MOTOR WORKS

Motor Works' MG Repairs & Restorations

1984 to 2013 - A Small Sample of Our Work

For Classic Car Enthusiasts Everywhere

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Dear Classic Car Enthusiast,

Greetings! I'm Marty Fay, the owner of Motor Works in DeKalb, IL. Welcome to our Motor Works' MG Repairs & Restorations eBook. The staff and I would like to share with you a few of the hundreds of classic car projects we have worked on. These projects cover many makes and models, but timeless British cars and MG's in particular constitute the largest proportion.

Motor Works is proud to be a member of the Chicagoland MG Club. We are also listed in the Club's Workshops and Repair Database. In light of this listing I wanted this eBook to provide some additional background on who we are and what we do. While it would be our fondest hope that some of our readers might find their repair and restoration needs fulfilled here at Motor Works, this is not an advertisement. It is instead a work of passion! You see here a chronicle that has been years in preparation, and many months in execution.

Why so much effort? BECAUSE WE LOVE WHAT WE DO! There is a unique pride that comes from making cranky old machinery "sing". Repairs and restorations of classic cars allow us to practice the highest of our mechanical arts including, welding, fabrication, engine building, tuning archaic ignition and carburetion systems, and so much more. It's all so neat, we just have to tell somebody! Somebody who understands!

Our Motor Works' MG Repairs & Restorations eBook (the book you are reading), includes articles on more than MG's because some of our most creative work is performed on other British Classics. This will give the audience a sense of the kind of expertise and creative engineering we can apply to MG's. We think you'll find the articles are "great reads", full of humor, unique perspectives, technical knowledge, and some awesome photographs.

The Motor Works' Triumph GT6 Restoration eBook (our other eBook), is a must read. It's the story of our full boat gonzo, one-of-a-kind, scary fast, Triumph GT6 with a TR6 engine and 5-speed transmission conversion. This is the chronicle of a frame up restoration, turning three GT6's into one. Countless obstructions are overcome as we fit a groundbreaking driveline, complete new British interior, unique suspension modifications, and dozens of other upgrades! Similar conversions (including the 5 speed transmission) are available for MG's.

I hope you enjoy the articles. Both eBooks are available as free downloads in the Classic Car Section of our website. Go to www.motorw.com and click on the Classic Car Tab.

Sincerely,

Martin Fay, Owner
The Motor Works of DeKalb, Inc.
March 2013

P.S. Speaking of our website, in the Classic Car Section you will see twenty of the more interesting projects I have managed to write about so far. Also, Motor Work's Website was one of the winners in AutoInc. Magazine's National Top Ten Website Competition in 2012. Click on the Top Ten AutoInc. 2012 link at the lower right of the Homepage to see our article.

There is a lot to see on our site including some great humor. If you can find a few minutes, grab a cup o' Joe and take a look around. If you're having a tough day, go right to "Washing Machine Self Destructs" in our Comedy section. If you're having a really tough day, watch it twice.

Motor Works' MG Repairs & Restorations For Classic Car Enthusiasts Everywhere

1984 to 2013 - A Small Sample of Our Work

Table of Contents:

No, the picture above is not a car show. At least we did not plan it as one. It is a single, rather unusual week at Motor Works. Under repair at the same time are (left to right) a Delorean, MGB GT, Jaguar XKE, MGB, MGA, Jensen Healy and another MGB. We call it our British Roundup.

British Roundup:

Delorean: "*YIKES and YIKES AGAIN!"*

Deloreans are always a challenge. The parts are hard to find. They also require special tooling, special knowledge and you always run the risk of damaging an irreplaceable body panel if something goes wrong.

This Delorean gets its sagging doors adjusted *(YIKES!)*, the CIS fuel injection system repaired *(YIKES AGAIN!)*, and many other repairs/retrofits. The doors are heavy and counterbalanced by adjustable torsion bars in the roof. Adjusting the torsion bars takes huge, long breaker bars and enormous pressure. Working by the rear window, if anything slips or the torsion bar breaks, glass, body and personal damage are all a near certainty; not to mention, worst of all, an angry customer*. (YIKES to the max!)*

Bosch CIS fuel injection was used for many years in Porsche, Mercedes, Audi, VW, Saab, Volvo and other European makes. This includes the PRV (Peugeot-Renault-Volvo) 2.8L V-6 engine used in the Delorean. On the plus side, CIS injection has the ability to deliver major horsepower. On the minus side, it is very sensitive to gas quality, dirt and moisture. The system is based on hydraulic pressures and is diagnosed with a special gauge setup. Our Delorean gets new fuel injectors and a warm-up regulator. Once installed we carefully tune the pressures and adjust the mixture with a gas analyzer.

Note: Motor Works has extensive experience with many forms of European fuel injection. These include Bosch Mechanical, MPC (D-Jetronic), CIS (K-Jetronic), AFC (L-Jetronic), many forms of MAF Sequential FI, and recently Direct Injection.

Deloreans are also susceptible to a number of common ailments including failing radiator cooling fans and related electronics, shift linkage problems, power window problems, breakage of the rear plastic deck lid, and coolant leaks. We have faced them all and more.

1980 Green MGB: *"Torque Monster!"*

I'm going to jump ahead to the green 1980 MGB in the center of the picture. This car was once mine. The chassis, engine, interior and paint were all rock solid but basically stock. I sold it to a friend who is also a good customer of the shop. He had a vision. My friend wanted a "fast" MGB.

Now "fast" is a loaded word. In the world of engines it is easy to build a "cammy", hi revving, hi horsepower engine that pulls like a rocket sled above 4000 RPM. Just bolt up big carbs, big pipes and big cams. These engines usually idle poorly. The acceleration above 4000 RPM is novel and fun at first, but reaching for that power-band ends up being tiresome in the long run. Reliability is commonly an afterthought.

Our concept is one of balance. We prize reliability over all things. A smooth idle is a must. Our engine pulls smartly from a stop, then gains power in a lovely, linear, torquey rush from 2000 to 4500 RPM. Passing traffic above 4500 RPM is a joy as the extra horsepower continues. The engine is noticeably smoother than stock at all RPM ranges.

We will let the cat out of the bag immediately and give thanks and credit to Auto Machine in St. Charles, IL. They are our engine builders. Their reputation is known throughout northern Illinois as one of the premier automotive machine shops. The precision they bring to fitting and balancing the engine is what insures its reliability and smoothness.

There is no substitute for cubic inches when modifying an engine. Our MGB engine was bored and new pistons fitted. You will pardon me for not quoting an exact displacement increase. There have just been too many cars between then and now.

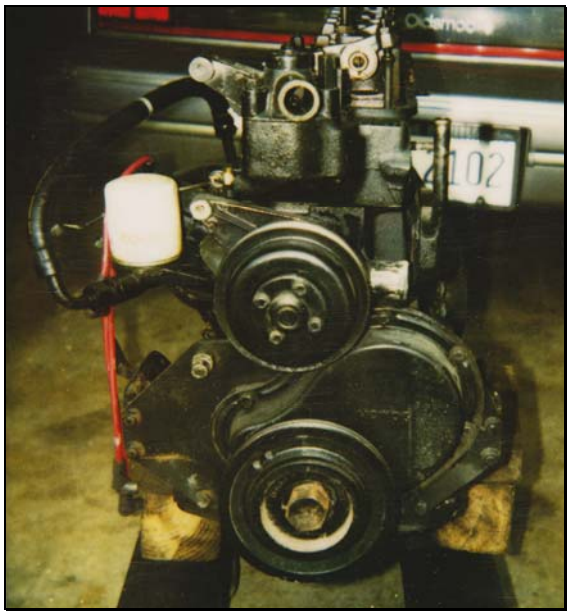
A moderate cam designed to increase midrange torque and horsepower was fitted. This was complemented with a lovely set of English headers and a Weber downdraft carburetor conversion. There are header pipes and carburetors available that flow more air. We did not use these. One of the keys to balanced torque and horsepower is air velocity at lower and midrange engine speeds. The better the air velocity the better the cylinder filling, exhaust extraction and mixture atomization. Big pipes and carbs can yield high horsepower at high RPM, but can cause an engine to bog and sag at low to midrange RPM.

We rounded out the engine build with a Petronix ignition and Flame Thrower Coil. The base timing was advanced a few degrees over stock.

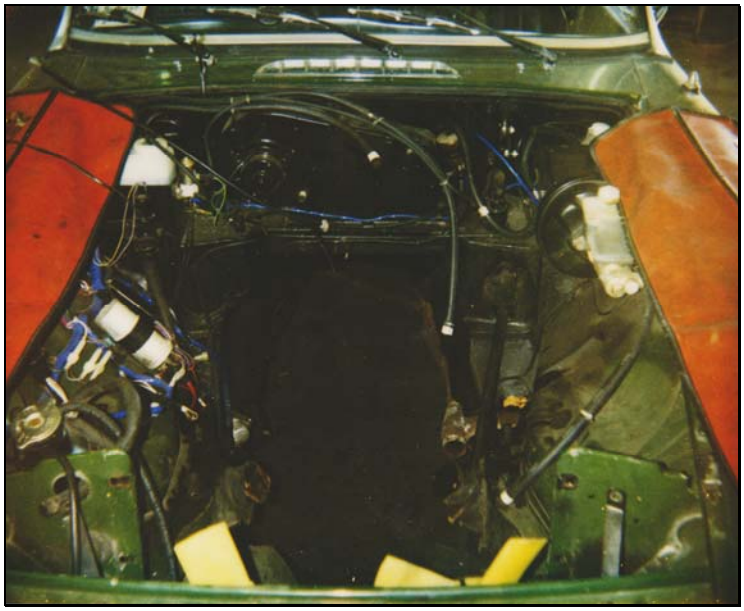
Note for next time: send distributor out to Jeff at A-1 Distributor. Jeff will recurve the distributor to meet the exact needs of the engine at all speeds and loads. We estimate this is good for an additional 5 horsepower and 5 ft-lbs of torque across much of the RPM range.

And OMG, does it pull. It is the strongest street MGB we have ever driven; and delightfully the smoothest. The owner's nephew drove the car on a 2000 mile trip with stone-axe reliability. Interestingly, the nephew did experience a problem at the end of his tour. The car started to lose power and jerk on his return trip just a few miles out of town. He brought the car straight to us and it died in our drive. We checked it out on the spot and determined the fuel pump had failed. Wow! After 2000 miles the car delivers its owner back into safe hands and politely dies at our doorstep. All we could do is laugh, shake our collective heads and stare in awe at an MGB with such heart. We were more than a little proud!

Marty's 1980 MGB now lovingly owned by a good friend and customer of the shop. We show it here with all the "Torque Monster" mods performed. "Sleepy looking, isn't it?"



Engine, freshly removed from our future "Torque Monster"; here being prepared for its trip to Auto Machine. (old Polaroid)



Empty engine bay awaits its new playmate. This is a good time for cleanup, new mounts, etc. (old Polaroid)

Second Green MGB: (at right) *"Hey, does this mean we have stereo?"*

A brief mention is due the green MGB on the far right. This very pretty "B" comes to us needing front end and steering work. The suspension bushings are worn, and the kingpins, wheel bearings and tie rods are loose. During its stay at the Motor Works MG Hotel it will also receive a carburetor overhaul, fresh brakes, and have an oil leak fixed. If all this sounds commonplace, well it is. And that's just the point. This type of job is our "bread and butter". We tend to write about the unusual cars or special problems that make for interesting reading. However, the bulk of our work covers everyday concerns. There is no job too small that we don't appreciate it coming thru our front door.

