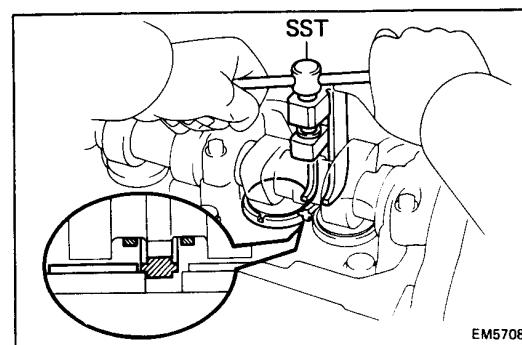
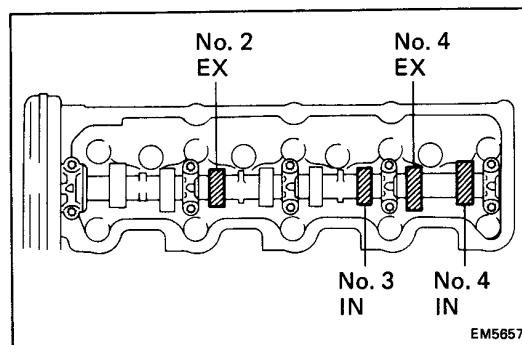
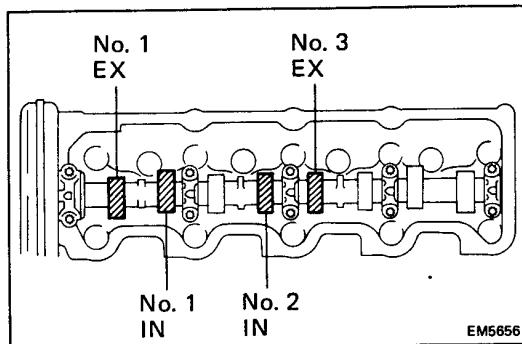
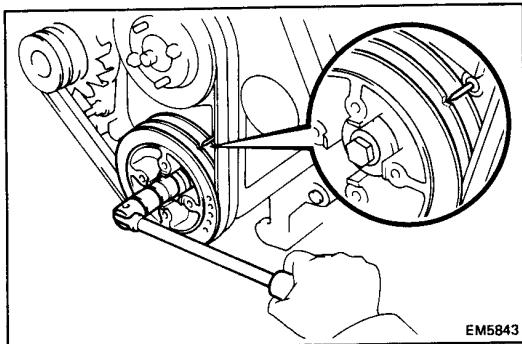


## ADJUSTMENT OF VALVE CLEARANCE

HINT: Adjust the valve clearance while the engine is cold.

1. (2L-T)  
**REMOVE AIR CLEANER**
2. (w/ Intake Pipe)  
**REMOVE INTAKE PIPE**
3. **REMOVE CYLINDER HEAD COVER**  
(See step 16 on page EM-38)
4. **SET NO. 1 CYLINDER TO TDC/COMPRESSION**
  - (a) Turn the crankshaft pulley clockwise, and align its groove with the timing pointer.
  - (b) Check that the valve lifters on the No. 1 cylinder are loose and valve lifters on the No. 4 cylinder are tight. If not, turn the crankshaft one revolution ( $360^\circ$ ) and align the mark as above.



### 5. ADJUST VALVE CLEARANCE

- (a) Check only the valves indicated in the illustration.
  - Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
  - Record the valve clearance measurements which are out of specification. They will be used later to determine the required replacement adjusting shim.

#### Valve clearance (Cold):

Intake    0.20 – 0.30 mm (0.008 – 0.012 in.)  
Exhaust    0.40 – 0.50 mm (0.016 – 0.020 in.)

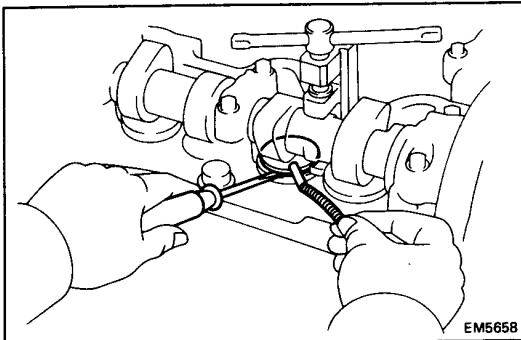
- (b) Turn the crankshaft one revolution ( $360^\circ$ ), and align the mark as above (See procedure step 4).
- (c) Check only the valves indicated in the illustration. Measure the valve clearance.  
(See procedure step (a))

- (d) Remove the adjusting shim.

