

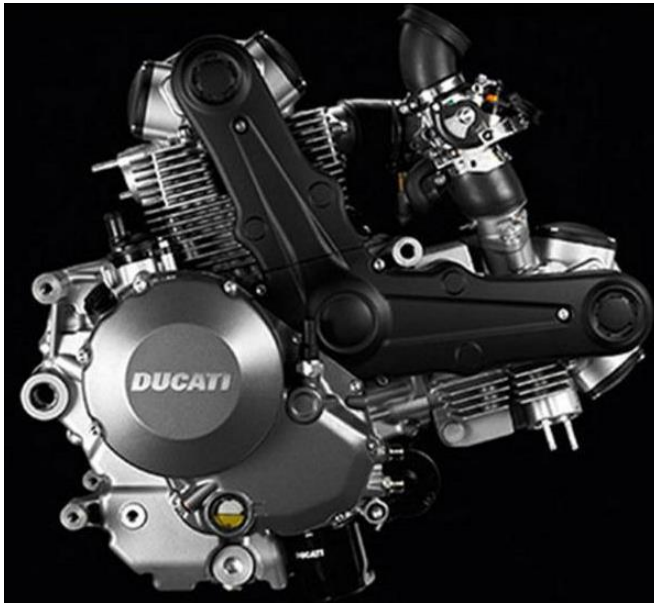


## **Scrambler**

### **Belt Replacement User Guide**

by Evan T DeWan at [ducati-toolrental.com](http://www.ducati-toolrental.com)

## Introduction



The Scrambler engine is an updated version of Ducati's classic SOHC V-twin. It is an air-and-oil cooled two-valve engine displacing 803cc.

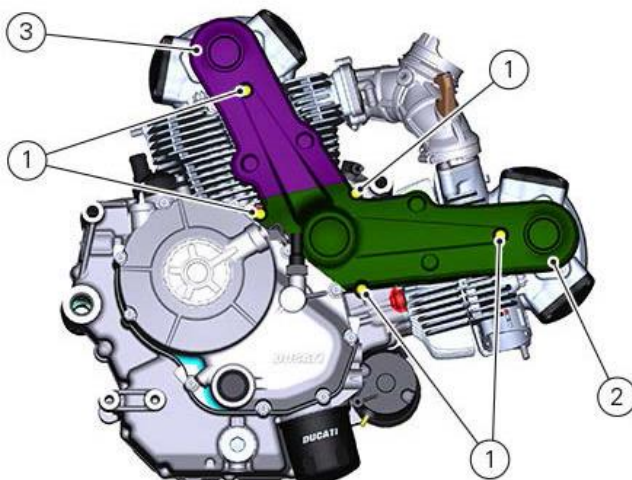
## Operation

The Desmodromic (Desmo) engines use a positive valve control system to open and close the valves at the same time in the combustion cycle regardless of RPM. The Desmo valve system depends on an opening rocker arm and a closing rocker arm that open and close the valve in a precisely controlled manner.

The rocker arms are driven by cam shafts which in turn are driven by belts. The belts deteriorate from wear and age. The belts must be replaced at the prescribed intervals for optimum engine life and performance.

Before the belts can be changed, there is some disassembly required.

