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Model: Avensis 250, Page 1 of 16 Section: Engine
 Celica, Corolla
 Verso, Rav4

Model Codes: ZZT221, ZZT251, ZZE122, ZNR11, ZZT230, ZCA25

Subject: 1ZZ Excessive Oil Consumption – Amended (All amendments highlighted in blue) Please Destroy All Previous Versions Of This Document

Status: Technical Information

THIS TECHNICAL INFORMATION IS APPLICABLE ONLY TO THE FOLLOWING MODELS:

Model Name	Katashiki Code	Production Period	Yes / No
Avensis 221/251	ZZT221/251	January 2001~C/M Introduction	~
Corolla Verso TMC	ZZE122	October 2001~December 2003	~
Corolla Verso TMMT	ZNR11	February 2004~C/M Introduction	~
Celica	ZZT230	August 1999~C/M Introduction	~
RAV4	ZCA25	May 2000~C/M Introduction	~

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This 'Technical Information' contains details of the new policy and procedure for vehicles listed above that are exhibiting excessive oil consumption. It is important that all Service, Parts and Warranty Staff are aware of this policy as it is vital that the correct part is ordered, installed and claimed relative to the model. TME will vigorously apply this policy without exception so please ensure that OPTIFIT Short Engines are ordered when available.

We trust that these procedures are clear but should you have any queries please contact the warranty department on 01737 367400.

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PHENOMENON / SYMPTOM:

The driver may report that the engine appears to have suddenly started using excessive amounts of engine oil.

Please note: The oil consumption will start suddenly and increase at an exponential rate.

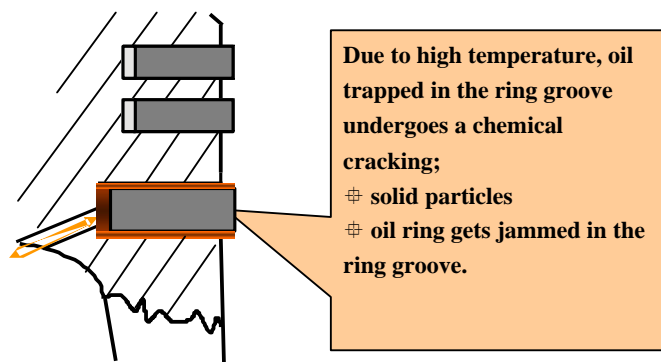
Cause Of Phenomenon:

The root cause is the sticking of the oil control rings due to degradation of the engine oil.

There are a number of contributory factors:

1. Failure to follow the Manufacturers Service Schedule causes oil degradation.
2. Oil entering the combustion chamber being burnt and carried by 'blow by' gas down side of piston as carbon particles.
3. The lower portion of the piston (especially around the oil control ring) runs hotter (160°C) than target (120°C).
4. The oil flow in the oil control ring area is quickly restricted by any carbon particles reducing lubrication, cooling and 'flushing action'. This in turn causes degradation of oil in the ring groove, further accelerating the sticking process.

These factors cause the oil in the oil control ring groove to degrade faster leading to sticking of the oil control rings.



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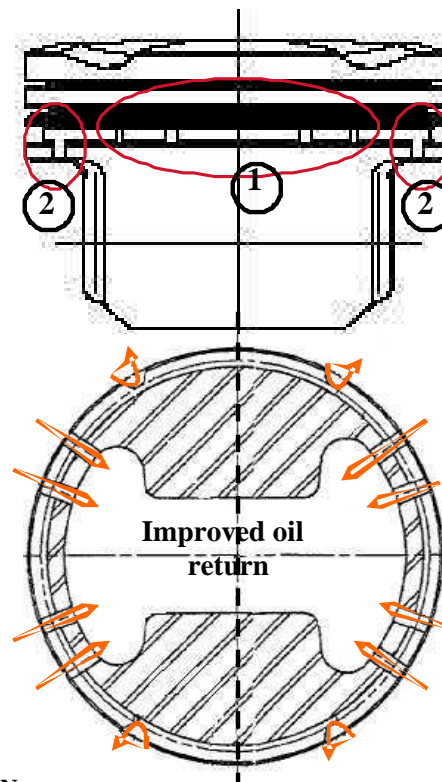
Production Improvement:

1. Increase the number of oil return holes from 4 to 8
2. Add a slit to the ring groove

These changes are designed to improve circulation of oil around the lower portion of the piston.

