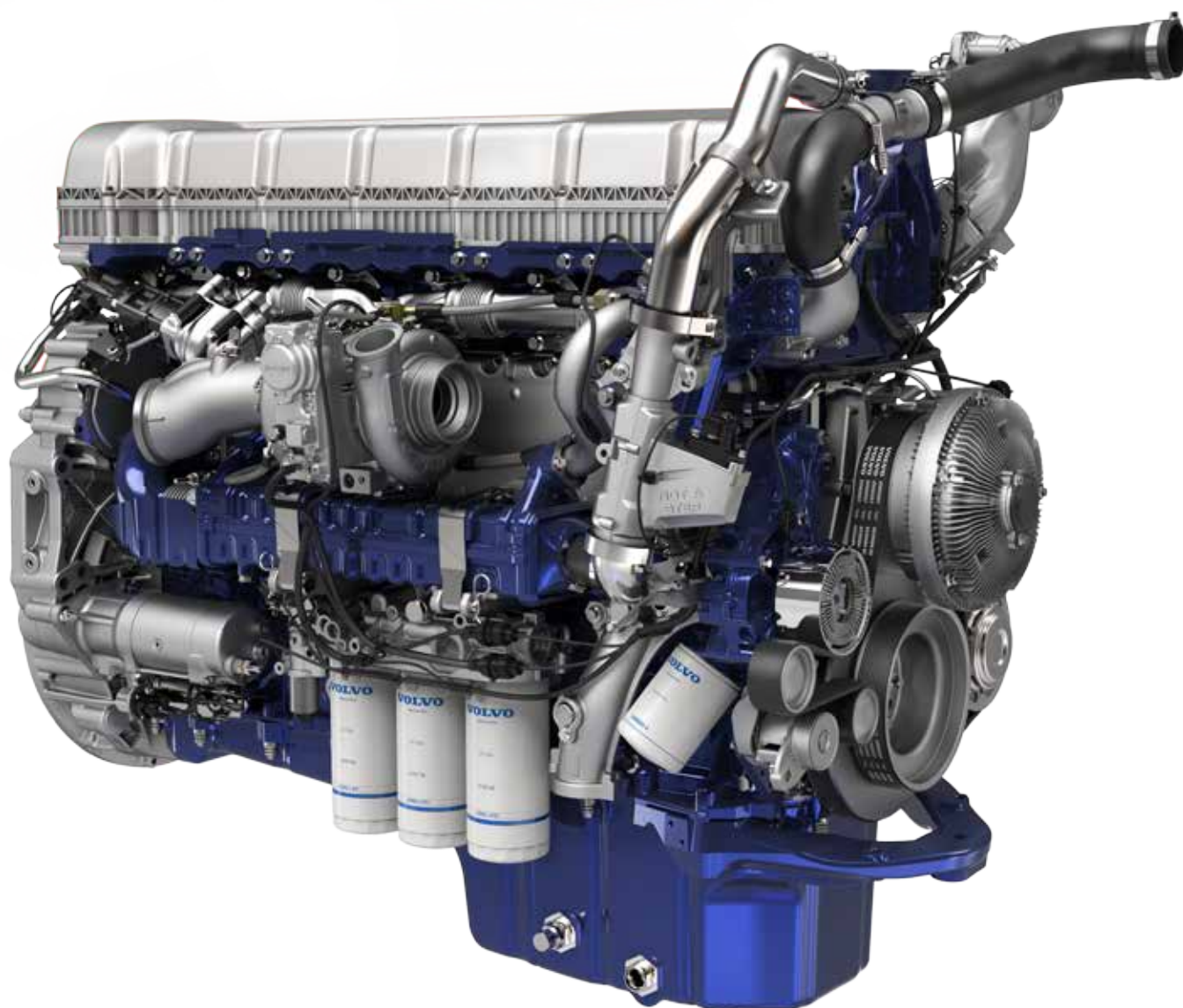




Volvo Trucks. Driving Progress

VOLVO D13 ENGINE FAMILY



All the power your job needs.

