State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-197
Relating to Exemptions under Section 27156
of the Vehicle Code

P.A.C.E. SETTERS OF AMERICA
"VITALIZER" DEVICE

WHEREAS, Vehicle Code Section 27156 and Title 13 California Code of Regulations (hereafter "CCR") Section 2222(e), authorize the California Air Resources Board (ARB) and its Executive Officer to exempt add-on and modified parts from the prohibitions of Vehicle Code Section 27156.

WHEREAS, P.A.C.E. Setters of America has applied to the ARB for exemption from the prohibitions of Vehicle Code Section 27156 for the "Vitalizer" device.

WHEREAS, pursuant to the authority vested in the Executive Officer by Health and Safety Code Section 39515 and in the Chief, Mobile Source Division by Health and Safety Code Section 39516 and Executive Order G-45-5, the Air Resources Board finds:

1. "Vitalizer" device is an add-on device that is attached to the fuel line in a motor vehicle.

2. "Vitalizer" device is intended for use with a required motor vehicle pollution control system.

3. "Vitalizer" device by being installed in the engine alters the original design of a motor vehicle pollution control system.

4. "Vitalizer" is a device subject to the prohibitions of Vehicle Code Section 27156 and an add-on part as defined by 13 CCR Section 1900(b)(1).

5. "Vitalizer" device does not reduce the effectiveness of any required motor vehicle pollution control device.

6. The ARB in the exercise of technical judgement, is aware of no basis on which the "Vitalizer" device will provide either a decrease in exhaust emissions or an increase in fuel economy.

7. It has not been determined what effect the use of "Vitalizer" device may have on any warranty, either expressed or implied, by the manufacturer of a motor vehicle on which the device is installed.

8. "Vitalizer" device is not a certified motor vehicle pollution control device pursuant to Health and Safety Code Section 43644.

9. The ARB by granting an exemption to P.A.C.E. Setters of America for the "Vitalizer" device does not recommend or endorse in any way the "Vitalizer" device for emissions reduction, fuel economy, or any other purpose.

IT IS HEREBY RESOLVED that the "Vitalizer" device is exempt from the prohibitions of Vehicle Code Section 27156 for installation on 1990 and earlier model year gasoline and diesel powered vehicles subject to the following conditions:

1. This exemption shall not apply to any device, apparatus, or mechanism advertised, offered for sale or sold with, or installed on, a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

2. No changes are permitted to the device as described in the staff report. Any changes to the device applicable model year, or other factors addressed in this Executive Order must be evaluated and approved by the ARB prior to marketing in California.

3. Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the ARB. Exemption of this product shall not be construed as an exemption to sell, offer for sale, or advertise any component of the product as an individual device.

4. Any oral or written references to this Executive Order or its content by the P.A.C.E. Setters of America, its principals, agents, employees, distributors, dealers, or other representatives must include the disclaimer that the Executive Order or the exemption it provides is not an endorsement or approval of any fuel economy or emissions reduction claims for "Vitalizer" device and is only a finding that the device is exempt from the prohibitions of Vehicle Code Section 27156.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after hearing that grounds for revocation exist.

Executed at El Monte, California, this 28th day of October, 1989.

K. D. Drachand, Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF P.A.C.E. SETTERS OF AMERICA'S "VITALIZER" DEVICE FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

October, 1989

EVALUATION OF P.A.C.E. SETTERS OF AMERICA'S "VITALIZER" DEVICE FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division

State of California
Air Resources Board
9528 Telstar Avenue
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

P.A.C.E. Setters of America (PACE), of 1705 West University, Suite 2, Tempe, Arizona 85281, has applied for exemption from the prohibitions in Section 27156 of the California Vehicle Code for their "Vitalizer" device. The device is designed for installation on 1990 and older model year gasoline and diesel powered vehicles.

Previously the Air Resources Board (ARB) exempted four similar devices: the "Moleculator Fuel Energizer" and the "Fuel Dominator" by Internal Energy Management Corporation, the "Top Eliminator" by Top Eliminator, Inc., and the "Fuel-Cat" by Fuel-Cat, Inc. Based on the engineering evaluation of the devices and exemptions issued for the devices that operate in a manner similar to the Vitalizer, the staff believes that the Vitalizer will not have any adverse effects on the exhaust emissions from gasoline and diesel powered vehicles.

