ENGINE [SKYACTIV-G 2.0, SKYACTIV-G 2.5]

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Special Features

- For SKYACTIV-G 2.0 and SKYACTIV-G 2.5, the following is performed to lower fuel consumption.
  - — Improvement of mechanical resistance loss
    - Narrowed down crankshaft journal
    - Optimized piston skirt shape
    - Lowered piston ring tension
    - Roller follower adopted
    - Reduction of valve spring load
    - Stabilization of timing chain behavior
    - Optimized engine coolant passage
    - Optimized water pump impeller shape
    - Lowered drive belt tension
    - Optimized oil passage
    - Optimized oil pump shape
    - Oil pump discharging pressure control has been adopted.
  - — Improvement of pumping loss
    - Variable valve timing mechanism has been adopted on both sides of intake and exhaust.
- L-jetronic*1 and D-jetronic*2 type detectors have been combined for intake air amount detection, improving the accuracy of the intake air amount measurement.
  - — MAF sensor adopted
  - — MAP sensor adopted
  - — IAT sensor No.1 and No.2 adopted
- Valve timing control has been adopted on both sides of the intake and exhaust, improving fuel economy and emission performance.
  Intake side: Electric variable valve timing control
  - — Intake CMP sensor adopted
  - — Electric variable valve timing motor/driver adopted
  - — Electric variable valve timing relay adopted

  Exhaust side: Hydraulic variable valve timing control
  - — Exhaust CMP sensor adopted
- Engine oil control has been adopted reducing engine load.
  - — Engine oil solenoid valve adopted
- DC-DC converter control has been adopted for improved power supply stability.
  - — DC-DC converter adopted
- With the adoption of fuel pump control, fuel pump power consumption has been reduced, improving fuel economy.
  - — Fuel pump control module adopted
- Generator output control adopted, fuel economy/idling stability improved.
  - — Current sensor adopted
- With the adoption of the ion sensor, which detects pre-ignition, engine reliability has been improved.
- LIN communication has been adopted to the current sensor and DC-DC converter for simplified wiring harnesses.

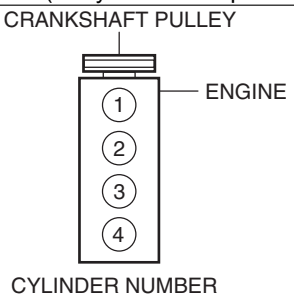
*1 : Measures the intake air amount directly using the MAF sensor.

*2 : Measures the intake air pressure introduced into the cylinder using the MAP sensor and calculates the intake air amount indirectly.

Specification

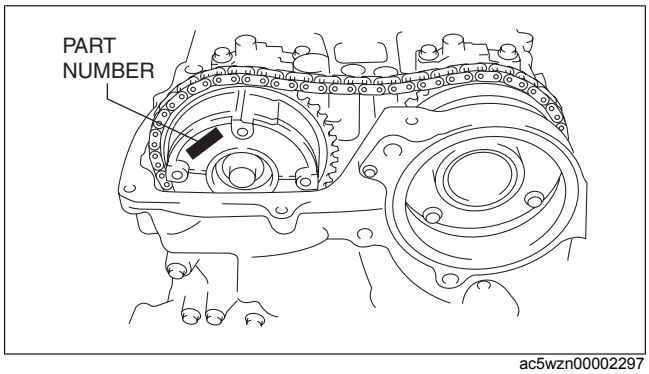
Item	Specification	
	SKYACTIV-G 2.0	SKYACTIV-G 2.5
MECHANICAL		
Type	Gasoline, 4-cycle	
Cylinder arrangement and number	In-line, 4-cylinder	
Combustion chamber	Pentroof	
Valve system	DOHC, timing chain driven, 16 valves	
Displacement (ml {cc, cu in})	1,998 {1,998, 121.9}	2,488 {2,488, 151.8}
Bore × stroke (mm {in})	83.5 × 91.2 {3.29 ×3.59}	89.0 × 100 {3.50 × 3.94}
Compression ratio [European (L.H.D. U.K.) specs.]	14.0:1	13.0:1
Compression ratio [Except European (L.H.D. U.K.) specs.]	13.0:1	

