

# General Description

## MECHANICAL

### 1. General Description

#### A: SPECIFICATION

Engine	Model	3.6 L		
	Cylinder arrangement	Horizontally opposed, liquid cooled, 6-cylinder, 4-stroke gasoline engine		
	Valve system mechanism	Chain driven, double overhead camshaft, 4-valve/cylinder		
	Bore x Stroke	mm (in)		92 x 91 (3.622 x 3.583)
	Displacement	cm <sup>3</sup> (cu in)		3,630 (221.5)
	Compression ratio	10.5		
	Compression (350 rpm and fully open throttle)	kPa (kgf/cm <sup>2</sup> , psi)	Standard	1,275 — 1,471 (13.0 — 15.0, 185 — 213)
	Number of piston rings	Pressure ring: 2, Oil ring: 1		
	Intake valve timing	Open	Max. retard	ATDC 10°
			Min. advance	BTDC 40°
		Close	Max. retard	ABDC 74°
			Min. advance	ABDC 24°
	Exhaust valve timing	Open	Max. retard	BBDC 4°
			Min. advance	BBDC 44°
		Close	Max. retard	ATDC 44°
			Min. advance	ATDC 4°
	Valve clearance	mm (in)	Intake	0.20 <sup>+0.04</sup> <sub>-0.06</sub> (0.0079 <sup>+0.0016</sup> <sub>-0.0024</sub> )
			Exhaust	0.35 <sup>±0.05</sup> (0.0138 <sup>±0.0020</sup> )
	Idle speed ["P" or "N" range]	rpm	No load	700 <sup>±100</sup>
			A/C ON	805 <sup>±100</sup>
	Ignition order	1 → 6 → 3 → 2 → 5 → 4		
	Ignition timing	BTDC/rpm	Standard	15° <sup>±8°</sup> /700

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NOTE:

OS: Oversize

US: Undersize

Camshaft	Bending limit	mm (in)	0.020 (0.00079)		
	Cam lobe height	mm (in)	Intake	Standard	
			Exhaust	Standard	
	Cam base circle diameter	mm (in)	Intake	Standard	
			Exhaust	Standard	
	Journal O.D.	mm (in)	Front	Standard	
			Except for front	Standard	
	Oil clearance	mm (in)	Standard		
	Thrust clearance	mm (in)	Intake	Standard	
			Exhaust	Standard	
Cylinder head	Warping limit (Mating surface with cylinder block)			mm (in) 0.020 (0.0008)	
	Standard height			mm (in) 124±0.05 (4.88±0.0020)	
Valve seat	Seating angle between valve and valve seat			90°	
	Contacting width between valve and valve seat	mm (in)	Intake	Standard 1.0 (0.039)	
Valve guide			Exhaust	Standard 1.5 (0.059)	
Clearance between the valve guide and valve stem	mm (in)	Intake	Standard 0.030 — 0.057 (0.0012 — 0.0022)		
		Exhaust	Standard 0.040 — 0.067 (0.0016 — 0.0026)		
Inside diameter			mm (in) 5.500 — 5.512 (0.2165 — 0.2170)		
Valve stem outer diameters	mm (in)	Intake	5.455 — 5.470 (0.2148 — 0.2154)		
		Exhaust	5.445 — 5.460 (0.2144 — 0.2150)		
Valve	Valve guide protrusion amount	mm (in)	Intake	mm (in) 8.6 — 9.0 (0.3386 — 0.3543)	
			Exhaust	mm (in) 10.7 — 11.1 (0.4213 — 0.4370)	
	Head edge thickness	mm (in)	Intake	Standard 1.0 (0.039)	
			Exhaust	Standard 1.2 (0.047)	
Valve spring	Overall length	mm (in)	Intake	103.5 (4.075)	
			Exhaust	103.2 (4.063)	
Valve lifter	Free length	mm (in)	Intake	49.06 (1.9315)	
			Exhaust	49.06 (1.9315)	
	Tension/spring height	N (kgf, lb)/mm (in)	Set	182 — 210 (18.6 — 21.4, 40.9 — 47.2)/31.0 (1.220)	
			Lift	316 — 350 (32.2 — 35.7, 71.0 — 78.7)/21.0 (0.827)	
Cylinder block	Squareness			2.5°, 2.1 mm (0.083 in)	
	Outer diameter			mm (in) 32.959 — 32.975 (1.2976 — 1.2982)	
	Inner diameter of valve lifter hole			mm (in) 32.994 — 33.016 (1.2990 — 1.2998)	
	Clearance between the valve lifter and valve lifter hole			mm (in) 0.019 — 0.057 (0.0007 — 0.0022)	
	Warping limit (Mating surface with cylinder head)			mm (in) 0.020 (0.0008)	
	Standard height			mm (in) 202 (7.95)	
	Cylindricality			mm (in) Limit 0.030 (0.0012)	
	Out-of-roundness			mm (in) Limit 0.010 (0.0004)	
	Clearance between cylinder and piston at 20°C (68°F)			mm (in) Standard -0.010 — 0.010 (-0.0004 — 0.0004)	
	Cylinder inner diameter boring limit (diameter)			mm (in) 92.515 (3.6717)	

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Piston	Piston grade point			mm (in)	37.3 (1.4685)	
	Outer diameter	mm (in)	Standard	A	92.005 — 92.015 (3.6222 — 3.6226)	
				B	91.995 — 92.005 (3.6218 — 3.6222)	
				0.25 (0.0098) OS	92.245 — 92.265 (3.6317 — 3.6325)	
				0.50 (0.0197) OS	92.495 — 92.515 (3.6415 — 3.6423)	
	Inner diameter of piston pin hole	mm (in)	Standard	22.000 — 22.006 (0.8661 — 0.8664)		
Piston pin	Degree of fit			Piston pin must be fitted into position with thumb at 20°C (68°F).		
	Outer diameter		mm (in)	Standard	21.994 — 22.000 (0.8659 — 0.8661)	
	Clearance between piston and piston pin		mm (in)	Standard	0.004 — 0.008 (0.0002 — 0.0003)	
Piston ring	Piston ring gap	mm (in)	Top ring	Standard	0.20 — 0.35 (0.0079 — 0.0138)	
			Second ring	Standard	0.40 — 0.50 (0.0157 — 0.0197)	
			Oil ring	Standard	0.20 — 0.50 (0.0079 — 0.0197)	
	Clearance between piston ring and piston ring groove	mm (in)	Top ring	Standard	0.040 — 0.080 (0.0016 — 0.0031)	
			Second ring	Standard	0.030 — 0.070 (0.0012 — 0.0028)	
			Oil ring	Standard	0.065 — 0.165 (0.0026 — 0.0065)	
Connecting rod and connecting rod bearing	Bend or twist per 100 mm (3.94 in) in length		mm (in)	Limit	0.10 (0.0039 in)	
	Thrust clearance		mm (in)	Standard	0.070 — 0.330 (0.0028 — 0.0130)	
	Oil clearance		mm (in)	Standard	0.016 — 0.043 (0.0006 — 0.0017)	
	Bearing size (Thickness at center)	mm (in)	Standard		1.489 — 1.505 (0.0586 — 0.0593)	
			0.03 (0.0012) US		1.507 — 1.515 (0.0593 — 0.0596)	
			0.05 (0.0020) US		1.517 — 1.525 (0.0597 — 0.0600)	
			0.25 (0.0098) US		1.617 — 1.625 (0.0637 — 0.0640)	
Bushing of small end	Clearance between piston pin and bushing		mm (in)	Standard	0 — 0.022 (0 — 0.0009)	

