

# General Description

## MECHANICAL

### 1. General Description

#### A: SPECIFICATION

Engine	Model	2.0 L		
	Cylinder arrangement	Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine		
	Valve system mechanism	Chain driven, double overhead camshaft, 4-valve/cylinder		
	Bore x Stroke	mm (in)		84.0 x 90.0 (3.31 x 3.54)
	Displacement	cm <sup>3</sup> (cu in)		1,995 (121.73)
	Compression ratio	10.5		
	Compression pressure (at 200 — 300 rpm)	kPa (kg/cm <sup>2</sup> , psi)	Standard	1,050 — 1,400 (11 — 14, 152 — 203)
	Number of piston rings	Compression ring: 2 Oil ring: 1		
	Intake valve timing	Open	Max. retard	ATDC 25°
			Min. advance	BTDC 43°
		Close	Max. retard	ABDC 85°
			Min. advance	ABDC 17°
	Exhaust valve timing	Open	Max. retard	ABDC 3°
			Min. advance	BBDC 52°
		Close	Max. retard	ATDC 47°
			Min. advance	BTDC 8°
	Cam clearance	mm (in)	Intake	Standard
			Exhaust	Standard
	Idle speed (For CVT model, select lever in "P" or "N" range. For MT model, gear shift lever in neutral position.)	rpm	No load	Standard
			A/C ON	Standard
	Ignition order	1 → 3 → 2 → 4		
	Ignition timing	BTDC/rpm		Standard
		16°±10°/650		

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NOTE:

OS: Oversize US: Undersize

Cam-shaft	Bending	mm (in)	Limit	0.020 (0.00079)
	Cam lobe height	mm (in)	Intake Standard Exhaust Standard	40.77 — 40.87 (1.605 — 1.609) 40.15 — 40.25 (1.581 — 1.585)
	Cam base circle diameter	mm (in)	Standard	34.0 (1.339)
	Journal outer diameter	mm (in)	Standard	25.946 — 25.963 (1.0215 — 1.0222)
	Thrust clearance	mm (in)	Standard	0.068 — 0.116 (0.0027 — 0.0047)
	Oil clearance	mm (in)	Standard	0.037 — 0.072 (0.0015 — 0.0028)
Cylinder head	Warpage (mating surface with cylinder block)	mm (in)	Limit	0.035 (0.0014)
	Grinding limit	mm (in)		To 98.4 (3.874)
	Height	mm (in)	Standard	98.5 (3.878)
Valve & valve guide	Valve overall length	mm (in)	Intake Exhaust	103.3 (4.067) 94.1 (3.705)
	Valve head edge thickness	mm (in)	Intake Standard Exhaust Standard	0.8 — 1.2 (0.031 — 0.047) 1.0 — 1.4 (0.039 — 0.055)
	Valve stem outer diameter	mm (in)	Intake Standard Exhaust Standard	5.455 — 5.470 (0.2148 — 0.2154) 5.445 — 5.460 (0.2144 — 0.2150)
	Valve guide inner diameter	mm (in)	Standard	5.500 — 5.512 (0.2165 — 0.2170)
	Clearance between valve and valve guide	mm (in)	Intake Standard Exhaust Standard	0.030 — 0.057 (0.0012 — 0.0022) 0.040 — 0.067 (0.0016 — 0.0026)
	Valve guide protrusion amount	mm (in)	Standard	11.4 — 11.8 (0.449 — 0.465)
	Valve stem end outer diameter	mm (in)	Intake Standard Exhaust Standard	5.455 — 5.470 (0.2148 — 0.2154) 5.445 — 5.460 (0.2144 — 0.2150)
	Valve shim inner diameter	mm (in)	Standard	5.500 — 5.560 (0.2165 — 0.2189)
	Clearance between valve and valve shim	mm (in)	Standard	0.030 — 0.115 (0.0012 — 0.0045)
Valve seat	Seating width between valve and valve seat	mm (in)	Intake Standard Exhaust Standard	0.8 — 1.6 (0.031 — 0.063) 1.1 — 1.7 (0.043 — 0.067)
	Seating angle between valve and valve seat			90°
	Seating position between valve and valve seat			Valve face center
Valve spring	Free length	mm (in)	Standard	41.06 (1.617)
	Tension/spring height	N (kgf, lb)/mm (in)	Set Standard	182 — 210 (18.56 — 21.41, 40.92 — 47.22)/33.0 (1.299)
			Lift Standard	552 — 610 (56.29 — 62.20, 124.11 — 137.15)/22.0 (0.866)
	Squareness		Standard	2.5°, 1.8 mm (0.071 in) or less

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Cylinder block & piston	Cylinder block warpage (Mating surface with cylinder head)			mm (in)	Limit	0.025 (0.00098)	
	Grinding limit of cylinder block			mm (in)	To 204.9 (8.067)		
	Height of cylinder block			mm (in)	Standard	205.0 (8.071)	
	Inner diameter of cylinder liner	mm (in)	Cylinder bore size mark A	Standard	84.005 — 84.015 (3.3073 — 3.3077)		
			Cylinder bore size mark B	Standard	83.995 — 84.005 (3.3069 — 3.3073)		
	Cylindricality of cylinder liner			mm (in)	Limit	0.015 (0.0006)	
	Out-of-roundness of cylinder liner			mm (in)	Limit	0.010 (0.0004)	
	Piston grade point			mm (in)		38.0 (1.50)	
	Piston outer diameter	mm (in)	Standard	Grade A	Standard	83.975 — 83.985 (3.3061 — 3.3065)	
			Grade B	Standard		83.965 — 83.975 (3.3057 — 3.3061)	
			0.25 (0.0098) OS	Standard		84.215 — 84.235 (3.3155 — 3.3163)	
			0.50 (0.0197) OS	Standard		84.465 — 84.485 (3.3254 — 3.3262)	
Piston and piston pin	Clearance between cylinder liner and piston			mm (in)	Standard	0.020 — 0.040 (0.00079 — 0.00157)	
	Inner diameter of cylinder liner boring limit (diameter)			mm (in)		To 84.505 (3.3270)	
Piston ring	Degree of fit				Piston pin must be fitted into position with thumb at 20°C (68°F).		
	Clearance between piston and piston pin			mm (in)	Standard	0.004 — 0.008 (0.0002 — 0.0003)	
Connecting rod and connecting rod bearing	Closed gap	mm (in)	Compression ring	Top ring	Standard	0.20 — 0.35 (0.0079 — 0.0138)	
			Second ring	Standard		0.40 — 0.50 (0.0157 — 0.0197)	
			Oil ring (upper rail and lower rail)		Standard	0.20 — 0.50 (0.0079 — 0.0197)	
	Clearance between compression ring and piston		mm (in)	Top ring	Standard	0.040 — 0.080 (0.0016 — 0.0031)	
				Second ring	Standard	0.030 — 0.070 (0.0012 — 0.0028)	
Piston pin & connecting rod bushing	Bend or twist per 100 mm (3.94 in) in length			mm (in)	Limit	0.10 (0.0039)	
	Thrust clearance			mm (in)	Standard	0.070 — 0.330 (0.0028 — 0.0130)	
	Connecting rod bearing thickness (at center)	mm (in)	Standard size	Standard	1.492 — 1.508 (0.0587 — 0.0594)		
			0.03 (0.0012) US	Standard	1.511 — 1.515 (0.0595 — 0.0596)		
			0.05 (0.0020) US	Standard	1.521 — 1.525 (0.0599 — 0.0600)		
	Oil clearance			mm (in)	Standard	1.621 — 1.625 (0.0638 — 0.0640)	
	Clearance between piston pin and connecting rod bushing			mm (in)	Standard	0.017 — 0.047 (0.0007 — 0.0019)	

