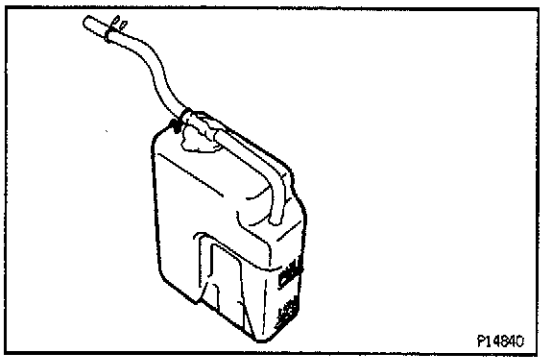
EG

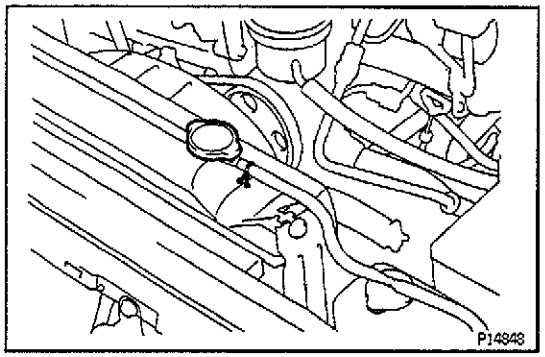

P14840

# TUNE—UP

## ENGINE COOLANT INSPECTION

1. **CHECK ENGINE COOLANT LEVEL AT RESERVOIR TANK**

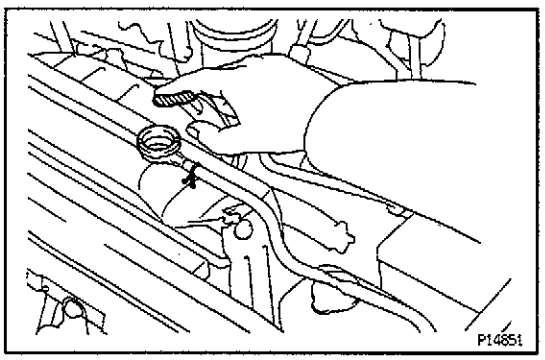
The coolant level should be between the "LOW" and "FULL" lines at low temperature.
If low, check for leaks and add coolant up to the "FULL" line.


P14848

2. **CHECK ENGINE COOLANT QUALITY**

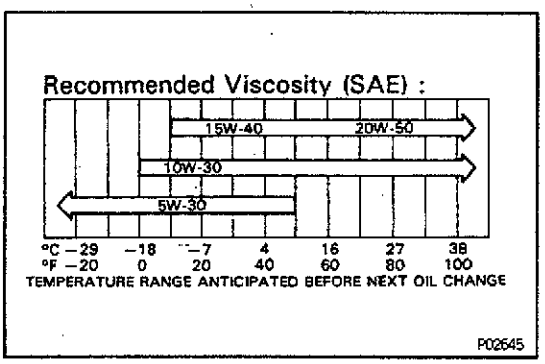
(a) Remove the radiator cap.

**CAUTION: To avoid the danger of being burned, do not remove the radiator cap while the engine and radiator are still hot, as fluid and steam can be blown out under pressure.**


P14851

(b) There should not be any excessive deposits of rust or scales around the radiator cap or radiator filler hole, and the coolant should be free from oil.
If excessively dirty, replace the coolant.

(c) Reinstall the radiator cap.



P02645

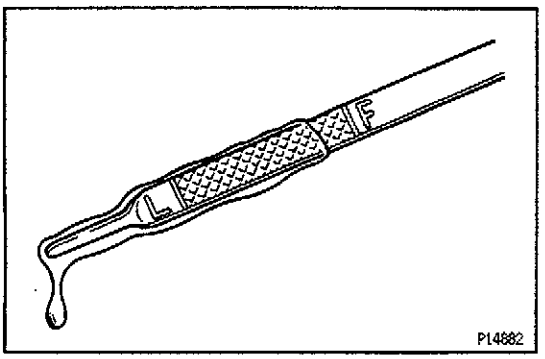
## ENGINE OIL INSPECTION

1. **CHECK OIL QUALITY**

Check the oil for deterioration, entry of water, discoloring or thinning.
If oil quality is visibly poor, replace the oil.

**Oil grade:**

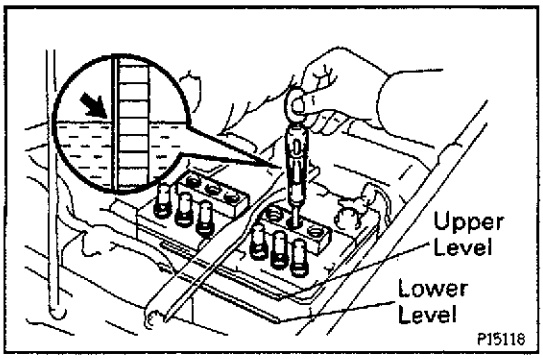
**API grade SG or SH, or ILSAC multigrade engine oil.**
**Recommended viscosity is as shown in the illustration.**

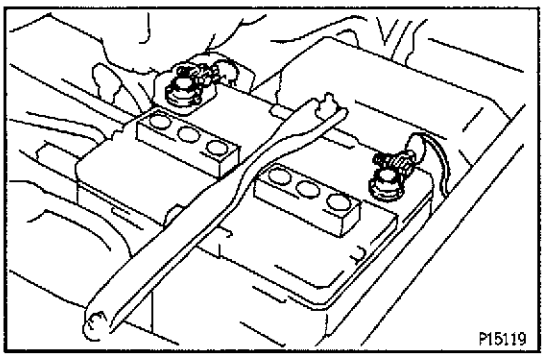


P14682

2. **CHECK ENGINE OIL LEVEL**

The oil level should be between the "L" and "F" marks on the dipstick.
If low, check for leakage and add oil up to the "F" mark.




## BATTERY INSPECTION

EG40U-01

**1. CHECK BATTERY SPECIFIC GRAVITY AND ELECTROLYTE LEVEL**

(a) Check the electrolyte quantity of each cell.
If insufficient, refill with distilled (or purified) water.

(b) Check the specific gravity of each cell.
**Standard specific gravity:**
**1.25 – 1.27 at 20°C (68°F)**
If the gravity is less than specification, charge the battery.

**2. CHECK BATTERY TERMINALS, FUSIBLE LINK AND FUSES**

(a) Check that the battery terminals are not loose or corroded.

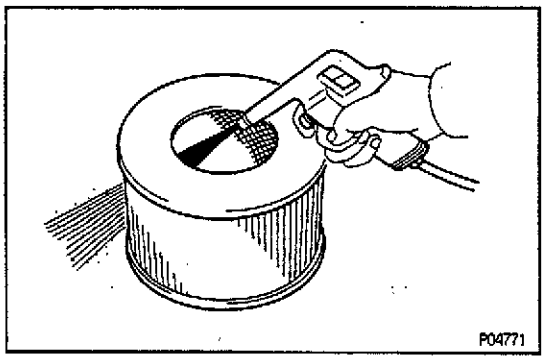
(b) Check the fusible link and fuses for continuity.

