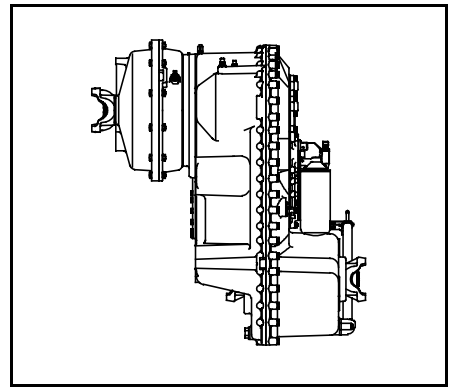




Order-No.: 5872 196 002

ZF – ERGOPOWER TRANSMISSION

6 WG-210

TECHNICAL DATA
DESCRIPTION
OPERATION
MAINTENANCE
DIAGNOSTIC SYSTEMS



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Subject to changes w/o notice

I. DESCRIPTION

1.1 Function of the Converter:

Function of a hydrodynamic Torque converter (Schematic view)

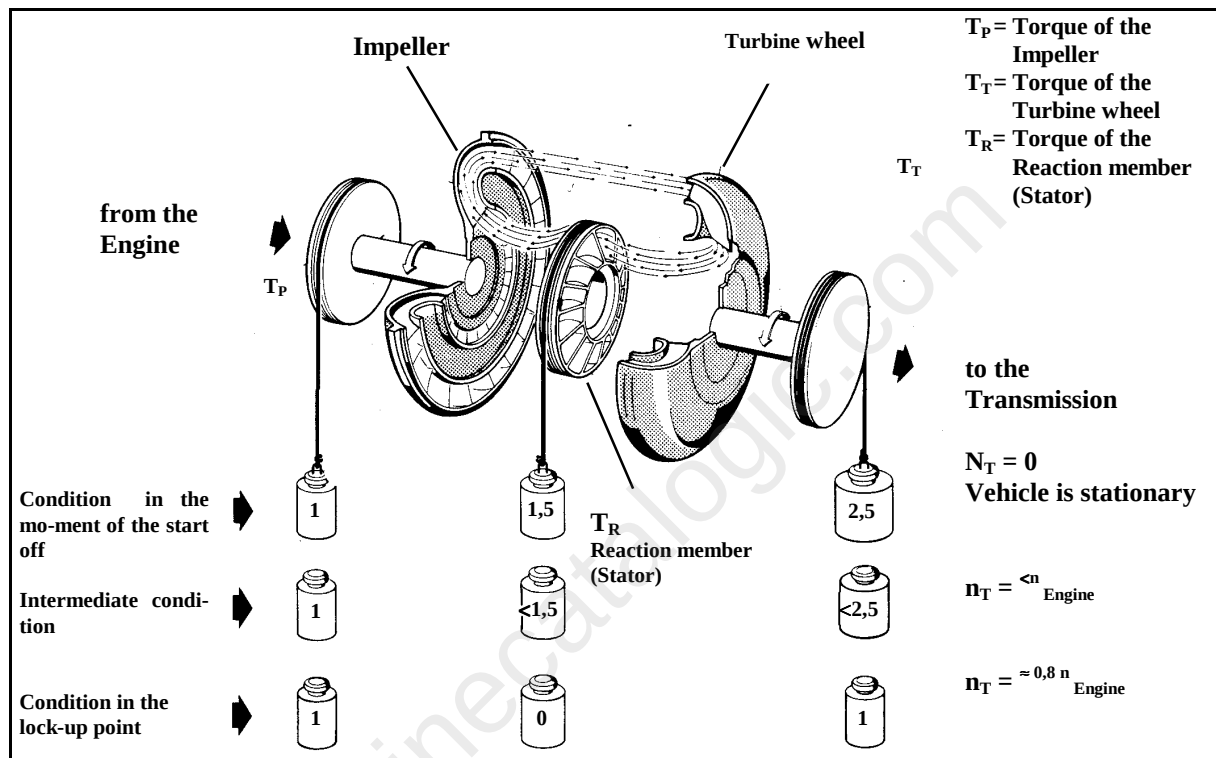


Figure-No.: 1.1

The converter is working according to the Trilok-System, i.e. it assumes at high turbine speed the characteristics, and with it the favourable efficiency of a fluid clutch.

