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WEBER 40 IDA 3C ADJUSTMENT

It's being taken for granted that you have had some experience working with Porsche engines, at least at the tune-up level. Webers are easy to adjust when compared to other Porsche induction systems but they are much harder to adjust than an American two barrel. It takes a certain feel; which usually can be learned.

Before attempting to adjust the carbs the engine must have correct cam and ignition timing along with a careful valve adjustment. The points, plugs, distributor cap, ignition wires, etc., should be in like-new condition. The distributor must be mechanical advance or modified for straight mechanical advance. The compression differential between the cylinders should not exceed 20 psi max. An engine compartment fuel filter will keep the carbs clean longer. When the air cleaner is finally installed, it should have a clean element.

DEFINITIONS:

Front, Back, Left, Right, etc., are defined from your position as you sit in the driver's seat.

The Throttle Body is the main part of the carb. What it doesn't contain is attached to it.

The Mixture Screws thread into the base of each throttle bore. They have springs to maintain a setting and there are three of them in each carburetor. Be careful as you turn these in as they seat in the throttle body. Turning a mixture screw in leans the mixture and turning it out does the reverse.

The Idle Screw is sometimes called the idle stop screw. There is one on the back of each carb and it determines the minimum throttle setting through its action on the throttle arm of the carb. When this screw is turned all the way out the throttle plates rest against the throttle bores.

The Air Screws are similar to the mixture screws in that they operate on the needle valve principle. There are also three of these in each carb and they are located close to the mixture screws. They have an 8 mm lock nut on them to maintain their setting. As they are adjusted out they let air slip around the throttle plates to equalize the volume of mixture entering each cylinder at idle. The basic setting is 1/8 turn from stop. Great care is to be taken since these screws also seat in the throttle body.

Side to Side Balance means equal vacuum between the two sides of the engine through adjusting the idle screws and throttle linkage.

TOOLS needed to adjust the carbs are:

Stubby screw drivers to adjust the mixture and air screws

STE SYNCHROMETER for adjusting vacuum at the air screws

Two 8 mm combination wrenches plus a 7mm one.

P 226a; a Porsche special tool that allows you to check the float level with engine running

A small cc measuring vial; useful for measuring the accelerator pump injection quantity. Webers: top two lines.

These instructions start with the engine thoroughly cleaned and the manifolds installed with new gaskets. The linkage should be clean and high temp grease added to the ball sockets. An 8 mm open end wrench can be used as a ball joint separator. New gaskets are used under the carburetors when they are installed. The air horn shield is the part of the air cleaner that is clamped to the top of

+CLEAN THE CARBURETORS INSIDE AND OUT BEFORE INSTALLING.
(remove plugs from the float bowl vents on 40mm carbs)

the carburetor by the air horns. A new gasket should go between the air horn shield and the carburetor. A gasket can go under the air horns if you want to be sure of getting an accurate adjustment with the STE.

Next, the linkage should be hooked up except for the short ball jointed carburetor rods. If you are converting to Webers from Zeniths, the linkage arm connected to the crossbar on the right side sometimes has to be bent further to the right to allow the short ball jointed carb rod to travel in a totally vertical plane when viewing the mechanism from the rear of the vehicle. Find the idlescrew at the rear of each carb and turn the screw all the way out so that the throttle plates rest against the throttle bore walls. Now turn the screw in until it just touches the throttle arm and then turn it 1/4 turn more. Repeat with the other carb. Now adjust the short ball jointed rods so that they can be snapped onto the throttle arm ball without disturbing the throttle setting. This should give the carbs side to side balance.

Oil the throttle shafts and accelerator pump linkage (henceforth every 3,000 miles) and check for smooth operation. Take the play out of the linkage by shortening the long ball jointed rod that connects the pivot point on the front of the left manifold to the crossbar; making sure that the throttle closes all the way. Next, have someone get inside the car and floor the gas pedal while you are looking into the carbs to make sure the throttle plates rise to a complete vertical position. You may have to adjust the throttle stop behind the pedal. Be sure throttle plates don't go past the vertical position. The throttle stop is at pedal.

