

GENERAL DESCRIPTION

Mechanical

1. General Description S103001

A: SPECIFICATIONS S103001E49

Engine	Model		2200 cc	2500 cc
	Type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine	
	Valve arrangement		Belt driven, single over-head camshaft, 4-valve/cylinder	
	Bore × Stroke		mm (in)	96.9 × 75.0 (3.815 × 2.953)
	Displacement		cm ³ (cu in)	2,212 (135)
	Compression ratio		10.0	
	Compression pressure (at 200 — 300 rpm)		kPa (kg/cm ² , psi)	1,079 — 1,275 (11.0 — 13.0, 156 — 185)
	Number of piston rings		Pressure ring: 2, Oil ring: 1	
	Intake valve timing	Opening	2° BTDC	1° BTDC
		Closing	50° ABDC	51° ABDC
	Exhaust valve timing	Opening	46° BBDC	50° BBDC
		Closing	6° ATDC	6° ATDC
	Valve clearance	Intake	mm (in)	0.20±0.02 (0.0079±0.0008)
		Exhaust	mm (in)	0.25±0.02 (0.0098±0.0008)
	Idling speed [At neutral position on MT, or “P” or “N” position on AT]		rpm	700±100 (No load) 850±50 (A/C switch ON)
	Firing order		1 → 3 → 2 → 4	
	Ignition timing		BTDC/rpm	14°±8°/700 (MT), 20°±8°/700 (AT)

NOTE:

STD: Standard, I.D.: Inner Diameter, O.D.: Outer Diameter, OS: Oversize, US: Undersize

Belt tensioner adjuster	Protrusion of adjuster rod		5.2 — 6.2 mm (0.205 — 0.244 in)
Belt tensioner	Spacer O.D.		17.955 — 17.975 mm (0.7069 — 0.7077 in)
	Tensioner bush I.D.		18.00 — 18.08 mm (0.7087 — 0.7118 in)
	Clearance between spacer and bush	STD	0.025 — 0.125 mm (0.0010 — 0.0049 in)
		Limit	0.175 mm (0.0069 in)
	Side clearance of spacer	STD	0.2 — 0.55 mm (0.0079 — 0.0217 in)
		Limit	0.81 mm (0.0319 in)
Valve rocker arm	Clearance between shaft and arm	STD	0.020 — 0.054 mm (0.0008 — 0.0021 in)
		Limit	0.10 mm (0.0039 in)

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Camshaft	Bend limit			0.020 mm (0.0008 in)
	Thrust clearance		STD	0.030 — 0.090 mm (0.0012 — 0.0035 in)
			Limit	0.11 mm (0.0043 in)
	Cam lobe height (2200 cc)	Intake	STD	38.732 — 38.832 mm (1.5249 — 1.5288 in)
			Limit	38.632 mm (1.5209 in)
		Exhaust	STD	39.257 — 39.357 mm (1.5455 — 1.5495 in)
			Limit	39.157 mm (1.5416 in)
	Cam lobe height (2500 cc)	Intake	STD	39.485 — 39.585 mm (1.5545 — 1.5585 in)
			Limit	39.385 mm (1.5506 in)
		Exhaust	STD	39.257 — 39.357 mm (1.5455 — 1.5495 in)
			Limit	39.157 mm (1.5416 in)
	Camshaft journal O.D.			
Camshaft journal hole I.D.				32.000 — 32.018 mm (1.2598 — 1.2605 in)
Oil clearance		STD	0.055 — 0.090 mm (0.0022 — 0.0035 in)	
		Limit	0.10 mm (0.0039 in)	
Cylinder head	Surface warpage limit			0.05 mm (0.0020 in)
	Surface grinding limit			0.1 mm (0.004 in)
	Standard height			98.3 mm (3.870 in)
Valve set	Refacing angle			90°
	Contacting width	Intake	STD	1.0 mm (0.039 in)
			Limit	1.7 mm (0.067 in)
		Exhaust	STD	1.4 mm (0.055 in)
			Limit	2.1 mm (0.083 in)
Valve guide	Inner diameter			6.000 — 6.012 mm (0.2362 — 0.2367 in)
	Protrusion above head	Intake		20.0 — 20.5 mm (0.787 — 0.807 in)
		Exhaust		16.5 — 17.0 mm (0.650 — 0.669 in)
Valve	Head edge thickness	Intake	STD	1.0 mm (0.039 in)
			Limit	0.6 mm (0.024 in)
		Exhaust	STD	1.2 mm (0.047 in)
			Limit	0.6 mm (0.024 in)
	Stem diameter		Intake	5.950 — 5.965 mm (0.2343 — 0.2348 in)
			Exhaust	5.945 — 5.960 mm (0.2341 — 0.2346 in)
	Stem oil clearance	STD	Intake	0.035 — 0.062 mm (0.0014 — 0.0024 in)
			Exhaust	0.040 — 0.067 mm (0.0016 — 0.0026 in)
		Limit	—	0.15 mm (0.0059 in)
	Overall length		Intake	120.6 mm (4.75 in)
Exhaust			121.7 mm (4.79 in)	
Valve spring	Free length			54.30 mm (2.1378 in)
	Squareness			2.5°, 2.4 mm (0.094 in)
	Tension/spring height			214.8 — 246.2 N (21.9 — 25.1 kgf, 48.3 — 55.3 lb)/45.0 mm (1.772 in)
				526.6 — 581.6 N (53.7 — 59.3 kgf, 118.4 — 130.8 lb)/34.7 mm (1.366 in)

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Cylinder block	Surface warpage limit (mating with cylinder head)			0.05 mm (0.0020 in)	
	Surface grinding limit			0.1 mm (0.004 in)	
	Cylinder bore (2200 cc)	STD	A	96.905 — 96.915 mm (3.8151 — 3.8155 in)	
			B	96.895 — 96.905 mm (3.8148 — 3.8151 in)	
	Cylinder bore (2500 cc)	STD	A	99.505 — 99.515 mm (3.9175 — 3.9179 in)	
			B	99.495 — 99.505 mm (3.9171 — 3.9175 in)	
	Taper		STD	0.015 mm (0.0006 in)	
			Limit	0.050 mm (0.0020 in)	
	Out-of-roundness		STD	0.010 mm (0.0004 in)	
			Limit	0.050 mm (0.0020 in)	
Piston clearance		STD	0.010 — 0.030 mm (0.0004 — 0.0012 in)		
		Limit	0.050 mm (0.0020 in)		
Enlarging (boring) limit			0.5 mm (0.020 in)		
Piston	Outer diameter (2200 cc)	STD	A	96.885 — 96.895 mm (3.8144 — 3.8148 in)	
			B	96.875 — 96.885 mm (3.8140 — 3.8144 in)	
		0.25 mm (0.0098 in) OS		97.125 — 97.135 mm (3.8238 — 3.8242 in)	
		0.50 mm (0.0197 in) OS		97.375 — 97.385 mm (3.8337 — 3.8340 in)	
	Outer diameter (2500 cc)	STD	A	99.485 — 99.495 mm (3.9167 — 3.9171 in)	
			B	99.475 — 99.485 mm (3.9163 — 3.9167 in)	
		0.25 mm (0.0098 in) OS		99.725 — 99.735 mm (3.9262 — 3.9266 in)	
		0.50 mm (0.0197 in) OS		99.975 — 99.985 mm (3.9360 — 3.9364 in)	
Standard inner diameter of piston pin hole			23.000 — 23.006 mm (0.9055 — 0.9057 in)		
Piston pin	Outer diameter			22.994 — 23.000 mm (0.9053 — 0.9055 in)	
	Standard clearance between piston pin and hole in piston	STD		0.004 — 0.008 mm (0.0002 — 0.0003 in)	
		Limit		0.020 mm (0.0008 in)	
	Degree of fit			Piston pin must be fitted into position with thumb at 20°C (68°F).	
Piston ring	Piston ring gap	Top ring	STD		0.20 — 0.35 mm (0.0079 — 0.0138 in)
			Limit		1.0 mm (0.039 in)
		Second ring	STD		0.35 — 0.50 mm (0.0138 — 0.0197 in)
			Limit		1.0 mm (0.039 in)
		Oil ring	STD		0.20 — 0.70 mm (0.0079 — 0.0276 in)
			Limit		1.5 mm (0.059 in)
	Clearance between piston ring and piston ring groove	Top ring	STD		0.040 — 0.080 mm (0.0016 — 0.0031 in)
			Limit		0.15 mm (0.0059 in)
		Second ring	STD		0.030 — 0.070 mm (0.0012 — 0.0028 in)
Limit			0.15 mm (0.0059 in)		
Connecting rod	Bend twist per 100 mm (3.94 in) in length		Limit		0.10 mm (0.0059 in)
	Side clearance		STD		0.070 — 0.330 mm (0.0028 — 0.0130 in)
			Limit		0.4 mm (0.016 in)

