

Basic Mechatronics Workshop

Module 3: Introduction to PLC

LAB-6

a and b contact, coil,

Compare of Pneumatic circuit and PLC circuit

(Practice)

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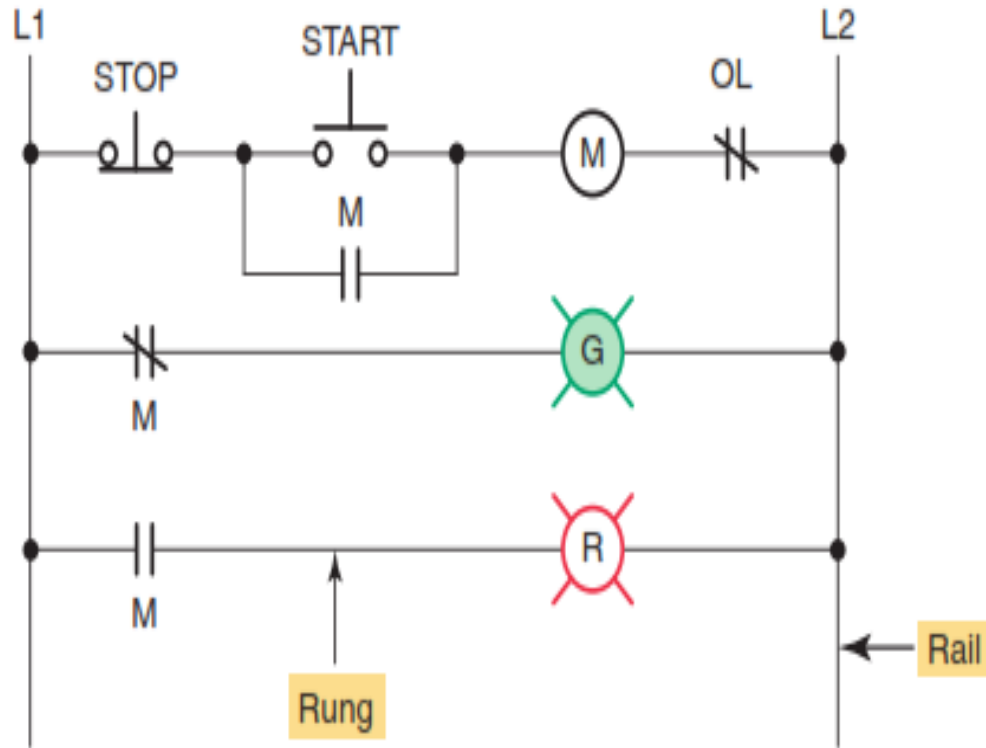
Compare of Pneumatic circuit and PLC circuit (Practice)

