

Road test

Volvo's I-Shift transmission

By James Menzies

GREENSBORO, N.C. – The trucking industry seems to be warming up to the idea of automated mechanical transmissions, with major fleets such as Schneider National, Averitt Express and Bison Transport all publicly embracing the technology.

One of the strongest value propositions driving automated transmission sales is that they make the least fuel efficient drivers as good as the best drivers. I recently had the chance to put this theory to the test during a test drive of a Volvo VT 880 equipped with I-Shift transmission.

Last fall Volvo announced it was bringing its popular I-Shift automated mechanical gearbox to North America. At the time, it boasted global sales of roughly 80,000 but that number has since topped 120,000 according to company officials.

Three models of the 12-speed I-Shift are available and I recently had the chance to spend some time operating the ATO3112C model paired with Volvo's 600 hp D16 engine under the hood of the company's flagship VT 880 highway tractor.

The truck was an owner/operator spec', complete with 270-inch wheelbase, creating a trailer gap the likes of which you simply won't see north of the border due to archaic wheelbase restrictions. It definitely wasn't a fuel economy spec'.

Along for the ride were Volvo's powertrain product manager Ed Saxman, and fellow truck writer Tim Barton. Barton and I were to share driving duties on a 232-mile run through North Carolina and into Virginia.

By way of introduction, Barton is a US-based truck writer and former professional driver whose works have appeared in publications including *Truck News*. He's probably driven more trucks than I pass on my daily commute along the 401 and he's the only guy I know who has traversed the globe by truck – twice.

I'm not too proud to admit that I couldn't touch his fuel mileage with a stick – or a stickshift, for that matter. However, as he pulled out from Volvo's Greensboro headquarters, I was determined to see if I could achieve a comparable mpg with the help of the I-Shift.

First, some details on the drive. Our route would take us from Greensboro northwest to Virginia, where relatively flat land would give way to rolling hills and even the occasional monster.

Many veteran drivers I've spoken to about automated transmissions have voiced concern about their dependability on steep grades. Professional drivers are reluctant to entrust technology

with a responsibility as important as selecting the right gear on a steep grade.

To put those worries to rest, Volvo's Saxman directed us to Fancy Gap – the old Fancy Gap. Old Fancy Gap boasts a 7%+ grade and since the Interstate was built, it's no longer legal to descend it by truck. With Barton behind the wheel, we climbed the winding hill with relative ease, thanks to the 600 horses under the hood.

I must admit to secretly questioning the wisdom of Saxman when he urged Barton to stop the truck on widened section of the road with the grille still pointed skyward. Barton obliged and performed several starts from a standing stop.

We were loaded to 78,100 lbs and had the scale ticket to prove it, but remarkably there was no roll-back at all when he let off the brake to step on the gas.

We continued on our way into Virginia towards Wytheville where we stopped for lunch at a Flying J. With our bellies full, I climbed behind the wheel and began the trek back to Greensboro. Thanks to an earlier rollover on I-77, I had the chance to become very familiar with a feature called the Idle Governor. This driving mode allows the truck to crawl ahead at idle without any use of the accelerator pedal.

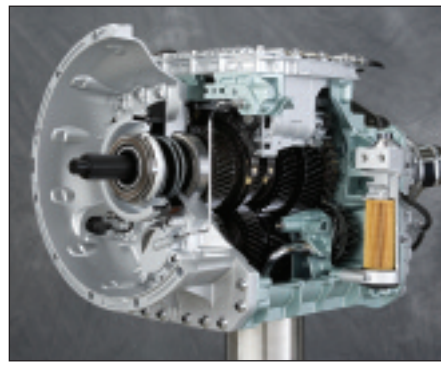
For a little more than 10 miles we inched along at a consistent pace thanks to the Idle Governor, which selects the gear that best suits the pace of traffic, thus saving fuel.

I was able to change gears by tapping the brake or accelerator pedals but the clutch remained engaged the entire time.

When traffic finally opened back up, I was able to appreciate some of the I-Shift's other features, including Eco-Roll. Eco-Roll automatically disengages the engine when the truck is travelling down a long, slight downgrade in top gear.

"Would you pedal a bicycle downhill?" asked Saxman as we coasted down a lengthy grade. Eco-Roll saves about 36 hp when activated, saving even more fuel. I could de-activate the system by simply touching the brake or accelerator pedals or engaging the engine brake.

There were plenty of grades on the drive through North Carolina which were ideal for Eco-Roll, so it's easy to see how this feature would save a noticeable amount of fuel over the course of a trip.



INTEGRATION: The Volvo I-Shift is strongly integrated with Volvo engine electronics, making it incompatible with other engine types.

The beauty of the I-Shift is the ease in which it works through the gears. When starting from a standstill, the transmission would select as few as six gears



WELCOME HELP: Volvo's I-Shift automated transmission never misses a shift, which is more than I can say for myself.

while climbing up to top speed. "It skip shifts with abandon," pointed out Saxman. "You just don't need to go through all the gears."

I will admit that it skip shifts a helluva lot better than I do, and instead of fumbling my way through the lower gears and holding up traffic, I was up to highway speed in no time. The I-Shift's ability to gracefully skip shift creates the potential for quicker trip times, particularly in stop-and-go applications.

If you want even more power from a standstill, you can select Performance Mode, which provides better acceleration and improved gradeability. When you no longer require the extra juice, the transmission automatically switches back to Economy Mode for improved fuel mileage.

For those who simply don't feel like they're driving if they're not choosing gears, you can select Manual Mode and

click your way up and down through the gears to your heart's content. The driver display helps with gear selection, by displaying arrows that indicate when an up-shift or downshift is permitted.

The transmission won't let you damage it. If you try to start out from a gear that's too high, a message pops up on the driver display instructing the driver to select a lower gear.

"It's very difficult to abuse the system," confirmed Saxman.

Another of the I-Shift's impressive features is its ability to idle backwards for loading and unloading. A frequent complaint about automated mechanical

transmission electronics, making it an extremely sophisticated marriage. The extensive integration between engine and transmission allows the I-Shift to constantly have a complete understanding of the engine's torque curve and operating parameters.

"We allow the transmission to take quite a bit of control of the engine," explained Saxman. "This thing knows when to shift, it knows what the load is, the horsepower, the acceleration and it knows the grade and grade resistance. It knows everything there is – it doesn't shift based only on RPM and it never makes a mistake."

After maneuvering the lengthy combination back into Volvo's parking lot, I took note of the fuel mileage. I averaged 5.6 mpg (remember the engine was not yet broken in and the truck was far from a fuel-economy spec'). Barton averaged 4.9 mpg on the way up. Admittedly, those numbers are not a fair comparison. After all, he spent more time driving uphill than I did and I had some bumper-to-bumper traffic to contend with.

As a side note, I averaged 5.3 mpg driving a VT 880 with 625 hp D16 and 18-speed manual transmission over much of the same terrain a couple of years ago. While conditions didn't lend themselves to a direct fuel economy comparison, it was encouraging to see my mileage was in the same ballpark as Barton's.

With that in mind, there may well be something to the claim that a relatively inexperienced driver can rival the most fuel efficient drivers with a little help from the I-Shift. □

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Ed Saxman