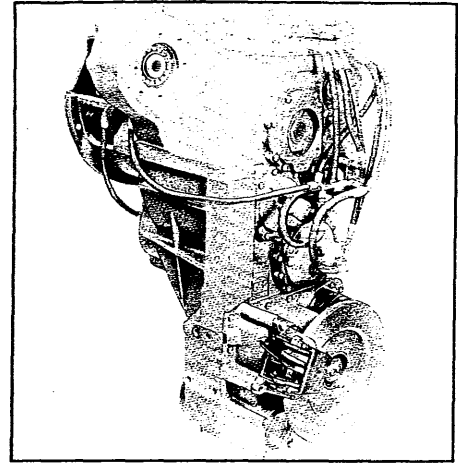




ORDER-NO. 5872 185 002

OPERATION AND MAINTENANCE ZF-HYDROMEDIA TRANSMISSION

WG - 250

**DESCRIPTION
INSTALLATION INSTRUCTIONS
OPERATION
MAINTENANCE**



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Änderungen vorbehalten!

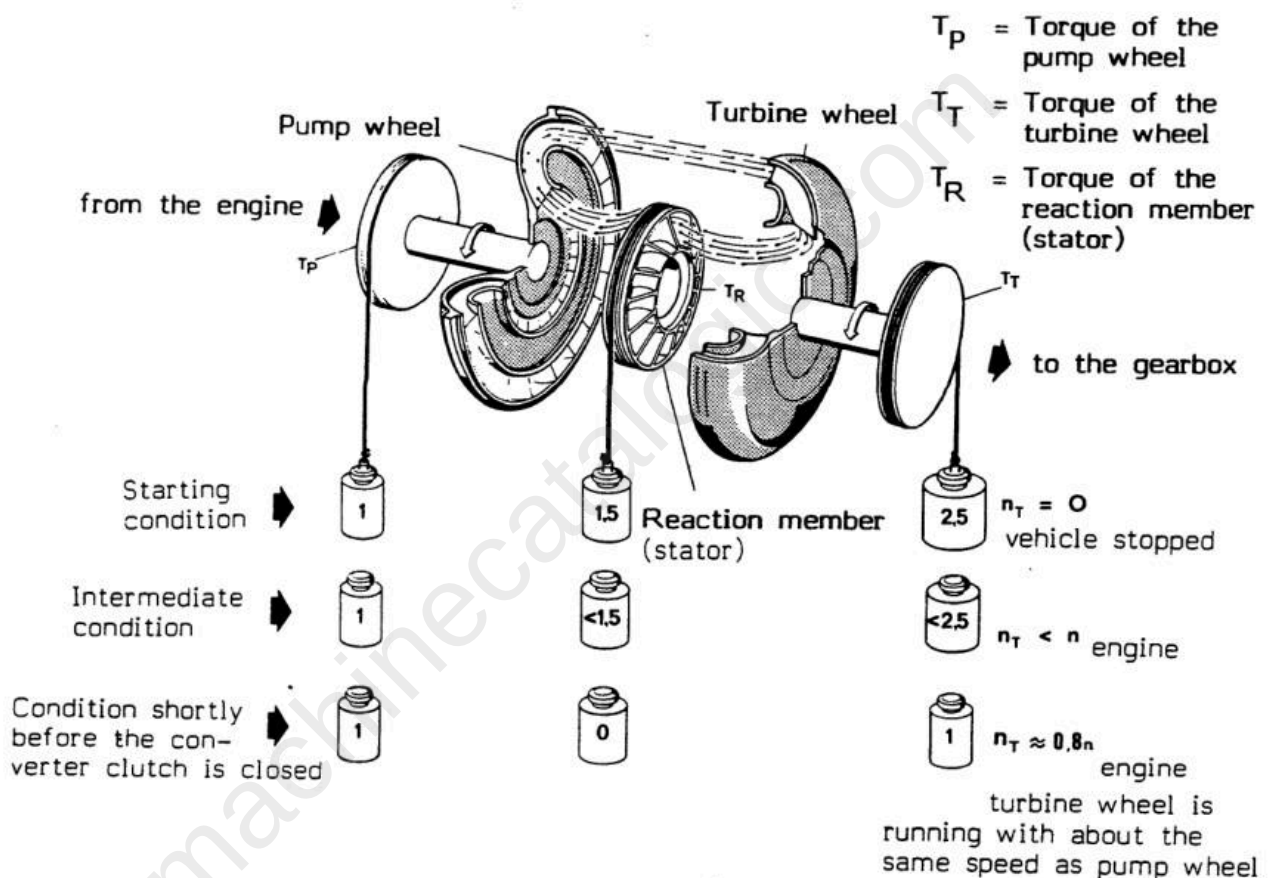
APPENDIX composed:

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- 1 _____ Design of the Powershift Transmission WG-250
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- 13 _____ Wiring diagram WG-250
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- 15 _____ Control unit 2-stage pressure control valve and breather valve
- 16 _____ Control unit with look-up valve (WK)

With closed converter connecting clutch (WK), the slip between pump wheel and turbine wheel, and therefore the hydraulic loss in the converter, is equal to "Zero".

