Y-TYPE NEWSLETTER

Safety fast

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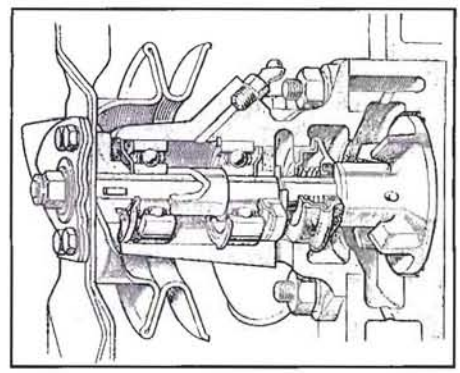
How Do They Do That?

To the layman, a pump is a pump, but like many items of engineering there are many different ways of obtaining the same end result, that is, moving a fluid from A to B. Some cases a positive supply is needed, at a set pressure, all the time; or a small amount needs to top up a reservoir; or a simple cheap method is used to assist a natural action.

So, the easiest first . . . the cooling system. The water pump used is still the same today as those fitted before WW2. They rely on centrifugal force to move water, not dissimilar to a centrifugal compressor on a turbo, but far less sophisticated, they simply fling the water outwards on an impeller crudely cast, and an outer volute casing collects it, and passes it up to the 'top-hose'. Driven by the fan belt, the pump rotates assisting on the 'Y' series, the thermosyphon action of the rising hot water. It is easy to stop this flow, as it is NOT a positive displacement action. If you stop the water getting out, it will simply 'cone', the water in the impeller will go round with it, in effect 'stalling' it. There are only a few pounds pressure produced, and no harm will be done if it cannot pump. Most engines have a by-pass, but this is more for quick heating up of the engine, than to relieve excess pressure. Later Wolseley 4/44 engines did away with the by-pass in fact, and cars such as the Metro with the little 'A' series do not have one. *(I thought they had a horrible little hose bypass between head and block? APW)*

So, the water pump is a crude centrifugal pump, that assists a flow, working at very low pressure.



A Morris Engine's water pump, from a 918cc side valve Morris Minor.

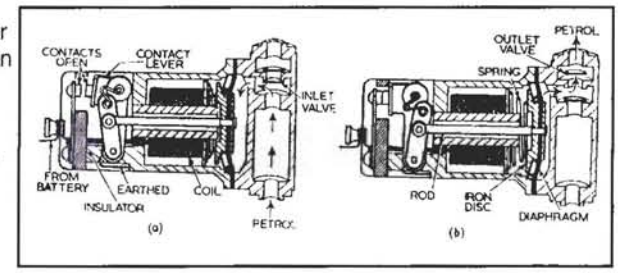
The next pump used on the 'Y' is the electric fuel pump. This is another archaic item, that relies on schoolboy electrics. It is nothing more than a solenoid; hands up all those who remember the soft iron rod inside a coil of wire experiment at school? The electromagnet. To give the 'rod' in the simple diagram the power to go back and forwards, it has a spring at one end. If you energise the coil, it will move one way, and when de-energised, the spring will return it. So, one end of the 'rod' has a diaphragm, the other a switch consisting of a set of points, very crudely working on the electric bell principle, with modifications.

The end with the rubber diaphragm on, will suck in petrol via the inlet when the pump is energised, and push out petrol via the outlet with spring pressure. The spring is controlled by the needle in the carb float chamber, and once the float chamber has 'used' up the fuel the 'points' flick over and re-energise the rod, sucking in more petrol, and so infinitum. That's why it 'ticks'. It is a positive displacement pump, that means it WILL move fluid, but because of its intermittent action controlled by the needs of the float chamber, via the points action, it only pumps as and when needed.

The little diagram says it all. There are two NON-RETURN valves in the pump body, the inlet and outlet valve, which are simple discs of steel. They allow fuel one way only, and if you study the picture it will become obvious how they work. In practice the 'inlet' one can have a very light spring fitted, to prevent drain-down, and there is a filter in the base, that needs cleaning OFTEN in an old car, with a rusty fuel tank inside. The only faults with this very simple pump, are . . . the points burn out eventually, (usually up a mountain in heavy rain . . .) and people will fit the Non-return valves about face, with the machined face on the wrong side, allowing leakage (the pump ticks away all the time). The diaphragms do not last forever, either.

