

Making the Weber Progressive (32/36 DFEV) Work on the Aircooled VW Engine

Here at ACN we have gotten enough tech questions asking about the Weber Progressive Carburetor that we felt it was time to get a good article up on the subject. These are our OPINIONS on this subject. Hopefully this article will help some folks, who really have no idea what they are doing, to get their progressive running well.

If you have an EMPI progressive, understand that is a Chinese copy of a Weber DFAV/DFEV. We suggest that you get a real Weber DFAV/DFEV.

The DFAV and DFEV are the same basic carburetors, BUT the "A" stands for "Aqua", or water. Put simply, the "A" is just a water choke version, and the "E" is the electric choke version. Because our cars are aircooled, we never ever deal with the DFAV. But if you pull one off of a Pinto or another car in the junkyard, you may have the DFAV version, which has 2 water hoses that run to the choke assembly. We do NOT have a conversion kit for these chokes!

This carburetor is a "32/36" Progressive design. What that means is the primary throttle plate is 32mm in diameter, and the secondary side is 36mm. The progressive side does not open until the primary is around 1/3 open. This allows you to jet the carburetor lean for fuel sipping when on the primary, but when the secondary opens you obviously do not care about MPG so it flows a lot more air, since you are probably accelerating or passing.

Our first piece of advice is to NOT run a 009 or other centrifugal only distributor. They stink! Simply run a SVDA (Single Vacuum, Dual Advance), it will make your tuning job much easier. Good progressive carburetors HAVE the proper port for the SVDA distributor. If the carburetor does not, you got a chinese copy or an old (ie: obsolete) progressive, and you will HAVE no other choice but to run a 009/010, but you will NOT have optimal tuning results like you would if you had a SVDA.

Pertronix I SVDA, with electronic points in it.

Pertronix II SVDA, with electronic points and a safety circuit, which keeps the Pertronix from burning up if the key is on and the engine is not running!

Pertronix III SVDA, which is the same as the II but also has a programmable rev limiter in it!

Centermount Progressives NEED intake heat, and lots of it. This is why a progressive on a T4 WILL NOT WORK. It's so bad and unfixable, we do not even sell the kits that are available for the Type 3 or Type 4 engines. The intake volume is too large, and there is no easy way to get the intake manifold and runners heated up. It will not work well, please do not ask, because the answer is "get dual carbs". Nuff Said.

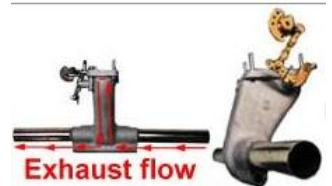
However on the upright engine which is used in the Type 1 (Or Type 2s up to 1971 models), the stock muffler is setup perfect, just make sure they are clear (not clogged with carbon, or left "undrilled" as is the case with a lot of performance exhausts). But understand that if you have an aftermarket header with the flanges on #2 and #4 primaries, you must relocate one of them to the collector (like the stock muffler!) to get good preheat. Don't be lazy and think you are special and that these rules don't apply to you. Just relocate one to the collector, with some small (3/8") steel tubing, and weld/braze it in place. If you can't do this, another option is to have the guy at the muffler shop do it, it's an easy job for him.

If you don't do this relocation modification, don't then complain about the forthcoming flat spot and poor MPG, along with needing "wack" jetting (such as a richer primary than what is needed if the intake manifold gets hot). The hot intake manifold from the preheat keeps the fuel that is metered at the carburetor (by the idle and main jets) VAPORIZED (Google "Latent Heat of Vaporization"). Your intake heat is of a fixed amount. The richer it is, the colder the intake is going to be. Don't be any richer than you have to! If your intake manifold is cold, you either have too much fuel, or not enough exhaust preheat. This creates a condition where you have to jet rich to make sure that the air/fuel reaching the cylinder is rich enough, because a lot of the metered fuel condensed on the way to the cylinder because it's so cold (not vaporized). It's a long ways from the carburetor to the cylinder. If you are too rich and/or too cold you'll have symptoms of revving it up, and all that condensed liquid fuel puddled in the intake manifold then makes it's way into the cylinders and now you are way rich. Intake heat IS A GOOD THING for centermounts! Even if the temperature is 120F (50C) in the desert, the intake heat is a good thing! The more heat you route to the intake, the leaner you will be able to jet the carburetor, yet keep the A/F the same. If you have a wideband like our **Innovate LM-2** or **Innovate MTX** you'll see that as you add heat to the intake, it will run "richer". This is because you are keeping the metered fuel vaporized and it will combust properly! Just understand that what fuel the carb meters is NOT necessarily the same as what gets to the cylinders, and good intake heat is key to this.

There are also some rare situations where some guys that didn't want to hack their exhaust, so they have simply routed their hot engine oil thru the preheat tubes, which has the double benefit of heating the intake and cooling the oil AT THE SAME TIME. If you have a porous intake (ie: CHEAP) you are SOL on this one, it will leak.

An example of a **GREAT PROGRESSIVE INTAKE MANIFOLD KIT**.

Also, good intakes route the heat to the carb base, NOT just along the bottom tube. If you see a bottom tube only preheat model, walk away from it, it sucks. PERIOD.



