Prepare and Operate Equipment, Tools and Machinery - Hand Tools

Workbook
(AUM9004A)
AUM9004A

Prepare and Operate Equipment, Tools and Machinery – Hand Tools

Workbook
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Not for NEALS

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Introduction

Vehicle body building is a very diverse trade and therefore requires the tradesperson possess many and varied skills. This person must be able to use and operate a wide range of tools and equipment, possibly a wider range than in any other trade.

This learning resource covers a selection of hand tools and equipment used in the vehicle body building trade.

Tools

Tools can be divided into two main groups: hand tools and power tools. Hand tools are operated by the physical strength of the user. Power tools require an external source of power such as electricity or compressed air to operate.

Each of these groups can also be divided into sub groups.
Hand tools

Hand tools have been devised to enable tradespeople to carry out a job more efficiently, quickly and safely than would otherwise be possible. Some tools are quite simple, such as a screwdriver, which is almost indispensable for undoing a countersunk screw located in a recess. Others are more complicated, such as a micrometer; these are indispensable when measuring fine tolerances.

Hand tools can be classified into several groups:

- fastening tools
- gripping and clamping tools
- impact tools
- cutting tools
- marking-out tools
- measuring tools.

Tools use one or more of the following methods to gain a mechanical advantage:

- the lever
- the crank
- the inclined plane.

Read pages 1 to 4 of *Hand and Power Tools* and then answer the following questions.

1. Name a tool which would use leverage to an advantage.

2. Give a definition of the term ‘torque’.

3. What type of force does a cold chisel use to cut metal?

4. What does tension mean?
Fastening tools

Spanners
There are several types of spanners, each suitable for a specific job.
The most commonly used spanners in a vehicle body building workshop are:

- open-ended spanners
- ring spanners
- combination spanners
- sockets and their accessories
- hook spanners
- pin spanners
- adjustable spanners
- ratchet spanners
- flare nut spanners.
Spanner selection

Selecting which spanner to use depends on the job at hand, but as a general rule the first choice should be a socket. This offers the advantage of surrounding the nut or head of the bolt entirely, which minimises the possibility of slipping. A socket has contact on six points of the hexagon, compared with an open-ended spanner, which has only two contact points and could lead to the rounding of the nut. One of the socket’s shortcomings is that it requires clear space above the hexagon.

A ring spanner can be inserted into a more confined space and has the advantage of contact with all six points of the hexagon. The disadvantage is that a ring spanner is more time consuming to use in a confined space, as the spanner must be lifted clear of the hexagon to take a second bite.

An open-ended spanner only contacts the hexagon in two places, but has the advantage of getting into confined places. This is useful when attaching components where it is not possible to slip a spanner over the hexagon, such as when attaching a relay valve to an air tank.

All of these spanners have a handle which is not longer in length than necessary, so over-tightening a bolt is minimised.

Hook spanners and C spanners are special-use spanners. They would be used to tighten the end caps of hydraulic rams. Flare nut spanners are specifically designed to fit onto flare nuts of hydraulic or air lines.

The last choice of a spanner should be an adjustable spanner, as they are not usually a perfect fit and the length of the handle is not specifically designed for the torque of the bolt size. Only pull the spanner so the force bears against the fixed jaw. Pulling the spanner in the opposite direction may damage the spanner or round off the nut or bolt head.
Choice of spanner size

Spanner size is either metric or American Fine (AF). Spanners are measured across the flats of the hexagon.

For a metric bolt a 16 mm spanner would fit this nut.

For imperial bolts such as an AF bolt, the system is the same except that the measurements are given in inches.

For an AF bolt a 3/4" spanner would fit this nut.

British Standard Whitworth (Whit or BSW) or British Standard bolts are measured differently. It is the diameter of the shank of the bolt which is embossed on the spanner. For example, a Whitworth bolt would require a spanner with 1/2 W embossed on the spanner, although the gap in the spanner would be closer to three-quarters of an inch.

For a Whitworth bolt a 1/2" spanner would fit this nut.
Read pages 5 to 12 of *Hand and Power Tools* and then answer the following questions.