The staff recommends that the Vitalizer device be exempted from the prohibitions in Vehicle Code Section 27156 and that Executive Order D-197 be issued.

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I. INTRODUCTION

P.A.C.E. Setters of America (PACE), of 1705 West University, Suite 2, Tempe, Arizona 85281, has applied for exemption from the prohibitions of Section 27156 of the California Vehicle Code for their "Vitalizer" device. The device is designed for installation on 1990 and older model year gasoline and diesel powered vehicles.

The applicant submitted drawings and specifications of the device for our evaluation.

II. CONCLUSION

Previously the Air Resources Board (ARB) exempted four similar devices: the "Moleculator Fuel Energizer" and the "Fuel Dominator" by Internal Energy Management Corporation, the "Top Eliminator" by Top Eliminator, Inc., and the "Feul-Cat" by Fuel-Cat, Inc. Based on the engineering evaluation of the devices and the exemptions issued to the devices that operate in a manner similar to the Vitalizer, the staff believes that the Vitalizer will not have any adverse effects on the exhaust emissions from gasoline and diesel powered vehicles.

III. RECOMMENDATION

The staff recommends that PACE be granted an exemption from the prohibitions in California Vehicle Code Section 27156 for their Vitalizer device and that Executive Order D-197 be issued.

IV. DEVICE DESCRIPTION AND OPERATION

The Vitalizer device is a cylindrical shape device with a core of metal alloy. The metal alloy is composed of copper, tin, zinc, iron, nickel, and silver. The device is narrowed on both ends in order to match

the fuel lines. The Vitalizer is 5 inches long with the core length of 2.25 inches, and an inner core diameter of 5/8 inches. The Vitalizer installation instructions and drawings are shown in Appendices A and B, respectively.

The device is installed in series with the vehicle fuel line. According to the applicant when fuel passes through the device, the electrical interaction of dissimilar metals causes ionization of the fuel. The ARB did not perform any testing on the device to verify this. It is the staff's opinion that the technical principles underlying the stated function of the device are not capable of producing any effects on emissions and fuel economy.

V. DISCUSSION

Previously the ARB exempted four similar devices: the "Moleculator Fuel Energizer" and the "Fuel Dominator" by Internal Energy Management Corporation, the "Top Eliminator" by Top Eliminator, Inc., and the "Fuel-Cat" by Fuel-Cat, Inc. Because of the previous exemptions issued to similar devices with the same operating principle and the fact that qualifying for an exemption is based on not adversely affecting exhaust emissions, the staff recommends that PACE be granted an exemption as requested.

APPENDICES

INSTALLATION

The Vitalizer is currently available in two sizes. The two units currently available will accommodate all passenger vehicles, small/medium pickup trucks, delivery units, service vehicles, and earth moving equipment.

The determining factor for installation is the diameter of the fuel line leading to the fuel pump. In standard production we currently have readily available:

P/N	Sizes	Application
~~G.D. 33S~~	~~5/16"~~	~~Compact, medium import, gas/diesel 4 and small 6 cylinder engines.~~
G.C. 34M	3/8"	Medium to large passenger vehicles; delivery-size trucks, gas/diesel.

Installation is easily accomplished for the small and medium size units.

On vehicles with carburetors, the unit is installed between the fuel pump and the carburetor in the fuel line.

On vehicles with fuel injection, either gas or diesel, the unit should be placed in the fuel line as close to the actual injectors as possible.

IMPORTANT NOTE: IN SELECTING THE LOCATION, PLEASE ENSURE THAT THE UNIT IS NOT TOUCHING OR RESTING ON ANY METAL SURFACES. (IF GROUNDED THE VITALIZER WILL NOT WORK.)

General Installation

Rubber Fuel Lines (Illustration #1) and Metal Fuel Lines (Illustration #2) will cover the majority of installations.

Teflon Fuel Lines applications are given in Illustration #3 and requires a slip fitting reinforcement that goes inside the teflon line to keep it from collapsing, when tightening the screw clamps, tighten at the connections.

Sizes

Vitalizer		Teflon Line
3/8"	on	5/16"
5/16"	on	1/4"

Steel Braided Fuel Lines are covered under Illustration #4 and is used primarily on 1988 & 89 Chevrolet & G.M.C. V/8 Pick-ups.

