



merSETA
MANUFACTURING, ENGINEERING
AND RELATED SERVICES SETA

TRAINING SCHEDULE FOR TIMEBASED APPRENTICES

DIESEL MECHANIC

Introduction to the Industry:	Responsibilities, appearance and attitude in work situation.	28
Safety:	Basic safety precautions applicable in the trade to be practised throughout apprenticeship, with special reference to safe handling and care of hand tools, noxious and flammable gases, liquids and gases under pressure, electrical installations, machine protection, machine and pneumatic tools, grinding wheels, moving and overhead machinery and use of portable fire extinguishers. Theory and practice of first aid.	50
Knowledge of: Hand and workshop tools:	Care and use of tools. Making of work pieces and/or parts using the techniques of chipping, drilling, filing, reaming, sawing, scraping, screwing and tapping. Sharpening of cutting tools. Use of pullers and presses. Dressing, trueing, checking and mounting of wheels on grinding machine. Use of securing, locking and sealing devices.	100
Brazing, soldering and welding:	Knowledge and use of gas and electric welding and soldering processes. Annealing of materials.	90
Drawings:	Reading and interpretation of drawings from workshop manuals and bulletins.	60
Power unit:	Knowledge of function and different forms of energy and the workings of compression ignition engines.	156
Systems:	Knowledge of function and composition of: Fuel, exhaust, turbo charger, cooling and lubrication systems, vacuum pumps and air compressors, injectors and injector pumps and exhaust brake systems.	166
Electrical principles:	Knowledge of batteries, volts, amps, ohms, watts, magnetism and workings of parallel switches. Elementary knowledge of starter motors, alternators, generators, regulators, pre-heating and other cold starting devices.	130

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Ball, roller and babbitt metal bearings:	Knowledge of types of bearings used in the motor industry. Making of simple calculations. Identification of worn and defective bearings.	116
Clutches:	Knowledge of all types of clutches used in the motor industry.	124
Gearboxes:	Knowledge of simple gearbox principles. Calculating simple gear ratios. Knowledge and identification of various kinds of gear systems.	132
Drive shafts:	Knowledge of purpose of drive shafts and types of joints. Use of lubricants. Removal and replacement of universal joints.	132
Final drive:	Knowledge of theory of worm drive, crown wheel and pinion drive type rear axles, planetary drive systems. Calculating simple ratios. Use of dial test indicators. Knowledge and identification of differential types and types of axles. Removing and replacing rear wheel bearings.	140
Wheel and tyres:	Identification of wheel types, rim and tyre sizes, causes of tyre wear and failure. Removal, adjustment and replacement of front wheel bearings. Removal and replacement of wheels, tyres and tubes. Balancing of wheels.	130
Suspension and steering systems:	Knowledge of composition of lead and coil springs, torsion bars, shock absorbers and air suspension systems. Identification of all sections of front suspensions commonly used in the motor industry. Knowledge of composition and ability to identify worn steering box systems.	140
Steering geometry:	Knowledge of complete steering geometry of heavy vehicles commonly used in the motor industry.	140
Brakes:	Knowledge of friction laws and ability to identify composition of friction materials. Knowledge of working of simple brake booster and various air brake systems normally used in the motor industry. Ability to correctly remove, replace and adjust braking mechanisms commonly used in the motor industry.	140
Lubrication and servicing:	Application of maintenance schedules lubricants and materials. Maintenance of batteries, filters, pumps and compressors. Use and maintenance of hydraulic lifting equipment.	152
Cooling systems:	Maintenance of cooling systems.	152

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Engine tuning:	Adjustment of idling systems and spill cut off timing.	152
Replacement and servicing of components:	Removal and replacement of engine assemblies and system components such as cooling, fuel, electrical and exhaust system components: clutches, gearboxes, propeller shafts, universal joints, rear axle centre portions and assemblies, front and rear suspension components: mechanical and hydraulic brake components; front and rear wheel bearing; electrical lighting system. Diagnose and remedy by application of differentiation between wear requiring replacement or adjustment.	512
Towing and recovery of vehicles:	Experience of elementary towing and recovery of vehicles.	512
Sketches and diagrams:	Making sketches of mechanical parts and elementary auto electrical circuits. Reading and interpretation of drawings, signs and symbols, and elementary wiring diagrams.	90
Advanced practical training: Engine units – overhauling and fitting of parts:	Dismantling and complete assembling of engine including overhauling and fitting of the following parts: Pistons, rings and gudgeon pins, main and big end bearings, cylinder heads, valve trains, pre-heaters and injectors.	250
Inspection and assessment of wear:	Location and identification of fault in cylinders, on crankshaft, main and big end journals, camshaft journals, valve trains and cylinder heads.	250
Assessment of wear and overhauling of systems and units:	Overhaul, assess for wear, reassemble and adjust where necessary of clutches, gearboxes, propeller shafts, shafts, final drive, front axle and rear axle assemblies, steering boxes and linkages, suspension units and brake systems. Location of faults by systematic trouble shooting and adjustment and/or replacement of worn or faulty components and parts. Repair and/or replacement of faulty assemblies.	250
Reset of steering geometry:	Knowledge of and ability to reset complete steering geometry of motor vehicles commonly used in the motor industry.	30
Testing equipment and gauges:	Correct use of compression testers, amp, volt and ohm meters, fuel pump pressure gauges, timing lights (where facilities exist), exhaust gas analysers and injector testers.	280

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<p>Major service:</p> <p>Revision and independent work:</p>	<p>Carrying out major service of fuel pump, injectors, pre-heaters, resetting spill timing, servicing of exhaust brake systems.</p>	<p>280</p>
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