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Miscellaneous

Last updated 20-Nov-2019

If you find the information here useful, you may like to make a small contribution to help offset the costs of providing it. Thank you.

Full-length Ramps UK MOT Nut Screws Washers and Bolts (and Grommets) Decals Speedos Terminology Workshop Tools What Year?
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Full-length Ramps

Servicing Bee and Vee was a right pain in the new house this year as I'm not allowed to use ramps, axle stands or jacks on this drive. So all the raising had to be done either half in and half out of the garage, the short ramps slide on the smooth painted garage floor so can only be used on the rougher section near the entrance, but that's narrower, and I had to keep moving the cars to get first one end up then the other.

A pal of a pal was getting rid of a nearly new pair of full-length ramps (as he now has a four-post lift!) and they were offered to me for £500. As they were around £1700 new that was something of a bargain. However as they were over a 200 miles round trip away in Hertford it wasn't really feasible to go down just to have a look at the size and try and work out if they would fit in my garage, so pal took loads of pictures and measurements. I pondered long and hard over those, decided they would fit, so the next question was how to get them here. Son-in-law has a van but they were just too long to fit in that, so it meant hiring one. However we were planning on moving some furniture down to my son near St Neots, so a 'two birds with one stone' trip was planned. All went well until we got down to Hertford and I saw just how big all the bits were - gulp! Too late to go back now though, so we loaded them up.

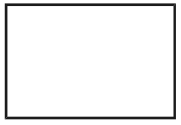
Once home I could take more detailed measurements, and realised that to assemble the two ramps and their lifting tube I either needed more width than I'd bargained for, or several beefy blokes to assemble them outside, then carry them in at an angle to get them through the door! However being American they were built for their monster vehicles, and the ramps were intended to be positioned further apart on the lifting tube than I needed for the MGBs. Even positioned as close together as they would go the centre of the ramps is still wider then the centre of the tyres. However it allowed me to chop a few inches off each end of the lifting tube, and I could assemble them in the garage. Each ramp is in two

sections so the length can be adjusted as well, but even one of the sections was a struggle to move on my own, and I couldn't imagine being able to move all four of them plus assemble them. So a few days later son-in-law came round and we got them in and put them together.

The lifting tube has to be able to pivot up to allow the jack under, and down to allow the vehicle to clear them as it is driven on and off. But unless the ramps were very precisely positioned in all three orientations the tube could be very stiff to turn. But R-ing TFM I discovered the tube should have been greased where it passes through the larger tubes under the ramps! So this time single-handedly I wiggle the one ramp off the tube by dragging each end sideways a bit at a time, then I can pull the tube out of the other ramp. Grease that end, reinsert, grease the other end, then wiggle the first ramp back onto the tube again. Now the tube pivots really easily and is much less dependant on precise orientation.

The ramps are lowered both ends when not in use so I can park one of the cars on them, and that 'raises' (ho ho) a couple more issues. Because the entry end is now about 4" off the ground the manual describes how to make a pair of pre-ramps - easy enough. What's a bit more of an issue is lifting the 'blunt' end of each double-length ramp while you position the support tower underneath it - no easy task. I can get a jack under the end (sides won't work as they are too close to the ground) and raise it far enough to get blocks under, then move the jack round to the side away from where the tower fits while I raise it the rest of the way, but that is a bit of a faff. So various Wallace and Gromit devices are being discussed, one of the maddest being a rope tied to the back of the car positioned just in front of the ramps, run over a pulley on a beam, and down to a hook at the end of the ramp - drive car forward, lift ramp, slide tower under. Split the rope and do both ramps at the same time :o) But in the end I settle for a block and tackle attached to a cross-beam conveniently near that end of the ramps.

Another slight inconvenience is that my relatively compact jack (I tour with it in the boot of either car) won't raise the lifting tube far enough in one go to lower the swinging legs and lock them in position. I have to jack it part way, then put axle stands under the tube, then slide a block made out of timbers with a sheet steel top under to stand the jack on while I raise it the rest of the way. I've looked at alternative jacks but to get one capable of lifting all the way in one go, but low enough profile to fit under the tube when lowered, is way too expensive for the very occasional use it would get.



High enough to get under and work with ease, but not so high I can't reach things when lying on my back.

I can only envy Herb Adler his space and 2-post lift ... I think! While Vee was at the paintshop I was able to use a 2-post lift to fit the cross-member and exhaust,

amongst other things, and it was really hard work on the neck with my head bent back all the time, and on the arms. I know I'm also reaching up with my ramps, but at least I'm lying down with my head supported and can have a proper rest every now and again, instead of having to stand there all the time.

UK MOT

The full DVSA MOT manual can be found here - published 20th May 2018, at the time of writing last updated June 2019.

Preparation

September 2019: Still ramifications and misinformation rumbling around following the exemption for cars over 40 years old from the MOT. Some people are recommending you get a £25 safety check instead of an MOT. Others are finding garages that say they can't perform an MOT test on an exempt vehicle. And at my recent MOT for the V8 at a different place I found the car parked outside after about 40 minutes but I had to wait the full hour as they said if they completed the test in under an hour they would face questions from the DVSA. Dave Birkby on the MGOC forum, who is an MOT inspector covering 85 MOT stations writes:

> The MOT tester who claims that an exempt vehicle cannot be tested, is not fit to be a tester. He is a risk to the integrity of the MOT scheme. He clearly does not read the notices sent to each and every MOT tester, but is 'clicking the button' on the system anyway to state that he has. If he does not acknowledge the notice he is automatically suspended from testing.
>
> Almost every vehicle type can now have a MOT even if exempt, and that includes a vehicle that is exempt because it is not yet 3 years old, or is foreign. Even your finally finished restoration of your barn find that has not been tested for 30 years can have a MOT. The MOT manual even states that a 1905 car does not require a handbrake!!! It is also an offence under the MOT scheme to refuse to test a vehicle other than for a small number of legitimate reasons.
>
> The letter in EMG ... incorrectly suggested that there is a national scheme available for £25 or so and people should use it. There is a national scheme, it is called the MOT and prices vary from £0 - £55, you chose the one you want. There is no such other national scheme.
>
> Re Pauls post about timings, this is a subject that I hate and is my biggest challenge. Another myth (created by MOT testers and the many millions of 'wannabe' testers) is that it takes X amount of time to test or they will be locked up. This is simply not true and those testers should concentrate on quality testing and not being tea break lawyers. The test takes as long as it takes using all of the mandatory equipment required for that type of vehicle.

> So, unless a car is a complete basket case that requires in depth scrutiny, then an emissions exempt classic may only need half an hour. One that needs a gas check may need more time, one that needs a decelerometer brake test will take longer again. Again, leaving a car logged on whilst it being outside is an offence. Plus, if it is common place, it makes me look harder at their data ... which sometimes shows up a bingo win result. They are using the longer test times to skew their average test time, i.e. hiding the 2 min tests for their mates. Doesn't work anymore though chaps.

Each to their own, but I would far rather have the official record and documentation in the event of anything untoward, instead of some miscellaneous piece of paper with no official standing, or even worse nothing at all.

June 2019: Can you drive a failure away from the testing station or not? ZS failed on the back box leaking, and Halfords proceeded to give me my options including scrapping it (!) or taking it somewhere else to get it fixed, but stated that a fail immediately cancelled the existing MOT (which still had a week to run), and if I drove it away I could be picked up by ANPR cameras and fined, and my insurance would be invalid. I was surprised that I hadn't heard of this immediate cancellation before, and when he advised leaving it so they could check the rest of the system to see what else might need replacing I smelt a rat - why wasn't the full story on the failure document? Back home I checked the DVSA database and the failure and advisory details were there, but so was a statement that the existing MOT was in force until 3rd July i.e. a week hence.

Searching online threw up this document "warning motorists that they face prosecution if they drive their car following an MOT failure even if its previous test hasn't expired." However in February 2016 that was updated saying: The DVSA has updated its website again to say the complete opposite of what it originally said. It now states: "You can take your vehicle away if your MOT certificate is still valid.". Then in September 2018 another update: "The situation as it stands is as follows: an MOT fail before the previous MOT certificate elapses does not necessarily mean you can't drive it away, unless there is a **dangerous** problem listed on the certificate and the minimum standards of roadworthiness aren't met.", which seems fair - and clear - enough.

Then find this DVSA document dated May 2018 which states:

> Dangerous - A direct and immediate risk to road safety or has a serious impact on the environment. Do not drive the vehicle until it's been repaired. Fail
>
> Major - It may affect the vehicle's safety, put other road users at risk or have an impact on the environment. Repair it immediately. Fail

Which tends to confirm the September 2018 update above ... except this document was withdrawn on 13th June 2019!

Apparently still current is this document dated 20th May 2018 which says exactly the same for the Dangerous and Major failures. If it wasn't for the "Do not drive" statement for a 'Dangerous' defect I'd have said the "Repair it immediately" for a 'Major' defect also meant you couldn't drive it away - how immediate is immediate?

Then Dave Birkby (an MOT inspector i.e. inspects the work of MOT testers) came up with this document which includes the information:

> Driving a vehicle that's failed
>
> You can take your vehicle away if:
>
> - your current MOT certificate is still valid
> - no 'dangerous' problems were listed in the MOT
>
> Otherwise, you'll need to get it repaired before you can drive.
>
> If you can take your vehicle away, it must still meet the minimum standards of roadworthiness at all times.

The 'minimum standards' document really only mention lights, brakes and tyres, so very minimal.

December 2018: I thought I understood the new VHI and MOT exemption from May 2018 until I read December's EMG. That states on p6: "as soon as the car reaches 40 it will be presumed to be MOT exempt immediately from that date". However the Guidance document states "If the vehicle has a current MOT certificate but you anticipate that on expiry of that certificate you will wish exemption from future MOTs you will at the time of relicensing be required to declare that the vehicle is a VHI." which seems to contradict it. On renewing Bee's tax in December, with a current MOT, I was NOT offered the chance to make a declaration. The MOT expires in June 2019, but I won't be renewing Road Tax until December 2019. What happens in the interim when I have no MOT and have not made a declaration? Supposing one were required to present one's documents at a Police Station? The DVLA have confirmed that you will only be required to make the declaration if there is not a **current** MOT when you retax, and you are covered between expiry and the next road tax renewal when you will be required to make the declaration if there is no current MOT. If you don't make the declaration then the renewal will not proceed. So really the guidance document should say words to the effect of "If the vehicle does not have a current MOT certificate you will at the time of relicensing be required to declare that the vehicle is a VHI." Of course whether one has a current MOT or not, when being used the vehicle must be roadworthy at all times. Hopefully that's the end of it!

