

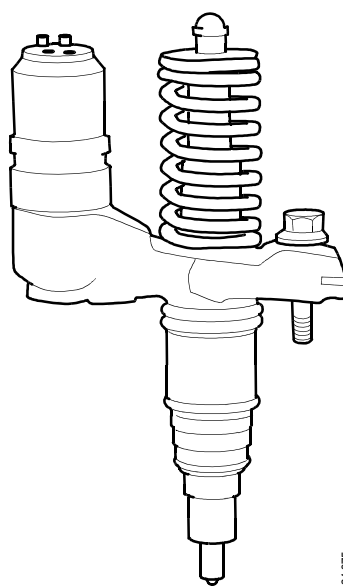
**SCANIA**

**03:04-07**

Issue 1 **en**

## Checking PDE unit injectors

### Troubleshooting



124 975

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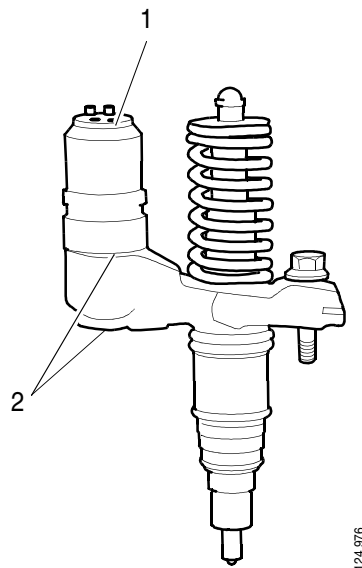
# General

This Workshop Manual describes how to look for fuel leaks on unit injectors.

Fuel leaks in unit injectors can cause fuel to run down into the engine and dilute the engine oil. This in turn can cause serious engine damage.

## Fuel leaks on unit injectors

Where fuel leaks have been detected on unit injectors, the fuel will have leaked from the solenoid valve at 1 and 2 because of damaged O-rings or cracks.



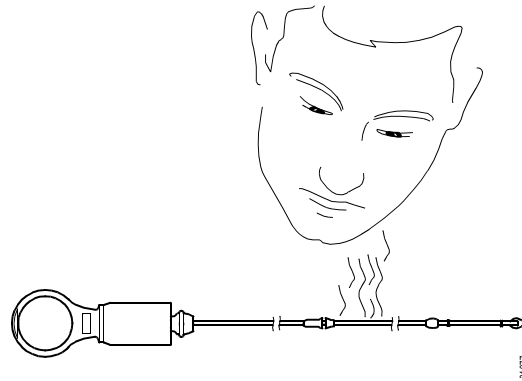
# Troubleshooting

## Checking the engine oil for diesel dilution

### Tools

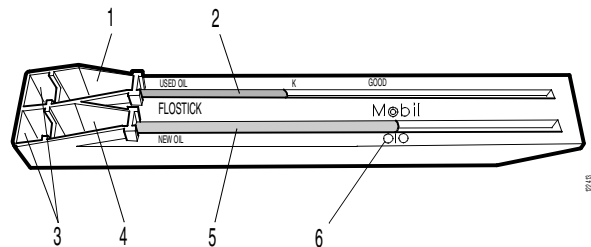
Number	Description
588 493	Viscosity gauge

- 1 Check the oil level and check whether the engine oil smells of diesel. Where the oil level is too high or smells of diesel, proceed to step 2.



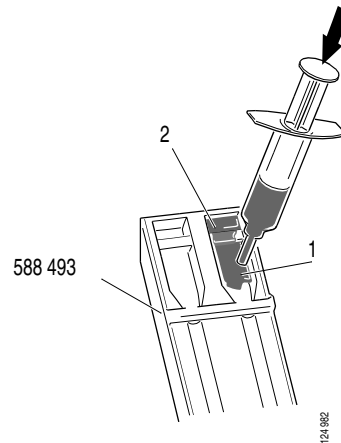
- 2 Check engine oil viscosity with viscosity gauge 588 493.

**IMPORTANT!** When checking the viscosity, new engine oil of the same type as the oil in the engine should be used for reference.



- 1 Chamber for used oil
- 2 Groove for used oil
- 3 Chamber for excess oil
- 4 Chamber for new oil
- 5 Groove for new oil
- 6 The new oil must reach the mark OIO before the viscosity gauge is quickly returned to horizontal position.

