MGF Technical Archive

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Thread: The K Series head gasket failure

From: **Terry Cox Oxfordshire United Kingdom TerryCox@Anson.Freeserve.Co.Uk on 29 November 1999 at 15:07:25** (UK time)

There have been many concerns posted with regard to MGF overheating with the cylinder head gasket (CHG) being the top reason for concern. What follows is intended to be as complete a picture as to the causes, cures and preventative actions as I can muster.
The key factors for initial overheat are:-
Proper initial system bleeding.
Incomplete bleeding following previous coolant drain down. Each vehicle has a different procedure which must be followed. There are various bleed screws which must be opened until coolant flows freely with no bubbles. Most importantly the filling and bleeding should take place with the heater set to fully hot. Further the vehicle should be driven for a short while to release any trapped air and re-bled.
Auto bleed valve blocked
This is situated in the inlet manifold coolant stub pipe - manifold to expansion tank) . The idea is that the valve will be open to the passage of air but that water will lift the valve and close it. Blockage of this will not only hinder bleeding following previous coolant drain down, but also allow air pocket build up during future use. This may be from small pockets of air or bubbles clinging to the coolant jacket surfaces that will migrate running. There may also be slight combustion gas leak (having passed the head gasket fire ring). The bleed valve is not available as a separate item, but is a simple device similar to the "Jiggle" valve often seen in thermostats. The only way to ensure that it is clear is to remove the manifold and flush through the stub pipe. At the same time ensure that the hose from here to the expansion tank is also not blocked or kinked.
Antifreeze.
You MUST have antifreeze in the cooling system all year. Only recommended antifreeze specification must used and you should not mix types. Antifreeze not only contains Ethylene Glycol, which lowers the freezing point of the coolant, but more importantly, special additives which prevent corrosion. This is especially important with aluminium engines, where unprotected aluminium will rapidly corrode, especially where it is in contact with other metals. This not only results in erosion of the aluminium surface in critical areas, but also potential perforation and coolant loss. Additionally the displaced corrosion products will block the radiator. Engines stripped for examination have shown areas of metal erosion to the cylinder head face. This is especially seen at the CHG fire ring location and also adjacent to the elastomeric track. This is caused by lack of proper inhibitors in the coolant. Leakage is likely to occur at these points.
The result of age or previous overheating can both degrade the antifreeze capability of the coolant but more importantly the corrosion inhibitors. Therefore antifreeze should be replaced at the recommended frequencies and in the event of previous overheating. You can be sure that the cooling system of your vehicle has been designed to operate properly using the designated approved coolant. It should not need adjusting or modifying.
There have been suggestions that a water wetter product may be used (http://www.redlineoil.com/wwti.html). This product does not contain any antifreeze properties but does include an additive pack which claims to work well. The benefit is that Ethylene Glycol has a lower thermal conductivity than water and inclusion in the system reduces the overall conductivity. It appears that the benefits are mostly from this and gives very little benefit when used in conjunction with Glycol.
Proper operation of radiator (and where applicable engine bay) fans.
These have been known to be wired in reverse and spin the fan the wrong way. You may also check wiring connections and the sensors that activate the fans.
No blockage of radiator (leaves etc.).
See also comments under anti freeze. Remove any external blockages and thoroughly flush the cooling

system.
Proper operation of thermostat.
Generally a very reliable component however, overheating may damage the thermostat. It should therefore be replaced after overheating.
Proper operation of radiator pressure cap
Now usually on the expansion tank. There have been previous entries on this where problem caps could be identified with the dimple in the cap being offset. A faulty cap may result in low pressure in the cooling system, effectively lowering the boiling point of the coolant.
General Cooling System Leaks
Obvious, I know, but do ensure all hoses are in good condition and firmly clamped. Look especially for chafing of hoses. Also check the metal pipes for corrosion perforation (especially the one at the back of the engine coming from the thermostat).

