FM11I-01

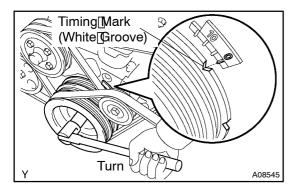
ADJUSTMENT

HINT:

Inspect@and@adjust@he@alve@learance@when@the@engine@s@old.

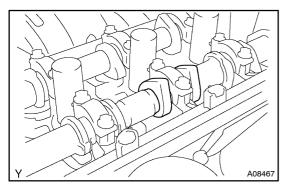
- 1. REMOVE NO.1 ENGINE UNDER COVER
- 2. DRAIN ENGINE COOLANT
- 3. REMOVE AIR CLEANER INLET
- 4. REMOVE AIR CLEANER ASSEMBLY
- 5. REMOVE PCV HOSE
- 6. REMOVE NO.2 CYLINDER HEAD COVER
- 7. DISCONNECTENGINE WIRE FROM CYLINDER HEAD
- 8. REMOVE[IGNITION[COILS[See[page[IG-6]]
- 9. REMOVE SPARK PLUGS (See page G-1)
- 10. REMOVE NO.3 WATER BYPASS PIPE
- 11. REMOVE AIR CLEANER INLET DUCT BRACKET
- 12. REMOVE CYLINDER HEAD COVER

Remove the 11 bolts, cylinder head cover and gasket.



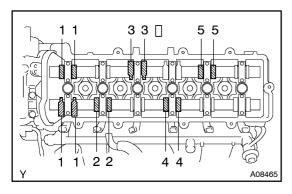
13. SET NO.1 CYLINDER TO TDC/COMPRESSION

(a) Turn the crankshaft pulley, and align the timing mark (white groove) with the timing mark "0" of the No.1 timing belt cover.



(b) Check that the No.4 cylinder cam lobes of the intake camshaft faces nearly straight up.

If not, revolve the crankshaft 1 (360°) and align the mark as above.



14. INSPECT VALVE CLEARANCE

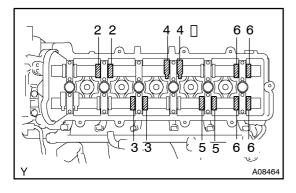
- (a) Check only those valves indicated in the illustration.
 - (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
 - (2) Record the out-of-specification valve clearance measurements. They will be used later to determine the required replacement valve lifter.

LEXUS[]S200[] (RM684E)

Valvectlearance(Cold):

Intake	0.15 -[0.25[mm[[0.006 -[0.010[in.)
Exhaust	0.25 -[0.35[mm[[0.010 -[0.014[]n.)

(b) Turn[the[crankshaft[one[revolution[360])[and[align[the mark[as[above.]



- (c) Check only the valves indicated as shown. Measure the valve bearance. See procedure in step (a)
- 15. REMOVE[RADIATOR[ASSEMBLY[See]page[CO-16])
- 16. REMOVE DRIVE BELT FOR A/C COMPRESSOR (See page AC-17)
- 17. REMOVE DRIVE BELT FOR ALTERNATOR (See page CH-6)

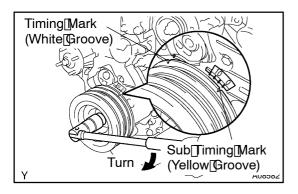
HINT:

Before removing the drive belt, loosen the 4 fan pulley nuts.

- 18. REMOVE DRIVE BELT FOR PS VANE PUMP (See page \$R-27)
- 19. REMOVE FAN SPACER AND PULLEY
- 20. REMOVE NO.2 TIMING BELT COVER

Remove the 4 bolts, timing belt cover and gasket.

21. REMOVE NO.4 TIMING BELT COVER

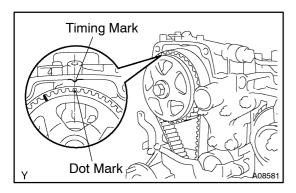


22. SET NO.1 CYLINDER TO APPROX. 60° BTDC/COM-PRESSION

(a) Turn the crankshaft pulley, and align the sub timing mark (yellow groove – 60° mark BTDC) with the timing mark "0" of the No.1 timing belt cover.

