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2850

**Level 1 Certificate in Engineering**

and

**Level 2 Certificate/Diploma in Engineering**





## Units supported at Level 1

There are 10 units supported on  
SmartScreen

Unit 101 Working in engineering

Unit 102 Carrying out basic fitting techniques

Unit 103 Carrying out basic milling techniques

Unit 104 Carrying out basic turning techniques

Unit 105 Carrying out mechanical assembly

Unit 107 Carrying out electrical assembly

Unit 110 Carrying out MIG welding processes

Unit 112 Carrying out oxy-acetylene welding processes

Unit 114 Carrying out mechanical maintenance

Unit 116 Producing engineering drawings





## Units supported at Level 2

# There are 16 units supported on SmartScreen

Unit 201 Working in engineering

Unit 202 Principles of engineering technology

Unit 203 Principles of manufacturing technology

Unit 204 Machine components using milling techniques

Unit 205 Machine components using turning techniques

Unit 206 Using bench fitting techniques

Unit 208 Principles of maintenance technology

Unit 209 Assembling and maintaining fluid power systems

Unit 210 Maintenance of mechanical devices and equipment

Unit 211 Maintaining electrical wiring support systems

Unit 212 Principles of fabrication and welding technology

Unit 213 Welding by manual metal arc processes

Unit 214 Welding by MIG process

Unit 221 Principles of electrical and electronics engineering

Unit 222 Maintaining electrical equipment and systems

Unit 223 Wiring and testing electrical circuits





# Support for the units includes

- Sample schemes of work
- Sample lesson plans
- Handouts
- Worksheets
- Interactive activities
- Revision cards
- PowerPoint presentations
- Qualification information
- Practical assignments/projects



# Example: Handout

## Unit 110: Carrying out MIG welding processes

### Handout 2: MIG welding shielding gases

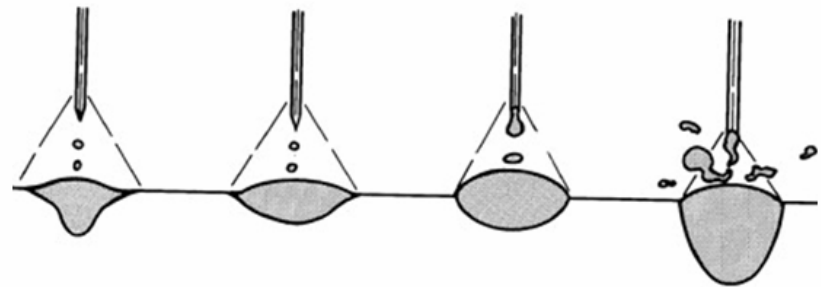
#### Shielding Gases

The primary function of the shielding gas is to exclude the atmosphere from contact with the molten weld metal. This is necessary because most metals, when heated to their melting point in air, exhibit a strong tendency to form oxides and, to a lesser extent, nitrides. Oxygen will also react with carbon in molten steel to form carbon monoxide and carbon dioxide. These varied reaction products may result in weld deficiencies, such as trapped slag, porosity, and weld metal embrittlement. Reaction products are easily formed in the atmosphere unless precautions are taken to exclude nitrogen and oxygen.

In addition to providing a protective environment, the shielding gas and flow rate also have a pronounced effect on the following:

- arc characteristics
- mode of metal transfer
- penetration and weld bead profile
- speed of welding
- undercutting tendency
- cleaning action
- weld metal mechanical properties.

The principal gases used in MIG welding are mixtures of inert gases which often contain small quantities of oxygen or  $\text{CO}_2$ . Helium, argon-helium mixtures and carbon dioxide are illustrated.



# Example: Worksheet

## Unit 210: Maintenance of mechanical devices and equipment

### Worksheet 2: Identification and repair of faults

#### Individual activity

Suggested time for this activity: **20 minutes**

This activity starts with an accompanied visit to the workshop with your tutor to view a machine or item of equipment that requires you to find faults and repair. Discuss with your tutor the normal expected operation of this machine or equipment.

Note that fault finding methods involve:

- sensory information (sight, sound, smell, touch)
- visual checks
- measurement
- movement and operation checks
- fault reports
- speaking to the operator/user
- testing
- fault location techniques (half split, input-to-output, function testing, unit substitution, equipment self diagnostics).

#### Individual activity

Suggested time for this activity: **25 minutes**

Prepare a list of requirements before carrying out the fault finding and repair procedures. This should include:

- health and safety requirements
- safe working procedures
- PPE required
- tools and diagnostic equipment needed
- a method statement on how you are going to conduct the activity ig the sequence of checks you are going to follow.



## Example: Activity

unit\_201\_info\_found\_on\_drawings\_sequence\_drag\_n\_drop

Question 2 of 4 Point Value: 10

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Dedicated online support

Listed below are the definitions of essential information found on technical drawings; match them to the correct name of the information.

This a critical factor for the viewer of a diagram to visualise the object shown correctly.

Makes ordering spare parts for maintenance purposes easy.

This is required to be able to judge relative size.

This may be required for component parts that are complex, small in size or intricate.

-- Select --  
Detailed drawing  
Projection  
Scale  
Parts lists  
-- Select --

-- Select --

Score so far: 0 points out of 0 **SUBMIT**





# Additional support

- Tutor forum
- Recommended books and websites
- Glossary and FAQs

# Coming soon!

- Sample questions
- Level 3 Diploma in Engineering!





**For more information please  
email:  
smartscreen@cityandguilds.com**

