

## **Post Purchase Suggestions. XJS V12 and others.**

### **Including, timely advice as I go.**

This is MY suggestions, and based on MY experience with these Beasts for a very long time. I know the title is XJS, but any Jaguar will need similar refreshing. The Series cars (1,2,3) will be the same work process.

*Before anyone starts getting Anti Jaguar, or even Anti me, this is a suggestion that the car you are looking at, or already purchased, MAY need. Lets face it, they all be pushing 30+ years old now. A well cared for car, and yes they are still out there, will require some of this. A Basket case will require a hell of a lot more. Take it all in, apply what is related to the beast in front of you.*

*This is the schedule I have used, in various forms, on all my Jags since 1968 (Dad was a good teacher). I call it "Catch up Maintenance", and its as simple as that.*

**This is based on my 1985 HE V12 Coupe.**

**Jaguar made some "updates/facelifts" along the way, mainly in the 90's. Marelli, ABS, Airbags, tail lights, outboard rear brakes, etc. I am NOT getting into specifics of that anywhere. The basics of the car did not change for what is being discussed here.**

I am biased toward the V12, as this is how I believe this car should be. There will most certainly be similarities for the 6cyl owners, and I believe you are intelligent enough to recognise them. The basics of the car is identical.

#### **PLEASE NOTE:**

*I hear a LOT of bagging of these cars, and in all honesty, the baggers have NEVER driven an XJS that is "On Song", as we say. Their car is not as designed, and had very little maintenance its whole life, BUT, it is still expected to perform as it did when new.*

*These cars were designed and released in the days of "Grease and Oil Change" every 2000miles, as that was the quality of oils etc in those days. Grease points, a thing of the past, but the XJS has at least 17 grease points, and many have NEVER seen a grease gun (what's that I hear), since the car left the factory.*

*They are UNLIKE any Jaguar, then and now, and are a TRUE Grand Tourer, and are HEAVY, so a little common sense (whats that I hear again) will go a very long way with the care of the car and the general attitude of the owner/driver.*

*Around the suburbs, NO, no different to many other machines. Awesome looking beast, real head turner etc. Get on the open road, and they are FAST, SILENT, Comfortable, and do what they do without fuss.*

*A sloppy XJS is a sloppy XJS, and you will need to spend time, some money, and get it back to spec, then that "stupid grin" on your face will return.*

*My XJS , only 10 years old when I stole it, was returned to spec, and it was NOT a sloppy junker, but that little bit here, little bit there, and the car was not right. I used OE suspension bushes primarily, with Poly on the steering rack only.*

*Once I got it back, I rarely lifted the bonnet, there simply was no need.*

*BUT*

*When that bonnet was opened, so were my eyes, and I looked around carefully, so if something was starting to fail, or did not look right, sort it NOW, was always the motto, and still is today with the newer ones.*

*It ALWAYS started on the 1<sup>st</sup> rotation of the engine, hot or cold, so if I noticed that this was not the case, “sort it out now”, thus preventing some stupid item stranding me in the middle of the Aussie Outback.*

This is a suggestion guide only, with elaborations where I deem necessary. There are Stickies in the same section of the Forums you found this, explaining many things mentioned. I have huge amounts of PDF worksheets covering “How to Do” that are available by request. Many of them are in the archives of the Forums, but feel free to ask if searching does not find what you need.

There will be a larger version, with the PDF write ups included, BUT, that will not be a sticky on these Forums, it will simply be too large. Ask nicely, and I will oblige direct to your email.

My ONLY request, RULE if you must, is that if any of info in here that may help you, PLEASE update any thread you may have active on the Forums. That way the archives are kept alive and updated, for those that will follow us in years to come.

I communicate in Aussie, so if some terminology is alien to you, Google is your friend, as it is mine when deciphering other peoples sayings. If that fails, ASK, I dont bite.

You may, probably will, see some repetition, so be it, I am OLD, and allowed some consideration, surely. I have attempted to keep some order to things, but so much crosses over, and relies on other things being done at the same time, or “while you are here”, it is not easy to slot things exactly.

Read the whole thing, then read it again, and I feel sure you will follow the pattern.

ALL the work I suggest, and elaborate on, I have actually done, not simply theorised on “what should be done”. There will be references to other members of the Forums that I know have done and documented other tasks.

I am also assuming YOU are doing the work on YOUR car. No one touches my Jaguars, ever. If I cannot fix it, it simply is NOT broken. Finding a “mechanic” that has any understanding of these V12 beasts will be difficult at best, as most will be my age or older and no longer getting involved. If your circumstances dictate that

someone else will sort your car, good luck, and enjoy the completed product. Hopefully they will listen to what you will have gathered from here and elsewhere, and do the right thing by you, and more importantly, the car.

RH and LH (Right or Left) are ALWAYS referring to as “sitting IN the drivers seat and facing forward”. This drivers/passengers talk is stupid at best, as it depends where the steering is located, as not everyone is LHD, or RHD.

NO START means the engine will NOT run, as apposed to NO CRANK, which means the engine will not crank over by the starter motor. 2 very different causes, and repair paths. The right terminology saves days of misguided repair suggestions.

### **Engine and other Speak:**

“A” Bank is Right side

“B” Bank is Left side

TPS = Throttle Position Sensor.

CTS = Coolant Temp Sensor (the one for the ECU).

ATS = Air Temp Sensor

ECU = Electronic Control Unit, AKA Fuel Control Unit.

FPR = Fuel Pressure Regulator.

HT = High Tension, as in Spark Plug Lead.

ATF = Auto Transmission Fluid.

### **Parts Suppliers:**

I have worked in the Auto Parts Industry since 1965, both Franchise and Aftermarket. The suppliers that SUPPORT this Forums Website are very good at what they do. I have used them, even from down here, and still do today. Shipping is what it is, live with it.

There a numerous parts you will need that are NOT Jaguar specific, so think outside the box, and look around. Some of my PDF's give generic part numbers, and they are Aussie based numbers, BUT, but any half decent Parts Operation can convert any part number to theirs, some just dont try, or care.

Shop around, ask questions, the Forums are a wealth of knowledge and information, but remember time zones can be frustrating.

Your decision to own one of these very “Special” items of motoring, puts YOU in a very special place, NO question about that at all. You are now the caretaker of motoring history, there will NEVER be another Jaguar like this.

The age of these cars, the neglect they have survived, is what will challenge you to the core.

My 1985 HE was a one owner, full dealer service history, 91000kms, all the ticks lined up. Sounded good at the time, but as months progressed, and I began the work

to sort some Gremlins, I found shortcut after shortcut, so then it came off the road, and the stem to stern refurbish began.

