March 2010

Morris Gazette

THE OFFICIAL NEWSLETTER OF THE ARIZONA MG CLUB

FROM THE DRIVER'S SEAT

President, Mary Urich

21 Reasons to Like British Cars

1. *You look good driving one.*
2. They reduce your IRS burden because you have less cash on which to owe income tax.
3. They are not only really taxable as assets when the parts are spread all around your garage and basement.
4. You lose weight because you have less money to spend on food.
5. There is no place for a computer to be connected to download failure codes.
6. They're like cats: they don't love you back, but you like 'em anyway because they're cute.
7. They're like dogs: the perfect companion for a little excursion. Yes, they leak on the floor sometimes…
8. You always wanted to drive the clown car when you saw the circus.
9. People tend to be a little wistful when they admire them, instead of lustful.
10. *You look good driving one.*
11. You don't really need a radio because the engine sounds so cool. What's a CD player?
12. They are not as unreliable as everyone says. Just kidding!
13. Driving one is a process in and of itself, not just a means to get to a destination.
14. Working on one is a process in and of itself, jot just a means to keep a car running.
15. They are easy for the uninitiated to learn to work on, but will still challenge you for the rest of your life.
16. They connect you to a certain point in time at the country of origin; to a proud history of British automotive achievement.
17. Every time you score a NOS part on eBay it's like Christmas and your birthday, all at the same time.
18. Driving one turns tedious little errands into a brain massage.
19. There's just something very nice about real wood dashboards and trim.
20. You don't mind getting out-dragged by a minivan because, well, the jerk is still stuck with a minivan!

You look really, really good driving one!

Courtesy Cape Cod British Car Club Ltd., website

Sabino Canyon Music Festival Trip

Come for the day or stay!
March 13 – 14 (see flyer)

Highlights in This Issue ….

THANK YOU FOR YOUR RENEWAL:

Taz Waller & Katy Burke, Wittman, 1952 MGTD

Andy Kurtz, Gold Canyon, 1978 MGB GT

Charlie & Suzi Wright, Glendale, 1964 MGB

MEMBERSHIP

WELCOME NEW MEMBERS!

Bradley Hardin, Sierra Vista, 1978 Midget

Mike Brower, Peoria, 1979 MGB

DON'T MISS RENEWING YOUR MEMBERSHIP!

Watch for your name in this section of the newsletter and if you see it, mail your check and the Fast Registration form (on the last page of every newsletter) to the address on the form. Thanks!

UPCOMING RENEWALS

Missed for February
Steve Westerdahl

March
Tom Kinnaman
Jerry & Marda Larson

April
Michael Griffis, Flagstaff, 1972 MGB GT
Bill & Penny Meyer, Prescott, 1967 MGB
Joseph & Dollie Shannon, Safford, 1971 Midget
Philip & Mary Jane Smid, Tempe, 1979 MGB, 1960 MGA, 1962 Triumph
Steve Thompson, Scottsdale, 1971 MGB

AZ MG CLUB EXECUTIVE BOARD 2010

President	Mary Urich	(480) 664-3655	murich@cox.net
Vice President	Carl Anglin	(602) 971-1385	cfanglin@cox.net
Secretary	Ed Striffler	(623) 478-0282	estriffler@msn.com
Treasurer	Ginger Pottenger	(602) 548-8774	glc17@cox.net
Membership	Bob Taylor	(480) 730-3555	taylormgb@cox.net

Arizona MG Club Meeting Minutes

Meeting Date: February 23, 2010 @ 6:00 pm

Meeting Location: The Original Hamburger Works – Phoenix AZ

Board Attendees: Mary Urich
Ginger Pottenger
Ed Striffler
Bob Taylor

Other Attendees: Don Pottenger
Tim Hovan

The meeting was called to order with a call for agenda items at 6:25 pm at the Original Hamburger Works restaurant in Phoenix.

Ginger Pottenger presented the January 2010 financial statement for Board review. The club was net positive for the month given renewals and new member dues.

Ginger Pottenger will check with Tracy Sattler to confirm that no checks have arrived at the former post office box.

Ed Striffler will look back at emails from potential new member Mike Brower. He may have sent his dues to the former post office box.

Mary Urich has been added to the bank account. She will be signed up for online access as a checks and balances measure.

The development of the new member letter is still in the works.

Ginger Pottenger contacted the name badge vendor and made arrangements to open a tab and satisfy invoices as incurred.

Bob Taylor will order the new member badge for the January new member(s).

The Board decided that new member badges need to go to Bob Taylor before being shipped to the new member as a quality control measure.

Mary Urich will ask Jonathan Baney about the status of the website upgrades.

Mary Urich reported that regalia research was still underway.

Bob Taylor identified the need to contact Sharon Gray to see if Larry McLaughlin is still in possession of the regalia of years past.

The Board discussed that the Bisbee trip will be moved to November. Details will be passed from Ginger Pottenger to Carl Anglin.

Tim Hovan appealed to the Board to invite club members to Yarnell Days on May 1st. It will be a family event with a parade at 10am. Details forthcoming. Tim Hovan to develop the flyer and coordinate with Karen Timian for inclusion in the upcoming Morris Gazette.

Karen Timian will tutor Bob Taylor on the letters/emails she has previously sent to members who have been slow to renew their memberships.

Members of the Board reported that the Valentines Brunch event on February 13th was a success. More impromptu events will be peppered into the events calendar.