So, the SU Fuel Pump is a simple demand and supply pump, that has a positive displacement. Anyone who has seen water pumps of the old type, emptying ditches, they are just huge SU pumps without the electrics.

An electrically operated S.U. petrol pump. (a) shows the end of the suction stroke; the diaphragm has been drawn to the left by pull of the coil and the contacts have just opened. (b) shows petrol being delivered as the spring forces the diaphragm to the right; the contacts have just closed.



Second instalment of this article will appear in December's Newsletter.

How Do They Do That?

EXTRACT FROM *Safety Fast!*
DECEMBER 1994
ON CAMSHAFTS AND THINGS

Last May Paddy reprinted an old "Sacred Octagon" article on distributor advance curves for various camshafts, but more to the point is the fact that several camshafts were fitted as standard to "our" engines, and over the years many more have been designed and tried. This initial article is not going to be an attempt to amaze (or confuse) you by listing all the possibilities, but will merely sort out the two main types which you will come across. The earlier one, AAA5776 was fitted to all TB and TC engines and in TDs up to XPAG/TD2 /24115. The later cam, AAA3096, was fitted to TDs after this and to XPAG/TF and XPEG engines as used in the TF.

(These are BMC part no's. The late TD/TF cam often is referred to as 168553. This no. is often stamped on these cams – APW)

But what can you do if you suspect that the wrong camshaft has been fitted? The

AAA5776 should have valve clearances set to 0.019" as is well known, and results in the typical XPAG clatter. If, however, you try to reduce this noise by setting smaller clearances power will be reduced, or if you thought you had a later cam and went down to 0.012", not only will it be well down on power, but there is a very high probability that you will burn exhaust valves. (Remember Paddy's photo of a burnt exhaust valve from the "editorial TB" last July? It could very well be that no. 3 exhaust gets hotter than the rest, due to water flow in the head or whatever, and this would lead to the valve seat burning away, just a few atoms on each exhaust stroke, but enough for the valve clearance at the rocker to be reduced. This in turn would mean that the valve is open for far too long on each stroke, leading to more burning etc. etc. On the other hand, if Paddy had got a more exotic cam fitted, such as a full race AAA3095, it should have clearances of 0.012" inlet but 0.019" exhaust). *(No, it is a bog standard 168553. APW)* But I digress: in the world of standard cams the other possibility of mistake is an AAA3096 (normally set to 0.012") but in an early car and set to 0.019". This combination would only be slightly down on power, but would produce the most awful valve clatter, and make any owner immediately reach for their feeler gauges!

Beyond that, things get a bit more involved (and we are here only talking about cams still fitted to the engine). The "proper" way to do things is to fit a "degree wheel" to the crankshaft pulley, and by means of a dial gauge on a cam follower ascertain the valve timing and compare it with the specifications in the workshop manual. However, there is a quicker way! This was first described by Angus Laidlaw in the "Sacred Octagon" (October 1967 issue) and was passed on to him by a BMC service technician, who in turn had seen it in a service bulletin many years ago.

The trick is simply this: First turn the crank on the handle until #1 inlet valve (that's the second from the front) is fully open. At this point, #4 inlet (7th from the front) cam-follower will be on the centre of the heel of the cam lobe (this is of course just as you would go about things to adjust the rockers. When you go through this procedure, the valve numbers always add up to 9, which makes it easy to do when you have got a workshop manual handy). This time, however, set the clearance to 0.021" so that the sides of the cam lobe do not affect the measurement, only the tip (but don't forget to re-set it later!).

Next, using Tipp-Ex, or possibly chalk, make two marks on the rear flange of the crankshaft pulley (after giving it a good clean!) one 9mm to the right of the TDC notch (corresponding to 11), and another only 4mm to the right (5). These are pretty close to each other and to the notch, so the marks need to be quite small.

Now turn the engine until the pushrod of the #4 inlet just locks up, examine the position of your pulley relative to the pointer on the timing cover. A 0.012" cam will be on the 5 mark, and a 0.019" cam will be on the 11 line – the added bonus of this method is that it also shows up a wrongly installed timing chain, unlikely if your engine ran before, but useful for somebody who has just rebuilt an engine and cannot get it to run at all.

