MRBUBBLEHEADS WEBER IDF CARB TUNING INSTRUCTIONS

Tools needed:
Timing light, sync tool (snail), hand held RPM gauge, air/fuel gauge (hand held or in dash, reamers, and gauges.

Carb preparation:
Install rebuild kits, pin down the choke plungers if you carbs have them, set the float levels. OPTIONAL: CB idle jet dr. and CB spray bars, uni foam filter wraps. SVDA distributor.

Engine preparation:
I suggest you do a complete tune up before starting (new cap and rotor, plug wires, plugs, valve adjustment, clean air filters).

Now let's get started!

Always perform your adjustments on a warm engine that is at operating temperature. We drive them at operating temperature, so that's how we tune 'em. Who cares how it runs when they are cold. We are enthusiast drivers, not just steering wheel holders. If it pops, farts, or is sluggish during warm up, we don't mind this because we know that's what cars do when they don't have a choke.

Sync your carbs.

Unhook all of the linkage.
To start, what I do is turn the "SPEED" screws until they touch the stops.... I then put a little piece of notebook paper between the speed screw and the stop. While gently pulling on the piece of notebook paper, I back the speed screw out until the paper slides free. Then I turn the speed screw in $\frac{1}{4}$ turn. Then go to the other carb and do the same. If the engine won't idle on $\frac{1}{4}$ turn, then try $\frac{1}{2}$ turn.

Gently turn all of your "MIXTURE" screws in to their seats, and then back them out one full turn.

Turn all of your "AIR BLEED" screws in to their seats. Now start the engine and let it run a minute. Then with your snail, find the barrel that has the highest vacuum. That barrel will be your baseline. Lock the jam nut down on it. Move to the next barrel with the snail. Now back the bleed screw out until the vacuum matches your baseline barrels vacuum, and tighten the jam nut. Then move to the next barrel and so on until all barrels are pulling the same vacuum. Done..... You shouldn't have to touch the bleed screws again.

Now it's time to set your mixture screws to LEAN BEST IDLE (LBI). What I do is hook up a

little hand held RPM gauge I got from my local flaps for like 15 bucks (just a cheapy) or use the rpm gauge on your timing light, if it has one. You really cannot use the stock tach as it won't give you enough definition. One end goes to the + positive side of the coil and one and to ground. Any ground.

Choose a carb and proceed to set the mixture screws. Your engine should respond to very minute adjustments to these screw. The response is NOT instantaneous either. So give the screw a small turn and wait 5 to 10 seconds to respond.
Looking at your little gauge slowly turn the mixture screw in (clockwise). Did the idle raise? Or lower?

You are looking for the fastest, smoothest idle you can obtain. Then go to the next mixture screw and do the same. Then next then next. Now your first time around was just a rough draft, to get them all in the ball park. This time around you are going to fine tune the LBI. Start at your first mixture screw and really watch the gauge and listen to the engine. LBI is a fine line. While twisting the mixture screw clockwise you should see the RPM increase slightly, it will drop when you've gone too far. If its dropping while you are turning, you missed it. Back the screw out till the RPM picks up and do it again. Think of it like it's a ramp. Climb the ramp (turn the screw) until you get to the top and stop. If you go off the end of the ramp (RPM start to fall) then back up just a tad, to where the RPM was at its highest point.
Then move on to the next mixture screw and so on.

It should be idling pretty smoothly now. But it might be too fast or too slow. You want to set your idle to 800 RPM. If you set your RPM any higher your cheating yourself. You will be using part of the progression circuit for idling and not getting the full potential of your carbs... With some cams, the engine will not idle at 800 rpm. Or it is very difficult to warm up due to much lower cold idle.

If you are too fast, set your snail on the barrel closest to the speed screw and back the speed screw out a touch. Take note of the snail and then move the snail to the other carb and turn the speed screw in or out to match the first carb. Do they match? If so, reset your mixture screws again to achieve LBI. Are you at 800 RPM?

Now your idle is to slow? Again pick a carb and put your snail on the barrel closest to the speed screw and turn the screw in a tad. Then move the snail to the other carb and adjust the speed screw until it matches the first carb. Then reset your mixture screws to LBI. REMEMBER- Little adjustments go a long way. So take your time. Patience is the key. Blip the throttles every so often to clean them up. Your car wont over heat idling in the driveway. My car runs way hotter out on the road. Trust me...

Now you should be idling at 800 RPM and all four barrel mixtures are LBI and all four barrels pulling the same vacuum.