Function of a hydrodynamic torque converter (schematic view)



1.2 Powershift transmission

The multi-speed Reversing Transmission in countershaft design can be engaged and disengaged under load by means of hydraulically actuated multi-disk clutches.

All gears are running in antifriction bearings and are constantly meshed.

The gears, bearings and clutches are lubricated by cooled oil.

The 4 - speed as well as the 6 - speed Reversing Transmission has 6 multi-disk clutches each.

As to the engagement of the speeds from NEUTRAL, generally results what follows:

If the driving speed is too high in relation to the preselected speed (danger of over-speed), the lowest still admissible speed is engaged and then changed back in a 2,5 s clock pulse until the preselected speed is reached.

With the kick-down button, integrated in the Controller, it is always possible to select - in the speeds 2 V and 2 R (i.e. in Position 2 of the Controller) - the 1st speed by a short finger-tip.

This kick-down condition can be - according to the programming - switched off by :

- another pressing of the kick-down button
- carrying out a reversing procedure
- changing the position of the Controller

Switching off becomes effective at the earliest after a minimum kick-down dwell time of 2,5 seconds. The kick-down function remains effective also during reversing procedures, provided that the Controller does not remain longer than 1 second in the NEUTRAL Position and cutoff by reversing has not been programmed.

The Controller DW-2 is not equipped with an active reversing lock. What is more, the driver can start reversing procedures at any time.

Depending upon the actual driving speed, results what follows :

In the speeds 1 and 2 reversing is effected at any time (1 V 1 R and 2 V 2 R).

Reversing procedures in the speeds 3 and 4 are processed speed-dependent as follows :

- Above a programmable speed limit (normally the maximum 2nd gear speed), an immediate change-back procedure to the 2nd speed of the same driving direction is effected, and 1,2 seconds later, the 2nd speed of the opposite driving direction will be engaged.

Now, shifting to the preselected speed is effected in a 2,5 s clock pulse.

If the speed falls below the critical velocity, reversing is effected immediately.

- Below this speed limit, reversing is effected directly, i.e. without previous change-back procedure.

If the preselected target speed is at least 2 speed stages higher than the actually engaged speed, upshifting procedures are effected in a 2,5 s clock pulse.