Carl's Corner

A lot of fun events planned for our club starting with the Sabino Canyon Music Festival this month. You can drive down for the day or spend the evening with friends at the Comfort Inn. See the flyer for meeting and departure times and hotel info if you want to stay the night and take a tram ride up Sabino Canyon on Sunday before heading home.

The Sattlers are planning a Treasure Hunt for us in April. Have fun and drive your car with the top down in our beautiful weather and don't forget the pool party in June.

Another club member, Tim Hovan has invited us up to Yarnell to participate in the parade there on May 1st. After the parade we can see all the artists and craftsman's work and have lunch. Then, if you want, we'll head up and join our friends in the Mile Hi Club in Prescott for their annual Barbecue that evening.

Jim Keller, Payson member has suggested a September Run to the Pines as a fun trip. We can meet at his home for rolls and coffee in Payson, then head out to get gas and caravan to Show Low/Pinetop area. There is a fairly large car show there, he estimates about 500 cars. This would be fun to drive our cars up there just to see everyone else's

cars. He suggests that we may not want to participate in the Car Show part, since that would mean staying both days in one place. His idea is to enjoy the show, stay possibly at Honda Casino, and head back to Payson Sunday afternoon. More details as I get them – right now in the interest of submitting my report, I don't have dates and times. Contact me at cfanglin@cox.net or Jim Keller at jrandconn@q.com if you have an interest in attending.

The New Mexico Club has also invited to a three day event they are holding in September. This 3-day event will include a car show, road rally, tours and a banquet with awards, located in the beautiful, Sierra Blanca Mountains of southern New Mexico, the home of Smokey Bear! Look to the BAOA web site for registration information (www.baoa.org). Look to the web page for the event motel. Any interest?

How about a trip to the World Wildlife Zoo – they have been advertising a new aquarium display. Located at 165th Avenue and Northern, Daytime Admission to Zoo & Aquarium **is** Adults: $26.50 + tax, Kids 3 to 12 Years: $14.25 + tax, and 2 & younger free. Groups of ten or more get a $1.00 per admission discount. Admission is good for both the Zoo and the Aquarium. Open 9 AM to 6 PM 365 days a year… We just need someone to step up and take charge to complete the planning and the trip.

We hope to see many more of our membership taking part in this year's events.

Send me comments at cfanglin@cox.net

Arizona MG Club 2010 EVENTS CALENDAR

March 13 – 14 – Sabino Canyon Music Festival Weekend trip – Hosted by Carl and Chris Anglin – See Flyer in newsletter for meeting and departure times. **C**ontact cfanglin@cox.net or call 602-971-1385 to RSVP for this event

* March 7, 2010 – Sunday – Wheels of Britain at Heritage Square

Sunday, April 25th – Treasure Hunt – hosted by Gary and Tracy Sattler – See Flyer in newsletter for meeting and departure times. Contact the Sattlers at gjsattler@cox.net or call 602-547-2317 to RSVP for this event.

* April 10 & 11, 2010 – Southwest Unique Little Car Meet, no location set

* April 17 & 18 BEAT – Registration and information at www.BEATAZ.com

Saturday May 1 – 2(? Your choice**) MG Club in the Yarnell Days Parade & Prescott Bar-B-Que.** See flyer in newsletter for details

Saturday June 12 – Pool Party & **Tech Session** - Hosted by Gary & Tracy Sattler - Tech Session will start at 2:00 PM, and Pool Party will start at 4:00 PM.

July TBD – Drive & Dinner – Hosted by Mary & John Urich – Details to follow

Saturday August 21 – Pizza Party at Barro's – Details to follow

September TBD – Run to the Pines – Jim & Connie Keller Hosting

* September 24-26 - 20th ANNUAL RIO GRANDE VALLEY REGIONAL RENDEZVOUS
ALL BRITISH CAR MEET- RUIDOSO, NEW MEXICO SEPTEMBER 24-26, 2010.
LOG ONTO WWW.BAOA.ORG FOR DETAILS AS THEY'RE POSTED.
CALL KEVIN KITTLE FOR REGISTRATION INFO (505-345-4207).

October TBD – Drive to San Tan Flats for Dinner – Jonathan & Leslie Baney hosting – Details to follow

November 1-3 – Trip to Bisbee – Hosted by Ginger & Don Pottenger – Details to follow

December TBD – Holiday Dinner, Gift Exchange and Toys for Tots

*** indicates not an AZMG Club Event**

March 13 – 14 – Sabino Canyon Music Festival

Hosted by Carl and Chris Anglin –

Sabino Canyon. Ruggedly Scenic.

If you're looking for stunning views, fresh air, and a serene spot to get to know the natural side of Tucson, a trip to Sabino Canyon is in order.

Sabino Canyon is located in the **Coronado National Forest** in the foothills of the **Santa Catalina Mountain range**. The mountains around Tucson are affectionately called the Sky Islands. Imagine these sky islands towering over the desert floor, offering a respite from the heat found down below.

The Friends of Sabino Canyon Music Festival is being held on Saturday March 13 from 12 noon until 6 PM, no admission but suggested donation of $5 per person.

We'll meet at Fiesta Mall SE parking lot in Mesa at 8:30 AM Saturday, and depart at 9 AM, taking the scenic back route to Tucson.

