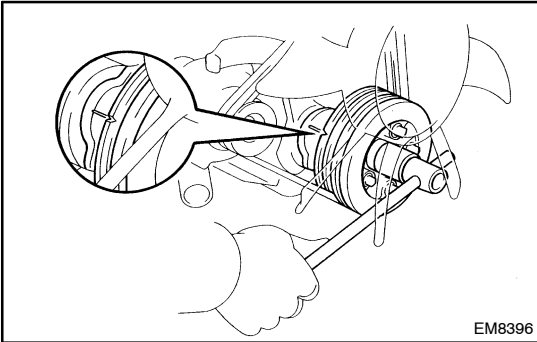


VALVE CLEARANCE (1HZ, 1HD-T)

INSPECTION

EM0W0-01

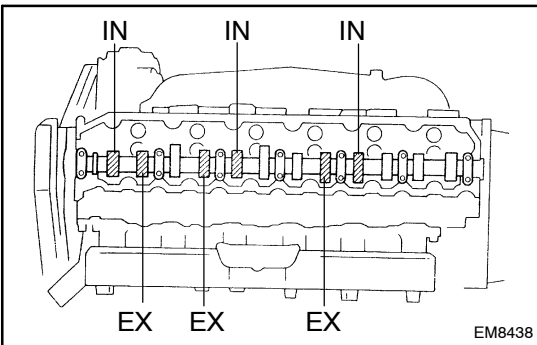
1. REMOVE INTAKE PIPE ASSEMBLY
(See page EM-48)
2. REMOVE CYLINDER HEAD COVER
(See page EM-77)



3. SET NO.1 CYLINDER TO TDC/COMPRESSION

- (a) Turn crankshaft pulley clockwise, and align its groove with the timing gear cover groove.
- (b) Check that the valve lifters on the No.1 cylinder are loose and valve lifters on the No.6 cylinder are tight.

If not, turn the crankshaft one revolution (360°) and align the mark as above.



4. INSPECT VALVE CLEARANCE

- (a) Check only those valves indicated in the illustration.
 - Using a feeler 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.

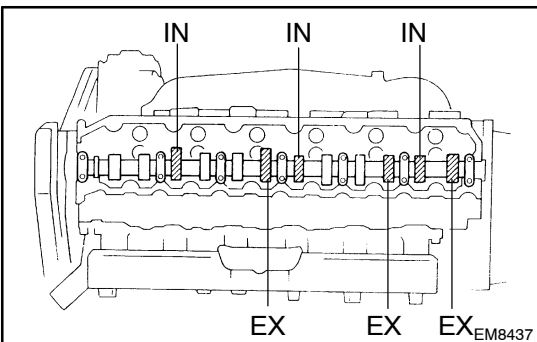
Valve clearance (Cold):

Intake

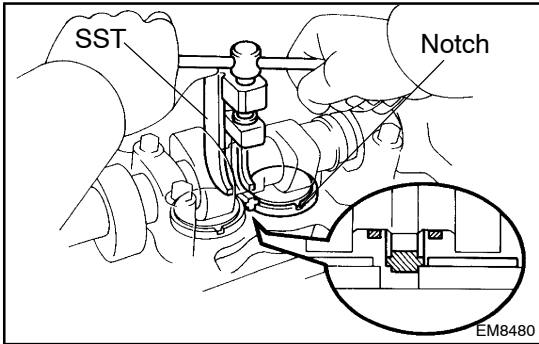
0.15 – 0.25 mm (0.006 – 0.010 in.)

Exhaust

0.35 – 0.45 mm (0.014 – 0.018 in.)



- (b) Turn the crankshaft one revolution (360°) and align the mark as above (See step 3).
- (c) Check only the valves indicated in the illustration. Measure the valve clearance (See step 3).



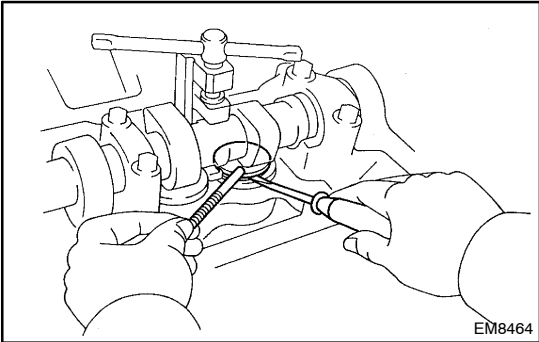
(d) Remove the adjusting shim.

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

SST 09248-64011

HINT:

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



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

(e) Determine the replacement adjusting shim size by using following Formula or Charts.