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Connect- ing rod bearing	Oil clearance (2200 cc)		STD	0.010 — 0.038 mm (0.0004 — 0.0015 in)
			Limit	0.05 mm (0.0020 in)
	Oil clearance (2500 cc)		STD	0.020 — 0.046 mm (0.0004 — 0.0018 in)
			Limit	0.050 mm (0.0020 in)
	Thickness at center portion (2200 cc)		STD	1.492 — 1.501 mm (0.0587 — 0.0591 in)
			0.03 mm (0.0012 in) US	1.510 — 1.513 mm (0.0587 — 0.0596 in)
			0.05 mm (0.0020 in) US	1.520 — 1.523 mm (0.0598 — 0.0600 in)
			0.25 mm (0.0098 in) US	1.620 — 1.623 mm (0.0638 — 0.0639 in)
	Thickness at center portion (2500 cc)		STD	1.486 — 1.498 mm (0.0585 — 0.0590 in)
			0.03 mm (0.0012 in) US	1.504 — 1.512 mm (0.0592 — 0.0595 in)
			0.05 mm (0.0020 in) US	1.514 — 1.522 mm (0.0596 — 0.0599 in)
			0.25 mm (0.0098 in) US	1.614 — 1.622 mm (0.0635 — 0.0639 in)
Connect- ing rod bushing	Clearance between piston pin and bush- ing		STD	0 — 0.022 mm (0 — 0.0009 in)
			Limit	0.030 mm (0.0012 in)
Crank- shaft	Bend limit			0.035 mm (0.0014 in)
	Crankpin and crank journal		Out-of-roundness	0.020 mm (0.0008 in) or less
			Grinding limit	0.250 mm (0.0098 in)
	Crankpin outer diameter		STD	51.984 — 52.000 mm (2.0466 — 2.0472 in)
			0.03 mm (0.0012 in) US	51.954 — 51.970 mm (2.0454 — 2.0461 in)
			0.05 mm (0.0020 in) US	51.934 — 51.950 mm (2.0446 — 2.0453 in)
			0.25 mm (0.0098 in) US	51.734 — 51.750 mm (2.0368 — 2.0374 in)
	Crank journal outer diameter	#1, #5, #3	STD	59.992 — 60.008 mm (2.3619 — 2.3625 in)
			0.03 mm (0.0012 in) US	59.962 — 59.978 mm (2.3607 — 2.3613 in)
			0.05 mm (0.0020 in) US	59.942 — 59.958 mm (2.3599 — 2.3605 in)
			0.25 mm (0.0098 in) US	59.742 — 59.758 mm (2.3520 — 2.3527 in)
		#2, #4	STD	59.992 — 60.008 mm (2.3619 — 2.3625 in)
			0.03 mm (0.0012 in) US	59.962 — 59.978 mm (2.3607 — 2.3613 in)
			0.05 mm (0.0020 in) US	59.942 — 59.958 mm (2.3599 — 2.3605 in)
			0.25 mm (0.0098 in) US	59.742 — 59.758 mm (2.3520 — 2.3527 in)
	Thrust clearance		STD	0.030 — 0.115 mm (0.0012 — 0.0045 in)
			Limit	0.25 mm (0.0098 in)
	Oil clearance		STD	0.010 — 0.030 mm (0.0004 — 0.0012 in)
			Limit	0.040 mm (0.0016 in)

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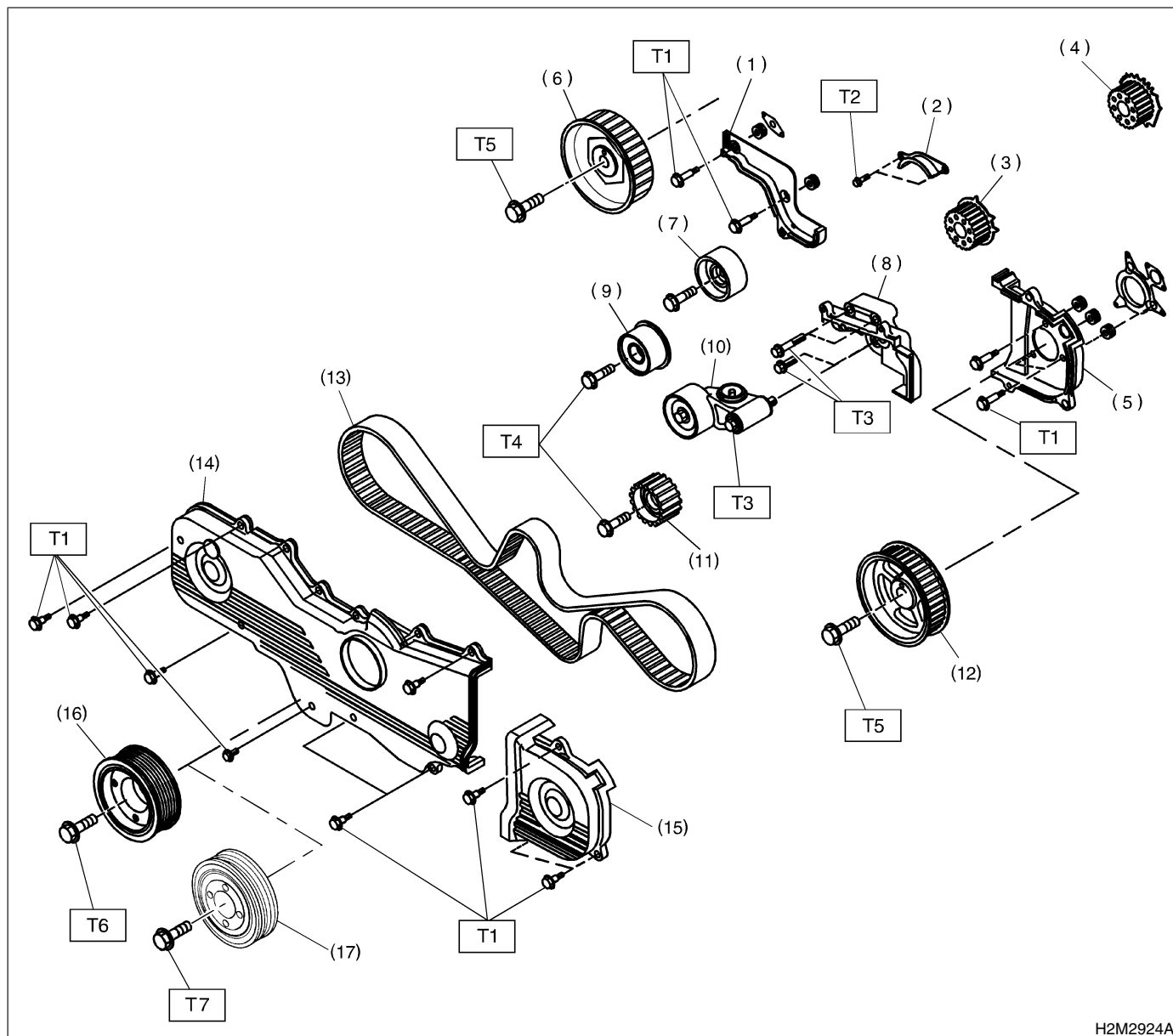
Crankshaft bearing	Crankshaft bearing thickness	#1, #3	STD	1.998 — 2.011 mm (0.0787 — 0.0792 in)
			0.03 mm (0.0012 in) US	2.017 — 2.020 mm (0.0794 — 0.0795 in)
			0.05 mm (0.0020 in) US	2.027 — 2.030 mm (0.0798 — 0.0799 in)
			0.25 mm (0.0098 in) US	2.127 — 2.130 mm (0.0837 — 0.0839 in)
		#2, #4, #5	STD	2.000 — 2.013 mm (0.0787 — 0.0793 in)
			0.03 mm (0.0012 in) US	2.019 — 2.022 mm (0.0795 — 0.0796 in)
			0.05 mm (0.0020 in) US	2.029 — 2.032 mm (0.0799 — 0.0800 in)
			0.25 mm (0.0098 in) US	2.129 — 2.132 mm (0.0838 — 0.0839 in)

