

- ③ Drive a new valve guide bush into position, until the snap ring contacts the cylinder head, using the following SST.

SST: 09201-87201-000

NOTE:

After the valve guide bush has been driven into position, remove any burr or the like, using an adjustable reamer. At this time, make sure that the specified oil clearance is assured between the valve guide bush and the valve stem.

● **Intake side**

- ① Drive out the valve guide bush from the combustion chamber side, using the following SST.

SST: 09201-87201-000

- ② Drive a new valve guide bush into position, until the snap ring contacts the cylinder head, using the following SST.

SST: 09201-87201-000

NOTE:

After the valve guide bush has been driven into position, remove any burr or the like, using an adjustable reamer. At this time, make sure that the specified oil clearance is assured between the valve guide bush and the valve stem.

4. Checking of valve springs

- (1) Check the valve spring for squareness, using a square.

Maximum limit: 1.5 mm (0.059 inch)

- (2) Using a spring tester, measure the free length. Also, measure the spring tension with the spring compressed to the specified installed length.

Minimum free length: 42.0 mm (1.654 inch)

Spring tension:

Minimum limit/installation height

22.7 kg/34.9 mm (56.7 lb/1.374 inch)

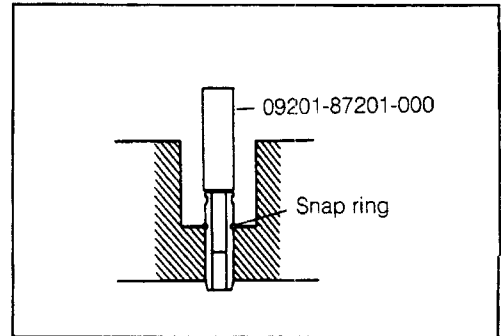


Fig. 5-152

WM-05173

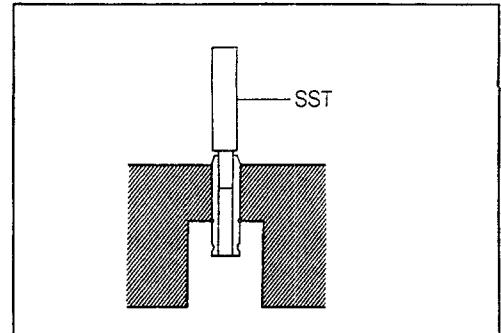


Fig. 5-153

WM-05174

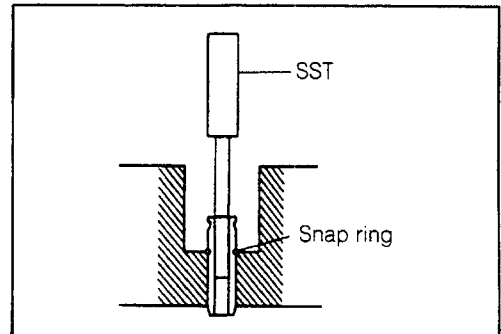


Fig. 5-154

WM-05175

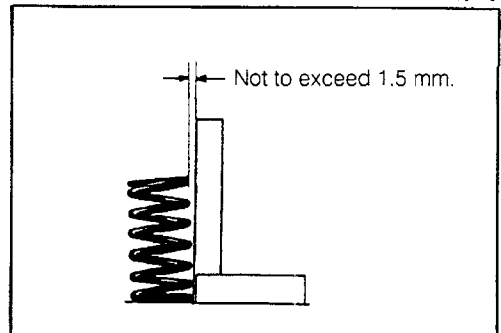


Fig. 5-155

WM-05176

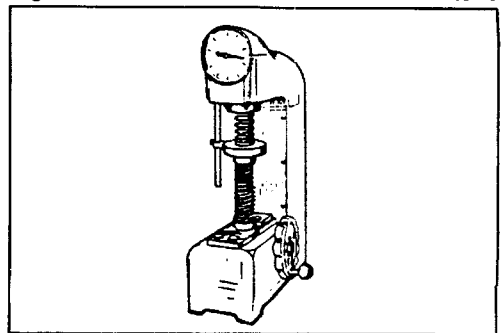


Fig. 5-156

WM-05177

ENGINE MECHANICALS

5. Checking of valve rocker arms and valve rocker shafts
(1) Check the rocker arms and rocker shafts for cracks and damage.

