TT00012
Revised Cylinder Head Bolts In 2010 Subaru 2.5L Engines

S. B. International, Inc., offers the following information regarding a revised cylinder head bolt on 2010 midyear Subaru 2.5L engines. The purpose ofthis bulletin is to inform technicians that a surface treatment of the cylinder head bolts has changed for production purpose along with installation procedures.

The new style bolts were introduced into production on December 4, 2009. The bolts are interchangeable and can be mixed, however the new procedure must be followed regardless.

SOHC Cylinder Head Bolt Installation

1. Clean the bolt threads and the bolt holes in the cylinder block. To avoid erroneous tightening of the bolts, clean the bolt holes sufficiently by blowing with compressed air to eliminate engine coolant etc.
2. Apply a sufficient coat of engine oil to the washer and bolt thread.
3. Tighten all bolts to 29.5 ft/lbs (40 Nm) in alphabetical order as shown in **Figure 1**.
4. Tighten all bolts to 70.1 ft/lbs (95 Nm) in alphabetical order. If the bolt makes a stick-slip noise (a squeaking sound) during tightening, start over from **Step 1**. In this case, the cylinder head gasket can be reused.
5. Loosen all bolts 180° in the reverse order of installing and loosen them an additional 180°.
6. Tighten all bolts to 7.4 ft/lbs (10 Nm) in alphabetical order.
7. Tighten all bolts to 22.1 ft/lbs (30 Nm) in alphabetical order.
8. Tighten all bolts to 44.2 ft/lbs (60 Nm) in alphabetical order.
9. Tighten all bolts 80-90° in alphabetical order.
10. Tighten all bolts an additional 40-45° in alphabetical order. Do not exceed 45°.
11. Tighten bolts (a) and (b) further by 40-45°. Do not exceed 45°. Caution: Make sure that the total ñtightening angleò of steps 10 and 11 does not exceed a total of 90°.

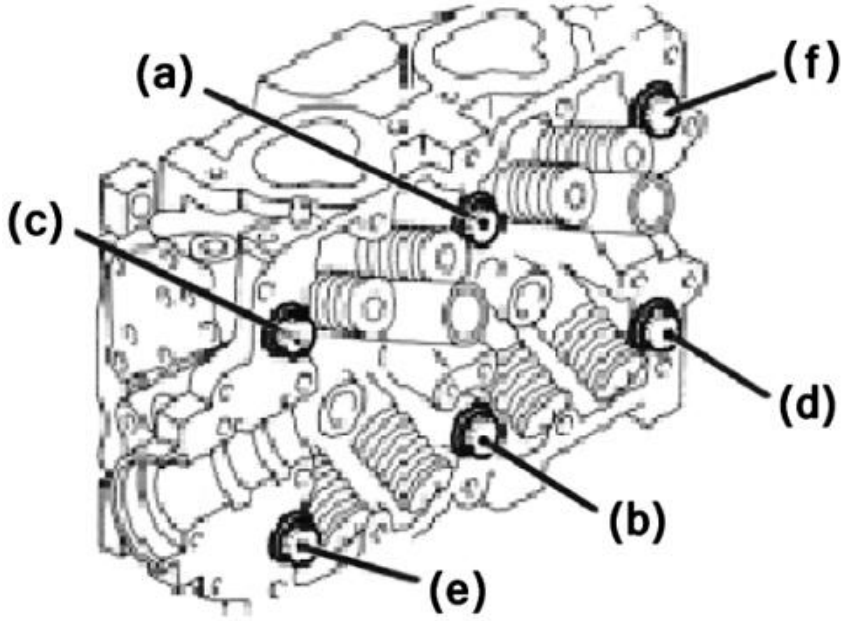
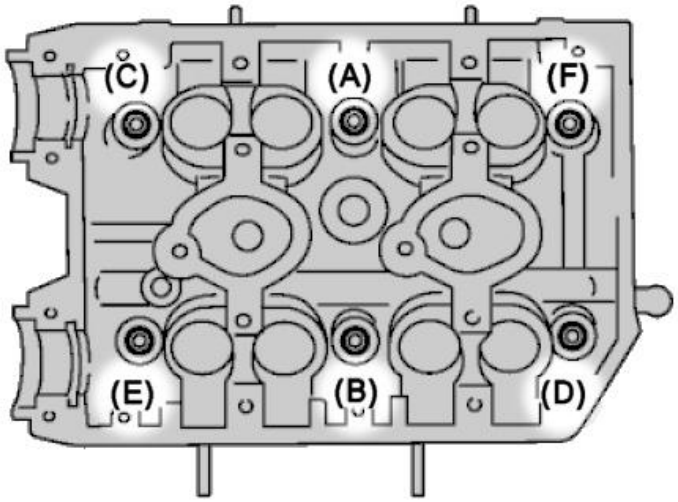


Figure 1. SOHC cylinder head bolt torque sequence.

DOHC Cylinder Head Bolt Installation

1. Clean the bolt threads and the bolt holes in the cylinder block. To avoid erroneous tightening of the bolts, clean the bolt holes sufficiently by blowing with compressed air to eliminate engine coolant etc.
2. Apply a sufficient coat of engine oil to the washer and bolt thread.
3. Tighten all bolts to 29.5 ft/lbs (40 Nm) in alphabetical order as shown in **Figure 2**.
4. Tighten all bolts to 70.1 ft/lbs (95 Nm) in alphabetical order. If the bolt makes a stick-slip noise (squeaking sound) during tightening, start over from **Step 1**. In this case, the cylinder head gasket can be reused.
5. Loosen all bolts 180° in the reverse order of installing and loosen them an additional 180°.
6. Tighten all bolts to 7.4 ft/lbs (10 Nm) in alphabetical order.
7. Tighten all bolts to 22.1 ft/lbs (30 Nm) in alphabetical order.
8. Tighten all bolts to 51.6 ft/lbs (70 Nm) in alphabetical order.
9. Tighten all bolts 80-90° in alphabetical order.
10. Tighten all bolts an additional 40-45° in alphabetical order. Do not exceed 45°.
11. Tighten bolts (A) and (B) further by 40-45°. Do not exceed 45°. Caution: Make sure that the total ñtightening angleò of steps 10 and 11 does not exceed a total of 90°.

Figure 2. DOHC cylinder head bolt torque sequence.



Cylinder Bolt Usage Chart – Engine Assembly

		New Bolt	Old Bolt
Surface Color		Black	Silver
DOHC Bolt	Part Number	11095AA160	11095AA042
	Length under bolt neck	173mm	173mm
	Head Shape	Concave	Concave
SOHC Bolt (Corner)	Part Number	11095AA170	11095AA123
	Length under bolt neck	191mm	191mm
	Head Shape	Flat	Concave
SOHC Bolt (Center)	Part Number	11095AA180	11095AA141
	Length under bolt neck	191mm	191mm
	Head Shape	Concave	Flat