CATERPILLAR

Service Manual

303.5C MINI HYD EXCAVATOR

DMY00001-UP

Printed by Heavy Equipment Manuals **Printed in U.S.A**
v2.20

Heavy Equipment Manuals

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04020373

Air Inlet and Exhaust System - Inspect

SMCS - 1050-040

Measuring exhaust manifold distortion

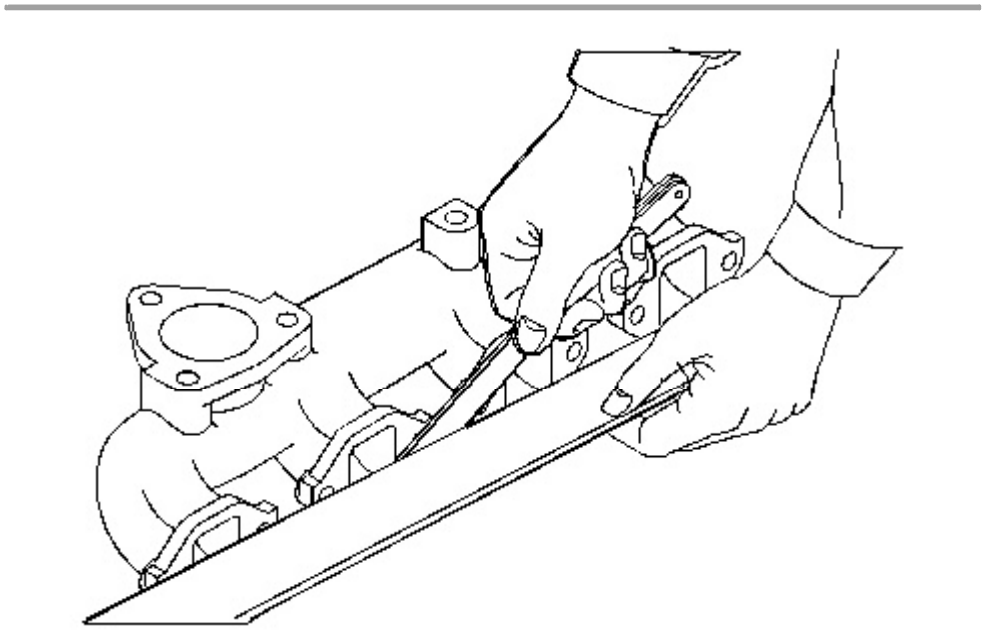


Illustration 1 g02239554

1. Check the flange for crack.
2. Check the flange surface for distortion. If the distortion exceeds the standard, retouch the surface.

Table 1

Item	Standard
Exhaust manifold distortion	Less than 0.150 mm (0.0059 inch)

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.
Tue Jun 9 21:05:41 UTC+0530 2020

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04116257

Air Inlet and Exhaust System - Install

SMCS - 1050-012

Installing inlet and exhaust system

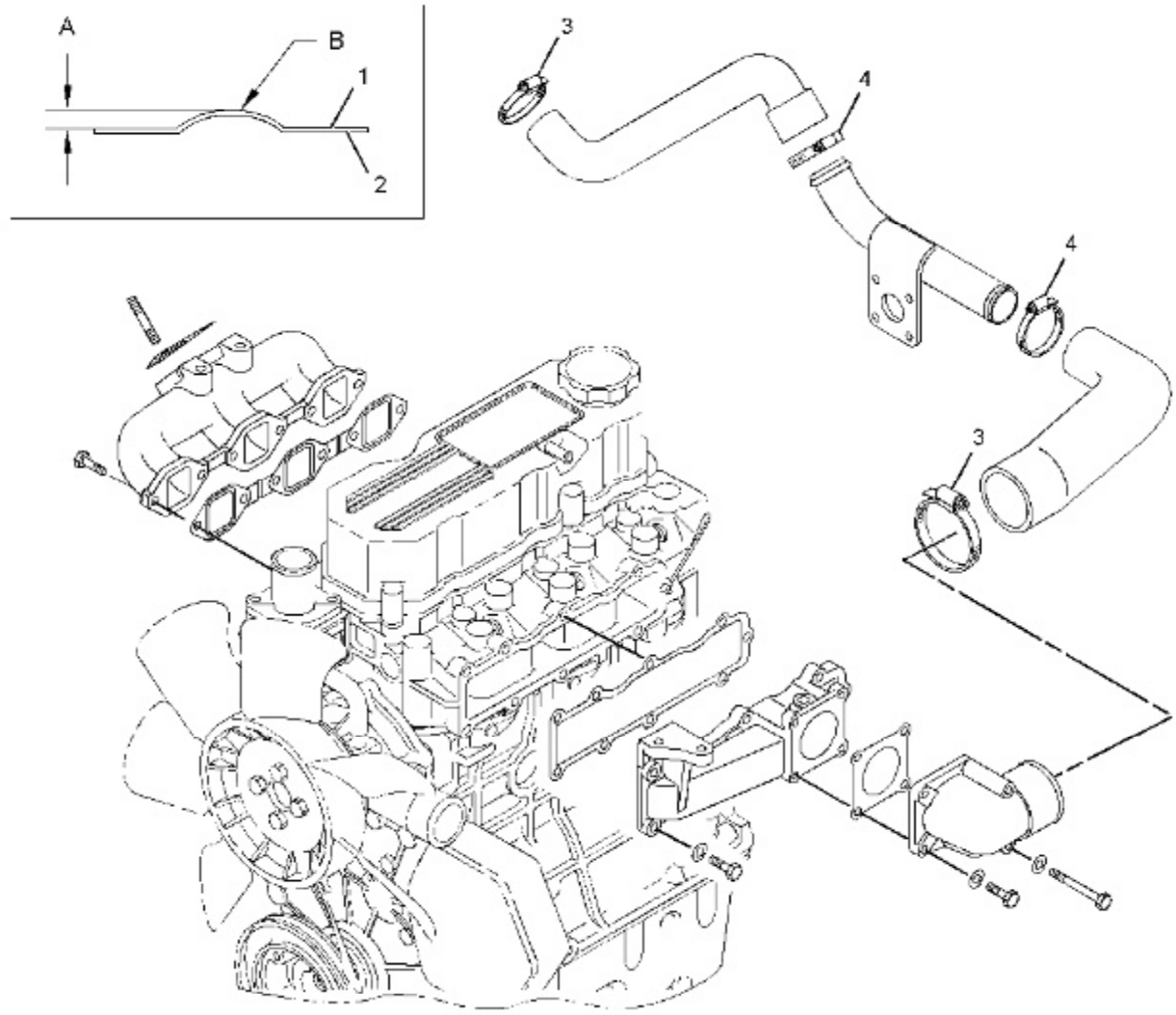


Illustration 1 g02317847

1. Replace all the inlet and exhaust system gaskets.
2. Exhaust gasket installing at exhaust manifold side (1) .
3. Exhaust gasket installing at cylinder head side (2) .
4. Tighten the clamps (3) to 7 ± 1 N·m (62 ± 9 lb in).
5. Tighten the clamps (4) to 6 ± 1 N·m (53 ± 9 lb in).
6. Dimension for (A) 1.0 mm (0.04 inch).
7. Radius for (B) 5.0 mm (0.20 inch).