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

T..... Thickness of used shim

A..... Measured valve clearance

N..... Thickness of new shim

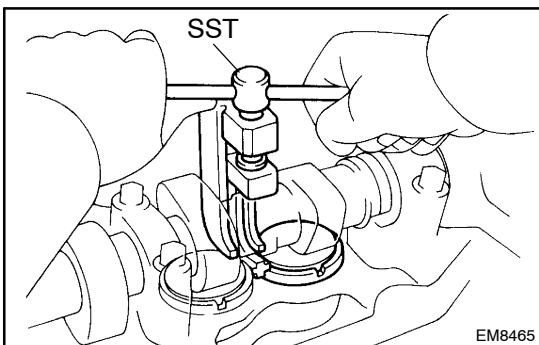
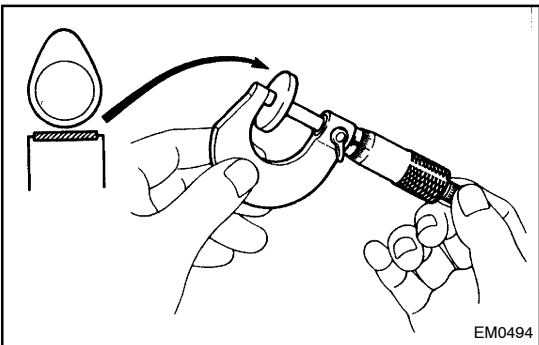
Intake $N = T + (A - 0.20 \text{ mm} (0.008 \text{ in.}))$

Exhaust $N = T + (A - 0.40 \text{ mm} (0.016 \text{ in.}))$

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

HINT:

Shims are available in twenty sizes in increments of 0.05 mm (0.0020 in.) from 2.35 mm (0.0925 in.) to 3.30 mm (0.1299 in.)



(f) Install a new adjusting shim.

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

SST 09248-64011

(g) Recheck the valve clearance.

5. REINSTALL CYLINDER HEAD COVER

(See page EM-66)

6. REINSTALL INTAKE PIPE ASSEMBLY

(See page EM-66)

