



COMPETITIVE ANALYSIS



THIS COMPETITIVE ANALYSIS CLEARLY OUTLINES I-SHIFT'S ADVANTAGES OVER THE DETROIT DT12® AND THE EATON ULTRASHIFT PLUS®. YOU'LL SEE HOW THE I-SHIFT OFFERS:

SUPERIOR FUEL EFFICIENCY

I-Shift is a key component in Volvo's XE package for exceptional fuel efficiency. Customers using the XE packages have seen up to three percent better fuel economy than comparable engine and transmission combinations.

SUPERIOR DRIVER PRODUCTIVITY

I-Shift offers an incredible 2,350 lb-ft of torque, the industry's highest available rating among automated manual transmissions. Volvo also gives you the option to adjust the torque rating on your engine and transmission package with a software update. This option can increase your value at resale.

SUPERIOR INTEGRATION

Volvo offers a completely integrated powertrain. Our engineering team developed the engine, transmission and software controls to work as a single unit, communicating seamlessly, maximizing efficiency every mile.

SUPERIOR UPTIME

I-Shift has been engineered with superior quality to minimize required maintenance and increase uptime. And Volvo backs every transmission with one of the longest warranties available.

Proven fuel efficiency, productivity and uptime makes I-Shift the preferred automated manual transmission for fleets and drivers alike.



I-SHIFT A SUPERIOR CHOICE

I-Shift continues to set the standard for automated manual transmissions. Worldwide, Volvo Trucks has sold hundreds of thousands of units with I-Shift since 2001. Customers in the trucking industry have started to recognize that I-Shift can increase fuel efficiency while improving driver safety and productivity. Each I-Shift for the North American market is built in Hagerstown, Maryland and we proudly offer it standard in Volvo trucks sold with Volvo power.

LESS FUEL MORE SAVINGS

Volvo was the first to recognize that an automated manual transmission could provide benefits to fuel efficiency. We introduced the innovative I-Shift in 2007, long before some of our competitors made their way into the North American market.

I-Shift's electronic sensors identify truck load and road grade, allowing the transmission to always keep the truck in the optimum gear. When appropriate, I-Shift engages the Eco-Roll™ feature, returning the engine to idle when travelling through moderate, rolling hills and adding fuel savings.

I-Shift is the central component in Volvo's XE powertrain package. XE reduces fuel consumption by lowering engine rpm at a given vehicle speed, or "downspeeding." As a result, Volvo engines running at highway cruising speeds see reductions of 200 RPM or more.

Fuel efficiency improvements of 1.5 percent for every 100 rpm of downspeeding are common. Customers with the XE package can see fuel efficiency improvements up to 3 percent over a typical overdrive transmission.

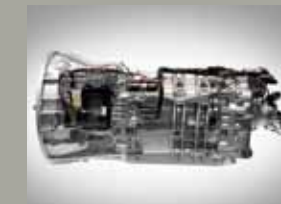


		Weight w/Clutch (lbs.)	Torque Capacity (lb-ft) / (Nm)	Transmission Housing Body	Max Highway Weight (lbs.)	Downhill Economy Mode
Volvo I-Shift	Direct	712	1900 (2600)	Aluminum	110,000*	Eco-Roll
	Overdrive	712	1900 (2600)	Aluminum	125,000*	Eco-Roll
	Overdrive	726	2350 (3150)	Aluminum	143,000*	Eco-Roll
Detroit DT12®	Direct	640	1450 (1966)	Aluminum	80,000*	E-coast
	Overdrive	640	1650 (2237)	Aluminum	97,000*	E-coast
	Direct	759	1750 (2373)	Aluminum	80,000*	E-coast
	Overdrive	759	2050 (2790)	Aluminum	Unlimited*	E-coast
Eaton UltraShift Plus®	LAS Direct	915	1450 - 1550 (1966 - 2100)	Steel	80,000	None
	LAS Overdrive	915	1450 - 1650 (1966 - 2250)	Steel	110,000*	None
	MHP Overdrive	978	1450 - 2050 (1966 - 2780)	Steel	140,000*	None
	MXP Overdrive	978	2250 (3050)	Steel	170,000*	None

*Approved by application



Volvo I-Shift



Detroit DT12®



Eaton UltraShift Plus®

Volvo's commitment to fuel savings goes well beyond the revolutionary XE technology. I-Shift's aluminum housing clearly provides a weight advantage against transmissions with comparable torque ratings. Lower transmission weight translates directly into increased hauling capacity or lower fuel costs.

