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## Magnetti Marelli Installation Instructions

### Required Tools - Lubricants - Sealers:

- a. Assorted hand tools
- b. Assorted torx drivers
- c. Assorted allen wrenches
- d. Blue Loc-Tite

### Removal Procedures:

#### 1. Air Cleaner Assembly

- a. Remove allen head bolt located in the center of the air cleaner outer cover
- b. Remove the 4 torx screws and cover bracket from the air filter element
- c. Remove rubber tubes from the back side of the filter element; pull filter element and gasket from back plate
- d. Remove rubber tubes from the breather bolts on the back plate
- e. Remove breather bolts
- f. Pull back plate from the throttle body face (back plate gasket and breather bolt seal to be set aside)

***At this point, it is important to check TPS Voltage and document for re- installation. This will allow for correct tuning.***

#### 2. Horn Assembly

- a. Remove center bolt and washer from horn bracket
- b. Disconnect both wires from back side of horn assembly
- c. Disconnect the fuel lines from the gas tank, located on the left side bottom of the gas tank To do this, push up on the chrome ring on the bottom of the tank, This will allow the fuel line to be pulled down out of the tank, Some models will have a threaded connection. To do this you will have to locate the cross over tube in front of tank, pinch off right side and disconnect left side to let fuel drain out of tank. Do this by placing a rubber hose on the left side male fitting letting fuel drain into a container. After this is done remove the fuel tank.

#### 3. Throttle Body an Intake Manifold Assembly

- a. Disconnect wires from the throttle position sensor (left side front of the throttle body)  
Incoming Air Temperature Sensor (left side rear of the throttle body)  
IAC Module Wiring (top front of the throttle body)  
Fuel Injectors (top of intake manifold)  
**- Move these parts out of the work area**
- b. Loosen both throttle cable adjustments up at the handle bar, screw both adjusters in to give as much free play as possible, remove both cable ends from the cable wheel and remove them from the throttle cable bracket, the front cable has a small spring wound around the cable inside the bracket and will need a small screwdriver to pick it up out of the cable pocket.  
**- Move cables out of the work area**
- c. Loosen and remove both right side bolts holding the intake manifold to the cylinder heads
- d. Loosen both left side bolts holding the intake manifold to the cylinder heads, only loosen these until there is approximately 3/16" gap between the intake flange and the bottom of the bolt head
- e. Lightly move the throttle body up and down till the seals break free. Then remove the assembly from between the cylinders (pay close attention to fuel line routing at this time)
- f. While not working on the engine during change over of electronics, cover both the intake openings on the cylinder heads to keep foreign material out of the intake runners

## Installation Procedures:

### 1. IAC Installation- DO NOT REMOVE IAC ARM FROM THROTTLE BODY

- a. If stock unit is equipped with a folk style IAC, removal of the IAC mounting bracket is required. Once again, do not remove the arm from the Horsepower Inc. throttle body. After determining style, you will need to do one of the following:

#### **Fork Style Instructions**

- Remove IAC Motor by removing the two bolts on top of the factory unit. Remove O-ring retainer at end of IAC fork clip. Change the supplied blade style to the factory folk style extension piece. Be sure to re-install O-ring retainer on the end of extension.

-Mount the IAC into the IAC bracket using two factory bolts with the **Blue Loc-Tite** and torque to factory specs

#### **Blade Style Instructions**

- Does not require re-use of factory component

- At an angle, slide IAC under and up into blade extension

- Attach the unit using the two supplied factory bolts using Blue Loc-Tite and torque to factory specs.

### 2. Incoming Air Temperature Sensor

- a. Place gasket over opening and install sensor thru opening with the electrical connection facing towards the intake manifold. Tighten both bolts at this time using **Blue Loc-Tite**.

### 3. Throttle Position Sensor

- a. With the throttle plate in the closed position, hold it in that position by inserting a finger into the venturi. Place throttle position sensor onto the throttle shaft with the electrical connection at the top, it was originally placed on the stock throttle body with the electrical connection on the bottom but due to the amount of wire needed, it may be too short. Some models have adequate wire to mount in factory position, if so disregard and mount in downward position. Tighten both bolts at this time using **Blue Loc-Tite**, once again If there is additional slack in the wiring harness TPS sensor may be installed at the factory position with the plug wires facing down. Do not fully tighten bolts as TPS voltage will need to be set after installation of Horsepower Inc. throttle body.

