**Stage 1 Material Solutions**

**Design, Technology and Engineering**

School Assessment

**Assessment Type 1: Specialised Skills Task 1**

Purpose

Students develop knowledge and skills through specialised skills tasks. They apply the skills, processes and techniques in the chosen context. This informs the design development for a solution in Assessment Type 2. Students evaluate and assess the development of their own skills in this assessment task. They review how these processes and techniques may influence their solution.

Description of task

We are going to fabricate a metal vice, which will require the use of electric welded joining systems – typically, Metal Inert Gas Welding – MIG.

You will be supplied with your test materials, but you will need to grind a ‘V’ on the appropriate edges as a form of weld preparation. Set your work up to counter, or minimise distortion and the loss of squareness, during this process.

In this task, you will be required to set the welding equipment ready for use, and then use the supplied test pieces to produce:

1. Two vertical fillet welds (‘T’ joints) P1, P2
2. Two butt joints P1, P2
3. A brief description/evaluation of the plan you used to successfully weld and prepare your work. Mention offsetting, tacking, the use of jigs E2

Please note that assessment will be based on weld quality, machine setup, and squareness/flatness, of your final joints.

Assessment conditions

Evidence for this assessment type should be provided in multimodal form, including a series of images, to a maximum of 3 minutes, 500 words in written form or a combination of these.

For this assessment type, students provide evidence of their learning in relation to the following assessment design criteria:

* Production (P1, P2)
* Evaluation (E1)

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| Investigations and Analysis | Design Development and Planning | Production | Evaluation |
| A | Comprehensive and insightful analysis of the design features of products, processes, materials, systems and/or production techniquesPurposeful research and critical analysis of ethical, legal, economic and/or sustainability issues | Insightful and comprehensive communication of design concepts using relevant technical language and visual representationsInsightful and thorough planning, development, testing and validation of design concepts and procedures | Highly proficient application of skills, processes, procedures and techniques to create a solutionComprehensive development of solutions to technical problems that arise during the solution realisation | Comprehensive and insightful evaluation of the solution features and realisation process |
| B | Thoughtful and well-considered analysis of the design features of products, processes, materials, systems and/or production techniquesDetailed research and well-considered discussion of ethical, legal, economic and/or sustainability issues | Thoughtful and well-considered communication of design concepts using relevant technical language and visual representationsWell-considered planning, development, testing and validation of design concepts and procedures  | Proficient application of skills, processes, procedures and techniques to create a solutionThoughtful development of solutions to technical problems that arise during the solution realisation | Well-informed and detailed evaluation of the solution features and realisation process |
| C | Considered analysis of the design features of products, processes, materials, systems and/or production techniquesResearch and some analysis of ethical, legal, economic and/or sustainability issues | Clear communication of design concepts using technical language and some visual representationsCompetent planning, development, testing and validation of some design concepts and procedures  | Competent application of skills, processes, procedures and techniques to create a solutionDevelopment of solutions to technical problems that arise during the solution realisation | Considered evaluation of the solution features and realisation process |
| D | Identification of the design features of products, processes, materials, systems and/or production techniquesSome description of information about ethical, legal, economic and/or sustainability issues | Basic communication of design concepts using some technical languageSome planning and development of design concepts and/or procedures | Basic application of some skills, processes, procedures and techniques to create a solutionSome endeavour to develop solutions to technical problems that arise during the solution realisation | Some description of the solution features and realisation process |
| E | Attempted identification of the design features of products, processes, materials, systems and/or production techniquesSome accessing of information about ethical, legal, economic and/or sustainability issues | Superficial and simplistic communication of design concepts Limited use of information to plan design concepts  | Limited application of emerging skills Attempted development of a solution to a technical problem  | Emerging recognition of the solution features and realisation process |

Teacher comment:

Overall grade