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< Product: GEN SET ENGINE
Model: 3056 GEN SET ENGINE 7AK
Configuration: 3056 Generator Set Engine 7AK00001-UP

Testing and Adjusting

3054 and 3056 Industrial and Generator Set Engines

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Engine Valve Lash - Inspect/Adjust

SMCS - 1102-025



WARNING

To prevent possible injury, do not use the starter to turn the flywheel.

Hot engine components can cause burns. Allow additional time for the engine to cool before measuring valve clearance.

Refer to Systems Operation, "Engine Design" for the location of the cylinder valves.

If the valve lash requires adjustment several times in a short period of time, excessive wear exists in a different part of the engine. Find the problem and make necessary repairs in order to prevent more damage to the engine.

Not enough valve lash can be the cause of rapid wear of the camshaft and valve lifters. Not enough valve lash can indicate that the seats for the valves are worn.

Valves become worn due to the following causes:

- Fuel injection nozzles that operate incorrectly
- Excessive dirt and oil are present on the filters for the inlet air.
- Incorrect fuel settings on the fuel injection pump.
- The load capacity of the engine is frequently exceeded.

Too much valve lash can cause broken valve stems, springs, and spring retainers. Too much valve lash can be an indication of the following problems:

- Worn camshaft and valve lifters
- Worn rocker arms
- Bent pushrods
- Broken socket on the upper end of a pushrod
- Loose adjustment screw for the valve lash

If the camshaft and valve lifters show rapid wear, look for fuel in the lubrication oil or dirty lubrication oil as a possible cause.

Valve Lash Check

An adjustment is NOT NECESSARY if the measurement of the valve lash is in the acceptable range. Check the valve lash while the engine is stopped. The temperature of the engine does not change the valve lash setting.

Valve Lash Setting

Inlet valve ... 0.20 mm (0.008 inch)
Exhaust valve ... 0.45 mm (0.018 inch)

If the measurement is not within the acceptable clearance, adjustment is necessary. Refer to "Valve Lash Adjustment".

Valve Lash Adjustment

3054

Note: The No. 1 cylinder is at the front of the engine.

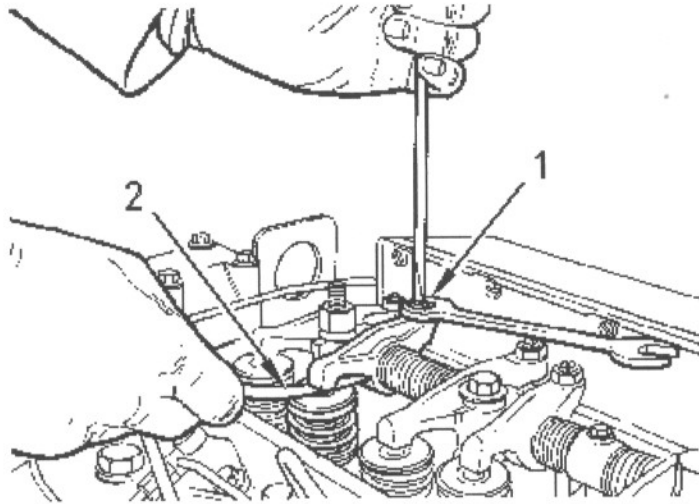


Illustration 1
Setting the valve lash

g00323903

- (1) Adjustment screw
- (2) Feeler gauge

! WARNING

Accidental engine starting can cause injury or death to personnel.

To prevent accidental engine starting, turn the ignition switch to the OFF position, place a do not operate tag at the ignition switch location and disconnect and tape the electrical connection to the stop solenoid that is located on the fuel injection pump.

Remove the valve mechanism cover and perform the following procedure in order to adjust the valve lash:

Note: Later 3054 engines may require the use of a TORX T27 driver to adjust valve lash.

1. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 4 cylinder has opened and the exhaust valve of the No. 4 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 1 cylinder. If necessary, make adjustment.
 - a. Loosen the valve adjustment screw locknut that is on adjustment screw (1) .
 - b. Place the appropriate feeler gauge (2) between the rocker arm and the valve. Turn

adjustment screw (1) while the valve adjustment screw locknut is being held from turning. Adjust the valve lash until the correct specification is achieved.

- c. After each adjustment, tighten the valve adjustment screw locknut while adjustment screw (1) is being held from turning.
2. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 2 cylinder has opened and the exhaust valve of the No. 2 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 3 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

3. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 1 cylinder has opened and the exhaust valve of the No. 1 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 4 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

4. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 3 cylinder has opened and the exhaust valve of the No. 3 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 2 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

3056 Engine

Note: The No. 1 cylinder is at the front of the engine.

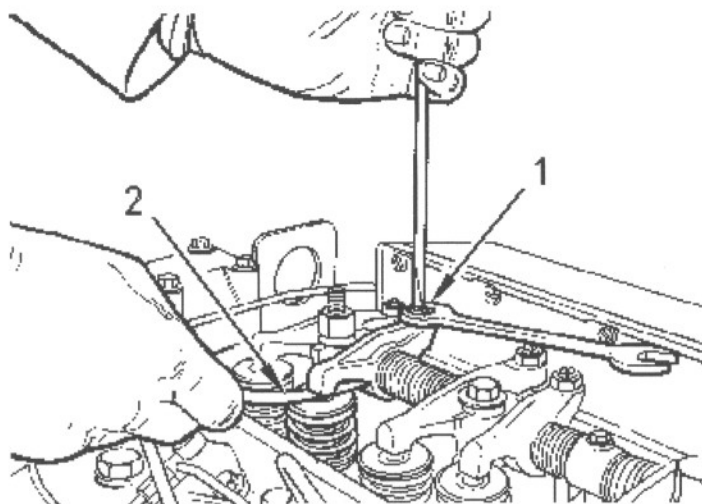


Illustration 2

g00323903

Setting the valve lash

- (1) Adjustment screw
- (2) Feeler gauge



Accidental engine starting can cause injury or death to personnel.

To prevent accidental engine starting, turn the ignition switch to the OFF position, place a do not operate tag at the ignition switch location and disconnect and tape the electrical connection to the stop solenoid that is located on the fuel injection pump.

Remove the valve mechanism cover and perform the following procedure in order to adjust the valve lash:

1. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 6 cylinder has opened and the exhaust valve of the No. 6 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 1 cylinder. If necessary, make adjustment.
 - a. Loosen the valve adjustment screw locknut that is on adjustment screw (1) .
 - b. Place the appropriate feeler gauge (2) between the rocker arm and the valve. Turn adjustment screw (1) while the valve adjustment screw locknut is being held from turning. Adjust the valve lash until the correct specification is achieved.
 - c. After each adjustment, tighten the valve adjustment screw locknut while adjustment screw (1) is being held from turning.
2. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 2 cylinder has opened and the exhaust valve of the No. 2 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 5 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

3. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 4 cylinder has opened and the exhaust valve of the No. 4 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 3 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

4. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 1 cylinder has opened and the exhaust valve of the No. 1 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 6 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

5. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 5 cylinder has opened and the exhaust valve of the No. 5 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 2 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.

6. Rotate the crankshaft in the normal rotation of the engine. When the inlet valve of the No. 3 cylinder has opened and the exhaust valve of the No. 3 cylinder has not completely closed measure the valve lash of the inlet valve and the exhaust valve of No. 4 cylinder.

If adjustment is necessary, refer to Steps 1.a, 1.b, and 1.c.