This will:

- prevent build up of carbon deposits
- improve cooling due to increased flow of oil



Improvement Effective:

Model:	Improvement Effective VIN:	Date:
Avensis 220	N/A -No Longer In Production	N/A
Avensis 250	SB1BR56L90E129522	July 7, 2005
Corolla Verso TMC	N/A -No Longer In Production	N/A
Corolla Verso TMMT	NMTERR16R20R054936	July 12, 2005
Celica	JTDDR38T600189857	July 20, 2005
RAV4	JTEXR20V600026951	July 20, 2005

TGB Request:

Please advise the Technical Department should you experience this phenomenon either after installation of countermeasure parts, or on vehicles after the above listed VIN numbers.

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PARTS INFORMATION:

Should you experience this item, please install the 'OPTIFIT' Short Engine listed below. These units incorporate all the latest specification changes and are 100% OE parts. The only exception to this is the Corolla Verso ZZZE122 and MMC Rav4 ZZZCA25 as there is no OPTIFIT unit available for these models.

Please Note: For warranty repair, the use of an OPTIFIT unit where applicable is mandatory. If the correct replacement unit listed in the table below is unavailable, the modified piston and rings must be fitted to the old short engine (provided block is undamaged) rather than use an O/E short engine.

OE Short Engine	E/G type	Applicable model	Replacement Short Engine
11400-0D060	1ZZ	Avensis ZZZT221	11400-0D061-84
11400-0D142(3)		Avensis ZZZT251	11400-0D143-84
		Corolla Verso ZZZNR11	
114100-22200		Corolla Verso ZZZE122	11400-22201
11400-22061		Celica ZZZT230	11400-22061-84
11400-22100		Pre MMC Rav4 ZZZCA25	
11400-22121 MMC		Rav4 ZZZCA25	11400-22121

If OPTIFIT Short Engine is unavailable

Part Description	Model	Model Code	Part No.	Production Period	Qty required
Piston sub-assy, w/pin	Avensis 250	ZZT251	13101-0D062	0103~	4
	Corolla Verso	ZZE122	13101-22032	0110~0312	4
		ZZNR11	13101-0D062 0402~		4
	Celica	ZZT230	13101-22032	9908~	4
	Rav4 ZZZCA25		13101-22032	0005~	4
Ring Set, Piston	Avensis 250	ZZT251	13011-0D110	0103~	1
	Corolla Verso	ZZE122	13011-0D110	0110~0312	1
		ZZNR11	13011-22150	0402~	1
	Celica	ZZT230	13011-22150	9908~	1
	Rav4 ZZZCA25			0005~	1

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Part Description			Part No.
Oil Dipstick	Model	Model Code	15301-0D011
	Avensis	ALL	
	Corolla Verso	ALL	
	Celica ALL		
	RAV4	ALL	
Sticker Kit			GBNGH- 05OIL- CP
Thermostat			See EPC
Head Gasket Set			See EPC
Gasket Sealer (FIPG)			See EPC
Oil Filter			See EPC
TGMO Engine Oil (5L)			08880-80725

Note: The above part number information details ONLY the enhanced parts. Additional parts will be required depending upon individual circumstances.

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REPAIR INFORMATION:

CAUTION: The OPTIFIT Short Engine is supplied in reusable packaging (Plastic Bag and Box) that **MUST** be reused. Please ensure that this packaging is not damaged when unpacking the new unit. Failure to use the correct packaging may result in the surcharge not being returned.

With immediate effect, in order to speed claim processing times, we have removed the need to submit a PARF for out of warranty repairs.

Before carrying out any repairs, please ensure that the 'Oil Consumption Check' and appropriate check sheet has been completed, however it will no longer be necessary for you to send these in support of your claims but you must be able to produce them, if requested by TME. Failure to produce supporting information when requested, may lead to claims being debited at a later date.

Fitting Instructions:

Fitment of the new OPTIFIT Short Engine should be done following the appropriate engine repair manual.

Before starting to remove the engine block from the vehicle, make sure you have all necessary gaskets, seals and sufficient amount of FIPG material.

NOTICE:

- In order to apply the FIPG material on the timing chain cover properly, the engine assembly should be removed from engine bay. Otherwise, FIPG application can not be done correctly leading to oil leakage, especially at the three point joint area (block, head and cover joining point).
- Clean the engine compartment before installing the new engine. Do not steam clean!
- Thoroughly check the cooling system (replacement of thermostat is mandatory).
- Thoroughly clean the intake and exhaust manifolds. Use an airline to blow out any loose particles.

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After installing the new OPTIFIT short engine fill up the engine with appropriate revised engine oil quantity according to the following table.