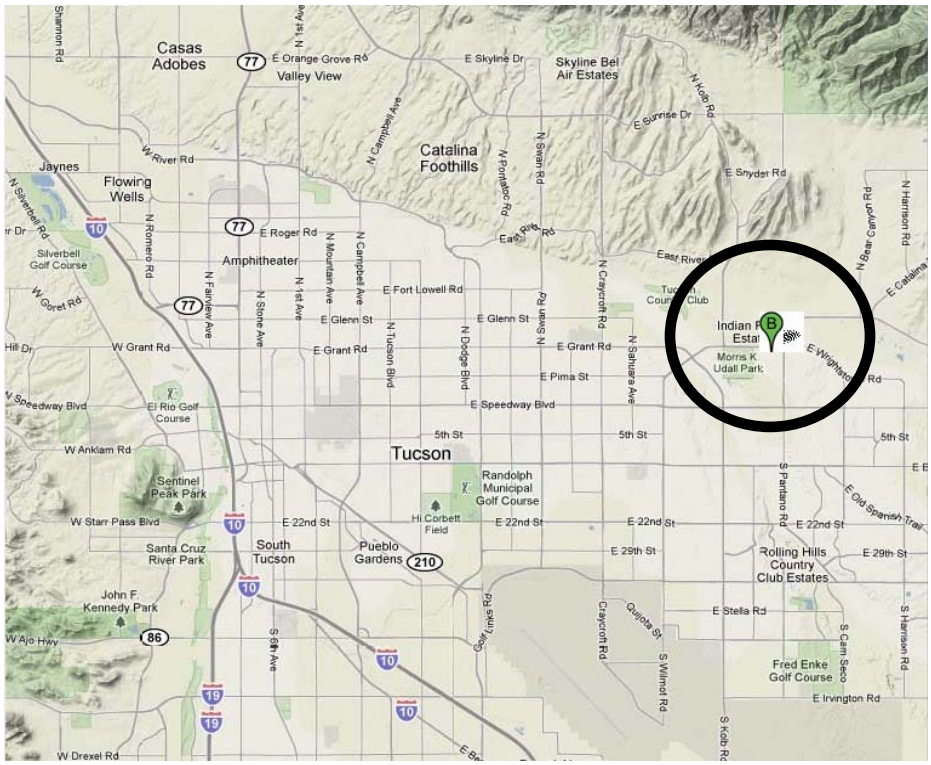
Call the Comfort Suites, 7007 East Tanque Verde Lane, Tucson, AZ -at 520-298-2300 to reserve a room and mention the MG Club for the special rate. $98.99 for 1 King or 107.99 for a suite that sleeps six (two doubles and a sofa bed)

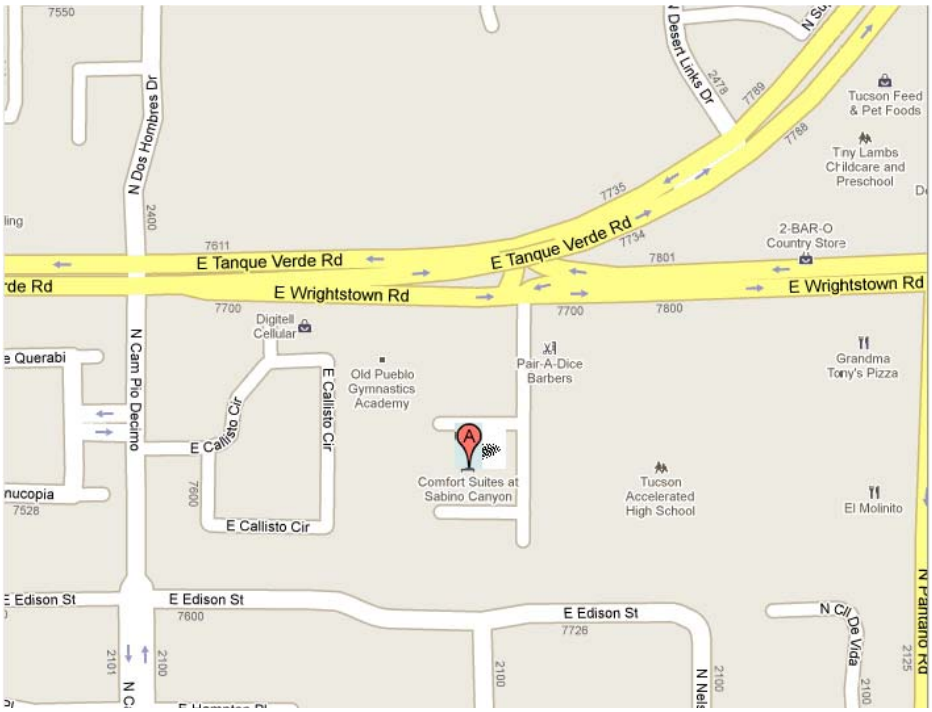
On Sunday, we'll take a tour on a tram up Sabino Canyon and then head for home

To RSVP or for more information – Contact Carl Anglin at cfanglin@cox.net or 602-971-1385

