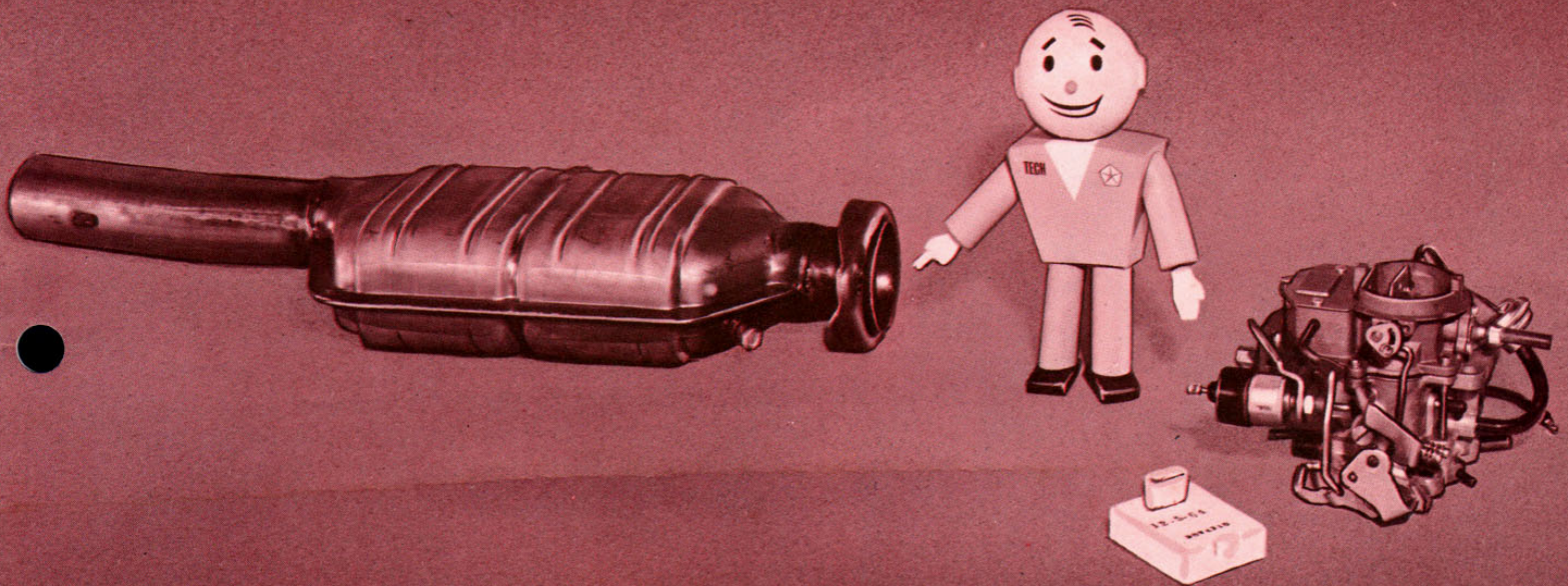


Master Technicians Service Conference

# reference book 751



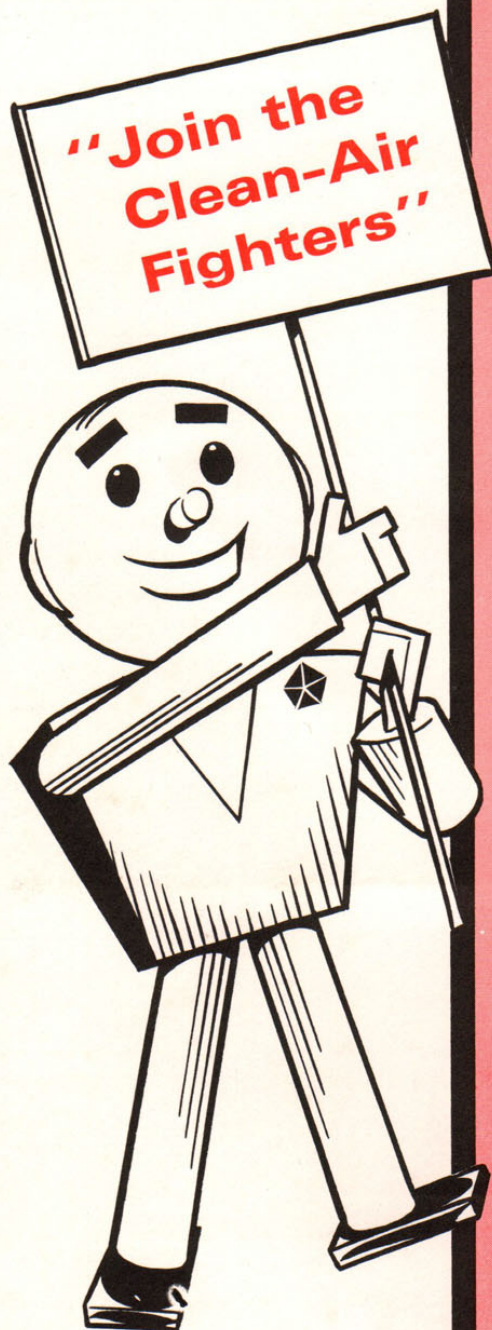
## THE NEW EMISSION CONTROLS

PLYMOUTH • DODGE • CHRYSLER • IMPERIAL • DODGE TRUCK



**CHRYSLER**  
MOTORS CORPORATION





No one is against breathing fresh air. And, no one wants to knowingly contribute to air pollution. So, we'd better take a close look at what each of us is doing to help in the fight for even better air quality.

Chrysler, for one, has done an excellent job in designing and manufacturing the sophisticated emission systems, sub-systems and the necessary controls for their 1975 models, while maintaining good vehicle driveability.

And, as a group, no one is better qualified to stand up and be counted as "Clean Air Fighters." Your technical know-how, training and skills are the back-up needed for maintaining these systems and controls on all 1975 Chrysler Corporation vehicles as well as all prior models. Therefore, to help you become even more of a professional in the fight to protect our air quality, we have prepared this Reference Book. You'll find fundamental information and details on how the new emission system and controls work in order to help you maintain the 1975 emission standards for hydrocarbons (HC), carbon monoxide (CO) and oxides of nitrogen (NO<sub>x</sub>). Of course, we have also covered a number of major precautions that must be observed in the interest of catalytic converter life as well as protection of other units in the emission system.

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# Why a catalytic converter is needed

## BACKGROUND INFORMATION

Exhaust emissions would be simple to control if all of our driving were done on the open highways at steady speeds. However, the difficulty is that mixtures of air and fuel that are most favorable for full and complete combustion are not rich enough to prevent the engine from stalling when it is idling or, on the other hand, when the engine is called upon to deliver good driveability and maximum power for acceleration. So, for smooth engine performance, the air/fuel mixture must change in order to meet the demands of different driving conditions such as starting, accelerating, cruising, climbing hills and extremes of weather.

As the intake mixture changes, exhaust emissions going out the tailpipe vary in quantities. It is this hurdle that Chrysler engineers had to find a solution for when designing the new emission control systems to meet the tough 1975 anti-pollution standards, both Federal and California.

## MEETING THE CHALLENGE

Their solution was the introduction of an oxidizing-type of *catalytic converter* which looks like a small muffler. This new unit does an excellent job of substantially reducing hydrocarbon and carbon monoxide emissions before they reach the atmosphere. By adding this catalytic converter to the exhaust system or through the installation of only an air pump on some models or through the application of both of these units, all Chrysler Corpora-

tion cars and light trucks for 1975 comply with the Federal Clean Air Act of 1970 and still give good driveability.

**NOTE:** As in past models, the formation of oxides of nitrogen ( $\text{NO}_x$ ) is controlled inside the engine by the Exhaust Gas Recirculation System, with help from leaner carburetor mixtures and closely calibrated spark advance control, including OSAC.

## THE TOUGH 1975 EMISSION STANDARDS

Note that in Figure 2, the 1975 Federal exhaust emission standards call for a reduction in hydrocarbon and carbon monoxide emissions amounting to a little over half of what the levels were in the

EXHAUST EMISSION STANDARDS —GRAMS PER MILE—			
1975		1974	
Hydro-Carbons	Carbon Monoxide	Hydro-Carbons	Carbon Monoxide
1.5	15	All States Except California	39.0
.9	9.0		39.0
		California Only	3.2

