

DX/STD DPFI to MPFI Wiring Running OBD1 ECU

INSTRUCTIONS

Things you will need for the wiring:

1. Four (4) fuel injector plugs – you can use the ones from the harness that was on your OBD1 engine harness.
2. OBD0 to OBD1 ECU jumper harness.
3. 18 ga. A.W.G. wire.
4. Soldering gun and solder.
5. Electrical tape and heat shrink tubing.
6. Tiny screwdriver (one that comes in an eyeglasses repair kit available at your local Walgreens, etc. works great) or large needle, for removing pins in connectors.
7. DO NOT use cheap crimp-on wire connectors for making any of the connections. Crimped and soldered connections are the best if you have the proper crimping tools and connectors to accomplish this – most people don't. Solder all splices and use heat shrink tubing to help support and protect the splice.
8. Plan on spending about 2 to 3 hours to do the wiring changes. Take your time and do it right, so you don't have to do it again.

Connector Pins – Removing and Installing

1. When making the wiring changes, you will end up with a cleaner and more reliable installation if you de-pin and re-pin the wires into the connectors at the ECU, where possible, rather than cutting and splicing them.
2. You can find very good step by step instructions, with pictures, for de-pinning the connectors at the FourthGenHatch website:

<http://www.fourthgenhatch.net/depin.html>

3. You will need a few extra pins with a 4-5 inch length of wire on them in order to make the changes. You can get these from any OBD0 chassis harness and will give you a chance to practice removing the pins. Please note that the 'B' and 'C' connector pins are the same and 'A' connector pins are different from 'B' and 'C'.

Now that we have this out of the way, you should be ready to start making the wiring changes. Follow instructions below – do not try to short-cut something because it looks like it might work, it probably won't.

WIRING HARNESS

You must use the engine harness that was on your STD/DX, and modify it, as required below – you cannot use the OBD1 engine harness and you can't use the OBD0 MPFI (Si or HF) engine harness – none of the harnesses are interchangeable – you must use the STD/DX. We are asked all the time, “Why do I need to use my STD/DX engine harness?” The main reason you need to use the STD/DX harness is that, it mates up to the chassis harness that is in the car, which runs from the Electronic Control Unit (ECU) to the engine bay. All of the engine harnesses have connectors that plug into the chassis harness at the firewall. The wires in these connectors are in the same location on each side of the connector in order to provide continuity from the engine to the ECU. The STD/DX engine is Dual Point Fuel Injection (DPFI) which has two (2) fuel injectors, a Main Injector and an Auxiliary Injector. The Main Injector supplies fuel constantly into the intake manifold through the throttle body. The auxiliary Injector supplies additional fuel as needed. The STD/DX chassis harness, that the engine harness connects to, as well as the STD/DX engine harness, only have wiring for these two (2) fuel injectors. The Multi Point Fuel Injection (MPFI) engine has four (4) fuel injectors, one at each cylinder. These injectors are not firing constantly like the DPFI, but are firing individually for each cylinder, at the proper time. The ECU determines, through readings from sensors on the engine, the proper time to fire each injector. Since there are four (4) injectors on the MPFI system, there needs to be four (4) wires from the ECU, and they are simply not there on the STD/DX. Although the engine harness needs to be modified for the four (4) injectors, the bigger concern is adding wiring that the chassis harness doesn't have. Besides the absence of the needed injector wiring, the STD/DX engine and chassis harnesses do not have wires for the Cylinder Position Sensor (in the distributor), which the ECU reads in order to tell the injectors when to fire. The STD/DX does not need a Cylinder Position Sensor, since it is not firing the injectors sequentially, and therefore doesn't have one and also doesn't have wiring for it. The added injector wiring from the ECU, the added Cylinder Position Sensor wiring from the ECU and the resultant changes to the engine harness are what make up the DPFI to MPFI wiring changes.

You will find it easier to do most of the changes to the engine wiring harness with the engine out of the car. Locate the four (4) fuel injector connectors on your OBD1 MPFI engine harness. Cut the tape and remove the black plastic wire looming from the injector wiring part of the harness. Follow the wires up to the connector that plugs into the chassis harness. There are two (2) wires from each fuel injector connector. Cut the eight (8) Fuel Injector wires that go to the chassis connector. Should have Brown, Light Blue, Red, Yellow and (4) Yellow with Black stripe wires. Install the STD/DX engine harness onto the OBD1 engine and plug in all the connectors.

