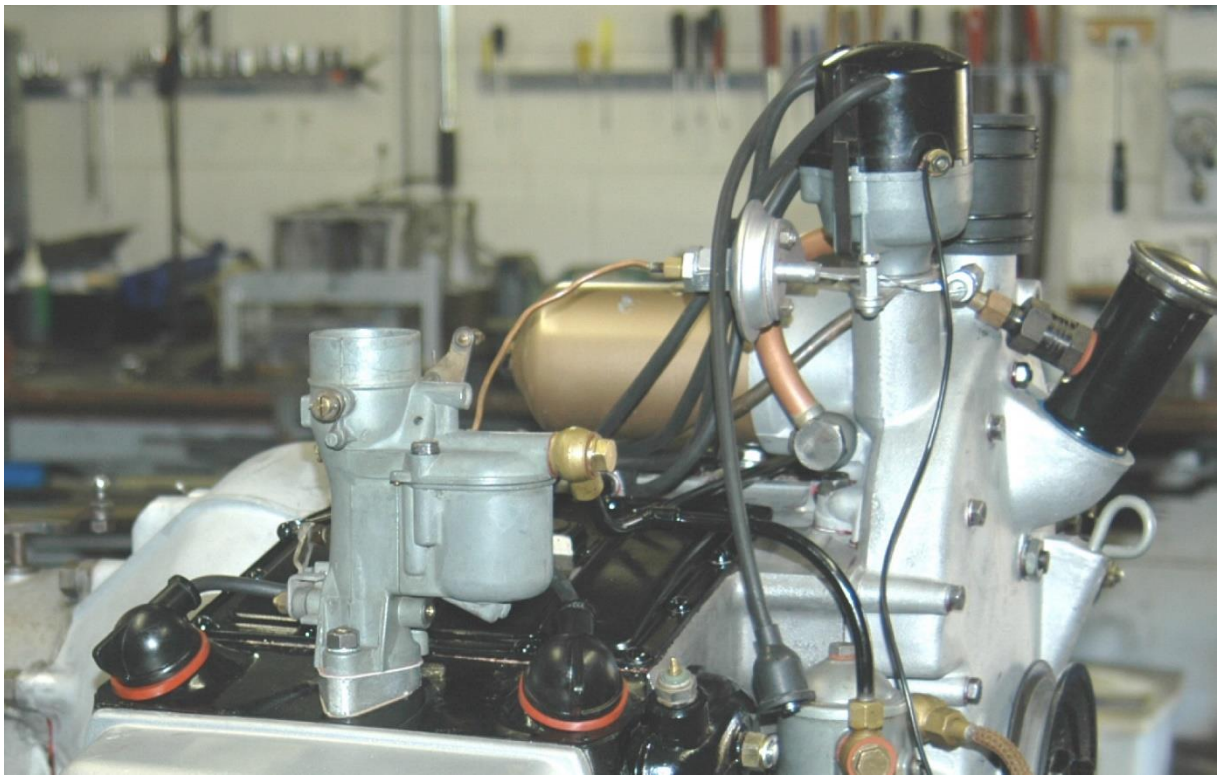
TECHNICAL NOTES SERIES

JOWETT JAVELIN – PA, PB, PC, PD & PE
JOWETT JUPITER – SA & SC



Preparing for unleaded petrol - cylinder head, carburettors and ignition system.

PART XXIII – SET UP FOR UNLEADED PETROL

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Written by Mike Allfrey.
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WARNING!
ASBESTOS COULD BE PRESENT IN GASKETS, FIBRE WASHERS AND CLUTCH FRICTION DISCS

INTRODUCTORY COMMENT FOR TECHNICAL NOTES

These introductory notes should be read prior to reading Part XXIII of the Technical Notes Series.

The Jowett Technical Notes Series have been an ongoing activity for several years. That means that some techniques and specifications may have been superseded in later notes on the same, or associated topics in the series. Also be aware that some topics and recommendations may be specific to certain Engine Serial Number ranges. It appears that, in Australia, the various State Main Agents did not carry out Service Bulletin information during Jowett active times. A set of known Service Bulletins is in Part III.