SPECIFICATIONS

Ratings:	
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	Common Rail
Maximum Fuel Injection Pressure, psi (bar)	35,000 (2,400)
Rating Uprateability	Software Only, Throughout Range
Displacement, cu. in. (L)	780 (12.8)
Compression Ratio	17:1
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)	2605 (1182)
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)	55,000 (88,514)*
Oil Specification	Volvo VDS-4.5, SAE 10W-30
FLOCS Oil Drain Kit	Optional
Engine Equipment:	
Air Compressor, CFM	Two Cylinder, 31.8
Retarder	Volvo Engine Brake (VEB)
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 on VHD
Preheater, Electrical	Optional

* Application at 6 mpg or greater.

Just like the entire Volvo engine family, the D13 is designed to produce the power needed for your specific application, the fuel economy crucial to your bottom line, and the reliability your customers demand. Volvo achieves these goals by starting with a foundation of proven, mature engine architecture, and then leveraging innovative hardware and technology to optimize performance, productivity and efficiency. Thoughtful features are expertly integrated to deliver the solution for your needs.

High-efficiency aftertreatment system

Volvo's "one-box" exhaust aftertreatment system offers smaller system packaging and reduces weight by 17 pounds from previous systems. The one-box configuration provides better thermal encasing of exhaust energy, and improves muffler efficiency. The use of Cu-Z catalyst coatings improves both low-temperature NOx conversion, and long-term system robustness.

D13 drivetrain recommendations

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

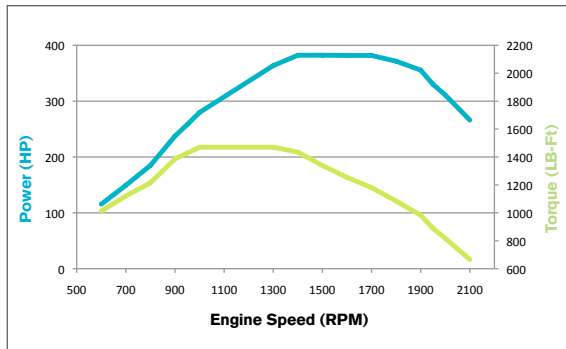
Ask your salesman to help you choose a rear axle ratio appropriate for your expected cruising speed and gross combination weight.

Never specify a Volvo D13 engine for a cruise speed above 1550 rpm.



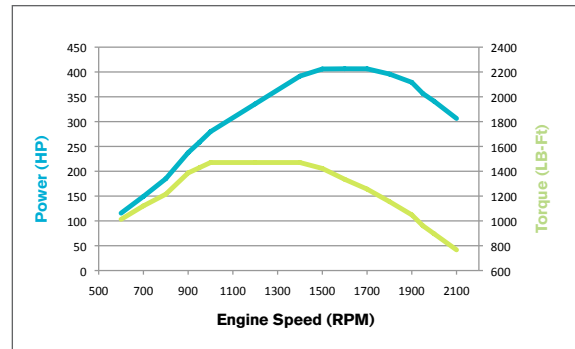
Specifications

Volvo D13 375/1450



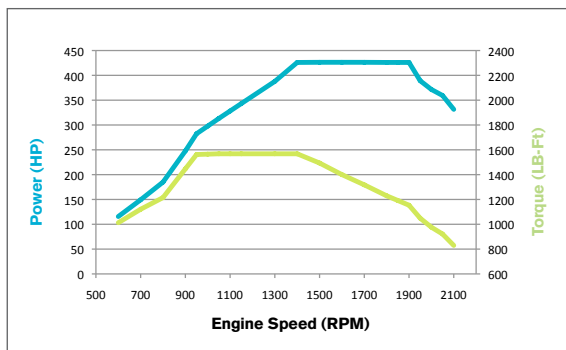
Advertised Power, HP	375
Peak Torque, lb-ft@rpm	1450@1000
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 405/1450



