INJECTOR SIZE

Obtaining the correct amount of fuel flow from a group of injectors in an EFI system is similar to determining the right size jets for a carbureted engine. The fuel flow of both systems must be matched to the airflow requirements of the engine over a broad rpm operating range.

A carburetor may have three or more separate control circuits such as idle, mid-range, and power, to deliver a fuel curve over the engine's operating range. An injector also must be able to supply a small amount of fuel to support engine idle, a large amount at wide-open throttle to prevent high-rpm lean-out, and transitional amounts to cover all of the operating conditions in between. These wide operating boundaries demand that an injector have a wide "dynamic range" of operation.

The amount of fuel delivered by an electronic injector is controlled by how long it is held open by the Engine Control Unit (ECU). It is "pulsed or energized" open for short periods of time at idle, and held open longer as rpm and airflow increase.

Just as the wrong-sized jets in a carb can cause driveability problems such as rough idle, surging, poor throttle response or even high-rpm lean-out, so can incorrect injectors. Following is a guideline equation for *approximating* fuel flow per injector based on estimates on engine Horsepower (HP) and Brake Specific Fuel Consumption (BSFC). Take note of these conditions for equation accuracy:

1. Engine HP must be realistic estimate of engine output.
2. BSFC is determined from engine dynamometer measurements. It typically ranges from 0.4 - 0.6 for gasoline powered engines. A BSFC of 0.5 is a reasonable initial estimate for most engines.
3. The 0.8 multiplier of the "Number of Injectors" helps us derive a practical, maximum "Injector Flow Rate" for each injector based on an effective real world injector operating pulse time and fuel flow. It's unrealistic to establish the fuel flow to the engine based on an injector operating pulse time of 100% (wide open all the time). This formula uses an injector operating cycle based on 80%. Some full race engine management systems may operate at 85 - 95% duty cycle, but doing so for some time increases the likelihood of overheating the injectors which may cause irregular fuel rates or a decrease in low rpm operation.

$$\text{Injector Flow Rate (lb/hr)} = \frac{\text{Engine HP x BSFC}}{\text{Number of Injectors x 0.8}}$$

For example, to calculate the individual injector size for a 650 HP V8 using eight injectors and assuming a BSFC of 0.5:

$$\text{Injector Flow Rate (lb/hr)} = \frac{650 \times 0.5}{8 \times 0.8} = 50.78$$

Use MSD Competition Fuel Injector PN 2013, rated at 50 lb/hr static flow at 43.5 psi (3 barometric) fuel system pressure.

If you have a known injector fuel flow rate you can solve the above equation for a rough estimate of fuel system capacity like this:

$$\text{Engine HP} = \frac{\text{Injector Flow Rate x Number of Injectors x 0.8}}{\text{BSFC}}$$

For example, using the same estimated values from above:

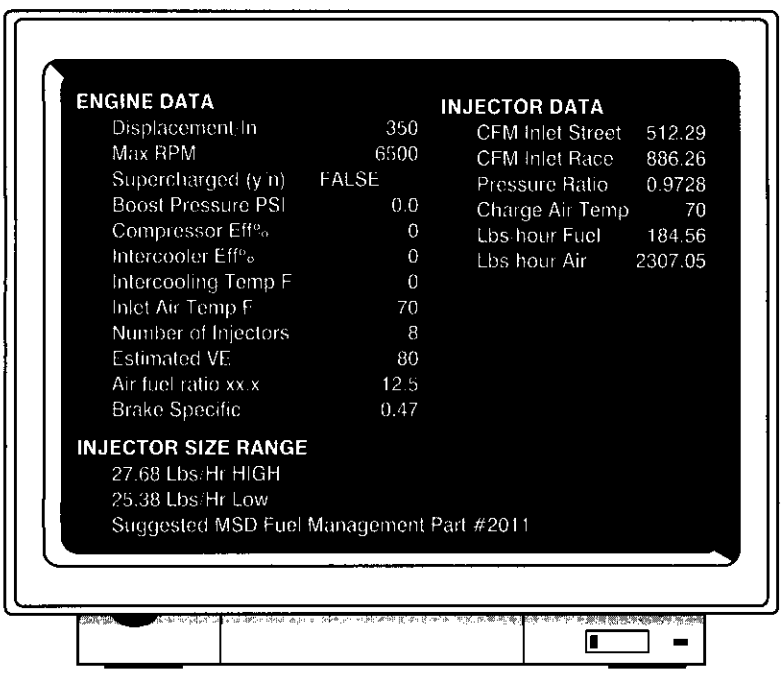
$$\text{Engine HP} = \frac{50 \times 8 \times 0.8}{0.5} = 640 \text{ HP}$$

NOTE: Keep in mind your application and other mechanical modifications that have been made to your engine. The number of cylinders or extremely high rpm engines (such as rotary engines) may require larger injectors due to on/off times.

INJECTOR MATCHING SOFTWARE

To make your correct injector choice easier MSD offers an Injector Selector program (PN 2000) that precisely matches the MSD Competition Fuel Injectors' static fuel flow capacity to the maximum airflow demands of a gasoline fueled engine, be it naturally aspirated or turbo/supercharged. You choose 12 different engine parameters to calculate the correct injector size ranging from the following:

- **Engine Displacement**
- **Engine RPM**
- **Boost Pressure**
- **Intercooler Efficiency**
- **Volumetric Efficiency**
- **Brake Specific Fuel Consumption**



To obtain an injector recommendation, simply enter the parameters requested and the Selector Software immediately calculates the values to come up with the recommended size MSD Competition Injector for your application.

