

®
Dayton



Speed Control Kits For EC Motors

Models 35YV92, 35YV94, 43Y140A

®
Dayton

**PLEASE READ AND SAVE
THESE INSTRUCTIONS.**

**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! RETAIN INSTRUCTIONS
FOR FUTURE REFERENCE.**

**PLEASE REFER TO BACK COVER
FOR INFORMATION REGARDING
DAYTON'S WARRANTY AND OTHER
IMPORTANT INFORMATION.**

Model #: _____

Serial #: _____

Purch. Date: _____

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BEFORE YOU BEGIN



Electrical Requirements:

- The motor voltage and ampere rating must be checked for compatibility with the electrical supply prior to final electrical connection. Supply wiring to the fan must be properly fused, and conform to local and national electrical codes.



Tools Needed:

- Lock-Out Tag-Out
- Wrench
- Small Flat Headed Screwdriver
- 5/16" Nut Driver
- 11/32" Nut Driver

UNPACKING



Contents:

- Speed Control (1)
- 24 Volt Transformer (1)
- PRV/Powerpack Transformer Mounting Bracket (1)
- Circulator Transformer Mounting Bracket (1)
- 9 Pin Motor/Transformer Harness (1)
- #8-32 Nut (3)
- #10-1/2" Screw (4)
- Cord Strain Relief (1)
- Nylon Lock-Nut (for Strain Relief) (1)
- Operating Instructions Manual (1)



Inspect:

- After unpacking unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Shipping damage claim must be filed with carrier.



- See General Safety Instructions on page 2, and Cautions and Warnings as shown.

GENERAL SAFETY INSTRUCTIONS

Electronically commutated motor (ECM) speed control kits are designed to maximize the efficiency of ventilation systems in a wide variety of applications when used with a Dayton variable-speed ECM models. Manually control ECM exhaust ventilators, blowers or recirculating fans from a remote location. Transformer provides power to remote control and motor controls. Transformer includes N.O./N.C. auxiliary contacts for sending power to an optional damper actuator. Recommended for indoor use in commercial buildings and restaurants.

⚠ DANGER *Do not depend on any switch as the sole means of disconnecting power when installing or servicing a fan. Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury. Motor will restart without warning after thermal protector trips. Do not touch operating motor, it may be hot enough to cause injury.*

⚠ DANGER *Do not place any body parts or objects in fan, motor openings or drives while motor is connected to power source.*

⚠ WARNING *Do not use this equipment in explosive atmospheres.*

1. Read and follow all instructions and cautionary markings. Make sure electrical power source conforms to requirements of equipment and local codes.
2. Fans should be assembled, installed and serviced by a qualified technician. Have all electrical work performed by a qualified electrician.
3. Follow all local electrical and safety codes in the United States and Canada, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States. Ground motor in accordance with NEC Article 250 (grounding). Follow the Canadian Electric Code (CEC) in Canada.
4. Do not kink power cable or allow it to come in contact with sharp objects, oil, grease, hot surfaces or chemicals. Replace damaged cords immediately.
5. Make certain that the power source conforms to the requirements for the equipment.

SPECIFICATIONS

	35YV92	35YV94	43Y140A
Voltage	115/230	115/230	115/208-240
Max. Amps	0.5/0.25	0.5/0.25	0.5/0.25
Max. Wattage	50	50	50
For Use With	43Y135-43Y139, 5DVR2A-5DVR4A, 5DVT2A-5DVT4A, 6KWH9A, 6KWJ0A, 6KWJ1A, 16D517A-16D521A, 20UD15-20UD20, 48C155-48C158, 48C178-48C190, 48C192		

INSTALLATION INSTRUCTIONS

▲ WARNING

Installation, troubleshooting and parts replacement are to be performed only by qualified personnel.

Easy to install, universal mounting hardware is for use with Dayton Variable-Speed Electronically Commutated (EC) Fans, Ventilators, and blowers utilizing motors with remote mount capabilities (motors 43Y135-43Y139, 32RU47 and 32RU47).