Item				Specification	
				SKYACTIV-G 2.0	SKYACTIV-G 2.5
Compression pressure [European (L.H.D. U.K.) specs.]			(kPa {kgf/cm^2, psi} [rpm])	978 {9.97, 142} [300]	954 {9.73, 138} [300]
Compression pressure [Except European (L.H.D. U.K.) specs.]			(kPa {kgf/cm^2, psi} [rpm])	885 {9.02, 128} [300]	
Valve timing	IN	Open	BTDC (°)	-32—42	
		Closed	ABDC (°)	110—36	
	EX	Open	BBDC (°)	Type A*1: 54—11 Type B*2: 54—9	58—13
		Closed	ATDC (°)	Type A*1: 7—50 Type B*2: 7—52	6—51
LUBRICATION SYSTEM					
Type				Force-fed type	
Oil pressure (reference value) [Water temperature 80—90 degrees C]			(kPa {kgf/cm^2, psi} [rpm])	Low oil pressure: 110—175 {1.13—1.78, 16.0—25.3} [1,500] High oil pressure: 300—430 {3.06—4.38, 43.6—62.3} [4,500]	
Oil pump	Type			Trochoid gear type	
Oil filter	Type			Full-flow, paper element	
	Bypass pressure		(kPa {kgf/cm^2, psi})	78—118 {0.80—1.20, 12.0—17.1}	
Oil capacity (approx. quantity)	Total (dry engine)		(L {US qt, Imp qt})	Without oil cooler: 4.9 {5.2, 4.3} With oil cooler: 5.0 {5.3, 4.4}	5.4 {5.7, 4.8}
	Oil replacement		(L {US qt, Imp qt})	4.0 {4.2, 3.5}	4.3 {4.5, 3.8}
	Oil and oil filter replacement		(L {US qt, Imp qt})	4.2 {4.4, 3.7}	4.5 {4.8, 4.0}
COOLING SYSTEM					
Type				Water-cooled, Electromotive	
Water pump	Type			Centrifugal, V-ribbed belt-driven	
Thermostat	Type			Wax type	
	Opening temperature		(°C {°F})	80.5—83.5 {177—182}	
	Full-open temperature		(°C {°F})	95 {203}	
	Full-open lift		(mm {in})	8.5 {0.33} or more	
Radiator	Type			Corrugated fin type	
Cooling system cap	Valve opening pressure		(kPa {kgf/cm^2, psi})	93.2—122.6 {0.951—1.250, 13.6—17.7}	
Cooling fan	Type			Electric type	
	Number of blades			Cooling fan No.1: 5 Cooling fan No.2: 7	
	Outer diameter		(mm {in})	320 {12.6}	
	Cooling fan motor output		(W)	80	
FUEL SYSTEM					
Fuel injector		Type		High resistance	
		Fuel supply method		Top-feed	
		Drive types		Electronic type	
Pressure regulator control pressure			(kPa {kgf/cm^2, psi})	Approx. 430 {4.38, 62.4}	
Fuel pump	Type			Electric	
Fuel tank	Capacity (L {US gal, Imp gal})	2WD		56.0 {14.8, 12.3}	
		4WD		58.0 {15.3, 12.8}	
EMISSION SYSTEM					
Catalyst	Type			WU-TWC (monolith) TWC (monolith)	
EVAP control system	Type			Charcoal canister type	
PCV system	Type			Closed type	

Item			Specification	
			SKYACTIV-G 2.0	SKYACTIV-G 2.5
CHARGING SYSTEM				
Battery	Voltage	(V)	12	
	Type and capacity (with i-stop)	(A·h/5HR, A·h/20HR)	Q-85 (52, 62)	
	Type and capacity (without i-stop)	(A·h/5HR, A·h/20HR)	55D23L (48, 55) 75D23L (52, 65)	
Generator	Output	(V-A)	12-100	
	Regulated voltage		Controlled by PCM	
	Self diagnosis function			
IGNITION SYSTEM				
Ignition system	Type		SEI	
	Spark advance		Electronic	
	Firing order		1—3—4—2 (all cylinders independent firing)	
				
Spark plug	Type		PE01-18-110 PE02-18-110 PE5R-18-110 PE5S-18-110	
STARTING SYSTEM				
Starter	Type		Coaxial reduction	
	Output	(kW)	Without i-stop: 1.0 With i-stop: 1.4	1.4
CONTROL SYSTEM				
i-stop OFF switch			ON/OFF	
Neutral switch			ON/OFF	
CPP switch			ON/OFF	
MAF sensor			Hot film	
IAT sensor			Cold resistor	
MAP sensor			Sealant diaphragm	
TP sensor			Hall element	
APP sensor			Hall element	
CKP sensor			MR (Magnetic Resistance) element	
CMP sensor			GMR element	
ECT sensor			Thermistor	
BARO sensor			Piezoelectric element	
Fuel pressure sensor			Metal diaphragm	
KS			Piezoelectric element	
Current sensor			Shunt resistance, Thermistor	
A/F sensor			Zirconia element	
HO2S			Zirconia element	
Clutch stroke sensor			Hall element	
Power brake unit vacuum sensor			Piezoelectric element	

*1 : The part number marked on the hydraulic variable valve timing actuator is for the PE01 12 4Y0 or PE01 12 4YA0A engine.

