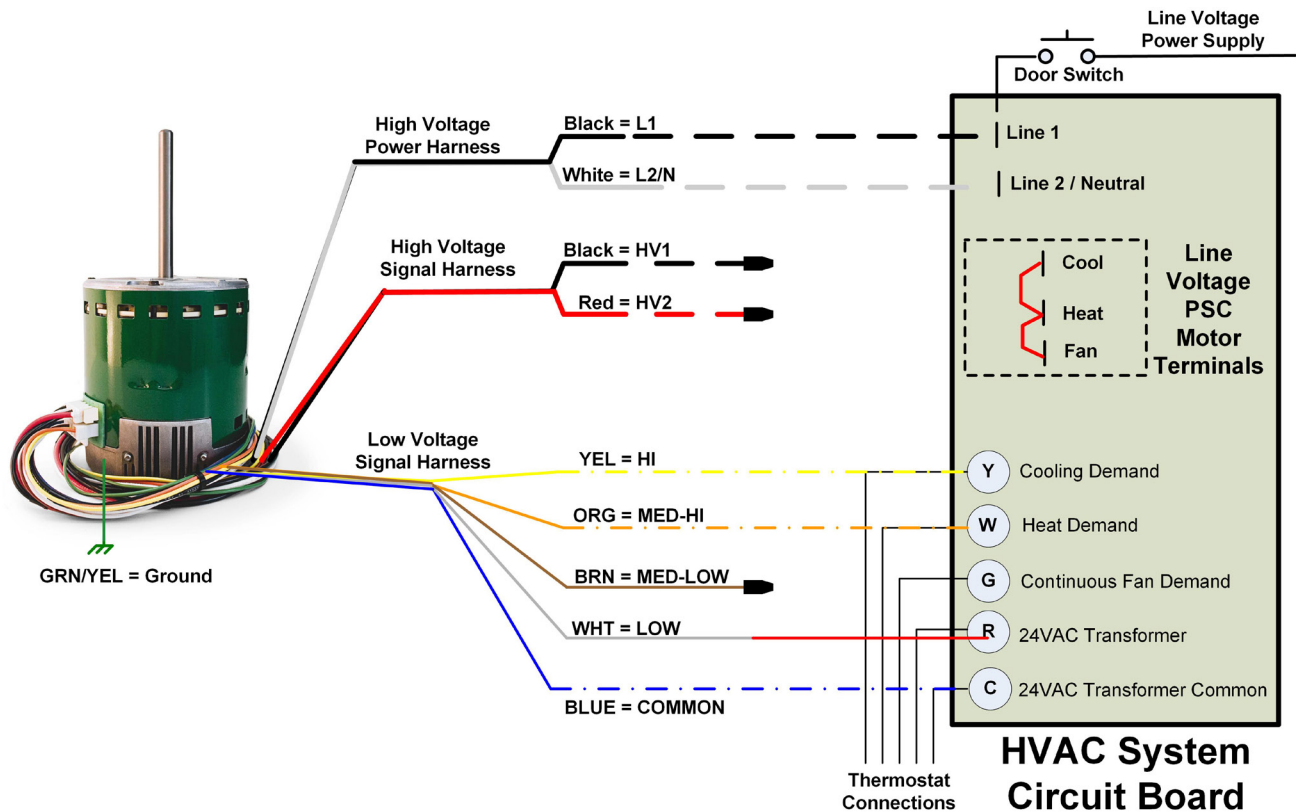


Rotation Reversing  
Harness # 5K016

## CHANGING ROTATION (CONT.)

### Change rotation with onboard features.

1. Disconnect the line voltage power to the HVAC system. **WARNING!** Using a voltmeter, confirm the power is disconnected.
2. Remove both HIGH VOLTAGE SIGNAL wires from the HVAC system controls.
3. Connect one of the LOW VOLTAGE SIGNAL wires to the thermostat (R) terminal.  
**NOTE:** See diagram below.
4. Restore the line voltage power to the HVAC system.
  - Line voltage power must remain on for a minimum of 5 minutes. Use a watch to confirm time. The motor will not operate during this timeframe.
5. Disconnect the line voltage power to the HVAC system. **WARNING!** Using a voltmeter, confirm the power is disconnected.
  - The line voltage power must remain disconnected for a minimum of 1 minute. Use a watch to confirm time. During this time remove the LOW VOLTAGE SIGNAL wire from the thermostat (R) terminal and reconnect either or both of the HIGH VOLTAGE SIGNAL wires to the HVAC system controls.
6. Restore the line voltage power to the HVAC system. Provide any demand call to confirm that the motor has now changed direction. If this process fails to reverse the motor's direction, repeat the above process. If this process fails to change the direction of rotation, use the reversing plug.



HIGH VOLTAGE SIGNAL INPUT CHART		
Stock # 6005	Line Voltage Connection	Stock # 6010
1/2 HP	<b>Black (HV1) and Red (HV2)</b>	1 HP
1/3 HP	<b>Black (HV1)</b>	3/4 HP
1/4 - 1/5 HP	<b>Red (HV2)</b>	1/2 HP



## MECHANICAL INSTALLATION

The Evergreen® IM motor is built with a NEMA®\* 48 (5.6" diameter) frame for installation in a belly band mount. If the failed motor is the same frame size and the motor mount is a belly band mount, it can be reused to mount the Evergreen IM motor.