EG

## AIR FILTER INSPECTION AND CLEANING

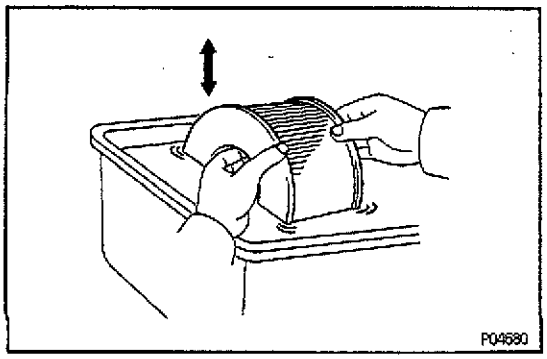
EG3WM-01

**1. REMOVE AIR FILTER**
Remove the air cleaner cap and air filter.



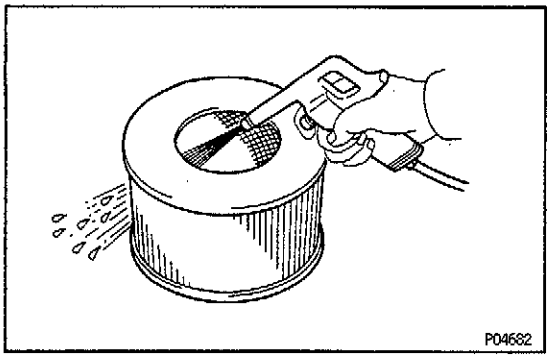

**2. CLEAN AIR FILTER**

(a) Blow dirt off in the element with compressed air from the inside.




(b) Submerge the element in the water and agitate it up and down ten or more times.

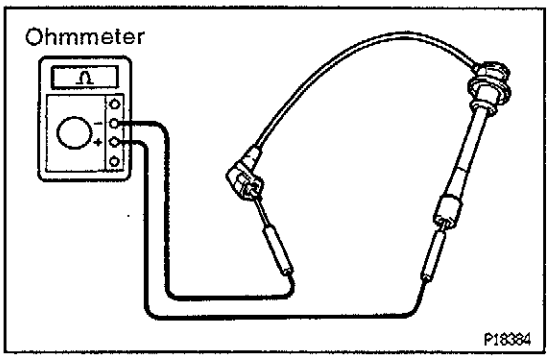
(c) Repeat rinsing in clean water until rise water is clear.




(d) Remove excess water by shaking the element or blowing with compressed air.
**NOTICE: Do not beat or drop filter element.**
(e) Wipe off dust on the air cleaner case interior.

**3. REINSTALL AIR FILTER**






## HIGH—TENSION CORDS INSPECTION

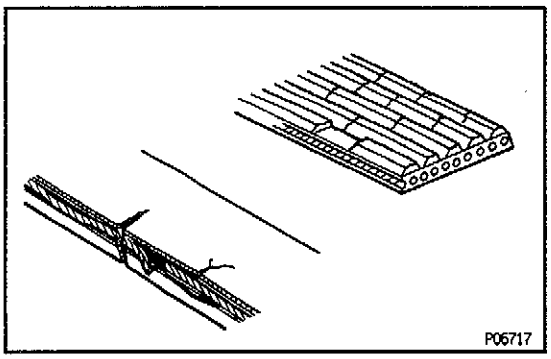
EG087-04

**(See IG section)**
**Maximum resistance:**
**25 kΩ per cord**

## SPARK PLUGS INSPECTION

EG0RE-05

**(See IG section)**
**Recommended spark plug:**
**K16R—U for ND**
**BKR5EYA for NGK**
**Correct electrode gap:**
**0.8 mm (0.031 in.)**

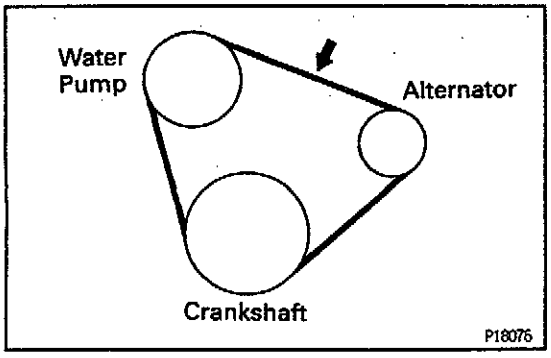



## ALTERNATOR DRIVE BELT INSPECTION

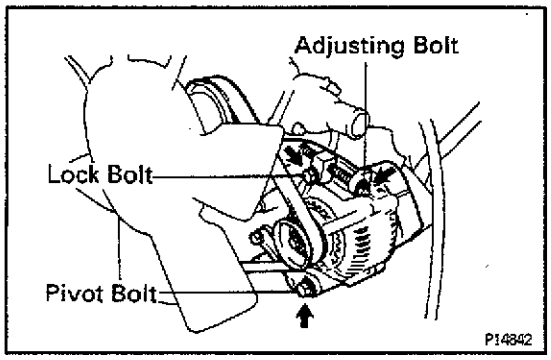
EG40V-01

**INSPECT DRIVE BELT**

(a) Visually check the belt for excessive wear, frayed cords etc.
If necessary, replace the drive belt.
HINT: Cracks on the rib side of a belt are considered acceptable. If the belt has chunks missing from the ribs, it should be replaced.

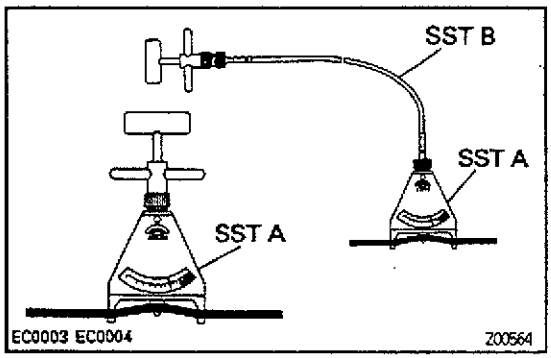



(b) Check the drive belt deflection by pressing on the belt at the points indicated in the illustration with 98 N (10 kgf, 22 lbf) of pressure.
**Deflection:**
**New belt**
**5 — 7 mm (0.20 — 0.28 in.)**
**Used belt**
**7 — 8 mm (0.28 — 0.31 in.)**




If the deflection is not as specified, adjust it.






**Reference**

Using SST, check the drive belt tension.

SST A 09216–00021

SST B 09216–00030

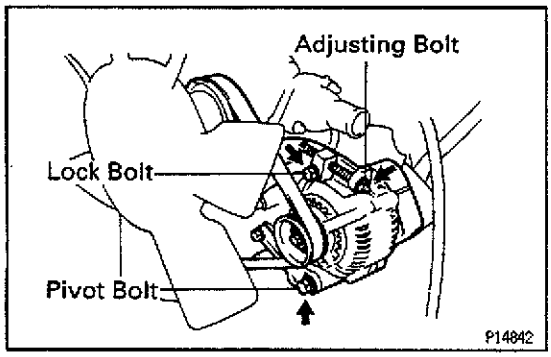
**Drive belt tension:**

**New belt**

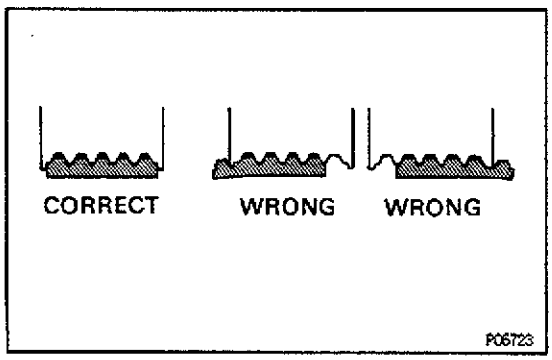
**685 – 785 N (70 – 80 kgf)**

**Used belt**

**295 – 440 N (30 – 45 kgf)**




If the belt tension is not as specified, adjust it.




