# INSTALLATION & MAINTENANCE INSTRUCTIONS

## EC MOTOR WIRING DIAGRAMS

**This publication applies to fan models shipped with the EC Motor (Electronically Commutated Motor)**

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage!

| Manufacturer | HP | Voltage 60Hz | Voltage 50Hz | RPM@60 Hz | Enclosure | Part Number | Page Number |
|---|---|---|---|---|---|---|---|
| McMillan | 1/2 | 115 | 110 | 1200 | Open | 922711 | 2-3 |
| | 3/4 | 115 | 110 | 1800 | Open | 923250 | |
| Baldor | 2 | 208/230 | 240 | 1800 | TEFC | 924748 | 4-7 |
| Nidec (US Motors) | 1/4 | 277 | ---- | 1800 | Open | 921763 | 8-9 |
| | 1/4 | 115/208/230 | 110/220 | 1800 | Open | 921761 | 10-13 |
| | 1/2 | 115/208/230 | 110/200/220 | 1200 | Open | 922714 | |
| | 1/2 | 115/208/230 | 110/220 | 1800 | Open | 922715 | |
| | 3/4 | 115/208/230 | 110/240 | 1800 | Open | 923255 | |
| | 1 | 115/208/230 | 110/220/240 | 1800 | Open | 923744 | |
| Genteq 142R | 1/5 | 115 | 110 | 1200 | TEAO | 921253 | 13-14 |
| | 1/5 | 208/230 | 220 | 1200 | TEAO | 921256 | |
| | 1/3 | 115 | 110 | 1800 | TEAO | 922202 | |
| | 1/3 | 115 | 110 | 1200 | TEAO | 922206 | |
| | 1/3 | 208/240 | 220 | 1800 | TEAO | 922242 | |
| | 1/3 | 208/240 | 220 | 1200 | TEAO | 922243 | |
| | 1/2 | 115 | 110 | 1800 | TEAO | 922739 | |
| | 1/2 | 208/240 | 220 | 1200 | TEAO | 922750 | |
| | 1/2 | 208/240 | 220 | 1800 | TEAO | 922751 | |
| | 1/2 | 115 | 110 | 1200 | TEAO | 922761 | |
| | 3/4 | 208/240 | 220 | 1200 | TEAO | 923231 | |
| | 3/4 | 208/240 | 220 | 1800 | TEAO | 923232 | |
| | 1 | 208/240 | 220 | 1200 | TEAO | 923726 | |
| Symax-i | 2 | 208/230 | 220 | 1200 | Open | 924738 | 15-16 |
| | 2 | 208/230 | 220 | 1800 | Open | 924762 | |
| | 2 | 460 | 400 | 1200 | Open | 924739 | |
| | 2 | 460 | 400 | 1800 | Open | 924740 | |
| | 3 | 208/230 | 220 | 1800 | Open | 925017 | |
| | 3 | 208/230 | 220 | 1800 | TEAO | 925018 | |
| | 3 | 460 | 400 | 1800 | Open | 925019 | |
| | 3 | 460 | 400 | 1800 | TEAO | 925020 | |

## This section applies only to McMillian EC Motor Part Numbers: 922711 and 923250

**Speed Dial Only*** – (See Figure 1) Motor features a potentiometer dial located on the side of the motor allowing the user to make necessary speed adjustments with a small flat tip screw driver. The 3 control wires are not used. The motor can also be controlled by a separate 0-10 VDC and 24 VAC to the control wires, in this set up the potentiometer dial needs to be set to full speed (CW).

**Optional Speed Controller** – (See Figure 2)

**Remote Speed Controller Single Speed (Optional)*** – (See Figure 2-A) Set the potentiometer dial located on the side of the motor to full clockwise. When selected with this option the fan will come with a 24 VAC transformer mounted for the purpose of powering the logic circuits in both the motor and the remote speed controller. The remote speed control will supply a DC signal that varies from 0 to 10V. This signal will vary the motors speed. The motor will shut off between 0-1.9v.

**Mounted Speed Controller Two Speed (Optional)*** – (See Figure 2-B) Set the potentiometer dial located on the side of the motor to full clockwise. When selected with this option the fan will come with a 24 VAC transformer mounted for the purpose of powering the logic circuits in both the motor and the dual speed controllers mounted on fan. The supplied toggle switch will select the Low (LO) or High (HI) speed on the speed controllers based on the dial settings. The motor will shut off between 0-1.9v.

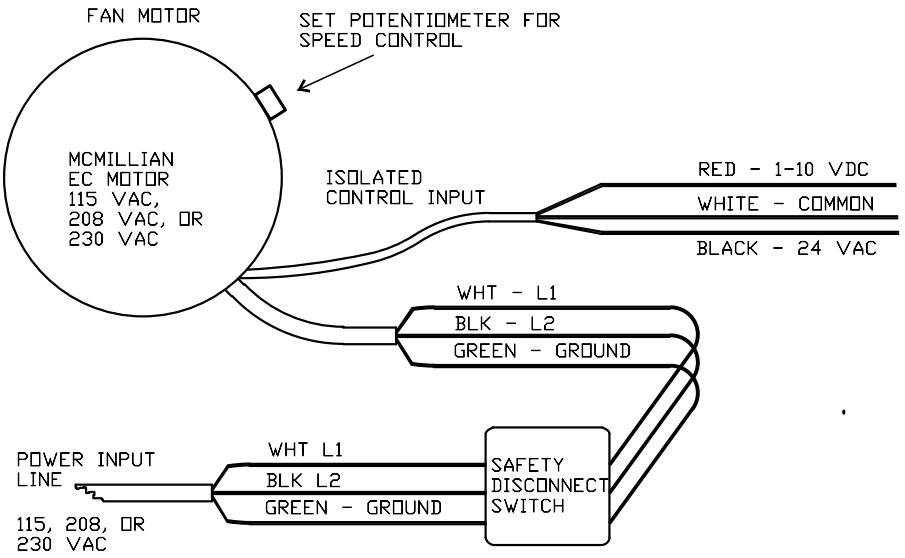
**Customer Building Controller** – (See figure 2-C) Set potentiometer dial located on motor side to full clockwise. Connect Red (0-10VDC) and White (Common) to building controller. Motor requires factory mounted 24VAC transformer to run motor logic boards. The motor shuts off between 0-1.9V.

* All 115, 208 or 230V connections will be made in the supplied junction box. Wire to the remote speed control is to be supplied by others and must meet all applicable codes.

NOTE: When using a remote variable speed control the potentiometer on the motor (if present) should be set to full clockwise.

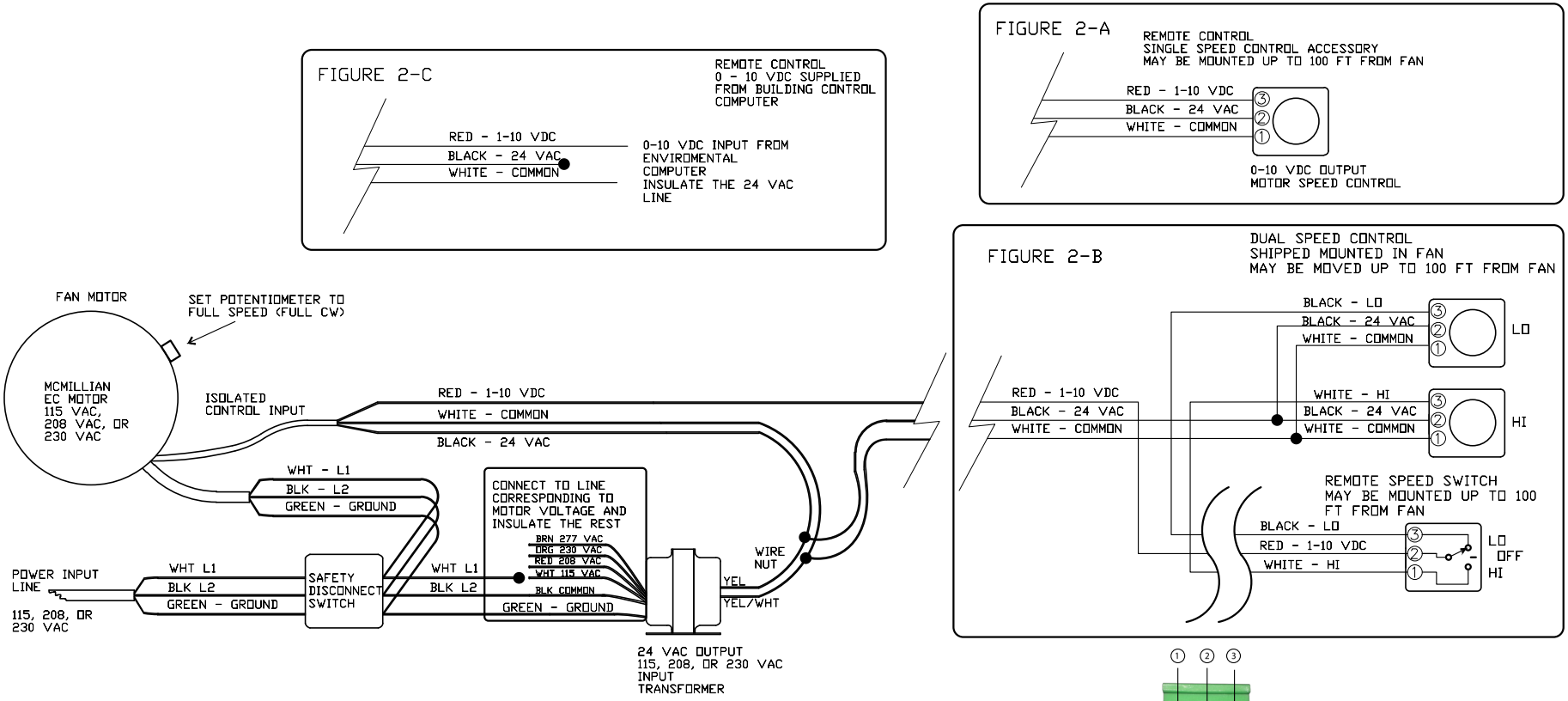
The remote speed control location is limited by a maximum wire length of 100 feet. Up to 6 fans can be operated from one remote control. Only one transformer should be used.