May 2018: As of 20th May 2018 there are new defect types, stricter rules for diesel car emissions, and some vehicles over 40 years old becoming exempt, see this DVSA document.

After much chatter back and fore the upshot seems to be that only the most outrageous modifications involving structural bodywork are likely to be considered a substantial change, as the 'upgrades' typically talked about can probably all come under "changes made to improve efficiency, safety or environmental performance are considered acceptable", including more powerful engines when the emissions are lower. And even then if you don't attempt to declare it VHI and MOT-free then no one will know about it anyway ... except, one presumes, your insurance company for road-going cars. If you do make the declaration then it is taken at face-value, there are no checks. Some of the various pronouncements on what the changes might have meant when first proposed can be found here.

MOT Preparation *Updated March 2012 by Michael Beswick [my comments]:* April 1st sees the introduction of the recent MOT changes. Up to then these items are advisories. This is not exhaustive but covers those things likely to concern classic MG owners or perhaps owners of classic MGs:

- Hazards - not obligatory prior to 1/4/80, but if fitted will be tested and must work
- Steering lock is only applicable post 1/9/2001
- Dust covers - apart from existing steering rack, those ones on the bottom of the kingpin. They need to prevent the ingress of water and must not prevent the egress of grease.....but could be contentious
- Coil springs - slight change - they fail if they do not locate properly when the vehicle suspension is put back under load, or if their function is impaired
- Engine mounts
- Drivers seat must move and lock, though not in every position! [August 2018: If there is an adjustment mechanism, then it must allow the seat to be moved, and locked in a selected position. However if the seat is bolted to the floor and cannot be moved other than by unbolting it, then that is not a fail. The regulation gives reason for failure as "fore and aft adjustment mechanism not working as intended" see DVSA MOT manual section 6.2.5 Driver's seat Defect para b i.. If the intention IS that there should be no adjustment, by the seat being bolted directly to the floor, then it is working as intended. The DVSA have apparently said that this failure for a fixed seat gives grounds for appeal, if 'discussion' at the station fails.]
- Reg plate - same as before - silver and black is prior to 1/1/73 (although some claim it has been amended to include any vehicle in the 'historic' taxation class, although I have not been able to find any official statement to that effect), but if shown as a "new" bit of the test it may remind testers of the requirement. (Keep a spare set of modern ones...)
- Tow bar security (as now) but + electrics
- Electric wiring generally
- Battery security
- Fuel pipes - damaged or chafed

September 2010: Michael Beswick found and has sent me this [my comments]:

"I was asked by a friend's son what he should check before sending his car for MOT, to avoid it failing on something minor. The list is not exhaustive, and assumes no mechanical knowledge or tools. Just newspaper to kneel on and maybe a pair of rubber gloves! It is also SIMPLIFIED, and makes no attempt to cover items that require equipment to test them or requires knowledge of the testers' manual. Probably takes 15 minutes.

"MOTs are a test - the tester may not adjust anything other than Headlamp aim during the test [if you suspect headlamp aim is off then drive to the test centre having removed the headlamp rings yourself, I suggest!]. Certain minor items - such as blown bulbs - can be replaced at the end of the test before the car is passed. Garages may well charge for fitting an item, especially if it is discounting the test [**VERY** silly to go for a test with blown bulbs ...]. (Currently £54 max but available for £39.95 etc) So it pays to avoid this if possible. Certain failure items must be retested for no fee. Partial re-tests may or may not incur a fee. Details are shown on a poster that MOT stations must display and on the VT30 fail certificate.

"All the usual caveats apply. Your investment can go down as well as up. Your home is at risk etc etc. This information is not governed by the Financial Services Authority.....

"Hazard lights, (if fitted) must work , ignition on, ignition off

"Horn must work. Fuel cap must seal [visible rubber seal, not loose and rattling about, actually sealing is not checked]. Door mirrors to be secure. You must have a driver's door mirror and either a rear view or passenger side one [On vehicles first used before 1st August 1978 only **one** of interior, external offside, or external nearside mirror is required on passenger vehicles with fewer than eight seats, for those on or after 1st August 1978 there must be two one of which must be 'an exterior mirror or device that provides a view along the offside of the vehicle' according to MOT Manual Section 3.3]

"Wipers must work, with blades that clear the screen and are intact [clear an arc to give an 'adequate' view, not specified]. Washers +fluid. (push type washer is fine). Windscreen - chips bigger than 10mm in the area in front of the steering wheel will fail: as will bigger than 40mm in the rest of the area swept by the wiper blades.

"Indicators left & right. 60-120 flashes per minute is required.

"Side lights - front and back, dip beam, main beam, rear number plate lights. If fitted, rear fog light + tell-tale [if two are fitted the off-side lamp **must** work. If neither work but they are accessories added by an owner then you **may** get away with it!]. Brake lights. Indicate left then right and check stop/tail lights don't flash in time. (Reverse lights don't matter [not tested, although at one time if they were operated from a manual switch by the driver they must also have a tell-tale])

"Then put hazards on and all the above, (except indicators) to check that other lights are not "disco-ing" in time with the hazards.

"Seat belts must recoil (often slowly!), unless static type, and lock in place in the buckle. Belts must not be unduly frayed.

"Check the tyre tread depth - it needs to be 2mm (1.6mm is the legal min). Check the side walls for bulges or damage. You can't do much about the inside face without lying under the car!

"Handbrake - does the lever poke you in the eye when you pull it up? Turn the steering wheel - if it moves more than from 12 o'clock to 1 o'clock without turning the road wheels it will probably fail (depends on steering wheel diameter)

"Exhaust must be "supported" - waggle the tail pipe a bit (when cold...) - it shouldn't. Noise is subjective, as it is difficult to determine a "standard" car!

"Number plates - lots of regulations. Stick on ones on the bonnet should pass but don't always. 1/1/73 was the change year from metal black & silver to modern yellow/white. Take the V5C to prove date of first registration and/or ask first!

"Bits must not be obviously falling off!

"Play in bearings, suspension, or steering is beyond the scope of this. If you think headlamp aim may be wrong, remove the chrome bezel before the test to make adjustment easier. If you can see the front brake pads they must be a minimum 1.5mm thick (the thickness of a 5 pence piece).

"Corrosion within 300mm of a suspension mounting or seat belt anchorage or major structural item will fail

"Local classic car clubs/users can best advise on "sympathetic" MOT stations who understand older cars. High throughput / low price ones probably do not fall onto this category! If you are not sure about a particular thing , take the car in and ask BEFORE the test is due!

"If the car has no MOT you may legally drive it to a pre-booked MOT test - nowhere else. Insurance for this trip is a slightly murky area. [You can get insurance without having tax or an MOT. I'm pretty sure it is an offence to drive to an MOT station **without** insurance, regardless of whether it is a pre-booked test or not. It's not something you should ever put to the test, I suggest, or you may be **personally** liable for any damage or injury caused to third-parties as well as being prosecuted. Note that someone else may be able to drive **your** car on **their** insurance, which may be Third-party cover only.]

"Should the car fail, you can drive it home or to a garage to have it fixed [The MOT station may encourage you **not** to drive the car away on safety grounds, i.e. have it fixed there and then or arrange for it to be towed/trailered somewhere else, but they cannot legally prevent you driving it away].

"Should you have some days "left" on your current MOT but the car fails the test, you still have an MOT, but you are driving an "un-roadworthy" vehicle. The current MOT Pass certificate shows the earliest date at which the vehicle can be presented for test - just under a month before the certificate expires [But see here]. By having the car tested near this date, there should be ample time to fix items that fail. If the car passes, the new certificate is automatically dated for 12 months from the date of the expiry of the current certificate. However if it does fail, be aware that although you still have an MOT, you are driving an "unroadworthy vehicle" which restricts legal use. The penalties are pretty similar to not having an MOT and whilst technically covered by your insurance in legal terms, you are unlikely to have a claim settled.

[My son when living in London had no facilities to work on his car and regularly had it MOT'd twice a year].

"I've probably missed something, but it's a start! Good Luck!"

For those that have to suffer it, the emissions limits and dates applicable can be found here. Note that there seems to have been a change in rules where later engines are concerned.

You can also check the brakes to make sure the pedal doesn't sink under sustained pressure, and if you have a servo 'empty' it by repeated operations of the brake pedal with the engine off until it stops wheezing, then with the pedal firmly pressed start the engine. While emptying the servo the pedal should get higher and harder, then when starting the engine it should sink a little.

See also the official MOT Manual from GOV.UK. In addition I spend a few minutes each year under the car, at the annual service before the MOT, just looking around and waggling things, bending the brake hoses back looking for surface cracking etc.

November 2011:There are proposals to cease MOT testing of cars registered before 1st January 1960, as well as possibly make testing a bi-annual event for newer cars. One has to ask "Why?" One of the reasons seem to be that owners of 1960 and earlier cars are likely to be enthusiasts and so look after their cars better, but that doesn't follow at all. It's true that pre-1960 cars are 0.6% of the population, and contribute to 0.03" of road casualties and accidents, but that is down to the greater sense of self-preservation of people driving cars of this era. Many cars at the 'lower' end of the classic price scale are likely to be owned by

younger and less well-off people, with other cars and families to support, who may well take short-cuts on their pride and joy if they are allowed to. They are equally liable to be owned by people who don't know as much about their cars as perhaps they ought to, as can be seen by some of the questions and comments in the various online communities. Another reason given is that many aspects of the current test are not relevant to older cars - which is true, but in that case they are not tested! It's difficult to see just what could be dropped from the MOT that **isn't** safety-related. I'm no lover of MOTs, it's taken me 20 years to lose the 'heart in the mouth' feeling on delivering my cars for their tests and getting the verdict. As a Michael Beswick has said, it will only take one child to be killed or seriously injured by a classic car that had a defect that should have been picked up on an MOT, and we might find ourselves under a much stricter regime or maybe even restricted to trailering them to private circuits etc. Nigel Case, owner of the Classic Car Club, is quoted as saying "It's nonsense. Older cars need more attention. You could buy a car which seems superficially fantastic, but it will be rotten underneath and a death trap."

Even less reason for reducing the frequency on cars less than 10 years old, with the first test being at four years. One of the biggest reasons for failure of modern cars is worn tyres, and you can see this in any supermarket car park. Manufacturers have progressively reduced the ownership experience to one of being completely passive, and most people only ever do things like servicing and replacements when someone tells them they have to. The failure rate is increasing - 35% in 2008, 37% in 2010, and 12% of tyres are illegal on replacement. In the current financial climate people are cutting down on servicing where things might get picked up, and the MOT will be the only time that they can be.