HINT:

- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the belt, check that it fits properly in the ribbed grooves.
- Check by hand to confirm that the belt has not slipped out of the groove on the bottom of the pulley.
- After installing a new belt, run the engine for about 5 minutes and recheck the belt deflection or belt tension.

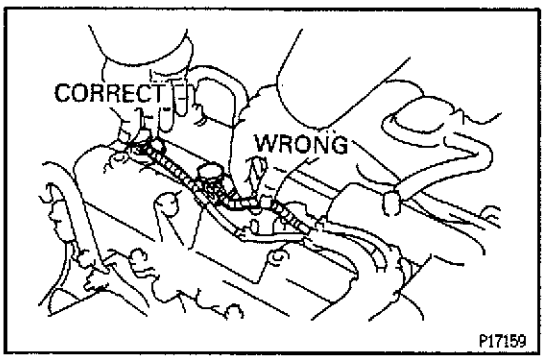
# VALVE CLEARANCE INSPECTION AND ADJUSTMENT

B040W-01

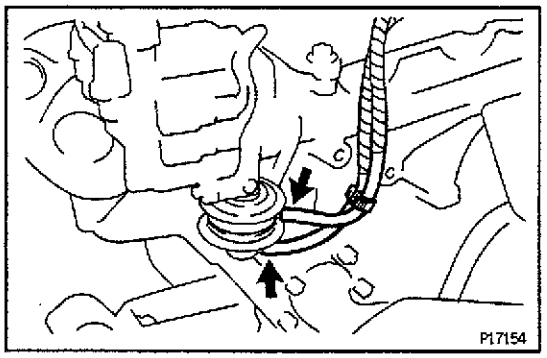
HINT: Inspect and adjust the valve clearance when the engine is cold.

1. **REMOVE INTAKE AIR CONNECTOR**

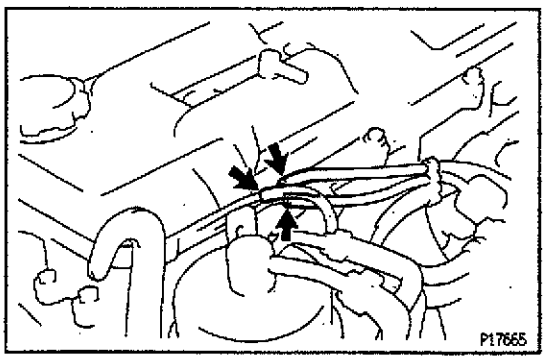




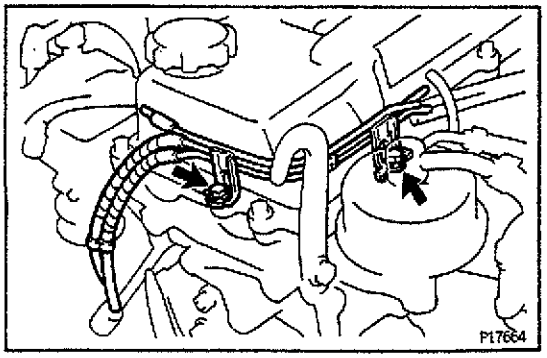

2. **DISCONNECT HIGH–TENSION CORDS FROM SPARK PLUGS**
Disconnect the high – tension cords at the rubber boot.
DO NOT pull on the cords.
**NOTICE: Pulling on or bending the cords may damage the conductor inside.**
3. **REMOVE NO.1 AND NO.2 PCV HOSES**



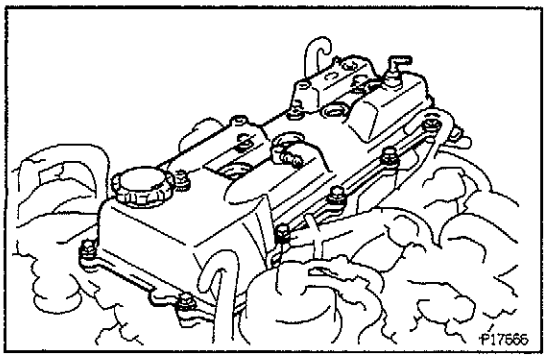

4. **REMOVE NO.2 VACUUM PIPE**
(a) Disconnect the 2 vacuum hoses.




(b) Disconnect the 3 vacuum hoses.



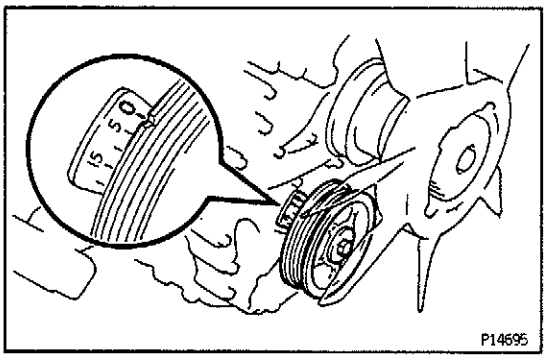

(c) Remove the 2 bolts and vacuum pipe.




**5. REMOVE CYLINDER HEAD COVER**

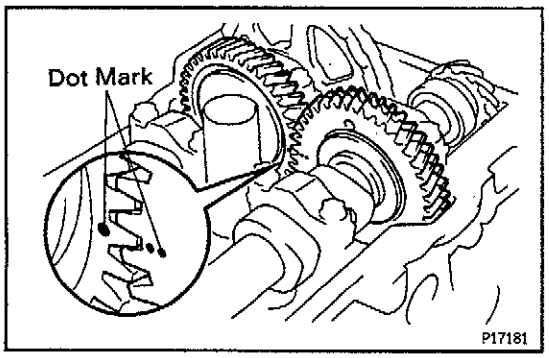
Remove the 10 bolts, cylinder head cover and gasket.



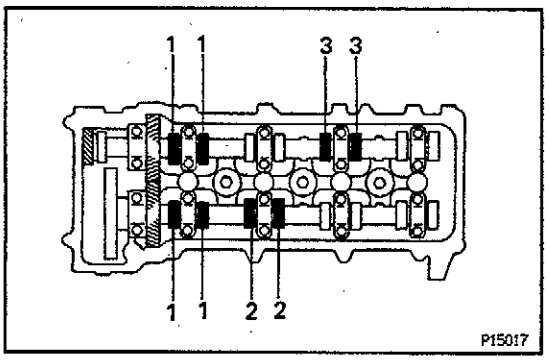



**6. SET NO.1 CYLINDER TO TDC/COMPRESSION**

(a) Turn the crankshaft pulley clockwise and align its groove with the "0" mark on the timing chain cover.




(b) Check that the timing marks (one and two dots) of the camshaft drive and driven gears are in straight line on the cylinder head surface as shown in the illustration. If not, turn the crankshaft 1 revolution (360°) and align the marks as above.




**7. INSPECT VALVE CLEARANCE**

(a) Check only the valves indicated.

- Using a thickness gauge, measure the clearance between the valve lifter and camshaft.
- Record the out — of — specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.

