Title: **Stop/Start/Jog using Selector Switch for a Three-Phase Mtr** Job: 19

Course: Introduction to Automation Unit: Introduction of PLC CLO: 4

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Station \_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall reinforce their knowledge of a stop/start/jog motor control circuit.
2. Student shall develop a knowledge of retentive timers and their use.
3. Student shall apply this circuit in a three-phase motor control scenario.

**Assessment**

Students shall demonstrate a comprehension of the objectives listed above by scoring a minimum of 75% on this Job. Grading shall be based on the Introduction to PLC rubric.

**Instructions**

Design a stop/start/jog motor control circuit using two momentary pushbuttons. The circuit will also utilize a latching mushroom head pushbutton to act as an “ESTOP” as well. If the ESTOP is pressed, the motor shall stop and not be able to be restarted until the “ESTOP” is disengaged. One pushbutton shall be a traditional “stop”. When pressed, it shall stop the motor. A selector switch shall determine if the circuit is a sealing circuit, or used as a “jog” circuit. When the selector switch is in the “A” position and the “start” button is pressed, the motor shall start and stay running even when the button is released. When the selector switch is in the “B” position and the “start” button is pressed, the motor shall start and only run while the button is pressed. Once released, the motor shall stop. The control circuit shall also contain an “overload” function. If a motor overload occurs, the control circuit shall disable itself requiring the operator to press “start” after the overload is reset. Additionally, a retentive timer shall be used to keep track of motor run time. When the motor is running, the timer shall increment keeping track of how long the motor has been running. When the motor is off, the timer shall retain the time. If the motor is re-started, the timer will continue to time from the previously stored value. Whenever the motor has been “started” and keeps running, the green light shall illuminate. Whenever the motor has been “jogged”, the blue light shall illuminate. The green and blue light shall never be on at the same time. When the motor is not running, the red light shall illuminate. If an overload occurs, the yellow light shall illuminate. During overload, it is permissible for both the yellow and red lights to be on simultaneously. Once complete, review the design with the instructor. After obtaining approval, configure the program in RSLogix 500. Have the instructor review the program before downloading. After review, download the program.

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| --- | --- | --- | --- | --- |
| Input | Description | Output | Desc | Three-Phase Motor Starter |
| I/0 | ESTOP | O/0 | Green |  |
| I/1 | 3P SS, Position A | O/1 | Yellow |
| I/2 | 3P SS, Position B | O/2 | Red |
| I/3 | 2P SS, Pos. A =ON | O/3 | Blue |
| I/4 | PB1, NC | O/4 | FWD Coil |
| I/5 | PB2, NO | O/5 | REV Coil |
| I/6 | PB3, NO |  |  |
| I/7 | Forward NO Contacts |  |  |
| I/8 | Overload NC Contacts |  |  |
| I/9 | Reverse NO Contacts |  |  |

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Discussed design \_\_\_\_\_\_\_, Test logic without motor \_\_\_\_\_\_\_, With motor \_\_\_\_\_\_\_