Despite the above, there are new advisories from 1st Jan 2012 which will be failures from 1st April 2012. That's the list of new and amended items, but before you groan about something like the steering lock on an MGB having to be working as I did (Vee's has never worked in my ownership) you might like to have a look at the full manual. This has new and amended paragraphs and sections denoted by a vertical bar to the left, and in the case of the steering lock it is only to be tested on cars first used from 1st January 2001. There are others, like the new main-beam tell-tale check is only on cars first used from 1st April 1986. One thing that applies to **all** vehicles is the battery condition and security check - all those who have fitted 'battery bins' or 12v batteries and not bothered to re-engineer the clamps take note!

Nut Screws Washers and Bolts (and Grommets)

Torque Values
Translate between part numbers and description for many MGB fasteners
Links:
'Fastener Decoder Booklet' A reproduction of the document produced by BMC in 1964, kindly sent to me by Marc.
MGB Bolt Sizes/Taps and Dies by Les Bengtson
MGB 18V Engine Bolt Sizes (threads) by Les Bengtson

British Fasteners Used on the MGB by Dave Dubois
Whitworth sizes and numbers from Samstag Sales.
British Tools and Fasteners, which says it all really (the original link was to The British Tool Company which has been out of business a couple of years.
Rask Cycle on bolt head markings and torque figures.
Uni-Thread, for taps, dies, reamers and much more.
Tracy Tools ditto (funnily enough also in Devon).
Abbey Power Tools, which has Whitworth and BA spanners as well as much else.
Baconsdozen Imperial Tools, Conversion charts for Whitworth and BSF to mm, AF, BA socket and wrench size equivalents etc.
Spanner Jaw Sizes, a useful chart for comparing spanner (wrench) sizes and common nut/bolt use.
Conversions from fractional in 64ths to decimal and metric, also useful for comparing spanner sizes.
Grommets.

Torque Values

Nuts and bolts can be assembled with dry, oiled or greased threads. From comparisons made with generic sources of information it seems that the figures in the MG Workshop Manual, at least, are probably for oiled threads. Greasing threads can make them liable to come loose. For example I read many years ago that wheel studs should be oiled, not greased.

Although there are a lot of figures here there are still a lot more where no torque figure is given. It is possible that those given here are 'non-standard' torque values and the rest should be tightened to the 'standard' values for the type, size and thread of the nut and bolt:

- Geno's Garage
- Leyton Fasteners
- Imperial Supplies

Also see this list of 'standard' values from the Rover V8 Engine Manual:

METRIC
- M5 . . . . . .4 Nm (3 ft-lb.)
- M6 . . . . . .6 Nm (4.5 ft-lb.)
- M8 . . . . . 18 Nm (13 ft-lb.)
- M10 . . . . . 35 Nm (26 ft-lb.)
- M12 . . . . . 65 Nm (48 ft-lb.)
- M14 . . . . . 80 Nm (59 ft-lb.)
- M16 . . . . . .130 Nm (96 ft-lb.)

UNC/UNF (thread size, not spanner/socket size)
- 1/4 . . . . . 8-10 Nm (6-7 ft-lb.)
- 5/16 . . . . . 25 Nm (18.5 ft-lb.)
- 3/8 . . . . . 40 Nm (29.5 ft-lb.)
- 7/16 . . . . . 75 Nm (55 ft-lb.)

- 1/2 . . . . . 90 Nm (66 ft-lb.)
- 5/8 . . . . . 135 Nm (100 ft-lb.)

By Monte Morris.
Additions by Peter Scott.
MBG GT V8 Workshop Manual Supplement and Rover V8 Engine Manual.
Additions from Haynes.
Printer-friendly version

4-Cylinder Engine | Factory V8 | Conversion V8 | Gearbox | Prop-shaft | Rear Axle | Front Suspension | Rear Suspension | Steering | Brakes | General

ENGINE (4-cyl)		FtLb	KgM	NM
Air-pump mounting screws	if fitted	18	2.5	24
Big-end bolts	early	35 to 40	4.8 to 5.5	48 to 54
Big-end bolts oiled thread	12-sided	33	4.5	45
Camshaft nut	All models	60 to 70	8.3 to 9.68	81 to 95
Carburettor stud nuts	18G/18GA	2	0.28	3
Carburettor stud nuts	All models	15	2.1	20
Clutch to flywheel	All models	25 to 30	3.4 to 4.1	34 to 41
Crankshaft pulley bolt	All models	70	9.6	95
Cylinder head nuts	18G/18GA	45 to 50	6.2 to 6.9	61 to 68
Cylinder side cover screws	18G/18GA	2	0.28	3
Cylinder side cover screws deep cover	18G/18GA	5	0.7	7
Distributor clamp bolt (bolt trapped)	18G/18GA	2 to 2.5	0.3 to 0.35	3 to 4
Distributor clamp bolt (nut trapped)	18G/18GA	4.16	0.57	5
Fan blade fixing screws	18G/18GA	7.3 to 9.3	1.0 to 1.3	9 to 12
Flywheel set screws	18G/18GA	40	5.5	54
Front plate 5/16 inch screws	All models	20	2.8	27
Gudgeon pin clamp bolts	18G/18GA	25	3.4	34
Main bearing nuts	All models	70	9.7	95
Manifold nuts	All models	15 to 16	2.1 to 2.2	20 to 22
Oil filter centre bolt	18G/18GA	15	2.1	20
Oil pipe banjo	All models	37 max	5.1 max	50 max
Oil pressure relief valve domed nut	Pre-78	43	5.9	58
Oil pressure relief valve domed nut	78-on	40	5.5	54

Oil pump to crankcase	All models	14	1.9	19
Rear engine mounting bolt	All models	38 to 40	5.22 to 5.53	52 to 54
Rear plate 3/8 inch screws	All models	30	4.1	41
Rear plate 5/16 inch screws	All models	20	2.8	27
Rocker bracket nuts	All models	25	3.4	34
Rocker cover nuts	18G/18GA	4	0.56	5
Spark plugs	All models	18	2.5	24
Sump to crankcase	All models	6	0.8	8
Timing cover 1/4 inch screws	18G/18GA	6	0.8	8
Timing cover 5/16 inch screws	18G/18GA	14	1.9	19
Water outlet elbow nuts	18G/18GA	8	1.1	11
Water pump to crankcase	18G/GA	17	2.4	23
Water pump to crankcase	Later models	25	3.5	34
Note that the WSM quotes 17ftlb for 18G and GA i.e. early cars whereas Haynes quotes early models as 25 ft lb and late models as 17 ft lb i.e. the other way round.				
ENGINE (Factory V8)		FtLb	KgM	NM
Carburettor adapter nuts		18	2.49	24
Connecting rod cap nuts		33	4.56	45
Crankshaft pulley bolt		150	20.73	203
Cylinder head bolts		68	9.4	92
Distributor drive gear to camshaft bolt		43	5.94	58
Exhaust manifold bolts		13	1.8	18
Flywheel bolts		55	7.6	75
Induction manifold bolts		28	3.87	38
Induction manifold gasket clamp bolt		13	1.8	18
Main bearing cap bolts: Nos. 1 to 4		53	7.32	72
Rear		68	9.4	92
Oil pressure relief valve plug		33	4.56	45
Oil pump cover bolts WARNING! I got mine up to about 10 and they didn't seem to want to go higher. Bearing in mind they are going into the alloy front cover I stopped. If you look at the 'Other V8' figures there are two - 9ftlb and for Suffix B 3ftlb. 3 seems a bit low for oil under pressure (sealant must not be used), but 9 is definitely safer than 13.		13	1.8	18
Rocker shaft to cylinder head bolts		28	3.87	38
Timing chain cover bolts		23	3.18	31
Water pump bolts: 1/4 U.N.C.		7	0.97	9
5/16 U.N.C.		17	2.35	23

ENGINE (Other V8)		FtLb	KgM	NM
Camshaft gear bolt		37	5.12	50
Camshaft thrust plate bolts - If fitted		18	2.49	25
Connecting rod nuts:		37	5.12	50
Connecting rod bolts: Stage 1		15	2.07	20
Connecting rod bolts: Stage 2 Further 80 °				
Coolant pump/timing cover to cylinder block		16	2.21	22
Crankshaft pulley bolt		200	28	270
Cylinder head bolts - Engine numbers with suffix B: + */**** Stage 1		15	2.07	20
Stage 2 Further 90 °				
Stage 3 Further 90 °				
Cylinder head bolts - Engine numbers without suffix B: + * Bolts 11 to 14 - Outer row		44	6.09	60
Bolts 2, 4, 6, 8 and 10 - Centre row		66	9.13	90
Bolts 1, 3, 5, 7 and 9 - Inner row		66	9.13	90
Distributor clamp nut		15	2.07	20
Drive plate and clamp ring bolts		33	4.56	45
Drive plate hub aligner Allen bolts		63	8.71	85
Flywheel bolts		58	8.02	78
Lifting eye to cylinder head bolts		30	4.15	40
Main bearing cap bolts + * Initial torque - all bolts:		10	1.38	14
Final torque: Numbers 1 to 4 main bearing cap bolts:		52	7.19	70
Final torque: Rear main bearing cap bolts:		66	9.13	90
Oil pick-up pipe bolts		8	1.11	10
Oil pressure relief valve plug - Engine numbers without suffix B		33	4.56	45
Oil pressure switch		11	1.52	15
Oil pump cover plate bolt - if fitted **		6	0.83	8
Oil pump cover plate screws - Engine numbers with suffix B **		3	0.41	4
Oil pump cover to timing cover - Engine numbers without suffix B		9	1.24	12
Oil strainer bolts		7	0.97	10
Oil strainer nut - Engine numbers with suffix B		16	2.21	22