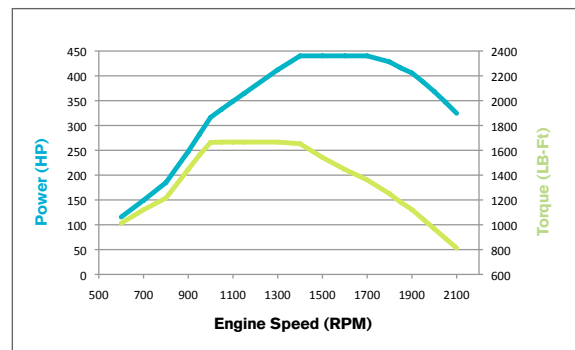
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1450@1000
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 425/1550



Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1550@950
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 435/1650

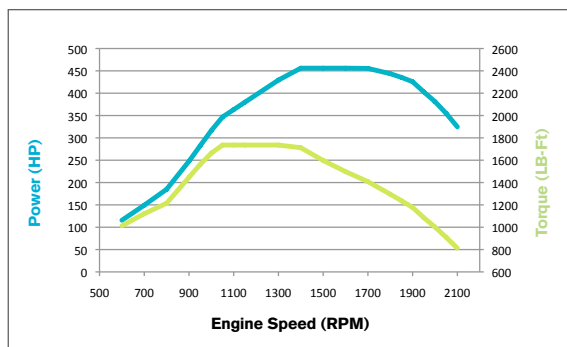


Advertised Power, HP	435
Peak Torque, lb-ft@rpm	1650@1050
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800



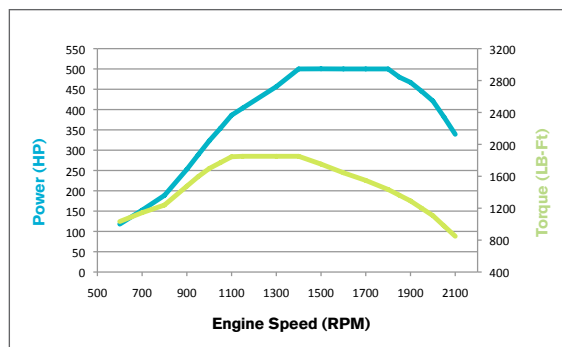
Specifications

Volvo D13 455/1750



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1750@1050
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 500/1850



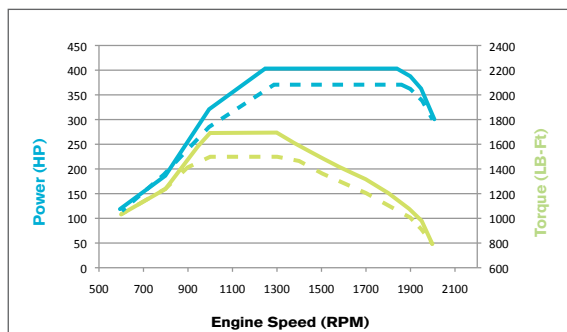
Advertised Power, HP	500
Peak Torque, lb-ft@rpm	1850@1100
Governed rpm	2100
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

FEATURE	BENEFIT
Variable Geometry Turbocharger (VGT)	Supercharges the intelligent Volvo Engine Brake (VEB) system for high retarding horsepower at low rpm, where engine braking is needed most.
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.
Oil-Cooled dual-port EGR valve	Consistent temperature; balanced pressure design with reduced opening force for high reliability and stick resistance.
Volvo engine family shares common architecture	Thorough component development assures more refined design.
Rigid deck cylinder head	Six headbolts per cylinder arrangement delivers uniform clamping force for long life.
Camshaft damper	Reduces injection system torsional vibration and high frequency buzz, for longer component life.
Smart fan clutch	Increases fuel efficiency by only running the fan when extra cooling is necessary, varying fan speed based on cooling needs.
Intelligently modulated VEB	Maintains steady vehicle speed during descent for greater driving comfort, improved safety.
Available VEB	Exceptional retarding, optimized for the rpm you drive, increasing service brake life.
Performance Bonus Guide driver coaching software	Increased fuel savings and driver retention by altering driver behavior through incentives.