You can now hook up the fuel lines. If the original braided fuel lines to the carburetors are old and ragged and you don't want to buy the complete set-up from Porsche you can remove the entire assembly from the car, cut about 1/2" from the metal lines and install high pressure fuel hose and pinchless hose clamps. Don't forget the filters.

You now have all your tools together and are ready to adjust the carbs. The initial adjustment on the Mixture Screws is two turns out from the seats. The Idle Screws are 1/4 turn in after touching the throttle arm on each carb. The Air Screws are 1/8 turn open; 8 mm nuts are lightly locked with the screws being held stationary. When adjusting the RPM use the tach in the dash. Tach-dwell meters have been known to knock out CD units in Porsches. Warm the engine to at least 140 degrees. Unlock the rod from the right carb and evenly turn the idle screws in until the tach reads 1100 rpm. Check the side to side balance of the carbs with the STE to make sure both sides of the engine are pulling equal vacuum. Adjust an idle screw if need be. Pick a barrel and turn the mixture screw in until the engine speed drops and then slowly out again until it runs smoothly. Remember to let the engine speed stabilize after each increment of screw turn. If you found that the engine runs smoothly at less than the initial 2 turn setting then you can turn all the other mixture screws a half turn in and start over. If you need 2 1/2 turns to make the engine run well then do it. 3 1/2 turns out or more usually calls for bigger idle jets.

If the engine doesn't respond when you turn one of the mixture screws in and out it means that the cylinder is not getting ignition or it is not getting idle mixture. If the ignition and compression on the cylinder check out then an idle passage is plugged. Remove the mixture screw and idle jet and blow air back and forth to clear the obstruction. DON'T put compressed air through the float vent. If this doesn't work the idle passages have to be boiled out and possibly checked with a duct guage. Always oil o-rings when replacing idle jets.

After you have the idle mixture initially adjusted you can bring out your STE and adjust the Air Screws. Find the barrel which is pulling the most vacuum,

then adjust the other cylinders to an equal vacuum using the air screws. The cylinder which is pulling the most vacuum you leave alone. Remember to unlock the nuts before adjusting the air screws. Tighten

them by hand as you go along; when you're finished you can tighten them using the 8mm wrench while holding the screw stationary with the stubby screwdriver.

Now readjust the mixture screws until you get the correct adjustment. Usually you'll turn the mixture screw in until the engine slows down and then out again slowly until it runs smoothly and then perhaps another half turn. You want the maximum speed with the least fuel. It takes practice. Sometimes as you turn out the mixture screw it speeds up the engine enough to advance the timing and that immediately adds 300 or 400 rpm. When you turn the idle screws back a hair to correct this the weights flop back and this is what slows the engine. It's best to get your initial adjustment around 1200 rpm and hope the distributor doesn't intercede. Check the side to side balance each time you adjust the idle screws. The mixtures can be a little lean or a little rich but they must be consistent from cylinder to cylinder. Always oil the o-rings on the mixture screws!

When you are finished adjusting the mixture screws back-off the idle screws evenly to 850-950 rpm and check balance. Adjust the rod that attaches to the right carb throttle arm unless it will snap on without moving the throttle. It's imperative to check the balance at 3000 rpm also. Before you put the air cleaner on take a look at the front of the engine in the area of the pressure sender and thermostat. If it's wet with oil put a new o-ring on the thermostat before your clutch gets wet.

NOTE THAT THE INJECTION QUANTITY IS BEST CHECKED BEFORE INSTALLING CARBURETORS.

You check the injection quantity with a narrow cc measuring vial which can be purchased from a pharmaceutical supply house. Attach a wire around it and hang it down to catch the gas as it squirts out of the accelerator pump jet. .8 cc for one complete throttle action is about right. The injection quantity can be varied by adjusting the length of the stroke using the nuts on the threaded shaft. The ignition is turned off during this operation. Start engine to burn out gas each time.