Things I found, 10 new spark plugs, 2 very old spark plugs, stripped oil drain plug in the sump, 3 new fan belts, and the old Alternator belt still insitu, new RH Top radiator hose, all the rest originals, and so on.

Paint and interior were, SPOT ON, and that was MOST important for me, as those 2 items will COST you \$\$ to rectify.

ALSO, ALL my Jags have always been Daily Drivers, and on call at any given time. Reliability was/is paramount.

YOUR intended usage of the car will determine what lengths YOU go to, and only you know that answer.

None of mine have ever come home on a Flatbed, and I take great pride in that.

Some BASIC requirements for being a V12 owner, and I make NO apologies to anyone for them, are:

- 1) A sense of humour, the more warped the better.
- 2) The ability to “speak” a NEW language, with lots of words/phrases the kids should NOT be allowed to hear.
- 3) The ability to consume alcohol.
- 4) These are VERY simple cars/engines, only made complicated by not adhering to the 3 above requirements.
- 5) Working systematically is a **MUST**, you will see this reasoning very quickly.
- 6) The ability to think outside the box (Aussie speak).
- 7) LOTS of spare tools, some will be eaten by the engine bay, others you will throw at the wall.
- 8) Take snaps, write notes, label EVERYTHING you unplug, your memory will fail you.
- 9) Common Sense, and a GOOD dose of that will be best.

Now the fun begins, and I am going FULL OUT, as I did to mine, and returning the car to 100% reliability, and as original as possible. You can skip whichever you choose, it is YOUR car after all. Mine, once sorted as described, was reliable, no doubt, so much so we drove the Australia Coast Road, some 25000kms, twice, and never gave any thought to not completing either trip.

**That ends the boring stuff, so lets into it:**

***You have a running/driveable XJS V12;***

***WELL DONE.***

Raise the car on a lift (hoist) or 4 STRONG jack safety stands. You will be under this thing, and it will give you pain if it falls on you. My safety stands have a short (1" approx) stub of 1" water pipe welded to the flat platform top section. This water pipe sits OVER the Jaguar jacking point snugly, and the car CANNOT slide off the safety stand. Peace of mind when under the thing.

The following is an overview of the work involved. I go into some detail, by section, further down this scribe.

***WARNING WARNING:***

***Prior to draining the diff oil (Salisbury/GKN only, is remove the FILL plug first. It is too late when you have drained the oil and the fill plug will not come out. It happens, and I have had 3 so far, so laugh if you want, it is YOUR car. Rotating the car 180deg so the oil can be replenished via the drain hole is NOT good for you or the paintwork.***

Drain **EVERY**, and I mean **EVERY**, fluid. Engine oil, steer fluid, trans fluid, diff oil, brake fluid, coolant, petrol, washer bottle, atmospheric coolant tank.

You will need to remove the metal coolant header tank to drain it (unless you have a PreHE), as it does NOT drain when you drain the radiator system (the PreHE does).

Remove ALL the filters, Air, Oil, Trans, Petrol.

Replace EVERY bulb/globe in ALL the exterior lamps. When in there doing this, trace the BLACK wire, and CLEAN its earth point, wherever that may be. A short spray of WD40 etc inside the sockets will also help with contact integrity, and keeps the rust at bay, and also makes the turning of the bulbs for removal very easy, saves a lot of time digging out broken bulbs.

Remove the radiator, and **ALL** the coolant hoses. Some of these will test #1 above, trust me.

Remove the plastic fan for inspection, and the hydraulic hub for testing.

Remove the small electric fan, check it for operation, They seize, so pay attention.

Have the radiator professionally cleaned inside and out, or simply recored (my 1<sup>st</sup> choice). Either choice is a radiator specialist task.

The radiator sits on rubber “pads”, and there are 2 more at the top, replace all 4.

There are 2 small rubber “bushes” in the top bracket of the engine oil cooler, one each side, and the A/C condensor sits snugly into them. Mostly these are missing, and the rattle is terrible.

Inspect the fan blade carefully for cracks, most are, so be very thorough with your inspection, I missed some on mine and a blade left the engine bay via the bonnet at very high speed, NOT funny.

Remove ALL the belts, NEW will go back.

Remove the fuel rail, and replace **ALL** the fuel hoses, and again #1, 2 & 3 will be tested here. Shortcuts here **WILL** give you an engine fire, you have been TOLD.

Renew ALL the small Vac hoses, Do ONE at a time please, as the schematics are vague at best, and your memory is not that good.

Remove the EFI wiring loom, the one in the bottom of the “V”, and make a NEW one.

While on wiring, look and test EVERY wire and connector in the engine bay, this will scare you, of that I am sure. I did this, and succumbed to rewire the engine bay 100%, and never looked back.

New spark plugs, HT leads, distributor cap and rotor.

The distributor Vac advance capsule will most likely be toast, so a new unit should be fitted.

OIL LEAKS, OK, you will have them. There is a separate Sticky on the Forums that goes through this step by step.

If you have removed the front cradle assembly, as I did, a lot of these oil leaks are so easy to rectify, particularly the sump, both of them, oil filter drain back hoses, etc.

The engine oil cooler hoses should be replaced, any half decent hydraulic workshop will replace the hose section for minimal \$. Jag OE hose are NLA I am told, and were huge \$ back in the day.

Suspension rubber components. There are many, and **ALL** need replacing.

I remove the front cradle as an assembly. Suspending the engine with a cross bar, is required. My reasoning is simple. There are engine o/rings requiring the sump to be removed, and that is impossible with the cradle fitted to the car.

The front cradle has 2 large round (often called 6 shots mounts) at the front, and 2 “V” mounts at the rear. I use ONLY genuine Metlastik here, which is the OE spec.

The engine mounts of which there are 2, and the RH is simple enough, the LH is a mongrel.

Suspension arm bushes, hell yes. The front lower inner arm bushes require the suspension spring to be removed, and the cradle lowered, if it is still in the car. This lowering is to allow the pivot shaft/s to be driven out without hitting the engine. The steering rack will also need to be removed. This why I remove that cradle, and do ALL on the ground where it is so much safer.

The front upper wishbone bushes on their own are straight forward, BUT, the spring pan will need a support under it to prevent the spring exiting the cradle at great speed, and danger. If the spring is out for the lowers, do the uppers at the same time. Ball joints NOW, will be a walk in the park, so why not do them. Genuine again here for bushes, and joints. Lemforder if your market supports that brand for joints.

Shock absorber top bushes, and there are 4 in total, often fail. I use the OE spec here, and replace every 5 years or so, as that is the average life. Rubber I found too “thumpy”, but, again, its your car.

