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 operations on your vehicle.

This manual assumes that you are familiar with typical automotive systems and basic service and repair procedures. **DO NOT attempt to carry out the operations shown in this manual unless these assumptions are correct. ALWAYS HAVE ACCESS TO A FACTORY SHOP MANUAL. INSTALLATION OF THIS PRODUCT WILL REQUIRE A GENUINE FACTORY SHOP MANUAL.**

INSTALLATION TIME: 3 - 4 HOURS

INTRODUCTION

When modiifying a vehicle, one of the most important ways to make a performance improvement is getting adequate amounts of air into the engine. The starting point for such is generally a low restriction air filter. Improving the filter and removing the box that contains it will reward the user with better response and peak power. The design of the POWER FLOW is like that of a large velocity stack with a felt covered foam air element at the inlet throat thus removing the factory air box completely. With advent of the HKS VPC, you can now remove the air mass sensor assembly completely. The VPC empolys a highly sensitive absolute pressure transducer (B-MAP sensor) and intake air temp. sensor that is mated to the stock circuitry with OE plug-in connectors at the original location. The reason that the VPC is able to deliver all information needed is the fact that the unit has an interpretation computer using a high-performance 16-BIT CPU and 3D fuel map that transcribes the signal from the pressure transducer and intake air temp. sensor into the appropriate signal for the OE brain box.

USER NOTES

Before installing and adjusting 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. The VPC ws carefully designed, programmed and tested on a California specification vehicle. Use of this component on vehicles using other manufacturers performance products may result in poor vehicle performance, damaging OE and/or HKS electronic components, and/or a damaged engine. Additionally, any implied HKS warranties on any and all HKS products used on the vehicle will become void due to misapplication.

2. Handle the VPC components with extreme care and adhere to the installation procedures shown herein. Failure to do so may result in permanent damage to the unit.

3. When removing the air flow meter/sensor, use a plastic bag to cover the connector to prevent water and/or dirt from entering the connector.

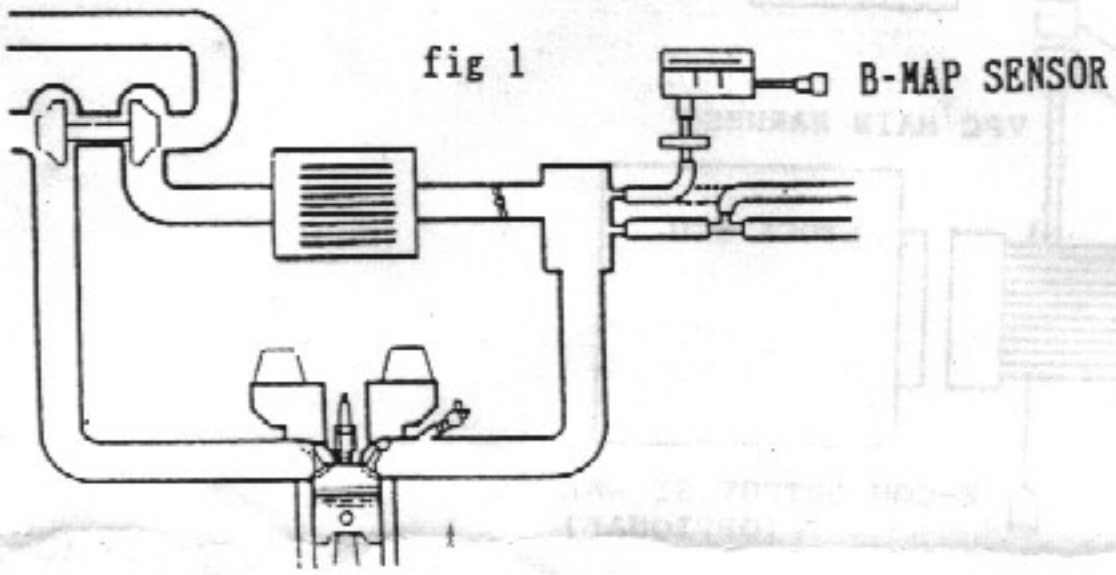
INSTALLATION OF PRESSURE SENSOR

1. Remove the negative terminal from the battery.

2. Attach the sensor to the 'L' bracket with the mounting bolts.

3. Mount the pressure sensor in a location taking into account the following:
   A. The pressure sensor should be mounted slightly higher than the throttle body with the fitting facing downward. Mount the sensor away from water and high temperature. If you cannot use an existing mounting bolt, drill a hole and use either a M6 x 20mm bolt, lock/ flat washer, nut or M6 sheet metal screw.
   B. The hose layout to the pressure sensor must be done with the length of hose and wire harness supplied in the kit. The 4mm hose should be kept as short as possible.
   C. 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 into the other line source. fig 1
   D. Connect the sensor harness to pressure sensor.

fig 1



INSTALLATION OF AIR TEMPERATURE SENSOR

1. Mount the adapter, if possible onto the intake manifold after the throttle body, if not in front of the throttle body keeping it close as possible to the throttle body. Drill and tap (1/8pt) the desired location. fig 2 **DO NOT** mount the air temp. sensor after the cold start injector or AIC (Additional Injector Controller) injectors.

