TREGISTER

Totally T-Type

ISSUE 30 NOVEMBER 2008

A labour of love - the restoration of Ian Ailes' TD

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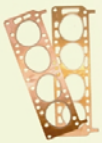

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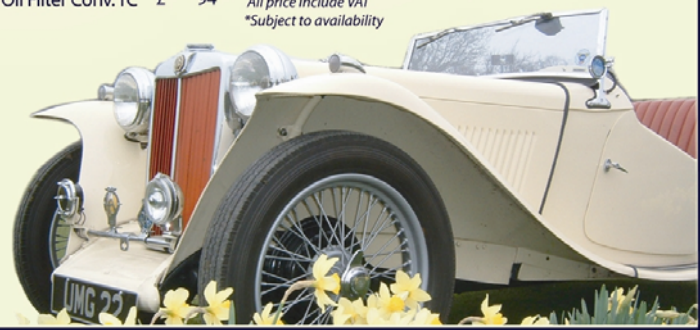


THE EDITOR

Welcome to Issue 30! I'm not going to comment on politics again.….except to say that we have been living in a fool's paradise for far too long and an economy built on consumer spending and debt was bound to end in tears – but then I'm just old fashioned!

I'm afraid it's TTT renewal time again! Included with this issue you should find a renewal form. Please, please deal with it as soon as you can. I am a 'one man band' and chasing up outstanding subscriptions costs me valuable time – time that I don't seem to have these days. Also, if you have sold your car and don't wish to renew, please let me know to save me 'chasing' you; likewise if you still have your car but don't wish to renew for whatever reason please also let me know.

I'm really pleased that we have some good articles in this issue for the TD/TF owner. I have been conscious that the publication was light on articles for these models, but we have put this right, at least for this issue.

I have spent much of my time over the last couple of months corresponding with Gary Watson, the filmmaker of "Inside the Octagon". Gary has now made a follow up DVD to the original "Inside the Octagon" DVD which covered the pre-war years of the M.G. Car Company. The follow up DVD covers the post-war years from 1946 through to when the Factory closed in 1980. It features the T-Series prominently as the TC led the export drive to the USA when a virtually bankrupt Great Britain was in desperate need of foreign exchange to fund post-war reconstruction.

The really good news is that I have been able to negotiate the exclusive rights for The MG Car Club to distribute the DVD in the UK, Ireland and the rest of Europe. This is a win/win situation because Gary knows that he can count on the services of a trusted supplier and The MG Car Club has a great opportunity to market the DVD for the mutual benefit of the filmmaker and the Club.

As you might expect, I have also looked after ……*(continued on page 4)*

the interests of the Register and we shall be carrying out much of the work for the Club, for which we will be suitably recompensed.

Having had a preview of the DVD, I must say that Gary has done a fabulous job and he is to be commended for having the foresight to make both ITO films – the interviews with the late John Thornley and the late Phil Hill and other M.G. personalities are priceless.

My next job after putting this edition to bed is to write a two page article on the DVD for December's "Safety Fast!" By the time the December issue of "Safety Fast!" appears, we should have copies for sale. The NTSC version should be available by the time this publication is received and can be obtained through the following website www.insidetheoctagon.net as can PAL version copies in countries of the world outside of Europe.

Another good bit of news, which has given me enormous personal satisfaction is that we are almost home and dry with the go-ahead to get the MG<>Pavlova sign refurbished. Originally sited within the Factory premises (a period photo will appear in the 'T' Register Newsletter in January's "Safety Fast!"), the sign has languished in the garden of Kimber House for the past umpteen years, where it has deteriorated to the point where it is now only just salvageable.

Neil Sharpe has sent the following correction to an article in September's TTT:

"Being a bit pedantic, there is a point in the steering wheel article in September's Totally T Type that requires correction. The reference to Celluloid describes it as cellulose acetate. It is actually cellulose nitrate.

If anybody is interested, it is made by nitrating cotton (cellulose) with concentrated nitric acid, plasticising the resultant nitrocellulose (an explosive) with camphor and pressing the final product under heat into a machineable sheet material.

OK, chemistry over!

The original name for what was the first thermoplastic was Xylonite, and it was manufactured by Bakelite Xylonite Ltd at their factory in Brantham, Suffolk. I was employed in the late sixties in my first industrial job as a production manager on the camphor production unit there, where both the camphor plant and the nitrocellulose plant were located at the far end of the factory away from the offices and PVC production units, on the River Stour marshes, as both processes were handling extremely flammable materials (well before health & safety at work).

The most widely known uses for celluloid were table tennis balls, photographic film and gaming dice, and of course we all remember the smell of camphor in Vick.

If anybody has any celluloid anywhere, take care as it is extremely flammable, hence its fall from favour in comparison with modern plastics.

Incidentally, the factory is now closed, and we passed it within 100m of it (and diverted nostalgically) on the recent 'T' Register tour of Suffolk".

‘T’REGISTER NEWS (Compiled by John James)

FUTURE EVENTS

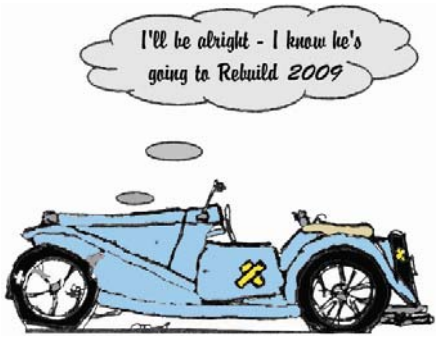
MG Spares Day at Stoneleigh – Sunday 22nd February 2009

Following a successful day at Stoneleigh in February of this year, we are planning to have a Register stand again in 2009. Please make a note of the date and we hope to see you there.

You can bring along unwanted spares for sale and we will NOT charge you commission. All we ask is that items are in reasonably clean condition and each is tagged with a parcel label, giving your name and the amount asked. Additionally, the spares in your name should be listed with a copy for you to keep and a copy for those on the stand. By doing this you will be helping us to help you!

Further details will be given in the January 2009 “Safety Fast!” Newsletter and the January 2009 issue of TTT.

‘Rebuild’ 2009 (14th March 2009)



The date is now confirmed - please note that it is a Saturday. Good progress is being made by the event organiser, Bill Silcock and he is putting together an interesting programme. The day is going to differ from previous ‘Rebuilds’ in that there are unlikely to be any model specific presentations e.g. the session on preparation for paintwork is applicable to all T-Types. We will finalise the programme and give you full details in the January 2009 “Safety Fast!” Newsletter and the January 2009 issue of TTT. The venue is the Community College at St Neots, Cambridgeshire.

T-Types to Europe

Bill and Sally Silcock are currently gauging potential interest in a trip to the Champagne District of France. They are contacting all those who went on the trip to the Ardennes in May as these are the “seasoned tourists” and they would form the nucleus of a touring party.

The likely dates are 15 -19 May (or possibly 8 -12 May) – any later, runs the risk of bumping into the Late Spring Bank Holiday and Whitsun. If you

have not been on one of these trips and would like to know more please contact Bill and Sally Silcock at bill.silcock1(at)ntlworld.com (substitute @ for at) or phone 01525 750468.

'T' Party

At the time of writing we have not decided whether to hold the event next year. If we do, it is possible that Shuttleworth will be 'in the frame'. The summer 'fly in' is normally held on the first Sunday in July.

Silverstone International Weekend 2009

A weekend to pencil in your diaries (the date is by no means firm and could well change) is 10th/11th/12th July.

Having drawn the short straw for the location of the Register car park in 2008, we shall be looking for a far better position in 2009.

SCOTTISH BORDERS TOUR 17/18/19 AUGUST 2009

This Tour has been fully booked for some time now, all the rooms in the Ednam House Hotel, Kelso having been taken. A number of members who live in the area, or are staying with friends near Kelso, have applied to join the event. The arrangements for these applicants will be communicated early in the New Year by the Tour organisers, John and Claudette Bloomfield.