Shock Absorbers themselves. I use Gabriel, they just suit me, and maintain the Jaguar ride. There are many variations/brands out there, once again, its your car.

Power steer hoses. The high pressure hose is Genuine only, and well worth the \$\$ in my opinion. The return hoses are simply 10MM transmission hose, with a cloth heat sleeve fitted. The steer fluid cooler, is mounted in the metal work of the LH engine mount bracket. They leak. I remove it, and take the return hose direct to the pump spigot, thus eliminating 2 hose joints from leakage.

Steering rack bushes, the thing is off for the suspension work, so new bushes here. I use the Poly, as they withstand the heat and oily contamination very well. Some use the JagSport rack bushes. That choice belong you.

Brake hoses, there are 3 in total, should be replaced. Any other brake work I will leave to you to establish. I have had very little issues with caliper leaks, or master cylinder problems, maybe I be blessed, or its our climate, dunno. Brake fluid change every year has probably helped.

Thats about it for the brief overview, the following is more detailed and WARNINGS where needed.

PLEASE resist simply pulling “things” apart, some of those “things” can, and will, BITE you badly either physically or in the wallet.

### **The detailed section:**

#### **Rear End Stuff:**

The rear cradle is EASY to remove from the car, time consuming, not really, but not hard. About 4 hours for the 1<sup>st</sup> time. Well worth getting it out, as this is the single MOST neglected part of the whole damn car.

What you do with this now its out of the car is up to you.

My work plan has always been:

New disc rotors, and caliper seal kits (changeover calipers if you are not comfortable doing your own) would be the basic minimum.

Parkbrake caliper and pad refurbish will be a must do.

Halfshaft universal joints, most definitely, as age is against them.

The “dogbone” mounting bolts, at the diff casing, will mostly be loose, and shims long fallen out, so a reshim and re-torque will be needed. Again there is a PDF for this time consuming process.

The lower wishbone needle rollers, and the associated sleeves, are readily available, and a good idea to replace now. Yours may well be OK, mine were, so inspect carefully, and any ridges in the sleeves, throw them out.

The outer pivot, at the actual hub, has bearings and shims inside. Rarely an issue down her. There is a grease fitting on the bottom, and a bleed hole at the top. Plug that bleed hole, a simple self tapping screw will do. This then FORCES the grease throughout the small chamber, and out through the bearings and the felt seals. Take GREAT care greasing this after the plugging of that bleed hole. Too much gusto with the grease gun, and you will dislodge those felt seals and create a lot of extra work for yourself. With that bleed hole unplugged, the grease simply goes in the bottom, and out the top, and that’s it. When first greasing with the hole plugged, take is SLOWLY, and you will notice gooey odd looking stuff oozing out, keep going,

SLOWLY, and when clean grease is visible, you are done. This is an annual grease point from now on.

The trailing arm bushes will need replacing, BUT, the large bush is tricky to R&R, so maybe check on rebuilt arms, not so expensive in the long run.

The 4 “V” mount rubbers MUST be replaced. Genuine here again.

Since the brakes are off, the diff output shaft seals should be replaced. This is related to the GKN (Salisbury) diff only. NOT SURE??, if you drained the diff oil at the beginning, you have a GKN diff, the Dana (used late 1984 – early 1986) has NO drain plug. The Dana has unique output bearings, Greg in France, a member of the Forums mentioned, IS the Dana Guru, and is friendly as well.

The GKN seals are simple enough, and again, a PDF is available if needed.

Rear wheel (hub to some) bearings. Never seen a failure, they are huge and well greased. If replacement is needed, Greg in France has an excellent write up for this task.

While checking things back here, inspect the actual steel cradle itself, particularly around the 4 top bolt holes that secure the diff to that cradle. They do crack, so pay attention.

Remove and clean the diff breather, soooo easy on the ground as versus in the car.

### **Propshaft:**

I have addressed it here, as it is undone for rear cradle out work.

Some shafts have 3 grease nipples, some do not. Mine had 2, one in the front joint, one in the sliding spline.

Renew the Uni Joints. I used the greasable type, but there are “sealed for life” if that is simpler for you.

If you choose the greaseable style, the front is hidden by the heat shield. I marked that shield, took to the workshop, and cut a 2” hole at the mark. This gave easy access to the front Uni Joint grease nipple.

If you select the “greased for life” joints, NO cutting etc is required.

### **Front suspension items:**

I removed the front cradle. Again, easy enough, and it just allows all those little things to be sorted with ease. Also gave me access to remove the engine sumps for internal work.

ALL the rubber bushes need renewing. The lower inner will require the spring to be removed, as said earlier. This is a very dangerous task for the unaware operator. There are many versions of removing that spring. I had, at the time, the Jaguar tool for doing so safely, hence I still have 10 fingers and my head. PLEASE take care here, and I cannot stress the danger here enough.

Once the spring is out, drive the long lower shafts out, and go about bush replacement. I ONLY use OE bushes here, other brands, particularly for the lower wishbone, have been reported to fail very quickly.

Often, those shafts will be toast. New shafts are cheap, so why not fit new, with plenty of Anti-seize on the shafts prior to installing them.

New upper bushes and all 4 ball joints. New front cradle round bushes and cradle rear "V" mounts.

Reassemble the cradle, refit the spring, etc. DO NOT fully tighten the lower long shaft nut until the car is back on the ground. PITA I know, but unless the suspension is pre-loaded prior to tightening those nuts, the lower inner bushes will simply tear apart. SO, leave those castellated nuts at least ONE full turn loos, leave the steering rack off the cradle for now, it is easy to fit once the cradle is in the car.

Refit the cradle, AGAIN, do NOT tighten the front round bush (6 shot to some) thru bolts until the car is on the ground.

Once the car is back on the ground, I use 3"H X 12"W X 24"L blocks of wood under the front tyres, then slither under the front, tighten those castellated nuts to spec, and the front cradle thru bolts to spec.

Steering rack bushes should be replaced, I use the Red Poly Kit here. Some use the JagSport bushes, your choice.

Steering Tierod ends, NEW, hell yes. Again I use greasable ends here.

Steering rack boots, new again please.

The actual "rack ends", as we call them, the threaded shafts protruding from the rack with the boots attached, rarely wear, but look carefully, and if in doubt fit new ones.

Wheel bearings:

Generally not an issue, however, since the brake calipers are off, remove the hub assembly, carefully tap out the grease retainer (seal to some), and inspect the bearings. If you need new bearings, so be it, I only ever use Timken brand, NO exceptions, any bearing supplier can oblige, or OE maybe. The grease retainer is OE only.