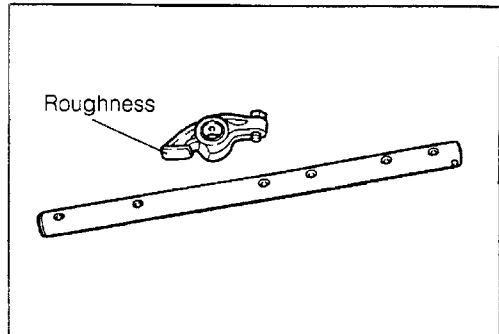


Fig. 5-157

WM-05178

- (2) Measure the oil clearance.

Oil clearance = Inner diameter of valve rocker arm –
Outer diameter of valve rocker shaft
Specified Value: Oil clearance 0.016 - 0.09 mm
(0.00063 - 0.00350 inch)

NOTE:

The oil clearance should be established by measuring the following two values: The inner diameter of each valve rocker arm and the outer diameter of the valve rocker arm installation section of the valve rocker shaft.

If the oil clearance does not meet the specifications, replace the parts with new ones, as required, referring to the specified values of the inner diameter of the valve rocker arm and the outer diameter of the valve rocker shaft.

Inner diameter of valve rocker arm (new one)

16.000 - 16.018 mm (0.6300 - 0.6306 inch)

Outer diameter of valve rocker shaft (new one)

15.958 - 15.984 mm (0.6283 - 0.6293 inch)

[Reference]

Oil clearance at the time when the valve rocker shaft and valve rocker arm have been replaced by new ones:

0.016 - 0.060 mm (0.0006 - 0.0024 inch)

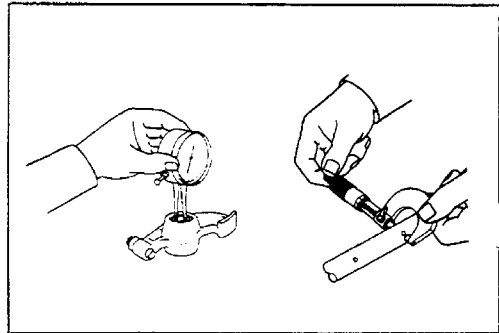


Fig. 5-158

WM-05179

WM-05180

5. Checking of camshaft

(1) Checking distributor drive gear

Check the distributor drive gear for cracks and abnormal wear.

NOTE:

If the distributor drive gear exhibits any abnormal wear, check the distributor driven gear, too.

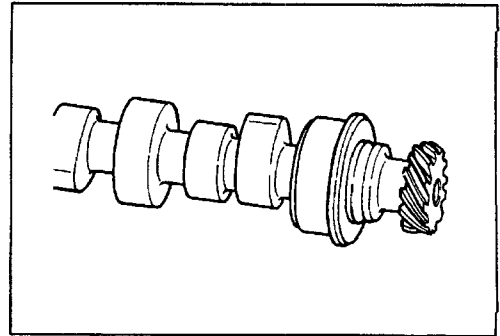


Fig. 5-159

WM-05181

(2) Checking camshaft for runout

Support the camshaft at its both ends with V-shaped blocks. Set a dial gauge to the mid-point of the center journal section of the camshaft. Turn the camshaft one turn, making sure that the camshaft will not move in the axial direction. Take a reading on the dial gauge during the turning. Calculate the maximum runout, i.e. the difference between the maximum and minimum readings.

