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Installation Overview

- Design Attachment control, including float function.
- Install Cabin components and connect.
- Intercept existing Hydraulic System and install New hydraulic components (Diverter Valve and DPX Proportional Spool valve)
- Fabricate Float Control and Connect all hydraulic components as required.
- Fabricate and install over roller system
- Create and publish Electrical Schematic
- Create and publish Hydraulic Schematic
- Supply and install 3 x Cylinders as per MES dimensions
- Install Camera System
- Install Flood lights on Attachment.
- Supply documents to support Attachment control System (including further development ideas).

Primary Components



Figure 1:DPX050-3OCEF-35002



Figure 2:CH Joystick

- DPX050 proportional control spool valve is controlled by the CED400X Walvoil Driver. The ramp and speed of the spool can be manipulated via the Driver software that is supplied.
- The DPX050 is fitted under the floor of the cabin and connected via Continental XCP hose and SG high pressure SG fittings.
- The analogue inputs from the P-Series Joystick are converted into PWM signal and sent back to the DPX050 Spool valve, after being modified to get the desired speed and strength of cylinders.
- There is a diagnostic port inside the enclosure mounted inside the operators cabin. When plugged into a laptop, the diagnostic functions will be able to identify any issues in the driver or external to the control unit.
- There is a fused supply to the driver that needs to be checked if there are no driver communications to the Spool valve.

Primary Components



Figure 3: DFE20 6-Way Diverter



Figure 6:
Deadman
Switch

- The DFE20 6-Way Diverter valve controls the operation between “Manitou Fork Controls” and “MES Attachment Controls”.
- When the Deadman switch (Fig 6) is activated the Joystick will be able to operate the MES Attachment. Once released the Operator will be able to operate the Manitou Original Controls.
- While the Deadman is depressed, there will be no Manitou Controls.

