071506T4MTM

MECHANICAL TECHNOLOGY AND MAINTENANCE TECHNICIAN LEVEL 6

ENG/OS/MEM/CR/07/06

Maintain Hydraulic and Pneumatic Systems

July /August 2025

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

OBSERVATION CHECKLIST

INSTRUCTIONS TO ASSESSOR

1. You are required to guide the candidate on duration of this assessment as per the department's practical assessment schedule for this unit as the assessment is to be done continuously during training.
2. Assess the candidate as the practical progresses observing the critical areas
3. You are required to mark the practical as the candidate perform the tasks
4. You are required to take video clips at critical points
5. Ensure the candidate has a name tag and registration code at the back and front

OBSERVATION CHECKLIST

Candidate's name & Registration No.	
Assessor's name & Reg. code	
Venue of Assessment	
Date of assessment	

Items to be evaluated: *(Award appropriate marks for each item evaluated)*	**Marks available**	**Marks obtained**	**Comments**
TASK 1: REPLACE WORN OUT PISTON RINGS AND THE PIN LOCKING THE CONNECTING ROD AND THE PISTON OF THE COMPRESSOR			
1. Wore appropriate PPEs			
i. Safety boots	1		
ii. Overall,	1		
iii. Gloves	1		
(Award one mark for each PPE or 0)			
2. Handled tools and equipment as per workshop procedure			
i. Used the right tools	1		
ii. Observed safety when using tools and equipment	1		
(Award marks as indicated on each item or zero)			
3. Isolated the compressor			
i. Ensured the engine was off	1		
ii. Depressurized the receiver	1		
iii. Drained the receiver	1		
iv. Disconnected the discharge line	1		
v. Removed the belt	3		
(Award marks as indicated on each item or zero)			
4. Drained engine oil.			
i. Opened the drain plug carefully	1		
ii. Drained the oil without spillages	2		
(Award marks as indicated on each item or zero)			

5. Removed the cylinder head i. Unscrewed the bolts on the cylinder head ii. Lifted off the cylinder head and set it aside *(Award 2 marks for each task)*	2 2		
6. Removed the piston and connecting rod assembly. i. Rotated the crankshaft to position the piston at the top dead center ii. Removed the bolts securing the connecting rod cap iii. Removed the piston and rod assembly out of the cylinder. iv. Loosened the gasket between the cylinder and the air compressor. v. Removed the connecting pin between piston and connecting rod *(Award marks as indicated on each item or zero)*	1 2 2 2 2		
7. Removed the old piston rings: i. Removed the compression ring ii. Removed the wiper ring iii. Removed the top oil scrapper. iv. Removed the oil ring expander v. Removed the bottom oil scrapper. *(Award 2 marks for each task)*	2 2 2 2 2		
8. Cleaned the piston and the cylinder i. Used a soft brush to clean the piston ii. Rinsed the piston and the cylinder iii. Dried the piston and the cylinder *(Award marks as indicated on each item or zero)*	1 1 1		

9. Installed new piston rings as specified in the service manual.			
i. Inserted the replacement oil ring expander	2		
ii. Inserted the oil scrapers	2		
iii. Replaced the compression ring	2		
iv. Replaced wiper ring	2		
v. Compressed the rings.	2		
vi. Oriented the rings correctly according to the manufacturer's specifications.	3		
vii. Staggered the ring gaps	1		
(Award marks as indicated on each item or zero)			
10. Reinstalled the piston and connecting rod assembly			
i. Lubricated the piston and rings with clean engine oil.	1		
ii. Replaced the gasket between the cylinder and air compressor	2		
iii. Rotated the piston to top dead center.	1		
iv. Aligned the piston with its corresponding cylinder.	1		
v. Lowered the cylinder down and pushed it to seat against the gasket.	1		
vi. Reattached the connecting rod cap and torqued the bolts to the specifications provided in the service manual.	1		
(Award marks as indicated on each item or zero)			
11. Reassembled the cylinder head			
i. Replaced the cylinder head gasket	2		
ii. Reattached the cylinder head and tightened the bolts to the correct torque specifications	2		
(Award marks as indicated on each item or zero)			

12. Reassembled the Compressor: i. Reinstalled the belt ii. Reconnected discharge line iii. Screwed back the oil plug at the engine block iv. Refilled the compressor engine with engine oil *(Award marks as indicated on each item or zero)*	 1 1 1 1		
13. Tested the Compressor: i. Started the compressor and checked for proper operation. ii. Listened for any unusual noises and checked for leaks. *(Award marks as indicated on each item or zero)*	 1 1		
14. Performed housekeeping as per workplace policy i. Cleared the work station, ii. Cleaned and stored tools and equipment iii. Cleaned the compressor iv. Disposed of waste correctly *(Award marks as indicated on each item or zero)*	 1 1 1 1		
15. Generated maintenance report. Report must contain i. Machine name ii. Materials used iii. Diagnostic/problem iv. Resolution v. Personnel/technician name vi. Final condition of machine *(Award 1 mark per item captured)*	 1 1 1 1 1 1		
Sub Total Task 1	**82**		

TASK 2: REPLACE WORN OUT CIRCLIP RING IN THE HYDRAULIC PUMP.			
16. Wore appropriate PPEs i. Safety boots ii. Overall, iii. Gloves *(Award one mark for each PPE or 0)*	1 1 1		
17. Handled tools and equipment as per workshop procedure i. Used the right tools ii. Observed safety when using tools and equipment *(Award marks as indicated on each item or zero)*	1 1		
18. Dismantled centrifugal pump i. Removed outer cover ii. Removed impeller from the shaft iii. Cleaned impeller and shaft using cotton clothe *(Award marks as indicated on each item or zero)*	2 2 2		
19. Removed worn out circlip and seals using circlip pliers *(Award marks as indicated on each item or zero)*	2		
20. Installed external circlip i. Fitted the external circlip into the circlip end holes ii. Fitted the pliers' tips into the grips on the end of circlip used iii. Squeezed the handles iv. Fitted the circlip in the groove to complete installation *(Award marks as indicated on each item or zero)*	2 2 2 2		
21. Installed internal circlip i. Fitted the internal circlip into the circlip end holes ii. Fitted the pliers tips into the grips on the end of	2 2		

circlip used iii. Squeezed the handles iv. Guided the ring into the circlip groove and released the pliers *(Award marks as indicated on each item or zero)*	2 2		
22. Reassembled impeller and outer cover of the pump	2		
Sub Total Task 2	31		
TASK 3: TEST AND COMMISSION THE COMPRESSOR			
23. Checked and Tested the Compressor: • Rotated the compressor by hand to ensure there is no binding and the components move smoothly. • Re-energized the compressor. • Checked for oil leakage around the compressor block. • Monitored the compressor for a short period to ensure it operates correctly. • Monitored the air discharge pressure by releasing shut off valve. • Tested for vibration levels • Listened for unusual noises ***(Award 1 or 0 mark for each activity)***	1 1 1 1 1 1 1 1		

24. Generated maintenance report. Report must contain i. Machine name ii. Materials used iii. Diagnostic/problem iv. Resolution v. Personnel/technician name vi. Final condition of machine *(Award 1 mark per item captured)*	 1 1 1 1 1 1		
Sub-Total Task 3	**13**		
GRAND TOTAL	**121**		
CANDIDATE'S SCORE	$\frac{x}{126} \times 100\%$		

The candidate was found to be: (Please tick (√) as appropriate)

Competent ☐	Not yet competent ☐

The candidate is competent if they score 50% of total marks

Feedback from candidate:

Feedback to candidate:

Candidate's signature: **Date:**

Assessor's signature: **Date:**