

071605T4MCT

MECHATRONICS TECHNOLOGY LEVEL 5

ENG/OS/MC/CR/02/5/A

Maintain Electromechanical Systems

Nov/Dec 2024



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

OBSERVATION CHECKLIST

Candidate's name & Registration No.			
Assessor's name & Reg. code			
Venue of Assessment			
Date of assessment			
Items to be Evaluated: <i>Please award marks as appropriate. Give a brief comment on your observation.</i>	Marks Allocated	Marks Obtained	Comments
1. Wore PPEs according to OSHA 2007: (i) Overall (ii) Safety boots <i>(Award 1 mark for each correctly worn PPE)</i>	2		
Sub-Total	2		
TASK 1: DIAGNOSED SYSTEM FAULTS			
2. used equipment and tools according to the designated task: (i) Screw driver	2		

(ii) Multimeter (Award 1 mark or 0 for using each tool correctly)			
3. Started and run the system to check whether it is operating as per the manufacturers' specification. (Award 2 marks or 0)	2		
4. Inspected and tested the power supply system: (i) Tested the power supply in the extension bar; (Award 2 marks or 0) (ii) Checked cables for complete connection; (Award 2 marks or 0) (iii) Carried out continuity test on each input and output conductor of the power supply unit; (Award 1 mark for each of the 4 tests done) (iv) Inspected the power supply unit and identified the faulty fuse in the top plug; (Award 2 marks for correctly identifying the faulty fuse in the top plug)	10		
5. Inspected and troubleshooted the sensors: (i) Conducted visual inspection of sensors and identified the disconnected P24 terminals; (Award 2 marks for correct identification) (ii) Identified incorrect sensitivity of the sensor.	4		

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(Award 2 marks for correct identification)			
6. Inspected and troubleshoot the middle solenoid valve: (i) Conducted a visual inspection and identified the ground terminal, of the middle solenoid valve, which is disconnected. (Award 2 marks for conducting test and identifying the disconnected terminal)	2		
7. Inspected the pneumatic circuit: (i) Conducted a visual inspection and identified the plugged-out air tubes, of the two feed cylinders. (Award 1 mark for identifying unplugged air tubes of each feed cylinder)	2		
Sub -Total			
TASK 2: SERVICE AND PAIR THE SYSTEM			
8. Carried out repair of power supply system: (i) Tested fuses provided to select the working one; (Award 2 mark for correctly testing each fuse) $2 \times 2 = 4$ marks (ii) Inserted the working fuse in the top plug. (Award 2 marks or 0)	6		
9. Carried out repair on the pneumatic circuit: (i) Correctly connected the unplugged air tubes to the right valves. (Award 2 marks for correctly plugging the unplugged air tubes to the right valves)	4		

Page 3 of 6

10. Carried out repair and test of the sensors: (i) Correctly connected the disconnected terminal (P24) of the two sensors; (Award 2 marks for correct connection to each sensor) (ii) Correctly adjusted sensitivity of the sensor. (Award 2 marks for correct adjustment)	4		
11. Carried out repair of middle solenoid valve: (i) Correctly connected the ground terminal of the middle solenoid valve. (Award 2 marks or 0)	2		
12. Powered the system for testing: (i) Turned on power supply; (Award 1 mark or 0) (ii) Turned on the pneumatic circuit. (Award 1 mark or 0)	2		
Sub -Total			
TASK 3: TESTED AND OPERATED THE SYSTEM			
13. Tested electromechanical equipment to confirm its proper operation according to manufacturer specifications: (i) Tested the Electrical system. (Award 2 marks for correct testing of AC voltage of the components) (ii) Operated the system; (Award 4 marks if the sorting happens successfully)	6		
14. Powered off the system: i. Powered off electrical system procedurally; (Award 2 marks for correct procedure)	4		

ii. Turned off pneumatic system (Award 2 marks for correct procedure)			
15. Performed housekeeping: (Award 2 mark for cleaning and right workstation organization)	2		
Sub-Total	12		
GRAND TOTAL $\left(\frac{x}{54} \times 100\%\right)$	54		
ASSESSMENT OUTCOMES			
The candidate was found to be: Competent ☐ Not yet competent ☐ (Please tick as appropriate) (The candidate is competent if s/he gets 50% or higher)			
Feedback from candidate:			
Feedback to candidate:			
Candidate's signature: _____	:	_____	
Assessor's signature: _____	Date:	_____	

APPENDIX I: FOR THE ASSESSOR ONLY

INSTRUCTIONS TO THE ASSESSOR:

In this assessment, the candidate will be required to perform practical tasks on DLFA-DCD03 Mechatronic sorting unit training module.

The following errors should be deliberately introduced into the system:

- (i) Out of the two fuses provided one should be faulty.
- (ii) Disconnect the ground terminal of the middle solenoid valve.
- (iii) Adjust the sensitivity of one of the sensors.
- (iv) Plug out any two of the outlet air pipes of the double-acting cylinders of the sorting unit.
- (v) Disconnect the positive terminal (P24) of any two sensors from the terminal block,
but not the signal terminal connected to the PLC input
- (vi) Replace the 13A fuse of the extension by the machine with a faulty one.

The trainee should identify the faults and replace the faulty 13A fuse, connect the connect the air tubes of the two air cylinders and sensors.

errors accordingly: e.g., identify and connect the ground terminal of the middle solenoid valve, disconnect the positive terminal (P24) of the two sensors.