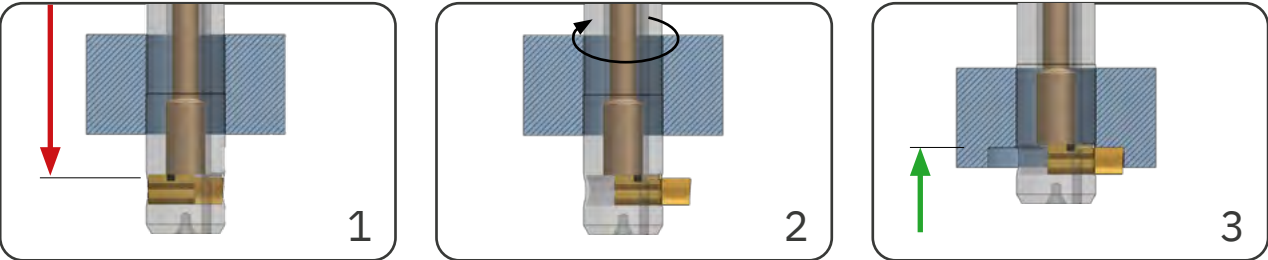


SOLO PROCESS STEPS



- Spindle stop! Blade is retracted
- Rapid feed through the work-piece
- Spindle rotation clockwise
- Spindle speed (>1900 rpm) – Blade extends
- Dwell time min. 1 sec.
- External/internal coolant on
- Working feed to counterbore depth

Example

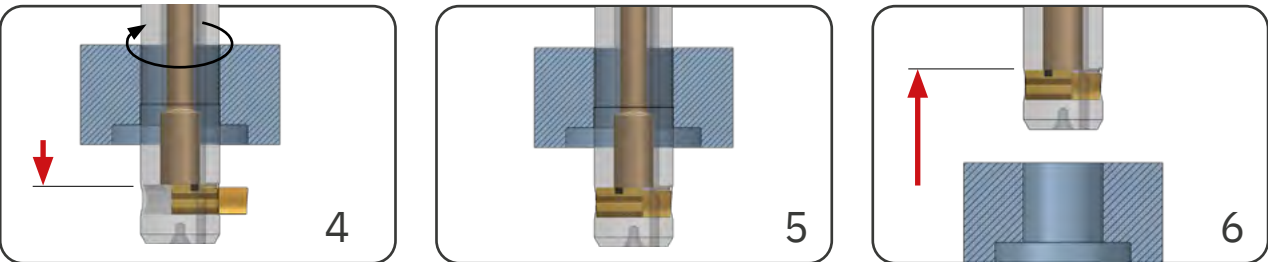
M5  
G0 Z-32.0<sup>1)</sup>

<sup>1)</sup> 32.0=30.0+2.0 (safety)

S2729 M3  
G4 X2  
M8 (M88)

G1 Z-22.0<sup>2)</sup> F136

<sup>2)</sup> 22.0=30.0-8.0



- Rapid feed out of the workpiece
- External/internal coolant off
- Spindle stop! Blade retracts
- Dwell time at least 1 sec.
- Rapid feed out of the workpiece

G0 Z-32.0<sup>3)</sup>  
M9 (M89)

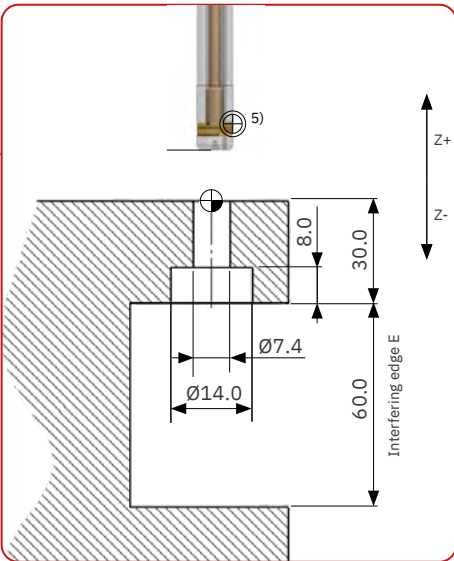
<sup>3)</sup> 32.0=30.0+2.0 (safety)

M5  
G4 X2

G0 Z+13.3<sup>4)</sup>

<sup>4)</sup> 13.3=11.3+2.0 (safety)

