

ATTENTION:

GENERAL MANAGER PARTS MANAGER
 CLAIMS PERSONNEL SERVICE MANAGER

IMPORTANT - All Service Personnel Should Read and Initial



SERVICE BULLETIN

APPLICABILITY: 1998-2000 Impreza Service Manual

NUMBER: 18-55-00

SUBJECT: Service Manual Corrections

DATE: 01/27/00

Replace the following revised pages into the applicable Service Manuals listed below:

YEAR	VOL #	MSA #	SECTION	PAGES	REFERENCE
1998	9	MSA5M9804A	2-3b	7-8	[C100] / [C200]
1998	9	MSA5M9804A	2-3b	9-10	[C200] / [C300]
1998	9	MSA5M9804A	2-3b	37-38	[W3B1] / [W3C1]
1998	9	MSA5M9804A	2-3b	53-54	[W4E2] / [W4E2]
1999	11	MSA5T9904A	3-1	33-34	[W3C1] / [W4A1]

The following pages are revised from your 2000 Impreza Service Manuals.

Place a revised label on the indicated page in your original Service Manual and then place your corrected page into your Impreza Correction Binder. Keep your Service Manuals and Correction Binders together for quick reference.

YEAR	BOOK#	MSA#	SECTION	PAGES	REFERENCE
2000	4	MSA5T0013A	2-7	356	[T11A0]
2000	4	MSA5T0013A	2-7	540	[T11BY0]
2000	4	MSA5T0013A	2-7	541	[T11BY4]
2000	4	MSA5T0013A	2-7	542	[T11BY5]
2000	4	MSA5T0013A	2-7	543	[T11BZ1]
2000	4	MSA5T0013A	2-7	544	[T11BZ2]
2000	4	MSA5T0013A	2-7	545	[T11BZ7]
2000	4	MSA5T0013A	2-7	546	[T11BZ8]

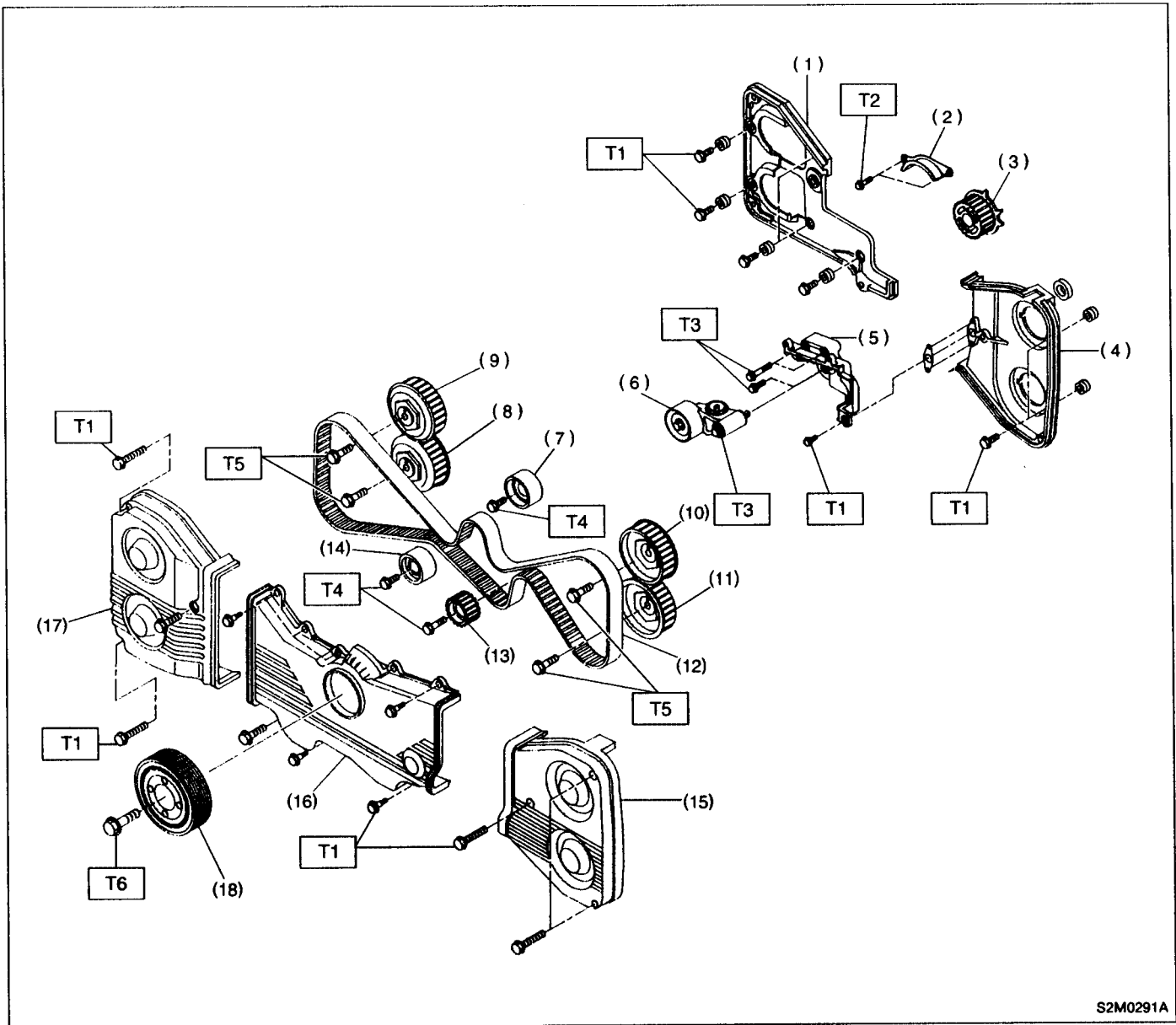
Please perform these corrections promptly to ensure that the most recent information is conveyed when the Service Manual is used.

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.

1. Timing Belt



S2M0291A

- (1) Right-hand belt cover No. 2
- (2) Timing belt guide (MT vehicles only)
- (3) Crankshaft sprocket
- (4) Left-hand belt cover No. 2
- (5) Tensioner bracket
- (6) Automatic belt tension adjuster ASSY
- (7) Belt idler
- (8) Right-hand exhaust camshaft sprocket

