

Stag Cooling System Mods

By James Ostergaard

(provided by John F Benson, Sales & Marketing Manager, Davies, Craig)

Modifications performed include:

- Overflow bottle replaced by expansion bottle.
- Davies, Craig EWP115 Electric Water Pump fitted.
- EWP/Fan Digital Controller fitted.
- Removed original fan & fitted a Davies, Craig 16" Thematic electric fan.
- Air bleed on rear of right-hand head.
- Air gaps around radiator blocked off.
- Air flow blocked inside the front guards.

Basics first

- Flush radiator and remove residual casting sand from the block.



Overflow bottle replaced by expansion bottle

- Discard old overflow bottle and cut off the bracket.
- Install new expansion bottle at the highest point under the bonnet.
- New expansion bottle has a level sensor.

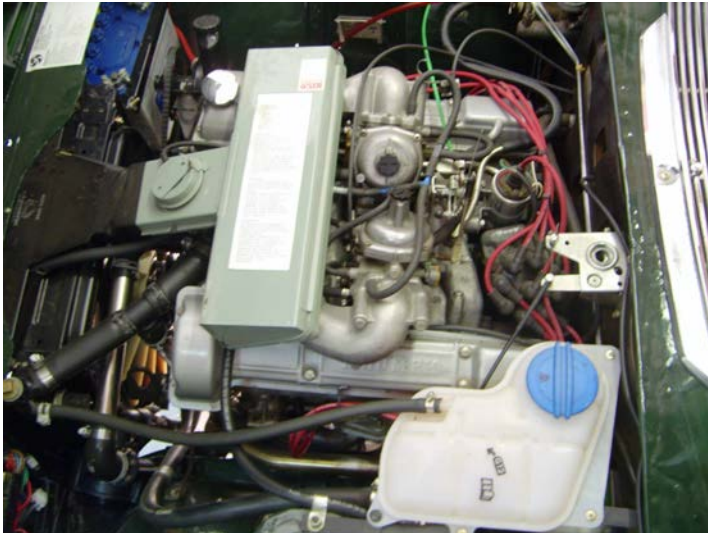
Remove the old overflow bottle



New expansion bottle



Expansion bottle mounted high



Easy to see coolant level



1.5 Bar Pressure cap (21.75 psi)



Electric water pump & digital controller

- The Electric Water Pump takes the place of the original Stag water pump, and does a much better job.
- EWP/Fan Digital Controller runs the EWP in pulse mode until the engine reaches operating temp.
- EWP/Fan Digital Controller runs EWP after engine shut down to prevent heat soak.
- EWP/Fan Digital Controller operates the Thematic electric fan.

EWP115 Electric Water Pump & Digital Controller (DIY kit)