The converter is designed according to the engine power so that the most favourable operating conditions are obtained for each installation case.

The Torque converter is composed of 3 main components:

Impeller – Turbine wheel – Stator (Reaction member)

These 3 impellers are arranged in such a ring-shaped system that the fluid is streaming through the circuit components in the indicated order.

Pressure oil from the transmission pump is constantly streaming through the converter. In this way, the converter can fulfill its task to multiply the torque of the engine and at the same time, the heat created in the converter is dissipated via the escaping oil.

The oil which is streaming out of the impeller, enters the turbine wheel and is there reversed in the direction of flow.

According to the rate of reversion, the turbine wheel and with it also the output shaft is receiving a more or less high reaction torque.

Installation dimensions of the TCU

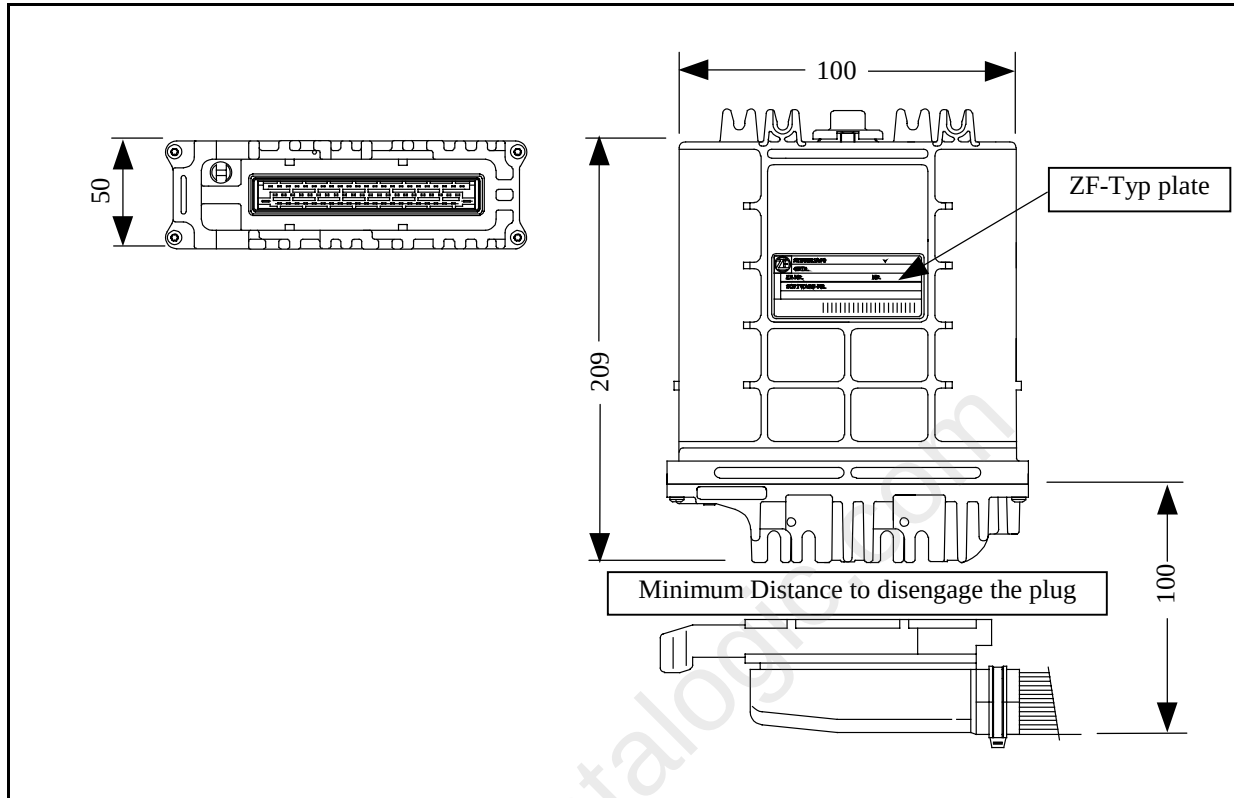


Figure-No.: 1.7 B2

1.8 Elektronik Control for ZF-Powershift transmissions:

1.8.1 General:



Because of the different configurations of the electronic transmission controls at the various vehicles, the corresponding documentation must be taken from the operating Instructions of the Vehicle Manufacturer or from the Data sheets of the respective Parts List Versions. In these are also indicated the corresponding circuit diagram (see Sample Table – 19 and 20) and the connection diagram (upon request, these Informations can be asked for at the ZF Passau).

