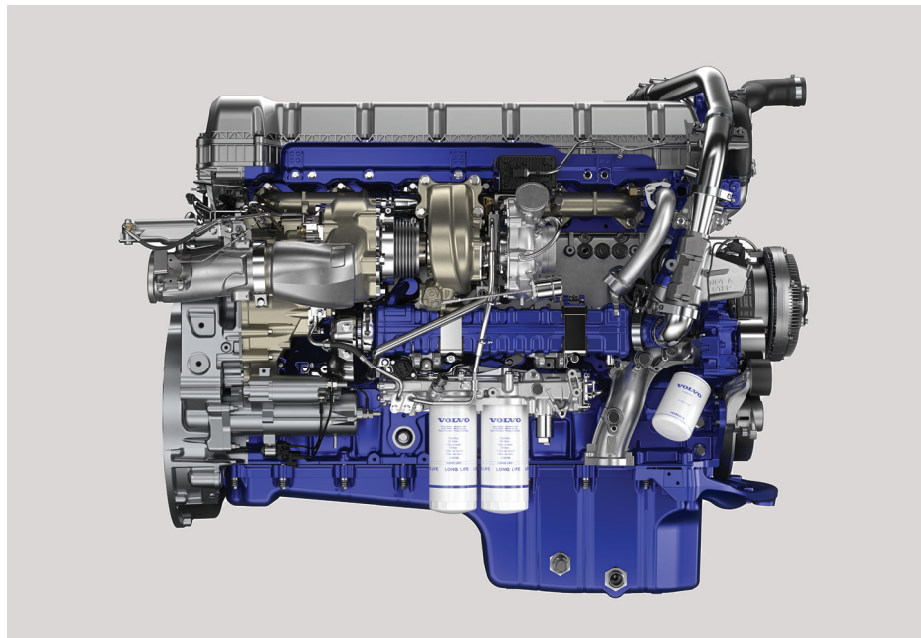




VOLVO D13 TC - 405 HP

Super Direct, XE Adaptive Gearing, XE Economy, XE High-Torque



Cash in on fuel

The D13 Turbo Compound engine provides maximum fuel efficiency and performance for a wide array of applications and terrain. The Turbo Compound unit is a waste heat recovery system that extracts energy from the exhaust gases and converts it to useable torque that is transferred back into the crankshaft. This extra boost of power back into the engine can increase fuel efficiency up to 6%. Just like the entire Volvo engine family, the D13 is designed to produce the power you need, the fuel efficiency crucial to your bottom line, and the reliability your customers demand.

Downspeeding: The key to saving fuel

“Downspeeding” is Volvo’s term for lowering engine rpm at a given vehicle speed to save fuel. All Volvo XE13/TC powertrain packages are designed to cruise comfortably in the engine’s sweet spot reducing engine friction and increasing fuel efficiency.

Engine Variants

Super Direct: Our most fuel efficient powertrain for applications that are constantly required to adapt to terrain. A perfect selection for hub-to-hub customers operating >85% top gear and carrying various payloads up to 110k lbs.

XE Adaptive Gearing:: Delivers superior fuel efficiency with our XE package. Ideal for customers with >90% in top 2 gears, running loaded out for delivery and unloaded back to depot. Optimized to give fuel efficiency while also driving at road speed limits both loaded and unloaded. Recommended for 120k lbs. GCW and higher.

XE Economy: Our most versatile and balanced fuel efficiency powertrain, suitable for any customer. Offers the benefits of the XE package while being highly adaptive to road conditions and terrain. XE Economy provides maximum fuel efficiency under any load and duty cycle.

XE High-Torque: A performance oriented powertrain that still delivers fuel efficiency. The XE High-Torque package is optimized to provide best throttle and torque response independent of your loading scenario.

