

02 and 03 ZF-6 Swap - Wiring Solutions - 02-03's ARE NOT THE SAME AS 99-01's

Credits to "Freedombyforce" @ www.powerstroke.org

Full thread can be found here: <http://www.powerstroke.org/forum/99-03-7-3l-general-discussion/243879-02-03-zf-6-swap-wiring-solutions-02-03s-not-same-99-01s.html>

As the Title Says 99 through 01 ZF-6 Swaps are not the same as 02 and 03 when it comes to the wiring! 🤖

If you are reading this and was like me, you just got done swapping all the hardware over and realize that the other threads with 99 model truck's wiring isn't matching up to your 02 or 03. Don't worry, it is possible, just a little more complicated. My truck is an 02 and is now successfully swapped over and functioning as it would have if it had come from the factory with the 6 speed. And for the record, I love it. It was a MAJOR PITA for me figuring everything out, but I'm going to try and simplify the process in this thread.

1st of all, the Mechanical process of the swap is the same. I had no problems with making everything work and it has been covered plenty of times so I'm just going to focus on the wiring for the 02-03's. I have right at \$3,000 in my swap and that's with a \$700 Valair Clutch.

First, you will either need a Chip returned for a manual [transmission](#) or a [manual PCM](#). I tried the Chip first and the truck ran, but I didn't like the power I was getting. Its seemed like my chip was stuck in 60 horse position and wouldn't go any higher. Possibly because the tunes were wrote for a different HEX code, but I don't really know. I picked up a used pcm for \$260 through [Car-part.com](#).

Where Our trucks are different from the 99-01's is that we can't trade pcm's like baseball cards. I got a 2C3F-BE with a HEX Code of AEB4 for a 2002 or [2003 F250](#) or F350. The 2C3F will be the same but the suffix BE will change. The BE is the standard emissions non California, non Cold weather. I would suggest this one only because I know it works. I'm not sure about the others.

There are a couple different phases to the wiring, the first being getting the truck to run.

For a Temporary Fix to get the truck to turn over and crank you need to connect the Tan/Red and the White/Pink wire together at the automatic transmission's Range sensor. This is the connector where the [Shifter cable](#) connects to the [auto transmission](#).

Now it will crank and run, HOWEVER, you will throw a PO118 Overheat code, the truck will run like crap and you'll get terrible fuel mileage. Here's how to fix it:

The Manual transmission PCM is looking for an additional coolant temperature input. This happens to be the Orange/Black wire that goes to the transmission temperature sensor. You need to purchase a additional coolant temp sensor and pigtail from Ford. The Sensor is P/N [F5AZ12A648AB](#). You will need the pigtail to fit it, but I'm not sure what the p/n is on it.

You can install the additional sensor in the test plug on the side of the thermostat housing, or if you have a Coolant Filter like I do, you can put it into one of its ports. Just so you know, in my set up it does throw a soft code because the two sensors are not reading very

similar temps because the 2nd sensor is away from the motor and a bit cooler. I'm not worried about it at this point.

For wiring the 2nd sensor in you need to "T" into the Gray/Red wire on the existing Coolant sensor and run it to the same side of the new sensor. This is the Universal "power" wire for all the sensors. The other wire of the new sensor will go to the Drivers side wheel well next to the pcm. Looking down into the corner next to the cab on the Driver's side you will see several connectors going down to the transmission. There should be a black one on top and a gray underneath it. The gray connector is where all the action will take place. In the pictures the black one is disconnected so it will be easier to get to the gray connector.

On the gray connector you are looking for an Orange/Black wire. Cut this wire on the transmission side of the connector and connect it so that it is running back through the connector and into the pcm.

The second Picture is backed off for orientation.

This will get the truck running with no Hard Codes. However your Clutch pedal position switch and cruise control won't work.... More wiring for that.

I'm out of time now but will try to finish it tonight. 🤖🤖







Now on to making the Clutch Pedal Position Sensor (CPPS) and the Cruise Control work.

