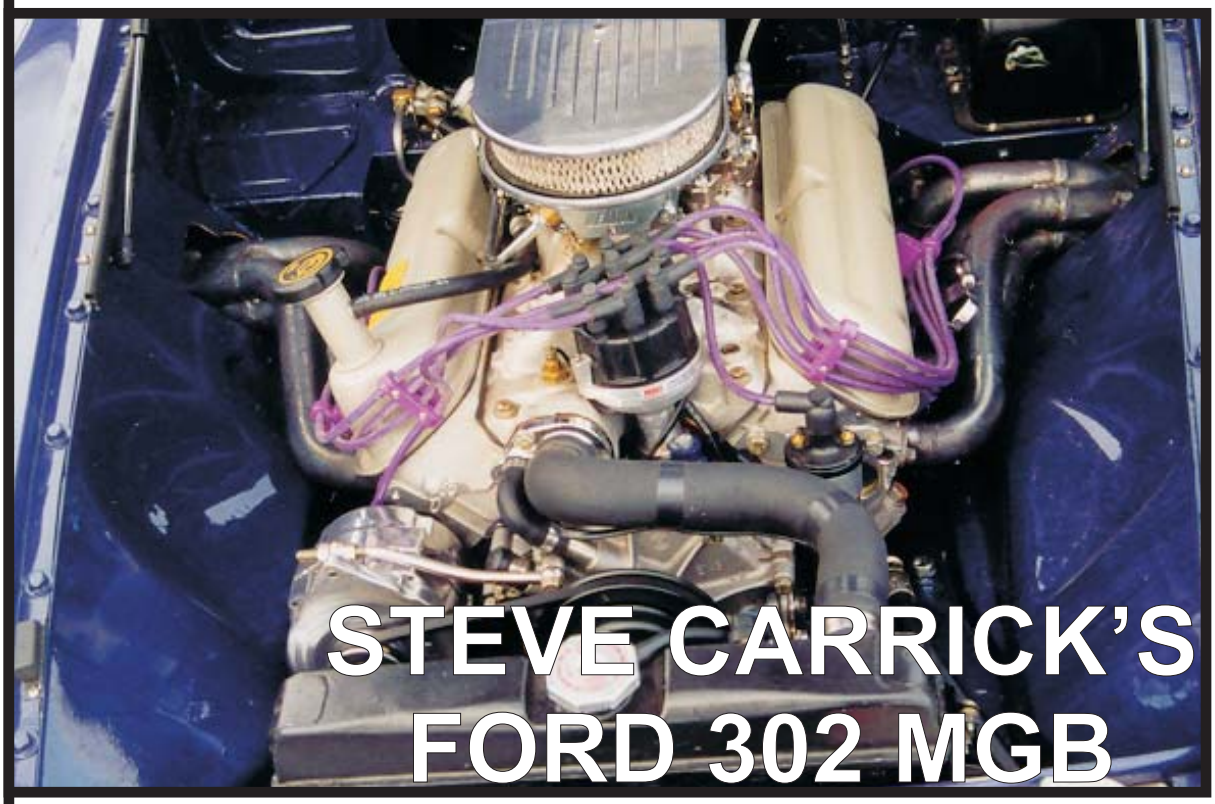
BRITISH V8 NEWSLETTER

Postage 80¢

P.O. Box 6430, Maryville, TN 37802-6430

VOLUME X, NUMBER 1

JANUARY - APRIL, 2002



STEVE CARRICK'S FORD 302 MGB

FEATURED STORIES:

- STEVE CARRICK'S MGB/FORD 302
- BRUCE WYKOFF'S MGB/BUICK 215
- HARRISON MANELL'S MGA/BUICK V6
- DANA AXLES FROM THE POST OFFICE
- JUST AN INCH SHORTER
- FLYWHEELS
- MORE

ADDRESS LABEL

WANTED!

Any British V8 or V6 related articles, tech tips, photos, product or vendor recommendations.

"How it was done" articles - share your expertise with us!

Comments, opinions, or corrections to Newsletter articles.

This is YOUR newsletter - how successful it remains depends on YOU - SEND THOSE ARTICLES IN!

The British V8 Newsletter is published
three times yearly,
January - April,
May - August, and
September - December by:

Publisher/Editor:
Dan Masters
DM Publications
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Newsletter website:
http://members.aol.com/DANMAS4/mgv8.htm

Please send all correspondence to:
The British V8 Newsletter
C/O DMP
PO Box 6430
Maryville, TN 37802-6430

Subscription rates:
$15.00 per year (three issues)

WEB SITES OF INTEREST
www.groups.yahoo.com/group/rover-v8
www.groups.yahoo.com/group/rover-v8
Two sites with interesting information on drivetrain problems and solutions

BRITISH V8 NEWSLETTER

Volume X, Issue 1 **January - April 2002**

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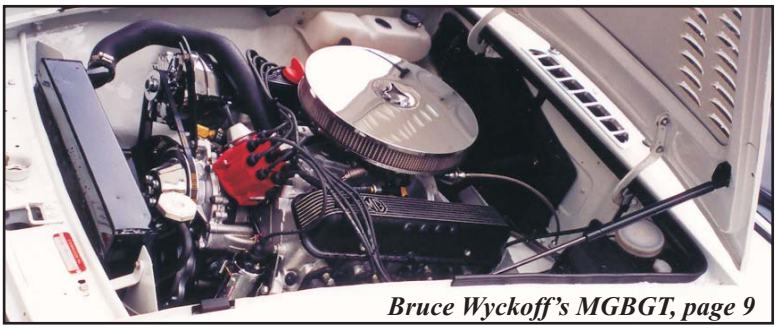

Bruce Wyckoff's MGBGT, page 9

FROM THE EDITOR

First of all, a great big THANK YOU to everyone for not lynching me, and for your patience and understanding in light of all the problems with the newsletter. Hopefully, we are back on track now, and the newsletter will continue for a long time to come. There are still a lot of details to work out as concerns distribution of the newsletter - online versus paper, for example - but I hope to have all of these ironed out by the next issue.

Another item of concern yet to be resolved is the issue of newsletter finances. It isn't fair to those who have already paid to be asked to pay again, and it isn't fair to ask you to pay for material that any Tom, Dick, or Harry can download for free from the Internet. Although I'm not looking to make any profit from the newsletter, I don't want to be out anymore money than the equivalent cost of a subscription either. At this time, I don't have a handle on what my expenses may be, although I can calculate to three decimal places what the paper/ink/postage cost is per hard copy, and I know to the dollar what my costs are for web space. By this time next year, I should have a firm handle on things.

Also by this time next year, the current subscriptions should have run out for those who have already paid. At that time, a fresh start would be appropriate, both for me and you, the subscribers. Between now and then, I should be able to figure out a way to password protect the web site to make the material available only to paid subscribers. Or, as an alternative, e-mail the newsletter to those who have subscribed. In the interim, I would not be opposed to accepting modest donations from any one who would be inclined to help me recover some of my current expenses. Several readers have written to me offering to help.

As I have stated before, it was never my intention to become the publisher of the newsletter - I had a more modest goal of being merely the editor. But now that I am the publisher, I will do my best to publish a quality newsletter, with the kind of material you want to see, and do it in a timely manner. I have a lot to learn, especially pertaining to gathering up material for articles, and for the subscriber/advertiser revenue generation, so please bear with me.

As many of you know, I have been in the process of stuffing a Ford 302 into my TR6 for several years now (http://members.aol.com/danmas/1971.htm), while my MGBGT V8 conversion sits on hold. Last month, I took two steps towards getting started on the MG project. The first step was to install a larger capacity fuel pump (see story on page 13), and the second step was to contract with Ted Lathrop, of ***Fast Cars, Inc***, to do the conversion for me. I'm a hard-core, unrepentant, do-it-yourselfer, but as much as I'd like to do the conversion myself, I have gradually come to the conclusion that I'm not going to get it done anytime soon at the rate I'm going. Look for me soon in a Ford 302 powered MGBGT! I'll be using the same engine as the one I'm installing in My TR6, and the same one Steve Carrick is using, as shown on page 4. I'll also be using one of Ted's fantastic front suspension set-ups, and a 4-link rear axle set-up

Naturally, the conversion process will be well documented and photographed, so look for a comprehensive how-it-was-done article in a future issue of the newsletter. Am I getting excited? You betcha!

dm

HEATER HOSE CONNECTIONS

By Bob Spurr

MGB V8 215 BUICK Heater Hose Conversion Kit

Parts list for heater hose kit:

Part 1 - water pump to upper right side of heater core outlet.

Gates #28474 - 3/4 ID: molded hose from pump w/90° bend.

Gates #28467 - 5/8 ID: molded center hose w/90° bend.

Gates #28461 - 1/2 ID: molded hose to top right heater outlet w/90° bend.

Gates #28611 - 3/4 - 5/8: plastic hose connector from water pump hose to center hose

Gates #28610 - 5/8 - 1/2: plastic hose connector from center hose to heater core hose.

#HS12 (4 each) and **#HS10** (2 each) hose clamps

Option: two round clamps to secure center hose to block that can be mounted to the two top valve cover screws. Keep in mind that you will need to keep proper clearance for the throttle linkage in front of the choke linkage so the hose does not hang up.

Notes:

When fitting hose **#28461**, you will need to cut off from the long side of the hose about 4" for a nice fit.

When fitting hose **#28474**, you will need to cut off from the short end about 1" for a nice fit.

Part 2 - Heater core outlet to heater control valve on back of intake manifold.

Gates # 28460 - 1/2 ID: molded hose from heater core to control valve.

#HS10 (2 each) hose clamps

Note:

When fitting hose **#28460**, you will need to cut 1" off one end, either side of the hose, for a nice fit.

Dan Lagrou, of ***D&D Fabrications***, has assembled complete kits of the above components, and is offering them for sale at the price of $50.00. See Dan's ad on the back page of the newsletter for contact information.

