Volvo Penta of the Americas
1300 Volvo Penta Drive
Chesapeake, Virginia 23320-9810

Longblock Guidelines, 4.3L
Models: 4.3Gi, GS, GL, see list

NOTICE! Please read and understand Parts Bulletin P-21-0-1 before ordering any parts or longblocks. Bulletin P-21-0-1 contains important information that applies to all gas engine longblock service.

4.3L Models covered by this bulletin:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>3868321</td>
<td>4.3GSPNCM</td>
</tr>
<tr>
<td>3868321</td>
<td>4.3GSPHUS</td>
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<tr>
<td>3868320</td>
<td>4.3GiPNCMCE</td>
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<tr>
<td>3868320</td>
<td>4.3GiPHUSCE</td>
</tr>
<tr>
<td>3868186</td>
<td>4.3GSPNCA</td>
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<tr>
<td>3868186</td>
<td>4.3GSPHUB</td>
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<tr>
<td>3868185</td>
<td>4.3GiPNACE</td>
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<tr>
<td>3868184</td>
<td>4.3GLPNCA</td>
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<tr>
<td>3868184</td>
<td>4.3GLPHUB</td>
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<td>3868089</td>
<td>4.3GSPMDA</td>
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<td>3868045</td>
<td>4.3GLLMDA</td>
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<td>3868044</td>
<td>4.3GLMMDA</td>
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<tr>
<td>3868007</td>
<td>4.3GSPMDA</td>
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</tbody>
</table>

The current longblock for these engines is **21165946**. The previous longblock, 3862055 is no longer available from the supplier and is now replaced by new longblock 21165946.

The following parts are not included with 21165946:
- Circulation pump
- Intake manifold
- Flywheel

Intakes are model specific and are covered later in this bulletin.

The flywheel from the original engine will not mount to the longblock. For flywheel order:
1 ea. 3858694 flywheel

For 290DP applications, also order:
6 ea. 3856130 screw, flywheel

A new circulation pump should be installed. For pump order:
1 ea. 3853850 pump, circulation
2 ea. 3852477 gaskets, pump

The circulation pump bolts from the original engine can be re-used to mount the pump.

Additional model specific parts that are needed are listed later in this bulletin.
The Crankshaft Sensor is not included with the new long block. Move the sensor from the original engine to the long block.

**NOTICE!** Install sensor with o-ring. If original o-ring is worn or damaged, replace. See catalog for o-ring PIN.

On GL/GS models the sensor is installed in the timing cover but is not electrically functional. The sensor is not connected to the engine harness. The sensor is needed to seal the timing cover and crankcase.

The following parts come with 21165946:

<table>
<thead>
<tr>
<th>Part no.</th>
<th>name</th>
<th>#</th>
<th>use</th>
</tr>
</thead>
<tbody>
<tr>
<td>3853273</td>
<td>locknut</td>
<td>6</td>
<td>coupler studs</td>
</tr>
<tr>
<td>3853274</td>
<td>stud</td>
<td>6</td>
<td>coupler, SX/DP-S/ XDP</td>
</tr>
<tr>
<td>3857937</td>
<td>stud</td>
<td>2</td>
<td>ground</td>
</tr>
</tbody>
</table>

21165946 is painted red. All from list were painted dark charcoal. For dark charcoal paint order; 3851221, OAL spray can

21165946 comes with high quality spark plugs designed for late model ignitions. The plugs are gapped (G) at 0.060" (1.52mm). These plugs will work correctly in these engines, however the plugs will have to be re-gapped to match the ignition on the original engine. All from list, plug gap is; 0.045" (1.14mm).
The following applies to all engines in list above:

There are several parts issues that must be considered:

1. The bore (B) in the longblock's crankshaft, where the drive coupler or pilot bushing sits is larger than on the original engine.

**NOTICE** The coupler or bushing from the original engine will not mount correctly on the long block. Part or longblock failure will occur if these parts are re-used on the long block.

For engines with SX, DP-S drives, order new coupler 3858437.
Studs and locknuts come with long block.

For engines with DP-D (290) drive, new pilot bushing 3858846 is included in kit 3858443, see details below.
Re-use damper and hardware.

2. 21165946 has metric threads at the attaching points for the starter, flywheel housing, and motor mount brackets.

**Order kit 3858443,** which contains the following parts (A, B & C):

A. Metric hardware for motor mount brackets, starter and SX/DP-S flywheel housing, see picture.
B. Complete oil tube assembly, see picture.

