



## 5.0.1 Hydraulic Drive

### Contents, hydraulic drive

Inhalt/ Contents	Seite / Page
Arrangement of the hydraulic drive components (overview)	3-5
Installation location of the hydraulic pumps with measuring points	6
Design of hydraulic pump	7 - 9
Hydraulic pump components in the circuit diagram	10
Hydraulic drive motor	11- 13
Function description of the hydraulic pump	14
Y13 switching valve: front wheel drive (Transport mode), 30 kph to all-wheel drive (Work mode) 16 kph	15- 19
Hydraulic function diagram, front wheel drive (Transport mode), max 30 kph, Y13 power on	20
Hydraulic function diagram, all-wheel drive (Work mode), max. 16 kph, Y13 power off	21
Detailed hydraulic function diagram, Y13 power on and Y13 power off	22
Error location following fault: Vehicle does not run or runs slowly	23 - 2
Error location following fault: In front wheel drive (Transport mode), final speed of 30 kph is not reached	25

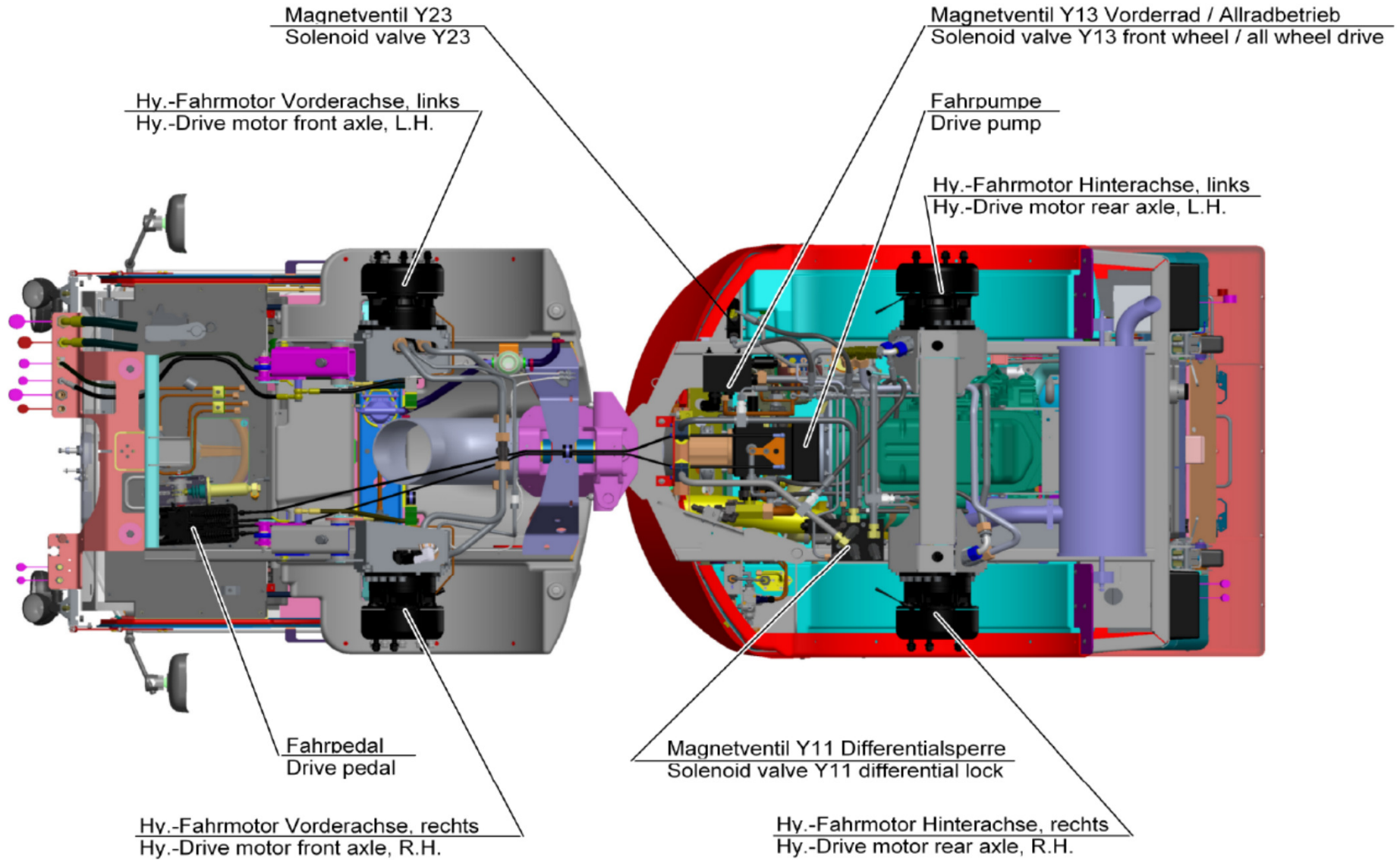


## 5.0.1 Hydraulic Drive

### Contents, hydraulic drive

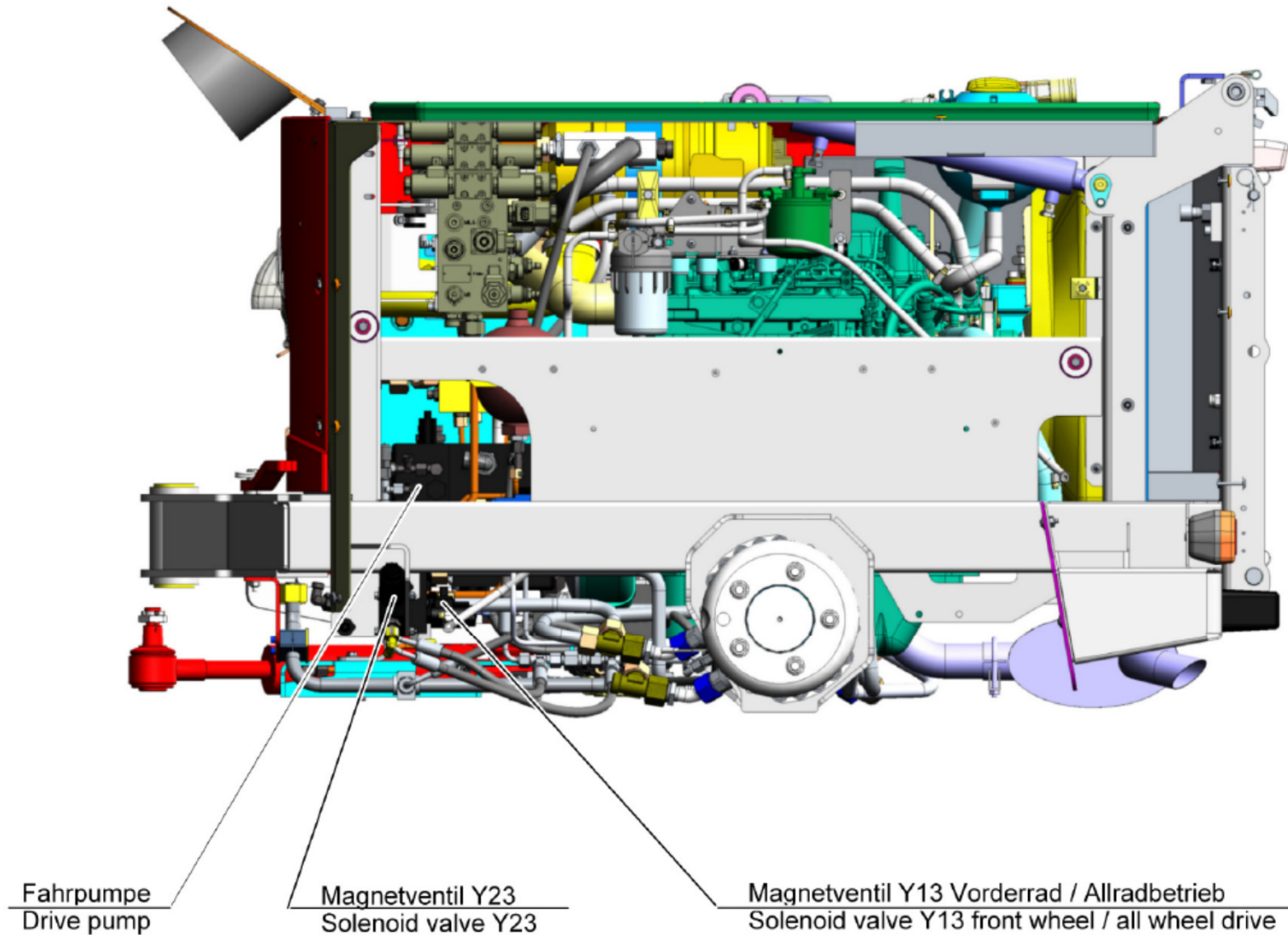
Inhalt/ Contents	Seite /Page
Y11 solenoid valve, differential lock (option)	26- 30
Hydraulic function diagram, differential lock switched off, Y11 power off	31
Hydraulic function diagram, differential lock switched on, Y11 power on	32
Detailed hydraulic function diagram, Y11 power off and Y11 power on	33
Position of the nozzles D1 and D2 in the differential lock block	34- 35
Adjustment of the end speed at the accelerator pedal	36- 38
References to further information on the hydraulic drive	39
Own notes	40 - 42

### 5.0.1 Hydraulic Drive



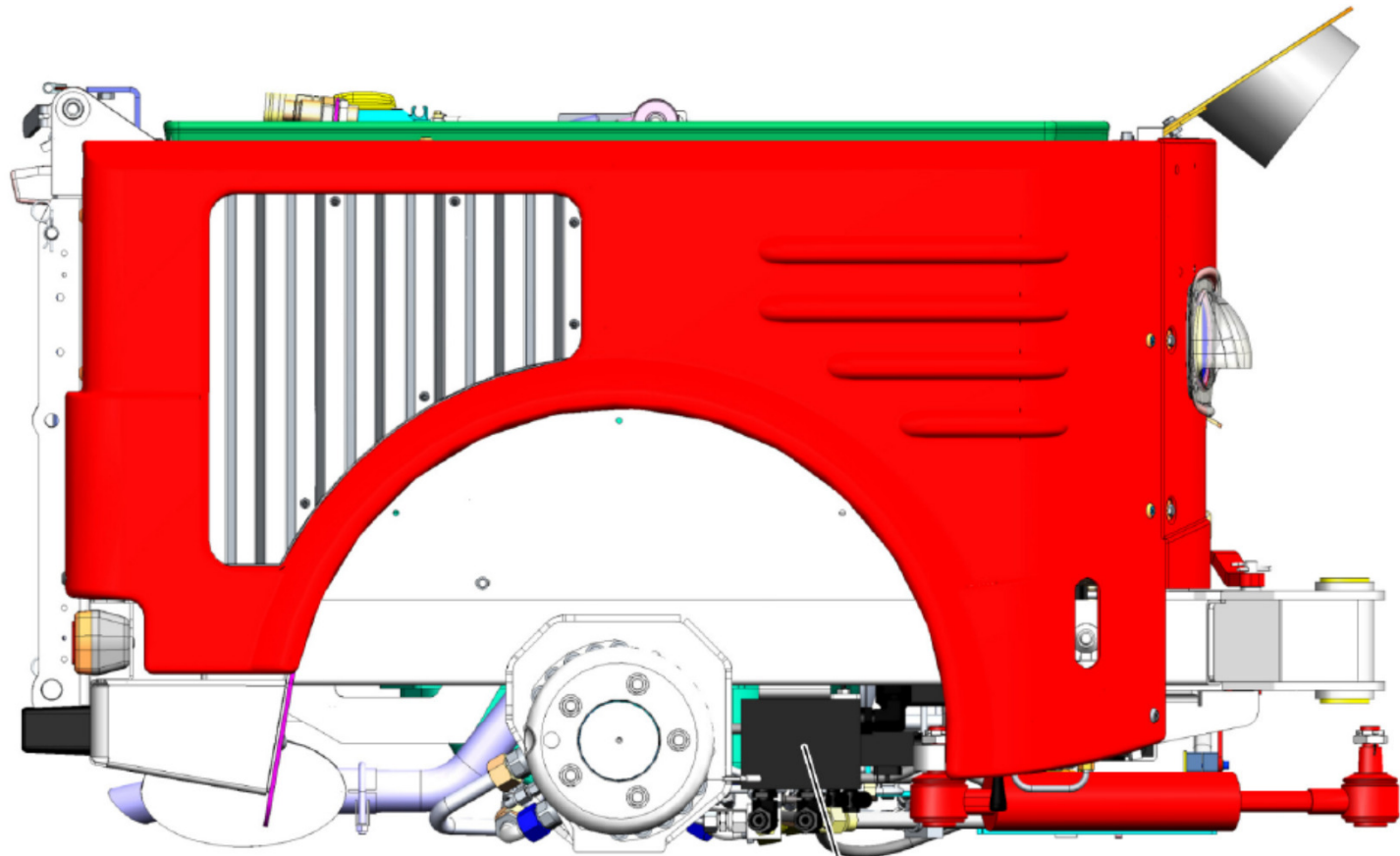
### 5.0.1 Hydraulic Drive

#### Solonoid valves Y13 and Y23 rear vehicle, L-H



### 5.0.1 Hydraulic Drive

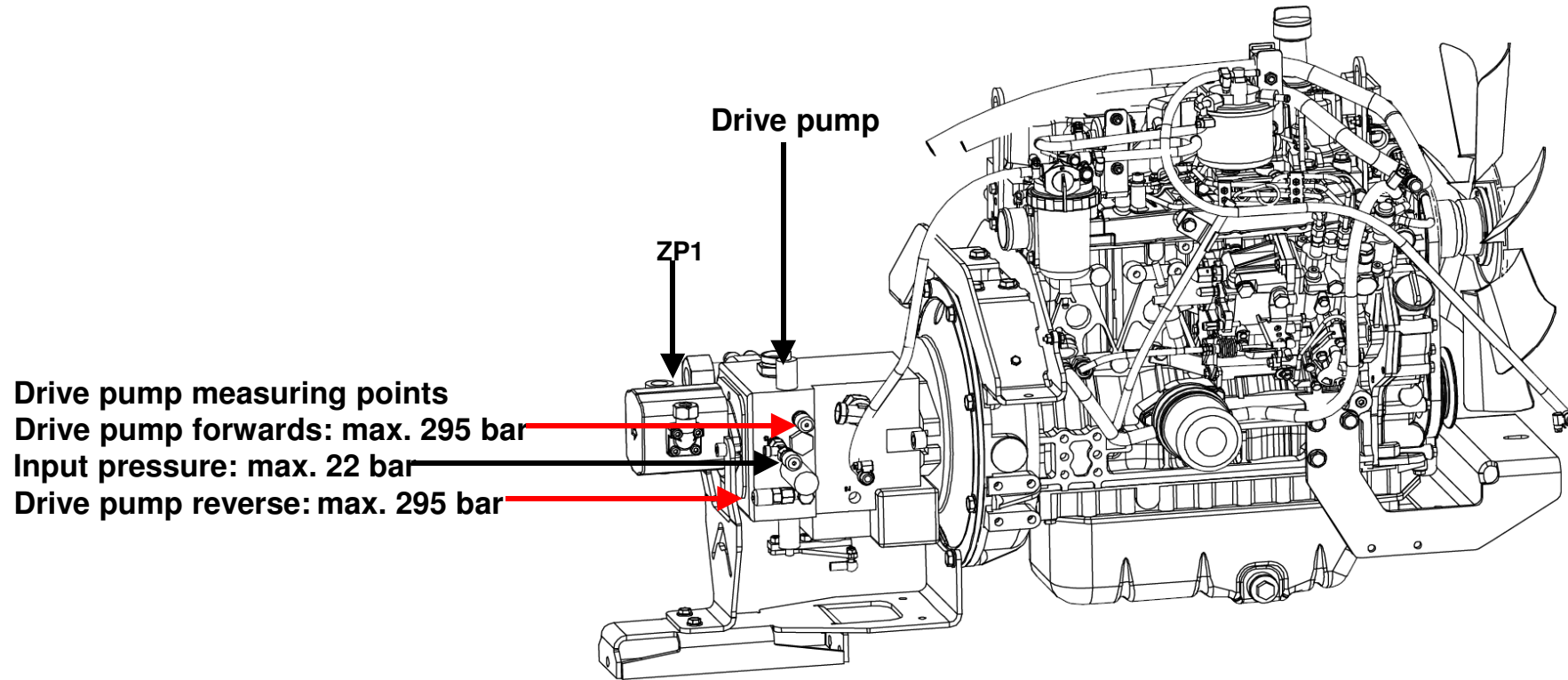
#### Solonoid valve Y11 differential lock rear vehicle, R-H



