FACT SHEET

Dynamic steering

Volvo Dynamic Steering

Volvo Dynamic Steering (VDS) is an active steering system producing a torque overlay of up to 25 Nm. The steering is progressive and gives more power to the steering when needed. It obtains a predetermined steering feel, independent of load and tires, and contributes to a more relaxed driving through improved directional stability.

Additional torque to the steering gear

An electrical motor is connected to the hydro-mechanical steering gear giving an additional torque to the steering gear. The motor function is electronically controlled through an ECU, receiving signals from existing vehicle state sensors and an integrated torque sensor.

The hydraulic steering gear is available with two ratios, 18,6 and 23,2 to fulfil steering homologation. The standard steering wheel can be used.

If a severe failure is detected VDS goes to a failsafe state which is to switch off the electrical motor. When the electrical motor is switched off the hydraulic assistance is still active and the steering works as on a truck without VDS.

Sales variants

Dynamic Steering

ACTST-TO Volvo Dynamic Steering

Active Steering Features

ASFE-BAS Volvo Dynamic Steering feature basic
ASFE-PS Volvo Dynamic Steering personal settings
ASFE-OG Volvo Dynamic Steering stability assist
ASFE-PO Volvo Dynamic Steering personal settings, stability assist



The dynamic steering unit.



FEATURES AND BENEFITS

- Reduced steering force up to 85%.
- Improved directional stability at high speed.
- Reduced steering kicks caused by potholes and other road damages at low speed.
- Reduction of directional deviations caused by gusts of wind or banked roads.
- Keeps steering wheel straightforward also when braking on split friction.
- The steering wheel will return to neutral when the truck is moving, thus making both reversing and forward driving at low speed easier.
- Reduction of driver wear and tear injuries through lower shunting forces (light steering at low vehicle speeds).
- With personal settings the driver can create his own steering feeling.
- Stability Assist helps the driver to keep control of the vehicle by a guiding steering torque when the trucks start to skid.

FACT SHEET

Dynamic steering

Personal setting

The driver can choose between some predefined steering feeling settings, but also on another level create his own steering feeling by adjusting some steering parameters.

The settings are available only with vehicles with SEM (Service and Entertainment Module), and allows the driver to adjust the steering feeling according to his own preferences on different type of roads and in different driving situations.

There are a number of predefined settings that the driver can choose from:

DEFAULT: The production setting which gives a balanced steering feeling that is designed to be good for most drivers.

LIGHT: Gives a very light steering wheel but still damped (low spring, high damping/friction).

STABLE: Gives a firm, stable feeling. Could for example be popular on narrow roads (high spring, high damping/friction).

RESPONS: Gives a sporty feeling (high spring, low damping/friction).

CUSTOM: Gives the driver the possibility to make his own tuning.



Personal settings allow the driver to adjust the steering feeling according to his own preferences on different type of roads and in different driving situations.

Create an own steering feeling

In custom mode the driver can create an own steering feeling by setting some steering parameters:

STRAIGHT AHEAD: Spring stiffness effect in steering wheel around the straight ahead position (small angles) at high speed. Gives a torque in the inwards direction towards the straight ahead position.

CORNERING: Spring stiffness effect in steering wheel in curves (bigger angles) at high speed. Gives a torque in the inwards direction towards the straight ahead position.

RETURN: Amount of steering wheel return towards the straight ahead position when maneuvering at low speed.

DAMPING: A speed dependent torque resisting both inwards and outwards movement of the steering wheel which gives a damping effect. Damping works at all vehicle speeds.

The Driver ID from the driver card is used to store personal settings for up to 10 different drivers.

On centre adjustment

Vehicle pulling can happen due to banked road, heavy side wind or uneven load distribution A few trucks can have the problem that the straight ahead position differs significantly between unladen and laden vehicle or has changed after the body is installed on the chassis.

If the vehicle is pulling the driver compensates by moving the slider in the VDS App. This will change the straight ahead position. The setting will be changed back to default at key off.



On centre adjustment function is to be used for compensation of "zero" straight ahead position in strong side wind, banked roads and uneven load distribution.

FACT SHEET

Dynamic steering



Stability assist helps the driver to keep control of the vehicle by a guiding steering torque when the trucks start to skid.

Stability Assist

Stability Assist is a driver support function on low friction surfaces. It helps the driver to keep control of the vehicle by a guiding steering torque when the trucks start to skid (swing out with rear end). The function also helps the ESP/ESC-system to act quicker.

The purpose of the function is increased safety when driving on low friction roads.

Once the VDS-system detects that the truck starts to skid the Stability Assist function starts to counter steer, in the same way a professional driver would do in order to remove the on-going skidding. This is done by adding a small guiding steering torque, resulting in corrective steering action.

The function is, with the help of steering, a further enhancement of the Electronic Stability Control system by braking. The skid is identified by the yaw rate sensor and the Volvo Dynamic Steering is adding a torque in the steering direction during a limited time, to support the intention of the driver to counteract the oversteering. The ESC symbol in the instrument cluster is lit to inform the driver when this happens.

The stability assist system is useful in the following situations:

- Driving on low friction road uphill. Rear end of tractor swings out when driver accelerates.
- Driving on low friction road cornering. Rear end of tractor swings out when accelerating after corner.
- Driving on low friction road straight ahead. Rear end of tractor swings out when hitting ice edge.
- Driving with no trailer on slippery road in-between transport missions. Rear end of tractor swings out when driver accelerates.

Volvo Truck Corporation
www.volvotrucks.com

Volvo retains the right to modify design and specifications without prior notification.