

TESTASTRETТА BELT REPLACEMENT

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This procedure applies to all Testastretta engines except the DVT.

DISASSEMBLY

Secure the bike to a stand or a lift.

Place the transmission in neutral.

Take pictures of everything, especially electrical connections and routing of leads, hoses, etc. (to aid in reassembly).

Use a paint pen or other marking device to make alignment marks (i.e.-oil pressure sensor connection) for reassembly purposes.

Remove the side fairings.

Disconnect the battery (the battery negative terminal is the first removed and the last installed).

Remove enough interference to gain access to the cylinders and timing belt covers. This may include the fuel tank/seat cowling assembly, the air-box, and radiator (note: sometimes the radiator can be pushed to one side to allow adequate clearance). Get a picture of cooling fan connections (both sides). Place a catch pan underneath the radiator hoses to catch the fluid during removal.

Remove the spark plugs (at least one from each cylinder).

Place transmission in neutral.

Remove the rocker cover.

Remove the timing belt covers:

Undo the bolts securing the vertical timing belt cover and remove it from the vertical cylinder assembly. Some finesse may be required as this is a tight fit in the frame.

Undo the bolts securing the timing belt cover and remove it from the horizontal cylinder unit.

Remove the spark plugs and place transmission in neutral. This is important: the engine will not rotate with the spark plugs installed or the transmission in gear. The engine will have to

rotate during belt replacement and is only possible with the removal of the spark plugs and placing the transmission in neutral.



Once the spark plugs are removed, the engine-turning tool can be installed. Remove the cover on the left side of the engine and install the engine-turning tool onto the end of the crankshaft. Note: the tangs on the engine-turning tool fit neatly into indents on the crankshaft. Tighten the bolt to snug and the engine is

ready to turn counter clockwise (CCW) into the correct position(s) for belt replacement.

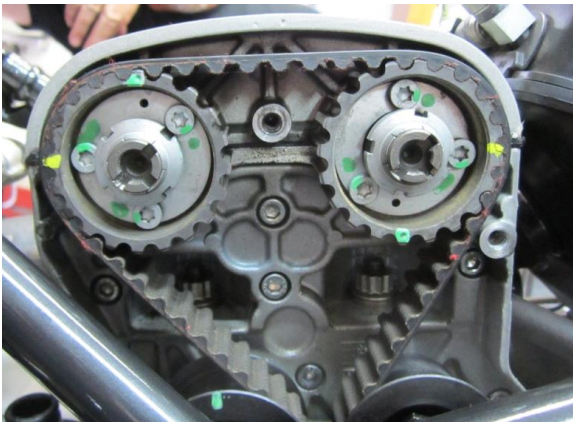
Place the engine in the "home" position. The "home" position is when the horizontal cylinder is at Top Dead Center (TDC): the compression stroke of the horizontal cylinder. From the left-hand side of the engine, rotate the engine slowly counterclockwise to locate TDC. There are several ways to find TDC. The easiest way is to stick your thumb in the spark plug hole on the horizontal cylinder and rotate the engine until you find compression coming from the cylinder. Stop at the top of the stroke.



With the belt covers removed check alignment on the belts and pulleys. The intermediate shaft drives the cam belts. There is a mark (dimple) on the pulley and a mark on the engine case. At TDC of the horizontal cylinder, the marks will align. Use the paint pen to mark this alignment. Slight rotation of the engine forward/back may be necessary to locate TDC at this point.

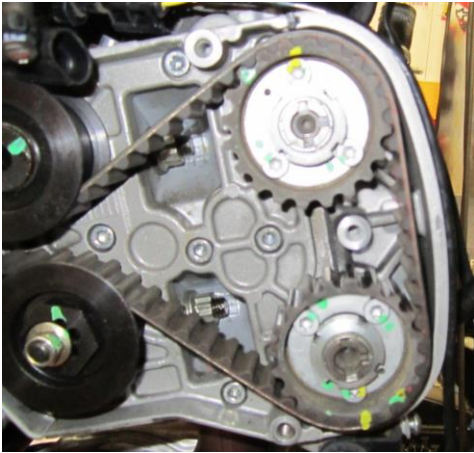
When the engine is in the "Home" position the mark on the intermediate shaft pulley will align with a mark on the engine cover.

A note about markings: Once the cam belt covers are removed, various marks on nuts, pulleys, etc. are evident. These are "torque" stripes. Once a Factory Technician torques a component down, it is marked. This makes it easier to keep track of what has/has not been torqued and a visual aid for the QA person to check if everything is tightened.

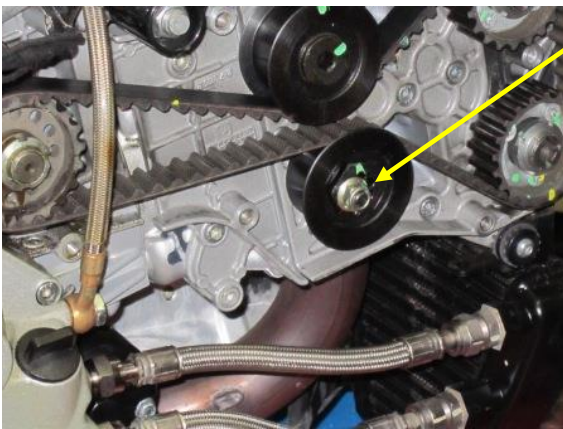


The torque stripes (green marks) do not necessarily indicate alignment.