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04116179

Air Inlet and Exhaust System - Remove

SMCS - 1050-011

Removing inlet and exhaust system

This is the sample of the manual click on the download link for complete manual

DOWNLOAD LINK

For some reason if link does not work download this pdf and then click

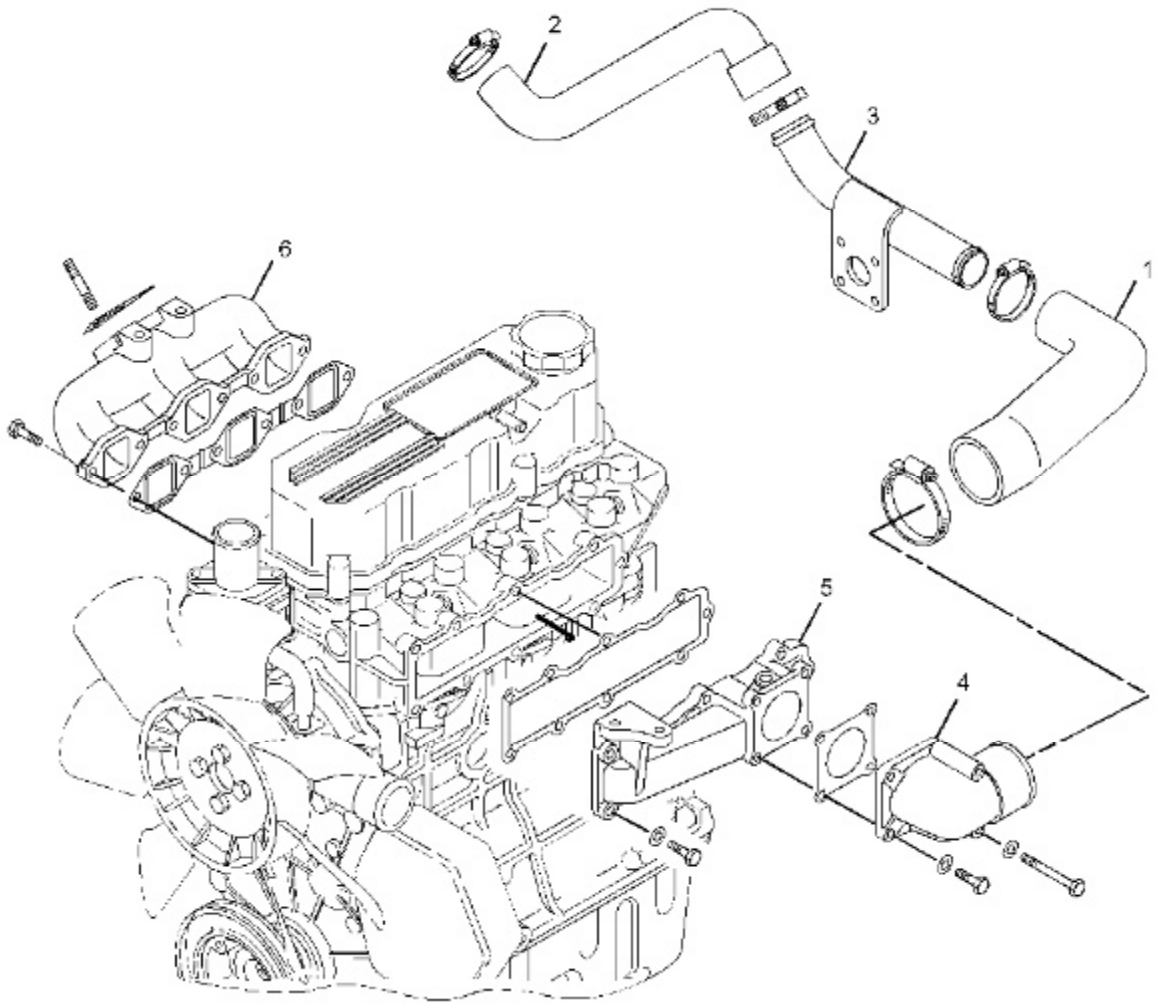


Illustration 1 g02317843

Removing sequence

(1) Air hose

(2) Air hose

(3) Air pipe

(4) Air inlet elbow

(5) Inlet manifold

(6) Exhaust manifold

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.

Private Network For SIS Licensees.

