

CONSULT-II (Cont'd)

ENGINE CONTROL COMPONENT PARTS/CONTROL SYSTEMS APPLICATION

Item		DIAGNOSTIC TEST MODE			
		SELF-DIAG RESULTS	DATA MONITOR	ACTIVE TEST	
ENGINE CONTROL COMPONENT PARTS	INPUT	Engine coolant temperature sensor	X	X	
		Vehicle speed sensor	X	X	
		Accelerator position sensor	X	X	X
		Accelerator position switch	X	X	
		Accelerator switch (F/C)	X	X	
		Crankshaft position sensor (TDC)	X	X	
		Ignition switch (start signal)		X	
		Park/Neutral position (PNP) switch		X	
		Battery voltage		X	
		Air conditioner switch		X	
		Mass air flow sensor	X	X	
		Stop lamp switch	X	X	
		Heat up switch		X	
		Charge air pressure sensor	X		
	OUTPUT	Glow relay		X	X
		EGR volume control valve	X	X	X
		Cooling fan relay	X	X	X
		Air conditioner relay		X	
		Variable nozzle turbocharger control solenoid valve		X	
Swirl control valve control solenoid valve			X	X	
Exhaust gas control valve control solenoid valve		X			

X: Applicable

SELF-DIAGNOSTIC MODE

Regarding items detected in "SELF-DIAG RESULTS" mode, refer to "TROUBLE DIAGNOSIS — INDEX", EC-37.

DATA MONITOR MODE

Monitored item [Unit]	ECM input signals	Main signals	Description	Remarks
CKPS-RPM (TDC) [rpm]	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> The engine speed computed from the crankshaft position sensor (TDC) signal is displayed. 	
CMPS-RPM-PUMP [rpm]	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> The engine speed computed from the pulse signal sent from electronic control fuel injection pump is displayed. 	
COOLAN TEMP/S [°C] or [°F]	<input type="radio"/>	<input type="radio"/>	<ul style="list-style-type: none"> The engine coolant temperature (determined by the signal voltage of the engine coolant temperature sensor) is displayed. 	<ul style="list-style-type: none"> When the engine coolant temperature sensor is open or short-circuited, ECM enters fail-safe mode. The engine coolant temperature determined by the ECM is displayed.

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Monitored item [Unit]	ECM input signals	Main signals	Description	Remarks
VHCL SPEED SE [km/h] or [mph]	○	○	● The vehicle speed computed from the vehicle speed sensor signal is displayed.	
FUEL TEMP SEN [°C] or [°F]	○	○	● The fuel temperature (sent from electronic control fuel injection pump) is displayed.	
ACCEL POS SEN [V]	○	○	● The accelerator position sensor signal voltage is displayed.	
FULL ACCEL SW [ON/OFF]	○	○	● Indicates [ON/OFF] condition from the accelerator position switch signal.	
ACCEL SW (FC) [OPEN/CLOSE]	○	○	● Indicates [OPEN/CLOSE] condition from the accelerator switch (FC) signal.	
OFF ACCEL SW [ON/OFF]	○	○	● Indicates [ON/OFF] condition from the accelerator position switch signal.	
SPILL/V [°CA]		○	● The control position of spill valve (sent from electronic control fuel injection pump) is displayed.	
BATTERY VOLT [V]	○	○	● The power supply voltage of ECM is displayed.	
P/N POSI SW [ON/OFF]	○	○	● Indicates [ON/OFF] condition from the park/neutral position switch signal.	
START SIGNAL [ON/OFF]	○	○	● Indicates [ON/OFF] condition from the starter signal.	● After starting the engine, [OFF] is displayed regardless of the starter signal.
AIR COND SIG [ON/OFF]	○	○	● Indicates [ON/OFF] condition of the air conditioner switch as determined by the air conditioner signal.	
BRAKE SW [ON/OFF]	○	○	● Indicates [ON/OFF] condition from the stop lamp switch signal.	
IGN SW [ON/OFF]	○	○	● Indicates [ON/OFF] condition from ignition switch signal.	
WARM UP SW [ON/OFF]	○		● Indicates [ON/OFF] condition from the heat up switch signal.	
MAS AIR/FL SE [V]	○	○	● The signal voltage of the mass air flow sensor is displayed.	● When the engine is stopped, a certain value is indicated.
DECELER F/CUT [ON/OFF]		○	● The [ON/OFF] condition from deceleration fuel cut signal (sent from electronic control fuel injection pump) is displayed.	
INJ TIMG C/V [%]		○	● The duty ratio of fuel injection timing control valve (sent from electronic control fuel injection pump) is displayed.	
AIR COND RLY [ON/OFF]		○	● Indicates the control condition of the air conditioner relay (determined by ECM according to the input signals).	
GLOW RLY [ON/OFF]		○	● The glow relay control condition (determined by ECM according to the input signal) is displayed.	

