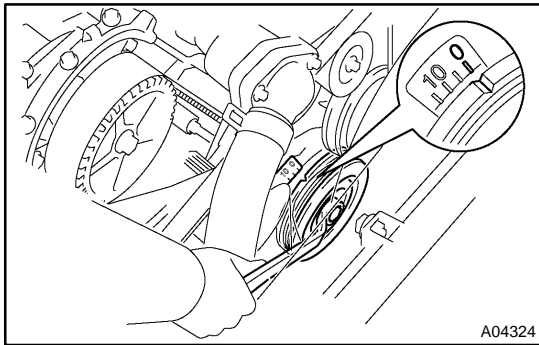


VALVE CLEARANCE (2UZ-FE)

14073-03

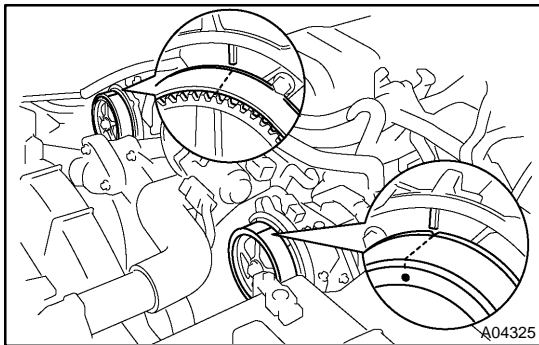
ADJUSTMENT

1. DRAIN ENGINE COOLANT (See page 16-5)
2. SEPARATE BATTERY NEGATIVE TERMINAL
3. REMOVE THROTTLE BODY COVER SUB-ASSY
4. REMOVE AIR CLEANER HOSE ASSY
5. REMOVE RADIATOR SUPPORT SEAL UPPER
6. REMOVE FAN AND GENERATOR V BELT (See page 14-5)
7. REMOVE OIL COOLER PIPE (See page 14-107)
8. REMOVE TIMING BELT COVER SUB-ASSY NO.3 LH (See page 14-107)
9. REMOVE TIMING CHAIN OR BELT COVER NO.2 (See page 14-107)
10. REMOVE CYLINDER HEAD COVER SUB-ASSY
 - (a) Remove the 9 bolts, 9 seal washers and cylinder head cover.
11. REMOVE CYLINDER HEAD COVER SUB-ASSY LH
 - (a) Disconnect the PCV hose.
 - (b) Remove the 9 bolts, 9 seal washers and cylinder head cover.

