

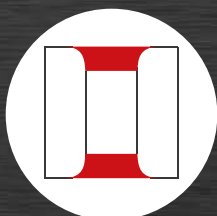
 Swiss Made

HEULE+
PRECISION TOOLS

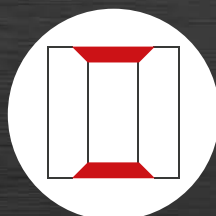


Precision Cutting Tools

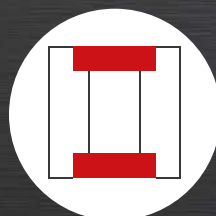
For high-volume, automated manufacturing



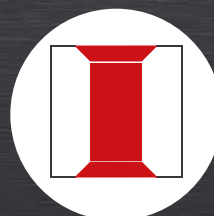
Deburring



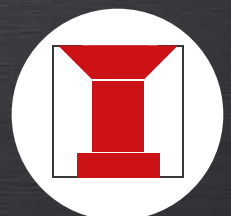
Chamfering /
Countersinking



Counterboring /
Back Spotfacing



Drilling
combined



Custom
solutions

CATALOG PILOT

PRODUCT OVERVIEW	6
TOOL RECOMMENDATIONS	8
ADVICE & SUPPORT	10
GOOD TO KNOW	12
FIND A SOLUTION FAST	13
CASE STUDIES	13

NOTE:

This printed catalog shows the status at the time of printing and is subject to technical changes. Any subsequent additions or corrections can only be viewed on the website.

CUSTOM SOLUTIONS

SEMI-STANDARD	258
SPECIAL TOOLS	259

Table of contents

DEBURRING

COFA	14
COFA-X	56
DL2	64
X-BORES	258

CHAMFERING / COUNTERSINKING

SNAP	74
DEFA	112
GH-K	142

COUNTERBORING / BACK SPOTFACING

BSF	148
SOLO	200

DRILLING COMBINED

VEX	210
COMBI	236
SNAP18 MODULE	250

COFA

COFA-X

DL2

SNAP

DEFA

GH-K

BSF

SOLO

VEX

COMBI

MODULE

CUSTOM

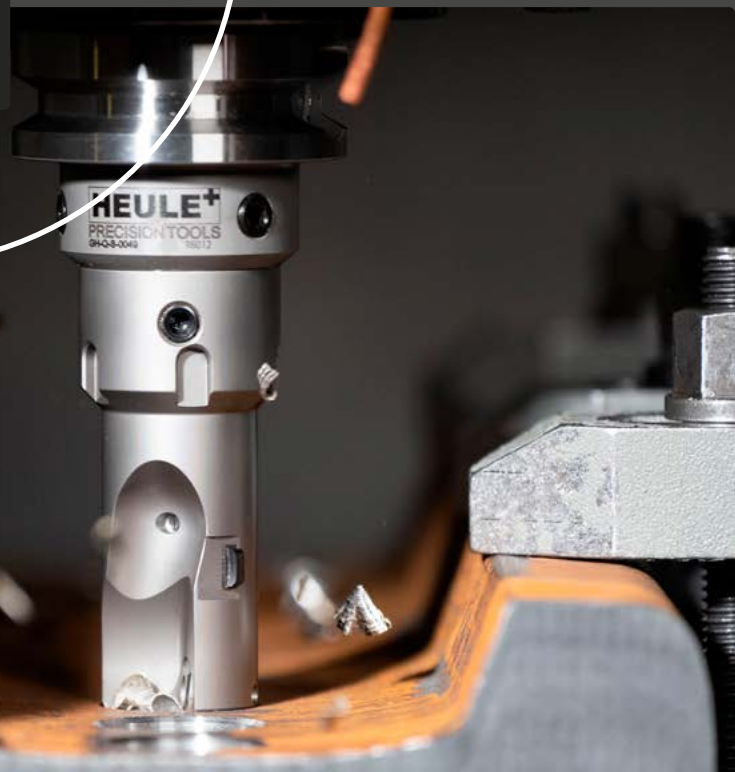


AT HOME IN SWITZERLAND – INDEPENDENT AND AGILE

HEULE is proudly Swiss-engineered since 1961, manufacturing all tools at our headquarters in Balgach, Switzerland. Every tool begins here – with precision, innovation, and the family-owned values that define our company. North America represents one of the largest global markets served from Swiss headquarters.

OUR FOCUS: REDUCING YOUR UNIT COSTS

Our reliable solutions for back bore machining benefit you in multiple ways. First of all, they guarantee maximum process reliability, and second, they eliminate the need for time-consuming work steps such as manual processing, re-clamping, reworking or external operations. The goal is to produce finished parts on the machine. Simple programming and handling also contribute to cost-effectiveness and peace of mind.





INNOVATION, RELIABILITY & LONG-TERM VALUE

HEULE tools are built for longevity – carbide-coated blades, precision-ground components, and modular designs reduce downtime and extend tool life. We invest in continuous innovation to support sustainable production, from reducing scrap to improving energy efficiency through single-operation machining.

NORTH AMERICAN SUPPORT & DISTRIBUTION

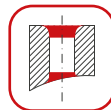
HEULE North America provides dedicated support for the U.S., Canada, and Mexico from our headquarters in Loveland, Ohio. Our technical sales engineers, customer service team, and on-site support specialists ensure fast response times, local training, and application expertise. We have our own warehouse in Ohio, which means we can ship same-day on stocked tools.



The HEULE solutions at a glance

Good to know!
If the standard does not fit, a customized solution often works!

Deburring

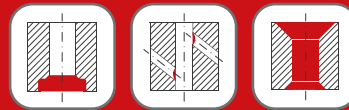


Deburring: Removing burrs and/or breaking edges without defined forms or dimensions.



	DL2	COFA	COFA Cassette	COFA-X	
Page in the general catalog	64	14	40	56	
Bore diameter min. in mm	1.0	2.0	10.0	5.0	
Bore diameter max. in mm	2.1	26.0	∞	26.0	
Working length in mm	3.0–10.0	15.0–70.0	∞	15.0–70.0	
Machining the front of the bore	●	●	●	●	
Machining the back of the bore	●	●	●	●	
Machining angled and uneven bore edges	slightly uneven	up to 30°	up to 30°	●	
Deburring profile / form	Radius-form deburr / edge break				
Spotfacing / counterboring					
Use on large burrs					
Use with demanding workpiece materials	●	●	●	●	
Install in holder or combination tool			●		

● = recommended



Custom solutions

Does the standard not fit your needs? We would be happy to advise you on application-specific solutions. We either adapt the dimensions of an existing tool system, for example, or we develop a customized solution.

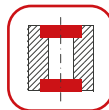
Chamfering / Countersinking



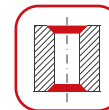
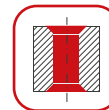
Chamfering: Creating a defined angled break on the edge of a bore



Counterboring / Back Spotfacing

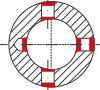


Drilling combined



	SNAP	SNAP Cassette	DEFA	GH-K	BSF	SOLO	VEX	COMBI	SNAP18 Module
	74	104	112	142	148	200	210	236	250
	2.0	12.6	4.0	3.0	6.5	6.0	5.0	9.5	18.0
	35.0	∞	23.9	45.0	21.0	49.0	17.0	35.0	∞
	10.0–75.0	∞	30.0–60.0	-	40.0–70.0	10.0–150.0	2xd	14.0–38.0	∞
	•	•	•	•		•	•	•	•
	•	•	•		•	•	•	•	•
	Chamfer 45°	Chamfer 45°	Chamfer 45°	Chamfer 30/45°			Chamfer 45°	Chamfer 45°	Chamfer 45°
					•	•			
	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•
		•							•

Tool recommendations

Application		Deburring			
		DL2	COFA	COFA Cassette	COFA-X
Page in the general catalog		64	14	40	56
Deburring or chamfered edge according to ISO13715 – Edges with undefined form for bore diameter >2.0 mm, e.g. see dimensioning of outer edge according to ISO13715			●	●	
Chamfered edge acc. to ISO13715 – edges with undefined form for bore Ø <2.0 mm		●			
Chamfered edge in pipe		●	●	●	●
Chamfered edge on uneven surface			●	●	●
Deburring on cross bores (bore Ø >5.0 mm)				Bore ratio 1:1	●
Chamfer 45° acc. to ISO21204 – edge with defined specification (e.g. 1x45°)					
Bore diameter >30.0 mm				●	
Groove in bore (interrupted cut)					
Large chamfer 60°/82°/90°/100° Countersink up to 20.0 mm deep					
Spotfacing and back spotfacing					
Back spotfacing					
Back spotfacing with interrupted cut					
Front and/or back counterboring					
Combined drilling and chamfering					

- = recommended
- = possible

	Chamfering / Countersinking				Counterboring / Back Spotfacing		Drilling combined		
	SNAP	SNAP Cassette	DEFA	GH-K	BSF	SOLO	VEX	COMBI	SNAP18 Module
	74	104	112	142	148	200	210	236	250
			 DEFA is suitable for large burr formation or interrupted cuts.						
									
			DEFA is the choice for large burr formation, interrupted cuts or adjustable chamfer size.						
									
									
									
									
									
									
									
				backwards only					> diameter 18.0 mm
									

Great support on the way to the optimum solution!

CONSULTING AND SUPPORT

HEULE is more than just a tool supplier. Our strength lies in the competent support we provide to the customer on their way to finding the optimum solution. We offer a comprehensive service package along with the tool.

	Design stage	Sample part	Pre-series	Serial production	
Consulting during the design stage	☑				We offer our expertise right from the design stage of the workpiece. The requirements for the deburring solution can often be simplified by making design adjustments to the workpiece. In many cases, this enables the use of standard tools rather than custom developments.
Technical consulting		☑	☑	☑	Our experienced specialists analyze your technical challenges, prepare cost-per-part analyzes and cycle time calculations and advise you on the best solutions. Upstream process steps (e.g. drilling) are also analyzed if necessary. If desired, we can organize product or technology training courses at your premises or at HEULE.
Custom solutions		☑			Does the standard not fit your needs? We would be happy to advise you on application-specific solutions. We either adapt the dimensions of an existing tool system, for example, or we develop a custom solution.
Testing at the HEULE test center		☑	☑		For new developments or challenging applications, we conduct tests at our test centers in USA or Switzerland. The customer's original workpiece is machined using the proposed tool solution. The customer is more than welcome to participate in the tests in person.
Test tool			☑	☑	If you want to make sure that the tool you have in mind meets your requirements, HEULE will be happy to provide a test tool along with support.

	Design stage	Prototype	Pre-series	Serial production	
Supervised tests at the customer's plant		✓	✓	✓	Once a tool solution has been found for the application, test tools can be put into operation at the customer's plant. Depending on the complexity of the application, this step is overseen by HEULE specialists.
Programming support			✓	✓	If you would like support in programming the CNC machine, you are welcome to get in touch with us. We are also happy to provide on-site support.
On-site commissioning			✓	✓	For technically demanding applications or valuable workpieces, HEULE is happy to be on-site at the plant to ensure successful commissioning and optimization of the process.
After sales service				✓	Even after the start of series production, HEULE is on hand should unexpected challenges arise or should there be a need for optimization. Thanks to our global sales network, we can respond quickly and provide support in your local language.



Good to know

PRODUCT CATEGORIES AND AVAILABILITY

HEULE offers three types of tooling solutions depending on your application requirements. This approach allows us to provide the best balance of availability, performance, and customization.

Category	Your benefit	Quotation	Delivery time
STANDARD	Solutions within our standard product range. The most common tool sizes are kept in stock to ensure fast availability. Examples: • Standard tool that fully meets application requirements • Tool for upcoming projects or testing	Quote within 24 hours	In stock Items highlighted in green in the tables
			Other standard sizes: 1–6 weeks



SEMI-STANDARD	A modified version of a standard tool designed to meet your specific application needs. Based either on one of our standard products or an existing tool system, which is always customized (e.g. SOLO, COFA-X). Example: • Tool with longer working length • Blades with optimized service life	Quote and tool drawing typically provided within 48 hours	approx. 6–7 weeks after drawing approval
---------------	---	---	--



SPECIAL	A fully customized tool designed specifically for your application. Example: • Multi-function tool concepts that combine several operations into one tool to increase efficiency	Quote provided after feasibility review	approx. 7–9 weeks after drawing approval
---------	---	---	--



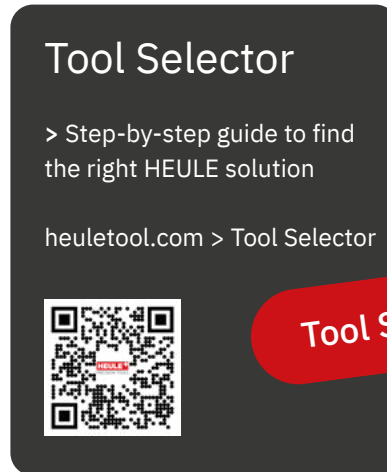
Find a solution fast

THE TOOL SELECTOR WILL GUIDE YOU THE WAY

The HEULE Tool Selector is the fastest and easiest way to identify the right tool for your application.

Simply enter your application details and review the recommended solutions. You can also send your results directly to your HEULE representative for review. Our team will verify your application and help you select the best solution.

If your application requires a custom solution, our engineers are ready to help.



Case studies

OUR SOLUTIONS IN ACTION

At HEULE, our goal is simple: provide customers with the right tool solution for their specific application. Whether you are working in aerospace, automotive, energy, or heavy equipment, our tools are designed to deliver reliable performance and consistent results.



COFA

A stroke of genius for deburring even and uneven bore edges. Proven a thousand times over.

The advantages – Your benefit



Inaccessible bore edges are reliably machined without turning the workpiece, even when working with challenging materials.

Our COFA is a proven winner for any deburring challenge. With the addition of the COFA-C New Generation line, your process capability and efficiency is even further expanded to include larger edge breaks.



Uniform deburring of bore edges regardless of the height of the machining plane. This is particularly important for cast parts and parts with tolerance deviations.



The tool follows uneven edges and uneven bore edges sloped up to 30° and ensures clean deburring.



THE RANGE

Standard version

Bore Ø range		Max. deburring size mm	Working length mm	Series	Catalog page
Ø2.0–3.1	.079–.122	0.10	15.3	COFA 2	22
Ø3.0–4.1	.118–.161	0.15	20.8	COFA 3	24
Ø4.0–4.9	.157–.193	0.25	28.0	COFA 4	26
Ø5.0–5.9	.197–.232	0.35	32.6	COFA 5	28
Ø6.0–8.0	.236–.315	0.35	56.0	COFA 6	30
Ø8.0–12.2	.315–.480	0.50	74.0	COFA 8	32
Ø12.4–40.0	.488–1.575	0.70	81.0	COFA 12	34
Ø6.0–8.0	.236–.315	0.70	48.0	COFA C6	44
Ø8.0–12.0	.315–.472	0.90	61.0	COFA C8	46
Ø12.0–26.0	.315–1.024	1.40	70.0	COFA C12	48

METRIC
C-SERIES
larger edge
breaks

Cassette tools

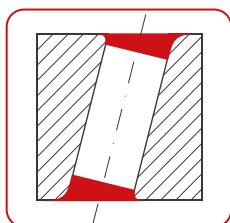
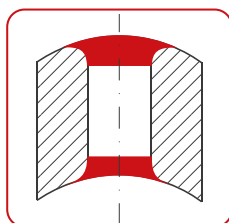
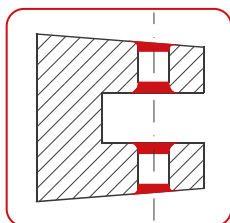
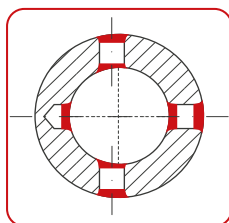
For installation in holder/combination tools for machining large bore diameters

Bore Ø range		Max. deburring size mm	Series	Catalog page
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
> Ø13.0	.512	0.55	6 Cas.	40
> Ø16.0	.630	0.70	8 Cas.	40
> Ø25.0	.984	0.9	12 Cas.	40
> Ø10.0	.394	0.70	C6 Cas.	50
> Ø14.0	.551	0.90	C8 Cas.	50
> Ø20.0	.787	1.40	C12 Cas.	50

For deburring cross bores: see **X-BORES** on page 258. **COFA-X**: see page 56.

If the required tool is not included in the standard range above, our **CUSTOM** range often has a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION

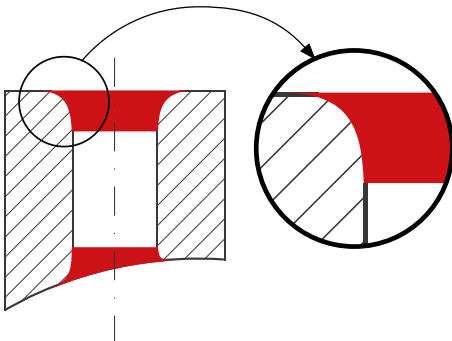
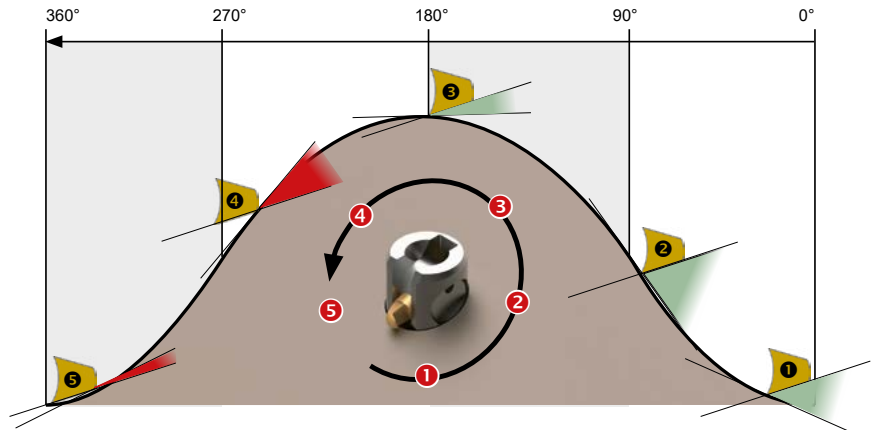


OPERATING PRINCIPLE

The COFA blade is spring-loaded in the tool body. This means that the cutting edge also follows uneven bore edges.

The cutting edge removes the burr along with the burr root without creating a secondary burr. The blade pivots into the tool body as it enters the bore.

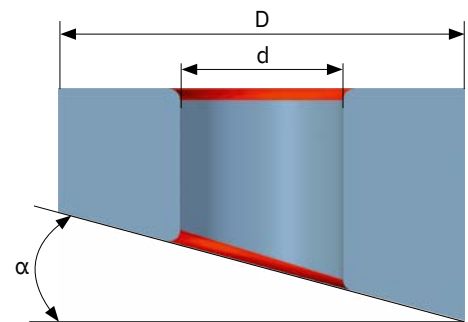
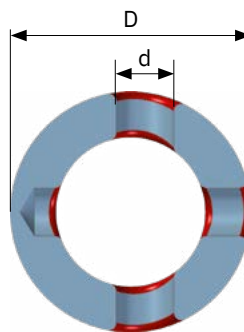
The result is a bore edge deburred with a radial form.



MAXIMUM UNEVENNESS

COFA is designed for machining uneven bore edges. The standard blade can reliably deburr uneven edges up to $\alpha \leq 18^\circ$. This corresponds to a diameter ratio (d:D) of 0.5.

The range also includes blades with a clearance angle of up to 30° for greater unevenness. For larger irregularities, tools and blades from the **CUSTOM** range, e.g. COFA-X, are used.



Calculation of angle

With the HEULE Tool Selector, you can easily calculate the angle of unevenness and at the same time determine the correct tool and blade.

heuletool.com > Tool Selector > COFA



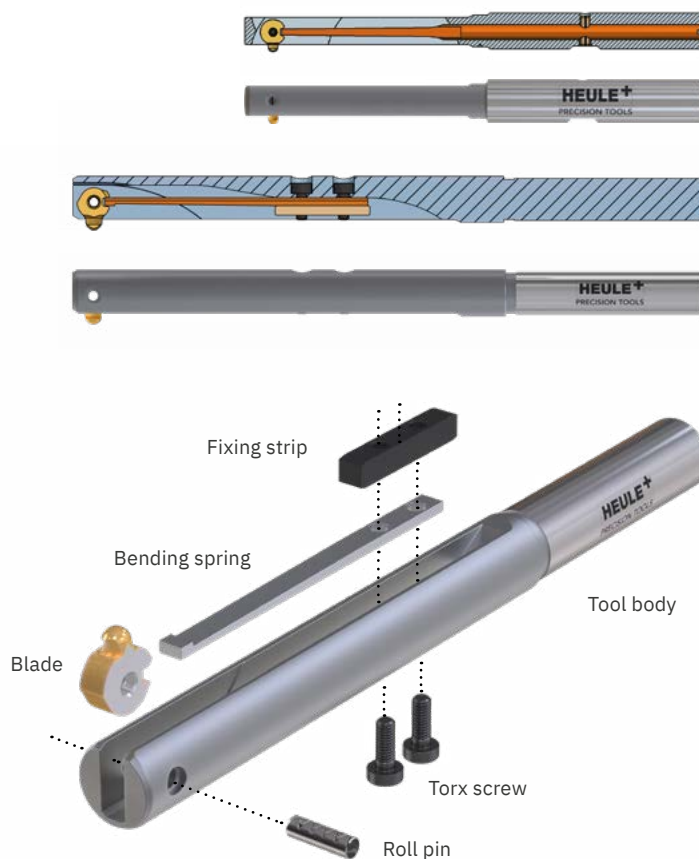
TOOL DESIGN

Simple, robust, reliable. The COFA tool family is made up of two types.

The **COFA Series** removes burrs on the front and back of a drilled through-hole on even and uneven surfaces in a single cycle.

- Deburr through holes on irregular surfaces up to 30°
- Typical edge break range: .005"–.015"
- Available in sizes 2.00 mm (.080") and up

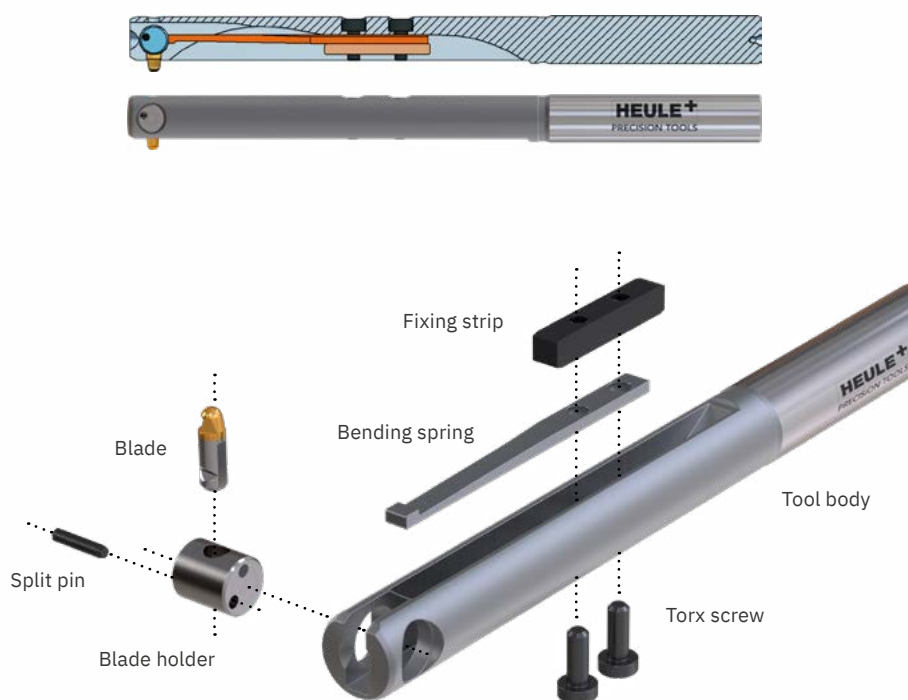
In the **COFA 2/3/4/5/6/8** and **12**, the blade is held directly in the tool body by a roll pin.



The **Metric C-Series** is a new innovation of our proven COFA product. Like its predecessor, COFA-C will efficiently deburr bore edges in one single pass, but with added features to encompass a broader range of applications.

- Designed for added durability
- Suitable for threaded bores and larger edge breaks
- Shorter working length for a more stable tool

With the **COFA C6, C8** and **C12**, a separate blade is retained and guided by a solid blade holder.

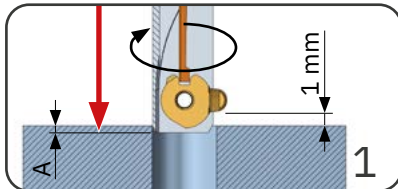


COFA PROCESS STEPS

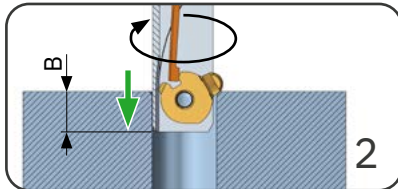
Front & back deburring

Back only deburring

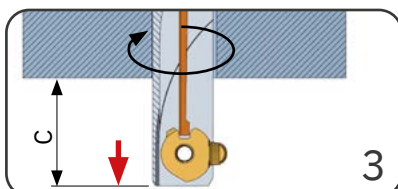
Referencing the front of the tool.
Rapid traverse the tool the distance **A** into the hole. This will give 1 mm (.040") clearance from the cutter.



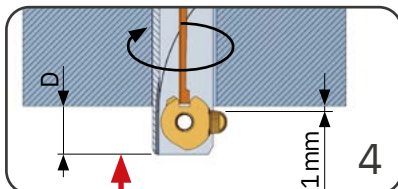
In forward working feed machine the top surface of the hole by moving to distance **B**. (Ref. the front of the tool)
Rapid traverse through the hole. The hole will not be damaged.



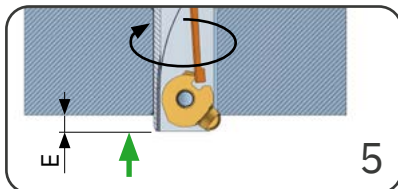
In order to make the blade pop out again, the tool has to be positioned beyond the rear bore edge by the distance **C**. (Ref. the front of the tool)



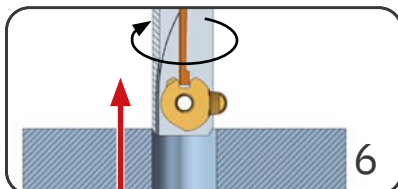
(Optional:) Travel the tool in back rapid feed below the rear material surface of the hole or burr to reduce cycle time. Move to distance **D**. (Ref. the front of the tool)



In back working feed, move to distance **E** to machine the rear surface. (Ref. the front of the tool)



Rapid out.



For back deburring only, the COFA tool can rapid traverse through the top hole without damage to your hole surface.

In order to make the blade pop out again, the tool has to be positioned beyond the rear bore edge by the distance **C**. (Ref. the front of the tool)

(Optional:) Travel the tool in back rapid feed below the rear material surface of the hole or burr to reduce cycle time. Move to distance **D**. (Ref. the front of the tool)

In back working feed, move to distance **E** to machine the rear surface. (Ref. the front of the tool)

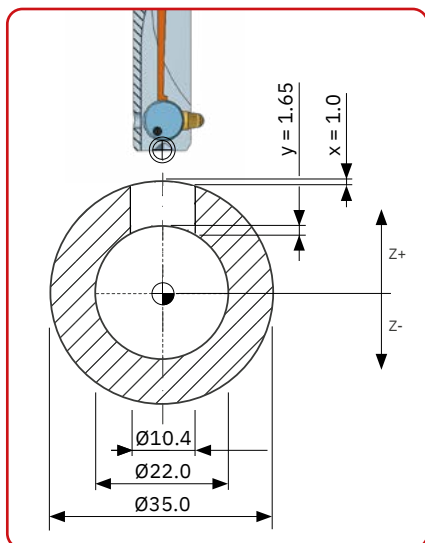
Rapid out.

PROGRAMMING DIMENSION TABLE

Tool	A	B-Flat	B-Irregular	C*	D*	E-Flat*	E-Irregular*
COFA 2	1.7 .067	4.5 .177	4.9 .194	4.5 .177	4.3 .169	1.5 .059	1.0 .040
COFA 3	2.5 .098	6.0 .236	6.6 .260	6.0 .236	5.5 .217	2.0 .078	1.4 .055
COFA 4	2.0 .079	5.5 .217	6.1 .240	5.5 .217	5.3 .209	1.8 .071	1.2 .048
COFA 5	2.8 .090	7.0 .276	7.3 .286	6.9 .272	6.4 .252	2.2 .087	0.9 .037
COFA 6	1.0 .039	5.5 .217	6.5 .258	6.0 .236	5.0 .197	0.5 .020	-0.5 -.018
COFA 8	1.5 .059	7.0 .276	8.2 .324	8.0 .315	6.5 .256	0.0 .000	-1.2 -.049
COFA 12	3.0 .118	10.0 .394	11.9 .468	12.0 .472	9.0 .354	2.0 .079	0.0 .000
COFA C6	1.1 .043	6.8 .268	7.8 .306	6.8 .268	4.9 .193	-0.8 -.030	-1.8 -.071
COFA C8	1.9 .075	8.8 .347	10.0 .392	8.5 .335	6.1 .240	-0.4 -.016	-1.6 -.063
COFA C12	3.4 .134	13.0 .512	14.9 .584	12.5 .492	8.6 .339	-1.0 -.039	-3.0 -.118

* Values above based on either medium or large blade. Plus material thickness.

APPLICATION EXAMPLE



Application data

Workpiece: Outside Ø 35.0 mm / inside Ø 22.0 mm
 Bore Ø: Ø10.4 mm (.409)
 Material: Carbon Steel
 Machining: both bore edges
 Unevenness y: Angle 15.9°

Tool and blade selection

Tool: COFA8-409-S
 Blade: GH-C-M-0003, medium, forward and backward cutting
 Deburring Ø max: 11.4 mm (.449)
 Outside Ø: Ø D2 = 13.1 mm (.516) (note interfering edge / inside Ø)

Cutting data

Cutting speed Vc: 100–340 SFM
 Working feed fz: .006–.012 IPR

CUTTING DATA

Material	Hardness BHN	Spring Code	COFA 2/3/4/5		COFA 6/8/12 COFA C6/C8/C12	
			IPR mm/rev	SFM MPM	IPR mm/rev	SFM MPM
Carbon Steels	100–250	S–Z	.002–.006 0.05–0.15	40–160 12–49	.006–.012 0.15–0.30	100–340 30–104
Free machining Alloy	125–340	S–Z	.002–.006 0.05–0.15	22–100 7–30	.006–.014 0.15–0.35	60–240 18–73
High Alloy Steel	250–350	S–Z1	.002–.006 0.05–0.15	22–85 7–26	.006–.010 0.15–0.25	60–200 18–60
Stainless Steel	140–250	S–Z2	.002–.006 0.05–0.15	15–110 4–34	.006–.010 0.15–0.25	40–175 12–53
Steel Castings	90–250	S–Z1	.002–.006 0.05–0.15	40–160 12–49	.006–.012 0.15–0.30	100–340 30–104
Grey Cast Iron	150–330	H–S	.002–.006 0.05–0.15	18–110 5–34	.008–.016 0.20–0.40	50–330 15–100
Nodular Cast Iron	140–310	H–S	.002–.006 0.05–0.15	18–130 5–40	.006–.012 0.15–0.30	50–300 15–91
Aluminum Alloys	30–180	W–H	.002–.006 0.05–0.15	30–200 9–61	.008–.016 0.20–0.35	80–600 24–183
Nickel-based Alloys	140–310	Z1–Z3	.002–.006 0.05–0.15	7–38 2–12	.005–.010 0.12–0.25	15–80 5–24
Titanium Alloys	120–334	Z1–Z3	.002–.006 0.05–0.15	7–38 2–12	.005–.010 0.12–0.25	15–80 5–24
Copper-Brass-Bronze	80–202	S	.002–.006 0.05–0.15	30–200 9–61	.008–.016 0.20–0.40	80–600 24–183



The cutting data listed are guide values! They depend on the amount of the unevenness of the bore edges (e.g. high slope > low cutting value).

For materials that are difficult to machine or uneven bore edges, we recommend applying cutting speeds that are at the lower end of the range.

Selecting the correct COFA tool

TOOL SELECTOR TOOL TABLES

The HEULE Tool Selector is the quickest and easiest way to find the right tool.

Send your search result along with your application data to your HEULE representative. They will check the application and offer you options if required.

If your search produces no results, please contact HEULE with your application data anyway. We also develop customized solutions and are happy to advise you.

The right tool is primarily determined by the bore diameter to be machined. This table also shows the deburring diameter and the tool diameter.

The tool tables cover the standard range. The tool part numbers highlighted in green are available from stock.

In addition, COFA offers a selection of various blades and spring strengths to effectively cover the requirements based on the bore geometry, burr thickness and workpiece material.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form (heuletool.com > contact) or by telephone.

Tool Selector

> Step-by-step guide to find the right solution

heuletool.com > Tool Selector
> COFA



Tool Selector 

Still have questions?

> HEULE Consulting and Support

heuletool.com > contact



CONFIGURING COFA TOOLS

COFA Series 2/3/4/5/6/8/12 incl. blade

1. Select tool



Select the appropriate tool for the bore diameter and desired deburring size from the tool table.

Example: COFA6□-236-□

+ Add spring



Select a suitable spring from the spring table and adjust the tool part number.

Example: COFA6□-236-**Z1**

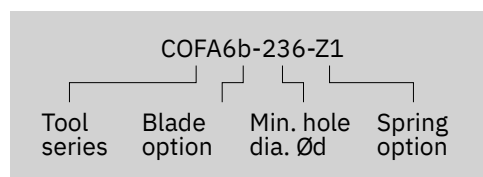
+ Add blade



Select a suitable blade from the blade table and adjust the tool part number.

Example: COFA6**b**-236-**Z1**

Overview



METRIC C-Series C6/C8/C12 without blade

1. Select tool



Select the appropriate tool for the bore diameter and desired deburring size from the tool table.

Example: C6-6.0-□

+ Add spring



Select a suitable spring from the spring table and adjust the tool part number.

Example: C6-6.0-**Z1**

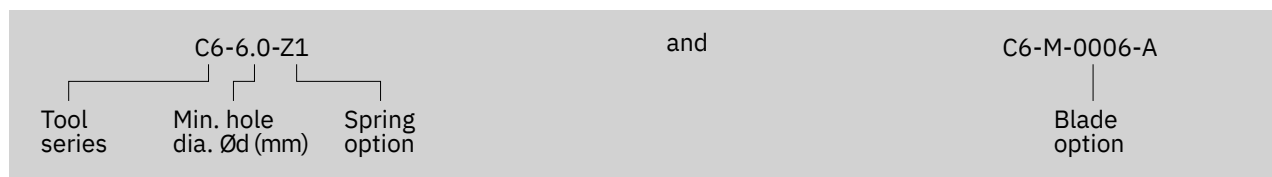
2. Select blade



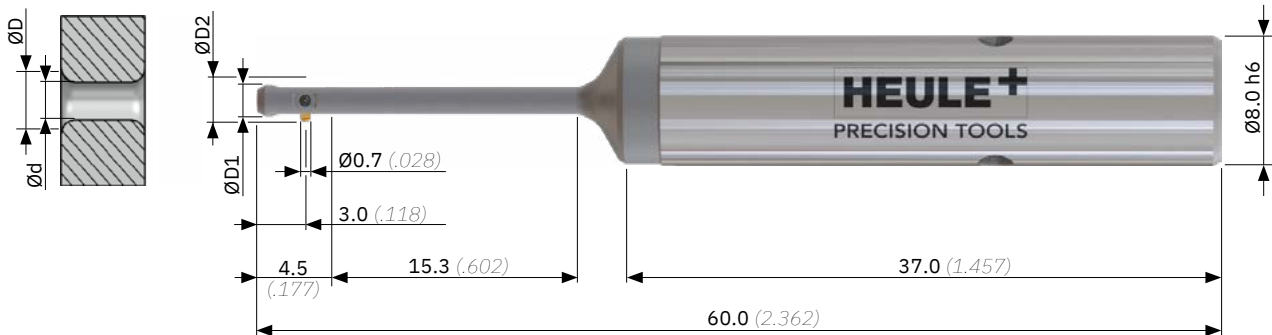
Select a suitable blade from the blade table and order it with the tool.

Example: C6-M-0006-A

Overview



COFA2 $\varnothing 2.0 \text{ mm to } 3.1 \text{ mm}$ (.079" to .122")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA2**b**-2.0-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore Ø d	Max. deburring Ø D	Working length	Tool Ø D1	Maximum Ø D2	Tool part no. front & back	Tool part no. back only
2.0 .079	2.2 .087	15.3 .602	1.95 .077	2.7 .106	COFA2□-2.0-□	COFA2 b -2.0-□
2.1 .083	2.3 .090	15.3 .602	2.05 .081	2.8 .110	COFA2□-2.1-□	COFA2 b -2.1-□
2.2 .087	2.4 .094	15.3 .602	2.15 .085	2.9 .114	COFA2□-2.2-□	COFA2 b -2.2-□
2.3 .091	2.5 .098	15.3 .602	2.25 .089	3.0 .118	COFA2□-2.3-□	COFA2 b -2.3-□
2.4 .094	2.6 .102	15.3 .602	2.35 .092	3.1 .122	COFA2□-2.4-□	COFA2 b -2.4-□
2.5 .099	2.7 .106	15.3 .602	2.45 .096	3.2 .126	COFA2□-2.5-□	COFA2 b -2.5-□
2.6 .102	2.8 .110	15.3 .602	2.55 .100	3.3 .130	COFA2□-2.6-□	COFA2 b -2.6-□
2.7 .106	2.9 .114	15.3 .602	2.65 .104	3.4 .134	COFA2□-2.7-□	COFA2 b -2.7-□
2.8 .110	3.0 .118	15.3 .602	2.75 .108	3.5 .138	COFA2□-2.8-□	COFA2 b -2.8-□
2.9 .114	3.1 .122	15.3 .602	2.85 .112	3.6 .142	COFA2□-2.9-□	COFA2 b -2.9-□
3.0 .118	3.2 .126	15.3 .602	2.95 .116	3.7 .146	COFA2□-3.0-□	COFA2 b -3.0-□
3.1 .122	3.3 .130	15.3 .602	3.05 .120	3.8 .150	COFA2□-3.1-□	COFA2 b -3.1-□



Parts in stock highlighted in green

- add blade code
(y, yb, b or leave empty)
- add spring code
(W, H, S or Z)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA2 $\varnothing 2.0 \text{ mm to } 3.1 \text{ mm}$ (.079" to .122")

Blades

Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	C2-M-0007-A	10°	y b	C2-M-0017-A
20°		C2-M-0006-A	20°	b	C2-M-0016-A

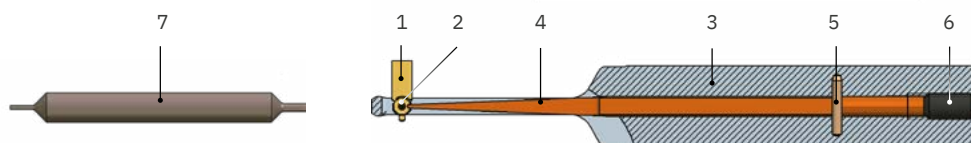
- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required (upon request)
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	C2-E-0013	Aluminum, Brass, Magnesium
H	hard	C2-E-0014	Grey Cast Iron, Nodular Iron
S	very hard	C2-E-0015	Carbon Steel, Free Machining Steel
Z	extra hard	C2-E-0016*	Nickel, Titanium, Stainless

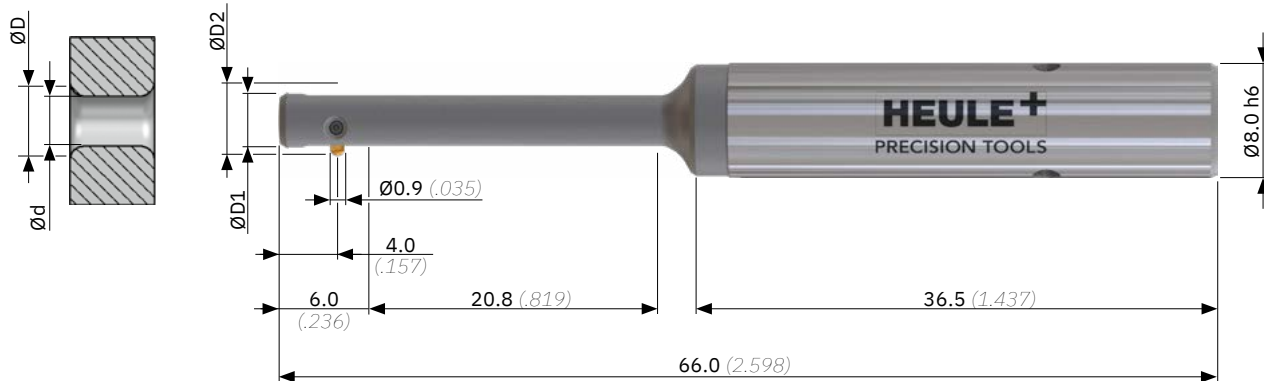
* Not recommended with COFA2-2.0 tool.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	C2-E-0002
3	Tool body	upon request
4	Spring	see above
5	Retainer pin	GH-H-S-1017
6	Set screw	GH-H-S-0135
7	Assembly pin	C2-V-0001
	Wrench 1.3 mm for item 6	GH-H-S-2106
optional	Blade change fixture	C3-V-0002

COFA3 $\varnothing 3.0$ mm to 4.1 mm (.118" to .161")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA3**b**-3.0-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
3.0 .118	3.3 .130	20.8 .819	2.95 .116	4.0 .157	COFA3□-3.0-□	COFA3 b -3.0-□
3.1 .122	3.4 .134	20.8 .819	3.05 .120	4.1 .161	COFA3□-3.1-□	COFA3 b -3.1-□
3.2 .126	3.5 .138	20.8 .819	3.15 .124	4.2 .165	COFA3□-3.2-□	COFA3 b -3.2-□
3.3 .130	3.6 .142	20.8 .819	3.25 .128	4.3 .169	COFA3□-3.3-□	COFA3 b -3.3-□
3.4 .134	3.7 .146	20.8 .819	3.35 .132	4.4 .173	COFA3□-3.4-□	COFA3 b -3.4-□
3.5 .138	3.8 .150	20.8 .819	3.45 .136	4.5 .177	COFA3□-3.5-□	COFA3 b -3.5-□
3.6 .142	3.9 .154	20.8 .819	3.55 .140	4.6 .181	COFA3□-3.6-□	COFA3 b -3.6-□
3.7 .146	4.0 .157	20.8 .819	3.65 .144	4.7 .185	COFA3□-3.7-□	COFA3 b -3.7-□
3.8 .150	4.1 .161	20.8 .819	3.75 .148	4.8 .189	COFA3□-3.8-□	COFA3 b -3.8-□
3.9 .154	4.2 .165	20.8 .819	3.85 .152	4.9 .193	COFA3□-3.9-□	COFA3 b -3.9-□
4.0 .158	4.3 .169	20.8 .819	3.95 .156	5.0 .197	COFA3□-4.0-□	COFA3 b -4.0-□
4.1 .161	4.4 .173	20.8 .819	4.05 .159	5.1 .201	COFA3□-4.1-□	COFA3 b -4.1-□



Parts in stock highlighted in green

- add blade code
(y, yb, b or leave empty)
- add spring code
(W, H, S or Z)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA3 $\varnothing 3.0$ mm to 4.1 mm (.118" to .161")

Blades

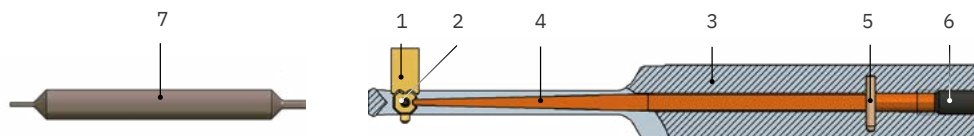
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	C3-M-0007-A	10°	y b	C3-M-0017-A
20°		C3-M-0006-A	20°	b	C3-M-0016-A

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required (upon request)
- The online Tool Selector will assist calculating your application slope angle

Spring

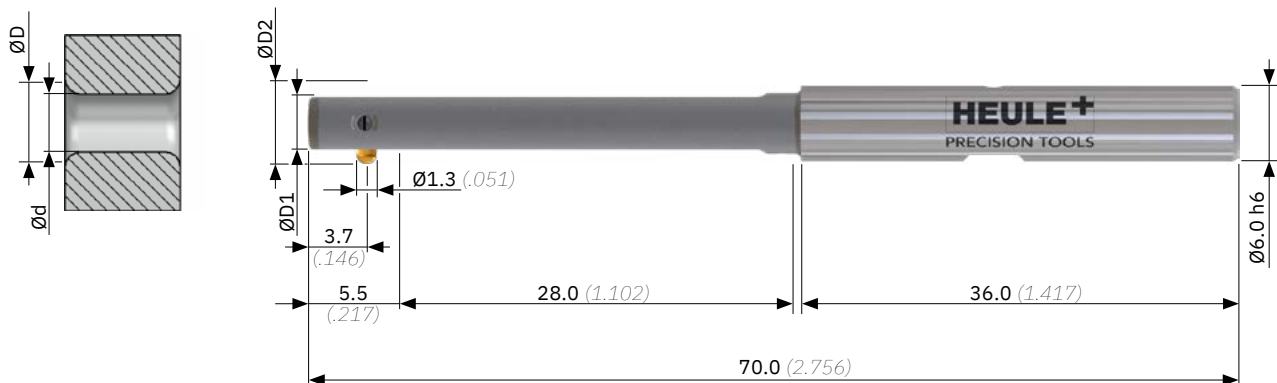
Code	Spring load	Part no.	Typical materials
W	soft	C3-E-0013	Aluminum, Brass, Magnesium
H	hard	C3-E-0014	Grey Cast Iron, Nodular Iron
S	very hard	C3-E-0015	Carbon Steel, Free Machining Steel
Z	extra hard	C3-E-0016	Nickel, Titanium, Stainless

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	C3-E-0002
3	Tool body	upon request
4	Spring	see above
5	Retainer pin	GH-H-S-1017
6	Set screw	GH-H-S-0135
7	Assembly pin	C3-V-0001
	Wrench 1.3mm for item 6	GH-H-S-2106
optional	Blade change fixture	C3-V-0002

COFA4 $\varnothing 4.0$ mm to 4.9 mm (.157" to .193")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA4**b**-4.0-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
4.0 .157	4.5 .177	28.0 1.102	3.9 .154	5.2 .205	COFA4□-4.0-□	COFA4 b -4.0-□
4.1 .161	4.6 .181	28.0 1.102	4.0 .157	5.3 .209	COFA4□-4.1-□	COFA4 b -4.1-□
4.2 .165	4.7 .185	28.0 1.102	4.1 .161	5.4 .213	COFA4□-4.2-□	COFA4 b -4.2-□
4.3 .169	4.8 .189	28.0 1.102	4.2 .165	5.5 .217	COFA4□-4.3-□	COFA4 b -4.3-□
4.4 .173	4.9 .193	28.0 1.102	4.3 .169	5.6 .220	COFA4□-4.4-□	COFA4 b -4.4-□
4.5 .177	5.0 .197	28.0 1.102	4.4 .173	5.7 .224	COFA4□-4.5-□	COFA4 b -4.5-□
4.6 .181	5.1 .201	28.0 1.102	4.5 .177	5.8 .228	COFA4□-4.6-□	COFA4 b -4.6-□
4.7 .185	5.2 .205	28.0 1.102	4.6 .181	5.9 .232	COFA4□-4.7-□	COFA4 b -4.7-□
4.8 .189	5.3 .209	28.0 1.102	4.7 .185	6.0 .236	COFA4□-4.8-□	COFA4 b -4.8-□
4.9 .193	5.4 .213	28.0 1.102	4.8 .189	6.1 .240	COFA4□-4.9-□	COFA4 b -4.9-□



Parts in stock highlighted in green

- add blade code
(y, yb, b, x, xb or leave empty)
- add spring code
(W, H, S, Z or Z1)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA4 $\varnothing 4.0 \text{ mm to } 4.9 \text{ mm}$ (.157" to .193")

Blades

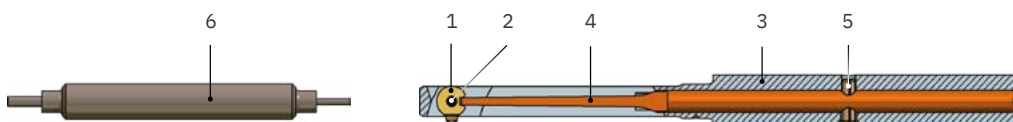
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0744	10°	yb	GH-C-M-0854
20°		GH-C-M-0504	20°	b	GH-C-M-0914
30°	x	GH-C-M-0148	30°	xb	GH-C-M-0182

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

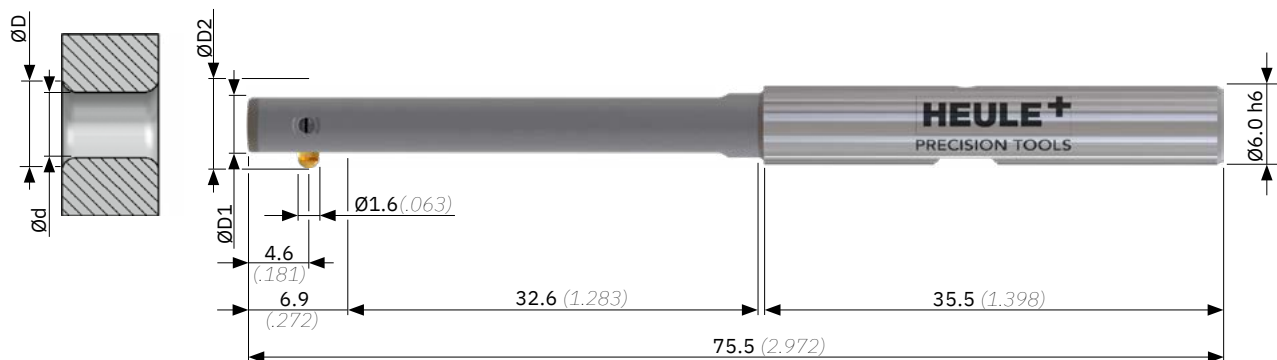
Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0342	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0343	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0344	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0345	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0346	Titanium, Hardened Steel, Nickel Alloy

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	GH-C-E-0819
3	Tool body	upon request
4	Spring	see above
5	Retainer pin	GH-H-S-0902
6	Assembly pin	GH-C-V-0206
optional	Blade change fixture	GH-C-V-0541

COFA5 $\varnothing 5.0$ mm to 5.9 mm (.197" to .232")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA5**b**-5.0-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
5.0 .197	5.7 .224	32.6 1.283	4.9 .193	6.6 .260	COFA5□-5.0-□	COFA5 b -5.0-□
5.1 .201	5.8 .228	32.6 1.283	5.0 .197	6.7 .264	COFA5□-5.1-□	COFA5 b -5.1-□
5.2 .205	5.9 .232	32.6 1.283	5.1 .201	6.8 .268	COFA5□-5.2-□	COFA5 b -5.2-□
5.3 .209	6.0 .236	32.6 1.283	5.2 .205	6.9 .272	COFA5□-5.3-□	COFA5 b -5.3-□
5.4 .213	6.1 .240	32.6 1.283	5.3 .209	7.0 .276	COFA5□-5.4-□	COFA5 b -5.4-□
5.5 .217	6.2 .244	32.6 1.283	5.4 .213	7.1 .280	COFA5□-5.5-□	COFA5 b -5.5-□
5.6 .220	6.3 .248	32.6 1.283	5.5 .217	7.2 .284	COFA5□-5.6-□	COFA5 b -5.6-□
5.7 .224	6.4 .252	32.6 1.283	5.6 .220	7.3 .287	COFA5□-5.7-□	COFA5 b -5.7-□
5.8 .228	6.5 .256	32.6 1.283	5.7 .224	7.4 .291	COFA5□-5.8-□	COFA5 b -5.8-□
5.9 .232	6.6 .260	32.6 1.283	5.8 .228	7.5 .295	COFA5□-5.9-□	COFA5 b -5.9-□



Parts in stock highlighted in green

- add blade code
(y, yb, b, x, xb or leave empty)
- add spring code
(W, H, S, Z or Z1)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA5 $\varnothing 5.0 \text{ mm to } 5.9 \text{ mm}$ (.197" to .232")

Blades

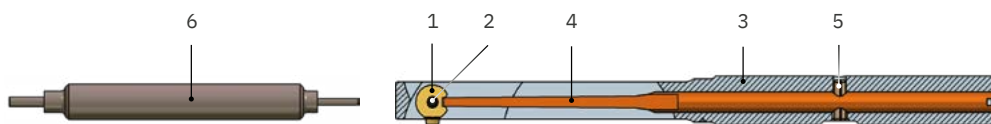
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0745	10°	yb	GH-C-M-0855
20°		GH-C-M-0505	20°	b	GH-C-M-0915
30°	x	GH-C-M-0150	30°	xb	GH-C-M-0184

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

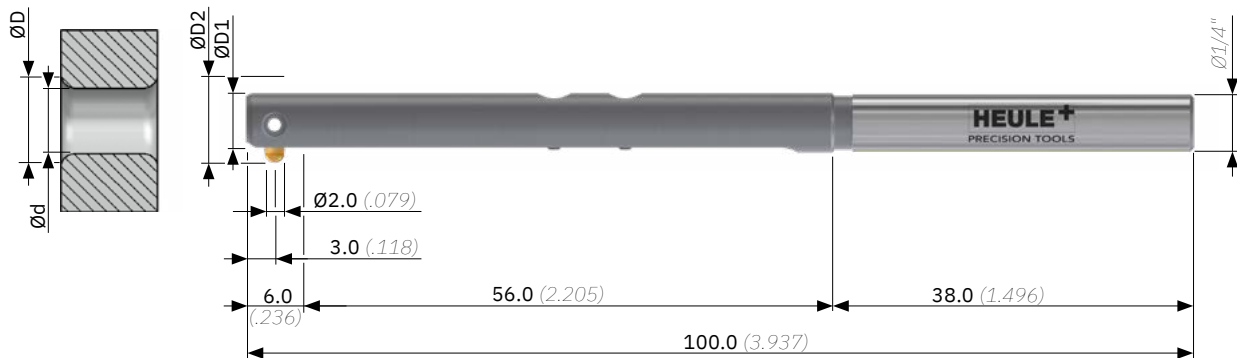
Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0352	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0353	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0354	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0355	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0356	Titanium, Hardened Steel, Nickel Alloy

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	GH-C-E-0820
3	Tool body	upon request
4	Spring	see above
5	Retainer pin	GH-H-S-0902
6	Assembly pin	GH-C-V-0211
optional	Blade change fixture	GH-C-V-0541

COFA6 $\varnothing 6.0$ mm to 8.0 mm (.236" to .315")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA6**b**-236-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
6.0 .236	6.7 .264	56.0 2.205	5.8 .228	7.9 .311	COFA6□-236-□	COFA6 b -236-□
6.2 .244	6.9 .272	56.0 2.205	6.0 .236	8.1 .319	COFA6□-244-□	COFA6 b -244-□
6.4 .252	7.1 .280	56.0 2.205	6.2 .244	8.3 .327	COFA6□-252-□	COFA6 b -252-□
6.6 .260	7.3 .287	56.0 2.205	6.4 .252	8.5 .335	COFA6□-260-□	COFA6 b -260-□
6.8 .268	7.5 .295	56.0 2.205	6.6 .260	8.7 .342	COFA6□-268-□	COFA6 b -268-□
7.0 .276	7.7 .303	56.0 2.205	6.8 .268	8.9 .350	COFA6□-276-□	COFA6 b -276-□
7.2 .284	7.9 .311	56.0 2.205	7.0 .276	9.1 .359	COFA6□-284-□	COFA6 b -284-□
7.4 .291	8.1 .319	56.0 2.205	7.2 .284	9.3 .366	COFA6□-291-□	COFA6 b -291-□
7.6 .299	8.3 .327	56.0 2.205	7.4 .291	9.5 .374	COFA6□-299-□	COFA6 b -299-□
7.8 .307	8.5 .335	56.0 2.205	7.6 .299	9.7 .382	COFA6□-307-□	COFA6 b -307-□
8.0 .315	8.7 .342	56.0 2.205	7.8 .307	9.9 .390	COFA6□-315-□	COFA6 b -315-□



Parts in stock highlighted in green

- add blade code
(y, yb, b, x, xb or leave empty)
- add spring code
(W, H, S, Z, Z1, Z2 or Z3)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA6 $\varnothing 6.0 \text{ mm to } 8.0 \text{ mm}$ (.236" to .315")

Blades

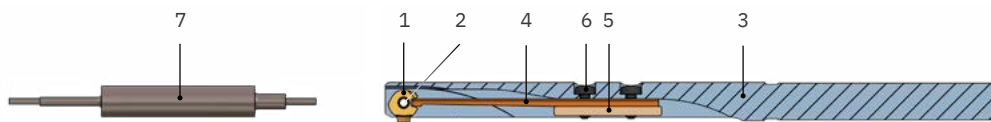
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0442	10°	yb	GH-C-M-0452
20°		GH-C-M-0002	20°	b	GH-C-M-0012
30°	x	GH-C-M-0142	30°	xb	GH-C-M-0143

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0321	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0322	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0323	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0324	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0325	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0326	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0327	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Roll pin	GH-C-E-0811
3	Tool body	upon request
4	Spring	see above
5	Retainer block	GH-C-E-0812
6	Screw	GH-H-S-0803
7	Assembly pin	GH-C-V-0126

COFA8 $\varnothing 8.0$ mm to 12.2 mm (.315" to .480")

COFA



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA8b-315-W
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
8.0 .315	9.0 .354	74.0 2.913	7.8 .307	10.7 .421	COFA8-315-	COFA8b-315-
8.2 .323	9.2 .362	74.0 2.913	8.0 .315	10.9 .429	COFA8-323-	COFA8b-323-
8.4 .331	9.4 .370	74.0 2.913	8.2 .323	11.1 .437	COFA8-331-	COFA8b-331-
8.6 .339	9.6 .378	74.0 2.913	8.4 .331	11.3 .445	COFA8-339-	COFA8b-339-
8.8 .346	9.8 .386	74.0 2.913	8.6 .339	11.5 .453	COFA8-346-	COFA8b-346-
9.0 .354	10.0 .394	74.0 2.913	8.8 .346	11.7 .461	COFA8-354-	COFA8b-354-
9.2 .362	10.2 .402	74.0 2.913	9.0 .354	11.9 .469	COFA8-362-	COFA8b-362-
9.4 .370	10.4 .409	74.0 2.913	9.2 .362	12.1 .476	COFA8-370-	COFA8b-370-
9.6 .378	10.6 .417	74.0 2.913	9.4 .370	12.3 .484	COFA8-378-	COFA8b-378-
9.8 .386	10.8 .425	74.0 2.913	9.6 .378	12.5 .492	COFA8-386-	COFA8b-386-
10.0 .394	11.0 .433	74.0 2.913	9.8 .386	12.7 .500	COFA8-394-	COFA8b-394-
10.2 .402	11.2 .441	74.0 2.913	10.0 .394	12.9 .508	COFA8-402-	COFA8b-402-
10.4 .409	11.4 .449	74.0 2.913	10.2 .402	13.1 .516	COFA8-409-	COFA8b-409-
10.6 .417	11.6 .457	74.0 2.913	10.4 .409	13.3 .524	COFA8-417-	COFA8b-417-
10.8 .425	11.8 .465	74.0 2.913	10.6 .417	13.5 .531	COFA8-425-	COFA8b-425-
11.0 .433	12.0 .473	74.0 2.913	10.8 .425	13.7 .539	COFA8-433-	COFA8b-433-
11.2 .441	12.2 .480	74.0 2.913	11.0 .433	13.9 .547	COFA8-441-	COFA8b-441-
11.4 .449	12.4 .488	74.0 2.913	11.2 .441	14.1 .555	COFA8-449-	COFA8b-449-
11.6 .457	12.6 .496	74.0 2.913	11.4 .449	14.3 .563	COFA8-457-	COFA8b-457-
11.8 .465	12.8 .504	74.0 2.913	11.6 .457	14.5 .571	COFA8-465-	COFA8b-465-
12.0 .473	13.0 .512	74.0 2.913	11.8 .465	14.7 .579	COFA8-473-	COFA8b-473-
12.2 .480	13.2 .520	74.0 2.913	12.0 .473	14.9 .587	COFA8-480-	COFA8b-480-

☐ add spring code (W, H, S, Z, Z1, Z2 or Z3)
☐ add blade code (y, yb, b, x, xb or leave empty)

COFA8 $\varnothing 8.0$ mm to 12.2 mm (.315" to .480")

Blades

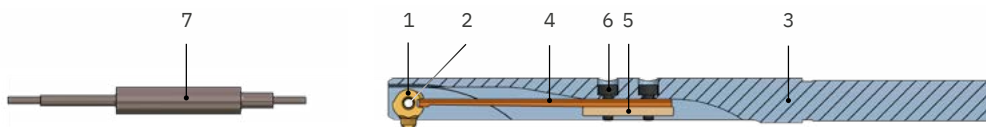
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0443	10°	y b	GH-C-M-0453
20°		GH-C-M-0003	20°	b	GH-C-M-0013
30°	x	GH-C-M-0133	30°	x b	GH-C-M-0131

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0331	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0332	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0333	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0334	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0335	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0336	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0337	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Roll pin	GH-C-E-0810
3	Tool body	upon request
4	Spring	see above
5	Retainer block	GH-C-E-0808
6	Screw	GH-H-S-0517
7	Assembly pin	GH-C-V-0111



Parts in stock highlighted in green

COFA12 $\varnothing 12.4 \text{ mm to } 20.0 \text{ mm}$ (.488" to .788")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA12**b**-488-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
12.4 .488	13.8 .543	81.0 3.189	12.2 .480	16.2 .638	COFA12□-488-□	COFA12 b -488-□
12.8 .504	14.2 .559	81.0 3.189	12.6 .496	16.6 .654	COFA12□-504-□	COFA12 b -504-□
13.2 .520	14.6 .575	81.0 3.189	13.0 .512	17.0 .669	COFA12□-520-□	COFA12 b -520-□
13.6 .536	15.0 .591	81.0 3.189	13.4 .528	17.4 .685	COFA12□-536-□	COFA12 b -536-□
14.0 .551	15.4 .606	81.0 3.189	13.8 .543	17.8 .701	COFA12□-551-□	COFA12 b -551-□
14.4 .567	15.8 .622	81.0 3.189	14.2 .559	18.2 .717	COFA12□-567-□	COFA12 b -567-□
14.8 .583	16.2 .638	81.0 3.189	14.6 .575	18.6 .732	COFA12□-583-□	COFA12 b -583-□
15.2 .599	16.6 .654	81.0 3.189	15.0 .591	19.0 .748	COFA12□-599-□	COFA12 b -599-□
15.6 .614	17.0 .669	81.0 3.189	15.4 .606	19.4 .764	COFA12□-614-□	COFA12 b -614-□
16.0 .630	17.4 .685	81.0 3.189	15.8 .622	19.8 .780	COFA12□-630-□	COFA12 b -630-□
16.4 .646	17.8 .701	81.0 3.189	16.2 .638	20.2 .795	COFA12□-646-□	COFA12 b -646-□
16.8 .662	18.2 .717	81.0 3.189	16.6 .654	20.6 .811	COFA12□-662-□	COFA12 b -662-□
17.2 .677	18.6 .732	81.0 3.189	17.0 .669	21.0 .827	COFA12□-677-□	COFA12 b -677-□
17.6 .693	19.0 .748	81.0 3.189	17.4 .685	21.4 .843	COFA12□-693-□	COFA12 b -693-□
18.0 .709	19.4 .764	81.0 3.189	17.8 .701	21.8 .858	COFA12□-709-□	COFA12 b -709-□
18.4 .725	19.8 .780	81.0 3.189	18.2 .717	22.2 .874	COFA12□-725-□	COFA12 b -725-□
18.8 .740	20.2 .795	81.0 3.189	18.6 .732	22.6 .890	COFA12□-740-□	COFA12 b -740-□
19.2 .756	20.6 .811	81.0 3.189	19.0 .748	23.0 .906	COFA12□-756-□	COFA12 b -756-□
19.6 .772	21.0 .827	81.0 3.189	19.4 .764	23.4 .921	COFA12□-772-□	COFA12 b -772-□
20.0 .788	21.4 .843	81.0 3.189	19.8 .780	23.8 .937	COFA12□-788-□	COFA12 b -788-□

□ add spring code (W, H, S, Z, Z1, Z2 or Z3)
□ add blade code (y, yb, b, x, xb or leave empty)



Parts in stock highlighted in green

COFA12 $\varnothing 12.4 \text{ mm to } 20.0 \text{ mm}$ (.488" to .788")

Blades

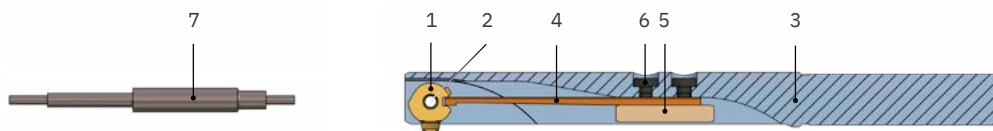
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0447	10°	y b	GH-C-M-0457
20°		GH-C-M-0007	20°	b	GH-C-M-0017
30°	x	GH-C-M-0105	30°	x b	GH-C-M-0104

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0361	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0362	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0363	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0364	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0365	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0366	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0367	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Roll pin	GH-C-E-0801
3	Tool body	upon request
4	Spring	see above
5	Retainer block	GH-C-E-0800
6	Screw	GH-H-S-0530
7	Assembly pin	GH-C-V-0100

COFA12 $\varnothing 20.5 \text{ mm to } 30.0 \text{ mm}$ (.807" to 1.181")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA12**b**-20.5-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D	Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. front & back	Tool part no. back only
20.5 .807	21.8 .858	80.0 3.150	20.3 .799	24.3 .957	COFA12□-20.5-□	COFA12 b -20.5-□
20.8 .819	22.2 .874	80.0 3.150	20.6 .811	24.6 .969	COFA12□-20.8-□	COFA12 b -20.8-□
21.0 .827	22.4 .882	80.0 3.150	20.8 .819	24.8 .976	COFA12□-21.0-□	COFA12 b -21.0-□
21.2 .835	22.6 .890	80.0 3.150	21.0 .827	25.0 .984	COFA12□-21.2-□	COFA12 b -21.2-□
21.5 .847	23.0 .906	80.0 3.150	21.3 .838	25.3 .996	COFA12□-21.5-□	COFA12 b -21.5-□
22.0 .866	23.4 .921	80.0 3.150	21.8 .858	25.8 1.016	COFA12□-22.0-□	COFA12 b -22.0-□
22.5 .886	23.9 .941	80.0 3.150	22.3 .878	26.3 1.035	COFA12□-22.5-□	COFA12 b -22.5-□
22.8 .898	24.2 .953	80.0 3.150	22.6 .890	26.6 1.047	COFA12□-22.8-□	COFA12 b -22.8-□
23.0 .905	24.4 .960	80.0 3.150	22.8 .898	26.8 1.055	COFA12□-23.0-□	COFA12 b -23.0-□
23.2 .914	24.6 .969	80.0 3.150	23.0 .906	27.0 1.063	COFA12□-23.2-□	COFA12 b -23.2-□
23.5 .925	24.9 .981	80.0 3.150	23.3 .917	27.3 1.075	COFA12□-23.5-□	COFA12 b -23.5-□
24.0 .945	25.4 1.000	80.0 3.150	23.8 .937	27.8 1.094	COFA12□-24.0-□	COFA12 b -24.0-□
24.5 .965	25.9 1.020	80.0 3.150	24.3 .957	28.3 1.114	COFA12□-24.5-□	COFA12 b -24.5-□
24.8 .977	26.2 1.031	80.0 3.150	24.6 .969	28.6 1.126	COFA12□-24.8-□	COFA12 b -24.8-□
25.0 .984	26.4 1.039	80.0 3.150	24.8 .976	28.8 1.134	COFA12□-25.0-□	COFA12 b -25.0-□
25.5 1.004	26.9 1.059	80.0 3.150	25.3 .996	29.3 1.154	COFA12□-25.5-□	COFA12 b -25.5-□
26.0 1.024	27.4 1.079	80.0 3.150	25.8 1.016	29.8 1.173	COFA12□-26.0-□	COFA12 b -26.0-□
26.5 1.043	27.9 1.098	80.0 3.150	26.3 1.035	30.3 1.193	COFA12□-26.5-□	COFA12 b -26.5-□
26.8 1.055	28.2 1.110	80.0 3.150	26.6 1.047	30.6 1.205	COFA12□-26.8-□	COFA12 b -26.8-□
27.0 1.063	28.4 1.118	80.0 3.150	26.8 1.055	30.8 1.213	COFA12□-27.0-□	COFA12 b -27.0-□
27.2 1.071	28.6 1.126	80.0 3.150	27.0 1.063	31.0 1.220	COFA12□-27.2-□	COFA12 b -27.2-□
27.5 1.083	28.9 1.138	80.0 3.150	27.3 1.075	31.3 1.232	COFA12□-27.5-□	COFA12 b -27.5-□
28.0 1.102	29.4 1.157	80.0 3.150	27.8 1.094	31.8 1.252	COFA12□-28.0-□	COFA12 b -28.0-□
28.5 1.122	29.9 1.177	80.0 3.150	28.3 1.114	32.3 1.272	COFA12□-28.5-□	COFA12 b -28.5-□
29.0 1.142	30.4 1.197	80.0 3.150	28.8 1.134	32.8 1.291	COFA12□-29.0-□	COFA12 b -29.0-□
29.5 1.162	30.9 1.217	80.0 3.150	29.3 1.154	33.3 1.311	COFA12□-29.5-□	COFA12 b -29.5-□
30.0 1.181	31.4 1.236	80.0 3.150	29.8 1.173	33.8 1.331	COFA12□-30.0-□	COFA12 b -30.0-□

□ add spring code
(W, H, S, Z, Z1, Z2 or Z3)

□ add blade code
(y, yb, b, x, xb or leave empty)

COFA12 $\varnothing 20.5 \text{ mm to } 30.0 \text{ mm}$ (.807" to 1.181")

Blades

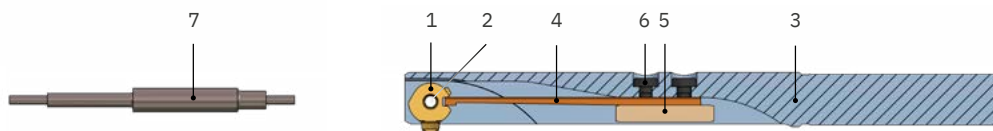
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0447	10°	y b	GH-C-M-0457
20°		GH-C-M-0007	20°	b	GH-C-M-0017
30°	x	GH-C-M-0105	30°	x b	GH-C-M-0104

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0361	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0362	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0363	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0364	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0365	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0366	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0367	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Roll pin	GH-C-E-0807
3	Tool body	upon request
4	Spring	see above
5	Retainer block	GH-C-E-0800
6	Screw	GH-H-S-0513
7	Assembly pin	GH-C-V-0130



Parts in stock highlighted in green

COFA12 $\varnothing 30.5 \text{ mm to } 40.0 \text{ mm}$ (1.201" to 1.575")



Tool

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined
- Sample tool order with back cutting only blade (code b) and with soft spring (code W): COFA12**b**-30.5-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore Ø d	Max. deburring Ø D	Working length	Tool Ø D1	Maximum Ø D2	Tool part no. front & back	Tool part no. back only
30.5 1.201	31.9 1.256	78.0 3.071	30.3 1.193	35.9 1.413	COFA12□-30.5-□	COFA12 b -30.5-□
31.0 1.221	32.4 1.276	78.0 3.071	30.8 1.213	36.4 1.433	COFA12□-31.0-□	COFA12 b -31.0-□
31.5 1.240	32.9 1.295	78.0 3.071	31.3 1.232	36.9 1.453	COFA12□-31.5-□	COFA12 b -31.5-□
32.0 1.260	33.4 1.315	78.0 3.071	31.8 1.252	37.4 1.472	COFA12□-32.0-□	COFA12 b -32.0-□
32.5 1.280	33.9 1.335	78.0 3.071	32.3 1.272	37.9 1.492	COFA12□-32.5-□	COFA12 b -32.5-□
33.0 1.299	34.4 1.354	78.0 3.071	32.8 1.291	38.4 1.512	COFA12□-33.0-□	COFA12 b -33.0-□
33.5 1.318	34.9 1.374	78.0 3.071	33.3 1.311	38.9 1.531	COFA12□-33.5-□	COFA12 b -33.5-□
34.0 1.339	35.4 1.394	78.0 3.071	33.8 1.331	39.4 1.551	COFA12□-34.0-□	COFA12 b -34.0-□
34.5 1.358	35.9 1.413	78.0 3.071	34.3 1.350	39.9 1.571	COFA12□-34.5-□	COFA12 b -34.5-□
35.0 1.378	36.4 1.433	78.0 3.071	34.8 1.370	40.4 1.591	COFA12□-35.0-□	COFA12 b -35.0-□
35.5 1.398	36.9 1.453	78.0 3.071	35.3 1.390	40.9 1.610	COFA12□-35.5-□	COFA12 b -35.5-□
36.0 1.417	37.4 1.472	78.0 3.071	35.8 1.409	41.4 1.630	COFA12□-36.0-□	COFA12 b -36.0-□
36.5 1.437	37.9 1.492	78.0 3.071	36.3 1.429	41.9 1.650	COFA12□-36.5-□	COFA12 b -36.5-□
37.0 1.457	38.4 1.512	78.0 3.071	36.8 1.449	42.4 1.670	COFA12□-37.0-□	COFA12 b -37.0-□
37.5 1.477	38.9 1.531	78.0 3.071	37.3 1.469	42.9 1.689	COFA12□-37.5-□	COFA12 b -37.5-□
38.0 1.496	39.4 1.551	78.0 3.071	37.8 1.488	43.4 1.709	COFA12□-38.0-□	COFA12 b -38.0-□
38.5 1.516	39.9 1.571	78.0 3.071	38.3 1.508	43.9 1.728	COFA12□-38.5-□	COFA12 b -38.5-□
39.0 1.536	40.4 1.591	78.0 3.071	38.8 1.528	44.4 1.748	COFA12□-39.0-□	COFA12 b -39.0-□
39.5 1.555	40.9 1.610	78.0 3.071	39.3 1.547	44.9 1.768	COFA12□-39.5-□	COFA12 b -39.5-□
40.0 1.575	41.4 1.630	78.0 3.071	39.8 1.567	45.4 1.787	COFA12□-40.0-□	COFA12 b -40.0-□

□ add blade code (y, yb, b, x, xb or leave empty)
 □ add spring code (W, H, S, Z, Z1, Z2 or Z3)

COFA12 $\varnothing 30.5 \text{ mm to } 40.0 \text{ mm}$ (1.201" to 1.575")

Blades

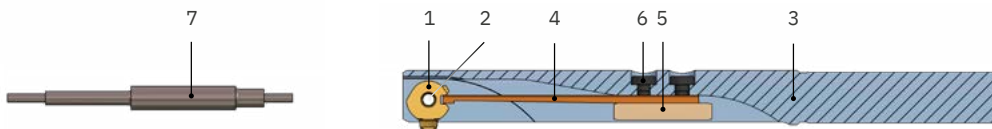
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Code	Part no.		Code	Part no.
10°	y	GH-C-M-0447	10°	y b	GH-C-M-0457
20°		GH-C-M-0007	20°	b	GH-C-M-0017
30°	x	GH-C-M-0105	30°	x b	GH-C-M-0104

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating for 10° blades: TiCN. Standard coating for 20° and 30° blades: TiN.
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	GH-C-E-0361	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0362	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0363	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0364	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0365	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0366	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0367	Nickel Alloy etc.