According to the type of vehicle, the wiring will be performed according to the wiring diagrams. Variations such as double cabin Version (e.g. RT-Crane vehicles) are possible. The cabin change-over is not scope of supply of the ZF !

The corresponding electric circuit diagrams (proposals) will be realized by ZF.

Upon request, the wiring can be also supplied by ZF.

If the wiring is realized by the Vehicle Manufacturer, it must be in accordance with the ZF-Requirements (see Installation Specification).

From the Version 812 on, the AEB can be started with the Tools Laptop, MOBIDIG 2001 and the AEB-Starter.

(See Type plate Figure-No.. 1.8.3 B3)

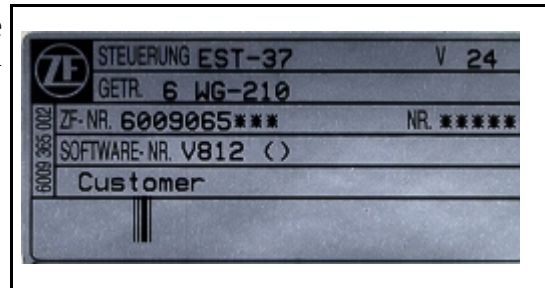


Figure-No.: 1.8.3 B3

1.8.4 Kickdown function:

At the actuation of the KD-switch, up- and downshiftings take place at higher speeds. Upon request, upshiftings can be completely suppressed (e.g. driving and upgrades with a Dumper).

1.8.5 Special functions:

There are various Special functions possible, as for example:

- * Control of converter clutch and Antigas.
- * Start-off interlock out of Neutral at too high engine speed during the speed engagement out of Neutral
- * Limitation of the available gears in dependance of the cabin (I or II), all wheel steering front axle engagement (Crane vehicles).
- * Control/limitation of the available gears at inching mode (Lift trucks).

Further available Special functions upon request after contact with the ZF.

1.9 Interaxle differential:

1.9.1 Description:

The differential, installed in the output, has the task to transmit different torques on the vehicle axles and to function as intermediate compensation in the driving direction (longitudinal direction of the vehicle).

Due to the installed differential lock, both functions can be put out of service, and a rigid connection between the axle can be created.

The engagement and disconnection can be realized:

- mechanics
- hydraulically or pneumatically
- powershift.

1.9.2 Function:

The planetary drive (differential) is designed in such a way that the external internal gear will be driven.

The output is realized via the planet carrier (4) – great lever arm – and via the internal sun gear (6) – small lever arm.

Due to these different lever arms (diameter), a torque splitting of 1 : 2 is given in the actual case as follows:

3.8 Shifting of the various outputs:

- **Axle disconnection/Interaxle differential mechanically/pneumatic/hydraulic operated**
Both interlocks can be preselected during the drive via a switch. At exceeding the driving speed below 5 km/h and unloaded transmission, the interlocks engage of automatically.

Attention:

The engagement is only then permitted, if no speed difference between the axles is prevailing. Differential lock and front axle engagement can be programmed in such a way that they e.g. are always engaged in reverse.

