## Subject
Liner Protrusion Specification

## Date
April 2011

### Additions, Revisions, or Updates

<table>
<thead>
<tr>
<th>Publication Number / Title</th>
<th>Platform</th>
<th>Section Title</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDC-SVC-MAN-0081</td>
<td>EPA07/10</td>
<td>Installation of the Cylinder Liner</td>
<td>Cylinder liner protrusion specification is updated.</td>
</tr>
<tr>
<td>DDC-SVC-MAN-0081</td>
<td>DD Platform</td>
<td>Installation of the Cylinder Liner</td>
<td>Cylinder liner protrusion specification is updated.</td>
</tr>
</tbody>
</table>
2 Installation of the Cylinder Liner

Install as follows:

**NOTICE:** Thoroughly clean the cylinder block, liner, and counter bores to remove any foreign material. Foreign material in the cylinder liner counter bores can cause the liner to seat improperly. Clean with a wire brush.

1. Wipe the inside and outside of the liner clean.

**NOTICE:**
Ensure when installed, the seal rings are properly seated in the proper grooves (1, 3).

2. Lubricate the seal rings with clean engine oil.
3. Install the two new seal rings (1, 3) onto the cylinder liner (2).

4. Install the cylinder liner in cylinder block bore using cylinder liner installation tool J-45876.
5. Seat the liner into the block using cylinder liner installation tool J-47407 for the DD15 and DD16 and tool J-47407-128 for the DD13.

6. Install the cylinder liner protrusion tool J-47415 onto the cylinder block. Thread four cylinder head bolts through the tool and into a head bolt hole and alternately torque the four bolts to 10 N·m (7 lb·ft).

7. Install a dial indicator.
8. Measure the distance from the top of the liner flange to the top of the block in all four locations (see arrows). Allowable average liner protrusion is 0.1397 - 0.2692 mm (0.0055 - 0.0106 in.).

<table>
<thead>
<tr>
<th>DD Platform Engine Liner Protrusion Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum value</td>
</tr>
<tr>
<td>0.1397 mm (0.0055 in.)</td>
</tr>
</tbody>
</table>

a. Add the four measurements together for each liner and divide by 4. This will give you the average liner protrusion. For example: 0.1778 mm (0.0070 in.) + 0.1905 mm (0.0075 in.) + 0.1702 mm (0.0067 in.) + 0.1829 mm (0.0072 in.) = 0.7214 mm (0.0284 in.); 0.7214 mm (0.0284 in.) divided by 4 = 0.18035 mm (0.0071 in.).

b. If the average liner protrusion for a cylinder exceeds the allowable maximum value remove the piston and connecting rod assembly (if installed) and then remove the liner to check for debris under the liner flange.

c. If the liner protrusion average is below the minimum specification, replace the liner and recheck liner protrusion. If liner protrusion is still below minimum specification, contact Detroit Diesel Customer Support Center (313-592-5800).