"Pittsburgh Power" Detroit DDEC III and IV

Installation Instructions

By: Pittsburgh Power

Congratulations on the purchase of your "**Pittsburgh Power**" performance computer system. The only product of its kind! These installation instructions will guide you through the process required to make your engine perform like a winner. **Be sure to read these instructions in their entirety prior to installing your performance computer**. Aside from basic hand tools you will need the following:

1 3/8" hole saw 1/4" pipe tap

1/2" drill 1/8" & 15/32" drill bit.

Note: It is not necessary to disconnect the battery during the installation process. However, do not turn the key on. This may result in trouble codes being logged to the ECM. Keep all wires and connections free from dirt and grease. Any contamination on the connectors or terminals could effect the operation of the unit. Also, we have found many instances of charge air coolers and or intake plumbing leaking manifold pressure to atmosphere. This causes low boost, high pyrometer heat, lack of power and engine damage. It is recommended to pressure test your intake system and charge air cooler prior to installing the "**Pittsburgh Power**". We also suggest that you make sure your computer system is not generating any trouble codes.

1). Mounting the "**Pittsburgh Power**" computer/ECU. Find a suitable location **inside the cab** around the dash area for the ECU (engine control unit). It can be mounted in any orientation making sure you will have access to the connections on the one end, and the on-off switch on the other. If possible try to mount it so the operator can view the green LED's. The ECU can be securely mounted to any flat surface utilizing the mounting plate and screws supplied with your unit or it can be held in place with Velcro or wire ties as the situation permits.

2). Preparing to install the new harness. Inspect the firewall for accessibility and, using a hole saw, drill a 1-3/8" hole (see figure 1) in a location that will allow you to pass the wiring harness through. This harness will be connected to the ECM (engine control module) that is located on the drivers side of the engine and the "**Pittsburgh Power**" ECU that is located inside the vehicle. After drilling the hole remove any burrs from the area with sandpaper or a small file.

3). Installing the new harness . Being careful not to damage the connectors, feed the main wiring harness (double round black connector end. See figure 6) through the hole in the firewall from the engine side, towards the inside of the vehicle. Pull enough through the firewall so the yellow lead wire for the EGT sensor breaks out of the new harness at the left rear corner of the engine (figure 2). Carefully insert the supplied grommet into the pass-through hole in the firewall and around the harness (see figure 3).

Figure 1

Figure 2

Figure 3

4.) Attach the new harness to the ECU that you mounted in step #1. Push each black connector (small & large) on to the receptacles of the "**Pittsburgh Power**" ECU. Turn the lock nut till you feel it "click". Do not over tighten.

5.) Connect the new harness to the ECM connectors. We will be working with the connectors on the **front** of the ECM for the following procedure. The ECM is located on the drivers side of the engine just above the oil pan. (see figure 4). Remove the top male connector of the factory wiring harness from the ECM. Plug the grey male connector from the new harness into the ECM where the factory connector was just removed from. (figure 5) Next, plug the male factory connector, previously removed, into the black female connector of the new harness. Follow the same procedure with the connection on the ECM that is right below the connection you just changed. Remove the male connector from the ECM. Plug the white male connector from the new harness into the ECM where you just removed the factory connector from. Next, plug the factory male connector into the white female connector of the new harness.

6.) Connect the power and ground leads. (12V only) There is a wire with a 3/8" eyelet connector that breaks out of the new harness in the same area as the ECM connectors. Using the supplied 10x1.5-20mm metric bolt, bolt the eyelet to one of the threaded bolt holes that is predrilled in the side of the engine block. (see figure 7) Make certain that there is no paint or rust in the threaded bolt hole as a good ground connection is very important. Run a tap in there to clean it out if necessary. The positive terminal connection is the red wire with a 1/4" eyelet that breaks out of the new harness at the two black ECU connectors. (see figure 6) Run this wire to the **switched** side of the ignition switch or fuse box. It must supply power only when the key is turned on.

