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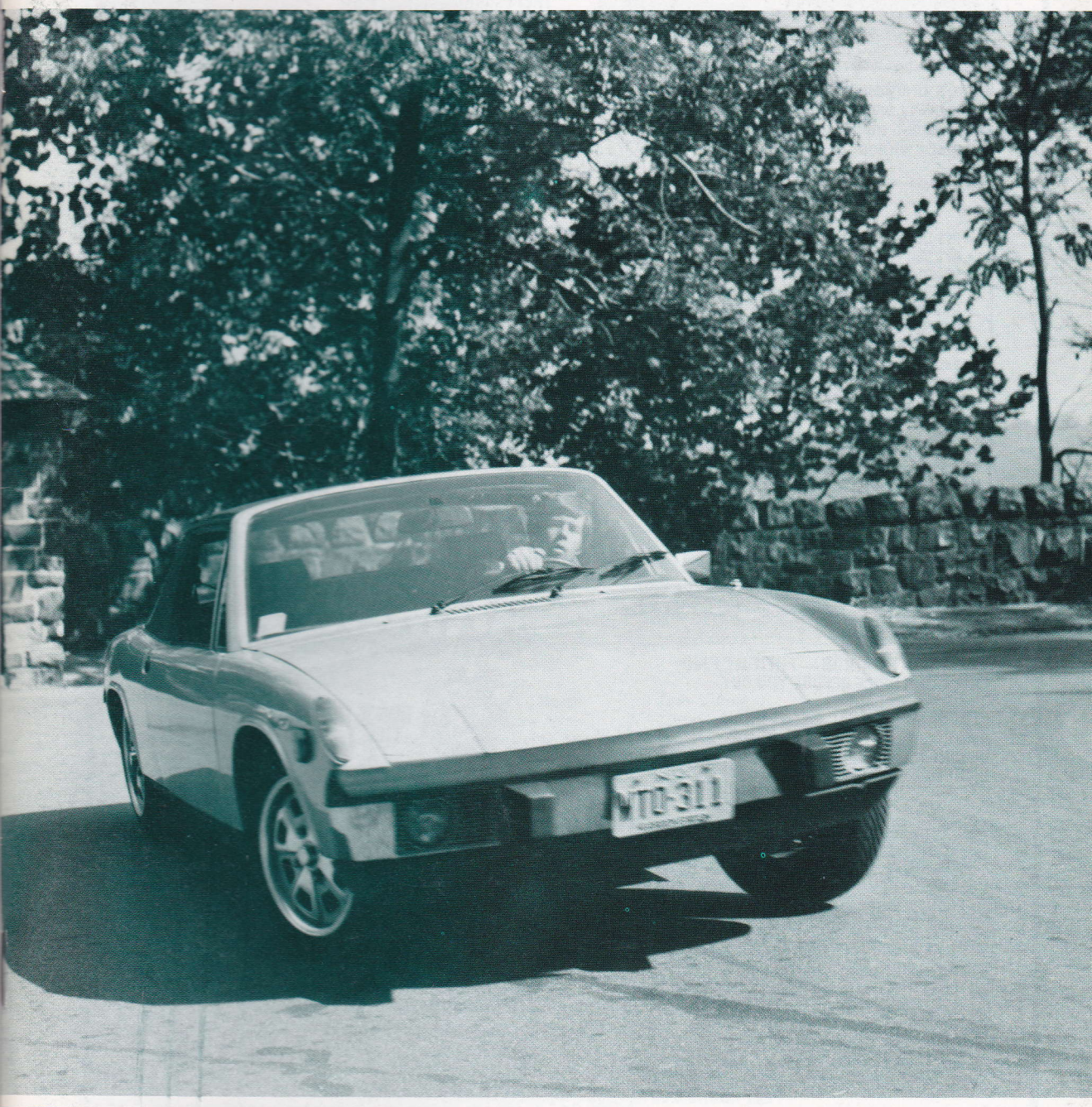

Trouble shooting the 914

Rainbonnet '79:

Trouble shooting the 914

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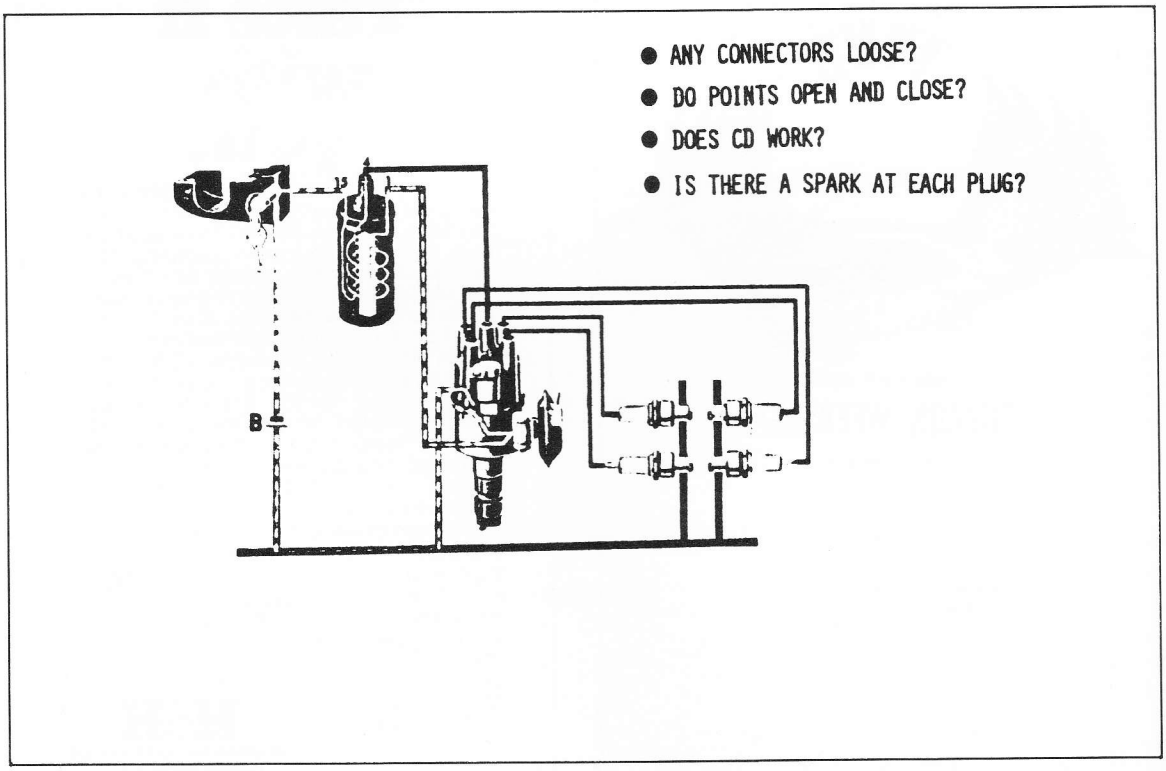
The purpose of my presentation is to describe some of the troubleshooting and maintenance procedures that we old-timer 914/4 owners have learned. One of the most distressing things that can happen to a new 914 owner and one of the most frequent questions I am asked is what to do when the car suddenly stops on the freeway and won't restart or won't start after being parked. When the car has been parked for a while and won't start (I'm assuming here that you always use the correct starting procedure), there are three conditions to worry about. The most troublesome condition occurs under normal temperature conditions. Cold and hot are pretty straightforward. For example, if you go skiing in the wintertime, stay overnight in the mountains and park the car outside overnight, you may come out in the morning and find the car won't start. What may have happened is that the water in the gasoline has gone to the bottom of the high pressure fuel system circuit and formed ice around the injector. The injector, as you know, is a solenoid-operated valve. Once that freezes, the car is never going to start until it is thawed. The answer is that if you are going to drive your car in freezing weather, you must use a gas dryer to keep water from accumulating in the high pressure circuit. In the case of extreme high temperature, the problem is usually fuel vapor lock and we will get into that in a few minutes.