Fig. 2—1975 clean air standards are tougher than 1974

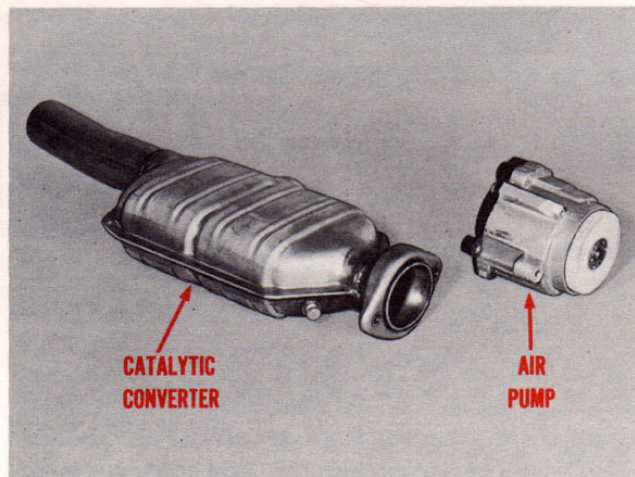


Fig. 1—Converters and air pumps reduce exhaust emissions

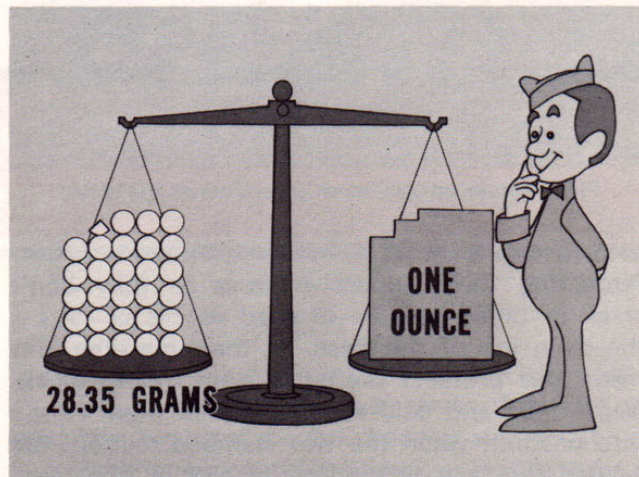


Fig. 3—About 28 grams make one ounce



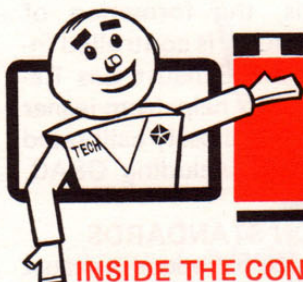
1974 model year. California standards have been tightened even more than those for the other 49 states. In fact, as you will notice, their standard for grams per mile of hydrocarbon emissions is down to less than one gram per mile. While we're talking about "Grams Per Mile" let's take a moment to review what that means.

### WHAT ARE GRAMS?

We all know what an ounce and a pound are because we've been accustomed to buying or weigh-

ing items with such weight values. To put the record straight, a "Gram" is a lot less than *one ounce*! In fact, it takes just a little over 28 grams (28.35 grams) to equal one ounce.

Therefore, the California standard of nine-tenths (.9) of a gram per mile for hydrocarbon emissions is less than one-twenty-eighth of an ounce. To reach that small amount, most of the California cars will have both an air pump and a catalytic converter.



## Construction of the catalytic converter

### INSIDE THE CONVERTER

Chrysler's catalytic converter is made up of two stainless-steel stampings that are welded together and requires no servicing. If we open it up for a look inside, as shown in Figure 4, you will see two oval-shaped ceramic cores surrounded by stainless-steel mesh. These cores are made from special, clay-like material baked much like chinaware. Unprotected, they are somewhat fragile and will break when subjected to shock or severe jolts.

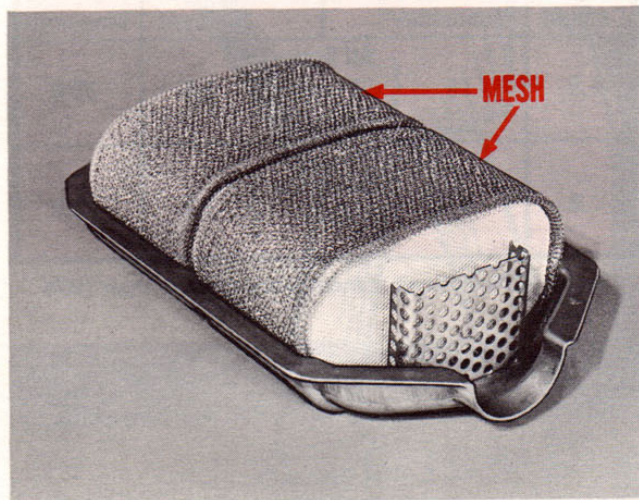


Fig. 4—Stainless-steel mesh wire protects the cores

### THE PROTECTIVE MESH

Protecting these expensive cores so they don't crack or break because of road shocks or jolts is the main job of the mesh. At the same time, this mesh also protects the cores from shocks of extreme heat and cold and helps lock them firmly into position when the two stamped sections are welded together during final assembly. The mesh eliminates the possibility of core shock failure.

### THE TWO OVAL-SHAPED CORES

Each of the two oval cores have thousands of small triangular-shaped honeycomb passages that

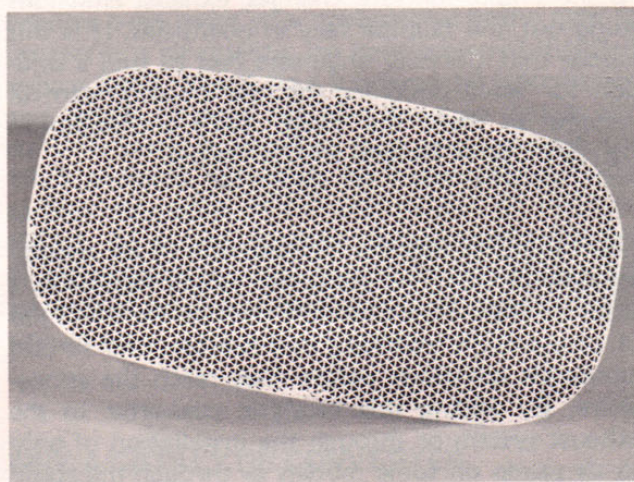


Fig. 5—Cores have 240 passages per square inch

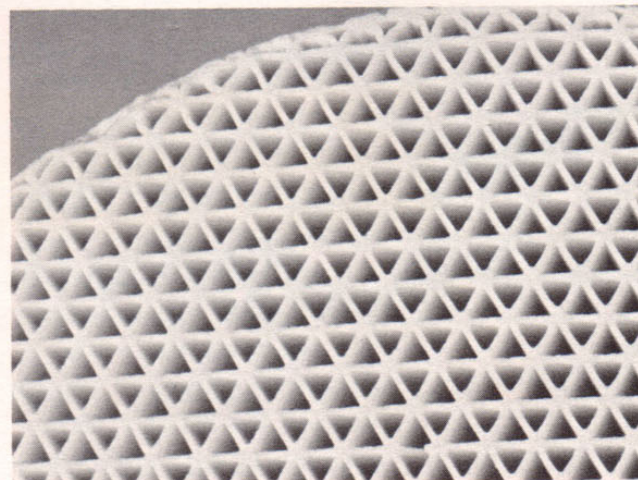


Fig. 6—Thousands of passages help in the catalytic action



run the length of each core. In fact, every square inch contains close to two hundred and forty of these passages.

### HUGE SURFACE AREA

The result of this unique core construction and its porous nature results in the inner surface area equalling the flight deck area of a large, modern aircraft carrier. Roughly, that's about one hundred and ninety-five thousand square feet.

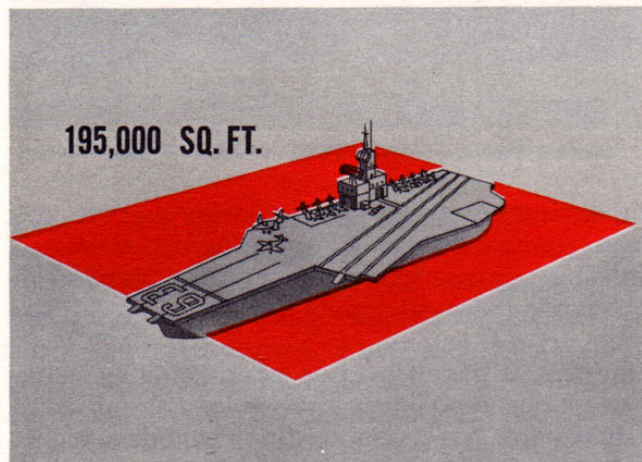


Fig. 7—Core area equals deck of aircraft carrier

### THE CONVERTER SHELL AND DIFFUSER

Both the two stampings that make up the shell and the diffuser are stainless steel to withstand the high-operating temperatures caused by the more complete oxidation of hydrocarbons and carbon monoxide within the unit. The diffuser used in the large converter is necessary in order to "fan out" the exhaust gases and prevent them from funneling into a small center portion of the cores. Without this diffuser, not all of the catalytic action would take place.

### A PROTECTIVE GUARD

Models intended for sale in California have a guard

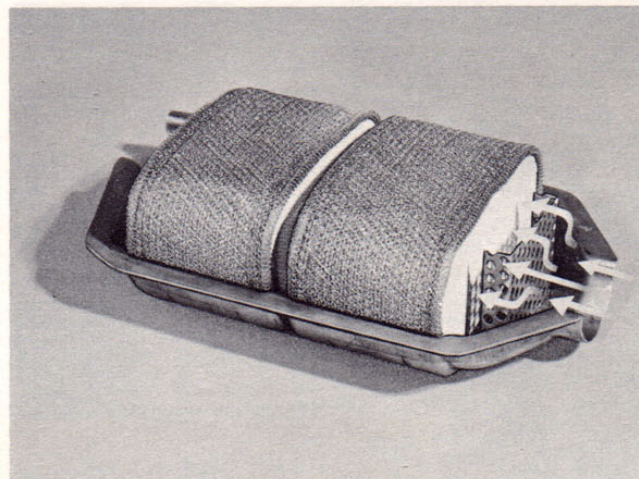
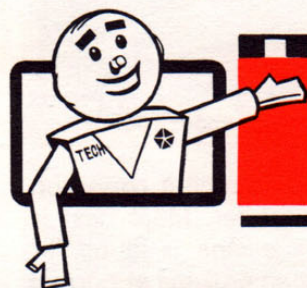


Fig. 8—The diffuser "fans out" flow of exhaust gases



Fig. 9—The guard keeps objects away from high heat

device attached to the catalytic converter through "U" bolts and nuts. This device helps to prevent objects from coming in direct contact with the hot converter shell. Models with an air pump need this guard because the extra air piped into the exhaust system causes the catalytic converter to run hotter than those without an air pump.



