

Product: EXCAVATOR

Model: 325-A EXCAVATOR 9SG

Configuration: 325, 325L, 325LN EXCAVATORS 9SG00001-UP (MACHINE) POWERED BY 3116 ENGINE

Disassembly and Assembly

446 and 446B Backhoe Loaders, Lexion 450 Combine, 3114 and 3116 Engines, IT18F Integrated Toolcarrier, D6M Track-Type Tractor and 928F, 950F and 950G Wheel Loaders

Media Number -SEN3611-18

Publication Date -01/05/2009

Date Updated -27/05/2009

i01928788

Exhaust Manifold - Remove and Install

SMCS - 1059-010

Removal Procedure

Start By:

- a. Remove the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Remove".

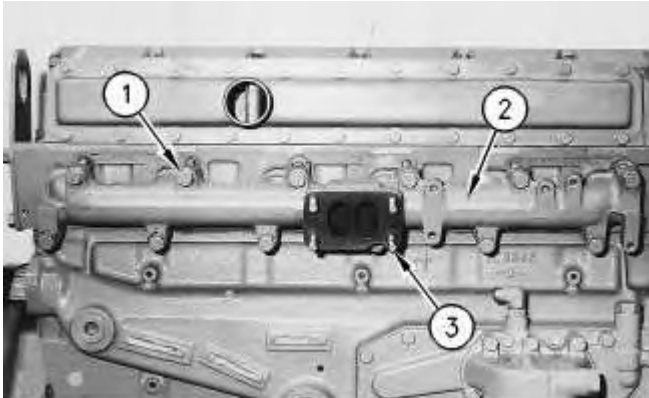


Illustration 1

g00652578

Typical example

1. Remove bolts (1), exhaust manifold (2), locks and the gaskets from the cylinder head assembly.
2. If the engine is equipped with a three-piece exhaust manifold, disassemble exhaust manifold (2) into three pieces.
3. Remove mounting studs (3) from exhaust manifold (2), if necessary.

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5P-3931	Anti-Seize Compound	1
B	2P-2333	High Temperature Sealer	1

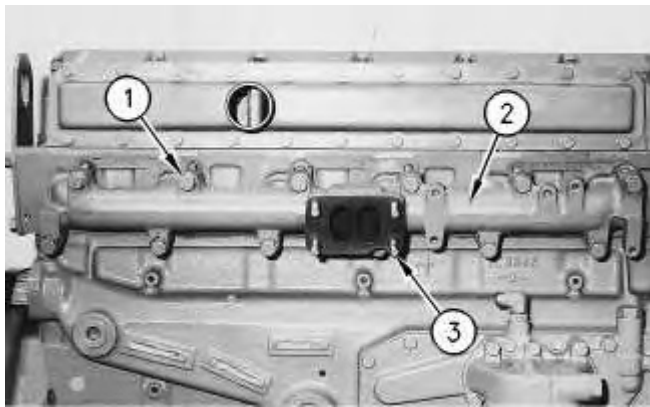


Illustration 2

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Typical example

1. Apply Tooling (A) to the threads of mounting studs (3).
2. Install mounting studs (3). Tighten mounting studs (3) to a torque of 35 ± 5 N·m (26 ± 4 lb ft).
3. If the engine is equipped with a three-piece exhaust manifold, apply a thin coat of Tooling (B) to the male ends of exhaust manifold (2). Coat the inside of the female ends of exhaust manifold (2) with clean engine oil. Assemble exhaust manifold (2) and remove the excess sealant from the joints.
4. Install new exhaust manifold gaskets.
5. Apply Tooling (A) to the threads of bolts (1). Position the gaskets and exhaust manifold (2) on the cylinder head assembly. Install locks and bolts (1).

