



an ISO 9001:2015 Registered Company

Brushless Fan Control Kit Instruction



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Brushless Fan Controller Installation

Refer to wiring schematics on Page 6.

NOTE: The Vintage Air Brushless Fan Control Kits are designed exclusively for use with Vintage Air Brushless LoPro Fan kits. Vintage Air does not recommend and cannot support their use with fans purchased from other sources.

This controller kit can be installed before or after the installation of the fan itself, however it is important that you plan how you will route the signal wire (white) connecting the controller harness to the main fan power harness and the override wire (blue) that will connect to the AC system trinary switch. You should consider the shortest and cleanest routing, away from unnecessary heat sources and moving components.

Crimp terminals are supplied for the necessary connections to the switched ignition source, chassis ground and fan harness signal wire. A properly crimped connection is superior in electrical conductivity and durability to a soldered connection. To ensure a reliable crimp, a quality crimper must be used (See Photos 1-6, below).

NOTE: To avoid excessive key-off current, it is very important that the red power wire on this harness is connected to a switched ignition source that turns off with the ignition switch.

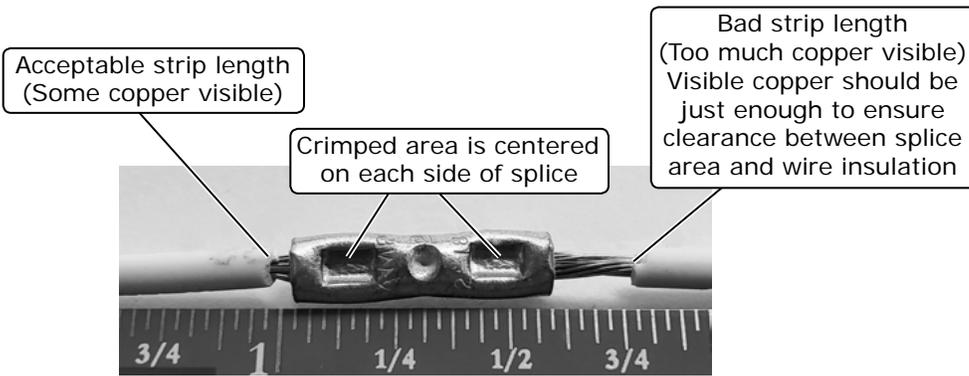


Photo 1

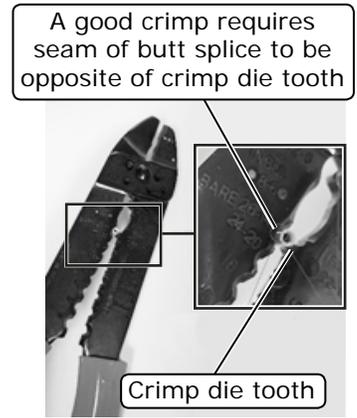


Photo 2

Good Ring Terminal Crimp

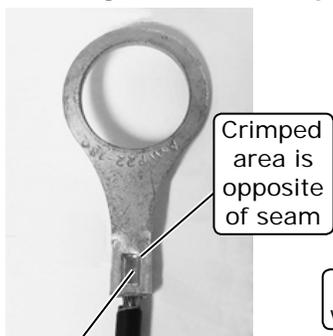


Photo 3

Bad Ring Terminal Crimp

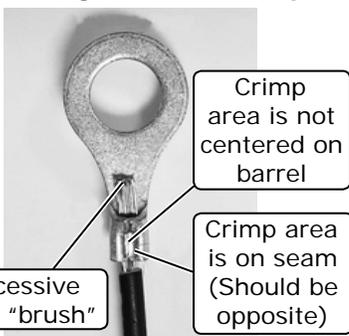


Photo 4

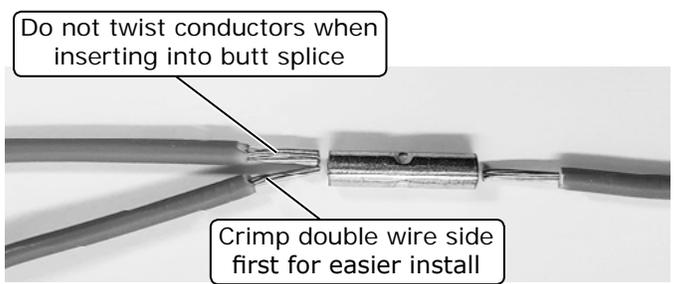


Photo 5

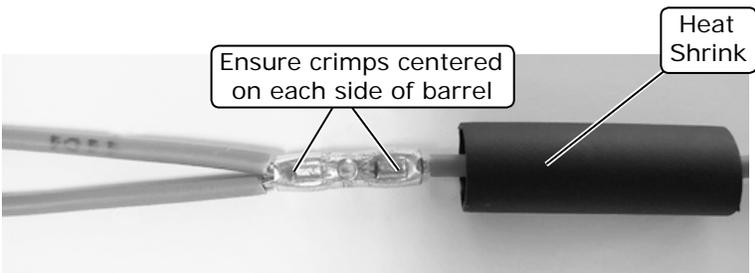


Photo 6



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Brushless Fan Controller Installation (Cont.)