For the record, the AEG122 camshaft opens its inlets at 13 before top dead centre (BTDC) and wild things like the AAA3095 are as much as 32 BTDC.

Having said all this, there are of course many other reasons why an engine won't skin the proverbial rice pudding, such as mixture or ignition, but the above should give you plenty to think about for now!

1949 M.G. 'Y' TOURER

by Ross McGowen

The M.G. 'Y' series have been overshadowed by the T-Type sports M.G.s of the late forties and early fifties. Whilst a total of 7459 M.G. 'Y' sedans were produced between 1947 and 1953, the tourers were produced from 1948 to 1950, with a production run of 877 cars. Interestingly, the model was designated for export only when introduced, with the company's sights set on the American's market. All but 42 were exported making tourers quite a rariety in their home country.

1949 M.G. YT. (Photo: John Allen.)

Like many of Britain's early post-war vehicles, the M.G. 'Y' series was actually a pre-war design having been built in prototype form in 1939. The model had a newly-designed chassis, fitted with independent front suspension, using coil springs, with the rear end on semi-elliptic springs. Rack and pinion steering was provided for the first time in an M.G., and braking was fully hydraulic. The engine was detuned version of the famous XPAG 1250 cc unit, as used in the 'T' series sports cars. The gearbox was a four-speed, with synchromesh on the upper three ratios. The tourer was introduced in October 1948, on the sedan chassis, but with the twin carburettor engine of the 'TC' sports car. Power output was 54 bhp at 5,200 rpm compared with 46 bhp at 4,800 rpm for the sedan. Modest this may seem by today's standards, but the compressions ratio of 7.2:1 was limited by the low octane petrol available to the public. The XPAG engine had immense tuning potential, and it was not uncommon for the 'Y' series cars to be upgraded by their owners as better fuels became available.

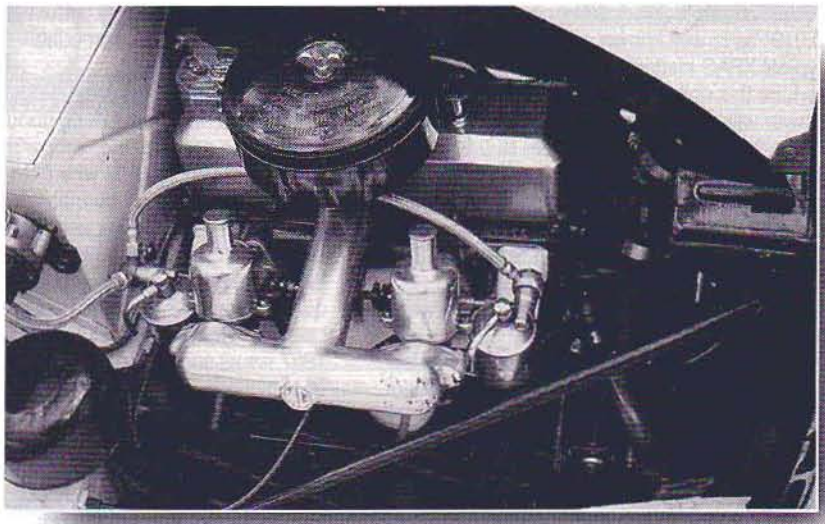
Undoubtedly, though, these cars were outdated when introduced to the public. When reporting on the 'Y' sedan 'The Motor' commented that 'The M.G. has a distinctly old-fashioned appearance . . . but there are many who will rejoice that the appearance continues a long tradition . . . after only a few miles at the wheel of the car, one becomes very deeply impressed by the retention of many old-fashioned virtues which have in large measure been washed into the sea of time by the inexorable flow of progress.'

These qualities enhance the attractiveness of these M.G.s to enthusiasts now. Fittings such as leather upholstery, adjustable steering column, comprehensive instrumentation and the Smiths 'Jackall' hydraulic system enabled either front, rear, or all four wheels to be raised with an under-bonnet crank.

