

Early 150s were fitted with this C12438 manifold and associated parts, an improvement on the 140 set-up

## ■ XK 150 Engine

Words and photos by **Stuart MacNeill** of Coventry Auto Components

The XK 150, introduced in 1957, still housed the strong and reliable 3.4-litre (3442cc) engine, evolved from the XK 140 powerplant, but Jaguar was now into serious development of its products and was strongly tied into the 'performance sells' mantra; having established a position in the American market, Jaguar now had to compete with rivals to sustain it.

The new engine was the most powerful production XK engine yet, as it incorporated many of the features of the XK 140's 'C-type' head into a revised design known as the 'B-Series' (identified by the V-prefix). This head cannot easily be visually discerned from the earlier 'A' head with the untrained eye, but had larger valves and a revised inlet design. The C8610 engine block casting was again used until replaced by the C15951 unit. This configuration claimed 190bhp. This head is a nice, simple, upgrade for XK 120 and 140 engines without shelling out the hefty sums asked for a similar-performance 'C-type' head.

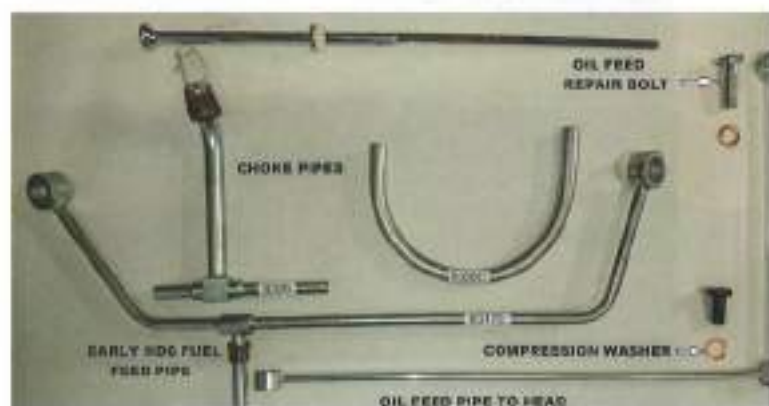
Visually the engine had a new, revised inlet manifold, going from earlier, one-piece to a modular design with separate, bolt-on, water rail with thermostat housing. This design allowed for more efficient cooling and various designs of manifold and choke pipe set-ups were used on the underside. Although unusual, all of these pipe assemblies are reproduced by Coventry Auto Components (CAC).

This manifold also sported a new design of twin SU HD6, 1 3/4in

CAC can supply all parts associated with the 150's HD6 carburetors



Below: Even the various types of choke, oil and fuel feed pipes are available



carburetors, which are similar to earlier versions until you view the revised fittings on the flat underside, ridding them of some of the old-style banjo pipes that are easily bent on disassembly.

Sitting below the manifold, it can be seen that the XK 150 also had a new sleeker design of distributor (DMB26A). In the trade we tend to refer to earlier distributors as the 'classic ice cream cone' shape and the later body as a 'Cometto' design. There was a recent period of



Viewed from below, the 150's carburetors are flat, bottomed

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The odd little "valve" (rarely seen and not currently available) under the early manifold choke pipe assembly

manufacture (under various brands) of rotor arms that regularly failed. This was due to a metal rivet through the arm contact itself causing the plastic body to fracture, so always replace with plastic bonded rotor arms to avoid future problems.

Looking down the block, it can be seen that the oil filtration system had been replaced with a later Tecalemit oil filter head, angled upwards at a 2 o'clock inclination. This slimline unit sports an external return hose to a new, slightly shallower, sump design, which has a

hooked pipe inlet braised onto it. This is a good visual 'tell' of having the correct sump fitted. It is worth mentioning again that it is common for these vehicles to have been jacked up by the sump, so always inspect for damage on the underside.

A further note here: this oil return hose is a very high specification



The C14651 later inlet manifold assembly



The engine number is located on the plinth above the oil filter location on the block



New 12-bladed 150 fan



CAC has recently tooled up to produce silicone XK 150 top hoses, moulded and over-braided as original; look correct, last for ever!



Early rev counter drive equipment; bottom and centre right CAC's conversion from electronic drive to XK manual gauges

rubber, but deceptively short and plain-looking. NEVER replace it with a piece of standard spec heater hose; unless you want to embark on a full engine rebuild the next day!