Oil sump bolts +		17	2.35	23
Oil sump drain plug		33	4.56	45
Rocker cover bolts: + **** Stage 1		2.5	0.35	3
Stage 2		6	0.83	8
Rocker shaft to cylinder head bolts		28	3.87	38
Secondary air injection adapters - If fitted ***		24	3.32	33
Spark plug		15	2.07	20
Timing cover to cylinder block bolts **		16	2.21	22
* Lightly oil threads prior to assembly.				
** Coat threads with sealant Part number STC 50552 prior to assembly.				
*** New adapters must be fitted				
**** New bolts must be fitted				
GEARBOX		FtLb	KgM	NM
Gearbox remote control cover to tunnel	3-synch	7.5 to 9.5	1.1 to 1.3	11 to 13
Drive flange nut overdrive	Type D	100 to 130	13.8 to 18.0	136 to 176
Drive flange nut overdrive	Type LH	55 to 60	7.6 to 8.3	75 to 81
Drive flange nut without overdrive	manual	150	20.7	203
Mounting to gearbox case	manual	15 to 20	2.1 to 2.8	20 to 27
Cam bracket screws	automatic	20 to 40	2.77 to 5.53	27 to 54
Centre support bolts	automatic	10 to 18	1.38 to 2.49	14 to 24
Converter to drive plate bolts	automatic	25 to 30	3.46 to 4.15	34 to 41
Downshift cable adaptor bolts	automatic	8 to 9	1.11 to 1.24	11 to 12
Drain plug	automatic	8 to 10	1.11 to 1.38	11 to 14
Drive flange nut	automatic	55 to 60	7.6 to 8.3	75 to 81
Driving flange nut	automatic	55 to 60	7.6 to 8.3	75 to 81
Extension housing to transmission case	automatic	8 to 13	1.1 to 1.8	11 to 18
Filler tube connector sleeve to transmission case	automatic	20 to 30	2.77 to 4.15	27 to 41

Filler tube to connector sleeve nut	automatic	17 to 18	2.35 to 2.49	23 to 24
Front brake band adj. screw locknut	automatic	15 to 20	2.1 to 2.8	20 to 27
Front servo adjusting screw locknut	automatic	15 to 20	2.07 to 2.77	20 to 27
Front servo bolts	automatic	8 to 13	1.11 to 1.80	11 to 18
Governor to counterweight screws	automatic	4 to 5	0.55 to 0.69	5 to 74
Governor to cover plate screws	automatic	20 to 48	2.77 to 6.64	27 to 65
Lower valve body to upper valve body scr	automatic	20 to 30	2.77 to 4.15	27 to 41
Manual shaft locknut	automatic	7 to 9	0.97 to 1.24	9 to 12
Oil pan to gearbox	automatic	8 to 13	1.1 to 1.8	11 to 18
Oil tube and end plate to valve body	automatic	20 to 30	2.77 to 4.15	27 to 41
Pressure adaptor plug	automatic	4 to 5	0.55 to 0.69	5 to 7
Pump adaptor to housing bolts	automatic	17 to 32	2.35 to 4.43	23 to 43
Pump adaptor to housing screw	automatic	2 to 3	0.28 to 0.41	3 to 4
Pump adaptor to transmission case	automatic	8 to 18.5	1.11 to 2.56	11 to 24
Rear brake band adj. screw locknut	automatic	25 to 30	3.46 to 4.15	34 to 41
Rear servo adjusting screw locknut	automatic	25 to 30	3.46 to 4.15	34 to 41
Rear servo bolts	automatic	13 to 27	1.80 to 3.73	18 to 37
Starter inhibitor switch locknut	automatic	4 to 6	0.55 to 0.83	5 to 8
Stone guard screws	automatic	17 to 19	2.35 to 2.63	23 to 26
Transmission case to converter housing	automatic	8 to 13	1.11 to 1.80	11 to 18
Upper valve body to lower valve body scr	automatic	20 to 30	2.77 to 4.15	27 to 41
Valve bodies to transmission case bolts	automatic	5 to 9	0.69 to 1.24	7 to 12

PROP-SHAFT		FtLb	KgM	NM
Flange nuts	All models	30 to 35	4.1 to 4.8	41 to 47
REAR AXLE		FtLb	KgM	NM
Axle shaft nut	Salisbury	150	20.7	203
Bearing retaining nut Then align to next hole	Banjo	180	24.9	244
Crown wheel bolts	Salisbury	60 to 65	8.3 to 9.0	81 to 88
	Factory V8	63	8.7	85
Crown wheel to differential carrier	Banjo	55 to 60	7.6 to 8.3	75 to 81
Differential bearing cap bolts	Salisbury	50 to 55	6.9 to 7.6	68 to 75
Differential bearing cap bolts	Banjo	60 to 65	8.3 to 9.0	81 to 88
	Factory V8	53	7.3	72
Half-shaft nut	Salisbury	150	20.7	203
Pinion bearing nut	Banjo	135 to 140	18.7 to 19.4	183 to 190
Pinion nut new spacer only		180 to 220	24.9 to 30.4	244 to 298
Pinion nut oil seal change	Mark nut, shaft and flange positions, refit and tighten to the same point			
FRONT SUSPENSION		FtLb	KgM	NM
Anti roll bar link	All models	60	8.3	81
Bearing retaining nut stage 1	All models	40 to 70	5.5 to 9.7	54 to 95
stage 2	Tighten to next split-pin hole			
Bottom wishbone pivot to cross-member nut	Factory V8	45	6.22	61
Cross member to body	4-cyl	54 to 56	7.5 to 7.7	73 to 76
Cross member to side member nut: Top	Factory V8	55	7.61	75
Bottom	Factory V8	45	6.22	61
Front shock absorber bolts	All models	43 to 45	5.9 to 6.2	58 to 61
King pin to damper - upper fulcrum		40	5.5	54

King pin to wishbone - lower fulcrum		45	6.2	61
King pin trunnion (nut on top of king pin)		60	8.3	81
Shock absorber pinch bolt	All models	28	3.9	38
Spring pan nuts and screws	All models	22	3.0	30
Stiff nut to crossmember mounting bolt	Mk2	44 to 46	6.1 to 6.4	60 to 62
Wishbone cross bolt	All models	28	3.9	38
REAR SUSPENSION		FtLb	KgM	NM
Rear shock absorber bolts	4-Cyl	55 to 60	7.6 to 8.3	75 to 81
Shock absorber to side-member nut	Factory V8	58	8.0	78.6
STEERING		FtLb	KgM	NM
Column clamp bolt Note this is given in the manual as "85 lbf **inches"**	Factory V8	7	0.97	9
Road wheel nuts	4-cyl	60 to 65	8.3 to 9.0	81 to 88
Road wheel nuts	Factory V8	60	8.3	81
Steering arm bolts	All models	60 to 65	8.3 to 9.0	81 to 88
Steering column top fixing bolts	All models	12 to 17	1.66 to 2.35	16 to 23
Steering column universal joint bolts	All models	20 to 22	2.77 to 3.04	27 to 30
Steering lever balljoint nut	All models	34 to 35	4.7 to 4.8	46 to 47
Steering rack and pinion bearing nut	All models	40	5.5	54
Steering rack fixings		30	4.1	41
Steering tie-rod lock nut	All models	33 to 38	4.56 to 5.26	45 to 52
Steering wheel nut		36 to 38	4.98 to 5.26	49 to 52
Steering wheel nut 11/16 in. UNF		41 to 43	5.67 to 5.95	56 to 58
Steering wheel nut 9/16 in. UNF		27 to 29	3.73 to 4.01	37 to 39
Steering wheel nut	Factory V8	28	3.87	38
Swivel pin nut stage 1	All models	60	8.3	81
stage 2	Tighten to next split-pin hole			

BRAKES		FtLb	KgM	NM
Brake caliper clamping bolts Spotted by Ed Woods in the main body of the manual: **"Only split the caliper if it is unavoidable, then replace the fluid channel seal, bolts and lock plates. Only bolts supplied by BMC Service Ltd. may be used"**	All models	35.5 to 37	4.8 to 5.1	48 to 50
Brake caliper securing bolts	All models	40 to 45	5.5 to 6.2	54 to 61
Brake disc to hub	All models	40 to 45	5.5 to 6.2	54 to 61
Brake front servo bolts	All models	8 to 13	1.1 to 1.8	11 to 18
Brake pressure failure switch (nylon) Note given as 15 lb **in** in the WSM		1.25	0.173	1.69
Brake pressure failure switch end plug Note given as 200 lb **in** in the WSM	All models	17	5.5	27
Brake rear servo bolts	All models	13 to 27	1.8 to 3.7	18 to 37
Brake stone guard screws	All models	17 to 19	5.5 to 2.6	23 to 26
Hydraulic brake pipe connect 7/16 UNF		7 to 10	5.5 to 1.4	9 to 14
Hydraulic brake pipe connection 3/8 UNF		5 to 7	5.5 to 1.0	7 to 9
Master cylinder port adaptors	RB	33	5.5 to 4.6	45 to 45
Master cylinder reservoir fixing bolts	All models	5	5.5	7
Rear brake adjuster fixing nuts	All models	5 to 7	0.69 to 0.97	7 to 9
GENERAL		FtLb	KgM	NM
Alternator mounting bolt	All models	20	2.8	27
Alternator pulley nut	All models	25	3.5	34
Alternator shaft nut	All models	25 to 30	3.5 to 4.1	34 to 41
Interior mirror special screw Note given as 5 lb **in** in the WSM	All models	0.42	0.058	0.57
Starter motor mounting bolts	All models	30	4.1	41

Decals

Primarily for RHD cars.

Speedos

There were many different speedos used over the years (I have found 50 so far!) according to year, market and vehicle spec. Secured into the dash with two large 3BA knurled nuts 17H1304 and spring-washers, with a U-strap AJH5176 to September 64, separate 'legs' 17H3744 on each threaded stud from then until July 74, and 17H1339 after that.

As well as the obvious physical differences in size and markings the 'turns per mile' (TPM) varied over the years, that is the number of turns of the speedo cable to register a mile travelled. This has to be matched to the drive gearing in the gearbox output shaft, the rear axle ratio, the wheel size, and to some extent the tyre size. Get the TPM wrong and both speed and distance travelled indications will be incorrect. Speed is relatively easy to compensate for by making internal adjustments but to correct the odometer different gear sets are required. The table below has been developed largely from the Leyland Parts Catalogue and Clausager and examination of many speedos at autojumbles, with additional information from other sites such as NAMGBR, Autochart and Paul Tegler. However these other sites either don't include TPM figures, are limited in scope, or disagree to some extent with information from other sources.

I am indebted to Ian John of Caerbont Automotive Instruments for supplying me with a list of TPMs for these speedos.

Note that speedos **not** in the list with the exact reference number, even though they have the correct TPM figure, may have different speedo cable fitments, or night-time illumination/ignition warning lamp/main beam tell-tale or fitting arrangements, making fitting them in an MGB not straightforward.

