The BMW Club

Vintage & Classic News

Issue 15/2005

In this issue – The R45, a 'BIG' mistake or not? And 'Good Brakes, Tyres and Suspension' by 'The Amateur Mechanic'.



Photographed by Bob Porecha at Mannhiem is this Russian racer. It's just as well the photo is not in colour. It was finished in a pastel green. Remember the Valspar colours of old?

EDITORIAL

Most members will be aware that the Register is affiliated to the Federation of British Historic Vehicle Clubs, an organisation that looks after the interests of owners of older vehicles. This organisation is essential with all the rubbish coming out of Brussels.

It is now down to you all to participate in a survey questionnaire that will give our lobbyists the data that is required to fight against any future EU plans to jeopardise our freedom on the road, and I'm not just talking about machines over 25 years old, younger ones are in the firing line.

An A4 size questionnaire is available from myself, just send an SAE (A5 will be okay) email or telephone. Unfortunately photocopies are no good as the forms will be read by automated equipment which will not function if there is any distortion due to copying. All information will be treated in confidence and no personal data will be disclosed.

The completed questionnaire will need to be returned to the FBHVC by the end of the year.

I do urge you to participate; it's in your own interest. Thanks

VINTAGE & CLASSIC REGISTER DIARY FOR 2006

APRIL 2006
STAFFORD INTER-NATIONAL CLASSIC MOTORCYCLE SHOW

MAY 2006
CLASSIC BIKE CLUBS' SHOW
STANFORD HALL
LEICS.

JUNE 2006
5th VINTAGE & CLASSIC REGISTER RALLY
LLWYNGWAIR MANOR HOLIDAY PARK, NEWPORT, SOUTH WALES.

JULY 2006
VMCC FOUNDERS DAY RALLY
STANFORD HALL, NR. LUTTERWORTH
LEICS.

Newsletter Compiled & Edited by Malcolm & Wendy Mc Nair
27, Syon Gardens,
Newport Pagnell, Bucks.
MK16 0JU
Tel. 01908 216623
Email
vintage@bmwclub.org.

OLD BMW's ……..But With Good Suspension, Tyres and Brakes.

by The Amateur Mechanic





Although your BMW may be old and slower than most modern machines there is simply no reason to suffer poor road holding, handling or bad brakes. All BMW models both pre and post war should handle and stop well. They may never have had a reputation for impeccable manners like a Manx Norton but the brakes were always amongst the best then available. On test with "Motorcycling" the R51/3 (with a single leading shoe front brake) stopped from 30mph in 32 feet and the R50 achieved 27 feet from the same speed when tested by "The Motorcycle". At this time any bike that stopped in less than 30 feet was considered exceptional!

So how do you ensure your bike really performs as it should?

SUSPENSION

(a) Plunger Models.

(i) Forks.

After nearly 50 years of use (and probably some abuse!) it is well worth checking the condition of the fork bushes, stanchions and lower legs. Original hard chroming on the stanchions was very good but won't last indefinitely.
Check for signs of the chrome scoring or wearing through. If either has happened then re-chroming and grinding back to original size is the proper solution. The other alternative would be to buy new but this is likely to be the more expensive option. Always use a reputable company to undertake this work. I have used HCP & G for a number of years (01623 862314) they have a lot of experience and plate and grind on the same premises. I should add that I have no connection with this firm other than as a very satisfied customer. With the legs re-ground new bushes will probably be needed but these are readily available from your normal pre-69 spares suppliers. Wear in the lower fork leg will cause you more problems but can be overcome by boring and fitting oversize bushes. This is likely to be a specialist job. When all is well refill with 160 cc of SAE 20 engine oil as recommended by BMW.

(ii) Rear Plungers.

The rear end has no damping arrangement. Plungers should be lubricated regularly and grease nipples are provided for this purpose. Check for excess play between the slider tubes and bushes. Wear on either (or both) should be corrected by re-chroming and grinding the

MICK BARR
INDEPENDENT
BMW SPECIALIST

BMW Factory Trained Technician with over 20 years Experience.
Service & Repairs.
Engine, Gearbox, Bevel Drives Over-hauled.
New Parts Stocked 1950 – 1970 Twins

Scraptoft, Leicester.
Tel. 01162 419316
Fax. 01162 921840

SEE US AT THE STAFFORD CLASSIC MECHANICS SHOW – 15th/16th OCTOBER 2005. PRESTWOOD HALL, STAND 15 & 16. **ALL PARTS DISPLAY.**

sliders. Again it will probably be necessary to replace the bushes. One way or another all play must be eliminated to ensure excellent handling.

(b) Earles Models.

(i) Forks.

The front swinging arm bearings are an important but often neglected item. On earlier models it is necessary to remove the arm to grease the bearings. This is not a difficult job to do but can be time consuming which is why it's seldom done. Later machines are fitted with a grease nipple and are easy to keep lubricated. Fitting a nipple was detailed in BMW Service note No 212. To install a grease point proceed as follows;

Drill a 6.8 mm hole 37.5 mm from the left hand end of the swinging arm cross member and set up at an angle of 8 degrees. Tap this hole 8 mm x 1.25 mm and carefully file a small flat area to enable the nipple to seat on the arm. Fit a suitable straight nipple.
Before adjusting the arm check the clearance between the arm and the rear fork section. This should not exceed 0.2 mm (8 thou) and is adjusted by inserting suitable shims between the oil seal "top hat" insert and the rear link. At one time shims were available in varying thickness but these days you may have to modify suitable washers. In my experience it is not unusual for these washers to be lost over the years. Once this clearance is correct insert the spindle and tighten until the arm will just fall under it's own weight.