What I thought I would do this morning is review for you a routine that I would recommend for getting the car going under normal temperatures; that is, what the priority is in troubleshooting if the car won't start or if it stops when it shouldn't. The three main things to worry about are the ignition system, and two

Figure 1 914/4 Ignition System



parts of the fuel injection system—the high pressure gasoline supply system and the electronic part of the fuel injection system which tells the high pressure system when to supply fuel.

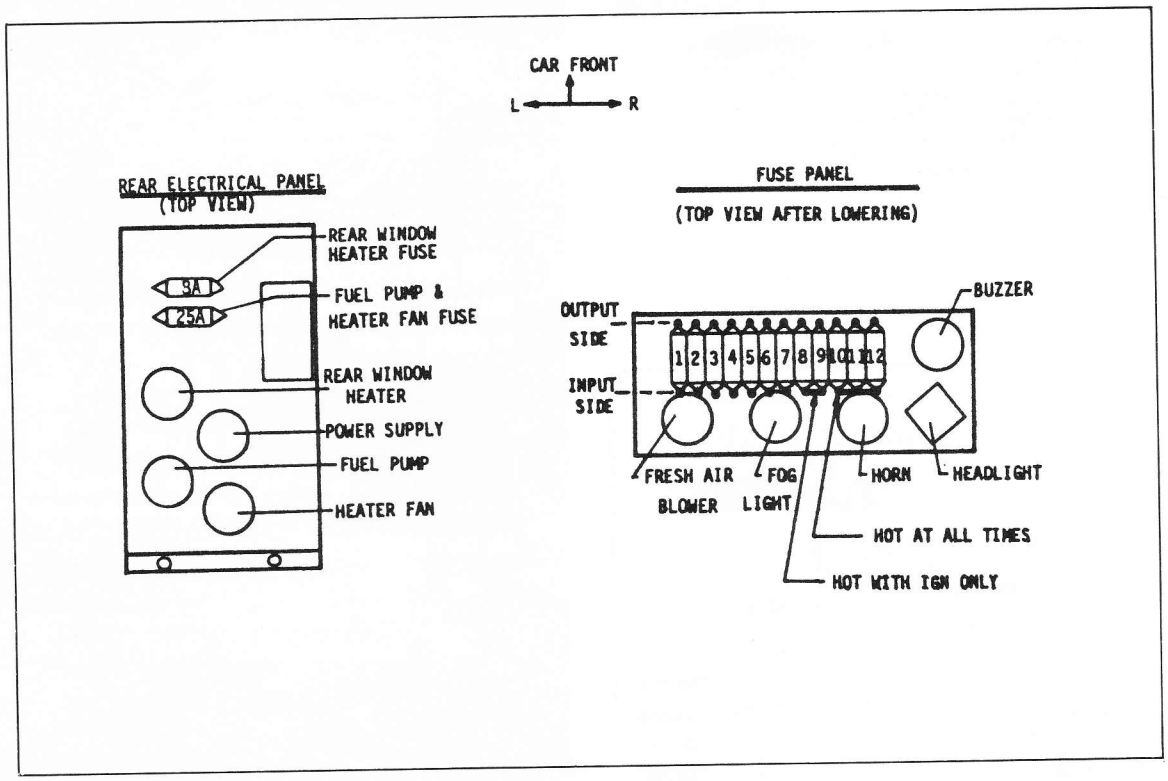
The first item on the priority list is based on our experience that about 95% of all failures in starting or in stopping suddenly are due to something wrong with the ignition system. A 914 has about the simplest ignition system of any car around (Figure 1), and each owner should take the time to understand how it works. There are a few people who have installed capacitive discharge units, as I have, but they are really not all that necessary on a 914, although they do save point wear.

PANO recently has published some electrical wiring diagrams on 914's (1971 model: PANO March 1978). If you really intend to pursue this subject, you should determine which workshop manual supplement contained the colored wiring diagram for your particular model. The supplements are only $5.50 from PCA National and having the diagram for your own model is well worth the money. It has a color coding of all the wires and you can trace the ignition system and any of the other electrical components and wiring.