THE AUTUMN TOUR 2009 11/12/13 September 2009

After a very successful 2008 Autumn Tour based at Copdock near Ipswich, planning is well advanced for the 2009 event. This will be based at the Moorland Links Hotel, YELVERTON (www.moorlandlinkshotel.co.uk) on the southern edge of Dartmoor National Park and will take place from **Friday 11th September to Sunday 13th September 2009**. This is one week later than normal so please make sure you check your diary dates carefully.

The location of the hotel is ideal for two varied runs of around 100 miles on the Saturday and the Sunday. The first day will tour Dartmoor with some stunning views and moorland scenery and Sunday will see us travelling further to the South, although the details of that day have yet to be planned. If there is sufficient interest shown we may also add an extension on Monday with a short tour of Bodmin Moor.

Demand for this Tour is expected to be very high and it is going to be a challenge to accommodate everybody as the hotel only has 45 bedrooms.

Therefore we are inviting applications NOW on a first come, first served basis which should be accompanied by a cheque for £45 made payable to "MGCC 'T' Register" for the entry fee. Please contact the organisers Geoff and Annie Matthews 01840 214972 geoff.matthews@yahoo.co.uk for an application form.

THE AUTUMN TOUR 2010

We now have three firm locations to choose from! These are (in alphabetical order) Mid Wales, Rutland and Skipton (North Yorkshire). What's more, we have a volunteer organiser for each one – talk about being spoilt for choice!

The 'winner' will be announced in the January 2009 "Safety Fast!" Newsletter and the January 2009 issue of TTT.

UPGRADING THE TD/TF DIFFERENTIAL TO A TALLER MGA RATIO

At the 'Rebuild' session in March of this year, Malcolm Sayers gave an excellent presentation on fitting a higher ratio (MGA) differential to the TD/TF rear axle. Those who attended were given a photocopy of an article which appeared in *Classic MG Magazine* www.classicmgmagazine.com Noting that the article was an account of a technical session run by our friends in the Southeastern MG T Register (a Local Chapter of the New England MG T Register), I contacted Don Harmer, Editor of the Register's magazine *mgTalk* to help me seek permission to reprint it. Don was very supportive and contacted *Classic MG Magazine* on my behalf. I am indebted to Don, to Dick Lunney co-editor of *Classic MG Magazine*, who wrote the article and gave me permission to reprint it, and to Len Thomas of the SEMGTR, who, as technical *guru* for the session contributed to the article.

I am not going to reprint the lead in to the article, but it is worth mentioning that the SEMGTR has been performing this conversion for nearly twenty years, with Jim Holcombe and Steve Rinaldo doing the first conversions back in the early '80s. Since then nearly fifty conversions have been carried out and the procedure has been refined to almost assembly line precision with key club members bringing the tools and gauges required to ensure the proper tolerances are achieved. The tech session on which the article is based was attended by over 40 SEMGTR members and rear axles were brought along by Florida, North Carolina, South Carolina and Georgia club members.

The article follows and starts with the tools required.

1. **Wooden work stand made from 2x4s and plywood**
2. **Cooler with dry ice**
3. **Leather gloves**
4. **Large (foot/pound) and small (inch/pound) torque wrenches**
5. **Metal and nylon or rawhide hammers**
6. **Ratchet and wrench sets (American up to 11/8" and British sizes)**
7. **Emery cloth (coarse), Scotch Brite and brake cleaner**
8. **Machine press**
9. **Long brass drift**
10. **Two feeler gauges**
11. **Calipers**
12. **Workshop Manual**
13. **Brass shim stock**
14. **¼ " by 2" by 2 foot long steel bar with two holes to bolt to flange**

TD/TF rear differential components required:

1. Differential cage containing the spider gears.
2. Carrier bearings – need to be replaced with new bearings to ensure proper alignment. Use either MOSS (127-300) or Timken.
3. Bearing distance collars – note which side each collar came from (left or right). Often the Factory used different thickness collars to achieve proper centering. These collars need to be put back in the proper orientation and history has shown that the RH collar may need to be up to an additional 0.010 shim to achieve proper centering.
4. Locking tabs (4) – need to replace with new tabs MOSS (266-040).
5. Gasket (optional) – SEMGTR uses silicone (RTV) sealant in place of a paper gasket.
6. Lock washers (new) – always replace lock washers.

MGA rear differential components required:

1. Crown wheel (ring gear) and pinion gear – need to be carefully removed to prevent damaging gear teeth.
2. Crown wheel bolts will be reused since TD/TF bolts have different threads
3. Pinion head washer (critical) – needs to be machined on opposite side of pinion taper to achieve a total thickness of 0.094. This will properly center the MGA pinion gear onto the MGA crown wheel (ring gear) in the TD/TF housing.
4. Inner pinion bearing (critical) – marriage of MGA gears to TD/TF housing requires a new (different) bearing which can only be obtained from a local bearing distributor. Use Timken cone (3188) and Timken cup (3120).
5. Pinion bearing spacer – it may need to be reduced in length by using coarse emery cloth to achieve proper pre-load.
6. Pinion bear shims (0.004 – 0.006) – need to have on hand for use in case spacer pre-load requires. 0.004 – MOSS (267-330), 0.006-MOSS (267-340).
7. Outer pinion bearing – new bearings can be purchased from MOSS (125-805), Victoria British (5-794), or Timken (outer cone 15100, outer cup 15250).
8. Oil seal – MOSS (120-800) or Victoria British (5-885).
9. Dust cover – optional since TD/TF did not use one. If used, the collar will need to be flattened slightly to prevent rubbing on TD/TF housing.
10. Flange – sealing surface needs to be polished (cleaned) using 3M green Scotch Brite.

Conversion Instructions:

The first step in the conversion process is to obtain an MGA differential in good condition. Check gears for damage or wear. Then disassemble, carefully noting which parts will be reused and machined (pinion head washer). *Photo on left and the two photos below refer.*

The next task is to remove the TD/TF rear axle from the car. It is much easier to remove the rear axle if the brake backing plates and drums are removed first (the brake lines can remain attached). The photo on the left shows the axle removed from the car, ready to be worked on.

With the axle removed from the car work can start on dismantling the differential assembly. Follow the instructions in the TD/TF Workshop Manual and (as mentioned previously) carefully note the orientation of the bearing distance collars (left or right).

Remove the crown wheel (ring gear) from the differential cage *(right photo)* and replace with the MGA crown wheel *(photo below)*, using the TD/TF bolts and new lock tabs.

Press off the carrier bearings and from the differential cage and install new bearings, making sure the *inner chamfer* (bevelled edge) goes toward the differential cage, and the *outer chamfer* goes towards the housing *(see next four photos)*.

Next, remove the TD/TF pinion bearing races (cones) from the TD/TF differential housing, using a long brass drift to remove the cups from the housing *(see photo, top right p. 12)*.

N.B. It is important that a brass drift be used to prevent damage to the housing.

Then place new pinion bearing (races) cups in “dry ice” to shrink for at least 20 minutes. Wearing gloves, quickly remove one race at a time from ice and position it into the appropriate location in the housing and drive home with a brass drift *(see next three photos).*

As an aside, the technical experts in the SEMGTR have created a unique compressor (puller) contraption made from threaded rod, old original races, large washers and miscellaneous spacers to pull in the inner race completely *(see photo below).*

Continuing with the conversion instructions, assemble the MGA pinion and by first slipping on the newly machined MGA pinion gear washer, keeping the bevelled edge toward the gear. Press the inner pinion bearing onto the pinion gear shaft. Place the pinion bearing onto the shaft and position this unit into the housing *(see the relevant item in the Workshop Manual)*.

