

Making the warning light feature work on the PowerFC

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The PowerFC has a handy warning feature that will blink the exhaust overheat light if knock or injector duty cycle exceeds a certain amount. Problem for the US cars, though, is the light is under your arm while driving and is pretty much impossible to see. I decided to make it more useful by wiring it into the Check Engine light instead, and ended up digging through Japanese ECU diagrams and such to find an answer to this riddle.

The problem with this warning light system lies in the difference between JDM and US cars. Japanese cars have the exhaust overheat light with the idiot lights in the instrument cluster. It's lit directly by the ECU as well. The US cars have the exhaust overheat light in the center console, and the wire coming from the ECU isn't even there for the JDM-style warning system.

So, we need to do 2 things. One, add the wire into the US harness. Two, tap that wire into the Check Engine light. There's a few ways to go about this.

- a) Buy an Autosport Wiring harness. This is a short harness that goes between the ECU and the stock wiring harness – you can tap all your electrical connections into this harness without damaging the stock harness. I have quite a few aftermarket electronic doodads in my car, so I elected to buy one some time back. It's about \$150 from <http://www.autosportwiring.com> but it's well worth it – the harness is top quality, and it saves you from hacking up your stock harness for boost controllers, power meters, and whatever else. This harness has wires going to all the pins, so you just tap into the appropriate one.
- b) Get a spare ECU harness pin from the junkyard. Mazda used very similar connectors for the ECU in all the '90s cars. Find a 626 or the like in the junkyard, find the ECU wiring, back a couple of pins out of the connector and cut them off the harness. Should only be a buck or so.
- c) Use one of the 4 cut wires. You have to cut 4 wires when installing the PowerFC in a US car – you can back one of those connectors out of the harness to use.

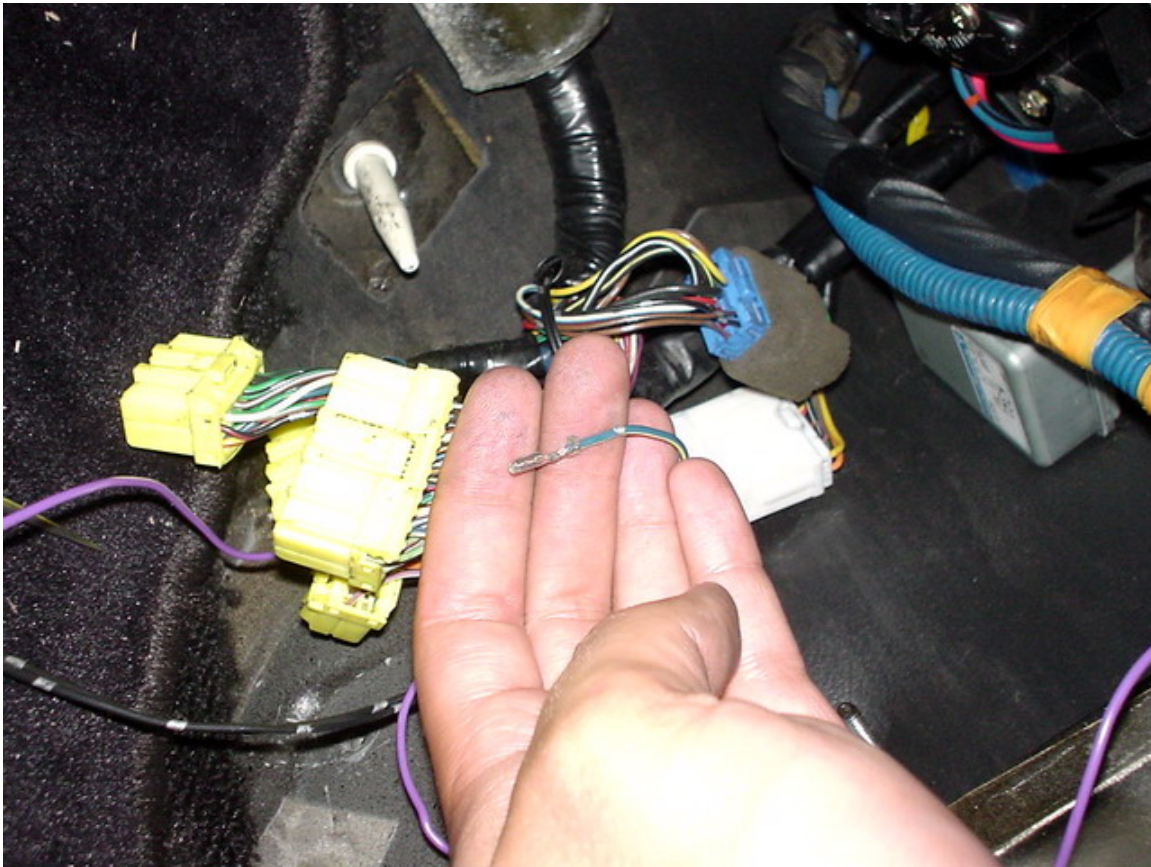
Regardless of method, you have to PROPERLY add a pin into the harness. Shoving a wire in there won't cut it. The good thing is, this is VERY easy to do.