With the hub off, run your finger nail on the underside of the spindle, paying particular attention to the area where the inner bearing sits. If you feel a wear lip, the spindle needs replacing. This is common on cars that have been allowed to run with badly adjusted bearings.

You will notice a grease nipple in the hub, some claim they dont have them, dunno, most do. It is to apply grease to that hub on an annual basis, and 2 pumps of a

standard hand operated grease gun is all that is required. BUT, this was a feature back in the day when greases, and oils, were NOT as good as they are today. If you are using a “modern day” wheel bearing grease, then the pre-packing YOU do prior to installation is fine, but old habits die hard, and I still grease these fittings annually.

Wheel alignment:

This is a very specific procedure, and failing to follow this procedure will have you replacing those inner wishbone bushes sooner than expected. There is a PDF explaining this in detail.

Power steer pump:

It is a basic Saginaw pump, with a Jaguar specific hi-pressure bleed off valve fitted. 2 versions of that valve, #1 is a simple flare fitting, #2 is an o/ring style.

The attached mounting brackets are also Jaguar specific.

Extremely robust.

Some leaks may develop due to stale fluid. If that is the case, best to remove this pump while the radiator etc is out, its just easier.

Seal kits are readily available, and “Hi-Temp” kits are what I have used.

### **Fuel related tasks:**

Fuel tank and associated small sump tank (that one is under the battery) MUST be inspected for internal rust. If there is rust, remove both tanks, and seek professional cleaning, repairing and pressure testing. New sender unit seal, sump tank top seal MUST be fitted. The various hoses in the boot MUST be replaced. Doug, Forum member, has used Marine Grade hose with great success. Fuel odours in the boot are generally from fuel “leaching” through hoses.

Fuel spillage during fuel filter changes is a fact of life. My fuel filter was relocated, by me, to the RHF corner of the engine bay back in 1994. If you need details on this, ask as usual.

Inside that sump tank, fitted over the end of the pick up spout is a plastic filter cartridge. They clog EASILY, and starve the pump for fuel, and are generally a PITA. I fitted a WIX ½” steel filter into the supply hose FROM the main tank TO this sump tank, and deleted that plastic thing totally. Some alteration is required to that 90deg steel pipe for this upgrade, so PLEASE ask for details if you plan on going this route. Greg has just done this to his, and has snaps etc on the Forums.

Main fuel tanks are NLA that I know of, so if yours is rusted on the inside/outside, some do, then repair is your only viable choice.

Above the rear cradle, one on each side, is a flexible section of the steel piping. The RH is the Hi-pressure supply line, the LH is the Lo-pressure return line. While that cradle is out, replace those flex hoses with EFI grade hose and EFI spec clamps. The swaging is easily opened up for hose removal, and exposes the barb ends for replacement hoses and clamps.

Check the steel pipes mentioned above. Tyre fitters are well known for jacking cars without using the supplied jacking points, and I have experienced flattened pipes too many times.

As mentioned earlier, all fuel hoses in the engine bay **MUST** be replaced. EFI spec hose and clamps only here please.

I say “clamps” due to mostly the “push on” barbs are damaged, and will no longer seal the hose. If this is the case, take some 800Wet & Dry paper in the palm of your hand, and rotate the barbed section within that paper. This will “dull” the barbs, and allow clamps to seal without cutting the hose.

If there is a vertical score along the barb section, this **MUST** be cleaned up with a fine file, or that hose will **NEVER** seal. I use a metal finger nail file, perfect, and slowly and carefully address that score, removing as little “meat” as possible.

If you have all the barbs, that is 24 of them, or 28 if you are running cold start Injectors, that are not damaged, then fit the cups and push on the fuel hose, is all that is needed, no clamps required.

FPR (Fuel Pressure Regulator) you have what looks like 2. One on the A Bank, one on the B Bank. The B Bank FPR is the actual pressure control unit. The A Bank unit is some pulse damper arrangement, and should be removed. They do cause pump issues and running issues. Removal is simply follow your nose. Find a standard bolt for the vac spigot you will remove, and shorter bolts for the brackets as required. The fuel pipe/hose from the FPR to the rail Inlet will need to be sacrificed. You will need the end bit that screws into the rail Inlet port, so open the hose swaging carefully, and remove the hose and thus exposing the barbed end for the new hose. Run a new EFI spec hose from the Inlet pipe spigot at the firewall (under the brake booster on RHD cars) along the chassis rail and then over and up to the rail. Secure that hose in its travels as you need. There is a PDF for this.

The B bank FPR should be checked, as they do fail with age. The fact you have a running car, negates this somewhat, but simply look at the vac hose, and if its dry on the inside, **GOOD TO GO**, if its fuel wet, **NO GOOD**, you need a new FPR. **NO** the A Bank and B bank FPR's are **NOT** interchangeable, nice try.

## **Engine bay cooling system:**

All hoses must be replaced. Some of these are NOT easy, but they will be the ones that fail and screw your day and your bank balance.

I DO NOT mess around trying to twist and pull the old hoses off of their spigots, damage to spigots is very high. I remove the clamps, take a scalpel style knife and SLOWLY and CAREFULLY slice along the hose. Take care, as you do not want to penetrate the inner lining of that hose and score the spigot. It is easier than it looks, both the slicing and the scoring of the spigot, so please pay attention. The 1st one is the scariest, then its smooth sailing.

Refitting is simple, BUT, orientation of all the NEW clamps is critical, so spend some time LOOKING at the position of said clamps. REASON, you will need to get access to ALL those clamps after a few hours of running to nip them up a small amount, maybe ½ a turn, and if the clamps are orientated wrong, you cannot do this, and that WILL be the joint to leak, trust us all on that.

Running fore and aft on top of each cylinder head are steel pipes. They transfer coolant. Each end is inserted in the alloy housings either end of each head. These pipes are sealed with “tophat” seals at each end. These MUST be replaced, along with the pipes (Genuine are cheap). I suggest purchasing the gaskets under those alloy housings, as when the bolts are undone for pipe removal, they will be needed, AND those bolts break readily, so additional drilling and tapping will be part of this task.

Thermostats, you have 2, one each side, and they should be replaced. TAKE CARE, as some stats listed/supplied are too short for this application. There is a PDF about this also. I run 82C stats with a 1/8” bleed hole drilled in the outer disc, and that hole is located at 12 o’clock when the stats are refitted. Ensure the groove that the stat sits in is CLEAN, and I mean CLEAN. Any debris in that groove will upset the stat operation. I apply a SMALL dab of RTV the stat at the 12 o’clock point, and then sit the stat in its groove, and press it firmly for about 1 -2 minutes. This will KEEP the stat in place as the cover is slid into position. Vertical stats are a PITA, and they will fall out if not “glued” into place. Once the gasket and cover are in place, they cannot move, its just that “blind area” as the cover is slid on that will catch you out.

