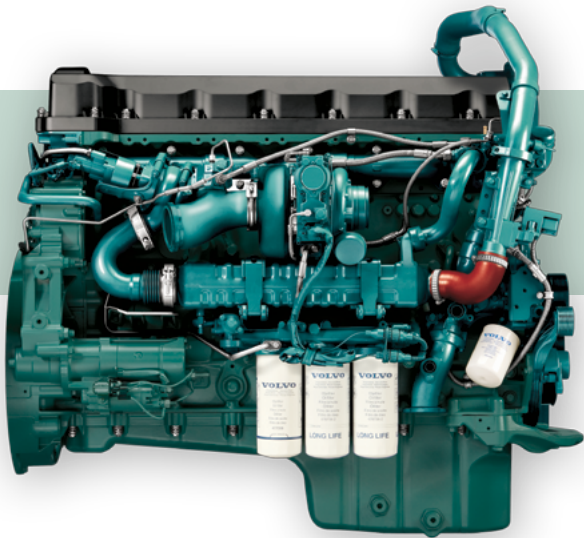
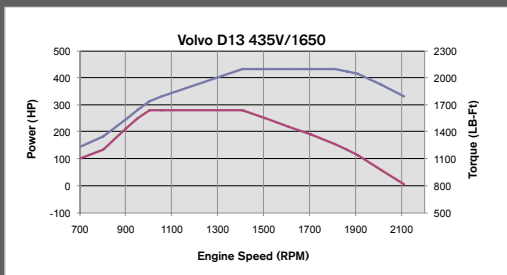


# VOLVO D13



435 / 1650  
Vocational

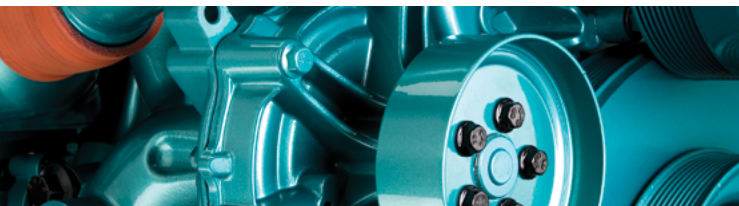
All Volvo 2014 engines fully comply with the latest EPA mandates. This means all regulated pollutants have been reduced by 99% from untreated levels. Yet Volvo meets these demands with outstanding reliability and fuel economy. This is because we use a Selective Catalytic Reduction (SCR) system designed 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.



|                                     |           |
|-------------------------------------|-----------|
| Advertised Power, HP                | 435       |
| Peak Power, HP                      | 455       |
| Peak Torque, lb-ft@rpm              | 1650@1050 |
| Governed rpm                        | 2100      |
| Recommended cruise speed range, rpm | 1200-1500 |
| Start engagement torque, lb-ft@rpm  | 850@800   |

## SPECIFICATIONS

|  |   |
|--|---|
| <b>Ratings:</b>                                | Power: 435 HP<br>Torque: 1650 lb-ft           |
| Base Engine Configuration                      | 4 cycle / Inline Six                          |
| Emissions                                      | SCR Selective Catalytic Reduction             |
| Aspiration                                     | Sliding Nozzle Variable Geometry Turbocharger |
| Cam / Valve Configuration                      | SOHC / 4 Valves per Cylinder                  |
| Cylinder Head                                  | One Piece Rigid Deck Cylinder Head            |
| Injection System                               | Dual Solenoid Electronic Unit Injection       |
| Fuel Injection Pressure, psi (bar)             | 35,000 (2,400)                                |
| Electronic Management System                   | Volvo VECTRO                                  |
| Rating Uprateability                           | Software Only, Throughout Range               |
| 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)                                   |
| <b>Fuel and Lubrication:</b>                   |   |
| Fuel Specification                             | Ultra Low Sulfur Diesel, 15 ppm               |
| Fuel Filters                                   | Primary plus Secondary                        |
| Total Lube Oil Capacity, qts. (L)              | 38 (36)                                       |
| Oil Filtration                                 | Two Full Flow, One Bypass                     |
| Oil Drain Interval, Normal Service, miles (km) | 35,000 (56,000)                               |
| Oil Specification                              | Volvo VDS-4, SAE 10W-30                       |
| FLOCS Oil Drain Kit                            | Optional                                      |
| <b>Engine Equipment:</b>                       |   |
| 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                                      |



435 / 1650



| FEATURE  | BENEFIT  |
|--|--|
| "No-Regen" DPF strategy, regenerating soot with only Passive (NO <sub>2</sub> -based) Regeneration; no 7 <sup>th</sup> 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   |
| 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   |
| Rigid deck cylinder head with six headbolts around each piston; 31 in total  | Headbolt arrangement designed for uniform clamping force for long 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 |
| Oil-Cooled EGR valve with dual port design   | Consistent temperature and accurate flow; balanced pressure design with reduced opening force for high reliability and stick resistance                              |
| Available I-VEB engine brake—strongest in class engine brake at cruise rpm   | Exceptional retardation at the rpm drive   |
| I-VEB intelligently modulated the engine brake power for "downhill cruise: to maintain a steady vehicle speed during descent                             | Greater driving comfort; improved safety   |
| 'Performance Bonus Guide' software helps the driver operate in the most efficient zone   | By altering the driver's behavior through incentives, fuel savings can be significant and driver retention can be increased  |

### HIGH-EFFICIENCY AFTERTREATMENT SYSTEM



Volvo's 2014 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 NO<sub>x</sub> in the catalyst. This allows us to deliver better fuel economy.

### 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.

Volvo 2014 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.

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