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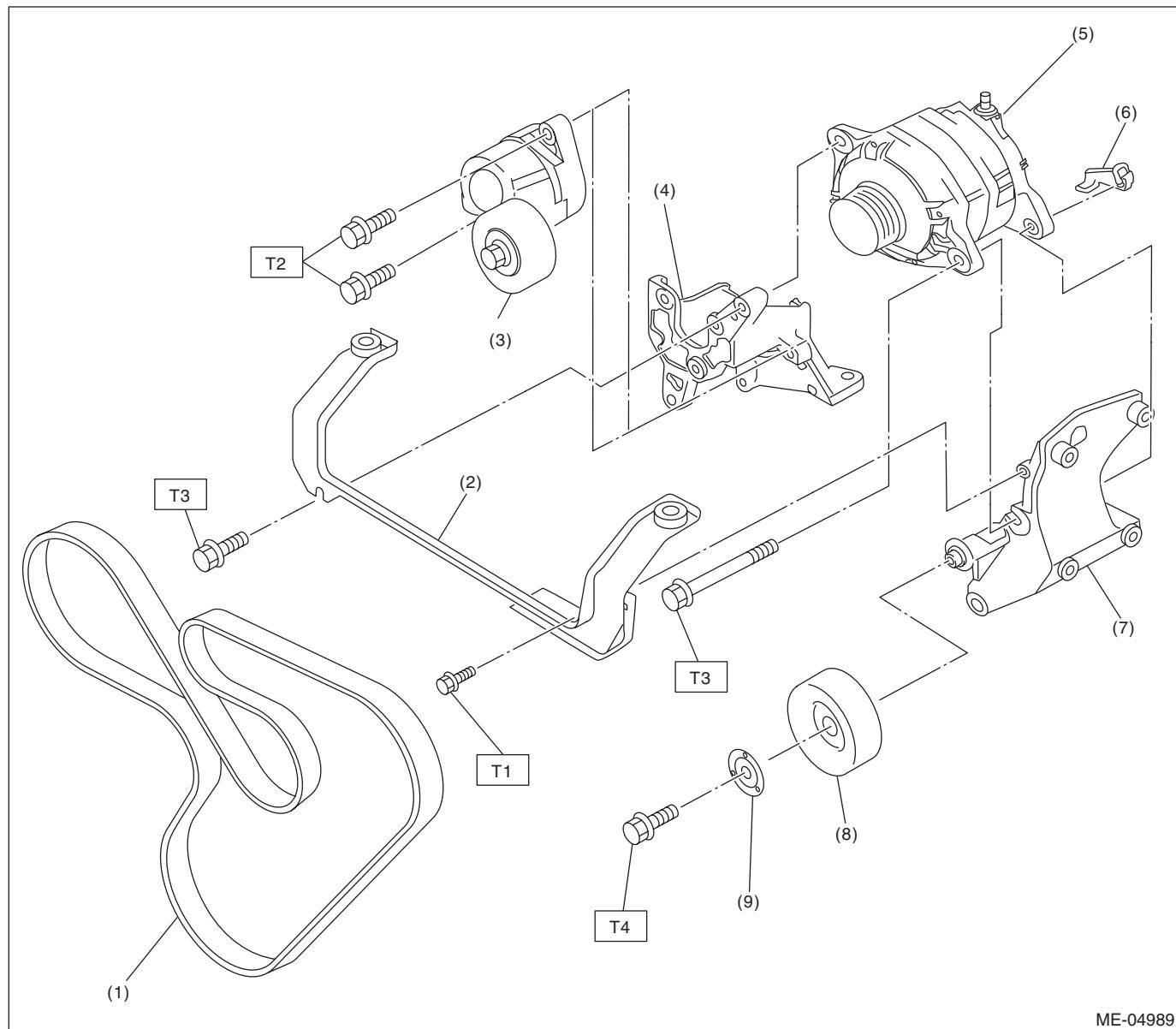
Crankshaft and crankshaft bearing	Bending limit		mm (in)	0.035 (0.0014)
	Crank pin	Out-of-roundness	mm (in)	0.005 (0.0002)
		Cylindricality	mm (in)	0.006 (0.0002)
		Grinding limit	mm (in)	51.734 (2.0368)
	Crank journal	Out-of-roundness	mm (in)	0.005 (0.0002)
		Cylindricality	mm (in)	0.006 (0.0002)
		Grinding limit	mm (in)	63.742 (2.5095)
	Crank pin outer diameter	mm (in)	Standard	51.976 — 52.000 (2.0463 — 2.0472)
			0.03 (0.0012) US	51.954 — 51.970 (2.0454 — 2.0461)
			0.05 (0.0020) US	51.934 — 51.950 (2.0446 — 2.0453)
			0.25 (0.0098) US	51.734 — 51.750 (2.0368 — 2.0374)
	Crank journal outer diameter	#1, #3, #5, #7	Standard	63.992 — 64.016 (2.5194 — 2.5203)
			0.03 (0.0012) US	63.962 — 63.978 (2.5182 — 2.5188)
			0.05 (0.0020) US	63.942 — 63.958 (2.5174 — 2.5180)
			0.25 (0.0098) US	63.742 — 63.758 (2.5095 — 2.5102)
		#2, #4, #6	Standard	63.992 — 64.016 (2.5194 — 2.5203)
			0.03 (0.0012) US	63.962 — 63.978 (2.5182 — 2.5188)
			0.05 (0.0020) US	63.942 — 63.958 (2.5174 — 2.5180)
			0.25 (0.0098) US	63.742 — 63.758 (2.5095 — 2.5102)
	Bearing size (Thickness at center)	#1, #3, #5	Standard	1.996 — 2.013 (0.0786 — 0.0793)
			0.03 (0.0012) US	2.011 — 2.014 (0.0792 — 0.0793)
			0.05 (0.0020) US	2.021 — 2.024 (0.0796 — 0.0797)
			0.25 (0.0098) US	2.121 — 2.124 (0.0835 — 0.0836)
		#2, #4, #6	Standard	1.996 — 2.013 (0.0786 — 0.0793)
			0.03 (0.0012) US	2.015 — 2.018 (0.0793 — 0.0794)
			0.05 (0.0020) US	2.025 — 2.028 (0.0797 — 0.0798)
			0.25 (0.0098) US	2.125 — 2.128 (0.0837 — 0.0838)
		#7	Standard	1.992 — 2.009 (0.0784 — 0.0791)
			0.03 (0.0012) US	2.011 — 2.014 (0.0792 — 0.0793)
			0.05 (0.0020) US	2.021 — 2.024 (0.0796 — 0.0797)
			0.25 (0.0098) US	2.121 — 2.124 (0.0835 — 0.0836)
	Thrust clearance	mm (in)	Standard	0.030 — 0.115 (0.0012 — 0.0045)
	Oil clearance	mm (in)	Standard	0.010 — 0.030 (0.0004 — 0.0012)

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### B: COMPONENT

#### 1. V-BELT



(1) V-belt	(6) Generator plate
(2) Collector cover bracket	(7) A/C compressor stay
(3) Belt tension adjuster ASSY	(8) Idler pulley
(4) Power steering pump bracket	(9) Idler pulley cover
(5) Generator	

