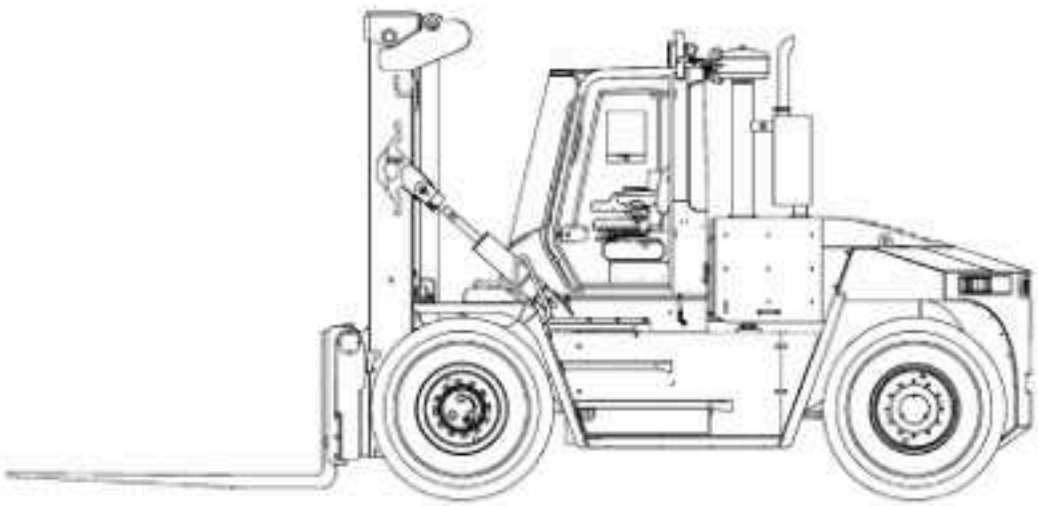
SERVICE MANUAL

C236 (H400HD, H450HD, H400HDS, H450HDS)



Rev. 08/14

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This section is for the following models:

H14.00-20.00XM [A214];
H16.00-18.00XM-12EC (H400-450H-EC) [A214];
H16.00-18.00XM/XMS-12 (H400-450HD/HDS) [A236];
H16.00-22.00XM-12EC (H400-500HD/HDS-EC) [B214];
H16XM-12, H18XM-12, H20XM-12, H22XM-12 (H400HD, H450HD, H500HD, H550HD) [B236];
H16XM-12EC, H18XM-12EC, H22XM-12EC (H400HD-EC, H450HD-EC, H500HD-EC) [C214]

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Item	Cummins QSB 6.7
Valve Clearance (Cold) Intake Exhaust	 0.254 mm (0.010 in.) 0.508 mm (0.020 in.)
Minimum Cranking Speed	125 RPM
Weight (Dry)	485 kg (1069 lb)

Function Speeds

Table 1. Lifting Speeds

Unit	142kW (190hp) Engine				164kW (220hp) Engine			
	No Load		Rated Load		No Load		Rated Load	
	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min
H16.00XM-12	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H16.00XMS-12	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H18.00XM-12	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H18.00XMS-12	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H400HD	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H400HDS	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H450HD	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9
H450HDS	0.37	72.8	0.32	63	0.38	74.8	0.35	68.9

Table 2. Lowering Speeds

Unit	142kW (190hp) Engine				164kW (220hp) Engine			
	No Load		Rated Load		No Load		Rated Load	
	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min	m/sec	ft/min
H16.00XM-12	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H16.00XMS-12	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H18.00XM-12	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H18.00XMS-12	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H400HD	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H400HDS	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H450HD	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8
H450HDS	0.34	66.9	0.39	76.8	0.34	66.9	0.38	74.8

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Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
56.05	Analog input 6 (pin S1) 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.
57.00	Analog input 7 (pin C2) 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.
57.01	Analog input 7 (pin C2) related fault: analog input is not connected or measured input value is above the maximum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the highest 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.
57.04	Analog input 7 (pin C2) 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.