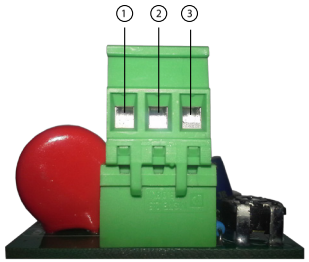
**FIGURE 1**
**Potentiometer Dial Only**



# OPTIONAL EC MOTOR CONTROLS (FIGURE 2)

FIGURE 2-A SINGLE SPEED
FIGURE 2-B DUAL SPEED
FIGURE 2-C BUILDING CONTROL (BY OTHERS)




Note: If pin numbers are missing or worn off orient speed controller as shown (single speed controller shown 2 speed control same as single speed.)

## This section applies only to Baldor EC Motor Part Number: DV3302SA01 (924748) 2 HP

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage!

The EBSM Motor is an integrated industrial motor and speed control that is simple and easy to install.

### General Safety Information

This equipment contains voltages that may be as high as 1000 volts! Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

This equipment may be connected to other machines that have rotating parts or parts that are driven by this equipment. Improper use can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

**WARNING:** Do not touch any circuit board, power device or electrical connection before you first ensure that power has been disconnected. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the installation, operation and maintenance of this equipment.

**WARNING:** Disconnect all electrical power from the motor windings and accessory devices before disassembly of the motor. Electrical shock can cause serious or fatal injury.

**WARNING:** Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that all grounding instructions have been followed. Electrical shock can cause serious or fatal injury. National Electrical Code and Local codes must be carefully followed.

**WARNING:** Avoid extended exposure to machinery with high noise levels. Be sure to wear ear protective devices to reduce harmful effects to your hearing.

**WARNING:** Surface temperatures of motor may reach temperatures which can cause discomfort or injury to personnel accidentally coming into contact with hot surfaces. When installing, protection should be provided by the user to protect against accidental contact with hot surfaces. Failure to observe this precaution could result in bodily injury.

**WARNING:** Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury.

**WARNING:** Motors that are to be used in flammable and/or explosive atmospheres must display the CSA listed logo. Specific service conditions for these motors are defined in NFPA 70 (NEC) Article 500.

**WARNING:** Pacemaker danger – Magnetic and electromagnetic fields in the vicinity of current carrying conductors and permanent magnet motors can result in a serious health hazard to persons with cardiac pacemakers, metal implants, and hearing aids. To avoid risk, stay way from the area surrounding a permanent magnet motor.

**WARNING:** Do not remove cover for at least five (5) minutes after AC power is disconnected to allow capacitors to discharge. Dangerous voltages are present inside the equipment. Electrical shock can cause serious or fatal injury.

**WARNING:** Motor circuit may have high voltage present whenever AC power is applied, even when motor is not rotating. Electrical shock can cause serious or fatal injury.

**CAUTION:** Disconnect motor leads (T1, T2 and T3) from control before you perform a dielectric withstand (insulation) test on the motor. Failure to disconnect motor from the control will result in extensive damage to the control. The control is tested at the factory for high voltage / leakage resistance as part of Underwriter Laboratory requirements.

**CAUTION:** Suitable for use on a circuit capable of delivering not more than 5000 RMS symmetrical short circuit amperes at rated voltage.

**CAUTION:** Connection of power 115 or 230VAC power to “N” will damage the unit.

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the National Fire Protection Agency (NFPA), where applicable. Follow the Canadian Electric Code (CEC) in Canada.
2. The rotation of the fan wheel is critical. It must be free to rotate without striking or rubbing any stationary objects.
3. Motor must be securely and adequately grounded.
4. Do not spin fan wheel faster than max cataloged fan RPM. Adjustments to fan speed significantly effects motor load. If the fan RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
5. Do not allow the power or speed control cables to kink or come in contact with oil, grease, hot surfaces or chemicals. If damaged, discontinue use immediately and have cord replaced.
6. Verify that the power source is compatible with the equipment. Branch protection and disconnect means must be provided if required.
7. Never open access doors to a duct while the fan is running.

### Features

**Soft Start**
All EBSM motors use soft start motor technology. They will reliably start at any speed setting.

**Overload**
If the motor becomes overloaded, the control begins a countdown that creates an “Overload fault” when it ends.

**Locked Rotor Protection**
If a locked rotor condition occurs, the motor will automatically shut itself down. Restart is attempted (up to 3 times). If the 3rd attempt is unsuccessful, the motor will not attempt restart until power is cycled (turned “Off” then “On”).

**Thermal Protection**
Motor software limits motor current to prevent an overheating condition. If motor temperature increases above the protection limit, a thermal switch provides final protection to prevent a fire. The thermal switch will reset when motor temperature decreases to an acceptable level.

**Built-in Protection**
Built-in over current, over voltage and under voltage protection.

**RPM measurement**
Motor RPM can be measured by removing the cooling fan cover on the back of the motor and using a optical tachometer or contact. Replace cooling fan cover when completed to prevent motor from over heating.

**Reversible rotation**
The motor shaft rotation is set at factory and no adjustments are needed. If a replacement motor is ordered make sure the motor rotation matches the fans rotations. Rotation can be changed by swapping any of the Red, Black and Blue wires connecting the control board to the motor at terminals T1, T2 and T3.

**Installation**

1. Wire motor in accordance with local codes. The motor can be mounted by the feet or face. See Figure 3 for mounting hole locations. Verify fasteners holding motor to fan are properly secured.
2. Verify fan wheel is properly secured on motor shaft.
3. Connect the motor to AC power and ground. See Figure 4. Use appropriate strain relief (not provided).