Speedometer Reference Numbers								
Market	**Date**	**Chassis No. From - To**	**Gearbox**	**MPH/ KPH**	**Part No.**	**Serial No.**	**TPM/ TPK**	**Size**
All markets	1962 - Oct67	101 - 138400	Standard	MPH	BHA4478	SN6125/04, SN6124/04A, SN6144/00	1060* 1040? 1040*	4"

except Germany				KPH	BHA4479	SN6125/05, SN6125/05A, SN6144/01	660* 660! 660*	4"
			Overdrive	MPH	BHA4480	SN6125/06, SN6125/06A, SN6144/02	1040* 1020! 1020*	4"
				KPH	BHA4481	SN6125/07, SN6125/07A, SN6144/03	640! 640! 640!	4"
Germany	1962 - Oct67	101 - 138400	Standard?	MPH	BHA4574	SN6144/05	1040!	4"
			Standard?	KPH	BHA4636	SN6144/15	660!	4"
			Standard?	KPH	BHA4637	SN6144/13	660!	4"
			OD?	KPH	BHA4638	SN6144/14	640!	4"
Not Canada, USA, Sweden, Germany, or V8	Nov67 - Nov73	138401 - 332925 138401 - 332394	Standard	MPH	BHA4707	SN6144/20	1280*	4"
				KPH	BHA4709	SN6144/21	800!	4"
			Overdrive	MPH	BHA4812	SN6144/23A	1280*	4"
				KPH	BHA4813	SN6144/24	800!	4"
	Nov67 - Sep68	138401 - 158230	Automatic	MPH	BHA4707	SN6144/20	1280*	4"
				KPH	BHA4709	SN6144/21	800!	4"
	Nov68 - Aug73	158231 - 328800	Automatic	MPH	BHA4868	SN6144/28	1216!	4"
				KPH	BHA4869	SN6144/29	760!	4"
	Nov73 - Sep74	332926 - 360300 332395 - 36100	Standard	MPH	BHA5279	SN6144/20BS	1280!	4"
				KPH	BHA5280	SN6144/21BS	800!	4"
			Overdrive	MPH	BHA5281	SN6144/23BS	1280*	4"
				KPH	BHA5282	SN6144/24BS	800!	4"
	Sep74 - Jun76	360301 - 410350	Both	MPH	BHA5339	SN5230/13	1000*	80mm
			Both	KPH	BHA5340	SN5230/14	620!	80mm
Canada	Nov67 - Jul68	138401 - 153877	Standard	MPH	BHA4707	SN6144/20	1280*	4"
				KPH	BHA4709	SN6144/21	800!	4"
			Overdrive	MPH	BHA4812	SN6144/23A	1280*	4"
				KPH	BHA4813	SN6144/24	800!	4"
	Aug68 - Jul71	153878 - 258000	Standard	MPH	37H 3766	SN5226/03, SN5226/05, SN5227/07	1280! 1280! 1280!	80mm
			Overdrive	MPH	37H 3768	SN5226/08, SN5227/12	1280! 1280!	80mm
			Automatic	MPH	37H 4180	SN5227/16	1216!	80mm
	Aug71 - Apr72	258001 - 282419	Standard	MPH	BHA5084	SN5231/00	1280!	80mm
			Overdrive	MPH	BHA5086	SN5231/04	1280!	80mm
			Standard	MPH	BHA5161	SN5230/06S	1280!	80mm

	May72 - Sep74	282420 - 360300	Overdrive	MPH	BHA5163	SN5230/08S	1280!	80mm
	Sep74 - Jun76	360301 - 410000	Both	MPH	BHA5339	SN5230/13	1000*	80mm
	Jun76 - 1978	410001 - 447000	Both	MPH	AAU 3027	SN5373/00	1000!	4"
Japan	Sep 77	443981 - 447000	all OD	KPH	?	?	620	4"
Canada & Japan	1978 - 1979	447001 - 501000	Both	KPH	?	?	620	4"
Canada & Japan	1980	501001 on	Both	KPH	?	?	620	4"
USA, USA for Germany	Nov67 - Jul71	138401 - 258000	Standard	MPH	37H 3766	SN5226/03, SN5226/05, SN5227/07	1280! 1280! 1280!	80mm
			Overdrive	MPH	37H 3768	SN5226/08, SN5227/12	1280! 1280!	80mm
			Automatic	MPH	37H 4180	SN5227/16	1216!	80mm
	Aug71 - Apr72	258001 - 282419	Standard	MPH	BHA5084	SN5231/00	1280!	80mm
			Overdrive	MPH	BHA5086	SN5231/04	1280!	80mm
	May72 - Sep74	282420 - 360300	Standard	MPH	BHA5161	SN5230/06S	1280!	80mm
			Overdrive	MPH	BHA5163	SN5230/08S	1280!	80mm
	Sep74 - Jun76	360301 - 410000	Both	MPH	BHA5339	SN5230/13	1000*	80mm
All LHD	Jun76 - Jun79	410001 - 498440 (Cal) 410001 - 503250 (other)	Both	MPH	AAU 3027	SN5373/00	1000!	4"
	Jun79 - Oct80	498441 (Cal) on 503521 (other) on	Both	MPH	?	SRM6006/00	1000!	4"
Sweden, Germany	Sep69 - Jul71	187211 - 258000	Standard	KPH	BHA4924	SN5227/20	800!	80mm
			Overdrive	KPH	BHA4925	SN5227/22	800!	80mm
			Automatic	KPH	BHA4926	SN5227/24	740!	80mm
	Aug71 - Apr72	258001 - 282419	Overdrive	KPH	BHA5087	SN5231/08	800!	80mm
	May72 - Sep74	282420 - 360300	Overdrive	KPH	BHA5164	SN5230/09S	800!	80mm
	Sep74 - Jun76	360301 - 410000	Both	KPH	?	?	620	80mm
RHD (not Police)	Jun76 - Oct78	410001 - 480296 GT 410001 -	Overdrive	MPH	AAU 3035	SN5234/00	1000*	80mm

		481115 Roadster						
RHD (not Police)	Oct78 - Oct80	480297 on GT 481116 on Roadster	Overdrive	MPH		SN5234/02	1000*	80mm
RHD (Police)	Jun76 - Oct80	410001 on	Overdrive	MPH	AAU 3036	Z 65465	1040!	80mm
V8 (not Police)	Dec72 - Jul76	101 - 2903	Overdrive	MPH	BHA5210	SN5230/11S	960*	80mm
V8 (Police)	Dec72 - Jul76	101 - 2903	Overdrive	MPH	BHA5317	Z 63973	980!	80mm

Notes:	TPM/TPK	MPH speedos have a 'turns per mile' number on the dial, whereas KPH speedos have kilometre' number, and there are 1.60934 kilometres to the mile. Thus a Mk1 car with 1020/1040/1060 MPH speedo uses the same gearbox components as a car with a 640/ speedo, a Mk2 chrome bumper with a 1280 MPH speedo has the same gearbox comp with an 800 KPH speedo, and a rubber bumper car with a 1000 MPH speedo has the s components as one with a 620 KPH speedo. This means that cars can be converted be KPH simply by fitting the 'other' speedo.
	'*' and '!'	'*' after the TPM indicates that I have confirmed the figure on an actual example of t the number has been confirmed by a manufacturer and repairer of the instruments. '!' after the TPM indicates the number has been confirmed by a repairer of the instrur
	1	The Parts Catalogue shows these serial numbers as having the same part number but a and manufacturers data show different TPMs.
	2	Clausager shows Canada and Japan having KPH speedos from 1978, and Canada and models having 6 - digit odometer, but these changes are not shown in the Parts Catalo
	3	North American spec including Japan had 4" speedos for 1977 on. 85mph, initially ch plastic bezel and trip-reset on the face.
	4	1979 and 80, 6-digit odometer. Not in Parts Catalogue.
	5	Parts List shows this type continuing till Jun76
	6	Clausager states 80mm from Sep74 LHD roadsters only made for North American ma
	7	Reads to 120mph, additional kph markings. Figures outside markings, numbers go 10
	8	Reads to 120mph, additional kph markings. Figures inside markings, numbers go 10/
	9	XA5(XAS?),175x14 tyres, 140mph
	10	Use with right - angle drive
	11	Axle ratio changed and hence speedo

Updated August 2010: Note that 1280 tpm overdrives were used V8s and 4-cylinder chrome bumper cars (the latter having a black label) whereas 1000 tpm ODs were used on 4-cylinder rubber bumper cars and had a blue label. Thus on V8s there seems to be a mismatch between the 1280 tpm overdrive and the 980 tpm speedo, but this is almost exactly counterbalanced by the different axle ratio used on the V8. See here for more information on label colours.

December 2014

I needed to get into the mechanism in order to modify the mileage reading. Bee's trip odo has been jamming regularly this year, which made following Tulip instructions tricky. Fortunately the tenths was still going round, so I was having to add that to the main odo reading, then add to that the next inter (distance to the next turn) for the Navigator to write down. Bad enough, but because the trip and main odo aren't in synch sometimes I ended up a mile out either way. I was going to send it away over winter to be repaired, there are a couple of people who can then set any mileage you require (ordinarily it would be zeroed), but at £90 it's quite pricey and they take several weeks to do it. I'd got to the point of investigating how much new ones were for insurance purposes if mine should get lost, when I thought of looking for used on eBay. I found two, one was exactly right for Bee going by the reference number on the dial at £40. The other wasn't a very good picture but from what I could see looked right, at £20 in 'good condition and fully functioning', both mileages way different to Bee's of course. No shipping price in the ad, and you don't get that until you commit to buy which isn't helpful. Emailed the seller asking them to confirm the numbers and shipping price, but had to wait several days for a reply. Not exactly right - it was originally used on 74 models, but specified in the Parts Catalogue as being backwards compatible with earlier Mk2 cars so fine for me, and shipping a reasonable £5. By that time the £40 one had gone, so I committed to buy this one, then had to wait another week or so with no further info from the seller as to whether it had been shipped or not, before it turned up. First thing I did was test it with my drill on reverse, and the speedo goes smartly round, but neither bloody odo worked! Annoying, as the face and the numerals were in as-new condition, and the bezel and glass were no worse than Bee's. I could have sent it back of course, but more hassle and aggro, and no further forwards. So for the sake of £20 I decided to use it as a learning experience and open it up and have a look at it. Same problems with getting the guts out as with Bee's, which I'd already tried months earlier in an effort to see what was wrong with her trip. See the full story here on fixing the odometers on both speedos as well as a description of how they work.

Speedy Cables is often mentioned as a source of speedo repairs, but there have been complaints of these taking several weeks.
JDO Instruments offers a 48 hour turn round which has been verified by members of the MGOC MGB Technical forum.

March 2008
And now for the question of gearbox drive gears! Whereas for the 3-synch cars the speedo tpms varied between non-OD and OD cars (but by less than 2%) the speedos for 4-synch cars quote the same tpms (1280 for chrome bumper cars and 1000 for rubber bumper) but there are still different part and reference numbers for the speedos according to whether the car was non-OD or OD. This continued up to September 76 and the 77 model year, when suddenly there is only one speedo (different again for the 'new' plastic dash) for LHD and one for RHD, still at 1000tpm as for previous rubber bumper cars, but no corresponding change in gearboxes or ODs.