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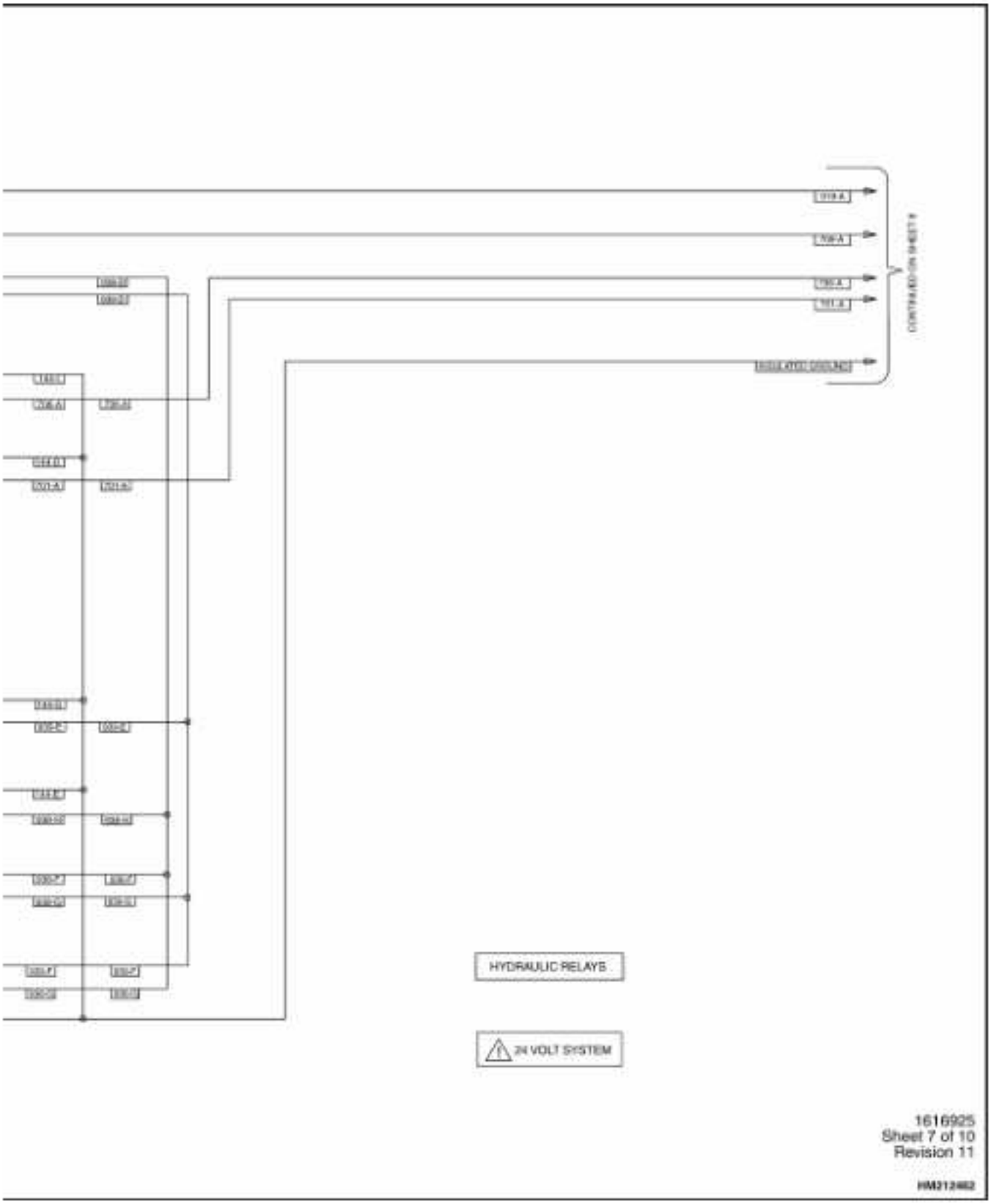


Figure 2. Electrical Schematic Tier 3 (Sheet 7 of 10)