1. What type of force do spanners apply to a nut or bolt?

2. Give one situation where an open-ended spanner is better suited than a ring spanner.

3. Why is it possible to apply a greater force to a ring spanner than to an open-ended spanner?

4. How many points are there in a double hex socket?

5. What would usually be embossed on a metric open-ended spanner which would fit a nut measuring 12 mm across the flats?

6. Give one use for each of the following socket accessories:
   - speed brace ____________________________
   - extension ______________________________
   - universal joint _________________________
   - ratchet ________________________________
   - breaker bar ___________________________

7. Describe a combination spanner.

8. When should an adjustable spanner be used?

9. Name the spanner that should be selected to undo a brake pipe or fuel line.
Wrenches

Wrenches are tools used for holding and turning. A variety of wrenches are used in the vehicle body building industry.

Adjustable pipe wrenches are sometime called Stillson wrenches. Typically, they are used on cylindrical objects such as pipes and rails where there are no flats on which to use a spanner.

Another type of wrench is the hexagon wrench, which would typically be used for undoing hexagonal recessed drain plugs. Smaller hexagon wrenches are called allen keys.

Torque wrenches are used to tighten nuts or bolts to a specific tension and are sometimes called tension wrenches. They are used to correctly tension down the bolts holding engineering components such as power take-off units or bolts on kingpins. Never use a torque wrench to undo nuts or bolts, as this may damage or alter the accuracy of the wrench.

A tap wrench is used to hold thread-cutting taps.

Read pages 13 to 15 and 102 to 103 of Hand and Power Tools and then answer the following questions.

1. Why should an adjustable pipe wrench never be used on polished surface material such as a hydraulic ram?

2. How is the size of a hexagon wrench measured?

3. What is another name for a torque wrench?

4. Why must a torque wrench not be used to loosen nuts or bolts?

5. Name two types of tap wrench.

6. What is used to check tap squareness?
Screwdrivers

Screwdrivers are accurate precision tools and are not designed to be used as punches or cold chisels. The most common types of screwdrivers are the standard (straight blade or flat) type and the Phillips screwdriver, and they are available in many different sizes and lengths.

There are also special screwdrivers designed for hard-to-get screws, for example right-angle screwdrivers.

Read pages 16 to 20 of *Hand and Power Tools* and then answer the following questions.

1. Name a short screwdriver designed to be used in confined spaces.

2. What type of screwdriver would you expect an electrician to use?

3. What is the largest commercially available standard screwdriver?

4. What advantage does a Phillips screwdriver have over a standard screwdriver?

5. How many different-sized Phillips screwdrivers are there?

6. Name two other types of screwdriver heads besides a standard and a Phillips.

7. If a right-angled screwdriver has one blade set at 0°, what angle would the other blade be set at?
8. When would the use of an impact screwdriver be necessary?

9. What determines the correct width of a screwdriver?

10. What is meant by dressing a screwdriver?

11. If the tip of a screwdriver is too soft, what can be done to fix the problem?

12. When using a screwdriver, keep the axis of the screwdriver blade in line with the

13. Why is a bent blade screwdriver difficult to use?

14. Screwdrivers are not designed to be used as ________________________ or ________________________.
Keys

Keys used in the trade include drill chuck keys, lathe chuck keys and hexagon keys. Hexagon keys are also called allen keys and include ball driver keys which can be used at an angle, unlike straight hexagon keys, which must be inserted squarely into the hexagonal recess.

Chuck key

Lathe chuck key

Ball driver key
Hexagon keys come in metric and imperial sizes. In both cases they are measured across the flats of the hexagon.

Metric allen keys are measured across the flats.
Metric allen keys come in sizes ranging from 1.5 mm to 19 mm.
Imperial allen keys range in size from $\frac{\frac{1}{16}}{\frac{3}{4}}$.

Read the section on allen keys on page 20 *Hand and Power Tools* and then answer the following questions.

1. Give a different name for an allen key.
   ________________________________________________________________

2. Sketch and dimension a 6 mm allen key.

3. Name a type of screw which would need an allen key to tighten it.
   ________________________________________________________________

4. What advantage does a ball driver have over a straight allen key?
   ________________________________________________________________

5. Name another two keys other than an allen key or a ball driver.
   ________________________________________________________________  ________________________________________________________________
Gripping and clamping tools

Pliers
There is a vast range of pliers used in the vehicle body building industry, with the most common being combination pliers, slip joint pliers, side cutters, circlip pliers, long-nosed pliers and multi grips. The correct pliers to use depends on the type of vehicles being built. For example, long-nosed pliers are used to hold and grip small work in awkward places so these may be used extensively with hydraulic or electrical work. However, they may not be much use when building a semitrailer.