The most important step on all the above installations is the last one,

"Check for Leaks."

PACESETTERS is not liable because of faulty installations.

Automobile Installations

Standard Information

(a) On vehicles with carburetors, your pressure will be 4 PSI to 12 PSI. (PSI = Pounds per Square Inch).

(b) Automobiles having a fuel injection system will have pressures of 15 - 100 PSI. (Use Gates, Aero Quip, etc. fuel lines that are rated at 250 lbs. constant and 1,000 burst pressure.

(c) Clamps - use a standard, U.S. made 3/8", screw-down mini-clamp.

(d) Vitalizer units should be placed as close to the point of use (no more than 12") as possible.

(e) After installation, check all connections to insure that there are no leaks.

(f) Size of the Vitalizers are either 3/8" or 5/16", which is determined by the existing fuel line size. The 3/8" Vitalizer casing is 3/4" longer than the 5/16".

(g) It is impossible to put too large a unit on a vehicle. If in doubt, use the larger car unit and reduce the unit down to the fuel line size by using two step menders, which are available at PACESETTERS.

(h) Make sure that the unit is not grounded.

(i) Before installation, clean out the Vitalizer with either water or gasoline, and blow through the unit to insure that all foreign objects are out.

(j) On vehicles with fuel injection, the Vitalizer must be put on the in-flow fuel line rather than the return fuel line. If you are unsure which is the in-flow line, see your mechanic for instruction.

(k) The Vitalizer is an easy installation if you have the proper tools and a little mechanical aptitude. However, we recommend that you establish a good rapport with a local mechanic that can and will work with you for future installation(s).

(l) In selecting a rubber fuel line hose to use for connections, be sure that the connecting line does not use graphite in the construction of the hose. (This causes grounding and will weaken the performance of the Vitalizer). Gates, Aero Quip and Dayco do not use graphite. (Fuel Rate - 250 P.S.I. hose).

Automobile Installation Information

Listed below are seven installation situations and suggested methods:

1.) Standard Installation (Illustration #1) - Rubber Fuel Line. Place the Vitalizer as close to the carburetor as possible.
   (a) Before installation, clean out the Vitalizer with either water or gasoline, and blow through the unit to insure that all foreign objects are out.
   (b) Cut the rubber fuel line.
   (c) Place two clamps on both ends of the rubber fuel line.
   (d) Insert the Vitalizer into the two ends of the cut rubber fuel line.
   (e) Tighten the clamps.
   (f) Watch the unit for 5 minutes, while the vehicle is running to ensure that there are no leaks.
   (g) On vehicles with fuel injection, the Vitalizer must be put on the in-flow fuel line rather than the return fuel line. If you are unsure which is the in-flow line, see your mechanic for instruction.

2.) Metal Line (Illustration #2)
   (a) Before installation, clean the Vitalizer with either water or gasoline, and blow through the unit to insure that all foreign objects are out.
   (b) Use tube cutters to cut the metal fuel line, making sure that you are cutting the correct line. (See General Instruction).
   (c) Make sure there are no loose metal shavings in the cut line.
   (d) Make sure that you have not restricted the flow within the metal line. It may be necessary to take a small hone to clean the cut surfaces inside of the line.
   (e) Securely clamp a rubber hose to each end of the Vitalizer with good clamps. Use a rubber hose that will fit snugly over the line. (For fuel injection systems be sure to use flexible high-pressure hose - Gates, Aeroquip, etc.; rated at 250 lbs., constant and 1,000 lbs. burst pressure.)
   (f) Slide the rubber line over the metal fuel line and attach securely with two screwclamp on each end.
   (g) Watch the unit for 5 minutes while the vehicle is running, to ensure that there are no leaks.
   (h) On vehicles with fuel injection, the Vitalizer must be put on the in-flow fuel line rather than the return fuel line. If you are unsure which is the in-flow line, see your mechanic for instruction.

3.) Teflon Line (Illustration #3)
   (a) Before installation, clean out the Vitalizer with either water or gasoline, and blow through the unit to insure that all foreign objects are out.
   (b) Cut the teflon line.