BRITISH V8 ARTICLES

Article of interest from recent publications

Hot Rod Magazine, in the January, 2002 issue, ran a series of tests on various multiple carburetor/intake manifold combinations. Seven different intake systems were tested, all on the same engine, to evaluate the effectiveness of the various combinations. The combinations ranged from six Stromberg 97 two-barrels on an Offenhauser intake, to a pair of Race Demon TR carbs on a tunnel ram. While you most likely will not be using any of these setups, the article was very interesting and informative never-the-less.

Rod & Custom, also in the January issue, had an article on stroking the Ford 302 to 327ci. That's within 23ci of the Chevy 350, in a smaller, lighter, package. V8

2002 BRITISH V8
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e-mail mgbv8@iserv.net
http://members.aol.com/danmas4/2002.htm

TUNE-UP SESSION
GRATTEN ROAD COURSE
Thursday, August 15, 2002

There are several half-hour sessions available, limited to 60 cars. There will be track restrictions of no passing in the corners, a helmet that meets SCCA rules, completed and signed waiver forms, and NO ALCOHOL.

These spaces are filing fast, and must be prepaid. Send your registration fee ($70.00) to:

Steve Carrick
11475 Ridge Point Road
Middleville, MI 49333

NOTE:

This "tune-up" session is ***NOT*** sponsored by the V8 Newsletter. Neither Steve nor the Newsletter assumes any responsibility for this event, but are only acting as a co-ordinators for the convenience of our readers.

MARKETPLACE

1964 TRIUMPH TR4/BUICK 215 V8 FOR SALE

Jim Giordano, Bellevue, WA.....(gio@sprynet.com) Have too many cars, one must go. Asking $7,500 OBO.

Carb: 4 barrel with manual choke Intake Manifold: Lo-rise alum. 4 Bbl. Transmission: Ford Toploader 4spd. Shift Linkage: Hurst Exhaust: Dual exhaust with glasspacks mufflers. RH exhaust under engine was pinched against frame, and will need replacement of this small section. Brakes: Stock disk/drum-Brakes are in great condition-stops very well. Suspension: HD shocks/appears std springs. Steering: Custom HD conversion along RH fenderwell. Wheels: Stock spoke

wheels. Body: Stock-Superb straight body. Rust: Very minimal-surface rust in small areas of rock chips and paint chips. A couple of small door dings. Interior: Overall very good. New carpeting on floors and covering custom bellhousing cover. Exc. Highback seats that are hinged and fold forward.

Padded 4 point rollbar. Stock appearing dash. Extra guages. Good wood dash.

Glass: Rock cracks in windscreen, exc. door glass. Convertible top: good condition-fits well, plastic window cracked. Chrome: fair to good condition. Bumpers have light corrosion. Some pitting on tail lamps.

Quality of V8 conversion: overall good to very good. This car drives great, has wonderful torque and power, yet is easy to drive anywhere. Recent compression test by prof. mechanic found all cylinders 160-180lbs. The engine seems very strong, has piles of torque.

1960 MGA/FORD V8 FOR SALE

Mike Guillory, (guillory@pegasusdesign.com) (713) 856-9076 I'm asking $22000, well below what it cost to build. This car was featured in the August, 1996 issue of the newsletter.

- •Ford 302 GT40 crate motor
- •MSD Billet distributor & ignition
- •Edelbrock aluminum manifold
- •Fuel pressure regulator
- •Carter Competition AFB carb.
- •Holley Blue fuel pump
- •2.5" Aluminized exhaust
- •Coated headers, fender well exit
- •Competition lever shocks - front
- •MGB V8 front suspension bushings
- •Ford Motor Sport clutch
- •Koni rear shocks
- •K&N Filter
- •Braided SS lines
- •Polished alternator
- •Moroso valve covers
- •Borg-Warner 4 speed
- •Ford 9" narrowed
- •Traction Bars
- •Super turbo mufflers
- •4-point harnesses
- •Tonneau cover

HOW IT WAS DONE # 1

Owner: Steve Carrick
City: Middleville, MI
e-mail: mgbv8@iserv.net
Phone: 616-795-1148
Model: 1974 MGB
Engine: Ford SVO 302

Engine: ***Ford Motorsport SVO*** M-60070-B40 "crate" engine, aluminum GT-40 heads, GT-40 valve train, and ***SVO*** high performance M-6250-B303 hydraulic roller camshaft.

• Head specs: ***SVO*** M-6049-Y302, GT-40, aluminum heads weigh 22 pounds each, 25 pounds lighter than similar iron heads. Intake valves - 1.94", exhaust valves - 1.54".

• Intake system: A single 4bbl 625cfm ***Road Demon*** sits on an ***Edelbrock*** "airgap" 7121 aluminum manifold. Throttle cable by ***Lokar***.

• Camshaft specs:
Intake and exhaust - duration = 284°(224°@ 0.050" lift).
Intake and exhaust lift = 0.480".

• Oil pan: A rear sump pan was fitted, but the front crossmember required extensive modification for clearance. Even the rear sump pan on a Ford has a small front "sump" to allow room for the oil pump drive. This front sump can cause difficulties in some installations, interfering with the front crossmember as in this application.

• Power: An identically configured engine was tested by Car Craft magazine recently, and their engine produced 375HP!

Three hundred seventy five horsepower!

Transmission: B&W T5, installed with a bellhousing from a Mustang. Fifth gear is 0.63:1.

Cooling system:

• Water pump: stock Ford, configured for V-belt operation (opposite rotation from the normal serpentine belt drive).

• Radiator: ***Griffen***, brass construction, designed as a stock replacement for a '65 Mustang.

• Fan: ***Spal*** electric, in a puller configuration.

• Performance notes: Car runs way too cold at highway speeds. - 150° at 80 MPH. The thermostat is a modified 180° ***Robert-Shaw.*** The bypass was opened up to 1/2". Will go back to a stock ***Robert-Shaw*** 180° and stock 3/8" bypass opening to try and get the temperature up to normal.

The license plate says it all

Exhaust: Headers were custom made by ***Fast Cars, Inc***, with primary tube diameter of 1 1/2" Mufflers are chambered, and 48" long.

Rear axle: Ford 8.8", with a 2.73:1 final drive ratio. Upgrade to a Ford 9" will be the next modification.

Front suspension: Lowered one inch. Currently running a ***Ron Hopkins/Bilstein*** conversion, but will soon upgrade to a Fast Cars, Inc front suspension setup (see page 18 of the May 2002 issue for a photo of this setup, and look for a detailed article on it in the near future....ed).

Nice set of wheels

Rear suspension: Lowered one inch. Composite springs and koni shock conversion supplied by ***British Automotive, Inc***.

Brakes, front: Stock for now, but will be upgraded to ***Wilwood*** four piston calipers and 12 3/4" diameter rotors as part of the ***Fast Cars, Inc,*** front suspension upgrade.

Brakes, rear: Stock Mustang, as part of the Ford 8.8" axle assembly.

Wheels/Tires: ***ARE*** 15x7 wheels, ***Goodrich*** TA 225x15 tires.

Interior/Body: Fiero seats. Other interior improvements are a future project.

Electrical:

• Alternator: **GM** 100 amp one wire.

• Starter: Gear reduction from ***PA Performance.***
• Wiring: Rerouted to clean up engine bay.

Conversion performed by: Owner.

*The snow may be cold, but the car is **HOT!***

Problems encountered since completion: Runs too cold, causing choke problems.

Source of parts/conversion information:

- ***Glenn Towery, Towery Foreign Cars.***
- ***Doug Jackson, British Automotive, Inc.***
- ***Ted Lathrop, Fast Cars, Inc.***
- ***Kurt Schley, Mike Moor, Richard Barnes.***

Conversion Recommendations/Advice you'd give others: Start with the engine of your dreams. Rebuilding your car later to achieve your dream will only cost you time and money. V8

Experience is the best teacher. The problem with learning from experience, though, is that the exams are given first, and then the lessons.

PRESERVATION WITH RESERVATION

By Barrie Robinson

When you get yourself really stuck into a rebuild you learn a lot. I say rebuild rather than restore as I am not restoring an MGB GT V8 but building one from a 1970 shell that I acquired. Being a sort of perfectionist (yes! I line up the screw slots on my cover plates for light switches) I have searched for the best possible solution for the various aspects of the build. In this mode I had the shell dipped, and then had it worked over by a metal master, which was a crushing blow to my budget. Then a paint man of mean repute did my paint. This man does work for museums and has a waiting list as he is not only good but reasonable in his prices. So now I have a gleaming GT with equally gleaming Rover V8 engine nestling in the engine bay. What this does is start those horrible visions of rain, sleet, snow, and salt spray, as I do intend to drive this machine even through Canadian winters. And before you say that is foolhardy, I have done eight years like that in a 4 pot MGB GT and loved it. Nothing like tackling a snow storm in an MGB!

Obviously, a corrosion protection plan has to be put into place. Consultation with my paint fellow revealed that the inner dark deep recesses of the body may not be completely covered with paint or primer - a safe assumption. Consultation with members on the MGB, MGB V8 and other "listers" resulted in some excellent advice regarding correcting this situation. One suggestion was to fill up the cavities with paint, ***Tremclad, POR 15***, or similar, and then drain it out to be used in the next cavity. This most sensible idea does not appeal to me because of the difficulty of filling some of the large GT cavities and draining out. It also seems to be quite a messy procedure. It would give great results and this method is used in car manufacturing but maybe, I thought, there could be a less awkward method.