But you usually don't carry the supplements around with you, so you have to run through a mental check list if the car won't start, or stops. For example, I was driving to a rally and got three blocks from home and the car stopped dead and was unstartable. The first thing you do is to look for loose connections in the engine compartment. In the 914/4, not only does the fuel injection system have about a zillion connectors, but the ignition system is also mostly connected by clips. Clips are good in that they go on and off easily, but are bad in that they occasionally fall off for no apparent reason. A careful visual inspection of the connectors can pay dividends. My problem was a loose coil wire; I was quickly on my way. If there are no obvious loose connections, the second thing to find out is whether or not your points open and close and you have a spark. One way to do that is to put the car in fifth gear, take the distributor cap off, and just push the car while watching the points. You can visually tell right away if you have the right point gap by comparing the maximum opening with the thickness of a business card. If the points open and close and there are no connectors loose, and if you have a C.D., check to see if it is working. Turn the ignition on and if the unit hums, the oscillator is working and you are OK.

On some Delta Mark 10 models, where there is a switch that provides either the standard ignition or the C.D., we have found cases where you could push the switch to the regular ignition and the car still wouldn't start. The push button switch can be bad! So it is not

Figure 2 914 Electrical Panels



enough just to use a switch on the C.D. What you may have to do is go clear back to ground zero, bypass the C.D. completely, and reconnect the basic ignition system like it was originally.

If that still doesn't get you started, then you have to determine whether or not there is a spark at the plugs. The easiest way to do that is with your spare spark plug. Everybody should carry a spare spark plug in the car. Without having to remove any plugs, you can one-by-one pull the connectors off and place the spare plug into the connector, turn the engine over while grounding the plug threads against the engine. You will see the spark if it is there. If you get that far and you know you have a spark on all four plugs, then you are probably lacking fuel or else the car would run.

So that brings you to the fuel system and all of a sudden you have to learn something about electronic fuel injection. I don't know how many of you have studied the various fuel injection systems that are available on the 914/4. The most common one is the MPC system, which is sometimes called the D-Jetronic. MPC stands for manifold pressure control. This system was used in all the 1.7 and 2.0 cars. In 1974, they introduced the air flow control system, AFC, (also called L-Jetronic) which was used on the 1.8 models. The AFC works off of measured air flow and has the advantage of far fewer connectors, but it also has its own series of problems and there is less freedom in making adjustments on it.

I have heard that the MPC has something like 350 electrical connectors and these things can drive you mad if they don't stay reasonably clean. They are OK when the car is new, but as the car gets older and if you let the engine compartment get dirty and let the clips get corroded, then you can have problems. Anyhow, each owner should understand enough about his injection system to know how it basically works.

For starters, a couple of components critical to the injection system are the two electrical panels in the car (Figure 2). One is the panel up front underneath the steering wheel. There are two big screws that hold it in and the panel drops straight down when they are removed. You see twelve fuses and some black relays. They will vary a little from model to model. The important thing to know about the fuse panel is that there is an input side and an output side. The bottom side of the fuse panel is the input side; the top side is the fused output. The inputs for numbers 10, 11, and 12 are bussed together and there is an extra set of clips. Those terminals are hot at all times. The next two clips, #8 and #9, are hot with the ignition on only. So if you want an accessory or power lead to work on-

continued on page 26

(continued from page 22)

ly when the ignition is on, you plug it in #8 or #9 input, and if you want it to work all the time, you plug it in #10, 11 or 12 input side. Curiously, the power to run the rear panel "power relay" which works the primary side of the fuel pump relay comes from the input side of the #9 fuse!

You should know what the relays are and realize that typically you have a fresh air blower, horn relay, and fog light relay on the front panel. And, of course, the buzzer. When you got your car, the first thing you did was pull it out and put it in the glove box right? The relays are instrumental in getting power to all the different components of the car. The car has about eight or nine of them and when one goes bad, you just about have to replace it. There are some spares around, because several are not in continuous use. There are two in the headlight assemblies under the black plastic covers inside the trunk: one on each side. During the daytime, if you find one that is burned out somewhere else, you can pull one out of the headlight assembly and use it

Question: Are they all the same?

Allan: All the same. This is one thing they did right.

Question: How about the 911's as well?

Allan: Yes, beginning in 1969.

The rear electrical panel in the engine compartment has a cover over it in the late models. One relay there in particular you should know about is the fuel pump relay. You can't believe how many electrical components there are between your battery and the high pressure fuel system. First of all, there is this relay that says "fuel pump" (Figure 2). Its secondary circuit input comes through the 25 amp fuse. The input to the primary circuit of the fuel pump relay is the output of the power supply relay. All three of these have to be in good shape for the fuel pump to work! In other words, the fuel pump relay is the last component on the line before the fuel pump and it takes power from both the power supply relay and the fuse. The power supply relay can fail and even though the fuel pump relay is good, you won't have any fuel pressure. You must make sure both of these are good. And you can check whether they are good or not by a little experimental swapping with a known good relay.

What I did on my car was locate each of these relays and apply a little masking tape with a notation to indicate which circuit it works. You can't remember when you are out on the highway and the car suddenly

stops. The same procedure can be utilized with the fuse box. Once you understand the electrical system, what you have to do is think a little bit about the fuel injection system itself. What I have done here on a diagram (Figure 3) is indicate the main components of the MPC. Variations of this system were used for everything from Cadillacs to Saabs. It is a very reliable system except when it gets old and has not had proper care.

Basically, the fuel system feeds fuel from the tank to the fuel pump, a continuously running rotary pump, the parts of which are bathed in fuel, which then pumps the fuel into the high pressure circuit. The pump has a return on it that goes back to the tank, since the pump output is much greater than the engine usage. The high pressure circuit has a pressure of around 30 psi. If you have a leak in the system, you will have gas all over and a possible fire hazard. Be sure you have a good fire extinguisher when you drive a fuel injected car.