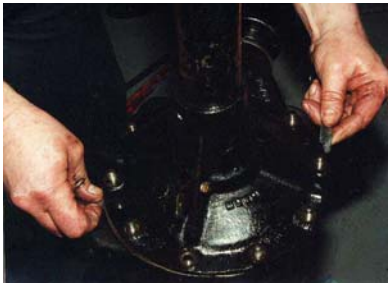
Install outer pinion bearing onto shaft and gently tap into position with a nylon or rawhide hammer. Put the flange onto the shaft and install old *lock washer and nut*. Tighten to 125 ft. pound torque *(photo above left)*. Measure the bearing pre-load with an inch pound torque wrench to achieve 6 in-pound reading (+ or – 2 in. pounds). If there is not enough resistance to obtain the desired reading, disassemble and remove the spacer. Reduce (grind down) the length of the spacer using coarse emery cloth (0.001 in. reduction = additional 3 in-pound resistance.

If resistance reading is too high (greater than 8 in-pounds), add shim (0.001 shim = 3 in-pound resistance reduction).

Reassemble as above and recheck. Once desired resistance (pre-load) is achieved, remove flange and install new oil seal and new washer and nut (be sure to grease sealing surface on flange). Tighten and re-torque to 125 ft-pounds torque.

Re-install RH bearing distance collar into differential housing. Place differential assembly into housing. Assembly may need some finesse and careful prodding to properly seat *(see photo bottom right)*. Place LH bearing distance spacer onto differential assembly. Lower the LH portion of the housing over studs, carefully noting the spring mount brackets on matching side. First we must check pre-load and this is accomplished by measuring with a feeler gauge the distance between the two housings (LH & RH). It should measure 0.010 in. *(see page 14 top left)*.

(A)
If it is less than 0.010 in. then add a shim under the RH bearing distance collar (initially add a 0.010 shim and reassemble and re-measure; use either brass shim stock or a VW crank shaft shim). Once the 0.010 distance is achieved then set the backlash to no less than 1.5 degrees and no more



than 3 degrees rotation of the pinion shaft. Strategically install and tighten three nuts to a snug fit to pull the housings together then measure. If it is less than 1.5 degrees then add more shim stock to the RH side and re-measure. Once the backlash is greater than 1.5 degrees check the pre-load, if it is over 0.010 then the LH bearing distance collar will need to be machined (the difference between 0.010 and your measurement). If the rotation is greater than 3 degrees, then the RH shim size must be reduced and that amount must be added to the LH side.

(B)
If this distance is greater than 0.010 the LH bearing collar must be machined to achieve the 0.010 distance between the housings (only one set out of 50 differentials ever needed this). Once the desired pre-load and backlash is achieved, install paper gasket or silicone RTV sealant. (Note: if paper gasket used, pre-load distance between housing sections needs to be 0.012).

Finally, reassemble housing and install new washers and stud nuts tightening to 30 in-pounds torque.

Re-install axle assembly into your TD/TF and fill with oil. Depending on tyre size, you will be gaining about 10mph at 4,000 rpm.

HINTS AND TIPS

ANSWERS TO SOME QUESTIONS WHICH HAVE NOT YET BEEN ASKED.

I have found Dulux 'Woodsheen' (ebony) to be very satisfactory for painting body timbers and floorboards in a TC. Mike Sherrell in 'TCs Forever!' describes some of the timbers as being "black, like a dye, not flat black or gloss black". That's exactly the finish one gets with 'Woodsheen'.

EKP Supplies (www.ekp.supplies.btinternet.co.uk) sell 2BA roundhead screws without a slot which are a useful lazy alternative to the rivets which fasten the headlamp shell to its base.

A company called Modelfixings (www.modelfixings.co.uk) can supply small quantities of 4BA and 2BA T-nuts and also M5 threaded inserts. I have used these inserts to enable machine screws rather than woodscrews to be employed for holding the front of the under-dash panel to the dashboard backing and for holding down the rubber gearbox cover to the floorboards. It has never seemed to me to be a good idea to use woodscrews in situations where it is likely that they will need to be removed and replaced from time to time. The advantage of the inserts over the T-nuts is that they can be used in blind holes and there is no risk of dislodging them when inserting the screw. Those who, like me, prefer not to use modern metric fastenings in a T-Type might care to note that 2BA has the same pitch as M5 although a slightly smaller diameter so it is a somewhat easy fit in the M5 insert. Nevertheless for non-critical applications 2BA screws can be used without any problem. **Tony Allnutt**

(From Doug McWilliam – TC4647 – Griffith, Australia)

I note the article in the July "Totally T-Type" re the Gas tank filler release spring. I have successfully used a simple dressmaker's safety pin by opening it first so that it opens to about 90 degree angle, closing it again and holding the head with pliers, inserting it in place on the pin then opening it up and cutting the head off and legs to length whilst in place. Simple!

The following from Brian Craft (TD MKII):

When replacing cylinder head studs and the like put a small countersink in the hole prior to fitting the new stud. This will remove the slight raised area around the hole that has been produced during the previous tightening of the nuts.

When fitting lip type oil seals over splines, or less than smooth surfaces, always wrap the rough area with thin tape first, then grease or oil the area before inserting the seal to prevent "pick up".

If you are having trouble removing road grease and grime from your windscreen try cleaning with a non silicone paint cutting compound such as Farecla, T Cut or similar.

Pre-mix your antifreeze before filling the radiator. This has two advantages in that you will not need to run the engine to distribute the mixture and should you spill some on the paint work it is less likely to cause damage in the diluted state.

To remove blind hole bushes, tap a thread into the bush, insert a stud or bolt, then the bush can be withdrawn by placing a spacer of larger diameter over the bush, place a thick washer over the stud and run a nut down to the washer and tighten.

If the bush will not take a thread, try partially filling the hole with grease and then drive in a close fitting drift. Driving in the drift will force the grease under the bottom edge of the bush thus forcing said bush out of the hole.

From David Lewis (TC1037)

I attach a photo of a method I adopted for compensating for slightly enlarged holes in the rear cross member of my TC, where it bolts to the chassis. I initially drilled the holes slightly too far forward and off line. Although perhaps not strictly necessary, I thought it would be worth spending an hour making the plates *(one of which is shown in the photo)* out of some rigid alloy that I had lying about. The bolts are in an easily reached part of the car and it struck me that it might be something worth considering for a well used TC with ageing timbers.

Ed's Note: David is hand painting his TC with Tekaloid coach enamel. I have just seen the results of his labours and the finish is very, very good. He might be persuaded to write an article on the subject for a future issue of TTT.

David has also had new upholstery for his TC supplied by P.J.M. Motors of Market Drayton in Shropshire. David was particularly impressed with their service and having seen the product I think they have done a first class job.

The Story of TD24680 So Far (cover photo)

To cut a long story short, one day I decided I wanted to be with those old cars at the front on the start of the Regency Run rather than at the back in my rubber bumper GT of which I am still very fond. After all, it was built at Abingdon as well. I ended up acquiring TD24680 at the MG Spares Day at Sandown Park on 11th October 1998; 10 years ago! Fortunately it was a cold day and I got the car at a good price, so I thought, until I set out to acquire the bits that were missing or wrong – that is another story! I bought the car as a 'barn find' from a classic car dealer. Having recently joined the Car Club, my new friends Roger Furneaux, Tony Bugbird and Graham Davis of Moto-Build all helped me decide to buy it. Actually, they have quite a lot to answer for. The Octagon CC sold me a lot of books that day! The evening it arrived, I was so excited it reminded me of Christmas Days as a little boy; a feeling long forgotten.

I thought it might be possible to restore the car as a running restoration but having removed the front wings realised that was not going to happen. I ended up stripping the car down to the bare chassis which was just as well because when I got down to the pedal box and master cylinder I discovered that the car had been very crudely converted to right hand drive.