The software includes on-line Help functions and calculates in US or metric units. The program requires a PC based computer and is available on 3½" disk.

Injector Matching Software _____ PN 2000

MSD FUEL MANAGEMENT

ECU COMPATIBILITY

Determining the right amount of injector fuel flow is only part of injection selection process. You also have to match the injector's operating parameters to your Electronic Control Unit. Before we delve into these operating systems, you need to understand how an injector operates.

When an injector is energized (from the ECU), its internal parts physically move to let the pressurized fuel flow through. In the case of MSD's "top feed" Competition Fuel Injectors, an internal ball is electronically lifted off its seat to allow the high pressure fuel to pass and go through six metering holes to form a tight 10° - 15° cone. This narrow spray angle (other injectors' spray angle can be as wide as 30°) delivers a fully atomized fuel charge that is suspended in the intake and is kept from wetting the intake and cylinder walls.

The amount of fuel delivered is controlled by how long the injector is energized by the ECU and its driver circuit. This time is usually specified in milliseconds (ms). An injector is "pulsed" open for short periods of time at idle, and held open longer as rpm and the engine's airflow increases, which requires a corresponding increase in fuel flow. There are two main styles of driver circuits so there are two main styles of injectors: There is a Saturated Circuit style as well as a Peak and Hold style.

Before going into the differences, keep in mind that the two are not compatible! Interchanging the different style injectors can result in slower delivery rate, overheating of the injector or driver and even engine damage!

SATURATED CIRCUIT DRIVERS/INJECTORS

Most domestic OE production EFI systems use an ECU with 12 volt Saturated Circuit drivers. These are very inexpensive, simple, and reliable. This type of driver works by supplying 12 volts to the injectors and the ECU turns it on and off to establish a fuel injector pulse. In general, if an injector has a high resistance specification (12-16 ohms) the ECU uses a 12 volt saturated circuit driver to control it. This means that the current flow in the driver and injector circuit stays low keeping the components nice and cool for long life.

Conversely, a downfall of a Saturated Circuit driver is that it has a slower response time (and closing time) than a peak and hold type. This slower time can somewhat decrease the usable operating range of the injector energized by this driver. An injector operating on a saturated circuit driver typically has a reaction time of 2 milliseconds while a peak and hold driver typically responds in 1.5 ms.

MSD offers two higher flow injectors that are designed primarily for quick response time with a 12 volt saturated circuit driver. The PN 2018 Injector is rated at 38 lb/hr with 12 ohms and the PN 2013 is a 50 lb/hr, 12 ohm injector.

NOTE: You can measure an injector's resistance with a Digital Volt-Ohm Meter(DVOM) by connecting it across the injector's electrical plug contacts.

NOTE: Ohm's Law can be applied to calculate the current in the injector and driver circuit when using a high resistance injector like the PN 2018 (38 lb/hr static flow, 12 ohm). Remember, Ohms's Law is I = E/R, where I = the circuit's current in amps, E = battery voltage in volts available to the injector, and R = injector resistance in ohms. So, for our 12 ohm injector being supplied 12 volts, I = 12v / 12 ohms, which is 1 amp of current in the circuit to operate the injector.

PEAK AND HOLD DRIVER/INJECTORS

These type of injectors and drivers may also be called current sensing or current limiting. They are more expensive and complex than saturated circuit drivers, and are not generally used with domestic production ECUs. They are primarily used in aftermarket high performance systems.

Most high flow injectors are low resistance (2-5 ohms) and use a peak and hold driver to activate them. The Peak current is the amount required to quickly jolt the injector open, and then the lower Hold current rating is used to keep it open for as long as the ECU commands. These require the extra kick from the higher current to keep the opening and closing time of the injector stable at the higher fuel flow rate.

With this type of driver, 12 volts is still delivered to the injector, but due to the its low resistance, the current in the driver circuit is high. How high? Using Ohms's Law we can calculate the current rating (12v/2 ohms = 6 amps). This is substantial current flow and a Saturated Injector cannot handle it.

The drivers also come in two values; 4 amp peak/1 amp hold, and 2 amp peak/0.5 amp hold.. Even though 6 amps may be available to operate the injector, the maximum it is allowed to reach is 2 or 4 amps, depending on the driver's current limit. Note that the MSD PN 2014 (72 lb/hr, 2 ohm) and PN 2015 (96 lb/hr, 2 ohm) injectors require a 4/1 amp driver.

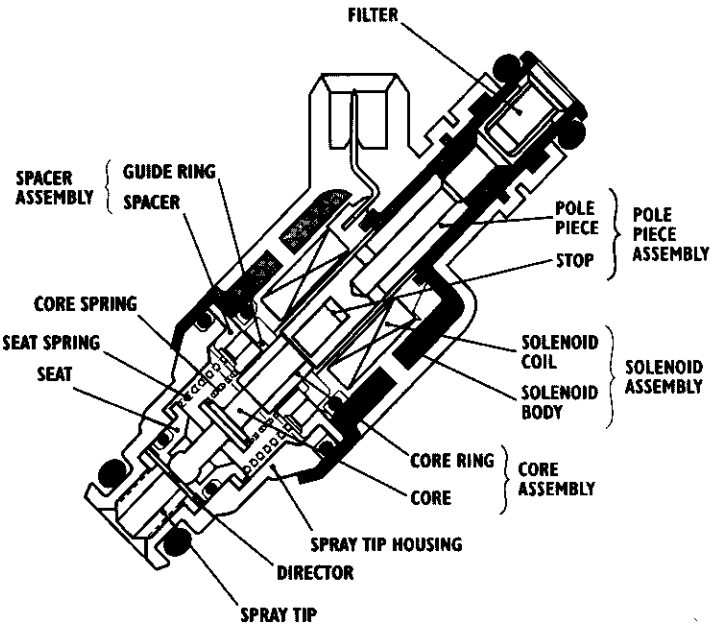
INJECTOR POINTS

A performance EFI system is only as reliable and powerful as its injectors. Elaborate management systems are useless if the injectors cannot accurately meter the fuel delivery on command.

