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Technique parameters

Technique parameters

Technique parameters of complete apparatus

Items		Parameters		Remark
Model		HM484Q	HM484Q-B	
Number of cylinders and arrangement		Inline 4-cylinder		
Combustion chamber		Pentroof		
Ignition order		1—3—4—2		As per cylinder number
Direction of rotation		Counterclockwise		Looking forward from behind (the flywheel side is the back end)
Valve timing mechanism		Double overhead camshaft, timing sprocket drive, double VVT		
Number of valves		16		
Displacement (cc)		1995	1840	
Cylinder bore × stroke (mm)		84×90	84×83	
Compression ratio		10		
Valve timing (°)	Intake	On	-4~36(BTDC)	
		Off	64~24(ABDC)	
	Exhaust	On	56~32(BBDC)	
		Off	0~24(ATDC)	
Maximum power (kW/rpm)		102/6000	94/6000	
Maximum torque (N·m/rpm)		180/4500	166/4500	
Idling speed (rpm)		A/C Idle: 800±50		
		Target idle speed: 750±50		
Spark advance angle (°)		6±3		In the idle state
Starting method		Electric start		
Cooling method		Water cooling forced circulation		
Lubrication method		Pressure and splashing complex		
Overall dimension (mm)		584.1×638.1×641.9		
Net mass (kg)		130	128.25	

Technique parameters

Technical specification of service

Items		Parameters	
Valve spring			
Height H pressure of valve spring (N{kgf, lbf})	Intake	H: 38.8mm {1.528in}	203 ~ 225 {20.71 ~ 22.95, 45.62 ~ 50.56}
	Exhaust	H: 38.8mm {1.528in}	203 ~ 225 {20.71 ~ 22.95, 45.62 ~ 50.56}
Perpendicularity (mm{in})	Intake	Max.	1.86{0.073}
	Exhaust	Max.	1.86{0.073}
Valve oil seal			
Depth L (mm{in})	Intake		22.1{0.87}
	Exhaust		16.9{0.665}
Camshaft			
Axial run-out of camshaft (mm{in})		Max.	0.03{0.0012}
Protrusion height of cam (mm{in})	Intake	Standard	43.81{1.7248}
		Min.	43.61{1.7169}
	Exhaust	Standard	43.78{1.7236}
		Min.	43.58{1.7157}
Journal diameter (mm{in})		Standard	25.936 ~ 25.965{1.0211 ~ 1.0222}
		Min.	25.906{1.0199}
Journal gap (mm{in})		Standard	0.035 ~ 0.085{0.0014 ~ 0.0033}
End gap (mm{in})		Standard	0.08 ~ 0.20{0.0031 ~ 0.0078}
		Max.	0.21{0.0082}
Tappet			
Tappet hole diameter (mm{in})		Standard	31.000 ~ 31.025{1.2205 ~ 1.2215}
Tappet diameter (mm{in})		Standard	30.964 ~ 30.980{1.2191 ~ 1.2197}
Gap between tappet and tappet hole (mm{in})		Standard	0.020 ~ 0.061{0.00079 ~ 0.00240}
		Max.	0.180{0.0071}
Cylinder block			
Height (from top surface to main cover boundary line) (mm{in})		Standard	273.5{10.7677}
		Maximum grinding allowance	0.20{0.008}
Deformation at top surface (mm{in})		Standard	0.05{0.002}

Technique parameters

Technical specification of service


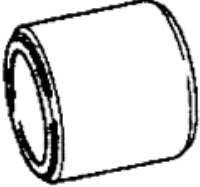
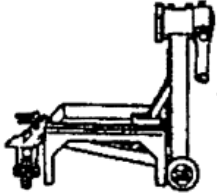


