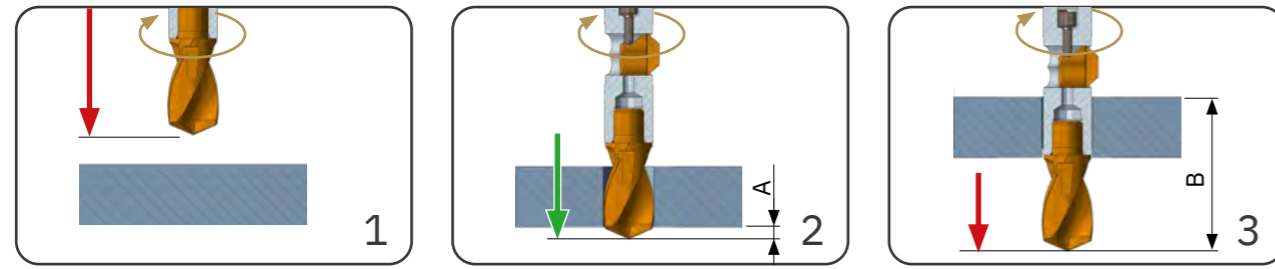


# VEX PROCESS STEPS

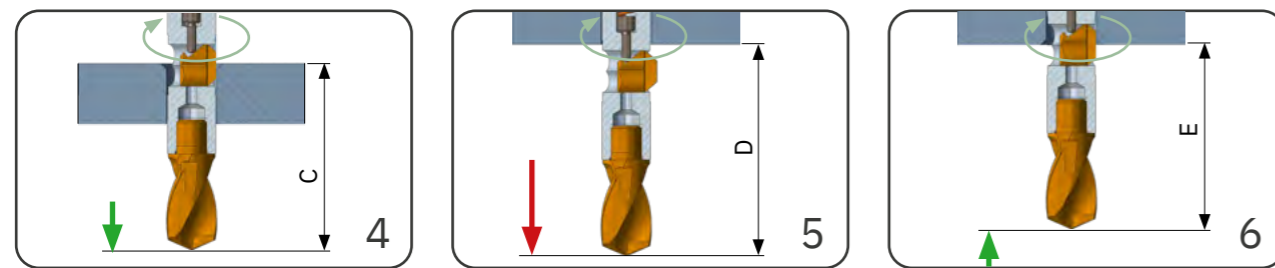


- Spindle speed **drilling (!)** on
- External coolant on. (Internal coolant on if available.)
- Rapid feed to the front of the workpiece
- Working feed **drilling (!)** to position **A**
- Rapid feed to position **B**

```

Example S 3184 M3
           M8
           G0 Z+1.0
           G1 Z-12.91) F636
           G0 Z-28.1
    
```

<sup>1)</sup> 12.9=10.0+2.9



- Spindle speed **chamfering (!)**
- Working feed **chamfering (!)** to position **C**
- Rapid feed to position **D**
- Working feed **chamfering (!)** to position **E**
- Rapid feed out of the workpiece

```

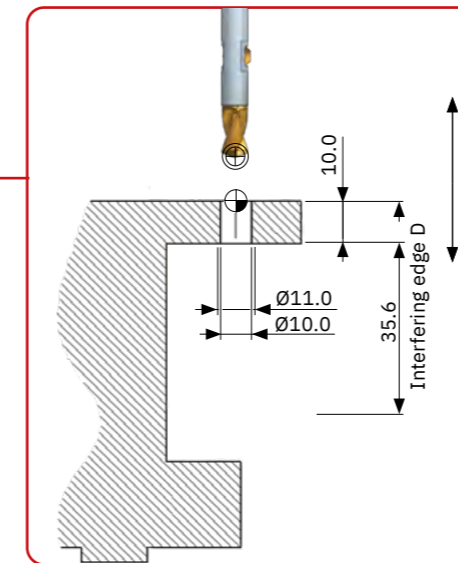
S 1158 M3
G1 Z-32.1 F174
           G0 Z-45.62)
           G1 Z-42.13)
           G0 Z+1.0
    
```