**FIGURE 3 Mount the Motor**

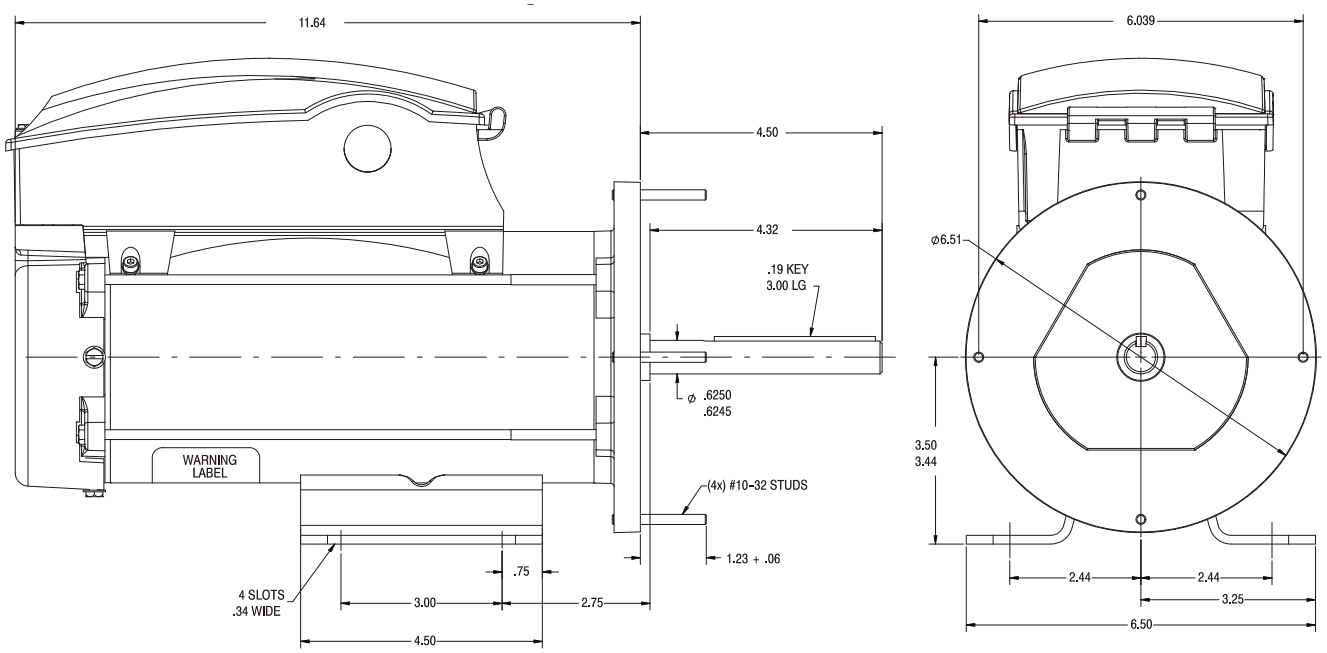


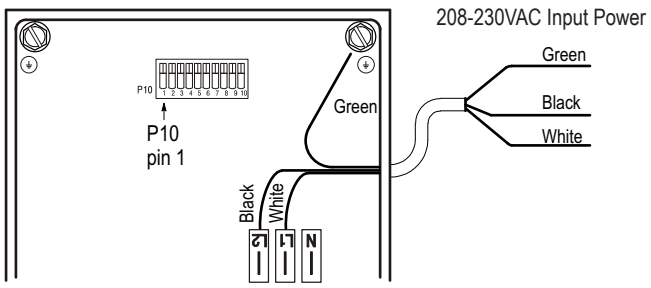

**FIGURE 4 208-240VAC Power Connection to Motor**

AC power
Connect it to the motor control as follows:

a. Connect L1 (White) to L1.
b. Connect L2 (Black) to L2.
c. Connect Ground to ⏚

Use only Copper Wire for all wiring.

**Caution: Connection of either line of 208-240VAC power to "N" will damage the unit.**



## Table 1 Single Phase Power Requirements

| Nominal AC Voltage | Minimum AC Volts | Maximum AC Volts | HP | Input $A_{RMS}$ | Output $A_{RMS}$ |
|---|---|---|---|---|---|
| 230 | 200 | 264 | 2.0 | 11.05 | 5.29 |

Note: Internally, the Speed Controller provides 240VAC 3 phase at 8kHz switching frequency to the motor.

## Speed Dial Wiring Diagrams

**Mounted Speed Dial** – (See Figure 5) Standard potentiometer speed dial is mounted and wired at the factory.

For field replacement: Connect the Speed Control Potentiometer to the motor control as follows:

a. Connect one end of 10K Potentiometer to P10-1 (24VDC).

b. Connect center (wiper) of Potentiometer to P10-2 (Analog Input)

c. Connect other end of Potentiometer to P10-3 (DGND).

**Remote Speed Dial**** – (See Figure 6 & 6A) Factory mounted Molex receptacle allows a quick connection to remote potentiometer speed dial. The potentiometer dial can be mounted up to 100 ft from fan using additional wire by others.*** Speed B on box is not used for single speed selection and will not have a dial.

**Dual Speed Dial**** – (See Figure 6 & 6B) Factory mounted Molex receptacle that allows a quick connection to Dual Potentiometer Speed Dial. The supplied unmounted toggle switch will select the Low (LO) or High (HI) speed on the speed controllers based on the dial settings. Toggle switch and mounting plate fit in a standard gang box and wired to Dual Potentiometer Speed Dial. The speed dial can be mounted up to 100 ft from fan using additional wire by others.***

**Building Control 0-10VDC Wire Kit** – (See Figure 6 & 6B) Factory mounted Molex receptacle that allows a quick connection to supplied 2 wire connector (wires are 3" long).

**Disconnects and Speed Dials are available as mounted on certain fan models and will be wired to motor, for more information see descriptions on submittals for these items weather they are mounted, not mounted or not available

*** For extended wiring up to 100 Feet you will need (1) Receptacle Molex 3 1396-R4 with 3 Pin Female Molex 02-09-1119 and (1) Plug Molex 3 Pin 1396-P1 with Pin Male Molex 02-09-2118 not provided.

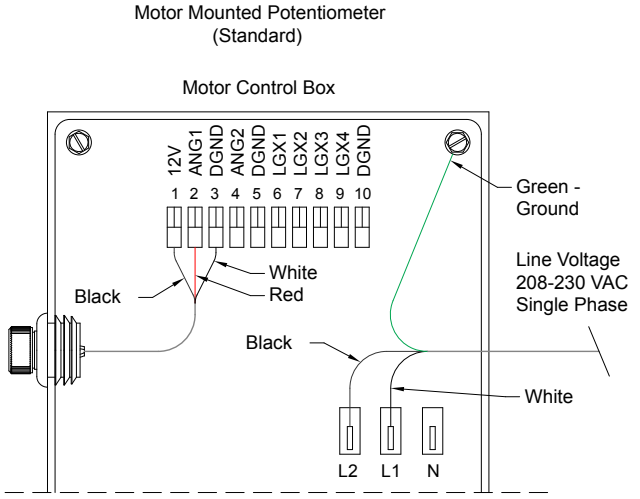



**FIGURE 5**

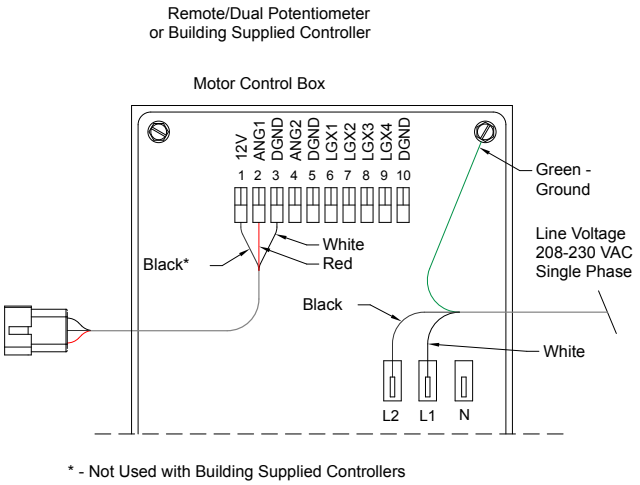



**FIGURE 6**

**FIGURE 6A**

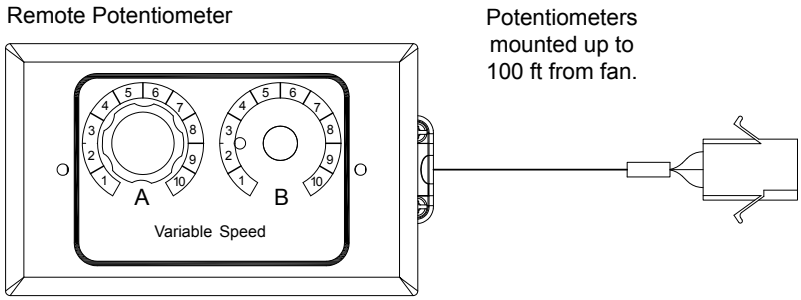
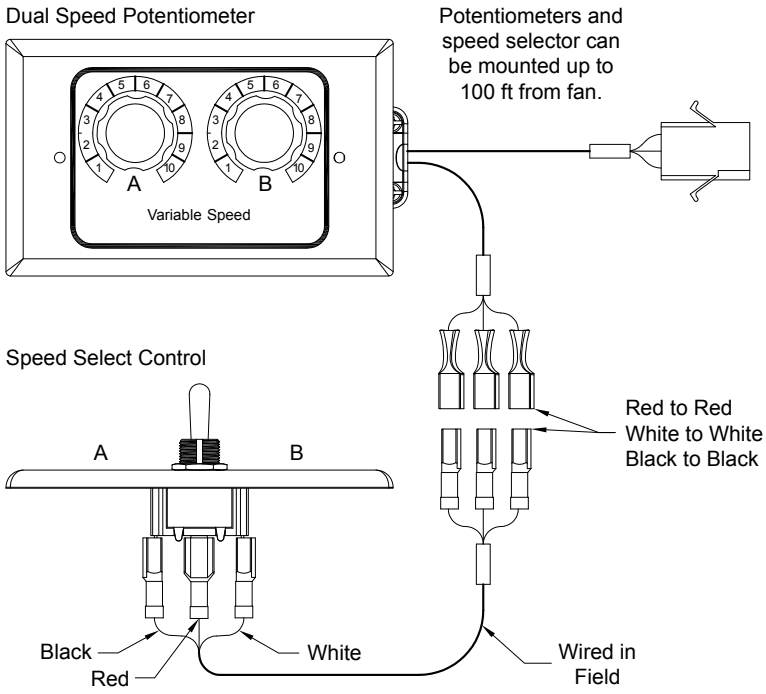
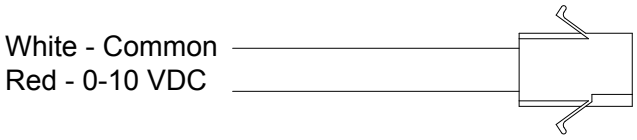


