



Service Manual

S4S Diesel Engine

1001-up

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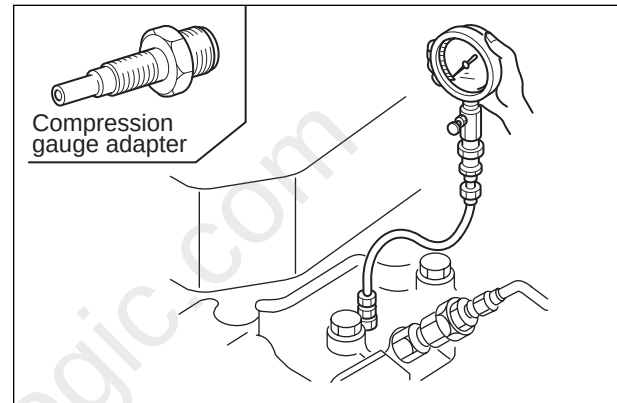
2. Testing Compression Pressure

2.1 Preparation

- (1) Make sure the engine oil, air cleaner, starter and battery are normal.
- (2) Start the engine and allow it to warm up to operating temperature.

2.2 Testing

- (1) Move the stop lever to the stop position (fuel cut).
- (2) Remove all glow plugs from the cylinder head.
Connect compression gauge (33911-02100) to the cylinder on which the compression is to be measured with compression gauge adapter (30691-21100).
- (3) Crank the engine with the starter, then read the compression gauge indication when the engine begins running at 300 rpms.
- (4) If the compression pressure is lower than the repair limit, overhaul the engine.



Measuring compression pressure

CAUTION

- (1) Measure the compression pressure on all cylinders.
- (2) Compression pressure varies with the engine speed. Check the engine speed when measuring the compression pressure.

Unit: MPa (kgf/cm²) [psi]

Item	Assembly Standard	Service Limit
Compression pressure	3.24 (33) [470]	2.84 (29) [412]

NOTE

Measure the compression pressure, with the engine running at 300 rpms and the oil and water temperatures at 20 to 30°C (68 to 86°F).