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

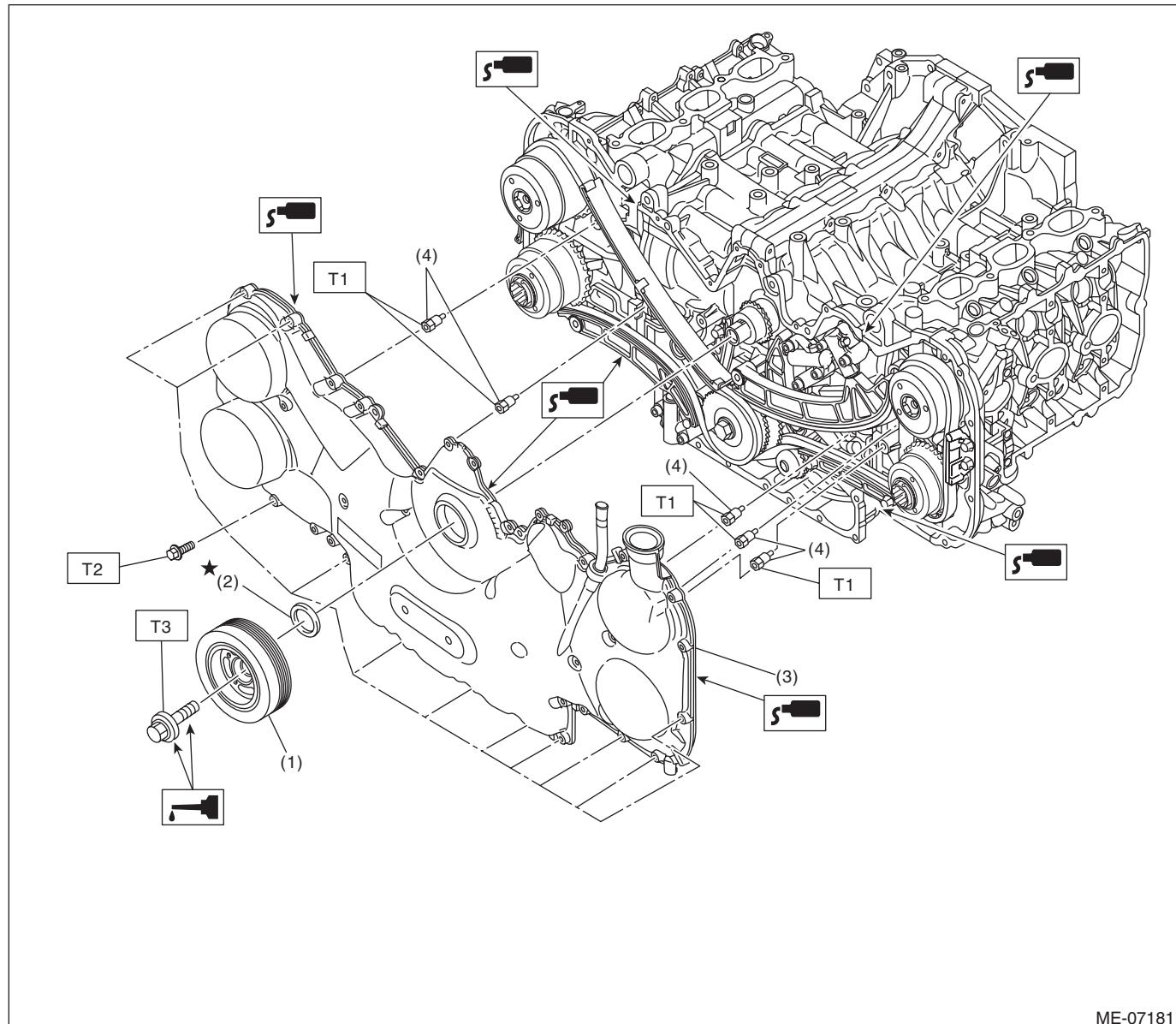
**T1: 6.4 (0.7, 4.7)**

**T2: 20 (2.0, 14.8)**

**T3: 25 (2.5, 18.4)**

**T4: 33 (3.4, 24.3)**

## 2. TIMING CHAIN COVER



ME-07181

- (1) Crank pulley
- (2) Oil seal
- (3) Chain cover
- (4) Bolt

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

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

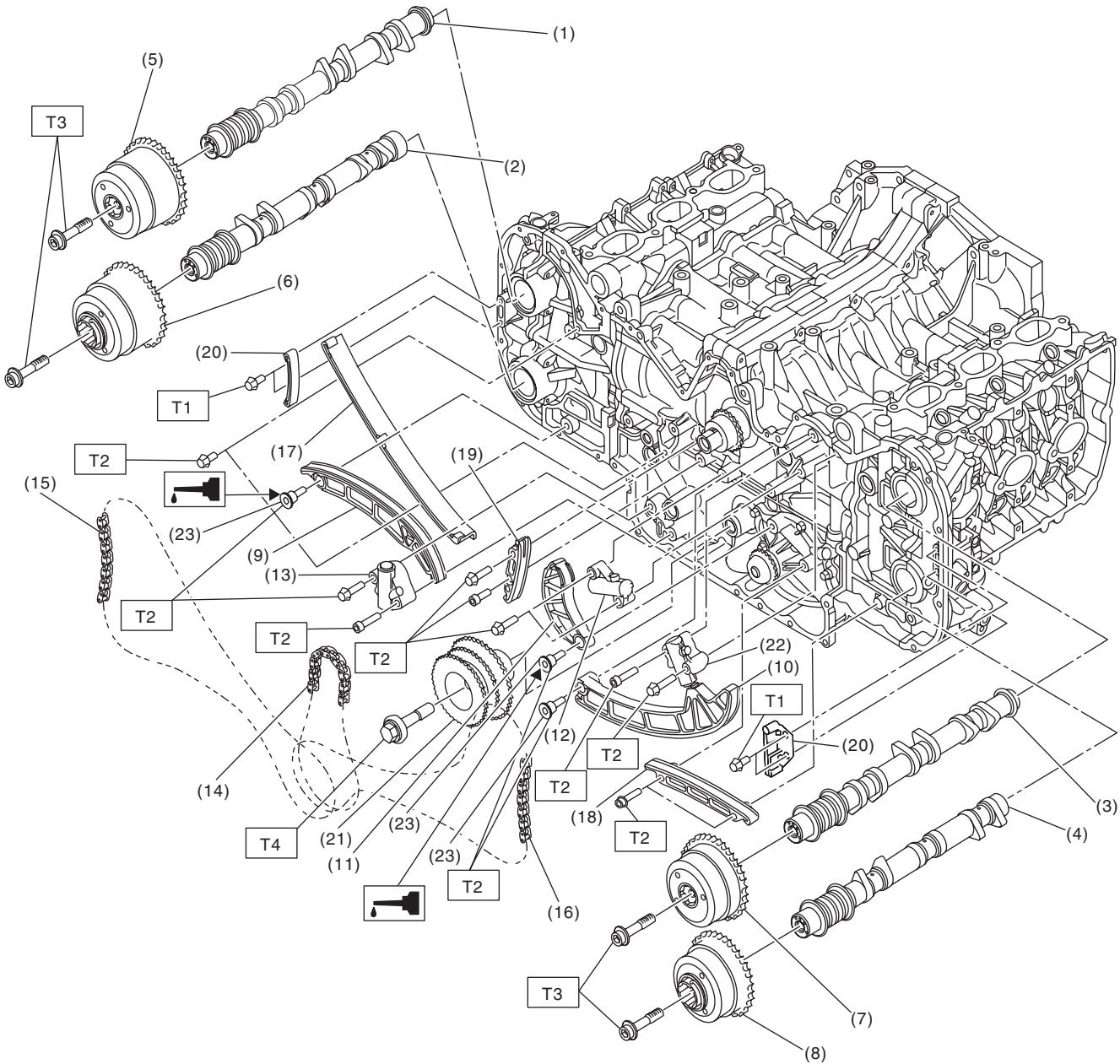
***T2: 10 (1.0, 7.4)***

***T3: 195 (19.9, 143.8)***

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### 3. TIMING CHAIN



ME-07784

# General Description

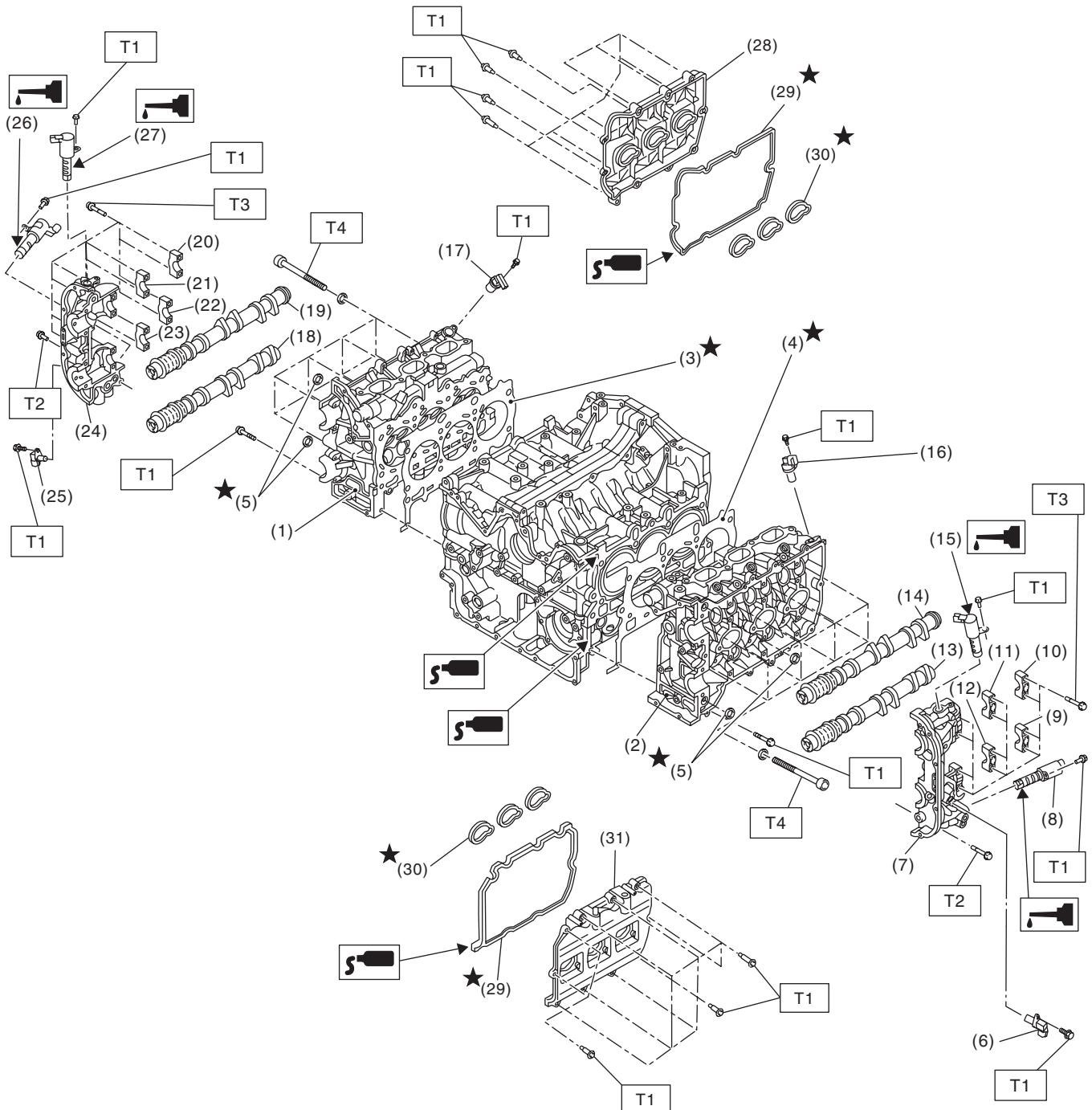
MECHANICAL

(1) Intake camshaft (RH)	(11) Chain tensioner lever (main)	(21) Idler sprocket
(2) Exhaust camshaft (RH)	(12) Chain tensioner (main)	(22) Chain tensioner (LH)
(3) Intake camshaft (LH)	(13) Chain tensioner (RH)	(23) Chain tensioner lever shaft
(4) Exhaust camshaft (LH)	(14) Timing chain (main)	
(5) Intake cam sprocket (RH)	(15) Timing chain (RH)	<b>Tightening torque: N·m (kgf·m, ft-lb)</b>
(6) Exhaust cam sprocket (RH)	(16) Timing chain (LH)	<b>T1: 6.4 (0.7, 4.7)</b>
(7) Intake cam sprocket (LH)	(17) Chain guide (RH)	<b>T2: 16 (1.6, 11.8)</b>
(8) Exhaust cam sprocket (LH)	(18) Chain guide (LH)	<b>T3: &lt;Ref. to ME(H6DO)-74, Cam Sprocket.&gt;</b>
(9) Chain tensioner lever (RH)	(19) Chain guide (main)	
(10) Chain tensioner lever (LH)	(20) Chain guide (between cams)	<b>T4: 120 (12.2, 88.5)</b>

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#### 4. CYLINDER HEAD AND CAMSHAFT



