

PLC125 LAB 2.1: WIRING AND TROUBLESHOOTING A REVERSING START/STOP CONTROL CIRCUIT

Student Name: _____

Student ID: _____

LAB OUTCOMES:

Upon completion of this lab procedure, the student should be able to:

1. Wire a motor reversing control circuit with pushbutton and auxiliary contact interlocking.
2. Measure the voltage at various test points in the controls circuit
3. Explain the operation of a motor reversing control circuit.
4. Troubleshoot a motor reversing control circuit.

LAB PROCESS:

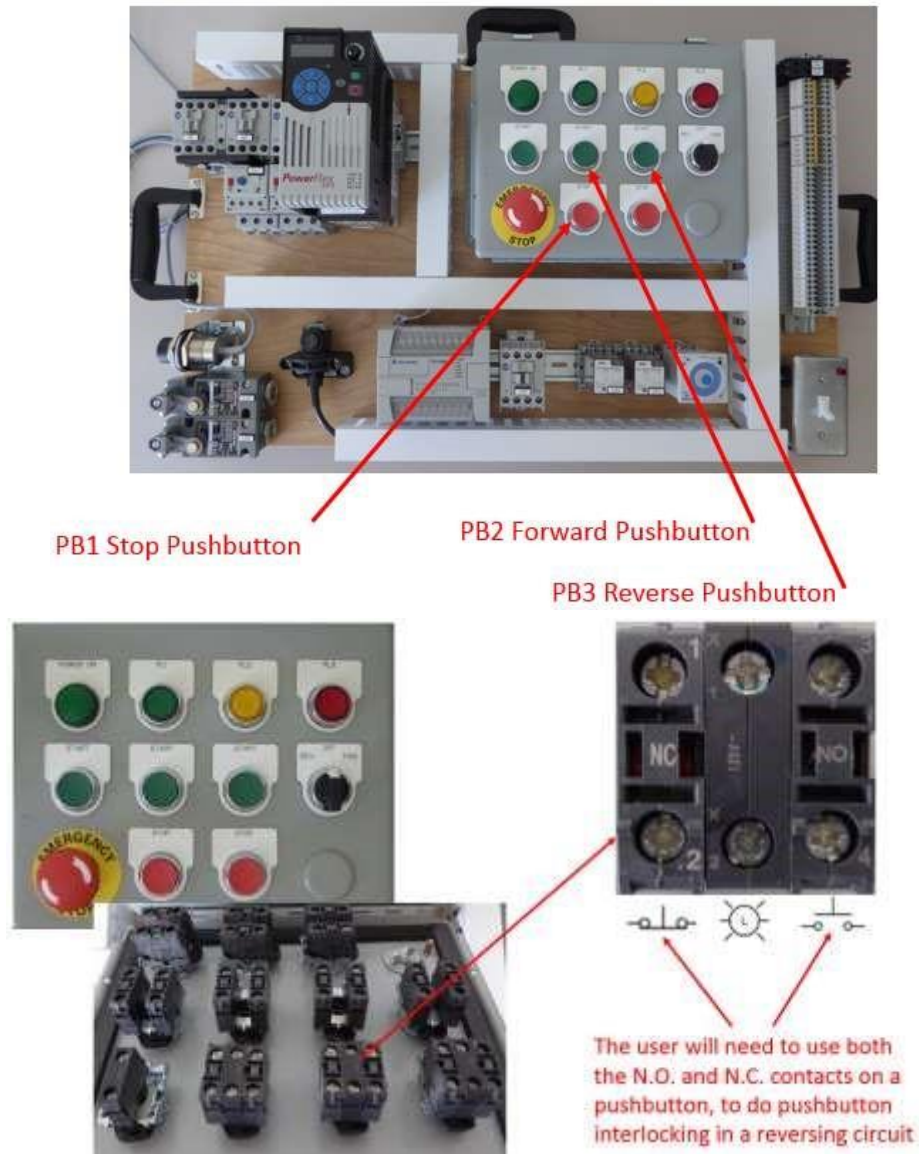
Set up NSCC 120VAC wiring board. Setup the unit on its base, or lay flat on the work table.

