

CATERPILLAR®

Product: INDUSTRIAL ENGINE
 Model: 3114 INDUSTRIAL ENGINE 1ZG
 Configuration: 3114 INDUSTRIAL ENGINE 1ZG00001-UP

Specifications

3114, 3116 and 3126 Industrial, Marine and Generator Set Engines

Media Number -SENR9557-01

Publication Date -01/10/2001

Date Updated -02/11/2001

i01582109

Engine Design

SMCS - 1201

3114 Engine

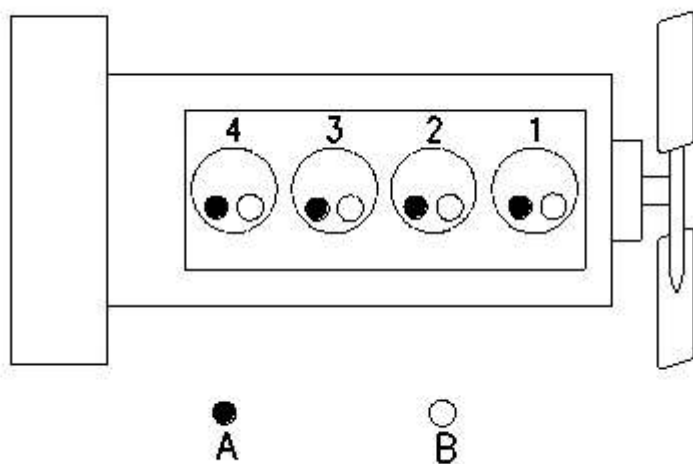


Illustration 1
 Cylinder and valve location

g00296424

(A) Exhaust valves

(B) Inlet valves

Bore ... 105.0 mm (4.13 inch)

Stroke ... 127.0 mm (5.00 inch)

Displacement ... 4.4 L (268 in³)

Number of cylinders ... 4

Cylinder arrangement ... In-line

Valves per cylinder ... 2

<http://engine.od.ua>

In order to check the engine valve lash setting, the engine must be cold and the engine must be stopped. Engine valve lash settings

Inlet ... 0.38 mm (0.015 inch)

Exhaust ... 0.64 mm (0.025 inch)

Type of combustion ... Direct Injection

Firing Order ... 1-3-4-2

The crankshaft rotation is viewed from the flywheel end of the engine. Crankshaft rotation ... counterclockwise

Note: The front end of the engine is opposite of the flywheel end of the engine. The left side of the engine and the right side of the engine are viewed from the flywheel end of the engine. The number one cylinder is the front cylinder.

3116 Engine

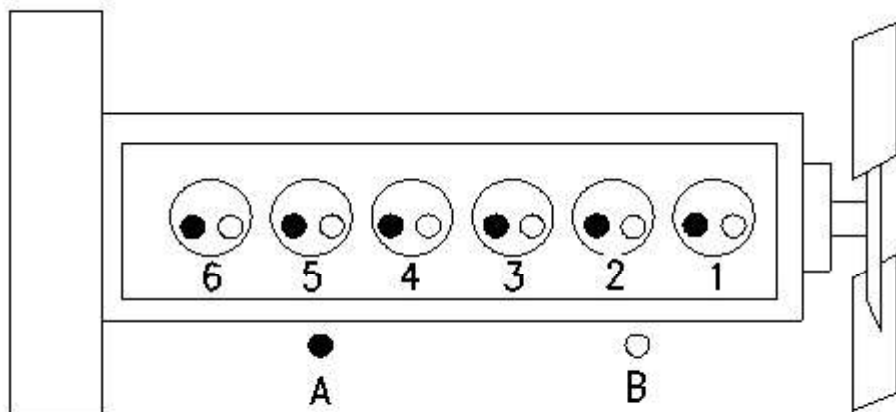


Illustration 2

g00821000

Cylinder and valve location

(A) Exhaust valves

(B) Inlet valves

Bore ... 105.0 mm (4.13 inch)

Stroke ... 127.0 mm (5.00 inch)

Displacement ... 6.6 L (403 in³)

