

CVC516 HVAC Vehicle Controller **2015 - 2016 Ford Transit; All Engines**

Contact InterMotive for additional vehicle applications

System Overview

The CVC516 allows the addition of a tie-in rear auxiliary AC system on the Ford Transit chassis. When the rear system is turned on, the CVC activates the OEM clutch/compressor, and uses the OEM temperature and pressure sensors, eliminating the need for auxiliary sensors. The auxiliary rear AC system can be operated even with the front OEM controls shut off. The front OEM AC control functions are preserved whether the rear system is on or off.

The CVC system provides a Rear AC System Request input which will automatically activate the OEM system (clutch compressor). An optional input allows monitoring a Rear AC system evaporator freeze switch input, which can be used to cycle the OEM AC Clutch/Compressor to prevent freeze up.

The front evaporator temperature is monitored, and should it fall below 7 degrees C (default value can be adjusted), the CVC will automatically activate the medium-high front AC fan to help prevent the front evaporator from freezing. The compressor clutch will cycle on/off based on the front evaporator temperature, regardless of which system is on (front, rear, or both).

The CVC also provides an auxiliary output (+12v @ 2A) that is active whenever the front or rear AC is on. This can be used to activate a power relay for controlling auxiliary condenser fans.

Review Ford SVE Bulletin Q-195 and ensure final system wiring complies with all of Ford's requirements.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.



IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

CVC516 Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the CVC516 module. Locate the module in an area away from any high heat sources (engine heat, heater ducts, etc.). Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

Data Link Harness

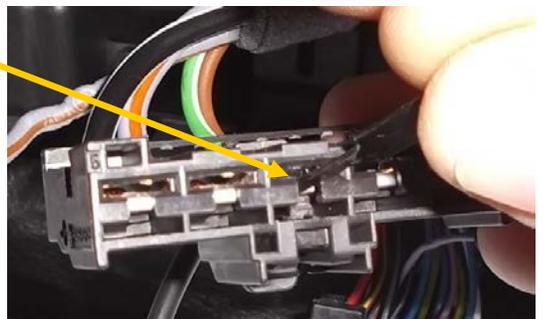
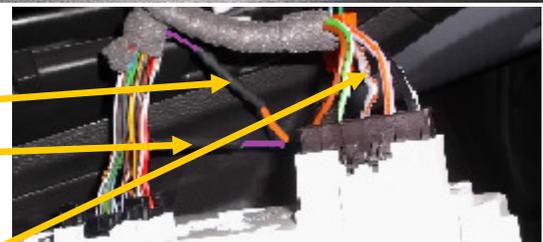
1. Locate the vehicle's OBDII Data Link Connector. It will be located below the lower left dash panel.
2. Remove the mounting screws for the OBDII connector. Plug the red connector from the CVC516 Data Link T-Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secured with the supplied wire tie.
3. Mount the white connector from the CVC516 Data Link Harness in the former location of the vehicle OBD II connector.
4. Attach the Black wire from the 2-pin power connector to a good frame ground. NOTE: you may have to scrape some paint to make a good ground.
5. Secure the CVC516 harness so that it does not hang below the lower dash panel.
6. Plug the 6-pin connector from the Data Link Harness into the 6-Pin connector on the module.



MAIN Control

Remove the face plate (as shown) to gain access to the Front AC control panel. Remove four screws and drop the panel to gain access to the rear connectors. Make the following connections to a wire from each of the connectors:

1. About 2 inches back from the 24-pin connector, cut the Violet wire and connect each end to two wires (Violet & Orange) from the CVC516 module.
2. Connect the Orange wire to the wire going into the harness.
3. Connect the Violet wire to the other wire going into the connector. Make sure the above connections are soldered and heat-shrunk to make them safe and secure.
4. Remove the Grey/Brown wire (middle wire of the 5-pin blower connector) by using the Yazaki terminal removal tool (part number G 0406) or a small screwdriver. Place the included heat shrink on the Violet/Brown wire and insert the terminal into the mating connector on the Intermotive Black wire. Secure the heat shrink. Insert the remaining terminal into empty cavity on the 5 pin blower connector.



Once complete, replace the A/C control panel and face plate.

Rear AC System Inputs

Note: The following connections must be made using solder and heat shrink.

1. Connect the Blue wire from J4/Pin#3 of the 4-pin connector to the Rear AC system request line. 12V = AC ON request.
2. Connect the Lt. Blue wire from J4/Pin#4 of the 4-pin connector to the Rear AC system Freeze switch. 12V = Freeze (shuts off OEM AC clutch). If a rear AC freeze switch is not used, this input can be left as a "no connect". It does not require grounding.
3. NOTE: both of the above inputs are active high. It is possible to designate J4/Pin#2 Orange wire as a low true input for either of the above. Contact Intermotive for instructions on how to do this.

Auxiliary Output [J8/pin3]

This output is capable of sourcing +12V @ 2A, it is intended to drive a relay coil to power fans on an auxiliary condenser. This signal goes active (+12V) when either the front (OEM) or rear AC operation is requested. The output goes inactive 30 seconds after both requests are disabled.

Using solder and heat shrink tubing, connect the Orange/Black wire from J8/pin3 to a wire leading to the relay coil which controls the auxiliary condenser fan(s). Ground the other side of the relay coil.

NOTE: If there is no need to use this output, it should either be taped up on the end or cut off even with the J8 connector to prevent shorting the +12v during operation.

CVC516 Module

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the CVC516 module as described on page 1 and secure using screws or double sided tape.

Reconnect the vehicle battery

Post Installation Check List

Start the engine. NOTE: Put the module into the diagnostic mode (see next page), and monitor status as you test out the module.

Rear AC Test

1. Set Front (OEM) AC off (including blower switch).
2. Turn ON rear AC system and confirm the OEM AC clutch engages and rear cabin is receiving cool air. If AUX output (J8/pin3) is connected, verify auxiliary condenser fans are operating.
3. The CVC516-A module is now monitoring the front Evap. temperature, and if it goes below 7 degrees C, the front blower will automatically come on. This should happen as you are running the rear AC.
4. Confirm the OEM AC clutch disengages when rear AC is turned OFF.
5. Confirm auxiliary condenser fans (if connected) turn OFF 30 sec. after rear AC is turned OFF.

Front AC Test

1. SET Rear AC system OFF.
2. Turn ON Front (OEM) AC system and confirm front cab is receiving cool air.
3. If AUX output (J8/pin3) is connected, verify auxiliary condenser fans are operating.

Front AC Test cont.

4. While the Front AC is on, the module monitors the Rear Evaporator Freeze Trip input if used. If this input goes True, the OEM AC clutch will disengage protecting the Rear Evaporator from further cooling. As soon as this input goes False (i.e. Rear Evaporator has warmed up enough) the OEM clutch will again engage, generating cool air to the Front cab. Verify this action if using the Freeze Trip input.
5. Turn OFF rear AC and verify auxiliary condenser fans (if connected) turn OFF 30 sec. later.

Diagnostic Mode

Diagnostic LEDs can be enabled by momentarily pushing the red Test button. The five LEDs will scroll a couple times, then LED1 will “blink out” the firmware version, and finally the LEDs become status indicators as follows.

STATUS: Blinks once a second to indicate the mode

LED4: Not Used

LED3: ON when sending AC enable to vehicle Body Control Module

LED2: ON when input 3 (Rear AC Request) is True

LED1: ON when input 4 (Rear AC Evap. Freeze Trip) is True

If the CVC516 fails any step in the Post Installation, review the installation instructions and check all connections.

Reinstall the lower dash panel