(ii) Rear Swinging Arm.

Once again the rear swinging arm bearings tend to get neglected and (again) there is no provision for any lubrication or any factory approved modification. It is however possible to replace the pins with those used on /5 onwards twin shock machines and these do have a grease hole provided. If you have access to suitable machining facilities it is possible to drill the original pins. Otherwise it's arm out job again to service, which, of course, is why it's rarely done. Lubrication of both front and rear swinging arms should be part of the 12000km (7500m) service. Finally the arm must be centrally situated in the frame and can be quickly checked by using either a suitable vernier caliper or (lots of) feeler gauges. Adjust the threaded pins to obtain the correct alignment.

(iii) Suspension Units.

Front:

Check the condition of the lower eyes. The alloy has been known to split at its lowest point. The top and bottom bushes need to be checked for wear and deterioration. Always make sure the top eye is still screwed tight on the damper rod as these have completely

unscrewed on occasions. The first sign of this is usually scraping between the upper and lower shrouds.

Rear:

Check the 'metallastic' bushes as per the front. Alignment of the units within the upper frame mountings is very important. The aluminium shroud should be concentric within the frame. If it isn't then the chances are the shrouds will scrape and score. Check clearances on both the upper and lower spring settings. If they don't lie central (and many don't) shim the lower eyes until they do. Damping provided by the standard BOGE units is only on the rebound stroke. In other words they will push in easily but show resistance when being pulled out. Early dampers have two holes in the top either side of the damper rod and can be dismantled using a suitable peg spanner or ring driver. These can be rebuilt if you can find suitable seals fluid etc. To my knowledge there is at least one firm in the UK who will undertake this task. Later units are unfortunately scrap. The alternative as BOGE don't manufacture them any more used to be KONI's but I believe these are also out of production now. Anyone out there know of another source?

SUSPENSION SPRINGS (all models)

At this point it would be as well to consider the springs themselves. Over the last 50 or so years many of the machines will have been used in a number of different guises. There is a chance that the suspension springs will have been changed either because the originals had become weak or maybe a sidecar has been fitted necessitating stronger springs. When the springs are accessible it's an easy task to check them against the following table:

MODEL TYPE		SPRING LENGTH	SPRING DIA.
PLUNGER SOLO	Front	227.5 mm (+ or – 2 mm)	5.5 mm
	Rear	145 mm	7.25 mm
PLUNGER SIDECAR	Front	204 mm (+ or – 2 mm)	6.5 mm
	Rear	141.5 mm	8.0 mm
EARLES SOLO	Front	284 mm	6.0 mm
	Rear	272.5 mm	7.0 mm
EARLES SIDECAR	Front	273 mm	6.3 mm
	Rear	271.5 mm	7.6 mm

(It may not come to mind that it's worth checking the length of your springs when overhauling or servicing your machine. I just happened to be stripping the plungers on my R67 at the same time as laying this article out and it prompted me. What did I find? One solo and one sidecar rated spring! Just shows what previous owners get up to. Ed.)

HEAD BEARINGS (all models).

The BMW head bearing design remained unchanged from 1923 to 1969! All models from the R32 until the /5, that was launched in 1969, use exactly the same bearing originally supplied by FAG. The FAG bearing No 200185 has never been readily available from any bearing stockists as it was a "special" made for BMW. A better cheaper alternative is the taper roller replacement now available from your pre-69 parts supplier but not once again something your local bearing stockist will have. If you are rebuilding using the original cup and cone bearings check that the separator is fitted in position in the top race. Again it's surprising how many of these seem to have been "mislaid". For further information on this see the parts book. The absence of the separator can greatly affect the steering characteristic

TYRE CHOICE

(i) Plunger models.

All plunger models with 19 inch wheels were fitted with 3.50 x 19 tyres. Up until very recently it was possible to buy (in the UK) Metzeler Block C tyres in this size. The tread pattern really suited older machines whilst the rubber was a modern mix and afforded excellent grip. Apparently probably due to insufficient demand these have been deleted from the catalogue. They are still available in Germany. All is not lost however as the 3.50 tyre actually measures over 4.00 inches across the tread. The 3.25 tyre measures a good 3.5 inches across when inflated and is still imported. At least the wheel will come out without deflating the tyre if you fit this one!

(ii) Earles Fork models.

All solo machines were fitted with WM3 x18 rims and 3.50 x 18 tyres (I will mention the change to 4.00 tyres on the last machines later). Over the past few years 3.50 x 18 tyres have moved in and out of fashion. Over the past 36 years since I bought my first Earles bike I have run all sorts of tyres. Latterly I rather liked Continental TK 16's but these have now been dropped! I try to stick to German makes for a German bike these days so my current choice comes from Metzeler in the form of ME

BRAKES.

(i) Plunger models.

Up until 1952 all machines used single leading shoe brakes front and rear. In 1952 a twin leading shoe front brake was introduced and this unit formed the basis of all subsequent front brakes up to the introduction of discs in 1974. Some lining materials supplied by BMW over the years have been really hard and, although giving exceptional service life, do take some warming up before they become fully effective. Modern lining materials seem to take much longer to bed in than they used to but perhaps that's because I don't ride as often or as hard as I used to! As well as checking the linings for wear it is also necessary to have a good look at the drum. New linings fitted to a badly worn or scored drum are hardly likely to be very efficient. In fact they probably won't be as good as the ones they're replacing! At least the old linings had worn to the hub. On the half-width hub (but not on the full width) it is possible to skim the braking area and clean it up. There should be enough thickness in the drum to do this UNLESS someone has already done it in which case be VERY CAREFUL! I will deal with full width hubs under swinging arm models. There are firms about with lathes big enough to be able to skim a drum without dismantling the wheel (or even removing the tyre).