Spare parts

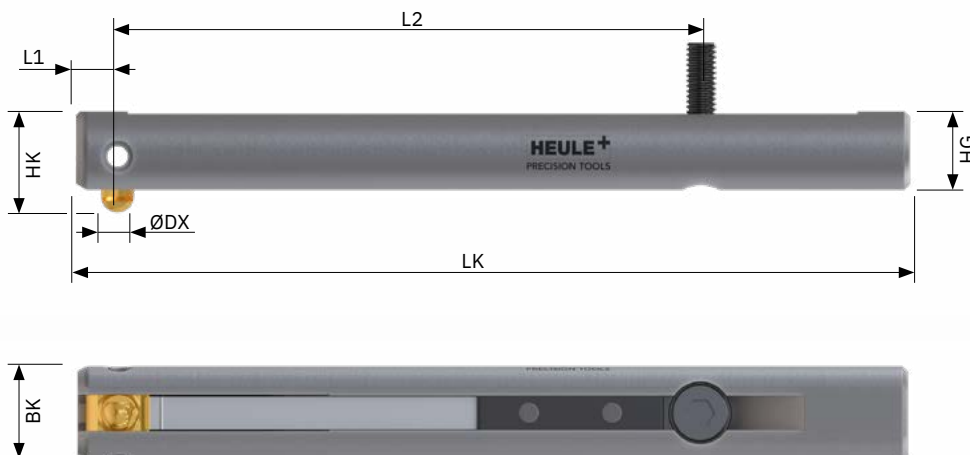


Item	Description	Part no.
1	Blade	see above
2	Roll pin	GH-C-E-0807
3	Tool body	upon request
4	Spring	see above
5	Retainer block	GH-C-E-0800
6	Screw	GH-H-S-0513
7	Assembly pin	GH-C-V-0130



Parts in stock highlighted in green

COFA cassette systems COFA 6, COFA 8 and COFA 12



Tool

The COFA cassette is used for installation in combination tools and cassette holders. The required cassette holder can be ordered from HEULE or manufactured by the customer according to the specifications on page 42.

Standard tool **with** blade

- Choose the proper blade code for the appropriate geometry
- Choose the proper spring code for the material being machined. Sample tool order with soft spring code: COFA6b-CAS-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application

Cassette size	from bore Ø d	Deburring size max.	Tool part no. with blade front & back	Tool part no. with blade back only
COFA 6	13.0 <i>.512</i>	0.35 <i>.014</i>	COFA6□-CAS-□	COFA6 b -CAS-□
COFA 8	16.0 <i>.630</i>	0.50 <i>.020</i>	COFA8□-CAS-□	COFA8 b -CAS-□
COFA 12	25.0 <i>.984</i>	0.70 <i>.028</i>	COFA12□-CAS-□	COFA12 b -CAS-□



Parts in stock highlighted in green

□ add blade code

(y, yb, b, x, xb or leave empty)

□ add spring code

(W, H, S, Z, Z1, Z2 or Z3)

Dimensions	BK	HG	LK	HK	ØDX	L1	L2
COFA 6	7.6 <i>.299</i>	6.0 <i>.236</i>	60.0 <i>2.360</i>	7.55 <i>.297</i>	2.0 <i>.079</i>	3.0 <i>.112</i>	45.0 <i>1.772</i>
COFA 8	9.0 <i>.354</i>	7.5 <i>.295</i>	80.0 <i>3.150</i>	9.65 <i>.380</i>	3.0 <i>.112</i>	4.0 <i>.157</i>	56.0 <i>2.205</i>
COFA 12	14.0 <i>.551</i>	11.85 <i>.467</i>	93.0 <i>3.661</i>	15.0 <i>.591</i>	4.0 <i>.157</i>	6.0 <i>.236</i>	71.0 <i>2.795</i>

COFA

cassette systems COFA 6, COFA 8 and COFA 12

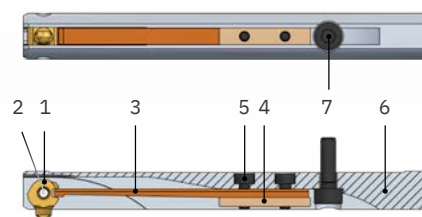
Blades

Clearance angle	Front & back cutting (FAB)				Back cutting only (BCO)			
	Code	C6	C8	C12	Code	C6	C8	C12
10°	y	GH-C-M-0442	GH-C-M-0443	GH-C-M-0447	y b	GH-C-M-0452	GH-C-M-0453	GH-C-M-0457
20°		GH-C-M-0002	GH-C-M-0003	GH-C-M-0007	b	GH-C-M-0012	GH-C-M-0013	GH-C-M-0017
30°	x	GH-C-M-0142	GH-C-M-0133	GH-C-M-0105	x b	GH-C-M-0143	GH-C-M-0131	GH-C-M-0104

Bending spring

Code	Spring load	Part no.			Typical materials
		Series 6	Series 8	Series 12	
W	soft	GH-C-E-0321	GH-C-E-0331	GH-C-E-0361	Aluminum, Brass, Magnesium
H	hard	GH-C-E-0322	GH-C-E-0332	GH-C-E-0362	Grey Cast Iron, Nodular Iron
S	very hard	GH-C-E-0323	GH-C-E-0333	GH-C-E-0363	Carbon Steel, Free Machining Steel
Z	extra hard	GH-C-E-0324	GH-C-E-0334	GH-C-E-0364	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	GH-C-E-0325	GH-C-E-0335	GH-C-E-0365	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	GH-C-E-0326	GH-C-E-0336	GH-C-E-0366	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	GH-C-E-0327	GH-C-E-0337	GH-C-E-0367	Nickel Alloy etc.

Spare parts

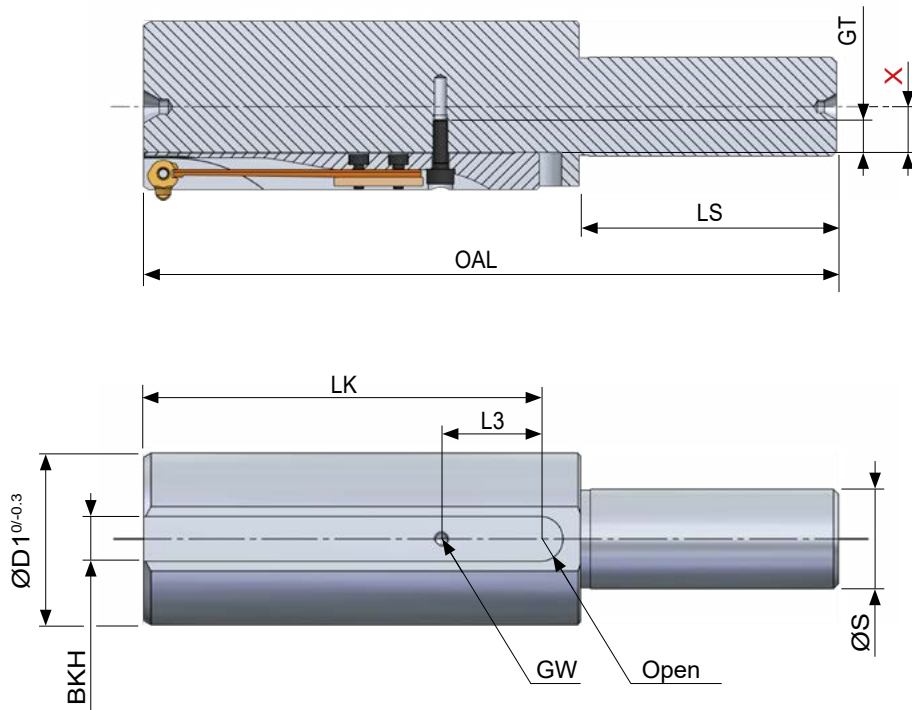


Item	Description	Series 6	Series 8	Series 12
1	Blade	see above	see above	see above
2	Roll pin	GH-C-E-0811	GH-C-E-0810	GH-C-E-0801
3	Spring	see above	see above	see above
4	Retainer block	GH-C-E-0812	GH-C-E-0808	GH-C-E-0800
5	Screw	GH-H-S-0803	GH-H-S-0517	GH-H-S-0530
6	Tool body	GH-C-G-1087	GH-C-G-1096	GH-C-G-1053
7	Cap screw	GH-H-S-0533	GH-H-S-0538	GH-H-S-0519
	Assembly pin	GH-C-V-0126	GH-C-V-0111	GH-C-V-0100

COFA cassette systems COFA 6, COFA 8 and COFA 12

COFA

INSTALLATION INSTRUCTIONS



Dimension table

	LK		L3		BKH		GW	GT		OAL (min.)	
COFA 6	60.0	2.36	12.0	.472	7.7	.303	M2.5	6.0	.236	70.0 + LS	2.756 + LS
COFA 8	80.0	3.15	20.0	.787	9.1	.358	M3	7.5	.295	90.0 + LS	3.543 + LS
COFA 12	93.0	3.66	16.0	.630	14.1	.555	M4	8.0	.315	103.0 + LS	4.055 + LS

Recommended dimensions

ØD1		Shank ØS	Ls
13.0–16.0	.512–.623	1/2 s.s.	47.0 1.850
16.0–30.0	.623–1.181	5/8 s.s.	48.0 1.890
30.0–50.0	1.181–1.969	1" s.s.	58.0 2.283
>50.0	>1.969	1.125 s.s.	58.0 2.283

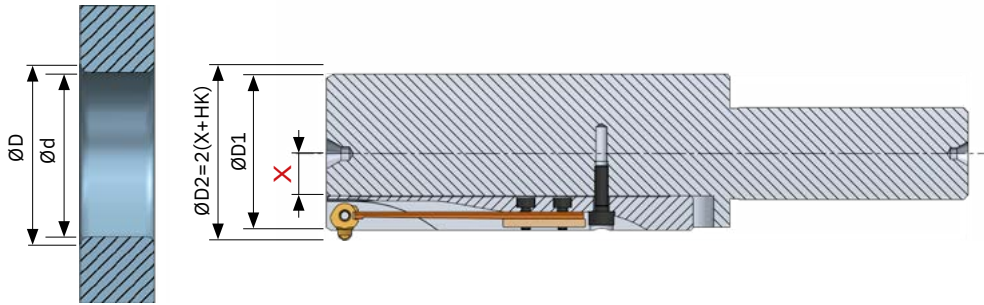
metrics inches

COFA cassette systems COFA 6, COFA 8 and COFA 12

Limits

	Series 6	Series 8	Series 12
from bore Ø	Ø13.0	Ø16.0	Ø22.0
max. Ø D	Ød + 0.7	Ød + 1.0	Ød + 1.4
max. Ø D1	Ød - 0.5	Ød - 0.5	Ød - 0.5

Calculating dimension X



Formula for calculating dimension X

COFA 6: $X = \text{Ø } d / 2 - 6.6 + \text{adjustment}^*$

COFA 8: $X = \text{Ø } d / 2 - 8.3 + \text{adjustment}^*$

COFA 12: $X = \text{Ø } d / 2 - 13.1 + \text{adjustment}^*$

* Adjustment for desired deburring size: TARGET minus ACTUAL

Calculation example for cassette series 6

Given:

Bore diameter: 13.0 mm / deburring diameter D: 13.6 mm

→ required deburring size $(13.6 - 13.0) / 2 = 0.3 \text{ mm}$ (= TARGET)

→ blade deburring size: 0.35 mm (= ACTUAL)

Desired X

$X = \text{Ø } d / 2 - 6.6 + (\text{correction for blade deburring size})$

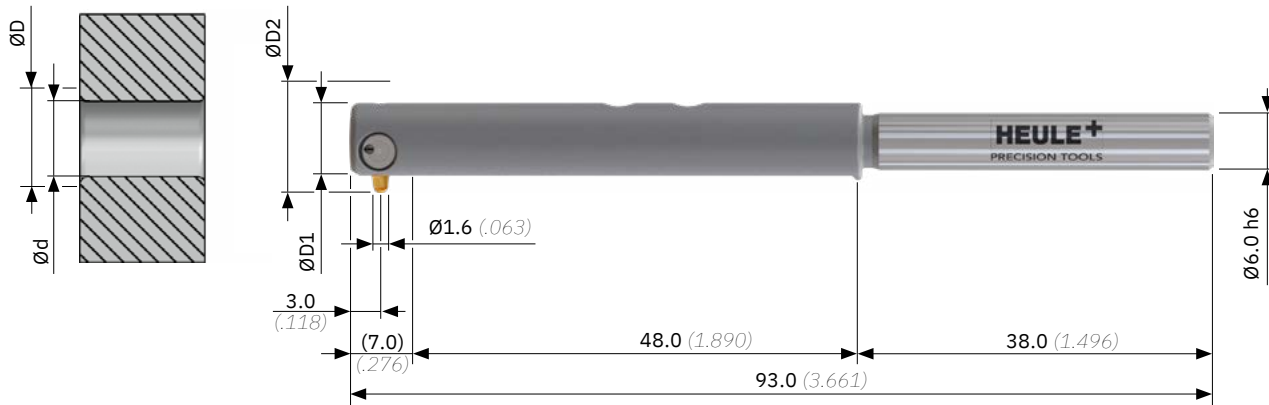
$X = (13.0 \text{ mm} / 2) - 6.6 \text{ mm} + (\text{TARGET} - \text{ACTUAL})$

$X = 6.5 \text{ mm} - 6.6 \text{ mm} + (0.3 \text{ mm} - 0.35 \text{ mm})$

$X = -0.1 \text{ mm} + (-0.05 \text{ mm})$

X = -0.15 mm

COFA-C C6 $\varnothing 6.0$ mm to 8.0 mm (.236" to .315")



Tool

Standard tool **without** blade

- The blades must always be ordered separately
- Choose the proper spring code for the material being machined
- Sample tool order with soft spring code: C6-6.0-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore Ø d	Max. deburring Ø D		Working length	Tool Ø D1	Maximum Ø D2	Tool part no. without blade
	Medium Blade	Large Blade				
6.0 .236	7.0 .276	7.4 .291	48.0 1.890	5.8 .228	8.3 / 8.7	C6-6.0- ☐
6.2 .244	7.2 .283	7.6 .299	48.0 1.890	6.0 .236	8.5 / 8.9	C6-6.2- ☐
6.4 .252	7.4 .291	7.8 .307	48.0 1.890	6.2 .244	8.7 / 9.1	C6-6.4- ☐
6.6 .260	7.6 .299	8.0 .315	48.0 1.890	6.4 .252	8.9 / 9.3	C6-6.6- ☐
6.8 .268	7.8 .307	8.2 .323	48.0 1.890	6.6 .260	9.1 / 9.5	C6-6.8- ☐
7.0 .276	8.0 .315	8.4 .331	48.0 1.890	6.8 .268	9.3 / 9.7	C6-7.0- ☐
7.2 .283	8.2 .323	8.6 .339	48.0 1.890	7.0 .276	9.5 / 9.9	C6-7.2- ☐
7.4 .291	8.4 .331	8.8 .346	48.0 1.890	7.2 .284	9.7 / 10.1	C6-7.4- ☐
7.6 .299	8.6 .339	9.0 .354	48.0 1.890	7.4 .291	9.9 / 10.3	C6-7.6- ☐
7.8 .307	8.8 .346	9.2 .362	48.0 1.890	7.6 .299	10.1 / 10.5	C6-7.8- ☐
8.0 .315	9.0 .354	9.4 .370	48.0 1.890	7.8 .307	10.3 / 10.7	C6-8.0- ☐



Parts in stock highlighted in green

☐ add spring code
(W, H, S, Z, Z1, Z2 or Z3)



Programming
Page 18



Cutting data
Page 19



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > COFA

COFA-C C6 $\varnothing 6.0$ mm to 8.0 mm (.236" to .315")

Blades

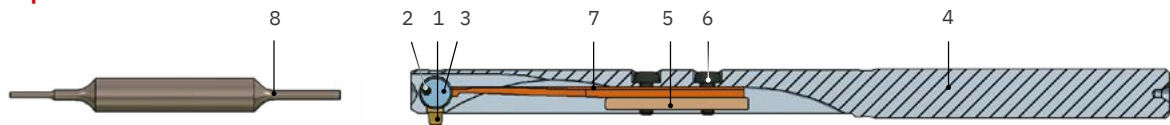
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Medium	Large		Medium	Large
10°	C6-M-0007-A	C6-M-0002-A	10°	C6-M-0027-A	C6-M-0022-A
20°	C6-M-0006-A	C6-M-0001-A	20°	C6-M-0026-A	C6-M-0021-A
30°	C6-M-0009-A	C6-M-0004-A	30°	C6-M-0029-A	C6-M-0024-A

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating: TiAlN
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	C6-E-0008	Aluminum, Brass, Magnesium
H	hard	C6-E-0009	Grey Cast Iron, Nodular Iron
S	very hard	C6-E-0010	Carbon Steel, Free Machining Steel
Z	extra hard	C6-E-0011	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	C6-E-0012	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	C6-E-0013	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	C6-E-0014	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	C6-E-0003
3	Blade holder	C6-E-0001
4	Tool body	upon request
5	Retainer block	GH-C-E-0812
6	Screw	GH-H-S-0803
7	Spring	see above
8	Assembly pin	C6-V-0006
optional	Blade change fixture	C6-V-0008

COFA-C C8 $\varnothing 8.0$ mm to 12.0 mm (.315" to .472")



Tool

Standard tool **without** blade

- The blades must always be ordered separately
- Choose the proper spring code for the material being machined
- Sample tool order with soft spring code: C8-8.0-W
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D		Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. without blade
	Medium Blade	Large Blade				
8.0 .315	9.2 .362	9.8 .386	61.0 2.402	7.8 .307	10.8 / 11.4	C8-8.0- ☐
8.2 .323	9.4 .370	10.0 .394	61.0 2.402	8.0 .315	11.0 / 11.6	C8-8.2- ☐
8.4 .331	9.6 .378	10.2 .402	61.0 2.402	8.2 .323	11.2 / 11.8	C8-8.4- ☐
8.6 .339	9.8 .386	10.4 .409	61.0 2.402	8.4 .331	11.4 / 12.0	C8-8.6- ☐
8.8 .346	10.0 .394	10.6 .417	61.0 2.402	8.6 .339	11.6 / 12.2	C8-8.8- ☐
9.0 .354	10.2 .402	10.8 .425	61.0 2.402	8.8 .346	11.8 / 12.4	C8-9.0- ☐
9.2 .362	10.4 .409	11.0 .433	61.0 2.402	9.0 .354	12.0 / 12.6	C8-9.2- ☐
9.4 .370	10.6 .417	11.2 .441	61.0 2.402	9.2 .362	12.2 / 12.8	C8-9.4- ☐
9.6 .378	10.8 .425	11.4 .449	61.0 2.402	9.4 .370	12.4 / 13.0	C8-9.6- ☐
9.8 .386	11.0 .433	11.6 .457	61.0 2.402	9.6 .378	12.6 / 13.2	C8-9.8- ☐
10.0 .394	11.2 .441	11.8 .465	61.0 2.402	9.8 .386	12.8 / 13.4	C8-10.0- ☐
10.2 .402	11.4 .449	12.0 .472	61.0 2.402	10.0 .394	13.0 / 13.6	C8-10.2- ☐
10.4 .409	11.6 .457	12.2 .480	61.0 2.402	10.2 .402	13.2 / 13.8	C8-10.4- ☐
10.6 .417	11.8 .465	12.4 .488	61.0 2.402	10.4 .409	13.4 / 14.0	C8-10.6- ☐
10.8 .425	12.0 .472	12.6 .496	61.0 2.402	10.6 .417	13.6 / 14.2	C8-10.8- ☐
11.0 .433	12.2 .480	12.8 .504	61.0 2.402	10.8 .425	13.8 / 14.4	C8-11.0- ☐
11.2 .441	12.4 .488	13.0 .512	61.0 2.402	11.0 .433	14.0 / 14.6	C8-11.2- ☐
11.4 .449	12.6 .496	13.2 .520	61.0 2.402	11.2 .441	14.2 / 14.8	C8-11.4- ☐
11.6 .457	12.8 .504	13.4 .528	61.0 2.402	11.4 .449	14.4 / 15.0	C8-11.6- ☐
11.8 .465	13.0 .512	13.6 .535	61.0 2.402	11.6 .457	14.6 / 15.2	C8-11.8- ☐
12.0 .472	13.2 .520	13.8 .543	61.0 2.402	11.8 .465	14.8 / 15.4	C8-12.0- ☐

☐ add spring code
(W, H, S, Z, Z1, Z2 or Z3)

COFA-C C8 $\varnothing 8.0$ mm to 12.0 mm (.315" to .472")

Blades

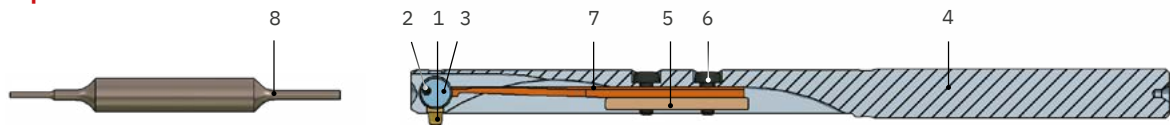
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Medium	Large		Medium	Large
10°	C8-M-0007-A	C8-M-0002-A	10°	C8-M-0027-A	C8-M-0022-A
20°	C8-M-0006-A	C8-M-0001-A	20°	C8-M-0026-A	C8-M-0021-A
30°	C8-M-0009-A	C8-M-0004-A	30°	C8-M-0029-A	C8-M-0024-A

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating: TiAlN
- The online Tool Selector will assist calculating your application slope angle

Spring

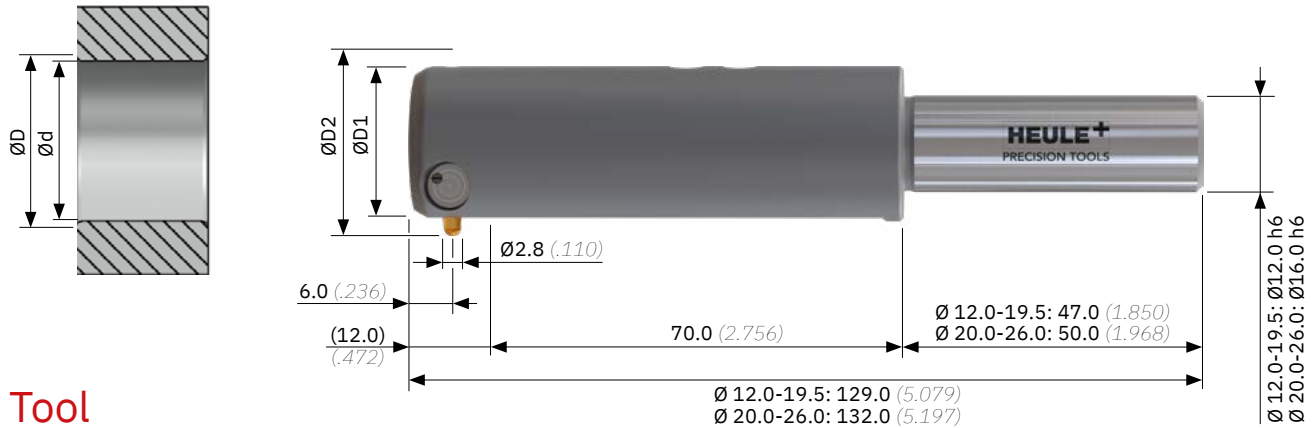
Code	Spring load	Part no.	Typical materials
W	soft	C8-E-0008	Aluminum, Brass, Magnesium
H	hard	C8-E-0009	Grey Cast Iron, Nodular Iron
S	very hard	C8-E-0010	Carbon Steel, Free Machining Steel
Z	extra hard	C8-E-0011	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	C8-E-0012	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	C8-E-0013	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	C8-E-0014	Nickel Alloy etc.

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Split pin	C8-E-0003
3	Blade holder	C8-E-0001
4	Tool body	upon request
5	Retainer block	GH-C-E-0808
6	Screw	GH-H-S-0517
7	Spring	see above
8	Assembly pin	C8-V-0005
optional	Blade change fixture	C8-V-0007

COFA-C C12 $\varnothing 12.0$ to 26.0 mm (.472" to 1.024")



Tool

Standard tool **without** blade

- The blades must always be ordered separately
- Choose the proper spring code for the material being machined
- Sample tool order with soft spring code: C12-12.0-W
- The maximum cutting diameter may vary depending on material, cutting data and application
- With cylindrical shank

Bore $\varnothing$ d	Max. deburring $\varnothing$ D		Working length	Tool $\varnothing$ D1	Maximum $\varnothing$ D2	Tool part no. without blade
	Medium Blade	Large Blade				
12.0 .472	13.6 .535	14.8 .583	70.0 2.756	11.8 .465	15.7 / 17.0	C12-12.0- ☐
12.5 .492	14.1 .555	15.3 .602	70.0 2.756	12.3 .484	16.2 / 17.5	C12-12.5- ☐
13.0 .512	14.6 .575	15.8 .622	70.0 2.756	12.8 .504	16.7 / 18.0	C12-13.0- ☐
13.5 .531	15.1 .594	16.3 .642	70.0 2.756	13.3 .524	17.2 / 18.5	C12-13.5- ☐
14.0 .551	15.6 .614	16.8 .661	70.0 2.756	13.8 .543	17.7 / 19.0	C12-14.0- ☐
14.5 .571	16.1 .634	17.3 .681	70.0 2.756	14.3 .563	18.2 / 19.5	C12-14.5- ☐
15.0 .591	16.6 .654	17.8 .701	70.0 2.756	14.8 .583	18.7 / 20.0	C12-15.0- ☐
15.5 .610	17.1 .673	18.3 .720	70.0 2.756	15.3 .602	19.2 / 20.5	C12-15.5- ☐
16.0 .630	17.6 .693	18.8 .740	70.0 2.756	15.8 .622	19.7 / 21.0	C12-16.0- ☐
16.5 .650	18.1 .713	19.3 .760	70.0 2.756	16.3 .642	20.2 / 21.5	C12-16.5- ☐
17.0 .669	18.6 .732	19.8 .780	70.0 2.756	16.8 .661	20.7 / 22.0	C12-17.0- ☐
17.5 .689	19.1 .752	20.3 .799	70.0 2.756	17.3 .681	21.2 / 22.5	C12-17.5- ☐
18.0 .709	19.6 .772	20.8 .819	70.0 2.756	17.8 .701	21.7 / 23.0	C12-18.0- ☐
18.5 .728	20.1 .791	21.3 .839	70.0 2.756	18.3 .720	22.2 / 23.5	C12-18.5- ☐
19.0 .748	20.6 .811	21.8 .858	70.0 2.756	18.8 .740	22.7 / 24.0	C12-19.0- ☐
19.5 .768	21.1 .831	22.3 .878	70.0 2.756	19.3 .760	23.2 / 24.5	C12-19.5- ☐
20.0 .787	21.6 .850	22.8 .898	70.0 2.756	19.8 .780	23.7 / 25.0	C12-20.0- ☐
20.5 .807	22.1 .870	23.3 .917	70.0 2.756	20.3 .799	24.2 / 25.5	C12-20.5- ☐
21.0 .827	22.6 .890	23.8 .937	70.0 2.756	20.8 .819	24.7 / 26.0	C12-21.0- ☐
21.5 .846	23.1 .909	24.3 .957	70.0 2.756	21.3 .839	25.2 / 26.5	C12-21.5- ☐
22.0 .866	23.6 .929	24.8 .976	70.0 2.756	21.8 .858	25.7 / 27.0	C12-22.0- ☐
22.5 .886	24.1 .949	25.3 .996	70.0 2.756	22.3 .878	26.2 / 27.5	C12-22.5- ☐
23.0 .906	24.6 .969	25.8 1.016	70.0 2.756	22.8 .898	26.7 / 28.0	C12-23.0- ☐
23.5 .925	25.1 .988	26.3 1.035	70.0 2.756	23.3 .917	27.2 / 28.5	C12-23.5- ☐
24.0 .945	25.6 1.008	26.8 1.055	70.0 2.756	23.8 .937	27.7 / 29.0	C12-24.0- ☐
24.5 .965	26.1 1.028	27.3 1.075	70.0 2.756	24.3 .957	28.2 / 29.5	C12-24.5- ☐
25.0 .984	26.6 1.047	27.8 1.094	70.0 2.756	24.8 .976	28.7 / 30.0	C12-25.0- ☐
25.5 1.004	27.1 1.067	28.3 1.114	70.0 2.756	25.3 .996	29.2 / 30.5	C12-25.5- ☐
26.0 1.024	27.6 1.087	28.8 1.134	70.0 2.756	25.8 1.016	29.7 / 31.0	C12-26.0- ☐

☐ add spring code
(W, H, S, Z, Z1, Z2 or Z3)

COFA-C C12 $\varnothing 12.0$ to 26.0 mm (.472" to 1.024")

Blades

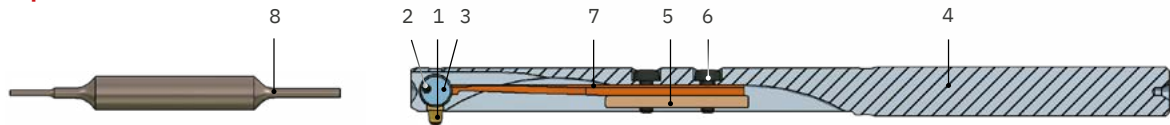
Clearance angle	Front & back cutting (FAB)		Clearance angle	Back cutting only (BCO)	
	Medium	Large		Medium	Large
10°	C12-M-0007-A	C12-M-0002-A	10°	C12-M-0027-A	C12-M-0022-A
20°	C12-M-0006-A	C12-M-0001-A	20°	C12-M-0026-A	C12-M-0021-A
30°	C12-M-0009-A	C12-M-0004-A	30°	C12-M-0029-A	C12-M-0024-A

- Cutting blades are available for front & back cutting (fab) and back cutting only (boc) geometry
- Use standard 20° blade for general applications, use 10° blades for flat surfaces for improved blade life, use 30° for applications above 15–30 degree slopes if required
- Standard coating: TiAlN
- The online Tool Selector will assist calculating your application slope angle

Spring

Code	Spring load	Part no.	Typical materials
W	soft	C12-E-0008	Aluminum, Brass, Magnesium
H	hard	C12-E-0009	Grey Cast Iron, Nodular Iron
S	very hard	C12-E-0010	Carbon Steel, Free Machining Steel
Z	extra hard	C12-E-0011	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	C12-E-0012	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	C12-E-0013	Nickel Alloy etc.
Z3	extra hard (harder than Z2)	C12-E-0014	Nickel Alloy etc.

Spare parts



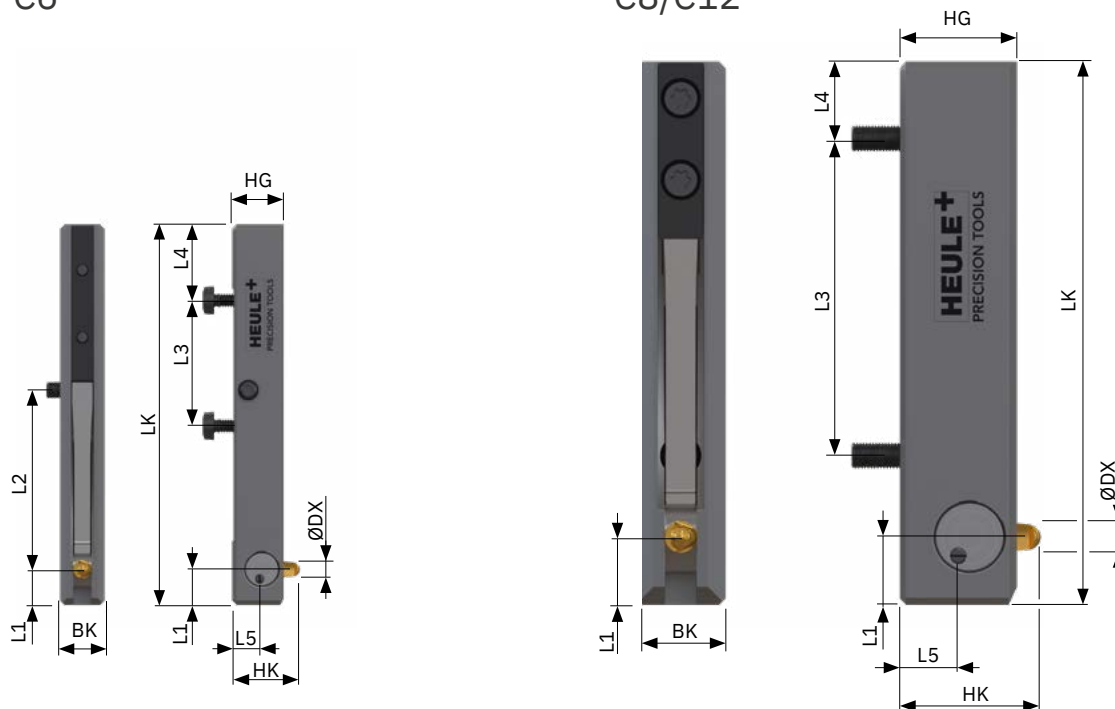
Item	Description	Part no.
1	Blade	see above
2	Split pin	C12-E-0003
3	Blade holder	C12-E-0001
4	Tool body	upon request
5	Retainer block	GH-C-E-0800
6	Screw	GH-H-S-0530
7	Spring	see above
8	Assembly pin	C12-V-0005
optional	Blade change fixture	C12-V-0018

COFA-C

cassette systems C6, C8 and C12

C6

C8/C12



Tool

The COFA cassette is used for installation in combination tools and cassette holders. The required cassette holder can be ordered from HEULE or manufactured by the customer according to the specifications on page 52.

Standard tool **without** blade

- The blades must always be ordered separately
- Choose the proper spring code for the material being machined. Sample tool order with soft spring code: C6-0-0900-**W**
- The maximum cutting diameter may vary depending on material, cutting data and application

Cassette size	from bore Ø d	Deburring size max.	Tool part no. without blade
C6	10.0 <i>.394</i>	0.7 <i>.028</i>	C6-O-0900- ☐
C8	14.0 <i>.551</i>	0.9 <i>.035</i>	C8-O-0900- ☐
C12	20.0 <i>.787</i>	1.4 <i>.055</i>	C12-O-0900- ☐



Parts in stock highlighted in green

☐ add spring code
(W, H, S, Z, Z1 or Z2)

Dimensions	BK	HG	LK	Blade M	Blade L	ØDX	L1	L2	L3	L4	L5
C6	5.0	5.8	42.5	7.6	7.8	Ø1.6	4.0	20.0	14.0	8.5	3.3
C8	8.0	8.5	51.5	10.6	11.0	Ø2.0	4.0	-	29.6	9.5	5.2
C12	10.0	13.0	60.0	15.6	16.2	Ø2.8	7.5	-	35.0	8.5	7.7

COFA-C

cassette systems C6, C8 and C12

Blades

Front & back cutting (FAB)

Clearance angle	C6		C8		C12	
	Medium	Large	Medium	Large	Medium	Large
10°	C6-M-0007-A	C6-M-0002-A	C8-M-0007-A	C8-M-0002-A	C12-M-0007-A	C12-M-0002-A
20°	C6-M-0006-A	C6-M-0001-A	C8-M-0006-A	C8-M-0001-A	C12-M-0006-A	C12-M-0001-A
30°	C6-M-0009-A	C6-M-0004-A	C8-M-0009-A	C8-M-0004-A	C12-M-0009-A	C12-M-0004-A

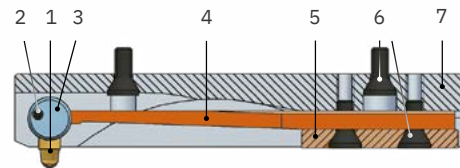
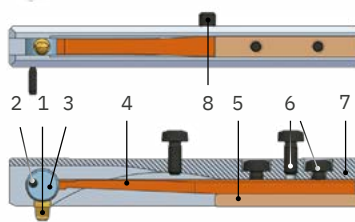
Back cutting only (BCO)

Clearance angle	C6		C8		C12	
	Medium	Large	Medium	Large	Medium	Large
10°	C6-M-0027-A	C6-M-0022-A	C8-M-0027-A	C8-M-0022-A	C12-M-0027-A	C12-M-0022-A
20°	C6-M-0026-A	C6-M-0021-A	C8-M-0026-A	C8-M-0021-A	C12-M-0026-A	C12-M-0021-A
30°	C6-M-0029-A	C6-M-0024-A	C8-M-0029-A	C8-M-0024-A	C12-M-0029-A	C12-M-0024-A

Bending spring

Code	Spring load	Part no.			Typical materials
		C6	C8	C12	
W	soft	C6-E-0008	C8-E-0008	C12-E-0008	Aluminum, Brass, Magnesium
H	hard	C6-E-0009	C8-E-0009	C12-E-0009	Grey Cast Iron, Nodular Iron
S	very hard	C6-E-0010	C8-E-0010	C12-E-0010	Carbon Steel, Free Machining Steel
Z	extra hard	C6-E-0011	C8-E-0011	C12-E-0011	Long Chipping Steel, Stainless
Z1	extra hard (harder than Z)	C6-E-0012	C8-E-0012	C12-E-0012	Titanium, Hardened Steel, Nickel Alloy
Z2	extra hard (harder than Z1)	C6-E-0013	C8-E-0013	C12-E-0013	Nickel Alloy etc.

Spare parts



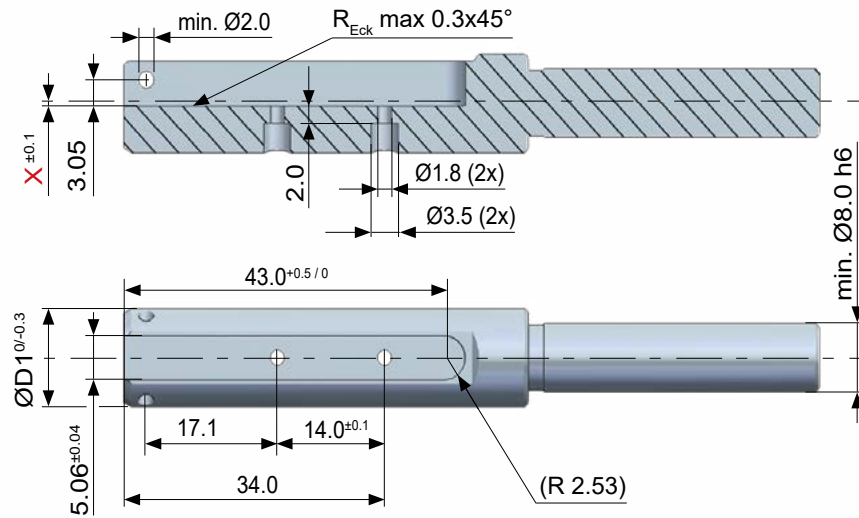
Item	Description	C6	C8	C12
1	Blade	see above	see above	see above
2	Split pin	C6-E-0003	C8-E-0003	C12-E-0003
3	Blade holder	C6-E-0001	C8-E-0001	C12-E-0001
4	Spring	see above	see above	see above
5	Retainer block	GH-C-E-0812	C8-E-0800	C12-E-0800
6	Cylinder screw	GH-H-S-0803	GH-H-S-0050	GH-H-S-0012
7	Tool body	C6-G-0900	C8-G-0900	C12-G-0900
8	Set screw	GH-H-S-0137	-	-
	Assembly pin	C6-V-0006	C8-V-0005	C12-V-0005

COFA-C

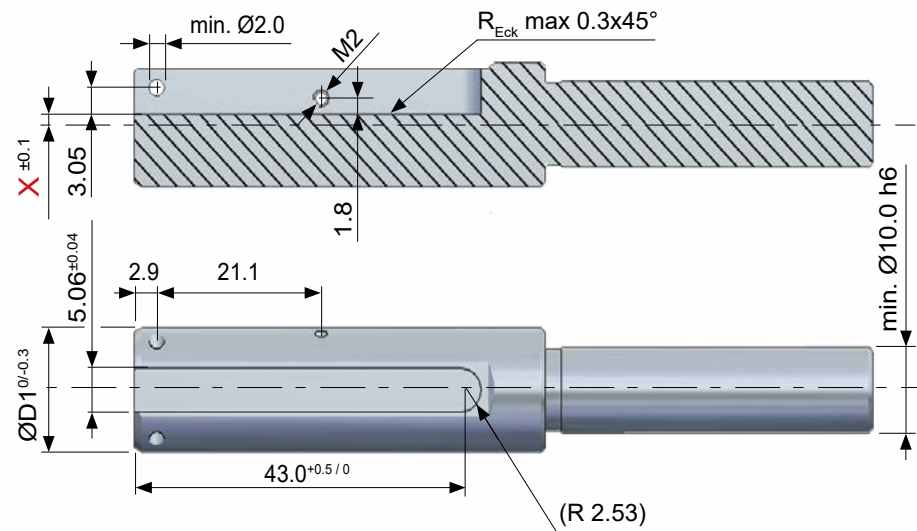
cassette systems C6, C8 and C12

INSTALLATION INSTRUCTIONS

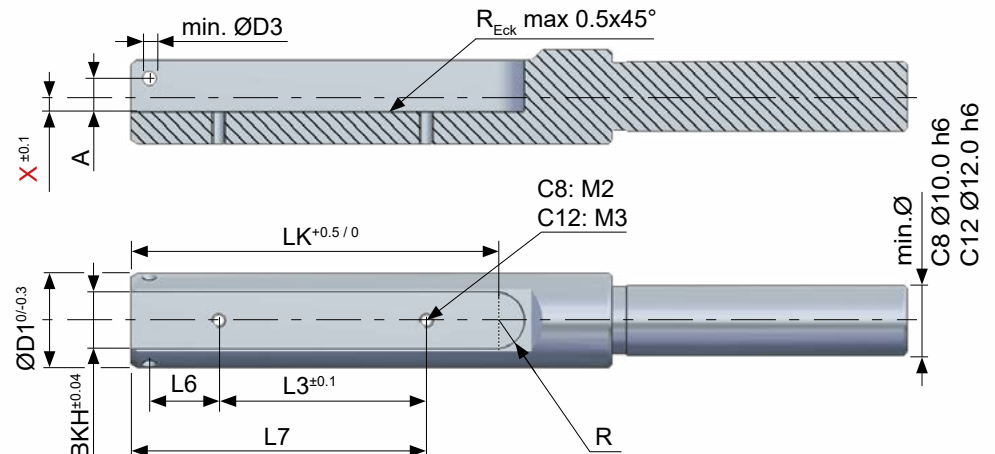
C6
Ø10.0–14.99



C6
>Ø15.0



C8
C12



COFA-C

cassette systems C6, C8 and C12

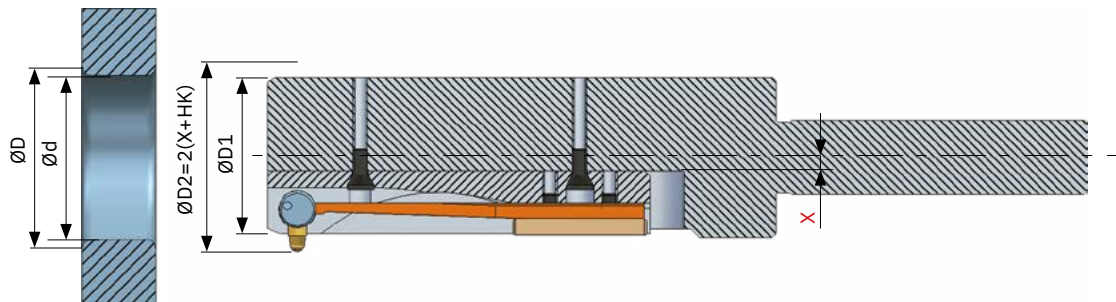
Limits

	C6		C8		C12	
from bore Ø	Ø10.0		Ø14.0		Ø20.0	
Blades	Medium	Large	Medium	Large	Medium	Large
max. Ø D	Ød + 1.0	Ød + 1.4	Ød + 1.2	Ød + 1.8	Ød + 1.6	Ød + 2.8
max. Ø D1	Ød - 0.5		Ød - 0.5		Ød - 0.5	

Cassette holder dimension table

	BKH	LK	D3	L3	L6	L7	X	A	R
C6	see drawings page 52						Must be calculated for each application. See formula below		
C8	8.06	52.0	2.0	29.6	9.85	42.1		4.70	4.03
C12	10.06	61.0	3.0	35.0	11.1	51.5		6.45	5.03

Calculating dimension X



Formula for calculating dimension X

$$\text{C6: } X = \text{Ø d} / 2 - 6.3 + \text{adjustment}^*$$

$$\text{C8: } X = \text{Ø d} / 2 - 9.2 + \text{adjustment}^*$$

$$\text{C12: } X = \text{Ø d} / 2 - 13.7 + \text{adjustment}^*$$

* Adjustment for desired deburring size: TARGET
minus ACTUAL

Calculation example for cassette system C6

Given:

Bore diameter: 12.5 mm / deburring diameter D: 13.7 mm

→ required deburring size $(13.7 - 12.5) / 2 = 0.6 \text{ mm}$ (= TARGET)

→ L-blade deburring size: 0.7 mm (= ACTUAL)

Desired X

$$X = \text{Ø d} / 2 - 6.3 + (\text{correction for blade deburring size})$$

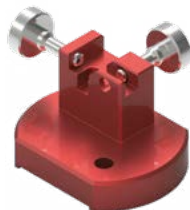
$$X = (12.5 \text{ mm} / 2) - 6.3 \text{ mm} + (\text{TARGET} - \text{ACTUAL})$$

$$X = 6.25 \text{ mm} - 6.3 \text{ mm} + (0.6 \text{ mm} - 0.7 \text{ mm})$$

$$X = -0.05 \text{ mm} + (-0.1 \text{ mm})$$

$$\mathbf{X = -0.15 \text{ mm}}$$

COFA Assembly aid for blade change



Type	Part no.
COFA 2 / 3	C3-V-0002



Type	Part no.
COFA 4 / 5	GH-C-V-0541



Type	Part no.
COFA 6	GH-C-V-0552
COFA 8	GH-C-V-0550
COFA 12	up to Ø 20mm: GH-C-V-0548 Ø 20 to 40 mm: GH-C-V-0549

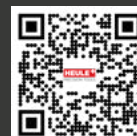
METRIC / C-SERIES

COFA C6	C6-V-0008
COFA C8	C8-V-0007
COFA C12	C12-V-0018

Operating instructions

- > Blade change
- > Spring change

heuletool.com > Service >
Media & download center



Question	Causes	Remedy
Chamfer Ø too large	• Tool is designed to cut to a set chamfer diameter	• Select a smaller sized tool
Chamfer Ø too small	• Chamfer is cutting to the designated maximum from the catalog but this is not large enough • Chamfer is not to designed maximum size	• Use the next size larger tool if possible • Select larger blade if possible • Use the next higher strength spring • Use a slower feed rate
Tool chatters	• Operating conditions are not correct • Not enough cutting force for your material	• Increase feed rates • Decrease speed rates • Use coolant on tool • Use the next higher strength spring
Tool is pushing the burr	• Blade is used or dull • Blade is new but still not working	• Change the insert • Use the next higher strength spring • Check programming position and feed rates • Burrs are too large
Tool creates a secondary burr or poor surface finish	• Spring is too heavy • Chamfer size is large • Operating conditions are not correct	• Use next lighter strength spring • Use a smaller tool to achieve a smaller edge break • Check recommended feed and speed rates
Cutting blades are chipping	• Programming error • Interrupted cut or possible wall interference	• Make sure cutting edge is not in fast feed when cutting • Try smaller tool • Reduce speed rate
Uneven chamfer or missing some burrs	• Speed rate far too high • Ratio between crosshole and tube diameter (d:D) is larger than 0.5 • Not enough cutting force for your material	• Special inserts are possible • Change spring or use the next higher strength spring
Blade is breaking or falling out of tool	• Interrupted cut or possible wall interference • Pins are being deformed • Program is incorrect	• Try smaller tool • Check assembly procedures • Assembly pins must be used when changing blades • Change pins • Check programming positioning • Do not use bore cycle

COFA-X

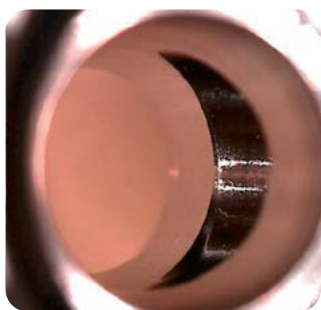
Mechanical, process-reliable deburring of cross bores with a bore ratio up to 1:1.

The advantages – Your benefit

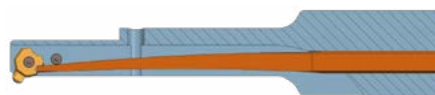


The edges of cross bores with almost identical diameters are very uneven. Nevertheless COFA-X removes the burrs reliably and completely.

The use of carbide blades with coatings based on the workpiece material guarantees a long service life.



The defined cutting process ensures a fully broken edge. The edge is burr-free.



The simple, mechanical operating principle massively increases process reliability with regard to deburring and reduces process costs at the same time.

THE RANGE

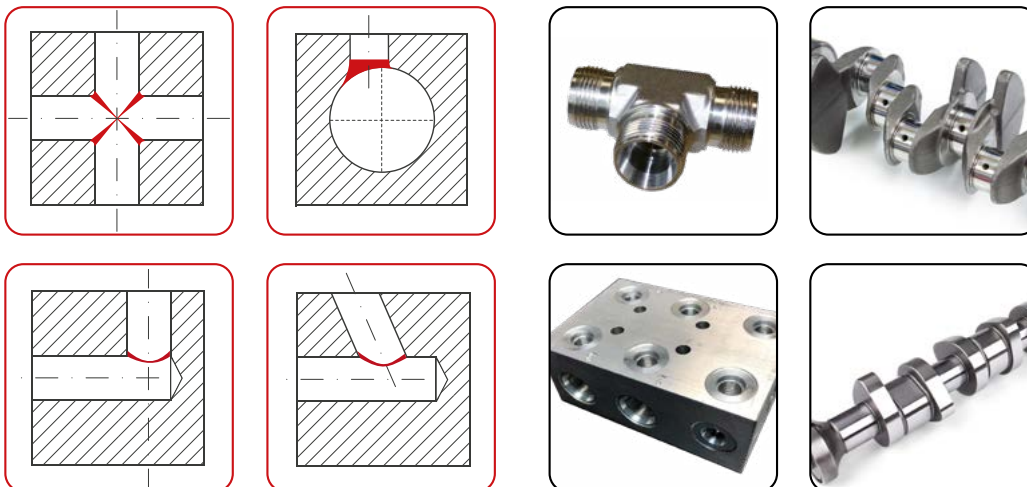
The reliable and economical deburring of cross bores is a major challenge. COFA-X solves this problem by combining its strengths with the capabilities of a modern CNC machine. The field of application for COFA-X starts from a bore diameter of 5.0 mm (.200").

COFA-X does not have a standardized product range. Every COFA-X tool is manufactured as part of our **CUSTOM** range of solutions designed specifically for the application. For a quote, please send us the data and information about your application using the checklist. We will be happy to help you.

CHECKLIST FOR FEASIBILITY CHECK

- Main bore diameter including tolerance
- Cross bore diameter including tolerance
- Bore depth
- Workpiece 3D model (STEP, DXF)
- Material
- Penetration angle
- Eccentricity
- Cycle time expectation
- Machine (type, external cooling, compressed air)
- Production volume per year
- Current solution
- Special requirements

FIELD OF APPLICATION

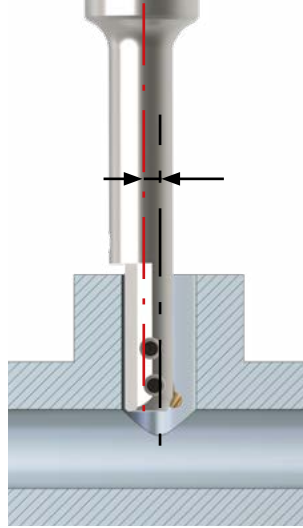


OPERATING PRINCIPLE

Tool function: The COFA-X operates on the same proven principle as the standard COFA tool system, ensuring reliable front and back deburring. Unlike the standard COFA, the COFA-X features a pre-tensioned spring and a relieved front section of the tool body.

This design allows the cutting blade, which moves in only one direction due to the spring pre-tension, to enter the bore eccentrically. As a result, the tool utilizes the positioning capabilities of a CNC machine to perform precise and consistent deburring even in challenging applications.

Blade function: The blades are designed either for forward or back only machining and are always pre-tensioned by the spring. The spring returns the blade to its neutral position. The blade position varies according to the machining direction.

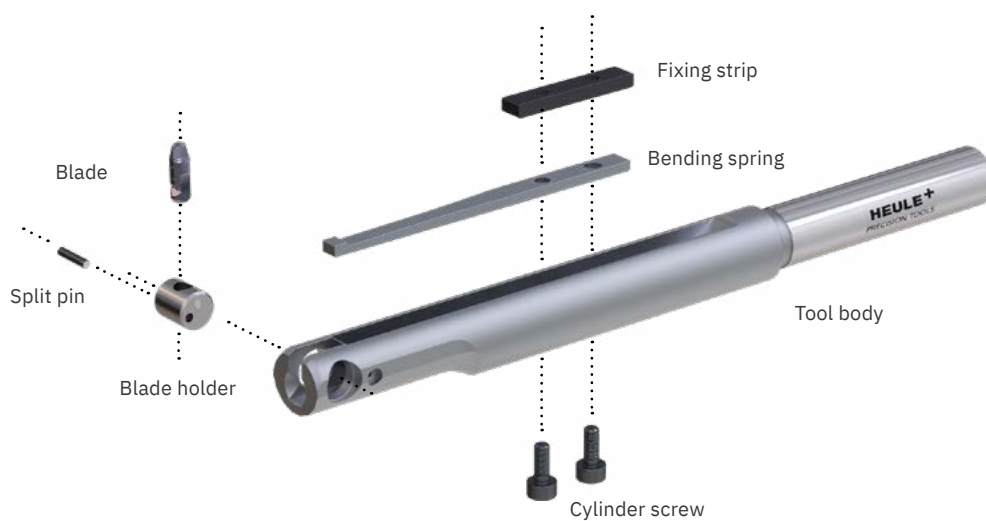


Neutral position of blade for machining in reverse



Neutral position of blade for forward machining

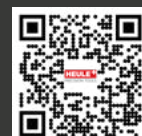
TOOL DESIGN



Operating instructions

- > Blade change
- > Spring change

heuletool.com > Service > Media & Download center



COFA-X CUTTING DATA

Material	Hardness BHN	Spring Code	IPR <i>mm/rev</i>	SFM <i>MPM</i>
Carbon Steels	100–250	S–Z	.002–.006 <i>0.05–0.15</i>	65–100 <i>20–30</i>
Free machining Alloy	125–340	S–Z	.002–.006 <i>0.05–0.15</i>	30–100 <i>10–30</i>
High Alloy Steel	250–350	S–Z1	.002–.006 <i>0.05–0.15</i>	30–100 <i>10–30</i>
Stainless Steel	140–250	S–Z2	.002–.006 <i>0.05–0.15</i>	30–100 <i>10–30</i>
Steel Castings	90–250	S–Z1	.002–.006 <i>0.05–0.15</i>	30–100 <i>10–30</i>
Grey Cast Iron	150–330	H–S	.002–.006 <i>0.05–0.15</i>	65–100 <i>20–30</i>
Nodular Cast Iron	140–310	H–S	.002–.006 <i>0.05–0.15</i>	65–100 <i>20–30</i>
Aluminum Alloys	30–180	W–H	.004–.008 <i>0.10–0.20</i>	65–130 <i>20–40</i>
Nickel-based Alloys	140–310	Z1–Z3	.002–.004 <i>0.05–0.10</i>	30–65 <i>10–20</i>
Titanium Alloys	120–334	Z1–Z3	.002–.004 <i>0.05–0.10</i>	30–65 <i>10–20</i>
Copper-Brass-Bronze	80–202	S	.004–.008 <i>0.10–0.20</i>	65–130 <i>20–40</i>



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

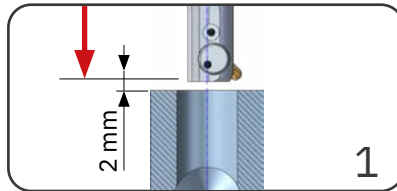
SPARE BLADES

Clearance angle	Front cutting only (FCO)			Back cutting only (BCO)		
	C6	C8	C12	C6	C8	C12
30°	C6X-M-0006-A	C8X-M-0006-A	C12X-M-0006-A	C6X-M-0005-A	C8X-M-0005-A	C12X-M-0005-A

Note: All blades are left side cutting only.

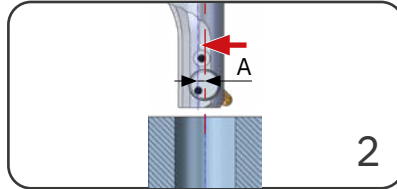
COFA-X PROCESS STEPS

- Spindle stop
- Approach by rapidly traversing with offset 0 spindle orientation¹⁾ (=M19).

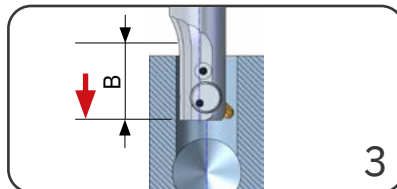


¹⁾ Spindle orientation: The position of the cutting edge must be aligned in advance so that it can be moved in the offset direction.