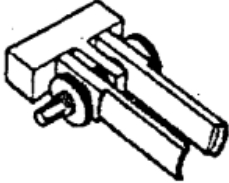
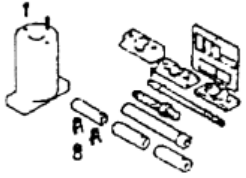
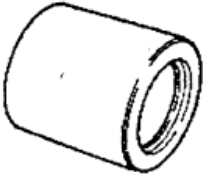
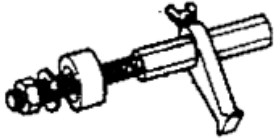
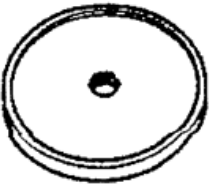


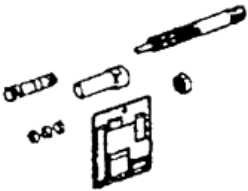
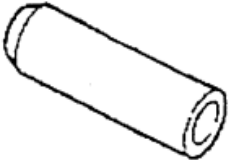

Items		Parameters
Thickness of prominent rivet(mm{in})		≥0.3{0.012}
radical cycle run-out(mm{in})		≤0.7{0.028}
Flywheel		
Radial run-out (mm{in})		≤0.13{0.0051}
Engine oil pump		
Gap between inner rotor tooth tip to outer rotor (mm{in})	Standard	0.06~0.18{0.0024~0.0070}
	Max.	0.22{0.009}
Gap between outer rotor and pump body (mm{in})	Standard	0.100~0.181{0.0040~0.0071}
	Max.	0.22{0.009}
Backlash (mm{in})	Standard	0.040~0.095{0.0016~0.0038}
	Max.	0.14{0.006}
Pressure spring length (mm{in}) Pressure: 82.6-90.4N {8.43-9.22kgf, 18.56-20.31lbf}		35.15{1.3839}
Knock-in distance of front end oil seal (mm{in}) [from engine oil pump body edge]		0~1.0{0~0.039}
Rear oil seal		
Knock-in distance of rear oil seal (mm{in}) [from the edge of crankshaft rear cap]		0~0.5{0~0.019}
Plastic tightening bolt length		
Cylinder cover bolt (mm{in})	Standard	104.2~104.8{4.103~4.125}
	Max.	105.5{4.154}
Main bearing cap bolt (mm{in})	Standard	67.7~68.3{2.665~2.689}
	Max.	68.7{2.705}
Connecting rod cover bolt (mm{in})	Standard	46.7~47.3{1.838~1.862}
	Max.	47.6{1.874}

Tightening torque

Installation location	Torque rating			Remark
	N•m	kgf•m	ft•lbf	
Generator				



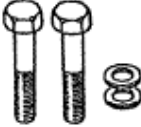

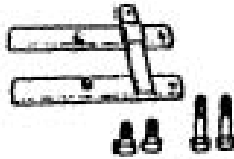



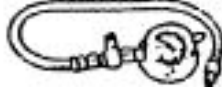

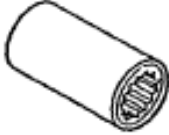




Special tool

Special tools

<p>49 T012 0A0A Tappet retainer component</p> 	<p>49 B014 001 Seal installer</p> 	<p>49 0107 680A Engine service platform</p> 
<p>49 L010 1A0 Engine hook components</p> 	<p>49 0636 100B Valve spring puller</p> 	<p>49 B012 0A2 Pivot</p> 
<p>49 L011 0A0B Piston pin assembly kit</p> 	<p>49 T028 302 Dust cover installer</p> 	<p>49 E011 1A0 Gear rim stop device</p> 
<p>49 W033 105 Seal installer</p> 	<p>49 G030 797 Handle (Part of 49G030 795)</p> 	<p>49 B012 005 Puller/installer of valve guide</p> 
<p>49 L012 0A0A Installer component of valve oil seal and guide</p> 	<p>49 E011 001 Guide apparatus</p> 	<p>49 S120 170 Puller of valve oil seal</p> 

