The I-Shift gearbox's functions are optimised by specially adapted software packages which make the gearbox even more practical and economical by adapting the gearshift strategies to transport conditions at hand.

I-Shift’s functionality is enhanced by a series of software packages specially developed to optimise the gearbox’s operation in various applications. I-Shift’s software packages can easily be installed and changed with the help of Volvo’s analysis and programming tool, VCADS-Pro. This is done by authorised dealers and workshops, where the software packages can be further customised with optional functions and customer parameters.

Four different software packages are available for the I-Shift. The packages contain progressively more functions, and the most advanced package, TP-HD, includes all the functions in TP-BAS, TP-DICON and TP-FUEC.

The software packages have several functions that optimise the driver’s control of the driving situation. For example, the gearbox adapts quickly to changes in road gradient. Thanks to the short delay of the braking effect, the Brake Cruise function is highly effective.

**Basic version (TP-BAS)**
TP-BAS is the standard software package supplied with the I-Shift. TP-BAS includes the gearbox’s basic functions for all-round driving.

**Distribution & Construction (TP-DICON)**
TP-DICON adapts the gearbox’s function to the specific conditions in the distribution and construction segment. The software package includes functions that aid manoeuvrability when starting off from standstill, in close-quarter manoeuvring and when driving at low speed.

**Long haul & Economy (TP-FUEC)**
TP-FUEC includes intelligent functions that minimise fuel consumption. This software package is ideal for long haul operations where strong emphasis is placed on fuel economy. This package includes the I-Roll function.

**Heavy duty transport (TP-HD)**
TP-HD optimises I-Shift for heavy duty transport with high gross combination weights (>85 tonnes). Regardless of the gross combination weight, the driver can always optimise drivability by selecting or deactivating the heavy duty mode. The functions in the software package also offer benefits for trucks driving with several trailers attached.
Software packages - overview
Below is an overview of the functions included in the software packages. Different software packages can be chosen depending on the gearbox used. The software packages are not compatible with earlier versions of I-Shift:

<table>
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<th>Functions</th>
<th>TP-BAS</th>
<th>TP-DICON</th>
<th>TP-FUEC</th>
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<tr>
<td>Basic PTO Functions (APF-BAS)</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Gearbox Oil Temperature Monitor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Performance Shift</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Enhanced Shift Strategy</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Launch Control</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>I-Roll</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Smart Cruise Control</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Heavy Duty GCW Control (GCW + 85 t)</td>
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<td>X</td>
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*Only AT2612D and AT0312D.

Standard functions in all software packages for I-Shift:

Basic PTO Functions (APF-BAS) – Facilitates power take-off operation. Pre-defined splitter gear positions determine which splitter gear is used when one or two gearbox power takes-offs are engaged. Because the gear selection to the engine speed limit, it is possible to set parameters for the software. The gear selection is then adapted to any engine speed limits imposed by body builder functions.

Basic Gear Selection Adjustment (AMSO-BAS) – Allows the driver to adjust gear selection with the gear lever buttons during engine braking in Automatic mode (gear selector position A).

Basic Vocational Functions (AVO-BAS) – Allows the driver to choose between the Economy and Performance driving modes.

Basic Shift Strategy – Automatic selection of correct starting gear (1st - 6th gear). The choice of starting gear is determined by gross vehicle weight and road gradient.

Performance Shift – Gives faster, gentler shifts through intelligent utilisation of the engine’s compression brake (VEB brakes), the vehicle’s clutch and a special gearbox brake.

Gearbox Oil Temperature Monitor – Continuously shows the gearbox oil temperature on the information display.

Heavy Start Engagement – For start-up with high revs in Performance mode in 1st gear, resulting in higher starting torque. The function raises the revs to facilitate heavy starts. This is useful, if the truck is stuck in soft ground.

Sales codes for software packages:

- **TP-BAS**: Baseline version of I-Shift
- **TP-DICON**: Includes the DICON function
- **TP-FUEC**: Includes the FUEC function
- **TP-HD**: Includes the HD function

**Sales codes for available options:**

- **APF-ENH**: Add-on function for high gross combination weights
- **AMSO-AUT**: Automatic selection of starting gear
- **AVO-ENH**: Add-on function for heavy duty applications

Other sales codes:

- **APF-BAS**: Basic version of I-Shift
- **AMSO-BAS**: Standard version of I-Shift
- **AVO-BAS**: Standard version of I-Shift

TP-BAS
The software package includes all the standard functions for the I-Shift (see above).

TP-DICON
**Enhanced Shift Strategy** – By interacting with EBS* and ECS*, both starting and close-quarter manoeuvring are made easier.

This brake mode maximises VEB/VEB+/retarder braking effects by automatically selecting the appropriate gear so that the engine runs at high revs. The function compensates for the engine brake when changing gears in brake mode.

When changing gears during engine braking, the wheel brakes are activated to compensate for braking moment. This raises the brake power and provides smoother gearshifts.

Interaction with the braking systems increases safety by preventing the truck from accelerating during gearshifts on steep slopes when brake mode is activated.

**Launch Control** – Optimises gear selection and EBS functions when manoeuvring at low speeds. Manoeuvring is facilitated because the EBS brakes are automatically engaged when the truck changes direction. This also ensures that the Hill Start Aid function is only activated on uphill gradients.

It is possible to drive the vehicle forward with the idle regulator. This saves unnecessary downshifts and makes it easier to adapt the vehicle’s speed, for instance when driving in traffic queues.