Magnetventil Y11 Differentialsperre  
Solenoid valve Y11 differential lock

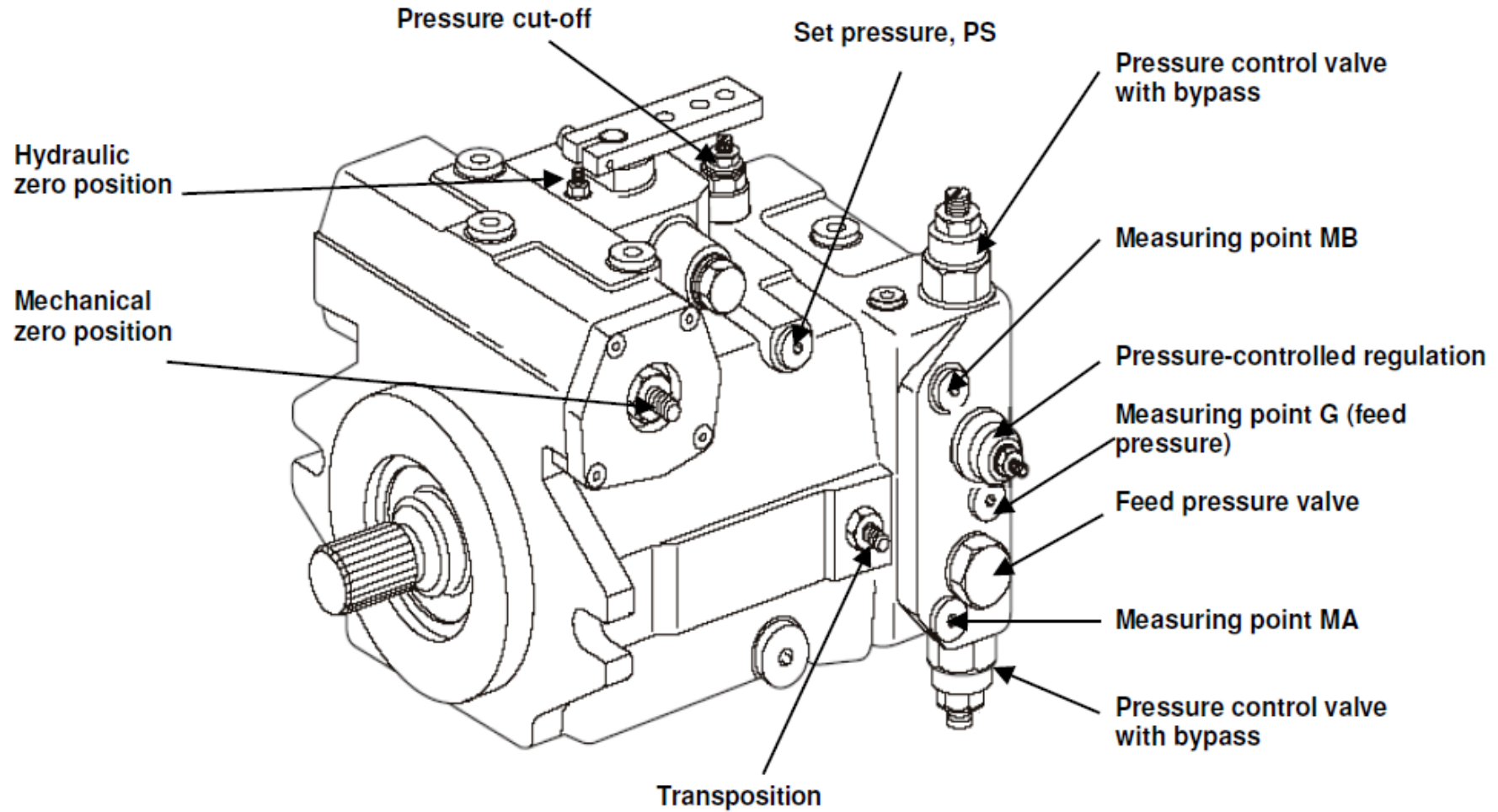
### 5.0.1 Hydraulic Drive

#### Installation location of the hydraulic pumps - drive pump and gear pump 1 (ZP1)



### 5.0.1 Hydraulic Drive

Drive pump: Variable displacement pump – Bosch Rexroth A 10VG with pressure cut-off and pressure-controlled regulation

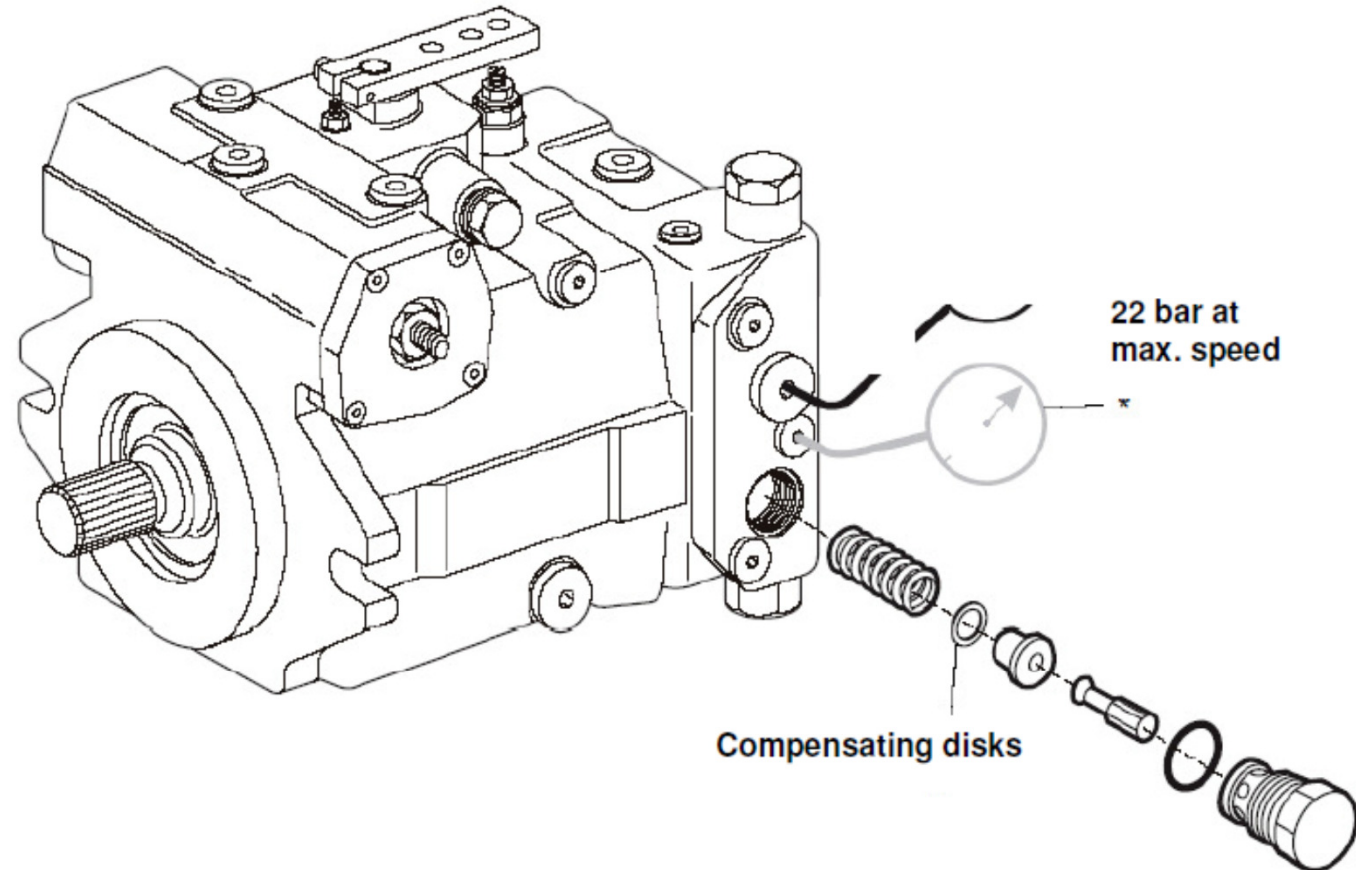


### 5.0.1 Hydraulic Drive

Feed pressure (supply pressure) adjustment

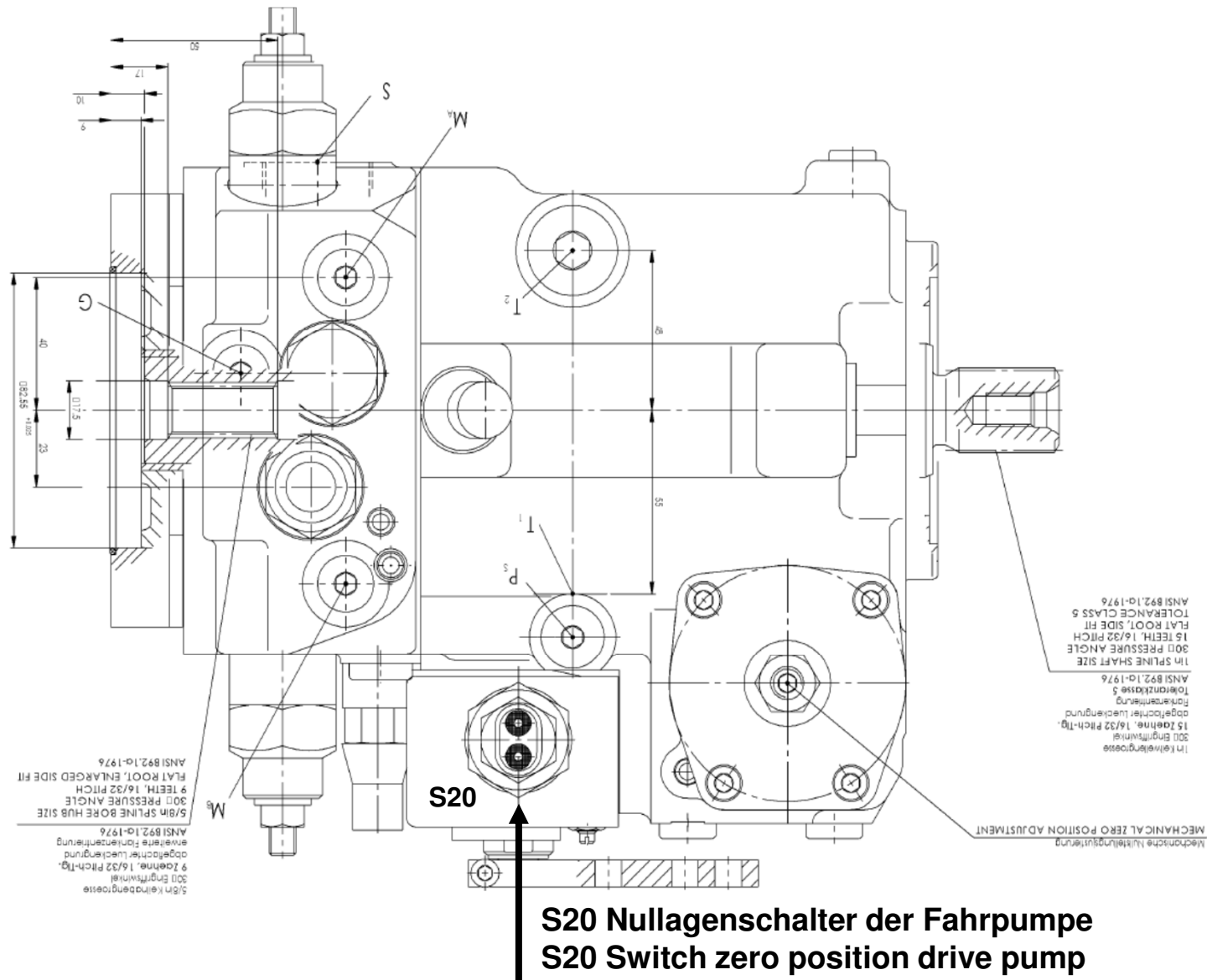
Comment:

Only check at operating temperature





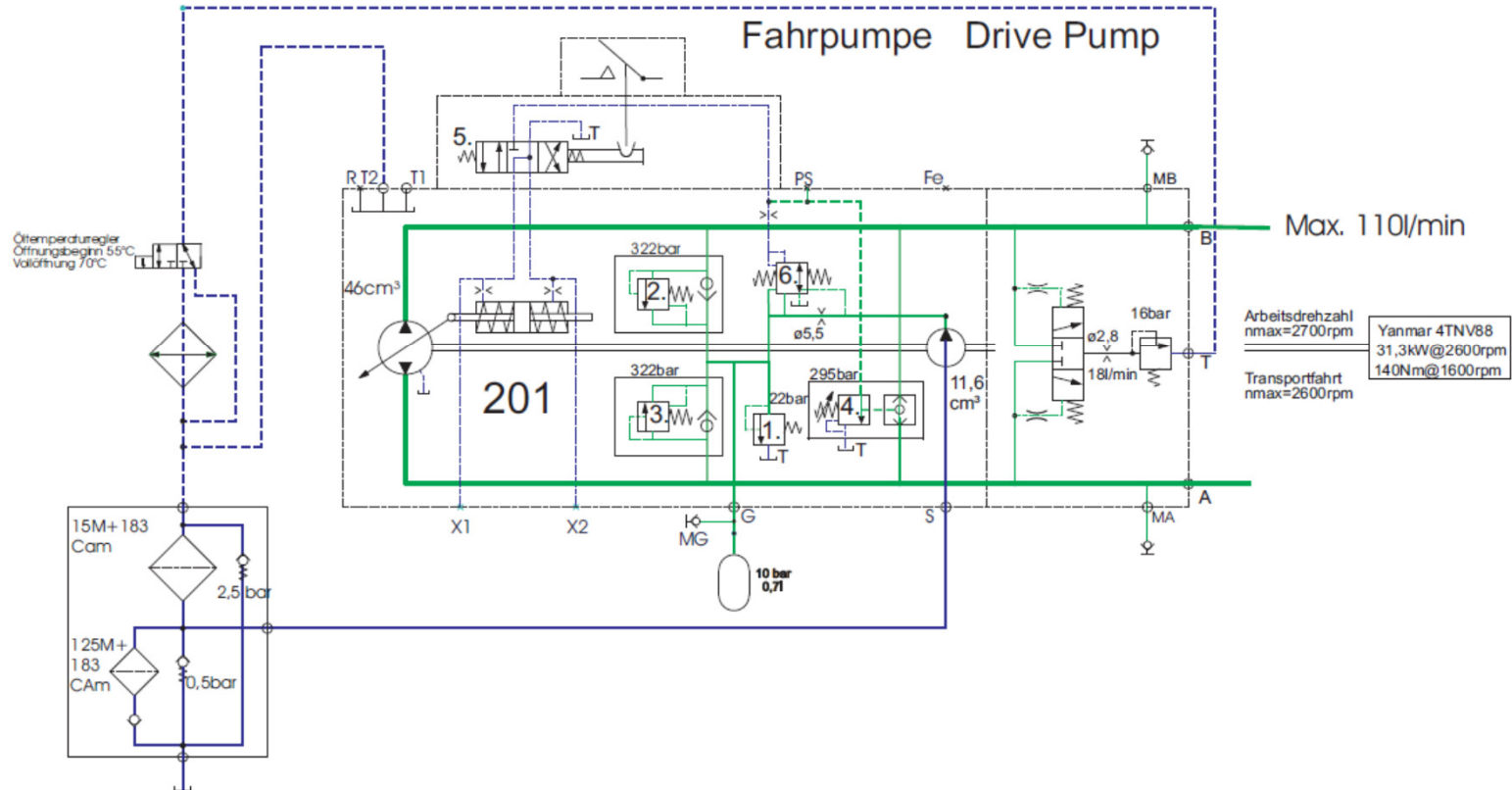
5.0.1 Hydraulic Drive



**S20 Nullagenschalter der Fahrpumpe**  
**S20 Switch zero position drive pump**

### 5.0.1 Hydraulic Drive

Fahrpumpe (Hydrostat) CM 1250 Drive Pump (Hydrostat) CM 1250



201 Fahrpumpe - 201 Drive pump

1. Speisedruckventil max. 22 bar
1. Supply pressure valve (feed pressure) max. 22bar
2. Druckbegrenzungsventil Fahrpumpe vorwärts, max 322 bar
2. Pressure relief valve, drive pump forward, max 322 bar
3. Druckbegrenzungsventil Fahrpumpe rückwärts, max 322 bar
3. Pressure relief valve, drive pump reverse, max. 322 bar
4. Druckabschneidung
4. Pressure cut off valve, max 295 bar
5. Ventil vorwärts- rückwärts
5. Valve forward- reverse
6. Anfahrpatrone
6. Starting cartridge

Funktion: Fahrpumpe in Nullstellung,  
Maschine im Stillstand

Function: Drive pump in zero position,  
machine stops

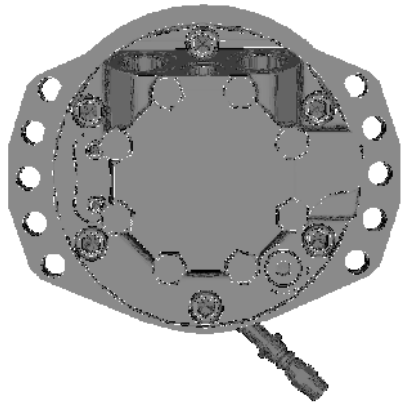
Farbcodes/ Coulor codes

- █ Speisedruck Fahrpumpe
- Supply pressure drive pump
- █ Saugseite/ Rücklaufleitung z. Tank
- Suction side/ backflow to tank
- █ Hochdruckseite Fahrpumpe
- High pressure side drive pump

Fahrtrieb CM 1250

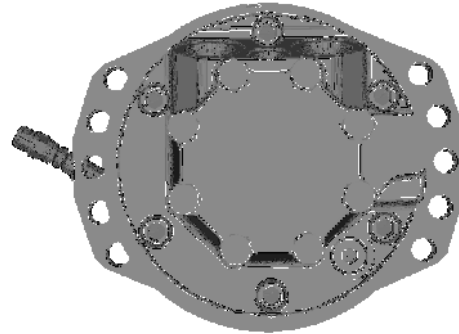
5.0.1 Hydraulic Drive  
 Fahrmotor - Drive- Motor, Bosch- Rexroth Typ MRC 3, 225 ccm

Hako Motor Information															
BR Ident. No.	Hako Ident No.	Installation Drawing No.	GA Drawing No.	Motor Description Code											
R921811114	90599853	DO71654	8744	MCR3	F	225	F180	Z	32	C2L	M	1L	12	S - P0	SO389B
R921811115	90599861	DO71657	8785	MCR3	F	225	F180	Z	32	C2R	M	1L	12	S - -	SO389C
R921811116	90599762	DO71653	8743	MCR3	F	225	F180	Z	32	C2L	M	1L	12	S - -	SO389D
R921811117	90599770	DO71656	8786	MCR3	F	225	F180	Z	32	C2R	M	1L	12	S - -	SO389E



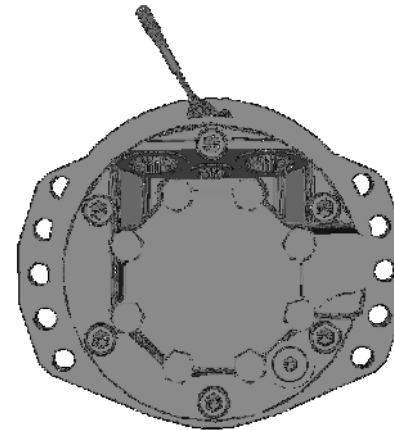
Radmotor vorne links  
 Wheel motor front axle L-H

Part Number  
 01167030



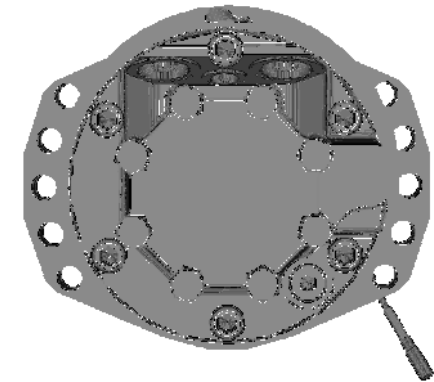
Radmotor vorne rechts  
 Wheel motor front axle R-H

Part Number  
 01167110



Radmotor hinten links  
 Wheel motor rear axle L-H

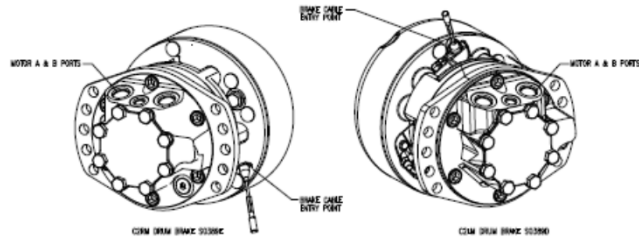
Part Number  
 01167200



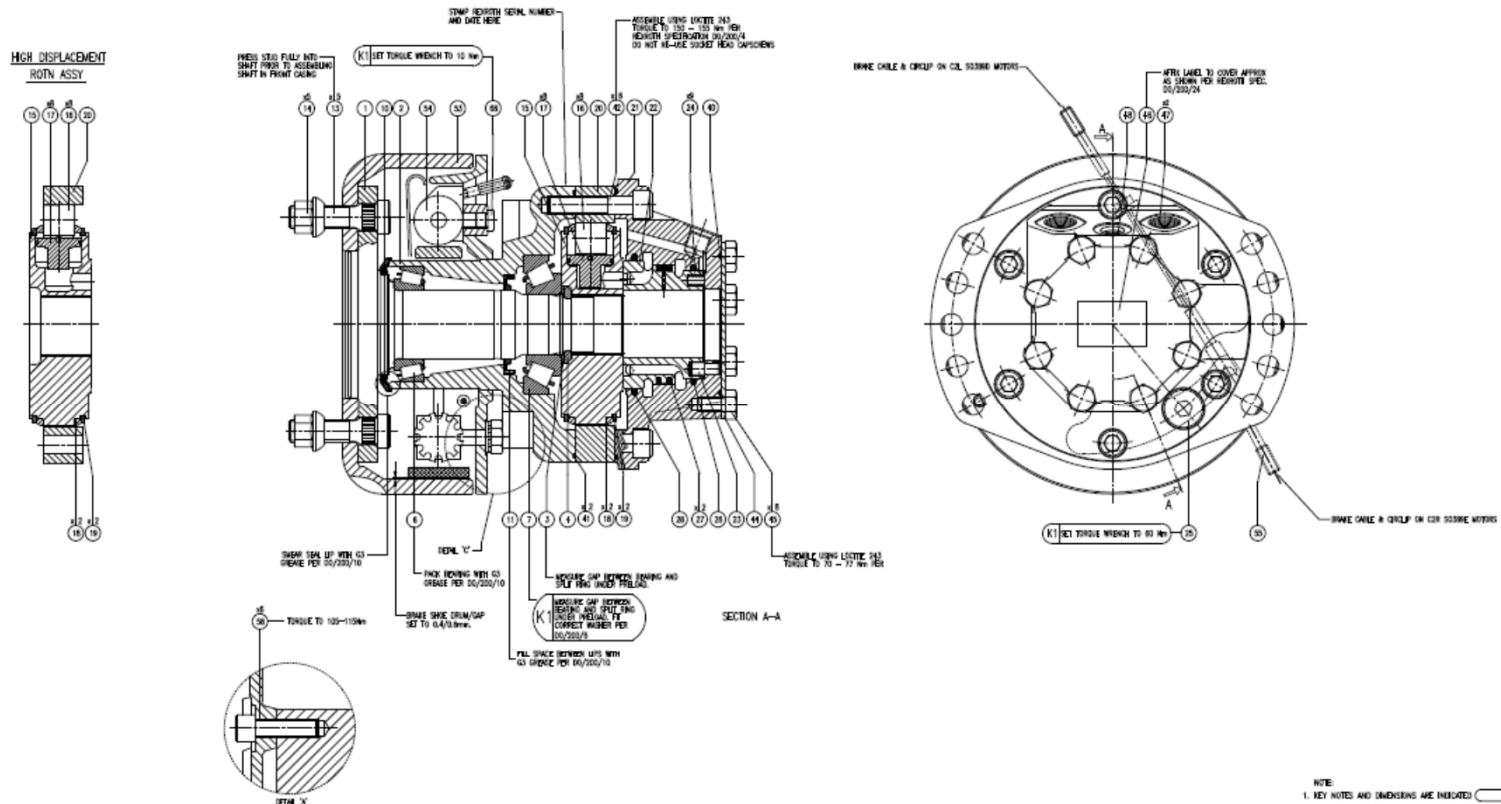
Radmotor hinten rechts  
 Wheel motor rear axle R-H

Part Number  
 01167290

### 5.0.1 Hydraulic Drive Fahrmotor - Drive- Motor Bosch- Rexroth MRC 3. 225 ccm



PICTORIAL VIEW SHOWING  
DRUM BRAKE ORIENTATION



## 5.0.1 Hydraulic Drive

### Fahrmotor - Drive- Motor, Bosch- Rexroth MRC3, 225 ccm

MCR

- Pumpe A, B  
Pump A, B
- Tank B, A  
Tank B, A
- Steuerleitung X, Z  
Pilot line X, Z
- Leckleitung L  
Drain line L

**Motor mit Haltebremse**  
Motor with parking brake

**Motor mit schaltbarem Schluckvolumen**  
Motor with switchable displacement

**Anwendungen**

- Kompaktlader
- Stapler
- Walzen
- Landmaschinen
- Kommunalfahrzeuge
- Fördertechnik

**Applications**

- Skid steer loaders
- Fork lift trucks
- Road rollers
- Agricultural vehicles
- Municipal vehicles
- Conveyors

**Technische Daten**

- Max. Betriebsdruck 450 bar
- Max. Lecköldruck 10 bar
- Schluckvolumen 160 - 3000 cm<sup>3</sup>/U
- Schluckvolumen schaltbar
- Drehzahl 5 - 400 min<sup>-1</sup>
- Drehzahlerfassung
- Freilauf
- Halte- / Fahrbremse
- Spülventil

**Technical Data**

- Max. pressure 450 bar
- Max. leakage pressure 10 bar
- Displacement 160 - 3000 cm<sup>3</sup>/rev
- Switchable displacement
- Speed 5 - 400 min<sup>-1</sup>
- Speed sensor
- Free-wheeling
- Parking brake / Dynamic brake
- Flushing valve



## 5.0.1 Hydraulic Drive

### Drive pump description

The swash plate variable displacement pump feeds 0 – 110 l/min, continually adjustable, in both directions. When at high pressure, both outlets are set to 322 bar (Pos. 2 + 3)(pressure relief valve).

The integrated feed pump supplies a maximum of 30 l/min to compensate for oil leakage, to change a defined quantity of oil for cooling and for diverse control functions.

The feed pump draws oil from the tank via the suction return flow filter (Pos. 204) and feeds it to the non-return valves which are integrated in the pressure relief valves (Pos. 2 + 3). The maximum feed pressure is limited to 22 bar by the feed pressure valve (Pos.1). The non-return valve to which high pressure is not applied enables feed to the variable displacement pump circuit.

At the same time, the feed pressure is generated via the starting cartridge for the mechanical-hydraulic control units. Depending on the DA - regulating valve (pos.5), actuating the accelerator pedal causes the feed pressure to be supplied to the set piston which moves the hydraulic pump's pivoting disk in the required direction and angle (feed volume/driving speed).

If the pressure at the hydraulic motors meets with resistance (gradient/obstruction) which causes a pressure increase in excess of 290bar, the overpressure is relieved, by the pressure cut-off valve, to the tank. Cause of this, the pressure will be hold at 290bar. The function of the pressure cut-off valve is to limit the power of the pump (feed volume x pressure) to the maximum allowed value. The pressure relief valves (Pos. 2 + 3) are used for safety reasons. Normally they are never activ.

The set feed pressure is measured at measuring points G.

The set cut-off pressure is measured at measuring points MA and MB when the wheels are blocked.

To measure the relief valve pressure, the cut-off valve has to be set to a value over 325bar. Then the relief pressure can be measured at the points MA and MB.

