Weber Carburetors Owners Workshop Manual

Foreword

I had this manual (and a couple of its individual chapters) available for download when my site was up and running.
I have a Letter of Authorization from the Haynes Publishing Group allowing me to do so.
...some of you know this.

In this post, I will try and convey my solidified and unwavering view to our manifold construction habits, dispelling all myth and to encourage others to read the information that I have. My effort is meant to continually reinforce the facts concerning my conversion.
My intent of putting this manual out for download was to have us all on the same page, in all facets of anyone's individual build, so that we all talk the same basic language that shows another the common understanding in design and construction techniques that we all need in order to share ideas between ourselves.
Currently, we have terminology available in this book that is not being used by most.

I can talk to very few in technical terms. This is because most all are looking for the short answer. Many are trying to assemble a conversion (through short-cutting their way to success) with the resulting problems of working in that way.
Some take it seriously enough to listen to what it is that I have to say. Most do not.
So, ...here goes;

This excerpt is from the Weber manual that I offered for download when my site was up. Weber tells us exactly what is needed from a intake manifold when using any one of their carburetors that is referenced in the manual.

Part 1 – page 12
Chapter 2 – Carburetor Fitting
Sub-Chapter 3 – The Inlet Manifold

..as follows my approach in learning the curve on my own.

“The purpose of the inlet manifold is to convey the previously prepared air/fuel mixture from the carburetor to the engine cylinders, whilst at the same time keeping the composition of the mixture uniform.”

This is telling me that the mixture is as good as it will ever get once it leaves the chosen carburetor. The air/fuel mixture is set, and the manifold needs to get the fuel charge (or “mixture”) to the combustion chambers as efficiently as possible.
The “composition of the mixture” is determined solely by the calibration of the carburetor and its ability to have proper activation of its internal circuitry from its air intake apparatus. Previously, we've chosen a properly sized carburetor and have calibrated it using Weber's information for the application.

“In general terms...”

We start out the sentence with a non-specific slant on the rest of the sentence.

"...the speed of the mixture should be maintained..."

Meaning: that I need to remain focused in keeping the air/fuel mixture moving as consistently as I possibly can. I understand that the inlet manifold must have a role in its ability to maintain the speed of this mixture.

"...at the identical velocity with which it leaves the carburetor; ..."

...and match the exit speed of the carburetors ventui past the throttle plate. Nothing in the statement tells me otherwise, or to do anything more or less than to match it. A very important starting point is to know what this speed is. Some way of calculating or measuring the speed and velocity must be used to establish a figure to calculate with for our manifold. For example: Flow-rate and RPM data are two valuable figures to have. There are others. Whether these are actual, calculable or theoretical is up to your means.

"...too large a manifold diameter..."

The manifold we are speaking of is termed "the plenum" in our vocabulary, as opposed to Weber's technical definition of it that we just read. "too large" speaks of the plenums volume. So now, I am being told that the size of the plenum we use to mount the carburetor has choices in overall volume. I have primary venturi exit speed and velocity figures past the throttle valve that need to be maintained and that the plenum volume plays a role in this. From the onset, Weber is essentially telling me to keep the plenum volume as small as possible to start with.
Our Empi plenum is pre-sized and must by CC'd for volume in more than one way.

"...will cause the mixture to slow down..."

OK, I understand that if blowing a set volume of air through a normal sized cup straw has defined amount of work involved and gives a resulting effect, then blowing through a super-sized cup straw will have a different effect requiring less work while providing a faster event. My lungs tell me this and the resulting difference between the two are working differences expressed as a differential valued in percent. The differential of the two relates to the previously mentioned speed and velocity values that will affect overall engine performance based on plenum volume alone.

"...and this may cause condensation of fuel..."

Now I'm told that if the mixture is moving too slow in the plenum, that the fuel in that mixture may end up turning back to a liquid that collects upon itself just after leaving the carburetor, or condense. If I fail, I will be leaving nothing but the air of that mixture for the combustion chamber. A condition that would erratically go from lean to rich in a uncontrolled way. I do not want the mixture to condense back to a liquid because of too large a plenum volume. The answer here should be obvious: the smaller the better.