I-Shift's weight advantage is most apparent when the application requires high horsepower and high torque ratings. I-Shift can deliver 2,350 lb-ft while weighing only 726 lbs.

GREATER TORQUE GREATER VALUE

I-Shift gives you all the torque you'll need and more. With torque ratings of 2,350 lb-ft, I-Shift is well suited for a wide variety of heavy-duty applications. Paired with a Premium Shifter and the Performance+ mode software package, I-Shift provides your driver with more tools to get the job done.

Volvo's "rock free" feature can get a vehicle moving when stuck in soft soil, mud or snow. Tire rocking is done by simply pumping the accelerator, rather than manually switching between forward and reverse gears. When more torque is needed, Power Launch allows the engine to rev as high as 1300 RPM in the lowest gear.

A Gentle Shift software package is available to achieve the smooth take-offs and easy shifting preferred by team drivers. Gentle Shift is also perfect in motorcoach and livestock hauling applications.

Backing is a breeze because the Volvo I-Shift comes standard with two available reverse gears for everyday use. Two additional high-speed reverse gears are available in VHD models, with a premium shifter package, for more intense backing requirements.



		Torque Capacity (lb-ft) / (Nm)	Torque Upgrade Software Updates	Gear Ratio	Forward Gears	Reverse Gears	Power Launch Feature
Volvo I-Shift	Direct	1900 (2600)	Yes	14.94:1	12	4	Yes
	Overdrive	1900 (2600)	Yes	15.04:1	12	4	Yes
	Overdrive	2350 (3100)	Yes	15.04:1	12	4	Yes
Detroit DT12®	Direct	1450 (1966)	No	14.93:1	12	4	No
	Overdrive	1650 (2237)	No	15.31:1	12	4	No
	Direct	1900 (2600)	No	14.93:1	12	4	No
	Overdrive	1900 (2600)	No	15.31:1	12	4	No
Eaton UltraShift Plus®	LAS Direct	1450 - 1550 (1966 - 2100)	No	15.42:1	10	2	No
	LAS Overdrive	1450 - 1650 (1966 - 2250)	No	17.53:1	10	2	No
	MHP Overdrive	1450 - 2050 (1966 - 2780)	No	16.84:1	13	3	No
	MXP Overdrive	2250 (3050)	No	19.72:1	18	4	No



Volvo I-Shift



Detroit DT12®



Eaton UltraShift Plus®

No other automated manual transmission on the market can match the I-Shift in available torque. The DT12® will not be available in torque ratings over 1,750 lb-ft until mid-year 2014. And even then it will max out at 2,050 lb-ft.

I-Shift's available 2,350 lb-ft of torque will easily meet and surpass your needs in heavy applications. And I-Shift has the industry's highest gear ratio in the first five gears, providing greater torque at the start, when you need it most.

Volvo provides the option to upgrade torque output for your engine with a software update that doesn't require physically changing the transmission. It's possible because all Volvo integrated powertrains share the same engine hardware and have been designed to communicate with each other. Other transmissions on the market are locked into limited torque ranges. These engine updates are exclusive from Volvo and can make a big difference in your vehicle's resale value at trade in.

SAFETY AND PERFORMANCE AT YOUR FINGERTIPS

Volvo's I-Shift controls are all within easy reach, allowing the driver to maintain focus on the road ahead. Volvo also provides a unique, intuitive Driver Information Display (DID) in the middle of the gauge cluster for easy reference. The stalk controls for the DID and engine brake are conveniently placed in front of the driver on the steering column.

I-Shift transmission and DID controls can both improve performance and reduce in-cab distractions. Readings are seen at a glance and time previously spent concentrating on shifting gears is used to monitor and anticipate changes in surrounding traffic. When drivers are experiencing heavy traffic, I-Shift also enhances safety through gear shifting without touching the accelerator, thanks to the Idle Driving mode.

As the leader in automated manual transmissions, I-Shift has offered Hill Start Assist since its introduction. Hill Start Assist holds the vehicle on a hill by applying the service brakes (in forward or reverse), allowing the driver three seconds to move their foot from the brake to the accelerator. This safety feature keeps the vehicle from unintentionally rolling backwards or forwards.

We can provide you with a custom solution based on your application. Only Volvo can offer a basic or a premium shifter option. The premium shifter comes with multiple performance software packages to choose from and gives the driver the option of working in Economy or Performance mode. Both shifters provide simplified controls, enhancing driver safety and performance.



