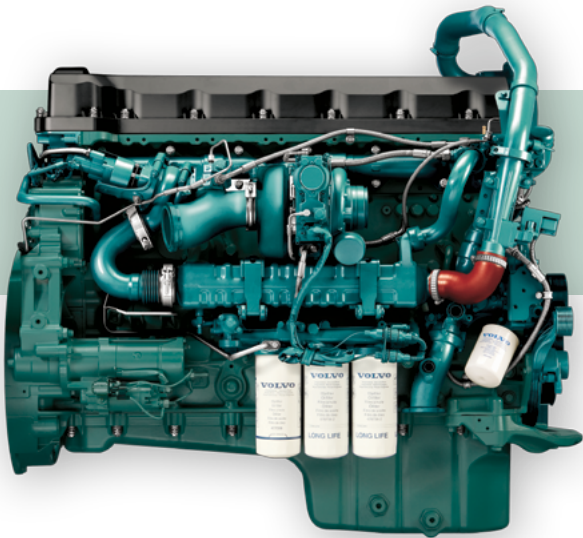
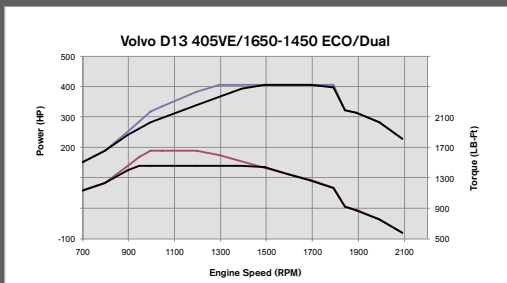


VOLVO D13



405 Eco & Dual 1650 / 1450

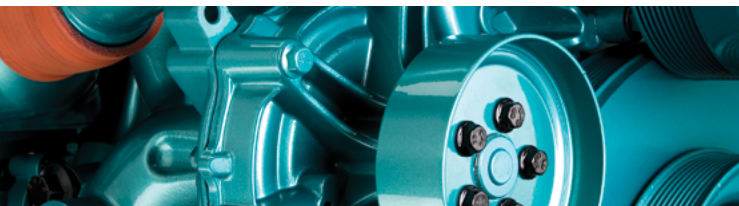
All Volvo 2014 engines fully comply with the latest EPA mandates. This means all regulated pollutants have been reduced by 99% from untreated levels. Yet Volvo meets these demands with outstanding reliability and fuel economy. This is because we use a Selective Catalytic Reduction (SCR) system designed 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	405
Peak Power, HP	415
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
Torque in all gears but top two, lb-ft	1650
Default torque in top two gears, lb-ft	1450
On demand torque in top two gears, lb-ft	1650

SPECIFICATIONS

Ratings:	Power: 405 HP Torque: 1450-1650 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)
Fuel and Lubrication:	
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
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



FEATURE	BENEFIT
"No-Regen" DPF strategy, regenerating soot with only Passive (NO ₂ -based) Regeneration; no 7 th 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
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

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.

	MAXIMUM FUEL ECONOMY	MAXIMUM PERFORMANCE	MAXIMUM DRIVEABILITY	USE OF LOWER RATED TRANSMISSIONS	MAXIMUM UPGRATEABILITY
BASE RATINGS	X	✓	✓	X	✓
ECO-TORQUE RATINGS	✓	X	✓	X	✓
DUAL-TORQUE RATINGS	✓	X	X	✓	X

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_x 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.

Volvo Trucks North America
PO Box 26115
Greensboro, NC 27402-6115

www.volvotrucks.us.com

Volvo Trucks Canada
2100 Derry Road West, Suite 410
Mississauga, Ontario L5N 0B3

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