

Document Title: <b>General description</b>	Function Group: <b>400</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/9 0</b>
Profile: <b>WLO, L110E [GB]</b>			

## General description

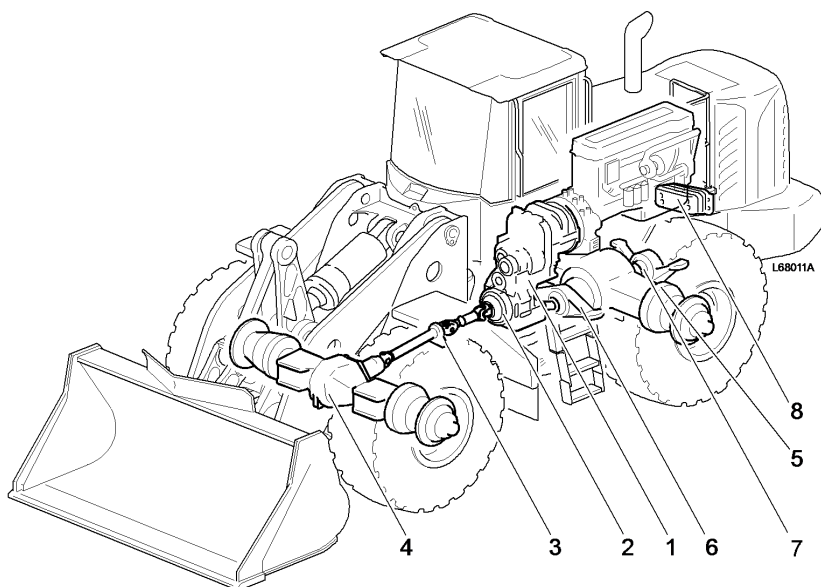
The power from the engine to the wheels is transferred hydraulically and mechanically through transmission (1), via a torque converter, which adapts its output torque to the torque requirement and on to the drive axles (4, 5).

The transmission is of the HTE type, a hydro-mechanical four-speed Power Shift transmission with torque converter, spur gearings and hydraulically controlled disc clutches.

It has four forward gears and four reverse gears.

The "E" in the designation means that the transmission has a gear selector valve with gear shifting solenoids of the PWM type, (Pulse Width Modulated). This means that the V—ECU sends out a pulsating continuous voltage with constant frequency, but with variable length of the voltage pulses.

The drive axles have floating half shafts and hub reduction gears of the planetary gear type with built-in oil cooled multi-disc brakes. Each axle has a common space for the hub reduction gears, the brakes and the differential carrier assembly.



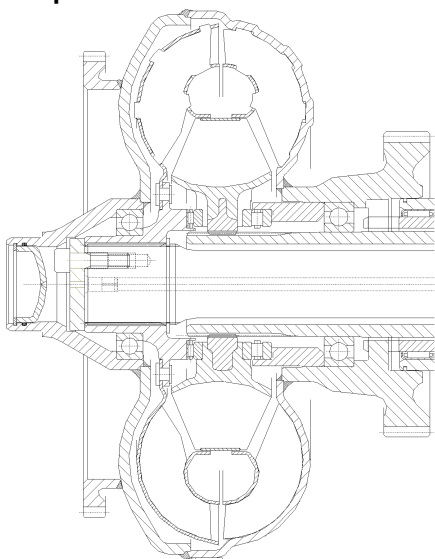
**Figure 1**  
**Power transmission**

1. Transmission
2. Parking brake
3. Support bearing
4. Front axle
5. Rear axle
6. Front rear axle bearing
7. Rear rear axle bearing
8. Transmission oil cooler

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## Description

### Torque converter

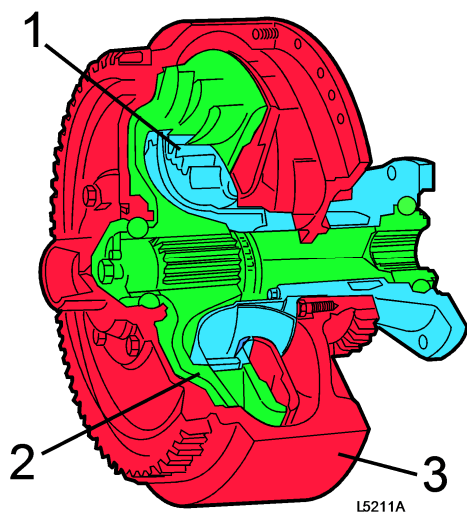


**Figure 1**

Torque converter

The torque converter consists of an engine-driven impeller and a turbine rotor that drives the transmission's mechanical part, the gearbox. A fixed stator is located between the impeller and the rotor.

