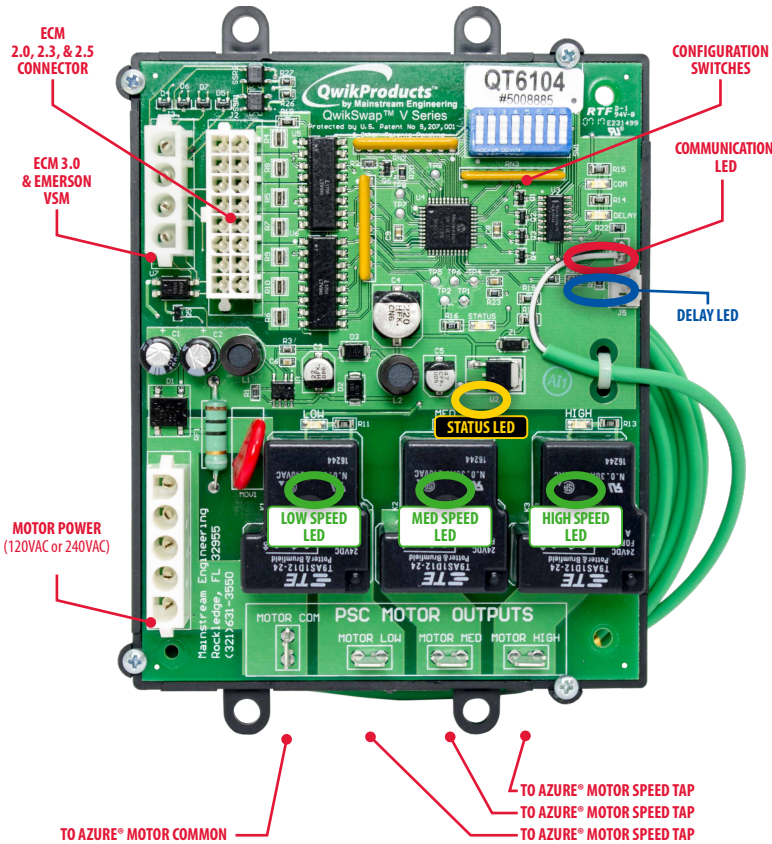


# Variable Speed ECM to Azure<sup>®</sup> Motor Conversion (for 2.0, 2.3, 2.5, 3.0 ECM and EMERSON VSM Motors Only)

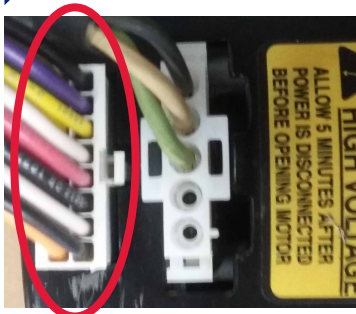


## GLOSSARY

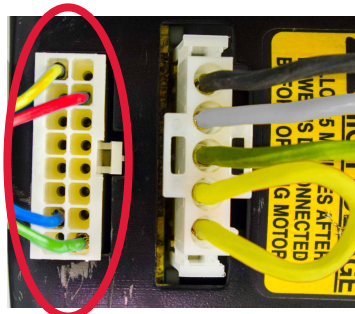
- MOTOR POWER:** 5-pin connector accepts 120 VAC or 240 VAC connector from defective ECM motor.
- TO AZURE<sup>®</sup> MOTOR (COMMON, LOW SPEED, MEDIUM SPEED, and HIGH SPEED):** Connections to Azure<sup>®</sup> motor.
- ECM 2.0, 2.3, & 2.5 CONNECTOR:** 16-pin signal connector accepts connector from defective 2.0, 2.3 or 2.5 ECM motor.
- ECM 3.0 & EMERSON VSM:** 4-pin signal connector accepts connector from defective 3.0 ECM or Emerson VSM motor.
- CONFIGURATION SWITCHES:** Used to program QwikSwap<sup>®</sup>.
- LOW, MED, HIGH SPEED LEDs:** Solid **GREEN** LEDs indicate which Azure<sup>®</sup> motor speed tap is energized.
- STATUS LED:** Flashing **YELLOW** LED indicates QwikSwap<sup>®</sup> is receiving line power.
- COMMUNICATION LED:** Solid **RED** LED indicates successful communication with the blower motor's control board. OFF or flashing **RED** indicates a communication problem, such as a failed ECM air handler control board, faulty wiring or some other issue that will prevent the QwikSwap<sup>®</sup> from operating properly. **Do not proceed with the installation unless this problem can be resolved.**
- DELAY LED:** Solid **BLUE** LED indicates a delay-on-break is keeping the blower motor operating (for 1, 2 or 3 minutes) after the blower motor has been commanded to turn OFF (ECM 2.0 and 2.3 motors only).