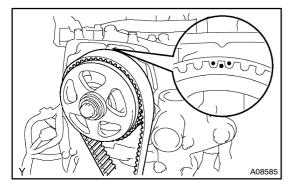
NOTICE:

- Always turn the crankshaft clockwise.
- If the timing belt is disengaged, having the crankshaft pulley at the wrong angle can cause the piston head and valve head to come into contact with each other. Thus results in damage when you remove the camshaft iming pulley See page EM-59). So, always set the crankshaft pulley at the correct angle.



(b) Check that the dot mark (60° mark BTDC) of the camshaft timing pulley is aligned with the timing mark of the No.1 bearing cap.

If not, revolve the crankshaft 1 (360°).

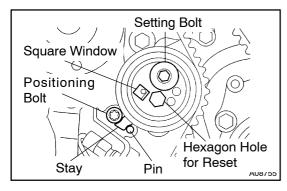


23. DISCONNECT TIMING BELT FROM CAMSHAFT TIM-ING PULLEY

HINT:

When re-using timing belt:

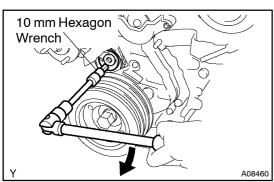
Place the matching marks on the timing belt and the camshaft timing pulley as shown in the illustration.



(a) Using a 10 mm hexagon wrench, insert the auto tensioner rod inside of the No.1 idler pulley to the hexagon hole for reset in the No.1 idler pulley.

NOTICE:

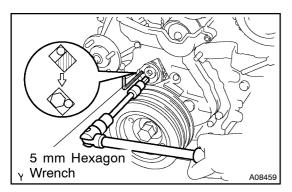
Must not apply torque with more than 39 N·m (400 kgf·cm, 29 ft·lbf).



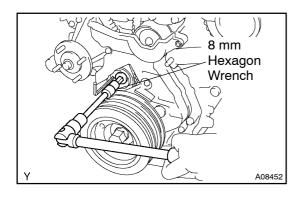
(b) After confirming the movement of the pin inside the square window, insert a 5 mm hexagon wrench.

HINT:

Be sure to insert the wrench only after you feel the knocking while inserting the auto tensioner.



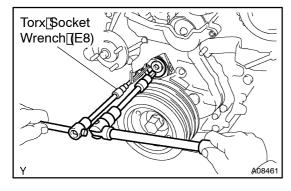
LEXUS IS200 (RM684E)



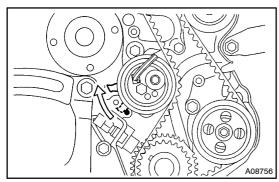
(c) Using a mmhexagon wrench, oosen he bolt fhe No.1 der bulley timing belt ensioner).

NOTICE:

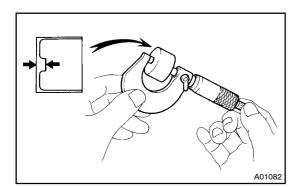
Least[necessary[losing[]s[required[only[]to[move[]the[]No.1 idler[pulley.



(d) Using an Omm hexagon wrench, keep holding he No.1 idler pulley jghtly toward the direction of tensing and take out the positioning of this ing a forx socket wrench E8).



- (e) Move[the[No.1]]dler[bulley[by[hand[toward[the[direction of[loosening[the[timing[belt.
- (f) Disconnect in e im ing belt in ing pullev.
- 24. REMOVE CAMSHAFT TIMING PULLEY AND CAMSHAFTS (See page EM-36)
- 25. ADJUST VALVE CLEARANCE
- (a) Remove the valve fifter.



- (b) Determine the replacement valve ifter size by following the Formula or Charts:
 - (1) Using a micrometer, measure the thickness of the removed valve of th
 - (2) Calculate[the[thickness[bf[a[new]]ifter[so[that[the valve[clearance[comes[within[specified[value.

