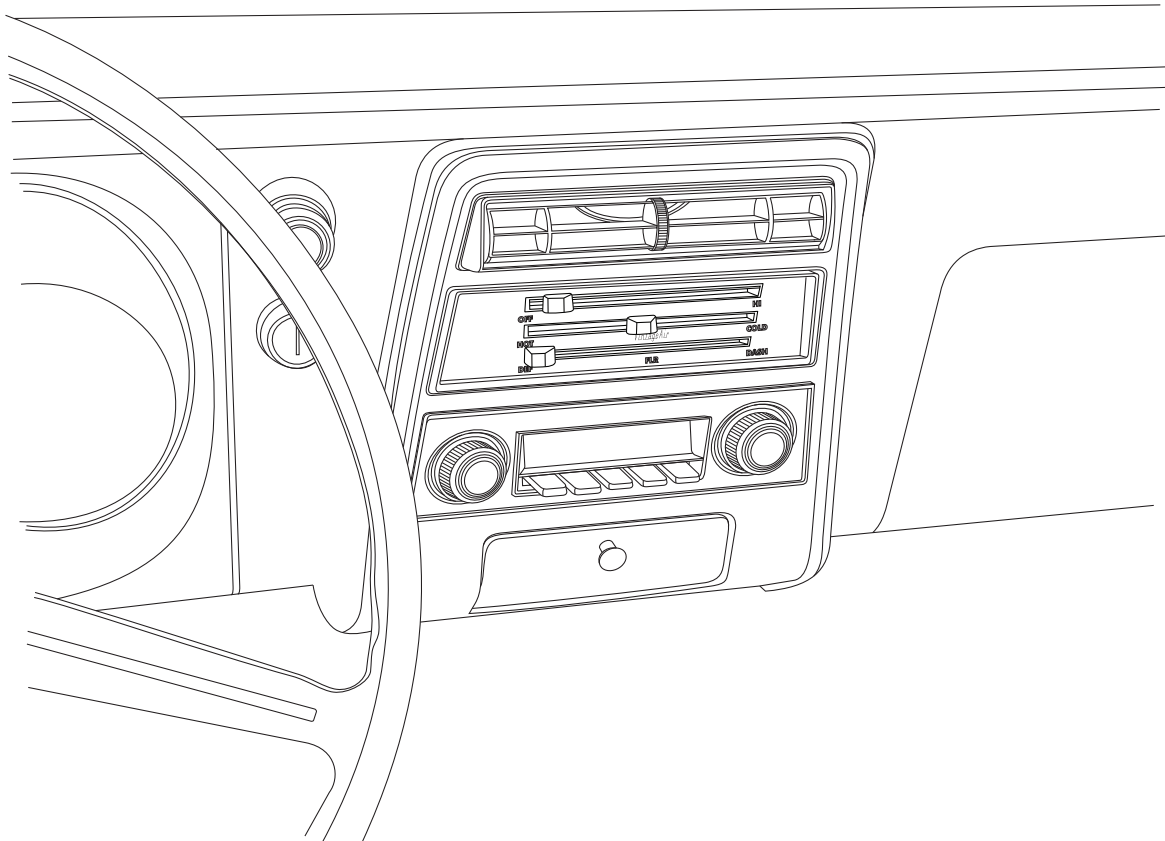




1967-68 Chevrolet Camaro/ Pontiac Firebird

with Factory Air
Control Panel Conversion Kit
(475166)



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Sales: sales@vintageair.com
Tech Support: tech@vintageair.com
www.vintageair.com



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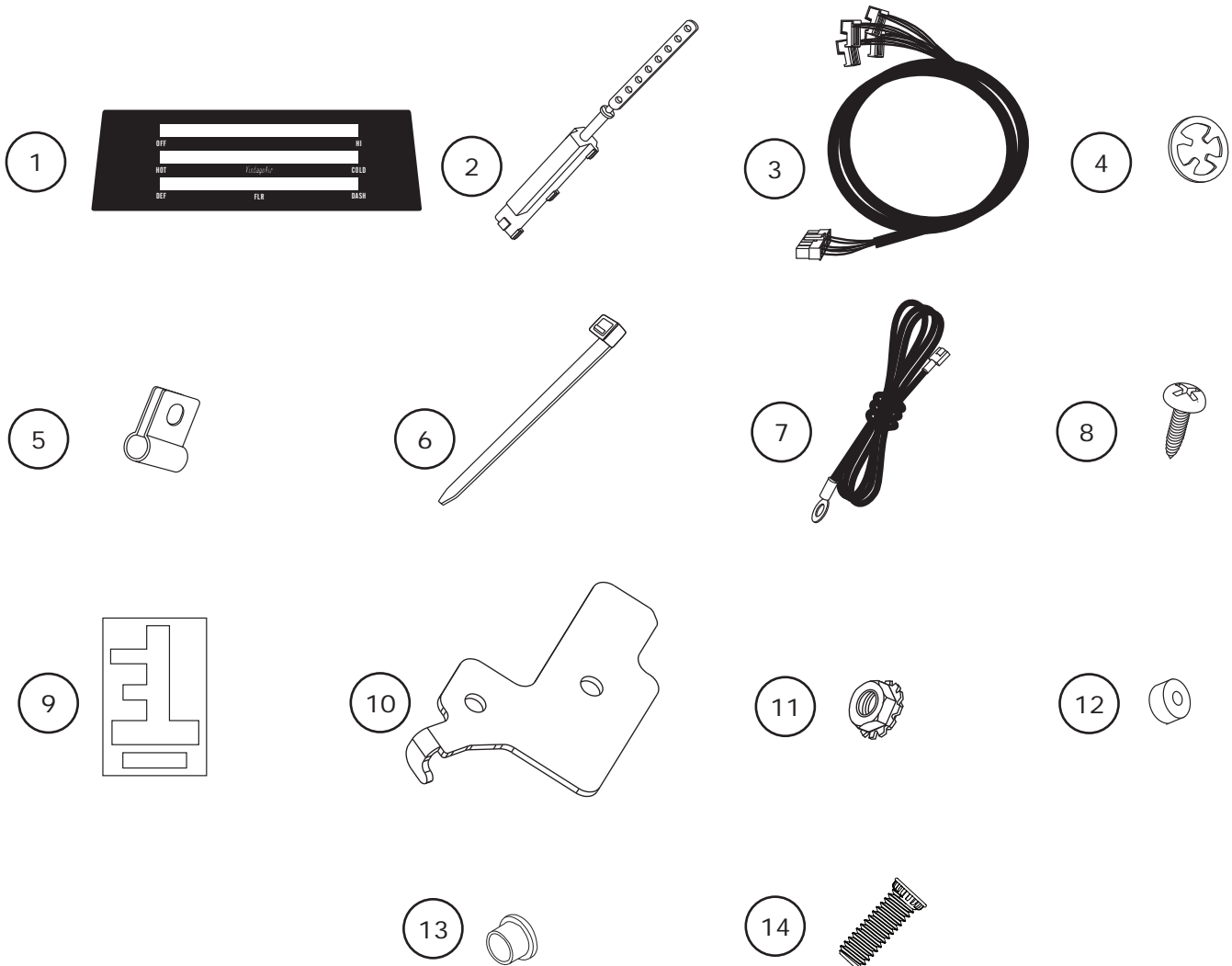


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Packing List: Control Panel Kit (475166)

No.	Qty.	Part No.	Description
1.	1	484166	Label, Control Panel
2.	3	112002-SUA	Cable Converter Assembly
3.	1	232002-VUA	Control Harness, Gen IV/Gen 5 Universal
4.	2	65976-VUE	Push-on Ring, 3/16"
5.	3	491010-VUR	Cable Converter Clamp
6.	5	21301-VUP	Tie Wrap, 4"
7.	1	231520	Ground Wire
8.	4	18235-VUB	Screw, #8 x 1/2"
9.	1	484170	Label, Placard Backing
10.	1	640686	Bracket, Control Panel
11.	1	18089-VUB	Nut with Star Washer, 8-32
12.	1	180048	Spacer, .500" OD x .166" ID x .1875" L, Nylon
13.	2	182536	Sleeve, .160" ID x .197" OD x .125" L, Nylon
14.	1	180882	Stud, 8-32 x .500"

**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**





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Control Panel Removal

1. Remove the (4) mounting screws from the bottom of the dash bezel (See Figure 1, below).
2. Remove the (4) screws from behind the dash bezel, and remove the control panel.
3. Disconnect all cables and wires from the back of the control panel.
4. Remove the (3) control knobs (retain) (See Figure 2, below).