Some of the notes are restorations of what was written by members of the Jowett Car Club (UK), the Jowett Car Club (NZ) and by members of the JCCA.

Over the years of involvement with matters Jowett, and with the dawning of the personal computer age, a personal decision was made to help members of the Jowett Car Club of Australia Inc. with technical information. Included with the Technical Notes are ‘restored’ versions of the Javelin and Jupiter Maintenance Manuals and the associated Spare Parts Catalogues. Future generations will prefer to flick through images on their personal device screens, rather than leafing through pages in a tattered and oil stained book to access information.

The term ‘restored’ has been used because it soon became apparent that, as with our efforts in restoring Jowett vehicles, we desire excellent quality of workmanship in the reproduction of Jowett related documentation. Not for us the crude, and crooked, photocopies that have been issued over the years. These have, even though accurate at their time, become partly out of date.

Hence the decision to ‘restore’ the publications and documents that have come to hand.

It should be noted that the Javelin and Jupiter Spare Parts Catalogue is a combination of all the catalogues that were to hand (from 1948 to 1953).

The Maintenance Manuals were originally written on the assumption that they would be used by skilled motor mechanics who had attended service training courses conducted by Jowett Cars Limited and after works closure, were made available for owners who had reasonable mechanical knowledge of motor car maintenance and overhaul.

Included with the Technical Notes Series is a Lucas Overseas Correspondence Course, which can be of great assistance when trouble-shooting electrical problems related to your Jowett, or any other British vehicle of the same period.

Please be aware that this is an ongoing project . . . .

Mike Allfrey – February, 2024

Introduction – And A History Lesson

In January, 2000 the sale of leaded petrol in this country was banned. This had happened earlier in Western Australia of all places, due probably to a teaspoonful of political ‘one-upmanship’, that was totally unnecessary. Shades of that old chestnut, the railway gauge saga! How, being a couple of months ahead in our least populace State, this early ban made any difference to our environment has to be questioned. Another example of wasting taxpayers’ hard earned cash, is all it can rightfully claim.

The threat of leaded petrol being withdrawn from our pumps caused a fair amount of comment from all quarters. Our politicians, who knew nothing about how older cars would be affected by the withdrawal of leaded petrol, started campaigns telling us how ‘clean’ unleaded petrol would be – when, actually, the exhaust fumes are dirtier than they were with leaded petrol being used. We were also informed that lead replacement petrol (L.R.P.) would be the total solution for older motor cars. Looking back, it was a time of blithely accepting what was served up and going with it.

Like the railway gauges of yore, there were several additives used in L.R.P. to try and reduce the valve seat recession concern. Older engines, designed to run on leaded petrol, frequently employed soft (cast iron) valve seats in cylinder heads. This was particularly so with respect to British engines. The British, even though they were at the pinnacle of Formula One engine technology, stuck stubbornly with cast iron cylinder heads in its production cars. With leaded petrol, the parent metal (cast iron) valve seats benefited from particles of lead forming an alloy with the parent metal by being ‘hammered’ into

the seat by the valve. In the majority of cases the ant-wear characteristics of this alloying process were extremely good. Lead in petrol also had the following benefits:

It permitted higher compression ratios due to its raising of the petrol's octane rating.
It helped lubricate engine valve stems.
It was a cleaner burning fuel, leaving minimal combustion deposits.
It prevented the growth of algae in the petrol tank.
It did not affect flexible (rubber) petrol hoses or pump diaphragms.
It kept the petrol's octane rating up during lengthy periods of vehicle non-use.

However, aside from all of these benefits, it caused photo-chemical smog – particularly in a place called Los Angeles, California, U.S.A., and it was this place that instigated the swing away from leaded petrol. It has been said that it would have been easier, and cheaper, to have moved Los Angeles to a better geophysical location! That being said, a little tongue-in-cheek, with the sudden huge increase of motor vehicles world-wide – something had to be done, and drastically quickly.