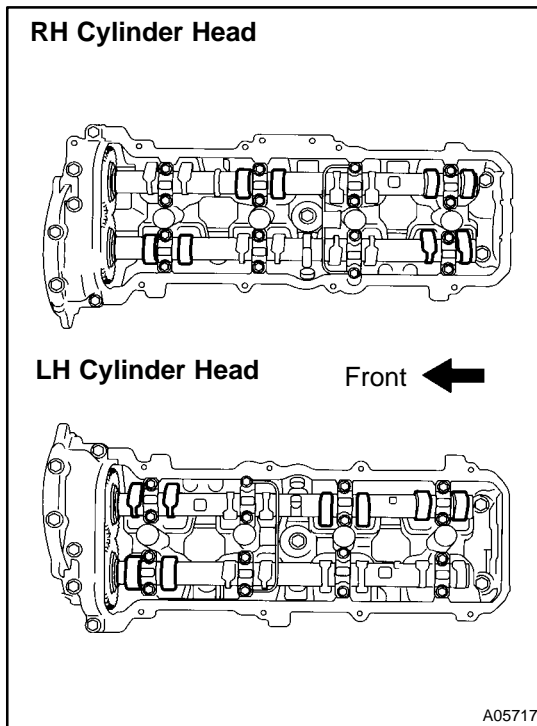


12. SET NO. 1 CYLINDER TO TDC/COMPRESSION

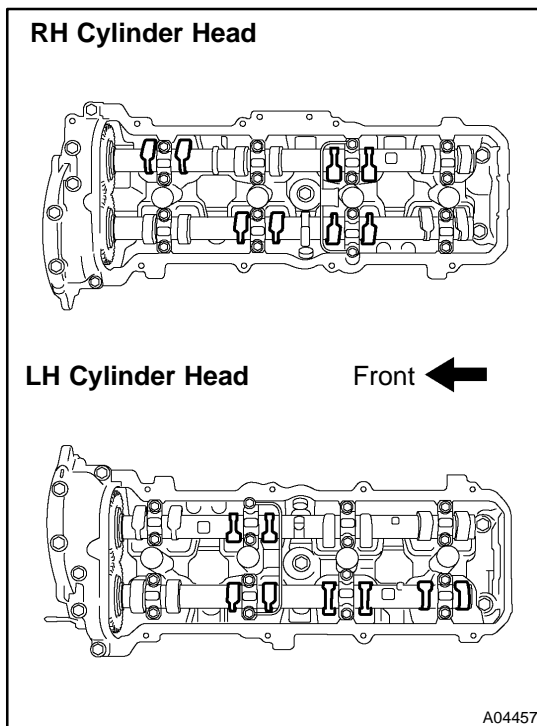
- (a) Turn the crankshaft pulley, and align its groove with timing mark "0" of the No. 1 timing belt cover.



- (b) Check that the timing marks of the camshaft timing pulleys and timing belt rear plates are aligned. If not, turn the crankshaft 1 revolution (360°) and align the mark as above.

**13. INSPECT VALVE CLEARANCE**

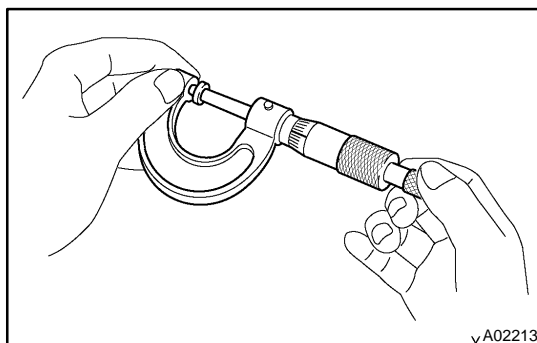
- (a) Check only the valves indicated.
- (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
 - (2) Record the out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjust shim.

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.)**

- (b) Turn the crankshaft 1 revolution (360°) and align the mark as above.
- (c) Check only the valves indicated as shown. Measure the valve clearance.

14. ADJUST VALVE CLEARANCE

- (a) Remove the timing belt (See page 14-107).
- (b) Remove the camshafts (RH Bank) (See page 14-132).
- (c) Remove the camshafts (LH Bank) (See page 14-141).
- (d) Remove the valve lifter and adjusting shim.



- (e) Determine the replacement adjusting shim size according to these Formula or Charts:
- (1) Using a micrometer, measure the thickness of the removed shim.
 - (2) Calculate the thickness of a new shim so that the valve clearance comes within the specified value.

T: Thickness of removed shim**A: Measured valve clearance****N: Thickness of new shim**

Intake:

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

Exhaust:

$$N = T + (A - 0.30 \text{ mm (0.012 in.)})$$

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

HINT:

Shims are available in 41 increments of 0.020 mm (0.0008 in.), from 2.00 mm (0.0787 in.) to 2.80 mm (0.1102 in.).

- (f) Place a new adjusting shim on the valve.
 - (g) Place the valve lifter.
 - (h) Reinstall the camshafts (LH Bank) (See page [14-141](#)).
 - (i) Reinstall the camshafts (RH Bank) (See page [14-132](#)).
 - (j) Reinstall the timing belt (See page [14-107](#)).
 - (k) Recheck the valve clearance.
- 15. **INSTALL CYLINDER HEAD COVER SUB-ASSY LH (See page [14-31](#))**
 - 16. **INSTALL CYLINDER HEAD COVER SUB-ASSY (See page [14-31](#))**
 - 17. **INSTALL TIMING CHAIN OR BELT COVER NO.2 (See page [14-107](#))**
 - 18. **INSTALL TIMING BELT COVER SUB-ASSY NO.3 LH (See page [14-107](#))**
 - 19. **INSTALL OIL COOLER PIPE (See page [14-107](#))**
 - 20. **INSTALL FAN AND GENERATOR V BELT (See page [14-5](#))**
 - 21. **INSTALL RADIATOR SUPPORT SEAL UPPER**
 - 22. **INSTALL AIR CLEANER HOSE ASSY**
 - 23. **INSTALL THROTTLE BODY COVER SUB-ASSY**
 - 24. **REFILL ENGINE COOLANT (See page [16-5](#))**

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

The 2.300mm (0.0906 in.) shim is installed, and the measured clearance is 0.440 mm (0.0173 in.). Replace the 2.300 mm (0.0906 in.) shim with a No. 54 shim.