**After this the pressure cut-off valve must be set back to 290bar!**

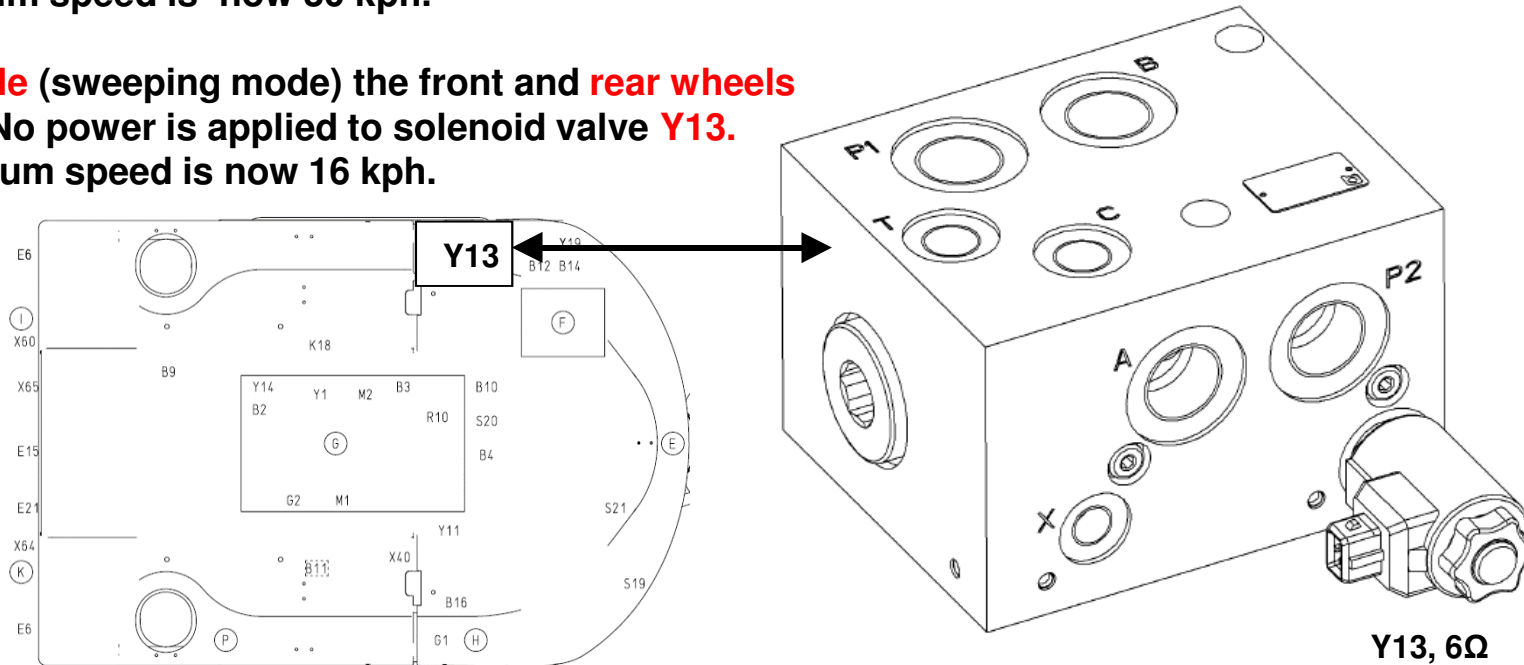
**The correct feed pressure is a basic condition for generating high pressure.**

### 5.0.1 Hydraulic Drive

**Y13 Solenoid valve (switching valve), front wheel drive (Transport mode) / all-wheel drive (Work mode)**

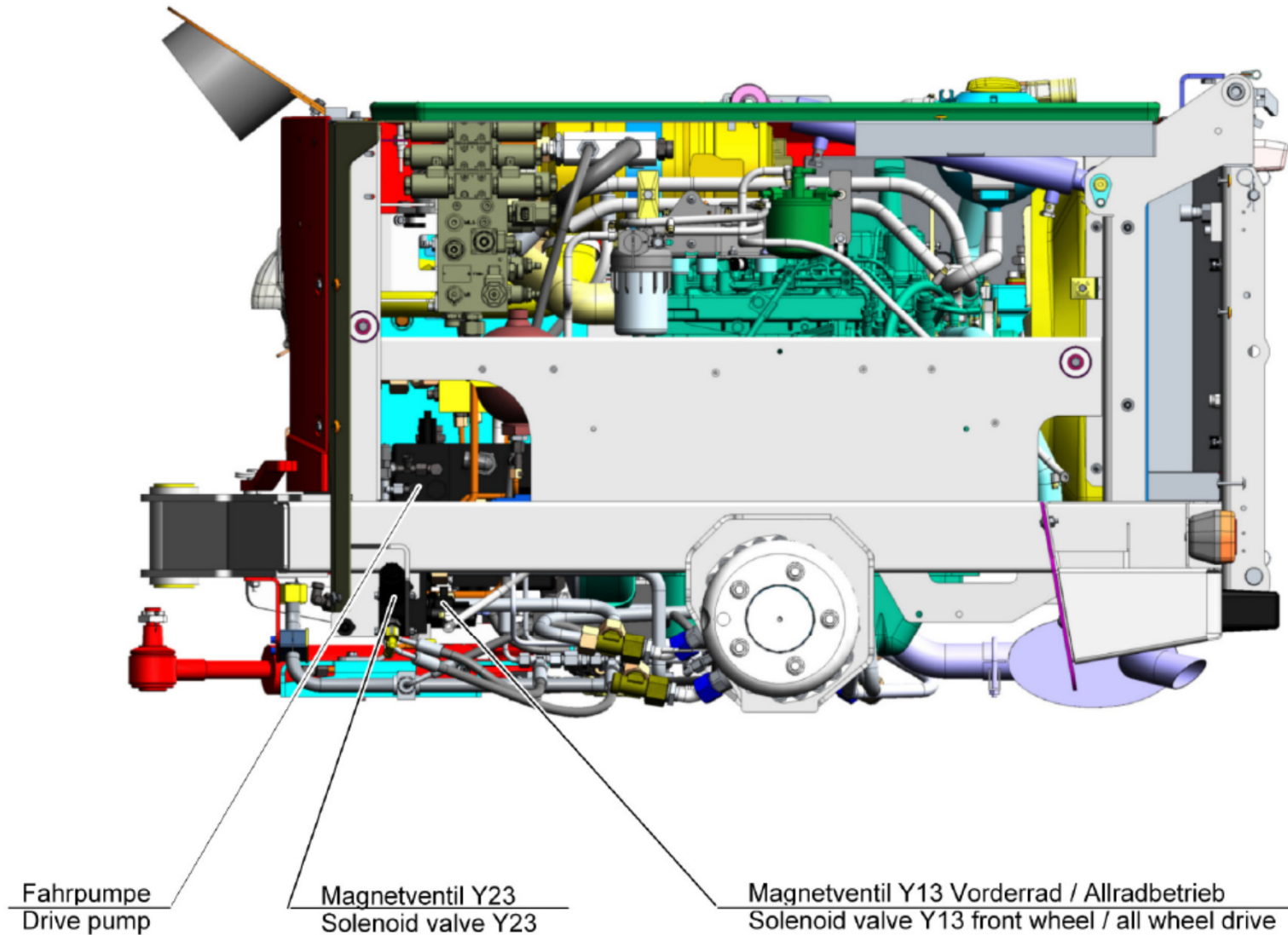
**In Transport mode, only the front wheels are driven.**  
**Power is applied to solenoid valve Y13.**  
**The maximum speed is now 30 kph.**

**In Work mode (sweeping mode) the front and rear wheels are driven. No power is applied to solenoid valve Y13.**  
**The maximum speed is now 16 kph.**



Messwerte Magnetventile Measurement values solenoid valves	Spannung (V) Voltage (V)	Stromstärke (A) Current flow (A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
Y13 Umschaltventil Vorderrad/ Allradantrieb 2/4 Y13 bestromt/ ein = 30km/h	12V	2000mA	6Ω
Y13 Solenoid valve 2 wheel / 4 wheel drive 2/4 Y13 powered/ on = 25 km/h	12V	2000mA	6Ω

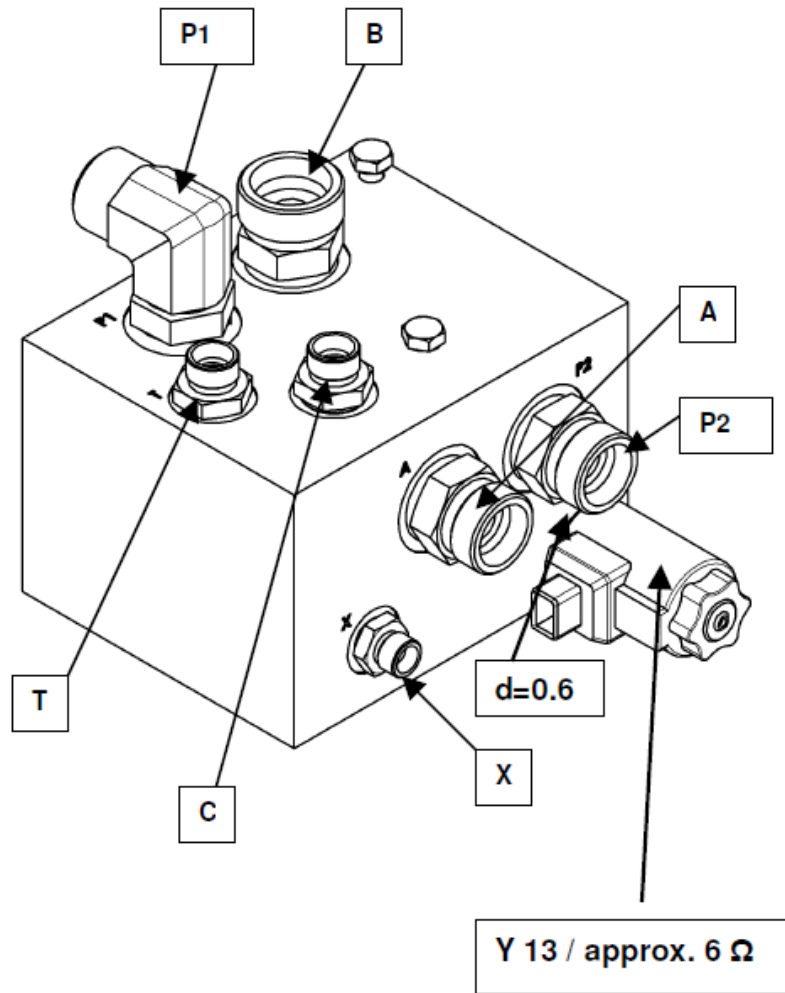
### 5.0.1 Hydraulic Drive



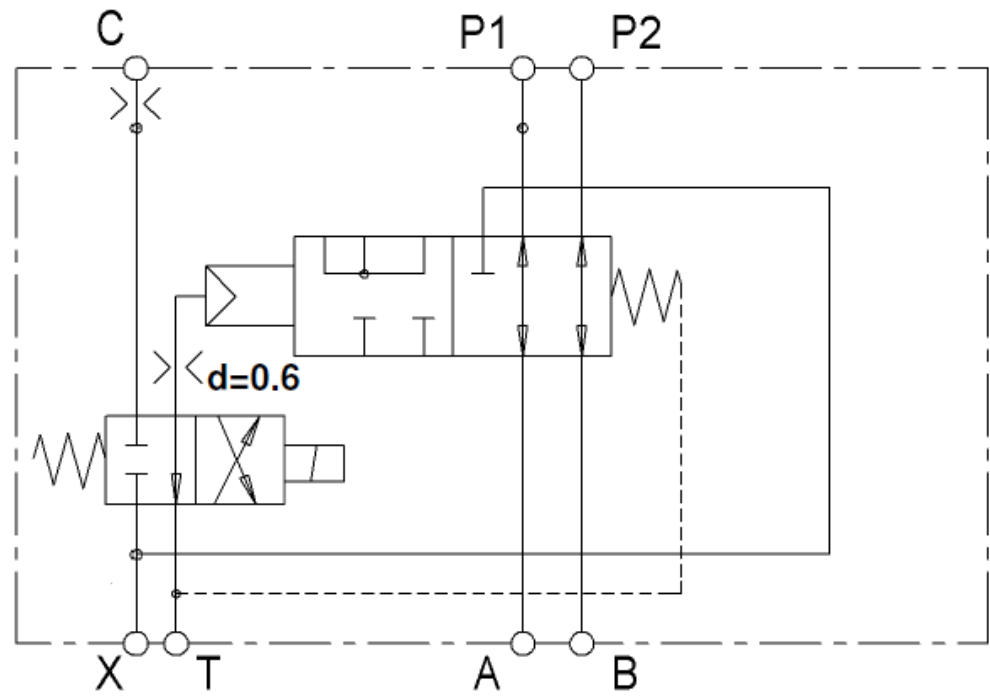


### 5.0.1 Hydraulic Drive

#### Function description, solenoid valve Y13



- A = Feed/Return flow from differential lock
- B = Return flow/Feed from the hydraulic pump
- P1 = Feed/Return flow from the hydraulic motor
- P2 = Return flow/Feed from the hydraulic motor
- X = Feed pressure
- T = Tank
- C = Outflow





## 5.0.1 Hydraulic Drive

### Function description, solenoid valve Y13

#### Switching valve four-wheel / front-wheel drive

##### **Possible faults**

Valve does not switch

##### **Possible causes**

No power at solenoid magnet (coil approx. 6  $\Omega$ )

Feed pressure too low or not provided

Aperture d = 0.6 blocked

Solenoid precontrol valve defect

Main control piston jam



## 5.0.1 Hydraulic Drive

### Function description, solenoid valve Y13

**Y13 solenoid (switching) valve, work mode. Y13 is not energized/ off.**

As it progresses, the volume flow from the shut-off unit (output A) to the rear wheel motors is applied to the switching valve (input A). When in an inactive state (Y13), the volume flow is feed to the rear wheel motors (all-wheel drive).

The two rear motors are connected in series so that the volume flow can be divided as required.

**The slower work mode results from distribution of the feed quantity to 4 wheel motors max. 16 kph).**

**Y13 solenoid (switching) valve transport mode.Y13 is energized/ on.**

When activated (**Y13 energised**), the solenoid valve switches the feed pressure to the distributing valve and activates it hydraulically. When at this switch setting (drive on roads), the distributing valve connects the feed side with the outflow side and the feed pressure. At the same time, a connection from the outflow side of the motors (C), used to exchange the warmed oil, is established to the tank via an aperture. The feed (A) to the switching terminal is blocked so that the oil quantity supplied by the pump only needs to be distributed **to the two front motors.**