Welcome, to unleaded petrol!

For the enthusiast running older cars, typically 1950s through to 1980s models, there was a fair amount of concern. Some fears were well-founded and some were not. We need to look at the overall scene to appreciate how we are really affected. It has to be said that our fifty-plus year-old Jowetts are mostly no longer used as daily runners, and they have also survived the 'being run into the ground' stage and, are now at the point where they are being looked after much better than they have been in their lifetime.

Modern Petrol

With the blanket banning of leaded petrol, the automotive industry sought some major design changes. Joe Public was not expecting a drop-off in performance and, for this reason, new engine 'management' systems and petrols have been developed. This development has been most effective in rendering the faithful old carburettor and petrol pump as being virtually obsolete. Fuel injection, mostly electrically controlled, has replaced the humble carburettor. It has to be said that the carburettor was always just a compromise with respect to providing an air/petrol mixture that was ideal for all conditions. Because modern fuel injection systems are controlled by a myriad of sensors and evaluators, the amount of petrol injected can be very precisely measured for virtually every known engine operating condition and situation. It is for this reason that modern petrol has changed so greatly.

Modern petrol is denser and therefore will, unless steps are taken, give symptoms of rich running.

Modern petrol also has a lower boiling point and, with a Jowett engine, this matters somewhat. Today's petrols also have a detrimental effect on older petrol hoses and fuel pump diaphragms which are known to become expanded and distorted. Owners of older motor cars need to be aware of these concerns that affect fuel systems.

In a response to questions put by the Association of Motoring Clubs, a Victorian association representing car clubs, Shell responded that their Optimax does promote algal growth if left for long periods with some water (from condensation) in the tank, the response also stated that Optimax fuel had a shelf life of approximately thirty days. Shell also advised that Optimax and copper did not go well together. Modern petrols also burn more fiercely in the engine's combustion chambers and this could lead to engine overheating concerns.

E-Mail Correspondence With BP Australia

Dear Sir or Madam,

I am a customer who, where possible, runs my motor cars exclusively using BP Ultimate Unleaded 98 petrol. My everyday car is a 2001 Rover 75 and I have no concerns with that.

However, I also run a 1950 Jowett Jupiter as a hobby motor car, and due to its status, it can sit unused for a week or more. The engine is a horizontally-opposed 1½ litre four cylinder unit with two Zenith down-draught carburettors. The concern that I am currently experiencing is that, after standing for a week or more, the engine is very difficult to start from cold (whatever the Melbourne ambient temperature may be – summer or winter). The engine usually requires six or seven lengthy sessions of starter motor cranking before it will fire. It gets to the stage where I worry about the starter motor and the batteries.

Once started, if immediately stopped and re-started, it starts instantly. That is the same after non-use for two days, instant cold starting. When the engine is warmed-through it continues to start instantly.

The engine has been fitted with an electronic ignition system, and that produces a really good spark. In addition, there is no evidence of carburettor flooding.

Currently, I am wondering if the petrol that is left in the carburettor float bowls while the car awaits its next outing, maybe deteriorates to the extent that I have to 'crank' the carburettor bowls' contents through the engine until flow from the fuel tank arrives and then the engine commences to start. Could my assumption be correct?

I have tried using the Sta-Bil petrol additive as a means of improving the situation, but that seems to make no difference at all.

Your comments on this subject will be greatly appreciated.

Yours sincerely,

Michael Allfrey.

First Response From BP Australia

Hi Michael,

Thank you for your enquiry. Nice car !

What you are describing is an issue with the volatility of the fuel. Do you remember when you filled up the fuel tank? Also, how frequently do you refuel the vehicle? And do you fill the fuel tank fully up?

Petrol is a blend of over 100+ different chemical molecules. Each different molecule has its own volatility, boiling point, energy released on combustion, RON number, MON number and other properties.