   NOTE: When tapping make sure the location is flat for thread strength and all metal is cleaned out (to prevent from entering engine) of the piece being tapped. Make sure there is enough clearance for the length of the air temp. sensor when mounted.

2. Use teflon tape when installing the adapter.

3. Install the air temp. sensor to the adapter with a M6 brass washer.

4. Connect sensor harness to air temp. sensor.

5. Route the sensor harness through the firewall.

fig 2

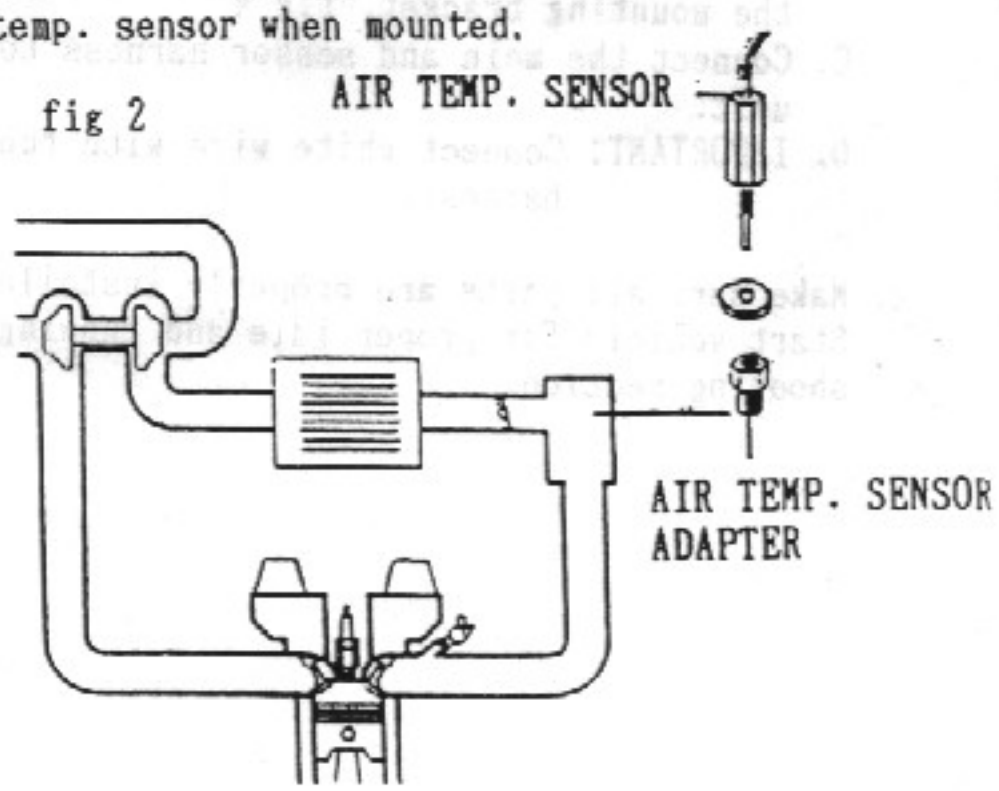
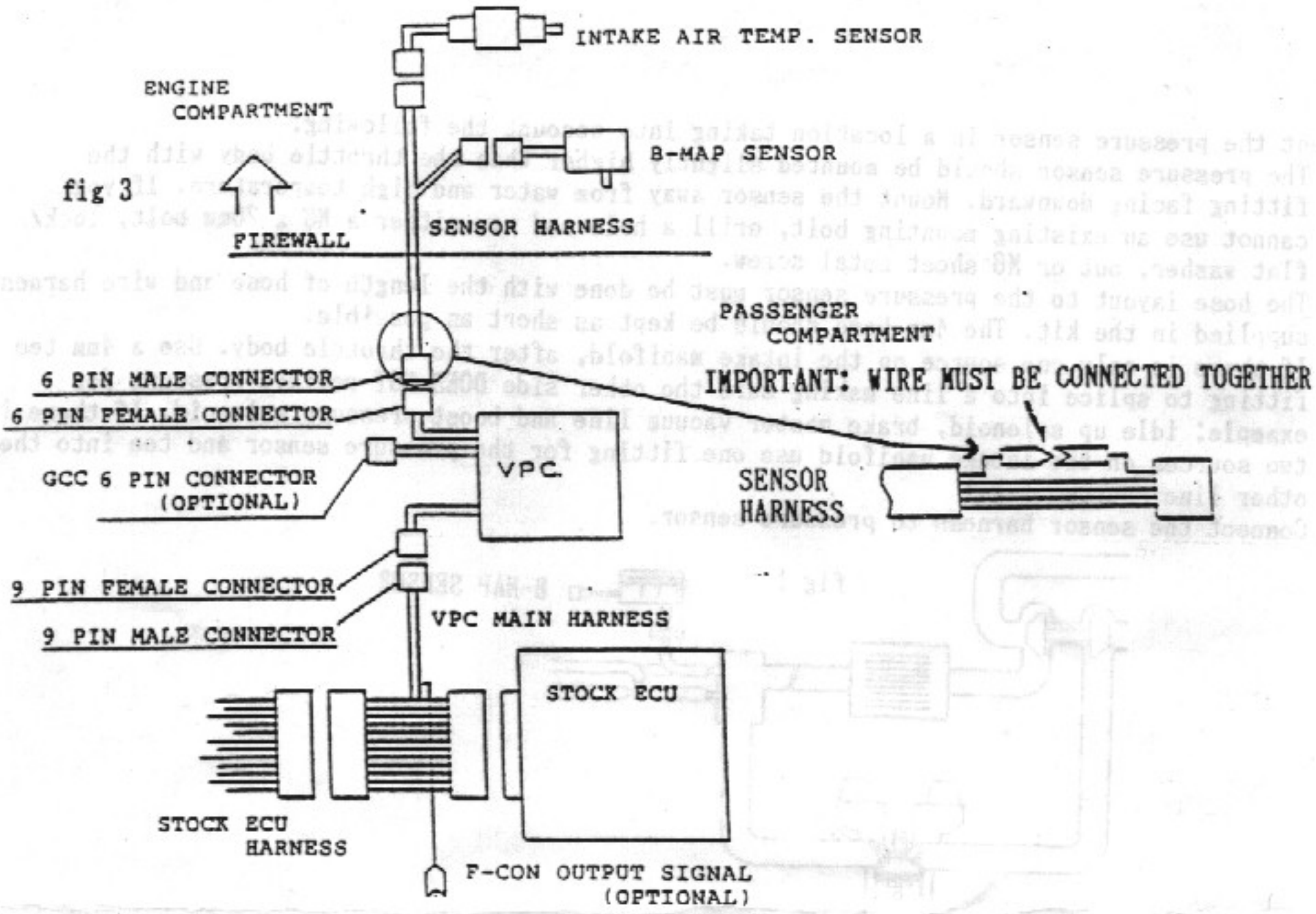
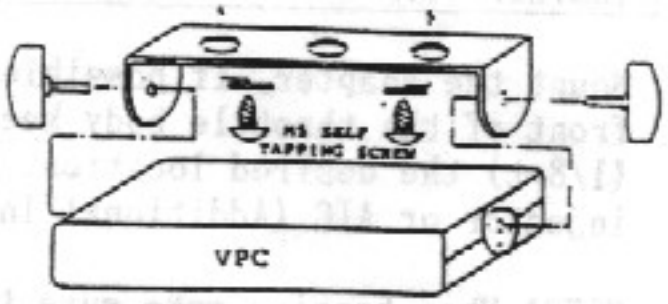


fig 3



INSTALLATION OF VPC CONTROL UNIT

fig 4



1. Locate the stock ECU using the factory shop manual.

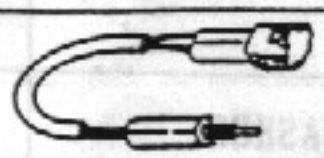
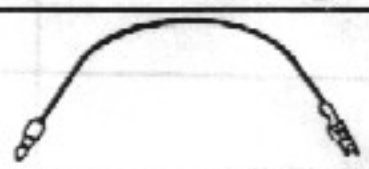
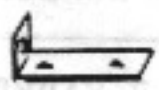
   A. Install the VPC main harness between the ECU and ECU main harness. fig 3
   CAUTION: MAKE SURE THE CONNECTORS ARE PUSHED IN ALL THE WAY.
   B. Mount the VPC control unit in a desired location using the mounting bracket. fig 4
   C. Connect the main and sensor harness to the VPC control unit.
   D. **IMPORTANT:** Connect white wire with the round type male/female connector on the sensor harness.