Special tool

Special tools

<p>49 B010 001 Seal installer</p> 	<p>49 E011 002 Screw</p> 	<p>49 G011 103 Bolt component</p> 
<p>49 S12 710 Studded connection fixture</p> 	<p>49 E011 1A1 Fixture component</p> 	<p>49 H010 401 Seal installer</p> 
<p>49 G033 107A Dust cover installer</p> 	<p>49 9200 020A Belt pressure gauge</p> 	<p>49 0187 280A Oil pressure gauge</p> 
<p>49 G014 001 Oil filter sleeve</p> 	<p>49 D015 001 Extension sleeve</p> 	<p>49 1285 071 Needle bearing puller</p> 
<p>49 E011 1A0 Gear rim assembly fixtures</p> 	<p>49 SE01 310A Clutch disc positioning tool</p> 	<p>49 F028 202 Sleeve mounting unit</p> 

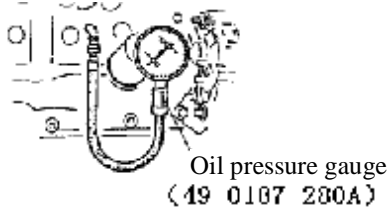
Check of oil pressure

Warning

- I **As waste oil is carcinogenic, wash your skin with soap and clean water after the work.**

The oil temperature of warm-up engine is very hot and easily scalding, operate after the engine shut down and cooled down.

1. Remove the oil pressure switch.
2. Fit the special tools on the mounting hole of oil pressure switch.



3. Warm up the engine to the normal operating temperature.
4. Bring the engine up to the specified speed and pay attention to the reading of oil gauge.

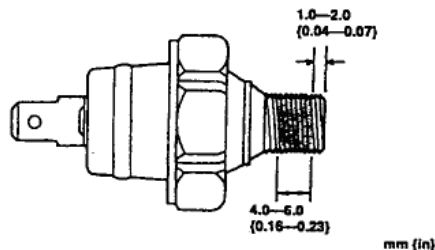
- I **If the pressure gauge is not within the specified range, check the reason and repair and replace as needed.**

Attention

- I **The oil of different viscosity and temperature may varies in pressure.**

Oil pressure: 446~588kPa{4.6~6.1kgf/cm², 64~841psi}[2500rpm]

5. Flame out the engine and let it cool down.
6. Remove the special tool.
7. As shown in the following Fig., evenly smear the sealant on the threads of oil pressure switch.



The bolt needs to smear the sealant when in reuse

8. Fit the oil pressure switch with the tightening torque: 12~14.7N·m{1.2~1.5kgf·m, 9~10.7ft·lbf}.
9. Start the engine and check whether there is any oil leakage.

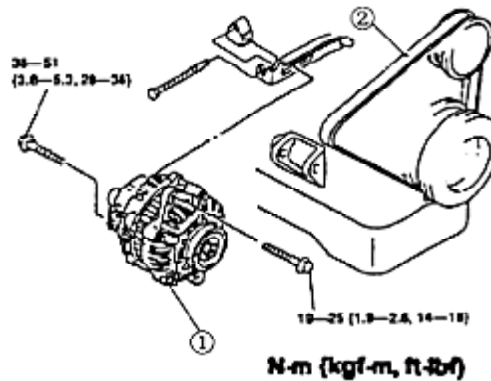
Generator and starter

Lubrication system of Engine

Warning

I When disassembling/assembling a generator on the CBU, you should remove first the battery cable, otherwise the terminal B of generator will get in touch with the bodywork , cause sparks and result in personnel injury and electrical component damage.

1. Disassemble as per the order shown in Fig.
2. Assemble in the reversing order of disassembly.
3. Check the deflection /tension of belt (See—Engine belt, Check of Engine Belt).



1	Generator
2	Alternator belt

Check of engine belt

1. When necessary, check the deflection and tension of engine belt.

Deflection check of engine belt

Attention

I The belt deflection shall be checked in 30mins after the engine cooled down or shut down.

1. Appropriate pressure of 98N{10kgf, 22lbf} is to be added between two pulleys.

I If the deflection is out of the specified scope, adjust the engine belt (See—Adjustment of Engine Belt).