The filter head sports the external oil pressure relief valve cap, but rather than having an adjustable body, Jaguar inserted a machine screw (unthreaded) type spacer into the end of the spring to pre-load it and act as a valve stop.

The cooling fan changed to a 12-blade, all steel, pressed design, in a two-piece fully shrouded body for improved air flow, but the operating system retained the XK 140 10mm belt and pulleys. This was later changed to a tougher 13mm belt system and the dynamo pulley was also reduced in diameter to utilise what is now known as 'over-running' of the unit: the re-gearred dynamo works at a more efficient, higher output speed at all engine revs.

Looking further down the head, which is visually similar to the XK 140, we see that from the opposite side to earlier models, i.e. the rear of the inlet camshaft, a rev counter drive assembly is now exiting. Early heads sport a mechanical, right-angle box drive, which sits on a plate that rotates it slightly (about 10 degrees) towards the rev counter (centre of car). These drive boxes should be inspected regularly, as the gears are fitted into the casing with Welsh washers (dished cone plugs) and are renowned for ejecting gears whilst in use! Care should also be taken not to kink or overstretch this unit's mechanical drive cable, or it will fail prematurely. From experience, we now manufacture this particular cable  $\frac{3}{4}$ in longer than original to eliminate any fitment problems.

This repositioning of the rev counter driving assembly led to the rev counter gauge itself now operating in a more conventional clockwise sweep, unlike previous XKs. When viewing a running XK 150, it is worth investigating any non-functioning or incorrect model rev counter (refer to Jaguar Parts Book) as it may just indicate an incorrect (for that model year) spec engine swap. Often this last complication is just abandoned as it can cost many hundreds of pounds to sort out (but is quite possible to do, with specialist help).

Later versions went over to a wired version with the electronic drive box (Mk2-type) and sports the matching electronic rev counter (obvious from the different markings on the face). Correct cam covers are required to suit the type of tachometer drive fitted, as body diameters vary.

The early XK 150 fuel line was a direct feed from pump to carb with minimal filtration, but later models have an AC Delco glass filter bowl fitted in the engine bay. These still only used a flat disc of brass gauze, but CAC can now supply a full paper element to provide better



Top l/r early/late mechanical rev counter faces, below electronic – note red arrow at 900rpm and clock markings on face, plus rev numerals at 500rpm as well as 1000rpm increments



Original XK 150 right-hand drive airbox and rare hose

filtration. This is an excellent upgrade and correct fuel feed pipes and hoses are available to upgrade to this spec and protect your carbs.

Now you may be thinking that an engine as powerful as the XK 140's in C-type spec would be a sure-fire recipe for success, but sadly the XK 150 had gained a bit around the waistline and a further 4in across its girth, so was now tipping the scales at a far heftier weight. Not only this, but Jaguar's new saloons were getting nippler and the XK 150 was in danger of losing its place as the 'performance option'.

As the USA market was still writing the cheques (or checks as they prefer to put it!), it was only natural for Jaguar to follow the American maxim of "There's No Substitute For Cubic Inches", and in 1959 the engineers at Jaguar turned to the newly-developed, stroked and bored XK engine block, known as the 3.8-litre (3781cc).

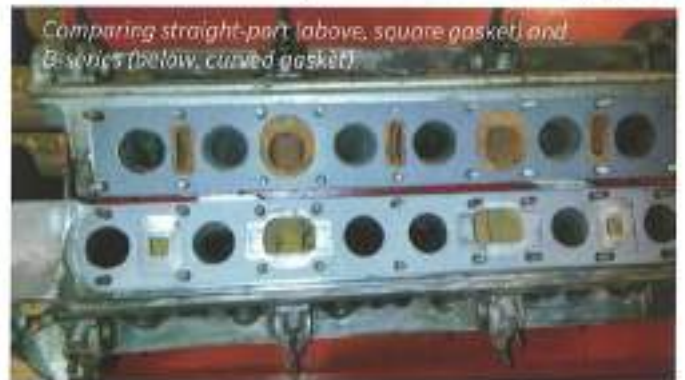
Ok then, it's a simple job to throw in a 'big', torquey 3.8 bottom end and away we go with a fair bit more grunt! This was designated as the 'VA' prefix engine series, but this was just the beginning!