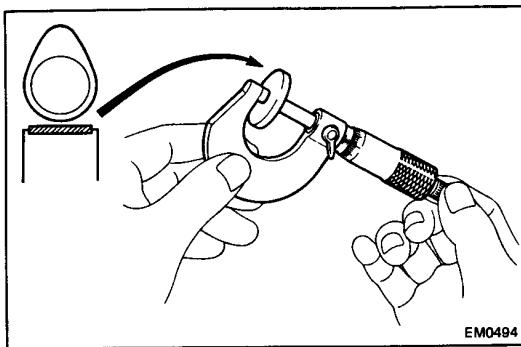
- Turn the crankshaft to position the cam lobe of the camshaft on the adjusting valve upward.
- Using SST, press down the valve lifter.

SST 09248-64010

HINT: Before pressing down the valve lifter, position the notch on the exhaust manifold side.



- Remove the adjusting shim with small screwdriver and magnetic finger.



(e) Determine the replacement adjusting shim size by using following the formula or charts:

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

T ..... Thickness of used shim

A ..... Measured valve clearance

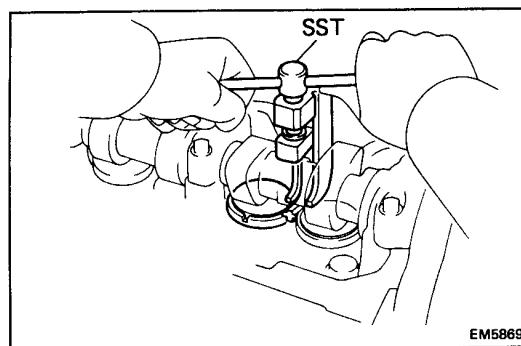
N ..... Thickness of new shim

Intake side:  $N = T + (A - 0.25 \text{ mm (0.010 in.)})$

Exhaust side:  $N = T + (A - 0.45 \text{ mm (0.018 in.)})$

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

HINT: Shims are available in seventeen sizes in increments of 0.050 mm (0.0020 in.), from 2.500 mm (0.0984 in.) to 3.300 mm (0.1299 in.).



(f) Install a new adjusting shim.

- Place a new adjusting shim on the valve lifter.
- Remove SST.

SST 09248-64010

(g) Recheck the valve clearance.