ME-04916

# General Description

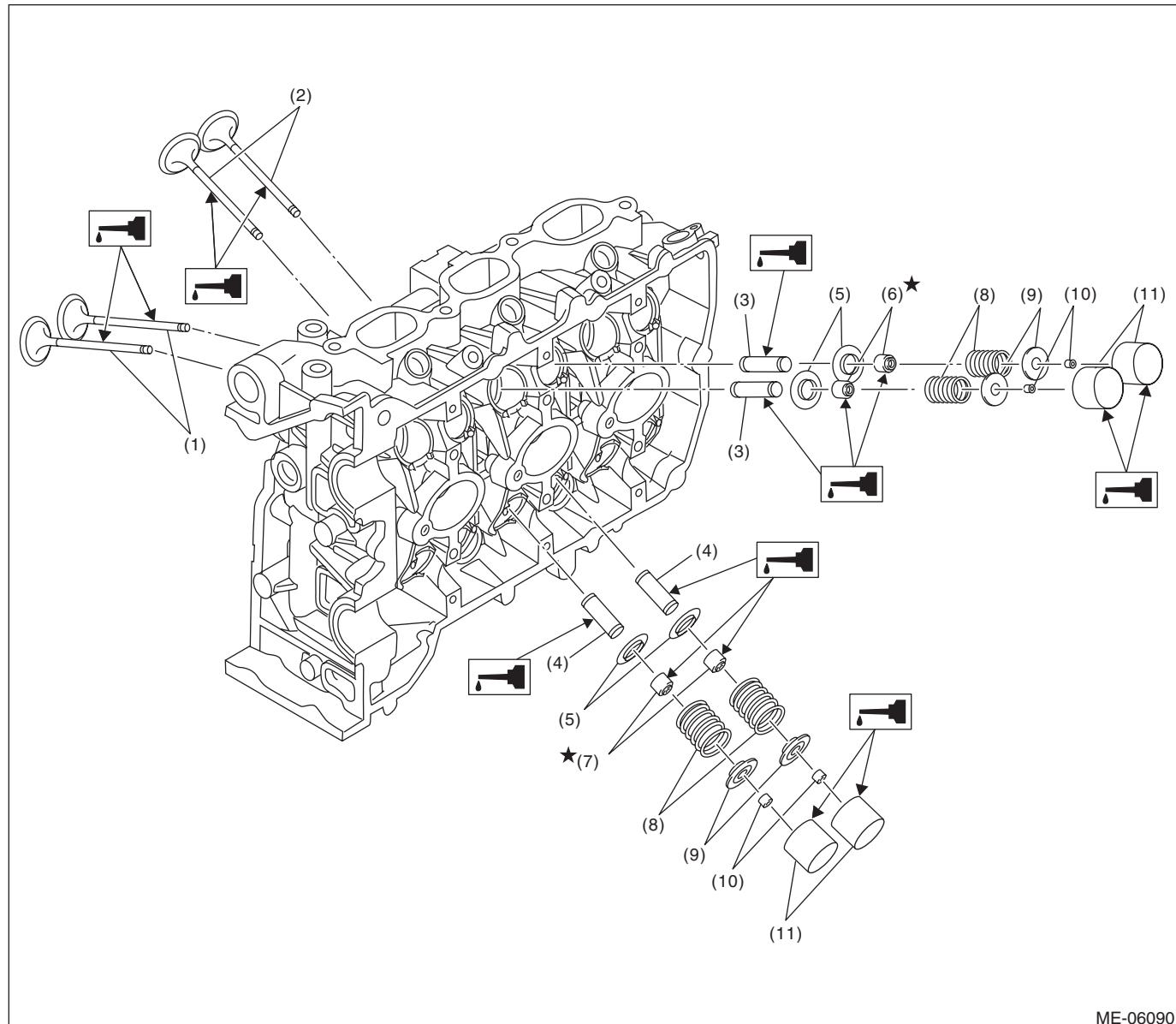
MECHANICAL

(1) Cylinder head (RH)	(14) Intake camshaft (LH)	(27) Intake oil flow control solenoid valve (RH)
(2) Cylinder head (LH)	(15) Intake oil flow control solenoid valve (LH)	(28) Rocker cover (RH)
(3) Cylinder head gasket (RH)	(16) Intake camshaft position sensor (LH)	(29) Gasket
(4) Cylinder head gasket (LH)	(17) Intake camshaft position sensor (RH)	(30) Gasket
(5) O-ring	(18) Exhaust camshaft (RH)	(31) Rocker cover (LH)
(6) Exhaust camshaft position sensor (LH)	(19) Intake camshaft (RH)	
(7) Front camshaft cap (LH)	(20) Intake camshaft cap (rear RH)	<b>Tightening torque: N·m (kgf·m, ft-lb)</b>
(8) Exhaust oil flow control solenoid valve (LH)	(21) Intake camshaft cap (center RH)	<b>T1: 6.4 (0.7, 4.7)</b>
(9) Exhaust camshaft cap (rear LH)	(22) Exhaust camshaft cap (rear RH)	<b>T2: 9.75 (1.0, 7.2)</b>
(10) Intake camshaft cap (rear LH)	(23) Exhaust camshaft cap (center RH)	<b>T3: 16 (1.6, 11.8)</b>
(11) Intake camshaft cap (center LH)	(24) Front camshaft cap (RH)	<b>T4: &lt;Ref. to ME(H6DO)-85, Cylinder Head.&gt;</b>
(12) Exhaust camshaft cap (center LH)	(25) Exhaust camshaft position sensor (RH)	
