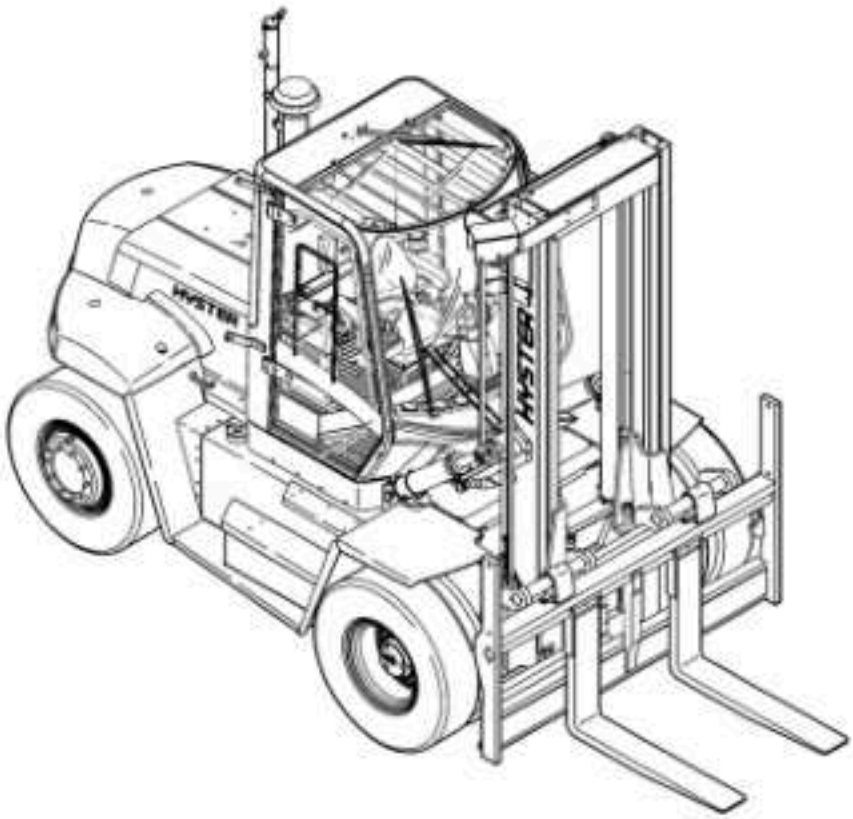
SERVICE MANUAL

J007 (H190HD2, H210HD2, H230HD2, H230HDS2, H250HD2, H280HD2)



Rev. 08/14

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Table 2. Basic Truck

Model	Length	Width	Height	"MIN" Weight	"MAX" Weight
H190HD2 H8.00-12.00XM	3,763 mm (148 in.)	2,425 mm (94.5 in.)	2,972 mm (117 in.)	9,400 kg (20,723 lb)	10,150 kg (22,376 lb)
H210HD2 H8.00-12.00XM	3,763 mm (148 in.)	2,425 mm (94.5 in.)	2,972 mm (117 in.)	9,700 kg (21,384 lb)	10,450 kg (23,038 lb)
H230HD2 H8.00-12.00XM	3,963 mm (156 in.)	2,425 mm (95.4 in.)	2,972 mm (117 in.)	10,700 kg (23,589 lb)	11,450 kg (25,242 lb)
H250HD2 H8.00-12.00XM	3,963 mm (156 in.)	2,446 mm (96.2 in.)	2,972 mm (117 in.)	10,900 kg (24,030 lb)	11,600 kg (25,573 lb)
H280HD2 H8.00-12.00XM	3,963 mm (156 in.)	2,446 mm (96.2 in.)	2,990 mm (117.7 in.)	11,550 kg (25,463 lb)	12,300 kg (27,116 lb)
H300HD H13.00-14.00XM	4,363 mm (171.7 in.)	2,607 mm (102.6 in.)	3,021 mm (118.9 in.)	12,500 kg (27,557 lb)	13,700 kg (30,203 lb)
H330HD H13.00-14.00XM	4,363 mm (171.7 in.)	2,607 mm (102.6 in.)	3,021 mm (118.9 in.)	13,200 kg (29,101 lb)	14,350 kg (31,636 lb)
H360HD H16.00XM-6	4,363 mm (171.7 in.)	2,607 mm (102.6 in.)	3,201 mm (118.9 in.)	14,250 kg (31,415 lb)	15,400 kg (33,951 lb)
H16.00XM-12EC H10.00-12.00XM -12EC	4,363 mm (171.7 in.)	2,607 mm (102.6 in.)	3,201 mm (118.9 in.)	13,200 kg (29,101 lb)	14,350 kg (31,636 lb)
H12.00XM-12EC / H360HD-EC4	4,363 mm (171.7 in.)	2,607 mm (102.6 in.)	3,201 mm (118.9 in.)	14,900 kg (32,848.8 lb)	16,050 kg (35,384 lb)