**6. REINSTALL CYLINDER HEAD COVER  
(See step 4 on page EM-43)**

**7. (w/ Intake Pipe)  
REINSTALL INTAKE PIPE**

**8. (2L-T)  
REINSTALL AIR CLEANER**

## Adjusting Shim Selection Using Chart

### INTAKE

Measured clearance mm (in.)	Installed shim thickness		mm (in.)
	mm (in.)	mm (in.)	
0.000 - 0.020 (0.0000 - 0.0008)	2.500 (0.0984)	2.520 (0.0992)	2.500 (0.0984)
0.021 - 0.040 (0.0008 - 0.0016)	2.540 (0.1000)	2.550 (0.1004)	2.540 (0.1000)
0.041 - 0.060 (0.0016 - 0.0024)	2.560 (0.1008)	2.580 (0.1016)	2.560 (0.1008)
0.061 - 0.080 (0.0024 - 0.0031)	2.600 (0.1024)	2.620 (0.1031)	2.600 (0.1024)
0.081 - 0.100 (0.0032 - 0.0039)	2.640 (0.1039)	2.660 (0.1043)	2.640 (0.1039)
0.101 - 0.120 (0.0040 - 0.0047)	2.700 (0.1063)	2.750 (0.1087)	2.700 (0.1063)
0.121 - 0.140 (0.0048 - 0.0055)	2.800 (0.1102)	2.860 (0.1087)	2.800 (0.1102)
0.141 - 0.160 (0.0056 - 0.0063)	2.880 (0.1104)	2.950 (0.1122)	2.880 (0.1104)
0.161 - 0.180 (0.0063 - 0.0071)	2.900 (0.1118)	2.960 (0.1126)	2.900 (0.1118)
0.181 - 0.199 (0.0071 - 0.0078)	2.920 (0.1124)	2.980 (0.1134)	2.920 (0.1124)
0.200 - 0.300 (0.0079 - 0.0118)	2.940 (0.1130)	2.980 (0.1142)	2.940 (0.1130)
0.301 - 0.320 (0.0119 - 0.0126)	42.06060606434311111111444416161616454521212121464626262647473131313148483636363649494141414141	42.0606060643431111111144441616161645454521212121464626262647473131313148483636363649494141414141	42.0606060643431111111144441616161645454521212121464626262647473131313148483636363649494141414141
0.321 - 0.340 (0.0126 - 0.0134)	46.06064343431111111144441616161645454521212121464626262647474731313131484836363649494141414141	46.06064343431111111144441616161645454521212121464626262647474731313131484836363649494141414141	46.06064343431111111144441616161645454521212121464626262647474731313131484836363649494141414141
0.341 - 0.360 (0.0134 - 0.0142)	46.06434343111111114444161616164545452121212146464626262647474731313131484836363649494141414141	46.06434343111111114444161616164545452121212146464626262647474731313131484836363649494141414141	46.06434343111111114444161616164545452121212146464626262647474731313131484836363649494141414141
0.361 - 0.380 (0.0142 - 0.0150)	46.06434343111111114444161616164545452121212146464626262647473131313148483636363649494141414141	46.06434343111111114444161616164545452121212146464626262647473131313148483636363649494141414141	46.06434343111111114444161616164545452121212146464626262647473131313148483636363649494141414141
0.381 - 0.400 (0.0150 - 0.0157)	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141
0.401 - 0.420 (0.0158 - 0.0165)	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141	43.431111111111444416161616454521212121464626262647473131313148483636363649494141414141
0.421 - 0.440 (0.0166 - 0.0173)	41.111111444444161616454545212121464646262626474747313131314848483636364949494141414141	41.111111444444161616454545212121464646262626474747313131314848483636364949494141414141	41.111111444444161616454545212121464646262626474747313131314848483636364949494141414141
0.441 - 0.460 (0.0174 - 0.0181)	41.1111444444161616454545212121464646262626474747313131314848483636364949494141414141	41.1111444444161616454545212121464646262626474747313131314848483636364949494141414141	41.1111444444161616454545212121464646262626474747313131314848483636364949494141414141
0.461 - 0.480 (0.0181 - 0.0189)	41.114444441616164545452121214646462626264747473131313148484836363636494949494141414141	41.114444441616164545452121214646462626264747473131313148484836363636494949494141414141	41.114444441616164545452121214646462626264747473131313148484836363636494949494141414141
0.481 - 0.500 (0.0189 - 0.0197)	44.444416161645452121212146462626264747313131314848363636364949494141414141	44.444416161645452121212146462626264747313131314848363636364949494141414141	44.444416161645452121212146462626264747313131314848363636364949494141414141
0.501 - 0.520 (0.0197 - 0.0205)	44.4616161645452121212146462626264747313131314848363636364949494141414141	44.4616161645452121212146462626264747313131314848363636364949494141414141	44.4616161645452121212146462626264747313131314848363636364949494141414141
0.521 - 0.540 (0.0205 - 0.0213)	41.16161645452121214646262626474747313131314848483636364949494141414141	41.16161645452121214646262626474747313131314848483636364949494141414141	41.16161645452121214646262626474747313131314848483636364949494141414141
