

General Shim and Shim Kit Information

Shim Qualities

- All shims are made from A2 tool steel, the highest quality steel for this application.
- All shims are hardened to an Rc 58 to 62. This is very hard, much harder than Ducati OEM shims, resulting in excellent wear and impact qualities.
- The physical design of EMS shims are similar to Ducati OEM shims. The 7 mm closer shims are slightly different to work optimally with MBP retainers. The slight difference has no affect when using the stock Ducati OEM half rings.
- All shims are made in USA using the latest in turning machine technology.
- All shims are 100% inspected.
- The design and material have been extensively tested on the road and on the track. EMS shims are used all over the world in race and street bikes. Some Ducati dealers in the US are now using EMS shims.
- EMS closer shims do not deform over time, where the stock Ducati OEM shims do deform down in the groove where the retainers reside. The “dishing” that occurs contributes to increased valve clearances.
- Since the shims are hardened completely through, they may be lapped down without affecting the hardness of the shim.
- I recommend starting with around 300 grit paper and finishing with 600 grit. Make sure the foundation is completely flat (a piece of glass or a granite plate). It takes about 1 minute to remove .001 in (.025 mm)

Shim Application

- There are two basic shim designs for Ducati Motorcycles, one for 7 mm diameter valve stems and one for 8 mm diameter valve stems. There are two shims per valve, an opener shim which sits on top of the valve stem and a closer shim which slips over the valve stem and is constrained by two half ring retainers.
- The 8 mm diameter valve stems were used on all the earlier 2V Ducatis. When the 851 came along, 7 mm dia valve stems were used with a new shim design.
- The “4V” shim design was then used on all the 4V bikes, 888, 916, 996, 748, 998, 999, 749, 1098, 848, etc.
- The 749S and later model 999R and 1098R models use 6 mm diameter valve stems and a completely different shim design.
- The 7 mm shims are used on all 2V and 4V Ducatis from 2007 and later.
- See the Valve Shim Application Chart to find out which shim is used each model of Ducati.
- The 7 mm closer shims were redesigned when the 1098 was introduced. The chamfer on the outside was moved toward the bottom of the shim for clearance with adjacent cams. All EMS 7 mm closer shims fit either the older 4V bikes and the newer ones (1098, 848).

Shim Kit Designs

Over the last few years I have accumulated a lot of data correlating the shim sizes used in the various Ducati Motorcycles. Using this data I have come up with 4 different shim kits to provide the appropriate range of shims needed for all the Ducati's manufactured. The kits are listed below. Each kit has one of each shim size (except the 4V modified kit for use with MBP retainers). It is unusual to need more than one shim of a particular size per bike. *If you buy a shim kit from me and it should happen that you need more shims that are not in the kit, I will trade out shims that you will never use with shims you need at no extra cost. Just send the shims you will never use and a list of shims you need and I will make the exchange.*

1) Shim Kit 2V- 8mm

- This shim kit is designed for all 8 mm valve stem bikes. It includes the older bikes (Grand Canyon, older supersports, Paso, etc. see shim application chart)

- It has a total of 36 shims:

Closers- 15 Shims, from 6.20 mm to 7.60 mm in .10 mm increments

Openers- 21 Shims, from 3.00 mm to 5.00 mm in .10 mm increments

Spacer tool provided to measure size of closer shims

36 compartment storage case

- The range of shims needed for the two valve bikes is greater than for the bikes that use the 7mm shims. Therefore to make the kit affordable, the increment between shim sizes is .10 mm (.0039 in). 8 mm shims in half sizes (.05 mm increments) are available but not included in this kit.

2) Shim Kit, 2V Small- 7mm

- This shim kit is designed for the 2V bikes that use the 7 mm valves. It includes the Monster 695, 698, 1100, Hypermotard and Multistrada 1000 and 1100. See shim application chart for a complete list.