Near Perfect White MGA: *"Open err"*

Now, on to the near perfect white MGA. This car/customer has been coming to us for over 25 years. We have serviced it religiously for all that time. During its tenure we have attended to all the normal ailments one would expect; carb overhauls, tune-ups, valve adjusts, belts, hoses, batteries, choke work, etc. The car is also carefully prepped each fall for winter storage. Please see our article *Motor Work's Winter Storage Procedure*.

What makes our story unique is that despite all the years this car has been visiting us, the owners have never raised the convertible top. They only drove the car "open air" on suitable days when there was no chance of rain.

Our job would be threefold:
1) Deploy the top and recondition it
2) Install side curtains
3) Teach the owners how to work all the hardware and help them remember how next year

1) Deploy the top and recondition it:

As expected, the top had shrunk and required considerable finesse (read muscle) to get all the closures to work. We were actually afraid the top might rip during the process. Also expected, the top had faded badly and the rear window clouded almost opaque. We actually considered ourselves fortunate there were no tears or animal damage to the top. Tops are often stored incorrectly. This allows the rails to poke holes in the canvas or tear the sidelights.

Reconditioning is not the black art it looks to be; although stunning before and after results could induce such thoughts. We employ a three step process. Each step is determined by the products used. As of this writing our current favorites are Mother's Plastic Polish for all plastic windows, and RaggTopp's Convertible Top Care Kit for Fabric Tops. This kit contains both a cleaner and a protectant.

Important Note: in the photo below the Protectant bottle is for vinyl tops. The kit we use is for fabric tops. See the card in the center of the photo. It is correct.

Without going into excruciating detail, we start by washing the top and windows with a mild dishwashing detergent; rinse, and then chamois dry. We use a right angle drill for controlled power. A buffing pad is made from a microfiber fiber towel wrapped around a brake rotor non-directional-finish ball hone.

(Wow; *"brake rotor non-directional-finish ball hone"*. *I'll bet you can't say that ten times fast. Wait, maybe you can; that, that, that, that..... Uh-oh, I think I am beginning to digress, diverge, deviate, and altogether divest myself of my original thesis. If I may paraphrase Seinfeld "**No More Fun For You"!*** Back to business.

The pain in the posterior part is having to mask off the inside and outside of all the windows, covering the canvas. Otherwise, the polish is going to "sling" onto the faded top and stain it.

Once the windows are done, we reverse mask and cover them to expose the canvas. The cleaner and protectant are applied and drying times are observed. It's a lot of work but the results can be spectacular!

2) Install the side curtains:

We removed the side curtains from their boxes and read the instructions. Our conclusion was "hey, these are nice looking units and installation should be a breeze." Well, an hour later we sat baffled, befuddled, and bewildered. No amount of manipulation could get both the mounting post and the hand-screw bracket to line up with their counterparts on the door. They were at least an inch off.

Checking the forums on the internet showed many frustrated owners with the same problem. What to do? Do what we do best. Fabricate! One of Motor Works great strengths is our ability to build our way out of a jamb. This can mean constructing tools, modifying parts, welding, milling, and even soldering damaged circuit boards and switch internals.

Fortunately the side curtains hand-screw bracket was steel pop riveted to an aluminum frame. After removing the bracket we cut off the hand-screw tab, relocated it and welded it in position. Once the weld was dressed, everything looked good and fit like a glove.

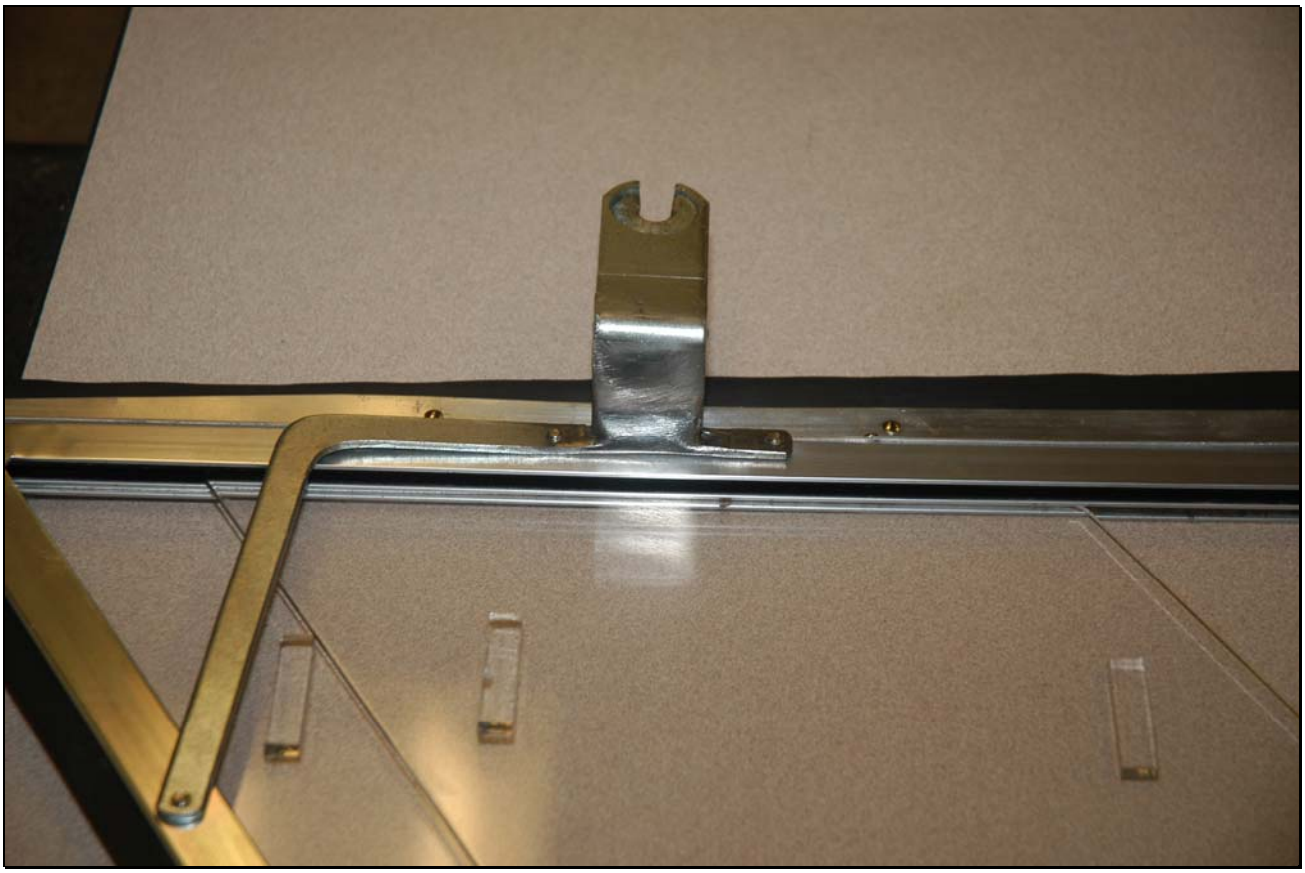
3) Teach the owners how to work all the hardware and help them remember how next year:

A large percentage of our British sports car owners do not know how to deploy or stow their convertible tops properly. If the car has side curtains, an already arcane procedure becomes doubly hard. One of our missions is to help them master this skill. This demonstration is a big "kick" for us. Very little beats the huge smile on the customer's face as he or she completes the process for the first time.

I am forgetful to a fault. (Why do you think I have a name badge on my uniform shirt? It's not for the customer. Smile!) Our customers tell me their convertible top skills tend to suffer from the same problem. In light of this I direct them to the internet for excellent articles on top folding.
MGA: http://mgaguru.com/mgtech/top/top104.htm
MGB: http://www.mgexperience.net/article/folding-top.html

Tools of the top trade; right angle drill, microfiber towel, ~~brake rotor non~~ that, that, that……., RaggTopp Convertible Cleaner and Protectant Kit, and Mothers Plastic Polish. Missing from the picture are tons of newspapers and masking tape.

Our Near Perfect MGA with its top still folded away; not used in over 25 years. And yes, that is a Fiat Spider with a fresh head gasket and fuel injection work. Maybe I should have cropped that one out? Naw, Fiats need love too!



If it doesn't fit, fabricate! Kind of catchy, isn't it? The bracket for the hand screw on this side curtain was an inch off proper alignment. We removed the larger bracket, cut off the hand screw portion, rewelded it in the correct position and dressed the weld. End product fits like a glove.

1960 MGA with top deployed after at least 25 years of stowage. With the canvas faded and the rear window nearly opaque, it is still in better condition than we had expected.

The top is reconditioned, the plastic windows polished and the side curtains are installed. WOW! What a difference! Interesting note: the car with the long hood in the background is a 1958 Bentley S1. A fascinating story will follow later.

Green MGB GT, Blue Jaguar XKE, Orange Jensen Healey, & Green MGB : *"Side-draft mania"*

Question; what do these four cars have in common?
Answer 1: they're all the same color. *"Noooooooo……"*
Answer 2: they're all British. *"Closer, but not what I was looking for."*
Answer 3: they all need carburetor work. *"Correct-o-mundo! Give that man a sea turtle."*

A little background: *("Please forgive my apparent lack of humility in the following discussion. I am not boasting, I'm just trying to be accurate.")*

I have been repairing and overhauling carburetors since 1972. And I don't mean a few carburetors; I mean many hundreds if not thousands. For about 2 years I organized all the literature that came in each carb kit into a three ring binder. So, what you see below is only a fraction of my output.

Most models of Rochester, Motorcraft, Holley, Carter, Keihin, Mikuni, Solex, Zenith, Weber, and SU carbs have spent time on my overhaul bench. As some of these models became computerized I often took evening classes to stay current. I ran a home side business overhauling carburetors for a parts sales/service center. These carbs were either put immediately onto customer's cars in the service center or boxed for sale in the parts store.

My experience extends to multi carb setups, aftermarket upgrades, small engines and motorcycles. One of my more challenging overhauls was a 1949 Cadillac. The brass float had cracked and leaked. Being unobtainable, I drilled the float, boiled out the gas, and then soldered all the cracks and holes. I also had to build many of the gaskets; the top gasket being complicated and delicate required extreme care.

Well, enough already. Now that my bona fides are in place, back to the fun stuff!

Carburetors are often the first thing to go wrong on a classic car, and need to be the last thing you fix. Good carburetion is totally dependent on clean fuel delivery, proper engine mechanical condition and strong ignition. A perfectly overhauled and adjusted carburetor will never perform right until the basics are solid underneath it.

Clean fuel: *"The fooler"*

In the last two years we have been "burned" several times by fuel contamination problems. *"Yeah, some people learn harder than others."* Traditionally, prior to overhauling a carburetor, we drain and flush the fuel tank, flush the lines, replace the filter, and give the tank a fresh fill. Recent experience has taught us this is not enough. We have been encountering hard packed sediment on the bottom of fuel tanks that does not flush out. Two or three hundred miles down the road the "hard pack" sheds some of its top layer. This fine sediment pushes its way into and past the filter, lodging in the fuel bowl and main jet.