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04020371

Cooling System - Disassemble/Inspect/Assemble

SMCS - 1350-017; 1350-040

Disassembling, inspecting, and reassembling water pump

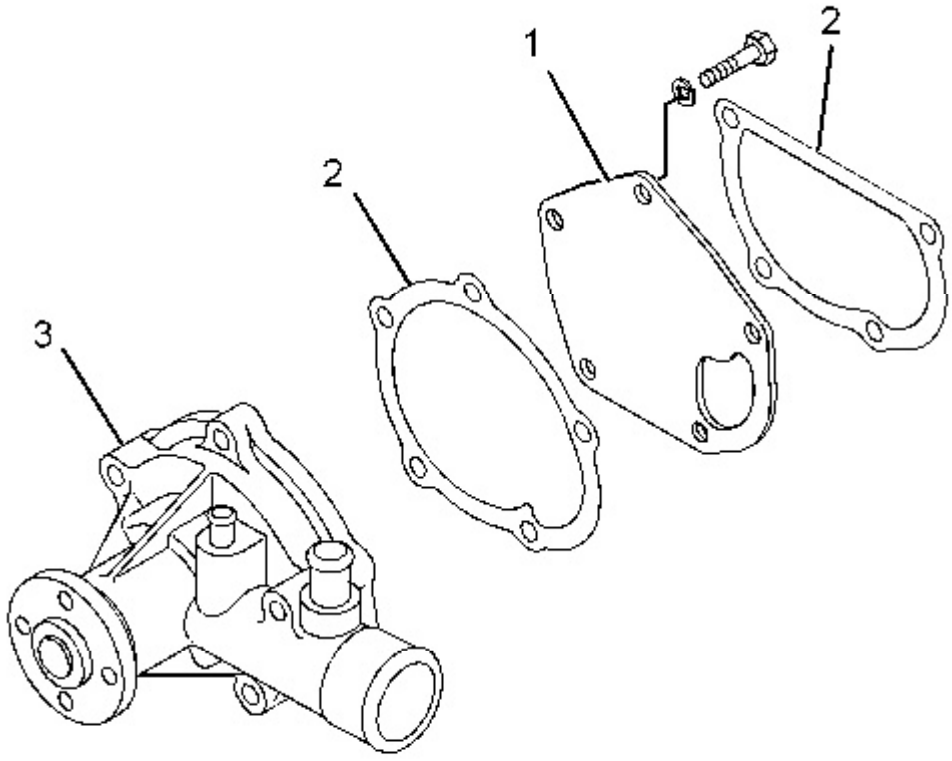


Illustration 1 g02239513

Disassembling sequence

(1) Water pump cover

(2) Gasket

(3) Water pump

Inspect the water pump cover (1) for crack, water leakage, and distortion. Replace both the gaskets (2) during assembly. Inspect the water pump (3) for crack, water leakage, damage, impeller, and shaft of rotation.

Inspecting water pump for smooth rotation

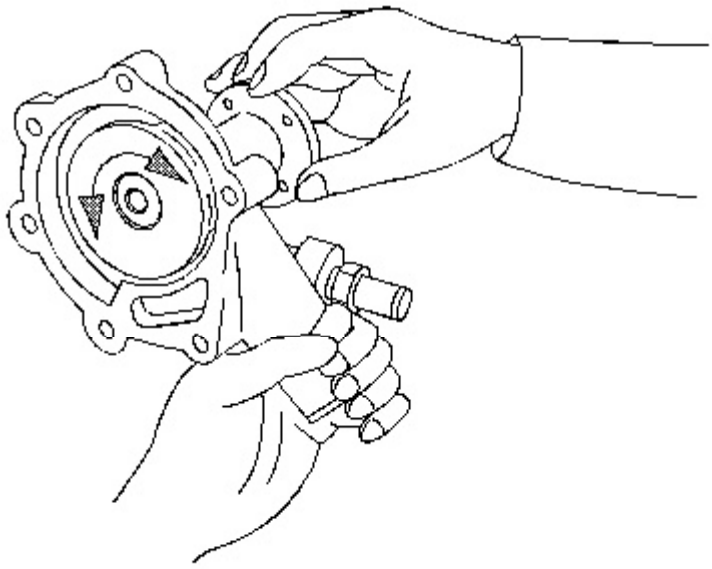


Illustration 2 g02239514

Check to make sure that the impeller and shaft of water pump rotate smoothly without noise and irregularities. If faulty, replace the water pump assembly.

Disassembling, inspecting, and reassembling thermostat

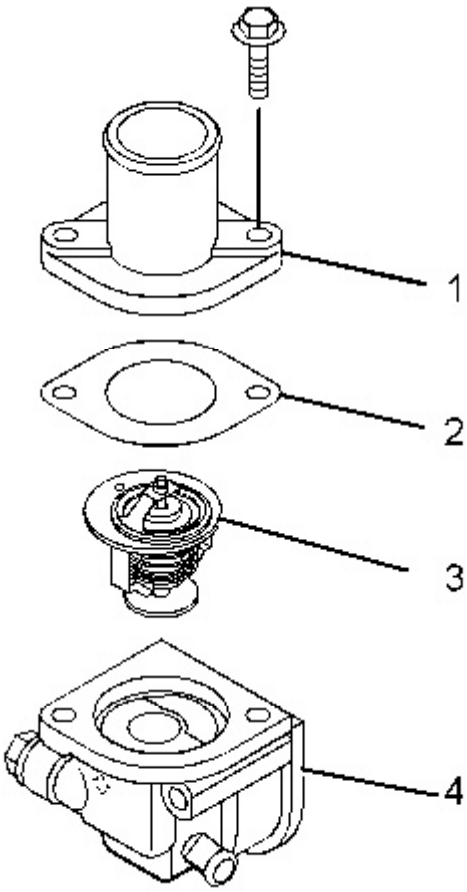


Illustration 3 g02239515

Disassembling sequence

(1) Thermostat cover

(2) Gasket

(3) Thermostat

(4) Thermostat case

Inspecting thermostat

Note: Be careful of burns or a fire when measuring temperature, as it involves a high-temperature and open flame.

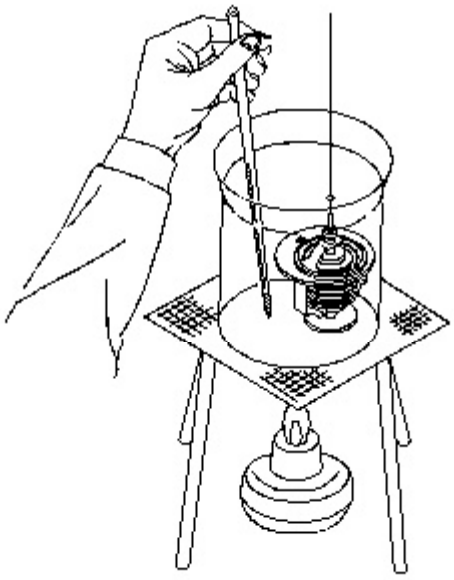


Illustration 4 g02239516

To test the thermostat operation, immerse the thermostat in a container filled with water. Heat the water, while measuring the water temperature. Record the temperature at the conditions shown in the table below. If the temperatures are not within the standard range, replace the thermostat.

Note: Stir the water in the container with a stick to ensure uniform temperature distribution. Before installing the thermostat, be sure to check the valve opening temperature stamped on the thermostat valve side face.

Table 1

Item	Standard
Temperature at which valve starts opening	75 to 78 °C (167 to 172 °F)
Temperature at which valve lift becomes 8.0 mm (0.31 inch) or more.	90 °C (194 °F)

Copyright 1993 - 2020 Caterpillar Inc.
Tue Jun 9 21:04:59 UTC+0530 2020
All Rights Reserved.
Private Network For SIS Licensees.

