SCR Injector Dosing Measurement Test

2015 - 2019 Ford Everest

SCR / AdBlue Injector Dosing Measurement Test is one of the first tests you should perform when looking into problems with an SCR / AdBlue system, as it is relatively quick and simple. The following test specifications are based on the Ford Everest. However, the broad idea is applicable for other vehicles.

Over time it is not uncommon for crystals of AdBlue to build up on the SCR injector nozzle, and in the intake hole of the SCR catalyst unit in the exhaust. These crystals will restrict the flow and spray pattern of the AdBlue, and could trigger all sorts of DTCs related to pressure, flow or system efficiency. See Diagram #2

When new and in good condition, the injector will be free of crystals and will pulse at a regular interval, and commonly spray in three jets. If there is excessive crystal build-up on the injector, you can dissolve the crystals with clean, warm water. See Diagram #3

Before starting the test, ensure the following:

- The AdBlue tank is full, and the AdBlue is not contaminated. Drain and refill as required.
- There are no external leaks in the SCR system. Repair before the test.

1. Ignition off.
2. With the wiring harness connector and AdBlue pressure line still attached. Remove the injector from in front of the SCR catalyst unit in the exhaust.
3. Place the injector into a container with measuring markers for volume (e.g. a graduated 100 ml measuring cup). See Diagram #1
4. Connect a compatible scan tool to the vehicle and carry out “SCR Dosing Measurement Test”. This should be under System Selection / RDCM1 (Reductant Dosing Control Module).
5. During the test, monitor live data for the REDUCT_TNK_P (Pressure) and REDUCT_PMP_DC (Duty Cycle) PIDs.
6. The REDUCT_TNK_P (Pressure) should have increased to over 345 kPa.
7. The REDUCT_PMP_DC (Duty Cycle) should be less than 50% after creating over 345 kPa in the system during the test.
8. Once the test is completed, with normal pressure and flow, there should be 40-50 mL of AdBlue in the container. See Diagram #1

If the above specifications are not met:
- Check the AdBlue pressure line for kinks or any other blockages in the system.
- Check the pickup filter in the tank for blockages.
- If too much flow, the injector may be leaking, or the pressure is high.
- If no issues are found, the injector may be internally restricted, which will require replacement.

NOTE: If the injector or other components have AdBlue crystal build-up you might be able to soak them in clean water and flush it out, then repeat the above tests. If there is no improvement, new parts are required.

Have your shop vacuum cleaner close to catch the crystals and prevent them from falling into the SCR catalyst unit.

NOTE: Don’t use water to clean out the SCR catalyst, see the following article for why. See page 4847

To test this system without a scan tool. Get the vehicle to operating temperature, then remove the SCR injector and start the engine. It should pulse and spray cleanly. If not, further diagnosis is required.

Diagram #1
With the SCR injector still connected, check the spray pattern and flow rate.

Diagram #2
Crystalised SCR Injector

Diagram #3
Clean SCR Injector

Remove the injector from the exhaust to inspect for crystalisation.
The crystals can be dissolved with clean warm water.