Key factors on repeated overheat situations
Cylinder head condition. Previous over heat can result in the aluminium softening and the steel fire rings in the CHG burying them selves into the head face. This causes the clamping of the gasket at the fire ring to be less than required and combustion gasses to pass into the cooling system. This not only applies excessive temperature to the elastomeric sealing track on the CHG, degrading it, but also introduces gas pockets in the cooling system reducing it's efficiency. Even skimming the cylinder head to remove the impressions may not fix the problem if the aluminium has softened.
Cylinder liner stand heights.
Should the liners shift due to relaxed clamping, then they can hammer down on the location face in the cylinder block. This mushrooms the location resulting in the liners sitting lower. This again results in a clamp load at the fire ring that is less than required. Rover do not quote the liner stand proud in publications as they cannot be adjusted (shims etc. not permitted). Actual stand heights depend upon the age of the engine. It is either 0 to 5 thou or 5 to 9 thou. (MGFs would all be 5 to 9 thou). It is felt that 2 thou should be the lowest for good results. In any event they should all be within 2 or 3 thou of each other. If you have problems here, only a new engine will fix it. (It has been known that Rover have got this wrong at original manufacture).
Cylinder head torque
This is key. The spec is 20 Newton meters plus 180 degrees plus a further 180 degrees. These need to be progressively applied, that is all the bolts to 20 Nm, then all bolts 180 degrees etc. It's ever so easy to miss the second 180 degrees or to miss bolts. Always follow the torque sequence and don't get side-tracked during the procedure. Also be very careful fitting the head to the block. If you leave the manifolds on (which is common practice) the head is unwieldy and the edge of the head can be bumped on the gasket track damaging it (without you seeing it). It will then leak.
Inlet manifold gasket condition (plastic manifold)
This is sealed by a polymer gasket fitted into a recess. Engine overheating is known to degrade the material. This results in water loss (at either end of the manifold) and further problems. Rover have introduced a gasket in an improved material which will withstand a higher temperature though as far as I can see the gasket only deteriorates if overheating has occurred (not being the cause of it). There have been problems of the manifold fixings loosening also. Be sure that this gasket is always replaced after overheating.
Finally
The causes of overheating are many. When the cylinder head gasket is removed, this shows clear signs of this where the elastomeric track has become dislodged, gives the appearance of melting or taken a compression set. Although this results in water loss, it is the symptom rather than the cause. You should be sure that the root cause for the overheating is established and corrected.

From: **Dieter Dormagen Germany dkoen@gmx.de on 29 November 1999 at 15:52:14** (UK time)

boooinnng :)

Nice, I like this instructions (Altavista not). Should get a complete webside including some pictures ?

The link to waterwetter (R) is
http://www.redlineoil.com/wwti.htm

From: **Richard Eaton West Yorkshire United Kingdom richard.eaton@mediatek.co.uk on 29 November 1999 at 16:44:00** (UK time)

Terry

First of all well done for taking the time to gather all the information regarding MGF HGF and writing your

findings in a concise but thorough way.

I have not had a HGF in my 1998 27k 1.8i but had a fright when some coolant "disappeared" from the expansion tank a few weeks ago. This turned out to be the inlet manifold leaking but I've never had an overheating problem and my temp gauge rarely gets over 100. Do you therefore think this failure will have been down to the manifold fixings then?

Cheers

Richard
http://www.mgfworld.co.uk

From: **Dieter Dormagen Germany dkoen@gmx.de on 29 November 1999 at 17:35:48** (UK time)

Richard,
your MPI? has the plastic inlet manifold and was built before VIN 504633

If yes, then join your dealer and complaín that coolant loss. Some of my friends here in Germany get this change done recently under goodwill.

I never understood why this since January 1999 known problem, stated in an MG Bulletin for the MPI did not get to a recall.
But I think this is because of Rovers curious quality policy:
- wait and see what will happen -
- may be the car withstands until its out of warranty and goodwill, or may be not ! -

I payed for the change at my 05/96 MPI about 70 GBP for the change and app 5 GBP for the gasket in August.
My dealer told me that a slightly leak does not lead directly to overheating but can be seen as coolant loss at the expansion tank.
I beleave the leak can be be measured too as pressure loss, according to the instructions in the workshop manual.

I would be interested too in explanations on what happens if more or less coolant gets steady to one or more cylinders. I asked this already 4 month ago, but without any reaction that time.

Cheers
Dieter
PS. coolant loss can have several more reasons, mine leaks just slightly at the hose fixtures to the metal pipes under the car.
http://www.fortunecity.de/hockenheim/senna/253/defects/index.htm

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From: **Carl Sweden on 29 November 1999 at 17:57:48** (UK time)

Many thanks for crystal clear advises - a kind of information that Rover themselves should have given here a long time ago , (or at least to their dealers !)