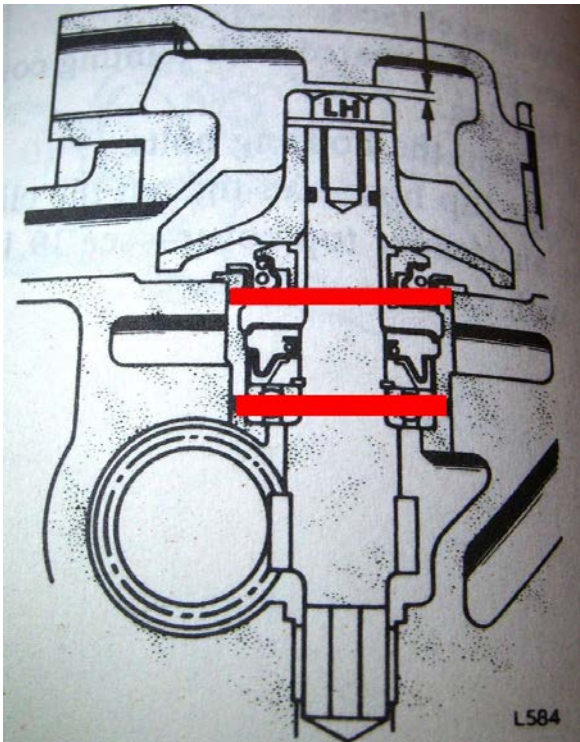


Remove Stag pump and keep housing



Plug water pump holes

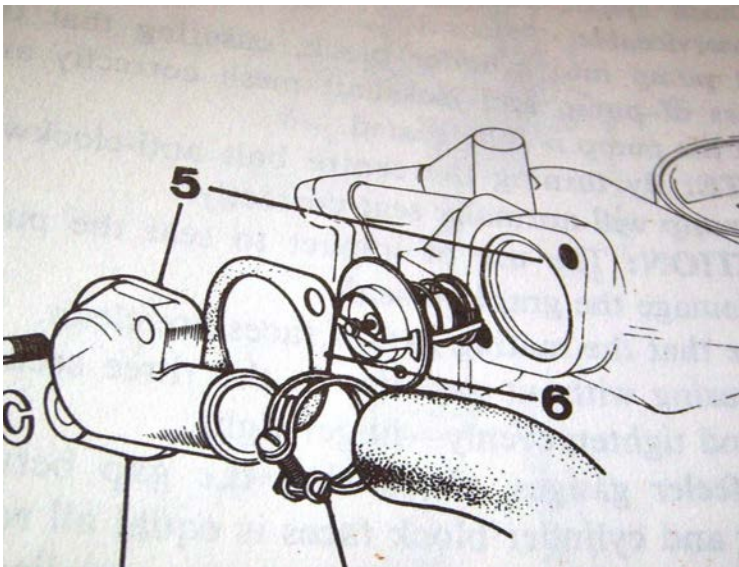
- Use welch plugs: 2 plugs required – 1 x 43mm approx. and 1 x 45mm approx.



Remove original thermostat

- The EWP/Fan Digital Controller becomes the new 'thermostat'.

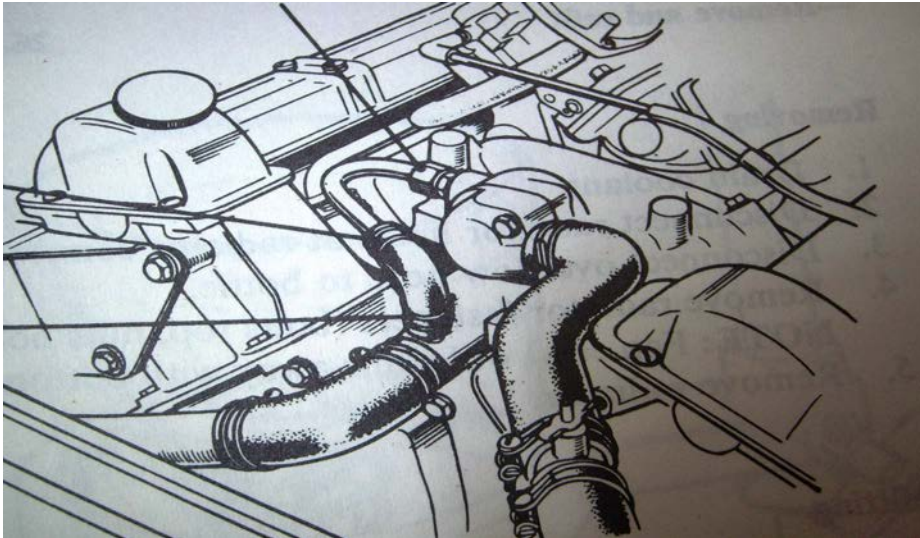
Remove original thermostat



Block off original bypass

- The Digital Controller unit takes over the job of the bypass.
- If the bypass is not blocked, hot coolant will circulate constantly and may cause overheating.