(c) Insert slipfittings, as in Step #2, into each end of the teflon cut line. A slipfitting is merely a metal insert that goes inside the fuel line that permits you to use clamps to tighten, making the teflon line ridged so that you may treat the teflon line as a metal line.

(d) Securely clamp a rubber fuel line hose to each end of the Vitalizer with good screwclamps. (The rubber line must be able to slip over the outside of the teflon line.

(e) Slide the rubber line over the teflon line and attach securely with a clamp on each end, making sure that the clamp is tightened down on the portion of the teflon line that has the ridged sleeve. PACESETTERS has slipfittings $1.00 for both the 3/8" and 5/16" sizes.

4.) <u>Steel Braided Lines</u> (Illustration #4)

Fittings for steel braided lines may be difficult to find in your area. If so, you may obtain complete ready-made fittings from PACESETTERS for $12.95/ea. Merely send in your existing Vitalizer along with $12.95 (plus taxes, shipping and handling). All you need to do is make two screwed-in connections and your installation is complete. This will also minimize the installation charge. If you do not obtain the ready-made fittings from PACESETTERS, follow the following steps:

(a) Obtain a male and female fitting the same size as the steel braided line fittings.

(b) Insert these fittings into a rubber line (approximately 6" long) using the clamps to secure these fittings to the rubber fuel line.

(c) Cut the rubber fuel line in the middle.

(d) Screw the fittings into their proper place (steel braided line and metering block).

(e) Place a screwclamp on each end of the cut rubber fuel line.

(f) Insert the Vitalizer into either end of the cut rubber fuel lines.

(g) Tighten clamps securely:

(h) Watch the unit for 5 minutes, while the vehicle is running to ensure that there are no leaks.

(i) See general instructions to determine which is the return fuel line and which is the charged fuel supply line.

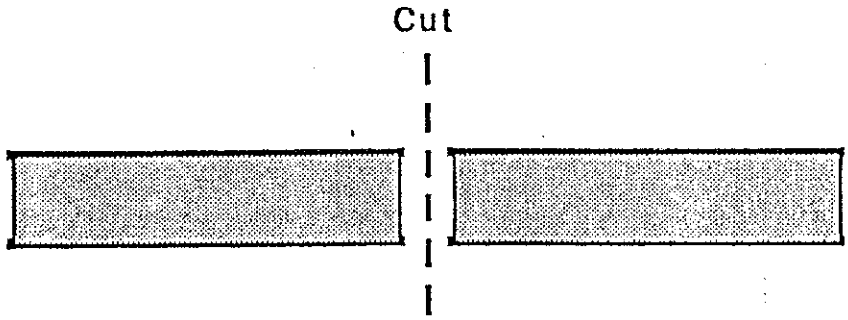
5.) Step Menders - available from PACESETTERS at $3.75/pair . The step menders will allow you to use a large Vitalizer on small car fuel lines.

Vehicles with a Carburetor and Rubber Fuel Line

Illustration #1

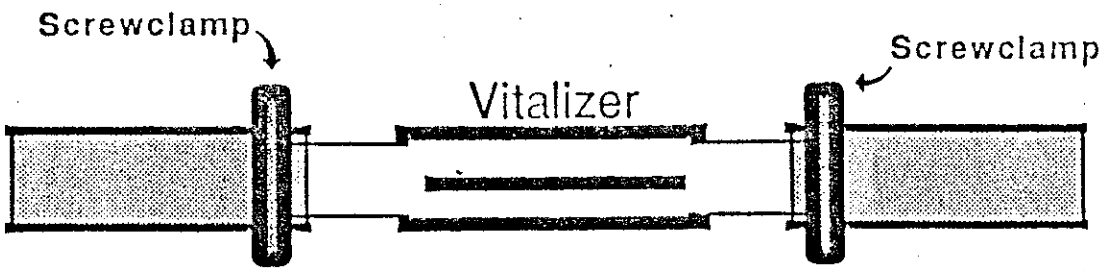
Step #1

Cut rubber fuel line no more than 12 inches from carborator.