B: COMPONENT

S103001A05

1. TIMING BELT

S103001A0501



H2M2924A

- (1) Belt cover No. 2 (RH)
- (2) Timing belt guide (MT vehicles only)
- (3) Crankshaft sprocket (2500 cc models)
- (4) Crankshaft sprocket (2200 cc models)
- (5) Belt cover No. 2 (LH)
- (6) Camshaft sprocket No. 1
- (7) Belt idler (No. 1)
- (8) Tensioner bracket

- (9) Belt idler (No. 2)
- (10) Automatic belt tension adjuster ASSY
- (11) Belt idler No. 2
- (12) Camshaft sprocket No. 2
- (13) Timing belt
- (14) Front belt cover
- (15) Belt cover (LH)
- (16) Crankshaft pulley (2200 cc model)

- (17) Crankshaft pulley (2500 cc model)

Tightening torque: N·m (kgf-m, ft-lb)

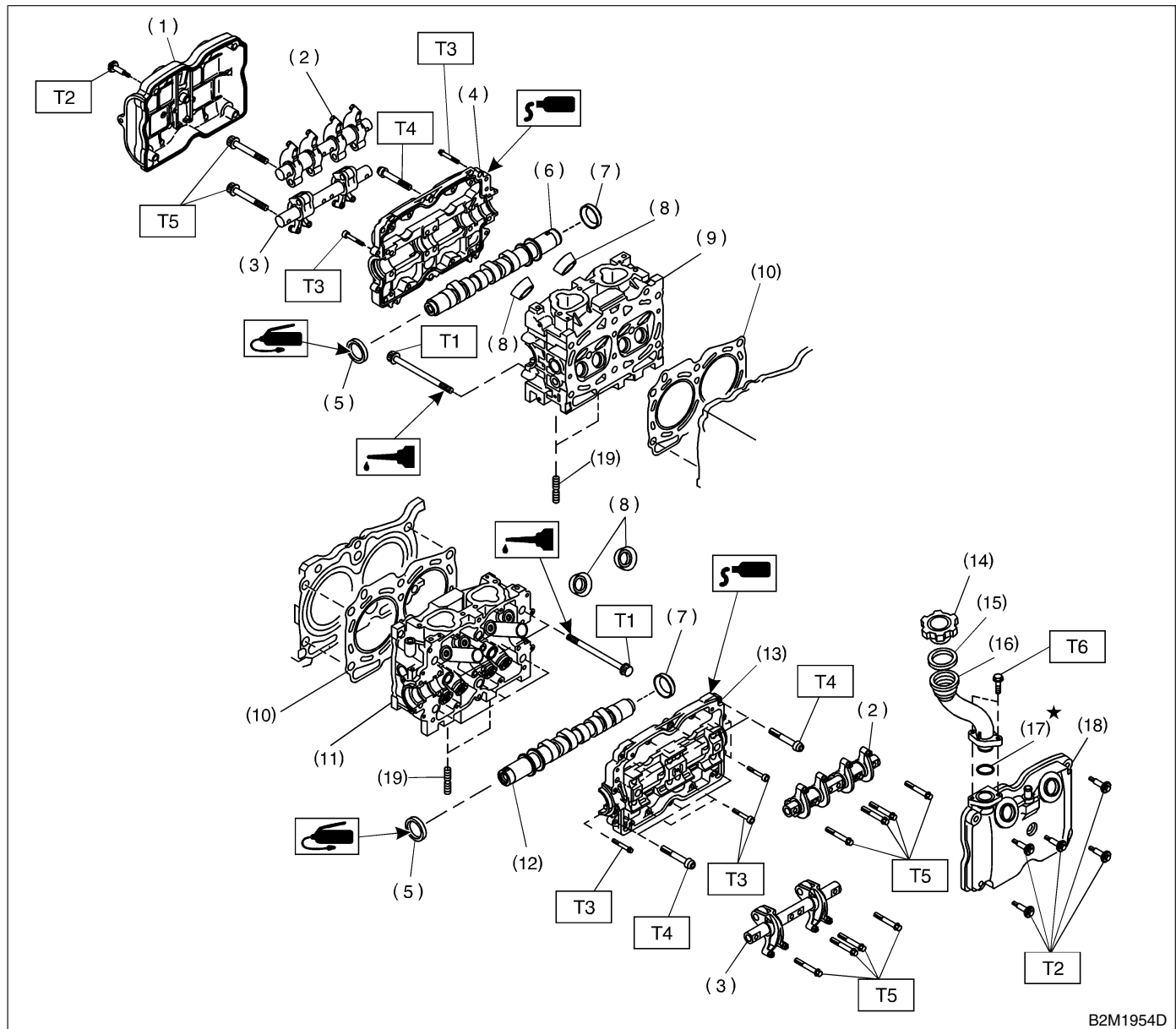
- T1: 5 (0.5, 3.6)**
- T2: 9.8 (1.0, 7.2)**
- T3: 25 (2.5, 18.1)**
- T4: 39 (4.0, 28.9)**
- T5: 78 (8.0, 57.9)**
- T6: 127 (13.0, 94)**
- T7: 177 (18.0, 130.2)**

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2. CYLINDER HEAD AND CAMSHAFT

