

## **Kawasaki Vulcan VN800 Valve Adjustment Maintenance Procedure Instructions**

**Tools Required:** Torque wrench, 8, 10, 12 and 17mm 6 point sockets. Big Ass Phillips screwdriver. Set of METRIC feeler gauges. Digital METRIC caliper. You can pick up a caliper from Harbor Freight cheap and the feeler gauges from Snap-On for less then \$5.00. Using them eliminates the potential for errors in conversions.

**Supplies Required:** Wire ties, anti-freeze, distilled water, Isopropyl alcohol.

The subject in the accompanying pictures in a non-California version 2001 Vulcan VN800A with the "Cool Off" EPA removal mod performed. As we cannot address all the possible modifications that can be done, these instructions are written as if the bike is in stock form and you will have to make any adjustments necessary to accommodate mods to your specific bike. This is a very easy procedure that should not take more then four hours to perform with the actual valve adjustment only taking a few minutes but like most things, preparation is the key to success. As the engine internals will be open to the environment for a time, it is recommended this be done in doors. As the engine coolant must be drained, this is a very good time to flush the system and replace it as well.

**Disassembly:** There are shortcuts than can be taken but experience has shown me this is the best procedure to follow as Murphy's law ensures you will do it all 99 times out of 100 anyway. The engine must be cold, i.e. not run for a good eight hours before starting this procedure. Remove the seat and fuel tank. Things should now look like as they do in figures VA01 and VA02. Our objective is to get things looking like figures VA03 and VA04. As you remove bolts and screws, put them back in after removing the component so they will not be lost and you won't have to go looking for them during assembly. Using a 10mm socket, remove the two bolts holding the upper airbox chamber, pull the chamber up to remove and set aside. Remove the air filter cover with a 10mm socket. Remove the air filter. Using the same 10mm socket, remove the two chrome bolts that hold the airbox backing plate on. The backing plate does not need to be removed, just pull it loose from the carb and drop it down and turn clockwise until it is below the level of the valve covers. Use a wire tie or safety wire to secure it. Disconnect the carburetor float bowl vent tube from the carb and pull it along with the speedometer cable and fuel tank vents tube(s) back and down until they are completely out of the way of the rear valve cover. Even behind it. Cut all wire ties as needed to get all the tubes out of the way but remember where they were for assembly. Disconnect the coolant overflow tube from the back of the thermostat housing and pull it back and down until it is completely out of the way of the rear cylinder valve cover, even behind it. Now move to the left side of the bike and disconnect the EPA gold valve tube (or bypass) from the valve covers. Just let it lay down between the jugs with the fuel line. Pull the spark plug wires and get them out of the way. Remove the two large screws shown in figure VA05 and swing the choke cable over so that it lays between the jugs with the other lines. Set a drain pan under the bike and remove the 10mm coolant drain bolt show in figure VA06. Open the coolant fill cap on the top of the thermostat housing to speed draining of the coolant. Using a 10mm socket, remove the two bolts holding the thermostat housing to the frame shown in figure VA07. Using an 8mm socket, remove the bolt holding the Y coolant hose connector from the frame as shown in figure VA08. Using a Phillips screwdriver, loosen the hose clamps from the two coolant hoses attached to the top of the engine and disconnect the hoses. Swing the assembly up and position it on top of the frame as shown in figure VA07. We are now ready to remove the valve covers but I recommend using a rag and spray cleaner to clean any and all dirt from the frame and components above the valve covers to prevent it falling into the engine while the covers are off. Using the 10mm socket or wrench, remove the three chrome bolts on the top of both valve covers. Starting at the rear of the front valve cover, work a small flat screw driver between the valve cover and the gasket to break it loose and work around the cover until it is no longer stuck to the gasket. Now lift the cover straight up until it clears and remove to the left side of the bike. Note that the spark plug sleeve, shown in figure VA09 may stick preventing horizontal movement of the cover. If this happens, push it back down into the cylinder head with your finger through the spark plug hole while lifting up on the valve cover. The spark plug sleeve has an O-Ring

on each end that should be inspected and replaced if needed by simply pulling the sleeve straight out. This will prevent having to tear things down again to fix an oil leak from the weep hole. Set the valve cover aside upside down and using a screwdriver scratch an "F" for front in it to prevent mixing them up. Remove the valve cover gasket and reed valve and place on the valve cover. Cover it with a clean rag to prevent contamination. Pull the wiring harness running down the right side of the frame as far to the rear and the right as possible and clip it between the frame tube and leading edge of the battery box to get it out of the way. Now using the small screwdriver, start at the front of the rear valve cover and break it loose from the gasket. This one is a little tight and will take some juggling to get it out. Lift up and slide out to the left of the bike. DO NOT force it. It will come, you just have to get it in the right position to get over the cam chain sprocket. Mark it with a "R" and set it, the gasket and reed valve aside covered. Using the large Phillips screwdriver remove the screw holding the inspection plate on the left side lower engine cover. Remove the cover, two O-Rings and set aside.