Limit value: 10mm {0.39in}

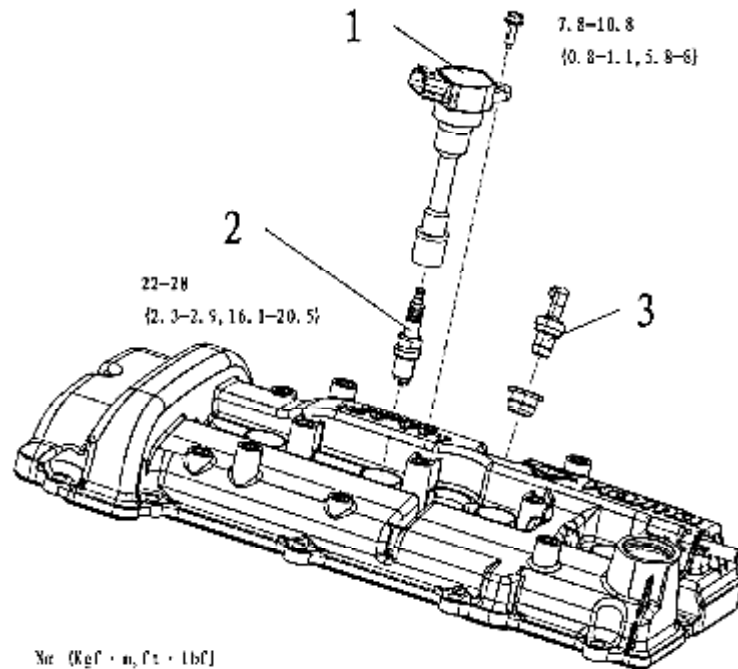
Ignition and control systems

Lubrication system of ignition and PVC valve

Caution

- I **When removing the ignition coil and spark plug, it is very easy to tear up the extension bar sheath, therefore, disassemble it when the replacement is necessary. At the disassembly time, be cautious to avoid tearing or damage.**

1. Disassemble in the order as shown in Fig.
2. Assemble in the reversing order of disassembly.



1	Ignition coil
2	Spark plug (See——Removal/Installation of Spark Plug)
3	Positive Crankcase Ventilation(PCV)valve (See——Check of PVC valve)

Instructions of plug removal/installation

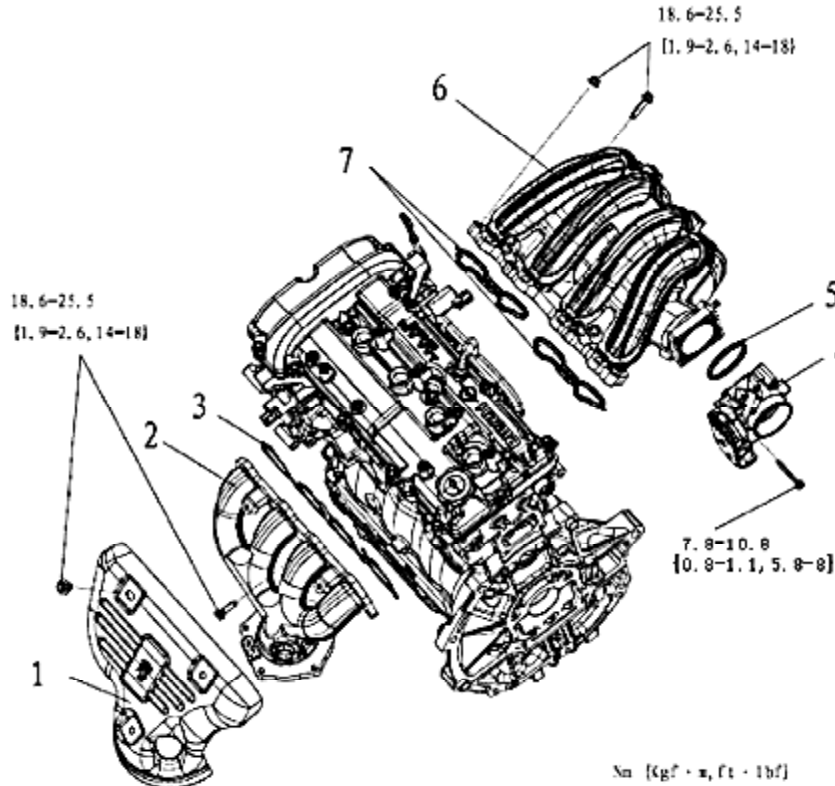
Caution

- I **The spark plugs have to be carefully fitted, as the powerful strike will result in spark plug damage.**

