

PRLR15 MECHATRONICS AND INDUSTRIAL AUTOMATION Lab

Experiment Number: 14
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Aim: Develop an electro-pneumatic control circuit for implementing the fully automatic operation of the cylinder.

Components Required:

1. Double actuator.
2. 5/2-way single solenoid valve.

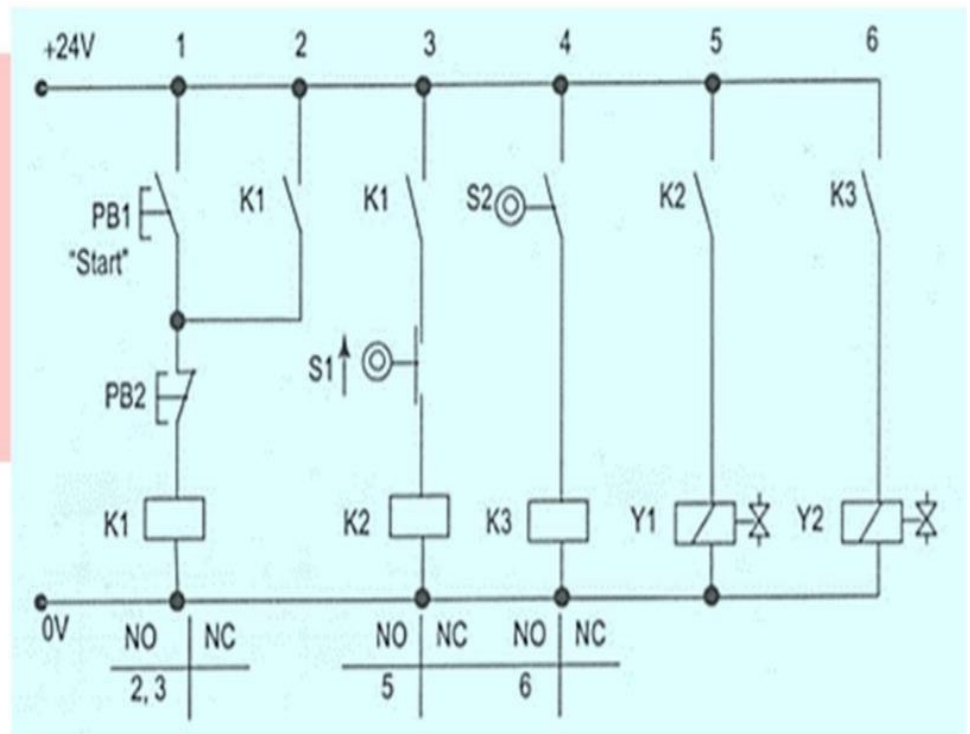
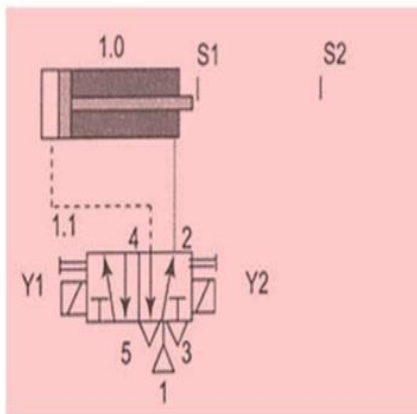
Circuit Description:

- **Direction control valves (DCV) (5/2-way single solenoid valve):** It is the extend and retract control for your hydraulic cylinders. It provides a flow path from the pump to the cylinders and a return path from the cylinders to the reservoir.
- **Actuator (Double acting cylinder):** They have a port at each end and move the piston forward and back by transfer of the hydraulic oil, necessary when a load must be moved in both directions such as opening and closing doors.