Even with the Manual Tranny PCM, the PCM still looks for the Range Sensor on the Auto Transmission to tell it what gear it is in. It uses this information for several different tasks, including starting and Cruise. You have to make the computer think its seeing the Range Sensor when its actually seeing the CPPS. Under the dash tucked up past the Clutch pedal, (its easier to find before you install the pedal), is the wiring harness for the CPPS. It has a plug in it that is called the "Triple Function Switch Jumper". It lets the harness exist, but not do anything because its not needed with the automatic. As far as I could tell, it doesn't do crap anyway. In Order for the CPPS to operate Correctly you will need to run some wires. There should be 6 wires that come into the connector. Personally I reached up in there and cut the harness about 3 inches back from the plug. This was so I could get it out from under the dash to work on it. There is only one wire that stays connected to the harness, and its much easier to add on to it than to work under the dash.

Here's what to do with the wires:

Red / Light Green - This wire will stay connected to the harness as it was from Ford. You need to make sure it has 12 volts on it in the run and crank position.

(2) **Blue / Yellow** - There are (2) of these on the switch. Connect them together and run them through the firewall to the Gray connector mentioned earlier for the water temp sensor.

Tan / Red - Run through the firewall to the Gray connector.

White / Pink - Run through the firewall to the Gray connector.

Those (3) Wires have corresponding wires on the wheel well at the gray connector. Cut those wires and attach the new wires from the CPPS the same way you did the Water Temp Sensor.

Personally I used a short piece of trailer wire so the wires would stay together and have different colors.

Tan / Light Blue - This wire is the Speed Control wire (cruise). It cancels the cruise if you push the clutch in. In the automatic, however, this wire cancels the cruise if you push the overdrive off switch. So you need to connect the TN/LB to the overdrive switch. To do this you will need to remove the plastic cover, top and bottom, on the steering column. Under there you will find a set of very small wires that connect to a harness and go up to the overdrive off switch.

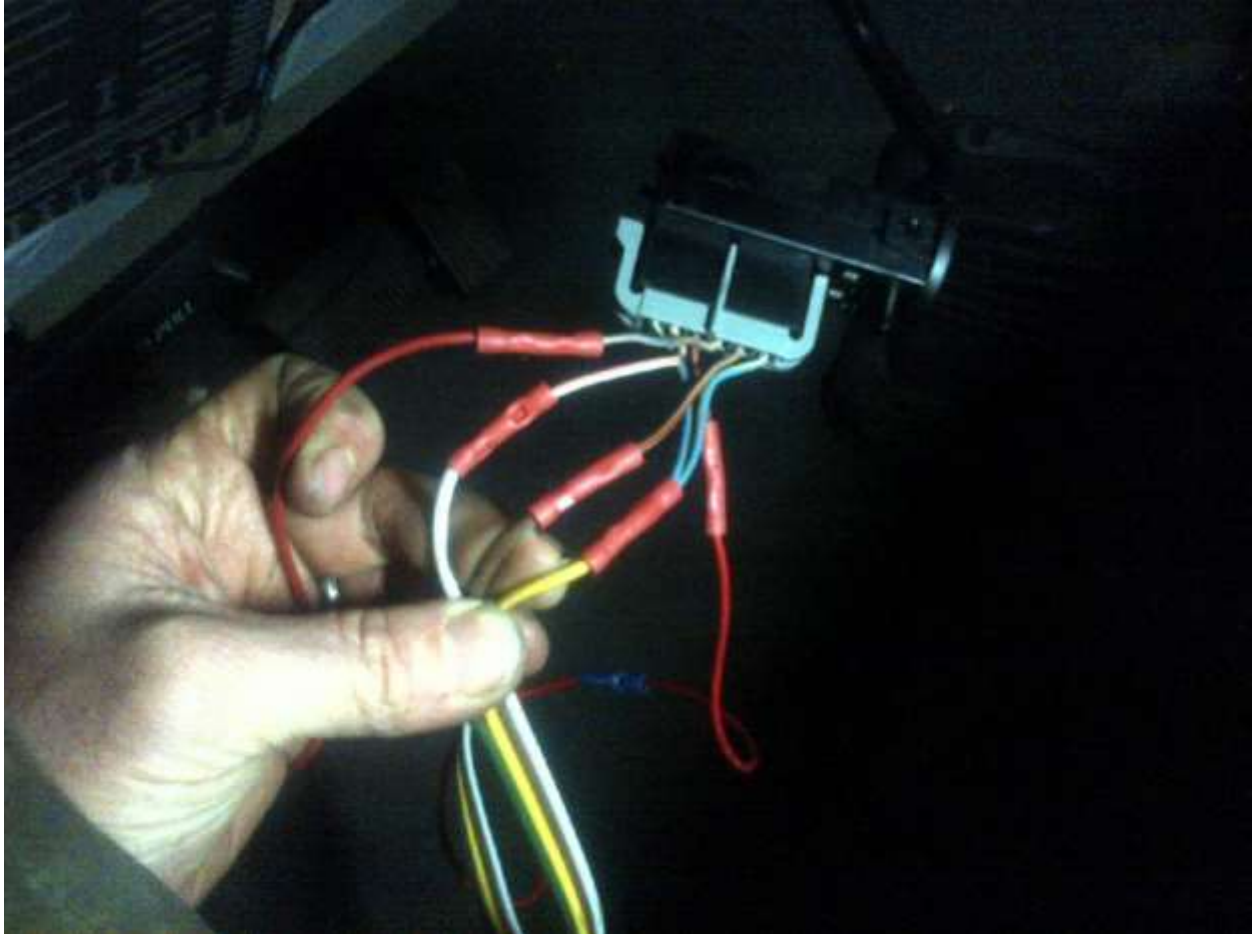
On the harness that the small wires are connected to you need the Tan / White wire. It helps to remove the dash cover to get access to the wire. Cut the Tan / White wire at the harness and connect it to the TN/LB wire on the CPPS.

