

Step 1: Remove the right-hand wheel arch trim to access the crankshaft central bolt.

Turn the engine by hand to move the flywheel to approximately 90 degrees before TDC. (Top Dead Center) Install the locating pin (see photo) ([MINI Cooper S R56 Special Tool 11 9 590](#)) to lock the position of the engine.

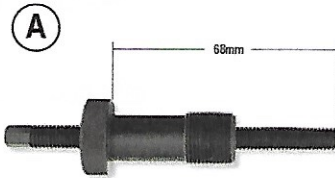


Step 2: Remove the chain tensioner and collect the residual oil with a shop towel.

(The tensioner is located on the side of the engine block timing cover facing the firewall.)

Fit the timing chain tensioner tool ([MINI Cooper S R56 Special Tool 11 9 340](#)) without the seal ring and with the lock nut loose. Pretension the chain tensioner tool to 0.6 Nm, and finger-tighten the lock nut.

Remove the chain tensioner tool ([MINI Cooper S R56 Special Tool 11 9 340](#)) from the engine, with the lock nut still tight. Measure the distance (A) as shown. If the distance (A) is less than 68mm, then only replace the chain tensioner piston with BMW P/N [11 31 7 598 956](#).

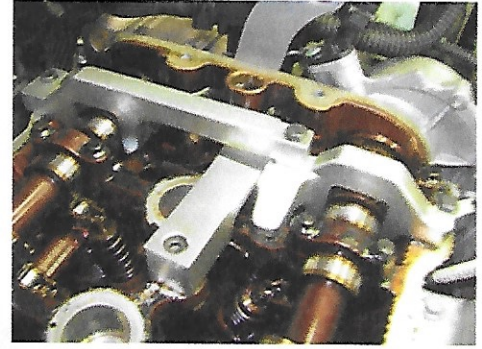


If the distance (A) is 68mm or greater, then replace the following timing chain components:
! Important: Do not replace the intake camshaft VANOS adjustment unit or the exhaust camshaft sprocket.

Step 3: Remove serpentine belt.

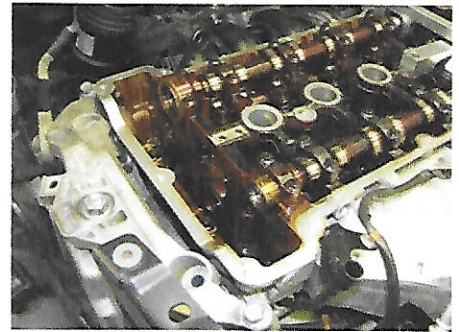
Step 4: Remove the valve cover.

Step 5: Assemble and install the cam locking tool brackets.



Step 6: Remove crankshaft bolt inside the crankshaft pulley which allows for timing chain cassette removal.

Step 7: Remove the old timing chain rail cassette by sliding the whole assembly up and out.



Step 8: Assemble the new timing chain rail cassette with the new crank sprocket held in place with the specially designed tabs.



Step 9: Install the crankshaft pulley and bolt.

Step 10: Install the new timing tensioner.

Step 11: Remove the Cam locking tool. Remove the Crankshaft locking tool.

Step 12: Install the new valve cover gasket, and replace the valve cover to factory torque specifications.

Step 13: Install the new serpentine belt.