

Informazioni elettriche-elettroniche su applicazioni TPI, condivise su piattaforma F-body (Camaro Firebird) oppure piattaforma Y-body Corvette edito da Tunedport

This page is to show the electrical systems that you'll need to know when choosing a tpi system for your car. It is important to get the right set up depending on whether you are using a MAF from a Camaro or Firebird, or a speed density set up. You have a choice in harnesses, either from a donor car or buying a new aftermarket harness from several different companies that specialize in this.

TPI Applications

1985	1986-1988	1989	1990-1992
Wiring Harness unique to this year only	Wiring harness will interchange.	Wiring harness will interchange with 1986-88 years.	Wiring harness will interchange these years only.
MAF sensor	MAF sensor	MAF sensor	MAP sensor
cold start injector	cold start injector	cold start injector eliminated	cold start injector eliminated.
conventional HEI	1986 conventional HEI, 1987 and later have smaller distributor with remote coil. 1987 and later distributors are not compatible with earlier engines.	small distributor and remote coil	small distributor and remote coil. The distributor from 1990-92 cannot be used on earlier due to different est module.
ECM#1226870, separate 32K prom and calpak. "piggyback" MAF controller.	ECM#1227165. 128K prom and calpak combined into one module "Memcal"	ECM# 1227165. Prom module has cold start enrichment added to calibration. "Memcal"	ECM#1227730, 256K prom, "memcal".
no vats	Trans Am's and Corvettes ecm's have VATS programmed into prom	VATS programmed in prom	VATS programmed in prom
Intake will interchange with 1986 and earlier cylinder heads	1986 intake will interchange with earlier cylinder heads. 1987 and later intakes fit 1987 and later heads, unless modified.	1987 and later intakes fit 1987 and later heads, unless modified.	1987 and later intakes fit 1987 and later heads, unless modified.

MAF and Speed Density

MAF sensor systems were used on the tpi cars from 1985 through 1989. The maf sensor is a special device with its own miniature computer. The sensing wire in the air stream is heated to around 100 degrees Fahrenheit above the temperature of the incoming air. As the air is drawn across, it tends to cool the wire, the sensor then tries to maintain the heated wire at its preset temperature, the potential or difference is converted into a voltage that is used by the ecm along with other sensors to calibrate the proper fuel injection rate. What makes the MAF sensor unique that is is capable of measuring the exact weight of the air due to the effect that humidity, temperature and barometric pressure, and rate of flow has on how fast or slow the cooling effect takes place on the sensing wire. It is extremely accurate. To keep this sensing wire accurate is that when the engine shuts down, a special relay heats the sensing wire to 1000 degrees F, to burn off any oil and grime from the wire. The MAF system will allow for wear of engine components, and still perform over the lifespan of the engine. The MAF system will also tolerate a change of around 10% or so in flow rate due to cam, head and exhaust modifications.

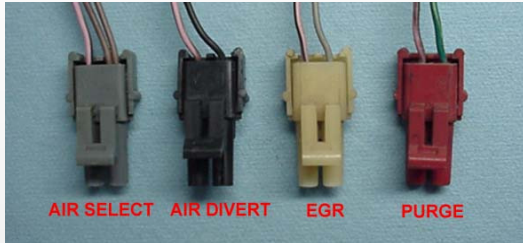
The MAF system did have some minor changes over its life. 1985 MAF system was unique, as it had the MAF controller "piggyback" on the ecm. The ecm service Number was 1226870, and had a separate prom with a 32K chip and separate calpak chip to act as a back up limp home mode in case of ecm failure. This harness and computer will not interchange with the later harness/ecm systems. In 1986 the separate MAF controller was eliminated and the ecm service number changed to 1227165. The prom and calpak was combined into one module. The prom capability was changed to a 128K. This remained unchanged until 1989, when the cold start injector was eliminated and the cold start enrichment was added to the prom calibration. Another thing to remember on the 1988 and later ecm's will have the VATS (Vehicle Anti-Theft System) encoded on the prom.

Speed density was installed on the 1990 and later TPI engines. This eliminated the MAF, and depended on the MAP sensor, O2 sensor, coolant sensor, air temp. sensor and TPS to calculate the fuel requirements. The ecm service number was changed to 1227730, and the prom memory was increased to 256K. This is due to the fact that the ecm had to do some serious number crunching to get the fuel requirements as accurate as possible. It is to be noted that the speed density system is calibrated to that particular engines configuration. The system is not forgiving when it comes to modifications, or when the engine components degrade over time, changing the way the ecm reads the MAP, which is based on reading the amount of vacuum or engine load. If you use this system and have anything more than a basic stock engine, you will need a new prom chip made.

As was explained in the mechanicals section, you'll need to make sure to get the proper manifold with the proper harness.