Measured clearance mm (in.)	Installed shim thickness mm (in.)		New shim thickness mm (in.)	
	Shim No.	Thickness	Shim No.	Thickness
0.000 - 0.020 (0.0000 - 0.0008)	2	3.40 (0.0921)	709	2.35 (0.0925)
0.021 - 0.040 (0.0008 - 0.0016)		2.350 (0.0925)	704	2.40 (0.0945)
0.041 - 0.060 (0.0016 - 0.0024)		2.360 (0.0937)	710	2.45 (0.0965)
0.061 - 0.080 (0.0024 - 0.0031)		2.380 (0.0937)	709	2.50 (0.0984)
0.081 - 0.100 (0.0031 - 0.0039)		2.400 (0.0945)	704	2.55 (0.1004)
0.101 - 0.120 (0.0040 - 0.0047)		2.420 (0.0953)	710	2.60 (0.1024)
0.121 - 0.140 (0.0048 - 0.0055)		2.440 (0.0961)	709	2.65 (0.1043)
0.141 - 0.160 (0.0056 - 0.0059)		2.450 (0.0965)	704	2.70 (0.1063)
0.160 - 0.180 (0.0059 - 0.0068)		2.460 (0.0969)	710	2.75 (0.1083)
0.181 - 0.200 (0.0068 - 0.0076)		2.480 (0.0976)	709	2.80 (0.1102)
0.201 - 0.220 (0.0076 - 0.0084)		2.500 (0.0984)	704	2.85 (0.1121)
0.221 - 0.240 (0.0084 - 0.0092)		2.520 (0.0992)	710	2.90 (0.1142)
0.241 - 0.260 (0.0092 - 0.0100)		2.540 (0.1000)	709	2.95 (0.1161)
0.261 - 0.280 (0.0100 - 0.0108)		2.550 (0.1004)	704	3.00 (0.1181)
0.281 - 0.300 (0.0108 - 0.0116)		2.560 (0.1008)	710	3.05 (0.1201)
0.301 - 0.320 (0.0116 - 0.0125)		2.580 (0.1016)	709	3.080 (0.1213)
0.321 - 0.340 (0.0125 - 0.0134)		2.600 (0.1024)	704	3.100 (0.1220)
0.341 - 0.360 (0.0134 - 0.0142)		2.620 (0.1031)	710	3.120 (0.1228)
0.361 - 0.380 (0.0142 - 0.0150)		2.630 (0.1035)	709	3.140 (0.1236)
0.381 - 0.400 (0.0150 - 0.0157)		2.650 (0.1043)	704	3.150 (0.1240)
0.401 - 0.420 (0.0158 - 0.0165)		2.660 (0.1047)	710	3.160 (0.1244)
0.421 - 0.440 (0.0166 - 0.0173)		2.680 (0.1055)	709	3.180 (0.1252)
0.441 - 0.460 (0.0174 - 0.0181)		2.700 (0.1063)	704	3.200 (0.1260)
0.461 - 0.480 (0.0181 - 0.0189)		2.720 (0.1070)	710	3.220 (0.1268)
0.481 - 0.500 (0.0189 - 0.0197)		2.740 (0.1078)	709	3.240 (0.1276)
0.501 - 0.520 (0.0197 - 0.0205)		2.760 (0.1087)	704	3.250 (0.1280)
0.521 - 0.540 (0.0205 - 0.0213)		2.780 (0.1094)	710	3.260 (0.1283)
0.541 - 0.560 (0.0213 - 0.0220)		2.800 (0.1102)	709	3.280 (0.1291)
0.561 - 0.580 (0.0221 - 0.0228)		2.820 (0.1110)	704	3.300 (0.1299)
0.581 - 0.600 (0.0229 - 0.0236)		2.840 (0.1118)	710	
0.601 - 0.620 (0.0237 - 0.0244)		2.850 (0.1122)		
0.621 - 0.640 (0.0244 - 0.0252)		2.860 (0.1126)		
0.641 - 0.660 (0.0252 - 0.0260)		2.880 (0.1134)		
0.661 - 0.680 (0.0260 - 0.0268)		2.900 (0.1142)		
0.681 - 0.700 (0.0268 - 0.0276)		2.920 (0.1150)		
0.701 - 0.720 (0.0276 - 0.0283)		2.940 (0.1157)		
0.721 - 0.740 (0.0284 - 0.0291)		2.950 (0.1161)		
0.741 - 0.760 (0.0292 - 0.0299)		2.960 (0.1165)		
0.761 - 0.780 (0.0300 - 0.0307)		2.980 (0.1173)		
0.781 - 0.800 (0.0307 - 0.0315)		3.000 (0.1181)		
0.801 - 0.820 (0.0315 - 0.0323)		3.020 (0.1189)		
0.821 - 0.840 (0.0323 - 0.0331)		3.040 (0.1197)		
0.841 - 0.860 (0.0331 - 0.0339)		3.060 (0.1205)		
0.861 - 0.880 (0.0339 - 0.0346)		3.080 (0.1213)		
0.881 - 0.900 (0.0347 - 0.0354)		3.100 (0.1220)		
0.901 - 0.920 (0.0355 - 0.0362)		3.120 (0.1228)		
0.921 - 0.940 (0.0363 - 0.0370)		3.140 (0.1236)		
0.941 - 0.960 (0.0370 - 0.0378)		3.150 (0.1240)		