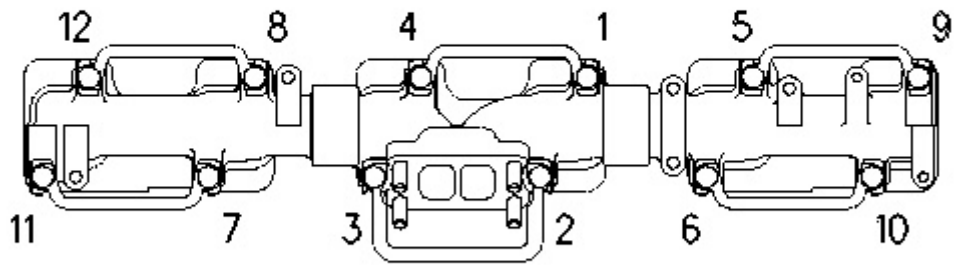


Illustration 3

g00617739

Typical example of a three-piece exhaust manifold

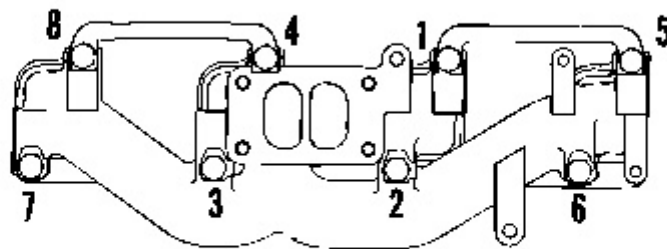


Illustration 4

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Exhaust manifold for a Four cylinder engine

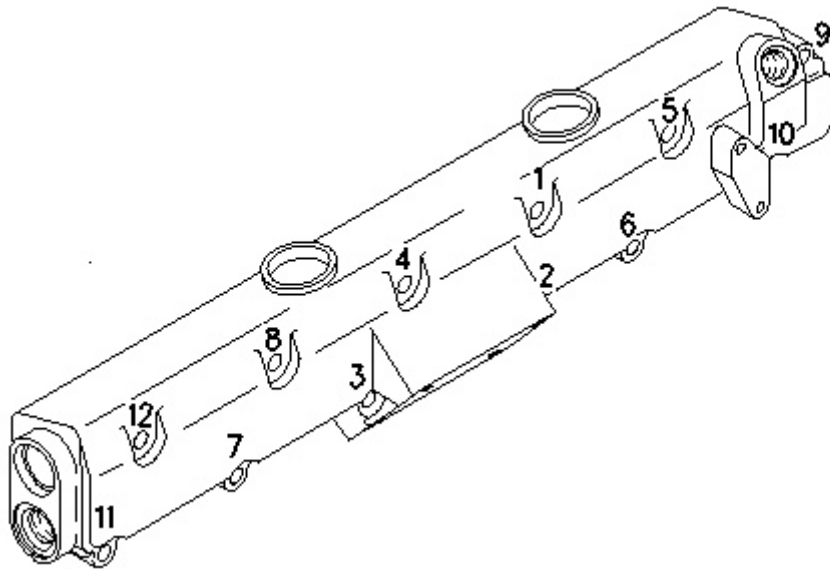


Illustration 5

g00641092

Water cooled exhaust manifold

6. Tighten bolts (1) in a numerical sequence to a torque of 4 ± 1 N·m (35 ± 9 lb in).
7. Tighten bolts (1) in a numerical sequence to a torque of 45 ± 5 N·m (33 ± 4 lb ft).

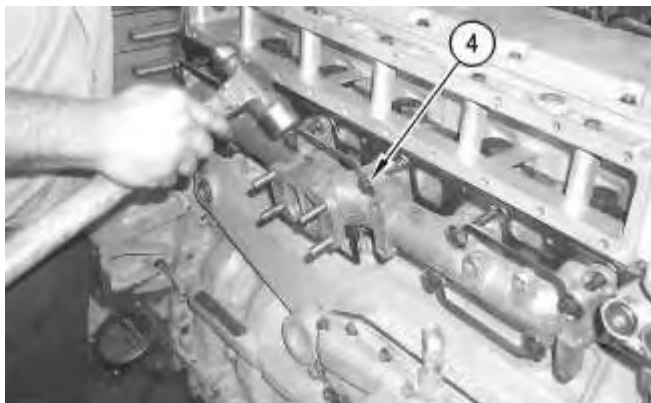


Illustration 6

g00675760

Typical example of locking tabs

8. Bend the locking tabs (4) over the flat of each bolt head.

End By:

- a. Install the turbocharger. Refer to Disassembly and Assembly, "Turbocharger - Install".
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i01328419

Inlet Manifold - Remove

SMCS - 1058-011

Removal Procedure

Start By:

