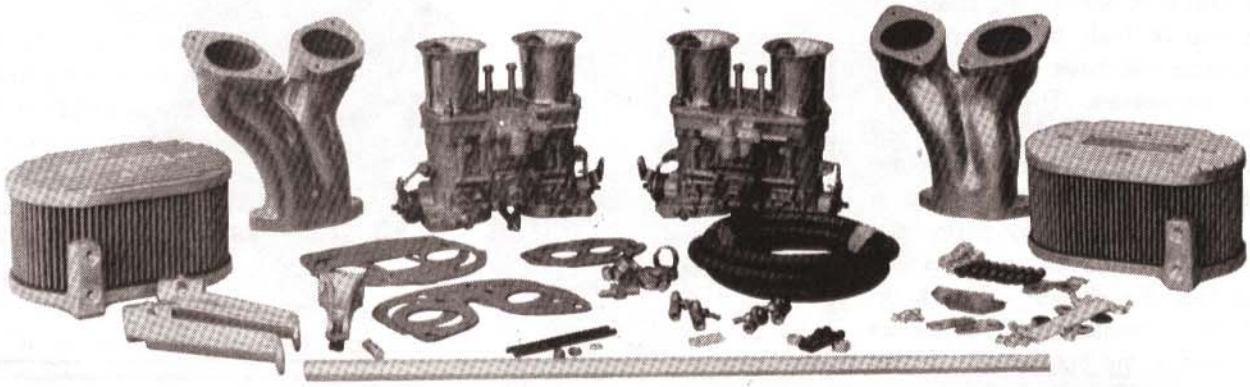
WEBERS- Bolt 'Em On



Installing your new Webers can be a happy experience, or can be the most miserable thing that has happened since your mother-in-law moved in. It all depends on whether you are reading this before or after you tried to make your Webers work.

The Webers, in most dual carburetor kits, as they come out of the box, are calibrated to run on smaller to mid-sized engines. In other words they won't be just right for every engine. That would not be practical for your favorite carburetor dealer to predict. They are however, set up so that your engine should fire up and run. The exact, final jetting is up to you, so let's take care of the basics and get it on the road.

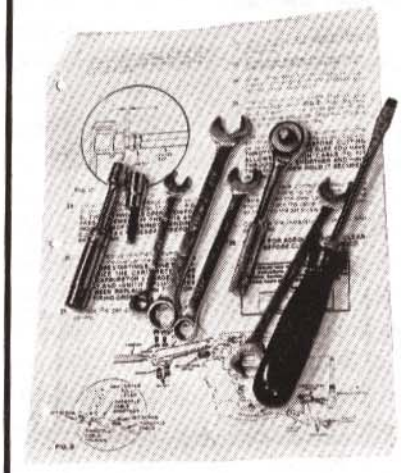
Basics, such as verifying the conditions of the complete ignition system, which includes checking the ignition timing, and the condition and gap of each spark plug have to be taken care of or you might never get running. VW spark plug connectors are famous for causing misfire.. check'em out. Your best approach here is to use an OHM meter on each plug wire, connector and even the distributor cap.

Valve lash and a compression check should be attended to, prior to bolting on a set of dual carburetors. Make certain that your engine is in top condition, because regardless of what you read in those slick advertisements, there just isn't any magic in those Dual Webers. Your new set of dual carbs won't make a winner out of a junk yard engine.

Basically, what your dual carbs are going to accomplish, is to reduce the resistance to flow. What that does is to make it possible to cram more air into your engine. And that's how you begin the process of making excellent horsepower. But in order to take advantage of the improved flow system, you've gotta have an engine that's in top shape. Then, and only then, will dual carbs start to do what they are supposed to do.

The rest of the flow system is important too. How about your exhaust system....you can't cram a lot of air/fuel mixture into a plugged up exhaust system....so check it out....and replace it with a free flowing exhaust system, and give your new carbs the chance to flex their muscles.

Look over your new Weber kit. Read the enclosed instructions and parts list. Make certain that everything is complete and accounted for. The time to talk to your parts guy is now, before you've got carburetor kit pieces strung all over the garage. Read over the suggested tool list and get the package together. Your neighbor might have some objections to loaning you his favorite left handed Okie Metric wrench at 3:00 in the morning.



When you think you've got the program under control, which includes plenty of tortilla chips and salsa, the first step is to remove the choke on the side of both carburetors. This procedure will have to be done to both carburetors. The chokes are removed for a few reasons. The first reason is that when the carbs are installed on a vehicle to be used in a serious off-road condition, the carbs will become contaminated with crud that the chokes will suck up from the surrounding air. The chokes are open at the bottom side, except for a small wire screen which is not suitable for keeping outdoor elements out of the carburetors. The second reason is that the chokes will most likely hit the fan shroud. Also in order to operate the factory Weber chokes, you must use choke cables to operate two carburetors. So to speed up the installation process, it's much easier to just remove the chokes. Besides, most of you probably won't be seeing any sub zero temperatures that will require the use of a choke.

Begin with removing the two screws that hold the choke cover on. Once the screws have been taken out, the choke cover will be easily removed. Refer to pictures (1, 2, & 3). Then replace the choke with the new choke Block Off Plates supplied in the kit. The use of different screws is also necessary since the Block Off Plates are thinner than the choke cover. The two allen head screws can be snugged down with the use of a 3mm allen wrench. Don't try and break'em off, just tighten them down. Now that the chokes have been removed and blocked off, it's time to pre-tune the carburetors.

Pre-tuning is going to make you look like a hero during the initial fire up routine. A good carburetor pre-tune is where you decide who is going to take charge of the situation. You or the carburetors. Pre-tuning is initiated by setting all of the butterflies at the same opening. This is accomplished by using a .004 steel feeler gauge placed between the butterfly and the side of the carburetor barrel wall. Refer to picture (4). Adjust the idle speed screw until a tight, snug fit between the butterfly and the side of the barrel wall is obtained. The feeler gauge should slide out of the opening with a slight amount of pressure. Check the barrel closest to the idle speed set screw.

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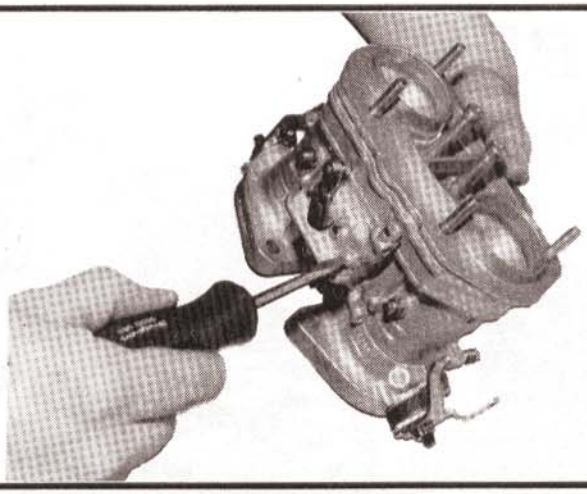

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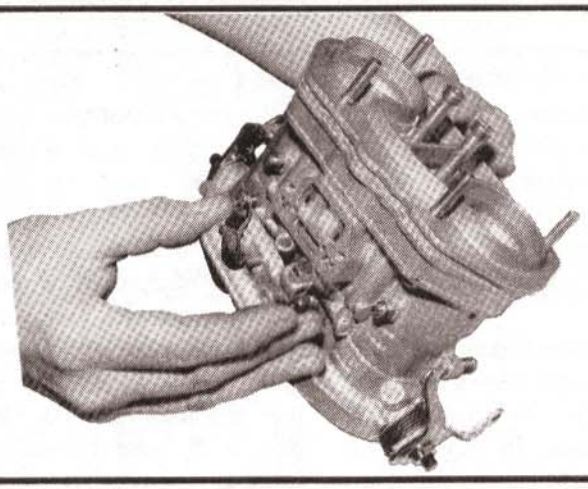

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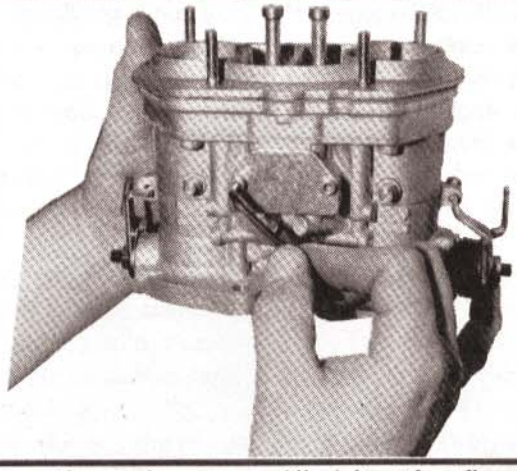

Each carburetor should be the same to assure you equal air flow during the first start up period.

A .004 clearance between the butterflies and the carburetor walls might result in an engine idle speed that's slightly on the fast side, but at least your carbs will be set even and your engine will run smooth. You can slow it down later.

Now turn the mixture screws inward gently, clockwise, until they bottom out. Don't cram'em into the bottom of the threaded needle wells, slow and easy is the key to this operation. Turn each mixture screw out, counter clockwise, three turns. Refer to picture (5). This will provide an even starting point for idle speed air/fuel mixture control when the engine is first started.

Now is as good a time as any to pre-set your air by-pass screws. Set them one half turn off the bottom. Refer to picture (6). As elementary as it seems, the pre-tuning routine will smooth out dual carburetor installation. You'll see why later.

With the pre-tuning adventure out of the way, bolt the carburetors to the intake manifolds. This requires installing four studs in each intake manifold. Refer to picture (7 & 8). If the studs are on the loose side, use a small amount of Loctite to cement the studs in position. Gaskets are placed between the carburetors and the intake manifolds and then the nuts are torqued to eighteen foot pounds. Don't use sealant between the carburetor and the intake manifold. Paper gaskets will do just fine.

