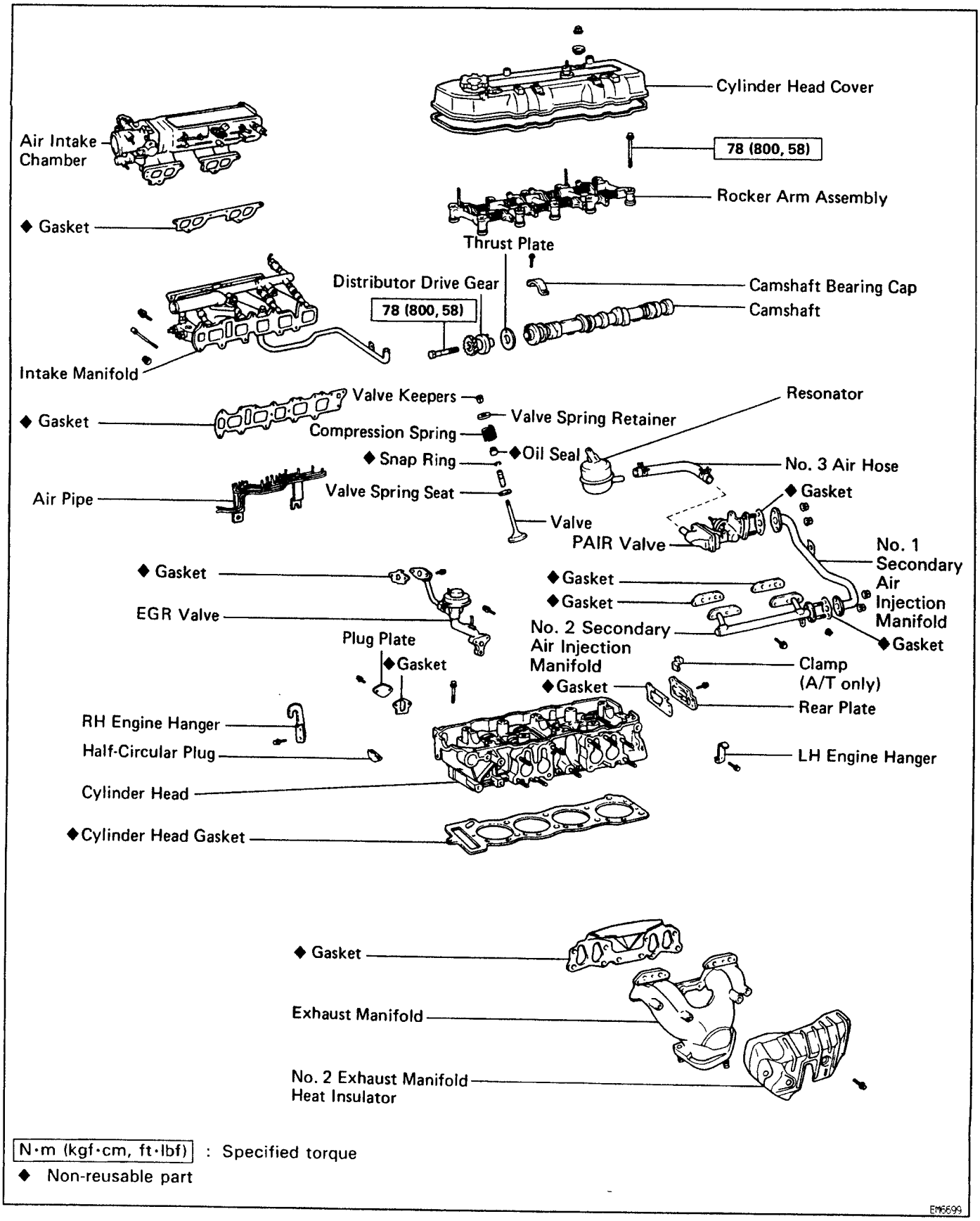
CYLINDER HEAD

EG1VA–01

COMPONENTS



EG1Vb–01

PREPARATION FOR REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

2. DRAIN COOLANT FROM RADIATOR AND CYLIN– DER BLOCK

(See step 3 on page EG1–225**)**

3. REMOVE INTAKE AIR CONNECTOR

4. DISCONNECT EXHAUST PIPE FROM EXHAUST MANIFOLD

(a) Remove the exhaust pipe clamp.

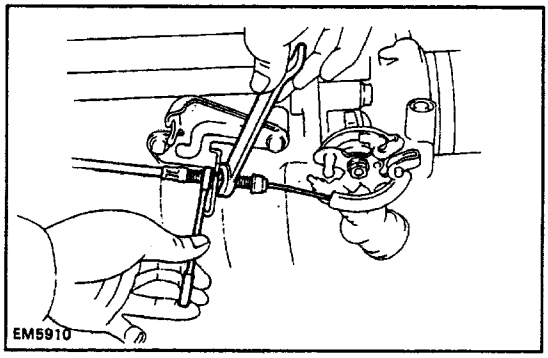
(b) Remove the three nuts, and disconnect the exhaust pipe.

5. REMOVE OIL DIPSTICK

6. REMOVE DISTRIBUTOR AND SPARK PLUGS

7. REMOVE RADIATOR INLET HOSE

8. DISCONNECT HEATER WATER INLET HOSE FROM HEATER WATER INLET PIPE



9. DISCONNECT ACCELERATOR CABLE

10. (A/T)

DISCONNECT THROTTLE CABLE

Disconnect the throttle cable from the bracket and clamp. .

11. DISCONNECT GROUND STRAP FROM ENGINE REAR SIDE

12. DISCONNECT FOLLOWING PARTS:

(a) No.1 and No. 2 PCV hoses

(b) Brake booster hose

(c) (w/PS)

Air control valve hoses

(d) (with A/C)

VSV hoses

(e) EVAP hose

(f) EGR vacuum modulator hose

(g) EGR valve hose

(h) Fuel pressure up hose

(i) PAIR valve hose

(j) Pressure regulator hose

(k) Vacuum hoses from throttle body

(l) No. 2 and No. 3 water by–pass hoses from the thr– ottle body

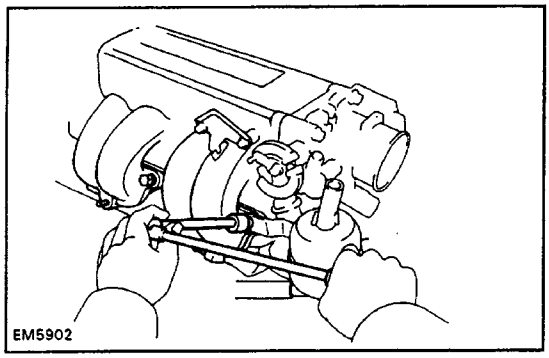
(m) (w/Oil cooler)

Disconnect the No. 1 oil cooler hose from the intake manifold.

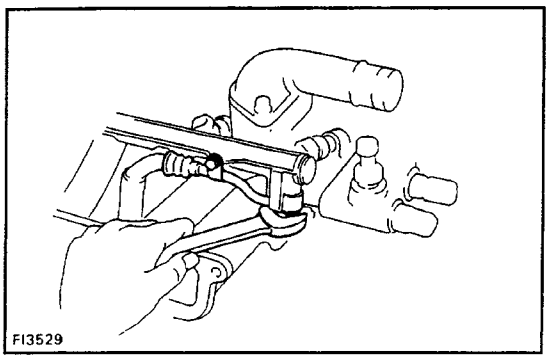
(w/o Oil cooler)

Disconnect the No. 1 water by–pass hose from the intake manifold. ‘

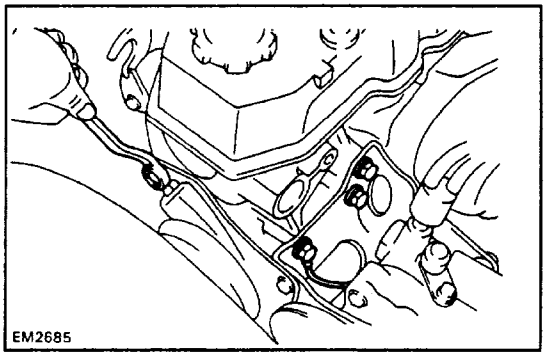
13. REMOVE EGR VACUUM MODULATOR
14. DISCONNECT FOLLOWING WIRES:
(a) Cold start injector wire
(b) Throttle position wire
(c) (California only)
EGR gas temp. sensor wire



15. REMOVE CHAMBER WITH THROTTLE BODY
(a) Remove the union bolt holding the cold start injector pipe to the chamber.
(b) Remove the bolts holding the No. 1 EGR pipe to the chamber.
(c) Remove the bolts holding the manifold stay to the chamber.
(d) Remove the four bolts, two nuts, bond strap and fuel hose clamp.
(e) Remove the chamber with the throttle body, resona–tor and gasket.
16. DISCONNECT FUEL RETURN HOSE
17. DISCONNECT FOLLOWING WIRES:
(a) Knock sensor wire
(b) Oil pressure sender gauge wire
(c) Starter wire (terminal 50)
(d) Transmission wires
(e) (with A/C)
Compressor wires
(f) Injector wires
(g) Engine coolant temp. sender gauge wire
(h) (A/T)
OD temp. switch wire
(i) Igniter wire
(j) VSV wires
(k) Start injector time switch wire
(l) Engine Coolant temp. sensor wire



18. DISCONNECT FUEL HOSE FROM DELIVERY PIPE
Remove the bolt, union bolt and two gaskets.
19. DISCONNECT BY – PASS HOSE FROM INTAKE MANIFOLD
20. (w/PS)
REMOVE PS BELT

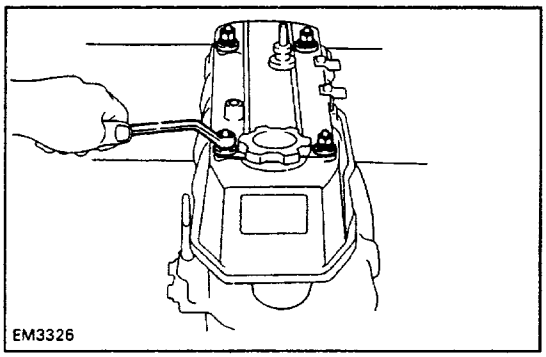


21. (w/PS)
DISCONNECT PS BRACKET FROM CYLINDER HEAD
Remove the four bolts, disconnect the ground strap and bracket.

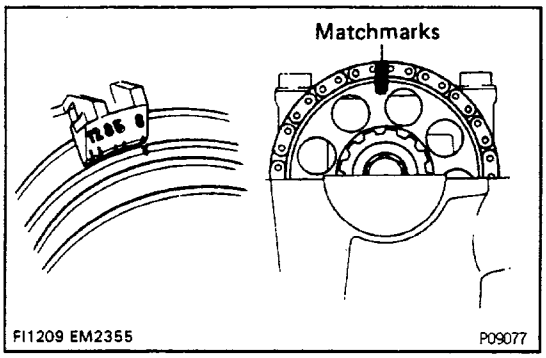
EG1VC–01

CYLINDER HEAD REMOVAL

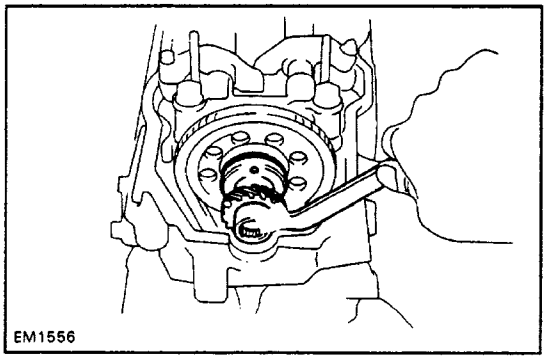
1. REMOVE HEAD COVER
(a) Remove the ground strap from the body.
(b) Remove the four nuts and seals.
(c) Remove the head cover.
NOTICE: Cover the oil return hole in the head with a rag to prevent objects from falling in.