1. Disconnect the battery.
2. Locate a suitable port for the fan controller. This controller MUST be mounted so that it senses the temperature of coolant leaving the engine. **NOTE: On early model engines, provisions usually exist in the intake manifold or coolant pump. On late model engines such as Chevrolet LS and LT, Ford Coyote and Chrysler Hemi, it may be necessary to install an in-hose adapter that provides the required 3/8" NPT port.**
3. Apply Teflon thread sealant to controller threads and install.
4. Determine the desired route from the fan controller to your chosen power source, typically the ignition coil wire (before the ballast resistor) or a switched ignition source in the fuse panel, as well as the ground, signal and override wires. Avoid routing close to heat sources such as exhaust manifolds or moving parts such as belts and pulleys.
5. Assemble the fuse assembly to the red power wire and connect to your chosen power source.
6. Connect the ground wire. It is acceptable to be connected to a clean, conductive surface on either the engine or the vehicle chassis. Confirm you have a good ground with a multimeter before proceeding.
7. Using the supplied butt connector, connect the white signal wire on the control harness to the white signal wire on the fan power harness.
8. The blue wire is used to turn on the fan when the trinary switch on the AC system closes. It must be supplied with an ignition switched 12V source, which can be shared with the controller power source. See attached schematic for recommended wiring connections.

Operation

Operation of Vintage Air brushless fans is different from conventional brushed fans in several ways. For instance, the brushless system contains no control relays. Instead, the battery powers the motor assembly at all times and an electronic controller within the motor housing determines when to operate the motor, based on a control signal that comes in from the Vintage Air Brushless Fan Control Kit.

When the fan is configured and operating properly, it will engage with a soft-start at approximately 30% power when the engine reaches approximately its coolant thermostat opening temperature, then gradually ramp up in speed as engine temperature further increases, until reaching maximum speed at approximately 20-25 deg. F (11-14C) higher. Since these fans are very powerful, they typically stabilize somewhere in-between, rarely if ever reaching maximum speed. **NOTE: This control strategy is ideal for cooling system performance, is typical of most modern OEM engine cooling control strategies, and is the strategy employed by all Vintage Air brushless fan controllers.**



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Troubleshooting

WARNING: ALWAYS KEEP HANDS, CLOTHES, TOOLS, ETC. AWAY FROM THE FAN BLADE!

Brushless fans have proven to be extremely reliable when installed properly. Troubleshooting is limited to determining that the appropriate power and PWM signal is supplied to the motor.

Fan doesn't turn on:

If the fan does not come on when you expect it to, first confirm that the fan is receiving at least 12V on the red and black main power wires and that the polarity is correct. Red is positive and Black is negative. If the main fuse is determined to be blown, inspect the wiring carefully to determine if there is damage to the insulation, resulting in a short circuit. Once you have confirmed that the motor is being supplied with power, you'll need to confirm proper PWM signal to the white wire. **Note that you cannot turn the fan on by applying either 12V or ground to the white wire.**

You will next need to confirm that the controller also has power and ground to its sensor. Since the VA fan controller contains its own microcontroller, it requires its own power. First, confirm that the vehicle ignition switch is on, then check for at least 12V on the red and black wires to the controller. If not, inspect wiring connections at chassis ground, ignition source and fuse holder. Once you have confirmed that the controller is being supplied with power, you'll need to confirm proper PWM signal to the white wire. On this controller, there is a blue override wire that is typically used to turn the fan on via an AC trinary switch. This wire makes it easy to turn on the fan regardless of engine temperature. Before continuing...

IMPORTANT SAFETY MESSAGE

THIS FAN CAN TURN ON WITHOUT WARNING. ALWAYS STAY CLEAR OF THE FAN BLADE WHENEVER THE BATTERY IS CONNECTED. KEEP HANDS, CLOTHING, TOOLS, ETC. CLEAR OF THE FAN BLADE AT ALL TIMES!

With the ignition switch on and the white wire from the Vintage Air brushless fan controller connected to the white wire on the fan power harness, apply 12V to the blue wire on the fan controller. Within a few seconds, the fan should slowly start turning and ramp up to full speed a few seconds later.

If the fan operates when applying power to the blue wire, but not when you expect it to with the engine heated up, confirm that the controller sensor is installed in the engine water jacket BEFORE the thermostat and that the engine is actually up to operating temperature. Also confirm that you have the proper controller, matched to your thermostat setting.

Fan doesn't turn off:

Check all wiring to confirm proper connections, specifically the blue override wire. If the fan is running full speed all the time, even when the engine is still cold, this is probably the issue.

If the fan is off when the engine is cold, but always runs on high speed when the engine is up to operating temperature, the engine thermostat is probably mismatched to the fan controller. Install the proper thermostat for the chosen fan controller.