## INSTALLATION INSTRUCTIONS

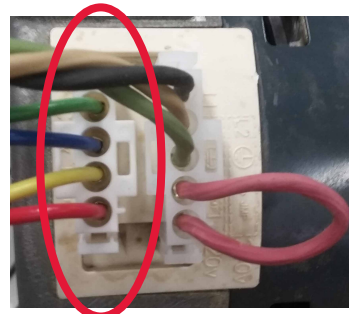
### 1 Identify defective ECM version using label or pictures below



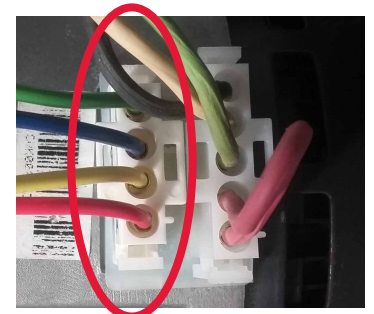
**ECM 2.0, 2.3:**  
16-pin connector uses most pins.



**ECM 2.5:**  
16-pin connector uses only 4 pins.



**ECM 3.0:**  
4-pin signal connector

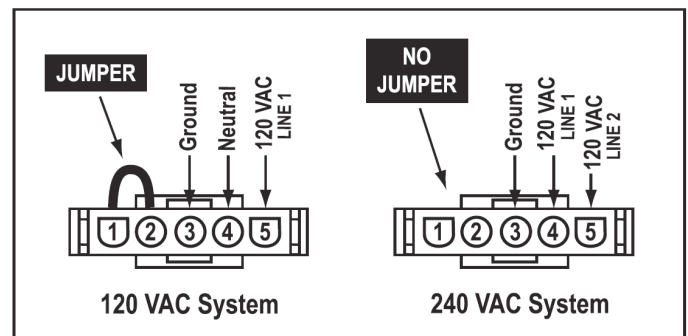


**EMERSON VSM:**  
4-pin signal connector

### 2 Identify ECM motor voltage

Examine 5-pin power connector on defective ECM motor.

- ▶ Jumper wire between pin 1 and pin 2: 120 VAC setting on Azure<sup>®</sup>.
- ▶ No jumper wires: 240 VAC setting on Azure<sup>®</sup>.



DETERMINING REPLACEMENT MOTOR VOLTAGE

### 3 Verify QwikSwap® communications

Prior to replacing the defective ECM motor with a QwikSwap® board and Azure® motor, perform the following steps to verify proper performance when installed.

- Turn thermostat system to **OFF** and **FAN** control to **OFF**.
- Turn all humidity controls to **OFF**.
- Disconnect power to the air handler.
- Remove the 5-pin power plug and 16-pin (2.0, 2.3 & 2.5) or 4-pin (3.0 & Emerson VSM) signal plug from the defective ECM motor and reconnect to the mating connectors on the QwikSwap®.
- For ECM 2.5, 3.0, and Emerson VSM motors only:** Use the CONFIGURATION SWITCHES to select the rated horsepower of the defective ECM motor.

