TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

Qualification Code	**:**	**071606T4MCT**
Qualification	**:**	**Mechatronic Technician Level 6**
Unit Code	**:**	**ENG/OS/MC/CR/05/6/A**
Unit of Competency	**:**	**Carry out mechatronic programming**

PRACTICAL ASSESSMENT

INSTRUCTIONS TO CANDIDATE

1. In this practical assessment, you are required to perform the following tasks:
    a. Install and use PLC application software
    b. Interpret a tag table and install PLC components
    c. Configure and test PLC system
2. You will be allocated **3 HOURS** to complete the practical task.
3. The assessor will record your performance at critical points using audio-visual means

Requirement:

Use relay and PLC module separately to control 5/3 double solenoid valve to complete double-acting cylinder's continuous reciprocating movement.

Relay control

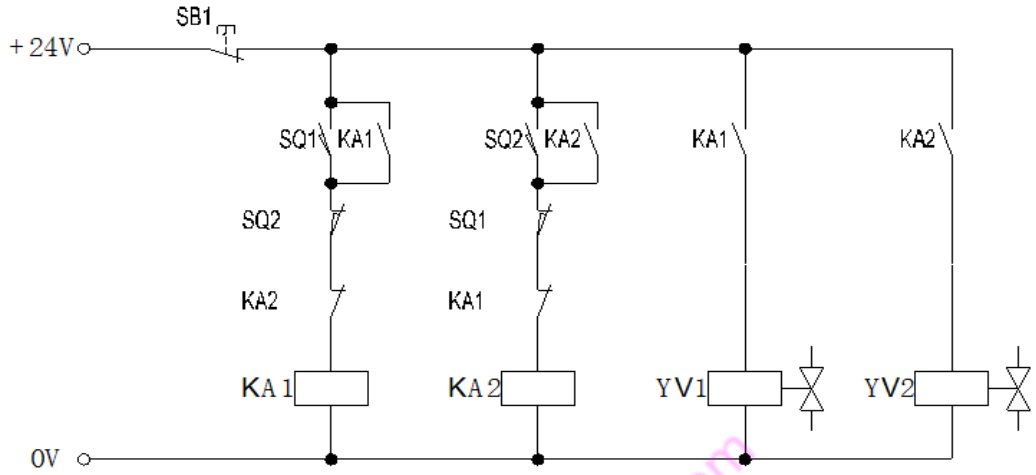


Figure 1: Electrical Schematic

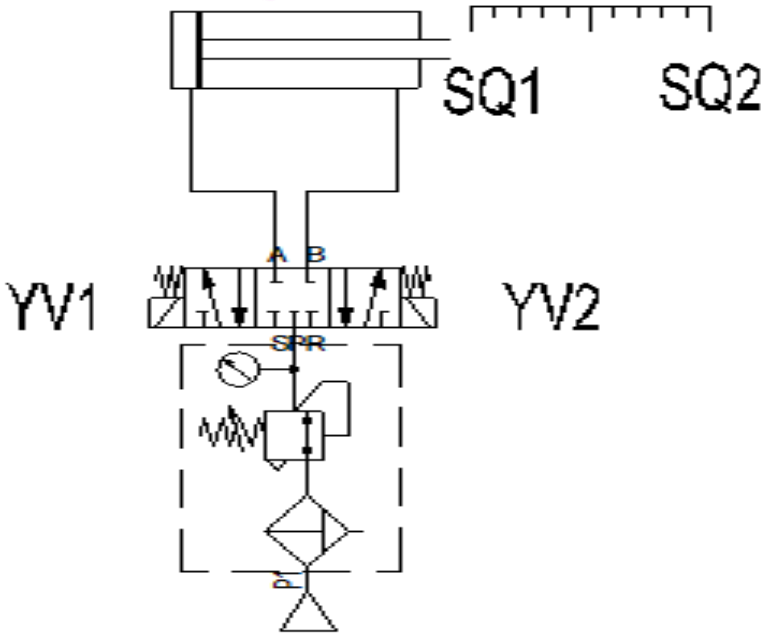


Figure 2: Pneumatic schematic

Principle statement:

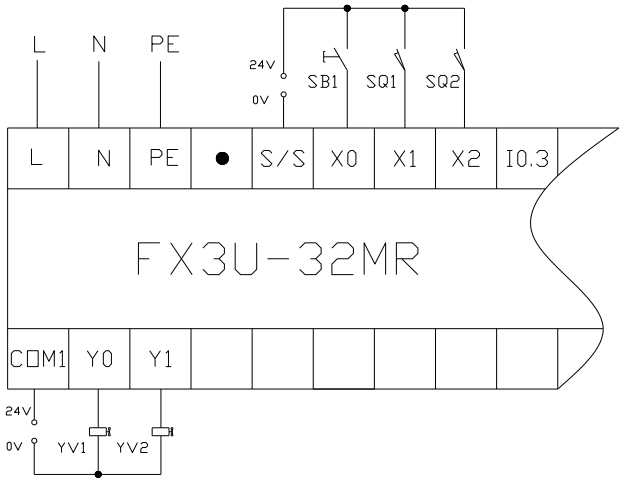
- Press the self-lock button SB1 to connect 24V power supply,
- press the self-reset button SB2, the coil of the relay KA1 energized, its commonly on contact close, the solenoid valve coil energized, the cylinder extended,
- after extending then press stroke switch SQ1, the coil of the relay KA1 loss power, it's NO contact break off, NC contact close, relay KA2 coil energized, it's NO contact close, then right coil of the solenoid valve energized, the cylinder retracts back,
- after retracting the press stroke switch SQ2, the coil of the relay KA2 loss power, it's NO contact break, NC contact close, relay KA1 coil energized, the cylinder will extend out, cycle as such.

PLC control

I/O Distribution sheet

DI wiring	SB1	X0
	SQ1	X1
	SQ2	X2
	S/S	0V
DO wiring	YV1	Y0
	YV2	Y1
	COM1	24V

PLC wiring schematics:



Procedure:

i. Understand each electrical contact, function and symbolic structure;
ii. Connect cable according to the electrical schematics;
iii. Build pneumatic circuit according to the pneumatic schematics;
iv. Develop a ladder diagram program using GX works2 to perform the task and download it to the PLC.
v. Debug and check equipment;
vi. Test with the presence of an assessor;
vii. Generate **HARD** copies of the ladder program with your **name, date and registration numbe**r on the cover page.
viii. Turn off the power after finishing the task.
ix. Remove the elements and placed neatly.