**Clearance Check:** We are now ready to check and adjust the valves but first we must set the front cylinder piston to top dead center. Using the 17mm socket with an extension insert it in the forward inspection hole to engage the nut shown in figure VA10. Ensure the engine is in neutral and turn the nut COUNTER CLOCKWISE ONLY until the pointer is aligned with the F mark in the rear inspection hole as shown in figure VA10. If you go past the mark DO NOT BACKUP by turning the bolt clockwise. Continue around for another revolution until you have the pointer and the mark perfectly aligned. Now verify that you are at Top Dead Center by ensuring that the line scribed in the cam chain sprocket lies parallel with the cylinder head as shown in figure VA11. If not, keep turning as you are 180 degrees out. Using your metric feeler gauges determine the clearance as shown in figure VA09 for all four valves and record them. The Intake Valve clearance low limit is 0.10MM and the high limit is 0.15mm. The exhaust low limit is 0.25MM and high limit is 0.30mm. If this is the first time checking clearances I recommend removing all the shims, one at a time, using the magnet. Record their thickness and position using your digital metric caliper. To remove a shim, simply slide the rocker arms aside on their shaft and lift the shim out of the valve using your magnet. To insert a shim, simply place it on the magnet, slide the rocker arm out of the way, position the shim back in it's bucket and release the rocker, it will slide the magnet out of the way and leave the shim trapped between the valve and rocker arm. I use an Excel spreadsheet that I print out before starting an adjustment to record the new clearances on. This lets me know exactly what shim I will need in each position and a good idea of when I will need it so I can have it on hand. Now turn the engine over COUNTER CLOCKWISE ONLY until the rear cylinder mark is aligned with the pointer and verify with the scribe line on the cam chain sprocket (from the right side of the bike). Use the feeler gauges to determine each valves clearance and record. If all valves are within spec, congratulations, proceed to assembly section. Now you must determine what shim you will need to bring a valve back within spec. Say for example; you have an intake valve that you could not get the 0.10mm feeler gauge in but a 0.05mm would slide in fine and the shim currently in that position is 2.65mm thick. You will need a 2.60mm shim to bring it back into spec. By analyzing your record you should find that in some cases you can swap shims between valves to bring them back into spec. In boarder line cases, it is better to be a little over then under specification as once the clearance reaches zero or below, the valve will not be closing fully. The cylinder will start to loose compression and the seat of the valve will start to burn away. Note that due to expansion, clearances WILL get tighter when the engine is at normal operation temperature. Be sure to recheck a valves clearance after changing it's shim and remember its cylinders piston MUST BE at top dead center when the clearance is checked.

**Shim Part Numbers:** (Thickness in MM / Part #)

1.70 / 92180-1213 | 1.75 / 92180-1212 | 1.80 / 92108-1211 | 1.85 / 92180-1210 |  
1.90 / 92180-1209 | 1.95 / 92180-1208 | 2.00 / 92025-1870 | 2.05 / 92025-1871 |  
2.10 / 92025-1872 | 2.15 / 92025-1873 | 2.20 / 92025-1874 | 2.25 / 92025-1875 |  
2.30 / 92025-1876 | 2.35 / 92025-1877 | 2.40 / 92025-1878 | 2.45 / 92025-1879 |  
2.50 / 92025-1880 | 2.55 / 92025-1881 | 2.60 / 92025-1882 | 2.65 / 92025-1883 |

2.70 / 92025-1884 | 2.75 / 92025-1885 | 2.80 / 92025-1886 | 2.85 / 92025-1887 |  
2.90 / 92025-1888 | 2.95 / 92025-1889 | 3.00 / 92025-1890 |

**LIMITS: Intake .10~.15mm Exhaust .25~.30mm**

**Assembly:** Using a rag and Isopropyl Alcohol, clean the valve cover gaskets, reed valves and mating surfaces on the valve covers and cylinder heads. This tends to rejuvenate the gaskets and makes them sticky. I have never experienced a leak and have reused the gaskets many times doing this. Now position the front cylinder's gasket in place. Make sure it sets down all the way around the cylinder. There are tabs in the gasket that will clip around the head and two slots on the sides of the reed valve opening that the gasket must set into. Now set the reed valve back into position. The flapper must be down and positioned over the deepest part of the depression where the hole is. Double check that the gasket is in position, then position the valve cover over it, align and lower into position. Check around the cylinder that the gasket is not pinched by ensuring that how far it sticks out between the head and cover is uniform all the way around. Insert the three washers with the metal side up and the three chrome bolts back into the valve cover and torque to 104 in/lbs. Now do the same thing with the rear cylinder gasket, reed valve and valve cover. Clean the lower engine inspection plate and 2 O-Rings. Position back into place and secure with the large Phillips screw. Swing the coolant lines and thermostat housing back into position and secure with their bolts and clamps. Swing the choke cable back into position and secure with the two large Phillips screws. Insert the spark plug wires and press home. Plug the EPA Gold valve or bypass hose back onto the nipples in the valve covers. Route the coolant overflow tube back up to the thermostat housing and connect. Now move to the right side of the bike and route the carb float bowl vent tube, fuel tank vent tube(s) and speedometer cable back into position and connect. Position the air box backing plate back into position ensuring the boot is sealed around the carb's mouth and insert the two chrome retention bolt. Tighten them down with the 10mm socket and inset the filter. Put the cover back on and tighten down it's 10mm nut. Retrieve the upper airbox component, place into position and secure with it's two 10mm bolts. Reinstall the fuel tank and seat. Police up the area, put the tools away and update your maintenance records.

**Congratulations, you just saved about \$250.00 and have completed one of the most demanding maintenance procedures the 800 has.**

I've done all of the maintenance on my bike since I had the first oil change done by the shop I bought it from. If you're smart, you may be able to get the first service thrown in for free when you buy the bike. I took my 800 Classic in for its 500 mile checkup and they were done in about 45 minutes.

That included an oil change and check of everything (including the valve clearances). I asked them if the valves needed to be adjusted and they said no, they were fine. That was the last time I let them lie to me. Read the manual or better yet, DO a valve adjustment. It is nothing less than Pure hell to get the head covers off the 800, there just ain't that much space in there to maneuver them off. Plus you can't accurately check the valve clearances unless the engine is cold. There's no way these guys could have done this to a hot bike in even twice that time. It was pretty obvious that they "listened" to the bike and it didn't sound like it needed adjustment.

I must have missed that diagnostic method in the manual somewhere. I'm making sure everything is done right by doing it myself.....bwahahaha.....okay I'm making sure it's at least done half-assed right, but hey I'm learning in the process plus my wife is letting me buy some cool toys...er....tools with the money I save (you should see the size of my torque wrench, it makes timid ladies faint!!!).

Well I got the manual and started doing the valve adjustments myself, every 6,000 miles (as stated in the manual). Every time I've had to make significant adjustments because I was down to zero clearance (not good).