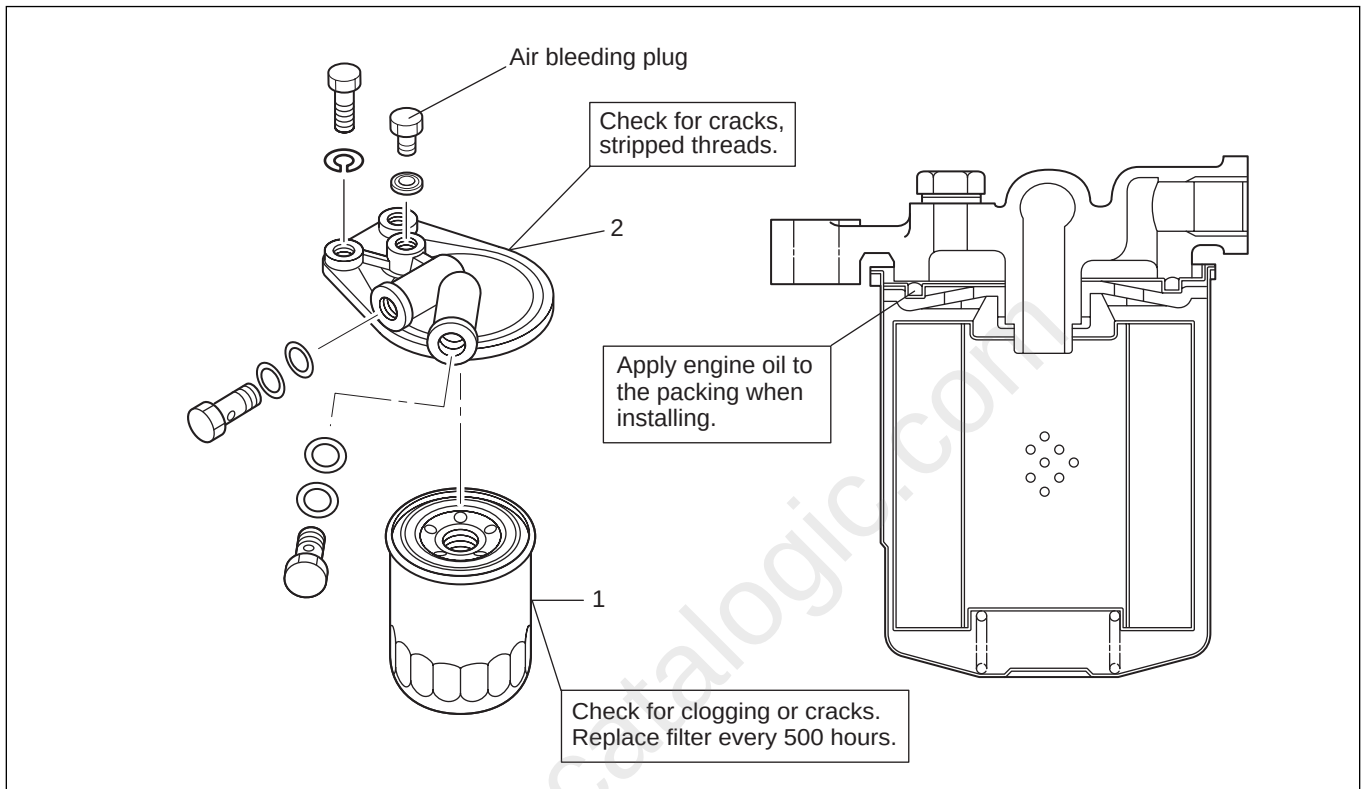
CAUTION

- (1) Measure the compression pressure at regular intervals to obtain correct data.
- (2) The compression pressure will be slightly higher in a new or overhauled engine due to new piston rings, valve seats, etc. Pressure will drop gradually by the wear of parts.