In the past I have read articles in British car magazines about a product called ***Waxoyl***. It's praises are loud and long, so I decided to investigate this route. The theory is simple: You just coat the surface with wax, which like oil, stifles rust. ***Waxoyl*** is a thick, almost paste stuff, and some complaints refer to this thick consistency. However, this complaint is the result of being somewhat lacking in thought. There are two solutions to the thickness problem, heat the stuff or add mineral spirits - or both! I became interested in what ***Waxoyl*** was and how it worked. I learnt from a lister on autox.team.net that ***Waxoyl*** is nothing more than paraffin wax dissolved in mineral spirit with maybe some rust inhibitor. The latter seems desirable but not essential, as the brew will obviously halt more rust forming by blocking the damp, and anaerobic rusting in cavity areas seems improbable. The recipe sounds credible as such purveying of basic materials as a branded product at a high price is not new. For instance, gas line anti-freeze at $2.50 for a tiny bottle, is just methylated spirits at $3.00 for 5 litres! But, having heard of the incredible properties of bees wax, I thought maybe bees wax dissolved in mineral spirits may be even better. ***Waxoyl*** probably do not use bees wax because of the cost.

So I pondered on all the stuff I had learnt and from the back of my mind came a name (there was nothing to stop it moving to the front of my brain!) The name was ***Dinitrol***. When I was somewhat younger and in England, I restored a TR3A and was advised to use ***Dinitrol***, which had gained a legendary reputation for injecting under trim and such. Being aware of the resistance of North America to import European auto-technology - disk brakes and radial tyres spring to mind - I decided to find ***Dinitrol***.

So I did the old Web search trick. The result was I found a USA based outfit that handles the product with the telephone number of 800-331-4304. But I was absolutely amazed at the different flavours of the product. The USA people said they only were interested in aircraft applications; however, they added that their ***AV-30*** would do the trick for my MGB GT V8. When I asked how long it would last, the response indicated that this was a frivolous question. It lasts and lasts and lasts. Apparently ***Dinitrol***, sometimes called ***Dinol***, does not have paraffin wax, but rather a compound that leaves a plasticky-rubbery-waxy type skin just like those skins one finds on those small Gouda cheeses.

Further questioning revealed that at 800-668-4318 sat the Canadian organization that sold ***AV-30*** at Can$135.52 for a case of 12 spray cans, or Can$123.20 (no 99.99 here folks) for 5 litres. This is about twice the price of ***Waxoyl***, but somehow I feel it is more than twice the product. The chap I spoke to, a Mr. ***Mike Lissadrello***, mentioned in the course of our conversation that ***AV-30*** would creep in between welds and not just float over them as would paint and maybe paraffin wax. So just in case anyone is interested, I am going to get 5 litres and squirt it in all over the plac, and 5 litres should amply cover every little place in my gleaming machine.

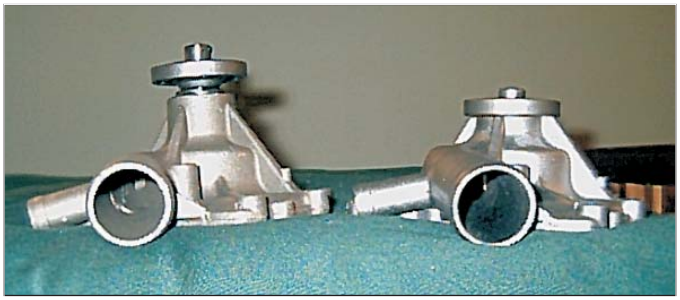
Only time will tell, but I think I have found the right anti-corrosion method; but, at least, I can boast I am using aircraft technology. Incidentally I am using a funny yellow stuff for cleaned out bolt holes in the body to stop rust as used on helicopters, courtesy of my helicopter mechanic friend who says it just does not wash, seep, or dry away! Incidentally, when I asked him about ***Dinitrol*** he said they hated it - ***it was difficult to remove and stuck like mad!*** V8

JUST AN INCH SHORTER, or BARRIE'S SHORT PUMP

By Barrie Robinson

There are several well-known problems with dropping Rover V8 engines into an MGB to make it into that most desirable machine built by the factory in the 70s. When I say problems I mean "challenges" rather than problems. They are all well known and include the unsuitability of the MGB rear axle, the rear springs wind-up, the probable need for better front brakes, the oil filter set-up and the most dreaded of all, the cooling problem. Not that the factory MGB GT V8 was noted for its cool engine bay but it was "satisfactory". But it was only pumping out something around the 137bhp mark. Rover engines being slipped into newborn V8s are in the 200bhp area. This extra heat has complicated things and many Veighters are experiencing overheating.

This is the problem to which I gave a lot of thought. The most obvious first decision is the use of through the wings (fenders) exhausts rather than block huggers. This has three positive effects. One it gives more room for air to pass over the engine, down and away; secondly it lets air stream over the exhausts and out through the holes in the wing; thirdly it effectively puts a great portion of the hot exhaust tubes outside the engine bay. The factory used an up-rated version of the MGB radiator but modified for the radiator hose positions and this



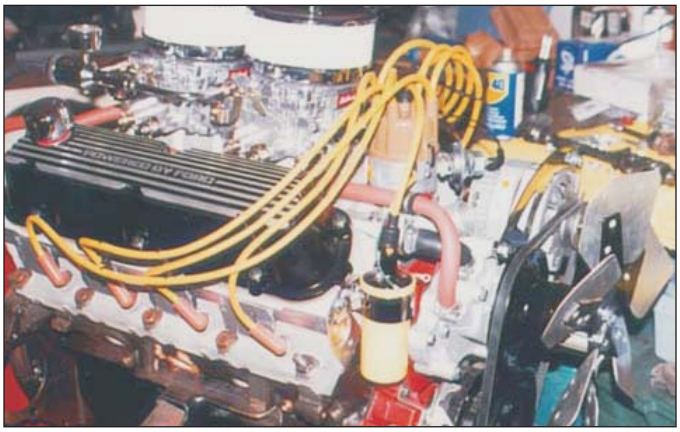
What a difference an inch can make!

would seem to prevent a problem. But interestingly enough my survey on the over heating problems showed that users of MGB radiators were in the "not having much trouble" category. However, only 13 cars were in the survey - (so where were all you other MGB Veighters when I asked for data?). So I decided to use ***D & D Fabrication's*** heavy-duty radiator and this began what I would call a "gotcha" problem.

Despite using ***Glenn Towery's*** air-conditioning engine mounts which set the engine back 1.5", I found there was little space to slip an electric fan between radiator and water pump. By tilting the radiator I had just 2.625" and thus the only fan that would fit would give me something in the order of 850 cfm and this allowed no clearance. ***Hayden's*** web page, which is pretty badly setup I may add, shows a Typical Cooling Application Chart. This is the only attempt I have seen that puts cfms against engine sizes and realizing the difficulty at doing this I take my hat off to ***Hayden*** for having a stab at it. It says 3.2 - 4.0 litres require their model 3710 and this beauty is rated at 1,820 cfm. Obviously I had a problem and I was NOT going to use twin small pusher fans in the front. I have been told that they are noisy and give poor performance.

So as the radiator could not be moved forward and the engine could not be moved back, the answer was a thinner water pump. A remote electric water pump solution seemed attractive as suggested by a "lister" but I could not find a bilge pump that would sit inline with radiator hose. They all seemed to be designed for bilges - strange! They also looked slightly fragile. I bought another bog standard Buick "short" pump, designated P591 by the company that rebuilds them here in Toronto, for closer examination. They informed me that this is the shortest available. When I pointed out that cursory examination revealed that it could be made shorter by a significant amount the reply was that they could not help me - goodbye and good luck. A local highly regarded machine shop estimated a charge of Can$250 to make it smaller - big problem they said. By using the Web I found ***Margus Auto Electric Exchange Inc***. of Los Angeles.

A brief chat with ***Don Lopez*** there resulted in a promise that he would see what he could do. A mere 10 days later the new pump arrived. It was only 3" from the stub end of the shaft to the engine block mounting face - absolutely marvelous! The picture shows the standard Buick pump on the left, which is 4" from pulley flange face to engine mount face, while the ***Margus*** beauty is on the right, measuring a svelte 3". I calculate that I will have a 3.625" when the new pump is fitted. This allows for a ***Spal*** 14" puller fan with a massive 0.235" clearance. Despite advice to the contrary I was going to use a ***Spa***l because of its specifications. It draws a massive 16.3 amps, but it also belts out a massive 1,720 cfm at a static pressure of 0". But with further investigation, I found that ***Vintage Air*** sells a ***Revco***r 14" unit of 3" thickness that delivers 1,980 cfm. So at time of writing I am trying to get specifications out of R***evcor***. I find that too many suppliers do not give any specifications and one web site just said the fan was 14" - "Put in shopping cart". I ALWAYS send off a short notes to such people telling them of their deficiencies and I urge everyone to follow suit - as well as panning those stupid $999.99 prices. V8



The next time you see this engine, it will be in my MGBGT (Actually, not THIS engine, but one just like it - 360HP!) dm

MG V-8 REAR ENDS FROM THE USPS!

By Kurt Schley

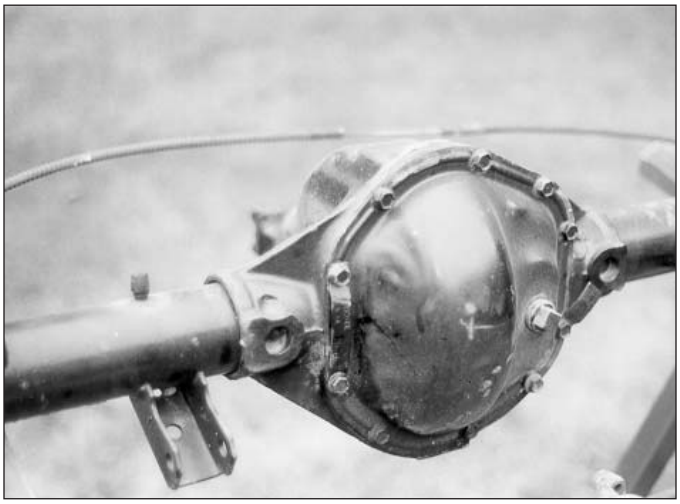
Over the last several years, several Newsletter contributors have mentioned that the rear end from under a Post Office Jeep Dispatcher may be a prime candidate for use under an MG V-8 conversion. ***Dan LaGrou*** decided to follow up on these rumors and obtained two of the Jeep rear ends which were on display for examination at his ***D & D Fabrication*** Customer Appreciate Day last August. It appears that certain of the Post Office carrier Jeeps have Dana 44 rear ends under them. The other Jeeps had American Motors rear ends which do not enjoy a good reputation. The desirable Dana unit can easily be identified by the flat area on the axle ends, between the lug nuts. The AMC unit has a threaded spline axle ends with a large nut and cotter pin, just like an MGB.