- a. Remove the valve mechanism cover. Refer to Disassembly and Assembly, "Valve Mechanism Cover - Remove and Install".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

1. Disconnect air inlet piping from the turbocharger to the aftercooler, if necessary.

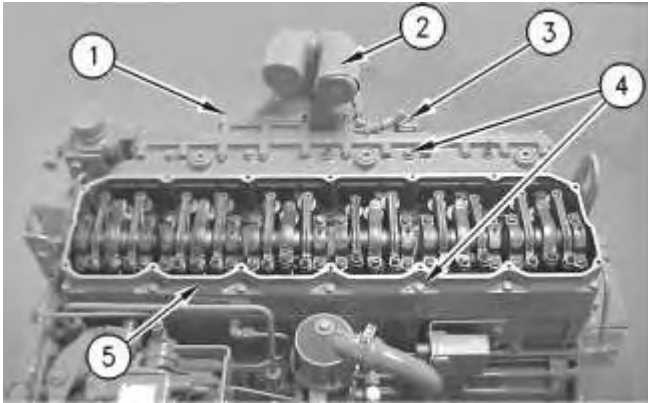


Illustration 1

g00629952

2. Remove bolts (1) and disconnect air inlet heater solenoid (3).
 3. Remove air inlet elbows (2) from air inlet manifold (5).
 4. Remove bolts (4) from air inlet manifold (5).
 5. Remove air inlet manifold (5) and the gasket.
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i01414226

Inlet Manifold - Install

SMCS - 1058-012

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.



Illustration 1

g00675794

1. Install a new gasket (6) on the cylinder head.

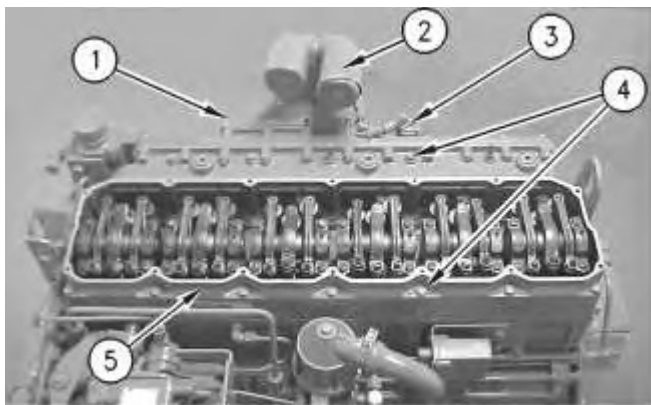


Illustration 2

g00629952

2. Position the air inlet manifold (5) on the engine.
3. Install bolts (4). Tighten the bolts to a torque of $28 \pm 7 \text{ N}\cdot\text{m}$ ($21 \pm 5 \text{ lb ft}$).
4. Install air inlet elbows (2) on air inlet manifold (5).
5. Install bolts (1) and connect air inlet heater solenoid (3).

End By:

- a. Install the valve mechanism cover. Refer to Disassembly and Assembly, "Valve Mechanism Cover - Remove and Install".
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i01943334

Inlet and Exhaust Valves - Remove and Install

SMCS - 1105-010

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

Start By:

- a. Remove the cylinder head assembly. Refer to Disassembly and Assembly, "Cylinder Head - Remove".

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: For information on the reusability of the inlet valves, the exhaust valves and the springs, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8002, "Valves, Valve Springs, Valve Rotators, and Locks", Guideline For Reusable Parts And Salvage Operations, SEBF8034, "Valve and Valve Spring Specifications", and Guideline For Reusable Parts And Salvage Operations, SEBF8162, "Specifications to Measure and Salvage Cylinder Head Assemblies and Related Components".