APPLICATION AND PROGRAMMING EXAMPLE



Cylindrical counterbore on the back of the bore

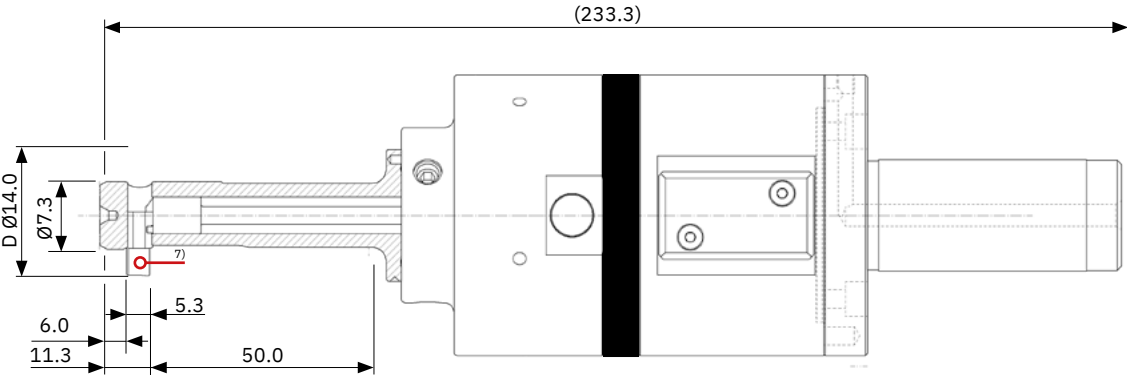
**Application data**  
Material: Aluminium  
Counterbore Ø: 14.0 mm  
Counterbore depth: 8.0 mm  
Bore Ø: 7.4 mm

**Tool and blade selection**  
Tool: see below  
Blade: backward cutting only

**Cutting data**  
Cutting speed Vc: 120 m/min.  
Working feed fz: 0.05 mm/rev

<sup>5)</sup> We recommend programming the zero point of the tool to the cutting edge of the blade.

TOOL FOR APPLICATION <sup>6)</sup>



<sup>6)</sup> All SOLO tools are customised. The dimensions of this tool must not be used to program your own application. The applicable values can be found in your own tool drawing.

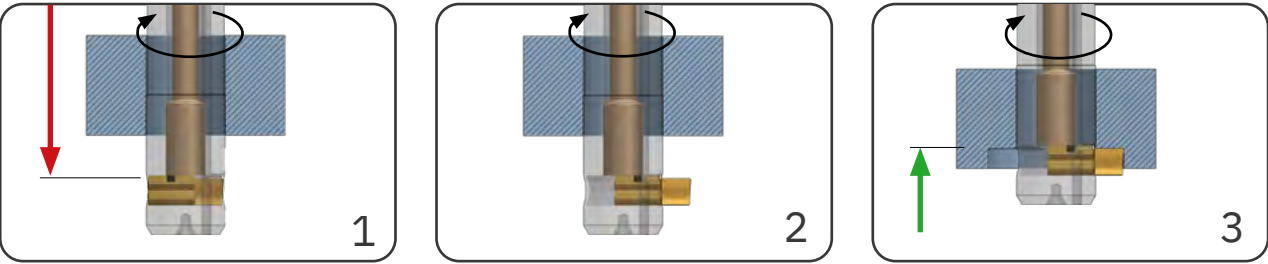
<sup>7)</sup> Attention: Blade position when spindle stops is RETRACTED. Minimum spindle speed for machining is >1900 rpm, as the activation speed is 1900 rpm.

COUNTERBORING TOLERANCE

Tolérance du Ø de perçage en mm	+0.1 0	+0.2 0
Tolérance du Ø de lamage en mm	±0.2	±0.3

Please note the recommended value for the tolerance of the bore diameter. The larger the tolerance, the more the quality can be affected (damage to the bore, pressing, counterbore diameter becomes smaller).

PROCESS STEPS SOLO2 / SOLO25



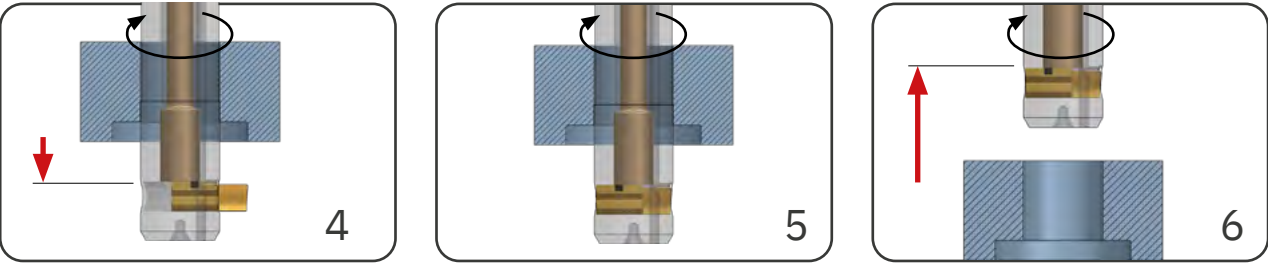
- Activation speed (>1900 rpm)
    - Blade retracts
  - Dwell time min. 1 sec.
  - Rapid feed through the work-piece
- Spindle stop! Blade extends
  - Dwell time min. 1 sec.
  - External/internal coolant on
  - Spindle speed (max. 1500 rpm)
- Working feed to counterbore depth