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Monitored item [Unit]	ECM input signals	Main signals	Description	Remarks
COOLING FAN [ON/OFF]		○	<ul style="list-style-type: none"> ● Indicates the control condition of the cooling fans (determined by ECM according to the input signal). ● ON ... Operates. ● OFF ... Stopped. 	
EGR VOL CON/V [step]		○	<ul style="list-style-type: none"> ● Indicates the EGR volume control value computed by the ECM according to the input signals. ● The opening becomes larger as the value increases. 	
VNT S/V 1 [%]			<ul style="list-style-type: none"> ● Indicates the variable nozzle turbo-charger control solenoid valve control value computed by the ECM according to the input signals. 	
BARO SEN [kPa]	○		<ul style="list-style-type: none"> ● The barometric pressure (determined by the signal voltage from the barometric pressure sensor built into the ECM) is displayed. 	
SWRL CON S/V 1 [ON/OFF]		○	<ul style="list-style-type: none"> ● The control condition of the swirl control valve control solenoid valve (determined by ECM according to the input signals) is indicated. ● ON ... Swirl control valve is closed. ● OFF ... Swirl control valve is opened. 	
EXH/GAS REG V [ON/OFF]			<ul style="list-style-type: none"> ● The control condition of the exhaust gas control valve control solenoid valve (computed by ECM according to the input signals) is indicated. ● ON ... Exhaust gas control valve is closed. ● OFF ... Exhaust gas control valve is opened. 	<ul style="list-style-type: none"> ● This item is applicable for cold area models. ● On other models, "OFF" is always displayed.

NOTE:

Any monitored item that does not match the vehicle being diagnosed is deleted from the display automatically.

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ACTIVE TEST MODE

TEST ITEM	CONDITION	JUDGEMENT	CHECK ITEM (REMEDY)
COOLING FAN	<ul style="list-style-type: none"> ● Ignition switch: ON ● Operate the cooling fan at "LOW", "HI" speed and turn "OFF" using CONSULT-II. 	Cooling fan moves at "LOW", "HI" speed and stops.	<ul style="list-style-type: none"> ● Harness and connector ● Cooling fan motor ● Cooling fan relay
OFF ACCEL POSIG	<ul style="list-style-type: none"> ● Clears the self-learning fully closed accelerator position, detected by accelerator position sensor, from the ECM. 		
GLOW RLY	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) ● Turn the glow relay "ON" and "OFF" using CONSULT-II and listen to operating sound. 	Glow relay makes the operating sound.	<ul style="list-style-type: none"> ● Harness and connector ● Glow relay
INJ TIMING*	<ul style="list-style-type: none"> ● Engine: Return to the original trouble condition ● Retard the injection timing using CONSULT-II. 	If trouble symptom disappears, see CHECK ITEM.	<ul style="list-style-type: none"> ● Electronic control fuel injection pump
SWIRL CONT S/V1	<ul style="list-style-type: none"> ● Ignition switch: ON ● Turn solenoid valve "ON" and "OFF" with the CONSULT-II and listen to operating sound. 	Solenoid valve makes an operating sound.	<ul style="list-style-type: none"> ● Harness and connector ● Solenoid valve
EGR VOL CONT/V	<ul style="list-style-type: none"> ● Ignition switch: ON ● Change EGR volume control valve opening step using CONSULT-II. 	EGR volume control valve makes an operating sound.	<ul style="list-style-type: none"> ● Harness and connector ● EGR volume control valve

*: When using this item, DTC 0707 "P7-F/INJ TIMG FB" may be detected. If so, erase it because it is not a malfunction.

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CONSULT-II Reference Value in Data Monitor Mode

Remarks:

- Specification data are reference values.
- Specification data are output/input values which are detected or supplied by the ECM at the connector.
- * Specification data may not be directly related to their components signals/values/operations.