(13) Exhaust camshaft (LH)	(26) Exhaust oil flow control solenoid valve (RH)	

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### 5. CYLINDER HEAD AND VALVE ASSEMBLY



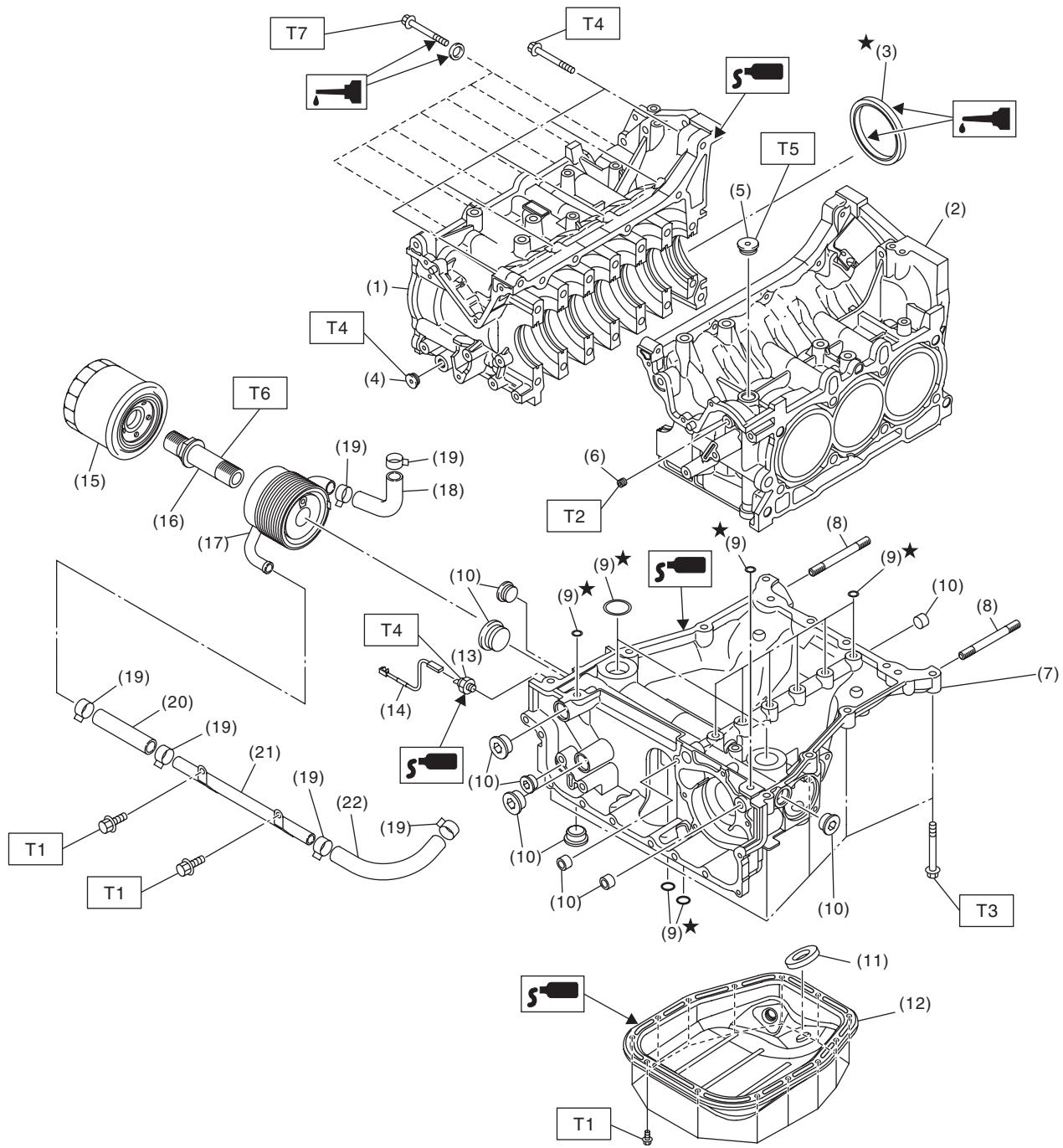
ME-06090

(1) Intake valve	(5) Valve spring seat	(9) Valve spring retainer
(2) Exhaust valve	(6) Stem seal (intake)	(10) Valve collet
(3) Valve guide (intake)	(7) Stem seal (exhaust)	(11) Valve lifter
(4) Valve guide (exhaust)	(8) Valve spring	

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## 6. CYLINDER BLOCK



ME-04988

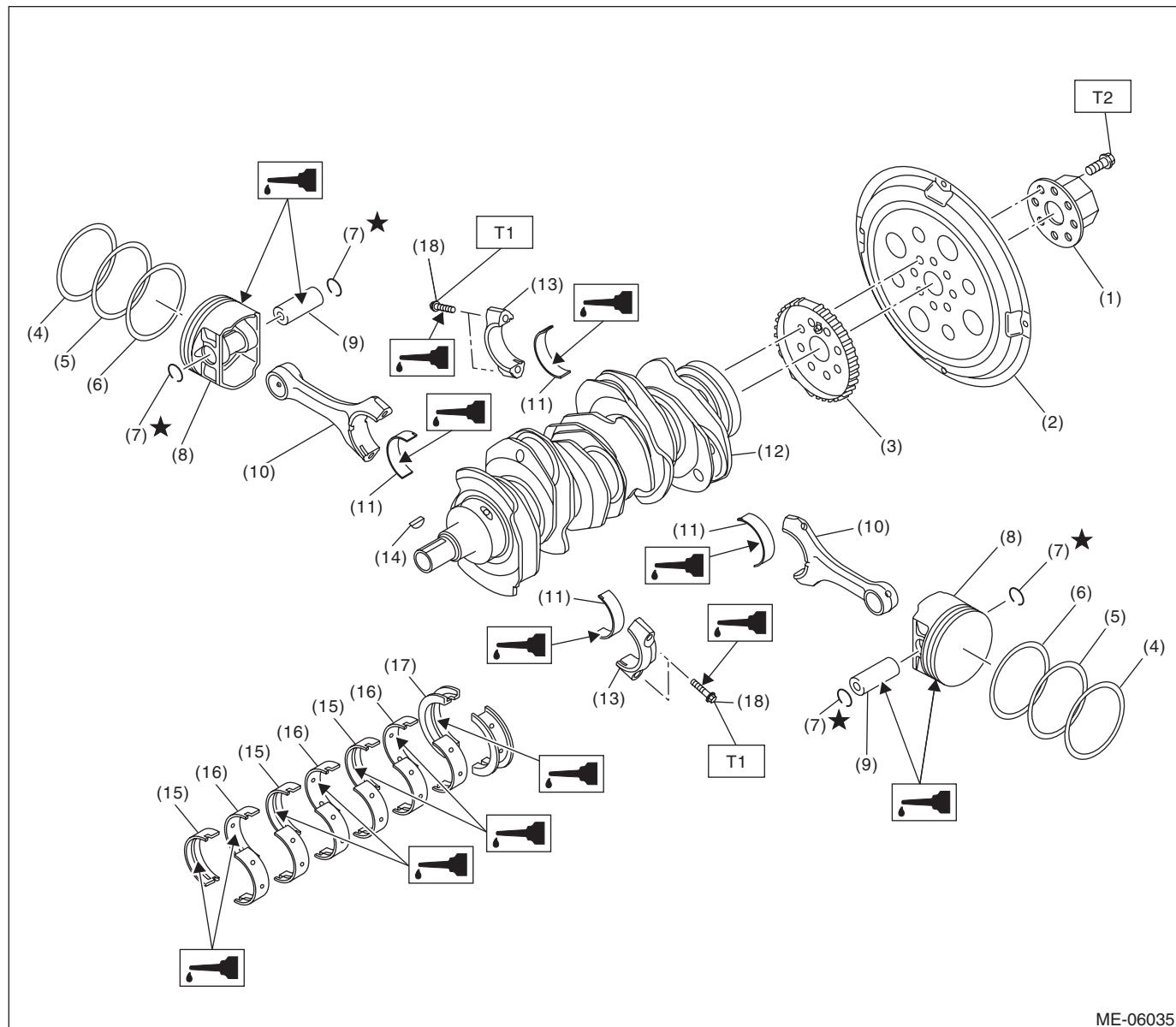
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(1) Cylinder block (RH)	(12) Oil pan lower	<b>Tightening torque: N·m (kgf·m, ft-lb)</b>
(2) Cylinder block (LH)	(13) Oil pressure switch	<b>T1: 6.4 (0.7, 4.7)</b>
(3) Oil seal	(14) Oil pressure switch harness	<b>T2: 17 (1.7, 12.5)</b>
(4) Plug	(15) Oil filter	<b>T3: 18 (1.8, 13.3)</b>
(5) Plug	(16) Oil cooler connector	<b>T4: 25 (2.5, 18.4)</b>
(6) Orifice	(17) Oil cooler	<b>T5: 37 (3.8, 27.3)</b>
(7) Oil pan upper	(18) Hose	<b>T6: 54 (5.5, 39.8)</b>
(8) Stud bolt	(19) Clamp	<b>T7: &lt;Ref. to ME(H6DO)-98, Cylinder Block.&gt;</b>
(9) O-ring	(20) Hose	
(10) Plug	(21) Oil cooler pipe	
(11) Magnet	(22) Hose	