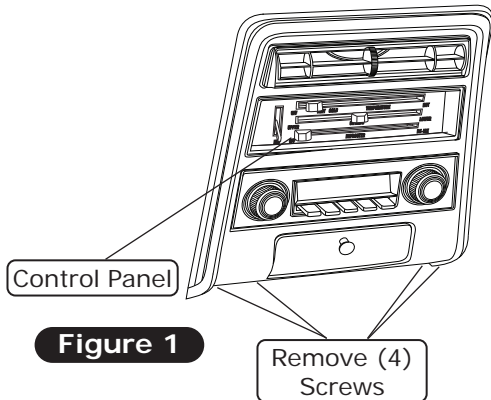


Figure 1

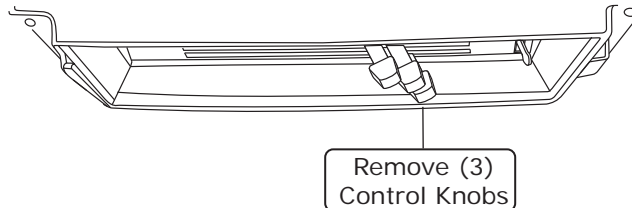


Figure 2

Placard Installation

NOTE: The OEM placard can be used with this system, but the placard will not depict the actual mode settings. This kit comes with a replacement placard label that will show the correct mode settings when installed. To use the replacement placard label, the control panel must be modified as described below.

1. Remove the control panel face plate, placard and backing plate from the control panel (See Photo 1, below).
2. Drill out the rivets using a 9/64" drill bit. Remove the (4) mounting rivets from the control panel face plate (See Photo 2, below).
3. Using a suitable method, cut along the inside right edge of the control panel backing plate flange (See Photos 3a & 3b, below).
4. Apply the white placard backing label to the back of the OEM placard as shown in Figure 1, below. **NOTE: This is done to balance the amount of light across the face of the control panel. Apply the rectangular label approximately 3 1/2" from the edge of the placard (See Figure 1, below).**
5. Install the control panel label onto the front side of the OEM placard (See Figure 2, below).



Remove Face Plate, Placard and Backing Plate

Photo 1



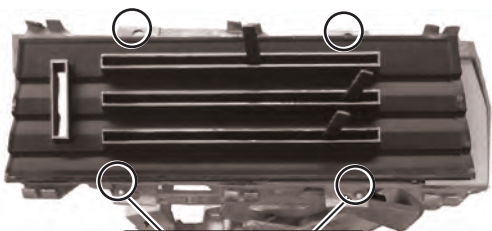
Before Modification

Photo 3a



After Modification

Photo 3b



Remove (4) Rivets

Photo 2

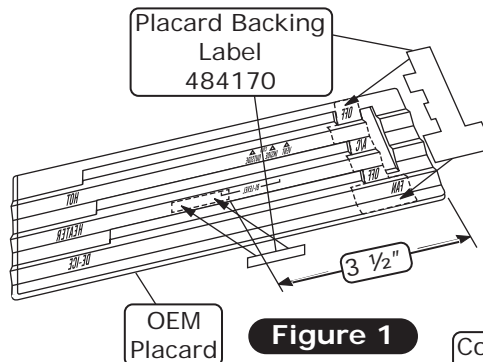
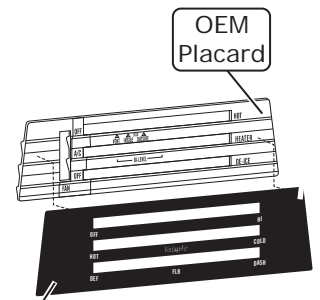


Figure 1



Control Panel Label 484166

Figure 2



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Control Panel Assembly Modification

1. Remove the blower speed switch, vacuum valve, master blower switch and all related hardware (discard) (See Photo 1, below).
2. To remove the lower control arm bracket, carefully remove the rectangular plate (retain) as shown in Photo 2, below. **NOTE: The plate is located at the bottom of the control panel toward the rear, from where all of the arms swivel.**
3. Remove the alignment pin from the control arms, and push aside the first two control arms (See Photo 3, below).
4. Lift the primary control arm and the secondary linkage lever from the swivel pin (See Photo 4, below). Discard the secondary linkage lever (See Photo 5, below).
5. Remove the upper control arm from the control frame by sliding the main control arm as far as possible in the opposite direction from the blower switch opening (See Photo 6, below). **NOTE: Use enlarged opening to remove the arm from the control panel frame.**

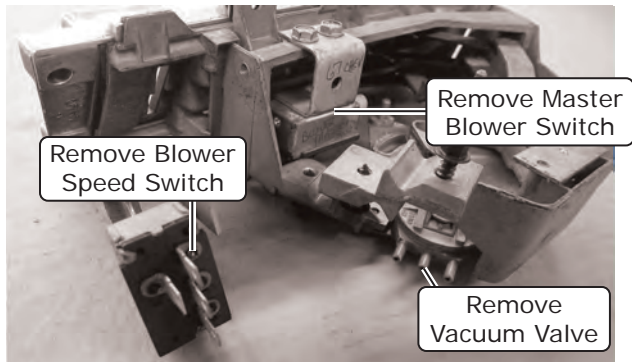
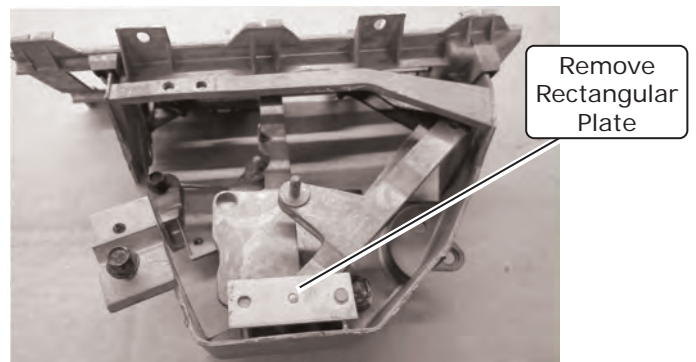