MSD's Competition Fuel Injectors will control the fuel flow correctly and reliably every time. Each injector is engineered to racing specifications and are available in flow rates of engines ranging from 250 – 1,300 horsepower. The injectors are manufactured to handle the demands of high performance racing applications.

MSD COMPETITION FUEL INJECTORS FEATURE:

- Stainless steel ball and seat metering method creates maximum internal sealing.
- MULTEC metering design produces superior fuel charge flow for consistent fuel delivery at any rpm.
- Six hole injector metering orifice produces totally atomized and compact 10°-15° spray pattern.
- Fuel flow rates are set and calibrated during manufacturing to ensure precise flow rates.
- Recessed delivery holes resist fuel clogging and injector formation so no cleaning is required.



ADDITIONAL INFORMATION

ALCOHOL FUELS

MSD Competition Fuel Injectors are compatible with alcohol based fuels. When using 100% methanol, the entire fuel system should be flushed with mineral spirits or gasoline to purge the methanol after every race. Any residual methanol will harbor water that will corrode any part that isn't stainless steel.

The internals of MSD injectors will withstand long term use with alcohol fuels, but the external O-rings will swell after prolonged use. Keeping a few spare O-rings (PN 2100) is inexpensive replacement insurance. Remember, that using methanol fuel requires about twice the comparable fuel flow of gasoline. Therefore, double the injector size when determining the correct injector required.

BIGGER ISN'T ALWAYS BETTER

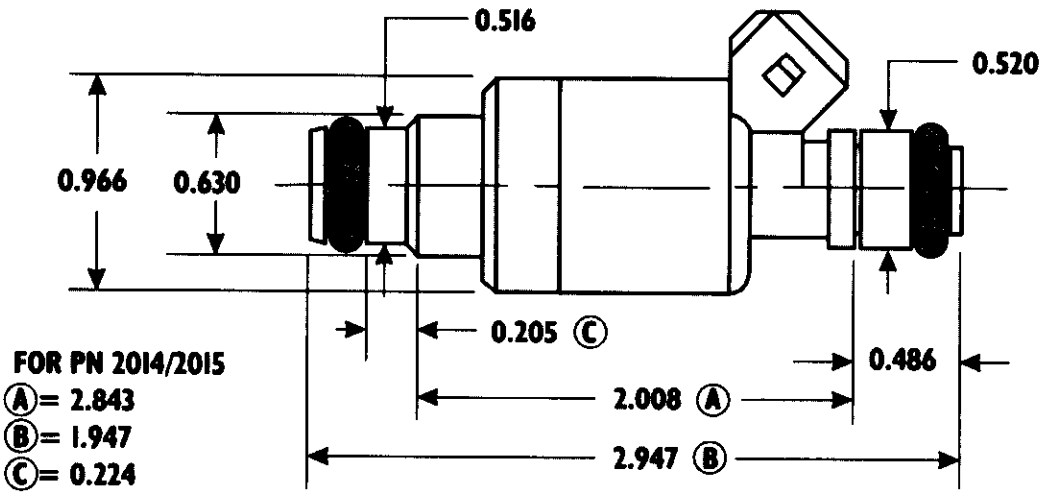
Stock, street driven EFI engines using an O_2 feedback, closed loop control system rarely exhibit a performance gain simply by installing higher flowing injectors. During closed loop operation, the stock ECU will try to adjust for the greater amount of fuel being delivered. If the replacement injector is not too large (about 10 - 20% greater flow at most) the ECU might be able to make the correct compensation. If the induction system has been left stock and the ECU cannot compensate for the increased fuel volume, unburned fuel will all but pour into the exhaust. This in turn will cause the Check Engine Light to come on, the catalytic converter could overheat and other problems will occur. In applications looking for just a little more performance it my be easier and more cost effective to raise the fuel system pressure to get a 10%-20% fuel flow increase at the injectors (see page 114).

Remember that installing larger flow injectors only has technical merit if substantial modifications have been made to the entire induction system. Plus, the stock ECU will undoubtedly have to be re-programmed for the increased injector fuel flow

BALANCING INJECTORS

There is some performance merit in matching or balancing injector flow rates among cylinders on a stock engine. MSD Competition Fuel Injectors have been balanced to a flow rate tolerance between individual injectors of the same static (wide open) flow rate of 1.5 - 3%. This close tolerance is particularly useful in high performance racing engines where maximum performance for each cylinder is required.

INJECTORS



The chart below lists all of the MSD Competition Fuel Injectors available. The static flow rates (pound per hour) are approximate with fuel pressure set at 43.5 psi (3-bar) and fuel specific gravity at 0.788. The flow rate tolerance between individual injectors of the same static flow is 1.5% -3%.