TD24680 as bought in 1998

The chassis was laid down on 3rd February 1953 along with 15 other TDs that day. I had a truly absorbing time trying to trace the history of the car. It was originally built left hand drive for the North American market. It appears to have started out in California, then moved to France and was eventually imported into the United Kingdom and registered in Coventry on 18th September 1964 and given the registration number 9365 KV. When I bought the car it had nothing but the rear number plate. I tracked the registration down to the Museum of Transport in Coventry which held the original records, as a result of which I was able to re-register the car with that number. I eventually traced it back to the original owners who obligingly found the original Log Book listing the previous owners although I have been unable to trace any of them. The car ended up in Taunton having been acquired by the previous owner in 1972 with the intention of restoring it and as is so often the case, this never happened. It ended up being sold to a dealer 26 years later who then sold it to me.

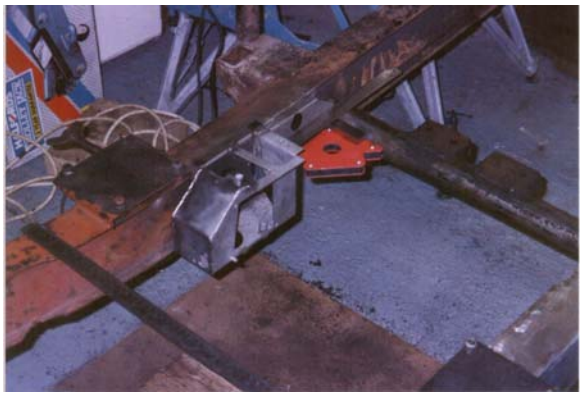
So the journey began to restore the car with a ground up re-build. By this time, I had met Mike Card, Eric Worpe and Barry Knight. I strung along with them as the 'kid' to learn about restoration even though I was not 'qualified' because they were all TC boys, and I, rather like the looked down on rubber bumper owner, was a TD owner. Nonetheless they have become very good friends. I learnt some very important lessons from all of them. In particular, Mike had set out to do the definitive TC restoration which he has now done. If you have seen his car and read the articles on it, I would say it exceeds the standards of Mike Sherrell and he really does know what he is talking about. I have decided that my restoration will not be to win prizes at concours competitions but to restore the car as closely as possible to the day it drove down Cemetery Road in 1953. I have tried wherever possible to put back the original parts into the car even if it means that they are a little shabby. I have tried having parts re-chromed but it doesn't work unless you are really lucky. Some of the re-manufactured parts are good copies of the originals whilst others merely serve to do the job. For example, the original Acorn Nuts on the spare wheel carrier have a beautiful line to them but modern Acorn Nuts look nothing like them. I have also acquired a lot of original literature so that when the time comes to put the car on the road and the 'wheel kickers' tell me the spotlight is wrong, I can produce the 1953 Lucas catalogue showing that the SFT576 spotlight was not listed by Lucas until their catalogue was published in June 1954. Concours judges take note. There is also a film showing a TD leaving the factory with a SFT462 spotlight fitted to it. This is bad news for TD restorers because it is a rare lamp to get hold of and is usually sought after by late TC restorers.

I am now the last of the four to get my car back on the road although it did take Eric 25 years to do his and Mike 10 years. I think Barry won the race and his car took about 8 years to complete.

One of the most important lessons I have learnt is that unless you strip the car down, you do not know what is inside and this proved all too true when I discovered the mess that had been made of the pedal box and the plate holding the master cylinder. These had been brazed on rather crudely and had to come off. I spent a huge amount of time researching the measurements for the pedal box and the master cylinder mounting plate because on my car they had been rather neatly cut off on the left and I have no reference points. I eventually found a drawing of the chassis and this gave some of the measurements. I have tried to make that drawing freely available to as many Club members as possible but there is a second drawing out there which I have, so far, been unable to find. It shows the detail of the clutch and brake pedal bracket. It is drawing number 136162-W produced by Morris Motors Ltd, Cowley, Oxford. If anyone has this drawing, please lend it to me so that I can reproduce it for other Club members to assist in their restorations. This brings me on to a very important point. When restoring T Types, remember that all the measurements are Imperial and will be exact Imperial measurements although as I am dictating this article, I have noted one measurement which

shows the maximum width of the chassis as being 15.82 inches from the centre line. Not helpful! Malcolm Green pointed out to me that the chassis drawings were all prepared from the prototype chassis after it had been built.

There are two fundamental points to note if you are converting a car to right hand drive. Firstly, the master cylinder mounting plate must be welded at right angles to the centre line of the chassis so that it is square with the cross tube rather than the right hand chassis rail. Secondly, the captive nuts must be offset so that the brake pedal arcs correctly with the piston in the master cylinder. There are a number of conversion kits where the plate has been incorrectly manufactured. A second pitfall is the pedal box. Everybody I know who has installed a right hand conversion has fallen into it. What happens is that the bottom of the brake pedal lever fouls on the bottom of the pedal box. I discovered why but still fell into the trap. The reason is that the re-manufactured pedal boxes are wrong. If you look at the photograph *(below)*, you will see that the left hand flange is level with the rest of the box. On the original TDs this flange was raised by approximately one thickness so that when the box is welded onto the chassis rail, the three other flanges are flush with the top of the rail whereas the mounting flange is raised. If you buy a pedal box you will almost certainly have to reform the flange so that the rest of the pedal box sits beside the chassis rail. If not, it sits too high and the brake pedal catches on the bottom.



It is also important to get the tube in the chassis rail welded in correctly. The centre line should be 1.5 inches down from the top of the chassis rail. Once the tube has been welded in, you will need to ream it out with a ¾ inch reamer to remove the distortion from the welding. Fortunately these are freely available at auto jumbles and even car boot sales. Do not use an adjustable reamer. If you get stuck you can borrow one of mine, I now have three!

I had to get someone to come round with oxy-acetylene to burn off the old brazing which took some doing. Fortunately I did a City and Guilds welding

course at North West London College of Technology. This was really a beginner's course for car restorers but it is run under the City and Guilds scheme. Not only did I get a Certificate, I also got a Student Union Card and I am fairly sure I got the cost of the course back on student discounts at the Edinburgh Festival!

Once I had repaired the chassis, which was in surprisingly good condition apart from the conversion, I had it shot blasted and painted and it looked really good on the day the painter brought it back. The first nut and bolt went back on the car on, coincidentally, 3rd February 2003 50 years to the day the car was built. Here is a picture celebrating the event and my partner Kay performed the ceremony. Note the coffee and cream cake.

I am now going to skip to the tub. I bought a new ash frame and used the original ironwork. It was then re-skinned for me by Mick Trueman in Bradford. He used the original scuttle and repaired the bulkhead. The photo *(left)* shows the tub on the chassis. When we lowered it on, all the original stretch marks in the chassis and the angle irons on the frame matched perfectly. I then discovered the next pitfall. The rear nearside bracket taking the tub turned out to be about ¼ inch higher than it should be. Had I fitted the tub before the chassis had been painted, I would probably have cut the bracket off and welded it in its correct position. However, my original plan was to restore the car as closely as possible to

factory spec and so I have left the bracket where it is because that is where the factory put it.

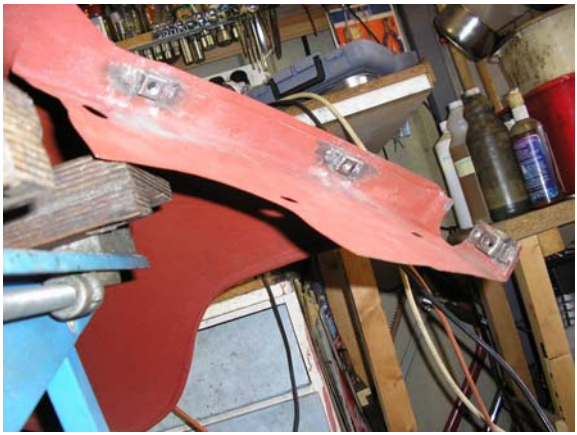
The next task was to fit the bulkhead to the tub. At this point I hit the 'wall' and the car sat in the back of the garage for 2 years whilst I diverted myself to acquiring a factory V8. I found myself talking to the owner of a Tigress at the Brooklands MG Day who is currently restoring a TB. His advice was to take 2 weeks off work. I couldn't do this but recently took a week off work to do the first fit. The photograph on the front cover shows the progress. I am now going to attempt to explain how to do the first fit and try to include all the bits that the books leave out.