Name these pliers:
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Read pages 21 to 23 and pages 26 to 27 of *Hand and Power Tools* and then answer the following questions.

1. Name four things combination pliers are designed to do.
   
2. Why are standard engineer’s pliers called combination pliers?
   
3. On a set of combination pliers, what are the joint cutters designed to do?
   
4. Name the type of pliers that give a range of jaw openings for parallel gripping.
   
5. Give another common name for diagonal cutting pliers.
   
6. When cutting wire, why should the free end of the wire be pointing away from you?
   
7. What is the difference between internal and external circlip pliers?
   
8. Vice grips can be used as pliers as well as for
   
9. Name three different types of vice grips.
   
10. How are the jaws adjusted on a pair of vice grips?
   
11. What are long-nosed pliers used for?
Clamps

Clamping and cramping tools range from the common G clamps and F clamps to longer sash cramps. There are also the smaller versions of these, such as spring clamps and various types of vice grips, which include the plain pliers, vice grip welding pliers and D clamps. One of the most common type of clamping devices is the fixed bench vice.

Name the clamping and cramping tools:
Read pages 24 to 26 and page 28 of *Hand and Power Tools* and then answer the following questions.

1. What is the basic purpose of a clamping tool?

2. Where did the G clamp get its name?

3. Give another name to describe an F clamp.

4. What is the advantage of using an F clamp compared with a G clamp?

5. What type of clamping or cramping tool should be used for holding work which is 1500 mm in width?

6. How are spring clamps held in place?

7. Name the most common type of bench vice found in a vehicle body building workshop.

8. Soft jaws can be used with bench vices to prevent work being marked. Name three materials from which soft jaws can be made.
   a) ___________________ b) ________________ c) ___________________
Impact tools

Impact tools are one of the earliest forms of tools. By extending the impacting section of the tool (the head) by the use of a handle, the force of the impact was greatly increased. Impact tools can be used directly, such as for driving a hinge pin into place, or indirectly when using another tool designed to be hit by a hammer, such as a cold chisel. The head of the hammer is designed to do certain work, so there are many shapes of hammer heads. The impact of the hammer is determined by the pressure applied by the user and the mass of the head, therefore there are many weights of hammer heads. A mallet is another form of hammer; it uses a softer face to prevent damage or stretching of the material being hit.

Hammers and mallets

The head of a hard hammer is made of steel and the handles can be made of a variety of materials such as wood, fibreglass or steel.

Mallets are selected for use where a steel hammer might damage the object being hit. Mallets have a softer and larger face which spreads the impact over a bigger area, therefore minimising or even eliminating the stretching or damage which may be caused to the material being struck.

Name the impact tools:
Read pages 29 to 35 of *Hand and Power Tools* and then answer the following questions.

1. Sketch an engineer’s hammer and label the face, ball pein, throat and eye.

2. What is the difference between a straight pein hammer and a cross pein hammer?

3. What type of work would require the use of a planishing hammer?

4. Gympie is the colloquial name for a mashing hammer. What type of work is it designed for?

5. Sledgehammers normally have a square head and a square pein. Name three other pein shapes available.

6. List four faults on an engineer’s hammer which would require fixing before being used.
   a) ___________________________ b) ___________________________
   c) ___________________________ d) ___________________________

7. A half-moon indentation is caused when the metal ___________________________

8. Never hit hardened metal directly with a steel faced hammer. What should be done instead?

9. When using a hammer to hit a punch or chisel, which should you watch, the end of the tool or the hammer?

10. Name three materials other than wood from which the head or insert of a mallet can be made.
    a) ______________________ b) ______________________ c) ______________________
Punches

Punches and chisels are designed to be struck by a hammer. Punches and chisels convert general impact to a very specific impact.

Read pages 36 to 42 of *Hand and Power Tools* and then answer the following questions.