"...on the manifold walls."

This starts to define, interpretively, our plenum, as it now has walls.
There will be four of them, as walls are vertical only, and I know that I need an enclosed space.

Once condensation occurs and after our lean condition presents itself, the continuation of the process has the now-liquid fuel tearing away from itself as a heavy droplet entering the airstream, where it may or may not stay, eventually creating a rich condition in the combustion chamber.
And then the process starts over.
And there will be many of these condensation processes happening at the same time.
Weber is telling us that: even with a perfectly calibrated carburetor, the manifold can make it appear as out of calibration for the application if the plenum is not properly designed.

…next paragraph:

"The length of the inlet manifold branches..."
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"manifold branches" are our "runner's". I'm now told to concentrate additional thought as to my runners overall length. To have a plenum, one must have runners. I'm told these things in order by Weber. I've thought of the Empi plenum as pre-sized for our carburetor(s) and, based on what we just previously read, the plenum volume, and now the length of the runner's, have cause-and-effect as well. Plenum, then Runners, in that order.
Continuing, we now add specification to the runner's (or "branches").

"...should be as short as possible..."

If using our pre-designed Empi VW plenum, then our only option is a straight shot from the plenum to the cylinder head port inlet. The shortest path from point A to B.
With my Empi plenum, I have little choice in error.

"...and as equal in length as possible..."

Weber already understands that "manifold's" (ie: plenum and runner's) are not equalized in tract distances, and warns us to design/build our manifold with a best-effort approach in our own design and construction technique's to have a successful use of their carburetor upon completion.
I have carburetor venturi exit speed and velocity figures, plenum volume figures and now equalized runner figures.
Each of the three areas noted have their own specific calculations involved within their respective formula's. Each finished formula relies on the next. Example: I cannot select options for the best runner cross-sectional sizes until I first formulate the best overall plenum volume. Luckily, those figures are giving to me as the Empi plenum.

"...to ensure that each cylinder receives equal quantities of mixture."

A straight-shot, point A-to-B run, from our plenum is defined.
As a result, most give this statement no further thought as they believe there is nothing else they can do.
I have more on this later in the summary.

"The branch bores..."

These are the plenum outlets incorporated into the walls of two sides of our plenum, or manifold. We run into problems when one uses the term "plenum", as Weber technically defines it as a "manifold". On the forums, I generally accept the term "plenum" as the Empi piece, and the term "manifold" as the

completed plenum/runner combination. I use “plenum outlets” where they use “branch bores”. Switching gears in terminology is a work of effort, just in itself, for me when getting on the boards to discuss anything.

“...must have a smooth or even polished surface...”

Hence my reasoning for knocking-down the rough casting and parting lines of the plenum interior. I simply knock the roughness down without polishing. I was given a choice in the statement and exercised smooth to retain as much interior surface area as possible. I do not want the volume to increase in either the plenum or its outlets or to influence airflow. Knocking the peaks of the casting flash is all I do to smooth the plenums interior. There is no machining done to the plenums as-purchased other than milling of the base flange for the carburetor and machining the outlets ID/OD for a universal acceptance of runners.
They are all the same when purchased new today.

“...and all bends must be kept to minimum angles.”

I analyzed all manifold designs that I could imagine. I selected some of the better ones and posted pictured representations of my findings expressed as a percentage of each designs working differential. By design, many are inherently inefficient and were not included in any posting's. Some more so than others. All have their trade-offs. I chose the best design that I could reasonably perfect on my own. I have not posted any drawing's of my personal manifold showing any figures whatsoever. I explain why later.

“The use of excessively long horizontal sections of inlet manifold...”

Yep, it figures! Talking about our 4-cylinder Goldwing engines. GL, Subi, Corvair, and all the other European boxers that are lessor known.
These long, straight sections of manifold are due to my runners. I deal with them effectively and make mention of how.

“...may result in carburetion problems when cornering...”