**FIGURE 6B**




**Building Supplied Controller Harness**

**FIGURE 6C**




## Operation

Operating temperature range is: 14°F to 104°F (–10°C to 40°C)

The EBSM motor offers various control options. Follow the correct wiring diagram based on the control option desired.

1. Energize motor and check for proper rotation. Rotation should match wheel rotation as noted in fans instruction manual and rotation arrow located on fan.
2. Adjust motor speed to verify the proper motor speed controller functionality.

## Troubleshooting

**Mounted Speed Control Dial**

1. Check voltage to ensure the motor is receiving the correct control input.
2. Check voltage at the remote dial. 24VAC should be present across the 24V and COM terminals. 0-10VDC should be present across the 0-10V and COM terminals.
3. Verify all of the connections inside the fan and make certain that they are secure.

## Fault Indication

A red LED on the control board provides fault indication. During a fault, this LED will blink a specific number of times to identify the fault that has occurred.

Table 2 describes these fault indications.

**Table 2 Fault Indications**

| No. Blinks | Indicated Fault |
|---|---|
| 2 | Over current |
| 3 | Over voltage |
| 4 | Under voltage |
| 5 | Communication Error |
| 6 | Sync Loss |
| 7 | Spin Fault |
| 8 | 3 Sec/60 sec overload |
| 9 | Motor over-temperature |

## Maintenance

EBSM motors use brushless technology with sealed bearings so no maintenance is required other than keeping any accumulated debris from collecting on the motor.

## This section applies only to Nidec (US Motors) EC Motor Part Number 921763 1/4 hp

**NOTE: The 921763 motor requires a 0-10VDC input to operate the motor. Motor will not run without this control input and has to be under a load (attached to wheel) to operate.**

**Mounted Speed Dial**** – (See Figure 7) When selected with this option the fan will come with a 24 VAC transformer mounted for the purpose of powering the logic circuits in both the motor and the remote speed controller. Dial can be removed and remotely mounted up to 100 Ft from fan. The motor will shut off between 0-1.9v.

**Remote Speed Dial**** – (See Figure 8) When selected with this option the fan will come with a 24 VAC transformer mounted for the purpose of powering the logic circuits in both the motor and the remote speed controller. Remote Dial (unmounted) and can be mounted up to 100 Ft from fan. The motor will shut off between 0-1.9v.

**Mounted Two Speed Dial**** – (See Figure 9) When selected with this option the fan will come with a 24 VAC transformer mounted for the purpose of powering the logic circuits in both the motor and the dual speed controllers mounted on fan**. The supplied unmounted toggle switch will select the Low (LO) or High (HI) speed on the speed controllers based on the dial settings. The motor will shut off between 0-1.9v.

**Customer Building Controller** – Connect Yellow (Pin4) (0- 10VDC) and Blue (Common) to building controller. The motor shuts off between 0-1.9V.

**Transformers, Disconnects and Speed Dials are available as mounted on certain fan models and will be wired to transformer as shown in Figure 7 for more information see descriptions on submittals for these items whether they are mounted, not mounted or not available.