Connect the power cord and turn off the power input switch to make sure the unit is not powered.

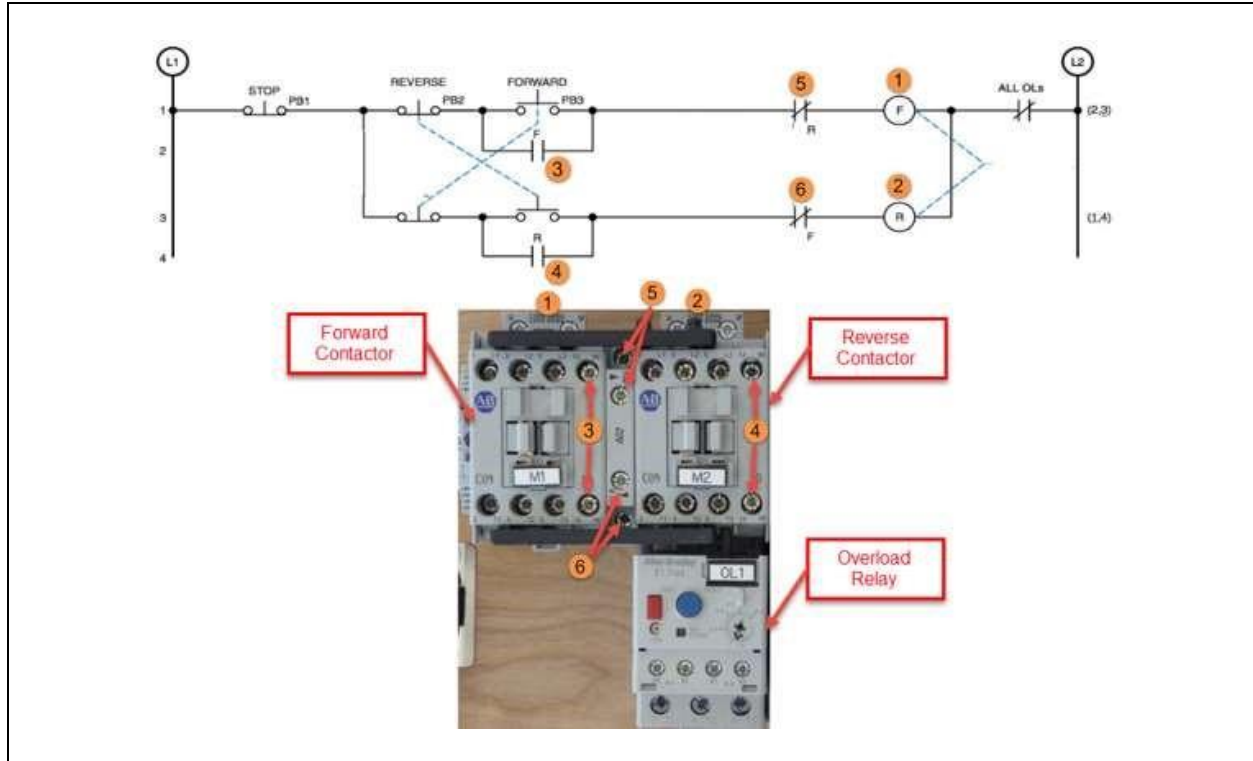
Part 1:

1. Make sure the power is removed from the wiring board. Identify the IEC reversing motor starter that will be used in this lab.

2. Identify the pushbuttons that will be used in this lab. Notice that you will need a N.O and N.C contact on the Forward and Reverse pushbutton (use the 2 pushbuttons marked as Start on the trainer).

