Keeping Your Stag Cool

This section was written by William Mayo and Walter Holliday, originally appearing in Issue 38 of The Vintage Triumph magazine (currently out of print)

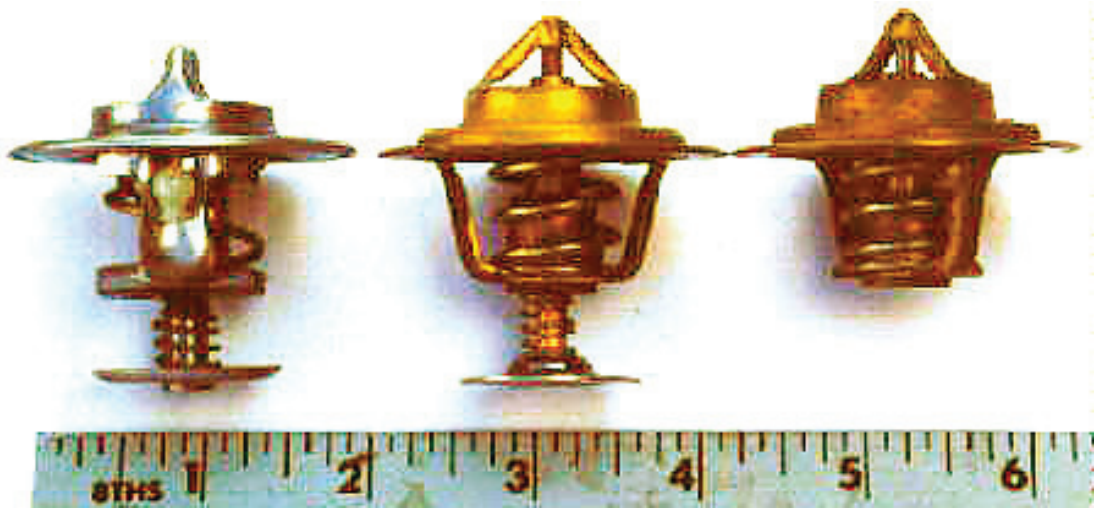
Section in brackets [] added by Tim Buja, TKBuja@insightbb.com

The Stag needs all the help it can get in order to prevent boiling over. Most Stags have the familiar hexagon-shaped brass plug on top of the radiator; early models had the American style pressure relief cap. During periods of peak pressure, coolant is allowed to run into the plastic collection bottle. Because most of these bottles were fitted with pressure caps rated at only 13 lbs. per square inch, we strongly recommend the use of 20 lb. caps which became standard on later model Stags. If your dealer can provide one, it is Unipart # GRC124.

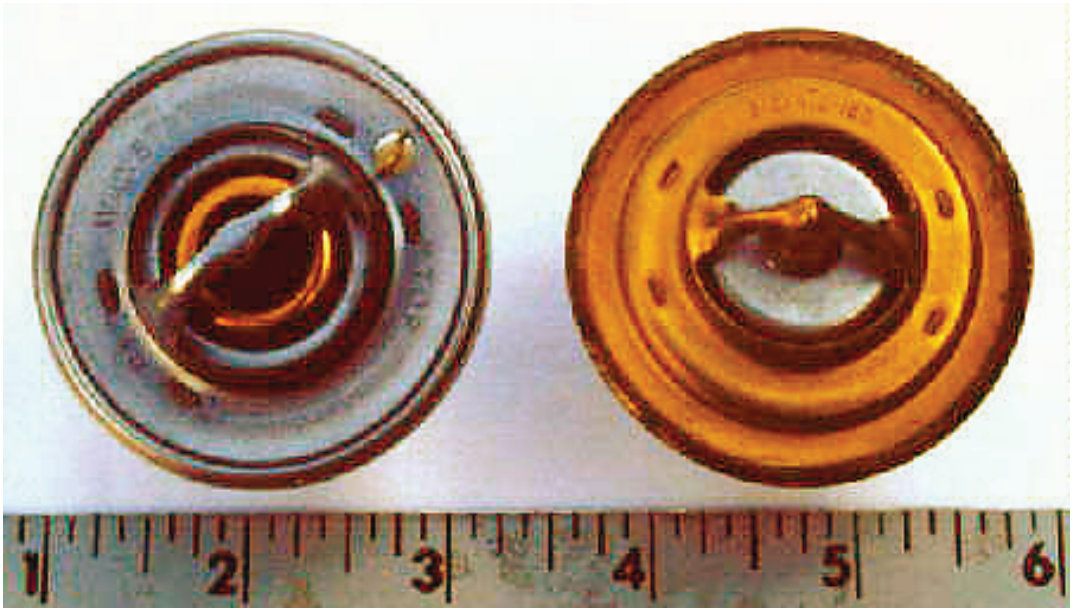
Equally important is the use of a good thermostat. Never attempt to operate the car without one. The principal behing the "pump-assisted, thermo-siphoned" cooling system is that coolant remains in the radiator long enough to be cooled before returning to the engine. The thermostat regulates this flow. In addition, it provides a very necessary build up of pressure because the water pump works best when it assists the flow of coolant already in motion.