Two years later – first fit of the body

When my car was built they were producing 16 a day so they did not spend much time getting things to fit. Having got the tub sitting on the chassis, the first task is to fit the bulkhead – do not! Start by fitting the firewall to the bulkhead and then the 2 bulkhead supports. These should be loosely bolted together. Start by putting in 2 bolts on each side of the chassis into the mounting pads from the bottom up. You can then drop the assembly on to the bare threads to give you a locating point (see photo). The assembled bulkhead can then marry up to the tub frame. From inside the tub, you can then line up the 2 small tabs with the ironwork on the tub as shown in the photograph, and fix the bulkhead to the tub using small wood screws and washers without drilling any holes in the wrong place. From underneath the scuttle, note the position of the bolts on the inner dashboard brackets. If you are unlucky, the bolts which will hold the bulkhead to the tub will end up in the same place. You may need to take the ash rails off the tub and reposition the bracket bolts so that they do not foul each other. Hopefully you can see what I mean in the 2 photographs at the top of page 22. Once you have got the 2 lower bulkhead tabs lined up with the tub you can then start to set out the bulkhead and, hopefully, it will shape up between the bulkhead supports and the tub as you can see in the third photo on page 22. For the first fit, I have used woodscrews. Drill out and put in the bolts on the second fit prior to painting.

The next step is, I think, to fit the radiator with its shell on. The cross member supporting the radiator can only be fitted one way; it will of course fit 2 ways, the right way and the wrong way. It has to be fitted so that the radiator is forward of the cross member otherwise the radiator will foul on the fan when the engine is fitted. You will see the offset on the cross member and hopefully in the photograph you will see that the bigger flange goes to the front.

The radiator together with its shell, which should be carefully protected with sticky tape on the chrome, is then fitted onto the cross member. The radiator has to be at right angles to the cross member and obviously level with it across the chassis. You can then fit the 2 lower support rods and 2 upper support rods which go from the bulkhead mounting bracket to the top of the radiator. These are adjustable. Once the radiator is in place, the bonnet tops can be fitted loosely. The front bracket looks after itself but the rear bracket should be left off. Carefully measure the centre line of the scuttle so that you can align up the bonnet tops. Once fitted, the bonnet sides can be fitted. A cordless electric drill is a useful tool for this. Put the brass rod into the drill chuck and gently spin it as you feed it through the 2 panels.



I have, wherever possible, used the correct fixings including replacing some of the captive nuts with BSF threads. I had to replace 3 on one of the front wings. These were originally spot welded and I plug welded them as you can see in the photograph. Having spent ages cleaning up the welds underneath, I realised I should have plug welded them from above which would have been much easier to grind down and, of course, the weld is hidden behind the front valance anyway. This hobby does seem to have a habit of taking me down the most difficult route.

The wings can then be fitted and should not prove too much of a problem although an extra pair of hands is useful. The headlamp support brackets can then be fitted to provide additional support to the wings from the radiator. On my car, the offside wing sits about 1 inch lower than the nearside wing. This maybe due to the imperfect shape of the wings or the position of the radiator. Frankly, I think a difference of 1 inch between the two is well within factory spec. I do not think it is worth trying to straighten it out. Similarly, the front valance doesn't sit quite evenly around the radiator grille but, again, to try to correct the error may be impossible. You may even find that the radiator shell is not symmetrical or has possibly been repaired in the past and so the valance can never sit evenly around it without replacing the radiator shell. By the way I have 3 spares!

That was the easy bit, now comes the problem of fitting the back wings. The position of the back wings is determined by the tub (obviously) and in particular the bottom edge of the tub where the wing starts. It is then further determined

by the captive nuts in the inner wheel arch and the rear angle irons. Finally, it is determined by the rear bracket on the chassis. All my TD/TF owning friends said their wings bolted straight on but mine didn't. I have just about got them to fit but they are fouling on the rear spring hangers (which need to hang down as far as possible) and on some parts of the new tub. These will have to be adjusted by a panel beater before the car is sprayed. Believe me, pay someone else to do this rather than ruin the original wings.

The running boards should then fit in between the front and rear wings but you will be lucky if the back of the running boards match the profiles of the leading edge of the rear wings. Again, leave this to the body shop or live with a slightly crooked gap. I do not think it is worth trying to correct this which may, after all, relate to a slight imperfection in the new tub. I have to say that I think my tub is pretty good and the error probably lies in the original wings which have probably been bashed about over the years.

The running boards should drop in between the wings. Holes need to be drilled to support the running boards against the tub. Each board is fitted with two 3 ¼ inch BSF bolts and one 3¾ inch BSF bolt. The 3¼ inch bolt goes at the front where the ash frame thickens out.

The final task is to fit the spare wheel carrier, petrol tank and rear valance. Now this really is fun! It was at this point that I discovered that the paint shop had lost one half of one of the brackets that hold the wheel carrier to the rear chassis tube. I had to make up a temporary bracket and am now searching for a spare one. When the tub arrived, the holes for the spare wheel carrier were already pre-drilled. I concluded that these were probably in the wrong place but having now fitted it, I am not so sure that they were. Don't be too quick to reach for the drill otherwise you will

end up with more holes than you need. The spare wheel carrier is fitted to the tub over the tank straps and a small plywood spacer which may need replacing (see photograph). You will also need to thoroughly clean the bottom brackets and the carrier so that these move freely to adjust whilst you are assembling everything. There are also plastic protective spacers which go underneath the tank straps which should be fitted to allow for their thickness. I have not fitted the trim to the wings at this stage but they will have to be trial fitted before the body is painted to make sure there is enough room for them on the final assembly.

Finally, and hopefully, the rear valance should just bolt on to the chassis.

I was not looking forward to doing the first fit because it seemed to me to be a waste of time. Having done it, it certainly was not and I intend to do a second fit with the piping just to make sure it does all go together before it goes to the paint shop.

I think it only fair to acknowledge the help I have had from Carl Ord from Moss Bradford, Mike Trueman of Metalcraft, Bradford, Andy King and Mike Sherrell's *TCs Forever*!. I still have a long way to go but I hope that this article and the photographs will make the task easier for future TD restorers. I cannot imagine writing TDs Forever but if every TD restorer could write a chapter, I am sure our noble editor would incorporate them into a single publication.

Finally, I must thank my secretary Jane for typing this article which I hope has been useful.

Ian Ailes

A Technical Review of the:

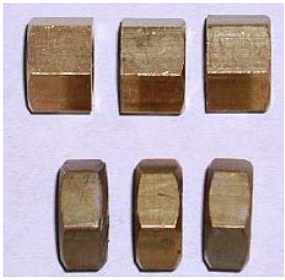
MG TC EXHAUST SYSTEM

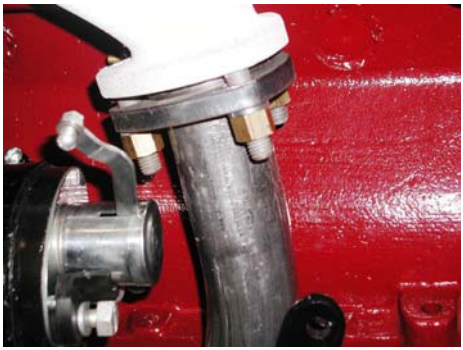
The exhaust system has been one of those areas that have plagued numerous TC owners with countless hours trying to fit and fix habitual exhaust leaks with modern day replacement parts. In order to understand the system and offer solutions, we must review each segment starting with the exhaust manifold and continue to the tailpipe. This review will also offer what was original, what is available today, and solutions to common problems.