Objectives

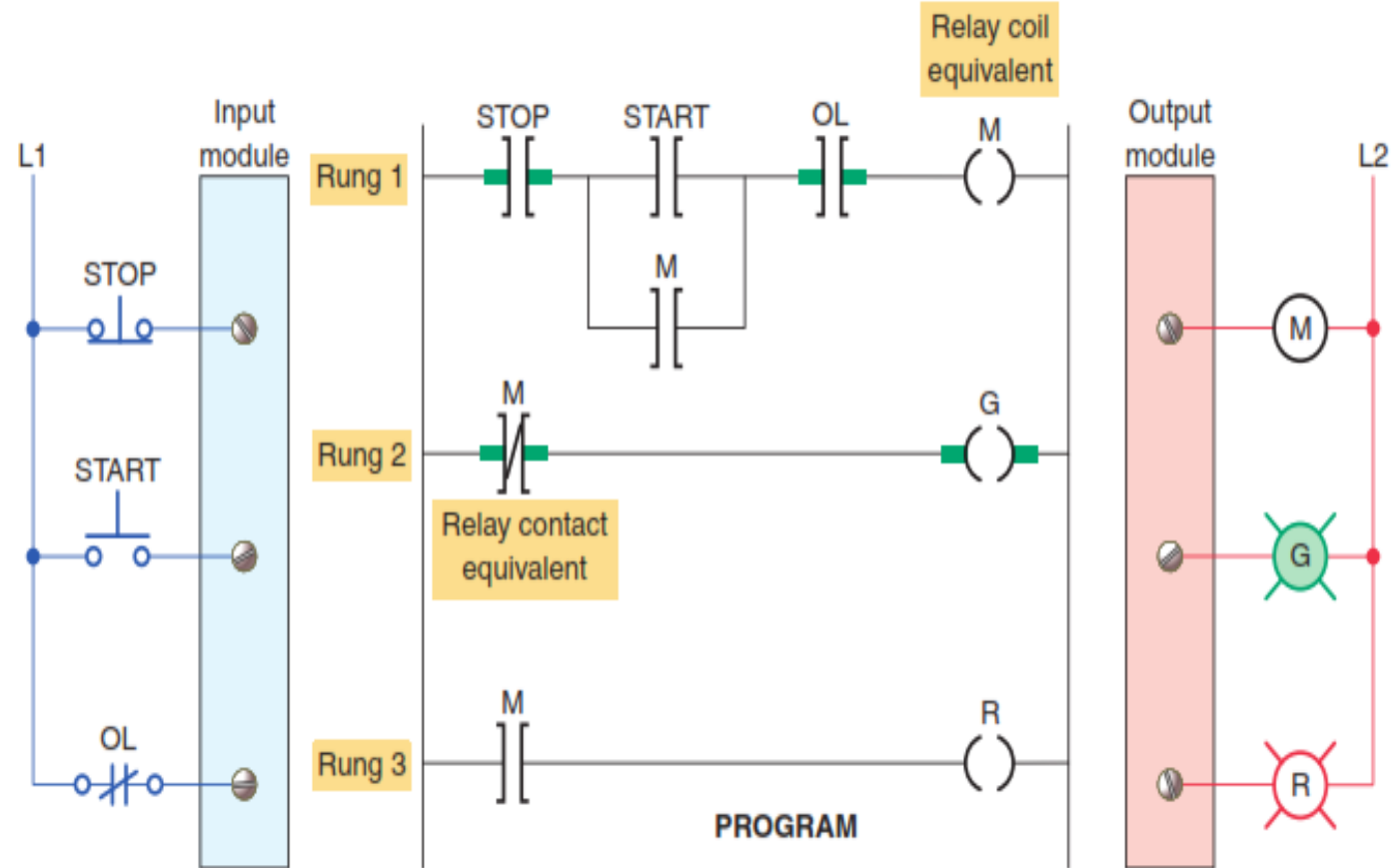
Upon completion of this chapter, Student should be able to

- ✓ Convert the hardwired logic to programmed logic
- ✓ illustrates the relationship between the relay ladder schematic, the ladder logic program, and the equivalent logic gate circuit through control a solenoid valve.

Hardwired Logic versus Programmed Logic



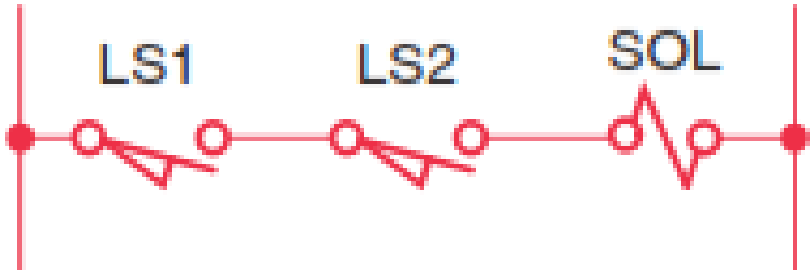
Motor stop/start relay ladder schematic.



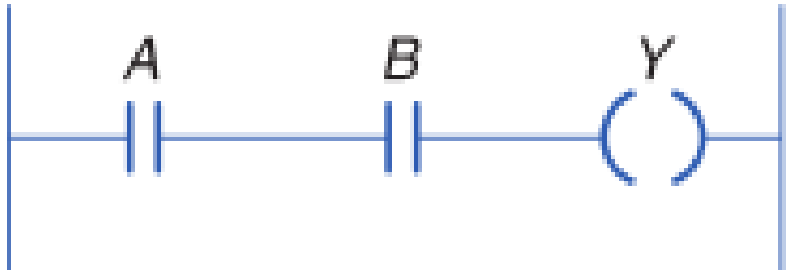
Motor stop/start ladder logic program

Example 1 Two limit switches connected in series and used to control a solenoid valve.

