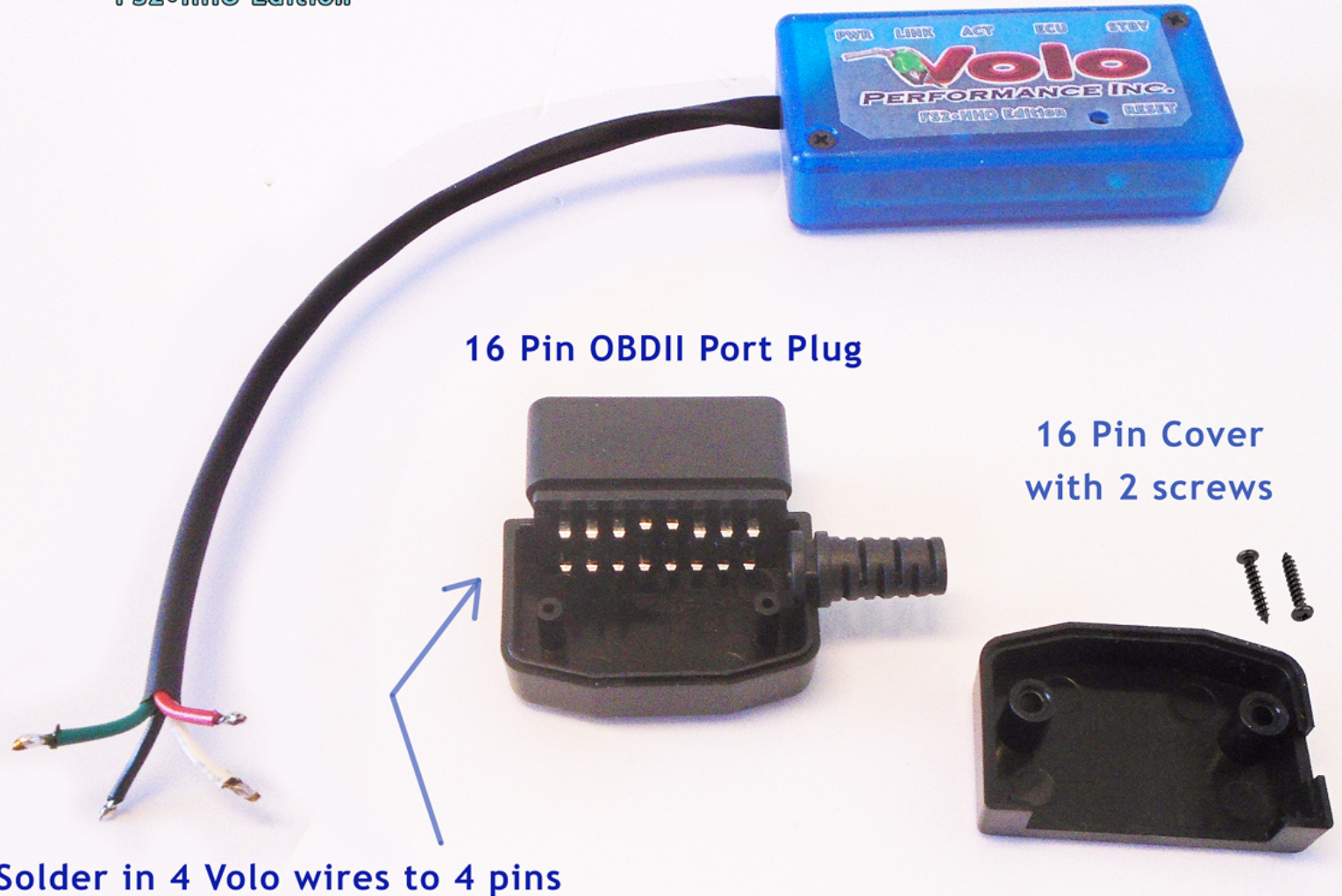