THE FLOAT LEVELS ARE THE FIRST THING TO CHECK AFTER INSTALLING CARBS. It's necessary to check the float level when a carburetor is rebuilt and new needle valves are installed. It's possible to check the float level with the engine running using Porsche tool P 226a. This gauge clamps onto the float bowl after you remove the float bowl plug. Remember to use the fiber washer which comes with the gauge and screw the gauge in fairly tight since if it leaks the float won't rise and gas will pour out of the carb when you start the engine. Always wipe up any spilled gas after you install the gauge and before you start the engine. If the float level is incorrect, you remove the large brass plug over the float needle valve and add or subtract height by using various thickness washers under the needle valve. The washers are available in the gasket kit.

Use a Snap-On 6 point socket, 16mm on the large brass plugs over the needle valves.

If you spend a day tuning your carbs you've gained experience and patience. You have also changed the shape of your knees. Treat the needle seats with respect because they can't be replaced. When adjusting the mixture screws remember that they can all be a little lean, or they can all be a little rich, but they should be one way or the other.

For city and low speed highway driving we recommend hot plugs: W 8 DP for compression ratios to 9.1; W 6 DP for ratios above 9.1 (Gap plugs .034-.036).

Always check for water in the fuel system. Protect your investment!

The carburetors should be checked for percolation in the float bowls after the engine is thoroughly heated and car is allowed to sit. If this condition exists, and it is not due to too high of float level or pressure in the gas tank, the 914-6 phenolic insulators should be placed under the intake manifolds. The part number is: 901-108-131-00. They have to be opened-up for cars with a larger than 32mm port size.

Adjusting Steps: Clean carbs
Adjust injection quantity
Install
Adjust float levels
Adjust side to side balance at 3,000 RPM
Adjust Idle Screws, Air Screws, Mixture Screws

