

User instructions:





This manual contains important information on how to use the vibration damped machining tools.

Please follow the instructions and avoid common mistakes which impairs the products performance.

You can always consult MAQ for a recommendation on how to set up the tools at support@magab.com

To align the bar to the center:

Reference A: **Central Groove** Reference B: Flat surface on **Cutting point** cutter heads Inclination angle

The cutting point has an inclination angle to the central groove on the body and the flat surface on the cutter heads.

Alignment

surfaces

Use either the flat surface on cutter heads or the central groove for alignment.

Digital Spirit Level:

Alignment surfaces

Reference 🚿

Plane

Tilting = 0.55°

Use the center line

Reduction sleeve with plunger:

Use correct cutting depth and feed rate:

Rule of thumb:

Depth of cut > cutting edge radius (0,05 mm for carbide)

Feed rate > cutting edge radius (0,05 mm for carbide)

Feed rate > $\frac{1}{4}$ of the nose radius

Example of using tungsten carbide insert DCMT 11T304 (edge radius 0.05 mm):

Minimum depth of cut 0.07 mm Minimum feed rate 0.1 mm

Minimum feed rate is determined by both the nose radius and edge radius.

Recommended starting machining parameters for different materials:

| Material | Insert nose | Cutting speed | Ар | Feed |
|-------------------------|----------------------|----------------------------|----------------------|-------------------------------|
| P Alloy steel | 0.4 mm 0.016 inch | 200 m/min (656 ft/min) | 0.5 mm 0.02 inch | 0.15 mm/rev 0.006 inch/rev |
| M Stainless steel | 0.4 mm 0.016 inch | 165 m/min (541 ft/min) | 0.5 mm 0.02 inch | 0.15 mm/rev 0.006 inch/rev |
| K Cast iron | 0.4 mm 0.016 inch | 250 m/min (820 ft/min) | 0.5 mm 0.02 inch | 0.15 mm/rev 0.006 inch/rev |
| N Aluminum | 0.4 mm 0.016 inch | 500m/min (1 640 ft/min) | 0.5 mm 0.02 inch | 0.15 mm/rev 0.006 inch/rev |
| S Ni or Ti alloy | 0.4 mm 0.016 inch | 105 m/min (344 ft/min) | 0.5 mm 0.02 inch | 0.15 mm/rev 0.006 inch/rev |
| H Hardened steel | 0.4 mm 0.016 inch | 125 m/min (410 ft/min) | 0.25 mm 0.01 inch | 0.15 mm/rev 0.006 inch/rev |

How to reduce vibrations:

Positive inserts have less vibration:

Small nose radius has less vibration







Lead angle close to 90° to reduce force in radial direction







For best product performance, rigid clamping of the tools is important.

Clamping methods





Shorter tool holders have higher rigidity:

Use short tool holders: VDI (\checkmark) Shorter the better VDI Clamp with one side of screw using reduction sleeves:



Avoid using fixtures with reduced cross section:



Reduced cross section by half.

Recommend with external mounting with higher rigidity:

External tool mount (ex. BMT)

- **Higher rigidity** \checkmark
- \checkmark Recommended



Mandatory to use coolant when using STMD products!

High temperature will destroy the product.





Product code example:

| STMD | М | 25 | 255 | 3C |
|--------|--------|----------|--------|---------|
| Series | Metric | Diameter | Length | Coolant |

MAQ steel bars can be cut for length:



- Steel bars cut by sawing or parting.
- Carbide bars cut by wire EDM ٠

Note: when parting, control surface speed below 100 m/min, as the body is hardened steel. Use coolant to avoid overheating.



With a vision to Simplify Machining!

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