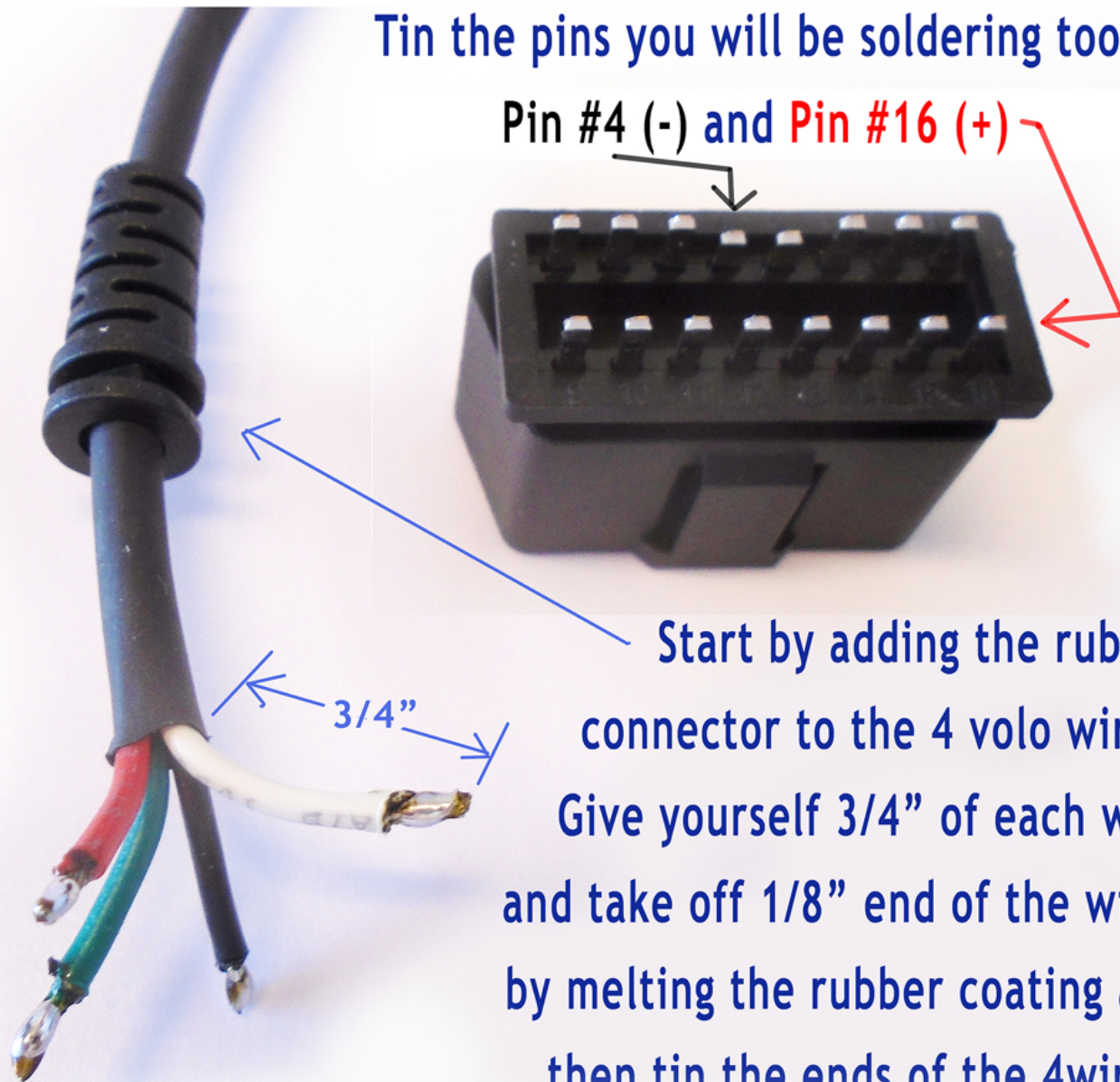


