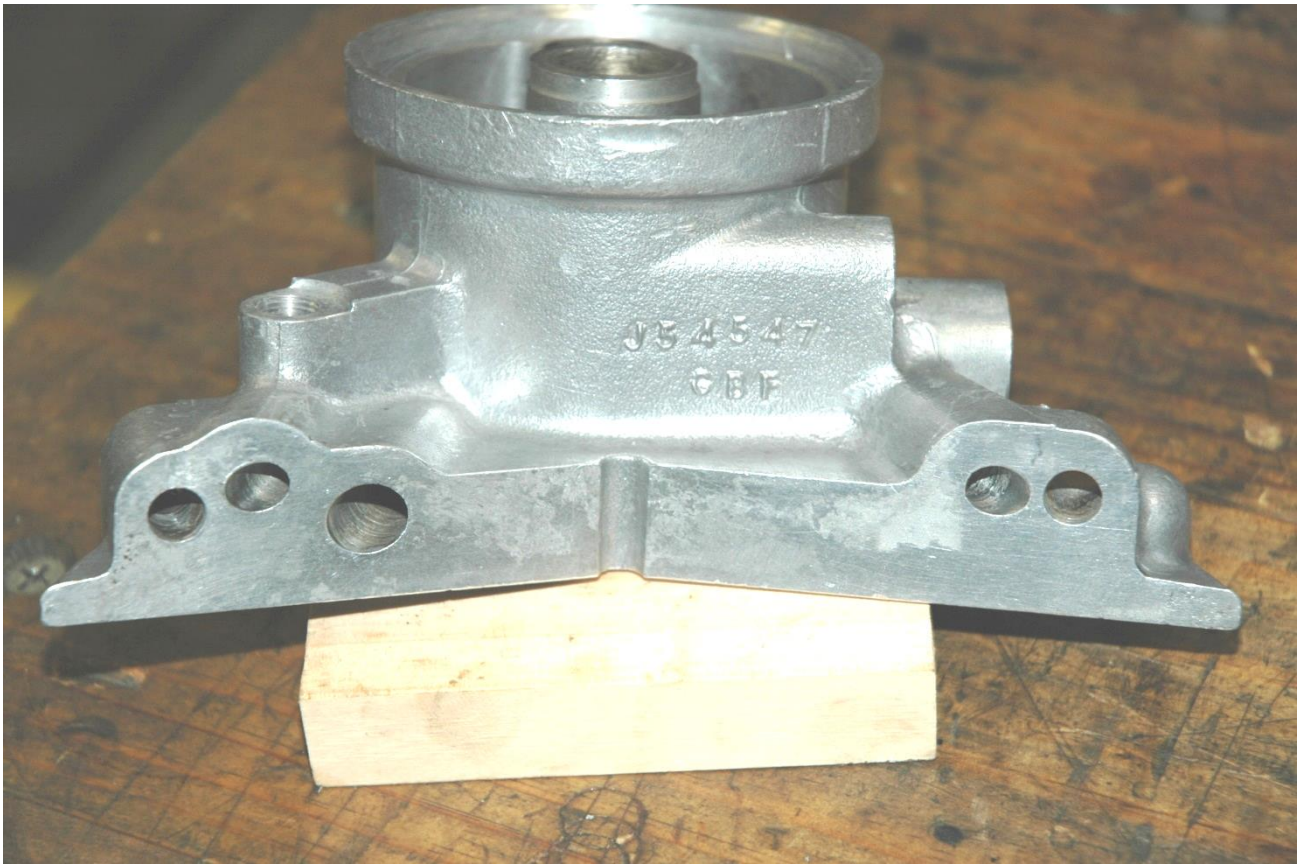
TECHNICAL NOTES SERIES

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



A Series III rear timing cover.

PART XV – REAR TIMING COVER GASKET

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Compiled by Mike Allfrey – January, 2006.
Revised – February, 2024.