Maximum runout: 0.03 mm (0.0012 inch)

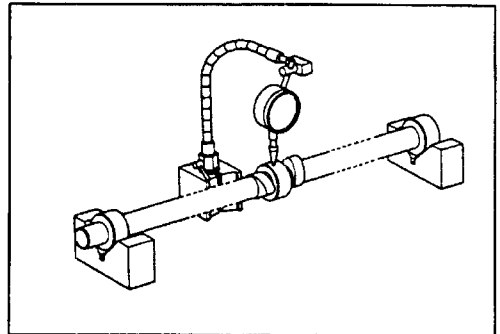


Fig. 5-160

WM-05182

(3) Checking cam lobe height

Minimum limit mm (inches)

CB-23	39.8 (1.567)
CB-61	39.8 (1.567)

If the measured height is less than the minimum limit, replace the camshaft.

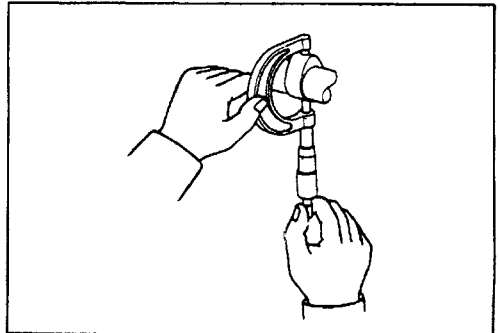


Fig. 5-161

WM-05183

ENGINE MECHANICALS

- (4) Checking oil clearance
- ① Measure the outer diameters of the journal sections of the camshaft.
 - ② Measure the inner diameters of the bearing bores of the cylinder head at three points of front, center and rear sections. This bore measurement for each section should be conducted in two directions, 90 degrees apart from each other.

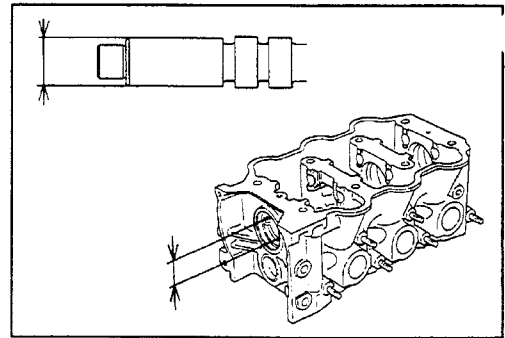


Fig. 5-162

WM-05184

Oil clearance

Front	0.04 - 0.14 mm (0.0016 - 0.0055 inch)
Center	0.09 - 0.19 mm (0.0035 - 0.0075 inch)
Rear	0.06 - 0.16 mm (0.0024 - 0.0063 inch)

If the oil clearance exceeds the specified value, replace the parts, as required, so that the oil clearance may meet the specifications, referring to the following specified dimensions of the camshaft journal sections and the camshaft bearing bores of the cylinder head.

WM-05185

Specified Dimensions

	Front	Center	Rear
Outer diameter of camshaft journal section	31.960 - 31.980 mm (1.2583 - 1.2591 inches)	47.385 - 47.410 mm (1.8655 - 1.8665 inches)	48.415 - 48.440 mm (1.9061 - 1.9071 inches)
Inner diameter of camshaft bearing bore of cylinder head	32.020 - 32.045 mm (1.2606 - 1.2616 inches)	47.500 - 47.525 mm (1.8701 - 1.8711 inches)	48.500 - 48.525 mm (1.9094 - 1.9104 inches)

WM-05186

7. Checking of wave washer
Check the wave washer for flattened condition or damage.

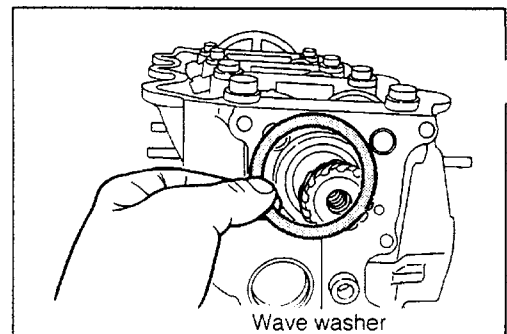


Fig. 5-163

WM-05187

8. Hand lapping of valves
- (1) After all checks have been completed, carry out hand lapping of the valves before assembling them.
 - (2) Apply a thin film of abrasive compound to the valve and valve seat. Perform the lapping with a valve lapper.
 - (3) After completion of the lapping, wash the valves and cylinder head, using a cleaning solvent. Blow them with compressed air.

