



CNC MILLING

CzechSkills 2024

Test Project

Czech Republic is looking for the Champion in CNC Milling 2024!



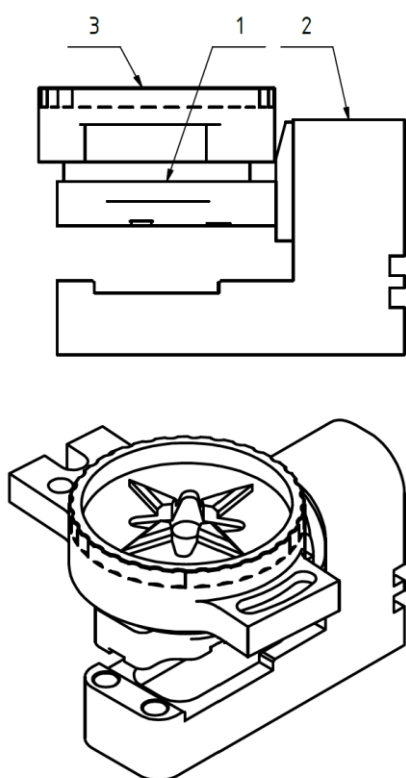
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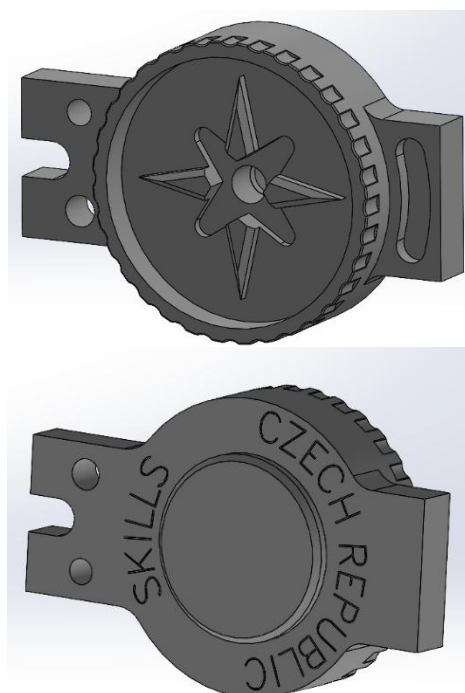
I. Test project task