**This results in the faster transport mode (30 kph)**

### 5.0.1 Hydraulic Drive

#### Function diagram, front wheel drive (Transport mode) solenoid valve Y13 power on, max. 30 kph

Fahrtrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

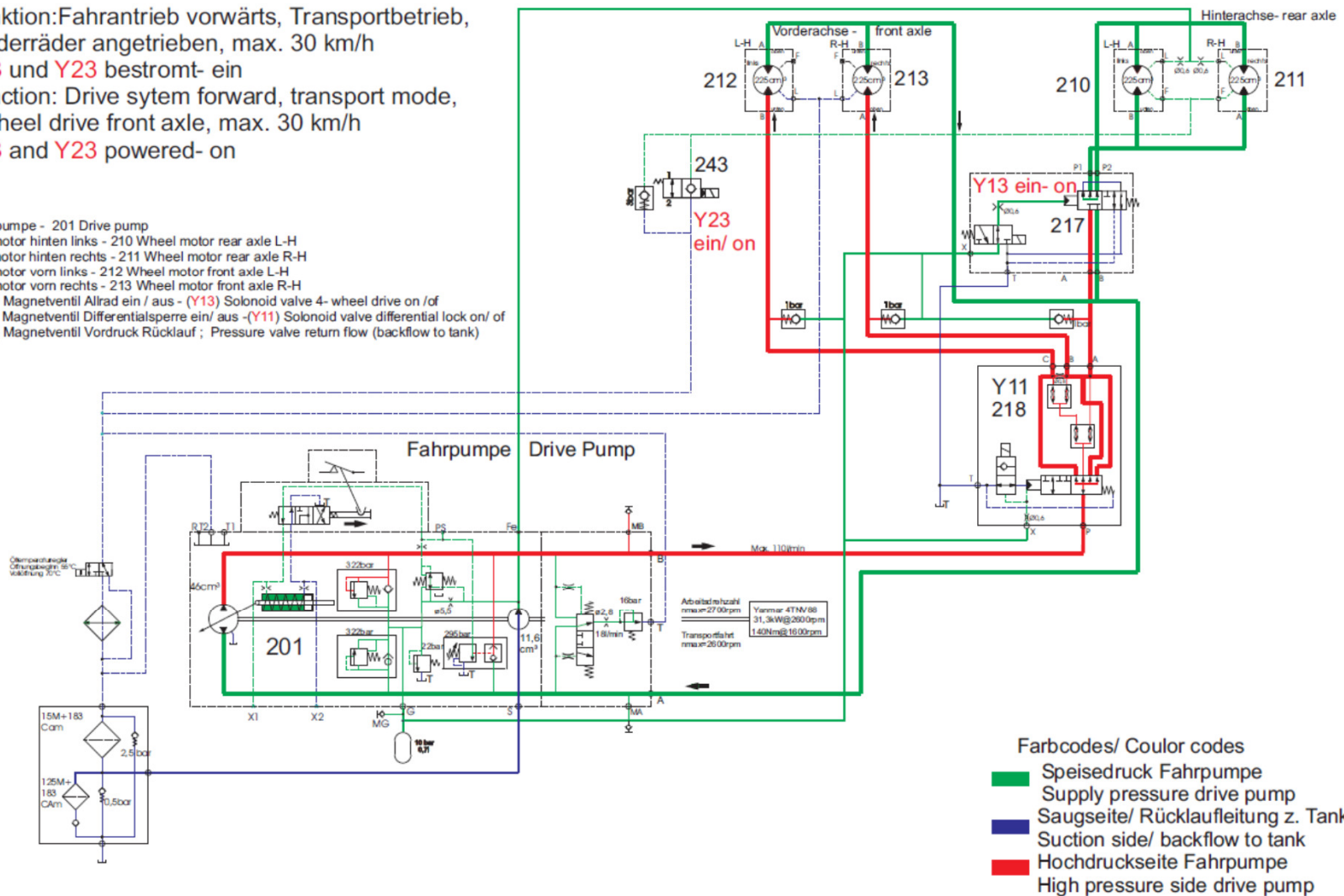
Funktion: Fahrtrieb vorwärts, Transportbetrieb, Vorderräder angetrieben, max. 30 km/h

Y13 und Y23 bestromt- ein

Function: Drive system forward, transport mode, 2 wheel drive front axle, max. 30 km/h

Y13 and Y23 powered- on

- 201 Fahrpumpe - 201 Drive pump
- 210 Radmotor hinten links - 210 Wheel motor rear axle L-H
- 211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
- 212 Radmotor vorn links - 212 Wheel motor front axle L-H
- 213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
- 217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solenoid valve 4-wheel drive on / off
- 218 (Y11) Magnetventil Differentialsperre ein / aus - (Y11) Solenoid valve differential lock on / off
- 243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)



- Farbcodes/ Coulor codes
- █ Speisedruck Fahrpumpe  
Supply pressure drive pump
  - █ Saugseite/ Rücklaufleitung z. Tank  
Suction side/ backflow to tank
  - █ Hochdruckseite Fahrpumpe  
High pressure side drive pump

Fahrtrieb CM 1250

### 5.0.1 Hydraulic Drive

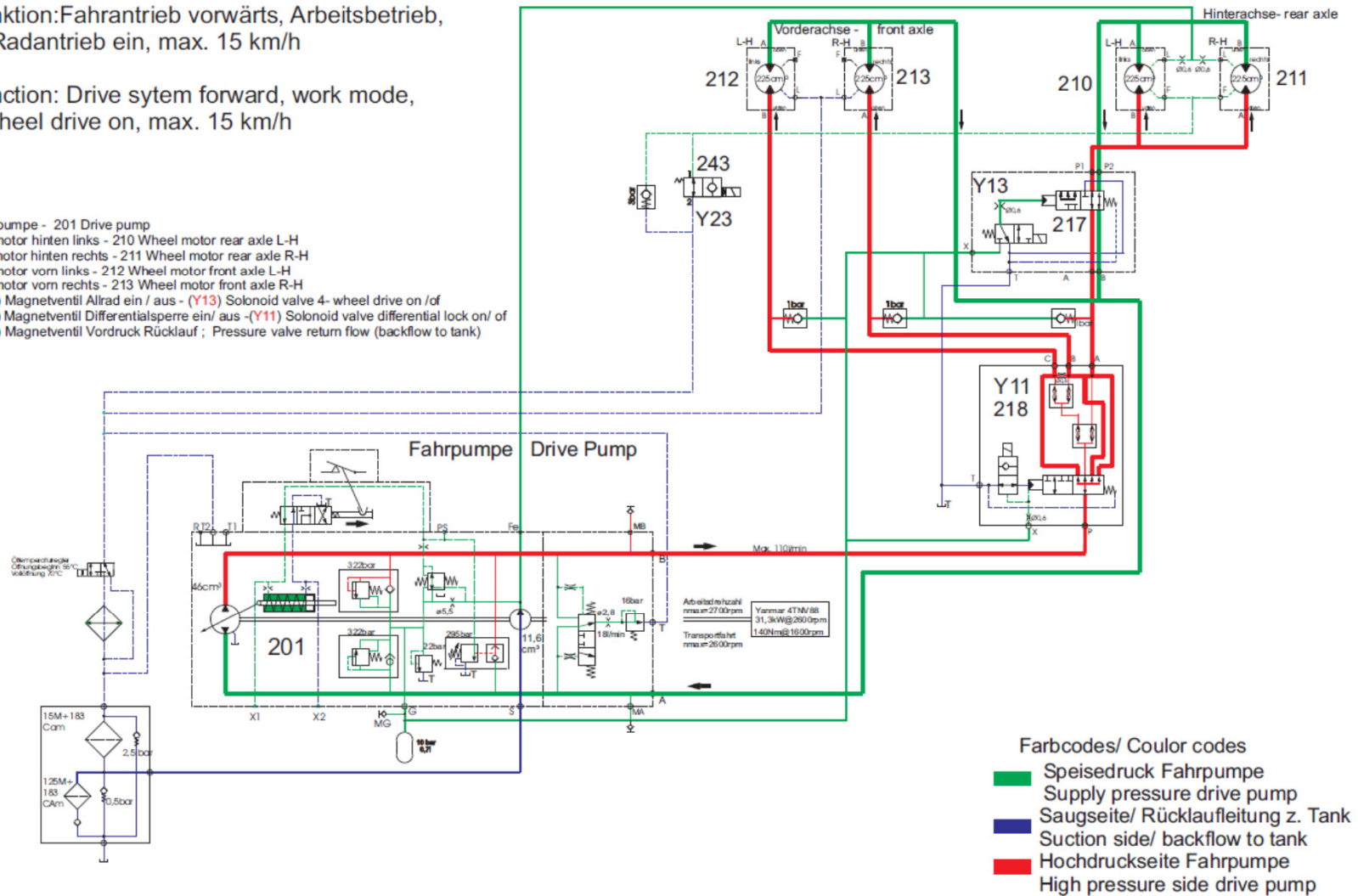
#### Function diagram, all-wheel drive (Work mode) solenoid valve Y13 power off , max. 16 kph

Fahrtrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion: Fahrtrieb vorwärts, Arbeitsbetrieb,  
4- Radantrieb ein, max. 15 km/h

Function: Drive sytem forward, work mode,  
4 wheel drive on, max. 15 km/h

- 201 Fahrpumpe - 201 Drive pump
- 210 Radmotor hinten links - 210 Wheel motor rear axle L-H
- 211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
- 212 Radmotor vorn links - 212 Wheel motor front axle L-H
- 213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
- 217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solenoid valve 4- wheel drive on / of
- 218 (Y11) Magnetventil Differentialsperre ein/ aus - (Y11) Solenoid valve differential lock on/ of
- 243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)

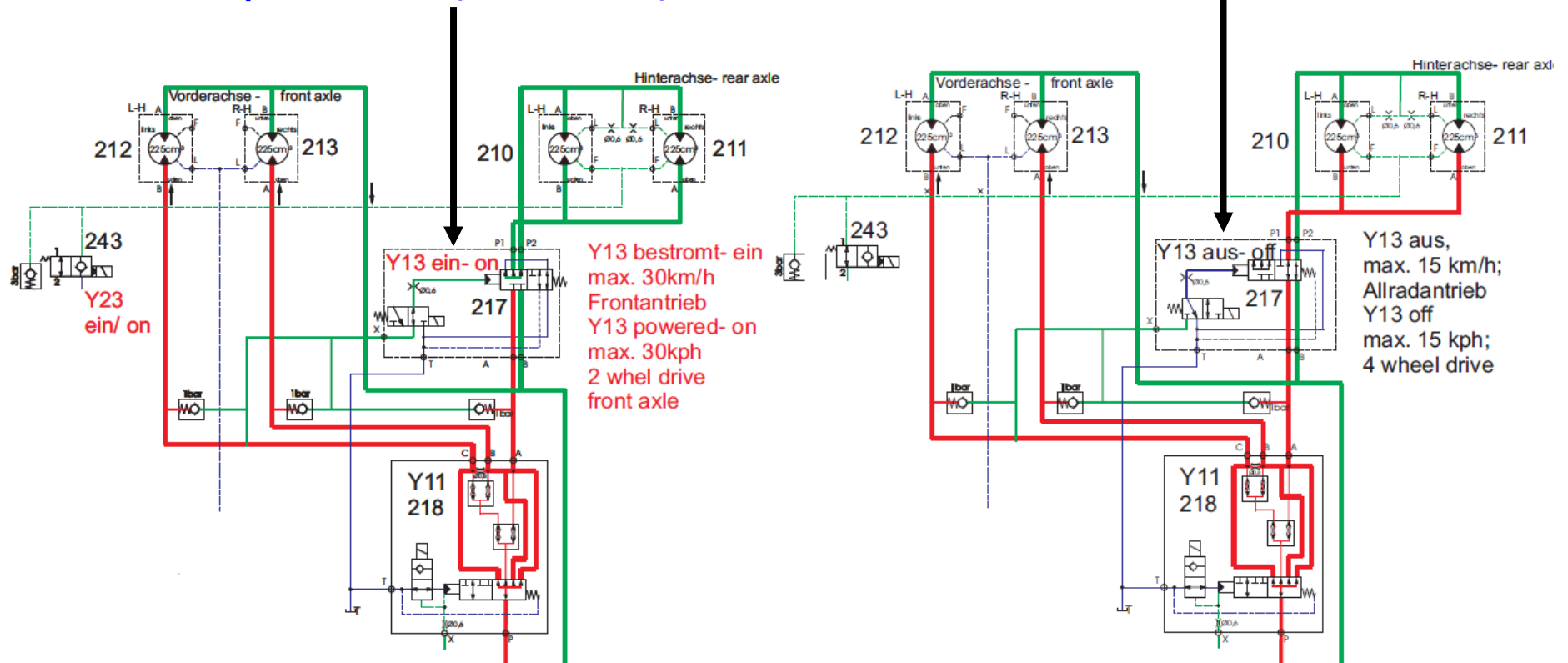


Fahrtrieb CM 1250

### 5.0.1 Hydraulic Drive

**2 wheel drive (Transport Mode)  
Y13 powered – on (12V, 2000 mA).**

**4 wheel drive (Work Mode)  
Y13 off.**





## 5.0.1 Hydraulic Drive

**Fault: vehicle does not run or only runs slowly!**

1. Is the bypass valve closed (in towing position)? Solution: close bypass valve.
2. The vehicle only reached 15 kph in Transport mode. Solution: check solenoid valve Y13. Solenoid valve Y13 must be set to power on to reach 30 kph. For details, refer to Page19.
3. Check the engine speed of engine. If engine speed is not reached, check the air filter and fuel filter for soiling; change the filter, if necessary.
4. Check the hydraulic pump Bowden cables. Is the hydraulic pump fully disengaged mechanically?
5. Hydraulic oil pressure is too low. Solution: check the hydraulic oil pressure on the hydraulic pump.  
Check the following:
  - Switch the vehicle on in Transport mode.
  - Apply the hand brake and actuate the foot brake.
  - Check the hydraulic oil pressure on the hydraulic pump; forwards approx. 295 bar, feed pressure (supply pressure) approx. 22 bar.

**If the hydraulic oil pressure is correct, repeat the checks in Work mode (4-wheel drive)!**

- If the required hydraulic oil pressure is not reached, jack up the vehicle and check the quantity of leakage oil from the hydraulic motors. When the vehicle is jacked up, approx. 0,2L/Min leakage oil per axle (2 wheel motor) should accumulate.

**If the quantity of leakage oil is too high, the wheel motors must be changed in pairs (per axle)!**



### 5.0.1 Hydraulic Drive

**Fault: vehicle does not run or only runs slowly!**

If the quantity of leakage oil at the wheel motors is not too high, close the hydraulic pump outputs and check the hydraulic oil pressure at the hydraulic pump.

Check the hydraulic oil pressure on the hydraulic pump; forwards approx. 295 bar, feed pressure approx. 22 bar.

If the hydraulic oil pressures required are still not achieved, replace the hydraulic pump.