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04115784

Cooling System - Install

SMCS - 1350-012

Installation cooling system

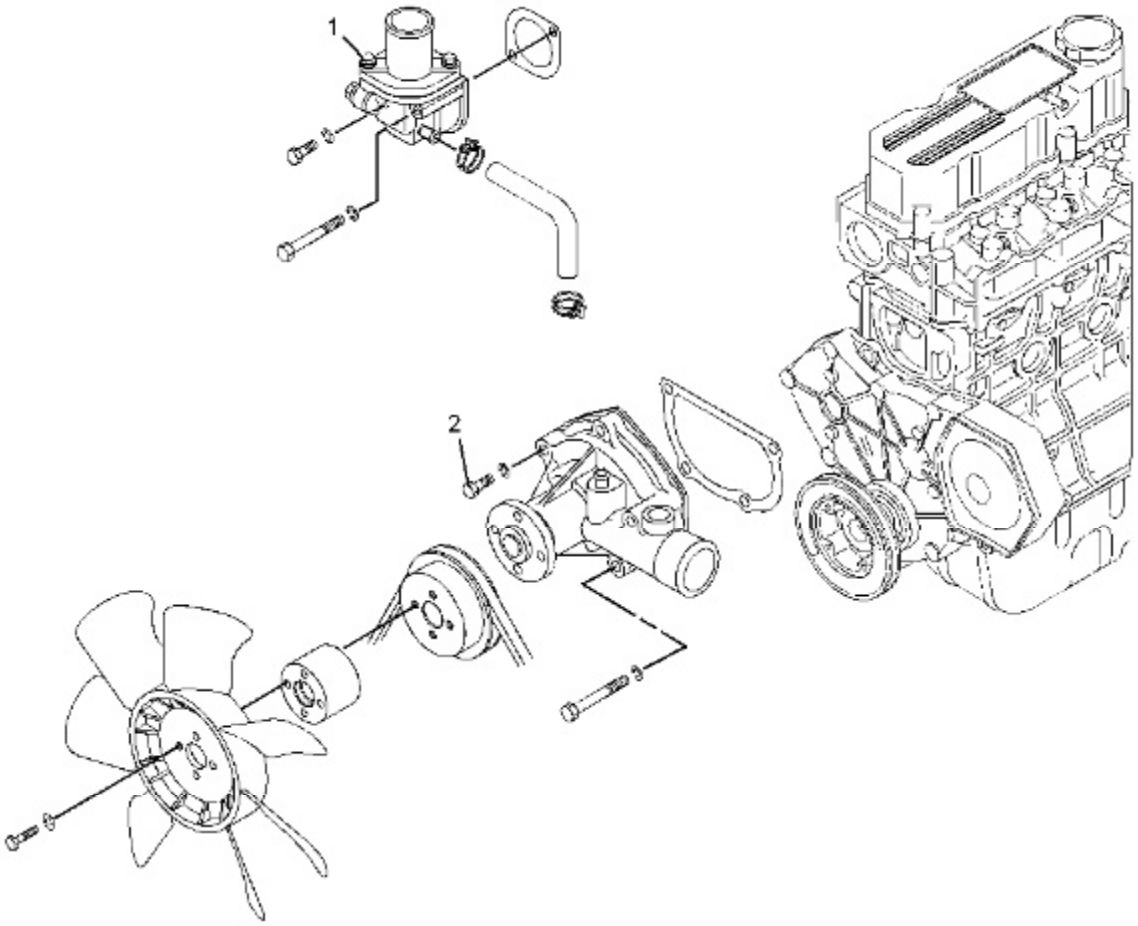


Illustration 1 g02317774

1. Replace all the gaskets, O-rings, and rubber hoses.
2. Tighten the thermostat cover bolts (1) to 18 ± 2 N·m (159 ± 18 lb in).
3. Tighten the water pump bolts (2) to 10 ± 1 N·m (88 ± 9 lb in).

