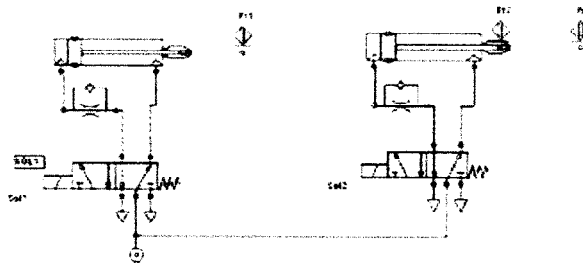


[Problem 1 – without using a timer]

In this project, you may use either limit switches or proximity sensors to implement your PLC program. Please design and implement a relay-schematic ladder diagram to perform the following tasks:

1. An NO push button (which will be immediately opened when released) is to start the operation and extend Cylinder A at an adjustable speed when Cylinder B is in the retract position, which is sensed by a proximity sensor Pr3.
2. Cylinder B starts to move forward slowly when Cylinder A is fully extended and is sensed by a proximity sensor Pr1.
3. Cylinder A remains in fully extended position, but when Cylinder B is fully extended and is sensed by a proximity sensor Pr2, Cylinder A starts to retract at regular speed.
4. Cylinder B remains in fully extended position, but when Cylinder A starts to retract, so does Cylinder B.
5. The operation will be continuously repeated until another NC Push Button is pressed.



[Problem 2 – with a timer]

Add a timer in Step 4 of Problem 1 so that Cylinder B won't retract until five seconds after Cylinder A starts to retract.