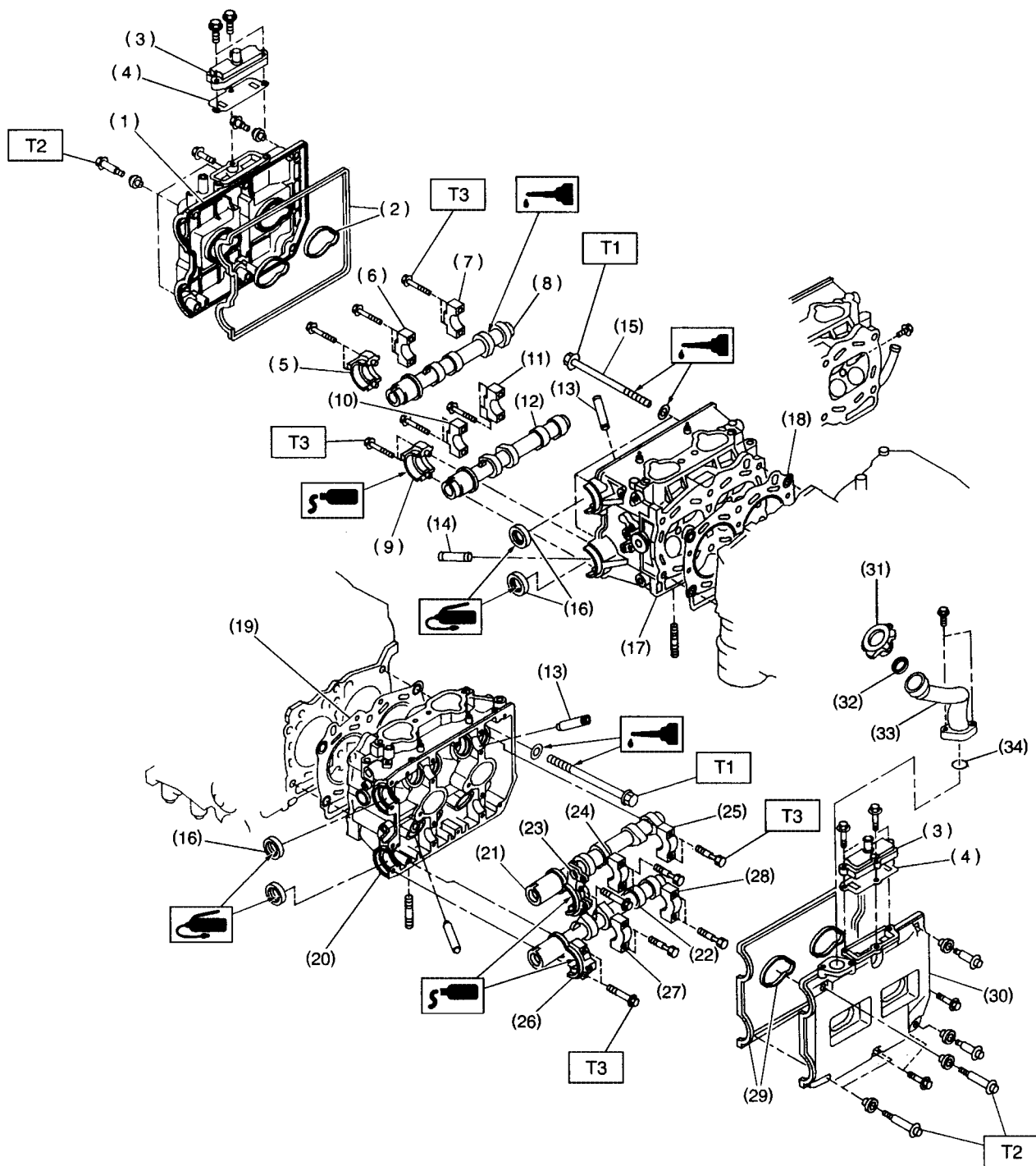
- (9) Right-hand intake camshaft sprocket
- (10) Left-hand intake camshaft sprocket
- (11) Left-hand exhaust camshaft sprocket
- (12) Timing belt
- (13) Belt idler No. 2
- (14) Belt idler
- (15) Left-hand belt cover
- (16) Front belt cover

- (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	9.8 ± 1.0	(1.0 ± 0.1, 7.2 ± 0.7)
T3	25 ± 3	(2.5 ± 0.3, 18.1 ± 2.2)
T4	39 ± 4	(4.0 ± 0.4, 28.9 ± 2.9)
T5	78 ± 5	(8.0 ± 0.5, 57.9 ± 3.6)
T6	177 ± 5	(18.0 ± 0.5, 130.2 ± 3.6)

2. Cylinder Head and Camshaft



S2M0292B

- (1) Rocker cover (RH)
- (2) Rocker cover gasket (RH)
- (3) Oil separator cover
- (4) Gasket
- (5) Intake camshaft cap (Front RH)
- (6) Intake camshaft cap (Center RH)
- (7) Intake camshaft cap (Rear RH)
- (8) Intake camshaft (RH)
- (9) Exhaust camshaft cap (Front RH)
- (10) Exhaust camshaft cap (Center RH)
- (11) Exhaust camshaft cap (Rear RH)
- (12) Exhaust camshaft (RH)
- (13) Intake valve guide
- (14) Exhaust valve guide

- (15) Cylinder head bolt
- (16) Oil seal
- (17) Cylinder head (RH)
- (18) Cylinder head gasket (RH)
- (19) Cylinder head gasket (LH)
- (20) Cylinder head (LH)
- (21) Intake camshaft (LH)
- (22) Exhaust camshaft (LH)
- (23) Intake camshaft cap (Front LH)
- (24) Intake camshaft cap (Center LH)
- (25) Intake camshaft cap (Rear LH)
- (26) Exhaust camshaft (Front LH)
- (27) Exhaust camshaft cap (Center LH)
- (28) Exhaust camshaft cap (Rear LH)

- (29) Rocker cover gasket (LH)
- (30) Rocker cover (LH)
- (31) Oil filler cap
- (32) Gasket
- (33) Oil filler duct
- (34) O-ring

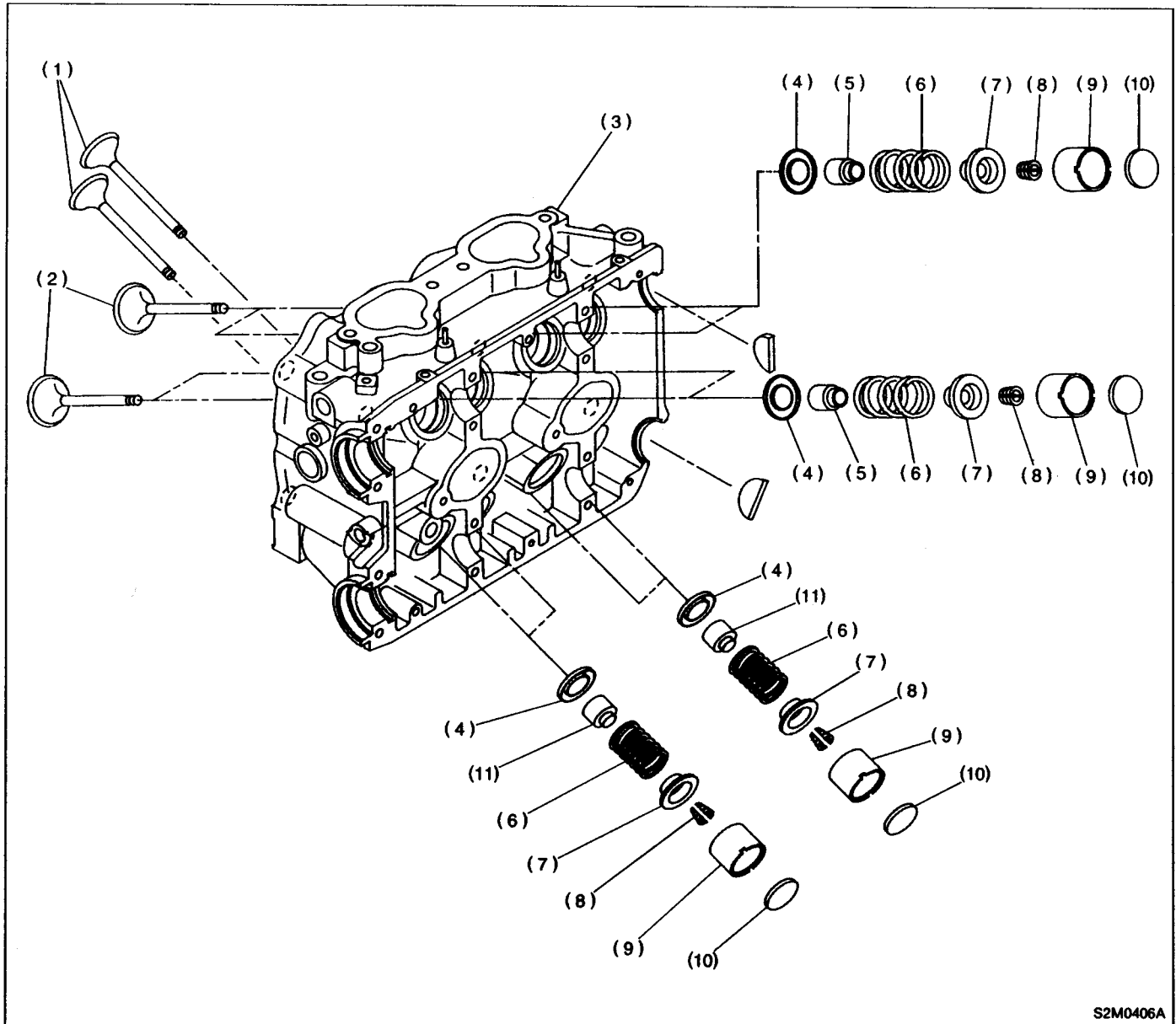
Tightening torque: N·m (kg-m, ft-lb)

T1: Refer to 2-3b [W4E1]☆6.