March 13 – 14 – Sabino Canyon Music Festival

Hosted by Carl and Chris Anglin –





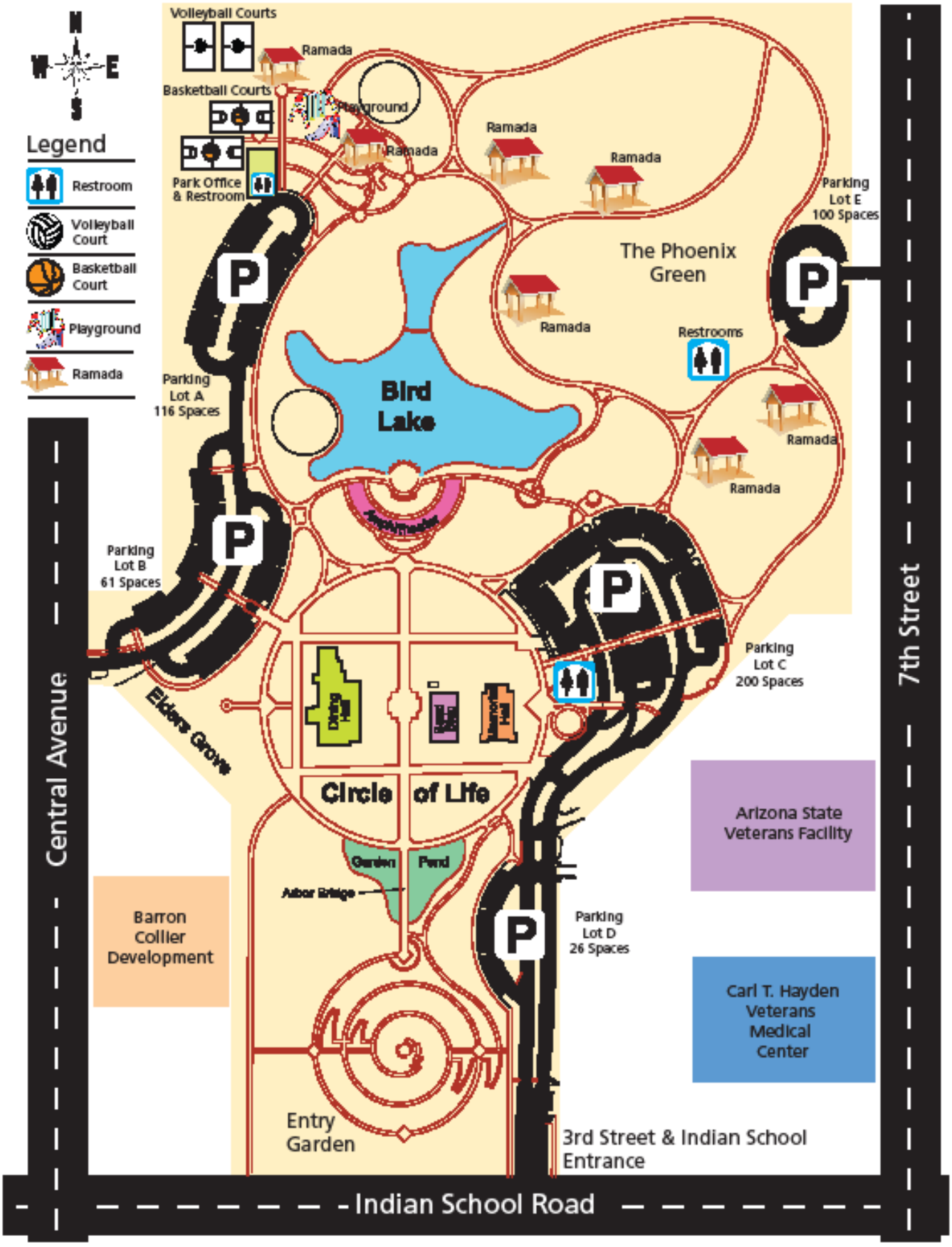
Call Comfort Suites 7007 East Tanque Verde Lane, Tucson, AZ -at 520-298-2300 and mention the MG Club for the special rate. $98.99 for 1 King or 107.99 for a suite that sleeps six (two doubles and a sofa bed)

Blimey, Mates... it's a bloomin' Treasure Hunt

Sunday, April 25th
meet at Steele Indian School Park, Parking Lot "E"
on 7th Street (see map)
@ 0900 AM We set sail @ 0930 AM

R.S.V.P. to the Sattler's by April 23rd
@602-547-2317 or
gjsattler@cox.net

Steele Indian School Park - 300 E. Indian School Road



Everyone Loves a Parade!

Come and be a part of the 2010 Yarnell Daze Parade on May 1st

We'll meet our hosts, Tim and Brenda Hovan in the parking lot of Sunrise Chevrolet, just outside of Wickenburg between 8 and 8:30 on Saturday, May 1st. Then it is onto Yarnell and in place for the Parade by 9:00 a.m.

After the parade ,participants can shop the many arts & crafts vendors along highway 89 and take in the sights before lunch at the Hovan's. Hamburgers & hot dogs provided, bring something to share.

Evening your choice – head for home or up to Prescott for the Mile Hi British Club's Annual Barbecue. If you are going to the Barbecue, bring your meat to grill and a dish to share. If you need hotel information for Prescott, please contact Karen Timian at raktimian@q.com.

Questions? Call Tim at 480-861-1704

Please RSVP to Tim Hovan at Thovan@pgage.com by April 28th so Brenda and Tim can plan the meal.

Tech Articles

The tech articles that we've been publishing have been primarily B related. However, we do have a number of A and T members. I have contacted the A and T Registers to get articles from them so we can alternate these tech articles amongst the models so everyone hopefully gets information they can use. In many of these cases, I received pdf files so please bear with me on the quality. Hopefully it will be adequate. Hope you enjoy them.