T..........Thickness of removed valve lifter

A[].....[Measured[valve[clearance

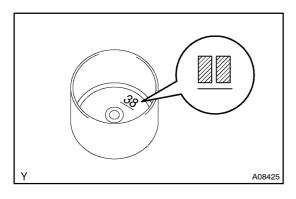
N∏......∏Thickness[\phif\new[\valve|]ifter

Intake:[N]=[T]-[(A -[0.20[mm[(0.008[in.)) Exhaust:[N]=[T]-[(A -[0.30[mm[(0.012[in.))

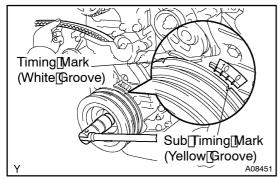
(3) Selectanew valve lifter with a thickness as close as possible to the calculated value.

HINT:

 Valve lifters are available in 35 sizes in increments of 0.020 mm (0.0008 in.), from 5.060 mm (0.1992 in.) to 5.740 mm (0.2260 in.).



- Identification number inside the valve lifter shows the value of the two decimal places. (The illustration shows 5.380 mm (0.2118 in.).)
- (c) Install a new valve lifter.
- 26. REINSTALL CAMSHAFTS AND CAMSHAFT TIMING PULLEY (See page EM-59)
- 27. RECHECK VALVE CLEARANCE



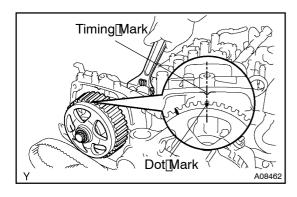
28. RESET NO.1 CYLINDER TO APPROX. 60° BTDC/ COMPRESSION

(a) Crankshaft Pulley Position:

Turn the crankshaft pulley, and align the sub timing mark

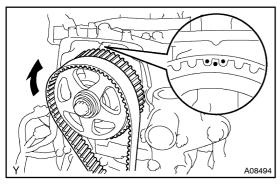
(vollow groups, 60° mark PTDC) with the timing mark "0"

(yellow groove – 60° mark BTDC) with the timing mark "0" of the No.1 timing belt cover.



(b) Camshaft Timing Pulley Position:

Using the hexagon portion of the camshaft, turn the camshaft, align the dot mark (60° mark BTDC) of the camshaft timing pulley with the timing mark of the No.1 bearing cap.



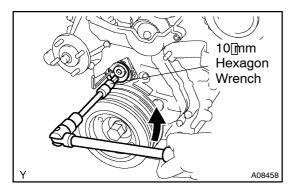
29. RECONNECT TIMING BELT TO CAMSHAFT TIMING PULLEY

(a) Install the timing belt, check the tension between the crankshaft timing pulley, oil pump pulley, No.2 idler pulley and camshaft timing pulley.

HINT:

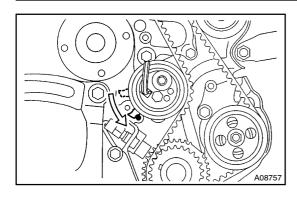
When re-using timing belt:

Align the marked points during removal.

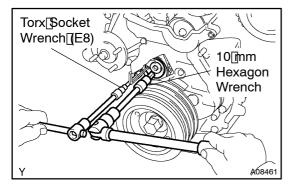


(b) Using a 10 mm hexagon wrench, keep holding the No.1 idler pulley toward the direction of tensing the timing belt.

LEXUS IS200 (RM684E)



(c) Aftprconfining fat factoring of factoring touches the pin, install the positioning old by fand.

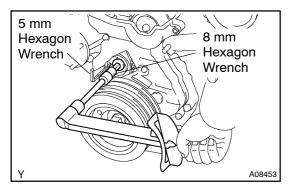


(d) Using allorx socket wrench E8), ighten the positioning bolt.

