Title: **Canning Conveyor Circuit** Job: 28

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 sequence control of a conveyor.

**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.

**Devices**

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| Inputs | | |
| *Device* | *Description* | *Symbol* |
| Limit Switch | Box Indication | BOX\_STAT |
| NC Pushbutton (PB1) | Stop Motor | STOP |
| NO Pushbutton (PB2) | Start Motor | START |
| NO Pushbutton (PB3) | Jog Motor | JOG |
| NO Contacts (MS-F-AUX) | Conveyor Status | CONV\_STAT |
| NO Contacts (MS-OL) | Conveyor Overload Contacts | CONV\_OL |
| Outputs | | |
| *Device* | *Description* | *Symbol* |
| Green Pilot Light | Conveyor Moving | MOVING |
| Red Pilot Light | Conveyor Stopped | STOPPED |
| Yellow Pilot Light | Motor Overload | OVERLOAD |
| Blue Pilot Light | Box in position | BOX |
| 24VDC Three-Phase Motor Starter | Conveyor Motor Starter | CONV |

**Instructions**

Design a stop/start/jog motor control circuit using three momentary pushbuttons. The circuit will also utilize a limit switch to control a conveyor. The limit switch shall be wired in place of the existing ESTOP input. One pushbutton shall be a stop, one a start and the other a jog. This circuit has a motor that controls a conveyor for a canning operation. This control scheme fills either a six or twelve pack of cans. A selector switch shall be used to determine which operation is running (6 or 12). When start is pressed, the conveyor shall move a box along a conveyor until a limit switch detects that the box is in place. A timer will start and run for the fill time that is required. For a six pack, 5 seconds is required. For a twelve pack, 10 seconds is required. Once the fill timer is done, the conveyor will start again. The loss of the limit switch shall indicate that the box is gone. The conveyor shall continue to run until either the limit switch indicates a new empty box has arrived or the conveyor has been running for 15 seconds without an empty box arriving. If a new box arrives, the fill sequence starts all over again. If no box arrives, the conveyor shall stop and require the operator to press start to begin the sequence again. Light are defined as listed above. If the conveyor times out due to no box, the blue light shall blink.

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