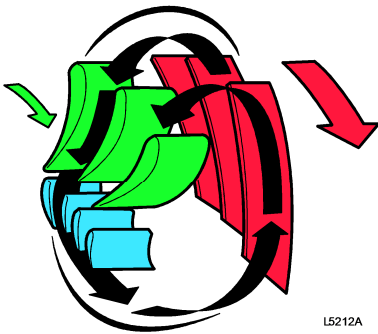
### Function



**Figure 2**  
**Principle diagram**

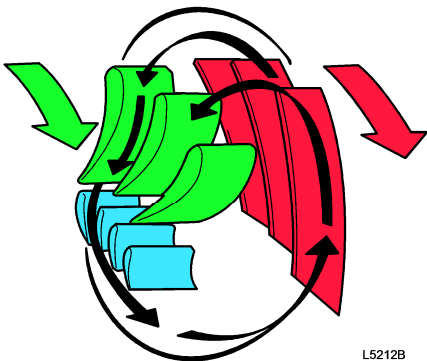
1. Stator
2. Turbine rotor
3. Pump rotor

The red guide rails designate the pump rotor, which is run by the engine. The red arrow shows the direction of rotation. The green guide rails designate the turbine rotor, which is connected to the transmission. The blue guide rails designate stators, while the black arrows indicate oil flow. The pump and turbine rotors can rotate freely and individually. If we imagine that the torque converter is filled with oil and the pump rotor is rotating, oil will flow as indicated by the thicker arrows. Suppose the turbine rotor is stationary. Almost all of the kinetic energy the oil receives from the pump, after leaving the pump, remains. When the oil returns to the pump rotor, it receives an additional boost of kinetic energy. At maximum oil speed, the turbine rotor torque will be three times greater than the torque supplied by the pump rotor. When the turbine rotor speed equals that of the pump rotor, torque increase is almost nil (smaller arrows).



**Figure 3**  
**Principle diagram**

The pump rotor speed is high; the turbine is stationary or rotates slowly. The eddy current, and thereby the torque increase, is greatest.



**Figure 4**  
**Principle diagram**

The pump rotor and turbine speeds are almost identical. The eddy current and subsequent torque increase is least.

Document Title: <b>Torque converter, removing, installing</b>	Function Group: <b>414</b>	Information Type: <b>Service Information</b>	Date: <b>2014/5/9 0</b>
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## Torque converter, removing, installing

**Op nbr 41403**

[6999003 Drift handle](#)

[6999050 Drift plate](#)

[9993354 Counterhold](#)

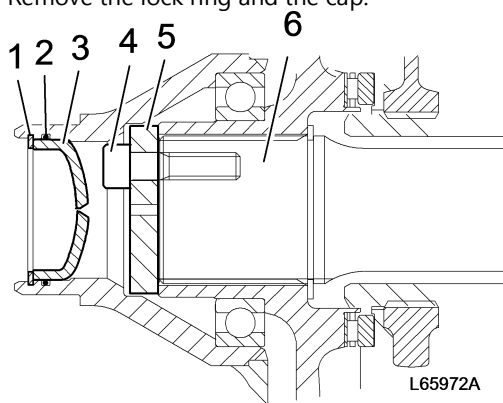
Sling 3 m (10 ft)

**NOTE!**

The engine is removed (Section 2), hydraulic transmission is still in the machine. Make sure that the transmission is adequately secured.

**Removing**

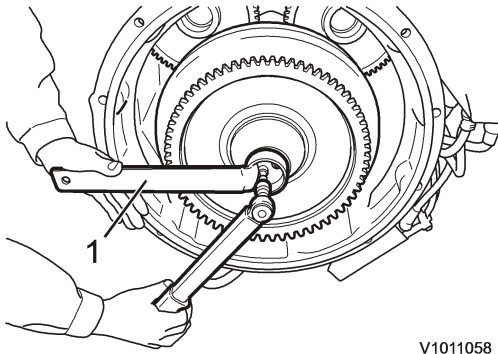
1. Remove the lock ring and the cap.