Mounting tab (M) on oil tube assembly attaches to front of port cylinder head, outer hole. Most engines, tab mounts behind steering pump bracket.

**NOTICE** do not bend tube to install, bending could alter oil level on dipstick and give incorrect oil fill reading.

C. Bolt to secure damper and spacer to crankshaft. **Not used on these engines.**

For engines with DP-D (290) drive, order;
6 ea. 965220 screw, flywheel housing
Not included in kit 3858443.
3. NOTICE

This longblock will provide higher horsepower for these applications. After installation of this longblock in these models the boat should be checked to insure the engine operates in the correct RPM range.

See diagram (WOT=wide open throttle). In some cases the boat may need to be re-propped.

NOTICE/These engines can not be mixed in a dual engine boat.

4. Do not install flywheel housing dust shield on long block.

5. The bolt pattern is different on the intake. The throttle bracket is mounted to the intake and will not mount to the new intake.

Order new throttle bracket (8):
4.3GL, 4.3GS 3860811
4.3Gi 3860809
For 4.3GL engines:

1. GL engines were built with 2V intakes. The intake from the original engine will not mount on the longblock.
Order:
1 ea. 3855805 intake manifold
1 ea. 3855807 gasket, intake
8 ea. 3856765 screw, intake
Install intake 3855805 on longblock.

**NOTICE!** Engine failure may occur if intake is not installed correctly on longblock.

Check Workshop Manual 7743365 covering 4.3L Engine Mechanical for the procedure for the sealer and torquing the bolts on the intake.
Both procedures are critical and must be followed.

2. The carburetor spacer from the original engine will not work on intake 3855805. A thicker spacer is needed to keep the carburetor linkage from binding on the intake. The higher carburetor location requires a different fuel pipe,
Order:
1 ea. 3850056 carb spacer
4 ea. 3852864 screw, spacer
1 ea. 3855904 fuel pipe
Also order the following gaskets, seals;
1 ea. 3852109 gasket, distributor
1 ea. 3852111 gasket, thermo housing
1 ea. 3852479 o-ring, pwr. strg. line
1 ea. 3853279 gasket, carb adapter
1 ea. 3853280 gasket, carb to adapter
2 ea. 3853412 gasket, exhaust manf.
For 4.3Gi engines:
There are several additional parts issues that must be considered;

1. Due to the horsepower increase, the ECM from the original engine will not function correctly on the long block.
   Order:
   1 ea. 3851990 bracket, ECM
   1 ea. 3856894 ECM

2. TBI engines were built with 4V intakes. The intake from the original engine will not mount on the long block;
   Order;
   1 ea. 3850355 gasket, TBI
   1 ea. 3850405 gasket, adapter
   1 ea. 3855806 intake manifold
   1 ea. 3855807 gasket, intake
   8 ea. 3856765 screw, intake
   Install intake 3855806 on long block.

   **NOTICE!** Engine failure may occur if intake is not installed correctly on long block.

   Check Workshop Manual 7743365 covering 4.3L Engine Mechanical for the procedure for the sealer and torquing the bolts on the intake.
   Both procedures are critical and must be followed.

3. Order the following gaskets, seals;
   1 ea. 3850423 o-ring, fuel pump
   1 ea. 3850424 o-ring, fuel pump
   1 ea. 3852109 gasket, distributor
   1 ea. 3852111 gasket, thermo housing
   1 ea. 3852479 o-ring, pwr. strg. line
   2 ea. 3853412 gasket, exhaust manf.
For 4.3GS engines:

There are several additional parts issues that must be considered:

1. GS engines were built with 4V intakes. The intake from the original engine will not mount on the long block;

Order:
- 1 ea. 3852437 gasket, adapter
- 1 ea. 3853497 gasket, carb
- 1 ea. 3855806 intake manifold
- 1 ea. 3855807 gasket, intake
- 8 ea. 3856765 screw, intake

Install intake 3855806 on long block.

**NOTICE** Engine failure may occur if intake is not installed correctly on long block.

Check Workshop Manual 7743365 covering 4.3L Engine Mechanical for the procedure for the sealer and torquing the bolts on the intake.

Both procedures are critical and must be followed.

2. Order the following gaskets, seals:
- 1 ea. 3852109 gasket, distributor
- 1 ea. 3852111 gasket, thermo housing
- 1 ea. 3852479 o-ring, pwr. strg. line
- 2 ea. 3853412 gasket, exhaust manf.