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WARNING!
ASBESTOS COULD BE PRESENT IN GASKETS AND FIBRE WASHERS

INTRODUCTORY COMMENT FOR TECHNICAL NOTES

These introductory notes should be read prior to reading Part XV 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 That means that some techniques and specifications may have been superseded in later notes on the same, or associated topics in the series.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 These have, even though accurate at their time, become partly out of date.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

INSTALLING THE TIMING CASE REAR COVER GASKET

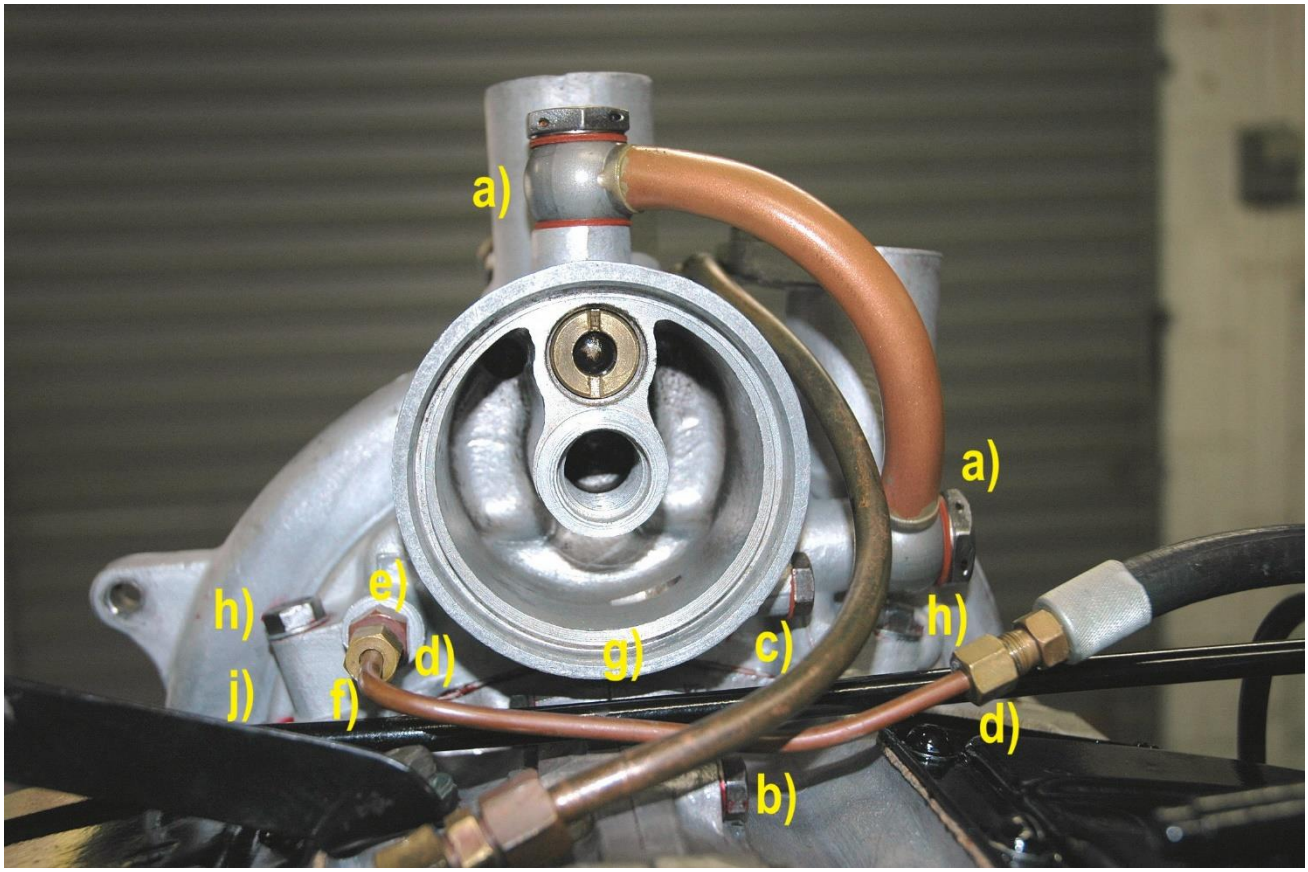
Oil Leakage

The engine for Javelin and Jupiter motor cars has an unfair reputation for leaking oil from the gasket between the rear timing case cover (also known as the oil filter housing) and the crankcase. There can be cases where oil may not be leaking from this gasket. Before taking any action, check the following potential oil leakage areas, refer to *Figure 1*:

a) With respect to later series engines, the banjo fittings for the oil cooler hoses (or side transfer pipe) could leak at their fibre washers. It is best to cure leaks here by using 16 mm Dowty hydraulic type sealing washers. These washers have a flexible seal bonded to their inner diameter.

b) The five ¼-in. BSF bolts along the top of the crankcase joint can leak oil. Often, one half of the crankcase set has the bolt holes breaking through the bottom of the face joint. Hot oil can migrate from here along the bolt and out through the split in the spring washer. An effective repair is to use close tolerance flat washers at both sides in conjunction with Loctite 518 Master Gasket and Nyloc nuts.

c) The oil filter drain bolt fibre washer could be leaking. This washer tends to be neglected, and should be replaced with an 8 mm Dowty hydraulic washer.



