

Cylinder Head Gasket Selection & Installation On Caterpillar C3.3 Diesel Engines

The AERA Technical Committee offers the following information on cylinder head gasket selection and installation for Caterpillar C3.3 diesel engines. This information should be considered any time the cylinder head has been removed. This engine uses multiple thickness head gaskets during engine assembly depending on the piston protrusion observed before re-assembly.

The head gaskets are marked with no notch or notches to indicate the gasket thickness and those notches are visible without removing the cylinder head as shown in Figure 1 below. If no work has been done on the engine before this head gasket repair, replace the head gasket with a “like” gasket that is removed.

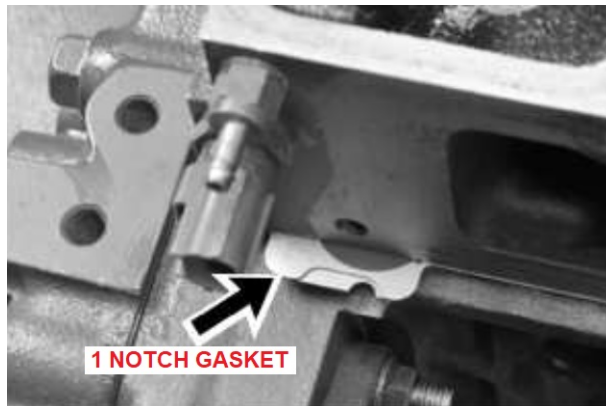


Figure 1. Gasket Identification Location

When replacing the piston, piston pin bushing, connecting rod or crank pin bearing, or various other work has been done, select the cylinder head gasket thickness to meet with the top clearance to match the piston protrusion.

Measuring Piston Protrusion

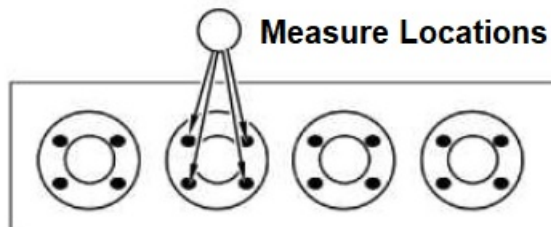


Figure 2. Measurement Locations

With a stationary dial indicator measure the piston head protrusion from the crankcase cylinder face at 4 spots per each piston using the dial gauge as shown in Figure 2. Record and get the average of the 4 measurements for all pistons. From the chart below select and obtain the proper thickness head gasket.

	Gasket Thickness		Piston Protrusion
2 Notch	NEW .035" (.900MM)	Compressed .030" (.800 MM)	.003-.006" (.008-150 MM)
1 Notch	.0394" (1.000 MM)	.035" (.900 MM)	.006-.0098" (.151-.250 MM)
No Notch	.0453" (1.150 MM)	.0394" (1.000 MM)	.0099-.0135" (.251-.342 MM)

Refer to Figure 3 below following the torque sequence shown and torque the cylinder head bolts to the listed specification.

- Apply engine oil to the threads of the bolts before assembly.
- Torque the cylinder head bolts in sequence to 138 FT/LBS (187 Nm)
- Torque the cylinder head bolts in sequence to 145 FT/LBS (196 Nm)

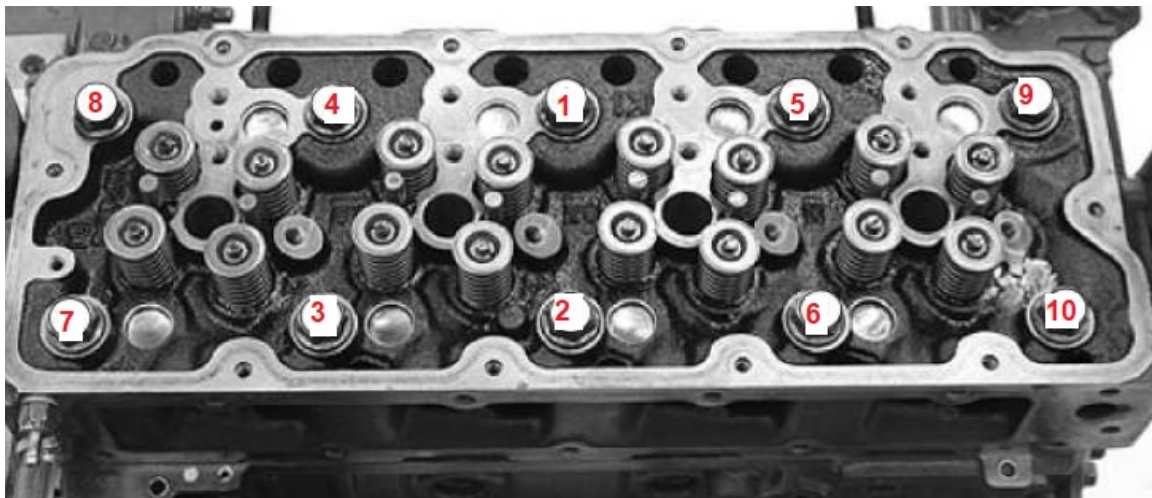


Figure 3. Cylinder Head Bolt Torque Sequence