Number of cylinders ... 6

Cylinder arrangement ... In-line

Valves per cylinder ... 2

In order to check the engine valve lash setting, the engine must be cold and the engine must be stopped. Engine valve lash settings

<http://engine.od.ua>

Inlet ... 0.38 mm (0.015 inch)

Exhaust ... 0.64 mm (0.025 inch)

Type of combustion ... Direct Injection

Firing Order ... 1-5-3-6-2-4

The crankshaft rotation is viewed from the flywheel end of the engine. Crankshaft rotation ... counterclockwise

Note: The front end of the engine is opposite of the flywheel end of the engine. The left side of the engine and the right side of the engine are viewed from the flywheel end of the engine. The number one cylinder is the front cylinder.

3126 Engine

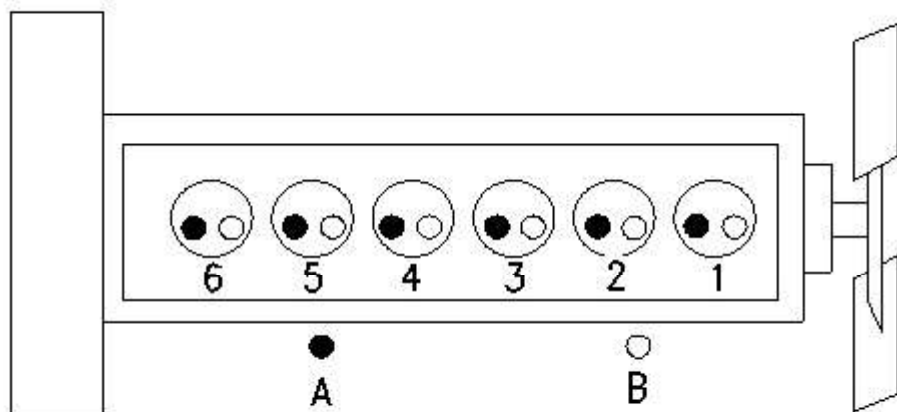


Illustration 3

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Cylinder and valve location

(A) Exhaust valves

(B) Inlet valves

Bore ... 110.0 mm (4.33 inch)

Stroke ... 127.0 mm (5.00 inch)

Displacement ... 7.2 L (442 in³)

Number of cylinders ... 6

Cylinder arrangement ... In-line

Valves per cylinder ... 2

In order to check the engine valve lash setting, the engine must be cold and the engine must be stopped. Engine valve lash settings

Inlet ... 0.38 mm (0.015 inch)

Exhaust ... 0.64 mm (0.025 inch)

Type of combustion ... Direct Injection

Firing Order ... 1-5-3-6-2-4

The crankshaft rotation is viewed from the flywheel end of the engine. Crankshaft rotation ... counterclockwise

Note: The front end of the engine is opposite of the flywheel end of the engine. The left side of the engine and the right side of the engine are viewed from the flywheel end of the engine. The number one cylinder is the front cylinder.



