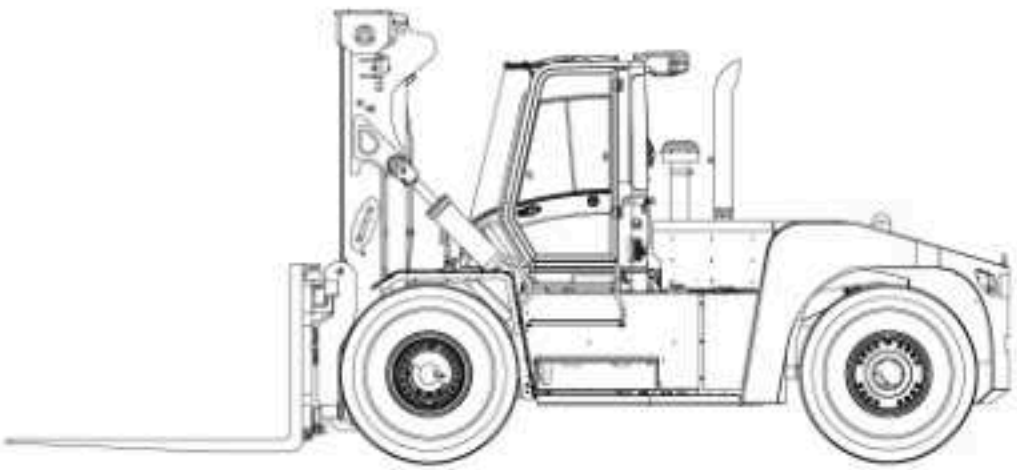
SERVICE MANUAL

F008 (H550HD)



Rev. 08/14

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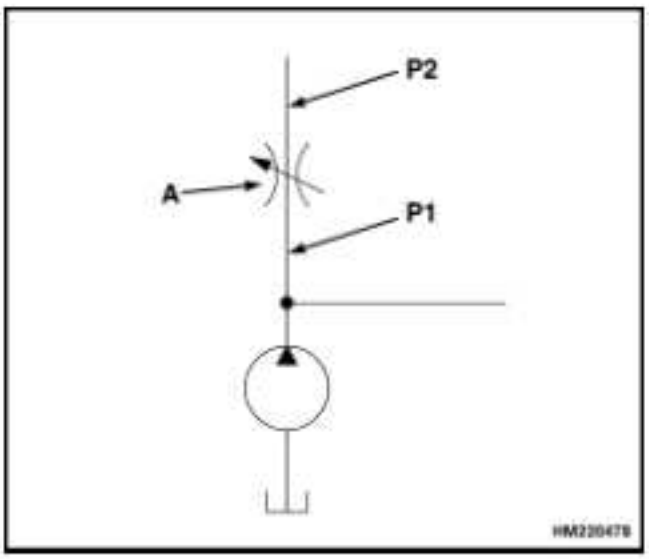
This section is for the following models:

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P2	Function Pressure

Figure 1. Fixed Orifice Example Schematic



A	Variable Orifice
P1	System Pressure
P2	Function Pressure

Figure 2. Variable Orifice Example Schematic

PRESSURE COMPENSATED FLOW CONTROL VALVE

Pressure compensated flow control valves are used in hydraulic systems to control the rate of flow from one section of the hydraulic system to the next, independent of the system pressure.

Basic Principle

The output flow of an orifice (A) is constant when the pressure differential created by the orifice (A) is constant. The absolute pressure before and after the orifice (A) does not affect the output flow. For more information on an orifice (A), see Orifice (Fixed/Variable).

Pressure Compensated Flow Control Valve Functional Description

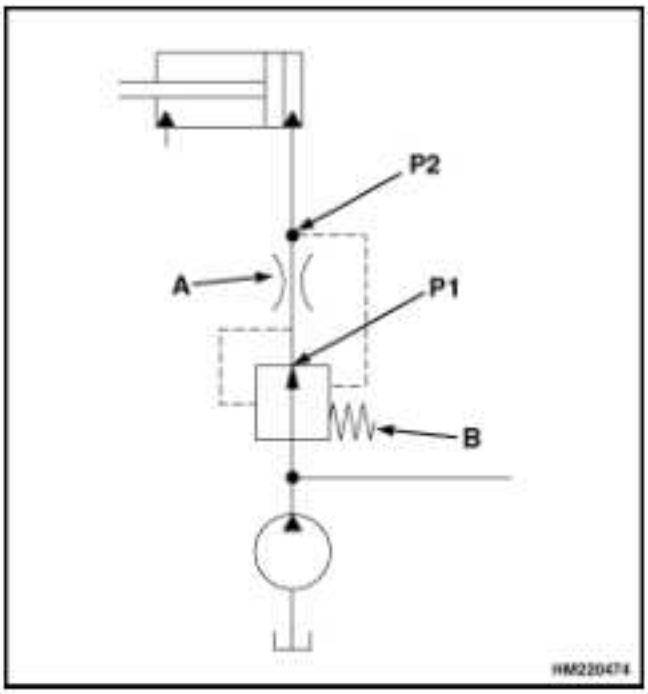
When the flow supply to the orifice (A) is regulated by the pressure differential (P1 – P2) created by the orifice (A), the flow will be regulated by the spring force (B) and will not be dependent on the absolute pressures at P1 and P2 but on the pressure differential. See Figure 3.