Torque: [8[N·m[[80[kgf·cm,[69[in.·lbf]

NOTICE:

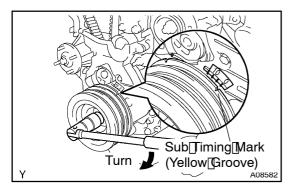
Becareful motito allow the bolt to come onto the stay of the No.1 idler pulley.



(e) Using a B mm hexagon wrench, tighten the bolt of the No.1 der bulley timing belt ensioner).

Torque: 42.5 N·m (425 kgf·cm, 31 ft·lbf)

(f) Take[the[st]mm[hexagon[wrench[for[lock[out[of[the[square window.

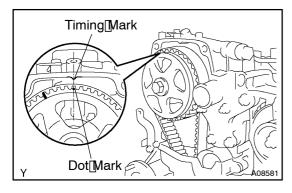


30. CHECK VALVE TIMING

(a) Slowly revolve the rankshaft [2] mes, and align the bub timing mark yellow groove - 60° mark BTDC) with the timing nark 0" of the No.1 iming belt over.

NOTICE:

Always[turn[the crankshaft clockwise.



- (b) Check[that[the[dot[mark[]60[mark[BTDC)]of[the[amshaft timing[pulley[]s[aligned[with[]the[]timing[mark[of[]the[]No.1 bearing[cap.
- 31. REINSTALL NO.4 TIMING BELT COVER
- 32. REINSTALL NO.2 TIMING BELT COVER
- (a) Install the gasket to the timing belt cover.
- (b) Install the timing belt cover with the 4 bolts.

Torque: 6 N·m (60 kgf·cm, 52 in.·lbf)

33. REINSTALL CYLINDER HEAD COVER (See page EM-59)

LEXUS[]S200[] (RM684E)

- 34. REINSTALL AIR CLEANER INLET DUCT BRACKET Torque: 18.5 N·m (190 kgf·cm, 14 ft·lbf)
- 35. REINSTALL[NO.3[WATER[BYPASS[PIPE Torque:[8.5[N·m[]85[kgf·cm,[]74]]n.·lbf)
- 36. REINSTALL SPARK PLUGS See page G-1)
- 37. REINSTALL GNITION COILS See page G-6)
- 38. RECONNECT ENGINE WIRE TO CYLINDER HEAD
- 39. REINSTALL NO.2 CYLINDER HEAD COVER Torque: 8.5 N·m (85 kgf·cm, 74 in.·lbf)
- 40. REINSTALL PCV HOSE
- 41. REINSTALL FAN PULLEY AND SPACER HINT:

Temporarily install the 4 nuts.

- 42. REINSTALL DRIVE BELT FOR PS VANE PUMP (See page \$R-37)
- 43. REINSTALL DRIVE BELT FOR ALTERNATOR (See page CH-15)
- 44. REINSTALL DRIVE BELT FOR A/C COMPRESSOR (See page AC-18)
- 45. RETIGHTEN MOUNTING NUTS OF FAN PULLEY AND SPACER
 - Torque: 18.5 N·m (185 kgf·cm, 13 ft·lbf)
- 46. REINSTALL RADIATOR ASSEMBLY (See page CO-21)
- 47. REINSTALL AIR CLEANER ASSEMBLY Torque: 7.5 N·m (75 kgf·cm, 65 in.·lbf)
- 48. REINSTALL AIR CLEANER INLET Torque: 5 N·m (50 kgf·cm, 43 in.·lbf)
- 49. REFILL ENGINE WITH COOLANT
- 50. START ENGINE CHECK FOR LEAK
- 51. REINSTALL NO.1 ENGINE UNDER COVER
- 52. ROAD TEST

Check abnormal noise, shock, slippage, correct shift points and smooth operation.

53. RECHECK ENGINE COOLANT LEVEL

5.720 (0.2252) 5.740 (0.2260)

5.480 (0.2157)

5.240 (0.2063)

5.260 (0.2071)

5.500 (0.2165) 5.520 (0.2173)

5.280 (0.2079)

8

Replace the 5.250 mm (0.2067 in.) lifter with a new No. 48 lifter.