**Valve clearance (Cold):**

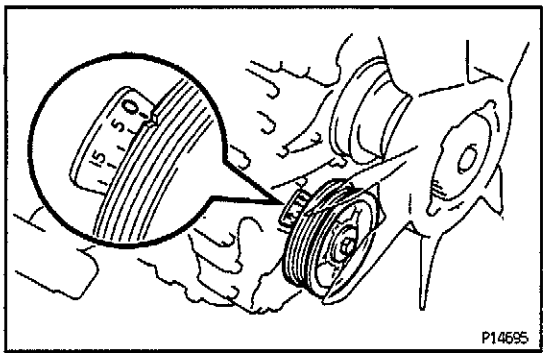
**Intake**

**0.15 — 0.25 mm (0.006 — 0.010 in.)**

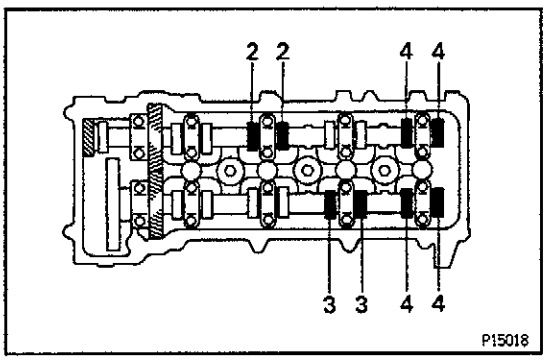
**Exhaust**

**0.25 — 0.35 mm (0.010 — 0.014 in.)**

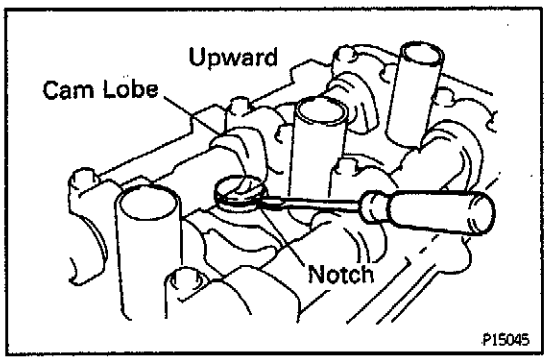
EG




(b) Turn the crankshaft pulley 1 revolution (360°) and align its groove with timing mark "0" of the timing chain cover.



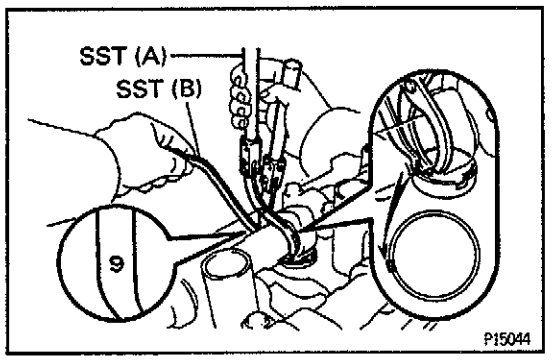

(c) Check only the valves indicated as shown. Measure the valve clearance. (See procedure in step (a))




**8. ADJUST VALVE CLEARANCE**

(a) Remove the adjusting shim.

- Turn the crankshaft to position the cam lobe of the camshaft on the adjusting valve upward.
- Position the notch of the valve lifter toward the spark plug side.

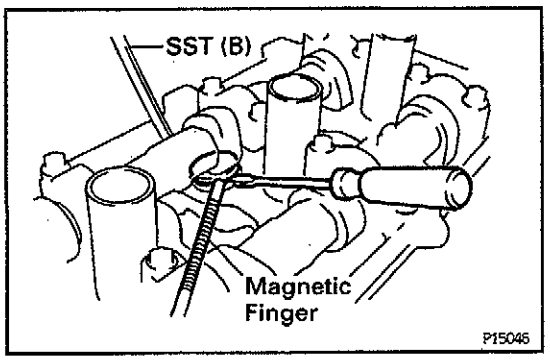


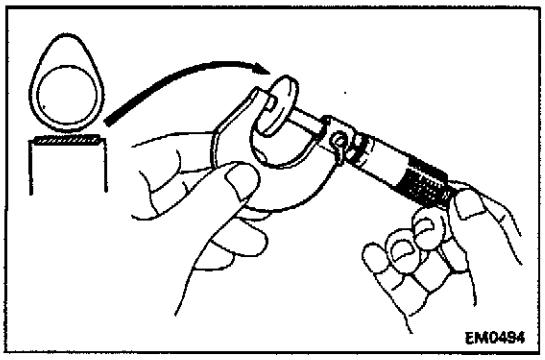

- Using SST (A), press down the valve lifter and place SST (B) between the camshaft and valve lifter flange. Remove SST (A).

SST 09248—55040 (09248—05410, 09248—05420)

HINT:

- Apply SST (B) at slight angle on the side marked with "9", at the position shown in the illustration.
- When SST (B) is inserted too deeply, it will get pinched by the shim. To prevent it from being stuck, insert it shallowly from the outside of the cylinder head, at a slight angle.
- Remove the adjusting shim with a small screwdriver and magnetic finger.






(b) Determine the replacement adjusting shim size by following the Formula or Charts:

- Using a micrometer, measure the thickness of the removed shim.
- Calculate the thickness of a new shim so that the valve clearance comes within specified value.

T ..... Thickness of removed shim
A ..... Measured valve clearance
N ..... Thickness of new shim

**Intake:**

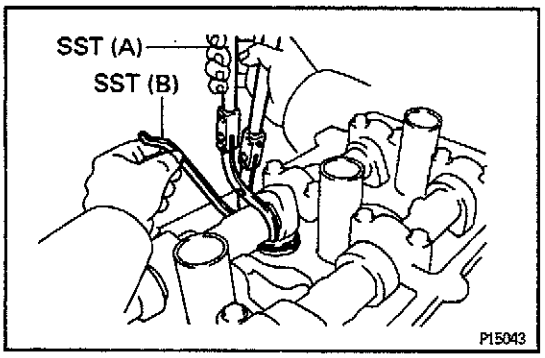
**N=T + (A – 0.20 mm (0.008 in.))**

**Exhaust:**

**N=T + (A – 0.30 mm (0.012 in.))**

- Select a new shim with a thickness as close as possible to the calculated value.

HINT: Shims are available in 17 sizes in increments of 0.05 mm (0.0020 in.), from 2.50 mm (0.0984 in.) to 3.30 mm (0.1299 in.).




(c) Install a new adjusting shim.

