<table>
<thead>
<tr>
<th>Application</th>
<th>OM662LA</th>
<th>OM661LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle Speed (rpm)</td>
<td>720 - 820</td>
<td>750 - 850</td>
</tr>
<tr>
<td>Fuel Injection Pressure (bar)</td>
<td>135 - 143</td>
<td>135 - 143</td>
</tr>
<tr>
<td>Oil Capacity (liter)</td>
<td>8.0 - 9.5</td>
<td>6.5 - 8.0</td>
</tr>
<tr>
<td>Lubrication Type</td>
<td>Forced by Gear Pump</td>
<td>Forced by Gear Pump</td>
</tr>
<tr>
<td>Oil Filter Type</td>
<td>Combined Full-Flow and Partial Flow Filter</td>
<td>Combined Full-Flow and Partial Flow Filter</td>
</tr>
<tr>
<td>Fuel</td>
<td>Diesel</td>
<td>Diesel</td>
</tr>
</tbody>
</table>
SECTIONAL VIEW

OM662LA ENGINE

Front View
## SPECIAL TOOLS

### SPECIAL TOOLS TABLE

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Tool Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000 589 10 99 01</td>
<td>Torque Wrench</td>
</tr>
<tr>
<td>601 589 65 09 00</td>
<td>Socket</td>
</tr>
<tr>
<td>001 589 76 21 00</td>
<td>Compression Pressure Tester</td>
</tr>
<tr>
<td>001 589 73 21 00</td>
<td>Hand Vacuum Pump</td>
</tr>
</tbody>
</table>
OIL LEAK DIAGNOSIS
Most fluid oil leaks are easily located and repaired by visually finding the leak and replacing or repairing the necessary parts. On some occasions a fluid leak may be difficult to locate or repair. The following procedures may help you in locating and repairing most leaks.

Finding the Leak
1. Identify the fluid. Determine whether it is engine oil, automatic transmission fluid, power steering fluid, etc.
2. Identify where the fluid is leaking from.
   2.1 After running the vehicle at normal operating temperature, park the vehicle over a large sheet of paper.
   2.2 Wait a few minutes.
   2.3 You should be able to find the approximate location of the leak by the drippings on the paper.
3. Visually check around the suspected component.
   Check around all the gasket mating surfaces for leaks. A mirror is useful for finding leaks in areas that are hard to reach.
4. If the leak still cannot be found, it may be necessary to clean the suspected area with a degreaser, steam or spray solvent.
   4.1 Clean the area well.
   4.2 Dry the area.
   4.3 Operate the vehicle for several miles at normal operating temperature and varying speeds.
   4.4 After operating the vehicle, visually check the suspected component.
   4.5 If you still cannot locate the leak, try using the powder or black light and dye method.

Powder Method
1. Clean the suspected area.
2. Apply an aerosol-type powder (such as foot powder) to the suspected area.
3. Operate the vehicle under normal operating conditions.
4. Visually inspect the suspected component. You should be able to trace the leak path over the white powder surface to the source.

Black Light and Dye Method
A dye and light kit is available for finding leaks. Refer to the manufacturer’s directions when using the kit.
1. Pour the specified amount of dye into the engine oil fill tube.
2. Operate the vehicle normal operating conditions as directed in the kit.
3. Direct the light toward the suspected area. The dyed fluid will appear as a yellow path leading to the source.

Repairing the Leak
Once the origin of the leak has been pinpointed and traced back to its source, the cause of the leak must be determined in order for it to be repaired properly. If a gasket is replaced, but the sealing flange is bent, the new gasket will not repair the leak. The bent flange must be repaired also. Before attempting to repair a leak, check for the following conditions and correct them as they may cause a leak.

Gaskets
- The fluid level/pressure is too high.
- The crankcase ventilation system is malfunctioning.
- The fasteners are tightened improperly or the threads are dirty or damaged.
- The flanges or the sealing surface is warped.
- There are scratches, burrs or other damage to the sealing surface.
- The gasket is damaged or worn.
- There is cracking or porosity of the component.
- An improper seal was used (where applicable).