## How Chrysler's catalytic converter works

### IT TAKES OXYGEN AND A PRECIOUS METAL

Specifically, in the presence of oxygen and a catalyst, a chemical reaction takes place inside the catalytic converter, causing the unburned hydrocarbons and carbon monoxide to be oxidized more completely as they flow through the cores.

The catalyst is a mixture of platinum and palladium or just platinum alone. In terms of durability, operating temperature and chemical activity, it has been determined that these precious metals make a very effective catalyst.



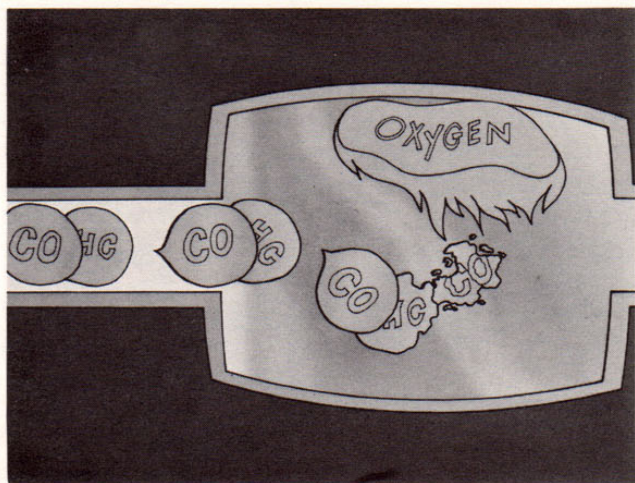


Fig. 10—Exhaust emissions are oxidized more completely

### CATALYTIC DEPOSIT MIXTURE

The extremely large surface area of the honeycomb cores is needed in order for the unburned hydrocarbons and carbon monoxide to come in contact with the catalytic coating deposited in the thousands of core passages.

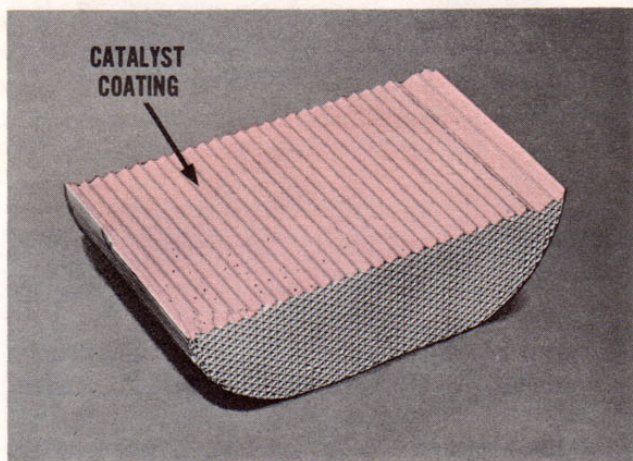


Fig. 11—Precious metals are used for the catalyst

It is this catalyst, exposed to the hot exhaust gases plus oxygen, that promotes the chemical reactions inside the ceramic cores, thus reducing emission levels in compliance with the 1975 anti-pollution standards.

### HARMLESS CARBON DIOXIDE AND WATER

In Chrysler's new catalytic converter, unburned hydrocarbons and carbon monoxide are changed into harmless carbon dioxide and water. As an interesting side note, carbon dioxide is used in the carbonation of many beverages.

### CONVERTERS AND HEAT

As the catalytic reaction takes place, normal internal temperatures of the catalytic converter rise

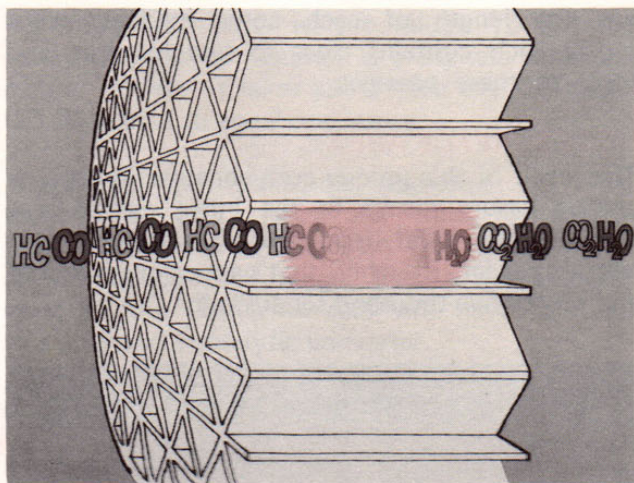


Fig. 12—HC and CO become carbon dioxide and water

to somewhere between thirteen-hundred to sixteen-hundred degrees F., while normal outer-surface heat generally reaches the neighborhood of about one thousand degrees F.

However, if the engine is in poor operating condition, is operating under a severe load, is in need of a tune-up or has several misfiring cylinders, higher temperatures than normal are easily reached, both inside and outside the converter shell. Excessively high temperatures reduce converter life and can destroy the cores.

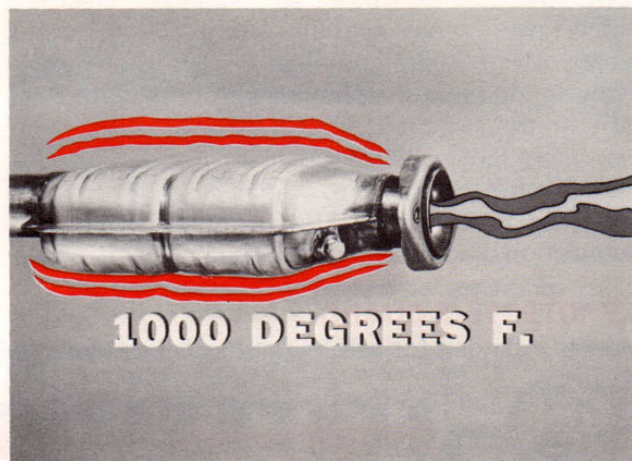


Fig. 13—External heat of converter is about 1000°F.

**NOTE:** Idle soak is the worst running condition for the catalytic converter. More heat is developed when the engine is idling for long periods than when cruising at normal highway speeds.

### ABNORMAL OPERATING CONDITIONS

If catalytic converters are fed too rich a fuel mixture because of poor engine operating condition, they become somewhat like a cata-



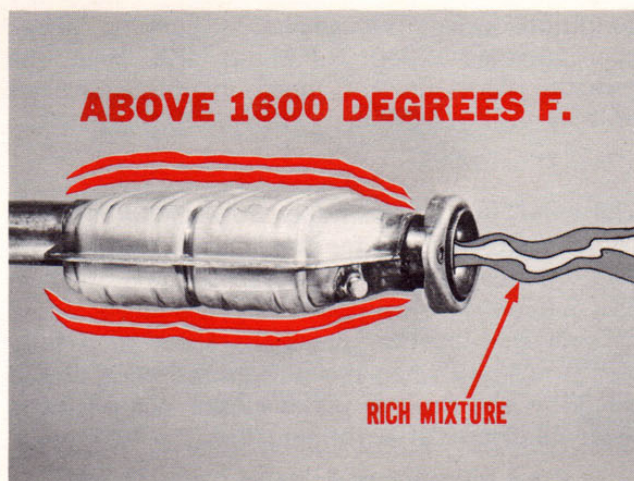


Fig. 14—Rich mixtures create excessive heat in converters

lytic furnace. When this condition occurs, they easily reach temperatures exceeding sixteen-hundred degrees F. For example, when more than two plugs are not firing, raw fuel is pumped into the catalytic converter. When such misfiring is present over a prolonged period of time, internal converter heat can skyrocket to twenty-five

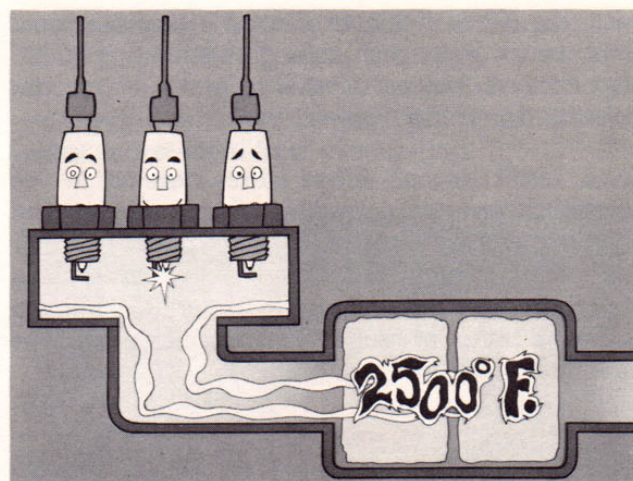
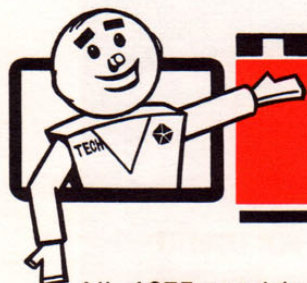


Fig. 15—Misfiring develops high heat in converters

hundred degrees F. or more. This abnormal high heat can quickly destroy the converter.