The link below gives an indication of what a distillation curve looks like.

https://www.bing.com/images/search?view=detailV2&id=6450725A8055E0020B9B6B758CA57347434A3F41&thid=OIP.Fq8hcj3wnSj4OLiiND126AHaE5&mediaurl=http%3A%2F%2Fnptel.ac.in%2Fcourses%2F112104033%2Flecture37%2Fimages%2Fr.jpg&exph=331&expw=500&q=petrol+volatility+curve&selectedindex=12&ajaxhist=0&vt=0&eim=1,6

What could be happening is the fuel is a winter blend which has lighter components blended in. Some of these lighter components of the petrol in the fuel tank have evaporated out over the summer / warmer months.

In addition to this, some of the light components which are still in the petrol in the fuel tank have a second opportunity to evaporate when the fuel is sitting in the fuel bowl of the carburettor.

Where are the carburettors located in the engine bay? Above the engine or in another position which gets warm?

After running the vehicle, the heat in the engine bay will assist in boiling-off additional light components.

We are looking at the T0 to T20% part of the distillation curve.

When the air and fuel mixture goes into the cylinder, the petrol needs to vaporise and this will result in good combustion. When starting the engine from cold, the light ends vaporise first and will ignite with the aid of the spark. From then on, the flame front spreads out, heat in the cylinder increases due to combustion and increasing pressure in the cylinder. The mid-range and heavy ends will be burning and vaporising until combustion is finished.

Following your description – for the first 6 to 7 cranks the old fuel is being drawn into the cold engine and when the spark plug sparks, the conditions for combustion are not good and the initial com-bustion doesn’t [happen].

After the 6 to 7 cranks fresher fuel is going into the engine and combustion starts occurring. That said, the previous 6 to 7 cranks have left fuel residue in the combustion chamber and the chamber is very rich in its fuel mix. The fuel starts to burn but when the temperature gets hot enough the mid-range and heavy ends evaporate and all of the sudden the mixture is too rich to sustain com-bustion. Rough running and then the engine will stop.

The next few cranks now have fresh fuel and less residual fuel in the combustion chamber. Initial burning occurs and the residual fuel in the combustion chamber has leaned out allowing the charge to burn more completely. The engine is now running but maybe a bit rough which then settles down as the engine warms up and excess fuel is burnt away.

Once the engine is warm, restarting it is much easier. As the air/fuel goes into the combustion chamber, the heat of the chamber assists is evaporating the mid-range and heavy ends of the fuel – a bit like a glow plug in a diesel engine.

What to do then?

For the fuel tank - if you believe you have old winter petrol in the tank, take the car for a good drive to run the fuel level down or drain the tank. Fill up with fresh fuel. When filling the tank, don't fully fill the tank. If possible, keep less fuel in the tank and top it up more often to keep the fuel fresh.

For the carburettors – if you can get access to the air inlet to the carbs, purchase a Starting Fluid from Autobarn, Supercheap Auto etc., and follow the instructions, which will be along the line of spraying some product into the air filter or inlet to the carburettor. This will provide the missing light end of the petrol, get the engine started quicker and less flooding of the combustion chamber. Over time you will get a feel for how much spray is needed.

This procedure is the same as Aero-Start that is used for starting reluctant diesel engines. I have seen far too many bent connecting rods from tractor engines being given heavy doses of the spray.

Check the jetting on your carb in regards using the choke and the idle jet.

Let me know how you go and I hope this is of assistance to you.

Malcolm.

My Response To The Above

Dear Malcolm,

Thank you for your very detailed response to my questions about difficult starting after my Jowett has stood for lengthy periods without use.

Attached is a photograph of an engine about the same as mine. The carburettors are located on the top faces of the cylinder heads. In the photo, the black dot to the left of the yellow arrow is the vent hole for the carburettor float chamber. I can well understand that the light components can either 'boil off' or evaporate over time after the engine is turned off.

