Title: **Stop/Start/Swap for two Three-Phase Motors** Job: 24

Course: Introduction to Automation Unit: Introduction of PLC CLO: 2, 4

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

**Objectives**

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

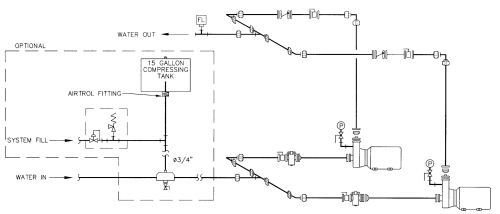
**Assessment**

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/swap motor control circuit using two momentary pushbuttons. The circuit will also utilize a latching mushroom head pushbutton to act as an “ESTOP”. One pushbutton shall be a traditional “stop”. When pressed, it shall stop the motor. The control circuit shall also contain an “overload” function. If a motor overload occurs, the control circuit shall stop the running motor requiring the operator to press “start” after the overload is reset. This circuit has two motors that are paired together to perform one function. One pump alone can handle all the process needs, but a second is utilized to “backup” the other pump. If one pump is broken or needs maintenance, it can be valved off and the other pump shall supply the process. Since only one pump is needed at a time, the circuit shall “swap” run time between the two pumps. One pump shall run for 1 hour, then the other pump shall run for the same duration. When the pumps are swapped, the initially running pump shall remain on for 15 seconds while the other is started. This will ensure there is no process flow interruption during the swap. Retentive timers shall be used to keep track of each motor’s run time. When each motor is running, a 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 motor 1 has been “started”, the green light shall illuminate. Whenever motor 2 has been “started”, the blue light shall illuminate. When the motor is not running, the red light shall illuminate. If an overload occurs, the yellow light shall blink. 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.

**THIS CIRCUIT WIL NOT BE CONNECTED TO 3-PHASE AT ANY TIME!!!**



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