Figure 4

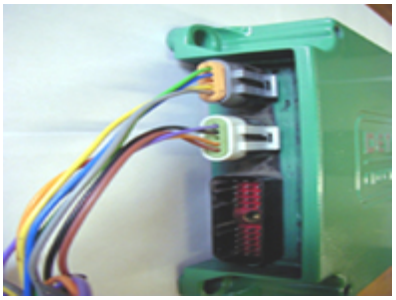

Figure 5

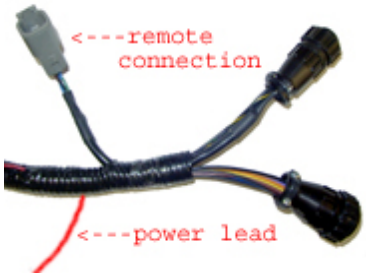

Figure 6

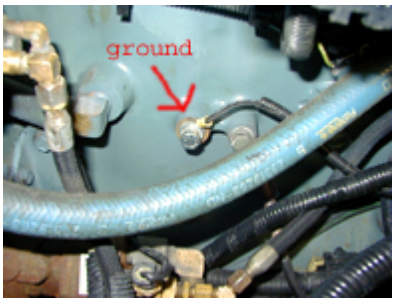

Figure 7

7.) Connect the new harness to the boost sensor that is located on the left side of the engine. This sensor is located on the intake manifold right in the center of the engine on the drivers side. See figure 8. Disconnect the original connector from the sensor. Find the boost sensor wires that brake out of the **new** harness in the same area as the ECM connectors are located. Plug the male connector from the new harness into the boost sensor. Next, plug the **original** male connector, removed previously, into the female connector of the new harness. If your engine is a 1997 or older, use the supplied adapter harness to make these connections.

8.) Drill and tap the exhaust manifold and install the EGT sensor (thermocouple). Note: The thermocouple **must** be located in the exhaust manifold in order for proper temperature monitoring. Removal of the turbocharger is not necessary as the small amount of shavings created will pass through on engine start up. Referring to figure 9 & 10, drill a 1/8" pilot hole in the center of the **flat boss** on top of the manifold by the turbo. After the pilot hole is drilled re-drill with a 15/32" bit to open the hole to accept a 1/4" pipe tap. Run the tap in and thread the hole. Use caution not to turn the tap in to deep as this will open the hole beyond specifications. Use the EGT sensor as a guideline by removing the tap and checking for a proper fit. After the hole is tapped, install the sensor into the manifold. It is recommended to use anti-seize on the sensors threaded areas. **Caution**: Do not drill the manifold in the ***center*** of the turbo mounting flange.

Figure 8

Figure 9 Top View

Figure 10 Side View

9.) EGT Wire Connections. Connect the yellow EGT sensor lead wire, (built into the new harness) to the EGT sensor. Attach the longer red lead wire to the shorter red wire on the EGT sensor and the shorter yellow lead wire to the longer yellow wire on the EGT sensor. Slide the protective cover over the connectors and tape or heat shrink it closed on the end.

10.) Final Wiring Steps. Using the supplied wire ties, fasten the EGT lead wire **and** the "**Pittsburgh Power**" harness at several locations under the hood and under the dash to prevent vibration. Be sure to route all wiring away from any heat source.

11.) Install the remote control unit . Using the supplied Velcro, attach the remote to a convenient location. Route the wire from the remote unit to the "**Pittsburgh Power**" ECU and plug it into the connector that breaks out of the harness at the ECU (see figure 6). Use wire ties were necessary to hold the lead in place. When routing the lead from the remote, do not run it near any other electrical wires and keep it separated from the big wires of the new harness that plugs into the back of the "**Pittsburgh Power**". In other words, do not tie wrap the excess lead wire to the ECU harness. If the cable is near any other electrical wires or devices, electrical interference may cause the remote to display erroneous characters. If this occurs, reroute the lead and cycle the key on and off and the remote will reset.

"Pittsburgh Power" operating instructions

All driver interaction will be done through the remote unit. You will have ten different power level settings starting at level zero. Each level above zero will add approximately 20 horsepower to your stock setting for a total of 175* additional ponies. The level setting can be changed at any time under any type of driving condition.

If you turn the key on and the remote displays more than a few pounds of manifold pressure **do not start the engine**. Check to make sure you plugged into the correct boost sensor described above. If you are sure you are plugged into the correct sensor, call tech support.

The remote also displays important monitoring information. It will show, in real time, exhaust gas temperature and manifold pressure. If the exhaust gas temperature (EGT) rises above 1300 degrees the "**Pittsburgh Power**" will start to cut the power back in order to maintain a safe operating condition. The DD III engine has a limitation of 34LBS of manifold pressure on the display unit. If you are making more than 34LBS the display unit will not show a higher reading. This is a limitation of the boost sensor on this engine. It is highly recommended that you have a mechanical gauge to read the proper boost that might be obtained above this limitation.