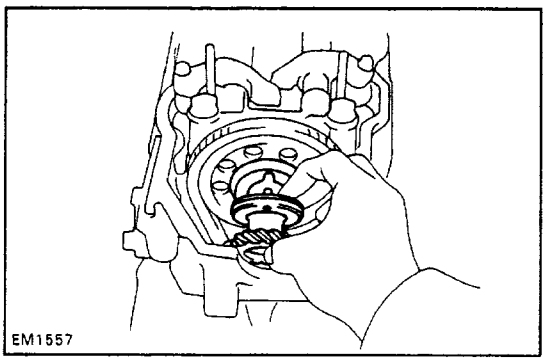
2. REMOVE CAM SPROCKET BOLT
(a) Turn the crankshaft until the No. 1 cylinder position is set at TDC compression.
(b) Place matchmarks on the sprocket and chain.
(c) Remove the half–circular plug.

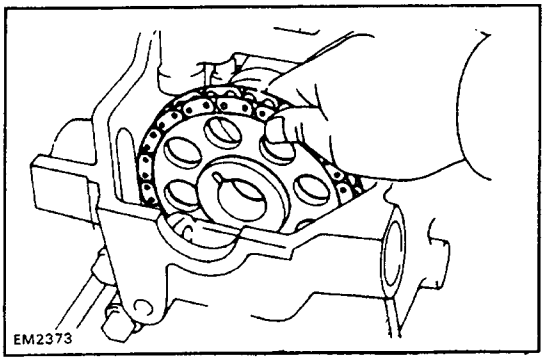


(d) Remove the cam sprocket bolt.



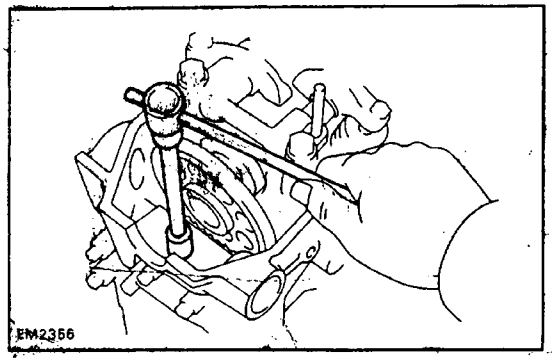
3. REMOVE DISTRIBUTOR DRIVE GEAR AND CAM–SHAFT THRUST PLATE





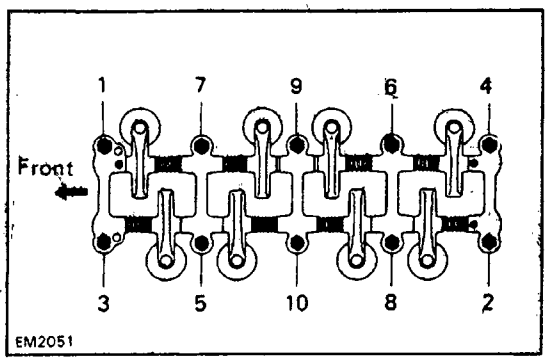
4. REMOVE CAM SPROCKET

Remove the cam sprocket and chain from the cam–shaft and leave on the vibration damper.



5. REMOVE CHARY COVER BOLT

Remove the bolt in.–front of the head before the other head bolts are removed.



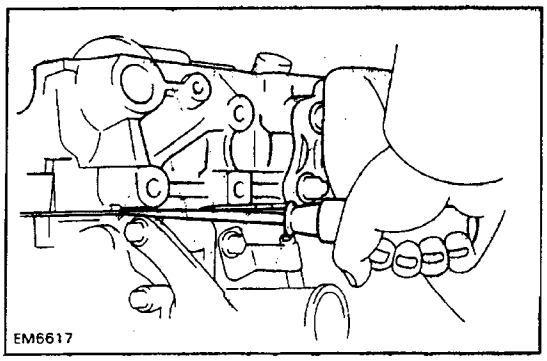
6. REMOVE CYLINDER HEAD BOLTS

Remove the head bolts gradually in two or three passes and in the numerical order shown.

NOTICE: Head warpage or cracking could result from removing bolts incorrect order.

7. REMOVE ROCKER ARM ASSEMBLY

If may be necessary to use a pry bar on the front and rear of the rocker arm assembly to separate it from the head.

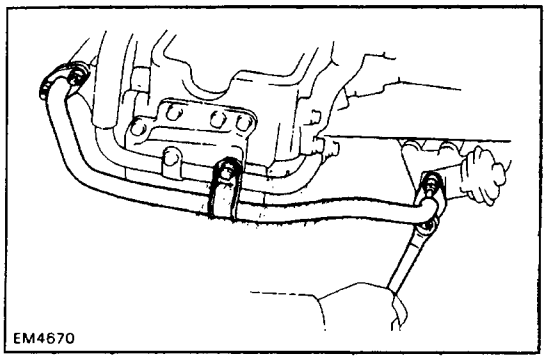


8. REMOVE CYLINDER HEAD

Lift the cylinder head from the dowels on the cylinder block and place the head on wooden blocks on a bench.

HINT: If the cylinder head is difficult to lift off, pry with a screwdriver between the head and block sa–liences.

NOTICE: Be careful not to damage the cylinder head and block surfaces of the cylinder head gasket.



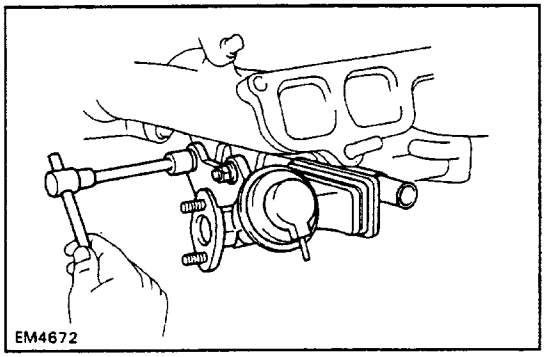
CYLINDER HEAD DISASSEMBLY

EG1VD–01

(See page EG1–15)

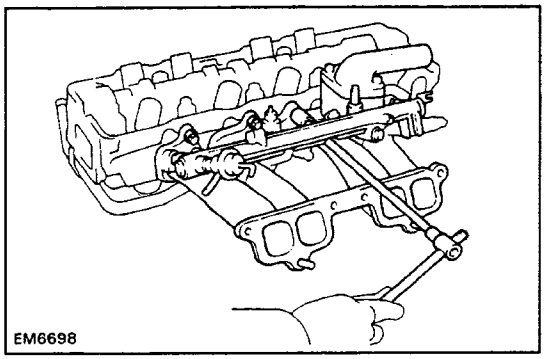
1. REMOVE NO. 1 SECONDARY AIR INJECTION MANIFOLD

Remove the bolt, four nuts, No. 1 secondary air in–jection manifold and two gaskets.

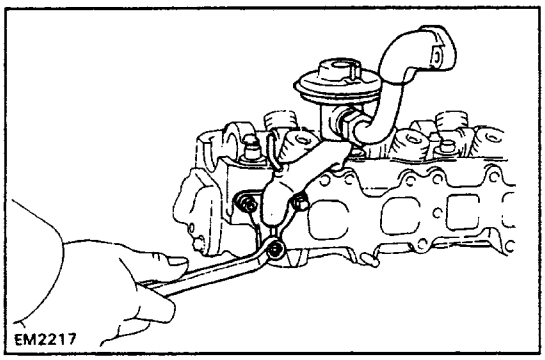


2. REMOVE INTAKE MANIFOLD WITH DELIVERY PIPE AND INJECTORS

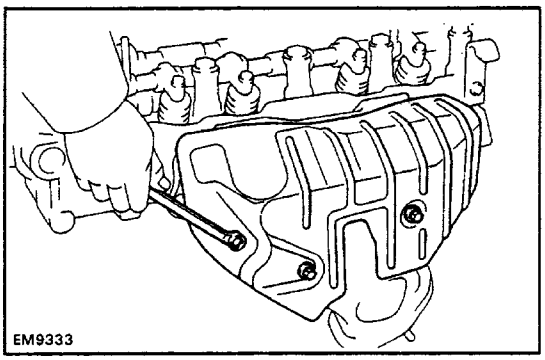
(a) Remove the two nuts and reed valve.



(b) Remove the bolt and the heater inlet pipe from the cylinder head.
(c) Remove the seven bolts, one hexagon bolt, two nuts and No. 1 air pipe.
(d) Remove the intake manifold together with the delivery pipe, injectors and heater water inlet pipe.

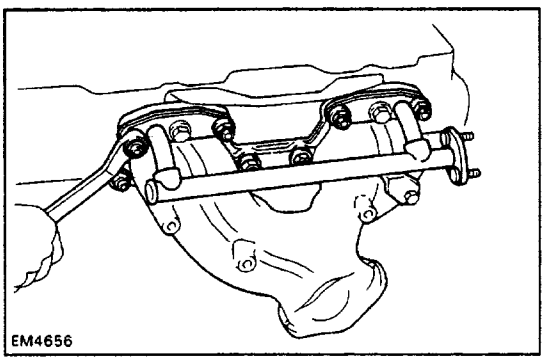


3. REMOVE EGR VALVE



4. REMOVE EXHAUST MANIFOLD WITH NO. 2 SECONDARY AIR INJECTION MANIFOLD

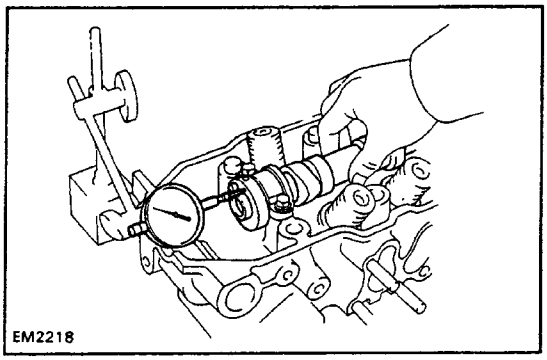
(a) Remove the three bolts and No. 2 exhaust manifold heat insulator.



(b) Remove the eight nuts, exhaust manifold and No. 2 secondary air injection manifold.

5. REMOVE TWO ENGINE HANGERS AND GROUND STRAP

6. REMOVE CYLINDER HEAD REAR OVER



7. MEASURE CAMSHAFT THRUST CLEARANCE

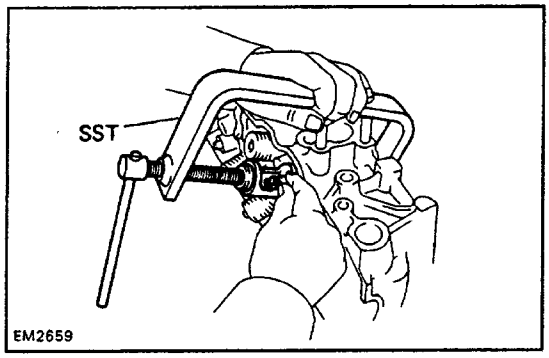
Using a dial gauge, measure the camshaft thrust clearance.