Seals
- The fluid level/pressure is too high.
- The crankcase ventilation system is malfunctioning.
- The seal bore is damaged (scratched, burred or nicked).
- The seal is damaged or worn.
- Improper installation is evident.
- There are cracks in the components.
- The shaft surface is scratched, nicked or damaged.
- A loose or worn bearing is causing excess seal wear.
COMPRESSION PRESSURE TEST

1 Test Adapter
2 Flexible Connector
3 Compression Pressure Recorder

Service Data

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Compression Pressure</td>
<td>28bar</td>
</tr>
<tr>
<td>Minimum Compression Pressure</td>
<td>Approx. 18bar</td>
</tr>
<tr>
<td>Permissible Pressure Difference</td>
<td>Max. 3bar</td>
</tr>
</tbody>
</table>

- Engine at normal operating temperature of 80°C

Tools Required

000 589 65 09 00 Socket
001 589 73 21 00 Hand Vacuum Pump
Compression Pressure Measurement

Notice
Ensure that no gear is engaged and that the vehicle is protected from rolling.

1. Run the engine to be the coolant temperature 80°C.
2. Remove the fuel injection nozzle.

Socket Wrench Insert 001 589 65 09 00
3. Install the test adapter (1) and connect the flexible connector (2) to the compression pressure recorder.

Compression Pressure Recorder 001 589 76 21 00
4. Disconnect the vacuum line from the stop unit and connect the hand vacuum pump to the stop unit.
5. Pump the hand vacuum pump and make the fuel injection pump in stop position.

<table>
<thead>
<tr>
<th>Operating Pressure</th>
<th>Approx. 500bar</th>
</tr>
</thead>
</table>

Hand Vacuum Pump 001 589 73 21 00
6. Using a starter motor, crank the engine 8 revolutions.
7. Measure the remaining cylinder compression pressure in the same manner and compare it with service data.

Notice
If out of standard, do cylinder pressure leakage test.

8. Remove the compression pressure recorder.
9. Install the fuel injection nozzle.
CYLINDER PRESSURE LEAKAGE TEST

Permissible Pressure Leakage (Engine at Normal Operating Temperature of 80°C)

<table>
<thead>
<tr>
<th></th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Whole Engine</td>
<td>25 %</td>
</tr>
<tr>
<td>At Valve and Cylinder Head Gasket</td>
<td>10 %</td>
</tr>
<tr>
<td>At Piston and Piston Ring</td>
<td>20 %</td>
</tr>
</tbody>
</table>

Commercial Tools

<table>
<thead>
<tr>
<th>Commercial Tools</th>
<th>BOSCH, EFAW 210 A or SUN CLT 228</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder Pressure Leakage tester</td>
<td></td>
</tr>
<tr>
<td>Connection Piece</td>
<td>BOSCH order no. 1 687 010 016</td>
</tr>
</tbody>
</table>
Leakage Test
1. Run the engine to be the coolant temperature 80°C.
2. Remove the fuel injection nozzle.
3. Open the coolant subtank cap.
4. Check the coolant level and replenish if necessary.
5. Open the oil filler cap.
6. Remove the air cleaner cover and element.
7. Position the piston at TDC.
8. Install the connector (1) and connection piece (2).
9. Calibrate the tester and connect the connection hose (3)
10. Pressurize with compressed air and compare the pressure changes with permissible pressure leakage.
11. If permissible pressure leakage is out of standard, check followings:
   - Intake and exhaust lines.
   - Sounds in oil filler area.
   - Air bubbles in radiator coolant.
12. Do pressure leakage test for the remaining cylinders according to the firing order.
    - OM 662LA Engine : 1-2-4-5-3
    - OM 661LA Engine : 1-3-4-2
13. Remove the tester.
14. Close the coolant pressure cap and oil filler cap.
15. Install the air cleaner element and cover.
16. Install the fuel injection nozzle.