I'm going to be doing these checks every 4,000 miles now. So, contrary to what AMBob's mechanic said, I would not recommend letting it slide past the 6,000 miles between checks.

As long as I'm on the subject, I'm gonna expound on the valve clearance check as described in the Kawi manual. First, you don't have to remove ALL of the stuff they tell you to. Try just loosening the coolant tubing above the front cylinder. But take the head cover off VERY carefully or you'll scratch it on the metal bracket for the coolant tubes (cover the chrome with a rag when doing this). The rear head cover is a major pain in the ass to manipulate off. It can be done, just don't force it. Place the head covers somewhere safe where they won't get dropped or scratched while you're checking the valves (been there, done that). The torque rating for the head cover bolts is 102 inch pounds, NOT foot pounds (hehehe, been there too).

DO NOT and I mean DO NOT drop the valve shims down the cam chain!!! You're going to drop them, they're small and covered with oil, but just don't let them fall there (fortunately I haven't been there).

Finally, the manual says that you need to check the valve clearances with the front or rear cylinder set to TDC and it describes how to do this in the manual. However, the manual does not give enough detail here. When you're turning the cylinders and you've got the appropriate marks lined up you ALSO have to have the line on the cam sprocket lined up with the edge of the top of the head (see cam installation in the manual). That's the only way to check the valve clearances properly. You can have the marks lined up and not have the cams in the right place and your clearance measurements will be way off, but of course they don't tell you that in the \*&\$%# manual.

Cap'n Kirk  
VROC #928

Alright, I've done it enough to do it asleep... Here goes:

Remove seat, remove speedo and tank, remove air breather cover and box, loosen outer carb clamp (but leave inner clamp bolt alone) with 3 mm allen key BUT DO NOT REMOVE the carb itself, merely let the carb swing out of the way. Loosen the coolant hose bracket above the front jug, but do not empty the coolant. Some coolant might weep while the bracket is loose, but not enough to worry about.

Remove rear spark plug and the elliptical cover on the clutch cover (left side engine crankcase). Remove bolts on cylinder head covers. Set front Jug at top dead center by aligning the marks visible through the clutch cover AND ensuring the markings on the cam chain are parallel to the top of the cylinder head with cover off (or merely lifted enough to view the cam markings). If you do not have both the clutch marks aligned and the cam chain markings parallel to the cylinder head, you are not at top dead center and will have incorrect clearance measurements.

Now, this next step is the most important for saving time, scraped knuckles, much cursing and potential equipment damage: DO NOT REMOVE THE CYLINDER HEAD/VALVE COVERS UNLESS THEY NEED ADJUSTING!!!!

Once the bolts are removed, you can lift the covers high enough to align the cam chain markings for Top Dead Center and allow enough room to reach in with feeler gauges to check the clearances. If they are within specs, button it back up and ride another 6,000 miles or so with no worries. If the shims need adjusting, carefully remove the cylinder/valve head covers. Wiring bundles will have to be moved, the choke cable might have to be loosened, etc., to provide enough clearance for removing the head covers.

The inlet valves are located on the inside of the jugs nearest the carb, the exhaust valves on the outer portions nearest the exhaust. I think Inlet clearance is supposed to be between 1mm and 1.5 mms and the exhaust between 2.5 mms and 3mms, but consult your manual to be sure my memory isn't fading.

The entire job shouldn't take more than an hour--once you have done it a couple times. Give yourself two or three hours on the first try, and walk away for a while if it becomes a bitch to remove the valve covers. They can be frustrating.

I use a magnetic screwdriver to remove the shims when necessary and always cover the cylinder openings with a clean rag first to prevent the shims from falling into the motor.

I think my memory did fade a bit. I believe the proper clearance for the inlet valves is between 0.1mms and 0.15 mms while the proper clearance for the exhaust valves are 0.25mms to 0.3 mms. Again, double check against a manual to ensure those are the right specs. Freaking decimal points make all the difference :)