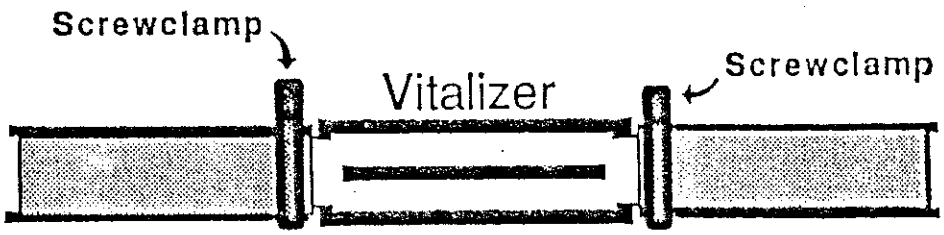
Step #2

Place screwclamps on each end of cut fuel line. Insert Vitalizer into rubber fuel line.



Step #3

Tighten Clamps.



Step #4

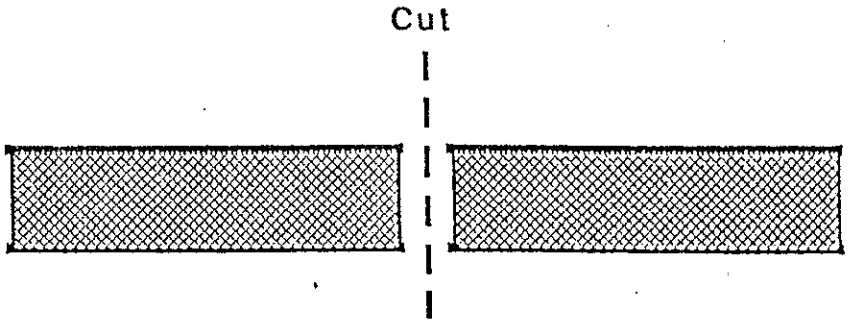
Check for Leaks.

Metal Fuel Line

Illustration #2

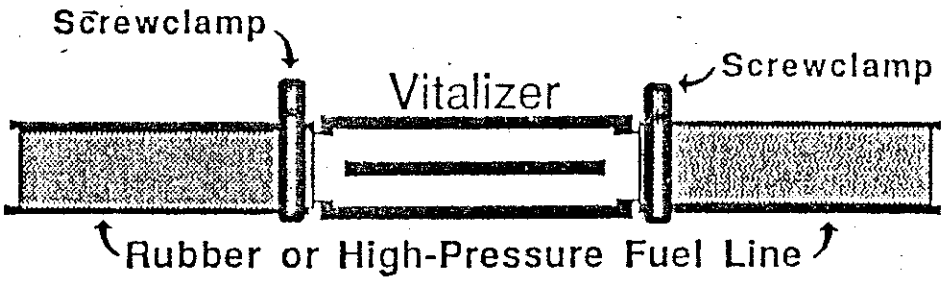
Step #1

Cut with tube cutter. Make sure the cut ends are cleaned of metal shavings.



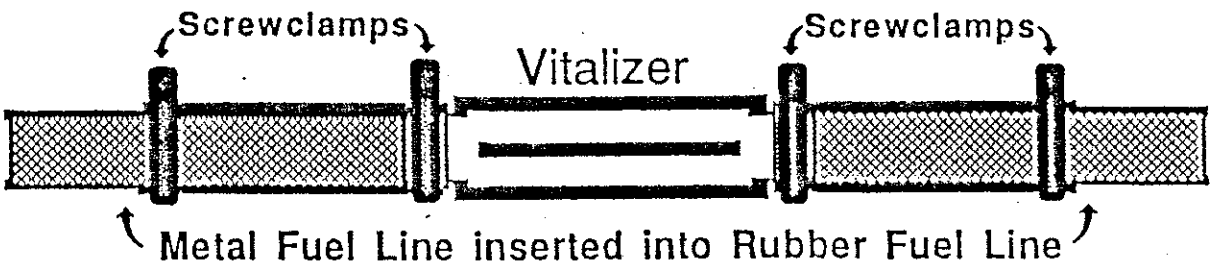
Step #2

Use rubber fuel line (or high-pressure hose for fuel-injected systems) the same size as the Vitalizer ends and the metal fuel line. Rubber fuel line (approximately 3" on each end) to be attached to both ends of the Vitalizer and secured with screwclamps.



Step #3

Slide the rubber line that has the Vitalizer attached over both ends of the metal fuel line and tighten securely.



Step #4 - Check for Leaks.