**CAUTION:** *Never turn the ignition key OFF when driving at road or highway speeds in order to diagnose a particular problem or owner complaint.*



## The new catalyst protection system

All 1975 models with a catalytic converter are equipped with a new device called the *Catalyst Protection System*. A schematic diagram of this new system is shown in Figure 16. The main features are the Electronic Speed Switch and the Throttle Positioner Solenoid.

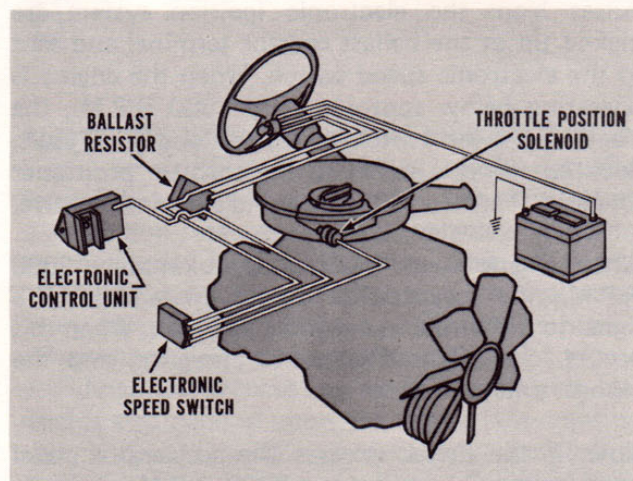


Fig. 16—The Catalyst Protection System is vital

### WHY IS IT NEEDED?

As mentioned earlier, when excess fuel is dumped into the converter, damage can result to the core structure from the high heat levels that develop.

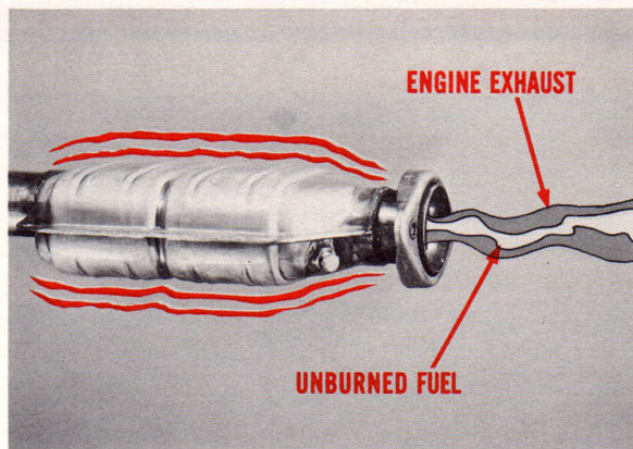


Fig. 17—Deceleration dumps unburned fuel into converter

Now, during *normal closed throttle deceleration*, an excessive amount of unburned fuel goes out



with the exhaust due to incomplete combustion. This occurs under such an engine operating condition because fuel particles and intake air are not balanced for proper fuel/air ratios.

As a result, higher temperatures develop in the catalytic converter, a condition that is similar to an engine operating with fouled spark plugs. In either case, the catalytic converter becomes overheated and loses its effectiveness. In order to eliminate this condition, Chrysler engineers came up with the new catalyst protection system.

### FUNCTION OF MAJOR UNITS

The electronic speed switch can be considered an electronic counting unit. Its main purpose is to pick up the pulses from the Electronic Ignition System and determine whether or not the engine is running either *below* or *above* approximately 2000 R.P.M.

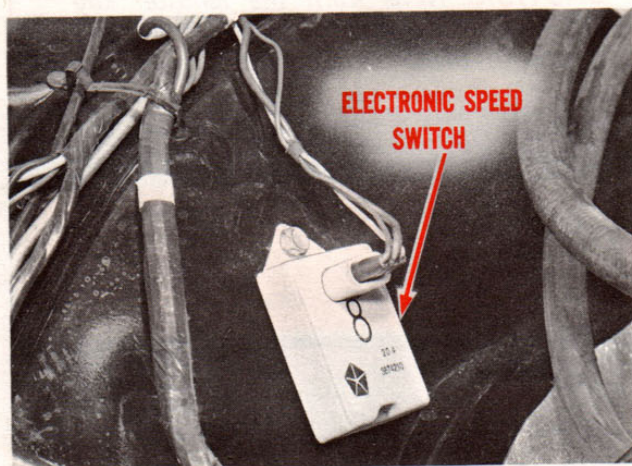


Fig. 18—The electronic speed switch signals the solenoid

The throttle positioner solenoid is necessary so that on a *closed throttle deceleration* driving

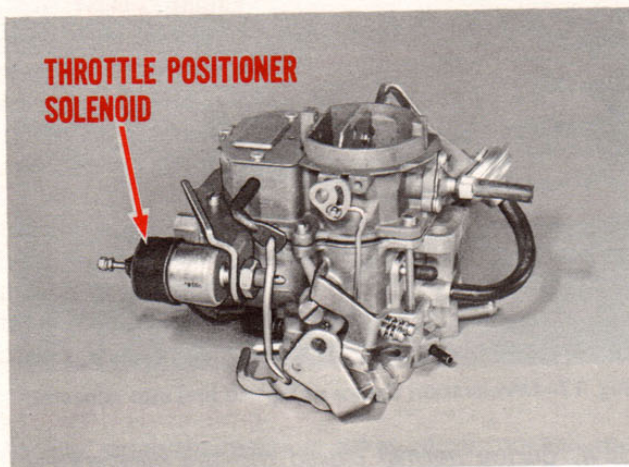


Fig. 19—Throttle positioner solenoids are important

condition, when the engine is running above approximately 2000 R.P.M., it will keep the throttle plates cracked open at the equivalent of a fast-idle position.

### DON'T BE CONFUSED

The new Throttle Positioner Solenoid should not be confused with the familiar "curb idle" solenoid that some carburetors have been equipped with in past models. As you know, the curb-idle solenoid permits the throttle plates to return to a fully closed position when the ignition switch is turned off. With the throttle plates closed, the engine is prevented from "after running."

When the ignition switch is turned to the "ON" position, the curb-idle solenoid becomes energized and the plunger extends to provide a curb-idle throttle stop position whenever the accelerator pedal is released. Operation of the new throttle positioner solenoid is much different.

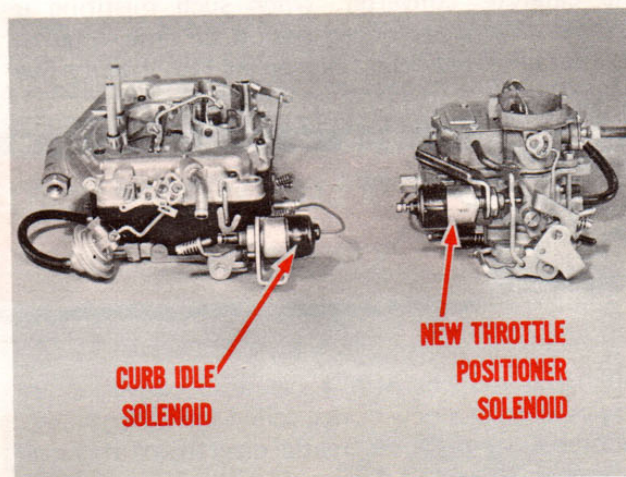


Fig. 20—The curb-idle solenoid works differently

### HOW IT WORKS ELECTRICALLY

Pulses from the electronic ignition system are picked up at the ballast resistor terminal and sent to the electronic speed switch. When the engine is operating below approximately 2000 R.P.M., the electronic speed switch senses this and as a result, does *not send* a signal to the throttle positioner solenoid. Therefore, the solenoid remains inactive.

When engine speed reaches approximately 2000 R.P.M., the speed switch senses this and sends a signal to the throttle positioner solenoid. When this occurs, the solenoid becomes energized and the plunger extends outward.

Now, if the driver releases the accelerator pedal when engine speed is above 2000 R.P.M., the solenoid plunger holds the throttle plates open at the



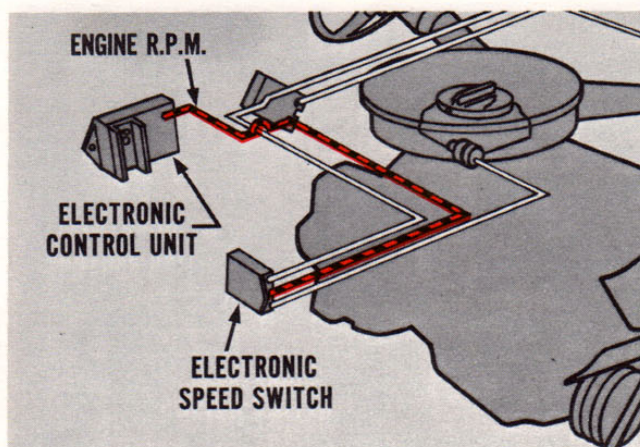


Fig. 21—The speed switch counts engine R.P.M.