It's time to reinstall your linkage. I reconnect carb linkages while the car is running. That way I can listen to a change in note like a raise or drop in idle speed. Then I know I am binding somewhere and then diagnose the problem. Either lengthen or shorten a rod. Whatever needs to be done to correct it.

Time to set your timing.

Set you timing to 28 degrees full advance with the vacuum hose off if you are running a SVDA. If you have an SVDA distributor then your golden. If you are using an 009 you are going to have a very hard time. Your engine will run hotter, rougher and you won't get as good of gas mileage. With today's fuel prices a SVDA distributor will pay for itself shortly with the increased fuel mileage you will obtain. AIRCOOLED.NET SVDAs dizzys are genuine Bosch units. And the set up the advance curve custom to our carbs. You will not be sorry you spent the dough. I highly recommend them.

I time my car off of the TDC mark off of the flywheel. I use an adjustable timing light. I set it to 28 degrees, rev the engine and watch the timing mark on the flywheel. While holding the throttle at above 3500 RPM and twisting the distributor and holding the timing gun as soon as the flywheel timing mark meets the case halves I let off the throttle and lock the dizzy down. Then double check the timing. If it's stayed at 28 degrees full advance, I reconnect the vacuum hose to the distributor.

Chances are your RPM changed. So reset your mixture screws. Are you at 800 RPM after you reset your mixture screws? Yes? You can move on. No? You have to reset your idle with the snail again and reset your mixture screws again.

Anytime you make an idle speed change, an idle jet change, or timing change you HAVE to reset your mixture screws

Ok. Now you have set your timing to 28 degrees full advance, idling at 800 RPM, mixture screws are at LBI and both carburetors are pulling the same vacuum.

Now let's do some tuning.

I'm not going to get into the whole theory about the benefits of lean cruise. This is technology that the aircraft guys have been practicing for 80 years. We (car guys) are just slow to catch up.

There are 3 jets we will be dealing with, (2) idle and main fuel jets and 1 air jet. These jets are totally independent and need to be treated as such.

First thing we need to do is disable the accelerator pump. We don't want it to interfere with our readings. Reconnecting and adjusting the pump will be the last thing we do. If all goes well, we should only need very little squirt if any from the pumps. If you have later carbs with the threaded rods what I do is remove the little cotter pin at the end of the rod, opposite of the threads. It has a small 90 degree hook. So pull the pin, unhook the rod, and just let it hang for now.

The first jet we tune is the idle jet. This jet controls the idle AND progressive circuit. The first 30% of your throttle is run off of this jet only. The best way to get a feel for how this jet operates is to remove your main jet stacks and drive around on your idles. Don't drive for just a couple blocks, drive around for a couple of hours on them. This way you will know exactly how they work and how they react under certain conditions and loads. Now that you are familiar with the idle jets behavior, it's time to reinstall your main jet stacks. You want to run the smallest idle jet possible. This will yield the best cruising speed m.p.g. You are NOT tuning the idle jets for best power/response, it should be a little lazy. This is normal and desired. You should be able to get it to 17-18:1 A/F at cruise. So smaller and smaller on the idles until it's protesting (ie: undrivable, spitting, farting, etc) then go back a size. Make your changes slowly and note the effect. Remember to reset your mixture screws after every idle jet change, ignition timing change or speed screw change....

Once you are happy with your idle A/F ratios it's time to work on your mains and air correctors. Install the biggest main jets you have (you want them TOO big), and the smallest air jets you have and go on a test drive. You should find that as you start off, your idles will gradually go leaner and leaner as you progress thru that first 30% of throttle until it completely falls off. As the throttle is depressed even further the main jets will "TIP IN". This tip in will be obvious. And your A/F meter will swing rich rather quickly. The number doesn't matter at this point.

Now, chances are you have a big lean hole (bog) between your idle circuit and main circuit. This is where your air corrector jet steps in. I call this jet the "timing jet". It dictates when to tip the main jets in. you are looking for a seamless transition. We slowly increase the size of our air jet until the lean hole just barely goes away. Now that your lean hole is gone, as you progress thru the throttle, your gauge should look something like this as you go from your idles to your mains..... 14, 15, 16, 17, 18, then swing way rich. .....now, on to the mains.
Your target A/F ratio is 12.75 plus or minus .5 at "WOT" (wide open throttle). So if your gauge reads richer than 12.75 you need to decrease your main jet size. in small steps until you nail it. THAT'S IT!

Time to reconnect your accelerator pump. Then back the nut up until it just touches the arm. The object is to use as little accelerator pump as necessary. Turn the nut in equal amounts on both carbs until the hesitation is gone.

WEBER MODEL IDF-XE

Fig. A