Please note in the illustrations, a bare dual port long block has been used. This is an attempt to better illustrate the installation procedure. During the actual installation of dual carburetors in a VW, the cylinder covers and fan shroud would already be installed.

The next step is to install the intake manifolds to the cylinder heads. At this point in the installation you might find that the intake manifolds don't fit real well into the cylinder cover area. If so, some modifying of the cylinder covers may be necessary. This is do to the fact that all cylinder covers are not all manufactured the same, leaving a big margin for error. If you do experience this problem, don't panic, it is easily corrected. Refer to page (37). Or you may not have any problems at all or might already have modified cylinder

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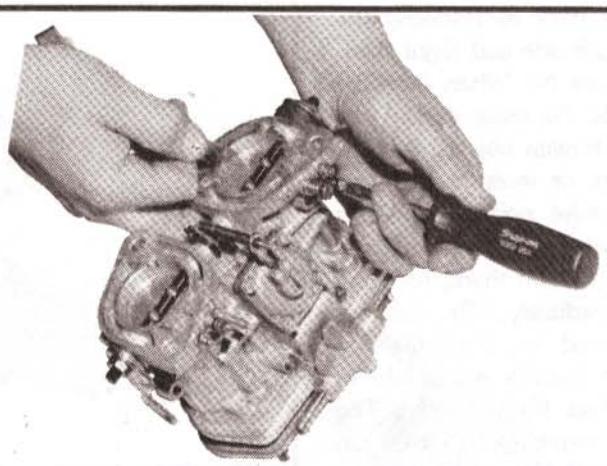

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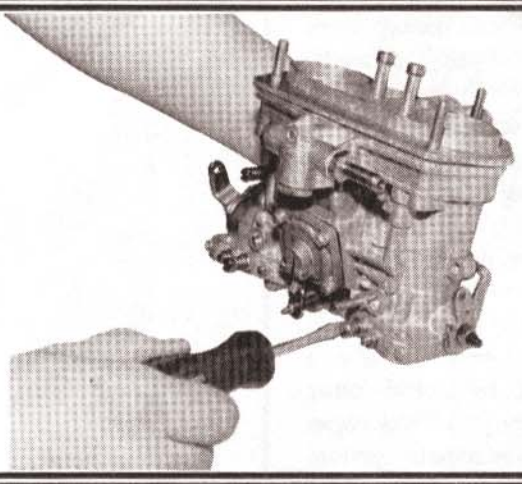

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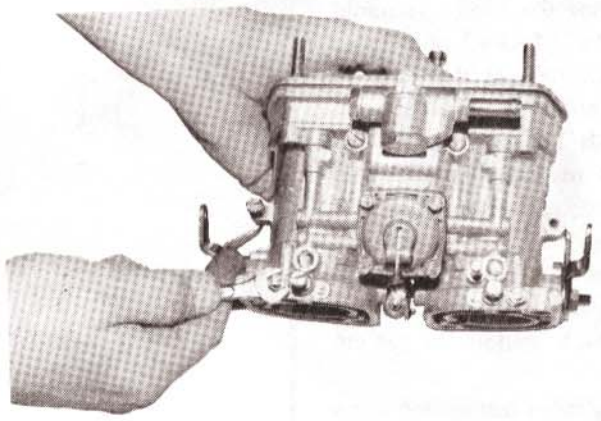

covers. Now back to installing the manifolds. (Left side and Right side). Refer to picture (9). When installing the manifolds, be extra careful not to drop any foreign objects, such as nuts, washers or tools of any sort down the intake ports. If there is any doubt that something might have found its way down there, go for a magnet immediately. Or even a mirror if needed, but don't fire that engine off if there is any doubt in your mind that it's not right. The use of thick paper gaskets between the intake manifolds and the cylinder heads is a must. Paper gaskets work great on ported and polished heads. They provide enough gasket area to match the gasket to the ports on the heads and manifolds. Pressed steel gaskets do not offer this option, they simply aren't big enough. Pressed steel intake gaskets, as used on OEM equipment will also most often result in vacuum leaks and far more trouble than asked for. Leave the silicon sealant for bath tubs and other household plumbing jobs. Thick paper base gaskets help eliminate vacuum leaks and act to some degree as a heat sink. Slide the intake manifold down onto the cylinder head. Install the two 8mm nuts at the base of the manifold and slowly tighten them. The manifolds and carburetors will pull inwards as the manifolds are tightened. Torque the manifold nuts down to about 14 foot pounds. If you can't get a torque wrench on the manifold nuts, give it your best shot. Just make certain to get'em tight.

Remember, these installation steps are being shown to you on a bare long block. The job calls for considerable dexterity and patience when the engine is fitted with cylinder covers, sheet metal, generator, and is mounted inside a VW sedan body. The basis for a successful installation is to use small, VW size, non-bulky hand tools. A quarter inch drive metric socket set is handy as well as a set of thin line, forged wrenches.

A set of combination box and open end wrenches will help you get into the tight places, such as intake manifold nuts. Some high buck wrench sets, such as MAC and Snap On, are offered in offset 45 degree open-end models. These are slick for this type of operation. They allow you to get in around the base of the intake manifold and tighten'em up with quarter turn movements.

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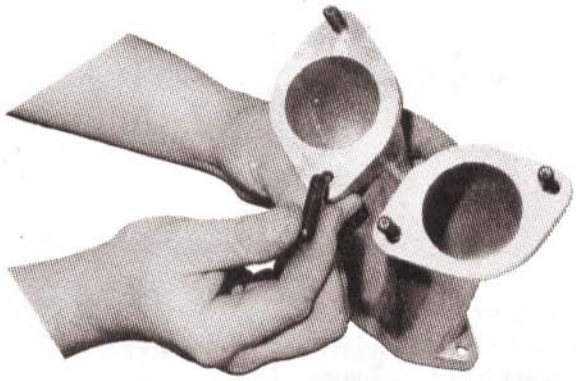

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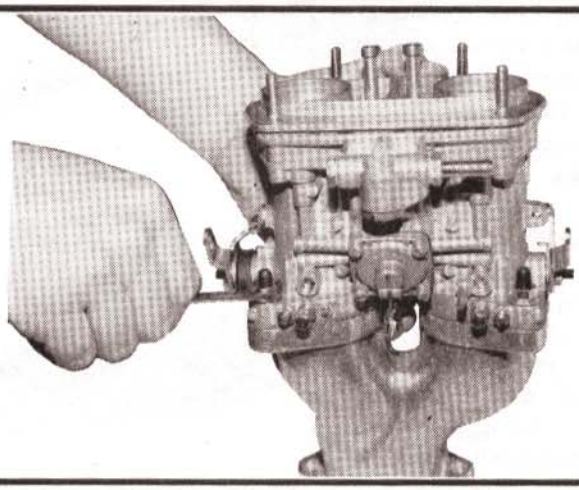

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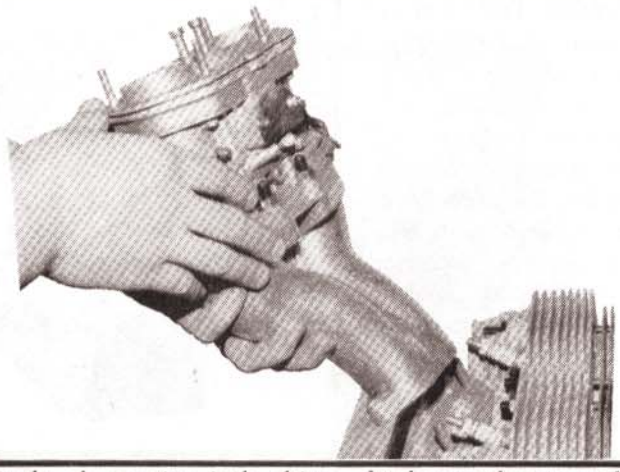
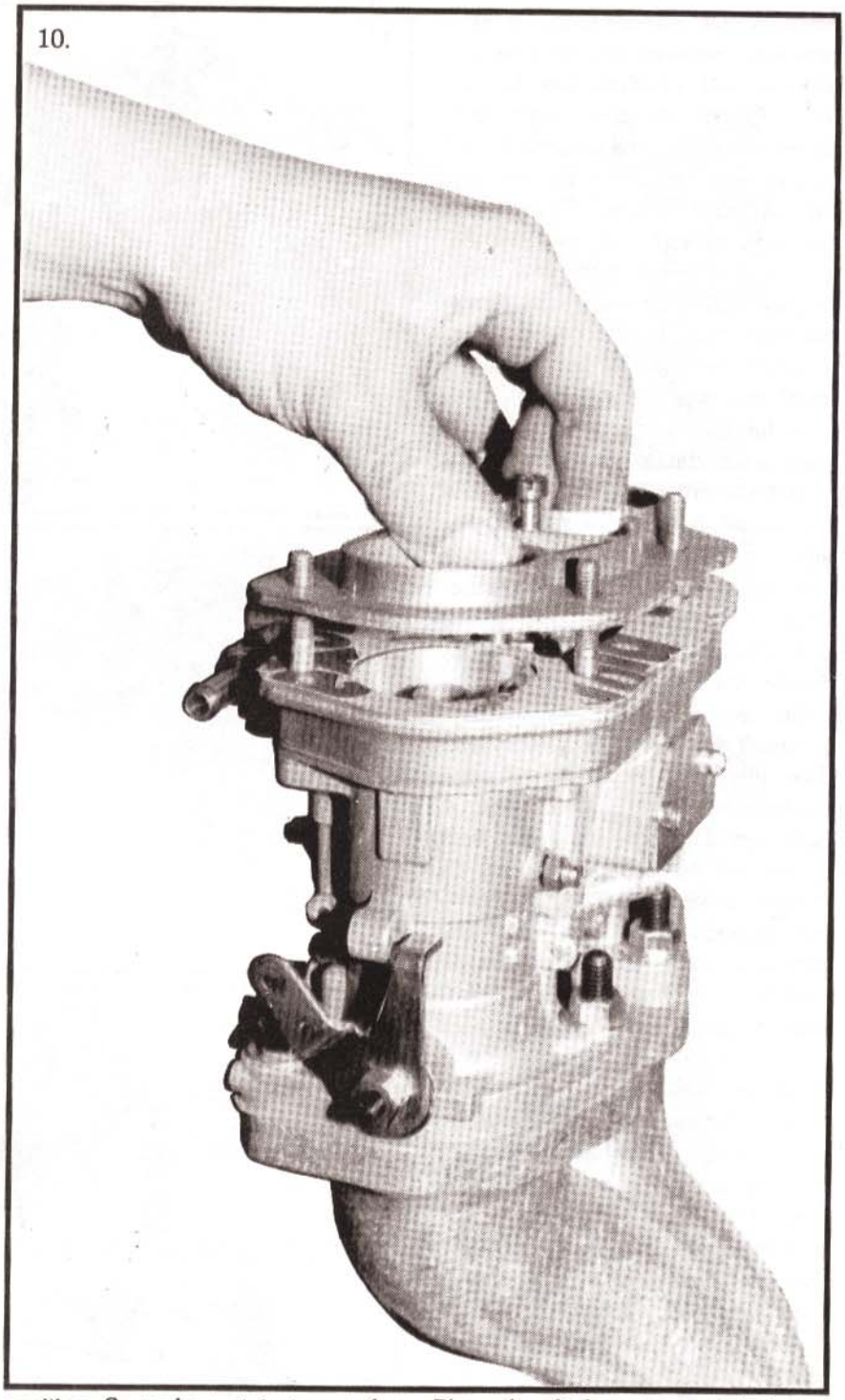