Dana (L) and stock MGB (R). Note that the Dana axle end is flat between the lug nuts. The undesirable AMC version of the Jeep rear end has a protruding nut at the axle end, just like an MGB, making identification easy.

Jeep Dispatcher Dana 44 rear ends (two in front) and MGB (rear) Simple spring mounts on Dana are easily replaced with salvaged or new MGB mounts.

The two Dana 44 examples Dan obtained had outside of drum to outside of drum dimensions of 51-1/4" and 49-1/4", making them well suited as a replacement for the MGB's 52" rear end. The Dana differential is offset to one side approximately 1", which might require a maximum driveshaft o.d. of 2", but this will depend of the individual installation (The stock MG rear end is offset about 1/2"). An advantage of the Dana Rear end is that many are Posi-traction and most have a gear ratio of 3.73:1, very well suited to use with a T-5 transmission. (One note is that all the Dana 44 rear ends have an attached tag indicating that Posi-type gear fluid should be used, whether they are actually posi units or not. To confirm Posi, spin one wheel; the opposite wheel should spin the same direction if the rear end is indeed posi equipped). Some Dana's have a 3.07:1 which is the preferred ratio for service behind a Rover trans. Replacement gear are very readily available from 2.87 to 5.89:1 The differential's gear ratio is marked on a metal tag attached to the diff.

The Dana 44 has a 8-1/2" ring gear, making it strong enough for any MG conversion. The pinion diameter is 1.376" with 26 splines. The axle diameter is actually .100" larger than the legendary early Ford 9" ! You won't twist these even with a blower and on nitrous bottle. The stock drum brakes are 2" wide, but disc brake aftermarket conversions are available. (*Keep an eye on the **D & D Fabrication** New Product announcements)* The axles are drilled for a Chevy 5-bolt lug nut pattern but can be redrilled for the MG 4-bolt arrangement. Alternatively, as there are more wheel choices for Chevy than any other, convert the front hubs to MGC parts which also carry the five bolt pattern.



A metal tag on the Dana 44 rear end will show the gear ratio

Both of the Dana 44 rear ends on display carried a number C35284 cast into the differential housing. While measurement were being taken, several rear ends were attached to a scale and a forklift and individually weighed. The stock MGB (drum brake version) weighed 170#, a Ford 9" diff weighed 179# and the Dana 44 was the heavyweight at 190#. The axle mounts on the Jeep rear ends were simple and easily removed. MG mounts, either new or salvaged from an MG rear end, could then be welded to the Dana axle tubes. (Remember to check the pinion angle!) V8

PINION ANGLE

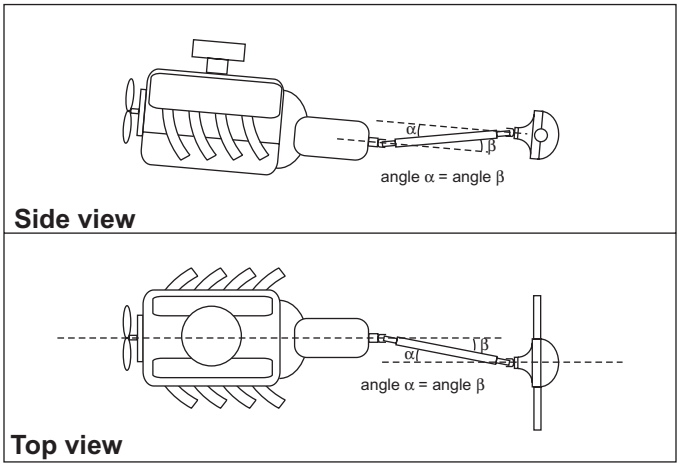
By Dan Masters

This subject has been covered before in the newsletter, but it deserves another, more detailed mention here. There are a couple

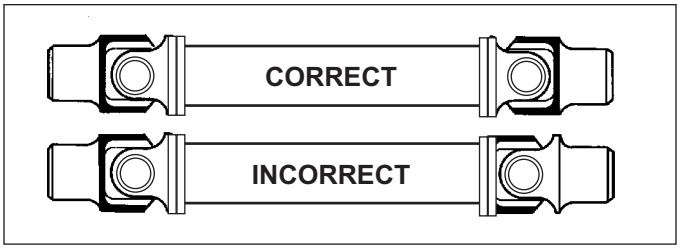
of things to keep in mind when installing a rear end assembly, and they both have to do with universal joints.

The first thing to remember is that a universal joint is a variable speed device. That is, with a constant speed applied to the input shaft, the speed of the output shaft will vary as the shaft rotates. To get a feel for this, go out toyour garage and place a pair of extension on a universal joint from your socket wrench set. While holding one extension in one hand, turn the other extension with your other hand. You won't be able to turn it fast enough to feel the speed difference, but you can feel the resistance to turning stiffen and then loosen as you rotate the extension shaft. This change in rotational restriction translates into a speed a change. You can look at the u-joint as you turn it, and you can see why the speed changes. With only one u-joint in your drive train, this change in speed will be felt as a vibration.

By adding a second u-joint to the driveshaft, properly phased, this vibration can be canceled. The vibration from the second u-joint cancels the vibration from the first. To be properly phased, the input and the output shafts must be parallel, and the u-joints properly aligned, as shown below.



Proper U-joint/driveshaft phasing



Proper U-joint alignment

The second point concerns u-joint angle. It might seem reasonable to maintain all driveshaft components in a single line, eliminating the worry over vibration problems. Doing so, however, would cause premature wear of the U-joint bearings. By having the U-joints at an angle with respect to the driveshaft, the needle bearing are forced to rotate, distributing the wear evenly. If not for the rotation, the driving force would be concentrated in one area anytime the car is driven long distances over a smooth road.

For best operation in a street driven car, and longest u-joint life, the maximum u-joint angle should be 5°, and the minimum should be 2°. V8

INDEX OF PAST HOW IT WAS DONE ARTICLES

(The numbers at the left indicate the volume and issue the article appeared in)

J Stuart	MD	MGB	77	Olds 215	T-50	2	1
J Stuart	MD	BGT	74 1/2	Buick 215	T-50	2	1
J Begley	CA	MGA	57	Buick 215	T-50	2	1
K Williamson	PA	MGB	80	Buick 215	T-50	2	2
L Cotton	CAN	MGB	76	Buick 2.8	T5	2	2
J Allen	FL	MGC	73	Chevy 2.8	Auto	2	2
B Jacobson	WA	MGB	73	Buick 215	Pon 4spd	2	2
L Faust	CA	MGB	65	Buick 215	T5	3	1
B Pulleyblank	FL	BGT	78	Rover 3.5L	Rover 5spd	3	1
F Braunrot	IL	MGB	72	Ford 2.8	Ford 4spd	3	1
R Milner	CA	BGT	67	Buick 215	T5 5sp	3	1
R Howard	NC	BGT	74	Buick 215	MG w/OD	3	1
R Neal	MA	MGB	75	TR8	TR8 5spd	3	2
K Childs	CAN	MGB	75	Rover 3.5	MG w/OD	3	2
L Anderson	WA	BGT	70	Chevy 350	GM auto	4	1
D Spooner	VT	MGB	77	Ford 302	Ford C4	4	1
M Reilly	IL	TD	53	Ford 289	Ford 4-spd	4	1
W Penner	CAN	MGB	70	Olds 215	MG w/OD	4	1
B Pulleyblank	FL	BGT	76	Rover 3.5	Rover 5spd	4	1
M Jelinek	MD	MGB	80	Buick 215	MG w/OD	4	1
J Kaiser	MI	MGB	79	Buick 215	T5	4	1
J Lakanen	MI	BGT	72	Buick 215	Rover 5spd	4	1
M Moor	IN	MGB	78	Buick 215	T-50	4	2
B Hyclak	FL	MGB	74	Rover 3.5	Rover 5sp	5	1
P Richards	CAN	MGB	79	Rover 3.5	MG w/OD	5	1
CJacobson	NC	BGT	71	Buick 215	T5	5	1
M Harvey	Can	MGB	79	Rover 3.5	Rover 5sp	5	1
F Wastell	MI	BGT	74	Rover 4.2	Rover 5sp	5	2
B McClain	FL	MGB	80	Rover 3.5	Rover 5spd	5	2
S Burr	CO	MGB	77	Ford 2.8	T5	5	2
J McCue	CA	MGB	79	Chevy 2.8	Chevy auto	5	2
J Palma	ID	MGB	76	Chevy 3.8	T-50	6	1
G. Smith	NC	MGB	80	Rover 3.5	Rover 5sp	6	1
D Nelson		MGB	77	Buick 215	Rover 5sp	6	1
J Emery	ME	MGB	67	Buick 215	T5	6	1
J Blackwood	KY	MGB	71	Olds 215	T-50	6	2
T Zweifel	CA	MGB	70	Ford 302	Ford 4sp	6	2
J Stobbe	CA	MGB	64	Buick 215	Auto	6	2
W. Van Clapdurp	VA	MGB	77	Rover 3.5	Rover 5sp	6	2
D Griffith	TX	MGB	77	Rover 3.5	Rover 5sp	6	2
G Oxford	AL	BGT	70	Ford V6	Ford 4sp	6	2
C Gore	GA	MGB	79	Olds 215	MGB	7	1
R Forbes	LA	GT	71	Buick V6	GM auto	7	2
R&A Huber	LA	MGB	75	TR8 V8	Rover 5sp	8	1
B Egerton	AUS	BGT	78	Rover 3.5L	Toyota 5sp	8	1
B Egerton	AUS	MGB	71	Rover 3.5	BW auto	8	1
K Beidler	WA	MGB	77	Buick 215	BW T5	8	2
C Jensen	VA	MGB	78	Chevy 327	Man 3sp	8	2
D Lewis	FL	MGB	80	Buick 215	Rover 5sp	8	2
G Holtzclaw	SC	MGB	74	Olds 215	T5 5sp	8	3
B Yobi	OH	MGB	79	Olds 215	Rover 5sp	8	3
J Fisher	OH	MGB	77	Buick 215	T5 5sp	8	3
K Anderson	NY	MGB	80	Rover 3.5	TR8 5sp	8	3
B Yeates	CAN	BGT	73	GM 350	BW T56	9	1
J Ray	GA	MGB	80	Buick 215	T5 5sp	9	1
K Schley	OH	MGB	74	Olds 215	T5 5sp	9	2
T Lathrop	MI	TR6	76	Chevy 350	T5 5sp	9	2
L Shockey	VA	TR6	69	Ford 351	Ford C4	9	3
R Franzen	MI	MGB	79	Buick 215	T5 5sp	9	3