5.700 (0.2244)

5 2 4

5.460 (0.2150)

5.220 (0.2055)

24 | 25 | 26 | 26 |

Valve Lifter Selection Chart (Intake)

5.600 (0.2205) 5.620 (0.2213) 5.660 (0.2228) 5.540 (0.2181) 5.560 (0.2189) 5.580 (0.2197) 5.640 (0.2220) 5.680 (0.2236) mm (in.) Thickness New lifter thickness Lifter No. 54 56 58 9 62 64 99 89 5.360 (0.2110) 5.300 (0.2087) 5.340 (0.2102) 5.380 (0.2118) 5.400 (0.2126) 5.420 (0.2134) 5.440 (0.2142) 5.320 (0.2094) Thickness (Sass.o) 0st.a 4 & & & 64 64 66 66 74 (++ss.0) 007.8 K K K K K K K K 74 5.680 (0.2236) 4 4 4 5.660 (0.2228) 48 50 54 56 58 60 72 74 74 72 74 74 (OSSS.0) 04-8.2 A & & C C 7 7 7 8 8 70 (E1SS.0) 0Sa.2 4 4 8 8 0 2 2 4 8 68 72 72 47 44 74 74 74 Lifter No. 32 34 36 38 4 42 44 30 74 74 74 74 74 74 74 74 68 2 72 99 72 70 89 99 5.120 (0.2016) 5.080 (0.2000) 5.100 (0.2008) 5.140 (0.2024) 5.160 (0.2031) 5.200 (0.2047) 5.060 (0.1992) 5.180 (0.2039) (Tets.0) 088.8 8 8 8 8 8 8 64 68 68 68 70 72 74 74 74 Thickness 04 44 44 65 55 55 55 (e81s.0) 093.2 % 4 4 4 & 4 0 74 (381S.0) 033.3 % 4 4 4 & & C 66 66 68 68 72 74 74 74 74 62 (1812.0) 043.3 8 8 4 4 4 8 60 64 64 68 68 72 74 74 74 74 5 4 8 8 (7712.0) 066.8 36 88 88 4 62 49 72 72 74 58 60 62 64 66 68 70 70 72 74 74 9 42 4 16 8 90 80 20 g (6912.0) 013.8 (3912.0) 003.3 32 8 8 8 4 4 4 26 28 72 74 58 60 66 66 68 68 77 77 77 74 74 (rars.o) 0et.a % % % % % 4 4 26 (Tats.0) 084.a 8 8 8 4 4 6.470 (0.2154) (021S.0) 084.2 & 8 & 8 & 8 & 4 5 5 6 7</t (3412.0) 034.3 8 8 8 8 4 52 (S412.0) 044.2 8 8 8 8 8 8 6:430 (0:2138) 26 30 8 8 8 8 56 58 62 68 68 70 72 8 8 8 8 8 8 8 48 6.410 (0.2130) 4 8 8 8 8 8 8 48 20 (9212.0) 004.2 54 52 56 62 64 68 68 68 83 48 50 60 </tr (SS1S.0) 006.8 % 4 % % % % % % 46 44 46 47 48 48 48 48 48 49 40 </tr (8ffs.0) 086.8 S S S S S S S 5.370 (0.2114) 46 48 4 (OTTS.0) 036.8 & 8 8 8 8 8 4</t 44 44 48 48 48 68 49 68 60 69 7 7 7 7 8 99 8 99 8 99 8 99 8 99 8 99 8 99 8 99</ (5015.0) 046.8 3 4 46 46 47 48 48 49 49 