Joystick Functions

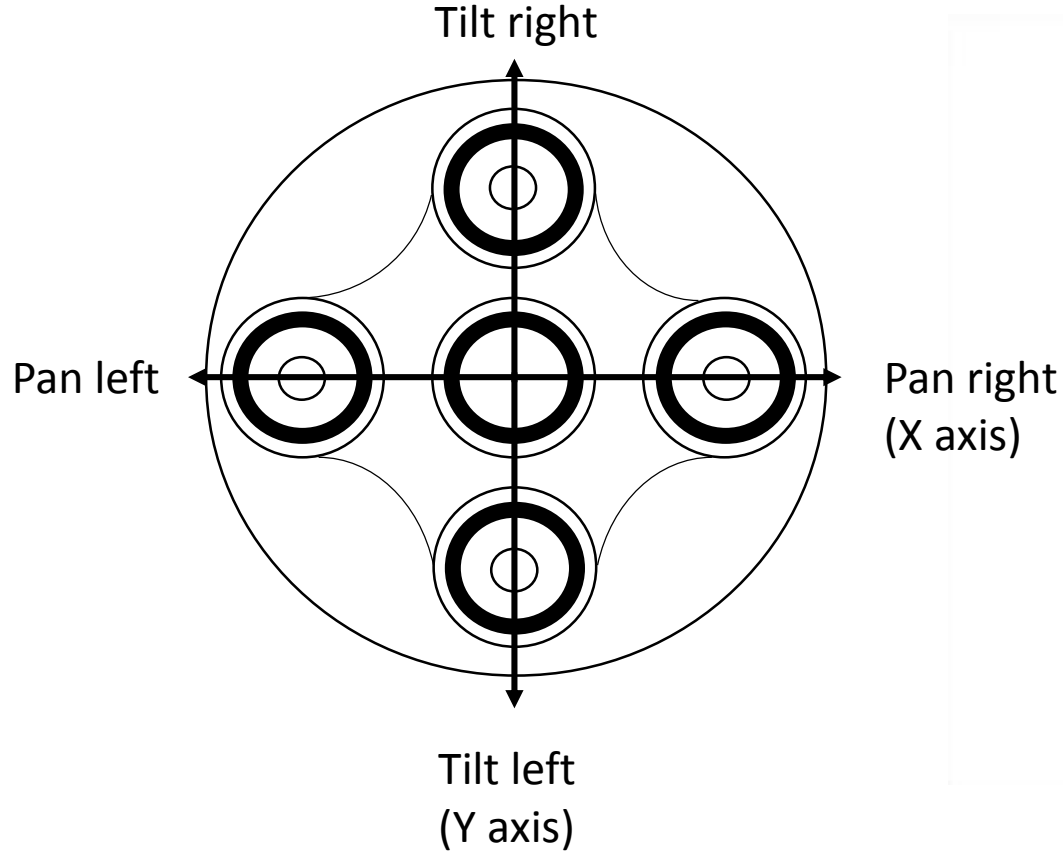


Figure 5: Joystick movement

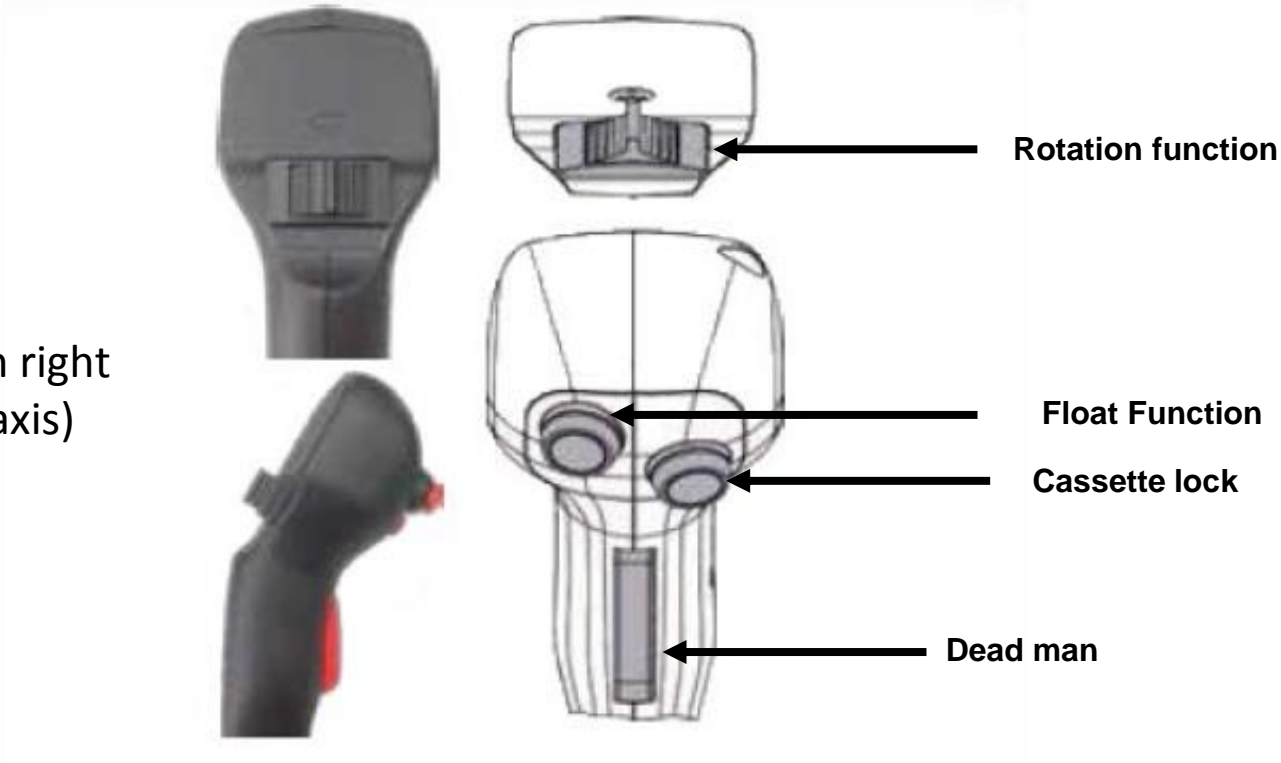


Figure 6: CH Joystick Layout

Joystick Overview

- P-Series Joystick functions as per Fig 5 & 6, show the basic operations Joystick and the outcomes of the attachment.
- Each of the functions are adjustable and proportional.
- The 2 latching switches on the front of the Joystick, are as per the Fig 6. The Cassette Lock and Float Function.
- The Cassette Lock once depressed will illuminate the RED light on the dash to signal the locks are activated. To unhook from a Cassette the button will have to be pressed again to release the locks from the Cassette.
- The Float function is to allow the Pan and Tilt cylinder to hold pressure on the attachment but also allow movement in the cylinder to remove the cassette.
- The Float function will adjustable to suit the cassette removal and installation, if more resistance is required to steady the movement it will be adjusted through the accumulators and bleed off valves as per Fig 7.
- The Float function and Locking function, both use the input from the Joystick and deliver an output to the attachment via slave relay's (behind RHS switch panel). Each are fused and travel through the cabin to the Mast overoller system.

Float Function