Relay schematic

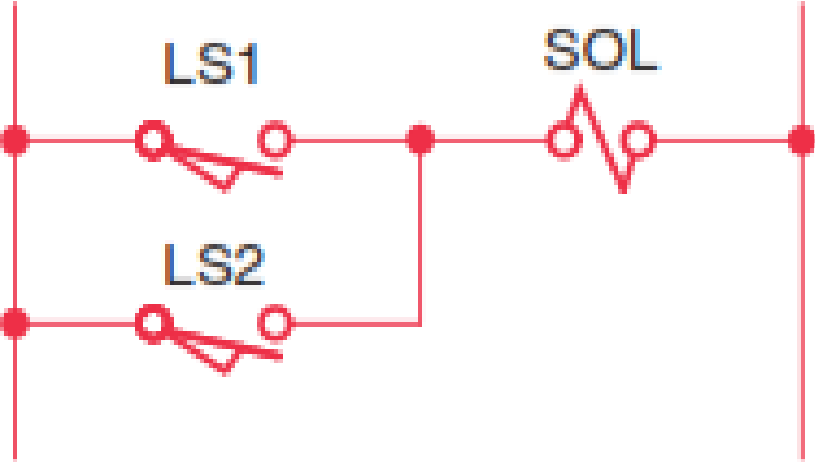


Ladder logic program

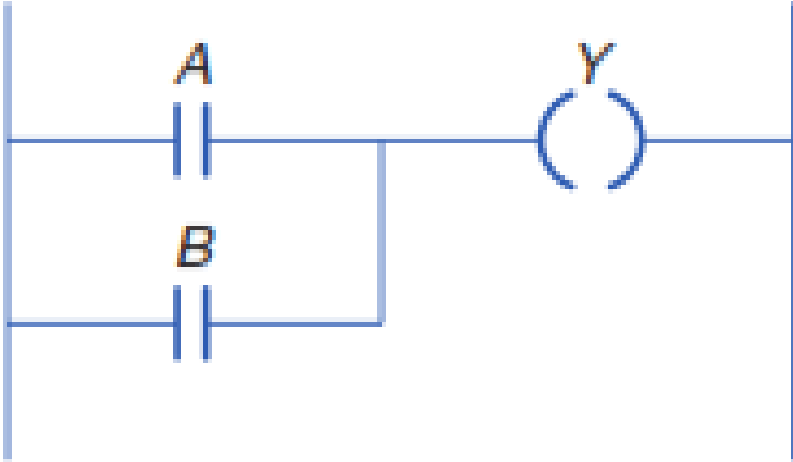


Example 2 Two limit switches connected in parallel and used to control a solenoid valve.

Relay schematic

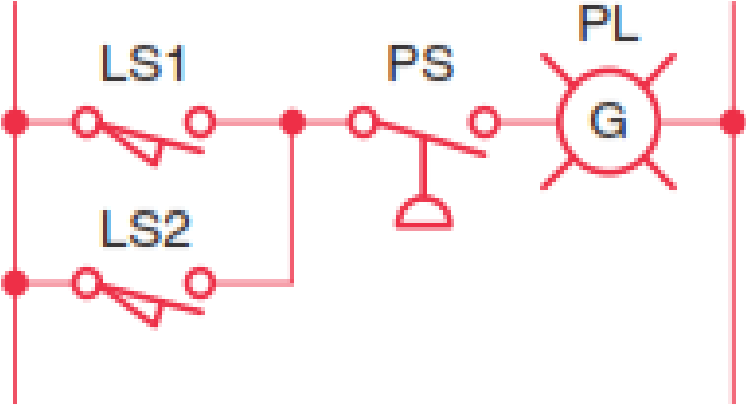


Ladder logic program

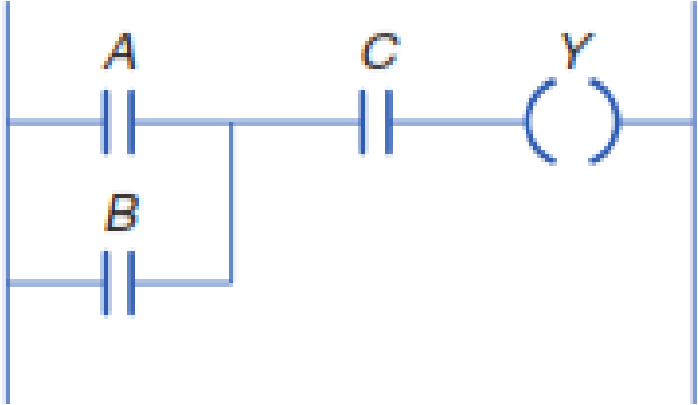


Example 3 Two limit switches connected in parallel with each other and in series with a pressure switch.