Now, tank internals are accessed, often by pulling the sender, and a close inspection for this hard packed sediment is performed. New gas tanks or cleaning and resealing are becoming common.

A quick check of fuel pump pressure and volume is also advisable. A 1979 MGB fuel pump should produce a minimum of 2.4 pints per minute at a maximum of 2.7 psi. The flow rate is more important than the pressure. Pressures higher than 3-4 psi can cause carburetor problems.

Proper engine mechanical condition: *"Whad'ya mean a thermostat is important? I ain't had no thermostat in 20 years!"*

A valve adjust and compression test are a must. Less obvious is the thermostat temperature. An engine coolant temperature of a least 180 degrees F is essential to good air-fuel atomization. Engines do not burn liquid gasoline. They burn a fine air-fuel mist. Remember how water condenses on the outside of an ice filled glass on a hot, humid day. Fuel does the same thing inside the intake manifold. Coolant temperatures above 180 greatly reduce this fuel condensation, and the bogs and sags that go with it.

New thinking #1: we often perform chemical intake manifold and valve cleaning on today's modern engines. These engines tend to carbon up every 30,000 miles or so, making them stall, hesitate, and reducing gas mileage.

Last year we had excellent results performing the same process on our first classic car, a 1965 Mercedes 230 SL with Bosch Mechanical Fuel Injection. The customer told us he did not remember that last time the car ran this well. This shows real promise for many of our British Classics.

Strong ignition: *"Can you ever really have too much of a good thing?"*

Even top technicians have been fooled into thinking they had carburetion problems when the ignition was actually at fault. To be certain your ignition is up to the task, check spark first. It should be blue in color and jump at least ¼ inch from a screwdriver placed in the spark plug boot to the block.

On general principles we always recommend installing a Petronix electronic ignition and Flame Thrower Coil. The reasons are obvious. Lucas electronic ignitions can fail without notice. With point style ignitions points wear, can float at higher RPM, and dwell can change dramatically when the vacuum advance operates against worn distributor shaft bushings.

Even with a Petronix ignition installed, base timing and timing advance must be checked. There is nothing new in checking base timing. Just make sure the RPM is down around 600 (so the mechanical advance is not starting) and disconnect the vacuum advance hose. Some vacuum advances use straight manifold vacuum, some use ported vacuum. To be certain there is no vacuum advance, disconnect the line at the advance and plug it.

Mechanical timing can be checked for operation by leaving the vacuum advance hose disconnected and slowly raising the RPM while looking at the timing mark with a timing light. The mark will jump around some but timing should increase and then max out at about 4500 RPM.

There are two quick checks for the vacuum advance system:
1) With the engine idling, put a vacuum pump on the advance nipple. The advance must hold at least 15inHg for 10 seconds. You should also hear a definite rise in engine RPM as the advance vacuum increases. An engine with a failed vacuum advance will has less low and midrange acceleration than it should have. It can also hesitate under heavy throttle. Never having known different, many owners think this is the way the car is supposed to run. Until it is repaired. Then the typical owner comment is *"I had no idea the engine could be so responsive!"* I estimate 1 in 5 advance units fail this test.

2) With the engine running, put a vacuum gauge on the hose leading to the carb or intake. The gauge should either read manifold vacuum (about 17inHg) or rise to about 15inHg as the throttle is slowly raised to 2500 RPM. Either means the vacuum signal to the advance is working. Note: there are some exceptions where the signal is interrupted by the emission control system. I'll leave that to another time.

Another note*: ("boy are these note things handy")* The tests outlined above for the mechanical and vacuum advance systems are rough, either-they-work-or-they-don't tests. Both mechanical and vacuum advance systems work at precise specifications of timing vs. RPM or vacuum delivery. It is time consuming, but additional, detailed testing and related adjustments (recurving the distributor) can yield further progress when super tuning an engine.

Last and probably least are three items:
1) Check the distributor bushings, especially on points style distributors. The bushings tend to wear opposite the ignition point rubbing block. If you have any doubt rebush or replace the distributor.
2) Some distributors have ground straps from the body to the breaker plate. If one end is broken, fix it.
3) Many distributors have a felt wick in the center of the distributor shaft (under the rotor). Put a few drops of light engine oil on the wick every 6 months. This will help keep the mechanical advance system free. *("And if not free, at least darn cheap! Smile!")*

Well now, let's see. I have a decision to make. I could write yet another detailed article on British carburetor overhaul and setup. But seeing as there are so many good articles already in print, maybe I will stop writing for a bit and let the pictures and captions tell the story. *"Ouch! Did I hear cheering when I said I would stop writing for a bit? Better be careful out there. Remember, I could start writing again just out of spite! Smile!"*

P.S. *"Sorry, but I do have one more thing I've got to add."*

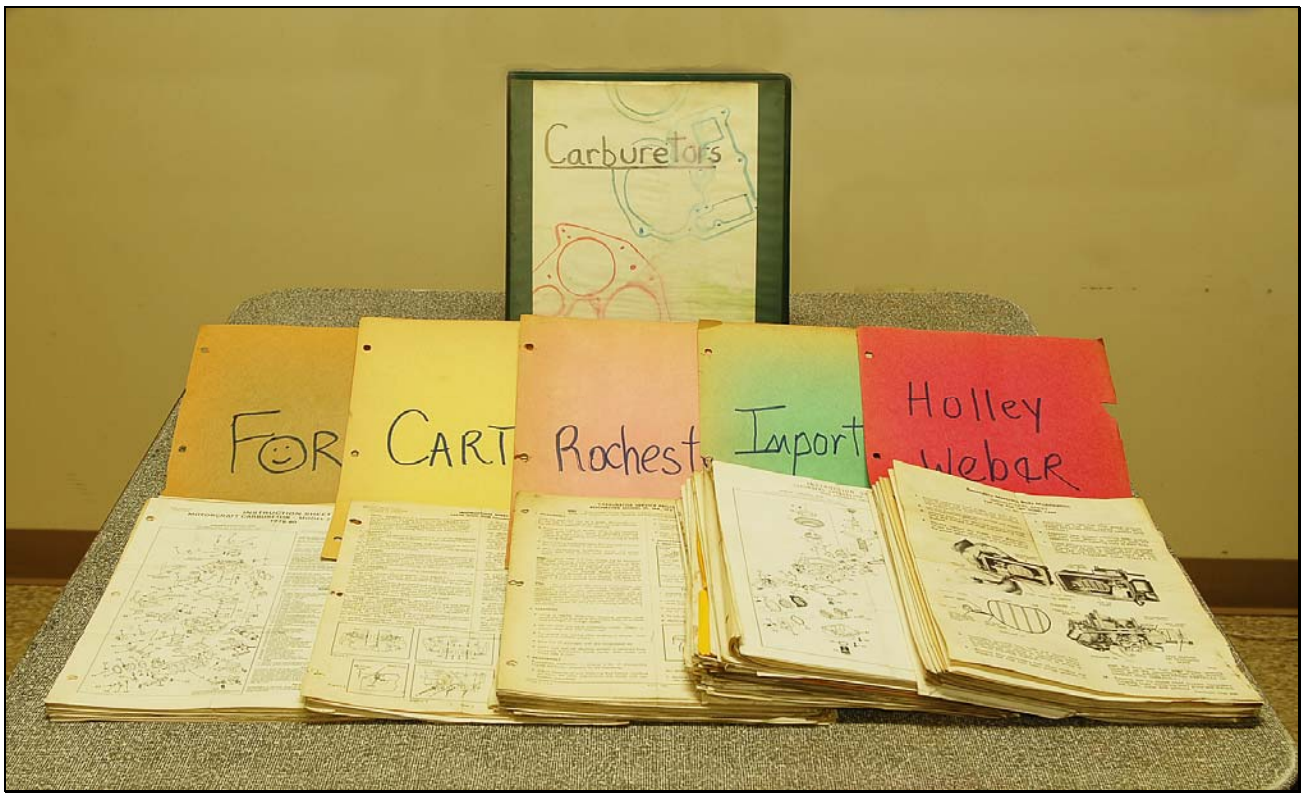
New thinking #2: We have some great tools for synchronizing throttles on multi-carb British engines, including an old Marquette dual scale air volume meter. However, from my motorcycle work I have come to prefer my Morgan Carbtune four column synchronizer above all others.

This tool provides simultaneous synchronization readings for each carburetor at any engine speed. It measures manifold vacuum. Many carburetors do not have individual vacuum ports, but we have found it easy to drill and insert permanent vacuum nipples in almost any carb base.

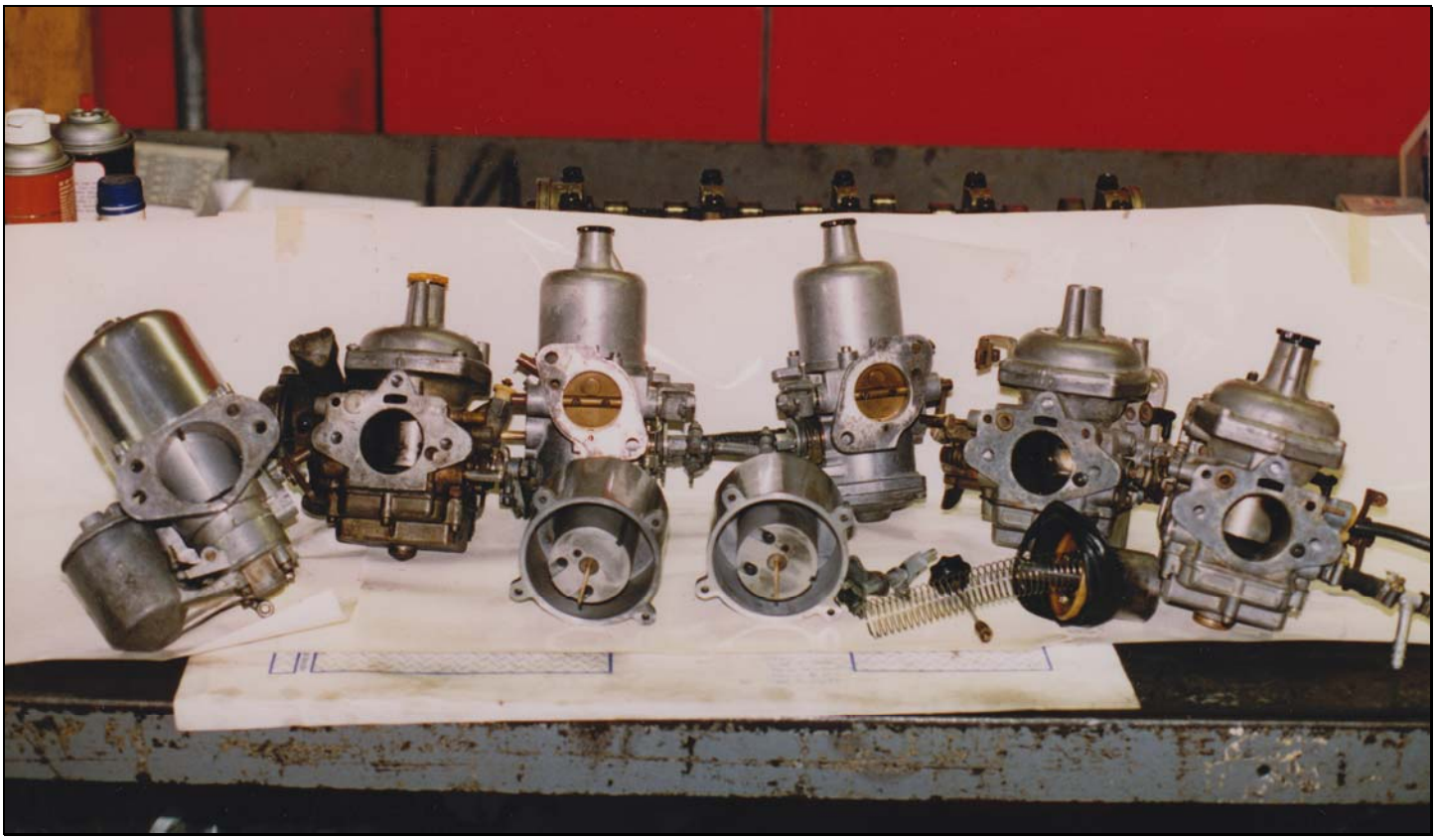
Synchronizing multi-carb engines with the Carb Tune works best when each cylinder has a single carburetor throttle valve. This allows each cylinder to have an isolated vacuum signal. We recently installed Dual Weber IDF's on a hi performance dune buggy with an 1835CC heavily "built" engine. We drilled the bases for vacuum ports and performed both idle and midrange synchronizing with the Carb Tune. The end result amazing. The engine was loud, smooth and the customer could chirp the one foot wide rear rubber.