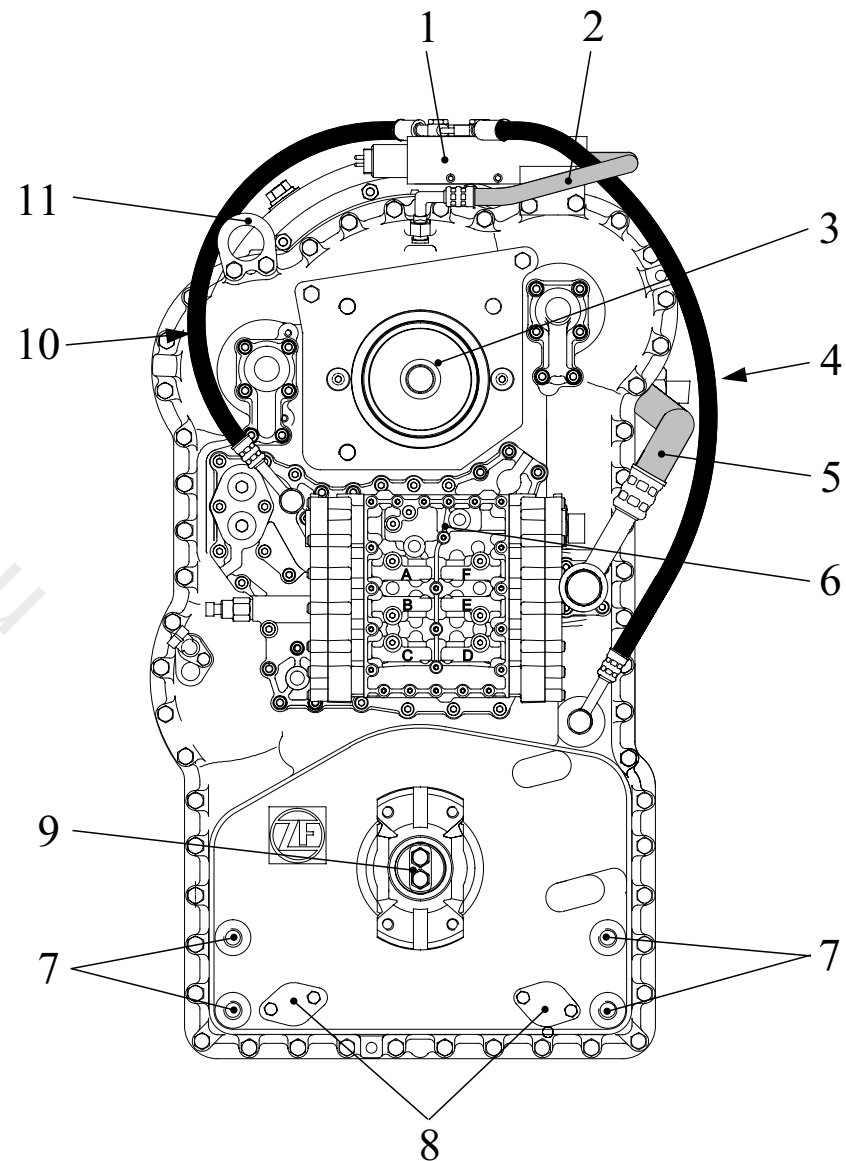
- **Interaxle differential powershift:**
Powershift differential in transmission Enables actuation during drive resp. up to 4th gear, 20 km/h at low input torque