00	2.000 (0.0787)	28	2.280 (0.0898)	56	2.560 (0.1008)
02	2.020 (0.0795)	30	2.300 (0.0906)	58	2.580 (0.1016)
04	2.040 (0.0803)	32	2.320 (0.0913)	60	2.600 (0.1024)
06	2.060 (0.0811)	34	2.340 (0.0921)	62	2.620 (0.1031)
08	2.080 (0.0819)	36	2.360 (0.0929)	64	2.640 (0.1039)
10	2.100 (0.0827)	38	2.380 (0.0937)	66	2.660 (0.1047)
12	2.120 (0.0835)	40	2.400 (0.0945)	68	2.680 (0.1055)
14	2.140 (0.0843)	42	2.420 (0.0953)	70	2.700 (0.1063)
16	2.160 (0.0850)	44	2.440 (0.0961)	72	2.720 (0.1071)
18	2.180 (0.0858)	46	2.460 (0.0969)	74	2.740 (0.1079)
20	2.200 (0.0866)	48	2.480 (0.0976)	76	2.760 (0.1087)
22	2.220 (0.0874)	50	2.500 (0.0984)	78	2.780 (0.1094)
24	2.240 (0.0882)	52	2.520 (0.0992)	80	2.800 (0.1102)
26	2.260 (0.0890)	54	2.540 (0.1000)		

	2.000 (0.0787)	2.020 (0.0795)	2.040 (0.0803)	2.060 (0.0811)	2.080 (0.0819)	2.100 (0.0827)	2.120 (0.0835)	2.140 (0.0843)	2.160 (0.0850)	2.180 (0.0858)	2.200 (0.0866)	2.210 (0.0870)	2.220 (0.0874)	2.230 (0.0878)	2.240 (0.0882)	2.250 (0.0886)	2.260 (0.0890)	2.270 (0.0894)	2.280 (0.0898)	2.290 (0.0902)	2.300 (0.0906)	2.310 (0.0909)	2.320 (0.0913)	2.330 (0.0917)	2.340 (0.0921)	2.350 (0.0925)	2.360 (0.0929)	2.370 (0.0933)	2.380 (0.0937)	2.390 (0.0941)	2.400 (0.0945)	2.410 (0.0949)	2.420 (0.0953)	2.430 (0.0957)	2.440 (0.0961)	2.450 (0.0965)	2.460 (0.0969)	2.470 (0.0972)	2.480 (0.0976)	2.490 (0.0980)	2.500 (0.0984)	2.510 (0.0988)	2.520 (0.0992)	2.530 (0.0996)	2.540 (0.1000)	2.550 (0.1004)	2.560 (0.1008)	2.570 (0.1012)	2.580 (0.1016)	2.590 (0.1020)	2.600 (0.1024)	2.620 (0.1031)	2.640 (0.1039)	2.660 (0.1047)	2.680 (0.1055)	2.700 (0.1063)	2.720 (0.1071)	2.740 (0.1079)	2.760 (0.1087)	2.780 (0.1094)	2.800 (0.1102)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
0.000-0.030 (0.0000-0.0012)							00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
0.031-0.050 (0.0012-0.0020)						00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
0.051-0.070 (0.0020-0.0028)					00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
0.071-0.090 (0.0028-0.0035)				00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
0.091-0.110 (0.0036-0.0043)			00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
0.111-0.130 (0.0044-0.0051)		00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
0.131-0.149 (0.0052-0.0059)		00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
0.150-0.250 (0.0059-0.0098)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

0.25 - 0.35 mm (0.010 - 0.014 in.)

EXAMPLE:

The 2.300mm (0.0906 in.) shim is installed, and the measured clearance is 0.440 mm (0.0173 in.). Replace the 2.300 mm (0.0906 in.) shim with a No. 44 shim.

