

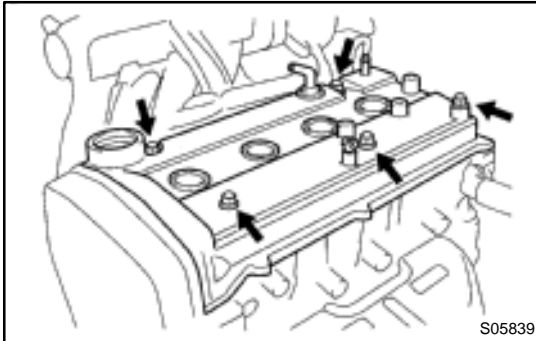
VALVE CLEARANCE INSPECTION

EMOKA-04

HINT:

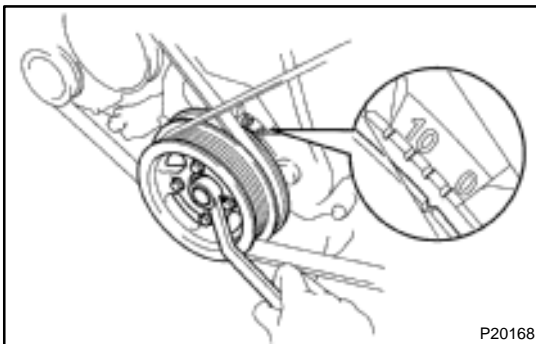
Inspect and adjust the valve clearance when the engine is cold.

1. **DISCONNECT PCV HOSES FROM CYLINDER HEAD COVER**
2. **REMOVE HIGH-TENSION CORDS AND IGNITION COILS FROM SPARK PLUGS**



3. REMOVE CYLINDER HEAD COVER

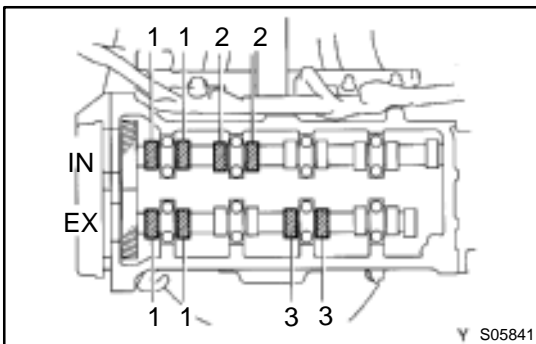
- (a) Remove the oil filler cap.
- (b) Remove the 5 cap nuts and seal washers.
- (c) Pry out the cylinder head cover, and remove the cover and gasket.



4. SET NO.1 CYLINDER TO TDC/COMPRESSION

- (a) Turn the crankshaft pulley, and align its groove with the timing mark "0" of the No.1 timing belt cover.
- (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 1 complete revolution (360°) and align the marks as above.

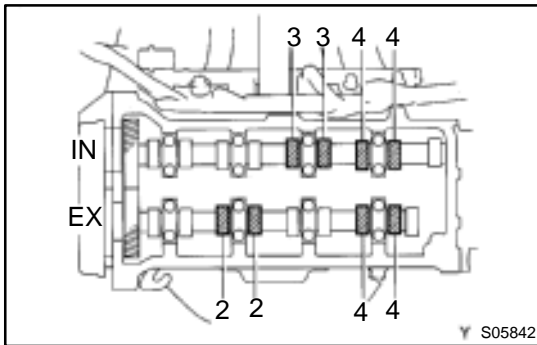


5. INSPECT VALVE CLEARANCE

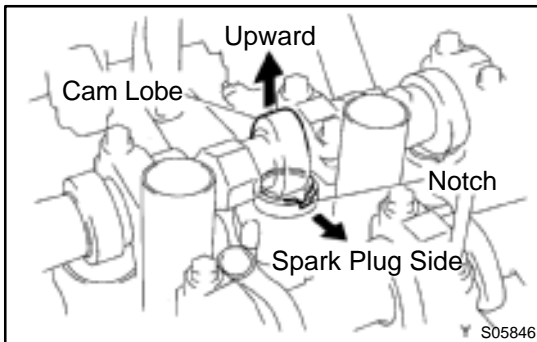
- (a) Check only the valves indicated.
 - (1) Using a feeler gauge, measure the clearance between the valve lifter and camshaft.
 - (2) Record the out-of-specification valve clearance measurements. They will be used later to determine the required replacement adjusting shim.