This is also a good time to remove the Auto's Shifter unless you desire to have two! 🤪

Personally at this point I tried it. Try to crank the truck with the CPPS off of the clutch. It should not crank. You can slide the CPPS back to simulate pushing the clutch in to see if your work has paid off. The truck should crank when you push the slide back. MAKE DAMN SURE YOU HAVE THE TRUCK IN NEUTRAL! At this point my truck did as I was hoping and I breathed a sigh of relief.

Now you can put the CPPS on the Clutch Pedal Rod and check your work one last time. Take it for a drive and get above 40 or so mph and try the cruise. Mine worked, and at this point I let out a nice little rebel yell! 🗣️





Now on to the small stuff. 🚚🤖

The Reverse Lights are fairly easy. The ZF-6 only has a Reverse sensor on it. I believe the wires you are looking for are on the Range Sensor Plug for the Automatic, but I could be wrong, It is however on one of the Auto's plugs and its the only Black / Pink wire. You are looking for the **Black / Pink** wire, and with it the **Light Blue and Pink** wire. The LB / Pink is the 12 Volts and the BK/PK is your reverse lights. Run each wire to each side of the ZF's Reverse switch.

Now you have light.

The 4x4 lights are next. Personally I switched over to the manual shift transfer case when I did my swap and put manual Hubs on the wheels. To get your 4x4 lights to work you have to bypass all of the ESOF B/S. The manualtrans case has a connector with 2 wires on it. I got my pigtail off the donor truck, but you might have to track one down at ford. All the switch on the Trans Case does is give a ground signal on one wire if you are in high and the other if you are in low.

You need to run both of these wires up behind the dash and behind the instrument cluster. While you have the dash cover off for the CPPS is the fine time to do this. Unscrew

the instrument cluster and carefully pull it forward. There are a ton of wires running into the back of the cluster. You are looking for a **Light Blue** and a **Brown / Yellow** wire that are next to each other. I believe they were on the drivers side of the cluster. Cut these wires and attach your wires coming from the Trans case so that they run into the cluster. You will have to temporarily connect them and try the 4x4 to see which light comes on. If its backwards, just switch the wires.

While you are in the instrument Cluster there is one other thing that could be an issue for you. The "Check Gage" light will always be on because the trans temp gauge is not receiving a signal. Personally I took the cluster apart and removed the Check gage LED with a pair of pliers. Now I don't have to look at it all the time.

If you elected to keep the ESOF Transfer case and swap the input shafts then I really can't help a whole lot. If someone has this problem, I'll try to help you sort through it by looking at the wiring schematics. It may work fine once you have all of the clutch pedal wiring hooked up, but I suspect that since you have to do all of the neutral to reverse routine to get the ESOF into Low range, you will run into problems. I'll try to help as much as I can, but I would suggest going manual.

And that's it. Everything should operate as if it came from the factory with the ZF.

Would I do it again? Yes, knowing what I know now, I would. Towing with the ZF is a dream, compared to the Auto.

Good Luck, and if you have any questions, don't hesitate to ask. I received a ton of help form threads and individuals and I intend to pass that along.