CONFIGURATION SWITCH NUMBER & POSITION								
H.P.	1	2	3	4	5	6	7	8
1/3	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
1/2	ON	ON	ON	ON	OFF	OFF	OFF	OFF
3/4	ON	ON	ON	ON	ON	ON	OFF	OFF
1	ON	ON	ON	ON	ON	ON	ON	ON

- Reconnect power to the air handler. Leave the thermostat, blower and humidity controls **OFF**. **NOTE:** THE EXISTING SYSTEM'S BLOWER CONTROL BOARD IS CONNECTED TO THE QWIKSWAP, BUT THE QWIKSWAP IS NOT CONNECTED TO ANY MOTOR AT THIS TIME.
- A **flashing YELLOW** (STATUS) LED and solid **RED** (COM) LED indicate proper communication, proceed to the next step.
  - ▶ **OFF YELLOW** (STATUS) LED: verify 120/240 VAC power to the QwikSwap® board.
  - ▶ **OFF** or **flashing RED** (COM) LED indicates a communication problem between the existing air handler board and the QwikSwap®. **OFF RED** (COM) LED for 2.0 and 2.3 ECM motors may indicate a problem with the 24 VAC signal from the air handler board or the transformer. **Do not proceed with the installation, unless the problem can be resolved.**
  - ▶ **GREEN** (SPEED) LEDs should be **OFF** at this time.

For ECM 2.5, 3.0, and Emerson VSM motors only: During **flashing YELLOW** (STATUS) LED and solid **RED** (COM) LED, set all CONFIGURATION SWITCHES to **OFF** to lock-in the Input Configuration. If this QwikSwap® board is to be used in a different unit, see **APPENDIX 2: CLEARING THE INPUT CONFIGURATION** before reusing the QwikSwap® in a different unit.

- Set the thermostat to **FAN ON**.
- Following a short delay (which can take several minutes for the air handler board to send a command), the **GREEN** (HIGH) LED should initially light, and then settle on one of the **GREEN** (HIGH), (MED), or (LOW) LEDs. Operate the unit for a few minutes to make sure the air handler control board has accepted the QwikSwap® communication. THE QWIKSWAP IS NOT CONNECTED TO ANY MOTOR AT THIS TIME
- Set **FAN** control to **OFF** at the thermostat. Within a few minutes the QwikSwap® should receive a request to turn **OFF**, and all the **GREEN** LEDs (HIGH, MED, LOW) should turn **OFF**.

#### For 2.0 and 2.3 ECM motors only:

- ▶ Solid **BLUE** (DELAY) LED and one solid **GREEN** LED are both **ON**: indicates the delay-on-break is active. Both LEDs should go **OFF** after the delay.
  - ▶ If one of the **GREEN** LEDs is **ON** and the **BLUE** (DELAY) LED is **OFF** (even though sufficient time to deactivate the blower has passed) see **APPENDIX 1: ADJUSTING THE INPUT CONFIGURATION**. **DO NOT PROCEED WITH THE INSTALLATION IF THIS CANNOT BE RESOLVED.**
- Once all the steps above have been confirmed, proceed to **Step 4** to complete the installation of the Azure® motor with the QwikSwap®.

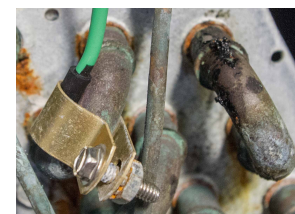
### 4 Complete QwikSwap® and Azure® motor installation

Having confirmed successful communication between the QwikSwap® and the existing air handler control board, perform the following steps to install and wire the Azure® motor.

- Disconnect power to the air handler.
- Remove defective ECM motor (note the direction of rotation and motor voltage).
- Install new Azure® motor (with same voltage and direction of rotation).
- Connect the Azure® motor common wire to the **MOTOR COM** terminal on the QwikSwap®. This wire is **WHITE**.
- Connect three Azure® motor speed taps to the corresponding terminals on the QwikSwap®. See table for suggested connections.
- Attach the temperature sensor bulb to an elbow closest to one of the inlet distribution lines on the evaporator coil using the mounting hardware provided.

### 4 continued...

- Mount the QwikSwap® (directly or use the 90-degree mounting bracket) and dress all wiring (so that no wires can be drawn into the fan or motor shaft and where the board and wiring will not short out).
- Reconnect power to the air handler and verify proper operation.
- Set the Delay-on-Break Time (For 2.0 & 2.3 ECM motors only) SEE APPENDIX 3: SETTING the DELAY-ON-BREAK TIMER.