Figure 7:Float system

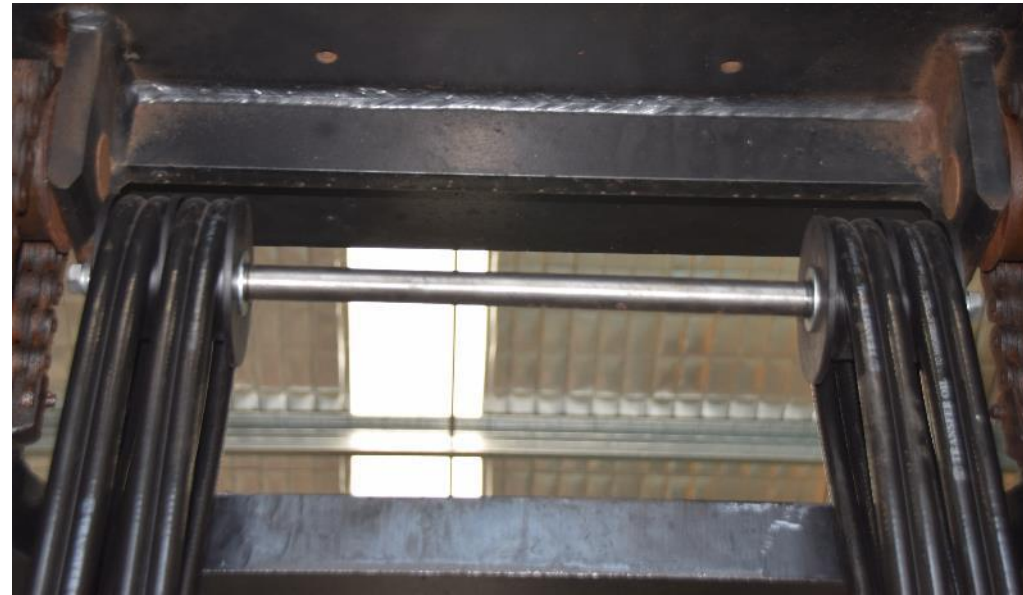


Figure 8:Mast Over roller System

Float Function Overview

- The Float Function is primarily activated via the Latching switch on the P-Series Joystick and will activate the 2ea DFE052/6B valves mounted on the front of the Firewall.
- The only 2 cylinders in this system are the Pan Cylinder (AG4008D/SB1R) and the Tilt Cylinder (AG4006D)
- When activated they will open the port in the 6-way valve to allow the flow of the cylinders to the 4 ea. Accumulators and to tank.
- Depending on the direction of Cylinder movement i.e. in or out. The flow from the cylinder will be directed by the shuttle valves to the accumulator and the opposite side of the cylinder will scavenge oil from the flow control sides connected to the oil reservoir.
- If the direction of the cylinders change so will the flow path to the accumulator via the movement of the shuttle valves.
- By increasing or decreasing the pressure in the Accumulator precharge it will determine the amount of force required to shift the cylinder. We have calculated with 25psi of precharge the maximum force allowed to move each cylinder will be 500kg. With a total length movement of 100mm on the cylinder. Which will be adjusted to suit the requirements of the client.
- Currently Accumulators are charged to 10psi.