S103001A0502



- | | |
|-------------------------------|-------------------------|
| (1) Rocker cover (RH) | (11) Cylinder head (LH) |
| (2) Intake valve rocker ASSY | (12) Camshaft (LH) |
| (3) Exhaust valve rocker ASSY | (13) Camshaft cap (LH) |
| (4) Camshaft cap (RH) | (14) Oil filler cap |
| (5) Oil seal | (15) Gasket |
| (6) Camshaft (RH) | (16) Oil filler pipe |
| (7) Plug | (17) O-ring |
| (8) Spark plug pipe gasket | (18) Rocker cover (LH) |
| (9) Cylinder head (RH) | (19) Stud bolt |
| (10) Cylinder head gasket | |

Tightening torque: N·m (kgf-m, ft-lb)

**T1: <Ref. to ME-69
INSTALLATION, Cylinder
Head Assembly.>**

T2: 51 (0.5, 3.6)

T3: 10 (1.0, 7.2)

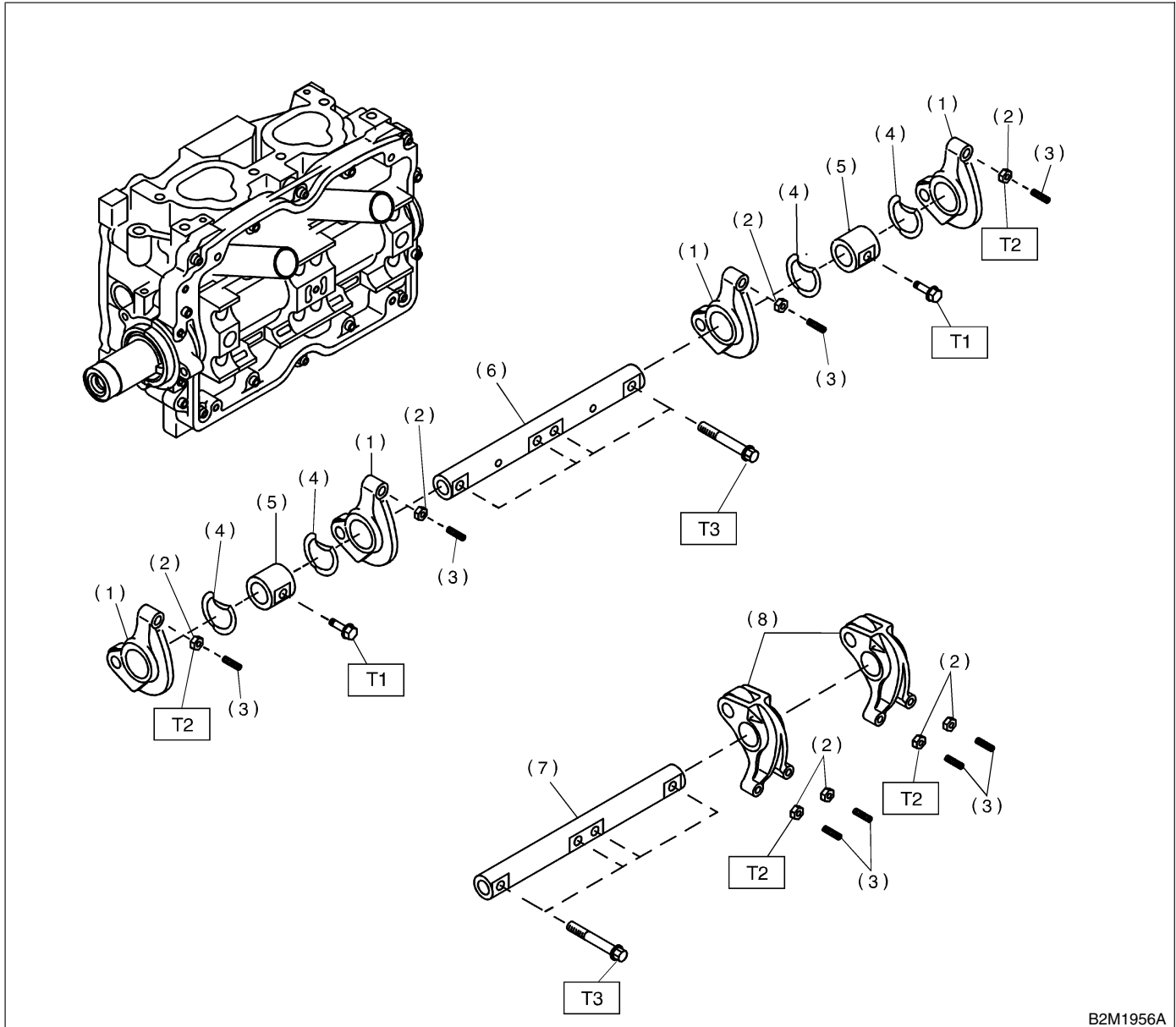
T4: 18 (1.8, 13.0)

T5: 25 (2.5, 18.1)

T6: 6.4 (0.65, 4.7)

3. VALVE ROCKER ASSEMBLY

S103001A0503



- | | |
|-------------------------------|------------------------------|
| (1) Intake valve rocker arm | (6) Intake rocker shaft |
| (2) Valve rocker nut | (7) Exhaust rocker shaft |
| (3) Valve rocker adjust screw | (8) Exhaust valve rocker arm |
| (4) Spring | |
| (5) Rocker shaft support | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 5 (0.5, 3.6)

T2: 10 (1.0, 7.2)

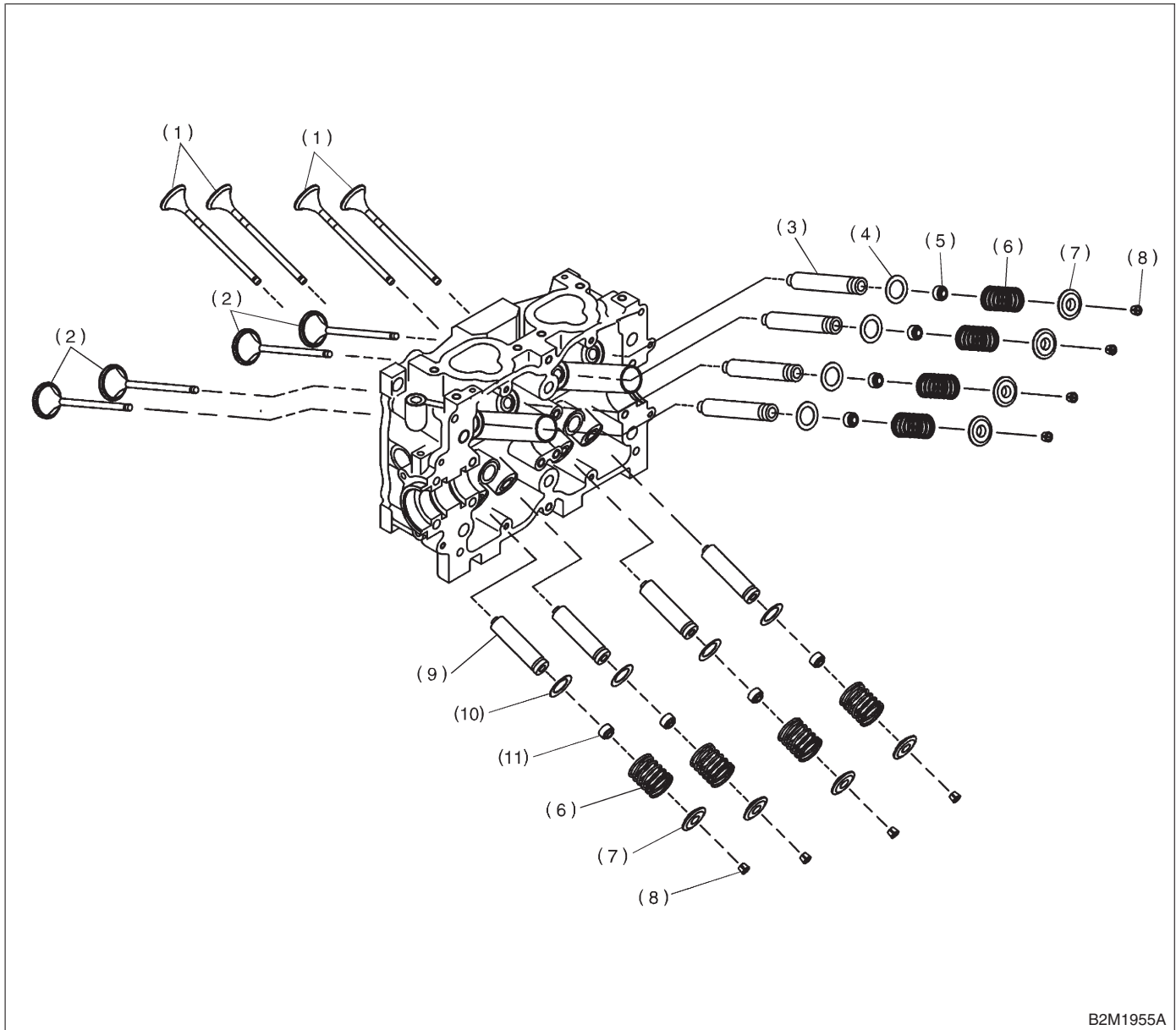
T3: 25 (2.5, 18.1)