On the front of the ECU there are 6 LED's and an on-off switch. The LED's indicate when cylinders 1 through 6 are firing with **enhanced power** and will blink with every power stroke of the engine **ONLY WHILE UNDER LOAD** . They will also get brighter as more power is applied. If you have a miss that is ECM or "**Pittsburgh Power**" related you may be able to tell what cylinder it is. The corresponding light for the problem cylinder will not light while under load. If the miss is downstream from the ECM or "**Pittsburgh Power**" the light will still blink. This could indicate a possible problem with an injector or an internal engine malfunction.

The yellow MAP light is an indicator that the "**Pittsburgh Power**" is seeing a signal from the boost sensor and will get brighter with higher manifold pressure readings. The red power light indicates whether or not the switch is turned on.

Use the on-off switch to enable or disable the unit. With the switch turned off, no power will be added regardless of where the remote is set. The display on the remote will continue to function normally in both modes.

NOTE: All of the lights on the ECU are important when diagnosing any type of issue. If you are going to call tech support, please have the information about what the lights are doing handy.

TROUBLESHOOTING

99% of all problems with the "Pittsburgh Power" are caused by bad connections. Prior to calling for technical support, please unplug all weatherpack connectors from our harness, spray them out with brake clean, blow dry with compressed air and reassemble. If this does not correct the problem, disconnect the positive and negative feed wires for the "Pittsburgh Power" computer and run them directly to the battery. If this corrects the problem, find a better ground source and a different switched power source. If you do need to call for support, **please monitor all the lights** on the "Pittsburgh Power" computer prior to calling so you can tell the support team what they are doing. This also includes knowing what the green lights are doing along with the yellow and red.

High Performance Driving Tips

A word from our CEO Bruce Mallinson

The "**Pittsburgh Power**" begins to add fuel to the engine at two pounds of turbo boost. With power levels of three or above the engine will be very responsive. Please observe the turbo boost gauge and accelerate slowly with your right foot. Keep in mind that it takes eight pounds of turbo boost to burn fuel. Mashing the throttle when the turbo boost is below eight pounds will result in black smoke out of the exhaust stacks. Using excessive power to accelerate the rig to your cruising speed will result in excessive drive train wear. Drive as though you have an egg between your foot and the throttle. Don't see how fast the turbo boost gauge can be pegged. Between shifts roll your foot into the throttle. Don't jab your right foot to the floor. Be smooth. Never use full power to pull the grade of a mountain. Your engine was designed at ten percent more power than it was released to you. Always be in a gear where you can accelerate. Most "**Pittsburgh Power**" owners are running their engines on power level two or three and are seeing anywhere from .2 to 1 full mile to the gallon **improvement** in fuel economy.

Metal fatigue is a truck drivers worst enemy. Anything can break at any given time. Treat your equipment with respect. Especially with awesome power. It's up to you, the driver, to keep your engine alive.

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WARRANTY AND DISCLAIMER

Diesel Injection of Pittsburgh Inc. warrants that its "Pittsburgh Power" computer will be free of functional defects for a period of one year unlimited mileage and will perform as advertised provided they are used on engines that are in good mechanical condition. It is mandatory that the pyrometer sending unit be properly connected to the "Pittsburgh Power" or severe engine damage may result.

Diesel Injection of Pittsburgh does not warrant the engine, drivetrain or balance of the vehicle in any way. The operator is solely responsible for the proper use of this product. Use of power levels 4 and above on a regular daily basis my shorten engine life.

Diesel Injection of Pittsburgh shall not be held responsible for any misuse or unsafe acts performed by the customer, whether directly or indirectly resulting from the increase in engine power.

The original manufacturer may void its warranty on the engine and/or drivetrain when stock power is altered.

Any repair/alteration of the "Pittsburgh Power", unless conducted by Diesel Injection of Pittsburgh or one of its factory trained and authorized dealers, will void any and all warranties of the product. A copy of the original sales receipt from Diesel Injection of Pittsburgh or one of its authorized dealers must accompany all products submitted for warranty consideration.

For all technical support related issues call 724-360-4080

*Horsepower ratings vary depending on the individuals current engine rating.

Fuel Mileage With The Pittsburgh Power:

Please keep in mind when thinking about fuel mileage: This unit is a **performance enhancement**. Generally, when you improve performance, fuel mileage is also improved. Fuel mileage can be increased when using this unit if you are an average owner operator pulling 60-80K lbs. across country. Under these conditions an average improvement of 3 tenths MPG is very common. Some of our customers have seen over one MPG improvement in mileage. There are also situations where there may be no improvement in mileage. These are:

Running around empty
Pulling very light loads
Running on flat level terrain
Pulling oversize or over weight loads
Running high power levels
Using the unit to gain enough power to run at excessive speeds.