A Journeyman's Jaguar Jottings

My suggested Maintenance shortcuts by Jack Clough (Jaguar Drivers Club of Natal)

The Fan (viscous or direct drive).

To save fuel and reduce noise remove this. Fit a single (or two speed) electric fan with a switch (180°F, 85° C), into the radiator LOWER tank. An override switch is an option.

To prevent incontinence try to keep the temp below 190°F. Let it idle a short while to equalize internal temp differences. No 1 (rear) will be hotter than no 6. This, I believe, causes "steam" thus blowing the water out!

The Water Pump.

Press off the front flange. Remove securing setscrew. Press complete assembly out of the Rear of the pump. Wrap a cloth around the bearing and break the outer Casing. Now put a soft spacer against the impellor face and press the shaft out. Clean the impellor and its seal face. The seals are half inch and not readily available locally. A universal bearing 5/8 inch both ends can be machined as per original.

NEVER use later timing cover gaskets on an early engine with smaller water galleries. You can fit "dual" welch plugs to the earlier engines by fitting **CUP** type into the inner bore and then SAUCER type as normal.

Loctite on these plus fitting securely will ensure no further trouble. On some models make sure you fit the correct type of thermostat/s.

The "Rhodesian" sports kit for an overheating 3.8 Mk 2 was a skipping rope and tennis ball! Ball under front of bonnet. Rope secures to bumper

Short studs.

I always use a 420 "short-stud" block to replace later "long stud" blocks on the XJ 6 including the series 3. When matching numbers count (later 4.2 "E" types) keep the original block! Those corroded studs can be VERY expensive to remove/replace. NEVER use a 1.5 mm split pin in the conrod nuts. Either use the 1/16'' original size, Nylok type nuts or "Loctite" the castellated nuts if necessary. Split pin pieces have jammed the relief valve on many engines I know off. I never use the brass small end bushes, only the steel backed ones.

The front crankshaft seal.

If the sump and timing cover are off I relieve the locating lip on them so it is easy to replace the seal without stripping. Should you drop the sump and drive the seal collar forward on the crank it should just come out without touching the timing cover.

The dreaded rear main!

I have devised a method to fit a new "rope" seal IN PLACE! Cut the Locating collars and top allen screw using shim stock on either side of the blade! Make new short locating collars and a factory spec mandrel to size the new seal. I use a spare Block's rear main to do this and fit these halves back onto the original engine. Job done!

The local Vitol rear seal conversion, crank out! 95x75 Vitol seal, Grind rear scroll to 74.6 m! Bore the standard seal housing out to 94.6 mm. this to allow for the 1mm cut in the seal using a 1mm cutting disc to do this. Fit the seal expanding spring over the flywheel flange then carefully bend the seal and "screw" over no 1 journal onto the rear main. Straighten seal and fit crank into block. Refit seal housing and after fitting a shorter top allen bolt ,replace onto block.

Crankshaft blanking plugs.

ALWAYS endeavour to remove the six BSP thread blanking plugs from the crankshaft. Sludge compacts there and if dislodged damages the bearings. (Get them professionally taken out if you fail to remove them)

Starting and priming the oil pump.

NEVER try to start a Jag engine that has just been overhauled without "priming" the oil delivery galleries. This purges the air out and prevents the oil pump from "cavitating". You can also fill the pump with Vaseline. I overfill by 5 litres and let it stand a few hours.

Should the engine have stood for a period I remove the EXHAUST cam cover and with no spark plugs in turn the engine slowly to make sure that no exhaust valve has seized (Rusted) in its guide. STOP if the valve does not follow the cam lobe up! If so DON'T try to start or even turn it further as it may bend or even break off the valve head!

Normally its only one exhaust valve sticking. Make a plan to free it. I remove the camshaft and bucket and pull it back up. Work it until free. Now you can reassemble these OR you can remove the head! I leave the electric oil sender unit out, check / fill the filter canister and then turn the engine until, within seconds, the oil flows out. I then put a mechanical oil pressure gauge in to get a "true" reading and start the engine. Don't forget to drain the excess oil out after this!

Don't throw the "pressure plate" and spring under the oil filter away!

Seized Clutch?

A clutch plate that won't free, caused by moisture/corrosion after standing for a while, comes loose after I put an electric bar heater under the car below the gearbox bell housing overnight. The heat dries it out and nine times out of ten it then frees easily. Sorry if your car is no 10! Pull the Box or whatever.

The cylinder head.

When I pulled the cylinder head on a 340 motor I was surprised to see that it used the "420" head gasket! I knew it was a 420 Head (straight port) so it APPEARS that you can use the 4.2 head gasket on a 3.4 or 3.8 with original head! Please check before using. I like to keep the compression ratio at 8/1 so an over-skimmed head could cause pre ignition on low octane fuels. A series 3 XJ6 head has the largest valves if you want performance.