PN 2010	21 lb/hr	12V Saturated Circuit	12 Ohms
PN 2012	34 lb/hr	2/0.5A Peak & Hold	2 Ohms
PN 2014	72 lb/hr	4/1A Peak & Hold	2 Ohms
PN 2016	19 lb/hr	12V Saturated Circuit	16 Ohms
PN 2018	38 lb/hr	12V Saturated Circuit	12 Ohms

DIRECT REPLACEMENT INJECTORS

Some of MSD's Competition Fuel Injectors can be used with the factory electronic control modules. The following are a few recommended applications:

PN 2010 — **Replaces the secondary injector on ZR-1 Corvettes.**
PN 2011 — **This is a replacement for the GM Quad IV, 2.3L DOHC engine.**
PN 2016 — **A direct replacement injector for the GM 5.0L engine.**
PN 2016 — **For Ford 5.0L engines, this injector matches the stock flow rate.**
PN 2017 — **A replacement for Chevrolet 5.7L engines.**
PN 2019 — **Direct replacement to for earlier LT-1 engines.**

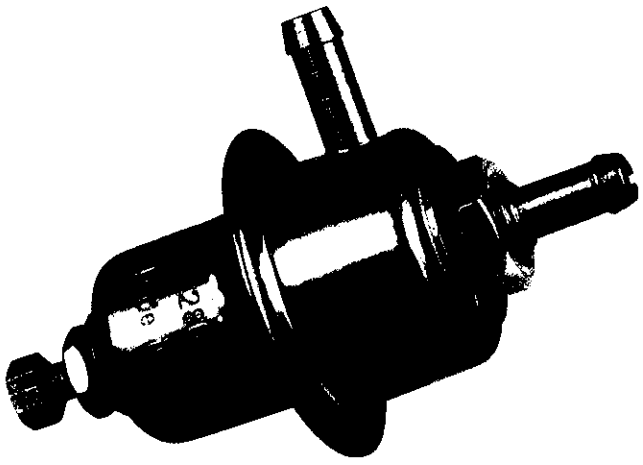
FUEL PRESSURE

Fuel pressure obviously plays a major role in the performance of your Electronic Fuel Injection system. Multiport injection systems require much higher fuel pressure than mechanical systems can supply and the pressure and volume must be consistent throughout the entire rpm range of your engine. To answer these needs, MSD offers a high output Electric Fuel Pump and Adjustable Regulators.

HIGH PRESSURE ELECTRIC FUEL PUMP

Multiport EFI systems require a stable fuel supply to maintain best performance throughout the engine's rpm range. This high pressure and high flow Fuel Pump features a roller vane pump mechanism which is extremely resistant to clogging and jamming. The pump mounts in-line (out of the fuel tank) with two supplied cushioned clamps for a quick and sturdy installation. The nipple inlet is 3/8" with a 5/16" outlet. The wire terminals feature brass studs for secure connections. Made in the USA, the pump is ideal for use as a "booster" for nitrous oxide applications, or as a stand alone pump for multiport EFI systems on engines up to approximately 500 HP.

High Pressure Electric Fuel Pump _____ PN 2225



PN 2220

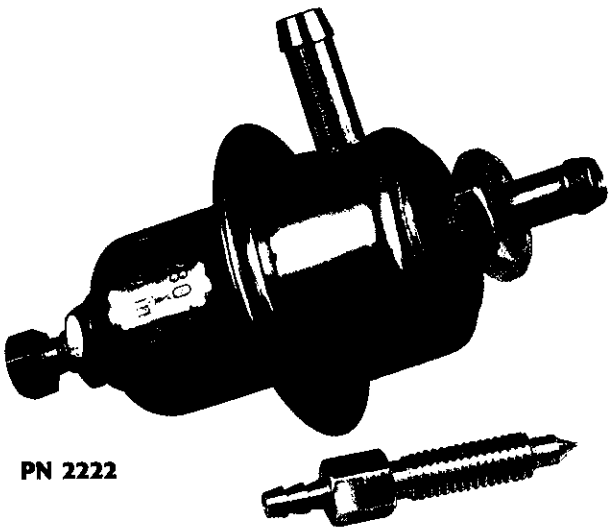
FUEL PRESSURE REGULATORS

Maintaining accurate fuel system pressure on any multiport EFI system is crucial to performance. MSD's Adjustable Fuel Pressure Regulators allow you to fine tune the fuel pressure to meet the demands of your engine and injection system.

Both Regulators are adjustable from 36-45 psi with a flow rate of 9.2-10.5 gal/hr. The inlet and outlets are 5/16" and a jam nut is supplied for special threads on the bottom to ease mounting to a bracket.

These rugged Regulators are free standing so they don't have to be mounted directly to a fuel rail and can be installed in any position. Fuel pressure is set with an adjusting bolt and is locked in position with a locking nut.

Fuel Pressure Regulator _____ PN 2220



PN 2222

BOOST ADJUSTABLE

This Regulator is designed for turbo or supercharged engines. As boost pressure increases, more fuel is required by the engine. This regulator features a boost reference circuit that adds more fuel in relation to boost pressure.

Boost/Fuel Pressure Regulator _____ PN 2222

MSD FUEL MANAGEMENT

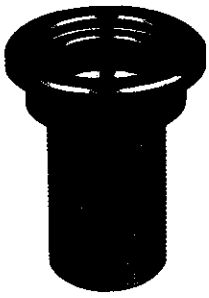
FLEXIBLE HOSE MOUNTING

If you prefer to route separate lines to each injector, commonly referred as Flexible Hose Routing, these Pockets, Mounts and Retainers are the ones you'll need.