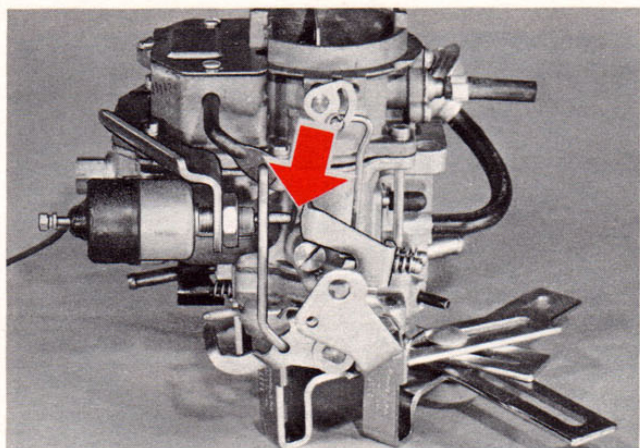


Fig. 22—Above 2000 R.P.M., the solenoid becomes energized

equivalent of a fast-idle position — approximately 1500 R.P.M. This permits a sufficient flow of intake air to properly balance fuel/air ratios and provide more complete combustion. Thus, the converter is protected from overheating.

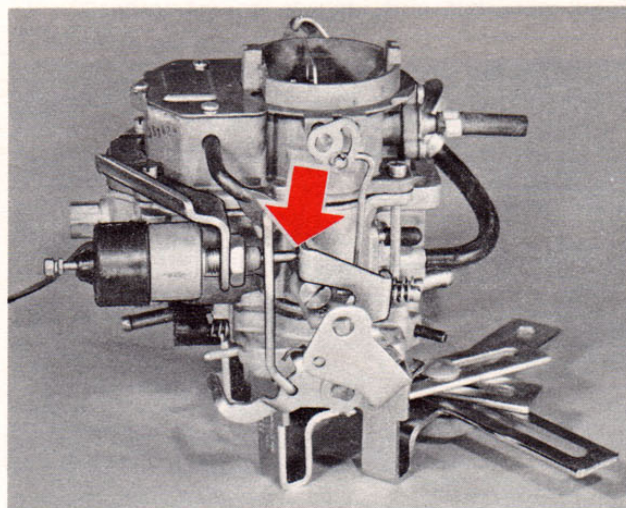
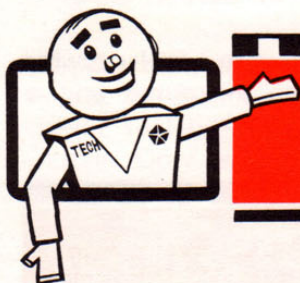


Fig. 23—The solenoid plunger keeps throttle plates open

When engine speed drops below approximately 2000 R.P.M., the speed switch cuts off the signal to the solenoid, the solenoid becomes de-energized and the throttle is then allowed to return to its normal curb-idle stop position.



## Protection from catalytic converter system heat

### HEAT SHIELDS ARE NECESSARY

Because the catalytic converter produces high heat levels, all units in the exhaust system (muffler, resonator, tailpipe), operate at higher temperatures than on non-catalytic-equipped vehicles. Therefore, to protect the underbody, heat shields or "barriers" have been installed at strategic areas. They vary in size, shape and placement because different models require their own special type of shielding. Differences in these aluminized steel shields also depend upon the engine, the transmission and, of course, other chassis components. California models have more shielding than those sold in the other states.

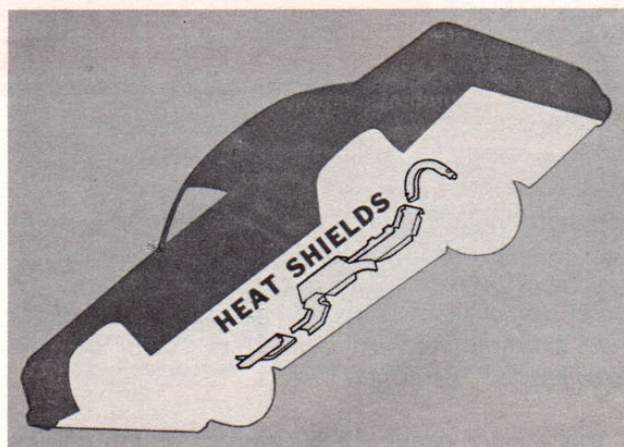


Fig. 24—Shields protect the underbody from high heat



## PROTECTING THE CHASSIS COMPONENTS

You'll find heat barriers that protect the automatic transmission and its cooler lines, the torsion bar adjacent to the exhaust system, and on the full-size models in the 1975 line-up, there is extra shielding needed for the rear shock absorber and luggage compartment.

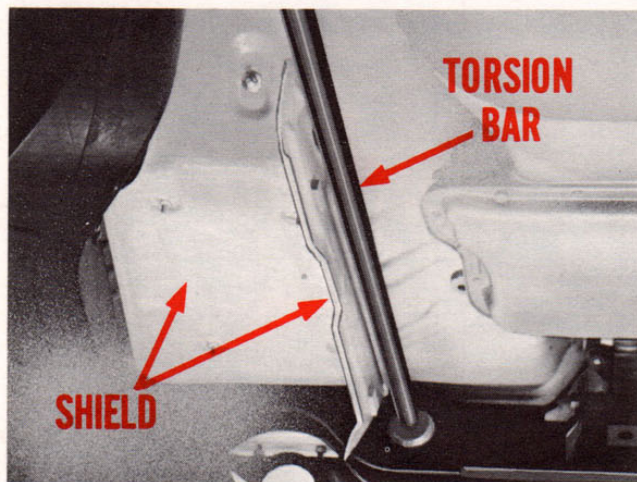


Fig. 25—Shields protect drive line and torsion bars

## SPECIAL SHIELDING

Models that are equipped with an automatic vehicle height control system also have an extra heat shield attached directly to the air-chambered rear shock absorber that operates near the exhaust pipe.

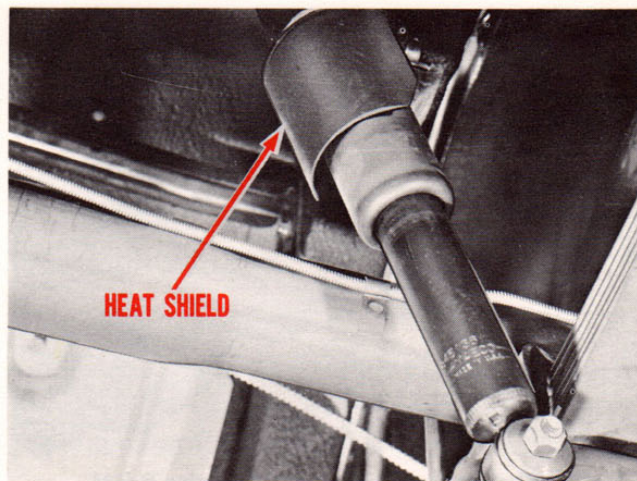


Fig. 26—Air-chambered shocks need extra shielding

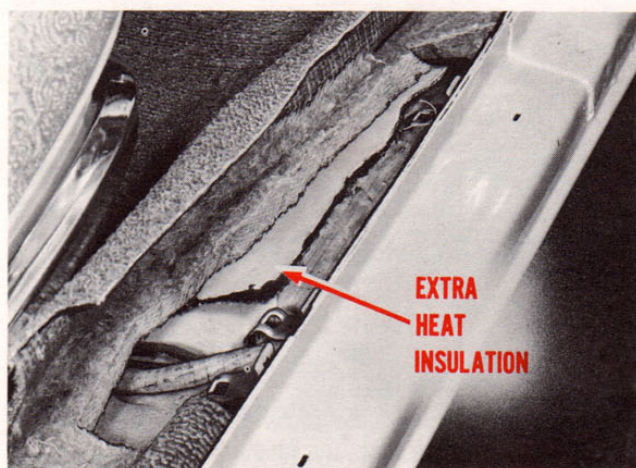
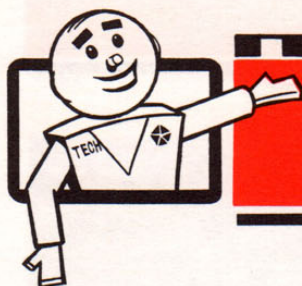


Fig. 27—Extra floor mat insulation protects the interior

## PROTECTING THE INTERIOR

At the converter, the underbody floor pan is heavily shielded to protect the floor mats from absorbing heat radiated from the converter shell. Most models for 1975 have additional heat insulation under the floor mats. This is especially impor-

tant on cars that are equipped with a trailer-towing package or vehicles with an air pump and a catalytic converter.



## Operating and service precautions

### CORRECT FUEL IS VITAL

Chrysler engineers want to emphasize the point that only *unleaded* fuels should be used in vehicles equipped with a catalytic converter. If presently available *leaded* fuels are added to the gasoline tanks, converters can become *damaged* or "poisoned."

If this should occur, then catalytic action will be destroyed and hydrocarbon and carbon monoxide

emission levels will jump upward drastically.