Weber is telling me that the fuel and fuel mixture has weight. What I do with this weighted mass traveling from throttle valve to intake valve is solely dependent on my design and construction plan. I abhor problems of this nature. Having the ability to design-out potentially inherent problems I appreciate.
Our corning is a bit different than the statement realizes, in that we corner via a bank angle. Where a automobile with four wheels will exert a side load on a “contained within” mass, our motorcycles will deal with a “pendulum-effect” as well. This pendulum effect attempts to push the mass downward, as well as the expected side-load characteristics of the automobile. We've additional design criteria above the intention of the statement as a result.
Note: Some compensation to overall carburetor calibration may be required due to the down-force exerted by this pendulum effect on our fuel mass. When looking for solutions to this potential problem, look to racing vehicles using downdraft carburetors that have steep bank angles while at speed.

“...and must therefore be kept to a minimum.”

Overall tract length is what they're telling me. From throttle valve to intake valve.

Point A (plenum outlet) to B (cylinder head intake port opening) is all we can do, right?
Centering the plenum starts with choosing any two diagonally opposed port outlets and equalizing the distance from each of the chosen outlets to their respective cylinder head port intake openings. How you do this is up to you.
I show one way in the first video.

...next paragraph:

"In modern engine applications the inlet manifold..."

We are working with a relatively modern engine, so this paragraph applies in it's entirety.

"...is sometimes heated..."

I've an option here? I'm now aware that the application of heat is now a possibility.

"...in order to promote vaporisation of the air/fuel mixture."

This is a statement that I initially disregarded as not needed. The video of my initial garage-build confirms this. I built that first manifold with no intention of heating it. The ONLY lingering thought of my misgiving process is attributed to Silicon Sam here on the Forum. He was running a heated manifold with such confidence that I kept second-guessing my own approach and reflecting on his.
The chosen word "vaporisation", as termed by Weber, is specific. VERY specific. Vaporisation of the air/fuel mixture converts its state to that of a gas using heat. I already knew this, but due to 99% of talk on all forums, I chose to roll with what that percentage was doing; applying ...no heat. I incorrectly assumed they knew better.
As I was running that first manifold, badorderbob was trying to figure out how to heat his set-up. He was ahead of the game in this application and we were quietly talking about many things back then.
I'm riding around with (now two) lingering thoughts.

"The best method to do this is..."

Again, the manufacturer of the carburetor is telling me "the best method" in how to apply the required heat to prevent condensation and to promote vaporisation of the fuel charge.

"...is by passing water from the engine cooling system..."

Thankfully, we have a water-cooled engine. My past experience with single carburetor work centered on air-cooled engines only, culminating with the Virago's. I helped another who is known today for it. In that application, one of the two factory carburetor's are retained for the exact reasoning's we use here; simplicity. I had no other reasoning back then, as increased performance was not a goal (though torque was slightly improved at the cost of slightly decreased HP). A downdraft Weber carburetor utilizing a plenum had nothing to do with it and reinforced my hard-headedness of not applying it here.

"...through a section of the manifold just below the carburetor."

Technically, I'm now given the plenum floor.
The statement is telling me to heat the plenum floor to promote vaporisation of the mixture, to prevent condensation and promote efficient airflow. It is clear and not a optional facet in any of our conversion