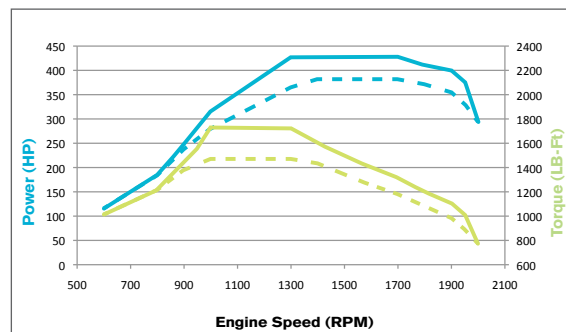
Eco-Torque Specifications

Volvo D13 405 Eco-Torque
Performance/Economy/Dual Torque 1650-1450



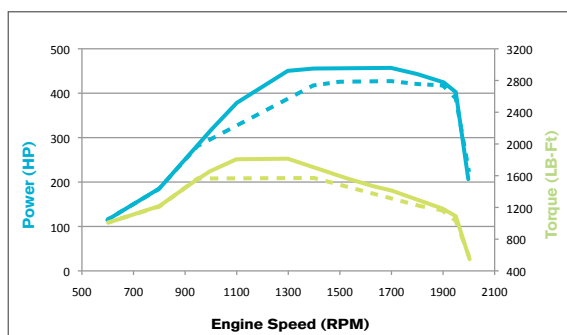
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1650@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 425 Eco-Torque
Performance/Economy/Dual Torque 1750-1450



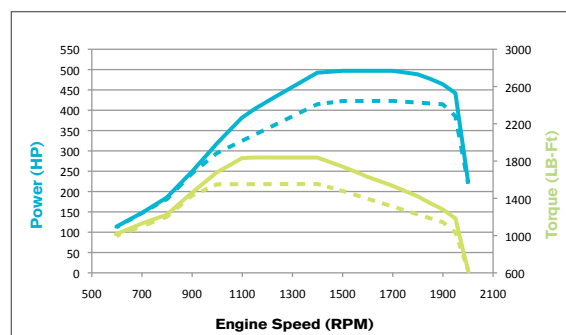
Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1750@900
Governed rpm	2000
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 455 Eco-Torque
Performance/Economy/Dual Torque 1850-1550



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1850@900
Governed rpm	2000
Recommended cruise speed range, rpm	1200-1500
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 500 Eco-Torque
Performance/Economy 1850-1550



Advertised Power, HP	500
Peak Torque, lb-ft@rpm	1850@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1250-1500
Start engagement torque, lb-ft@rpm	869@800

TORQUE MANAGEMENT

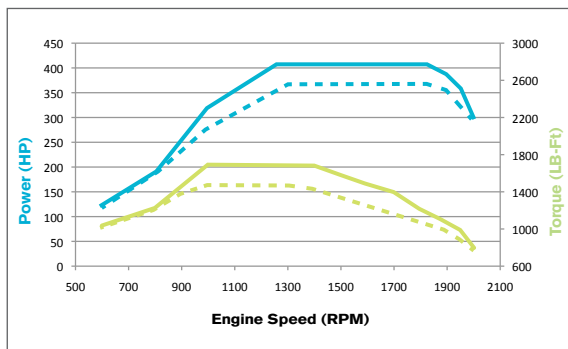
Package	Gear	Torque Curve	Torque Switching Gears
Eco-Torque Performance*	1-10	High	Top 2
	11-12	High or Low	
Eco-Torque Economy	1-8	Low	Top 4
	9-12	High or Low	
Dual Torque	1-X	Low	Top 2 gears

* Use when fully loaded majority of the time.