Some of the early cars suffered fuel line damage from battery acid. Following this, 914 owners in the U.S. received a letter about two years ago asking them to come in and have the fuel system rebuilt. This was done at no charge; there were about $23 worth of parts, and no charge for the labor. Not only did they give you much better lines, they used a reusable clamp. These cars were originally built with a mechanically ingenious clamp that was used once and could never be used again. If you were out on the road and something went bad, unless you could get to a hardware store for a clamp, there was no way to repair it. Getting it off was a problem too, if you didn't have the right tools. The new clamps they put on were very good; they were screw-type clamps with a little guard on them. This was a worthwhile recall, although Roger Chaney points out that the kit only covered fuel hoses and clamps above the engine sheet metal and many fires were caused by gas leaks under the engine near the pump.

The fuel pump is really critical. If you get out in the middle of nowhere, even if there are gas stations, and your pump fails, then you've got big trouble. Also it's a good idea not to run out of gas with rotary pumps since they can go dry and burn up. When you get a new pump from the dealer, it has caps over the opening and it has prime fuel in it. If you store one, leave the caps on. The fuel is there so the pump won't run dry and burn up the first time you run it after installation. By the way, to minimize vapor lock if you are driving in hot weather, you shouldn't let your fuel level go down below one-third or so. What happens is that the pump turns out so much fuel and returns it to the tank that it creates a flow between the pump and the tank and so you are recirculating cold fuel back into the pump all the time and are less likely to get vapor lock. But if the tank gets down below a quarter—like an eighth or so—you are just heating up the fuel that is remaining.

On the MPC, the injectors can open when the engine is cranked, and if the engine doesn't immediately start with the pump putting out 30 psi, you might have a goodly amount of fuel going into an open intake valve. The system solves that problem by putting a delay in the logic of the fuel pump circuit so when you first turn the key the pump runs for one second and stops. Then, it doesn't start again until the engine starts to run. Now, this provides a clue on how to get the car going if you get vapor lock and there is nothing but bubbles in the line. You can usually drive them out into the return line if you repeatedly work the pump starting circuit. When the atmospheric temperature gets over 100° and you have bubbles in the high pressure circuit, turn the key on and off. It may take 25 times, but you will usually find that the car will start.

What they officially recommend is to move the fuel pump forward as in the 1975 models. What we did locally was to take the heater control valve on the right hand side, which dumps the hot air from the heat exchanger onto the fuel pump, and carefully take the top off, get a piece of 911 heater hose and some glue

and/or a clamp, glue the hose over the top, and run the hose over to the middle of the car and dump it straight down. This will take the hot air away from the pump and solve most of the problem for the cooler climates.

Now, let's get back to getting the stalled car started under normal temperatures. If you can hear that buzz, you know you have a fuel pump. That's 90% of the battle. If the car still won't run and the fuel pump is working, then you have to worry about the rest of the fuel injection system.

Let's talk about the way the fuel injection system works. This system is a pulse-width-modulated system. A lot of people think that the so-called "brain" or electronic control unit is the most crucial part of this system. It is not. The heart of this system is the trigger points. Is there anybody who has not seen this part before? (Figure 4) You won't find much in any maintenance manual, including the factory manual, about maintaining these points. However, they are absolutely essential in making the car run. The basic fuel pulse is generated by these two separate points that are worked off the distributor shaft. The points don't have much voltage, about .3 volt, and can get dirty; they are in an oily place. What those points generate is a square wave voltage vs. time, which provides the basic injector opening pulse, which can vary from 4 to 8 milliseconds.

The pulse is sent into the electronic control unit and all the other sensors shrink or expand that pulse width for the appropriate driving conditions. As long as you have any pulse at all, the engine will probably run if the injectors are working. It is just a matter of making sure you have good trigger points. Most of the unstartable car cases I know about that seemed tough to solve were caused by lack of fuel to the engine because these points were not right. Consequently the trigger points are high on the list of things to check.

The only problem is that you have to pull the distributor out and that is not always easy to do out on the highway. As an example, I was driving to an autocross one morning and heard a tremendous backfire and the engine stopped. We couldn't get the car started even though some of the local dealer people at the autocross tried to help me. They all thought it was electronic control. I had driven the car only 30,000 miles. The trigger points are supposedly designed to last 50,000 miles but they were bad. Now, I wouldn't drive across the state without a spare set of trigger points.

Another interesting thing about the way these systems work is shown in the firing diagram (Figure 4). Here are the cylinders, 1,4,3,2. Cylinders 1 and 4 and cylinders 3 and 2 are injected simultaneously. Think about that. It injects two cylinders at once even though the intake valves are not open at the same time. One cylinder gets the fuel just as the intake opens and the next one has to wait until the crank turns another 180°. You wouldn't think that would work, but it does. They even do this on the 6 and 8 cylinder applications.

Question: Does that have an effect on the way valves would burn?

Allan: I have never heard any indication that it affects the valves.

Question: When the points failed, what did the car do?

Allan: The car just stopped due to lack of fuel. What happens is you get dirt or oil in the points. There is no adjustment on the contacts and usually you can use them over and over again as long as they are clean. You can clean them with lacquer thinner, etc. I have heard a lot of people have had this problem, and then there are many others who never encounter it.

Question: If you had one set of points with high resistance, would you lose two cylinders or lose it all?