builds if we choose to run a Weber-based downdraft carburetor using a plenum.
Again, I read it and then dismissed it initially.
Badorderbob had found a carburetor he thought would be good for our bikes. I had calibrated my DCD 28/36 to perfection during this interim of riding and discovery through field testing, yet still had tolerable drivability problems. I attributed these drivability problems to the “excessively long”runners that I had carefully designed and constructed to the best of my ability. I did not attribute these problems to the carburetor (DCD 28/36) and accepted Weber's assumption that I may have a slight failure in either design, construction or application. Again, tolerable. But to help anyone else do what I had done, I needed to find a carburetor that we all could afford. The Weber 32/36 was the usual carburetor chosen because it was new and widely available. The fact that Weber says it is too large for our application and still promoted for use by a “specialist” seem to be completely ignored. Restoring a Italian DCD like mine is expensive and few, if any, would go for its cost. I decided to call Tom Langdon of Stovebolt (who Bob found for us) and talk with him. Bob thought it would be a good carb for us so I followed-up with it and made the call. To me, it was obvious that Bob had done his homework in properly sizing a carburetor for his bike.
It was a profound conversation with an incredibly knowing person. Being retired from GM Powertrain, and a specialist in their induction, he was as direct as needed in passing to me the absolute need to “heat the plenum floor”.
I was convinced. I would design a coolant chamber for my Empi plenum, as I now needed to heat the plenum floor undeniably. I felt so much better. Within two weeks, I was riding around with no drivability problems whatsoever. I had seen the light that Silicon Sam was washed in, and that Bob was searching for himself.
Using a new carburetor that needed no recalibration, was 1/3 the cost of a new 32/36 and half the cost of a new Brosol H-30/31 was a significant find by Bob.
Night and Day difference. A point that Weber gave to me and I dismissed due to the forums on the whole. The information available, at that time, was horrible and wrought with misleading's. I immediately saw why and was banned from a forum for correcting those who were doing it intentionally.
My thinking at that time was, “Why would CC Products heat their manifold and not Cycle Innovations?” I concluded that CC Products spared no cost in their conversion effort and Cycle Innovations had cut some key corners. I purchased, and then tested, those two conversions completely along side my own conversions.
I now knew what to do and why.
There was nothing definitive, save for a few whom I ignored, in any further help associated with these Goldwing Forums. I was never again going to be mislead for any reason by anyone claiming to know something that I did not know for myself as fact in either reasoning or application through experience. I not only had to successfully build my own conversion alone, but could see that I would now have to defend its merit from those who are biased should I choose to present it as a successful conversion on the Internet as a whole.
The reasoning has proved itself true over time.

“This arrangement also has the advantage...”

The application of heat has an advantage? Well, didn't Silicon Sam tell me this as well?
As it turns out, there are many advantages.

“...that it makes possible the use of leaner mixtures throughout the complete engine speed range.”

In this statement, we are talking about overall efficiency. Translate it in many ways. What it tells me is;

less fuel will be used by a more efficient engine.
Finishing this paragraph a second time (under a different framework of thought) changed my entire view on what my conversion needed. If I'm on this Forum, my responsibility is to pass it (this framework of thought) on to you. I see it in no other way. My past experience in not finding accurate information on this single carburetor manifold subject, via the forums that we use, tells me to do this with the facts of my experience which contrast completely with the published information of Randall Washington, a known carburetor specialist of our motorcycles. His published information is technically accurate in much of its wording and biased 100% to the negative slant via opinion with no factual data supporting it. A web-page designed specifically to help market his wares and influence my decision to buy his product. The information is continually referenced as fact versus the opinion it is. I had no choice but to conclude that Randakk's may indeed be a “specialist” of the factory induction, but he is no specialist of single carburetor conversions for our bikes.
I've no opinion as to anything else regarding Randall Washington.

..next paragraph;

“It is important to make sure...”

I read this as, “DO IT!”

“...that each branch of the inlet manifold...”

Meaning all four runners.

“...locates exactly with the inlet bores in the cylinder head...”

This is why I strongly push the need to recognize this FACT; the heads port openings have a 2mm centerline off-set between flange mounting locations and their respective center line of drillings and the actual port opening. Why did Honda do this? A dissected analization of the head itself shows the combustion chamber roof-to-coolant passageways requires it. We need to make our flanges intake port opening's fit perfectly centered. I showed my way of doing this with the PICT34 carb base flanges used in the first video. The tool used to adjust the flanges was a chainsaw file. By design, I had them water-jetted with the correct off-set and diameters to comply with the importance of the statement.
Allowing the runner outlet to retain a 2mm offset of the cross-sectional center-point of the opening is unsatisfactory by Weber and my own experience. The valve pocket requires a centralized input by Honda's design.

“...and that gaskets do not obstruct the free passage of air.”

The tubing that I used for the runners is the exact dimension of the intake port opening. When installing the conversion, gasketing material is removed to the ID of the actual port opening. Tubing selection was critical so that all three (port opening, gasket and runner) Become unitized as one once installed. This turns out to be an incredibly strong statement when reading further;

“Failure to take these precautions can lead to quite serious carburetor faults.”

