

# **DIESEL MECHANIC**

## **TRAINING SCHEDULE**

**&**

## **RECORD OF APPRENTICE TRAINING**

*add name & CHIETA contract number*

*add employers name*

*(The employer is encouraged to add their logo, pictures to this document...)*

*Welcome to the start of your exciting career in engineering!*

## FOR YOUR ATTENTION

The Training Schedule and Record of Apprentice Training are used as a master copy for each individual apprentice's training. It can be copied as required by the company/training centre for issue to the apprentice.

The apprentice and company may customize the arrangement of the documentation to suite the local context and branding.

This Training Schedule and Record of Apprentice Training consists of four parts:

- 1 **Training Schedule** in which the scope of learning and criteria to be met are given
- 2 **Course Map** in which the common progression of training is shown.
- 3 **Individual Training Programme**
- 4 **Record of Apprentice Training**

### TRAINING SCHEDULE

The Training Schedule below contains the basic training requirements for the relevant trade. Additional modules may be incorporated into the schedule at the discretion of the company if deemed necessary to meet specific training needs.

**Any changes or deviations from the Training Schedule must be agreed to by the Apprenticeship Manager at the CHIETA before training based on these changes commences.** This is essential to ensure that the learning required for the trade is addresses before an apprentice can attend a trade test

### COURSE MAP

The course map is laid out in four phases and in the most logical sequence. A company test is to be conducted at the end of each phase. This map should form the basis of the Individual Training Programme that is developed and agreed to by the employer and the individual apprentice

### RECORD OF APPRENTICE TRAINING

This record replaces the old "log book" system. The record is laid out in relation to the four phases. Every **code must be signed off when the apprentice is declared competent** by the relevant artisan (mentor / coach / supervisor) and provider when the relevant learning module is successfully completed.

This record serves as the master record of training completed and should be retained by the apprentice in a safe place.

A copy must also be retained by the employer in a safe place.

Copies of the training record, as indicated below, must be sent to the Apprenticeship Unit at the CHIETA. It is recommended that this be done after each phase has been successfully completed and the test passed so that any shortfalls can be identified and addressed timeously:

- Phase 1 – submit relevant pages
- Phase 2 – submit relevant pages
- Phase 3 – submit relevant pages
- Phase 4 – submit relevant pages with an application for a trade test.

Before a trade test can be attempted, an apprentice must have completed 80 weeks of on the job training (at the employer) and all the modules in the training schedule (at least 32 weeks over the four phases), as well as the relevant N course or CHIETA approved N2 equivalent (approximately 10 weeks).

Completion of the whole Record of Apprentice Training is the standard of evidence required for access to a trade test.

### INDIVIDUAL TRAINING PROGRAMME

This is a table, chart or similar document that is developed by the employer and agreed to by the individual apprentice.

It must show **when** and **where** each module or other training activity is to take place and which **objectives** in the Training Schedule (with **reference to the code**) are addressed in the different modules in.

This programme must be **attached to the individual apprentice's** Record of Apprentice Training.

All deviations and changes to the programme that occur during the training of the apprentice must be indicated on the programme.

### THEORETICAL TRAINING

A four subject pass is needed to obtain the N course. Mathematics and the relevant trade theory subjects are compulsory. A further two relevant subjects must be chosen by the employer, college and apprentice to obtain the four subjects required for the course.

Should an apprentice have a qualification higher than that prescribed in the schedule, it must be ensured that the subjects are relevant to the trade in question, before a trade test date will be allocated.

Please note that the Employer may apply for the apprentice to conduct the CHIETA approved N2 equivalent subjects.

### PLEASE NOTE:

**THE CHIETA APPRENTICESHIP UNIT IS TO BE NOTIFIED OF ALL ABSENTEEISM FROM THE WORKPLACE OR PROVIDER OF TRAINING**

Part 1: TRAINING SCHEDULE FOR THE TRADE: DIESEL MECHANIC

MODULE	CODE	OBJECTIVES	CRITERIA
INDUCTION	ID1	Recall applicable sections of the Manpower Training (Act No 56, 1981), with special reference to discipline and legal responsibilities.	1. Pass a questionnaire with at least 80%.
	ID2	Recall terms and conditions of apprenticeship as Gazetted 26 July 1991.	1. Pass a questionnaire with at least 80%.
	ID3	Recall applicable grievance procedures.	1. Pass a questionnaire with at least 80%
	ID4	Recall applicable disciplinary procedures.	1. Pass a questionnaire with at least 80%.
	ID5	Recall company rules and procedures.	1. Pass a questionnaire with at least 80%.
	ID6	Recall quality assurance procedures.	1. Correct according to company standards and procedures with a minimum of five (5) questions and 100% pass.
SAFETY	SF1	Recall relevant regulations of the following Acts: (where applicable) – Occupational Health and Safety Act (Act No 85, 1993). – Minerals Act and Regulations (Act No 50, 1991).	1. Pass a questionnaire with at least 80%.
	SF2	Recall standard industrial safety course accredited by the Industry.	1. Obtain a recognised certificate.
	SF3	Recall safety in welding and gas cutting.	1. All safety aspects correct according to accredited procedures.
	SF4	Attend a first aid course.	1. Obtain a recognised certificate - 1st level.
	SF5	Identify relevant colour markings and symbolic safety signs.	1. Correct use of SABS 0140 and SABS 1186 publications.
HAND TOOLS	HT1	Identify measuring, checking, forming, cutting, marking and fastening tools and tooling aids.	1. Correctly identify all the tools and state all their physical characteristics.
	HT2	Use measuring, checking, forming, cutting, marking and fastening tool and tooling aids.	1. <u>Measuring and marking tools</u> - 1,0mm accumulative dimensional tolerance and 2° on angular tolerance. 2. <u>Checking tools</u> - 0,5mm dimensional tolerance. 3. <u>Forming, cutting and marking tools</u> - correct application. 4. All safety aspects adhered to.