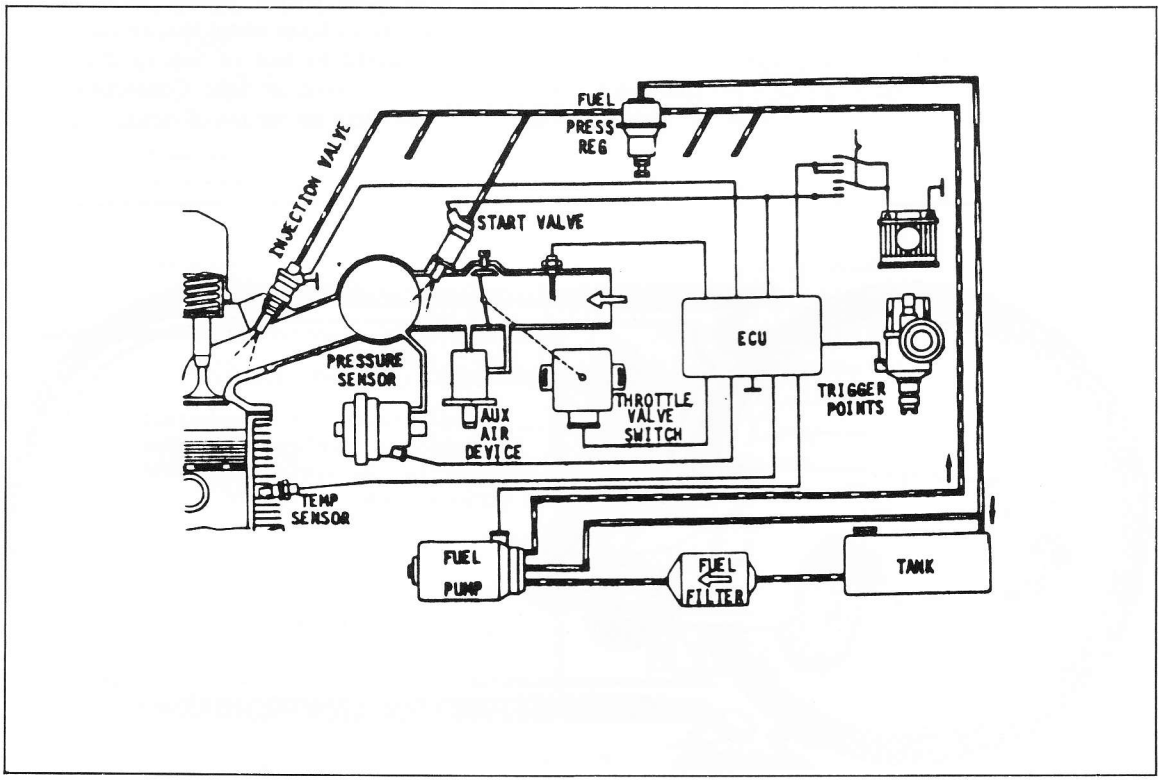
Allan: It would seem that this would be the case since each set has the same center tap and individual outputs. However, in the cases I have experienced, both have failed. Of course, it is also possible that an injector might fail, but unlikely that all four would fail simultaneously. One injector out will cause rough running and loss of power, but the engine will run. So if there is no fuel at all, the most likely cause is the trigger points.

Question: When a relay fails, does that mean it is not opening properly, or does it just cut out?

Allan: Usually it is a full disconnect. Something fails in there and it can be either the secondary going open or bad points. I have had relays break, taken them apart, repaired them, and put them back together again and they work.

Another important MPC component is this cylindrical object, the air pressure sensor, down by the battery (Figure 5). It measures pressure and puts out a signal proportional to the difference between the intake manifold pressure and the outside atmosphere. That is one of the main controls on the fuel injection pulse. It is unlikely that anything is going to go wrong with it, as long as it reads the right manifold pressure

Figure 3 MPC (D-Jetronic) Fuel Injection



(like 13-14" Hg at idle). However, for those cars that seem to be lean, there is an old mechanic's trick for getting more fuel into the engine by putting a gasket between the two halves of the sensor case. The early models had screws holding the two halves together and the late models are riveted shut so the halves are not easily separated. However, you can drill them out and put in screws if you are really determined.

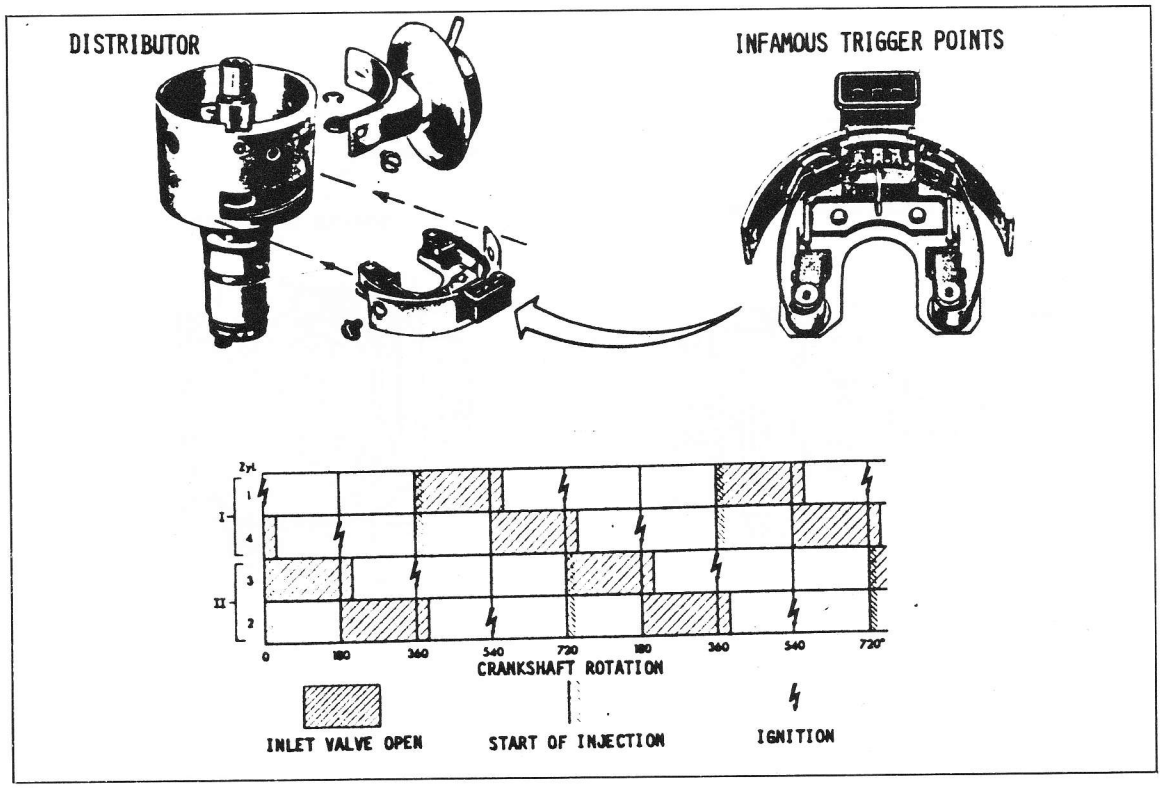
What you do is take the two halves apart and buy yourself a 36 horsepower VW engine oil pump gasket; it just exactly fits the case. If you bolt the halves back together with the gasket between them, it makes the air pressure sensor think that the car is operating below sea level, and obviously the engine will get more gas and will be stronger. By the way, there is also a sealed screw on the end of the case that will accomplish somewhat the same thing. The trouble with this air sensor fix is that it is just a crutch and may be just covering up some other problem that ought to be fixed.