The entire paragraph that we've just read applies to our construction of a manifold if using their carburetor. The last thing I wanted was a failure of any kind. I had just reworked my manifold to apply heat according their direction. Why would anything read so far be optional after learning the needed

requirements (and obvious benefits) the hard way?
I do not publish specifications of my manifold as explained in the summary. I will say this though:
Transitional blending of materials used is vital.
Cylinder head port opening's are 35.5mm
Tubing runner ID is 34.5mm
Plenum outlet is 31.0mm
I have 3.5mm on the plenum side and 1.0mm on the head side for transitional blending to create a absolutely perfect delivery tract.
My parts were specified for a reason.

...final paragraph;

"Although the previous comments are correct for most applications, the design of the inlet manifold..."

This is the manifold as a whole now. Not "manifold" as in "plenum", but the finished manifold that we know, or Weber's defined "inlet manifold", ready for use.

"...is a complicated process involving the use of a dynomometer..."

Man!, ...now I need access to a dynomometer. No distinction as to what kind is given; engine or chassis. Well, I'm certainly not buying a chassis dyno to build my manifold, but I can certainly get use of one (for a price) here in town. Thankfully, there are some available to me through the people that I know. What I did do was build a engine dynomometer using a 25K-watt generator for load testing. My first test stand was adopted for its use. Cheaper to build my engine dyno than to constantly harass my friend for use of his chassis dyno until I finalized my conversion and was ready for it.

"...and the completing of many engine tests."

I knew that was coming, as I've done this before. I know the processes of final tuning.
Of all the required calculations that precede the physical scale modeling of my manifolds desired performance curve, know that there are variables that I use from one calculation to the next within any formula that I use. My carburetor selection and finished manifold are matched technically and paired physically together. Dynomometer testing verifies my performance projections.

"A poor design..."

Right there tells me that my best efforts, in separate technical disciplines, need to happen. From initial concept through finalization of any field-testing, my design is critical if I expect positive results of any kind. My designing skills are top-notch, even if within a different discipline than that of which I am trained in.

"...may result in unsatisfactory..."

I read the statement as the word "FAILURE" in that portion of the sentence. If I do not design the best possible solution, construct the best possible piece using the best of my abilities, test until there is nothing left to test, and finalize the end result to a completion, then it will all be for nothing. I recall the dozens upon dozens of dead threads and unanswered questions that the Internet has for us all on this subject. If I wanted satisfactory for my finalized conversion, then I simply would abandoned the idea and deem the entire concept a failure, accept what is published and move on as many have done. I

approach all in life this way. I fail, at times, as we all do. I keep trying to a proven fault, exhausting all possible options before any consideration is given to anything before abandoning it. I too can end-up with something unsatisfactory as a result of my best effort if not armed with all of the required information at the start. This manual provided my fair start once I accepted what it was that I was reading. Sometimes, things will not work as we either want or need them to. I was determined to see this through and make it, at the least, satisfactory.

"...vaporisation, ..."

That is; vaporisation through the application of heat. We've just read of the headache I gave myself with this heat issue. "vaporisation" is sometimes termed "atomization" by many. The two are distinctively different but, I do use the term often so others understand what it is that I am trying to convey to them. Atomization does not create a change of physical state. It simply reduces the size of the material being atomized through,usually, a sprayer of some sort. Atomized particles do not float, as they have tremendous weight. This seems to be visualized easier by many as our carburetors; sprayers (ie; a Volkswagen "Bug Sprayer" carburetor). Vaporisation does create a change in physical state. When vaporised, particles are so small that they tend to float. Example that; smoke is a vapor, fog is a vapor, and yes, even the clouds themselves are water vapor. It is this vaporised state (now a gaseous mixture) that our fuel is in once past the throttle valve of our carburetor. It is the manifolds responsibility to keep it in this vaporised, gaseous state exactly as it has left the carburetor for delivery to the inlet port opening's of our cylinder heads. The application of heat affords many features responsible for making this happen efficiently.