MODULE	CODE	OBJECTIVES	CRITERIA
	HT3	Maintain measuring, checking, forming, cutting, marking and fastening tools and tooling aids.	1. Tools in a safe and functional working condition.
	HT4	Use hand tools applicable to the trade.	1. All safety aspects adhered to. 2. No tools or equipment is damaged. 3. All tools and equipment are clean after use.
WORKSHOP TOOLS	WT1	Use fixed portable drilling machines.	1. Correct speeds and feeds to be used. 2. Holes to be within 1,0mm of centre. 3. Correct cutting compounds to be used.
	WT2	Use fixed and portable grinding machines including replacing, setting, truing and ringing of wheels.	1. All prescribed safety standards applied.
	WT7	Use hydraulic presses.	1. All safety aspects adhered to. 2. No equipment damaged. 3. All tools and equipment are clean after use.
	WT18	Maintain and operate a hydraulic and mechanical jack.	1. All safety aspects adhered to. 2. No equipment damaged. 3. All tools and equipment are clean after use.
	WT20	Use hand operated press.	1. All safety aspects adhered to. 2. No damage to components.
	WT21	Mount grinding stone to pedestal grinder. Maximum size: 250mm diameter wheel RPM = 2000.	1. Ring test 100% correct. 2. No visible damage. 3. Only blotting paper gaskets on each side. 4. Speeds of grinder must not exceed wheel speed. 5. Toolrest as close as possible to stone. 6. Tighten nut to hold wheel firmly.
	WT22	Dress a grinding wheel.	1. Wheel must be concentric.
MATERIALS	MA2	Recall the physical properties and characteristics of metals.	1. Minimum of 15 questions with at least 80% pass.
	MA3	Identify ferrous and non-ferrous metals.	1. Each type of material correctly identified.
	MA15	Recall the terms, definitions and use of materials pertaining to the	1. 100% correct.

MODULE	CODE	OBJECTIVES	CRITERIA
		trade.	
DRAWINGS AND SKETCHES	DS7	Make free hand sketches including plan, front and side elevations.	<ol style="list-style-type: none"> <li>To be legible and identifiable.</li> <li>All dimensions recorded to be 100% correct.</li> </ol>
	DS19	Draw a block diagram of a hydraulic circuit incorporating a given list of components.	<ol style="list-style-type: none"> <li>The diagram must include all the components.</li> <li>The system must be functionally correct.</li> </ol>
	DS21	Draw a block diagram of a fuel system incorporating a given list of components.	<ol style="list-style-type: none"> <li>The diagram must include all the components.</li> <li>The system must be functionally correct.</li> </ol>
	DS23	Compile parts list from a parts manual.	<ol style="list-style-type: none"> <li>100% correct.</li> </ol>
	DS24	Interpret manufacturers' drawings pertaining to the trade.	<ol style="list-style-type: none"> <li>100% correct.</li> </ol>
	DS25	Interpret symbols and abbreviations pertaining to the trade where applicable.	<ol style="list-style-type: none"> <li>100% correct.</li> </ol>
	DS27	Make free hand sketches of components including the plan, front and side elevations.	<ol style="list-style-type: none"> <li>To be legible and identifiable.</li> <li>All dimensions stated to be 100% correct.</li> </ol>
	DS28	Interpret auto electrical drawings.	<ol style="list-style-type: none"> <li>Explanation of drawings to be 100% functionally correct.</li> </ol>
MARKING OFF	MT9	Mark off projects for manufacturers using all standard marking-off techniques and tools.	<ol style="list-style-type: none"> <li>No double lines.</li> <li>Punch hole centres 100% correct.</li> <li>All dimensions to be within 0,25mm.</li> <li>According to specific drawings.</li> </ol>
HAND SKILLS	HS1	Fabricate a drill angle-gauge from mild steel. Maximum plate thickness 5mm.	<ol style="list-style-type: none"> <li>All dimension to be within <math>\pm 0,25</math>mm.</li> <li>All angles to be within 30 minutes.</li> <li>Surface texture N7.</li> </ol>
	HS2	Sharpen chisels.	<ol style="list-style-type: none"> <li>Cutting angle is correct and no mushroom on the chisel head.</li> </ol>
	HS3	Sharpen drills.	<ol style="list-style-type: none"> <li>Angles according to tables and application.</li> </ol>
	HS4	Dress screwdrivers.	<ol style="list-style-type: none"> <li>All safety aspects adhered to.</li> <li>Screwdrivers to be functionally correct.</li> </ol>

MODULE	CODE	OBJECTIVES	CRITERIA
	HS5	Sharpen punches.	<ol style="list-style-type: none"> <li>1. All safety aspects adhered to.</li> <li>2. Correct included angles according to application.</li> </ol>
	HS7	Sharpen marking-off tools.	<ol style="list-style-type: none"> <li>1. Marking edge to make single scribing lines.</li> </ol>
	HS8	Manufacture a project using the following techniques and material: filing, sawing, drilling, tapping, reaming. Material: mild steel.	<ol style="list-style-type: none"> <li>1. All sizes within 0,05mm.</li> <li>2. All surfaces flat and square.</li> <li>3. Surface texture down to N9 according to comparison scale.</li> </ol>
	HS9	Harden and temper a centre punch.	<ol style="list-style-type: none"> <li>1. Temperature and colour controlled according to specifications.</li> <li>2. Temper to be correct for application.</li> </ol>
<b>ARC WELDING</b>	AO1	Identify and set up AC and DC welding machines equipment including starting up and shutting down procedures.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturer's handbook.</li> <li>2. All safety aspects adhered to.</li> </ol>
	AO2	Differentiate between arc welding consumables.	<ol style="list-style-type: none"> <li>1. Correct to manufacturers' specifications.</li> </ol>
	AO3	Prepare material for arc welding.	<ol style="list-style-type: none"> <li>1. Correct according to company welding procedures and practises with regard to weld joint preparation, voltage, amperages and welding consumables.</li> <li>2. All safety aspects adhered to.</li> </ol>
	AO4	Tack and arc weld workpieces incidental to the trade using manual metal arc weld techniques.	<ol style="list-style-type: none"> <li>1. Correct according to company quality control procedures.</li> <li>2. All safety aspects adhered to.</li> </ol>
<b>GAS WELDING AND BRAZING</b>	GW10	Identify and set up oxygen-fuel gas equipment including: light up, adjustment of gas pressures and shut down procedures.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturer's handbook.</li> <li>2. All safety aspects adhered to.</li> <li>3. Selection of correct size nozzles in relationship to material thickness.</li> </ol>
	GW11	Differentiate between brazing and gas welding consumables.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturers' specifications.</li> </ol>
	GW12	Prepare material for brazing and gas welding.	<ol style="list-style-type: none"> <li>1. Correct to company brazing and gas welding procedures with regard to joint preparation including brazing and gas welding consumables.</li> <li>2. All safety aspects adhered to.</li> </ol>
	GW13	Braze and gas weld workpieces incidental to the trade.	<ol style="list-style-type: none"> <li>1. Correct according to company quality control procedures.</li> <li>2. All safety aspects adhered to.</li> </ol>