We have not yet tried this on our British Classics, but are excitedly looking forward to it. The one possible drawback is the intake manifold balance tube. Neither carburetor is isolated from the other. Whether this will render our tool ineffective, partially effective or fully effective is yet to be seen.

"Now, on to the promised pic's. They start on the next page."

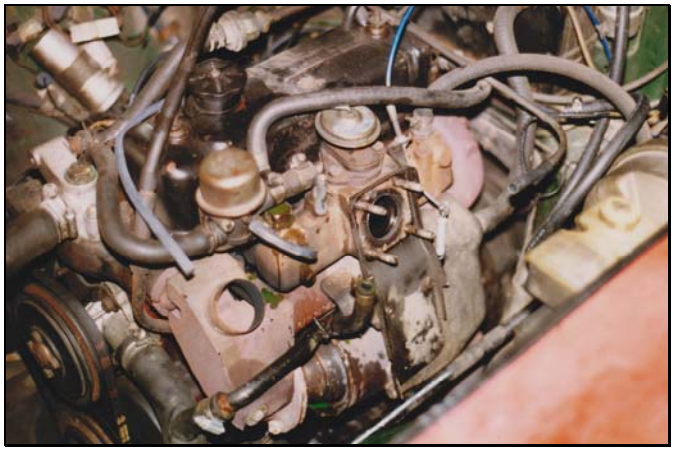


Two years' worth of carburetor overhaul literature from a (so far) 41 year career. Man, do I suddenly feel old - Smile!

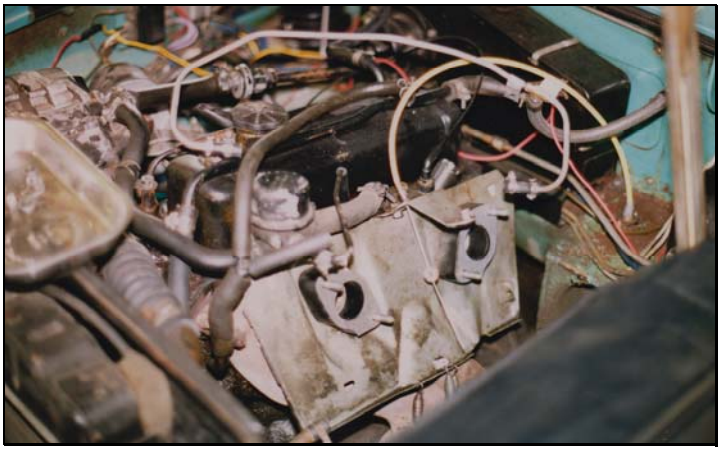


"What was that cavalier statement I made on page 11?" "Can you ever really have too much of a good thing?" I'm thinking about taking it back here. This could be a mite, too many carbs at once. Carburetors off, being overhauled, from left to right: Jaguar XKE, Second Green MGB, MGB GT, and the Jensen Healey.

First carb and suction chambers off Jag XKE



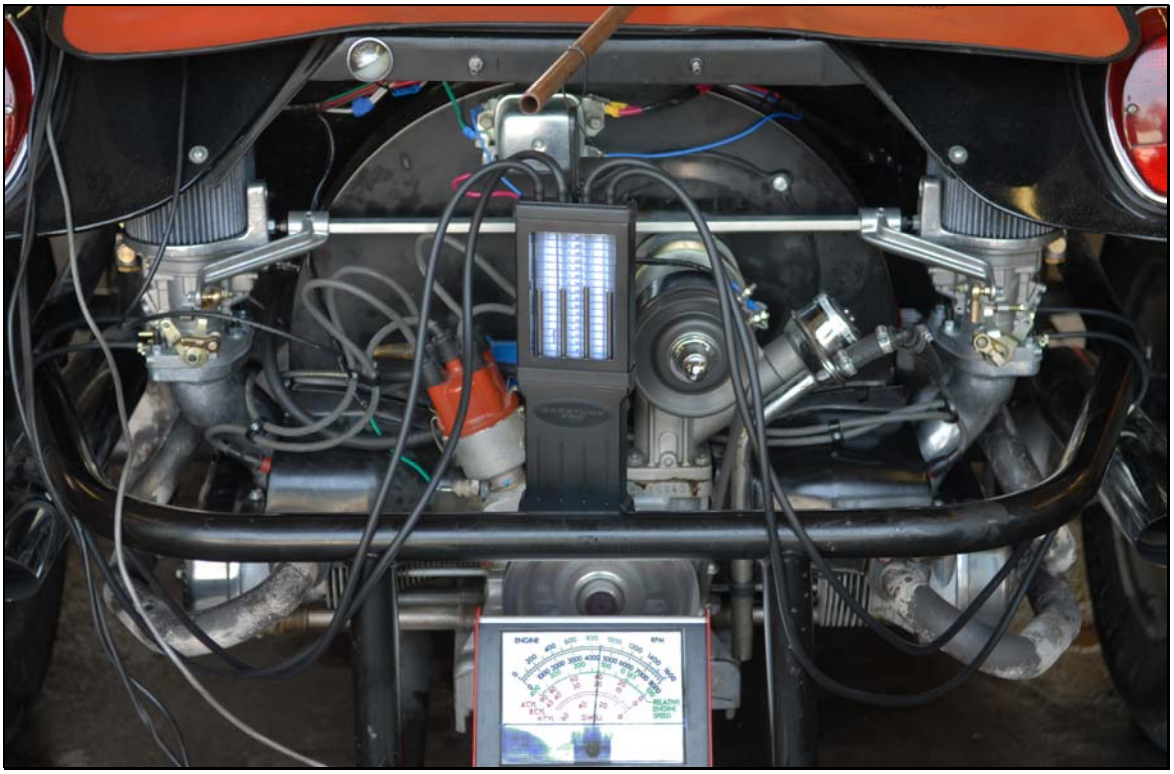
Second Green MGB with carb just removed. We will clean it up momentarily.



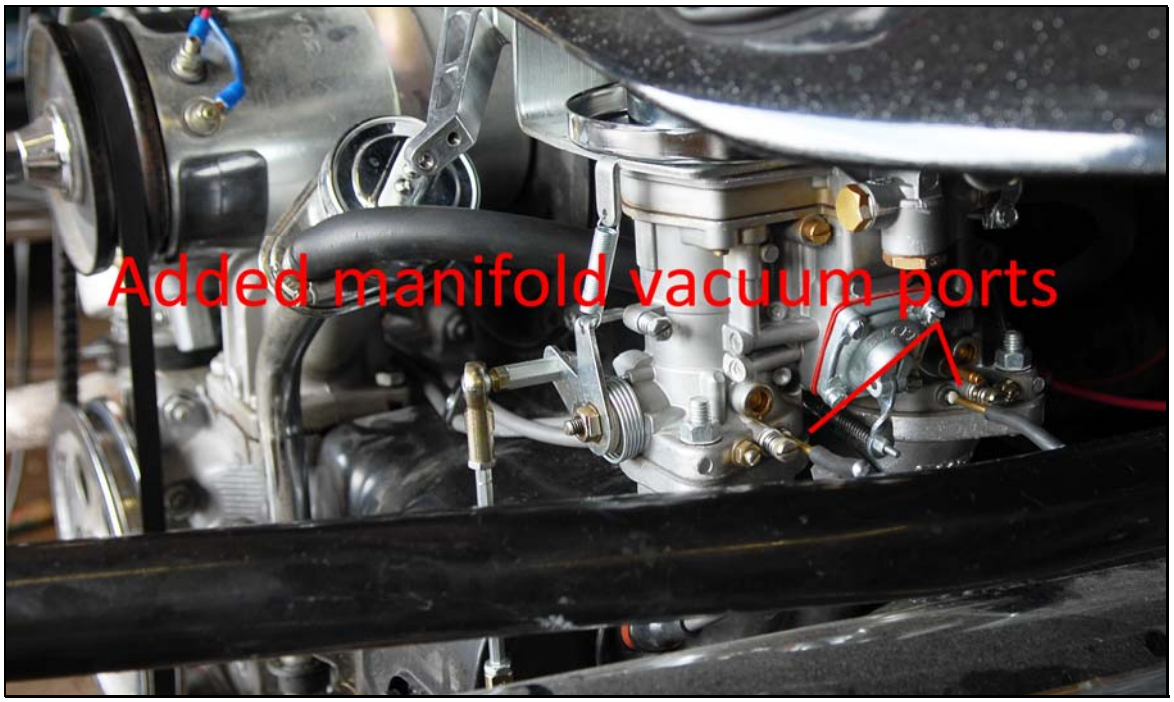
MGB GT awaits its carb's return

Jensen Healey sits quietly (for now)

British carb adjust paraphernalia (that's two phernalia right? pair-of-phernalia - smile!). (This reminds me of the great cosmic dilemma; is a single pear a contradiction in terms - don't smile, it's pretty stupid.) Old love, Marquette air flow meter, middle left. New love, Carb Tune synchronizer at top.



New Thinking #2: Carb Tune in action on a heavily modified 1835CC dune buggy motor. We installed the gorgeous Dual Weber IDF carbs. The Carb Tune allows instantaneous monitoring of all carbs at any engine speed. We sync the carbs at idle and 2500 RPM. Old Snap-On Cylinder Shorting Expanded Scale Tach-Dwell Meter is the finest tool of its type ever made in my opinion. The ability to read in 10 RPM increments and to short cylinders with the press of a button is still impressive even by today's standards.



As discussed earlier, it is easy to drill most carburetor bases and add manifold vacuum ports.

New Thinking #1: The handsome devil cleaning the injectors, intake manifold and valves is yours truly, Modest Marty Fay (Smile). BG Products Induction Cleaning Tool, used here, does a great job.

Excellent results using the BG Induction Cleaning Process on a 1965 Mercedes 230SL, makes us look forward to trying it on our British Classics. Note: we did not clean the injectors, only the intake and valves.