Photo 1



Bottom of Control View

Photo 2

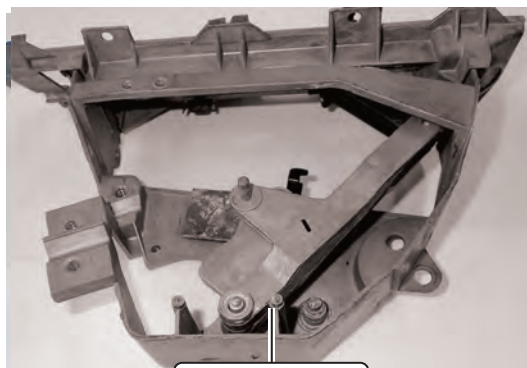


Photo 3

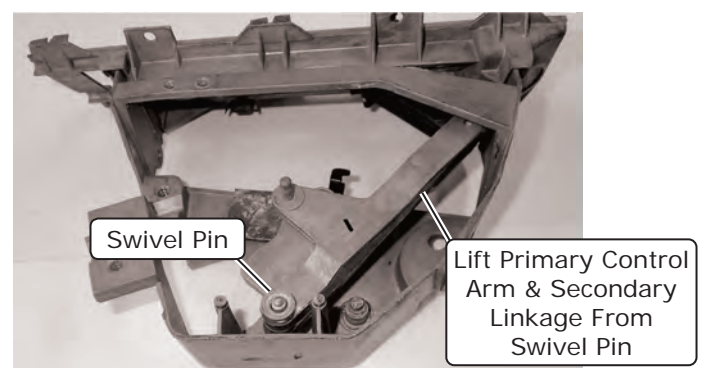


Photo 4

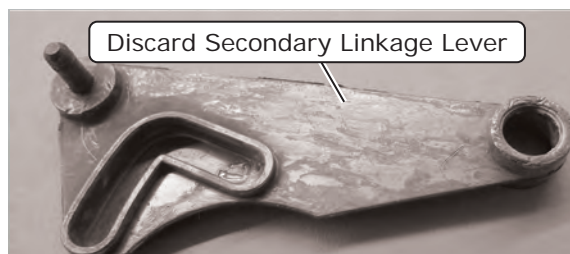


Photo 5

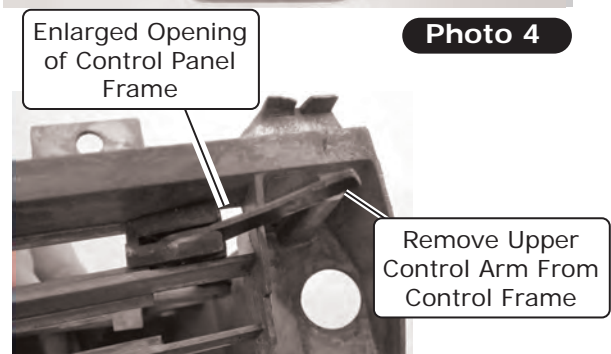


Photo 6



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Cable Converter Assembly Modification

1. Locate the (3) cable converter assemblies. Using wire cutters, cut each cable converter actuator rod at the 3rd hole as shown in Photo 1, below.
2. Install a cable converter clamp onto each of the (3) cable converters (See Photo 2, below).
3. Insert (1) .125" length nylon sleeve each into the 2nd hole of the temperature and mode cable converter assemblies (See Photo 3, below). **NOTE: The blower speed cable converter assembly does not require a nylon sleeve.**

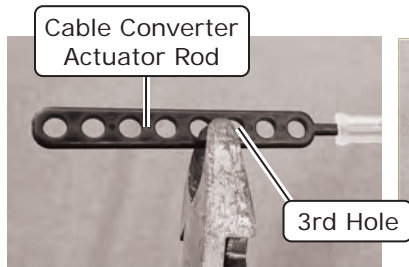


Photo 1

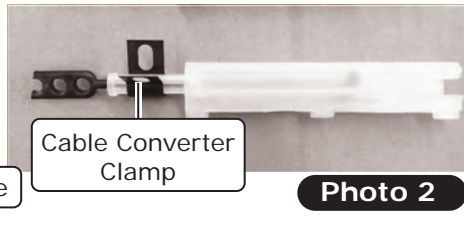


Photo 2

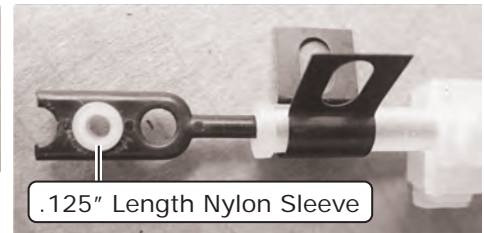


Photo 3

Control Arm Modification

1. Modify the OEM main upper control arm by placing the control panel bracket onto the top of the control arm, aligning the small hole over the peg and seating it firmly in place (See Photo 1, below).
2. Using the control panel bracket as a guide, drill through the OEM control arm using a 5/32" drill bit (See Photo 2, below).
3. Remove the bracket, and insert a 8-32 x .500" stud into the 5/32" hole (See Photo 3, below).
4. Install the .1875" length nylon spacer on top of the 8-32 x .500" stud (See Photo 4, below). Install the control panel bracket on top of the spacer, followed by the 8-32 nut with star washer (See Photo 4, below).
5. Tighten the nut until the head of the 8-32 x .500" stud sinks slightly into the main control arm.

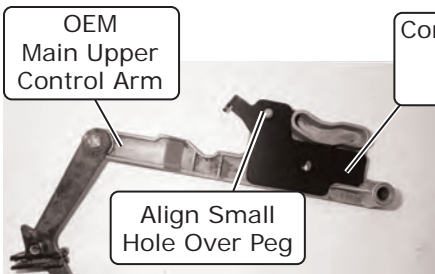


Photo 1

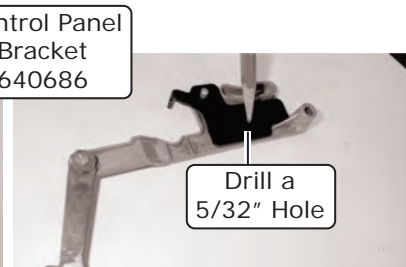


Photo 2

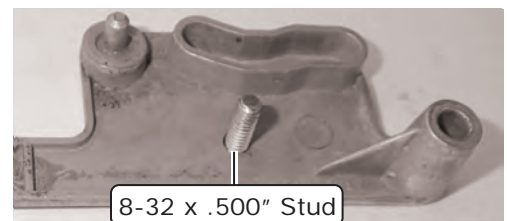


Photo 3

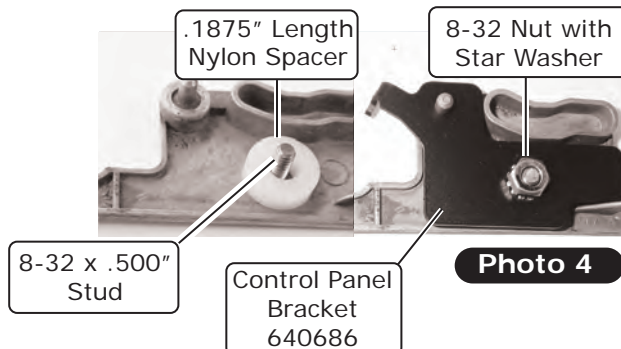


Photo 4



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Control Panel Assembly

1. Install the alignment pin into the modified upper control arm along with the (2) arms previously pushed aside. Install the rectangular plate at the rear of the control panel frame (See Photo 1, below).
2. Secure the control panel face plate to the control panel using (4) # 8 x 1/2" screws (See Figure 1, below). Install the control knobs onto the control panel.