(ii) Swinging arm models.

All full width hubs are unsuitable for any skim whatsoever. The reason for this is the minimal thickness of the braking area. This is approximately 2 mm (40 thou) on all full width hubs. Unfortunately

time has taken its toll on these hubs and many of them are developing problems. It's worth making the following checks;

(a)

Undertake a visual check of the liner looking for any obvious signs of cracking. If you see what looks like a crack do make sure it's not just a water mark from a recent cleaning session! Any sign of a crack denotes a serious problem.

(b)

If all appears OK then place the edge of a steel ruler across the braking area at right angles to the hub. Check to see if you can rock the ruler. Try this test at various points around the hub. If you have any rock it indicates that the liner is starting to "belly". In other words the centre of the hub liner has started to rise. They nearly always do this just before they crack! So if you find either of these problems what next? Unfortunately there is no simple or cheap solution. The only alternatives are a new hub (very expensive) or a replacement liner in the old hub. Whilst it may still be possible to find a second-hand hub there is absolutely no guarantee that it wont end up cracking in very short order. The only long term solution is to bite the bullet and spend the money. Without a good flat concentric braking surface you will never have a decent brake.

BMW
UK's Longest Established Independent BMW Specialist (Since 1962)
For classic BMW twins
★ SPARES ★ REPAIRS ★
★ SERVICE RESTORATION ★
Opening Times:
9am-6pm Monday-Friday
9.30am-5pm Saturday
Classic BMW purchased incl. non runners and parts.
MAIL ORDER & EXPORT WELCOME
BOB PORECHA
303 Sydenham Road,
London SE26 5EW
Tel: 020 8659 8860
Fax: 020 8659 9198
Email: bob@porecha.fslife.co.uk

SETTING UP THE FRONT BRAKE (TLS).

Firstly have a good look at the brake plate checking the fit of the actuating cams in their holes. Excess play here will reduce braking efficiency. It is possible to bush the back plate but this will only be worthwhile if the cam spindles are in good condition. Worn spindles will require either replacement or machining to correct any wear. Once you are satisfied that the pivots are OK then reassemble the shoes and springs. Do fit all three springs and make sure the thinner, lighter one is on the side nearest the rear cam. It is essential for efficient operation that the rear arm moves first. Over the years I have seen so many brakes set up with the front arm operating first and the owner complaining about poor brake performance.
To read about the actual brake adjustment I can do no better than refer you to the article in issue 5/2001. I have nothing to add to his excellent description.

So follow all the above and you will have a bike that's a real pleasure to ride. OK so it won't handle or stop like the latest R1100S but that's not we're all about…is it?

……

Okay, here is that article mentioned by the 'Amateur Mechanic'. Of all the queries I receive this is by far the most frequent so I make no excuses for repeating it here.

Twin Leading Shoe Brake Adjustment

It is some time since the twin leading front shoe lost favour with BMW and it is reasonable to assume that the front brake will have been on the receiving end of some one's well-meant attentions, thus it is wise to remove the wheel and inspect the bowels of the unit. Presuming

that all the correct components are present, even if not in the places envisaged by the designer, it will be seen that the two shoe springs are different and the thicker one should be at the front.
The small spring does indeed serve a function, albeit a secondary one, and should therefore be in its proper place for maximum operating efficiency of the brake. Assuming that all else is well, let us refit the wheel and commence the crucial sequence of adjustments.
Start by screwing in the handlebar level adjuster as far as it will go, then lock it and forget it - it plays no part in adjustment of the brake, and if used subsequently will cause maladjustment. Make sure there is plenty of slack in the cable, even take it off if you like, and block up the machine so that the wheel is clear of the ground. Undo the locknut on that funny little adjuster thing in the brake plate and grip the flats of the screw end with something substantial like a pair of mole grips for best results. Spin the wheel; gently turn the adjuster clockwise, and the lower shoe will be pressed into contact with the drum by the eccentric on the business end of the adjuster. The idea is to set this so the shoe is a thou. or two off the drum, just not quite binding. Spend a bit of time getting it absolutely right as this setting is vital to the performance of the brake; juggle with the 14 mm spanner and mole grips so as to be sure that the setting does not move when you lock it up. Now set the cable adjusting nut to a position that brings the handlebar lever to a comfortable place for your size of hand when the brake is applied.
Apply the brake and take a long squint at the cam levers; the angles they make with the cable may be the same but always err towards the front lever having a smaller included angle than the rear, never the other way around. Move the cam levers on their splines if necessary and readjust the cable. Presuming the cable, linings, and working parts of the brake to be in good order you should have a front stopper more powerful and progressive than you dreamed possible, but before hurling the tools to one side and dashing out for a road test spare a moment to consider the theory behind all the foregoing.
You will observe, if you apply the brake slowly, that the back cam lever will move first. This is because the rear spring is weaker, remember? The front lever will only move a fraction as the rear one stops because the shoe it operates is only just off the drum, set by that funny eccentric thing we spent so much time fiddling with. Therefore all the cable play is taken up by the top shoe, and the instant this shoe touches the drum the resistance overcomes the stronger front spring and the lower shoe touches simultaneously. Result-smooth, progressive, concerted action of both shoes.
And that soppy little spring? That keeps the front cam in contact with the lower shoe, otherwise the cam lever would be flapping about in the breeze and upsetting the release of the top shoe.
Finally, never try to make a quick adjustment with one of these brakes, it can't be done. The lower shoe must be pre-set before cable play is adjusted every time, otherwise you'll upset the whole setup again. Once done properly with bedded-in linings it will retain its efficiency at least between the normal 4,000-mile services.