*2 : The part number marked on the hydraulic variable valve timing actuator is for engine, with a part number other that indicated by *1.



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Engine oil [Europe]

Recommended engine oil		Alternative engine oil	
Mazda Original Oil Supra 0W-20	Mazda Original Oil Ultra 5W-30	API SM/SN 0W-20	API SL/SM or ACEA A3/A5 5W-30

Engine oil [Except Europe]

Item	Specifications
Grade	API SG/SH/SJ/SL/SM/SN or ILSAC GF-2/GF-3/GF-4/GF-5
Viscosity (SAE)	10W-30, 10W-40, 10W-50, 5W-20, 5W-30, 5W-40, 0W-20, 0W-30*1

*1 : Except China

Engine coolant capacity (approx. quantity)

Specs.	SKYACTIV-G 2.0 MTX	SKYACTIV-G 2.0 ATX	SKYACTIV-G 2.5 ATX
European (L.H.D.) specs., Russia	7.3 L {7.7 US qt, 6.4 Imp qt}	7.4 L {7.8 US qt, 6.5 Imp qt}	7.8 L {8.2 US qt, 6.9 Imp qt}
European (U.K.) specs.	7.4 L {7.8 US qt, 6.5 Imp qt}	—	—
General (L.H.D.) specs.	7.3 L {7.7 US qt, 6.4 Imp qt}	7.5 L {7.9 US qt, 6.6 Imp qt}	7.7 L {8.1 US qt, 6.8 Imp qt}
Australian, General (R.H.D.) specs.	7.4 L {7.8 US qt, 6.5 Imp qt}	7.6 L {8.0 US qt, 6.7 Imp qt}	7.6 L {8.0 US qt, 6.7 Imp qt}
Saudi	—	7.8 L {8.2 US qt, 6.9 Imp qt}	7.7 L {8.1 US qt, 6.8 Imp qt}

Fuel	Research Octane Number	Country
Premium unleaded fuel (Conforming to EN 228 and within E10)*1	95 or above	New Caledonia, Turkey, Azerbaijan, Armenia, Georgia, Canary Islands, Reunion, Morocco, Austria, Greece, Italy, Switzerland, Belgium, Denmark, Finland, Norway, Portugal, Spain, Sweden, Hungary, Germany, Poland, Bulgaria, Croatia, Slovenia, Luxembourg, Slovakia, Latvia, Lithuania, Russia, Belarus, France, Ukraine, Czech, Estonia, Faeroe, Iceland, Romania, The Netherlands, Macedonia, Bosnia and Herzegovina, Serbia, Montenegro, Albania, Moldova, Martinique, F.Guiana, Guadeloupe, Cyprus, Malta, Ireland, UK, Tahiti, Vanuatu, Iran, UAE, Lebanon, Israel, Algeria, Libya, Tunisia, Madagascar, Guatemala, Bolivia, Honduras, Nicaragua, Aruba, Singapore, Hong Kong, Malaysia, Macau, Mauritius, Jamaica, Barbados, Grenada, St. Lucia, St. Vincent, Antigua
Regular unleaded fuel (Conforming to Fuel Quality Standards Act 2000)*2	90 or above	Taiwan, Vietnam, The Philippines, Marshall Islands, Ustt*3, Kuwait, Oman, Qatar, Saudi Arabia, Syria, Bahrain, Jordan, Nigeria, Angola, Chile, El Salvador, Costa Rica, Ecuador, Haiti, Colombia, Dominican Republic (LHD), Panama, Peru, B. Virgin, Curacao, St. Martin, Indonesia, Thailand, Brunei, Nepal, Sri Lanka, Fiji, Papua New Guinea, Zimbabwe, South Africa, Trinidad and Tobago, Commonwealth of Dominica, Australia
	92 or above	Egypt
	93	China

*1 : Europe

*2 : Australia

*3 : Republic of Palau & Federated States of Micronesia