OBD2 Port Plug In Solder Instructions



Tin the pins you will be soldering too.

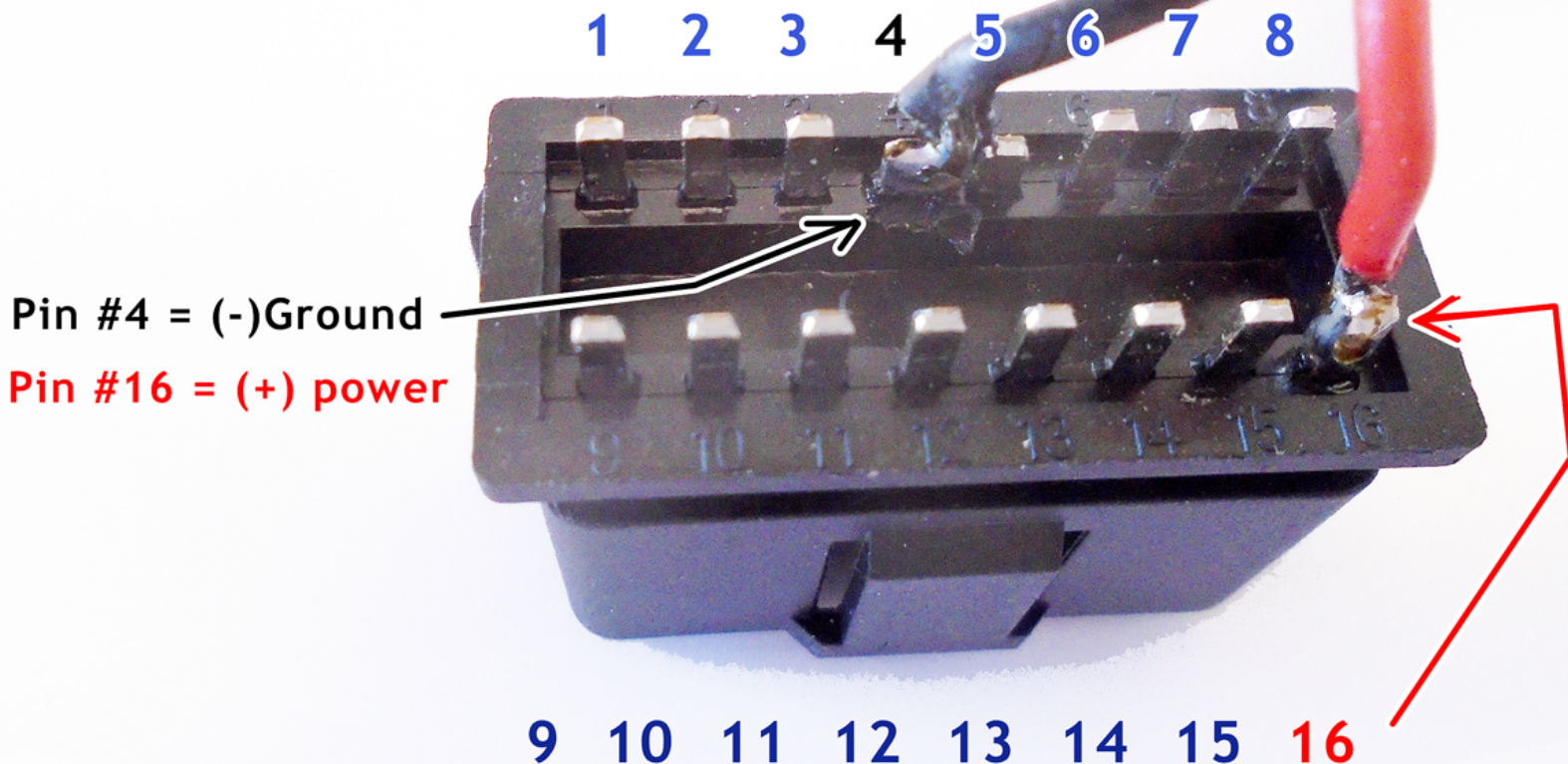
Pin #4 (-) and Pin #16 (+)



Start by adding the rubber connector to the 4 volo wires.

Give yourself 3/4\" of each wire and take off 1/8\" end of the wire. by melting the rubber coating and then tin the ends of the 4wires.

Standard 16 pin OBDII
port plug in.