Mike "Tool" Heuer

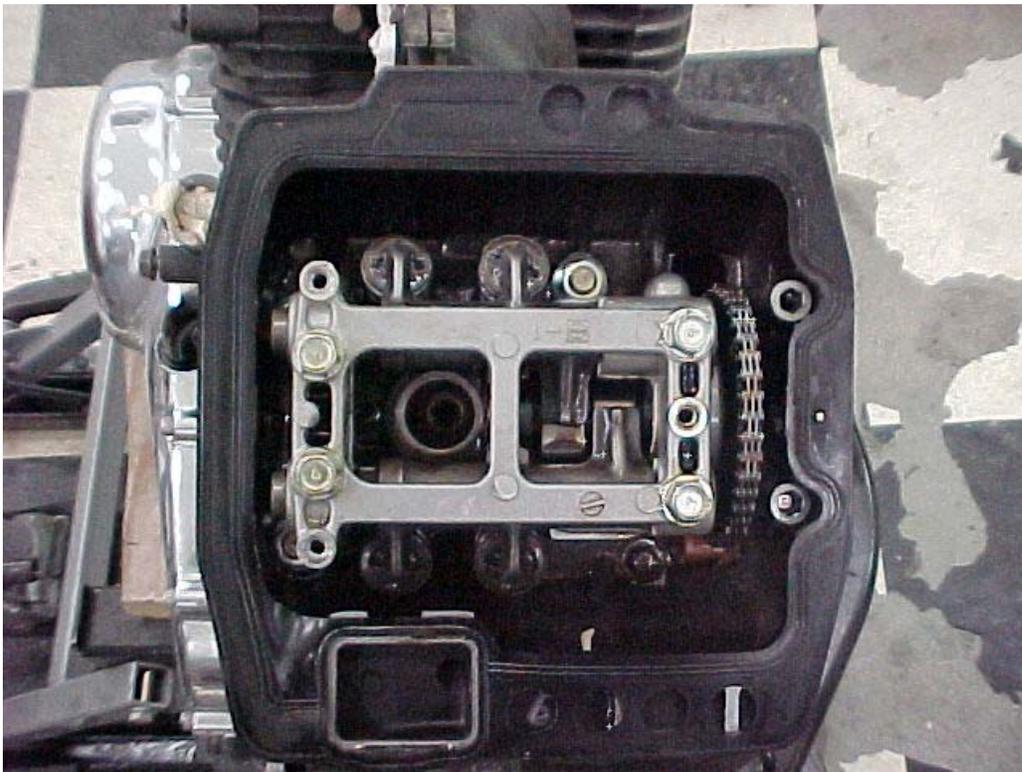
#2005

'97 800B

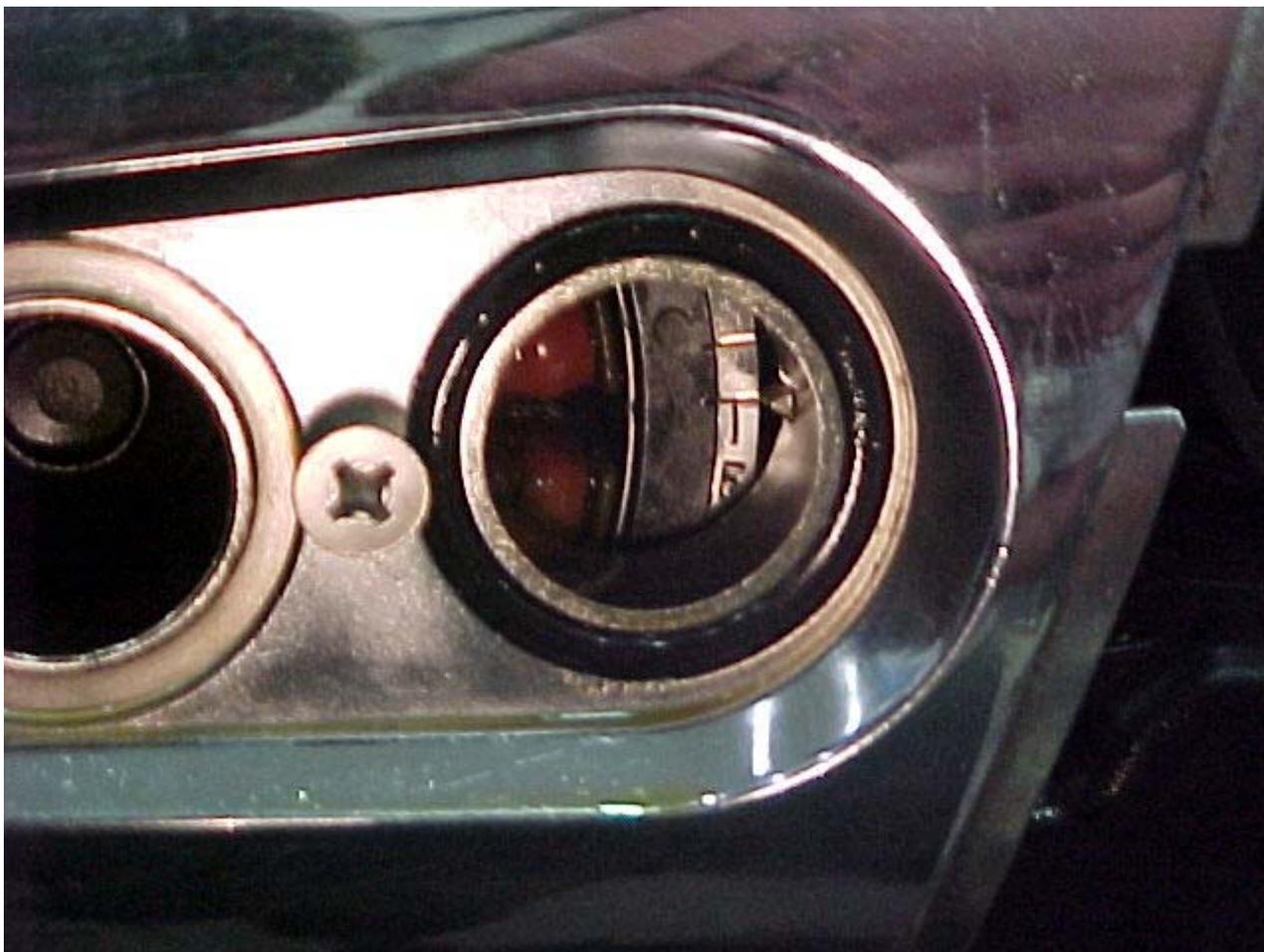
Here are a few pictures of us doing the valve shim maintenance on the wrecked 800 that we are rebuilding. The bike had 30,000 miles on it. The valves were way too tight and needed to have thinner shims put in. I hope the pictures help any of you that wanted to do the job yourself but the thought of tearing the top off your engine made you a little nervous. Picture #1: Having the engine out of the frame sure makes it EZ to check the shims but is not required!!!



