TRIUMPH STAG COOLING SYSTEM

Dec 2009

This article has been written to inform the many new owners and club members, whilst reminding a number of existing members, to keep their systems up to date.

Ever since the introduction of the Stag in 1970, many many articles have been written about the Stag overheating problems by a great many so called experts in the field. Sadly most have missed the point and many continue to do so even in this day and age of the information explosion of the internet.

To briefly recap:-
In the early 1970's, British Leyland workers built cars, which became known as either Monday or Friday cars, because they appeared to suffer the most problems.

For example:-
Casting sand was left remaining in cylinder heads and/or blocks which cluttered up the water passages and restricted flow.
The Stag was intended for the vast USA market where Americans just hopped in their cars and drove their V8s for 200,000 miles and were lucky if their engines even saw a complete change of the engine oil in that time.
The Stag is a mixed metal engine and as soon as water is added to them, electrolysis begins.
So starts corrosion (in cast iron engines – rust) of the most sacrificial metal – that being the aluminium in the cylinder heads.
So here we have just demonstrated that water is the main cause of all Stag overheating problems.

In the late 1960's and early 1970's virtually no one had ever heard of **'Anti-Corrosive Inhibitor'**. Even today not many people understand the term nor its use.
Start up a conversation about the Stag cooling system and usually the first sentence contains the phrase "I always change the anti-freeze" etc. etc.
Unless you live south of Christchurch in NZ, anti-freeze is hardly required, as the anti-corrosive inhibitor recommended by SOC NZ can handle minus 3 degrees and that is if the car is left outside in the open weather.
N.B. additional compatible anti-freeze can be added to the inhibitor.

Back in 1970-73 in good old USA and Britain, little if nothing was known about corrosion in mixed metal engines. Fill-er up with water and maybe some anti-freeze!
Munch, munch, gobble, gobble goes the corrosion in the aluminium cylinder heads. The debris collects in the lower cylinder block water galleries (access to these galleries is via the ¾ AF brass hexagonal plugs either side of the block). Slowly but surely this debris finds its way to the lower 100mm of the radiator. Meanwhile one can see that the cooling system is becoming restricted and/or blocked.

Eventually enough corrosion takes place around the surface of the cylinder heads that the head gasket 'fire rings' are unable to contain the exhaust gases heat and pressure due to insufficient support in the form of metal.
The gases pass straight through into what should be the cooling medium. However the water cannot cope with a direct injection of this heat and the consequence is that the engine overheats along with all the associated problems that brings. Like warped cylinder heads, water in the oil, cooks the water pump, overheats the engine oil which destroys the crankshaft bearings etc. etc.

Water really is **dangerous** stuff on its own!

Every couple of months, someone will say to me. “I’ve drained all the coolant out of my Stag and now I am unable to put the ten litres back in”.
The conversation goes like this:-

Q. Explain how you drained all this coolant out of the system?
A. I took the bottom radiator hose off.
Q. What else?
A. Nothing – that emptied the radiator.
Q. Exactly that, and nothing else!
A. What do you mean?

The explanation:-
The bottom radiator hose empties the radiator and virtually nothing else. Have a look at the bottom hose connection on the engine block and you will see it is at the top of the engine just below the top radiator hose.
“Well – well – so it is, I never noticed that!”

To empty the engine block:-

1. Turn the heater on to heat and make sure the water valve on the heater opens (just to the left of your left foot in the driver’s chair).

N.B. Water usually corrodes this shut and inoperable whilst anti-corrosive inhibitor ensures its trouble free use.

2. Remove either the radiator filler plug or the pressure cap from the overflow bottle.
3. Next remove both ¾ AF hexagonal brass plugs from either side of the block. LH side can be got to with a socket on an extension whilst the RH one requires a ring & OE spanner whilst going vertical.
4. Water should pour out of both sides without prompting, otherwise a problem could be on its way!
5. This now completes the total system being emptied.
6. Empty and clean the overflow bottle before refilling.
7. It is suggested you reverse flush the radiator (or take to a specialist if in doubt), reverse flush the block, which also flushes the heater core.
8. Refit both drain plugs in the block and all water pipes and refill the system with 760mls **‘RCP+’** Anti-Corrosive Inhibitor together with 10 litres of clean water.
9. Leave the heater open on Heat whilst refilling and ensure you remove all air from the system and get all the water/coolant into the system.

On my own car, this operation is made easier with the fitment of permanent hose connections at the front of the car just behind the front bumper.
Once every three years, I open these bungs and drain the block with care and replace the long life **RCP+** Inhibitor.
Fortunately my brother-in-law in the late 1960’s introduced me to anti-corrosive inhibitor and ever since I have never experienced any of the so-called Stag cooling system problems nor any corrosion in my engines.

Nov 2009:
I have just removed the front cooling pipe from the current Club President’s Stag and inside was a beautiful pink colour, an excellent sign of a corrosion free engine.

Much is talked about of having the correct pressure cap on the overflow bottle.
In my opinion this is nothing more than a red herring.
The correct cap (factory spec) is 20lb, this delays water boiling until:

212°
40°
252°

A 13 lb cap (on many cars)

212°
26°
238°

My own car which is equipped with a Toyota Estima overflow/header tank complete with low level warning system operates a pressure cap of 6lbs

212°
12°
224°

In fact my car recently returned from Bluff all the way home to Mount Maunganui with a cracked overflow pipe and hence no pressure in the cooling system.
Each morning less than half a cup of water was added to the header tank. That is, in the course of a week, about 3 cups of water was added. So much for 20lb caps being required on an excellent engine.

N.B. The engine was fully reconditioned by me in March 1993. Sixteen years trouble free motoring – so it can be achieved!

The Radiator:-
When the Stag left the factory, the top of the radiator was rubber mounted, a bit like all modern cars of today.
Over the years, the small troublesome mounts got damaged or lost and therefore the easiest fix was to just put bolts into the captive panel nuts and tighten them.

WRONG!
This causes the radiator to become a stressed member supporting the front panels.
Several laps of Bathurst and the infamous 'Dipper' would result in a broken radiator.
These days mine is fully floating. In 26 years I've broken mine twice, hopefully never again.

The Exlir: **RCP+**
The Word: Anti-corrosive Inhibitor

John Parker
73STAG