

SERVICE BULLETIN

APPLICABILITY 1996 LEGACY

DATE 09-22-95

SUBJECT SERVICE MANUAL SUPPLEMENT (MSA5T9602A) CORRECTION PAGES

Please replace the attached correction pages in the 1996 Legacy Service Manual Supplement. These pages are indicated by a revision date of 9/95 at the bottom.

CAUTION

VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN SERIOUS INJURY TO THOSE PERSONS OR TO OTHERS. Subaru Service Bulletins are intended for use by professional technicians ONLY. They are written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described, DO NOT assume that this Service Bulletin applies to your vehicle, or that your vehicle will have that condition.

SPECIFICATIONS AND SERVICE DATA

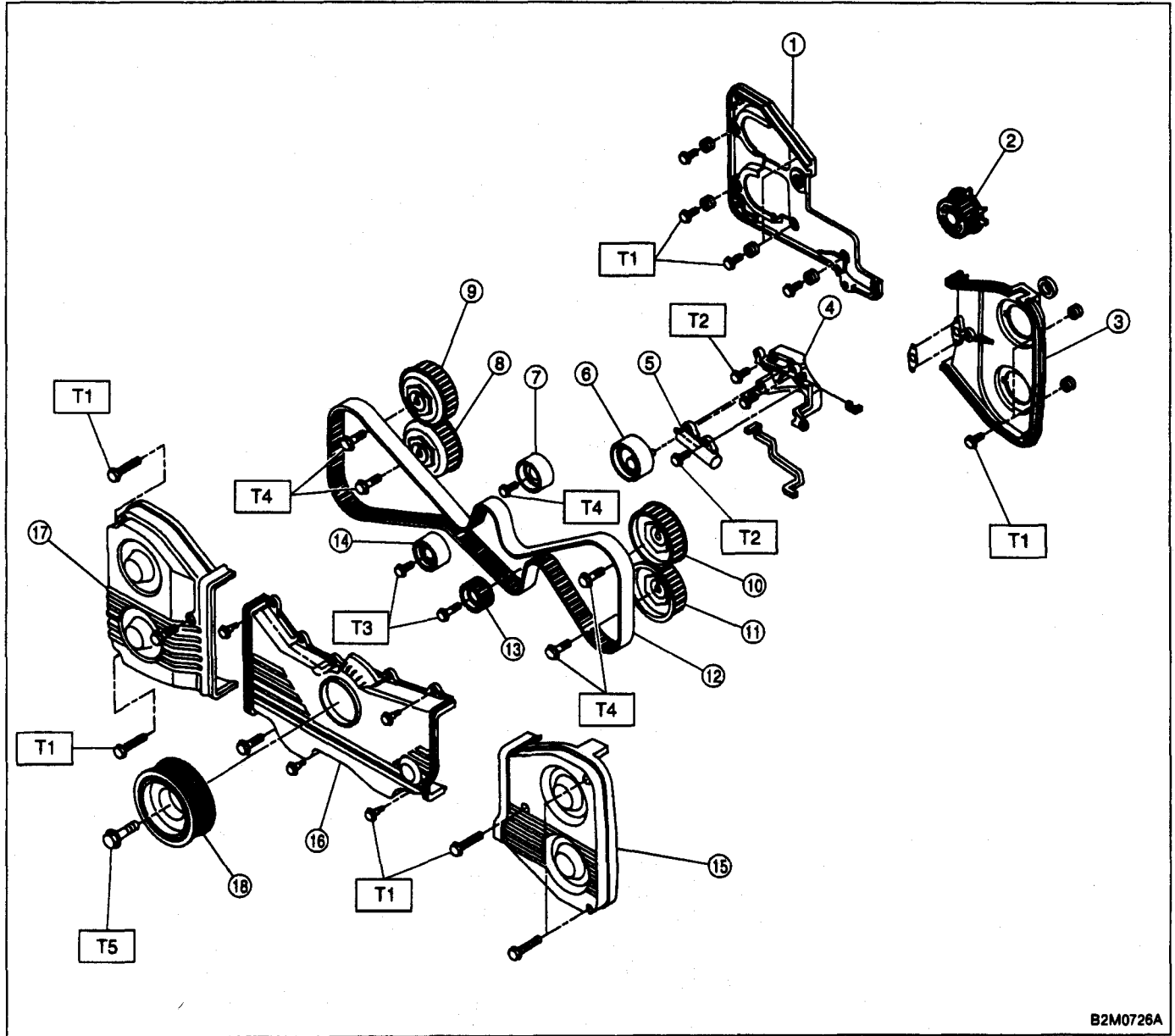
[S1B0] 2-3b

1. Engine

Crankshaft	Bend limit		0.035 mm	(0.0014 in)	
	Crank pin and crank journal	Out-of-roundness	0.020 mm (0.0008 in) or less		
		Grinding limit	0.25 mm	(0.0098 in)	
	Crank pin outer diameter	STD	47.984 — 48.000 mm	(1.8891 — 1.8898 in)	
		0.03 mm (0.0012 in) US	47.954 — 47.970 mm	(1.8879 — 1.8886 in)	
		0.05 mm (0.0020 in) US	47.934 — 47.950 mm	(1.8872 — 1.8878 in)	
		0.25 mm (0.0098 in) US	47.734 — 47.750 mm	(1.8793 — 1.8799 in)	
	Crank journal outer diameter	#1, #5	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, #3, #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	#1, #5	STD	0.003 — 0.030 mm	(0.0001 — 0.0012 in)	
