FACT SHEET

I-Shift software package

The I-Shift gearbox’s functions are optimised with specially adapted software packages that make the gearbox even more practical and economical by adapting the gearshift strategies to the current transport conditions.

Sales variants

Basic version (TP-BAS)

TP-BAS is the standard software package supplied with the I-Shift and includes the gearbox’s basic functions for allround driving.

I-Shift distribution gear changing software (TP-DIST)

TP-DIST adapts the gearbox’s function to the specific conditions in the distribution segment. The software package includes functions that aid manoeuvrability when starting off from standstill, in manoeuvring and when driving at low speed.

I-Shift construction gear changing software (TP-CON)

TP-CON adapts the gearbox’s function to the specific conditions in the construction segment. The software package includes functions that aid manoeuvrability when starting off from standstill, in manoeuvring and when driving at low speed. This software can also handle tougher road conditions.

I-Shift long haul gear changing software (TP-LONG)

TP-LONG 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, and activating the long haul mode. The functions in the software package also offer benefits for trucks hauling multiple trailers.
# FACT SHEET
## I-Shift software package

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<tr>
<td>Enhanced PTO Functions (APF-ENH)</td>
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<td>Basic Gear Selection Adjustment (AMSO-BAS)</td>
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<tr>
<td>Enhanced Gear Selection Adjustment, incl. Kickdown (AMSO-AUT)</td>
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<tr>
<td>Basic Vocational Functions (AVO-BAS)</td>
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<td>Enhanced Performance – Bad Roads (AVO-ENH)</td>
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<tr>
<td>Basic Shift Strategy</td>
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<td>Performance Shift</td>
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<td>Heavy Start Engagement</td>
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<td>I-Roll</td>
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<tr>
<td>Smart Cruise Control</td>
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<tr>
<td>Launch Control</td>
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<tr>
<td>Enhanced Shift Strategy (GCW ≤ 85 t)</td>
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<tr>
<td>Heavy Duty GCW Control (85 t &lt; GCW ≤ 180 t)</td>
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<tr>
<td>I-See (PVT-BAS) use of GPS data*</td>
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<tr>
<td>I-See (PVT-EXT) use of GPS data*</td>
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<tr>
<td>I-See (PVT-MAP) use of GPS data**</td>
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</tr>
</tbody>
</table>

* Standard  (+) The function can be used when TP-LONG is activated.  o Option  – Not available

*Only AT2612D, AT2612F, ATO2612F, ATO3112F and ATO3512F.

†TP-BAS and TP-LONG are the only options available for SPO2812.

‡Requires CRUIS-E.

‡‡Requires CRUIS-E and Preview topography service.

### Sales codes for I-Shift software packages

- **TP-BAS**: I-Shift basic software package
- **TP-DIST**: I-Shift distribution gear changing software
- **TP-CON**: I-Shift construction gear changing software
- **TP-LONG**: I-Shift long haul gear changing software
- **TP-HD**: I-Shift heavy duty gear changing software

### Sales codes for available options

- **APF-ENH**: Enhanced I-shift PTO functions (Auto Neutral / Reverse Inhibit / Split Box Connection)
- **AMSO-AUT**: I-Shift manual gear shift available in automatic mode incl kickdown function
- **AVO-ENH**: Enhanced I-Shift software for construction and off road applications
- **PVT-BAS**: Basic topography information, learning by GPS positioning
- **PVT-EXT**: Extended topography information, learning by GPS positioning and centrally stored data
- **PVT-MAP**: Map based topography information using a high resolution commercial topography map
- **PVTS5**: Preview topography service, 5 years prepaid subscription

### Sales codes for standard equipment

- **APF-BAS**: Standard version of I-Shift, if APF-ENH is not chosen
- **AMSO-BAS**: Standard version of I-Shift, if AMSO-AUT is not chosen
- **AVO-BAS**: Standard version of I-Shift, if AVO-ENH is not chosen
I-Shift’s software packages can easily be installed and changed with the help of Volvo’s analysis and programming tool, Volvo Tech Tool. This is done by authorised dealers and workshops, where the software packages can be further customised with optional functions and customer parameters.

**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 take-offs are engaged.

Because gear selection is matched 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 bodybuilder functions.

**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 bodybuilder control unit, regardless of the gear lever’s position, when Auto Neutral is activated.

**Reverse Inhibit**
When the bodybuilder 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. Direct gear is activated when the bodybuilder module is put in splitter box mode. It is also possible to use all high range gears. Please look into the bodybuilder instructions.

**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).

**Enhanced Gear Selection Adjustment, incl. Kickdown (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 in 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 example in traffic queues. The gears can also be shifted upwards since engine speed is automatically increased before upshifts.

The kickdown function selects a gear for maximum acceleration. When the kickdown 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.

Kickdown only works in Economy mode to prevent accidental activation during off-road driving.

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

**Enhanced Performance – Bad Roads (AVO-ENH)**
This optional package is specially adapted to the specific conditions of 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 gradients. It also includes functions that facilitate starting from standstill in poor driving conditions.

P+ 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 influence 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. Both Economy, Performance and an P+ are now available.

