DIESEL MECHANIC: PHASE 2

On-The Job Training Record

Apprenticeship: Log Book

[OFO Code: 653306]

Contract No:									

Trade Name:	Diesel Phase 2

Employer details:	

Full Name:
Surname:

ID No:													

NOTE: The total number of hours allocated to the subjects are applicable to the year in which the apprentice is completing.

GUIDE/SUBJECT/TOPIC: CYLINDER HEAD													Ref No: 1
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													
Record of Occupation Trade experience and or Institutional Training													

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	1. Recall tools and equipment required to overhaul engine block				
	2. Identify and recall the components and functions of the (cylinder head):				
	3. Assessment and Overhaul of the Cylinder Head.				
	• Step 1. Cleaning.				
	• Step 2. Valve Removal.				
	• Step 3. Valve stem seals.				
	• Step 4. Head Thickness.				
	• Step 5. Warpage.				
	• Step 6. Calculation.				
	• Step 7. Visual Inspection.				
	• Step 8. Valve Cleaning.				
	• Step 9. Valve Inspection.				
	• Step 10. Measure the Valve stem.				
	• Step 11. Measure the internal bore of the valve guide.				

	• Step 12. Valve Guide Measurement.				
	• Step 14. Welch plugs/ Core plugs.				
	• Step 15. Valve Lapping.				
	• Step 16. Valve Spring Inspection.				
	• Step 17. Valve Spring Refitment.				
	• Step 18. Valve Spring Retainer Refitment.				
	• Step 19. Cotter Fitment.				
	• Step 20. Leak Test.				
	• Step 21. Camshaft Inspection.				
	• Step 22. Rockers & Rocker Shafts.				
	• Step 23. Camshaft & Hydraulic Lifter or Bucket Shim Refitment.				
	• Step 24. Rocker and Rocker Shaft Configuration.				
	• Step 25. Cylinder Head Refitment & Valve Timing.				
	4. Timing an HDV Engine Geartrain.				
	5. Training Institution.				
	Note: All measurements, clearances & torque valves & valve timing according to manufacturers' specifications and procedures. Correct according to manufacturer's specification and procedures.				
		Total			

GUIDE/SUBJECT/TOPIC: ENGINE BLOCK						Ref No: 2
TRADE NAME:						
APPRENTICE NAME:						
ID NO:						
Record of Occupation Trade experience and or Institutional Training						
JOB CARD NO	**DETAILS OF WORK DONE**	**DATE**	**HOURS**	**MENTOR SIGN**	**APPRENTICE SIGN**
	6. Recall tools and equipment required to overhaul engine block.				
	7. Assessment of the cylinder block.				
	8. Identify and recall the functions of the following (cylinder head):				
	• Cylinder Block.				
	• Crankshaft & Bearings.				
	• Piston & Rings.				
	• Connecting Rod & Bearing.				
	• Flywheel.				
	• Oil pump checks and assessment.				
	9. Cylinder liner protrusion, checks and renewal. (Ensure cylinder liners for taper & ovality).				
	10. Engine block reassembly and component checks and measurements.				
	11. Crankshaft fitment and checks (Endure measures of crankshaft journals for taper & ovality).				

	12. Piston and piston ring and connecting rod fitment, checks and measurements.				
	13. Connecting rod end play.				
	14. Cylinder head gasket calculation.				
	Note: All measurements, clearances must be according to manufacturers' specifications and procedures.				
	15. Training Institution.				
		Total			

GUIDE/SUBJECT/TOPIC: COOLING SYSTEM													Ref No: 3
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													
Record of Occupation Trade experience and or Institutional Training													

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	16. Recall the types of cooling systems.				
	17. Describe the functions of the following components: -				
	• Radiator and cap.				
	• Thermostat.				
	• Flushing the system.				
	• Water pump.				
	• Relief valve (cap).				
	• Fan and cowling.				
	• Engine oil cooler.				
	• Exhaust Gas Recirculation (EGR) Coolers				
	18. Recall safety precautions when working on cooling systems.				
	19. Explain: - Anti-freeze effect on boiling point and altitude / pressure / boiling point relationship chart.				
	20. Diagnose cooling system problems.				
	21. Remove, recondition and install water pumps.				
	22. Remove and install an oil cooler and a thermostat.				