Radiator caps, you have 2. The cap on that metal header tank is the pressure control cap for the entire system. The cap on the filler spout is simply a blanking cap, and has NO bearing on the system pressure.

Mine all run 13psi caps. Check your new cap, as when I had erratic temp issues, I eventually found my NEW 13psi cap was blowing off at 4psi. I went through ALL the caps at work, and found 2 that actually blew off at 13psi, one for the car, one for a spare. Re-bled the system, new cap fitted, all sweet.

The cap on the filler spout is a seal to the outside world, so the seal up inside the top cover of the cap is the critical seal. The circular seal on the spring disc does not touch the seat down the spout, it is simply too far down, just a thing Jaguar had plenty of

stock of, so waste not want not,, and used up old stock. Mine run a simple Blank Cap (CPC 2002) in this position.

Atmospheric overflow bottle. Tucked away in the aperture aft of the LHF wheel, requiring the wheel and the closing panel to be removed to get at it. It will be full of mud, so flush it out, refill it ½ full with fresh coolant and return it to its home.

Inspect the tube that runs from it to the filler neck of the metal header tank, ensure it is NOT blocked, and the end that sits IN the atmospheric bottle is cut at an angle.

I use a clear braided hose for this, often called air compressor hose, and my reasons are simple.

Every time you remove a cap to check the coolant level, you potentially allow air into the system, bugga. This clear hose will allow you to look at the coolant in that hose, same as a sight glass. In my case, if I see Green coolant, the system is full, drive on. If there is nothing in that hose, sort the problem, refill and bleed the system, drive on.

Heater tap, at the rear of the engine. They leak, jam in any position. They are Vac supply to CLOSE the tap, so no vac = full on. Replace it while you are at the hoses, either an OE tap, or one of the generic “in hose” style. If you go generic ensure you push the finished assembly down the back of the engine. Sometimes that tap is sitting higher than the OE set up, and an air lock will get in there, making it very difficult to bleed the cooling system.

Water pump, not a known issue, but if a new is cheap enough in your market, remove it, flush the block out PROPERLY, and flush it well, fit the new pump.

Heater core needs flushing. Remember that the coolant IN is the bottom spigot of the 2 pipes at the firewall. The garden hose is all you need, and flush it in both directions.

The metal header tank, you removed that for draining earlier. Flush the mud out of it, inspect it, and if required, take it to your radiator guy for repairs.

The steel crosspipe at the front of the engine, the one with the filler spout attached, does rot out, so again, remove it when doing the 3 hoses related to it, and inspect it carefully.

The Banjo bolt on the RH top edge of the radiator, and its associated pipework, will need to be inspected carefully. The Banjo bolt needs modifying to allow better air bleed to take place. This involves elongating the cross drilled holes towards the threads by approx ONE hole length. This then places the holes in the centre of the Banjo, instead of at the top edge, where restrictions can prevent air bleeding properly through the banjo into the pipes.

The AAV, not technically cooling system, but it is operated by the coolant. They jam, and reek havoc with the running of the engine. Rebuildable (PDF again), or replace with a new one, but big \$\$ for that. I rebuild them, simple to do.

Cooling fans. I run, on all mine, twin thermo fans, thus eliminating the engine driven fan and the small LH electric unit. Your market will have plenty of aftermarket fans that can be adapted. Mine was done in 1996, and the Aussie Ford Twin fan pack was the latest and greatest at that time. Think outside the box, look around, and you will be surprised whats out there.

OE engine fans are still available, as are the clutch units, at a price I am told.

Bleeding this cooling system is CRITICAL. There are many ways of doing this, and they are in the Forums. Please do not fill it and drive off, you will be sorry. A PDF is available if needed.

**Air conditioning:**

I have not mentioned, and basically stay out of. Regulations down here prevent any fiddling etc with the A/C system unless you are licensed.

Fitting a compact compressor is now pretty much standard in lieu of the Black Monster.

Removing the TX valve and/or the hoses at the rear of the engine are a fair mongrel. The risk of cracking the evaporator pipes is huge, and that means a dash out to rectify. If the engine is out of the car, EASY.

I found a guy who specialises in Tractors etc, and he had all sorts of strange bent spanners, and got in there and done in less that 20 minutes.

If you have the fuel rail off, and the Inlet manifolds off, then access to that valve is much easier, but damage is still too easy to do.

**Other engine bay items:**

On top of that AAV is a 90deg rubber elbow/hose. They split, so replace it, and keep a spare in the shed.

Throttle spindle shaft rubber pivot bushes. One each side at the rear, pushed into a bracket dropping down from the end of the Inlet manifold. Mostly they are missing. Replace them, the throttles will NOT work correctly with missing/worn bushes. Some have made Bronze etc, I simply use the OE, and repeat in about 5 years.

Inlet manifold securing nuts, there are 24, they loosen over time. This is the gasket, very thick cardboard type, settling progressively. Tighten them all, NOT Rock Ape tight, just firm, and put them on the annual "to do list" and you will be fine. If, for any reason, oil leaks perhaps, those manifolds are off the engine, replace those gaskets, even if they look "just fine", resist the temptation to reuse the old with sealant.

Throttle bodies, you have 2 of these. They get “goosed up” on the inside. Take a solvent soaked rag, open the throttle by hand, and scrub them CLEAN. I would NOT scrape the heavy stuff, if there is any, as scratches on that inner bore, at the disc idle position, will reek havoc, so just keep at it, and again, add this task to the “annual to do list”. Once you have done them the 1<sup>st</sup> time, the follow up will take seconds only, as you will not be leaving them for years, and the new goo will be soft, and simply wipe away.

The throttle capstan, at the rear, and has the TPS mounted underneath. The internal bushing arrangement needs lubrication once every now and then. The TPS MUST be removed to do this, so do not simply undo the 2 top screws and pull up, you will be quite unhappy. Remove the 4 nuts, lift it off the studs, invert it, remove the 3 TPS screws, lift off the TPS. It may be stiff on the shaft, CAREFULLY prise it up, and I mean CAREFULLY, it is plastic, use your brains here please.

Re-invert the capstan, remove the 2 top plate small hex head screws, lift out the inner shaft. You will easily see how the thing works, a few drops of ATF, and rotate it a few times. Refit the shaft and the 2 hex head screws, invert it, refit the TPS, and follow the PDF for “Setting the TPS”. Refit the capstan and the 4 nuts, done.