Standard clearance: 0.08 – 0.18 mm (0.0031–0.0071 in.)

Maximum clearance: 0.25 mm (0.0098 in.)

If clearance is greater than maximum, replace the head.

8. REMOVE CAM BEARING CAPS AND SHAFT



9. REMOVE VALVES

(a) Using SST, compress the valve retainer until the two keepers can be removed.

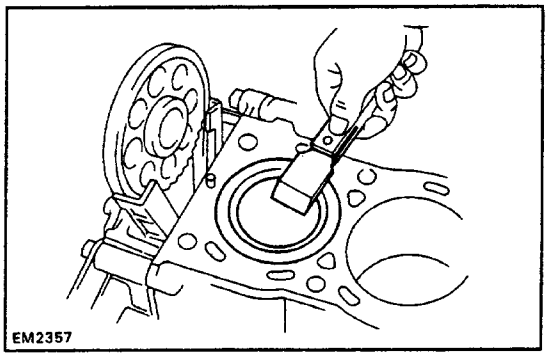
SST 09202–43013

(b) Remove the valve keepers, retainer, spring and valve.

(c) Pry out the oil seal.

(d) Using a small screwdriver or magnet, remove the valve spring seat.

HINT: Keep the valves arranged so they can be ins–talled in the same order as removed.



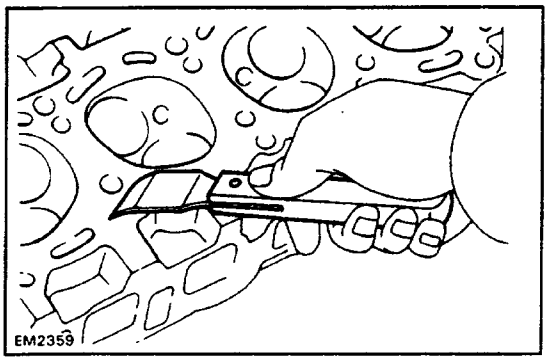
INSPECTION, CLEANING AND REPAIR OF CYLINDER HEAD COMPONENTS

1. CLEAN TOP OF PISTONS AND TOP OF CYLINDER BLOCK

(a) Turn the crankshaft and bring each piston to top dead center. Using a gasket scraper, remove all the carbon from the piston tops.

(b) Using a gasket scraper, remove all gasket material from the top of the block. Blow carbon and oil from the bolt holes.

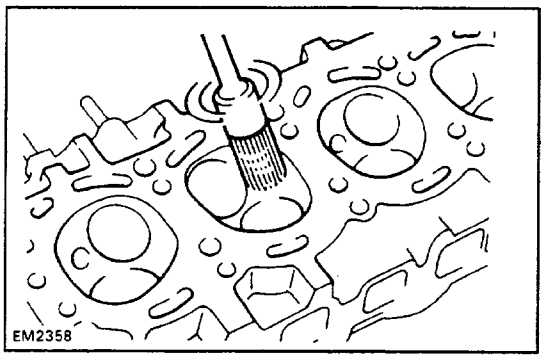
CAUTION: Protect your eyes when using high pressure sir.



2. REMOVE GASKET MATERIAL

Using a gasket scraper, remove all gasket material from the head and manifold surfaces.

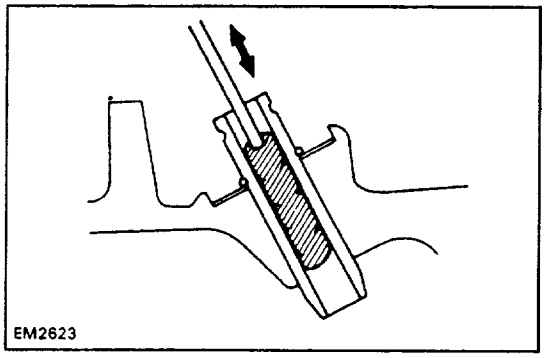
NOTICE: Be careful not to scratch the surfaces.



3. CLEAN COMBUSTION CHAMBERS

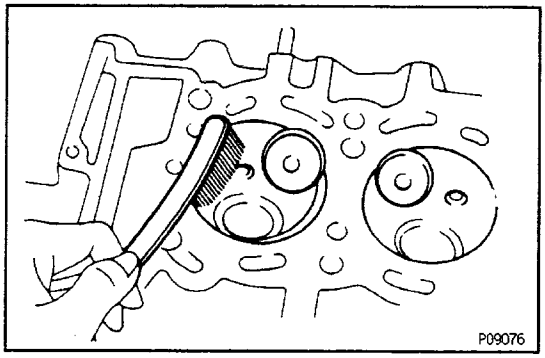
Using a wire brush, remove all the carbon from the combustion chambers.

NOTICE: Be careful not to scratch the head gasket con–tact surface.



4. CLEAN VALVE GUIDE BUSHINGS

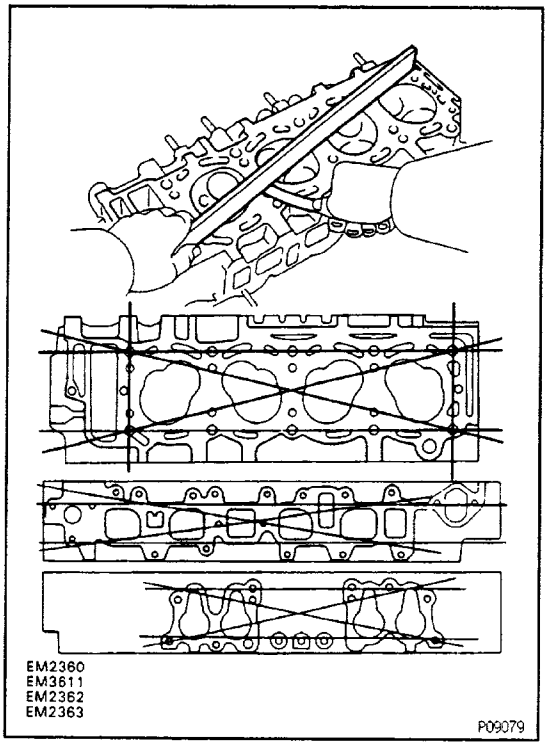
Using a valve guide brush and solvent, clean all the valve guide bushings.



5. CLEAN CYLINDER HEAD

Using a soft brush and solvent, clean the head.

NOTICE: Do not clean the head in a hot tank as this will seriously damage it.



6. INSPECT CYLINDER HEAD FOR FLATNESS

Using a precision straight edge and thickness gauge, measure the surface contacting the cylinder block and manifold for warpage.

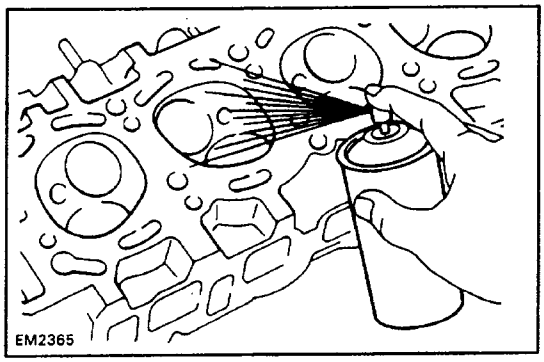
Maximum head surface warpage:

0.15 mm (0.0059 in.)

Maximum manifold surface warpage:

0.20 mm (0.0079 in.)

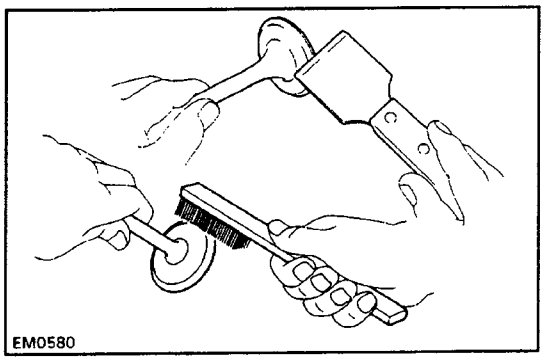
If warpage is greater than maximum, replace the cyl–inder head.



7. INSPECT CYLINDER HEAD FOR CRACKS

Using a dye penetrant, check the combustion cham–bers, intake and exhaust ports, head surface and the top of the head for cracks.

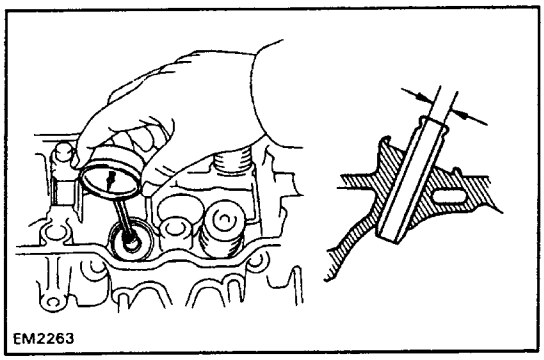
If a crack is found, replace the head.



8. CLEAN VALVES

(a) Using a gasket scraper, chip off any carbon from the valve head.

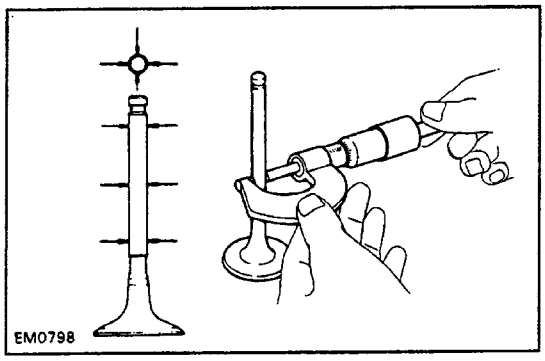
(b) Using a wire brush, thoroughly clean the valve.



9. INSPECT VALVE STEMS AND GUIDE BUSHINGS

(a) Using a caliper gauge, measure the inside diameter of the valve guide bushing.

Standard inside diameter: 8.01 – 8.03 mm
(0.3154 – 0.3161 in.)



(b) Using a micrometer, measure the diameter of the valve stem.

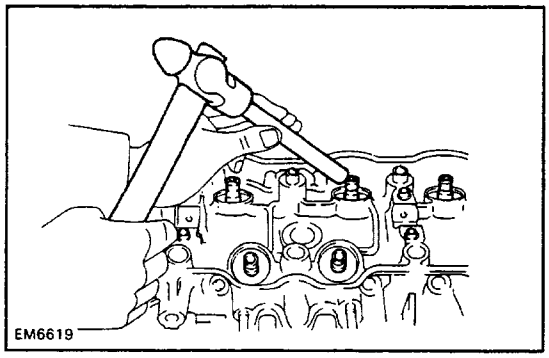
Standard valve stem diameter:
Intake 7.970 – 7.985 mm
(0.3138 – 0.3144 in.)
Exhaust 7.965 – 7.980 mm
(0.3136 – 0.3142 in.)

(c) Subtract the valve stem diameter measurement from the valve guide bushing diameter measurement.

Standard oil clearance:
Intake 0.025 – 0.060 mm
(0.0010 – 0.0024 in.)
Exhaust 0.030 – 0.650 mm
(0.0012 – 0.0026 in.)