……



In the last issue of Vintage & Classic News I included several photos of an engine offered for sale on the ebay auction site. The motor was withdrawn early from sale. Of interest is the description the vendor gave and I've reprinted the relevant portion here:-

'*These double overhead cam heads are a real jewel to look at. They were made by an intrepid German racer & machinist who used to race NSU motorcycles against the factory Rennsports during the 1950's…….*

Continued on page 11

THE SMALLEST TWIN by Mike Fishwick



'Why a forty-five?' is the question most frequently asked of the owner of an R45, usually spoken with a mixture of scorn, pity, and plain curiosity. The simple fact that we have all become accustomed to the use of more power than most TT winners ever had at their disposal, and the belief that 'We Are What We Ride' has brought about a situation where ownership of the smallest BMW production twin is regarded as the sign of the whimp!

The R45, however, is a particularly fine motorcycle, once one comes to terms that it lacks the outright urge of a machine sharing similar design and breeding but of double the capacity. As far as power is concerned, however, it is worth remembering that the R45 produces more power than the Earles-forked R50, and as much as the revered R50S! What it lacks in outright performance the little twin makes up for in terms of handling, manoeuvrability and cruising ability, while the brakes, particularly if fitted with twin discs, are still excellent even by the standards of today - the Germans really can make good brakes if they try!

Perhaps the basic problem is that most of us, besides being lifelong sufferers of the Peter Pan Syndrome want a motorcycle which will do anything we may ever wish of it. Perhaps this is the reason for the majority of R45 owners being somewhat older than the average, and who have purchased their machine for the specific purpose of being ridden at sensible speeds without a passenger. The R45 will, however, cruise happily in the mid-eighties even with a passenger.

As a machine to last a lifetime the R45 is one of the best propositions – the engine and transmission being virtually identical to its one-litre relations, with the exception of the connecting rods and pistons, cylinder heads and barrels, and of course the final drive ratio. I suspect that even the crankshaft begins its life as the same forging, and is simply machined around different centres to produce the shorter stroke.

When the R45 and R65 were introduced in 1978 the main difference was, perhaps, the frame, with its shorter wheelbase (similar to that of the original /5 Series) steeper steering head angle, and lighter construction due to the absence of internal stiffening tubes.
The UK model R45 provided 35 bhp, but a 27 bhp version was available in Germany where it was very popular, the reduced power making it very cheap to insure. The changes to effect this reduction entailed low-compression pistons, smaller-sized inlet ports, valves and carburettors, more restrained camshaft timing, and of course lower final drive gearing. These models can be readily identified by their use of 25 mm carburettors.
In terms of a ride-to-work machine the R45 will provide literally years of trouble-free service. It is the ideal stable mate for a cherished larger BMW, combining the same general qualities and 'feel' with a very reasonable second-hand price. It will accept the same fairings as its larger brothers and even suffers from the same general foibles. For some reason, however, it is more acceptable, even in the BMW Club, to own an MZ!

As a sporting mount the R45 has been used by several competitors in the Land End and Exeter Trials as an alternative to the R80GS. For such applications it will do much the same job, is a few inches narrower, and when combined with forks from an oriental trail bike can also be made to weigh a little less.

Even speed events are possible – those who watched Reg Moule wrestle his R90S to the fastest time at the St. Audries Bay hill-climb will remember him recording the fastest time of the day, closely followed by Nigel Barraclough on wife Heather's R65LS. At such speeds there is little difference between the R65 and its little brother.

The correct criterion for assessing an R45 is, however, that of its performance in the role for which it was built – general road use. I originally purchased my 1981 model to spare my R100 from the ravages of winter salt etc. For ten years the little twin was used for winter commuting over both local and distant routes, not to mention being carried on my ship and being ridden in areas such as Iceland, Madeira, Azores and Gibraltar etc. During this period it became far more to me than a humble hack, growing in stature with familiarity until it was regarded with the same level of affection as its larger brothers. Even after riding the K100RS it remained a genuine pleasure to use the R45. Power is not everything, a combination of adequate performance with good cruising ability, handling, braking and practicability being preferable.

To one who had become used to the handling of a pre-Monolever 'thousand' the handling of its little brother was a revelation – it actually wanted to go around corners, and made the R100 seem unresponsive until several thousand miles had been covered on it again. The little twin has a standard of handling which will stand regular comparison with the best, particularly if fitted with good modern tyres such as the Michelin Macadam 50 I have used for many years.

During my regular winter commuting between Plymouth and Bath the R45 was usually required to cruise at around 7,000 rpm between Plymouth and Taunton, then between 6 and 7,000 rpm to Radstock, where I picked up the morning traffic. In five years of such usage the Little Twin never missed a beat or burnt any oil, as one would expect of any BMW. This route was roughly split between motorway and fast B roads, the little BMW taking around a quarter of an hour longer than its larger relatives.

After standing in the sub-zero temperatures of winter in Bath I found that the use of Mobil 1 (SAE 5-50) synthetic engine oil was essential in order that the small 18 ah battery was able to provide reliable starting. This was assisted by Mobil 75-90 EP synthetic gear oil throughout the transmission, the lower drag – particularly when cold – being very welcome.
In ten years the only problems I experienced on the road concerned the ignition system. An intermittent electronic ignition failure (with the tachometer reading full scale as the engine stopped) was quickly bypassed by fitting my spare 1980-model contact breaker at the roadside. This was easily connected to the coil by an additional wire I had run from inside the front engine cover to the coil for just such an eventuality, the static timing checked with a test lamp, and I was on my way after a delay of under half an hour. The cause was easily found the next morning, in the form of a small corrosion deposit inside the trigger unit plug, allowing a tiny current to flow between the centre (output) pin and one of the end (power supply) pins. This steady current flow would have convinced the electronic that the engine had stopped, the planned response being to switch off the coil to prevent it overheating.