T2: 5 ± 0.5 (0.5 ± 0.05, 3.6 ± 0.4)

T3: 10 ± 0.7 (1.0 ± 0.07, 7.2 ± 0.5)

3. Cylinder Head and Valve Assembly

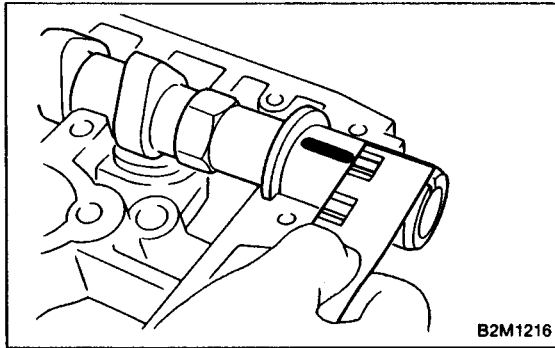


S2M0406A

- (1) Exhaust valve
- (2) Intake valve
- (3) Cylinder head
- (4) Valve spring seat

- (5) Intake valve oil seal
- (6) Valve spring
- (7) Retainer
- (8) Retainer key

- (9) Valve lifter
- (10) Shim
- (11) Exhaust valve oil seal



(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.

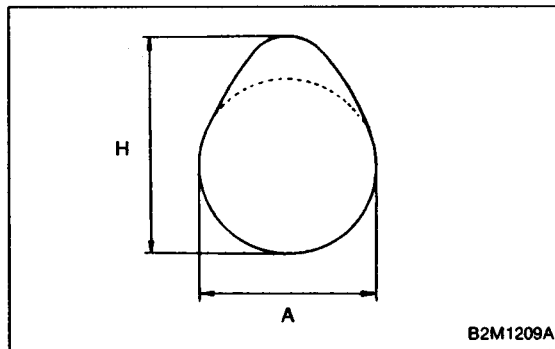
Standard oil clearance:

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.

Cam height: H

Standard:

Intake:

42.20 — 42.30 mm (1.6614 — 1.6654 in)

Exhaust:

Front: 42.50 — 42.60 mm (1.6732 — 1.6772 in)

Rear: 41.40 — 41.50 mm (1.6299 — 1.6339 in)

Limit:

Intake:

42.05 mm (1.6555 in)

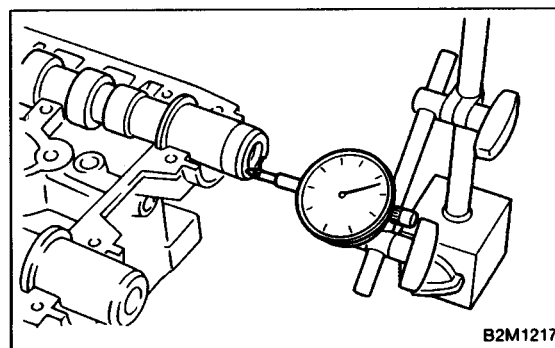
Exhaust:

Front: 42.35 mm (1.6673 in)

Rear: 41.25 mm (1.6240 in)

Cam base circle diameter A:

28.0 mm (1.102 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:

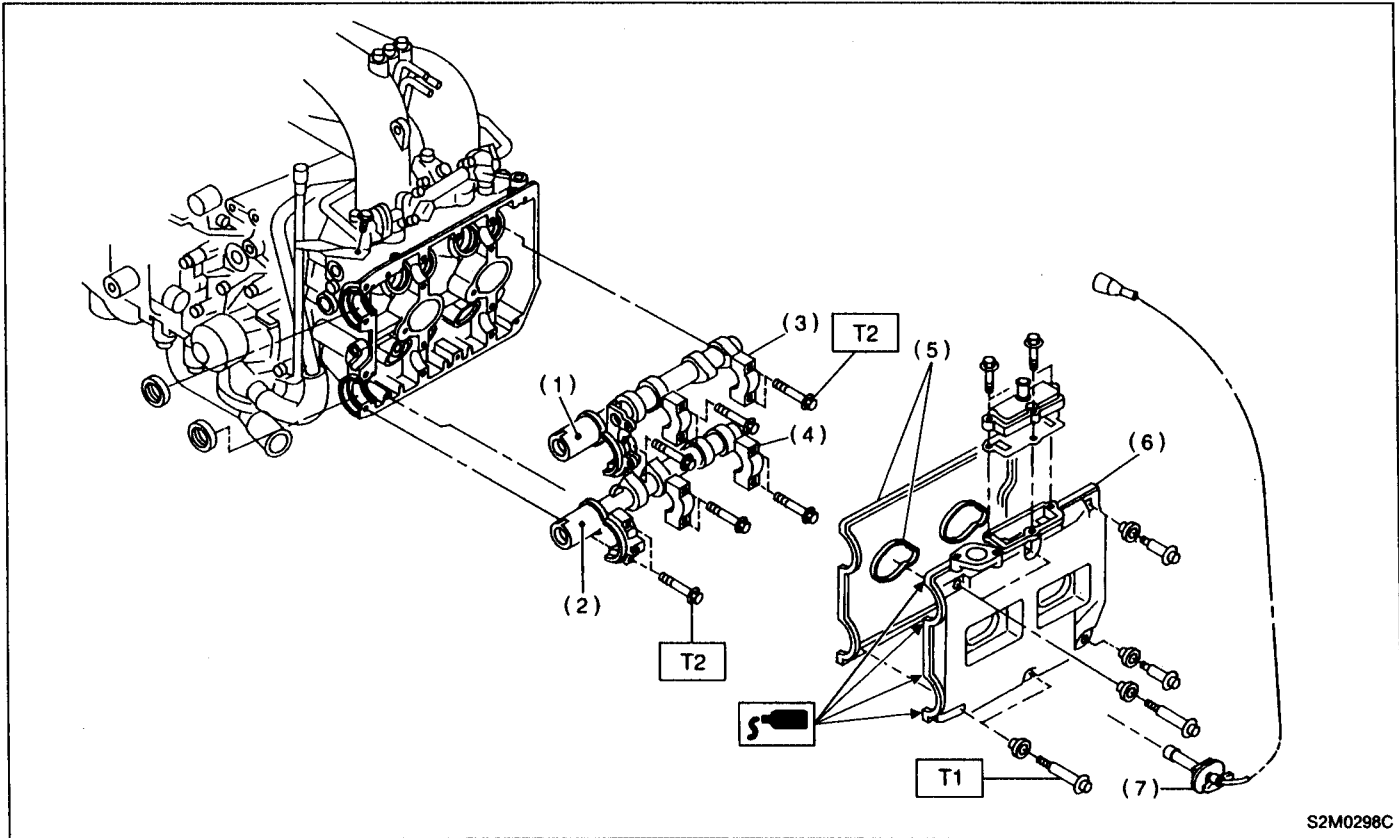
0.040 — 0.080 mm (0.0016 — 0.0031 in)

Limit:

0.1 mm (0.004 in)