The Editor

TECH TALK

Where the Rubber Meets the Road ..... Establishing a Base Line

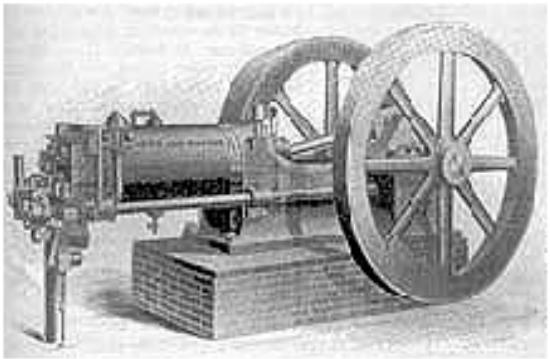
By; Dave Barnett
Vintage MG Club of Southern California

What's a Dyno? How can I use it to measure the differences in engine modifications, and dial in a stock or modified engine?

When talking with fellow automotive enthusiasts and the word Dynamometer or Dyno for short, comes up, the subject can conjure up all kinds of images in ones mind. Things like big horsepower and monster torque, bragging rights at the local pub, and for some, statements like "I don't race a dyno, I race my car". The mystique surrounding this marvelous machine can be incredible.

This article is not about pushing an engine to the limit, instead it's about what I call non-destructive testing. In short, we test the car in the environment in which it will be used. We will briefly examine:

- The history of the four-cycle engine.
- The dynamometer and what it measures.
- A look at various types of dyno's.
- Why Dyno-tune your MG?
- A day at the dyno with Dave Evans of EvanSpeed Mobile Chassis Dynamometer Service, and my humble TD.



Prototype "Otto-cycle" four stroke engine circa 1876

History of the four-cycle engine

Nikolaus August Otto (1832-1891), a German Engineer's stroke of genius was an engine with valves timed to produce *four* separate strokes. His prototype engine ran in 1876, by 1880 over 50,000 "Otto-Cycle" engines were built and sold in the US and Europe, and effectively started the internal combustion industry.

Otto produced an engine in which the piston made four strokes. As the piston moved outward (first stroke), a mixture of air and fuel would be drawn into the cylinder. As the piston moved inward (second stroke), the mixture would be compressed, and at the height of the compression, a spark would set off an explosion. The explosion would drive the piston outward (third stroke), which would supply the power that did the work. As the piston moved inward (forth stroke), the waste gases would be forced out. The cycle would then be repeated. This is the activity that takes place approximately 24,000 full Otto cycles per minute when our MG's are motoring down the road.

Otto's assumption that the intake and exhaust valves should be opened and closed right at Top Dead Center (TDC) or Bottom Dead Center (BDC), is based on the belief that the air-fuel mixture and exhaust gasses start and stop insistently. At very low engine speeds, like 160-rpm peak speed of Otto's original four-cycle engine, this assumption is not far off from the truth. However, as engine speeds increase to 2,500 rpm and higher, gases develop considerable momentum. In addition, finite amplitude waves that are within the induction

and exhaust systems, carries substantial energy and influence mass flow.
This complex phenomenon changed everything. To a great extent, it is the understanding and harnessing of this phenomenon that determines the success of most engine modifications. Induction design, camshaft profiles, cylinder head ports, valve size, exhaust tubing and length, and many other engine components must harness the hidden forces in the flow of gasses if they are to produce optimum power, efficiency and/or economy.

The Dynamometer and what it measures


Rich Gaspard baron de Prony

The need to accurately measure the power output of and engine has been around since the days of the steam engine. In 1821 Gasoard Clair Francois Marie Riche de Prony (1755-1839) invented the "de Prony brake" Dynamometer. This invention was based on ideas of Jean Nicolas Pierre Hachette (1796-1834) and Pierre Simon Girard (1765-1836).

Before we continue exploring the evolution of dynamometers and engine testing, It's helpful to understand the forces that a dyno must absorb and how these forces are utilized to produce measurements of **Torque** and **Horsepower.**

Understanding torque and horsepower can be seam to be complicated and confusing. In simple terms torque as it relates to our MG, is the force that propels our cars down the high way. Horsepower is the force that determines how fast the force (torque) makes it happen.

Torque

Let's take a look at physics behind what "comes out" of an engine and what goes into the dynamometer. To begin, let's define the *force* the engine produces as something we will call *torque*. Richard Feyman, (1918-1988) once described this concept as: "Force is the stuff that is needed to *make things* move in a straight line and the stuff that *makes something rotate* is 'rotary force,' or 'twisting force,' and that is called torque."

The engine is now generating rotary *motion*. According to Feyman: "If we maintain the analogy between straight-line and angular motion, force times the distance of movement is work, and force times the swept angle of movement is also work"

David Vizard author of the book Tuning BL's A-Series Engine explains torque this way; the lever arm length in an engine is, to all intents and purposes, half the stroke length. The distance from the crank center to the big end centerline, and the force the engine exerts at that radius is due to the pressures in the cylinder. The stroke length can't be changed, at least not without redesigning the engine. The pressures in the cylinder are limited by the amount of air drawn into the cylinder.

