Diesel Mechanics

Experienced Worker Performance Assessment
Test Code: 0152 Version: 01

NATIONAL OCCUPATIONAL COMPETENCY TESTING INSTITUTE

SPECIFIC INSTRUCTIONS FOR THE TEST PARTICIPANT

1. This test consists of five jobs.

2. The maximum time allowed for this test is 4 hours.

3. Complete all jobs in the order assigned by the evaluator.

4. READ the instructions for each assignment carefully before you start.

5. Ask the evaluator for anything required for the job that you do not have. Materials such as specifications of components, schematic diagrams, drawings, relevant directions, handbooks, manuals and scrap papers will be provided.

6. Follow the normal pattern of work to which you are accustomed in the trade. If any problems develop or if you have any questions, consult with the evaluator.

7. Adhere strictly to all safety standards.

8. Advise the evaluator immediately in the event that any of the equipment is not operating properly; however, do not ask for technical assistance.

9. Refrain from any discussion with the other candidates during the test.

10. Ask the evaluator for permission to leave the testing room should it become necessary to do so. Only one person is permitted to be out of the room at a time (for acceptable reasons only), and time away is part of the specified allotted testing time. NO additional time will be allowed.

11. Record neatly any calculations or data requested in the test and underline your answers.

12. Identify all papers with your name and give them to the evaluator before you leave.

13. Leave the workstation you have been using in a clean and orderly fashion.

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Candidate's Name: _____ Test Center Code: _____

Social Security Number: _____ Date: _____

Performance Evaluation Key

Participant's performance is typical of a/an:

A = Extremely skilled worker
B = Above average worker
C = Average worker
D = Below average worker
E = Inept Worker

DIESEL MECHANICS

PERFORMANCE EVALUATION WORKSHEET

Test Code #152

Job	Process	Max Score	Item No.	A B C D E	Job	Product	Max Score	Item No.	A B C D E
1	**Cylinder Kit (A or B or C)**	(260)			1	**Cylinder Kit (A or B or C)**	(315)		
	Use of service specification manual		1	0 0 0 0 0		Correct specifications determined		20	0 0 0 0 0
	Correct tool selection		2	0 0 0 0 0		Parts removed without damage		21	0 0 0 0 0
	Use of tools		3	0 0 0 0 0		Correct measurements of bore		22	0 0 0 0 0
	Use of precision measuring tools and equipment to prevent damage		4	0 0 0 0 0		Correct liner measurements		23	0 0 0 0 0
						Out-of-round (liner)		24	0 0 0 0 0
	Determine journal surface condition		5	0 0 0 0 0		Taper wear connecting rod journal		25	0 0 0 0 0
	Measuring crankshaft journal with micrometer		6	0 0 0 0 0		End play- crankshaft		26	0 0 0 0 0
						Cylinder counter bore depth		27	0 0 0 0 0
	Measure engine block bore for out-of-round		7	0 0 0 0 0		Liner protrusion		28	0 0 0 0 0
						Ring end gap		29	0 0 0 0 0
	Measure cylinder liner for out-of-round		8	0 0 0 0 0		Interpretation of journal surface condition		30	0 0 0 0 0
	Taper wear measure liner		9	0 0 0 0 0		No foreign material introduced		31	0 0 0 0 0
	Counter bore depth measure		10	0 0 0 0 0		Rings installed on piston correctly		32	0 0 0 0 0
	Ring end gap measure		11	0 0 0 0 0		Connecting rod assembled correctly		33	0 0 0 0 0
	Ring installed on piston correctly		12	0 0 0 0 0		Connecting rod installed in engine correctly		34	0 0 0 0 0
	Piston installed in liner assembly correctly		13	0 0 0 0 0					
						Connecting rod fasteners torqued to specifications		35	0 0 0 0 0
	Liner installed in block correctly		14	0 0 0 0 0					
	Measure cylinder liner protrusion		15	0 0 0 0 0		Oil clearance in connecting rod bearing determined		36	0 0 0 0 0
	Measure oil clearance		16	0 0 0 0 0					
	Measure crankshaft end play		17	0 0 0 0 0					
	Parts lubricated		18	0 0 0 0 0					
	Correct use of torque wrench		19	0 0 0 0 0					
2A	**Injector (Cummins Engine)**	(245)			2A	**Injector (Cummins Engine)**	(95)		
	Isolate faulty injector		37	0 0 0 0 0		Safe practices (product)		47	0 0 0 0 0
	Removal of injector		38	0 0 0 0 0		Position injector correctly		48	0 0 0 0 0
	Injector plunger slide test		39	0 0 0 0 0		Correct specifications		49	0 0 0 0 0
	Injector plunger rotation test		40	0 0 0 0 0		Correct torque		50	0 0 0 0 0
	Injector spray pattern test		41	0 0 0 0 0		Quality of job		51	0 0 0 0 0
	Installation of new-rebuilt injector		42	0 0 0 0 0					
	Set engine valves		43	0 0 0 0 0					
	Set injector timing		44	0 0 0 0 0					
	Operate engine		45	0 0 0 0 0					
	Safe practices (personal)		46	0 0 0 0 0					
	OR					**OR**			

