



General Shim and Shim Kit Information

Shim Qualities

- All shims come from two sources: machine shops in the USA and from the original shim supplier for Ducati in Italy. The Ducati shims are made to Ducati specifications and have the size in millimeters etched on the side of each shim. The Ducati shims are made from a bearing steel and through hardened to Rc 58. The shims made in the USA do not have the sizes etched on them. These shims are made from A2 tool steel and hardened to around Rc 62. The physical design of EMS shims are almost identical to Ducati OEM shims.
- All shims are 100% inspected and some are lapped to bring them into their size tolerance.
- 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.
- 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

- The two most common shim designs for Ducati Motorcycles are the 7 mm shims (for 7 mm dia valve stems) and 8 mm shims (for 8 mm dia. 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.

Below are pics of the 8 mm and 7 mm closer and opener shims



8 mm Closer 8 mm Opener 7 mm Closer 7 mm Opener

- 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 7 mm 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 also used on all 2V 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 7 mm shims sold by EMS fit both the older 4V bikes and the newer ones (1098, 848, etc).
- The Panigale has 7 mm diameter valve stems but uses two different types of closer shims. The standard 7 mm closer shim is used on the exhaust valve. The closer shim on the intake valve is of a brand new design. It has a tapered hole through it like the 6 mm closer shims and is used with special tapered collets. The opener shims on all the valves are the standard 7 mm opener shim

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 many different shim kits to provide the appropriate range of shims needed for all the Ducati motorcycles manufactured. The kits are listed below.

1) 2V- 8mm Shim Kit

- This shim kit is designed for all 8 mm valve stem bikes. It includes the older bikes (Grand Canyon, older Supersports, Paso, and Monsters, 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) 2V- 7mm Small Shim Kit

- This shim kit is designed for the 2V bikes that use the 7 mm valves, which includes the Monster 1100, 796, 696, 695, S2R-1000, S2R-800, 1000, Multi 1100, 1000DS, 1000, Sportclassic 1000, Hypermotard 1100, 796, Supersport 1000. See shim application chart for a complete list.
- There a total of 16 shims:
 Closers- 8 shims from 2.70 mm to 3.40 mm in .10 mm increments
 Openers- 8 shims from 2.30 mm to 3.00 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 less than 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) **2V- 7 mm Large Shim Kit**

- This kit is also designed for the 2V bikes that use the 7 mm valves, which includes the Monster 1100, 796, 696, 695, S2R-1000, S2R-800, 1000, Multi 1100, 1000DS, 1000, Sportclassic 1000, Hypermotard 1100, 796, Supersport 1000, ST2 See shim application chart for a complete list.
- There are a total of 38 shims:

Closers- 18 shims, 2.70 (1), 2.75 (1), 2.80 (1), 2.85(1), 2.90 (1), 2.95 (2), 3.00 (2), 3.05 (2), 3.10 (1), 3.20 (1), 3.25 (1), 3.30 (1), 3.35 (1), 3.40 (1).

Openers- 20 shims, 2.30 (1), 2.35 (1), 2.40 (1), 2.45 (1), 2.50 (1), 2.55 (1), 2.60 (1), 2.65 (1), 2.70 (2), 2.75 (2), 2.80 (2), 2.85 (2), 2.90 (1), 2.95 (1), 3.00 (1)

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

This shim kit is designed for the following 4V desmoquattro and early testestretta bikes: 851, 888, 916, 748, 749, 996, 998, 999, MS4, MS4R, MS4RS, ST3, ST3S, ST4, ST4S

- There are a total of 38 shims:

Closers- 19 shims, 2.70 (1), 2.75 (1), 2.80 (1), 2.85 (1), 2.90 (1), 2.95 (2), 3.00 (2), 3.05 (2), 3.10 (2), 3.15 (1), 3.20 (1), 3.25 (1), 3.30 (1), 3.35 (1), 3.40 (1)

Openers- 19 shims, 2.65 (1), 2.70 (1), 2.75 (1), 2.80 (1), 2.85 (2), 2.90 (2), 2.95 (2), 3.00 (2), 3.05 (2), 3.10 (2), 3.15 (1), 3.20 (1), 3.25 (1)

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

- This shim kit was designed for the 4V bikes 2007 and later and include: 1198, 1098, 848, Streetfighter, Hyper 821, Hyperstrada, Diavel, Multi 1200, Panigale 899, Monster 821, Monster 1200.

- There are a total of 34 shims:

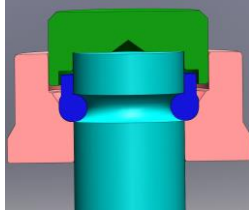
Closers- 18 shims, 2.95 (1), 3.00 (1), 3.05 (1), 3.10 (1), 3.15 (1), 3.20 (2), 3.25 (2), 3.30 (2), 3.35 (2), 3.40 (2), 3.45 (1), 3.50 (1), 3.55 (1).

Spacer tool provided to measure size of closer shims.

36 Compartment Storage case.

6) **Early 4V- 7 mm Modified Shim Kit with Modified Opener Shims**

- This kit was designed for the early 4V bikes when the 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 pic below:



- This shim kit is designed for the following 4V desmoquattro and early teststretta bikes: 851, 888, 916, 748, 749, 996, 998, 999, MS4, MS4R, ST3, ST3S, ST4, ST4S
- There are a total of 42 shims:
Closers-19 Shims, 2.70 (1), 2.75 (1), 2.80 (1), 2.85 (1), 2.90 (1), 2.95 (2), 3.00 (2), 3.05 (2), 3.10 (2), 3.15 (1), 3.20 (1), 3.25 (1), 3.30 (1), 3.35(1), 3.40 (1).
Modified Openers- 23 Shims, 2.65 (1), 2.70 (1), 2.75 (1), 2.80 (1), 2.85 (2), 2.90 (3), 2.95 (3), 3.00 (3), 3.05 (3), 3.10 (2), 3.15 (1), 3.20 (1), 3.25 (1)
Closer Measurement Tool provided to measure the size of the closer shims
36 Compartment Storage Case

7) **Later 4V- 7 mm Modified Shim Kit with Modified Opener Shims**

- This shim kit was designed for the 4V bikes 2007 and later and include:
1198, 1098, 848, Streetfighter, Hyper 821, Hyperstrada, Diavel, Multi 1200, Panigale 899, Monster 821, Monster 1200.
- There are a total of 39 shims:
Closers- 18 shims, 2.95 (1), 3.00 (1), 3.05 (1), 3.10 (1), 3.15 (1), 3.20 (2), 3.25 (2), 3.30 (2), 3.35 (2), 3.40 (2), 3.45 (1), 3.50 (1), 3.55 (1)
Modified Openers- 21 shims, 2.65 (1), 2.70 (1), 2.75 (1), 2.80 (2), 2.85 (2), 2.90 (3), 2.95 (3), 3.00 (3), 3.05 (2), 3.10 (1), 3.15 (1), 3.20 (1).
Closer Measurement Tool provided to measure the size of the closer shims
36 Compartment Storage Case