[Emission connectors:](#)

The emission connectors styles vary from the older pre-87 engines and the newer 1987 and later engines using the centerbolt valve covers. If you are using a donor engine that has no wiring harness or you are purchasing a wiring harness that you need to have emission systems, this will help identify the connectors you have or needed. Other than the connector changes made, mechanically they bolt on the same.



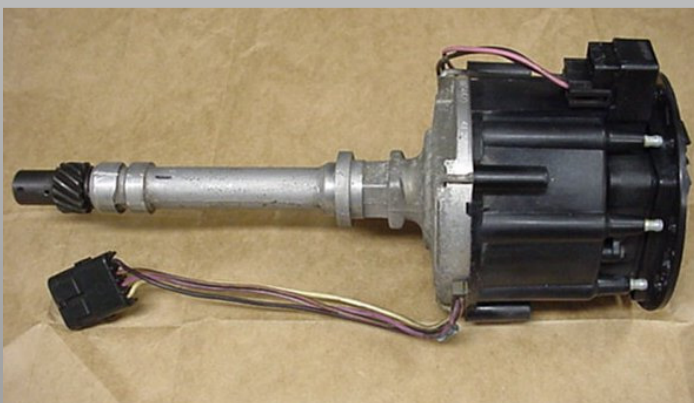
Early style emission connectors (1981-86)

Late style connectors (1987 on up)

Distributors:

Depending on the year your TPI engine will depend on the type of distributor that was used. In 1985-86 "F" body (Camaro-Firebird) and 1985-1991 "Y" Body (Corvette), the distributor was the familiar looking large cap HEI distributor. Upon closer examination of the original distributor you will see it's cap is held down by 4 screws. The more common HEI distributors, if you have another 1974-86 small block Chevy to compare, is held with 4 latches. Another difference is the 4 wire EST connector to the wiring harness. While the common HEI has the prongs with two outer slots facing up, the HEI used on the TPI engines, has one of these slots facing to the outside.

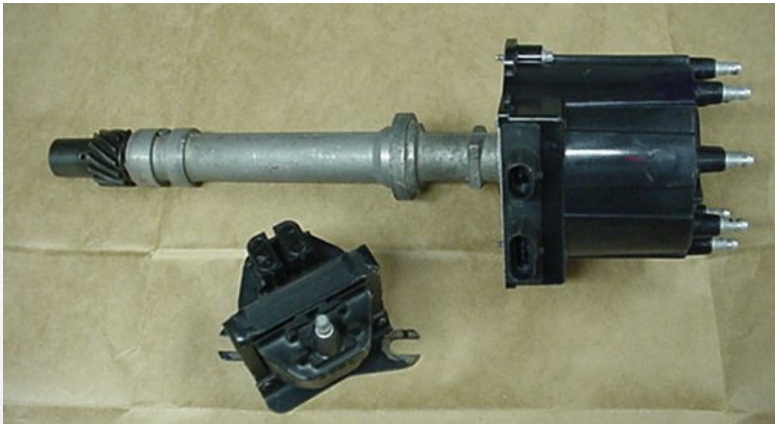
You can use the common HEI on your TPI for the years mentioned above, but you will have to swap the connector at the harness or find the connectors at a salvage yard, which can be found on the 1985-86 3.8L V6 found on the FWD vehicles or on the 4.1L V8 Cadillac motors.



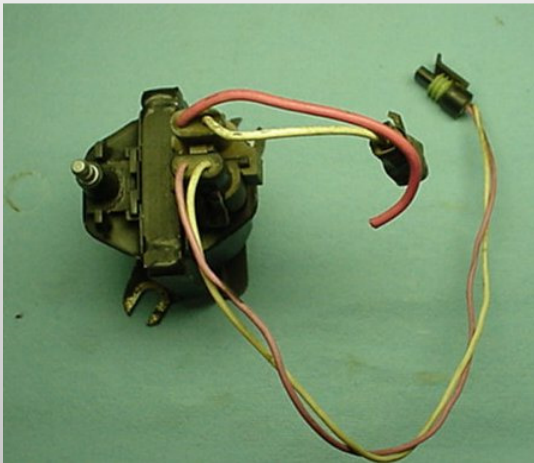
Shown above is the large cap HEI distributor, this one is the common variety which the cap is latched instead of being held by four screws. These can have the est connector modified to work on your TPI engine perfectly.

The next distributor was on the 1987 through 1992 Camaro-Firebird TPI engines. This is what I call the "small cap" HEI, which uses a remote mounted coil, typically is bolted to the

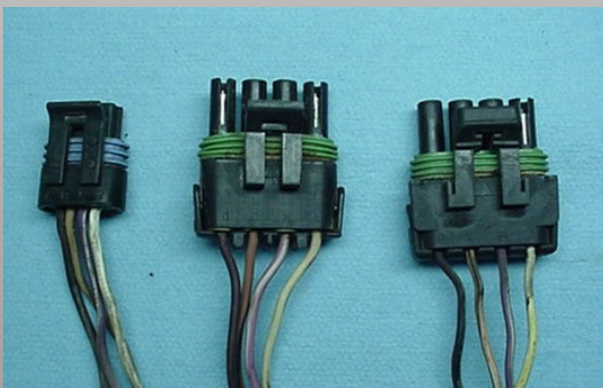
intake manifold. You will note this is the time period, Chevrolet switched to the roller cam motor, and this distributor was used on these engines.



