

Task Information - Video Tutorial

WorldSkills UK - CNC Milling 2024

Test Project

This training task is to program and produce a component to the correct quality standards on a CNC Milling machine and follows a very similar process to what is expected at the qualifiers and national finals.

The elements of the tasks are:

- Produce CNC Code on a CAD/CAM system
- Load Tools to machine
- Clamp and Align the Vice
- Set Tool lengths
- Set work shift / Datum (G54)
- Run component
- Inspect and De-burr Component
- Hand in for assessment

This is a two-sided component. It is expected that both sides are machined and classed as one task

The suggested time frame is:

2 hours to program on a CAD/CAM system

3 hours to set and run the component off.

This is a training task so keep track of your time and try and improve on it a second time around.

A 2D engineering drawing and a 3D model as a STEP file have been provided.

At the start of the training task, competitors will receive the test project, printed 2D engineering drawing and the STEP file.

They have 15 minutes to check the engineering drawing and ask their point of contact or tutor any questions, after 15 minutes the timer will start.

The tutor can use this time to suggest a strategy to produce the component

The tools required are:

10mm Endmill

6mm Endmill

6mm 90° Chamfer Tool

10mm 90° NC Spot Drill

6.8mm Drill

M8 X 1.25mm Tap

The tools may be set up in the holders before the task starts.

Materials and Equipment

- Safety Footwear (Steel toe caps)
- Safety glasses
- Workwear (Overalls or work trousers and top)
- Aluminium 100mm x 100mm x 50mm Billet
- 10mm or 12mm Endmill
- 6mm Endmill
- 6mm 90° Chamfer Tool
- 10mm 90° NC Spot Drill
- 6.8mm Drill
- M8 X 1.25mm Tap

Assessment

The marking scheme as well as the judgement guide are provided, this can be shared with the competitor or student before the task starts so they can familiarise themselves with the required standard. The competitors will not see the mark scheme for the qualifiers or national finals, although the assessment strategy, including the judgement criteria, will remain the same.

There are two assessment methods: **measurement** and **judgement**.

Measurement is used to assess accuracy and precision and is based on features that can be measured objectively. It is split into Main and Secondary Dimensions. The Main Dimensions are worth more points than the secondary dimensions and therefore are usually the tighter toleranced features. Not all features may be included in the marking scheme.

Judgement is used to assess the quality of performance about which there may be small differences of view when applying the external benchmarks. A judgement guide is provided judgement marks are awarded as either 0,1,2 or 3.

- 0: Marks - Performance is below standard, including a non-attempt
- 1: Mark - performance is acceptable but may have some quality issues
- 2: Marks - performance is good with very few minor issues
- 3: Marks - Excellence - Relative to or surpasses industry standards.

Video Tutorial

Ensure you watch the video tutorial series that accompanies this task.

To get started read the first pdf guide page "0. Getting Started with Mastercam Tutorial Series" The guide contains instructions on how to download the necessary files for the task and a free copy of Mastercam software.

Mastercam UK will provide further free software licenses for training providers who have competitors registered for the WorldSkills UK CNC Milling national competition. Get in contact with them here: <https://www.mastercam.com/community/mastercam-uk/>