	#2, #3, #4	STD	0.010 — 0.033 mm	(0.0004 — 0.0013 in)	
	#1, #3, #5	Limit	0.040 mm	(0.0016 in)	
	#2, #4	Limit	0.045 mm	(0.0018 in)	
Crankshaft bearing	Crankshaft bearing thickness	#1, #5	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, #3, #4	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)

STD: Standard US: Undersize

1. Timing Belt

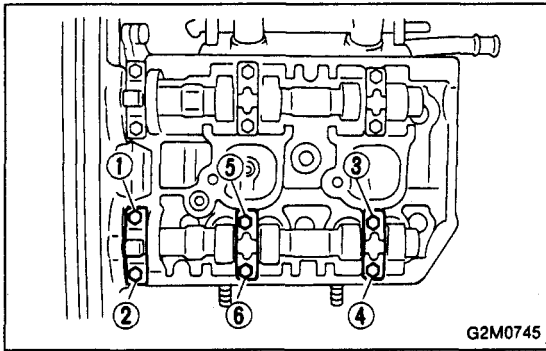


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- ① Right-hand belt cover No. 2
- ② Crankshaft sprocket
- ③ Left-hand belt cover No. 2
- ④ Tensioner bracket
- ⑤ Tensioner adjuster
- ⑥ Belt tensioner
- ⑦ Belt idler
- ⑧ Right-hand exhaust camshaft sprocket
- ⑨ Right-hand intake camshaft sprocket
- ⑩ Left-hand intake camshaft sprocket
- ⑪ Left-hand exhaust camshaft sprocket
- ⑫ Timing belt
- ⑬ Belt idler No. 2

- ⑭ Belt idler
- ⑮ Left-hand belt cover
- ⑯ Front belt cover
- ⑰ Right-hand belt cover
- ⑱ Crankshaft pulley

Tightening torque: N·m (kg·m, ft·lb)
T1: 4.9 ± 0.5 (0.5 ± 0.05, 3.6 ± 0.4)
T2: 25 ± 2 (2.5 ± 0.2, 18.1 ± 1.4)
T3: 39 ± 4 (4.0 ± 0.4, 28.9 ± 2.9)
T4: 78 ± 5 (8.0 ± 0.5, 57.9 ± 3.6)
T5: 127 ± 5 (13.0 ± 0.5, 94.0 ± 3.6)



- 6) Loosen exhaust camshaft cap bolts equally, a little at a time in the numerical sequence shown in figure.
- 7) Remove camshaft caps and exhaust camshaft.