Model name	Model Code	Oil volume (dry fill)	Oil level
Avensis	ZZT220/251	4.7 Litre	Full On New Oil Dipstick
Corolla Verso	ZZE122, ZNR11		
Celica ZZT230			
RAV4	ZCA2#		

WARNING:

An increased oil quantity is part of the countermeasure. Please ensure that the revised Oil Dipstick is installed (Min. - Max. range has been shifted upwards by 10 mm) and the engine oil amount is increased accordingly.

Engine oil specification:

PLEASE NOTE:

The use of TGMO Fuel Economy, SAE 5W-30 type engine oil (part number 08880-80725) is **MANDATORY** for **ANY** warranty repair and the subsequent `running in` period, thereafter the following oils may be used.

Model name	Model Code	API grade	SAE viscosity (recommended)
All Models		SJ "Energy-Conserving" or SL "Energy Conserving" motor oil	Temperature range: 1) -15 C° to 35 C° SAE 10W-40 2) -30 C° to 40 C° SAE 5W-30 (preferred)

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When first starting the engine:

- First of all, re-check the level of the engine oil.
- To properly lubricate the moving parts of the engine, you must first crank the engine using the starter-motor only. *(Remove Fuel Pump (C/OPN RLY) relay or disconnect the connector of each injector to stop fuel supply)* Then wait for the oil pressure warning light on the dashboard to go out. Only then can you be assured that the engine is properly lubricated.
- You can now carefully start the engine, and:
 - Check oil pressure, coolant temperature, running performance and idling speed.
 - Check for any abnormal noise or smoke.
 - Check for engine coolant leak.
 - Check for engine oil leak
 - Check for fuel leaks.
 - Check the blow-by amount at idle.

If all above is ok, a test drive should be carried out to check the engine's performance.

NOTICE: During the test drive, avoid putting high strain on the engine and respect the running in guidelines detailed on page 10 of this bulletin.

After completion of the test drive, check the coolant temperature, check for leaks and check the levels of coolant and engine oil. Make sure no air is contained in the cooling system. Check the tightening-torque of all nuts and bolts that were loosened during the installation.

Check the operation of the Exhaust Catalyst

This operation can only be done after finishing oil consumption repair.

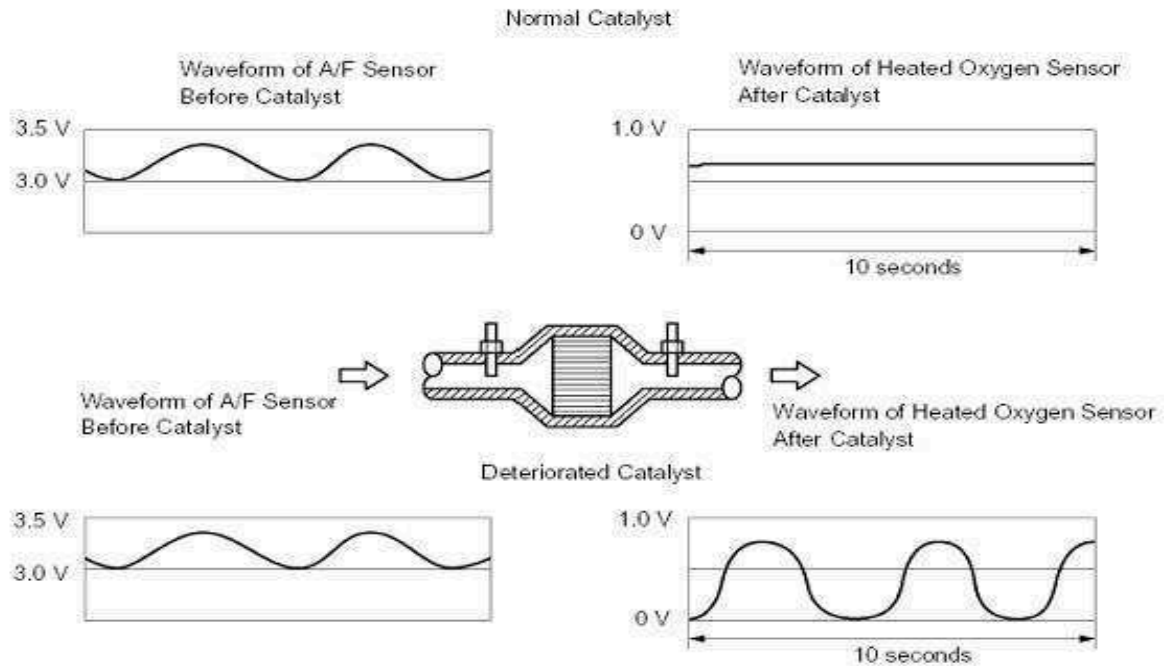
- a) Warm up the engine to normal operating temperature.
- b) Connect Intelligent Tester to DLC3 and select O2S1 and O2S2 graphical display.
- c) Keep the engine speed at 1600 rpm for 90 seconds or longer.
- d) After the engine speed has stabilized at idle check both O2 sensor activity. Please refer to the following graphs.