40 </tr 16 18 22 22 24 28 28 8 (8602.0) 088.3 16 18 22 22 28 (\$e0S.0) OSE.8 4 6 6 8 8 8 8 38 (1605.0) 015.3 40 38 (5802.0) 006.2 ŭ 4 16 85 82 84 36 12 14 16 18 18 20 22 22 24 6.290 (0.2083) (6702.0) 085.3 01 21 4 12 02 22 38 38 40 </tr (RTOS.0) 09S.8 8 5 51 4 6 8 8 (8TOS.0) 07S.8 5 5 4 6 8 8 2 9 36 37 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 48 49< (Taos.o) 03s.a & 5 5 4 6 8 8 38 38 38 38 40 </tr 6.240 (0.2063) (e30s.0) 0es.a 8 8 5 5 4 6 6 72 78 74 (880S.0) 0SS.8 8 8 8 5 5 4 4 6 88 (1502.0) 012.3 38 38 38 38 40 </tr 8 30 98 99 92 5 4 36 60 62 64 66 68 68 77 (740S.0) 00S.8 33 88 06 06 06 12 12 (6505.0) 081.3 24 (1605.0) 091.3 8 8 8 6 22 23 24 25 26 26 27 27 28 </tr 5.140 (0.2024) 98 98 98 8 ଷ 6.120 (0.2016) 9 9 9 18 20 20 22 24 28 28 28 28 30 30 30 33 31 34 40 72 74 74 (8002.0) 001.3 8 8 72 74 74 20 7 4 7 (000S.0) 080.8 8 4 2 89 (\$661.0) 080.8 thickness 0.271 - 0.290 (0.0107 - 0.0114) -0.370 (0.0138 -0.0146) 0.411 - 0.430 (0.0162 - 0.0169)-0.050 (0.0012 -0.0020) - 0.070 (0.0020 - 0.0028) - 0.350 (0.0130 - 0.0138) 0.371 - 0.390 (0.0146 - 0.0154) 0.431 - 0.450 (0.0170 - 0.0177) 0.571 - 0.590 (0.0225 - 0.0232) 0.591 - 0.610 (0.0233 - 0.0240) 0.671 - 0.690 (0.0264 - 0.0272) -0.750 (0.0288 - 0.0295) 0.811 - 0.830 (0.0319 - 0.0327) - 0.310 (0.0115 - 0.0122) lifter -0.110 (0.0036 -- 0.710 (0.0272 -0.771 - 0.790 (0.0304 -0.130 (0.0044 0.410 (0.0154 -0.470 (0.0178 -00000.0) 060.0 0.090 (0.0028 0.149 (0.0052 -0.250 (0.0059 -0.330 (0.0122 - 0.490 (0.0185 -- 0.530 (0.0201 -- 0.570 (0.0217 -0.611 - 0.630 (0.0241 -- 0.650 (0.0248 - 0.670 (0.0256 -0.730 (0.0280 -0.770 (0.0296 -0.831 - 0.850 (0.0327 -0.910 (0.0351 -0.911 - 0.930 (0.0359 - 0.550 (0.0209 - 0.810 (0.0311 nstalled Measured clearance mm (in.) 0.711 -0.111 0.511 0.031 0.131 0.150 0.351 0.391 0.451 0.551 0.631 0.651 0.731 0.751 0.051 0.071 0.091 0.251 0.291 0.311 0.331 0.471 0.491 0.531 0.691 0.791 0.851 0.871 0.891