### INSURING THE CORRECT FUEL

In order to prevent service stations or motorists from using leaded fuels, there's a new fuel filler neck on the gasoline tank on all 1975 models equipped with catalytic converter. Outer dimensions may appear the same as those used in prior years, yet internally the fuel inlet diameter is much smaller.





Fig. 28—Leaded gasoline can destroy catalytic reaction

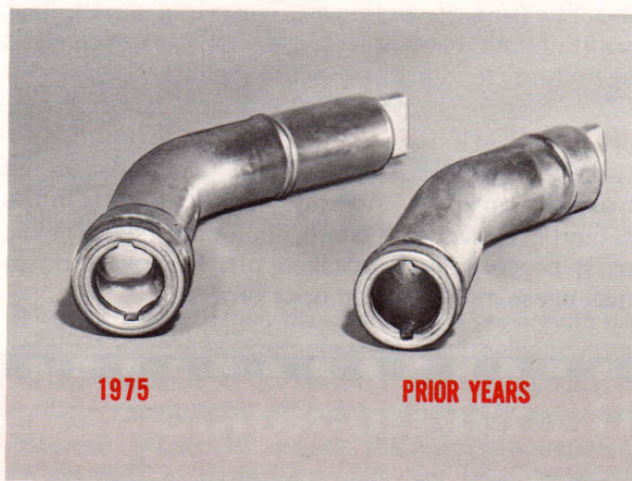


Fig. 29—1975 fuel inlet filler necks are smaller internally

Besides that, there's a spring-loaded hinged valve inside the filler neck that can only be opened to admit fuel by a new and smaller unleaded fuel nozzle. Only pumps dispensing unleaded fuel will be equipped with this new-type nozzle.

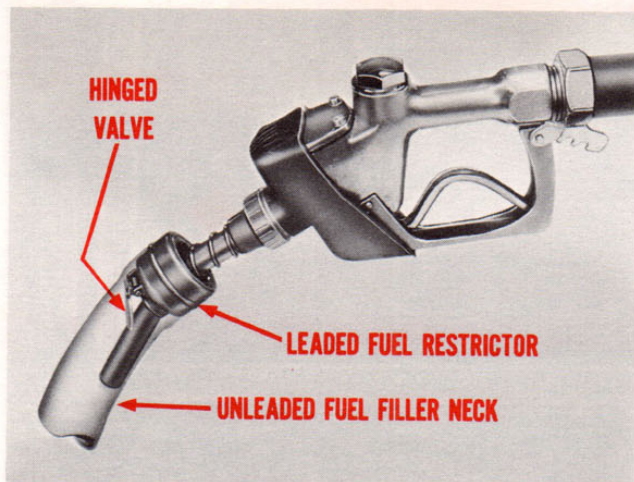


Fig. 30—New filler necks have a spring-loaded, hinged valve

Another preventive measure against the use of the wrong type of fuel is the application of warning decals. You'll find one in a prominent place at the instrument panel. Another decal is located just above the fuel filler neck, either attached to the rear luggage compartment lid or to the left rear fender, depending upon filler neck opening location.

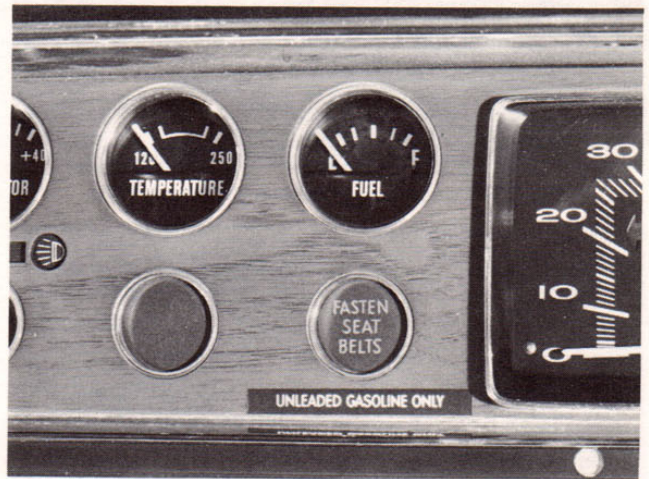


Fig. 31—Drivers are alerted by warning decals

### PULLING SPARK PLUG WIRES

As mentioned earlier, cylinders that do not fire, send raw fuel into the converter and internal temperatures rise at a rapid rate above normal operating levels. It is for that reason troubleshooting for weak cylinders by pulling one spark plug wire off at a time must be done quickly. Spark plugs that are deliberately shorted out for a prolonged period of time in order to diagnose an engine problem can permanently damage converter cores.

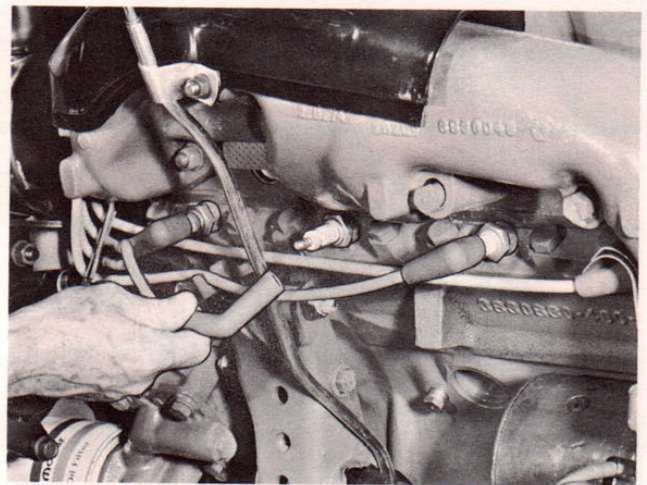


Fig. 32—Pulling spark plug wires should be done cautiously

### CUTTING OUT A BANK OF CYLINDERS

Another service operation that can cause



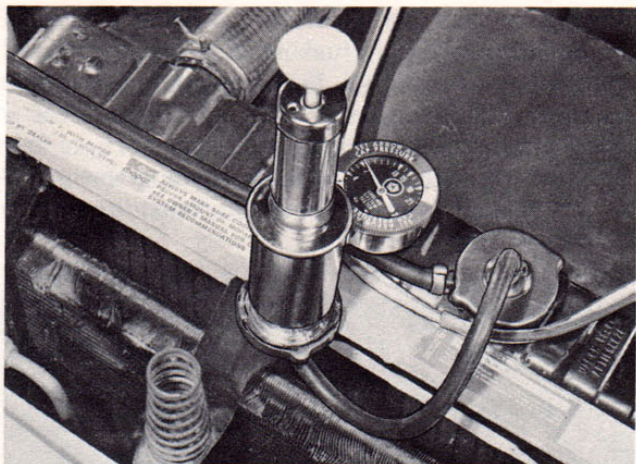


Fig. 33—Compression leakage testing on V-8s

serious problems with the converter is cutting out one bank of cylinders when pressure-testing the cooling system in order to track down which of the two gaskets is leaking compression. Engineers warn service technicians that this diagnostic procedure is no longer acceptable on converter-equipped vehicles.

#### POURING LIQUIDS INTO ENGINES

Another way to ruin the converter is through the

use of combustion chamber liquids or carburetor cleaners. Pouring these substances into the engine intake system will send extra combustible materials into the converter and reduce converter life.

#### USING FLOOR JACKS OR HOISTS

With all the heat shielding used on 1975 vehicles with a catalytic converter, you've got to be extra careful when using floor jacks or hoists, especially the frame contact type. Before raising the car, make sure pads or side rails or other supporting members do not press against any parts of the system or its shielding. If the heat shields, the converter or exhaust pipes are bent, crushed or forced into misalignment, air space between the exhaust system and the heat shields or between the heat shield and the underbody floor pan, will restrict the free flow of cooling air. When this occurs, heat build-up can become uncomfortable to passengers or harmful to vital chassis components.

#### SPRAYING UNDERCOATING MATERIALS

When spraying rustproofing or sound-deadening materials onto the underbody areas, all units in the catalytic converter system, including heat shields, must be completely masked off. Failing to do so may cause more than an odor problem.



## The new EGR maintenance reminder system

#### REMINDER SIGNAL

One of the Federal requirements for the 1975 model year is a reminder light system that signals the driver of the need for maintenance of his en-

gine's Exhaust Gas Recirculation System. When the light comes on at 15,000-mile intervals, the words "CHECK EGR" located on the instrument panel light up and become easily visible even in daytime.