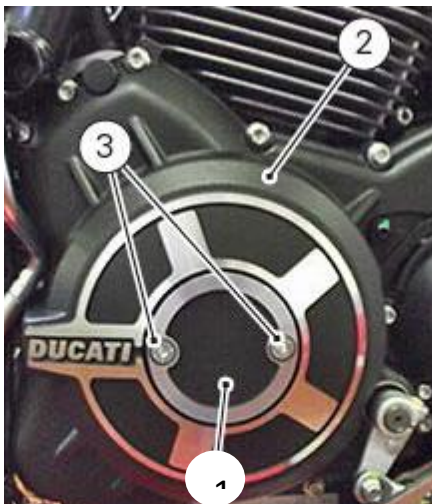
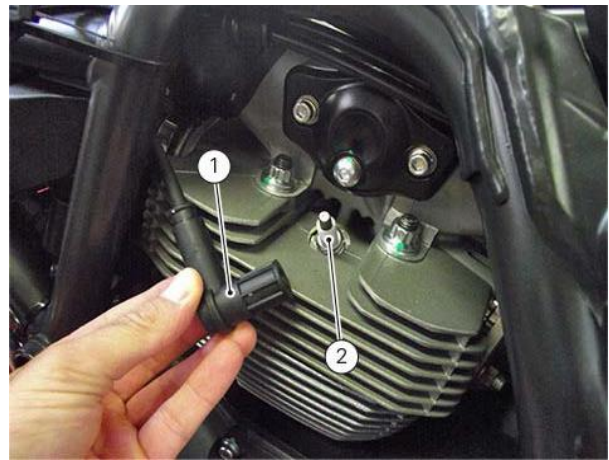
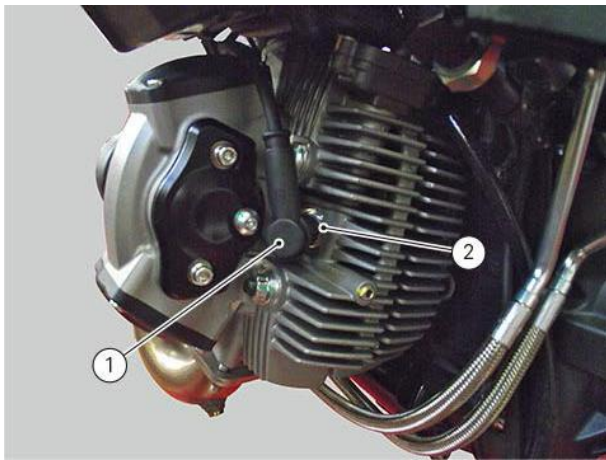
- Place the motorcycle on a swing arm stand, transmission in neutral.
- Remove the exhaust system.
- Remove the belt covers.



Loosen screws (1) and remove the external cover (2) of the horizontal timing belt. Loosen screws (1) retaining the external cover (3) of the vertical timing belt and remove it.

## Remove the Spark Plugs

Remove the spark plug boots (1) and the spark plugs (2) from the horizontal and vertical cylinders.



Working from vehicle left-hand side, loosen the two screws (3) and remove plug (1) from generator cover (2)

Once the plug is removed from the generator cover, install the engine turning tool, making sure the tangs on the tool engage the indents on the crank shaft (4).



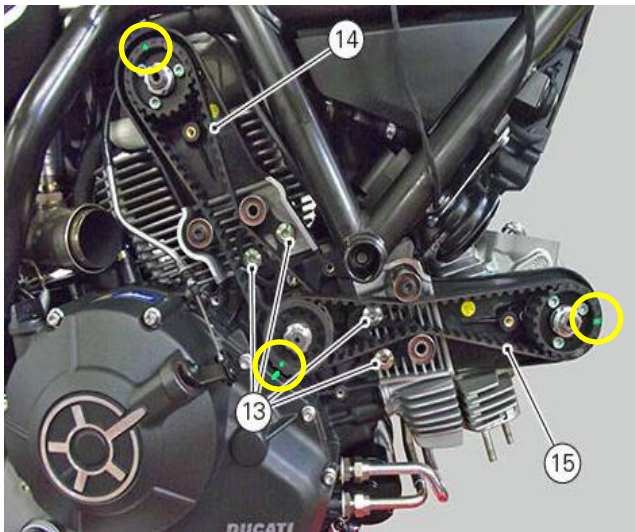
Tighten the retaining bolt snug with a 13 mm wrench.

With the sparkplugs removed rotate the engine turning tool counter clockwise (from the left side of the engine) until the horizontal cylinder comes to the top of its stroke: Top Dead Center (TDC).

TDC occurs at the top of the compression stroke. You can feel air rushing out of the cylinder as the piston comes up on the compression stroke. A pencil or other device gently inserted into the cylinder will give a visual indication when the piston has reached the top of the stroke. (The handle of the engine turning tool will be in line with the horizontal cylinder)



**IMPORTANT:** With the horizontal cylinder at TDC the engine is in the "HOME" position. The HOME position is the condition where all the timing marks will align.