The other problem concerned the ignition coil: these early (black) twin-outlet coils were notorious for failures of various types, as were the grey coils which superseded them. The 1992-on coil (mounted via a sheet steel bracket) is reliable but expensive, and came as a welcome release for all owners of the R45, 65, 80GS and earlier Monolever models. At least I managed to get home after my coils began to fail, finding that intermittent loss of sparks was the usual symptom.

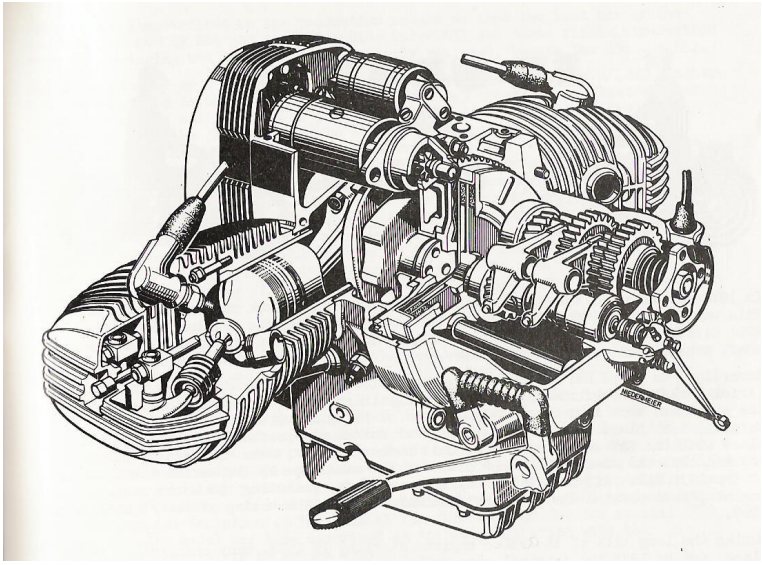
My final coil failure had the distinction of also taking the electronic ignition with it, but at least it took place in my garage, where it was probably aggravated by the additional heat rising from the cylinders while setting up the carburettors. All things considered it was the best way for it

to fail, and during the afternoon I easily fitted a pair of orthodox 6 volt coils from a R100RT connected to the 1980-model contact breaker. This conversion cost little and worked very well – so well in fact that the engine felt no different than before.

Given a rider who is used to keeping the engine 'on the boil' the combination of good handling, adequate performance and excellent brakes will enable one to keep company with machines of far greater performance on twisty roads. It is of course necessary for the rider to develop a different technique to obtain the best performance from such a 'small' engine, as one must plan ahead for overtaking, and generally 'read' the road to avoid being baulked – it is good practice for those who have become jaded by years of 'superbike' riding!

The ability of the very smooth engine to cruise at the maximum continuous speed of 7,300 rpm can also give a surprise to many – can you imagine cruising for hours on end on an old (or new!) Triumph Bonneville at 95% of its maximum speed?

About the only area of mechanical weakness concerns such use, for the valve stem diameter is of 7 mm rather than the 9 mm used on the larger engines. The pre-1981 models were prone to failure at the weld between the exhaust valve's head and stem, and should therefore be replaced after 30,000 miles. Later valves are manufactured with the welded joint higher up the stem, where it is supported within the valve guide.



Although it is said that more power is available by fitting 32 mm carburettors from an R65, the original 28 mm units have the advantage of restricting the engine speed to its maximum rated limit of 7,500 rpm. At such speeds there is no objection from the engine, which is totally unobtrusive, but such practice is akin to flogging a willing horse!

I found that my 1981 R45 – bought with a mere 10,000 miles on its clock – was as bad as its many detractors claimed. With a top speed of little over 70 mph and fuel consumption of 35 mpg it was pretty hopeless, but by steadily weakening the mixture, finally replacing the original 2.66 needle jets (as used on the R100!) by 2.64 with the needles in their richest position performance was transformed, giving a ready 95 mph and up to 65 mpg. I also found that retarding the ignition timing slightly (by about half a flywheel tooth) improved matter further. The final carburettor settings, incidentally, were identical to those of the R65 – hence the improvements claimed by fitting R65 carburettors. Another advantage of this weakened mixture is a reduction in the so-called vibration period of these engines between 4 and 5,000 rpm. I have always found this to be actually a misfire around the full torque rpm, where cylinder pressure is at its peak, the corrected mixture strength reducing this effect and restricting it to between 4,800 and 5,000 rpm.

One facet of the R45 which is usually overlooked is its true significance in the BMW Boxer story, for when it was launched in 1978 the R45/65 range broke new ground in many ways. These were the first models to use the crankcase which was standardised across the range for the 1980 model year, in which oil is fed directly to the main bearings rather than via the camshaft front bearing. This crankcase also incorporated the 'beancan' contact breaker and the single-row timing chain. Other innovations were the driveshaft shock absorber with the

associated Kinematic gear change linkage and a lighter flywheel assembly. All these changes were, of course, standardised across the range in subsequent years.

Other notable features of these radical new models were the use of a cast alloy top fork yoke (unfortunately not used on any other air-cooled Boxer) and twin-piston front brake calipers with a handlebar-mounted master cylinder and reservoir. The forks featured internal dampers similar in design to those which would be used from 1981, and which would form the basis of the forks used on the K-Series and Monolever ranges.