NOTE: Add 90 kg (198.4 lb) for a completely topped off fuel tank.

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. To calculate the total weight of the basic truck include the weight of following options:

- Add 200 kg (440.9 lb) for a closed cab.
- Add 50 kg (110 lb) for air conditioning.
- Add 90 kg (198.4 lb) for a completely topped up fuel tank.

NOTE: The total height of the basic truck is for trucks with an open cab and pneumatic tires.

Add 43 mm (1.6 in.) to the total height for trucks with a closed cab without air conditioning.

Add 78 mm (3 in.) to the total height for trucks with a closed cab with air conditioning.

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Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
92.10	Software related fault. Duplicate digital output assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.11	Software related fault. Digital output selected on unsupported wire.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.12	Software related fault. Digital output pattern faulty.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.13	Software related fault. Digital output selected on transmission wire.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.14	Software related fault. Error in speed sensor 1-2 assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.15	Software related fault. Error in speed sensor 3 assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.16	Software related fault. Duplicate speed sensor assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.17	Software related fault. Invalid supply voltage selected.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.18	Software related fault. Duplicate analog input pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.19	Software related fault. Pressure sensor wires interfere with analog input wires.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.20	Software related fault. Wrong configuration regarding servo motor or brake valve (on analog outputs 4-5-6).	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.30	Software related fault. Wrong configuration regarding full flow selection and past digital error treatment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.