Side of Motor Mounting

Models 5DVT2 thru 5DVT4, 5DVR2 thru 5DVR4, 6KWH9 thru 6KWJ1, 16D517 thru 16D521

1. Refer to Figure 1, attach bracket to top of motor using two motor thru-bolts. Fasten down with two #8-32 nuts provided.
2. Fasten transformer to mounting bracket using four #10 x 1/2 screws provided.
3. See Electrical Connection for wiring procedures.
4. Bend top of bracket by hand, along laser stitched line, forming a 90 degree angle.

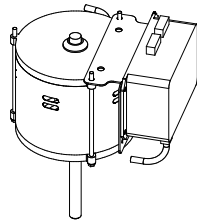


Figure 1

End of Motor Mounting

Models 22PP68 thru 22PP70

1. Refer to Figure 2, fasten transformer to mounting bracket using four #10 x 1/2 screws provided.
2. Attach bracket to end of motor using three motor thru bolts. Fasten down with three #8-32 nuts provided.
3. See Electrical Connection for wiring procedures.

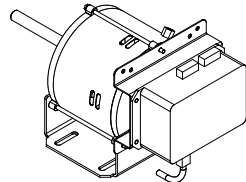


Figure 2

Fan Housing Mounting

Models 20UD15 thru 20UD17

1. Refer to Figure 3, motor cover is removed for clarity. Fasten transformer directly to outside of unit using four #10 x 1/2 screws provided.
2. See Electrical Connection for wiring procedures.

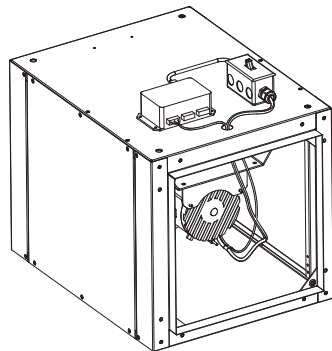


Figure 3

Models 20UD18 thru 20UD20

1. Refer to Figure 4, fasten transformer to drive frame angles using the pre-existing holes and the four #10 x 1/2 screws provided.

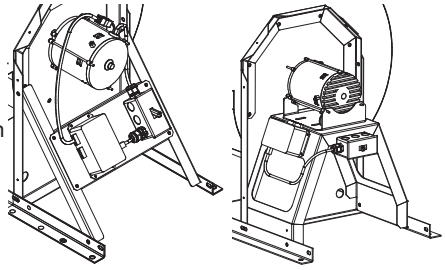


Figure 4

2. See Electrical Connection for wiring procedures.

Electrical Connection:

▲ WARNING Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA).