Camshaft timing, chain tension and correct valve clearances play a large part in a quiet and smooth engine. I normally allow no more than .001 inch above the recommendation.

Of course shims are a problem if you don't have a vast range at your disposal. Phone a friend. I suggest an expert does cylinder head work as even good mechanics have bent valves doing the clearances. It is also always a good idea to drill the guides out with a suitable UNDERSIZED drill if replacing them so as not to score the head bore.

If the locking mechanism sticks in when adjusting the timing chain, put a cloth down the aperture, remove the vernier wheel, work the "lock" and spring out. Clean and replace in reverse order.

My procedure to set the clearances is as follows; I lock the engine with no 6 at TDC and screw fabricated "stops" (14 x 1,25mm) into no 5 and 4 cylinder then tension the chain to just have a little slack. Set the EXHAUST valve timing and then Inlet valve timing with your Jaguar gauge.

NOW. Take out one camshaft and set the clearances. HOW? It's easy, cut a similar old cam leaving two lobes between the cam bearing. Tighten into place and set the clearances by changing shims if req. Redo if they are out of spec. then do the next two and the last two. That's it!

Don't allow the cam to turn (rotate) when replacing it. Refit the chain Gear and wire up. Repeat for the other side as above. REMOVE the threaded bar of course! But you knew that?

An Intermittent noise from the "valve Gear"?

It could be worn cotter/s, Retainer/s, valve stem groove/s OR the valve stem/s ground down to get clearances! A readers quick fix (me actually) saves removing the head. Remove the offending side camshaft after trying to locate the offending valve. Remove the bucket and shim and store in sequence, remove the spark plugs. Thread thin, 8mm, rope with a knot so it won't slip into the suspect cylinder and bring the piston up to keep the valves closed on firing stroke. NOW, remove the retainer and cotters with a Churchill tool or ask a Boer to "maak a plan"! Next use some shim stock

or equivalent to make a funnel that fits inside the retainer. Use an old valve to assemble this “shimmed” retainer onto it and trim the edges. It will now compress the valve spring more as it fits lower down on the valve and the stem will stick out further. Refit to the valve and RESET the valve clearance!

This is NOT a factory recommended procedure. I know this is not the right way but overhauling the head properly is EXPENSIVE and the result won’t necessarily be much better! NOTE. Sometimes fitting NEW retainers and collets does not cure the problem hence the “plan” as you can’t change the valve in place!

The fuel system; Pump/s tank/s and carbs.

If the car has stood check that the floats are still “air tight” by putting in warm water and see if they blow bubbles. Next perhaps check that the jet assembly is serviceable (expensive to renew). Clean out the carb as required (overflow pipes clear?). Check a workshop manual to set the carb linkage correctly, particularly the MK 2 linkage! The electric enrichment device is also described in the manual (3.4, 3.8 and some 2.8 and 4.2 engines) A car from up country might require “sea level” needles at the coast.

The fuel bowl WILL leak if you release it. Make a 3mm cork or like ring to seal it on replacement. Fit a new filter if required.

If the lines appear sound I clean them out with a long speedo cable driven by a slow speed drilling machine and push it through from both ends. Flush clean with petrol. I use the “low Pressure” 1.5 lb sq in Huco grey electronic pump and champher the SU base. Use longer screws.

NOW for the Tank/s.

I believe that they should be removed if doubt exists and checked. An expensive process will seal a good tank but if rusted badly? Fit a new air filter element if the old one is not serviceable.

The Gearbox and clutch.

I always use the diaphragm clutch as after I reduce the clutch master cylinder bore by .125 inch it makes it even lighter but with a longer travel and smoother. Try it. If it won’t bleed easily try removing the clevis pin and clutch pushrod. Now gently pump until the slave piston reaches the retaining circlip. Push the piston right home, repeat. Now reconnect. Its normally bled after this.

The Gearbox. Now we come to the tricky bit. There is a UK conversion that costs several Kruger Rands and uses an adapter. It uses a Getrag (BMW or big OPEL) Cressida or Borg Warner 5 speed.

The conversion I do uses your standard bell housing, clutch mechanism, Clutch assembly and starter motor. It is all synchro, 5 speed and overdriven fifth (NO it’s not the “dog leg” box). Getrag and is compact quiet and fuel efficient by design (low friction) thus low heat!

NOTE; if you have an E type with either engine or rear suspension out CHECK your prop shaft U joints. REPLACE IT BACK FIRST. Or else!

There are two basic types of flywheel/starter combinations. Pre engage or inertia starter motors? The different bell housings starter “centers” means checking that the bendix mates correctly!

The “Inertia” bell housing with “pre engage” starter? The starter must move in by approx. 1.5 mm and requires the spacer plate!

“Pre engage” bell housing, with locating rings? The inertia starter must move out by approx. 1.5mm and no spacer required

Brakes and Steering.