Example

S1900 M3  
G4 X2  
G0 Z-32.0<sup>1)</sup>  
<sup>1)</sup> 32.0=30.0+2.0 (safety)

M5 G4 X2  
M8 (M88)  
S227 M3

G1 Z-22.0<sup>2)</sup> F7  
<sup>2)</sup> 22.0=30.0-8.0



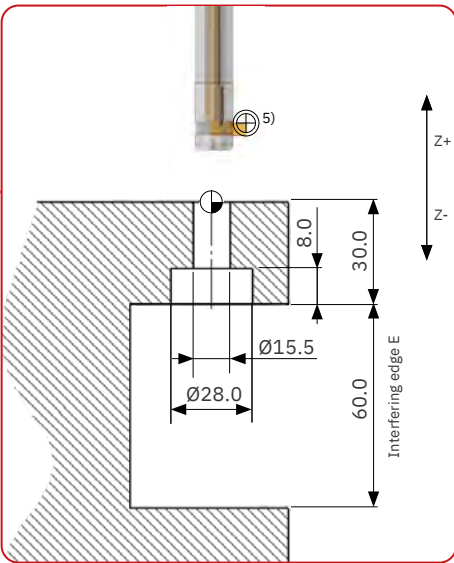
- Rapid feed out of the workpiece
  - Spindle stop! Blade remains extended
  - External/internal coolant off
- Activation speed (>1900 rpm)
    - Blade retracts
  - Dwell time min. 1 sec.
- Rapid feed out of the workpiece

G0 Z-32.0<sup>3)</sup>  
M5  
M9 (M89)  
<sup>3)</sup> 32.0=30.0+2.0 (safety)

S1900 M3  
G4 X2

G0 Z+13.3<sup>4)</sup>  
<sup>4)</sup> 13.3=11.3+2.0 (safety)

APPLICATION AND PROGRAMMING EXAMPLE



Cylindrical counterbore on the back of the bore

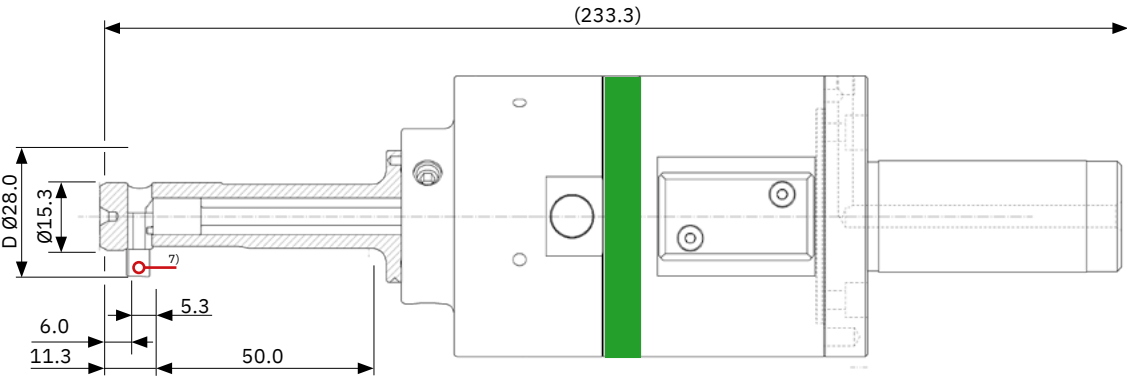
**Application data**  
Material: X5CrNi1810  
Counterbore diameter: 28.0 mm  
Counterbore depth: 8.0 mm  
Bore diameter: 15.5 mm

**Tool and blade selection**  
Tool: see below  
Blade: backward cutting only

**Cutting data**  
Cutting speed Vc: 20 m/min.  
Working feed fz: 0.03 mm/rev

<sup>5)</sup> We recommend programming the zero point of the tool to the cutting edge of the blade.