Green & white Volo wire, will be soldered to your vehicle's
protocol pins. Most common protocol today, 2008 and newer is
CAN protocol. CAN high and low. IN this case pin#6 is the
white wire & pin #14 is green

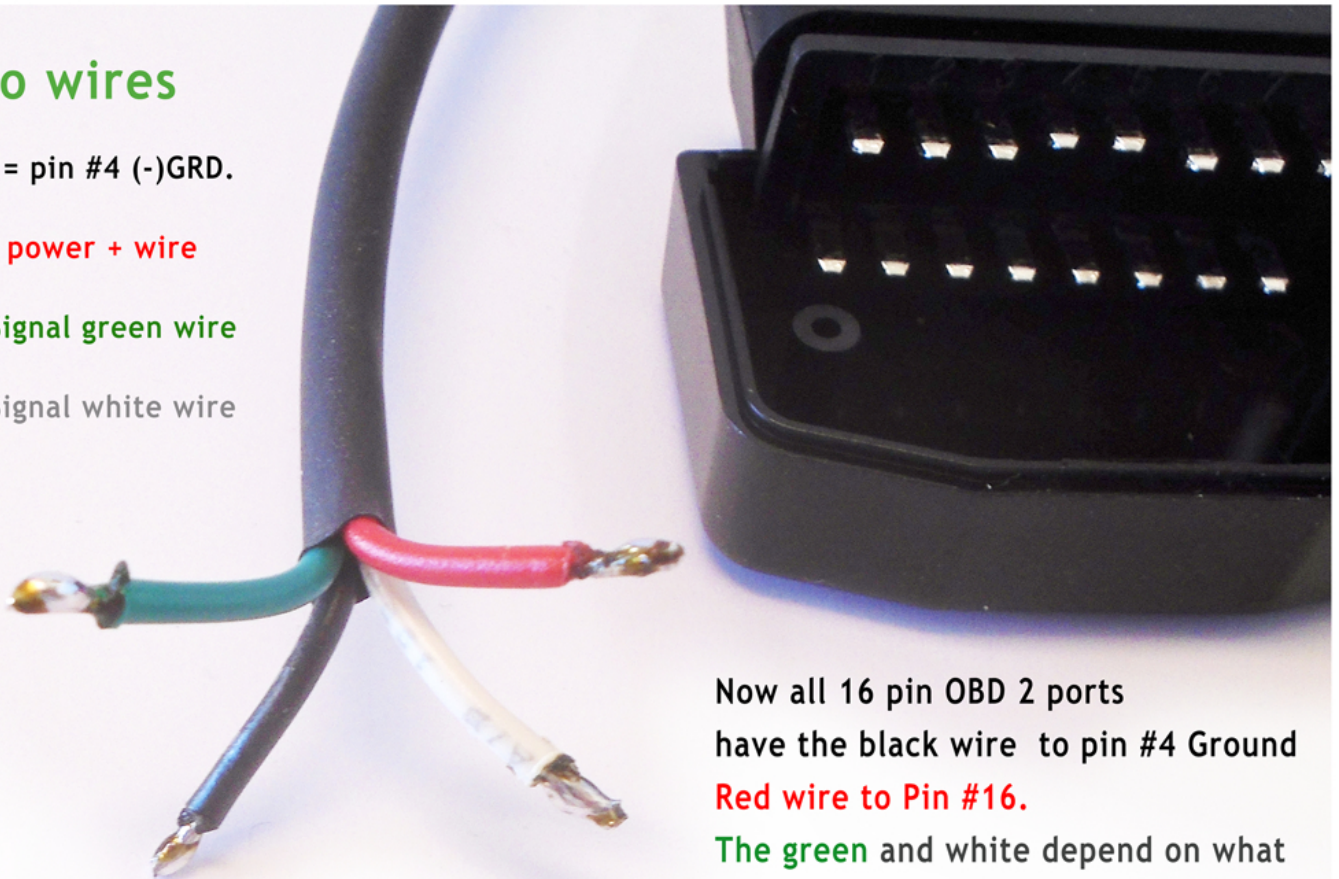
4 Volo wires

1) Black = pin #4 (-)GRD.

2) Red = power + wire

3) Volo Signal green wire

4) Volo Signal white wire



Now all 16 pin OBD 2 ports
have the black wire to pin #4 Ground
Red wire to Pin #16.