Wiring, as also mentioned. Check each wire carefully. The insulation gets brittle, cracks, and the internal copper degrades very quickly. Splicing in a new section is the only option. Pay close attention at the actual plug, as many a wire will break off inside these plugs, often being held in place by 2 or 3 strands, and the rubber boot. This is the cause of much unreliability.

Replacing wires in the engine bay is ONE WIRE AT A TIME. Confusion and crossed circuits will take weeks to sort if you do not pay attention here.

The CTS (Coolant Temp Sensor), located on the alloy housing just aft of the B Bank thermostat. These are cheap, NOT Jaguar specific, and are critical.

Example: Running V12, unplug the CTS = dead V12, its that simple.

ATS ( Air Temp Sensor), is located in the B bank inlet snorkel of the air cleaner. It is a “trimmer”, and has no real affect on the engine, BUT, the wiring pigtails for the CTS and the ATS are almost the same length, and the plugs on the ends are identical. They can be crossed up in a heartbeat, and that engine WILL NOT start like that, so please pay attention, and MARK everything you unplug.

The TPS (Throttle Position Sensor) is located under the throttle capstan. The original would be flaky now at best. There is a PDF for testing and adjusting the TPS. There is also a PDF for replacing it.

Oil switches/senders. There are 2 at the rear of the engine. The larger of the 2 is a Smiths brand unit for the dash gauge. The smaller is for the dash idiot light. They both can leak, the smaller more so than the larger.

The larger tends to go flaky and give strange gauge readings.

If the larger is dry around the seam, leave it alone. The smaller is nothing specific, a simple 1/8BSP threaded, spade terminal sender, will suffice. I used a Toyota one, as it was on the shelf at the time.

Remember, this engine runs at about 100PSI cold idling oil pressure, so NO "elcheapo" senders please, they will fail.

The Smiths gauge sender IS unique to Jaguar, so OE is the best place.

Alternator. It will possibly be a Lucas 75amp unit, maybe an 85amp. I upgraded to a 110amp Bosch, Ex an XJ40 6 cyl, and simply swapped the pulley from a multi "V" to a plain 13a Section single "V" pulley. The rest of the mounting was straight forward and the OE spec belt was retained.

The starter motor. A Lucas Monster. Gives very little trouble. Over use, as in a hard to start engine will shorten its life, so if your engine is hard to start, FIX THAT PROBLEM, and save the starter motor. All mine started on the first rotation of the engine, every time, no exceptions. There is a compact reduction drive starter motor available if that is the road you wish to take.

Distributor: That's the big round thing in the middle of the "V" with all the wires attached to a Blue Plastic Cap.

Remove the HT leads, all 13 of them, and bin them, they will not be going back.

Look at the cap, and just on the inner side of all those holes is a #1 cast into the cap plastic, found it GOODO, that is 1A spark plug wire, simple is it not? Undo the 3 screws that secure the cap, they will NOT come out, they are captive in the cap.

CAREFULLY raise the cap STRAIGHT up. NO rocking and angle removal, you WILL damage the tip of the rotor inside. Remove the rotor, STOP, some are stupid tight on the shaft, DO NOT, repeat DO NOT simply pull up on that rotor, you will screw the springs and stuff down below. If your rotor is tight, 99% are, use a screwdriver and PUSH DOWN of the metal star wheel, and then rock and twist the rotor until it comes free. The force you apply DOWNWARD is equal or greater than the force you are using to lift the rotor. Some rotors I have had to cut off with the Dremel, so please take care, the springs and stuff below are simply NOT available anywhere. This exposes the hollow shaft, and this is where you need to drop some ATF, and only a few drops. This is to lubricate the 2 shafts, one inside the other. They seize, and with care, and time, can be returned to the very free rotational movement required for a proper running V12. Slide the rotor back on, NOT all the way, and rotate the thing, it will only rotate about 15deg or so, thus working that ATF into the lower section. Remove the rotor, apply a few more drops, refit the rotor, work it some more. When it SNAPS back to the "zero" position, have a beer, you are done. Please DO NOT drown that shaft, just a few drops, work it, a few more, work it again, leave it a few hours, or overnight, it will free up, they all do.

Once done, refit the NEW rotor and cap you have on hand. Make sure the cap sits nice and square BEFORE tightening any of the 3 screws, as that cap will crack if it is not square on the base rim. Those 3 screws only need to be firm, so NO Rock Ape

stuff here. Refit the new leads, paying attention to the firing order, starting at that #1 on the cap, fit the 1A lead, then ANTI CLOCKWISE as looking at the top of the cap: 1A 6B 5A 2B 3A 4B 6A 1B 2A 5B 4A 3B, SIMPLE. Fit the coil HT lead, done and dusted.

Ignition Amplifier, AKA AB14 Black Box, is bolted to the B Bank inlet manifold. Not a major PITA, but it has a small condensor looking suppressor inside, tucked up in one corner, and secured by a single screw. Open the Amp, 4 small screws, remove this suppressor, refit the base to the Amp, and the 4 screws. This thing “leaks” to earth, and will kill the spark. It was originally a noise suppressor, and maybe worked back in the day. Not needed these days, fact. More on this Amp later.

### **Engine related items:**

These engines are bullet proof, fact.

Weak points I have noted and sorted:

Oil pump suction and supply pipe o/rings. They fail, no big deal, it just takes longer to get oil pressure up. SO, with the front cradle out of the car, remove the lower sump, upper sump (AKA Sandwich Plate) and replace these o/rings with Viton spec units. Nothing special, simply take the samples to any bearing, o/ring, seal supplier and ask for one of each in Viton spec.

Thermostats. Wrong length, as in too short, so the by-pass never closes 100% on warm up, and the engine overheats. PDF also for this.

DO NOT overheat a V12, particularly the HE version. They will drop valve seats after that event. The cooling system is fine, trust me, and if maintained properly, the engine never runs hot. Any shortcuts in cooling system maintaining will bite you big time, NO exceptions.

Timing chain has a “Boomerang” tentioner. Plastic thing inside the engine, HUGE \$, and a mongrel to fit. They do snap, BUT, VERY IMPORTANT, **ONLY** if the caretaker rotates the engine Counter Clockwise, as noted looking at the front of the engine. Normal engine rotation is Clockwise, and that is the **ONLY** rotation it must go.

OIL LEAKS. Mentioned at the beginning, and the PDF tells all there is to know.