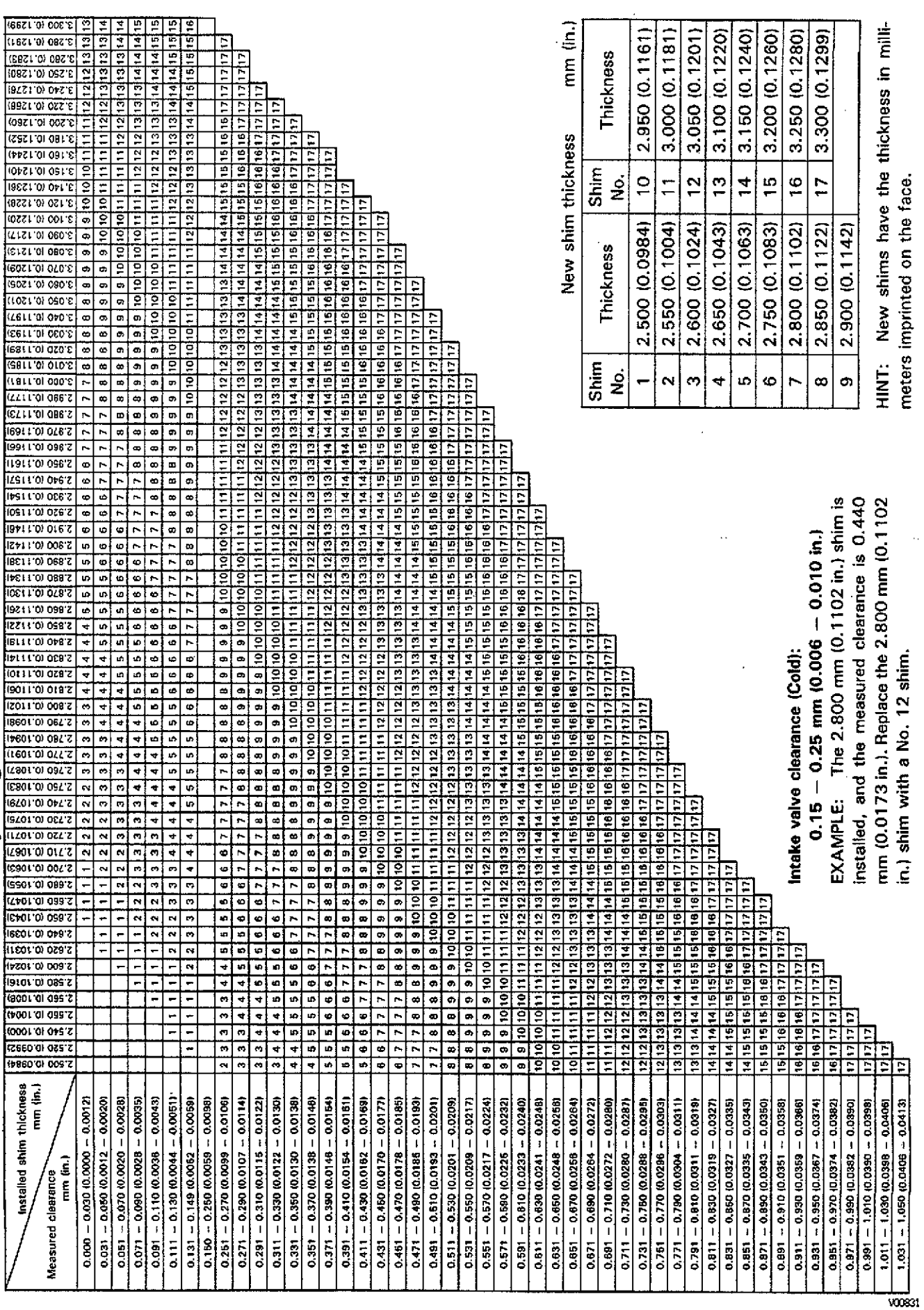
- Place a new adjusting shim on the valve lifter.
- Using SST (A), press down the valve lifter and remove SST (B).

SST 09248–55040 (09248–05410, 09248–05420)

(d) Recheck the valve clearance.

EG

## Adjusting Shim Selection Chart (Intake)




**Intake valve clearance (Cold):**
**0.15 — 0.25 mm (0.006 — 0.010 in.)**

EXAMPLE: The 2.800 mm (0.1102 in.) shim is installed, and the measured clearance is 0.440 mm (0.0173 in.). Replace the 2.800 mm (0.1102 in.) shim with a No. 12 shim.

New shim thickness mm (in.)

| Shim No. | Thickness | Shim No. | Thickness |
|---|---|---|---|
| 1 | 2.500 (0.0984) | 10 | 2.950 (0.1161) |
| 2 | 2.550 (0.1004) | 11 | 3.000 (0.1181) |
| 3 | 2.600 (0.1024) | 12 | 3.050 (0.1201) |
| 4 | 2.650 (0.1043) | 13 | 3.100 (0.1220) |
| 5 | 2.700 (0.1063) | 14 | 3.150 (0.1240) |
| 6 | 2.750 (0.1083) | 15 | 3.200 (0.1260) |
| 7 | 2.800 (0.1102) | 16 | 3.250 (0.1280) |
| 8 | 2.850 (0.1122) | 17 | 3.300 (0.1299) |
| 9 | 2.900 (0.1142) | | |

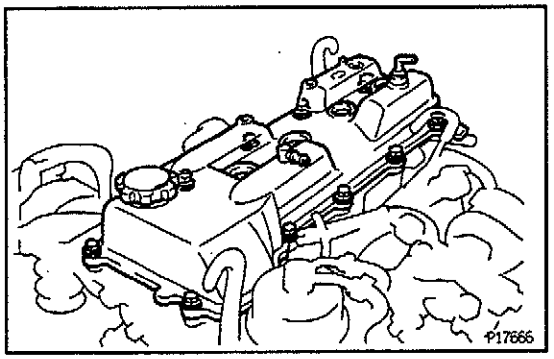
HINT: New shims have the thickness in millimeters imprinted on the face.

V00831

# Adjusting Shim Selection Chart (Exhaust)

| Measured clearance mm (in.) \ Installed shim thickness mm (in.) | 2.500 (0.0984) | 2.520 (0.0992) | 2.540 (0.1000) | 2.560 (0.1004) | 2.580 (0.1016) | 2.600 (0.1024) | 2.620 (0.1031) | 2.640 (0.1039) | 2.650 (0.1043) | 2.660 (0.1047) | 2.680 (0.1055) | 2.700 (0.1063) | 2.710 (0.1067) | 2.720 (0.1071) | 2.730 (0.1075) | 2.740 (0.1079) | 2.750 (0.1083) | 2.760 (0.1087) | 2.770 (0.1091) | 2.780 (0.1094) | 2.790 (0.1098) | 2.800 (0.1102) | 2.810 (0.1106) | 2.820 (0.1110) | 2.830 (0.1114) | 2.840 (0.1118) | 2.850 (0.1122) | 2.860 (0.1126) | 2.870 (0.1130) | 2.880 (0.1134) | 2.890 (0.1138) | 2.900 (0.1142) | 2.910 (0.1146) | 2.920 (0.1150) | 2.930 (0.1154) | 2.940 (0.1157) | 2.950 (0.1161) | 2.960 (0.1165) | 2.970 (0.1169) | 2.980 (0.1173) | 2.990 (0.1177) | 3.000 (0.1181) | 3.010 (0.1185) | 3.020 (0.1189) | 3.030 (0.1193) | 3.040 (0.1197) | 3.050 (0.1201) | 3.060 (0.1205) | 3.070 (0.1209) | 3.080 (0.1213) | 3.090 (0.1217) | 3.100 (0.1220) | 3.120 (0.1228) | 3.140 (0.1236) | 3.160 (0.1244) | 3.180 (0.1252) | 3.200 (0.1260) | 3.220 (0.1268) | 3.240 (0.1276) | 3.260 (0.1280) | 3.280 (0.1283) | 3.280 (0.1291) | 3.300 (0.1299) |
|---|---|---

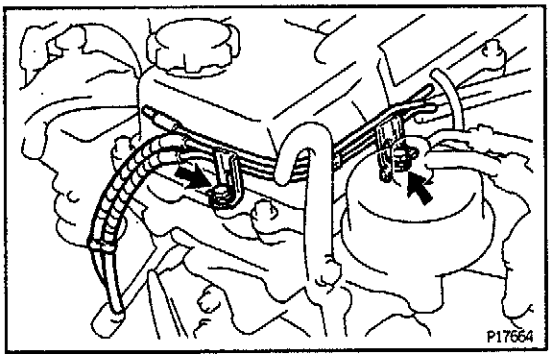
EG




**9. REINSTALL CYLINDER HEAD COVER**

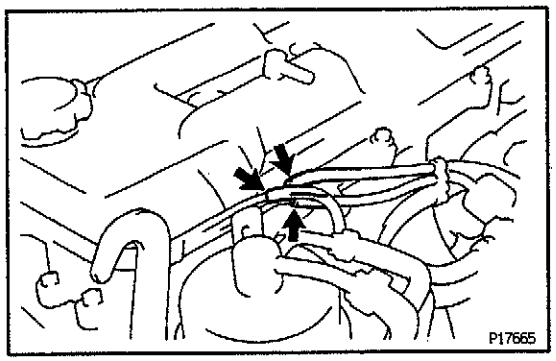
(a) Install the gasket to the cylinder head cover.