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If catalyst is performing correctly, Oxygen sensor behind the catalyst (O2 S2) must show a very slow activity.

Customer information:

Install:

- 'Mirror Hanger' on rear view mirror
- 'Revised Oil Quantity page' in Owners handbook in 'Specifications' section on page detailing 'Engine Lubrication'
- 'Revised Oil Quantity' sticker on bonnet slam panel after cleaning panel with degreaser

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‘Running In’ Precautions for OPTIFIT engines:

The following ‘Running In’ guidelines are printed on the mirror hanger to be installed in the car. When you return the vehicle to the customer, these points should be clearly explained to him/her:

To ensure trouble free operation of the newly installed engine, the following running in instructions should be explained to the customer. These guidelines will greatly enhance the durability and reliability of the engine. It is important that the new engine is not exposed to too much strain during the first 1000 miles of use. Please note that warranty claims may not be accepted if the damage is caused by not following these guidelines.

- Do not rev the engine over 4000 rpm. After the first 1000 miles you may gradually increase to higher rpm.
- Do not downshift abruptly causing excessive engine speed.
- Do not accelerate at full throttle in any gear.
- Avoid driving the engine for long periods at a constant speed, either fast or slow.
- Do not use Liquefied Petroleum Gas (LPG). Use Premium UNLEADED (95RON) fuel only.
- Do not tow a trailer during the first 1000 miles.

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WARRANTY INFORMATION:

Normal 3 Year/60,000 Mile	Warranty Extension	Prior Authority Required
Yes	Yes, 7yrs / 112,500 miles	No

The goodwill guidelines have been increased to 7 years / 112,500 miles (whichever comes first) subject to a vehicle having a good service history. It is still necessary for you to take & record all of the information previously required and this must be kept in your claims file as part of the claim set, e.g. service history, oil consumption rate test results.

It will no longer be necessary for you to send these in support of your claims but you must be able to produce them, if requested by TME. Failure to produce supporting information when requested, may lead to claims being debited at a later date.

If the service history is incomplete or unreasonable, the pistons should be inspected for the following conditions:

- Excessive carbon or gum deposits
- Piston rings can not be turned on pistons

Please note that, in cases where the service history is not complete, there may be a requirement to provide digital images of the pistons, to confirm “gumming up” conditions, ensuring that the images clearly show any carbon build up in the piston ring area. Copies of the images should be kept with your original claim documentation. (If possible, please also save the images electronically, for ease of transmission, should they be required at a later date).

Please refer to the tables below in order to help you assess the correct level of servicing and the relevant actions to take.

Service History Evaluation:

Service History	Services Completed	Digital Images of Piston Required
Full	All on schedule	No
Good	Over 80% or 1 missed	No
Poor	Less than 80% or more than 1 missed	Yes (Retain Images On File)
None	Not serviced at all or none recorded	No (Not eligible under warranty extension)

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Summary of Requirements:

Within Manufacturer's Warranty (up to 3yrs / 60,000 miles)	PARF Required?	No	PARF Required	No
	Oil consumption test required?	Yes – hold with claim set	Oil consumption test required?	Yes – hold with claim set
	Service history record required?	Yes – hold with claim set	Service history required?	Yes - hold with claim set
			Pictures of pistons required?	Yes – hold with claim set
Out of Warranty (+ 3 years / 60,000 miles to 7yrs / 120,000 miles)	PARF Required?	No	PARF Required?	No
	Oil consumption test required?	Yes – hold with claim set	Oil consumption test required?	Yes – hold with claim set
	Service history record required?	Yes – hold with claim set	Service history required?	Yes – hold with claim set
			Pictures of pistons required?	Yes – hold with claim set