Working in the dark can be dangerous and frustrating, a lighted and shielded drop cord can be a life saver. Two other helpful tools to be considered in the line-up are a small magnet, mounted on a flexible handle, and pocket size mirror. With the carburetors and intake manifolds bolted to the cylinder heads, the next move is to install the air cleaner bases. The air cleaner bases have two functions, one obvious one is that the air cleaner fits on it and the other is that the linkage also mounts to the same base. There is a left and right side. Depending on what kit you have purchased, there are a few different steps involved in bolting on the air cleaner bases.

40 IDF Webers are sometimes equipped with an air cleaner base designed to fit Fiat engines. These bases have no practical application in a VW installation. If your Weber kit has Fiat air cleaner bases, remove them and set them aside. Refer to picture (10). 40mm carb kits do not normally include velocity stacks. If you would like velocity stacks they will have to be purchased separately at the time of buying your kit or at a later time. 44- 48mm IDF Weber carb kits do not have this factory style air cleaner base. 44-48mm kits do come with velocity stacks though. The velocity stacks come bolted on to the carburetors. In order to secure the air cleaner base to the top of the carburetor, the stacks must first be removed. Once the stacks are removed, the securing studs must be replaced with longer securing studs.They are not long enough to use the base and the stacks together. New studs have been supplied for this task. Four 6 x 35mm and four 6 x 50mm studs. Each carburetor will take two of each. Two of the studs used to secure the air cleaner base are longer and actually help hold the top of the carburetor in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position. So make certain to use the long studs where needed. Now move on over to the other carburetor and repeat the procedure.

Now that the top of the carburetors are all straightened out, lets get back to bolting on the air cleaner bases. Place the thick paper gasket down, then the air cleaner base, (refer to picture 11 & 12) making sure to get the base on the correct side. The vertical supports on each base should face one another. Secure the base with the 6 x 10 lock nuts

supplied with the kit. Once again a difference between kits, 40's receive locknuts and 44-48mm kits do not. 44 - 48mm kits come with nuts already to secure the velocity stacks, re-use those same nuts for securing the air cleaner base. Tighten the four nuts to about 12 foot pounds. Once you have one carburetor finished, repeat this procedure on the other one. It may be necessary to leave one base loose in order to install the cross bar. Depending on what has been done to your engine there is sometimes not enough room to get the cross bar past the cross bar swivel ball mounts. If so you will just have to hang loose for a little bit. Make sure everything has been snugged and torqued into place and now get ready for some serious throttle linkage assembly.

With everything in place, it's time to install the cross bar swivel balls. Two are required to support the throttle linkage cross bar, one at each end. The cross bar swivel balls screw into the vertical supports on the air cleaner bases. They are locked into position with 8mm nuts. The vertical supports located on the air cleaner bases have two swivel ball mounting locations. This is to provide the engine builder with a choice in cross bar height. Center Mount fan shrouds for example, locate the fan at a higher elevation and require the use of the top mounting holes. Thread the cross bar swivel mounts and lock nuts into their respective mounting holes. Refer to picture (13). Don't lock'em down just yet. The cross bar throttle linkage is next. The length of the hex bar supplied in your kit is designed for use with engines of standard width dimensions. Here's where some people may run into trouble as we mentioned earlier. If your cylinder heads have been fly-cut to increase the compression ratio, it may be necessary to shorten the length of the cross bar so that enough clearance is provided on the cross bar swivel balls. If the clearance is to far off, it may be necassary to purchase a new cross bar with the correct length so that the installation is done correctly. The aluminum linkage arms and the throttle cable bracket slide onto the steel hex bar and are locked in position by allen set screws. The throttle cable bracket locates one hex degree down from the linkage arms. Install the linkage arms and throttle cable bracket as

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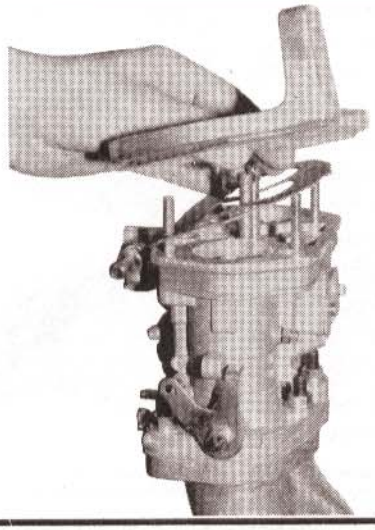

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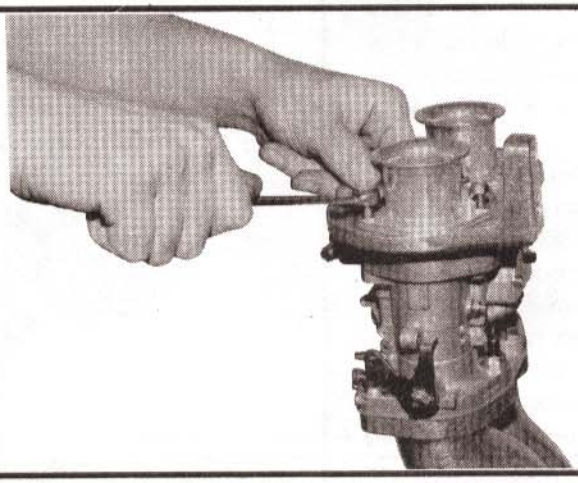

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shown. Don't tighten the allen set screws at this time. We'll do that when we line everything up. Refer to picture (14). Internal tension springs are placed in each end of the cross bar to aid in centering the linkage. Place a small amount of heavy grease inside the support holes in each end of the hex bar. Refer to picture (15). Insert the tension springs and place the left end of the hex bar over its respective cross bar swivel ball mount.

Push the cross bar on to the swivel ball, and line up the right side end of the hex bar with it's cross bar swivel ball mount. If it is necessary to loosen one base, do so and line the cross bar up with the swivel mount and then secure the base back down. Now screw the swivel balls out until the cross bar is fully supported by the swivel ball mounts. Center the hex bar linkage assembly by rotating the swivel balls. Adjust the length of the swivel ball mounting screws until the hex bar is centered. Over-tightening, resulting in not enough side play, will cause the linkage bar to bind. Leave about an 1/8" of side play and tighten up the swivel ball locking nuts. Refer to picture (16). Make certain that the cross bar is free to rotate on it's axis. Any resistance or binding of the cross bar can be a real problem later.

Next, the carburetor throttle linkage arms must be installed. There are two arms, one for each carburetor. To remove the nut from the throttle shaft, the nut must first be freed from the locking tab. It might take a little persuasion at first, once it becomes free, a wrench will now be able to be put on to the nut. It will take an 11mm wrench, preferably a box end wrench so that you won't slip off the nut. While loosening the nut be sure not to bind the throttle shafts or throttle plates against the carburetor barrel walls. Once the nut has been removed the locking plate will now come off. The linkage arms should be put on so that they are facing inward towards one another. Refer to picture (17). Now the locking plate can be put back on followed by the nut. Tighten the nut in the same manner as it was removed, taking caution as not to bind the shaft or throttle plates. Make sure to bend the locking plate back around the throttle shaft nut.