	23. Fill cooling systems.				
	24. Recall reasons for overheating.				
	25. Carry out pressure tests on static cooling systems.				
	26. Test thermostat opening temperatures (outside machine) 27. Carry out a pressure test on oil coolers.				
	28. Test radiator top and bottom tank differential temperatures.				
	29. Inspect and adjust vee belts.				
	30. Check and replace pulleys where necessary.				
	31. Add additives to a given cooling system.				
	32. Recall cooling system fan wiring diagram and operations.				
	Notes: All safety aspects adhered to. No leaks at connections. Serviceability determined 100% correct according to manufacturers' specifications. Correct according to manufacturers' specifications.				
	33. Training Institution.				
		Total			

GUIDE/SUBJECT/TOPIC: LUBRICATION SYSTEM						Ref No: 4
TRADE NAME:						
APPRENTICE NAME:						
ID NO:						
Record of Occupation Trade experience and or Institutional Training						
JOB CARD NO	**DETAILS OF WORK DONE**	**DATE**	**HOURS**	**MENTOR SIGN**	**APPRENTICE SIGN**	
	34. Recall the function of the engine lubrication system.					
	35. Oil viscosity and measurements (understands the SAE numbers and categories).					
	36. Recall lubricating (oil) system components.					
	37. Recall lubricating system and problem diagnosis.					
	38. Oil pumps and pressure testing.					
	39. Identify and replace oil filters.					
	40. Oil Cooler/Heat Exchanger.					
	41. Oil Pan/Sump.					
	42. Heavy duty vehicle lubrication systems (HDV).					
	43. Trailer and semi-trailer applications.					
	44. Carry out manual lubrication according to manufacturers' specifications.					
	Note: Correct according to manufacturers' specifications.					
	45. Training Institution.					
		Total				

GUIDE/SUBJECT/TOPIC: ELECTRICAL SERVICE													Ref No: 5
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													
Record of Occupation Trade experience and or Institutional Training													

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	46. Recall tools and equipment required to perform electrical service (types of measuring instruments, tools & equipment, etc.).				
	47. Recall the basics of electricity (conductors, Semi-conductors, Insulators, Current flow, amperes).				
	48. Recall voltage, current & resistance (Volts conductor, Ohms, Resistors, Variable resistors & Colour coding.				
	49. Identify all Electrical symbols and functions.				
	50. Battery & battery testing (According to manufacturers' specifications and SABS 0142).				
	• Recall the operation of different types of batteries.				
	• Identify various types of batteries.				
	• Maintain and store batteries.				
	• Connect batteries in series and parallel.				
	• Test battery capacity and ensure specific gravity levels are correct.				
	51. Diagnose starter motor testing and overhaul/repairs (Includes solenoid). All steps/ methods followed.				
	52. Recall the charging system.				

	53. Diagnose Alternator problems, replacement and testing. All steps/ methods followed.				
	54. Relays (diagnose and test the entire circuit that the relay operates).				
	55. Recall the components, function and construction of the Ignition systems (diagnose and test).				
	Notes: All safety aspects adhered to. Correct according to manufacturers' specifications.				
	56. Training Institution.				
		Total			

GUIDE/SUBJECT/TOPIC: FUEL SYSTEMS													Ref No: 6
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													
Record of Occupation Trade experience and or Institutional Training													