MODULE	CODE	OBJECTIVES	CRITERIA
GAS CUTTING AND HEATING	GC1	Identify and assemble gas cutting and heating equipment, including light up and shut down procedures.	1. Correct method and procedure according to safety standards.
	GC2	Select nozzles and gas pressures for cutting and heating different materials of various thicknesses.	1. 100% correct according to manufacturer's chart.
	GC3	Hand cut and heat material incidental to the trade.	1. Company quality standards on finish and with maximum 2mm deviation from line.
BASIC LIFTING TECHNIQUES	BG2	Recall overhead crane hand signals.	1. 100% correct according to recognised code of practice.
	BG3	Demonstrate overhead crane hand signals.	1. 100% correct according to recognised code of practice.
	BG9	Use the following equipment: <ul style="list-style-type: none"> <li>- chain block : 2 ton max</li> <li>- coffer block : 2 ton max</li> <li>- jacks : 2 ton max</li> <li>- shackles : 2 ton max</li> <li>- chain slings : 2,5 ton max</li> <li>- wire rope slings : 20mm diameter</li> </ul>	<ol style="list-style-type: none"> <li>1. Working load within equipment safe working load.</li> <li>2. Correct method of slinging.</li> <li>3. No kinks in wire rope slings and chain slings.</li> <li>4. No damage to equipment.</li> </ol>
SOFT SOLDER	SS11	Prepare and solder the following:- <ul style="list-style-type: none"> <li>- wire joints</li> <li>- wire ends</li> </ul>	<ol style="list-style-type: none"> <li>1. All safety aspects adhered to.</li> <li>2. No dry joints.</li> <li>3. Joint to be mechanically and electrically sound.</li> </ol>
MEASURING EQUIPMENT	MF1	Use a micrometer <ul style="list-style-type: none"> <li>- outside</li> <li>- depth</li> <li>- inside</li> </ul>	<ol style="list-style-type: none"> <li>1. All sizes within 0,05mm.</li> <li>2. Standard holding technique to be maintained.</li> <li>3. Correct zeroing method applied.</li> </ol>
	MF2	Use a vernier - depth, inside and outside.	1. All sizes within 0,1mm.
	MF3	Use a tape measure and steel rule.	1. All sizes within 0,5mm.
	MF4	Use a calliper - inside and outside.	1. All sizes within 0,5mm.
	MF6	Use a vernier height gauge.	1. All sizes within 0,5mm.

MODULE	CODE	OBJECTIVES	CRITERIA
	MF7	Use the following gauges: <ul style="list-style-type: none"> <li>- telescopic</li> <li>- thread</li> <li>- taper</li> <li>- feeler</li> <li>- dial</li> <li>- belt tensioner</li> </ul>	<ol style="list-style-type: none"> <li>1. All sizes for telescopic gauge to be within 0,05mm.</li> <li>2. All other measurements to be 100% correct.</li> </ol>
	MF12	Use the following measuring instruments:- <ul style="list-style-type: none"> <li>- tachometer</li> <li>- compression tester</li> <li>- ohmmeter</li> <li>- voltmeter</li> <li>- ammeter</li> <li>- hydrometer</li> <li>- dynamometer</li> </ul>	<ol style="list-style-type: none"> <li>1. All measurements to be 100% correct.</li> </ol>
	MF 24	Use the following diesel engine test equipment- <ul style="list-style-type: none"> <li>- compression testers</li> <li>- amp, volt and ohm meters</li> <li>- fuel pump pressure gauges</li> <li>- timing lights (where facilities exist)</li> <li>- exhaust gas analysers and,</li> <li>- injector testers.</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct application of test equipment .</li> <li>2. All measurements to be within manufacturers' specifications.</li> </ol>
KEYS AND LOCKING DEVICES	KL3	Fit a gib-head, parallel, taper and feather key.	<ol style="list-style-type: none"> <li>1. Surface to bear 80%.</li> </ol>
	KL4	Install the following locking devices - lock-nuts, dowels, lock plates, split pins, split-cotters, taper pins and wire method.	<ol style="list-style-type: none"> <li>1. All burrs and rough edges, ground smooth.</li> </ol>
	KL5	Remove a gib-head, parallel, taper and feather key.	<ol style="list-style-type: none"> <li>1. No damage to components.</li> </ol>
	KL6	Identify nuts and bolts.	<ol style="list-style-type: none"> <li>1. 100% correct.</li> </ol>
	KL8	Identify plain flat washers, split lock washers and toothed washers.	<ol style="list-style-type: none"> <li>1. 100% correct.</li> </ol>

MODULE	CODE	OBJECTIVES	CRITERIA
	KL9	Tighten, torque and torque turn bolts and nuts.	1. 100% correct according to manufacturers' procedures and specifications.
	KL10	Identify the following types of keys - gib-head, parallel, taper, feather and woodruff keys.	1. 100% correct.
ENGINES AND ACCESSORIES	EA1	Trace and repair faults on worn and faulty components.	1. Individual faults correctly traced and repaired.
	EA2	Adjust engine tappets.	2. Correct procedures and tools used. 1. Correct procedures and tools used. 2. As per manufacturers' specifications.
	EA3	Knowledge of function and different forms of energy and the workings of compression ignition engines. (Recall the operation of a four (4) stroke cycle engine).	1. 100% correct.
	EA4	Identify and recall the functions of the following major components: – cylinder head assembly – rocker shaft assembly – cylinder block – camshaft & followers – crankshaft & bearings – piston & rings – connecting rod & bearings – timing gear train – oil pump assembly – flywheel – dampers – turbocharger/s	1. 100% correct.
	EA5	Recondition cylinder head assemblies.	1. All measurements, clearances & torque values & valve timing according to manufacturers' specifications and procedures.
	EA6	Recondition sub-assemblies.	1. Correct according to manufacturer's specification and procedures.
	EA7	Measure crankshaft journals for taper & ovality.	1. Within manufacturers' specifications.

