T o allow additional salvage operations and block reclamations the Caterpillar Corporation does offer an oversize .025˝ (.635 mm) outside diameter bearing set. Caterpillar also offers main bearing sets for oversize bore bearings in both standard and .025˝ (.635 mm) inside diameters (see chart below).

To determine if a block you’re checking has the oversize bores, use the following procedures:

1) Install main bearing caps in original positions.
2) Lubricate cap bolt threads and bore head contact surfaces with a small quantity of thread lubricant 2PR206.
3) Install and tighten main cap bolts on the left side to 180-200 ft.lbs (246-274 N m).
4) Install and tighten main cap bolts on the right side to 180-200 ft.lbs (246-274 N m).
5) Tighten the main cap bolts on the right side by rotating them an additional 120°.
6) Tighten the main cap bolts on the left side by rotating them an additional 120°.
7) Measure your measurements and compare to the standard main bore diameter specification of 5.1133˝-5.1143˝ (129.878-129.903 mm).
8) Record your measurements and compare to the standard main bore diameter specification of 5.1133˝-5.1143˝ (129.878-129.903 mm).

If the block you are checking is larger than the above standard specification, compare it to the oversize dimension of 5.1383˝-5.1393˝ (130.513-130.538 mm). If there is a need to resize, it is recommended to go to the oversize, rather than repairing by align boring back to standard dimensions.

The new long cylinder hex head flange cap screw (p/n 4923187) that supersedes p/n 3045850.

Cumeens 10.0L cylinder head cap screw chart.
Valve & Valve Guide Caution For Cummins 11.0L ISM, M11 & QSM Diesel Engines

Engine builders are cautioned that 11.0L M11, IAM and QSM Cummins diesel engines have valves and valve guides that may be incompatible. As a condition of a product improvement, Cummins implemented chrome intake valve stems and a reverse scroll valve guide for all locations beginning with engine serial number (ESN) 35135680 built in July 2005.

These reverse scroll guides were implemented to prevent excess exhaust valve guide wear in the lower portion of the valve guide inside diameter. The reverse scroll guide has 50 percent more surface area in the lower portion of the valve guide inside diameter.

The valve guides are the same for the intake and exhaust valves. Engines prior to ESN 35135680 were built with chrome plated exhaust valve stems and non-reversed scroll valve guides. To accommodate the change in the valve guides, it was required that the intake valve stems be chrome plated to prevent excess wear on the intake valve stem. The chrome plated intake valve stems were released a month before the release of the reverse scroll valve guides in order to prevent usage of non-chrome plated valve stems with the reverse scroll guides. Do not use intake valves from prior serial number engines in cylinder heads with reverse scroll valve guides.

Intake valves with chrome plated valve stems, p/n 4926069 or 4955239, must be used on cylinder heads which have the reverse scrolled valve guides, p/n 4923471, or reverse scrolled oversized valve guides, p/n 4923473.

Either chrome plated intake valve, p/n 4926069, or non-chrome plated intake valve, p/n 3417778, can be used on cylinder heads which have the non-reverse scrolled valve guides, p/n 3328786.

Reverse scroll valve guides can be identified by the inner threading (spiral) of the guide at the top end, as opposed to no threads (spiral) on the non-reverse scroll guides.

Cylinder Head Installs For 1986-2004 Cummins 14.0L N, NT & N14 Diesel Engines

Because different cylinder head bolts have been used in Cummins 14.0L N, NT and N14 diesel engines, the installation procedures may be different depending on the age of the head.

This service parts topic provides the correct procedure to tighten the cylinder head gasket cap screws (Figure 1, page 31). Information about the different cylinder head bolts have been used as described previously in AERA Technical Bulletin TB...
There is a difference between procedures of cylinder heads manufactured before and after January 1991.

**Pre-1991 Cylinder Heads**

When tightening the head bolts on N Series engines built before January 1991 and using head bolt, p/n 209700 or 3013623, the following procedure should be used.

- Head bolts part numbers 209700 and 3013623 can be identified by an “NT” or “NTC” stamped on the head of the bolt.

**1991 and Later Cylinder Heads**

When tightening the head bolts on N Series engines built in January 1991 and later, and using head bolt, Part No. 3071161, 3068897, or 3068898, the following procedure should be used.

- Head bolt part numbers 3071161, 3068897 and 3068898, can be identified by a “<90” stamped on the bolt.

The old cylinder head gasket (p/n 4059350) included a one-piece steel carrier for the high pressure supply and low pressure oil return (Figure 2, page 32). The old gasket has been made obsolete and superseded by the new one (Figure 3, page 32).

The first engine serial number (ESN) for the new cylinder head gasket is 79156618, built on January 20, 2006.

**Connecting Rod Caution For 1998-2002 Detroit Diesel 40 Series 7.6L Diesel Engines**

The connecting rods for 1998-2002 Detroit Diesel 40 Series 7.6L diesel engines may have pin bushings machined offset, so engine builders should be aware of the differences.

The cylinder head gasket (p/n 4926316) contains two individual pieces, one for the high pressure oil supply and one for the low pressure oil return.

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are cautioned to check rod lengths carefully. It is believed this occurred to re-establish the intended center-to-center length (8.638"-8.642" (219.405-219.507 mm) of the connecting rod. The reported offset has been to the rod big end, thus shortening the rod as measured without the bushing installed.

While it is common practice for some machine shops to hone fit connecting rod bushings after installation, that process does not allow for adjustment of the center-to-center length of a connecting rod. If this method of piston pin fit is used, excessive piston protrusion may result, allowing piston to cylinder head contact if the engine is started.

Rocker Shaft Disassembly Caution For 2000-2007 Mack 11.0L MP7 & MP8 Diesel Engines

When disassembling the rocker shaft for 2000-2007 Mack 11.0L MP7 and MP8 engines you must pay attention to engines equipped with the PowerLeash™ engine brake. In this system the exhaust rocker arm incorporates an integral engine brake valve and piston.

When removal of the rocker shaft is necessary, the pistons must be retained to keep them fully retracted in the bores. Suitable tie wraps or mechanic’s wire can be used to secure the pistons in place. Failure to secure the engine brake piston before removing the rocker shaft assembly will allow the piston to drop from the bore as the shaft is removed. Should this occur, it may not be noticed, or it may be difficult to push the piston fully back into the bore.

Additionally, plungers are a match-fit to the rocker arm, and inadvertent mix-up of components must be avoided. Assembling the rocker shaft to the engine or operating an engine with the engine brake pistons not fully retracted will result in breakage of valve train components and significant engine damage.

Note: The tie wraps or mechanic’s wire must be removed only after the rocker shaft has been reinstalled on the engine. TSG