

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION
7	VERIFY TROUBLESHOOTING OF DTC P0011 COMPLETED <ul style="list-style-type: none"> Make sure to reconnect all the disconnected connectors. Clear the DTC from the PCM memory using the M-MDS. Turn the ignition switch off. Start the engine and warm it up completely. Is PENDING CODE for this DTC present? 	Yes Replace the PCM, then go to the next step. (See 01-40-6 PCM REMOVAL/INSTALLATION[L3 WITH TC].)
		No Go to the next step.
8	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> Perform the "After Repair Procedure". (See 01-02-10 AFTER REPAIR PROCEDURE[L3 WITH TC].) Are any DTCs present? 	Yes Go to the applicable DTC inspection. (See 01-02-13 DTC TABLE[L3 WITH TC].)
		No Troubleshooting completed.

01-02

DTC P0012[L3 WITH TC]

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DTC P0012	CMP Timing over-retarded
DETECTION CONDITION	<ul style="list-style-type: none"> Actual valve timing is over-retarded by 5 ° (when the following conditions are met) from the target valve timing for 5 s when the OCV system control is within the feed-back range. <p>MONITORING CONDITION</p> <ul style="list-style-type: none"> Engine speed is below 4,000 rpm. Engine coolant temperature is above 70— 110 °C {158— 230 °F}. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is a continuous monitor (CCM). MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. PENDING CODE is available if the PCM detects the above malfunction condition during the first drive cycle. FREEZE FRAME DATA is available. DTCs are stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> OCV malfunction Low engine oil pressure Spool valve in OCV is stuck in the retard position. Variable valve timing actuator is stuck in the retard position. Following oil runners are clogged or have leakage. <p>Oil runners</p> <ul style="list-style-type: none"> Between oil pressure switch and OCV Between OCV and variable valve timing actuator In variable valve timing actuator Loose timing chain or improper valve timing due to timing chain slippage PCM malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> Has the FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> Check for related Service Bulletins and/or on-line repair information availability. Is any related repair information available? 	Yes Perform the repair or diagnosis according to the available repair information. <ul style="list-style-type: none"> If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTCS <ul style="list-style-type: none"> Is DTC P2088 or P2089 present? 	Yes Go to the appropriate DTC troubleshooting procedure. (See 01-02-188 DTC P2088[L3 WITH TC] or 01-02-190 DTC P2089[L3 WITH TC].)
		No Go to the next step.
4	VERIFY ENGINE OIL PRESSURE <ul style="list-style-type: none"> Start the engine. Does the oil pressure warning light illuminate? 	Yes Inspect engine oil pressure. (See 01-11-2 OIL PRESSURE INSPECTION[L3 WITH TC].)
		No Go to the next step.

ON-BOARD DIAGNOSTIC [L3 WITH TC]

STEP	INSPECTION	ACTION	
5	VERIFY TIMING CHAIN INSTALLATION <ul style="list-style-type: none"> • Stop the engine. • Remove the timing chain cover. • Is the camshaft timing mark at the correct point? (See 01-10-10 TIMING CHAIN REMOVAL/INSTALLATION[L3 WITH TC].) 	Yes	Go to the next step.
		No	Reinstall the timing chain, then go to Step 8.
6	INSPECT OCV FOR MALFUNCTION <ul style="list-style-type: none"> • Stop the engine. • Remove the OCV. • Inspect the position of the spool valve in the OCV. • Is the spool valve located at the valve retard position? 	Yes	VARIABLE VALVE TIMING MECHANISM IS NORMAL <p>Note</p> <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed using the cleaning mode of the variable valve timing control function. <p>Go to the next step.</p>
		No	Replace the OCV, then go to Step 8.
7	INSPECT ENGINE OIL RUNNER <ul style="list-style-type: none"> • Inspect the following engine oil runners for clogging or leakage. <ul style="list-style-type: none"> — Between the oil pressure switch and the OCV — Between the OCV and the variable valve timing actuator — In the variable valve timing actuator • Is there any clogging or leakage? 	Yes	Repair or replace the suspected runner, then go to the next step.
		No	VARIABLE VALVE TIMING MECHANISM IS NORMAL <p>Note</p> <ul style="list-style-type: none"> • This DTC is detected as an intermittent concern. • The intermittent concern might be removed using the cleaning mode of the variable valve timing control function. <p>Go to the next step.</p>
8	VERIFY TROUBLESHOOTING OF DTC P0012 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. • Turn the ignition switch off. • Start the engine and warm it up completely. • Is PENDING CODE for this DTC present? 	Yes	Replace the PCM, then go to the next step. (See 01-40-6 PCM REMOVAL/INSTALLATION[L3 WITH TC].)
		No	Go to the next step.
9	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform the "After Repair Procedure". (See 01-02-10 AFTER REPAIR PROCEDURE[L3 WITH TC].) • Are any DTCs present? 	Yes	Go to the applicable DTC inspection. (See 01-02-13 DTC TABLE[L3 WITH TC].)
		No	Troubleshooting completed.