2. Fuel Filter (Continued)

Disassembly and Inspection

In-line type fuel injection pump

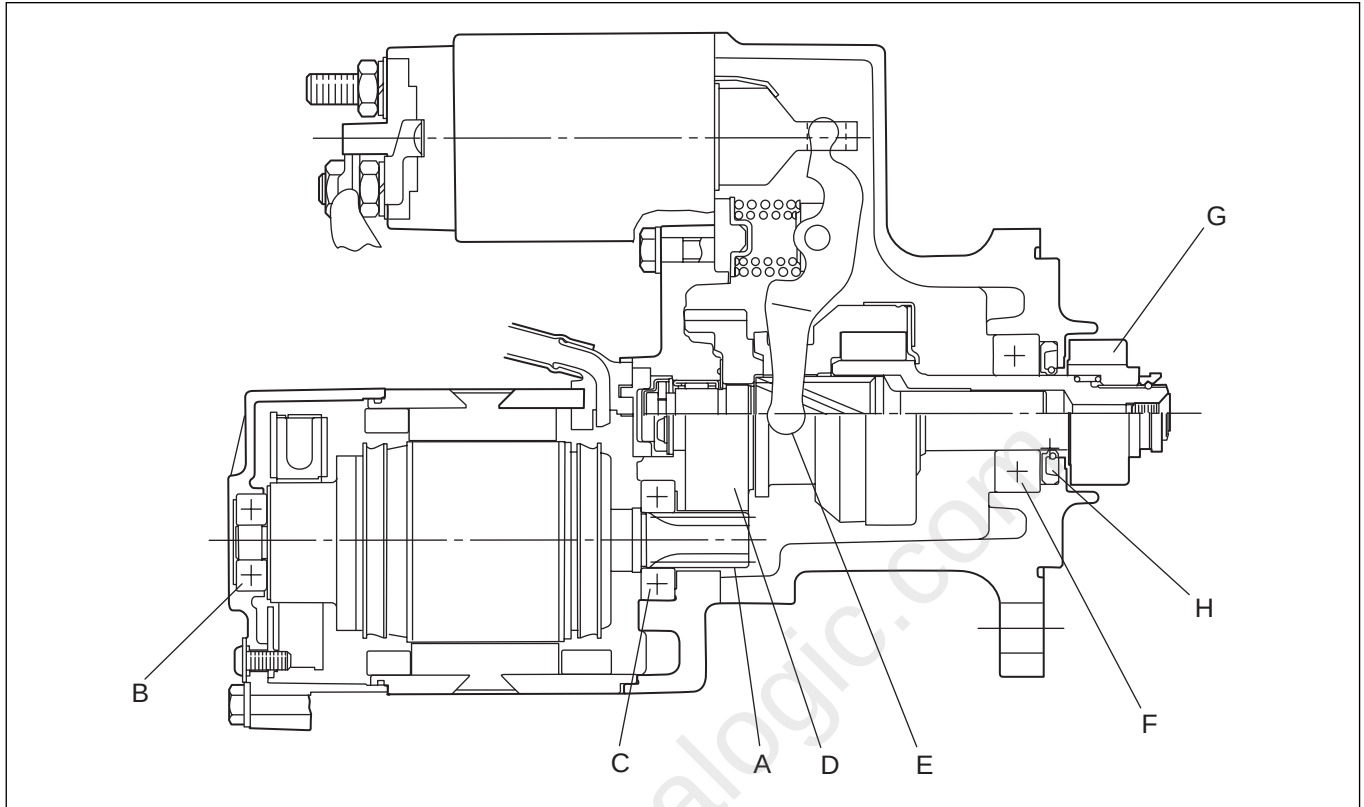


Sequence

1 Filter element

2 Bracket

M2TS0071A (12V-2.2kW)

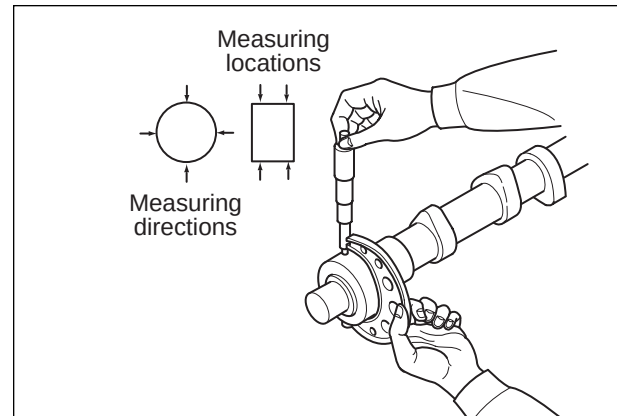


Greasing points on reassembly

- | | |
|--|--|
| A Armature shaft gear | E Lever sliding section of magnetic switch |
| B Armature rear bearing (Slightly. Be careful not to let the grease enter the commutator.) | F Pinion shaft bearing |
| C Armature front bearing | G Pinion |
| D Reduction gear | H Oil seal |

2.6 Checking Clearance between Camshaft Journal and Bore in Crankcase (or Bushing)

Measure the diameter of the camshaft journal and the inside diameter of the bore in the crankcase (or bushing) for camshaft as shown in the illustration to check the clearance. If the clearance exceeds the service limit, replace the camshaft.



Measuring camshaft journal

Unit: mm (in.)

