

AIRWORTHINESS ALERT 2022-3

Stemme S10-VT Engine Coolant Blockage

OVERVIEW

During annual inspection of a Stemme S10-VT, the number 1 and 2 cylinder leak down compressions were found to be low. On cylinder head removal, a brown material was found blocking the larger cooling port in the number 2 cylinder head. The two smaller ports were open enabling a limited coolant flow. The affected cylinder showed no signs of overheating.

INVESTIGATION



Figure 1: Blockage of cylinder head coolant port.

Figure 1 above is looking down into the main cylinder head coolant port. The brown material is the blockage as found. The pieces were too large to pass through the hole. Smaller pieces packed in around the larger piece compounded the problem. The blockage had to be broken into smaller pieces to back flush clean.

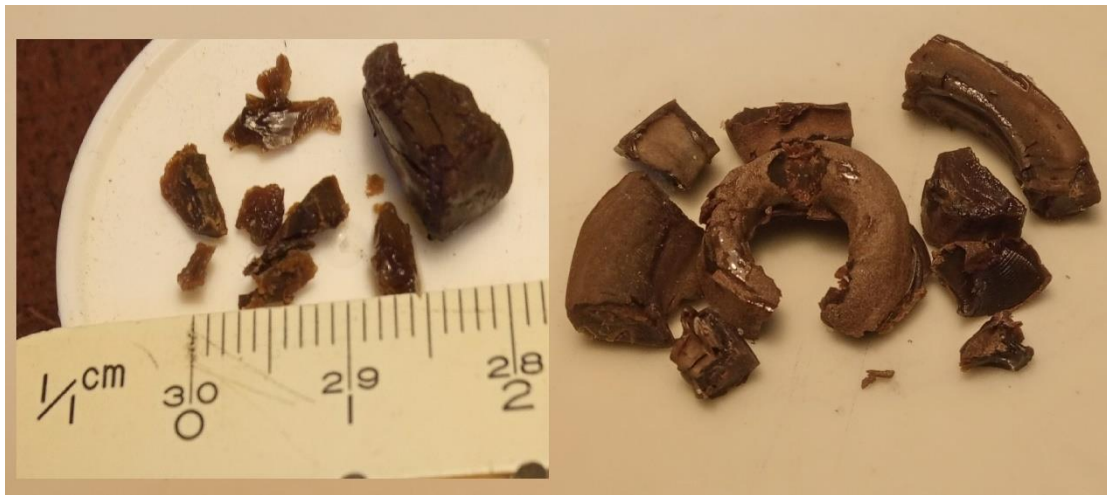


Figure 2: Blockage material.

A sample of the material was sent for chemical analysis. The analysis report stated the material was a glue or form of sealant. The source of the thick glue material was traced to the systems heat exchanger (radiator). The glue identified is used to internally bond three metal fittings in the heat exchanger unit.

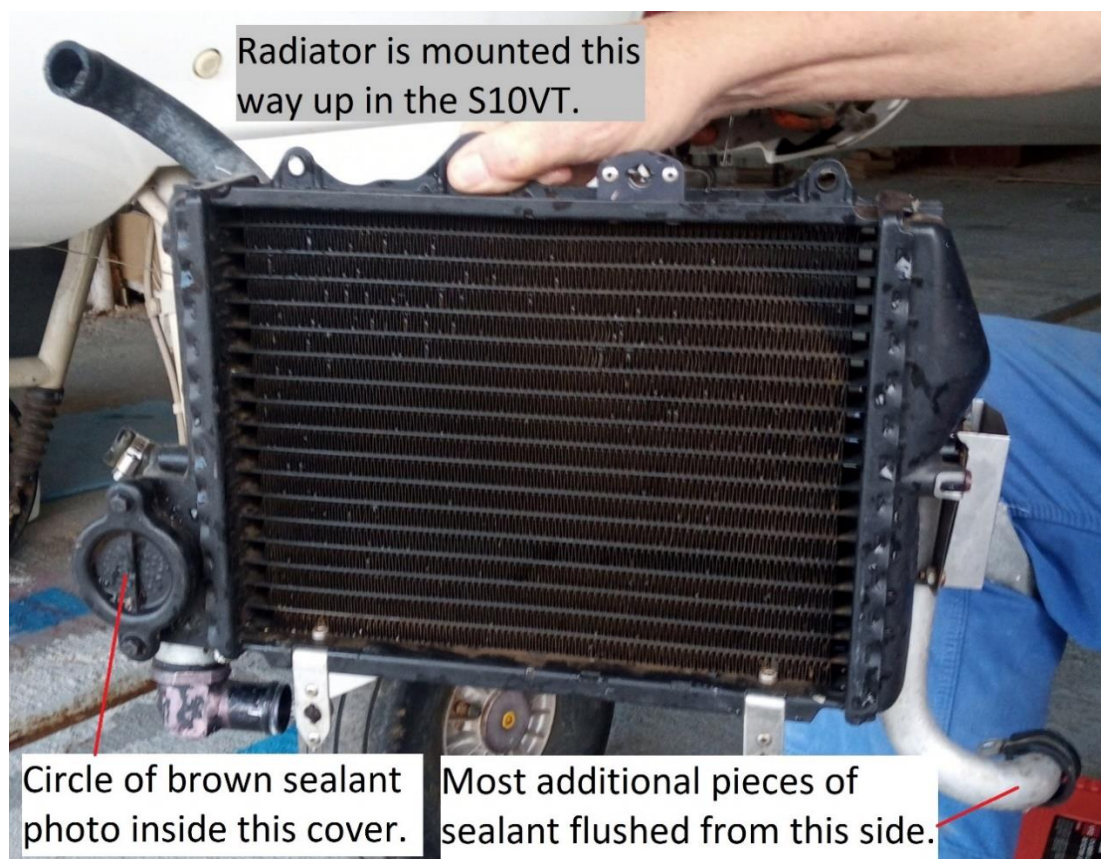


Figure 3: Stemme Heat Exchanger.



Figure 4: Excess sealant / adhesive squeezed out into inside of heat exchanger.

The excess sealant in the heat exchanger port can easily be pried off. It is recommended that a borescope is used to gain a better view inside.

RECOMMENDATION / ACTION

The GFA recommends Stemme S10-VT owners to remove the heat exchanger and back flush the system looking for any signs of solid glue loose in the system at the next periodic maintenance. It is possible to flush all four cylinder heads in-situ satisfactorily without head removal by removing the cylinder bottom coolant hose and applying water under pressure back flushing each cylinder. The inspector should then be satisfied any loose material is flushed free.

The heat exchanger should also be back flushed using a similar method. Remove the heat exchanger from the airframe and apply water pressure at the heat exchanger outlet, flushing to the top of the reservoir. Ensure the heat exchanger is shaken and rotated to ensure any loose pieces are flushed.

After reassembling the coolant system, ensure the coolant system is bled and correct coolant is used.

REPORTING

Notify the GFA if you have information relating to any similar or related occurrence.

Dennis Stacey
GFA CTO
08 Aug 2022