1. Drift punches can be made of material other than steel. Give two examples.
   a) _____________________________  b) _____________________________

2. State four uses of punches.
   a) _____________________________  b) _____________________________
   c) _____________________________  d) _____________________________

3. The safe use of drifts and punches depends particularly on two factors. Name both factors.
   a) _____________________________  b) _____________________________

4. What is the included angle for a prick punch and the included angle for a centre punch?
   Prick punch ______________________ Centre punch ______________________

5. What type of punch should be selected for the removal of pins or rods?
   ___________________________________________________________________

6. Give an example of where a drift punch should be used.
   ___________________________________________________________________

7. A hole punch must be used over a soft material such as the end grain of a wooden block. Why is this necessary?
   ___________________________________________________________________

8. Give another name for a wad punch.
   ___________________________________________________________________

9. A punch and die block need to be lined up accurately to cleanly cut a hole. How is this achieved?
   ___________________________________________________________________
Cutting tools

Cutting tools are used to cut, shape or remove material to bring it to a desired size. Cutting tools are made of specially hardened metal to enable them to cut softer material.

Name the tools shown:

___

___

___

___

___
Cold chisels

Special chisels are used to cut metal that is made red hot to enable easy cutting. These are hot cutting chisels. When hot cutting is not practical, the metal must be cut cold. In this case a cold chisel is used.

Cold chisel

Read pages 43 to 48 of *Hand and Power Tools* and then answer the following questions.

1. What type of steels are used to make cold chisels?
   a) _____________________________  b) _______________________________

2. Why is the head of a cold chisel left soft?
   ___________________________________________________________

3. The cutting tip of a carbon steel cold chisel is first of all hardened and then tempered (softened slightly). What temper colour is used to achieve a softer but tougher cutting edge?
   ___________________________________________________________

4. Alloy steel cold chisels of 0.4% carbon and 3% nickel require special treatment after hardening. What is the treatment?
   ___________________________________________________________

5. There are other chisels besides the common flat-nosed chisel. Name three of them and one specific purpose for each.
   a) ___________________________ purpose _____________________________
   b) ___________________________ purpose _____________________________
   c) ___________________________ purpose _____________________________

6. If a cold chisel has a mushroom head, what must be done?
   ___________________________________________________________
Files

The most common types of files used in the vehicle body building industry are the flat file and the half-round file, although there are several other profiles used including flat, round, triangular and square files. Besides the shape of file, there are several cuts of file, depending on the shape of the teeth. Added to this is the grade of the file; that is, how coarse or fine the teeth are. When the length of the file is considered there are hundreds of files available to choose from.

Mechanical means of removing material, such as grinders, sanders and burrs, have diminished the reliance on hand files, but they are still used extensively. Files can be used for a wide range of work: from rough work, quick removal work to fine finishing work.

Read pages 50 to 59 of *Hand and Power Tools* and then answer the following questions.

1. The length of a file is measured from the point of the file to where?

2. On a flat file, how much of the length tapers and how much remains straight?

3. Name four common file shapes.
   a) _____________________________
   b) _____________________________
   c) _____________________________
   d) _____________________________
4. In the space below, sketch four different types of cut: a single, double, rasp and a dreadnought cut.

5. In relation to a file, what is a safe edge?

6. What type of file has a safe edge?

7. Name two files which are designed to enlarge round holes.
   a) _____________________________  b) _______________________________

8. Which file is designed to sharpen saw blades and tin snips?

9. The handle of a file serves two purposes. What are they?
   a) ______________________________________________________________
   b) ______________________________________________________________


11. What is a file card?
Hand snips

Read pages 60 to 63 of *Hand and Power Tools* and then answer the following questions.

1. What is a more common name used for hand snips?

2. With hand snips, what advantage do offset or cranked handles have over straight handles?

3. A common brand name for aviation snips is Wiss®. These type of hand snips have a double pivot system. What advantage does this offer the user?
Boltcutters

Read page 69 of Hand and Power Tools and then answer the following questions.

1. Name three different materials a boltcutter can be used to cut.
   a) ___________________ b) _________________ c) ______________________

2. The operation of boltcutters relies on the jaws travelling a small distance compared with the ____________________________.

Saws

Read pages 73 to 82 of Hand and Power Tools and then answer the following questions.

1. What type of blades can be used in a padsaw?
   ___________________________________________________________________
2. Which is correct? A junior hacksaw has a blade:
   a) 150 mm long
   b) 200 mm long
   c) 250 mm long
(Circle the correct answer.)