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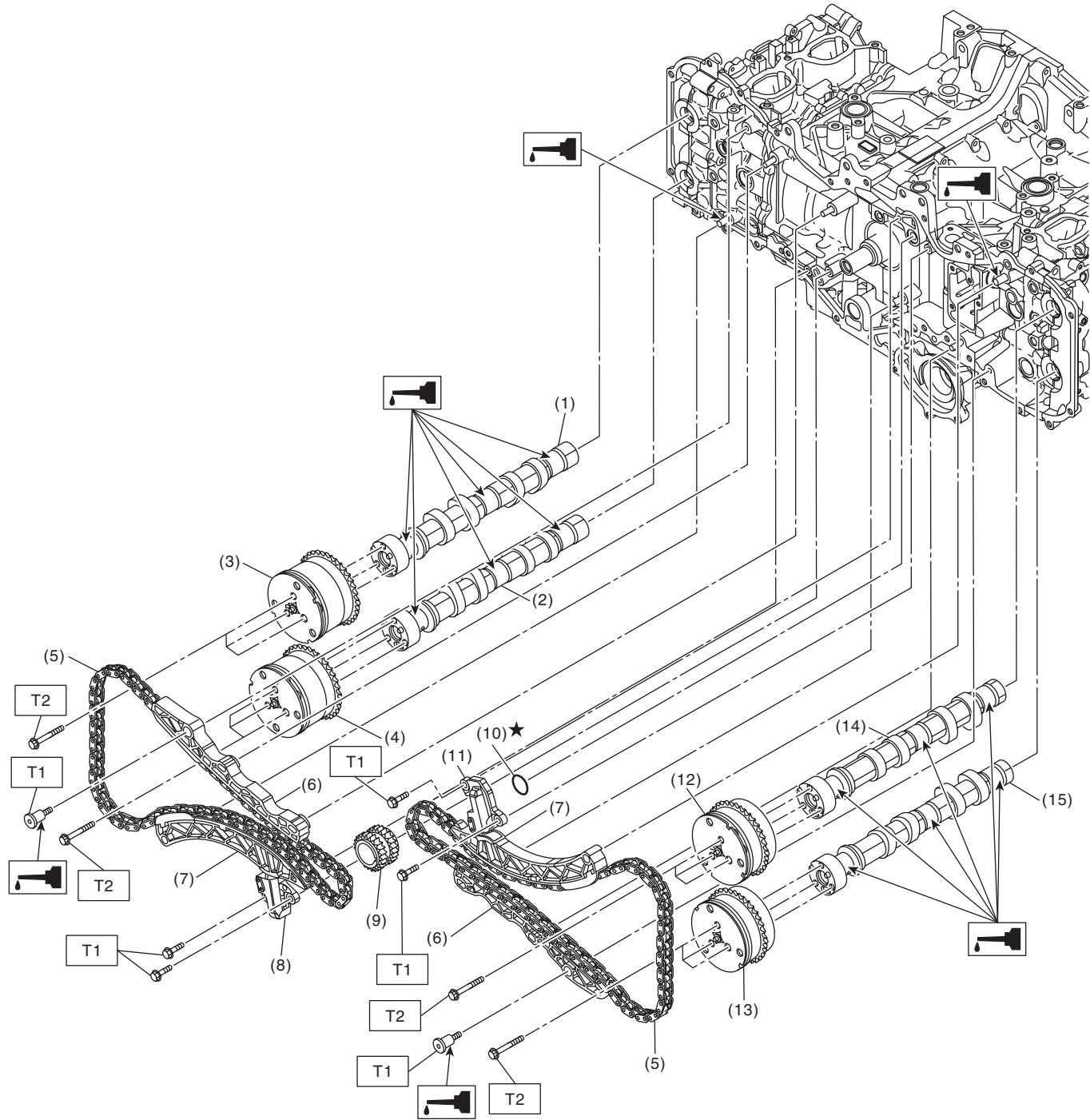
Crank-shaft and crank-shaft bearing	Bending		mm (in)	Limit	0.035 (0.0014)		
	Crankshaft pin	Cylindricality		mm (in)	Limit		
		Out-of-round-ness		mm (in)	Limit		
		Grinding limit (dia.)		mm (in)	To 47.726 (1.8790)		
	Crankshaft journal	Cylindricality		mm (in)	Limit		
		Out-of-round-ness		mm (in)	Limit		
		Grinding limit (dia.)		mm (in)	To 67.735 (2.6667)		
	Crankshaft pin outer diameter	mm (in)	Standard size	Standard	47.976 — 48.000 (1.8888 — 1.8898)		
			0.03 (0.0012) US	Standard	47.946 — 47.970 (1.8876 — 1.8886)		
			0.05 (0.0020) US	Standard	47.926 — 47.950 (1.8868 — 1.8878)		
			0.25 (0.0098) US	Standard	47.726 — 47.750 (1.8790 — 1.8799)		
	Crankshaft journal outer diameter	mm (in)	Standard size	Standard	67.985 — 68.009 (2.6766 — 2.6775)		
			0.03 (0.0012) US	Standard	67.955 — 67.979 (2.6754 — 2.6763)		
			0.05 (0.0020) US	Standard	67.935 — 67.959 (2.6746 — 2.6755)		
			0.25 (0.0098) US	Standard	67.735 — 67.759 (2.6667 — 2.6677)		
	Crankshaft bearing thickness (at center)	mm (in)	#1, #2, #3, #4	Standard size	Standard	2.495 — 2.513 (0.0982 — 0.0989)	
				0.03 (0.0012) US	Standard	2.519 — 2.522 (0.0992 — 0.0993)	
				0.05 (0.0020) US	Standard	2.529 — 2.532 (0.0996 — 0.0997)	
				0.25 (0.0098) US	Standard	2.629 — 2.632 (0.1035 — 0.1036)	
			#5	Standard size	Standard	2.493 — 2.511 (0.0981 — 0.0989)	
				0.03 (0.0012) US	Standard	2.517 — 2.520 (0.0991 — 0.0992)	
				0.05 (0.0020) US	Standard	2.527 — 2.530 (0.0995 — 0.0996)	
				0.25 (0.0098) US	Standard	2.627 — 2.630 (0.1034 — 0.1035)	
Thrust clearance			mm (in)	Standard	0.130 — 0.308 (0.00512 — 0.01213)		
Oil clearance			mm (in)	Standard	0.013 — 0.031 (0.00051 — 0.00122)		

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### B: COMPONENT

#### 1. TIMING CHAIN



ME-06796

# General Description

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(1) Intake camshaft RH	(8) Chain tensioner RH	(15) Exhaust camshaft LH
(2) Exhaust camshaft RH	(9) Crank sprocket	
(3) Intake cam sprocket RH	(10) O-ring	
(4) Exhaust cam sprocket RH	(11) Chain tensioner LH	
(5) Timing chain	(12) Intake cam sprocket LH	
(6) Chain guide	(13) Exhaust cam sprocket LH	
(7) Chain tension lever	(14) Intake camshaft LH	