If you want to add fuel for the track or autocross, the purists would much rather have you add some resistance to the temperature sensor on the cylinder head. This is a sender unit on the right hand side of the engine and the '73 model, 2 liter, came with a series resistance in the line. The sender starts out when it is cold at about 2500 ohms and when it gets hot it goes down to almost no resistance at all. What you want to do to make the engine think it needs more fuel is put more resistance in the line. Roger Chaney has noted that some temperature sensors came from the factory with low resistance. The cure was the same and, as a matter of fact, there was an add-on resistor supplied by Porsche for this.

If you have a 74 or later and there is no resistor in the line, you can buy the 73 part and just put it in series. The thing you want to remember about all of these adjustments is that they make the pulse wider. You can have a terrible running engine and it will still probably get you where you want to go, even if the sensors aren't right. But you can't get anywhere at all if you don't have the basic electrical pulse generation and the proper electrical connections.

Speaking of connectors, each one of the MPC injectors has a wire going to it from the electronic control unit and then a ground wire from the injector to ground. These grounds are grey in color and go back through the wiring harness to ground terminals that are at the rear of the engine, under the air cleaner, and just ahead of the bulkhead between the engine and transmission. I had an interesting experience on the way to the San Diego Parade. We had been concouring the car the day before. The next morning when we left to drive to San Diego from Seattle, I started the car and it didn't run well, but had an intermittent miss. I would go around a corner and it would run pretty good, then not so good in a straight line. It took me half way to California to realize what had happened. I had dislodged a couple of those grounds on the back of the engine when I was cleaning and they were making occasional contact only. It is terribly important to look at all the grounds and make sure they

Figure 4 Basic MPC Fuel Injection Pulse



are clean and tight because without them, you won't have fuel to the engine.

We have even heard of an emergency procedure to get fuel to the engine when all else fails. What can be done if you are out in the middle of the desert or some remote area and the fuel injectors aren't working at all is to use the cold start valve or "fifth" injector as a source. Since this injector is independent of the rest of the system, a hot lead directly from the battery to the cold start valve will put gas into the intake manifold. The car won't run well, and 12 volts on a 3 volt component isn't all that good or normally recommended, but it could save you a lot of bother.

The throttle valve (Figure 5) is really not all that crucial. It primarily affects the way the engine idles if it gets dirty, although it can possibly cause poor low end acceleration as well. By having it clean and positioned properly, the car will idle properly and run well.

Question: Where are the contacts located?

Allan: The unit is on the side of the throttle housing and has a black plastic case.

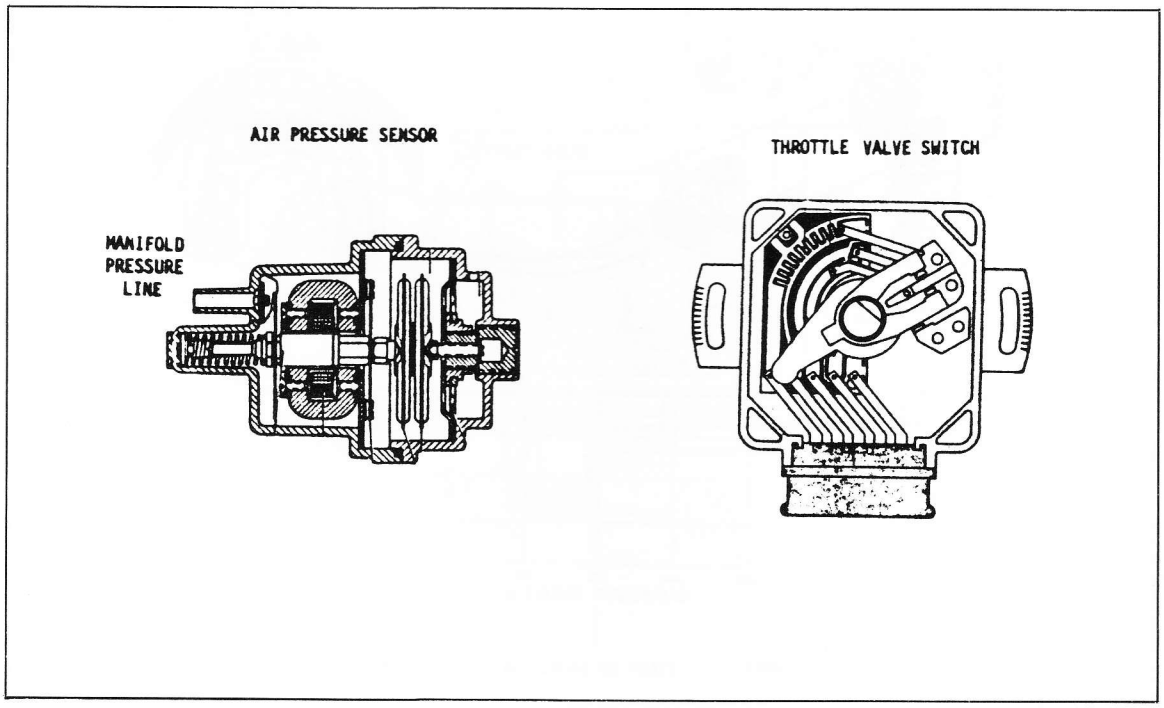
The later models of the MPC had a mixture control screw on the electronic control unit which has generally been found to be quite stable even over long periods. It has "click" positions and you can start out from zero and go clockwise to the normal setting of 12 clicks for idle mixture control.