INJECTOR MANIFOLD POCKETS

The correct mounting and sealing of each injector is just as important as the fuel delivery. When your intake doesn't have enough material to hold an injector you will need a pocket to hold the injector. For Flexible Hose installations, MSD offers a thread-in pocket along with an epoxy-in pocket to ease the installation of the injectors.

EPOXY-IN POCKET



This Pocket can be held in place with a strong epoxy or welding and is used for flexible fuel rail systems only. These Pockets are CNC-machined from aluminum for precision and have a 3/4" OD. Internally, the Pockets are contoured to accept the form and bottom sealing O-ring of an MSD Competition Injector. An interior O-ring is also supplied to absorb heat and vibration to protect the injector.

Epoxy-In Pockets, Set of 8 _____ PN 2145

THREAD-IN POCKET

If you prefer a thread-in style pocket for your Flexible Hose injection system, these Pockets will fill your needs. The aluminum pockets screw into a 3/4"–16 hole and are supplied with a #8 O-ring to seal the pocket to the manifold. There are also O-rings supplied to cushion the injector from vibration and excessive heat. The Pockets accept MSD's Injectors.

Thread-In Pocket, Set of 8 _____ PN 2150

90° FUEL DELIVERY TOP MOUNT

These Top Mounts are designed exclusively for Flexible Hose EFI systems. The brass mounts are CNC machined for accuracy within 0.001" and fit over the top O-ring of an MSD Competition Injector. An 1/8" NPT fuel hose fitting is required.

90° Fuel Delivery Top Mount, Set of 8 _____ PN 2135

STRAIGHT FUEL DELIVERY TOP MOUNT

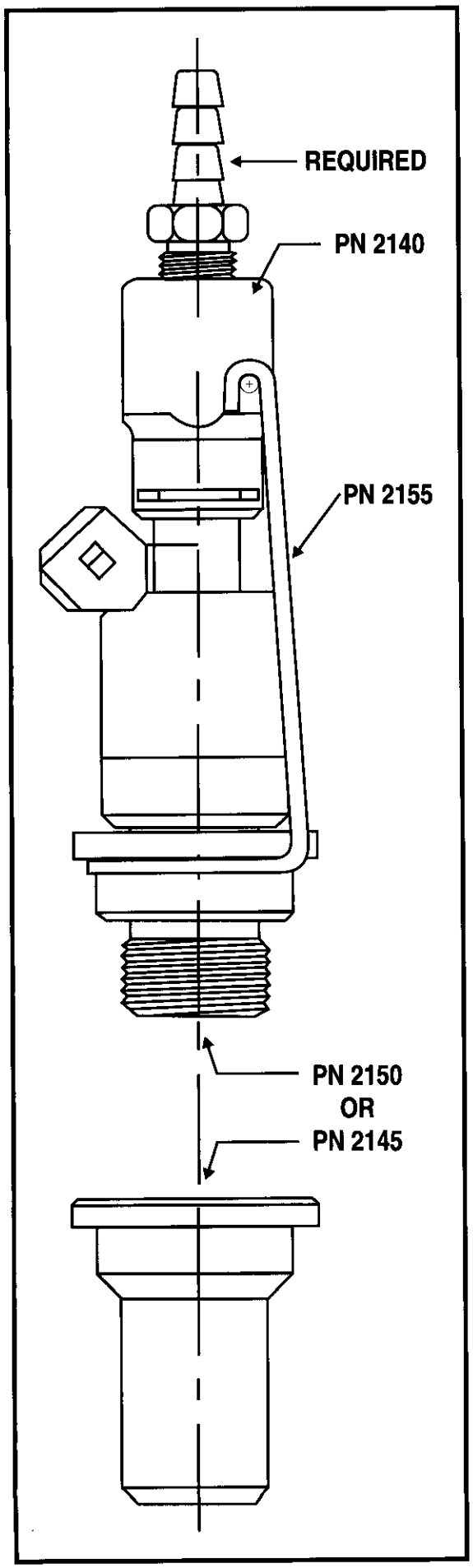
These Top Mounts accept an 1/8" NPT fuel hose fitting on top (180°) of the injector inlet. They are machined from brass and fit over the top O-ring of MSD's injectors. Designed for Flexible Hose injection systems only.

Straight Fuel Delivery Top Mount, Set of 8 _____ PN 2140

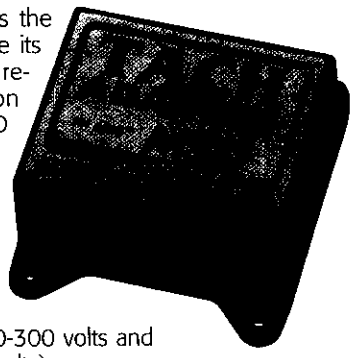
FREE STANDING RETAINING CLIP

These sturdy spring wire retaining clips hold a free standing injector securely to its manifold pocket. The Clips clamp to the seat of the manifold pocket and the top mount of Flexible Hose EFI systems to sandwich the injector in place.

Retaining Clip, Set of 8 _____ PN 2155
NOTE: Must be used with Manifold Pocket Kits PN 2145 or PN 2150.



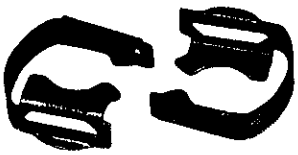
UNIVERSAL EFI/TACH ADAPTER



If your injection system uses the coil negative terminal to receive its trigger signal, this Adapter is required when an MSD Ignition Control is used. With the MSD installed, the coil negative terminal does not receive the trigger signal any more, therefore the ECU needs to go elsewhere to receive a trigger signal. This Adapter will supply the required signal and produces a spike voltage trigger signal that is 250-300 volts and 80 microseconds long (at 14 volts).