The green and white depend on what
OBDII protocol your vehicle has.
Most today are 1) CAN protocol
2) ISO protocol 3) PWM protocol
and 4) VPW protocol

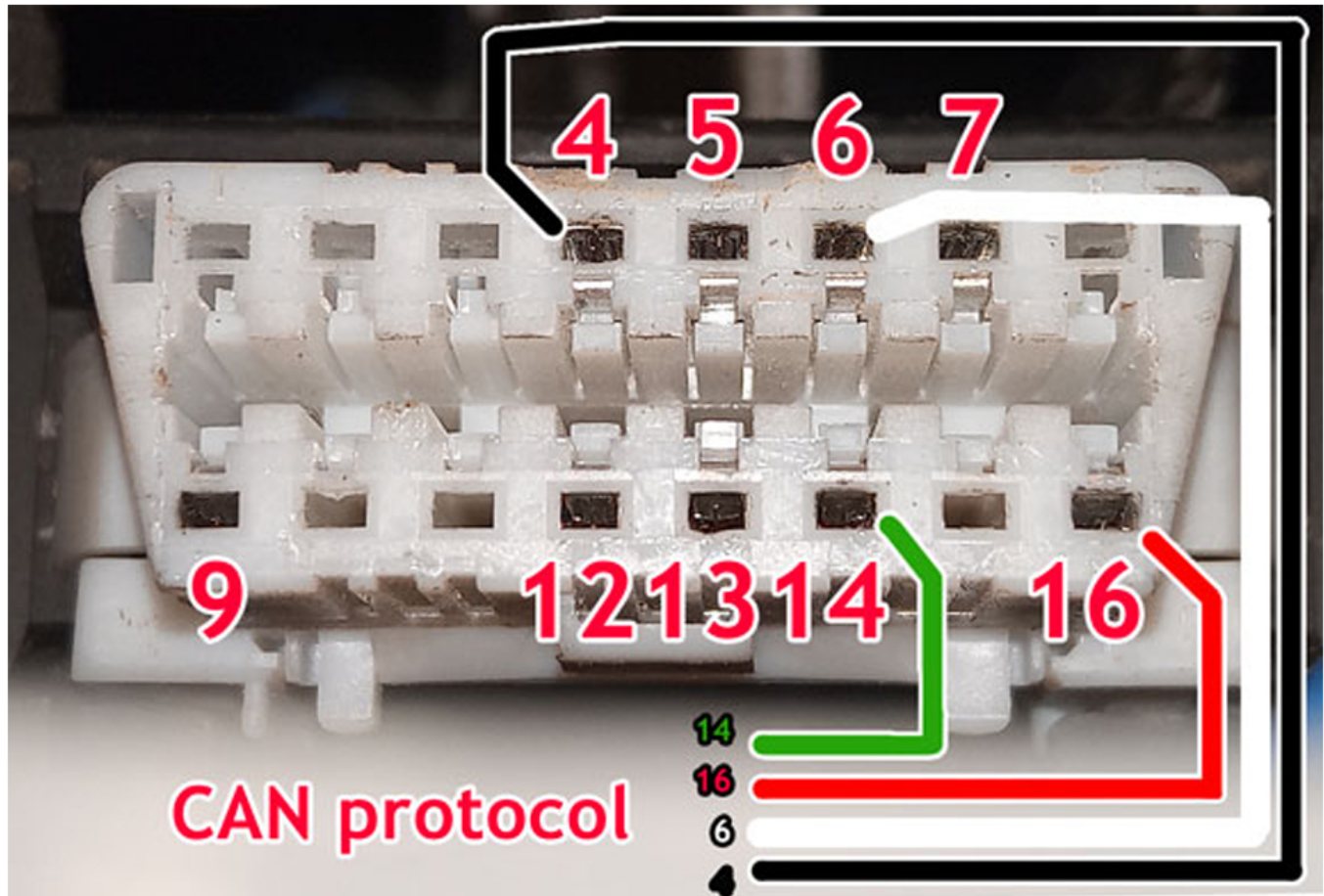
Two ways to find out your OBDII protocol.

- 1) Go to HydrogenGarage.com/volo_obd2.html#install and use Chat-AI to help find it fast instructions.
- 2) Read the Volo Install booklet page #4. Look at your pin population pins, most of the time are visible to view. Some modern cars/trucks the metal pins are not visible. Then you use the URL link above and use the Chat AI info. finder.