The revised frame not only provided sharper handling, but also reduced weight due to the previously-mentioned lack of internal stiffening tubes. The swinging arm was also improved, using a large-diameter tube to enclose the drive shaft rather than the previous type which was welded together from a pair of pressings. With the introduction of the Monolever range all these changes were adopted across the entire Boxer range – in the final analysis the R100GS was the direct son of the R45!

While the R90S has many devout followers, in technical terms it is little more than an R90/6 with some basic engine modifications, and does nothing which has not been surpassed by later developments. I believe that its real claim to everlasting fame is its excellent styling by ex-Ford designer Hans Muth, who provided the most enduring motorcycle bodywork of the century and set the aesthetic standard for BMW from its inception in 1976 to the end of the air-cooled twins in 1995.

Not a bad epitaph by any means, but I suggest it is no better than the very real engineering standards introduced by the R45, which also endured to the end of the air-cooled era – buy yours now, before the collectors discover them!

……...

Continued from page 7

His machine shop skills and technical contacts allowed him to make anything he wanted, including complete engines. As a test, he developed a single overhead cam head for the BMW twins, and proceeded to ride that for thousands of miles. With that under his belt, he took on the challenge of a double overhead cam design. This is the end result. It's a real masterpiece. For example, the valve timing on each valve can be adjusted individually, without swapping cams or replacing any parts. Amazing! He only made two of these DOHC engines, and the other one (along with the original SOHC engine) are in the hands of a noted BMW collector here in the USA. He told me that his DOHC bike is VERY fast!
This engine has been completely rebuilt, and it's ready to drop in a frame and go. It comes with a matching frame ID tag, and a valid title. When I picked this engine up from my mechanic friend, he had it in a test stand, and we really enjoyed starting it up and letting it rev. This engine does not sound like a normal BMW engine, it sounds more like a cammy Norton. The complete engine includes the generator, magneto, and the carbs. This engine is 500cc, which seems to have been an upper limit for racing purposes. There are standard compression BMW R50S pistons in the engine now, but it also comes with special Mahle high compression pistons that were made just for this DOHC engine. This engine is built on a BMW R50S case.'

An interesting special. Has anyone more information on these specials and their ultimate performance?

CLUB SPORTING SHOTS FROM THE PAST

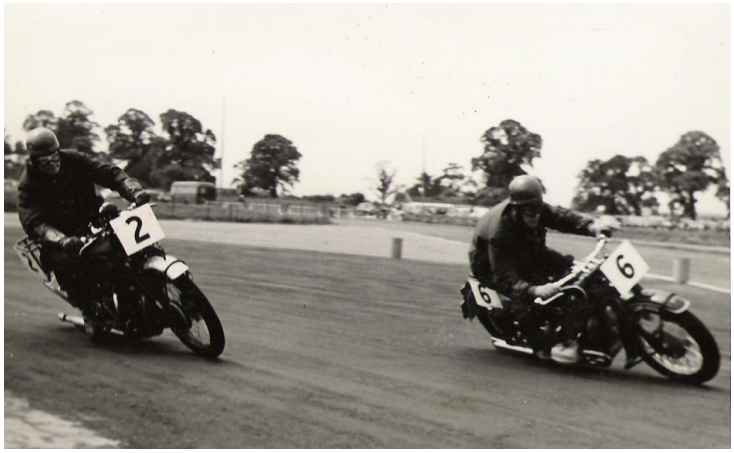


The 1954 I.S.D.T – WALES

Geoff Arkell, founder member of the Club, negotiating one of the shallower fords!

Below:

Geoff, R68 mounted, ascending the Eunant Pass on the 4th day.



Silverstone 1953 - Charlie Lock riding around a Vincent 1000!





The M.C.C. High Speed Trials- Silverstone 1953. Charlie Lock of MLG riding an R51 SS on which he gained a 1st Class Award.



Ex-ISDT or factory 'Off-Road' BMW's must be rarer than hen's teeth in the UK, but one possibility did surface some years ago. Vic Doswell wrote to me recently with an interesting story.

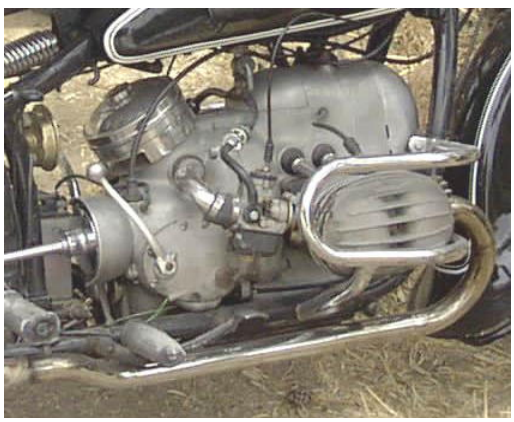
'In the sixties I acquired a 250 single from MLG in Shepherds, Bush London – registration YUC 800. This was obviously produced in the fifties in Munich as a fore-runner of the R26. It had a special swinging-arm rear end and very long travel tele-forks.
The engine was an R25/3 and so was the frame apart from the back end. It was very high off the ground and built for someone like six footer Sebastion Nachman, the works rider. I used it for some years on long-distance trials but without much success as whenever the odd dab with my foot could have saved me it was too far down for a short ar.. like me!



Vic riding the 250 in the 1963 Land' End's Trial (yes, he did complete this section without dropping it!)