**Attention:**  
**Complete all the necessary measurements when the hydraulic oil is warm (50°C)!**

leakage oil  
 Wheel motor



		MCR3 . 225						
Differenz- druck $\Delta p$ (bar)	Drehzahl n	min <sup>-1</sup>	0	25	50	100	150	200
100	T	Nm	186	319	326	326	322	319
	qv	l/min	0.32	5.95	11.57	22.82	34.07	45.32
	qvL	l/min	0.09	0.09	0.09	0.09	0.09	0.09
200	T	Nm	430	652	659	659	652	650
	qv	l/min	0.65	6.27	11.90	23.15	34.40	45.65
	qvL	l/min	0.18	0.18	0.18	0.18	0.18	0.18





## 5.0.1 Hydraulic Drive

### **Fault: Final speed of 30 kph not reached in transport mode**

#### **Possible cause:**

- 1. The bypass valve for towing mode is not closed (in towing position).**
- 2. The fuel filter is clogged, the engine speed is not reached.**
- 3. The air filter from the engine is clogged, the maximum engine speed is not reached.**
- 4. The solenoid valve Y13 is not powered.**
- 5. . Y13 does not switch mechanically. Valve Y13 is sticking or jammed.■**

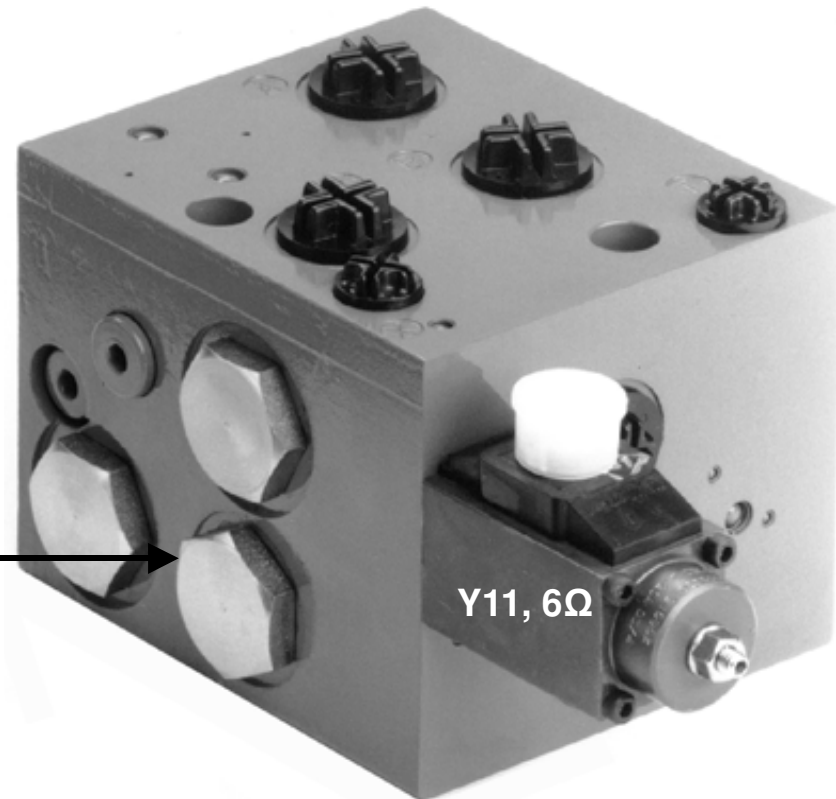
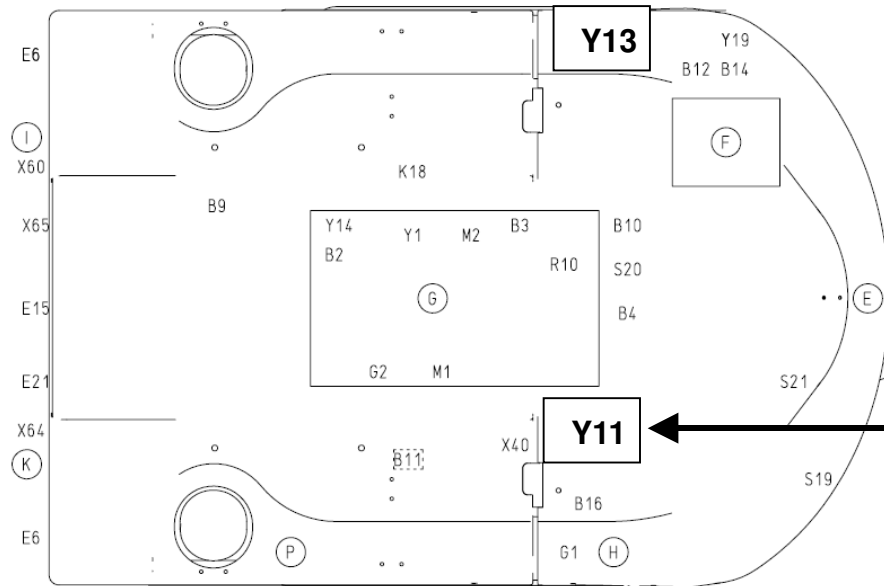
#### **Solution:**

- 1. Close the bypass valve for towing mode.**
- 2. Check the engine rpm, check the fuel filter and replace if required.**
- 3. Check the engine rpm, check the air filter from the engine and replace if required.**
- 4. Set the hand thottle in the transport position. Check the fuses F6 and F13 and the relay K6. Check the power supply from Y13 with solenoid test box.**
- 5. If there is no electrical fault at the solenoid valve Y13, (see point 4), dismantle Y13 and clean it; in the case of mechanically defective parts, change the valve.■**

### 5.0.1 Hydraulic Drive

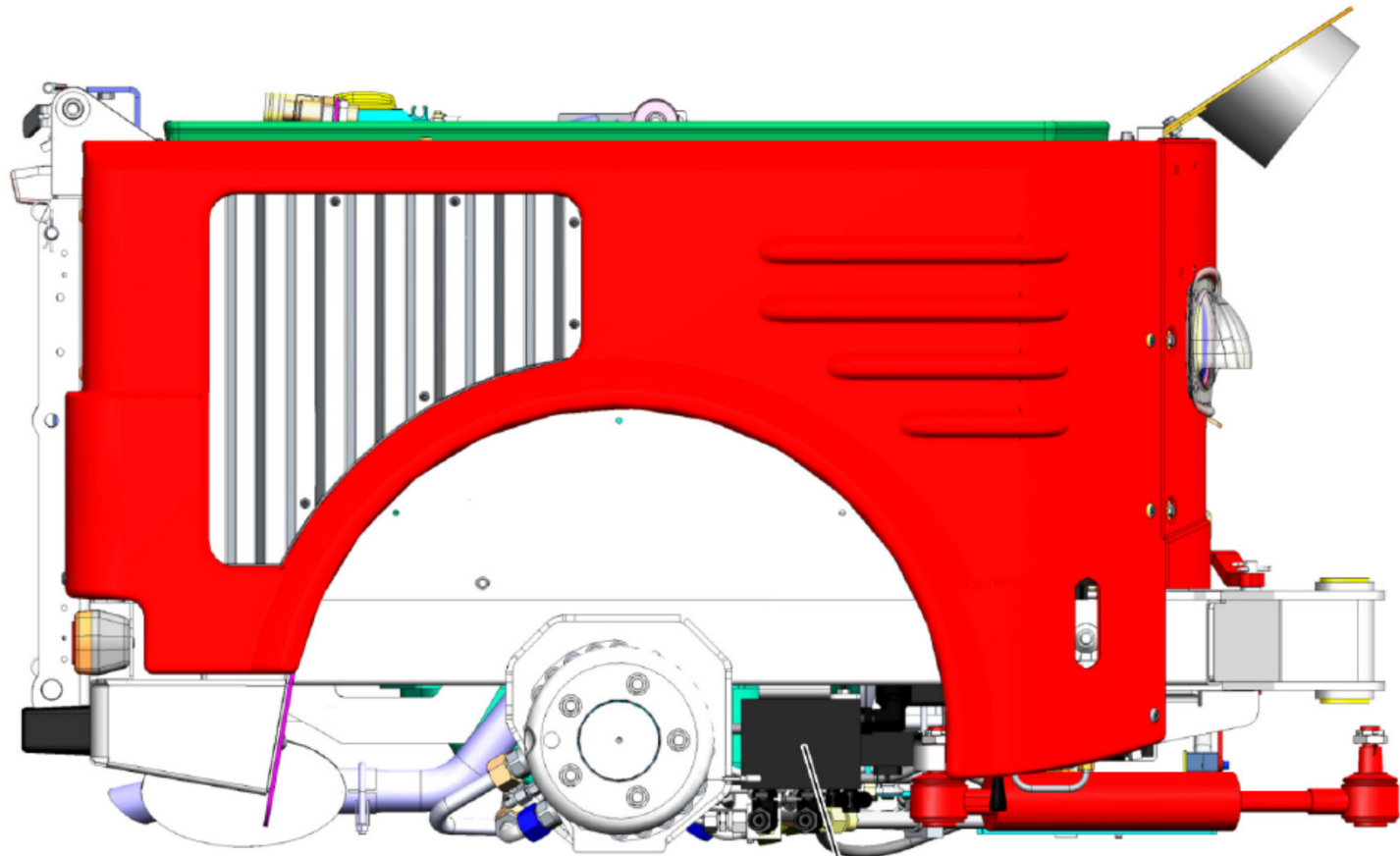
#### Y11 Solenoid valve, differential lock (option)

The differential lock is activated when power is applied to the solenoid valve **Y11**



	Beschreibung- Description	Spannung (V) Voltage (V)	Stromstärke (A) Current flow ( A)	Widerstand der Spule (Ω) Resistance of the coil (Ω)
<b>Y11</b>	Hydraulikventil Differentialsperreein (Opt.) Hydraulic valve differential lock on (Option)	12V	2000mA	6Ω

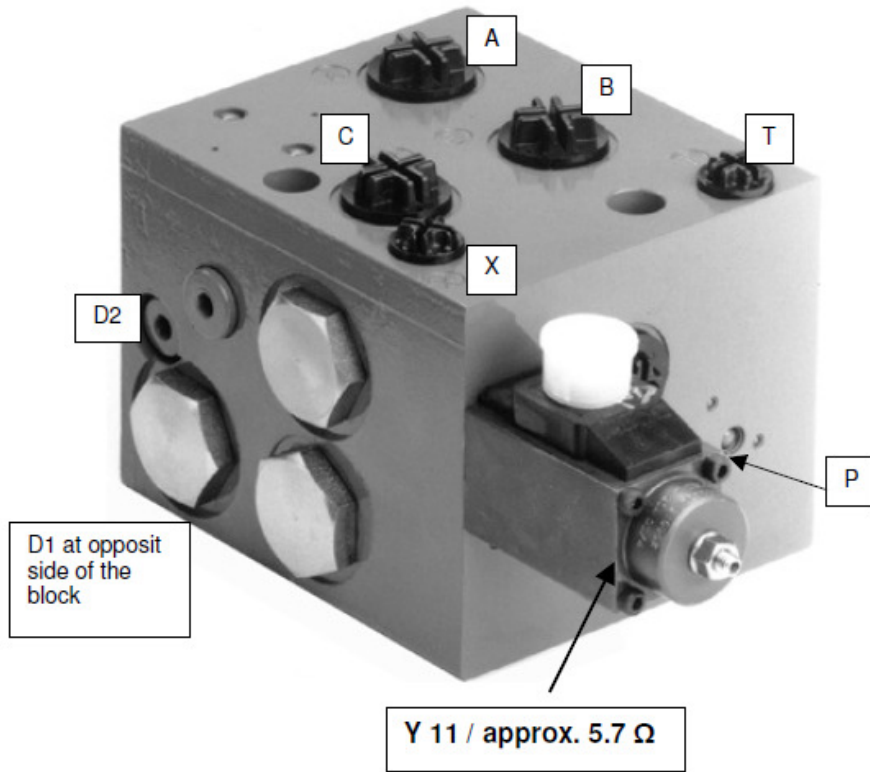
### 5.0.1 Hydraulic Drive



Magnetventil Y11 Differentialsperre  
Solenoid valve Y11 differential lock

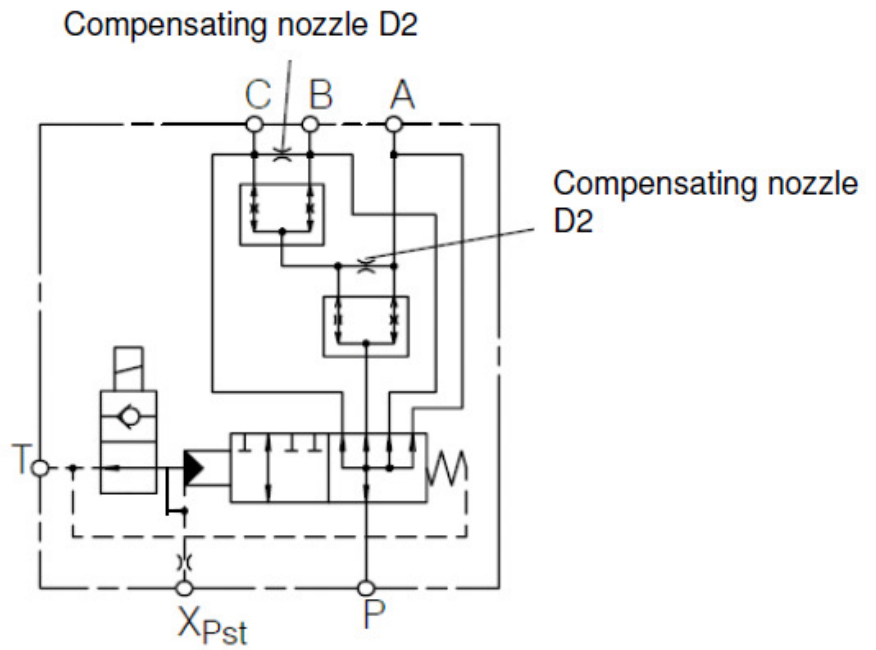
### 5.0.1 Hydraulic Drive

#### Solenoid valve Y11, differential lock



D1 at opposit side of the block

Y 11 / approx. 5.7 Ω





5.0.1 Hydraulic Drive  
Solenoid valve Y11, differential lock

**Y11 Differential locking valve**

**Possible faults**

Diff. locking valve does not switch on

Valve switches – pump is pressurised

**Possible causes**

No power at the solenoid (coil: approx. 5.7  $\Omega$  )

Feed pressure too low or not provided

Aperture in connection X is blocked

Series piston jams

O–ring on series piston is defect

Consumer is blocked (wheel stands still)

Divider piston jammed

Aperture bore in divider piston blocked



## 5.0.1 Hydraulic Drive

### Function description, solenoid valve Y11 differential lock

#### Y11 Differential locking valve

The volume flow supplied from the hydraulic pump for forward drive is fed to the differential locking valve (P) (Pos. 216). When (Y11) is not in its active state, it is possible to bypass the current divider and distribute the current to the wheel motors (A,B,C) as required.

#### Comment:

It is only possible to activate the differential lock valve (Y11 energized) in “work ride / four-wheel” mode.

If the differential locking valve is activated (Y11 energized), the solenoid valve interrupts the outflow of the feed pressure to the tank and the distributing valve is actuated hydraulically.

The differential locking valve is basically comprised of two double-action current dividers, (dividing and accumulating) and a distributing valve to optionally bypass the current divider.

When activated, the hydromotors are automatically switched parallel and the three outputs of the current divider are supplied with a load-independent component current, according to the proportions selected.

This ensures that, in the event of unfavourable ground conditions, the maximum pump pressure is applied at the blocked wheel.

Two compensation nozzles, arranged between the outputs A, B and C enable a certain partial compensation and prevent the wheels distorting.

