

## ENGINE SPECIFICATIONS

Item				Specifications		
				13B-MSP (High power)	13B-MSP (Standard power)	
<b>MECHANICAL</b>						
Engine type				Rotary		
rotor arrangement and number				In-line 2-rotor, longitudinal		
Combustion chamber type				Bathtub		
Displacement (ml {cc, cu in})				654 {654, 40} 2		
Compression ratio				10.0		
Compression pressure (kPa {kgf/cm <sup>2</sup> , psi} [rpm])				850 {8.7, 123}[250]		
Port timing	IN	Open	Primary port	ATDC	3	
			Secondary port		12	
			Auxiliary port		38	—
		Close	Primary port	ABDC	65	60
			Secondary		36	45
			Auxiliary port		80	—
	EX	Open	BBDC		50	40
		Close	BTDC		3	
Engine type				Rotary		
rotor arrangement and number				In-line 2-rotor, longitudinal		
<b>LUBRICATION SYSTEM</b>						
Type				Force-fed type		
Oil pump	Type			Trochoid gear		
	Relief valve opening pressure (approximate quantity) (kPa {kgf/cm <sup>2</sup> , psi} )			441—490 {4.5—5.0, 64.0—71.0}		
Oil filter	Type			Full-flow		
	Relief valve opening pressure (approximate quantity) (kPa {kgf/cm <sup>2</sup> , psi} )			78—118 {0.8—1.2, 11.4—17.1}		
Oil pressure (approximate quantity) [oil temperature 100 C {212 F}] (kPa {kgf/cm <sup>2</sup> , psi} )				350 {3.57, 50.8} [3,000]		
Oil capacity (approximate quantity) (L{US qt, Imp qt})	Oil replacement			3.3 {3.5, 2.9}		
	Oil and oil filter replacement			3.5 {3.7, 3.1}		
	Engine overhaul			4.7 {5.0, 4.1}		
	Total			AT: 6.0 {6.0, 5.3}, MT: 6.7 {7.1,5.9}		
Recommended oil	API classification			SL		
	SAE viscosity			5W-20		
	ILSAC classification			GF-3		
<b>COOLING SYSTEM</b>						
Type				Water-cooled, forced circulation		
Coolant capacity (L{US qt, Imp qt})				8.7 {9.1, 7.7}		
Water pump				Centrifugal, V-ribbed belt-driven		
Thermostat	Type			Wax		
	Opening temperature ( C {F } )			80—84 {176—183}		
	Full-open temperature ( C{F } )			95 {203}		
	Full-open lift (mm {in})			8.5 {0.33} or more		
Radiator	Type			Corrugated fin		
Cooling system cap	Cap valve opening pressure (kPa {kgf/cm <sup>2</sup> , psi} )			73.6—103.0 {0.748—1.053, 10.63—14.98}		
Cooling fan	Type			Electronic		
	Number of blades			cooling fan No.1: 4, Cooling fanNo.2: 5		
	Outer diameter (mm)			320		
<b>FUEL SYSTEM</b>						
Injector	Type			Multiple hole design		
	Type of fuel delivery			Top-feed		
	Type of drive			Electronic		

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Pressure regulator control pressure	(kPa {kgf/cm <sup>2</sup> , psi})	Approx. 390 {3.98, 56.6}		
Fuel pump type		Electric		
Fuel tank capacity (Approx. quantity)	(L {US qt, Imp qt})	60 {63, 53}		
Fuel type		Unleaded premium (unleaded high-octane) gasoline		
<b>EMISSION SYSTEM</b>				
Secondary air injection system		Air pump, air control valve		
Catalyst type		Three-way catalyst (monolithic)		
Evaporative emission (EVAP) control system		Canister design		
Positive crankcase ventilation (PCV) system		Closed design		
<b>CHARGING SYSTEM</b>				
Battery	Voltage	(V)	12	
	Type and capacity (5 hour rate)	(A·h)	50D20L (40) <sup>*5</sup> , 55D23L (48) <sup>*4</sup> , 75D26L (52) <sup>*1</sup>	
Generator	Out-put	(V)	12—100	
	Regulated voltage	(V)	Controlled by PCM	
	Self diagnosis function			
<b>IGNITION SYSTEM</b>				
Ignition system	Type		Distributorless ignition (DLI)	
	Spark advance		Electric	
	Firing order		When idling: T/F-L/F-T/R-L/R Except for idling: L/F-T/F-L/R-T/R (Independent ignition control)	
Spark plug	Type	NGK	Trailing side	RE9B-T <sup>*2</sup>
			Leading side	RE7A-L <sup>*2</sup> , (RE6A-L) <sup>*3</sup>
<b>STARTING SYSTEM</b>				
Starter	Type		Coaxial reduction	
	Output	(kW)	1.8 <sup>*4</sup> , 1.4 <sup>*5</sup>	
<b>CONTROL SYSTEM</b>				
PCM temperature sensor			Thermistor	
Neutral switch			ON/OFF	
Clutch switch			ON/OFF	
Secondary shutter valve (SSV) switch			ON/OFF	
Auxiliary port valve (APV) position sensor			Hall element      —	
Engine coolant temperature sensor			Thermistor	
Intake air temperature sensor			Thermistor	
Throttle position sensor			Potentiometer	
Accelerator pedal position sensor			Potentiometer	
Mass air flow sensor			Hot-wire	
Front heated oxygen sensor			Zirconia element (all range fuel-air ratio sensor)	
Rear heated oxygen sensor			Zirconia element (linear sensor)	
Barometric pressure sensor			Piezoelectric element	
Knock sensor			Piezoelectric element	
Eccentric shaft position sensor			Magnetic pickup	
Metering oil pump switch			ON/OFF	
Brake switch			ON/OFF	
Throttle valve actuator			DC motor	
APV motor			DC motor      —	
Fuel injector (primary)			Multiple hole design (12 holes)	
Fuel injector (secondary)			Multiple hole design (4 holes)	
Fuel injector (primary 2)			Multiple hole type (4 holes)	
Stepping motor (in metering oil pump)			Stepping motor	

