

| Document Title:                    | Function Group: | Information Type:   | Date:            |
|------------------------------------|-----------------|---------------------|------------------|
| Drivetrain, description            | <b>400</b>      | Service Information | <b>2014/7/25</b> |
| Profile:<br>ART, A35F (37142) [GB] |                 |                     |                  |

## Drivetrain, description

The flywheel housing, located between the engine and transmission, houses the power take-off for driving the hydraulic pumps, these are built as a unit (PTO). Lubrication of the power take-off takes place via the engine's lubrication system and return of the oil to the the engine takes place using a built-in oil pump.

A flex plate located in the flywheel housing drives the torque converter in the transmission.

For more information on the transmission, see 200 Engine, description and 200 Engine, general specifications.

The transmission is of planetary type and fully automatic with nine forward gears and three reverse gears, with lock-up in all gears. Automatic shifting is controlled by an electronic control unit (V-ECU) which, via the transmission's control system, always selects the correct gear in relation to the machine's speed and torque use.

For more information on the transmission, see <u>420 Transmission</u>, description and <u>420 Hydraulic transmission</u>, specifications.

The dropbox has a differential with locking function. The ground-dependent hydraulic pump for the secondary steering system is also located on the dropbox. The transmission drives the dropbox via a propeller shaft and, in turn, the dropbox drives the front and rear drive axles via a number of propeller shafts.

For more information on the transmission and propeller shafts, see <u>430 Transfer gearbox, description</u>, <u>430 Dropbox, specifications and 450 Propeller shaft, description</u>.

The drive axles have differentials with differential locks and are equipped with the planetary gears in the hubs, so-called hub reductions.

For more information on the transmission, see <u>460 Axles, specifications</u>.

ATC, Automatic Traction Control, automatically controls engagement and disengagement of the longitudinal differential lock and 6-wheel drive as needed.



#### Figure 1 Power transmission

- 1. Engine
- 2. Power take-offs for hydraulic pumps
- 3. Gearbox
- 4. Propeller shaft, transmission–dropbox
- 5. Dropbox
- 6. Propeller shaft, dropbox-front axle
- 7. Front drive axle

- 8. Propeller shaft, steering joint
- 9. Intermediate shaft, hitch
- Propeller shaft, intermediate shaft–front bogie axle Front bogie axle with power divider 6x6 10.
- 11.
- 12. Propeller shaft, front bogie axle-rear bogie axle
- 13. Rear bogie axle



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| VCADS Pro, Operations              | <b>400</b>      | Service Information | <b>2014/7/25</b> |
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# **VCADS Pro, Operations**

The following VCADS Pro operations are available for function group 4. Operations used when changing or working on components are mandatory.

#### NOTE!

Operations used when changing or repairing components are mandatory.

#### NOTE!

New operations are developed regularly. For a current list of all tests, see VCADS Pro software.

#### Tests

| Operation   | Application  |
|---|--|
| 40006-2 Parameter values gearbox, check           | The test is used to read out parameter values for the transmission's calibration status.         |
| 40012-3 Gear selector position sensor, test       | The test is used to check that the selected gear position is correctly read in the control unit. |
| 40026-3 PWM-valves clutches and brakes, test      | The test is used to check the PWM valves in the transmission control system.                     |
| 42002-3 PWM valve main oil pressure gearbox, test | The test is used to check the PWM valve that regulates main oil pressure to the transmission.    |
| 46075-3 Sensors ATC, check                        | The test is used to check function of the sensors for the ATC-system.                            |

#### Calibration

| Operation  | Application  |
|--|--|
| 40104-3 Gearbox, calibration                     | The test is used when changing transmission or component in the transmission.  |
| 42001-3 Lock-up, calibration                     | The test is used to calibrate Lock-up pressure in the transmission.  |
| 42004-3 Gearbox, return to uncalibrated position | The test is used for basic setting of the calibration parameters for the transmission. Should be done after changing transmission, before starting to operate to warm up temperature before calibrating. |



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| <b>PT Transmission</b>             | <b>420</b>      | Service Information | <b>2014/7/25</b> |
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# **PT Transmission**

Cross section (PT2519)



#### Figure 1 Transmission PT2519

- 1. Torque converter housing
- 2. Gearbox housing



- 3. Housing
- 4. Ring
- 5. Cover
- 6. Torque converter
- 7. Lock-up clutch
- 8. Turbine shaft
- 9. Stator shaft
- 10. Main shaft
- 11. Tubular shaft
- 12. Output shaft / range shaft
- 13. Oil pump
- 14. Directional clutch K1
- 15. Directional clutch K2
- 16. Brake B1
- 17. Brake B2
- 18. Brake B3
- 19. Brake B4
- 20. Brake B5
- 21. Planetary stages
- 22. Clutch K3
- 23. Suction strainer
- 24. Control system
- 25. Oil sump
- 26. Range gearbox
- 27. Drive flange
- 28. Turbine speed sensor (SE4213)
- 29. Range speed sensor (SE4215)
- 30. Sensor, output speed (SE4307)
- 31. Sensor, rotation direction output shaft (SE4209)

#### Side views (PT2519)



### Figure 2 **Right side**

- Drive flange 1.
- 2. Cover
- 3. Ring
- 4.
- Housing Gearbox housing 5.
- 6. Filter bracket
- Torque converter housing Torque converter Lubricating oil filter 7.
- 8.
- 9.
- 10. Oil sump
- Pressure check connection 11.
- Sensor, rotation direction output shaft (SE4209) 12.



#### Figure 3 Left side

- 1. EH-connector
- 2. Pipe for oil filling point
- 3. Gearbox housing
- 4. Pressure monitor, main oil filter (SE4218)
- 5. Tube for oil dipstick
- 6. Housing
- 7. Ring
- 8. Range speed sensor (SE4215)
- 9. Sensor, output speed (SE4307)
- 10. Drive flange
- 11. Cover
- 12. Main oil pressure sensor (SE4219)
- 13. Oil sump
- 14. Main oil pressure filter
- 15. Filter bracket
- 16. Pressure check connection
- 17. Torque converter housing
- 18. Torque converter



## **Service Information**

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# Transmission, description

#### Introduction

The following is an overview of the transmission's function. Descriptions are listed to the right of each paragraph, where you can read more about the text in bold print. The illustrations show what part of the transmission is described in the text below the illustration.

Designations of included parts in the transmission are found in the paragraph <u>420 PT Transmission</u> and the transmission's hydraulic diagram under <u>420 Hydraulic diagram PT</u>.

#### Description



#### Figure 1

The transmission is driven by the engine via a flex plate in the **power take-off** that absorbs vertical movements between engine and transmission. The engine power is transmitted via the flex plate to the **torque converter** which is a hydrodynamic clutch. The design of the clutch enables it to absorb jerks and shocks from the engine and also reinforces the torque. When drive of the machine is smooth, the torque converter can be "short-circuited". Then the torque converter's pump rotor is connected to the turbine rotor using the **Lock-up clutch** inside the torque converter, which means that the transmission is driven directly by the engine. This reduces losses in the drivetrain.



482 PTO (Power TakeOOff). description420 TorqueOconverterO420 Lock-up clutch

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