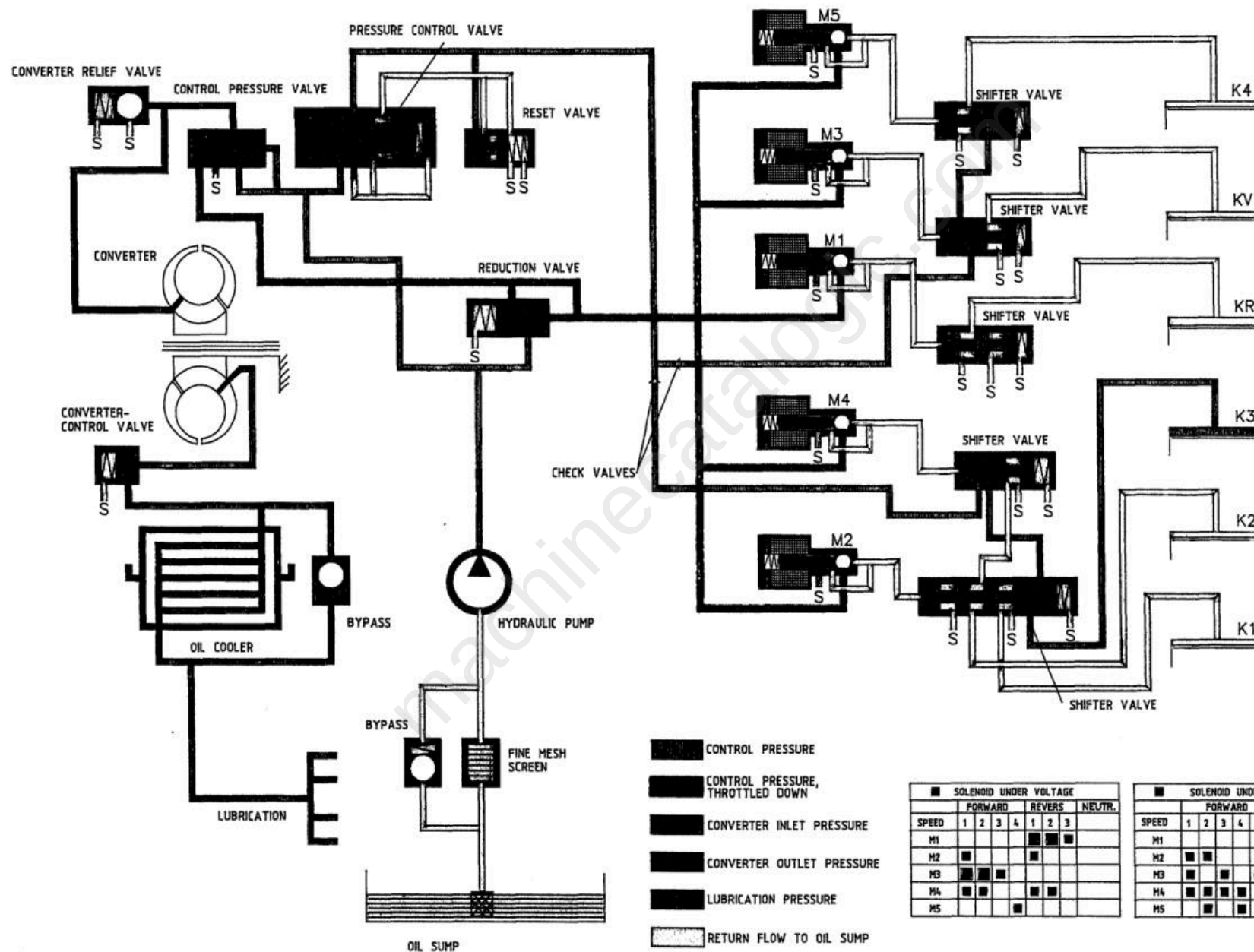
Change-back procedures up to the second speed are effected immediately, even if herewith speeds are skipped.

If out of the 3rd or 4th speed the 1st speed is selected, the 2nd speed is at first engaged for 1,2 seconds and only after this procedure, the 1st speed will be engaged.

Pressure cutoff :

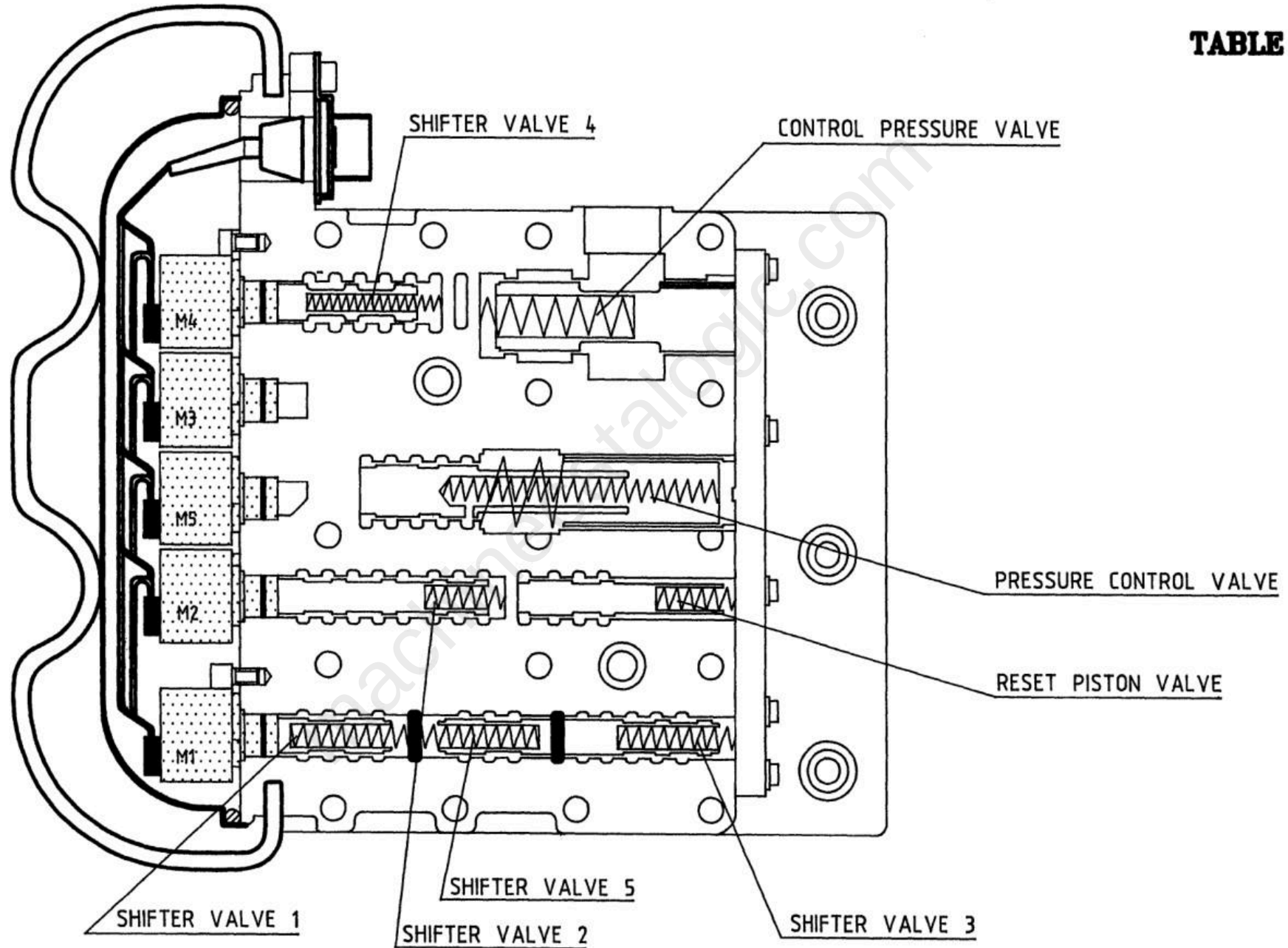
By means of an external positive signal, the pressure cutoff can be activated in the speeds 1 and 2 Forward and Reverse. It is interrupting the power flow in the gear-box as long as this positive signal is effective.