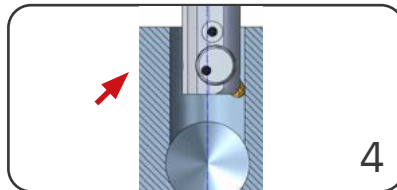
- Offset value **A**
(value depends on the tool, see customer drawing)



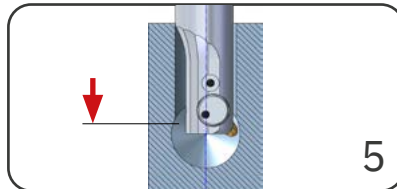
- Rapid feed to max. **B**
(value depends on the tool, see customer drawing)



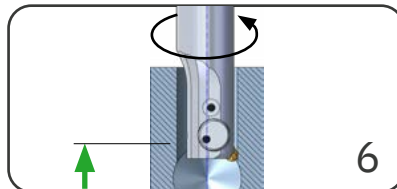
- Offset value 0
(center of bore axis, bore edge is lightly touched)



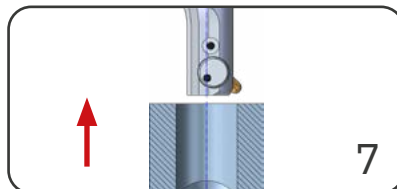
- Rapid feed to the starting position



- Spindle rotation anti-clockwise
- External coolant on
- Working feed



- Spindle stop!
- Rapid feed out of the workpiece

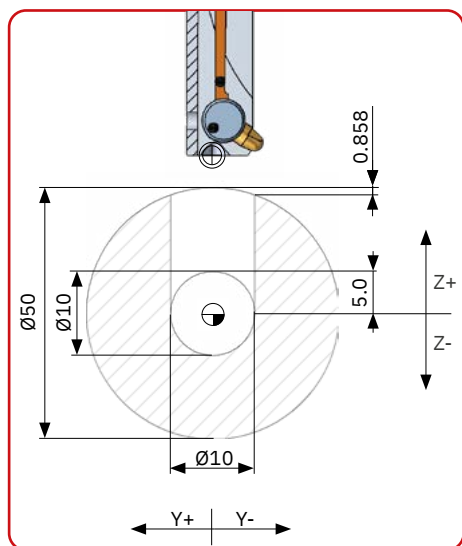


Important:

COFA-X works in the **anti-clockwise direction**, meaning the spindle must be programmed to rotate anti-clockwise.



APPLICATION EXAMPLE



Application data

Material: St50-1 (P3)
 Bore Ø: Ø10.0 mm (.394)
 Workpiece: Ø50.0 mm (1.969)
 Machining: rear bore edge only

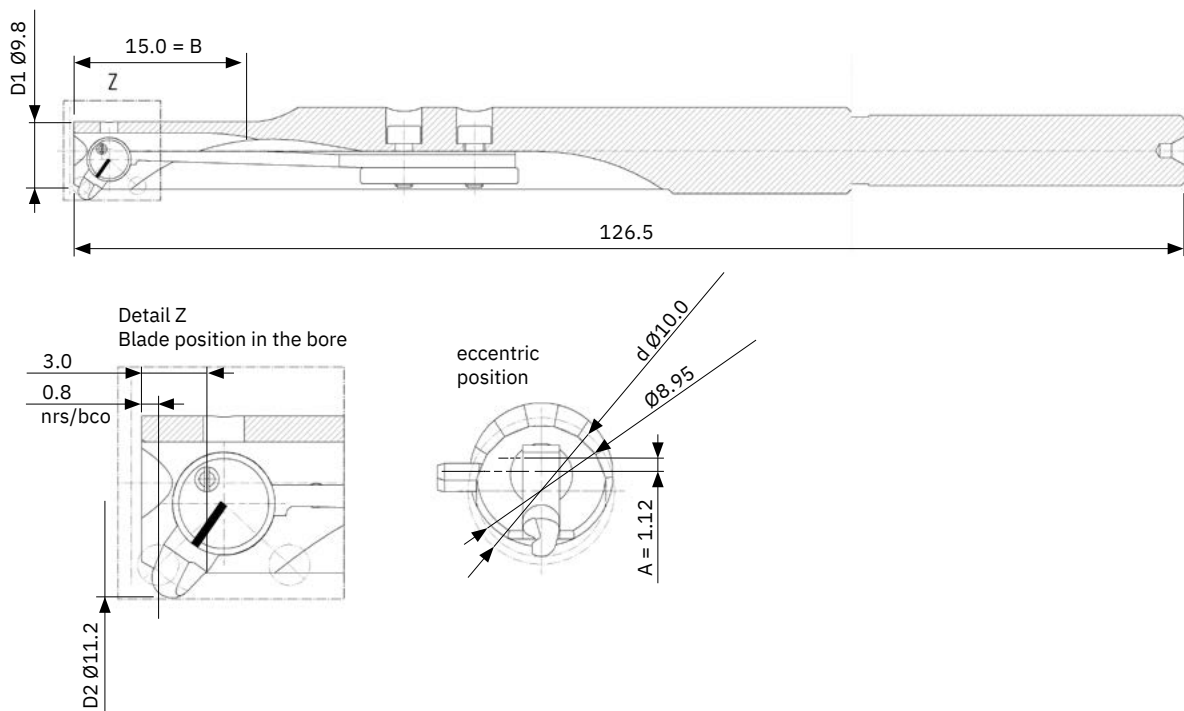
Tool and blade selection

Tool: COFA-X
 Blade: backward cutting only
 left-hand cutting

Cutting data

Cutting speed V_c : 65–100 SFM
 Working feed f_z : 0.002–0.006 IPR

TOOL FOR APPLICATION EXAMPLE



Attention!

Each COFA-X is application-specific, i.e. specifically designed for the individual deburring task. When programming, do not use the values from the programming/tool example above, but use the values from your own tool drawing.

COFA-X Assembly aid for blade change

COFA-X



Type	Part no.
COFA C3-C5 X	C3X-V-0001



Type	Part no.
COFA C6 X	C6-V-0008
COFA C8 X	C8-V-0007
COFA C12 X	C12-V-0018

Operating instructions

- > Blade change
- > Spring change

heuletool.com > Service > Media & Download center



COFA-X FAQ

Question	Causes	Remedy
No or incomplete deburring	Incorrect direction of rotation – standard COFA-X blades are left-hand cutting (M4)	Observe direction of rotation and correct to left-hand cutting (M4)
	Bore diameter too large	Drill bore according to specifications – COFA-X requires a bore tolerance of +0.1/0.
	Bending spring too soft	Install a harder bending spring if the tool concept permits (modular)
	Blade worn, worn out	Change blade
	Cutting speed too high	Reduce cutting speed
	Working feed rate too high	Reduce working feed rate
	Incorrect starting position for deburring	Check traverse ranges
	Burr height	Reduce the burr height by drilling until burr-free or reduce the service life of the drill
Vibration, chatter marks	Cutting speed too high	Reduce cutting speed
	Working feed rate too high	Reduce working feed rate

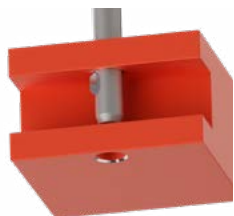
COFA-X FAQ

Question	Causes	Remedy
Deburring too small	Burr height	Reduce the burr height by drilling until burr-free or reduce the service life of the drill
	Bending spring too soft	Install a harder bending spring if the tool concept permits (modular)
	Cutting parameters too high	Reduce the cutting parameters according to the specifications or carry out the deburring process twice
Deburring too large	Bending spring too hard	Install a softer bending spring if the tool concept allows it (modular)
Secondary burr	Bending spring too hard	Install a softer bending spring if the tool concept allows it (modular)
Short service life	Poorly clamped workpiece or tool (vibration)	Ensure that workpiece and tool are more firmly clamped
	Burr height	Reduce the burr height by drilling without burrs or reduce the service life of the drill
Blade or spring breakage	Tool and blade incorrectly positioned in the tool holder	Mount the tool correctly in the tool holder (Weldon)
	Blade coordinates programmed incorrectly – blade orientation does not match the machining edge	Correct the programming, check traverse ranges
	Cutting parameters too high	Reduce cutting parameters according to specifications
Converting standard COFA to COFA-X	Conversion not possible	The standard COFA is designed for the bore diameter and therefore does not allow an offset value.
Inserting a standard COFA blade into a COFA-X tool	Standard COFA blades do not work in a COFA-X.	Standard COFA cutting geometry does not match the preloaded position of the blade (30° blade, left-hand cutting)
Possible use of COFA-X in a standard lathe	Spindle orientation (tool blade orientated to the alignment of the X-axis) and eccentric entry into the bore required	COFA-X requires the application-specific blade to be aligned with the bore edge as well as an offset in the X-axis for entry or exit – similar to a turning tool for the undercut

DL2

Impressive process reliability and deburring quality in mini bores from a diameter of 1.0 mm.

The advantages – Your benefit

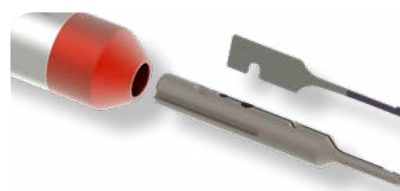


Highly economical when processing flat and slightly uneven bore edges forwards and backwards in a single operation.

Safe handling. DL2 boasts a simple design, quick blade change and robustness.



The defined cutting process with a coated carbide blade ensures a fully broken edge – meaning the edge is burr-free.



Safe processing. The blade housing gives the blade maximum stability and guidance. The coolant supply through the tool flows directly to the cutting edge of the carbide blade.

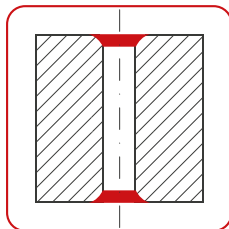
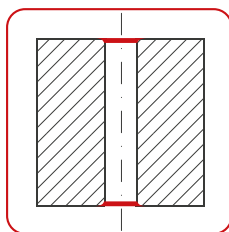


THE RANGE

Bore Ø range		Max. deburring size		Max. working length
Ø1.00–1.05	.039–.041	0.10	.004	3.00 .118
Ø1.10–1.30	.043–.051	0.1–0.15	.004–.006	4.00 .157
Ø1.35–1.45	.053–.057	0.1–0.15	.004–.006	5.00 .197
Ø1.50–1.60	.059–.063	0.1–0.15	.004–.006	6.00 .236
Ø1.65–1.70	.065–.067	0.1–0.15	.004–.006	7.00 .276
Ø1.75–1.80	.069–.071	0.1–0.15	.004–.006	8.00 .315
Ø1.85–1.90	.073–.075	0.1–0.15	.004–.006	9.00 .354
Ø1.95–2.10	.077–.083	0.1–0.15	.004–.006	10.00 .394

If the required tool is not included in the standard range above, the **CUSTOM** range can offer you a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION



Tool Selector

> Step-by-step guide to find the right solution

heuletool.com > Tool Selector > DL2



Tool Selector

OPERATING PRINCIPLE

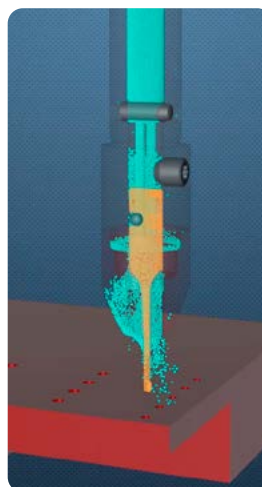
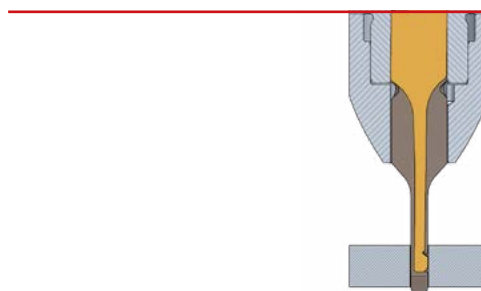
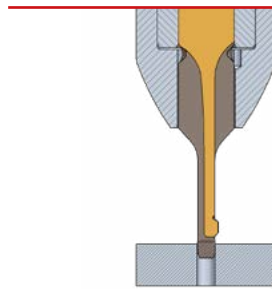
Due to its size, the DL2 blade performs the function of the spring and the blade simultaneously. Due to the rigid alignment of the blade, the operating principle is different from that of other HEULE tool systems. The blade has been designed in such a way that it can be used in confined spaces without compromising on functionality.

The blade produces the desired deburr in working feed. Upon completion of deburring, the blade automatically retracts into the blade housing without external activation. The specially designed sliding section of the blade prevents the bores from being damaged.

The spring-loaded blade automatically returns to its neutral position when it exits the bore.

Integrated cooling

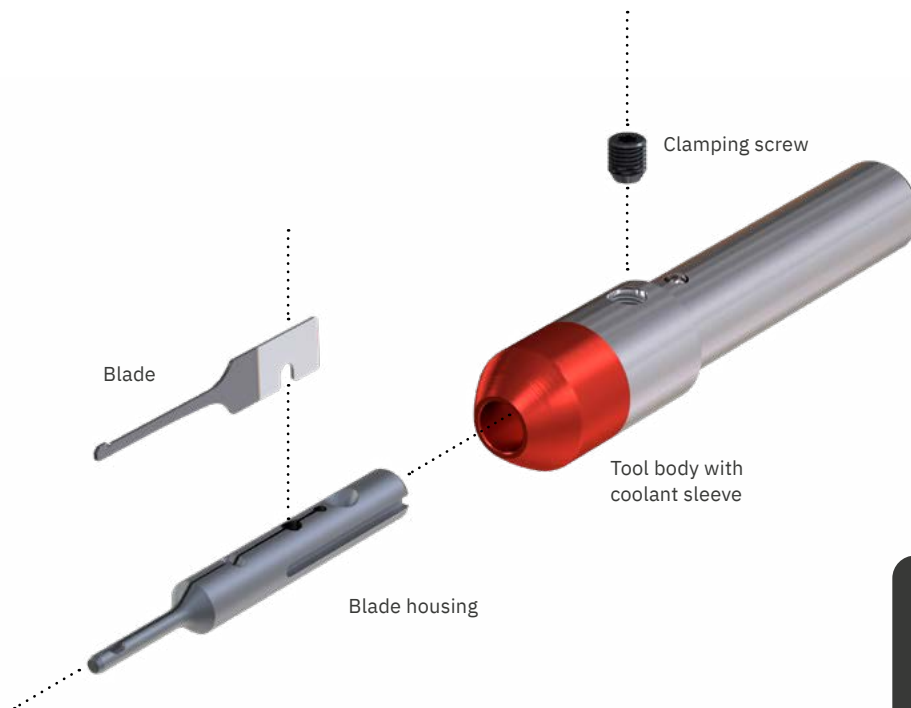
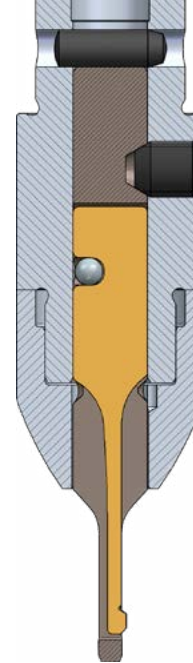
The technical challenge with deburring tools of this size is cooling the cutting edge. With the DL2, the coolant is supplied through the tool and cools and rinses the carbide blade directly – an important factor for process reliability in series production and for blade life.



TOOL DESIGN

The DL2 tool has a very simple and robust design, comprising only four components in its entire construction. The advantages of this design become obvious when changing the blade. Despite the extremely delicate dimensions of the cutting edge, the blade is easy to replace without tweezers or a magnifying glass.

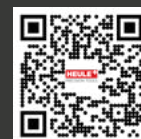
The tool body and blade housing form the heart of this mini tool. The coolant sleeve guides the coolant into the blade window and ensures that the cutting edge is flushed at all times. The smaller the tool, the more important cooling is for reliable operation and a long blade life.



Operating instructions

> Blade change

heuletool.com > Service >
Media & download center

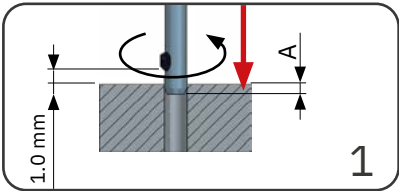


DL2 PROCESS STEPS

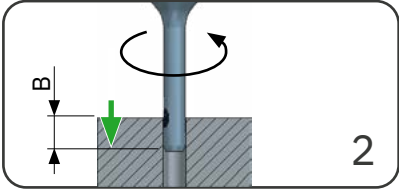


Important! The DL2 works in the counter-clockwise direction (left-hand cut).

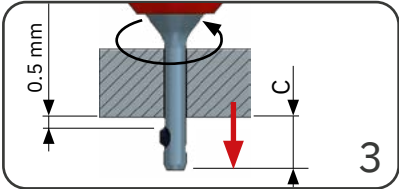
- Rapid feed to position **A** or 1.0 mm distance
- Spindle turning **counter-clockwise**
- Internal coolant on



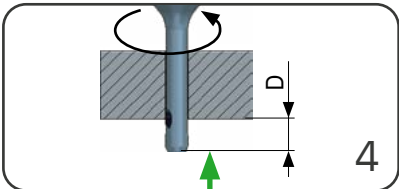
- Working feed to position **B**



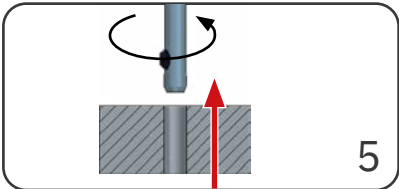
- Rapid feed to position **C** or 0.5 mm distance



- Working feed to position **D**



- Rapid feed out of the workpiece



DIMENSION TABLE PROGRAMMING

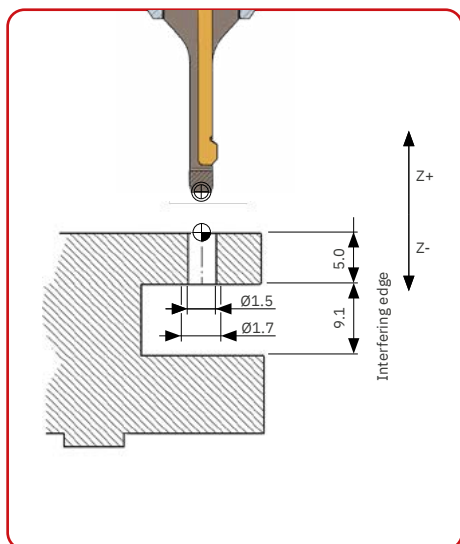
Tool	A		B		C		D	
DL2	0.5	.020	2.15	.085	3.3	.130	2.15	.085



IMPORTANT!
Observe max. working length

Bore Ø range		max. working length	
1.00–1.05	.039–.041	3.00	.118
1.10–1.35	.043–.053	4.00	.157
1.40–1.45	.055–.057	5.00	.197
1.50–1.60	.059–.063	6.00	.236
1.65–1.70	.065–.067	7.00	.276
1.75–1.80	.069–.071	8.00	.315
1.85–1.90	.073–.075	9.00	.354
1.95–2.10	.077–.083	10.00	.394

APPLICATION AND PROGRAMMING EXAMPLE



Application data

Material:	Steel C45
Bore Ø:	1.5 mm (.059)
Deburring Ø:	1.7 mm (.067)
Burr height max.	0.1 mm (.004)
Workpiece depth:	5.0 mm (.197)
Machining:	both bore edges

Tool and blade selection

Tool:	DL2/1.5/06
Blade:	DL2-M-0164-A (HM, Latuma coated)

Cutting data

Cutting speed Vc:	100–165 SFM
Working feed fz:	.0002–.0006 IPR

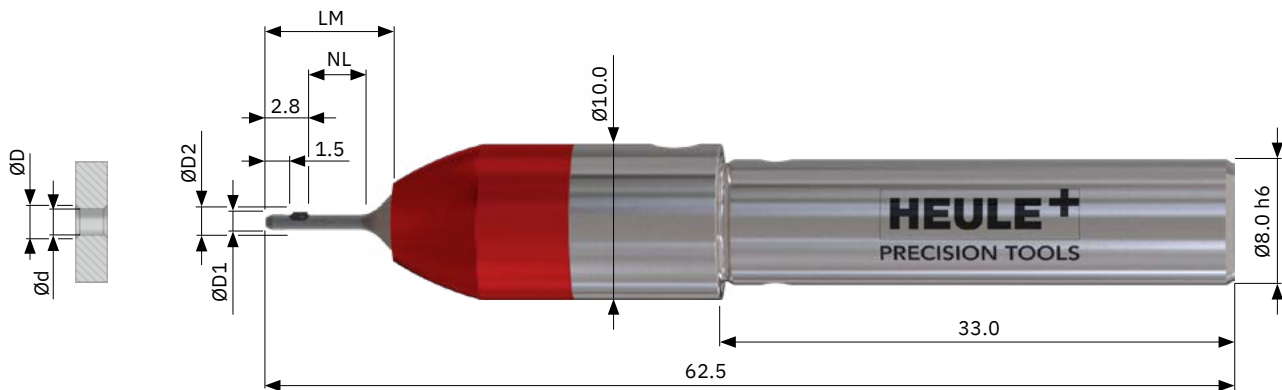
CUTTING DATA

Material	Hardness BHN	DL2	
		IPR <i>mm/rev</i>	SFM <i>MPM</i>
Carbon Steels	100–250	.0002–.0006 <i>0.005–0.015</i>	100–165 <i>30–50</i>
Free machining Alloy	125–340	.0002–.0006 <i>0.005–0.015</i>	100–165 <i>30–50</i>
High Alloy Steel	250–350	.0002–.0006 <i>0.005–0.015</i>	80–150 <i>25–45</i>
Stainless Steel	140–250	.0002–.0006 <i>0.005–0.015</i>	50–100 <i>15–30</i>
Steel Castings	90–250	.0002–.0006 <i>0.005–0.015</i>	100–165 <i>30–50</i>
Grey Cast Iron	150–330	.0002–.0006 <i>0.005–0.015</i>	115–165 <i>35–50</i>
Nodular Cast Iron	140–310	.0002–.0006 <i>0.005–0.015</i>	100–130 <i>30–40</i>
Aluminum Alloys	30–180	.0002–.0006 <i>0.005–0.015</i>	130–200 <i>60–80</i>
Nickel-based Alloys	140–310	.0002–.0006 <i>0.005–0.015</i>	30–50 <i>10–15</i>
Titanium Alloys	120–334	.0002–.0006 <i>0.005–0.015</i>	30–50 <i>10–15</i>
Copper-Brass-Bronze	80–202	.0002–.0006 <i>0.005–0.015</i>	145–200 <i>50–60</i>



The cutting data listed are guide values!
For materials that are difficult to machine or slightly uneven bore edges, we recommend applying cutting speeds that are at the lower end of the range.

DL2 $\varnothing 1.0 \text{ mm to } 2.0 \text{ mm}$ (.040" to .080")



Tool

Standard tool **with** blades

- The achievable deburr diameter may vary slightly depending on the material, blade force, cutting parameters and application.
- With cylindrical shank

Bore $\varnothing$ d	Working length NL	LM	Tool $\varnothing$ D1	Max. $\varnothing$ D2	Deburring $\varnothing$ D	Tool part no. front & back	Tool part no. back only
1.00 .039	3.00 .118	8.30 .327	0.95 .037	1.35 .053	1.20 .047	DL2-1.00-03-0104-A	DL2-1.00-03-0101-A
1.05 .041	3.00 .118	8.30 .327	1.00 .039	1.40 .055	1.25 .049	DL2-1.05-03-0110-A	DL2-1.05-03-0107-A
1.10 .043	4.00 .157	9.30 .366	1.05 .041	1.55 .061	1.30 .051	DL2-1.10-04-0116-A	DL2-1.10-04-0113-A
1.15 .045	4.00 .157	9.30 .366	1.10 .043	1.60 .063	1.35 .053	DL2-1.15-04-0122-A	DL2-1.15-04-0119-A
1.20 .047	4.00 .157	9.30 .366	1.15 .045	1.65 .065	1.45 .057	DL2-1.20-04-0134-A	DL2-1.20-04-0131-A
1.25 .049	4.00 .157	9.30 .366	1.20 .047	1.70 .067	1.55 .061	DL2-1.25-04-0146-A	DL2-1.25-04-0143-A
1.30 .051	4.00 .157	9.30 .366	1.25 .049	1.75 .069	1.60 .063	DL2-1.30-04-0152-A	DL2-1.30-04-0149-A
1.40 .055	5.00 .197	10.30 .406	1.35 .053	1.85 .073	1.70 .067	DL2-1.40-05-0164-A	DL2-1.40-05-0161-A
1.50 .059	6.00 .236	11.30 .445	1.45 .057	1.95 .077	1.80 .071	DL2-1.50-06-0176-A	DL2-1.50-06-0173-A
1.60 .063	6.00 .236	11.30 .445	1.55 .061	2.05 .081	1.90 .075	DL2-1.60-06-0188-A	DL2-1.60-06-0185-A
1.70 .067	7.00 .276	12.30 .484	1.65 .065	2.15 .085	2.00 .079	DL2-1.70-07-0200-A	DL2-1.70-07-0197-A
1.80 .071	8.00 .315	13.30 .524	1.75 .069	2.25 .089	2.10 .083	DL2-1.80-08-0212-A	DL2-1.80-08-0209-A
1.90 .075	9.00 .354	13.30 .524	1.85 .073	2.35 .093	2.20 .087	DL2-1.90-09-0224-A	DL2-1.90-09-0221-A
2.00 .079	10.00 .394	13.30 .524	1.95 .077	2.45 .096	2.30 .091	DL2-2.00-10-0236-A	DL2-2.00-10-0233-A



Parts in stock highlighted in green

DL2 $\varnothing 1.0 \text{ mm to } 2.0 \text{ mm}$ (.040" to .080")

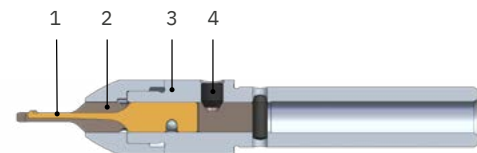
Blades

Bore $\varnothing$ d	Deburring $\varnothing D$	Part no. front & back	Part no. back only
1.00 .039	1.20 .047	DL2-M-0104-A	DL2-M-0101-A
1.05 .041	1.25 .049	DL2-M-0110-A	DL2-M-0107-A
1.10 .043	1.30 .051	DL2-M-0116-A	DL2-M-0113-A
1.15 .045	1.35 .053	DL2-M-0122-A	DL2-M-0119-A
1.20 .047	1.45 .057	DL2-M-0134-A	DL2-M-0131-A
1.25 .049	1.55 .061	DL2-M-0146-A	DL2-M-0143-A
1.30 .051	1.60 .063	DL2-M-0152-A	DL2-M-0149-A
1.40 .055	1.70 .067	DL2-M-0164-A	DL2-M-0161-A
1.50 .059	1.80 .071	DL2-M-0176-A	DL2-M-0173-A
1.60 .063	1.90 .075	DL2-M-0188-A	DL2-M-0185-A
1.70 .067	2.00 .079	DL2-M-0200-A	DL2-M-0197-A
1.80 .071	2.10 .083	DL2-M-0212-A	DL2-M-0209-A
1.90 .075	2.20 .087	DL2-M-0224-A	DL2-M-0221-A
2.00 .079	2.30 .091	DL2-M-0236-A	DL2-M-0233-A

Spare parts

Bore $\varnothing$ d	Blade housing Part no.	Tool body Part no.
1.00 .039	DL2-N-0102	DL2-G-0103
1.05 .041	DL2-N-0112	DL2-G-0103
1.10 .043	DL2-N-0123	DL2-G-0104
1.15 .045	DL2-N-0133	DL2-G-0104
1.20 .047	DL2-N-0143	DL2-G-0104
1.25 .049	DL2-N-0153	DL2-G-0104
1.30 .051	DL2-N-0163	DL2-G-0104
1.40 .055	DL2-N-0184	DL2-G-0105
1.50 .059	DL2-N-0205	DL2-G-0106
1.60 .063	DL2-N-0225	DL2-G-0106
1.70 .067	DL2-N-0246	DL2-G-0107
1.80 .071	DL2-N-0267	DL2-G-0108
1.90 .075	DL2-N-0288	DL2-G-0109
2.00 .079	DL2-N-0309	DL2-G-0110

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Blade housing	see above
3	Tool body	see above
4	Clamping screw Allen key	GH-H-S-1125 GH-H-S-2021

DL2 FAQ

Question	Causes	Remedy
Burr is not cut away cleanly or deburr too small	• Blade selected too small • Working feed rate too high • Burr too large	• Select blade for larger deburr Ø • Reduce working feed rate • Minimise burr size from drilling
No deburring	• Blade worn, worn out	• Replace blade
	• Excessive burr formation	• Replace or sharpen the drill
	• Wrong direction of rotation	• DL2 runs anti-clockwise (M4)
Forward and backward deburring size not the same	• Working feed rate forwards and backwards different	• Select the same working feed rate forwards and backwards if possible
	• Different burr formations front and back	• On the side with under-deburring: reduce working feed rate. On the side with over-deburring: increase working feed rate
Deburring with chatter marks	• Poorly set workpiece or tool	• Ensure that workpiece and tool are firmly clamped
	• Tool in unstable condition	• Increase tool feed rate
	• Cutting speed too high	• Reduce cutting speed
Inconsistent deburring size	• Different working feed rate	• Select consistent working feed rate
	• Tool in unstable condition	• Increase working feed rate
Poor service life	• Poorly clamped workpiece or tool (vibration)	• Ensure that workpiece and tool are rigidly clamped
	• Insufficient machine stability (spindle play, etc.)	• Improve machine stability or guide with special tool in the bore
	• Incorrect blade coating	• Select correct coating

SNAP

With SNAP, chamfering couldn't be simpler or safer. This productivity champion is in a league of its own.

The advantages – Your benefit



With SNAP, front and back chamfering could not be easier. Patented geometry guarantees accuracy and productivity.

The mechanical, spring-controlled operating principle and the robust design ensure a reliable and safe process.



SNAP is specially designed for CNC operation with large batch sizes. It is characterized by extremely quick and easy blade changes that can be carried out directly on the machine.



Regardless of the height of the surface to be machined, SNAP always produces a consistent chamfer.



THE RANGE

Standard version

Bore Ø range	Chamfering capacity max. mm	Series	Catalog page
Ø2.0–2.9 <i>.079–.114</i>	0.2–0.3	SNAP2	84
Ø3.0–3.9 <i>.118–.154</i>	0.3–0.5	SNAP3	86
Ø4.0–5.0 <i>.157–.197</i>	0.6–0.75	SNAP4	88
Ø5.0–10.5 <i>.197–.413</i>	1.00	SNAP5	90
Ø8.0–12.0 <i>.315–.472</i>	0.5–0.75	SNAP8	92
Ø12.0–20.0 <i>.472–.787</i>	1.00	SNAP12	94
Ø20.0–35.0 <i>.787–1.378</i>	1.50	SNAP20	96

Cassette tools

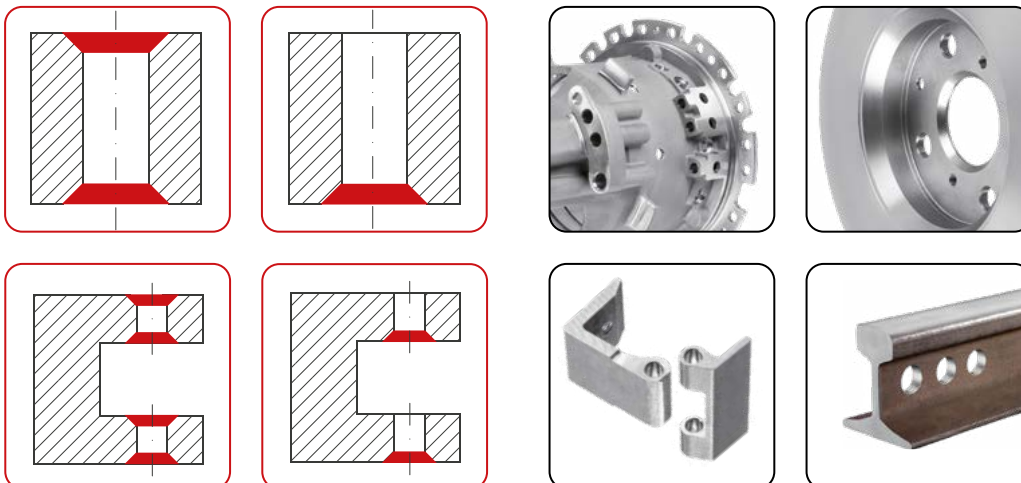
For installation in holder/combination tools for machining large bore diameters

Bore Ø range	Chamfering capacity max. mm	Series	Catalog page
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
> Ø12.6 <i>.496</i>	1.50	SNAP5	104
> Ø35.0 <i>1.378</i>	1.50	SNAP35	104

For **thread series tools**: see page 98.

If the required tool is not included in the standard range above, our **CUSTOM** range often has a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION



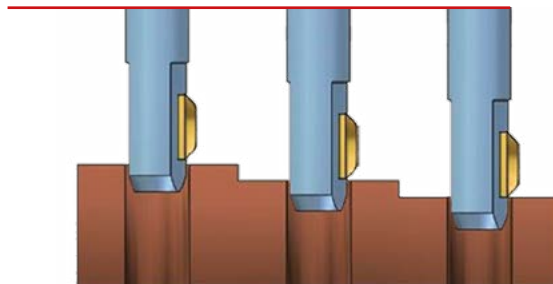
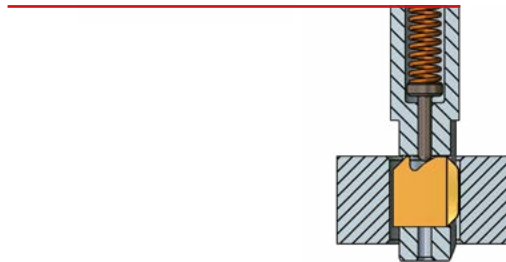
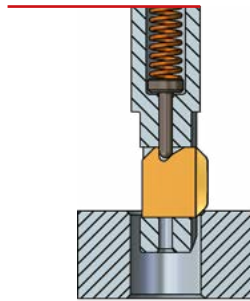
OPERATING PRINCIPLE

The SNAP chamfering blade is secured by a spring-loaded control bolt in the tool body. The specially ground SNAP blade, which cuts forwards and backwards or backward cutting only, produces the desired chamfer in the working feed.

Upon reaching the defined chamfer size, the blade retracts into the tool body. The chamfer size and angle are geometrically defined by the blade and can only be changed by using a different SNAP blade.

A specially designed non-cutting geometric portion of the blade prevents the bore from being damaged. When exiting the bore, the spring-loaded control bolt returns the blade to its neutral position to machine the edge of the bore.

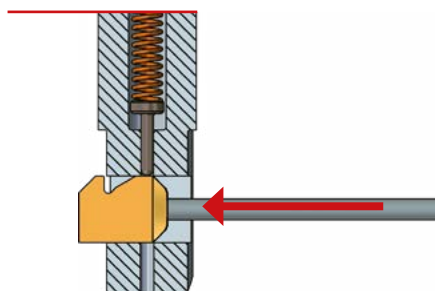
Compensation of height differences
SNAP automatically compensates for possible height differences in the components to be machined, e.g. cast parts. The blade only begins to retract or cut on contact with the workpiece. This means that the chamfer size remains constant regardless of surface location.



BLADE CHANGE

The coated carbide blades can be easily replaced by hand in a matter of seconds.

Inserts can be replaced manually or with an assembly pin.



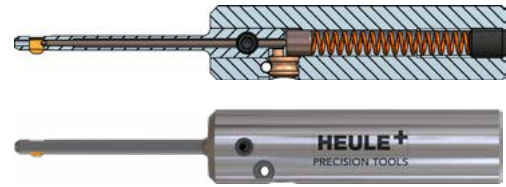
TOOL DESIGN

SNAP is HEULE's answer to the demand for ever simpler and more flexible manufacturing solutions.

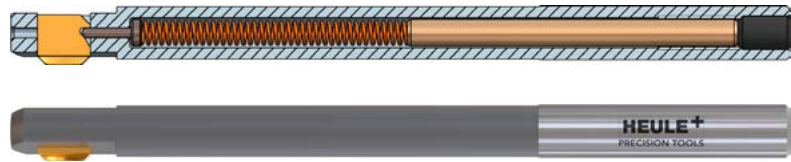
The SNAP tool family is made up of 3 groups of tools. These are SNAP2 to 4, SNAP5 to 20 and the cassette tools.

The tool body for SNAP2 to 4 consists of a tool body and blade housing. The tool body for SNAP5 to 20 is designed as one piece. The cassette tools have the same operating principle as SNAP5 to 20, but in a compact design that can be installed in a tool holder.

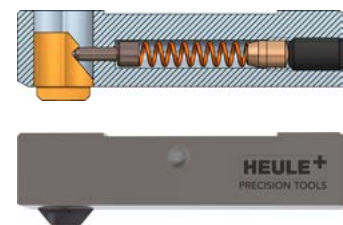
SNAP2 to 4



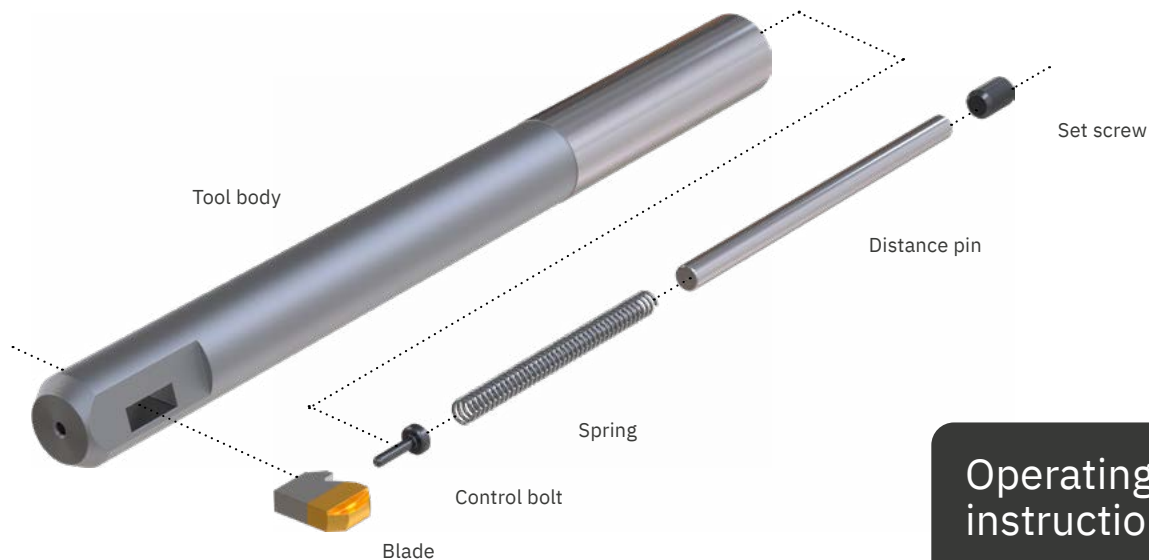
SNAP5 to 20



Cassette tools



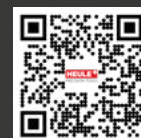
SNAP



Operating instructions

> Blade change

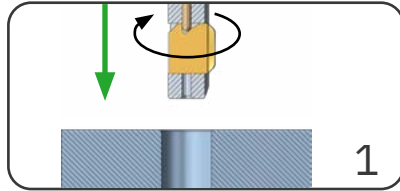
heuletool.com > Service > Media & download center



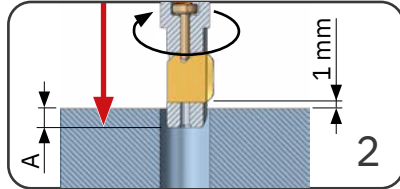
SNAP PROCESS STEPS

Front & back deburring

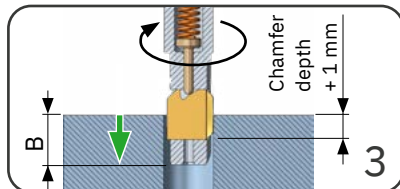
Set the RPM according to the suggested values.



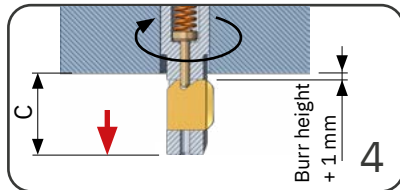
Move the tool with rapid feed to position **A** or 1 mm distance.



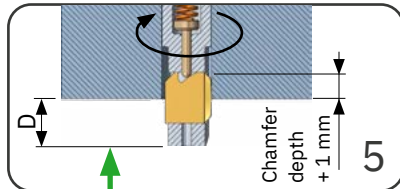
Machine the part with cutting feed. Feed into the part to position **B** or the chamfer depth + 1 mm to ensure the tool is finished cutting.



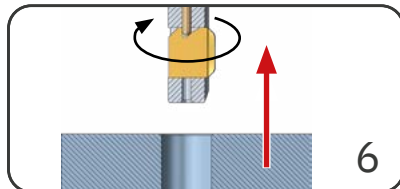
Move the tool through the part with rapid feed to position **C** or until the blade is 1 mm beyond burr. The blade will not damage the through hole.



Machine the part with cutting feed. Feed into the part to position **D** or the chamfer depth + 1 mm to ensure the tool is finished cutting.



Remove the tool from the part with a rapid feed and proceed to the next hole. The blade will not damage the through hole.



Back only deburring

Set the RPM according to the suggested values.

Move the tool through the part with rapid feed to position **C** or until the blade is 1 mm beyond burr. The blade will not damage the through hole.

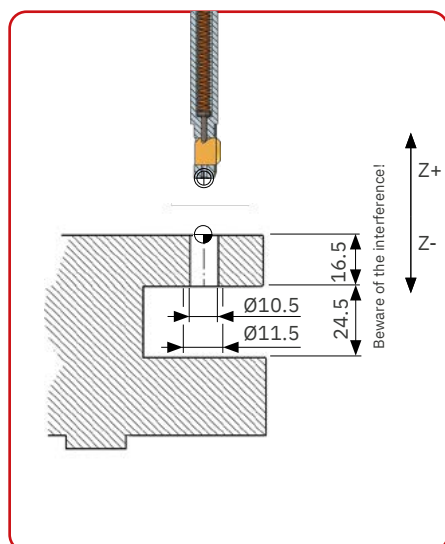
Machine the part with cutting feed. Feed into the part to position **D** or the chamfer depth + 1 mm to ensure the tool is finished cutting.

Remove the tool from the part with a rapid feed and proceed to the next hole. The blade will not damage the through hole.

DIMENSION TABLE FOR PROGRAMMING

	A		B		C		D	
SNAP2	1.0	.039	3.0	.118	5.0	.197	3.0	.118
SNAP3	1.0	.039	3.5	.138	6.0	.236	3.5	.138
SNAP4	1.0	.039	4.0	.157	7.0	.276	4.0	.157
SNAP5	2.0	.079	6.0	.236	9.5	.374	6.0	.236
SNAP8	3.0	.118	8.0	.315	13.0	.512	8.0	.315
SNAP12	5.5	.217	10.5	.413	15.5	.610	10.5	.413
SNAP20	6.0	.236	12.0	.472	18.0	.709	12.0	.472

APPLICATION EXAMPLE



Application data

Workpiece height: 16.5 mm (.650)
 Bore Ø: Ø10.5 mm (.413)
 Chamfer Ø: Ø11.5 mm (.453)
 Material: Carbon Steels
 Machining: both bore edges

Tool and blade selection

Tool: SNAP8-413
 Blade: GH-Q-M-03726, forward and backward cutting
 Tool Ø D2: Ø12.1 mm (.476) (note interfering edge)
 Working length: 68.0 mm (2.677) (note interfering edge)

Cutting data

Cutting speed Vc: 45–64 SFM
 Working feed fz: .004–.012 IPR

CUTTING DATA

Material	Hardness BHN	Cutting Speed SFM MPM	SNAP 2/3/4 IPR mm/rev		SNAP 5/8/12/20 IPR mm/rev	
			GS	DF/DR	GS	DF/DR
Carbon Steels	100–250	150–250 45–64	.003–.008 0.07–0.20	.001–.003 0.02–0.07	.004–.012 0.10–0.30	.001–.003 0.02–0.07
Free machining Alloy	125–340	100–260 67–107	.003–.006 0.07–0.15	.001–.002 0.02–0.05	.004–.012 0.10–0.30	.001–.002 0.02–0.05
High Alloy Steel	250–350	65–160 20–49	.003–.006 0.07–0.15	.001–.002 0.02–0.05	.004–.008 0.10–0.20	.001–.002 0.02–0.05
Stainless Steel	140–250	30–100 9–30	.002–.005 0.05–0.12	.001–.002 0.02–0.05	.002–.006 0.05–0.15	.001–.002 0.02–0.05
Steel Castings	90–250	130–230 40–70	.002–.006 0.05–0.15	.001–.002 0.02–0.05	.004–.012 0.10–0.30	.001–.002 0.02–0.05
Grey Cast Iron	150–330	150–300 45–91	.003–.008 0.07–0.20	.001–.003 0.02–0.07	.004–.012 0.10–0.30	.001–.003 0.02–0.07
Nodular Cast Iron	140–310	130–220 40–67	.003–.006 0.07–0.15	.001–.002 0.02–0.05	.004–.012 0.10–0.30	.001–.002 0.02–0.05
Aluminum Alloys	30–180	210–400 64–121	.003–.008 0.07–0.20	.001–.003 0.02–0.07	.004–.012 0.10–0.30	.001–.003 0.02–0.07
Nickel-based Alloys	140–310	30–65 9–20	.001–.004 0.02–0.10	.001–.002 0.02–0.05	.001–.004 0.02–0.10	.001–.002 0.02–0.05
Titanium Alloys	120–334	30–65 9–20	.001–.004 0.02–0.10	.001–.002 0.02–0.05	.001–.004 0.02–0.10	.001–.002 0.02–0.05
Copper-Brass-Bronze	80–202	65–300 20–91	.002–.006 0.05–0.15	.001–.003 0.02–0.07	.002–.006 0.05–0.15	.001–.003 0.02–0.07

Note: Recommended maximum speed is 6'000 RPM for SNAP series 2, 3, 4. Please contact HEULE for further assistance with your application.

SETTING THE BLADE FORCE

The blade force can be adjusted using the set screw. The blade force should be set so high that the blade extends completely after exiting the bore. This ensures that the blade can also provide the necessary cutting force. The tougher the material, the harder the spring should be set.

However, the blade force does not affect the chamfer diameter. An optimal spring tension increases the blade's service life and improves the quality of the chamfer.

A high blade force is required for extremely tough materials. The spring in SNAP5, 8 and 12 can be replaced for this purpose (see spare parts on the product range pages).

SNAP 5: see page 91

SNAP 8: see 93

SNAP 12: see 95

Add the suffix **-HS** (Hard Spring) for a complete tool with harder spring (e.g. SNAP12-473-HS).

How it works:

Clockwise rotation increases the spring load (tough steel, Inconel, titanium).

Anti-clockwise rotation reduces the spring load (aluminum).

Important!



The blade force does not define the chamfer diameter. This is essentially determined by the blade selected. Each blade produces a specific chamfer diameter.



BLADE FORCE SETTING TABLE

Tool	Thread size of set screw	Standard setting Number of revolutions	max. screw-in depth	
			mm / <i>inches</i>	Number of revolutions
SNAP2/3/4	M3	4	6.0 <i>.236</i>	12
SNAP5	M3	4	6.0 <i>.236</i>	12
SNAP5 thread	M3	4	14.0 <i>.551</i>	28
SNAP8	M5	4	11.0 <i>.433</i>	13
SNAP12	M5	4	11.0 <i>.433</i>	13
SNAP20	M5	4	11.0 <i>.433</i>	13

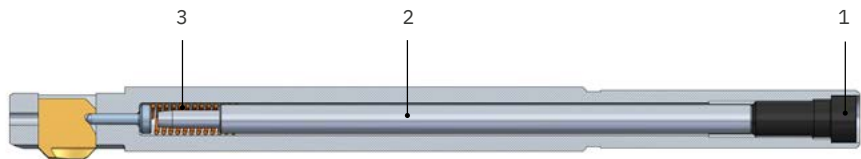
metrics *inches*

OPTIONAL LOCKING MECHANISM

Locking mechanism LOCKS the blade. The blade is free to move but cannot be removed completely until the cap screw is loosened. This allows for higher operational speeds and avoids possible drill burr chip interference issues.

Add the suffix **-LM** (Locking Mechanism) for the complete tool with locking mechanism (e.g. SNAP12-473-LM).

Spare parts



Tooling	Bore Ø range	1 Cap Screw – LM	2 Distance Pin – LM	3 Spring – LM
SNAP 2–4		contact HEULE for information		
SNAP 5	5.0–7.5 <i>.197–.295</i>	GH-H-S-0538-1	GH-Q-E-0089	GH-H-F-0055
	8.0–9.5 <i>.315–.374</i>	GH-H-S-0538-1	GH-Q-E-0090	GH-H-F-0055
	10.0–10.5 <i>.394–.413</i>	GH-H-S-0538-1	GH-Q-E-0091	GH-H-F-0055
SNAP 8	8.0–12.0 <i>.315–.472</i>	GH-H-S-0524-5	GH-Q-E-0093	GH-H-F-0012
SNAP 12	12.0–20.0 <i>.472–.787</i>	GH-H-S-0524-1	GH-Q-E-0384	GH-H-F-0012

Note: Tool holder must be modified for locking mechanism components.

Selecting the correct SNAP tool

TOOL SELECTOR TOOL TABLES

The HEULE Tool Selector is the quickest and easiest way to find the right tool.

Send your search results along with your application data to your HEULE representative, who will check the application and offer you options if required.

If your search produces no results, please contact HEULE with your application data anyway. We also develop customized solutions and are happy to advise you.

The correct tool is primarily determined by the bore diameter to be machined. This table also shows the possible chamfer diameters, working lengths and tool diameters.

The tool tables cover the standard range. The tool part numbers highlighted in green are available from stock.

SNAP also offers various blade coatings to meet the requirements based on the type of material.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form (heuletool.com > contact) or by telephone.

Tool Selector

> Step-by-step guide to find the right solution

heuletool.com > Tool Selector
> SNAP



Tool Selector 

Still have questions?

> HEULE Consulting and Support

heuletool.com > contact



CONFIGURING SNAP TOOLS

1. Select tool



Use the bore size to select a tool body from the tool table. Select the largest tool that fits the bore.

2. Select blade

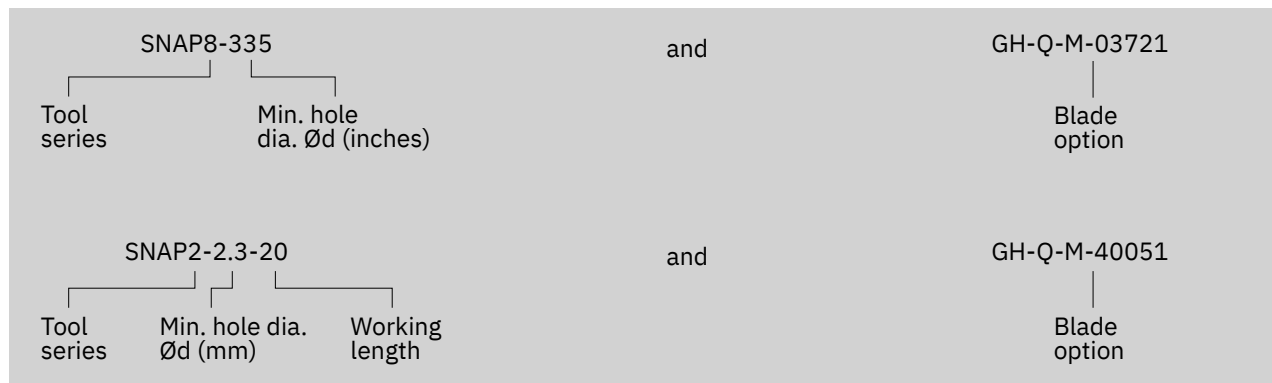


Tools are sold without blades.

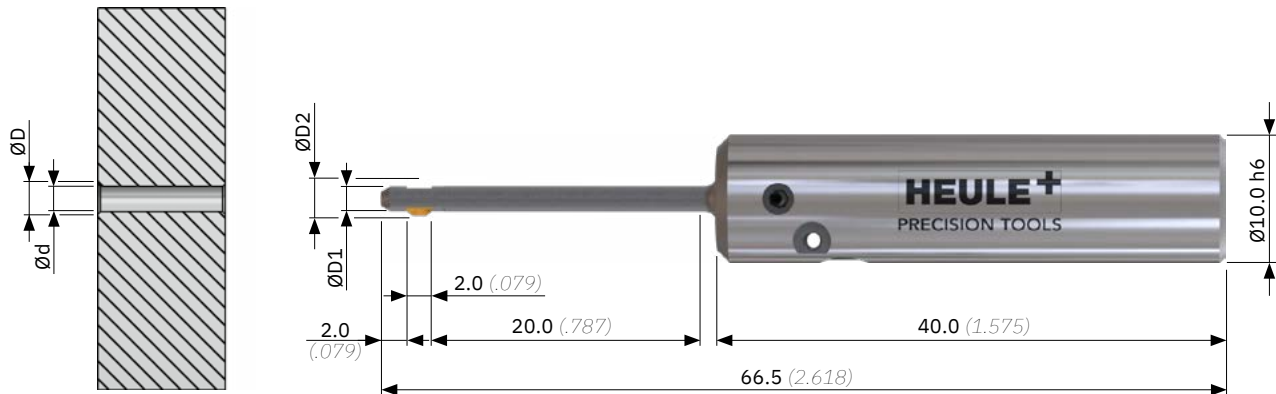
Use the desired chamfer size to select a blade from the blade table. In most cases, there are up to four choices of blade sizes based on size of desired edge break (Example: 0.10", 0.20", 0.30" x 45°).

GS is the standard geometry. For harder materials, use DF geometry options (not available for series 5).

Overview



SNAP2 $\varnothing 2.0 \text{ mm to } 2.9 \text{ mm}$ (.079" to .118")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Bore Ø d	Tool part no.	Tool Ø D1	Max. Ø D2	Blade part no. front & back cutting (FAB) / GS geometry					
				ØD	GH-Q-M-	ØD	GH-Q-M-	ØD	GH-Q-M-
2.0 .079	SNAP2-2.0-20	1.95 .077	ØD + 0.2 Beware of possible interference!	2.4	-40031				
2.1 .083	SNAP2-2.1-20	2.05 .081		2.4	-40031	2.6	-40051		
2.2 .087	SNAP2-2.2-20	2.15 .085		2.4	-40031	2.6	-40051	2.8	-40071
2.3 .091	SNAP2-2.3-20	2.25 .089		2.6	-40051	2.8	-40071		
2.4 .095	SNAP2-2.4-20	2.35 .092		2.6	-40051	2.8	-40071	3.0	-40091
2.5 .099	SNAP2-2.5-20	2.45 .097		2.8	-40071	3.0	-40091		
2.6 .102	SNAP2-2.6-20	2.55 .100		2.8	-40071	3.0	-40091	3.2	-40111
2.7 .106	SNAP2-2.7-20	2.65 .104		3.0	-40091	3.2	-40111		
2.8 .110	SNAP2-2.8-20	2.75 .108		3.0	-40091	3.2	-40111	3.4	-40131
2.9 .114	SNAP2-2.9-20	2.85 .112		3.2	-40111	3.4	-40131		



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP2 Ø2.0 mm to 2.9 mm (.079" to .118")

Blade GS geometry 90°

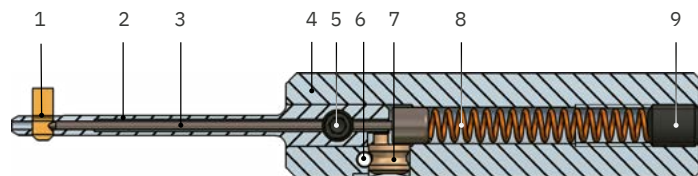
Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
2.4 .095	GH-Q-M-40031	GH-Q-M-40631
2.6 .102	GH-Q-M-40051	GH-Q-M-40651
2.8 .110	GH-Q-M-40071	GH-Q-M-40671
3.0 .118	GH-Q-M-40091	GH-Q-M-40691
3.2 .126	GH-Q-M-40111	GH-Q-M-40711
3.4 .134	GH-Q-M-40131	GH-Q-M-40731

Blade DF geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
2.4 .095	GH-Q-M-44031	GH-Q-M-44631
2.6 .102	GH-Q-M-44051	GH-Q-M-44651
2.8 .110	GH-Q-M-44071	GH-Q-M-44671
3.0 .118	GH-Q-M-44091	GH-Q-M-44691
3.2 .126	GH-Q-M-44111	GH-Q-M-44711
3.4 .134	GH-Q-M-44131	GH-Q-M-44731

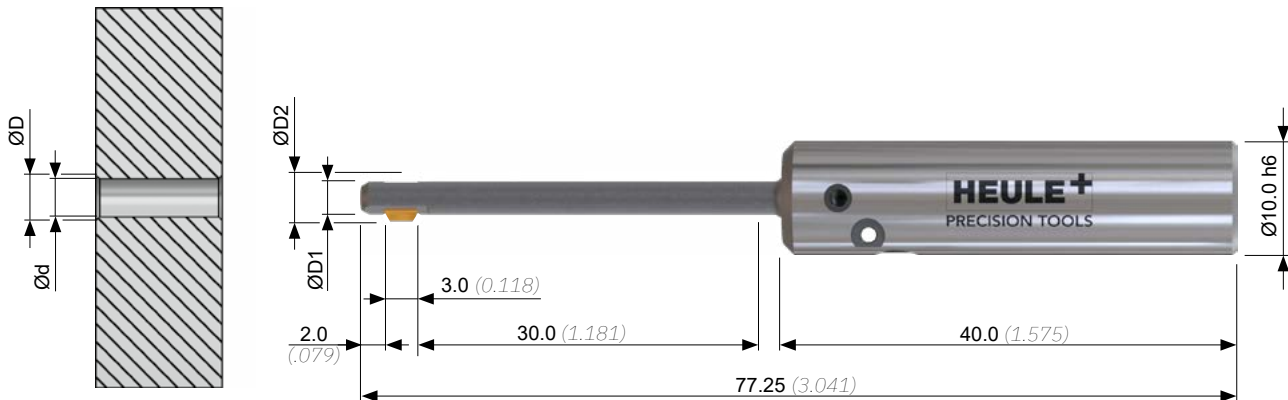
- Standard GS Geometry is available for front & back cutting (FAB) and back cutting only (BCO) geometry
- Use chamfer blade (DF) geometry for materials above 28Rc and/or larger burr formation

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Housing	see page 108
3	Control	GH-Q-E-0237
4	Tool body	GH-Q-G-5024
	Tool body assembly incl. eccentric GH-S-E-0031 incl. roll pin GH-C-E-0811	GH-Q-G-5025
5	Set screw	GH-H-S-1075
6	Roll pin	GH-C-E-0811
7	Eccentric	GH-S-E-0031
8	Spring	GH-H-F-0047
9	Screw	GH-H-S-0134
	Wrench for item 9	GH-H-S-2101

SNAP3 $\varnothing 3.0 \text{ mm to } 3.9 \text{ mm}$ (.118" to .154")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Bore Ø d	Tool part no.	Tool Ø D1	Max. Ø D2	Blade part no. front & back cutting (FAB) / GS geometry					
				ØD	GH-Q-M-	ØD	GH-Q-M-	ØD	GH-Q-M-
3.0 .118	SNAP3-3.0-30	2.9 .114	Beware of possible interference! ØD + 0.3	3.3	-40171	3.6	-40201		
3.1 .122	SNAP3-3.1-30	3.0 .118		3.6	-40201	3.9	-40231		
3.2 .126	SNAP3-3.2-30	3.1 .122		3.6	-40201	3.9	-40231	4.2	-40261
3.3 .130	SNAP3-3.3-30	3.2 .126		3.9	-40231	4.2	-40261		
3.4 .134	SNAP3-3.4-30	3.3 .130		3.9	-40231	4.2	-40261		
3.5 .138	SNAP3-3.5-30	3.4 .134		3.9	-40231	4.2	-40261	4.5	-40291
3.6 .142	SNAP3-3.6-30	3.5 .138		4.2	-40261	4.5	-40291		
3.7 .146	SNAP3-3.7-30	3.6 .142		4.2	-40261	4.5	-40291		
3.8 .150	SNAP3-3.8-30	3.7 .146		4.2	-40261	4.5	-40291	4.8	-40321
3.9 .154	SNAP3-3.9-30	3.8 .150		4.5	-40291	4.8	-40321		



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP3 $\varnothing 3.0 \text{ mm to } 3.9 \text{ mm}$ (.118" to .154")

Blade GS geometry 90°

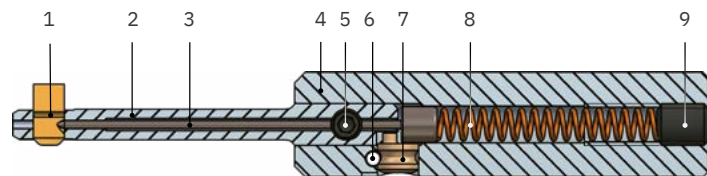
Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
3.3 .130	GH-Q-M-40171	GH-Q-M-40771
3.6 .142	GH-Q-M-40201	GH-Q-M-40801
3.9 .154	GH-Q-M-40231	GH-Q-M-40831
4.2 .165	GH-Q-M-40261	GH-Q-M-40861
4.5 .177	GH-Q-M-40291	GH-Q-M-40891
4.8 .189	GH-Q-M-40321	GH-Q-M-40921

Blade DF geometry 90°

Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
3.3 .130	GH-Q-M-44171	GH-Q-M-44771
3.6 .142	GH-Q-M-44201	GH-Q-M-44801
3.9 .154	GH-Q-M-44231	GH-Q-M-44831
4.2 .165	GH-Q-M-44261	GH-Q-M-44861
4.5 .177	GH-Q-M-44291	GH-Q-M-44891
4.8 .189	GH-Q-M-44321	GH-Q-M-44921

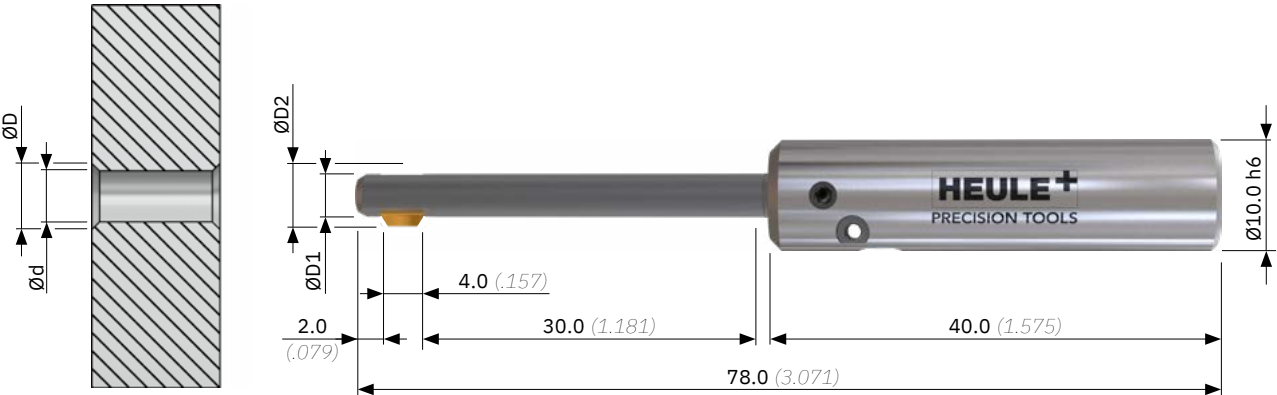
- Standard GS Geometry is available for front & back cutting (FAB) and back cutting only (BCO) geometry
- Use chamfer blade (DF) geometry for materials above 28Rc and/or larger burr formation

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Housing	see page 108
3	Control	GH-Q-E-0238
4	Tool body	GH-Q-G-5024
	Tool body assembly incl. eccentric GH-S-E-0031 incl. roll pin GH-C-E-0811	GH-Q-G-5025
5	Set screw	GH-H-S-1075
6	Roll pin	GH-C-E-0811
7	Eccentric	GH-S-E-0031
8	Spring	GH-H-F-0047
9	Screw	GH-H-S-0134
	Wrench for item 9	GH-H-S-2101

SNAP4 $\varnothing 4.0$ mm to 5.0 mm (.157" to .197")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Bore $\varnothing$ d	Tool part no.	Tool $\varnothing$ D1	Max. $\varnothing$ D2	Blade part no. front & back cutting (FAB) / GS geometry					
				$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
4.0 .157	SNAP4-4.0-30	3.9 .153	$\varnothing D + 0.4$ Beware of possible interference!	4.4	-40381	4.8	-40421	5.2	-40461
4.1 .161	SNAP4-4.1-30	4.0 .157		4.8	-40421	5.2	-40461	5.6	-40501
4.2 .165	SNAP4-4.2-30	4.1 .161		4.8	-40421	5.2	-40461	5.6	-40501
4.3 .169	SNAP4-4.3-30	4.2 .165		4.8	-40421	5.2	-40461	5.6	-40501
4.4 .173	SNAP4-4.4-30	4.3 .169		4.8	-40421	5.2	-40461	5.6	-40501
4.5 .177	SNAP4-4.5-30	4.4 .173		5.2	-40461	5.6	-40501	6.0	-40541
4.6 .181	SNAP4-4.6-30	4.5 .177		5.2	-40461	5.6	-40501	6.0	-40541
4.7 .185	SNAP4-4.7-30	4.6 .181		5.2	-40461	5.6	-40501	6.0	-40541
4.8 .189	SNAP4-4.8-30	4.7 .185		5.2	-40461	5.6	-40501	6.0	-40541
4.9 .193	SNAP4-4.9-30	4.8 .189		5.6	-40501	6.0	-40541	6.4	-40581
5.0 .197	SNAP4-5.0-30	4.9 .193		5.6	-40501	6.0	-40541	6.4	-40581



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP4 Ø4.0 mm to 5.0 mm (.157" to .197")

Blade GS geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
4.4 .173	GH-Q-M-40381	GH-Q-M-40981
4.8 .189	GH-Q-M-40421	GH-Q-M-41021
5.2 .205	GH-Q-M-40461	GH-Q-M-41061
5.6 .220	GH-Q-M-40501	GH-Q-M-41101
6.0 .236	GH-Q-M-40541	GH-Q-M-41141
6.4 .252	GH-Q-M-40581	GH-Q-M-41181

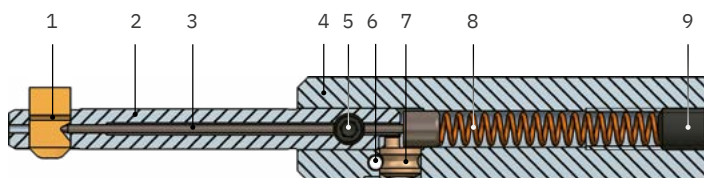
Blade DF geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
4.4 .173	GH-Q-M-44381	GH-Q-M-44981
4.8 .189	GH-Q-M-44421	GH-Q-M-45021
5.2 .205	GH-Q-M-44461	GH-Q-M-45061
5.6 .220	GH-Q-M-44501	GH-Q-M-45101
6.0 .236	GH-Q-M-44541	GH-Q-M-45141
6.4 .252	GH-Q-M-44581	GH-Q-M-45181

SNAP

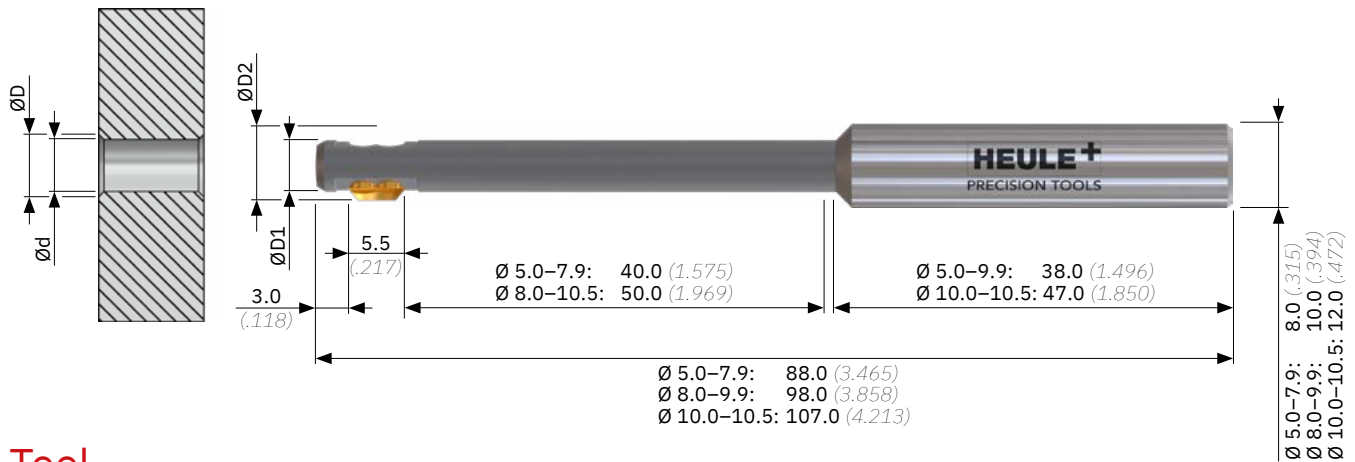
- Standard GS Geometry is available for front & back cutting (FAB) and back cutting only (BCO) geometry
- Use chamfer blade (DF) geometry for materials above 28Rc and/or larger burr formation

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Housing	see page 108
3	Control	GH-Q-E-0238
4	Tool body	GH-Q-G-5024
	Tool body assembly incl. eccentric GH-S-E-0031 incl. roll pin GH-C-E-0811	GH-Q-G-5025
5	Set screw	GH-H-S-1075
6	Roll pin	GH-C-E-0811
7	Eccentric	GH-S-E-0031
8	Spring	GH-H-F-0047
9	Screw	GH-H-S-0134
	Wrench for item 9	GH-H-S-2101

SNAP5 $\emptyset 5.0$ mm to 10.5 mm (.197" to .413")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Min. bore $\emptyset$ d	Tool part no.	Tool $\emptyset$ D1	Max. $\emptyset$ D2	Blade part no. front & back cutting (FAB) / GS geometry							
				$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-
5.0 .197	SNAP5-5.0	4.9 .193	Beware of possible interference! $\emptyset D + 0.6$	5.5	-30204	6.0	-30205	6.5	-30206	7.0	-30207
5.5 .217	SNAP5-5.5	5.4 .214		6.0	-30205	6.5	-30206	7.0	-30207	7.5	-30208
6.0 .236	SNAP5-6.0	5.9 .232		6.5	-30206	7.0	-30207	7.5	-30208	8.0	-30209
6.5 .256	SNAP5-6.5	6.4 .252		7.0	-30207	7.5	-30208	8.0	-30209	8.5	-30210
7.0 .276	SNAP5-7.0	6.9 .272		7.5	-30208	8.0	-30209	8.5	-30210	9.0	-30211
7.5 .296	SNAP5-7.5	7.4 .291		8.0	-30209	8.5	-30210	9.0	-30211	9.5	-30212
8.0 .315	SNAP5-8.0	7.8 .307		8.5	-30210	9.0	-30211	9.5	-30212	10.0	-30213
8.5 .335	SNAP5-8.5	8.3 .327		9.0	-30211	9.5	-30212	10.0	-30213	10.5	-30214
9.0 .354	SNAP5-9.0	8.8 .346		9.5	-30212	10.0	-30213	10.5	-30214	11.0	-30215
9.5 .374	SNAP5-9.5	9.3 .366		10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.0 .394	SNAP5-10.0	9.8 .386		10.5	-30214	11.0	-30215	11.5	-30216	12.0	-30217
10.5 .413	SNAP5-10.5	10.3 .406		11.0	-30215	11.5	-30216	12.0	-30217	12.5	-30218



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP5 $\varnothing 5.0$ mm to 10.5 mm (.197" to .413")

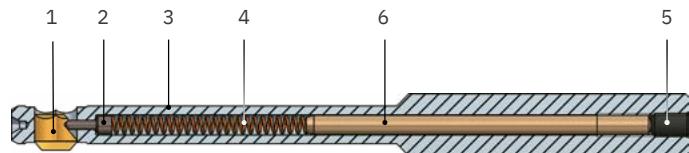
Blade GS geometry 90°

Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
5.5 .217	GH-Q-M-30204	GH-Q-M-31204
6.0 .236	GH-Q-M-30205	GH-Q-M-31205
6.5 .256	GH-Q-M-30206	GH-Q-M-31206
7.0 .276	GH-Q-M-30207	GH-Q-M-31207
7.5 .296	GH-Q-M-30208	GH-Q-M-31208
8.0 .315	GH-Q-M-30209	GH-Q-M-31209
8.5 .335	GH-Q-M-30210	GH-Q-M-31210
9.0 .354	GH-Q-M-30211	GH-Q-M-31211
9.5 .374	GH-Q-M-30212	GH-Q-M-31212
10.0 .394	GH-Q-M-30213	GH-Q-M-31213
10.5 .413	GH-Q-M-30214	GH-Q-M-31214
11.0 .433	GH-Q-M-30215	GH-Q-M-31215
11.5 .453	GH-Q-M-30216	GH-Q-M-31216
12.0 .472	GH-Q-M-30217	GH-Q-M-31217
12.5 .492	GH-Q-M-30218	GH-Q-M-31218
13.0 .512	GH-Q-M-30219	GH-Q-M-31219

The blades on the SNAP5 tools and the metric thread series tools are not interchangeable!