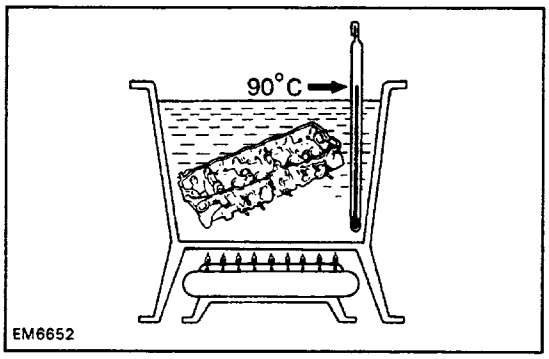
Maximum stem oil clearance:
Intake 0.08 mm (0.0031 in.)
Exhaust 0.10 mm (0.0039 in.)

If the clearance is greater than maximum, replace the valve and guide bushing.

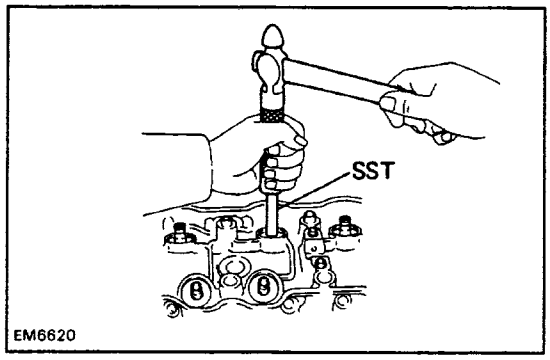


10. IF NECESSARY, REPLACE VALVE GUIDE BUSH–INGS

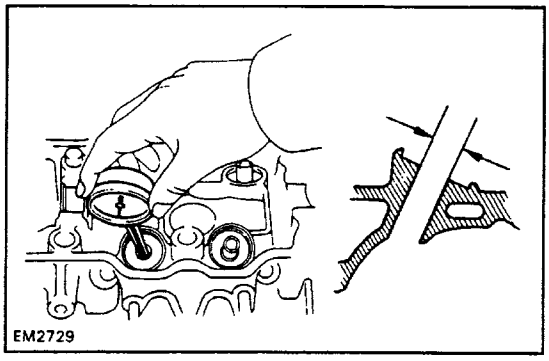
(a) Using a brass bar and hammer, break the valve –guide bushing.



(b) Gradually heat the cylinder head to approx. 90°C (194°F).



(c) Using SST and a hammer, drive out valve guide bus–hing.
SST 09201–60011

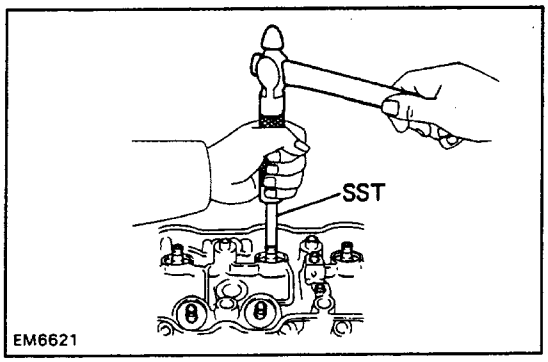


(d) Using a caliper gauge, measure the valve guide bus–hing bore of the cylinder head.

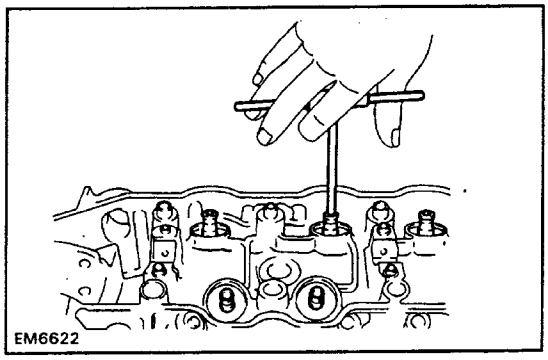
Bore intake and exhaust

Bushing bore mm (in.)	Bushing size
13.000 – 13.018 (0.5118 – 0.5125)	Use STD
Over 13.018 (0.5125)	Use O/S 0.05

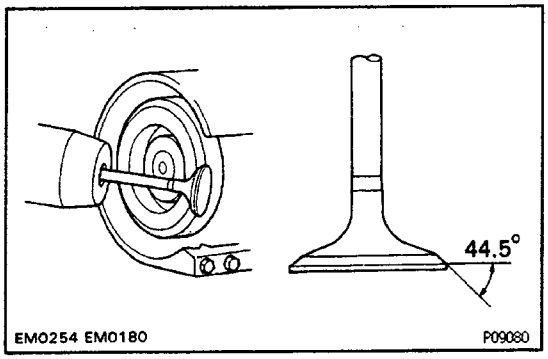
(e) Select a new valve guide bushing.
If the valve guide bushing bore of the cylinder head is more than 13.018 mm (0.512 in.), machine the bore to the following dimension.
Rebored valve guide bushing bore dimension (cold):
13.050 – 13.068 mm (0.5138 – 0.5145 in.)



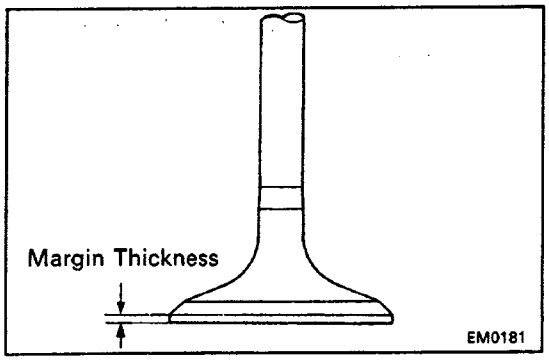
(f) Gradually heat the cylinder head to approx. 90°C (194° F).
(g) Using SST a and hammer, drive in a new valve guide bushing unit the snap ring makes contact with the cylinder head.
SST 09201–6001 1



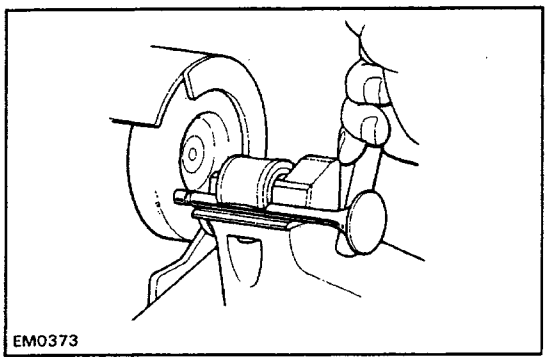
(h) Using a sharp 8 mm (0.31 mm) reamer, ream the valve guide bushing to obtain standard specified clearance (See page EG1–23) between the valve guide bushing and new valve.



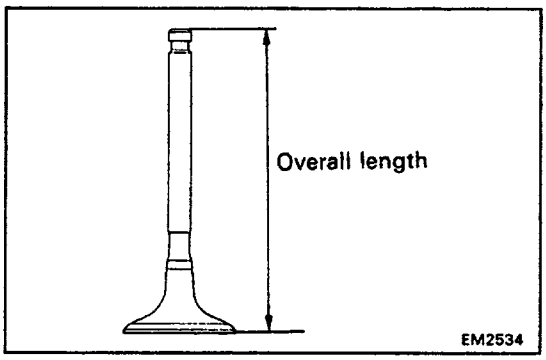
11. INSPECT AND GRIND VALVES
(a) Grind the valve only enough to remove pits and carbon.
(b) Check that valve is ground to the correct valve face angle.
Valve face angle: 44.5°



(c) Check the valve head margin thickness.
Standard margin thickness: 1.0 mm (0.039 in.)
Minimum margin thickness: 0.6 mm (0.024 in.)
If the valve head margin thickness is less than mini–mum, replace the valve.



(d) Check the surface of the valve stem tip for wear.
If the valve stem tip is worn, regrind it with grinder or replace the valve if necessary.
NOTICE: Do not grind off more than minimum overall length.
Minimum overall length:
Intake 113.0 mm (4.449 in.)
Exhaust 111.9 mm (4.406 in.)



(e) Check the valve overall length.

Standard overall length:

Intake 113.5 mm (4.468 in.)

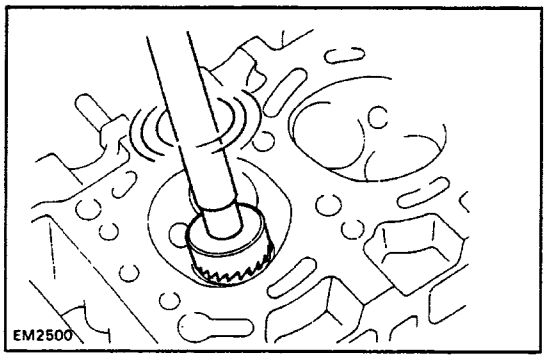
Exhaust 112.4 mm (4.425 in.)

Minimum overall length:

Intake 113.0 mm (4.449 in.)

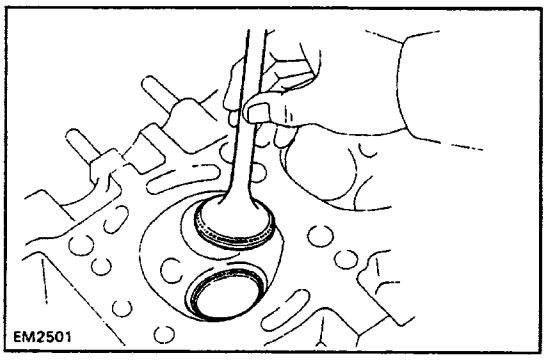
Exhaust 111.9 mm (4.406 in.)

If the valve overall length is less than minimum, re–place the valve.



12. INSPECT AND CLEAN VALVE SEATS

(a) Using a 45° carbide cutter, resurface the valve seats. Remove only enough metal to clean the seats.



(b) Check the valve seating position.

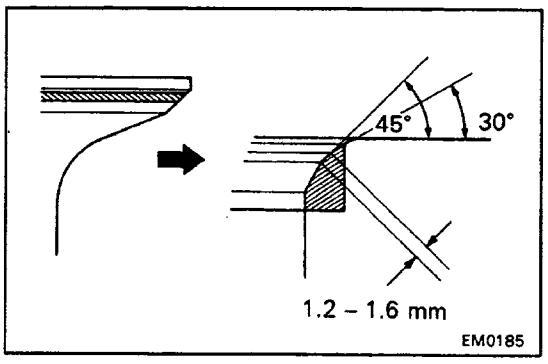
Apply a light coat of prussian blue (or white lead) to the valve face. Install the valve. Lightly press the valve against the seat. Do not rotate the valve.

(c) Check the valve face and seat for the following:

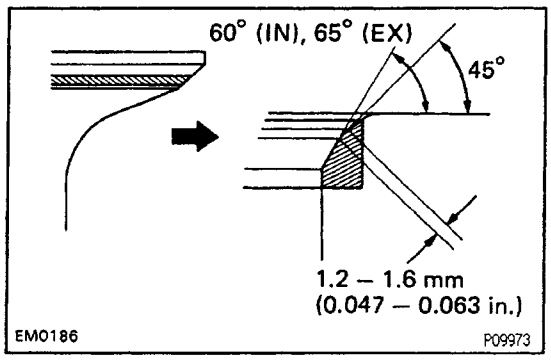
- If blue appears 360° around the face, the valve is concentric. If not, replace the valve.
- If blue appears 360° around the valve seat, the guide and seat are concentric. If not, resurface the seat.
- Check that the seat contact is on the middle of the valve face with the following width:

1.2 – 1.6 mm (0.047 – 0.063 in.)