**Figure 1**  
**Torque converter – turbine shaft (cut-away view)**

1. Lock ring
2. O-ring
3. Cap
4. Bolts (3 pcs.)
5. Washer
6. Turbine shaft

2. Remove the bolts. Use 9993354 to prevent rotation (rotation lock).

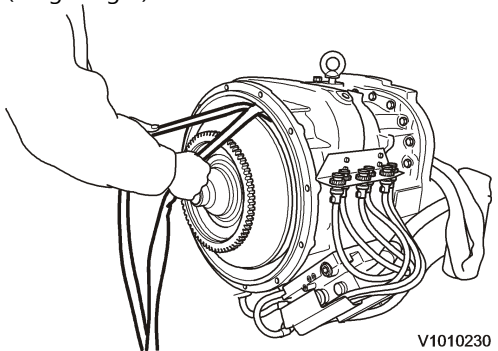


V1011058

**Figure 2**

1. 9993354

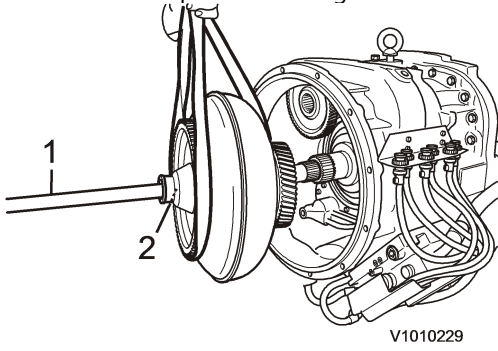
3. Route a 3 m sling around the rear of the torque converter. Cross the sling and make sure that it locks on the rear (sling is tight).



V1010230

**Figure 3**

4. Route the other part of the sling around the ring gear on the outside and connect a lifting device.



V1010229

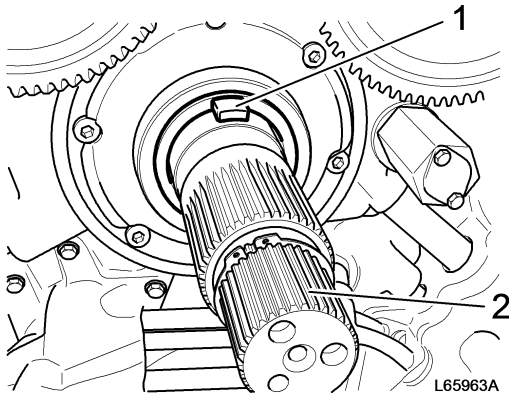
**Figure 4**

1. 6999003  
2. 6999050

5. Remove the torque converter.  
Torque converter weight: **approx. 40 kg (88 lbs)**

## Installing

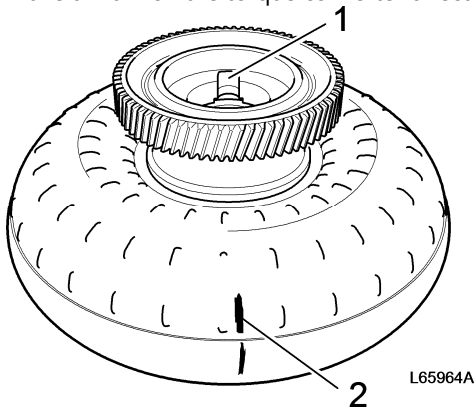
6. Place the pump drive in position as shown in the figure.



**Figure 5**

1. Pump drive
2. Turbine shaft

7. Make a mark on the torque converter directly in line with the pump drive's connection.

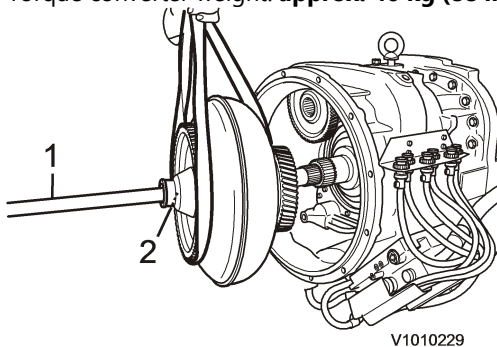


**Figure 6**

1. Connection for pump drive
2. Marking

8. Use 6999003 and 6999050, or corresponding pipe Ø50 mm, to make it easier to hold the torque converter horizontal and to be able to guide it in on the splines.

Torque converter weight: **approx. 40 kg (88 lbs)**



**Figure 7**

1. 6999003
2. 6999050

9. Fit the torque converter, fit it against the pump drive using the mark on the torque converter.

**Thank you very much for reading.**

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