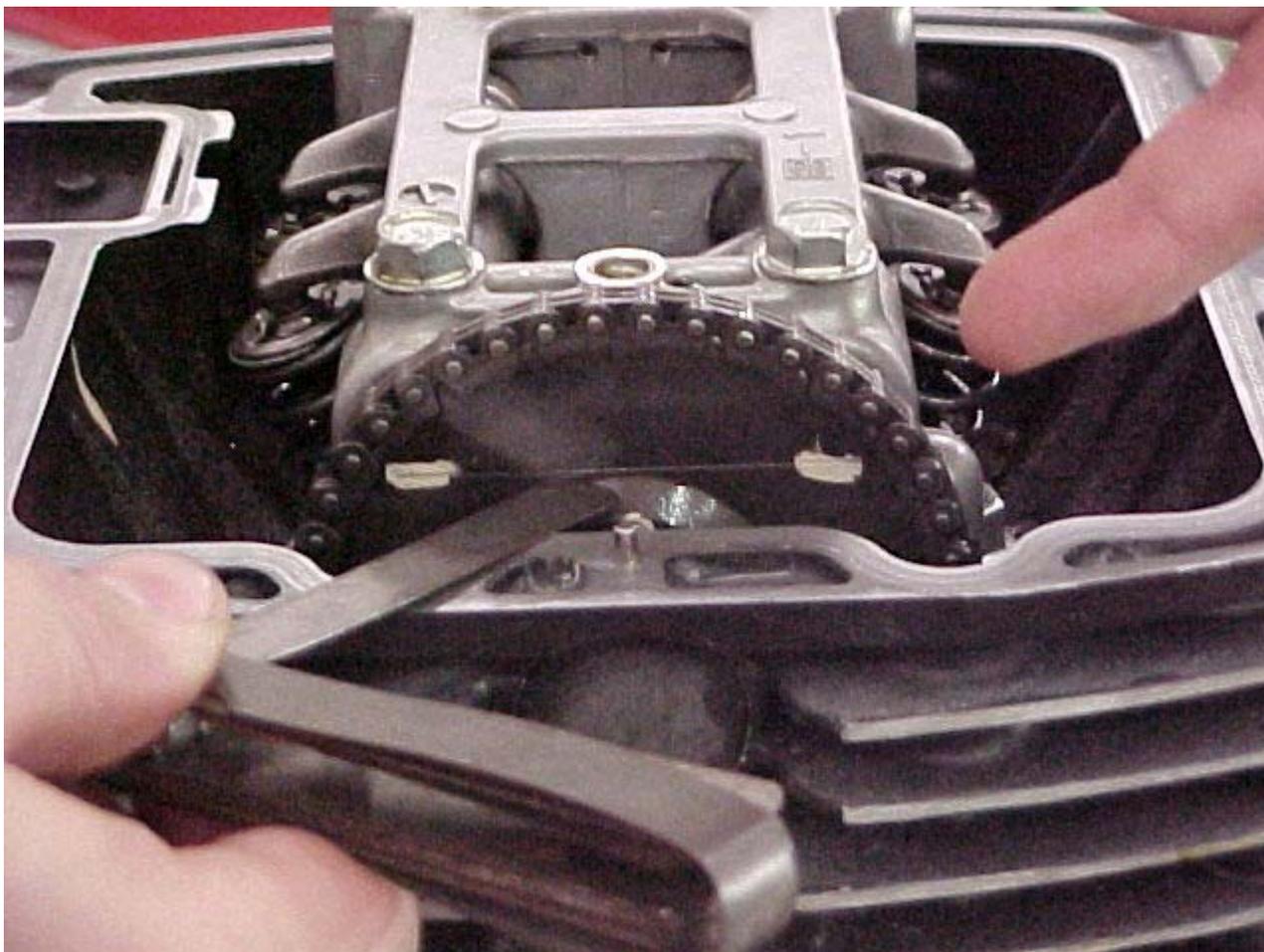
Picture #2: This is what it looks like when you take the chrome valve covers off the top of the 800's engine.



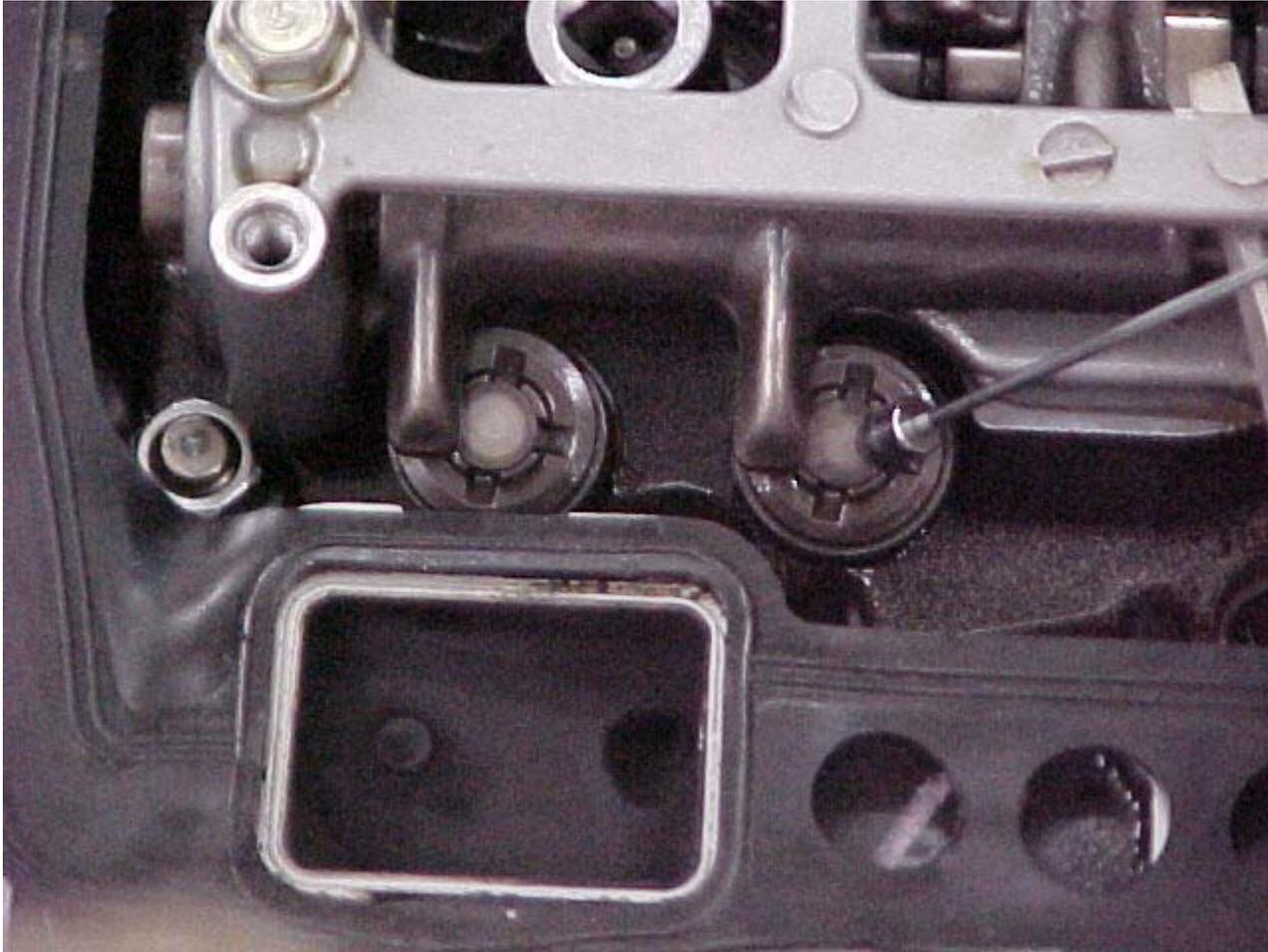
Picture#3: First thing you have to do is to get the engine to top dead center. (TDC) There are marks on the crankshaft to tell you TDC for the front cylinder then another mark 305 degrees later for the rear cylinder. The mark you are looking for looks like the top of a letter "T".