***Tightening torque: N·m (kgf·m, ft·lb)***

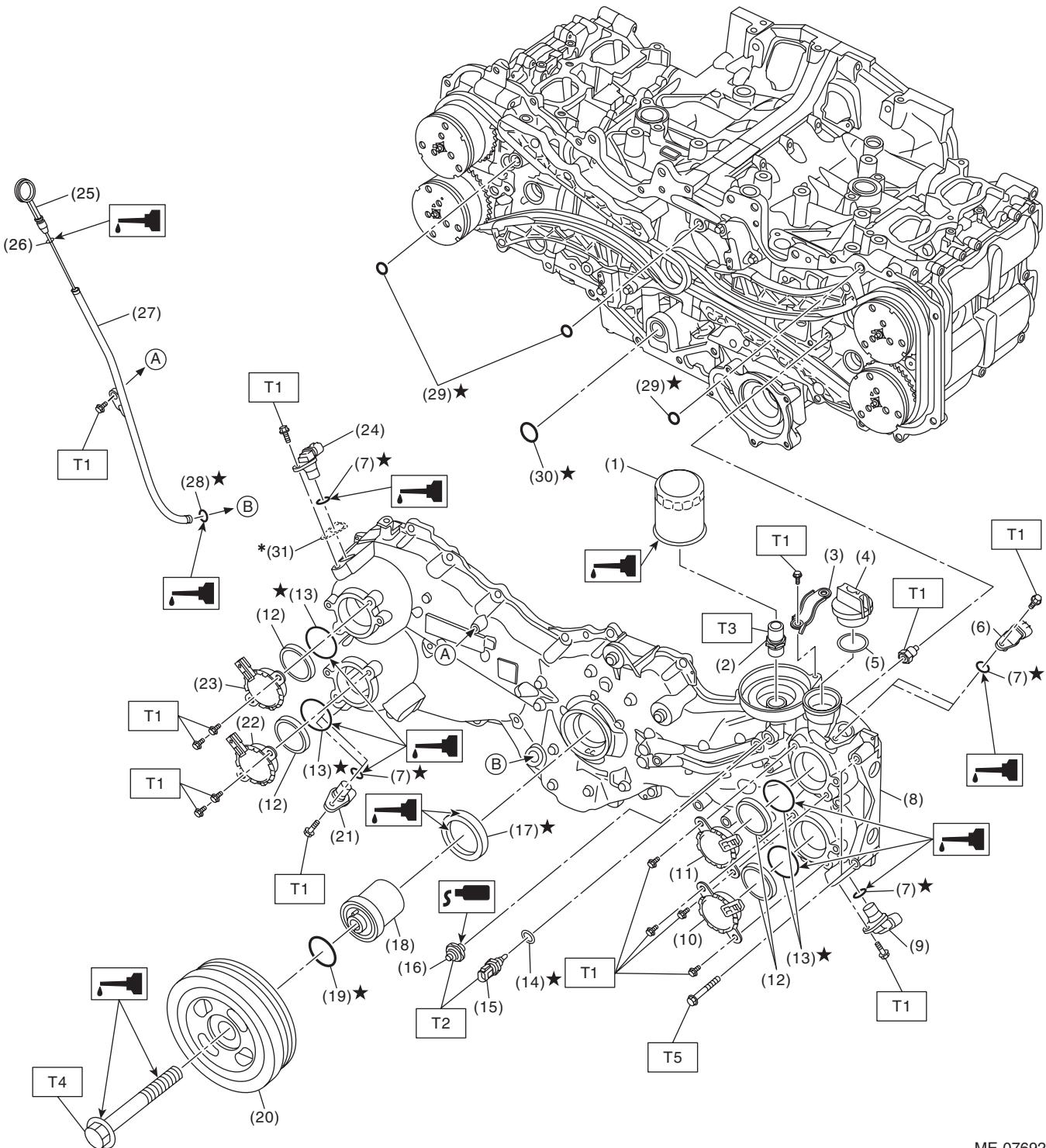
***T1: 6.4 (0.7, 4.7)***

***T2: 18 (1.8, 13.3)***

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### 2. CHAIN COVER



# General Description

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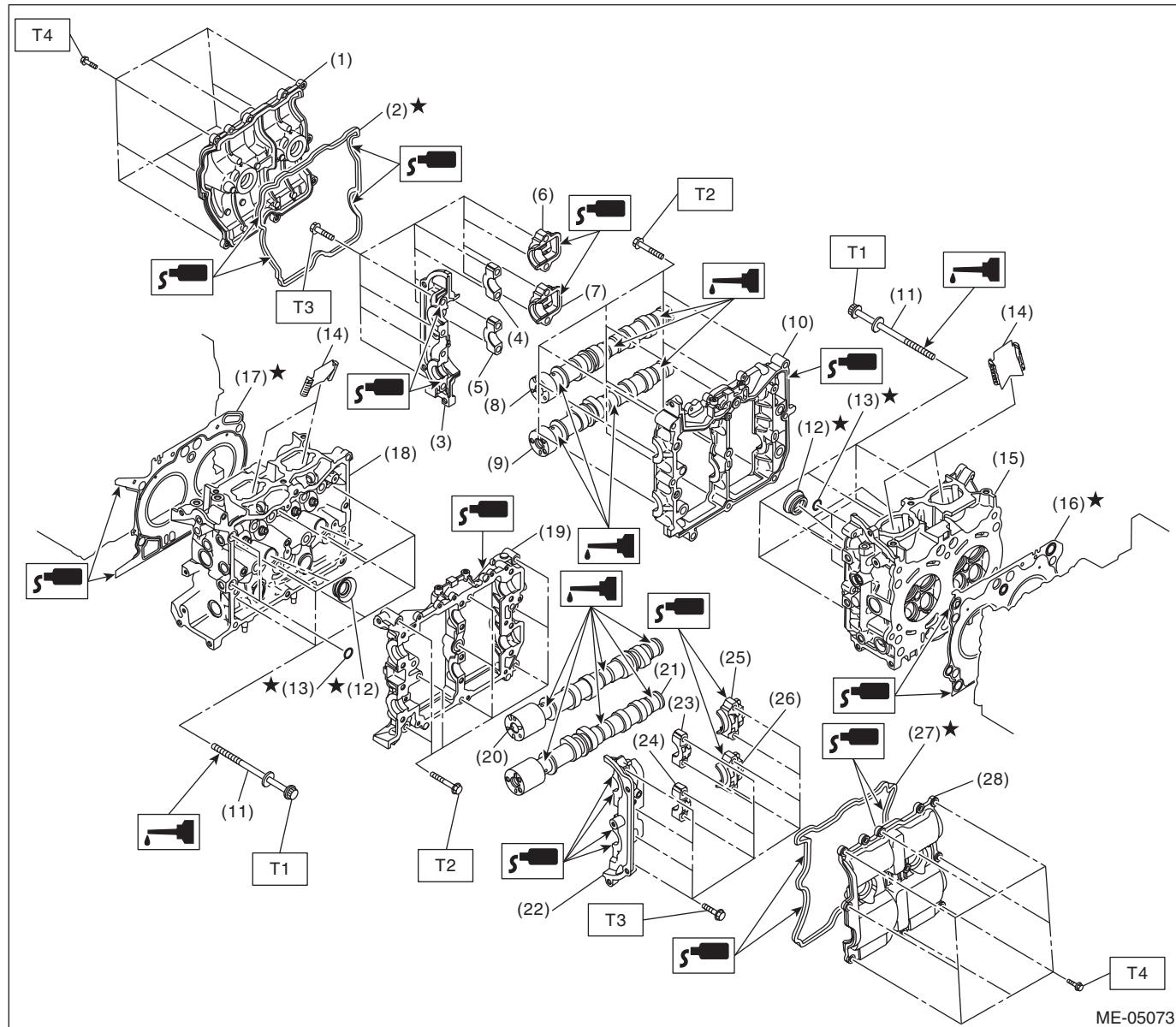
(1) Oil filter	(14) Gasket	(27) Oil level gauge guide
(2) Oil pump union	(15) Engine oil temperature sensor	(28) O-ring
(3) Generator cord stay	(16) Oil pressure switch	(29) O-ring
(4) Oil filler cap	(17) Front oil seal	(30) O-ring
(5) Gasket	(18) Crank pulley boss	(31) Spacer
(6) Intake camshaft position sensor LH	(19) O-ring	
(7) O-ring	(20) Crank pulley	<b>Tightening torque: N·m (kgf·m, ft-lb)</b>
(8) Chain cover	(21) Exhaust camshaft position sensor RH	<b>T1: 6.4 (0.7, 4.7)</b>
(9) Exhaust camshaft position sensor LH	(22) Exhaust oil control solenoid RH	<b>T2: 18 (1.8, 13.3)</b>
(10) Exhaust oil control solenoid LH	(23) Intake oil control solenoid RH	<b>T3: 45 (4.6, 33.2)</b>
(11) Intake oil control solenoid LH	(24) Intake camshaft position sensor RH	<b>T4: &lt;Ref. to ME(H4DO)-86, INSTALLATION, Crank Pulley.&gt;</b>
(12) Back-up ring	(25) Oil level gauge	<b>T5: &lt;Ref. to ME(H4DO)-97, INSTALLATION, Chain Cover.&gt;</b>
(13) O-ring	(26) O-ring	

\* Use one or no spacer to adjust the gap.