Regards , Carl.

From: **Mike Bees Cambridge England on 30 November 1999 at 08:30:28** (UK time)

Regarding the recommended coolant, I have an acquaintance who has spent a lot of time dyno-testing K-series engines. He very strongly recommends using 'Unipart Superplus 3 year protection' (he has no commercial connection with Unipart). His own words are at:

http://www.se7ens.net/archive/sevens.w3archive/9903/msg01547.html

Mike

From: **Per Brussels per.lagergren@consilium.eu.int on 30 November 1999 at 09:06:58** (UK time)

Hello,

I have been trying to get my hands on the Unipart Superplus 3 coolant but no Rover dealer here in Belgium seem to have it for sale in normal (small)quantities (1 liter bottles or something). They say it only exists in huge barrels for dealers. If so, how on earth can we simple mortals follow the advice of the owner's manual only to top up with that coolant??? Has anyone else had the same experience? How can I find some this coolant?

Per

From: **Dieter Dormagen. Germany dkoen@mgcc.de on 30 November 1999 at 09:37:56** (UK time)

Per,
look for direct import if no other source can be found.

http://www.partsdirect.co.uk/

GEC1001 Superplus 3 1Litre 1 £4.25
GEC1020 Superplus 3 20 ltr 1 £55.65

You find a lot of company links at my chaotic collection. Most are continental based.
http://home.t-online.de/home/dkoen/mgf_link.htm

Cheers
Dieter

From: **Terry Cox Oxfordshire United Kingdom TerryCox@Anson.Freeserve.Co.Uk on 30 November 1999 at 09:43:49** (UK time)

To Richard Eaton
Yes I think so probably. They used a new manifold stud with "patchlock". Dieter is right, the plastic manifold only applies to the MPi not the VVC and so the discussion on the manifold gasket only applies to the MPi (or any other Rover with the K series - not VVC). The reason I feel that the problem may not be gasket spec (ie symptom rather than cause) is that they would have been failing left right and centre for this and although it is not uncommon this is not the case. It may however be more likely on the MGF due to higher under bonnet (boot?) temperatures.

From: **Dieter Dormagen. Germany dkoen@mgcc.de on 30 November 1999 at 10:12:34** (UK time)

<g>
according to the manifold studs I wondered why 'they' state 'simply bolts' in the official papers.
Sorry, because lots of multilingual problems I found it not relevant. I thought 'only a bolt and nut'...
Now this comes more important.
Here are the part No. of the 'new' patchlock bolts:

Nut FX108047
Patchlock bolt (7x) TE108065M

I've no idea about the old numbers.

Aehhm, what is a patchlock bolt ? :-/ and what is the difference to the old bolts ?

Dieter

From: **Richard Eaton West Yorkshire United Kingdom richard.eaton@mediatek.co.uk on 30 November 1999 at 10:28:07** (UK time)

I'm not sure what my VIN number is but the car was built Aug 97'ish.

I noticed the coolant loss a couple of days before the 24k service and told my dealer to look at head gasket etc. They came back with the leak at the inlet manifold. After some very gentle persuasion I had it done FOC (along with two shockers).

Cheers

Richard

From: **Graeme Bishko Greater London United Kingdom graeme@bighairy.demon.co.uk on 30 November 1999 at 10:43:56** (UK time)

I've been quiet I know, but I had an overheating scare on Sunday morning. I was told by someone that there was steam coming from the boot and pulled over immediately. The car had overheated when I was stopped in traffic but I must have caught it within 1-2mins thanks to the stranger. I'd stopped to drop someone off 2 mins before and not noticed anything.

The RAC man tested the pressure in the coolant system and with his pressure measuring cap. It read 11 psi (nominal). He concluded that it was the cap causing the problem and nothing more serious. I got towed home (I didn't fancy doing more damage). There was no sign of other leakage and the oil looked fine.

I nipped down to Halfords in a borrowed car and bought two caps (£2.99 each) as recommended by their computer system for an MGF. I put one on and the car seems fine.