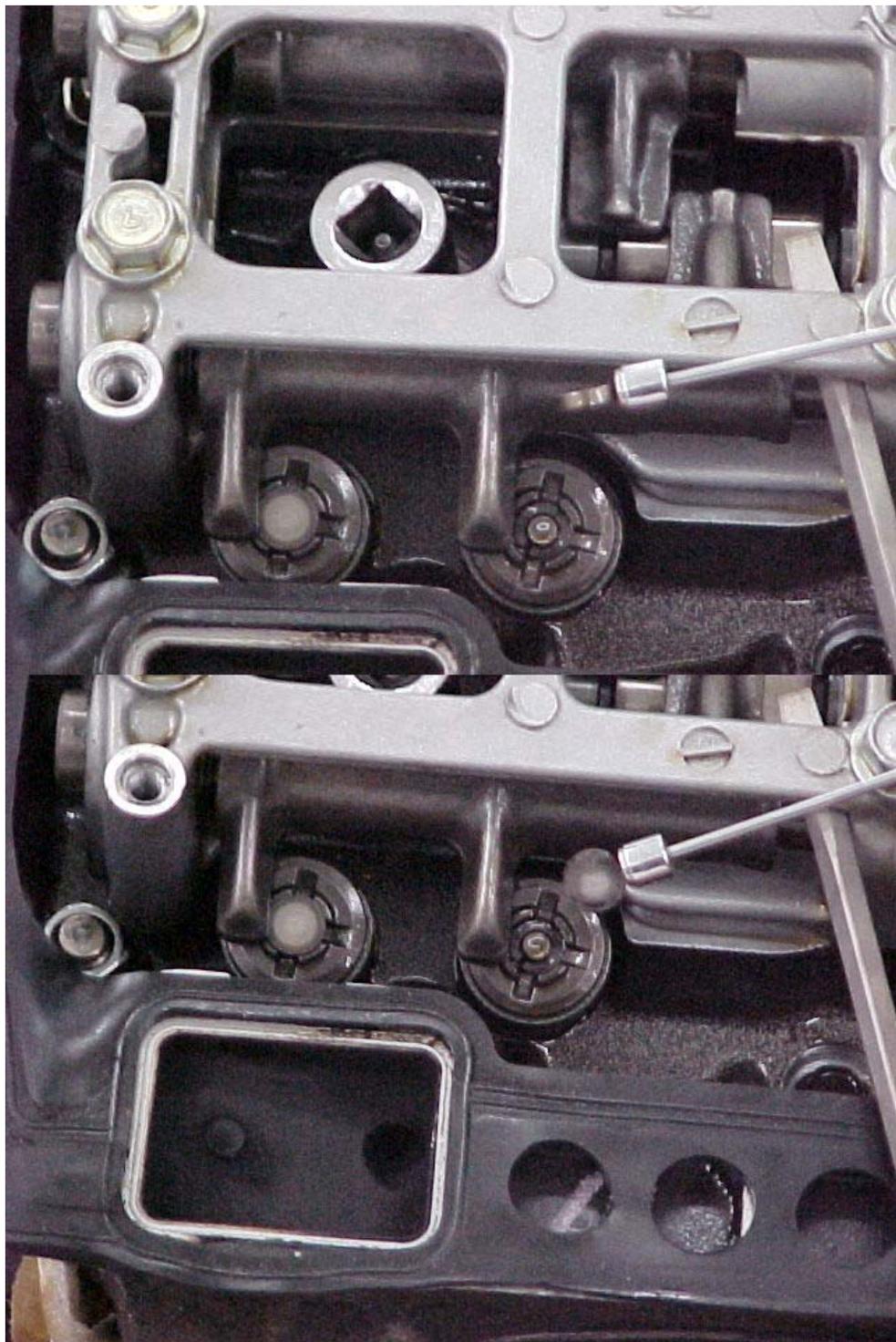
Picture#4: The way you can tell you have the right mark is by looking at the camshaft gear. There is a line scribed on it that should be perfectly level with the top of the head.