1. Exhaust manifold: There are 3 studs screwed into the manifold to hold the down pipe. Through the years some of these have been stripped out and replaced with an oversize hole and bolt. Just use a helicoil to return to the original studs. Also, before you use a pipe wrench or piers to extract or insert the studs, just double nut them, tighten, and the use a normal wrench to remove or replace. This avoids any damage. Also, you should note the length of the manifold studs. TC studs are 1 7/8" long compared to TD studs which are 1½"" long. Through the years parts have had a tendency to migrate between models.

2. Exhaust manifold and down pipe connection: The order of assembly for this area is the manifold, layered (copper and asbestos) gasket, cupped washer, down pipe, which are all held in place with the flange and 3 brass nuts. The original system had the cupped washer as central element that was the key to the design. The cupped washer was made to fit snuggly into the flared end of the down pipe to complete the seal and yet rotate and swivel to allow alignment of the down pipe to the engine bracket and muffler. Many installations have had no problems and the system has bolted together as stated. However, many of today's replacement down pipes have *not* been "flared" to the correct diameter of the cupped washer. Therefore, there can be a gap of up to 3/16" between the wall of the down pipe and the cone of the cupped washer. This has led to the chronic exhaust leak. In the long term, the manufacturers must adjust their tooling to correct the problem. In the short term, for those that experience this problem, there is a simple solution. That solution is to discard both the

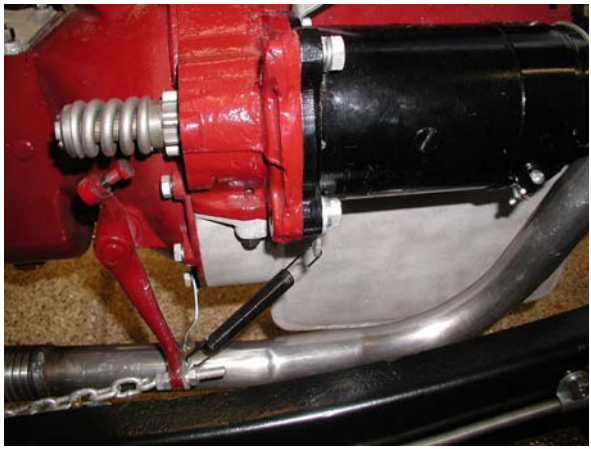
cupped washer and copper gasket and replace it with the exhaust flange gasket of an early model MGB. It has a combined cone washer with gasket material that fits nicely into both the exhaust manifold and exhaust down pipe. Tighten the brass nuts and lock washer and you are done; almost. Did you know that the original brass nuts (10mm x 1.5) are longer (about ½") in length? These original nuts have somehow been lost with time and replaced with modern standard thickness metric nuts.





3. Bell housing bracket: The next point of attachment is the down pipe to the bell housing. This has also been a problem area in that it does not always connect to the bell housing. Originally, there was an additional bracket that has been lost, misplaced, or discarded. When the engine and gearbox was installed at the factory, they had a metal tab bolted to 1 bolt on the bell housing (at the 5 o'clock position). It had 2 additional blank holes that were also elongated for adjustment. According to the original MG Midget Factory Specifications #259, there were 2 - 5/16 BSF x 5/8" bolts w/flat and lock washers used to attach the welded tab on the down pipe to the bell housing bracket. Depending on the today's exhaust system manufacturer, the welded tab on the down pipe may or may not fit directly to the bell housing. If it does not, you can make a simple bell housing bracket. Just use a piece of stock steel measuring 2½ long x ¾" wide x 1/8" thick. Drill a 5/16" hole for bell housing bolt and 1 or 2 - 3/8" holes for exhaust pipe bracket tab. There have been reports of some who have replaced or re-welded the down pipe tab with a longer one to get it to fit. Others have simply ignored this tab and never bolted it to anything which has never

really caused any other problems. This hand made bracket solves the bell housing connection problem.



The two photos on the left hand side of this page show the metal tab bolted to the bell housing at the 5 o'clock position.

The lower picture also shows the clutch pedal return spring in position. (The Editor still has a couple of pedal return sets in stock, or you can obtain them direct from Doug Pelton).

4. Down pipe to muffler connection: This connection is very simple with the flange compressed against the muffler with a gasket in between. The 2 studs are integral to the muffler itself. Original size nut was 3/8 BSF with flat and lock washer. A simple trick to hold the gasket in place during install is to use a little "plumbers putty" on the gasket and press in place. This will hold it temporarily and squeeze out when tightened to form a seal.

5. Muffler: Original factory documents refer to the muffler as a "Burgess Silencer". Burgess was the manufacturer back

then and is still in business today as Burgess-Manning manufacturing the same. The muffler is bolted to the frame with 4 - 5/16 BSF x 5/8" bolts, lock washers and hex nuts.

6. Muffler to tail pipe: One item that is conspicuously absent from parts manuals and even the Factory #259 specifications is that there was no clamp to connect the tail pipe to the muffler. The simple reason is that when the tail pipe was mated to the muffler at the Factory it was welded in place. There was no clamp. However, today's mufflers and tail pipes are sold separate so they do require a clamp. One solution is a standard 1 ½ exhaust clamp available at any local muffler shop. However, this would not be "period correct". Therefore, for the perfectionist, you should use a period correct clamp that is made of strap steel similar to the next item, the tailpipe clamp. However, the muffler clamp is circular only and will not bolt to the frame

7. Tail pipe clamp: The tail pipe clamp is readily available and holds the tail pipe rigid to the frame just below the gas tank area on the driver's side. It requires a 5/16 BSF x 7/8" bolt with flat and lock washer and hex nut.

8. Flexibility: The exhaust system is held rigid to the engine, from the exhaust manifold to the connect point at the bell housing. It is also held rigid to the frame, from the muffler to the tail pipe. In order to allow flexing between the engine and the frame, there is a "flexible" portion of the down pipe between connecting bolt to the bell housing and the muffler.

Considerations: If you experience any uncommon noise from your system, it is normally caused by a crack or hole in the pipe or muffler connections. I would suggest you inspect each of the areas discussed

above and hopefully it is only a matter of loose hardware. Although original systems were made of plain steel, most of today's replacement systems are stainless steel. These newer systems provide years of durability.

Finally: Hard to find items. If you require the original type exhaust manifold nuts, the conversion exhaust manifold gasket replacing the cupped washer or the period correct clamp for the muffler to tailpipe, these are available at: www.FromTheFrameUp.com or contact me direct at: dougpelton@cox.net As always comments are requested and welcome. **DOUG PELTON**

SPARES R US

The first significant trip I did after rebuilding my TC was the 1996 Continental Tour – a brave step into the unknown. The greatest distance my wife and I had travelled in the car prior to that trip was about 40 miles to Silverstone and the car itself had done barely 1000 miles. We were also totally inexperienced in the art of T-Type travel – something we were to learn rapidly as the trip progressed.

Being new to the game, I was very cautious about spares, taking a lot. As it happened, on that trip arrangements had been made for a range of spares to be carried by participants on a sale or return basis. Future trips were on a more informal basis with only 3 or 4 cars travelling together and I decided it was necessary to be more self-sufficient in spares. But storage was a problem, only solved when I read Harry Pyle's book "Drive them till the Roads wear out". He describes how he had made boxes to fill empty spaces – notably under the diff cover where, on a TA, the 6-volt batteries go. I built a pair of these boxes (see photograph) and they provide a substantial amount of storage space.