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### 3. CYLINDER HEAD AND CAMSHAFT



# General Description

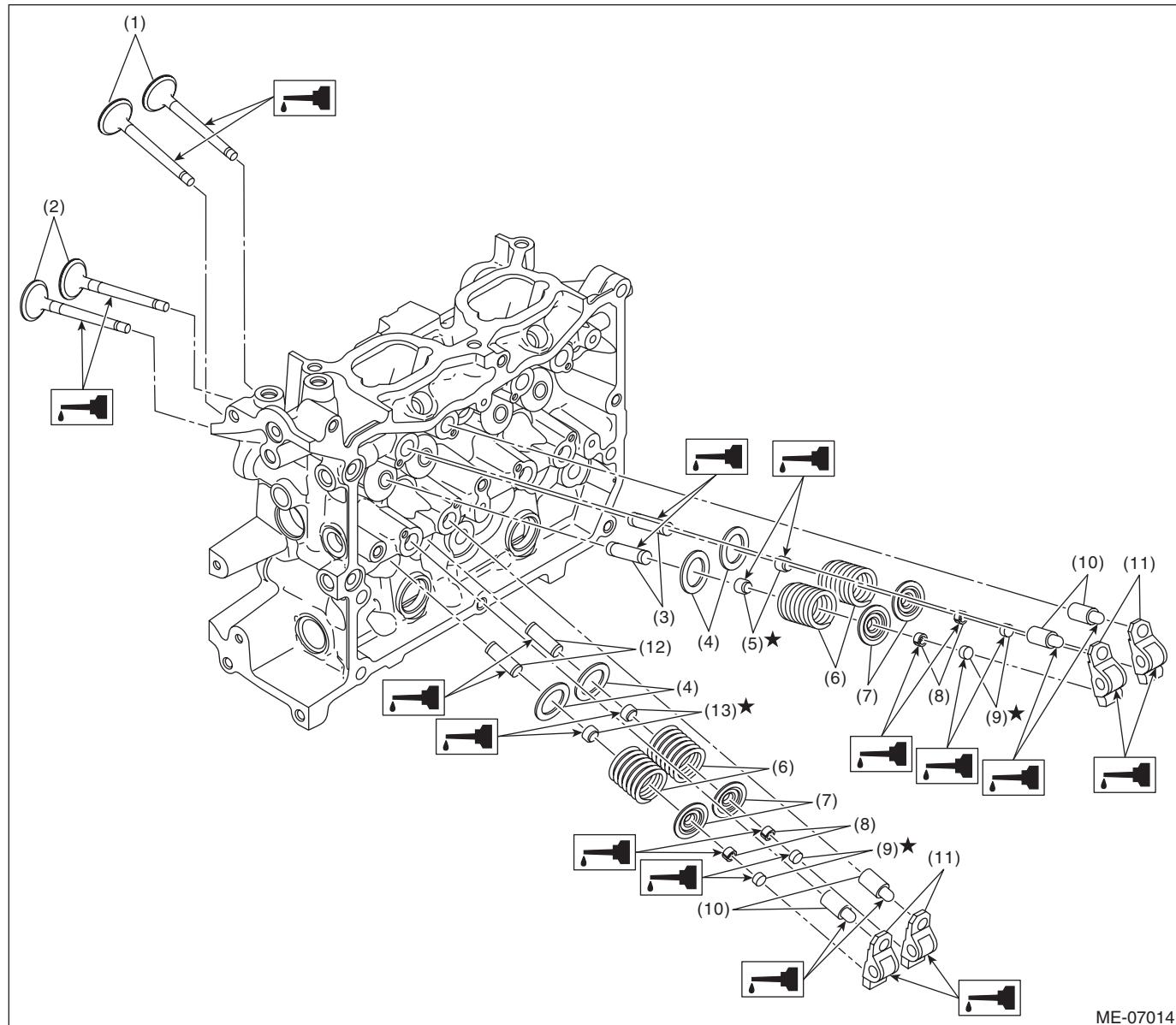
MECHANICAL

(1) Rocker cover RH	(13) O-ring	(24) Exhaust center camshaft cap LH
(2) Rocker cover gasket RH	(14) Cylinder head plate	(25) Intake rear camshaft cap LH
(3) Front camshaft cap RH	(15) Cylinder head RH	(26) Exhaust rear camshaft cap LH
(4) Intake center camshaft cap RH	(16) Cylinder head gasket RH	(27) Rocker cover gasket LH
(5) Exhaust center camshaft cap RH	(17) Cylinder head gasket LH	(28) Rocker cover LH
(6) Intake rear camshaft cap RH	(18) Cylinder head LH	
(7) Exhaust rear camshaft cap RH	(19) Cam carrier LH	<b><i>Tightening torque: N·m (kgf·m, ft·lb)</i></b>
(8) Intake camshaft RH	(20) Intake camshaft LH	<b><i>T1: &lt;Ref. to ME(H4DO)-203, INSTALLATION, Cylinder Head.&gt;</i></b>
(9) Exhaust camshaft RH	(21) Exhaust camshaft LH	<b><i>T2: &lt;Ref. to ME(H4DO)-164, INSTALLATION, Cam Carrier.&gt;</i></b>
(10) Cam carrier RH	(22) Front camshaft cap LH	<b><i>T3: &lt;Ref. to ME(H4DO)-189, ASSEMBLY, Cam Carrier.&gt;</i></b>
(11) Cylinder head bolt	(23) Intake center camshaft cap LH	<b><i>T4: &lt;Ref. to ME(H4DO)-145, INSTALLATION, Rocker Cover.&gt;</i></b>
(12) Spark plug pipe gasket		