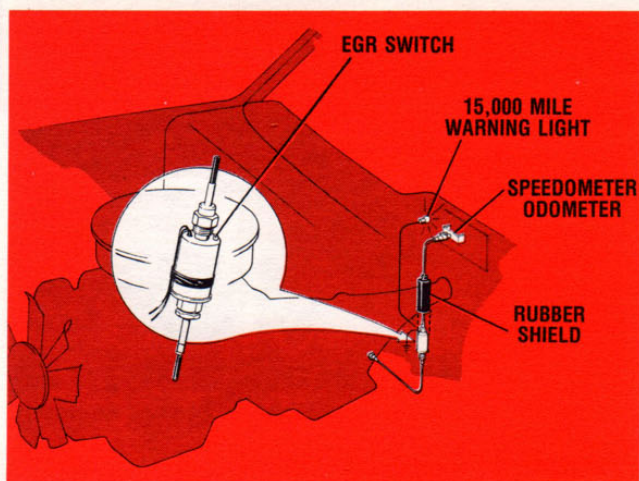


Fig. 34—EGR maintenance reminder system

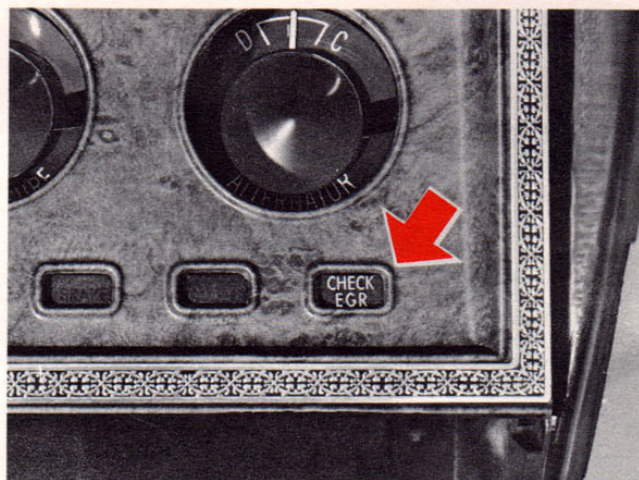


Fig. 35—When "CHECK EGR" lights up, service is a must



### THE SWITCH

The switch that controls the reminder light is triggered by a counter mechanism connected in series with the speedometer cable. In effect, it is similar to an odometer that counts the miles traveled by the car. You'll find this small EGR unit at the left side of the car near the toe-pan area. Access to this unit is accomplished from underneath.

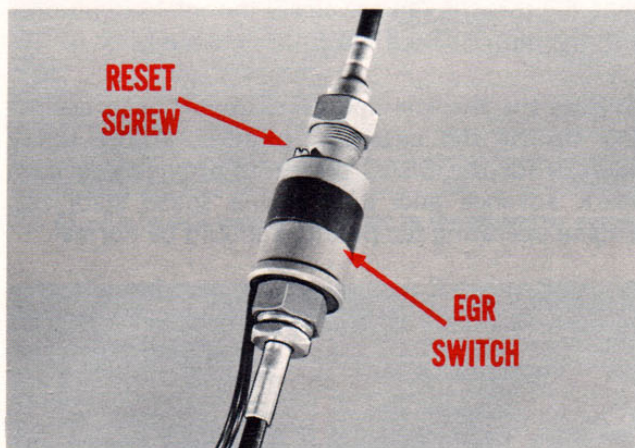


Fig. 36—The EGR switch has small gears that count miles

### HOW IT WORKS

When the first fifteen thousand miles have gone by, internal electrical contacts snap together and complete the circuit to the reminder light. About thirty million revolutions of the speedometer cable are required. When this occurs, the EGR system *must be serviced* in accordance with the procedures detailed in the appropriate Service Manual.

### TURNING THE REMINDER LIGHT OFF

After the required EGR maintenance is performed, the light can be turned off easily. It may be necessary to disconnect one of the speedometer cables connected to this unit in order to gain easy access to the reset screw.

After sliding the rubber shield away from the unit, just rotate the reset screw about one-half turn and release it. Doing so zeros the maintenance switch odometer gears, the electrical contacts open and the system is ready to count the next fifteen-thousand-mile interval. If damaged or inoperative, it will have to be replaced with a new one since it is sealed and cannot be repaired or taken apart.

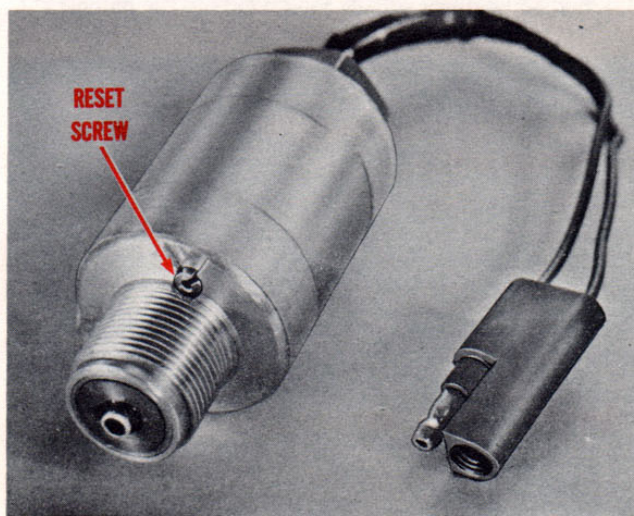
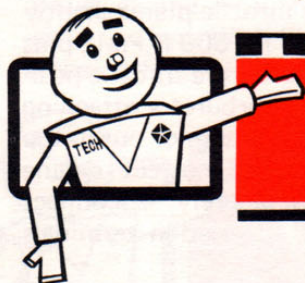


Fig. 37—The reset screw zeros gears; turns EGR light off



## Maintenance of the throttle positioner solenoid

At times it may become necessary to check out the operation or the setting of the Throttle Positioner Solenoid. If you suspect this unit is not operating as intended or incorrectly adjusted, here's a few simple steps for performing these services.

### CHECKING SOLENOID ACTION

Disconnect the throttle positioner solenoid lead-in wire terminal and hold the carburetor throttle wide open. With a short jumper wire, apply battery voltage directly to the terminal of the solenoid lead-in wire. The solenoid should extend positively and maintain its extended position. If it does not, re-

move the jumper wire, release the throttle and replace the solenoid with a new unit.

### CHECKING SPEED SWITCH ACTION

If the solenoid checks out okay, re-connect the lead-in wire terminals, connect a tachometer, then start and slowly accelerate the engine from idle speed. As engine speed reaches somewhere between 1800 to 2200 R.P.M. the solenoid plunger should extend positively and maintain its extended position. Now, slowly decelerate the engine and watch the tachometer needle. *At or before* engine speed reaches 1800 R.P.M., the solenoid should become



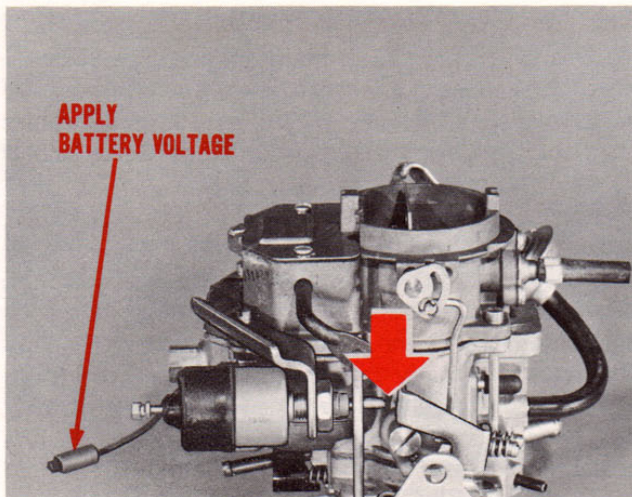


Fig. 38—Battery voltage should extend the plunger

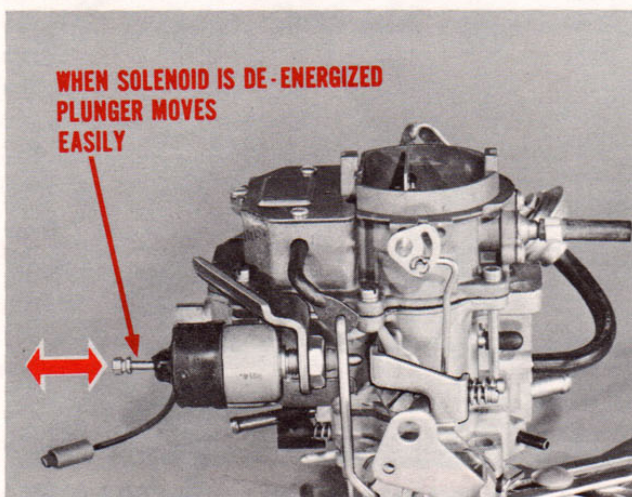


Fig. 39—The solenoid plunger moves easily without voltage

de-energized. Since there is no return spring to release the solenoid plunger, you can easily tell if the solenoid is de-energized by the ease with which the plunger extension can be moved by hand.

If the solenoid does not respond properly, the speed switch is at fault and should be replaced. Of course all wires and connections must check okay.

## ADJUSTING SOLENOID SETTING

When you have checked out the solenoid or replaced it and have verified the action of the electronic speed switch, then proceed to set the throttle positioner solenoid R.P.M. setting. To do this, apply battery voltage to the solenoid lead-in wire terminal. Now, the speed switch is eliminated from the solenoid electrical circuit. Connect a tachometer and start the engine. Increase engine speed so that the throttle linkage clears the solenoid plunger and the plunger becomes fully extended.

Release the throttle linkage so that it bears against the tip of the extended plunger. Allow thirty seconds for the OSAC system to provide a vacuum spark advance and that engine speed stabilizes. Engine operating temperature should be normal.