### 7. CRANKSHAFT AND PISTON



ME-06035

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

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

**T1: 60 (6.1, 44.3)**

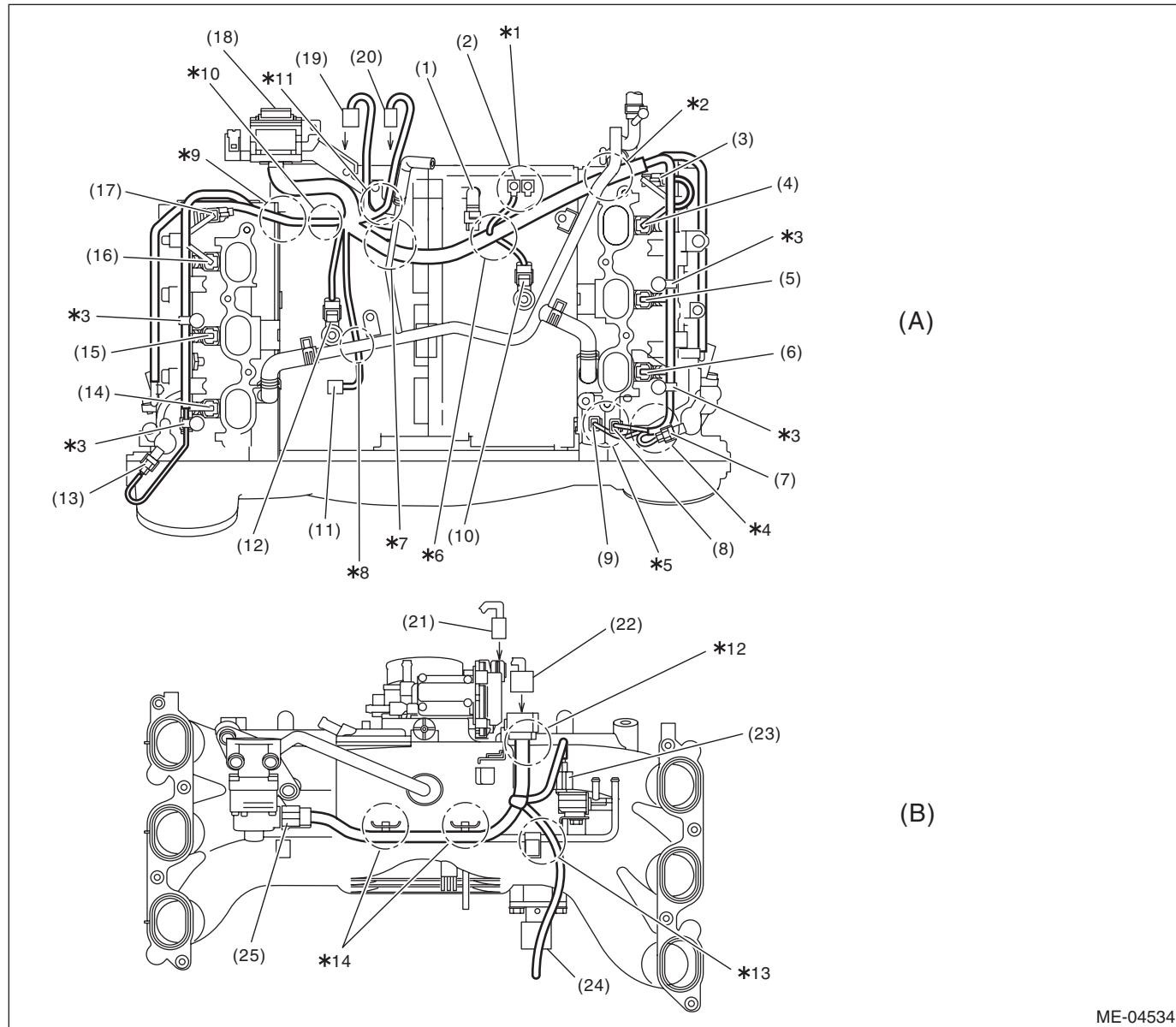
**T2: <Ref. to 5AT-62, INSTALLATION, Drive Plate.>**

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### 8. ENGINE HARNESS

#### Engine harness assembly diagram 1



# General Description

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(A) Cylinder block upper face	(B) Intake manifold back surface	
(1) Crankshaft position sensor connector	(10) Knock sensor LH connector	(19) Upper/lower connection connector (to intake manifold)
(2) Engine ground	(11) Power steering switch connector	(20) Electronic throttle control connector (to intake manifold)
(3) Intake camshaft position sensor LH connector	(12) Knock sensor RH connector	(21) Electronic throttle control connector (from upper part of the cylinder block)
(4) #6 injector connector	(13) Intake oil flow control solenoid valve RH connector	(22) Upper/lower connection connector (from upper part of the cylinder block)
(5) #4 injector connector	(14) #1 injector connector	(23) Purge control solenoid valve connector
(6) #2 injector connector	(15) #3 injector connector	(24) Manifold absolute pressure sensor connector
(7) Intake oil flow control solenoid valve LH connector	(16) #5 injector connector	(25) EGR valve connector
(8) Oil temperature sensor connector	(17) Intake camshaft position sensor RH connector	
(9) Engine coolant temperature sensor connector	(18) Engine harness docking connector	

\*1: Install so that engine ground terminals face the rear side of vehicle.

\*2: Route under the heater pipe.

\*3: Attach the engine harness fixing clip to the fuel pipe stay.

\*4: Route from the cutout portion on the fuel pipe protector LH.

\*5: Be careful not to mix up the connectors of oil temperature sensor and engine coolant temperature sensor.

\*6: Route between crankshaft position sensor and knock sensor LH.

\*7: Route under the heater pipe.

\*8: Route under the heater pipe.