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4. CYLINDER HEAD AND VALVE ASSEMBLY

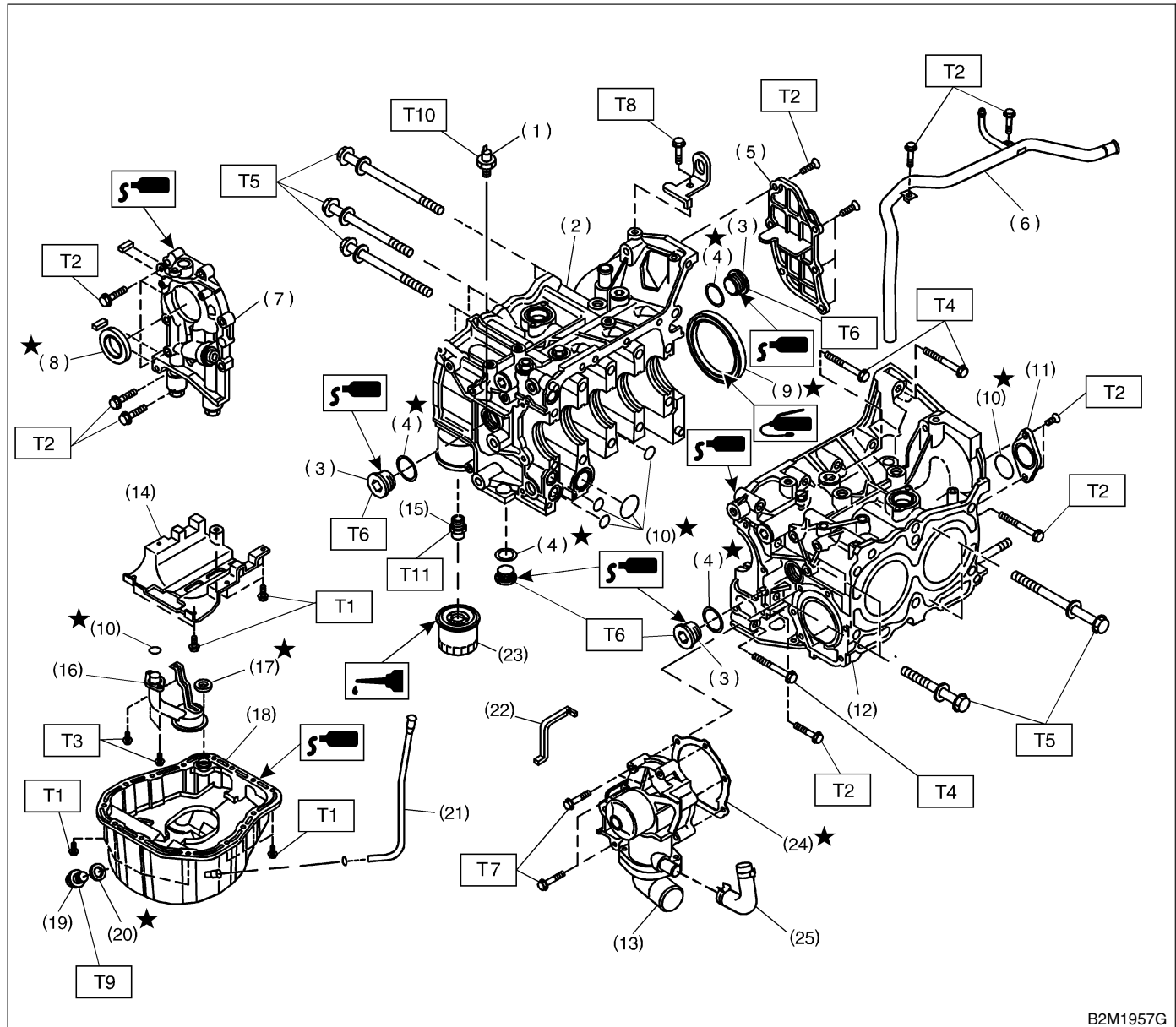
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|------------------------------|---------------------------|--------------------------------|
| (1) Exhaust valve | (5) Intake valve oil seal | (9) Exhaust valve guide |
| (2) Intake valve | (6) Valve spring | (10) Exhaust valve spring seat |
| (3) Intake valve guide | (7) Retainer | (11) Exhaust valve oil seal |
| (4) Intake valve spring seat | (8) Retainer key | |