(A) Teflon Line

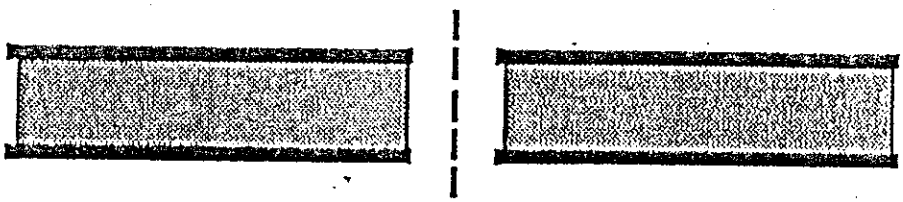
Illustration #3

(B) Slip Fittings

Slip Fitting - a metal insert that is placed inside the fuel line which allows clamps to clamps to tighten.

Step #1

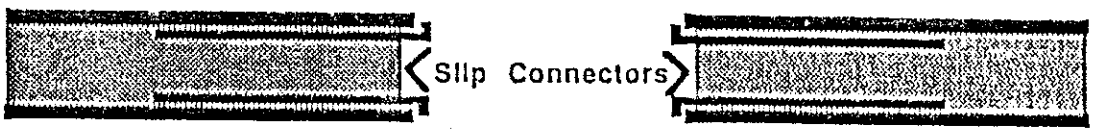
Place the Vitalizer as close as possible to the carburetor / fuel block. Cut teflon line no more than 12" from carburetor or fuel block.



Step #2

Insert 51.p fittings into each open end of teflon line.

(D)



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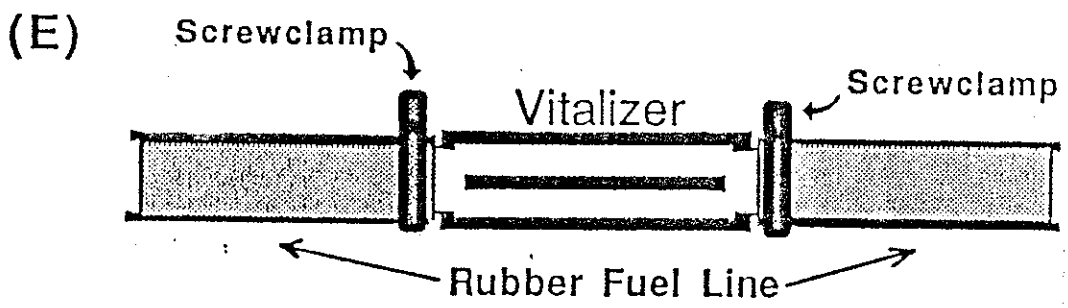
Teflon Line (Illustration #3; con't)

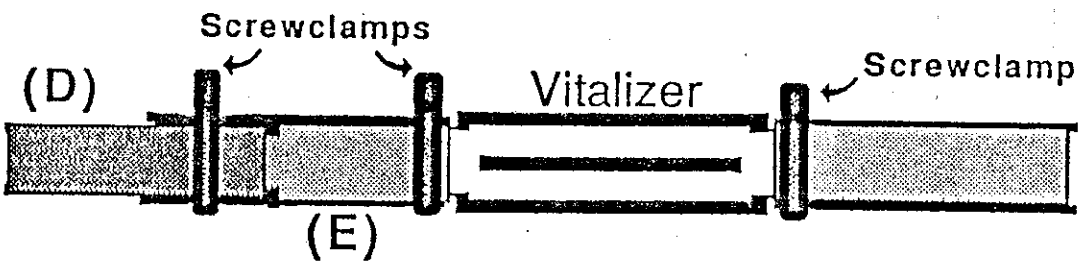
Step #3

Attach rubber fuel line to each end of the Vitalizer and secure both ends with screwclamps.



Step #4

Insert. Illustration (D) into Illustration (E) and secure with fastner.