The linkage rods and heim joints

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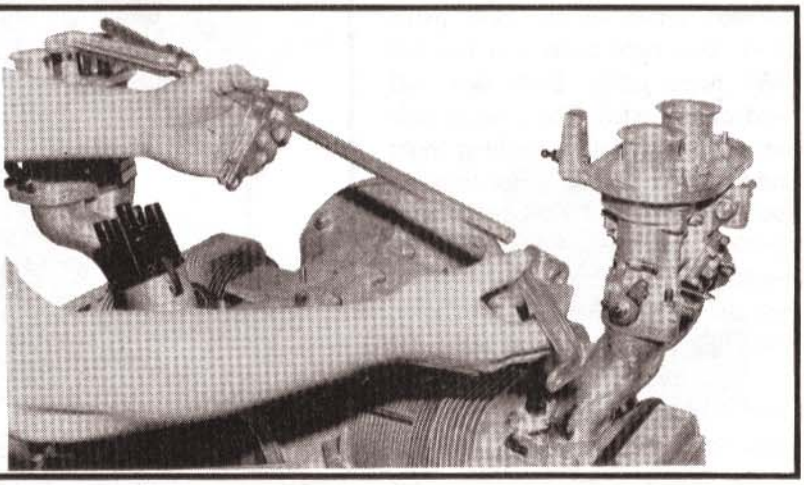

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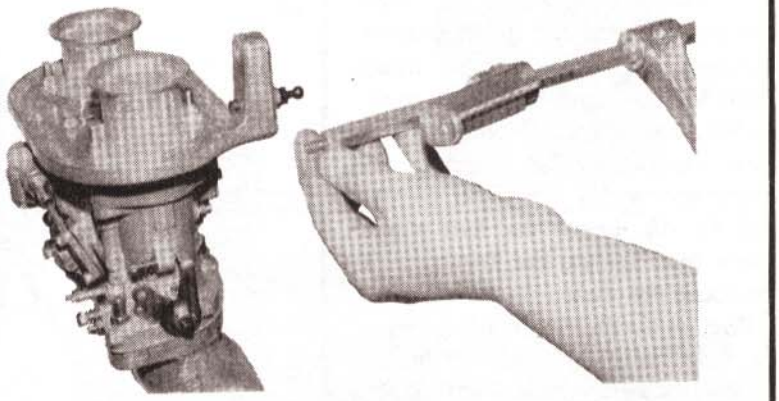

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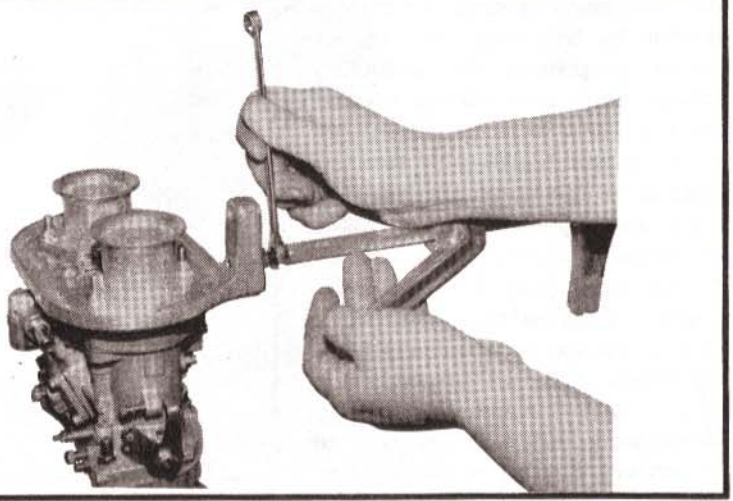

are next. There are four heim joints in all. Two right hand and two left hand heim joints. Each side will need one of each. The linkage rods are equipped with matching right and left hand threads. Once installed you'll be able to fine tune your throttle adjustments by rotating the throttle rods. Once adjusted, you lock them in position by tightening down the lock nuts. The lock nuts are also supplied in right and left hand threads. Leave the lock nuts loose for now. After the assembly of the linkage rods is done, they can now be attached to the cross bar linkage arms and the carburetor linkage arms. This is where those small VW size hand tools really come in handy. You'll need two open end box wrenches for this operation, an 8mm and a 3/8". Refer to picture (18 & 19). Leave the four shake proof nuts holding the linkage rods on loose for now.

Position the aluminum linkage arms on the cross bar so that the throttle linkage rods are vertical when viewed from the rear of the engine. Lock the aluminum linkage arms into position by tightening the allen set screws to prevent the aluminum linkage arms from sliding on the hex bar. Refer to picture (20). Slide the aluminum throttle cable arm into position to line up with the throttle cable and tighten down the allen set screw. Now check the installed linkage rods, both left and right, making certain that they rotate freely. Observe the way that rotation changes the length of the rod assembly. Up to this point the linkage assembly should work freely with out any drag or binding. If there is any type of resistance, something is not right. Go back and double check your installation up to this point. If everything is ok, run the shake proof nuts up a little, but not all of the way. The carburetors must first be balanced with the engine running before everything is tightened down for good.

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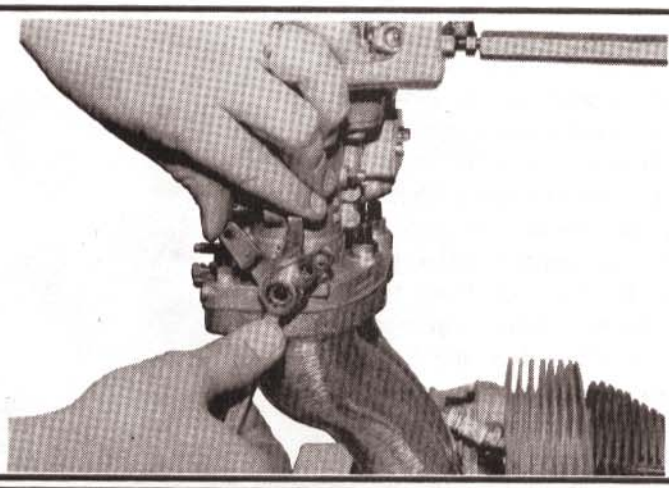

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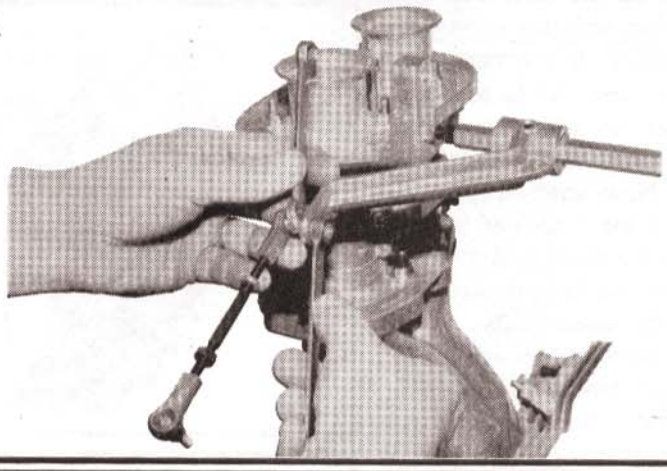

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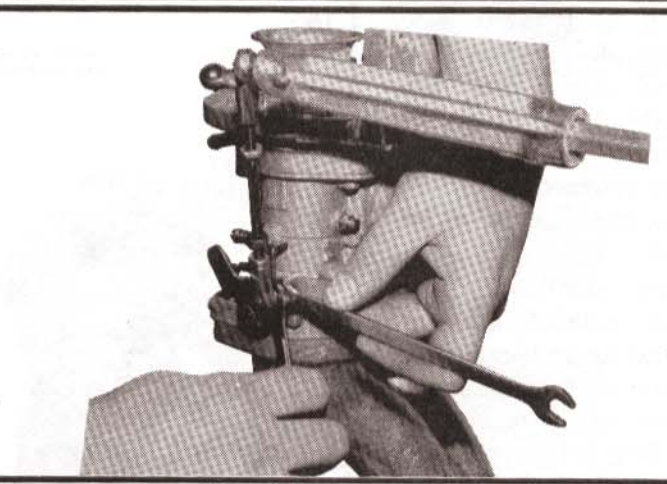


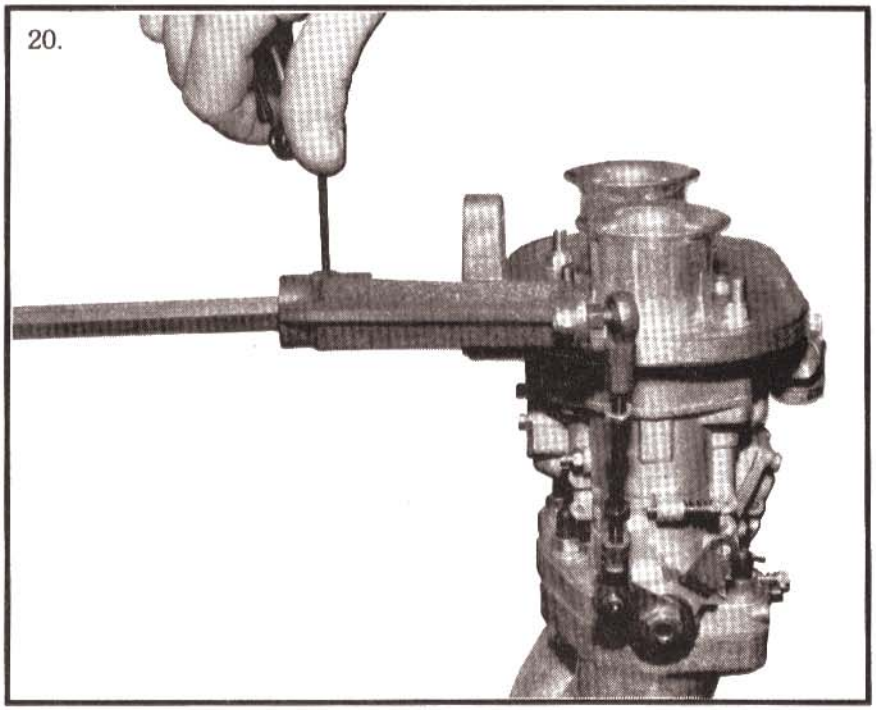
Now let's check out those left and right threads on the linkage rods. Adjust the throttle linkage rods, by rotating in right or left hand directions, until both carburetor throttle stop arms are resting on the idle speed set screws. By rotating the linkage rods you'll be able to extend or shorten the rods. This will allow you to align the linkage to match the pre-set carburetors. Refer to picture (21). Don't change the position of

the idle speed set screws at this time. The idea here is to dial in your linkage to the pre-set carburetors. You'll have ample opportunity after you get your engine running to screw around with the idle speed adjustments.