INSTALLATION VIEW 6 WG-210 WITH RETARDER

REAR VIEW

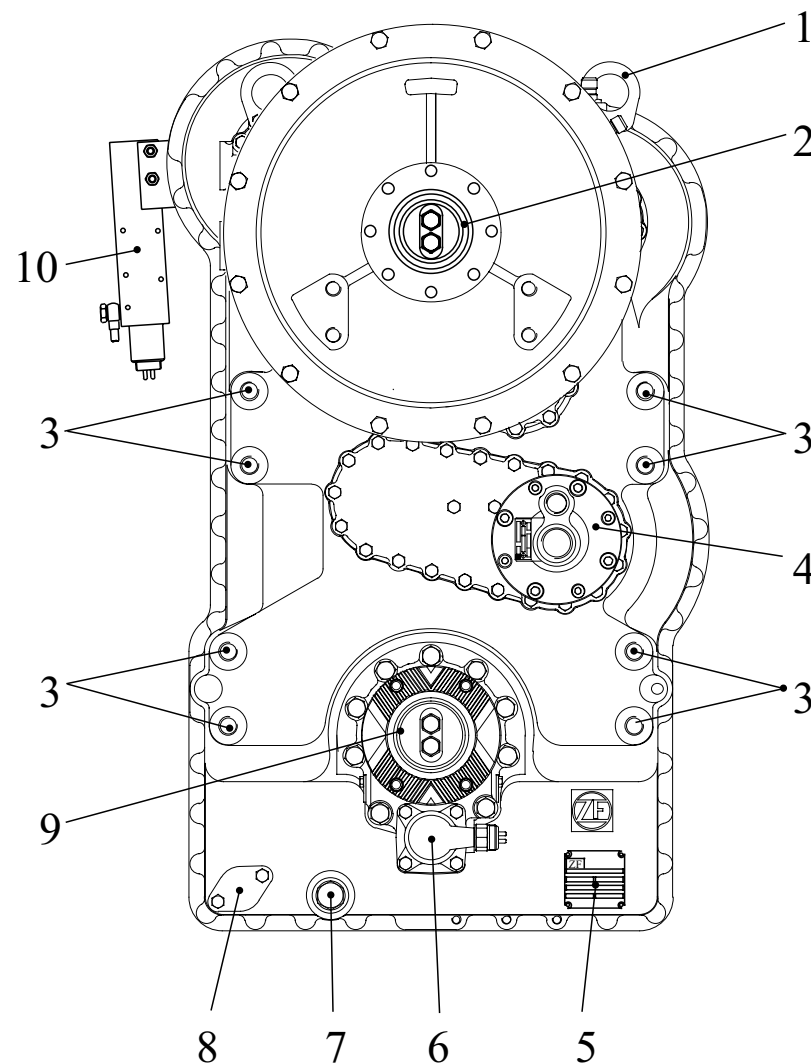
TABLE-3C

- 1 = WK-Valve
- 2 = Oil pressure line from WK-Valve to the WK
- 3 = Power take-off; coaxial; engine-dependent
- 4 = Breather line WK
- 5 = Pressure oil line from – in front of the converter – to the retarder valve
- 6 = Electro-hydraulic control
- 7 = Transmission suspension holes M20
- 8 = Attachment possibility for oil filler tube with oil dipstick (rear-side)
- 9 = Output flange - rear axle (rear side)
- 10 = Oil pressure line from control unit to WK-valve
- 11 = Lifting lugs



INSTALLATION VIEW 6 WG-210 – SEPARATE INSTALLATION WITH AXLE DISCONNECTION AND WK-VALVE SIDE-MOUNTING FRONT VIEW TABLE-7A

- 1 = Lifting lugs
- 2 = Input flange – Drive via universal shaft
- 3 = Transmission suspension holes M20
- 4 = Emergency steering pump
S = Suction port M26x1,5
D = Pressure port M22x1,5
- 5 = Model identification plate
- 6 = Pneumatic or hydraulic engagement and disconnection
- 7 = Oil drain plug M38x1,5
- 8 = Attachment possibility for oil filler tube with oil dipstick
(converter-side)
- 9 = Output flange (converter-side)
- 10 = WK-Valve