CAUTION:

Arrange camshaft caps in order so that they can be installed in their original positions.

- 8) Similarly, remove right-hand camshafts and related parts.

B: INSPECTION

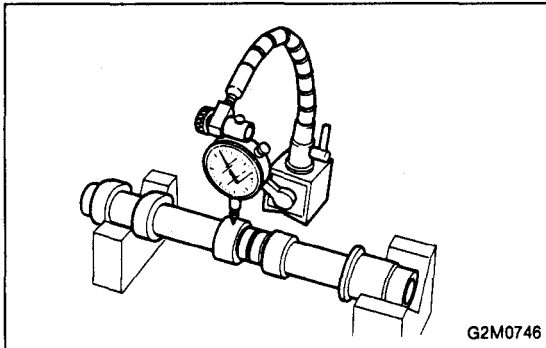
1. CAMSHAFT

- 1) Measure the bend, and repair or replace if necessary.

Limit:

0.020 mm (0.0008 in)

- 2) Check journal for damage and wear. Replace if faulty.
- 3) Measure outside diameter of camshaft journal. If the journal diameter is not as specified, check the oil clearance.



	Camshaft journal	
	Front	Center, rear
Standard	31.946 — 31.963 mm (1.2577 — 1.2584 in)	27.946 — 27.963 mm (1.1002 — 1.1009 in)

- 4) Measurement of the camshaft journal oil clearance

- (1) Clean the bearing caps and camshaft journals.
- (2) Place the camshafts on the cylinder head. (Without installing valve rocker.)
- (3) Place plastigauge across each of the camshaft journals.
- (4) Install the bearing caps.

<Ref. to 2-3b [W3C1].☆2>

CAUTION:

Do not turn the camshaft.

- (5) Remove the bearing caps.
- (6) Measure the widest point of the plastigauge on each journal.

If the oil clearance exceeds the limit, replace the camshaft. If necessary, replace the camshaft caps and cylinder head as a set.

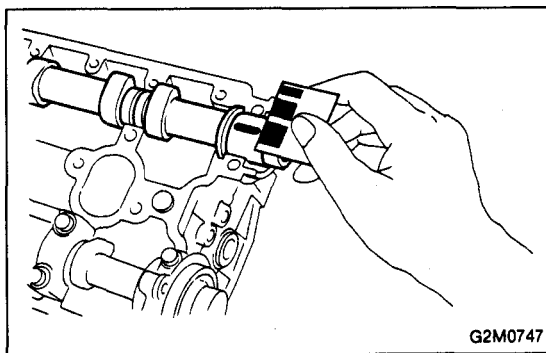
Standard oil clearance:

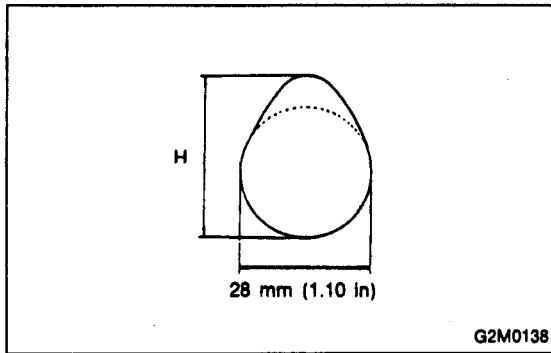
0.037 — 0.072 mm (0.0015 — 0.0028 in)

Limit:

0.10 mm (0.0039 in)

- (7) Completely remove the plastigauge.





5) Check cam face condition; remove minor faults by grinding with oil stone. Measure the cam height H; replace if the limit has been exceeded.