Installing temperature sensor of the QwikSwap® on the coil

### A1 APPENDIX 1: ADJUSTING THE INPUT CONFIGURATION (For 2.0 & 2.3 ECM motors only)

In rare cases, one or more of the blower motor activation signals may need to be ignored to prevent the blower motor from operating continuously. Follow this procedure when a **GREEN** LED is **ON** but it should be **OFF**. To adjust the configuration, set **FAN** control at the thermostat to **OFF**. The **YELLOW** STATUS LED should be **flashing**. One of the **GREEN** LEDs should be lit and the **BLUE** (DELAY) LED should not be lit. If THE **BLUE** (DELAY) LED IS LIT THE QWIKSWAP IS CURRENTLY IN DELAY-ON-BREAK MODE AND THE QWIKSWAP SHOULD TURN OFF WITHIN 3 MINUTES, REQUIRING NO ADJUSTING OF THE INPUT CONFIGURATION.

**USE AN INSULATED TOOL. DO NOT TOUCH COPPER TRACES OR CONNECTIONS ON THE BOARD.**

**Step 1.** While the QwikSwap® is connected and powered, set all CONFIGURATION SWITCHES to **OFF**.

**Step 2.** While the QwikSwap® is connected and powered, set all CONFIGURATION SWITCHES to:

SWITCH SETTINGS							
1	2	3	4	5	6	7	8
ON	OFF	ON	ON	OFF	ON	OFF	ON

**Step 3.** If the input configuration has been accepted, all of the **GREEN** LEDs should turn **OFF** and the **RED** (COM) LED and **BLUE** (DELAY) LED should be **flashing** alternatively. If any of the **GREEN** LEDs are still **ON**, repeat Steps 1-3.

**Step 4.** Once the configuration has been set, and while the QwikSwap® is still powered, turn all CONFIGURATION SWITCHES to **OFF** to lock-in the setting. The **RED** (COM) LED should be solid **ON** and the **YELLOW** (STATUS) LED should be **flashing** to indicate success. All other LEDs should be **OFF**.

### A2 APPENDIX 2: CLEARING THE INPUT CONFIGURATION (For 2.0 & 2.3 ECM motors only)

This procedure should only be required if the QwikSwap® was previously installed in another system or an input configuration was accidentally set. This procedure will clear the input configuration stored memory.

**USE AN INSULATED TOOL. DO NOT TOUCH COPPER TRACES OR CONNECTIONS ON THE BOARD.**

**Step 1.** While the QwikSwap® is connected and powered, set all CONFIGURATION SWITCHES to **OFF**.

**Step 2.** While the QwikSwap® is connected and powered, set all CONFIGURATION SWITCHES to:

SWITCH SETTINGS							
1	2	3	4	5	6	7	8
ON	OFF	ON	OFF	ON	OFF	OFF	ON

**Step 3.** If the INPUT CONFIGURATION has been successfully cleared, the **RED** (COM) LED and **BLUE** (DELAY) LED should be alternatively **flashing**. If not repeat Steps 1-3.

**Step 4.** Once the input configuration has been cleared, set all CONFIGURATION SWITCHES to **OFF**. The **RED** (COM) LED should be solid **ON** and the **YELLOW** (STATUS) LED should be **flashing** to indicate success. All other LEDs should be **OFF**.

### A3 APPENDIX 3: SETTING THE DELAY-ON-BREAK TIMER (For 2.0 & 2.3 ECM motors only)

This procedure should be the final step of the installation of the QwikSwap®. **This procedure will set the Delay-On-Break time feature and the time can be set to either 0, 1, 2, or 3 minutes.**

**USE AN INSULATED TOOL. DO NOT TOUCH COPPER TRACES OR CONNECTIONS ON THE BOARD.**

DELAY ON-BREAK TIME SWITCH SETTINGS								
	1	2	3	4	5	6	7	8
0 minute (NO DELAY)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1 minute	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2 minutes	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3 minutes	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF

**Step 1.** While the QwikSwap® is connected and powered, set the CONFIGURATION SWITCHES to the desired delay-on-break time using the switch positions shown in the table above.

**Technical Support**  
M-F 8AM – 5PM Eastern • (800)-678-9888