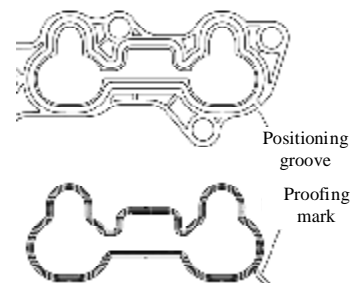
Intake and exhaust systems

Removal/installation of intake and exhaust systems

1. Disassemble as per the order shown in Fig.
2. Assemble in the reversing order of disassembly.



1	Thermal shield of exhaust manifold
2	Exhaust manifold
3	Exhaust manifold gasket
4	Throttle body
5	Sealant ring of throttle body (See Assembly Instructions)
6	Intake manifold
7	Sealant ring of intake manifold (See Assembly instructions)



Assembly instructions of intake manifold sealant ring

At the installation time, you shall properly put the sealant ring into the groove of intake manifold and enable the error proofing mark to clamp into the positioning groove of intake manifold.

Caution

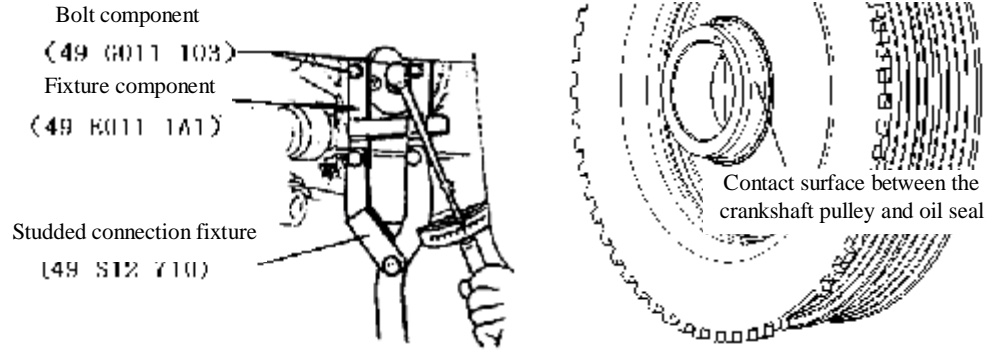
- I Prior to the installation, the sealant ring shall be checked for any damaged, if

4. Assemble the cylinder head cover bolt in the reversing order of the disassembly instructions of cylinder head cover (See——Disassembly of Cylinder Head Cover)

Assembly instructions of crankshaft pulley

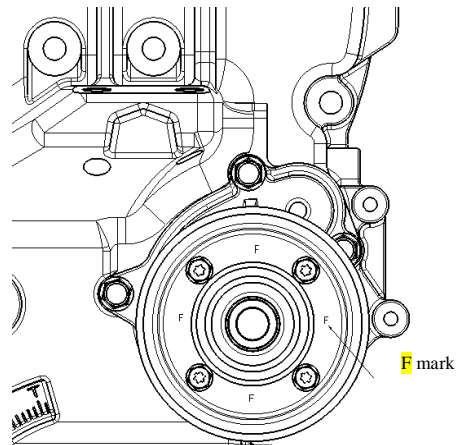
Use a special tool to fix crankshaft for further assembly.

I Smear oil on the contact surface between the crankshaft pulley and oil seal.