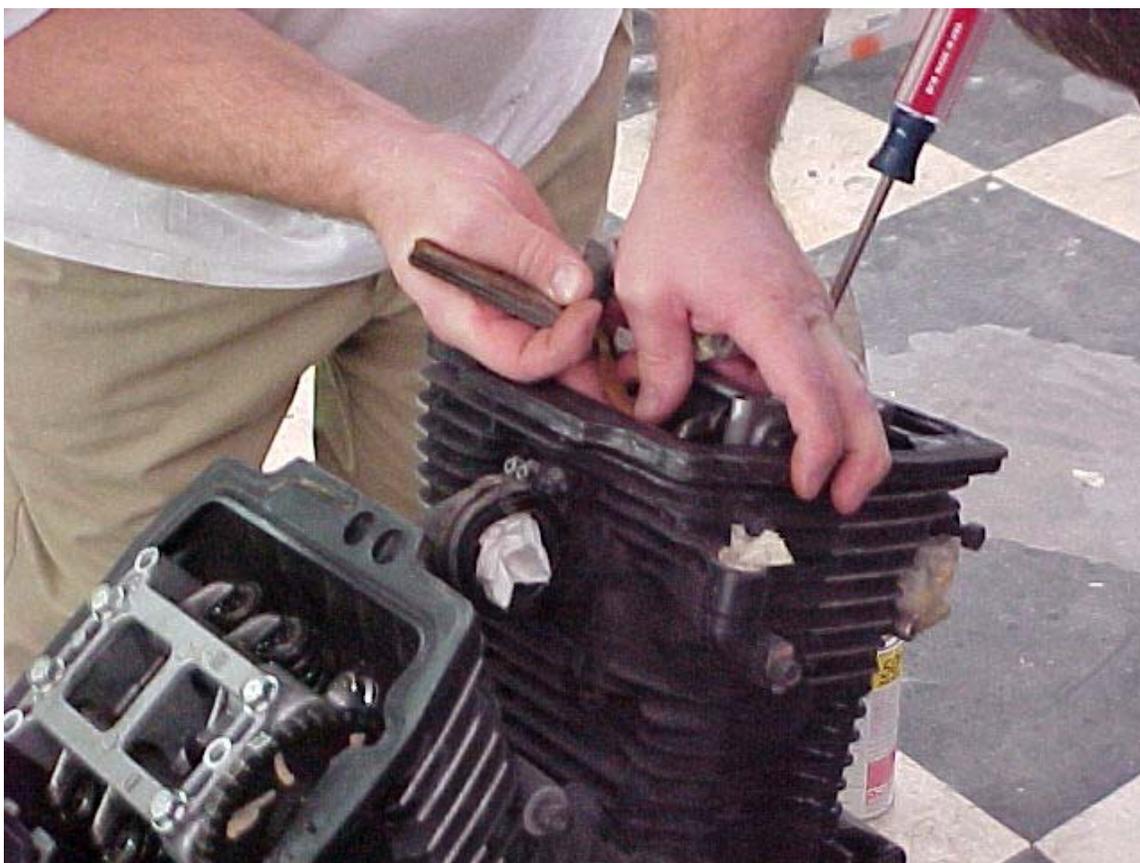
Picture#5: Use a magnetic tool to pull out the shims. They are very slick and you may lose one down in the engine if you drop it. The shims sit on top of the valve stem. You have to use a screwdriver to move the rocker arm assembly over to get to the shim.



Picture#5,6: Use the magnetic tool to pull the shim out then let the rocker assembly go back into place. the rocker arm assembly is spring loaded so it will slide right back.



Picture #7: Using a feeler gauge, slide it under the rocker arm and check the clearance. The intake valves need to be checked with a .010 to .015 feeler gauge. This is the acceptable range. I used the .010 to start with. On this engine I couldn't even get the gauge under the rocker at all unless I forced it. The gauge should slide under there with little effort. The exhaust valve should be checked with a .025 to .030 gauge. This is the acceptable range on the exhaust valves.