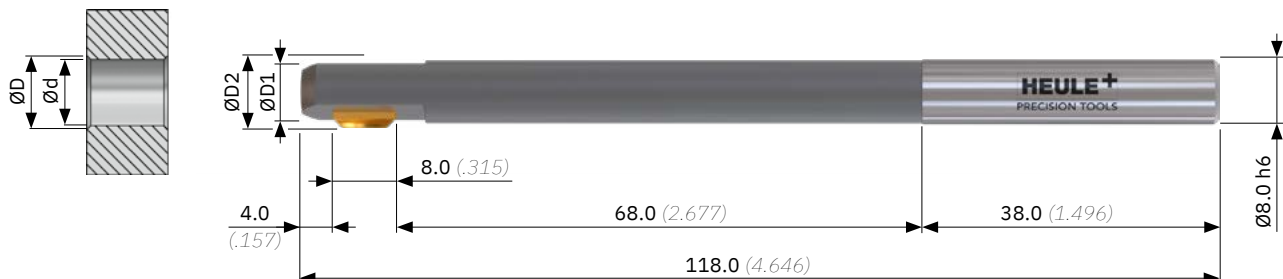
Spare parts



Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0008
3	Tool body	see page 109
4	Pressure spring $\varnothing 2.35 \times \varnothing 0.35 \times 30.0$ Hard pressure spring $\varnothing 2.5 \times \varnothing 0.5 \times 32.0$	GH-H-F-0019 GH-H-F-0041
5	Set screw Wrench for item 5	GH-H-S-0127 GH-H-S-2101
6	SNAP distance pin diameter 2.5 x 45.0 SNAP distance pin diameter 2.5 x 55.0 SNAP distance pin diameter 2.5 x 65.0	GH-Q-E-0041 GH-Q-E-0068 GH-Q-E-0067

Order tool with hard spring: Use suffix -HS.
Example: SNAP5-5.0-HS

SNAP8 $\varnothing 8.0$ mm to 12.0 mm (.315" to .472")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Min. bore Ø d	Tool part no.	Tool Ø D1	Max. Ø D2	Blade part no. front & back cutting (FAB) / GS geometry					
				ØD	GH-Q-M-	ØD	GH-Q-M-	ØD	GH-Q-M-
8.0 .315	SNAP8-315	7.8 .307	Beware of possible interference! ØD + 0.6	8.5	-03720	9.0	-03721		
8.5 .335	SNAP8-335	8.3 .327		9.0	-03721	9.5	-03722	10.0	-03723
9.0 .354	SNAP8-354	8.8 .346		9.5	-03722	10.0	-03723	10.5	-03724
9.5 .374	SNAP8-374	9.3 .366		10.0	-03723	10.5	-03724	11.0	-03725
10.0 .394	SNAP8-394	9.8 .386		10.5	-03724	11.0	-03725	11.5	-03726
10.5 .413	SNAP8-413	10.3 .406		11.0	-03725	11.5	-03726	12.0	-03727
11.0 .433	SNAP8-433	10.8 .425		11.5	-03726	12.0	-03727	12.5	-03728
11.5 .453	SNAP8-453	11.3 .445		12.0	-03727	12.5	-03728	13.0	-03729
12.0 .472	SNAP8-472	11.8 .465		12.5	-03728	13.0	-03729	13.5	-03730



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP8 $\varnothing 8.0$ mm to 12.0 mm (.315" to .472")

Blade GS geometry 90°

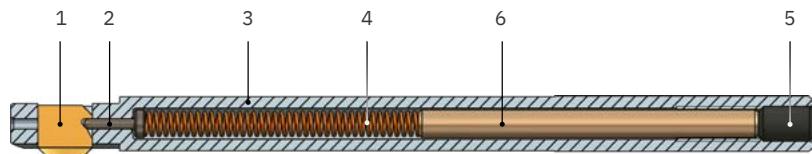
Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
8.5 .335	GH-Q-M-03720	GH-Q-M-05720
9.0 .354	GH-Q-M-03721	GH-Q-M-05721
9.5 .374	GH-Q-M-03722	GH-Q-M-05722
10.0 .394	GH-Q-M-03723	GH-Q-M-05723
10.5 .413	GH-Q-M-03724	GH-Q-M-05724
11.0 .433	GH-Q-M-03725	GH-Q-M-05725
11.5 .453	GH-Q-M-03726	GH-Q-M-05726
12.0 .472	GH-Q-M-03727	GH-Q-M-05727
12.5 .492	GH-Q-M-03728	GH-Q-M-05728
13.0 .512	GH-Q-M-03729	GH-Q-M-05729
13.5 .531	GH-Q-M-03730	GH-Q-M-05730

Blade DF geometry 90°

Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
8.5 .335	GH-Q-M-03120	GH-Q-M-05120
9.0 .354	GH-Q-M-03121	GH-Q-M-05121
9.5 .374	GH-Q-M-03122	GH-Q-M-05122
10.0 .394	GH-Q-M-03123	GH-Q-M-05123
10.5 .413	GH-Q-M-03124	GH-Q-M-05124
11.0 .433	GH-Q-M-03125	GH-Q-M-05125
11.5 .453	GH-Q-M-03126	GH-Q-M-05126
12.0 .472	GH-Q-M-03127	GH-Q-M-05127
12.5 .492	GH-Q-M-03128	GH-Q-M-05128
13.0 .512	GH-Q-M-03129	GH-Q-M-05129
13.5 .531	GH-Q-M-03130	GH-Q-M-05130

SNAP

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0002
3	Tool body	see page 109
4	Pressure spring $\varnothing 3.7 \times \varnothing 0.5 \times 48.0$ Hard pressure spring $\varnothing 4.3 \times \varnothing 0.6 \times 52.0$	GH-H-F-0007 GH-H-F-0011
5	Set screw Wrench for item 5	GH-H-S-0119 GH-H-S-2100
6	Distance pin	GH-Q-E-0028

Order tool with hard spring: Use suffix -HS.
Example: SNAP8-394-HS

SNAP12 $\emptyset 12.0$ mm to 20.0 mm (.473" to .787")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Min. bore $\emptyset$ d	Tool part no.	Tool $\emptyset$ D1	Max. $\emptyset$ D2	Blade part no. front & back cutting (FAB) / GS geometry							
				$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-	$\emptyset D$	GH-Q-M-
12.0 .473	SNAP12-473	11.8 .465	Beware of possible interference! $\emptyset D + 0.8$	12.5	-03740	13.0	-03741	13.5	-03742	14.0	-03743
12.5 .492	SNAP12-492	12.3 .484		13.0	-03741	13.5	-03742	14.0	-03743	14.5	-03744
13.0 .512	SNAP12-512	12.8 .504		13.5	-03742	14.0	-03743	14.5	-03744	15.0	-03745
13.5 .531	SNAP12-531	13.3 .524		14.0	-03743	14.5	-03744	15.0	-03745	15.5	-03746
14.0 .551	SNAP12-551	13.8 .543		14.5	-03744	15.0	-03745	15.5	-03746	16.0	-03747
14.5 .571	SNAP12-571	14.3 .563		15.0	-03745	15.5	-03746	16.0	-03747	16.5	-03748
15.0 .591	SNAP12-591	14.8 .583		15.5	-03746	16.0	-03747	16.5	-03748	17.0	-03749
15.5 .610	SNAP12-610	15.3 .602		16.0	-03747	16.5	-03748	17.0	-03749	17.5	-03750
16.0 .630	SNAP12-630	15.8 .622		16.5	-03748	17.0	-03749	17.5	-03750	18.0	-03751
16.5 .650	SNAP12-650	16.3 .642		17.0	-03749	17.5	-03750	18.0	-03751	18.5	-03752
17.0 .669	SNAP12-669	16.8 .661		17.5	-03750	18.0	-03751	18.5	-03752	19.0	-03753
17.5 .689	SNAP12-689	17.3 .681		18.0	-03751	18.5	-03752	19.0	-03753	19.5	-03754
18.0 .709	SNAP12-709	17.8 .701		18.5	-03752	19.0	-03753	19.5	-03754	20.0	-03755
18.5 .729	SNAP12-729	18.3 .720		19.0	-03753	19.5	-03754	20.0	-03755	20.5	-03756
19.0 .748	SNAP12-748	18.8 .740		19.5	-03754	20.0	-03755	20.5	-03756	21.0	-03757
19.5 .768	SNAP12-768	19.3 .760		20.0	-03755	20.5	-03756	21.0	-03757	21.5	-03758
20.0 .787	SNAP12-787	19.8 .780		20.5	-03756	21.0	-03757	21.5	-03758	22.0	-03759



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP12 $\varnothing 12.0 \text{ mm to } 20.0 \text{ mm}$ (.473" to .787")

Blade GS geometry 90°

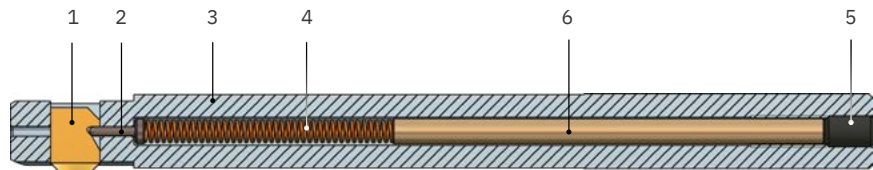
Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
12.5 .492	GH-Q-M-03740	GH-Q-M-05740
13.0 .512	GH-Q-M-03741	GH-Q-M-05741
13.5 .531	GH-Q-M-03742	GH-Q-M-05742
14.0 .551	GH-Q-M-03743	GH-Q-M-05743
14.5 .571	GH-Q-M-03744	GH-Q-M-05744
15.0 .591	GH-Q-M-03745	GH-Q-M-05745
15.5 .610	GH-Q-M-03746	GH-Q-M-05746
16.0 .630	GH-Q-M-03747	GH-Q-M-05747
16.5 .650	GH-Q-M-03748	GH-Q-M-05748
17.0 .669	GH-Q-M-03749	GH-Q-M-05749
17.5 .689	GH-Q-M-03750	GH-Q-M-05750
18.0 .709	GH-Q-M-03751	GH-Q-M-05751
18.5 .729	GH-Q-M-03752	GH-Q-M-05752
19.0 .748	GH-Q-M-03753	GH-Q-M-05753
19.5 .768	GH-Q-M-03754	GH-Q-M-05754
20.0 .787	GH-Q-M-03755	GH-Q-M-05755
20.5 .807	GH-Q-M-03756	GH-Q-M-05756
21.0 .827	GH-Q-M-03757	GH-Q-M-05757
21.5 .846	GH-Q-M-03758	GH-Q-M-05758
22.0 .866	GH-Q-M-03759	GH-Q-M-05759

Blade DF geometry 90°

Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
12.5 .492	GH-Q-M-03140	GH-Q-M-05140
13.0 .512	GH-Q-M-03141	GH-Q-M-05141
13.5 .531	GH-Q-M-03142	GH-Q-M-05142
14.0 .551	GH-Q-M-03143	GH-Q-M-05143
14.5 .571	GH-Q-M-03144	GH-Q-M-05144
15.0 .591	GH-Q-M-03145	GH-Q-M-05145
15.5 .610	GH-Q-M-03146	GH-Q-M-05146
16.0 .630	GH-Q-M-03147	GH-Q-M-05147
16.5 .650	GH-Q-M-03148	GH-Q-M-05148
17.0 .669	GH-Q-M-03149	GH-Q-M-05149
17.5 .689	GH-Q-M-03150	GH-Q-M-05150
18.0 .709	GH-Q-M-03151	GH-Q-M-05151
18.5 .729	GH-Q-M-03152	GH-Q-M-05152
19.0 .748	GH-Q-M-03153	GH-Q-M-05153
19.5 .768	GH-Q-M-03154	GH-Q-M-05154
20.0 .787	GH-Q-M-03155	GH-Q-M-05155
20.5 .807	GH-Q-M-03156	GH-Q-M-05156
21.0 .827	GH-Q-M-03157	GH-Q-M-05157
21.5 .846	GH-Q-M-03158	GH-Q-M-05158
22.0 .866	GH-Q-M-03159	GH-Q-M-05159

SNAP

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0002
3	Tool body	see page 109
4	Pressure spring $\varnothing 3.7 \times \varnothing 0.5 \times 48.0$ Hard pressure spring $\varnothing 4.3 \times \varnothing 0.6 \times 52.0$	GH-H-F-0007 GH-H-F-0011
5	Set screw Wrench for item 5	GH-H-S-0119 GH-H-S-2100
6	Distance pin	GH-Q-E-0032

Order tool with hard spring: Use suffix -HS.
Example: SNAP12-473-HS

SNAP20 $\varnothing 20.0$ mm to 35.0 mm (.787" to 1.378")



Tool

Standard tool **without** blade

- The blades are sold separately.
- Choose the blade size close to your chamfer diameter requirement. The achievable chamfer diameter may vary slightly depending on application parameters.
- With cylindrical shank

Min. bore $\varnothing$ d	Tool part no.	Tool $\varnothing$ D1	Max. $\varnothing$ D2	Blade part no. front & back cutting (FAB) / GS geometry					
				$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
20.0 .787	SNAP20-20.0	19.8 .780	$\varnothing D + 1.0$ Beware of possible interference!	21.0	-03770	22.0	-03771	23.0	-03772
21.0 .827	SNAP20-21.0	20.8 .819		22.0	-03771	23.0	-03772	24.0	-03773
22.0 .866	SNAP20-22.0	21.8 .858		23.0	-03772	24.0	-03773	25.0	-03774
23.0 .906	SNAP20-23.0	22.8 .898		24.0	-03773	25.0	-03774	26.0	-03775
24.0 .945	SNAP20-24.0	23.8 .937		25.0	-03774	26.0	-03775	27.0	-03776
25.0 .984	SNAP20-25.0	24.8 .976		26.0	-03775	27.0	-03776	28.0	-03777
26.0 1.024	SNAP20-26.0	25.8 1.016		27.0	-03776	28.0	-03777	29.0	-03778
27.0 1.063	SNAP20-27.0	26.8 1.055		28.0	-03777	29.0	-03778	30.0	-03779
28.0 1.102	SNAP20-28.0	27.8 1.094		29.0	-03778	30.0	-03779	31.0	-03780
29.0 1.142	SNAP20-29.0	28.8 1.134		30.0	-03779	31.0	-03780	32.0	-03781
30.0 1.181	SNAP20-30.0	29.8 1.173		31.0	-03780	32.0	-03781	33.0	-03782
31.0 1.220	SNAP20-31.0	30.8 1.213		32.0	-03781	33.0	-03782	34.0	-03783
32.0 1.260	SNAP20-32.0	31.8 1.252		33.0	-03782	34.0	-03783	35.0	-03784
33.0 1.299	SNAP20-33.0	32.8 1.291		34.0	-03783	35.0	-03784	36.0	-03785
34.0 1.339	SNAP20-34.0	33.8 1.331		35.0	-03784	36.0	-03785	37.0	-03786
35.0 1.378	SNAP20-35.0	34.8 1.370		36.0	-03785	37.0	-03786	38.0	-03787



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79



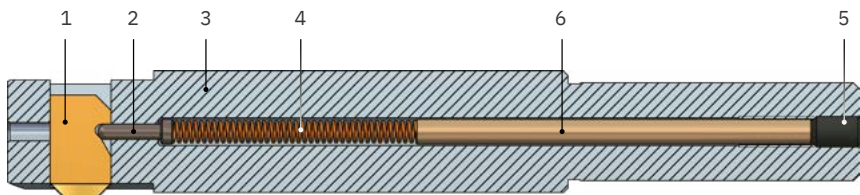
Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > SNAP

SNAP20 $\varnothing 20.0$ mm to 35.0 mm (.787" to 1.378")

Blade GS geometry 90°

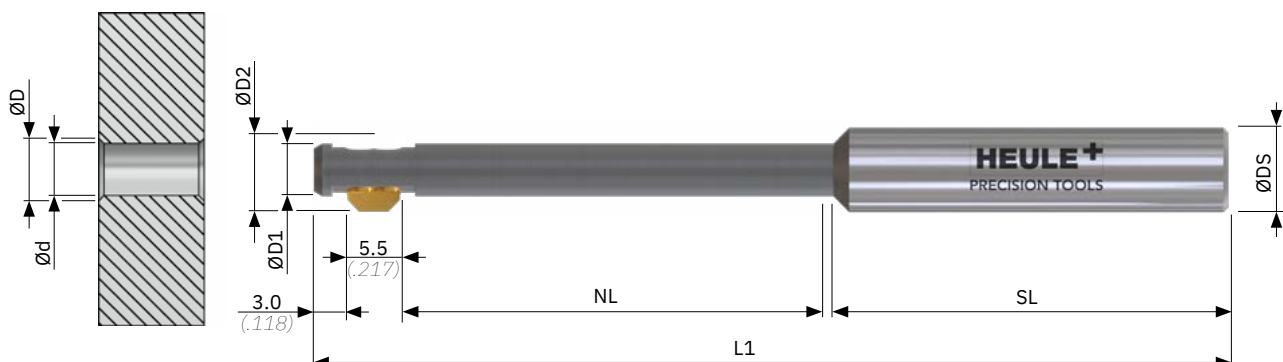
Max. chamfer $\varnothing$	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
21.0 .827	GH-Q-M-03770	GH-Q-M-05770
22.0 .866	GH-Q-M-03771	GH-Q-M-05771
23.0 .906	GH-Q-M-03772	GH-Q-M-05772
24.0 .945	GH-Q-M-03773	GH-Q-M-05773
25.0 .984	GH-Q-M-03774	GH-Q-M-05774
26.0 1.024	GH-Q-M-03775	GH-Q-M-05775
27.0 1.063	GH-Q-M-03776	GH-Q-M-05776
28.0 1.102	GH-Q-M-03777	GH-Q-M-05777
29.0 1.142	GH-Q-M-03778	GH-Q-M-05778
30.0 1.181	GH-Q-M-03779	GH-Q-M-05779
31.0 1.220	GH-Q-M-03780	GH-Q-M-05780
32.0 1.260	GH-Q-M-03781	GH-Q-M-05781
33.0 1.299	GH-Q-M-03782	GH-Q-M-05782
34.0 1.339	GH-Q-M-03783	GH-Q-M-05783
35.0 1.378	GH-Q-M-03784	GH-Q-M-05784
36.0 1.417	GH-Q-M-03785	GH-Q-M-05785
37.0 1.457	GH-Q-M-03786	GH-Q-M-05786
38.0 1.496	GH-Q-M-03787	GH-Q-M-05787

Spare parts



Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0003
3	Tool body	see page 109
4	Pressure spring	GH-H-F-0011
5	Set screw	GH-H-S-0119
	Wrench for item 5	GH-H-S-2100
6	Distance pin	GH-Q-E-0031

SNAP thread series tools | available for DR blades



Tool

Standard tool **without** blade

- The blades must always be ordered separately.
- Different blade options are available, thus offering various chamfer diameters. A blade is only designed for a defined chamfer diameter. The achievable chamfer diameter may vary slightly depending on the material, blade force, cutting parameters and application.
- With cylindrical shank

Bore Ø d	Tap/Pitch	max. chamfer ØD	Tool Ø D1	Max. Ø D2	Tool L. L1	Working L. NL	Shank L. SL	Shank Ø DS	Part no.
5.00 .197	M6	6.5 .256	4.9	7.3	88.0	40.0	38.0	8.0 h6	SNAP5/M6
5.11 .201	1/4"-20	7.0 .276	5.0	7.9	88.0	40.0	38.0	8.0 h6	SNAP5/Inch1/4
6.53 .257	5/16"-18	8.5 .335	6.4	9.4	88.0	40.0	38.0	8.0 h6	SNAP5/Inch5/16
6.80 .268	M8	8.5 .335	6.6	9.3	88.0	40.0	38.0	8.0 h6	SNAP5/M8
7.90 .311	3/8"-16	10.0 .394	7.8	10.9	100.0	50.0	40.0	10.0 h6	SNAP5/Inch3/8
8.50 .335	M10	10.5 .413	8.4	11.3	100.0	50.0	40.0	10.0 h6	SNAP5/M10
9.35 .368	7/16"-14	11.5 .453	9.2	12.4	100.0	50.0	40.0	10.0 h6	SNAP5/Inch7/16
10.20 .402	M12	12.5 .492	10.0	13.1	100.0	50.0	40.0	10.0 h6	SNAP5/M12
10.70 .421	1/2"-13	13.0 .512	10.6	13.9	100.0	50.0	40.0	10.0 h6	SNAP5/Inch1/2
12.00 .472	M14	14.5 .571	11.8	15.1	100.0	50.0	40.0	10.0 h6	SNAP5/M14



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79

The blades on the thread series and
the SNAP5 tools are not interchangeable!



SNAP thread series tools

Blade DRA geometry 90°

Geometry for soft materials, e.g. brass, low-alloy steels

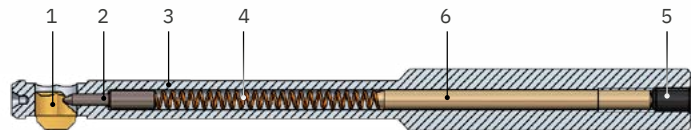
Tap/Pitch	Max. chamfer ØD	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
M6	6.5 .256	GH-Q-M-34032	GH-Q-M-34532
1/4"-20	7.0 .276	GH-Q-M-34232	GH-Q-M-34732
5/16"-18	8.5 .335	GH-Q-M-34272	GH-Q-M-34772
M8	8.5 .335	GH-Q-M-34072	GH-Q-M-34572
3/8"-16	10.0 .394	GH-Q-M-34312	GH-Q-M-34812
M10	10.5 .413	GH-Q-M-34112	GH-Q-M-34612
7/16"-14	11.5 .453	GH-Q-M-34352	GH-Q-M-34852
M12	12.5 .492	GH-Q-M-34152	GH-Q-M-34652
1/2"-13	13.0 .512	GH-Q-M-34392	GH-Q-M-34892
M14	14.5 .571	GH-Q-M-34192	GH-Q-M-34692

Blade DRB geometry 90°

Geometry for high-strength alloys, e.g. high-alloy steels

Tap/Pitch	Max. chamfer ØD	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
M6	6.5 .256	GH-Q-M-34042	GH-Q-M-34542
1/4"-20	7.0 .276	GH-Q-M-34242	GH-Q-M-34742
5/16"-18	8.5 .335	GH-Q-M-34282	GH-Q-M-34782
M8	8.5 .335	GH-Q-M-34082	GH-Q-M-34582
3/8"-16	10.0 .394	GH-Q-M-34322	GH-Q-M-34822
M10	10.5 .413	GH-Q-M-34122	GH-Q-M-34622
7/16"-14	11.5 .453	GH-Q-M-34362	GH-Q-M-34862
M12	12.5 .492	GH-Q-M-34162	GH-Q-M-34662
1/2"-13	13.0 .512	GH-Q-M-34402	GH-Q-M-34902
M14	14.5 .571	GH-Q-M-34202	GH-Q-M-34702

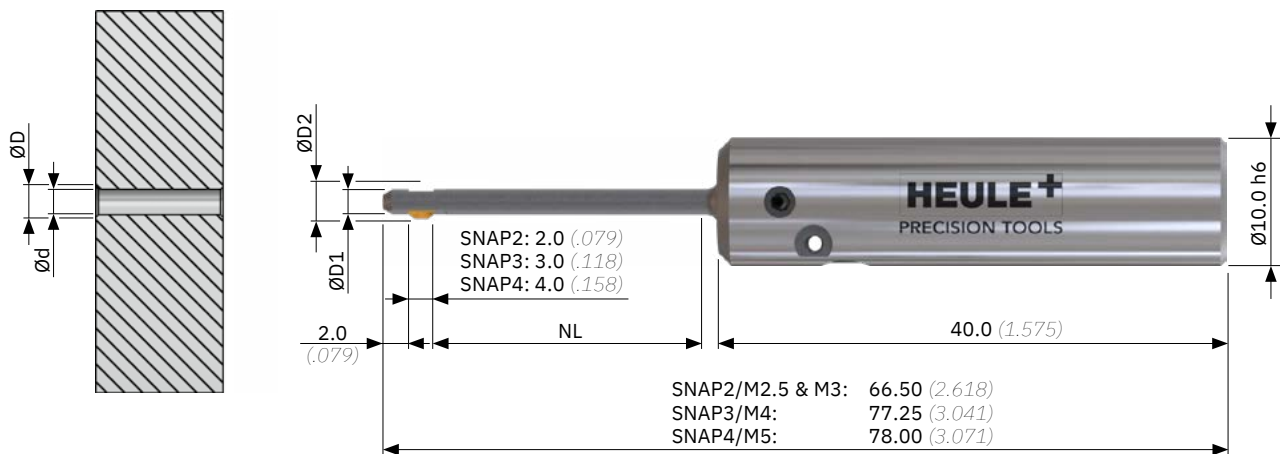
Spare parts



Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0015
3	Tool body	see page 109
4	Pressure spring	GH-H-F-0019
5	Set screw Allen key SW1.5	GH-H-S-0127 GH-H-S-2101
6	Distance pin: Tool No. ref.: ...M6-M8 Distance pin: Tool No. ref.: ...3/8-M14	GH-Q-E-0049 GH-Q-E-0042

SNAP

thread series tools | available for **GS** blades
| M2.5 / M3 / M4 / M5



Tool

Standard tool **without** blade

- The blades must always be ordered separately.
- Different blade options are available for each bore diameter thus offering various chamfer diameters. However, a blade is only designed for a defined chamfer diameter. The achievable chamfer diameter may vary slightly depending on the material, blade force, cutting parameters and application.

Bore Ø d	Tap/ Pitch	max. chamfer ØD	Tool Ø D1	Max. Ø D2	Part no. NL = 20.0 mm	Part no. NL = 30.0 mm
2.05 .081	M2.5	2.8 .110	2.0 .079	3.0 .118	SNAP2/M2.5/20	–
2.5 .098	M3	3.4 .134	2.45 .096	3.6 .142	SNAP2/M3/20	–
3.3 .130	M4	4.5 .177	3.2 .126	4.8 .189	–	SNAP3/M4/30
4.2 .165	M5	5.6 .220	4.1 .161	6.0 .236	–	SNAP4/M5/30



Parts in stock highlighted in green



Programming
Page 78



Cutting data
Page 79

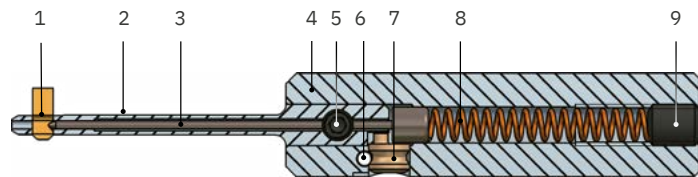
SNAP thread series tools

Blade GS geometry 90°

Tap/Pitch	Max. chamfer ØD	Part no. forward and backward cutting		Part no. backward cutting only	
		Coating A for steel, titanium, Inconel	Coating D for aluminum	Coating A for steel, titanium, Inconel	Coating D for aluminum
M2.5	2.8 .110	GH-Q-M-41501	GH-Q-M-41502	GH-Q-M-41601	GH-Q-M-41602
M3	3.4 .134	GH-Q-M-41511	GH-Q-M-41512	GH-Q-M-41611	GH-Q-M-41612
M4	4.5 .177	GH-Q-M-41521	GH-Q-M-41522	GH-Q-M-41621	GH-Q-M-41622
M5	5.6 .220	GH-Q-M-41531	GH-Q-M-41532	GH-Q-M-41631	GH-Q-M-41632

SNAP

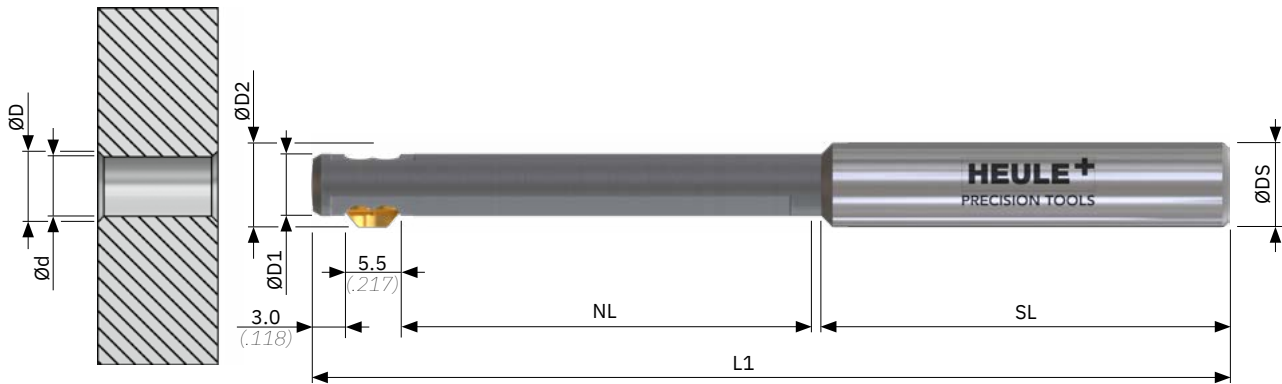
Spare parts



Item	Description	Part no. NL 20.0	Part no. NL 30.0
1	Blade	see above	see above
2	Blade housing SNAP2/M2.5/20 Blade housing SNAP2/M3/20 Blade housing SNAP3/M4/30 Blade housing SNAP4/M5/30	GH-Q-N-0075 GH-Q-N-0076	GH-Q-N-0155 GH-Q-N-0175
3	Control bolt SNAP2/M2.5/20 Control bolt SNAP2/M3/20 Control bolt SNAP3/M4/30 Control bolt SNAP4/M5/30	GH-Q-E-0256 GH-Q-E-0237	GH-Q-E-0238 GH-Q-E-0238
4	Tool body Tool body assembly SNAP2-4 diameter 10.0 h6 incl. eccentric GH-S-E-0031 incl. roll pin GH-C-E-0811	GH-Q-G-5024 GH-Q-G-5025	GH-Q-G-5024 GH-Q-G-5025
5	Clamping screw M3x3.3	GH-H-S-1075	GH-H-S-1075
6	Roll pin SNAP2-4	GH-C-E-0811	GH-C-E-0811
7	Eccentric SNAP2-4	GH-S-E-0031	GH-S-E-0031
8	Pressure spring Ø3.2xØ0.45x23.0	GH-H-F-0047	GH-H-F-0047
9	Set screw M4x5.0 DIN913 Allen key SW1.5	GH-H-S-0134 GH-H-S-2101	GH-H-S-0134 GH-H-S-2101

SNAP

thread series tools | available for **GS** blades
| M6 / M7 / M8 / M10 / M12



Tool

Standard tool **without** blade

- The blades must always be ordered separately.
- Different blade options are available, thus offering various chamfer diameters. A blade is only designed for a defined chamfer diameter. The achievable chamfer diameter may vary slightly depending on the material, blade force, cutting parameters and application.
- With cylindrical shank

Bore Ø d	Tap/Pitch	max. chamfer ØD	Tool Ø D1	Max. Ø D2	Tool L. L1	Working L. NL	Shank L. SL	Shank Ø DS	Part no.
5.00 .197	M6-1.0	6.5 .256	4.9	7.3	88.0	40.0	38.0	8.0 h6	GH-Q-O-2763
5.11 .201	1/4"-20	7.0 .276	5.0	7.9	88.0	40.0	38.0	8.0 h6	GH-Q-O-2764
6.00 .236	M7-1.0	7.5 .295	5.9	9.4	88.0	40.0	38.0	8.0 h6	GH-Q-O-2765
6.53 .257	5/16"-18	8.5 .335	6.4	9.3	88.0	40.0	38.0	8.0 h6	GH-Q-O-2766
6.70 .264	M8-1.25	8.5 .335	6.6	9.3	88.0	40.0	38.0	8.0 h6	GH-Q-O-2767
7.90 .311	3/8"-16	10.0 .394	7.8	10.9	98.0	50.0	38.0	10.0 h6	GH-Q-O-2768
8.50 .335	M10-1.5	10.5 .413	8.4	11.3	98.0	50.0	38.0	10.0 h6	GH-Q-O-2769
8.75 .344	M10-1.25	10.5 .413	8.6	11.3	98.0	50.0	38.0	10.0 h6	GH-Q-O-2770
9.35 .368	7/16"-14	11.5 .453	9.2	12.4	98.0	50.0	38.0	10.0 h6	GH-Q-O-2771
9.92 .391	7/16"-20	12.0 .472	9.8	12.4	107.0	50.0	40.0	12.0 h6	GH-Q-O-2772
10.30 .406	M12-1.75	12.5 .492	10.2	13.1	107.0	50.0	40.0	12.0 h6	GH-Q-O-2773
10.70 .421	1/2"-13	13.0 .512	10.6	13.9	107.0	50.0	40.0	12.0 h6	GH-Q-O-2774



Parts in stock highlighted in green



Programming
Page 78



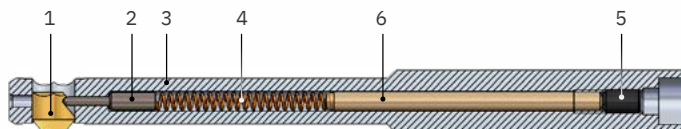
Cutting data
Page 79

SNAP thread series tools

Blade GS geometry 90°

Tap/Pitch	Max. chamfer ØD	Part no. front & back cutting (FAB)
M6-1.0	6.5 .256	GH-Q-M-30206
1/4"-20	7.0 .276	GH-Q-M-30207
M7-1.0	7.5 .295	GH-Q-M-30208
5/16"-18	8.5 .335	GH-Q-M-30210
M8-1.25	8.5 .335	GH-Q-M-30210
3/8"-16	10.0 .394	GH-Q-M-30213
M10-1.5	10.5 .413	GH-Q-M-30214
M10-1.25	10.5 .413	GH-Q-M-30214
7/16"-14	11.5 .453	GH-Q-M-30216
7/16"-20	12.0 .472	GH-Q-M-30217
M12-1.75	12.5 .492	GH-Q-M-30218
1/2"-13	13.0 .512	GH-Q-M-30219

Spare parts



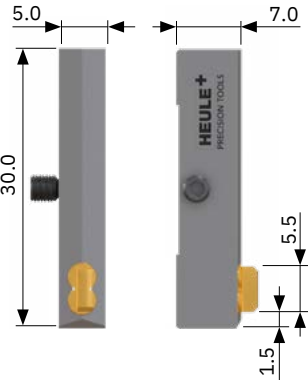
Item	Description	Part no.
1	Blade	see above
2	Control bolt	GH-Q-E-0121
3	Tool body	see page 109
4	Pressure spring	GH-H-F-0019
5	Set screw Allen key SW1.5	GH-H-S-0127 GH-H-S-2101
6	Distance pin: Tool No. ref.: ...2763-2767 Distance pin: Tool No. ref.: ...2768-2771 Distance pin: Tool No. ref.: ...2772-2774	GH-Q-E-0049 GH-Q-E-0041 GH-Q-E-0042

Optional: Locking Mechanism (-LM):

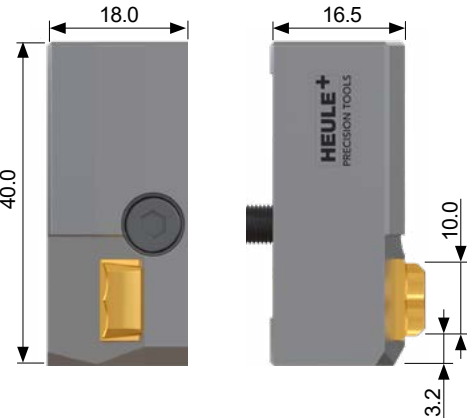
2	Control bolt	GH-Q-E-0121
4	Pressure spring	GH-H-F-0055
5	Set screw Allen key SW2.5	GH-H-S-0538-1 GH-H-S-2100
6	Distance pin: Tool No. ref.: ...2763-2767-LM Distance pin: Tool No. ref.: ...2768-2771-LM Distance pin: Tool No. ref.: ...2772-2774-LM	GH-Q-E-0505 GH-Q-E-0507 GH-Q-E-0508

SNAP cassette systems

SNAP5 >Ø12.6



SNAP35 >Ø35.0



SNAP MODULE:
Combined with drilling



More information: page 250

Tool

The SNAP cassette is used for installation in combination tools and tools for large bore diameters. The required cassette holder can be ordered from HEULE or manufactured by the customer according to the specifications on the following pages.

- Standard tool **without** blade
- The blades are sold separately.

Bore Ø range d	Cassette type	Part no.
20.0–90.0* <i>.787–3.543</i>	SNAP5	GH-Q-O-1430
>Ø35.0 <i>1.378</i>	SNAP35	GH-Q-O-1030

* Specials on request down to 12.6mm
For harder spring (GH-H-F-0055) use order number GH-Q-O-1430-HS



Parts in stock highlighted in green

SNAP cassette systems

SNAP5 cassette (Ø20.0–90.0)

Blade GS geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
0.5 .020	GH-Q-M-30770	GH-Q-M-31770
1.0 .039	GH-Q-M-30771	GH-Q-M-31771

Blade DF geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
0.5 .020	GH-Q-M-30780	GH-Q-M-31780
1.0 .039	GH-Q-M-30781	GH-Q-M-31781
1.5 .059	GH-Q-M-30782	GH-Q-M-31782

SNAP35 cassette (>Ø35.0)

Blade GS geometry 90°

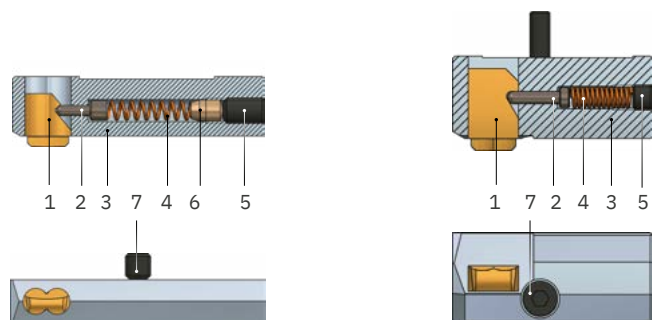
Max. chamfer Ø	Part no. front & back cutting (FAB)
0.5 .020	GH-Q-M-01802
1.0 .039	GH-Q-M-01812
1.5 .059	GH-Q-M-01822

Blade DF geometry 90°

Max. chamfer Ø	Part no. front & back cutting (FAB)	Part no. back cutting only (BCO)
0.5 .020	GH-Q-M-01901	GH-Q-M-01921
1.0 .039	GH-Q-M-01904	GH-Q-M-01924
1.5 .059	GH-Q-M-01907	GH-Q-M-01927

GS chamfer range can vary more than DF geometry.

Spare parts

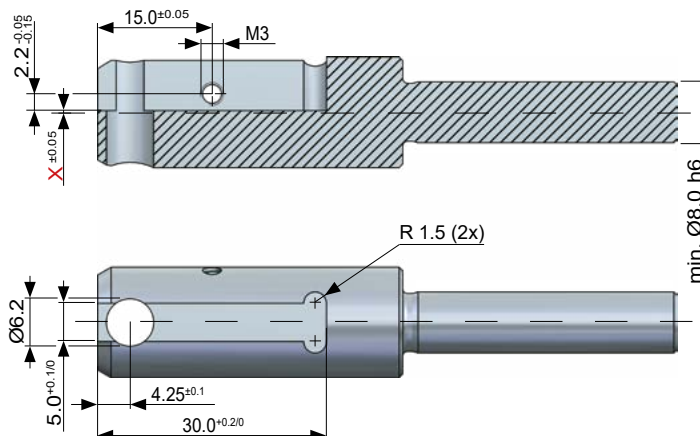


Item	Description	SNAP5	SNAP35
1	SNAP blade	see above	see above
2	Control bolt	GH-Q-E-0008	GH-Q-E-0003
3	Cassette tool body	GH-Q-G-1382	GH-Q-G-1034
4	Pressure spring	GH-H-F-0027	GH-H-F-0012
5	Set screw	GH-H-S-0127	GH-H-S-0120
6	Distance pin	GH-Q-E-0046	-
7	Set screw	GH-H-S-0355	GH-H-S-0502
	Wrench	GH-H-S-2101	GH-H-S-2100

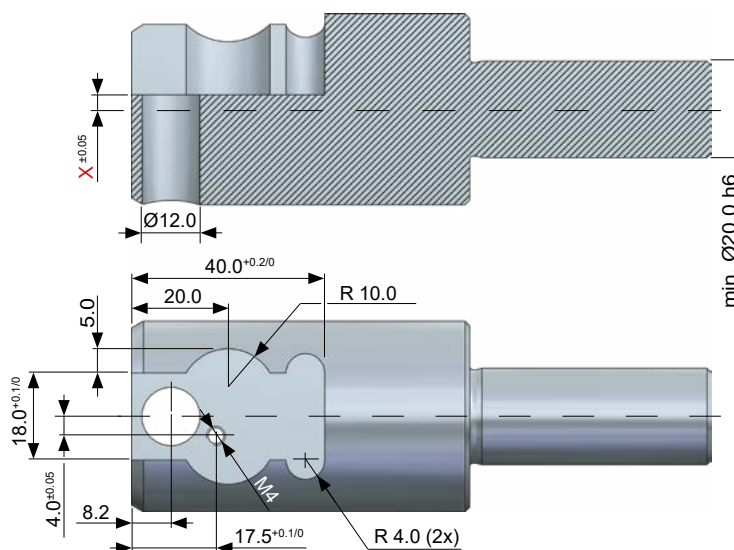
SNAP cassette systems

INSTALLATION INSTRUCTIONS

SNAP5 cassette
for diameter >12.6 mm



SNAP35 cassette
for diameter >35.0 mm

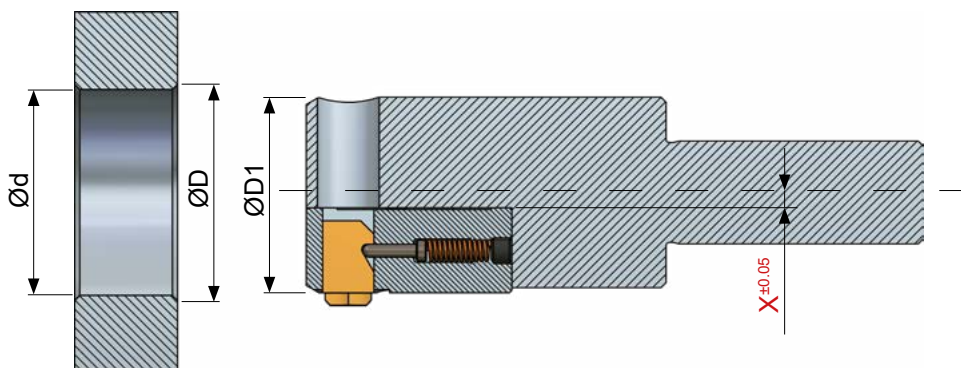


SNAP cassette systems

Limits

	SNAP5		SNAP35	
bore Ø	>Ø12.6	>Ø.496	>Ø35.0	>Ø1.378
max. ØD	Ød + 3.0	Ød + .118	Ød + 3.0	Ød + .118
max. ØD1	Ød - 1.0	Ød - .039	Ød - 4.0	Ød - .157

Calculating dimension X



Formula for calculating dimension X

SNAP5 > 12.6: $X = (\text{Ø } d/2) - 7.3 + \text{correction}^*$

SNAP35 > 35.0: $X = (\text{Ø } d/2) - 17.0 + \text{correction}^*$

*) Correction for desired chamfering size: Blade TARGET minus ACTUAL

Calculation example for SNAP5 cassette

Given:

Bore Ø: 23.0 mm / chamfer diameter D: 24.5 mm

→ required chamfer. capacity $(24.5-23.0)/2 = 0.75 \text{ mm}$ (= TARGET)

→ Blade chamfering capacity: 1.0 mm (= ACTUAL)

Desired dimension X

$X = \text{Ø } d / 2 - 7.3 + (\text{correction for blade chamfering size})$

$X = (23.0 \text{ mm} / 2) - 7.3 \text{ mm} + (\text{TARGET} - \text{ACTUAL})$

$X = 11.5 \text{ mm} - 7.3 \text{ mm} + (0.75 \text{ mm} - 1.0 \text{ mm})$

$X = 4.2 \text{ mm} + (-0.25 \text{ mm})$

X = 3.95 mm

SNAP spare parts

In the tables below you will find the blade housings and tool bodies that are not listed in the tables under the product itself. For all other items, please refer to the tables next to the product.

BLADE HOUSING

Tool	Tool ØD1	Part no. Working length NL 20.0	Part no. Working length NL 30.0
SNAP2-2.0-20	1.95 .077	GH-Q-N-0061	-
SNAP2-2.1-20	2.05 .081	GH-Q-N-0062	-
SNAP2-2.2-20	2.15 .085	GH-Q-N-0063	-
SNAP2-2.3-20	2.25 .089	GH-Q-N-0064	-
SNAP2-2.4-20	2.35 .092	GH-Q-N-0065	-
SNAP2-2.5-20	2.45 .097	GH-Q-N-0066	-
SNAP2-2.6-20	2.55 .100	GH-Q-N-0067	-
SNAP2-2.7-20	2.65 .104	GH-Q-N-0068	-
SNAP2-2.8-20	2.75 .108	GH-Q-N-0069	-
SNAP2-2.9-20	2.85 .112	GH-Q-N-0070	-
SNAP3-3.0-30	2.9 .114	-	GH-Q-N-0141
SNAP3-3.1-30	3.0 .118	-	GH-Q-N-0142
SNAP3-3.2-30	3.1 .122	-	GH-Q-N-0143
SNAP3-3.3-30	3.2 .126	-	GH-Q-N-0144
SNAP3-3.4-30	3.3 .130	-	GH-Q-N-0145
SNAP3-3.5-30	3.4 .134	-	GH-Q-N-0146
SNAP3-3.6-30	3.5 .138	-	GH-Q-N-0147
SNAP3-3.7-30	3.6 .142	-	GH-Q-N-0148
SNAP3-3.8-30	3.7 .146	-	GH-Q-N-0149
SNAP3-3.9-30	3.8 .150	-	GH-Q-N-0150
SNAP4-4.0-30	3.9 .153	-	GH-Q-N-0161
SNAP4-4.1-30	4.0 .157	-	GH-Q-N-0162
SNAP4-4.2-30	4.1 .161	-	GH-Q-N-0163
SNAP4-4.3-30	4.2 .165	-	GH-Q-N-0164
SNAP4-4.4-30	4.3 .169	-	GH-Q-N-0165
SNAP4-4.5-30	4.4 .173	-	GH-Q-N-0166
SNAP4-4.6-30	4.5 .177	-	GH-Q-N-0167
SNAP4-4.7-30	4.6 .181	-	GH-Q-N-0168
SNAP4-4.8-30	4.7 .185	-	GH-Q-N-0169
SNAP4-4.9-30	4.8 .189	-	GH-Q-N-0170
SNAP4-5.0-30	4.9 .193	-	GH-Q-N-0171

SNAP

spare parts (continued)

TOOL BODY

Tool	Tool ØD1	Part no.
SNAP5-5.0	4.9 .193	GH-Q-G-1271
SNAP5-5.5	5.4 .214	GH-Q-G-1272
SNAP5-6.0	5.9 .232	GH-Q-G-1273
SNAP5-6.5	6.4 .252	GH-Q-G-1274
SNAP5-7.0	6.9 .272	GH-Q-G-1275
SNAP5-7.5	7.4 .291	GH-Q-G-1276
SNAP5-8.0	7.8 .307	GH-Q-G-1277
SNAP5-8.5	8.3 .327	GH-Q-G-1389
SNAP5-9.0	8.8 .346	GH-Q-G-1384
SNAP5-9.5	9.3 .366	GH-Q-G-1485
SNAP5-10.0	9.8 .386	GH-Q-G-1486
SNAP5-10.5	10.3 .406	GH-Q-G-1478
SNAP8-315	7.8 .307	GH-Q-G-0320
SNAP8-335	8.3 .327	GH-Q-G-0321
SNAP8-354	8.8 .346	GH-Q-G-0322
SNAP8-374	9.3 .366	GH-Q-G-0323
SNAP8-394	9.8 .386	GH-Q-G-0324
SNAP8-413	10.3 .406	GH-Q-G-0325
SNAP8-433	10.8 .425	GH-Q-G-0326
SNAP8-453	11.3 .445	GH-Q-G-0327
SNAP8-472	11.8 .465	GH-Q-G-0328
SNAP12-473	11.8 .465	GH-Q-G-0340
SNAP12-492	12.3 .484	GH-Q-G-0341
SNAP12-512	12.8 .504	GH-Q-G-0342
SNAP12-531	13.3 .524	GH-Q-G-0343
SNAP12-551	13.8 .543	GH-Q-G-0344
SNAP12-571	14.3 .563	GH-Q-G-0345
SNAP12-591	14.8 .583	GH-Q-G-0346
SNAP12-610	15.3 .602	GH-Q-G-0347
SNAP12-630	15.8 .622	GH-Q-G-0348
SNAP12-650	16.3 .642	GH-Q-G-0349
SNAP12-669	16.8 .661	GH-Q-G-0350
SNAP12-689	17.3 .681	GH-Q-G-0351
SNAP12-709	17.8 .701	GH-Q-G-0352
SNAP12-729	18.3 .720	GH-Q-G-0353
SNAP12-748	18.8 .740	GH-Q-G-0354
SNAP12-768	19.3 .760	GH-Q-G-0355
SNAP12-787	19.8 .780	GH-Q-G-0356

Tool	Tool ØD1	Part no.
SNAP20-20.0	19.8 .780	GH-Q-G-0270
SNAP20-21.0	20.8 .819	GH-Q-G-0271
SNAP20-22.0	21.8 .858	GH-Q-G-0272
SNAP20-23.0	22.8 .898	GH-Q-G-0273
SNAP20-24.0	23.8 .937	GH-Q-G-0274
SNAP20-25.0	24.8 .976	GH-Q-G-0275
SNAP20-26.0	25.8 1.016	GH-Q-G-0276
SNAP20-27.0	26.8 1.055	GH-Q-G-0277
SNAP20-28.0	27.8 1.094	GH-Q-G-0278
SNAP20-29.0	28.8 1.134	GH-Q-G-0279
SNAP20-30.0	29.8 1.173	GH-Q-G-0280
SNAP20-31.0	30.8 1.213	GH-Q-G-0281
SNAP20-32.0	31.8 1.252	GH-Q-G-0282
SNAP20-33.0	32.8 1.291	GH-Q-G-0283
SNAP20-34.0	33.8 1.331	GH-Q-G-0284
SNAP20-35.0	34.8 1.370	GH-Q-G-0285

Thread series DR

SNAP5/M6	4.90 .193	GH-Q-G-5003
SNAP5/Inch1/4	5.01 .197	GH-Q-G-5100
SNAP5/Inch5/16	6.43 .253	GH-Q-G-5101
SNAP5/M8	6.70 .264	GH-Q-G-5018
SNAP5/Inch3/8	7.80 .307	GH-Q-G-5102
SNAP5/M10	8.30 .327	GH-Q-G-5010
SNAP5/Inch7/16	9.25 .364	GH-Q-G-5103
SNAP5/M12	10.00 .394	GH-Q-G-5019
SNAP5/Inch1/2	10.60 .417	GH-Q-G-5104
SNAP5/M14	11.80 .465	GH-Q-G-5017

Thread series GS

GH-Q-O-2763	6.5 .256	GH-Q-G-2551
GH-Q-O-2764	7.0 .276	GH-Q-G-2552
GH-Q-O-2765	7.5 .295	GH-Q-G-2553
GH-Q-O-2766	8.5 .335	GH-Q-G-2554
GH-Q-O-2767	8.5 .335	GH-Q-G-2555
GH-Q-O-2768	10.0 .394	GH-Q-G-2556
GH-Q-O-2769	10.5 .413	GH-Q-G-2557
GH-Q-O-2770	10.5 .413	GH-Q-G-2558
GH-Q-O-2771	11.5 .453	GH-Q-G-2559
GH-Q-O-2772	12.0 .472	GH-Q-G-2560
GH-Q-O-2773	12.5 .492	GH-Q-G-2561
GH-Q-O-2774	13.0 .512	GH-Q-G-2562

SNAP FAQ

Question	Causes	Remedy
Burr is not cut away cleanly or chamfer too small	• Blade selected too small • Working feed rate too high • Check program position	• Select blade for larger chamfer • Reduce working feed rate
No chamfer	• Blade force too low	• Turn the set screw clockwise to increase the blade pressure (only possible with SNAP blades with GS geometry)
	• Blade worn, worn out	• Insert new blade
	• Excessive burr formation	• Replace or sharpen the drill tool
	• Blade jams, no longer extends out of blade housing	• Check coolant delivery • Check runout
Forward and backward chamfer size not the same	• Working feed rate forwards and backwards different • Check program position	• Select the same working feed rate forwards and backwards if possible (only for blades with GS geometry)
	• Different burr formation front and back • Check if part is flat	• On the side with the chamfer that is too small: reduce working feed rate, only possible for blades with GS geometry. On the side with the chamfer that is too large: increase working feed rate, only possible for blades with GS geometry
Chamfer with chatter marks	• Poorly set workpiece or tool	• Ensure that workpiece and tool are firmly clamped
	• Tool in unstable condition	• Increase tool feed rate, and possibly blade force • Check tool endurance
	• Cutting speed too high	• Reduce cutting speed
Inconsistent chamfer size	• Different working feed rate	• Select consistent working feed rate
	• Blade force so weak that the blade does not return to the neutral position every time	• Turn the set screw clockwise to increase the blade pressure
	• Tool in unstable condition	• Increase blade force and working feed rate
Poor service life	• Poorly clamped workpiece or tool (vibration)	• Ensure that workpiece and tool are more firmly clamped
	• Inadequate machine stability (spindle play, etc.)	• Improve machine stability or guide with custom tool in the bore
	• Incorrect programming	• Select another coating • Check feed and speed

DEFA

Adjustable front and back chamfering tool for high burr formations, specific sizes and materials that are difficult to machine.

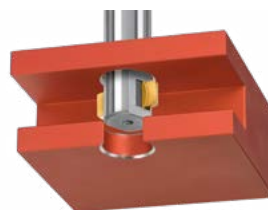
The advantages – Your benefit

The operating principle specific to the DEFA and the special blade geometry ensure a reliable chamfer result when working with demanding materials.

The chamfering capacity is infinitely adjustable on the tool itself, depending on the bore diameter. The cutting force can also be optimized to suit the material.



Double-edged tool for chamfers with precise diameters and high-quality chamfered surfaces.



Chamfering of interrupted bore edges – forward and backward in a single operation.



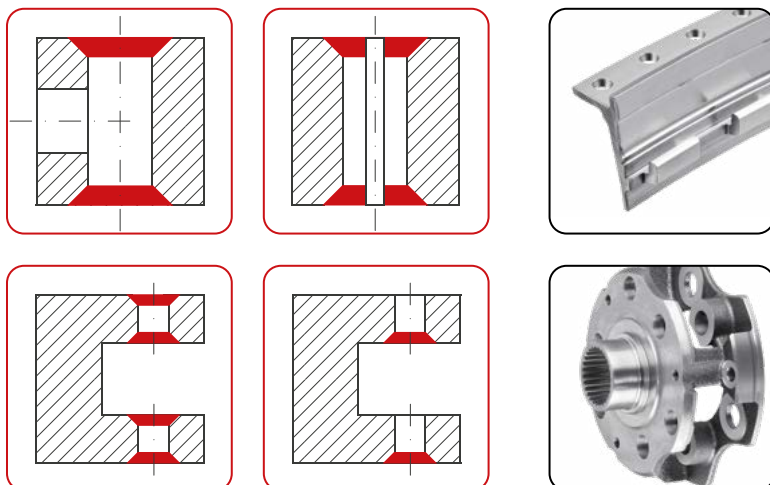


THE RANGE

Bore Ø range		Max. chamfer	Working length mm	Series	Catalog page
Ø4.0–5.9	.157–.232	0.70 .028	30.0 / 60.0	DEFA 2–6	122
Ø6.0–7.6	.236–.299	0.85 .033	34.0 / 60.0	DEFA 7–9	124
Ø7.7–8.9	.303–.350	1.10 .043	34.0 / 60.0	DEFA 10–11	126
Ø9.0–11.1	.354–.437	1.65 .065	30.0 / 60.0	DEFA 12–13	128
Ø11.2–13.4	.441–.528	2.00 .079	30.0 / 60.0	DEFA 14–15	130
Ø13.2–16.6	.520–.654	2.20 .087	30.0 / 60.0	DEFA 16–17	132
Ø16.8–20.4	.661–.803	2.70 .106	30.0 / 60.0	DEFA 18–19	134
Ø20.7–23.2	.815–.913	2.80 .110	52.5	DEFA 22–24	136

If the required tool is not included in the standard range, our **CUSTOM** range often has a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

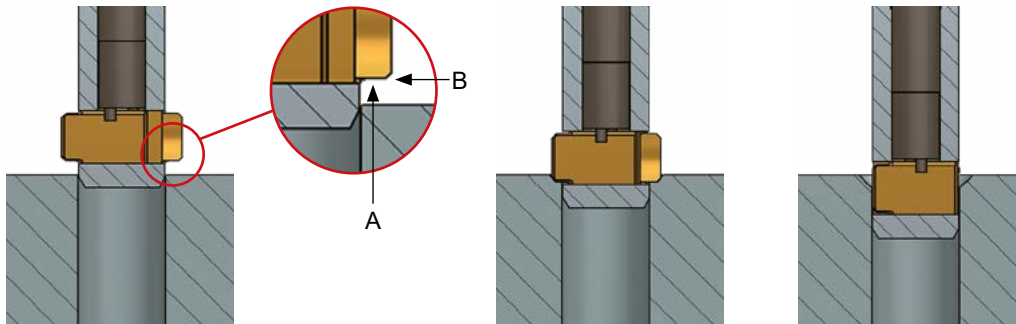
FIELD OF APPLICATION



DEFA

CUSTOM

OPERATING PRINCIPLE



The DEFA chamfering tool is particularly suitable for cutting small to large chamfers to materials with high burr formation and are difficult to machine (i.e. nickel alloys).

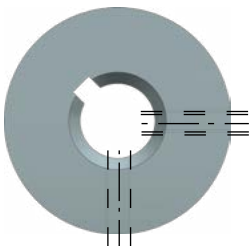
First, the cutting edges (A) remove the existing burr. As soon as the blades meet the workpiece surface, an inclined, non-cutting control surface on the blade (B) controls the cutting of the chamfer and the retraction of the blade into the tool body.

The crowned surface of the blade passes through the bore without causing any damage to the surface of the bore.

The rigid connection between the two cutting edges also allows bores with axial grooves or cross bores to be machined and to be traversed through in rotation, i.e. without stopping the spindle (see illustration below).

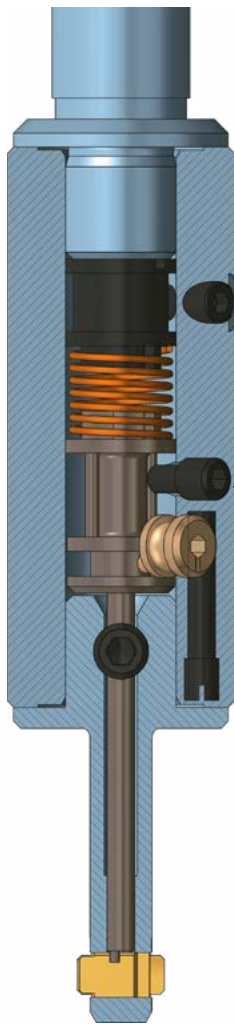
Compensation of height differences

DEFA automatically compensates for possible height differences in the components to be machined, e.g. cast parts. The blade only begins to retract or cut on contact with the workpiece. This means that the chamfer size remains constant.



Top view of workpiece with axial groove and cross bores. Twin blade design does not allow off setting blade to fall into slot (not 180° from each other).

