Title: **Fwd-Rev-Jog using a Selector Switch for 1P Motor** Job: 19

Course: Intro to Automation Unit: Manual Motor Control CLO: 1, 2

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade \_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**

1. Student shall repeat the design and construction of a reversing single-phase motor.
2. Student shall apply “jogging” functionality to a reversible, single-phase motor control circuit.
3. Student shall contrast “jogging” a non-reversing to a reversing single-phase motor circuit.

**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 Manual Motor Control rubric.

**Devices**

|  |  |  |
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| Inputs | | |
| *Device* | *Description* | *Symbol* |
| Three-position Selector Switch | Direction, Forward, Off, Reverse | DIRECTION |
| Normally Closed Pushbutton | Stop Motor | STOP |
| Normally Open Pushbutton | Start | START |
| Dual-Action Pushbutton | Jog | JOG |
| Outputs | | |
| *Device* | *Description* | *Symbol* |
| Green Pilot Light | Motor Running | RUNNING |
| Yellow Pilot Light | Forward Indication *(Optional)* | FORWARD |
| Red Pilot Light | Motor Stopped | STOPPED |
| Blue Pilot Light | Reverse Indication | REVERSE |
| Eleven-Pin Relay | Direction Control | DIR |
| Eight-Pin Relay | Motor Control | MS |
| 120VAC Motor | Reversible ½HP AC Motor | M |

**Instructions**

Design a forward/reverse motor control circuit using the devices listed above. One pushbutton shall be a START button. When the START button is pressed, the motor shall start and continue to run even if the START button is no longer pressed. Another pushbutton shall be a JOG pushbutton. If JOG is pressed, the motor shall start and run only while the button is pressed. Once the JOG button is released, the motor shall stop. If the STOP button is pressed, the motor shall stop regardless of direction. The selector switch shall determine if the motor is to rotate FORWARD (CCW) or REVERSE (CW). If the motor is running and the selector switch is changed, the motor shall stop running. The operator shall be required to press the START button to engage the motor in the newly selected direction. While the motor is running in either direction, the green light shall illuminate, and the red light shall be off. If the REV option is selected, the blue light shall illuminate when the motor is running. When the motor is not running, only the red light shall illuminate. BONUS: Add a yellow light that illuminates when the motor is running and FWD is selected. Use the space on the opposite side of this page to design the circuit. Once complete, review the design with the instructor. After obtaining approval, wire the circuit ensuring to label all wires with the appropriate wire numbers. Have the instructor review all wiring before energizing the circuit. Render the schematic using a CAD type software package. Post the schematic to the *student share* folder using filename *MMC Job 19 – name.ext.*

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Discussed design \_\_\_\_\_\_\_\_ Checked wiring \_\_\_\_\_\_\_\_ Energized Test \_\_\_\_\_\_\_\_