

Install spacer tool (BMW 11 1 411) in place of right cylinder head cover gasket. Place cover on cylinder head.

- Install right cylinder head cover fasteners and tighten uniformly in ½ turn steps.

### Tightening torque

Cylinder head cover to cylinder head (M6)	10 Nm (7 ft-lb)
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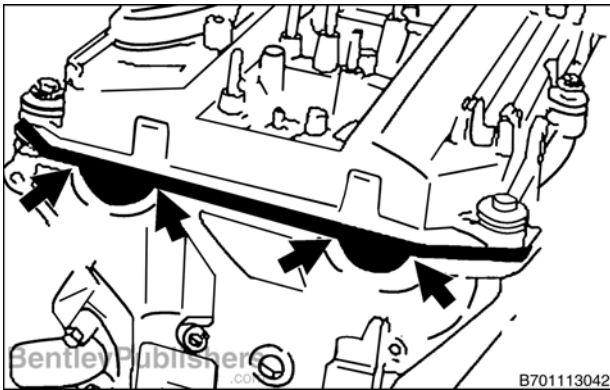
- Tighten right upper timing chain cover mounting bolts in two passes.

### Tightening torque

Timing chain cover to cylinder head (M6)	10 Nm (7 ft-lb)
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- Remove right cylinder head cover and BMW special tool 11 4 411.

Reinstall cylinder head cover to right cylinder head using new gaskets. Be sure to use additional sealant at half-moon cutout corners (**arrows**). See **113 Cylinder Head Removal and Installation**.



- Working at each upper timing chain cover:
  - Use 36 mm deep socket (BMW special tool 11 6 420) to reinstall VANOS solenoid. Wipe solenoid clean.
  - Clean solenoid flange sealing surface,
  - Lightly oil sealing lip of solenoid flange cover and install over solenoid.
  - Reattach solenoid electrical harness

### Tightening torque

VANOS solenoid to VANOS oil distributor (M27 x 1.5)	25 Nm (18 ft-lb)
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- Reinstall left and right camshaft sensors.
- Install primary timing chain tensioner with new sealing washer.

### Tightening torque

Chain tensioner to right upper timing chain cover	40 Nm (30 ft-lb)
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- Remainder of installation is reverse of removal. Remember to:
  - Use new sealing O-rings when reattaching secondary air injection manifold.
  - Reattach cooling system hoses. Fill and bleed cooling system. See **170 Radiator and Cooling System**.