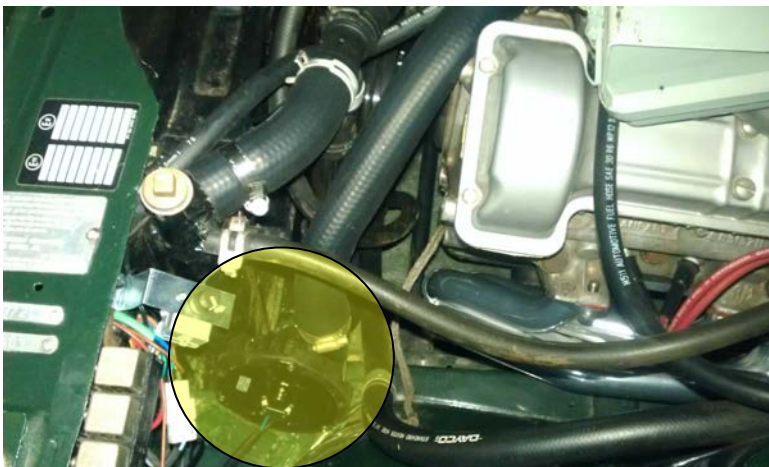
Block off original bypass



EWP location in a Stag

- The EWP115 needs to be mounted as low as possible in the system.
- The EWP was fitted into the bottom radiator hose and rests where the original overflow bottle was removed.

EWP location in a Stag



Holden V6 hoses may be useful



Heater return on suction side of pump

- A "T" piece was fabricated from stainless to make the heater work properly.



Controller mounted in glove box

- Controller mounted in the glove box to preserve the original look of the interior.
- No cutting of the glove box was required.
- Wiring to Controller passes through an existing hole.
- Easy to get to for adjustment & observation.



EWP warning LED

- The Electric Water Pump Controller warning light was installed into the middle of the warning light cluster, preserving the original look of the dash.

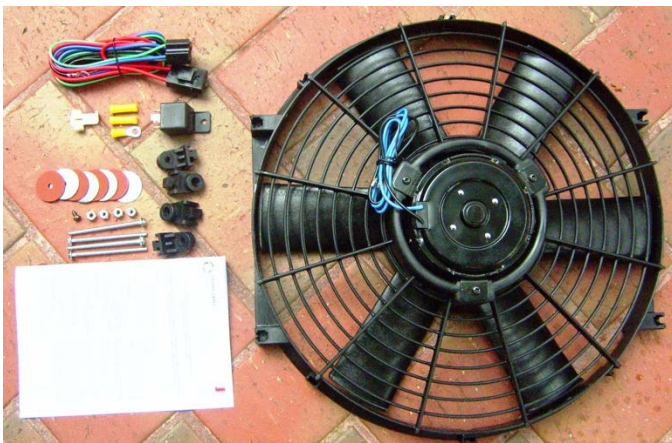


Original fan & viscous coupling

- Original fan, cowling and coupling is removed and replaced with a Davies, Craig Thermatic Fan 16" on the front of the radiator to increase air flow in traffic.
- This mod will increase horsepower and economy also.



Davies, Craig Electric Fan 16 inch



Fan with brackets

- Fan brackets were fabricated to easily remove & refit the fan assembly in the vehicle.
- Brackets were also used because this size electric fan has the kick of a mule when it comes on.



Air bleed on the back of RH head

- Tap a thread for a hose union into the plate at the back of the right hand head, and run a hose to a "T" in the heater hose or to the top radiator hose.



Block up air gaps around radiator

- Void area in the front wings were blocked with foam rubber, trimmed to the correct shape.
- Air gaps around the radiator were blocked up with 60mm x 3mm strips of rubber, glued to the radiator tanks.
- These mods force air through the radiator rather than around it.



Use a high quality coolant



Boiling point of coolant

Freeze and Boil Protection Chart (°F and °C)		
Percentage of cooling system capacity	Protects from:	
	Freezing down to:	Boiling up to:
33.3%	0°F (-17.8°C)	220°F (104.4°C)
40%	-12°F (-24.4°C)	222°F (105.6°C)
50%	-34°F (-36.7°C)	226°F (107.8°C)
60%	-62°F (-52.2°C)	231°F (110.6°C)

Note:
Boiling points at sea level with no system pressure. Boiling points increase by 3° F (1.7°C) for each pound of pressure (PSI) (0.07 bar) maintained by the cooling system pressure cap. A 21¾ psi (1.5 bar) pressure cap raises boiling point by approx. 65° F (37° C)