When you think that you've got the linkage dialed in, push the aluminum throttle arm downwards and watch the linkage arms as they move from closed to open. If one carburetor "leads" the other, you've got some more dialing in to do. The opening and closing throttle action has to be precise. So play with your throttle linkage until it works like a Swiss watch. Don't attempt to reinvent the linkage system. Simply adjust it to match your pre-set carburetors. Don't tighten those lock nuts down quite yet though, it may be necessary to remove one rod later in the program when you begin balancing the carburetors with a uni-syn gauge.

Look-over the complete assembly carefully prior to connecting the throttle cable. The cross bar linkage assembly should work accurately and freely. Both carburetors should snap to closed position when the linkage is released without protest. Don't accept anything but perfection concerning the operation of your throttle linkage. If it sticks or binds, find out why and fix it before starting the engine.

Connect the throttle cable. Push the throttle pedal. Make certain that the pedal attains the end of it's "stroke" at the same time or slightly before the carburetors reach full open throttle. Excessive travel of the throttle pedal can bend the throttle linkage. It may be necessary to install a throttle pedal stop to control or limit pedal movement. Have someone operate the throttle pedal while you watch the action of the throttle linkage. If the drag of the throttle cable and pedal slow down the closing action of the linkage, install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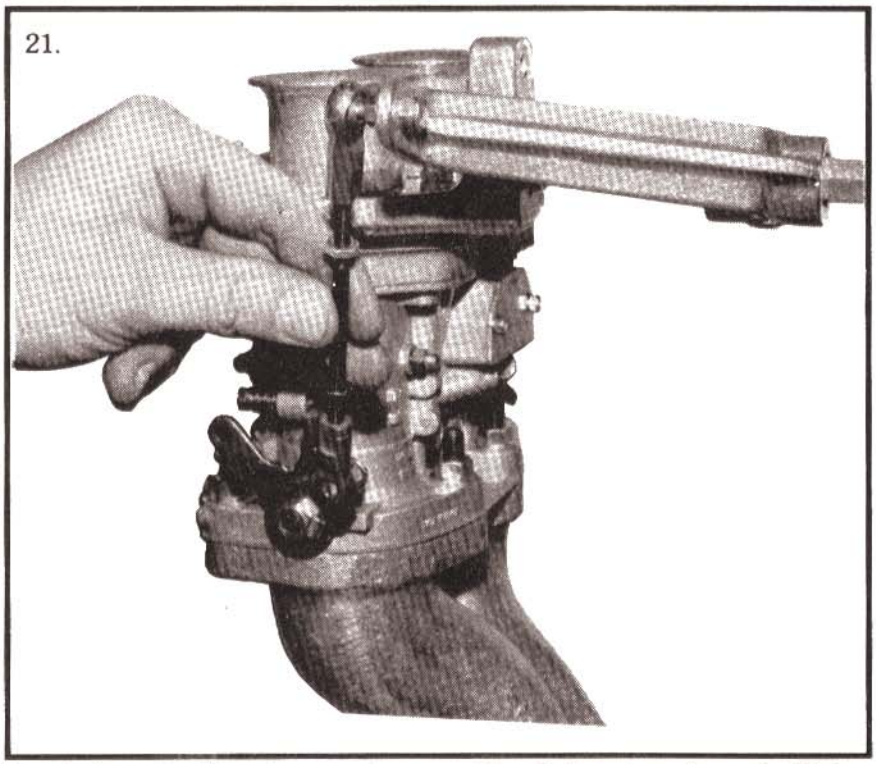
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two helper throttle return springs. The helper springs provide a safety factor and should be seriously considered for use on any type of vehicle. The slight amount of increase in throttle pressure will never be noticed.

The fuel system is next. Weber carburetors require the use of a fuel line T. Depending on the kit you have purchased, some suppliers ship kits with plastic fuel T's. If it is a CB Performance kit, you are ahead of the game. CB ships all kits with

brass fuel T's. Using a plastic fuel T on a high performance application is just asking for trouble, on any application for that matter. Plastic T's are intended for use in vacuum lines or non-petroleum applications. Play it safe, if you don't have a brass or metal T, locate one before proceeding. Refer to picture (22).

Before the installation of the fuel line begins, you must first make sure the inlet fittings are facing the correct direction on the carburetors. Webers are not sold as right and left side carburetors. The most desirable location for the fuel lines to be routed is back towards the firewall. To achieve this, one fitting must be removed and re-installed facing the opposite direction. Refer to pictures (23 & 24).

Fuel line connection clamps should be snug, just snug. Over-tightening will result in cut fuel lines. While installing the new fuel line, it's a good time to install a good fuel filter. For best results, place the filter in front, or upstream of the fuel pump. This will help keep pebbles and other loose stuff out of the fuel pump and carburetor inlet valve.

If you really think that your car's fuel tank is as clean as a hound's tooth, you're in for a real surprise. Even new automobile fuel tanks are loaded with enough material to plug several sets of dual carburetors and jam any fuel pump. Make certain to install a new gas tank filter screen and a big, oversize gas filter at the tank outlet.

All right, it's time for a complete safety check. Look at everything on the engine, or for that matter your entire VW that you have touched or worked on. While you're at it, remove all the loose tools, parts and shop rags left in the engine compartment. Check behind the fan shroud, secure any wires and fuel lines to prevent the fan from pulling it in and chewing it up during high speed operation.

Blip the throttle linkage, make sure that it works free and returns to idle position. Throttle cables that are too short will prevent the linkage from returning to idle speed. Check the idle speed throttle stops, they should rest against the idle speed screws. All nuts and screws should be snug, fuel lines securely in position and mounted in a location to prevent interference with linkage movement. Tie those new spark plug wires out of the way. Don't let'em get jammed up in your linkage shafts or throttle arms.

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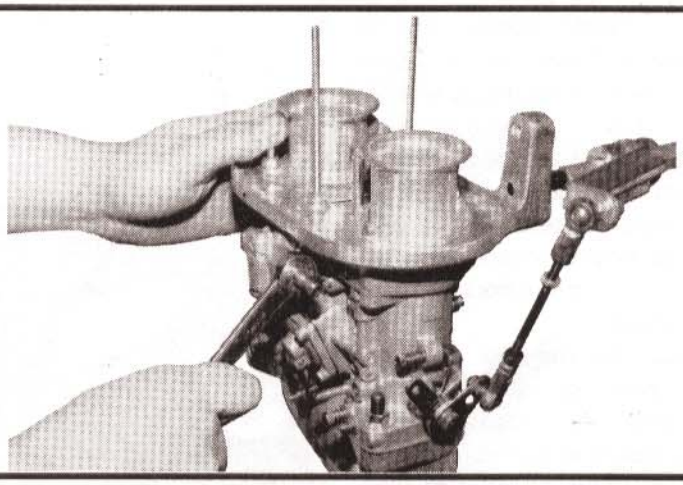

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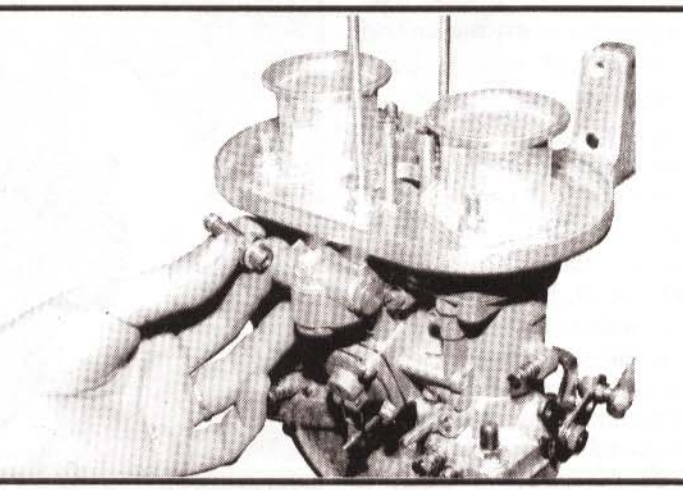
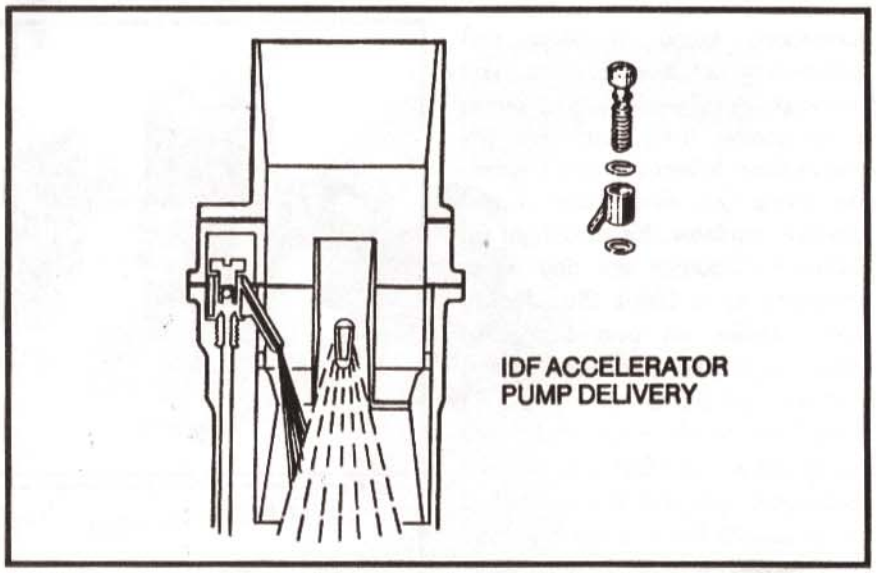