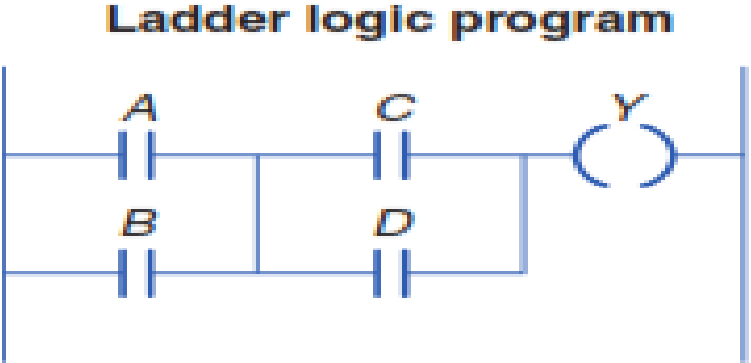
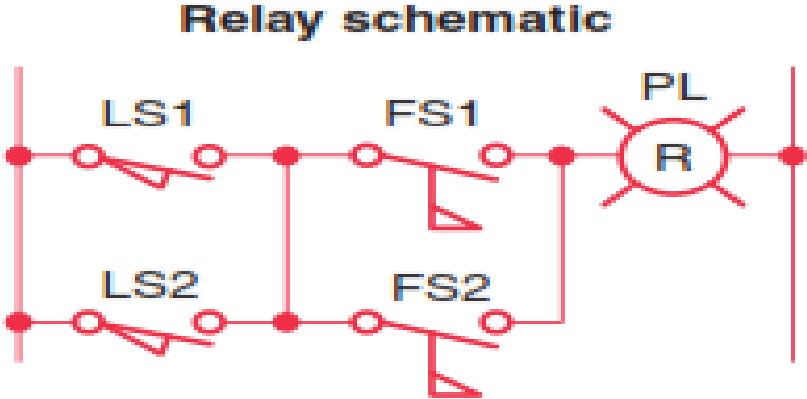
Relay schematic



Ladder logic program

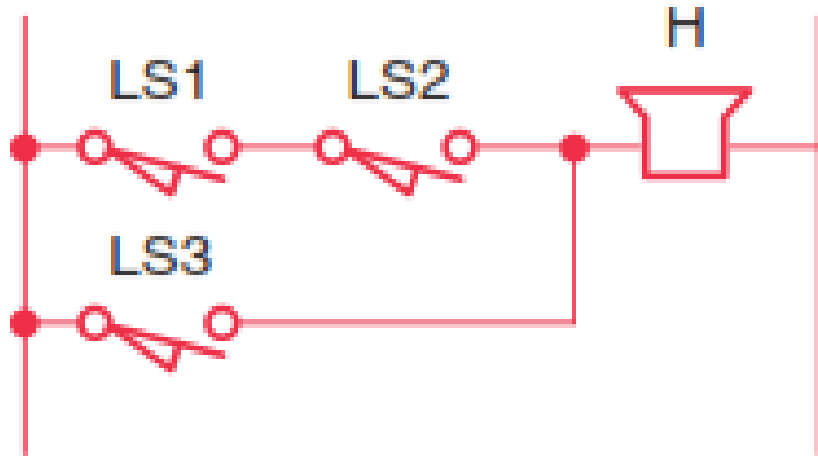


Example 4 Two limit switches connected in parallel with each other and in series with two sets of flow switches (that are connected in parallel with each other), and used to control a pilot light.