"...unequal mixture distribution, ..."

Right here is a key in efficiency. Weber is telling me that I need to conquer this distribution issue to the best of my abilities for a successful mating of their carburetor to my manifold. I've gone from point A to point B in simple fashion as previously directed to do. Now there is reaffirmation to consider the issue of it again. Obviously, there are potential problems if I do not thoroughly explore all possible solutions to their fullest extent.
"Have I not done the best I can do in equalizing the fuel charge distribution by centering the plenum as best I can?" I asked this question of myself over and over based on my experience with the heating issue. Surely I had options that may be invisible as before. I would soon find my best solution. Again, mentioned further in the summary.

"...or even insufficient mixture supply..."

Recall the condensation lean-to-rich/rich-to-lean condition mentioned earlier? Recall the application of heat to correct condensation? Weighted fuel as mass? The pendulum effect? The avoidance of sharp angles and unnecessary tract lengths? Right here is where "it all adds up".
Combine each together and this would be a manifold deemed "unsatisfactory" by Weber and myself.

"...and for this reason it is not recommended that a manifold be made up by a inexperienced person."

Weber Carburetors is a business. They sell carburetors. They manufacture with such consistent performance that the automobile manufactures lease their designs in order to replicate duplicity in each and every car they build. They have feedback on what does not work from a worldwide network over many decades. They have it from the Manufacturer's on down the line to individual retail speed shops with their customers and the shops attached to them. Customers much like you and I. They give this

precaution for good reason. Their phones have been non-stop ringing for solutions to installer problems over many decades of being in business.
They are telling me that I need to be, or will become, experienced in manifold design, construction and application should I take heed of their direction in design and construction of my manifold.
Whether it is a successful manifold or not, they prefer that I seek a experienced individual for building it.
No mention is made of seeking the advice or available referencing of another experience individual.
Weber already knows the outcome there, as many of us do.

"It is a much better idea..."

Hold the brakes! Weber is now telling me to stop thinking and listen to them. They are telling me, that even with my best thinking, it may be better to follow a different path. That path is as follows:

"...to purchase a manifold from a conversion specialist who is well versed in the subject."

At the time, I would've bought a conversion from someone. I had gone through three consecutive racks with fuel delivery problems associative to their internal circuitry. I won't go into detail here, but Honda never specified their carburetor's for use with any alcohol-blended fuel so, the alloy comprised to manufacture the carburetors were never designed to withstand its use. Once internal circuits loose metal, there is no way to replace it. I was done with Goldwing carburetors. Unfortunately, there were no companies providing single carburetor conversions. CCP and CI had been out of business for quite some time. Their conversions were sporadically available through eBay. The CI installation manual floated around the Internet as though it were the Bible itself. The only "specialist who is well versed in the subject" was Randall Washington of Randakk's. He had an entire web-page devoted to the subject, and none of it spoke of a single benefit other than that of "tinkering" as a means of entertainment. I was on my own with little help available. So, I decided to become as "well versed in the subject" as I possibly could.

Decide for yourself if I've followed direction to the best of my ability up to this point.
I declare myself nothing but one of you who wants the best available conversion as well.
I've been where you may be at.

Summary

In Summary, Weber makes no mention of "optimization".
This is important, as Weber is essentially telling me to learn several technical disciplines to produce the best manifold that I can for use with their carburetor(s). Their best advice being to let another design and construct a inlet manifold for me. "Optimization" is beyond the scope of this particular manual.
For various reasons, I am trained to do just that; know how to learn.
I've gone through the processes of learning formally. I have also gone through some other relevant processes to help you do what I have done. Unfortunately, I am not (and have never been) the best conveyor of information, ...let alone a teacher of specialized technical disciplines. Compound the fact the my entire spirit is that of a entrepreneur.
I find others to speak for me most times, as listening to me is work for most.

