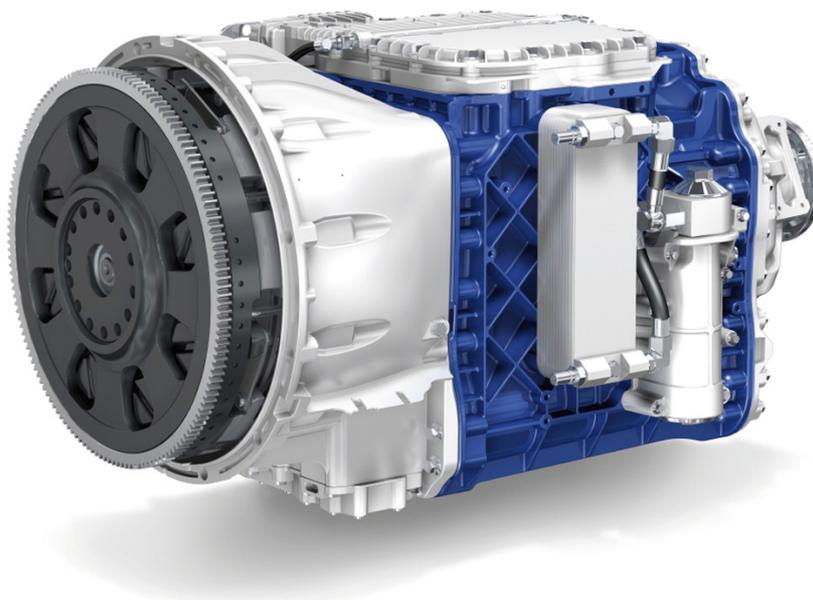


# FACT SHEET

Gearbox SPO2812



**I-Shift Dual Clutch is a gearbox that can be powershifted, giving uninterrupted power transfer to the wheels, at most single-step gear changes. It features 12 gears and it is dimensioned for 2800 Nm of torque.**

I-Shift Dual Clutch has a unique and fast gear changing system, enabling powershift gear changes.

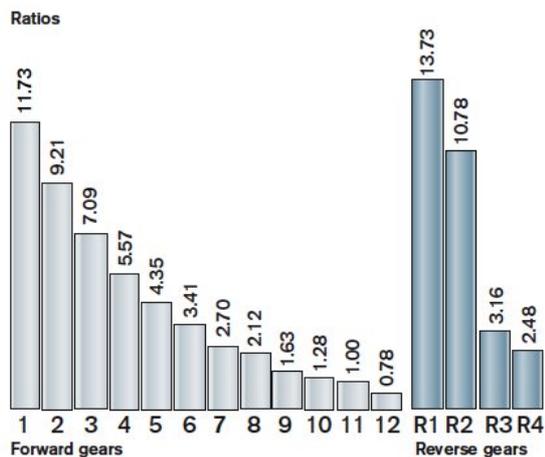
Powershifting makes it possible to perform most single-step shifts with no interruptions in power and torque delivery during gear changing. The large ratio coverage of the gearbox provides high starting traction and low fuel consumption. The advanced software has well-adapted gear change strategies. I-Shift Dual Clutch handles up to 60 tonnes of gross combination weight, ideal for demanding long- and regional-haul operations, including timber transports.

A power take-off, compact retarder and emergency power steering pump can be fitted to the transmission. An oil cooler is required for SPO2812.

Long intervals between oil changes promote low operating costs and less environmental impact. With special oil, filter and oil changes take place after a maximum of 450,000 km or every third year.

## FEATURES AND BENEFITS

- Smooth and fast gear changing without torque and power loss, giving an extremely good driving comfort.
- Powershifting is possible for every single-step gear change except when changing the range gear (gear 6-7).
- A fully automated gear changing system allows high comfort and fuel-efficient driving.
- The software packages adapt the gear changes to the prevailing transport conditions.
- Possibility of manual gear selection and locking of the current gear promotes high driving flexibility.
- Low weight thanks to compact construction and aluminium housings.
- Suitable for long haul and regional transports, including timber operation.