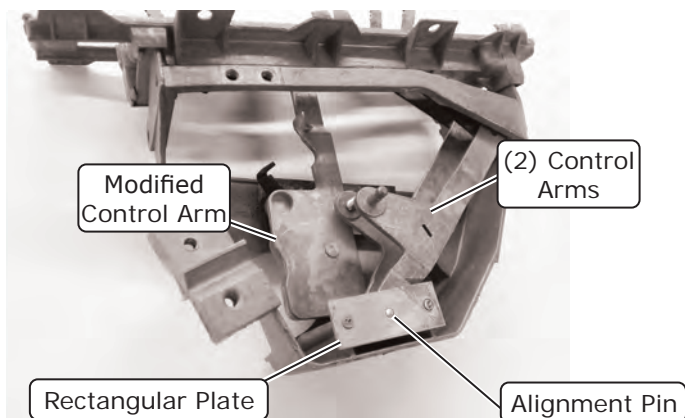


Photo 1

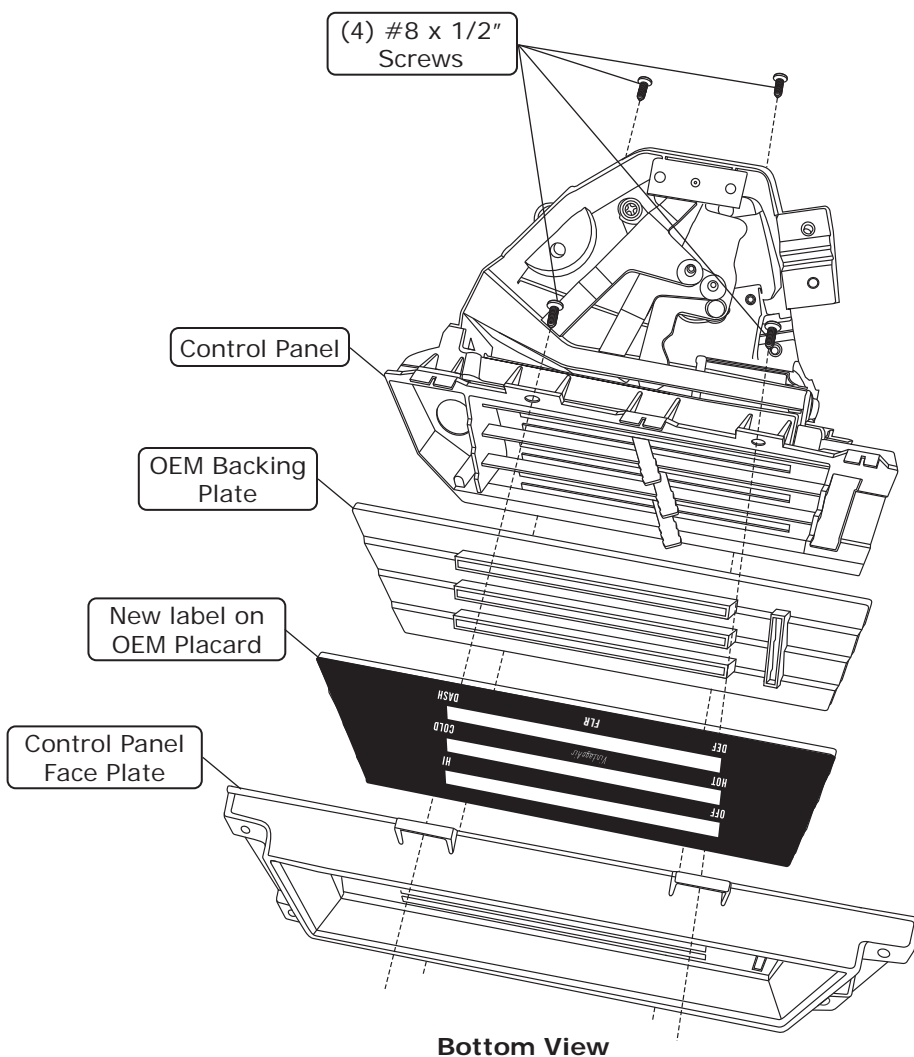


Figure 1



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Mode Cable Converter Assembly Installation

1. Place the control panel on a workbench with the bottom side facing up.
2. Install the mode cable converter assembly onto the mode lever by attaching the cable converter lever actuator rod (with nylon sleeve) to the OEM cable mounting stud on the lever (See Photo 1, below).
3. Secure the cable converter assembly to the control panel using the OEM screw in the OEM cable clamp mounting location (See Photo 2, below). **NOTE: Since the cable converter assembly can slide back and forth in the clamp before the screw is tightened, position the flat part of the actuator rod as close to flush as possible with the end of housing at the lever's innermost position (See Photo 3, below).**
4. Secure the cable converter lever actuator rod to the OEM cable's mounting stud using a 3/16" push-on ring as shown in Photo 4, below.
5. Locate the control panel wiring harness, and plug the corresponding connector into the correct cable converter assembly (See Figure 1, below).
6. Once the connector is correctly plugged into the cable converter assembly, secure the wires to the cable converter assembly using one of the supplied tie wraps. The tie wrap must be located between the end of the wire jacket and the step in the cable converter housing, forcing a bend in each wire as it passes over the step in the cable converter housing. The head of tie wrap must fall on the edge of housing to remain tight. Ensure that the tie wrap is tight enough that the wires cannot move (See Photo 5, below).

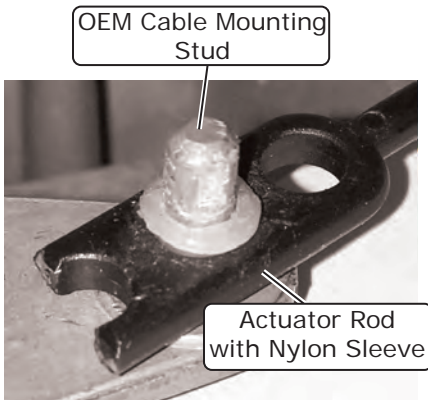


Photo 1

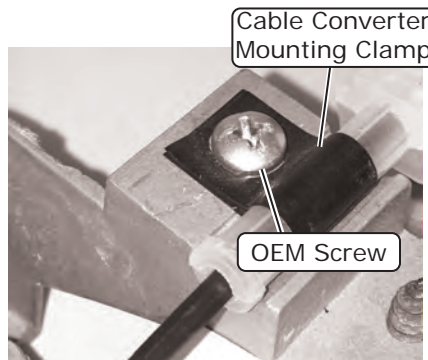


Photo 2

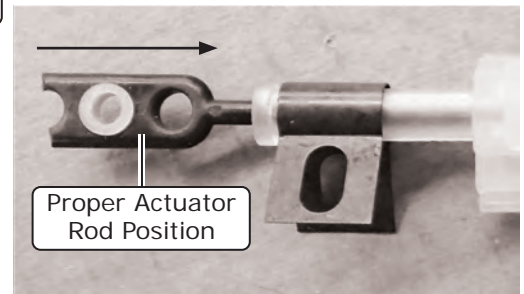


Photo 3



Photo 4

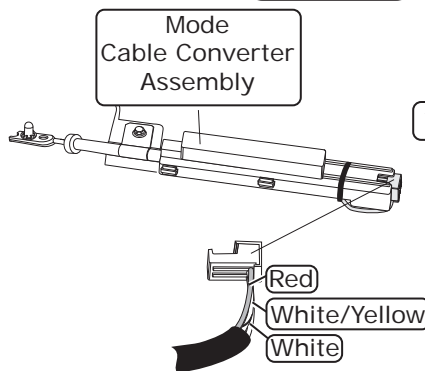


Figure 1

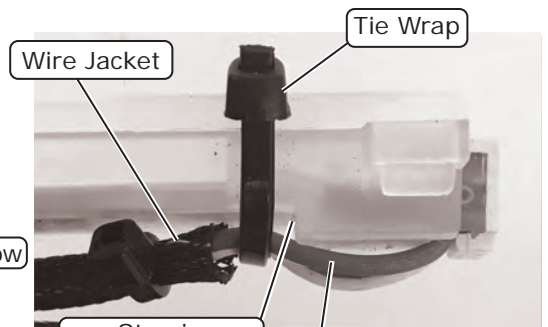


Photo 5



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Temperature Cable Converter Assembly Installation