Therefore, the system is balanced by the following equation:

(Pressure P1 – Pressure P2) × Working Area = Spring Force (B)

With a fixed orifice (A), the hydraulic system will maintain a fixed and constant output flow regardless of pressure fluctuations in the system pressure.

With a variable orifice (A), the hydraulic valve will control the rate of flow based on the opening area of the variable orifice (A).



A	Orifice
B	Spring Force
P1	System Pressure
P2	Function Pressure

Figure 3. Pressure Compensated Flow Control Valve Example Schematic

PRIORITY VALVE

The priority valve prioritizes the flow to one system over another when there is a limited flow supply to both systems.

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Table 2. Basic Truck

Model	Weight		Length	Width	Height
	Minimum	Maximum			
H25XM-12/ H550HD	28,040 kg (61,817 lb)	29,580 kg (65,212 lb)	6,046 mm (238 in.)	3,226 mm (127 in.)	3,217 mm (126.6 in.)
H28XM-12/ H28XM-16H/ H620HD	32,920 kg (88,008 lb)	35,050 kg (77,272 lb)	6,118 mm (240.8 in.)	3,435 mm (135.2 in.)	3,471 mm (136.6 in.)
H30XM-12/ H650HD	33,530 kg (73,921 lb)	35,650 kg (78,594 lb)	6,118 mm (240.8 in.)	3,435 mm (135.2 in.)	3,471 mm (136.6 in.)
H32XM-12/ H32XM-16H/ H700HD	33,150 kg (73,083 lb)	35,250 kg (77,712 lb)	6,628 mm (260.9 in.)	3,435 mm (135.2 in.)	3,471 mm (136.6 in.)
H25XMS-9/ H550HDS	27,680 kg (61,024 lb)	29,250 kg (64,485 lb)	5,458 mm (214.8 in.)	3,226 mm (127 in.)	3,217 mm (126.6 in.)
H30XMS-9/ H650HDS	32,650 kg (71,980 lb)	34,800 kg (76,720 lb)	5,738 mm (225.9 in.)	3,435 mm (135.2 in.)	3,471 mm (136.6 in.)
H32XMS-9/ H700HDS	33,300 kg (73,413 lb)	35,400 kg (78,043 lb)	5,738 mm (225.9 in.)	3,435 mm (135.2 in.)	3,471 mm (136.6 in.)

NOTE: The minimum weight indicates the weight for trucks with an open cab and pneumatic tires.

The maximum weight indicates the weight for trucks with an open cab and solid tires.

For the total weight of the basic truck include the weight of below options:

- Add 200 kg (440 lb) for a closed cab.
- Add 50 kg (110 lb) for air conditioning.
- Add 200 kg (440 lb) kg for H25XM, and 240 kg (529 lb) for H28-32XM for a completely topped up fuel tank.

NOTE: The total height of the basic truck is for trucks with a closed cab, with air conditioning and cab lights removed.

Subtract 43mm from the total height for trucks without air conditioning.

Subtract 78mm from the total height for trucks with an open cab.

See Figure 2.

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Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
55.04	Analog input 5 (pin P1) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
55.05	Analog input 5 (pin P1) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
56.00	Analog input 6 (pin S1) related fault: analog input is shorted to ground or measured input value is below the minimum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation. - Pressure Feedback: the controller will revert to limp home mode. - Pressure Sensor: the controller will revert to shut down mode. - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