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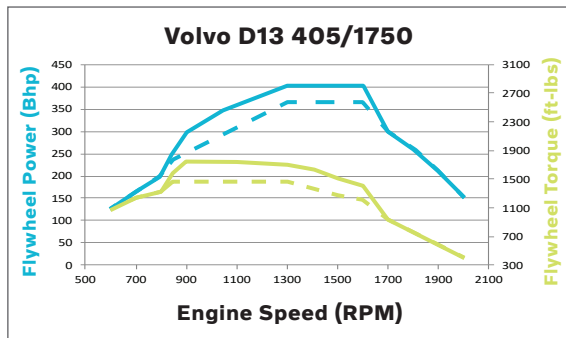
D13 drivetrain recommendations

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.

For maximum fuel efficiency at high speeds (65 mph or faster), the D13 TC package in combination with a 2.47 rear axle ratio and low pro tires rated at 512 revolutions per mile can be the perfect spec. In top gear, this combination will produce a 1069 rpm engine speed at 65 mph.

For versatility in areas where speed may vary, the D13 TC with a 2.64 rear axle ratio and low pro tires (i.e. 512 rpms) will run the engine rpm at 1002 in top gear at a cruise speed of 57 mph.



Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1750@900

Governed rpm	2100
Recommended cruise speed range, rpm	1050-1250
Start engagement torque, lb-ft@rpm	848@800

SPECIFICATIONS

Ratings:	Power: 405 HP Torque: 1750 lb-ft
Base Engine Configuration	4 cycle / Inline 6
Emissions	Selective Catalytic Reduction (SCR)
Aspiration	Fixed Geometry Turbocharger
Cam / Valve Configuration	SOHC / 4 Valves per Cylinder
Cylinder Head	One Piece Rigid Deck Cylinder Head
Injection System	Common Rail
Maximum Fuel Injection Pressure, psi (bar)	35,000 (2,400)
Rating Uprateability	Software Only, Throughout Range
Displacement, (L) cu. in.	(12.8) 780
Compression Ratio	18:1
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)	2635 (1195)
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
Oil Drain Interval, Normal Service, miles (km)	60,000 (96,560)*
Oil Specification	Volvo VDS-5.0, 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	347 hp @ 1500 rpm
Engine Brake Weight, lbs. (kg)	25 (12)
Preheater, Electrical	Optional

* Volvo VDS-5.0 Oil : Application at 6 mpg or greater.

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FEATURE	BENEFIT
Fixed Geometry Turbocharger	Robust design with fewer moving parts increases durability. Air-aided ball bearings increase compressor efficiency and improve fuel efficiency.
Common rail fuel injection	Precise control allows quicker, more accurate injection for improved fuel economy; clean installation improves reliability and reduces engine noise.
Ultra-high 35,000 psi fuel injection pressure	Finer fuel atomization for cleaner burn, reduced emissions and better fuel economy.
Wave piston design	Wave design optimizes cylinder efficiency, reducing soot production while enhancing fuel efficiency and performance.
Precision-Flow Cooled Exhaust Gas Recirculation	Tuned to give just the EGR flow needed, no more, no less, for optimum fuel consumption.
Volvo engine family shares common architecture	Thorough component development assures more refined design.

DRIVE MODES	
Extra Economy (EE)	Gear shifting is optimized for downspeeding. Achieves superior fuel saving settings in Eco-Roll at lowest crest speed and highest roll out speed.
Economy (E)	Gear shifting is optimized downspeeding while balancing performance. Achieves fuel saving settings with a balanced crest speed and roll out speed in Eco-Roll.
Performance (P)	Gear shifting is optimized to maintain road speed while utilizing the engine torque as much as possible. It disables the Eco-roll feature.

GCW AND GEARING			
GCW US (Canada/Mexico)	RaR DD	RaR OD	Cruise Speed Rpm
<80K (<90K) lbs.	1.95 - 2.28*	2.47 - 2.85*	1050-1250
>80K - 110K (>90K- 110K) lbs.	2.05 - 2.31*	2.64 - 3.08*	1050-1350
>110K - 160K (110K-143K) lbs.**	2.47 - 2.79*	3.08 - 3.42*	1050-1450

* Dependent on drive tire specification.

** Dependent on transmission and powertrain control software selection. Heavier weights available with application approval. Please check with your Volvo Trucks dealer.



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