Front engine pulley assembly. The rear most “V” of that assembly is the **ONLY** “V” that is driven by the “Harmonic Balancer” unit. This lamination fails, heat mainly, and oil. The “V” section is no longer driven and the alternator fails to charge, and you hear an unpleasant squeal. Remove that assembly, noting the 3 pulley pack on the

front is held by its own 4 bolts to the Harmonic unit. Once that is off, undo that large bolt (JAM THE ENGINE AT THE FLYWHEEL SO YOU CANNOT ROTATE THE ENGINE BACKWARDS AS I SAID EARLIER). Once that bolt is out, the pulley will simply fall off the tapered cone. Have it re-laminated, and refit, ensuring that large bolt is done up TIGHT. Damage to the keyways and cone will follow very soon if that thing is not TIGHT. Refit the 3 pulley pack.

### **Transmission related:**

OK, its a GM TH400 unit basically.

Strong as they come, and very old school.

Fresh fluid annually, and a filter every 3 or 4 years is all it needs.

The vac modulator on the RH side can be problematic. I always swap them out for a compact adjustable unit.

The vac hose for that modulator can melt at the attachment, due to being very close to the exhaust pipe. Take some "header wrap" from your local Speed Shop, wrap a small section around the exhaust at that area, and secure it with a couple of hose clamps.

If a new vac hose to the engine is required, attach the new to the old down below, and using common sense, pull the new through the gap in the insulation panel as you pull the old out. That hose MUST be behind that firewall heat panel.

The transmission rear mounting arrangement. A complicated piece of work is best to describe it.

Most are assembled incorrectly, so the PDF, again, explains all. DO NOT simply start undoing things, that spring packs a serious punch, and can break bones, so please pay attention.

The "cotton reel" centre bush should be replaced with a Poly spec bush. NO, this cannot be fitted from the bottom, it will only "push in" from the top, so mount assembly removal is required.

The spring only has a rubber seat on the bottom, and nothing on the top. This rubber is possibly all gooey by now, so a new one will be needed.

The transmission cooler is inside the RH tank of the radiator. I fit an aftermarket transmission cooler (Large size) out the front, and eliminate the trans fluid in the radiator completely. Again, I have a PDF on this if needed.

## **Electrical things:**

This where some repeating will be found.

Earths, and there are many of them. You will spend a day finding and cleaning and greasing the earths on any Jaguar.

Alongside the battery are the main earths, and they are usually in a very sad state. More will be found on each side of the radiator support panel top plate, and more again under a bolt in the Inlet Manifold of the A Bank, near the 5A area.

The main engine earth is via a stupid 2 strap arrangement at the LH engine mount. One strap is engine to cradle. The 2<sup>nd</sup> strap is cradle to chassis. They are usually broken, unattached, missing. I run a dedicated "eye to eye" battery spec cable from the engine direct to the chassis.

Look around, and any Black wire is an Earth wire.

**ALL EARTH WIRES/POINTS MUST BE CLEAN AND REGREASED.**

Alternator wiring. OK this gets messy for some. I run a 6mm diam cable from the B+ of the alternator up the chassis rail to the RH Battery +ve post in the engine bay. This is in ADDITION to the factory B+ that goes from alternator to starter motor via that steel tube.

I run a 6mm diam cable from the alternator casing to a dedicated earth point on the chassis just nearby.

All other wiring in the engine bay is either inspected and re-wrapped, or renewed. This is the weakest section of the whole car, so "do it once, do it right, repeat in 20 years". I started this inspection, too sad to repair, so removed the whole lot, ONE wire at a time, and renewed the lot.

On the firewall, one on each side of the engine bay, is a battery +ve post. Remove the nuts (DO NOT DROP THEM THEY ARE SOME WEIRD THREAD), and clean the cables etc and refit.

From the starter solenoid you will see a White wire with a RED trace. It passes very close to the transmission dipstick top Red handle. This is where this wire has a spade connector with a white rubber cover. Pulling the trans dipstick can separate the spade connector. The starter will not work, and some people have spent days and ripped many things apart trying to find the culprit, so remember, this silly spade connector can be pulled apart when checking the trans fluid. A pair of pliers, and gently squeeze the female connector to be a tighter fit, or run a new one piece wire from the relay to solenoid, your car your choice.

Screwed to the RH inner guard, basically behind the headlamp “bulge”, INSIDE the engine bay, is the EFI Power Resistor Pack. It has a multi pin plug inserted from the bottom. Unplug it, remove the 2 mounting screws, and remove the Pack. Clean the socket, and the plug. I use Lemon Juice, the real stuff, not the rubbish in the stores, and then clean them again, then rinse with a mist of water, and a WD40 (or similar) spray, refit and replug. This critter is the 98% cause of hard to start V12 engines, so PAY ATTENTION.

The fueling ECU is in the boot, tucked up inside the RH buttress, has a multi pin plug in its end. Remove this plug, clean the plug and socket thoroughly, and blow dry. The small vac hose at the side of the casing can split, so follow it to where it terminates under the battery area, and replace it, cheap insurance.

Cleaning and re-cleaning all connectors, and there are MANY, will reap rewards.

Spark plugs. I use NGK BPR6EF in all the HE engines.

The “P” is for projected nose spec, and puts the spark out in the BANG stuff, whereas the BR6ES has the spark almost up inside the plug housing. The “P” spec plugs are less likely to foul when the car is driven too sedately, as some owners do.

Spark plugs MUST be gapped at 0.025”, and near enough will not cut it, other components will suffer if that gap is too wide.

Spark plug leads: I use Magnecor exclusively. They were easy to get back in the day, but I am told a tad harder to obtain these days. In fairness, other brands may well be up to the quality of the Magnecor by now. The last set I needed was in 2000, so I may be a bit dated.

Make sure whatever you get have the connector at the spark plug end at 90deg for 1A, 1B, 5A, 6A, 6B. Straight ends do work, but the 90deg just make life so much easier.

### **Ignition Components:**

Some repeating again.

Ignition Amp, bolted to the B bank Inlet manifold. Inside this is the module (brain), a Zenor diode, a noise suppressor, and a blob of rubber.

The module is a standard GM unit, BUT quality of replacements has dropped greatly over the years. I have only ever used an Echlin brand (Made in the USA) module, and never had issues. These Amps give very little trouble anyway, and are usually damaged by other components, like Ignition coils, EARTHS, spark plugs, spark plug leads.

That noise suppressor should be removed, it is of no use, and age now has them “leaking” to earth, hence another dead V12 scenario.

The Zenor diode is basically there to absorb energy IF a spark plug does not fire, a spark plug lead falls off, etc.