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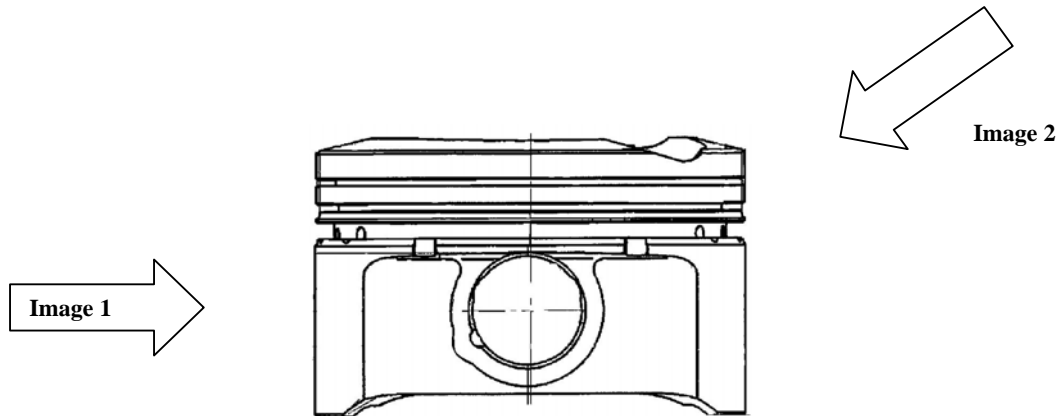
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Summary of Information to be kept with the claim set:

1. Details of the Service History that is available
2. Copy of the 'oil consumption record sheet'
3. Images (digital preferred) of each of the piston assemblies clearly showing – see over page
 - The piston ring area
 - The piston crown
 - The VIN and Claim number (You can use the paint inspection sticker for this)



Please ensure the images CLEARLY show any carbon build up in the piston ring area.

The pistons will need to be reinstalled and the big end bearings and bolts refitted prior to returning the old short engine. Failure to do so will result in the claim being rejected by TME.

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Claim Procedure:

This procedure applies only to vehicles that have exceeded 3 years or 60,000 miles. (Vehicles that are inside the warranty period remain subject to the normal claim procedures).

Please submit a warranty claim, entering the following codes & information:

Claim Type	VE
Campaign (“Recall”) Reference	WE60681
Prior Authorization Number	Not Required
Preformatted	No
Main Operation/Time	Must be a relevant Special Op. No. & time taken from the table on page 3 of WB446
Failed Part Number	Do not enter (leave blank)
T1 / T2	11 (excessive oil consumption) / 50 (faulty machining)
Condition / Cause / Remedy	Enter appropriately descriptive text, ensuring that oil consumption rate is mentioned
Replacement Parts*	As required to conduct repair*
Displaced Parts Retention	Exchange parts to be returned, otherwise 60 days
Sublet (Oils / Fluids)	As required to conduct repair

*Note: Optifit parts must be used where blocks are available on the Optifit scheme. Claims will be debited if the Optifit policy or technical process is not followed.

Surcharge:

This is reimbursable through the PL21 “Reman Claim” process. Please appreciate that surcharge costs should not be entered on the warranty claim.

Use of Genuine Toyota Motor Oil:

It is a specific requirement that as part of the approved enhancement process that TGMO (Toyota Genuine Motor Oil) is used and that the engine is filled with the correct increased level of oil. Please refer to the Technical Instructions as these are very specific concerning the correct oil level.

Oil Dipstick:

On all models it is necessary to replace the Oil Dipstick with a modified one as per the following details:

Description	Modified Part Number	Difference
Oil Dipstick	15301-0D011	Green dot on the pull ring Increases oil capacity by 0.5L

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RETURN OF DISPLACED UNIT:

PLEASE REFER TO TSB EG-6025: ZZ OPTIFIT SHORT BLOCKS ARE SUPPLIED IN RETURNABLE PLASTIC BOX

Change of Engine Number:

Each short engine supplied will be supplied with an engine number already stamped on the block. This will mean that by fitting it, the vehicle will have a “new” engine number. As a result of this there are 2 implications and actions required.

1. Advise DVLA – It is a customer's responsibility to inform the DVLA. The owner should complete and return the form provided with the vehicle registration document.
2. Update AS400 – As warranty validation and enquiries are based on VIN number and Engine number relationships it is necessary to update AS400. Please complete the form at the end of this bulletin and return it to the warranty department (the form is also available on TOTSS under Technical and Warranty /“forms”).
3. It is important that all staff are aware of this policy including your parts colleagues, as it is vital that the correct part is ordered relative to the model. TME will apply this policy without exception so please ensure that OPTIFIT Short Engines are ordered when available.

We trust that these procedures are clear but should you have any queries please contact the warranty department **on 01737 367400.**

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CUSTOMER ‘POST REPAIR’ PRECAUTIONS BREIFING POINTS: **BULLETIN NOT TO BE GIVEN TO THE CUSTOMER**

Change of Engine Number

Each short engine supplied will be supplied with an engine number already stamped on the block. This will mean that by fitting it, the vehicle will have a “new” engine number. As a result of this, please ensure that you have a record of the new number and provide this to the customer upon collection.

It is a customer’s responsibility to inform the DVLA. The owner should complete and return the form provided with the vehicle registration document.

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