Looking at the parts lists there always were different speedo drive gears and pinions, with different ratios, between non-OD and OD. But whereas the ratio difference is nearly 3% for the 3-synch gearboxes, it is only 1% for the chrome bumper 4-synch (I don't have all the ratio information for the rubber bumper cars). 1% is insignificant (given that speedos in the UK are allowed to over-read by up to 10% but not under-read) so having the same tpms for both is reasonable, but why the different speedo part and reference number if everything else is the same? Even 3% difference for the 3-synch is not that significant in the grand scheme of things, but the speedo tpms for non-OD and OD cars did take this into account. Although even that isn't straight-forward, as the information I have is that Jaeger instruments were 1060 for non-OD and 1040 for OD, whereas the later (1964) Smiths were 1040 for non-OD and 1020 for OD! Whilst the change from crossply tyres to radial may have required a change in gearing, radials weren't available until 1965, and crossplys remained standard on UK cars until 1972.

The bottom line is that while changing a non-OD gearbox to an OD gearbox will introduce an error of nearly 3%, on a 4-synch car changing from a non-OD to an OD gearbox **of the same era** will only introduce a 1% error and can be ignored. the important thing to remember on 4-synch cars is that if you put a rubber bumper OD gearbox in a chrome bumper car or vice-versa, and don't change the speedo, you will introduce an error of around 20% which is very significant.

And to finally beat this subject to death the table below lists the various gearboxes and what speedo drive gears and pinions were used in each:

	Gearbox	Worm Gear	Starts	Pinion	Teeth	Ratio
Chrome bumper 4-cylinder	3-synch non-OD (dipstick level/filler)	1H3369 (white plastic)	9	11G3264 (white plastic) or 22H1420L	28	1:3.111
	3-synch OD (dipstick level/filler) D-type OD	7H8294 (metal)	5	17H8021 (metal?)	16	1:3.2
	4-synch non-OD (dipstick level/filler) and Auto	22B468 (metal) or 22B649 (white plastic)	10	22B654 (white)	26	1:2.6
	4-synch OD (dipstick level/filler) LH-type OD (black label)	37H3464 (blue)	8	37H3463 (white)	21	1:2.625
	4-synch non-OD (side-plug level/filler)	DAM686 (black)	9	DAM687	30	1:3.333
Rubber bumper 4-cylinder	4-synch OD (side-plug level/filler) LH-type OD (blue label)	37H8844 (red)	6	37H8845 (red)	20	1:3.333
All V8s Note 1	4-synch OD (side-plug level/filler) LH-type OD (red label but see Note 2)	37H3464 (blue)	8	37H3463 (white)	21	1:2.625

Note 1: Using the same pinion and gear as the chrome bumper LH OD may seem incorrect as the 4-cylinder chrome-bumper car has a 1280tpm speedo and the V8 a 960tpm. You have to take into account the rear axle ratio as well, and the lower ratio of the V8 (prop-shaft turns slower for a given road speed) almost exactly balances the difference in speedo TPMs.
Note 2: Label colours are nominal, with MGC having green according to one source and V8s red, however my V8 is black and Geoff Dunlop's in Australia is green. Ex Laycock people at Sheffield Overdrive Services have told me that if they didn't have the right colour available they used whatever they had to hand albeit stamped with the correct reference and serial numbers.

'Starts' refers to the number of threads on the worm gear fitted to the gearbox output shaft (a standard bolt only has one start). The number of starts is another way of setting the ratio between worm gear and cable drive pinion, the greater the number of starts the faster the pinion turns in relationship to the worm gear. This Wikipedia page explains the principle very well and has an animated graphic demonstrating a 4-start worm gear.

SC Parts Group has exploded diagrams of all the OD components (as well as the gearboxes) for all the MGB variants. All the pinions and drive gears are priced, implying that all are available.

Did I say final? Speedo cables used were as follows: *March 2010*

Chassis No.		Gearbox	Cable	Length	Notes
101-9402 101-138400	RHD LHD	non-OD	GSD103	1143mm (3' 9")	It seems highly unlikely, if not impossible, for RHD and LHD cables to be the same length
101-10611	RHD	OD	GSD116	1422mm (4' 8")	
101-138400 10612-138400	LHD RHD	OD	GSD117	1542mm (5' 0")	It seems highly unlikely, if not impossible, for RHD and LHD cables to be the same length. Suppliers show

					this length as GSD115
9402-138400	RHD	non-OD	GSD111	1219mm (4' 0")	
138401-410000	RHD	non-OD	GSD249	991mm (3' 3")	
		OD	GSD116	1422mm (4' 8")	
138401-153877 (Canada) 138401-187210 (roadster) 138401-187840 (GT)	LHD	non-OD	BHA4596	1270mm (4' 2")	not USA, Sweden, Germany
		OD	GSD151	1829mm (6' 0")	not USA, Sweden, Germany
138401-282419 (USA) 153878-282419 (Canada)	LHD	non-OD	GSD104	1373mm (4' 6")	North America, Sweden, Germany, without service indicator
138401-410000 (USA) 153878-410000 (Canada)	LHD	OD	GSD151	1829mm (6' 0")	North America, Sweden, Germany, without service indicator
187211-328800	RHD	Auto	GSD103	1143mm (3' 9")	
	LHD	Auto	GSD116	1422mm (4' 8")	not USA, Sweden, Germany
			GSD117	1542mm (5' 0")	North America, Sweden, Germany, without service indicator. Suppliers show this length as GSD115
282420-410000	LHD	non-OD	GSD145		North America, Sweden, Germany, without service indicator
360301-386600 (Canada) 360301-422791	LHD	non-OD	BHA5351		North America, Sweden, Germany, gearbox to service indicator
		OD	BHA5360	1016mm (3' 4")	North America, Sweden, Germany, gearbox to service indicator
		all	BHA5359	584mm (1' 11")	North America, Sweden,

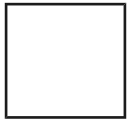
					Germany, service indicator to speedo
410001 on	RHD (all)	OD	GSD315	1450mm (4' 9")	
	LHD	non-OD	AAU3868	1200mm (3' 11")	without service indicator
		OD	AAU3870	1700mm (5' 7")	without service indicator
All V8	RHD	OD	GSD116	1422mm (4' 8")	

I've seen a complaint that the end of replacement cables is too big to fit through the hole in the bulkhead and they had chosen to cut the fitting down a bit in preference to increasing the size of the hole slightly. However pictures (this GSD115 at any rate) clearly show the speedo end is smaller than the gearbox end, I did ask if they had taken that into account but there was no response. Maybe too embarrassed.

Cable routing

On non-OD boxes the cable attaches after the gearbox proper, which on 3-synch at least is just forward of the removable crossmember, as in this image from Clausager. There appears to be a clip holding it to the tunnel wall right by the clutch slave, then it passes through the bulkhead at the hole in the top of the (RHD) drivers footrest.

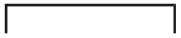
On OD boxes it attaches further back, after the OD, above the fixed crossmember on 4-synch boxes.



It should then pass under the removable cross-member and be supported by a P-clip, however both Bee and Vee have theirs above and cable-tied to the other cables and pipes. In Bee's case the cross-member is the wrong way round so the tapped hole is on the other side. And whilst Vee's is correct, and I could have fitted it in the correct position, where they are is more protected from any rocks, traffic-calming measures etc. and as neither have exhibited any problems in my ownership where they are I've left them be.

It eventually passes through the bulkhead as above ..... and from there makes a graceful turn up and back into the RHD speedo head.

There is also the question of right-angle drives.



The Parts Catalogue doesn't show or list one with the 3-synch standard box but does show and list 13H2567 (120694) with the D-type OD. The drive on the 3-synch standard box exits pointing slightly backwards, and on the D-type OD comes out at a right-angle to the line of the gearbox, which means especially for the non-OD gearbox a right-angle drive allows the speedo cable to run straight forwards and makes sense.

It lists but doesn't show the same item for 4-synch non-OD boxes but lists and shows it for the LH-OD but is completely unsuitable for both. The drive is angled forwards, which not only makes it difficult to attach a right-angle drive and cable especially on the OD with its casting bulge right next to it, but the fixed crossmember has a notch to allow a longer cable to make a smooth turn direct off the gearbox or OD, and the removable crossmember has provision for a clip to support the cable closer to the chassis rail.

It lists but doesn't show it for the automatic box, but exiting at right-angles similar to the 3-synch it does need one.

An important factor on BL gearboxes at least is the provision of copper spacer washer 3H550 between the angle-drive and the gearbox, usually listed in the Parts Catalogue with the angle-drive. Without that there are excessive end-loads on the angle-drive resulting in premature failure, possibly from the square drive shaft protruding too far.

What about the speedo end?

The Parts Catalogue indicates one for the speedo as well - BHA 4794 - for Sweden and Germany from chassis number 187211 (1970 model year), North America from 258001 (1972 model year) to 282419 (May 1972), then 13H2567 for apparently all 1977 and later LHD cars. It would have been needed where the cable came up into the right-hand footwell as for RHD cars (which is at the top of the clutch foot rest) then across the car behind the dash. This would have resulted in too tight a turn behind the LHD speedo in the limited space available, hence the second unit. A number of people with LHD cars have said their cable comes up past the RHD entry point, across the engine compartment at the heater shelf, then in through the bulkhead in front of the driver direct to the speedo, rendering a speedo head right-angle drive unnecessary. This includes 3-synch cars using the large hole under the hinge slot, although Clausager appears to show a 74 car routed in this manner but using a smaller hole further above and towards the centre of the car than the large hole (which contains the heat control cable?).

The question is what happened on LHD cars prior to the 1970 model year? Did they run across the bulkhead in the engine compartment like post-May 72 cars and hence not need one? If so it seems odd that they then brought it inside the cabin for two years, needing a second drive, but a different part to the

gearbox one. But this 1968 model has the cable inside the cabin in the right-hand footwell, and has a right-angle drive on the speedo.

EGR Service Indicator

North American rubber bumper cars had an EGR valve service indicator which was a warning light triggered every 25,000 miles. A resettable counter intercepted the speedo cable, and was positioned on the heater shelf as shown here on Bill Etter's car. The warning light was illuminated each time the car was started as a lamp test facility. The service indicator was deleted for Canada from 1976 on, and for the rest of North America from 1977 on.