3. Name the two metals used to make hacksaw blades.
   a) _____________________________ b) ______________________________

4. What is tooth pitch?
   ____________________________________________

5. List three common tooth pitches.
   a) ________________ b) ________________ c) ________________

6. Do the teeth on a hacksaw cut on the forward stroke or on the back stroke?
   ____________________________________________

Drills

Drill bits
Drill bits are one of the most frequently used tools in a vehicle body building workshop. They can be used either with a hand-held drill or a fixed drilling machine. Most drill bits have either a straight shank or a morse tapered shank. Larger diameter drill bits tend to use a morse tapered shank. Drill bits eventually become dull and need to be resharpened.

Read pages 87 to 93 and page 99 of *Hand and Power Tools* and then answer the following questions.

1. How many flutes does a twist drill have?
   ____________________________________________

2. On the sketch below, label the body, shank and the point of the drill.
3. What type of shank would you expect a 20 mm drill bit to have?

4. On the drawing below indicate the lips, land and the chisel edge of the drill bit.

5. How many degrees should the lip clearance angle be on a drill bit? (Circle the correct answer.)
   - 45°–47°
   - 22°–25°
   - 12°–15°

6. For what purpose are panel drills designed?

7. What indicates a correct cutting drill bit?

8. On the illustration below, indicate the angle at which the lips should be sharpened and name the parts of the drill bit.

9. Complete the general rules for drilling speeds if a table is not available.
   - The smaller the drill bit, the ____________________________
   - The softer the metal, the ____________________________
   - The harder the metal, the ____________________________
10. What does RPM stand for?
_________________________________________________________________

11. Name the two body parts which are most vulnerable when using a pedestal drilling machine.
   a) _____________________________  b)  ______________________________

**Taps and wrenches**

Taps are used to cut internal threads in holes which are usually drilled for the purpose of attaching an item with bolts or metal threads. Taps come in all sizes and threads to match the wide variety of bolts and metal threads available in the trade.

Read pages 100 to 104 of *Hand and Power Tools* and then answer the following questions.

1. How many cutting faces does a 10 mm tap have?
_________________________________________________________________

2. There are three types of taps used in engineering industries. Name all three.
   a) ___________________  b)  ___________________  c)  ___________________

3. Which type of tap should be used to start a thread?
_________________________________________________________________

4. The correct size tapping hole can be calculated by subtracting the pitch size of the tap from the tap’s major diameter. What size drill would be required for a 12 × 1.5 thread?
_________________________________________________________________

5. Which is the smaller tap wrench, a tee tap wrench or a bar tap wrench?
_________________________________________________________________
6. Using a simple formula for tapping a blind hole, calculate the maximum recommended depth for a 10 mm tap.

Stock and dies
Dies are used to cut external threads on rods, studs, shafts or bolts. They can also be used to clean up or repair damaged external threads.

Read pages 105 to 107 of *Hand and Power Tools* and then answer the following questions.

1. The stock and die set are made up of two components, the stock and the die. Which component actually cuts the thread?

2. A split in a large die allows for the die opening to be made _________________ or ___________________________, by turning an adjustment screw.

3. What can be done to the end of a rod to help start a thread?
Marking-out tools

There is a wide variety of marking-out tools used by vehicle body builders. Marking-out tools have one main purpose: to mark a line or shape to follow when working on material, for example when cutting, folding or drilling. The type of marking-out tool used is dictated by the length of line, accuracy, durability and the material being worked on.

Name the marking-out tools:
Read pages 112 to 135 of *Hand and Power Tools* and then answer the following questions.

1. Surface preparation is required on some materials to make lines clearly visible. Give three advantages of using metal dyes.
   a) ____________________  b) ____________________  c) ____________________

2. Chalk lines are used for one of the following purposes. (Circle the correct answer.)
   a) To mark long straight lines  
   b) To mark gentle curved lines  
   c) To mark short accurate lines

3. On the sketch below show the marking-out and dimensions required to make a fixed marking gauge for marking a line 12 mm from the edge of a panel.

![Sketch of a panel with guidelines](image)

4. Straightedges can be used to mark straight lines. Give two other purposes they can be used for.
   a) ____________________  b) ____________________

5. If there is not a master square available to check the accuracy of a try square, what simple alternative method can you use to make sure your try square is set at 90 degrees?
   ____________________________________________

6. A bevel gauge is an adjustable square. List two things a bevel gauge can be used for.
   a) ____________________  b) ____________________

7. Combination sets consist of three heads on a graduated steel rule. Name the three heads.
   a) ____________________  b) ____________________  c) ____________________
8. What type of head would be used from a combination set to locate the centre of the disc below?

