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108

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Oil Consumption
850

REFERENCE: NONE

Oil Consumption

This bulletin describes procedures to identify abnormal oil consumption.

GENERAL

It is normal for a certain quantity of oil to be consumed when an engine is operating. The actual quantity varies considerably and depends on a number of factors:

- Engine condition - state of tune, maintenance
- Driving conditions - heavy load, frequent idling
- Oil quality and viscosity
- Cylinder displacement - in general, larger engines use more oil than smaller engines
- Engine power - a more powerful engine usually uses more oil than a less powerful engine
- Number of valves - in general, engines with multiple valves consume more oil than engines with fewer valves
- Oil level - overfilling leads to higher oil consumption

Also refer to pages 2 and 3.

ASSESSMENT OF OIL CONSUMPTION

Oil consumption is normally measured in quarts of oil per 1,000 miles or litres per 1,000 kms. If a car is operated under conditions where there is frequent engine idling, this must be taken into consideration when making the assessment.

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Service Personnel: circulate, read, and initial.

SERVICE MANAGER		SHOP FOREMAN		SERVICE ADVISOR		SERVICE TECHNICIANS					



During the running-in period, approximately 3,000 miles or 5,000 kms for a new or reconditioned engine, higher oil consumption is to be expected. This figure is about 1.6 quarts per 1,000 miles or 1 litre per 1,000 kms.

After the running in period the oil consumption at mixed urban and highway driving should normally not exceed 0.7 quart per 1,000 miles (0.4 litres /1000 kms)

To use the above oil consumption figure as the limit for further evaluation, it is necessary to carry out an oil consumption test whereby the oil is weighed before and after the test to determine an abnormal condition. A minimum of 600 miles or 1,000 kms must be covered during the test.

ABNORMALLY HIGH OIL CONSUMPTION

Always begin by checking and rectifying any oil leaks. Also check that the crankcase ventilation is not clogged.

Ensure that the engine is equipped with the correct oil dipstick. It is essential that the correct dipstick is used and that the dipstick is inserted all the way into the duct during measurement, otherwise the reading will be incorrect.

Park the car on a level surface. When measuring the oil level in a warm engine, it is important to remember that the engine must be switched off for 5 - 10 minutes before the oil level is measured. This is done in order to give the oil sufficient time to flow back down to the sump, thus allowing sufficient time for stabilization of the oil level. Note also that waiting longer than 10 minutes allows the oil to cool, which causes a reduction in its volume.

When topping up the engine, note that it takes a long time for the oil to run all the way down to the sump, which is why the oil level should NOT be measured immediately after topping up.

Never add more oil than the quantity recommended in the applicable car owner's manual. Also see under REASONS FOR HIGH OIL CONSUMPTION.

REASONS FOR HIGH OIL CONSUMPTION

INCORRECT MAINTENANCE

Over-filling

If the oil level is too high, an excessive amount of oil will be thrown up against the cylinder walls. The oil level should be kept at or a little under the MAX marking on the dipstick.

Oil quality

Check if incorrect oil type is used for current operational conditions. If the oil is too thin, the result is higher oil consumption. This is partly because thinner oils contain a higher proportion of volatile substances and partly owing to the difficulty in retaining a consistent oil film between the piston rings and the cylinder wall at high temperatures.

DRIVING CONDITIONS

- Hard driving Driving at high engine speeds and high road speeds results in higher oil temperatures. This makes the oil thinner irrespective of its original viscosity, with the result that oil consumption rises. High engine speeds and forced driving in curves causes more oil to be thrown against the sides of the block (inside) and against the cylinder walls, further contributing to the increase in oil consumption.
- Mountain driving Considerable and repeated engine braking causes the engine oil to heat up and it also causes more oil to be sucked into the cylinders owing to negative pressure. Similar conditions also prevail if a car is driven a lot in low gear and high engine speed on flat terrain.

MECHANICAL CONDITIONS

- Leakage Worn crankshaft and camshaft seals, leaking gaskets, etc. Excessive pressure in the crankcase (clogged crankcase ventilation).
- Pistons and piston rings Worn ring grooves. Fatigued, worn, scratched or broken piston rings. Seized piston rings. Clogged oil scraper rings.
- Cylinder walls Worn, scratched.
- Valves Worn guides, valve stems. Worn, incorrectly fitted or missing valve stem seals.

INSTRUCTIONS FOR MEASURING OIL CONSUMPTION

The test should be carried out during 600 miles or 1,000 kms and measuring should not be made with the oil dipstick but only by weighing the oil in the oil sump.

This means:

1. Run the engine warm until the oil temperature has reached a normal operating temperature (minimum 15 minutes normal driving). **Park the car on a level surface.** Five minutes after the engine has been switched off, the oil level should be checked. If necessary, top up with oil to the maximum mark on the oil dipstick.
 2. Run the engine again for a period of 5 minutes for blend and distribution of added oil.
 3. Drain the oil into a clean container (minimum of 5 qt. capacity) for at least 10 minutes to allow complete drainage of the oil sump.
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4. Weigh the oil. Fill in the weight, mileage and vehicle data on the attached report form.
5. Fill the engine with the weighed oil.
6. After the test drive of at least 600 miles or 1,000 kms, or when the oil level has dropped to the minimum mark of the dipstick, the oil in the oil sump must be weighed again according to items 7 - 9 below.
7. Run the engine warm until the oil temperature has reached a normal operating temperature.
8. Drain the oil for at least 10 minutes to allow complete drainage of the oil sump.
9. Weigh the oil.
10. Complete the report form and calculate the oil consumption.

REPORT FORM FOR MEASURING OIL CONSUMPTION

Model:

VIN:

Engine number:

Date of delivery:

Mileage:

Report issued on:

OIL CONSUMPTION TEST

1. Mileage

Before the test	Miles/kms	_____
After the test	Miles/kms	_____
Mileage during the test	Miles/kms	_____

2. Volume of Oil (Weight)

Before the test	lbs/kgm	_____
After the test	lbs/kgm	_____
Weight of consumed oil	lbs/kgm	_____
Volume of consumed oil (1.83 lbs = 1 qt.) (0.9 kgm = 1 litre)	Qts/litre	_____

3. Measured Oil Consumption

Mileage during the test	Miles/kms	_____
Volume of consumed oil	Miles/litre	_____
Oil consumption	Qts/1,000 miles	_____
	Litre/1,000 kms	_____

Note: If parts have been replaced due to abnormal oil consumption, this form must accompany parts returned to Technical Material Analysis (TMA) Department.