MODULE	CODE	OBJECTIVES	CRITERIA
	EA8	Measure cylinder liners for taper & ovality.	1. Within manufacturers' specifications.
	EA9	Hone cylinder liners.	1. No glazing cross hatch. 2. Pattern at $\pm 130^\circ$ .
	EA10	Dismantle, recondition and refit oil pumps.	1. All measurements and clearance according to manufacturers' specifications and pump must turn freely.
	EA11	Set valve and fuel injection timing.	1. All measurement, clearances, torque values and valve timing according to manufacturers' specifications and procedures.
BEARINGS	BE15	Recall types of bearing failures and their causes.	1. Pass a questionnaire with at least 80%.
	BE16	Match the following bearings with a given list of sketches. <ul style="list-style-type: none"> <li>- standard ball bearing</li> <li>- thrust ball bearing</li> <li>- straight roller bearing</li> <li>- thrust roller bearing</li> <li>- taper roller bearing</li> <li>- needle bearing</li> <li>- thrust needle bearing</li> <li>- spherical roller bearing</li> </ul>	1. 100% correct.
	BE17	Remove a bearing using a puller.	1. No contamination or damage to components or bearings.
	BE18	Remove bearing using a puller and press.	1. No contamination or damage to components or bearings.
	BE19	Fit a bearing to a shaft using a press.	1. No contamination or damage to components or bearings.
	BE20	Fit a roller bearing to a shaft by heating.	1. No contamination or damage to components or bearings.
COOLING SYSTEMS	CS1	Describe the functions of the following components:- <ul style="list-style-type: none"> <li>- water pump</li> <li>- thermostat</li> <li>- radiator</li> <li>- relief valve (cap)</li> </ul>	1. 100% correct

MODULE	CODE	OBJECTIVES	CRITERIA
		<ul style="list-style-type: none"> <li>- fan and cowling</li> <li>- engine oil cooler</li> </ul>	
	CS2	Recall safety precautions when working on cooling systems.	1. safety precautions recalled.
	CS3	Explain:- antifreeze effect on boiling point.  altitude / pressure / boiling point relationship chart.	1. Boiling point increase or decrease.  1. 100% correct.
	CS4	Remove, recondition and install water pumps.	1. Correct according to workshop manual procedures and specifications.
	CS5	Remove and install an oil cooler and a thermostat.	1. All safety aspects adhered to. 2. No fluid leaks.
	CS6	Fill cooling systems.	1. Correct level and all air expelled.
	CS7	Recall reasons for overheating.	1. All reasons stated correctly.
	CS8	Carry out pressure tests on static cooling systems.	1. All safety aspects adhered to. 2. All leaks identified. 3. Relief and hold pressures recorded.
	CS9	Test thermostat opening temperatures (outside machine)	1. Correct according to manufacturers' specifications.
	CS10	Carry out a pressure test on oil coolers.	1. All safety aspects adhered to. 2. No leaks at connections. 3. Service ability determined 100% correct according to manufacturers' specifications.
	CS11	Test radiator top and bottom tank differential temperatures.	1. .Correct according to manufacturers' specifications.
	CS12	Adjust vee belts.	1. Tension according to specifications.
	CS13	Check and replace pulleys where necessary.	1. Correct according to manufacturers' specifications.
	CS14	Add additives to a given cooling system.	1. Correct according to manufacturers' specifications.

MODULE	CODE	OBJECTIVES	CRITERIA
DIESEL ENGINE STSTEMS AND TUNING	DETU1	<p>Knowledge of function and different forms of energy and the workings of compression ignition engines.</p> <p>Knowledge of function and composition of:</p> <ul style="list-style-type: none"> <li>- Fuel, exhaust</li> <li>- turbo charger</li> <li>- cooling and lubrication systems</li> <li>- vacuum pumps and air compressors</li> <li>- injectors and injector pumps and exhaust brake systems.</li> </ul> <p>Adjust and tune the following:</p> <ul style="list-style-type: none"> <li>- fuel injection</li> <li>- ignition / electronic</li> <li>- timing</li> <li>- tappets</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to for removal and replacement of components.</li> <li>2. Correct tools used.</li> <li>3. As per manufacturers' specifications.</li> </ol>
SERVICING	SER1	Interpret information in lubrication and maintenance guides.	<ol style="list-style-type: none"> <li>1. 100% correct.</li> </ol>
	SER2	<p>Identify recommended lubricants / fluids for:</p> <ul style="list-style-type: none"> <li>- engine crankcase</li> <li>- differential</li> <li>- gearbox</li> <li>- wheel bearings</li> <li>- transmissions</li> <li>- brakes</li> <li>- power steering</li> <li>- power shift</li> <li>- clutch</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct according to manufacturer's lubrication and maintenance manuals.</li> </ol>
	SER3	<p>Identify types of filter elements:-</p> <ul style="list-style-type: none"> <li>- fuel filters</li> <li>- oil filters</li> <li>- air cleaner filters</li> </ul>	<ol style="list-style-type: none"> <li>1. 100% correct.</li> </ol>
	SER4	<p>Perform tasks which include the:</p> <p>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</p>	<ol style="list-style-type: none"> <li>1. Correct sequence adhered to</li> <li>2. All adjustments and calibrations according to manufacturers' specifications and procedures</li> <li>3. All safety aspects adhered to</li> <li>4. Correct procedure and tools used</li> </ol>