C: INSTALLATION

1. CAMSHAFT



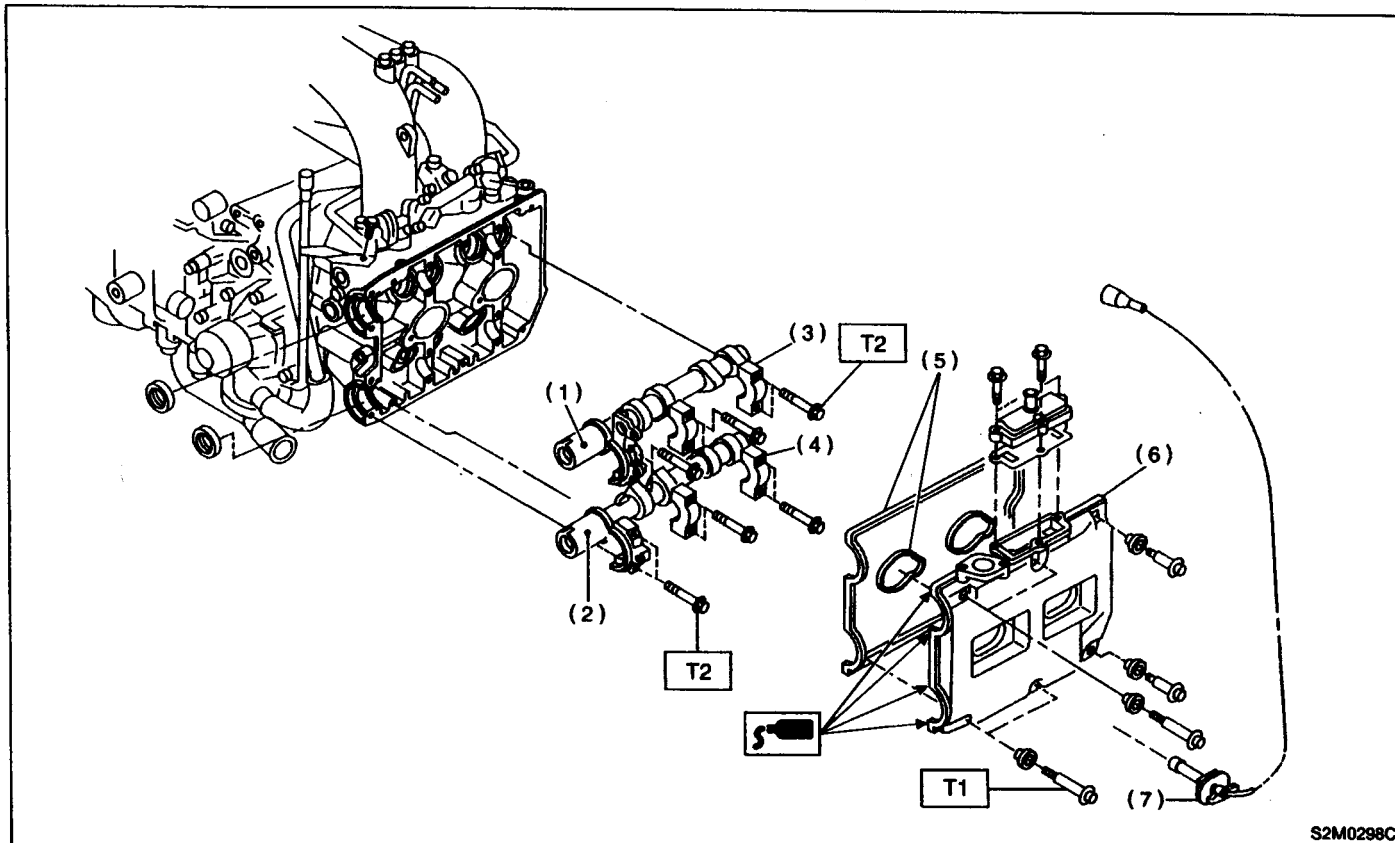
- (1) Intake camshaft (LH)
- (2) Exhaust camshaft (LH)
- (3) Intake camshaft cap (LH)
- (4) Exhaust camshaft cap (LH)
- (5) Rocker cover gasket (LH)

- (6) Rocker cover (LH)
- (7) Spark plug cord

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)

2. RELATED PARTS

1) Install camshafts, rocker cover and related parts.
 <Ref. to 2-3b [W3C1].☆6>



- (1) Intake camshaft (LH)
- (2) Exhaust camshaft (LH)
- (3) Intake camshaft cap (LH)
- (4) Exhaust camshaft cap (LH)
- (5) Rocker cover gasket (LH)

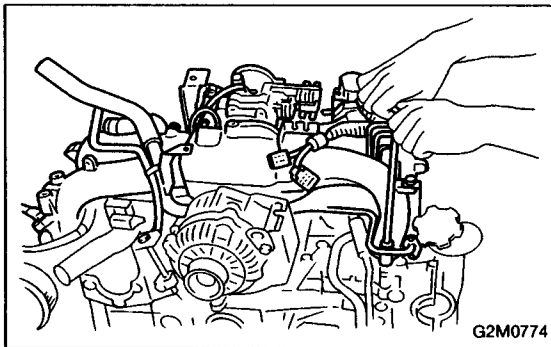
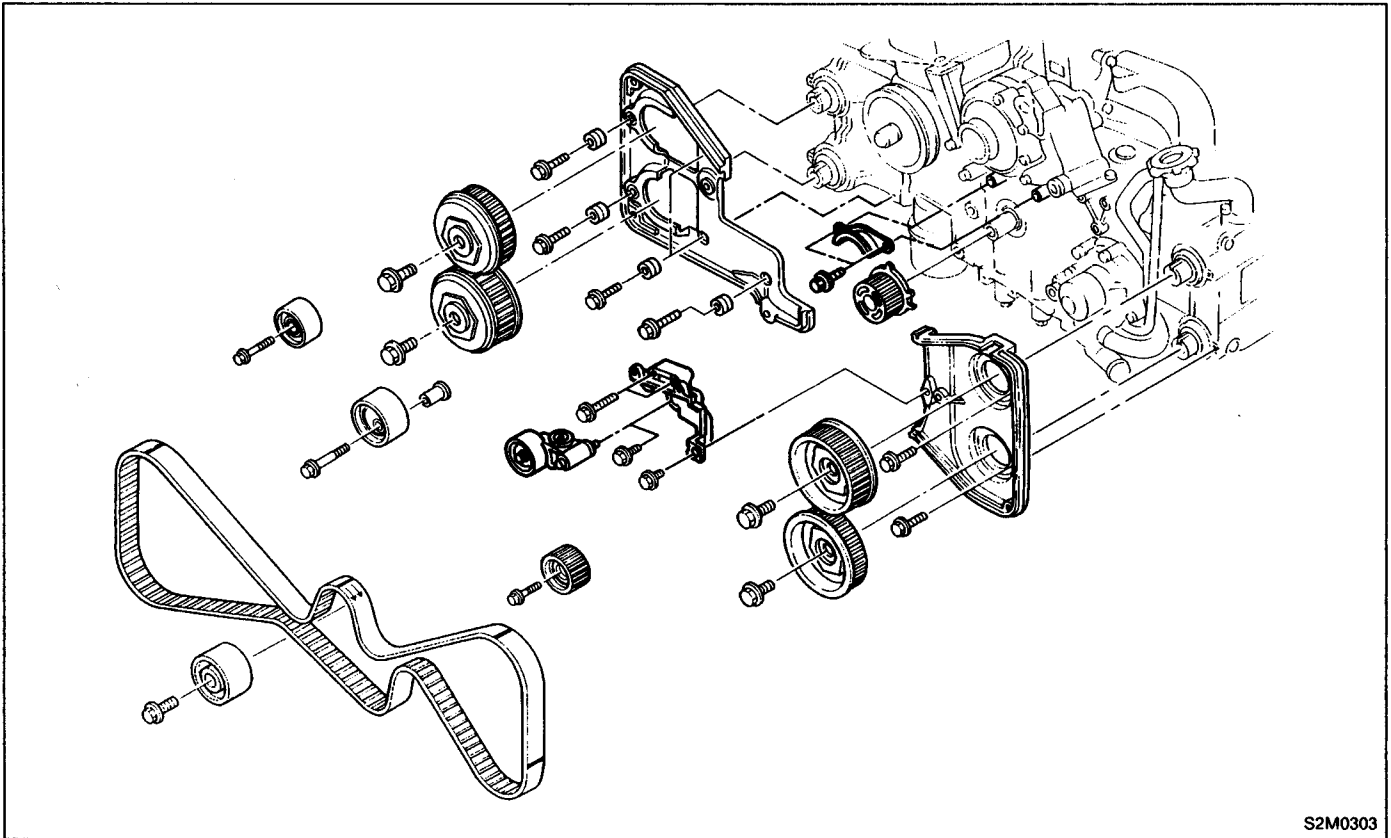
- (6) Rocker cover (LH)
- (7) Spark plug cord

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)

2) Similarly, install parts on right-hand side.

3) Install camshaft sprockets, timing belt and related parts.

<Ref. to 2-3b [W2C1].☆6>



4) Install intake manifold.

CAUTION:
Use new gaskets.

5) Install camshaft position sensor. Use dry compressed air to remove foreign particles before installing sensor.

6) Connect each connector and/or install connector bracket.

7) Connect hoses and tubes to cylinder block.