Universal EFI/Tach Adapter _____ PN 8920

INJECTOR FUEL RAIL RETAINER



These are the Retainers required with MSD's top mount fuel delivery adapters (PN 2115, 2135, 2140). They can also be used with many stock GM fuel rail systems.

Injector Fuel Rail Retainer, Set of 8 _____ PN 2105

EFI INJECTOR CONNECTOR

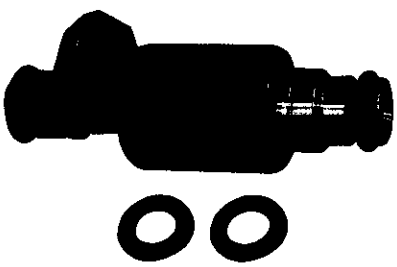
A reliable connection is imperative to the operation of your EFI system. These connectors feature a locking spring to firmly fasten the connector to the injector's plug. The injection molded nylon body withstands temperatures ranging from –40°F to 260°F. There are also inner and outter silicone seals to protect each terminal from underhood elements.

Injector Connectors, Includes 8 Connectors with 20 Pins _____ PN 2400

INJECTOR O-RING SEALS

These O-rings are formed of Viton, a fluoro-carbon material, and will resist high temperatures and chemicals. These are replacement seals for all MSD Competition Injectors and will also fit GM multiport injectors. Two are required per injector.

O-Ring Seals, Pack of 16 _____ PN 2100

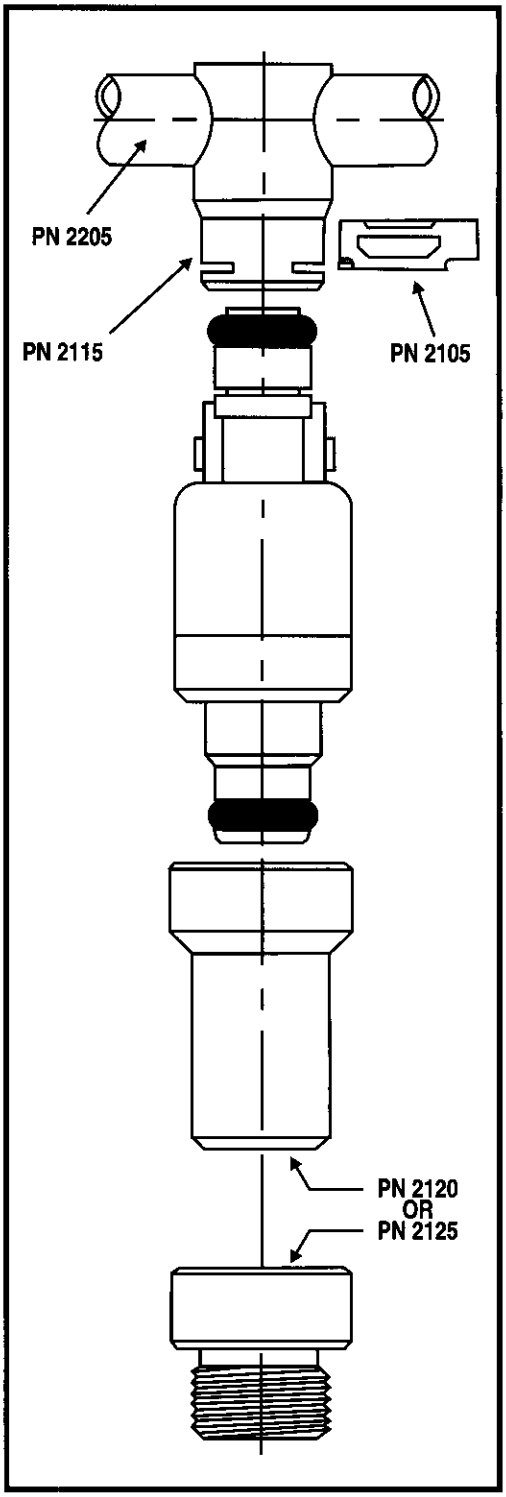


FIXED RAIL MOUNTING

When building a custom EFI system on your intake you can either route a separate fuel line to each injector or use a fixed fuel rail that all of the injectors connect to. This rail is generally mounted securely and is an ideal way to build you injection system. The following parts are all designed for Fixed Rail installations.

INJECTOR MANIFOLD POCKETS

The correct positioning and mounting of your injectors is just as important as getting fuel delivered to them. When your intake doesn't have enough material to hold an injector, such as with custom and sheet metal intakes, you will need a pocket to hold the injector. MSD offers a thread-in pocket along with an epoxy-in pocket to produce a secure and sealed injector mount.



EPOXY-IN POCKET

This Pocket can be held in place with a strong epoxy or welding and is used for fixed fuel rail systems only. These Pockets are CNC-machined from aluminum for precise dimensions and have a ¾" OD. Internally, the Pockets are contoured to accept the form and bottom sealing O-ring of an MSD Competition Injector.

Epoxy-In Pockets, Set of 8 _ PN 2120

THREAD-IN POCKET

If you prefer a thread-in style pocket, these ones will fill your needs. The aluminum pockets will screw into a ¾"–16 hole and are supplied with a #8 O-ring to seal the pocket to the manifold. The Pockets accept MSD's Injectors.