So, for some years now I have carried around a range of spares, tools and other essentials. The Table *(page 33)* lists them. The toolbox in the bulkhead is capable of carrying a significant amount of stuff. The rest is carried in the two boxes under the diff cover – especially bulky items such

as the spare oil and spare inner tubes, as can be seen in the photo. I also rigged up (using bungee rubbers) supports for a foot-pump and a set of jump cables in empty space under the dashboard. Incidentally, most of the tools have been purchased at autojumbles and the like over the years.

But how useful has this apparently large amount of spares and tools actually been in the 10 years or so I have been travelling around the UK and Europe? Actually I've hardly used any of them – other than consumables like oil, water and grease (for the grease-gun, it needs a service every 500 miles). They have also come in handy helping out fellow travellers, but even then infrequently.

For my part, the only spares I've had to use were a bracket fabricated out of dexion when the exhaust-bellhousing bracket broke; a distributor cap/rotor arm when the car flooded in the Harrogate 'T' Register Weekend a couple of years ago (in the torrential rain on the Saturday); a fanbelt in Brittany last year, together with a washer to stop an oil leak from the block-to-head oil pipe union. I used the multimeter during the Dutch European Event to trace a fault with the wiper motor feed (it turned out to be a poor earth connection). That's about it, other than spanners occasionally used to tighten up loose bolts – a perennial T-Type problem.

I have found myself helping others on a number of occasions. The most common faults are electrical – I currently carry three rotor arms as the modern pattern part ones seem to fail all too frequently. Distributor caps are also known to fail. On the recent Suffolk weekend I provided a replacement coil for a fellow traveller, but coil failures are rare in my experience. I've provided gaskets when a component, such as the water pump, is being replaced and the odd flexible water pipe and/or jubilee clip. I even provided a replacement 19x4.50 inner tube on one occasion. Almost always the recipient lets me have a replacement when they get back home. Tools have come in handy from time to time to help with a repair. Usually it is the more unusual sizes that one rarely needs, or specialist tools such as circlip pliers.

The truth is – our cars are very reliable if properly looked after. Rarely do they fail in a major way. Most failures are for relatively trivial reasons – all too often electrical. The vast majority of the tools and spares I carry have never been needed BUT at least I know they are there should that be the case.

Of course, I know I am tempting fate by writing all this down, and that my car will, now, fail me needing that one spare I don't carry – but the chances are that someone else will have it or will know someone who can provide it.

Chris Sundt
September 2008

Tools

Jack
Wheel nut hammer
BA: 0/2,4/6; 2/4 ring;
Metric: 8/10, 12/14; 10 combi, 13 combi
AF: ½ 9/16 OE; 9/16 combi, ½ combi
Whit combi: 3/16; 5/16
Whit OE: 1/8, 3/16, 1/4, 5/16, 3/8, 7/16 ,½
Whit ring: 1/8 – 3/16, 3/16-1/4, ¼ - 5/16, 5/16-3/8
Socket set 3/16-7/16 BSF/W
small socket set Rear wheel nut socket+ 1/2 – 5/8 adapter
1.125" socket
V. large ring spanner
3/4" socket bar
Circlip Pliers
Centre punch
Brake bleed tube
Screwdrivers
Tyre gauge
Scissors
Pliers – various
Adjustable spanner (large & small)
Continuity tester
Mole grip
Feeler gauge
Plug brush and Plug gap tool
Plug spanner
Tyre valve remover
File
Stilson's
Magneto Spanners
Stanley knife
Allen keys
Multimeter,
Jump leads
Tyre pump, tyre levers
Grease gun
Insulating tape
Various washers, split pins, etc

Spares

1 litre EP140
2 litre engine oil
Grease tin
Set front wheel bearings + oil seal
Exhaust repair bandage
Locking wire
Flexible brake hose
Carburettor float
Core plug set
Water pump
Petrol pump
16" & 19" inner tubes
Silicon brake fluid
2 x SU Carb kits
Rear bearing star washer
Rear wheel bearing & oil seal
F & R brake cylinder rubbers
Gasket & bits for manifold/downpipe joint
Various sealers/Hermetite
Spare bulbs
Spark Plugs
Distributor cap, Contact Set, Condenser, rotor arms,
Coil
Oil pipe (pump – filter & filter – block)
Oil pipe (block to head)
Puncture repair outfit
Various electrical connectors & fuses
Engine gasket sets
Fanbelt
Complete hose set & Jubilee clips
Water
Radiator cap spanner (home made)
Roll of Lint-free cloth
Wire - electrical and other
Box of nuts, bolts, split pins, etc
Box of tyre valves and valve string
Fibre, plastic, copper washers (& sump plug)
Cable ties & Tank tape

THE TRUE STORY OF THE XPAG ROCKER PEDESTAL PACKING SHIMS

(This article by Baard Nielson, originally appeared in "Safety Fast!" in April 1995 and I thought it to be worthy of publishing again)

"The recent discussions in these pages on whether to use packing shims or not below the rocker shaft pedestals when a XPAG head is skimmed has aroused my professional interest. The cacophony emitted from the valve gear of my TC was so intense that I chose to use valve gear motion as the subject of my university main thesis back in 1972 – the thesis is in fact dedicated to that XPAG valve gear!

Did you know – the engine noise from the XPJM (the original Morris version of the XPAG) was immortalised by the BBC as being their first standard recording of the noise from a motor car engine? ……but back to the packing shims:

To sort out this issue it is important to have a clear grasp of the different relative motions taking place at either end of the rocker, between rocker tip and valve at one end, and the ball and pushrod cup at the other. Let's look at the valve end first:

The valve stem end moves in a straight line up and down as the valve opens and closes. The rocker tip, however, moves through an arc around the rocker shaft centre. In principle, this would cause the rocker tip contact point (ideally a contact line) to slide across the valve stem end as the rocker moves up and down. This sliding would set up a side force on the valve stem, and cause heavy wear on the stem and guide.

To offset this sliding the rocker tip is curved. The aim is that the rocker tip should perform a rolling motion against the top of the stem as the valve moves up and down. This minimises side thrust and also wear, both in the stem/guide and the stem end/rocker tip.

The tip curvature is usually a circle, and to achieve the purest possible rolling motion, the radius and centre location of the circle must be 100% correct in relation to the general geometry of the rocker/valve setup.

Have you ever studied a worn rocker tip? Ever so often the wear is deeper towards one end of the tip curve than the other – in my XPAG experience the inner end of the tip is usually more worn than the outer. There is more than one reason for this, but one is certainly a poor match between the rocker tip circle radius and centre location in relation to the valve and rocker geometry.

There is another consideration that also enters into this picture: given that the degrees of rotation of the rocker is determined by the cam lift and the geometry at the pushrod end of the rocker, how do we get a maximum of valve lift out of the rocker rotation? The optimum condition is that the valve stem and the effective rocker radius for a 90 deg. angle at half valve lift.

Keeping the required high accuracy of the tip curve in mind, consider what would happen to this geometry if you lifted the centre of rotation of the rocker,

but let the valve stem end remain where it was – this is what you do by fitting packing shims under the rocker pedestals: all this finely tuned geometry is totally distorted. The packing shims are obviously not a good idea at all.

Let us now consider the other end of the rocker. Here we have a ball and cup connection between the rocker and the pushrod. If we want to have maximum of rocker rotation (and hence valve lift) combined with the lowest possible mechanical loads, we have to aim for a condition where the pushrod forms a 90 deg. angle with the effective rocker radius at half cam lift. And remember; at the pushrod end the effective rocker radius is a line drawn through the rocker shaft and the centre of the adjusting screw ball.

But apart from this, the ball joint itself has a very high capacity to cope with misalignment. The geometrical setup described above is desirable, but not essential and the joint is well capable of accommodating a condition whereby the ball centre was a little too high – i.e. shifted up as much as was skimmed off the head. This would be the situation if you skimmed the head but did not introduce the packing shims.