OIL CIRCUIT DIAGRAM 6 WG-210 WITHOUT WK

-FORWARD 1st SPEED-

TABLE-10

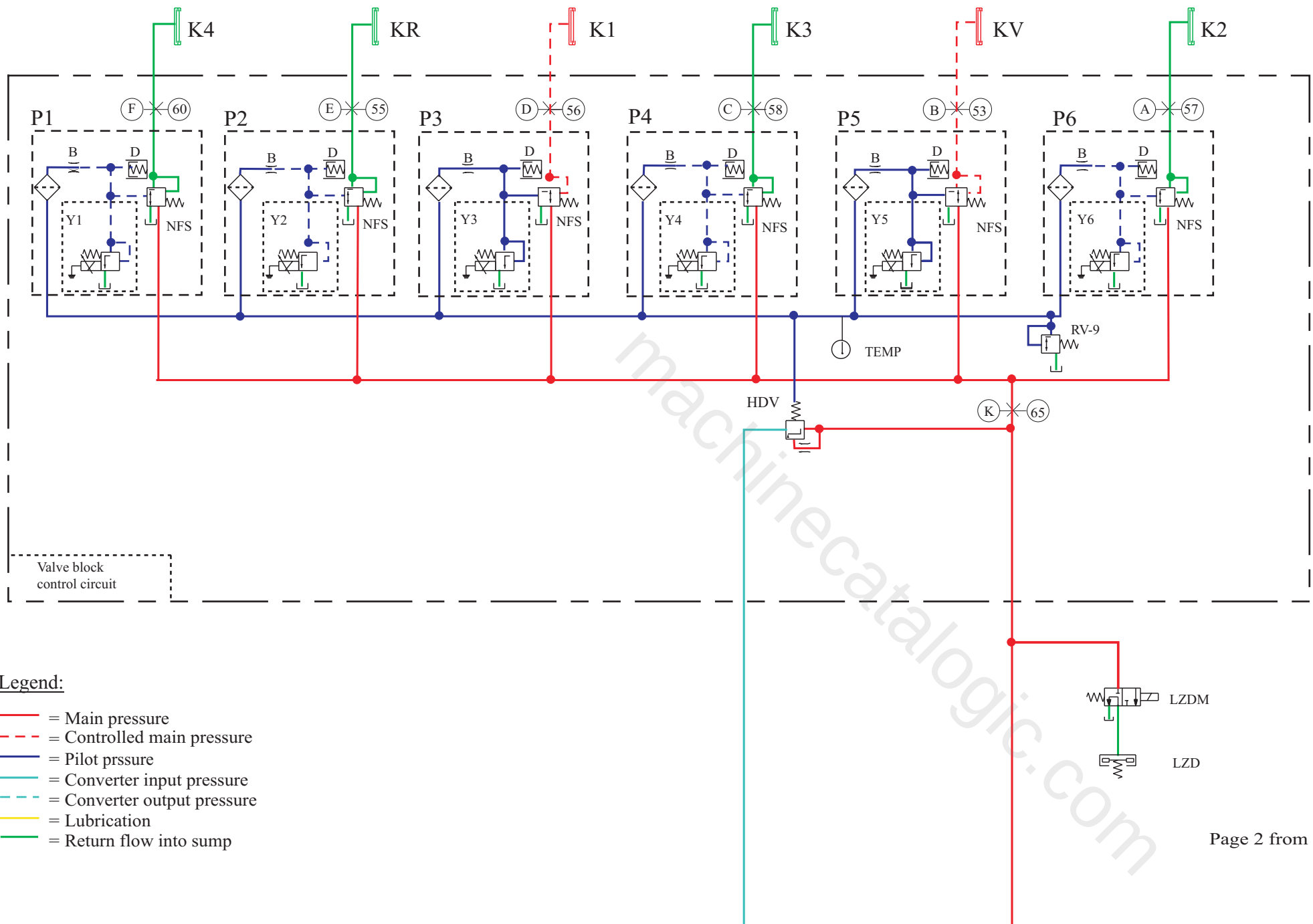
The marked positions (e.g. 53) correspond with the positions on the table-9 !

Legend:

WT	=	Heat exchanger	
WGV	=	Converter back pressure valve	4,3+3 bar
WSV	=	Converter safety valve	11+2 bar
HDV	=	Main pressure valve	16+2,5 bar
RV-9	=	Pressure reducing valve	9±0,5 bar
NFS	=	Follow-on slide	
D	=	Vibration damper	
B	=	Orifice	
P1	=	Proportional Valve – clutch K4	
P2	=	Proportional Valve – clutch KR	
P3	=	Proportional Valve – clutch K1	
P4	=	Proportional Valve – clutch K3	
P5	=	Proportional Valve – clutch KV	
P6	=	Proportional Valve – clutch K2	
Y1 – Y6	=	Pressure regulator	
TEMP	=	Temperature sensor	
UEDV	=	Pressure relief valve	40±5 bar
FDV	=	Filter pressure differential valve	Δp=5,5+3 bar

CODING

Driving direction	Speed	Pressure regulator under voltage						Engaged clutch	
		Y1	Y2	Y3	Y4	Y5	Y6		
Forward	1			•		•		K1	KV
	2	•		•				K4	K1
	3					•	•	KV	K2
	4	•					•	K4	K2
	5				•	•		K3	KV
	6	•			•			K4	K3
Reverse	1		•	•				KR	K1
	2		•				•	KR	K2
	3		•		•			KR	K3
Neutral									
Engaged clutch		K4	KR	K1	K3	KV	K2		
Position on valve block		F	E	D	C	B	A		
Consec. No. Of measuring points		60	55	56	58	53	57		



Full Version Available

ZF 6WG210 Transmission Service Manual (5872 196 002)

ZF 6WG210 transmission service manual with oil circuit diagrams, power flow, installation views and maintenance sections. 2 searchable PDF files.

VIEW THE FULL MANUAL

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