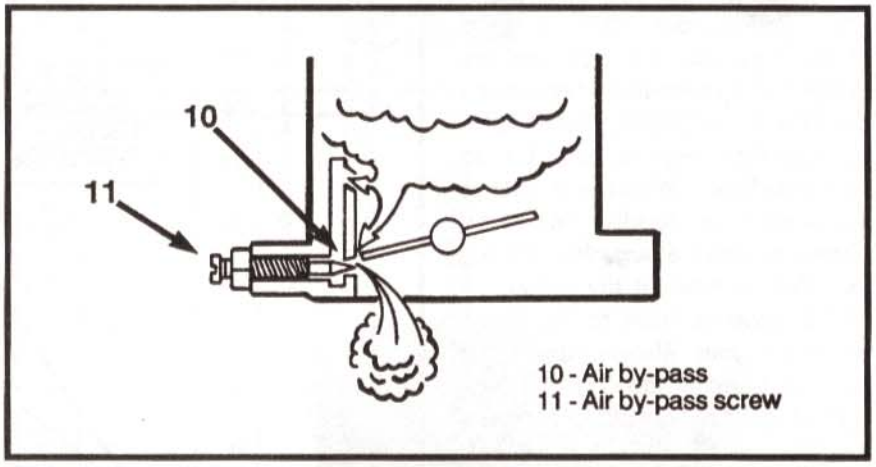
Ignition timing can be approximated by setting it with a static test light, and valve adjustments should be set to the required specifications. Check the fan belt, not only for tightness, but also for condition. The vertical alignment of the generator pulley to the crank pulley should also be checked. With those dual carbs installed you're going to rev it to the max, and you just don't need to flip a stray belt out of the groove and loose your cool. If there is a problem with the pulley alignments that cannot be easily corrected, CB Performance offers a Pulley Shim Kit. CB's special Pulley Shim Kit comes with an assortment of shims to correct pulley mis-alignment problems. It fits type I upright engines, part #1915. Did you leave any loose ends in the engine compartment..... don't guess, check it out. If you're running an electric fuel pump, turn it on and fill your float bowls with fuel. Check the entire system for potential leaks. Don't start the engine just yet. Look down into the throats of the carburetors, a mirror is recommended for this operation. Check to see if excessive fuel pressure is causing fuel to dribble past the inlet valve and down into the barrels of the carburetors.

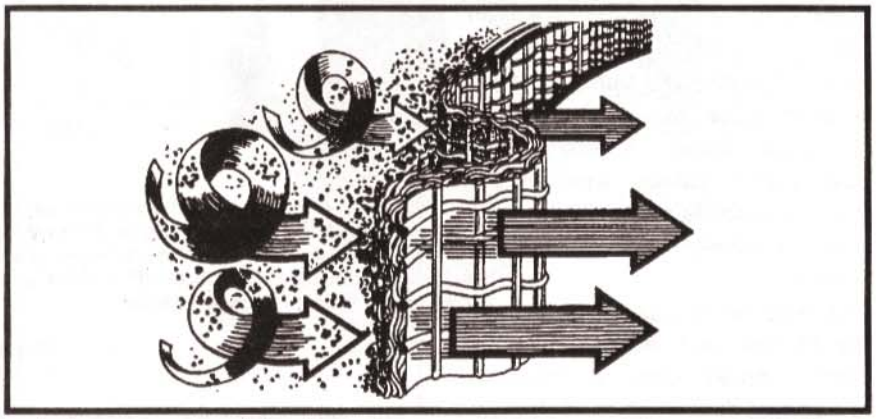
The secret to success when dealing with electric fuel pumps is to make certain that it operates quietly and delivers no more than 4 psi of fuel pressure to the carburetors. These two simple requirements of quiet operation and constant pressure, displace about 97 percent of electric fuel pumps found in the average parts house. Most of the locally available fuel pumps rattle like a loose box car, or whine like a screaming banshee. During the noisy process of pumping fuel, these over-stressed beauties create problems you really don't need.

For example, most of them require a fuel pressure regulator to reduce the pressure and flatten out the pulses. Just consider it extra baggage. That type of system is ok, but a more efficient fuel system can be built around a true rotary fuel pump. A rotary pump offers several distinct advantages over a conventional double geared pump.

The biggest advantage offered by a rotary fuel pump is constant stable fuel pressure. A rotary fuel pump will deliver 3 ½ to 4 psi of pressure, all the time. Pulsing and pressure







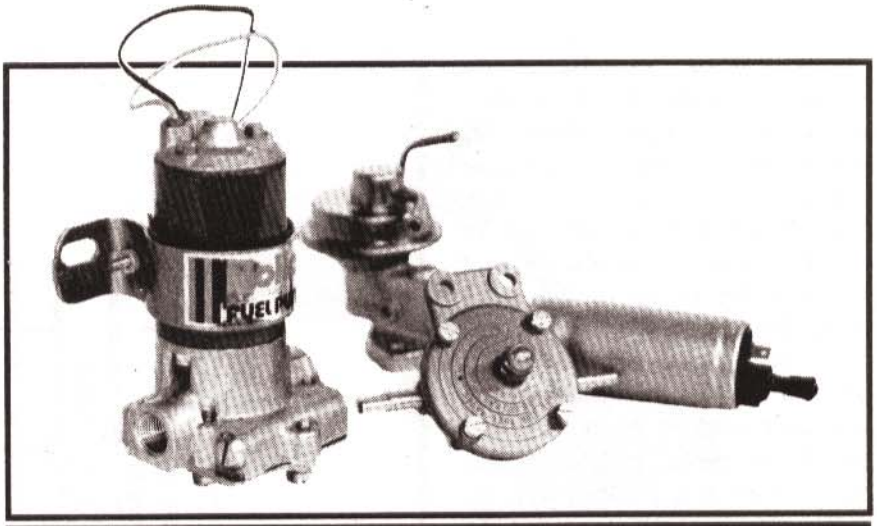
fluctuations found in other fuel systems are not a factor here. The flow capacity of a rotary fuel pump is far greater than your VW will ever require. When you run a rotary fuel pump you don't need a fuel pressure regulator. It's built right in. Rotary fuel pumps are tiny when compared to a Great Blue Holley pump. Unlike an over-size, noisy Holley, or a snap, pop, pulse pump, a rotary fuel pump runs quiet. So quiet, you won't even know that you've got a rotary fuel pump tucked under your fuel tank. If a rotary fuel pump sounds like a good idea and your having trouble locating one, CB Performance offers a good combo. They offer a 3 ½ psi pressure pump and a metal fuel filter already attached to the pump, part #3193. No regulator required and it's an easy installation. Which ever type of fuel system is decided on, make certain to install a large free flowing fuel filter in front of the pump.

Well, anyway, back to the basics of getting your Webers running. If your carburetors don't show any sign of flooding over and dribbling fuel through the secondary venturi, while the fuel pump is turned on, blip the throttle and make certain that each accelerator pump jet nozzle is squirting fuel into the bore of the carburetor barrel. A brief, even, steady, fuel delivery should spray from each nozzle as the throttle main shaft is rotated toward an open setting.

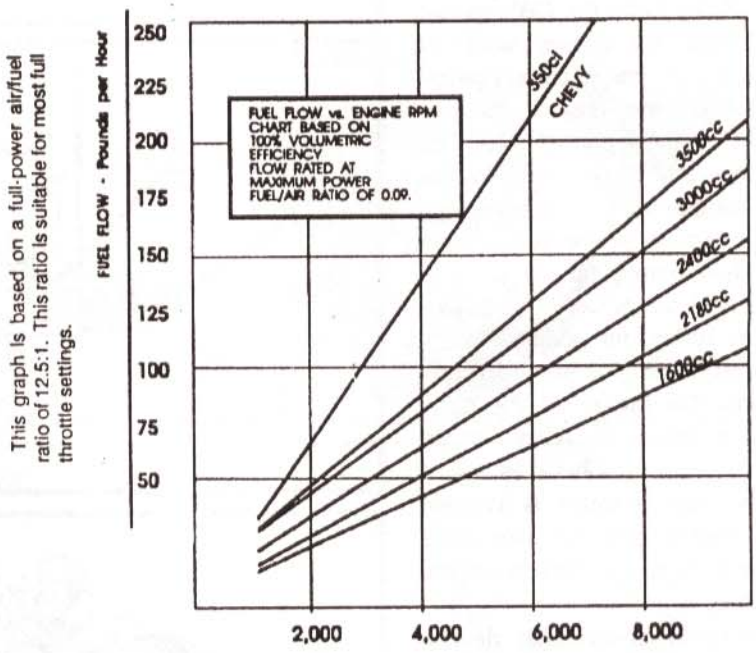
In other words, when you punch the throttle, each accelerator pump nozzle should spray a measured amount of fuel, (about .2 to .3cc) down into the carburetor bore. This will give you an indication that the carburetors are primed and ready to go.

Those of you who are running a mechanical pump will just have to crank it over until the float bowls fill with fuel. You might even need a battery charger to get it going. Disconnect the coil wire so that the engine doesn't start. Check the fuel system for leaks and think about how nice it would be to be running a super quiet rotary fuel pump. Don't forget to put that coil wire back on once the carbs are primed.

OK lets fire it up, but first open the garage door. Or better yet open the garage door and push your VW outside. Your neighbors are gonna love your new street racer exhaust.



Fuel Flow — How much do you need?



To use this chart to estimate fuel flow, multiply the indicated fuel flow rate by the VE you expect from your engine. For example: a 1600cc engine running a full throttle at 6000 RPM requires 60lbs. of fuel per hour at 100% VE. If your engine is running at 80% VE multiply 60 x 80% or 48lbs. of fuel per hour.
Fuel weighs 6lbs. per gallon.

$$\frac{\text{48 gal. per hr.}}{6} = \text{8 gals. per hr.}$$

Your carburetors don't have any chokes, so you'll have to blip the throttle to supply enough fuel to get it running.

When your engine has warmed to a point that it will run on its own, its time to whip out that uni-syn gauge and dial in those Dual Webers. For those of you who don't know, a uni-syn gauge will do one thing. It will help you determine when an equal amount of air is flowing into each carburetor. Its use is simple and direct. If you don't have one, you're gonna have to locate one.