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04115713

Cooling System - Remove

SMCS - 1350-011

Removing cooling system

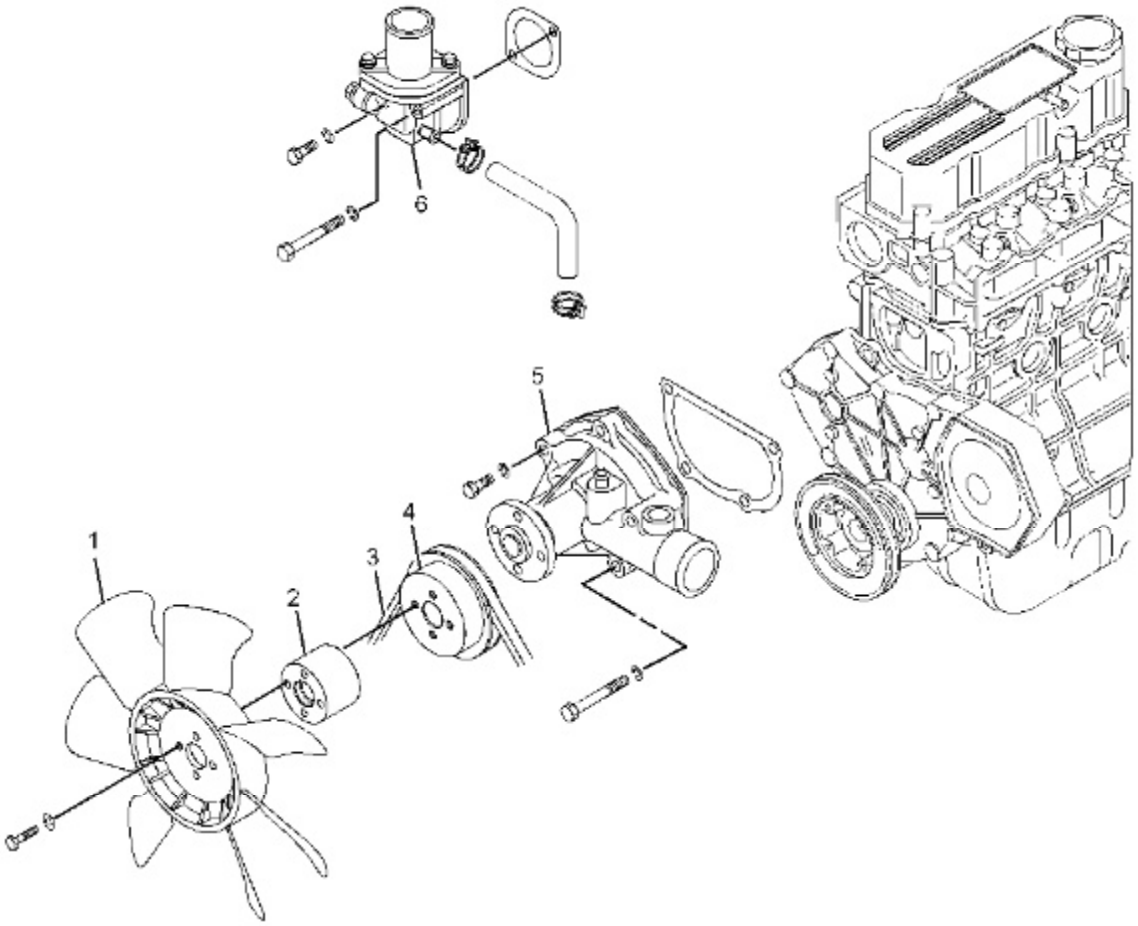


Illustration 1 g02317773

Removing sequence

(1) Cooling fan

(2) Fan spacer

(3) V-belt

(4) Water pump pulley

(5) Water pump assembly

(6) Thermostat

Replace the gaskets during installation.

Inspect the rubber hoses for cracked, distortion, and damage.

Inspect the V-belt (3) cracked, elongation, wear, damage, aging

Inspect the water pump assembly (5) for crack, water leakage, and damage.

Inspect the thermostat (6) for crack and damage.

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Tue Jun 9 21:04:45 UTC+0530 2020

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04112390

Cylinder Head and Valve Mechanism - Assemble

SMCS - 1100-016; 1102-016

Installing valve stem seal

Note: Do not apply oil or liquid gasket to the inner side of stem seal that comes in contact with the valve guide.

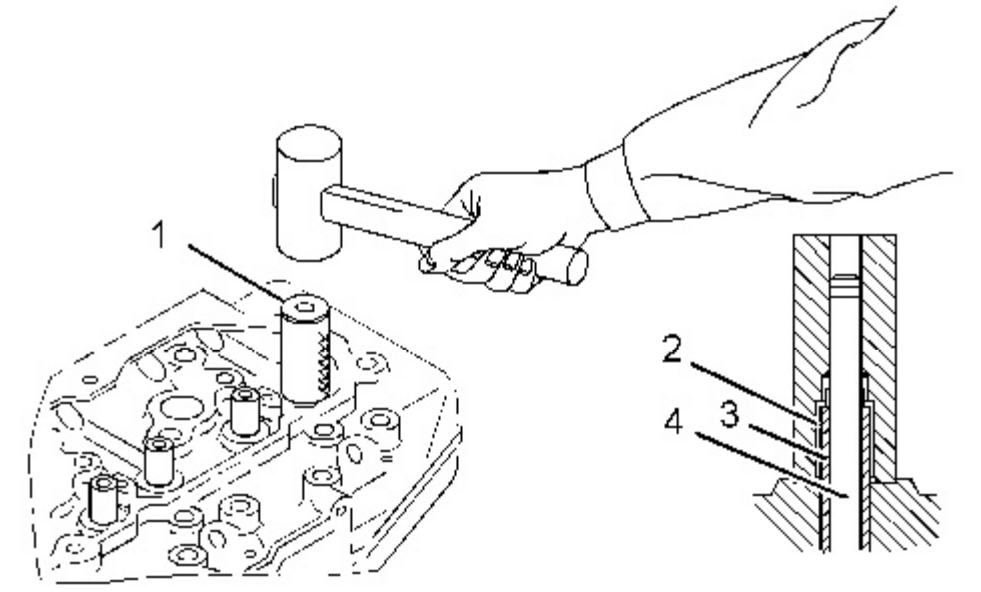


Illustration 1 g02237654

(1) Stem seal installer (P/N:32C91-10400)

(2) Valve stem seal

(3) Valve guide

(4) Valve

1. Apply engine oil to the lip of new valve stem seal.
2. Push the shoulder of the valve stem seal and fit the valve stem steal into the valve guide.
3. Insert the valve stem seal into the valve guide using the valve stem seal installer.