(b) Install the cylinder head cover with the 10 bolts.

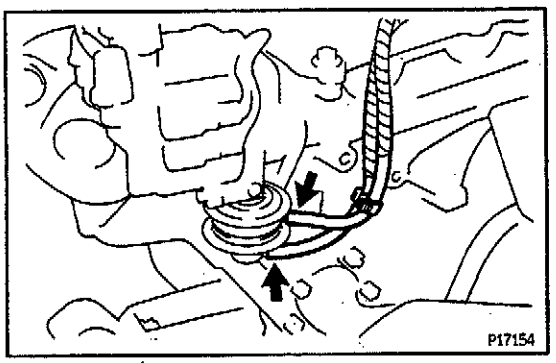



**10. INSTALL NO.2 VACUUM PIPE**

(a) Install the vacuum pipe with the 2 bolts.
**Torque: 8.5 N·m (85 kgf·cm, 74 in.·lbf)**

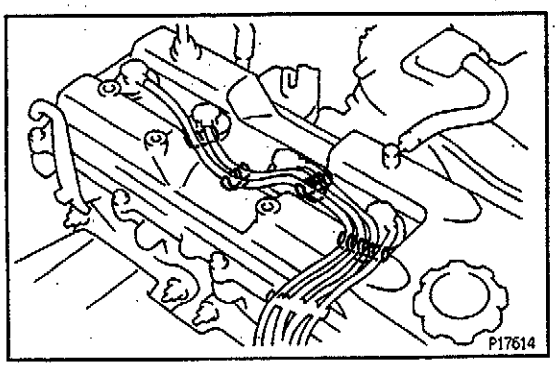



(b) Connect the 3 vacuum hoses to the vacuum pipe.




(c) Connect the 2 vacuum hoses to the vacuum pipe.

**11. REINSTALL NO.1 AND NO.2 PCV HOSES**




**12. REINSTALL HIGH – TENSION CORDS TO SPARK PLUGS**

Secure the high–tension cords with the clamps as shown in the illustration.

**13. REINSTALL INTAKE AIR CONNECTOR**

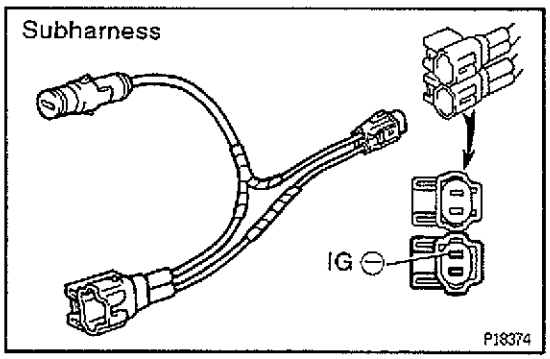
# IGNITION TIMING INSPECTION AND ADJUSTMENT

B340X-01

## 1. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.

EG

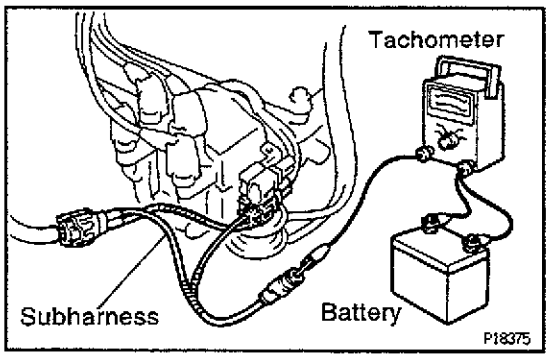



## 2. CONNECT TACHOMETER AND TIMING LIGHT

(a) Assemble the tachometer subharness using the following parts.

Parts No.:

90980—11137, 82998—12440, 90980—11038, 82998—12430, 90980—10115, 82998—12020



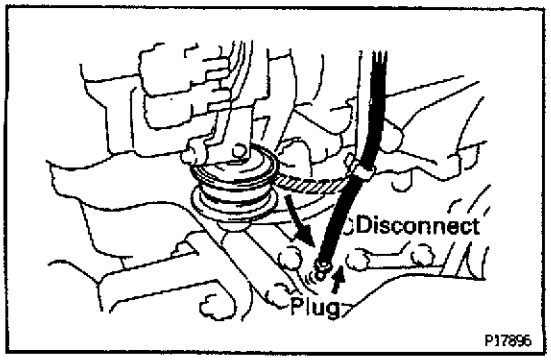

(b) Disconnect the distributor connector (for negative (—) terminal of ignition coil).

Then connect the subharness to the distributor.

(c) Connect the test probe of a tester to the subharness form the distributor.

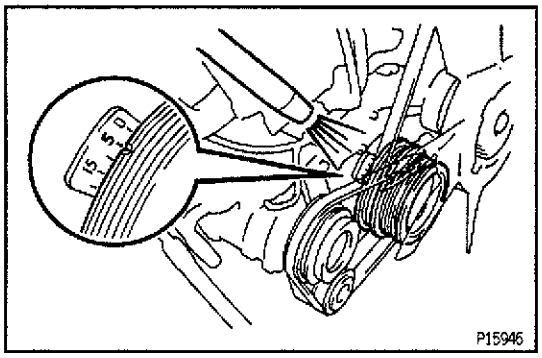
**NOTICE:**

- **NEVER allow the tachometer terminal to touch ground as it could result in damage to the igniter and/or ignition coil.**
- **As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.**

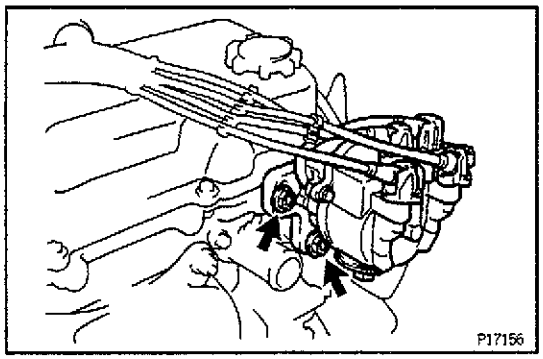



## 3. INSPECT AND ADJUST IGNITION TIMING

(a) Disconnect the vacuum hose from the sub vacuum advancer diaphragm and plug the hose.




(b) With the engine idling as specified, use a timing light to check the timing.
**Ignition timing:**
**5° BTDC @ Max. 950 rpm**




If necessary, loosen the distributor bolt and turn the distributor to align the marks. Recheck the timing after tightening the distributor bolt.
**Torque: 19 N·m (195 kgf-cm, 14 ft-lbf)**

(c) Reconnect the vacuum hose to the distributor.