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i02321744

Cylinder Head

SMCS - 1100

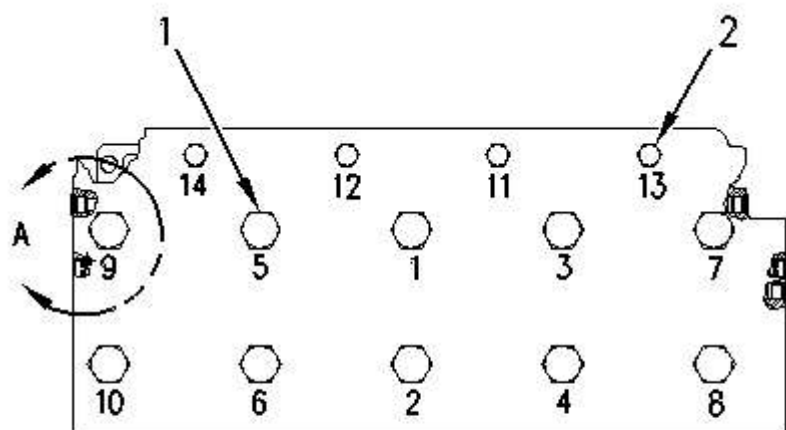


Illustration 1
 3114 Engines

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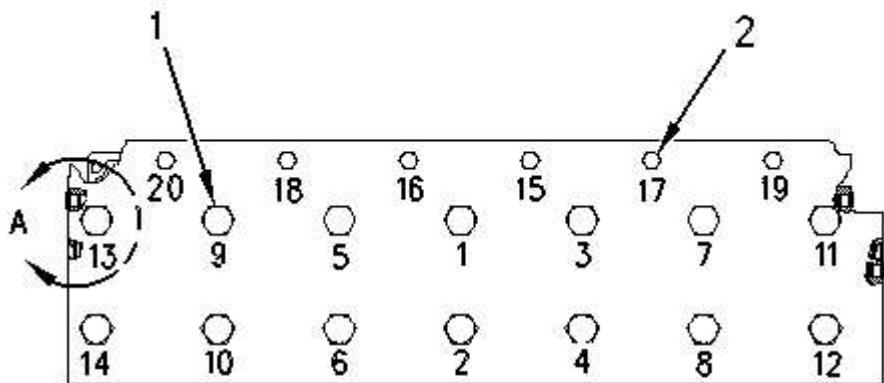


Illustration 2
3116 and 3126 Engines

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(1) Large bolts

(2) Small bolts

Use the following procedure to install bolts (1) and (2) :

1. Apply engine oil to the threads of the bolts.

2. Tighten large bolts (1) in a numerical sequence.

Tighten the bolts to the following torque. ... $300 \pm 15 \text{ N}\cdot\text{m}$ ($221 \pm 11 \text{ lb ft}$)

3. Loosen large bolts (1) in a numerical sequence.

4. Tighten large bolts (1) in a numerical sequence.

Tighten the bolts to the following torque. ... $130 \pm 15 \text{ N}\cdot\text{m}$ ($96 \pm 11 \text{ lb ft}$)

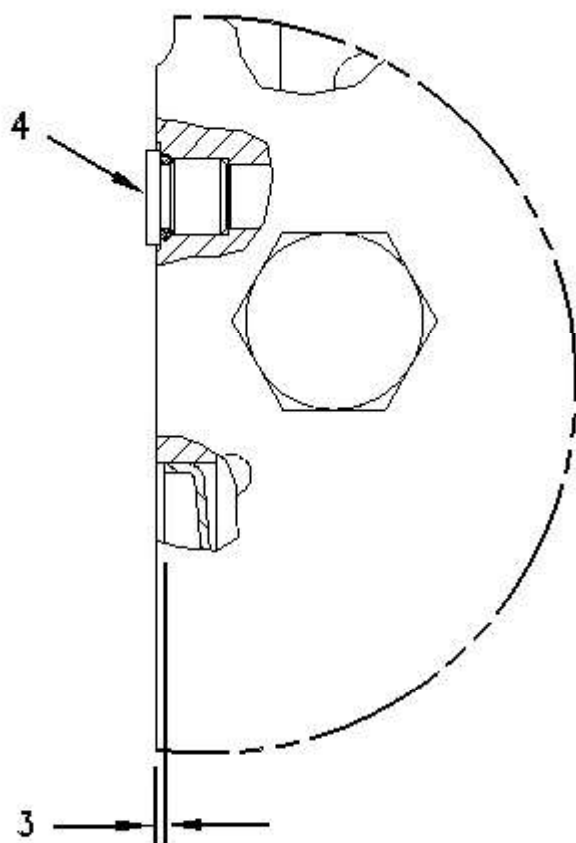
5. Tighten the large bolts (1) again in a numerical sequence.

Tighten the bolts to the following torque. ... $130 \pm 15 \text{ N}\cdot\text{m}$ ($96 \pm 11 \text{ lb ft}$)

6. Turn large bolts (1) in a numerical sequence an additional 90 degrees (1/4 of a turn).

7. Tighten the small bolts (2) in a numerical sequence.

Tighten the bolts to the following torque. ... $55 \pm 7 \text{ N}\cdot\text{m}$ ($41 \pm 5 \text{ lb ft}$)



Width of the main bearing cap ... 159.995 ± 0.020 mm (6.2990 ± 0.0008 inch)

Width of the cylinder block for the main bearing ... 160.000 ± 0.018 mm (6.2992 ± 0.0007 inch)

(14) Distance from the centerline of the crankshaft bore to the pan rail ... 110.00 mm (4.331 inch)

(15) Location of the sequence number for the bearing cap

(16) Main bearing cap bolts

Install the bearing caps with the sequence number to the right. A six cylinder engine has an order of 1 through 7 (front to rear). A four cylinder engine has an order of 1 through 5 (front to rear).

