

LITERACY PROFILE:

Automotive Electrician

This literacy profile identifies the reading, writing, speaking and listening, critical thinking, and use of information communication technology used by automotive electricians. The profile is based on roles observed at a number of different workshops. Individual automotive electricians will perform different combinations of tasks, based on how their company does things.

Reading tasks

“Read” implies that the person reads and understands.

Read signs and short texts

- Part numbers
- Part descriptions
- Symbols on fuse box covers, relay covers
- Ratings of fuses, relays, capacitors etc
- Safety signs
- Output displayed on electronic fault scanner including reference codes
- Dials, gauges and displays on measuring and test equipment (e.g. fuel system, air conditioning system)

Read charts, graphs and tables

- Tables and charts of specifications included in vehicle manuals
- Wiring diagrams (including colour coding of wires, symbols and codes)
- Exploded parts diagrams
- Supplier information sheets (e.g. Hella bulbs)
- Road maps (if doing call out work)

Read forms on job

- Job sheets (includes instructions about fault or work required on vehicle)

Read notices and memos

- Notices on notice board (e.g. staff meeting, social activity)
- Company rules or behaviour standards
- Supplier updates

Read instructions

- Part installation and use instructions
- Vehicle repair manuals
These complex documents include indexes, written descriptions, specifications, wiring diagrams, exploded parts diagrams and process instructions. They may be in book form or stored electronically.

Read training materials

- Apprenticeship training materials (paper and computer based)
- MITO Record of Achievement Book
- MITO Training Manual
- Supplier or Land Transport NZ briefing handouts
- Power point displays

Read employment related material

- Leave forms
- Code of conduct or company rules
- Employment agreement
- Training agreement

Reading skills

Interpret graphic symbols.

- Signs
- Colour coding

Recognise the features of a range of texts.

- Signs
- Codes
- Forms
- Drawings
- Procedures
- Manuals

Recognise number formats.

- Serial numbers
- Part numbers
- Vehicle registration numbers
- Phone numbers

Match numbers or identifiers across different texts.

Understand common and industry vocabulary.

Understand common and industry abbreviations.

Find out the meaning of unfamiliar words or phrases.

Use manuals as a reference source.

Follow written instructions (which may include diagrams).

Predict what will be contained in a text.

Use a guide to document contents.

- Index
- Table of contents
- Key
- Legend

Identify the main points from a page of text.

Scan text or table or label to find specific piece of information.

Skim a text for "gist".

Read text thoroughly.

Make inferences based on what written material does not say.

Understand information in graphic material.

- Tables
- Graphs
- Diagrams
- Charts
- Maps

Interpret material read.

- Summarise material read in own words
- Take notes from material read
- Report accurately on the information read



Writing tasks

Write short notes

- List of parts required
- Customer name and vehicle registration in job booking diary or on job booking whiteboard

Create sketches

- Sketch circuit to assist with work on the vehicle (may be to help with calculations)

Complete workplace forms

- Time sheets
- Job cards or sheets

Write descriptions of work completed

- Explain the work done on a customer's vehicle so customer can understand what happened

Write for training purposes

- Record notes about new learning in personal notebook
- Complete MITO Record of Achievement Book
- Write answers to assessment questions
- Write answers for test papers
- Write assignments for apprenticeship training

Writing skills

Understand that different writing styles are used for different types of writing.

- Note
- List
- Checklist
- Form
- Assignments (training)
- Assessments (training)

Complete forms using numbers, single words, or short sentences.

- Handwriting must be legible
- Abbreviations can be used
- Spelling must be understandable, but correct spelling is not essential
- Grammar and punctuation must be understandable

Write paragraphs (narrative descriptions of work).

- Handwriting must be legible
- Use recognisable spelling
- Write points in a logical order
- Use descriptive text to outline a sequence of activities
- Use punctuation
- Attempt to use correct tenses, and correct verb and subject agreement

Draw sketches that represent job requirements.

- Parts of circuit are represented clearly
- Correct abbreviations are used

Take notes from material read (training).

Write short answers to assessment questions (training).

- Handwriting must be legible
- Abbreviations can be used
- Spelling must be understandable, but correct spelling is not essential
- Grammar and punctuation must be understandable

Write assignments (training).