First, how to remove a pin. You need a fine pick type tool. I have a set I got from Sears. Look into the end of the ECU connector – there's a plastic tang that retains the pin just above the pin.

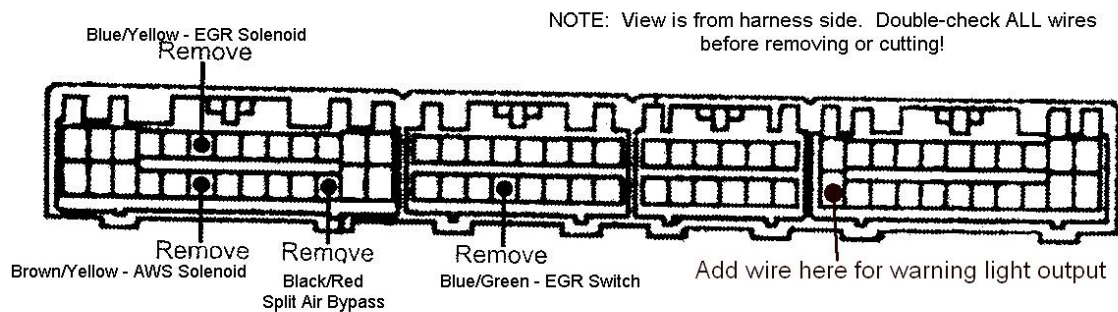


Lift up on the tang, and pull the wire on the other side. If you get it just right, the pin will slide out nice and easy. It's easier done than said, actually. This is also how you would remove a wire from a junkyard connector, or get an extra wire from your harness to move to the right position.

Here's the wire out –



Time to install the wire. It goes into terminal 1V on the ECU. On the US harness, this spot on the harness will not have a wire on it. Here's a diagram showing the location –



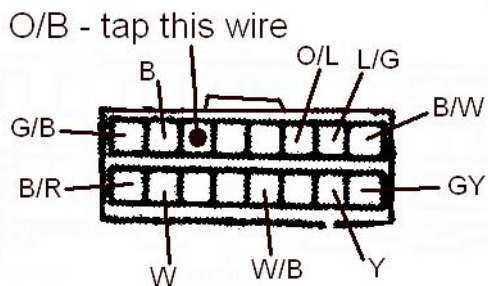
Install your additional wire into that spot, and part 1 is done. The wire will just pop into that spot, just install until it clicks into place. The connector is keyed so it will only install one way.

Now it's time to get that output to the Check Engine light. The CE light comes from the ELD, or Electrical Load, computer, which is a small metal box up above the ECU. It's

up there pretty good, and you WILL have a tricky time unplugging the harness. Here's a pic –



The wire on the harness is an ORANGE/BLACK STRIPE wire. Here's a diagram of the ELD connector that I hand-made –



So, strip a bit of that orange/black wire back, solder a decent length of wire (probably 2 feet or so) to the stripped back portion, and wrap with tape. Attach the other end to the wire you added to the ECU for pin 1V. I used a quick-disconnect on the ECU side so I can easily disconnect the wire if I ever need to put the stock ECU back in or something.

With all that done, you should be set. Stock, the PFC will flash the light with knock over 60 counts and injector duty cycle over about 98%. These points can only be changed with the Datalogit.