2. Make sure all parts are properly installed, then connect the negative terminal of the battery. Start vehicle for proper idle and running condition, if a problem occurs refer to trouble shooting section.

VPC I	VP-002

YEAR :
PRODUCT : VPC SYSTEM (ADJUSTABLE TYPE)

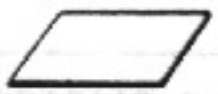
PART NUMBER : C4022XX - 90000X

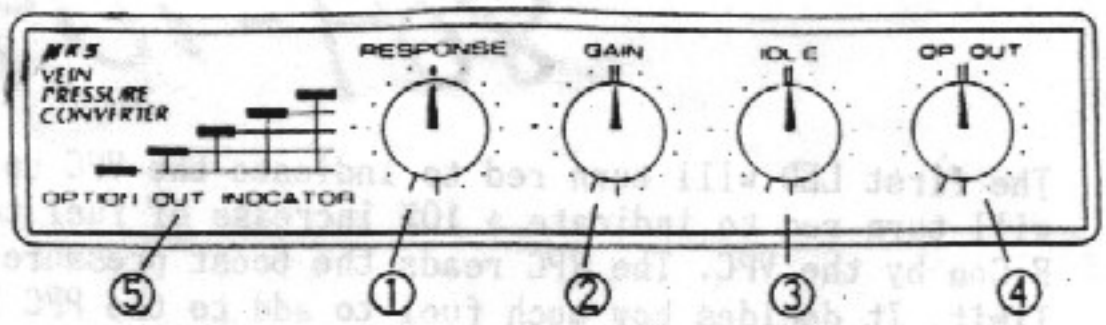
W/H PART NUMBER	SKETCH	QTY	DESCRIPTION	DETAILS
		1	CONTROL MODULE	ADJUSTABLE TYPE
C21202-006100		1	SENSOR, B-MAP	
C21212-001100		1	SENSOR, INTAKE AIR TEMPERATUR	
C21215-003100		1	HARNESS, SENSOR	USA SPECIAL
		1	HARNESS, F-CON	
C21207-005100		1	BRACKET, CONTROL MODULE	
C84120-001100		1	BRACKET, B-MAP SENSOR	
		1	SCREW, SELF TAPPING	M = 6mm
C93510-001100		2	SCREW, SELF TAPPING	M = 5mm
C93523-001100		2	WASHER, STAR - INT	M = 5mm
C21207-006100		2	BOLT, SETTING	M = 4mm
C91111-062004		1	BOLT	M = 6mm L = 20mm
C94110-061050		2	NUT	M = 6mm

VPC I	VP-002

YEAR :
PRODUCT : VPC SYSTEM (ADJUSTABLE TYPE)

PART NUMBER : C4022XX - 90000X

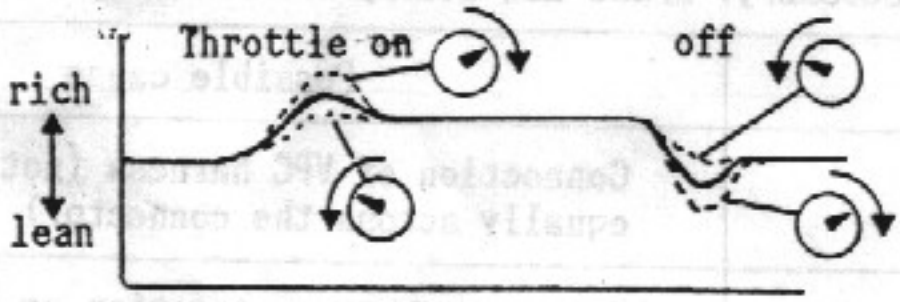
W/H PART NUMBER	SKETCH	QTY	DESCRIPTION	DETAILS
C94511-061216		1	WASHER, LOCK	M = 6mm
C94611-061310		3	WASHER, PLATE	M = 6mm
C91111-051004		2	BOLT W/WASHER	M = 5mm L = 10mm
C90131-001100		10	TIE WRAP	L = 100mm
C90461-050003		1	HOSE	L = 500mm
		1	WASHER, AIR TEMPERATURE SENSOR	BRASS
		1	TAPE, DOUBLE SIDED	
		1	INSTALLATION MANUAL	



VPC CONTROL MODULE FEATURES NOTE: All knobs are initial set for 12 0' clock.