The rear swinging-arm was a one-off job with the R25/3 shaft etc. contained in a welded-up leg bolted to the original bevel-box. It had wide braced handlebars and the wheel spindles had bars welded into the ends to aid quick removal. Alloy rims were fitted, 19" front, 18" rear. High level exhaust. I cannot remember what the gear ratios were but possibly standard, as the normal gearbox.
I eventually traded it back to MLG for one of the first batch of R26's imported – registration SXB 552, which I had for quite a few years.
Recently Hans Meier (Georg's brother) has been trying to trace it, among others, but I don't know if he has succeeded. It was last seen in London.
Well, there you have it. An unusual machine which may still be out there. Does anyone have a clue to its whereabouts?

……



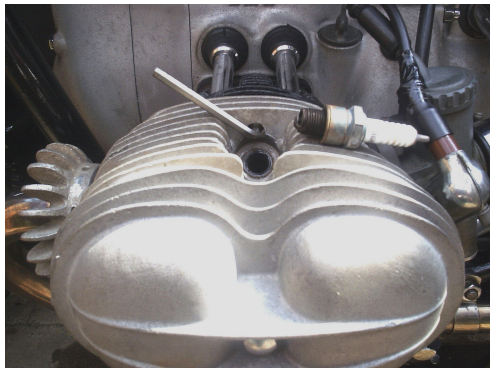
Over the years the question of fitting different carburettors to pre-69 machines has been touched on many times. Improved performance has usually been the reason for the enquiry, but of late, there has been a worrying report that Bing will no longer be producing complete carburettors. The reason apparently was that the dies used to produce the bodies were no longer within tolerances so they have been scrapped. If you are not a purist the option shown left on a Greek machine may be the way to go. I'm guessing when I say I think it's a Mikuni carb.

The 'SEAL' and 'THE RARE BIRD'

- a tale by Robert (The Jolly Jester) Freeman

This article is to explain how I was able to replace the rear main oil seal on my 1963 R50S, without removing the engine from the frame, or pulling the engine apart.

I last rebuilt the motor about 20 years ago, but in that time it has not done a great deal of mileage, though I ran the engine weekly, on a private road, it was not until 2000, that I actually got the whole lot finished,
tested, taxed & insured. The bike, 409 JPX, was imported for me by AFN Ltd at Isleworth, and registered 26th March 1963. The actual bike was built by BMW in Munich 12th November 1962, the last of twelve R50S models delivered to GB. My machine is 26 from the end of the production run.



Head Modification

It was used daily, rain, snow or shine, from '63 for ten years. Several Dragon Rally's, 4 National Rally's, with a sidecar, and very good navigator, we won the 500 cc. class three years running, and the whole sidecar class outright in 1970. I.o.M. for the T.T. a couple of times, and International Assembly, which from what I read, has fizzled out at the moment. The days of Fred Secker as President. Also semi sporting road trials, though if one saw the name Herbert Kennard, (hope I have that right), the result was usually predictable. Great fun, evening trials in Surrey, Sussex & Kent. Even had a go at High Speed trials at Lydden Race Track. I think I did 24 laps in the ½ hour, on a basic bike, rode there, rode home.

The 50S features a 9.5-1 compression ratio, and this did cause problems with head gaskets. The late Frank Cox of Markhouse Motorcycles, used to 'race' this model at the Thruxton 500 mile event, he had made copper gaskets, a pair of which he passed on to me. But the problem was, had BMW sacrificed reliability for performance? When I went to using a sidecar, the option was to go for R50 pistons, 7-1 ratio. & sidecar gearing. That I did, but a friend who made Grass Track bikes, Dula JAP, at Kings Langley, this is circa 1970, machined the heads and cylinder, putting an extra Allen type bolt between the two upper head bolts, just above the plug. (see photo above.)
That is how the engine is today, so, when the rear main seal started to weep, and got to the stage where after 50 miles there was a small amount on the casing, I felt it was time to repair. I imagine it was due to 'old age'.

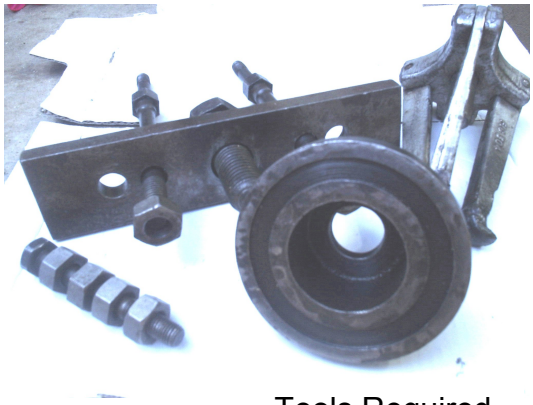


Double Lip Seal

Not really wishing to pull the engine apart, i.e. Remove crankshaft etc just to get to the oil seal, I felt it must be viable to tackle the problem from the clutch side. I obtained a seal from BEMW, not the factory item, but a newer type, with a double lip. , see photo(Double Lip Seal). The workshop manual tells, " Heat the engine housing to approx. 180 F. On R50S & R69S, after removing oil seal, spring washer, covering washer, fasten removing and installing ring 5048 with flywheel mounting screw onto rear journal spherical roller bearing" etc. These 2 models feature a barrel shaped roller bearing, and need the installing ring, as its called, to hold the bearing solid. See photo (Oil Seal Removed)

Why try to repair without removing the engine?, well first I don't really have suitable space where I could do the job, and my wife is not up to helping lift out the motor. I could do it myself, if I took away the heads & cylinders, to reduce weight. But could see no reason to dismantle the engine, when it is going so well.

What special tools did I need?. 6 mm Allen key for the shaft coupling, 41 mm socket for the clutch screw, home made puller for the flywheel, and 3 leg
puller reversed, inside out, for the oil seal, and the installing ring.
After removing the battery, tank, exhaust system, air filter, cables & wires, draining the shaft, and disconnecting the coupling, it was just the gearbox to remove. All straight forward. The clutch plate is held be 6 countersunk screws, and one really needs an impact screwdriver to loosen these. First three equidistant, and replace with 3 bolts using nuts as spacers. Remove the other three, then by a process of loosening the bolts, the clutch pressure is relieved, and the plate, clutch disc, pressure plate, and pressure disc removed.