- There a total of 18 shims:

Closers- 8 shims from 2.80 mm to 3.50 mm in .10 mm increments

Openers- 10 shims from 2.20 mm to 3.10 mm in .10 mm increments

Spacer tool provided to measure size of closer shims

36 compartment storage case

- This kit was designed to minimize cost as there are about ½ as many shims as the 2V Large Kit. Since there are only 4 valves total in a 2V motor, a .10 mm increment may be an adequate coverage of shims. Since .10 increments are used some shims may need to be lapped to get the exact valve clearances needed.

3) **Shim Kit, 2V Large- 7 mm**

- This kit is also designed for the 2V bikes that use the 7 mm valves. It includes the Monster 695, 698, 1100, Hypermotard and Multistrada 1000 and 1100. See shim application chart for a complete list.

- There are a total of 35 shims:

Closers- 17 shims from 2.75 mm to 3.55 mm in .05 mm increments

Openers- 18 shims from 2.20 mm to 3.05 mm in .05 mm increments

Spacer tool provided to measure size of closer shims

36 compartment storage case

- This kit was designed with the maximum number of shims to minimize lapping and maximize coverage.

4) **Shim Kit, 4V- 7mm**

- This kit was designed for all 3V and 4V bikes including all the Superbikes, Sport Touring, 4V Monster, MTS 1200, and Streetfighter.

- There are a total of 30 shims:

Closers- 16 shims from 2.80 mm to 3.55 mm in .05 mm increment

Openers- 14 shims from 2.60 mm to 3.25 mm in .05 mm increment

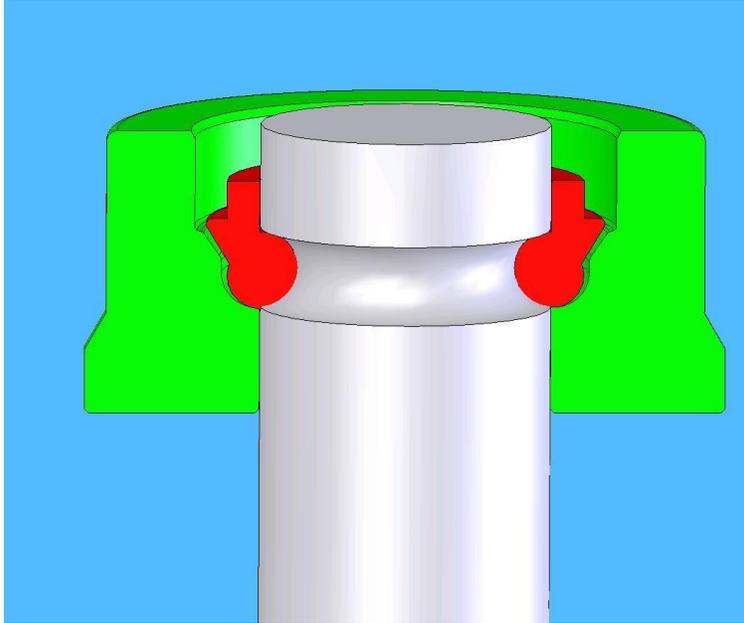
Spacer tool provided to measure size of closer shims

36 compartment storage case

- Since 4V bikes have 4 valves per cylinder, a .10 mm increment kit was not offered. 4V bikes typically require more shim replacements as compared to 2V bikes.

5) **Shim Kit, 4V with Modified Opener Shims**

- This kit was designed for all 4V bikes when the MBPDVRS (MBP Retainers) are used. Note the MBP Retainer protrudes up past the groove in the valve stem. The counterbore in the bottom of the 7mm modified opener shim is needed for clearance. See the diagram below:



Modified Opener Shim

- There is a total of 44 shims:
 - Closers- 19 shims, from 2.65 mm to 3.55 mm in .05 mm increments
 - Modified Openers- 22 shims from 2.60 mm to 3.25 mm in .05 mm increments
 - 2.60 mm to 2.70 mm- 1 ea
 - 2.75 mm to 3.10 mm- 2 ea
 - 3.15 mm to 3.25 mm- 1 ea
- Two of each shim in the more common sizes are included in the kit.

Remember, if you buy a shim kit from me and it should happen that you need more shims that are not in the kit, I will trade out shims that you will never use with shims you need at no extra cost. Just send the unused shims and a list of shims you need and I will make the exchange.