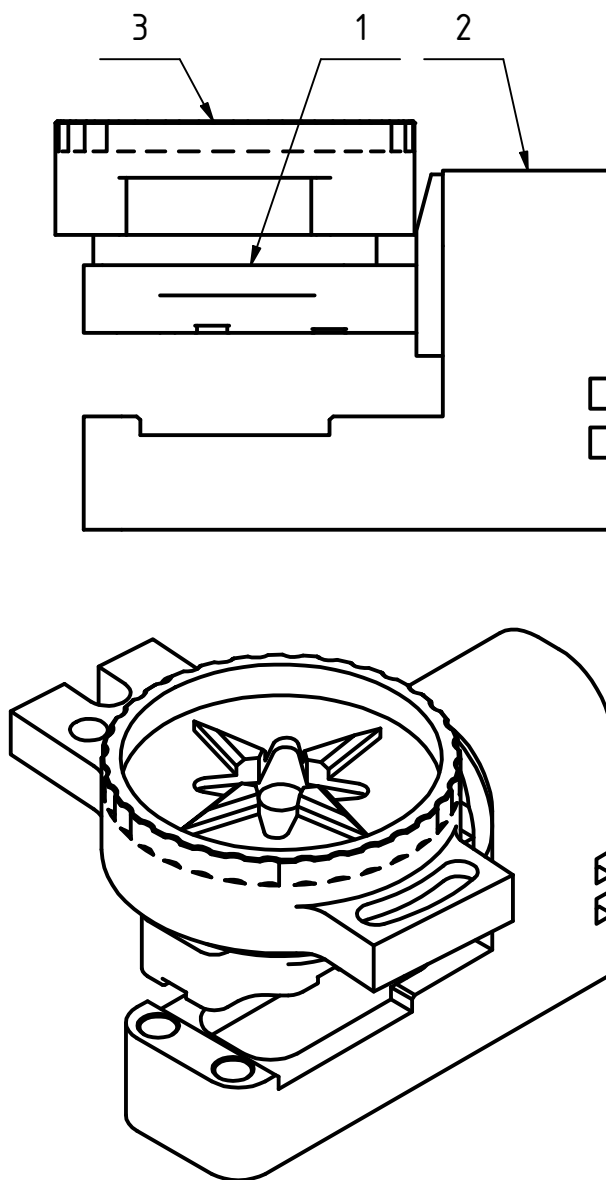


Task A - Qualification



Task B - National Finale



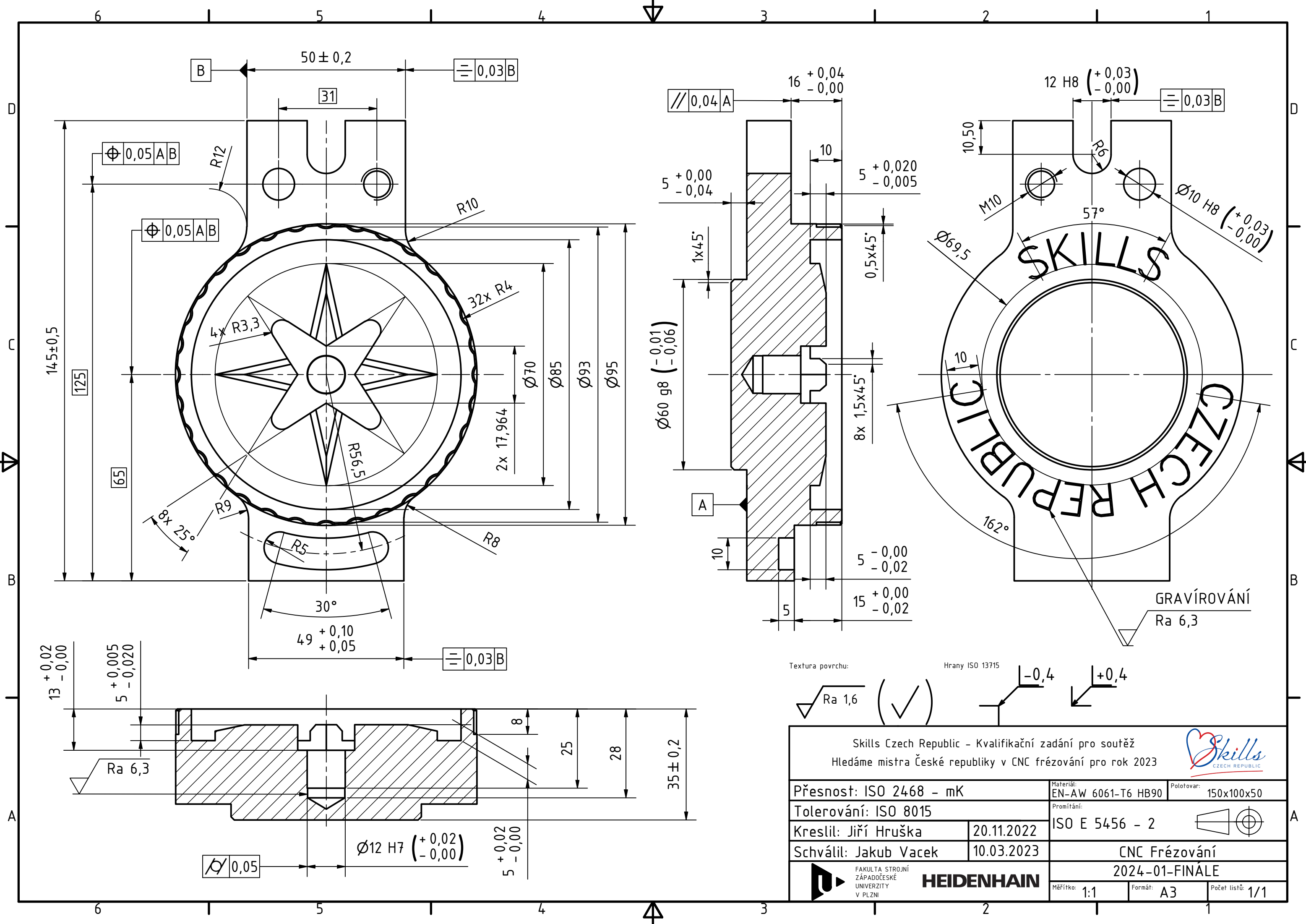


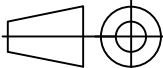
KUSOVNÍK			
POLOŽKA	KS	ČÍSLO SOUČÁSTI	POPIS
3	1	Skills-kompas	
2	1	rám	
1	1	stůl	