Installing valve and valve spring

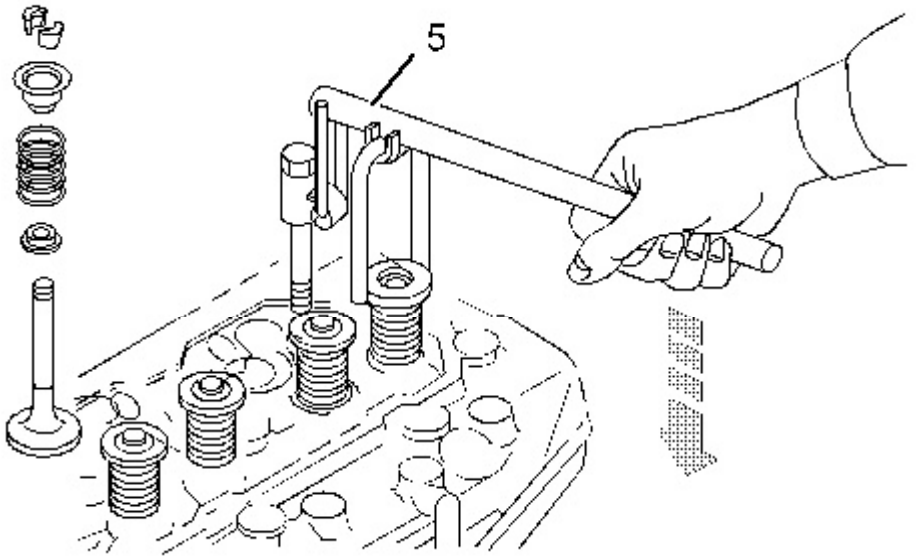


Illustration 2 g02237675

1. Install the valve spring and retainer on the valve guide. Install the valve cotter using a valve spring pusher (5) .

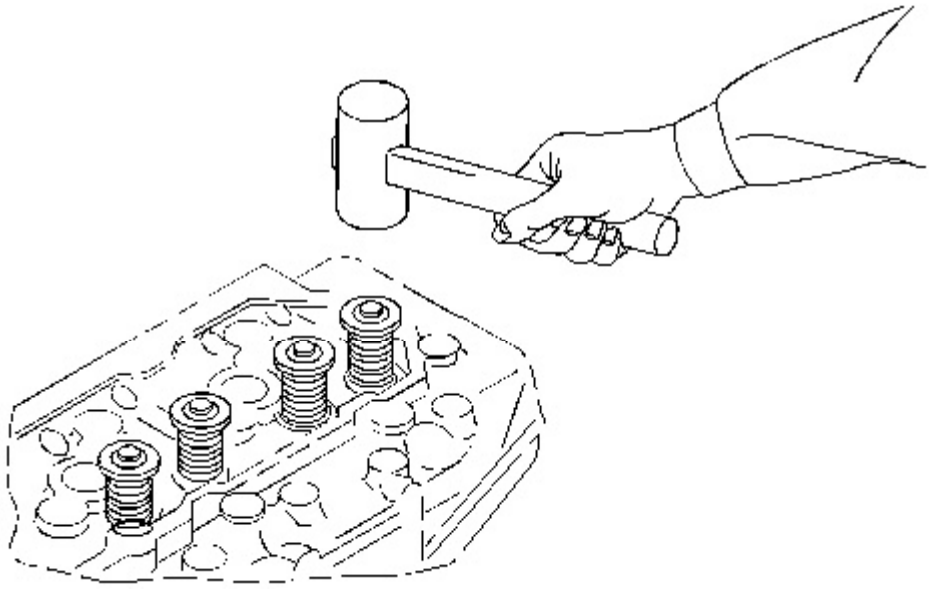


Illustration 3 g02237793

2. Tap the top of valve stem lightly several times with a soft hammer to make sure that the valve spring and valve cotter are properly installed and seated firmly.

Installing cylinder head gasket

Note: Do not use liquid gasket.

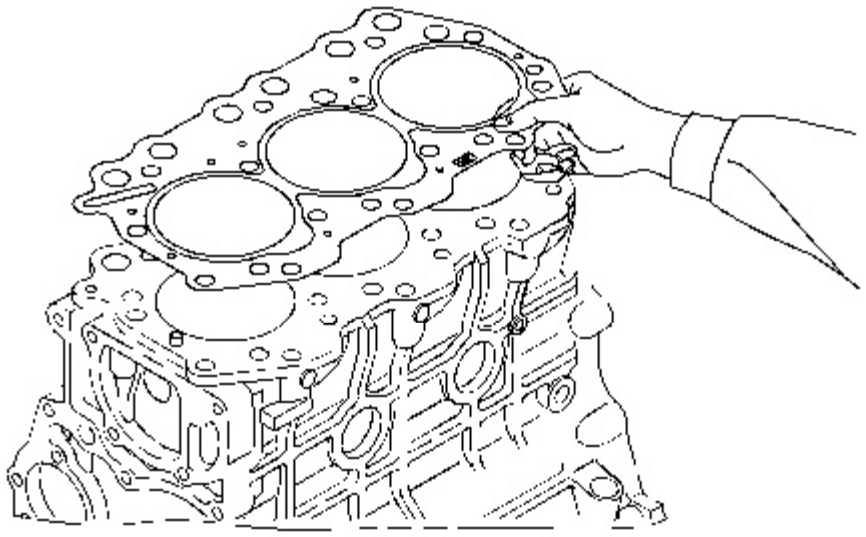


Illustration 4 g02315894

1. Wipe off oil, grease, and other stains from the cylinder head bottom surface and the crankcase upper surface with a shop towel.
2. Install the cylinder head gasket that has been coated with liquid gasket onto the crankcase with the dowel pin (6) and the hole in alignment.

Installing cylinder head assembly

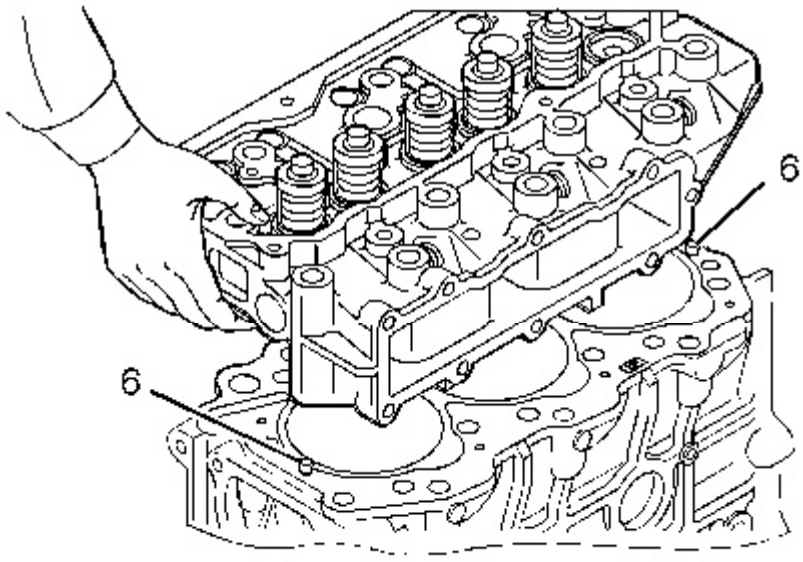


Illustration 5 g02315895

Install the cylinder head on the crankcase by aligning the cylinder head with the dowel pins (6) .

Note: Be careful not to displace the cylinder gasket when installing.

Tightening cylinder head bolts

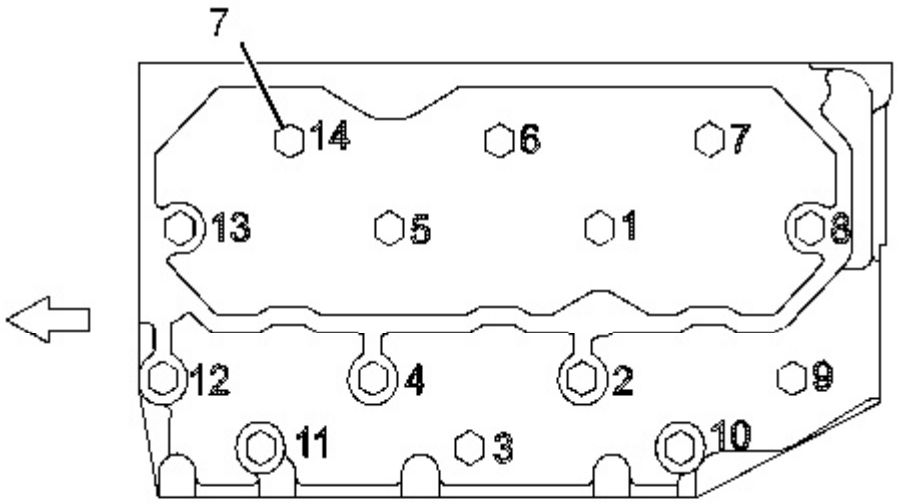


Illustration 6 g02315898

Tightening sequence of cylinder head bolts.