I will investigate a starting fluid to help the situation when starting after the car has stood for a week or so. In addition to that, I am in the process of another trial fix. The car has an electric S.U. petrol pump and, as a further security measure, I have wired the pump through an unused fog light switch on the dashboard. With the engine running, the petrol pump was switched off and the engine left running until it ceased to run due to fuel starvation, then the ignition was switched off. It is waiting for a week and then I will check to see how it starts after the pump has filled the float chambers.

All of this reminds me of when farm tractors were fuelled with TVO (Kerosene) and the procedures we had to adopt to ensure cold starts.

I have tended to keep the tank nearly full, mainly to avoid condensation, but will certainly try your suggestion of adding fresh petrol from time to time.

I am the Jowett Car Club's Delegate to the Association of Motoring Clubs (AOMC) which meets four times per year. Would you or someone from BP be happy to be a guest speaker, on this subject at a forthcoming AOMC Delegates' Meeting? I am sure that the Delegates would be very interested to hear about the use of modern petrol in vintage and classic cars. If so, I can make arrangements to suit.

Again, grateful thanks for your advice,

Michael Allfrey.

Second Response From BP Australia

Hi Michael.

Thank you for your email and the attached picture.

The carburettor is perfectly positioned to be heated from the rising heat from the cylinders and also the vent hole for the carburettor float chamber assists in allowing vapour to be released.

Right: The photo I sent to BP Customer Care.

In our Fuel Technology Group, there is myself and Maria Tilling who are both able to present and speak on fuel, refinery operations, logistics, QA, fuel testing, BP Ultimate additive, etc.

I am more than happy to present at future AOMC meetings. Just let us know the date, time and location and I can confirm if Maria or I are able to present.

I like your idea to trial the running down of the fuel in the fuel bowl. I do the same thing with my garden blower and whipper snipper. Due to non-regular use, at the end of using them, I drain the fuel and then run the item till the fuel bowl is empty. For my mower, I run it with not much fuel. When I do run the mower, I top up the fuel with enough to mow my section i.e. addition of fresh fuel. I have not experienced issues with fuel gumming in any of the equipment and I use Ultimate 98. For the 2-stroke mix, I use Castrol TTS full synthetic. The detergent additive in the Ultimate 98 is good for cleaning any deposits in the carburettor's and inlet valves.

The fuel cans I use, seal very well and there are no petrol fumes in my garage in the summer or winter i.e. no vapour loss. I give the fuel container a good shake before opening it and decanting the fuel.

Please let me know how the trials go and how much starting fluid you need to use. Be careful as it can be very volatile and flammable!

Regards,

Malcolm.

NOTE

Malcolm and Maria did make an interesting presentation at an AOMC Delegates' Meeting. The photograph of Richard Homersham's Javelin engine was used during the presentation.

During the presentation, Malcom recommended that when visiting a service station, should there be a tanker truck in the process of filling the station's tanks, then drive to another petrol vendor for a fill. The reason for this recommendation is due to the fuel being pumped in, all the gunge and algal growth in the tankage gets stirred up and clogs petrol filters. It is best to let the new delivery settle for a spell before filling your car's tank.

This episode has increased my loyalty to BP Ultimate 98.

PETROL VOLATILITY

Volatility Problems

- At higher temperatures, liquid petrol can easily vaporise, which can cause vapour lock.
- If winter blend petrol (or high-RVP* fuel) is used in an engine during warm weather, the following problems may occur:
  1. Rough low idle.
  2. Stalling.
  3. Hesitation on acceleration.
  4. Surging.

* Reid Vapour Pressure (**RVP**) is a common measure of the volatility of petrol and other petroleum products . . . Fuel cannot be pumped when there is vapour in the fuel line (summer) and winter starting will be more difficult when liquid petrol in the combustion chambers has not vaporised.