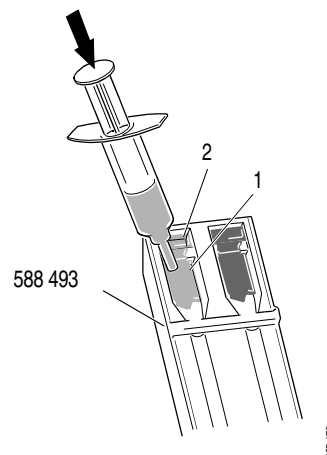
- 3 Drain oil from the engine.
- 4 Fill chamber 1 with used engine oil until it runs over the edge into chamber 2. Refer to the illustration.



- 1 Chamber for used engine oil.
- 2 Chamber for excess oil.

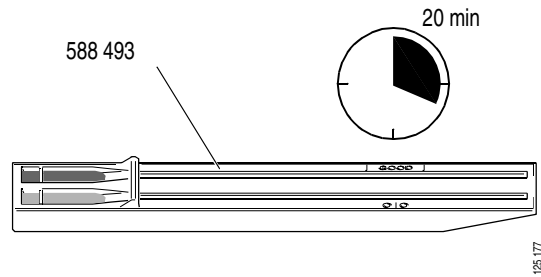
**IMPORTANT!** When checking the viscosity, new engine oil of the same type as the oil in the engine should be used for reference.

- 5 Use a **clean syringe** to fill chamber 1 with new engine oil until it runs over the edge into chamber 2.

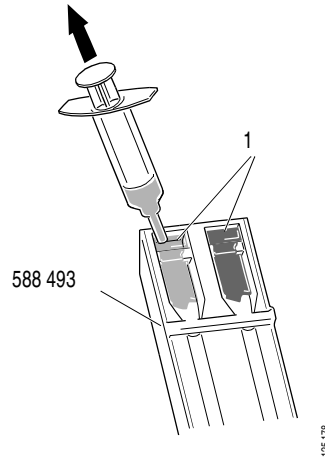


- 1 Chamber for new oil.
- 2 Chamber for excess oil.

- 6 Leave the viscosity gauge in a horizontal position for 20 minutes (for warm engine oil) so that the oil temperature and oil levels can become stabilised.

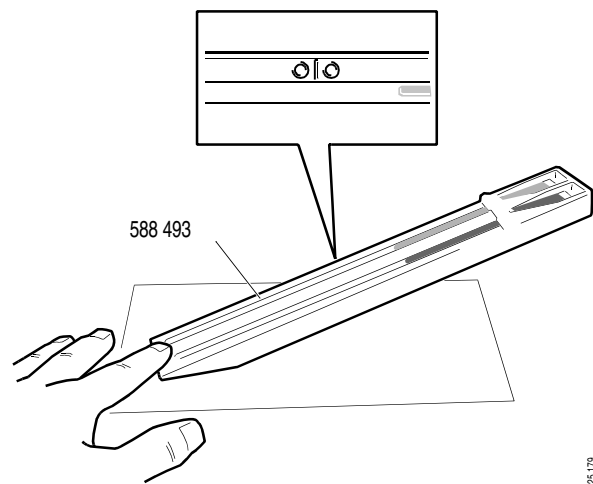


- 7 Drain excess oil from chambers 1.



**1** Chamber for excess oil.

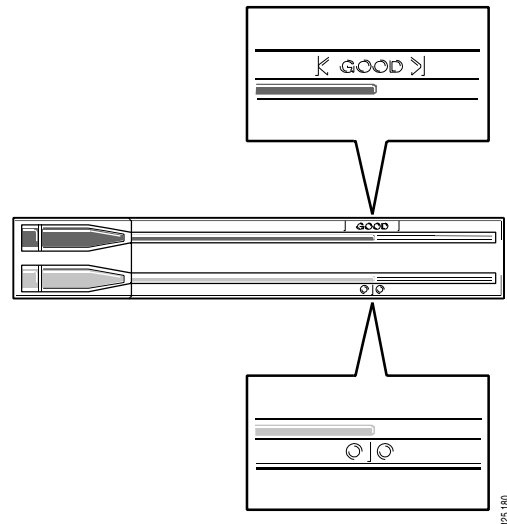
- 8 Tilt the viscosity gauge and hold it in that position until the reference engine oil in the groove reaches the mark beside the groove. Quickly lower the viscosity gauge.



- 9 Check the viscosity by checking how far the used engine oil has run compared with the reference engine oil.

