



**PROGRAMMED FUEL COMPUTER  
MANAGEMENT SYSTEM**

**INSTALLATION MANUAL**

## NOTICE

This manual assumes that you have and know how to use the tools and equipment which are necessary to safely and efficiently perform service and installation operations on your vehicle. This manual also assumes that you are familiar with typical automotive systems and terminology and basic service and repair procedures. **DO NOT** attempt to carry out the operations described herein unless these assumptions are correct.

Always have access to a **GENUINE FACTORY SHOP MANUAL** as many of the procedures and specifications required for the proper installation of this product will be referenced to the shop manual.

To avoid the risk of personal injury to yourself and/or others and to avoid the possibility of damaging your vehicle or rendering it unsafe, follow the safety precautions contained in the factory shop manual for the vehicle that you are working on.

## INTRODUCTION

### HKS PPC F-CON (PROGRAMMED FUEL COMPUTER)

The HKS PPC F-CON is a 8 bit, 256k byte fuel management microcomputer that is interfaced with the original ECU using the PPC F-CON interface cable (wire harness). The PPC F-CON PROM (programmed read only memory) is specifically programmed to calculate the proper injector pulse durations using engine rpm input from the original ECU and voltage input from the manifold vacuum/pressure sensor included in the PPC F-CON package. Using this data, the PPC F-CON will modify each original injector pulse from the ECU to provide accurate fuel compensation even at high engine speeds after peak boost has been reached. By maintaining an accurate air/fuel ratio throughout the entire engine rpm and boost pressure range, maximum engine performance and reliability can be maintained.

## USER NOTES

1. Before installing these components, read through the entire manual and familiarize yourself with the terms used herein. Pay special attention to the following precautions and information.
1. When ANY performance modifications are performed on this vehicle, 92 or higher octane fuel must be used. The use of high octane fuel will reduce the possibility of detonation.
2. The HKS PPC F-CON is a very precise and delicate electronic component. Handle the unit with extreme care and adhere to the installation procedures shown herein. Failure to do so may result in permanent damage to the unit.
3. The PPC F-CON contains a variety of mode condition switches (fig.1). These switches are preset by HKS to interface the computer with your vehicle. **DO NOT** alter the switch positions.

- The PROM (I.C. or CHIP) should never have to be removed (fig.1). If, however, the PROM requires removal (under EKS supervision), NEVER touch any part of the contact pins and NEVER place the PROM on a magnetized or static electricity charged surface. NEVER remove the sticker covering the top of the PROM and always install the PROM so the notch in the end matches up with the notch in the end of the PROM plug on the circuit board. Failure to follow these precautions will result in deprogramming of the PROM.
- The EKS products described in this manual were designed and tested on a California specification vehicle. Some installation procedures may differ slightly on federal vehicles. Different climate conditions (elevation, temperature, humidity, etc.) may affect the performance of the PFC P-COV. It is also advisable to install an accurate EGT (exhaust gas temperature) gauge to monitor engine operating conditions (air/fuel ratio).

fig.1

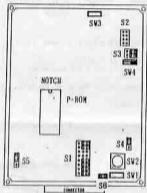
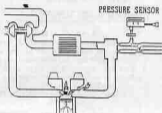


fig.2



**PRESSURE SENSOR INSTALLATION**

- Disconnect the negative terminal of the battery.
- Attach the sensor to the 'L' bracket with the two M5 x 10mm phillips pan head bolts. fig.5
- Mount the pressure sensor in a location taking into account the following:
  - The pressure sensor should be mounted slightly higher than the throttle body and facing down. Install the filter about 2 inches away from the pressure sensor to keep dirt and oil from entering the sensor. If you cannot use an existing mounting bolt, use either the M6 x 20mm sheet metal screw or the M5 x 20mm, lock washer, flat washer and nut.

- b. The hose layout to the sensor must be done with the length of hose and wire harness supplied in the kit. The pressure sensor 4mm hose should be kept as short as possible. If there is only one source on the intake manifold, after the throttle body. Use a 4mm tee fitting to splice into a line making sure the other side DOES NOT relieve pressure for example: idle up solenoid, brake master vacuum line and boost pressure solenoid. If there is two sources on the intake manifold use one fitting for the pressure sensor and tee the other hose into other line source. fig.2
- c. Connect the pressure sensor harness to the pressure sensor connector. Feed the other end of the harness (three loose wires with female connectors) through the firewall so it can reach the final mounting location of the PPC P-CON. To facilitate ease of insertion through the firewall, the wire ends can be taped together and lightly lubricated before feeding them through. Use caution when feeding the wires through the firewall as the connectors can be easily become damaged.

#### PPC P-CON HARNESS INSTALLATION

- The PPC P-CON harness will interface between the stock ECU and wire harness. fig.3
  - Carefully disconnect the stock wire harness from the ECU.
  - Insert the male PPC P-CON harness connectors into the stock ECU.
  - Insert the stock male harness connectors into the female PPC P-CON connector.
  - Push all connectors into place until they lock securely.

CAUTION: Do not bend the wire harness between the connectors as the wires can break off the back of the connector pins.