0.541 - 0.560 (0.0213 - 0.0220)	41.16164545212121464646262626474747313131314848483636364949494141414141	41.16164545212121464646262626474747313131314848483636364949494141414141	41.16164545212121464646262626474747313131314848483636364949494141414141
0.561 - 0.580 (0.0221 - 0.0228)	41.16454545212121464646262626474747313131314848483636364949494141414141	41.16454545212121464646262626474747313131314848483636364949494141414141	41.16454545212121464646262626474747313131314848483636364949494141414141
0.581 - 0.600 (0.0229 - 0.0236)	45.45452121212146462626264747313131314848363636364949494141414141	45.45452121212146462626264747313131314848363636364949494141414141	45.45452121212146462626264747313131314848363636364949494141414141
0.601 - 0.620 (0.0237 - 0.0244)	45.45212121212146462626264747313131314848363636364949494141414141	45.45212121212146462626264747313131314848363636364949494141414141	45.45212121212146462626264747313131314848363636364949494141414141
0.621 - 0.640 (0.0244 - 0.0252)	42.21212146462626264747313131314848483636364949494141414141	42.21212146462626264747313131314848483636364949494141414141	42.21212146462626264747313131314848483636364949494141414141
0.641 - 0.660 (0.0252 - 0.0260)	42.212146462626264747313131314848483636364949494141414141	42.212146462626264747313131314848483636364949494141414141	42.212146462626264747313131314848483636364949494141414141
0.661 - 0.680 (0.0260 - 0.0268)	41.4646462626264747313131314848483636364949494141414141	41.4646462626264747313131314848483636364949494141414141	41.4646462626264747313131314848483636364949494141414141
0.681 - 0.700 (0.0268 - 0.0276)	41.46462626264747313131314848483636364949494141414141	41.46462626264747313131314848483636364949494141414141	41.46462626264747313131314848483636364949494141414141
0.701 - 0.720 (0.0276 - 0.0283)	46.262626264747313131314848363636364949494141414141	46.262626264747313131314848363636364949494141414141	46.262626264747313131314848363636364949494141414141
0.721 - 0.740 (0.0284 - 0.0291)	26.2626474747313131314848363636364949494141414141	26.2626474747313131314848363636364949494141414141	26.2626474747313131314848363636364949494141414141
0.741 - 0.760 (0.0292 - 0.0299)	26.2647474731313131484848363636364949494141414141	26.2647474731313131484848363636364949494141414141	26.2647474731313131484848363636364949494141414141
0.761 - 0.780 (0.0304 - 0.0307)	26.4747474731313131484848363636364949494141414141	26.4747474731313131484848363636364949494141414141	26.4747474731313131484848363636364949494141414141
0.781 - 0.800 (0.0307 - 0.0315)	47.473131313131484836363636364949494141414141	47.473131313131484836363636364949494141414141	47.473131313131484836363636364949494141414141
0.801 - 0.820 (0.0315 - 0.0323)	47.313131313131484836363636364949494141414141	47.313131313131484836363636364949494141414141	47.313131313131484836363636364949494141414141
0.821 - 0.840 (0.0323 - 0.0331)	31.313131313131484836363636364949494141414141	31.313131313131484836363636364949494141414141	31.313131313131484836363636364949494141414141
0.841 - 0.860 (0.0331 - 0.0339)	31.313148484836363636494949494141414141	31.31314848483636363636494949494141414141	31.31314848483636363636494949494141414141
0.861 - 0.880 (0.0339 - 0.0346)	31.3148484836363636494949494141414141	31.314848483636363636494949494141414141	31.314848483636363636494949494141414141
0.881 - 0.900 (0.0347 - 0.0354)	48.484836363636364949494141414141	48.48483636363636364949494141414141	48.48483636363636364949494141414141
0.901 - 0.920 (0.0355 - 0.0362)	48.363636363636364949494141414141	48.36363636363636364949494141414141	48.36363636363636364949494141414141
0.921 - 0.940 (0.0363 - 0.0370)	36.3636494949494141414141	36.3636494949494141414141	36.3636494949494141414141
0.941 - 0.960 (0.0370 - 0.0378)	36.3649494949494141414141	36.3649494949494141414141	36.3649494949494141414141
0.961 - 0.980 (0.0378 - 0.0386)	36.4949494949494141414141	36.4949494949494141414141	36.4949494949494141414141
0.981 - 1.000 (0.0386 - 0.0394)	49.4949494949494141414141	49.4949494949494141414141	49.4949494949494141414141
1.001 - 1.020 (0.0394 - 0.0402)	49.414141414141	49.414141414141	49.414141414141
1.021 - 1.040 (0.0402 - 0.0409)	41.4141414141	41.4141414141	41.4141414141
1.041 - 1.060 (0.0410 - 0.0417)	41.4141414141	41.4141414141	41.4141414141
1.061 - 1.080 (0.0418 - 0.0425)	41.41	41	41
1.081 - 1.100 (0.0426 - 0.0433)	41		