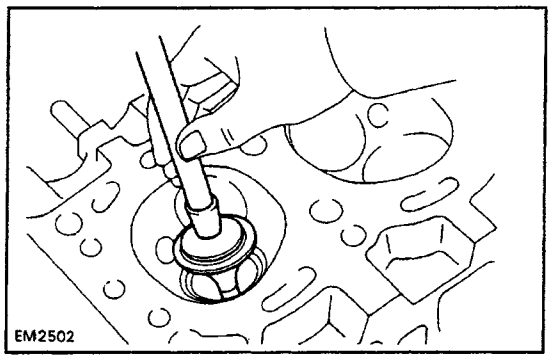
If not, correct the valve seat as follows:



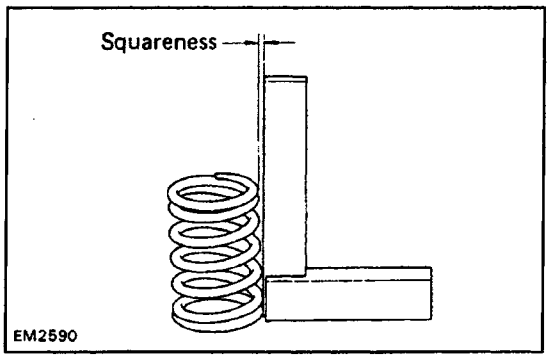
- If seating is too high on the valve face, use 30° and 45° cutters to correct the seat.



- If seating is too low on the valve face, use 60° (IN) or 65° (EX) and 45° cutters to correct the seat.



(d) Hand–lap the valve and valve seat with abrasive compound.

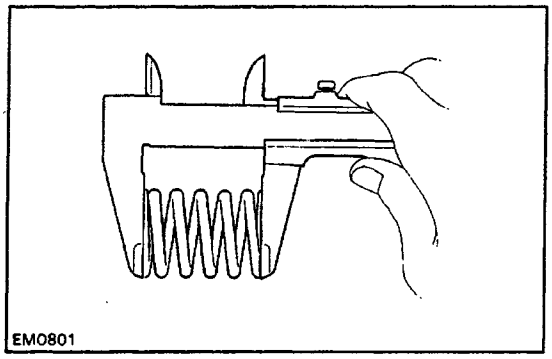


13. INSPECT VALVE SPRINGS

(a) Using a steel square, measure the squareness of the valve spring.

Maximum squareness: 1.6 mm. (0.063 in.)

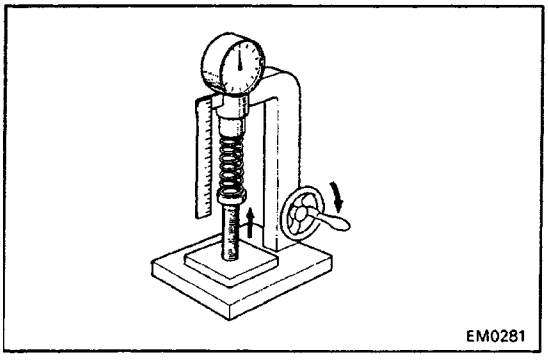
If squareness is greater than maximum, replace the valve spring.



(b) Using vernier calipers, measure the free length of the valve spring.

Free length: 48.5 mm (1.909 in.)

If the free length is not within specification, replace the valve spring.



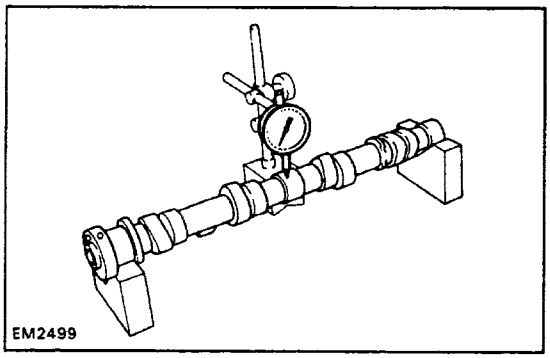
(c) Using a spring tester, check the tension of each spring at the specified installed height.

Installed height: 40.5 mm (1.594 in.)

Standard installed tension: 294 N (30.0 kgf, 66.1 lbf)

Minimum installed tension: 279 N (28.5 kgf, 62.8 lbf)

If the installed tension is less than minimum, replace the spring.

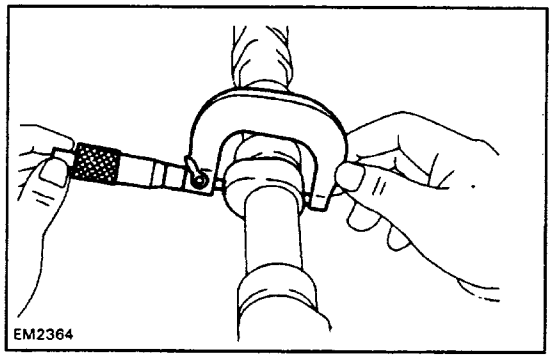


14. INSPECT CAMSHAFT AND BEARING CAPS

(a) Place the cam shaft on V – blocks and , using a dial indicator, measure the circle runout at the center journal.

Maximum circle runout: 0.2 mm (0.008 in.)

If the circle runout is greater than maximum, replace the camshaft.



(b) Using a micrometer, measure the cam lobe height.

Standard cam lobe height:

Intake 42.63 – 42.72 mm (1.6783 – 1.6818 in.)

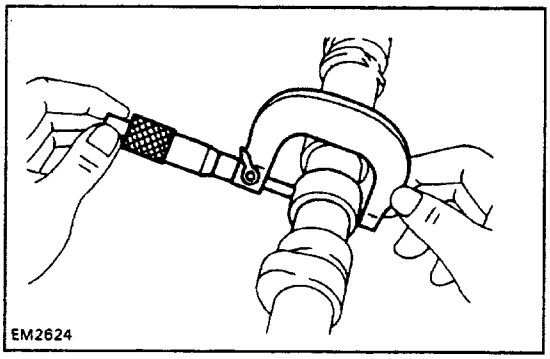
Exhaust 42.69 – 42.78 mm (1.6807 – 1.6842 in.)

Maximum cam lobe height:

Intake 42.25 mm (1.6634 in.)

Exhaust 42.30 mm (1.6654 in.)

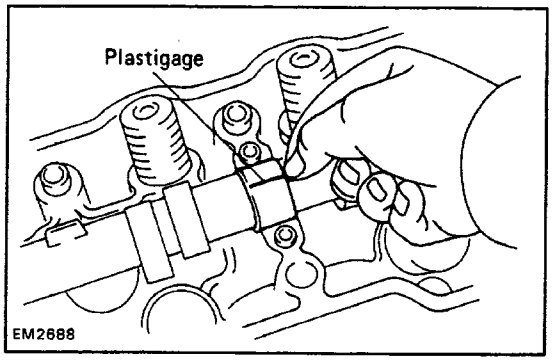
If the lobe height is less than ,minimum, replace the camshaft.



(c) Using a micrometer, measure the journal diameter.

Standard diameter: 32.98 – 33.00 mm (1.2984 – 1.2992 in.)

If the journal diameter is less than specified, replace the camshaft.

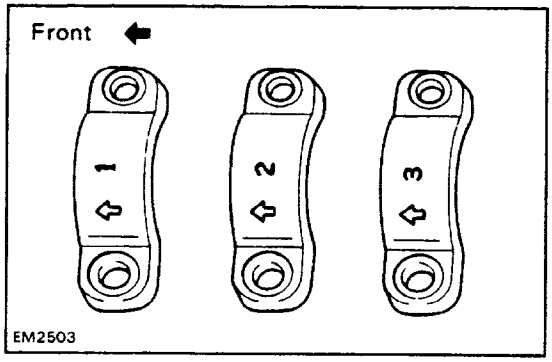


15. INSPECT CAMSHAFT OIL CLEARANCE

(a) Clean the bearing caps and camshaft journal.

(b) Place the camshaft in the cylinder head.

(c) Lay a strip of Plastigage across each journal.

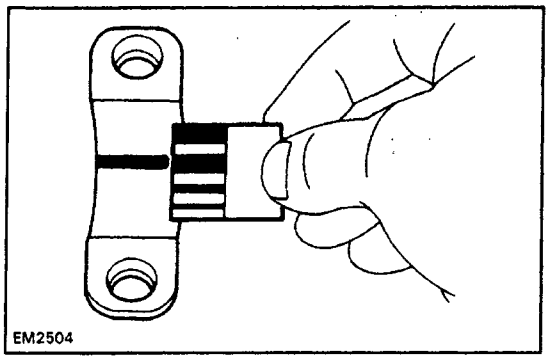


(d) Install the correct numbered bearing cap on each journal with the arrows pointing toward the front.

Torque each bolt.

Torque: 20 N–m (200kgf.–cm, 14ft–lbf)

HINT: Do not turn the camshaft while the Plastigags is in place.


EM2504

(e) Remove the caps and measure the Piastigage at its widest point.

Standard clearance: 0.01 – 0.05 mm (0.0004 – 0.0020 in.)

Maximum clearance: 0.1 mm (0.004 in.)

!f clearance is greater than maximum, replace the cylinder head and/or camshaft.

(f) Clean out the pieces of Plastigage from the bearing and journal.

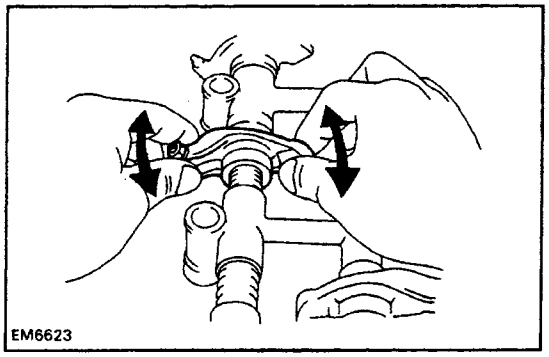
16. INSPECT ROCKER ARMS

Check the clearance between the rocker arms and shaft by moving the rocker arms as shown. Little or no movement should be felt.

If movement is felt, disassemble the rocker arm as–sembly and measure the oil clearance as follows:

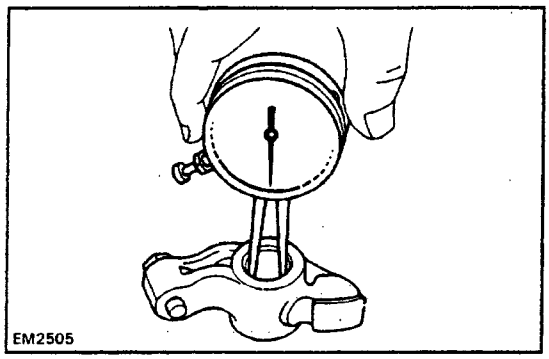
(a) Disassemble rocker arm assembly.

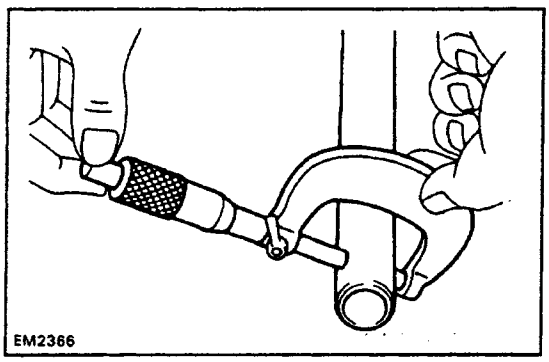
- Remove the three screws.
- Slide the rocker stands, spring and rocker arms off the shafts.


EM6623

(b) Using a dial indicator or telescoping gauge, measure the inside diameter of the rocker arm.