5. CYLINDER BLOCK S103001A0505



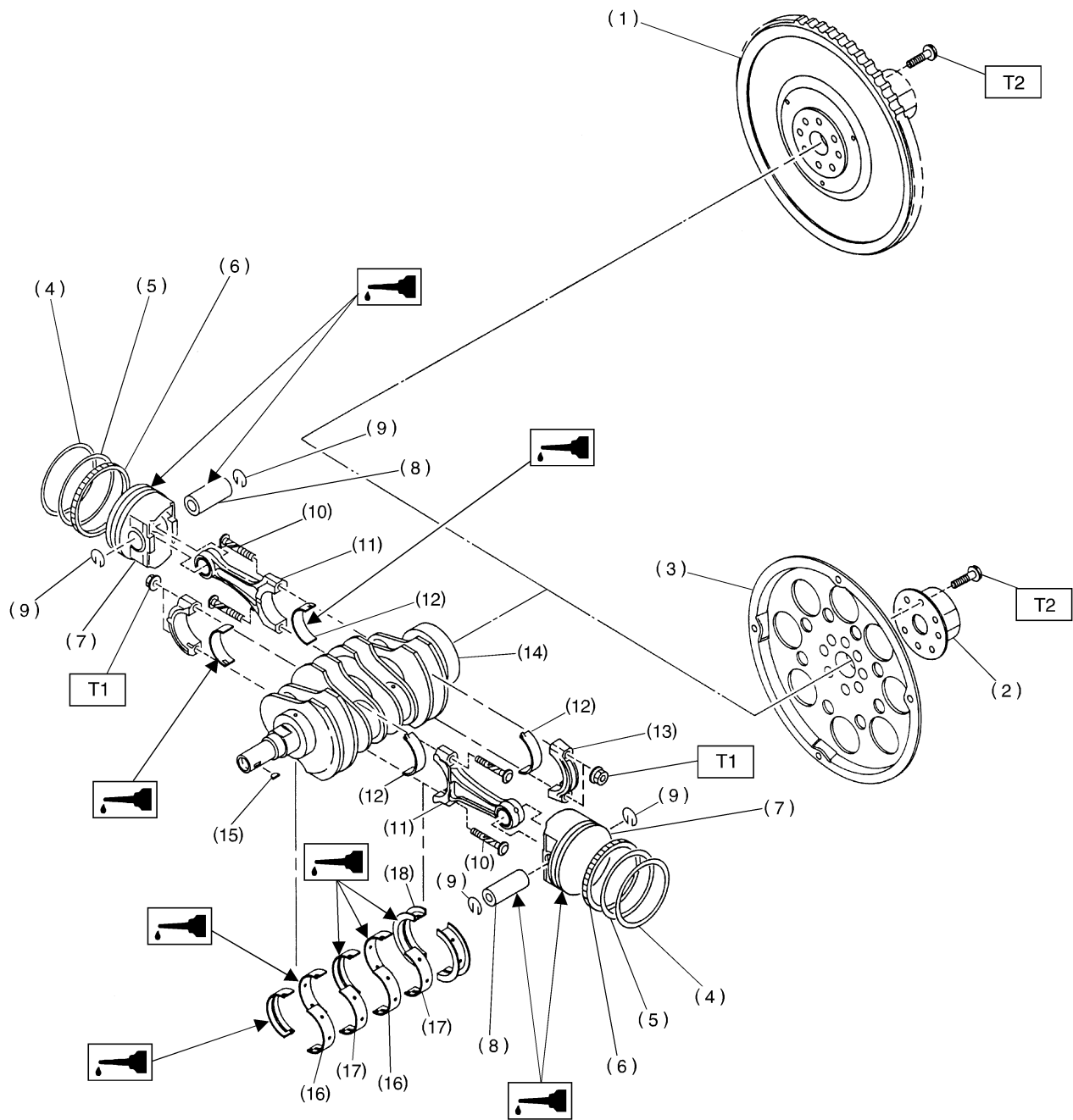
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|--------------------------|----------------------------|
| (1) Oil pressure switch | (15) Oil filter connector |
| (2) Cylinder block (RH) | (16) Oil strainer |
| (3) Service hole plug | (17) Gasket |
| (4) Gasket | (18) Oil pan |
| (5) Oil separator cover | (19) Drain plug |
| (6) Water by-pass pipe | (20) Metal gasket |
| (7) Oil pump | (21) Oil level gauge guide |
| (8) Front oil seal | (22) Water pump sealing |
| (9) Rear oil seal | (23) Oil filter |
| (10) O-ring | (24) Gasket |
| (11) Service hole cover | (25) Water pump hose |
| (12) Cylinder block (LH) | |
| (13) Water pump | |
| (14) Baffle plate | |

Tightening torque: N·m (kgf-m, ft-lb)

- | | |
|-------------|----------------------|
| T1: | 5 (0.5, 3.6) |
| T2: | 6.4 (0.65, 4.7) |
| T3: | 10 (1.0, 7) |
| T4: | 25 (2.5, 18.1) |
| T5: | 47 (4.8, 34.7) |
| T6: | 69 (7.0, 50.6) |
| T7: | First 12 (1.2, 8.7) |
| | Second 12 (1.2, 8.7) |
| T8: | 16 (1.6, 11.6) |
| T9: | 44 (4.5, 33) |
| T10: | 25 (2.5, 18.1) |
| T11: | 54 (5.5, 39.8) |

6. CRANKSHAFT AND PISTON S103001A0506



B2M3429A

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- | | |
|------------------------|--------------------------------|
| (1) Flywheel (MT) | (9) Circlip |
| (2) Reinforcement (AT) | (10) Connecting rod bolt |
| (3) Drive plate (AT) | (11) Connecting rod |
| (4) Top ring | (12) Connecting rod bearing |
| (5) Second ring | (13) Connecting rod cap |
| (6) Oil ring | (14) Crankshaft |
| (7) Piston | (15) Woodruff key |
| (8) Piston pin | (16) Crankshaft bearing #1, #3 |

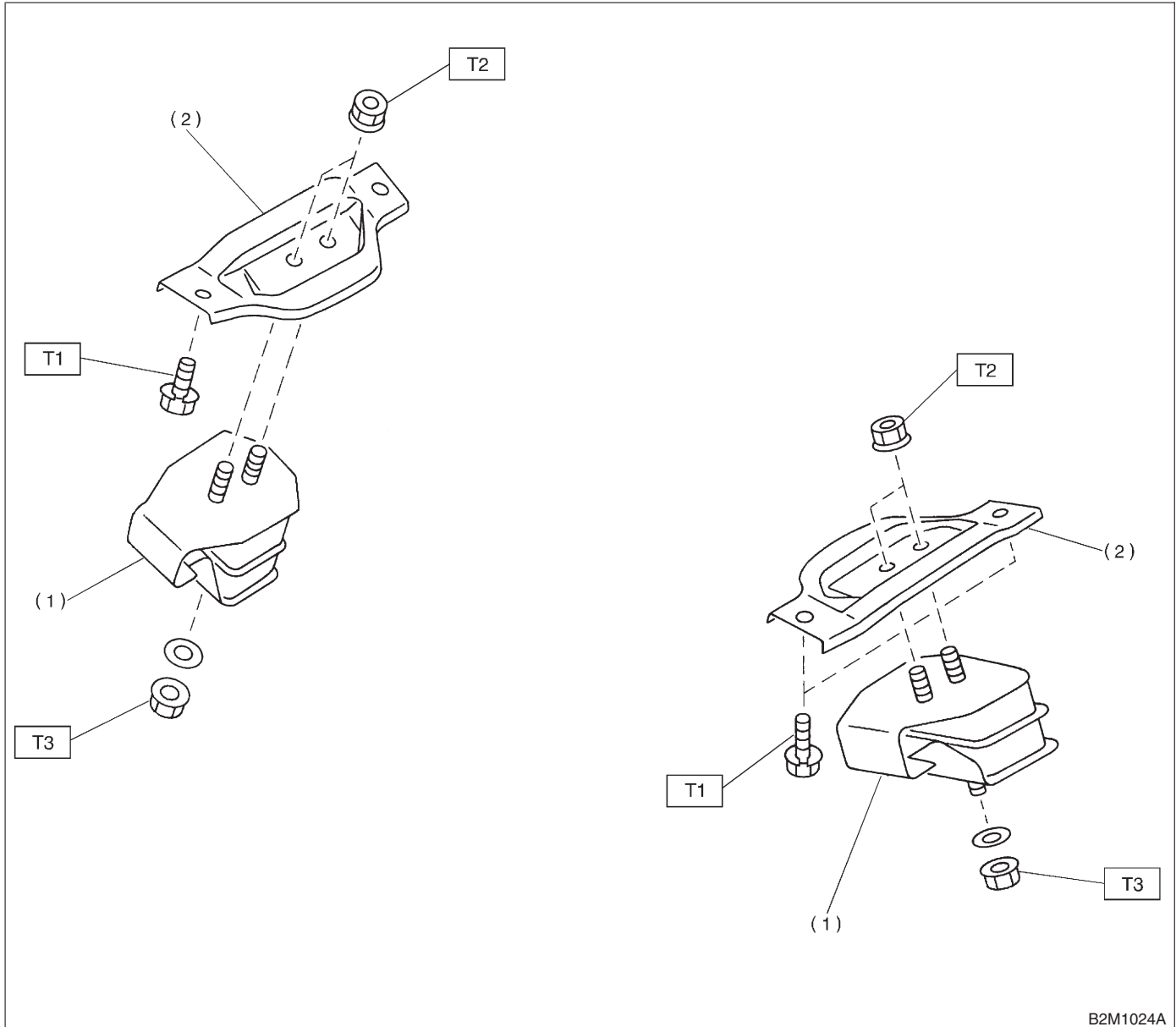
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|--------------------------------|
| (17) Crankshaft bearing #2, #4 |
| (18) Crankshaft bearing #5 |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 44.6 (4.55, 32.9)

