ADJUSTMENT OF VALVE CLEARANCE

- HINT: Adjust the valve clearance while the engine is cold.
- 1. REMOVE INTAKE PIPE (See step 6 on page EM-34)
- 2. REMOVE CYLINDER HEAD COVER (See step 7 on page EM-35)

3. SET NO.1 CYLINDER TO TDC/COMPRESSION

- (a) Turn the crankshaft pulley clockwise, and align its groove with the timing gear cover groove.
- (b) (1PZ) Check that the valve lifters on the No.1 cylinder are loose and exhaust valve lifter on the No.5 cylinder is tight.
- (c) (1 HZ and 1HD-T) 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.

ADJUST VALVE CLEARANCE

4.

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

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Intake 0.15-0.25 mm (0.006-0.010 in.)
Exhaust 0.35-0.45 mm (0.014-0.018 in.)
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- (b) Turn the crankshaft one revolution (360°), and align the mark as above (See procedure step 3).
- (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 09248-64011

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 value.
 - T.....Thickness of used shim A.....Measured valve clearance
 - N.....Thickness of new shim

Intake N = T + (A-0.20 mm (0.008 in.))Exhaust N = T + (A-0.40 mm (0.016 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 step 2 on page EM -38)
- 6. REINSTALL INTAKE PIPE (See step 3 on page EM-38)

tinte and a second a sec	126) 134) 134)	150) 157) 161) 165) 173) 181) 181) 181) 181) 187) 205)	213) 220) 228) 236)	244) 244) 266) 268) 268) 268) 276) 283) 283) 283) 291)
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	6 46 46 26	26 47 47 47 47 31 31 48 48 48	48 36 36 4	9 49 49 49 49 41 41 41 41
0.301 - 0.320 (0.0119 - 0.0126) 710 710 710 710 01 01 42 42 42 42 06 06 43 43 43 43 11 11 44 44 44 44 44 16 16 45 45 45 45 21 21 46 46 46	6 46 26 26	47 47 47 47 31 31 48 48 48 48	36 36 49 4	3 49 49 41 41 41
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0.421 - 0.440 (0.0166 - 0.0173) 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 16 45 45 45 21 21 21 46 46 46 22 26 47 47 47 3	1 31 31 48	48 48 36 36 36 49 49 49 41 41	41 41	
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0.901 - 0.920 0.0355 - 0.03621 47 47 47 31 31 48 48 48 48 48 48 48 48 49 49 49 49 49 41 41 41	No.	Thickness	No.	Ihickness
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1.021 - 1.040 (0.0402 - 0.0409) 48 36 36 36 49 49 49 41 41 41 41	/10	2.45 (0.0965)	46	2.95 (0.1161)
1.041 - 1.050 (0.0410 - 0.0417) 36 36 36 49 49 49 41 41 41 41	01	2.50 (0.0984)	26	3.00 (0.1181)
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1.161 - 1.180 (0.0457 - 0.0465) 41 41 41	11	2 70 (0 1062)	36	3 20 (0 1260)
1.181 - 1.200 (0.0465 - 0.0472) 41 41		2.70 (0.1003)	30	3.20 (0.1200)
1.201 - 1.210 (MAH/3 - UAH/0) 41	44	2.75 (0.1083)	49	3.25 (0.1280)
	16	2.80 (0.1102)	41	3.30 (0.1299)

Adjusting Shim Selection Using 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 0.300 mm (0.0118 in.). Replace the 2.800 mm (0.1102 in.) shim with a No.21 shim.

