All Volvo’s 2010 engines fully comply with the true EPA ’10 mandate of 0.2 g/hp-hr NOx. This means all regulated pollutants have been reduced by 99% from untreated levels. Yet Volvo meets these demands with outstanding reliability and fuel economy. This is because we use a Selective Catalytic Reduction (SCR) system designed for the highest efficiency. Which allowed us to pursue a passive regeneration concept that uses NOx in place of diesel fuel to regenerate the soot, further reducing your cost of operation.

### SPECIFICATIONS

| Ratings: | Power: 375-500 HP Torque: 1550-1750 lb-ft 4 cycle / Inline Six | SCR Selective Catalytic Reduction 2010 Emissions Sliding Nozzle Variable Geometry Turbocharger Cam / Valve Configuration Cylinder Head Injection System Displacement, cu. in. (L) 780 (12.8) Compression Ratio 16.0:1 Bore & Stroke, in. (mm) 5.16 x 6.22 (131 x 158) Cylinder Spacing, in. (mm) 6.61 (168) Full Dress Dry Weight, lb. (kg) 2676 (1214) Fuel Injection System Dual Solenoid Electronic Unit Injection Rating Uprateability Software Only, Throughout Range Electronic Management System Volvo VECTRO Fuel and Lubrication: Fuel Specification Ultra Low Sulfur Diesel, 15 ppm Fuel Filters Primary plus Secondary Oil Specification Volvo VDS-4, SAE 10W-30 Oil Filtration Two Full Flow, One Bypass Oil Drain Interval, Normal Service, miles (km) 35,000 (56,000) Oil Drain Kit Optional Engine Equipment: Air Compressor, CFM Two Cylinder, 31.8 Retarder I-VEB Volvo Engine Brake Engine Brake Rating at 2200 rpm 500 hp @ 2200 rpm Engine Brake Rating at 1500 rpm 350 hp @ 1500 rpm Engine Brake Weight, lbs. (kg) 25 (12) PTO Port for Live Rear PTO Pump or Shaft Standard Preheater, Electrical Optional

| Advertised Power, HP | 455 | Peak Power, HP | 465 | Peak Torque, lb-ft@rpm | 1750@1050 | Governed rpm | 2100 | Recommended cruise speed range, rpm | 1300-1500 | Start engagement torque, lb-ft@rpm | 850@800 | Torque in all gears but top two, lb-ft | 1550 | Default torque in top two gears, lb-ft | 1550 | On demand torque in top two gears, lb-ft | 1750 |

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Volvo Trucks. Driving Success.
**FEATURE** | **BENEFIT**
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“No-Regen” DPF strategy, regenerating soot with only Passive (NO₂-based) Regeneration; no 7th injector fueling for regeneration | Eliminates Active (oxygen-based) DPF Regenerations and the diesel fuel usage they require, for lower cost of operation
Available “Early Upshift” software encourages progressive shifting | Lower total engine revs; better fuel economy
Volvo D11, D13, D16 are the only EPA ’10 diesels using the same base engine and EGR systems as in 2007 (i.e., the image on the reverse side is the same as 2007) | Systems proven over time operate with greater durability for reduced cost of operation
Available I-VEB engine brake—strongest in class engine brake at cruise rpm | Exceptional retardation at the rpm you drive
Volvo D11, D13, D16 share common design philosophies throughout the family | More thorough component development assures better design and evaluation
Eight headbolts around each piston; four bolts on each connecting rod | Higher number of bolts assures more even clamping and greater clamping force for longer design life
Ultra-high 35,000 psi fuel injection pressure | Finer fuel atomization for cleaner burn, reduced emissions and better fuel economy
Damper on camshaft | Reduced injection system generated torsional vibration and high frequency “buzz,” for longer component life
Precision-Flow Cooled Exhaust Gas Recirculation with Delta-P sensor for accurate EGR measurement | Together with accurate turbocharger and EGR valve, this closed-loop system is tuned to give just the EGR flow needed, no more, no less, for optimum fuel consumption

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**VOLVO ECO-TORQUE AND DUAL-TORQUE RATINGS**

Volvo’s new Eco-Torque feature provides a new twist on encouraging fuel-economy driving. By switching to a lower torque curve in the top two gears, but allowing the higher torque curve during lug-back, Eco-Torque encourages low-rpm driving and provides a lower power level in non-demanding situations. But when conditions demand high torque at low rpm, the engine torque will switch up to the higher curve, in many cases allowing the hill to be topped in the highest gear.

Dual-Torque ratings have a similar dual personality, but serve a special purpose. They take advantage of several vendor transmissions that will allow a higher torque in the top two gears. This means that they must operate in their lower torque in the low gears.

<table>
<thead>
<tr>
<th>.Maximum Fuel Economy</th>
<th>Maximum Performance</th>
<th>Maximum Driveability</th>
<th>Use of Lower Rated Transmissions</th>
<th>Maximum Uprateability</th>
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<tbody>
<tr>
<td><strong>BASE RATINGS</strong></td>
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<tr>
<td><strong>ECO-TORQUE RATINGS</strong></td>
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<tr>
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<td>✗</td>
<td>✓</td>
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</tr>
</tbody>
</table>

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**HIGH-EFFICIENCY AFTERTREATMENT SYSTEM**

Volvo’s EPA ’10 engines include high-efficiency aftertreatment systems that save you fuel and reduce maintenance.

For example, our SCR catalyst has a full 40° between the point of introduction of the Diesel Exhaust Fluid and where it meets the catalyst. This allows for the DEF to fully and completely convert to ammonia.

More importantly, our SCR catalyst has three bricks where others have two. This added capacity allows a greater catalyst efficiency, which enables our No-Regen strategy. We can adjust the EGR flow rate down while still eliminating all of the NOx in the catalyst. This allows us to deliver better fuel economy.

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**D13 DRIVETRAIN RECOMMENDATIONS**

It is critical to specify the truck properly to achieve maximum fuel economy and performance.

Ask your salesman to help you choose a rear axle ratio appropriate for your expected cruising speed and gross combination weight.

2010 engines have been designed to achieve maximum fuel economy by cruising at low engine rpm. In D13 line haul specifications, the target is 1375 rpm at 65 mph.

For example, with 80K lbs GCW, 1650 lbs-ft torque, 295/75R22.5 drive tires and 0.74 top gear ratio, the 3.36:1 axle ratio would come closest to the 1375 rpm at 65 mph recommendation.

With 0.78 ratio transmission, you should use a 3.21:1 ratio for the same rpm at 65.

Never specify an EPA ’10 Volvo engine for a cruise speed above 1600 rpm.