MODULE	CODE	OBJECTIVES	CRITERIA
	SER5	<p>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.</p> <p>Perform a major service by: Carrying out major service of:</p> <ul style="list-style-type: none"> <li>- fuel pump</li> <li>- injectors</li> <li>- pre-heaters</li> <li>- resetting spill timing</li> <li>- servicing of exhaust brake systems.</li> </ul>	<p>5. 100% correct</p> <p>1. Correct sequence adhered to 2. All adjustments and calibrations according to manufacturers' specifications and procedures 3. All safety aspects adhered to 4. Correct procedure and tools used 5. 100% correct</p>
FUEL SYSTEMS	FS6	Dismantle, replace, adjust and calibrate components in various types of fuel systems.	<p>1. Correct sequence adhered to. 2. All adjustments and calibrations according to manufacturers' specifications and procedures.</p>
	FS9	Trace faults and repair fuel systems.	<p>1. All safety aspects adhered to. 2. Correct procedure and tools used. 3. Correct sequence adhered to. 4. To manufacturer's specifications and procedures.</p>
BATTERIES	BA1	Recall the operation of different types of batteries.	<p>1. 100% correct.</p>
	BA2	Identify various types of batteries.	<p>1. 100% correct.</p>
	BA3	Maintain and store batteries.	<p>1. According to SABS 0142.</p>
	BA4	Connect batteries in series and parallel.	<p>1. Correct according to SABS 0142.</p>
	BA5	Test battery capacity and ensure specific gravity levels are correct.	<p>1. All safety aspects adhered to. 2. Correct according to manufacturers' specifications.</p>
ELECTRICAL SYSTEMS	ES1	<p>(1) Recall information / knowledge of :</p> <ul style="list-style-type: none"> <li>- volts, amps, ohms, watts, magnetism and workings of parallel switches.</li> <li>- Starter motors, alternators, generators, regulators, pre-heating and other cold starting devices.</li> </ul> <p>(2) Fit and connect applicable auto electrical components.</p>	<p>1. Pass a questionnaire of minimum 80%. 2. Correct according to manufacturers' specifications and procedures. 3. All safety aspects adhered to.</p>

MODULE	CODE	OBJECTIVES	CRITERIA
	ES2	Fault find auto electrical components.	<ol style="list-style-type: none"> <li>1. All safety aspects adhered to.</li> <li>2. Correct instruments used.</li> <li>3. Correct procedures adhered to.</li> <li>4. Correct according to manufacturers' specifications.</li> <li>5. System to be functionally correct.</li> </ol>
	ES3	Check and adjust head lights.	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to.</li> <li>2. Correct according to manufacturers' specifications and procedures.</li> </ol>
EXHAUST SYSTEMS	EXS1	Test replace faulty exhaust systems.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturers' specifications.</li> </ol>
TRANSMISSION SYSTEMS	TS1	Recall various transmission systems.	<ol style="list-style-type: none"> <li>1. Pass a questionnaire with at least 80%.</li> </ol>
	TS2	Trace and repair faults on worn and faulty components on the following transmission systems: (1) <u>Manual gearbox and final drive.</u> – front wheel drive – rear wheel drive – four wheel drive (2) <u>Automatic gearbox and final drive.</u> – front wheel drive. – rear wheel drive	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to for removal and replacement of transmission systems.</li> <li>2. Correct procedures and tools used.</li> <li>3. All settings as per manufacturers' specifications and procedures.</li> </ol>
	TS3	Remove, repair and replace clutch systems.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturers' specifications.</li> </ol>
	TS4	<u>Drive Shafts</u> - Recall the theory and purpose of drive shafts and identify types of joints. - Use of lubricants. - Remove and replace universal joints.	<ol style="list-style-type: none"> <li>1. Pass a questionnaire with at least 80% correct</li> <li>2. Correct according to manufacturers's specifications</li> </ol>
	TS5	<u>Final drive</u> - Recall the 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. - Remove and replace rear wheel bearings	<ol style="list-style-type: none"> <li>1. Pass a questionnaire with at least 80% correct.</li> <li>2. Correct according to manufacturers' specifications</li> </ol>

MODULE	CODE	OBJECTIVES	CRITERIA
SUSPENSION SYSTEMS	SUS1	Recall the various suspension systems used in motor vehicles.	1. Pass a questionnaire with at least 80%.
	SUS2	Repair and or replace faulty or worn parts on the following suspension systems. <ul style="list-style-type: none"> <li>- front suspension</li> <li>- coil springs</li> <li>- struts</li> <li>- telescopic shock absorbers</li> <li>- anti-roll bar</li> <li>- constant velocity joints</li> <li>- rear suspension</li> <li>- transverse torsion axles</li> <li>- trailing arms</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to for removal and replacement of suspension systems.</li> <li>2. Correct procedures and tools used.</li> <li>3. All settings as per manufacturers' specifications and procedures.</li> </ol>
	SUS3	Check and adjust front wheel alignment with regard to- <ul style="list-style-type: none"> <li>- toe-out</li> <li>- toe-in</li> <li>- camber</li> <li>- castor</li> </ul>	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to for removal and replacement of suspension systems.</li> <li>2. Correct procedures and tools used.</li> <li>3. All settings as per manufacturers' specifications and procedures.</li> </ol>
	SUS4	Check and adjust rear wheel alignment with regard to- camber and toe-out.	<ol style="list-style-type: none"> <li>1. Correct procedures adhered to for removal and replacement of suspension systems.</li> <li>2. Correct procedures and tools used.</li> <li>3. All settings as per manufacturers' specifications and procedures.</li> </ol>
	SUS6	Align chassis.	<ol style="list-style-type: none"> <li>1. Correct according to manufacturers' specifications.</li> </ol>
	SUS7	<ul style="list-style-type: none"> <li>- Recall the various defects on tyres and rims with reference to wheel balancing.</li> <li>- Recall wheel types, rim and tyre sizes, causes of tyre wear and failure.</li> <li>- Remove and replace wheels, tyres and tubes</li> <li>- Balance wheels</li> </ul>	<ol style="list-style-type: none"> <li>1. Questionnaire – minimum of 80%</li> <li>2. Correct according to manufacturers' specifications.</li> <li>3. All safety aspects adhered to</li> <li>4. Housekeeping and quality of work to be observed and included as criteria for competency.</li> </ol>
TOWING AND RECOVERY	TR1	<ul style="list-style-type: none"> <li>- Recall procedures for the towing and recovery of vehicles.</li> <li>- Demonstrate the safe towing and/or recovery of vehicles</li> </ul>	<ol style="list-style-type: none"> <li>1. All safety aspects adhered to</li> </ol>
AIR OVER HYDRAULIC	AHB1	Dismantle, repair, assemble and test booster actuated master cylinder,	<ol style="list-style-type: none"> <li>1. Correct according to manufacturers' specifications.</li> </ol>