If a new motor mount is required there are multiple Genteq® mounting kits available at HVAC distributors.

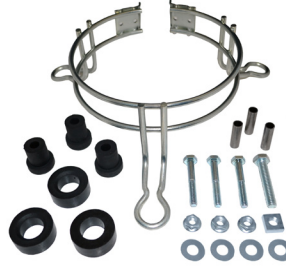
-Torsion flex mounts including stock # GA556 shown below should not be used on Evergreen IM stock # 6010.



Stock # GA556  
48 Frame 9-10"



Stock # 5K002  
48 Frame OEM Mount



Stock # 5K003 / 5K004  
48 Frame 10" / 11"



Stock # 5K005  
48 Frame 13"

The belly band should be located on the motor between the motor vents and the dimples that identify the end of the stator stack. Do not block the vents or allow the motor mount to come in contact with the electrical connection block.

Orient the motor in the mount so that the electrical connections are facing down or at least between the 4 and 8 o'clock position, when installed in the HVAC system. When the wires are connected to the motor try to form a drip loop near the motor. This will help prevent moisture from running into the electrical connections.

**NOTE:** Center the blower wheel in the blower housing before tightening the hub locking bolt. Tighten the hub locking bolt on the flat area of the motor shaft.

## EVERGREEN® IM MOTOR SPECIFICATIONS

Voltage: 115/208-230 VAC (dual voltage)

Horsepower: 1/2 (1/2, 1/3, 1/4-1/5), 1 (1, 3/4, 1/2)

Speeds: 5

RPM: 1075

Rotation: CW/CCW (dual rotation) rotation viewed from lead end

Bearing: Permanently lubricated ball bearing

Ambient Rating: -20°C to 55°C on 1/3 HP and 1/2 HP (non-icing conditions)

-20°C to 45°C on 3/4 HP and 1 HP (non-icing conditions)

Enclosure: Open Air Over (OAO)

Frame: NEMA®\* 48 (5.6" diameter)

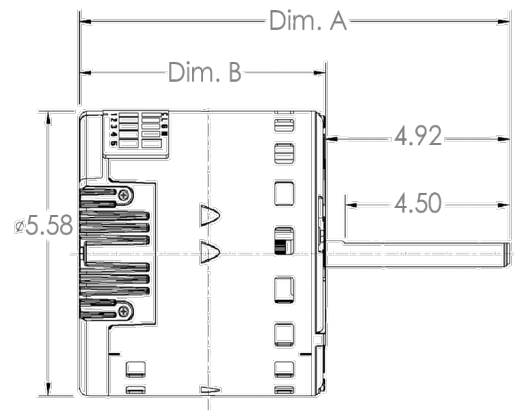
Shaft: Single, 1/2" diameter, 5" length, 4.5" single flat

Mounting: Belly band

Tested to UL and CSA standards

4 kV surge protection

	VOLTAGE	STOCK #	MAX CURRENT	DIM A	DIM B
<b>1 HP Models</b>	115V	6005	6.7A	11.26"	6.34"
	208-230V		4.0A		
<b>1/2 HP Models</b>	115V	6010	11.0A	12.76"	7.84"
	208-230V		6.7A		



## TECHNICAL SUPPORT

Contractor Hotline (1-866-503-8566)

Hours M-F 8am-5pm CST

Technical support is available for Evergreen products that are installed or serviced by trained and qualified technicians familiar with the Evergreen IM motor and the HVAC system into which it will be installed.

For more information about Evergreen IM motors, scan this code with your smart phone or go to:

[www.EvergreenIM-motors.com](http://www.EvergreenIM-motors.com)



## Terms & Conditions of Sale & Limited Warranty

Sales of the products described in this Installation Manual are subject to the "Regal Rexnord Terms and Conditions of Sale" current at the time of sale. They are accessible on [RegalRexnord.com](http://RegalRexnord.com) – <https://www.regalrexnord.com> (click "Terms and Conditions of Sale").

The full Limited Warranty, including the scope and period, remedies, exclusions and disclaimers, is described in Section 10 "Limited Warranty" of the Regal Terms and Conditions of Sale and applies except as described below:

Section 10(a)(1) is replaced with the following: Seller warrants that the Products shall be delivered free from defects in material, workmanship and title. This warranty shall expire twenty-four (24) months from first use of the Product or thirty (30) months from date of shipment of the Product, whichever occurs first.

\* NEMA is believed to be the trademark and/or trade name of National Electrical Manufacturers Association and is not owned or controlled by Regal Rexnord Corporation.

Regal Rexnord, Evergreen and Genteq are trademarks of Regal Rexnord Corporation or one of its affiliated companies.

©2021, 2023 Regal Rexnord Corporation, All Rights Reserved. MCIM23012E • Form# G0127E