![Diagram of a disc]

9. To bring the sharp edge of the scriber as close as possible to the straightedge, what angle should it be held at?

![Diagram of scriber and straightedge]

10. Name the tool designed to transfer large measurements or to scribe large circles or arcs.

_________________________________________________________________

11. Spring dividers are used to:
   a) ________________________________
   b) ________________________________
   c) ________________________________

12. Sharpen dividers' points by rubbing only their ______________________ on an oil stone.

13. Odd-leg calipers have two different legs. Name the legs.
   a) ________________________________ b) ________________________________
Measuring tools

Measuring tools are used to compare a wide variety of information such as time, heat, pressure and mass. This section will concentrate on distance, such as length, width and thickness.

Name the measuring tools:

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.
Read pages 136 to 144 of *Hand and Power Tools* and then answer the following questions.

1. When taking measurement readings off a measurement scale, parallax can be a problem. How can parallax be avoided?
   a) ________________________________
   b) ________________________________

2. Fixed steel rules are available in three popular sizes, what are they?
   a) ___________________  b) ___________________  c) ___________________

3. Steel tape rules are very common rules used in the vehicle body building industry. Which are the two most common sizes?
   a) ________________________________
   b) ________________________________

4. Name the type of caliper which would be used to measure the interior diameter of this cylinder.

   ![Cylinder Diagram]

5. Name the type of caliper which would be used to measure the exterior diameter of this pipe.

   ![Pipe Diagram]
Vernier calipers

Unlike most other calipers, vernier calipers do not require a secondary measuring instrument to determine the size of an object. Vernier calipers have their own built-in measuring scales for accurate work. One scale is the main or fixed scale and the other is called a vernier scale. It takes a bit of practice to be able to read one confidently. This is partly due to the fact that several vernier scales are used, depending on the accuracy of the caliper.
1. A set of vernier calipers has two scales. Name them.
   a) _____________________________  b) _______________________________

2. If the scale on a metric vernier scale is 49 mm long, how many divisions does it have?
   ___________________________________________________________________

3. a) Read the main scale of the vernier and write down the answer.

   45
   0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 cm

   ________________________________

   b) ___________________________________________________________________

   5 6 7 8 9 10 cm

   <!-- Diagram -->

   c) ___________________________________________________________________

   3 4 5 6 7 8 cm

   <!-- Diagram -->
h) cm

i) cm

j) cm
Micrometers

Micrometers measure more accurately than verniers, but are limited to what they are able to measure and their range.
Read pages 151 to 153 of *Hand and Power Tools* and then answer the following questions.

1. On the sketch below name the principal parts of the micrometer.

2. How far will one revolution of the thimble move the spindle?

3. How many full turns of the thimble are required to move the spindle 2 mm?
4.  
a) Read the measurements on the micrometer and write down the answer.

b) 

c) 

d)
i) 

[Diagram showing a measurement scale with markings at 10, 15, 20, 25, 10, 15, and 20.]

j) 

[Diagram showing a measurement scale with markings at 0, 5, 10, 15, and 20.]
Resource

You will need the following resource:

*Hand and Power Tools, Metals and Engineering Industry, Australian Training Products Ltd, Melbourne*
Prepare and Operate Equipment, Tools and Machinery - Hand Tools

Workbook

(AUM9004A)

DESCRIPTION

There is a large variety of hand tools used in the vehicle body building industry. This workbook deals with the hand tools most likely to be used in this industry.

The reader will be instructed to refer to relevant publications and extract the information required to complete the exercises at the end of each section.

EDITION
First edition

CATEGORY

Automotive Manufacture

COURSES AND QUALIFICATIONS

• Certificate III Automotive Manufacture (Bus, truck and trailer)

RELATED PRODUCTS

AUT031 Fabricate Parts for Sub-Assemblies Workbook
AUT032 Perform Gas Metal Arc Welding Workbook
AUT034 Prepare and Operate Equipment, Tools and Machinery – Power Tools Workbook
AUT035 Modify or Repair Chassis/Frame and Associated Components Workbook

Produced by WestOne Services

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