

TECH TIP: SVL- Series; SVL95-2S/SVL97-2 Overheats with Forestry Mulcher

Purpose:

This Tech Tip provides the recommended troubleshooting steps for diagnosing a forestry mulcher equipped SVL95-2S that is overheating the coolant or hydraulic oil during operation. **This Tech Tip should only be followed if the machine is being operated correctly by the operator, already equipped with a hydraulic oil cooler, and is not presenting any DTC codes.** This Tech Tip can also be used for overheating concerns in other high flow applications.

Theory:

The SVL95-2S is commonly used to power a forestry mulcher due to its high hydraulic flow capabilities. Forestry mulchers generally keep the machine running at very high duty cycles under a constant load, so ensuring the machine is running in prime condition is vital. Small changes in the system can have a large impact on how cool the unit runs and operates. Since the coolant radiator and hydraulic oil cooler are connected, both fluids may possibly impact each other.

Troubleshooting/Procedure:

1. Inspect the cooling package for damage or debris on both sides.

The rear radiator of the SVL95-2S is divided into two sections: a hydraulic cooler and an engine coolant radiator. Both sides need to be clean and clear of debris and the fins need to be straight to allow proper air flow. Additionally, the fins of the rear door must not be bent or blocked by large, poorly mounted 3rd party radiators/door guards.



Bent Fins and Debris Damage



Is the cooling package free of debris and damage?

Yes->Go to step 2

No-> Clean cooling package or repair damage.

Confidential and Proprietary

2. Inspect engine bay for debris build up.

The air for cooling is pulled from several spots around the loader arms and engine bay. These inlets must be clean and clear to provide for adequate cooling performance. While inspecting the engine bay, ensure the fan is not damaged and the belt is properly tensioned.



Rock and dirt build up in engine bay



Belt is correct tension and water pump spins freely

Is the engine bay free of debris, fan belt tight, and the fan in good condition?

Yes->Go to step 3

No-> Clean the engine bay or correct improper tension

3. Checking the case drain pressure

The front AUX couplers are all connected to the small case drain line within the casting to allow for ease of installation and removal of the AUX hoses. There is an O-ring that separates the high-pressure main lines from the low pressure case drain line, if this O-ring is damaged it can allow the hydraulic oil to go through the case drain line rather than to the attachment. This leakage can create an excessive amount of heat, as the case drain line acts like an orifice. When this occurs, the unit can have random drive issues and weak AUX flow.

To test for leakage into the case drain line, install a gauge into the case drain line in the front connector. Next, dead head the AUX in either direction with the toggle knob running the hydraulic flow against the couplers to see if the case drain pressure rises. You can perform this test with or without the mulcher attached, but is recommended to disconnect it.



Install a lower pressure gauge into this port to test drain pressure. It can be installed behind the coupler as well in the screw-on fitting but must be installed in-line. The pressure should be very close to 0 PSI.

Does the pressure on the drain line rise when the AUX is in use?

Yes-> Replace front couplers

No-> Go to step 4

4. Check the Coolant for Exhaust gas intrusion

If the machine has been overheated in the past, the head gasket may be damaged or the EGR cooler could be cracked. To test this, use a coolant exhaust gas tester as shown below. Ensure the fluid color does not change.



Noticeable color change in the test fluid from dark blue to green. Indicating an exhaust leak within the cooling system.

Does the fluid color change?

Yes-> Pressure test the EGR cooler to verify no leaks. If no leaks are found, the head gasket is most likely blown. Further testing of engine system components will be necessary to determine root cause of head gasket failure.

No-> Go to step 5

5. Send injectors out for testing, run a compression test, and test fuel

If the injectors are not dosing as they should, they could potentially be running the machine too rich or lean, causing excessive heat. At this point, the injectors need to be sent out for testing and a compression test needs to be performed. Additionally, a fuel sample should be sent off for testing to assist in determining root cause.

Did the injectors fail?

Yes-> If compression is still within specification, replace injectors and retest.

No-> Contact TSC with the results taken from the previous steps.