### FIGURE 7 Mounted Speed Dial

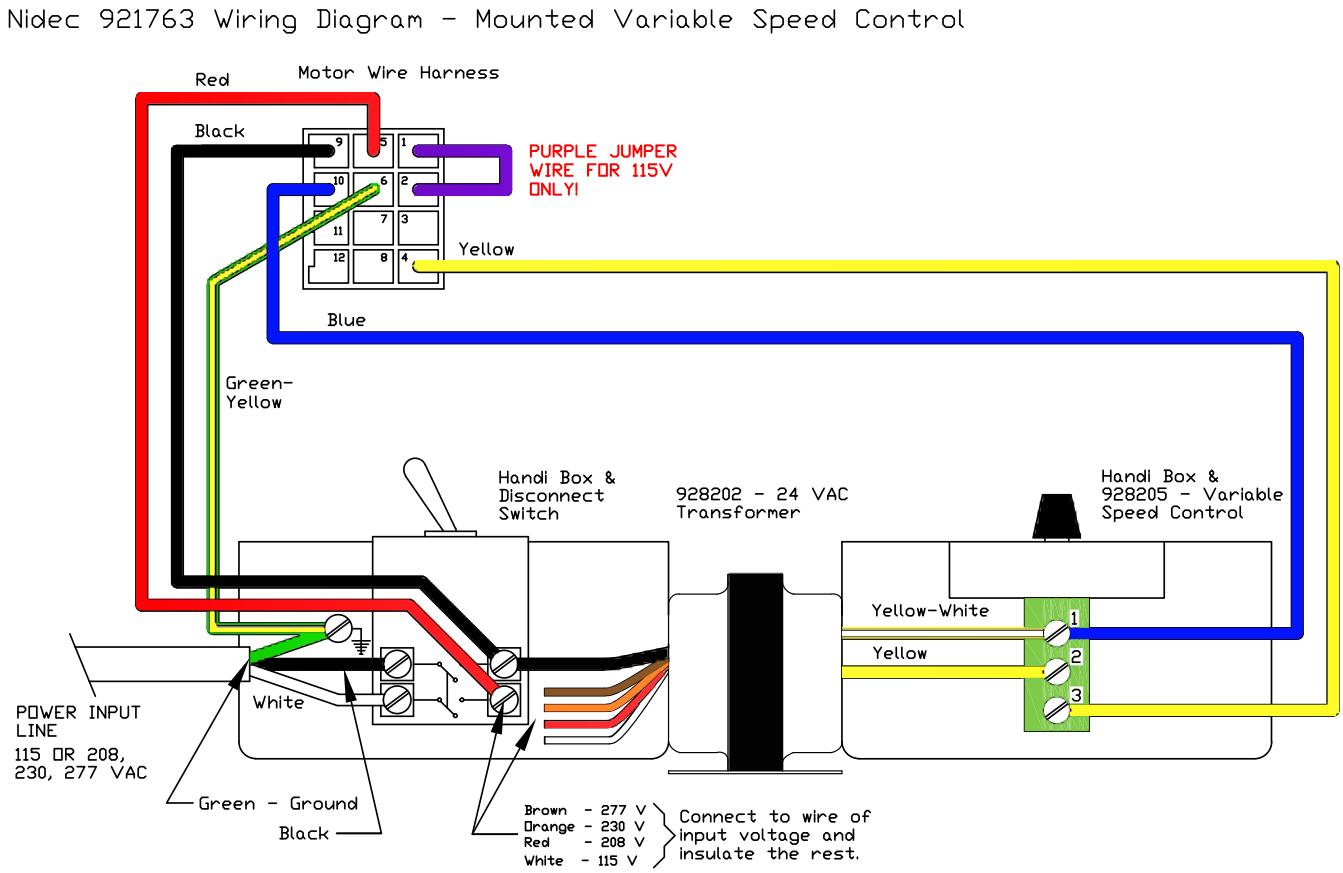


**FIGURE 8 Remote Speed Dial**

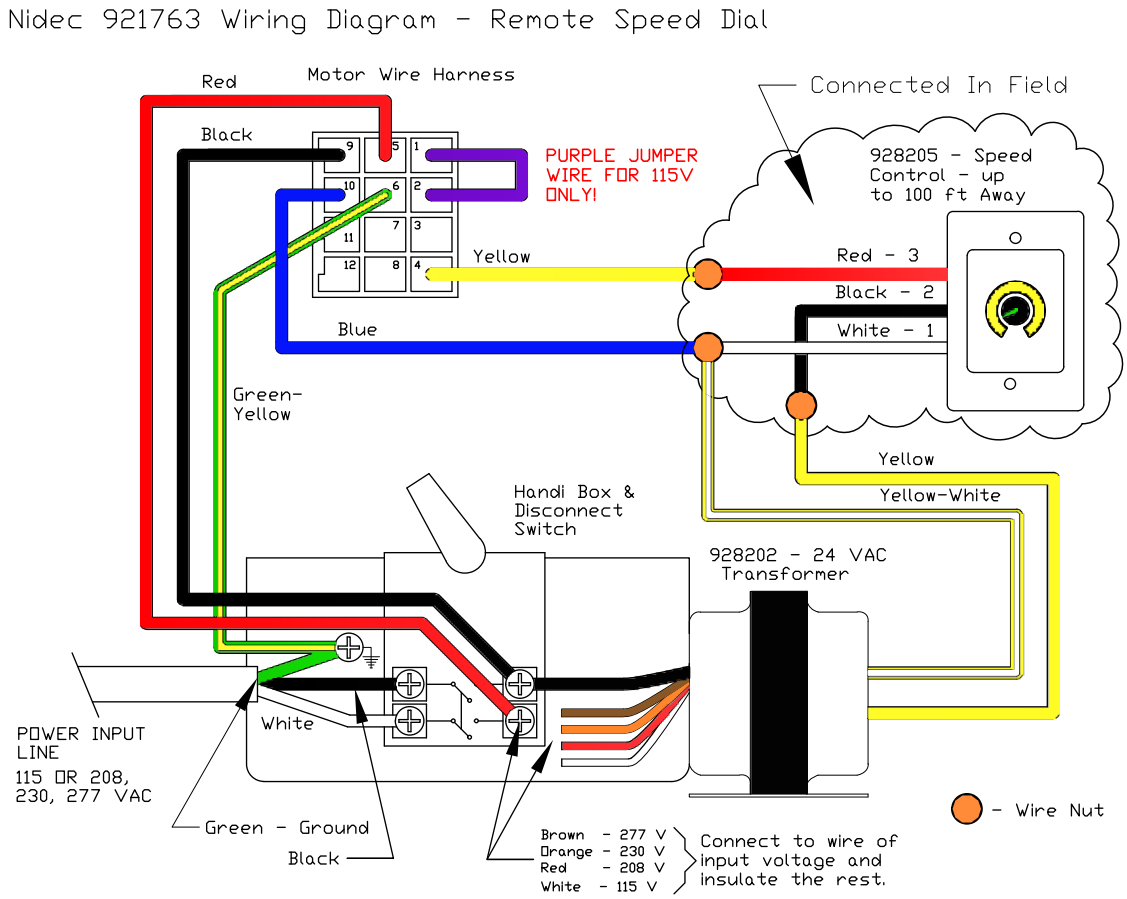
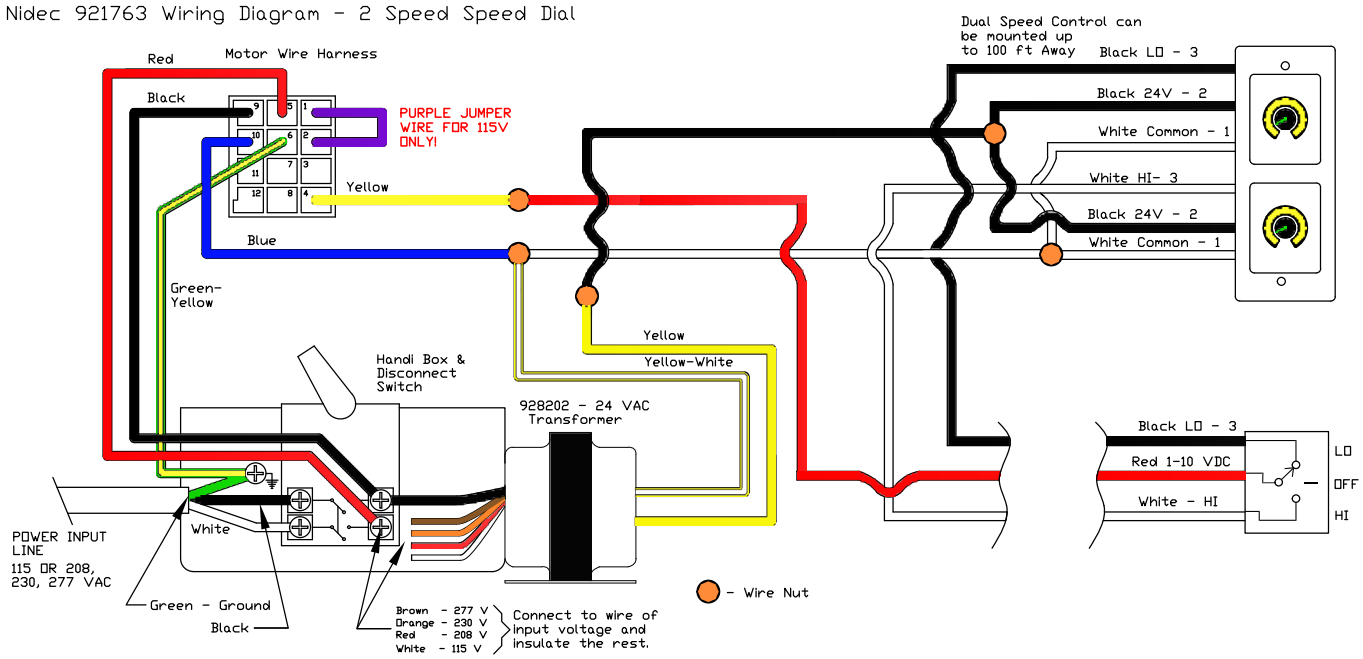



**FIGURE 9 Mounted Two-Speed Dial**



## This section applies only to Nidec (US Motors) EC Motor Part Numbers: 921761, 922714, 922715, 923255 and 923744

**NOTE: The controller must be powered up before or at the same time as power is supplied to the motor.**

**Mounted Speed Dial**** (Figure 10) – The Perfect Speed control box interface allows direct control of the motor by turning the onboard speed dial located to the right of the digital display.

**Optional Speed Controller** (See Figure 11)

**Remote Speed Dial**** – (See Figure 11 and 11A) When selected with this option the fan will come with a control cable and quick connect Molex plug that can be plugged into the Molex plug on the single speed potentiometer box***. Set blue speed dial on PerfectSpeed controller to zero (turn left). Speed B on box is not used for single speed selection and will not have a dial. The motor will shut off between 0-1.9V.

**Two Speed Dial**** – (See Figure 11 & 11B) When selected with this option the fan will come with a control cable and quick connect Molex plug that can be plugged into the Molex plug on dual speed dial. The supplied unmounted toggle switch will select the Low (LO) or High (HI) speed on the speed controllers based on the dial settings. The motor will shut off between 0-1.9v.

**Building Control 0-10VDC Wire Kit** (See Figure 11 & 11C) Factory mounted Molex receptacle that allows a quick connection to supplied 2 wire connector (wires are 3" long).

**NOTE: FOR OPTIONAL SPEED CONTROL SET THE BLUE SPEED DIAL TO 0%.**

More information on US Motors perfect speed interface can be found at: http://www.usmotors.com/Our-Products/ECM-Motors

** Disconnects and Speed Dials are available as mounted on certain fan models and will be wired to motor as shown in Figure 10 for more information see descriptions on submittals for these items weather they are mounted, not mounted or not available.

*** For extended wiring up to 100 Feet you will need (1) Receptacle Molex 3 1396-R4 with 3 Pin Female Molex 02-09-1119 and (1) Plug Molex 3 Pin 1396-P1 with Pin Male Molex 02-09-2118 not provided.