- **PWM Protocol** - If pins 2 and 10 are populated, then connect **WHITE** wire to PIN #2 and **GREEN wire** to PIN #10. (Fords)
- **VPW Protocol** - If pin #2 is populated, but not pin #10, then connect **WHITE** wire to PIN #2 and **GREEN** to PIN #5
- **CAN Protocol** - If PIN #6 and #14 are populated, then connect **WHITE** wire to PIN #6 and **GREEN wire** to PIN #14.
- **ISO Protocol** - If PIN #7 is populated, then connect **WHITE** wire to PIN #7. Connect **GREEN wire** to PIN #15 if populated. If not solder to PIN #5. If both ISO and CAN is present, then CAN is preferred.

(Page #4 of the Volo FS2 Instruction booklet.)

Toyota CAN protocol, showing the populated pins



95% of all cars and trucks
1996 and newer use
PIN #4 as ground (-) and
PIN #16 is power 12v DC+
Now you must find where
your **green** and white
wire go.

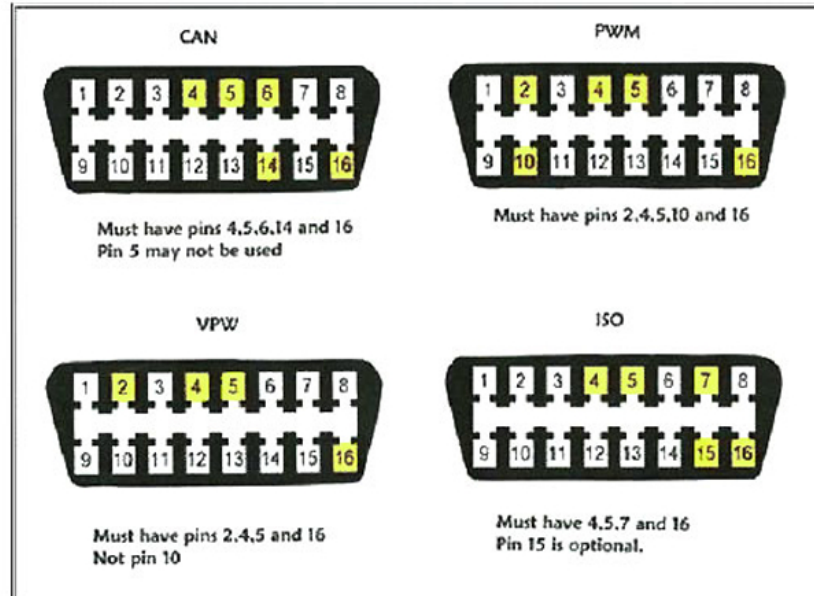


- PWM Protocol - If pins 2 and 10 are populated, then connect WHITE wire to PIN #2 and **GREEN wire** to PIN #10. (Fords)
- VPW Protocol - If pin #2 is populated, but not pin #10, then connect WHITE wire to PIN #2 and **GREEN** to PIN #5
- CAN Protocol - If PIN #6 and #14 are populated, then connect WHITE wire to PIN #6 and **GREEN wire** to PIN #14.
- ISO Protocol - If PIN #7 is populated, then connect WHITE wire to PIN #7. Connect **GREEN wire** to PIN #15 if populated. If not solder to PIN #5. If both ISO and CAN is present, then CAN is preferred.

Page 4 of the Volo Instruction booklet, that can
be found at HydrogenGarage.com/assembly.html

OBD Protocol List

An OBD2 compliant vehicle can use any of the five communication protocols:



PWM (Pulse Width Modulated)

SAE/J1850

SAE-established OBD II communication standard used by Ford domestic cars and light trucks. One of three hardware layers defined by OBD II.

VPW (Variable Pulse Width Modulated)

SAE/J1850

SAE-established OBD II communication standard used by GM cars and light trucks. One of three hardware layers defined by OBD II.

K-Line

ISO/9141-2

1994/Amd.1: 1996, Road vehicles — Diagnostic systems — Part 2: CARB requirements for interchange of digital information — Amendment 1

ISO/14230-4 (KWP2000)

This is a newer version of the ISO9141 protocol. It has a provision for a fast initialization which may be used instead of the slow 5bps handshake sequence.