	1122 1126 1126 11126 11126 11122 11123 111123 111123 11123 11123 11123 11123 11123 1
Measured 04 06 08 08 02 04 05 08 08 02 04 06 08 08 02 04 05 08 08 08 02 04 05 08 08 08 08 08 08 08 08 08 08 08 08 08	80 80<
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0.021 - 0.040 (0.0008 - 0.0018)	01 01 01 42 42 42 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 16 45 45 45 21 21 21 46
0.041 - 0.060 (0.0016 - 0.0024) 709 709 709 709 709 709 709 709 709 709	01 01 42 42 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 45 45 45 45 21 21 21 46 46
0.061 - 0.080 (0.0024 - 0.0031) 709/209/209/209/209/209/209/209/209/209/2	01 42 42 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 16 45 45 45 21 21 21 46 46 46
0.081 - 0.100 (0.0032 - 0.0039) 709/709/704 704 710/710/710 01 01 42	42 42 42 06 06 43 43 43 43 11 11 44 44 44 44 16 16 16 45 45 45 45 21 21 46 46 46 46 26
0.101 - 0.120 0.0040 - 0.00471 7071071071071071071071071071071071071071	42 42 06 06 43 43 43 43 11 11 44 44 44 44 16 16 45 45 45 45 21 21 46 46 46 46 48 28 28
0121 0140 0048 0 0055	
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0.141 - 0.160 (0.0056 - 0.0063) 709/709/709/709/709/701/710/710/710/710/710/710/710/710/710	06 06 43 43 43 11 11 11 44 44 44 16 16 16 45 45 45 21 21 21 46 46 46 26 26 26 47 47
0.161 - 0.180 (0.0063 - 0.0071)	06 43 43 43 11 11 11 11 44 44 44 16 16 16 45 45 45 21 21 21 46 46 46 26 26 26 47 47 47
0.0181 - 0.200 (0.0071 - 0.0079) 709709709709709709709704704710710710710 01 01 42 42 42 42 42 06 06 43	43 43 43 11 11 44 44 44 44 18 16 16 45 45 45 21 21 46 46 46 46 26 26 47 47 47 47 31
0.201 - 0.220 (0.0079 - 0.0087) 7097097097097097097097097097097097097097	43 43 11 11 44 44 44 44 16 16 45 45 45 45 21 21 46 48 46 46 28 28 47 47 47 47 31 31
0.221 0.240 (0.0027 0.0094) 200 200 200 200 200 200 200 200 200 20	11 11 11 44 44 44 16 16 16 46 45 45 11 21 21 46 46 46 26 26 26 47 47 47 21 21 21 40
0.241 - 0.260 (0.0055 - 0.0102) 709 709 709 709 709 709 709 709 709 709	11 11 44 44 44 16 16 16 45 45 45 21 21 21 46 46 46 26 26 26 47 47 47 31 31 31 48 48
0.261 - 0.280 (0.0103 - 0.0110) 709/709/709/709/709/709/704/704/704/710/710/710 01 01 01 42 42 42 40 06 06 43 43 43 11 11	11 44 44 44 16 16 16 45 45 45 21 21 21 21 46 46 46 26 26 26 47 47 47 31 31 31 48 48 48
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0.301 - 0.320 (0.0119 - 0.0126) 709/709/709/709/709/709/704/704/710/710/710/710 01 01 42 42 42 42 06 06 43 43 43 43 11 11 44 44	44 44 16 16 45 45 45 45 21 21 46 46 46 46 26 26 47 47 47 47 31 31 48 48 48 48 48 36 36
0.221 0.240 (0.0126 0.0124) 700 700 700 700 700 700 700 700 700 70	18 18 18 45 45 45 21 21 21 48 46 48 26 28 28 47 47 47 21 21 21 49 49 49 28 28 40
0.341 - 0.349 (0.0134 - 0.0137) 709/09/09/09/09/09/09/04/704/704/710/710/710/710/1 01 01 01 42 42 06 06 06 06 43 43 11 11 11 11 11 44 44 16	16 16 16 45 45 21 21 21 21 46 46 26 26 26 26 47 47 31 31 31 31 48 48 36 36 36 36 49
0.350 - 0.450 (0.0138 - 0.0179)	
0.451 - 0.460 (0.0178 - 0.0181) 704 704 704 704 710 710 710 01 01 01 42 42 42 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 45 45 45 45 21	21 21 46 46 46 46 26 26 26 47 47 47 31 31 31 48 48 48 36 36 36 49 49 49 49 41 41 41 41
0.461 - 0.480 (0.0181 - 0.0189) 704 704 704 710 710 710 01 01 01 42 42 42 06 06 06 43 43 43 11 11 11 44 44 44 16 16 16 16 45 45 45 45 21 21	21 46 46 46 26 26 26 47 47 47 31 31 31 48 48 48 36 36 36 49 49 49 41 41 41 41 41
0.481 - 0.500 (0.0189 - 0.0197) 710 710 710 710 710 01 01 42 42 42 42 06 06 43 43 43 43 11 11 44 44 44 44 16 16 45 45 45 45 45 21 21 46	46 46 46 26 26 47 47 47 47 47 31 31 48 48 48 48 48 36 36 49 49 49 49 49 41 41 41 41
	A6 A6 26 26 47 47 47 47 11 21 48 48 48 48 28 28 28 40 40 40 41 41 41
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0.581 - 0.600 10.0229 - 0.02361 42 42 42 42 42 40 60 64 43 43 43 43 11 11 44 44 44 44 44 16 16 45 45 45 45 45 21 21 46 46 46 46 46 26 26 47	47 47 47 31 31 48 48 48 48 36 36 49 49 49 49 41 41 41 41
0 601 - 0 620 0 0237 - 0 02440 42 42 42 06 06 43 43 43 11 11 44 44 44 44 44 16 16 45 45 45 45 12 21 46 46 46 46 46 26 26 47 47	47 47 31 31 48 48 48 36 36 49 49 49 49 41 41 41 41
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0.661 - 0.680 (0.0260 - 0.0268) 06 06 43 43 43 11 11 11 14 44 44 16 16 16 16 45 45 45 45 21 21 21 21 46 46 46 26 26 26 47 47 47 31 31	31 48 48 48 36 36 36 49 49 49 41 41 41 41
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	20 20 40 40 41 41 41 41
U.741 - U.7bU (U.U232 - U.U239) 11 11 11 44 44 44 16 16 16 16 45 45 45 21 21 21 46 45 46 20 20 20 20 47 47 47 31 31 31 40 40 40 30	
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0.801 - 0.820 0.0315 - 0.0323 44 44 44 16 16 45 45 45 45 21 21 21 46 46 46 46 26 26 47 47 47 47 47 41 31 31 48 48 48 48 48 36 36 49 49	
	49 49 41 41 41
0.821 - 0.840 (0.0323 - 0.0331) 44 16 16 16 45 45 45 21 21 21 46 46 46 26 26 26 47 47 47 31 31 31 48 48 48 48 48 36 36 36 49 49	49 49 41 41 41 49 41 41 41
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0.821 0.840 0.0322 0.0331 4 16 16 45 45 45 21 </th <th>48 41 41 41 48 41 41 41 41</th>	48 41 41 41 48 41 41 41 41
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Adjusting Shim Selection Using Chart (Exhaust)

snim 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.