Once it is on the engine, you will notice that a couple of the sensors are in different locations on the OBD1 than they were on the STD/DX and the connectors don't reach the sensors. This should only happen at three (3) locations:

1. EACV (Electronic Air Control Valve) – The MPFI EACV is located on the back of the intake manifold at passenger side end and is closer to the passenger side on the MPFI than it was on the STD/DX – Wires for the connector will need to be extended. Wire colors are Blue/Yellow stripe and Black/Yellow stripe – On the STD/DX harness, this connector is Green in color. Extend the wires by cutting and adding a short piece to each, so that they will reach the EACV.
2. TPS (Throttle Position Sensor) – The TPS connector is located on the back of the throttle body, is also closer to the passenger side and wires to the connector will also need to be extended – Wire colors are Yellow/White stripe, Green/White stripe and Red/Blue stripe - when you are extending it, switch the position of the Yellow/White and Green/White wires so that the Yellow/White from the harness is connected to the Green/White on the plug and the Green/White from the harness is connected to the Yellow/White on the plug (This is because the TPS rotates in the opposite direction on the STD/DX). Red/Blue stays Red/Blue.
3. Cooling Fan Switch – The cooling fan switch on the STD/DX is located on the back of the block next to the oil filter. It is a 2-wire connector with a big round black rubber boot. The wire colors are Yellow with Green stripe and Black. The OBD1 engine has the cooling fan switch on the thermostat housing. You need to cut the connector for the switch off the STD/DX harness and cut the connector off the OBD1 harness (leave enough wire to make sure the connector reaches) and install it on the STD/DX harness.

Fuel Injector wiring:

The Fuel Injector reference numbers are the same as the Cylinder numbers – 1 thru 4 – with #1 being closest to the timing belt and #4 closest to the distributor,

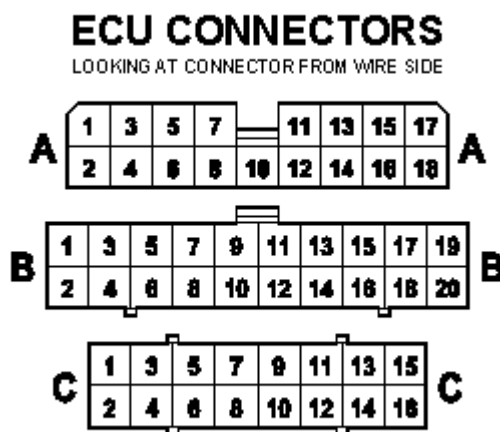
When adding and splicing the fuel injector wires, adjust the lengths of the wires by cutting them to the correct length before splicing, so that all the wires run next to each other and follow the other engine harness wires up to the round 14 pin connector. You can open up the engine harness at this location by cutting the tape that is around the black plastic wire looming (the looming is split from one end to the other) and slipping the wires into the looming and retaping it. Looks like it was made that way!

1. Cut the Main and Auxiliary injector connectors (Brown connector with Red and Yellow/Black wires and Green connector with Yellow and Yellow/Black wires) from the STD/DX harness, as close to the connector as you can.
2. Connect the Yellow wire from the Auxiliary Injector (not the yellow with black stripe) to the Brown wire from Injector #1.
3. Connect the Red wire from the Main Injector to the Light Blue wire from Injector #3.
4. Take a long piece of wire – it has to be long enough to follow the harness wiring all the way to the ECU, once the engine is in the car – make sure it is long enough, as you can cut it off later – and connect it to the Yellow wire from Injector #4. Place a piece of masking tape around the other end and mark it “A7”. It will connect to ECU later on, once engine is in.
5. Take another long piece of wire – it has to be long enough to follow the harness wiring all the way to the ECU, once the engine is in the car – make sure it is long enough, as you can cut it off later – and connect it to the Red wire from Injector #2. Place a piece of masking tape around the other end and mark it “A3”. It will connect to ECU later on, once engine is in.
6. Find the Yellow with Black stripe wires that went to the two (2) STD/DX injectors. Find the four (4) Yellow/Black wires that come from the injectors, one from each. Connect all six (6) of these wires together. You can solder them all together or you can use the dead end connector from the OBD1 engine harness. Your choice.