TABLE 7



CONTROL UNIT STANDARD (5-SOLENOID DESIGN)

TABLE 14



Tester PR-78

This Tester allows the control of all Controllers, the Version electronic gearshift automatic excepted.

Tester PR-49

This Tester allows the control of electronic modules in connection with special equipment of the gearbox types with converter connecting clutch (WK) and Controller with speed-dependent change-back lock.

Retarder

The hydrodynamic retarder (hydraulic retarder), installed upon request, is arranged between engine and torque converter, whereby a good braking effect is obtained in all speeds.

The retarder is wear-resistant hydrodynamic brake, operating speed-dependently. Therefore, the application of the retarder is especially recommended on longer downhill driving or for the braking from high velocities, because in this way the service brake is spared and in an emergency case the full braking effect (no fading) of the service brake is at disposal.

1.6 Gearbox final drive and ancillary equipment

The final drive is realized via an integrated transfer case. According to the utilization, one final drive can be declutched. Engaging and disengaging can be done only with stopped vehicle. The actuation can be either mechanical or pneumatic. Besides, a lockable interaxle differential or a crawler can be installed upon the output shaft in the gearbox housing. Engaging and disengaging of this differential lock is effected similar to that of the axle declutch.

Parking brake

The gearbox can be equipped on the final drive side with an auxiliary brake or a parking brake resp.

Emergency steering pump

The attachment of an emergency steering pump is possible (16 cm³/Rev. or 32 cm³/Rev.). Instead of an emergency steering pump, a secondary pump can be also attached. The secondary pump is driven from the output side and has therefore always a continuous direction of delivery.

When towing the vehicle, the gearbox is automatically supplied with the required amount of lubricating oil by this pump.

Speedometer drive

The signal required for the speedometer recognition is picked up inductively on the final drive side.

Lift trucks, road vehicles, trucks,
vehicles with WK in all speeds

= 30 - 35 %

14. For the cooler layout, the corresponding supply air values must serve as a base for the operation in hot countries.
15. The gearbox cooler should be situated on the cold water side of the cooling circuit.
If a retarder is used, the total cooling water quantity must flow through the gearbox cooler, even with closed thermostatic valve.
16. Cleaning of lines, filter and cooling system from original dirt (also after a gearbox replacement).
17. Internal width of the cooler or filter lines resp. and screw connections should be at least 24 mm. For length > 1 m, the nominal width must be + 20%.
18. Easy accessibility to the oil filter, oil dipstick and oil filler neck.
19. Supervision of the control pressure and the oil temperature from measuring point 65 and 63 in the driver's cabin.
20. Use oils according to the ZF-List of Lubricants (oil-level check see Instructions for the Operation and Maintenance)
21. It should be possible to remove the gearbox control unit without removal of the gearbox.
22. During welding operations on the vehicle, separate electric and electronic components from the supply system.
23. Separate earthing connections for gearbox, control unit and batterie should be planned.
24. Pay attention to the specific ZF-Plug reservation because only then the use of ZF-Testers would be possible.
25. Connect reverse lamps or alarm resp. via relay only.