A01234

Valve Lifter Selection Chart (Exhaust)

sss mm (in.)	Thickness	5.540 (0.2181)	5.560 (0.2189)	5.580 (0.2197)	5.600 (0.2205)	5.620 (0.2213)	5.640 (0.2220)	5.660 (0.2228)	5.680 (0.2236)	5.700 (0.2244)	5.720 (0.2252)	5.740 (0.2260)
thickne	Lifter No.	54	56	28	09	62	64	99	89	20	72	74
New lifter thickness	Thickness	5.300 (0.2087)	5.320 (0.2094)	5.340 (0.2102)	5.360 (0.2110)	5.380 (0.2118)	5.400 (0.2126)	5.420 (0.2134)	5.440 (0.2142)	5.460 (0.2150)	5.480 (0.2157)	5.500 (0.2165)
(c152.0) 058.6 4 8 8 4 4 4 4 8 9 9 4 4 4 8 9 9 6 6 4 4 4 8 9 9 6 6 4 4 4 8 9 9 8 4 4 4 8 9 9 9 9 8 9 8 4 4 4 8 9 9 9 9 9 8 9 4 4 4 8 9 9 9 9 9 9 9 9 9 9 9 8 9 8 4 4 4 8 9	Lifter No.	30	32	34	36	38	40	42	44	46	48	50
[815.0] 0.b3 8 8 8 8 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9	Thickness	5.060 (0.1992)	5.080 (0.2000)	5.100 (0.2008)	5.120 (0.2016)	5.140 (0.2024)	5.160 (0.2031)	5.180 (0.2039)	5.200 (0.2047)	5.220 (0.2055)	5.240 (0.2063)	5.260 (0.2071)
(CTIS.0) 0S38 2 8 8 8 8 8 8 8 8 8 9 9 8 8 9 9 8 8 9 9 8 8 9 9 8 8 9 8 8 8 8 8 8 8 8 8 8 8 8 8 9 8 9 9 8 9 9 8 <	Lifter No.	90	80	10	12	14	16	18	20	22	24	26
Composition Composition	42 44 46 48 50 50 52 52 54 54 56 56 58 58 60 0 62 62 62 64 64 66 66 68 68 70 70 72 72 72 44 46 48 60 62 52 54 54 56 56 58 58 60 0 62 62 64 64 66 66 68 68 70 70 72 72 72 72 74 46 48 48 60 52 52 54 54 55 56 58 58 60 60 62 62 64 64 66 66 68 68 70 70 72 72 72 74 74 74 74 74 74 74 74 74 74 74 74 74	48 150 152 5 4 5 6 5 6 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7	52 54 56 58 60 60 62 62 64 64 66 68 68 68 70 70 72 72 74 54 56 58 60 62 62 64 64 66 68 68 70 70 72 72 74 74 74	56 58 60 62 64 64 66 66 68 68 70 70 72 72 74 58 60 62 64 66 66 68 68 70 70 72 72 74 74 74	60 62 64 66 68 68 70 70 72 72 74 62 64 66 68 70 70 72 74 74 74 74	64 66 68 70 72 72 74 74 74 74 74 74 74 74 74 74 74 74 74	68 70 72 74 74 74 77 77 77 77 77 77 77 77 77 77	72 74 74 74 74 74 74 74 74 74 74 74 74 74	74 74 74	Exhalist valve clearance (Cold):		EXAMPLE: The 5.340 mm (0.2102 in.) lifter is installed, and the measured clearance is 0.440 mm (0.0173 in.)
(Seet. 0) 080.0 (0005.0) 080.0 (8005.0) 001.0 (8005.0) 001.0	36 38 40 38 40 38 40 42	42 44 46 44 46 44 46	44 46 48 46 48 50	48 50 52 50 52 54	52 54 56 58	0.791 - 0.810 (0.0311 - 0.0319) 56 58 60 62 0.0311 - 0.830 (0.0319 - 0.0327) 58 60 62 64	0.851 - 0.850 (0.0327 - 0.0335) 60 62 64 66 68 0.0551 - 0.870 (0.0335 - 0.0343) 62 64 66 68	0.871 - 0.890 (0.0343 - 0.0350) 64 66 68 70 0.891 - 0.910 (0.0351 - 0.0358) 66 68 70 72	0.931 - 0.950 (0.0359 - 0.0366) 68 70 72 74 74 0.931 - 0.950 (0.0367 - 0.0374) 70 72 74 74	0.951 - 0.970 (0.0374 - 0.0382) 72 74 74 74 74 74 0.0971 - 0.990 (0.0382 - 0.0390) 74 74 74	74 74	

A0123

5.520 (0.2173)

52

5.280 (0.2079)

28

the measured clearance is 0.440 mm (0.0173 in.). Replace the 5.340 mm (0.2102 in.) lifter with a new No. 48 lifter.