Petronix ignition and Flame Thrower Coil shown here are ready for installation in an Oldsmobile 442. Sorry I don't have a picture of an MG set-up, but this gives the general idea.

Humor: <u>The Incident:</u> *<u>"Not one of my better moments"</u>*

I remember this incident as though it was yesterday, and it wasn't one of my better moments. Thoroughly worn out on a 92 degree summer's day, the shop clock was approaching 4:30. I was starting to think about home and some air conditioned relief. Cars and customers had been boiling over since 10:00 that morning. Days like this are an auto shop owner's dream. The cars come rolling in with cooling system, battery and AC problems. You know you can finally pay some bills at day's end, but the rub is, cars belong to people whose internal versions of cooling systems, batteries and air conditioning are maxed out. Inevitably, hot customers become grumpy customers. Isn't it funny then, not ha-ha funny but strange funny, you wish for hot days because it's hard on cars and good for business. However, by 4:30 you wish it had never been hot in the first place. What's the old saying *"be careful what you wish for, you may get it!"*

At 4:35 that afternoon a fella comes into the shop whom I had never met before. Extending my hand, I offer a warm *"Hi-ya, how are you?". "Fine"* he said tentatively. Then I notice he had something intriguing under his right arm. He put it down to shake my hand and I was transfixed. It was the most beautiful cast replica of an MG TD I had ever seen. Clearly visible were doors that opened, rubber tires, and a real folding top. Noticing my interest, he moved the steering wheel and the tires turned. He then flicked a tiny switch on the dash and the head and taillights came on.

The car instantly transported me back to my fondest childhood playtime memories. I just had to have that car! *"I'll give you 25 dollars for your car"* I told him. A quiet *"no"* was all he said. *"Ok, then, how about 50 dollars?"* This time the *"No"* was a little more emphatic. Getting desperate I started to wail *"look I've just gotta have that car. I'll give you a hundred dollars for it!" "N,N,N,OOOO…….!"* he stammered, by now getting quite alarmed.

I saw my last chance disappearing so I grabbed for the car. He, noticing my obvious obsession, was already reaching to take it back. We both latched onto the car at the same time and a tussle ensued. I outweighed him by a hundred pounds and had muscle on my side, but he was so quick he easily countered every turn and twist I made.

The tussle started to degenerate into a street fight; biting, kicking, scratching, gouging out eyes. The insults flew. *"You're ugly and stupid! Gimme back my car!"* he yelled. Well, I knew he was right about one of them, but I didn't have time to figure out which one so I just yelled back. *"Am not! You got green teeth!" "Don't either! You're ugly and stupid and fat!"* He shouted.

Now that one really hurt. It was as though I had been hit with a flaming arrow. I wasn't going to take anymore, so I wound up for the biggest insult I could think of. *"YOUR MOTHER……"* He quickly cut me off, *"DON'T SAY IT!"* He screamed. *"YOUR MOTHER WEARS……" "DON'T YOU SAY IT!"* He screamed again. I knew I was over the edge, but in the heat of battle I just had to say it. *"YOUR MOTHER WEARS ARMY BOOTS!"*

"AHHHH……." He roared and launched himself at me like a guided missile with both arms stretched out and both fists curled into murderous weapons. When I finally came to I found him standing quietly, with compassion on his face, holding the car out to me. *"Mister"* he said *"I'd like you to have this car. You put up a real good fight and I didn't much like it anyway."*

"Thanks." Was all I could blurt out. His father, having watched the whole thing from a few feet away put his hand on the kid's shoulder and said *"I'm proud of you son."* They both turned and walked out. And that ends the story of the toughest 5 year old I ever fought.

Weber DGV Downdraft Conversion: *"A classic upgrade for a classy car"*

Motor Works has been tuning MGB carburetors since we opened in 1984. Those years have provided us with considerable familiarity with the Weber DGV Conversion, the OEM Twin SU Side-Drafts, and the single Zenith Stromberg. Our conclusions are as follows:

The Weber DGV Conversion:
Pros:
It's a strong, clean system that starts well in the cold, idles well when warm and supplies solid power throughout the rev range. Weber DGV's come in hand, water, and electric choke models. We prefer the electric choke for its simplicity. The carbs are near bulletproof. They run year after year with minor linkage cleaning and adjustment. Common adjustments like idle mixture, idle speed, fast idle speed, and choke spring tension are all easy. No synchronization or mixture balancing is required. They flow well on stock engines and fully met the needs of the "Torque Monster" MGB motor discussed earlier. The accelerator pump gives a spirited off-the-line punch. The price for a Weber Conversion is substantially less than that for a Twin SU Conversion or replacement.

Cons:
Not too many. Some folks may argue about the esthetics of the Weber vs. Twin SU's. But, more importantly, we feel the Twin SU's have a slight power edge in the midrange and upper end. That being said, the Weber Conversion is still a great product.

Important Note: *"We never stop learning."* Occasionally, an MGB with a slightly different Weber Conversion crosses our door. The difference being, a coolant heated chamber is added to the bottom of the intake manifold. This chamber supplies heat to the manifold where the air-fuel mixture hits the manifold floor and makes an immediate 90 degree turn towards the head.

Why is this important? Because when the air-fuel mixture rushes through the intake manifold it causes a major temperature drop in the runners. Some manifolds will actually be cool to the touch on a fully warmed engine. Cool runners condense the fuel in the atomized air-fuel mixture back into liquid gas on the runner walls. This will cause a lean condition resulting in hesitation and/or power loss. On damp, 40 degree days this cooling effect can produce carb icing, causing an engine to literally stop running. Carb icing is a life and death situation in the aviation field.

This condensing effect also causes exhaust emissions to rise. MGB's with Zenith carbs not only duct warm air into the air cleaner from the exhaust heat stove, they also have an electric heater grid in the carb to manifold spacer plate. Both intake preheat systems aid air-fuel atomization. This allows the carb to be jetted leaner to meet emissions standards.

Back to our epiphany. This coolant warmed hot spot is obviously a great idea, but we could never find this manifold design on the market. We checked Victoria British, Moss, Pierce Manifolds, and many others. All to no avail. In researching this article I finally found it. BUT…. I won't tell you where unless you write me a check for $1.00 on the bonnet of a 67' MGB GT. You can send the car to me at Motor Works, 316 E Taylor St. DeKalb, IL 60115. *("Yes, for you sharpies out there, I stole that joke from Car Talk." It's what my Pappy used to tell me; "Son, some jokes are funny once. Some jokes are funny every time. This is a funny once joke." Unfortunately, I think Dad was talking about my birthday-Smile!)* OK, for real now. I found the coolant heated Weber kits at Redline Fuel Management: www.redlineweber.com

Twin SU Side-Drafts:
Pros:
Let's start by saying if dual SU's are good enough for a 1958 Bentley S1 (more later), they are good enough for an MG. Also, before the widespread use of fuel injection on motorcycles, constant velocity side-draft carbs powered most of the world's fastest bikes. Our own experience brings us down solidly on the side of the Twin SU's as having a power edge over the other two carbs under discussion. In addition, being romantics, we are personally drawn to the "traditional look" of the SU's. If money were no object, Twin SU's would be the preferred choice for our personal MG's.

Cons:
Unfortunately, there are a few. Twin SU's require careful setup, which includes jet centering, throttle synchronization at idle and midrange RPM, mixture adjustment and balancing, fast idle adjustment, and damper piston oil replenishment. These adjustments seem to "creep" over time and should be checked every other season or as performance reductions dictate. Cleaning of the vacuum chamber, piston, and carb throat are also advisable. The carb throat is easily cleaned on the car with the chamber and slide removed. In addition, age, wear, sticky linkages, and weak springs cause the jet not to return to its seated position when the choke is pushed off. This should be inspected yearly.

"WOW! Did the fella writing this article say he liked SU carbs? Look at that list above. Let's not get him started on something he doesn't like or we'll be here forever! Maybe if we write him a check for $1.00 on the bonnet of an MGB GT and send it to…….Smile!"

The Zenith Stromberg:
Let me open this with an odd true story. Once upon a time, many years ago, a fella brought in an MGB with terrible carburetor problems. It would barely start cold, died at idle for the first 5 minutes, idled roughly when warmed and never accelerated well. It had a Zenith Stromberg carburetor.

Just like any other carburetor that is new to me, I took it apart, studied its air and fuel circuits, its cold enrichment system, its fast idle system, its mixture adjust system, etc. After cleaning and replacing a torn diaphragm, back on the car it went. In performing the idle mixture adjustment I ended up maxing out both the course and fine adjustments and still the idle mix was too lean. I cheated by raising the needle in the piston just enough to give me a smooth lean-best-idle. Curb idle was also raised about 150 RPM over spec.

Once the carburetor ran well warm, the cold start adjustments could begin. During several cold to warm cycles (each six hours apart) I repeatedly adjusted the cold enrichment (choke) coil spring tension and fast idle. Each adjustment cycle brought the cold start closer to our goal. After six or seven adjustment cycles the engine now started well cold, fast idled properly, did not lean out and stall, nor did it run overly rich.

Critical parts of the tuning process included checking and making required corrections to the ignition, timing, the air cleaner preheater and the carb base preheater. Also, thermostat condition and rating is critical to making the water heated cold enrichment system (choke) come off in a timely manner. By the time we were done, the car started and ran great through its complete cold to fully warmed cycle.

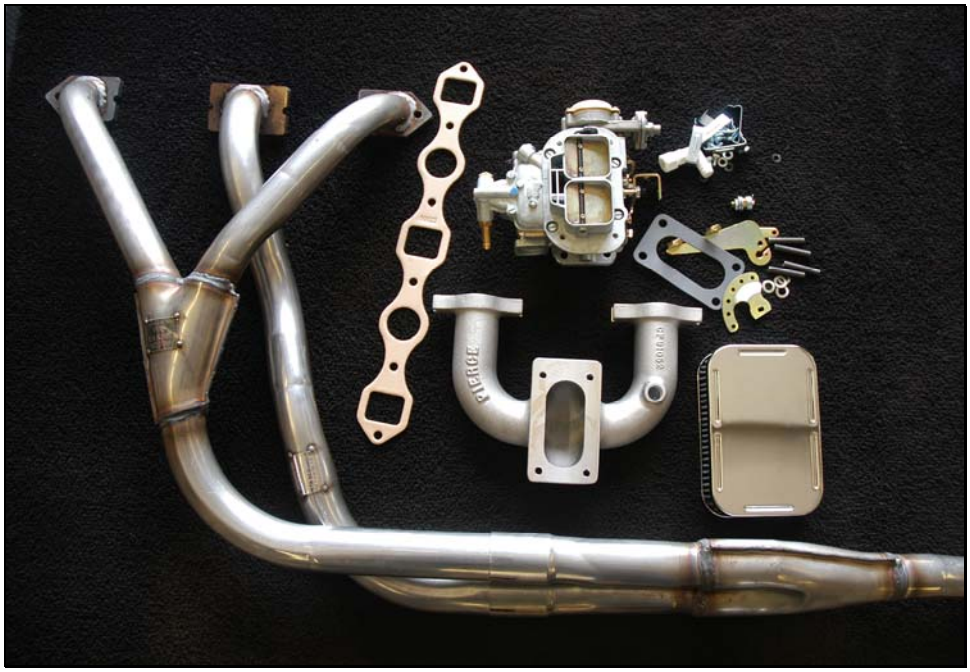
The odd part is this: nobody ever told me "Zenith carbs are junk. They can't be adjusted. They never run right. They come that way right from the factory." (Actually, they do come that way from the factory. In trying to meet emission standards, the carbs are adjusted so lean that starting and drivability is severely compromised.) Under no preconceived notions, I just figured it's another carburetor that needs work so I fixed it. And, none the wiser, I have continued to fix Zeniths with generally excellent results to this day. *"I wish someone had told me Zeniths were junk back in 1984. Darn, drat and crud! Think of all the time I could have saved if only I had been informed-Smile. Actually, truth be told, I would have fixed my first Zenith just because someone said it couldn't be done."*

The bottom line; properly repaired and tuned Zenith Stromberg carbs provide good drivability and good power. They are not in the same league with the Weber DGV or Twin SU's, but they are more than adequate for many owner's needs.