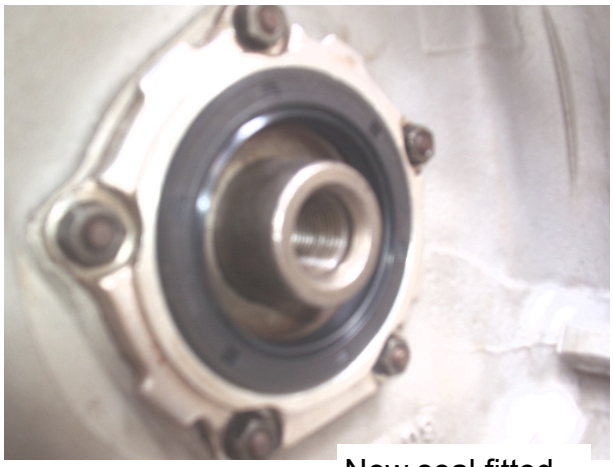

Tools Required

A suitable steel strip, drilled both ends, about 12 cm. locks the flywheel to the crankcase. Now one can undo the clutch screw with the 41 mm socket. The puller screws into the flywheel, with suitable spacer between that and the crankshaft, apply some pressure, but don't grind it down to remove. Give the end of the puller a sharp tap, and the flywheel will 'jump' free. There was oil spread around the crankcase, just a mist really, with the leak at the bottom, of course. I cleaned up the case, having removed the woodruff key for safe keeping. A film canister is good for small parts like this.


Seal Removed

To remove the oil seal, I heated the crankcase, with a butane gas cylinder, as used for household plumbing, having first blanked off the seal with the pressure ring. I did not want to run the risk of any miss-directed heat, igniting the oil seal. When the crankcase was really just 'too hot' to touch, I fitted the puller, and with gently pressure, the seal came out in tact.

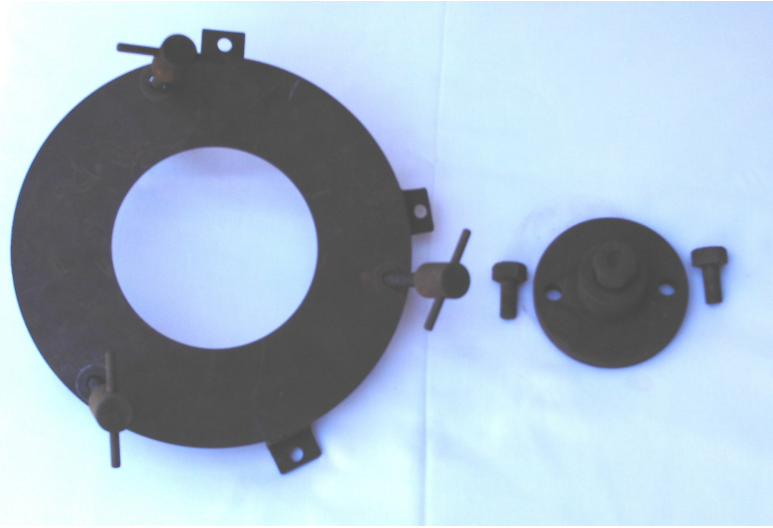
Next was clean up all the parts, I gave the flywheel boss, where the oil seal contacts, a rub over with Solvol Autosol, not wishing to use any abrasive on the surface. Assembly was reverse of above, It went a lot quicker. Again heat the crankcase, and press the new seal home, just 1 mm proud of the housing. Flywheel back, secure to crankcase, and torque to 123 foot pounds. The remaining parts were then fitted, last the battery. A road test for some 60 miles, just for the fun.


New seal fitted

So there you have it, with reasonable knowledge, and the suitable tools, this can be done, but, if in doubt, give the bike to a 'classic dealer' who advertises in our journal.

For anyone wondering about Michael Freeman's nickname, the Jolly Jester, I'll explain. Michael is a professional magician!

Although we have the Club Tool Loan schemes run by Peter Dunn and Mike Delacoe, (see Journal for contact numbers) I have two tools for pulling the flywheel. Nos. 292 & 311 make dismantling easier on the pre-69 machines and less fraught. Shown in the photo below they are available for loan to any member who cares to collect and return them personally. I'll not post out like the Club scheme.



FOR SALE

1951 R51/3. 3k since engine & gearbox rebuild. MOT & Historic Tax, Single saddle, Usual black with white lining. Matching engine & frame numbers. Described by the owner as 'a riders' machine'. Price £3500
Tel. Robin 01903 771013 or 07968 400368



Just part of the line-up of Register machines at the Classic Bike Clubs' Rally held in May at Stanford Hall. Photo courtesy of Dave Ranger.

BEMW

EVERYTHING YOU EVER NEEDED FOR YOUR BMW

Over 30 years of experience with BMW's
Restoration and repairs including British M/C's
Powder coating, painting, plating, bead & grit blasting
Parts made to pattern or drawing
SOLE IMPORTERS OF BMW R71 LOOKALIKE
NEW Chang Jiang CJ750 ready for the road from £2650
NEW Sidecars from £700
Always various bikes for sale
Come and have a browse at:
2 Foreman Street, Derby DE1 1JQ
Tel/Fax 01332 298523
Evenings & Weekends: 01332 824334
John@bemw.wanadoo.co.uk
Www.bemw.co.uk