1. Place the control panel on a workbench with the top side facing up.
2. Install the temperature cable converter assembly onto the temperature lever by attaching the cable converter lever actuator rod (with nylon sleeve) to the OEM cable mounting stud on the lever (See Photo 1, below).
3. Secure the cable converter assembly to the control panel using the OEM screw in the OEM cable clamp mounting location (See Photos 2 & 3, below). **NOTE: Since the cable converter assembly can slide back and forth in the clamp before the screw is tightened, position the flat part of the actuator rod as close to flush as possible with the end of housing at the lever's innermost position (See Photo 4, below).**
4. Secure the cable converter lever actuator rod to the OEM cable mounting stud using a 3/16" push-on ring as shown in Photo 5, below.
5. Locate the control panel wiring harness, and plug the corresponding connector into the correct cable converter assembly (See Figure 1, below).
6. Once the connector is correctly plugged into the cable converter assembly, secure the wires to the cable converter assembly using one of the supplied tie wraps. The tie wrap must be located between the end of the wire jacket and the step in the cable converter housing, forcing a bend in each wire as it passes over the step in the cable converter housing. The head of tie wrap must fall on the edge of housing to remain tight. Ensure that the tie wrap is tight enough that the wires cannot move (See Photos 6 & 7, below).

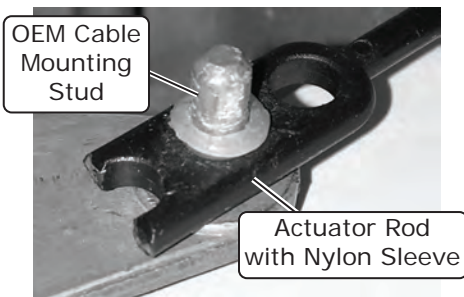


Photo 1

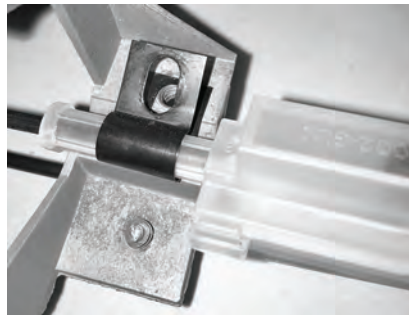


Photo 2

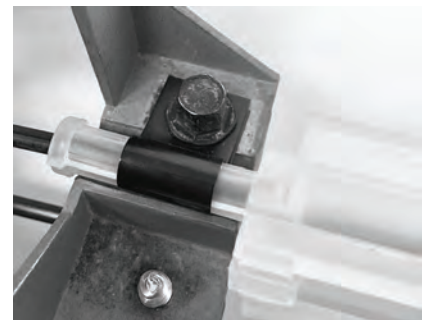


Photo 3

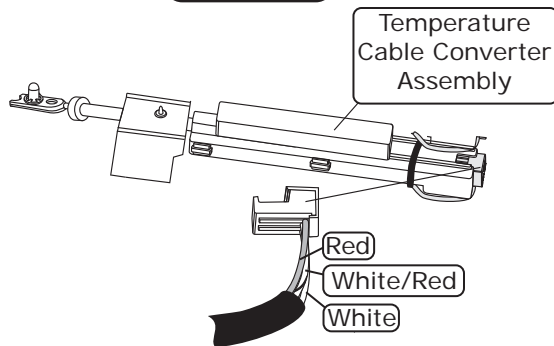


Figure 1

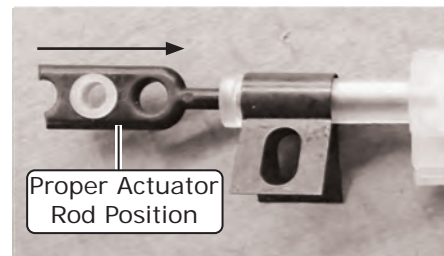


Photo 4



Photo 5

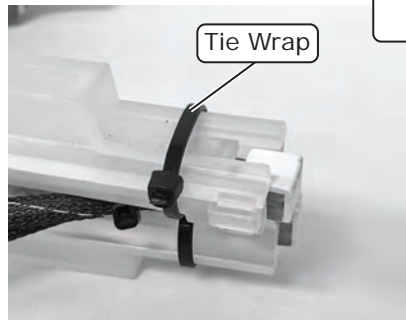


Photo 6

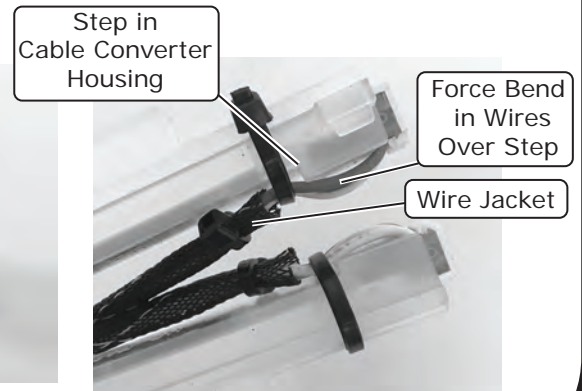


Photo 7



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Blower Speed Cable Converter Assembly Installation

1. Install the cable converter assembly onto the control panel bracket by rotating it 90° into the proper position (See Figure 1, below).
2. Position the assembly such that the flat part of the actuator rod is as close to flush as possible with the end of housing at the lever's innermost position (See Photo 1, below).
3. Secure the cable converter assembly to the control panel using the OEM screw in the OEM cable clamp mounting location (See Photo 2, below).
4. Locate the control panel wiring harness, and plug the corresponding connector into the cable converter assembly (See Figure 2, below).
5. Once the connector is correctly plugged into the cable converter assembly, secure the wires to the cable converter assembly using one of the supplied tie wraps. The tie wrap must be located between the end of the wire jacket and the step in the cable converter assembly housing, forcing a bend in each wire as it passes over the step. The head of the tie wrap must fall on the edge of housing to remain tight. Ensure that the tie wrap is tight enough that the wires cannot move (See Photo 3, below).