One side of that Amp has 2 wires from the distributor. Some are in a Mini shielded cover, some are not. Check these wires CAREFULLY, especially AT the rubber grommet in the base of the distributor. They are well known to fracture INSIDE that grommet. If the engine runs, and runs fine, these wires are OK, but remember this point whenever tracking NO SPARK situations. That Mini loom does get pushed and pulled whenever spark plugs are being changed, just saying.

The other side of the amp also has a plug. One of the wires here is a COAXIAL lead, and feeds an Ignition Pulse to Pin #18 of the ECU in the boot. You will hear mention of “the dreaded shielded wire failure” quite often. This is the ONLY signal that the ECU gets to indicate that there is an Ignition Pulse, so best we fire up the Injectors. If this Coax fails, AND THEY DO FAIL, there is NO pulse signal received, and that engine is DEAD. That Coax travels behind the engine, past the heater tap, and out through the grommet next to the RH bonnet catch. I ALWAYS replace that section of this Coax on any V12 that darkens my door.

With the engine running that Amp will get WARM to the touch, mainly at idle, when a lot of energy needs to be “dumped” to earth. If your Amp is HOT to the touch, as in you cannot hold onto it, and I DO NOT mean after a 3 hour drive, I am talking bonnet open, engine running prior to normal operating temp being reached, you have a problem with coils, HT leads, Spark plugs, EARTHS. Please spend some serious time and fix all those issues, thus saving your Amp, and lots of other items as well. Most common cause, if there is only 1, is too wide a gap on the spark plugs, they MUST be gapped at 0.025”.

Moving that Amp out to the front of the radiator is what I also do, and this eliminates the issues in the engine bay, as all that new wiring is tucked up on the RH Inner guard panel. Away from the heat etc. The Amp is also out in the cool air, and this is GOOD. There is a PDF for this.

Ignition coils. You will have 2. One in the “V”, the 2<sup>nd</sup> out the front of the radiator. The coil in the “V” is the Prime (for want of a better word) coil. It has the HT lead plugged into it. The 2<sup>nd</sup> coil has that HT hole plugged with RTV. The 2<sup>nd</sup> coil is used to aid the charge time between firing. Both coils are a standard Contact Points spec coil, of approx 1.2Ohms impedance across the terminals, each. When paired as they are, the total Ohms is now approx 0.8 +/- . New coils are now available with approx 0.7 to 0.9 impedance, and can be run as a stand alone coil. Jaguar introduced a Ducelliar coil for this, when it became available, some years after the HE introduction. Also note, all aftermarket manufacturers now have coils to suit,

commonly called a “Universal Electronic Ignition Coil”, and work just fine. That module we mention, inside that Amp, is happy with UP TO 1.0 Ohm +/- Impedance, over that it gets very hot, and fails.

### **Emission systems:**

This is one area I will not go.

We basically got zero in this area. Some markets are choked, and must remain that way for annual testing. Only you will know what your legislation requires.

The Jaguar Schematics for emissions vac hoses are extremely vague, and mixed up. Hence my warning to replace any vac hoses ONE AT A TIME. Then if something is inoperative when you are finished the refresh, you are not faced with errors created by you.

### **Interior/Exterior Stuff:**

As I mentioned at the beginning, I search for a car with near spot on Paint and Interior, and I have stuck with that since 1968.

STILL, there are items that need attention.

I remove the door trims, thus exposing the innards.

Silicon Spray the window glass runners.

Spray grease the regulator wheels and channels.

Unplug, or even increase the size of, the drain holes in the bottoms of the door.

Separate the wiring connectors, CLEAN them, and look for any earths that may be inside the doors, and CLEAN them also.

Carefully spray grease the door lock units and associated linkages.

Check ALL the bolts, screws, nuts for security.

Spray Auto Body Deadner (P/pack can) inside the doors, CAREFULLY, you dont want that stuff anywhere near the window runners, or the door lock mechanisms.

Leave the doors untrimmed for a few days to allow the stink to dissipate.

Lube the door hinges ( I use Inox for this).

A short shot of WD40 etc into each door courtesy light switch.

Remove the seats, shampoo the carpets, and let it all dry out. Summer time is the time I do all this.

Remove the console top panel, carefully, thus exposing the gearlever arrangement.

Lubricate the cable, the lever pivots etc etc.

Vac out the console, there will be all sorts of things in there.

Replace the bulb in the Fibre Optic unit, its old, freshen up things a tad.

Replace the bulb in the gear position indicator socket.

Replace the bulbs of the Interior lights, and the Puddle Lamps.

A short shot of Silicon Spray into the Ignition switch key section. Similarly, a short spray of that into each door key slot, and the boot lock key slot, will help prevent broken keys inside the locks, not a good thing to have happen.

Lubricate the boot lock mechanism in the boot lid. I lay a protective mat on the boot lip seal and over the bumper, so any drip down from that lock lube does not stain the carpet etc.

Remove the electrical section of the Ignition Switch (PDF for that), and open it up and clean the gunk out of the inside, lightly regrease and assemble. This little part is now causing grief (age related) and hard to start, no start, no crank etc, are all caused by dirty contacts inside this switch.

There are 2 bolts that secure the steering column to the steel dash frame just below the instrument cluster. They have been know to come loose, so run a socket over them to be sure.

Instrument cluster additional earth wire. PDF on that, and that will sort 98% of odd instrument readings.

Seats belts. I wash them in warm soapy water, very CAREFULLY, tie them in the extended position while you do other stuff. When dry, give the webbing a spray of Silicon Spray, it just softens them and they slide so much easier.

While the seats are out, a good Leather Shampoo and when dry, Leather Treatment. The warmer the leather, as out in the warm sun, the better the end result.

While the seats are drying, lube the runners, and work them fore and aft a few times, they are usually quite stiff with years of gunk.

## **KEEPING THE CAR THIS WAY:**

Maintaining all this work you have done is EASY.

My plane forever has been:

Engine oil and filter change, every 6 months.

Air filters, every 2 years. May be sooner, dependant of your conditions.

Fuel filter every 5 years. This will vary dependant on the quality of your markets fuel.

Brake fluid, annually.

Steer fluid is annually.

Trans fluid. Simply suck out and refill with fresh annually, and pan off and new filter every 5 years.

Diff oil, annually.

Grease points are annually.

Coolant, every 5 years.

Belts are at 5 years.

Hoses, subjective, but 10 years is what I do, as my cooling system is CLEAN, and running at proper temps, so stress levels on hoses etc are down.

Thermostats are at 5 years at the same time as coolant.

Spark plugs, usually at 40K kms.

Distributor shaft lube, same time as spark plugs.

Outside that, general observations as you look around from time to time, keeps you on top of things.

If you took shortcuts above, you could be “catching up” for years, just saying.