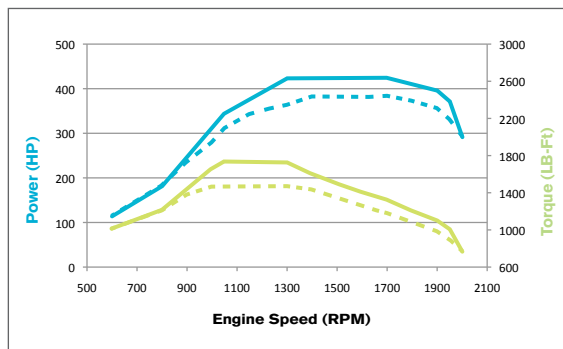
XE Specifications

Volvo D13 XE-Economy 405/1650-1450



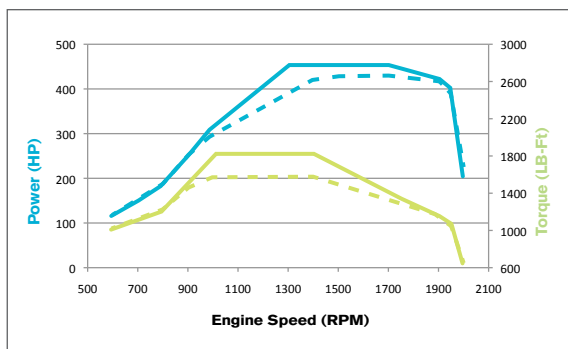
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1650@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-Economy 425/1750-1450



Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1750@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-Economy 455/1850-1550



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1850@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Downspeeding: The key to saving fuel

"Downspeeding" is Volvo's term for lowering engine rpm at a given vehicle speed to save fuel. The Volvo XE13 powertrain package is designed to cruise comfortably in the engine's sweet spot reducing engine friction and increasing fuel efficiency.

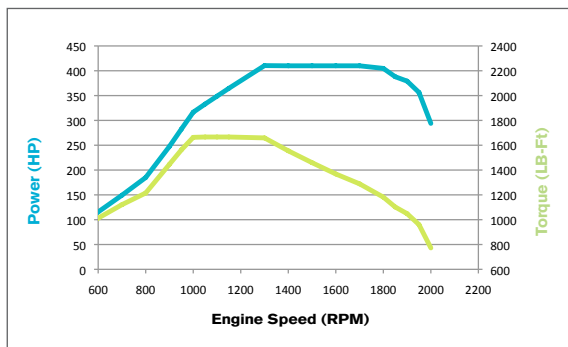
Basic specs for the Volvo XE13 package:

- On-highway application
- Maximum GCW 80K lbs
- Volvo D13 engine
 - 405 hp/(1650-1450) lb-ft
 - 425 hp/(1750-1450) lb-ft
 - 455 hp/(1850-1550) lb-ft
- Volvo I-Shift transmission
 - Automated 12-speed
 - 0.78:1 overdrive ratio
- 6x4, 6x2, or 4x2 with 2.64-2.85:1 axle ratio
- 22.5 tires 497-521 rev/mile
- Includes new efficiency-optimized engine and transmission application software



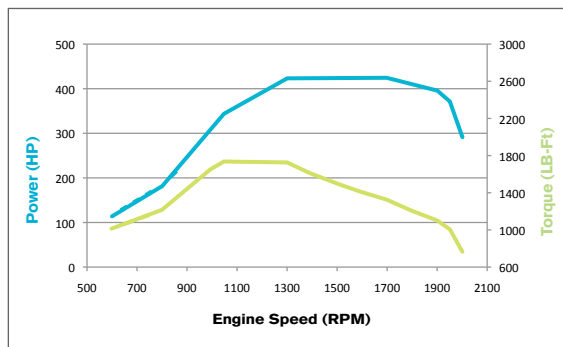
XE Specifications

Volvo D13 XE-High Torque 405/1650



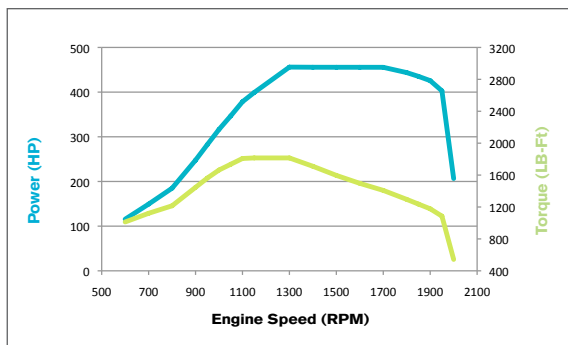
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1650@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-High Torque 425/1750



Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1750@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-High Torque 455/1850



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1850@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