Above: Figure 1. Potential oil leaks other than the rear timing case cover gasket.

d) The oil pressure gauge hose connector can leak at the thread in the housing. This can be repaired by cleaning the threads with Loctite 7471 Cleaner/Activator fluid and applying a drop of Loctite 569 Thread Sealant before assembling the connector.

e) Check that the oil pressure pipe boss has not been split. Due to over-tightening the union.

f) At the copper pipe olive at the pipe union. In bad cases, the pipe should be renewed.

g) The oil filter's canister sealing ring. This source of leakage can be fixed by installing a 'spin-on' oil filter conversion kit.

h) The two $^{5}/_{16}$-in. BSF bolts that clamp the rear timing cover to the crankcase. These bolts should not be tightened further in an attempt to cure a leak. They should be removed, cleaned and installed using flat washers in place of the spring washers. Use a smear of Loctite 518 Master Gasket under the washers and on the bolt shanks.

j) Another common source of oil leakage in this area is where a new gasket has been installed between the rear cover and the crankcase. Usually, this repair has been effected by taking a short cut in not removing the timing cover. The front cover's gasket is cut and a new top portion inserted. This is never successful.

The Fit-Up Of Multiple Gaskets

The construction method employed for the Jowett Javelin and Jupiter engines requires that engine oil withholding gaskets are fitted in an appropriate manner. There are five gaskets that require special attention:

(i) Part No. 50698 – Front Timing Cover Gasket.

(ii) Part No. 50767 – Engine Sump Gasket.

(iii) Part Nos. 50692 and J54688 – Timing Case Rear Cover Gasket.

(iv) Part No. 54038 – Clutch Housing Gasket.

(v) Part No. 50833 – Petrol Pump Gasket.

The requirement for these gaskets is that all of them must make contact with other gaskets. That contact is at edges of the front timing cover gasket and the clutch housing gasket making contact

with the engine sump gasket to form an effective oil-tight joint. This principle is carried further to the timing case rear cover gasket which makes contact with the front timing cover gasket to again form an oil-tight joint where the gaskets meet. Continuing the theme, the edge of the front timing cover gasket where it makes contact with the petrol pump gasket. Such joints can be termed 'T' joints.

The method for ensuring oil-tight joints in these locations is to ensure that the contact edges protrude 0·005-in. (0·127 mm) proud of the face that the abutting gasket fits against. In the instance of the timing case rear cover gasket, after the cover has been tightened in place by the two hold down bolts, the front edge of the gasket *must* protrude forward of the crankcase face 0·005-in. (0·127 mm).

The same procedure applies at the front timing cover gasket and at the clutch housing gasket edges where they meet the oil sump mounting flange. In addition, the R.H.S. edge of the front timing cover gasket must protrude at the petrol pump mounting face.

Jowett owners tend to save a few cents by making their own gaskets and, therefore, when cutting out a new gasket, allowance for the protrusions should be made.

It also needs to be understood that the gasket material must be of the original type in that the edges of the gaskets can be compressed into the face gaskets. An elderly, dried out hard gasket has very likely shrunk to the extent that an 'oil gallery' may have been created for an almost immediate oil leak. Inside the front timing cover and at the engine oil sump, while the engine is running, there is a copious amount of oil splashing around. It is the nature of oil to find a way out of an engine which means that we should not encourage such oil (and coolant) migration with slipshod gasket fitting.