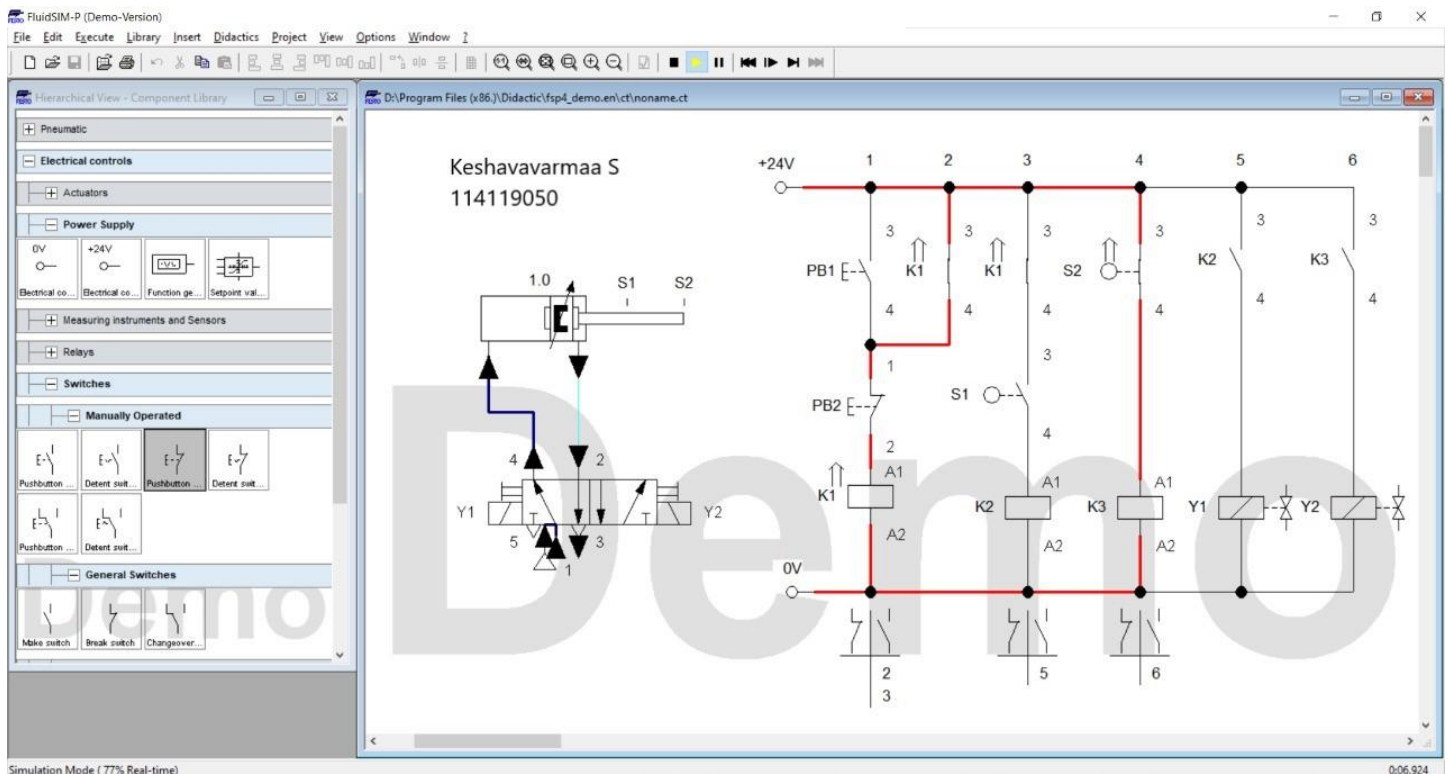
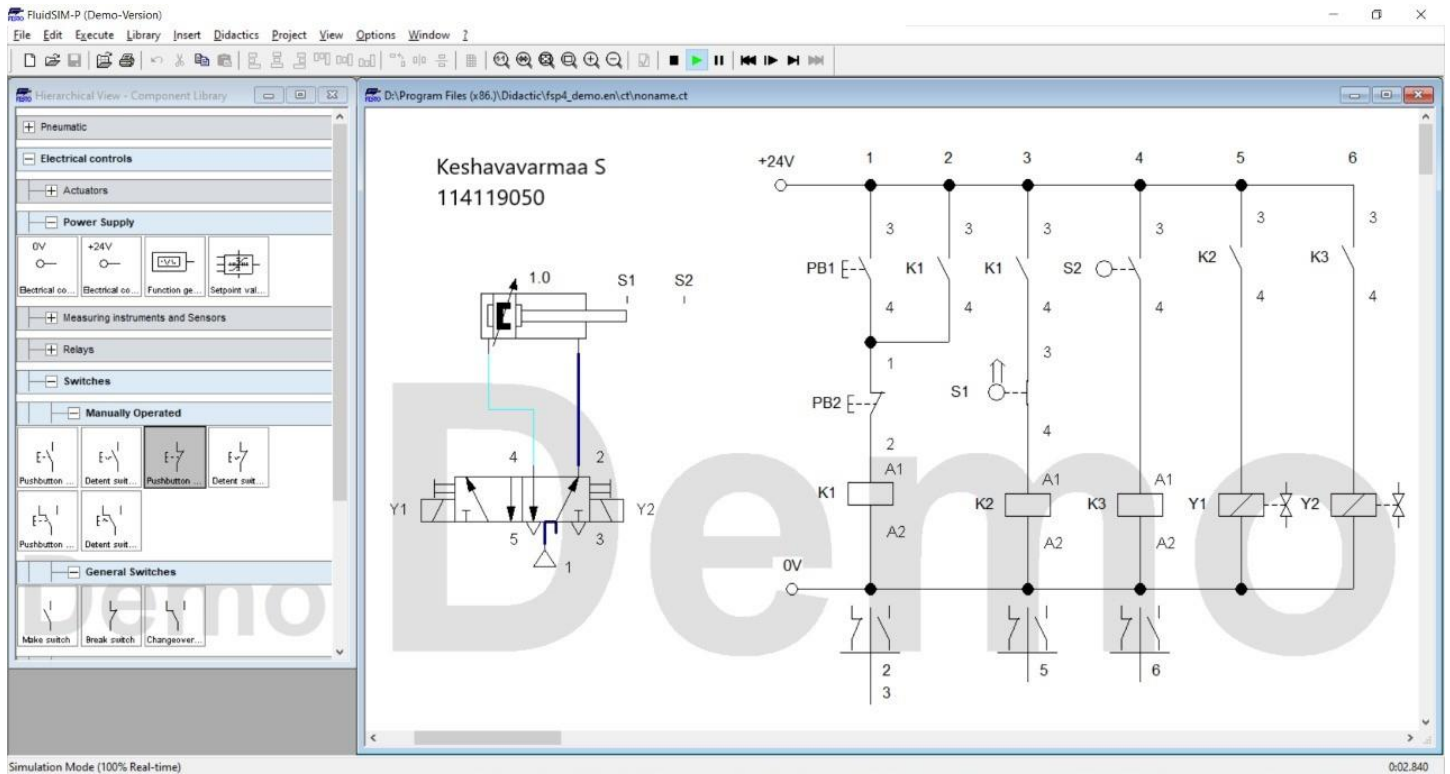
Working of the Circuits:

- When a 'Start' push button (PB1) is pressed, a double-acting cylinder is to perform a continuous back-and-forth motion until a 'stop'; push-button is pressed. The cylinder should stop in the retracted position always. A 5/2 DC double-solenoid valve is used as the final control element.
- When push button (PB2) is pressed the back-and-forth motion will be stopped and returned to the original position, i.e. the cylinder will retract backwards.

Simulate circuit with State Diagram using FluidSIM-P:



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Results: Thus, an electro-pneumatic power circuit and an electrical control circuit to implement the control task is developed.