T2: 72 (7.3, 52.8)

7. ENGINE MOUNTING S103001A0507



B2M1024A

- (1) Front cushion rubber
- (2) Front engine mounting bracket

Tightening torque: N·m (kgf-m, ft-lb)

T1: 34 (3.5, 25.3)

T2: 41 (4.2, 30)

T3: 83 (8.5, 61)

C: CAUTION S103001A03

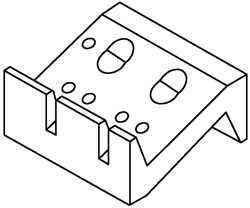
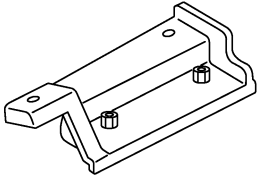
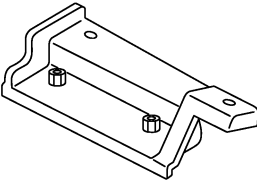
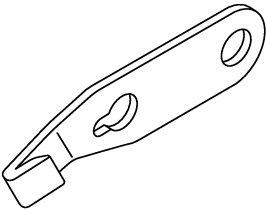
- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn your hands, because each part in the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect negative terminal from battery.
- All parts should be thoroughly cleaned, paying special attention to the engine oil passages, pistons and bearings.
- Rotating parts and sliding parts such as piston, bearing and gear should be coated with oil prior to assembly.
- Be careful not to let oil, grease or coolant contact the timing belt, clutch disc and flywheel.
- All removed parts, if to be reused, should be reinstalled in the original positions and directions.
- Bolts, nuts and washers should be replaced with new ones as required.
- Even if necessary inspections have been made in advance, proceed with assembly work while making rechecks.
- Remove or install engine in an area where chain hoists, lifting devices, etc. are available for ready use.
- Be sure not to damage coated surfaces of body panels with tools or stain seats and windows with coolant or oil. Place a cover over fenders, as required, for protection.
- Prior to starting work, prepare the following:
Service tools, clean cloth, containers to catch coolant and oil, wire ropes, chain hoist, transmission jacks, etc.
- Lift-up or lower the vehicle when necessary. Make sure to support the correct positions.

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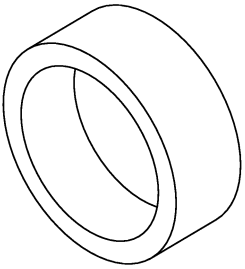
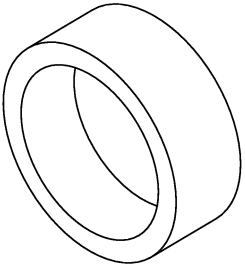
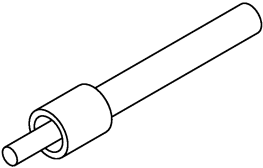
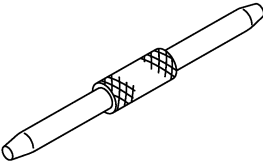
D: PREPARATION TOOL S103001A17

1. SPECIAL TOOLS S103001A1701

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B2M3850	498267800	CYLINDER HEAD TABLE	<ul style="list-style-type: none"> Used for replacing valve guides. Used for removing and installing valve springs.
 B2M3851	498457000	ENGINE STAND ADAPTER RH	Used with ENGINE STAND (499817000).
 B2M3852	498457100	ENGINE STAND ADAPTER LH	Used with ENGINE STAND (499817000).
 B2M3853	498497100	CRANKSHAFT STOPPER	Used for stopping rotation of flywheel when loosening and tightening crankshaft pulley bolt, etc.

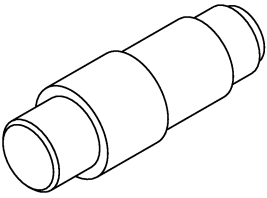
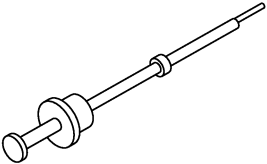
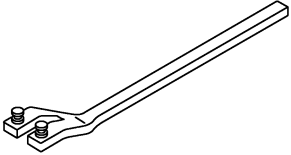
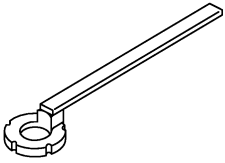
GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>B2M3854</p>	498747100	PISTON GUIDE	<ul style="list-style-type: none"> Used for installing piston in cylinder. For 2200 cc engine.
 <p>B2M3854</p>	498747300	PISTON GUIDE	<ul style="list-style-type: none"> Used for installing piston in cylinder. For 2500 cc engine.
 <p>B2M3855</p>	498857100	VALVE OIL SEAL GUIDE	Used for press-fitting of intake and exhaust valve guide oil seals.
 <p>B2M3856</p>	499017100	PISTON PIN GUIDE	Used for installing piston pin, piston and connecting rod.

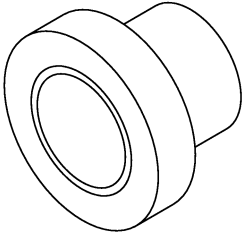
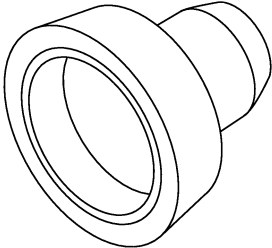
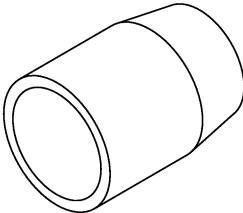
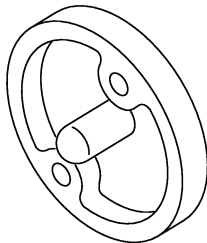
GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>B2M3857</p>	499037100	CONNECTING ROD BUSHING REMOVER & INSTALLER	Used for removing and installing connecting rod bushing.
 <p>B2M3858</p>	499097700	PISTON PIN REMOVER ASSY	Used for removing piston pin.
 <p>B2M3859</p>	499207100	CAMSHAFT SPROCKET WRENCH	Used for removing and installing camshaft sprocket (LH side).
 <p>H5M0978</p>	499207400	CAMSHAFT SPROCKET WRENCH	Used for removing and installing camshaft sprocket (RH side).