I'm considering having a coolant drain and re-fill performed but I didn't loose much water and the RAC man topped up with maybe 1/2 litre of water. Is there any point doing this or should I just carry on? Last coolant change was in March after the head came off (the spark plug incident :-)

graeme

From: **Dieter Dormagen. Germany dkoen@mgcc.de on 30 November 1999 at 11:07:58** (UK time)

Graeme,
I guess your F may be as 'young' as Richards ? and about VIN <<26000 ?
(Write it to the VIN Webside, I still miss it) :)

Anyway, see Terry Cox consumption according to 'if once overheated'.
If I where you, I would go for the other gasket with patchlock bolts. (If applicable)

IMO about 70 GBP and for a hopefully more 'calm sleep' in furure.

It can be that your dealer did not own that Februar MG bulletin at your March visit.

Cheers
Dieter

From: **Jérôme Paris France on 30 November 1999 at 11:14:27** (UK time)

Dieter,

Just a silly question : how do you have access of those MG bulletins ? Do you know a mechanic at Rover ?
I wonder if my dealer knows about those bulletins ! Can't we find them anywhere ?

Jérôme (trying to escape the HGF ...)
121 CCK 92

From: **Dieter Dormagen. Germany dkoen@mgcc.de on 30 November 1999 at 11:33:55** (UK time)

Never saw silly questions, without mine..

I did never say that I have access to a Rover guy. :)
Let me explain it as 'they came down the rhine' or they 'came from anywhere'.
Anyway, that papers do not state any word according to CHG or HGF. If they would then be sure I would not be so calm !!

I think they could not be found at 'other places' because of the 'wrong language'. -?

From: **Terry Cox Oxfordshire United Kingdom TerryCox@Anson.Freeserve.Co.Uk on 30 November 1999 at 12:31:26** (UK time)

Dieter,
Studs are a bar of metal with threads both ends (no hex head like a bolt).The one end screws directly into the cyl head, then the manifold goes over them and a nut is fixed the other end. Patchlock is a patch of thread locking material directly on the threads (usually blue in colour). This is intended to prevent the stud from vibrating out of the manifold. The patch end goes in the cyl head.

From: **Dieter Dormagen. Germany dkoen@mgcc.de on 30 November 1999 at 13:09:51** (UK time)

:o)
thanks. Now I got it and know it. This kind of bolts is too used often for brake system parts (as screw) and must be replaced if they where once used.

:o)
You are where Teds translation substitute :)

BTW where is Ted ? already again on vacancies :)

From: **John Thomas Bath UK j.s.thomas@bath.ac.uk on 30 November 1999 at 15:35:32** (UK time)

Terry, Mike, Rog et al - would you like to comment on the steps to be taken when treating a HGF.

Crack test /pressure test/skim the head
Reuse of head bolts if within spec
Replacement of service items - obviously oil, coolant - maybe plugs.
My mechanic also advises replacing the thermostat while you're at it - it's not easy to access normally.
I was also thinking about the timing belt too (36k) this looks the trickiest part.

My head gasket (mpi) started to produce enough of a dribble to be plain to see - but then stopped having lost less than 500cc coolant in 3-4 weeks.

I have no doubt that the gasket will fail eventually but having seen one or two stripped down in my dealer's I now feel confident enough to undertake the basic job myself. I have the facilities and experience and there's a good engine shop nearby.

jt
a10jst

From: **Mike Bees Cambridge England mikebe at sco dot com on 30 November 1999 at 16:53:01** (UK time)

> Crack test /pressure test/skim the head

Most important is to test it for flatness & skim if necessary (or discard if it's too bad!). If all you've had is a coolant dribble down the outside of the block then the head shouldn't have suffered.

> Reuse of head bolts if within spec

No problem, I've spoken to RoverSport about this in the past, they said reuse up to N times (can't remember what N was, something like 10) if still within spec.

> Replacement of service items - [snip] - maybe plugs.

If all you've had is a coolant dribble down the outside of the block then plugs shouldn't be affected.

> My mechanic also advises replacing the thermostat while you're at it

Can do [shrug].

> I was also thinking about the timing belt too (36k) this looks the trickiest part.

Sensible precaution at 36k.

> My head gasket (mpi) started to produce enough of a dribble to be plain to see - but then stopped having lost less than 500cc coolant in 3-4 weeks.

There are 2 types of gasket failure. One is when the coolant escapes due to a fault or failure in the rubber seal on the gasket which is supposed to keep the coolant inside the water jacket. This can be serious if you lose sufficient coolant to cause overheating. The other type of failure is where the compression ring fails, often on older Ks caused by erosion of the head in the area of the compression ring (use the recommended coolant chaps & chapesses).