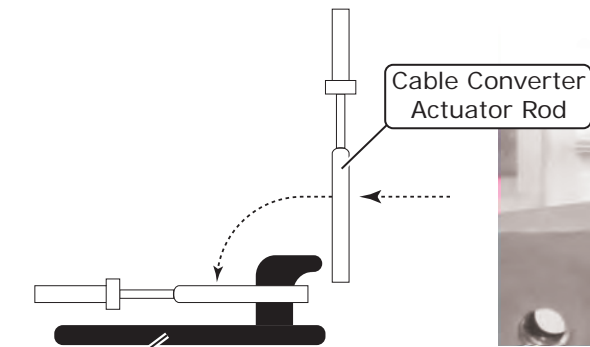


Figure 1

Control Panel Bracket
640686

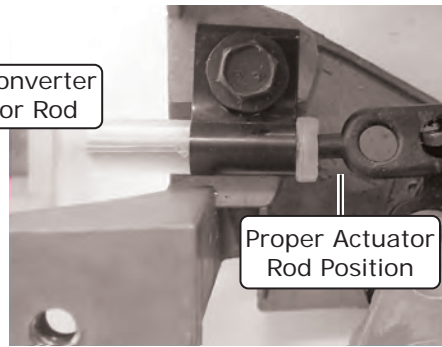


Photo 1

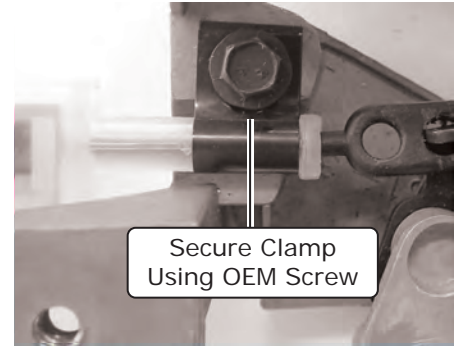


Photo 2

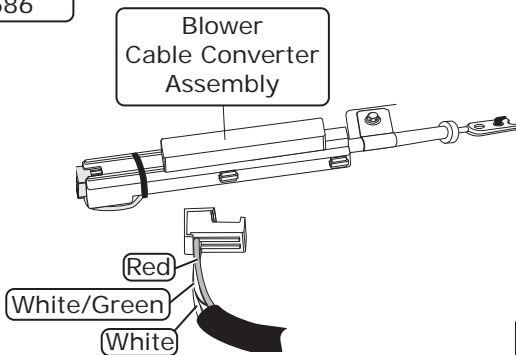


Figure 2

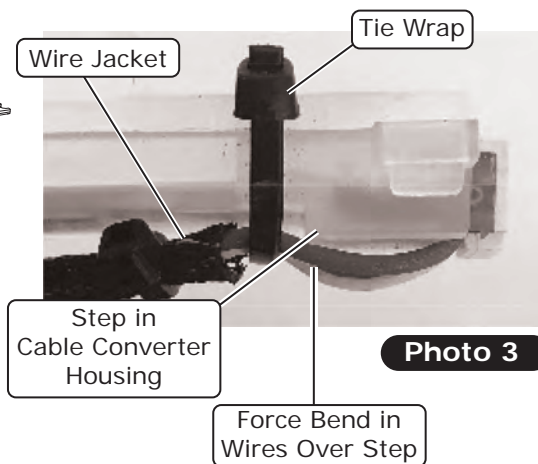


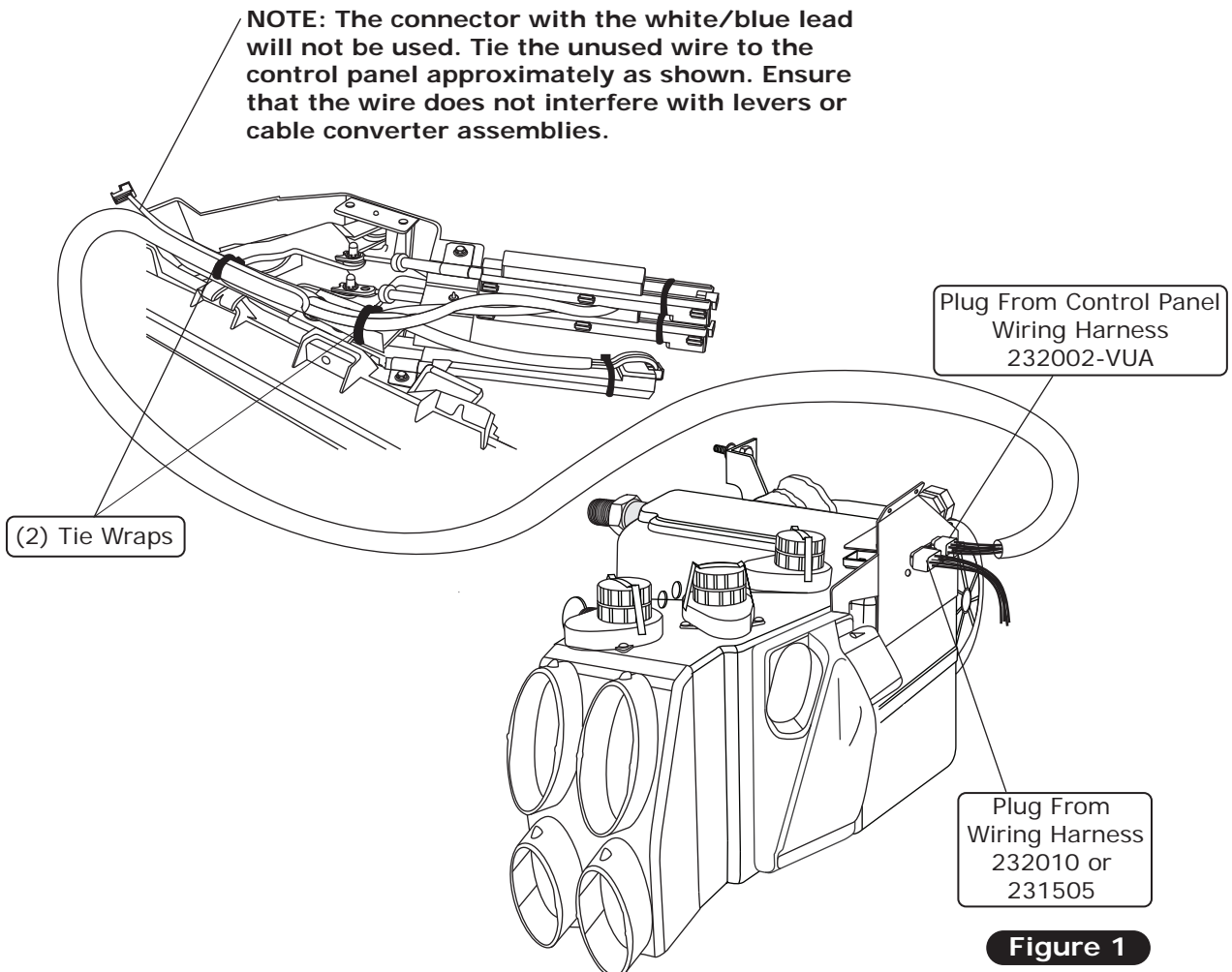
Photo 3



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Final Steps

1. Using the supplied tie wraps, secure the wires to the control panel as shown in Figure 1, below. Confirm that the wires are secure and do not interfere with lever operation or the cable converter assemblies.
2. Install the control panel into the dash. For ease of installation, raise the control panel from under the dash on the driver side to the opening in the dash. **NOTE: Make sure the assemblies clear the duct hose behind the driver side of dash opening. Do not force the control panel into the dash. Forcing the control panel into the dash may damage the cable converter assemblies and/or duct hose.**
3. Plug the wiring harnesses into the ECU module on the sub case (See Figure 1, below).
4. Wire according to the wiring diagram on Page 15 or 16.
5. Calibration procedure and operation instructions:
 - A. Calibrating the control panel will set the range of travel for the cable converters connected to the OEM control panel levers. Performing this procedure will set the limits of the cable converters at their highest and lowest points.
 - B. Locate the gray wire with an unused connector in the wiring harness near the cable harness relay. This wire is labeled PROGRAM on the wiring diagram.
 - C. It will be necessary to ground the gray wire for approximately five seconds while moving the controls, so it is sometimes helpful to attach one end of the white jumper to the vehicle's ground (for example, the chassis) and have the other end ready to connect to the gray PROGRAM wire when the procedure requires it.
 - D. To calibrate the control panel, follow the calibration procedures on Pages 12 & 13.