Understand that a good intake is not that much more than the "cheap" ones. Besides the pre-heat issue, the good ones also solve the progression linkage issue too, where the carburetor doesn't line up with the throttle cable. This results in the throttle cable rubbing the cable tube really bad where it exits the rear of the fan shroud. Also, the cheap kits have a ghetto connection from cable to carb, that doesn't even open the carb all the way up at WOT. **Our good intake manifold kit** will fix both linkage issues, with a McGyver like arrangement on the manifold which works really well!

If you don't have anything, then you need our **Complete Progressive Carburetor Kit**. This kit uses the same intake manifold, and comes with other parts to make the conversion a snap!

It's also useful to know that hot air intake also helps your cause. Figure a way to get hot air from under the engine, to the air intake on the carb.

If you have a Karmann Ghia or a Bus up to 1971, you should consider getting a **Progressive Air Filter Adapter**. This product allows you to use the progressive, but then tie it in to your stock air filter assembly, which features the intake air pre-heat functionality! To use this adapter you'll have to weld a sleeve inside the snout of the adapter, so that the intake boot can be slipped on and clamped, just like the top of the stock carburetor.

Some other basic information that a lot of guys don't know. ALL Webers also need 3-3.5psi fuel pressure, and the floats set to specification. THE FLOAT IS NOT SET WHEN NEW! In fact, we recommend that you disassemble the carburetor(s) to clean out any dirt that is in there, and set the float during assembly. Learning to do the basics on the carburetor are pretty much required if you are going to own a Weber, or a vintage VW for that matter! Even a lot of "mechanics" nowadays are clueless on what to do if they can't plug their computer into your car!

There are 4 things (fuel pressure, float level, intake heat, hot air intake) which are often NOT done by progressive owners, and the cause of the bad rap of the Weber Progressive.

My next topic is carburetor jetting. I have not once, in 30 years of working on these things, seen a progressive properly jetted, not even CLOSE, if I haven't worked on it first. I have also never seen a store that properly jets a progressive. Most shops/stores sell a "kit" which comes with "out of the box jetting", and the float set way out of spec. Their "charts and guidelines" are horrible. HORRIBLE. It's almost like they want you to blow up your engine and wear out your rings/pistons from fuel washdown, in 5k miles. So, on we go.

Here are our guidelines for progressive jetting!

Primary idle jet, 45-50 at sea level, 40-45 @ 5k'. **Secondary idle jet** 10-15 larger than primary idle. Weber supplies them with the primary idle larger than the secondary, WHICH IS STUPID. The result with this is that the engine runs too rich on the primary, then leans out when the secondary opens.

Remember, the more intake preheat you have, the smaller your idle jetting will need to be, since the fuel metered by the jet actually stays vaporized, it's not puddling and condensing before it gets to the cylinders!

Progressive Main Jets, 125 primary. 180-190 secondary (not a misprint). I've even seen some engines need 210 secondary mains. If you do not stagger your secondary jetting, you WILL have the same problem of severe lean out when the secondary opens up, since airspeed drops so much due to air flowing thru both carburetor barrels. We want to be lean (around 16:1) on the primary (for mpg and cool running), but richen up to ~13:1 when the secondary opens. Most people are not aware of this and jet the



primary and secondary the same. So when airspeed drops to $<1/2$ when the secondary opens, the vac signal the main circuit sees is also $<$ halved, and your pride and joy leans out like crazy. causing a massive flat spot or spitting/sputtering back up the carburetor. This is why we recommend that the secondary main be much larger than the primary main.

Progressive Air jets. 160-180 will work, we generally use 160 on primary, and 180 on secondary. If you use a 180 secondary air, you may need to go up 10 more on the main, to a 190-200 secondary main. Do NOT be scared of the "huge" secondary jet, it WILL WORK PROPERLY. I've setup hundreds of these carbs, and know what works and why.

If you are at elevation, we recommend that for every 4k' rise

drop both idles 5
drop both mains 5
increase airs 10-15.

To summarize, here are some quick jetting chart guidelines for a properly setup carburetor (float, fuel pressure), with no ignition "issues", and SVDA distributor.

HEATED INTAKE MANIFOLD!

Sea Level 45 Primary and 55 Secondary Idle Jet, 125 Primary and 175 Secondary Main Jet, and a 160 Primary and 180 Secondary Air Jet

4-5k' 42.5 Primary and 52.5 Secondary Idle Jet, 125 Primary and 175 Secondary Main Jet, and a 180 Primary and 200 Secondary Air Jet

We have even helped one guy at 8k' who wound up with a 37.5 primary idle! 😊

If you do not have the intake heated, your jetting will have to be much richer than this, for reasons mentioned previously.

NON HEATED INTAKE, run these jetting recommendations.

Sea Level 50 Primary and 60 Secondary Idle Jet, 130-135 Primary and 180 Secondary Main Jet, and a 160 Primary and 180 Secondary Air Jet

4-5k' 45 Primary and 55 Secondary Idle Jet, 130 Primary and 175 Secondary Main Jet, and a 180 Primary and 200 Secondary Air Jet

These guidelines are not exact, but are VERY close, and will get you running well so you can fine tune to make it perfect!

If you have any questions, feel free to e-mail us for more tech advice.

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