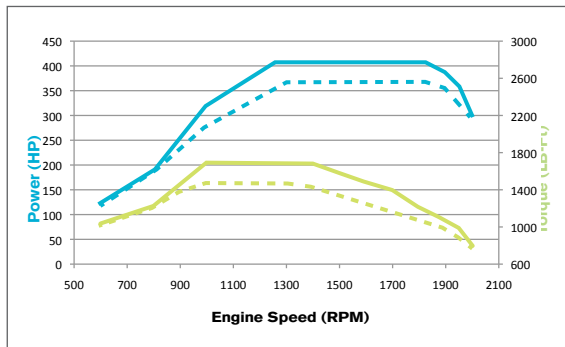
TORQUE MANAGEMENT

Package	Gear	Torque Curve	Torque Switching Gears
XE - Economy	1-7	Low	8, 9, 10, 11
	8-11	High or Low	
	12	High	
XE - High Torque	1-12	High	None



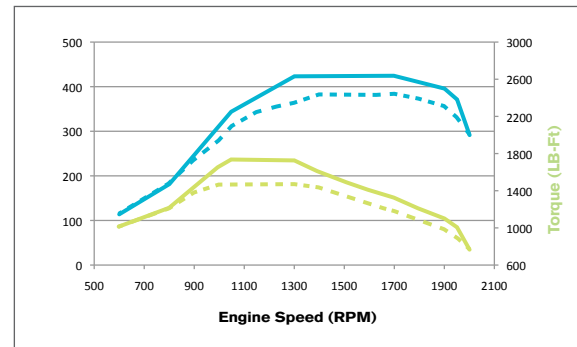
XE Adaptive Gearing Specifications

Volvo D13 XE-Adaptive Gearing 405/1650-1450



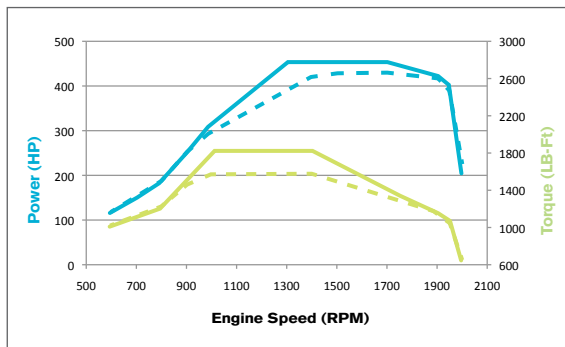
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1650@1000
Governed rpm	2000
Recommended cruise speed range, rpm (light)	1050-1250
Recommended cruise speed range, rpm (loaded)	1200-1450
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-Adaptive Gearing 425/1750-1450



Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1750@1000
Governed rpm	2000
Recommended cruise speed range, rpm (light)	1050-1250
Recommended cruise speed range, rpm (loaded)	1200-1450
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 XE-Adaptive Gearing 455/1850-1550



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1850@1000
Governed rpm	2000
Recommended cruise speed range, rpm (light)	1050-1250
Recommended cruise speed range, rpm (loaded)	1200-1450
Start engagement torque, lb-ft@rpm	869@800

Adaptive Gearing

The Adaptive Gearing system is both a direct and overdrive driveline depending on rear axle load, which the system senses in real-time. When loaded, the transmission locks out the 12th gear and provides the performance and fuel efficiency benefits of direct drive. During unloaded or lightly loaded trips, the driveline operates in overdrive, providing enhanced fuel efficiency.

XE13 – Adaptive Gearing Specs:

- On-highway tanker and bulkhaul applications
- Max GCW 80K lbs
- Loaded one-way, empty-the-other cycles
- Volvo D13 engine
 - 405 hp/1650-1450 lb-ft
 - 425 hp/1750-1450 lb-ft
 - 455 hp/1850-1550 lb-ft
- Volvo I-Shift Transmission
 - Automated 12-speed
 - 0.78:1 overdrive ratio
- 6x4, 6x2 with 2.47-2.50:1 axle
- 22.5 tires 512-521 rev/mile