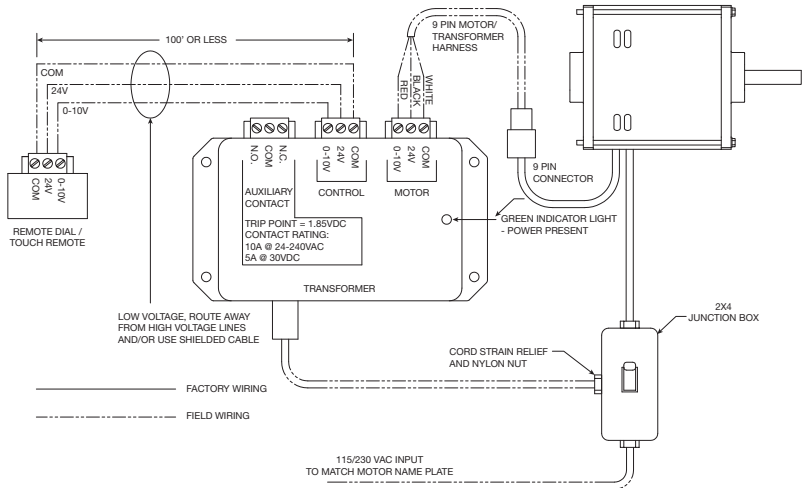


Figure 5 — Remote Dial and Touch Remote

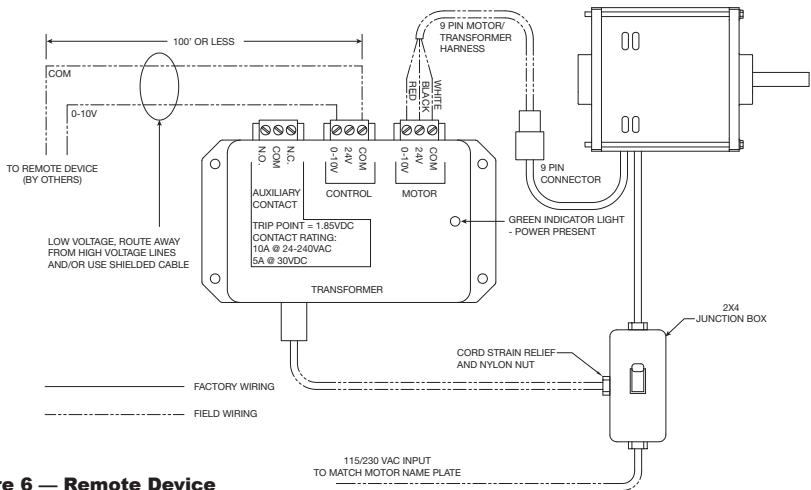


Figure 6 — Remote Device

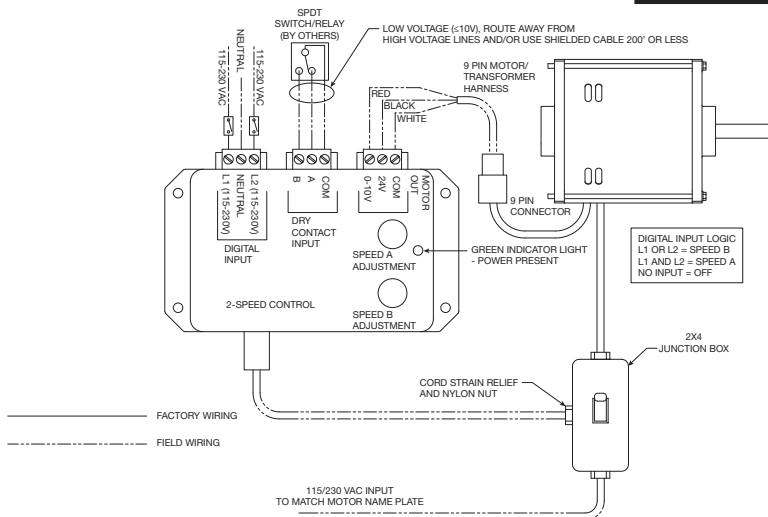


Figure 7 — 2-Speed Control

Remote Dial:

1. Disconnect power to the fan.
2. Mount a standard single-gang 2x4 junction box (by others) in a remote location. This will house the remote speed control.
3. Run a 3-wire control cable from the remote speed control to the transformer mounted to the fan. The maximum distance from the fan to the speed controller is 100 feet. Connect 24V, COM and 0-10 terminals on the transformer and remote speed control. See Figure 5 for wiring diagram.

NOTE: If a greater distance is required, signal loss may occur and cause the fan to operate erratically.

4. Using supplied control harness, connect 9-pin connector to motor. Wire Red (0-10), White (COM) and Black (24V) on transformer motor terminal block.
5. Connect power cable of transformer to 115-230V power supply of the fan. Use supplied cord strain relief fitting.
6. Secure remote speed control to 2x4 junction box.

NOTE: Maximum of four motors can be driven from one controller. Controllers do not have the ability to distinguish between more than one motor, therefore all motors will receive the same control voltage.

7. If using a third party controller instead of the remote speed control provided, refer to Figure 6 wiring details.
8. A normally open/normally closed contact is available to signal a motorized backdraft damper when controlling the fan with the remote speed control. The contact will change states when the motor is receiving greater than 1.85 VDC control signal.

Touch Remote:

Follow Remote Dial instructions above for wiring. After power is applied to the system, operate as follows:

1. Touch power button to turn fan on.
2. Touch up/down arrow to increase/decrease speed.
3. Subsequent touches of the power button will start the countdown timer of 90, 60, 30 or 10 minutes.
4. LED's will turn off after a period of inactivity.
5. To lock/unlock buttons, hold the up and down arrows for three seconds. When locked, the power button will light up red.

2-Speed Control:

Control is to be used in applications where two selectable speeds are required. Alternate between two selectable speeds via SPDT switch or relay, or digital input.