# FACT SHEET

Gearbox SPO2812

## Electronic control and ergonomic consideration

The gear selector and lever are integrated in the driver's seat for comfortable and safe operation. The gear lever has no mechanical contact with the transmission. Instead a number of sensors in the gear selector are activated.

As an option, the gearshift controls can be mounted in the dashboard, replacing the standard seat mounted gear control.



## Dual clutch transmission

I-Shift Dual Clutch can be described as "two gearboxes with two clutches", integrated into one unit. The two clutches are connected to two different input shafts, operating independently of each other. Since the gearbox has 12 gears, one shaft holds the six odd numbered gears, while the other holds the six even numbered gears. If the first gear is engaged one of the clutches is applied. The second gear on the second shaft will be engaged and will be connected when it is time for a gear change, and the torque is transferred to the second clutch, without interruption in torque delivered to the wheels.

The function is referred to as "powershifting", and can be performed at all single-step shifts except between gear 6 and 7 (range gear shift). Note that in certain cases and/or conditions the gearbox will perform a "normal" gear change, depending on software strategy and factors like vehicle GCW and throttle position.

The clutches are controlled by the DCCA (Dual Concentric Clutch Actuator), which in turn is pneumatically controlled via the DCVU (Dual Clutch Valve Unit). Another unit, GCU (Gearbox Control Unit), controls the gear changing. The clutches are of the dry type.

I-Shift Dual Clutch is a very flexible gear changing system. In Auto mode, gears change automatically even with the cruise control engaged.

Under sensitive driving conditions, the driver can lock the current gear by selecting Manual mode ("M"), making it possible to trigger gear changes with a button integrated in the gear lever. Since clutch operation is controlled by the gear changing system, there is no clutch pedal.



Shown in the display: 1. Driving program 2. Selected gear 3. Available gears (down/up) 4. Driving mode

## Driving programs for optimum efficiency

In Automatic mode, the driver can choose between the "Performance" and "Economy" programs. Gears are changed via a button on the gear selector. This function offers different gear change strategies depending on the road conditions. Economy mode provides good fuel economy. The "Performance" mode provides more aggressive gear changing, and is used when extra engine power is needed. With dash mounted gear controls there is no option of Economy or Performance and also no Manual mode or Limp-home function.

With a program package that is selected to suit the specific transport application, it is possible to tailor the properties and functions of the gearbox via the software. The programs are designed to provide the best gear changing strategy for each situation, with an added bonus in the form of fast gear changes.

## Two input shafts and synchronised range gear

The main section has two input shafts, three main forward ratios and one reverse ratio. A synchronised range gear of planetary type is located in the range housing. The dog clutches of the main section are unsynchronised. In all powershifts, a mechanical unit carries out an appropriate synchronisation of speeds prior to engaging a gear (while power is transferred in another gear). In other shifts, speed synchronisation is performed by controlling the engine and a brake in the gearbox.

## Strong and dependable components

All the gears are made of special, casehardened steel, providing considerable strength. With helical gears in the main- as well as the range-change section, more gear surface is in mesh at any given time. This promotes quiet operation and high reliability.

## SPECIFICATION

Type designation	SPO2812
Max incoming torque	2800 Nm
Max gross combination weight	60 tonnes
Weight including clutch, without oil	433kg
Weight in vehicle compared to I-Shift	+101kg
Type	Automatic dual clutch and range-change gearbox
Number of forward gears	12
Number of reverse gears	4
Gear selector positions:	
R	Reverse
N	Neutral
A	Automatic
M	Manual
Driving programs:	
E	Economy
P	Performance program
B	Braking program (option)
L	Limp Home function
Oil-change volume	approx. 16 l
incl. oil cooler with normal capacity	approx. 16 l
incl. oil cooler with high capacity	approx. 17 l

# VOLVO

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