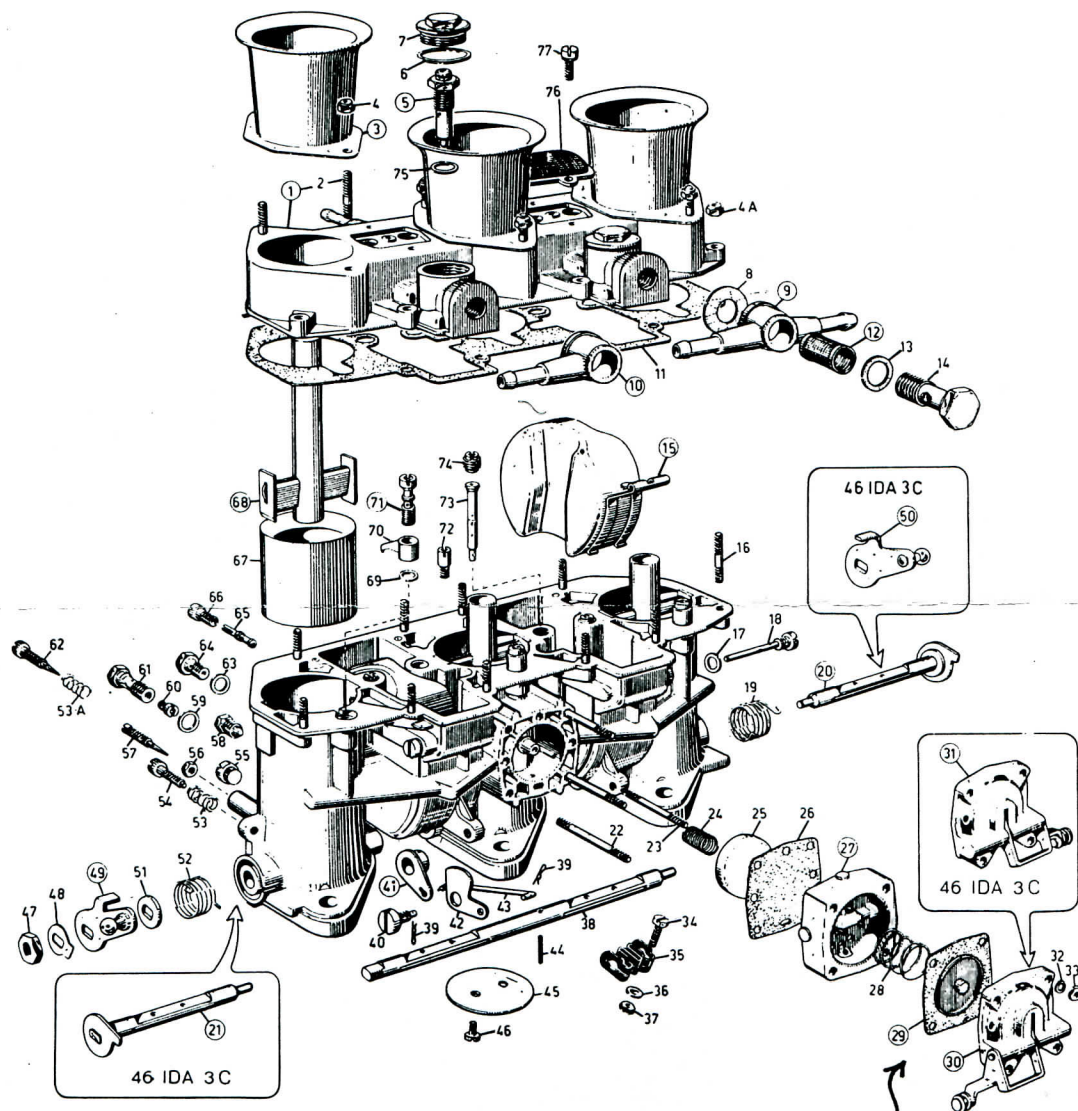


Fig. 8.12 Exploded view of the 46 IDA 3C carburettor (Sec 6)

- 1 Cover
- 2 Stud
- 3 Air horn
- 4 and 4A Nut
- 5 Needle valve
- 6 Washer
- 7 Plug
- 8 Washer
- 9 Union
- 10 Union
- 11 Gasket
- 12 Fuel filter
- 13 Washer
- 14 Bolt
- 15 Float
- 16 Stud
- 17 Washer
- 18 Fulcrum pin
- 19 Spring
- 20 Throttle spindle
- 21 Throttle spindle
- 22 and 23 Stud
- 24 Spring
- 25 Plate
- 26 Diaphragm
- 27 Accelerator pump housing

- 28 Spring
- 29 Diaphragm
- 30 Cover
- 31 Cover
- 32 Spring washer
- 33 Nut
- 34 Screw
- 35 Linkage
- 36 Washer
- 37 Nut
- 38 Throttle spindle
- 39 Clip
- 40 Pivot
- 41 Arm
- 42 Cam
- 43 Linkage
- 44 Roll pin
- 45 Throttle valve
- 46 Screw
- 47 Nut
- 48 Tab washer
- 49 Lever
- 50 Lever
- 51 Spacer
- 52 Spring

NOTE: SLOW
ACCELERATOR PUMP
ACTION RESULTS
FROM THIS
DIAPHRAGM BEING
REVERSED. NOTE
THE METAL TAB
FACING OUT.

- 53 and 53A Spring
- 54 Idling adjustment screw
- 55 Progression hole inspection plug
- 56 Locknut
- 57 Air compensating adjustment screw
- 58 Choke retaining screw
- 59 Washer
- 60 Main jet
- 61 Holder
- 62 Mixture adjustment screw
- 63 Washer
- 64 Drain plug
- 65 Idling jet
- 66 Holder
- 67 Choke
- 68 Auxiliary venturi
- 69 Washer
- 70 Pump jet
- 71 Delivery valve
- 72 Inlet and discharge valve
- 73 Emulsion tube
- 74 Air corrector jet
- 75 Washer
- 76 Filter gauze
- 77 Screw