Standard inside diameter: 16.000 – 16.018 mm. (0.6299 – 0.6306 in.)


EM2505


EM2366

(c) Using a micrometer, measure the outside diameter of the shaft.

Standard diameter: 15.97 –15.99 mm (0.6287 – 0.6295 in.)

(d) Subtract the shaft diameter measurement from the rocker arm diameter measurement.

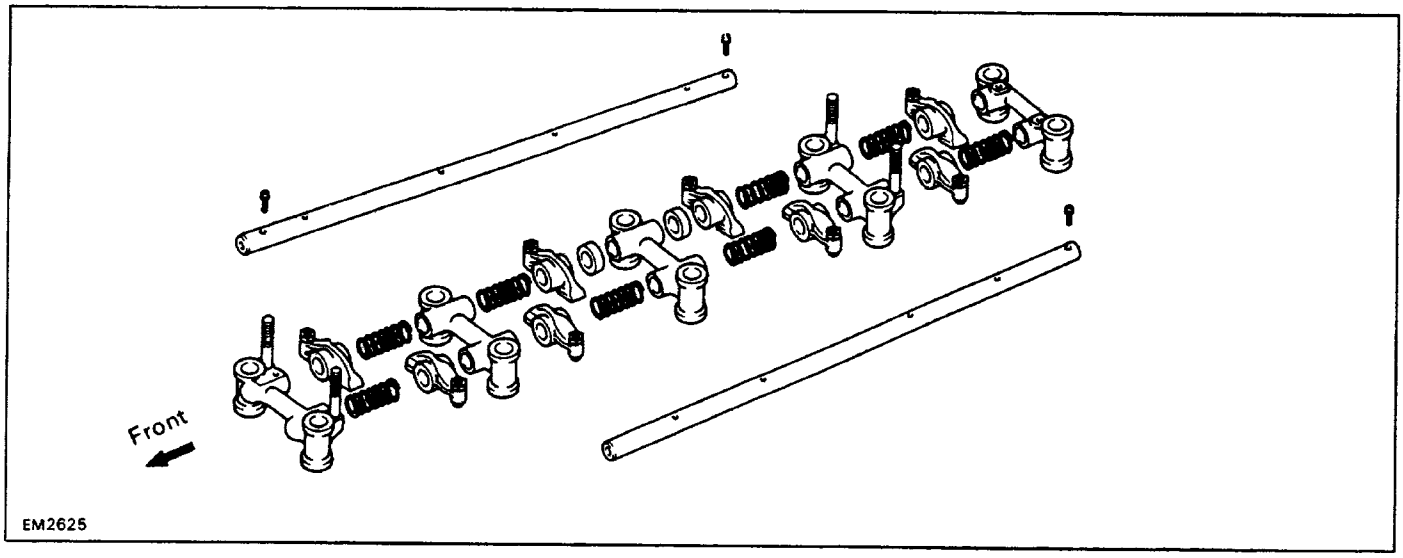
Standard oil clearance: 0.01 – 0.05 mm (0.0004 – 0.0020 in.)

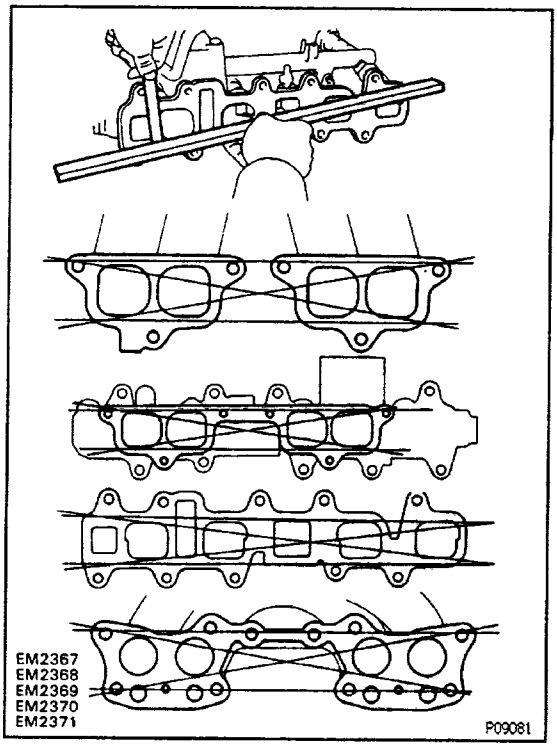
Maximum oil clearance: 0.08 mm (0.0031 in.)

If the oil clearance is grater than maximum, replace the rocker arm and/or shaft.

(e) Assemble the rocker arm assembly as shown, and install the three screws.

HINT: All rocker arms are the same but all rocker stands are different and must be assembled in the correct order.





17. INSPECT INTAKE, EXHAUST MANIFOLDS AND AIR INTAKE CHAMBER

Using a precision straight edge and thickness gauge, check the surface contacting the cylinder head or intake manifold for warpage.

Maximum intake warpage: 0.2 mm (0.008 in.)
Maximum exhaust warpage: 0.7 mm (0.28 in.)
Maximum air intake chamber warpage:
0.2 mm (0.008 in.)

If warpage is greater than maximum, replace the manifold and/or air intake chamber.

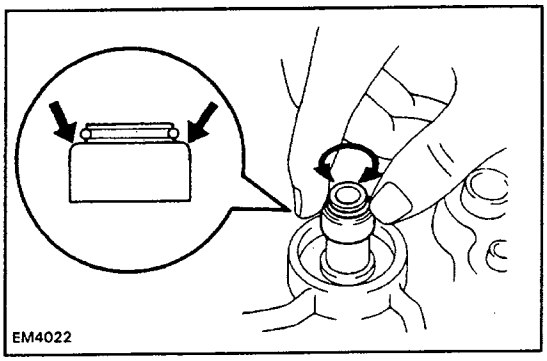
CYLINDER HEAD ASSEMBLY

EG1VF–02

(See page EG1–15)

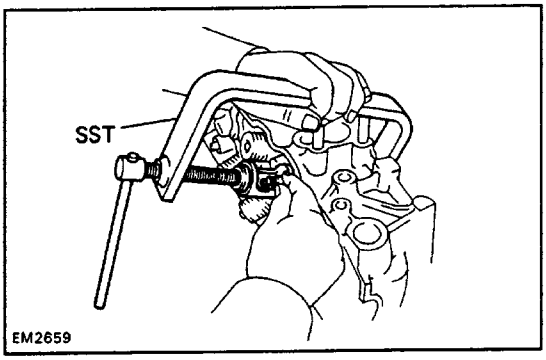
HINT:

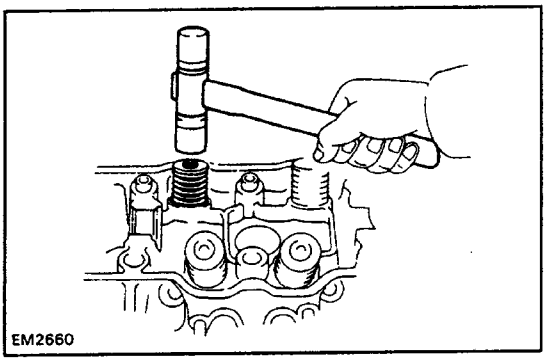
- Thoroughly clean all parts to be assembled.
- Before installing the parts, apply new engine oil to all sliding and rotating surfaces.
- Replace all gaskets and oil seals with new parts.



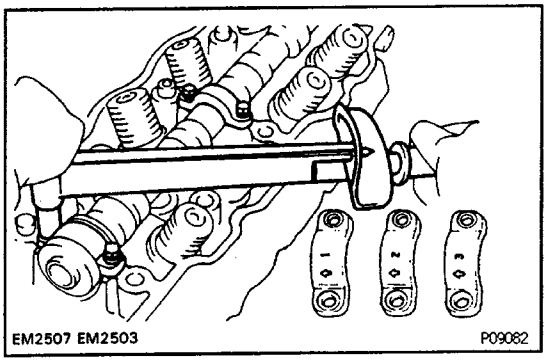
1. INSTALL VALVES

(a) Install a new oil seal on the valve guide bushing.
HINT Pushing down at the place shown in the illus–tration.
(b) Rotate the oil seal to check that it is firmly installed.
(c) Lubricate and insert valve in the valve guide bushing.
Check that valves are installed in the correct order.
(d) Install spring seat, spring and spring retainer on the cylinder head.
(e) Using SST, compress valve retainer and place two keepers around the valve stem.
SST 09202–43013



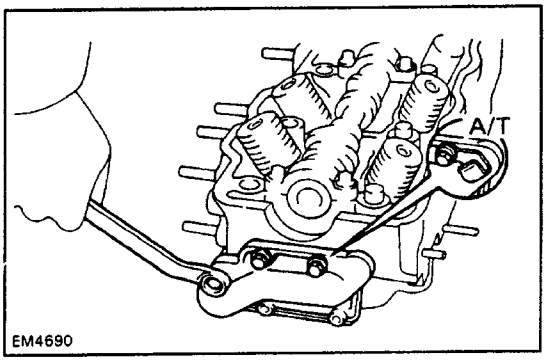


(f) Tap the stem lightly to assure proper fit.



2. INSTALL CAMSHAFT

(a) Place the camshaft in the cylinder head and install the bearing caps in numbered order from the front with arrows pointed toward the front.
(b) Install and torque the cap bolts.
Torque: 20N–m (200kgf–cm, 14ft–lbf)
(c) Turn the camshaft to position the dowel at the top.

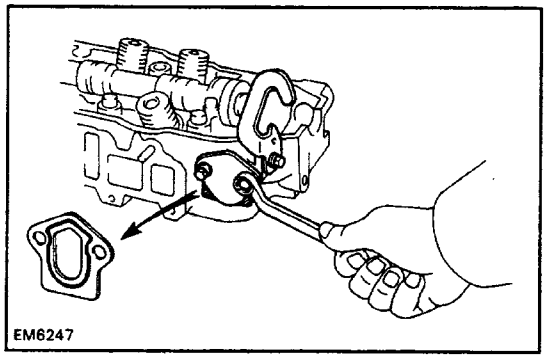


3. INSTALL CYLINDER HEAD REAR COVER

Install a new gasket, cylinder head rear cover and throttle cable clamp (for A/T) with the four bolts.

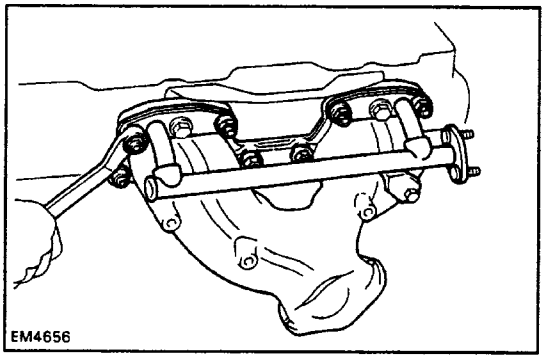
4. INSTALL LH ENGINE HANGER AND GROUND STRAP

5. INSTALL RH ENGINE HANGER



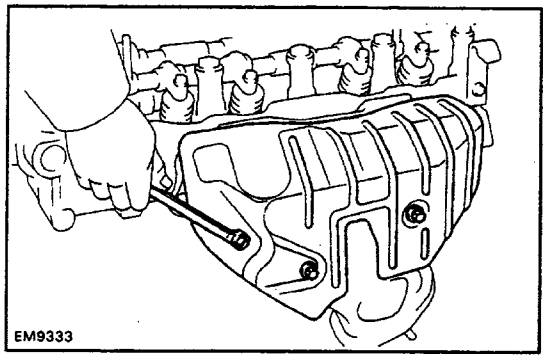
6. INSTALL PLUG PATE

Install a new gasket and plug plate with the two bolts.
HINT: Attach the flat side of the gasket to the cylinder head.