White arrow shows front of engine.

Tighten the cylinder head bolts (7) in the numerical sequence to 118 ± 5 N·m (87 ± 4 lb ft).

Reassembling rocker shaft assembly

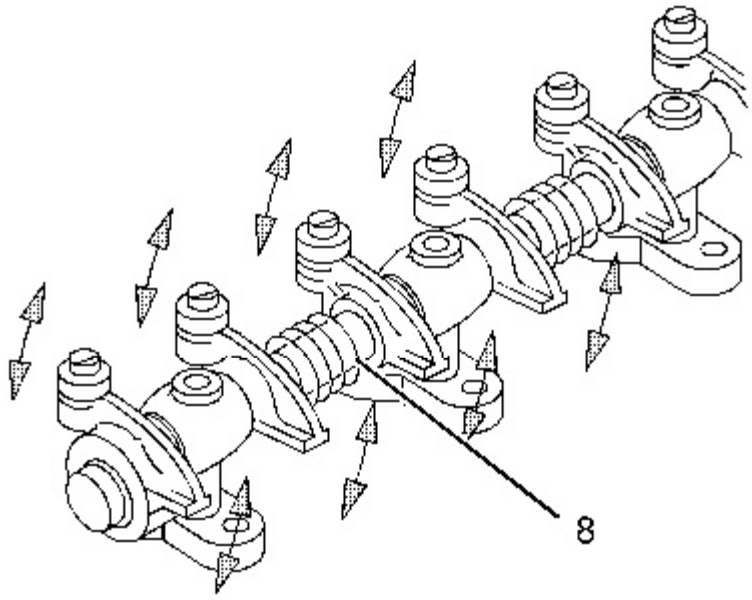


Illustration 7 g02237873

(8) Reassembling mark

1. Apply engine oil to the rocker shaft.
2. When reassembling, install the rocker shaft assembly in the original position.

   Note: If the rocker shaft assembly is not installed in the original position, the clearance becomes different. The different may result in a defect such as wear increase.
3. After reassembling, make sure the rocker arm and oil pipe move freely.

Inserting push rod

1. Insert each push rod into hole in the cylinder head.
2. Make sure that the ball end of each push rod is placed correctly on the tappet cup.

Installing rocker shaft assembly

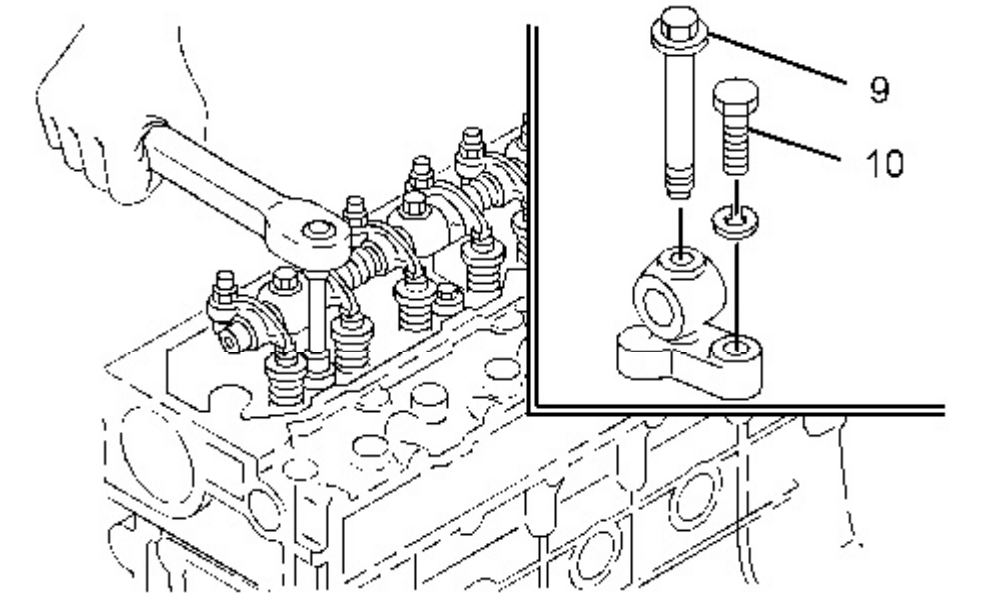


Illustration 8 g02237874

1. Install the valve caps to the valve heads.
2. Tighten the long bolts (9) of the rocker bracket to 15 ± 2 N·m (133 ± 18 lb in).
3. Tighten the short bolts (10) of the rocker bracket to 11.3 ± 1.5 N·m (100.0 ± 13.0 lb in)

Adjusting valve clearance

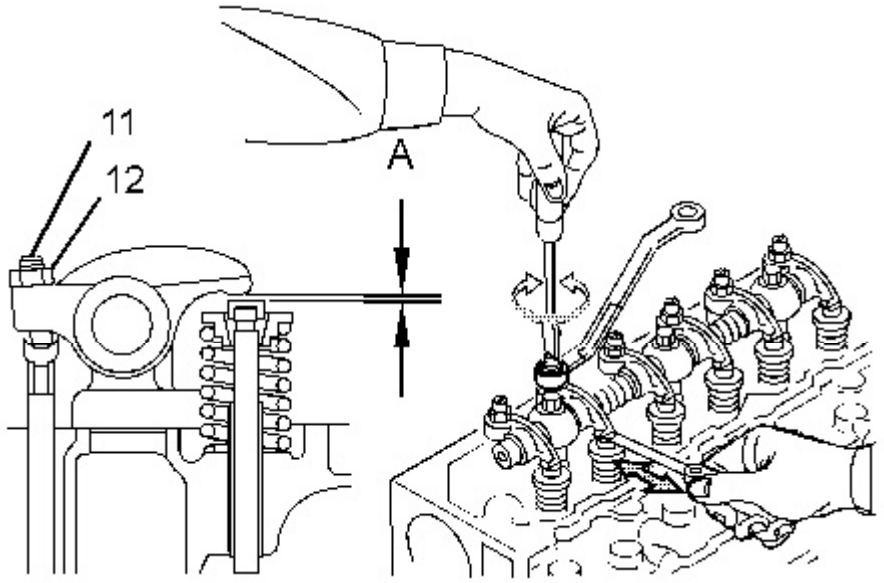


Illustration 9 g02237883

(A) valve clearance 0.250 mm (0.0098 inch)

(11) Adjustment screw

(12) Lock nut

Adjust the valve clearance.

