



merSETA
MANUFACTURING, ENGINEERING
AND RELATED SERVICES SETA

TRAINING SCHEDULE FOR TIMEBASED APPRENTICES

TRACTOR 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 machines. 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 working petrol and diesel engines.	156
Systems:	Function and composition of the following systems: Fuel, exhaust, turbo chargers, cooling and lubrication.	166
Electrical principles:	Knowledge of batteries, volts, amps, ohms, watts, magnetism. Function of magnetos, distributor, coil, and spark plugs. Elementary knowledge of starter motors, alternators, generators and regulators. Cold starting and pre-heating systems.	140

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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
Final drive:	Knowledge of theory of crown wheel and pinion drive type rear axles. Calculating simple ratios. Use of dial test indicators. Knowledge and identification of differential types and type of axles. Remove and replace rear wheel bearings.	140
Wheel and tyres tracks:	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 weights, wheels, tyres and tubes. Knowledge of endless track systems. Ballasting of tyres with weights and water.	140
Steering system:	Identification of all sections of steering systems commonly used in the motor industry. Knowledge of composition and ability to identify worn steering systems. Resetting of steering geometry.	140
Brakes:	Knowledge of friction laws and ability to identify composition of friction materials. 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 and filters.	140
Cooling systems:	Diagnosis and maintenance of cooling systems.	140
Engine tuning:	Running and minor tuning adjustments; eg: carburettors, ignition, plugs, points, adjustment of idling systems and spill cut off timing.	140
Replacement and servicing of components:	Removal and replacement of engine assemblies and system components such as cooling, fuel, electrical, pre-heating and exhaust system components: clutches, gearboxes, propeller shafts, universal joints, rear axle centre portions and assemblies; mechanical and hydraulic brake components; front and rear wheel bearing; hydraulic lifting equipment; endless track systems and electrical lighting system. Diagnose and remedy by application of differentiation between	140

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Towing and recovery of vehicles:	wear requiring replacement or adjustment. Experience of elementary towing and recovery of vehicles.	
Sketches and diagrams:	Making sketches of mechanical parts and elementary auto electrical circuits. Reading and understanding of drawings, signs, symbols and elementary wiring diagrams.	655
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 and valve trains.	655 90
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.	300
Assessment of wear and overhauling of systems and units:	Overhaul, assess for wear, reassemble and adjust where necessary. Clutches, gearboxes, drive shafts, final drive, front axle and rear axle assemblies, steering boxes and linkages, brake systems, hydraulic auxiliary equipment. 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.	300
Testing equipment and gauges:	Correct use of vacuum gauge, compression testers, amp, volt and ohm, tacho and dwell angle meters, fuel pump pressure gauges, timing lights, exhaust gas analysers, condenser and coil testers, spark plug cleaners and testers and hydraulic testing equipment and injector testers.	365
Revision and independent work:		128

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