Note :

The correct installation rests with the Manufacturer of the vehicle !

INSTALLATION VIEW WG-250

TABLE 3

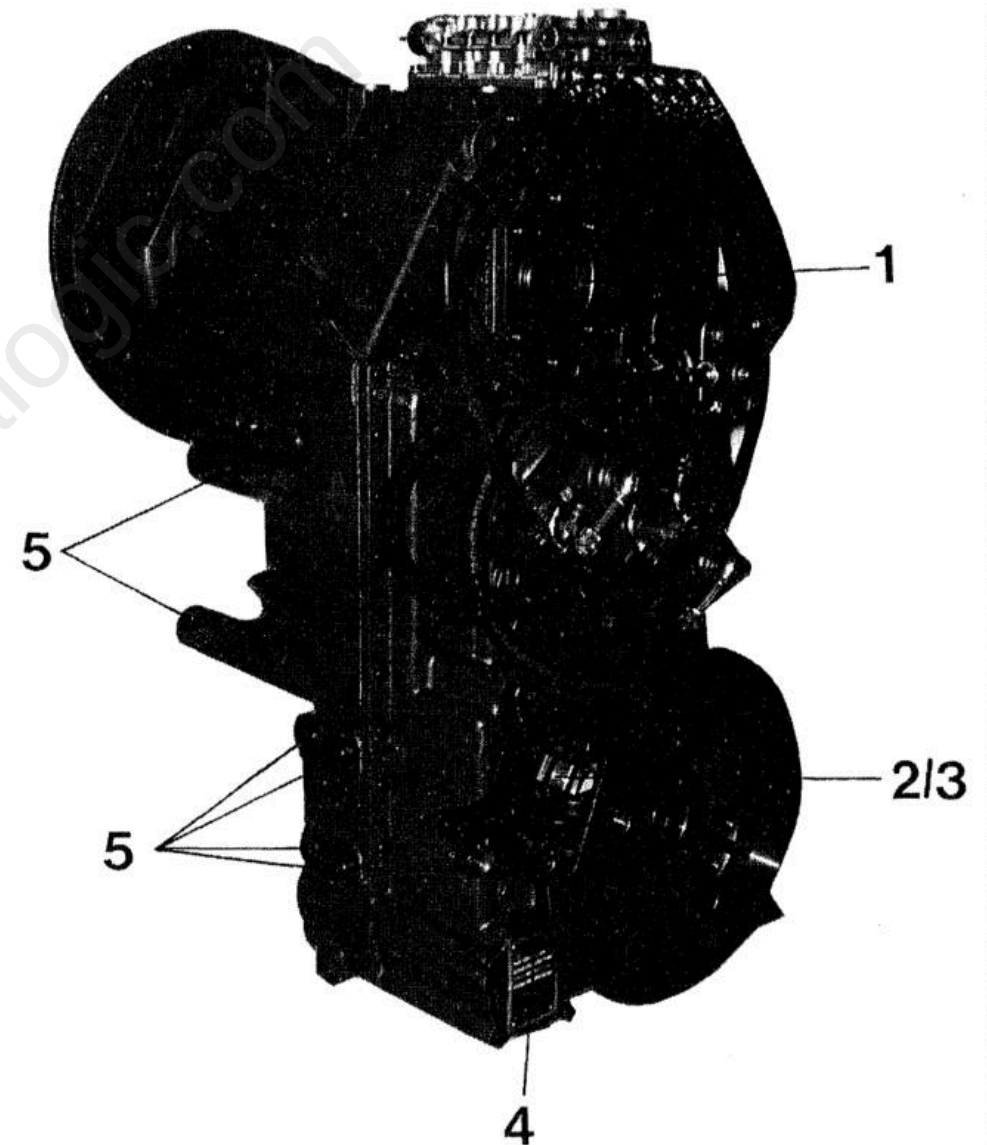
1 = POWER TAKE-OFF

2 = FINAL DRIVE

3 = PARKING BRAKE

4 = MODEL IDENTIFICATION PLATE

5 = GEARBOX SUSPENSION



Full Version Available

ZF 6WG-250 Transmission Service Manual

ZF 6WG-250 transmission service manual with installation, operation and maintenance sections plus appendix tables. Instant PDF download.

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