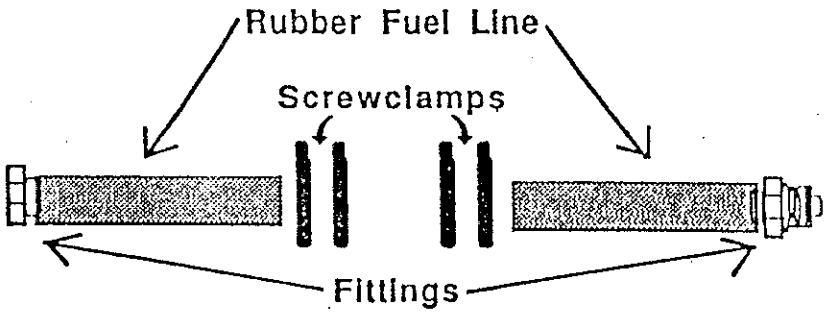
Step #5

Check for Leaks.

Steel Braided Line

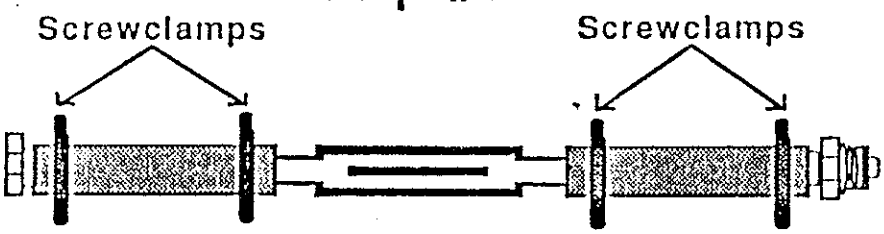
Illustration #4

(A) Steel Braided Fittings



(B) Vitalizer

Step #1



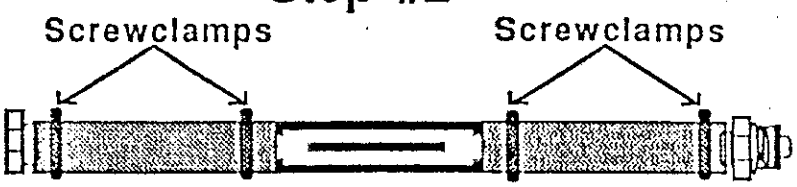
Step #1

Insert Vitalizer into rubber ends of steel braided fittings.

Step #2

Step #2

Tighten clamps Securely.



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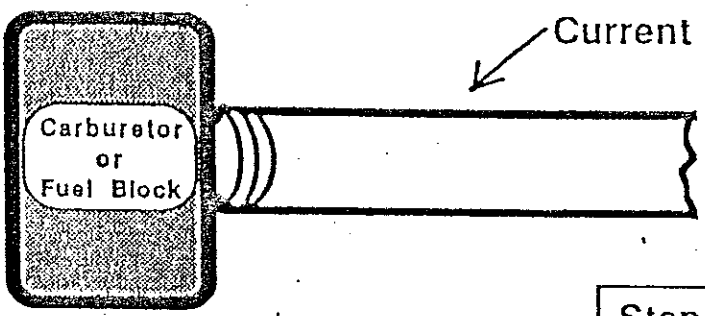
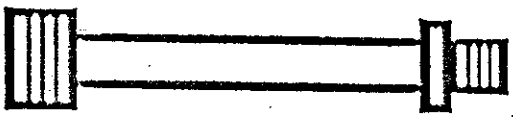
Steel Braided Line (Illustration #4; con't)



Step #3

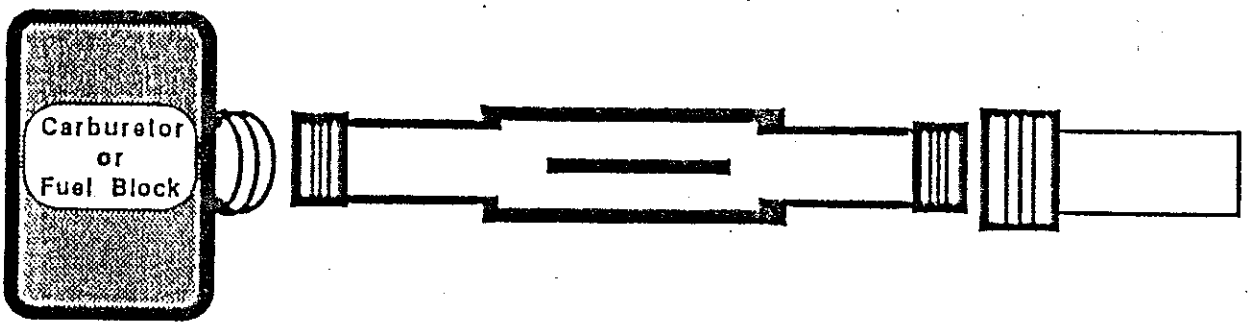
Disconnect your fuel line from the carburetor or fuel block.