So ultimately the torque output of an engine is limited by just how effectively we can make it breath. The more air we can cram into the cylinder then all other things being equal, the more torque the engine will produce. With out the help of tuned intake or exhaust systems, an engine reaches the limit of breathing in a normally aspirated form at 100% Volumetric Efficiency. Volumetric Efficiency refers to how breathing efficiency has been achieved. Unmodified engines usually range between 70 and 85% cylinder fill. VE for a modified engine can be as high as 130%. Airflow generally

increases with rpm until it reaches the maximum flow capacity of the valves, ports, intake manifold, carburetors or whichever is the major restriction. Once maximum flow capacity is reached it remains constant despite increases in rpm. At this point the engine becomes "flow limited," therefore volumetric efficiency and torque go down. If you increase the engine cylinder filling capability, the torque peak moves up the rpm band along with horsepower. The greater the cylinder is filled, the greater the force exerted on the piston by the expanding gases and the greater torque.

An engine is sometimes referred to as a "torque engine," meaning that it was built predominately with torque in mind. In reality, there is no such thing because any engine that has torque also has horsepower. At some point within the operating range of the engine, as rpm increases, the peak torque will cross over and peak horsepower will increase.

Horsepower

James Watt

James Watt (1736-1819) a British engineer and inventor of the steam engine, (Based on the work of Thomas Savery and Thomas Newcomen, who created a steam-powered pump called the "Miners' Friend"), dreamed up what we are all searching for: Horsepower. Watt wanted to know how many horses his steam engine would replace. He found that a robust horse could lift a 150-pound weight 220 feet in the air (using a pulley system) in 60 seconds. He eventually settled on the figure that is now the currently accepted standard for one horsepower: 33,000 pound-feet per minute or 550 pound-feet per second.
Torque and horsepower are often confused, although they are closely related in the equation for measuring horsepower. By definition, horsepower is equal to force multiplied by distance; divide by time as expressed below;

$$hp = \frac{2\ pi\ x\ torque\ x\ rpm}{33{,}000}$$

To simplify the equation we can substitute Watt's 17th Century definition of horsepower, by using the constant 5252. If 33,000 pounds-feet per minute is divided by 2 times *pi* (6.2832), the result is 5252.1008 rounded to 5252 therefore;

$$hp = \frac{torque\ x\ rpm}{5252}$$

If we want to develop a torque curve relative to

$$torque = \frac{hp\ x\ 5252}{rpm}$$

horsepower then;

Since horsepower is equal to torque multiplied by rpm, any torque increase results in a power increase at a given rpm level. This is why it is better to concentrate on improving torque instead of horsepower for the best performing engine.

A look at various types of dyno's

I think that it's important to note up front that there are so many variables involved in testing an engine on a dynamometer that trying to relate the results from one type of dyno to the next is foolish. Just getting repeatability on the same dyno can sometimes be very difficult.

An Internet search of the US Patent Office turned up an astounding 2,398,174 patents relating to the Dynamometer. Well I think we can narrow it down to the following types:

- Engine Dynamometer
- Stationary Chassis Dynamometer
- Rolling Road Mobile Dynamometer

- Driving your own Dyno and measuring performance using an Accelerometer

Engine Dynamometer

What is an engine dynamometer and what is it used for? An engine dynamometer primary function is for Research and Development. It is normally located in a test cell. This is an enclosed room where the complete environment is controlled.

There are several companies that manufacture engine dynamometers. The one that I am most familiar with is the SuperFlow SF-901. To my knowledge this product is one of the most accurate engine dynamometers available today.

SuperFlow 901 engine dynamometer

Because we have our engine in an isolated area, we can make changes to the engine, make a pull and immediately review the results. (Pull refers to the handle that is located on the dyno console). Today, the SF-901 can be used in conjunction with a computer and can provide *real-time* graphs of power and torque and other variables.

SuperFlow 901 Operators console

If we wanted to compare the power differences of a well-ported stock cylinder head and let's say aluminum "Laystall Lucas" head, this is the dyno that would be used. The engine dynamometer is also used to establish a base line for a new engine combination.

The SF-901 can monitor over 80 Channel Descriptions, i.e. engine torque, engine power in horsepower, brake specific fuel consumption, volumetric efficiency, all kinds of pressure and temperature measurements.

What most people seam to be interested in is horsepower output. On an engine dyno it is often measured as bhp (brake horsepower). This is number can be misleading if the engine being tested does not have a fan, generator, the exact exhaust system used, etc. Additionally, a correction factor is used. The industry standard corrected data for 29.92 inches Hg, 60 degrees Fahrenheit dry air. These are the highest numbers you will see for an engine tested in this manner.

Stationary Chassis Dynamometer

The British actually use a more accurate description for this dyno, they call it a Rolling Road dynamometer.

Dynojet's Automotive Chassis Dynamometer is widely used in the country for testing and is the officially licensed NASCAR dynamometer. This chassis dyno uses 48-inch knurled, precision balanced drums. The car is actually driven and can attain speeds up to 160 mph.

Dynojet Automotive Chassis Dynamometer

Let's say that we have built what we believe is the ultimate XPAG or XPEG engine. Now we want to install the engine in the car. This is where the rubber really meets the road, well almost.

First off we will find that the horsepower and torque are down from the results that we recorded on the engine dyno. We are now testing our MG at close to 400-500 feet above sea level. Lets say that we recorded a 'corrected' 100 hp at the flywheel. Now we are down to 87-installed hp. That's because the 12

hp we lost is something we never had in the first place, due to changes in air density, and increased temperature in the engine compartment. Next we have losses in the transmission, rear axle, and tires. It's entirely conceivable that the 100 hp we started with is now down to 60-65. If we through out the initial 12 hp we didn't have to begin with we are now producing 72-77 net horsepower.