Other Carburetors:
An honorable mention goes to the Weber DCOE side-draft. They can be down-tuned to work on a stock or even a moderately hot-rodded MG, but basically they are racing carburetors and overkill for most applications. I last installed a pair of DCOE's on a Triumph TR6 several years ago. The TR6 has a problem using downdraft carbs when racing. I am told the fuel will puddle and cause a bog when cornering hard. The DCOE's are the hi performance answer to this problem. I must admit, they looked and worked great.

There is a new player on the 1975 thru 1980 MGB carburetor stage. A single SU HIF44 side-draft carb is now available as a bolt on replacement for the Zenith 175CD. I do not have any personal experience with this conversion yet, but I will report in after my first introduction.

I'm going to segue back to our original discussion on the Weber DGV Conversion just in time to say a few words and then proceed to a couple of pictures. With discretion being the better part of valor, I am again going to restrain myself *("aren't you proud of me?")* from writing a long dissertation on the installation of the Weber DGV Conversion kit. We covered balanced components in the Torque Monster article on page 4. This is important because the Weber Conversion requires the use of headers in place of the exhaust manifold. It is common to end up replacing the entire exhaust during this conversion. Also, if you are not already running a Petronix ignition, now is the time to install one. It is a great compliment to the Weber Conversion.



Weber Conversion by Pierce Manifold. Falcon header from England.

Installed Weber Conversion. Notice the pressure regulator peeking out from the left fender. Webers and SU's are sensitive to excessive fuel pressure. The proper limit is 2.5 to 3.0 psi. Did we install a Petronix ignition? Well, if you'll write me a check for $1.00 on the bonnet of an MGB GT…...

Dangerous Game Hunting at Motor Works: *"A true story"*

A most unpleasant experience occurred when beginning the installation of a Petronix ignition on the car just mentioned. I reached for the distributor cap and noticed something "bulbous" attached to the bottom of the distributor. Indistinct at first, as I stared it quickly came into focus. "JESUS!" I muttered and jumped back. It was a spider, and a big one!

(Now, just between you, me and the wall, I don't like spiders. Especially big ones! I have this unreasoned fear they might jump from hiding and bite my face off.) Repositioning my light for a better look, in an instant my temperature dropped 20 degrees. The spider was hanging upside down and there was a red hourglass on its belly. It was a Black Widow! Remaining motionless and looking a little dusty, the spider appeared dead and cooked onto the distributor by engine heat. From a relatively safe distance I gently blew air at the spider. AND IT MOVED!!!

AND SO DID I!!! Backing away at the speed of light, and almost tripping over a battery charger in the process, I finally felt safe enough to think at 10 paces distant. Having a similar dislike for wasps and hornets, I have learned carb cleaner and better yet intake system cleaner will kill these stinging pests on contact.

Off I hurried to locate my weapon of choice, more than a little concerned the spider might not be there when I got back. Wouldn't that just be the pits, going on a spider hunt for a Black Widow; knowing I could never concentrate on car until the spider was dead? This was a little too close to the old cliché "Kill or be killed!"

Luckily, the spider was still there when I got back. Taking aim, I sprayed that deadly critter for ten full seconds. He was probably dead in two, and I wasn't taking any chances, but why didn't he drop off? I thought "Oh man, don't tell me he's still alive?" Sprinting across the shop I grabbed a long screwdriver off my box. I poked the spider once; nothing, but he didn't fall. I poked him again; no movement, but still he didn't fall. The third time I literally scraped that spider off the distributor. He hit the floor and thankfully stayed there. I swept him out and crushed the body to a pulp, shivering the whole time.

In my more distant past I have hunted both wild boar in Tennessee and bear in Arizona. I have given respectful distance to many a warning rattlesnake in Montana. At no time do I remember experiencing anything like fear during those expeditions. This spider was different. My hands were six inches away from this lethal menace and I would surely have touched it had I continued with the installation. All my firearms have been mothballed for 20 years now. Little did I expect intake system cleaner would enter my arsenal at this late a date. I can only hope it is the last shot I ever fire in anger.

Exquisite 1973 MGB Hardtop: *"Sleeping Beauty has a cardiac arrest false alarm"*

This "head turner" came to Motor Works not having run in over two years. The customer told us when it had last run, no oil pressure showed on the gauge. "*YIKES[10]! This is the automotive equivalent of a heart attack!"* Father time and mother entropy had certainly cast their evil dust on this Sleeping Beauty.

Getting the car started went according to plan; drain and flush the gas tank and lines, install a new fuel filter, replace the battery, clean the cables, change the oil, prime the oil filter, ether the carbs and hit the key.

Keeping the car running proved to be another matter entirely. Gasoline poured out the overflow tubes on the SU's. We pulled the carbs, performed a quick cleanout and roughed in the adjustments back on the engine. There was no sense performing a full boat carb overhaul if the engine had no oil pressure.

Prior to starting the engine we installed a manual oil pressure gauge. We needed a fast read on whether the engine had truly lost oil pressure or we merely had an electrical gauge problem.

This time the engine started and stayed running the precious few seconds we needed. *"YIPEEE….!"* We had manual oil pressure. And darn good oil pressure at that. Fully warmed the engine produced 21 psi at idle. Specification calls for 10 to 25 psi. Sleeping Beauty could safely awaken.

Further repairs to the brakes, suspension, electrical system, and cooling system were now viable. A major tune with valve adjust, fresh ignition components and a thorough carb overhaul would make this cat purr. The speedometer didn't register, but replacing the cable would bring it back to 90% functionality. We still had a slight needle wobble. This is a problem in the speedometer head itself and usually gets worse with time and miles. When it becomes intolerable we will send it off to our rebuilder.

We close the Exquisite 1973 MGB Hardtop story here; relieved that our patient's symptoms were only a false alarm and excited to reunite car and owner. The owner is a member of the Chicagoland MG Club. He is so pleased, he lists Motor Works in the Club's Workshops and Repairs Database.

Exquisite 1973 MGB Hardtop; Sleeping Beauty can safely awake now that we are past the no-oil-pressure scare.

1974 Triumph TR6: *"All stuck up and nowhere to go"*

How come we're talking about a Triumph in an MG mini-book? Because what happened to this Triumph can befall the owner of any classic car.

This grand old TR6 came to us after sitting for umpteen years in someone's barn. Sound familiar? The engine was locked tight and it had already been to three other shops. The owner asked if we thought we could free the seized engine? *"Happy to try, but obviously no guarantees"*, we said. And so the saga begins.

There are a few advantages to age *(although as I get older, they seem to be diminishing rapidly - Smile!).* One of them is accumulated knowledge. The other is the ability to use this knowledge productively. I hesitate to use the word wisdom, but there, I said it, and so far I have not been struck by lightning from on high.

My tenure as a UPS line mechanic hammered home basic engine, transmission and differential repair as few things could. Some of those trucks literally had a million miles on them. Field repairing overheated, seized engines was a required skill so we could limp the trucks back to the depot. Those techniques have helped me for a lifetime.

We started by administering a healthy dose of penetrating oil into each cylinder. After 24 hours, with a new battery, clean cables, fresh gas and the spark plugs out, we turned the key to the crank position. A dull thud met our ears as the starter drive met the immovable flywheel. Dozens of attempts later, we had to admit step one was a failure.

Step two, the classic push start, began with four burley technicians assembled at the front of the car. They began pushing the car out of the bay for its trip down a close-by hill, when the driver yelled *"Hey, something's wrong with the clutch!"* Sure enough, the clutch disc had rusted to the splines and was tight against the flywheel. This calamity removed any easy form of clutch manipulation in our bid to push-start the TR. In addition, the clutch master cylinder was near dry. What little fluid remained was black and floated on a layer of mud. *"Jeepers, creepers, shoot me now!"*

Knowing we couldn't put lots of expensive parts on a car who's engine might qualify as a boat anchor, we did the next best thing. We fixed stuff. Lots of stuff. Oodles and oodles of stuff. We cleaned out the clutch master cylinder and bled the clutch hydraulics. Black fluid turned to clear and the clutch pedal regained its proper travel and resistance. We then started to rock the car back and forth with the clutch pedal depressed. After ½ hour, we're not certain who was more depressed, the clutch pedal or our team. The guys were beginning to wear out when suddenly, POP! The disk let go and started to release properly.

I'd love to say we all went out for hot chocolate and ended the day on this up-note, but back to the salt mines our tired crew lumbered. The locked up TR was pushed to the top of a little hill running in front of our shop. On queue, like Pickett's Charge at Gettysburg, we thrust our Triumph down the hill. *(Ah, Pickett's Charge was actually uphill, but you get the idea - Smile!")* With the highest of expectations we yelled to the driver to release the clutch with the car in second gear, and…….And…….AND…….! The rear tires nearly burned off, leaving streaks of rubber down the road. The engine didn't turn one bit, not even a fraction. Back up the hill we pushed to try five more times, each with the same result; nil, nada, nothing, naught, zero, zilch, goose egg. Step two was a resounding failure.

"HAMSTER PISS! Enough of this crap!" I was going to beat this engine if it killed me. (I'm sure killing me first is what the motor had in mind.) Out came the coolant, radiator, hoses, belt, pulleys, crankshaft extension, etc. In short, out came everything required to put the biggest pry-bar I could fit on the front of that crankshaft. With all my strength I started forcing that bar one way, then the other. This went on for five minutes, ten minutes, then fifteen minutes. I had to rest; sweat poured down my back. Back to it I went. Five minutes, ten minutes, breathing hard I had to rest again. Again on the pry-bar, five minutes, and then something. Was that a little bit of movement? Or is something starting to break off? I pushed and pulled again; this time feeling a definite budge. Carefully, trying not to get greedy, I applied controlled power. And all of a sudden, the bar swung 90 degrees nearly breaking my knuckles. I smiled and breathed a huge sigh of relief. We might win this one.

And win we did. The starter now spun the engine. We blew out the cylinders, changed the oil, primed the new filter, ethered the carbs, hit the key and she started. Hesitantly at first, and then with more authority the engine idled. The carbs were way off and there is no idle mix adjustment available on these Zeniths so we added shims to one of the needles to compensate. Now we could rev the motor. Smoke, as expected, poured from the exhaust, so outside the car went.