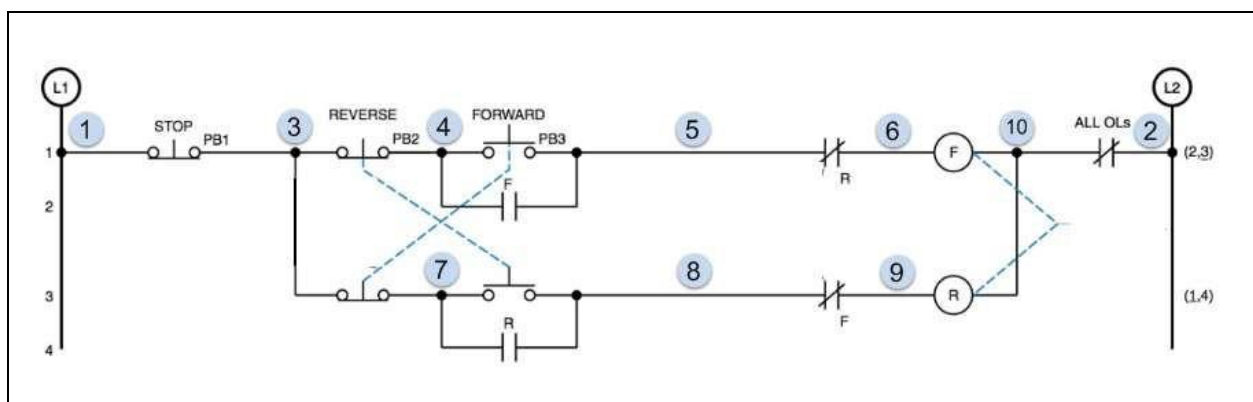


3. Correlate the interlocking components on the reversing motor starter and symbols on the electrical diagram.



Part 2:

1. Use the following wire numbers and red MTW wire to construct the following circuit. Apply 120VAC power to the board.



2. Measure the voltage between electrical nodes 1 & 2 on the terminal strip.

What is the measured value? _____

3. Make sure that no pushbuttons are actuated. What is the voltage that is measured between the following electrical nodes:

- a. Voltage between 3 & 2? _____
- b. Voltage between 4 & 2? _____
- c. Voltage between 5 & 2? _____
- d. Voltage between 6 & 2? _____
- e. Voltage between 7 & 2? _____
- f. Voltage between 8 & 2? _____
- g. Voltage between 9 & 2? _____

4. Momentarily push the Forward pushbutton. Does the Forward contactor pull in?

5. What is the voltage that is measured between the following electrical nodes:

- a. Voltage between 3 & 2? _____
- b. Voltage between 4 & 2? _____
- c. Voltage between 5 & 2? _____
- d. Voltage between 6 & 2? _____
- e. Voltage between 7 & 2? _____
- f. Voltage between 8 & 2? _____

- g. Voltage between 9 & 2? _____
6. Momentarily push the Reverse pushbutton. Does the Forward contactor drop out and the Reverse contactor pull in?
7. What is the voltage that is measured between the following electrical nodes:
- a. Voltage between 3 & 2? _____
 - b. Voltage between 4 & 2? _____
 - c. Voltage between 5 & 2? _____
 - d. Voltage between 6 & 2? _____
 - e. Voltage between 7 & 2? _____
 - f. Voltage between 8 & 2? _____
 - g. Voltage between 9 & 2? _____
8. Press the Stop pushbutton. Are both contactor coils de-energized?

Questions:

1. How many methods of interlocking is used in this circuit?

2. In this control circuit, what would be the two methods of electrical interlocking?

3. What does the dotted lines between the F & R coils mean on the electrical diagram?

4. What does the dotted lines between the pushbutton contacts mean on the electrical diagram?

The outcomes of this exercise (listed on page 1) specifies the skills that the Student must demonstrate to the Instructor. Once the Instructor is satisfied with the demonstration of Knowledge & Skills by the individual student, they will sign this document (for the student), then enter a 100% into the Hands-On Lab grade in Sakai.

I verify that this student has completed all of the requirements of this Hands-On Assessment:

Student Name: _____

Faculty Signature: _____ Date: _____

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