Main Bearing Installation for 2011-2018 Subaru/Toyota 2.0L FA20 Engines

The AERA Technical Committee offers the following information regarding the detailed main bearing installation for 2011-2018 Subaru/Toyota 2.0L FA20 engines. These engines are the result of team engineering from both manufacturers to produce high performance production engines.

Follow the steps noted below to install the main bearings and torque the bolts to the specifications supplied here-in. Note: When loosening and tightening the bolts, hold the cylinder block sub-assembly (for bank 2) while not holding the cylinder block sub-assembly (for bank 1) to ensure the joint accuracy of the cylinder blocks.

Figure 1. Banks and Bearing Locations

This procedure is for final assembly only as sealant is to be used between the two block halves. To check bearing clearances sealant should not be used.
Figure 2. “O” Ring Seal for Bank 2

Apply a New “O” Ring to the location indicated by the black arrow shown in the Figure 2 on bank 2.

Bearing Detail Chart

- No. 1 and No. 3 Bearings (with groove)
- No. 2 and No. 4 Bearings (without groove)
- No. 5 Bearing
- for Bank 1
- for Bank 2

- Install new bearings at the proper locations noting detail in chart above and Figure 1.
- The shapes of the No. 1 and No. 3 bearings are different from those of the No. 2 and No. 4 bearings. Be sure to install them in the right locations.
- Then, apply engine assembly lube to the exposed bearings surfaces.
- Carefully place the crankshaft on the bearing surfaces of bank 2.
- Apply seal packing (Three Bond 1217G or equivalent) to the mating surface of the cylinder block sub-assembly (for bank 1) as shown in the illustration below.
- Do not allow the seal packing too overflow to the oil passage or crankshaft bearing because seizure may result.
- Install the cylinder block sub-assembly (for bank 1) within 5 minutes of applying seal packing. Start the tightening procedure within the 5 minutes.
- Place the cylinder block sub-assembly (for bank 1) to the cylinder block sub-assembly (for bank 2).
- Apply engine oil to the washers and cylinder block bolt threads. To prevent engine oil from entering the water jacket, do not apply a large amount.
Follow the detailed 9 steps below to correctly tighten the main bearing bolts using a 12MM socket wrench.

1. **TORQUE ALL BOLTS IN SEQUENCE TO 26 FT/LBS**
2. **LOOSEN ALL BOLTS IN SEQUENCE 180°**
3. **TORQUE ALL BOLTS IN SEQUENCE TO 26 FT/LBS**
4. **LOOSEN 4 BOLTS IN SEQUENCE 180°**
5. **TORQUE 4 BOLTS IN SEQUENCE TO 13 FT/LBS**
6. **TIGHTEN 4 BOLTS IN SEQUENCE AN ADDITIONAL 60°**
7. **LOOSEN 6 BOLTS IN SEQUENCE 180°**
8. **TIGHTEN 6 BOLTS IN SEQUENCE TO 13 FT/LBS**
9. **TIGHTEN 6 BOLTS IN SEQUENCE AN ADDITIONAL 60°**

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**Step 1. Torque to 26 FT/LBS**

**Step 2. Loosen all bolts 180°**

**Step 3. Torque to 26 FT/LBS**

**Step 4. Loosen 4 bolts 180°**
Step 5. Tighten bolts to 13 FT/LBS

Step 6. Tighten Bolts an Additional 60°

Step 7. Loosen 6 bolts 180°

Step 8. Tighten bolts to 13 FT/LBS

Step 9. Tighten Bolts an Additional 60°