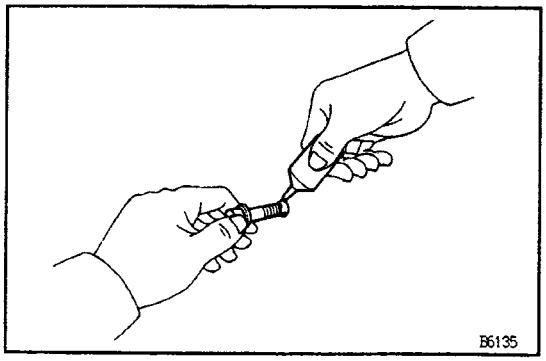


7. INSTALL EXHAUST MANIFOLD

(a) Position a new gasket on the cylinder head.
(b) Install the exhaust manifold with the eight nuts.
Torque the nuts.
Torque: 44N–m (450kgf–cm, 33ft–lbf)



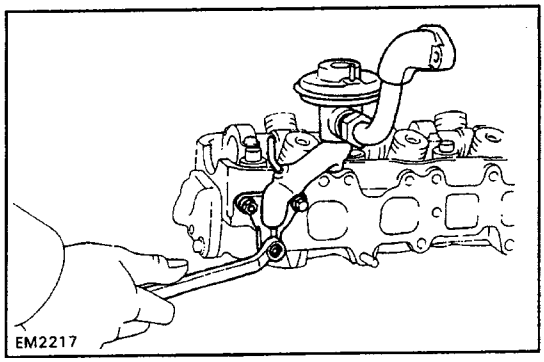
(c) Install the No. 2 exhaust manifold heat insulator with the three bolts.
Torque: 19N–m (195kgf–cm, 14ft.–lbf)



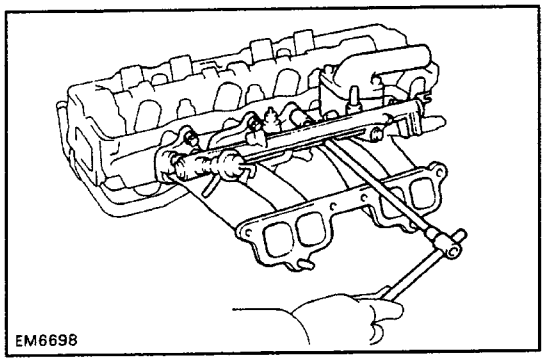
8. INSTALL EGR VALVE

(a) Clean the set bolt (closest to the front) threads and cylinder head bolt holes of any sealer, oil or foreign particles.
Remove any oil with kerosene or gasoline.
(b) Apply sealant to 2 or 3 threads of the bolt end.
Sealant: Part No. 08833–00070, THREE BOND 1324 or equivalent

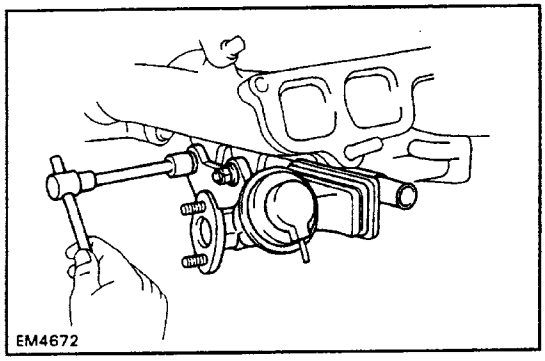
- This adhesive will not harden while exposed to air. It will act as a sealer or binding agent only when applied to threads, etc. and air is cut off.



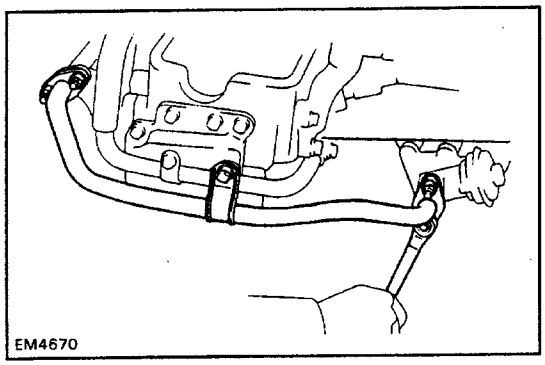
(c) Install the EGR valve with the two bolts and nut.



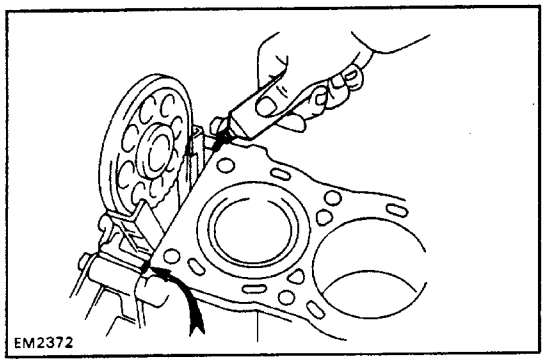
9. INSTALL INTAKE MANIFOLD
(a) Position a new gasket on the cylinder head.
(b) Install the intake manifold with the delivery pipe and injectors and No. 1 air pipe.
(c) Install the seven bolts, one hexagon bolt and two nuts. Torque the bolts and nuts.
Torque: 19Nm (195kgf–cm, 14ft–lbf)
(d) Install the heater inlet pipe to the cylinder head with the bolt.



(e) Install the PAIR valve with the two nuts.
Torque: 13N–m (130kgf–cm, 9 ft–lbf)



10. INSTALL NO. 1 SECONDARY AIR INJECTION MANIFOLD
(a) Position new gaskets on the PAIR valve and No. 1 secondary air injection pipe.
(b) Install the No. 1 secondary air injection pipe with the four nuts and bolt.
Torque: 13Nm (130kgf–cm. 9ft–lbf)



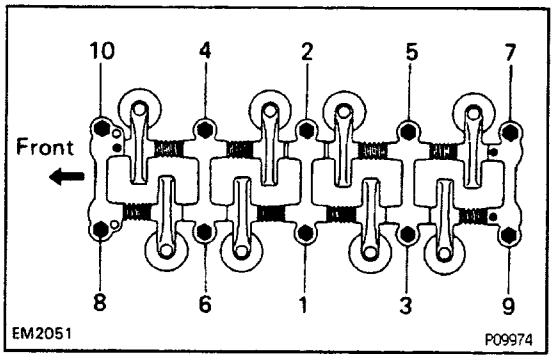
EG1VG–02

CYLINDER HEAD INSTALLATION

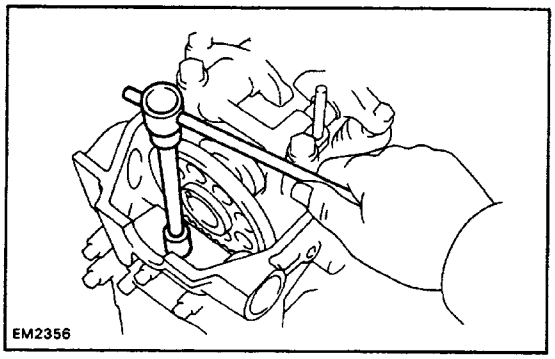
(See page EG1–15)

1. APPLY SEAL PACKING TO CYLINDER BLOCK
(a) Apply seal packing to two locations as shown.
Seal packing: Part No. 08826–00080 or equivalent
(b) Place a new head gasket over dowels on the cylinder block.
2. INSTALL CYLINDER HEAD

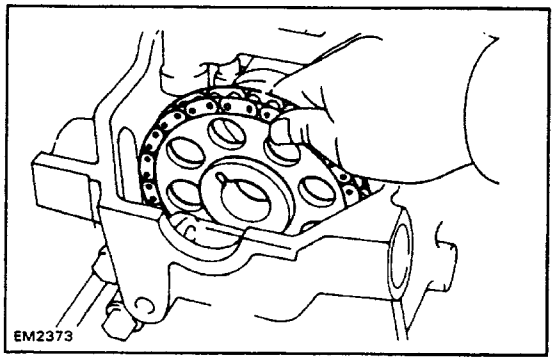
(a) If the sprocket was removed, align the alignment marks placed on the sprocket and chain during re–moval.
(b) position the cylinder head over dowels on the block.



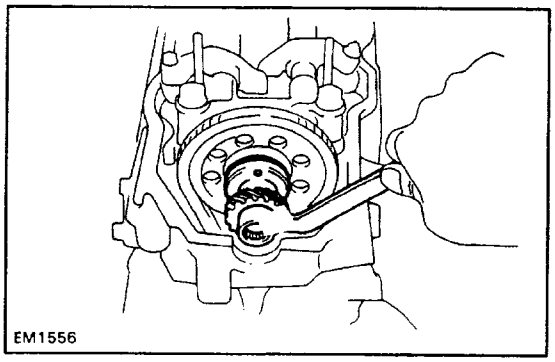
3. INSTALL ROCKER ARM ASSEMBLY
(a) Place the rocker arm assembly over the dowels on the cylinder head.
(b) Install and tighten the head bolts gradually in three passes in the sequence shown. Torque the bolts on the final pass.
Torque: 78N–m (800kgf–cm, 58ft–lbf)



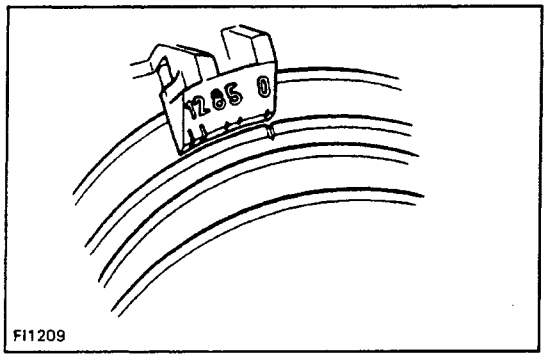
4. INSTALL CHAIN COVER BOLT
Torque the bolt.
Torque: 13N–m (130kgf–cm, 9ft–lbf)



(a) While holding up on the sprocket and chain, turn the crankshaft until the No. 1 and No. 4 cylinders are at top dead center.
(b) Place the chain sprocket over the camshaft dowel.
HINT: If the chain does not seem long enough,turn the crankshaft back and forth while pulling up on the chain and sprocket.



5. INSTALL DISTRIBUTOR DRIVE GEAR AND CAM–SHAFT THRUST PLATE
Place the distributor drive gear and camshaft thrust plate over the chain sprocket. Torque the bolt.
Torque: 78N–m (800kgf–cm, 58ft–lbf)



6. ADJUST VALVE CLEARANCE

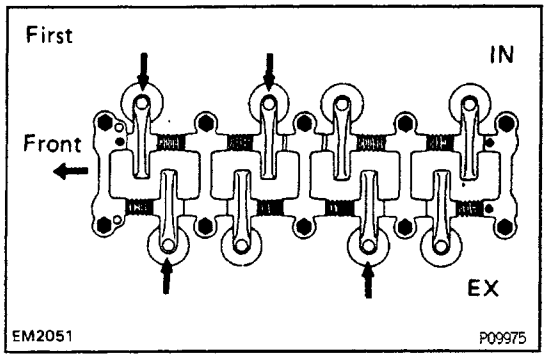
(a) Set the No. 1 cylinder to TDC/compression.

