



## Occupational Profile: *Welder- Operative Level*

A competent Welder should be able to demonstrate the following skills and competences:

1. Read data and manuals in English and Maltese
2. Read units of measure in the metric system and the English system
3. Distinguish and define metals
4. Know and explain the main processes for joining metals
5. Adapt a joining process for the right job
6. Setup and use equipment for welding
7. Operate welding equipment safely and effectively
8. Shutdown and leave equipment in a safe condition
9. Be proficient in practicing the Manual metal arc welding process
10. Perform welding beads
11. Perform basic welded joints
12. Lift and move loads safely
13. Use scaffold platform and ladders in a safe manner

**The candidate applying to be trade tested for the Certificate of Competence should be in possession of the majority of the following knowledge, competencies & skills:**

Measuring both in the metric and the English units

Identifying common metals and their alloys, iron, steel

The use of manual metal arc welding power sources.

Generators, rectifiers, current and voltage control, inverters, effect of polarity, open circuit voltage for AC and DC equipment, voltage and current meters. The identification and assembly of MMA equipment, cables, switch isolators, electrodes, head screens, chipping hammers and brushes.

The awareness and use of the Manual Metal Arc process, arc voltage, current settings, methods of striking an arc, breaking and restarting, Melting parent and filler metal, fusion and solidification, control of liquid metal and slug.

The awareness and use of transformers and inverters.

Perform welding joints such as lap, square butt, open corner outside, flat and horizontal fillet joints.

Experience and control of distortion, presetting, welding sequence, backing strips, restraints, jigs and chills, pre and post heating, residual stresses. Describe methods of inspection and testing of welds,

Identify weld defects and possible causes, undercut, cracking, overlap, lack of penetration, lack of fusion, slag inclusions, porosity, excessive spatter, and poor weld appearance.

Awareness of potential safety hazards, and precautions to be taken, personal protective equipment, electric hazards, confined spaces, ventilation, containers of flammable or caustic or toxic substances.

Identification of weld features, parent metal, weld pool, fusion zone, heat-affected zone, root, toe, actual throat, effective throat, leg length, concave profile, convex profile, mitre profile.

List safety requirements in relation to lifting and handling equipment:

State the precautions to be observed when using scaffold platforms less than two meters high and in the use, transport and storage of ladders. Use and care of personal protective equipment.

Use measuring and marking out equipment.

Assemble and use arc welding equipment such as M.M.A.

**Common tools Marking:**

Rule  
Scriber  
Divider  
Compass

**Common tools for Measuring:**

Tape measure  
Steel rule

**Hand Cutting Tools:**

Hacksaws  
Cold chisels types

**Welding Tools:**

M.M.A. welding transformer  
Electrode holders

**Power tools to be dexterous with.**

Electric Drills  
Electric Grinders

**Hand Tools**

Hammers  
Spanners  
Screw drivers  
Pliers and grips  
Clamps  
Engineers and flat squares

# ASSESSMENT CRITERIA

## Welder & Fabricator

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### 1. Introduction

The following is a detailed description of the assessment criteria to be adopted by the Trade Testing Board (TTB) to reach a final decision on the award of a Certificate of Competence.

### 2. Trade Test

The trade test is to be made up of the following three components:

1. The Written
2. The Practical
3. The Interview

**The Board has agreed on the sequence of the test and the markings allocated to each specific component as indicated below:**

<b>Component</b>	<b>Mark</b>	<b>Pass Mark</b>
<b>Written</b>	<b>100</b>	<b>50%</b>
<b>Interview</b>	<b>100</b>	<b>50%</b>
<b>Practical</b>	<b>100</b>	<b>50%</b>

## Written Test Component (Multiple Choice questions)

### The candidate will be assessed on the following:

The proper use and care of personal protective equipment.

The standard materials used in construction and fabrication. Use templates.

Use jigs.

Use the proper equipment to lift and move heavy objects safely.

Assemble and use scaffolding platforms and ladders according to national standards. Prepare plate edges to be joined by welding.

Identify electrode marking

Join metal using arc welding processes.

Identify possible defects in welded joints. Squareness

Areas and volumes

Distance measures in English and metric systems Angles

Pressures

Temperatures

## **Interview Component**

**During the interview the candidates will be assessed on the following:**

**Design and construction of common equipment:**

Welding transformer  
Electrode holders  
Welding cables

**Identify the correct use of:**

Gasses  
Fluxes  
Welding electrodes  
Filler rods  
Flames  
Extinguishers

**Performing processes:**

Technique of arc welding  
Preparation of joint edges  
Purposes of joint edges

**Settings affecting electric arc welding:**

Current

Voltage

Arc length

Speed of weld

Angle of electrode in relation to parent metal surface

**Welding and joining processes:**

Manual Metal Arc Welding

## **Practical Component**

This Assessment Test component is considered as based on the practical experience gained by the Candidates at the place of work.

- 1) Read design drawing supplied to transfer to the job
- 2) Clean and prepare material supplied as per drawing
- 3) Mark out details from drawing onto material supplied
- 4) Choose and use proper PPE for the job
- 5) Choose proper tools for the job
- 6) Assemble as per drawing
- 7) Join by the specified welding process
- 8) Joint to be performed in the welding position stated for every exercise.