① Response - If turned clockwise, will increase the fuel on the initial opening of the throttle and less fuel when released. If turned counterclockwise, will decrease the fuel on the initial opening of the throttle and more fuel when released.

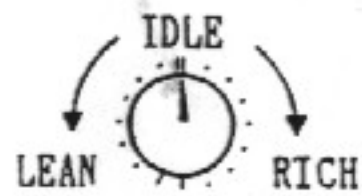
NOTE: If the response volume is turned clockwise to much, the VPC will be more senitive to the ON and OFF of throttle, which may cause hesitation.



② Gain - This feature will change the VPC output voltage (lean or rich) through the rpm band. Each notch equals 2% clockwise or counterclockwise.

NOTE: If the knob is turned clockwise (rich) to much, it may cause fuel cut or hesitation.

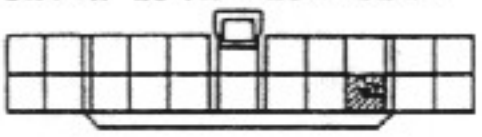
③ Idle - This feature will adjust the air/fuel mixture at idle below 1,300 rpm. Each notch equals 2% clockwise (rich) or counterclockwise (lean).



④ Option Out- This feature is used to control a secondary fuel enrichment computer (works only with HKS PFC F-Con) fuel curve clockwise (rich) or counterclockwise (lean). Each notch equals 2% either clockwise or counterclockwise. The PFC F-Con is used to provide additional fuel for levels aove the stock fuel cut point. If the injector capacity has enough volume it can be set pass the ECU (stock computer). The PFC F-Con controls the injectors after the stock ECU, so it can be set to the injector capacity. The Optional wire from the VPC harness goes to the PFC F-Con connector. If the vehicle needs this optional wire it will be explained in the supplement manual.

NOTE: If your vehicle is using a GCC II (Graphic Conrol Computer) with the PFC F-Con, disconnect the GCC II and connect to the VPC control unit (6 pin connector). The GCC II for the VPC can control the VPC output voltage by each rpm on the GCC II. If the GCC II is turned to much (rich side) it is possible to hit fuel cut.

shown from wire side



⑤ Option Out Indicator - The first LED will turn red to indicate the VPC unit is ON. Each LED will turn red to indicate a 10% increase of fuel to be added to the PFC F-Con by the VPC. The VPC reads the boost pressure pass the ECU computer limit. It decides how much fuel to add to the PFC F-Con. The VPC will control the PFC F-Con by the VPC map. The LED indicator will turn ON with or without the use of a PFC F-Con. Some applications the LED will not turn ON.

TROUBLE SHOOTING

NOTE: If the check engine light comes ON refer to factory shop manual for checking the diagnostic code and repair as necessary. Erase ECU memory and restart again.

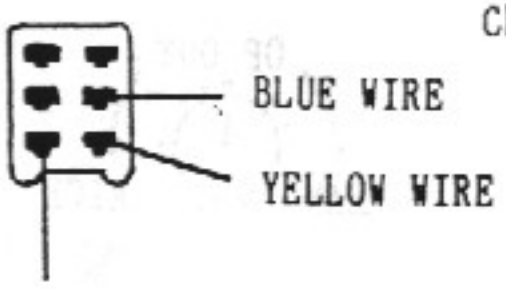
Symptom	Possible cause
Car does not start	Connection of VPC harness (not pushed in equally across the connector)
Rough idle or hesitation	Pressure sensor connection or location Air temp location or connection of white on sensor harness to VPC Adjustment of knobs
Hesitation in low or high boost pressure	Pressure sensor connection or location Problem with pressure sensor

Pressure sensor voltage check: With the ignition key ON
Green wire as ground.
Yellow wire should be 5 volts.
Blue wire should be about 1.744 volts with the hose disconnectd from the pressure sensor. Use a Mityvac to the pressure sensor to check the following:
NOTE: Check the voltage at harness connector.

in/hg	voltage	kg/cm²	voltage
-14.5	0.9267	0.1	1.908
-8.7	1.254	0.4	2.399
-2.9	1.581	0.7	2.889
0	1.744	1.0	3.380
		1.5	4.198

NOTE: If the voltage is not within pressure readings, possible defective sensor.

shown from wire side



CHECK VOLTAGE BETWEEN YELLOW (5 VOLTS) AND GREEN (GROUND).
CHECK VOLTAGE BETWEEN BLUE (PRESSURE VOLTS) AND GREEN WIRE (GROUND).