Electrical Schematic

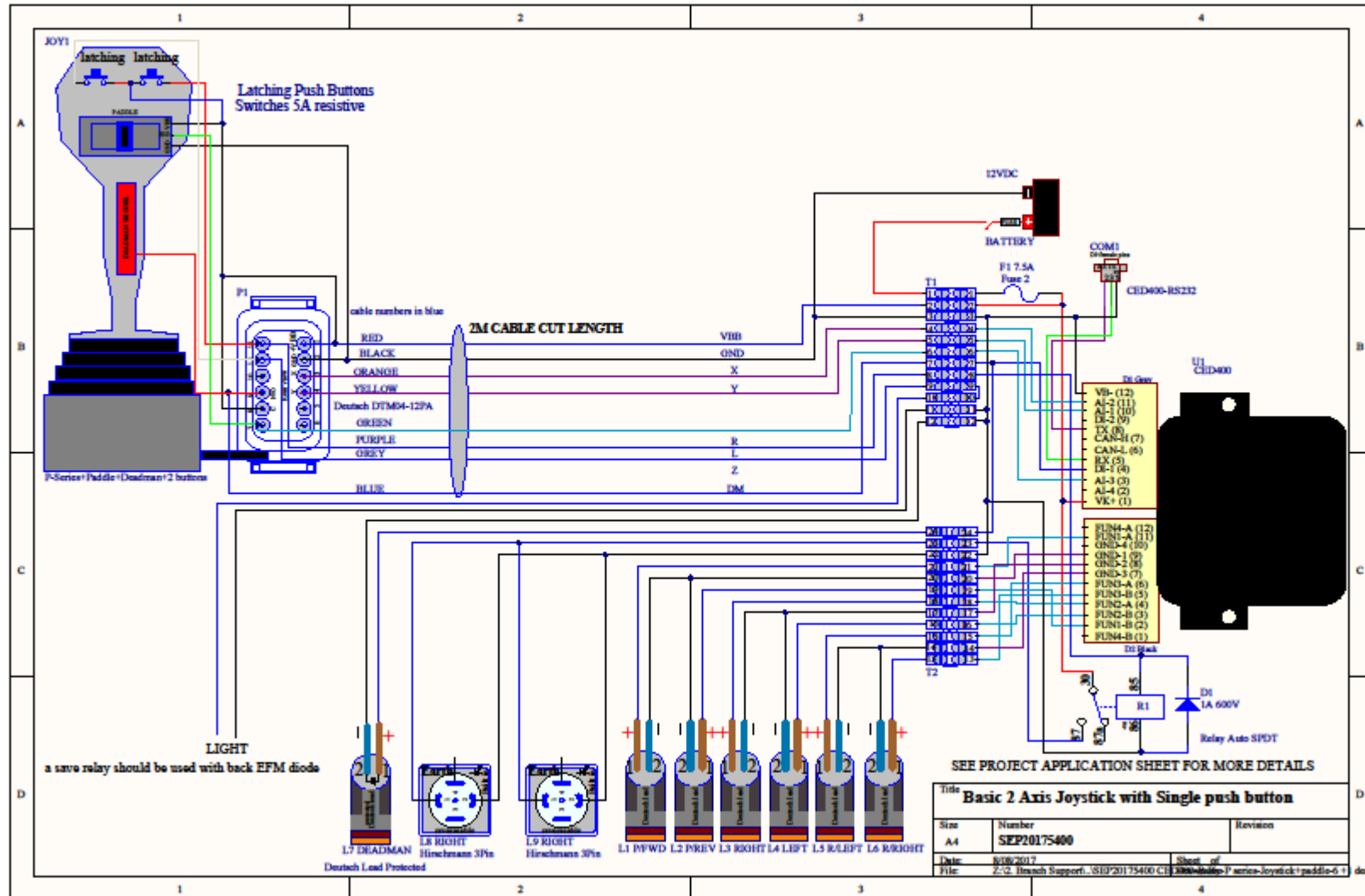


Figure 9: Electrical Schematic