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Control Panel Calibration Procedure

On Vintage Air Gen IV and Gen 5 systems using cable converters or replacement electronic controls, it is necessary to calibrate the system to your specific control panel. This procedure ensures that the travel of your control panel levers or knobs is translated into precise control of the blower speed, temperature blend and mode door position. Please carefully read and understand these procedures before beginning. The procedure may be repeated as many times as necessary to get it right.

Gen IV Systems:

In preparation for calibration, you will need to attach the supplied white ground jumper wire (PN 231520) to a suitable chassis ground. This jumper wire must be easily connected to the gray programming wire located in the main Gen IV wiring harness next to the compressor relay. During the calibration procedure, you will connect the white jumper to the gray program wire, which will "teach" the Gen IV ECU the upper limits of the control levers or knobs. The blower will momentarily change speeds, signaling that the upper limits have been "learned". You will move the levers or knobs to opposite extreme positions of their travel and then disconnect the white jumper. The blower will pulse on/off, signaling that the lower limits have been learned and that the calibration procedure is complete.

Gen 5 Systems:

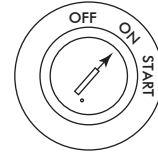
In preparation for calibration, you will need to attach the supplied white ground jumper wire (PN 231520) to a suitable chassis ground. This jumper wire must be easily connected to the gray programming wire located in the main Gen 5 wiring harness, see the Gen 5 wiring diagram and instructions for more information. During the calibration procedure, you will connect the white jumper to the gray program wire, and ground, which will then put the ECU into calibration mode. When the ECU is in calibration mode, the blower will default to medium speed and the ECU will flash a solid red light. Once in calibration mode you will cycle the controls as indicated in the calibration procedure on the next page. When complete, the jumper and program wire will be disconnected. The blower will turn off indicating calibration is complete.



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Control Panel Calibration Procedure (Cont.)

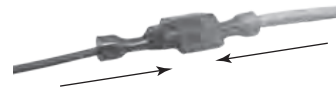
1. Turn on the ignition switch (Do not start the engine).



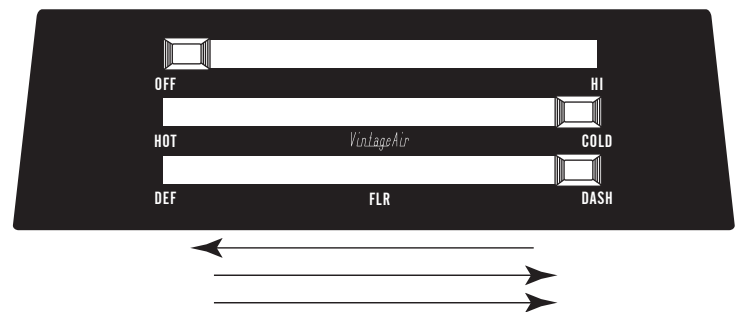
2. Move the control levers/knobs to the positions shown.



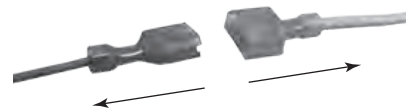
3. Connect the white jumper wire to the gray program wire. Wait approximately 5 seconds for the blower speed to change if using a Gen IV system, if using a Gen 5 system wait for the blower to default to medium speed.



4. Move the control levers/knobs to the positions shown.



5. Disconnect the white jumper wire from the gray program wire. The blower speed will change if using a Gen IV system, and will shut off if using a Gen 5 system, indicating completion of the calibration procedure.



6. Confirm proper operation of controls. Repeat procedure if necessary. When finished, tape over program wire connector with electrical tape to prevent accidental contact with chassis ground.



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Operation of Controls

On Gen IV or Gen 5 systems with three lever/knob controls, the temperature control toggles between heat and A/C operations. To activate A/C, move the temperature lever/knob all the way to cold and then back it off to the desired vent temperature. For heat operation, move the temperature lever/knob all the way to hot and then adjust to the desired vent temperature. The blower will momentarily change speed, each time you toggle in and out of heat and A/C operations, to indicate the change. **NOTE: For proper control panel function, refer to Pages 12 & 13 for calibration procedure.**

Blower Speed

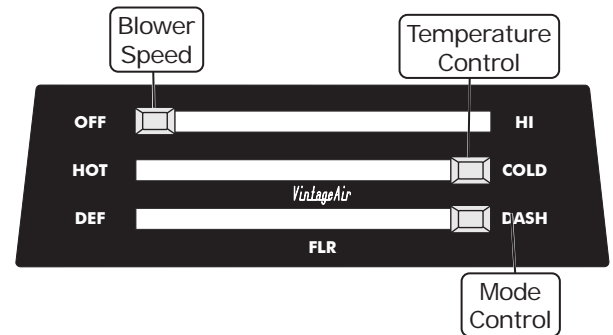
This lever/knob controls blower speed, from OFF to HI.

Mode Control

This lever/knob controls the mode positions, from DASH to FLOOR to DEFROST, with a blend in between.

Temperature Control

This lever/knob controls the temperature, from HOT to COLD.



A/C Operation

Blower Speed

Adjust to desired speed.

Mode Control

Adjust to desired mode position (DASH position recommended).

Temperature Control

For A/C operation, adjust to coldest position to engage compressor (Adjust between HOT and COLD to reach desired temperature).



Heat Operation

Blower Speed

Adjust to desired speed.

Mode Control

Adjust to desired mode position (FLOOR position recommended).

Temperature Control

For maximum heating, adjust to hottest position (Adjust between HOT and COLD to reach desired temperature).



Defrost/De-fog Operation

Blower Speed

Adjust to desired speed.

Temperature Control

Adjust to desired temperature.

Mode Control

Adjust to DEFROST position for maximum defrost, or between FLOOR and DEFROST positions for a bi-level blend (Compressor is automatically engaged).

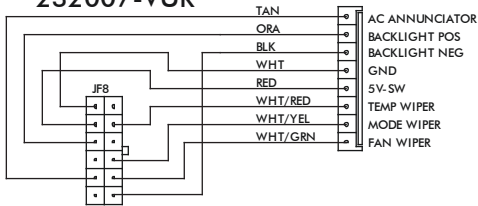




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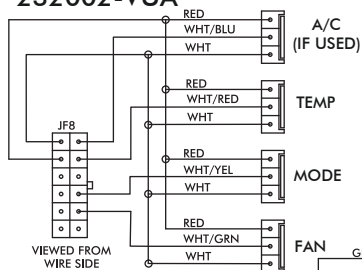
Gen IV Wiring Diagram

232007-VUR



VIEWED FROM WIRE SIDE

232002-VUA



VIEWED FROM WIRE SIDE

PROGRAM

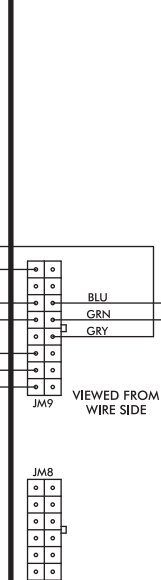
N/A
* DASH LAMP
(IF USED)