Viscosity OK

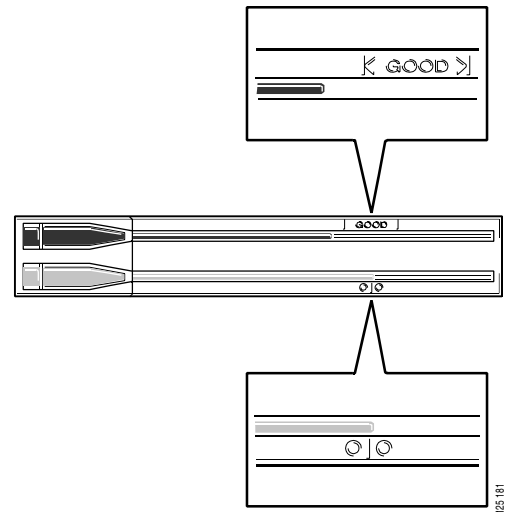
- The check does not show any fuel present in the engine oil.



Viscosity OK

Viscosity too high

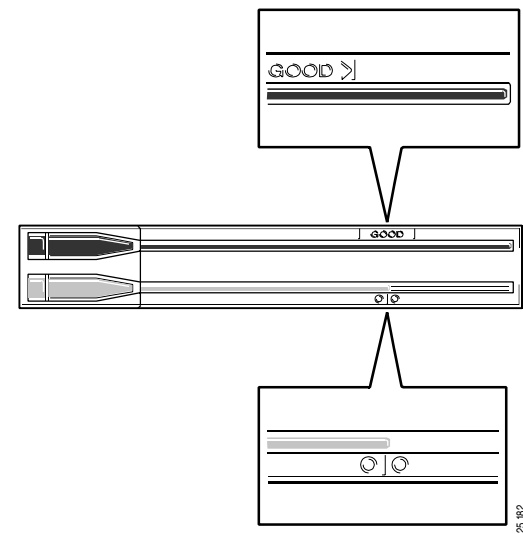
- The check does not show any fuel present in the engine oil, but shows that the oil should be changed.



Viscosity too high.

Viscosity too low

- The check shows that the engine oil is diluted and contains too much fuel. Change the engine oil and proceed according to section Checking unit injectors.
- Viscosity which is too low can also be due to an incorrect change interval or incorrect reference engine oil.



Viscosity too low.

- 10 Clean the viscosity gauge and syringes properly so that there are no engine oil residues or similar for the next measurement.

# Checking unit injectors

## Tools

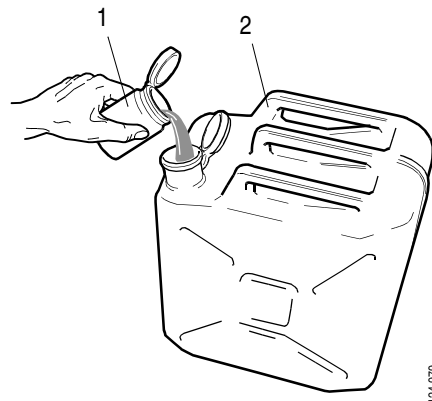
Part number	Description	Quantity
1 499 673	Dye	5 grams

Description	Quantity
Fuel can	approx. 20 litres

**IMPORTANT!** Secure the fuel can so that it will not become loose or fall over while driving. Avoid driving on public roads because of the risk of fuel leakage from the fuel can.

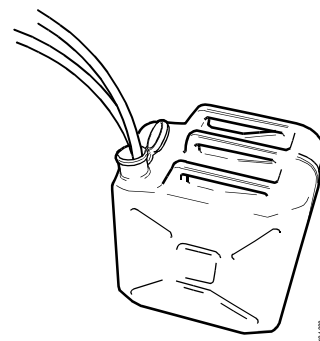
**IMPORTANT!** The dye must not be mixed in the vehicle fuel tank.

- 1 Mix the dye with the fuel in the can.  
5 grams of dye per 20 litres of fuel.

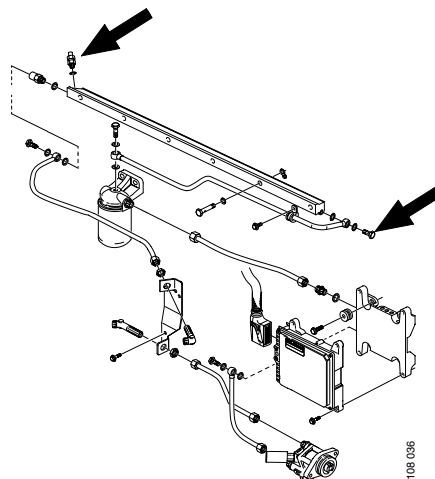


- 1 5 grams of dye.
- 2 20 litre fuel can.

