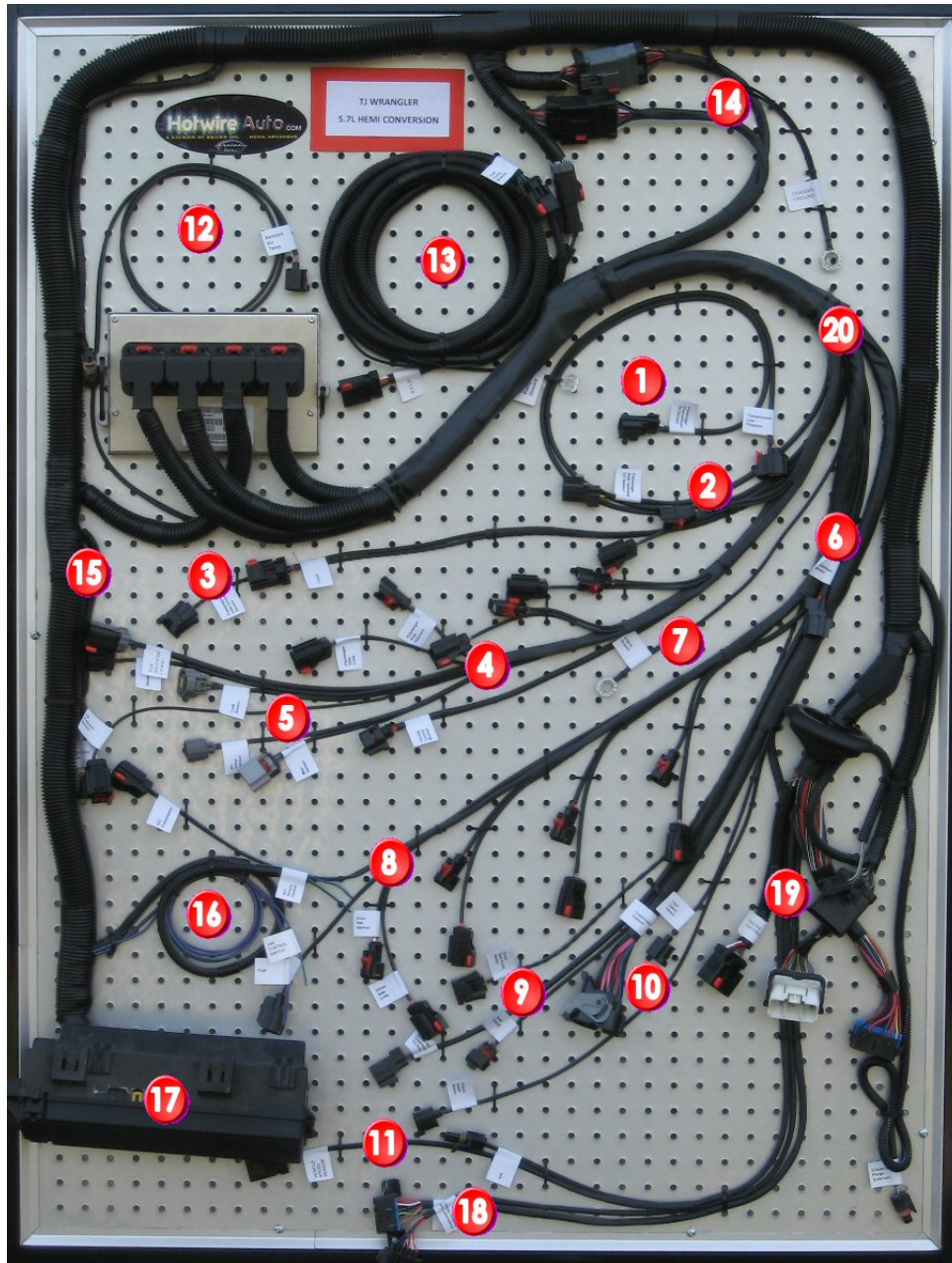




# **INSTALLATION INSTRUCTIONS**

## **JEEP WRANGLER TJ HEMI**

### **CONVERSION**



Our Jeep Wrangler Hemi Conversion harness is designed for the computer, fuse block and relays to be installed back into the factory locations. You may find it easiest if you can install the harness on the engine before mounting the engine in the Jeep. You can find pictures of a TJ installation here <http://www.hotwireauto.com/gallery2/v/ChrisTJ/> to help you along.

Item #20 should be positioned directly behind and slightly below the passenger fuel rail when installed. The branches that contain the coils and injectors should be zip-tied to the fuel rail so that all coils and injectors plug in with no strain on the plugs.

Accessory items and items on the front of the engine block should hang over the front and be close to the correct sensors. Items on the sides of the block will fall down behind the heads and up under the exhaust manifolds. Transmission and O2 sensors will down and back on either side of the transmission.

