# Shop drawing

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|  | Controll: | Title: | Material: | Óbudai University  Bánki Donát  Faculty of Mechanical and Safety Engineering |
|  |  |  |
| Date: | Mass: |
|  | kg |
| Neptun code: | Name: | Scale: | Drawing no.: |
|  |  | M 1:1 |  |

# Operation instruction

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| Óbudai University  Bánki Donát  Faculty 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 | | | | | | v  m/min | | n  1/min | | f  mm | | | a  mm | 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 | |  | | | |
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# Tool plan

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| --- | --- | --- | --- | --- |
| Óbudai University  Bánki Donát  Faculty 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. element  sketch | Calculation of the length of the feed motion and rapid motion |
| 2. Title of the op. element  sketch | 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