E0OVS-03

## IDLE SPEED INSPECTION AND ADJUSTMENT

1. **WARM UP ENGINE**
   Allow the engine to warm up to normal operating temperature.
2. **CONNECT TACHOMETER**
   **(See page EG−23)**
3. **INSPECT IDLE SPEED**
   **Idle speed:**
   **750 − 850 rpm**
   If not as specified, adjust according to the following procedure:
   **CAUTION:**
   - **Always use a CO meter when adjusting the idle mixture. It is not necessary to adjust with the idle mixture adjusting screw in most vehicles if they are in good condition.**
   - **If a CO meter is not available and it is absolutely necessary to adjust with the idle mixture adjusting screw, use the alternative method (See page EG−28).**

EG

E040Y-01

## A. METHOD WITH CO METER

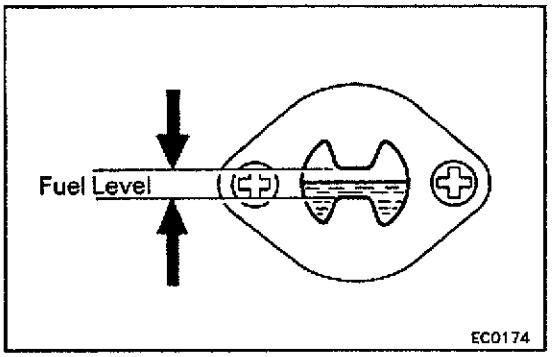
1. **VISUALLY INSPECT CARBURETOR**

(a) Check for loose screws or a loose mounting to the manifold.
(b) Check for wear in the linkage, missing snap rings or excessive looseness in the throttle shaft. Correct any problems found.

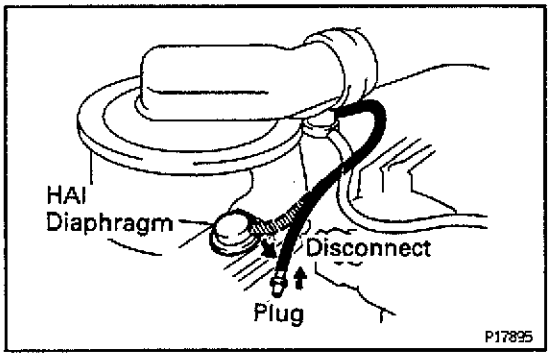
2. **INITIAL CONDITIONS**

(a) Air cleaner installed
(b) Normal operating coolant temperature
(c) Choke fully open
(d) All accessories switched off
(e) All vacuum lines connected
(f) Ignition timing set correctly
(g) Transmission in the neutral range

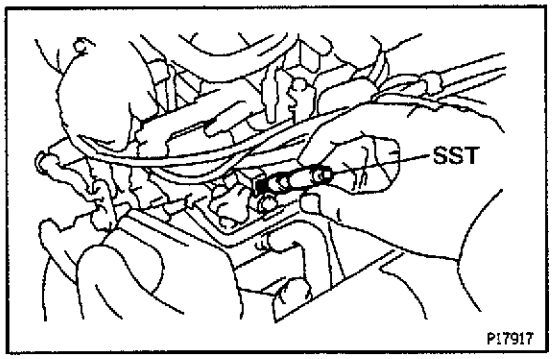
EG



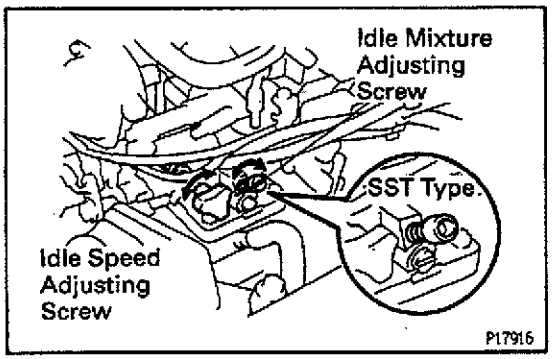

(h) Fuel level should be about even with the correct level in the sight glass
(i) CO meter operates normally



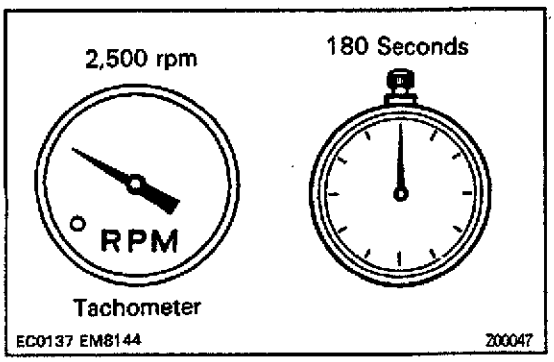

**3. DISCONNECT HOT AIR INTAKE (HAI) VACUUM HOSE AND PLUG HOSE END**



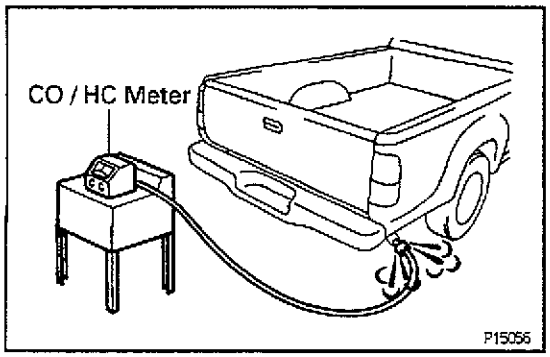

**4. ADJUST IDLE SPEED AND IDLE MIXTURE**
HINT: Use SST if necessary.
SST 09243—00020




(a) Start the engine.
(b) Using a CO meter to measure the CO concentration in the exhaust, turn the idle speed and idle mixture adjusting screws to obtain the specified concentration value at idle speed.
**Idle speed:**
**800 rpm**




**4. INSPECT CO CONCENTRATION**
(a) Check that the CO meter is properly calibrated.
(b) Race the engine 180 seconds at about 2,500 rpm before measuring concentration.
(c) Wait 1—3 minutes after racing the engine to allow the concentration to stabilize.




(d) Insert a testing probe at least 40 cm (1.3 ft) into the tailpipe, and measure the CO concentration within a short time.

**Idle CO concentration:**

**1.5 ± 0.5 %**

- If the CO concentration is within specification this adjustment is complete.
- If the CO concentration is not within specification, turn the idle mixture adjusting screw to obtain the specified concentration value.
- If the CO concentration cannot be corrected by adjusting the idle mixture, see table below for other possible causes.

(c) Reconnect the HAI vacuum hose.

EG

## TROUBLESHOOTING

| CO | HC | Problems | Causes |
|---|---|---|---|
| Normal | High | Rough idle | 1. Faulty ignition:<br>• Incorrect timing<br>• Fouled, shorted or improperly gapped plugs<br>• Open or crossed ignition wires<br>• Cracked distributor cap<br>2. Leaky exhaust valves<br>3. Leaky cylinder |
| Low | High | Rough idle<br>(Fluctuating HC reading) | 1. Vacuum leak:<br>• Vacuum hose<br>• Intake manifold<br>• PCV line<br>• Carburetor base |
| High | High | Rough idle<br>(Black smoke from exhaust) | 1. Restricted air filter<br>2. Plugged PCV valve<br>3. Faulty carburetion:<br>• Faulty choke action<br>• Incorrect float setting<br>• Leaking needle or seat<br>• Leaking power valve |

EG0V7-02

## B. ALTERNATIVE METHOD

**To be used only if CO meter is not available.**

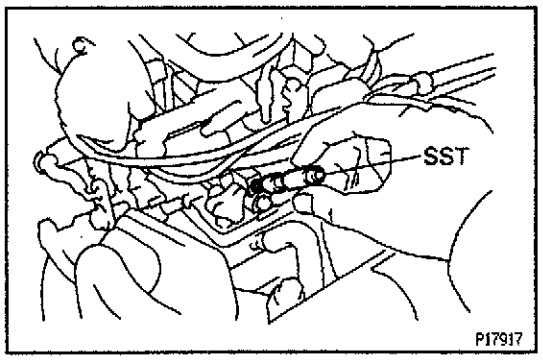
**1. VISUALLY INSPECT CARBURETOR**

(a) Check for loose screws or loose a mounting to the manifold.