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### 4. VALVE ASSY

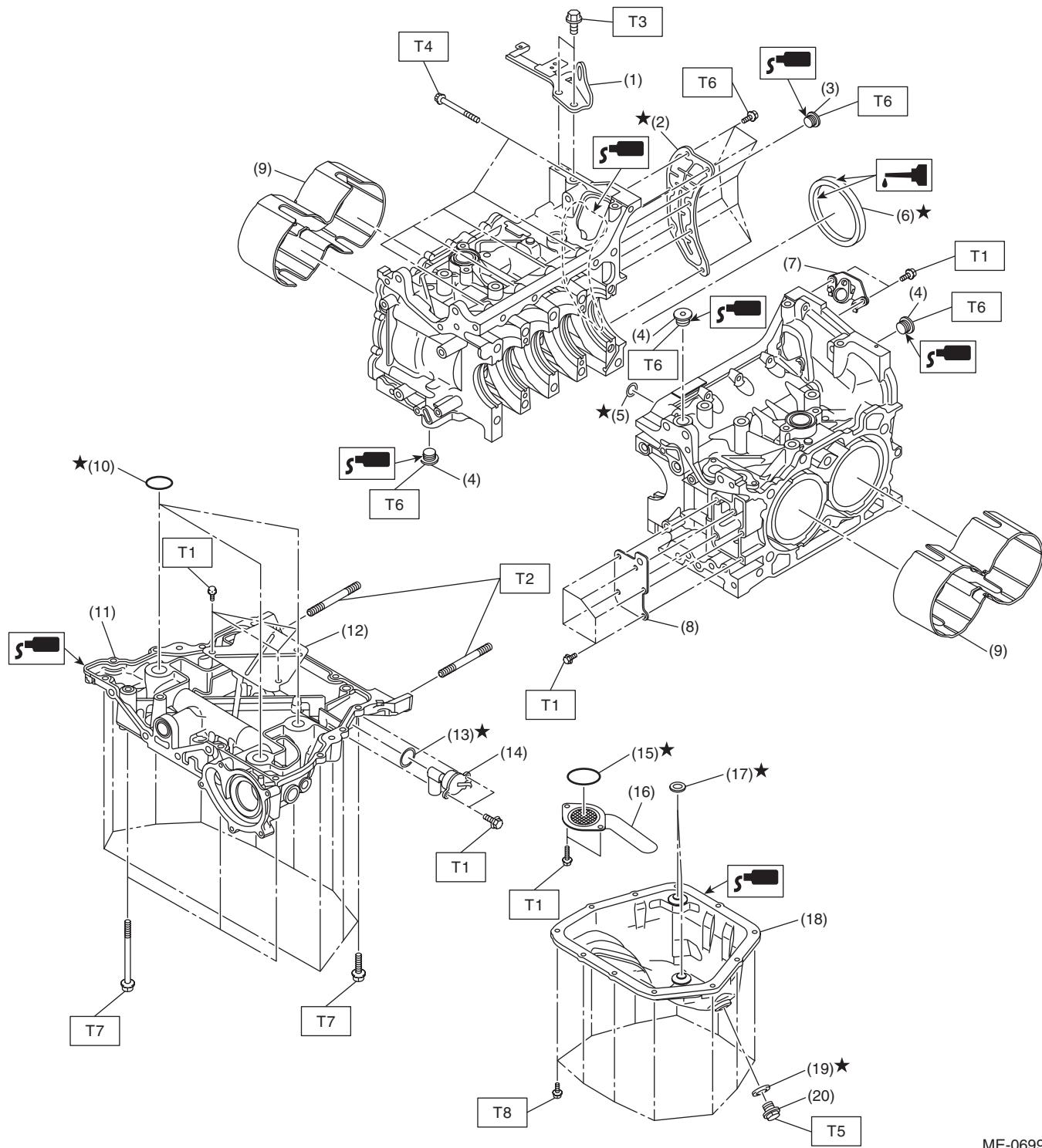


(1) Exhaust valve	(6) Valve spring	(11) Roller rocker arm
(2) Intake valve	(7) Valve spring retainer	(12) Exhaust valve guide
(3) Intake valve guide	(8) Valve collet	(13) Exhaust valve oil seal
(4) Valve spring seat	(9) Valve shim	
(5) Intake valve oil seal	(10) Roller rocker arm pivot	

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## 5. CYLINDER BLOCK 1



ME-06990

# General Description

## MECHANICAL

(1) Engine rear hanger	(11) Oil pan upper
(2) Oil separator cover	(12) Baffle plate
(3) Cylinder block plug	(13) O-ring
(4) Main gallery plug	(14) Oil level switch
(5) O-ring	(15) O-ring
(6) Rear oil seal	(16) Oil strainer
(7) Crankshaft position sensor holder	(17) Oil pan seal ring
(8) Cylinder block plate	(18) Oil pan
(9) Water jacket spacer (XV model)	(19) Drain plug gasket
(10) O-ring	(20) Drain plug