Knowing that major internal damaged may have occurred due to stuck rings and scored or rusted cylinders we performed a compression test before starting the engine. Compression with the cylinders cold and oiled:
(1) 130 psi, (2) 90 psi, (3) 90 psi, (4) 90 psi, (5) 80 psi, (6) 125 psi
Once the engine was fully warmed but before any driving, we performed a dry and wet compression test:

	Dry	Wet
(1)	100 psi	150 psi
(2)	85 psi	125 psi
(3)	90 psi	145 psi
(4)	90 psi	135 psi
(5)	90 psi	125 psi
(6)	105 psi	135 psi

Not unexpectedly, the rings were making poor contact with the cylinders. Fearing the worst, the fluids were serviced so we could safely drive the TR. On the road the engine was significantly underpowered and smoked like a son-of-a gun during deceleration. With nothing to lose we tried an experiment. The motor was put through a classic new engine break-in routine; accelerate from 20 MPH to 60 MPH at wide open throttle, then coast back to 20 MPH. Cruise another mile at a steady 60 MPH to cool and stabilize the engine, then accelerate to 60 MPH again. We performed this process for a total of ten repetitions.

Shortly after our first set of ten "reps", something magical started to occur. The engine power went way up and the smoke on deceleration decreased by 75%. The engine began to idle better. After letting the engine cool for a few hours we performed a second break-in routine. Once completed, we put another 20 miles on the car and were amazed. The smoke on decel quit almost entirely and the engine power could be considered in the normal range for a car devoid of tuning for all those years. While not exactly a glowing bill of health, considering our patient had been dead on the table a day a day earlier, this was amazing news.

When the owner drove the car, he couldn't believe the engine power and smooth idle. This resurrection would be a tale around the water cooler for years to come. Our 1974 TR6 was no longer stuck up and had many places to go.

Pictures on next page.

Tenacity, tenacity, tenacity. Sometimes blind unwavering tenacity will overcome the biggest obstacles. This one was touch and go until the end, but win we did!

What a shame it would have been to lose this lovely TR6 to a locked up motor. Fortunately it is no longer all stuck up, and now has many places to go.

1958 Bentley S1: *"He who saves a life is responsible for it" (Ancient Chinese Proverb)*

Ok, let's play the same three-answer game we played on page ten.
Question one; what's the worst calamity that can befall a 1958 Bentley owner?
Answer 1: bird droppings on the paint. *"Noooooo……"*
Answer 2: it could burn to the ground. *"Closer, but not what I was looking for."*
Answer 3: it could have brass and aluminum shavings in the oil filter. *"Aw crap, that's really tough nuts. This must be one of those jokes that's not even funny once."*

Question two; why are we talking about a Bentley in an MG mini-book?
Answer 1: "*because I can!"*
Answer 2: *"it's English and we're all brothers here."*
Answer 3: *"it belongs to the same friend who bought my MGB (subject of the Torque Monster article)"*
Answer 4: *"it's a damn good read"*

We've been servicing my friend's 1958 Bentley S1 for over twenty-five years. In that time, many a mechanical obstacle has been overcome. These include brake problems, electrical glitches, brake problems, transmission woes, brake problems, faulty ignition, brake problems, driveline failures, brake problems and more brake problems. *("Oh, did I mention brake problems? - Smile!")* Long association has placed Motor Works in an almost parental role of responsibility for the health of this unique car. So it was with worry on his face, that my friend came to me one day and explained aluminum shavings had been found in the oil filter during a routine service. He had been told *"Don't even start the motor!"*

I went over to his house, found the Bentley up on stands and inspected the oil filter. Sure enough, there were definite signs of aluminum flakes throughout the element. *"Give me a week to study this?"* I asked him. "*Take all the time you need."* He replied. So I parted with the filter and began my inquiries.

No technician works in a vacuum, especially on a car like this. Our investigation would start with the factory service manual and quickly expand with calls to Tony and Ralph Curzon. In 1974 the two brothers started Hyphen Repairs in Orton, Ontario. Catering exclusively to the service, repair, and restoration of Rolls Royce and Bentley Automobiles, Hyphen Repairs has the largest stock of parts in Canada.

Tony Curzon continues to run Hyphen Repairs which now concentrates solely on parts. Ralph Curzon (Master Rolls Royce and Bentley Technician) is now based at Hunter Classics in Bridgeton, Missouri. They have both been a great help to us since the Bentley first came through our door. Now, they would be again.

Separate discussions with Tony and Ralph lead to the same conclusion. The consensus was that there isn't much aluminum in a Bentley motor. The only source they could think of was the camshaft gear. Tony mentioned further he knew this to be a common situation.

We had to know more. How long was it taking the particles to show up in the oil? Was this a years' worth of accumulation or weeks. With the owner's informed help we embarked on a dangerous experiment. The oil and filter were changed. He then drove the car on a lovely 300 mile fall tour. This, after being told *"Don't even start the motor!"* collectively put our hearts in our throats. Had we sent him out in an irreplaceable hand grenade? Thankfully no. Other than a few minor glitches, the car had run very well.

With considerable trepidation we drained the oil into a clean bucket and cut open the oil filter. *RATS!* The aluminum flakes were back although in much smaller quantities. Never having had the luxury of studying the drain oil before, we did so now. *DOUBLE RATS!* There was a fine smoky trail in the bottom of the bucket. Under a bright light it was instantly identifiable as brass filings.

Another call to the Curzon team determined the brass was probably the camshaft gear thrust washer. So now we knew. There was no waiting. The engine would have to be cracked immediately or the car parked. Parking the car was not an option. My friend was giving it to his brother as a gift and the car needed to drive to its new home in Massachusetts. We knew this was going to be a huge job on ultra-high value machinery. There was considerable risk of an unfavorable outcome. Maybe we should say no this time? But, we just couldn't. We were responsible!

And so the project begins. As you may have guessed from the previous sentence, we are just getting started with our Bentley story. True justice to the tale would require many more pages; perhaps even a mini-book of its own. However, I'm not sure that would be justice for our readers at this point, and they are more important. I think I'll end the text with a mention of some of the huge impediments we overcame to bring this job to a successful completion. The brevity of the remaining story removes most of the high automotive drama that would accompany a more thorough telling. If I get requests for the full story, I will happily add to this narrative.

Bearing damage? With metal floating around in the oil for who knows how many years, bearing damage is a real possibility; maybe even a deal breaker. We pulled the oil pan and every main and rod cap we could access. The Gods were smiling. The bearings looked good.

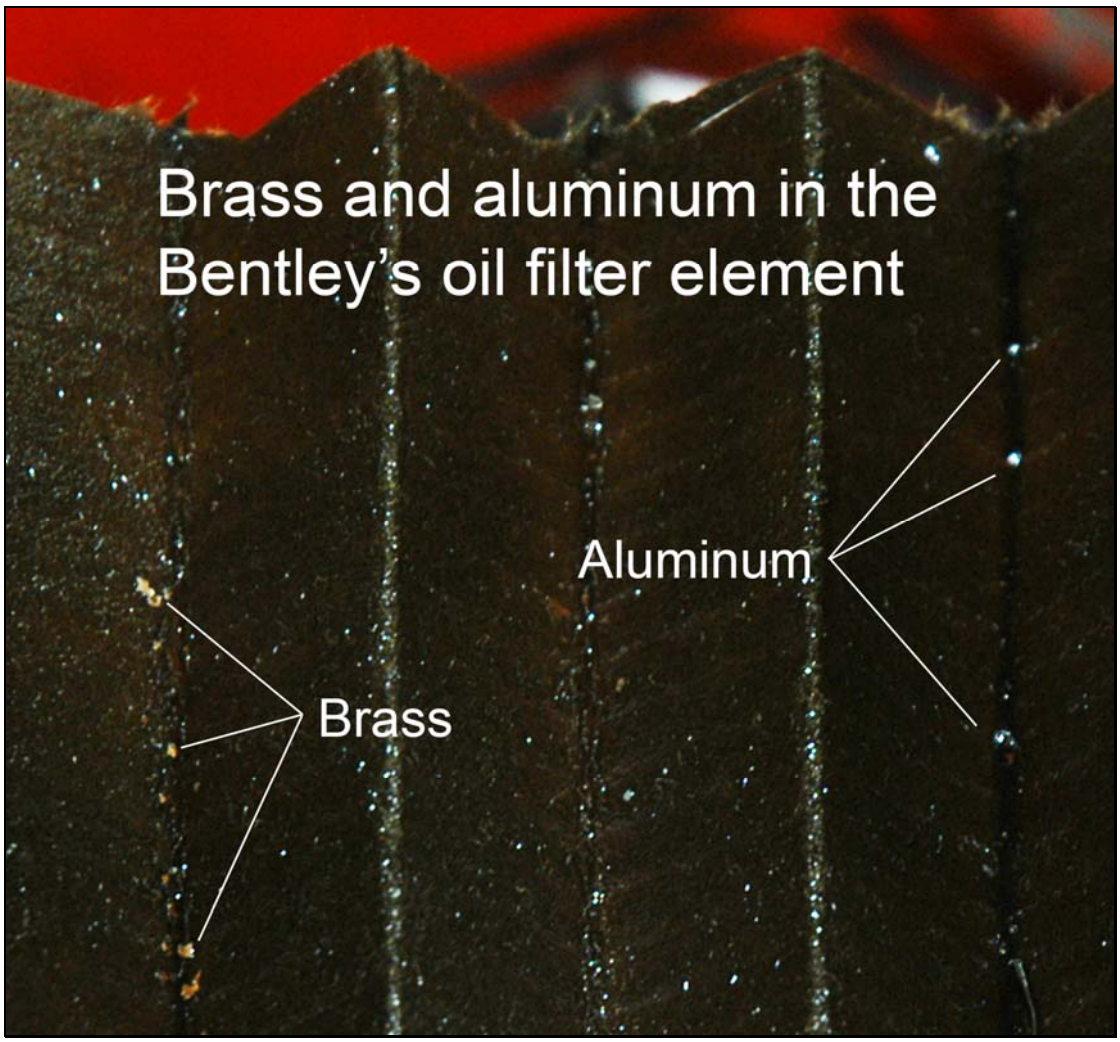
Cam gear oiling? The timing gears have their own external oil feed. This is a small metal tube that is easily crushed when tightening belts. We started the motor and studied the flow. *"No hay problema mi amigo"*

Crankshaft damper operation? This engine has a huge, complex crankshaft damper filled with clutches, springs, and gears. The unit actively counterbalances the crankshaft, changing its internal compensation as needed. Our damper had failed. We have some suspicion the increased vibration may have contributed to the demise of the camshaft gear. Off it went to Ralph Curzon for a complete rebuild and setup.

Parts availability? In any other circumstances, parts for this car would have been an impossible obstacle. Without Tony and Ralph's help the job would have ended before it began. One example is the camshaft timing gear. The part is long obsolete. There are no aftermarket sources. When offered new, the camshaft and crankshaft timing gears came as a matched set and cost several thousand dollars. The crankshaft gear is steel and seldom wears. The camshaft gear, being aluminum, is the weak link. Tony had two used camshaft gears in excellent condition. Ralph said if Tony encountered trouble finding a good gear he would build one. WOW! We have more trouble getting a Grand Caravan serpentine from NAPA than we do exotic, obsolete parts for a 1958 Bentley.

Article wind-down: The reassembled engine ran smoother and quieter than at any time in our past recollection. Home now with its new owner, it was transported back to Massachusetts. We haven't heard one way or the other on any further particles in the oil, but we are quietly confident.