Job	Process	Max Score	Item No.	A B C D E	Job	Product	Max Score	Item No.	A B C D E
2B	**Injector (Detroit and GM)**	(245)			3	**Injector (Detroit and GM)**	(95)		
	Isolate faulty injector		37	0 0 0 0 0		Safe practices (product)		47	0 0 0 0 0
	Removal of injector		38	0 0 0 0 0		No external leaks		48	0 0 0 0 0
	Pre-test- spray pattern		39	0 0 0 0 0		Correct specifications		49	0 0 0 0 0
	Pre-test - dribble		40	0 0 0 0 0		Correct torque of injector		50	0 0 0 0 0
	Injector installation		41	0 0 0 0 0		Quality of job		51	0 0 0 0 0
	Time injector		42	0 0 0 0 0					
	Set valves		43	0 0 0 0 0					
	Set control rack		44	0 0 0 0 0					
	Operate engine		45	0 0 0 0 0					
	Safe practices (personal)		46	0 0 0 0 0					
	OR					**OR**			
2C	**Injector (Caterpillar or Mack)**	(245)			2C	**Injector (Caterpillar or Mack)**	(95)		
	Locate faulty nozzle		37	0 0 0 0 0		Correct torque		47	0 0 0 0 0
	Removal of nozzle (technique)		38	0 0 0 0 0		Safe practices (product)		48	0 0 0 0 0
	Pre-test - opening PSI		39	0 0 0 0 0		No external leaks		49	0 0 0 0 0
	Pre-test - spray pattern		40	0 0 0 0 0		Gaskets replaced		50	0 0 0 0 0
	Pre-test - dribble		41	0 0 0 0 0		Quality of job		51	0 0 0 0 0
	Pre-test - holding pressure		42	0 0 0 0 0					0 0 0 0 0
	New/rebuilt nozzle installation (technique)		43	0 0 0 0 0					0 0 0 0 0
	Set valves		44	0 0 0 0 0					
	Operate engine		45	0 0 0 0 0					
	Safe practices (personal)		46	0 0 0 0 0					
3	**Electrical Systems**	(75)			3	**Electrical Systems**	(105)		
	Tool selection		52	0 0 0 0 0		Accuracy of meter reading		57	0 0 0 0 0
	Use of tools		53	0 0 0 0 0		Faulty parts isolated		58	0 0 0 0 0
	Meter set-up		54	0 0 0 0 0		Correction of faulty performance		59	0 0 0 0 0
	Meter (s) connected correctly		55	0 0 0 0 0		Parts replaced to specifications		60	0 0 0 0 0
	Safety		56	0 0 0 0 0		Correct belt adjustment		61	0 0 0 0 0
4	**Cooling Systems**	(60)			4	**Cooling Systems**	(50)		
	Tool selection		62	0 0 0 0 0		Determined correct condition of thermostat		66	0 0 0 0 0
	Use of service literature		63	0 0 0 0 0					
	Test thermostat		64	0 0 0 0 0		Thermostat installed correctly		67	0 0 0 0 0
	Safety		65	0 0 0 0 0					
5	**Lubrication Systems**	(65)			5	**Lubrication Systems**	(25)		
	Pre-oiler installed correctly		68	0 0 0 0 0		Leak (s) detected		71	0 0 0 0 0
	Air test pressure correct		69	0 0 0 0 0					
	Safety		70	0 0 0 0 0					