Rolling Road Mobile Dynamometer

When using a rolling Road Mobile Dynamometer we can have the dyno come to us or locate it in an area that is easily accessible. The reason that I am bringing this up is that I believe that we are very lucky to have one in our area.

David Evans owner of EvenSpeed mobile chassis dynamometer service, is located in upland. David specializes in dyno-tuning British cars. He is well versed in tuning SU's as well as Weber or Dellorto carburetors. In fact, if you have a blown MG with a single carb, David can tailor a needle to provide the correct air fuel mixture from idle to WOT (Wide Open Throttle).

Driving you're own Dyno and measuring performance using an Accelerometer

Tesla Electronics manufactures a very unique product. It's called the G-TECH/Pro. The product has been around for a number of years. In 1995 the original G-TECH product garnered SEMA (Specialty Equipment Market Association) "Best New Accessory." The latest configuration includes new Digital Signal Processing algorithms coupled with a precision Silicon Accelerometer.

G-TECH Performance Meter Pro

The G-TECH can calculate many different measurements that can be gathered from acceleration over time and include; Horsepower, ¼ mile E.T. (Elapsed Time), ¼ mile Speed, 0-60 E.T., Longitudinal G's, 60-0 Braking and Lateral G's. Although I have never used this product, It looks pretty good. And sells for only $140. If this thing works it could provide a substantial savings, compared to the cost of a rolling road dyno session.

Why Dyno-tune your MG?

If you have recently rebuilt your XPAG or XPEG engine, and changes were made to the engine like; increased bore, camshaft change, cylinder head work, larger carburetors etc. Then, in my opinion, it would be beneficial to have you car dyno tuned on a rolling road dyno.

If you have built a completely stock engine; standard bore, standard camshaft, etc. and you want to tune your engine for it best performance and or economy, then I would recommend the engine be run on a rolling road dyno.

Why? In the case of a modified engine the basic design has been changed or altered. If for example the engine bore was increased from 1250 cc to 1328 cc (.080 overbore), then the compression ratio has just increased.

If the compression ration is increased then:

- Cylinder pressure will increase. Brake mean effective pressure (BMEP), is the engineering term that refers to the amount of cylinder pressure that controls the power output of a given engine displacement and is measured on an engine dyno.
- The greater the air/fuel mixture is compressed, thus requiring a change in the mixture calibration.
- The potential for detonation is increased. Note that it is not always possible to hear the detonation occurring.
- Engine timing and the mechanical advance curve may need to be changed.

As changes in an engine are made, (even as slightly as running the new and improved California fuel), re-calibration of the engine is

required for optimum performance and economy.

A day at the dyno with Dave Evans

On July 18, 1997, after spending the better part of a year sorting out various engine problems, The engine was run in and it was time to see what I ended up with. Earlier in this article I used the term "Non-Destructive Testing." My objective was not out to set any new horsepower records but to attempt to dial in the engine combination.

By no means has this engine been built to realize its full potential. That won't happen until I replace the pistons next spring, raising the compression from approximately 7.9:1 to 9.5:1. Since I have planned to make additional changes to my engine, my goal was to establish a base line so that I could use to measure the differences between modifications.

I had agreed to meet David at Advanced Performance Technology, located in Riverside next to the K&N factory. This helped me keep my costs down.

I pulled in at 9:30 A.M. David had his mobile dyno set up and was ready to start. Prior to running my car I had made sure that the fuel tank was full and that the rear tire pressure was the same for both rear wheels.

The air temperature was 85 degrees Fahrenheit. Air pressure was 15.4 psi. Humidity was 59%. All runs were made with the bonnet closed. The horsepower figures were not corrected to standard temperature or barometric pressure. The dyno uses an Exhaust Gas Analyzer to measure CO% and HC. Measurements are taken at four points; Idle, Low Cruise, Cruise and High Cruise.

Run No. 1, the engine produced 48 hp at 5,000 rpm. The engine was running so rich at Idle that HC was off the scale and the CO% was 8.2

Run No. 2, the engine produced 46 hp at 4,500 rpm CO% was 9.0. Prior to each run David continued to attempt to dial in the mixture.

Run Number 3 the engine produced 40 hp at 4,000 rpm CO% was 10. As you can see so far, the lower the rpm the higher the CO%.

Run No. 4 was the breaking point. The engine produce 34 hp at 3500 rpm and the CO% was off the scale. AT this point we discovered that something was really wrong. David tore into the S&U's and measured and adjusted everything. He measured my new Moss Motors GJ needles and found one needle to be shorter that the other.

Run No. 5 David fitted new GJ Needles and the engine produced 51 hp at 5,000 rpm. The horsepower was up and the CO% was down a little to 7.8 however HC was still off the scale at idle. At this point I was asking questions like; can we make custom needles to get this sucker dialed in or what?

What the engine was doing was pretty scary. I was running rich at idle, in the midrange it would lean out and at the top end it would run rich again. You would think that I would notice this when driving the car right? Not so, I knew it was rich at idle, but I didn't realize that It was leaning out in the midrange. With this type of condition it is impossible to even attempt to read the plugs, especially with today's gas.

Run No. 6 David fitted number 5 needles and the engine produced 50 hp at 5,000 rpm but for the first time the HC were on the scale but at idle they were 1,550! CO% was 10. The engine ran much better that when we started but was still way too rich.