**Tightening torque: N·m (kgf·m, ft·lb)**

**T1: 6.4 (0.7, 4.7)**

**T2: 10 (1.0, 7.4)**

**T3: 21 (2.1, 15.5)**

**T4: 25 (2.5, 18.4)**

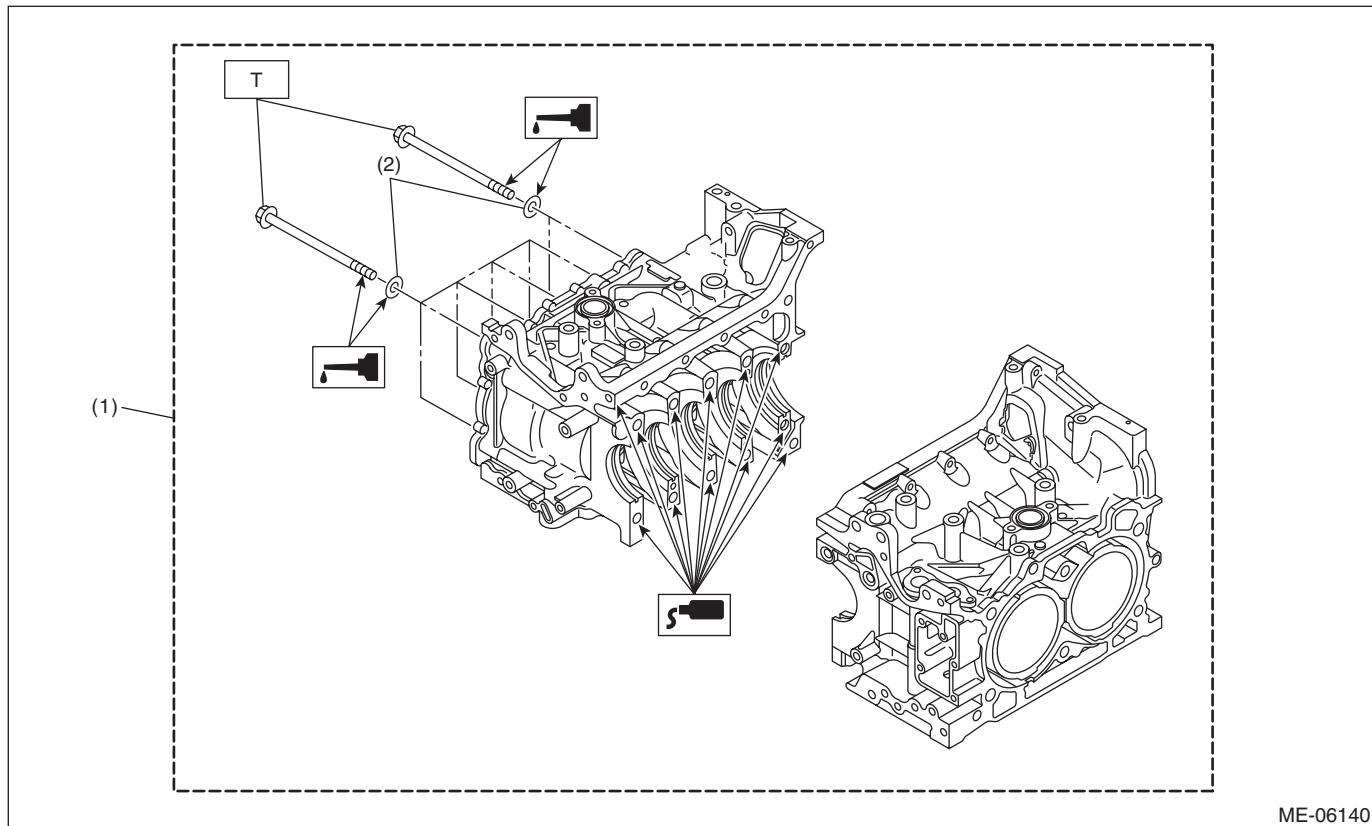
**T5: 41.7 (4.3, 30.8)**

**T6: <Ref. to ME(H4DO)-309, CYLINDER BLOCK, ASSEMBLY, Cylinder Block.>**

**T7: <Ref. to ME(H4DO)-261, INSTALLATION, Cylinder Block.>**

**T8: <Ref. to LU(H4DO)-16, OIL PAN, INSTALLATION, Oil Pan and Strainer.>**

## 6. CYLINDER BLOCK 2



ME-06140

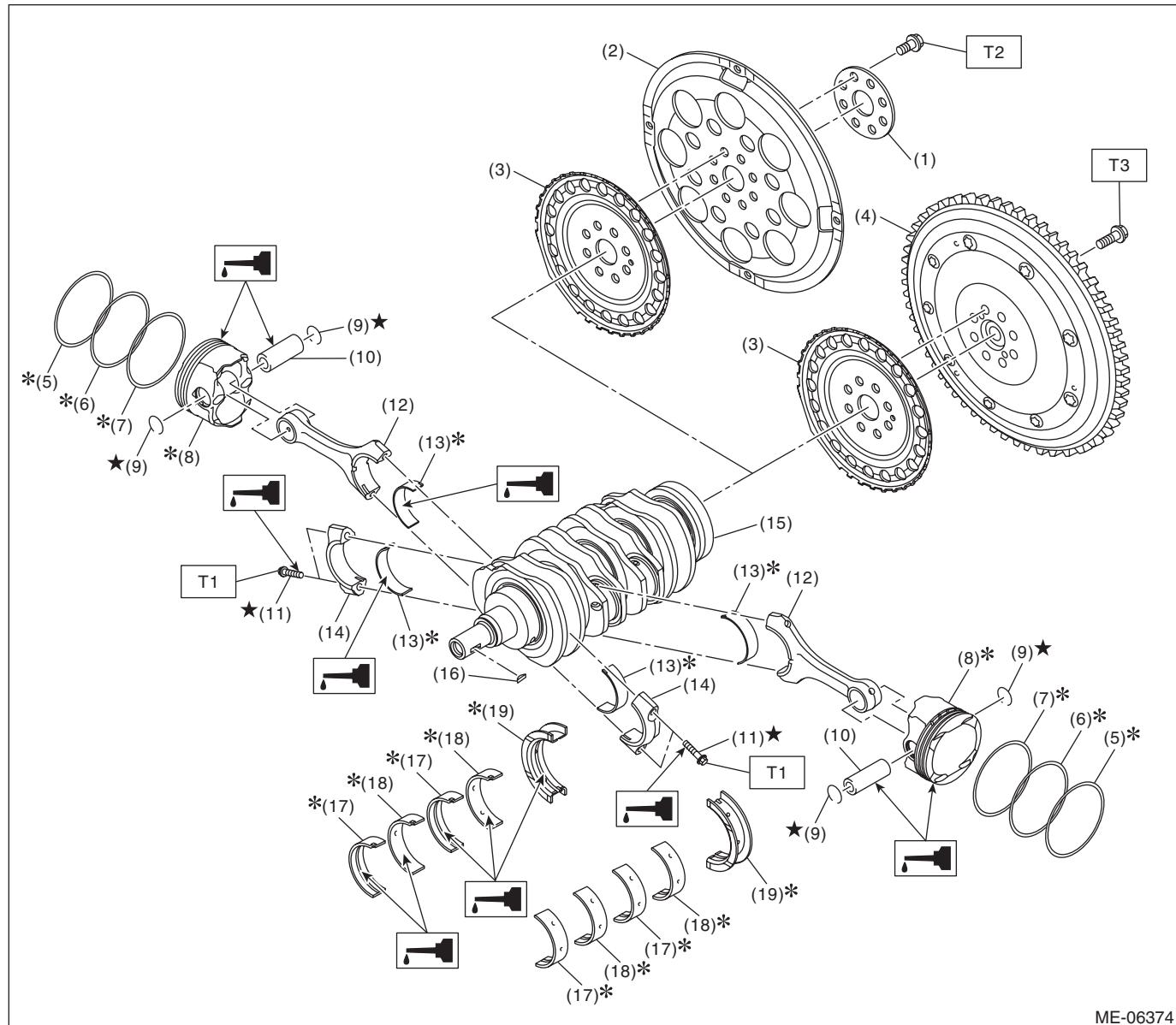
(1) Cylinder block ASSY

(2) Washer

**Tightening torque: N·m (kgf·m, ft·lb)**

**T: <Ref. to ME(H4DO)-261, INSTALLATION, Cylinder Block.>**

### 7. CRANKSHAFT AND PISTON



ME-06374

(1) Reinforcement (CVT model)	(9) Circlip	(17) Crankshaft bearing #1, #3
(2) Drive plate (CVT model)	(10) Piston pin	(18) Crankshaft bearing #2, #4
(3) Crankshaft position sensor plate	(11) Connecting rod cap bolt	(19) Crankshaft bearing #5
(4) Flywheel (MT model)	(12) Connecting rod	
(5) Top ring	(13) Connecting rod bearing	
(6) Second ring	(14) Connecting rod cap	
(7) Oil ring	(15) Crankshaft	
(8) Piston	(16) Woodruff key	

**Tightening torque: N·m (kgf-m, ft-lb)**

**T1:** *<Ref. to ME(H4DO)-261, INSTALLATION, Cylinder Block.>*

**T2:** *<Ref. to CVT-150, INSTALLATION, Drive Plate.>*

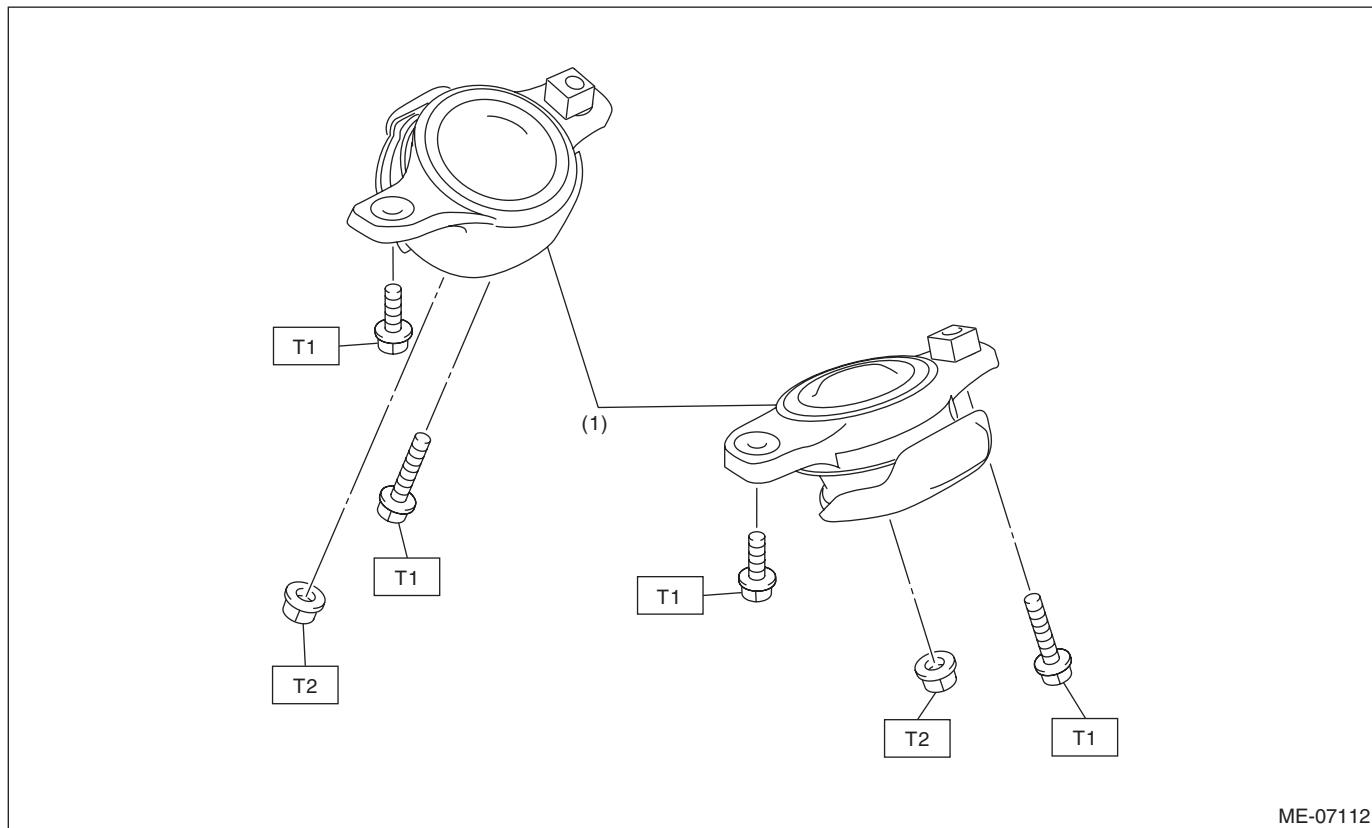
**T3:** *<Ref. to CL-12, INSTALLATION, Flywheel.>*