1. Disconnect power to the fan.
2. Run a 3-wire control cable from third party control device to the transformer mounted to the fan. The maximum distance from the fan to control device is 100 feet. Connect to dry contact input or digital input. See Figure 7 for wiring diagram.

NOTE: If a greater distance is required, signal loss may occur and cause the fan to operate erratically.

3. Using the supplied control harness, connect 9-pin connector to motor. Wire red (0-10), white (COM) and black (24V) onto transformer motor terminal block.
4. Connect power cable of transformer to 115-230V power supply of the fan. Use supplied cord strain relief.

NOTE: Maximum of six motors can be driven from one controller. Controllers do not have the ability to distinguish between more than one motor, therefore all motors will receive the same control voltage.

5. Select motor voltage (115/230) via a switch on the transformer housing near the power cable.
6. A green LED will be illuminated when the 2-speed control is powered.
7. There are two methods of toggling between speed A and B:
 - a. Dry Contact Input – uses an external switching device (relay or SPDT switch) to toggle between the two speeds.

Connect terminal A to COM for speed A.

Connect terminal B to COM for speed B.

If there is no contact made between either of these terminals, the motor will be off.

- b. AC Digital Input – allows an AC voltage signal to be fed directly into the control to change speeds.

Send 115/230V AC to L1 or L2 for Speed B.

Send 115/230V AC to L1 and L2 for Speed A.

If no voltage is applied to either terminal, the motor will be off.

NOTE: Do not connect both Dry Contact and Digital Inputs simultaneously.

8. Before the external control devices are installed, use a jumper wire to test fan operation. Connect jumper wire between the COM and A or B terminal on the dry contact input for fan operation.

TROUBLESHOOTING GUIDE

Remote Dial and Remote Touch:

Symptom	Possible Cause(s)	Corrective Action
Motor does not operate	<ol style="list-style-type: none"> 1. Incorrectly wired 2. Verify controller operation 3. Foreign objects in the wheel/propeller 	<ol style="list-style-type: none"> 1. Shut power OFF and check wiring for proper and secure connections 2. Verify that all voltages are present at the motor, including 24V and 0-10 VDC, if applicable 3. Shut power OFF and check wheel/propeller for free rotation
Motor will not reach maximum speed	<ol style="list-style-type: none"> 1. Speed setting is not set to maximum rpm 2. Motor is programmed lower than nameplate rpm 	<ol style="list-style-type: none"> 1. Make sure dial is rotated full clockwise, if applicable 2. Check maximum motor speed for your application
Remote dial does not adjust motor rpm	<ol style="list-style-type: none"> 1. 24 VDC is not present across the 24V and COM terminals 2. Remote dial is not wired correctly 	<ol style="list-style-type: none"> 1. Check voltage 2. Verify all wiring connections are correct
Touch remote does not operate	<ol style="list-style-type: none"> 1. Touch remote locked 	<ol style="list-style-type: none"> 1. Verify touch remote is unlocked, unlock if necessary

2-Speed Control:

Symptom	Possible Cause(s)	Corrective Action
Motor does not operate	<ol style="list-style-type: none"> 1. Incorrect voltage selected on the transformer 2. Dry Contact Input not connected properly 3. AC digital input not receiving correct voltage 	<ol style="list-style-type: none"> 1. Verify motor voltage and voltage selected on the input selector 2. Ensure contact closure is connecting the proper terminals 3. Disconnect connector from 2-speed control and measure voltage between L1 and Neutral or L2 and Neutral

DAYTON ONE-YEAR LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. All Dayton® product models covered in this manual are warranted by Dayton Electric Mfg. Co. ("Dayton") to the original user against defects in workmanship or materials under normal use for one year after date of purchase. If the Dayton product is part of a set, only the portion that is defective is subject to this warranty. Any product or part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton or Dayton's designee designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced with a new or reconditioned product or part of equal utility or a full refund given, at Dayton's or Dayton's designee's option, at no charge. For limited warranty claim procedures, see "Warranty Service" below. This warranty is void if there is evidence of misuse, mis-repair, mis-installation, abuse or alteration. This warranty does not cover normal wear and tear of Dayton products or portions of them, or products or portions of them which are consumable in normal use. This limited warranty gives purchasers specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

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