Skills Czech Republic - Finálové zadání pro soutěž
Hledáme mistra České republiky v CNC frézování pro rok 2023



Přesnost: ISO 2468 - mK		Materiál: EN-AW 6061-T6 HB90	Polotovár: 150x100x50
Tolerování: ISO 8015		Promítání: ISO E 5456 - 2	
Kreslil: Jiří Hruška	30.7 2023	CNC Frézování	
Schválil: xx	xx	2023-01-FINÁLE	
	FAKULTA STROJNÍ ZÁPADOČESKÉ UNIVERZITY V PLZNI	Měřítko: 1:1	Formát: A3
	HEIDENHAIN	Počet listů: 1/1	



Skills Czech Republic – Kvalifikační zadání pro soutěž			
Hledáme mistra České republiky v CNC frézování pro rok 2023			
Přesnost: ISO 2468 – mK		Materiál: EN-AW 6061-T6 HB90	Položovar: 150x100x50
Tolerování: ISO 8015		Promítání: ISO E 5456 – 2	
Kreslil: Jiří Hruška	20.11.2022	CNC Frézování	
Schválil: Jakub Vacek	10.03.2023	2024-01-FINALE	
	FAKULTA STROJNÍ ZÁPADOČESKÉ UNIVERZITY V PLZNI	HEIDENHAIN	
		Měřítka: 1:1	Formát: A3
		Počet listů: 1/1	

II. Test project instructions

Workflow plan

The project begins at the moment of handing over the technical drawing+work assignment. The first must be created: a workflow plan (procedure leading to the final and finished workpiece, machine switching on, clamping device setting, alignment of the clamping device) and technological procedure and list of tools incl. cutting conditions After the time allocated to this activity, the tools can be checked and measured.

Allocated time for this activity: approx: 2 hours

Once the instruments are selected and measured no further manipulation is allowed, only at the cost of losing the CNC program score.

CNC programme

Now we need to create a CNC program. It depends on the competitor's choices. It is possible to use programming directly on the machine, on programming station or in a CAD/CAM system.

Allocated time for this activity: 4 hours

The competitors has 15 minutes to check and set up machine before starting machining.

CNC machining

CNC machining includes: workpiece clamping,, machine set up, reference points setting , complex machining of the workpiece

Allocated time for this activity: 4 hours

Total allowed time for machining and programming must not exceed 8 hours

Completion

If it is possible, the workpiece should also be deburred on the machine. The remaining deburring time performed outside the machine must be added to the machining time. After Programming and machining are completed a quality inspection is carried out. The result of this inspection is the creation of a test report and the completion of a prepared inspection protocol. The measurement report should be entered into a table, where the first column indicates the measurement location – either a verbal description of the area or a number that corresponds to a marked location on the technical drawing. The following columns should include: the nominal dimension according to the drawing, the tolerance, the measured value, and finally an indication of whether the dimension is within tolerance or not.

Summary check

Project must include:

- Final workpiece
- Workflow plan
- Technological procedure
- Tool list including cutting parameters
- Measurement protocol
- Personal statement (may also include an evaluation of the drawing, manufacturing process, or the final machined part)
- Video of the machining simulation welcome!