**FIGURE 10 Mounted Speed Dial**

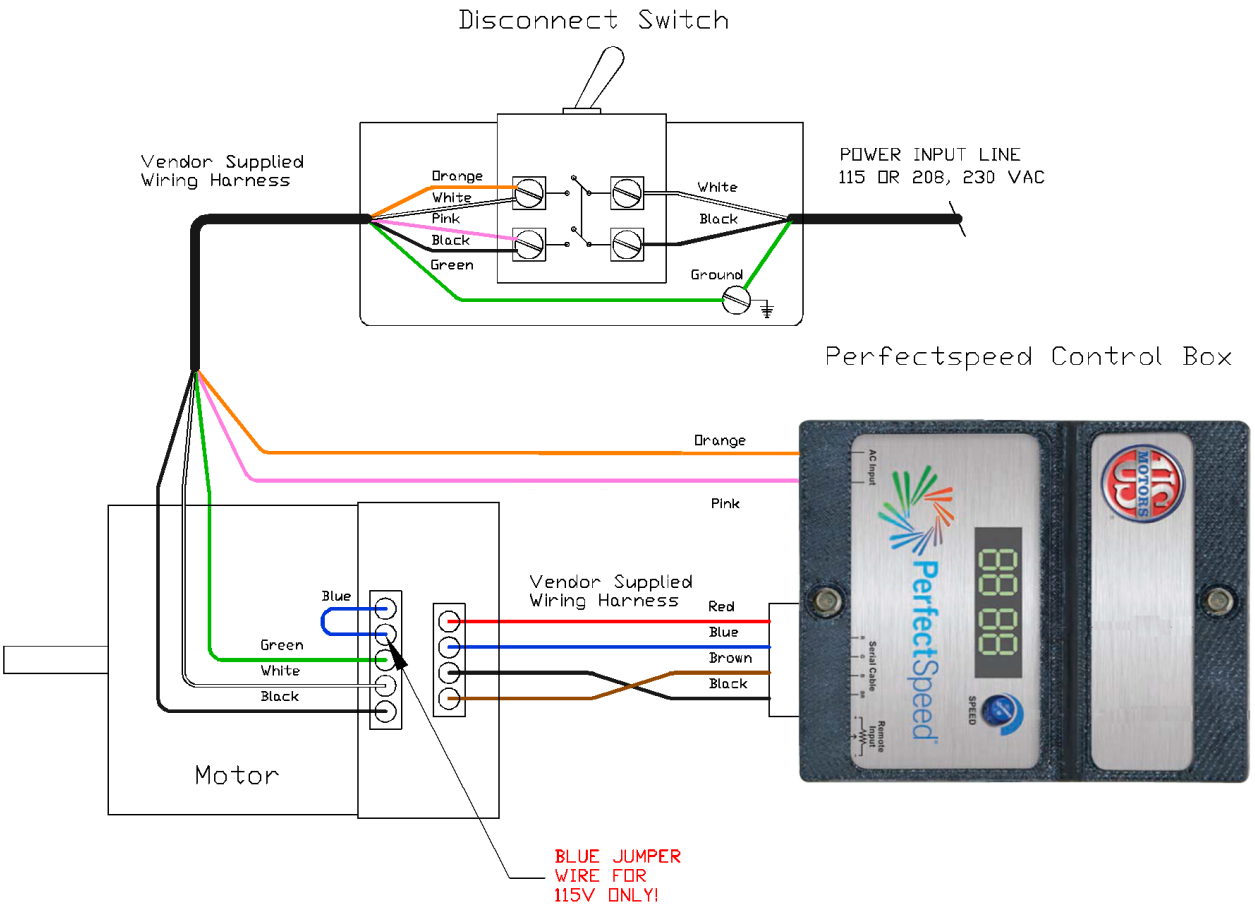
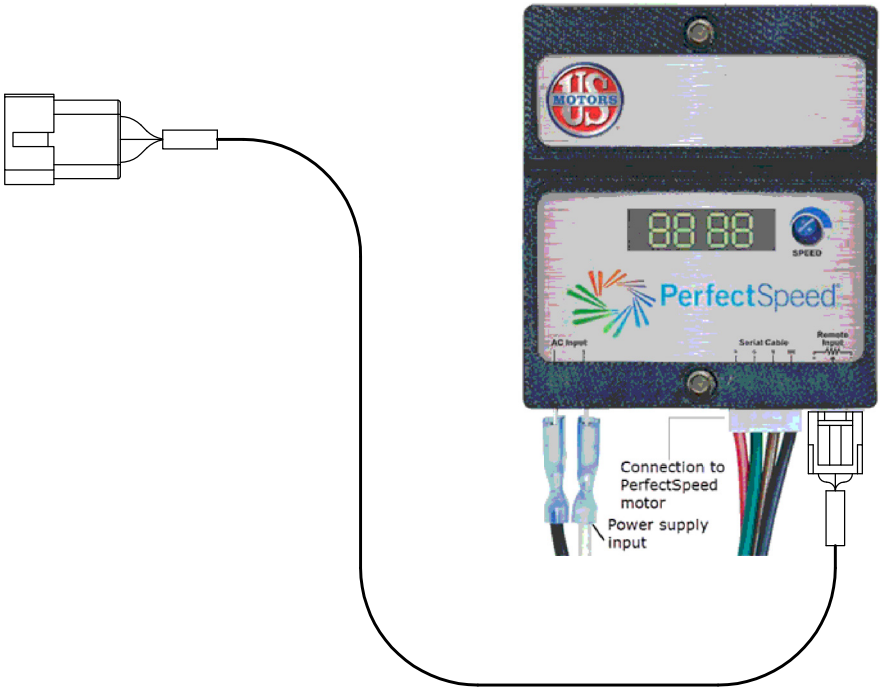


**FIGURE 11**




PerfectSpeed®
Control Cable

**FIGURE 11A**

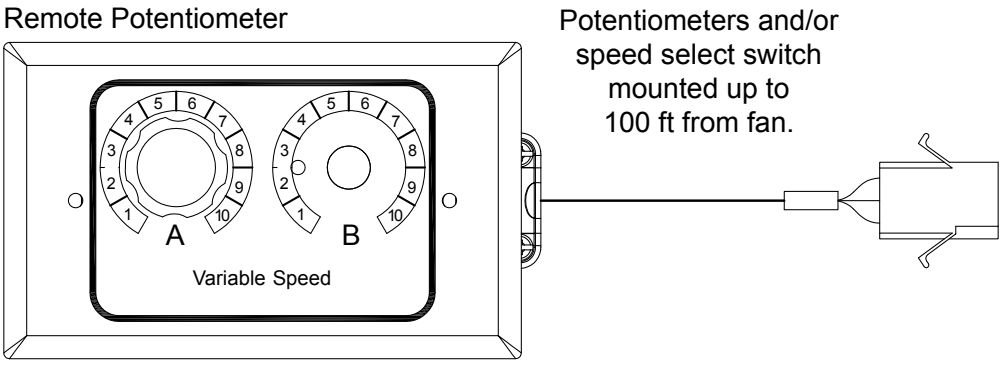


**FIGURE 11B**

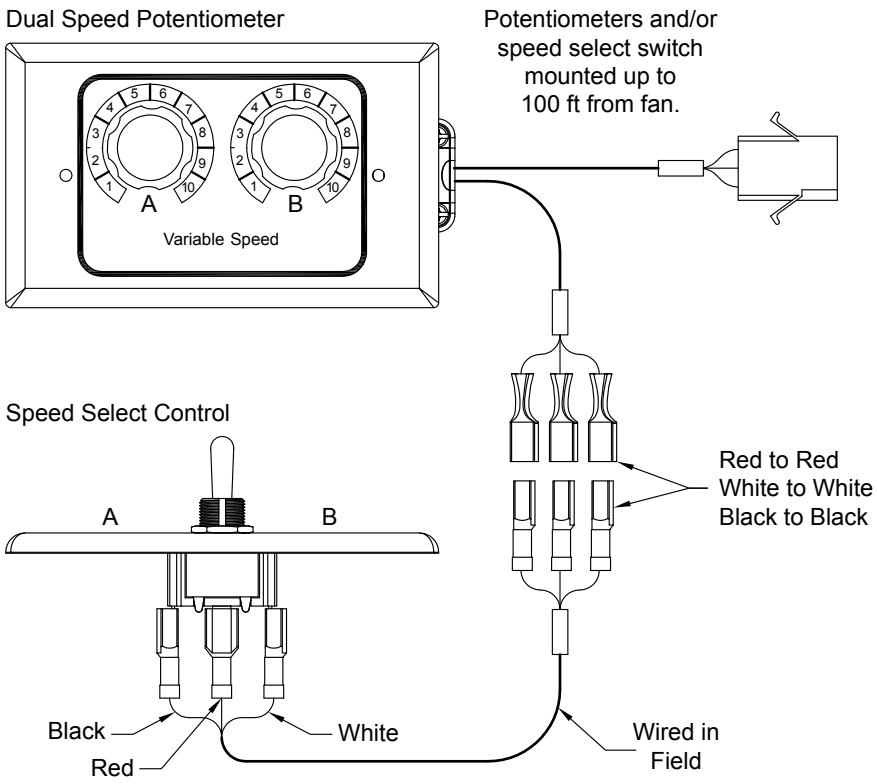
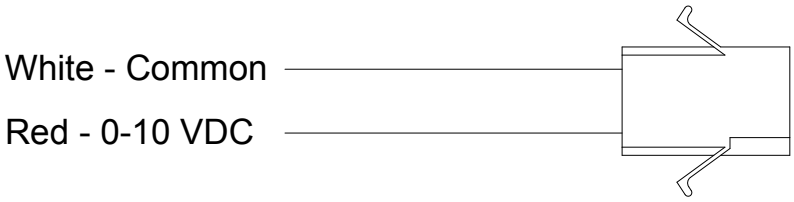