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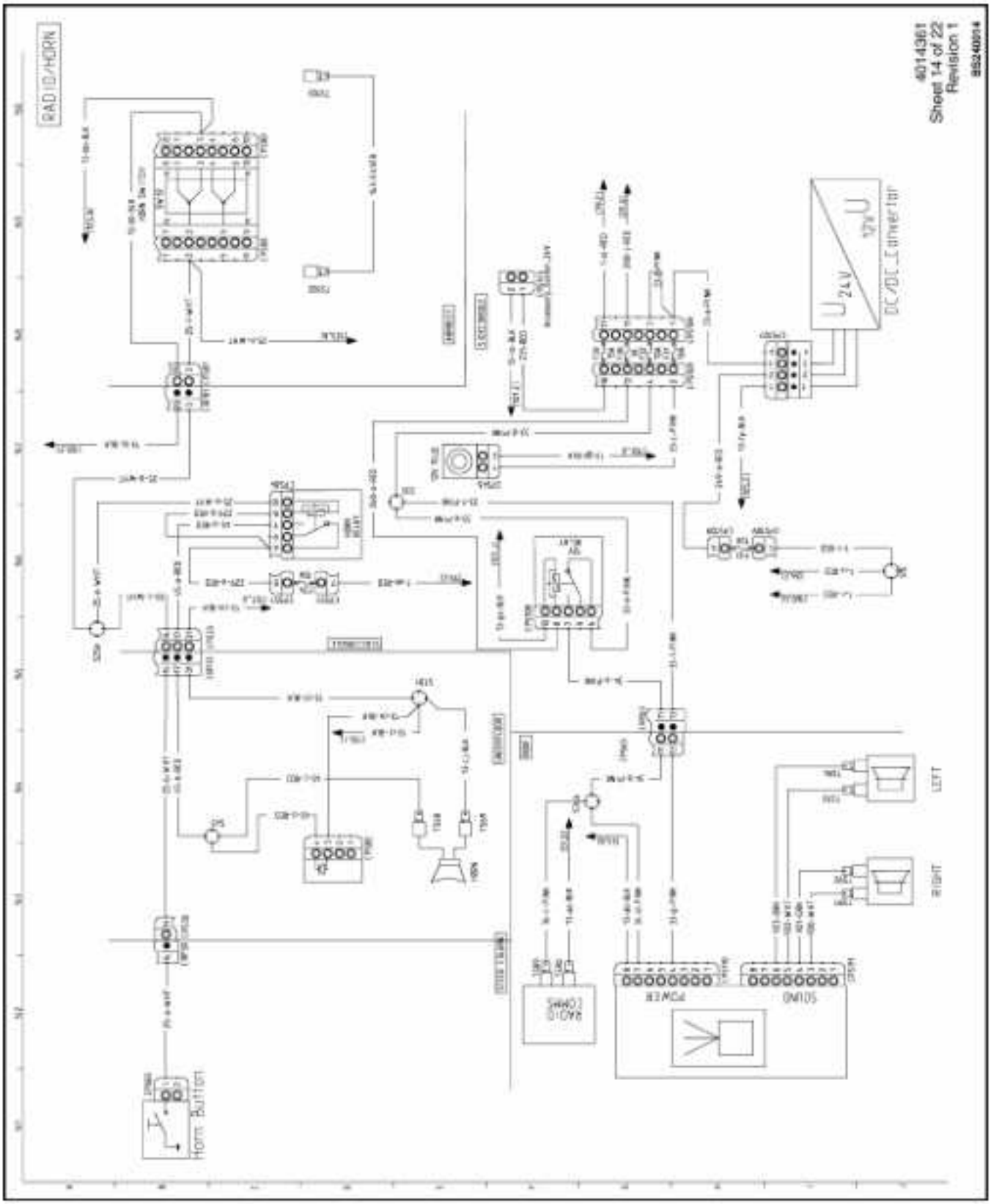


Figure 16. Electrical Schematic Heavy-Duty Transmission (Sheet 14 of 22)