Personal Performance Evaluation

Participant's overall performance is typical of a/an:

( ) Inept Worker
( ) Below Average Worker
( ) Average Worker
( ) Above Average Worker
( ) Extremely skilled worker

Please state your overall impression of the participant as a worker in the occupation.

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_____

_____

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Evaluator's Signature_____

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DIESEL MECHANICS

EXPERIENCED WORKER PERFORMANCE ASSESSMENT

JOB #1: REPLACE CYLINDER KIT OF A (A) MACK ENGINE OR (B) DETROIT ENGINE OR (C) CATERPILLAR 3400 SERIES 5.4 ENGINE OR CUMMINS 5.5 or 5.125 BORE ENGINE

Estimated completion time: 2 hours

1. You are to replace a cylinder kit (piston, pin, rings, and cylinder liner), connecting rod and bearing in one cylinder of one of the following types of engines:

   A. Mack Engine

   OR

   B. Detroit Engine

   OR

   C. Caterpillar 3400 Series 5.4 Engine or Cummins 5.5 or 5.125 bore Engine.

2. Check all measurements to determine that they meet manufacturer's specifications.

3. Use the back of this sheet to record specifications and data measured or determined.

DIESEL MECHANICS

EXPERIENCED WORKER PERFORMANCE ASSESSMENT

JOB #2: LOCATE AND REPLACE FAULTY INJECTOR ON A (A) CUMMINS OR (B) DETROIT OR (C) LOCATE, TEST, AND REPLACE FAULTY NOZZLE ON A CATERPILLAR OR MACK ENGINE.

Estimated completion time: 1 hour

1. You are to locate a faulty injector on a

   A. Cummins Engine

   OR

   B. Detroit Engine.

   Remove the faulty injector, make necessary tests and adjustments, replace the injector and start engine to verify correct operation.

   OR

   C. Locate a faulty nozzle on a Caterpillar or Mack Engine.

   Remove the faulty nozzle, perform the necessary tests on a nozzle tester to determine the cause of failure. Replace the faulty nozzle and operate the engine to verify correct operation.

2. Use the back of this sheet to record specifications and data measured.

DIESEL MECHANICS

EXPERIENCED WORKER PERFORMANCE ASSESSMENT

JOB #3: ELECTRICAL SYSTEMS

Estimated completion time: 25 minutes

1. You are to troubleshoot a charging system.
2. Replace faulty component(s) to return the system to operate to specifications.

JOB #4: COOLING SYSTEMS - REMOVE AND TEST THERMOSTAT

Estimated completion time: 20 minutes

1. You are to locate and remove a thermostat from the assigned engine.
2. Test the thermostat and record opening temperature and full open temperature.
3. Describe the condition of the thermostat and compare it to the rating of the thermostat.
4. Record whether good or bad (out of specifications).
5. Set thermostat in place in preparation for installation.

JOB #5: LUBRICATION SYSTEM TEST

Estimated completion time: 15 minutes

1. You are to connect a pre-oiler to an engine to determine the condition of the relief valve and/or the largest bearing leak.
2. Use the back of this sheet to record data.

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