I have a DIY kit from the "V8 Conversion Co." (England) for sale. It includes block adapter plate, crank adapter, MG machined & balanced 22 lb. flywheel, pilot bushing, and throw-out bearing. Asking $350.00 US$.

Keith Childs
105 Skylark Drive, Hamilton, Ontario Canada, L9A 5A9
(905) 383 9806 keith.childs@sympatico.ca

HOW IT WAS DONE # 1

Owner: Bruce & Connie Wyckoff
Kennesaw, GA
1-770-429-0686
bcwyckoff@mindspring.com
Model: 1974 1/2 MGBGT
Engine: Buick 215

Engine: 1962 Buick 215ci Aluminum V8. Crane cam, with a duration of 214° intake, 218° exhaust, at 0.050" lift, maximum lift of 0.488". Separation angle is 112°. Intake system uses a 500cfm Edlebrock carb on a stock Buick manifold.

Transmission: B&W T-5, with a McLeod hydraulic throw-out bearing. Bellhousing is stock Buick.

Radiator/Cooling System: Brass downflow radiator from ***D&D Fabrications***. ***Spal*** electric fan installed in a "puller" configuration. Stock water pump. To move the radiator forward enough to allow room for the puller fan, a notch was cut into the front lower body crossmember.

Exhaust: Block hugger headers From ***D&D Fabrications***, with 1 5/8" diameter primary tubes.

Rear Axle: Stock MGB, 3.9:1 ratio.

Front Suspension: Stock MGB with a 7/8" sway bar.

Rear Suspension: Tube Shock conversion, using a ***Fast Cars, Inc*** installation kit.

Conversion Performed by: ***Fast Cars, Inc***. Completed Sept, 13, 2001, and driven 1200 miles since.

Additional Comments: Both the stock and the conversion engine/transmissions were weighed, and the Buick/T5 weighed 50 pounds less than the stock engine transmission. Converting from rubber bumper to chrome bumper further reduced the total weight of the car.

From a Sow's Ear---------->

---------->To a Silk Purse

Ted Lathrop of Fast Cars, Inc, was great to work with on this conversion. His explanation of the conversion process was great. He supplied a complete step-by-step description of the process, and there were never any surprises.

Steve Carrick did the bulk of the electrical work, and was involved in all aspects of the car.

Andy Knout is an electrical engineer and his participation was key to the success of completing this car. Scrounging around in the past issues of the V8 newsletter, Ted found an article on making a 4-cylinder tachometer work with a V8. Andy had fun with that little challenge.

Every time that Ted needed to know something that no one had an answer to, he would call ***Kurt Schley***. Kurt would always have the answer. A big thanks to you, Kurt! V8

I don't know, but something tells me this ain't stock!

HOW IT WAS DONE # 2

Owner: Harrison Manell
e-mail:harriso987@aol.com
Phone:(949) 786-7000
Car: 1960 MGA
Engine: Buick V6

Engine: 1982 3.8 liter ***Buick*** Even-Fire V6, bore=3.83" stroke=3.40". ***Kenne Bell*** Mark 2X camshaft, with an intake lift of 0.478", exhaust lift of 0 .494" take duration is 260°, exhaust is 280°, with a lobe separation angle of 112°

•Cylinder heads are stock ***GM***, part # 25506293, Rev. A, with 1.70" intake, 1.50" exhaust.

•Stock heads were ported & CC'd by ***Flow-tech engineering***, Garden Grove Calif. (What they call street grind). They open them up and match the ports.

•Carburation is by a ***Carter*** AFB 9410, 400 CFM 4 bbl, with vacuum operated secondary, mounted on an ***Edelbrock Performer*** aluminum manifold, model # 5486, and fed by a ***Carter*** electric fuel pump mounted next to gas tank.

Our hero at work!

•Throttle linkage is Cable operated, and was custom designed and fabricated by owner.

•The stock crankshaft has been ground 0.0010, balanced and case hardened by ***New Performance,*** Santa Ana, CA

•Pistons are 9.5:1 CR ***Kenne Bell*** Cast Hypereutectic 0.030" over, providing for a 3.83" bore, fitted with ***Speed-Pro*** chromemoly rings.

•Stock connecting rods were machined, shot-peaned, balanced & straightened by ***New Performance.***

•Valves are operated by ***Kenne Bell*** push rods and lifters, using ***Kenne Bell*** springs and retainers, through ***T&D*** billet aluminum, roller bearing, 1.6:1 ratio, rocker arms, on ***T&D*** solid rocker shafts,

•Oil pump is Stock w/***Kenne Bell*** booster plate. Oil pressure @ 2500 rpm is 70 PSI.

•Timing chain & gears are ***Kenne Bell*** double roller.

•All engine machine work and balancing was done by ***New Performance.***

•Ignition is HEI by ***Ignitioneering***, Fullerton, CA

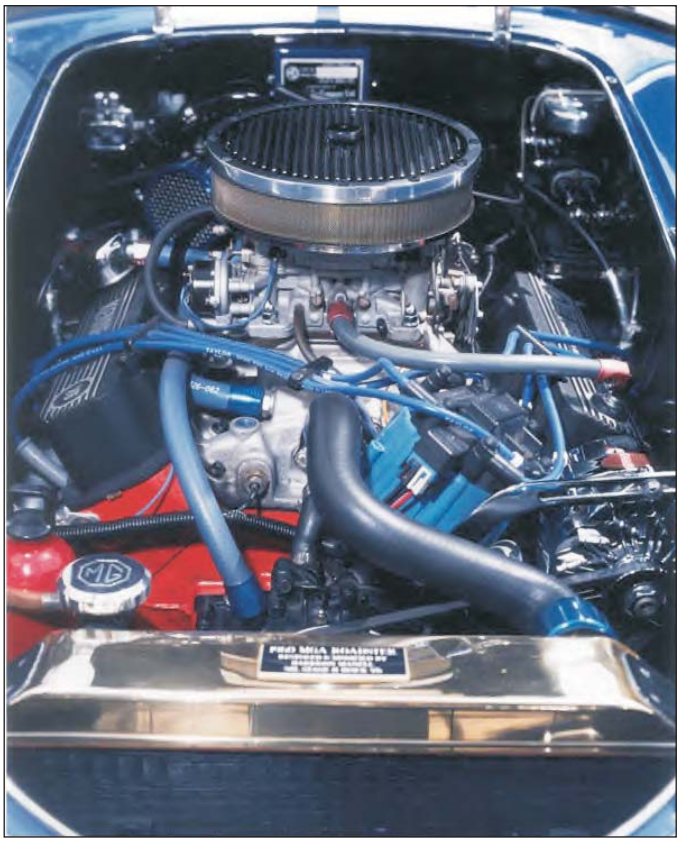
•Engine assembly was by the owner, using ***ARP*** hardware and ***Fel Pro*** gaskets.

Transmission: 1967 Muncie M21 close ratio, aluminum housing 4-speed. Gear ratios are:

1st 2.20 2nd 1.64 3rd 1.28 4th1.00

•Clutch is a ***Center Force*** unit, operated by a ***Weber*** hydraulic Throw out bearing The stock MGA master cylinder was retained. using a hydraulic throw out bearing made for a much simpler installation

•Bellhousing is a ***GM***#1249599, Purchased as NOS from a parts house.



Snug - but oh so nice!

Cooling System: Custom built brass crossflow radiator, 19"W X 18"H, four rows of 1/2 x 1/8 tubes, 11 cooling fins per inch. A ***Spal*** High Performance AirForce Swirl Model FS13AS-3.5 electric fan is mounted directly to rear of radiator core, in a puller

configuration, with no shroud, no mechanical fan. Fan provides 2000-cfm, with a current draw of approximately 16 amps.

•2 ea. Small electric ducted fans mounted under the hood side vents provide additional heat removal from the engine compartment.

•Water pump is a stock Buick/GM, of aluminum, with a March billet aluminum pulley.

•Coolant is ***Evans NPG*** 370°, with a boiling point at zero pressure of 370°. The 370° boiling point is not a misprint. It is made from non -aqueous propylene glycol and contains NO water. This is a real problem solver for overheating in a conversion application. Because of its extremely high boiling point, it will not form vapor bubbles around the cylinder walls and will remain in contact with the metal far after a water based coolant has boiled away. Detailed information is available at Evans web-site located at www.evanscooling.com

•An automatic electric thermostat is mounted in the intake manifold, and turns on at 180 degrees F. A manual override fan switch is mounted on the dash.