For some of Jaguar's up-and-coming engineers this was a bit of a sell-out and they were in the mood to show their understanding of race-developed new technology. They had made great advances with induction tuning: from the two (HD6) 1 3/4in carb set-up feeding into a one-piece manifold (i.e. 3 1/2in total flow), they had moved on to three separate 'U-section', twin plenums with a big, thirsty 2in HD8 carb crowning each beautiful-looking sculpture: now 6in of total flow area. To top it off, they also designed a new airbox that sat on three ram-pipes to further enhance the ram-air (forced) effect of an air filter

section of each door. There was no external indication of engine displacement for any hopeful challengers.

Note that the early, louvred-side, triple airbox was a crude affair with three circular wire mesh elements inside and is quite rare to see. Look for this 'tell' if the car professes to be a correct early 'S'. The later version uses a better, larger flow-surface area, oval canister that held a then-modern, replaceable, paper element. About 15 years ago, CAC commissioned ITG to design one of their famous, three-stage racing foam, re-usable elements to fit this box, so if you still have an old, dirty paper element fitted, you are not only strangling your engine's breathing, but will also be paying for this in fuel consumption too! Some original parts are nice to have, but really are best kept on your garage shelf if you want to release your engine's full performance.

It does not take much imagination to realise that this engine and



Comparing straight-port (above, square gasket) and E-series (below, curved gasket)



Competitively-priced composite head gaskets are the way to go...

box projected through the wing, straight into the cooler, rapid air-flow stream in the wheelarch area. This was all bolted onto a new, superior-design 'Straight Port' head that defined a new era of performance for Jaguar. This head was made available on the 3.4 block designated the 'VS' series and on 3.8 engines as the VAS-prefix engine.

This induction system was simply known as the 'S' package. Running at a higher 9:1 compression ratio made this set-up on a 3.8 block realise a reputed 230bhp (but only on the test-bed) according to the enthusiastic advertising that was common in the motor trade, especially in the USA in the period. The only external badging on the vehicle was a subtle, chrome-plated 'S' decal on the front upper



This is the tell (ledge) at the back of the ultimate straight port head casting that the racers prefer

inlet assembly is an early incarnation of the powerplant that was dropped into the E-type to make it the world-beating success that finally put the XK series into retirement.

It is now common for many XK 150s to be up-specced by the addition of a triple-carb setup, as they were popular on many period Jaguar saloons and so were easily found in the scrapyard (do you remember your local scrapyard full of goodies?). The correct 150S manifolds all clearly sport their consecutive casting numbers (C13941/2/7, SG6875/6/7) underneath and have three additional cast lugs on the bolt-on top water rail to carry the throttle slave rod across it. Spurious versions can be spotted as fake by wrong casting numbers, incorrect plenum-to-head angles, wrong accessory take-off points, badly welded-on lugs etc, so as always do your homework if a

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Triple-SU ('S' spec) manifolds showing the casting numbers



Here the throttle rod lugs are in the correct position for the 150S but are too square in shape to be original, and appear to have been welded on



The later 'S' airbox and ITG racing element: lasts for ever, wash in spirits, re-oil and re-fit.

car professes to be a genuine 'S', as this can add considerably to its cost nowadays. There are lots of fakes out there, so be warned dear reader, it's easy to bolt on any set of triples and paint a straight-port head gold (Pumpkin Orange)! The Devil is in the detail. Engine numbers are obvious at the rear of the valley in the head and also stamped over the oil filter mounting plinth on the block. Look for signs of re-stamping or tampering with incorrect size/style punches.

A manufacture year date can be found cast into the lower corner of 3.8 engine blocks. I am informed that later 1963-onwards blocks are considered superior for racing, but are sadly not within the XK 150's manufacturing lifetime. There are also improved straight-port heads, which sport a ledge at the back end, but are again a later build feature with some re-arrangement of spark plug and blanking plug positions, easily spotted if you are sharp.

I hope this series of overviews of the XK-series engines has given you some insight into what you should expect to see when you lift the bonnet of each Classic Cat model, as the term 'all original' is very widely over-used.

After all this waffle, I only have one closing question for you: If the working Brit still firmly refuses to give up his pint of beer and still prefers the yard to the metric metre, even now in 2016, who on earth convinced us to use litres and cubic centimetres to designate engine capacity somewhere back in the 1930s or earlier, when we really didn't have the faintest idea what it meant?



CAC has lots of used core unit heads in stock