Standard:

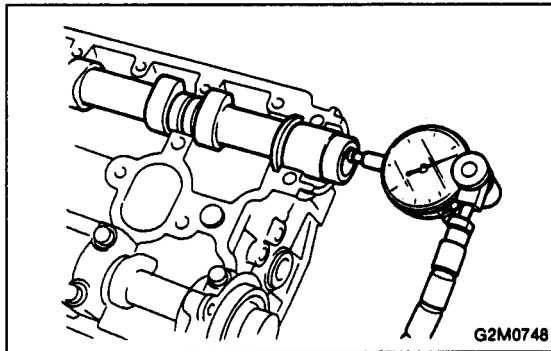
Intake 41.68 — 41.78 mm (1.6409 — 1.6449 in)

Exhaust 41.98 — 42.08 mm (1.6528 — 1.6567 in)

Limit:

Intake 41.52 mm (1.6346 in)

Exhaust 41.82 mm (1.6465 in)



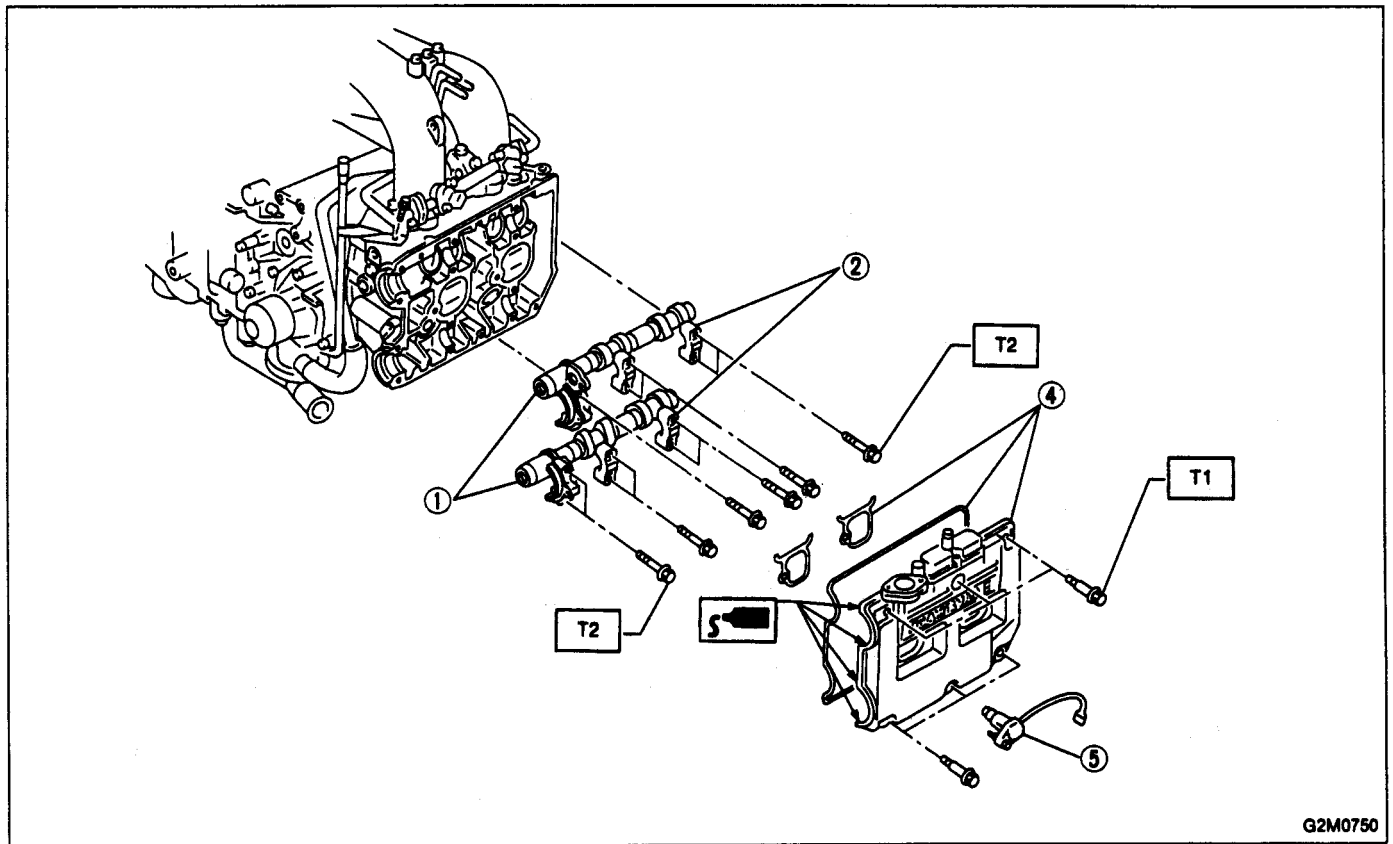
6) Measure the thrust clearance of camshaft with dial gauge. If the clearance exceeds the limit, replace caps and cylinder head as a set. If necessary replace camshaft.