Following project documentation is relevant for both: Qualification and National Finale competition

Competitor Name: _____

[illegible]

Tool list

Competitor Name: _____

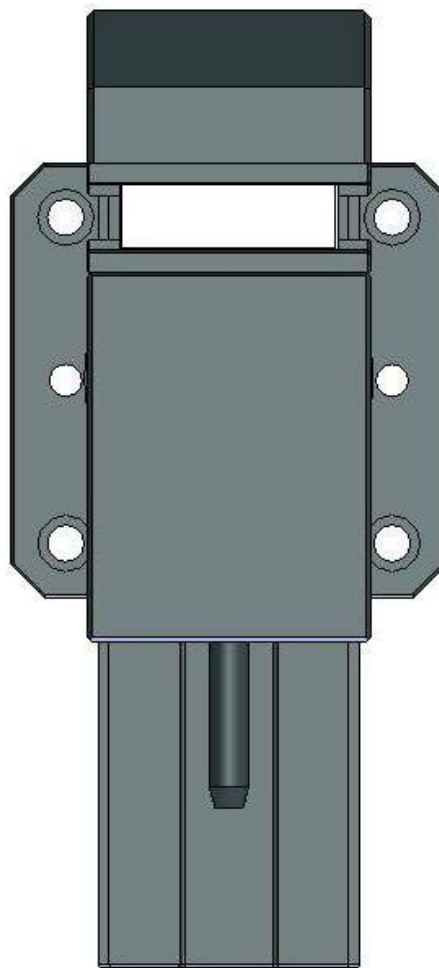
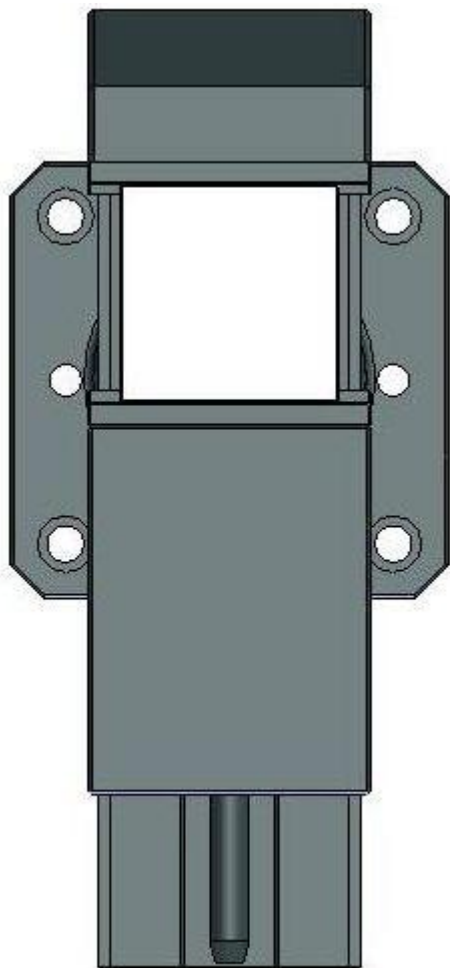
Tool No.	Name / tool specification	VC m/min	n 1/min	F mm /U	F mm/ min
			length	radius	Cut surface length
			52	20	
Tool No.		VC m/min	n 1/min	F mm /U	F mm/ min
			length	radius	Cut surface length
Tool No.		VC m/min	n 1/min	F mm /U	F mm/ min
			length	radius	Cut surface length délka
Tool No.		VC m/min	n 1/min	F mm /U	F mm/ min
			length	radius	Cut surface length délka
Tool No.		VC m/min	n 1/min	F mm /U	F mm/ min
			length	radius	Cut surface length

Technological instructions

Competitor Name: _____

Zero points definition (for HEIDENHAIN use the PRESET table)

- | | | | |
|-------|----------|----------|----------|
| • G54 | X= _____ | Y= _____ | Z= _____ |
| • G55 | X= _____ | Y= _____ | Z= _____ |
| • G56 | X= _____ | Y= _____ | Z= _____ |
| • G57 | X= _____ | Y= _____ | Z= _____ |



Control measurements

Competitor Name: _____

Working instructions: Prepare a measurement report. For the hole tolerances, use values from standard engineering tables.

Measure the finished workpiece and enter the measured values into the measurement report you have created

Submitting Declaration

Competitor Name: _____

Teacher /VET Master Name: _____

I, the undersigned, hereby declare that I have completed this task independently.

Soutěžící Competitor	Teacher / VET Master	Comment
☐ Ano / yes	☐ Ano / yes	
☐ comment	☐ comment	

.....

Competitor signature + workpiece send (dispatched) date