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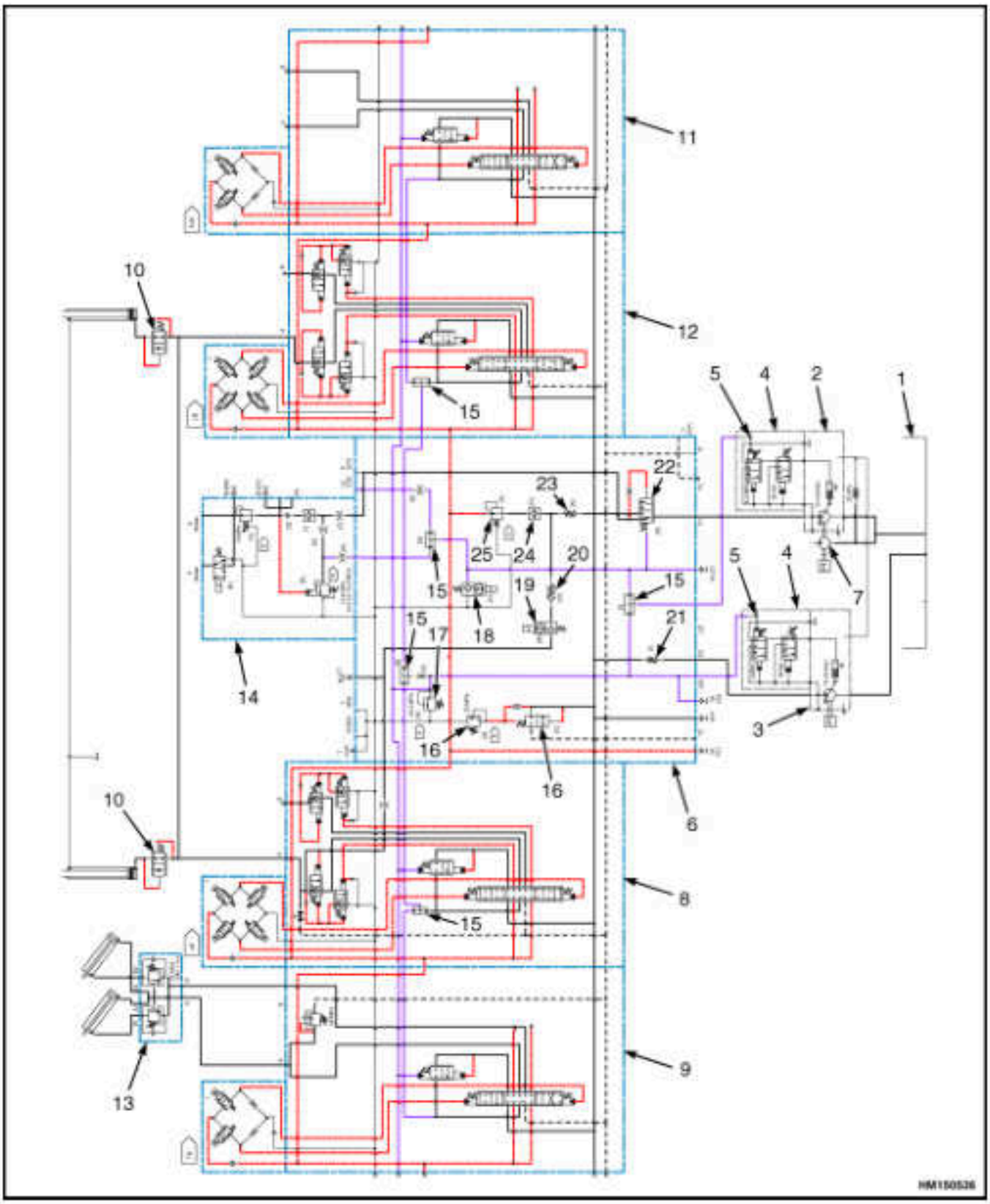