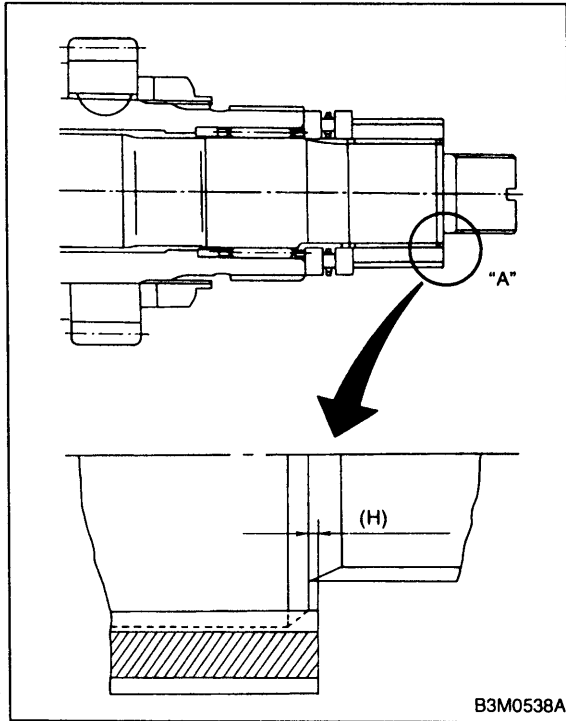
8) Install brackets, generator and air conditioner compressor.

9) Install V-belt.

C: ADJUSTMENT

1. THRUST BEARING PRELOAD

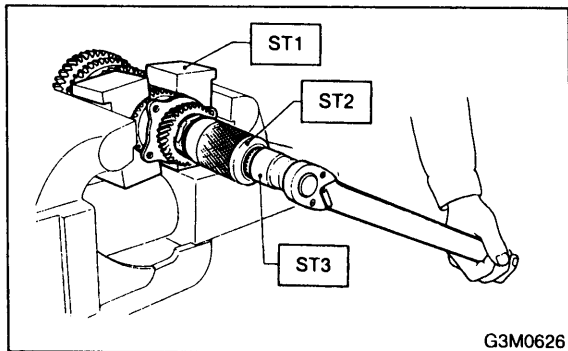
1) After completing the preceding steps 1) through 3), select adjusting washer No. 2 so that dimension (H) is zero through visual check. Position washer (18.3 × 30 × 4) and lock washer (18 × 30 × 2) and install lock nut (18 × 13.5).



2) Using ST1, ST2 and ST3, tighten lock nut to the specified torque.

- ST1 899884100 HOLDER
- ST2 498427100 STOPPER
- ST3 899988608 SOCKET WRENCH (27)

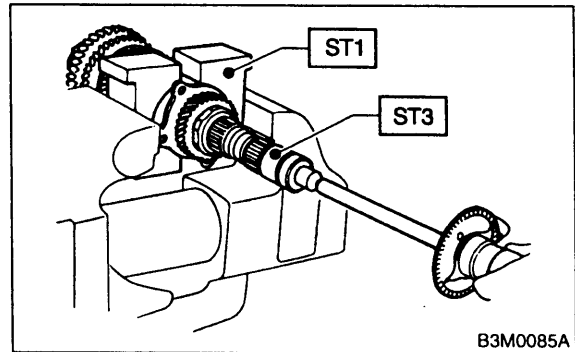
Tightening torque:
118±8 N·m (12±0.8 kg·m, 86.8±5.8 ft·lb)



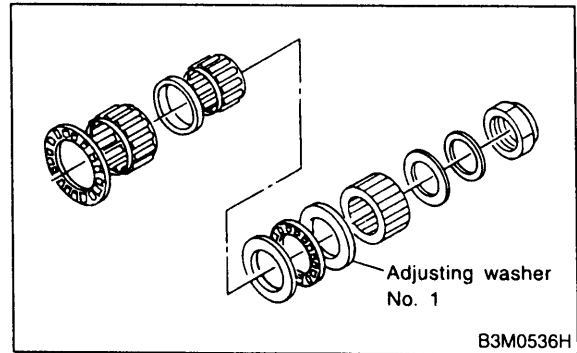
3) After removing ST2, measure starting torque using torque driver.

- ST1 899884100 HOLDER
- ST3 899988608 SOCKET WRENCH (27)

Starting torque:
0.3-0.8 N·m (3-8 kg·cm, 2.6-6.9 in·lb)

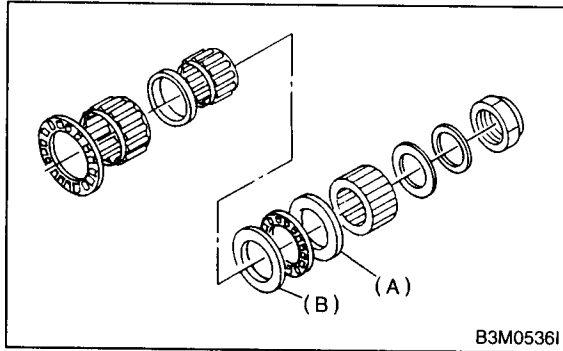


4) If starting torque is not within specified limit, select new adjusting washer No. 1 and recheck starting torque.



Adjusting washer No. 1	
Part No.	Thickness mm (in)
803025051	3.925 (0.1545)
803025052	3.950 (0.1555)
803025053	3.975 (0.1565)
803025054	4.000 (0.1575)
803025055	4.025 (0.1585)
803025056	4.050 (0.1594)
803025057	4.075 (0.1604)

5) If specified starting torque range cannot be obtained when a No. 1 adjusting washer is used, then select a suitable No. 2 adjusting washer from those listed in the following table. Repeat steps 1) through 4) to adjust starting torque.



(A) Adjusting washer No. 1
 (B) Adjusting washer No. 2

Starting torque	Dimension H	Washer No. 2
Low	Small	Select thicker one.
High	Large	Select thinner one.

Adjusting washer No. 2	
Part No.	Thickness mm (in)
803025059	3.850 (0.1516)
803025054	4.000 (0.1575)
803025058	4.150 (0.1634)

6) Recheck that starting torque is within specified range, then clinch lock nut at four positions.

4. Main Shaft Assembly

A: DISASSEMBLY

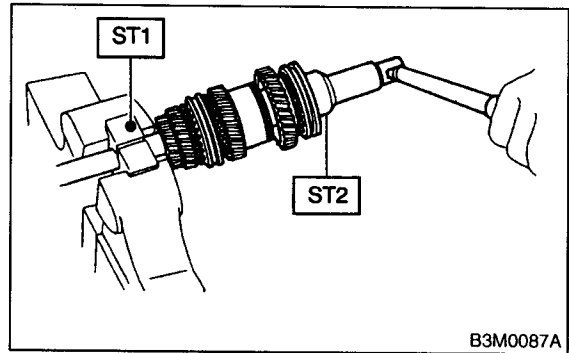
1. 2200 cc MODEL

- 1) Put vinyl tape around main shaft splines to protect oil seal from damage. Then pull out oil seal and needle bearing by hand.
- 2) Remove lock nut from transmission main shaft assembly.

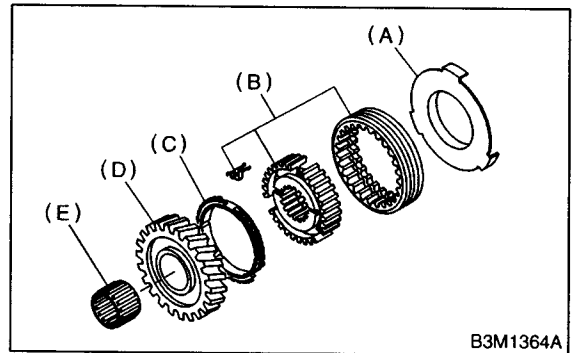
NOTE:

Remove caulking before taking off lock nut.

- ST1 498937000 TRANSMISSION HOLDER
 ST2 499987003 SOCKET WRENCH (35)



- 3) Remove insert stopper plate, sleeve and hub assembly No. 2, baulk ring, 5th drive gear, and needle bearing.