#### Part distribution:

A: 50% drive, rear-wheel

B: 25% drive, front right

B: 25% drive, front left

### 5.0.1 Hydraulic Drive

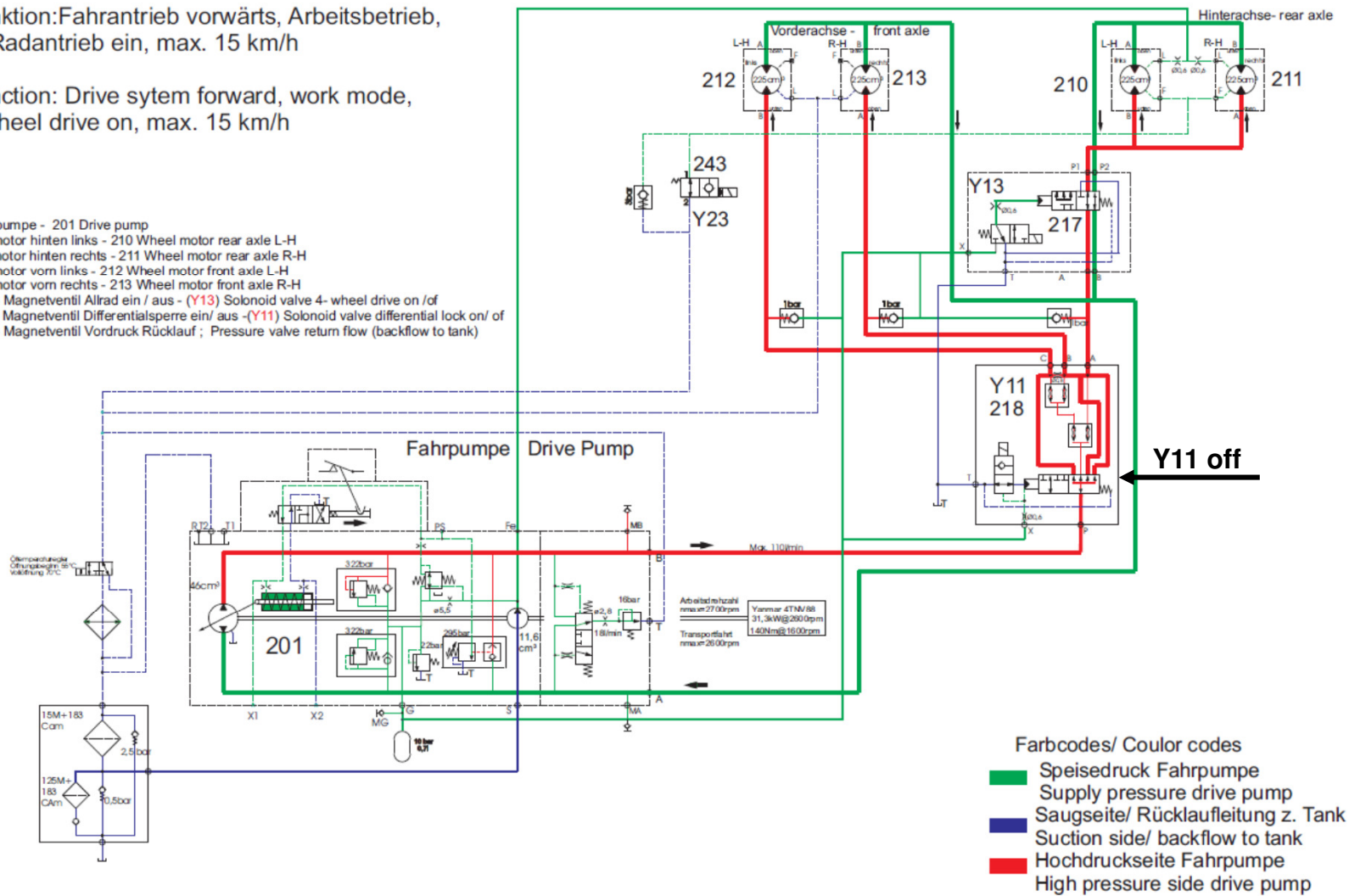
#### Differential lock switched off, solenoid valve differential lock Y11 power off

Fahrtrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion: Fahrtrieb vorwärts, Arbeitsbetrieb,  
4- Radantrieb ein, max. 15 km/h

Function: Drive sytem forward, work mode,  
4 wheel drive on, max. 15 km/h

- 201 Fahrpumpe - 201 Drive pump
- 210 Radmotor hinten links - 210 Wheel motor rear axle L-H
- 211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
- 212 Radmotor vorn links - 212 Wheel motor front axle L-H
- 213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
- 217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solenoid valve 4-wheel drive on / of
- 218 (Y11) Magnetventil Differentialsperre ein/ aus -(Y11) Solenoid valve differential lock on/ of
- 243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)



Fahrtrieb CM 1250

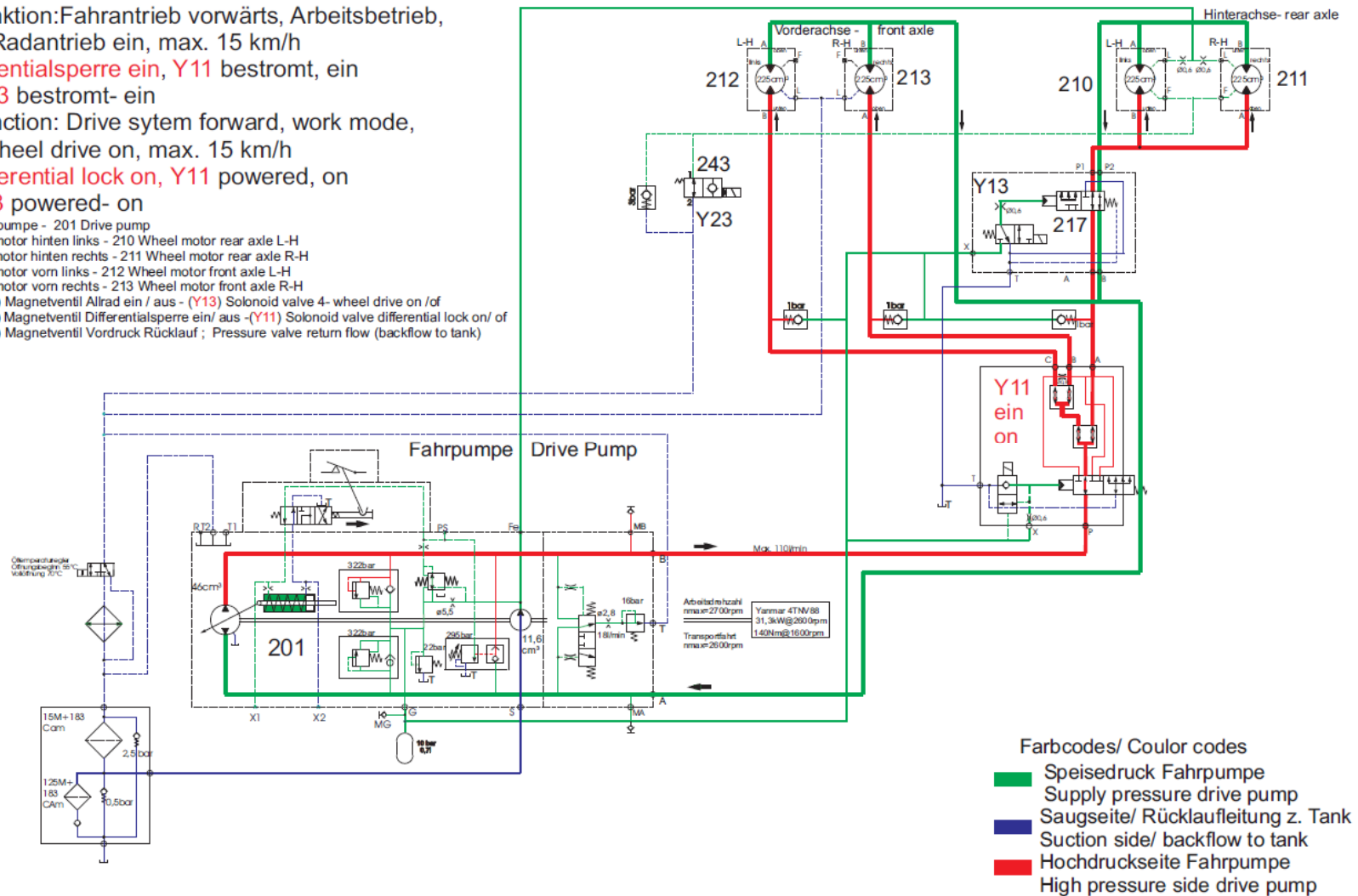
### 5.0.1 Hydraulic Drive

#### Differential lock switched on, solenoid valve differential lock Y11 power on

Fahrtrieb (Hydrostat) CM 1250 Drive System (Hydrostat) CM 1250

Funktion: Fahrtrieb vorwärts, Arbeitsbetrieb,  
 4- Radantrieb ein, max. 15 km/h  
 Differentialsperre ein, Y11 bestromt, ein  
 Y23 bestromt- ein  
 Function: Drive sytem forward, work mode,  
 4 wheel drive on, max. 15 km/h  
 Differential lock on, Y11 powered, on  
 Y23 powered- on

- 201 Fahrpumpe - 201 Drive pump
- 210 Radmotor hinten links - 210 Wheel motor rear axle L-H
- 211 Radmotor hinten rechts - 211 Wheel motor rear axle R-H
- 212 Radmotor vorn links - 212 Wheel motor front axle L-H
- 213 Radmotor vorn rechts - 213 Wheel motor front axle R-H
- 217 (Y13) Magnetventil Allrad ein / aus - (Y13) Solenoid valve 4- wheel drive on / of
- 218 (Y11) Magnetventil Differentialsperre ein/ aus - (Y11) Solenoid valve differential lock on/ of
- 243 (Y23) Magnetventil Vordruck Rücklauf ; Pressure valve return flow (backflow to tank)



Fahrtrieb CM 1250

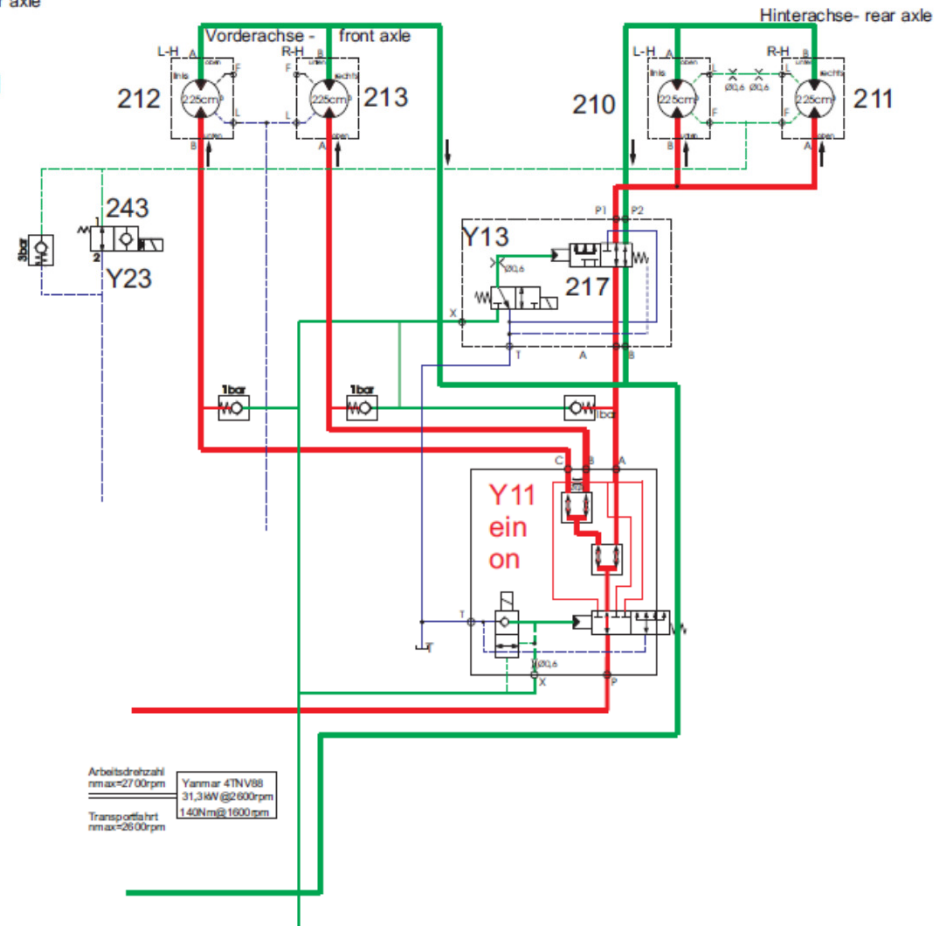
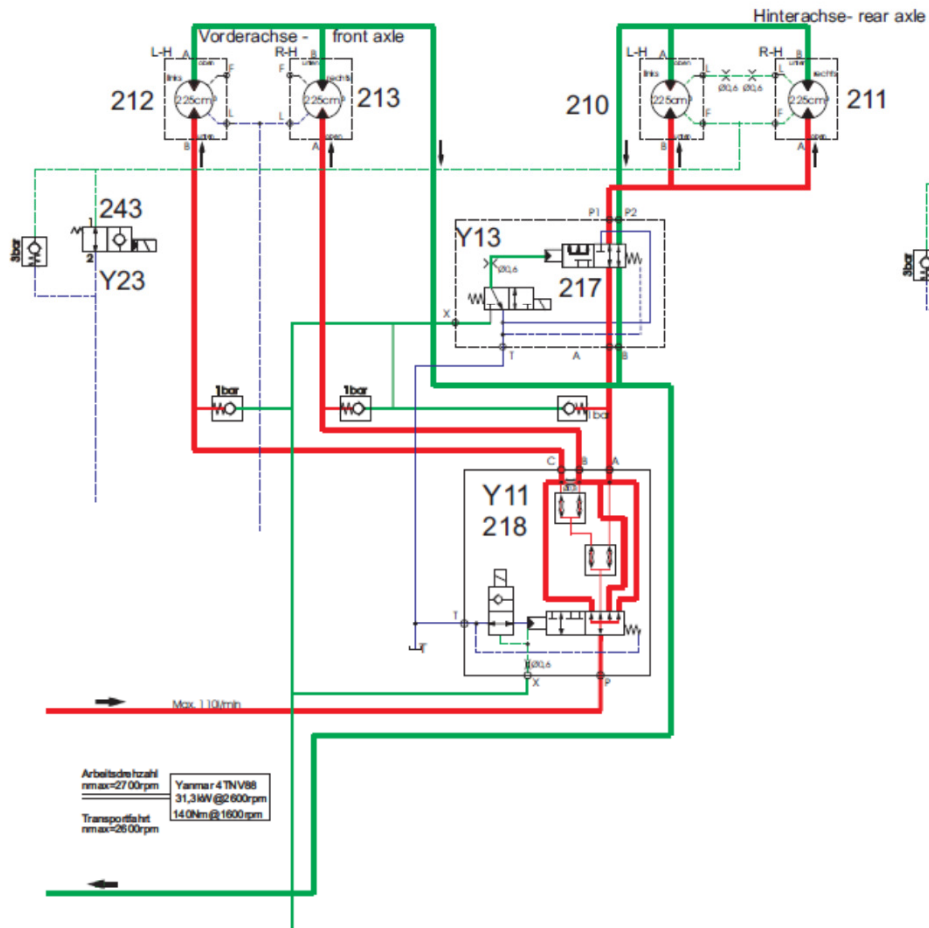


### 5.0.1 Hydraulic Drive



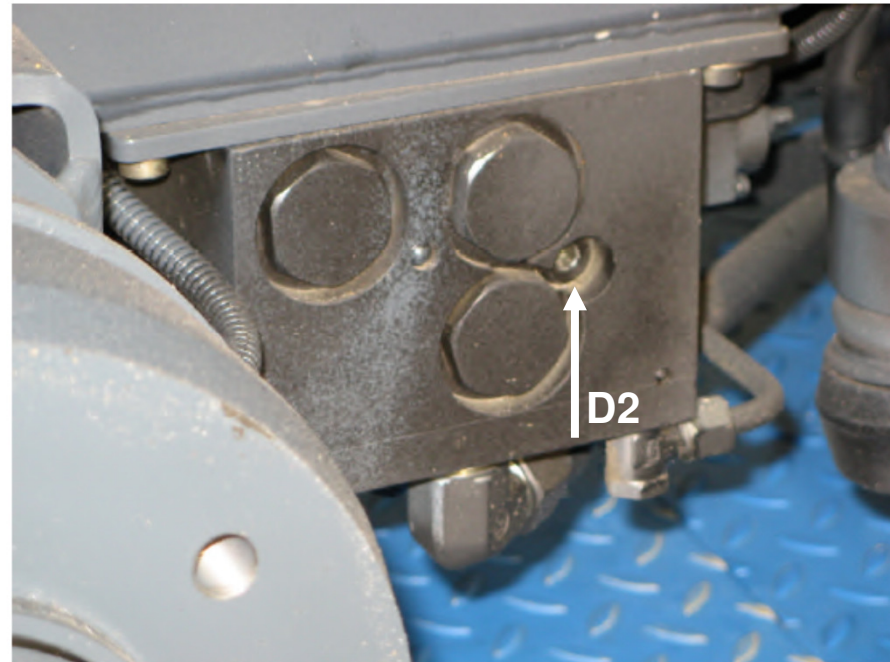
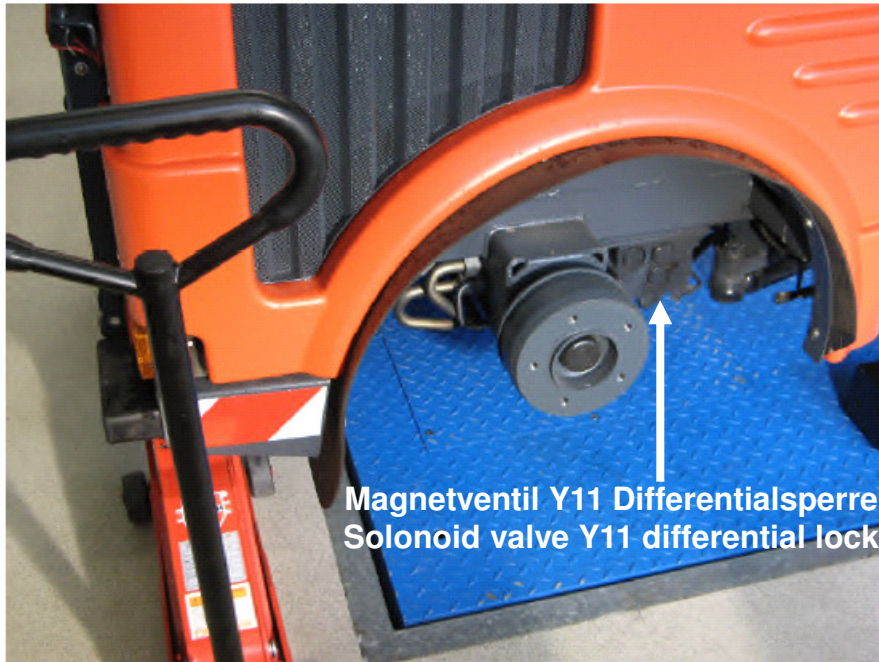
Differential lock switched off,  
solenoid valve differential lock Y11  
power off.