\*9: Route under the fuel pipe.

\*10: Attach the engine harness fixing clip to the fixing boss on the cylinder block.

\*11: Route over the heater pipe stay.

\*12: Securely install the engine harness fixing stay.

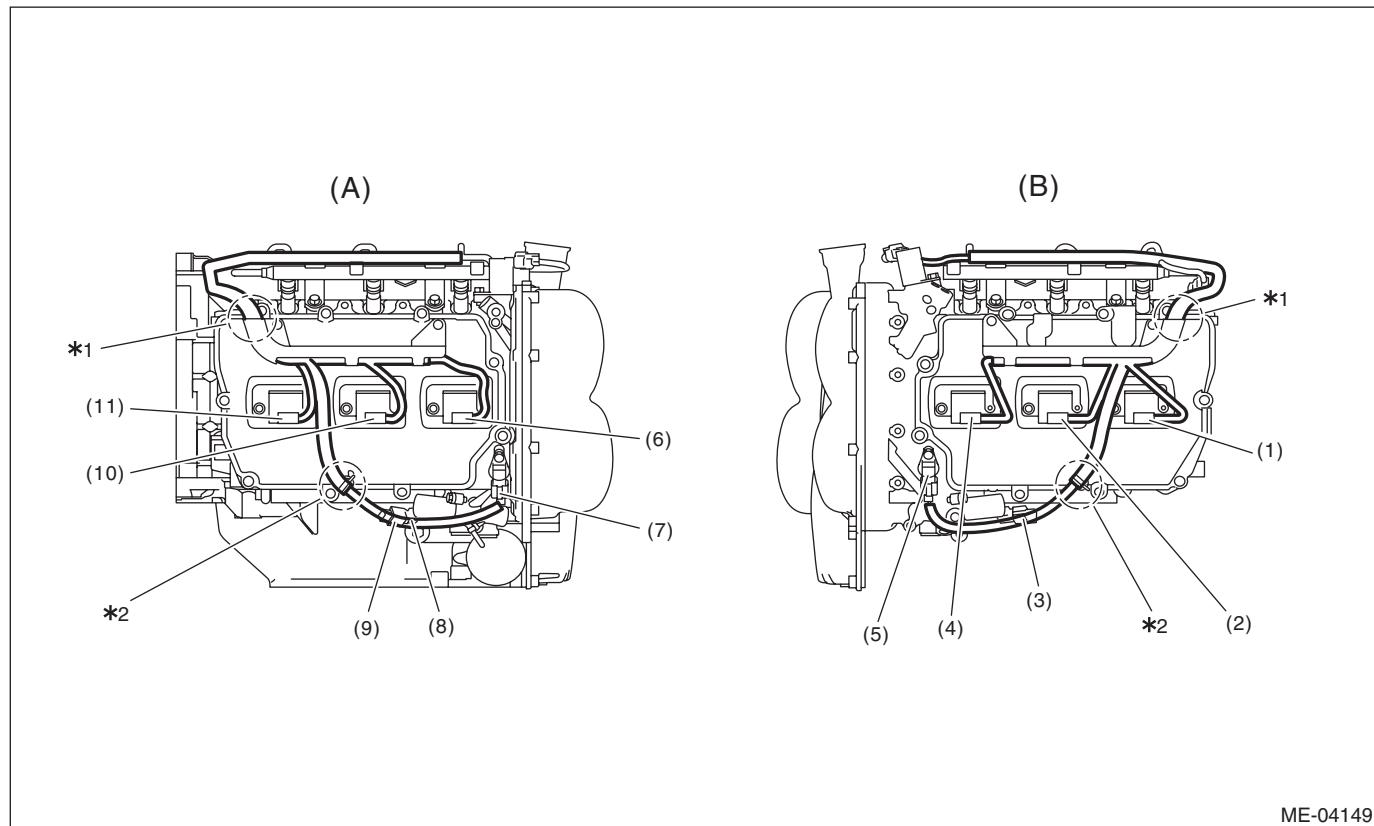
\*13: Route outside the fuel pipe.

\*14: Attach the engine harness fixing clip to the fixing stay on the intake manifold.

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### Engine harness assembly diagram 2



ME-04149

(A) Right side of the engine

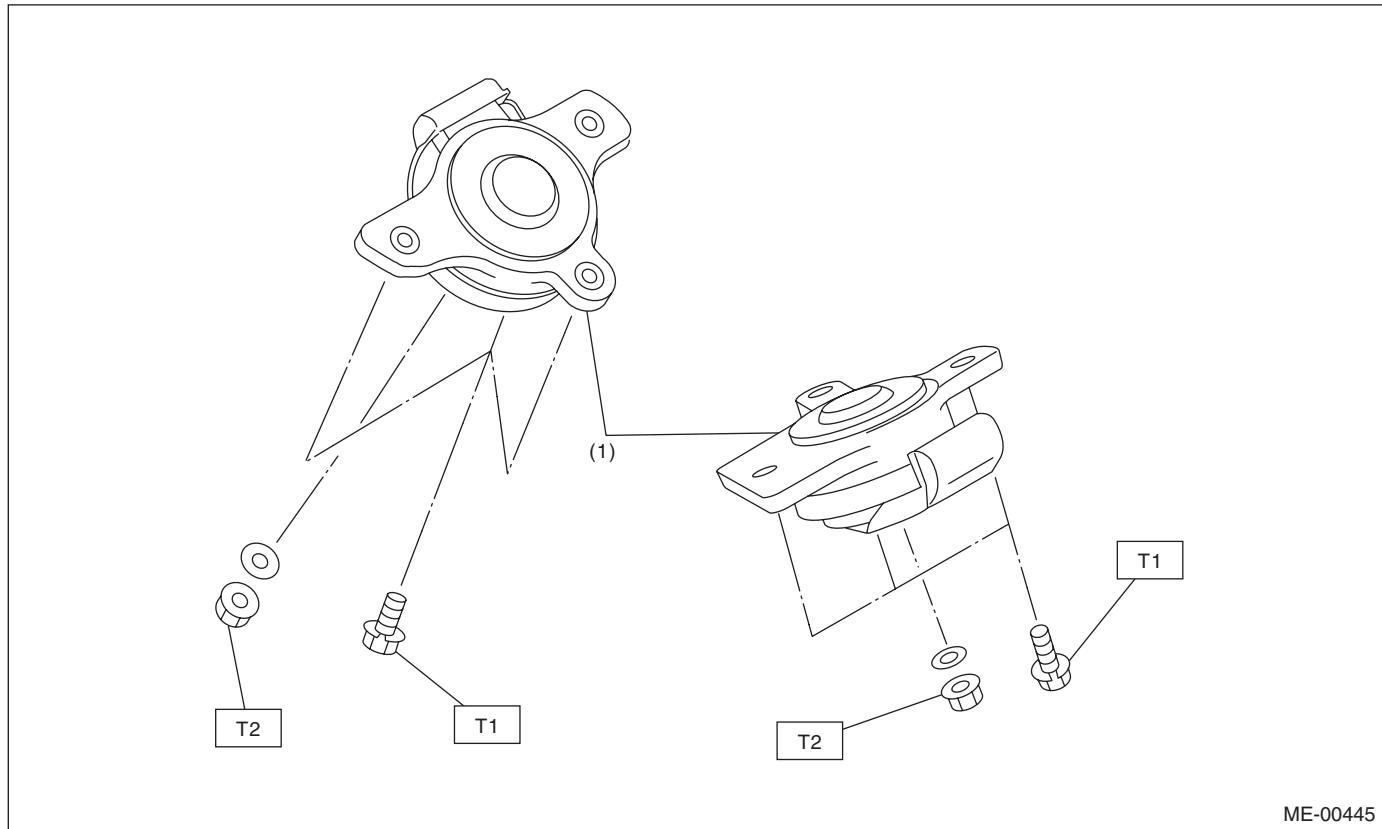
(B) Left side of the engine

(1) #6 ignition coil connector	(5) Exhaust camshaft position sensor LH connector	(9) Exhaust oil flow control valve solenoid RH connector
(2) #4 ignition coil connector	(6) #1 injector connector	(10) #3 ignition coil connector
(3) Exhaust oil flow control valve solenoid LH connector	(7) Exhaust camshaft position sensor RH connector	(11) #5 ignition coil connector
(4) #2 ignition coil connector	(8) Oil pressure switch connector	

\*1: Align the engine harness stay end with the end of engine harness identification tape.