Hydraulic Schematic

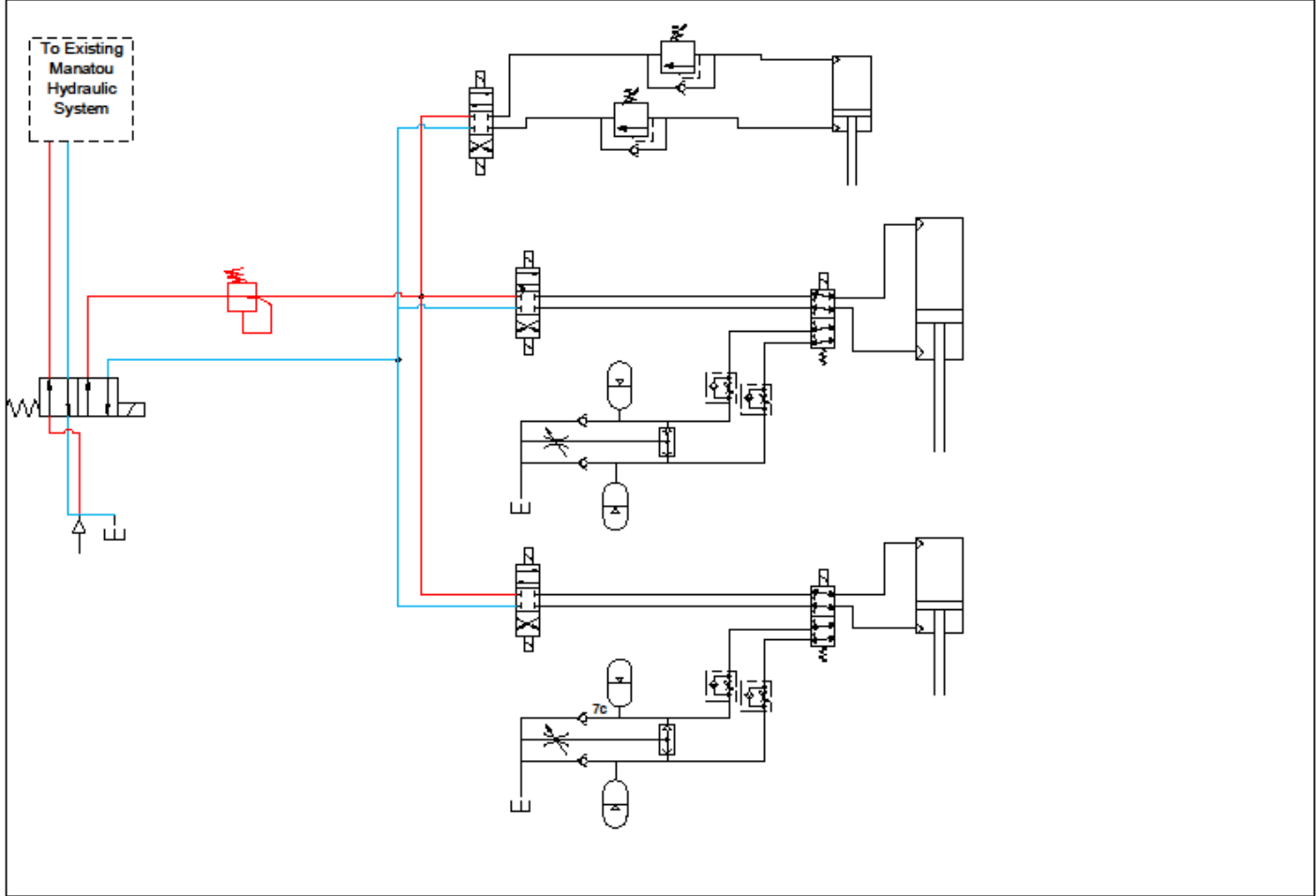


Figure 10: Hydraulic Schematic