My view is that most of the HGFs seen are of the former type and are harmless if caught in time (this can be difficult if it fails big-time while you're driving).

My >200bhp K-series had a weep from the 'front' (cambelt end)/exhaust corner immediately after a complete rebuild with new parts. Being somewhat desperate (3 days to first event, engine needed running in & mapping before that) I poured in a bottle of Radweld. With that bodge it's done several thousand miles, a few trackdays, and about 20 sprints and hillclimbs using 8000+rpm without giving any further trouble. Oh yes, and the compression ratio is ~11.3:1. OTOH it's not installed in an F...

Needless to say I'll have the head off over the winter to see what happened to the gasket, especially as the plan is to get some more bhp and closer to 9000rpm next year.

Mike

From: **Terry Cox Oxfordshire United Kingdom TerryCox@Anson.Freeserve.Co.Uk on 30 November 1999 at 17:00:22** (UK time)

John Thomas (really?)

Read my start of thread on this.
1. I agree, replace thermo.
2. You might as well replace the cam belt (though it's still got lots of life). But when you remove it, as you have to to get the head off, then you have to make sure you get it back on the same way round as it came off, and make sure you don't bend it etc etc.
3. You can use the head bolts again OK (check the length first according to WSM - not to hand at present)
4. Skimming the head is OK but you need to hardness check it as well, I'll try to find out the hardness later and add it to this thread.
5. Super-super important is to check the liner standproud. If the answer is bad then it's expensive (new engine or at least a cylinder block if you can get it).
LASTLY you say that you lost half a litre in 3-4 weeks - this sounds alot to me! Beware though, you may think it is the CHG leaking but the inlet manifold can also be the cause (the water wicks along between the CHG and the head face and comes out somewhere else). I should check this first before you get the head off!

From: **Carl Sweden on 30 November 1999 at 17:51:14** (UK time)

Hi all,

what do You K-engine gurus think about when replacing the thermostate to get a more relaxed one , 82 - 85 deg. C ? I know that there has been a continous race for higher temps due to emission standards etc.

Regards , Carl.

From: **?? - - on 30 November 1999 at 21:14:19** (UK time)

http://www.01019freenet.de/mgf/cap1.jpg
http://www.01019freenet.de/mgf/cap2.jpg
http://www.01019freenet.de/mgf/inmanga1.jpg
http://www.01019freenet.de/mgf/inmanga2.jpg

:)

From: **Kes Kidderminster on 30 November 1999 at 23:26:21** (UK time)

Hi,

This is a bit of a cleft stick. Those who have no coolant loss or HG trouble at the moment may not relish upgrading the inlet manifold gasket or any other parts, on the grounds that it's better to let sleeping dogs lie. As for incipient troubles - avoiding the inevitable - then just follow the good servicing practices outlined by many in this and other threads. I don't think those with a well-behaved F should panic.

Unipart Superplus 3 is the only recommended anti-freeze so we could assume (but not put too much money on) that the cars are filled with the same at the factory. The refill instructions make great play on not letting the expansion tank empty, and are based on someone watching the two front bleed valves whilst another pours carefully from a 12 litre jug. The 'additional bleed' advice seems silly, as this process is apparently required only if the heater isn't er, heating, and the bleed valve is on the ratiator circuit, as far from the heater circuit as can be imagined.

Although I haven't used any myself yet, the idea of water wetter is still appealing. One facet of it is, anyway, and that's the surfactant which reduces the surface tension of the coolant. Although the coolant temperature may be stable there can be boiling at local hot spots, where a significant amount of heat is being transferred to the coolant. Vapour bubbles form a barrier which prevents the heat from being transferred, and the surfactant reduces the size of these bubbles. That's what RedLine says, anyway, and I'm almost convinced. You can, by the way, get this stuff to pour onto your food (presumably to calm local hotspots).

By the way my '95 214 lost coolant for months without showing any sign of a leak, and I just topped the thing up when I thought about it. Eventually I asked the garage to look at it and they replaced the cap, pressure tested, then replaced the (plastic) inlet manifold gasket (£112). From then on (Dec '98) it hasn't lost a drop so I'm happy.

Regards, Kes.

From: **Dieter Dormagen Germany dkoen@gmx.de on 01 December 1999 at 08:19:00** (UK time)

Kes,
I absolutely agree with your comment to do nothing if no coolant loss occures.