TOOL FOR APPLICATION<sup>6)</sup>



<sup>6)</sup> All SOLO tools are customised. The dimensions of this tool must not be used to program your own application. The applicable values can only be found in your own tool drawing.

<sup>7)</sup> Blade EXTENDED at standstill. Max. machining speed 1500 rpm, as the retraction speed is 1900 rpm.

COUNTERBORING TOLERANCE

Tolérance du Ø de perçage en mm	+0.1 0	+0.2 0
Tolérance du Ø deamage en mm	±0.2	±0.3

Please note the recommended value for the tolerance of the bore diameter. The larger the tolerance, the more the quality can be affected (damage to the bore, pressing, counterbore diameter becomes smaller).



Note for commissioning the SOLO after extended idle period

A manual function check must be carried out after the tool has been idle for an extended period. Non-use can lead to the coolant and dirt drying out and the blade and blade control sticking together. This adhesive effect can lead to malfunction. To free them, the blade control and blade must be manipulated manually on the tool before it is put back into operation.

CUTTING DATA SOLO / SOLO2 / SOLO25

	Description	Tensile str. RM (MPa)*	Hardness (HB)	Hardn. (HRC)	Cutting speed (Vc)	Working feed (fz)
P0	Low-carbon steel, long-chipping, C <0.25%	<530	<125	–	50–90	0.03–0.1
P1	Low-carbon steel, short-chipping, C <0.25%	<530	<125	–	50–90	0.03–0.1
P2	Steel with carbon content C >0.25%	>530	<220	<25	50–90	0.03–0.1
P3	Alloy steel and tool steel, C >0.25%	600–850	<330	<35	50–90	0.03–0.08
P4	Alloy steel and tool steel, C >0.25%	850–1400	340–450	35–48	30–50	0.02–0.05
P5	Ferritic, martensitic and stainless PH steel	600–900	<330	<35	40–80	0.03–0.08
P6	High-strength ferritic, martensitic and PH stainless steel	900–1350	350–450	35–48	30–50	0.02–0.05
M1	Austenitic stainless steel	<600	130–200	–	30–50	0.03–0.08
M2	High-strength austenitic stainless steel	600–800	150–230	<25	15–25	0.02–0.05
M3	Duplex stainless steel	<800	135–275	<30	30–50	0.02–0.05
K1	Cast iron	125–500	120–290	<32	50–110	0.03–0.1
K2	Ductile cast iron with up to medium strength	<600	130–260	<28	50–90	0.03–0.08
K3	High-strength cast iron and bainitic cast iron	>600	180–350	<43	50–90	0.03–0.08
N1	Wrought aluminium alloys	–	–	–	100–200	0.03–0.12
N2	Aluminium alloys with low Si content	–	–	–	100–200	0.03–0.12
N3	Aluminium alloys with high Si content	–	–	–	100–200	0.03–0.12
N4	Copper, brass and zinc base	–	–	–	50–90	0.03–0.08
S1	Iron-based heat-resistant alloys	500–1200	160–260	25–48	15–25	0.02–0.05
S2	Cobalt-based heat-resistant alloys	1000–1450	250–450	25–48	15–25	0.02–0.05
S3	Nickel-based heat-resistant alloys	600–1700	160–450	<48	15–25	0.02–0.05
S4	Titanium and titanium alloys	900–1600	300–400	33–48	15–25	0.02–0.05



The cutting data listed are guide values! They depend on the amount of slope of the uneven surface. (e.g. high slope > low cutting value).  
For materials that are difficult to machine, we recommend applying cutting speeds that are at the lower end of the range.

MAINTENANCE INTERVAL / SERVICES

Periodic maintenance interval after 18 months or 200,000 cycles

HEULE Werkzeug AG offers technical support and services for all products.

Any service or maintenance which requires the removal of sealed screws may only be carried out by personnel certified or authorised by HEULE Werkzeug AG.

Professional maintenance and timely service cycles guarantee process reliability.

MANDATORY MAINTENANCE / SAFETY

Maintenance is mandatory once the maintenance interval has been reached. In addition to the work that must be carried out by persons authorised by HEULE, the following three processes can be carried out independently by the customer:

**IMPORTANT:** The control unit may only be opened by certified and authorised personnel.  
HEULE Werkzeug AG accepts no liability if it has been opened by unauthorised persons.

- Blade change
- Replacing the blade control
- Replacing the blade housing



SAFETY NOTE

If these guidelines are not adhered to, there is **considerable risk of injury** during operation of the tool.