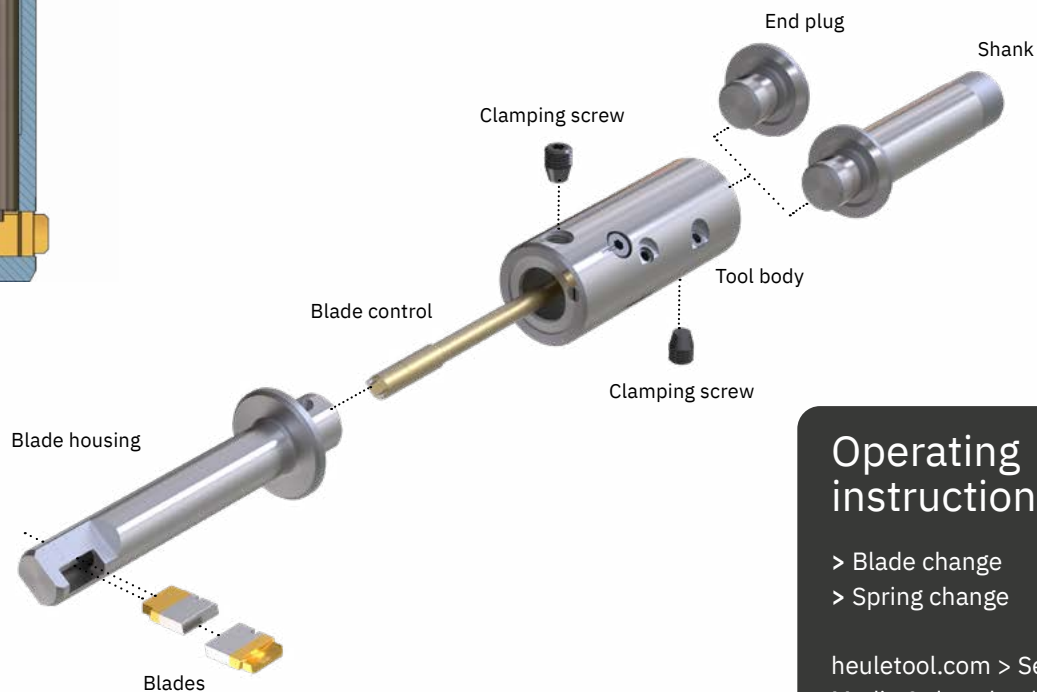
TOOL DESIGN



The DEFA chamfering tool is characterized by two blades with a special cutting geometry. The two blades are kept by a spring-loaded blade control in the tool body.

The two blades are rigidly connected. By turning the adjusting screw, the blade position and thus the chamfer diameter is simultaneously and continuously adjusted.

Adjusting screw



Operating instructions

- > Blade change
- > Spring change

heuletool.com > Service > Media & download center



DEFA PROCESS STEPS

Front & back deburring

See Feed and Speed chart on next page for proper parameters.

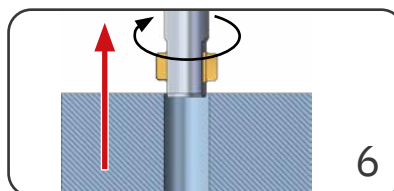
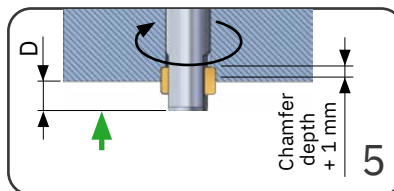
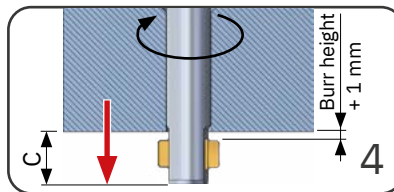
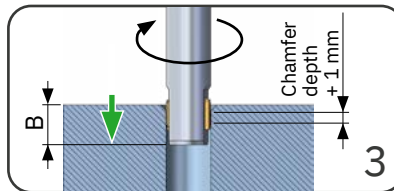
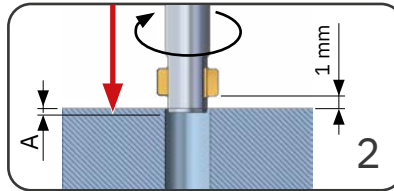
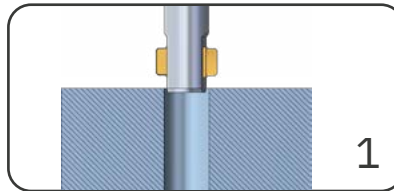
Move the tool with rapid feed into position **A** or 1 mm distance.

Machine the part with cutting feed and speed. Feed into the part to position **B** or the chamfer depth + 1 mm to ensure the blade has finished cutting.

Move the tool through the part with rapid feed (rf) to position **C** or the blade is 1 mm beyond the burr. The blade will not mark nor damage the through hole.

Machine the part with back cutting feed and speed. Feed into part to position **D** or the chamfer depth + 1 mm to ensure the blade has finished cutting the back chamfer.

Remove the tool from the hole with rapid feed and proceed to the next hole. The blade will not mark nor damage the through hole.



Back only deburring

See Feed and Speed chart on next page for proper parameters.

Move the tool through the part with rapid feed (rf) to position **C** or the blade is 1 mm beyond the burr. The blade will not mark nor damage the through hole.

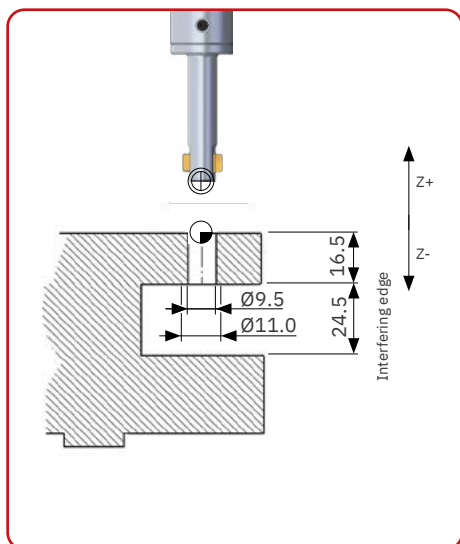
Machine the part with back cutting feed and speed. Feed into part to position **D** or the chamfer depth + 1 mm to ensure the blade has finished cutting the back chamfer.

Remove the tool from the hole with rapid feed and proceed to the next hole. The blade will not mark nor damage the through hole.

DIMENSION TABLE FOR PROGRAMMING

Tool	A		B		C		D	
DEFA 4-6	0.8	.031	3.5	.138	6.0	.236	3.5	.138
DEFA 7-9	1.0	.039	3.5	.138	6.6	.260	3.5	.138
DEFA 10-11	1.1	.043	3.5	.138	8.5	.335	3.5	.138
DEFA 12-13	2.3	.091	3.5	.138	9.7	.382	3.5	.138
DEFA 14-19	2.4	.094	3.5	.138	11.6	.457	3.5	.138
DEFA 22-24	3.5	.138	3.5	.138	13.5	.531	3.5	.138

APPLICATION EXAMPLE



Application data

Workpiece height:	16.5 mm (.650)
Bore diameter:	Ø9.5 mm (.374)
Chamfer diameter:	Ø11.0 mm (.433)
Material:	Carbon Steels
Machining:	both bore edges

Tool and blade selection

Tool:	DEFA12-30-366/.465
Tool diameter:	Ø9.3 mm (.366)
Max. chamfer diameter:	Ø12.8 mm (.504)
Working length:	30.0 mm (note interfering edge)
Blade:	GH-S-M-3X12
Setting diameter D2:	$D+2S = 11.0 \text{ mm} + 2(0.4) = 11.8 \text{ mm} (.465)$

Cutting data

Cutting speed Vc:	100–260 SFM
Working feed fz:	.001–.003 IPR

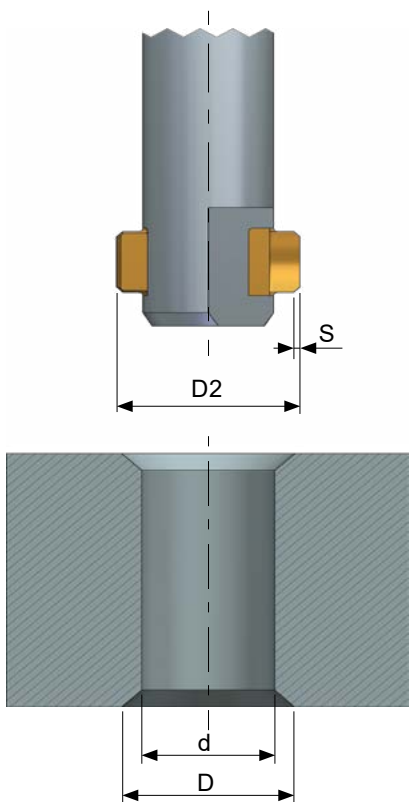
CUTTING DATA

Material	Hardness BHN	SFM MPM	IPR mm/rev
Carbon Steels	100–250	100–260 30–79	.001–.003 0.03–0.08
Free machining Alloy	125–340	140–200 43–61	.001–.003 0.03–0.08
High Alloy Steel	250–350	100–130 30–40	.001–.003 0.03–0.08
Stainless Steel	140–250	100–150 30–46	.001–.003 0.03–0.08
Steel Castings	140–250	100–150 30–46	.001–.003 0.03–0.08
Grey Cast Iron	150–330	140–240 43–73	.001–.003 0.03–0.08
Nodular Cast Iron	140–310	140–210 43–64	.001–.003 0.03–0.08
Aluminum Alloys	30–180	300–400 91–122	.001–.003 0.03–0.08
Nickel-based Alloys	140–310	20–80 6–24	.0008–.0015 0.02–0.04
Titanium Alloys	120–334	60–100 18–30	.0008–.0015 0.02–0.04
Copper-Brass-Bronze	80–202	240–315 73–96	.001–.003 0.03–0.08



The cutting data listed are guide values! For materials that are difficult to machine or uneven bore edges, we recommend applying cutting speeds that are at the lower end of the range.

SETTING THE CHAMFER DIAMETER



The desired chamfer diameter **D** is determined by the setting diameter **D2**. The maximum $D2$ must not be exceeded (see tool tables starting on page 122).

$D2$ = setting diameter

D = chamfer diameter

S = control surface width

Formula for setting chamfer diameter

$$D2 \approx D + 2S$$

Procedure

Turn the adjusting screw using an Allen key until the desired setting diameter $D2$ is reached. To do this, remove the red thread locker.

Increase $D2$ = turn adjusting screw anti-clockwise. Secure the adjusting screw again by using locking varnish.

Reduce $D2$ = turn adjusting screw to the right. Secure the adjusting screw again by using locking varnish.

If the chamfer diameter D deviates slightly from the desired diameter, the setting diameter $D2$ can be adjusted accordingly.

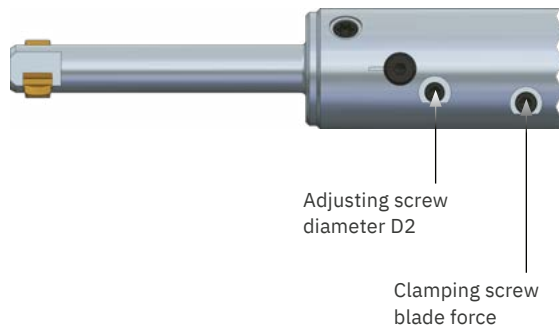
Operating instructions

> Setting the chamfer $\emptyset$

heuletool.com > Service >
Media & download center



SETTING THE BLADE FORCE



The force acting radially on the blades should be at least high enough to ensure that the blades reliably extend to the set D2 under working conditions (dirt, coolant, etc.).

Important: The blade force does not define the chamfer size!

Procedure

Blade force guide value 8–12 N. Influencing factors such as material and chamfer requirements must be considered. A test bore is recommended.

Increase blade force = turn clamping screw clockwise

Reduce blade force = turn clamping screw anti-clockwise

Operating instructions

> Setting the blade force

heuletool.com > Service > Media & download center



Selecting the correct DEFA tool

TOOL SELECTOR

The HEULE Tool Selector is the quickest and easiest way to find the right tool.

Send your search results along with your application data to your HEULE representative. They will check the application and offer you options if required.

If your search produces no results, please contact HEULE with your application data anyway. We also develop customized solutions and are happy to advise you.

TOOL TABLES

The correct tool is primarily determined by the bore diameter to be machined. This table also shows the chamfer diameter range, the working lengths and the tool diameters.

The tool tables cover the standard range. The tool part numbers highlighted in green are available from stock.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form (heuletool.com > contact) or by telephone.

Tool Selector

> Step-by-step guide to find the right solution

heuletool.com > Tool Selector
> DEFA



Tool Selector 

Still have questions?

> HEULE Consulting and Support

heuletool.com > contact



CONFIGURING DEFA TOOLS

1. Select tool



Select the tool from the tool table that is suitable for the existing bore diameter and the intended chamfer diameter. The working length must also be selected.

Depending on the bore depth, select the working length as short as possible or only as long as necessary (stability).

Calculate the ØD2 (over-the-blade) diameter in inches and add this dimension as a suffix to the order number. More information on the product range pages.

2. Select shank type



The tool can be clamped directly on the tool body or on the separate shank. If it is clamped to the tool body, an end plug is required. Add **p** to the order number for the tool with an end plug. Leave blank for tool with straight shank.

3. Select blades

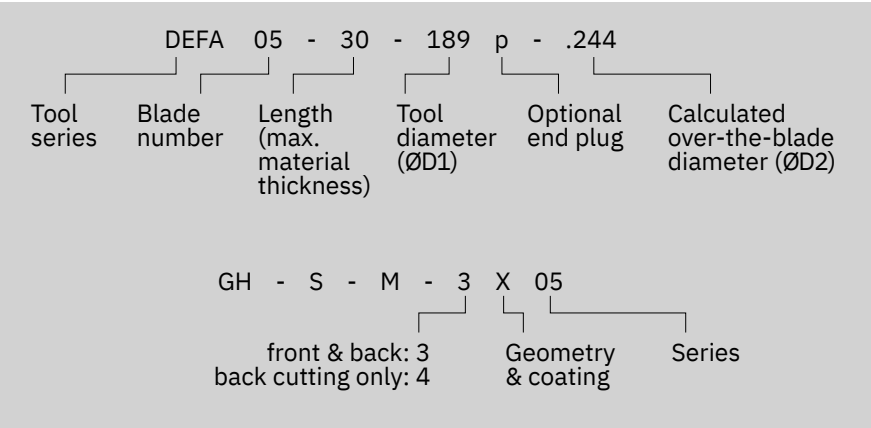


The blade is selected in the same way as the tool for the corresponding chamfer diameter range.

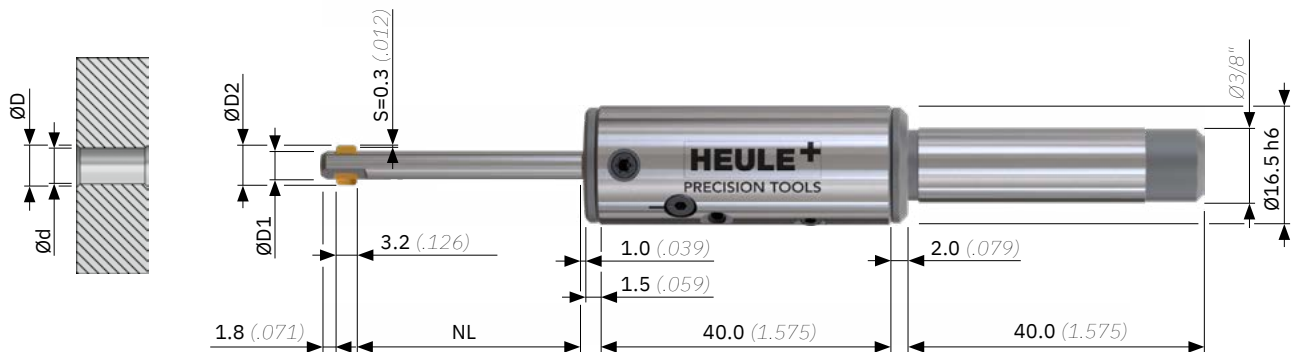
Cutting blade options also include front & back cutting and back cutting only.

Blades for a different chamfer angle are available upon request.

Overview



DEFA 2-6 $\varnothing 4.0$ to 5.9 mm (.157" to .232")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA02-30-150p/.201
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 30 mm 1.181	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
4.0 .157	4.8 .189	5.4 .213	3.8 .150	DEFA02-30-150 □/□	DEFA02-60-150 □/□	-3X02	-4X02
4.1 .161			3.9 .153	DEFA02-30-153 □/□	DEFA02-60-153 □/□		
4.2 .165			4.0 .157	DEFA02-30-157 □/□	DEFA02-60-157 □/□		
4.3 .169	5.2 .205	5.8 .229	4.1 .161	DEFA03-30-161 □/□	DEFA03-60-161 □/□	-3X03	-4X03
4.4 .173			4.2 .165	DEFA03-30-165 □/□	DEFA03-60-165 □/□		
4.5 .177			4.3 .169	DEFA03-30-169 □/□	DEFA03-60-169 □/□		
4.6 .181	5.8 .228	6.4 .252	4.4 .173	DEFA04-30-173 □/□	DEFA04-60-173 □/□	-3X04	-4X04
4.7 .185			4.5 .177	DEFA04-30-177 □/□	DEFA04-60-177 □/□		
4.8 .189			4.6 .181	DEFA04-30-181 □/□	DEFA04-60-181 □/□		
4.9 .193	6.4 .252	7.0 .276	4.7 .185	DEFA04-30-185 □/□	DEFA04-60-185 □/□	-3X05	-4X05
5.0 .197			4.8 .189	DEFA05-30-189 □/□	DEFA05-60-189 □/□		
5.1 .201			4.9 .193	DEFA05-30-193 □/□	DEFA05-60-193 □/□		
5.2 .205	6.8 .268	7.4 .292	5.0 .197	DEFA05-30-197 □/□	DEFA05-60-197 □/□	-3X06	-4X06
5.3 .209			5.1 .201	DEFA05-30-201 □/□	DEFA05-60-201 □/□		
5.4 .213			5.2 .205	DEFA05-30-205 □/□	DEFA05-60-205 □/□		
5.5 .216	6.8 .268	7.4 .292	5.3 .209	DEFA06-30-209 □/□	DEFA06-60-209 □/□	-3X06	-4X06
5.6 .220			5.4 .213	DEFA06-30-213 □/□	DEFA06-60-213 □/□		
5.7 .224			5.5 .216	DEFA06-30-216 □/□	DEFA06-60-216 □/□		
5.8 .228			5.6 .220	DEFA06-30-220 □/□	DEFA06-60-220 □/□		
5.9 .232			5.7 .224	DEFA06-30-224 □/□	DEFA06-60-224 □/□		



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

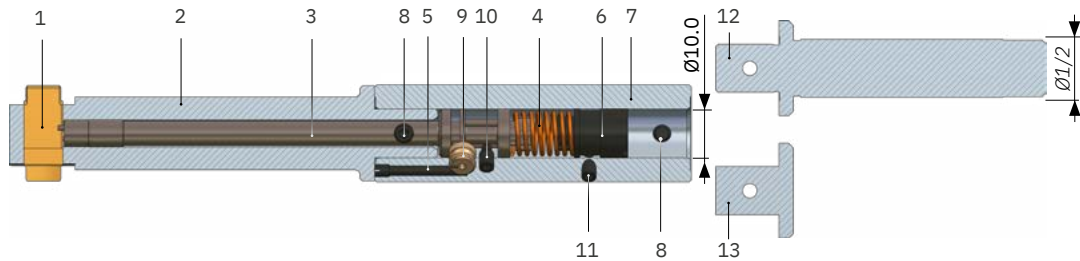
DEFA 2-6 $\varnothing 4.0$ to 5.9 mm (.157" to .232")

1) / 2)

1) Add **p** for tool with end plug (e.g.: DEFA02-30-150**p**/_).
Leave blank for tool with straight shank (e.g.: DEFA02-30-150/_).

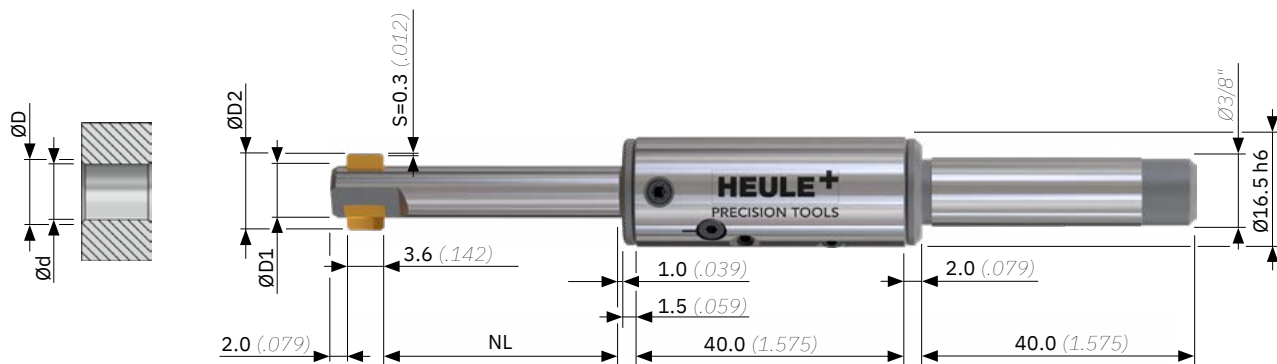
2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA02-30-150p/_.**201**).
 $\varnothing D2 = \varnothing D + .024$ or **$\varnothing D2 = \varnothing D + (2 \times S)$**

Spare parts



Item	Description	Part no.
1	Blade set	see page 122
2	Blade housing	¹⁾ see page 138
3	Blade control	30 mm: GH-S-W-0003 60 mm: GH-S-W-0027
4	Torsion spring	GH-S-T-0001
5	Positioning screw	GH-S-X-0001
6	Gear wheel	GH-S-C-0001
7	Tool body	GH-S-G-0001
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0001
10	Set screw	GH-H-S-0322
11	Tension screw	GH-H-S-0101
12	Straight shank 3/8"	GH-S-S-0155
13	End plug	GH-S-S-0090

DEFA 7-9 $\varnothing 6.0$ to 7.6 mm (.236" to .299")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA07-34-228p/.280
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 34 mm 1.339	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
6.0 .236	6.8 .268	7.4 .292	5.8 .228	DEFA07-34-228 ☐	DEFA07-60-228 ☐	-3X07	-4X07
6.1 .240			5.9 .232	DEFA07-34-232 ☐	DEFA07-60-232 ☐		
6.2 .244			6.0 .236	DEFA07-34-236 ☐	DEFA07-60-236 ☐		
6.3 .248	7.6 .299	8.2 .323	6.1 .240	DEFA08-34-240 ☐	DEFA08-60-240 ☐	-3X08	-4X08
6.4 .252			6.2 .244	DEFA08-34-244 ☐	DEFA08-60-244 ☐		
6.5 .256			6.3 .248	DEFA08-34-248 ☐	DEFA08-60-248 ☐		
6.6 .260			6.4 .252	DEFA08-34-252 ☐	DEFA08-60-252 ☐		
6.7 .264			6.5 .256	DEFA08-34-256 ☐	DEFA08-60-256 ☐		
6.8 .268	8.5 .335	9.1 .359	6.6 .260	DEFA09-34-260 ☐	DEFA09-60-260 ☐	-3X09	-4X09
6.9 .272			6.7 .264	DEFA09-34-264 ☐	DEFA09-60-264 ☐		
7.0 .276			6.8 .268	DEFA09-34-268 ☐	DEFA09-60-268 ☐		
7.1 .280			6.9 .272	DEFA09-34-272 ☐	DEFA09-60-272 ☐		
7.2 .283			7.0 .276	DEFA09-34-276 ☐	DEFA09-60-276 ☐		
7.3 .287			7.1 .280	DEFA09-34-280 ☐	DEFA09-60-280 ☐		
7.4 .291			7.2 .283	DEFA09-34-283 ☐	DEFA09-60-283 ☐		
7.5 .295			7.3 .287	DEFA09-34-287 ☐	DEFA09-60-287 ☐		
7.6 .299			7.4 .291	DEFA09-34-291 ☐	DEFA09-60-291 ☐		



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

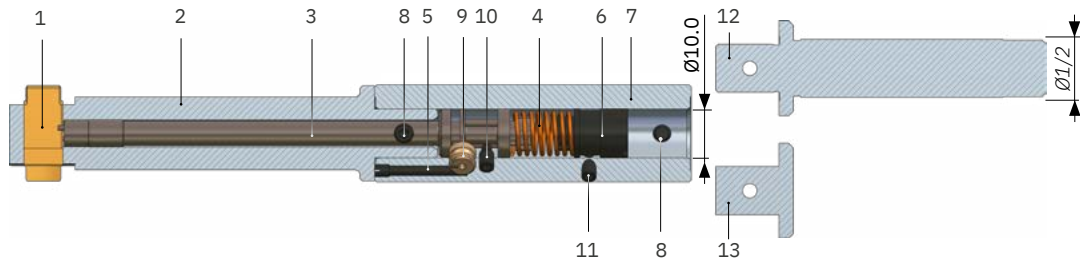
DEFA 7-9 $\varnothing 6.0$ to 7.6 mm (.236" to .299")

1) / 2)

1) Add **p** for tool with end plug (e.g.: DEFA07-34-228**p**/_).
Leave blank for tool with straight shank (e.g.: DEFA07-34-228/_).

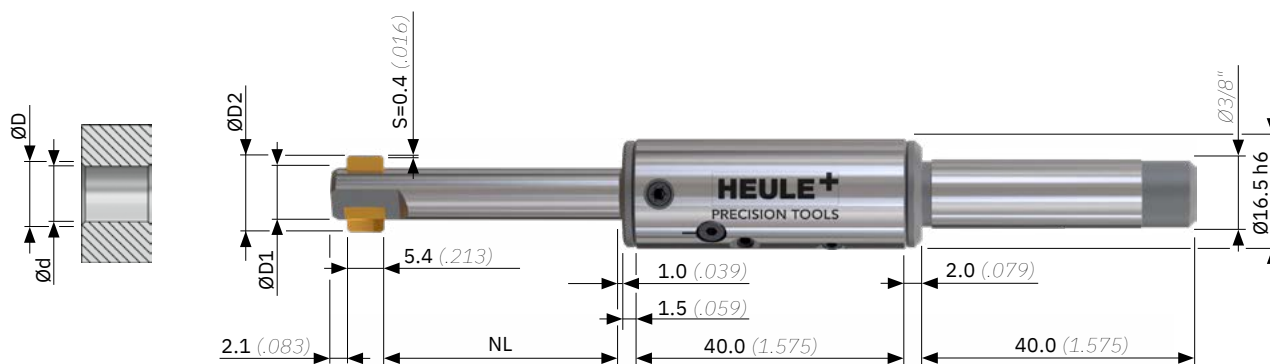
2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA07-34-228p/_.280).
 $\varnothing D2 = \varnothing D + .024$ or **$\varnothing D2 = \varnothing D + (2 \times S)$**

Spare parts



Item	Description	Part no.
1	Blade set	see page 124
2	Blade housing	¹⁾ see page 138
3	Blade control	34 mm: GH-S-W-0605 60 mm: GH-S-W-0628
4	Torsion spring	GH-S-T-0001
5	Positioning screw	GH-S-X-0001
6	Gear wheel	GH-S-C-0001
7	Tool body	GH-S-G-0001
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0001
10	Set screw	GH-H-S-0322
11	Tension screw	GH-H-S-0101
12	Straight shank 3/8"	GH-S-S-0155
13	End plug	GH-S-S-0090

DEFA 10-11 $\emptyset 7.7$ to 8.9 mm (.303" to .350")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA10-34-295p/.355
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 34 mm 1.339	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
7.7 .303	9.6 .378	10.4 .410	7.5 .295	DEFA10-34-295 ☐	DEFA10-60-295 ☐	-3X10	-4X10
7.8 .307			7.6 .299	DEFA10-34-299 ☐	DEFA10-60-299 ☐		
7.9 .311			7.7 .303	DEFA10-34-303 ☐	DEFA10-60-303 ☐		
8.0 .315			7.8 .307	DEFA10-34-307 ☐	DEFA10-60-307 ☐		
8.1 .319			7.9 .311	DEFA10-34-311 ☐	DEFA10-60-311 ☐		
8.2 .323	10.4 .409	11.2 .441	8.0 .315	DEFA11-34-315 ☐	DEFA11-60-315 ☐	-3X11	-4X11
8.3 .327			8.1 .319	DEFA11-34-319 ☐	DEFA11-60-319 ☐		
8.4 .331			8.2 .323	DEFA11-34-323 ☐	DEFA11-60-323 ☐		
8.5 .335			8.3 .327	DEFA11-34-327 ☐	DEFA11-60-327 ☐		
8.6 .339			8.4 .331	DEFA11-34-331 ☐	DEFA11-60-331 ☐		
8.7 .343			8.5 .335	DEFA11-34-335 ☐	DEFA11-60-335 ☐		
8.8 .346			8.6 .339	DEFA11-34-339 ☐	DEFA11-60-339 ☐		
8.9 .350			8.7 .343	DEFA11-34-343 ☐	DEFA11-60-343 ☐		



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

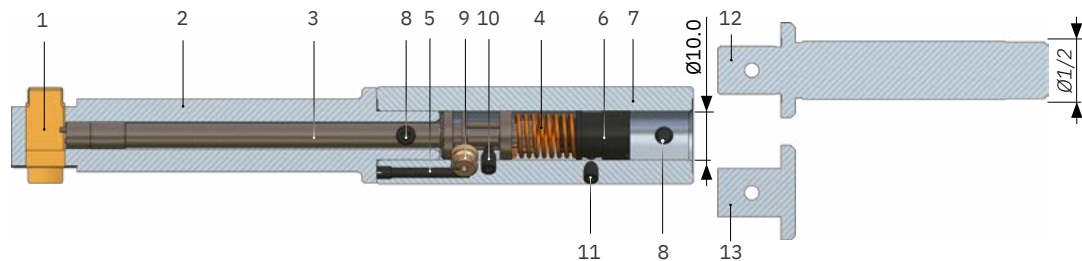
DEFA 10-11 $\varnothing 7.7$ to 8.9 mm (.303" to .350")

1) / 2)

1) Add **p** for tool with end plug (e.g.: DEFA10-34-295**p**/_).
Leave blank for tool with straight shank (e.g.: DEFA10-34-295/_).

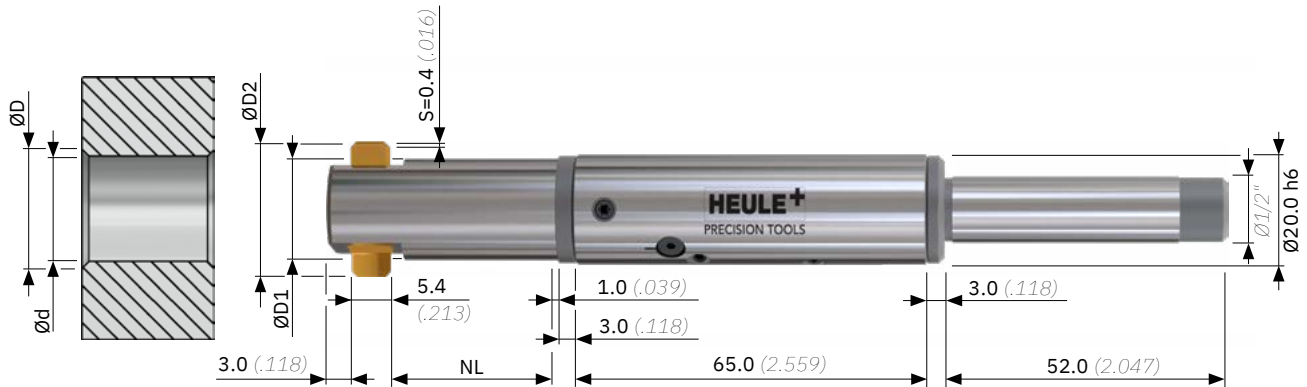
2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA10-34-295p/.355).
 $\varnothing D2 = \varnothing D + .032$ or **$\varnothing D2 = \varnothing D + (2 \times S)$**

Spare parts



Item	Description	Part no.
1	Blade set	see page 126
2	Blade housing	¹⁾ see page 138
3	Blade control	34 mm: GH-S-W-0605 60 mm: GH-S-W-0628
4	Torsion spring	GH-S-T-0001
5	Positioning screw	GH-S-X-0001
6	Gear wheel	GH-S-C-0001
7	Tool body	GH-S-G-0001
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0001
10	Set screw	GH-H-S-0322
11	Tension screw	GH-H-S-0101
12	Straight shank 3/8"	GH-S-S-0155
13	End plug	GH-S-S-0090

DEFA 12-13 $\varnothing 9.0$ to 11.1 mm (.354" to .437")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA12-60-346p/.406
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 30 mm 1.181	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
9.0 .354	12.0 .472	12.8 .504	8.8 .346	DEFA12-30-346 ☐	DEFA12-60-346 ☐	-3X12	-4X12
9.1 .358			8.9 .350	DEFA12-30-350 ☐	DEFA12-60-350 ☐		
9.2 .362			9.0 .354	DEFA12-30-354 ☐	DEFA12-60-354 ☐		
9.3 .366			9.1 .358	DEFA12-30-358 ☐	DEFA12-60-358 ☐		
9.4 .370			9.2 .362	DEFA12-30-362 ☐	DEFA12-60-362 ☐		
9.5 .374			9.3 .366	DEFA12-30-366 ☐	DEFA12-60-366 ☐		
9.6 .378			9.4 .370	DEFA12-30-370 ☐	DEFA12-60-370 ☐		
9.7 .382	13.0 .512	13.8 .544	9.5 .374	DEFA13-30-374 ☐	DEFA13-60-374 ☐	-3X13	-4X13
9.8 .386			9.6 .378	DEFA13-30-378 ☐	DEFA13-60-378 ☐		
9.9 .390			9.7 .382	DEFA13-30-382 ☐	DEFA13-60-382 ☐		
10.0 .394			9.8 .386	DEFA13-30-386 ☐	DEFA13-60-386 ☐		
10.1 .398			9.9 .390	DEFA13-30-390 ☐	DEFA13-60-390 ☐		
10.2 .402			10.0 .394	DEFA13-30-394 ☐	DEFA13-60-394 ☐		
10.3 .406			10.1 .398	DEFA13-30-398 ☐	DEFA13-60-398 ☐		
10.4 .409			10.2 .402	DEFA13-30-402 ☐	DEFA13-60-402 ☐		
10.5 .413			10.3 .406	DEFA13-30-406 ☐	DEFA13-60-406 ☐		
10.6 .417			10.4 .409	DEFA13-30-409 ☐	DEFA13-60-409 ☐		
10.7 .421			10.5 .413	DEFA13-30-413 ☐	DEFA13-60-413 ☐		
10.8 .425			10.6 .417	DEFA13-30-417 ☐	DEFA13-60-417 ☐		
10.9 .429			10.7 .421	DEFA13-30-421 ☐	DEFA13-60-421 ☐		
11.0 .433			10.8 .425	DEFA13-30-425 ☐	DEFA13-60-425 ☐		
11.1 .437			10.9 .429	DEFA13-30-429 ☐	DEFA13-60-429 ☐		



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

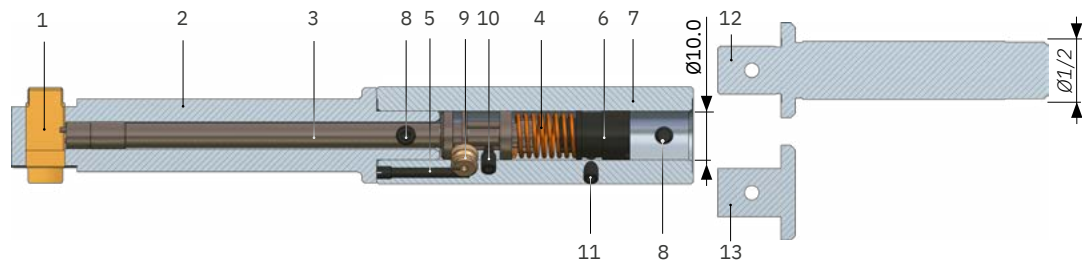
DEFA 12-13 $\varnothing 9.0$ to 11.1 mm (.354" to .437")

1) / 2)

1) Add **p** for tool with end plug (e.g.: DEFA12-60-346**p**/_).
Leave blank for tool with straight shank (e.g.: DEFA12-60-346/_).

2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA12-60-346p/.**406**).
 $\varnothing D2 = \varnothing D + .032$ or **$\varnothing D2 = \varnothing D + (2 \times S)$**

Spare parts

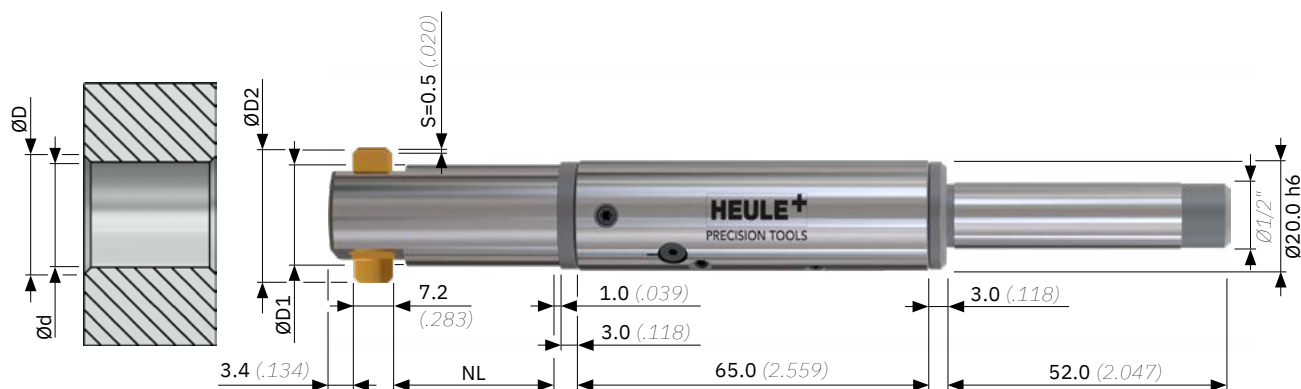


Item	Description	Part no.
1	Blade set	see page 128
2	Blade housing	¹⁾ see page 139
3	Blade control	30 mm: GH-S-W-0608 60 mm: GH-S-W-0609
4	Torsion spring	GH-S-T-0006
5	Positioning screw	GH-S-X-0006
6	Gear wheel	GH-S-C-0008
7	Tool body	GH-S-G-0011
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0003
10	Set screw	GH-H-S-0325
11	Tension screw	GH-H-S-0102
12	Straight shank 1/2"	GH-S-S-0156
13	End plug	GH-S-S-0092



Parts in stock highlighted in green

DEFA 14-15 $\varnothing 11.2$ to 13.4 mm (.441" to .528")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA14-60-433p/.501
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 30 mm 1.181	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
11.2 .441	14.6 .575	15.6 .615	11.0 .433	DEFA14-30-433 ☐	DEFA14-60-433 ☐	-3X14	-4X14
11.1 .437			11.1 .437	DEFA14-30-437 ☐	DEFA14-60-437 ☐		
11.4 .449			11.2 .441	DEFA14-30-441 ☐	DEFA14-60-441 ☐		
11.5 .453			11.3 .445	DEFA14-30-445 ☐	DEFA14-60-445 ☐		
11.6 .457			11.4 .449	DEFA14-30-449 ☐	DEFA14-60-449 ☐		
11.7 .461			11.5 .453	DEFA14-30-453 ☐	DEFA14-60-453 ☐		
11.8 .465			11.6 .457	DEFA14-30-457 ☐	DEFA14-60-457 ☐		
11.9 .469			11.7 .461	DEFA14-30-461 ☐	DEFA14-60-461 ☐		
12.0 .472			11.8 .465	DEFA14-30-465 ☐	DEFA14-60-465 ☐		
12.1 .476			11.9 .469	DEFA14-30-469 ☐	DEFA14-60-469 ☐		
12.2 .480	16.2 .638	17.2 .678	12.0 .472	DEFA15-30-472 ☐	DEFA15-60-472 ☐	-3X15	-4X15
12.3 .484			12.1 .476	DEFA15-30-476 ☐	DEFA15-60-476 ☐		
12.4 .488			12.2 .480	DEFA15-30-480 ☐	DEFA15-60-480 ☐		
12.5 .492			12.3 .484	DEFA15-30-484 ☐	DEFA15-60-484 ☐		
12.6 .496			12.4 .488	DEFA15-30-488 ☐	DEFA15-60-488 ☐		
12.7 .500			12.5 .492	DEFA15-30-492 ☐	DEFA15-60-492 ☐		
12.8 .504			12.6 .496	DEFA15-30-496 ☐	DEFA15-60-496 ☐		
12.9 .508			12.7 .500	DEFA15-30-500 ☐	DEFA15-60-500 ☐		
13.0 .512			12.8 .504	DEFA15-30-504 ☐	DEFA15-60-504 ☐		
13.1 .516			12.9 .508	DEFA15-30-508 ☐	DEFA15-60-508 ☐		
13.2 .520			13.0 .512	DEFA15-30-512 ☐	DEFA15-60-512 ☐		
13.3 .524			13.1 .516	DEFA15-30-516 ☐	DEFA15-60-516 ☐		
13.4 .528			13.2 .520	DEFA15-30-520 ☐	DEFA15-60-520 ☐		



Parts in stock highlighted in green

DEFA 14-15 $\varnothing 11.2$ to 13.4 mm (.441" to .528")

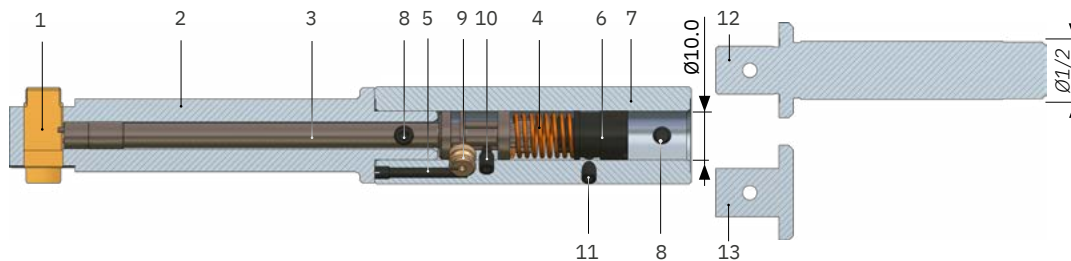
1) / 2)

1) Add **p** for tool with end plug (e.g.: DEFA14-60-433**p**/).
Leave blank for tool with straight shank (e.g.: DEFA14-60-433/).

2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA14-30-433p/.**501**).

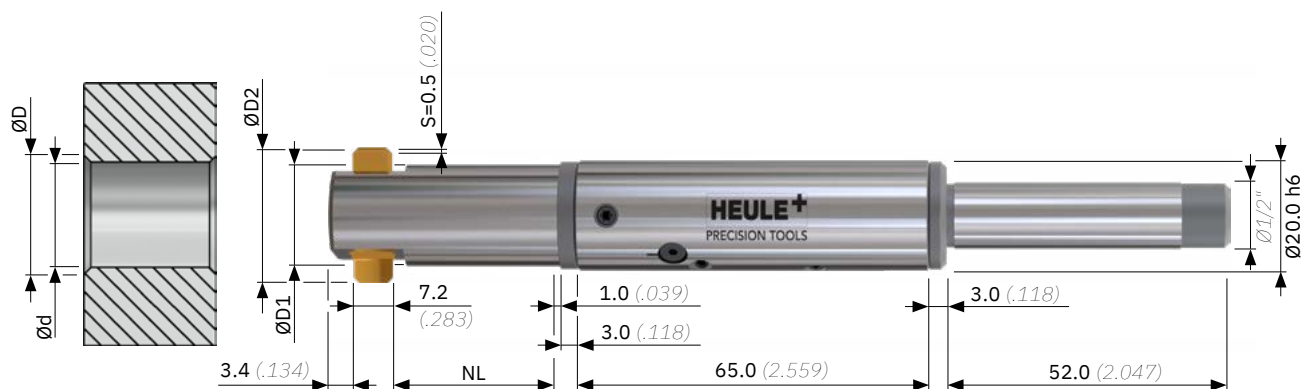
$\varnothing D2 = \varnothing D + .040$ or $\varnothing D2 = \varnothing D + (2 \times S)$

Spare parts



Item	Description	Part no.
1	Blade set	see page 130
2	Blade housing	¹⁾ see page 139
3	Blade control	30 mm: GH-S-W-0611 60 mm: GH-S-W-0612
4	Torsion spring	GH-S-T-0006
5	Positioning screw	GH-S-X-0006
6	Gear wheel	GH-S-C-0008
7	Tool body	GH-S-G-0011
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0003
10	Set screw	GH-H-S-0325
11	Tension screw	GH-H-S-0102
12	Straight shank 1/2"	GH-S-S-0156
13	End plug	GH-S-S-0092

DEFA 16-17 $\emptyset 13.2$ to 16.6 mm (.520" to .654")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA16-60-512p/.580
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 30 mm 1.181	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
13.2 .520	17.6 .693	18.6 .733	13.0 .512	DEFA16-30-512 ☐	DEFA16-60-512 ☐	-3X16	-4X16
13.4 .528			13.2 .520	DEFA16-30-520 ☐	DEFA16-60-520 ☐		
13.6 .535			13.4 .528	DEFA16-30-528 ☐	DEFA16-60-528 ☐		
13.8 .543			13.6 .535	DEFA16-30-535 ☐	DEFA16-60-535 ☐		
14.0 .551			13.8 .543	DEFA16-30-543 ☐	DEFA16-60-543 ☐		
14.2 .559			14.0 .551	DEFA16-30-551 ☐	DEFA16-60-551 ☐		
14.4 .567			14.2 .559	DEFA16-30-559 ☐	DEFA16-60-559 ☐		
14.6 .575			14.4 .567	DEFA16-30-567 ☐	DEFA16-60-567 ☐		
14.8 .583			14.6 .575	DEFA16-30-575 ☐	DEFA16-60-575 ☐		
15.0 .591			14.8 .583	DEFA16-30-583 ☐	DEFA16-60-583 ☐		
15.2 .598	19.0 .748	20.0 .788	15.0 .591	DEFA17-30-591 ☐	DEFA17-60-591 ☐	-3X17	-4X17
15.4 .606			15.2 .598	DEFA17-30-598 ☐	DEFA17-60-598 ☐		
15.6 .614			15.4 .606	DEFA17-30-606 ☐	DEFA17-60-606 ☐		
15.8 .622			15.6 .614	DEFA17-30-614 ☐	DEFA17-60-614 ☐		
16.0 .630			15.8 .622	DEFA17-30-622 ☐	DEFA17-60-622 ☐		
16.2 .638			16.0 .630	DEFA17-30-630 ☐	DEFA17-60-630 ☐		
16.4 .646			16.2 .638	DEFA17-30-638 ☐	DEFA17-60-638 ☐		
16.6 .654			16.4 .646	DEFA17-30-646 ☐	DEFA17-60-646 ☐		



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

DEFA 16-17 $\varnothing 13.2$ to 16.6 mm (.520" to .654")

1) / 2)

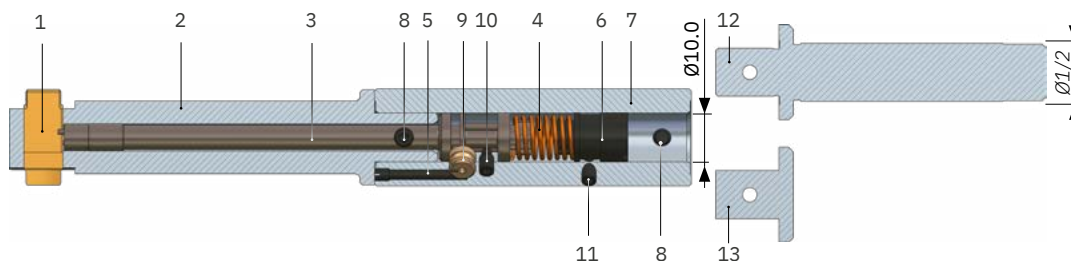
1) Add **p** for tool with end plug (e.g.: DEFA16-60-512**p**/_).

Leave blank for tool with straight shank (e.g.: DEFA16-60-512/_).

2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA16-60-512p/.580).

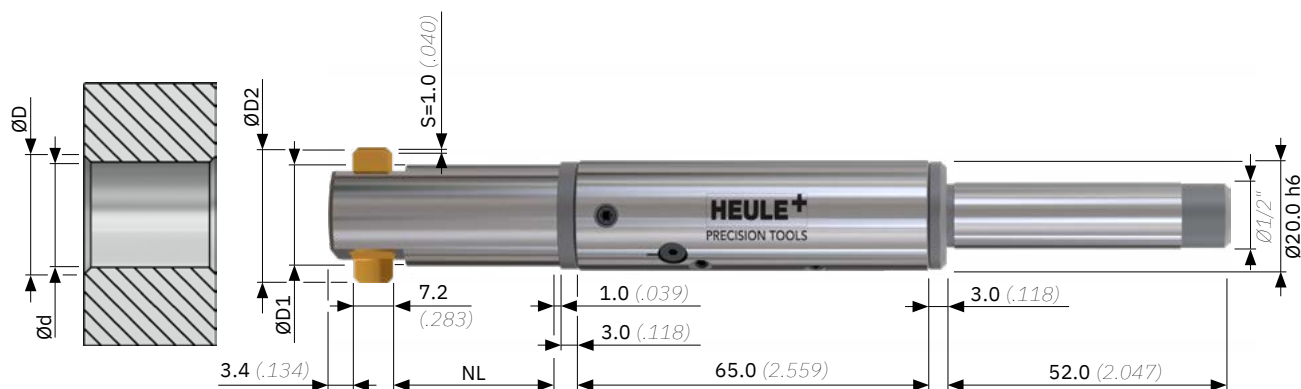
$\varnothing D2 = \varnothing D + .040$ or $\varnothing D2 = \varnothing D + (2 \times S)$

Spare parts



Item	Description	Part no.
1	Blade set	see page 132
2	Blade housing	¹⁾ see page 140
3	Blade control	30 mm: GH-S-W-0608 60 mm: GH-S-W-0609
4	Torsion spring	GH-S-T-0006
5	Positioning screw	GH-S-X-0006
6	Gear wheel	GH-S-C-0008
7	Tool body	GH-S-G-0011
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0003
10	Set screw	GH-H-S-0325
11	Tension screw	GH-H-S-0102
12	Straight shank 1/2"	GH-S-S-0156
13	End plug	GH-S-S-0092

DEFA 18-19 $\emptyset 16.8$ to 20.4 mm (.661" to .803")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA18-60-654p/.761
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.		Blades part no.	
				NL = 30 mm 1.181	NL = 60 mm 2.362	Front & back GH-S-M-	Back only GH-S-M-
16.8 .661	21.8 .858	23.8 .938	16.6 .654	DEFA18-30-654 ☐	DEFA18-60-654 ☐	-3X18	-4X18
17.0 .669			16.8 .661	DEFA18-30-661 ☐	DEFA18-60-661 ☐		
17.2 .677			17.0 .669	DEFA18-30-669 ☐	DEFA18-60-669 ☐		
17.4 .685			17.2 .677	DEFA18-30-677 ☐	DEFA18-60-677 ☐		
17.6 .693			17.4 .685	DEFA18-30-685 ☐	DEFA18-60-685 ☐		
17.8 .701			17.6 .693	DEFA18-30-693 ☐	DEFA18-60-693 ☐		
18.0 .709			17.8 .701	DEFA18-30-701 ☐	DEFA18-60-701 ☐		
18.2 .717			18.0 .709	DEFA18-30-709 ☐	DEFA18-60-709 ☐		
18.4 .724			18.2 .717	DEFA18-30-717 ☐	DEFA18-60-717 ☐		
18.6 .732			18.4 .724	DEFA18-30-724 ☐	DEFA18-60-724 ☐		
18.8 .740	24.2 .953	26.2 1.033	18.6 .732	DEFA19-30-732 ☐	DEFA19-60-732 ☐	-3X19	-4X19
19.0 .748			18.8 .740	DEFA19-30-740 ☐	DEFA19-60-740 ☐		
19.2 .756			19.0 .748	DEFA19-30-748 ☐	DEFA19-60-748 ☐		
19.4 .764			19.2 .756	DEFA19-30-756 ☐	DEFA19-60-756 ☐		
19.6 .772			19.4 .764	DEFA19-30-764 ☐	DEFA19-60-764 ☐		
19.8 .780			19.6 .772	DEFA19-30-772 ☐	DEFA19-60-772 ☐		
20.0 .787			19.8 .780	DEFA19-30-780 ☐	DEFA19-60-780 ☐		
20.2 .795			20.0 .787	DEFA19-30-787 ☐	DEFA19-60-787 ☐		
20.4 .803			20.2 .795	DEFA19-30-795 ☐	DEFA19-60-795 ☐		



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

DEFA 18-19 $\varnothing 16.8$ to 20.4 mm (.661" to .803")

1) / 2)

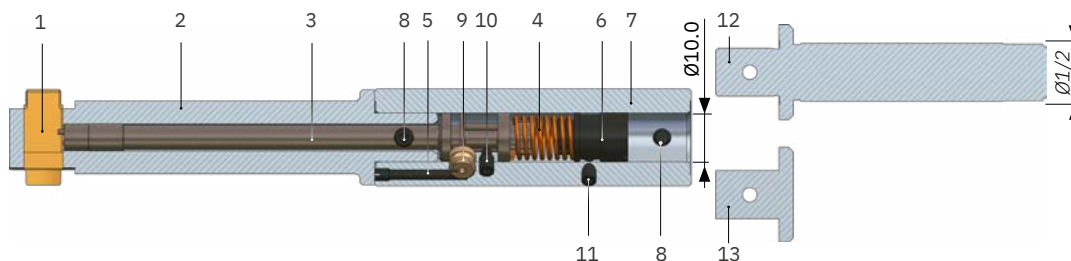
1) Add **p** for tool with end plug (e.g.: DEFA18-60-654**p**/_).

Leave blank for tool with straight shank (e.g.: DEFA18-60-654/_).

2) Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA18-60-654p/.**761**).

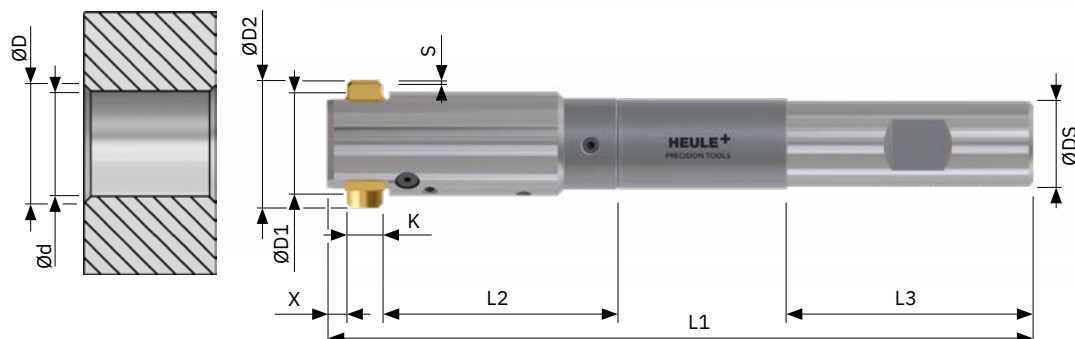
$\varnothing D2 = \varnothing D + .080$ or $\varnothing D2 = \varnothing D + (2 \times S)$

Spare parts



Item	Description	Part no.
1	Blade set	see page 134
2	Blade housing	¹⁾ see page 140
3	Blade control	30 mm: GH-S-W-0620 60 mm: GH-S-W-0621
4	Torsion spring	GH-S-T-0006
5	Positioning screw	GH-S-X-0006
6	Gear wheel	GH-S-C-0008
7	Tool body	GH-S-G-0013
8	Clamping screw	GH-H-S-0201
9	Eccentric cam	GH-S-E-0003
10	Set screw Set screw extended chamfer range (22.5 mm for Series 18 or 25.4 mm for Series 19)	GH-H-S-0325 GH-H-S-0302
11	Tension screw	GH-H-S-0102
12	Straight shank 1/2"	GH-S-S-0156
13	End plug	GH-S-S-0092

DEFA 22–24 $\varnothing 20.7$ to 23.2 mm (.815" to .913")



Tool

Standard tool **without** blades

- The blades are sold in sets and separately.
- Holding over the tool body requires an end plug. Order example: DEFA22-807/1.057
- With cylindrical shank

Bore Ød	Max. chamf. ØD	max. ØD2	Tool Ø D1	Tool part no.	Blades part no.	
					Front & back GH-S-M-	Back only GH-S-M-
20.7 .815	25.2 .992	27.2 1.072	20.5 .807	DEFA22-807/□	-3X22	-4X22
23.2 .913	27.5 1.083	29.5 1.163	23.0 .906	DEFA24-906/□	-3X24	-4X24

Tool dimension table

Bore Ød	L1	L2	L3	K	S	X	ØDS	Series
20.7 .815	158.0 6.220	52.5 2.067	55.0 2.165	8.0 .315	1.0 .040	4.5 .177	3/4"	22
23.2 .913	158.0 6.220	52.5 2.067	55.0 2.165	8.0 .315	1.0 .040	4.5 .177	3/4"	24



Parts in stock highlighted in green



Programming
Page 116



Cutting data
Page 117



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > DEFA

DEFA 22-24 $\varnothing 20.7$ to 23.2 mm (.815" to .913")



Fill in your calculated over-the-blade diameter in inches (e.g.: DEFA22-807/.280).

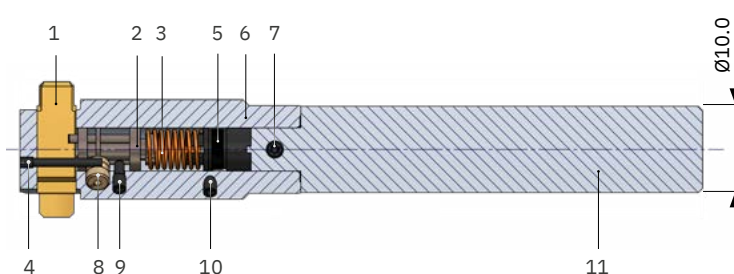
$\varnothing D2 = \varnothing D + .080$ or $\varnothing D2 = \varnothing D + (2 \times S)$

Otherwise a default dimension is used as follows:

Series 22: $\varnothing D2 = 1.057$ " (26.7 mm)

Series 24: $\varnothing D2 = 1.120$ " (28.4 mm)

Spare parts



Item	Description	Series 22-24
1	Blade set	see page 136
2	Blade control	GH-S-W-0014
3	Torsion spring	GH-S-T-0006
4	Positioning screw	GH-S-X-0006
5	Gear wheel	GH-S-C-0008
6	Tool body	22: GH-S-G-0023 24: GH-S-G-0024
7	Clamping screw	GH-H-S-0201
8	Eccentric cam	22: GH-S-E-0003 24: GH-S-E-0004
9	Set screw	GH-H-S-0325
10	Tension screw	22: GH-H-S-0102 24: GH-H-S-0103
11	Weldon shank	GH-S-S-0157 (3/4")

DEFA spare parts

DEFA 2-11

Tool holder	Blade housing	Tool holder	Blade housing
DEFA02-30-150	GH-S-N-1001	DEFA02-60-150	GH-S-N-1002
DEFA02-30-153	GH-S-N-1004	DEFA02-60-153	GH-S-N-1003
DEFA02-30-157	GH-S-N-1007	DEFA02-60-157	GH-S-N-1008
DEFA03-30-161	GH-S-N-1010	DEFA03-60-161	GH-S-N-1011
DEFA03-30-165	GH-S-N-1013	DEFA03-60-165	GH-S-N-1014
DEFA03-30-169	GH-S-N-1016	DEFA03-60-169	GH-S-N-1017
DEFA04-30-173	GH-S-N-1019	DEFA04-60-173	GH-S-N-1020
DEFA04-30-177	GH-S-N-1022	DEFA04-60-177	GH-S-N-1023
DEFA04-30-181	GH-S-N-1025	DEFA04-60-181	GH-S-N-1026
DEFA04-30-185	GH-S-N-1028	DEFA04-60-185	GH-S-N-1029
DEFA05-30-189	GH-S-N-1031	DEFA05-60-189	GH-S-N-1032
DEFA05-30-193	GH-S-N-1034	DEFA05-60-193	GH-S-N-1035
DEFA05-30-197	GH-S-N-1037	DEFA05-60-197	GH-S-N-1038
DEFA05-30-201	GH-S-N-1040	DEFA05-60-201	GH-S-N-1041
DEFA05-30-205	GH-S-N-1043	DEFA05-60-205	GH-S-N-1044
DEFA06-30-209	GH-S-N-1046	DEFA06-60-209	GH-S-N-1047
DEFA06-30-213	GH-S-N-1049	DEFA06-60-213	GH-S-N-1050
DEFA06-30-216	GH-S-N-1052	DEFA06-60-216	GH-S-N-1053
DEFA06-30-220	GH-S-N-1055	DEFA06-60-220	GH-S-N-1056
DEFA06-30-224	GH-S-N-1058	DEFA06-60-224	GH-S-N-1059
DEFA07-34-228	GH-S-N-1082	DEFA07-60-228	GH-S-N-1083
DEFA07-34-232	GH-S-N-1085	DEFA07-60-232	GH-S-N-1086
DEFA07-34-236	GH-S-N-1088	DEFA07-60-236	GH-S-N-1089
DEFA08-34-240	GH-S-N-1091	DEFA08-60-240	GH-S-N-1092
DEFA08-34-244	GH-S-N-1094	DEFA08-60-244	GH-S-N-1095
DEFA08-34-248	GH-S-N-1097	DEFA08-60-248	GH-S-N-1098
DEFA08-34-252	GH-S-N-1100	DEFA08-60-252	GH-S-N-1101
DEFA08-34-256	GH-S-N-1103	DEFA08-60-256	GH-S-N-1104
DEFA09-34-260	GH-S-N-1106	DEFA09-60-260	GH-S-N-1107
DEFA09-34-264	GH-S-N-1109	DEFA09-60-264	GH-S-N-1110
DEFA09-34-268	GH-S-N-1112	DEFA09-60-268	GH-S-N-1113
DEFA09-34-272	GH-S-N-1115	DEFA09-60-272	GH-S-N-1116
DEFA09-34-276	GH-S-N-1118	DEFA09-60-276	GH-S-N-1119
DEFA09-34-280	GH-S-N-1121	DEFA09-60-280	GH-S-N-1122
DEFA09-34-283	GH-S-N-1124	DEFA09-60-283	GH-S-N-1125
DEFA09-34-287	GH-S-N-1127	DEFA09-60-287	GH-S-N-1128
DEFA09-34-291	GH-S-N-1130	DEFA09-60-291	GH-S-N-1131
DEFA10-34-295	GH-S-N-1151	DEFA10-60-295	GH-S-N-1152
DEFA10-34-299	GH-S-N-1154	DEFA10-60-299	GH-S-N-1155
DEFA10-34-303	GH-S-N-1157	DEFA10-60-303	GH-S-N-1158
DEFA10-34-307	GH-S-N-1160	DEFA10-60-307	GH-S-N-1161
DEFA10-34-311	GH-S-N-1163	DEFA10-60-311	GH-S-N-1164
DEFA11-34-315	GH-S-N-1166	DEFA11-60-315	GH-S-N-1167
DEFA11-34-319	GH-S-N-1169	DEFA11-60-319	GH-S-N-1170
DEFA11-34-323	GH-S-N-1172	DEFA11-60-323	GH-S-N-1173
DEFA11-34-327	GH-S-N-1175	DEFA11-60-327	GH-S-N-1176
DEFA11-34-331	GH-S-N-1178	DEFA11-60-331	GH-S-N-1179
DEFA11-34-335	GH-S-N-1181	DEFA11-60-335	GH-S-N-1182
DEFA11-34-339	GH-S-N-1184	DEFA11-60-339	GH-S-N-1185
DEFA11-34-343	GH-S-N-1187	DEFA11-60-343	GH-S-N-1188

DEFA spare parts

DEFA 12–15

Tool holder	Blade housing
DEFA12-30-346	GH-S-N-1216
DEFA12-30-350	GH-S-N-1219
DEFA12-30-354	GH-S-N-1222
DEFA12-30-358	GH-S-N-1225
DEFA12-30-362	GH-S-N-1228
DEFA12-30-366	GH-S-N-1231
DEFA12-30-370	GH-S-N-1234
DEFA13-30-374	GH-S-N-1237
DEFA13-30-378	GH-S-N-1240
DEFA13-30-382	GH-S-N-1243
DEFA13-30-386	GH-S-N-1246
DEFA13-30-390	GH-S-N-1249
DEFA13-30-394	GH-S-N-1252
DEFA13-30-398	GH-S-N-1255
DEFA13-30-402	GH-S-N-1258
DEFA13-30-406	GH-S-N-1261
DEFA13-30-409	GH-S-N-1264
DEFA13-30-413	GH-S-N-1267
DEFA13-30-417	GH-S-N-1270
DEFA13-30-421	GH-S-N-1273
DEFA13-30-425	GH-S-N-1276
DEFA13-30-429	GH-S-N-1279
DEFA14-30-433	GH-S-N-1327
DEFA14-30-437	GH-S-N-1330
DEFA14-30-441	GH-S-N-1333
DEFA14-30-445	GH-S-N-1336
DEFA14-30-449	GH-S-N-1339
DEFA14-30-453	GH-S-N-1342
DEFA14-30-457	GH-S-N-1345
DEFA14-30-461	GH-S-N-1348
DEFA14-30-465	GH-S-N-1351
DEFA14-30-469	GH-S-N-1354
DEFA15-30-472	GH-S-N-1357
DEFA15-30-476	GH-S-N-1360
DEFA15-30-480	GH-S-N-1363
DEFA15-30-484	GH-S-N-1366
DEFA15-30-488	GH-S-N-1369
DEFA15-30-492	GH-S-N-1372
DEFA15-30-496	GH-S-N-1375
DEFA15-30-500	GH-S-N-1378
DEFA15-30-504	GH-S-N-1381
DEFA15-30-508	GH-S-N-1384
DEFA15-30-512	GH-S-N-1387
DEFA15-30-516	GH-S-N-1390
DEFA15-30-520	GH-S-N-1393

Tool holder	Blade housing
DEFA12-60-346	GH-S-N-1217
DEFA12-60-350	GH-S-N-1220
DEFA12-60-354	GH-S-N-1223
DEFA12-60-358	GH-S-N-1226
DEFA12-60-362	GH-S-N-1229
DEFA12-60-366	GH-S-N-1232
DEFA12-60-370	GH-S-N-1235
DEFA13-60-374	GH-S-N-1238
DEFA13-60-378	GH-S-N-1241
DEFA13-60-382	GH-S-N-1244
DEFA13-60-386	GH-S-N-1247
DEFA13-60-390	GH-S-N-1250
DEFA13-60-394	GH-S-N-1253
DEFA13-60-398	GH-S-N-1256
DEFA13-60-402	GH-S-N-1259
DEFA13-60-406	GH-S-N-1262
DEFA13-60-409	GH-S-N-1265
DEFA13-60-413	GH-S-N-1268
DEFA13-60-417	GH-S-N-1271
DEFA13-60-421	GH-S-N-1274
DEFA13-60-425	GH-S-N-1277
DEFA13-60-429	GH-S-N-1280
DEFA14-60-433	GH-S-N-1328
DEFA14-60-437	GH-S-N-1331
DEFA14-60-441	GH-S-N-1334
DEFA14-60-445	GH-S-N-1337
DEFA14-60-449	GH-S-N-1340
DEFA14-60-453	GH-S-N-1343
DEFA14-60-457	GH-S-N-1346
DEFA14-60-461	GH-S-N-1349
DEFA14-60-465	GH-S-N-1352
DEFA14-60-469	GH-S-N-1355
DEFA15-60-472	GH-S-N-1358
DEFA15-60-476	GH-S-N-1361
DEFA15-60-480	GH-S-N-1364
DEFA15-60-484	GH-S-N-1367
DEFA15-60-488	GH-S-N-1370
DEFA15-60-492	GH-S-N-1373
DEFA15-60-496	GH-S-N-1376
DEFA15-60-500	GH-S-N-1379
DEFA15-60-504	GH-S-N-1382
DEFA15-60-508	GH-S-N-1385
DEFA15-60-512	GH-S-N-1388
DEFA15-60-516	GH-S-N-1391
DEFA15-60-520	GH-S-N-1394

DEFA spare parts

DEFA 16–19

Tool holder	Blade housing
DEFA16-30-512	GH-S-N-1465
DEFA16-30-520	GH-S-N-1471
DEFA16-30-528	GH-S-N-1477
DEFA16-30-535	GH-S-N-1483
DEFA16-30-543	GH-S-N-1489
DEFA16-30-551	GH-S-N-1495
DEFA16-30-559	GH-S-N-1501
DEFA16-30-567	GH-S-N-1507
DEFA16-30-575	GH-S-N-1513
DEFA16-30-583	GH-S-N-1519
DEFA17-30-591	GH-S-N-1525
DEFA17-30-598	GH-S-N-1531
DEFA17-30-606	GH-S-N-1537
DEFA17-30-614	GH-S-N-1543
DEFA17-30-622	GH-S-N-1549
DEFA17-30-630	GH-S-N-1555
DEFA17-30-638	GH-S-N-1561
DEFA17-30-646	GH-S-N-1567
DEFA18-30-654	GH-S-N-1639
DEFA18-30-661	GH-S-N-1645
DEFA18-30-669	GH-S-N-1651
DEFA18-30-677	GH-S-N-1657
DEFA18-30-685	GH-S-N-1663
DEFA18-30-693	GH-S-N-1669
DEFA18-30-701	GH-S-N-1675
DEFA18-30-709	GH-S-N-1681
DEFA18-30-717	GH-S-N-1687
DEFA18-30-724	GH-S-N-1693
DEFA19-30-732	GH-S-N-1699
DEFA19-30-740	GH-S-N-1705
DEFA19-30-748	GH-S-N-1711
DEFA19-30-756	GH-S-N-1717
DEFA19-30-764	GH-S-N-1723
DEFA19-30-772	GH-S-N-1729
DEFA19-30-780	GH-S-N-1735
DEFA19-30-787	GH-S-N-1741
DEFA19-30-795	GH-S-N-1747

Tool holder	Blade housing
DEFA16-60-512	GH-S-N-1466
DEFA16-60-520	GH-S-N-1472
DEFA16-60-528	GH-S-N-1478
DEFA16-60-535	GH-S-N-1484
DEFA16-60-543	GH-S-N-1490
DEFA16-60-551	GH-S-N-1496
DEFA16-60-559	GH-S-N-1502
DEFA16-60-567	GH-S-N-1508
DEFA16-60-575	GH-S-N-1514
DEFA16-60-583	GH-S-N-1520
DEFA17-60-591	GH-S-N-1526
DEFA17-60-598	GH-S-N-1532
DEFA17-60-606	GH-S-N-1538
DEFA17-60-614	GH-S-N-1544
DEFA17-60-622	GH-S-N-1550
DEFA17-60-630	GH-S-N-1556
DEFA17-60-638	GH-S-N-1562
DEFA17-60-646	GH-S-N-1568
DEFA18-60-654	GH-S-N-1640
DEFA18-60-661	GH-S-N-1646
DEFA18-60-669	GH-S-N-1652
DEFA18-60-677	GH-S-N-1658
DEFA18-60-685	GH-S-N-1664
DEFA18-60-693	GH-S-N-1670
DEFA18-60-701	GH-S-N-1676
DEFA18-60-709	GH-S-N-1682
DEFA18-60-717	GH-S-N-1688
DEFA18-60-724	GH-S-N-1694
DEFA19-60-732	GH-S-N-1700
DEFA19-60-740	GH-S-N-1706
DEFA19-60-748	GH-S-N-1712
DEFA19-60-756	GH-S-N-1718
DEFA19-60-764	GH-S-N-1727
DEFA19-60-772	GH-S-N-1730
DEFA19-60-780	GH-S-N-1736
DEFA19-60-787	GH-S-N-1742
DEFA19-60-795	GH-S-N-1748

DEFA FAQ

Question	Causes	Remedy
Chamfer diameter too small	• D2 set too small	• Turn the adjusting screw anti-clockwise (see Adjusting the chamfer diameter on page 118)
Chamfer diameter too large	• D2 set too large	• Turn the adjusting screw clockwise (see Adjusting the chamfer diameter on page 118)
Chamfer not even	• Blade force too low	• Turn the clamping screw clockwise (see Setting the blade force page 119)
	• Tool not centered in the bore	• Align tool
Chamfered surface poor	• Working feed rate too high	• Reduce working feed rate
	• Blade wear	• Resharpening, TiN coating or new blades
Secondary burr	• Working feed rate too high	• Reduce working feed rate
	• Blade force too strong	• Turn the clamping screw anti-clockwise (see Setting the blade force page 119)
	• Tool not centered in the bore	• Align tool
	• Blade wear	• Resharpening, TiN coating or new blades
	• Cutting speed too low	• Increase cutting speed

GH-K

Chatter-free forward countersinking for extra large chamfers.