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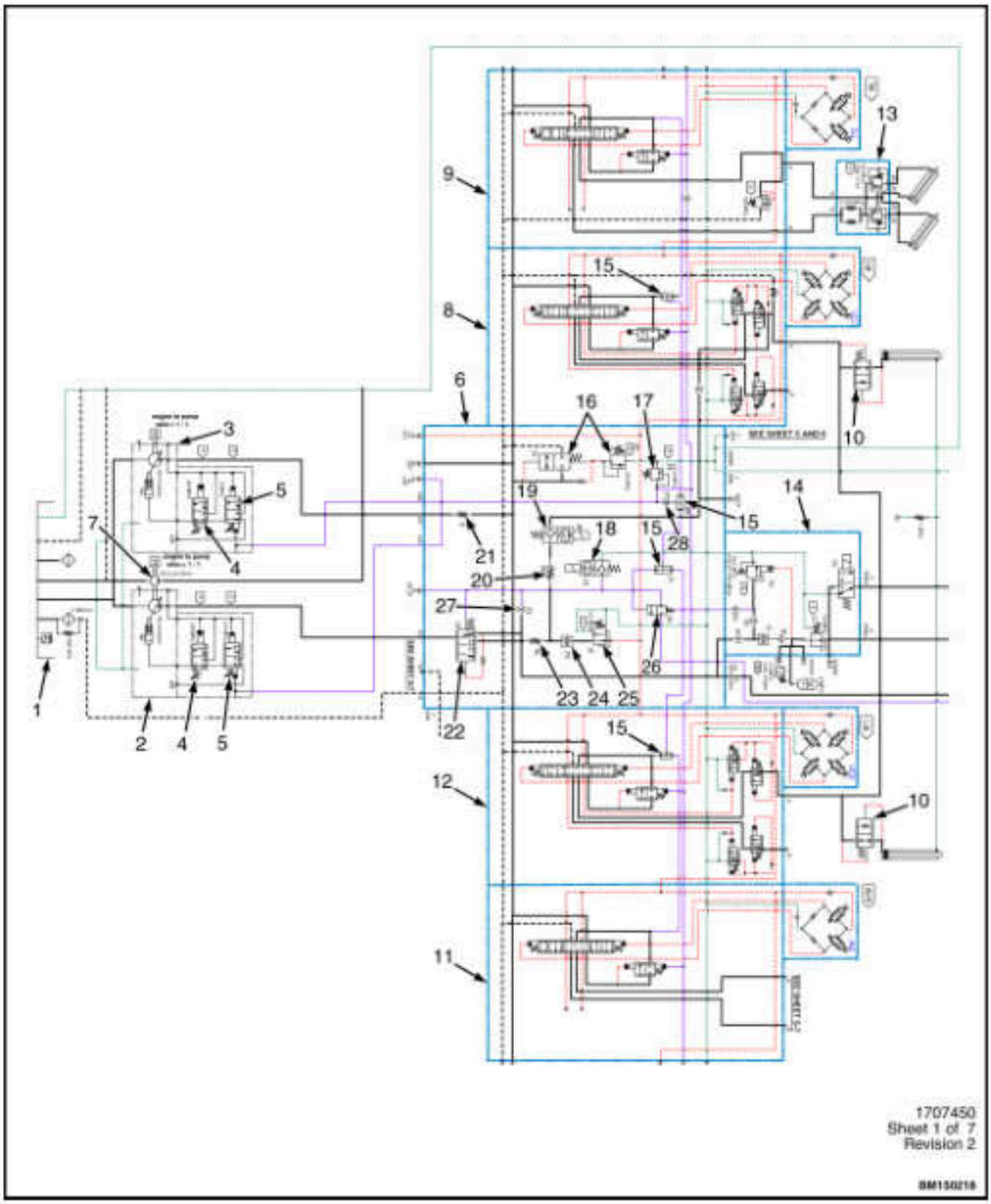