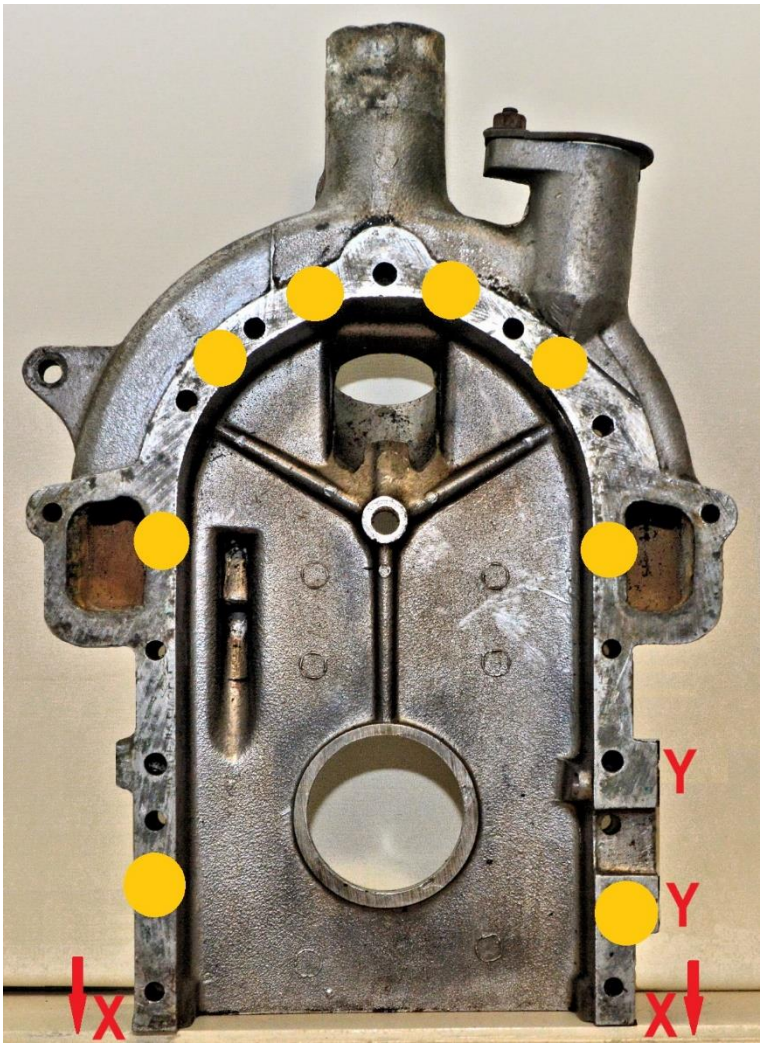
It has to be noted that the rear timing case cover gasket has to contend with full engine oil pressure at three points as well as coping with oil splash in confined spaces.

Gasket – Part Nos. 50692 And J54688 – Installation Procedure

Part Number 50692 rear timing case cover gasket has smaller oil gallery holes and is used on early (unmodified) crankcase assemblies – prior to E2 PD 21937 (Javelin) and E2 SA 882 (Jupiter). The later gasket, Part Number J54688, matches the enlarged oil galleries in rear timing case cover and the crankcase set.

To enable a proper repair to be effected, it is best to start from scratch and proceed as follows:

1. Remove the engine oil sump, petrol pump, front timing cover and rear timing cover.



Right: Figure 2. A suitably scungy front timing cover, viewed from the rear. The gold dots represent pieces of brass shim stock. Ensure that the shims at the second row down do not interfere with the gasket to be fitted. Red 'X' and arrow are where front timing cover gasket sticks out towards the sump gasket. Red 'Y' shows where the front timing cover gasket sticks out towards the petrol pump gasket.

2. Remove the oil filter canister.
3. The front timing cover, less its gasket, should then be bolted to the crankcase – with 0·005-in. (0·127 mm) shim stock pieces placed between the front cover and the crankcase face to provide a gap for the

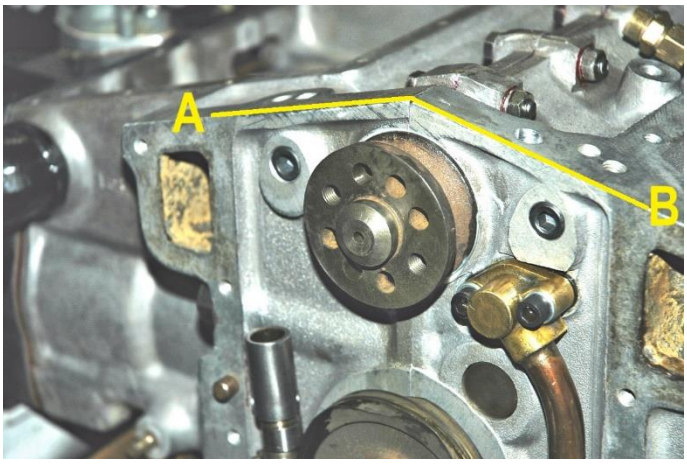
rear timing cover gasket to protrude, tighten the bolts. The shim stock can be temporarily adhered with a smear of light grease.