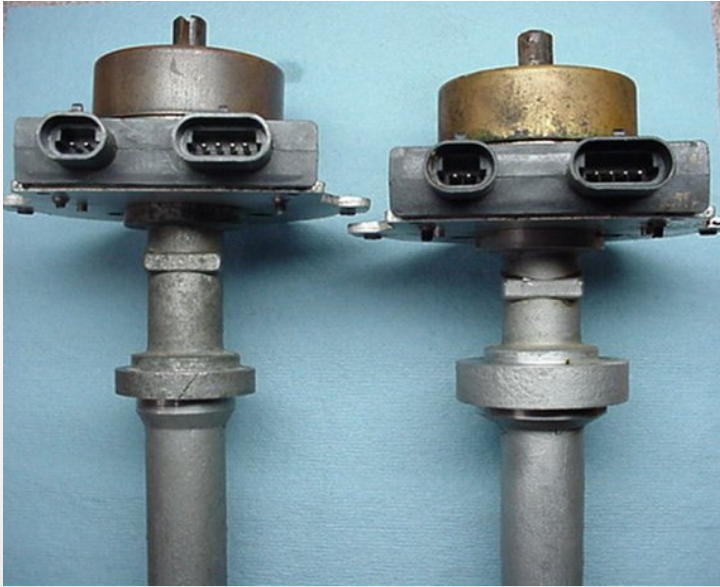
Shown above is the "small cap" HEI with coil.



The remote coil has two connectors. The gray connector is the 12V coil power supply, the large pink wire goes to ignition "on" power for the distributor, the white wire can be hooked to a tachometer. The black connector has the smaller pink and white wires which goes to the two wire connector on the ignition module on the distributor.



EST connectors that send the ignition signal back to the ecm, The one of the left is for the "small cap" HEI, the center one is for the "common" large cap HEI, note the two outer prongs with slots facing up. The connector on the right is the "TPI" distributor connector, used with screw down caps. Note one prong with slot facing up, the prong on the far left has a slot but is facing towards the left.



Be careful in pulling a small cap HEI to use. The distributor to the left is used on the 1987-1992 Camaro/Firebird. Note the smaller base as compared to the distributor on the right, these larger base distributors were used on some 1991-1993 "B" body TBI equipped engines, such as the Chevy Caprice and Buick Roadmaster. They use the TBI throttle bodies which are held down with two studs for the air cleaner, and the manifolds are machined for the large base distributor they *use*. *They will not interchange.*

DISTRIBUTOR GEAR APPLICATIONS

There has been a lot of controversy concerning the interchange of the distributors using a large cap HEI on a 1987 and later block and using a small cap distributor on earlier blocks. It used to be on the safe side, use the large coil in cap HEI on the pre-87 blocks and the smaller remote coil HEI on the 1987 and later engines. Now with the aftermarket coming to the rescue for those who want to use the different distributors due to firewall clearance issues, availability, etc. it is possible to use the distributor of your choice, but you must use the proper distributor gear based on the material the cam distributor gear is made of.

Crane cams makes the proper distributor gears for the roller and non-roller blocks.

General rule is to use a **bronze alloy** gear for a **steel** distributor gear on the camshaft (most factory roller cams follow this route). For an **cast iron** cam use a **iron** distributor gear (all non roller cams and some later aftermarket roller cams use an **iron** distributor gear on camshaft.

Crane cams does make a **coated steel distributor** they say is superior to the **bronze alloy** gear with a OEM life span. It can be found at this URL through Jeg's performance parts: <http://www.jegs.com>

Part # **270-11951-1**

Coated Steel Distributor Gear
Chevrolet
90° V-6 1978-86, 200 thru 262

V-8 1955-87, 262-thru 400 .491" Dia. shaft
V-8 1965-90, 396 thru 502

- .491" Dia.

Crane also makes a iron gear that fits the small HEI distributor for use in an earlier non-roller cam application.

Part# [270-11970-1](#)

Iron Distributor Gear

Chevrolet

90° V-6 1985-91, 262 For GM HEI

V-8 1985-99, 305-350 For GM HEI .427" Dia. shaft

V-8 1991-00, 454-502 For GM HEI

If you want to use the bronze alloy gear it is part # [270-11988-1](#) for the small HEI (.427" dia. shaft)

For the large HEI it is part # [270-11990-1](#) (.491" dia. shaft)