MONITOR ITEM	CONDITION		SPECIFICATION
CKPS-RPM (TDC)	<ul style="list-style-type: none"> ● Tachometer: Connect ● Run engine and compare tachometer indication with the CONSULT-II value. 		Almost the same speed as the CONSULT-II value.
CMPS-RPM-PUMP			
COOLAN TEMP/S	<ul style="list-style-type: none"> ● Engine: After warming up 		More than 70°C (158°F)
VHCL SPEED SE	<ul style="list-style-type: none"> ● Turn drive wheels and compare speedometer indication with the CONSULT-II value 		Almost the same speed as the CONSULT-II value
FUEL TEMP SEN	<ul style="list-style-type: none"> ● Engine: After warming up 		More than 40°C (104°F)
ACCEL POS SEN	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) 	Accelerator pedal: fully released	0.40 - 0.60V
		Accelerator pedal: fully depressed	Approx. 4.5V
FULL ACCEL SW	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) 	Accelerator pedal: fully depressed	ON
		Except above	OFF
ACCEL SW (FC)	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) 	Accelerator pedal: fully released	CLOSE
		Accelerator pedal: slightly open	OPEN
OFF ACCEL SW	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) 	Accelerator pedal: fully released	ON
		Accelerator pedal: slightly open	OFF
SPILL/V	<ul style="list-style-type: none"> ● Engine: After warming up 		Approx. 13°C/A
BATTERY VOLT	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stopped) 		11 - 14V
P/N POSI SW	<ul style="list-style-type: none"> ● Ignition switch: ON 	Shift lever: Park/Neutral	ON
		Except above	OFF
START SIGNAL	<ul style="list-style-type: none"> ● Ignition switch: ON → START → ON 		OFF → ON → OFF
AIR COND SIG	<ul style="list-style-type: none"> ● Engine: After warming up, idle the engine 	Air conditioner switch: OFF	OFF
		Air conditioner switch: ON (Compressor operates.)	ON
BRAKE SW	<ul style="list-style-type: none"> ● Ignition switch: ON 	Brake pedal: depressed	ON
		Brake pedal: released	OFF
IGN SW	<ul style="list-style-type: none"> ● Ignition switch: ON → OFF 		ON → OFF
WARM UP SW	<ul style="list-style-type: none"> ● Ignition switch: ON 	Heat up switch: ON	ON
		Heat up switch: OFF	OFF
MAS AIR/FL SE	<ul style="list-style-type: none"> ● Engine: After warming up ● Air conditioner switch: OFF ● Shift lever: Neutral position ● No-load 	Idle	1.6 - 2.0V
DECELER F/CUT	<ul style="list-style-type: none"> ● Engine: After warming up 	Idle	OFF
INJ TIMG C/V	<ul style="list-style-type: none"> ● Engine: After warming up, idle the engine. 		Approx. 50 - 70%
AIR COND RLY	<ul style="list-style-type: none"> ● Engine: After warming up, idle the engine 	Air conditioner switch: OFF	OFF
		Air conditioner switch: ON (Compressor operates.)	ON
GLOW RLY	<ul style="list-style-type: none"> ● Refer to EC-252. 		
COOLING FAN	<ul style="list-style-type: none"> ● When cooling fan is stopped. 		OFF
	<ul style="list-style-type: none"> ● When cooling fan operates. 		ON

CONSULT-II Reference Value in Data Monitor Mode (Cont'd)

MONITOR ITEM	CONDITION		SPECIFICATION
EGR VOL CON/V	<ul style="list-style-type: none"> ● Engine: After warming up ● Air conditioner switch: "OFF" ● Shift lever: Neutral position ● No-load 	After 1 minute of idling	More than 10 steps
		Revsing engine from idle to 3,200 rpm	0 step
VNT S/V 1	<ul style="list-style-type: none"> ● Engine: After warming up ● Air conditioner switch: "OFF" ● Shift lever: Neutral position ● No-load 	Idle	Approx. 56%
		2,000 rpm	Approx. 20%
BARO SEN	<ul style="list-style-type: none"> ● Ignition switch: ON 		Altitude Approx. 0 m (0 ft): Approx. 100.62 kPa (1.0062 bar, 1.026 kg/cm ² , 14.59 psi) Approx. 1,000 m (3,281 ft): Approx. 88.95 kPa (0.8895 bar, 0.907 kg/cm ² , 12.90 psi) Approx. 1,500 m (4,922 ft): Approx. 83.16 kPa (0.8316 bar, 0.848 kg/cm ² , 12.06 psi) Approx. 2,000 m (6,562 ft): Approx. 78.36 kPa (0.7836 bar, 0.799 kg/cm ² , 11.36 psi)
SWRL CON S/V 1	<ul style="list-style-type: none"> ● Lift up the vehicle ● Engine: After warming up let it idle for more than 1 second. ● Air conditioner switch: "OFF" ● No-load 	Shift lever: Except "P" and "Neutral" positions	ON
		Shift lever: Neutral position	OFF
EXH/GAS REG V*	<ul style="list-style-type: none"> ● Vehicle: Stopped ● Engine speed: Below 1,200 rpm ● Engine coolant temperature: Below 87°C (189°F) ● Heat up switch: ON 		ON
		Except above	OFF

*: This item is applicable for cold area models. On other models, "OFF" is always displayed.

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