An alternative is to use eight off 0·005-in. (0·127 mm) thick ¼-in. shim washers at the timing cover bolts. After use, place the shims in safe storage for future use.

The purpose of the shim stock (washers) is to hold the front timing cover 0·005-in. forward of the crankcase face. This ensures that the gasket's front edge protrudes by the correct amount.

4. Ensure that all joining components are free of any previous sealants, burrs and are cleaned with Loctite 7471 Cleaner/Activator. Loctite 7471 should be wet sprayed on to the component surfaces and then wiped dry with a clean cloth, Loctite 7471 is then sprayed on again and left for twenty minutes to half an hour to etch the surfaces ready for Loctite 515 Master Gasket. Methylated spirits, used after the Loctite cleaning fluid, will retard the curing process.

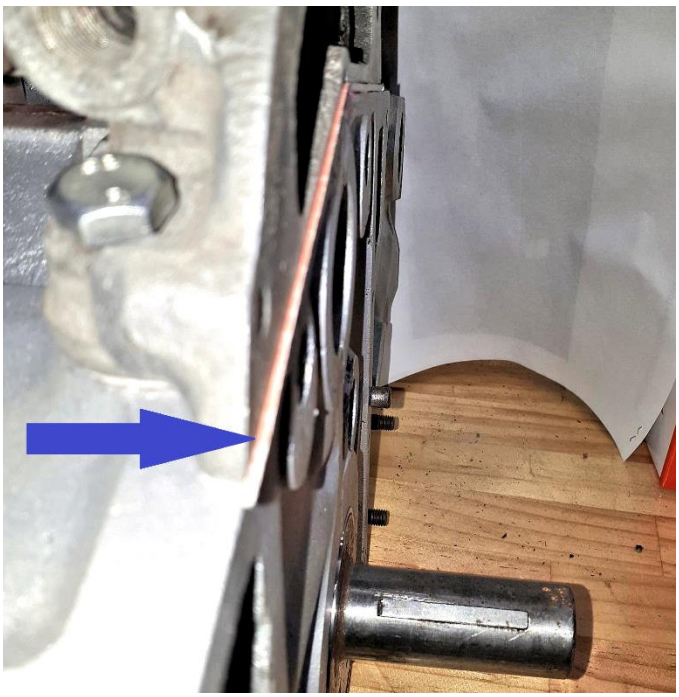
Right: Figure 3. The yellow line 'A' to 'B' shows where the gasket must stick out 0·005-in. after the rear timing case cover has been bolted in its final position.



5. The gasket, Part No. 50692 or J54688, should also be cleaned in the same manner as the other parts. It is well worth checking that the front edge of the gasket can protrude forward of the rear timing cover (refer to *Figures 3* and *4*) and the crankcase face by at least 0·005-in. with the hold down bolts easily passing through their holes in the gasket. This is necessary to ensure that there is an oil tight seal at the front timing cover gasket.

Right: Figure 4. The pink portion indicated by the blue arrow is the gasket protruding forward of the front crankcase face.

Here it is exaggerated for illustrative purposes.



6. Cut a piece of 5 mm diameter 'O' ring cord to fit into the recess at the centreline of the rear timing case cover's gasket surface. Slice off a longitudinal strip so that there is a flat edge. The finished piece should be proud towards the gasket surface so that it is compressed to fill the void. Use Loctite 406 adhesive to attach this strip to the rear cover.
7. A thin smear of Loctite 515 Master Gasket should be applied to the gasket on both faces. The rear timing cover, less the oil filter canister, is then bolted lightly and evenly to the crankcase. Do not permit the Loctite 515 Master Gasket sealant to squeeze into the oil galleries.