Differential lock switched on,  
solenoid valve differential lock Y11  
power on. (12V, 2000 mA, coil 6 Ohm)



5.0.1 Hydraulic Drive  
Solenoid valve Y11, differential lock

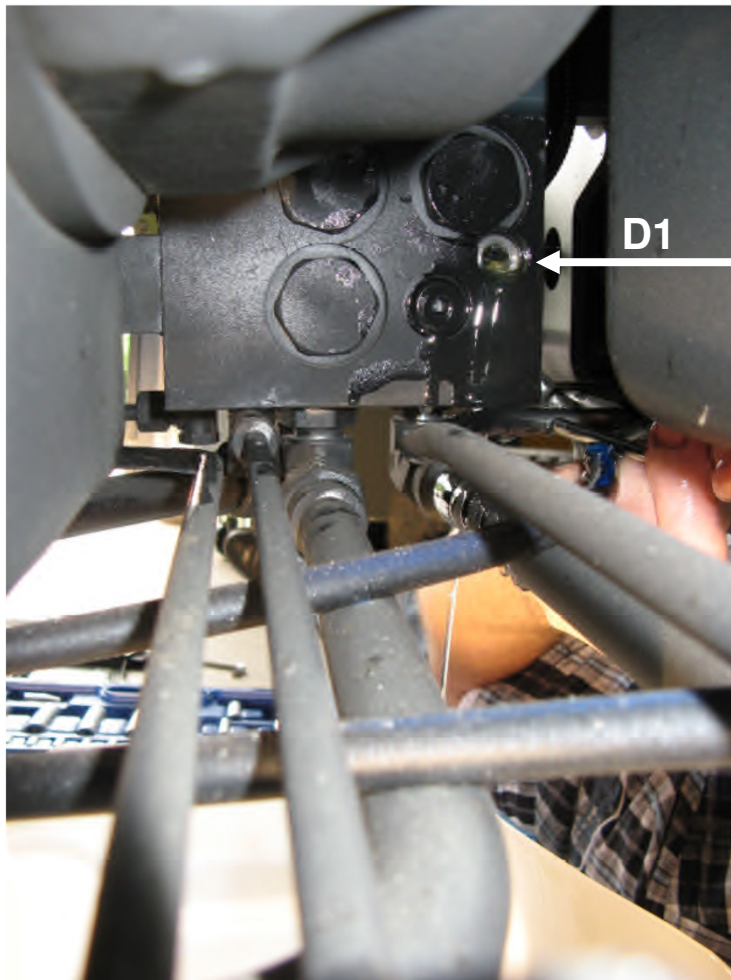
Fahrtrichtung/ driving direction



Düse D2, M10X1, 0.8mm, Differentialsperre Vorderachse  
Nozzle D2, M10X 1, Differential lock front axle

5.0.1 Hydraulic Drive  
Solenoid valve Y11, differential lock

Fahrtrichtung/ driving direction



Düse D1, M10X1, 0.8mm  
Sperre zwischen Vorderachse und Hinterachse.  
Sicht von hinten auf das Ventil (Rückseite)!

Nozzle D1, M10X1,  
Differential lock between front and rear axle.  
View from machine side.

## 5.0.1 Hydraulic Drive

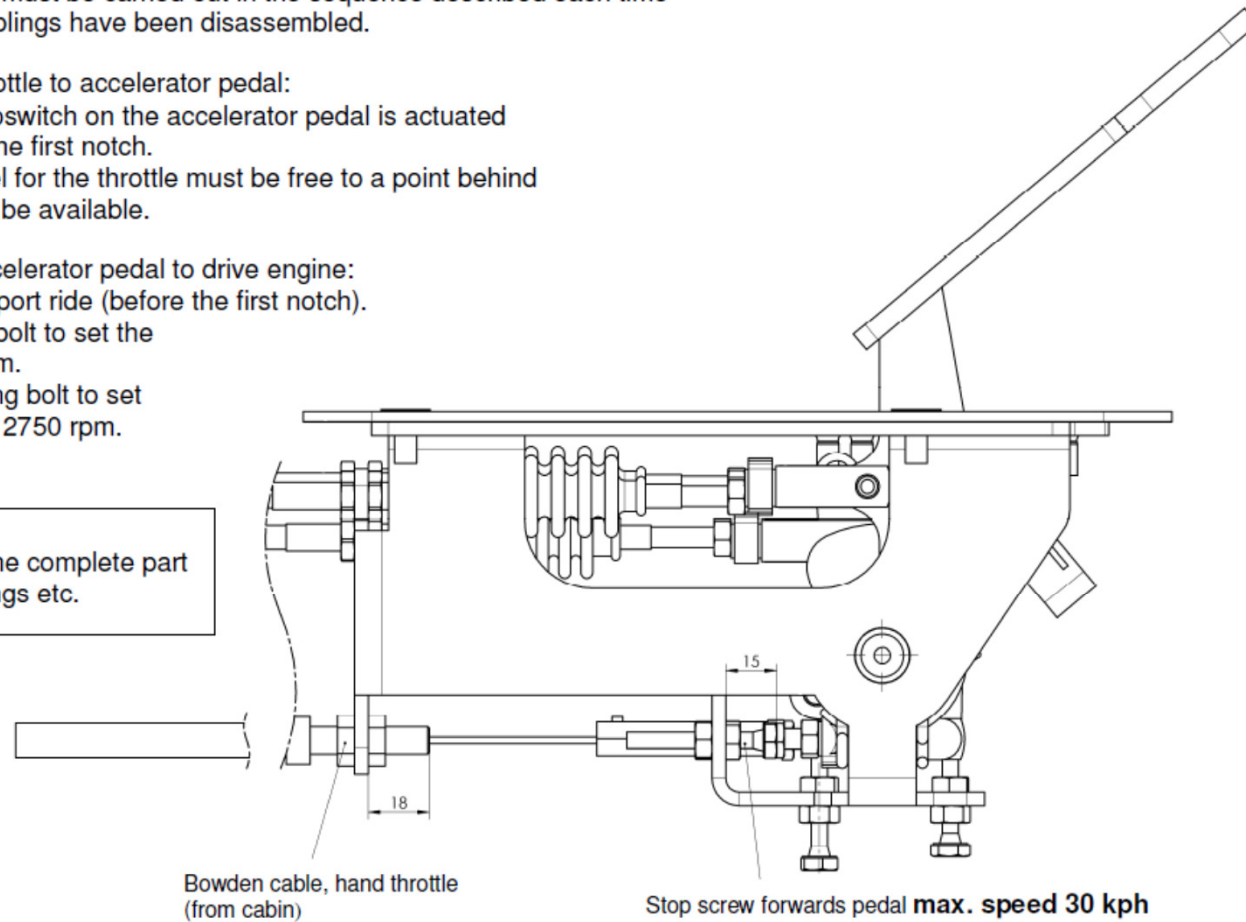
### Adjustment of the end speed CM 1250

#### Accelerator pedal

The following adjustments must be carried out in the sequence described each time the Bowden cables or couplings have been disassembled.

1. Bowden cable from throttle to accelerator pedal:
  - Adjust so that the microswitch on the accelerator pedal is actuated when the throttle is at the first notch.
  - The entire path of travel for the throttle must be free to a point behind the second notch must be available.
2. Bowden cable from accelerator pedal to drive engine:
  - Set the throttle to transport ride (before the first notch). Use the rear adjusting bolt to set the engine to  $1100 \pm 50$  rpm.
  - Adjust the front adjusting bolt to set the maximum speed of 2750 rpm.

Attention!  
Check each 1000h the complete part for wearout of bushings etc.

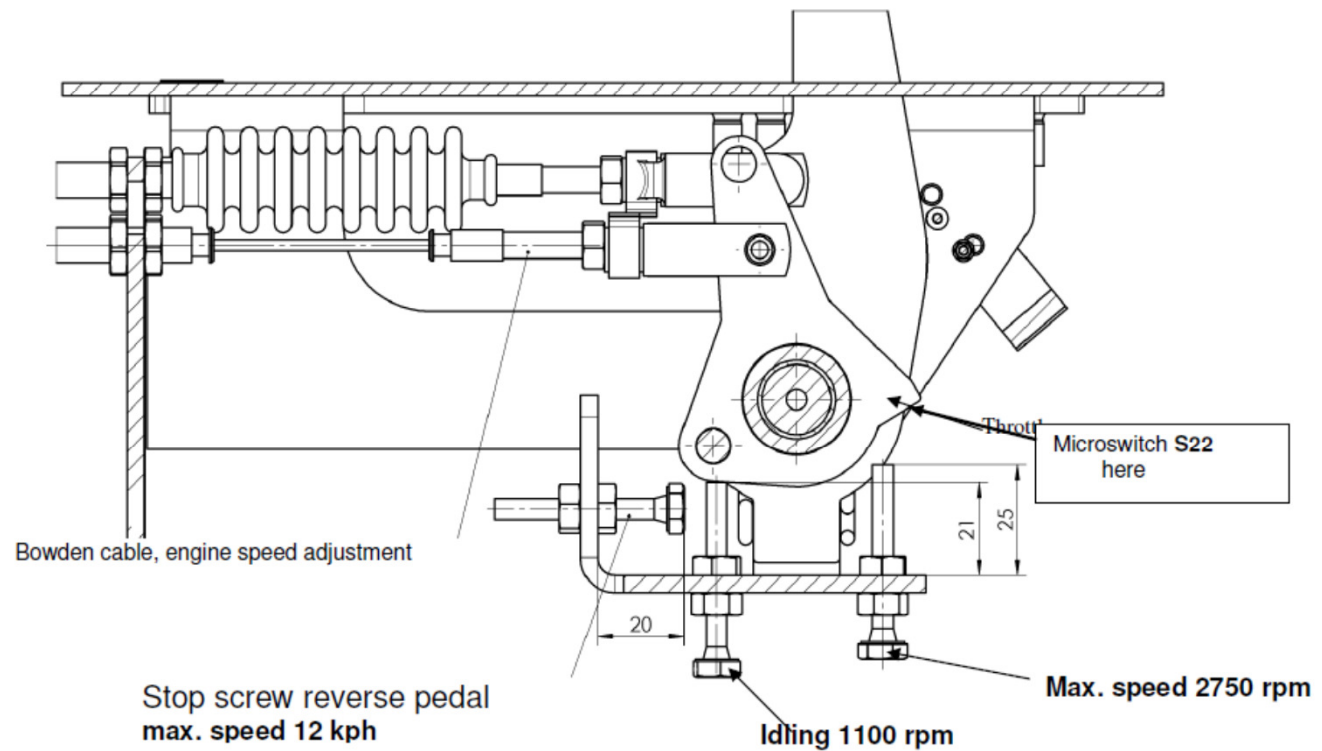


## 5.0.1 Hydraulic Drive

### Adjustment of the end speed CM 1250

Bowden cables in the hydraulic pump:

- Raise the front of the machine, set the hand throttle to "Transport mode", actuate the parking brake and secure the machine by positioning chocks against the rear wheels.
- Disconnect both cables from the accelerator pedal and check that the pedals are parallel.
- Hook in the cables for the forward ride and adjust them so that the pump is not moved when the pedals are in a neutral position. Adjust the stop screw so that the average of both front wheel speeds is maximal 30 kph.
- Hook in the cable for reverse ride and adjust until the average speed is 12 kph.





## 5.0.1 Hydraulic Drive

### Adjustment of the end speed CM 1250

**Important information:** The correct adjustment of the end speed via the wheel speed can only be completed on a roller dynamometer (brake test stand) because the wheel motors for the synchronization (same speed of both wheel motors) need a resistance.

In order to achieve an end speed of 30 km/h, the wheel speed of the front axle must be set to **250 +/- 3 rpm** for forward drive and to **110 +/- 5 rpm** for reverse drive.

The adjustment can also be made using the speedometer if the working mileage counter 1442 option is available. The accelerator must be adjusted so that an end speed of 30 km/h can be reached when driving forward and 12 km/h when driving in reverse. The speed can be read on the working mileage counter (combined instrument).

Press the left-hand button as often as necessary until the mileage display appears. It is now possible to read the driving speed and correct it, as necessary, by adjusting the accelerator (also refer to the description of the sweeping mileage counter on Page 38).

Another option is to control the speed by means of a navigation device and adjust it, as necessary, in respect of the correct speeds (forward drive/reverse drive).

**Note:** It is no longer possible to complete the adjustment with the machine jacked up by measuring the wheel speed!



## 5.0.1 Hydraulic Drive

Further information on the hydraulic drive is provided in :

5.0.2 Hydraulic function diagrams, hydraulic drive

5.0.3 Hydraulic diagram Hako Citymaster 1250

5.0.4 Spare part list Bosch Rexroth drive pump A10VG 45

5.0.5 Repair manual Bosch- Rexroth drive pump A10VG45

5.0.6 Spare part list drive motor Bosch- Rexroth MRC 3, 225 ccm

5.0.7 Service manual Bosch- Rexroth drive motor MRC 3, 225 ccm

## 5.0.1 Hydraulic Drive

### Notes





## 5.0.1 Hydraulic Drive

### Notes



## 5.0.1 Hydraulic Drive

### Notes