<sup>2)</sup> 45.6=10.0+35.6      <sup>3)</sup> 42.1=10.0+32.1

## DIMENSION TABLE FOR PROGRAMMING

mm	A	B		C		D		E	
		1xd	2xd	1xd	2xd	1xd	2xd	1xd	2xd
Series B Ø5.00–5.49	2.0	17.9	23.7	21.9	27.7	25.4	31.2	21.9	27.7
Series B Ø5.50–5.99	2.1	18.8	25.1	22.8	29.1	26.3	32.6	22.8	29.1
Series C Ø6.00–6.49	2.2	19.6	26.3	23.6	30.3	27.1	33.8	23.6	30.3
Series C Ø6.50–6.99	2.3	20.6	27.9	24.6	31.9	28.1	35.4	24.6	31.9
Series D Ø7.00–7.49	2.4	22.8	30.7	26.8	34.7	30.3	38.1	26.8	34.7
Series D Ø7.50–7.99	2.5	23.6	31.9	27.6	35.9	31.1	39.4	27.6	35.9
Series D Ø8.00–8.49	2.6	24.4	33.2	28.4	37.2	31.9	40.7	28.4	37.2
Series E Ø8.50–8.99	2.7	25.6	34.9	29.6	38.9	33.1	42.4	29.6	38.9
Series E Ø9.00–9.49	2.8	26.4	36.2	30.4	40.2	33.9	43.7	30.4	40.2
Series E Ø9.50–9.99	2.9	27.3	37.6	31.3	41.6	34.8	45.5	31.3	41.6
Series E Ø10.00–10.49	2.9	28.1	38.9	32.1	42.9	35.6	46.4	32.1	42.9
Series E Ø10.50–10.99	3.1	29.1	40.2	33.1	44.2	36.6	47.7	33.1	44.2
Series F Ø11.00–11.49	3.1	29.9	41.5	33.9	45.5	37.4	49.0	33.9	45.5

# APPLICATION AND PROGRAMMING EXAMPLE



### Application data

Material: Steel C45 / P3  
 Bore Ø: 10.0 mm  
 Chamfer Ø: 11.0 mm  
 Workpiece: 10.0 mm  
 Machining: both bore edges  
 Cooling: External coolant

### Tool, blade and drill insert selection

Tool: GH-Q-O-4010, max. bore depth 10.5, w/o int. coolant  
 Chamfering blade: GH-Q-M-30215, coating A, for- and backward cutting  
 Drill insert: P-S-E2-1000-1A, bore Ø10.0, coating A, w/o int. coolant

### Cutting data drilling

Cutting speed  $V_c$ : 90–110 m/min.  
 Tool working feed: 0.15–0.25 mm/rev

### Cutting data chamfering

Cutting speed  $V_c$ : 30–50 m/min.  
 Tool working feed: 0.1–0.2 mm/rev

## VEX CUTTING DATA

Description	Tensile str. RM (MPa)	Hardness (HB)	Hardn. (HRC)	VEX – Drilling			SNAP – Chamfering		
				VC	FZ	B*	VC	FZ	B*
P0 Low-carbon steel, long-chipping, C <0.25%	<530	<125	–	100–130	0.15–0.25	A	40–60	0.1–0.3	A
P1 Low-carbon steel, short-chipping, C <0.25%	<530	<125	–	100–130	0.15–0.25	A	40–60	0.1–0.3	A
P2 Steel with carbon content C >0.25%	>530	<220	<25	90–110	0.15–0.25	A	40–60	0.1–0.3	A
P3 Alloy steel and tool steel, C >0.25%	600–850	<330	<35	90–110	0.15–0.25	A	30–50	0.1–0.2	A
P4 Alloy steel and tool steel, C >0.25%	850–1400	340–450	35–48	90–110	0.15–0.25	A	30–50	0.1–0.2	A
P5 Ferritic, martensitic and stainless PH steel	600–900	<330	<35	30–50	0.08–0.12	A	20–40	0.05–0.15	A
P6 High-strength ferritic, martensitic and PH stainless steel	900–1350	350–450	35–48	20–30	0.08–0.12	A	20–40	0.05–0.15	A
M1 Austenitic stainless steel	<600	130–200	–	30–40	0.08–0.12	A	10–20	0.05–0.15	A
M2 High-strength austenitic stainless steel	600–800	150–230	<25	30–40	0.08–0.12	A	10–20	0.05–0.15	A
M3 Duplex stainless steel	<800	135–275	<30	20–30	0.08–0.12	A	10–20	0.05–0.15	A
K1 Cast iron	125–500	120–290	<32	90–180	0.2–0.35	A	50–90	0.1–0.3	A
K2 Ductile cast iron with up to medium strength	<600	130–260	<28	90–180	0.2–0.35	A	40–60	0.1–0.3	A
K3 High-strength cast iron and bainitic cast iron	>600	180–350	<43	90–160	0.2–0.35	A	40–60	0.1–0.3	A
N1 Wrought aluminium alloys	–	–	–	140–200	0.25–0.35	D	70–120	0.1–0.3	D
N2 Aluminium alloys with low Si content	–	–	–	60–100	0.2–0.3	D	70–120	0.1–0.3	D
N3 Aluminium alloys with high Si content	–	–	–	40–60	0.15–0.25	D	70–120	0.1–0.3	D
N4 Copper, brass and zinc base	–	–	–	40–60	0.15–0.25	D	30–70	0.05–0.15	D
S1 Iron-based heat-resistant alloys	500–1200	160–260	25–48	20–25	0.06–0.1	A	8–15	0.02–0.1	A
S2 Cobalt-based heat-resistant alloys	1000–1450	250–450	25–48	20–25	0.06–0.1	A	8–15	0.02–0.1	A
S3 Nickel-based heat-resistant alloys	600–1700	160–450	<48	20–25	0.06–0.1	A	8–15	0.02–0.1	A
S4 Titanium and titanium alloys	900–1600	300–400	33–48	20–25	0.06–0.1	A	8–15	0.02–0.1	A

\* coating for blades