   Apply a bead of Loctite 518 under close-fit plain washers and under the bolt heads. Use a smear of Loctite 518 at the bolt threads for retention purpose. Do not use spring washers.
8. The upper five bolts are then installed into the rear timing cover through the front timing cover to just hold it forward. The gasket must be pushed forwards to butt against the front timing cover rear face, with two pieces of shim stock between the upper bolts, to ensure that the gasket is proud of the crankcase face. The two vertical bolts should then be progressively tightened. Then the front bolts into the rear timing cover are fully tightened. The bolt and top stud holes in the front timing cover are oversize to allow the rear timing cover to be pulled down. When the two $^{5}/_{16}$-in. BSF bolts are close to being tight, confirm that the bolts from the

front into the rear timing cover are still snug, then fully tighten the two $^{5}/_{16}$-in. BSF bolts. The front cover bolts can then be tightened.

Wipe away any excess sealants that may have been squeezed out during tightening of hardware.

Throughout this operation, the rear timing case cover gasket must be held firmly forward.

9. The assembly, at this stage, should be left overnight to fully cure.
10. The 0·005-in. gasket protrusion (sticking out) works on the principle that there is sufficient yield in the front timing cover gasket material to make an effective seal.
11. The front timing cover should then be removed and normal engine reassembly procedure adopted. Always make sure that there is front timing cover gasket protrusion at the sump face, and at the petrol pump face, to effect a proper seals in those locations.

    Keep the shim stock pieces (washers) for future use.
12. There is a chance of oil leakage at some of the front timing cover securing bolts. This is particularly so with respect to those bolts in the vicinity of the petrol pump. There is a simple method to ensure no leaks.

    Make sure that the bolts are absolutely clean. Make sure that the holes in the timing cover are also clean. Do not use spring washers under the bolt heads, use a small outside diameter plain washer. Apply a smear of Loctite 518 Master Gasket to the bolt and the washer. Apply a thin smear of Penrite Copper Eze to the bolt threads. Tighten bolts evenly in sequence and wipe away any excess sealant that may have been squeezed out. The sealant will hold the bolts securely.

Using the aforementioned procedure, will usually effect a sound repair.

Using An Aluminium Plate And ‘O’ Rings

There is another method that should only be carried out on a completely dismantled engine:

1. From 1·6 mm thick flat aluminium plate make up a substitute gasket, ensuring that there is extra material along the rear edge.
2. Carefully mark out the two holes for the $^{5}/_{16}$-in. BSF bolts and drill with a $^{21}/_{64}$-in, diameter drill.
3. Make dimensional checks of the oil gallery positions in the crankcase set and the rear timing cover. If they match, all is well.

   If they do not match, the crankcase can be modified by counter boring the drilling that is out of position to a depth of 10 mm. The diameter of the counter bore should be such that the repositioned drilling fits into the counter bore diameter.

   A plug should be machined so that it is a tight fit into the counter bore. Install the plug, using Loctite 680 Retainer.

   Machine the plug flush with the gasket face.

   Carefully mark out the revised position of the oil gallery drilling and drill through the plug. De-burr the hole.
4. Mark out the oil gallery drillings in the 1·6 mm aluminium plate and drill the oil supply hole with a 16 mm diameter drill. Drill the two distribution gallery holes with a 14 mm diameter drill.

   Make sure that the aluminium plate, when bolted in place, is absolutely flush with the front face of the crankcase set.
5. Obtain one 16 mm OD ‘O’ ring and two 14 mm OD ‘O’ rings. The ‘O’ rings should have at least 1 mm of crush when installed.
6. Cleanly form a bend in the plate to match the angle of the top face of the crankcase set.
7. Trial assemble the components to make sure that the upper five front timing cover bolts will thread into the rear cover while it is located on the 1·6 mm plate. Do not force these bolts, remove the timing cover and drill the holes $^{1}/_{64}$-in. larger. Make sure that the plate is flush with the crankcase front face.
8. Thoroughly clean all components and prepare for Loctite sealant use.

9. Insert the ‘O’ rings into the plate and apply a thin film of Loctite 518 Master Gasket to both faces of the aluminium plate.
10. Apply Loctite 518 to the two $^{5}/_{16}$-in. BSF bolts and their flat washers.
11. Assemble the components as described for replacing the standard gasket, except that the protrusion at the front face should be 0·002-in. (0·0508 mm) to ensure contact with the front timing cover gasket.

Note: It is every Javelin and Jupiter owner’s ambition to have an oil leak free engine. Rusting engine bolt heads are proof of such a situation!

Photograph Credit – Figure 4. – Richard Homersham.