

Cooling system solutions

Posted by cullenwinter - 20 May 2008 10:40

Thought it was time to throw this out for discussion.....It would seem that not many RM 944spec cars have been without some kind of issue with temps on track, which can lead to the loss of oil pressure, and you know the rest. What can be done ? What is the weak link in the system ? How can we improve the cooling capacity, other than hard wiring the fans and cutting away at the front of the car ? How do the cars from AZ and SoCal prevent failures ? How can us high altitude folks combat this ? How can all the cars that show up for a weekend, run all weekend ? Let's figure this out (before I have a car to blow up again !) thanks, Cullen

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Re:Cooling system solutions

Posted by joepaluch - 21 May 2008 01:12

Really I don't agree that oil at 240 is big issue for these cars. Sure cooler is better, but I have run my car for year in hot temps with and with out a temp gauge and external cooler. 240-260F at the bottom of the pan is common place for 95F+ ambient temps. I bet I ran even hotter with no cooler or temp gauge. The motor has lasted along time like that.

I did have two rod bearing failures, but those were due to specific problems. First was a broken oil pickup tube due to mis timed balance shafts. I blew up the entire bottom end on that motor. The second was when I used too much sealant on the girddle and after 3-4 days I spun a bearing. As I tore it down I saw way too much sealant had squeezed out and I am sure clogged up the works.

Other than that I have never had and issue. I do use high quality thick oil and change it often. So far I have 1 day on my last oil change and will run Miller and then change the oil again. 4 days is plenty on oil in warm conditions. When it is cooler I tend to get 6 days from the oil. Remember this is the motor I have 80 races on and it had 140k miles before I rebuilt it to race. It still has the original rings in it as well, but it may finally be getting a little tired.

So while keeping the oil cool is always good I would not panic. Fresh rod bearings and proper oil fill level with a quality thick oil are MUCH more imporant.

We had guy spin rod bearing in one session this past season. He bought a car and used motor and was told many many times to change rod bearings as the were believed to be original.

Well first session out the track he made it about 10 minutes before dreaded rod knock. Turns oil the oil level was at the "low" mark on the dip stick. He never changed the bearings and was running 10w30 oil. Not much to say really.

Oh... if you look around you can probalby get a used 951 system (cooler, lines and oil fiter housing) for \$200. I got mine for \$120 by getting from a few differnt sources on Rennlist over few months time.

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Re:Cooling system solutions

Posted by cullenwinter - 21 May 2008 11:23

One thing that hasn't been mentioned here is fuel. I know it makes a difference in my WRX. Running higher octane (race fuel) reduces engine temps slightly. Is there any benefit to running higher octane in the 944 engine ? Is there any performance gain, and would the increased efficiency help temps any ? What are your experiences with that ?

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Re:Cooling system solutions

Posted by joepaluch - 21 May 2008 22:57

Most of us run 91 pump gas or 91 pump gas with a little race fuel mixed in. I a have always run straight pump gas. Remember stock all cars except for the 88 could run on 87 octane. So 91 is pumping it up a little. If you run close to the 10.5:1 compression ratio limit mixing race gas is a good idea. No impact on water temps, but helps prevent any chance of detonation. No impact on hp output either.

Remember the WRX is a turbo car and thus more prone to detontation at higher boost levels. In those cars using race gas allows safer running of more boost.

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Re:Cooling system solutions

Posted by bbell - 22 May 2008 04:53

This has been a great thread. With some very practical information.

Weston suggested Water Wetter, which is explicitly allowed in the rules. Would Evans NPG be allowed as a coolant in 944-spec? If not, is it something that could be considered? It was specifically designed for racing, the motorcycle guys use it and we know how they feel about spills on the track. The non-aqueous propylene glycol they use is non-toxic and environmentally safe.

Bruce

Re:Cooling system solutions

Posted by joepaluch - 22 May 2008 04:57

Coolant rules are NASA CCR rules not 944 spec rules. Read them carefully as I believe only on form of coolant is not allowed. Of course that is the most common.

If I forgot to mention it I use distilled water an 1 full bottle of water wetter. Water is perfect as a coolant medium and the water wetter is in the for its lube properties not cooling aspects.

Re:Cooling system solutions

Posted by bbell - 22 May 2008 12:34

Thank you Joe;

After further research it appears that while the Evan's coolant has a lot of merit: environmentally friendly, no need for a pressurised system, high boiling point and easy to clean spills. It is; however, still slick when dumped on the track. Recommendations seem to point to your use of Distilled water and redline Water Wetter since the use of Evan's requires the complete purge of water from the system. I like simple, so I'll keep it that way and go your route.

Bruce

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