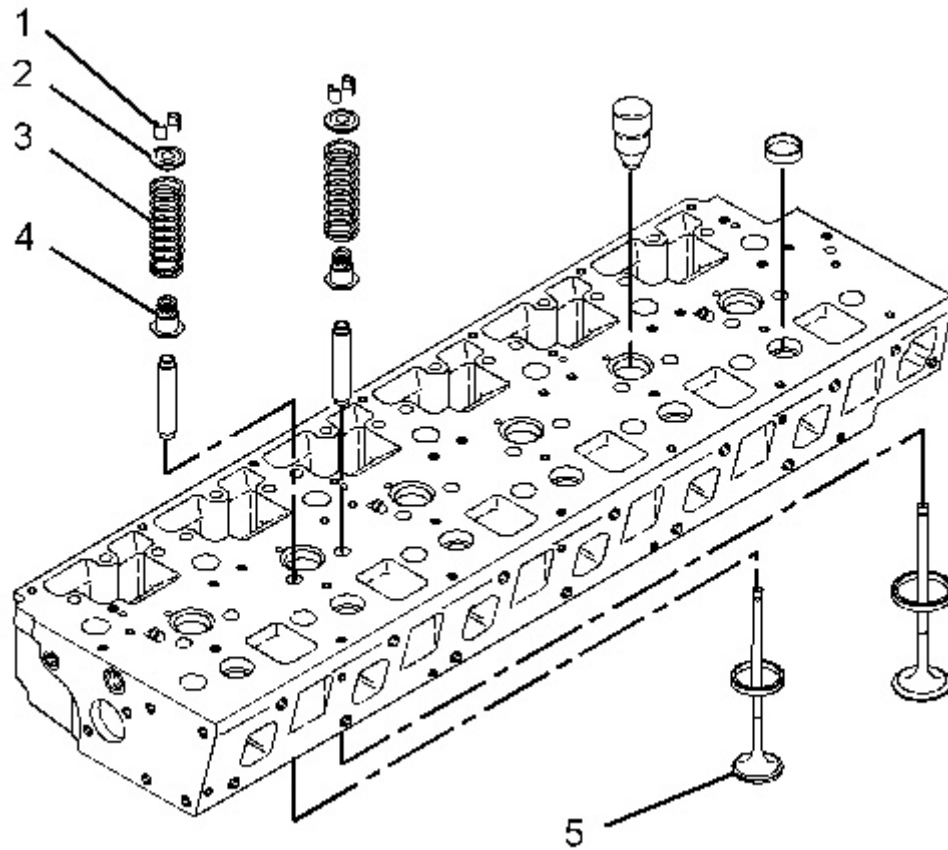


Illustration 1

g01011225

Note: The following components of the exhaust valves are different from the components of the inlet valves: spring retainer (2), valve spring (3) and valve (5).

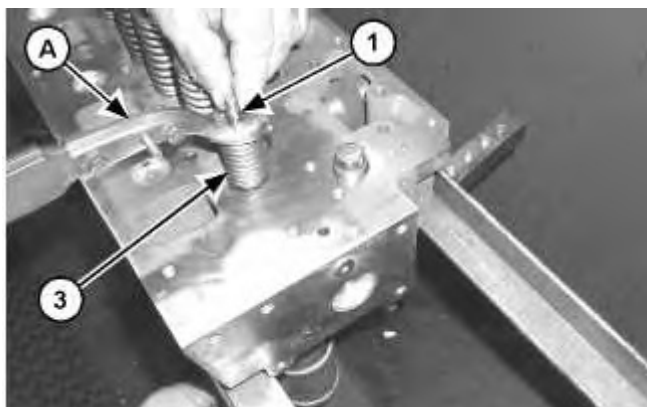


Illustration 2

g01011269

1. Use Tooling (A) to compress valve spring (3). Remove retainer lock (1).
2. Remove Tooling (A).
3. Remove spring retainer (2). Remove valve spring (3).

4. Remove valve seal (4) and valve (5).
5. Repeat Steps 1 through 4 in order to remove the remaining inlet valves and exhaust valves.

Installation Procedure

Table 2

Required Tools			
Tool	Part Number	Part Description	Qty
A	5S-1330	Valve Spring Compressor	1

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

Note: For information on the reusability of the inlet valves, the exhaust valves and the springs, refer to Guideline For Reusable Parts And Salvage Operations, SEBF8002, "Valves, Valve Springs, Valve Rotators, and Locks", Guideline For Reusable Parts And Salvage Operations, SEBF8034, "Valve and Valve Spring Specifications", and Guideline For Reusable Parts And Salvage Operations, SEBF8162, "Specifications to Measure and Salvage Cylinder Head Assemblies and Related Components".



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