### 4. Fuel lines, injectors, pressure regulator

- a. HPI MMI units come with pre-installed upgraded fuel pressure regulator (do not re-use stock unit), slide pressure regulator thru retainer bracket, then into intake manifold, use supplied spacer and nylock nut, tighten till bracket becomes snug, then tighten an additional quarter turn.
- b. Apply light film of oil to injector O-rings, install in new manifold, using slight twisting motion to avoid cutting O-rings
- c. Apply light film of oil to fuel supply bungs, install into manifold using manifold using slight twisting motion to avoid cutting O-rings, once installed and seated properly re-install supplied ¼ -20 nut and lock washer.

### 5. Installation of Throttle Body and Intake Manifold

- a. When the throttle body and intake manifold are positioned onto the head mounting screws, be sure that the flanges and seals are correctly installed. They are stamped F for the front cylinder and R for the rear cylinder. Place throttle body assembly in place and tighten screws finger tight.
- b. Install the throttle cables and adjust for full throttle and complete return positions, throttle body must operate freely
- c. Connect fuel injectors, IAC module, incoming air temperature sensor, throttle position sensor wiring at this time
- d. Make sure throttle body is level vertically and then tighten mounting bolts
- e. At this time install fuel tank
- f. Re-install factory fuel lines to fuel tank locations

### 5. Install Horn Assembly

- a. Attach both wiring leads to horn assembly
- b. Place horn over bolt on bracket; install washer and nut (use **Blue Loc-Tite**)

## Idle Circuit Setup:

### 1. Throttle Position Voltage

- a. The three leads connect to the throttle position sensor are as follows:  
Black/ White: Ground  
Red/ White: Sensor five volt power supply  
Grey/ Violet: Signal voltage to the ECM  
**-Reset the TPS voltage reading to previously documented factory setting.**

### 2. ECM Stepper Motor Count "Zero Set" Location

- a. Locate the 5 and 15 amp fuses that regulate the voltage to the ECM module. They will be located either under the seat, or behind the right side panel, depending on model. Remove the fuses from the fuse block, and wait 15 minutes for the ECM capacitor to discharge its voltage. After 15 minutes, the ECM will signal that the IAC Stepper Motor must "Zero Set" itself once again. At this point, cold idle can be adjusted by set- screw on cable wheel assembly (IN= High Idle, Out = Lower Idle).

*Depending on the model and year, the cold and hot step time will be between three and six minutes. Once hot idle has been achieved, the normal set down time is one minute or less.*

### 3. Air / Fuel Ratio Adjustment

- a. Refer to electronics manufacturer for details, adjust air/ fuel ratio. Proper air/ fuel ratio is critical to product effectiveness.

#### Install Air Cleaner Assembly

- a. With the basic plate and breather bolts already installed, insert the two breather tubes onto the breather bolts
- b. Place breather tubes into the filter element, place gasket between back plate and filter element, align mounting holes and install the three mounting bolts with the air cleaner cover bracket on the element face
- c. Install the air cleaner cover using its allen head bolts

### 4. Testing Procedure

- a. After installing the throttle body and intake assembly, horn assembly and air cleaner assembly, attention must be noted to make sure that the **throttle** is in working order, having a smooth opening and returning action, and that there are no air leaks present. At this time, perform an air leak test with the bike in neutral.

**Start the engine and allow to idle** (First time start-up may require feathering of throttle to maintain idle until cold idle calibration screw on cable wheel is set). Spray silicone on the areas where the intake manifold meets both front and rear cylinders, if the engine **Tone** or **RPM** drops after being sprayed an air leak is present and will cause damage to the engine if not corrected.

At this time, cold **RPM** is made adjustable by the set screw on the cable wheel assembly, not on the face of the throttle body. Clockwise adjustments of the screw will raise cold idle, counter clockwise will lower idle.

**Note: 1.800 Intake Runner Diameters require S&S Seals - Part# 16-0243**

## Warning

**Gasoline is extremely flammable and explosive under certain conditions and toxic when breathed. Do not smoke. Perform installation in a well vented area away from open flames or sparks.**

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