Shortening the pushrods by an equal amount as is skimmed from the head is obviously the only perfect solution, and the second best is leaving the rocker shaft centre where it was designed to be, keep the pushrods as they are, and compensate by lifting the ball centre of the rocker/push rod joint. The packing shims are indeed the least desirable solution.

So why on earth did Abingdon go for this option? I believe the simple answer is that the design of the rocker and adjusting screw did not allow the ball centre to be lifted as much as 1/8" which is the compensation needed if you skim a standard TC head to Stage II. The second best option was simply not feasible.

Either the adjusting screws cannot be screwed up this amount, or the edge of the pushrod cup will foul the rocker in the valve fully open position. I have never tuned a TC/early TD engine myself – my line is the later TDs to TF specification. Perhaps some of the TC stalwarts can enlighten us?

Remember, the parts that make up this valve gear were designed for the Morris Ten Series M, a "Family Ten" as the expression was at that time. It seems more than doubtful if any allowance was made for future skimmed M.G. heads during that design stage!

So then, when the men at Abingdon started playing about with skimmed heads they found that they were stuck with the limitations of the original Morris design. Somehow they had to get around this limitation and they introduced packing shims as a simple but less than perfect remedy. But admitting the true nature of the problem they added "…….better still, shorten the pushrod".

In my next article I shall look closer into what I believe really took place when the shorter pushrods and longer adjusting screws were introduced at engine number TD2/17298".

Ed's Note: The follow up article will be published in the next issue of TTT.

THE OVERHEATING DEBATE

(I could probably completely fill the pages of TTT about experiences with overheating problems and suggested solutions. The following article from Register Chairman, David Butler, entitled "Overheating XPAGs and the 13 Minute Rule" is a useful contribution to the debate)

There seems to be two separate issues regarding overheating. Fuel vaporisation, and coolant overheating. Fuel vaporisation is an old chestnut, and no two cars appear to behave in exactly the same way. This is probably because there are so many variables contributing to the build up of heat in the fuel held in the carburettors. However, I have not come across cases of it happening whilst the engine is running, which is understandable since the carbs are cooled by the flow of air through them. After the engine is switched off, the carb temperature rises due to conduction of heat through the inlet manifold, plus radiation and/or convection from the exhaust manifold. Some years ago I conducted an experiment on my TD before and after fitting insulating spacers between the carbs and inlet manifold. A digital thermometer recorded the temperature at the base of one carb. The car was taken for a 5 mile run to stabilise everything, and then switched off. The ambient temp was 24 deg C and the water temp 80 deg C. The carb base temperature rose from 30 deg C to a maximum of 43 after 13 minutes. After fitting the insulating spacers, the peak was reduced to 40 deg, still after 13 minutes. Not a great difference (there is still heat conduction through the studs, after all) but in conjunction with the heat shield already fitted, I found that the car would now start at the crucial 13 minutes, although it might misfire for a minute or so. There had previously been occasions when it would not start at all.

In September TTT, page 19, Denis Baggi suggests that coolant overheating is caused by running at high revs for long periods. My experience, and that of other owners who I have talked to is exactly the opposite: our only episodes of overheating have been due to driving in slow heavy traffic with high ambient temperatures (see Chris Sundt's experience at the French Event of the Year 2006, related on page 17 of the same issue). At the same event I completed two 30 minutes track sessions on the Charade circuit, holding the revs between 4000 and 5000 without any overheating problems. The car has a tweaked XPAG, and a perfectly standard cooling system. In normal motoring, with 4000 rpm cruising, the water temperature rarely goes above 80 deg. C. For information, it is 1308cc with 9:1 c.r., Crane cam, balanced, big valve head, fully gas flowed inlet tract with inlet ram pipes and sock filters. 4.55 back axle.

There is a lot of discussion about where to set the *static* ignition timing: opinions seem to vary between zero and 5 deg. It seems to me that the most important criterion is the *maximum* advance, reached somewhere between 3000 and 5000 rpm. An original distributor will advance the ignition by around 30 deg. which will result in 30 to 35 deg maximum, depending on how you set the static advance. This was originally designed for an engine with a 7.25

compression ratio running on leaded fuel. It is too high for an XPAG with raised compression ratio running on unleaded fuel. At different 'Rebuild' events I have heard both Jerry Brown and George Edney recommend using a distributor with a 10 deg plate (= 20 deg at the crankshaft) which with 2 or 3 deg static, will give you about 22 to 23 deg maximum advance. This is what I use, and it goes very nicely thank you, and returns 35 mpg when touring on standard unleaded.

The point I am getting to is this: could the incidence of high speed overheating be caused or enhanced by over-advanced ignition timing, with tweaked engines running on modern fuel but with original distributors? Answers on a postcard to John James, please. **David Butler**

Whilst on the subject of overheating, here's one engine, rebuilt by Peter Edney, which (as far as I know) didn't suffer any serious overheating problems. The letter below was sent to Peter by Bob and Lynne Douglas:

"Way back in 2000, when you were at Selby, you restored our XPAG engine for a TC. Since then the car has done over 90,000 miles, done a trip around and up and down the middle of Australia, done lots of touring in New Zealand where we are now based, and recently the TC has just completed a trip of a lifetime.

It has just covered 31,500 miles from the southernmost tip of South America on Tierra del Fuego, through 16 countries to the most northerly driveable tip of North America at Prudhoe Bay Alaska. The TC crossed the Andes 4 times completely problem free, and ventured 300 miles within the Arctic Circle. We then drove to Denver Colorado where the TC is awaiting our return to the USA in 2009 to carry on touring the southern and eastern states.

We did have problems - 3 sheared off shock absorber mounting brackets, 2 broken half shafts, a burnt out battery, and knackered water pump bearings and minor niggles like plug leads.

Would you consider it advantageous to us both to be able to advertise that your engines are capable of such feats of endurance? There can't be another TC that has been subjected to such extreme usage. Crossing the Andes for the first time came as a revelation - we came up to a sign that said "4000m altitude" and we didn't even know, the TC just kept on trucking without a blip. We climbed beyond 4500m altitude, again with no problems. Testament surely to the endurance and capacity of the XPAG for punishment. We knew we were at altitude when we got out of the TC and tried to walk around!

We have some fabulous photos of the car in various situations. Send us an email if you would like further info, or phone 077 487 92833.

After our tour of the USA in 2009, the TC will be repatriated to the UK, and we hope, in time for Silverstone 2009, Customs permitting of course".

Regards

Bob and Lynne Douglas

Spares update

Barrie Jones has polyurethane bushes back in stock.

Prices including UK postage:

Kit	Quantity	Price
Lower front bush (TD/TF/MGB)	4	£20.00
Rear shackle bushes (TD/TF/MGB)	8	£14.00
Rear shackle bushes (TC)	12	£21.00
Rear spring pad (TD/TF)	4	£16.00

The reference to the TC rear shackle bushes should read 8 for the front and 4 for the rear upper shackle bush (making a total of 12 altogether). I am still investigating the supply of the lower shackle bushes but Doug Pelton (see advert on page 25) carries these.

Barrie has asked me to point out that he won't be sending these out until he returns from vacation on 22nd November barrietf(at)talktalk.net 01566 782760.

Keyed Washer for Rear Spring Front Mounting Pin

I hope that you will recognise the washer from this description! It has a 'nib' on its inside edge which locates in a machined groove in the mounting pin. I've had some laser cut and these cost me £2.40 each plus VAT. Postage (UK) for a pair is £0.66. I'll include a photo in January's TTT.

Wrapped Bushes for TA*/B/C Kingpins *** not early TA**

We now have 400 of these in stock! Price is £6.00 per bush plus a £0.50 donation to the Register for each bush. This compares with £8.95 for a phosphor bronze bush from a trade supplier (not one of our advertisers).

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