Valve clearance (Cold):

Intake	0.15 – 0.25 mm (0.006 – 0.010 in.)
Exhaust	0.31 – 0.41 mm (0.012 – 0.016 in.)

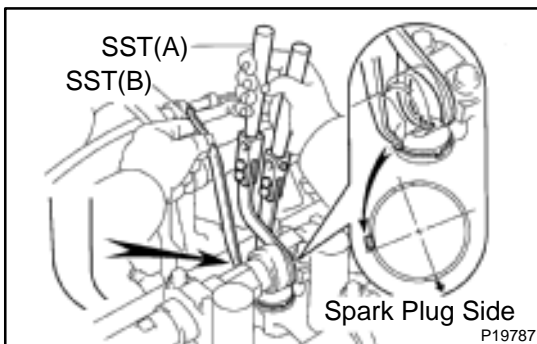


- (b) Turn the crankshaft pulley 1 revolution (360°) and align its groove with the timing mark "0" of the No.1 timing belt cover.
- (c) Check only the valves indicated as shown. Measure the valve clearance. (See procedure in step (a))



6. ADJUST VALVE CLEARANCE

- (a) Remove the adjusting shim.
 - (1) Turn the crankshaft to position the cam lobe of the camshaft on the adjusting valve points upward.
 - (2) Position the notch of the valve lifter so that the shim can be removed with a small screwdriver as shown in the illustration.

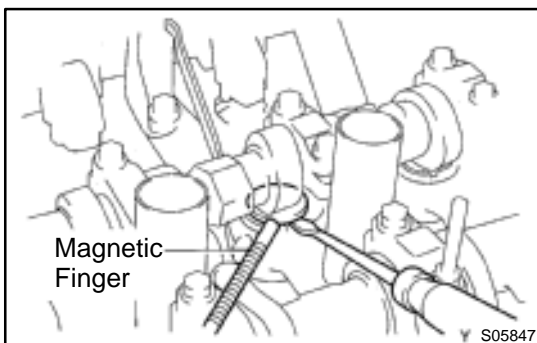
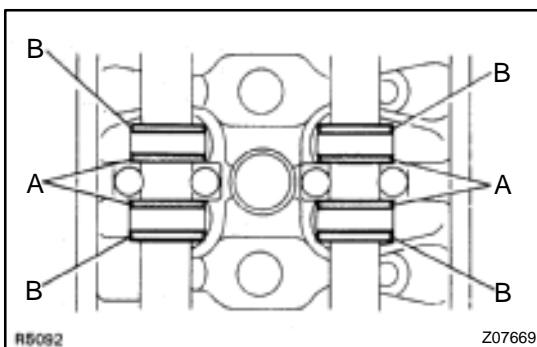


- (3) Using SST (A), press down the valve lifter and place SST (B) between the camshaft and valve lifter flange. Remove SST (A).

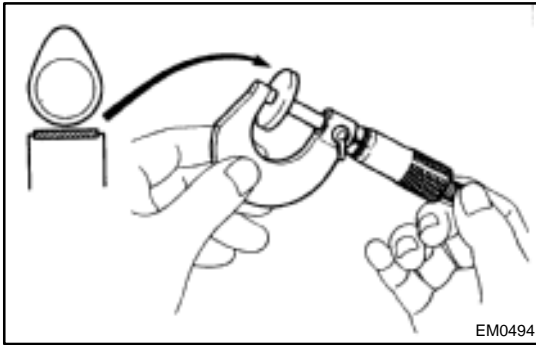
SST 09248-55040 (09248-05410, 09248-05420)

HINT:

- Apply SST (B) at slight angle on the side marked with "9", at the position shown in the illustration.
- Set SST (A) at position A, if position A is too narrow, at position B, as shown in the illustration.



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



- (b) Determine the replacement adjusting shim size by the following Formula or Charts on the next 2 pages:

- (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 specified value.
- T Thickness of removed shim
 A Measured valve clearance
 N Thickness of new shim

Intake:

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

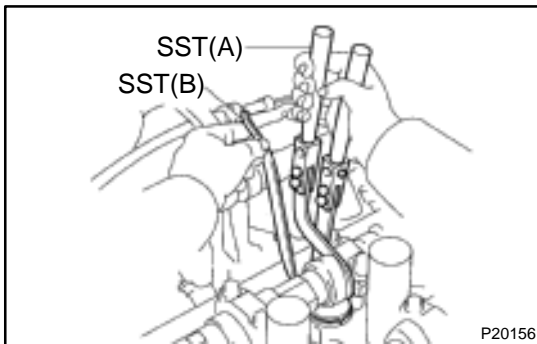
Exhaust:

$$N = T + (A - 0.36 \text{ mm (0.014 in.)})$$

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

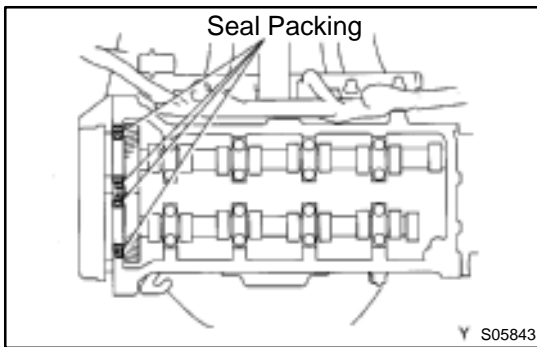
HINT:

Shims are available in 17 increments of 0.05 mm (0.0020 in.), from 2.50 mm (0.0984 in.) to 3.30 mm (0.1299 in.).



- (c) Install a new adjusting shim.
 - (1) Place a new adjusting shim on the valve lifter.
 - (2) Using SST (A), press down the valve lifter and remove SST (B).

SST 09248-55040 (09248-05410, 09248-05020)
- (d) Recheck the valve clearance.

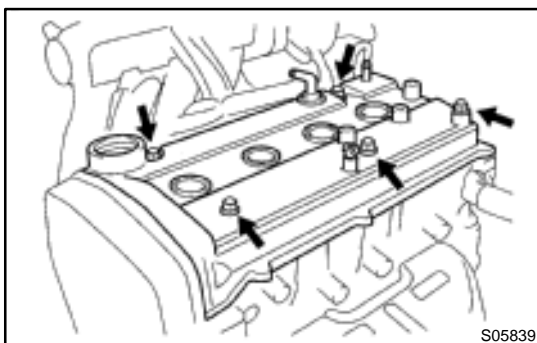


7. REINSTALL CYLINDER HEAD COVER

- (a) Apply seal packing to the cylinder head as shown in the illustration.

Seal packing:

Part No. 08826-00080 or equivalent



- (b) Install the gasket to the cylinder head cover.
- (c) Install the cylinder head cover with the 5 seal washers and cap nuts.

Torque: 7.0 N·m (70 kgf·cm, 61 in.-lbf)

- (d) Install oil filler cap.

8. REINSTALL IGNITION COILS AND HIGH-TENSION CORDS

9. RECONNECT PCV HOSES TO CYLINDER HEAD COVER

Adjusting Shim Selection Chart (Intake)

Measured clearance mm (in.)	Installed shim thickness mm (in.)	New shim thickness mm (in.)																	
		Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness	Shim No.	Thickness
0.000 – 0.020 (0.0000 – 0.0008)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.021 – 0.040 (0.0008 – 0.0016)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.041 – 0.060 (0.0016 – 0.0024)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.061 – 0.080 (0.0024 – 0.0031)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.081 – 0.100 (0.0032 – 0.0039)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.101 – 0.120 (0.0040 – 0.0047)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.121 – 0.140 (0.0048 – 0.0055)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.141 – 0.149 (0.0056 – 0.0059)		02	2.500 (0.0984)	20	2.950 (0.1161)														
0.150 – 0.250 (0.0069 – 0.0098)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.251 – 0.270 (0.0099 – 0.0106)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.271 – 0.290 (0.0107 – 0.0114)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.291 – 0.310 (0.0115 – 0.0122)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.311 – 0.330 (0.0122 – 0.0130)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.331 – 0.350 (0.0130 – 0.0138)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.351 – 0.370 (0.0138 – 0.0146)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.371 – 0.390 (0.0146 – 0.0154)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.391 – 0.410 (0.0154 – 0.0161)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.411 – 0.430 (0.0162 – 0.0169)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.431 – 0.450 (0.0170 – 0.0177)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.451 – 0.470 (0.0178 – 0.0185)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.471 – 0.490 (0.0185 – 0.0193)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.491 – 0.510 (0.0193 – 0.0201)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.511 – 0.530 (0.0201 – 0.0209)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.531 – 0.550 (0.0209 – 0.0217)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.551 – 0.570 (0.0217 – 0.0224)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.571 – 0.590 (0.0225 – 0.0232)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.591 – 0.610 (0.0233 – 0.0240)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.611 – 0.630 (0.0241 – 0.0248)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.631 – 0.650 (0.0248 – 0.0256)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.651 – 0.670 (0.0256 – 0.0264)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.671 – 0.690 (0.0264 – 0.0272)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.691 – 0.710 (0.0272 – 0.0280)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.711 – 0.730 (0.0280 – 0.0287)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.731 – 0.750 (0.0288 – 0.0296)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.751 – 0.770 (0.0296 – 0.0303)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.771 – 0.790 (0.0304 – 0.0311)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.791 – 0.810 (0.0311 – 0.0319)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.811 – 0.830 (0.0319 – 0.0327)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.831 – 0.850 (0.0327 – 0.0335)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.851 – 0.870 (0.0335 – 0.0343)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.871 – 0.890 (0.0343 – 0.0350)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.891 – 0.910 (0.0351 – 0.0358)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.911 – 0.930 (0.0359 – 0.0366)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.931 – 0.950 (0.0367 – 0.0374)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.951 – 0.970 (0.0374 – 0.0382)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.971 – 0.990 (0.0382 – 0.0390)		04	2.600 (0.1024)	22	3.000 (0.1181)														
0.991 – 1.010 (0.0390 – 0.0398)		04	2.600 (0.1024)	22	3.000 (0.1181)														
1.011 – 1.030 (0.0398 – 0.0406)		04	2.600 (0.1024)	22	3.000 (0.1181)														
1.031 – 1.050 (0.0406 – 0.0413)		04	2.600 (0.1024)	22	3.000 (0.1181)														