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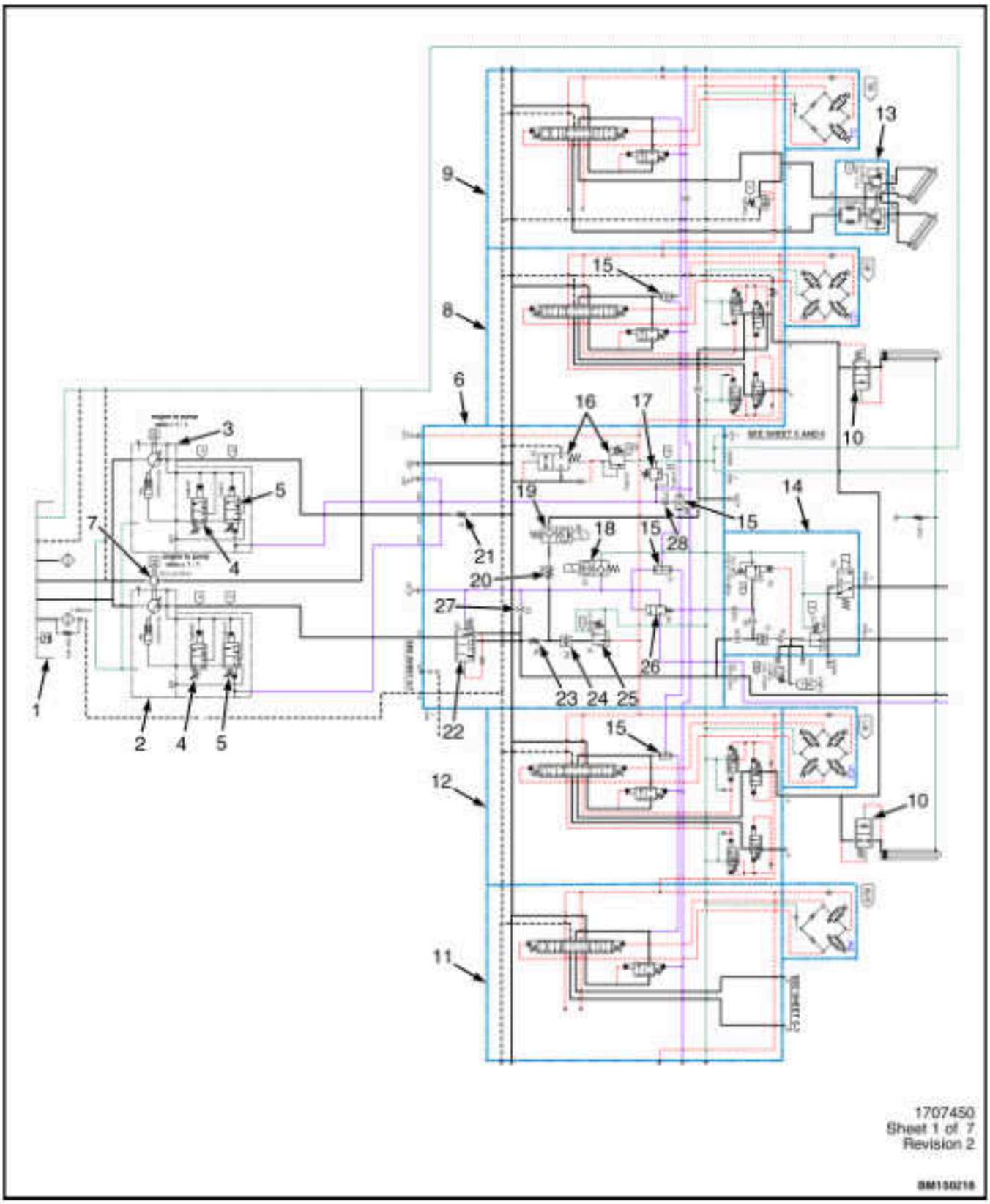


Figure 16. Hydraulic Component Location, Wet Brakes, Dual Pump Configuration

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