Figure 16. Hydraulic Component Location, Wet Brakes, Dual Pump Configuration

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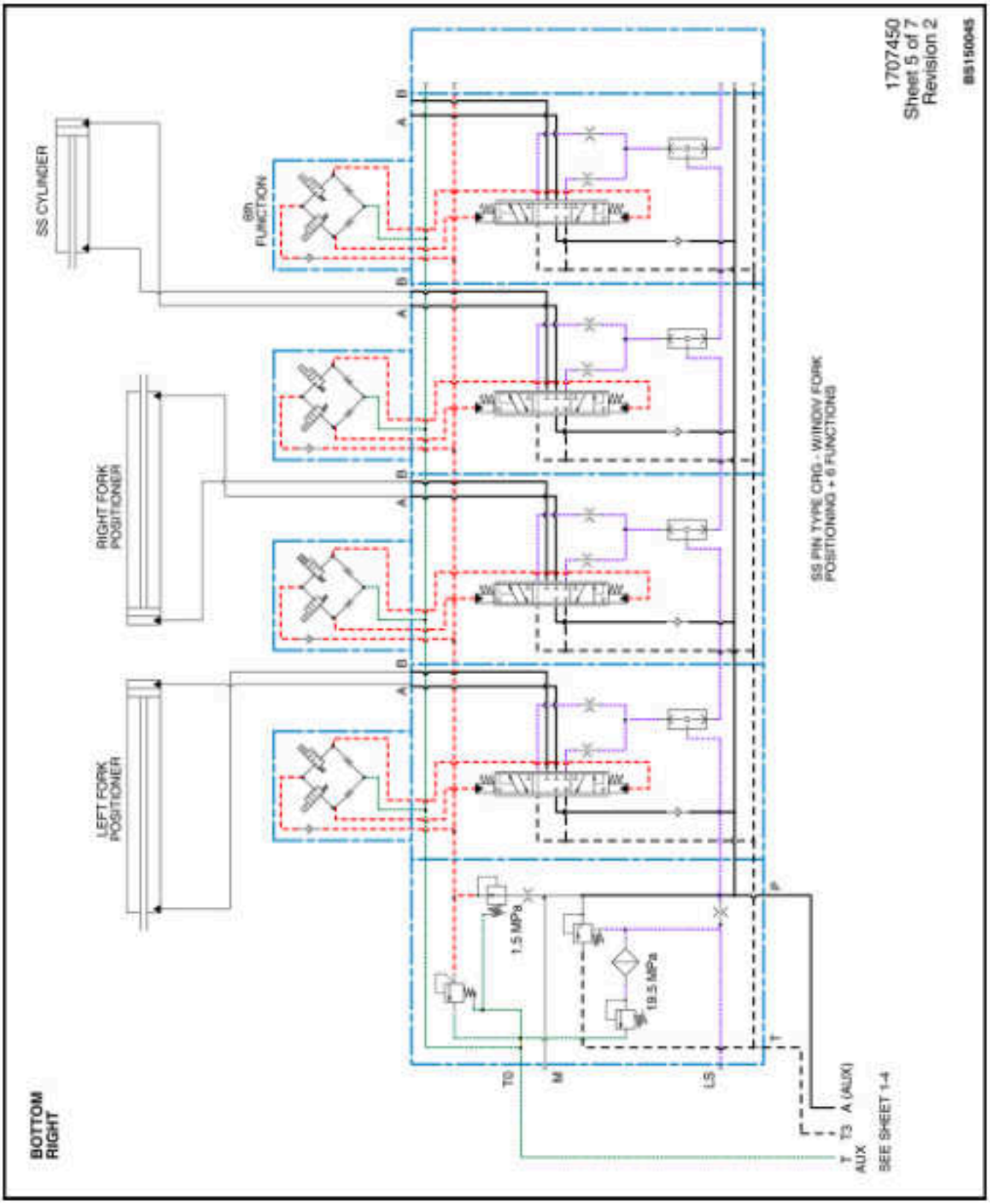
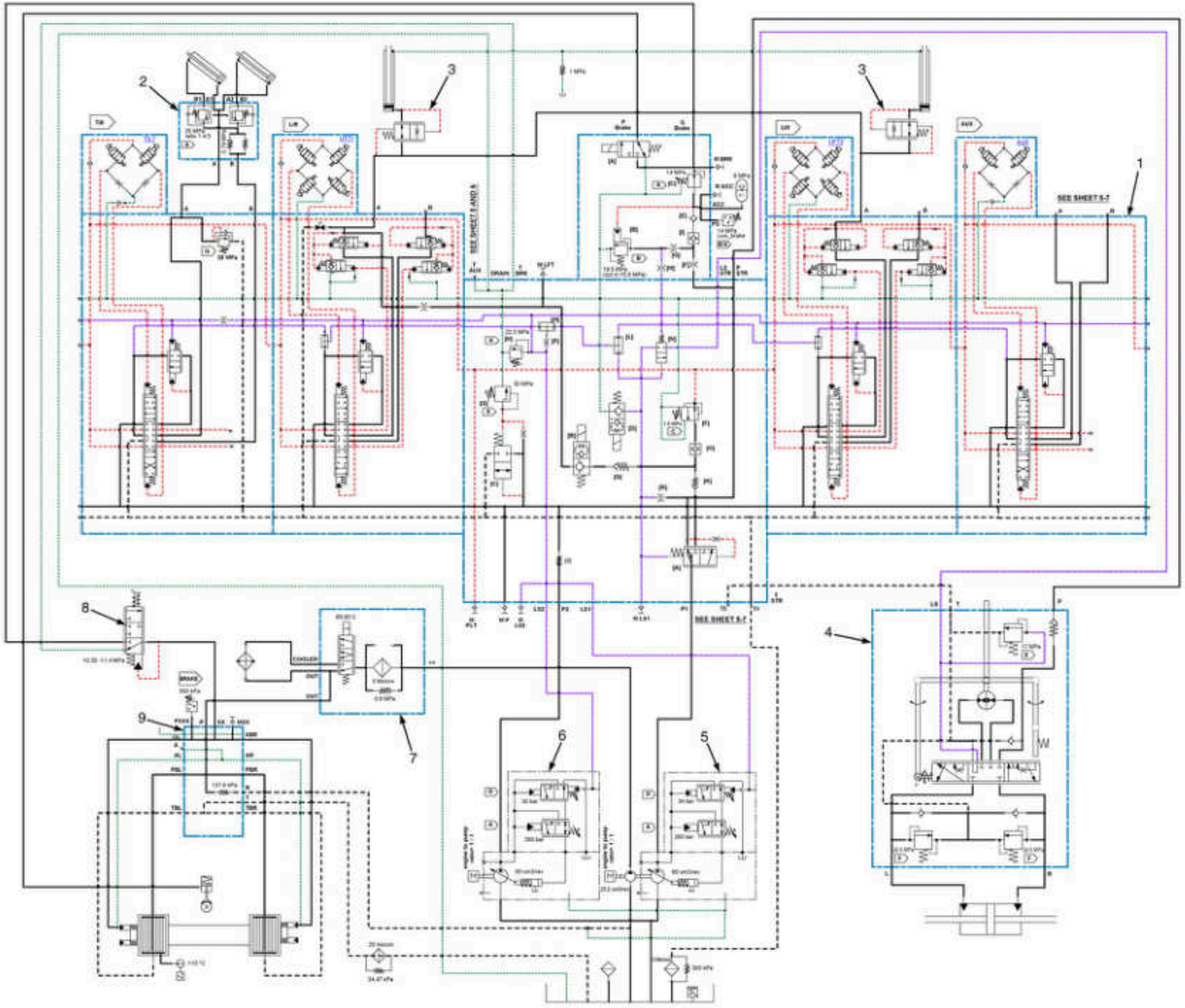


Figure 9. Hydraulic Schematic, SS Pin Type Carriage w/Fork Positioning

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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) : + 50 kPa
(F) : + 2 MPa
(G) : + 2.8 MPa
(K) : 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 Lift/Tilt/Aux and Steering to the primary pump
LS relief steering system 21.5 MPa (Set at Pump pressure, LS correct value with -1 MPa)
LS relief Lift/Tilt/Aux 22.0 MPa
MLS2 : LS signal supplied by Lift/Tilt/Aux to the secondary pump
LS relief Lift/Tilt/Aux 22.5 MPa

Wet Brakes only:

M BRK : Supply pressure to brake pedal 14 MPa
M ACC : Pressure in accumulator, cut out pressure 19.5 MPa, Accumulator pre-charge pressure 9 MPa
M XX : 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	STEERING CONTROL UNIT
5	VARIABLE DISPLACEMENT PUMP (PRIMARY)
6	VARIABLE DISPLACEMENT PUMP (SECONDARY)
7	BRAKE COOLING VALVE
8	BRAKE TREADLE VALVE
9	BRAKE FLOW DISTRIBUTION MANIFOLD

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Figure 2. Hydraulic Schematic, Wet Brakes - Double Pump Option

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