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 0.450 mm (0.0177 in.). Replace the 2.800 mm (0.1102 in.) shim with a new No.24 shim.

New shim thickness mm (in.)			
Shim No.	Thickness	Shim No.	Thickness
02	2.500 (0.0984)	20	2.950 (0.1161)
04	2.550 (0.1004)	22	3.000 (0.1181)
06	2.600 (0.1024)	24	3.050 (0.1201)
08	2.650 (0.1043)	26	3.100 (0.1220)
10	2.700 (0.1063)	28	3.150 (0.1240)
12	2.750 (0.1083)	30	3.200 (0.1260)
14	2.800 (0.1102)	32	3.250 (0.1280)
16	2.850 (0.1122)	34	3.300 (0.1299)
18	2.900 (0.1142)		

HINT: New shims have the thickness in millimeters imprinted on the face.

Adjusting Shim Selection Chart (Exhaust)

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)	2.500 (0.0984)	02	2.500 (0.0984)	20	2.950 (0.1161)
0.021 – 0.040 (0.0008 – 0.0016)	2.525 (0.0994)	04	2.550 (0.1004)	22	3.000 (0.1181)
0.041 – 0.060 (0.0016 – 0.0024)	2.550 (0.1004)	06	2.600 (0.1024)	24	3.050 (0.1201)
0.061 – 0.080 (0.0024 – 0.0031)	2.575 (0.1014)	08	2.650 (0.1043)	26	3.100 (0.1220)
0.081 – 0.100 (0.0032 – 0.0039)	2.600 (0.1024)	10	2.700 (0.1063)	28	3.150 (0.1240)
0.101 – 0.120 (0.0040 – 0.0047)	2.625 (0.1034)		2.750 (0.1083)		3.160 (0.1244)
0.121 – 0.140 (0.0048 – 0.0055)	2.650 (0.1043)		2.800 (0.1102)		3.180 (0.1252)
0.141 – 0.160 (0.0056 – 0.0063)	2.675 (0.1053)		2.850 (0.1121)		3.200 (0.1260)
0.161 – 0.180 (0.0063 – 0.0071)	2.700 (0.1063)		2.900 (0.1140)		3.225 (0.1270)
0.181 – 0.200 (0.0071 – 0.0079)	2.725 (0.1073)		2.950 (0.1159)		3.250 (0.1280)
0.201 – 0.220 (0.0079 – 0.0087)	2.750 (0.1083)		3.000 (0.1178)		3.275 (0.1288)
0.221 – 0.240 (0.0087 – 0.0094)	2.775 (0.1093)		3.050 (0.1197)		3.300 (0.1296)
0.241 – 0.260 (0.0095 – 0.0102)	2.800 (0.1102)		3.100 (0.1216)		
0.261 – 0.280 (0.0103 – 0.0110)	2.825 (0.1112)		3.150 (0.1235)		
0.281 – 0.300 (0.0111 – 0.0118)	2.850 (0.1121)		3.200 (0.1254)		
0.301 – 0.309 (0.0119 – 0.0122)	2.875 (0.1131)		3.250 (0.1273)		
0.310 – 0.410 (0.0122 – 0.0161)	2.900 (0.1140)		3.300 (0.1292)		
0.411 – 0.430 (0.0162 – 0.0169)	2.925 (0.1150)				
0.431 – 0.450 (0.0170 – 0.0177)	2.950 (0.1159)				
0.451 – 0.470 (0.0178 – 0.0185)	2.975 (0.1169)				
0.471 – 0.490 (0.0185 – 0.0193)	3.000 (0.1178)				
