

Coolant Call to Action Checklist

A troubleshooting guide for diesel engines based on coolant test results.

Ordered from easiest checks to deeper diagnostic work

How to use this checklist: Start with the fastest and least invasive actions. Move to the next level only if the lab results, visual condition, or machine symptoms justify escalation. Pair the report with equipment history, recent maintenance activity, and a representative sample.

Escalation Sequence

Step	Action	When the coolant report points here	What to do	Why it matters
1	Validate sample quality and machine information	Unexpected chemistry, mixed results, suspicious contamination, missing make/model/coolant type	Confirm sample was taken correctly, verify coolant type, service hours, top-up history, and any recent repairs.	Bad sample context leads to bad decisions.
2	Check coolant level and visible condition	Low glycol, contamination flags, solids, oil presence, abnormal color or odor	Inspect surge tank and radiator level, note discoloration, floating oil, sludge, debris, or foam.	Confirms whether lab findings match what the system is showing.
3	Review top-up practices	Low reserve alkalinity, low inhibitors, high chlorides/sulfates, hardness indicators	Verify what coolant and water were added. Confirm premix vs concentrate and whether untreated water was used.	Incorrect top-up practice is a common root cause of chemistry drift.
4	Inspect for external leakage	Low level, glycol loss, concentration changes	Check hoses, clamps, radiator seams, pump weep holes, heater lines, and fittings for seepage or crusting.	Small leaks change coolant concentration and often start the failure chain.
5	Inspect pressure cap and overflow function	Boil-over signs, concentration drift, recurring low coolant	Test or replace weak cap, inspect overflow bottle and recovery line operation.	A weak cap lowers boiling margin and accelerates coolant loss.
6	Review temperature history and operator complaints	Any chemistry issue combined with overheating comments	Check alarms, derates, operator notes, and seasonal workload changes.	Lab data is more powerful when matched to operating symptoms.
7	Pressure test the cooling system	Unexplained coolant loss, contamination trend, overheating	Pressure test the system and hold long enough to identify slow leaks.	Finds leaks not visible during a quick walkaround.
8	Inspect belts, fan drive, radiator, charge air cooler, and airflow path	Good chemistry but poor heat rejection or rising temperatures	Check fan performance, belt condition, debris loading, fin plugging, and airflow restriction.	Not every overheating issue is chemistry alone.
9	Evaluate water pump and thermostat performance	Overheating, hot spots, suspected low flow, cavitation concerns	Inspect pump condition, listen for bearing noise, look for seal leakage, and confirm thermostat operation.	Poor circulation can amplify chemistry-related damage.
10	Flush and replace coolant when chemistry is no longer recoverable	Severe pH drift, depleted inhibitors, hard water contamination, heavy solids, degraded coolant	Drain, flush to OEM guidance, correct root cause, and refill with the correct coolant and water quality.	Once protection is gone, partial correction may not be enough.
11	Investigate internal leakage or cross-contamination	Oil in coolant, fuel contamination indicators, sodium/potassium crossover, recurring chemistry upset	Check oil cooler, EGR cooler, head gasket, liner seals, and related pathways.	Mixed fluids often point to a mechanical defect, not just bad coolant.
12	Escalate to targeted diagnostic work	Repeat abnormal trends, persistent overheating, liner pitting concern, repeated coolant loss	Use borescope inspection, teardown planning, or OEM-guided diagnostics where required.	This is where you confirm deeper component damage before it becomes catastrophic.

Best Practice Reminder:

- Do not treat coolant results in isolation. Pair the report with machine history, maintenance records, and operating symptoms.
- After corrective action, resample to verify that the trend moved in the right direction rather than assuming the issue is solved.

Contact Fluid Life Toll Free: **1-877-962-2400** or go to www.fluidlife.com for more information.