The advantages – Your benefit

Wide range of applications:
Large countersink range from
bore Ø3.0 to 45.0 mm, angles of
60°, 82°, 90° and 100°.



Long service life: Tool body
made of alloyed heat-treated
steel in a robust and precise
design with internal cooling.



High-performance counter-
sinking tool and circular
milling cutter with three
cutting edges for perfectly
machined surfaces without
chatter marks.



Replaceable carbide blades that
can easily be re-sharpened, with
coating.



THE RANGE

Number of blades	Series	Countersink angle	Min. bore Ø	Max. counter-sink Ø
3	GH-K 25	100°	Ø3.0 <i>.118</i>	Ø25.0 <i>.984</i>
		90°	Ø3.0 <i>.118</i>	Ø25.0 <i>.984</i>
		82°	Ø5.0 <i>.197</i>	Ø25.0 <i>.984</i>
		60°	Ø3.0 <i>.118</i>	Ø25.0 <i>.984</i>
	GH-K 45	100°	Ø5.0 <i>.197</i>	Ø45.0 <i>1.772</i>
		90°	Ø4.0 <i>.157</i>	Ø45.0 <i>1.772</i>
		60°	Ø9.0 <i>.354</i>	Ø45.0 <i>1.772</i>
1	GH-K 25	90°	Ø3.0 <i>.118</i>	Ø25.0 <i>.984</i>
	GH-K 45	90°	Ø4.0 <i>.157</i>	Ø45.0 <i>1.772</i>

Tool Selector

> Step-by-step guide to find the right solution

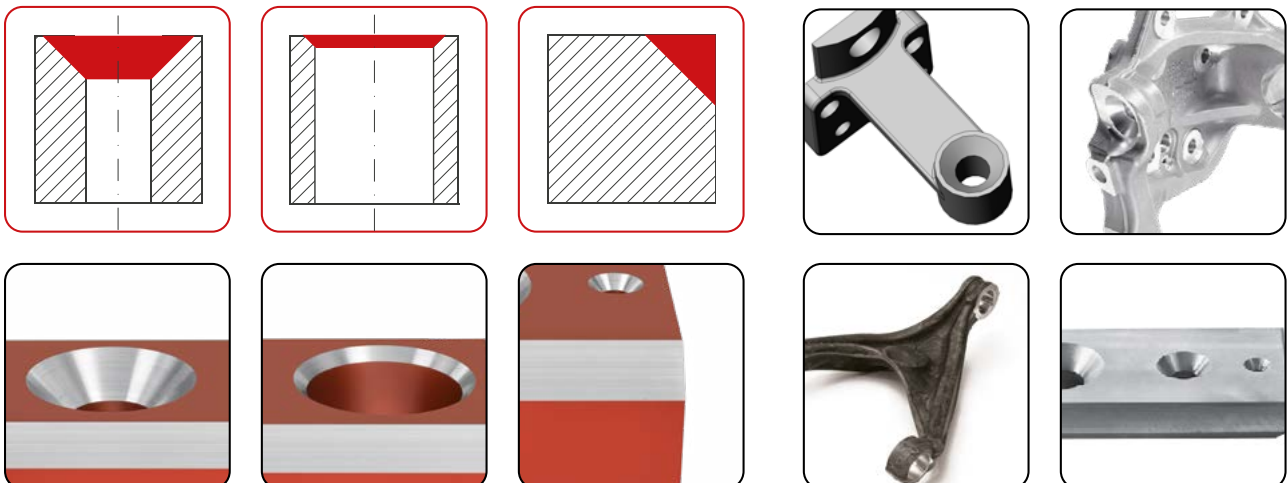
heuletool.com > Tool Selector
> GH-K



GH-K

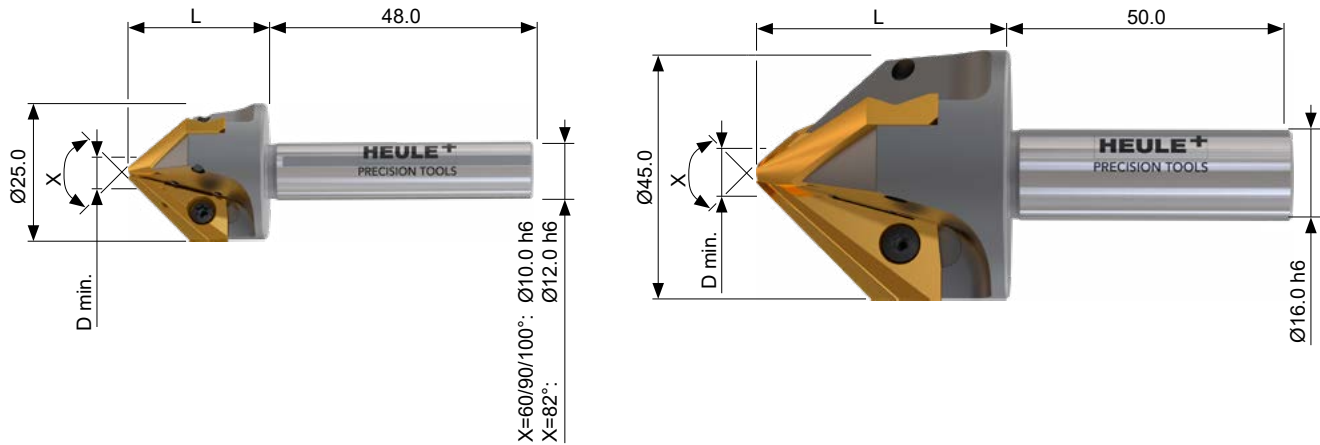
If the required tool is not included in the range above, the **CUSTOM** range can offer a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION



CUSTOM

GH-K 3 blades – 60°, 82°, 90° and 100°



Tool

Standard tool **without** blades

- The blades must always be ordered separately.

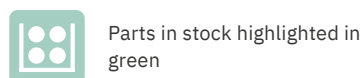
Series	C-sink angle X	Max. C-sink Ø	Min. bore Ø D	Dimension L	Tool w/o blade Part no.
GH-K 25	100°	25.0 .984	3.0 .118	24.7 .972	GH-K-O-0109
	90°	25.0 .984	3.0 .118	25.1 .988	GH-K-B-0001
	82°	23.5 .925	5.0 .197	26.8 1.055	GH-K-O-0016
	60°	25.0 .984	3.0 .118	33.8 1.331	GH-K-B-0601
GH-K 45	100°	45.0 1.772	5.0 .197	44.9 1.768	GH-K-O-0108
	90°	45.0 1.772	4.0 .157	45.0 1.772	GH-K-B-0012
	60°	45.0 1.772	9.0 .354	56.0 2.205	GH-K-B-0612

Blades and spare parts

C-sink angle X	Max. C-sink Ø	Blade set* Part no.				Spare parts
		HSS-TiN	Carbide	Carbide-TiN	Carbide-TiAlN	
60°	25.0 .984		GH-K-M-0607	GH-K-M-0617		see page 146
60°	45.0 1.772		GH-K-M-0608	GH-K-M-0618		see page 146
82°	23.5 .925		GH-K-M-0070		GH-K-M-0074	see page 146
90°	25.0 .984	GH-K-M-0001	GH-K-M-0007	GH-K-M-0017		see page 146
90°	45.0 1.772	GH-K-M-0002	GH-K-M-0008	GH-K-M-0018		see page 146
100°	25.0 .984	GH-K-M-0001	GH-K-M-0007	GH-K-M-0017		see page 146
100°	45.0 1.772	GH-K-M-0002	GH-K-M-0008	GH-K-M-0018		see page 146

Note: Uncoated carbide can be requested with alternative coatings.

* Three bladed tools: Cutting blades are sold and packaged in sets of three (trio), i.e. 1 set = 3 pcs.



Parts in stock highlighted in green

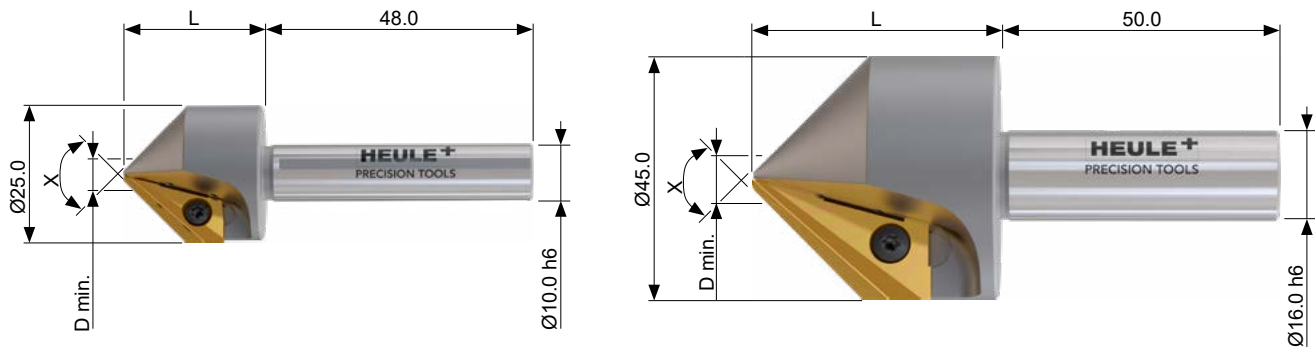


Cutting data
Page 147



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > GH-K

GH-K Single blade – 60° and 90°



Tool

Standard tool **without** blade

- The blades must always be ordered separately.

Series	C-sink angle X	Max. C-sink Ø	Min. bore Ø D	Dimension L	Tool w/o blade Part no.
GH-K 25	90°	25.0 .984	3.0 .118	25.1 .988	GH-K-B-0010
GH-K 45	90°	45.0 1.772	4.0 .157	45.0 1.772	GH-K-B-0011

GH-K

Blades and spare parts

C-sink angle X	Max. C-sink Ø	Blade* Part no.				Spare parts
		HSS-TiN	Carbide	Carbide-TiN	Carbide-TiAlN	
90°	25.0 .984	GH-K-M-0022	GH-K-M-0023	GH-K-M-0024		see page 146
90°	45.0 1.772	GH-K-M-0028	GH-K-M-0029	GH-K-M-0030		see page 146

Note: Uncoated carbide can be requested with alternative coatings.

* Single bladed tools: Cutting blades are sold per piece.



Only use the single-blade tool with an automatic working feed and stable spindle as well as rigid workpiece clamping.

GH-K spare parts

C-sink angle X	Max. C-sink Ø	Regrind fixture Part no.	Shim trio Part no.	Torx screw Part no.	Torx driver Part no.
60°	25.0 .984	GH-K-V-0023	GH-K-U-0004	GH-H-S-0008	GH-H-S-2014
60°	45.0 1.772	GH-K-V-0024	GH-K-U-0005	GH-H-S-0009	GH-H-S-2016
82°	23.5 .925	GH-K-V-0133	GH-K-U-0001	GH-H-S-0008	GH-H-S-2014
90°	25.0 .984	GH-K-V-0020	GH-K-U-0001	GH-H-S-0008	GH-H-S-2014
90°	45.0 1.772	GH-K-V-0021	GH-K-U-0002	GH-H-S-0009	GH-H-S-2016
100°	25.0 .984	GH-K-V-0020	GH-K-U-0001	GH-H-S-0008	GH-H-S-2014
100°	45.0 1.772	GH-K-V-0021	GH-K-U-0002	GH-H-S-0009	GH-H-S-2016

Adapting the tool to different materials

To optimize cutting geometry, 0.05 mm thick shims can be inserted between the blade and the tool body.

REGRINDING OF BLADES

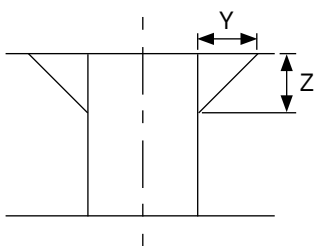
To increase the economy of the precision countersinking tool, the single and triple blades can be reground to original accuracy using available regrind fixtures. When regrinding pay attention to the following details.

- Triple blade sets are matched and numbered. These numbered sets should be kept as a set of three.
- Regrind the 30° radial rake only enough to renew a sharp edge. The maximum regrind depth is 1.0 mm for GH-K25 and 1.4 mm for GH-K45.
- Appropriate safety measures should be used when grinding Carbide.



Grinding may produce hazardous dust. To avoid adverse effects, use adequate ventilation and read MSDS. Cutting tools may break during use. To avoid injury, use proper safety precautions and protective equipment. Use the machine tool with sufficient rigidity and horsepower. Use a cover on a machine tool and protector, such as glasses, against shattering chips and broken tools due to misuse. Do not use insoluble oil because there is a danger of causing fire.

CALCULATION REFERENCE



	Z	Y
60°	1"	.577"
82°	1"	.869"
90°	1"	1.000"
100°	1"	1.191"



See blade order numbers on page 144 and 145.

CUTTING DATA

Material	Hardness BHN	Cutting Speed		Feed (per blade) IPR <i>mm/rev</i>
		HSS-E Coated	Carbide Coated*	
Carbon Steels	100–250	15–80 <i>5–24</i>	60–120 <i>18–36</i>	.001–.002 <i>0.02–0.05</i>
Free machining Alloy	125–340	30–80 <i>9–24</i>	80–150 <i>24–45</i>	.001–.002 <i>0.02–0.05</i>
High Alloy Steel	250–350	15–80 <i>5–24</i>	60–120 <i>18–36</i>	.001–.002 <i>0.02–0.05</i>
Stainless Steel	140–250	20–50 <i>6–15</i>	40–90 <i>12–26</i>	.001–.002 <i>0.02–0.05</i>
Grey Cast Iron	150–330	30–100 <i>9–30</i>	100–250 <i>30–75</i>	.001–.002 <i>0.02–0.05</i>
Aluminum Alloys	30–180	80–230 <i>24–70</i>	200–600 <i>60–220</i>	.002–.004 <i>0.05–0.10</i>
Titanium Alloys	120–334	15–45 <i>5–13</i>	20–80 <i>6–24</i>	.001–.002 <i>0.02–0.05</i>
Copper-Brass-Bronze	80–202	80–200 <i>24–60</i>	130–320 <i>40–100</i>	.001–.002 <i>0.02–0.05</i>



Power feed control is recommended to prevent over-feeding, which can damage the blades. Shims can be added behind the cutting blades to increase front clearance, which will change the cutting geometry to .005 thickness and enable you to tune the tool to different materials. Shims must be placed between blade and tool body.



The cutting data listed are guidelines! They depend on the unevenness of the bore edges (e.g. high slope > low cutting value). The working feed also depends on the sloping ratio.
For materials that are difficult to machine or uneven bore edges, we recommend using cutting speeds that are at the lower end of the range. Contact HEULE for alternative edge preps.

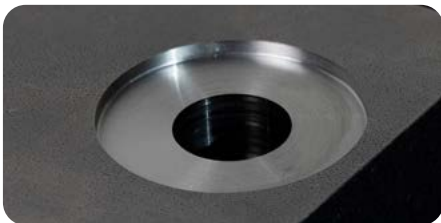
BSF

Efficient spotfacing up to $2.3 \times$ bore diameter.
Reliable, economical and easy to use.

The advantages – Your benefit



The robust tool is ready for immediate use without presets and is extremely easy to handle.



The clean counterbores up to $2.3 \times$ diameter d in demanding materials. Regrinding extends the service life of the solid carbide blades.

BSF can be used on a wide variety of machines. Designed as a modular system with three blade activation options.



BSF is designed to automate the machining of inaccessible bores without turning over the workpiece. Internal coolant can flush chips guaranteeing reliable operation.

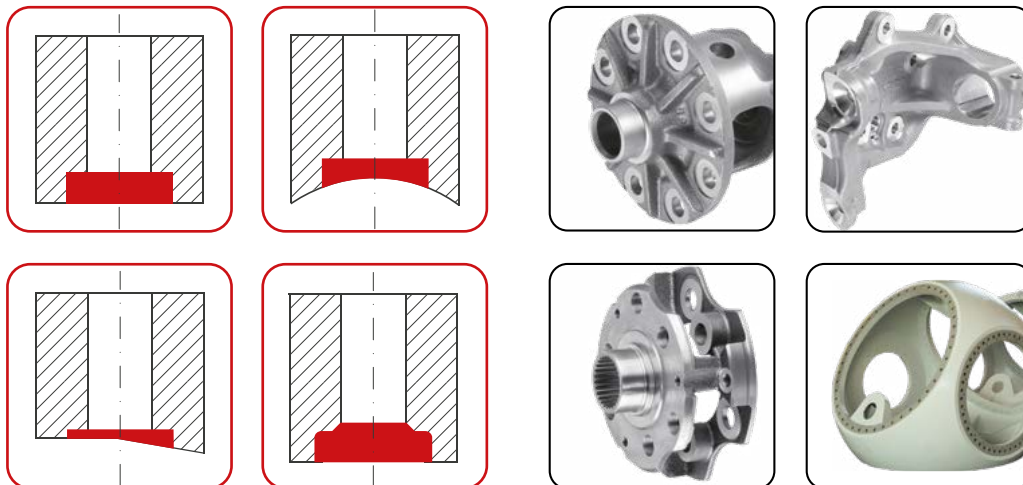


THE RANGE

Bore Ø range	Counterbore Ø range	Working length	Series	Catalog page
Ø6.5–7.0 .256–.276	Ø9.5–16.5 .374–.650	40.0 1.575	Series A	158
Ø7.5–8.5 .295–.335	Ø11.0–20.0 .433–.787	40.0 1.575	Series B	159
Ø9.0–10.0 .354–.394	Ø13.5–23.0 .531–.906	50.0 1.969	Series C	161
Ø10.5–11.5 .413–.453	Ø15.5–26.5 .610–1.043	50.0 1.969	Series D	163
Ø12.0–14.0 .472–.551	Ø18.0–32.5 .709–1.280	50.0 1.969	Series E	166
Ø14.5–17.0 .571–.669	Ø21.5–39.5 .846–1.555	70.0 2.756	Series F	171
Ø17.5–21.0 .689–.827	Ø26.0–49.0 1.027–1.929	70.0 2.756	Series G	177
Ø21.0–45.0 .827–1.772	CUSTOM		Series G	256

If the required tool is not included in the range above, the **CUSTOM** range can offer you a possible solution. If required, we can also develop **tailored solutions** for your application — for example, a **larger bore to counterbore ratio**, a **narrower production tolerance band of ± 0.1** , and/or any required **special counterbore form**.

FIELD OF APPLICATION



TOOL DESIGN

The BSF tool's construction is robust, simple and therefore reliable. The blade is unfolded using centrifugal force. There are three activation possibilities for the blade: Internal coolant pressure, compressed air or manual activation ring. The

modular design enables retrofitting within the standard range. Existing tools can be retrofitted if required. For simple change of the shank adaption see page 190.



Standard BSF

Use on machines with integrated coolant. IC pressure 20–50 bar (280–1'000 Psi).



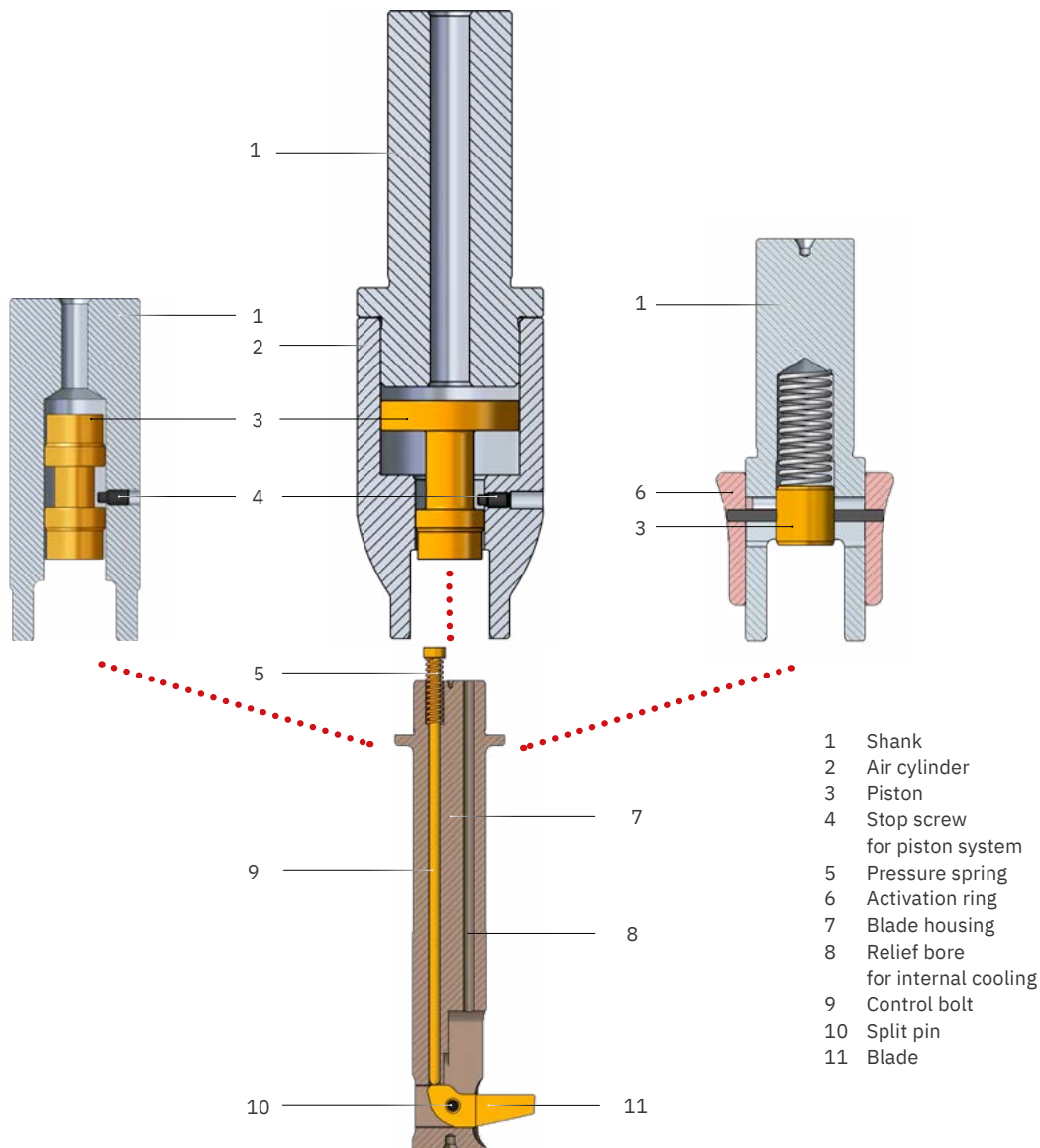
BSF Air

For use on machines that do not have integrated coolant, but do have compressed air (min. 5 bar / 80 Psi).

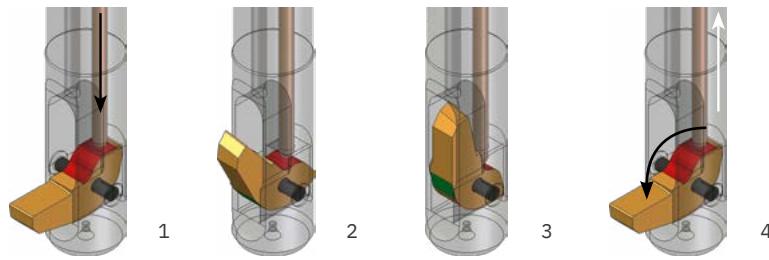


BSF Manual

Use on simple NC or manual machines that have neither compressed air nor integrated coolant.



OPERATING PRINCIPLE



1 The internal coolant (IC), the air or manual actuation applies pressure on the piston. The control bolt extends, presses on the back surface (red) and the blade folds in.

2 During the folding movement, the back surface rotates away and the control bolt – still under pressure – hits the stop-surface of the blade.

3 When folded in, the control bolt holds the blade in position. The blade remains in position (folded in) regardless of acceleration or rotational forces in the axial direction.

4 After switching off the coolant pressure/air pressure or manually turning the activation ring, the control bolt retracts and the blade is folded out by centrifugal force from the spindle rotation.

Operating instructions

- > Blade change
- > Operating BSF Manual

heuletool.com > Service >
Media & Download Center



MACHINE REQUIREMENTS

	BSF Blade activation with internal coolant	BSF Air Blade activation with compressed air	BSF Manual Manual blade activation
Machine	• Activation with coolant, internal coolant through spindle center, at least 20 bar (280 Psi) • Operating pressure 20–50 bar (280–1'000 Psi). Attention: Reduce coolant pressure for soft materials! • Coolant supply can be programmed on/off. • Filtered coolant circuit with filter size $\leq 25 \mu\text{m}$	• Activation with compressed air cooling through spindle center, at least 5 bar (80 Psi) • Operating pressure up to 20 bar (280 Psi) max.	• Activation speed requirement: see activation speed table • Machine should have controlled feed rate (recommended)
Activation speed for unfolding the blade	2'500–5'000 RPM The activation speed depends on the bore diameter and counterbore ratio (see activation speed table).		
Clamping workpiece	The BSF tool works in tension. This must be taken into account when clamping the workpiece. Make sure there is enough space behind the workpiece (clamping device) for chips. For long-chipping materials, feed cycles should be programmed so that you get only short chips that are easy to remove. The tool's flushing mechanism helps to remove the chips.		
Clamping system	A clamping collet seal is absolutely essential for tools with a cylindrical shank.		
Tool requirements	Typical spotface diameter tolerances ± 0.2 ($\pm .008$) with standard BSF. BSF-P allows up to ± 0.1 ($\pm .004$). The recommended tool diameter should be 0.1-0.2 ($\pm .008$) below the minimum hole diameter. All materials can be machined but special considerations should be given to interruptions and long chipping materials. All tools are ground with large cylindrical shanks with h6 tolerances. Proper tool holding may include hydraulic, mill chuck or precision collet holders. Coolant filtration required ($<25\mu\text{m}$).		

Note

Pay special attention to the recommended bore hole tolerance (± 0.1). Bores with a bigger tolerance can cause undesirable results (tool is rubbing in the bore, reduced counterbore diameter etc.). Watch the tool collision diameter (counterbore diameter + 2 mm) when you store the tool in the tool magazine.

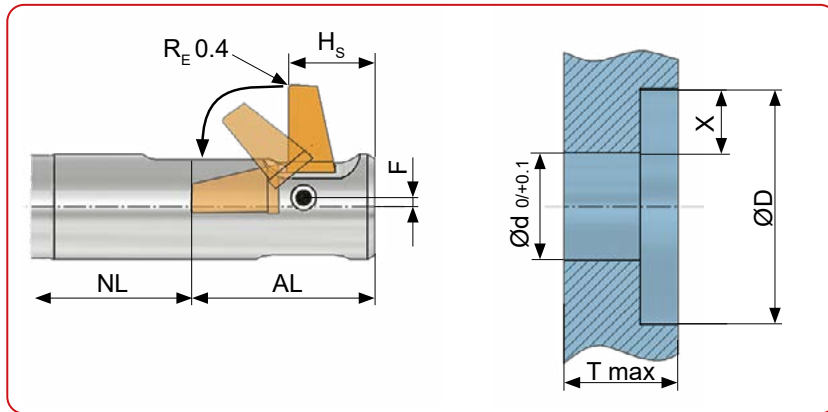
ACTIVATION SPEED

Counterbore ratio*	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
* C-bore Ø : Bore Ø										
Bore diameter d										
Series A										
6.5	4500	4500	4500	3500	3500	3500	3000	3000	2500	2500
7.0	2500	2500	2500	2500	2500	2000	2000	2000	2000	2000
Series B										
7.5	4500	4500	4500	3500	3500	3000	3000	2500	2500	2500
8.0	2500	2500	2500	2500	2500	2000	2000	2000	2000	2000
8.5	2000	2000	2000	2000	2000	2000	2000	2000	1500	1500
Series C										
9.0	3500	3500	3500	3000	3000	2500	2500	2500	2500	2500
9.5	2500	2500	2500	2500	2000	2000	2000	2000	2000	2000
10.0	2000	2000	2000	2000	2000	2000	2000	2000	2000	1500
Series D										
10.5	5000	5000	5000	3500	3500	3500	3000	3000	2500	2500
11.0	3000	3000	3000	2500	2500	2500	2500	2500	2000	2000
11.5	2500	2500	2500	2000	2000	2000	2000	2000	2000	2000
Series E										
12.0	3500	3500	3500	2500	2500	2500	2500	2500	2000	2000
12.5 – 13.0	2500	2500	2500	2000	2000	2000	2000	1500	1500	1500
13.5 – 14.0	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Series F										
14.5	3500	3500	3500	2500	2500	2500	2500	2500	2500	2000
15.0 – 15.5	3000	3000	3000	2500	2500	2500	2000	2000	2000	2000
16.0 – 17.0	2000	2000	2000	1500	1500	1500	1500	1500	1500	1500
Series G										
17.5 – 18.0	3500	3500	3500	2500	2500	2500	2000	2000	2000	1500
18.5 – 19.5	2000	2000	2000	1500	1500	1500	1500	1500	1500	1500
20.0 – 21.0	1500	1500	1500	1000	1000	1000	1000	1000	1000	1000

*All above values are recommended minimum RPM

The activation speed (rev./min.) to be set to swing out the blade depends on the bore diameter and the counterbore ratio (counterbore diameter : bore diameter).

BSF PROGRAMMING EXAMPLE

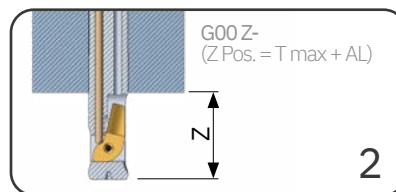


Legend

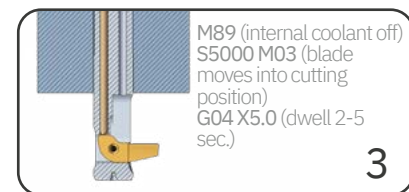
Ød	Bore diameter
ØD	Counterbore diameter
ØD1	Tool diameter
RE	Edge radius standard
NL	Working length
AL	Swing length
Hs	Blade height



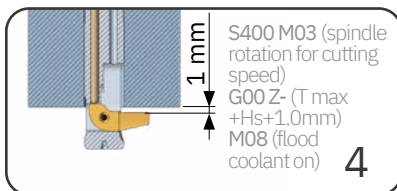
Position tool above part, spindle off, internal coolant on, dwell 2- 5 seconds (dwell time depends on pump), blade retracts.



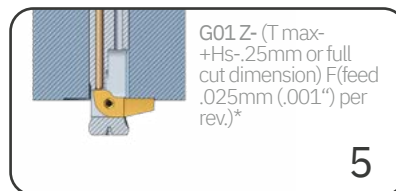
Position tool through the hole
(Z Pos. = T max + AL).



Internal coolant off and start spindle 2000-5000 RPM, dwell 2-5 seconds (dwell depends on time it takes to purge the internal coolant), blade moves into cutting position.



Turn on spindle at cutting speed. Position cutting blade 1 mm below T max (note tolerance and burr size), turn on flood coolant.

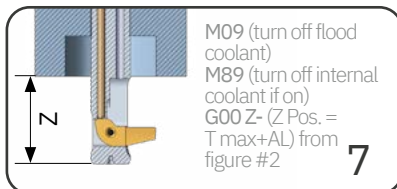


Move Z axis for cutting (approximately .25 mm deep or until full cut) with cutting feed rate.

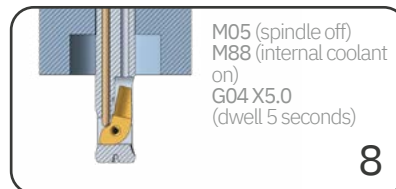
*continue to desired depth of cut unless optional next step is required



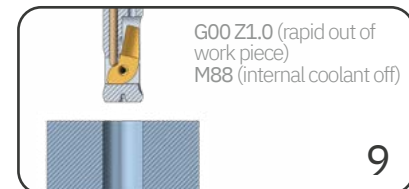
Optional: For deep bores, turn internal coolant on and feed to desired depth. Insert must be in full cut.



If the counterbore depth is reached, switch off internal coolant and external coolant, and rapid back to Z position (Z Pos. = T max + AL).



Spindle stop, internal coolant on, dwell 2-5 seconds, blade retracts.



Position tool out of work piece. Internal coolant off or move to next hole location.

*Programming codes vary per machine make and model

1: Check swing length 2: Check activation speed on pg 153 3: Reference cutting data on pg 155

CUTTING DATA

Material	Hardness BHN	Cutting Speed SFM MPM	IPR mm/rev				
			A Ø6.5–7.0	B Ø7.5–8.5	C Ø9.0–10.0	D Ø10.5–11.5	E/F/G Ø12.0–21.0
Carbon Steels	100–250	100–260 30–80	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0012–.0025 0.03–0.06	.0012–.0030 0.03–0.08
Free machining Alloy	125–340	100–230 30–70	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0008–.0020 0.02–0.05
High Alloy Steel	250–350	100–200 30–60	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0012–.0025 0.03–0.06	.0012–.0030 0.03–0.08
Stainless Steel	140–250	50–100 15–30	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0008–.0020 0.02–0.06	.0008–.0025 0.02–0.08
Steel Castings	90–250	130–230 40–70	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02
Grey Cast Iron	150–330	130–230 40–70	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0012–.0025 0.03–0.06	.0012–.0025 0.03–0.06
Nodular Cast Iron	140–310	100–260 30–80	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0012–.0025 0.03–0.06	.0012–.0030 0.03–0.08
Aluminum Alloys	30–180	60–120 18–37	.0008–.0012 0.02–0.03	.0008–.0020 0.02–0.05	.0012–.0025 0.03–0.06	.0012–.0030 0.03–0.08	.0020–.0040 0.05–0.10
Nickel-based Alloys	140–310	20–60 7–18	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0008–.0020 0.02–0.03
Titanium Alloys	120–334	30–100 10–30	.0004–.0008 0.01–0.02	.0004–.0008 0.01–0.02	.0008–.0012 0.02–0.03	.0008–.0020 0.02–0.05	.0008–.0025 0.02–0.06
Copper-Brass-Bronze	80–202	100–290 30–90	.0004–.0008 0.01–0.02	.0004–.0012 0.01–0.03	.0008–.0016 0.02–0.04	.0012–.0025 0.03–0.06	.0012–.0030 0.03–0.08



All listed cutting data are standard values only. The cutting values depend on the amount of slope of the material. In case of hard-to-machine materials or interrupted cuts, use lower end of the range and/or contact HEULE.



High-pressure flood coolant directed at cutter may prematurely close blade before engaging. Recommend turn flood on after cutter engages part.

Recommendations

- Activation speed: 2'000–5'000 RPM
- Coolant filtration: <25µm
- Clamping: Sealed coolant or hydraulic holder
- Minimum coolant pressure: 280 PSI (approximately 20 bar)
- Minimum air pressure: 80 PSI (approximately 5 bar)
- If there is long-chipping and deep counterbores, program the feed cycle so short chips are received.

Selecting the correct BSF tool

TOOL SELECTOR

The HEULE Tool Selector is the quickest and easiest way to find the right tool.

Send the search results along with your application data to your HEULE representative. They will check the application and offer options, if required.

If your search produces no results, please contact HEULE with your application data anyway. We also develop customized solutions and are happy to advise you.

TOOL TABLES

The correct tool is primarily determined by the bore diameter to be machined. This table also shows the possible counterbore diameters and the working length. The right blade can be selected accordingly.

The tool tables cover the standard range. The tool part numbers highlighted in green are available from stock.

BSF is also available with different blade coatings to meet the requirements depending on the type of material.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form (heuletool.com > contact) or by telephone.

Tool Selector

> Get reliable help to find the right solution

heuletool.com > Tool Selector
> BSF



Tool Selector 

Still have questions?

> HEULE Consulting and Support

heuletool.com > contact



CONFIGURING BSF TOOLS

1. Select tool



First select the bore diameter corresponding to your application in the tool table. Then select the required counterbore diameter.

2. Select activation type



Depending on the machine type, the blade can be activated with internal spindle coolant, compressed air or manually.

3. Select blade



Please refer to the tool table for the carbide blade suitable for the selected tool.

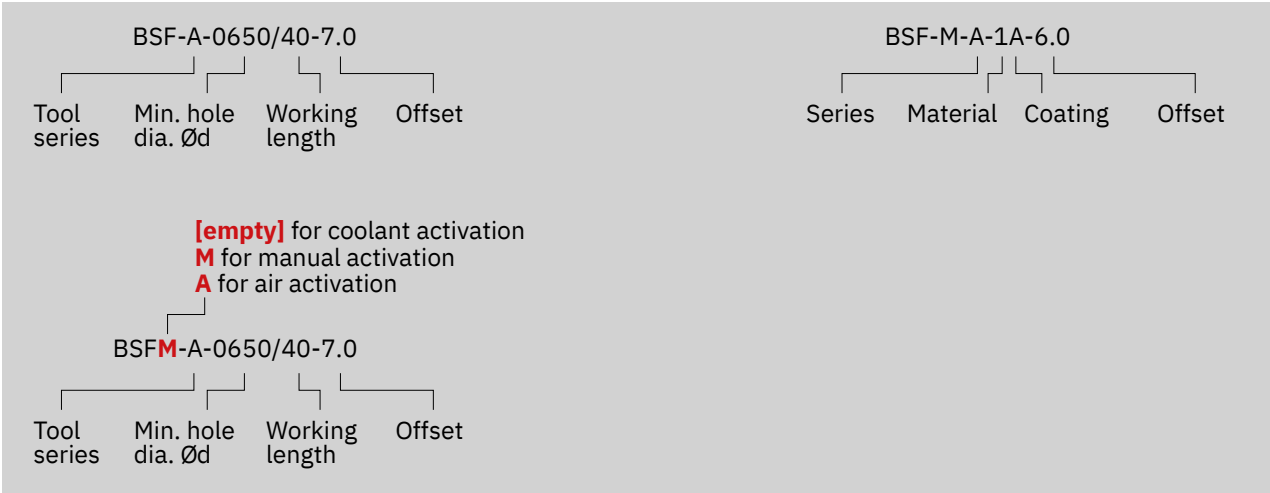
The coating required for the workpiece material is also referenced in the blade part number (1A: steel, 1D: aluminum*).

Standard blade: R = 0.4

Custom blade: R = 0.8

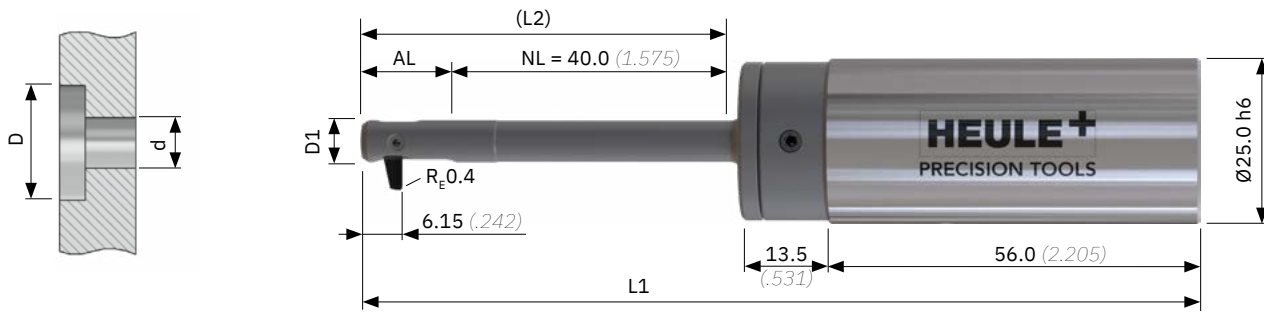
See page 197 for part numbers.

Overview



* limited stock

BSF Bore Ø 6.5 mm and Ø 7.0 mm (.256" to .276") | Series A



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
6.50 .256	6.40 .252	9.50 .374	14.25 .561	127.75 5.030	54.25 2.136	BSF-A-0650/040-6.5	BSF-M-A-1A-3.0
		10.00 .394				BSF-A-0650/040-7.0	
		10.50 .413				BSF-A-0650/040-7.5	
		11.00 .433				BSF-A-0650/040-6.5	BSF-M-A-1A-4.5
		11.50 .453				BSF-A-0650/040-7.0	
		12.00 .472				BSF-A-0650/040-7.5	
		12.50 .492				BSF-A-0650/040-6.5	BSF-M-A-1A-6.0
		13.00 .512				BSF-A-0650/040-7.0	
		13.50 .531				BSF-A-0650/040-7.5	
		14.00 .551				BSF-A-0650/040-6.5	BSF-M-A-1A-7.5
		14.50 .571				BSF-A-0650/040-7.0	
		15.00 .591				BSF-A-0650/040-7.5	
7.00 .276	6.90 .272	10.00 .394	15.00 .591	128.50 5.059	55.00 2.165	BSF-A-0700/040-7.0	BSF-M-A-1A-3.0
		10.50 .413				BSF-A-0700/040-7.5	
		11.00 .433				BSF-A-0700/040-8.0	
		11.50 .453				BSF-A-0700/040-7.0	BSF-M-A-1A-4.5
		12.00 .472				BSF-A-0700/040-7.5	
		12.50 .492				BSF-A-0700/040-8.0	
		13.00 .512				BSF-A-0700/040-7.0	BSF-M-A-1A-6.0
		13.50 .531				BSF-A-0700/040-7.5	
		14.00 .551				BSF-A-0700/040-8.0	
		14.50 .571				BSF-A-0700/040-7.0	BSF-M-A-1A-7.5
		15.00 .591				BSF-A-0700/040-7.5	
		15.50 .610				BSF-A-0700/040-8.0	
		16.00 .630				BSF-A-0700/040-7.0	BSF-M-A-1A-9.0
		16.50 .650				BSF-A-0700/040-7.5	
		17.00 .669				BSF-A-0700/040-8.0	



Parts in stock highlighted in green



Programming
Page 154

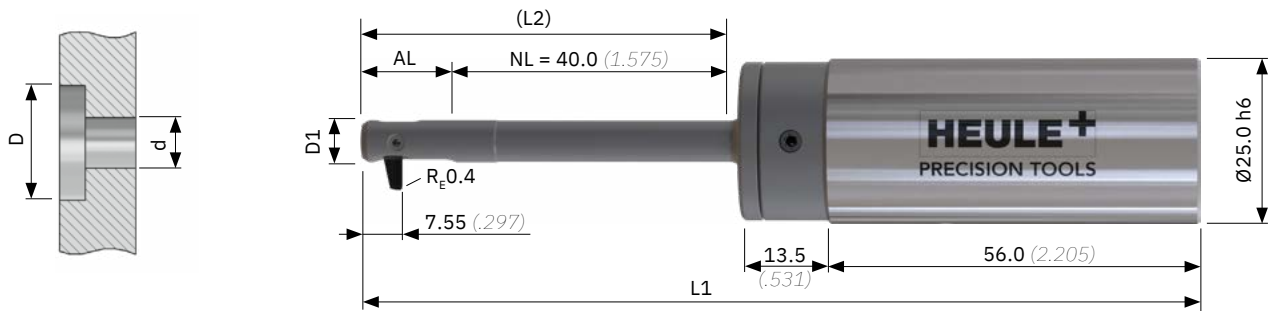


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 7.5 mm and Ø 8.0 mm (.295" to .315") | Series B



Tools and blades

Standard tool **without** blade

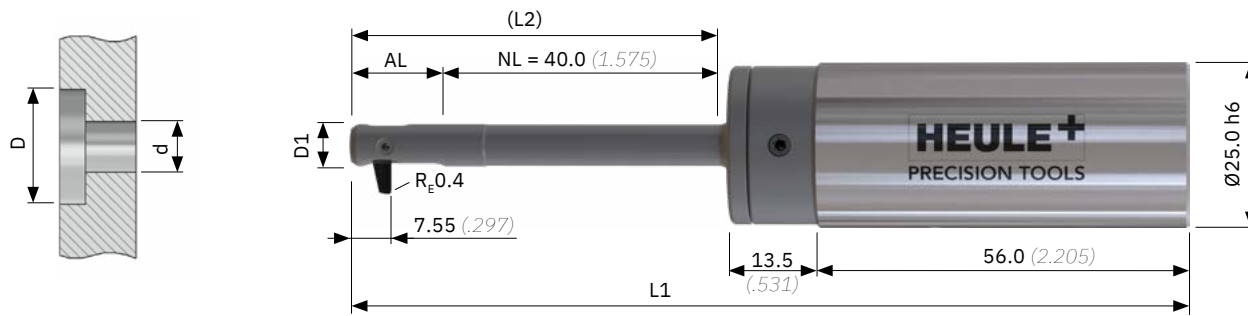
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
7.50 .295	7.40 .291	11.00 .433	17.00	130.50	57.00	BSF-B-0750/040-7.5	BSF-M-B-1A-3.5
		11.50 .453	.669	5.138	2.244	BSF-B-0750/040-8.0	
		12.00 .472				BSF-B-0750/040-8.5	
		12.50 .492				BSF-B-0750/040-7.5	BSF-M-B-1A-5.0
		13.00 .512				BSF-B-0750/040-8.0	
		13.50 .531				BSF-B-0750/040-8.5	
		14.00 .551				BSF-B-0750/040-7.5	BSF-M-B-1A-6.5
		14.50 .571				BSF-B-0750/040-8.0	
		15.00 .591				BSF-B-0750/040-8.5	
		15.50 .610				BSF-B-0750/040-7.5	BSF-M-B-1A-8.0
		16.00 .630				BSF-B-0750/040-8.0	
		16.50 .650				BSF-B-0750/040-8.5	
		17.00 .669				BSF-B-0750/040-7.5	BSF-M-B-1A-9.5
		17.50 .689				BSF-B-0750/040-8.0	
		18.00 .709				BSF-B-0750/040-8.0	
8.00 .315	7.90 .311	11.50 .453	17.00	130.50	57.00	BSF-B-0800/040-8.0	BSF-M-B-1A-3.5
		12.00 .472	.669	5.138	2.244	BSF-B-0800/040-8.5	
		12.50 .492				BSF-B-0800/040-9.0	
		13.00 .512				BSF-B-0800/040-8.0	BSF-M-B-1A-5.0
		13.50 .531				BSF-B-0800/040-8.5	
		14.00 .551				BSF-B-0800/040-9.0	
		14.50 .571				BSF-B-0800/040-8.0	BSF-M-B-1A-6.5
		15.00 .591				BSF-B-0800/040-8.5	
		15.50 .610				BSF-B-0800/040-9.0	
		16.00 .630				BSF-B-0800/040-8.0	BSF-M-B-1A-8.0
		16.50 .650				BSF-B-0800/040-8.5	
		17.00 .669				BSF-B-0800/040-9.0	
		17.50 .689				BSF-B-0800/040-8.0	BSF-M-B-1A-9.5
		18.00 .709				BSF-B-0800/040-8.5	
		18.50 .728				BSF-B-0800/040-9.0	



Parts in stock highlighted in green

BSF Bore Ø 8.5 mm (.335") | Series B



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
8.50 .335	8.40 .331	12.00 .472	17.75	131.25	57.75	BSF-B-0850/040-8.5	BSF-M-B-1A-3.5
		12.50 .492	.699	5.167	2.274	BSF-B-0850/040-9.0	
		13.00 .512				BSF-B-0850/040-9.5	
		13.50 .531				BSF-B-0850/040-8.5	BSF-M-B-1A-5.0
		14.00 .551				BSF-B-0850/040-9.0	
		14.50 .571				BSF-B-0850/040-9.5	
		15.00 .591				BSF-B-0850/040-8.5	BSF-M-B-1A-6.5
		15.50 .610				BSF-B-0850/040-9.0	
		16.00 .630				BSF-B-0850/040-9.5	
		16.50 .650				BSF-B-0850/040-8.5	BSF-M-B-1A-8.0
		17.00 .669				BSF-B-0850/040-9.0	
		17.50 .689				BSF-B-0850/040-9.5	
		18.00 .709				BSF-B-0850/040-8.5	BSF-M-B-1A-9.5
		18.50 .728				BSF-B-0850/040-9.0	
		19.00 .748				BSF-B-0850/040-9.5	
		19.50 .768				BSF-B-0850/040-8.5	BSF-M-B-1A-11.0
		20.00 .787				BSF-B-0850/040-9.0	
		20.50 .807				BSF-B-0850/040-9.5	



Parts in stock highlighted in green



Programming
Page 154

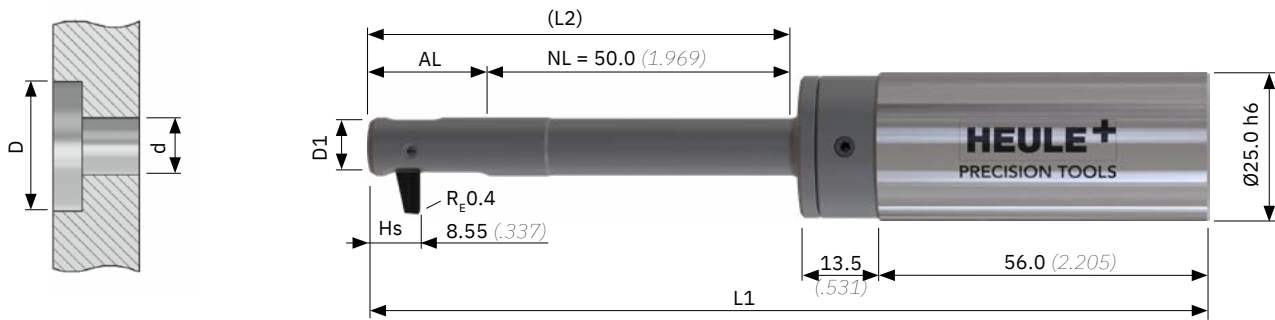


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 9.0 mm and Ø 9.5 mm (.354 to .374") | Series C



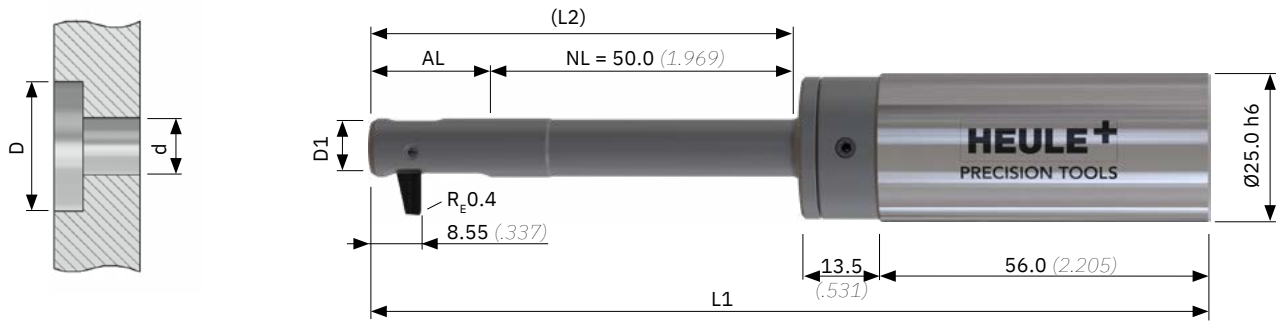
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
9.00 .354	8.90 .350	13.50 .531	20.25 .797	143.75 5.659	70.25 2.766	BSF-C-0900/050-9.5	BSF-M-C-1A-4.0
		14.00 .551				BSF-C-0900/050-10.0	
		14.50 .571				BSF-C-0900/050-10.5	
		15.00 .591				BSF-C-0900/050-9.5	BSF-M-C-1A-5.5
		15.50 .610				BSF-C-0900/050-10.0	
		16.00 .630				BSF-C-0900/050-10.5	
		16.50 .650				BSF-C-0900/050-9.5	BSF-M-C-1A-7.0
		17.00 .669				BSF-C-0900/050-10.0	
		17.50 .689				BSF-C-0900/050-10.5	
		18.00 .709				BSF-C-0900/050-9.5	BSF-M-C-1A-8.5
		18.50 .728				BSF-C-0900/050-10.0	
		19.00 .748				BSF-C-0900/050-10.5	
		19.50 .768				BSF-C-0900/050-9.5	BSF-M-C-1A-10.0
		20.00 .787				BSF-C-0900/050-10.0	
		20.50 .807				BSF-C-0900/050-10.5	
		21.00 .827				BSF-C-0900/050-9.5	BSF-M-C-1A-11.5
		21.50 .846				BSF-C-0900/050-10.0	
		22.00 .866				BSF-C-0900/050-10.5	
9.50 .374	9.40 .370	14.00 .551	20.25 .797	143.75 5.659	70.25 2.766	BSF-C-0950/050-10.0	BSF-M-C-1A-4.0
		14.50 .571				BSF-C-0950/050-10.5	
		15.00 .591				BSF-C-0950/050-11.0	
		15.50 .610				BSF-C-0950/050-10.0	BSF-M-C-1A-5.5
		16.00 .630				BSF-C-0950/050-10.5	
		16.50 .650				BSF-C-0950/050-11.0	
		17.00 .669				BSF-C-0950/050-10.0	BSF-M-C-1A-7.0
		17.50 .689				BSF-C-0950/050-10.5	
		18.00 .709				BSF-C-0950/050-11.0	
		18.50 .728				BSF-C-0950/050-10.0	BSF-M-C-1A-8.5
		19.00 .748				BSF-C-0950/050-10.5	
		19.50 .768				BSF-C-0950/050-11.0	
		20.00 .787				BSF-C-0950/050-10.0	BSF-M-C-1A-10.0
		20.50 .807				BSF-C-0950/050-10.5	
		21.00 .827				BSF-C-0950/050-11.0	
		21.50 .846				BSF-C-0950/050-10.0	BSF-M-C-1A-11.5
		22.00 .866				BSF-C-0950/050-10.5	
		22.50 .886				BSF-C-0950/050-11.0	

BSF Bore Ø 10.0 mm (.394") | Series C



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
10.00 .394	9.90 .390	14.50 .571	20.25	143.75	70.25	BSF-C-1000/050-10.5	BSF-M-C-1A-4.0
		15.00 .591	.797	5.659	2.766	BSF-C-1000/050-11.0	
		15.50 .610				BSF-C-1000/050-11.5	
		16.00 .630				BSF-C-1000/050-10.5	BSF-M-C-1A-5.5
		16.50 .650				BSF-C-1000/050-11.0	
		17.00 .669				BSF-C-1000/050-11.5	
		17.50 .689				BSF-C-1000/050-10.5	BSF-M-C-1A-7.0
		18.00 .709				BSF-C-1000/050-11.0	
		18.50 .728				BSF-C-1000/050-11.5	
		19.00 .748				BSF-C-1000/050-10.5	BSF-M-C-1A-8.5
		19.50 .768				BSF-C-1000/050-11.0	
		20.00 .787				BSF-C-1000/050-11.5	
		20.50 .807				BSF-C-1000/050-10.5	BSF-M-C-1A-10.0
		21.00 .827				BSF-C-1000/050-11.0	
		21.50 .846				BSF-C-1000/050-11.5	
		22.00 .866				BSF-C-1000/050-10.5	BSF-M-C-1A-11.5
		22.50 .886				BSF-C-1000/050-11.0	
		23.00 .906				BSF-C-1000/050-11.5	



Parts in stock highlighted in green



Programming
Page 154

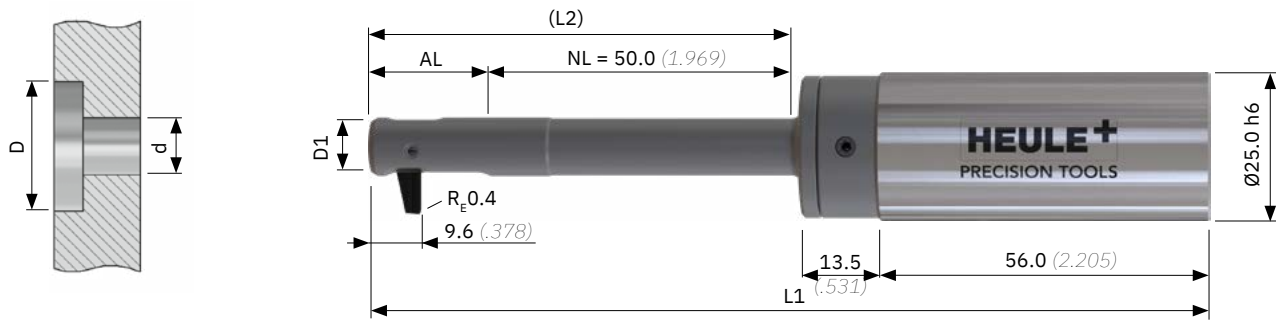


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 10.5 mm (.413") | Series D



Tools and blades

Standard tool **without** blade

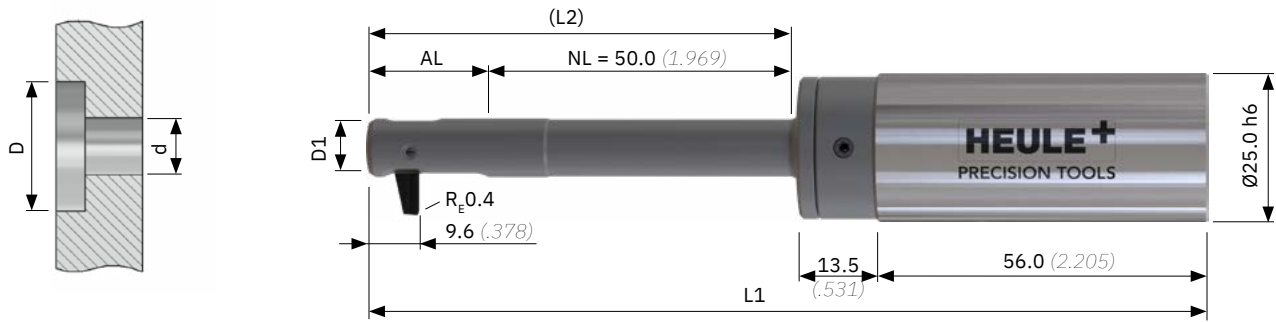
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
10.50 .413	10.40 .409	15.50 .591	22.50	146.00	72.50	BSF-D-1050/050-11.0	BSF-M-D-1A-4.5
		16.00 .630	.886	5.748	2.854	BSF-D-1050/050-11.5	
		16.50 .650				BSF-D-1050/050-12.0	
		17.00 .669				BSF-D-1050/050-12.5	
		17.50 .689				BSF-D-1050/050-13.0	
		18.00 .709				BSF-D-1050/050-11.0	BSF-M-D-1A-7.0
		18.50 .728				BSF-D-1050/050-11.5	
		19.00 .748				BSF-D-1050/050-12.0	
		19.50 .768				BSF-D-1050/050-12.5	
		20.00 .787				BSF-D-1050/050-13.0	
		20.50 .807				BSF-D-1050/050-11.0	BSF-M-D-1A-9.5
		21.00 .827				BSF-D-1050/050-11.5	
		21.50 .846				BSF-D-1050/050-12.0	
		22.00 .866				BSF-D-1050/050-12.5	
		22.50 .886				BSF-D-1050/050-13.0	
		23.00 .906				BSF-D-1050/050-11.0	BSF-M-D-1A-12.0
		23.50 .925				BSF-D-1050/050-11.5	
		24.00 .945				BSF-D-1050/050-12.0	
		24.50 .965				BSF-D-1050/050-12.5	
		25.00 .984				BSF-D-1050/050-13.0	



Parts in stock highlighted in green

BSF Bore Ø 11.0 mm (.433") | Series D



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
11.00 .433	10.90 .429	16.00 .630	22.50 .886	146.00 5.748	72.50 2.854	BSF-D-1100/050-11.5	BSF-M-D-1A-4.5
		16.50 .650				BSF-D-1100/050-12.0	
		17.00 .669				BSF-D-1100/050-12.5	
		17.50 .689				BSF-D-1100/050-13.0	
		18.00 .709				BSF-D-1100/050-13.5	
		18.50 .728				BSF-D-1100/050-11.5	BSF-M-D-1A-7.0
		19.00 .748				BSF-D-1100/050-12.0	
		19.50 .768				BSF-D-1100/050-12.5	
		20.00 .787				BSF-D-1100/050-13.0	
		20.50 .807				BSF-D-1100/050-13.5	
		21.00 .827				BSF-D-1100/050-11.5	BSF-M-D-1A-9.5
		21.50 .846				BSF-D-1100/050-12.0	
		22.00 .866				BSF-D-1100/050-12.5	
		22.50 .886				BSF-D-1100/050-13.0	
		23.00 .906				BSF-D-1100/050-13.5	
		23.50 .925				BSF-D-1100/050-11.5	BSF-M-D-1A-12.0
		24.00 .945				BSF-D-1100/050-12.0	
		24.50 .965				BSF-D-1100/050-12.5	
		25.00 .984				BSF-D-1100/050-13.0	
		25.50 1.004				BSF-D-1100/050-13.5	



