# Shop drawing

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|  |
|  | Controll: | Title: | Material: | Óbudai UniversityBánki DonátFaculty of Mechanical and Safety Engineering |
|  |  |  |
| Date: | Mass: |
|  | kg |
| Neptun code: | Name: | Scale: | Drawing no.: |
|  |  | M 1:1 |  |

# Operation instruction

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| --- | --- | --- | --- |
| Óbudai UniversityBánki DonátFaculty of Mechanical and Safety Engineering | **Operation instruction** | Op. Instr. No.: | Page no: |
| Manufacturing no.: | Drawing no.: | Title of the part: | Mark of workiece: |
| Material:C45 | Size: | Material state: | Title of the operation: | Mark of op.: |
| Sketch: |
| No. | Operation element | Surface | Tool | vm/min | n1/min | fmm | amm | i- |
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|  |  |  |  |  |  |  |  |  |
| Name: | Setup time [min] | standard piece time [min] | Number of pieces |
| Date: |  |  | 1 | 5 |
|  |  | Machine tool type |
|  |  |  |  | Workshop | Machine group |  | a | E400-1000 |
|  |  |  |  |  |  | mod  | b |  |
|  |  |  |  |  | c |  |
|  |  |  |  |  | d |  |

# Tool plan

|  |  |  |
| --- | --- | --- |
| Óbudai UniversityBánki DonátFaculty of Mechanical and Safety Engineering | **Tool plan** | Name:  |
|  |  | Date:  |
| No. of CNC program: - | Machine tool type: |
| Title of the workpiece:  | Drawing no.: |
| T | Tool | Sketch |
|  |  |  |
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|  |  |  |
|  |  |  |

# Manufacturing concept

*Sketch*

*List of operation elements*

# Tool path design and length calculation

|  |  |
| --- | --- |
| 1. Title of the op. elementsketch | Calculation of the length of the feed motion and rapid motion |
| 2. Title of the op. elementsketch | Calculation of the length of the feed motion and rapid (auxilary) motion |
| … |  |

# Operation time calculation

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| No | Op. element | Tool | vc\* | Dmax | Dmin | n\*max | n\*min | n | vc | f | vf | a | Ra | i | L | tg | Lm | tm |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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Summarized time of direct machine time (tg): min

Summarized time of auxilary time (tm): min

Estimated time of tool changes (tsz.v): min

Estimated time of worpiece change (tgk): min

Standard piece time (tn): min