The warning's in the sub-chapter we've read are clear. The potential deficit of the horizontal length as related to the runners and their ability to evenly distribute the fuel charge were fully optimized by me

through the use of my tuned runner venturi's. I kept that quiet for a while. Due to none trying my approach in design and application of heat, I had to refocus attentions on getting all to apply heat their plenum floor, runners and the manifold overall. Designing and installing tuned venturi's within each runner is so difficult I almost abandoned the idea, let alone the application. As a result, I know the worth and value of it explicitly. I also know that they are not needed. These are a want for the perfection of the best – optimized.

What I found in the application of heat beyond that of the plenum floor is so beneficial that it must be considered mandatory in any conversion. Applying evenly distributed heat to all interior surfaces of the entire manifold (meaning the entire fuel delivery tract from throttle valve to intake valve) appears to be magic, but it is not magic. It is known as a “boundary layer of heat” that is created to help promote centralization of the fuel charge within the delivery tract at the cross-sectional center-point for the exact reasoning that we apply it to the plenum floor. It centers the fuel charge (or “mixture” as termed by Weber) within the delivery tract explicitly when done correctly. When applied evenly to all tract surfaces, the fuel charge has no choice but to find the cross-sectional center of the tract. This happens due to the processes involved in preventing condensation and encouraging vaporisation by pressure. The pressures differentials exerted on the mass within the tract by the application of heat force the charge to the center of the tract with nowhere else to go, but with the flow. This is a form of optimization in my opinion, because no mention is made of applying heat further than the plenum floor by Weber. For the exact same reasoning that Weber tells us to heat the plenum floor (to form this “boundary layer of heat” that acts as a cushion for the fuel charge to travel unimpeded, prevent condensation and promote vaporisation) I do the exact same thing to the rest of the manifold with superb results. I found this out accidentally, as I was trying different methods of applying heat without the use of fluids or air for manifolds built prior to the redesigned coolant chambered manifolds. I decided to “super insulate” my runners fully and retain as much heat as possible from the mating of the manifolds mounting flanges to the cylinder heads port openings. Previously, the wasted heat was just that, wasted. I had now solved the application of effectively applying heat for those manifolds without coolant chambers. As a result, I've found coolant chambers to be unnecessary or a luxury for 99% who will design and build their own conversion manifold. More than enough heat is available from waste-heat via the cylinder heads to fully heat the runners and the plenum floor.
When I had that initial conversation with Tom Langdon I had asked him the question, “How much heat is enough heat?” His answer was, “Warm to the touch should be enough to start with.”
“Super Insulating” my runners transfers enough heat to the plenum floor once properly insulated.

The result of effectively applying heat is known. Many of you are finding this out on your own conversions now.

This is why I am like I am on the subject.

This is the pared-down version of what is in a manual that I am about to finish. We've all the same information available. What we each choose to do with it is up to each individual.

My intent to retain all of my findings (read: specifications) is to have you verify my finding's. That is the process I am taught. That is also the process of successful collaboration. On a business level, the information that I have acquired is secured due to its value.

I theorize, plan, develop and implement testing. Then I validate the results.
Westgl was the first to try what I had done, if for no other reason than to buy the carburetor I suggested. Many have since followed suit for good reason. To my gratitude, I can start validating my results from

your individual experiences (in either success or failure) of your own conversions.
What I do in minute detail with my conversion will hopefully be validated by your effort to duplicate what I have done.

Again, I hope to never sell another conversion kit in a effort to help you. I see this as both of us giving up in the effort to successfully convert. My intention was never to duplicate what I have done other than to show you the basics of what I have.
I would feel so much more “a part of” if you were to take the exact same information that I have and help yourself further your conversion without my specific design and build data so that I can continue to validate what it is that I use on my motorcycle.

I put the manual (alongside other manuals) out there so we can all build from the same basic understanding of what it is that we need to do.
Why some refuse to apply heat at this point is unacceptable in my view. You cannot tune the carburetor properly without it. Heat is a requirement, not a option as we are collectively finding out on our own through trial and error, and by our own individual merit.

I've simply followed the direction that Weber has put in front of me to meet the requirements of use for their carburetor. I thought you all would too.

I'll follow-up with more later.

My thanks to those mentioned in this writing.

CM85