- (A) Insert stopper plate
 (B) Sleeve and hub assembly No. 2
 (C) Baulk ring
 (D) 5th drive gear
 (E) Needle bearing (32 × 36 × 25.7)

11. Diagnostics Chart with Trouble Code for 2500 cc Models

DTC No.	Item	Index
P0725	Engine speed input circuit malfunction	<Ref. to 2-7 [T11BB0].>
P0731	Gear 1 incorrect ratio	<Ref. to 2-7 [T11BC0].>
P0732	Gear 2 incorrect ratio	<Ref. to 2-7 [T11BD0].>
P0733	Gear 3 incorrect ratio	<Ref. to 2-7 [T11BE0].>
P0734	Gear 4 incorrect ratio	<Ref. to 2-7 [T11BF0].>
P0740	Torque converter clutch system malfunction	<Ref. to 2-7 [T11BG0].>
P0743	Torque converter clutch system (lock-up duty solenoid) electrical	<Ref. to 2-7 [T11BH0].>
P0748	Pressure control solenoid (line pressure duty solenoid) electrical	<Ref. to 2-7 [T11BI0].>
P0753	Shift solenoid A (Shift solenoid 1) electrical	<Ref. to 2-7 [T11BJ0].>
P0758	Shift solenoid B (Shift solenoid 2) electrical	<Ref. to 2-7 [T11BK0].>
P1100	Starter switch circuit low input	<Ref. to 2-7 [T11BL0].>
P1101	Neutral position switch circuit low input [MT vehicles] or Neutral position switch circuit high input [AT vehicles]	<Ref. to 2-7 [T11BM0].>
P1103	Engine torque control signal 1 circuit malfunction	<Ref. to 2-7 [T11BN0].>
P1106	Engine torque control signal 2 circuit malfunction	<Ref. to 2-7 [T11BO0].>
P1110	Atmospheric pressure sensor low input	<Ref. to 2-7 [T11BP0].>
P1111	Atmospheric pressure sensor high input	<Ref. to 2-7 [T11BQ0].>
P1112	Atmospheric pressure sensor range/performance problem	<Ref. to 2-7 [T11BR0].>
P1115	Engine torque control cut signal circuit high input	<Ref. to 2-7 [T11BS0].>
P1116	Engine torque control cut signal circuit low input	<Ref. to 2-7 [T11BT0].>
P1120	Starter switch circuit high input	<Ref. to 2-7 [T11BU0].>
P1121	Neutral position switch circuit high input [MT vehicles] or Neutral position switch circuit low input [AT vehicles]	<Ref. to 2-7 [T11BV0].>
P1130	Front oxygen (A/F) sensor circuit malfunction (open circuit)	<Ref. to 2-7 [T11BW0].>
P1131	Front oxygen (A/F) sensor circuit malfunction (short circuit)	<Ref. to 2-7 [T11BX0].>
P1132	Front oxygen (A/F) sensor heater circuit high input	<Ref. to 2-7 [T11BY0].>
P1133	Front oxygen (A/F) sensor heater circuit low input	<Ref. to 2-7 [T11BZ0].>
P1142	Throttle position sensor circuit range/performance problem (low input)	<Ref. to 2-7 [T11CA0].>
P1151	Rear oxygen sensor heater circuit high input	<Ref. to 2-7 [T11CB0].>

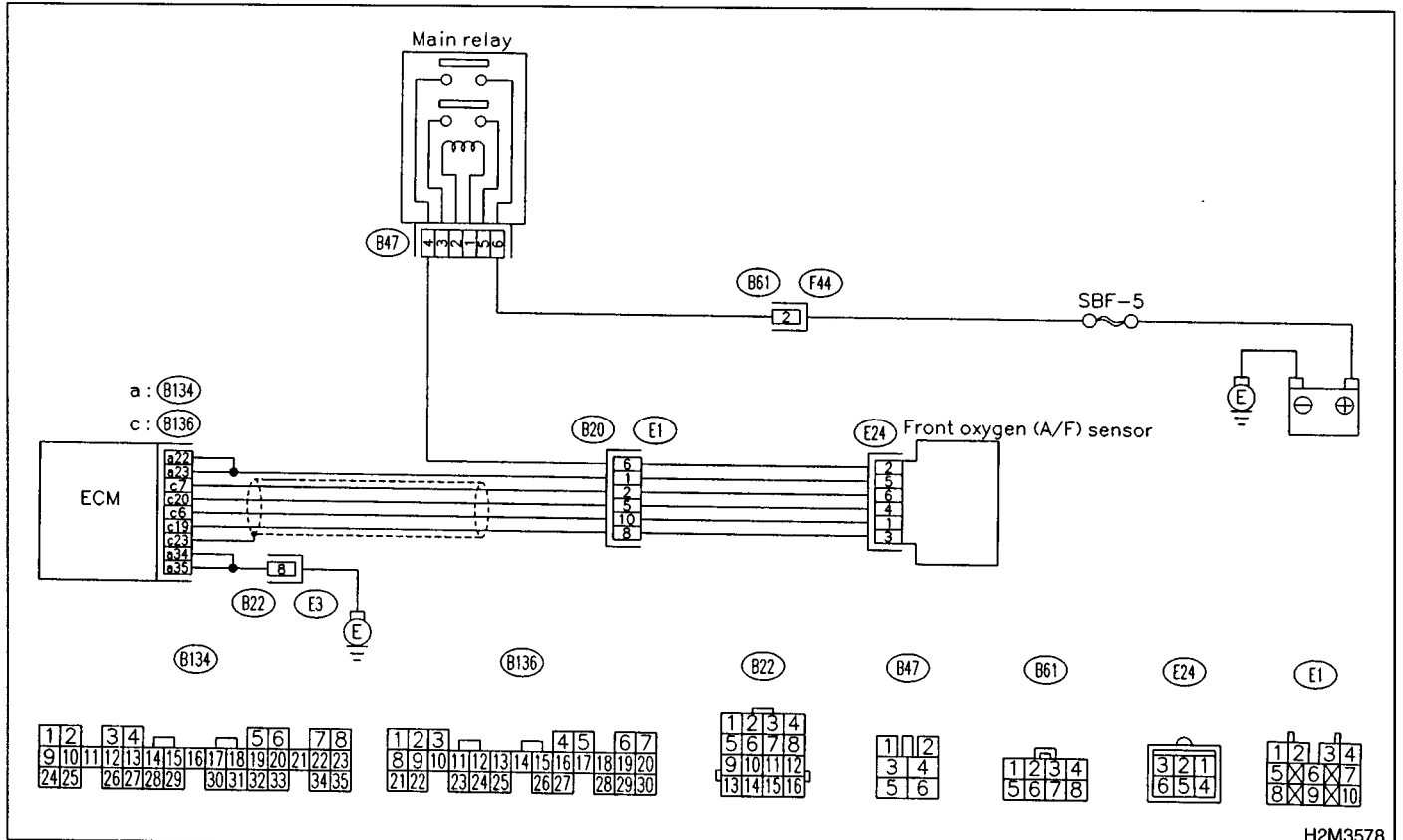
BY: DTC P1132 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT HIGH INPUT —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct CLEAR MEMORY MODE <Ref. to 2-7 [T3D0].> and INSPECTION MODE <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



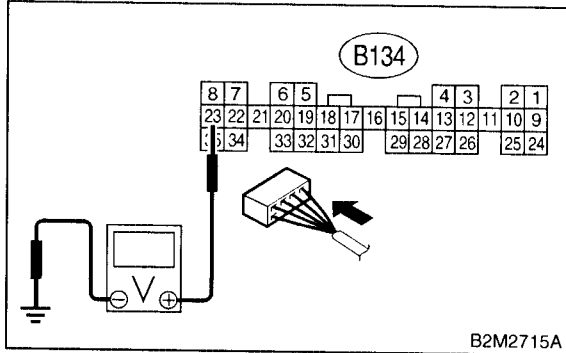
H2M3578

11BY1 : CHECK OUTPUT SIGNAL FROM ECM.