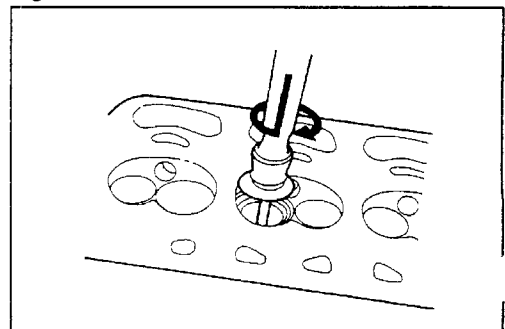


Fig. 5-164

WM-05188

INSTALLATION

Install the cylinder head to the SST (09219-87703-000).

1. Install the valve spring seats.
2. Installation of valve stem oil seals
Apply engine oil to a new valve stem oil seal. Then, insert it into the valve guide bush, using the following SST.
SST: 09201-87703-000

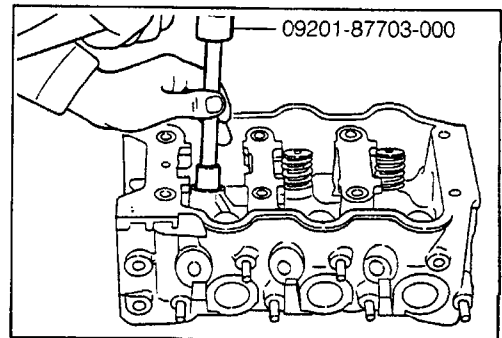


Fig. 5-165

WM-05189

3. Installation of valves

Apply engine oil to the valve stem. Insert it into the valve guide bush from the combustion chamber side, being very careful not to damage the valve stem oil seal.

NOTE:

Once the valve has been inserted, never pull it out from position. If the valve should be pulled out, replace the valve stem oil seal with a new one.

WM-05190

4. Install the compression springs (for the valves).
5. Install the valve spring retainers.
6. Installation of valve spring retainer locks
Insert the valve rocker shaft into position. Install the valve spring retainer lock, using the following SST.
SST: 09201-87702-000

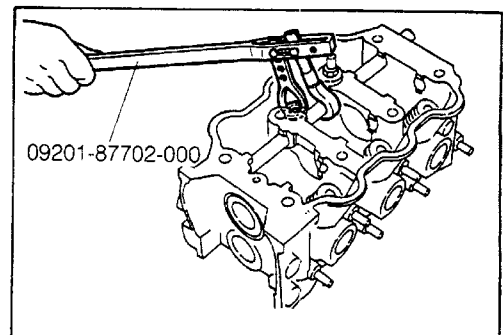


Fig. 5-166

WM-05191

After the valve spring retainer lock has been installed, lightly tap the valve retainer, using a plastic hammer. In this way, ensure that the valve spring retainer lock is installed securely.

NOTE:

During this check, care must be exercised to ensure that the valve spring retainer or lock retainer may not be jumped out.

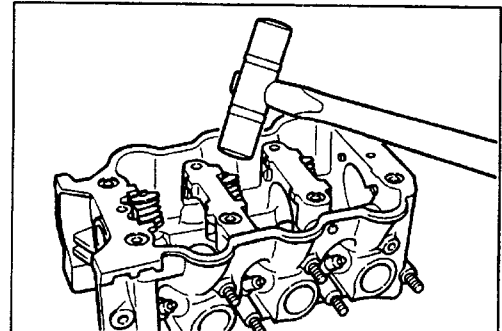


Fig. 5-167

WM-05192

7. Installation of oil seals

Install a new oil seal to the cylinder head, using the following SST.

SST: 09515-87202-000

After the oil seal has been installed, apply engine oil to the oil seal lip section.