Exhaust system: Headers were custom made by ***Mark Weiss*** in Costa Mesa Calif, with a primary tube ID of 1-3/8". Exhaust pipes are 2" diameter, with a 2" cross over pipe. Mufflers are dual low profile glass packs

Rear axle: Ford 8" from a Ford Fairlane Wagon, with a 3.0:1 ratio, open differential. Rear end width was shortened to fit MGA fenders. All Ford mounting and suspension hardware was removed from axle housing and replaced with axle mounting and suspension hardware from the original MGA rear end housing. The result was the Ford axle is bolted directly to all stock MGA rear suspension fittings including stock MGA fluid dampers.

Front suspension: Slightly modified MGA. An MGB fluid damper was used on the left front suspension because clearance was needed to mount remote oil filter adapter on the Buick engine. The MGB damper has its piston facing outward instead of inward as on the MGA damper which provided this clearance. Considerable machining was done on the MGB damper lever arm so it would fit on the stock MGA top suspension link.

Rear suspension: Stock MGA with one extra leaf added under the upper leaf.

Brakes, front: Stock MGA disc brakes. No modifications. Painted the calipers bright red.

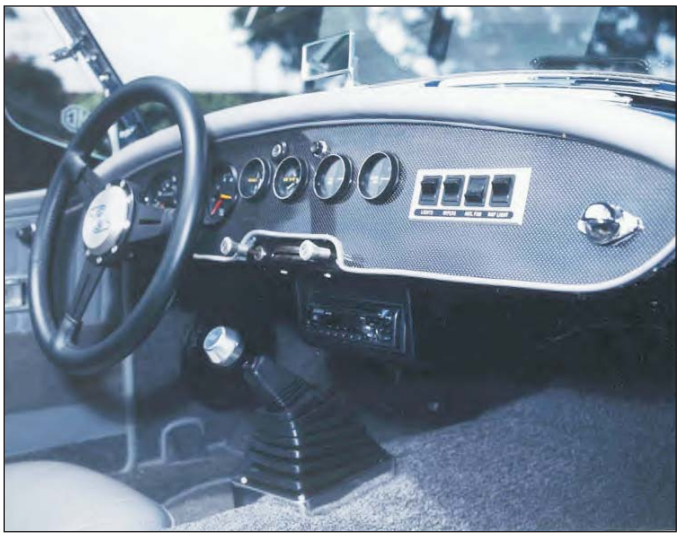
Brakes, rear: Ford drum brakes

Brake modifications: Spliced the Ford emergency brake cables to the MGA emergency brake cables. Added a hydraulic proportioning valve between the front and rear brakes to adjust front/rear lock-up characteristics.

Wheels: Intro Custom 17"x7 custom designed one-off set of billet aluminum wheels. MGA 4 bolt pattern in front, Ford 5 bolt pattern in rear..

Tires: Front and rear - Sumitomo HTRZII 215/50x17 25-1/2" Diameter Z Rated 149MPH+.

Interior: Seats are custom leather covered MGB. Remainder of the interior is totally custom. Quality leather used throughout.



High-tech meets low-tech - high tech wins.

Extensive attention to details. Dashboard is custom made hardwood overlaid with carbon fiber clothe & resin. Billet machined custom rocker switch bezel. Billet machined rear view mirror. Moto-Lita leather covered steering wheel. Custom machined and engraved aluminum steering wheel center and heater control knobs. Custom leather upholstered door panels that contain 2ea. 6 x 9" Speakers. Kenwood CD Receiver sound system with a 200 Watt sub-woofer amp driving 2ea. 8" sub-woofers mounted behind the front kick panels. Hand made custom bevel glass engraved wind wings. Custom billet machined shift lever bezel, shift knob and a Hurst competition plus shift linkage.

Body: Extensively modified while keeping the basic lines of the car intact. All body modifications done with steel formed on an English wheel then heli-arc & MIG welded together. Widened front & rear fenders. Hood scoop made with hand formed aluminum and carefully heli-arc welded into original hood. Totally restyled front-end and grill opening provides a cobra-like front end appearance. Custom made polished stainless steel front grill.

Electrical: ***Powermaster*** 100 Amp single wire Delco style alternator with internal regulator. Stock GM starter. Wiring harness is Stock MG, re-covered in exposed areas with corrugated nylon. Additional wiring added to accommodate sound system, electric fans, etc.

Guages: ***VDO*** Speedo & Tach., ***Stewart Warner*** Stage III Water temperature, Oil pressure, & Fuel level.

Frame: Mostly stock with some modifications. The frame cross-member supporting the stock transmission was cut away along with the original transmission and engine mounts. A cut out was made into the front main cross member to give clearance for the remote mounted oil filter adapter. Rubber cushioned engine and transmission mounts were added as well as a removable frame cross-member under the transmission. The steering shaft was re-routed around the engine block with the use of an additional u-joint and a frame-mounted steering center shaft support bearing. New flooring supports were welded to the frame and fresh plywood floorboards were installed. A new tunnel cover was hammer-formed from several pieces of soft

aluminum sheet that were pop-riveted together.

Conversion performed by: Owner

Estimated cost of conversion, excluding cost of original car: Approx. $15,000

Date conversion completed: 12/2000. Miles Driven since conversion - 5,000

Performance data: I have not taken it through the 1/4 mile yet. Top speed estimate: 130 MPH

Other: This car is geared for road performance rather than quick acceleration. It is a little sluggish off the line, but the 3rd and 4th gear performance is stunning. A five speed transmission would help greatly. When I have some spare time and $$ I would like to add a 5 speed. By using a lower rear end, around 3:73:1, the car would have more acceleration off the line and low rpm's in 5th for cruising.

Problems encountered since completion: None

Source of parts/conversion information: Junk yards/internet-excellent and extensive conversion information/friends/Kenne Bell/Local and not so local auto parts stores.

Conversion recommendations/advice I would give others: Be honest with yourself and do not start this extensive of a project unless you have the tenacity and money to complete it. I'm sure many conversions are started and never completed once the builder starts to realize how much dedication and time is required. I found the way to complete it was to do at least one thing each and every day, without fail.

Things I would do different on the next conversion: I would like to build a super charged V6 with fuel injection in another MGA. Maybe when I retire....!

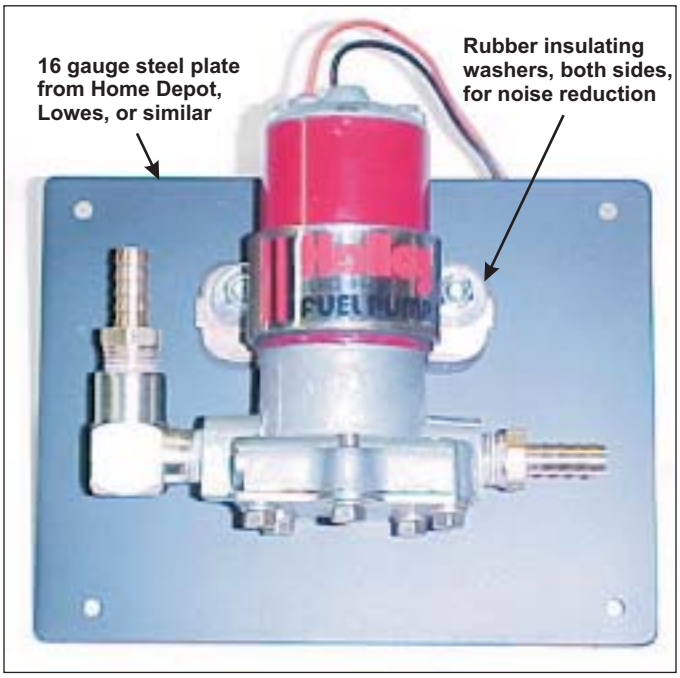
Sorta has an evil look about it, doesn't it?

FUEL PUMP INSTALLATION

By Dan Masters

Depending on the power level of your new engine, you may be able to get by with the stock fuel pump. Chances are, though, you will want to move up to a higher capacity pump - what good are all those horses if you can't keep them fed?

The fuel pump on my bone stock MGBGT failed last month, so I decided to replace it with the Holley I had on hand, which I had been saving to use when I finally got around to doing the V8



swap. I could have installed the new pump in the same location, using the same mounting details, as the factory installation, but I really didn't like that option. After a little head scratching, I came up with the scheme shown in the photos below.

When I finally get around to doing the engine swap, I will also redo the fuel tank location (to allow dual exhaust), and re-route the fuel lines. For now, though, this installation required no modifications at all to the fuel lines - just slipped new fuel lines over the old hard lines, routed them to the new pump, and clamped the lines in place using standard hose clamps. I'm not saying this is the best way to install a pump, but it works for me.

If you use a larger pump, I think this method will have definite advantages over most other locations. There is plenty of room for a large pump and all the fittings required to feed larger diameter fuel lines.

If you have the rear suspension out of the car, and have the car up on jack-stands, installing the pump is about as easy as it gets. If you're installing it the way I did, with everything in place (except the rear wheel, which I did remove), here are a couple of tips that you might find useful.

1) Make the holes in the battery box first, then hold the mounting plate up to the box and scribe locating marks for the matching holes in the plate. It is hard to get to the battery box brackets, so it is very easy to wind up with the holes slightly off from where you intended. The mounting plate can be drilled on your workbench, with a much higher degree of accuracy. By making the bracket holes first, you can insure a perfect match.