Look at the belt pulleys attached to the cams on the vertical and horizontal cylinders. The dimples (marks) on the pulleys will not align with anything useful. Use the paint pen to make some alignment marks you can refer to and always get the engine back to this "home" position. The yellow marks were made with a paint pen to indicate where the pulleys align with the gasket with the engine in the "home" position.



The yellow marks pictured on this horizontal cylinder are made on the pulleys where the valve cover gasket sets on the cylinder head. The three previous pictures show the pulley alignment at the "home" position. The markings will be necessary for reassembly when the belts have to be removed for replacement.

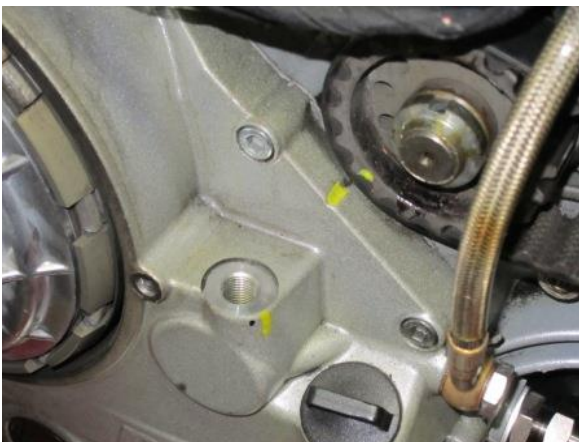


Loosen the tensioning pulley by loosening the Fuji nut and rotating the tensioning pulley clockwise (away from the cam drive gears). Loosen the nut and remove the tensioning pulley from its mounting stud on the cylinder head. Removing the tensioning pulley facilitates belt removal/installation. Label the tensioning pulley (horizontal or vertical).

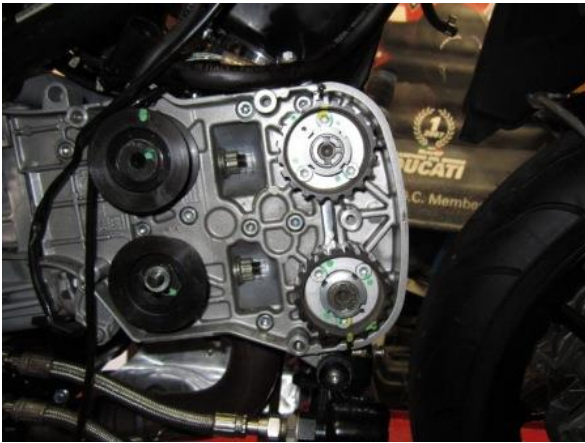
Remove the timing belt from the horizontal cylinder assembly.

Repeat the procedure for the vertical cylinder.

REASSEMBLY



Align the marks on the intermediate shaft and the engine cover.



Align the marks on the cams with the engine cases for the vertical and horizontal cylinders.

The vertical cylinder will require the small (included with the tool kit) cam holding tool to keep the intake cam in position while the belt is installed.

Install the belts, vertical cylinder first: bottom pulley first and work your way up.

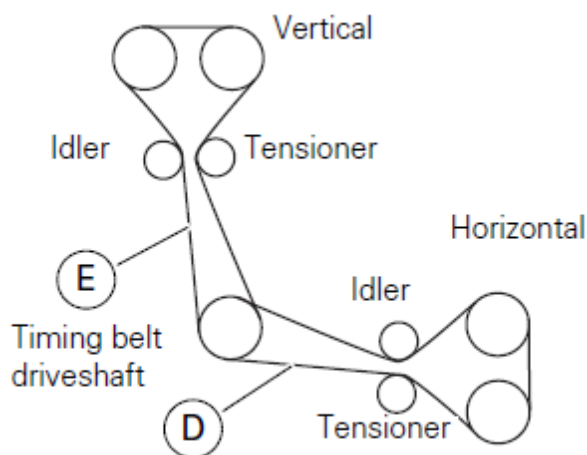
Install the tensioning pulleys and the Fuji nuts, but do not tighten them yet.

When putting tension on the belt, rotate the tensioning pulley counter clockwise and tighten (moving them toward the top of the cylinder head).

Use the meter to measure the frequency per the instructions. Make sure the cylinder you want to make the belt measurement on is at top dead center (TDC) on the combustion stroke. This ensures that the small valve closing springs are not exerting any pressure on the cam lobes and thereby potentially affecting the



belt tension measurement.



Once the belts are installed and tensioned, rotate the engine to verify everything lines up and check the tension again. Adjust as necessary.

Use 19 ft. lbs. of torque on the belt tensioning nuts

Set the belt frequency at 110HZ for all 4-cam engines. Measure the tension at points D and E to get an accurate frequency measurement.

Install the spark plugs, refit the radiator, and refit the air box

Refit the fuel tank: Use new O-rings on the fitting lubricated with Vaseline prior to assembly.

Reinstall the seat cowling assembly and fairings.