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 0.300 mm (0.0118 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.)	mm (in.)
0.000 - 0.020 (0.0000 - 0.0008)	2.340 (0.0921)	2.360 (0.0929)
0.021 - 0.040 (0.0008 - 0.0016)	2.360 (0.0929)	2.380 (0.0937)
0.041 - 0.060 (0.0016 - 0.0024)	2.380 (0.0937)	2.400 (0.0945)
0.061 - 0.080 (0.0024 - 0.0031)	2.400 (0.0945)	2.420 (0.0953)
0.081 - 0.100 (0.0032 - 0.0039)	2.420 (0.0953)	2.440 (0.0961)
0.101 - 0.120 (0.0040 - 0.0047)	2.440 (0.0961)	2.460 (0.0969)
0.121 - 0.140 (0.0048 - 0.0055)	2.460 (0.0969)	2.480 (0.0976)
0.141 - 0.160 (0.0056 - 0.0063)	2.480 (0.0976)	2.500 (0.0984)
0.161 - 0.180 (0.0063 - 0.0071)	2.500 (0.0984)	2.520 (0.0992)
0.181 - 0.200 (0.0071 - 0.0079)	2.520 (0.0992)	2.540 (0.1000)
0.201 - 0.220 (0.0079 - 0.0087)	2.540 (0.1000)	2.560 (0.1008)
0.221 - 0.240 (0.0087 - 0.0094)	2.560 (0.1008)	2.580 (0.1016)
0.241 - 0.260 (0.0095 - 0.0102)	2.580 (0.1016)	2.600 (0.1024)
0.261 - 0.280 (0.0103 - 0.0110)	2.600 (0.1024)	2.620 (0.1031)
0.281 - 0.300 (0.0111 - 0.0118)	2.620 (0.1031)	2.640 (0.1039)
0.301 - 0.320 (0.0119 - 0.0126)	2.640 (0.1039)	2.660 (0.1047)
0.321 - 0.340 (0.0126 - 0.0134)	2.660 (0.1047)	2.680 (0.1055)
0.341 - 0.360 (0.0134 - 0.0141)	2.680 (0.1055)	2.700 (0.1063)
0.361 - 0.380 (0.0142 - 0.0149)	2.700 (0.1063)	2.720 (0.1071)
0.381 - 0.400 (0.0149 - 0.0156)	2.720 (0.1071)	2.740 (0.1079)
0.401 - 0.420 (0.0157 - 0.0164)	2.740 (0.1079)	2.760 (0.1087)
0.421 - 0.440 (0.0165 - 0.0172)	2.760 (0.1087)	2.780 (0.1094)
0.441 - 0.460 (0.0173 - 0.0180)	2.780 (0.1094)	2.800 (0.1102)
0.461 - 0.480 (0.0181 - 0.0188)	2.800 (0.1102)	2.820 (0.1110)
0.481 - 0.500 (0.0189 - 0.0197)	2.820 (0.1110)	2.840 (0.1118)
0.501 - 0.520 (0.0197 - 0.0205)	2.840 (0.1118)	2.860 (0.1126)
0.521 - 0.540 (0.0205 - 0.0213)	2.860 (0.1126)	2.880 (0.1134)
0.541 - 0.560 (0.0213 - 0.0222)	2.880 (0.1134)	2.900 (0.1142)
0.561 - 0.580 (0.0221 - 0.0228)	2.900 (0.1142)	2.920 (0.1150)
0.581 - 0.600 (0.0229 - 0.0236)	2.920 (0.1150)	2.940 (0.1157)
0.601 - 0.620 (0.0237 - 0.0244)	2.940 (0.1157)	2.960 (0.1165)
0.621 - 0.640 (0.0244 - 0.0252)	2.960 (0.1165)	2.980 (0.1173)
0.641 - 0.660 (0.0252 - 0.0260)	2.980 (0.1173)	3.000 (0.1181)
0.661 - 0.680 (0.0260 - 0.0268)	3.000 (0.1181)	3.020 (0.1189)
0.681 - 0.700 (0.0268 - 0.0276)	3.020 (0.1189)	3.040 (0.1197)
0.701 - 0.720 (0.0276 - 0.0283)	3.040 (0.1197)	3.060 (0.1205)
0.721 - 0.740 (0.0284 - 0.0291)	3.060 (0.1205)	3.080 (0.1213)
0.741 - 0.760 (0.0292 - 0.0299)	3.080 (0.1213)	3.100 (0.1220)
0.761 - 0.780 (0.0300 - 0.0307)	3.100 (0.1220)	3.120 (0.1228)
0.781 - 0.800 (0.0307 - 0.0315)	3.120 (0.1228)	3.140 (0.1236)
0.801 - 0.820 (0.0315 - 0.0323)	3.140 (0.1236)	3.160 (0.1244)
0.821 - 0.840 (0.0323 - 0.0331)	3.160 (0.1244)	3.180 (0.1252)
0.841 - 0.860 (0.0331 - 0.0339)	3.180 (0.1252)	3.200 (0.1260)
0.861 - 0.880 (0.0339 - 0.0346)	3.200 (0.1260)	3.220 (0.1268)
0.881 - 0.900 (0.0347 - 0.0354)	3.220 (0.1268)	3.240 (0.1276)
0.901 - 0.920 (0.0355 - 0.0362)	3.240 (0.1276)	3.260 (0.1284)
0.921 - 0.940 (0.0363 - 0.0370)	3.260 (0.1284)	3.280 (0.1292)
0.941 - 0.960 (0.0370 - 0.0378)	3.280 (0.1292)	3.300 (0.1299)
0.961 - 0.980 (0.0378 - 0.0386)	3.300 (0.1299)	
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)		

Exhaust valve clearance (Cold):
0.35 – 0.45 mm (0.014 – 0.018 in.)

EXAMPLE: The 2.800 mm (0.1102 in.) shim is installed and the measured clearance is 0.300 mm (0.0118 in.). Replace the 2.800 mm (0.1102 in.) shim with a No. 11 shim.