

CONTINENTAL
CONTROLS
CORPORATION



ISO 9001 Certified

Mixing Venturi Inserts

VMI-200, 400, 600

Patents Pending

Carburetor Inserts For Mixing Air and Fuel to Gas Engines

GENERAL DESCRIPTION

The Continental Controls Mixing Venturi Insert is a device designed to replace the spring mass, diaphragm actuator and mixing bowl apparatus in existing Impco 200, 400 and 600 gaseous fuel carburetors. These inserts can be useful on Single or Dual Bank Gas Engines running in either rich or lean burn modes. By adding the Mixing Venturi Insert, Gas Valve Jet and Mixing Module in the Carburetor, the operator will be able to reduce emissions and very likely, reduce fuel consumption.

The Mixing Venturi Inserts should be used in conjunction with the ECV5 Emission Control Valve or other air fuel ratio controller. Each insert is designed and sized for a specific size of carburetor such that it is simple to install by replacing existing components in the carburetor with the appropriate insert.

APPLICATIONS

RICH-BURN ENGINES - The combination of the Venturi and the ECV5 constitutes a true electronic carburetor for natural gas engines, and when used with an O₂ sensor in the exhaust, it is an ideal device to maintain a Stoichiometric fuel mixture required for use with a 3-way catalytic converter.

LEAN-BURN ENGINES - The ECV5 and Venturi are also for use with lean-burn engines. In this application, a wide range O₂ sensor is used with the ECV-5 and the Venturi to maintain a constant lean mixture, or Lambda. The mixture can be programmed to change with the load signal if required. The wide range O₂ sensor is provided by CCC as a part of the system.

WHY IT WORKS SO WELL

Most carburetors include an air/fuel mixing section that is comprised of a spring mass diaphragm actuator which has the potential to create unstable engine performance due to interaction with the upstream pressure regulator. Mixtures in these carburetors between idle and full-load are controlled by the shape of the gas metering valve. These fuel valves that are included in the carburetor are designed to produce lean mixtures at light loads and increasingly rich mixtures at heavier loads and higher engine speeds. This fuel profile (lean to rich) will cause any air fuel controller that is controlling simply on the oxygen sensor, to constantly chase load changes. By replacing the original diaphragm and mixing module with the venturi insert, the fuel profile will become flat with the desired mix of air and fuel throughout the load range. If there is a large load change the Venturi will automatically accommodate the change by allowing just the correct amount of fuel for the amount of air to the engine. No mechanical action is required to make this fuel adjustment.

FEATURES:

REPLACES DIAPHRAGM
ACTUATOR AND MIXING BOWL

SIMPLE INSTALLATION

CONSISTANT FUEL PRESSURE
AT ALL LOADS

MIXES FUEL-AIR

NO MOVING PARTS

BENEFITS:

REDUCED MAINTAINENCE

REDUCED EMISSIONS

SUPERIOR MIXING

IMPROVED ENGINE STABILITY

LESS PRESSURE DROP

REDUCED FUEL
CONSUMPTION

DESIGN FEATURES

IMPROVED MIXING

Traditional Gas Carburetors introduce the fuel into the center of the air stream from a single location. This can create a lean mixture at the outer edges of the flow stream and a richer mixture in the center. This can make it more difficult for the engine to completely burn all of the incoming fuel, which often results in higher exhaust emissions and a reduction in horsepower. The Mixing Venturi Insert has a multitude of fuel inlet vanes and passages evenly dispersed throughout the low-pressure region of its throat. The fuel is more evenly distributed across the flow profile resulting in a homogenous air/fuel mixture entering the engine. The exhaust emissions are lower, easier to control, and the engine runs more efficiently.

MECHANICAL DIMENSIONS

The Venturi Inserts are available in three different basic sizes. VMI-200 will fit Impco 200 Carburetors. The VMI-400 will fit Impco 400, and the VMI-600 will fit the Impco 600 carburetors. The hardware required to mount the insert will be provided as part of the insert kit.

INSTALLATION

Installation of the Venturi Mixing Inserts is so simple that many times it can be accomplished with the carburetor still mounted to the engine. The user will have to remove the hood to the carburetor, the cover and then the diaphragm spring assembly. These are then replaced with the Venturi inserts, the new cover, and eventually the hood. No plumbing or flanges will need to be reworked to accommodate the changes.

DESCRIPTION OF THE CUT-AWAY

The carburetor pictured is the Impco 600VFD. This dual carburetor requires two venturi inserts to replace each of the diaphragm actuators.

The Mixing Venturi Insert has been designed such that the original Power Mixture Adjustment on the carburetor will become the mixture screw for the venturi insert which will allow the user to adjust the fuel inlet pressure to be nearly the same at all engine loads. Ideally, this operating fuel pressure will be in the 1" to 2" of H₂O over Air inlet throughout the entire load range.

WARNING

The carburetor with a diaphragm normally provides for one last gas shutoff. With the diaphragm removed, this final shut off has been eliminated. The user will be responsible for insuring that the control system has the ability to reliably shut off all fuel to the engine.



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