**FIGURE 11C**

## Building Supplied Controller Harness



## PerfectSpeed® Motor and User Interface Troubleshooting

**Motor Is Not Running**

If the PerfectSpeed® motor with User Interface isn't running, perform the following checks:

1. Ensure that both the PerfectSpeed® motor and User Interface have proper line voltage for intended application.
2. Turn the User Interface on-board potentiometer fully clockwise (100% demand) and check to see if the motor runs.
3. If 0-10 VDC input is in use, disconnect the external input from the User Interface and perform Check 2.
4. Check the digital read-out of User Interface for an error code:

| Error Code | Reason | Action |
|---|---|---|
| E1 | No Communication | Remove power from both the PerfectSpeed® motor and User Interface for four (4) minutes, then reconnect power and test again.<br>Check the communication cable connection between the PerfectSpeed® motor and User Interface.<br>Check the continuity of communication cable (pin 1-1, pin 2-2 pin 3-4, and pin 4-3). |
| E2 | Low Voltage | This is a reading from the PerfectSpeed® motor itself. Ensure that there is at least 71 VAC (for 115 VAC applications) or 142 VAC (for 230 VAC applications). |
| E3 | Not a NMC Motor | Connect to a NMC motor. |

**Check 2: Electrical Troubleshooting**

1. Disconnect or remove power to the equipment being serviced and allow four (4) minutes for the capacitors to discharge any residual voltage.
2. Check the rotation and speed of the motor. Determine if the motor can spin freely by hand without effort or assisted means. If any binding occures, replace the motor and control unit.
3. Determine whether the system is wired for 120 VAC power or 240 VAC power.
4. Disconnect the power cord from the connector on the control unit. Inspect the power cord for bent, damaged, or recessed wires and terminals.
5. Disconnect or remove AC power to the equipment serviced and allow four (4) minutes for the capacitors to discharge any residual voltage.
6. Proceed to Check 3.

**Check 3: Motor Verification**

1. Disconnect or remove AC power to the equipment serviced and allow four (4) minutes for the capacitors to discharge any residual voltage.
2. Make sure that the motor shaft spins freely by hand without effort in both directions.
3. DC motors can have a jump filling when rotating this is perfectly normal, if motor does not rotate at all motor needs to be replaced.

**Final Checks of the Motor**

1. Check the mounting and fastening of the motor and control unit. Make sure the motor and the control unit are securely attached together and mounted tightly in the system.
2. Check the control unit connectors. Inspect for shorts, detached wiring, or loose connections.
3. Check the motor and verify the rotation of the driven load. Make sure it spins freely by hand in both directions without effort or assisted means.
4. Check all circuit breakers.

**This section applies only to Genteq 142R motors. EC Motor part number 921253, 921256, 922202, 922206, 922242, 922243, 922739, 922750, 922751, 922761, 923231, 923232, and 923726**

**NOTE: These motors require a 0-10VDC input to operate the motor. Motor will not run without this control input and has to be under a load (attached to wheel) to operate.**

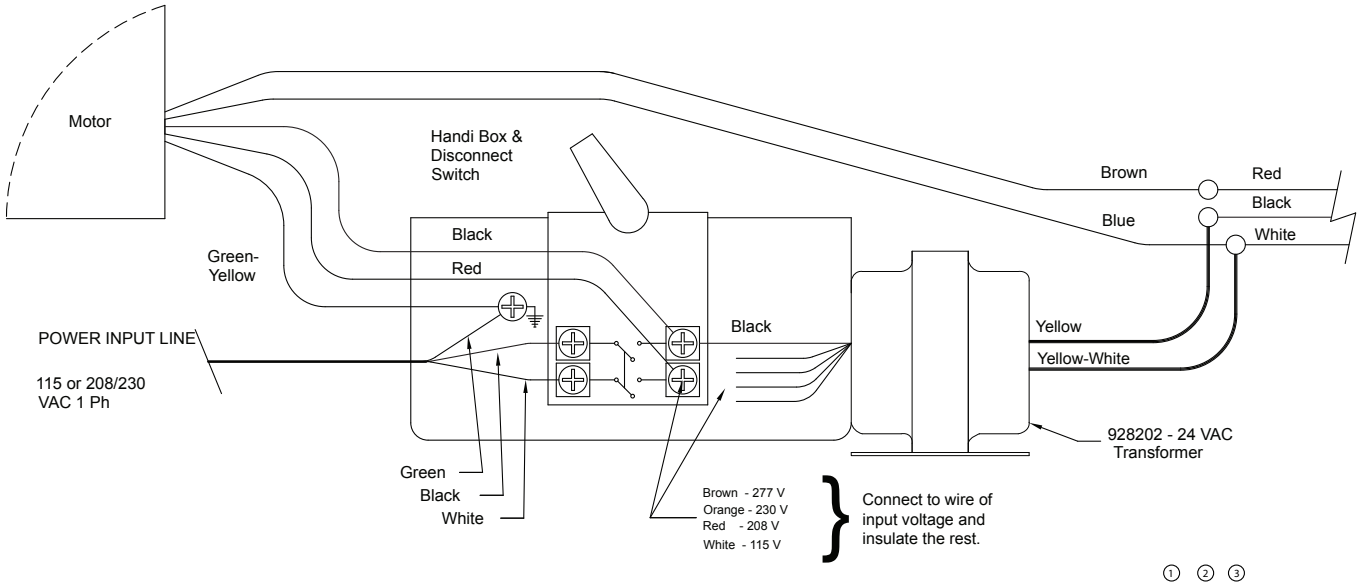
**Speed Dial**** – (See Figure 12 &12A) When selected with this option the fan will come with a 24 VAC transformer mounted** for the purpose of powering the logic circuits in both the motor and the speed dial. Dial can be removed and remotely mounted up to 100 Ft from fan. The motor will shut off between 0-1.9v.

**Two Speed Dial **** – (See Figure 12 & 12B) When selected with this option the fan will come with a 24 VAC transformer mounted ** for the purpose of powering the logic circuits in both the motor and the dual speed dial. The supplied unmounted toggle switch will select the Low (LO) or High (HI) speed on the speed controllers based on the dial settings. The motor will shut off between 0-1.9v.

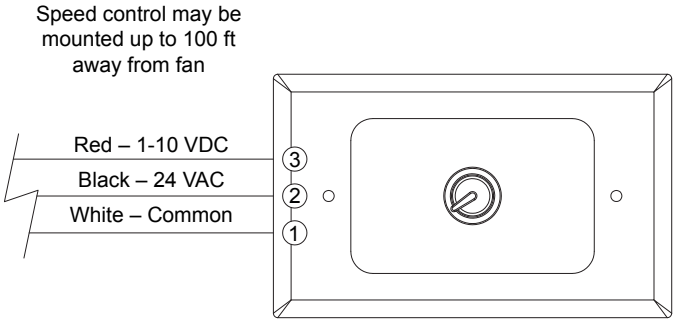
**Customer Building Controller 0-10VDC input** – (See Figure 12C) From customers building controller. Connect Brown to (0- 10VDC) and Blue to (Common) , insulate Black wire (not used). The motor shuts off between 0-1.9V.

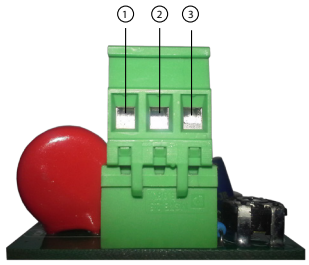
**Transformers, Disconnects and Speed Dials are available as mounted on certain fan models and will be wired to transformer as shown in Figure 12 for more information see descriptions on submittals for these items to determine if they are mounted, not mounted or not an option.