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	57. Recall the functions and operation of the carburettor system). Carry out maintenance and repairs (Adjustments, etc.).				
	58. Recall the functions and operation of the Single Point Fuel Injection. Undertake fault finding and repairs.				
	59. Recall the functions and operation of the K-Jetronic Continuous Fuel Injection (mechanically and hydraulically controlled fuel-injection).				
	60. Recall the function and operation of the Multiport Common Rail Petrol Indirect Injection & Fuel pressure testing. Undertake fault finding and repairs.				
	61. Recall the functions and operation of the Direct Petrol Injection. Undertake fault finding and repairs/ installations and replacement.				
	62. Recall the functions and operation of the Fuel Evaporative System.				
	63. Recall the component/sensor Operation and carry out Fuel System Component/Sensor testing.				
	64. Recall the functions and operation of the Inline Pump Diesel Fuel Injection. Undertake fault finding and repairs/ installations and replacement.				
	65. Recall the functions and operation of the Rotary Pump Diesel Fuel Injection. Undertake fault finding and repairs/ installations				

	and replacement.				
	66. Recall the functions and operation of the Unit Injectors Diesel Fuel Injection.				
	67. Recall the functions and operation of the Common Rail Diesel Fuel Injection. Undertake fault finding and repairs/ installations and replacement.				
	68. Recall the functions and operation of the Direct Petrol Injection. Undertake fault finding and repairs/ installations and replacement.				
	Note: All safety aspects adhered to. Vacuum at specified RPM and pressure at specific time and RPM. Timing set correctly. Engine starts immediately and runs smoothly. No fuel leaks. Correct sequence adhered to. All adjustments and calibrations according to manufacturers' specifications and procedures.				
	69. Training Institution				
		Total			

GUIDE/SUBJECT/TOPIC: ENGINE TUNE													Ref No: 7
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													

Record of Occupation Trade experience and or Institutional Training

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	70. Recall tools and equipment required to undertake Engine Tune.				
	71. Carry out Petrol Engine Tune Up.				
	72. Carry out Wet and Dry engine compression tests.				
	73. Recall spark plug oscilloscope patterns.				
	74. Undertake coil testing.				
	75. Carry out Petrol Engine Tune Up Distributorless Ignition Systems (DIS).				
	76. Carry out Diesel Engine Tune Up “In Line” And “Rotary Pump” Systems.				
	77. Carry out Diesel Engine Tune Up “Unit Injector and Unit Pump and Injector” Systems.				
	78. Carry out Diesel Engine Tune Up Common Rail Injection.				
	Note: Correct procedures and tools used. Correct according to manufacturers' specifications.				
	79. Training Institution.				
		Total			

GUIDE/SUBJECT/TOPIC: STEERING, SUSPENSION & WHEEL ALIGNMENT													Ref No: 8
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													

Record of Occupation Trade experience and or Institutional Training

JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	80. Recall tools and equipment required to undertake Steering, Suspension & Wheel Alignment.				
	81. Recall the components of the suspension system Undertake fault finding and repairs/ installations and replacement.				
	82. Recall the components of the Steering system. Undertake fault finding and repairs/ installations and replacement.				
	83. Recall the components of the LDV Wheels and Tyres and Wheel Alignment. Use the correct equipment to undertake tasks.				
	84. Wheel alignment. Task to be performed according to OEM guidelines and specification (LDV/HDV specific).				
	85. Heavy Duty Vehicle (HDV) Steering and Alignment and Suspension Systems.				
	86. Recall the components of the TRW/Ross Steering Gear/Box. Repair tasks to be performed according to OEM guidelines and specification.				
	87. Recall the components of Rack and Pinion Steering.				
	88. HDV Suspension Systems. Repair tasks to be performed according to OEM guidelines and specification.				
	89. HDV Wheels and Tyres. Task to be performed according to OEM guidelines and specification (LDV/HDV specific).				

	Notes: All safety aspects adhered to. Serviceability determined 100% correct according to manufacturers' specifications.				
	90. Training Institution.				
		Total			

GUIDE/SUBJECT/TOPIC: WORK EXPERIENCE AND INDEPENDENT WORK													Ref No: 9
TRADE NAME:													
APPRENTICE NAME:													
ID NO:													
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JOB CARD NO	DETAILS OF WORK DONE	DATE	HOURS	MENTOR SIGN	APPRENTICE SIGN
	91. On the job experience and independent work.				
	• This should cover at least 80% of all modules to ensure as wide as possible field of experience and must take place under supervisory control.				
	(Note: All work done to be recorded with respect to performance standards.)				
	Total				