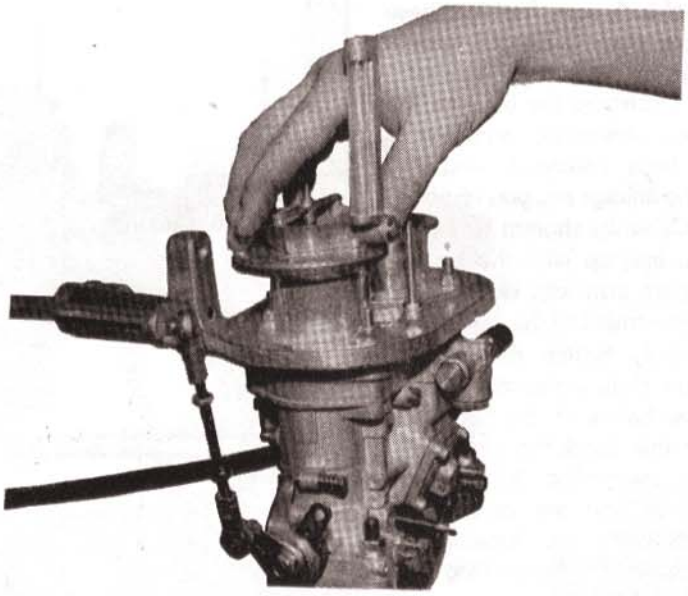
The uni-syn gauge is placed snugly on top of a velocity stack. Air flowing into the carburetor through the uni-syn gauge is routed through a changeable orifice. A thumb screw opens or closes the orifice. The low pressure created by the restriction in flow causes a ball or indicator to rise in a vertical glass column. Refer to picture (25).

If your Weber carburetors are not equipped with velocity stacks, a piece of 2 inch radiator hose can be used to provide a conduit for air flow through the uni-syn gauge. Refer to picture (26). The vertical position of the ball in the glass column can be compared by moving the uni-syn gauge from one carburetor to the other. The amount of air flowing through the carburetor is varied by moving the position of the idle speed screw. Refer to picture (27). Turning the idle speed screw in, clockwise, opens the butterflies and allows for increased air flow. Turning the idle speed screw out, counter clockwise, closes the butterflies and reduces the air flow through the carburetor.

For best results, and to prevent strangling of the engine, because of too little air flow, make every effort to use the lower indications on the vertical glass column. To get accurate readings, the speed of the engine must remain constant as the uni-syn gauge is moved from one carburetor to the other.

Use the two barrels closet to the linkage for comparison. Refer to pictures (27 & 28). The other two barrels will follow suit. Don't fight the linkage. It's tough, strong and has a mind of it's own. If at first you have difficulty in rotating the linkage rods to the proper length, remove one linkage arm heim joint from the aluminum linkage arm. Once it has been removed you can then check one carburetor and then balance the other without the linkage rod interfering. On the carburetor you begin balancing, tighten the two

25.



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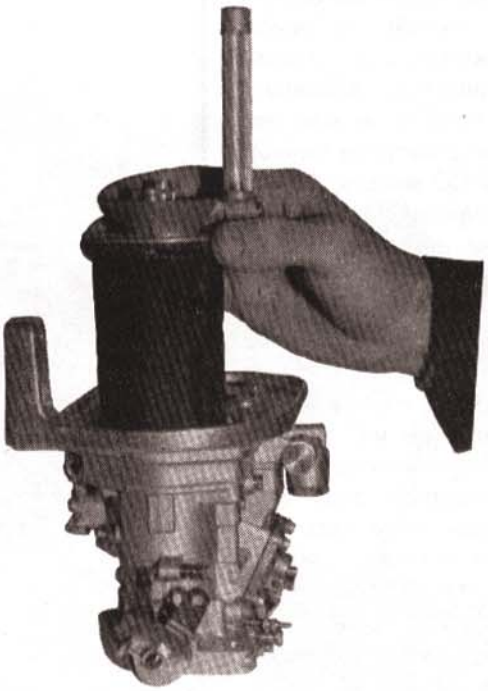


linkage rod lock nuts and the two shake proof lock nuts. Tighten these to no more than 2 lbs. of torque. Tightening this side now will keep you from disturbing the balance job on this one carburetor later. When they are both balanced, you can now put the linkage rod you removed back on. Carefully shorten or extend the rod to line up with the hole in the aluminum arm with out messing with the adjustment of the carburetor. Then carefully tighten the locknuts on that side. Both carburetors should now still be balanced. It's not a bad idea to double check the carburetors now that everything is tightened down. When you are certain that both carburetors are flowing the same amount of air during idle speed, you can put your uni-syn gauge aside for now. It will be needed later on though.

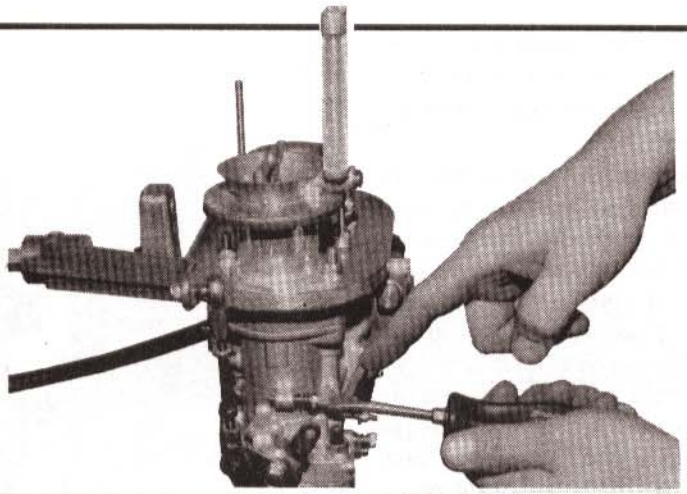
As you'll quickly notice, the uni-syn gauge will not provide any helpful information concerning mixture screw adjustment. Mixture screw adjustment is usually, for most of us who are not equipped with computer tune-up equipment and CO sensors, "a seat of the pants" type of thing.

Start with the mixture screw on number 3 barrel. Screw it in clockwise, until the engine speed begins to fall off. That barrel of the engine will go lean as the mixture screw closes off the flow of air/fuel mixture flowing into the engine. You will have to learn how to feel your engine as it responds to the lean condition. Your engine's response to a lean idle speed condition is often a rousing, timed snapping or popping out the exhaust. When this occurs, your engine is talking to you and begging for an increase in the amount of air/fuel mixture.

Help in the form of increased air/fuel mixture is just a turn of the mixture screw away. Rotate the mixture screw outwards, counter clockwise, until the engine smoothes out and runs at maximum RPM. Repeat the procedure on each remaining mixture screw, 4, 2 and 1. Refer to picture (29). If repositioning a mixture screw, turning it in, shows no effect on engine operation, it has to be assumed that either a vacuum leak exists on that barrel, the spark plug is not firing, or that the idle jet is plugged.

Now is the time to get serious about idle speed. Dual carburetors have a knack of flattening out long duration camshafts during idle speeds.

27.



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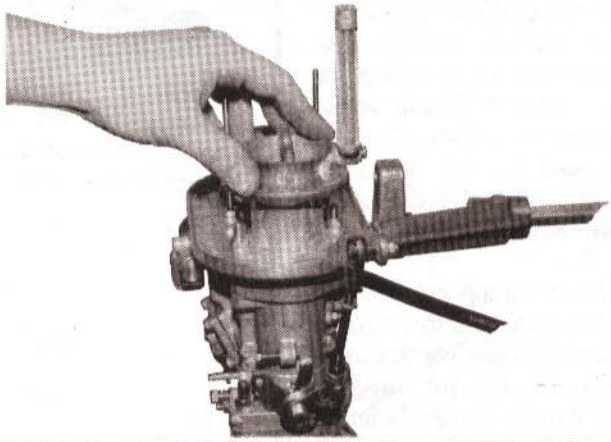

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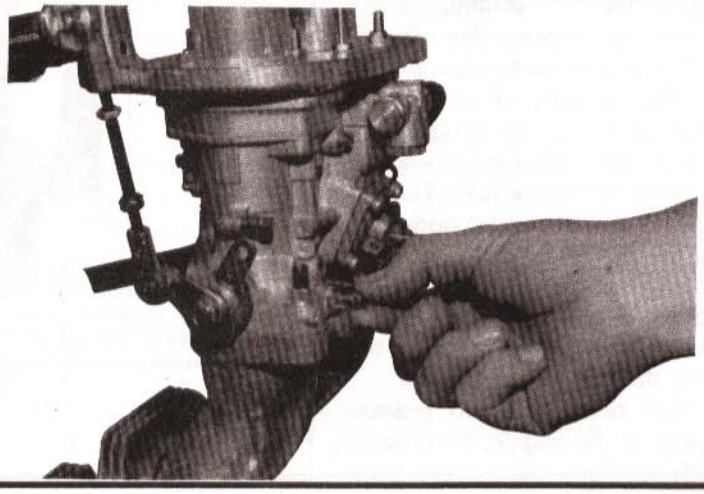

What this means to the engine tuner is smooth low speed operation, even when you've got a double whammy camshaft tucked inside your engine. A rough idle is usually the fault of the mechanic and lumpy idle speeds are usually a sign of a lack of know how.

Play with the mixture screws until you can feel your engine talking to you.... hunting, while popping out the carburetor bores and exhaust are indications of a lean condition. Black smoke and slow non responsive throttle are the tattle tale for too much fuel.

Don't settle for an idle speed of over 900 RPM, even if you're running a 290 degree cam. Most street engines can be tamed to idle at around 750 to 850 RPM once you show those dual carbs who wields the uni-syn gauge.

The ultimate carburetor balance job includes a check of each barrel with the uni-syn gauge. Time to go and get the uni-syn gauge again. You can bring each barrel into exact sync (equal air flow) by opening or closing the air by-pass screws. This advanced tuning step should only be attempted after the carburetors are brought into sync using the front (linkage side) barrels.