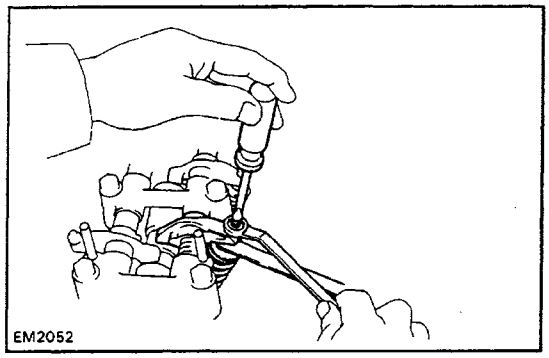
- Turn the crankshaft with a wrench to align the timing, marks at TDC. Set the groove on the pulley at the ”0” mark position of the chain cover.
- Check that the rocker arms on the No. 1 cylinder are loose and the rocker arms on No. 4 cylinder are tight.
  If not, turn the crankshaft one complete revolution and align the marks as above.

(b) Adjust the clearance of half of the valves.
Adjust only the valves indicated by arrows as shown.

Valve clearance (Cold):
Intake 0.20 mm (0.008 in.)
Exhaust 0.30 mm (0.012 in.)

HINT: After installing the cylinder head, warm up the engine and adjust the valve clearance.

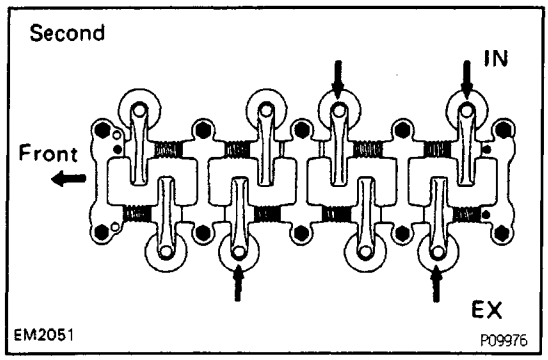




Use a thickness gauge to measure between the valve stern and rocker arm. Loosen the lock nut and turn the adjusting screw to set the proper clearance. Hold the adjusting screw in position and tighten the lock nut.

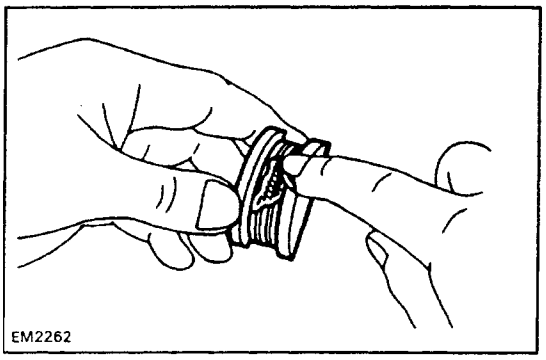
Torque: 25N–m (250kgf–cm, 18ft–lbf)

Recheck the clearance. The thickness gauge should move. with a very slight drag.



(c) Turn the crankshaft one revolution and adjust the other valves.

(d) Set the No. 1 cylinder to TDC/compression.

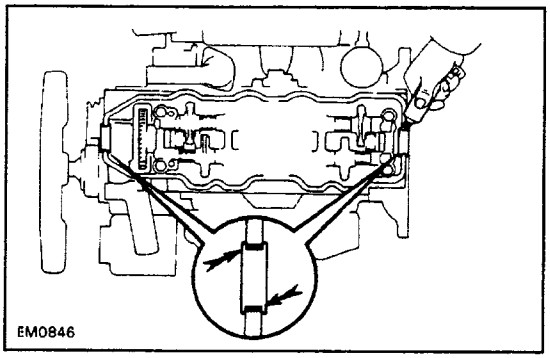


7. INSTALL HALF–CIRCULAR PLUGS

(a) Apply seal packing to the cylinder head installation surface of the plug.

Seal packing: Part No. 08826–00080 or equivalent

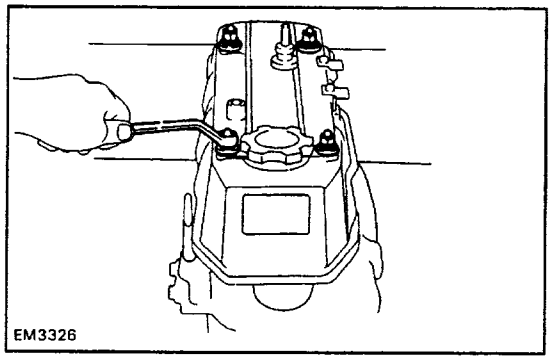
(b) Install the half–circular plugs to the cylinder head.



8. INSTALL HEAD COVER

(a) Apply seal packing to the four locations shown.

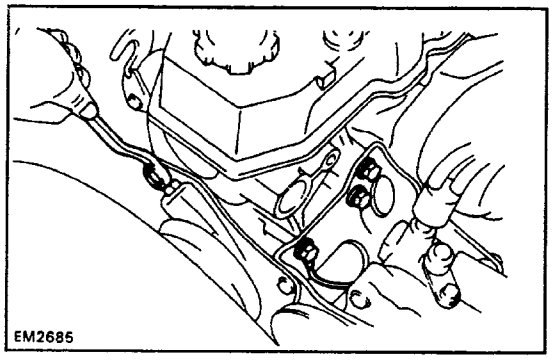
Seal packing: Part No. 08826–00080 or equivalent



(b) Install the gasket to the cylinder head.

(c) Place the head cover on the cylinder head and install the four seals and nuts.

Torque: 5.9N–m (60kgf–cm, 52in.–lbf)



EG1VH–02

POST INSTALLATION

1. (w/PS)

CONNECT PS BRACKET TO CYLINDER HEAD

Install the four bolts and bond strap. Torque the bolts.

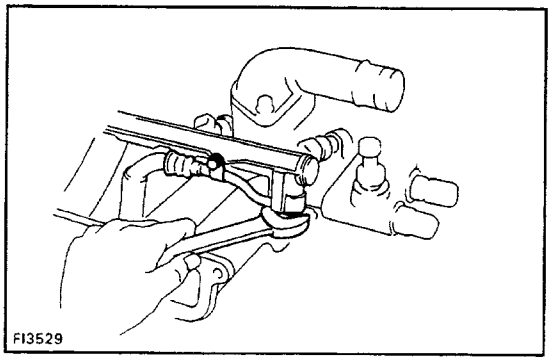
Torque: 44N–m (450kgf–cm, 33ft–lbf)

2. (w/PS)

INSTALL DRIVE BELT AND ADJUST BELT TEN–SION

(See step 2 on page MA–6)

3. CONNECT BY–PASS HOSE TO INTAKE MANIFOLD



4. CONNECT FUEL HOSE TO DELIVERY PIPE

Install new gaskets and the fuel hose with union bolt.

Torque: 44N–m (450kgf–cm, 33ft–lbf)

5. CONNECT FOLLOWING WIRES:

(a) Engine coolant temp. sensor wire

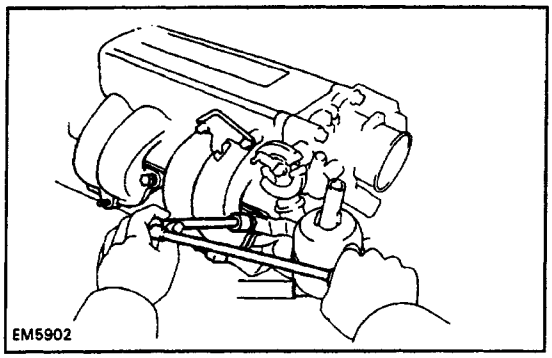
(b) Cold start injector time switch wire

(c) VSV wires

(d) Igniter wire

(e) (A/T)
OD temp. switch wire
(f) Engine coolant temp. sender gauge wire
(g) Injector wires
(h) (with A/C)
Compressor wires
(i) Transmission wires
(j) Starter wire (terminal 50)
(k) Oil pressure sender gauge wire
(l) Knock sensor wire

6. CONNECT FUEL RETURN HOSE



7. INSTALL CHAMBER WITH THROTTLE BODY

(a) Position new gaskets on the intake manifold and No. 1 EGR pipe.
(b)– Install the chamber, throttle body, fuel hose clamp, resonator and bond strap with the four bolts and two nuts.
(c) Connect the chamber and stay with a bolt.
(d) Install the bolts holding the EGR valve to the chamber.
(e) Install the new gaskets and cold start injector pipe.

8. CONNECT FOLLOWING WIRES:

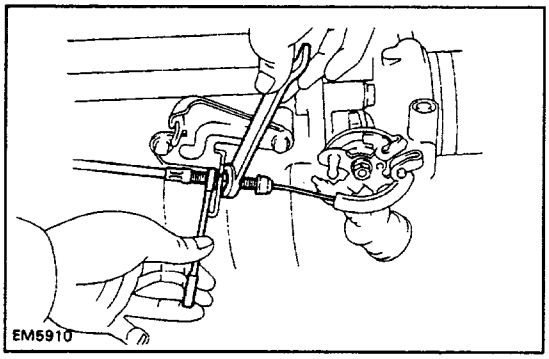
(a) (California only)
EGR gas temp. sensor wire
(b) Throttle position wire
(c) Cold start injector wire

9. INSTALL EGR VACUUM MODULATOR

10. CONNECT FOLLOWING PARTS:

(a) (w/ Oil cooler)
Connect the No. 1 oil cooler hose to the intake man–ifold.
(w/o Oil cooler)
Connect the No. 1 water by–pass hose to the intake manifold.
(b) No. 2 and No. 3 water by–pass hoses to the throttle body
(c) Vacuum hoses to throttle body
(d) Pressure regulator hose
(e) Fuel pressure up hose
(f) PAIR valve hose
(g) EGR valve hose

(h) EGR vacuum modulator hose
(i) EVAP hose
(j) (with A/C)
VSV hoses
(k) (w/PS)
Air control valve hoses
(l) Brake booster hose
(m) No. 1 and No. 2 PCV hoses



11. CONNECT GROUND STRAP TO ENGINE REAR SIDE
12. (A/T)
CONNECT THROTTLE CABLE
Connect the throttle cable to the clamp and bracket.
13. CONNECT ACCELERATOR CABLE
14. CONNECT HEATER WATER INLET HOSE TO HEATER WATER INLET PIPE
15. INSTALL RADIATOR INLET HOSE
16. INSTALL SPARK PLUGS AND DISTRIBUTOR
(See pages IG–6**, 9)**
17. INSTALL OIL DIPSTICK
18. CONNECT EXHAUST PIPE TO EXHAUST MANI–FOLD
(a) Install the new gaskets, and connect the exhaust pipe to the exhaust manifold with the three nuts.
(b) Install the exhaust pipe clamp.
19. INSTALL INTAKE AIR CONNECTOR
20. FILL WITH ENGINE OIL
(See step 3 on page EG1–236**)**
21. FILL WITH COOLANT
(See step 3 on page EG1–225**)**
22. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY
23. START ENGINE
Warm up the engine and inspect for leaks.
24. PERFORM ENGINE ADJUSTMENT
(See page EG1–10**)**
25. RECHECK COOLANT AND ENGINE OIL LEVEL
26. ROAD TEST
Road test the vehicle.
27. RECHECK COOLANT AND ENGINE OIL LEVEL