- 1) Turn ignition switch to ON.
- 2) Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 23 (+) — Chassis ground (-):



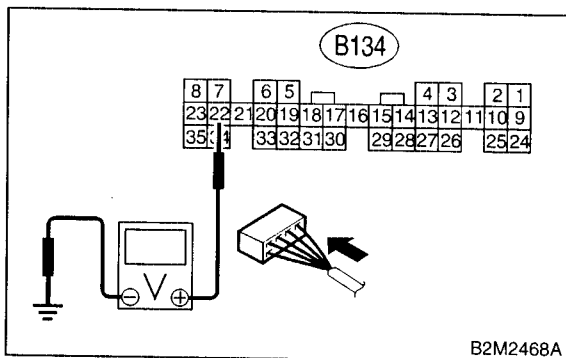
- CHECK** : *Is the voltage more than 8 V?*
- YES** : Go to step 11BY3.
- NO** : Go to step 11BY2.

11BY2 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 22 (+) — Chassis ground (-):



- CHECK** : *Is the voltage more than 8 V?*
- YES** : Go to step 11BY3.
- NO** : Go to step 11BY4.

11BY3 : CHECK FRONT OXYGEN (A/F) SENSOR HEATER CURRENT.

- 1) Turn ignition switch to OFF.
- 2) Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
- 3) Turn ignition switch to ON.
- 4) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or the OBD-II general scan tool.

NOTE:

- Subaru Select Monitor

For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>

- OBD-II general scan tool

For detailed operation procedure, refer to the OBD-II General Scan Tool Instruction Manual.

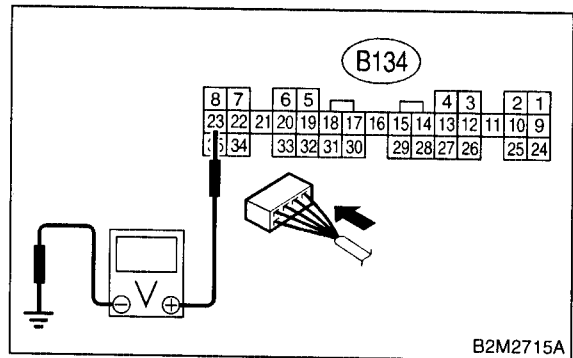
- CHECK** : *Is the value more than 2.3 A?*
- YES** : Replace ECM. <Ref. to 2-7 [W19A0].>
- NO** : END

11BY4 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 23 (+) — Chassis ground (-):



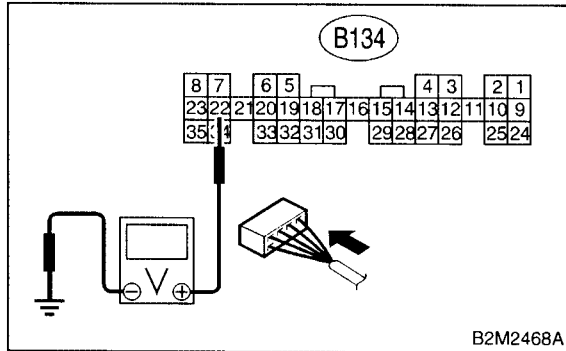
- CHECK** : *Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?*
- YES** : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
- NO** : Go to step 11BY5.

11BY5 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 22 (+) — Chassis ground (-):



- CHECK** : **Does the voltage change more than 8 V by shaking harness and connector of ECM while monitoring the value with voltage meter?**
- YES** : Repair battery short circuit in harness between ECM and front oxygen (A/F) sensor connector.
- NO** : END

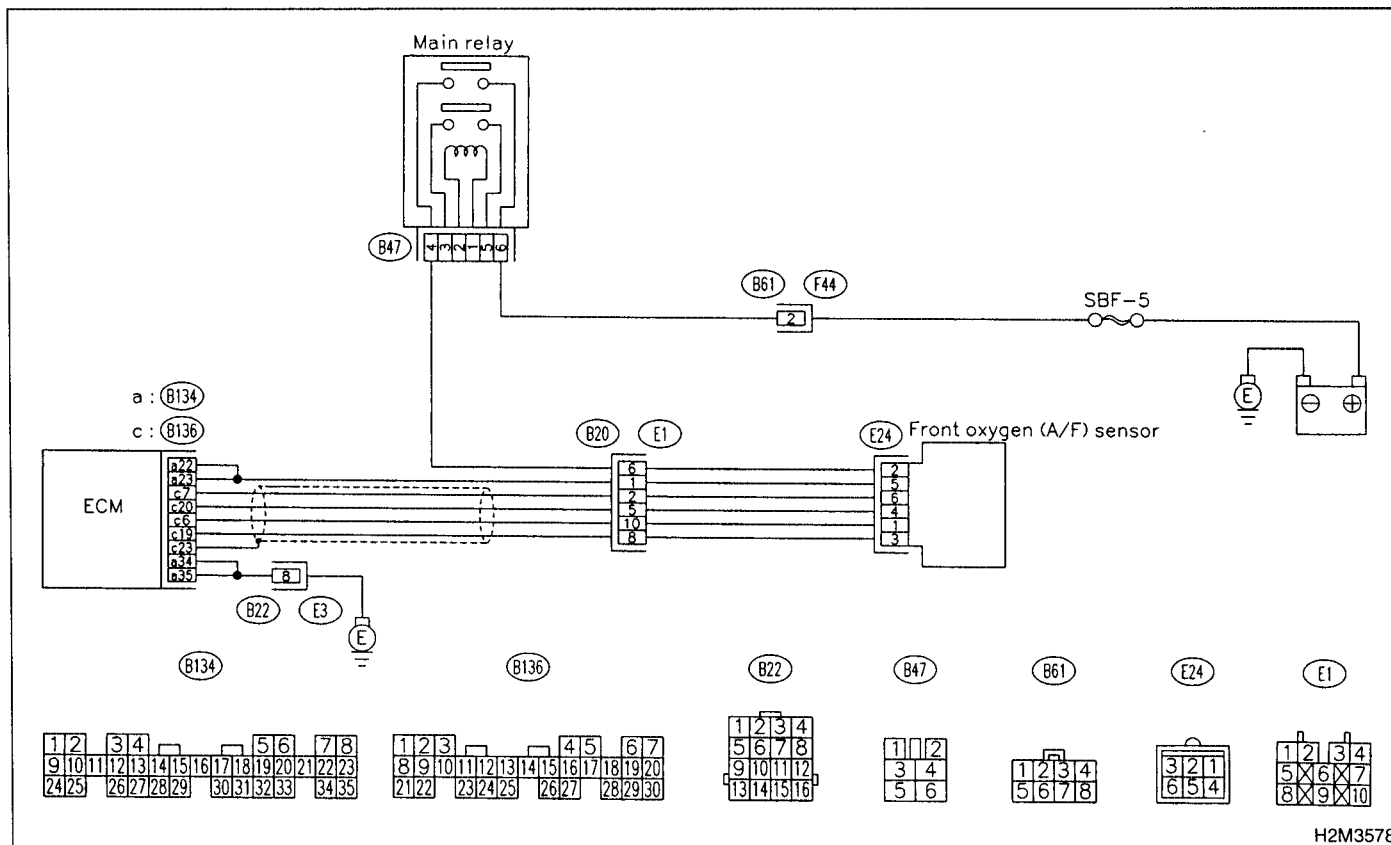
BZ: DTC P1133 — FRONT OXYGEN (A/F) SENSOR HEATER CIRCUIT LOW INPUT —

- **DTC DETECTING CONDITION:**
 - Two consecutive driving cycles with fault

CAUTION:

After repair or replacement of faulty parts, conduct **CLEAR MEMORY MODE** <Ref. to 2-7 [T3D0].> and **INSPECTION MODE** <Ref. to 2-7 [T3E0].>

● **WIRING DIAGRAM:**



H2M3578

11BZ1 : CHECK ANY OTHER DTC ON DISPLAY.

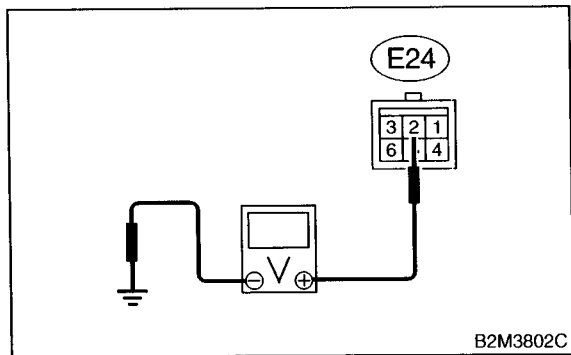
- CHECK** : Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P1133 and P0141 at the same time?
- YES** : Go to step 11BZ2.
- NO** : Go to step 11BZ5.

