

V O L V O

A close-up photograph of a hand on a steering wheel. The hand is positioned on the right side of the wheel. In the foreground, a gear shifter is visible, featuring a 'D N R' selector and a 'MODE' button. A semi-transparent gear shifter overlay is positioned over the hand and the gear shifter, showing a gear pattern and the text '+PULL' and '-PUSH' with a gear icon. The background is dark and out of focus.

# VNL POWERTRAIN

Volvo Trucks. Driving Progress.



## The right powertrain for you

Volvo's ground-breaking powertrain solution begins with the D13 engine and the I-Shift automated manual transmission. This generation of Volvo Power is more functional and more efficient than ever. Customers can see savings of up to 10% in the new VNL\* when combining these powertrain improvements with the truck's revolutionary aerodynamic features.

Choosing an engine and transmission that's customized to your operations continues to be the key to fuel savings. We will always strive to understand your load, route, and operation. It's how we make sure your powertrain and software settings can provide the right balance of performance and efficiency.

\*Comparison with previous model Volvo VNL.

# Volvo D13

The next-generation D13 engine is now available in three classes: Straight Torque, Super Direct, and I-Torque for peak performance and efficiency at higher road speeds. D13 power ratings have expanded to include five options, including two new 500 HP ratings.

Powertrain enhancements create 20% of the VNL's increase in overall fuel efficiency.\* Combustion improvements include a new variable-displacement oil pump and a seven-wave piston design.

The new aftertreatment system offers improved serviceability, including a swivel cover on the DPF. The aftertreatment unit is also nearly 75 lbs. lighter than our previous units.

\*Comparison with previous model Volvo VNL.

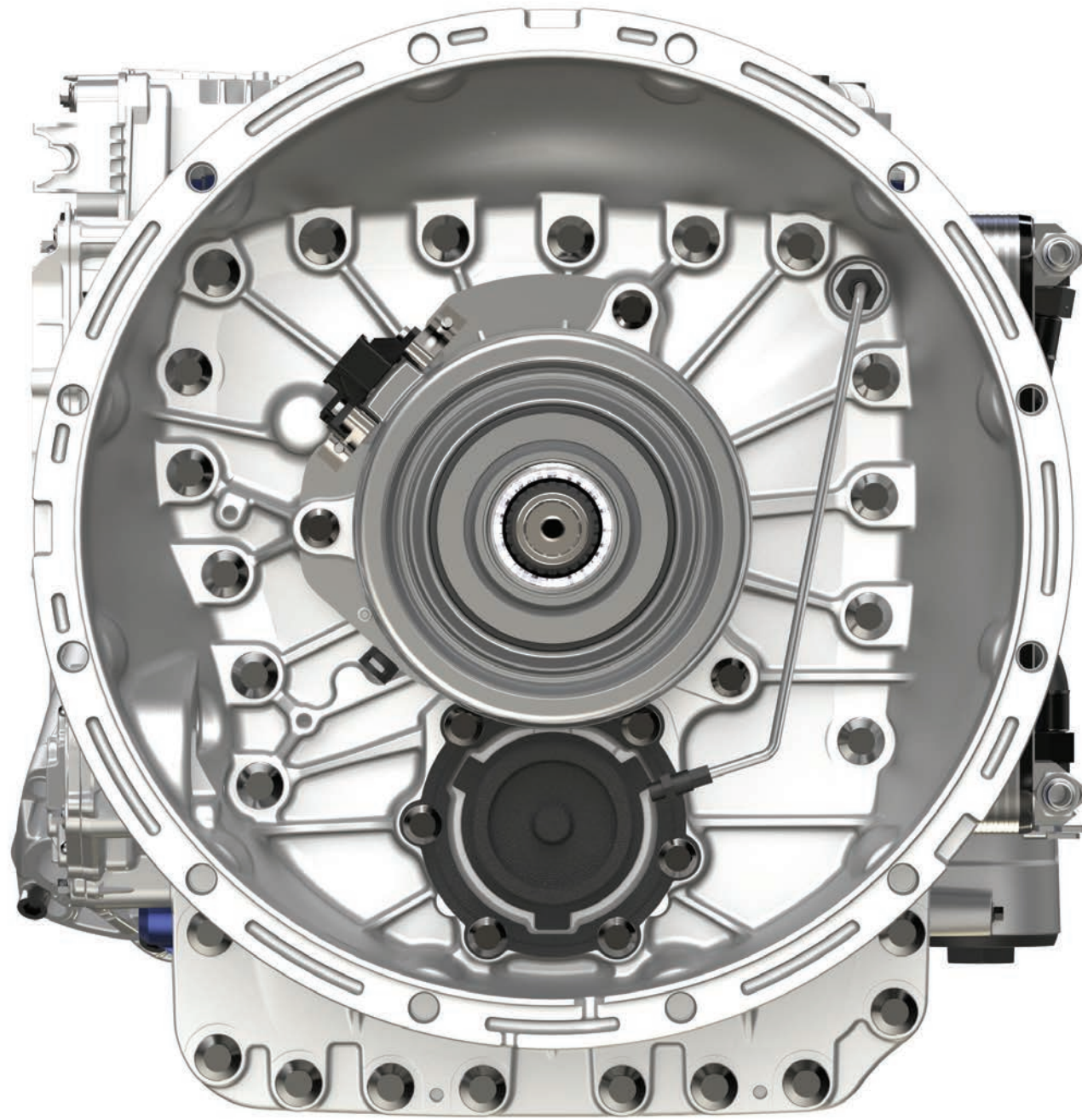
Ratings	
Power	405-500 hp
Torque	1750-1950 lb-ft.
Recommended cruise speed range	950-1150 rpm
Start engagement torque	738 lb-ft. @ 800 rpm