1. Apply **4C-5593** Anti-Seize Compound to the bolt threads (16) and face of the washers.

2. Tighten bolts (16) on each bearing cap.

Tighten to the following torque. ... 54 ± 7 N·m (40 ± 5 lb ft)

3. Tighten bolts (16) on each bearing cap again.

Tighten the bolts by another one quarter of a turn. ... 90 ± 5 degrees

(17) Bore in the cylinder block for the seven main bearings ... 95.000 ± 0.013 mm (3.7402 ± 0.0005 inch)

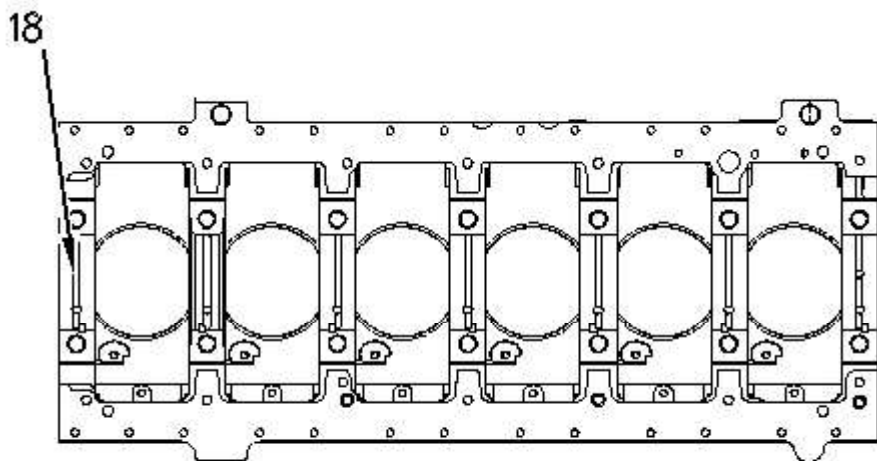


Illustration 4

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Six cylinder engine with oil grooves is shown.

(18) Oil grooves are machined in the saddles of the cylinder blocks of all 3114 engines and earlier 3116 engines.

The connecting rod may be heated from 175° to 260 °C (347 °F to 500 °F) for the installation of the piston pin bearing.

Length (A) is the maximum distance for heating the connecting rod 75 ± 5 mm (3.0 ± 0.2 inch)

The bearing joint must be at angle (B) which is 12.0 ± 5.0 degrees above the centerline.

(1) Bore size

Bore in the connecting rod for the piston pin bearing ... 43.191 ± 0.013 mm (1.7004 ± 0.0005 inch)

Bore in the bearing for the piston pin ... 40.028 ± 0.008 mm (1.5759 ± 0.0003 inch)

(2) Distance between the center of the bearings ... 200.00 mm (7.874 inch)

(3) Location for the etched cylinder numbers on the rod and the cap after assembly

Note: Etch the cylinder number on the connecting rod and the cap in this location (3) . Mark the numbers on the same side of the connecting rod as the bearing retainer notch.

(4) Connecting rod bolts

(5) Bore in the connecting rod for the bearing for the crankshaft connecting rod journal ... 75.000 ± 0.013 mm (2.9527 ± 0.0005 inch)

Tighten the connecting rod bolts. Use the instructions that follow:

1. Before installing the connecting rod bolts (4) , lubricate the bolt threads and the seating faces of the caps with engine oil.
2. Install the connecting rod bolts (4) .

Tighten each nut to the following torque. ... 54 ± 7 N·m (40 ± 5 lb ft)
3. Put an alignment mark on the cap and the nut.
4. Tighten each nut for an additional 60 ± 5 degrees (1/6 of a turn).