Now, let's talk a little bit about the marvelous world of AFC (Figure 6) which some of you people probably know more about than I do. Notice that the high pressure fuel system part of this set-up is essentially identical to the MPC. You still have the fuel pump, the fuel filter, the fuel pressure regulator and return lines. It still uses a pulse-width modulated system. But instead of taking the pulse off a separate set of trigger points, this system has a microprocessor which takes the squiggly trace produced each time a spark plug fires and runs it through a whole set of wave shaping and forming filters and finally presents the electronic control unit with nearly the same kind of pulse as the MPC does. However, the main pulse width control here, instead of being the manifold pressure as in MPC, is a vane air flow sensor, as shown in cross section in Figure 6. This vane is deflected a certain amount depending on how much air is taken in and the more air that comes in, the more fuel you get.

These systems are about as close to a sealed unit as anything I know about. They either work or don't work. The most frequent complaint we get about them is improper or impaired vane motion due to air box warpage or occasional breakage. There isn't all that much you can do on this system to adjust how much fuel goes into it. The corrections to it come predominantly from this sensor and there is less influence from the temperature sensor. I think we might have heard fewer owner complaints about this system because there is less to adjust on it than the other one. However, as we all know, there are good and bad things about not having adjustments.

Question: I had some trouble with backfiring, the engine was not running right and I took the car into our local shop and the mechanic popped the top of the oil filler cap off. There should be two O rings in there and this top didn't have them or else they had been

Figure 5 MPC Critical Components



broken. You have got to have them in there because this system relies on a good seal from the crankcase and even if you have the dipstick out, it doesn't work right. Any comment?

Allan: It is critical that all AFC air connections be airtight, and even on the MPC, if there is a leak in the manifold system, the engine will not run properly. The thing that everyone should remember is that these injection systems always fail lean. They get leaner as they get old, get out of adjustment or fail. When a car is backfiring, it probably means that you're not getting enough gas or you are getting too much air such as from an air leak somewhere. So you should look for these things.

The following is a list of things that I take with me when I go on a trip:

Fuel pump
Trigger points
Distributor points & condenser
Spare relay (s)
Clutch cable
Spare spark plug
Throttle cable
Miscellaneous fuses, oil, tools

I guess we have talked about most of the start and fuel injection troubleshooting problems. Are there any topics you would like to discuss?

Question: Do 914/6's have a heavier clutch cable?

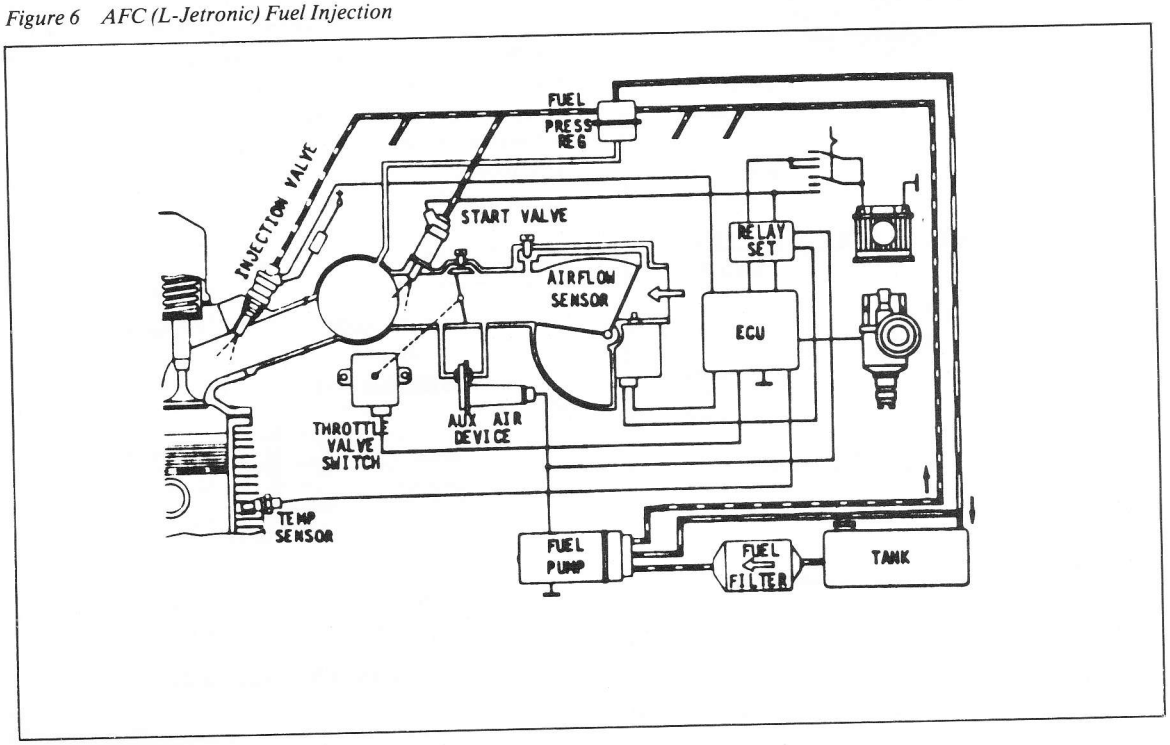
Allan: The 914/6 cable strands might be a little heavier; the two have different part numbers, slightly different fittings, and the 914/4 comes with a plastic sheath where the cable goes through the motor mount. In spite of these differences, I have heard that the 6 cylinder cable will work on the 4 and may even be cheaper.

Question: How do you jump start a 914 with electronic fuel injection? I hear some people say don't worry and others say be careful whenever you try to jump them.

Allan: I don't see any problem. Just connect the jump cables in the approved way, but follow the normal starting procedure. It often helps starting, especially when the car has not been driven for more than a day, to cycle the pump several times as outlined earlier.