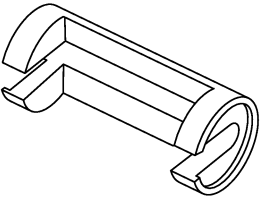
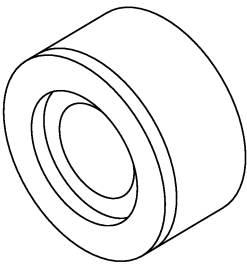
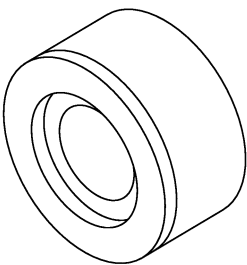
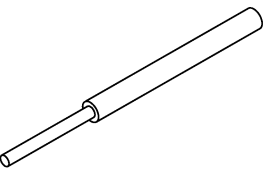
GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B2M3860	499587700	CAMSHAFT OIL SEAL INSTALLER	Used for installing cylinder head plug.
 B2M3861	499587200	CRANKSHAFT OIL SEAL INSTALLER	<ul style="list-style-type: none"> Used for installing crankshaft oil seal. Used with CRANKSHAFT OIL SEAL GUIDE (499597100).
 B2M3862	499597000	CAMSHAFT OIL SEAL GUIDE	<ul style="list-style-type: none"> Used for installing camshaft oil seal. Used with CAMSHAFT OIL SEAL INSTALLER (499587500).
 B2M3863	499597100	CRANKSHAFT OIL SEAL GUIDE	<ul style="list-style-type: none"> Used for installing crankshaft oil seal. Used with CRANKSHAFT OIL SEAL INSTALLER (499587200).

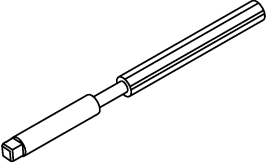
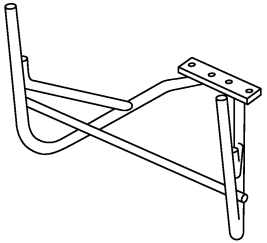
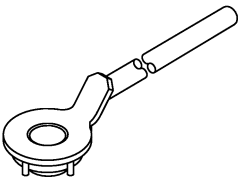
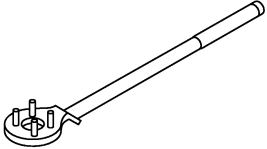
GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>B2M3864</p>	499718000	VALVE SPRING REMOVER	Used for removing and installing valve spring.
 <p>B2M3865</p>	499767700	VALVE GUIDE ADJUSTER	Used for installing intake valve guides.
 <p>B2M3865</p>	499767800	VALVE GUIDE ADJUSTER	Used for installing exhaust valve guide.
 <p>B2M3867</p>	499767200	VALVE GUIDE REMOVER	Used for removing valve guides.

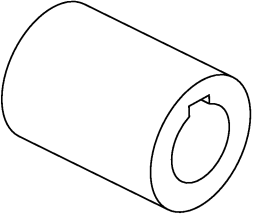
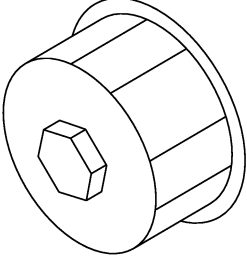
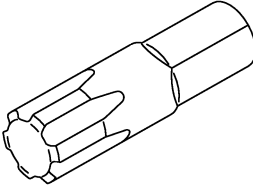
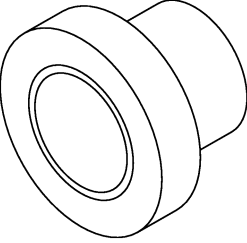
GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>B2M3868</p>	499767400	VALVE GUIDE REAMER	Used for reaming valve guides.
 <p>B2M3869</p>	499817100	ENGINE STAND	<ul style="list-style-type: none"> Stand used for engine disassembly and assembly. Used with ENGINE STAND ADAPTER RH (498457000) & LH (498457100).
 <p>H5M0977</p>	499977300	CRANK PULLEY WRENCH	<ul style="list-style-type: none"> Used for stopping rotation of crankshaft pulley when loosening and tightening crankshaft pulley bolts. For 2200 cc engine.
 <p>B2M3870</p>	499977100	CRANK PULLEY WRENCH	<ul style="list-style-type: none"> Used for stopping rotation of crankshaft pulley when loosening and tightening crankshaft pulley bolts. For 2500 cc engine

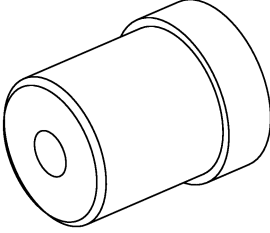
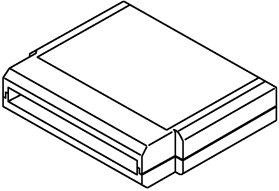

GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>B2M3871</p>	499987500	CRANKSHAFT SOCKET	Used for rotating crankshaft.
 <p>B2M3872</p>	498547000	OIL FILTER WRENCH	Used for removing and installing oil filter.
 <p>B2M3873</p>	499497000	TORX PLUS	Used for removing and installing camshaft cap.
 <p>B2M3874</p>	499587500	OIL SEAL INSTALLER	Used for installing front camshaft oil seal.

GENERAL DESCRIPTION

Mechanical

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 B2M3875	499587100	OIL SEAL INSTALLER	Used for installing oil pump oil seal.
 B2M3876	24082AA130	CARTRIDGE	Troubleshooting for electrical systems.
 B2M3877	22771AA0202	SELECT MONITOR KIT	Troubleshooting for electrical systems. • English: 22771AA020 (With printer) 22771AA030 (Without printer)

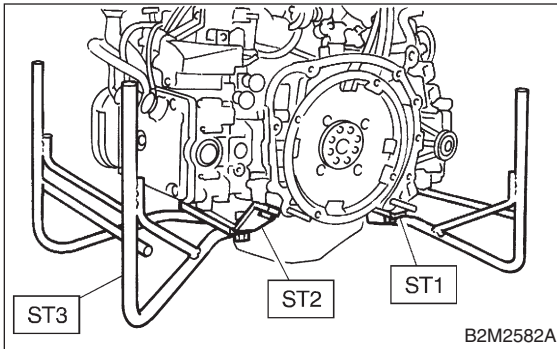
2. GENERAL PURPOSE TOOLS S103001A1702

TOOL NAME	REMARKS
Compression gauge	Used for measuring compression.
Tachometer (Secondary pick-up type)	Used for measuring idle speed.
Timing light	Used for measuring ignition timing.

E: PROCEDURE S103001E45

1) After removing the engine from the body, secure it in the ST shown below.

- | | | |
|-----|-----------|----------------------------|
| ST1 | 498457000 | ENGINE STAND ADAPTER
RH |
| ST2 | 498457100 | ENGINE STAND ADAPTER
LH |
| ST3 | 499817000 | ENGINE STAND |



2) It is possible to conduct the following service procedures with engine on the vehicle, however, the procedures described in this section are based on the condition that the engine is removed from the vehicle.

- Timing Belt
- Valve Rocker Assembly
- Camshaft
- Cylinder Head