- Plan assignment writing (beginning, middle and end)
- Write sentences and paragraphs
- Use diagrams and sketches to help make a point
- Spelling should be correct
- Grammar and punctuation should be mostly correct
- Use editing skills



Speaking and listening tasks

- Listen to oral instructions from workshop supervisor
- Listen and respond to requests for help from co-workers
- Listen to verbal explanations and training
- Listen during team meetings or briefings
- Listen to customer's description of fault with vehicle

- Ask questions to ensure you have understood what another person said
- Answer telephone and gather job information from potential customer
- Report where work is up to
- Report issues or potential hazards to supervisor
- Order parts or ask another person to order parts for you

- Ask for assistance when needed
- Suggest options to help other Auto Electricians diagnose a fault
- Communicate with co-workers (teamwork) during day to day work situations
- Communicate with a wide range of customers in appropriate ways (e.g. from working on an older lady's mobility scooter to working on a truck or piece of heavy machinery)
- Communicate with customers or trades people when fixing vehicles on site (away from workshop)
- Explain to a customer what work you have done on their vehicle.
- Answer oral questions during unit standard assessments
- Discuss progress of training with MITO field staff



Speaking and listening skills

Note: Speaking and listening includes non-verbal communication

Speak clearly.

Discuss topics which are appropriate in work context.

Use words, pronunciation, and tone appropriate to situation and audience.

Open and close conversations appropriately.

Give information in a sensible order.

Understand that communication is a two way process.

Use active listening skills.

- Repeat message back to sender
- Summarise instructions in own words

Use following techniques e.g. say "aha" or "okay" as you follow what someone is saying.

Present and defend a viewpoint.

Read information out loud.

Use hand signals and gestures to communicate in noisy environment.

Use questioning techniques including using open and closed questions to gain information, check understanding and encourage further discussion.

Summarise to check or clarify details.

Use suitable body language.

Read body language of person speaking, or being spoken to, and respond appropriately.

Understand that there are barriers to communication, especially in a cross-cultural situation.

Numeracy tasks

- Identify parts by alpha numeric codes
- Count and tally numbers of parts
- Use components, wire and cables that are the correct rating and size for the job
- Measure voltage, amperage, and ohms
- Interpret numerical outputs of specialised measuring equipment (digital and analog displays)
 - Multimeter
 - Gas analyser
 - Fuel pressure meter
 - Air conditioning servicing unit
- Carry out electrical calculations required to repair or adjust circuits
- Work out how much electrical wire or cable will be needed for a job
- Measure length of cable
- Evenly space body lighting on trucks and other vehicles
- Machine components to specific sizes

- Use micrometer to measure metal thickness
- Accurately record the time taken to complete a job

- Calculate total cost of job
- Take payment from customer
- Record mileage in company vehicles



Numeracy skills

Recognise numbers as part of a code.

Use numbers.

- Whole numbers
- Decimals
- Fractions
- Percentages
- Ratios
- Negative numbers
- Money

Do number problems (including using formula, conversions e.g. Ohms law).

- Addition
- Subtraction
- Multiplication
- Division

Understand place value.

Estimate quantities.

- Length
- Time
- Number

Measure accurately.

- Length
- Time
- Number
- Temperature
- Pressure
- Capacity

Understand difference between imperial and metric measurements.

Use 12 or 24hr clock.

Interpret numerical information represented in different ways.

- Graph
- Table
- Scale
- Dial

Recognise and use geometric concepts.

- Straight
- Square
- Parallel

Critical thinking tasks

Apprentice auto electricians usually work on more straightforward jobs, and will refer to experienced electricians regularly.

More experienced auto electricians use detailed knowledge of vehicle electrical systems to diagnose and repair faults. They are often asked to find faults that other people have been unable to resolve.

- Locate faults in vehicle electrical system

- Generate a list of possible reasons for the fault
- Identify possible solutions
- Select and implement a solution
- Check that the solution has worked
- Recall similar issues or problems from past experience to help with fault diagnosis and repair
- Use significant knowledge of how vehicle electrical systems operate to help with fault diagnosis and repair

- Deal with contingencies
 - oil spill in workshop
 - injury
- Identify any other things that need to be repaired that are not on the job sheet
- Get workshop supervisor's approval before completing work not listed on the job sheet
- Ask for help when needed

Critical thinking skills

Apply fault finding methodologies e.g.

- identify appropriate starting point
- work methodically through, testing each circuit
- isolate area where problem occurs.

Use problem solving methodology e.g.

- identify issue
- identify possible solutions
- determine best outcome
- decide on plan of action
- carry out plan.

Develop a personal reference "library" of common and unusual faults and the solutions used to correct these.