How many people are unhappy with their brakes? Spongy brakes, squeaky brakes? The 914 has a bad reputation on brakes which I think is undeserved. We have found here locally that the best way to solve 914 brake problems is to do two things. First of all, install the stainless steel flex lines. For some reason or other, they seem to help the 914 considerably more than the 911's. On the 914, as you know, you've got the pressure relief valve in the back of the car. It limits the pressure in the back braking system to about 700 or 800 psi. I don't know if you've ever sat in your car with everything quiet and worked the brake pedal, but you can hear it click. Limiting the pressure in the back system prevents the back wheels from locking up—the 914 is relatively light on the rear wheels. However, there is a problem with that valve—it seems to make the brakes a little harder to bleed. Pressure bleeding is a must for the 914 and the steel brake lines. Having done those two things on my own car, I think my 914 brakes are equal to or better than those on my

Figure 6 AFC (L-Jetronic) Fuel Injection



unvented disc 911T. One of our local inventors, Syd Baker, came up with a good idea for bleeding 914 brakes using a spare 914 windshield washer pressure hose and the spare tire pressure (see PANORAMA, January 1980). You won't believe how much your brakes can be improved by this process.

Question: What about trunk hinge failure?

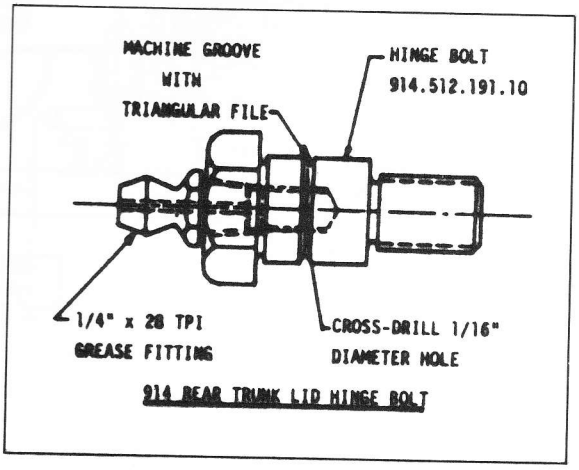
Allan: One problem is the hinge bolt seizing and the other problem is the hinge bracket breaking. The latter has been written up in Upfixin Vol. 4 (PANORAMA, August 1975). There are a number of ways of doing that. Some people have suggested just reinforcing the bracket with sort of a home-made metal support or you can go the whole route and reweld in a new fitting. Roger Chaney suggests that bracket failures can be prevented by carefully removing the torsion bars which hold the luggage lid up (and overload the brackets). Put them in a vise, heat near one end with a torch and "relax" the bar about 20°.

Question: Can you heliarc the cracks?

Allan: I suspect you can, but have not heard of anyone who has. Does everybody know about the hinge bolt repair? That's a bolt as shown in Figure 7. It is the main bolt that holds the rear trunk lid in. It is visible underneath the fixed side panels at each end of the engine compartment lid. It has a big hex head and then narrows down to a small diameter neck and is threaded out at the end. There is a big bearing surface and no lubrication at all. What happens is that this surface seizes and the bolt breaks off. What you can do is buy these bolts new and build in your own lubrication system. It is easy to drill a hole right down through the middle. Use a 7/32" drill and drill a ½" deep hole down through the middle, cross drill it as shown and then mount it on your ¼" drill in a vise, spin it up and with a file, put a little groove all the way around the middle that allows a little grease to get to the bearing surface. The end can be tapped out for a standard grease fitting. Unmodified bolts should be sprayed with WD-40 regularly.

One other thing I might mention. Anybody have any trouble with green lights at the track or during autocrosses? That's a problem with four cylinder

Figure 7 914 Rear Trunk Lid Hinge Bolt



engines and you really don't want to see green lights indicating the oil pump pick-up is uncovered. We have found that the 914 won't be harmed by slight overfilling of oil. I would suggest that you can put in half a quart, almost a full quart, over the fill mark and you won't see any green lights. The engine doesn't have all that much oil in it and I usually put four quarts in the car when I change the oil, even though it's 3.7 or something. And I've added a half quart on top of that occasionally at autocrosses. Once you do that, you won't have any trouble. The other thing you can do if you want to go all out, is to buy the sump extension that is offered by a lot of VW places. The trouble is that it reduces ground clearance. It's not too good to run with too much oil for normal driving, but if you get out on a track or at an autocross, the extra oil can help. Correct oil level is read only after the engine has been shut off for one to three hours.

Questions: What about body noise?

Allan: Well, the 914 really has a lot of body and door adjustments in it for curing body noises, possibly more than most Porsches. The doors are completely adjustable. You can adjust the angle and in-and-out position of glass. There is really no reason for these cars to have excess body noises. All convertibles tend to be a little loose, but usually a noise is caused by two dry surfaces rubbing. I've found that rubber lubricant and silicone spray go a long way toward eliminating a lot of noises around the rubber parts—the doors and the windows. Many deck lid torsion bars rub and make noise—rubber hose separators will solve that. You occasionally will get noises in rear shocks. If you hear a knock in the right or left rear, it may just be a bad shock. The car should be a pretty tight car and there are lots of ways to improve its tightness by making sure the windows are adjusted correctly and the rubber parts fit well. In 1974, there was a new rubber weatherstrip which has an extra overhanging lip and you can retrofit this strip to earlier cars and it gives you a better seal for wet weather.

Question: I've noticed that those chrome pieces up there, it looks like parts of that top is vibrating. I guess the body is vibrating.

Allan: You might have some motion in there. A standard rule is that if you shut the door on a Targa type car and see the roof move, something is loose. It shouldn't move when you shut the door. The clips that hold the top may not be tight.

I guess that is about the end of my message. We've had a number of years now with the 914 and nothing has really changed my mind about the car. At the risk of being drummed out of the club, I think it is the finest true street production sports car that Porsche ever designed and I own two very good 911's, including an SC. The 914 has many unique features, good driving characteristics, and economical operation which have still not been matched in the later cars, and I currently don't feel all that optimistic about seeing them again in a new design. Consequently, I advise all my 914 owner friends to hang on to their cars.