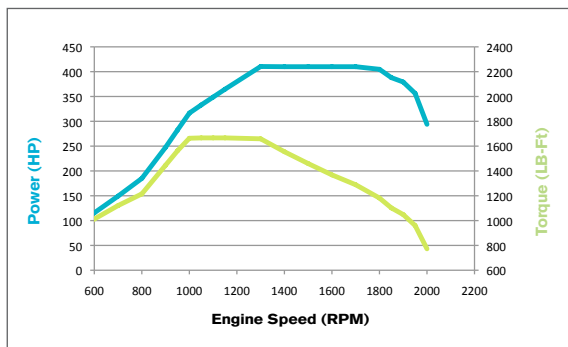
TORQUE MANAGEMENT

Package	Gear	Torque Curve	Torque Switching Gears
XE – Adaptive Gearing Lightly Loaded	1-11	High	12th gear always in low curve
XE – Adaptive Gearing Heavily Loaded	1-11	High	12th gear always locked out



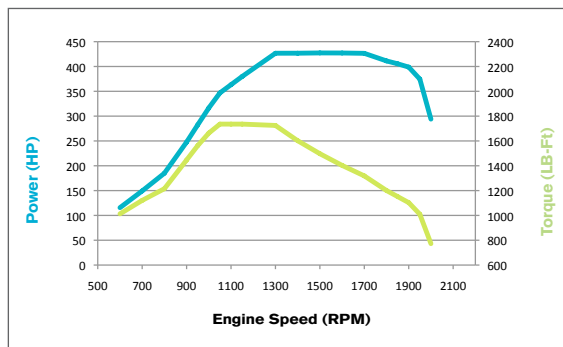
Super Direct Specifications

Volvo D13 Super Direct 405/1650



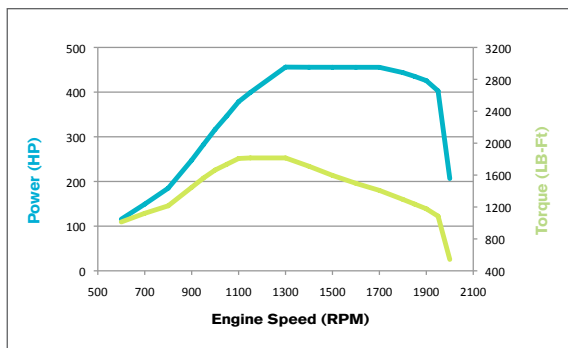
Advertised Power, HP	405
Peak Torque, lb-ft@rpm	1650@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 Super Direct 425/1750



Advertised Power, HP	425
Peak Torque, lb-ft@rpm	1750@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Volvo D13 Super Direct 455/1850



Advertised Power, HP	455
Peak Torque, lb-ft@rpm	1850@1000
Governed rpm	2000
Recommended cruise speed range, rpm	1150-1250
Start engagement torque, lb-ft@rpm	869@800

Downspeeding: The key to saving fuel

"Downspeeding" is Volvo's term for lowering engine rpm at a given vehicle speed to save fuel. The Volvo Super Direct powertrain package is designed to cruise comfortably in the engine's sweet spot reducing engine friction and increasing fuel efficiency.

Basic specs for the Volvo Super Direct package:

- On-highway application
- Maximum GCW 80K lbs
- Volvo D13 engine
 - 405 hp/1650 lb-ft
 - 425 hp/1750 lb-ft
 - 455 hp/1850 lb-ft
- Volvo I-Shift transmission
 - Automated 12-speed
 - 1:1 direct drive
- 6x4 with 2.26-2.39:1 axle ratio
- 22.5 tires 497-521 rev/mile
- Includes new efficiency-optimized engine and transmission application software

TORQUE MANAGEMENT

Package	Gear	Torque Curve	Torque Switching Gears
Super Direct	1-12	High	None

VOLVO

Volvo Trucks

www.volvotrucks.com

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

Volvo Trucks North America
7900 National Service Road
Greensboro, NC 27409

Volvo Trucks Mexico
Torre Zentrum piso 21
Av. Santa Fe #495 Col. Cruz Manca
Del. Cuajimalpa Ciudad de Mexico.
CP05340

Some vehicles shown with optional equipment.

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