00	2.000 (0.0787)	28	2.280 (0.0898)	56	2.560 (0.1008)
02	2.020 (0.0795)	30	2.300 (0.0906)	58	2.580 (0.1016)
04	2.040 (0.0803)	32	2.320 (0.0913)	60	2.600 (0.1024)
06	2.060 (0.0811)	34	2.340 (0.0921)	62	2.620 (0.1031)
08	2.080 (0.0819)	36	2.360 (0.0929)	64	2.640 (0.1039)
10	2.100 (0.0827)	38	2.380 (0.0937)	66	2.660 (0.1047)
12	2.120 (0.0835)	40	2.400 (0.0945)	68	2.680 (0.1055)
14	2.140 (0.0843)	42	2.420 (0.0953)	70	2.700 (0.1063)
16	2.160 (0.0850)	44	2.440 (0.0961)	72	2.720 (0.1071)
18	2.180 (0.0858)	46	2.460 (0.0969)	74	2.740 (0.1079)
20	2.200 (0.0866)	48	2.480 (0.0976)	76	2.760 (0.1087)
22	2.220 (0.0874)	50	2.500 (0.0984)	78	2.780 (0.1094)
24	2.240 (0.0882)	52	2.520 (0.0992)	80	2.800 (0.1102)
26	2.260 (0.0890)	54	2.540 (0.1000)		

	2.000 (0.0787)	2.020 (0.0795)	2.040 (0.0803)	2.060 (0.0811)	2.080 (0.0819)	2.100 (0.0827)	2.120 (0.0835)	2.140 (0.0843)	2.160 (0.0850)	2.180 (0.0858)	2.200 (0.0866)	2.220 (0.0870)	2.240 (0.0874)	2.260 (0.0878)	2.280 (0.0882)	2.300 (0.0886)	2.320 (0.0890)	2.340 (0.0894)	2.360 (0.0898)	2.380 (0.0902)	2.400 (0.0906)	2.420 (0.0909)	2.440 (0.0913)	2.460 (0.0917)	2.480 (0.0921)	2.500 (0.0925)	2.520 (0.0929)	2.540 (0.0933)	2.560 (0.0937)	2.580 (0.0941)	2.600 (0.0945)	2.620 (0.0949)	2.640 (0.0953)	2.660 (0.0957)	2.680 (0.0961)	2.700 (0.0965)	2.720 (0.0969)	2.740 (0.0972)	2.760 (0.0976)	2.780 (0.0980)	2.800 (0.0984)	2.820 (0.0988)	2.840 (0.0992)	2.860 (0.0996)	2.880 (0.1000)	2.900 (0.1004)	2.920 (0.1008)	2.940 (0.1012)	2.960 (0.1016)	2.980 (0.1020)	3.000 (0.1024)	3.020 (0.1028)	3.040 (0.1031)	3.060 (0.1039)	3.080 (0.1047)	3.100 (0.1055)	3.120 (0.1063)	3.140 (0.1071)	3.160 (0.1079)	3.180 (0.1087)	3.200 (0.1094)	3.220 (0.1102)																																																																																																																																																																																																																																																																																																																																																																																																																							
0.000-0.030 (0.0000-0.0012)												00	00	00	00	00	00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																													
0.031-0.050 (0.0012-0.0020)										00	00	00	00	00	00	00	00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																													
0.051-0.070 (0.0020-0.0028)									00	00	00	00	00	00	00	00	00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																													
0.071-0.090 (0.0028-0.0035)								00	00	00	00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																			
0.091-0.110 (0.0036-0.0043)							00	00	00	00	00	00	02	02	04	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																					
0.111-0.130 (0.0044-0.0051)						00	00	00	00	00	00	02	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																								
0.131-0.150 (0.0052-0.0059)					00	00	00	00	00	02	04	06	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																										
0.151-0.170 (0.0059-0.0067)				00	00	00	00	02	04	06	08	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																													
0.171-0.190 (0.0067-0.0075)			00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																															
0.191-0.210 (0.0075-0.0083)		00	00	00	00	02	04	06	08	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																																
0.211-0.230 (0.0083-0.0091)	00	00	00	00	02	04	06	08	10	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																																			
0.231-0.249 (0.0091-0.0098)	00	00	00	00	02	04	06	08	10	12	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	46	46	48	48	50	50	52	52	54	54	56	56	58	58	60	60	62	62	64	64	66	66	68	68	70	70	72	72	74	74	76	76	78	78	80	80	82	82	84	84	86	86	88	88	90	90	92	92	94	94	96	96	98	98	100	100																																																																																																																																																																																																																																																																																																																																																																																				
0.250-0.350 (0.0098-0.0138)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					