Fuel and lubrication	
Fuel specification	Ultra low sulfur diesel, 15 ppm
Fuel filters	Primary plus secondary
Total lube oil capacity	38 qts. (36 L)
Oil filtration	Two full flow filters
Oil specification	Volvo VDS-5.0, SAE 5w-30
Oil drain interval, normal service	75,000 miles (120,700 km)**

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

Engine equipment	
Base engine configuration	4 cycle / Inline 6
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	35,000 psi (2,400 bar)
Displacement	780 cu. in. (12.8 L)
Compression ratio	18:1
Bore & stroke	5.16 x 6.22 in. (131 x 158 mm)
Cylinder spacing	6.61 in. (168 mm)
Full dress dry weight	2635 lb. (1195 kg)
Engine brake rating	536 hp @ 2200 rpm
Engine brake rating	350 hp @ 1500 rpm





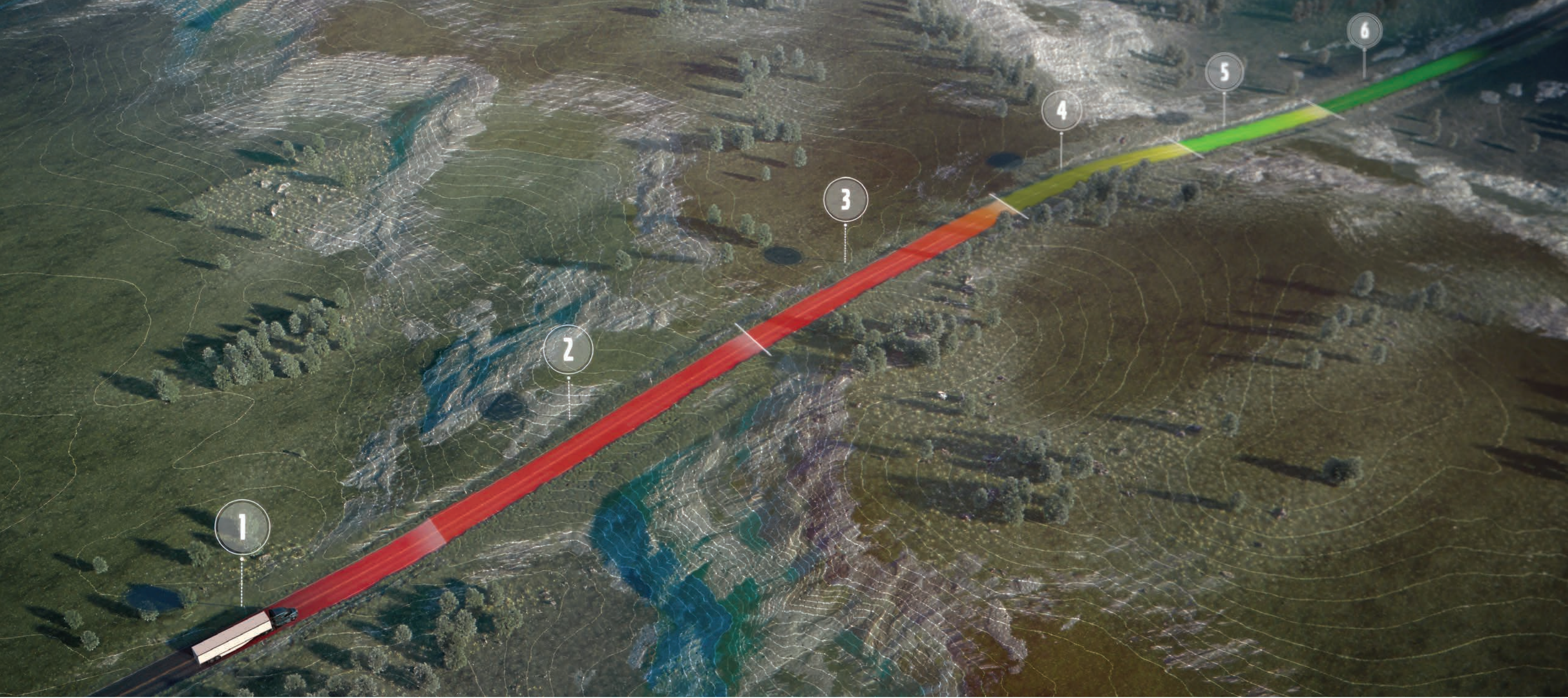
## Volvo I-Shift

Every new VNL comes standard with the innovative Volvo I-Shift automated manual transmission. It helps improve performance for drivers of all experience levels with more fuel savings and reduced equipment wear. I-Shift now features improved electronics. It pushes the limits of fuel efficiency through downspeeding, lowering peak torque to 900 rpm. This allows an optimum