*** WIDE OPEN
THROTTLE SWITCH
(OPTIONAL)

IGNITION SWITCH +12v

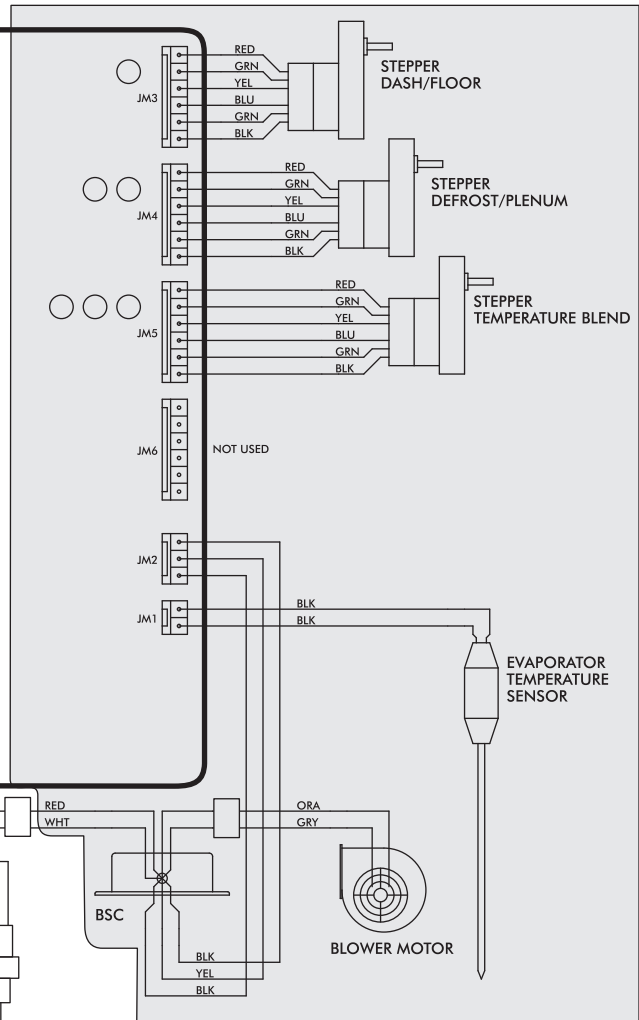
** CIRCUIT
BREAKER
30 AMP

GEN IV ECU



VIEWED FROM WIRE SIDE

PRE-WIRED



NOTE: = CHASSIS GROUND

* Dash lamp is used only with type 232007-VUR harness.

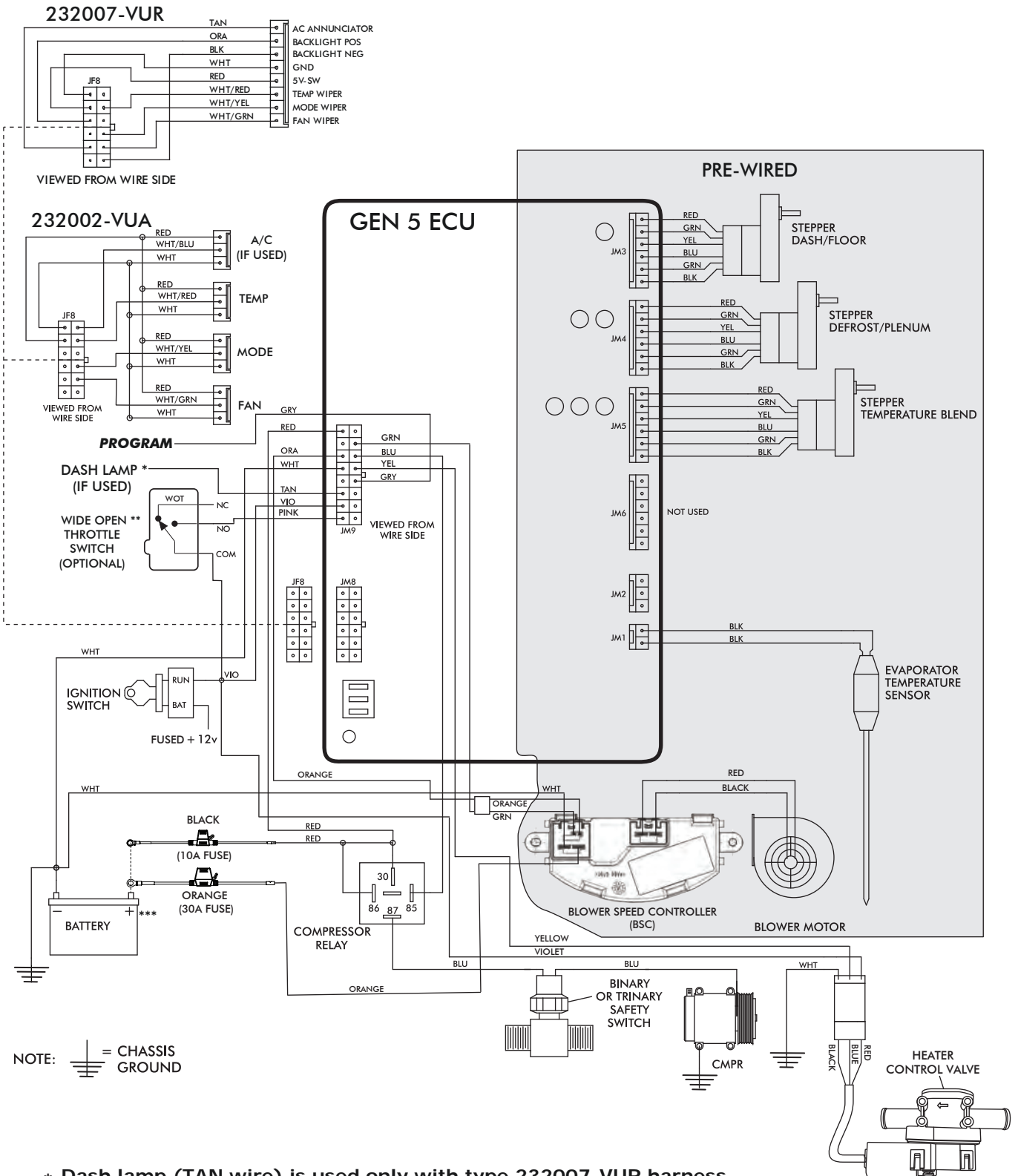
** Warning: Always mount circuit breaker as close to the battery as possible. (NOTE: Wire between battery and circuit breaker is unprotected and should be carefully routed to avoid a short circuit).

*** Wide open throttle switch contacts close only at full throttle, which disables A/C compressor.



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Gen 5 Wiring Diagram



NOTE: = CHASSIS GROUND

- * Dash lamp (TAN wire) is used only with type 232007-VUR harness.
- ** Wide open throttle switch contacts close only at full throttle, which disables A/C compressor.
- *** Install fuse assemblies at or as near to the battery as possible.



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Packing List: Control Panel Kit (475166)

No.	Qty.	Part No.	Description
1.	1	484166	Label, Control Panel
2.	3	112002-SUA	Cable Converter Assembly
3.	1	232002-VUA	Control Harness, Gen IV Universal
4.	2	65976-VUE	Push-on Ring, 3/16"
5.	3	491010-VUR	Cable Converter Clamp
6.	5	21301-VUP	Tie Wrap, 4"
7.	1	231520	Ground Wire
8.	4	18235-VUB	Screw, #8 x 1/2"
9.	1	484170	Label, Placard Backing
10.	1	640686	Bracket, Control Panel
11.	1	18089-VUB	Nut with Star Washer, 8-32
12.	1	180048	Spacer, .500" OD x .166" ID x .1875" L, Nylon
13.	2	182536	Sleeve, .160" ID x .197" OD x .125" L, Nylon
14.	1	180882	Stud, 8-32 x .500"

**** Before beginning installation, open all packages and check contents of shipment. Please report any shortages directly to Vintage Air within 15 days. After 15 days, Vintage Air will not be responsible for missing or damaged items.**