A few months later, I changed the stock muffler for a 3-Chamber Flowmaster. Boy what a difference this made. There was so much back-pressure with the stock muffler, that when the new muffler was installed I could really feel the difference, and the plugs looked much better.

I am once again making another change. This time I am installing a "Derrington" type extractor exhaust system. This will also help lean out the engine. I have been collaborating with Gordon Glass on this project and it will be exciting to stuff one of these under the bonnet.

I hope that you have found this article to be interesting and informative. Next month I will delve into; Understanding the XPAG & XPEG Engines inherent design characteristics, and what effects they have on making modifications to increase Power or Economy.

FEBRUARY EVENT – BRUNCH AT THE DUCK & DECANTER

It was an even two dozen members that enjoyed a Valentine's Brunch at The Duck and Decanter on February 13. We met in the parking lot starting around 9:30, and soon there were two MGAs, one MGC and three MGBs were in the lot, along with some non-MG vehicles with the rest of the crowd.

Around 9:55, someone said, "I'm hungry – let's go eat!" We all headed for the entrance and our food.

The menu was not familiar to most of us, and some were anticipating more of a breakfast instead of lunch, but we all enjoyed our delicious sandwiches and drinks.

Since this was a purely social event with no driving route, it was very relaxing, and we all enjoyed the conversation and food. So much so, in fact, that it was after 11:00 before we started to head back outside.

We got to admire all the cars, and watching as some put down their tops and fastened their tonneau covers, as we checked out new upholstery and trim. It was a very pleasant morning, and more than one person commented that we need to have more gatherings like this in the future. Plans and ideas are being developed, and new ideas and suggestions for different restaurants from other members are more than welcome.

Impromptu Tech Session

In February, a club member, Tim Hovan, put out a call for a tech session to install the Stayfast cloth top on his new 'B'. Ken Adkison answered the call and the session was scheduled for the afternoon of February 20th.

When Rick and I arrived (a little late), Doug Donahue and his son Josh, Ken and his wife Fran, and Tim were already there and starting the prep work. They laid the top on the car, checking key points and then cleaned the head rail. Next the top was pulled over for centering and marked.

Kraft paper was used to cover the windshield before spray mount was used so the top could be laid in place on the head rail but moved around as necessary to get it perfectly centered.

Then came what seemed to me to be the most strenuous part, stretching it into place.

Once this was done, the top was marked and then folded back to insert the pop rivets, header channel and the infamous rubber gasket.

Voila! The top was on.

Now a little MG talk and socializing. Did you know Ken has made How To videos on a number of MG subjects? NAMGBR is going to put the link to them in their next publication. He is not the only expert I have met in our club. We have a number of highly skilled and knowledgeable members in our club. If you have something you want to learn how to do, just give Carl Anglin a call and ask him about getting a tech session set up for it. The pool party is coming up in June and we usually have one then. Get your request in now and . . .

Safety Fast

For Sale

1978 MG Midget, 39,000 original miles. This is a fine, original example of a Midget with no rust. Complete suspension rebuild with new springs and poly bushings all the way around. New master and brake wheel cylinders. Weber DGV carb, runs great! Top and tonneau cover in good condition. Michelin tires on Minilite wheels and performance exhaust. I have the original window sticker for this car. You won't find a better driver for $6,500. Service records available. Call 602.867.8065 for an appointment.

Ask for Dennis.

For Sale

1977 MGB, 148,767 miles. Rebuilt engine, approx 4000 miles. AZ Car, 2nd owner, good tires, AM/FM tape player, good general condition, wire wheels, red. Price $4,500 firm.

Call Dallas or BJ Shuck at 480-837-3203

1977 MGB white, reliable driver, two sets of wheels & tires, carb. upgrade, spare parts, & all maint. records . Needs paint job & some interior work. $4,900
James Waters 623-815-7151

Looking for parts for a 1957 MGA Roadster

We are starting a restoration and at this point, would be particularly interested in rust free body parts and a radiator that is in decent condition. We are certain other parts will be needed in the future. Please contact:
Karen and Dave Campbell
kkcampbell613@gmail.com 623-518-4871

FOR SALE

1958 MGA project for sale. Lots already done including MGB running gear and 5 speed transmission. Located in Pine AZ. Kelly Somers @ 928-978-2319

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Editorial contributions and advertisements for the Newsletter must be received by 25th of each month. Newsletter contributions from the membership are encouraged. Editors reserve the right to edit for length and suitability. Thank You!

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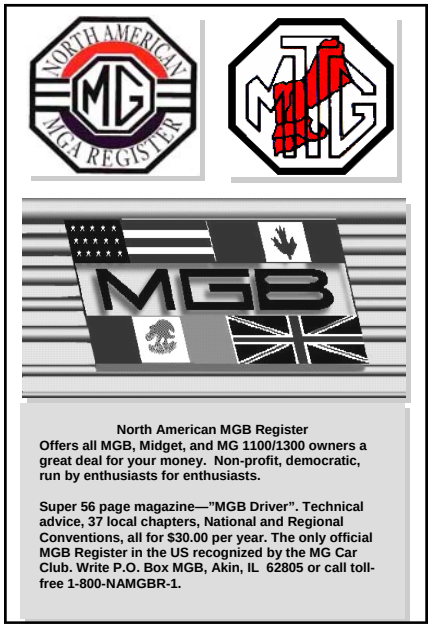

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