engine speed as low as 950 rpm. The integrated powertrain works in unison to precisely match engine speed to road conditions. Our new clutch delivers greater durability. The new transmission oil level sensor broadcasts information to the instrument cluster, notifying the driver if the transmission oil level is low.

	Volvo I-Shift				
	Direct	Overdrive	Direct	Overdrive	Overdrive
Forward gears	12	12	13	13	14
Reverse gears	4	4	6	6	6
Dry Weight w/clutch and oil cooler	719 lbs.	719 lbs.	805 lbs.	805 lbs.	805 lbs.
Max torque capacity	1950 lb-ft.	1950 lb-ft.	1950 lb-ft.	1950 lb-ft.	1950 lb-ft.
Transmission housing body	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
Maximum highway weight	150,000 lbs.*	150,000 lbs.*	150,000 lbs.*	150,000 lbs.*	150,000 lbs.*
Oil capacity approx.	16.2 qts. (15.3 L)	16.2 qts. (15.3 L)	17.9 qts. (16.9 L)	17.9 qts. (16.9 L)	17.9 qts. (16.9 L)
Overall ratio	14.94:1	14.94:1	19.38:1	22.34:1	40.8:1
Power launch feature	✓				
Fully integrated driver display	✓				
Downhill economy mode	Eco-Roll				
Topography optimization capability	I-See® predictive cruise				
Shifter position	Stalk mounted				
Gear selector positions	Reverse, neutral, drive, manual				
Kick down	✓				
Grade sensor	✓				
Load sensor	✓				
Trailer detection	✓				
Monitored by remote diagnostic	✓				
Remote programming OTA	✓				
Hill start assist	✓				
Skip shift	✓				
Low-speed operation	Idle drive				
Auto neutral	✓				
Intelligent shifting	✓				
Transmission warranty — normal duty	5 yrs/750K miles				
Clutch warranty — normal duty	3 yrs/350K miles				
Oil drain interval	5 yrs/500K miles				
Enhanced transmission PTO	✓				
Driver-controlled economy and performance modes	✓				

\*Capable of up to 220k GCW for Heavy Duty and Severe Duty Transmission Warranty



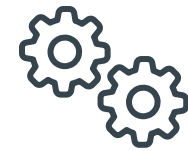
## I-Torque means no compromises

Volvo I-Torque is a unique powertrain solution enabling your VNL to operate optimally at higher road speeds. I-Torque maximizes the potential of both the D13 and Volvo I-Shift to achieve up to 8.5 miles per gallon even at maximum road speeds, depending on roads and loads. I-Torque incorporates adaptive gear shifting, map-based predictive cruise control, superior startability, and exceptionally low rear axle ratios. It also combines the benefits of Direct Drive and Overdrive, using the best features of each at appropriate points in the route.



I-See®

I-Torque uses I-See predictive cruise control with pre-loaded maps and optional cloud-based data to see and analyze upcoming road conditions. I-See anticipates gear, speed, and engine brake adjustments to deliver optimum fuel efficiency.



Low rear-axle ratios

One of the secrets to I-Torque's improved fuel efficiency is a rear-axle ratio as low as 2.15:1 which decreases demand on the engine. You'll also see excellent startability is maintained thanks to the I-Shift's 13-speed configuration.

## History is about to repeat itself

The first VN debuted in North America in 1996 and quickly turned the trucking industry on its head. Other truck makers took the next decade playing catchup to our innovations. The all-new Volvo VNL is filled with hundreds of next-generation features to improve your productivity and profitability.

**In addition to the powertrain improvements covered in this brochure, here are some additional highlights on the next generation VNL:**

- Revolutionary aerodynamics and powertrain innovations that improve fuel efficiency by up to 10% versus our previous models
- Industry leading connectivity that powers the new My Truck App and Volvo's exclusive e-call emergency response system
- The first of its kind, all-inclusive Volvo Blue Service Contract with predictive maintenance to improve uptime
- Interior and exterior design that stops you in your tracks, conveniently packaged into trim levels for easy decisions



**V O L V O**

Some vehicle options and services may not be available at time of introduction.  
Some vehicles shown with optional equipment. All specs current at time of publication release.  
Performance data based on engineering calculations and real-world data.

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