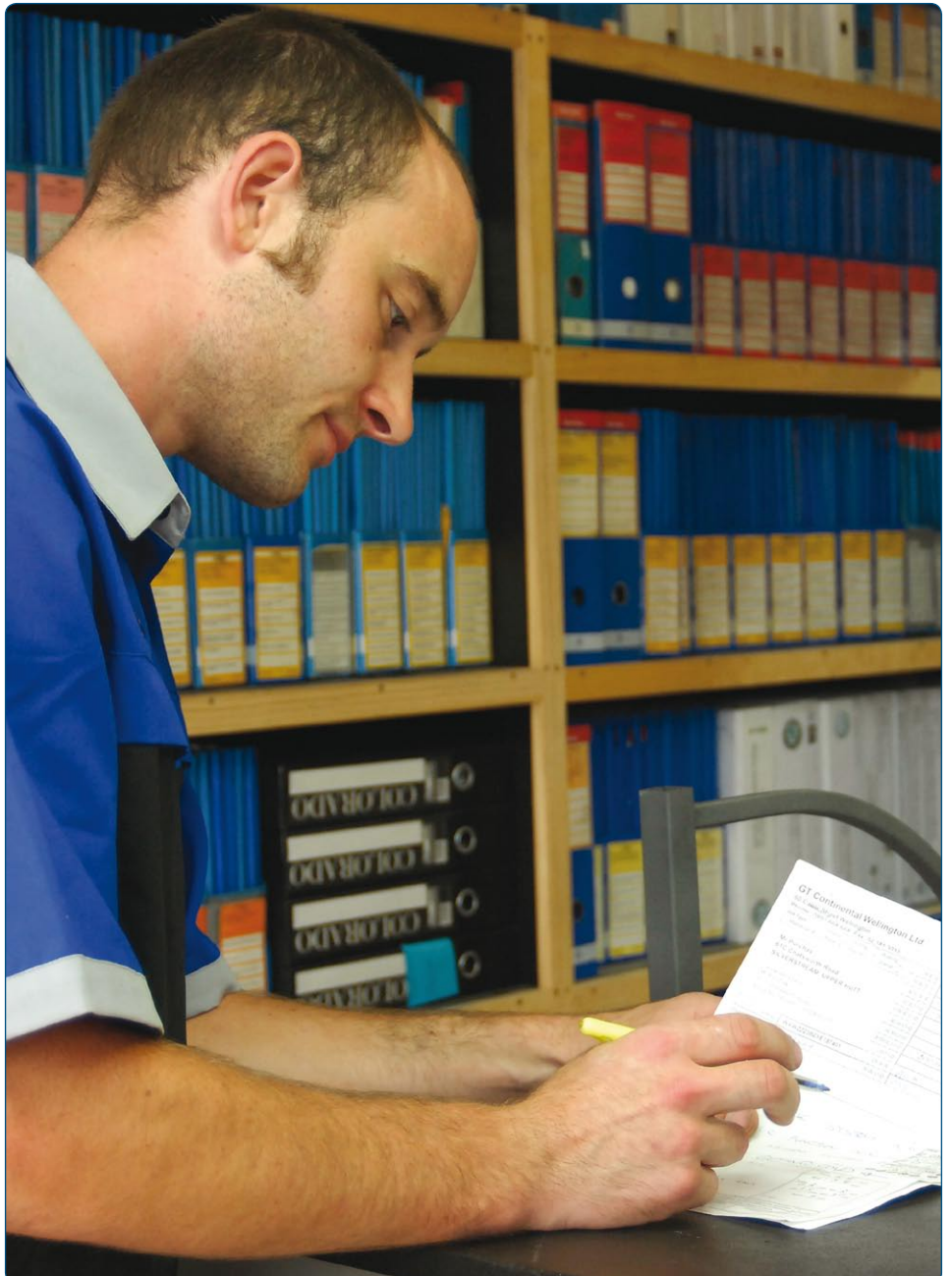
Apply knowledge of professional trade practice to work carried out.

Apply knowledge of safety requirements and principles to work practice.

Identify if you have enough knowledge and skill to take action on own.

Identify when you need assistance from others.

Recall and follow specified procedures to deal with contingencies.



Information and Communication Technology Tasks

- Use electronic vehicle scanning tools
- Operate specialised electronic tools (e.g. air conditioning service unit)
- Service and repair vehicle computer systems
- Record and update customer details on company customer management system
- Consult electronic vehicle manuals (CD ROM based or web based)
- Look up parts information on supplier website
- Place orders via supplier website
- Access and use computer based training materials



Information and Communication Technology Skills

Operate a computer or ICT based device:

- start the computer or device
- log-in if needed
- start appropriate application
- exit appropriate application
- turn off computer or device.

Identify elements of computer applications and the function of the element (e.g. menus and menu options, command buttons, icons, toolbars).

Identify appropriate computer application for task (e.g. spreadsheet, word processor, e-mail, web browser, drawing, company systems).

Operate computer application(s).

Enter or update data using a computer (using keyboard, mouse or other input devices).

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