(b) Check for wear in the linkage, missing snap rings or excessive looseness in the throttle shaft. Correct any problems found.

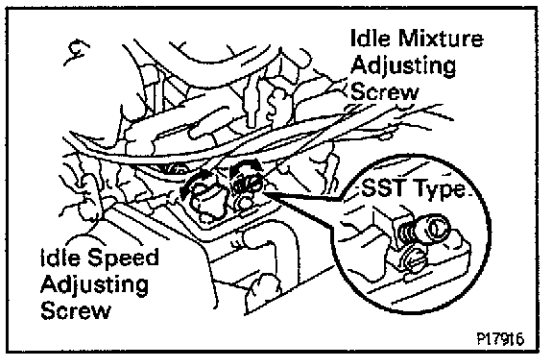
**2. INITIAL CONDITIONS**

(a) Air cleaner installed
(b) Normal operating coolant temperature
(c) Choke fully open
(d) All accessories switched off
(e) All vacuum lines connected
(f) Ignition timing set correctly
(g) Transmission in neutral range




**3. ADJUST IDLE SPEED AND IDLE MIXTURE**

HINT: Use SST if necessary.
SST 09243—00020




(a) Start the engine.

(b) Set to the maximum speed by turning the idle mixture adjusting screw.

(c) Set to the idle mixture speed by turning the idle speed adjusting screw.

**Idle mixture speed:**

**850 rpm**

(d) Before moving to the next step continue adjustments (b) and (c) until the maximum speed will not rise any further no matter how much the idle mixture adjusting screw is adjusted.

(e) Set to the idle speed by screwing in the idle mixture adjusting screw.

**Idle speed:**

**800 rpm**

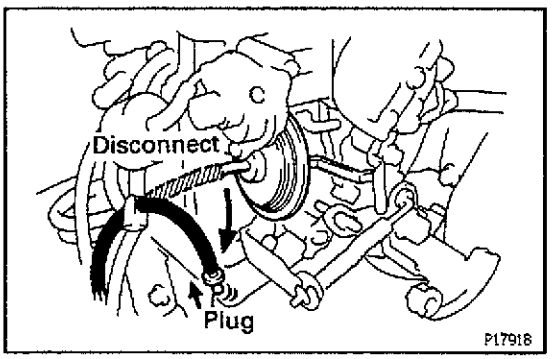
This is Lean Drop Method for setting idle speed and mixture.

E00V8-03

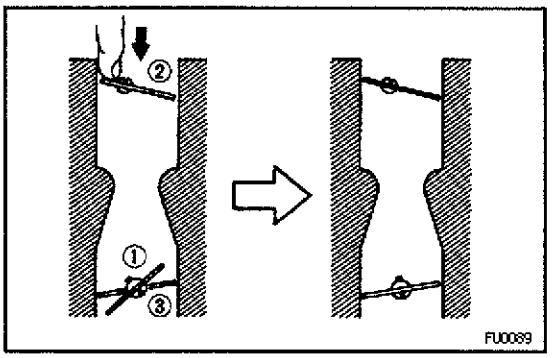
# FAST IDLE SPEED INSPECTION AND ADJUSTMENT

1. **WARM UP AND STOP ENGINE**
2. **CONNECT TACHOMETER TO ENGINE**






3. **CUT OPERATION OF CHOKE OPENER (CO) SYSTEM**
Disconnect the vacuum hose from the CO, and plug the hose end. This shuts off the CO.

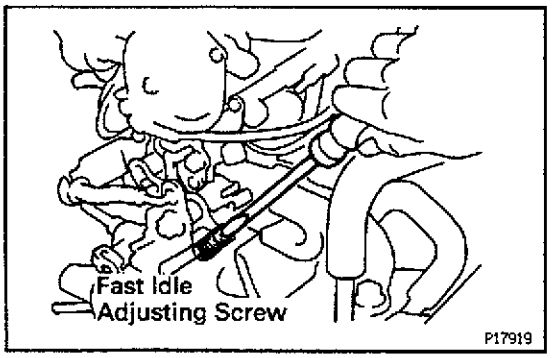



4. **SET FAST IDLE CAM**

(a) Set the fast idle cam. While holding the throttle slightly open, push the choke valve closed, and hold it closed as you release the throttle valve.

(b) Check that the fast idle cam is in the 1st step.

(c) Start the engine, but do not touch the accelerator pedal.




5. **INSPECT AND ADJUST FAST IDLE SPEED**

(a) Check the fast idle speed.

**Fast idle speed:**

**2,400 — 2,800 rpm**

If the fast idle speed is not as specified, adjust the fast idle speed by turning the fast idle adjusting screw.

**Fast idle speed:**

**2,600 rpm**

(b) Lightly race the engine and release the throttle and recheck the idle speed.

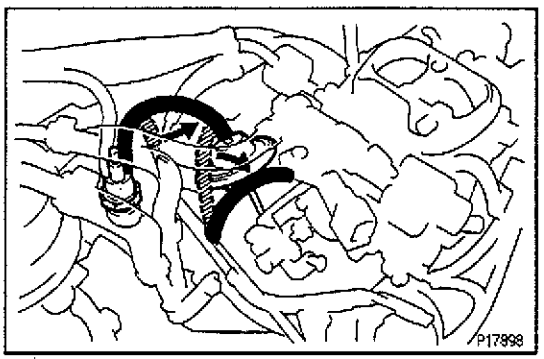
6. **RECONNECT VACUUM HOSE TO CO**

EG0VA-05

## THROTTLE POSTIONER (TP) SETTING SPEED INSPECTION AND ADJUSTMENT

1. **WARM UP AND STOP ENGINE**
2. **CONNECT TACHOMETER TO ENGINE**
   **(See page EG—23)**
3. **START ENGINE**

EG

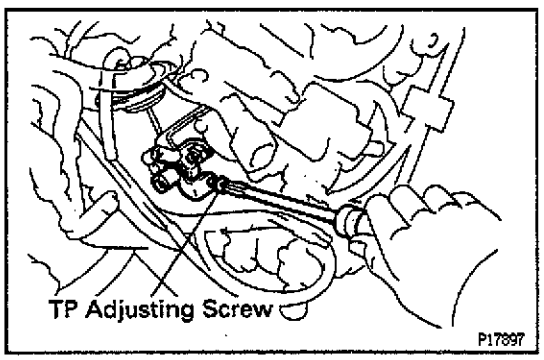



4. **INSPECT AND ADJUST THROTTLE POSITIONER (TP) SETTING SPEED**

(a) Disconnect the vacuum hoses from the gas filter and TP.

(b) Connect the vacuum hose which you have disconnected from the gas filter onto the TP.
HINT (RZB series):
Disconnect the vacuum hose from the 1st diaphragm of the TP.

(c) Check the TP setting speed.
**TP setting speed:**
**RCK series**
**1,200 — 1,400 rpm**
**RZB series**
**1,500 — 1,700 rpm**
**NOTICE (RZB series):**
**Do not adjust the 2nd TP diaphragm.**




If the TP setting speed is not as specified, adjust the setting speed by turning the TP adjusting screw.
**TP setting speed:**
**RCK series**
**1,300 rpm**
**RZB series**
**1,600 rpm**

(d) Reconnect the vacuum hose and check the idle speed.