	Fully Integrated Driver Display	Shifter Position	Gear Selector Positions	Skip Shifting	Electronic Clutch Actuation	Hill Start Assist
Volvo I-Shift	Yes	Seat Mounted	Reverse, Neutral, Drive, Manual	Yes	Yes	Yes
Detroit DT12®	No	Column Mounted	Reverse, Neutral, Drive, Manual	Yes	No	Yes
Eaton UltraShift Plus®	No	Seat Mounted	Reverse, Neutral, Drive, Manual, Slow	Yes	Yes	Yes



Volvo I-Shift



Detroit DT12®



Eaton UltraShift Plus®

Volvo provides the industry's largest, fully-integrated display panel for reviewing transmission data. Complete integration with the truck and engine means that drivers receive more feedback to keep them running at top efficiency.

I-Shift transmission features a lightweight electronic clutch actuator that engages and disengages the clutch. This is a one-piece sealed unit mounted directly on the input shaft of the transmission, eliminating the need to have a bulky "fork-type" actuator. This design eliminates wear points and improves the accuracy of clutch operation.

And Volvo's unique approach to skip shifting also provides an additional advantage over competitive transmissions. In testing sponsored by Volvo Trucks, the 12-speed I-Shift is able to downshift and upshift in smaller, optimum steps, an average of 28 percent between gears. The industry average for gear shift is 37 percent, which can negatively impact fuel efficiency.

UPTIME COMES STANDARD

I-Shift's long record of performance and durability makes choosing our transmission your easiest decision. In fact customer response has been overwhelming, so we've made I-Shift standard on every truck sold in North America with Volvo Power.

Durability comes from our commitment to thousands of details. For instance, I-Shift's lube oil pump ensures proper lubrication delivery throughout the transmission, while our integrated filter separates out oil contaminants. Eaton currently relies on splash technology for oil distribution and Detroit does not provide an integrated transmission filter. We virtually eliminated the need for maintenance on the actuator as well, by making it a sealed unit.

You can see your uptime increase because of our clutch design. Automated shifting places less stress on the driveline, minimizing maintenance. I-Shift uses a 17" single plate, push-type organic faced clutch. The spring-cushioned organic friction facings ensure the smoothest possible clutch engagement. The combination of non-aggressive facings and I-Shift's ability to minimize heat during clutch engagement results in excellent clutch life, and helps reduce flywheel wear.

Our Idle Driving Mode also reduces wear and tear by selectively eliminating clutch cycling. These features can be particularly beneficial in fleets with less experienced drivers.

Finally, Volvo's Remote Diagnostics monitors vehicle data 24/7 and detects when issues arise. With Volvo Remote Diagnostics small problems can be quickly identified before they become big problems.



	Maximum Transmission Warranty - Normal Duty	Maximum Clutch Warranty - Normal Duty	Lube Oil Pump	Oil Drain Interval	Remote Diagnostic Communications	Enhanced Transmission PTO
Volvo I-Shift	5 yrs/750k miles 15k hours	3 yrs/300k miles 7k hours	Yes	500,000 miles	Yes	Yes
Detroit DT12®	5 yrs/750k miles	2 yrs/200k miles	Yes	300,000 miles	Yes	No
Eaton UltraShift Plus®	5 yrs/750k miles	3 yrs/350k miles	Yes	500,000 miles	No	No



Volvo I-Shift



Detroit DT12®



Eaton UltraShift Plus®

I-Shift is the most proven automated transmission in the North American market. Globally, I-Shift has been logging miles for more than a decade. Compare that with Eaton's UltraShift Plus®, which was introduced in 2009, and Detroit's 2012 introduction of the DT12®. Our advantages are so clear that competitors often consider it a breakthrough to reach benchmarks already set by I-Shift.

The transmission Power Take Off was one of those benchmarks. Volvo not only offers a standard PTO on I-Shift, but we offer the only transmission with enhanced PTO features like pre-defined split positions, engine speed limitations during PTO use, auto-neutral on command and split box engagement.

Volvo was the first to set the bar for automated manual transmission warranties as well. Others have had to match our 750,000-mile warranty just to stay competitive. And I-Shift beats the DT12's clutch warranty by a full year and 100,000 miles.

I-Shift's ongoing durability and performance are major reasons why Volvo continues to be North America's only truck manufacturer offering an automated manual transmission as standard equipment.



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Some vehicles shown with optional equipment.

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