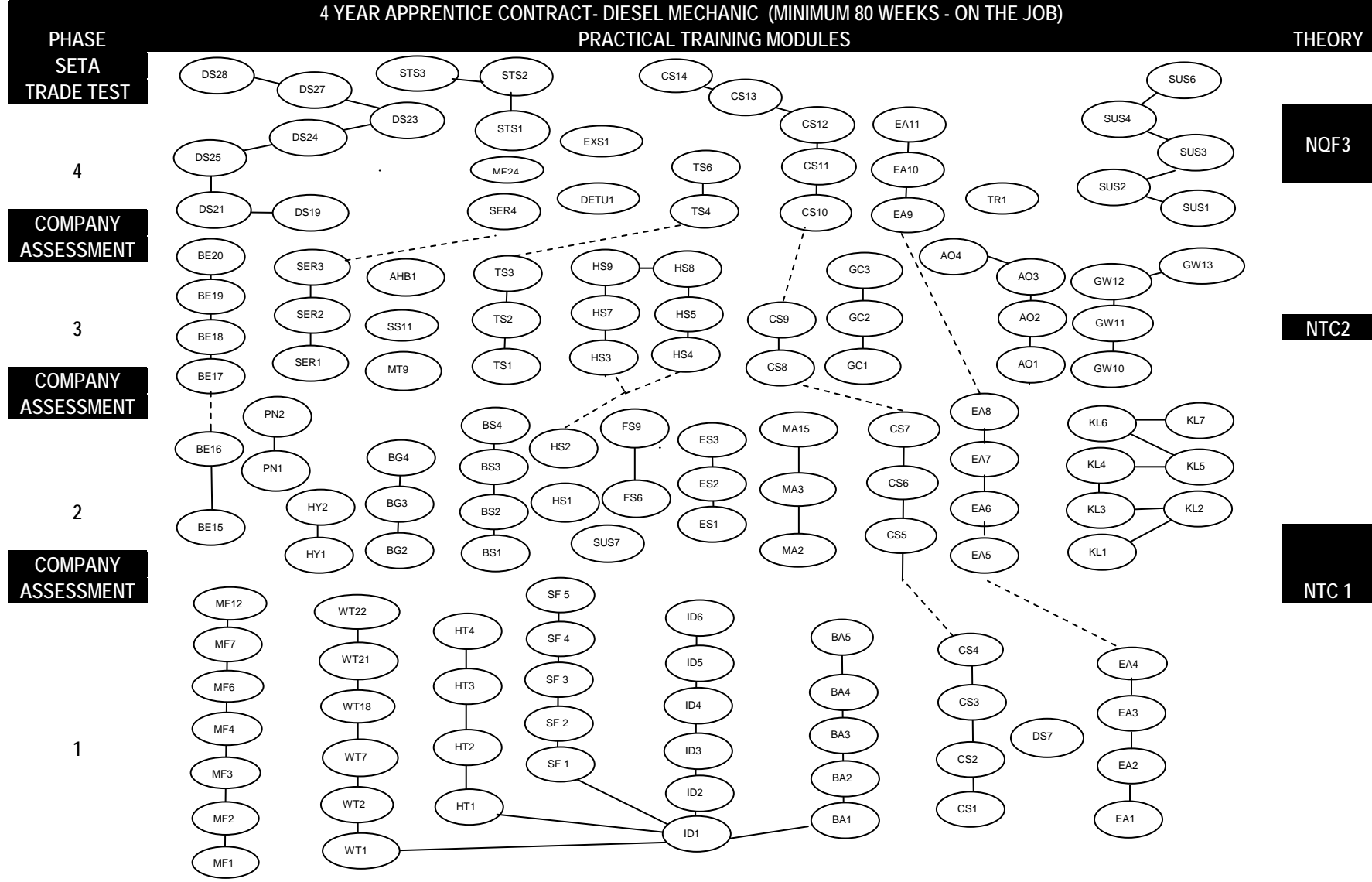
MODULE	CODE	OBJECTIVES	CRITERIA
<b>BRAKES</b>		wheel cylinders and calliper disc brakes.	<ol style="list-style-type: none"> <li>All safety aspects adhered to.</li> <li>All equipment to be functionally correct.</li> </ol>
<b>BRAKING SYSTEMS</b>	BS1	Recall the operation of various types of braking systems. (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 medium to heavy vehicles in the motor industry.)	<ol style="list-style-type: none"> <li>100% correct.</li> </ol>
	BS2	Dismantle, repair, assemble and test brake systems and components. (Ability to correctly remove, replace and adjust braking mechanisms commonly used in medium to heavy vehicles in the motor industry).	<ol style="list-style-type: none"> <li>Correct according to manufacturers' specifications.</li> <li>All safety aspects adhered to.</li> <li>All equipment to be functionally correct.</li> </ol>
	BS3	Diagnose faults in braking systems.	<ol style="list-style-type: none"> <li>Correct according to manufacturers' specifications.</li> <li>All safety aspects adhered to.</li> <li>All equipment to be functionally correct.</li> </ol>
	BS4	Maintain hydraulic braking systems.	<ol style="list-style-type: none"> <li>Brake fluid level between MIN and MAX marks.</li> <li>No fluid leaks.</li> <li>No chaffing, leakage, cracks and corrosion on hydraulic pipes and unions.</li> <li>Check operation of brake pressure regulator.</li> <li>Check disc pads or brake linings for wear.</li> </ol>
<b>STEERING SYSTEMS</b>	STS1	Recall different types of steering systems: <ul style="list-style-type: none"> <li>- Knowledge of composition of lead and coil springs, torsion bars, shock absorbers and air suspension systems.</li> <li>- Identify all sections of front suspensions commonly used in the motor industry.</li> <li>- Knowledge of composition and ability to identify worn steering box systems.</li> </ul>	<ol style="list-style-type: none"> <li>100% correct.</li> </ol>
	STS2	Remove, dismantle, repair, replace and test steering systems.	<ol style="list-style-type: none"> <li>Correct according to manufacturers' specifications.</li> <li>All safety aspects adhered to.</li> <li>All equipment must be functionally correct.</li> </ol>
	STS3	Discuss and explain the complete steering geometry of heavy	100% correct