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### 8. ENGINE MOUNTING

- CVT model



(1) Front cushion rubber

***Tightening torque: N·m (kgf·m, ft-lb)***

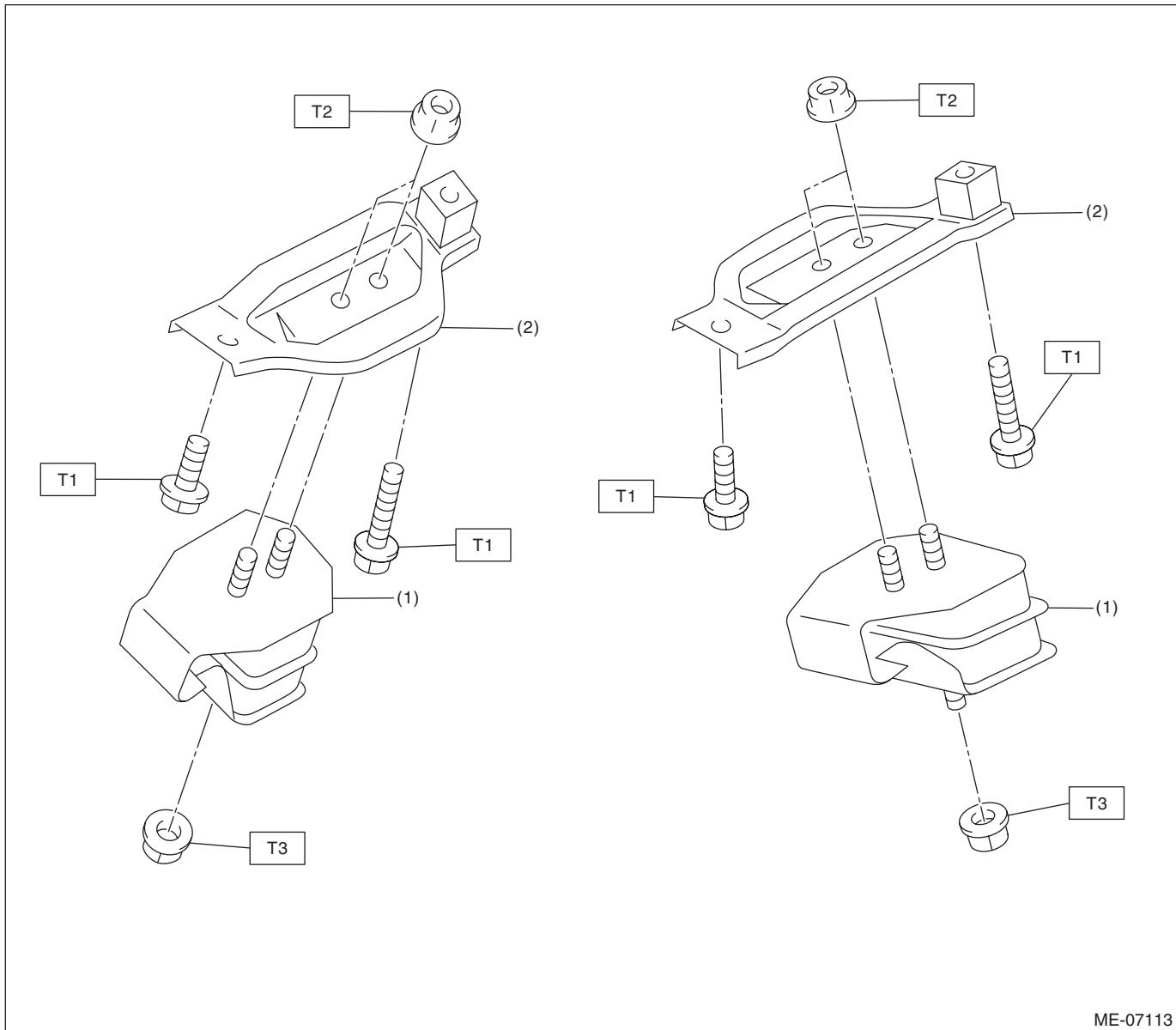
***T1: 35 (3.6, 25.8)***

***T2: 45 (4.6, 33.2)***

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- MT model



(1) Front cushion rubber

(2) Front engine mounting bracket

**Tightening torque: N·m (kgf·m, ft·lb)**

**T1: 35 (3.6, 25.8)**

**T2: 42 (4.3, 31.0)**

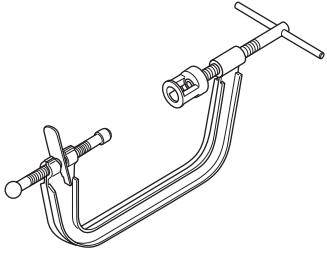
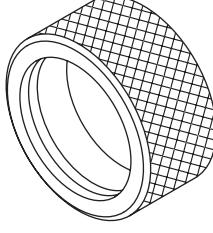
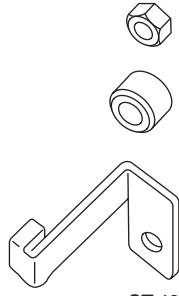
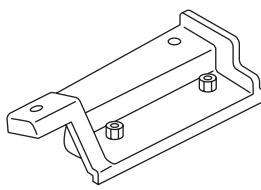
**T3: 45 (4.6, 33.2)**

## C: CAUTION

- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a safety cap, protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
  2. Protect the vehicle using a seat cover, fender cover, etc.
  3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- Remove or install the engine in an area where chain hoists, lifting devices, etc. are available for ready use. When lifting up the vehicle, make sure to support the vehicle at the jack-up points.
- Be careful not to let any oil or grease contact the clutch disc or flywheel.
- Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.
- Keep the removed parts in order and protect them from dust and dirt.
- All removed parts, if to be reused, should be reinstalled in the original positions with attention to the correct directions, etc.
- Rotating parts and sliding parts such as piston, bearing and gear should be coated with oil when being assembled.
- Bolts, nuts and washers should be replaced with new parts as required.
- Be sure to tighten the fasteners including bolts and nuts to the specified torque.