Standard:

0.040 — 0.080 mm (0.0016 — 0.0031 in)

Limit:

0.1 mm (0.004 in)

C: INSTALLATION**1. CAMSHAFT**

Tightening torque: N·m (kg·m, ft·lb)

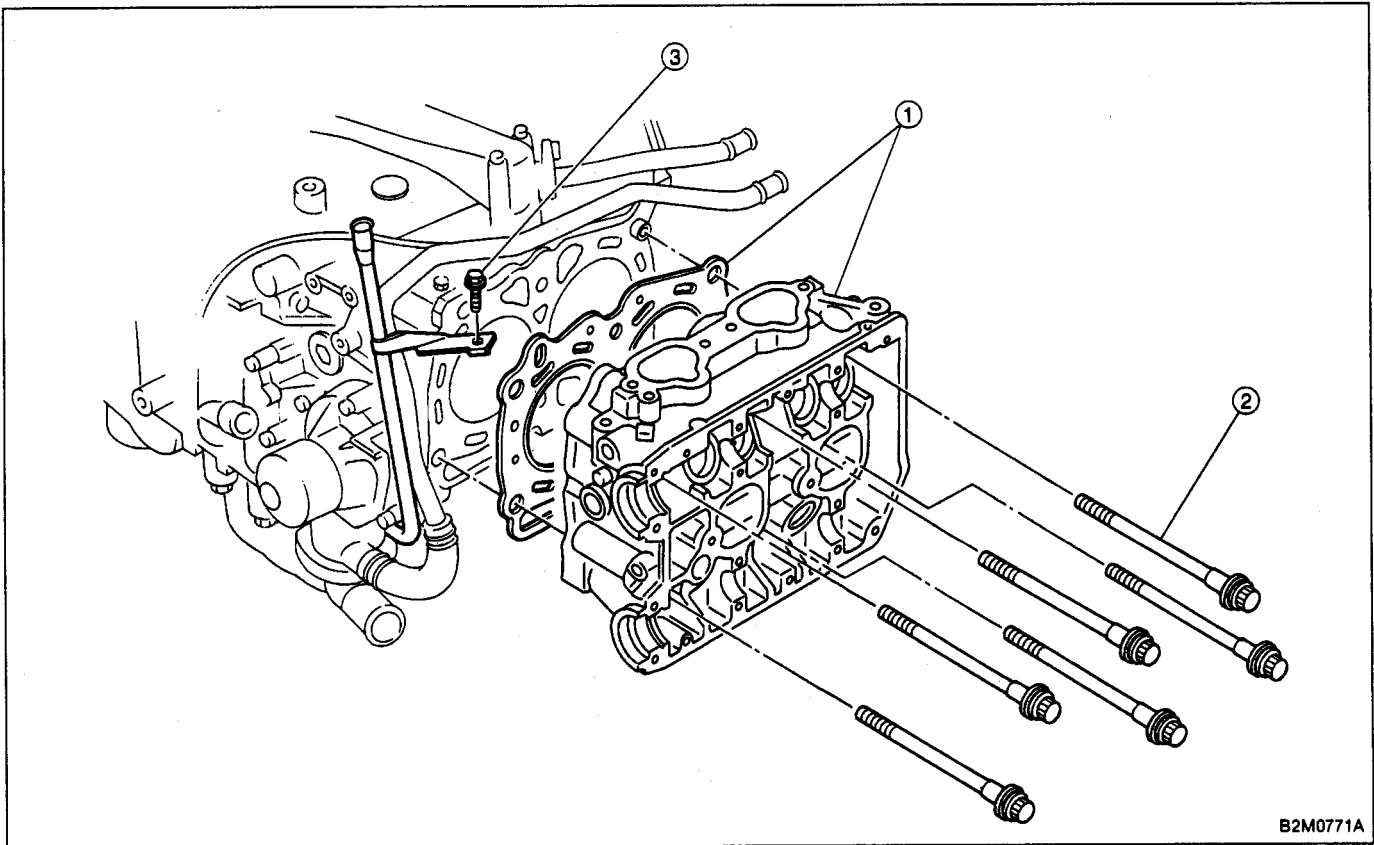
T1: 5 ± 0.5 (0.5 ± 0.05, 3.6 ± 0.4)