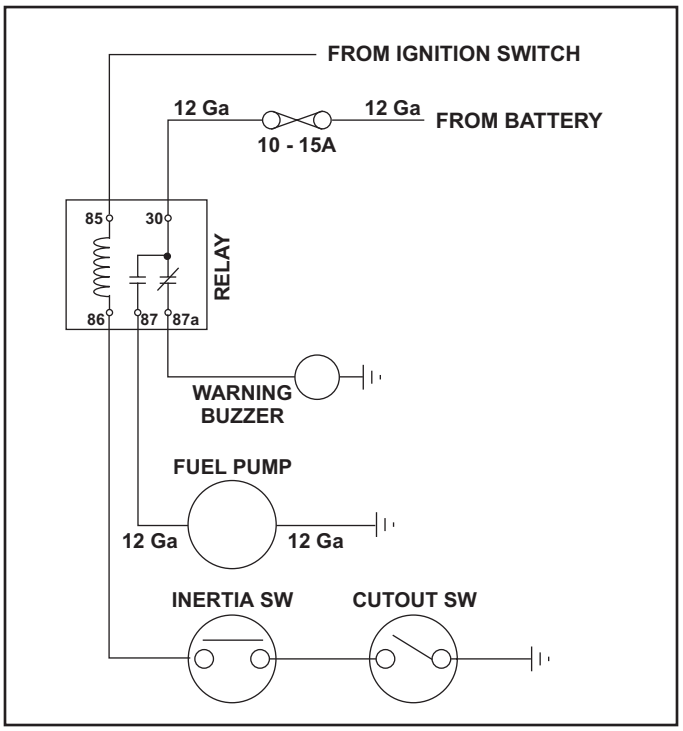
2) If you can, use a hole punch, rather than a drill to make the holes in the battery box. There isn't a lot of room for an electric drill. I have a Roper-Whitney hand punch that works very well for this. In fact, this punch works so well that I use it to punch holes in sheet metal even when I do have perfect access for a drill. The punch makes a clean, round hole, with no burrs.

3) Carefully check the location of the pump and the routing of the new fuel lines, to ensure there is no interference with the rear suspension. You certainly don't want to wear a hole in a fuel line, or crack the pump housing.

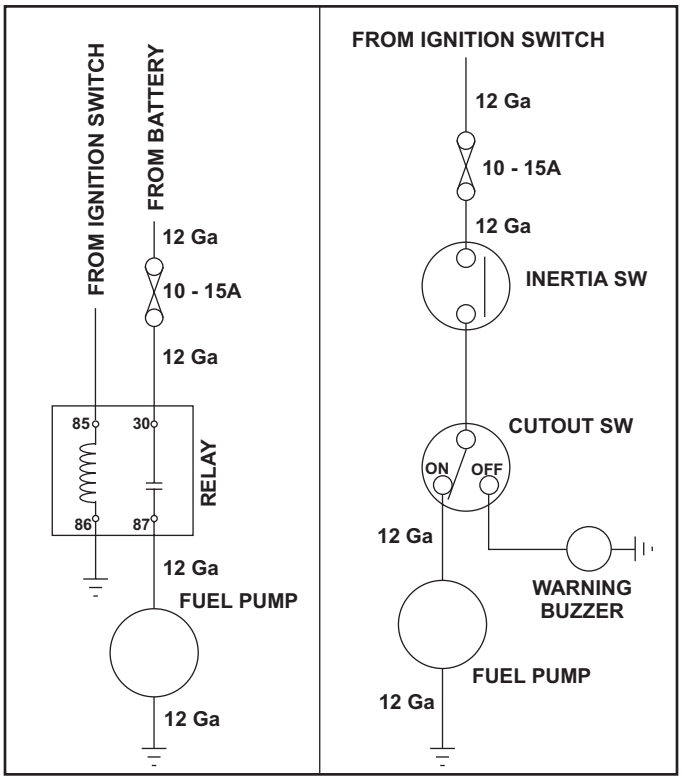
WIRING:

There are a few options for wiring the pump: The first option is to just wire the pump to the existing wires. I used a two-pin connector, but that isn't necessary. Simple splices will do, but it will be harder to remove the pump for repairs if needed.

A second option is to use a relay, wired as described in the May issue article on a custom wiring system. A revised schematic for this is shown below, modified to work without the relay panel as described in that article. See the May issue for a description of the circuit operation.



Two other options are shown in the diagrams below. The diagram on the left uses a relay, but has no provision for manual switching. Any time the ignition switch is on, the fuel pump is also on. Missing from this circuit is the inertia switch. I strongly recommend using an inertia switch - without it, the fuel pump may continue to operate following an accident, and could pump a lot of gas on the ground if a fuel line should be ruptured.



The circuit on the right describes the use of an "ON - OFF" control switch, along with an inertia switch, but no relay. When the switch is in the "ON" position, the pump turns on and off with the ignition key. When the switch is in the "OFF" position, the pump will not operate, but the warning buzzer will sound to remind you that the switch is off. This switch provides a bit of theft protection. If you use this switch, it should be mounted out of sight, but within easy reach of the driver. The buzzer serves to remind you to reset the switch before driving off and running out of fuel. If the switch is off, the buzzer will sound as soon as you turn on the ignition (don't ask me how many times I've heard the buzzer in my car - I'm more than just a bit forgetful).

Except as shown, the wiring should be 14 gauge. You could probably get by with using 14 gauge wire for all of the wiring, but you should use a pump that draws no more than a 10 amps if you the smaller wire.

The inertia switch should also be mounted where it's easy to reach by the driver, as you want to be able to reset it without stopping, should it operated from the shock of hitting a pothole in the road. In general, these inertia switched are not prone to mis operation, but why take a chance. If you use the wiring scheme presented on the previous page, the warning will sound if the inertia switch should operate. If the switch is in easy reach, you can simply reset it on the run, and not miss a lick.

CANADIAN CORNER

By Martyn Harvey
Canadian MGBV8 Register
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harv8@sympatico.ca

(Editor's Note: This is the first in what will be a regular series of contributions from Martyn. In this column, he will be reporting on the British V8 activities in Canada - British V8 related events, club activities, current projects, etc. All Canadian V8 enthusiasts are invited to contact Martyn with material for this column. There are a lot of enthusiasts from North of the border, so let Martyn - and us - hear from you. What about Great Britain and Australia? Any volunteers to provide reports from these countries?)

This summer I completed a long awaited project on HARV8 and once again, I have been reminded of the old adage "change one thing and you change another".

A couple of years ago I bought a set of RV8-style exhaust headers and they have been sitting on a shelf in the back of my garage ever since. I was really excited at the prospect of switching my block-hugger exhaust manifolds to the RV8 style. The benefits have been well proven and it would enhance the performance of HARV8 in several ways. So why has the process taken so long? I am sure that most MG enthusiasts can appreciate being in the position of wanting to make a significant modification to one's car but taking forever to get the job started. This was becoming one of those projects. Each time I started planning the job I realized how much of a challenge it would be and what the implications of making certain changes would be. There were also those ever-important factors of time and money to consider. The money question was easy to justify. After all, the headers had already been purchased. The time question was answered last August when my friend (and V8 mentor), Larry, came for a visit.

Larry had successfully performed the same surgery to his MGBV8 recently and was very happy with the results. He assured me that we could do the same to HARV8. Everything was in place to begin. In theory, it seemed like a fairly straightforward task:

- Remove exhaust system
- Remove block-hugger headers
- Cut holes in inner fenders for new headers
- Refit new headers
- Modify and refit exhaust system

In practice, it became a test of skill, patience, and determination. First of all, the car was jacked up and placed on four axle stands so I could slide, uncomfortably, underneath to remove the exhaust system. Since HARV8 is never driven in the winter, any securing nuts and bolts remove easily. The one-piece single exhaust system was unbolted and supported while I tried to separate it from the header down pipes. Although the pipes were clean and un-rusted they proved to be very difficult to separate and I didn't want to damage them in any way. Eventually success was achieved with the aid of levers and sharp, careful blows from a lump hammer! Next, the manifolds were unbolted from the heads and lifted out of the engine bay. This process was not as easy as it sounds. They were originally fitted to the engine before it was lowered into the car. The shape of the pipes necessitated the engine being raised considerably in order for them to clear the frame rails as they were lifted out of the engine bay. This was a time-consuming activity since the engine mounts are a little awkward to access. It is amazing the contortions the MG enthusiast's body can accomplish when asked!

It soon became apparent that the change of headers would adversely affect the SPAX shock absorbers which I have enjoyed since the car was built. Since the engine is located in the original factory position, the header down pipes would occupy the same space inside the wheel wells as the SPAX telescopic shock absorber brackets. Until I can modify these brackets, it is a choice between RV8 style headers or SPAX front shocks.
If anybody has done this modification, I would appreciate hearing from you. In the meantime, I made the decision to return to the Armstrong lever shocks, which meant that I had to flush them out, refill with the appropriate hydraulic fluid, and re-install the shock valves (the Armstrong shock valves are removed when SPAX shocks are fitted since the damping action of the lever shock must be disabled). I learned a lot about the operation of these shock absorbers, but unfortunately, it was another time-consuming activity. I experimented with different fluid viscosities and decided to use a 30 weight hydraulic fluid which made them slightly stiffer than stock. I also learned the correct way to install the shock valves. I must confess to installing them incorrectly, which, therefore, rendered them completely useless. I couldn't understand why the car was bouncy even though I had used a heavier fluid. Eventually I figured it out, but I must have had the front suspension apart several times in one day!

When it was time to cut the holes in the inner fenders I was wishing we had a template. Larry reminded me that we had something better - his car! After taking measurements from his engine bay, we soon had the future holes outlined with masking tape. The exhaust ports were sealed off with tape and the carburetor covered with plastic to prevent the ingress of any debris caused by the cutting procedure. Of course the battery had already been disconnected for safety reasons at the start of the project. I must say that I was more than a little hesitant about cutting holes in my engine bay but I believed the end result was worth it.

Four holes were drilled to delineate the corners and then Larry performed the surgery carefully and accurately using an electric hand grinder with a 4-inch cut-off disc. The new headers are a two-piece design enabling them to be fitted without removing the engine. However, the valve covers did need to be removed each time the headers were trial-fitted and we had to raise the engine off its mounts to manipulate the header into the hole. This was a necessarily time-consuming activity because it was crucial that the holes were cut as small as possible. They need to be efficient and have a professional appearance. The holes were carefully shaped into their finished size using a half-round file and emery cloth. The edges were then painted and we were ready to bolt the headers on.