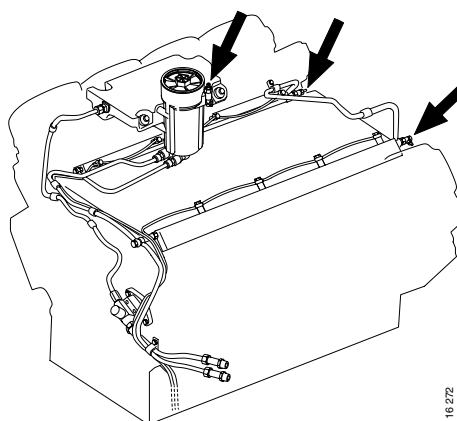
- 2 Run the engine until the engine temperature is 80 degrees.
- 3 Connect the feed pipe and return line to the fuel can.



- 4 Drain the fuel through the fuel manifold with the hand pump or with the engine running until dyed fuel comes out.



*12 litre engine*

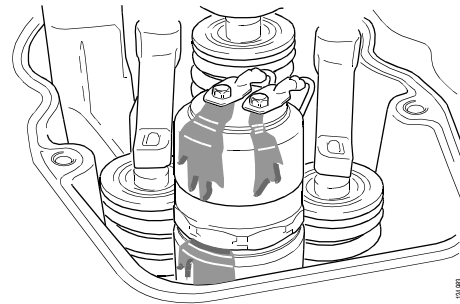


*16 litre engine*

**IMPORTANT!** Secure the fuel can so that it will not become loose or fall over while driving. Avoid driving on public roads because of the risk of fuel leakage from the fuel can.

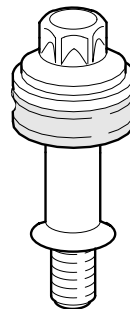
**Note:** It is not sufficient to run the engine at idling speed or to rev up the engine in the workshop. It is necessary to drive a short distance to induce leaks.

- 5 Drive the vehicle a short distance under load in the car park outside the workshop or similar. Accelerate a few times or use the retarder to induce the leaks. Avoid driving on public roads because of the risk of fuel leakage from the fuel can.
- 6 Switch off the engine.
- 7 Remove the upper rocker covers.
- 8 Check the unit injectors for fuel leaks.
- 9 Renew the leaking unit injector(s) as described in Workshop Manual group 3.

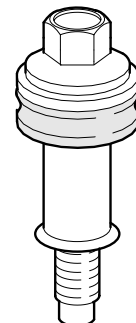


- 10 Refit the upper rocker cover and torque tighten the bolts to 12 Nm or 18 Nm depending on the type of bolt, refer to illustration.

18 ± 3Nm

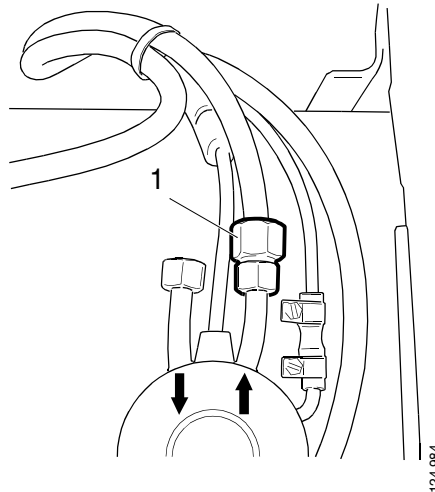


12 ± 3Nm



116 621

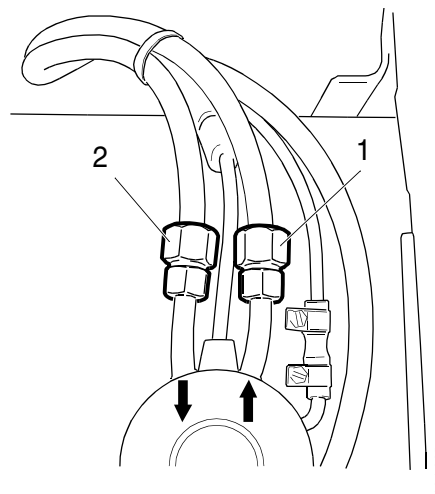
- 11 Refit the feed pipe to the fuel tank. Leave the return line in the can.



124 984

1 Feed pipe

- 12 Run the engine until undyed fuel comes out through the return line.
- 13 Renew the fuel filter. See Workshop Manual, group 3.
- 14 Refit the return line to the fuel tank.



124 985

1 Feed pipe  
2 Return line