\*2: Attach the engine harness fixing clip to the fixing boss on the rocker cover.

## 9. ENGINE MOUNTING



(1) Front cushion rubber

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

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

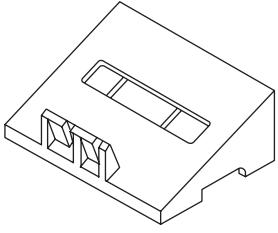
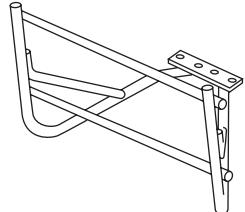
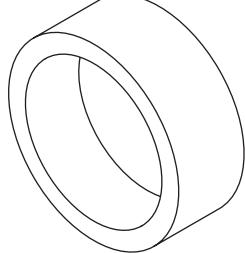
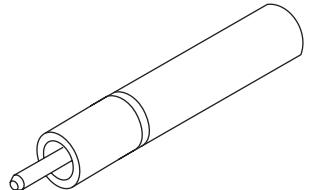
***T2: 75 (7.6, 55.3)***

## C: CAUTION

- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a work cap, and 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.
- 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.

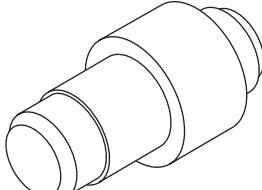
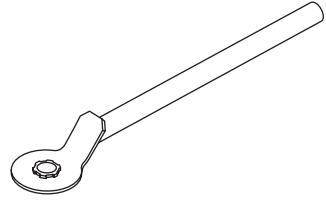
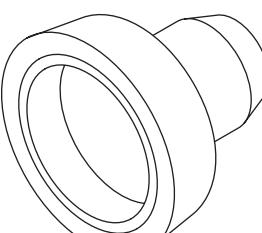
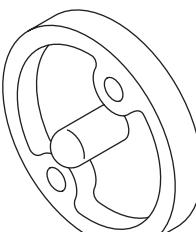
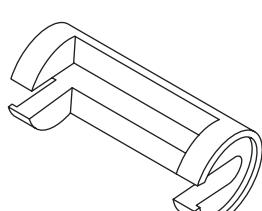
## D: PREPARATION TOOL

### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18250AA010	18250AA010	CYLINDER HEAD TABLE	<ul style="list-style-type: none"><li>Used for replacing valve guides.</li><li>Used for removing and installing valve spring.</li></ul>
 ST18232AA000	18232AA000	ENGINE STAND	Used for disassembling and assembling engine.
 ST-398744300	398744300	PISTON GUIDE	Used for installing piston in cylinder.
 ST18261AA010	18261AA010	VALVE OIL SEAL GUIDE	Used for press-fitting of intake valve guide oil seals and exhaust valve guide oil seals.

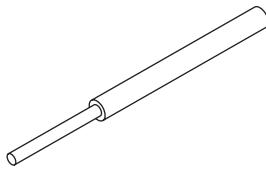
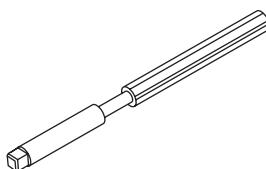
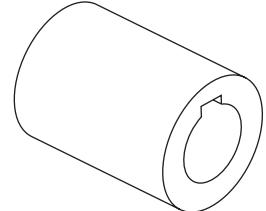
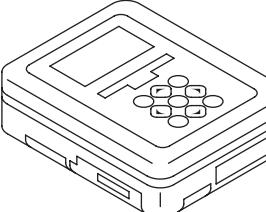
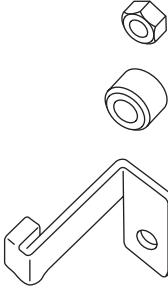
## General Description

### MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18350AA000	18350AA000	CONNECTING ROD BUSHING REMOVER AND INSTALLER	Used for removing and installing connecting rod bushing.
 ST-499977500	499977500	CAM SPROCKET WRENCH	Used for removing and installing cam sprocket.
 ST-499587200	499587200	CRANKSHAFT OIL SEAL INSTALLER	<ul style="list-style-type: none"> <li>Used for installing crankshaft oil seal.</li> <li>Used together with CRANKSHAFT OIL SEAL GUIDE (499597100).</li> </ul>
 ST-499597100	499597100	CRANKSHAFT OIL SEAL GUIDE	<ul style="list-style-type: none"> <li>Used for installing crankshaft oil seal.</li> <li>Used together with CRANKSHAFT OIL SEAL INSTALLER (499587200).</li> </ul>
 ST-499718000	499718000	VALVE SPRING REMOVER	Used for removing and installing valve spring.

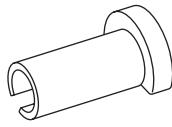
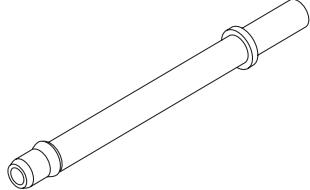
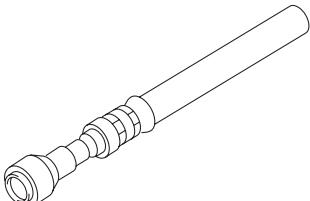
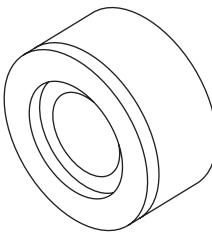
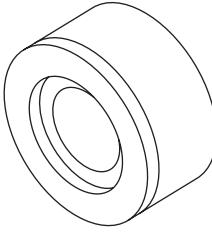
# General Description

MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-499765700	499765700	VALVE GUIDE REMOVER	Used for removing valve guides.
 ST-499765900	499765900	VALVE GUIDE REAMER	Used for reaming valve guides.
 ST18252AA000	18252AA000	CRANKSHAFT SOCKET	Used for rotating crankshaft.
 ST1B022XU0	1B022XU0	SUBARU SELECT MONI- TOR III KIT	Used for various inspections.
 ST-498277200	498277200	STOPPER SET	Used for installing automatic transmission assembly to engine.

## General Description

### MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	42099AE000	QUICK CONNECTOR RELEASE	Used for disconnecting quick connector of the engine compartment.
	18471AA000	FUEL PIPE ADAPTER	Used for measuring fuel pressure.
	42075AG690	FUEL HOSE	<ul style="list-style-type: none"> <li>• Used for measuring fuel pressure.</li> <li>• This is the SUBARU genuine part.</li> </ul>
	18251AA050	VALVE GUIDE ADJUSTER	Used for installing intake valve guides.
	18251AA060	VALVE GUIDE ADJUSTER	Used for installing exhaust valve guides.

# General Description

MECHANICAL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
	18355AA000	PULLEY WRENCH	<ul style="list-style-type: none"> <li>Used for removing and installing the crank pulley.</li> <li>Used for removing and installing the idler sprocket.</li> <li>Used together with PULLEY WRENCH PIN SET (18334AA000).</li> </ul>
	18334AA000	PULLEY WRENCH PIN SET	<ul style="list-style-type: none"> <li>Used for removing and installing the crank pulley.</li> <li>Used for removing and installing the idler sprocket.</li> <li>Used together with PULLEY WRENCH (18355AA000).</li> </ul>
	18332AA020	OIL FILTER WRENCH	Used for removing and installing oil filter.
	499585700	OIL SEAL GUIDE	Used for installing the chain cover oil seal.

## 2. GENERAL TOOL

TOOL NAME	REMARKS
Compression gauge	Used for inspecting compression pressure.
Timing light	Used for inspecting the ignition timing.
Vacuum gauge	Used for inspecting intake manifold vacuum.
Oil pressure gauge	Used for inspecting engine oil pressure.
Fuel pressure gauge	Used for inspecting fuel pressure.
TORX® socket (E12)	Used for removing and installing connecting rod cap.