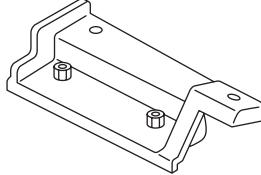
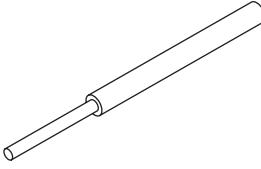
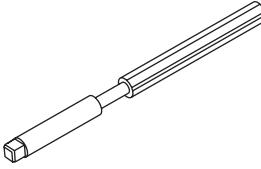
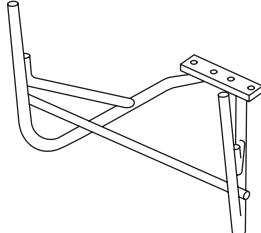
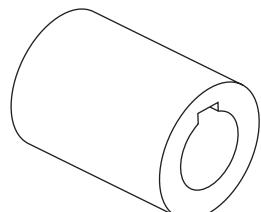
## D: PREPARATION TOOL

### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST0920287002000	0920287002000	REMOVER AND REPLACER	Used for removing and installing valve spring.
 ST-398437700	398437700	OIL SEAL INSTALLER	Used for installing the front oil seal of engine.
 ST-498277200	498277200	STOPPER SET	Used for preventing the torque converter from falling when removing and installing the engine.
 ST-498457000	498457000	ENGINE STAND ADAPTER RH	<ul style="list-style-type: none"><li>Used for disassembling and assembling engine.</li><li>Used together with ENGINE STAND (499817100) and ADAPTER (18362AA020).</li></ul>

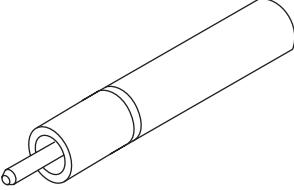
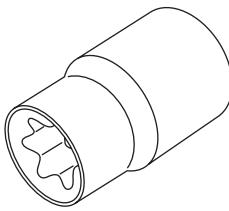
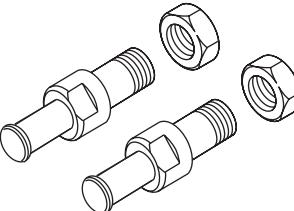
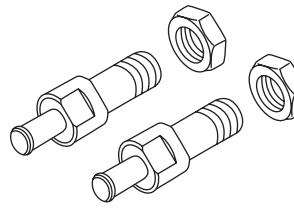
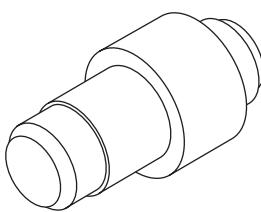
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### MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-498457100	498457100	ENGINE STAND ADAPTER LH	<ul style="list-style-type: none"> <li>Used for disassembling and assembling engine.</li> <li>Used together with ENGINE STAND (499817100) and ADAPTER (18362AA020).</li> </ul>
 ST-499765700	499765700	VALVE GUIDE REMOVER AND INSTALLER	Used for removing and installing valve guide.
 ST-499765900	499765900	VALVE GUIDE REAMER	Used for reaming valve guides.
 ST-499817100	499817100	ENGINE STAND	<ul style="list-style-type: none"> <li>Used for disassembling and assembling engine.</li> <li>Used together with ADAPTER (18362AA020), ENGINE STAND ADAPTER RH (498457000) and LH (498457100).</li> </ul>
 ST18252AA000	18252AA000	CRANKSHAFT SOCKET	Used for rotating crankshaft.

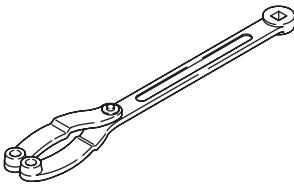
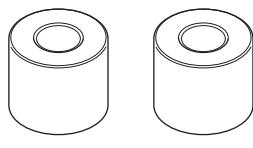
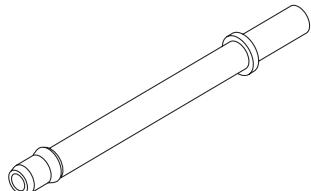
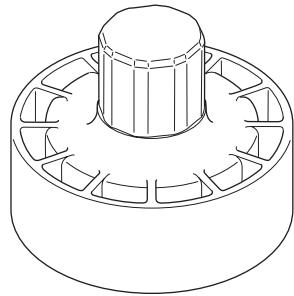
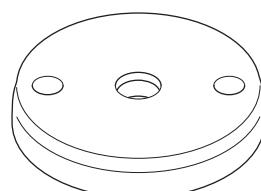
## General Description

MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	18261AA010	VALVE OIL SEAL GUIDE	Used for press-fitting of intake valve guide stem seals and exhaust valve guide stem seals.
	18270AA020	SOCKET	Used for removing and installing connecting rod.
	18334AA000	PULLEY WRENCH PIN SET	<ul style="list-style-type: none"> <li>Used for removing and installing the crank pulley.</li> <li>Used together with PULLEY WRENCH (18355AA000).</li> </ul>
	18334AA030	PULLEY WRENCH PIN SET	<ul style="list-style-type: none"> <li>Used for removing and installing water pump pulley, intake cam sprocket and exhaust cam sprocket.</li> <li>Used together with PULLEY WRENCH (18355AA000).</li> </ul>
	18350AA000	CONNECTING ROD BUSHING REMOVER AND INSTALLER	Used for removing and installing the connecting rod bushing at connecting rod small end.

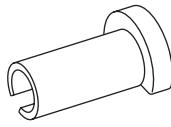
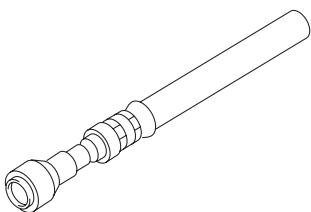
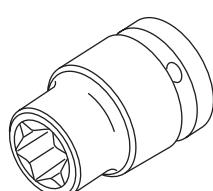
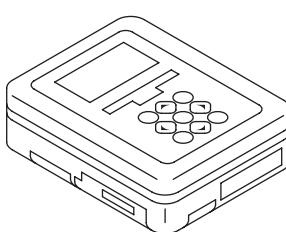
## General Description

### MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	18355AA000	PULLEY WRENCH	<ul style="list-style-type: none"> <li>Used for installing and removing the water pump pulley.</li> <li>Used for removing and installing the crank pulley.</li> <li>Used for removing and installing intake cam sprocket and exhaust cam sprocket.</li> <li>Used together with PULLEY WRENCH PIN SET (18334AA030) or PULLEY WRENCH PIN SET (18334AA000).</li> </ul>
	18362AA020	ADAPTER	<ul style="list-style-type: none"> <li>Used for disassembling and assembling engine.</li> <li>Used together with STAND (499817100), ENGINE STAND ADAPTER RH (498457000) and LH (498457100).</li> <li>Bolt used: M10 x 50 (SUBARU genuine Part No.: 010410500)</li> </ul>
	18471AA000	FUEL PIPE ADAPTER	Used for inspecting the fuel pressure.
	18657AA030	OIL SEAL INSTALLER	<ul style="list-style-type: none"> <li>Used for installing the rear oil seal of engine.</li> <li>Used together with OIL SEAL GUIDE (18671AA020).</li> </ul>
	18671AA020	OIL SEAL GUIDE	<ul style="list-style-type: none"> <li>Used for installing the rear oil seal of engine.</li> <li>Used together with OIL SEAL INSTALLER (18657AA030).</li> </ul>

## General Description

MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	42099AE000	QUICK CONNECTOR RELEASE	Used for removing the quick connector.
	ST42075AG690	FUEL HOSE	Used for inspecting the fuel pressure. NOTE: This is the SUBARU genuine part.
	18270KA010	SOCKET	Used for installing and removing intake cam sprocket and exhaust cam sprocket.
	ST1B022XU0	SUBARU SELECT MONITOR III KIT	Used for various inspections.

## 2. GENERAL TOOL

TOOL NAME	REMARKS
Compression gauge	Used for measuring compression.
Vacuum gauge	Used for measuring intake manifold vacuum.
Oil pressure gauge	Used for measuring engine oil pressure.
Fuel pressure gauge	Used for measuring fuel pressure.
Piston ring compressor	Used for installing the piston into the cylinder block.
Thickness gauge	Used for various inspections.
Angle gauge	Used for angle tightening.