For adjusting procedures, refer to Adjustment and Operation.

Copyright 1993 - 2020 Caterpillar Inc.
All Rights Reserved.
Private Network For SIS Licensees.

Product: MINI HYD EXCAVATOR
Model: 303.5C MINI HYD EXCAVATOR DMY
Configuration: 303.5C CR Mini Hydraulic Excavator DMY00001-UP (MACHINE) POWERED BY S3Q2 Engine

Disassembly and Assembly
S3Q2 and S3Q2-T Engines
Media Number -KENR6786-03 **Publication Date -01/08/2015** **Date Updated -18/08/2015**

i04112012

Cylinder Head and Valve Mechanism - Inspect and Repair

SMCS - 1100-023; 1100-040; 1102-023; 1102-040

Measuring distortion of the bottom surface of the cylinder head

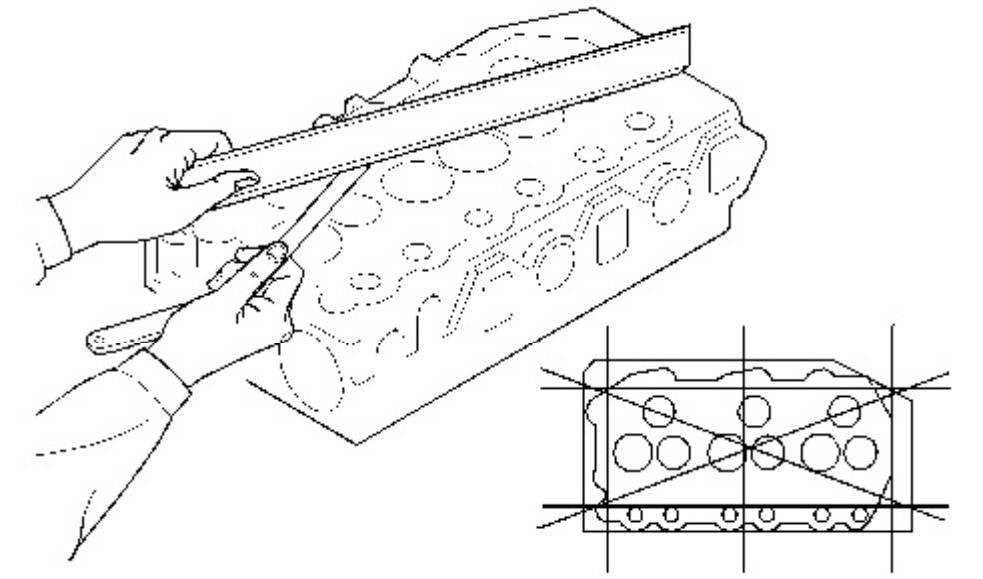


Illustration 1 g02315433

With a straight edge placed on the bottom face of the cylinder head, measure the bottom face distortion using a feeler gauge. If the measurement exceeds the limit, grind the bottom face using a surface grinder.

Table 1

Item	Standard	Limit
Bottom surface distortion	0.050 mm (0.0020 inch) or less	0.200 mm (0.0079 inch)

Note: Do not grind the surfaces more than 0.20 mm (0.008 inch) in total (cylinder head bottom surface plus crankcase top surface).

Measuring clearance between rocker arm and rocker shaft

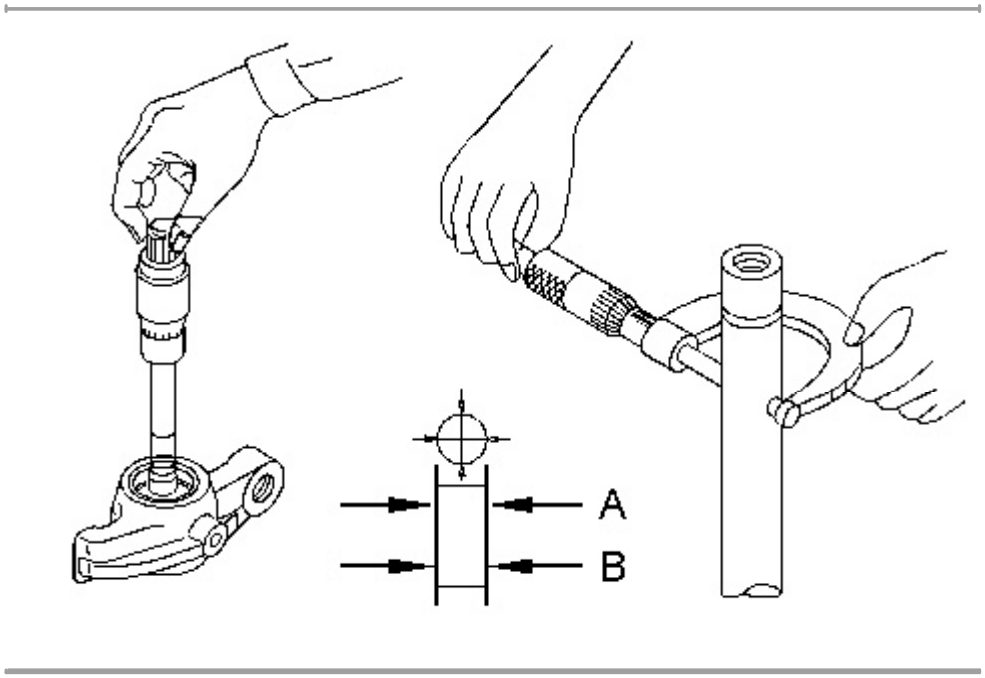


Illustration 2 g02212574

(A and B) Measuring points

Measure the inside diameter of the rocker arm and outside diameter of the rocker shaft. Replace the rocker arm or rocker shaft if the clearance exceeds the limit.

Table 2

Item	Nominal	Standard	Limit
Rocker arm inside diameter	19.0 mm (0.75 inch)	19.010 to 19.030 mm (0.7484 to 0.7492 inch)	-
Rocker shaft diameter			-

This is the sample of the manual click on the download link for complete manual

DOWNLOAD LINK

For some reason if link does not work download this pdf and then click