Parts in stock highlighted in green



Programming
Page 154

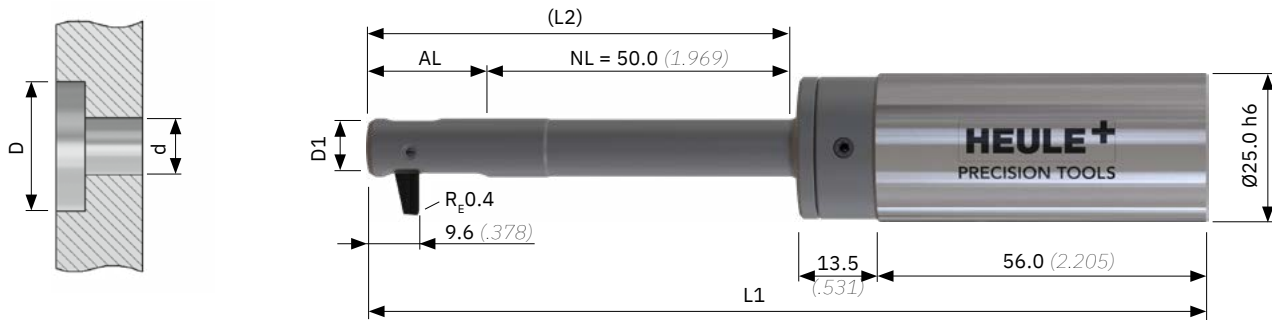


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 11.5 mm (.453") | Series D



Tools and blades

Standard tool **without** blade

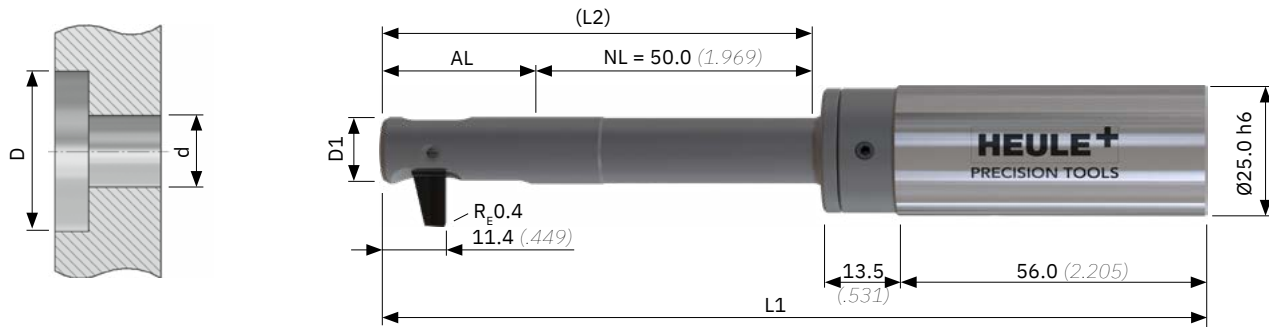
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
11.50 .453	11.40 .449	16.50 .650	23.75	147.25	73.75	BSF-D-1150/050-12.0	BSF-M-D-1A-4.5
		17.00 .669	.935	5.797	2.904	BSF-D-1150/050-12.5	
		17.50 .689				BSF-D-1150/050-13.0	
		18.00 .709				BSF-D-1150/050-13.5	
		18.50 .728				BSF-D-1150/050-14.0	
		19.00 .748				BSF-D-1150/050-12.0	BSF-M-D-1A-7.0
		19.50 .768				BSF-D-1150/050-12.5	
		20.00 .787				BSF-D-1150/050-13.0	
		20.50 .807				BSF-D-1150/050-13.5	
		21.00 .827				BSF-D-1150/050-14.0	
		21.50 .846				BSF-D-1150/050-12.0	BSF-M-D-1A-9.5
		22.00 .866				BSF-D-1150/050-12.5	
		22.50 .886				BSF-D-1150/050-13.0	
		23.00 .906				BSF-D-1150/050-13.5	
		23.50 .925				BSF-D-1150/050-14.0	
		24.00 .945				BSF-D-1150/050-12.0	BSF-M-D-1A-12.0
		24.50 .965				BSF-D-1150/050-12.5	
		25.00 .684				BSF-D-1150/050-13.0	
		25.50 1.004				BSF-D-1150/050-13.5	
		26.00 1.024				BSF-D-1150/050-14.0	
	26.50 1.043	26.50 1.043				BSF-D-1150/050-12.0	BSF-M-D-1A-14.5
		27.00 1.063				BSF-D-1150/050-12.5	
		27.50 1.083				BSF-D-1150/050-13.0	
		28.00 1.102				BSF-D-1150/050-13.5	
		28.50 1.122				BSF-D-1150/050-14.0	



Parts in stock highlighted in green

BSF Bore Ø 12.0 mm (.472") | Series E



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
12.00 .472	11.90 .469	18.00 .709	26.75	150.25	76.75	BSF-E-1200/050-13.0	BSF-M-E-1A-5.0
		18.50 .728	1.053	5.915	3.022	BSF-E-1200/050-13.5	
		19.00 .748				BSF-E-1200/050-14.0	
		19.50 .768				BSF-E-1200/050-14.5	
		20.00 .787				BSF-E-1200/050-15.0	
		20.50 .807				BSF-E-1200/050-13.0	BSF-M-E-1A-7.5
		21.00 .827				BSF-E-1200/050-13.5	
		21.50 .846				BSF-E-1200/050-14.0	
		22.00 .866				BSF-E-1200/050-14.5	
		22.50 .886				BSF-E-1200/050-15.0	
		23.00 .906				BSF-E-1200/050-13.0	BSF-M-E-1A-10.0
		23.50 .925				BSF-E-1200/050-13.5	
		24.00 .945				BSF-E-1200/050-14.0	
		24.50 .965				BSF-E-1200/050-14.5	
		25.00 .984				BSF-E-1200/050-15.0	
		25.50 1.004				BSF-E-1200/050-13.0	BSF-M-E-1A-12.5
		26.00 1.024				BSF-E-1200/050-13.5	
		26.50 1.043				BSF-E-1200/050-14.0	
		27.00 1.063				BSF-E-1200/050-14.5	
		27.50 1.083				BSF-E-1200/050-15.0	
		28.00 1.102				BSF-E-1200/050-13.0	BSF-M-E-1A-15.0
		28.50 1.122				BSF-E-1200/050-13.5	
		29.00 1.142				BSF-E-1200/050-14.0	
		29.50 1.161				BSF-E-1200/050-14.5	
		30.00 1.181				BSF-E-1200/050-15.0	



Parts in stock highlighted in green



Programming
Page 154

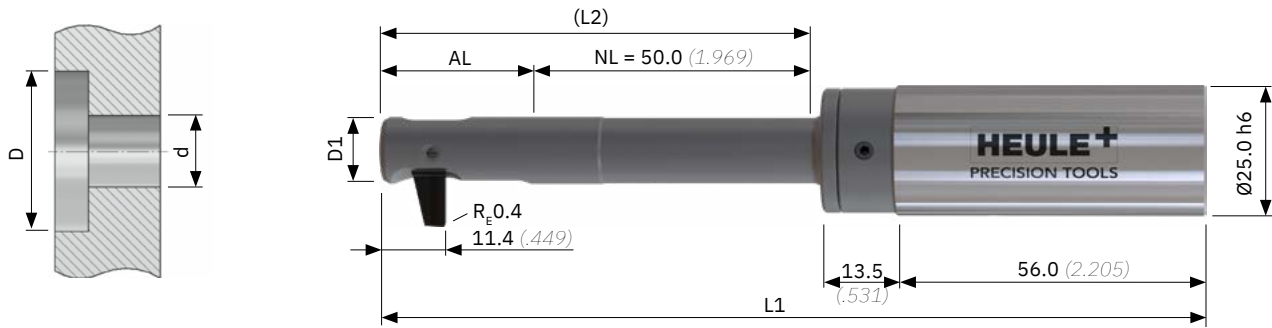


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 12.5 mm (.492") | Series E



Tools and blades

Standard tool **without** blade

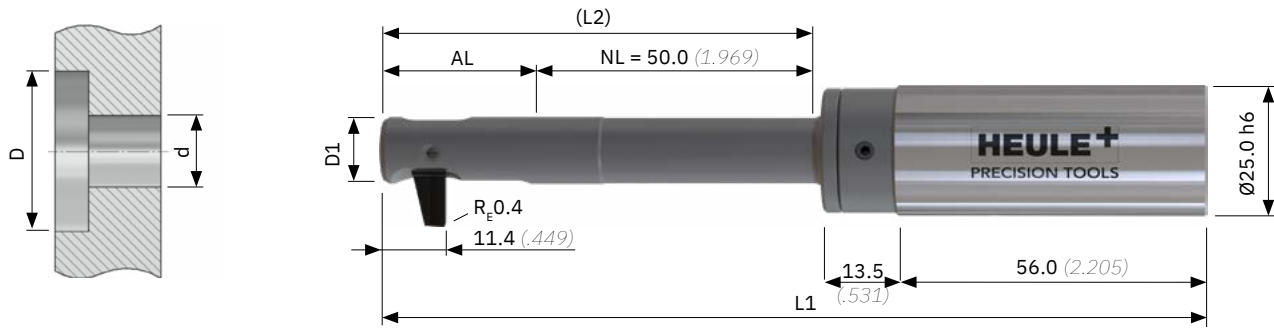
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
12.50 .492	12.40 .488	18.50 .728	26.75	150.25	76.75	BSF-E-1250/050-13.5	BSF-M-E-1A-5.0
		19.00 .748	1.053	5.915	3.022	BSF-E-1250/050-14.0	
		19.50 .768				BSF-E-1250/050-14.5	
		20.00 .787				BSF-E-1250/050-15.0	
		20.50 .807				BSF-E-1250/050-15.5	
		21.00 .827				BSF-E-1250/050-13.5	BSF-M-E-1A-7.5
		21.50 .846				BSF-E-1250/050-14.0	
		22.00 .866				BSF-E-1250/050-14.5	
		22.50 .886				BSF-E-1250/050-15.0	
		23.00 .906				BSF-E-1250/050-15.5	
		23.50 .925				BSF-E-1250/050-13.5	BSF-M-E-1A-10.0
		24.00 .945				BSF-E-1250/050-14.0	
		24.50 .965				BSF-E-1250/050-14.5	
		25.00 .984				BSF-E-1250/050-15.0	
		25.50 1.004				BSF-E-1250/050-15.5	
		26.00 1.024				BSF-E-1250/050-13.5	BSF-M-E-1A-12.5
		26.50 1.043				BSF-E-1250/050-14.0	
		27.00 1.063				BSF-E-1250/050-14.5	
		27.50 1.083				BSF-E-1250/050-15.0	
		28.00 1.102				BSF-E-1250/050-15.5	
		28.50 1.122				BSF-E-1250/050-13.5	BSF-M-E-1A-15.0
		29.00 1.142				BSF-E-1250/050-14.0	
		29.50 1.161				BSF-E-1250/050-14.5	
		30.00 1.181				BSF-E-1250/050-15.0	
		30.50 1.201				BSF-E-1250/050-15.5	



Parts in stock highlighted in green

BSF Bore Ø 13.0 mm (.512") | Series E



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
13.00 .512	12.90 .508	19.00 .748	26.75	150.25	76.75	BSF-E-1300/050-14.0	BSF-M-E-1A-5.0
		19.50 .768	1.053	5.915	3.022	BSF-E-1300/050-14.5	
		20.00 .787				BSF-E-1300/050-15.0	
		20.50 .807				BSF-E-1300/050-15.5	
		21.00 .827				BSF-E-1300/050-16.0	
		21.50 .846				BSF-E-1300/050-14.0	BSF-M-E-1A-7.5
		22.00 .866				BSF-E-1300/050-14.5	
		22.50 .886				BSF-E-1300/050-15.0	
		23.00 .906				BSF-E-1300/050-15.5	
		23.50 .925				BSF-E-1300/050-16.0	
		24.00 .945				BSF-E-1300/050-14.0	BSF-M-E-1A-10.0
		24.50 .965				BSF-E-1300/050-14.5	
		25.00 .984				BSF-E-1300/050-15.0	
		25.50 1.004				BSF-E-1300/050-15.5	
		26.00 1.024				BSF-E-1300/050-16.0	
		26.50 1.043				BSF-E-1300/050-14.0	BSF-M-E-1A-12.5
		27.00 1.063				BSF-E-1300/050-14.5	
		27.50 1.083				BSF-E-1300/050-15.0	
		28.00 1.102				BSF-E-1300/050-15.5	
		28.50 1.122				BSF-E-1300/050-16.0	
		29.00 1.142				BSF-E-1300/050-14.0	BSF-M-E-1A-15.0
		29.50 1.161				BSF-E-1300/050-14.5	
		30.00 1.181				BSF-E-1300/050-15.0	
		30.50 1.201				BSF-E-1300/050-15.5	
		31.00 1.220				BSF-E-1300/050-16.0	



Parts in stock highlighted in green



Programming
Page 154

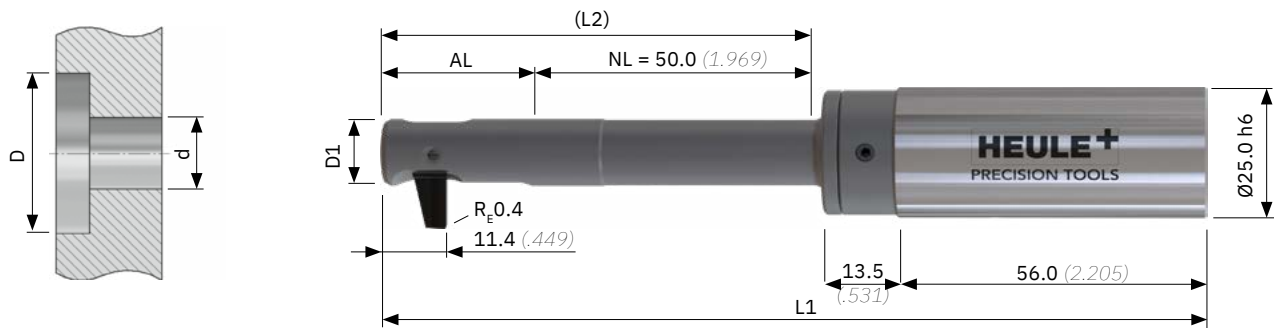


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 13.5 mm (.531") | Series E



Tools and blades

Standard tool **without** blade

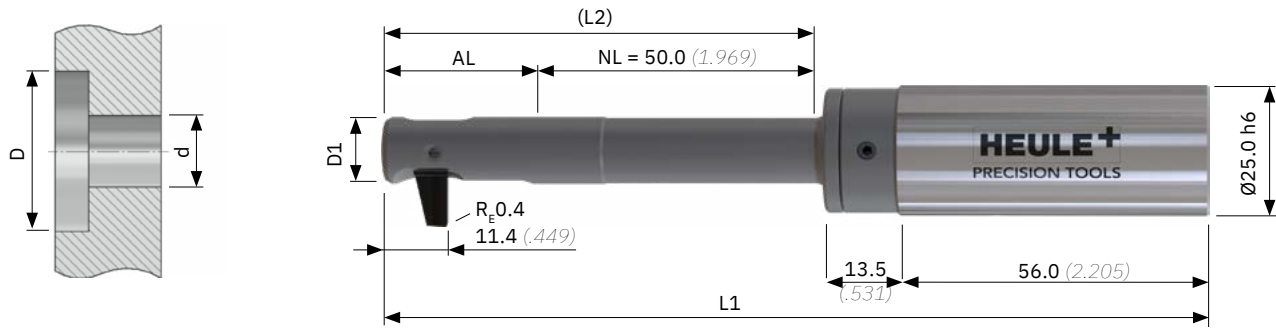
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
13.50 .531	13.40 .528	19.50 .768	26.75	150.25	76.75	BSF-E-1350/050-14.5	BSF-M-E-1A-5.0
		20.00 .787	1.053	5.915	3.022	BSF-E-1350/050-15.0	
		20.50 .807				BSF-E-1350/050-15.5	
		21.00 .827				BSF-E-1350/050-16.0	
		21.50 .846				BSF-E-1350/050-16.5	
		22.00 .866				BSF-E-1350/050-14.5	BSF-M-E-1A-7.5
		22.50 .886				BSF-E-1350/050-15.0	
		23.00 .906				BSF-E-1350/050-15.5	
		23.50 .925				BSF-E-1350/050-16.0	
		24.00 .945				BSF-E-1350/050-16.5	
		24.50 .965				BSF-E-1350/050-14.5	BSF-M-E-1A-10.0
		25.00 .984				BSF-E-1350/050-15.0	
		25.50 1.004				BSF-E-1350/050-15.5	
		26.00 1.024				BSF-E-1350/050-16.0	
		26.50 1.043				BSF-E-1350/050-16.5	
		27.00 1.063				BSF-E-1350/050-14.5	BSF-M-E-1A-12.5
		27.50 1.083				BSF-E-1350/050-15.0	
		28.00 1.102				BSF-E-1350/050-15.5	
		28.50 1.122				BSF-E-1350/050-16.0	
		29.00 1.142				BSF-E-1350/050-16.5	
		29.50 1.161				BSF-E-1350/050-14.5	BSF-M-E-1A-15.0
		30.00 1.181				BSF-E-1350/050-15.0	
		30.50 1.201				BSF-E-1350/050-15.5	
		31.00 1.220				BSF-E-1350/050-16.0	
		31.50 1.240				BSF-E-1350/050-16.5	



Parts in stock highlighted in green

BSF Bore Ø 14.0 mm (.552") | Series E



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
14.00 .551	13.90 .547	20.00 .787	28.00	151.50	78.00	BSF-E-1400/050-15.0	BSF-M-E-1A-5.0
		20.50 .807	1.102	5.965	3.071	BSF-E-1400/050-15.5	
		21.00 .827				BSF-E-1400/050-16.0	
		21.50 .846				BSF-E-1400/050-16.5	
		22.00 .866				BSF-E-1400/050-17.0	
		22.50 .886				BSF-E-1400/050-15.0	BSF-M-E-1A-7.5
		23.00 .906				BSF-E-1400/050-15.5	
		23.50 .925				BSF-E-1400/050-16.0	
		24.00 .945				BSF-E-1400/050-16.5	
		24.50 .965				BSF-E-1400/050-17.0	
		25.00 .984				BSF-E-1400/050-15.0	BSF-M-E-1A-10.0
		25.50 1.004				BSF-E-1400/050-15.5	
		26.00 1.024				BSF-E-1400/050-16.0	
		26.50 1.043				BSF-E-1400/050-16.5	
		27.00 1.063				BSF-E-1400/050-17.0	
		27.50 1.083				BSF-E-1400/050-15.0	BSF-M-E-1A-12.5
		28.00 1.102				BSF-E-1400/050-15.5	
		28.50 1.122				BSF-E-1400/050-16.0	
		29.00 1.142				BSF-E-1400/050-16.5	
		29.50 1.161				BSF-E-1400/050-17.0	
		30.00 1.181				BSF-E-1400/050-15.0	BSF-M-E-1A-15.0
		30.50 1.201				BSF-E-1400/050-15.5	
		31.00 1.220				BSF-E-1400/050-16.0	
		31.50 1.240				BSF-E-1400/050-16.5	
		32.00 1.260				BSF-E-1400/050-17.0	
		32.50 1.280				BSF-E-1400/050-15.0	BSF-M-E-1A-17.5
		33.00 1.299				BSF-E-1400/050-15.5	
		33.50 1.319				BSF-E-1400/050-16.0	
		34.00 1.339				BSF-E-1400/050-16.5	
		34.50 1.358				BSF-E-1400/050-17.0	



Programming
Page 154

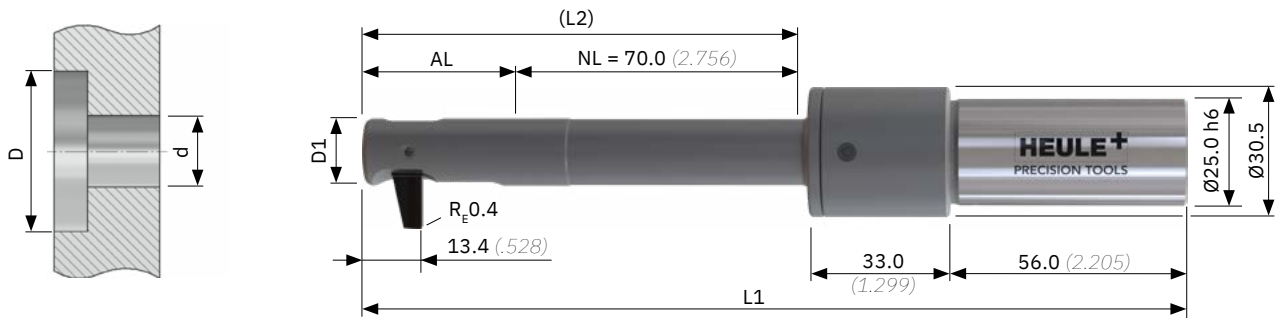


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 14.5 mm (.571") | Series F



Tools and blades

Standard tool **without** blade

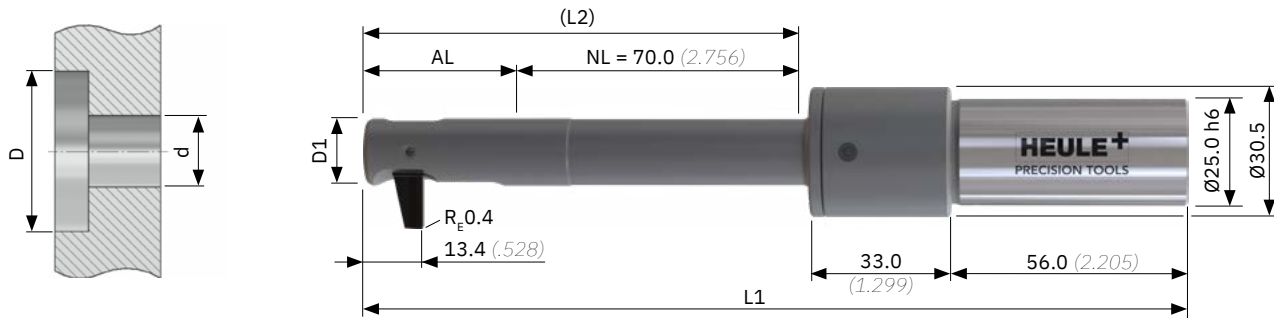
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
14.50 .571	14.40 .567	21.50 .846	30.75	193.75	100.75	BSF-F-1450/070-16.0	BSF-M-F-1A-5.5
		22.00 .866	1.211	7.628	3.967	BSF-F-1450/070-16.5	
		22.50 .886				BSF-F-1450/070-17.0	
		23.00 .906				BSF-F-1450/070-17.5	
		23.50 .925				BSF-F-1450/070-18.0	
		24.00 .945				BSF-F-1450/070-18.5	
		24.50 .965				BSF-F-1450/070-19.0	
		25.00 .984				BSF-F-1450/070-16.0	BSF-M-F-1A-9.0
		25.50 1.004				BSF-F-1450/070-16.5	
		26.00 1.024				BSF-F-1450/070-17.0	
		26.50 1.043				BSF-F-1450/070-17.5	
		27.00 1.063				BSF-F-1450/070-18.0	
		27.50 1.083				BSF-F-1450/070-18.5	
		28.00 1.102				BSF-F-1450/070-19.0	
		28.50 1.122				BSF-F-1450/070-16.0	BSF-M-F-1A-12.5
		29.00 1.142				BSF-F-1450/070-16.5	
		29.50 1.161				BSF-F-1450/070-17.0	
		30.00 1.181				BSF-F-1450/070-17.5	
		30.50 1.201				BSF-F-1450/070-18.0	
		31.00 1.220				BSF-F-1450/070-18.5	
		31.50 1.240				BSF-F-1450/070-19.0	
		32.00 1.260				BSF-F-1450/070-16.0	BSF-M-F-1A-16.0
		32.50 1.280				BSF-F-1450/070-16.5	
		33.00 1.299				BSF-F-1450/070-17.0	
		33.50 1.319				BSF-F-1450/070-17.5	
		34.00 1.339				BSF-F-1450/070-18.0	
		34.50 1.358				BSF-F-1450/070-18.5	
		35.00 1.378				BSF-F-1450/070-19.0	



Parts in stock highlighted in green

BSF Bore Ø 15.0 mm (.590") | Series F



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
15.00 .591	14.90 .587	22.00 .866	30.75	193.75	100.75	BSF-F-1500/070-16.5	BSF-M-F-1A-5.5
		22.50 .886	1.211	7.628	3.967	BSF-F-1500/070-17.0	
		23.00 .906				BSF-F-1500/070-17.5	
		23.50 .925				BSF-F-1500/070-18.0	
		24.00 .945				BSF-F-1500/070-18.5	
		24.50 .965				BSF-F-1500/070-19.0	
		25.00 .984				BSF-F-1500/070-19.5	
		25.50 1.004				BSF-F-1500/070-16.5	BSF-M-F-1A-9.0
		26.00 1.024				BSF-F-1500/070-17.0	
		26.50 1.043				BSF-F-1500/070-17.5	
		27.00 1.063				BSF-F-1500/070-18.0	
		27.50 1.083				BSF-F-1500/070-18.5	
		28.00 1.102				BSF-F-1500/070-19.0	
		28.50 1.122				BSF-F-1500/070-19.5	
		29.00 1.142				BSF-F-1500/070-16.5	BSF-M-F-1A-12.5
		29.50 1.161				BSF-F-1500/070-17.0	
		30.00 1.181				BSF-F-1500/070-17.5	
		30.50 1.201				BSF-F-1500/070-18.0	
		31.00 1.220				BSF-F-1500/070-18.5	
		31.50 1.240				BSF-F-1500/070-19.0	
		32.00 1.260				BSF-F-1500/070-19.5	
		32.50 1.280				BSF-F-1500/070-16.5	BSF-M-F-1A-16.0
		33.00 1.299				BSF-F-1500/070-17.0	
		33.50 1.319				BSF-F-1500/070-17.5	
		34.00 1.339				BSF-F-1500/070-18.0	
		34.50 1.358				BSF-F-1500/070-18.5	
		35.00 1.378				BSF-F-1500/070-19.0*	
		35.50 1.398				BSF-F-1500/070-19.5*	

* not for tough materials



Programming
Page 154



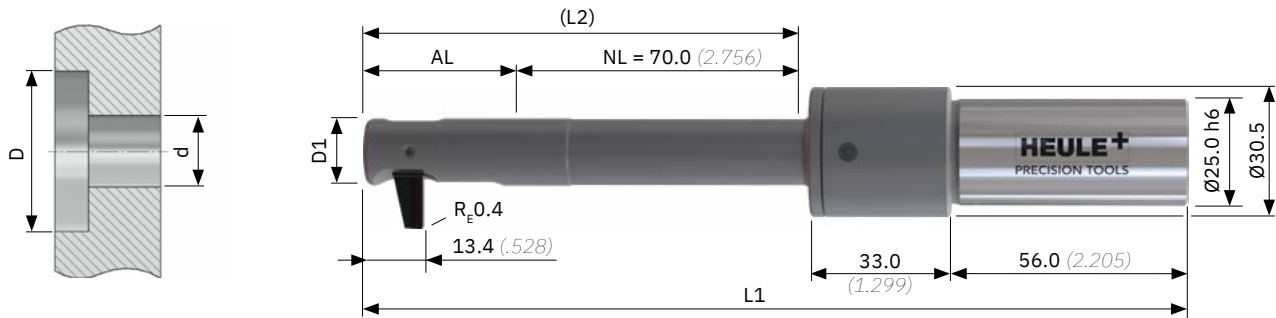
Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF

Bore Ø 15.5 mm (.610") | Series F



Tools and blades

Standard tool **without** blade

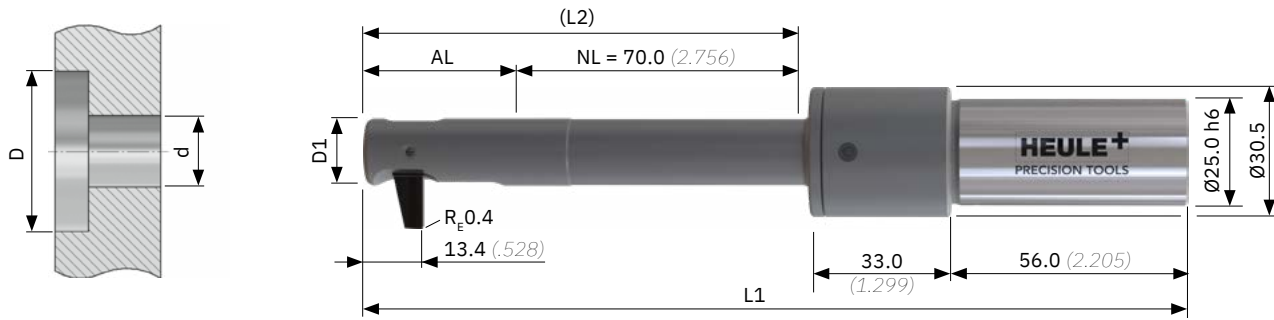
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
15.50 .610	15.40 .606	22.50 .886	30.75 1.211	193.75 7.628	100.75 3.967	BSF-F-1550/070-17.0	BSF-M-F-1A-5.5
		23.00 .906				BSF-F-1550/070-17.5	
		23.50 .925				BSF-F-1550/070-18.0	
		24.00 .945				BSF-F-1550/070-18.5	
		24.50 .965				BSF-F-1550/070-19.0	
		25.00 .984				BSF-F-1550/070-19.5	
		25.50 1.004				BSF-F-1550/070-20.0	
		26.00 1.024				BSF-F-1550/070-17.0	
		26.50 1.043				BSF-F-1550/070-17.5	
		27.00 1.063				BSF-F-1550/070-18.0	
		27.50 1.083				BSF-F-1550/070-18.5	
		28.00 1.102				BSF-F-1550/070-19.0	
		28.50 1.122				BSF-F-1550/070-19.5	
		29.00 1.142				BSF-F-1550/070-20.0	
		29.50 1.161				BSF-F-1550/070-17.0	BSF-M-F-1A-12.5
		30.00 1.181				BSF-F-1550/070-17.5	
		30.50 1.201				BSF-F-1550/070-18.0	
		31.00 1.220				BSF-F-1550/070-18.5	
		31.50 1.240				BSF-F-1550/070-19.0	
		32.00 1.260				BSF-F-1550/070-19.5	
		32.50 1.280				BSF-F-1550/070-20.0	
		33.00 1.299				BSF-F-1550/070-17.0	
		33.50 1.319				BSF-F-1550/070-17.5	
		34.00 1.339				BSF-F-1550/070-18.0	
		34.50 1.358				BSF-F-1550/070-18.5	
		35.00 1.378				BSF-F-1550/070-19.0	
		35.50 1.398				BSF-F-1550/070-19.5	
		36.00 1.417				BSF-F-1550/070-20.0	



Parts in stock highlighted in green

BSF Bore Ø 16.0 mm (.630") | Series F



Tools and blades

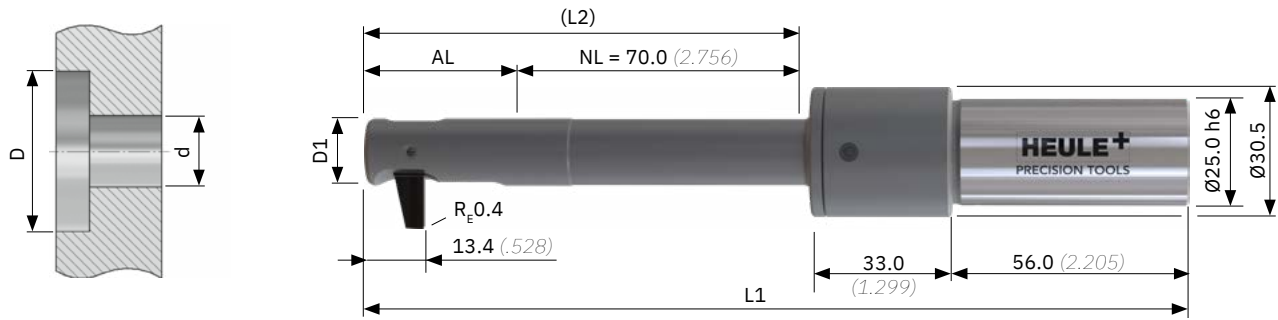
Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
16.00 .630	15.90 .626	23.00 .906	32.50	195.50	102.50	BSF-F-1600/070-17.5	BSF-M-F-1A-5.5
		23.50 .925	1.280	7.697	4.035	BSF-F-1600/070-18.0	
		24.00 .945				BSF-F-1600/070-18.5	
		24.50 .965				BSF-F-1600/070-19.0	
		25.00 .984				BSF-F-1600/070-19.5	
		25.50 1.004				BSF-F-1600/070-20.0	
		26.00 1.024				BSF-F-1600/070-20.5	
		26.50 1.043				BSF-F-1600/070-17.5	BSF-M-F-1A-9.0
		27.00 1.063				BSF-F-1600/070-18.0	
		27.50 1.083				BSF-F-1600/070-18.5	
		28.00 1.102				BSF-F-1600/070-19.0	
		28.50 1.122				BSF-F-1600/070-19.5	
		29.00 1.142				BSF-F-1600/070-20.0	
		29.50 1.161				BSF-F-1600/070-20.5	
		30.00 1.181				BSF-F-1600/070-17.5	BSF-M-F-1A-12.5
		30.50 1.201				BSF-F-1600/070-18.0	
		31.00 1.220				BSF-F-1600/070-18.5	
		31.50 1.240				BSF-F-1600/070-19.0	
		32.00 1.260				BSF-F-1600/070-19.5	
		32.50 1.280				BSF-F-1600/070-20.0	
		33.00 1.299				BSF-F-1600/070-20.5	
		33.50 1.319				BSF-F-1600/070-17.5	BSF-M-F-1A-16.0
		34.00 1.339				BSF-F-1600/070-18.0	
		34.50 1.358				BSF-F-1600/070-18.5	
		35.00 1.378				BSF-F-1600/070-19.0	
		35.50 1.398				BSF-F-1600/070-19.5	
		36.00 1.417				BSF-F-1600/070-20.0	
		36.50 1.437				BSF-F-1600/070-20.5	
		37.00 1.457				BSF-F-1600/070-17.5	BSF-M-F-1A-19.5
		37.50 1.476				BSF-F-1600/070-18.0*	
		38.00 1.496				BSF-F-1600/070-18.5*	
		38.50 1.516				BSF-F-1600/070-19.0*	
		39.00 1.535				BSF-F-1600/070-19.5*	
		39.50 1.555				BSF-F-1600/070-20.0*	
		40.00 1.575				BSF-F-1600/070-20.5*	

* not for tough materials

BSF Bore Ø 16.5 mm (.650") | Series F



Tools and blades

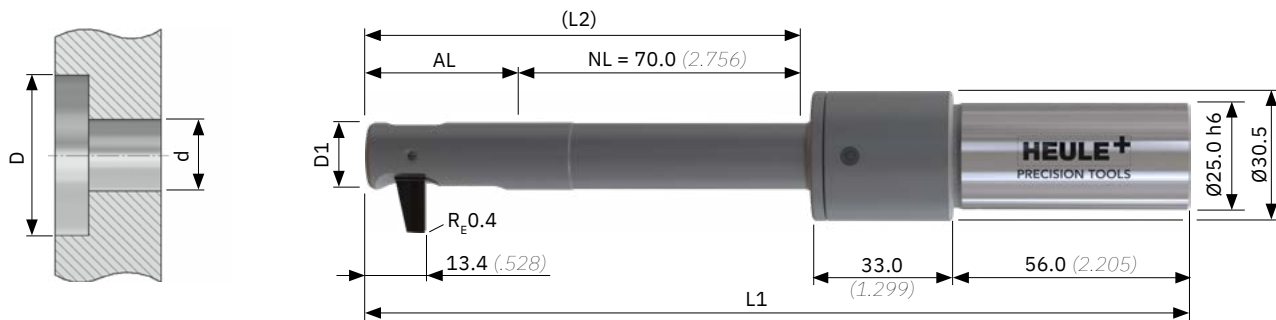
Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
16.50 .650	16.40 .646	23.50 .925	32.50 1.280	195.50 7.697	102.50 4.035	BSF-F-1650/070-18.0	BSF-M-F-1A-5.5
		24.00 .945				BSF-F-1650/070-18.5	
		24.50 .965				BSF-F-1650/070-19.0	
		25.00 .984				BSF-F-1650/070-19.5	
		25.50 1.004				BSF-F-1650/070-20.0	
		26.00 1.024				BSF-F-1650/070-20.5	
		26.50 1.043				BSF-F-1650/070-21.0	
		27.00 1.063				BSF-F-1650/070-18.0	BSF-M-F-1A-9.0
		27.50 1.083				BSF-F-1650/070-18.5	
		28.00 1.102				BSF-F-1650/070-19.0	
		28.50 1.122				BSF-F-1650/070-19.5	
		29.00 1.142				BSF-F-1650/070-20.0	
		29.50 1.161				BSF-F-1650/070-20.5	
		30.00 1.181				BSF-F-1650/070-21.0	
		30.50 1.201				BSF-F-1650/070-18.0	BSF-M-F-1A-12.5
		31.00 1.220				BSF-F-1650/070-18.5	
		31.50 1.240				BSF-F-1650/070-19.0	
		32.00 1.260				BSF-F-1650/070-19.5	
		32.50 1.280				BSF-F-1650/070-20.0	
		33.00 1.299				BSF-F-1650/070-20.5	
		33.50 1.319				BSF-F-1650/070-21.0	
		34.00 1.339				BSF-F-1650/070-18.0	BSF-M-F-1A-16.0
		34.50 1.358				BSF-F-1650/070-18.5	
		35.00 1.378				BSF-F-1650/070-19.0	
		35.50 1.398				BSF-F-1650/070-19.5	
		36.00 1.417				BSF-F-1650/070-20.0	
		36.50 1.437				BSF-F-1650/070-20.5	
		37.00 1.457				BSF-F-1650/070-21.0	
		37.50 1.476				BSF-F-1650/070-18.0	BSF-M-F-1A-19.5
		38.00 1.496				BSF-F-1650/070-18.5	
		38.50 1.516				BSF-F-1650/070-19.0*	
		39.00 1.535				BSF-F-1650/070-19.5*	
		39.50 1.555				BSF-F-1650/070-20.0*	

* not for tough materials

BSF Bore Ø 17.0 mm (.669") | Series F



Tools and blades

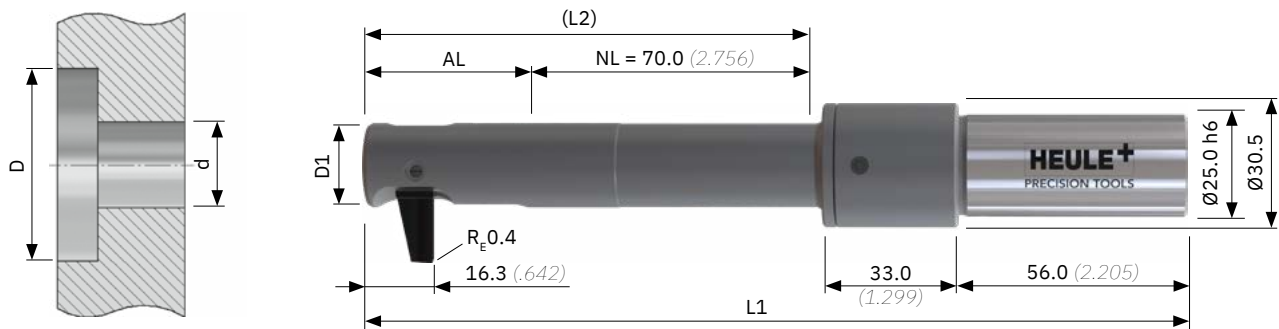
Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
17.00 .669	16.90 .665	24.00 .945	32.50	195.50	102.50	BSF-F-1700/070-18.5	BSF-M-F-1A-5.5
		24.50 .965	1.280	7.697	4.035	BSF-F-1700/070-19.0	
		25.00 1.084				BSF-F-1700/070-19.5	
		25.50 1.004				BSF-F-1700/070-20.0	
		26.00 1.024				BSF-F-1700/070-20.5	
		26.50 1.043				BSF-F-1700/070-21.0	
		27.00 1.063				BSF-F-1700/070-21.5	
		27.50 1.083				BSF-F-1700/070-18.5	BSF-M-F-1A-9.0
		28.00 1.102				BSF-F-1700/070-19.0	
		28.50 1.122				BSF-F-1700/070-19.5	
		29.00 1.142				BSF-F-1700/070-20.0	
		29.50 1.161				BSF-F-1700/070-20.5	
		30.00 1.181				BSF-F-1700/070-21.0	
		30.50 1.201				BSF-F-1700/070-21.5	
		31.00 1.220				BSF-F-1700/070-18.5	BSF-M-F-1A-12.5
		31.50 1.240				BSF-F-1700/070-19.0	
		32.00 1.260				BSF-F-1700/070-19.5	
		32.50 1.280				BSF-F-1700/070-20.0	
		33.00 1.299				BSF-F-1700/070-20.5	
		33.50 1.319				BSF-F-1700/070-21.0	
		34.00 1.339				BSF-F-1700/070-21.5	
		34.50 1.358				BSF-F-1700/070-18.5	BSF-M-F-1A-16.0
		35.00 1.378				BSF-F-1700/070-19.0	
		35.50 1.398				BSF-F-1700/070-19.5	
		36.00 1.417				BSF-F-1700/070-20.0	
		36.50 1.437				BSF-F-1700/070-20.5	
		37.00 1.457				BSF-F-1700/070-21.0	
		37.50 1.476				BSF-F-1700/070-21.5	
		38.00 1.496				BSF-F-1700/070-18.5	BSF-M-F-1A-19.5
		38.50 1.516				BSF-F-1700/070-19.0	
		39.00 1.535				BSF-F-1700/070-19.5	
		39.50 1.555				BSF-F-1700/070-20.0	
		40.00 1.575				BSF-F-1700/070-20.5*	
		40.50 1.594				BSF-F-1700/070-21.0*	
		41.00 1.614				BSF-F-1700/070-21.5*	

* not for tough materials

BSF Bore Ø 17.5 mm (.689") | Series G



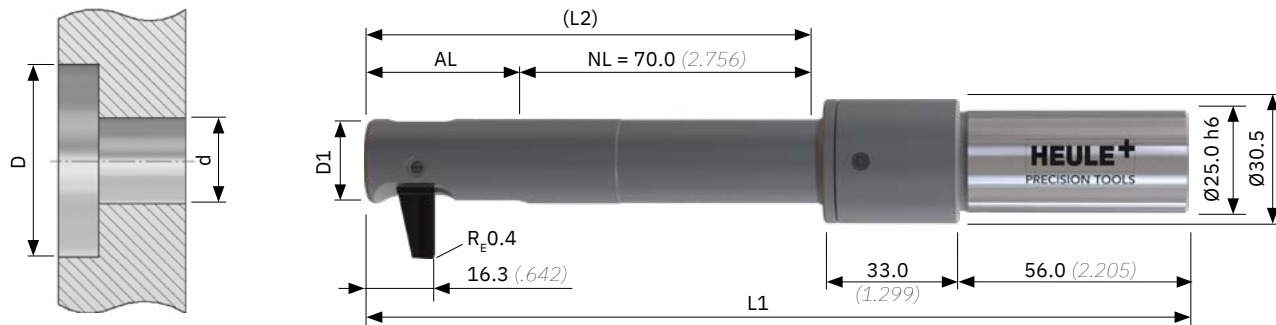
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
17.50 .689	17.40 .685	26.00 1.024	37.25	200.25	107.25	BSF-G-1750/070-20.0	BSF-M-G-1A-6.0
		26.50 1.043	1.467	7.884	4.222	BSF-G-1750/070-20.5	
		27.00 1.063				BSF-G-1750/070-21.0	
		27.50 1.083				BSF-G-1750/070-21.5	
		28.00 1.102				BSF-G-1750/070-22.0	
		28.50 1.122				BSF-G-1750/070-22.5	
		29.00 1.142				BSF-G-1750/070-23.0	
		29.50 1.161				BSF-G-1750/070-23.5	
		30.00 1.181				BSF-G-1750/070-24.0	
		30.50 1.201				BSF-G-1750/070-20.0	BSF-M-G-1A-10.5
		31.00 1.220				BSF-G-1750/070-20.5	
		31.50 1.240				BSF-G-1750/070-21.0	
		32.00 1.260				BSF-G-1750/070-21.5	
		32.50 1.280				BSF-G-1750/070-22.0	
		33.00 1.299				BSF-G-1750/070-22.5	
		33.50 1.319				BSF-G-1750/070-23.0	
		34.00 1.339				BSF-G-1750/070-23.5	
		34.50 1.358				BSF-G-1750/070-24.0	
		35.00 1.378				BSF-G-1750/070-20.0	BSF-M-G-1A-15.0
		35.50 1.398				BSF-G-1750/070-20.5	
		36.00 1.417				BSF-G-1750/070-21.0	
		36.50 1.437				BSF-G-1750/070-21.5	
		37.00 1.457				BSF-G-1750/070-22.0	
		37.50 1.476				BSF-G-1750/070-22.5	
		38.00 1.496				BSF-G-1750/070-23.0	
		38.50 1.516				BSF-G-1750/070-23.5	
		39.00 1.535				BSF-G-1750/070-24.0	
		39.50 1.555				BSF-G-1750/070-20.0	BSF-M-G-1A-19.5
		40.00 1.575				BSF-G-1750/070-20.5	
		40.50 1.594				BSF-G-1750/070-21.0	
		41.00 1.614				BSF-G-1750/070-21.5	
		41.50 1.634				BSF-G-1750/070-22.0	
		42.00 1.654				BSF-G-1750/070-22.5	

BSF Bore Ø 18.0 mm (.709") | Series G



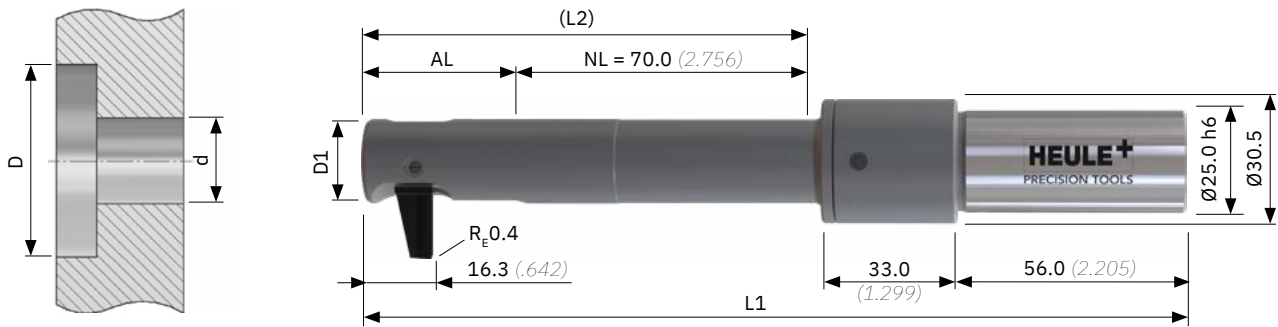
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
18.00 .709	17.90 .705	26.50 1.043	37.25	200.25	107.25	BSF-G-1800/070-20.5	BSF-M-G-1A-6.0
		27.00 1.063	1.467	7.884	4.222	BSF-G-1800/070-21.0	
		27.50 1.083				BSF-G-1800/070-21.5	
		28.00 1.102				BSF-G-1800/070-22.0	
		28.50 1.122				BSF-G-1800/070-22.5	
		29.00 1.142				BSF-G-1800/070-23.0	
		29.50 1.161				BSF-G-1800/070-23.5	
		30.00 1.181				BSF-G-1800/070-24.0	
		30.50 1.201				BSF-G-1800/070-24.5	
		31.00 1.220				BSF-G-1800/070-20.5	BSF-M-G-1A-10.5
		31.50 1.240				BSF-G-1800/070-21.0	
		32.00 1.260				BSF-G-1800/070-21.5	
		32.50 1.280				BSF-G-1800/070-22.0	
		33.00 1.299				BSF-G-1800/070-22.5	
		33.50 1.319				BSF-G-1800/070-23.0	
		34.00 1.339				BSF-G-1800/070-23.5	
		34.50 1.358				BSF-G-1800/070-24.0	
		35.00 1.378				BSF-G-1800/070-24.5	
		35.50 1.398				BSF-G-1800/070-20.5	BSF-M-G-1A-15.0
		36.00 1.417				BSF-G-1800/070-21.0	
		36.50 1.437				BSF-G-1800/070-21.5	
		37.00 1.457				BSF-G-1800/070-22.0	
		37.50 1.476				BSF-G-1800/070-22.5	
		38.00 1.496				BSF-G-1800/070-23.0	
		38.50 1.516				BSF-G-1800/070-23.5	
		39.00 1.535				BSF-G-1800/070-24.0	
		39.50 1.555				BSF-G-1800/070-24.5	
		40.00 1.575				BSF-G-1800/070-20.5	BSF-M-G-1A-19.5
		40.50 1.594				BSF-G-1800/070-21.0	
		41.00 1.614				BSF-G-1800/070-21.5	
		41.50 1.634				BSF-G-1800/070-22.0	
		42.00 1.654				BSF-G-1800/070-22.5	
		42.50 1.673				BSF-G-1800/070-23.0	
		43.00 1.693				BSF-G-1800/070-23.5	

BSF Bore Ø 18.5 mm (.728") | Series G



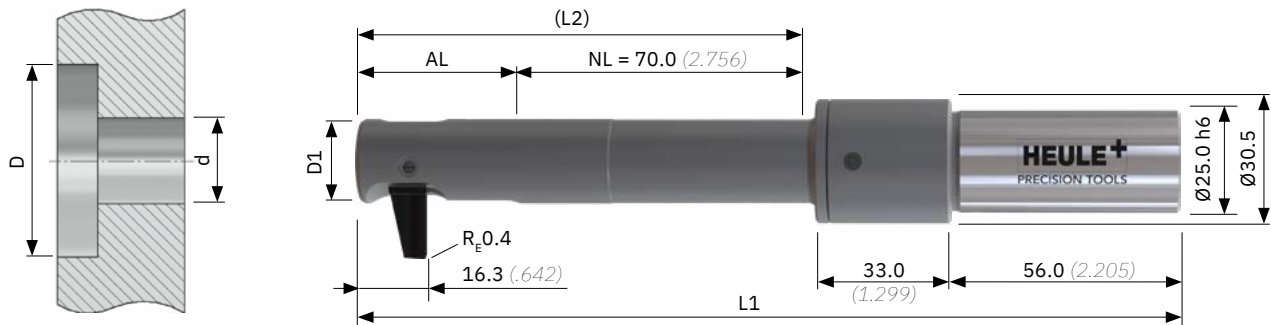
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
18.50 .728	18.40 .724	27.00 1.063	37.25	200.25	107.25	BSF-G-1850/070-21.0	BSF-M-G-1A-6.0
		27.50 1.083	1.467	7.884	4.222	BSF-G-1850/070-21.5	
		28.00 1.102				BSF-G-1850/070-22.0	
		28.50 1.122				BSF-G-1850/070-22.5	
		29.00 1.142				BSF-G-1850/070-23.0	
		29.50 1.161				BSF-G-1850/070-23.5	
		30.00 1.181				BSF-G-1850/070-24.0	
		30.50 1.201				BSF-G-1850/070-24.5	
		31.00 1.220				BSF-G-1850/070-25.0	
		31.50 1.240				BSF-G-1850/070-21.0	BSF-M-G-1A-10.5
		32.00 1.260				BSF-G-1850/070-21.5	
		32.50 1.280				BSF-G-1850/070-22.0	
		33.00 1.299				BSF-G-1850/070-22.5	
		33.50 1.319				BSF-G-1850/070-23.0	
		34.00 1.339				BSF-G-1850/070-23.5	
		34.50 1.358				BSF-G-1850/070-24.0	
		35.00 1.378				BSF-G-1850/070-24.5	
		35.50 1.398				BSF-G-1850/070-25.0	
		36.00 1.417				BSF-G-1850/070-21.0	BSF-M-G-1A-15.0
		36.50 1.437				BSF-G-1850/070-21.5	
		37.00 1.457				BSF-G-1850/070-22.0	
		37.50 1.476				BSF-G-1850/070-22.5	
		38.00 1.496				BSF-G-1850/070-23.0	
		38.50 1.516				BSF-G-1850/070-23.5	
		39.00 1.535				BSF-G-1850/070-24.0	
		39.50 1.555				BSF-G-1850/070-24.5	
		40.00 1.575				BSF-G-1850/070-25.0	
		40.50 1.594				BSF-G-1850/070-21.0	BSF-M-G-1A-19.5
		41.00 1.614				BSF-G-1850/070-21.5	
		41.50 1.634				BSF-G-1850/070-22.0	
		42.00 1.654				BSF-G-1850/070-22.5	
		42.50 1.673				BSF-G-1850/070-23.0	
		43.00 1.693				BSF-G-1850/070-23.5	
		43.50 1.713				BSF-G-1850/070-24.0	
		44.00 1.732				BSF-G-1850/070-24.5	
		44.50 1.752				BSF-G-1850/070-25.0	

BSF Bore Ø 19.0 mm (.748") | Series G



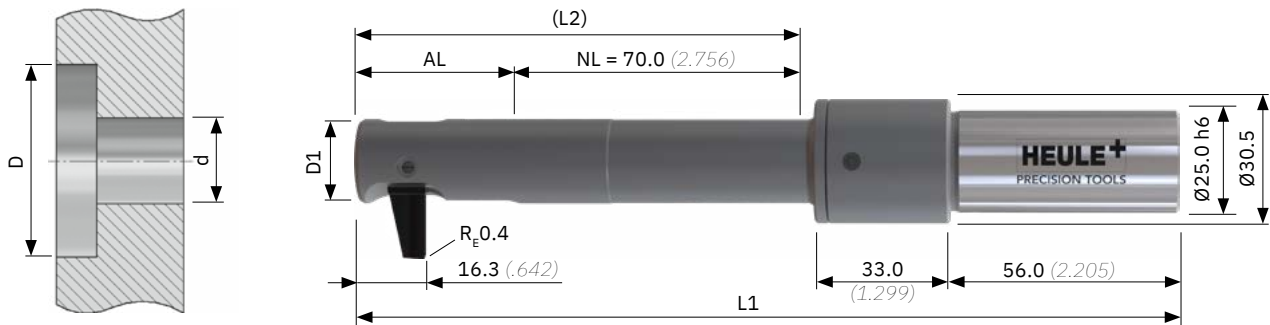
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
19.00 .748	18.90 .744	27.50 1.083	37.25 1.467	200.25 7.884	107.25 4.222	BSF-G-1900/070-21.5	BSF-M-G-1A-6.0
		28.00 1.102				BSF-G-1900/070-22.0	
		28.50 1.122				BSF-G-1900/070-22.5	
		29.00 1.142				BSF-G-1900/070-23.0	
		29.50 1.161				BSF-G-1900/070-23.5	
		30.00 1.181				BSF-G-1900/070-24.0	
		30.50 1.201				BSF-G-1900/070-24.5	
		31.00 1.220				BSF-G-1900/070-25.0	
		31.50 1.240				BSF-G-1900/070-25.5	
		32.00 1.260				BSF-G-1900/070-21.5	BSF-M-G-1A-10.5
		32.50 1.280				BSF-G-1900/070-22.0	
		33.00 1.299				BSF-G-1900/070-22.5	
		33.50 1.319				BSF-G-1900/070-23.0	
		34.00 1.339				BSF-G-1900/070-23.5	
		34.50 1.358				BSF-G-1900/070-24.0	
		35.00 1.378				BSF-G-1900/070-24.5	
		35.50 1.398				BSF-G-1900/070-25.0	
		36.00 1.417				BSF-G-1900/070-25.5	
		36.50 1.437				BSF-G-1900/070-21.5	BSF-M-G-1A-15.0
		37.00 1.457				BSF-G-1900/070-22.0	
		37.50 1.476				BSF-G-1900/070-22.5	
		38.00 1.496				BSF-G-1900/070-23.0	
		38.50 1.516				BSF-G-1900/070-23.5	
		39.00 1.535				BSF-G-1900/070-24.0	
		39.50 1.555				BSF-G-1900/070-24.5	
		40.00 1.575				BSF-G-1900/070-25.0	
		40.50 1.594				BSF-G-1900/070-25.5	
		41.00 1.614				BSF-G-1900/070-21.5	BSF-M-G-1A-19.5
		41.50 1.634				BSF-G-1900/070-22.0	
		42.00 1.654				BSF-G-1900/070-22.5	
		42.50 1.673				BSF-G-1900/070-23.0	
		43.00 1.693				BSF-G-1900/070-23.5	
		43.50 1.713				BSF-G-1900/070-24.0	
		44.00 1.732				BSF-G-1900/070-24.5	
		44.50 1.752				BSF-G-1900/070-25.0	
		45.00 1.772				BSF-G-1900/070-25.5	

BSF Bore Ø 19.5 mm (.768") | Series G



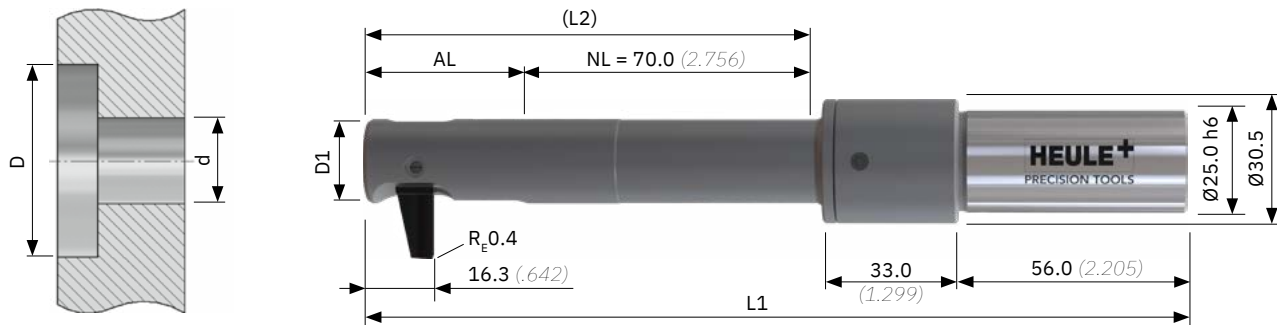
Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
19.50 .768	19.40 .764	28.00 1.102	37.25 1.467	200.25 7.884	107.25 4.222	BSF-G-1950/070-22.0	BSF-M-G-1A-6.0
		28.50 1.122				BSF-G-1950/070-22.5	
		29.00 1.142				BSF-G-1950/070-23.0	
		29.50 1.161				BSF-G-1950/070-23.5	
		30.00 1.181				BSF-G-1950/070-24.0	
		30.50 1.201				BSF-G-1950/070-24.5	
		31.00 1.220				BSF-G-1950/070-25.0	
		31.50 1.240				BSF-G-1950/070-25.5	
		32.00 1.260				BSF-G-1950/070-26.0	
		32.50 1.280				BSF-G-1950/070-22.0	BSF-M-G-1A-10.5
		33.00 1.299				BSF-G-1950/070-22.5	
		33.50 1.319				BSF-G-1950/070-23.0	
		34.00 1.339				BSF-G-1950/070-23.5	
		34.50 1.358				BSF-G-1950/070-24.0	
		35.00 1.378				BSF-G-1950/070-24.5	
		35.50 1.398				BSF-G-1950/070-25.0	
		36.00 1.417				BSF-G-1950/070-25.5	
		36.50 1.437				BSF-G-1950/070-26.0	
		37.00 1.457				BSF-G-1950/070-22.0	BSF-M-G-1A-15.0
		37.50 1.476				BSF-G-1950/070-22.5	
		38.00 1.496				BSF-G-1950/070-23.0	
		38.50 1.516				BSF-G-1950/070-23.5	
		39.00 1.535				BSF-G-1950/070-24.0	
		39.50 1.555				BSF-G-1950/070-24.5	
		40.00 1.575				BSF-G-1950/070-25.0	
		40.50 1.594				BSF-G-1950/070-25.5	
		41.00 1.614				BSF-G-1950/070-26.0	
		41.50 1.634				BSF-G-1950/070-22.0	BSF-M-G-1A-19.5
		42.00 1.654				BSF-G-1950/070-22.5	
		42.50 1.673				BSF-G-1950/070-23.0	
		43.00 1.693				BSF-G-1950/070-23.5	
		43.50 1.713				BSF-G-1950/070-24.0	
		44.00 1.732				BSF-G-1950/070-24.5	
		44.50 1.752				BSF-G-1950/070-25.0	
		45.00 1.772				BSF-G-1950/070-25.5	
		45.50 1.791				BSF-G-1950/070-26.0	

BSF Bore Ø 20.0 mm (.787") | Series G



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
20.00 .787	19.90 .783	28.50 1.102	37.25	200.25	107.25	BSF-G-2000/070-22.5	BSF-M-G-1A-6.0
		29.00 1.147	1.467	7.884	4.222	BSF-G-2000/070-23.0	
		29.50 1.161				BSF-G-2000/070-23.5	
		30.00 1.181				BSF-G-2000/070-24.0	
		30.50 1.201				BSF-G-2000/070-24.5	
		31.00 1.220				BSF-G-2000/070-25.0	
		31.50 1.240				BSF-G-2000/070-25.5	
		32.00 1.260				BSF-G-2000/070-26.0	
		32.50 1.280				BSF-G-2000/070-26.5	
		33.00 1.299				BSF-G-2000/070-22.5	BSF-M-G-1A-10.5
		33.50 1.319				BSF-G-2000/070-23.0	
		34.00 1.339				BSF-G-2000/070-23.5	
		34.50 1.358				BSF-G-2000/070-24.0	
		35.00 1.378				BSF-G-2000/070-24.5	
		35.50 1.398				BSF-G-2000/070-25.0	
		36.00 1.417				BSF-G-2000/070-25.5	
		36.50 1.437				BSF-G-2000/070-26.0	
		37.00 1.457				BSF-G-2000/070-26.5	
		37.50 1.476				BSF-G-2000/070-22.5	BSF-M-G-1A-15.0
		38.00 1.496				BSF-G-2000/070-23.0	
		38.50 1.516				BSF-G-2000/070-23.5	
		39.00 1.535				BSF-G-2000/070-24.0	
		39.50 1.555				BSF-G-2000/070-24.5	
		40.00 1.575				BSF-G-2000/070-25.0	
		40.50 1.594				BSF-G-2000/070-25.5	
		41.00 1.614				BSF-G-2000/070-26.0	
		41.50 1.634				BSF-G-2000/070-26.5	



Parts in stock highlighted in green



Programming
Page 154

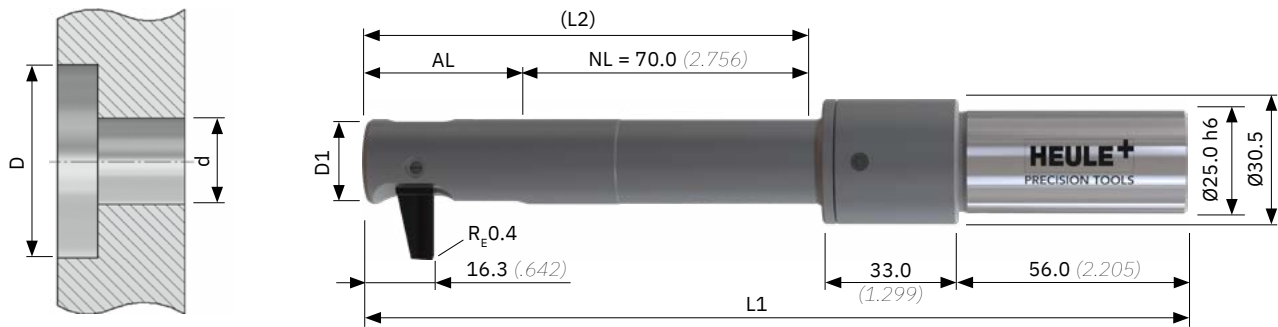


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 20.0 mm (.787") | Series G – continued



Tools and blades

Standard tool **without** blade

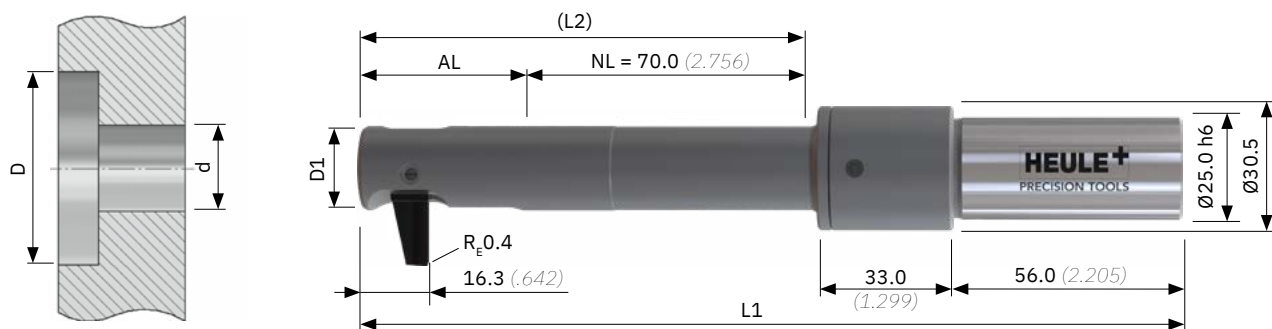
- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
20.00 .787	19.90 .783	42.00 1.654	37.25	200.25	107.25	BSF-G-2000/070-22.5	BSF-M-G-1A-19.5
		42.50 1.673	1.467	7.884	4.222	BSF-G-2000/070-23.0	
		43.00 1.693				BSF-G-2000/070-23.5	
		43.50 1.713				BSF-G-2000/070-24.0	
		44.00 1.732				BSF-G-2000/070-24.5	
		44.50 1.752				BSF-G-2000/070-25.0	
		45.00 1.772				BSF-G-2000/070-25.5	
		45.50 1.791				BSF-G-2000/070-26.0	
		46.00 1.811				BSF-G-2000/070-26.5	



Parts in stock highlighted in green

BSF Bore Ø 20.5 mm (.807") | Series G



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
20.50 .807	20.40 .803	29.00 1.142	39.50	202.50	109.50	BSF-G-2050/070-23.0	BSF-M-G-1A-6.0
		29.50 1.161	1.555	7.972	4.311	BSF-G-2050/070-23.5	
		30.00 1.181				BSF-G-2050/070-24.0	
		30.50 1.201				BSF-G-2050/070-24.5	
		31.00 1.220				BSF-G-2050/070-25.0	
		31.50 1.240				BSF-G-2050/070-25.5	
		32.00 1.260				BSF-G-2050/070-26.0	
		32.50 1.280				BSF-G-2050/070-26.5	
		33.00 1.299				BSF-G-2050/070-27.0	
		33.50 1.319				BSF-G-2050/070-23.0	BSF-M-G-1A-10.5
		34.00 1.339				BSF-G-2050/070-23.5	
		34.50 1.358				BSF-G-2050/070-24.0	
		35.00 1.378				BSF-G-2050/070-24.5	
		35.50 1.398				BSF-G-2050/070-25.0	
		36.00 1.417				BSF-G-2050/070-25.5	
		36.50 1.437				BSF-G-2050/070-26.0	
		37.00 1.457				BSF-G-2050/070-26.5	
		37.50 1.476				BSF-G-2050/070-27.0	
		38.00 1.496				BSF-G-2050/070-23.0	BSF-M-G-1A-15.0
		38.50 1.516				BSF-G-2050/070-23.5	
		39.00 1.535				BSF-G-2050/070-24.0	
		39.50 1.555				BSF-G-2050/070-24.5	
		40.00 1.575				BSF-G-2050/070-25.0	
		40.50 1.594				BSF-G-2050/070-25.5	
		41.00 1.614				BSF-G-2050/070-26.0	
		41.50 1.634				BSF-G-2050/070-26.5	
		42.00 1.654				BSF-G-2050/070-27.0	