0.491 – 0.510 (0.0193 – 0.0201)	3.025 (0.1188)				
0.511 – 0.530 (0.0201 – 0.0209)	3.050 (0.1197)				
0.531 – 0.550 (0.0209 – 0.0217)	3.075 (0.1207)				
0.551 – 0.570 (0.0217 – 0.0224)	3.100 (0.1216)				
0.571 – 0.590 (0.0225 – 0.0232)	3.125 (0.1226)				
0.591 – 0.610 (0.0233 – 0.0240)	3.150 (0.1235)				
0.611 – 0.630 (0.0241 – 0.0248)	3.175 (0.1244)				
0.631 – 0.650 (0.0248 – 0.0256)	3.200 (0.1254)				
0.651 – 0.670 (0.0256 – 0.0264)	3.225 (0.1263)				
0.671 – 0.690 (0.0264 – 0.0272)	3.250 (0.1273)				
0.691 – 0.710 (0.0272 – 0.0280)	3.275 (0.1282)				
0.711 – 0.730 (0.0280 – 0.0287)	3.300 (0.1292)				
0.731 – 0.750 (0.0288 – 0.0295)					
0.751 – 0.770 (0.0296 – 0.0303)					
0.771 – 0.790 (0.0304 – 0.0311)					
0.791 – 0.810 (0.0311 – 0.0318)					
0.811 – 0.830 (0.0319 – 0.0327)					
0.831 – 0.850 (0.0327 – 0.0335)					
0.851 – 0.870 (0.0335 – 0.0343)					
0.871 – 0.890 (0.0343 – 0.0350)					
0.891 – 0.910 (0.0351 – 0.0358)					
0.911 – 0.930 (0.0359 – 0.0366)					
0.931 – 0.950 (0.0367 – 0.0374)					
0.951 – 0.970 (0.0374 – 0.0382)					
0.971 – 0.990 (0.0382 – 0.0390)					
0.991 – 1.010 (0.0390 – 0.0398)					
1.011 – 1.030 (0.0398 – 0.0406)					
1.031 – 1.050 (0.0406 – 0.0413)					
1.051 – 1.070 (0.0414 – 0.0421)					
1.071 – 1.090 (0.0422 – 0.0429)					
1.091 – 1.110 (0.0430 – 0.0437)					
1.111 – 1.130 (0.0437 – 0.0445)					
1.131 – 1.150 (0.0445 – 0.0453)					
1.151 – 1.170 (0.0453 – 0.0461)					
1.171 – 1.190 (0.0461 – 0.0469)					
1.191 – 1.210 (0.0469 – 0.0476)					

Exhaust valve clearance (Cold):

0.31 – 0.41 mm (0.012 – 0.016 in.)

EXAMPLE: The 2.800 mm (0.1102 in.) shim is installed, and the measured clearance is 0.450 mm (0.0177 in.).

Replace the 2.800 mm (0.1102 in.) shim with a new No.18 shim.

New shim thickness mm (in.)			
Shim No.	Thickness	Shim No.	Thickness
02	2.500 (0.0984)	20	2.950 (0.1161)
04	2.550 (0.1004)	22	3.000 (0.1181)
06	2.600 (0.1024)	24	3.050 (0.1201)
08	2.650 (0.1043)	26	3.100 (0.1220)
10	2.700 (0.1063)	28	3.150 (0.1240)
12	2.750 (0.1083)	30	3.200 (0.1260)
14	2.800 (0.1102)	32	3.250 (0.1280)
16	2.850 (0.1122)	34	3.300 (0.1299)
18	2.900 (0.1142)		

HINT: New shims have the thickness in millimeters imprinted on the face.