FROM WIKIPEDIA

Reid Vapour Pressure (RVP) is a common measure of the volatility of petrol and other petroleum products. It is defined as the absolute vapour pressure exerted by the vapour of the liquid and any dissolved gases/moisture at 37·8 °C (100 °F) as determined by the test method ASTM-D-323, which was first developed in 1930 and has been revised several times (the latest version is ASTM D323-15a). The test method measures the vapour pressure of gasoline, volatile crude oil, jet fuels, naphtha, and other volatile petroleum products but is not applicable for liquefied petroleum gases. ASTM D323-15a requires that the sample be chilled to 0-1 degree Celsius and then poured into the apparatus; for any material that solidifies at this temperature, this step cannot be performed. RVP is commonly reported in kilopascals or pounds per square inch and represents volatisation at atmospheric pressure because ASTM-D-323 measures the gauge pressure of the sample in a non-evacuated chamber.

The matter of vapour pressure is important relating to the function and operation of gasoline-powered, especially carburettor equipped vehicles and is also important for many other reasons. High levels of vaporisation are desirable for winter starting and operation and lower levels are desirable in avoiding vapour lock during summer heat. Fuel cannot be pumped when there is vapour in the fuel line (summer) and winter starting will be more difficult when liquid gasoline in the combustion chambers has not vaporized. Thus, oil refineries manipulate the Reid Vapour Pressure seasonally specifically to maintain gasoline engine reliability.

The Reid vapour pressure (RVP) can differ substantially from the true vapour pressure (TVP) of a liquid mixture, since (1) RVP is the vapour pressure measured at 37·8 °C (100 °F) and the TVP is a function of the temperature; (2) RVP is defined as being measured at a vapour-to-liquid ratio of 4:1, whereas the TVP of mixtures can depend on the actual vapour-to-liquid ratio; (3) RVP will include the pressure associated with the presence of dissolved water and air in the sample (which is excluded by some but not all definitions of TVP); and (4) the RVP method is applied to a sample which has had the opportunity to volatize somewhat prior to measurement: i.e., the sample container is required to be only 70-80% full of liquid (so that whatever volatizes into the container headspace is lost prior to analysis); the sample then again volatizes into the headspace of the D323 test chamber before it is heated to 37·8 degrees Celsius.

Unleaded Petrol And The Jowett Engine

All is not the absolute disaster that was predicted in the late 1990s. Our Jowetts can cope admirably well when using modern petrol. It should be remembered that the Jowett engine was originally designed to run on ‘Pool’ petrol that was available in Britain just after WW II. However, in those days, motorists did not have the expectations that their modern counterparts expect today. In the late 1940s and early 1950s it was ‘normal practice’ for an enthusiast motorist to ‘do’ the plugs and points before a journey of more than a hundred miles. It was also normal to perform a decarbonizing activity at intervals of 18,000 to 25,000 miles, hence strong sales of decoke gasket sets in those days. A ‘decoke’ was, for home mechanics, a common weekend activity. Fortunately that is not the case today!

With steady, relaxed driving, a Jowett engine should be able to run reliably on standard unleaded petrol. There is a gross misunderstanding that these engines require premium grade unleaded petrol. If the compression ratio of an engine is below 9:1, premium petrol is not required at all. In fact, the low compression engine will perform no better on a higher octane petrol, simply because it does not have the compression ratio that demands anti-pre-ignition characteristics of higher octane ratings.

Such a statement requires a degree of qualification though. Experience has shown, with a Jowett engine, that the exhaust pipe is much cleaner when a petrol such as BP Ultimate is used. On the same motor car, the exhaust was very soot affected when standard unleaded petrol was used for a period of time. It is also true that, while using Shell Optimax exclusively for an extended period, the exhaust pipe was severely soot affected – particularly if the Optimax petrol had aged. It is horrifying to observe that heavy deposits of soot in the exhaust pipe also mean particles of soot being discharged into the atmosphere. Clean fuel? Not quite so!

The Jowett engine will run successfully on unleaded petrol, without serious modification. However a number of points have to be considered:

1. The needle and seats in both carburettors need to be in very good condition.
2. Petrol delivery pressure should be below 2 psi. The Zenith carburettor has a float that acts directly on the float chamber needle and seat. There is no leverage as in most other types of carburettor. This is quite important, because of the inherent denseness of modern petrol, any additional fuel supply, due to poor needle and seat performance, will certainly compound the perceived richness of the petrol-air mixture and will be seen as carburettor flooding.