MODULE	CODE	OBJECTIVES	CRITERIA
		vehicles commonly used in the motor industry.	
HYDRAULICS	HY1	Interpret symbols and abbreviations.	1. 100% correct according to ISO 1219 table.
	HY2	Interpret elementary hydraulic circuit diagrams.	1. 100% correct according to ISO 1219 table.
PNEUMATICS	PN1	Interpret symbols and abbreviations.	1. 100% correct according to ISO 1219 standards.
	PN2	Interpret pneumatic circuit diagrams.	1. 100% correct according to ISO 1219 standards.
THEORETICAL TRAINING	TT1	<p>A four subject pass is needed to obtain the N course. Mathematics and the relevant trade theory subject is compulsory. A further two relevant subjects must be chosen by the employer, college and apprentice in order to obtain the four subjects required for the course.</p> <p>Mathematics N1  Relevant Trade Theory N1  Plus two relevant subjects N1</p>	1. Obtain a four subject certificate.
	TT2	<p>Mathematics N2  Relevant Trade Theory N2  Plus two relevant subjects N2</p> <p>OR</p> <p>CHIETA approved N2 Equivalency</p> <p>Should the apprentice have a qualification higher than that prescribed in the schedule, it must be ensured that the subjects are relevant to the trade in question, before a trade test date will be allocated. This should take approximately 10 weeks.</p>	1. Obtain a four subject certificate or pass the integrated course.
ON THE JOB EXPERIENCE AND INDEPENDENT WORK	EX1	<p>On the job experience and independent work should cover at least 80% of all modules plus at least 4 machines in the module machines to ensure as wide as possible field of experience and must take place under supervisory control. This must be at least 80 weeks.</p>	1. All work done to be recorded with respect to performance levels.
TRAINING PROVIDER	TP1	Training at an accredited provider of apprentice training, for a minimum period of 32 weeks over the 4 phases.	1. All work done to be recorded with respect to performance levels.

MODULE	CODE	OBJECTIVES	CRITERIA
		Training must cover all the modules of the training schedule. If the candidate does not have NTC2, the candidate must conduct an additional 10 weeks to attain the N2 or a CHIETA approved equivalency. This must be obtained at a provider accredited / approved for theoretical training.	

4 YEAR APPRENTICE CONTRACT- DIESEL MECHANIC (MINIMUM 80 WEEKS - ON THE JOB)  
PRACTICAL TRAINING MODULES

THEORY



Apprentice Name		Contract Number		Trade: Turner		Employer		Page No: 1	
Month:		Year:							
Week 1		Week 2		Week 3		Week 4		Week 5	
Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Activity: <i>Induction</i>	Activity: <i>xxx</i>	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:
Course	Venue: <i>place</i>	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:
Venue: <i>Company</i>	Code <i>XX1</i>	Code:	Code:	Code:	Code:	Code:	Code:	Code:	Code:
<i>training</i>									
<i>Room</i>									
Code									
<i>ID 1</i>									
<i>ID2</i>									
<i>ID3</i>									
<i>ID4</i>									
<i>ID5</i>									
<i>ID6</i>									
<i>ID</i>									
<i>assessment</i>									
<i>test</i>									
Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:
Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:
Code	Code	Code:	Code:	Code:	Code:	Code:	Code:	Code:	Code:
Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:	Activity:
Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:	Venue:
Code	Code	Code:	Code:	Code:	Code:	Code:	Code:	Code:	Code:

Part 4 APPRENTICESHIP TRAINING RECORD

<b>APPRENTICE TRAINING RECORD</b>						<b>PAGE 1</b>	<b>TRADE : DIESEL MECHANIC</b>		
<b>EMPLOYER:</b>						<b>CONTRACT NO:</b>			
<b>APPRENTICE SURNAME &amp; INITIALS:</b>									
<b>I.D. NUMBER:</b>									
<b>CONFIRMATION OF TRAINING PRESENTED</b>									
<b>MODULE AND MODULE CODE</b>			<b>PHASE 1</b>			<b>MODULE AND MODULE CODE</b>			
<b>CODE</b>		<b>SIGNATURE</b>		<b>DATE</b>	<b>CODE</b>		<b>SIGNATURE</b>		<b>DATE</b>
		<small>APPRENTICE</small>	<small>SUPERVISOR</small>				<small>APPRENTICE</small>	<small>SUPERVISOR</small>	
P = Provider E= Employer									
<b>INDUCTION</b>					WT2 0	P			
						E			
ID1	P				WT2 1	P			
	E					E			
ID2	P				WT2 2	P			
	E					E			
ID3	P				<b>MEASURING EQUIPMENT</b>				
	E								
ID4	P				MF1	P			
	E					E			
ID5	P				MF2	P			
	E					E			
ID6	P				MF3	P			
	E					E			
<b>SAFETY</b>					MF4	P			
						E			
SF1	P				MF6	P			
	E					E			
SF2	P				MF7	P			
	E					E			
SF3	P				MF1 2	P			
	E					E			
SF4	P				<b>BATTERIES</b>				
	E								

SF5	P				BA1	P			
	E					E			
<b>HAND TOOLS</b>					BA2	P			
						E			
HT1	P				BA3	P			
	E					E			
HT2	P				BA4	P			
	E					E			
HT3	P				BA5	P			
	E					E			
HT4	P				<b>COOLING SYSTEMS</b>				
	E								
<b>WORKSHOP TOOLS</b>					CS1	P			
						E			
WT1	P				CS2	P			
	E					E			
WT2	P				CS3	P			
	E					E			
WT7	P				CS4	P			
	E					E			
WT1 8	P								
	E								
<b>ENGINES AND ACCESSORIES</b>									
EA1	P								
	E								
EA2	P								
	E								
EA3	P								
	E								
EA4	P								
	E								
<b>DRAWINGS AND SKETCHES</b>									
DS7	P								
	E								
<b>PHASE 1 COMPANY ASSESSMENT</b>									



<b>EMPLOYER:</b>	<b>CONTRACT NO:</b>
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**APPRENTICE SURNAME & INITIALS:**

**I.D. NUMBER:**

**CONFIRMATION OF TRAINING PRESENTED**

<b>MODULE AND MODULE CODE</b>	<b>PHASE 2</b>	<b>MODULE AND MODULE CODE</b>
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CODE	SIGNATURE		DATE	CODE	SIGNATURE		DATE
	APPRENTICE	SUPERVISOR			APPRENTICE	SUPERVISOR	