T2: 10 ± 0.7 (1.0 ± 0.07, 7.2 ± 0.5)

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E: INSTALLATION

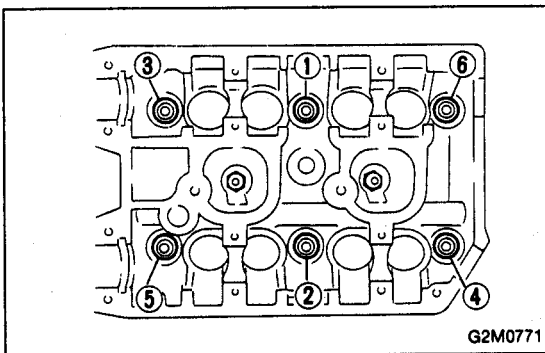
1. CYLINDER HEAD



1) Install cylinder head and gaskets on cylinder block.

CAUTION:

Use new cylinder head gaskets.



2) Tighten cylinder head bolts.

(1) Apply a coat of engine oil to washers and bolt threads.

(2) Tighten all bolts to 29 N·m (3.0 kg-m, 22 ft-lb) in numerical sequence.

Then tighten all bolts to 69 N·m (7.0 kg-m, 51 ft-lb) in numerical sequence.

(3) Back off all bolts by 180° first; back them off by 180° again.

(4) Tighten bolts ① and ② to 34 N·m (3.5 kg-m, 25 ft-lb).

(5) Tighten bolts ③, ④, ⑤ and ⑥ to 15 N·m (1.5 kg-m, 11 ft-lb).

(6) Tighten all bolts by 80 to 90° in numerical sequence.

CAUTION:

Do not tighten bolts more than 90°.

(7) Further tighten all bolts by 80 to 90° in numerical sequence.