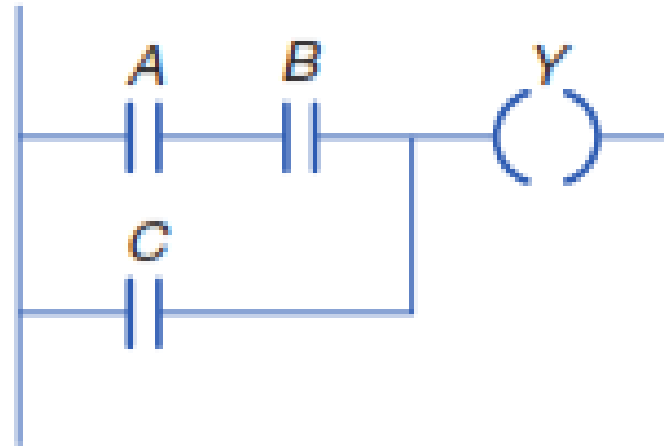


Example 5 Two limit switches connected in series with each other and in parallel with a third limit switch, and used to control a warning horn.

Relay schematic

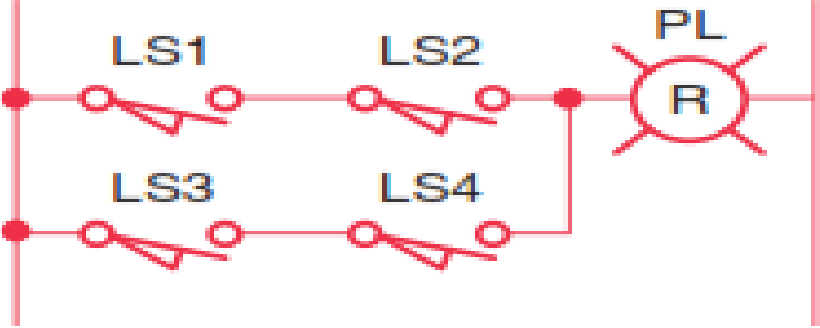


Ladder logic program

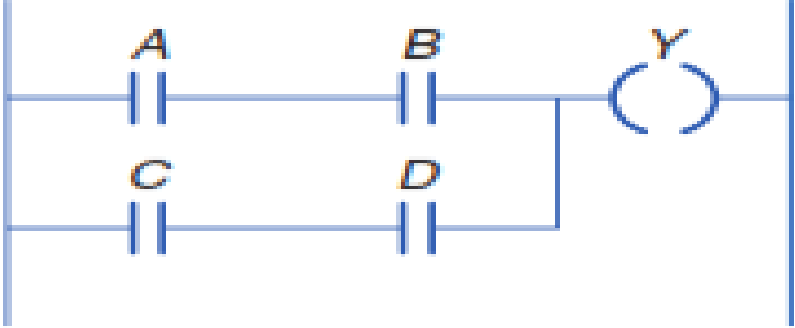


Example 6 Two limit switches connected in series with each other and in parallel with two other limit switches (that are connected in series with each other), and used to control a pilot light.

Relay schematic

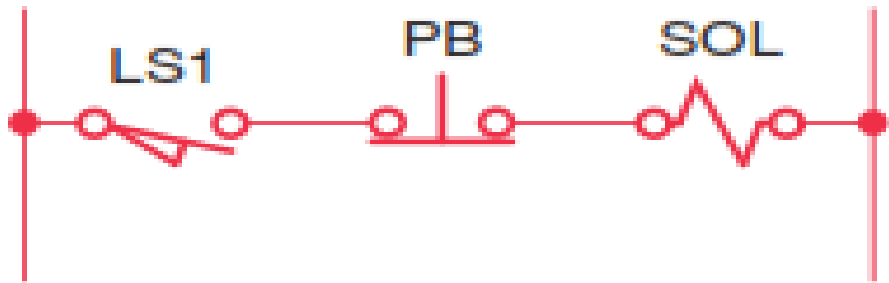


Ladder logic program

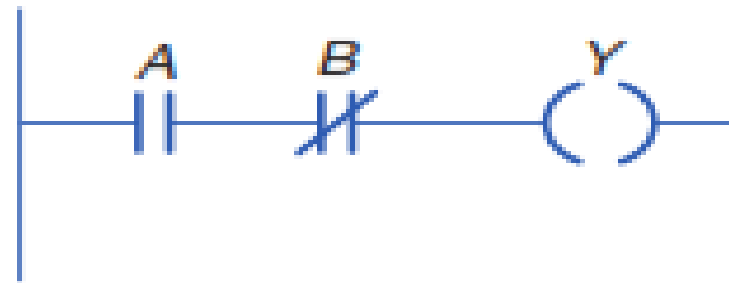


Example 7 One limit switch connected in series with a normally closed pushbutton and used to control a solenoid valve. This circuit is programmed so that the output solenoid will be turned on when the limit switch is closed and the pushbutton is not pushed.