The only thing that prevented me taking a test drive was the lack of an exhaust system. The next morning the neighbours were awakened to the awesome sound of HARV8 heading off to the local muffler shop! I will also be heading off to the local "dyno shop" soon to find out if we improved the engine efficiency. It feels good to have completed a project that was at the top of my "to do list" and my initial driving impressions are definitely favourable. That old adage "change one thing and you change another" certainly rang true throughout the project and caused some frustration. However, I do love one resulting change - that wonderful new raucous V8 sound. mh

FLYWHEELS

By Dan Masters

Sure, we all know what a flywheel is - it's that heavy round thing with teeth on it that fits on the end of the crankshaft, engages the starter, and holds the clutch. Yeah, but what *really* is a flywheel? Basically, a flywheel is an energy storage device; you have to put energy into it to make it spin, and you have to take energy out of it to make it stop. In a vacuum (no wind resistance) and with perfect bearings (no friction), a flywheel would continue to spin forever, once put into motion, as there is nothing there to take energy out of it.

Try this: Take your kids to the park, and put them on the merry-go-round. Gather up all the kids you can find, and their parents, and really load it up. Now, try to make it go around. Hard, isn't it? You may have to get help from your friends to get it really spinning. Once you get it started, try to stop it. Very difficult. When you do get it stopped, have everyone get off, and try again to get it started spinning. Without the extra weight (mass), you'll find that it's much easier to spin. Much easier to stop too.

Ok, so what does all this have to do with the flywheel in your car? Consider the following two scenarios:

A) You're on your way home from the local home improvement store in your pick-up truck, loaded down with lumber, cinder blocks, mortar, etc. - more than you really should be carrying in that truck. You're sitting at a stoplight, and when the light turns green, you try to take off. With all that load in the truck, your poor little wheezer engine just doesn't have the necessary oomph (torque) to pull you off the line. In order to get moving, you have to really rev the engine up to get it into its maximum torque rpm range, and slip the clutch until you're finally moving. In this situation, you could really use all the help you can get in the form of stored energy from your flywheel. Here, you'd like to have the heaviest flywheel you can get - the heavier the flywheel, the more stored energy.

B) You're running an F1 car, under the yellow, in the final laps of the race, following the pace car at what seems to be an excruciatingly slow speed. When the flag goes to green, you want to get off the line as fast as you can, out accelerating your competition. You have your car in the proper gear to put the engine in the rpm range for maximum torque, you have plenty of torque, and your car weighs next to nothing. In this case, you do not want to spend any of your engine's precious energy spinning up a heavy flywheel. You want all of that energy directed to the rear wheels. A heavy flywheel here would be an unnecessary burden. In fact, in this case, no flywheel at all would be the preferred condition.

This then defines the prime criteria for flywheel weight considerations:

THE LIGHTER THE CAR, AND/OR THE MORE TORQUE THE ENGINE HAS, THE LIGHTER THE FLYWHEEL NEEDS TO BE. CONVERSELY, THE HEAVIER THE CAR, AND/OR THE LESS TORQUE THE ENGINE HAS, THE HEAVIER THE FLYWHEEL NEEDS TO BE.

The flywheel also performs another function as well, one of smoothing the engine's power pulses. As the engine turns, each cylinder goes through two distinct phases - the compression stroke and the power stroke. On the power stroke, the piston is driving the crankshaft. On the compression stroke, the crankshaft is driving the piston. Thus, for every other revolution, the crank alternates between "being twisted" and "twisting." The flywheel absorbs energy on the "being twisted" phase, and then returns the energy on the "twisting" phase, helping to smooth the engine pulsations. On a single cylinder engine, this pulse damping is of significance. On a one hundred cylinder engine, the pulses would be distributed so evenly that the flywheel damping would not be needed. For this reason, a heavy flywheel would be of less benefit to a V8 than it would be to a four-cylinder engine.

The damping effect of the flywheel is also assisted by the damping action of the harmonic balancer. In addition to the "flywheel" effect of the relatively heavy damper, the elastic material between the inner and outer portion of the harmonic balancer adds to the smoothing effect. This elastic material absorbs some of the "being twisted" forces, and gives back during the "twisting" phase.

So, what is a good weight for a flywheel in a British V8 conversion? Well, most of the British cars we're concerned with here weigh around 2500 pounds or less, relatively light weight as cars go. If the V8 engine we're installing doesn't have pretty good torque, we wouldn't be putting in the car in the first place, so we can count on good torque values. Looking through the various flywheel vender catalogs, we find flywheel weights ranging from 15 to 50 pounds.

Ford Motor Company uses a 40 pound flywheel in their stock cars equipped with a 302ci V8. For their high performance crate engine, with torque values around 350lbft, they supply 27 pound flywheels. Generally, they expect these engines to be put into cars weighing over 3000 pounds, so the 27 pound figure would seem to be the upper limit for our applications, assuming a fairly low torque motor.

For a really hot engine, with stump pulling torque, a 15 pound flywheel would be about right. Ted Lathrop is running a 15 pound flywheel in his 350 Chevy powered TR6, and it feels to me to be just about right. His car weighs less than 2500 pounds, and that engine should produce in excess of 350lbft of torque. I have driven his car, and it is just about perfect. Believe me, getting off the line is ***NO PROBLEM!*** Nor is there any significant vibration. For a lightly modified BOP/Rover 215ci engine, which are quite often used n a MGBV8 swap, perhaps a 22 pounder, such as those offered by ***D&D Fabrications***, would be more appropriate.

That heavy round thing with teeth on it isn't the only flywheel you have on your car - you have four more, one on each corner of your car! Your tires and wheels are also flywheels. Just like all flywheels, the heavier the tire/wheel combo, the harder it is to get it spinning, and the harder it is to get it to stop. Unlike the engine flywheel, though, there is NO purpose to having extra weight on the tires and wheels. The ideal weight here is ***ZERO!*** Besides the flywheel effect, extra weight here is just that much more mass to get moving off the line, and that much more mass to stop. Not only does the weight effect acceleration and braking, wheel and tire weight has a tremendous impact on handling as well. The heavier the tire/wheel combo, the harder it is for the suspension system to control the tire/wheel movement, and the harder it is to keep the tire in correct contact with the road. There is, then, a triple whammy to pay for extra weight on your tires and wheels. Ample justification, I think, to spring the big bucks on a set of super lightweight aluminum or magnesium wheels! V8

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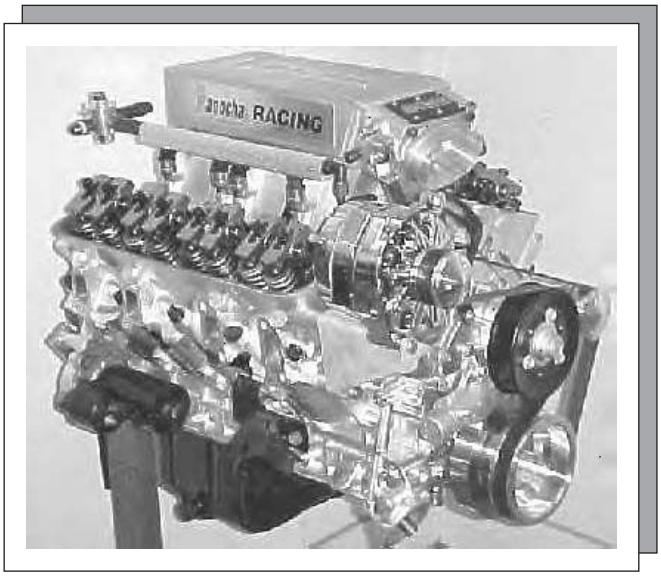

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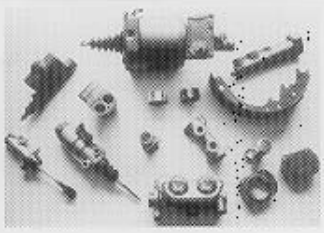

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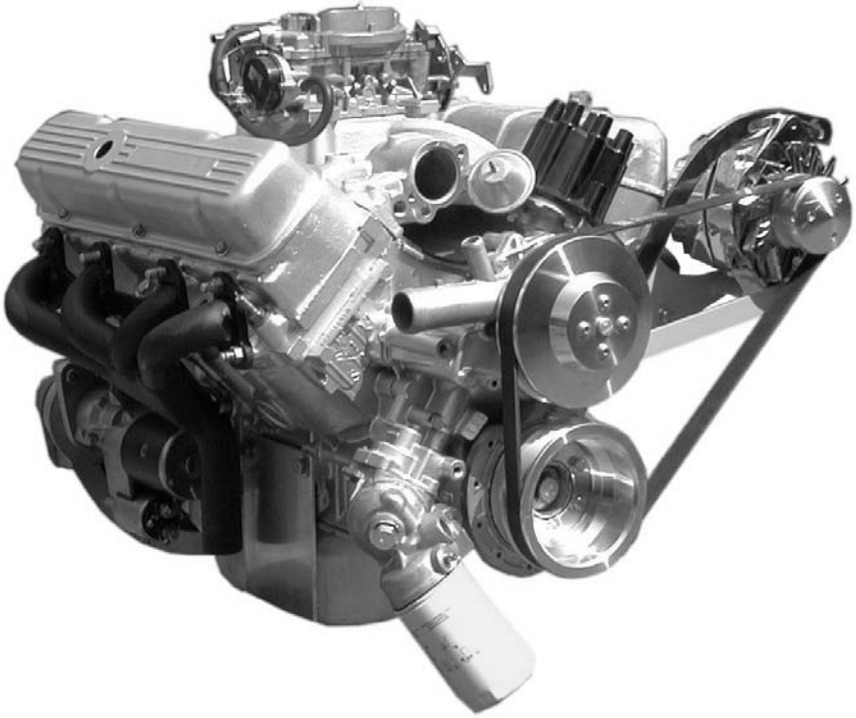

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