Summary of the functions in the package:
- Engine revs are increased as necessary to provide extra torque when starting off from standstill.
- Larger margins before upshifts ensure safer driving if the gradient changes.
- Gear selection is adapted to minimise the number of gearshifts and run at slightly higher revs (also available with Economy mode).
- 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 of trouble if it gets stuck on a soft surface.
- When moving the gear lever, the driver can choose the gear that provides the highest possible engine speed.

AVO-ENH can be combined with the Heavy Duty Transport program (TP-HD) without any problem. The AVO-ENH functions will only be active when the HD-mode is not active and when the Power mode is selected.

**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 in the information display.

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

**I-Roll**
Automatic activation and deactivation of a freewheel function in order to cut 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.

**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 adjust the vehicle’s speed, for instance when driving in traffic queues.

**Enhanced Shift Strategy**
By interacting with EBS and ECS, both starting and manoeuvring are made easier.

This brake mode maximises VEB/VEB+/retarder braking effects by automatically selecting the appropriate gear so the engine runs at high revs. This 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 braking power and provides smoother gearshifts.

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

**Heavy Duty GCW Control**
Optimises gear selection for high gross combination weights (85 t < GCW ≤ 180 t). This function improves 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 HD mode, 1st gear is used as the starting gear and gear selection is adapted to heavier 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 selects the starting gear to suit the gross combination weight, thereby saving the clutch. The entire gear range is utilised, and the gears are changed consistently at high revs to maintain torque and driving comfort.

When driving with low gross combination weights or 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. This ensures comfortable and fuel-efficient driving.

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1 Full functionality requires EBS-MED.
2 EBS = Disc Brakes with Electronically controlled Brake System (EBS-STD / EBS-MED)
3 ECS = Electronically Controlled Suspension (SUSPL-EC).
4 Full functionality requires EBS and ECS.
5 Available only with certain engine/gearbox combinations.
I-See

<table>
<thead>
<tr>
<th>The road topography is recorded, the first time a route is travelled, for the truck</th>
<th>PVT-BAS</th>
<th>PVT-EXT</th>
<th>PVT-MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>All driven routes road typography, for all connected trucks, will be available for the truck</td>
<td>-</td>
<td>-</td>
<td>*</td>
</tr>
<tr>
<td>Uses high resolution commercial topography map, and downloaded it to the truck</td>
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<tr>
<td>Requires TP-LONG / TP-HD</td>
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<td>Requires CRUIS-E</td>
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<tr>
<td>Requires Preview topography service</td>
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<td>*</td>
</tr>
</tbody>
</table>

* Available
- Not available

I-See (PVT-BAS)

I-See uses GPS coordinates, saved in the transmission’s electronic control unit, to register the vehicle’s position. When driving with Cruise Control or Adaptive Cruise Control the vehicle has information about approaching gradients, thereby controlling and adjusting progress (speed, braking, chosen gear etc) in order to optimise fuel consumption and driveability. I-See is active in Economy mode (E), not in the Power mode (P).

The road topography is recorded the first time a road is travelled, when Cruise Control or Adaptive Cruise control is active.

I-See (PVT-EXT)

PVT-EXT shares topography data through a central data storage. Thus, it is enough that one connected vehicle has driven the route, for all connected vehicles to be able to utilize the information and optimize their driving when they then traveling the same route.

The vehicle communicates and shares data with other vehicles through the central storage via the TGW (Telematics Gateway) link. The Truck is equipped with TGW as standard. When the vehicle operates outside GSM network coverage the I-See functionality will still function but using locally stored topography data.

PVT-EXT comes with an initial prepaid subscription, minimum 5 years, of shared topography data through the central data storage. The initial subscription period may vary depending on vehicle model, TGW technology, and other factors. Subscription is subject to change or cancellation at any time by Volvo with advanced notice to customer. Volvo does not assume responsibility for technological obsolescence of the TGW or technical capabilities of the product, or for failure to use (covers any kind of use, non-compliant with Volvo instructions) or misuse of the product (refers to abuse / improper use, by reference to the purpose of the product or service), or for third party supplier services or products.

I-See is developed for long-haul customers and the fuel saving will increase with higher gross combination weights. See the Cruise Control factsheet for more information on I-See cruise behaviour.

I-See (PVT-MAP)

Map based I-See (PVT-MAP) is in principal working as I-See (PVT-EXT) service, with the difference that the map is not recorded by the truck itself. Instead the PVT-MAP uses a high resolution commercial topography map.

As the truck drives forward, map data of the path ahead is downloaded to the truck. If the road is not covered by the map, or the connection with the server is failed, the truck will fall back to PVT-EXT solution. Once the commercial map is back, the truck will go back to map based mode.

The map license is enabled for a number of years of operation when purchasing the truck with Preview topography service). PVT-MAP is only available in combination with Cruise Control I-Cruise (CRUIS-E). PVT-MAP is only available for Europe.

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. Power take-off operation can also be customised.

Customised settings and reprogramming of I-Shift are carried out at authorised workshops using the Volvo Tech Tool.