Relay schematic

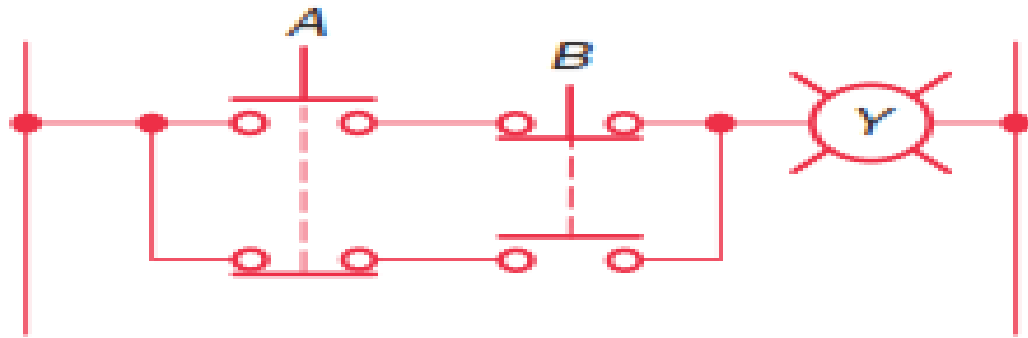


Ladder logic program

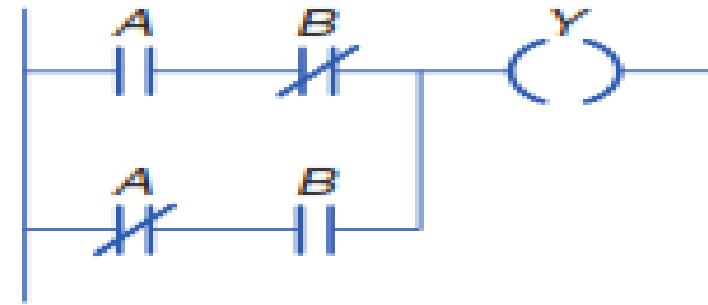


Example 8 Exclusive-OR circuit. The output lamp of this circuit is ON only when pushbutton A or B is pressed, but not both. This circuit has been programmed using only the normally open A and B pushbutton contacts as the inputs to the program.

Relay schematic

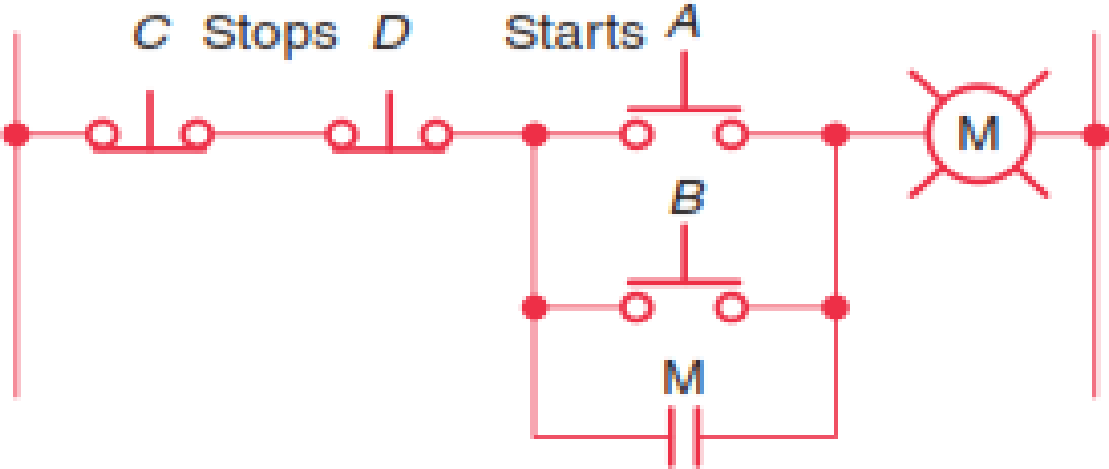


Ladder logic program



Example 9 A motor control circuit with two start/stop buttons. When either start button is depressed, the motor runs. By use of a seal-in contact, it continues to run when the start button is released. Either stop button stops the motor when it is depressed.

Relay schematic



Ladder logic program