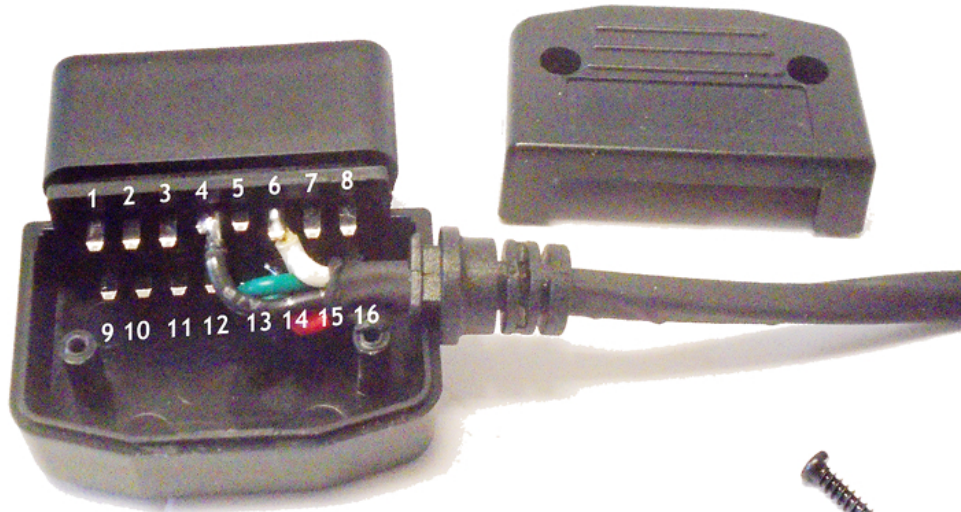
CAN (Controller Area Network)

ISO/15765, SAE/J2480

CAN is becoming the most widely used bus for in-vehicle communications. It is a high speed/high performance protocol.



CAN protocol soldered up.
Pin # 4 is (-) black. Pin #6 is white
Pin #14 is green, Pin#16 is red (+).



CAN protocol soldered up.
Pin # 4 is (-) black. Pin #6 is white
Pin #14 is green, Pin#16 is red (+).



CAN Protocol soldered up.

Calibration

Volo can not throw a check engine light

The Volo Chip **MUST** be calibrated before use.

To Calibrate :

1. Start the vehicle and wait for it to reach normal operating temperature. Leave the engine running for the calibration process.
2. If you have an aftermarket HHO generator equipped, ensure it is connected properly with no vacuum leaks and that it is producing the maximum output you intend to use.
3. Use a paper clip to press the RESET button located inside the Volo Chip's case.
4. Wait 1-3 minutes for calibration to complete. The LINK LED will flash during calibration. Once the LINK LED becomes solid green, calibration is complete.

In addition to calibration, most vehicles will require an additional ~120 miles adjustment period for maximum gains.

Recalibrating

In the event you make any changes* to your vehicle, you must reset the Chip for optimum gains. If you feel the chip is no longer functioning properly, a reset will return it to normal.

If you change amp draw with your HHO cell, push the reset button, while hot and idling and NOT moving. Any changes, HHO off, push reset button. Once you see gains, leave reset alone.

Page 6 & 7 of the
Volo Performance Booklet
that comes with every Volo
sold. Please read it. Learn how
to reset the Volo circuit.
You can download a .pdf version
of the booklet at :
HydrogenGarage.com/assembly.html

LED States



STANDBY MODE

STBY LED blinks every 5-10 seconds

There is no signal from the vehicle's computer.

The device may not enter stand-by on some vehicles in which the ECU remains active after engine shut-off.

This is normal and will not adversely effect operation.



POWER ON MODE

PWR and LINK LEDs are solid green

ACT and ECU LEDs are solid or flashing

This indicates the device is connected and functioning properly.



CALIBRATING

PWR LED is solid green

LINK LED is flashing

ACT and ECU LEDs are solid or flashing

The device is in Auto-Calibration mode. During this time, your particular engine characteristics are being evaluated to generate an offset map. This allows the device to fine tune itself for optimum performance.