## ENGINE ABBREVIATIONS

A/C	Air conditioner
API	American Petroleum Institute
APV	Auxiliary port valve
AT	Automatic transmission
ATDC	After top dead center
ABDC	after bottom dead center
BBDC	Before bottom dead center
BTDC	Before top dead center
CAN	Controller area network
DC	Drive cycle
DLI	Distributorless ignition
F/P	Fuel pump
FP1	Front primary 1
FP2	Front primary 2
FS	Front secondary
HI	High
IC	Integrated circuit
IG	Ignition
L/F	Leading front

LF	Left front
LH	Left hand
LO	Low
L/R	Leading rear
LR	Left rear
MT	Manual transmission
RH	Right hand
RP1	Rear primary 1
RP2	Rear primary 2
RR	Right rear
RS	Rear secondary
SAE	Society of Automotive Engineers
SST	Special service tool
SSV	Secondary shutter valve
T/F	Trailing front
T/R	Trailing rear
VDI	Variable dynamic effect intake
VFAD	Variable fresh air duct
WDS	Worldwide diagnostic system

## PID/DATA MONITOR AND RECORD

The PID/DATA monitor items are shown below.

### PID/DATA monitor item table

Item	Definition
ACCS	A/C relay control signal in PCM
ACSW	Input signal from A/C switch
AIP RLY	AIR pump relay control signal in PCM
ALTF	Generator field coil control signal in PCM
ALTT V	Input voltage from generator
APP	APP
APP1	APP from APP sensor No.1
	Input voltage from APP sensor No.1
APP2	APP from APP sensor No.2
	Input voltage from APP sensor No.2
APV	APV motor control signal in PCM
APV_POS	Input voltage from APV position sensor
ARPMDES	Target engine speed
B+	Input voltage from battery
BARO	BARO
	Input voltage from BARO sensor
BOO	Input signal from brake switch No.2
CATT11_DSD	Estimated catalyst converter temperature
CHRGLP	Generator warning light control signal in PCM
COLP	Input signal from refrigerant pressure switch (medium-pressure)
CPP	Input signal from CPP switch
CPP/PNP	Input signal from neutral switch
DTCCNT	DTC count (includes those needing no action)
DEI	VDI solenoid valve control signal in PCM
ECT	ECT
	Input voltage from ECT sensor
ECT_DES	Estimated ECT
ETC_ACT	Throttle valve opening angle
ETC_DSD	Target throttle valve position
	Target throttle valve opening angle
EVAPCP	Purge solenoid valve control signal in PCM
FAN1	Cooling fan relay No.1 control signal in PCM
FAN2	Cooling fan relay No.2 control signal in PCM
FDPDTC	Pending code that caused FFD storage
FLI	Fuel level
FP	Fuel pump relay control signal in PCM
FPRR	Fuel pump relay-2 control signal in PCM
FUELPW	Fuel injection duration in PCM
FUELSYS	Fuel system loop status
GENVDSD	Target generator voltage
HTR11	Front HO2S heater control signal in PCM
HTR12	Rear HO2S heater control signal in PCM
IAC	Throttle actuator control signal in PCM
IASV	VAD solenoid valve control signal in PCM
IAT	IAT
	Input voltage from IAT sensor
INGEAR	In gear

Item	Definition
IVS	Idle variation
KNOCKR	Spark retard value to prevent knocking
LOAD	LOAD
LONGFT1	Long fuel trim
MAF	MAF
	Input voltage from MAF sensor
MIL	MIL control signal in PCM
MIL_DIS	Distance travelled while MIL is activated
MOP_POS	Metering oil pump control status
MOP_SW	Input signal from metering oil pump switch
O2S11	Lambda
	Front HO2S output current
O2S12	Input voltage from rear HO2S
PACNTV	AIR solenoid valve control signal in PCM
PCM_T	Input voltage from PCM temperature sensor
RO2FT1	Target A/F feedback system status
RPM	Engine speed
SC_SET	Cruise indicator light control signal in PCM
SCCS	Input voltage from cruise control switch
SELTESTDTC	DTC count by KOEO/KOER self-test
SHRTFT1	Short fuel trim
SPARK-L	Spark advance (L/F) in PCM
SPARK-T	Spark advance (T/F) in PCM
SSV	SSV solenoid valve control signal in PCM
TIRESIZE	Tire revolution per mile
TP	Input voltage from TP sensor
TP REL	Relative TP
TP1	TP from TP sensor No.1
	Input voltage from TP sensor No.1
TP2	TP from TP sensor No.2
	Input voltage from TP sensor No.2
TPCT	Minimum input voltage from TP sensor at throttle closing
VSS	Vehicle speed

\* Specifications and information were accurate at time of publication and are subject to change without notice.