11BZ2 : CHECK POWER SUPPLY TO FRONT OXYGEN (A/F) SENSOR.

- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from front oxygen (A/F) sensor.
- 3) Turn ignition switch to ON.
- 4) Measure voltage between front oxygen (A/F) sensor connector and engine ground.

Connector & terminal

(E24) No. 2 (+) — Engine ground (-):



CHECK : *Is the voltage more than 10 V?*

YES : Go to step 11BZ3.

NO : Repair power supply line.

NOTE:

In this case, repair the following:

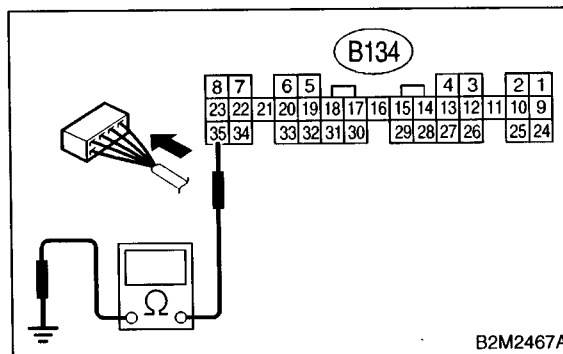
- Open circuit in harness between main relay and front oxygen (A/F) sensor connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in main relay connector

11BZ3 : CHECK GROUND CIRCUIT OF ECM.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal

(B134) No. 35 — Chassis ground:



CHECK : *Is the resistance less than 5 Ω?*

YES : Go to step 11BZ4.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

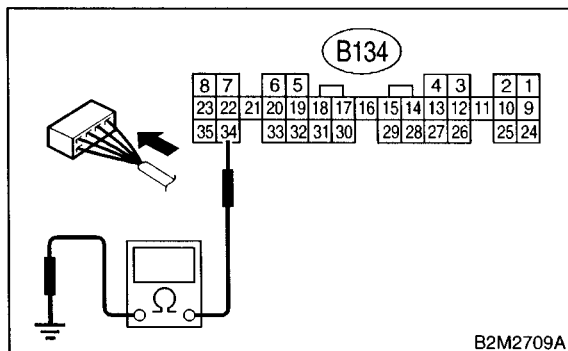
- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

11BZ4 : CHECK GROUND CIRCUIT OF ECM.

1) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal

(B134) No. 34 — Chassis ground:



CHECK : **Is there resistance less than 5 Ω?**

YES : Go to step 11BZ5.

NO : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open circuit in harness between ECM and engine ground terminal
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

11BZ5 : CHECK CURRENT DATA.

1) Start engine.
2) Read data of front oxygen (A/F) sensor heater current using Subaru Select Monitor or OBD-II general scan tool.

NOTE:

- Subaru Select Monitor
- For detailed operation procedure, refer to the "READ CURRENT DATA SHOWN ON DISPLAY FOR ENGINE". <Ref. to 2-7 [T3C4].>
- OBD-II scan tool
- For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

CHECK : **Is the value more than 0.2 A?**

YES : Repair poor contact in connector.

NOTE:

In this case, repair the following:

- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector

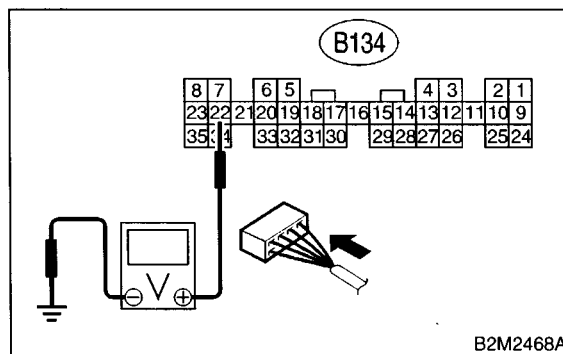
NO : Go to step 11BZ6.

11BZ6 : CHECK OUTPUT SIGNAL FROM ECM.

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 22 (+) — Chassis ground (-):



CHECK : **Is the voltage less than 1.0 V?**

YES : Go to step 11BZ8.

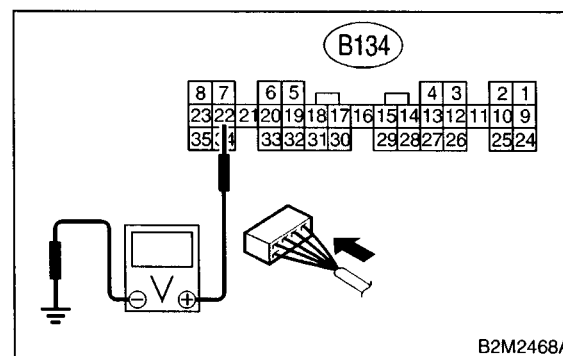
NO : Go to step 11BZ7.

11BZ7 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 22 (+) — Chassis ground (-):



CHECK : **Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?**

YES : Repair poor contact in ECM connector.

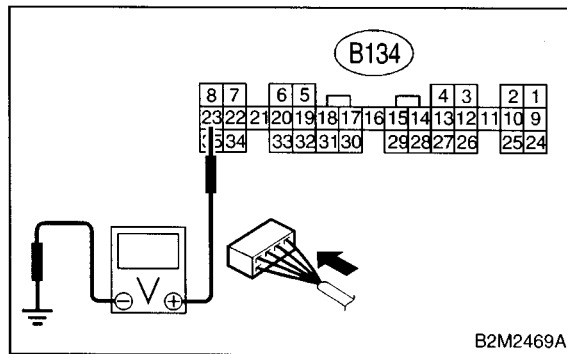
NO : Go to step 11BZ8.

11BZ8 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 23 (+) — Chassis ground (-):



CHECK : *Is the voltage less than 1.0 V?*

YES : Go to step **11BZ10**.

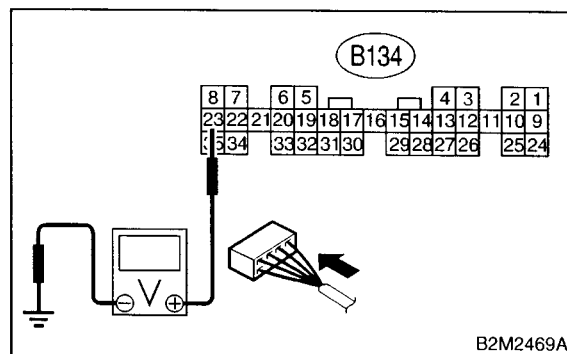
NO : Go to step **11BZ9**.

11BZ9 : CHECK OUTPUT SIGNAL FROM ECM.

Measure voltage between ECM connector and chassis ground.

Connector & terminal

(B134) No. 23 (+) — Chassis ground (-):



CHECK : *Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?*

YES : Repair poor contact in ECM connector.

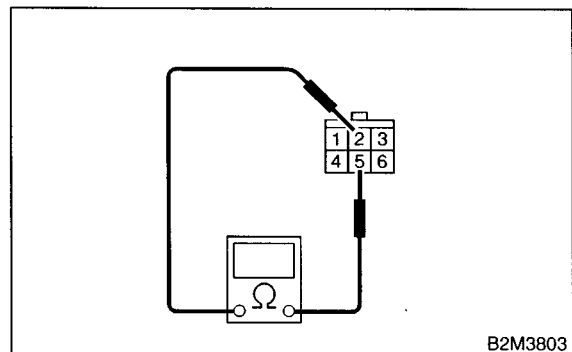
NO : Go to step **11BZ10**.

11BZ10 : CHECK FRONT OXYGEN (A/F) SENSOR.

- 1) Turn ignition switch to OFF.
- 2) Measure resistance between front oxygen (A/F) sensor connector terminals.

Terminals

No. 2 — No. 5:



CHECK : *Is the resistance less than 10 Ω?*

YES : Repair harness and connector.

NOTE:

In this case, repair the following:

- Open or ground short circuit in harness between front oxygen (A/F) sensor and ECM connector
- Poor contact in front oxygen (A/F) sensor connector
- Poor contact in ECM connector

NO : Replace front oxygen (A/F) sensor.
<Ref. to 2-7 [W8A0].>