With the engine idling at a constant speed, move the uni-syn gauge from barrel to barrel. Note the position of the indicator in the uni-syn gauge tower. The height of the indicator, which is an indication of air flow, will most often vary when the front barrels are compared to the rear barrels. If the flow is equal, you need not go any farther. Unequal flow between barrels can be due to a variance in the fit of the butterfly to the barrel wall. Some of which can be the fault of a twisted carburetor shaft or the alignment of the butterfly within the slotted shaft. It happens in the best of circles.

Rather than attempt to realign the butterflies, which can require disassembly of the carburetors, minor air flow changes can be effected by opening or closing the air by-pass screws. This procedure is initiated by confirming that all of the air by-pass screws were turned out one half turn from the bottom during the pre-tune procedure. If repositioning the air by-pass screws to one half turn out effects the idle speed, the idle speed must be reset to regain a smooth idle speed before continuing the tuning procedure.

Now for the magic, the part of

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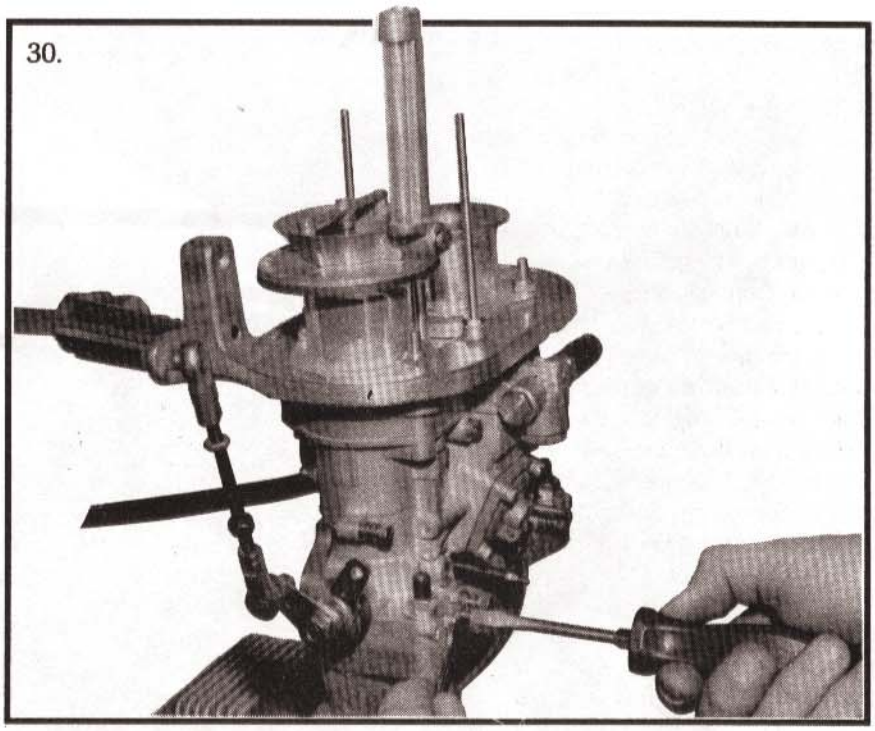

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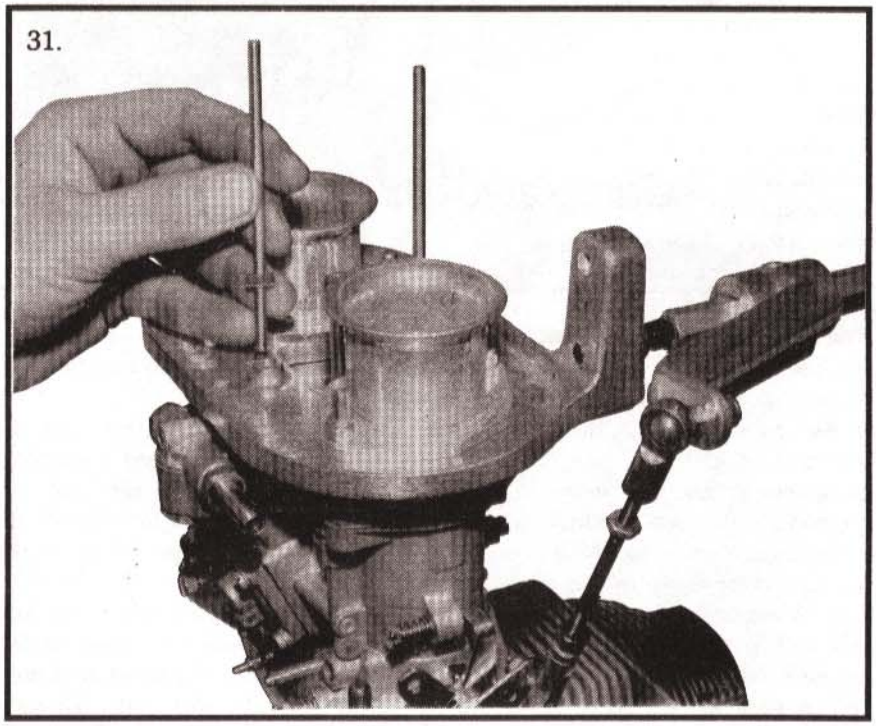

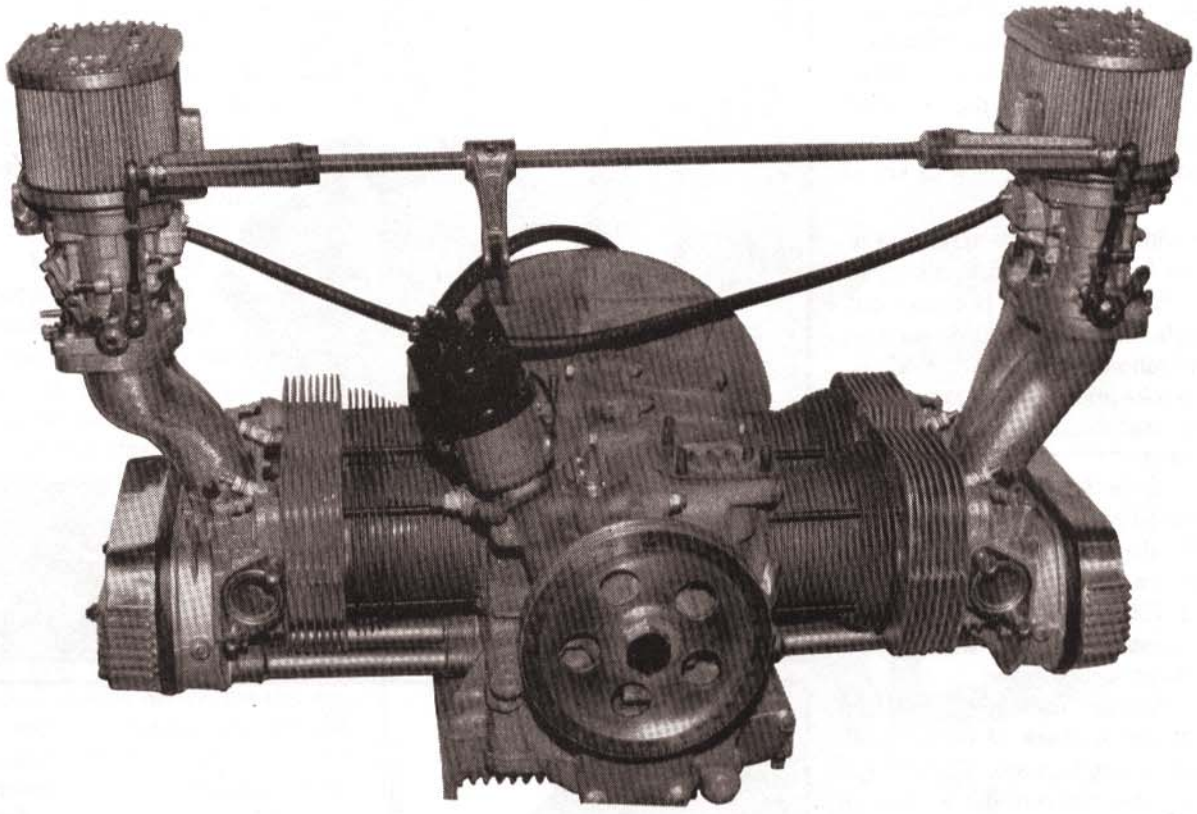

Completed Installation of Dual IDF Webers

dialing in your duals that helps engines run silky smooth. Adjust the uni-syn gauge to flow and register at the lowest mark on the indicator tower. This reduces the possibility of choking the engine while the uni-syn gauge is in position on top of the barrel. If a barrel shows less air flow than the previous cylinder, increase the air flow by opening up the air by-pass screw. Conversely, air flow can be reduced by closing the by-pass screw. Refer to picture (30).

Check all four barrels, and make adjustments to the air by-pass screws until the uni-syn gauge indicates equal flow through each barrel. Final adjustments should position the by-pass screws no more than 1 ½ turns off bottom. Too much air flow through an air by-pass port can create a lean condition in the effected combustion chamber.

Once you have your carburetors all dialed in and running superbly, it's time to keep the dirt out of them. It's time for the installation of the air cleaners. The bases have already been installed, so that doesn't leave too much work left. Your kit has been supplied with four studs which thread into the bases and are held in place by lock nuts. Thread the nuts onto the studs first and then the studs into the bases. Then thread the nuts down and tighten them in place. Refer to picture (31). The mesh type elements supplied in your kit are not really filters. They are considered to be suspension devices to hold oil. It's the oil that's held in suspension that traps the dirt and grime before it reaches your engine. Be sure to oil the elements before they are installed on the car. The rest is easy, place the A/C tops on and bolt them down. First place the rubberized washers down, then the lock washers and finally the wing nuts.

Your carburetor kit should look something like this. Check everything over one more time before putting it on the road. Put all the tools up and pick up the loose rags laying around. Check for any fuel leaks that might have occurred. If everything checks out all right, you're finished! Happy motoring.