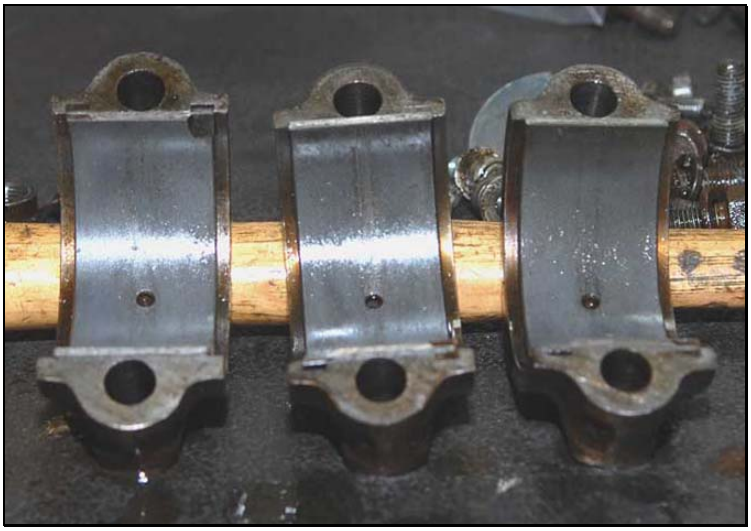
Honorable Mention: Major kudos go to Mark Huff, our Head Technician. As I slow down (now 57), Mark has taken over much of the heavy lifting on our classic cars. The Bentley was Mark's impeccable craftsmanship from beginning to end. S'way-to-go Mark!

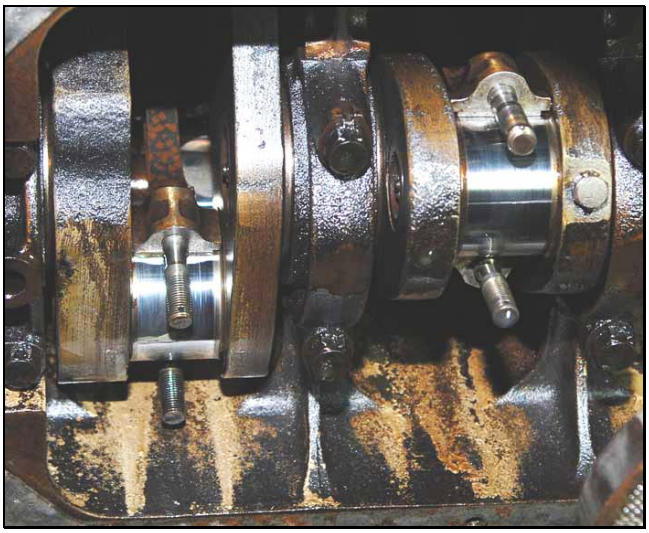


Is the engine in this grand old car headed for a $40,000 overhaul? With a little luck, loads of skill, and top notch technical support, the answer is not yet.

The culprit; a badly worn aluminum camshaft timing gear. The brass thrust washer is hidden behind it.

The tear-down has begun. Our Bentley here is minus its bumper, grille and radiator. WOW, is there a lot of motor under that hood!





We spoke of a little luck in an earlier picture. This is it. The bearings and crankshaft have survived their ordeal with flying colors. We can now continue with our "responsibility".

Our patient has survived his/her surgery, and is all cleaned up. The Bentley is ready to go to its new home. We will miss it. No other car collected more stares, comments, and admirers during its stay at the Motor Works Classic Car Hotel.

Dense pack, 4.9 liter straight six engine seems to go on forever. WOW, is there a lot of motor under that hood! Wait, I just said that three pictures ago. Well, so much for originality. It's still true though. Hey, is this one of those jokes that's funny every time? Smile!

The interior is just too classy for words; so I won't offer any.

The Bentley S1 chassis was offered for sale to various coachbuilders who then built a custom body and interior to their customer's exact specifications. This is a lovely example. Yes, that's a Jaguar XJS V-12 in the background. Normally a leader in the class department, today the big Jag sits quietly in awe of its neighbor.

Photo Gallery

Stories Yet To Be Told

A lovely trio. Odd note: the White Midget has a Weber DCOE side-draft racing carburetor on it. At first glance the carb looks bigger than the engine. The DCOE would not be our first choice for a carburetor conversion.

Wouldn't it be the pits if we handed the wrong green MGB to the customer and he actually drove it home because he couldn't tell them apart either - Smile!

Red MGB eagerly awaits new "legs". A rebuilt transmission is ready to go in.

Uh-oh! Which transmission goes back in the "B"? Rock, paper, scissors anybody? Yes, I am poking fun. But, I'll bet there isn't a line technician alive from the points and condenser era who hasn't removed an old set of points and placed them on his box. Only to come back ½ hour later and distractedly reinstall the old points instead of the new set next to them. I know I have. You don't think that could happened with the transmission do you? Should I put a sign on the new trans that says "Install Me"? - Smile.

Impeccable Florida MGB has aftermarket air conditioning.

Impeccable MGA has TD-SCO-60 AC. That's right. Top Down-Side Curtains Out-60 MPH AC. - Smile!

The White MGB in the three pictures that follow has been visiting Motor Works since shortly after I opened in 1984. It truly appears to have been driven off the showroom floor yesterday. I do not believe it has ever seen paint, and certainly not salt. It is not restored, it's just that good.

"Many thanks to all who have taken this tour with us. Classic cars are a passion at Motor Works, and a passion unshared is a passion denied. To all our customers, readers and fellow enthusiasts who share our passion, we offer our deepest appreciation."

Sincerely,

Martin Fay, Owner & President
The Motor Works of DeKalb, Inc.
March 2013

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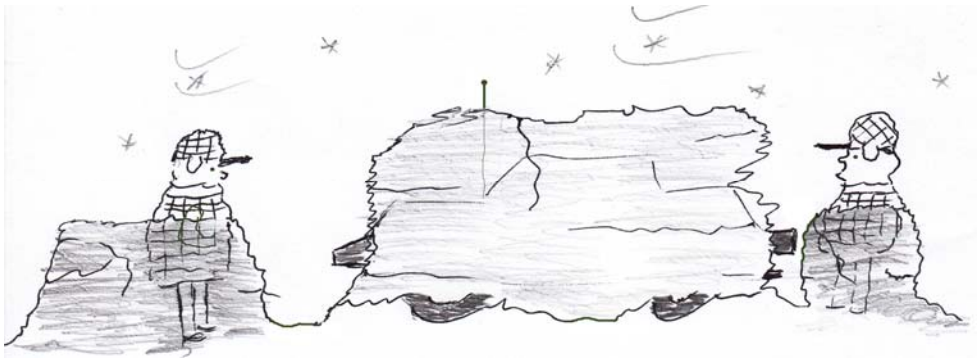
Motor Works' Winter Storage Procedure



"Hey Henry, that your car in that block of ice?" "Yup."
"You worried about it?" "Nope."
"How come?" "Cause I had Motor Works perform their winter storage procedure last fall. Come springtime that baby will purr like a kitten and off I'll go on the first warm day."
"Uh, Henry?" "Yeah." "I'm not worried about your car either." "How's that?"
"Cause I'm stuck in this same block of ice and I'm getting cold!" "Hey, me too!"
"We better call Motor Works, they can do anything!"

Welcome to Motor Works Winter Storage Procedure. With some effort cars can be put into long term storage and ride out the rigors of varnished gas, stuck clutches, destroyed paint, and frozen pistons. The list of possibilities is of course, much longer, but you can defend against almost all of them. It will take some time and cost some money but not having to repair a seized piston is the automotive version of money in the bank. Time to get started.

1) Wash, wax and vacuum your car. Cover it with a high quality breathable car cover or a simple white bed sheet. Good breathable covers can cost $300, but are worth the protection. Bed sheets help prevent against dust and they breathe well, but provide no protection against bumps and scratches.

2) Change the oil and filter. Be sure to warm the engine first.

3) Put the proper amount of Stabile in the gas tank and fill it. Then drive 10 miles to circulate the stabile through the fuel system.

4) Bring tire pressures to 40 psi to help prevent flat spots. If possible, block the car so the wheels are off the ground (no weight). If this is not possible, roll the car two feet forward every month. Make a note to yourself to lower the tire pressures before resuming driving. Put the note on the steering wheel. Coat tire sidewalls with Armor All or silicon to reduce dry rot. Do not coat the tread.

5) Apply silicon to all weather seals to keep them supple. Don't forget the trunk and engine bay.

6) Block the clutch pedal in the released position with a 2x4. Careful you don't deform the seat if you lever against it. Blocking the clutch will help prevent it from rusting in the applied position.

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7) At the storage site, pull all spark plugs and pump 5 squirts of engine oil into each cylinder. Putting a two foot length of vacuum hose on the end of the oil can nozzle will make this easier. Crank the engine for 30 seconds with the plugs out. Reinstall the spark plugs. Make a note to yourself there will be considerable smoke from the tailpipe for the first 10 miles of diving. Put the note on the steering wheel.

8) Stick rags in the air cleaner snorkel and the tailpipe. This is to prevent mice from building nests in critical areas of the car. Make a note to yourself to remove the rags before you resume driving. Put the note where? Why, on the steering wheel of course.

9) There is some controversy over putting mothballs inside the vehicle to repel rodents. This could save you chewed up seats or wiring. However, the smell can be very difficult to eliminate once the mothballs are removed. One of Motor Works technicians recently informed me he had personal experience that dryer sheets also make a good repellant without the problematic smell of mothballs. I have verified this on the internet and look forward to trying it.

10) Lower the windows ½ inch and unlatch the convertible top. This will lessen the pressure on the seals and prevent further permanent indentation. It also helps the inside of the car breathe.

11) Charge the battery. Every month turn your headlights on for 3 hours to exercise the battery. Then recharge it with a trickle charger. Another option is to leave a maintenance charger on the battery the entire time it is in storage. These special chargers are inexpensive and available through Motor Works, Interstate Battery and other outlets. A maintenance charger is my preferred method.

12) Power back flush the cooling system to remove acids, rust and sediments for long term storage. Refill with 60/40 antifreeze and water (preferably distilled). Pure antifreeze will freeze in the bottle at 10 degrees Fahrenheit, so do not add more than the required 60/40 ratio. Do not store antifreeze containers in unheated buildings.

13) Flush the brake and (if it has it) clutch fluid to remove moisture contamination. Brake fluid is hydroscopic (absorbs moisture). A can of brake fluid left open overnight will absorb enough moisture from the atmosphere that it must be discarded.

14) DO NOT APPLY THE HANDBRAKE while the car is in storage! It can rust in the applied position. Handbrakes are a use it or lose it proposition. You must either exercise the cables constantly or do not use them at all.

That about does it. Our customers, who follow this program, start their cars in the spring and after correcting tire pressures and pulling rags just drive into the new season. They don't even have to visit us, but we hope they will at least honk and wave as they cruise by.

*Note, some of the general storage principles listed above are loosely based on an old article in the now out of circulation Miata Magazine. I was so impressed with the article, I called the magazine and got permission to reproduce it in its entirety for our customers. This version bears little resemblance to the original article as we have added a great deal to it. Still, credit is due to Miata Magazine for the original thesis. Thank-you Miata Magazine.