Thread-In Pocket, Set of 8 _ PN 2125

FUEL DELIVERY TOP MOUNT

These fuel delivery mounts are CNC machined from #304 stainless steel for great durability and precise dimensions. They slide over ½" steel tubing (MSD PN 2205) then are brazed or TIG welded in place to form a fuel rail. Fuel is routed through a 5/16" hole aligned to the mount and the injector. The PN 2105 Fuel Rail Clip is required for assembly.

Injector Top Mount, Set of 8 _ PN 2115
NOTE: Must use Retainer, PN 2105, page 117.

STAINLESS STEEL FUEL TUBING

This four feet length of 304 stainless steel tubing is perfect for making custom fixed rails. The seamless tubing has a ½" OD and .035" wall.

Fuel Rail Tubing, Two 4-Feet Sections _____ PN 2205

SENSORS

Electronic fuel management systems all rely on a variety of inputs from sensors to calculate the engine's requirements for fuel or timing while it is running. MSD offers a variety of sensors for custom EFI installations.

COOLANT TEMPERATURE SENSOR

Your engine's coolant temperature is one of the primary inputs for EFI management systems. This sensor produces a variable resistance from -40°F – 302°F ranging from 100K-50 ohms. It threads into a 3/8" NPT hole and is supplied with a matching 2-Pin connector, seals and terminals for reliable, positive locking connections.

Coolant Temperature Sensor ____ **PN 2310**

INTAKE AIR TEMPERATURE SENSOR

Installing this sensor in your air cleaner assembly or intake will relay the temperature of the air entering your engine. This information assists the ECU as it tries to produce an optimum air-to-fuel ratio for the engine. It is supplied with matching 2-pin connector and produces a variable resistance from 100K-50 ohms. It mounts in a 3/8" NPT hole.

Intake Air Temperature Sensor ____ **PN 2320**

OIL TEMPERATURE SENSOR

If you're ECU has the ability to monitor oil or fuel temperatures through a variable resistance sensor, this MSD Sensor is the right choice. The sensor threads into a 3/8" hole and will alter its resistance from approximately 100K to 50 ohms as temperatures vary from -40°F to over 300°F. Matching connectors are supplied.

Oil Temperature Sensor ____ **PN 2315**

TEMPERATURE SENSOR CONNECTORS

A pack of connectors used with MSD Temperature Sensors.

Pack of Three connectors with 10 terminals ____ **PN 2402**
Pack of Six connectors with 10 terminals ____ **PN 2401**

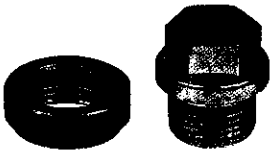
HEATED OXYGEN SENSOR

All EFI management systems monitor the oxygen content of the exhaust gases to calculate the fuel mixture. MSD's Heated Oxygen Sensor is a fast responding sensor to reliably deliver reference information to the ECU.

This sensor uses an internal heat supply to remain at a constant 1,300°F for less variance in producing important signals. This is also a benefit in that the sensor doesn't have to warm up and is active even when the engine is first started. The sensor is a direct replacement for factory mounting bosses.

Heated Oxygen Sensor ____ **PN 2330**
Note: For custom installations, Mounting Boss PN 2335 is required.

OXYGEN SENSOR MOUNTING BOSS



To install MSD's Heated Oxygen Sensor on custom applications you will need this Mounting Boss. A chromate coated plug to seal the boss is also supplied.

Oxygen Sensor Mounting Boss ____ **PN 2335**

MANIFOLD ABSOLUTE PRESSURE SENSOR

The pressure inside the intake manifold is an extremely important input to the ECU. This Sensor will respond to changes in manifold pressures and relay the information to the ECU in the form of a voltage signal ranging from about 1 volt to 5 volts. Several different versions are available for normal aspirated and engines with blowers.

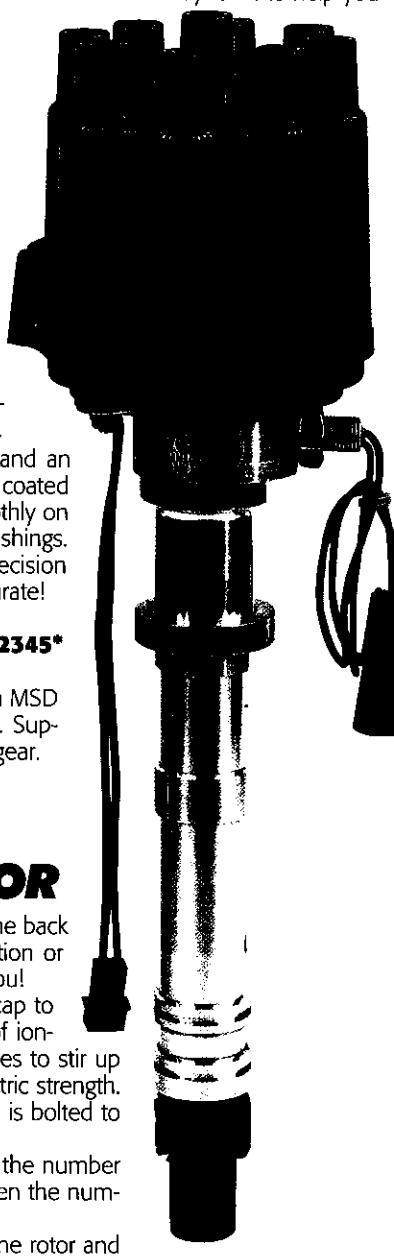
MAP Sensor, 1-Bar, normally aspirated applications ____ **PN 2311**
MAP Sensor, 2-Bar, for blown or turbo applications up to 20 lbs of boost ____ **PN 2312**
MAP Sensor, 3-Bar, for blown or turbo applications up to 30 lbs of boost ____ **PN 2313**

MSD

BILLET SYNC DISTRIBUTORS

Some aftermarket EFI management computers fire the fuel injectors in the same order as the engine's firing order. These EFI systems are called synchronization systems. In order for the ECU to know which injector should be fired it requires a signal to reference the number one cylinder which is known as the synchronization, or sync, signal. MSD offers two complete distributors and a Universal Sync Kit to help you get the right signals at the correct time.