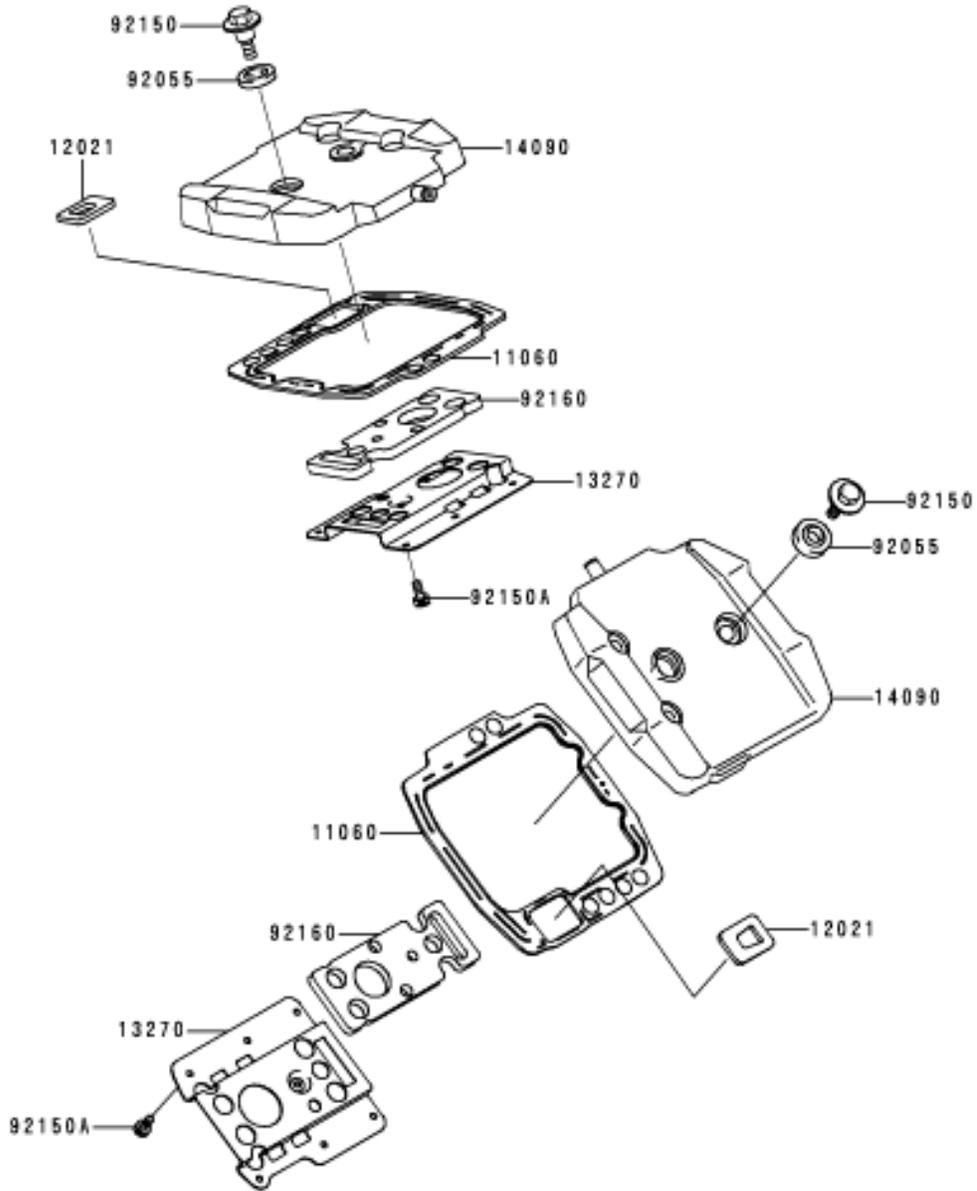


Do yourself a favor and get a repair manual. There are charts in the book that tell you what size shim to try next if your clearance is not correct. Some of it is guess work. Our engine was so far out of spec that we had to try several different sizes thinner to even be able to get the feeler gauge under the rocker arm. We were lucky and just happened to have a "spare" engine on the bench to rob different sized shims out of to try in this engine. If it weren't for that this would have taken a lot longer.

I hope these pictures help someone. Sometimes being able to "see" what is involved makes it a lot less intimidating. If you have any questions or need any help don't hesitate to call me or Scooter. I think we could do this blind folded now!!!

"Ez"

VROC#288



VALVE CLEARANCE ADJUSTMENT CHART  
INLET VALVE

		PRESENT SHIM																		Example					
PART No. (92025 -)		1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890			
MARK		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	00			
THICKNESS (mm)		2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00			
VALVE CLEARANCE MEASUREMENT	Example	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90			
		1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95			
		SPECIFIED CLEARANCE/NO CHANGE REQUIRED																							
		2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.00			
		2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00		3.00			
		2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00						
		2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00							
		2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00								
		2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00									
		2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00										
		2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00											
		2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00												
		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00													
		2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00														
		2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00															
		2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00																
	2.70	2.75	2.80	2.85	2.90	2.95	3.00																		
	2.75	2.80	2.85	2.90	2.95	3.00																			
	2.80	2.85	2.90	2.95	3.00																				
	2.85	2.90	2.95	3.00																					
	2.90	2.95	3.00																						
	2.95	3.00																							
	3.00																								

Parts No.	Thickness
92180-1208	1.95 mm
92180-1209	1.90 mm
92180-1210	1.85 mm
92180-1211	1.80 mm
92180-1212	1.75 mm
92180-1213	1.70 mm

The shim from 1.70 to 1.95 mm thick are also available.

INSTALL THE SHIM OF THIS THICKNESS (mm)

1. Measure the clearance (when engine is cold).
  2. Check present shim size.
  3. Match clearance in vertical column with present shim size in horizontal column.
  4. Install the shim specified where the lines intersect. This shim will give the proper clearance.
- Example:** Present shim is 2.60 mm  
 Measured clearance is 0.25 mm  
 Replace 2.60 mm shim with 2.70 mm shim.
5. Remeasure the valve clearance and readjust if necessary.

**NOTE**

*○ If there is no clearance, select a shim which is several sizes smaller and then measure the clearance.*

VALVE CLEARANCE ADJUSTMENT CHART  
EXHAUST VALVE

PART No. (92025-)	PRESENT SHIM																			Example			
	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	55	60
MARK	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	00		
THICKNESS (mm)	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00		

VALVE CLEARANCE MEASUREMENT	Example	SPECIFIED CLEARANCE/NO CHANGE REQUIRED																									
		1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00
0.00~0.04		1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00
0.05~0.09		1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	
0.10~0.14		1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00		
0.15~0.19		1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00			
0.20~0.25																											
0.26~0.30		2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00					
0.31~0.35		2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00						
0.36~0.40		2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00							
0.41~0.45		2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00								
0.46~0.50		2.20	2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00									
0.51~0.55		2.25	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00										
0.56~0.60		2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00											
0.61~0.65		2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00												
0.66~0.70		2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00													
0.71~0.75		2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00														
0.76~0.80		2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00															
0.81~0.85		2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00																
0.86~0.90		2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00																	
0.91~0.95		2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00																		
0.96~1.00		2.70	2.75	2.80	2.85	2.90	2.95	3.00																			
1.01~1.05		2.75	2.80	2.85	2.90	2.95	3.00																				
1.06~1.10		2.80	2.85	2.90	2.95	3.00																					
1.11~1.15		2.85	2.90	2.95	3.00																						
1.16~1.20		2.90	2.95	3.00																							
1.21~1.25		2.95	3.00																								
1.26~1.30		3.00																									

Parts No.	Thickness
92180-1208	1.95 mm
92180-1209	1.90 mm
92180-1210	1.85 mm
92180-1211	1.80 mm
92180-1212	1.75 mm
92180-1213	1.70 mm

The shim from 1.70 to 1.95 mm thick are also available.

INSTALL THE SHIM OF THIS THICKNESS (mm)

4. Install the shim specified where the lines intersect. This shim will give the proper clearance.

**Example:** Present shim is 2.55 mm.  
Measured clearance is 0.50 mm.  
Replace 2.55 mm shim with 2.75 mm shim.

5. Remeasure the valve clearance and readjust if necessary.

NOTE

○ If there is no clearance, select a shim which is several sizes smaller and then measure the clearance.