Assembly instructions of water pump pulley

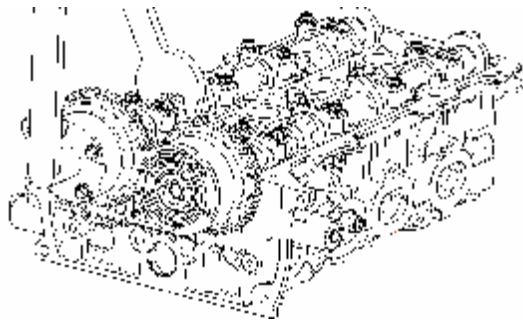
1. Fit the water pump pulley, orienting the sign “F” outward.



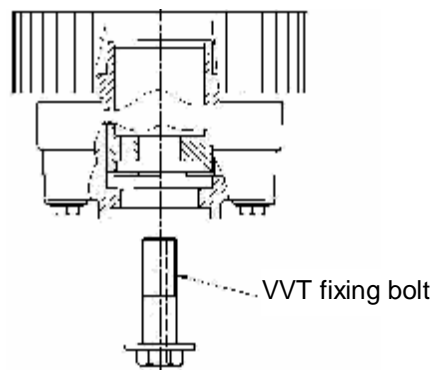
2. After the engine belt assembled, apply force on the water pump pulley bolt.

VVT Disassembly instructions of intake and exhaust

1. As shown in Fig. Disassemble by jamming the hexagonal casting on the camshaft with a wrench



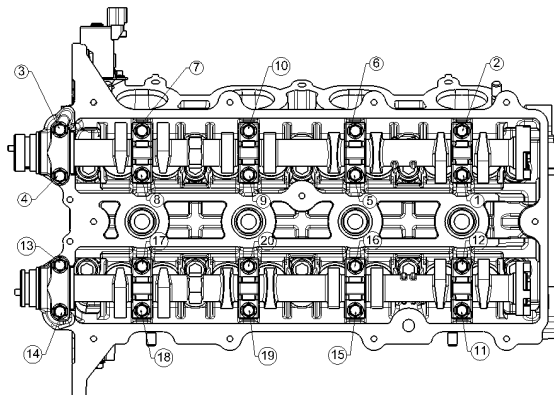
2. Remove the VVT fixing bolt.



3. Slight swing the VVT and carefully take it out from the camshaft.

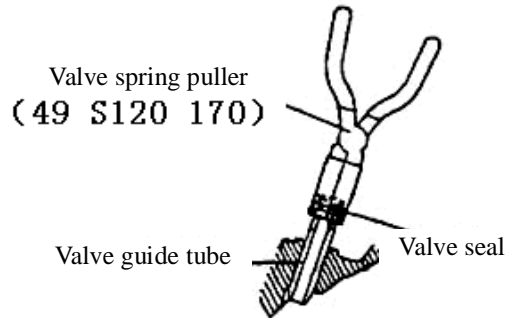
Disassembly instructions of camshaft

1. Check and adjust the valve clearance when necessary (See this section, Valve Clearance).
2. Check the end gap of camshaft (See this section, Check of spring).
3. Check the journal gap of camshaft (See this section, Check of spring).
4. Unscrew the camshaft bearing bolt, in 2–3 steps, as per the order shown in Fig.



Disassembly of valve oil seal

- 1 Use a special tool to remove the valve oil seal.

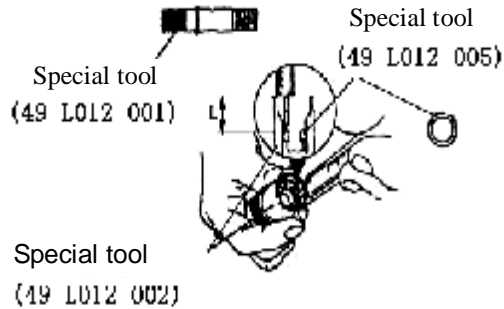


Assembly of valve oil seal

1. Adjust the special tool and enable the encasing depth L to meet the requirements.

Depth L

Intake: 22.1mm (0.87in); Exhaust: 16.9mm (0.665in).



2. Press with hands the valve oil seal into the valve guide.
3. Keep tapping the special tool by use of a plastic hammer until its bottom gets in touch with the cylinder head.