## FIGURE 12



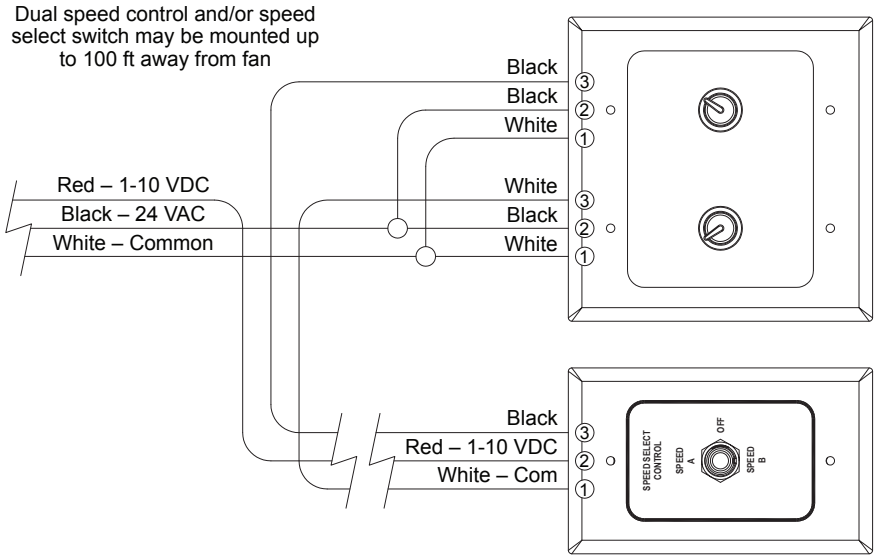

## FIGURE 12A



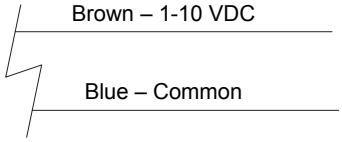




Note: If pin numbers are missing or worn off orient speed controller as shown (single speed controller shown 2 speed control same as single speed.)

## FIGURE 12B




## FIGURE 12C




Building supplied 0-10 VDC

**This section applies only to Marathon Symax-i motors. Motor part numbers 924738, 924739, 924740, 924762, 925017, 925018, 925019, 925020.**

**Mounted Speed Dial**** – (See Figure 13 and 13A) Motor will come with a prewired control cable and wired to a mounted potentiometer dial that is used to control the speed of the motor.** Speed B on control box is not used for single speed selection and will not have a dial.

**Remote Speed Dial**** – (See Figure 13 and 13A) When selected with this option the fan will come with a control cable and quick connect Molex plug that can be plugged into the Molex plug on the single speed potentiometer box.*** Speed B on box is not used for single speed selection and will not have a dial. The motor will shut off between 0-1.9V.

**Two Speed Dial**** – (See Figure 13 & 13B) Motor will come with a prewired control cable and wired to a mounted dual speed potentiometer dial that is used to control the speed of the motor.** The supplied unmounted toggle switch will select the Low (LO) or High (HI) speed on the speed controller based on the dial settings. The motor will shut off between 0-1.9v.

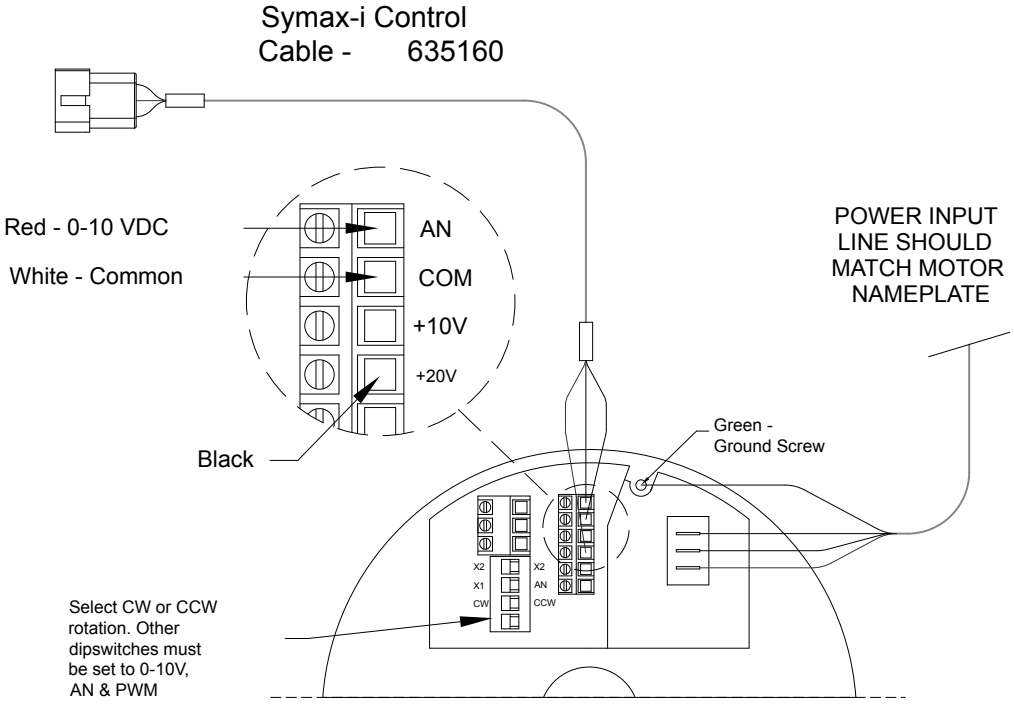
**Customer Building Control 0-10 VDC input** – (See Figure 13C) Customer supplies 0-10 VDC input to control motor speed.

The remote speed control location is limited by a maximum wire length of 100 feet.

** Disconnects (not shown) and Speed Dials are available as mounted on certain fan models and will be wired to motor as shown in Figure 13 for more information see descriptions on submittals for these items weather they are mounted, not mounted or not available.

*** For extended wiring up to 100 Feet you will need (1) Receptacle Molex 3 1396-R4 with 3 Pin Female Molex 02-09-1119 and (1) Plug Molex 3 Pin 1396-P1 with Pin Male Molex 02-09-2118 not provided.

**FIGURE 13**




## Symax-i Motor

**FIGURE 13A**

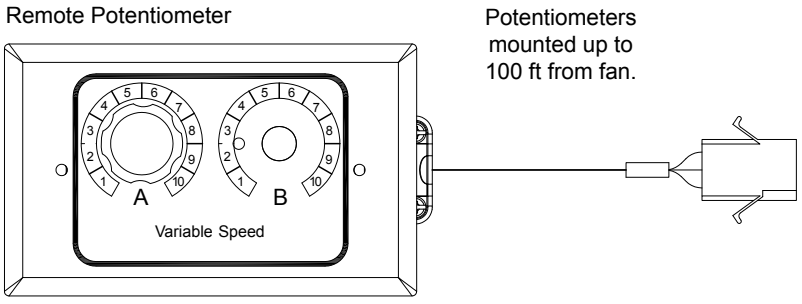


**FIGURE 13B**

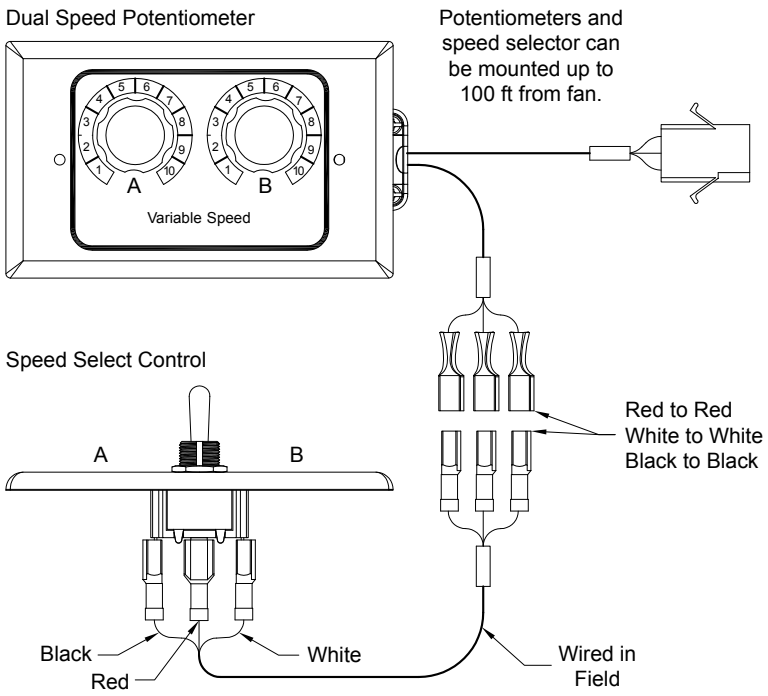



**FIGURE 13C**

## Building Supplied Control