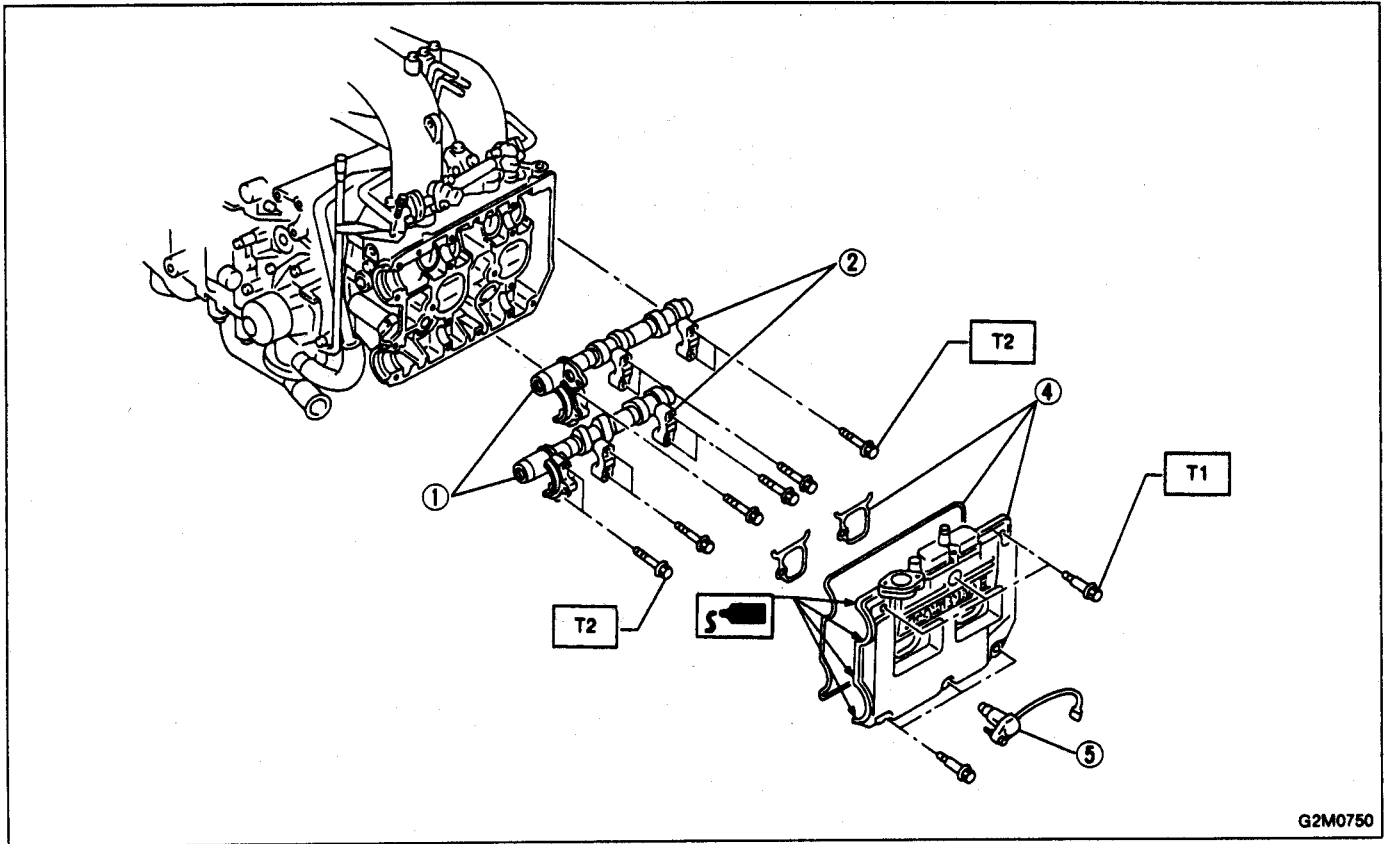
CAUTION:

Ensure that the total "re-tightening angle" [steps (6) and (7) above] do not exceed 180°.

3) Install oil level gauge guide attaching bolt (left side only).

2. INTAKE MANIFOLD

1) Install camshafts, rocker cover and related parts.
<Ref. to 2-3b [W3C0].☆2>



Tightening torque: N·m (kg·m, ft·lb)
T1: 5 ± 0.5 (0.5 ± 0.05, 3.6 ± 0.4)
T2: 10 ± 0.7 (1.0 ± 0.07, 7.2 ± 0.5)