   It is a sound idea to install a good quality fuel pressure regulator on the delivery side of the petrol pump, mounted away from engine vibration.

   Another method of controlling fuel pressure on a Javelin is to install an electric petrol pump and install at the same time a by-pass loop from the delivery side of the pump, that passes surplus petrol to the inlet side of the pump. This involves extra plumbing, but it is worthwhile.
3. With the carburettor's close proximity to the cylinder head, after a hot engine is switched off, it is affected by heat surge and then for a short term, higher temperature stabilisation, the petrol's lighter components in the carburettor float chamber will boil away. This gives fuel starvation symptoms when an attempt is made to re-start the engine. At low cranking speeds, this condition can lead to carburettor flooding.

   An electric petrol pump, as fitted to the Jupiter model, will help compensate for this.
4. To every tank full of unleaded petrol, add 50 – 80 ml of pure upper cylinder lubricant. This is to prevent the valves from sticking in the valve guides. On a Jowett engine, after a long period of full throttle work (hill climbing) the inlet valve stem will be washed clean with the amount of petrol vapour passing through the inlet port. Once lesser throttle openings are used (coasting down hill) an inlet valve could stick in the open position. This condition usually occurs at number three inlet valve. Upper cylinder lubricant will help prevent such incidents happening.

   If genuine upper cylinder lubricant can't be obtained, a dose of two-stroke oil for mixing with petrol will suffice and keep valve stems lubricated.
5. Long periods of running at over 60 mph should be avoided if consideration is being given to exhaust valve seat recession.
6. Thankfully, lead replacement petrol is no longer available. It never did entirely prevent valve seat recession and its long term effects on an engine were not known. The additives used in lead replacement petrol contained elements of sodium and potassium and the main concern with these was, how did they affect an engine's internal components if it was left standing unused for long periods?

   Lead replacement petrol's acronym L.R.P. soon came to stand for 'Lousy Rotten Petrol'.
7. There could be petrol starvation symptoms due to the deterioration of rubber components in the fuel system. On the Jowett, the braided petrol hose, located on the suction side of the pump, could suffer from rubber hose liner collapse due to the suction of the petrol pump. This is particularly so if there is a partial blockage at the pick up in the petrol tank.

   Lack of petrol delivery performance can manifest itself if the pump diaphragm is softened due to incompatibility with modern fuels.

Modifying The Engine

There are steps that can be taken to ensure reliable, fast running of a Jowett engine that is fuelled by unleaded petrol. These steps are considered by most Jowett owners to be extremely expensive. To a certain extent that could be true, however, the upgrading of an engine to operate economically and reliably on unleaded petrol can also be seen as a value-adding investment. Peace of mind counts a great deal in this too. The economics of converting an engine can dictate that the conversion be undertaken at the engine's next major overhaul. If this course of action is undertaken, then serious consideration should be given to making desirable changes to the engine at overhaul time. The Jowett engine can be modified in the following ways:

1. Polishing the combustion chambers in the cylinder heads to a smooth finish.

2. Smooth away surplus sparking plug thread that shows in the combustion chamber, after the correct plug has been screwed in fully home. The ‘peaks’ of the thread can glow red hot and cause pre-ignition and running on after the engine is switched off concerns. These threads can be cleaned away by using a small die grinder.
3. Install hardened valve seat inserts. This should be carried out by a specialist workshop. There has been one instance of a valve seat falling out and causing severe damage.