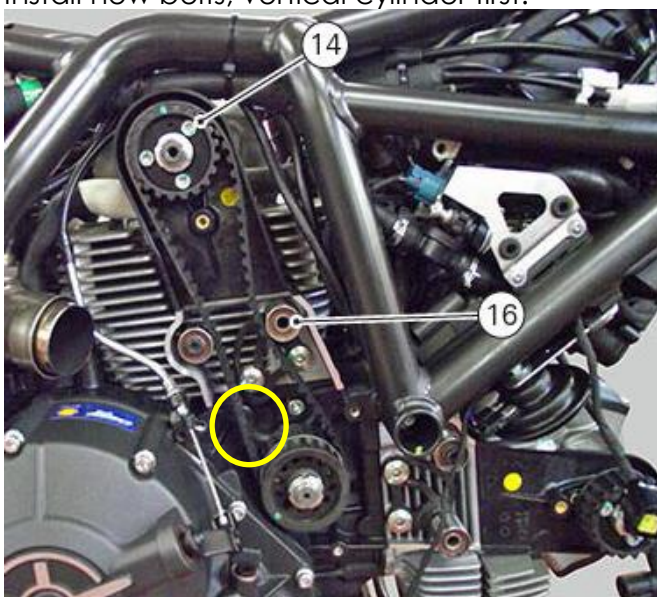


Note how the timing marks, indicated in green, align when the engine is in the "HOME" position (TDC, the horizontal cylinder). If there are no marks on the belt pulleys, make some using a paint pen or other suitable marker. Maintaining the pulleys in the correct position is critical.

Loosen the two screws (13) from belt tensioner (14) on vertical cylinder and belt tensioner (15) on horizontal cylinder.

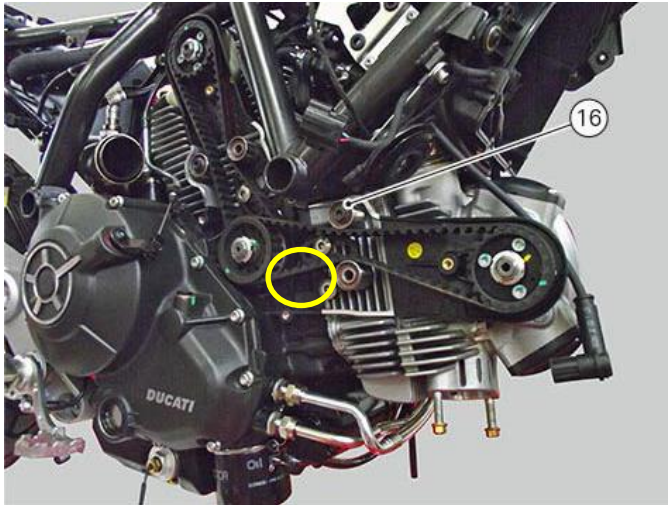
Remove both belts.

Install new belts, vertical cylinder first.



Fit belt (14) and put some tension in it by hand using the mobile belt tensioner (16). Tighten the two screws on the belt tensioner. Check proper tensioning using the harmonic belt tool by placing the end of the meter probe close to the circled portion of the belt. Strum or pluck the belt with your finger/thumb to get the frequency reading. Frequency reading for proper tensioning is **110** Hz with a new belt. If this value is not reached, work the mobile tensioner (16) until getting the proper reading.

Install the belt for the horizontal cylinder.



Put some tension in it by hand using the mobile belt tensioner (16). Tighten the two screws on the belt tensioner.

Check proper tensioning using the harmonic belt tool by placing the end of the meter probe close to the circled portion of the belt. Strum or pluck the belt with your finger/thumb to get the frequency reading. Frequency reading for proper tensioning is **110** Hz with a new belt.

If this value is not reached, work the mobile tensioner (16) until getting the proper reading.

Using the engine rotating tool, rotate the engine through several rotations and set the engine in the "HOME" position.

Using the Harmonic Belt Tool, recheck the tension and verify 110 HZ reading. Refit the belt covers (Refitting the timing belt external covers).

Refit the exhaust system (Refitting the exhaust system).