P = Provider E= Employer

<b>ENGINES AND ACCESSORIES</b>				ES2	P			
					E			
EA5	P			ES3	P			
	E				E			
EA6	P			<b>BEARINGS</b>				
	E							
EA7	P			BE	P			
	E			15	E			
EA8	P			BE	P			
	E			16	E			
<b>COOLING SYSTEMS</b>				<b>BRAKING SYSTEMS</b>				
CS5	P			BS1	P			
	E				E			
CS6	P			BS2	P			
	E				E			
CS7	P			BS3	P			
	E				E			
<b>MATERIALS</b>				BS4	P			
					E			
MA2	P			<b>KEYS AND LOCKING DEVICES</b>				
	E							
MA3	P			KL3	P			
	E				E			
MA	P			KL4	P			

15	E					E			
<b>BASIC LIFTING TECHNIQUES</b>					KL5	P			
						E			
BG2	P				KL6	P			
	E					E			
BG3	P				KL8	P			
	E					E			
BG9	P				KL9	P			
	E					E			
<b>HAND SKILLS</b>					KL	P			
					10	E			
HS1	P				<b>HYDRAULICS</b>				
	E								
HS2	P				HY1	P			
	E					E			
<b>ELECTRICAL SYSTEMS</b>					HY2	P			
						E			
ES1	P								
	E								
<b>PNEUMATICS</b>									
PN1	P								
	E								
PN2	P								
	E								
<b>SUSPENSION SYSTEMS</b>					<b>PHASE 2 COMPANY ASSESSMENT</b>				
SUS 7	P								
	E								
<b>THEORETICAL TRAINING</b>									
TT1									
<b>AFTER APPRENTICE HAS SUCCESSFULLY COMPLETED PHASE 2 A COPY OF PAGE 3 AND 4 OF THIS TRAINING RECORD MUST BE FORWARDED TO THE TO THE APPRENTICESHIP UNIT AT THE CHIETA</b>									

**EMPLOYER:**

**CONTRACT NO:**

**APPRENTICE SURNAME & INITIALS:**

**I.D. NUMBER:**

**CONFIRMATION OF TRAINING PRESENTED**

**MODULE AND MODULE CODE**

**PHASE 3**

**MODULE AND MODULE CODE**

CODE	SIGNATURE		DATE	CODE	SIGNATURE		DATE
	APPRENTICE	SUPERVISOR			APPRENTICE	SUPERVISOR	

P = Provider E= Employer

**BEARINGS**

**HAND SKILLS**

BE 17	P				HS5	P			
	E					E			
BE 18	P				HS7	P			
	E					E			
BE 19	P				HS8	P			
	E					E			
BE 20	P				HS9	P			
	E					E			

**SERVICING**

**ARC WELDING**

SER 1	P				AO1	P			
	E					E			
SER 2	P				AO2	P			
	E					E			
SER 3	P				AO3	P			
	E					E			
<b>COOLING SYSTEMS</b>					AO4	P			
						E			

**GAS WELDING AND BRAZING**

CS8	P				<b>GAS WELDING AND BRAZING</b>				
	E								
CS9	P				GW 10	P			
	E					E			
<b>SOFT SOLDER</b>					GW	P			

					11	E			
SS1 1	P				GW 12	P			
	E					E			
<b>AIR OVER HYDRAULIC BRAKES</b>					GW 13	P			
						E			
AHB 1	P				<b>GAS CUTTING AND HEATING</b>				
	E								
<b>MARKING OFF</b>					GC1	P			
						E			
MT9	P				GC2	P			
	E					E			
<b>HAND SKILLS</b>					GC3	P			
						E			
HS3	P								
	E								
HS4	P								
	E								
<b>TRANSMISSION SYSTEMS</b>					<b>FUEL SYSTEM</b>				
TS1	P				FS6	P			
	E					E			
TS2	P				FS9	P			
	E					E			
TS3	P								
	E								
<b>PHASE 3 COMPANY ASSESSMENT</b>									

**AFTER APPRENTICE HAS SUCCESSFULLY COMPLETED PHASE 3 A COPY OF PAGE 5 AND 6 OF THIS TRAINING RECORD MUST BE FORWARDED TO THE TO THE APPRENTICESHIP UNIT AT THE CHIETA**

**EMPLOYER:**

**CONTRACT NO:**

**APPRENTICE SURNAME & INITIALS:**

**I.D. NUMBER:**

**CONFIRMATION OF TRAINING PRESENTED**

**MODULE AND MODULE CODE**

**PHASE 4**

**MODULE AND MODULE CODE**

CODE	SIGNATURE		DATE	CODE	SIGNATURE		DATE
	APPRENTICE	SUPERVISOR			APPRENTICE	SUPERVISOR	

P = Provider E= Employer

**DRAWINGS AND SKETCHES**

**EXHAUST SYSTEMS**

DS 19	P				EXS 1	P			
	E					E			

DS 21	P				<b>TRANSMISSION SYSTEMS</b>				
	E								

DS 23	P				TS4	P			
	E					E			

DS 24	P				TS6	P			
	E					E			

DS 25	P				<b>SUSPENSION SYSTEMS</b>				
	E								

DS 27	P				SUS 1	P			
	E					E			

DS 28	P				SUS 2	P			
	E					E			

<b>ENGINES AND ACCESSORIES</b>					SUS 3	P			
						E			

EA9	P				SUS 4	P			
	E					E			

EA 10	P				SUS 6	P			
	E					E			

EA 11	P				<b>SERVICING</b>			
	E							
					SER 4	P		
						E		
<b>COOLING SYSTEMS</b>					<b>STEERING SYSTEMS</b>			
CS 10	P				STS 1	P		
	E					E		
CS 11	P				STS 2	P		
	E					E		
CS 12	P				STS 3	P		
	E					E		
CS 13	P				<b>MEASURING EQUIPMENT</b>			
	E							
CS 14	P				MF2 4	P		
	E					E		
<b>DIESEL ENGINE TUNING</b>					<b>ON THE JOB EXPERIENCE</b>			
DET U1	P				EX1 – EX4			
	E							
<b>TOWING AND RECOVERY</b>					<b>THEORETICAL TRAINING</b>			
TR1	P				TT2			
	E							
<p>AFTER APPRENTICE HAS SUCCESSFULLY COMPLETED PHASE 4 A COPY OF PAGE 7 OF THIS TRAINING RECORD MUST BE FORWARDED TO THE TO THE APPRENTICESHIP UNIT AT THE CHIETA UNIT WITH AN APPLICATION FOR A TRADE TEST</p>								

**REMEMBER TO APPLY FOR YOUR TRADE TEST!**