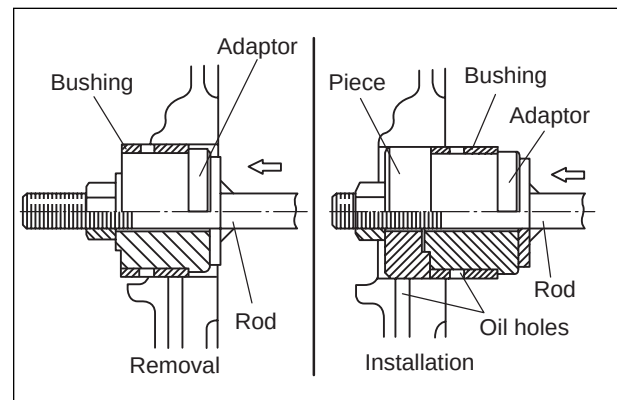
Item		Nominal Value	Assembly Standard	Service Limit
Diameter of camshaft journal	No. 1 and No. 2	54 (2.13)	53.94 to 53.96 (2.1236 to 2.1244)	53.90 (2.1220)
	No. 3	53 (2.09)	52.94 to 52.96 (2.0843 to 2.0850)	52.90 (2.0827)
Clearance between camshaft journal and bore in crankcase (or bushing) for camshaft		—	0.07 to 0.11 (0.0028 to 0.0043)	0.15 (0.0059)



Measuring bore in crankcase (bushing) for camshaft

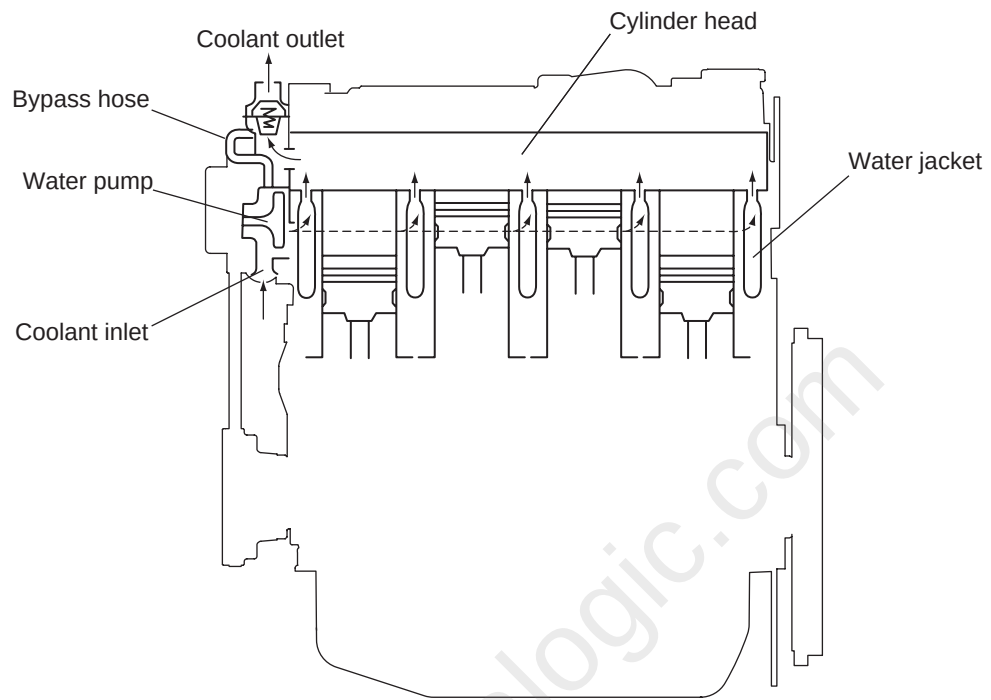
2.7 Replacing Camshaft Bushings

- (1) If the clearance between the camshaft journal and bore in the crankcase exceeds the service limit, refinish the bore to 57H6 ($^{+0.019}_0$) 3.125 Ra. and install bushings.
- (2) To replace or install bushings, use camshaft bushings installer set (30691-00010).
- (3) Install bushings with their oil holes aligned with the holes leading to the oil gallery.



Replacing camshaft bushings

1. Cooling System



Full Version Available

Caterpillar DP20 MC Forklift Engine Service Manual (99729-96100)

Caterpillar DP20 MC forklift engine service manual, repair procedures, testing, adjustments, and service data. Downloadable PDF format.

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