Shim No.	Thickness	Shim No.	Thickness
01	2.50 (0.0984)	46	2.95 (0.1161)
42	2.55 (0.1004)	26	3.00 (0.1181)
06	2.60 (0.1024)	47	3.05 (0.1201)
43	2.65 (0.1043)	31	3.10 (0.1220)
11	2.70 (0.1063)	48	3.15 (0.1240)
44	2.75 (0.1083)	36	3.20 (0.1260)
16	2.80 (0.1102)	49	3.25 (0.1280)
45	2.85 (0.1122)	41	3.30 (0.1299)
21	2.90 (0.1142)		

**Intake valve clearance (Cold):**

**0.20 – 0.30 mm (0.008 – 0.012 in.)**

**EXAMPLE:** The 2.800 mm (0.1102 in.) shim is installed and the measured clearance is 0.350 mm (0.0138 in.). Replace the 2.800 mm (0.1102 in.) shim with a No. 21 shim.

## Adjusting Shim Selection Using Chart

## EXHAUST

Measured clearance mm (in.)	Installed shim thickness mm (in.)	mm (in.)
0.000 - 0.020 (0.0000 - 0.0008)	2.500 (0.0984)	3.300 (0.1299)
0.021 - 0.040 (0.0008 - 0.0016)	2.520 (0.0992)	3.280 (0.1291)
0.041 - 0.060 (0.0016 - 0.0024)	2.540 (0.1000)	3.260 (0.1283)
0.061 - 0.080 (0.0024 - 0.0031)	2.560 (0.1008)	3.240 (0.1275)
0.081 - 0.100 (0.0032 - 0.0039)	2.580 (0.1016)	3.220 (0.1267)
0.101 - 0.120 (0.0040 - 0.0047)	2.600 (0.1024)	3.200 (0.1259)
0.121 - 0.140 (0.0048 - 0.0055)	2.620 (0.1031)	3.180 (0.1251)
0.141 - 0.160 (0.0056 - 0.0063)	2.640 (0.1039)	3.160 (0.1243)
0.161 - 0.180 (0.0063 - 0.0071)	2.660 (0.1043)	3.140 (0.1235)
0.181 - 0.200 (0.0071 - 0.0079)	2.680 (0.1051)	3.120 (0.1227)
0.201 - 0.220 (0.0079 - 0.0087)	2.700 (0.1063)	3.100 (0.1219)
0.221 - 0.240 (0.0087 - 0.0094)	2.720 (0.1071)	3.080 (0.1211)
0.241 - 0.260 (0.0095 - 0.0102)	2.740 (0.1079)	3.060 (0.1203)
0.261 - 0.280 (0.0103 - 0.0110)	2.760 (0.1087)	3.040 (0.1195)
0.281 - 0.300 (0.0111 - 0.0118)	2.780 (0.1094)	3.020 (0.1187)
0.301 - 0.320 (0.0119 - 0.0126)	2.800 (0.1102)	3.000 (0.1179)
0.321 - 0.340 (0.0126 - 0.0134)	2.820 (0.1110)	2.980 (0.1171)
0.341 - 0.360 (0.0134 - 0.0142)	2.840 (0.1118)	2.960 (0.1163)
0.361 - 0.380 (0.0142 - 0.0150)	2.860 (0.1126)	2.940 (0.1157)
0.381 - 0.399 (0.0150 - 0.0157)	2.880 (0.1134)	2.920 (0.1149)
0.400 - 0.500 (0.0157 - 0.0197)	2.900 (0.1142)	2.900 (0.1142)
0.501 - 0.520 (0.0197 - 0.0205)	2.920 (0.1150)	2.900 (0.1142)
0.521 - 0.540 (0.0205 - 0.0213)	2.940 (0.1158)	2.880 (0.1134)