Below is a list of all items marked on the photo:

1. **Passenger Downstream O2 Sensor** – After the catalytic converter on the right side exhaust.
2. **Passenger Upstream O2 Sensor** – Before the cat on the right side exhaust.  
**Transmission Line Pressure** – Midway down the right side of the transmission.
3. **Passenger Knock Sensor** – Midway up the side of the engine block on the right side.  
**Crank Sensor** – Rear of engine block on right side.
4. **Passenger Coils and Injectors** – Run down the right-side fuel rail.
5. **Cam Sensor** – Front top of block to the right of water pump.  
**Oil Pressure Sensor** – Front of block directly above oil filter.  
**Generator** – Accessory on right front.  
**Intake Air Temp** – Front of air box (ram) or in Intake Air Tube (car).  
**Map Sensor** – Front of intake below air box (ram) or back of intake (car).  
**Throttle Control Module** – Middle of intake behind air box (ram) or front of intake (car).
6. **Driver Upstream O2 Sensor** – Before the cat on the left side exhaust.
7. **Engine Ground** – Use transmission bell-housing bolt at back of engine block.
8. **Driver Coils and Injectors** – Run down the left-side fuel rail.  
**A/C Compressor** – Accessory on left front of block.  
**Engine Temp Sensor** – Front top of block to the left of water pump.
9. **Driver Downstream O2 Sensor** – After the cat on the left side exhaust.  
**Starter Solenoid** – On top of starter, usually on left side of block.  
**Driver Knock Sensor** – Midway up the side of the engine block on the left side.
10. **Transmission Solenoid** – Midway down the left side of the transmission.  
**Input Speed Sensor** – Left side of transmission forward of Transmission Solenoid.  
**Output Speed Sensor** – Left side of transmission behind Transmission Solenoid.
11. **Vehicle Speed Sensor** – On output shaft of transfer case.  
**4x4 Switch** – On top left side of transfer case.

12. **Ambient Air Temp Sensor** – In radiator support in front of radiator.
13. **Sub-Harness** – Includes the following items:
  - a. **Fuel Pump Module** – Top of fuel tank, needs to be upgraded to 2005-2006 fuel pump.
  - b. **Fuel Pump Ground** – Bolt to ground lug on center of firewall.
  - c. **NVLD** – Above and behind the right rear tire.
  - d. **Locker Pumps (Rubicon)** – On skid plate next to transfer case. Need to re-use the factory connectors from your old wiring harness.
  - e. **Locker Indicators (Rubicon)** – One on front axle, one on rear axle.
14. **Bulkhead Connectors** – Top center of firewall, connects the engine harness to the rest of the Jeep.  
**Chassis Ground** – Bolt to ground lug on center of firewall.
15. **Battery Temp Sensor** – In bottom of battery tray.
16. **Fan Control Wires (optional)** – Used to hook up an electric fan, includes the following items:
  - a. Fan Power, fused battery feed to run the fan.
  - b. Fan Control, ground to turn on fan. (without fan control kit)  
-- or --
  - c. Ignition Run/Start to fan control kit.
  - d. A/C compressor signal to fan control kit.
17. **Fuse Block** – Install back in factory location. May include the following additions:
  - a. **Transmission Relay** – Added in older TJ's to support the electronic automatic transmission.
  - b. **Transmission Fuse** – Power for new transmission.
  - c. **Fan Code Relay** – Dummy relay to remove trouble code.
  - d. **A/C Code Relay** – Dummy relay to remove trouble code.
18. **Accelerator Pedal Position Sensor** – Plugs in to top of pedal under the dash.  
**Data Link Connector** – Mount under dash for scanning.
19. **Cruise Control Module** – Connection point for the HotwireAuto cruise control module.  
**Open Wires** (wires vary by harness options)
  - a. **Orange** – Overdrive off Switch to momentary ground. (not required unless wanted)
  - b. **Black/Blue** – Clutch safety ground (manual trans). Should be wired to clutch switch with the other side of the switch going to a ground.
  - c. **Purple** – PCI Bus, hooks up to new cluster to make gauges work.
  - d. **Red/Green** – Ignition Run/Start add to brake light switch position #3.
  - e. **Yellow/Red** – Brake signal add to brake light switch position #4.
  - f. **Tan/Blue** – Cruise control, hook up to TJ style cruise switch, works with HotwireAuto cruise module.

TJ Hemi Conversion Notes:

Our TJ swap uses the 2005 Ram Hemi computer as it's base. The benefit of this computer is that the Jeep can be made fully emissions complaint when all the parts are put in place.

As a result of using this computer, the best engine/transmission combination is a 2003-2008 Hemi with the 545RFE transmission (or a manual transmission). You can use either the 5.7L or the 6.1L Hemi.

The 2005 and 2006 Jeep TJ's are the easiest swap for you to perform. The fuel system and computer system is completely compatible with the 2005 Ram Hemi computer. All other year TJ's will need to be upgraded to some extent to work with this Hemi swap.

**Instrument Cluster:**

1997-2000 TJ's - You will need to upgrade your instrument cluster. Any cluster from a 2001 to 2006 TJ will work with this Hemi swap. We can provide the connectors for the new cluster and will provide all the wiring information you need to make this swap.

**Fuel Pump:**

1997-2004 TJ's - You will have to upgrade to the 2005-2006 fuel pump module. A complete 2005-2006 fuel tank and NVLD system upgrade is required for FULL EMISSIONS.

**Electric Fan:**

We can provide wiring if you want to run an electric fan. The easiest way to get an electric fan working is to purchase a fan control kit. Derale makes a simple controller (p/n 16749) that works well.

**Rubicon Lockers:**

We provide the wiring to support the factory Rubicon locker system found in the 2003-2006 TJ's. You need to keep the locker pump connectors from your original engine harness to use on the conversion harness.

**Other Items:**

Various Year TJ's - Some will have to add sensors such as: Battery Temp, Ambient Air Temp, etc.

You may have an orange open wire under the dash labeled "Overdrive Off Switch". You can hook this wire up through a momentary switch to a ground if you want to be able to disable the overdrive.

Some older systems will have 2 open wires you need to hook in to your factory brake light switch. These wires will be labeled if they are there.

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