This completes the wiring changes to the engine harness itself and is all you can do until the engine is in the car.

AFTER ENGINE IS INSTALLED

ECU Wiring Changes



See ECU pin-out diagram above.

Connector “A” is the largest. Connector “C” is the smallest.

1. Looking at the ‘A’ connector, you will see that pins “A1” and “A3” both have a yellow wire – these wires connect together inside the harness and become one wire which goes to the DPFI Auxiliary Injector.
2. Cut the Yellow wire from A3 - Connect the new wire previously connected to the Red wire at injector #2 and labeled “A3” to the portion still in the connector – leave the portion in the harness not connected.
3. Again looking at the ‘A’ connector, you will see that pins “A5” and “A7” both have a red wire – these wires connect together inside the harness and become one wire which goes to the DPFI Main Injector.
4. Cut the Red wire at A7 – Connect the new wire previously connected to the Yellow wire at injector #4 and labeled “A7” to the portion still in the connector – leave the portion in the harness not connected.
5. De-pin the Orange wire at ECU pin C1 and relocate it to ECU pin B10.
6. De-pin the White wire at ECU pin C2 and relocate it to ECU pin B12. If there is a wire already at B12, just de-pin it and leave it not connected.
7. Add two (2) new wires, with pins, at ECU pins C1 and C2 and run them out into the engine bay (make them long enough to reach the distributor and label them “C1” and “C2”. Easiest to run them thru the firewall with the harness on the passenger side, just above the ECU.
8. Install the OBD0 to OBD1 ECU jumper between the ECU connectors on the chassis harness and the ECU. Most OBD0 to OBD1 ECU jumpers, like Rywire, Boomslang, etc. come with the wiring for the 4-wire O2 sensor and VTEC already incorporated into the jumper. Follow their instructions for connecting these items at the engine.

UNDER THE HOOD

1. Locate the two (2) new wires labeled “C1” and “C2”. Incorporate them into the harness, or just tape them to the harness, all the way up to where the distributor connector comes out of the harness.
2. These wires will need to be incorporated into the distributor connector. What you need to do here will depend on how the OBD1 distributor is being wired into the system. You can purchase an OBD0 to OBD1 distributor jumper or you can swap the OBD1 connectors onto your STD/DX harness.
3. While you are in this area, check to make sure that the ground wire – short wire coming out of the side of the engine harness with a round eye end – is connected to the bolt on the thermostat housing. This is the ground for the ECU and most of the sensors and the car will not start if it is not connected. Make sure the connection is clean and secure.

4. The OBD1 engine uses a throttle body mounted MAP sensor. The MAP sensor on the OBD0 STD/DX is mounted on the firewall. The electrical connector for the MAP is not on the engine harness. The connector comes through the firewall right behind the MAP. The wire colors for the MAP connector are Yellow with Red stripe, Green with White stripe and Solid White. You will need to extend these (3) wires so that the connector will reach the MAP on the throttle body.
5. The fuel line from the fuel filter to engine on the STD/DX will not work with the MPFI engine (too long). You need the fuel line that goes from the filter to the fuel rail from 88-91 CRX/Civic Si or HF.
6. The STD/DX throttle cable will work, although it is kind of long, if you just loop it around at the driver's side strut tower. Better to use the Si or HF cable.

All other connectors on your STD/DX harness will plug right into the sensors and connectors on the Si. Be sure you don't switch the EACV (Electronic Air Control Valve) connector with the TA (Intake Air Temperature) connector. The EACV connector has a Blue with Yellow stripe wire and a Black with Yellow stripe wire and the connector is Green in color. The TA connector has a Red with Yellow stripe wire and a Green with White stripe wire and is white in color. You will have one connector on the STD/DX engine harness that won't be used. It is the connector for the Tandem Control Valve and has 2-wires in a white connector. The wire colors are Black with Yellow stripe and Orange. Just tape this connector back to the engine harness and leave it.