   It could be a better option to use a treatment like Flash Lube at every tank fill, and stay with parent metal valve seats.
4. Bore out and install bronze liners in the valve guides. This should be carried out by a specialist workshop.
5. Install stainless steel valves. There are a number of forged blanks from which valves to suit the Jowett engine can be machined. Again, specialist work-shops can do this work.
6. Install Champion L87-YC sparking plugs. This model replaces the original L10 plug. It also has the feature of having an extended core nose that places the spark further into the combustion chamber. When installing these plugs, it is advisable to check that the valves do not clash with the extended nose of the plug into the chamber.
7. Fine tune the ignition timing during road test to prevent detonation.
8. Replace those rubber fuel system components that could be affected by modern petrol.
9. Have the carburettors thoroughly overhauled and set up to provide optimum running on denser petrol. The carburettors should be set and tuned with an exhaust gas analyser. Specialist workshops can do this.
10. Install a fuel pressure regulator. Zenith carburettors can only handle a maximum of 2 psi fuel pressure comfortably. Petrol pump repair kits have been rationalised and seem to err on the high pressure side which can affect the mixture.

    A fuel pressure regulator that is compatible with unleaded petrol should be used.

Other Alternatives

There are several types of petrol additive on the market that claim to stop valve seat recession. We all have to be somewhat dubious about claims for some of these ‘wonder’ products. The late John Dymond, then managing Director of the Penrite Oil Company, and himself a very knowledgeable ex-BP chemist, presented a very interesting talk to car club Delegates at an AOMC Information Day on the subject of valve seat recession and the products that claimed to prevent the phenomenon.

Essentially, John reassured those present that there was not too much to worry about, with respect to the phasing out of leaded petrol. The main advice given was to run the car on straight unleaded petrol and add a valve seat recession prevention additive. Don’t purchase L.R.P., was the real message, due to the various fuel companies using differing additives. The best prevention method would be to stay with just one additive brand at all times. A cynic would say that John was selling Penrite’s own additive, but there was a heap of sense in what John said that day.

In tank or inline fuel catalysts – in the years leading up to the withdrawal of leaded petrol, there was quite a campaign for tin particle catalysts. These wonder devices were advertised in such a way that some thought, “Why on earth isn’t the world’s entire automotive industry installing these devices as original equipment?” It was estimated that, for a device to match a 1½ litre engine, and for the period it was claimed to provide protection for – a seven tonne truckload of tin would have to be carried by the vehicle.

Upper cylinder type oil additives – there are a couple of these on the market. One is cleverly attached to the intake manifold with a vacuum operated metering device. Having looked closely at such a unit, it was felt that a Jowett engine would need two such units, having one unit meter into the balance pipe not being a very dependable option.

Contact was made with the supplier and there was no response to questions about which additive was used to help prevent valve seat recession. Another supplier of a similar system, makes so many claims about the product boosting octane ratings, improving fuel consumption and boosting engine

performance to such an extent that, again, we have to wonder why the automotive industry is not installing this product on to every motor car being manufactured?

Liquid additives – there are several of these on the shelves at service stations. The Federation of British Historic Vehicle Clubs carried out exhaustive tests on a Leyland 'A' Series (Mini and MG Midget) engine (most prone to valve seat recession) and resolved that the Valvemaster product was probably the best, closely followed by a Millers product.

These additives are fairly expensive and, depending on vehicle use, it could work out more expensive in the longer term than installing hardened valve seats and stainless steel valves.

The choice, as always, is yours!

Conclusion

As can be seen, there is no real difficulty with respect to running a Jowett engine on unleaded petrol. The engine in the author's Jupiter, and now in use in his Javelin, has covered 30,000 miles on unleaded petrol. No special changes were made to the engine and only pure upper cylinder lubricant was added to the petrol at each tank fill. There was one instance of a sticking inlet valve after a long burst of near full throttle work.

The engine currently in the Jupiter has been converted to use unleaded petrol, but it still receives a dose of upper cylinder lubricant – for peace of mind while on the open road, and that is what it is all about.

Special Note

Since these notes were written, some products mentioned are no longer available. That also applies to service workshops and, 'service' stations (here in Australia) seem to stock only sweets, cold drinks and bags of crisps. It is becoming more difficult to find top up oil and such in a 'service' station.

The word 'service' in the common title is a misnomer in these modern times.