On OD gearboxes the cable attaches further back above the fixed cross-member. This cross-member on 4-synch cars has a notch which together with the connection being angled slightly forwards allows the cable to leave the gearbox at almost a right-angle, the bulk of the curve turning forwards being in front of the cross-member and under the floor. Early cars do not show this notch (Clausager p76), but 3-synch gearboxes with the earlier D-type OD do seem to offer more space to allow a right-angle drive to be used. However if a broken right-angle drive on a non-OD gearbox was not replaced (they are expensive) this may need a slightly longer cable to avoid a tight turn.

What year is my MG?

By John H. Zajac

Often the question comes up regarding "What year is my MG?" with the early cars. Cars built in 1951, or even 1950 are titled as "1952" TDs, for example. Early MGBs built in 1962 or 3 may be listed as 1963 or 1964s. Owners of early cars are especially urged to know their VIN numbers in order to get the correct original equipment. Why?

My understanding of the situation is that the "model year" was an American, primarily GM, invention. In the 1930's GM's chairman, Alfred Sloan began the practice to showcase annual styling changes. Soon, every other US manufacturer followed suit, and the concept of a "model year" starting in the fall of the year started.

This system was alien to most European manufacturers, including MG. VW even used their rather stable product plan to their advantage with the Beetle's advertising in the States. The European manufacturers basically updated their cars when required for competitive reasons, and only loosely followed a "model year" concept. MG up until the late sixties was like this, hence the issue with when was it built, when was it sold, what year is it anyway, what do I put on the title? Early cars had model years "designated" by the dealer. It was a world where model years were ingrained into American paperwork registration, and titles (after all, who couldn't tell the

difference between a '59 Chevy and a '60?), but with imports from Europe, well, it was a different story. The dealer typically filled out the paperwork so that a car sold in the model year (October to October) was of that model year, regardless of date of manufacture.

What changed that "system" was the safety and emissions regulations which phased in requirements *by model years* for cars sold in the US. Once that occurred, all the European manufacturers had to follow US procedures for VINs, and linking US-destined cars to specific model years and levels of safety and emissions equipment. Of course, old habits are hard to break, and while I'm sure MG put in all legally required equipment, I've heard how sometimes earlier parts sometimes ended up in the next model year's cars on occasion.

So - it's not unusual for cars exported to the States sold prior to 1967 (I think that's when the first safety/emissions laws became effective) to have wildly different dates of manufacture vs. model year on their title, and why after that a system was imposed on the VIN designation. Later cars, therefore, will have their model year "baked into" the VIN regardless of the date for manufacture. It's easy to imagine how MG would have had to have been building the next year's model in late spring or early summer in order to be in showrooms in the U.S. by the fall.

From 'Original MGB with MGC and GT V8' by Clausager

True VINs, including the model year, only appeared on the very last MGBs - those built between June 1979 and October 1980. Before that car or chassis (UK) or serial (North America) numbers of the form 'G-HN5/nnnnnn-G' (for an MG, 1800cc engine two-seater tourer, 69-79 model, built at Abingdon) were used. In the UK a vehicle's 'year' is generally regarded by owners as the date it was first registered, the exception being for inclusion in the 'Historic' registration class and its free annual Road Fund Licence or Tax Disc, where the cut-off date (31st December 1972) relates to the date of manufacture rather than the date of first registration.

Clausager refers to 'model years' from 1969 on, which started production in November 1968. Thereafter the new model year could start production at any time from May 1978 (for the 1979 model year) to December 1974 (for the 1975 model year) but was typically August or September. 1974 saw another main change-point in September, for the '1974 1/2' model year cars and the full rubber bumpers. Small changes appeared constantly throughout

production, however. The changeover points, listed by chassis/serial number, could be a little chaotic as 'old' parts were used up before 'new' parts were used. Therefore it was common for a car with a chassis/serial number *before* the change point to have some parts that should only have appeared *after* the change point, and vice-versa. The only thing that could be said for sure is that, as far as is known, matched items were fitted i.e. you wouldn't get a car with one 1976 headlight and one 1977!

Dating your car by its windows - based on the original compiled by Neil Cairns.
Updated October 2008

MGs made in the 1950's to the late 1970's can be dated by the 'TRIPLEX CODE' etched into or screen printed onto the toughened glass. This also works for any other make using TRIPLEX glass.

Note that it dates the GLASS, so is only an indication of the cars age, assuming the glass is original.

If you are not quite sure of the year of your car, but the decade is known, just look for dots above and below the TRIPLEX TOUGHENED or LAMINATED logo on the glass. Unfortunately it is complicated by the code system changing in January 1969.

Before January 1969 one dot above T, R, E or X gives the quarter of the year the glass was manufactured:
T = Jan, Feb, March
R = April, May, June
E = July, Aug, Sept
X = Oct, Nov, Dec

From January 1969 the code indicated the month not the quarter, and although the same four letters were used there could be one, two or three dots used:

	.		: .
Jan	TRIPLEX (dot over the T)	Jul	TRIPLEX
	.		: .
Feb	TRIPLEX (dot over the R)	Aug	TRIPLEX
	.		. :
Mar	TRIPLEX	Sep	TRIPLEX
	.		. :
Apr	TRIPLEX	Oct	TRIPLEX
	:		.:
May	TRIPLEX (double dot over T)	Nov	TRIPLEX
	:.		:
Jun	TRIPLEX	Dec	TRIPLEX

But which year? Nine letters make the word TOUGHENED or LAMINATED, one dot below a letter gives the year of the decade:

T/L = 1, O/A = 2, U/M = 3 and so on. However, if you see no dot (or possibly a dot under a space **after** the last letter), the year is zero.

Say your car is a 1950's MG, then TRiplEX TOUGHENED, with one dot over the 'R' in Triplex, and the other under the last 'E' in Toughened, indicates 'April/May/June 1958'.

My 75 GT has Sicursive side glass but a Triplex heated back-light with a dot over the E and one under the G, indicating March 74. The car has a build date of May 1975, so you can see that glass (and quite probably other components) could be hanging round for some time before being used - no Just In Time then!

My thanks to Pierre De Rijck of Belgium for questioning this information when he found multiple dots on his windows, as originally the information from Neil only indicated one dot. The additional info came from these Spitfire and Mini (NLA) sites. However it should be noted that these two differ for 1969 and later for the months of March and April. The former shows the dots over the I and P of TRIPLEX whereas the latter shows then over the E and X as previously. As **both** sites show only the E and X letters being used in all other cases, I'm tempted to think the Triumph site is in error and have assumed such. Pierre also mentioned his two side windows had different codes. This could have been due to breakage in the past, but in his case the two codes seem to be consecutive months in the same year and so are more likely to be from two production batches rather than one. If LHS and RHS glasses are made, packed and shipped separately rather than as pairs this is more then likely, especially given the apparent gap between manufacture and fitting. Less so if the glasses were shipped as pairs, but still possible if one were damaged or a defect found during the build of the car.

The following pages contain similar information in some cases for more modern cars, and there are many other pages found with Google:

Team-BHP.com
Turner 950 Part and Assembly Information
Glass.com
Bob Beranek

Links

Body Brakes Clutch Cooling Electrics Engine Fuel Gearbox Heater Ignition Propshaft Rear_Axle Steering_and_Suspension Wheels

The following sites carry information on a variety of topics:

- **So good it deserves a line of its own right at the top - a set of 'How to' videos from John Twist and University Motors**

I've had to delete the links to the MGOC articles on things like axle clonk repair etc. as you have to be a member to get access to them now. But even then it isn't easy finding them - you have to go to Members Area, Technical Archive, enter search terms and select 'Within Enjoying MG only'. Looks easy written there, but I had to have several goes to get there the first time.

- **from Paul Kile**
- **Paul Lewis**
- **and Norm Nock all of the Sacremento Valley MG Car Club**
- **Barney Gaylord's 'The MGA with an attitude' - mainly MGA but some details and much general information will be applicable to the MGB.**
- **MGA and MGB technical information from British Automotive**
- **Scions of Lucas (SOL). Technical info for MG and other marques much of the 'other marques' info will also apply to MG to some extent.**
- **Skye Poier's 'The MGB Experience' site**
- **Rich Mason's 'Helpzone'**
- **Tech Tips from the NAMGBR**
- **Robert Epstein's 'MGB Tech Tips'**
- **John and Elaine Hubbard's 'MGB-GT' pages**
- **Chicagoland MG Club - Tech tips**
- **for a variety of marques and MG models from Moss Motors (now only available by logging-in)**
- **Parts sources from (Bob?) Lundgren**
- **Automobile Repair manuals Online (not)**
- **Robert Bentley manuals**
- **MGB Parts List available online from Moss USA. Other MG models and marques available.**
- **Miscellaneous MGB info from AutoChart Inc.**
- **Classic car restoration courses at UK Further Education Colleges from Restored Classics**
- **Maintenance tips, recalls and Technical Service Bulletins from SlickCar by Kris Rinson**
- **Fuel Additives Lubricants and Coolant reference information from Stephen Ringlee's Volvo Maintenance FAQ**
- **MOT Manual from GOV.UK**
- **UK MOT info from Haynes**
- **Using a vacuum gauge for fault diagnosis.**
- **Les Bengtson's Classic MG Sports Car Restoration information**
- **More speedo info from Autochart**
- **Yet more speedo info from Paul Tegler**

- **Speedo repairs from Anthony Rhodes or as a downloadable PDF**
- **Speedo repairers and suppliers Speedograph Richfield successors to Smiths Industries**
- **Bespoke and replacement instruments from Caerbont Automotive Instruments**
- **Another on-line Parts Catalogue from Brown and Gammons in the UK**
- **Handy Reference Information from Pegasus Auto Racing - Decimal inch equivalents copper electrical wire specs and more.**
- **Smiths and Jaeger speedo repairs from Tigers United**
- **John Twist's Tech Tips hosted by NAMGBR, on a variety of topics.**
- **US Mechanic EDU brings together the best mechanic training information available in one convenient place.**

Body Links:

- **Bodywork from John Elwood.**
- **Paint Codes from Paul Tegler's 'Teglerizer' site**
- **British car keys cut in the USA by Pete Groh.**
- **Roadster screen from Lee Daniels** (updated link)
- **MGB Chrome Bumper Conversion sites from Google**
- **Body Rotisserie from Bob Beaupre**
- **Body Rotator from Skye Poier**
- **'The Instillation (sic) of Sills & Rockers' from Classic Auto Restoration Services. A commercial site but includes 'How to' and FAQs.**
- **Hood/top fitting from Washington DC Centre MG Car Club**
- **Remanufactured parts from British Motor Heritage Ltd.**
- **Brief information on fitting a child seat in the back of a GT. The lap and diagonal static belt from Securon can be found here. NOTE:** Check the legality of these in the UK following the change in UK law from 18th September 2006, although it seems that systems with an older BS approval marking will remain legal until May 2008. Other than that it is **legal** to have an unrestrained child (or two) in the back of a GT, but **illegal** to have them restrained with an **unapproved** system.
- **Herb Adler on radio speakers, door alignment, door latches, central door locking, alternative seats, fitting an arm-rest cubby, bonnet release, wheel arch liners**