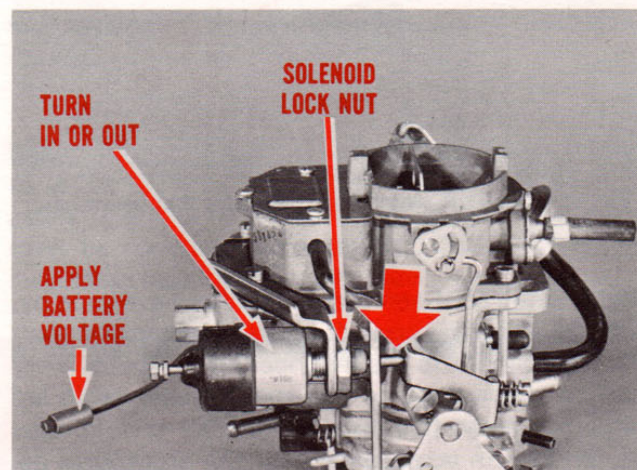
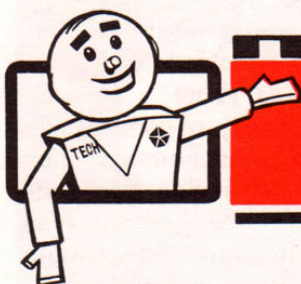


Fig. 40—Adjust solenoid by turning body in bracket

With the plunger holding the throttle plates slightly open, verify that engine speed is 1500 R.P.M., plus or minus 50 R.P.M. If not, loosen the throttle positioner solenoid lock nut at the carburetor attaching bracket and turn the solenoid body in or out in the bracket threads to achieve the correct engine speed. Tighten the lock nut securely, disconnect the jumper wire, re-connect the lead-in terminals and remove tachometer.



## The need for air pumps

### WHY SOME ENGINES NEED EXTRA AIR

The more exacting exhaust emission levels called for by the standards for California require that

some California engines have an air pump as well as a catalytic converter. This air pump is necessary in order to introduce sufficient quantities of oxygen



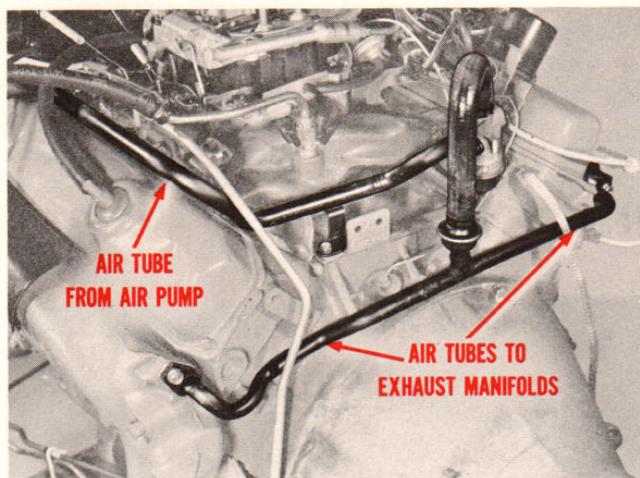


Fig. 41—Air pumps supply added air to the converter system

into the exhaust stream so that those engines can meet the tougher standards on hydrocarbon and carbon monoxide emissions.

### AIR PUMP DELIVERY SYSTEM

The extra supply of controlled air is piped into the exhaust manifolds on V-8 engines by tubing connected to the pump air delivery outlet. Air enters the exhaust manifolds at the rear and is delivered into the exhaust stream by rifle-drilled passages in the exhaust manifold castings.

### MORE COMPLETE REDUCTION OF EMISSIONS

Extra air flowing into the exhaust system and catalytic converter insures more complete oxidation of the unburned hydrocarbons and carbon monoxide inside the converter. As a result, higher heat levels are developed throughout the entire catalytic converter system. With higher temperatures prevailing, emission levels are reduced even more than Federal

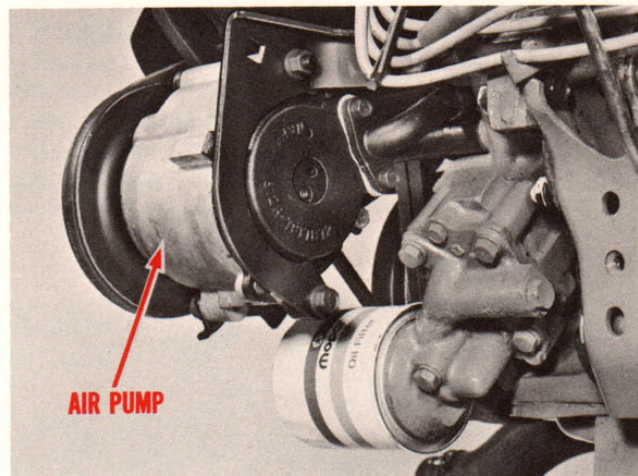


Fig. 42—Air pumps deliver air to rear of exhaust manifolds

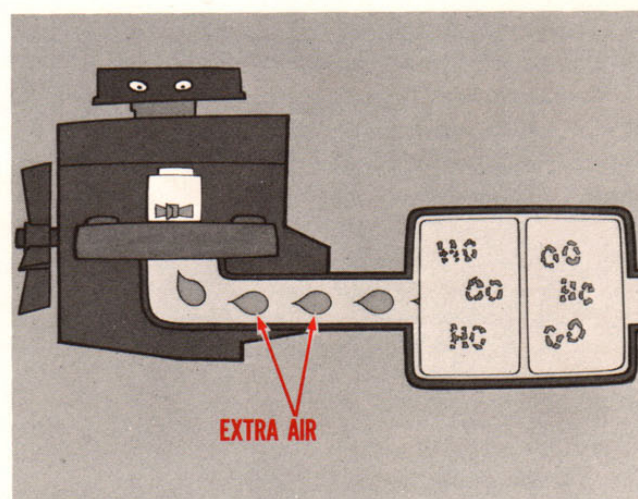
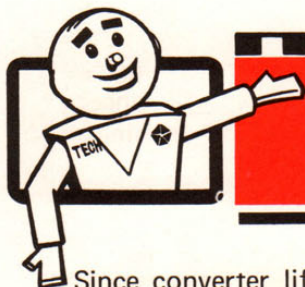


Fig. 43—Extra air insures more complete oxidation

standards. This is also the main reason for added insulation under floor mats.



## Clean air is everybody's job

Since converter life is directly affected by engine operating condition, scheduled maintenance and regular tune-ups of 1975 models are more important than ever before. Converters are covered under the terms of the vehicle warranty for 50,000 miles and will perform their vital function of reducing exhaust emissions for that duration only when the vehicle's engine is delivering good performance and the proper fuel has been used. But more than that is necessary. Chrysler Corporation did an excellent job of de-

signing their new catalytic converter system to meet the tough 1975 emission standards. But, owners must be made to realize they also have a big responsibility in clean air, too. Urge them to follow factory recommendations as listed in the Operator's Manual. And, because of your technical know-how, professional service skills and training, you can maintain the new 1975 vehicles so that exhaust emissions are kept at a minimum for better air quality.



## Test Questions

**MEETING LEADER'S INSTRUCTIONS:** Explain that the first three questions are multiple-choice type. Have each mechanic circle the letter in front of the statement which he thinks is correct. For example, if he thinks the correct answer to question number 1 is B, he should put a circle around it . . . like this (B). Explain that questions 4 through 10 are TRUE and FALSE type. Mechanics should put a mark after TRUE ☒ for each statement they think is correct and put a mark after FALSE ☒ for each statement they think is incorrect. Have them write their names in the space provided and turn their reference books in to you for scoring and recording.

1. The new oxidizing-type of catalytic converter helps to substantially reduce the exhaust emission levels of the following two pollutants:

A. Carbon monoxide and oxides of nitrogen ( $\text{NO}_x$ ).  
B. Unburned hydrocarbons and carbon monoxide.  
C. Unburned hydrocarbons and oxides of nitrogen ( $\text{NO}_x$ ).

2. The Catalyst Protection System is designed to:

A. Protect the converter during periods of rapid acceleration.  
B. Protect the converter during prolonged periods of curb-idle speed.  
C. Protect the converter during normal deceleration driving conditions.

3. When two or more spark plugs misfire over a prolonged period of time, it will:

A. Quickly destroy the converter.  
B. Have little or no effect on converter life.  
C. Only affect engine performance and mileage.

4. When the ignition switch is turned ON, the throttle positioner solenoid becomes energized to provide a fast-idle throttle position.

TRUE ☐ FALSE ☐

5. The catalytic reaction inside the converter also reduces the level of oxides of nitrogen emissions ( $\text{NO}_x$ ).

TRUE ☐ FALSE ☐

6. Hydrocarbons and carbon monoxide are changed into harmless carbon dioxide and water from the catalytic reaction inside the converter.

TRUE ☐ FALSE ☐

7. Too rich a fuel mixture entering the converter because of misfiring cylinders or poor engine operating condition, develops excessive heat levels that eventually destroy the converter cores.

TRUE ☐ FALSE ☐

8. The words "CHECK EGR" become visible at the instrument panel when the vehicle has been driven 12,000 miles.

TRUE ☐ FALSE ☐

9. With battery voltage applied to the throttle positioner solenoid, it should be adjusted in its bracket to provide an engine speed of 1500 R.P.M. (plus or minus 50 R.P.M.)

TRUE ☐ FALSE ☐

10. Adding presently available leaded fuels to the vehicle gasoline tank will destroy catalytic action.

TRUE ☐ FALSE ☐

NAME \_\_\_\_\_