The tourer differs from the sedan in several detail features not readily noticeable to the casual observer. The sedans were fitted with octagonal shaped instruments, set in a walnut dash, whilst tourers used round faced British Jaguar instruments in a vinyl-covered dash,

1993 John Allen M.G. 'YT' during tickatape for Wagga Cricketers Mike Platin – Mark Taylor shown here with Miss Wagga and Miss Charity Queen. (Photo: John Allen.)

1949 M.G. YT. (Photo: John Allen.)



identical to the 'TC'. The 5 inch tachometer sits directly in front of the driver, whilst the speedometer is on the passenger side. Unlike the sedan, there is no glovebox. The windscreen can be folded flat, whilst the sedan screen opens forward. Both models were strictly four seaters, with the tourer's doors featuring the cutaways considered so essential for the sporting motorist in those days. The hood and supports fold into zip fasteners compartments on each side of the rear seat, providing very tidy storage. These are also useful for carrying small items when travelling with the hood up.

The car featured belongs to Paul Dever of Cleveland, Queensland. Sold new by Lanes Motors in Melbourne to Mr B. Owime of Quintree Gully, the car was registered until 1973. It lay idle until 1981 when it was purchased by Mr David Ordill, of Ballina, NSW. Over the following three and half years he undertook a full restoration. He realised after purchasing the car that the body was beyond redemption, and there were numerous parts missing. Another tourer was located in Melbourne and provided the necessary parts to recreate the M.G. The story of the car's restoration was recorded by Mr Ordill, and it is interesting to reflect on some of the difficulties encountered. For instance the petrol tank was not fitted prior to bolting the rebuilt body to the chassis, with the result that it was extremely difficult to re-fit. The original hood bows were way out of plumb when the time came to re-fit them, and finally in desperation were cut and re-joined. It appeared the assembly was 'skew-whiff' from new.

Finally the car was finished in ivory paintwork, matched to an original colour. Trim was in the correct green leather and vinyl, with a brown salt and pepper hood. The standard of restoration was rewarded with first prize in the 'Y' class of the 1985 M.G. National Meeting concours in Newcastle, and subsequently a similar award at the Gold Crest M.G. Car Club concours in August 1985.

Mr. Ordill sold the M.G. to Paul Rever in 1986. Since then it has enjoyed a new lease of life, providing reliable transport for the family on a regular basis.

Contemporary road testers found the top speed to be 76 mph but the free-revving engine enabled an easy cruising speed of 60mph to be maintained. Good handling and a high level of driver comfort assisted in achieving high average speeds in its time. The 'Y' tourer may not have been the export earner the Abingdon people had hoped it would be, but these days the cars are very much sought after, and understandably so. It is able to hold its own in modern traffic, and has a feel of quality and strength which is only found in the most expensive of modern vehicles.

In this country we are lucky if we see more than one example of this fine model each year. We are grateful to John Allen of Wagga Wagga who is the present owner of the car, for this detailed description.

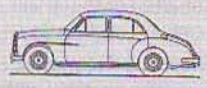
ON A LIGHTER SIDE

Overheard on the Silverstone Parts Counter

Customer:	Can I buy a set of thinner floorboards?
Parts Person:	Why?
Customer:	I need the throttle to open a bit further!

THE MG CAR CLUB LTD.

MAGNETTE
Z AND FARINA REGISTER



NEIL CAIRNS, "FARINA" Rep., 44 Highfield Rd., Leighton Buzzard, Beds. LU7 8LZ.

Dear Dennis,

I went to SILVERSTONE, but was tied up with the above lot. I did take my M.G. Barge, the Mk4 Magnette, round the track for 5 circuits. It was OK for tight handling little sports cars, but a bit roly-poly for a family saloon!

I also purchased a LEADFREE head for the 'YB'. The story is enclosed should you want to use it . . . there are some photos of lots of bits of engine all over the place, and me covered in black oil. I will forward them if you want.

I renewed the brake hoses last month. It took ages as I was determined to save the pipes and their end fittings, to save having to make up a new set. Whoever fitted them had used brass pipes with STEEL end fittings, I won.

In my little article I did not make it clear that I use two nuts locked together to remove the studs. If you think that needs adding, please do so. If you find the odd IE as EI, it's my Christian name that causes me problems spelling them, NEIL.

All the best,
Neil Cairns