TP-FUEC
**I-Roll** – Automatic activation and deactivation of a freewheel function in order to save fuel consumption, which can be reduced by up to several percent. I-Roll is used when neither engine power nor engine braking is needed, for instance on flat roads. When driving with cruise control, I-Roll runs at roughly 1-3 km/h below the pre-set speed, which saves fuel. The longer the vehicle drives using I-Roll, the more fuel is saved.

**Smart Cruise Control** – Interacts with the vehicle’s Brake Cruise and ensures that the auxiliary brakes are not activated unnecessarily. The auxiliary brakes are deactivated on downhill stretches to save fuel.

This allows increased use of the freewheel function, resulting in improved fuel efficiency.

TP-HD
**Heavy Duty GCW Control** – Optimises gear selection for high gross combination weights (> 85 tonnes). The functions improve driveability and fuel economy in the heavy duty transport segment. Heavy Duty GCW Control gives the driver access to the HD (Heavy Duty) driving mode.

In the HD mode, 1st gear is used as the starting gear and the gear selection is adapted to higher gross combination weights.

The gearshifts generally occur at higher revs. HD is activated and deactivated by pressing and holding the E/P button on the gear selector for about 3 seconds. The chosen driving mode remains selected when the engine is turned off.

Among other things, the TP-HD function adapts the starting gear to the gross combination weight, thereby saving the clutch. The whole gear range is utilised, and the gears are changed consistently at high revs to maintain the torque and driving comfort.

When driving allowing gross combination weights without a load, it is easy to deactivate the HD driving mode and return to Economy mode. After this, the driver can switch between Economy and Performance modes, using the same functionalities as a truck with TP-FUEC. This ensures comfortable, fuel-efficient driving.

* Full functionality requires EBS-MED/EBS-HIG.
* EBS = Disc Brakes with Electronically controlled Brake System (EBS-STD / EBS-MED / EBS-HIG).
* ECS = Electronically Controlled Suspension (SUSPL-EC).
* *Available only with certain engine/gearbox combinations.
Available options for the software packages

Enhanced PTO Functions (APF–ENH)
Several functions that aid power take-off operation. I-Shift’s power take-off functions make it possible to activate the properties listed below by having the software parameters adjusted at an authorised workshop.

Auto Neutral
On command, the driveline is disconnected from the body builder control unit, regardless of the gear lever’s position, when Auto Neutral is activated.

Reverse Inhibit
When the body builder control unit issues the Reverse Inhibit command, the reverse gears are blocked by the transmission system.

Connection of splitter box
Allows connection of a splitter box for operation of high-capacity power take-offs. The direct gear is activated when the body builder module is put in splitter box mode.

Enhanced Gear Selection Adjustment, incl. Kick-down (AMSO–AUT)
This function allows both the automatically selected starting gear and the driving gear in Automatic mode to be adjusted by activating the plus/minus button on the gear lever. Arrow symbols on the driver information display show the available gears.

There is also a function that facilitates speed adjustment when the vehicle is idling or driving very slowly, for instance in traffic queues. The gears can also be shifted upwards since the engine speed is automatically increased before upshifts.

The kick-down function selects a gear for maximum acceleration. When the kick-down switch on the accelerator pedal is engaged, the system changes the gearshift strategy to maximise vehicle acceleration. When suitable (e.g. depending on engine speed), this leads to a downshift.

Kick-down only works in Economy mode, to prevent accidental activation during off-road driving.

Enhanced Performance – Bad Roads (AVO–ENH)
This optional package is specially adapted to the specific conditions in the construction and timber transport segments.

The P+ Performance mode includes various functions that adapt gearshifts and gear selection to poor driving surfaces and hilly road stretches. It also includes functions that facilitate starting from standstill in poor driving conditions.

Performance mode is designed to minimise the number of gearshifts required. This is useful during off-road driving. It prevents wheels from spinning out when torque is increased after a gearshift, and prevents missed gearshifts, for example if the road gradient changes sharply.

High engine power (high revs) is often required when driving uphill. If the driver speeds up before a hill and then changes gears, the truck may not gain enough speed.

The driver can also effect the maximum number of downshifts. This is very useful when you shift to a lower gear on a very steep uphill gradient and only want to shift once to a gear strong enough to take you all the way up. A summary of the functions in the package:
- The motor revs are increased as necessary to provide extra torque when starting off from standstill.
- Larger margins before upshifts ensure safer driving if the road gradient changes.
- Gear selection is adapted to minimise the number of gear shifts and run at slightly higher revs.
- Functions that make it easier to keep the same gear when the accelerator pedal position and road gradient change.
- The package enables multiple downshifts. This facilitates gearshifts when driving up steep slopes.
- Includes a function that speeds up clutch release and makes it easier to rock the vehicle out if it gets stuck on soft surfaces.
- More gear positions available with the retarder engaged.
- When moving the gear lever, the driver can choose the gear that provides the highest possible engine speed.

Customer parameters
I-Shift also has many options for setting customer parameters that optimise the vehicle’s driving properties in special applications and special transport segments. For instance, the starting gear can be optimised according to the transport conditions. The power take-off operation can also be customised.

Customised settings and reprogramming of I-Shift are carried out at authorised workshops using the VCADS Pro tool.

Enhanced Performance – Bad Roads is adapted to handle difficult or poor road surfaces.