0.541 - 0.560 (0.0213 - 0.0220)	2.960 (0.1166)	2.860 (0.1126)
0.561 - 0.580 (0.0221 - 0.0228)	2.980 (0.1174)	2.840 (0.1124)
0.581 - 0.600 (0.0229 - 0.0236)	3.000 (0.1182)	2.820 (0.1180)
0.601 - 0.620 (0.0237 - 0.0244)	3.020 (0.1189)	3.040 (0.1197)
0.621 - 0.640 (0.0244 - 0.0252)	3.040 (0.1197)	3.050 (0.1201)
0.641 - 0.660 (0.0252 - 0.0260)	3.060 (0.1205)	3.150 (0.1240)
0.661 - 0.680 (0.0260 - 0.0268)	3.080 (0.1213)	3.160 (0.1244)
0.681 - 0.700 (0.0268 - 0.0276)	3.100 (0.1220)	3.180 (0.1252)
0.701 - 0.720 (0.0276 - 0.0283)	3.200 (0.1250)	3.220 (0.1268)
0.721 - 0.740 (0.0284 - 0.0291)	3.240 (0.1276)	3.250 (0.1283)
0.741 - 0.760 (0.0292 - 0.0299)	3.260 (0.1284)	3.260 (0.1291)
0.761 - 0.780 (0.0300 - 0.0307)	3.280 (0.1299)	3.280 (0.1299)
0.781 - 0.800 (0.0307 - 0.0315)		
0.801 - 0.820 (0.0315 - 0.0323)		
0.821 - 0.840 (0.0323 - 0.0331)		
0.841 - 0.860 (0.0331 - 0.0339)		
0.861 - 0.880 (0.0339 - 0.0346)		
0.881 - 0.900 (0.0347 - 0.0354)		
0.901 - 0.920 (0.0355 - 0.0362)		
0.921 - 0.940 (0.0363 - 0.0370)		
0.941 - 0.960 (0.0370 - 0.0378)		
0.961 - 0.980 (0.0378 - 0.0386)		
0.981 - 1.000 (0.0386 - 0.0394)		
1.001 - 1.020 (0.0394 - 0.0402)		
1.021 - 1.040 (0.0402 - 0.0409)		
1.041 - 1.060 (0.0410 - 0.0417)		
1.061 - 1.080 (0.0418 - 0.0425)		
1.081 - 1.100 (0.0426 - 0.0433)		
1.101 - 1.120 (0.0433 - 0.0441)		
1.121 - 1.140 (0.0441 - 0.0449)		
1.141 - 1.160 (0.0449 - 0.0457)		
1.161 - 1.180 (0.0457 - 0.0465)		
1.181 - 1.200 (0.0465 - 0.0472)		
1.201 - 1.220 (0.0473 - 0.0480)		
1.221 - 1.240 (0.0481 - 0.0488)		
1.241 - 1.260 (0.0489 - 0.0496)		
1.261 - 1.280 (0.0496 - 0.0504)		
1.281 - 1.300 (0.0504 - 0.0512)		

Shim No.	Thickness	Shim No.	Thickness
01	2.50 (0.0984)	46	2.95 (0.1161)
42	2.55 (0.1004)	26	3.00 (0.1181)
06	2.60 (0.1024)	47	3.05 (0.1201)
43	2.65 (0.1043)	31	3.10 (0.1220)
11	2.70 (0.1063)	48	3.15 (0.1240)
44	2.75 (0.1083)	36	3.20 (0.1260)
16	2.80 (0.1102)	49	3.25 (0.1280)
45	2.85 (0.1122)	41	3.30 (0.1299)
21	2.90 (0.1142)		

## Exhaust valve clearance:

0.40 – 0.50 mm (0.016 – 0.020 in.)

EXAMPLE: The 2.800 mm (0.1102 in.) shim is installed and the measured clearance is 0.350 mm (0.0138 in.). Replace the 2.800 mm (0.1102 in.) shim with a No. 11 shim.