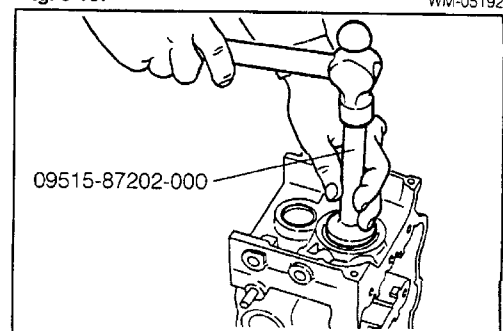


Fig. 5-168

WM-05193

ENGINE MECHANICALS

8. Installation of camshaft
- (1) Apply engine oil to the camshaft bearing bores of the cylinder head.
 - (2) Apply engine oil to the camshaft journal sections.
 - (3) Assemble the camshaft to the cylinder head, being very careful not to damage the camshaft bearing bores of the cylinder head.

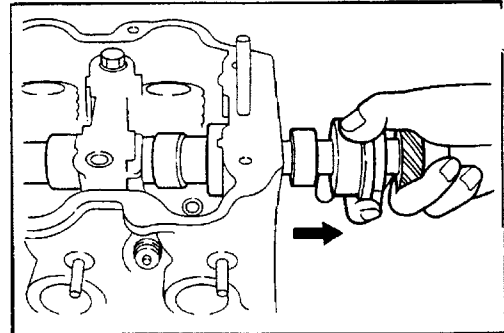


Fig. 5-169

WM-05194

9. Installation of valve rocker shafts, valve rocker arms and compression springs (for valve rocker shafts)
- Apply oil to the valve rocker shafts, valve rocker arms, compression springs and valve rocker shaft attaching holes of the cylinder head. Then, install these parts.

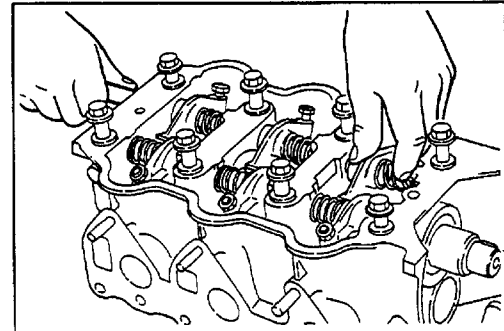


Fig. 5-170

WM-05195

NOTE:

The length of the valve rocker shaft differs between the exhaust side and the intake side.

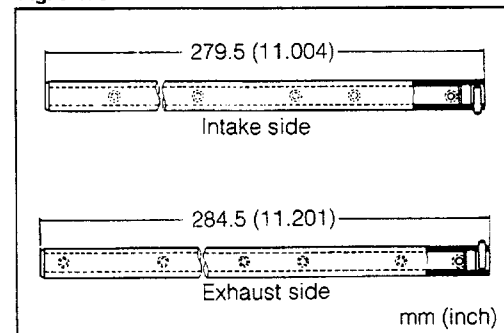


Fig. 5-171

WM-05196

10. Installation of wave washer
- Apply engine oil to the wave washer. Assemble it to the cylinder head.

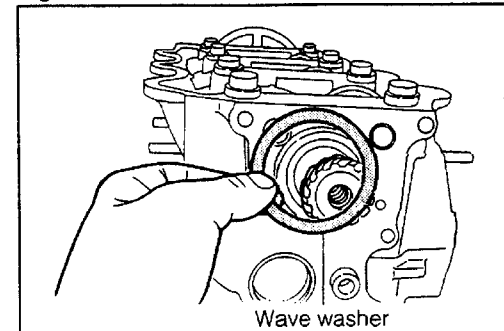


Fig. 5-172

WM-05197

11. Installation of distributor housing
- Tighten the distributor housing to the specified torque.
- Tightening Torque: 0.4 - 0.7 kg-m (2.9 - 5.1 ft-lb)

NOTE:

Be sure to use a new O-ring.

WM-05198