ADJUSTABLE SYNC SIGNAL BILLET DISTRIBUTOR



This Billet Chevrolet Distributor features an adjustable Sync Pickup so you can set it to match your ECU's requirements (up to 60° BTDC). This Sync pickup uses a powerful rare earth magnet for strong trigger signals and the wiring is routed through a Weathertight Connector for positive locking, sealed connection.

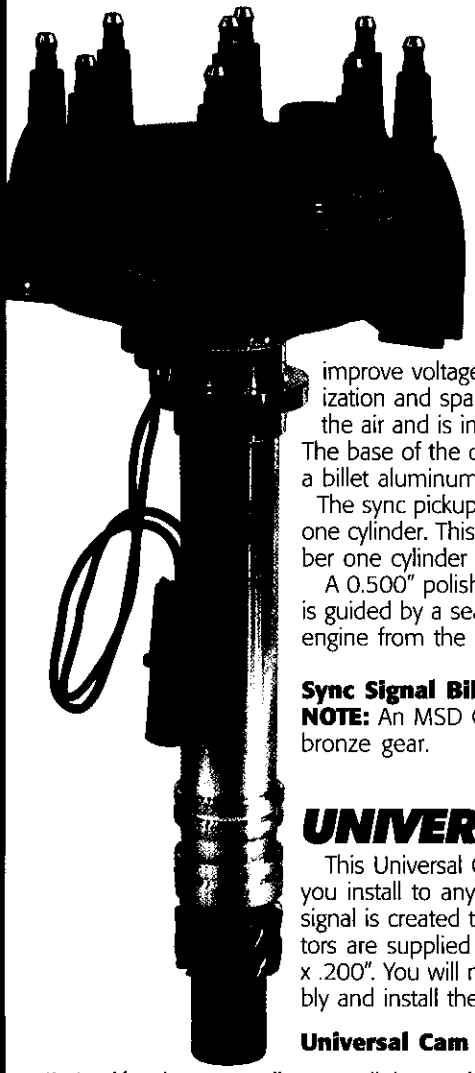
The Distributor housing is CNC machined from a billet of 6061-T6 aluminum creating a strong, precise housing. There is an adjustable slip collar on the housing that allows you to accurately set the distributor's installation depth in the engine. This feature is required for engines that have been decked or use modified heads.

An oversized steel shaft spins in a sealed ball bearing at the top of the housing and an extra long sintered bushing at the bottom for added stability. On top of this QPQ coated shaft is MSD's adjustable mechanical advance assembly. Precision weights slide smoothly on nylon bushings and the advance is easy to adjust with supplied springs and stop bushings.

To trigger the MSD Ignition, a high output magnetic pickup is signaled by a precision manufactured reluctor. This pickup never requires adjustment and is extremely accurate!

Adjustable Sync Signal Billet Distributor, Chevrolet V8 _____ PN 2345*

NOTE: Must be used with an MSD 6, 7, 8 or 10 Series Ignition. Supplied with a cap, rotor and gear.



CRANK TRIGGER SYNC DISTRIBUTOR

If your application has limited space in the back of the engine due to the intake combination or firewall, this low profile distributor is for you!

The distributor uses a wide, Ford style cap to improve voltage distribution and to reduce the chances of ionization and spark scatter. The rotor also features thick vanes to stir up the air and is injection molded from Rynite for high dielectric strength. The base of the distributor is also molded out of Rynite and is bolted to a billet aluminum housing.

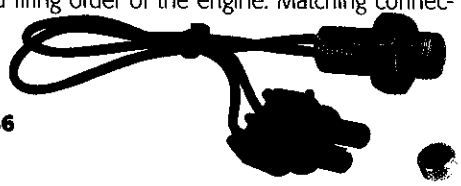
The sync pickup of this distributor is fixed at 45° BTDC on the number one cylinder. This signal will reliably alert your ECU as to when the number one cylinder is preparing to fire.

A 0.500" polished steel shaft is responsible for spinning the rotor and is guided by a sealed ball bearing guide and bushing. The distributor is ready to drop in your race engine from the bronze gear to the brass terminals of the cap.

Sync Signal Billet Distributor, Chevrolet V8 _____ PN 2340
NOTE: An MSD Crank Trigger and Ignition Control must be used. Supplied with a cap, rotor and bronze gear.

UNIVERSAL CAM SYNC PICKUP

This Universal Cam Sync Pickup Kit is supplied with a non-magnetic pickup and a magnet that you install to any part that operates at camshaft speed. When the magnet passes the pickup, a signal is created to alert the ECU of the position and firing order of the engine. Matching connectors are supplied and the magnet measures .250" x .200". You will need to fabricate a bracket assembly and install the magnet.



Universal Cam Sync Pickup Kit ____ PN 2346