[Be sure that you have the correct type of thermostat. To improve drivability and shorten the engine warm-up time, the Stag has a bypass port behind the thermostat which connects the water pump suction line to the intake manifold coolant chamber. Since it collects all of the coolant flow from the engine through both of the cylinder heads, the intake manifold coolant chamber is the hottest part of the cooling system. The heated manifold prevents fuel from condensing on its inner walls and causing drivability problems like lean stumble. The bypass port allows the manifold to heat up faster by allowing coolant to flow into the water pump via the intake manifold coolant chamber as the engine warms up. In addition to the manifold chamber passageway, coolant can also flow from the left cylinder head through the heater control valve and heater core to the water pump. If the heater valve is closed, there won't be any flow through this path, leaving the bypass port as the only path for coolant flow into the water pump when the engine is cold.

As the engine comes up to normal operating temperature, the thermostat should close off the bypass port as it opens the main discharge line to the upper radiator hose (hot side of the radiator). Most thermostats do not have the blanking disk that closes this bypass port. If you use one without the blanking disk, the water pump will take suction from both the hot and cold sides of the radiator. In addition to raising the temperature of the coolant pumped back into the engine, this will reduce the volume of coolant flowing through the radiator.



This picture shows the Unipart GTS 101 (left), Robertshaw 412-180 (center), and for comparison, a "normal" thermostat as used in Triumph six cylinder OHV engines, Spitfire four cylinder engines, and the Rover V8 (right). Both of the thermostats on the left, along with the Stant 35398 (BT 339 180) thermostat (not shown) have the proper blanking disk to close off the bypass port at normal operating temperature. One disadvantage of using the aftermarket (Robertshaw & Stant) thermostats is that these units are not equipped with the small bleed hole and "jiggle pin" that is used in the Unipart thermostat. You can see the plastic part of the jiggle pin just below the flat mounting face of the Unipart thermostat in the top picture.



This picture is a top view of the Unipart GTS 101 (left) and Robertshaw 412-180 (right), with the vent hole and metal part of the jiggle pin plainly visible in the upper right area of the mounting face. The Stag Repair Operations Manual shows the jiggle pin in the thermostat in the illustration in section 26.45.09, but it does not mention anything about it in the thermostat installation procedure. The Triumph TR8 ROM explicitly states that the thermostat should be installed "with the jiggle pin uppermost at 12 o'clock". It appears that the bleed hole & jiggle pin is there to assist in venting air from the cooling system as you fill it, and also for reducing the peak cooling system pressures that may develop in the engine before the thermostat opens. You can modify the Robertshaw and Stant thermostats by drilling a 1/8″ hole in the stationary part of the thermostat to aid in filling & venting your cooling system. As mentioned in the TR8 manual, the thermostat should be installed with the jiggle pin (or vent hole) at the "12 o'clock" position.]

The mating of aluminum and iron castings in an engine poses the special problem of corrosion, and as local water sources often contain a high concentration of minerals, coolant composition should not be overlooked. We recommend a mixture of Prestone II antifreeze and distilled water at all times. The correct ratio is 50/50. In that strength, your car is drivable from a cold start down to -33F, and, after minimal warm up, as cold as -53F. Whenever adding coolant, be sure to use the same mixture.

The Stag cooling system holds 22-1/2 US pints. If you can't fit that volume into a dry engine [and heater core], then there is probably a trapped air pocket somewhere. Coolant should be added with the engine running and warm. Make sure the heater control is in [the full hot] position. It's been suggested that having the front end of the car raised when filling will eliminate air pockets. As a final step, hold the overflow bottle higher than the radiator when filling.

Back flush the cooling system once a year after cleansing with a suitable cleaning agent. If you have any doubt about the condition of your radiator, it is best to have it "rodded" and cleaned in a tank by a competent radiator shop. Make sure that the radiator is not painted by the shop afterward, as most types of paint can clog the thin metal fins. If you must have the cosmetic touch, we suggest a light coating of the type of paint used on barbecue grills.

It really is important to keep the radiator full at all times. Replacement heads are costly items. The high-mounted water pump makes the balance of water between the heads delicate at best. As many Stag owners know all too well, the heads must be properly cool[ed] to prevent warpage... after skimming off 10 to 15 thousandths, about all you can do is buy expensive, extra-thick gaskets.

Crankcase oil functions as a coolant, too, so keep it clean and up to capacity. Proper torque settings of head bolts are exceptionally important. We are looking into the rumored advantage of increasing the manufacturer's recommended setting (55 [ft-]lb.) by additional 5 [ft-] lb.

The intake manifold, which allows coolant to flow from head to head, while at the same time keeping the carburettors warm, uses gaskets on either side that have very narrow bands of material surrounding the inlets. These are sometimes the source of leaks. Universal type radiator hoses, of the "accordion" type, are not recommended as they offer little flexibility and can cause cracks where they attach to the radiator fittings. Use properly suited, [reinforced,] molded radiator hoses. Exhaust headers, available for the Stag, are thought to act as heat sinks, thereby eliminating a certain amount of heat.

In summing up, it is fair to say that practically anything can be the cause of overheating. On that list you might include: ignition timing, exhaust valve clearance, vacuum hoses to distributor or air cleaner, air leaking in past the "O" ring on the base of the carburettors, a cracked block, and sticking brakes. One final suggestion: If you live in an excessively hot area and wish to have every measure of protection available, you might want to consider installing one of the imported, heavy duty radiators. These units are 4-row, staggered core affairs, and reputed to be of very high quality.