Mk 2 and Daimler V8. I use a scrap 420 front end (if available) this has three pot callipers. I use the original front cylinders on the back of these cars to balance out the braking better.

NOTE. Always release the pedals slowly when bleeding so as to give time for the system to "recuperate" without drawing air in on the back stroke.

Power steering.

The later Mk2/Daimlers had the Marles Varamatic (420) power steering fitted to a modified cross member that also gave a better turning circle! Finding a generator driven pump is not easy (3.8 S) but the Daimler V8 uses a 420/XJ6 type. Having done several of these "bolt on conversions" I recommend it to those who would like lighter steering with a reduced turning radius and can be converted back to original for the purists. I have not done the rack conversion.

Ps. Re-sleeve your block and refit your old pistons if serviceable. Slightly wider rings (and grooves) are serviceable if you don't use excessive revs.

Deepen the ring groove to allow the correct clearance as necessary!

Otherwise swop your Kruger Rand for some pistons (Mk 2), if available. The limited slip unit from the (A) 2.88, 3.07 and 3.3 are common but won't fit the (B) 3.53, 3.77 and 4.22 housing thus a Mk 2 can only take the (B) group. If using an Independent rear end limited slip carrier you must obtain or make up the centre thrust pads for the slide shafts to thrust against (read manual for method)

Addendum and corrections

Thermostat

Use a 75/80 degrees for hotter running engines.

Some believe radiator "sealers" clog the galleries - overheating!?

Tappet cover

I slightly counter sink the inner holes. This allows the Cam cover to fit DIRECT to the head. Relieve rear cam housing to allow cover to fit properly. Use good sealer! Have not had a leak yet and no gasket!

E type torsion bars.

Relieve the tension by dropping the lower control arm (at ball joints), the workshop manual describes each model setting for ride height on replacement. (The V12 series 3 E type uses a special rear spline tool!) Now remove the torsion bracket under the gearbox. I remove the manifolds and some ancillaries and lower the engine/gearbox to the floor. Lift the front of the car and remove the engine/gearbox ass.

Mk 2 engine removal

Similar to E type. Remove cross member and manifolds. Remove gear-lever knob (saves removing console) release securing items and lower. Lift car off assembly (crane). To refit put a guide hose over gear-lever and through gear-lever boot, guide assembly back into place. Done deal!

Hand brake pads/mechanism.

A bit of expertise required. Release the cable. Remove the PIVOT bolts of the handbrake mechanism. Take it around the disc and out the rear (XJS, 420 and XJ6) Strip, clean, lube and adjust the mechanism to be close when refitted. I give a slight champher to the extremes of the Pads to enable them to "bed in" (if necc) Replace (it's so quick to type that, hey?) manually adjust and replace/adjust cable LAST!

Camshaft Driven Rev Counter failure?

The Drive into the camshaft moves out of mesh. Pull it forward and drill and pin into that position!

The limited slip diff is for experts; side play about .006 inch. Remember the ¾ inch buttons the side shafts press against. Also special oil.

Use LOCTITE rather than 1.5mm metric split pins on conrods.

Remove core plugs on crank (new are available) Recommended on O/H!

The Overdrive clutch; recommend new or good reconditioned unit.

The overdrive solenoid.

This has TWO sets of windings. Heavy and "Holding", check both work. If pin in centre won't break points, use "shrink fit" over the blade. This usually fixes it. Temp repair!

Stripped thread in oil feed to head; make a longer banjo bolt.

Fitting a 3.8 starter and flywheel with a 4.2 "Inertia" type all synchro Gearbox?

The starter must be moved out approx. 1.5mm to operate. However if it is a 2.8 XJ6 (inertia starter) gearbox it should fit. The pre-engaged starter requires a "fine tooth" flywheel and spacer. W/W conversion; requires special strong hub puller.

Tyres on a MK2. Bikini spats allow wider rear tyres i.e. 205/70/15 inch

Fitting the rear bumper

First cut the elongated hole lower sections out completely (near the over rider area) clean out the threads on the mounting and fit a longer bolt with a big thick washer that just clears when tightened completely allowing for 3mm bumper bracket thickness!

Screw bolt in 3 turns only. Now attach the side mountings with the mounting adaptor bracket attached. Make sure the 3/8 inch NF threads are clean in the captive bracket nuts!

Take 4 3/8 inch approx. 1 inch long bolts and machine the start back approximately 8 mm so they self-align into the attached bumper brackets when fitting!

Get help now to align and "drop" the bumper onto the extended ½ inch bolts (with the washer held out) Nip up these two bolts.

Now fit the four bolts to the front mounting bracket; nip up.

Now it's time to align and secure in that position.

Door rubbers.

When fitting new door rubbers it is best to remove the doors (front Mk2)

Jack Clough, 2007