  - PCD (Fuel Cut Defencer) refer to FCD installation manual.
- Install the pressure sensor connectors into the back of the wire harness connector to the PPC P-CON. fig.4

fig.3

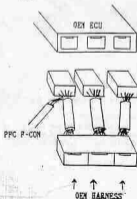
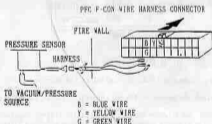


fig.4



3. Make sure the pressure sensor wires are properly installed into the connector. If the connections are in the wrong location or making poor contact, the PPC F-CON will not function properly.

NOTE: If a connector is installed in the wrong location, it can be removed by inserting a small piece of wire (1mm or .04" dia.) through the front of the connector to push the lock tab and gently pull on the wire from the back of the connector.

#### PPC F-CON INSTALLATION

1. Use the M5 x 8mm phillips/hex head bolts to mount the 'L' brackets to the body. DO NOT USE a bolt longer than this because it will damage the inside of the PPC F-CON. Mount the body in a convenient location within reach of the wire harness and pressure sensor harness. Use the M5 x 15mm sheet metal screws to securely mount the PPC F-CON 'L' brackets. fig.5

NOTE: The PPC F-CON transistors build up heat, so if the PPC F-CON over heats it may function improperly or damage the unit. DO NOT mount under carpeting or near heat ducts, mount in a location with air ventilation.

2. Reconnect the battery and start the engine to test for smooth operation at both idle and revving to 3000 rpm. If the vehicle does not operate smoothly, refer to the trouble shooting section.



#### PPC F-CON TROUBLE SHOOTING

NOTE: If check engine light comes on, refer to factory shop manual for diagnostic code procedures.

SYMPTOM: Engine will not start

Possible cause: With the ignition key ON position check the condition of the green light in front of the PPC F-CON.

If the light is not illuminated, check the following:

1. Main ECU fuse
2. PPC F-CON wire harness connections.
3. PPC F-CON harness wire to connector pin connections. (on the wire harness)
4. PPC F-CON main circuit board. (check to make sure there is no damage)

If the light is illuminated, check the following:

1. Check the main PROM for correct installation.
2. Possible memory loss in the main PROM.
3. Improperly interfaced. (condition switch position)



*Performance Products*

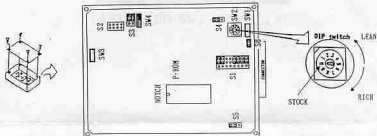
PFC F-CON SW2 ADJUSTMENT

MANUAL

## ADJUSTMENT PROCEDURES FOR FUEL MANAGEMENT SYSTEM

NOTE: Read through the entire adjustment procedure section BEFORE beginning the actual work. If you do not understand a step, read the procedure again until everything is understood. If you have any questions, please contact HKS USA INC. before you begin the adjustment procedures.

1. The FPC P-CON has 10 different programs to allow minor adjustments of the air/fuel mixture due to changes in boost pressure, weather, altitude, etc. To change the program (channel), make sure the ignition key is in the OFF position and remove the FPC P-CON from the wire harness. Remove the 4 phillips head screws holding the top cover to the main body. Remove the cover and use a small jewelers screwdriver to gently rotate the switch position.



2. Reinstall the cover and reconnect to wire harness.
3. The following adjustments must be made while driving the vehicle under full load.
  - a. Make sure 92 octane fuel is being used.
  - b. Make sure a boost gauge with a 20 psi. range is being used and functioning properly.
  - c. A high quality EGT gauge (Exhaust Gas Temperature) is recommended to determine the final FPC P-CON channel. The EGT should be within the following limits when the vehicle is under full load.
    - Immediately before the turbocharger: 1850 F\* (900 C\* )
    - Immediately after the turbocharger: 1380 F\* (750 C\* )
4. Adjust the EVC to the recommended boost setting according to the stage on the vehicle.

5. Adjust the PPC P-COM channel selector to increase the response and maintain a proper exhaust temperature in step 3c. NOTE: Channel 0 is the stock, unmodified fuel curve. Channels 1 through 9 are richer as you go up.
- a. It is possible to run too rich. If a rich condition exists turn the channel selector switch to a lower channel. The following are signs of a rich mixture:
- |                     |                                |
|---------------------|--------------------------------|
| Low EGT readings    | After burn through the exhaust |
| Black exhaust smoke | Hesitation or low power        |
| Poor response       | Excessive fuel consumption     |
- b. It is also possible to run too lean. Too lean of a fuel mixture can cause engine damage. To make a rich mixture turn the channel selector to a higher channel. The following are signs of a lean mixture.
- |                                |
|--------------------------------|
| High EGT reading               |
| Audible detonation             |
| Hesitation during the rpm band |
| Backfire                       |
6. All of the HKS tests are California specification vehicles. For this reason, some federal vehicles may require adjustment to the channel selector inside the PPC P-COM.
7. HKS vehicles are tested at sea level. For customers that live in a different climate and/or altitude may require adjustment to the channel selector inside the PPC P-COM.
8. If the vehicle has other after-market parts (camshafts, throttle body, pistons, etc.) may require adjustment to the channel selector inside the PPC P-COM.
9. If there are any question contact HKS USA INC. area code (213) 328-8100.