Brake Links:

- **Brake fluid from Veteran Triumph Register**
- **Servo overhaul on a TR6 from Buckeye Triumphs.**
- **Low brake fluid level warning - note the remote servo can suffer seal failure which causes all the fluid to be sucked out of the master!**
- **Herb Adler on alternative brake light switches**

Clutch Links:

- **Herb Adler on clutch release/throwout bearing**

Cooling Links:

- **'Advanced Cooling System Basics' (sic) from Stewart Components**
- **Herb Adler on cooling system enhancements**

Electrics Links:

- **Smartscreen intermittent wiper control.** So good I have them on both my MGBs.
- **Lamp/bulb and fuse info from 'Automotive Lite Bulbs'**
- **More lamp/bulb info from Daniel Stern Lighting including FAQs, Tech info and 'How To'. Note that headlamp aiming shows LHD, reverse the images for RHD.**
- **Lots of electrics info on the 'The T*****h TR6 Web' much of which is also relevant to MGs.**
- **Alternator conversions from Bob Muenchausen.**
- **Converting 4-cylinder tachs to V8 from the British V8 Forum.**
- **Tach calibration and repair from Mark Olsen's Sunbeam Tiger pages. Includes the circuit diagram of the inductive circuit.**
- **Rebuilding a tach with modern electronics from Theo Smit's Tiger pages includes a link to a description of how to modify the inductive tach to work with electronic ignition.**

- **Tip from Crane (may work with other manufacturers products) if your inductive tach (64 to 72) doesn't work with your new electronic ignition.**
- **Enlargeable coloured wiring diagrams in PDF format from Advance Auto-wire. These differ from the Workshop Manual Haynes Bentley in that associated components are placed together so reducing the amount of wiring snaking about and hence making them easier to follow.**
- **Lucas relay info on CRC's TVR site.**
- **Lucas Technical catalogues for bulbs, switches etc.**
- **Racemettle geared starters, contains useful info on the number of pinion teeth used by each model.**
- **Herb Adler on column switches, radio speakers, instrument voltage stabiliser, central locking, alternative brake light switches, LED instrument lighting**

Engine Links:

- **V8 power for the MGB from Dan Masters**
- **MG V8 conversions from Mike Barnes**
- **V8 conversion from Glenn somebody or other**
- **More V8 conversion from commercial site V8 Developments**
- **'MGB V8 Conversions by Roger Parker' - a noted authority**
- **A Buick V8 conversion by Leon Zak**
- **MG Engines from the TA to the MGF by Neil Cairns**
- **BMC engine numbers from 1952 to 1990 also by Neil Cairns. However the section on Gold Seal numbers doesn't include those for the MGB, for which see here.**
- **More info from Neil Cairns, this time on the differences between the 18V engine as used in the MGB and that used in the Marina.**
- **Got an 18V engine with a funny number? These were used in the Sherpa van.** (Note March 2007: Not currently available but I'll leave this link here for a while in case it comes back.)
- **Rover V8 engine number ranges from Capri Racing. Doesn't actually include the factory V8 MGB (or the RV8 as far as I know) but may be**
- **Oil filter study from Russ W. Knize.**

helpful if you get hold of an engine for a conversion.

- **Engine oil bible from 'The Speed-Trap Bible' by Chris Longhurst. Also see the sections on Snakeoils and Additives.**
- **'More Than You Ever Wanted to Know About Motor Oil ' from The Vintage Triumph Register. Biased towards the makes and grades available in the USA.**
- **Another oil filter study from SHOClub**
- **More oil info, this time from a British biker, but mostly applicable to cars. Explanations of viscosity, detergency, relationship between gear and engine oil viscosity ratings, synthetics and additives ("Don't!" in this last case).**
- **Another oil filter study. Two words of warning though - this relates to very high output close-tolerance Ford engines, and to me at least the detailed data conflicts with the conclusions.**
- **Compression Tests - from Puma Racing**
- **Engine weights for many marques by Dave Williams, passed to me by Bob Howard. MG 4-cylinders under 'BL', V8 and V6 under 'Rover'. Some engine dimensions, only for the V8 in the case of MG, also some gearbox weights. See here for Workshop manual info.**
- **Cylinder-head casting numbers - a frequent source of questions - from British Automotive**
- **MGB cylinder head identification from Sean Brown's Flowspeed.com, mainly for North American spec engines.**
- **A little more MGB cylinder head identification info this time from Paul Walbran Motors in New Zealand.**
- **Herb Adler on oil leaks, head removal, running-on, exhaust**

Fuel Links:

- **Carburettor Models by Year from Paul Tegler's 'Teglerizer' site**

- **Polishing SU dashpot covers by Paul Tegler**
- **SU Carburettors by Scott Fisher and Roger Garnett**
- **THE S.U. VARIABLE CHOKE CARBURETTOR by Malcolm Land - what it is and how it works.**
- **Unleaded Fuel - a technical guide from Puma Racing.**
- **Several SU fuel pump articles by Dave Dubois.**
- **Zenith/Stromberg water choke by Rick Jaskowiak. And for a picture of a manual choke conversion click here.**
- **SU carb and fuel pump parts from SU Burlen. Includes spec data on things like piston springs.**
- **Alternatively a downloadable comparison and selection program from Scott A. Beavis.**
- **'Living with Unleaded' from Rick Astley**
- **Tech info from ZTherapy**
- **SU Carburettor Tips by Jim Taylor from the Jaguar Clubs of North America, including piston 'drop test' specs**
- **Detailed pictures of the HIF6 carb linkage pieces on the factory V8 from British Auto.**
- **RON MON and PON (American) octane ratings explained from Wikipedia and compared by Mad Mole.**
- **SU/Butec carb data from Peter & Rita Forbes' Engine Webpages.**
- **'Minty Lamb SU Needle Compare-o-rama'. Shades of Wallace and Gromit, but it is an on-line SU needle comparison and selection program.**
- **Herb Adler on fuel pumps, carbs, using a Colortune, fuel tank sender, fuel leaks**

Gearbox Links:

- **A gearbox testing tool from Kai Radicke**
- **Theoretical Top Speed calculator from mySportsCar.**
- **Herb Adler on gearbox problems, alternative gearbox**
- **Adding overdrive to a non-overdrive gearbox by Octarine Services**
- **Modifying the rear crossmember to give improved access to the gearbox mount bolts. NB: Not sure if this is strictly necessary if you attach the crossmember to the gearbox before you raise the cross-member up to the chassis rails.**

Heater Links:

- **Heater Valve Improvements for BMC B-Series Engines from Bob Muenchausen's 'Muenchausen's Garage'**
- **Herb Adler on an alternative heater tap**
- **MGB Heater Rebuild and Upgrade from Chicagoland MG Club**

Ignition Links:

- **Distributor curves from Paul Tegler's 'Teglerizer' site**
- **More distributor info from Doug Jackson's 'British Automotive'.**
- **Yet more distributor info from AutoChart Inc.**
- **A problem and solution when installing electronic ignition systems.**
- **Transpo supply the electronic module for the 45DM4 distributor. Select 'Ignition Modules', 'Delco', and it is the DM1906.**
- **Points, condensers, rotors and caps reputedly of better quality than those from the usual suspects, as well as electronic ignition conversions.**
- **Electronic Ignition Systems from Autocar Electrical Equipment Co Ltd**
- **Even more distributor info from TDC Engineering many Lucas serial numbers not just MG.**
- **Tuning (as opposed to 'setting-up') Lucas distributors also from TDC Engineering.**
- **Product information for the 123 electronic distributor. For installation and technical data see here.**
- **Original-spec advance springs, yes advance springs, from Distributor Doctor, although unfortunately only for 25D and not 45D. Other springs available if you can quote dimensions, also all other distributor parts and a rebuilding service.**
- **Herb Adler on the distributor**

Propshaft Links:

- **Driveline alignment - problems and solutions from Drivetrain Specialists of Las Vegas**

Rear Axle Links:

- **Wheel hub and rotor/disc measurement points from Wheel Vintiques**
- **Herb Adler on banjo diff, octagonal nuts**
- **See just how much a live axle like on the MGB can move about when pushed**

Steering and Suspension Links:

- **Tube shock conversion from Paul Tegler's 'Teglerizer' site**
- **Make your own steering column/rack shaft alignment tool.** Original link replaced by a section in 'Spanners' as more information has come to light, click on the globe then 'Column/Rack Alignment'.
- **Suspension bible from 'The Speed-Trap Bible' by Chris Longhurst**
- **Herb Adler on steering, rear bump stops, spring breakage**

Wheel Links:

- **Tyre sizes and axle ratios from Skye Poier's 'The MGB Experience' site**
- **Wheels and tyres bible from 'The Speed-Trap Bible' by Chris Longhurst**
- **Tyre Size Comparisons from Club DSM**
- **Tire/Wheel Combination Calculator from Rick Tolan**
- **Solent Wheels, who apparently make a good job of refurbing V8 wheels where the chrome is peeling. They powder-coat the whole wheel silver, then top-coat the alloy with satin black, and polish the areas round the cut-outs, all for £50. I understand they split the centre from the rim and re-rivet in the process.**
- **Central Wheel Components. They can make stainless spokes to fit MGB wheels for you to fit but do not work on the wheels themselves, only motorbike wheels. Highly polished they are close to chrome, but are said to resist breakage better.**
- **Tyre sizes and axle ratios from Scott Galaba's BMW M Coupe and Z3 Coupe site.**
- **Tyre sizing sidewall info construction etc from Dunlop**
- **Wheel and Tyre Sizing from AGP Motorsports**
- **Lots of stuff on wheels and tyres from the All Morgan site**
- **My local wire-wheel rebuilder - Phillips & Son, Unit 3, Seven Stars Road, Oldbury, West Midlands, 0121 544 9060, just a couple of minutes from J2 of the M5. The map (click the globe) has the green arrow close to where they actually are between the canal bridge and the A457, even though that is shown as Park Lane and not Seven Stars Road.**
- **Weights of many wheels, probably all after-market.**
- **British Wire Wheel - based in the USA despite the name. Sell both Dunlop and Dayton so a useful price comparison.**

If you know of any sites containing technical information that you would like to see listed here (including your own of course) please mail me with the URL.