Figure 15. Hydraulic Components Location

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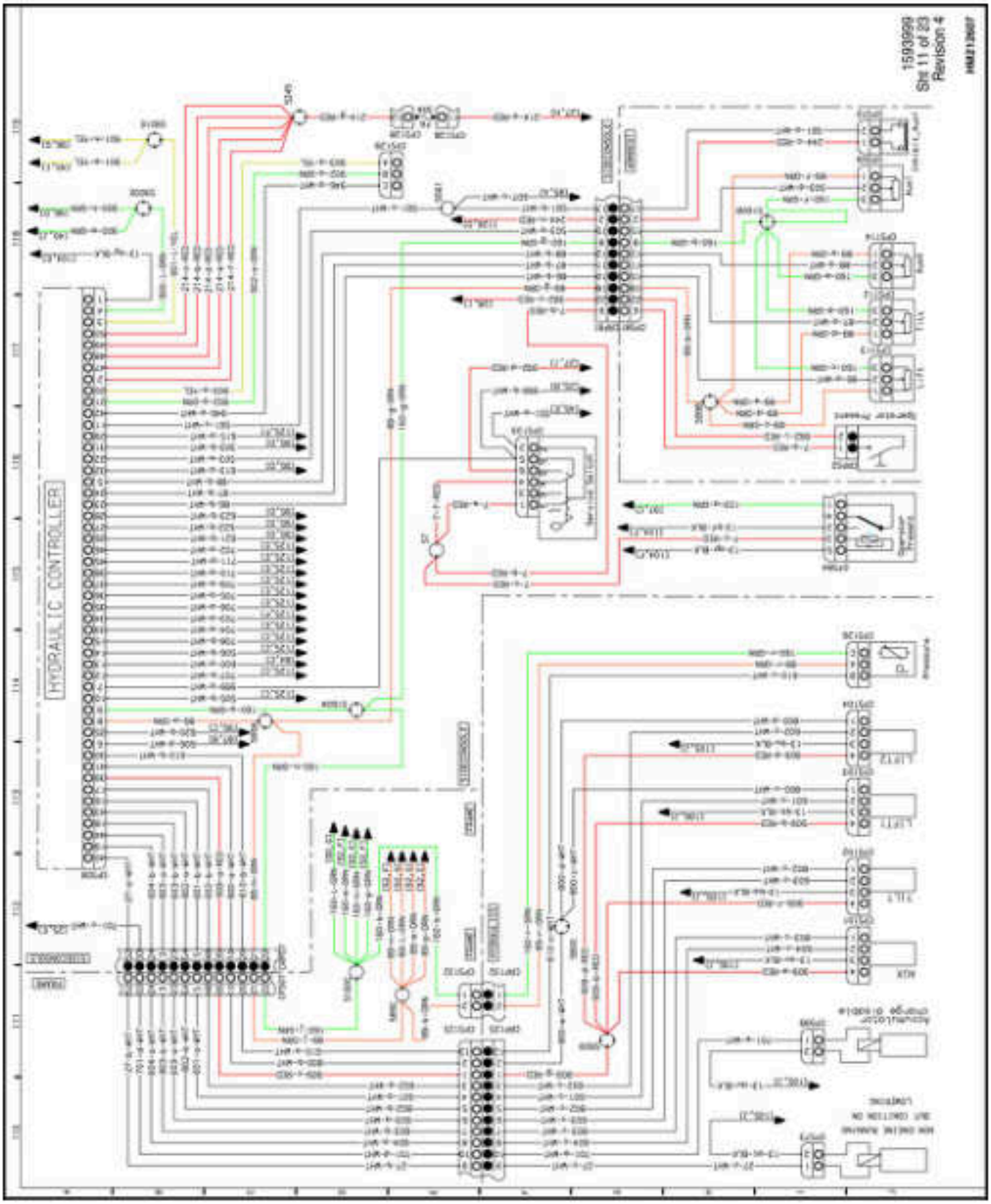


Figure 15. Electrical Schematics (Sheet 11 of 17)

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If not mentioned differently the electrical connectors of the harness are labelled with the same character as shown in the schematic besides the symbol. This character is also stamped on the valve besides the cartridge.

The next electrical connections of the hydraulic valves are deviating from above:

- LIFT connector harness is labelled with
- TILT connector harness is labelled with
- AUX connector harness is labelled with AUX

Pressure settings and system back pressures as specified on this circuit are component settings set at an oil temperature of 80 C and engine running at idle.

The next list specifies the tolerances of these pressure settings:

- (A) : +/- 500 kPa
- (B) : +/- 750 kPa
- (C) : - 100 kPa
- (D) : +/- 50 kPa
- (E) : + 1 MPa
- (F) : + 2 MPa
- (G) : + 3.8 MPa
- (X) : Setting is set at a falling pressure. Hysteresis - switch must be de-activated <18.5 MPa

The next list indicates the system setting(s) that can be measured at the Pressure gauges that are available in the system:

MPLT : Pilot Pressure 1.5 MPa measured during lift (No load)
MP : Pump pressure in pressure gallery
MLS1 : LS signal supplied by Steering and Accumulator charge to the primary pump LS relief steering system 21.5 MPa (Set at Pump pressure. LS correct value with -1 MPa)
MLS2 : LS signal supplied by Lift/Tilt/Aux to the secondary pump LS relief Lift/Tilt/Aux 22.5 MPa
M BRK : Supply pressure to brake pedal 14 MPa
M ACC : Pressure in accumulator, cut out pressure 19.5 MPa, Accumulator pre-charge pressure 10.35 MPa
(BRAKE) : Output pressure brake pedal max. 10.34 MPa

Legend:
- = Pressure line
- = Tank Return line
- = Drain line
- = Pilot line
- = LS line
- = Valve Boundary

ITEM	DESCRIPTION
1	MAIN CONTROL VALVE
2	COUNTER BALANCE VALVES
3	LOWERING CONTROL VALVE
4	FLOW AMPLIFIER
5	STEERING FEED BACK VALVE
6	STEERING CONTROL UNIT
7	VARIABLE DISPLACEMENT PUMP
8	VARIABLE DISPLACEMENT PUMP
9	BRAKE COOLING VALVE
10	BRAKE TREADLE VALVE
11	BRAKE FLOW DISTRIBUTION MANIFOLD

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Figure 1. Hydraulic Schematic

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