I see this thread not as an instruction (or a must) but as information to make people sensible.

Sensible for looking from time to time to the coolant, sensible for any leaks, instead of bursting only through the country and later whinging if something happens.

dk

From: **Roger Parker Tamworth roger.parker@virgin.net on 02 December 1999 at 00:32:46** (UK time)

Mike, very interesting comment...

My >200bhp K-series had a weep from the 'front' (cambelt end)/exhaust corner immediately after a complete rebuild with new parts. Being somewhat desperate (3 days to first event, engine needed running in & mapping before that) I poured in a bottle of Radweld. With that bodge it's done several thousand miles, a few trackdays, and about 20 sprints and hillclimbs using 8000+rpm without giving any further trouble. Oh yes, and the compression ratio is ~11.3:1. OTOH it's not installed in an F...

Needless to say I'll have the head off over the winter to see what happened to the gasket, especially as the plan is to get some more bhp and closer to 9000rpm next year.

I have recently had a '95 214 with a very very minor leak that I traced to the same front corner, in fact only detectable by laying a little piece of tissue on the small cast ledge that is in that area. Overnight there would be a small puddle under the car, but no loss during the day once the engine was warmed. Expansion perhaps providing the final sealing.

I lifted the head and noted no specific damage to the gasket, no warping or damage to the head face, or block face. Bolts were well within tolerance but I was not aware of the liner dimensions so that remaons an unknown. The coolant has always been maintained at recomended concentrations and dealer supplied.

New gasket of a non metal shim type used and this was followed by worse leaking than before. This was replaced by a Payen one, which from examination appeared the same as a genuine Rover item - perhaps someone with direct information would like to confirm this!!

This time the leak was lessened but still left a very small puddle overnight. If the engine remained warm leakage was not present, but stood for more than 8 hours and a leak would show. In the absence of any other immediate solution a rad sealant has for now completely stopped the loss.

Now since the leak was so very small I expect that it will remain sealed for a considerable period of time/miles. However, I wonder what side effects the sealing compound will have on other internal areas of the cooling system? I also wonder what, other than a casting problem, may have caused this leak.

Rog

From: **Mike Bees Cambridge England mikebe at sco dot com on 02 December 1999 at 10:40:59** (UK time)

Rog,

With mine the leak only occurred when the engine was running. It's not a casting fault, 'cos the same block & head combo didn't have this problem the previous year. What had changed though was the liners. The replacement (thicker) liners were also a few thou taller, which is good for clamping force at the compression ring, but it's a bit worrying that a few thou makes all the difference to the sealing the rubber bits - must mean they weren't *that* well sealed to start with.

That said I will have the head checked for flatness while it's off. It's a rather unique head, in that it's a VVC casting that has been modified to run a single inlet cam with normal-sized journals. Dave Andrews (http://hometown.aol.com/DVAndrews/kengine.htm) is going to port the head, and we're going for 32.5mm inlet valves (nice stainless one-piece waisted stem jobs), up 1mm on the standard ones. We have the Minister/Caterham 230bhp K in our sights...

Mike

From: **Terry Cox Oxfordshire United Kingdom TerryCox@Anson.Freeserve.Co.Uk on 02 December 1999 at 12:07:56** (UK time)

As promised earlier in the thread, here is the hardness info for the cylinder head.
500kg load with 10mm ball to give minimum 92 Brinell (equates to 2.6mm dia impression). The best place to do the test is in the flat part of the combustion chamber area of 2 or 3 cyl - keeping it well away from where the gasket fire ring sits.

Regard changing thermostat temperature range, I don't think that is a very good idea. Older cars often did have summer and winter thermostats but bearing in mind the potential for cockup when bleeding the cooling system on the F I think the dangers far outweigh any potential benefit.

Regard radweld, I am of the opinion that this is not a good thing with modern radiators with finer water ways. I have no evidence but I feel there is a danger of blocking the radiator.

Regard Mike Bee's motor. You are right, there is a fine balance between a nice hard clamp on the fire ring and enough load on the elastomeric track.

Regard water wetter. I am not sure it is a good idea to add this stuff to the proper antifreeze (the chemicals may not work well together) and if you don't use antifreeze what happens in the winter and what about all that internal corrosion. I wouldn't touch it with yours (as they say).
