

# VOLVO ECO-TORQUE & DUAL-TORQUE RATINGS



The new Volvo Eco-Torque and Dual-Torque ratings are ratings with special emphasis on fuel economy. Each rating has a higher torque curve and a lower torque curve. The nominal horsepower for each rating is associated with the higher torque curve.

With Eco-Torque, the truck accelerates normally through all bottom gears. In the top two gears, where most of the fuel is consumed, the engine defaults to the lower torque curve. The higher torque is available on demand, but only under certain conditions.

On a steep grade, performance is enhanced when the engine automatically switches to the higher curve. Engine efficiency under these full-load, low-rpm conditions is at its maximum. The engine will revert to the low curve when the power demand is removed and cruise conditions are resumed. This saves fuel by encouraging operation under load at a lower, more efficient rpm and makes a fleet spec engine that is capable of cresting hills in the top gear along with more powerful trucks. The driver soon learns that this

exceptional performance is obtained by operating at low engine rpm.

All Volvo engines may be up-rated to the highest rating within their displacement with only a software flash, limited only by transmission capacity. For example, a fuel-economy-conscious fleet owner may specify the tractor with a 405 Eco-Torque engine and Volvo I-Shift transmission. At trade-in time, the engine may simply be re-flashed to a full 500 horsepower and 1750 lb-ft torque, for higher residual value, without replacing any of the driveline or cooling components or exceeding their limits. No engine hardware, such as turbo or injectors, needs to be changed, either.

The 405 and 425 Dual-Torque have exactly the same dual personality in the top two gears as the Eco-Torque ratings. But by operating on the lower torque curve through all the low gears, they have the added feature that they can use certain vendor transmissions with a 100 or 200 lb-ft lower rating than the maximum engine torque. However, this means that at resale time, they cannot be uprated beyond

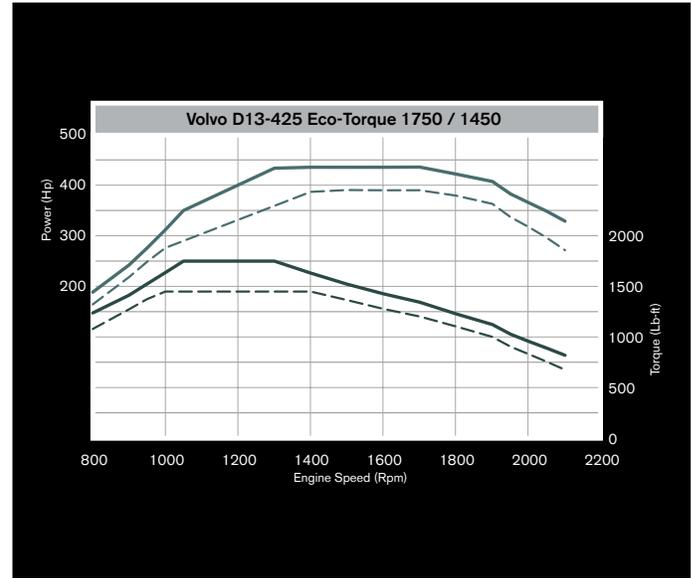
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the torque rating of the installed transmission, and as well, these ratings will suffer poorer driveability in the mountains, as compared to Eco-Torque.

At right is the curve of the Eco-Torque 425, which we judge will be the most popular, plotted against lines of constant torque and constant horsepower. Note that under demand, fully 300 lb-ft more torque is available. It is important to remember that this will be a low-speed engine. Peak torque of the 1750 curve is available down to 1050 rpm, and the 1450 torque is available to 1000 rpm.

Care must be taken to set up the specifications. A Road Speed Limit (RSL) of 62 mph coupled with a rear axle ratio of 3.36:1, 0.74 transmission ratio, and tires with 512 rev/mile would be ideal.

What kind of fuel economy might we expect? As always, that depends on driver, terrain, and other factors, but from



everything we know, this setup should deliver the best fuel economy for any similarly loaded EPA '10 Volvo truck.

	MAXIMUM FUEL ECONOMY	MAXIMUM PERFORMANCE	MAXIMUM DRIVEABILITY	USE OF LOWER-RATED TRANSMISSIONS	MAXIMUM UPRATEABILITY
<b>BASE RATINGS</b>	X	✓	✓	X	✓
<b>ECO-TORQUE RATINGS</b>	✓	X	✓	X	✓
<b>DUAL-TORQUE RATINGS</b>	✓	X	X	✓	X

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