Steel Braided Fuel Line

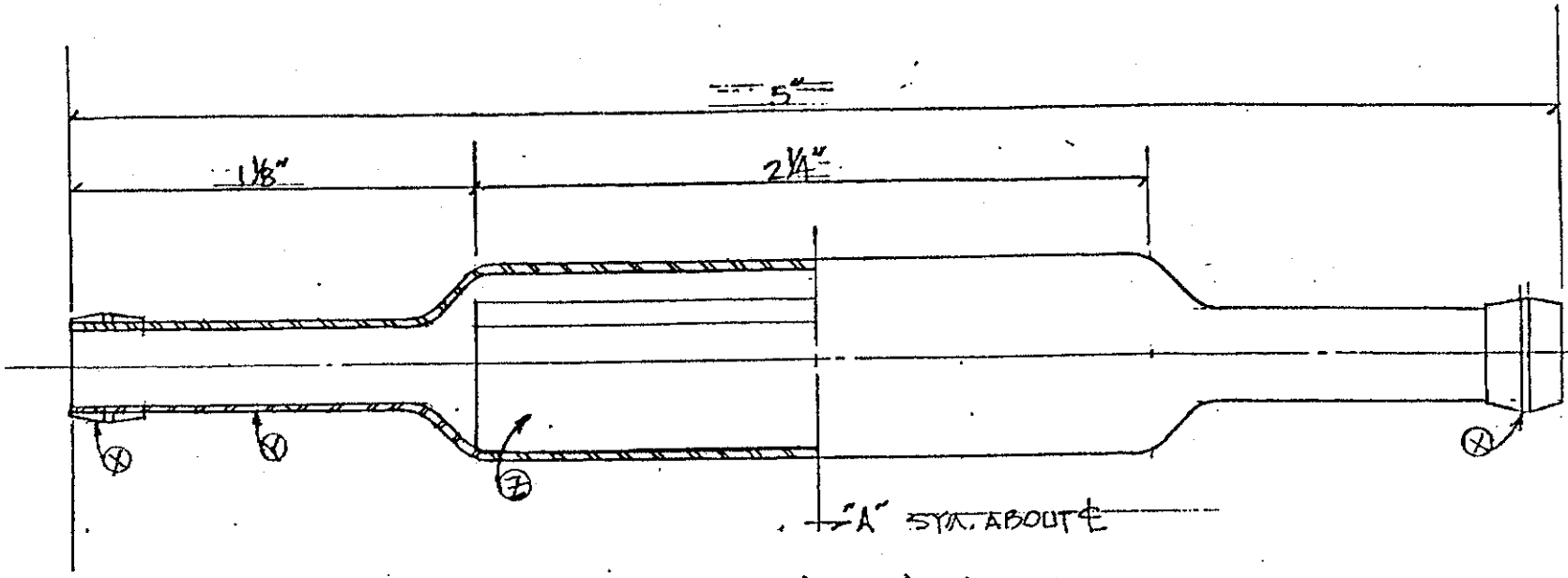


Step #4

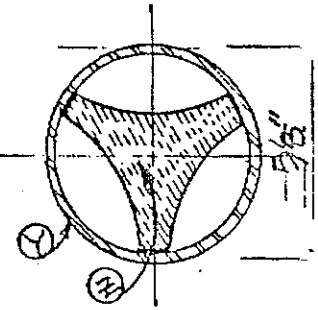
Slide your fuel line back so that you will have room to screw the Vitalizer fittings into the fuel line and into the carburetor or fuel block. Tighten securely.



Step #5 - Check for leaks.



LONGITUDINAL – PLAN
SCALE: 2 X ACTUAL



SECTION "A"
END

LEGEND

X COPPER
Y COPPER TUBING
Z METAL ALLOY BAR

VITALIZER

PACESETTERS	
SCALE: NOTED	DES. BY:
DATE: 10-7-89	DWG. BY: A. AYE
DWG. No. A-1089	APPROVED:
REVISED:	SHEET NO.

APPENDIX B