Parts in stock highlighted in green



Programming
Page 154

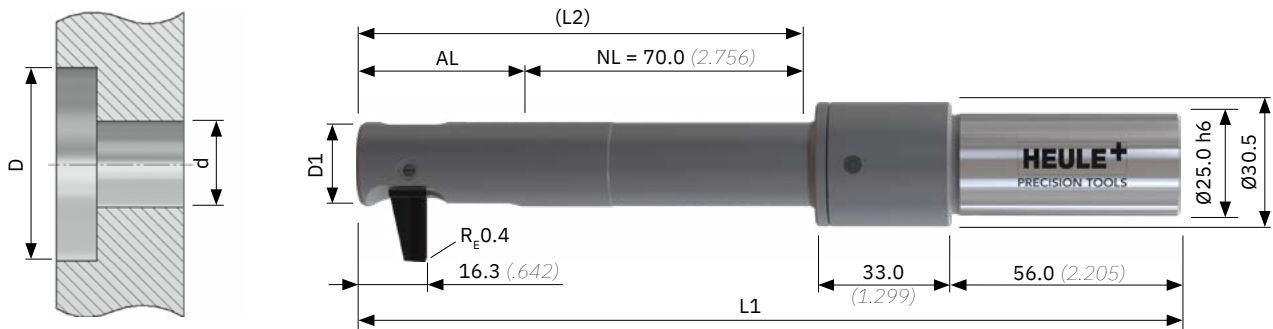


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF Bore Ø 20.5 mm (.807") | Series G – continued



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

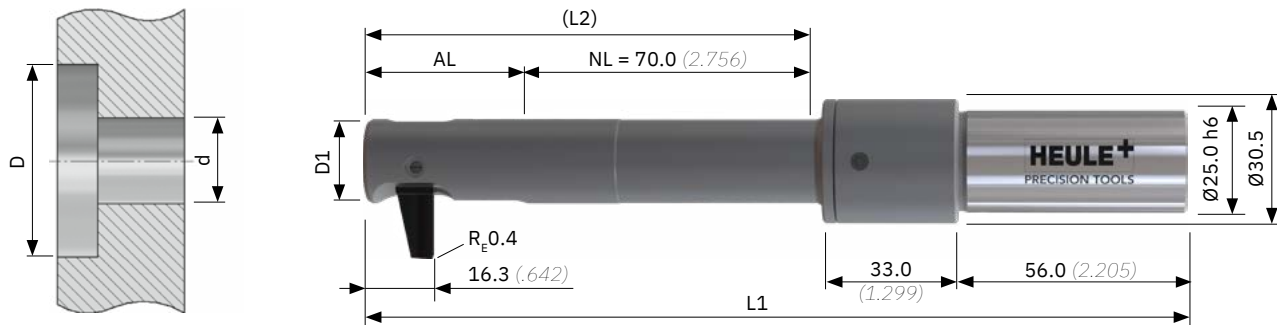
Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
20.50 .807	20.40 .803	42.50 1.673	39.50	202.50	109.50	BSF-G-2050/070-23.0	BSF-M-G-1A-19.5
		43.00 1.693	1.555	7.972	4.311	BSF-G-2050/070-23.5	
		43.50 1.713				BSF-G-2050/070-24.0	
		44.00 1.732				BSF-G-2050/070-24.5	
		44.50 1.752				BSF-G-2050/070-25.0	
		45.00 1.772				BSF-G-2050/070-25.5	
		45.50 1.791				BSF-G-2050/070-26.0	
		46.00 1.811				BSF-G-2050/070-26.5	
		46.50 1.831				BSF-G-2050/070-27.0	
		47.00 1.850				BSF-G-2050/070-23.0	BSF-M-G-1A-24.0
		47.50 1.870				BSF-G-2050/070-23.5	
		48.00 1.890				BSF-G-2050/070-24.0	
		48.50 1.909				BSF-G-2050/070-24.5	
		49.00 1.929				BSF-G-2050/070-25.0*	
		49.50 1.949				BSF-G-2050/070-25.5*	
		50.00 1.969				BSF-G-2050/070-26.0*	
		50.50 1.988				BSF-G-2050/070-26.5*	
		51.00 2.008				BSF-G-2050/070-27.0*	

* not for tough materials



Parts in stock highlighted in green

BSF Bore Ø 21.0 mm (.827") | Series G



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
21.00 .827	20.90 .823	29.50 1.161	39.50	202.50	109.50	BSF-G-2100/070-23.5	BSF-M-G-1A-6.0
		30.00 1.181	1.555	7.972	4.311	BSF-G-2100/070-24.0	
		30.50 1.201				BSF-G-2100/070-24.5	
		31.00 1.220				BSF-G-2100/070-25.0	
		31.50 1.240				BSF-G-2100/070-25.5	
		32.00 1.260				BSF-G-2100/070-26.0	
		32.50 1.280				BSF-G-2100/070-26.5	
		33.00 1.299				BSF-G-2100/070-27.0	
		33.50 1.319				BSF-G-2100/070-27.5	
		34.00 1.339				BSF-G-2100/070-23.5	BSF-M-G-1A-10.5
		34.50 1.358				BSF-G-2100/070-24.0	
		35.00 1.378				BSF-G-2100/070-24.5	
		35.50 1.398				BSF-G-2100/070-25.0	
		36.00 1.417				BSF-G-2100/070-25.5	
		36.50 1.437				BSF-G-2100/070-26.0	
		37.00 1.457				BSF-G-2100/070-26.5	
		37.50 1.476				BSF-G-2100/070-27.0	
		38.00 1.496				BSF-G-2100/070-27.5	
		38.50 1.516				BSF-G-2100/070-23.5	BSF-M-G-1A-15.0
		39.00 1.535				BSF-G-2100/070-24.0	
		39.50 1.555				BSF-G-2100/070-24.5	
		40.00 1.575				BSF-G-2100/070-25.0	
		40.50 1.594				BSF-G-2100/070-25.5	
		41.00 1.614				BSF-G-2100/070-26.0	
		41.50 1.634				BSF-G-2100/070-26.5	
		42.00 1.654				BSF-G-2100/070-27.0	
		42.50 1.673				BSF-G-2100/070-27.5	



Parts in stock highlighted in green



Programming
Page 154

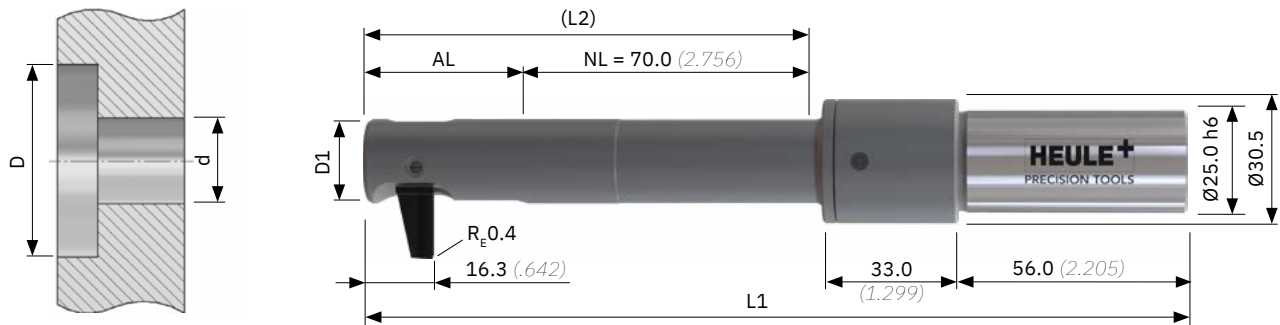


Cutting data
Page 155



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > BSF

BSF bore Ø 21.0 mm (.827") | Series G – continued



Tools and blades

Standard tool **without** blade

- The blade must be ordered separately.
- Activation with internal coolant. For BSF Air, add A to the tool part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank

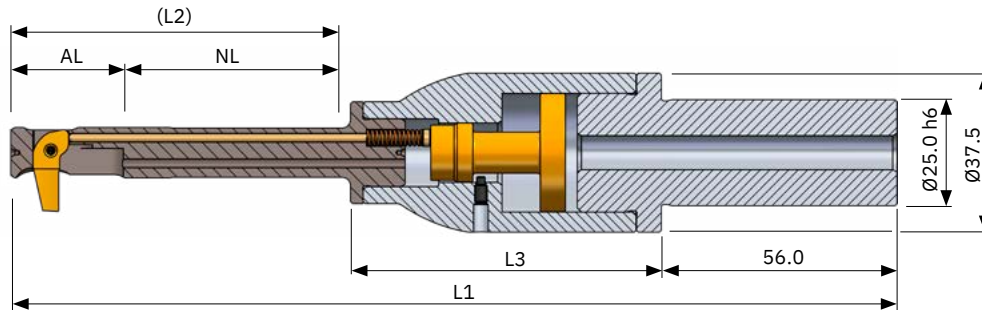
Bore Ø d	Tool Ø D1	C-bore Ø D	AL	L1	L2	Tool part no.	Blade part no.
21.00 .827	20.90 .823	43.00 1.693	39.50	202.50	109.50	BSF-G-2100/070-23.5	BSF-M-G-1A-19.5
		43.50 1.713	1.555	7.972	4.311	BSF-G-2100/070-24.0	
		44.00 1.732				BSF-G-2100/070-24.5	
		44.50 1.752				BSF-G-2100/070-25.0	
		45.00 1.772				BSF-G-2100/070-25.5	
		45.50 1.791				BSF-G-2100/070-26.0	
		46.00 1.811				BSF-G-2100/070-26.5	
		46.50 1.831				BSF-G-2100/070-27.0	
		47.00 1.850				BSF-G-2100/070-27.5	
		47.50 1.870				BSF-G-2100/070-23.5	BSF-M-G-1A-24.0
		48.00 1.890				BSF-G-2100/070-24.0	
		48.50 1.909				BSF-G-2100/070-24.5	
		49.00 1.929				BSF-G-2100/070-25.0	
		49.50 1.949				BSF-G-2100/070-25.5	
		50.00 1.969				BSF-G-2100/070-26.0	
		50.50 1.988				BSF-G-2100/070-26.5	
		51.00 2.008				BSF-G-2100/070-27.0	
		51.50 2.028				BSF-G-2100/070-27.5*	

* not for tough materials



Parts in stock highlighted in green

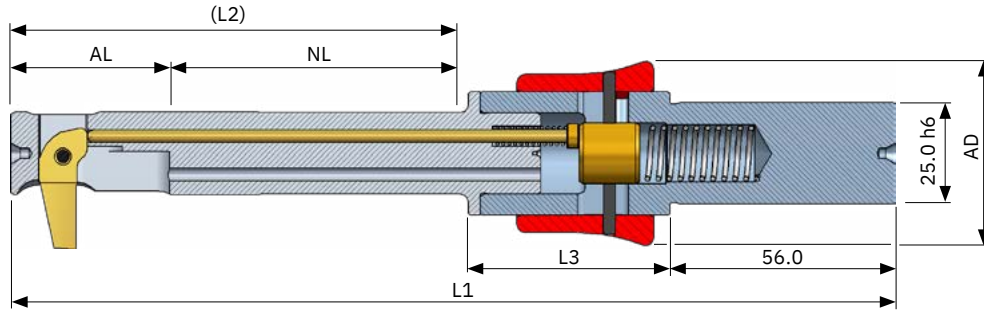
BSF Air



Dimensions

Assembly	Bore Ø d mm	AL mm	NL mm	L1 mm	L2 mm	L3 mm
A	6.50	14.25	40.00	188.50	54.25	74.00
A	7.00	15.00	40.00	189.00	55.00	74.00
B	7.50	17.00	40.00	191.00	57.00	74.00
B	8.00	17.00	40.00	191.00	57.00	74.00
B	8.50	17.75	40.00	191.75	57.75	74.00
C	9.00	20.25	50.00	204.05	70.25	74.00
C	9.50	20.25	50.00	204.05	70.25	74.00
C	10.00	20.25	50.00	204.05	70.25	74.00
D	10.50	22.50	50.00	206.30	72.50	74.00
D	11.00	22.50	50.00	206.30	72.50	74.00
D	11.50	23.75	50.00	207.75	73.75	74.00
E	12.00	26.75	50.00	210.75	76.75	74.00
E	12.50	26.75	50.00	210.75	76.75	74.00
E	13.00	26.75	50.00	210.75	76.75	74.00
E	13.50	26.75	50.00	210.75	76.75	74.00
E	14.00	28.00	50.00	212.00	78.00	74.00
F	14.50	30.75	70.00	242.75	100.75	82.00
F	15.00	30.75	70.00	242.75	100.75	82.00
F	15.50	30.75	70.00	242.75	100.75	82.00
F	16.00	32.50	70.00	244.50	102.50	82.00
F	16.50	32.50	70.00	244.50	102.50	82.00
F	17.00	32.50	70.00	244.50	102.50	82.00
G	17.50	37.25	70.00	249.05	107.25	82.00
G	18.00	37.25	70.00	249.05	107.25	82.00
G	18.50	37.25	70.00	249.05	107.25	82.00
G	19.00	37.25	70.00	249.05	107.25	82.00
G	19.50	37.25	70.00	249.05	107.25	82.00
G	20.00	37.25	70.00	249.05	107.25	82.00
G	20.50	39.50	70.00	251.50	109.50	82.00
G	21.00	39.50	70.00	251.50	109.50	82.00

BSF Manual



Dimensions

Assembly	Bore $\varnothing d$ mm	AL mm	NL mm	L1 mm	L2 mm	L3 mm	AD mm
A	6.50	14.25	40.00	156.25	54.25	42.00	36.50
A	7.00	15.00	40.00	157.00	55.00	42.00	36.50
B	7.50	17.00	40.00	159.00	57.00	42.00	36.50
B	8.00	17.00	40.00	159.00	57.00	42.00	36.50
B	8.50	17.75	40.00	159.75	57.75	42.00	36.50
C	9.00	20.25	50.00	172.25	70.25	42.00	36.50
C	9.50	20.25	50.00	172.25	70.25	42.00	36.50
C	10.00	20.25	50.00	172.25	70.25	42.00	36.50
D	10.50	22.50	50.00	174.50	72.50	42.00	36.50
D	11.00	22.50	50.00	174.50	72.50	42.00	36.50
D	11.50	23.75	50.00	175.75	73.75	42.00	36.50
E	12.00	26.75	50.00	178.75	76.75	42.00	36.50
E	12.50	26.75	50.00	178.75	76.75	42.00	36.50
E	13.00	26.75	50.00	178.75	76.75	42.00	36.50
E	13.50	26.75	50.00	178.75	76.75	42.00	36.50
E	14.00	28.00	50.00	180.00	78.00	42.00	36.50
F	14.50	30.75	70.00	210.75	100.75	50.00	45.40
F	15.00	30.75	70.00	210.75	100.75	50.00	45.40
F	15.50	30.75	70.00	210.75	100.75	50.00	45.40
F	16.00	32.50	70.00	212.50	102.50	50.00	45.40
F	16.50	32.50	70.00	212.50	102.50	50.00	45.40
F	17.00	32.50	70.00	212.50	102.50	50.00	45.40
G	17.50	37.25	70.00	217.25	107.25	50.00	45.40
G	18.00	37.25	70.00	217.25	107.25	50.00	45.40
G	18.50	37.25	70.00	217.25	107.25	50.00	45.40
G	19.00	37.25	70.00	217.25	107.25	50.00	45.40
G	19.50	37.25	70.00	217.25	107.25	50.00	45.40
G	20.00	37.25	70.00	217.25	107.25	50.00	45.40
G	20.50	39.50	70.00	219.50	109.50	50.00	45.40
G	21.00	39.50	70.00	219.50	109.50	50.00	45.40

BSF shank options

The shank in the standard range is fully compatible with the air-activated and manually activated versions. Accordingly, the adaptation to the blade housing is compatible with the shanks of the other two activation types. To convert your existing tool to a different type of activation, simply order the corresponding shank of the same series for your blade housing.

The cylindrical shank is standard. For Weldon please add **-HB**, for Whistle Notch > add **-HE** to the part no. (e.g. BSFA-O-0001-HB).

For existing blade housing:	Shank Ø 20 mm Part no.	Shank Ø 25 mm Part no.	Shank Ø 32 mm Part no.
Series A-E			
Standard	BSF-O-0001	BSF-O-0002	-
Air	BSFA-O-0001	BSFA-O-0002	BSFA-O-0003
Manual	BSFM-O-0011	BSFM-O-0012	BSFM-O-0013
Series F-G			
Standard	BSF-O-0003	BSF-O-0004	BSF-O-0005
Air	BSFA-O-0004	BSFA-O-0005	BSFA-O-0006
Manual	BSFM-O-0014	BSFM-O-0015	BSFM-O-0016



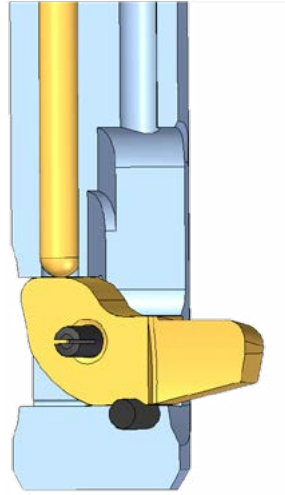
BSF options

Smaller tolerance range of ± 0.1 mm with BSF-P

The BSF-P version enables a counterbore diameter accuracy with a tolerance band of 0.2 mm (± 0.1 mm).

The individual production of these blades means that any other customer-specific requirements can also be incorporated, e.g. with regard to form.

The adaptation to the blade housing is compatible with the standard BSF version as well as with BSF Air and BSF Manual.

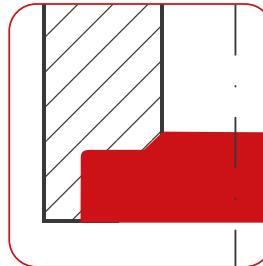


BSF-P: The additional interlocking bolt in the blade housing helps to position the blade more precisely.

Counterboring with inside chamfers

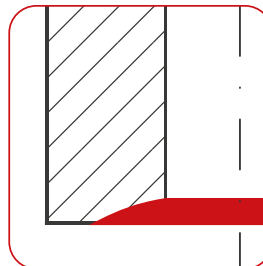
BSF carbide blades can also be produced with custom forms. A common example is the additional cutting of an internal chamfer.

Standard blade blanks ground to the desired form are used. Blades with customized forms can also be manufactured for the BSF-P version.

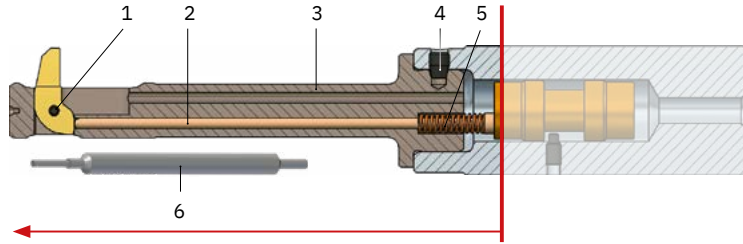


Spherical formed blades

The higher counterboring accuracy of the BSF-P version and the manufacturing process make additional customer specifications possible, e.g. spherical convex form.

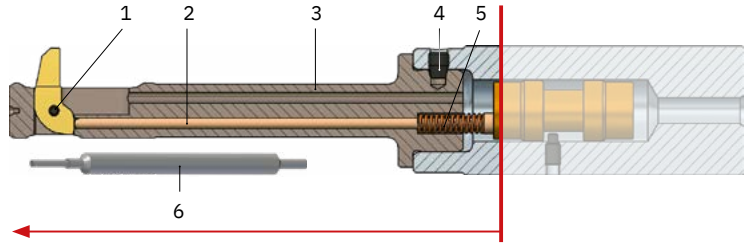


BSF spare parts



	1 Split pin	2 Control bolt	3 Blade housing	4 Clamping screw	5 Pressure spring	6 Assembly pin
BSF-A-0650/040-6.5	BSF-E-0009	BSF-B-0001	BSF-N-A-0650/N025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-A-0650/040-7.0	BSF-E-0009	BSF-B-0001	BSF-N-A-0650/0000/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-A-0650/040-7.5	BSF-E-0009	BSF-B-0001	BSF-N-A-0650/P025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-A-0700/040-7.0	BSF-E-0009	BSF-B-0002	BSF-N-A-0700/0000/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-A-0700/040-7.5	BSF-E-0009	BSF-B-0002	BSF-N-A-0700/P025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-A-0700/040-8.0	BSF-E-0009	BSF-B-0002	BSF-N-A-0700/P050/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0750/040-7.5	BSF-E-0018	BSF-B-0003	BSF-N-B-0750/N025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0750/040-8.0	BSF-E-0018	BSF-B-0003	BSF-N-B-0750/0000/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0750/040-8.5	BSF-E-0018	BSF-B-0003	BSF-N-B-0750/P025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0800/040-8.0	BSF-E-0018	BSF-B-0003	BSF-N-B-0800/0000/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0800/040-8.5	BSF-E-0018	BSF-B-0003	BSF-N-B-0800/P025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0800/040-9.0	BSF-E-0018	BSF-B-0003	BSF-N-B-0800/P050/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0850/040-8.5	BSF-E-0018	BSF-B-0004	BSF-N-B-0850/P025/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0850/040-9.0	BSF-E-0018	BSF-B-0004	BSF-N-B-0850/P050/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-B-0850/040-9.5	BSF-E-0018	BSF-B-0004	BSF-N-B-0850/P075/040	GH-H-S-0201	GH-H-F-0052	BSF-V-0009
BSF-C-0900/050-9.5	BSF-E-0010	BSF-B-0005	BSF-N-C-0900/N025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-0900/050-10.0	BSF-E-0010	BSF-B-0005	BSF-N-C-0900/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-0900/050-10.5	BSF-E-0010	BSF-B-0005	BSF-N-C-0900/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-0950/050-10.0	BSF-E-0010	BSF-B-0005	BSF-N-C-0950/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-0950/050-10.5	BSF-E-0010	BSF-B-0005	BSF-N-C-0950/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-0950/050-11.0	BSF-E-0010	BSF-B-0005	BSF-N-C-0950/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-1000/050-10.5	BSF-E-0010	BSF-B-0005	BSF-N-C-1000/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-1000/050-11.0	BSF-E-0010	BSF-B-0005	BSF-N-C-1000/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-C-1000/050-11.5	BSF-E-0010	BSF-B-0005	BSF-N-C-1000/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006

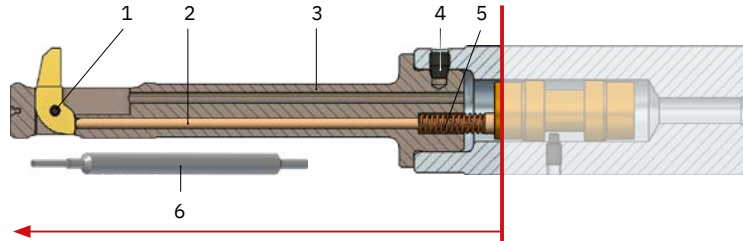
BSF spare parts



	1	2	3	4	5	6
	Split pin	Control bolt	Blade housing	Clamping screw	Pressure spring	Assembly pin
BSF-D-1050/050-11.0	BSF-E-0019	BSF-B-0006	BSF-N-D-1050/N050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1050/050-11.5	BSF-E-0019	BSF-B-0006	BSF-N-D-1050/N025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1050/050-12.0	BSF-E-0019	BSF-B-0006	BSF-N-D-1050/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1050/050-12.5	BSF-E-0019	BSF-B-0006	BSF-N-D-1050/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1050/050-13.0	BSF-E-0019	BSF-B-0006	BSF-N-D-1050/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1100/050-11.5	BSF-E-0019	BSF-B-0006	BSF-N-D-1100/N025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1100/050-12.0	BSF-E-0019	BSF-B-0006	BSF-N-D-1100/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1100/050-12.5	BSF-E-0019	BSF-B-0006	BSF-N-D-1100/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1100/050-13.0	BSF-E-0019	BSF-B-0006	BSF-N-D-1100/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1100/050-13.5	BSF-E-0019	BSF-B-0006	BSF-N-D-1100/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1150/050-12.0	BSF-E-0019	BSF-B-0007	BSF-N-D-1150/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1150/050-12.5	BSF-E-0019	BSF-B-0007	BSF-N-D-1150/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1150/050-13.0	BSF-E-0019	BSF-B-0007	BSF-N-D-1150/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1150/050-13.5	BSF-E-0019	BSF-B-0007	BSF-N-D-1150/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006
BSF-D-1150/050-14.0	BSF-E-0019	BSF-B-0007	BSF-N-D-1150/P100/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0006

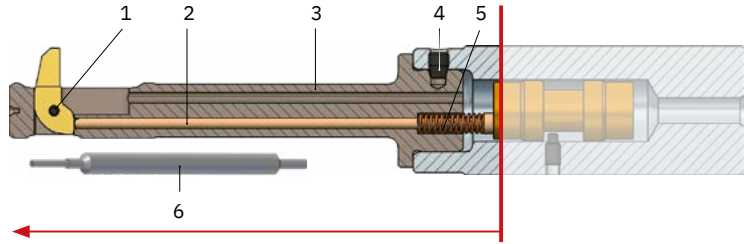
BSF-E-1200/050-13.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1200/N050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1200/050-13.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1200/N025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1200/050-14.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1200/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1200/050-14.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1200/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1200/050-15.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1200/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1250/050-13.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1250/N025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1250/050-14.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1250/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1250/050-14.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1250/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1250/050-15.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1250/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1250/050-15.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1250/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1300/050-14.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1300/0000/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1300/050-14.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1300/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1300/050-15.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1300/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1300/050-15.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1300/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1300/050-16.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1300/P100/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1350/050-14.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1350/P025/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1350/050-15.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1350/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1350/050-15.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1350/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1350/050-16.0	BSF-E-0011	BSF-B-0008	BSF-N-E-1350/P100/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1350/050-16.5	BSF-E-0011	BSF-B-0008	BSF-N-E-1350/P125/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1400/050-15.0	BSF-E-0011	BSF-B-0009	BSF-N-E-1400/P050/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1400/050-15.5	BSF-E-0011	BSF-B-0009	BSF-N-E-1400/P075/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1400/050-16.0	BSF-E-0011	BSF-B-0009	BSF-N-E-1400/P100/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1400/050-16.5	BSF-E-0011	BSF-B-0009	BSF-N-E-1400/P125/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007
BSF-E-1400/050-17.0	BSF-E-0011	BSF-B-0009	BSF-N-E-1400/P150/050	GH-H-S-0201	GH-H-F-0053	BSF-V-0007

BSF spare parts



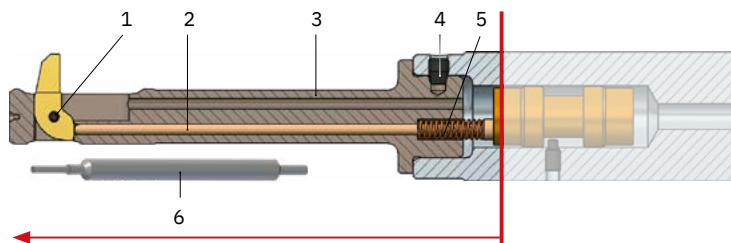
	1	2	3	4	5	6
	Split pin	Control bolt	Blade housing	Clamping screw	Pressure spring	Assembly pin
BSF-F-1450/070-16.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/N075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-16.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/N050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-17.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-17.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-18.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-18.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1450/070-19.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1450/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-16.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/N050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-17.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-17.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-18.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-18.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-19.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1500/070-19.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1500/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-17.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-17.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-18.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-18.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-19.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-19.5	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1550/070-20.0	BSF-E-0012	BSF-B-0010	BSF-N-F-1550/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-17.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-18.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-18.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-19.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-19.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-20.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1600/070-20.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1600/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-18.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-18.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-19.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-19.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-20.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-20.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1650/070-21.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1650/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-18.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-19.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-19.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-20.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-20.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-21.0	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007
BSF-F-1700/070-21.5	BSF-E-0012	BSF-B-0011	BSF-N-F-1700/P200/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0007

BSF spare parts



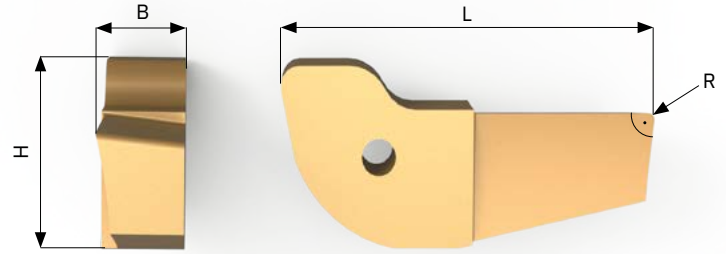
	1	2	3	4	5	6
	Split pin	Control bolt	Blade housing	Clamping screw	Pressure spring	Assembly pin
BSF-G-1750/070-20.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/N100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-20.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/N075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-21.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/N050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-21.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-22.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1750/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1750/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-20.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/N075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-21.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/N050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-21.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-22.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1800/070-24.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1800/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-21.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/N050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-21.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-22.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-24.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1850/070-25.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1850/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-21.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/N025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-22.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-24.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-25.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1900/070-25.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1900/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008

BSF spare parts



	1 Split pin	2 Control bolt	3 Blade housing	4 Clamping screw	5 Pressure spring	6 Assembly pin
BSF-G-1950/070-22.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/0000/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-24.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-25.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-25.5	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-1950/070-26.0	BSF-E-0013	BSF-B-0012	BSF-N-G-1950/P200/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-22.5	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P025/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-23.0	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-23.5	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-24.0	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-24.5	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-25.0	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-25.5	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-26.0	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P200/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2000/070-26.5	BSF-E-0013	BSF-B-0012	BSF-N-G-2000/P225/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-23.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P050/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-23.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-24.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-24.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-25.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-25.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-26.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P200/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-26.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P225/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2050/070-27.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2050/P250/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-23.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P075/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-24.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P100/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-24.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P125/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-25.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P150/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-25.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P175/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-26.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P200/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-26.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P225/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-27.0	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P250/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008
BSF-G-2100/070-27.5	BSF-E-0013	BSF-B-0013	BSF-N-G-2100/P275/070	GH-H-S-0202	GH-H-F-0051	BSF-V-0008

BSF blade dimensions



Blade number <i>R = 0.4 (.016)</i>	Custom blade <i>R = 0.8 (.032)</i>	Length L	Width B	Height H
BSF-M-A-1A-3.0	BSF-M-A-08-1A-3.0	7.70 .303	2.00 .079	4.50 .177
BSF-M-A-1A-4.5	BSF-M-A-08-1A-4.5	8.40 .331	2.00 .079	4.50 .177
BSF-M-A-1A-6.0	BSF-M-A-08-1A-6.0	9.20 .362	2.00 .079	4.50 .177
BSF-M-A-1A-7.5	BSF-M-A-08-1A-7.5	9.90 .390	2.00 .079	4.50 .177
BSF-M-A-1A-9.0	BSF-M-A-08-1A-9.0	10.70 .421	2.00 .079	4.50 .177
BSF-M-B-1A-3.5	BSF-M-B-08-1A-3.5	8.90 .350	2.50 .098	5.50 .217
BSF-M-B-1A-5.0	BSF-M-B-08-1A-5.0	9.60 .378	2.50 .098	5.50 .217
BSF-M-B-1A-6.5	BSF-M-B-08-1A-6.5	10.40 .409	2.50 .098	5.50 .217
BSF-M-B-1A-8.0	BSF-M-B-08-1A-8.0	11.10 .437	2.50 .098	5.50 .217
BSF-M-B-1A-9.5	BSF-M-B-08-1A-9.5	11.90 .468	2.50 .098	5.50 .217
BSF-M-B-1A-11.0	BSF-M-B-08-1A-11.0	12.70 .500	2.50 .098	5.50 .217
BSF-M-C-1A-4.0	BSF-M-C-08-1A-4.0	10.80 .425	3.00 .118	6.50 .256
BSF-M-C-1A-5.5	BSF-M-C-08-1A-5.5	11.60 .457	3.00 .118	6.50 .256
BSF-M-C-1A-7.0	BSF-M-C-08-1A-7.0	12.30 .484	3.00 .118	6.50 .256
BSF-M-C-1A-8.5	BSF-M-C-08-1A-8.5	13.10 .516	3.00 .118	6.50 .256
BSF-M-C-1A-10.0	BSF-M-C-08-1A-10.0	13.80 .543	3.00 .118	6.50 .256
BSF-M-C-1A-11.5	BSF-M-C-08-1A-11.5	14.60 .575	3.00 .118	6.50 .256
BSF-M-C-1A-13.0	BSF-M-C-08-1A-13.0	15.30 .602	3.00 .118	6.50 .256
BSF-M-D-1A-4.5	BSF-M-D-08-1A-4.5	12.50 .492	3.50 .138	7.25 .285
BSF-M-D-1A-7.0	BSF-M-D-08-1A-7.0	13.80 .543	3.50 .138	7.25 .285
BSF-M-D-1A-9.5	BSF-M-D-08-1A-9.5	15.00 .590	3.50 .138	7.25 .285
BSF-M-D-1A-12.0	BSF-M-D-08-1A-12.0	16.30 .642	3.50 .138	7.25 .285
BSF-M-D-1A-14.5	BSF-M-D-08-1A-14.5	17.50 .689	3.50 .138	7.25 .285
BSF-M-E-1A-5.0	BSF-M-E-08-1A-5.0	14.30 .563	4.50 .177	8.50 .335
BSF-M-E-1A-7.5	BSF-M-E-08-1A-7.5	15.50 .610	4.50 .177	8.50 .335
BSF-M-E-1A-10.0	BSF-M-E-08-1A-10.0	16.80 .661	4.50 .177	8.50 .335
BSF-M-E-1A-12.5	BSF-M-E-08-1A-12.5	18.10 .713	4.50 .177	8.50 .335
BSF-M-E-1A-15.0	BSF-M-E-08-1A-15.0	19.30 .760	4.50 .177	8.50 .335
BSF-M-E-1A-17.5	BSF-M-E-08-1A-17.5	20.60 .811	4.50 .177	8.50 .335
BSF-M-F-1A-5.5	BSF-M-F-08-1A-5.5	17.20 .677	5.00 .197	10.00 .394
BSF-M-F-1A-9.0	BSF-M-F-08-1A-9.0	19.00 .748	5.00 .197	10.00 .394
BSF-M-F-1A-12.5	BSF-M-F-08-1A-12.5	20.80 .819	5.00 .197	10.00 .394
BSF-M-F-1A-16.0	BSF-M-F-08-1A-16.0	22.60 .890	5.00 .197	10.00 .394
BSF-M-F-1A-19.5	BSF-M-F-08-1A-19.5	24.30 .957	5.00 .197	10.00 .394
BSF-M-G-1A-6.0	BSF-M-G-08-1A-6.0	20.80 .819	6.00 .236	12.00 .472
BSF-M-G-1A-10.5	BSF-M-G-08-1A-10.5	23.10 .909	6.00 .236	12.00 .472
BSF-M-G-1A-15.0	BSF-M-G-08-1A-15.0	25.40 1.000	6.00 .236	12.00 .472
BSF-M-G-1A-19.5	BSF-M-G-08-1A-19.5	27.70 1.090	6.00 .236	12.00 .472
BSF-M-G-1A-24.0	BSF-M-G-08-1A-24.0	29.90 1.177	6.00 .236	12.00 .472



Parts in stock highlighted in green

Question	Causes	Remedy
Blade folds out automatically when the spindle stops (vertical machining).	Gravity. The blade is not fixed in the blade housing without the coolant pressure or compressed air switched on, or the activation ring on the BSF Manual set to lock.	If the blade is to remain securely in the blade housing, switch on internal coolant, compressed air or actuate the activation ring on the BSF-M. Attention: To bring the blade safely into the working position (unfolding), the activation speed of the spindle must be correctly programmed.
No counterbore after machining	Blade does not fold out	- Check whether the spindle activation speed has been selected correctly. - Check whether the blade is jammed in the blade window. If so, remove the blade and clean the blade and blade window.
Blade does not fold in reliably	Internal coolant pressure too low	Minimum pressure is 20 bar. If this pressure cannot be reached, switch to BSF Air or BSF Manual if possible.
	Air pressure on the machine spindle too low	Minimum air pressure is 5 bar. Check the available air pressure in the spindle. HEULE can provide a measuring device for this purpose if required.
Is coolant filtration necessary?	Yes. Excessively contaminated cooling medium impairs the activation operation of the blade.	The cooling medium must be cleaned with a minimum filter size of 25 µm.
Can machining be done with internal coolant or compressed air?	Yes. This helps to remove chips and cool the tool/blade.	Attention: The blade must be fully in the cut before the internal coolant is switched on.
I have a bore with H7 tolerance. Will the BSF damage the finished bore?	It is possible that the BSF will leave marks on the finished bore.	We recommend using the BSF tool on a pre-machining diameter.
Does it matter from which side the split pin is inserted when changing the blade?	No	
Is it possible to hold the BSF tool in a shrink-fit chuck?	No. The shank is made of tool steel and has a different thermal expansion compared to carbide tools.	
The blade housing is assembled onto the shank with 3 clamping screws. Is there a recommended location or position?	No, the tool works in any position.	

SOLO

The counterboring and spotfacing tool for any machine. Forwards and backwards. Interrupted cutting possible.

The advantages – Your benefit



SOLO enables automatic spotfacing and counterboring on both the front and back of the bore without turning the workpiece.

Versatile use thanks to modular design: The tool head and shank are standard, while the housing, control and blade are customized to the customer's application.



Thanks to its strong and stable design, the SOLO is able to handle difficult materials.



SOLO achieves maximum process reliability and performance thanks to its design optimized for the customer's specific application and its reliability-oriented, simple construction.



THE RANGE

Bore Ø range		Counterbore Ø max.	Workpiece material	Series
Ø6.0–25.0	.236–.984	2x bore Ø - 1.0 mm	Aluminum	SOLO
Ø6.0–25.0	.236–.984	2x bore Ø - 1.0 mm	Steel, Titanium, Inconel	SOLO2
Ø25.0–35.0	.984–1.378	2x bore Ø - 1.0 mm	all	SOLO2-S
Ø25.0–45.0	.984–1.772	2x bore Ø - 1.0 mm	all	SOLO25

SOLO does not have a standardized product range. Each SOLO tool is designed specifically for the application as part of our **CUSTOM** range, with one of the three tool head types being used in each case.

Is SOLO an option for you? **We would be happy to examine the feasibility** of SOLO in your application and give you a quote so that you can assess the economic viability. Please send us full application information.

CHECKLIST FOR FEASIBILITY CHECK

- Bore Ø including tolerance
- Counterbore Ø or chamfer Ø with tolerance
- Bore depth
- Counterbore depth + form and position tolerances if necessary
- Chamfer angle with tolerance
- Workpiece 3D model (STEP, DXF)

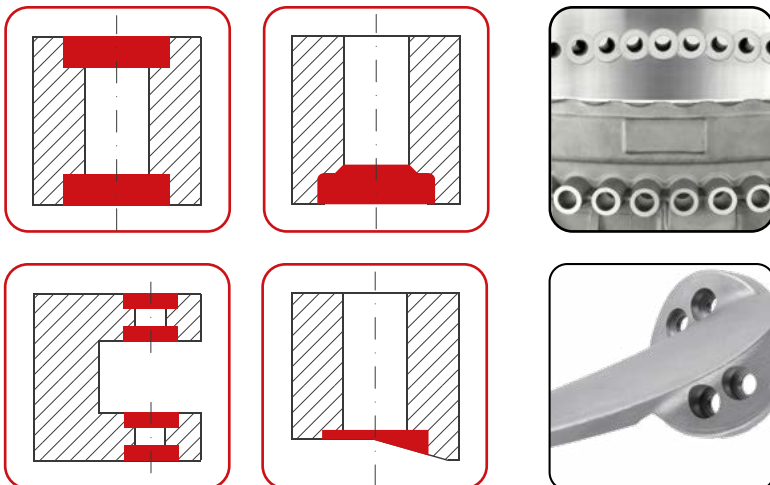
- Material
- Interfering edges / distances
- Machine (type, internal coolant, external coolant, compressed air)
- Shank type

- Production volume per year
- Batch size
- Current solution
- Special requirements

SOLO

CUSTOM

FIELD OF APPLICATION



OVERVIEW



	SOLO	SOLO2	SOLO2-S	SOLO25
Tool head	GH-B-O-0084	GH-B-O-0085	GH-B-O-0086	-
Center ring color	black	green	blue	-
Blade position when spindle stops	retracted	extended	extended	extended
Activation speed	1900 RPM	0 = spindle stop	0 = spindle stop	0 = spindle stop
Retraction speed	0 = spindle stop	2000 RPM	2000 RPM	2200 RPM
Machining speed	> 1900 RPM	0–1500 RPM	0–1500 RPM	0–1500 RPM
Bore Ø range	Ø6.0–25.0 .236–.984	Ø6.0–25.0 .236–.984	Ø25.0–35.0 .984–1.378	Ø25.0–45.0 .984–1.772
Maximum counterbore Ø	2x bore Ø - 1.0 mm (0.040")			

There are four different models of the SOLO tool: SOLO, SOLO2, SOLO2-S and SOLO25. Each tool is capable of reaching counterbore sizes two times the bore diameter minus 1.0 mm. Possible applications up to 40.0 mm through hole depending on the counterbore to bore ratio, and parameters. Max ratio = Ødx2 - 1mm (0.040").

Each SOLO tool is designed and built to your specifications and manufactured for superior strength and quality. SOLO tooling system is completely customizable to create multiple features in one tool including indexable countersinks, form countersinks, and more.

«Took 2 ½ Hours manual operation to only 10min on our CNC, eliminating a manual setup and secondary operation.»

Aerospace Customer

TOOL DESIGN

Each tool consists of two components:

1. Standard tool head with integral shank: This tool head is of standard design and is the base element for all applications with bore diameters 6.0 to 45.0 mm.

2. Custom components: Housing pilots, control mechanism and cutting blades are optimized per the desired back bore application and are customized to suit the needs of our customers.

The SOLO counterboring system is modular. Set-ups can use the same tool head reducing set-up cost and inventory requirements.

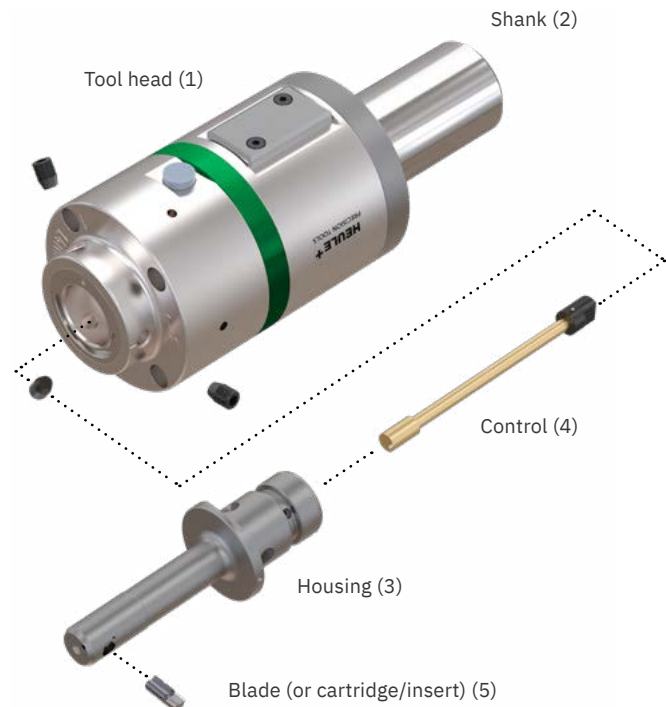
Tool heads (1) are standard and offered with H6 tolerance **straight shanks (2)**. Optional V-Taper or other adoptions including HSK or ABS shanks are available on request. All heads are sealed and have a 200'000 cycle guarantee. SOLO (black ring) heads are used primarily for high RPM cutting above 1900 RPM e.g aluminum. SOLO2 (green ring) heads are most common and used for cutting parameters up to 0–1500 RPM. SOLO2-S heads (blue ring) are a stronger version with larger connection and used for bore diameters above 25.0 mm.

Housings (3) are designed and built to the customer's specific applications. Each housing is optimized for strength depending on the application and ratio of cut. Coolant through the housing is standard when possible; dependent of wall thickness of the housing. Optional bushings can be used for small ratio (Hole:C'bore). Max ratio = $\varnothing dx2 - 1mm$.

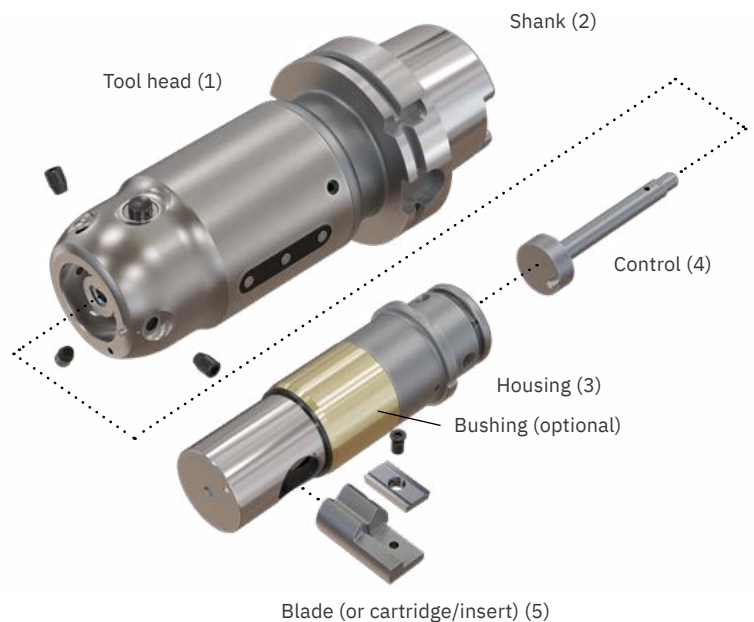
Controls (4) are designed and built to the customer's specific applications. The control pin drives the blade in and out with varying RPM.

Blades (5) are solid carbide and are specific to each application. Optional; cartridges, for indexable inserts, are designed to the customer's specific applications and are typically available for hole sizes above 25.0 mm.

SOLO / SOLO2 / SOLO2-S



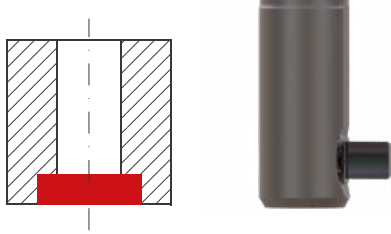
SOLO25



TOOLING OPTIONS

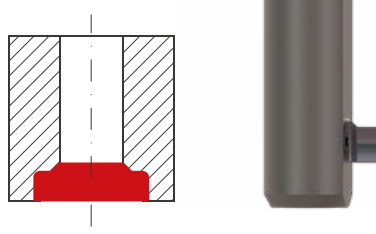
Type 1

Back counterbore only



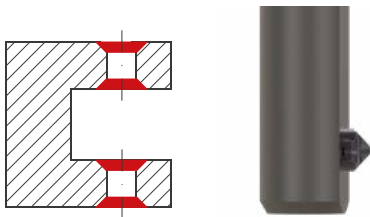
Type 2

Back counterbore with chamfer



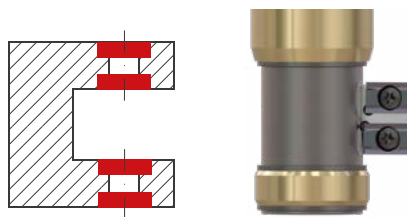
Type 3

Form insert: countersink ° or radius form



Type 4

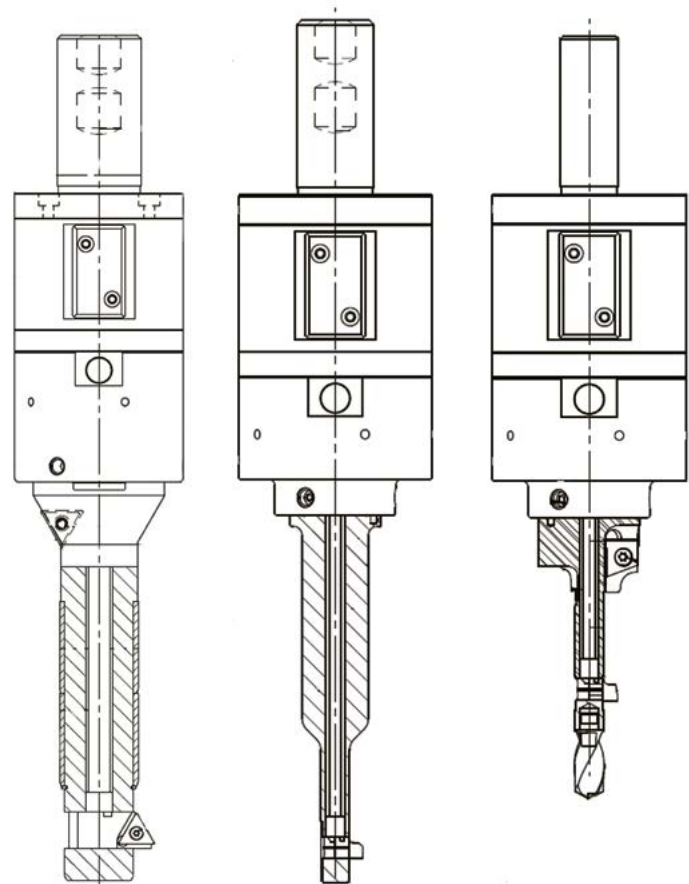
Front & back counterbore; solid carbide or cartridge



MULTIOPERATIONS

The nature of back counterboring tends to be an unstable and difficult operation due to the large chip force and small pilot hole to counterbore size. HEULE tools have proven to be the strongest automatic back boring tool on the market able to cut the most difficult materials and counterbore geometry. Our tools cut on center and are designed to use the maximum pilot size allowed; this helps guarantee stability even in deep hole applications.

Experience with difficult applications demonstrates that our unique cutting blade geometry far surpasses other back counterbore tools in strength and reliability. Unlike the flip-out back boring systems, HEULE's patented pin-drive system activates the cutting blade radially, which prevents chips from interfering with the tool's operation. Keyed blades with no sharp corners and smooth transitions add strength to both the housing and the cutting blade.



APPLICATION SITUATIONS

SOLO is designed to handle a wide range of part geometries – from standard flat surfaces to complex interrupted cutting conditions. Proper piloting of the tool is critical, particularly when machining interrupted features. HEULE recommends sizing the tool diameter 0.15 mm (.006") ± 0.05 mm (.002") smaller than the pilot hole to ensure proper guidance. Correct

piloting improves tool stability, surface finish, and overall machining reliability. Part geometry can also influence blade life and cutting parameters. More complex or interrupted conditions may require reduced cutting speeds and feeds to maintain consistent tool performance.



Standard flat surface

Machining considerations: Ideal cutting condition with full support and continuous engagement.



Raised boss or curved surface

Machining considerations: Partial interruption during entry and exit of the cutting edge.



Multiple interrupted surfaces

Machining considerations: Increased vibration potential; stable piloting becomes critical.



Highly interrupted or scalloped surfaces

Machining considerations: May require reduced speeds and feeds to optimize blade life.

SOLO

SHANK OPTIONS

Shank Adaption Options	Shank without tool head Part No.	Shank with tool head Part No.		
		SOLO	SOLO2	SOLO2-S
Str. Shank 1" h6	GH-B-S-0165	GH-B-O-0084-0165	GH-B-O-0085-0165	GH-B-O-0086-0165
Str. Shank 1 ¼" h6	GH-B-S-0166	GH-B-O-0084-0166	GH-B-O-0085-0166	GH-B-O-0086-0166
Str. Shank 20mm h6	GH-B-S-0124	GH-B-O-0084-0124	GH-B-O-0085-0124	GH-B-O-0086-0124
Str. Shank 25mm h6	GH-B-S-0125	GH-B-O-0084-0125	GH-B-O-0085-0125	GH-B-O-0086-0125
HSK63	GH-B-S-0203	GH-B-O-0084-0203	GH-B-O-0085-0203	GH-B-O-0086-0203

Other options available on request.

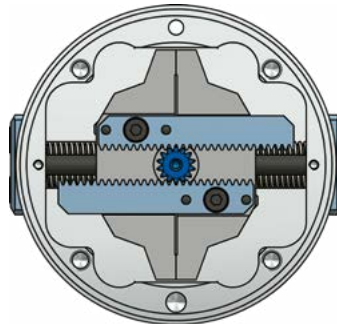
OPERATING PRINCIPLE

The SOLO uses two centrifugal weights installed in a sealed tool head. With an activation speed rate of 2000 RPM or higher, the weights start moving outwards and turn the gearwheel. The gearwheel drives the blade out by rotating the blade control. When the spindle is stopped, a pull back spring pushes the centrifugal weights back to the center and retracts or extends the blade depending which system you have.

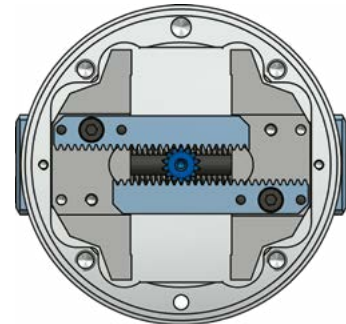
The SOLO2 uses similar parts, but works in the opposite way. With an activation speed rate of 2000 RPM or higher, the blades retract when the centrifugal weights move. When the spindle rotation is below 1500 RPM, the weights are pushed back to the center and the blade is fixed in the cutting position.

SOLO2-S, a larger SOLO head (blue ring) may be used for bores larger than approximately 25.0 mm. Cartridges with indexable inserts may be an option.

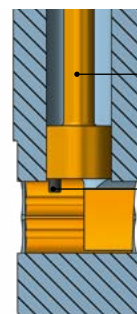
Spindle stopped:
SOLO > Blade retracted;
SOLO2 > Blade extended



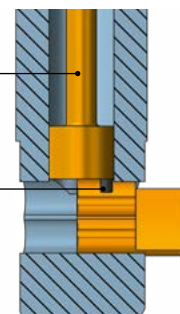
Spindle rotating:
SOLO > Blade extended;
SOLO2 > Blade retracted



Blade housing with
retracted blade.

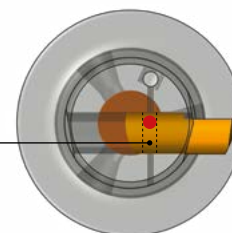
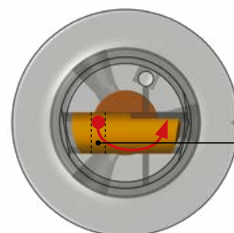


Blade housing with
extended blade.



Blade control

Control pin



Blade slot

The rotary motion of the pinion causes the blade control to extend or retract the blade.

Operating instructions

- > Blade change
- > Changing the control
- > Maintenance manual

heuletool.com > Service >
Media & download center



MAINTENANCE INTERVAL / SERVICES

Periodic maintenance interval after 18 months or 200,000 cycles

Any service or maintenance which requires the removal of sealed screws may only be carried out by personnel certified or authorized by HEULE Precision Tools.

HEULE Precision Tools offers technical support and services for all products.

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 authorized by HEULE, the following three processes can be carried out independently by the customer:

- Blade change
- Replacing the control
- Replacing the housing

IMPORTANT: The tool head may only be opened by certified and authorized personnel.

HEULE Precision Tools accepts no liability if it has been opened by unauthorized persons.



SAFETY NOTE

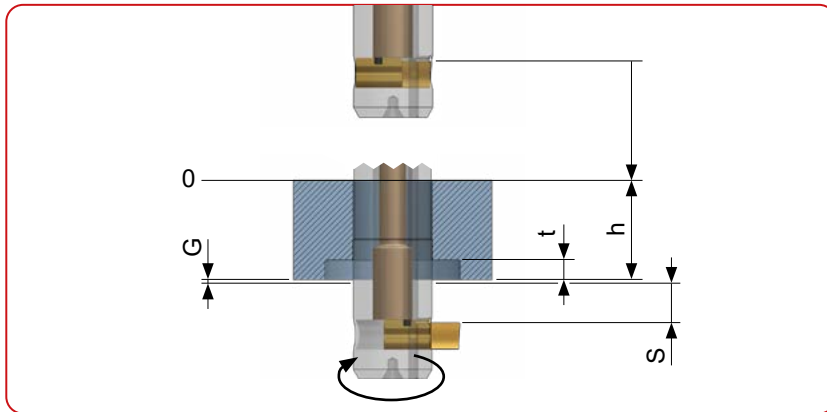
If these guidelines are not adhered to, there is **considerable risk of injury** during operation of the tool.



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 control sticking together. This adhesive effect can lead to malfunction. To free them, the control and blade must be manipulated manually on the tool before it is put back into operation. Optional warm-up cycle (open/close) on the machine may be necessary (5–10 sec.) to guarantee activation.

PROCESS STEPS

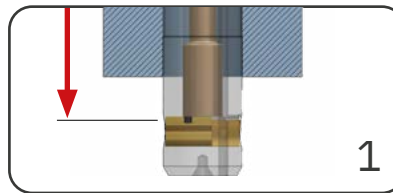


Legend

0	Zero gage line
G	Burr height
H	Workpiece thickness
T	Countersink depth
S	Clearance distance

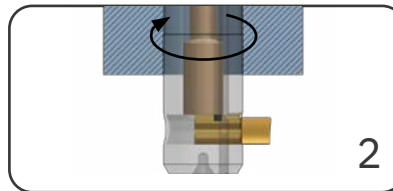
SOLO

Stop spindle, blade is retracted.
Rapid feed through the workpiece.



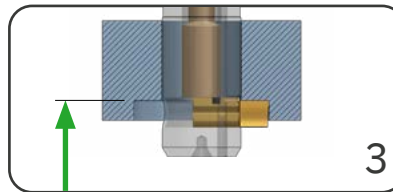
Start spindle to working speed.
Dwell time 1 sec. at least.
Switch on coolant.

Position: $h + G + S$



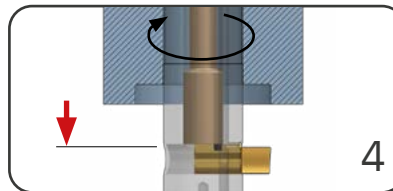
Machine the workpiece backwards
in working speed and with working
feed.

Position: $h - t$

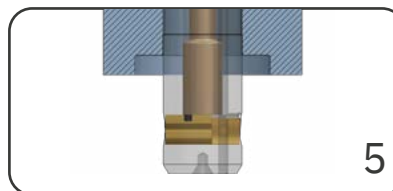


Travel out of countersink in rapid
traverse.
Switch off coolant.

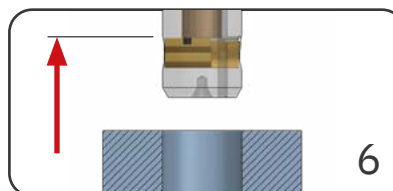
Position: $h + G + S$



Stop the spindle.
Dwell time 1 sec. at least.



Travel out of workpiece.



SOLO2 / SOLO2-S / SOLO 25

With 2000–3000 RPM spindle
rotation, pass through the workpiece
(Blade is retracted).
Dwell if necessary to allow blade
retract.

Stop the spindle. Dwell time 1–2 sec.
minimum. Switch on coolant.
Set the speed to working speed.

Position: $h + G + S$

Machine the workpiece backwards
in working speed and with working
feed.

Position: $h - t$

Travel out of countersink in rapid
traverse.
Switch off coolant.

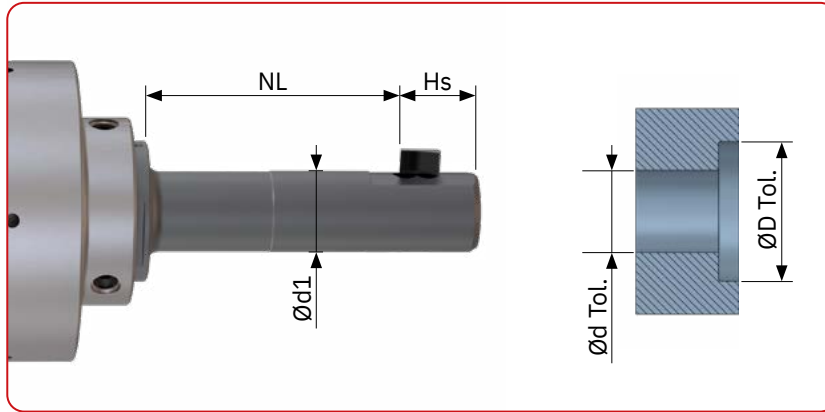
Position: $h + G + S$

Retract blade by increasing spindle
speed to 2000 rev./min. or above.
Attention: Dwell time 1–2 sec. min.

Position: $h + G + S$

Travel through workpiece with
retraction speed (Speed rate 2000
rev./min. minimum) and in rapid
traverse and with retracted blade.

PROGRAMMING



Legend

Ød	Bore diameter (tol. 0/+0.1)
ØD	Counterbore diameter
Ød1	Tool diameter -0.1/0.2<Ød
NL	Working length
Hs	Blade height

From drawing/application

Coolant through optional

Integrated HSK optional

NOTE: Please observe the recommended value for the tolerance of the bore diameter (d). The larger the tolerance is chosen, the more side effects can occur (damaged bore, enlarging, counterbore Ø gets smaller). **Recommended hole diameter above tool diameter: .006"-.008".**

Surface footage are recommended only; Remember you must run the minimum or maximum of your rated tool head. For interrupted cuts; slow both feeds and speed parameters 10–50% depending on the severity of interruption and size of cut. Counterbore diameter tolerance is dependent on bore tolerance and clearance. Typical 2xtol. of bore + clearances.

CUTTING DATA

Material	Hardness BHN	Ø6.0–11.0		Ø11.0–18.0		Ø18.0+	
		IPR mm/rev	SFM MPM	IPR mm/rev	SFM MPM	IPR mm/rev	SFM MPM
Low Alloy Steel		.001–.003 0.02–0.08	100–300 30–90	.001–.004 0.02–0.10	130–300 40–90	.001–.004 0.02–0.10	130–300 40–90
High Alloy Steel	250–350	.0007–.002 0.02–0.05	80–190 25–60	.0008–.003 0.02–0.08	100–230 30–70	.001–.004 0.02–0.10	100–230 30–70
Stainless Steel	140–250	.001–.003 0.02–0.08	140–300 40–90	.002–.004 0.03–0.10	140–300 40–90	.002–.005 0.03–0.12	140–300 40–90
Grey Cast Iron	150–330	.001–.003 0.02–0.08	170–360 50–110	.002–.006 0.03–0.15	170–360 50–110	.002–.008 0.03–0.20	170–360 50–110
Aluminum Alloys	30–180	.001–.004 0.02–0.10	300–600 90–180	.015–.006 0.03–0.15	320–640 100–200	.0015–.006 0.03–0.15	320–640 100–200
Nickel-based Alloys	140–310	.0007–.012 0.02–0.03	25–60 8–18	.0007–.0012 0.02–0.03	25–60 8–18	.0008–.0015 0.02–0.04	25–60 8–18
Titanium Alloys	120–334	.0008–.015 0.02–0.04	60–80 18–55	.001–.003 0.02–0.08	60–180 18–55	.001–.004 0.02–0.10	60–180 18–55
Copper-Brass-Bronze	80–202	.001–.003 0.02–0.08	100–300 30–90	.002–.004 0.05–0.10	130–320 40–100	.002–.006 0.05–0.15	130–320 40–100



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.

VEX

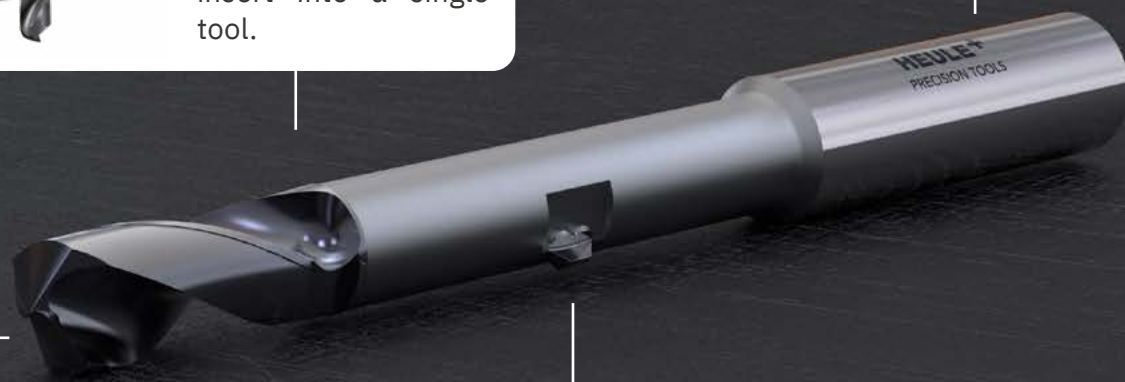
Streamlines the drilling operation.
Simultaneous drilling and chamfering,
front and back in one single pass.

The advantages – Your benefit



VEX combines the patented SNAP chamfering technology with a high-performance carbide drill insert into a single tool.

One operation and the bore is complete, including chamfer on both bore edges, without turning the workpiece and without changing tools.



Replaceable twist drill inserts and chamfering blades made of carbide with coatings for specific workpiece materials.



For bores from a diameter of 5.0 mm to 17.0 mm and bore depths from 1xd to 2xd. For additional solutions, see **CUSTOM**.

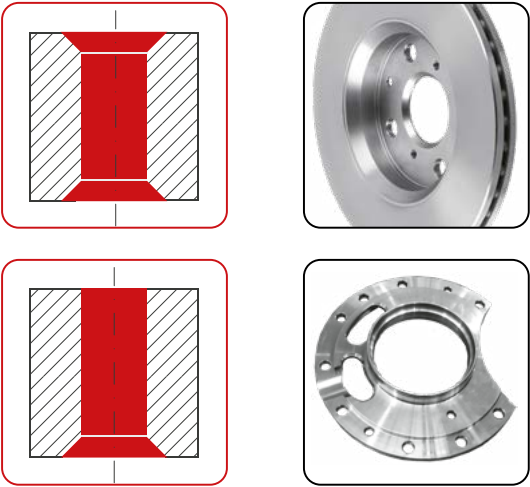


THE RANGE

Bore Ø range	Max. bore depth		Chamfer size max.	Series	Catalog page
VEX-S	1xd	2xd			
5.0–5.99 .197–.236	5.5 .217	10.0 .394	1.0 .039	B	220 224
6.0–6.99 .236–.275	6.5 .256	13.0 .512	1.0 .039	C	220 224
7.0–8.49 .276–.334	8.0 .315	16.0 .630	1.0 .039	D	220 224
8.5–10.49 .335–.413	10.0 .394	20.0 .787	1.0 .039	E	222 226
10.5–11.49 .413–.452	11.0 .433	22.0 .866	1.0 .039	F	222 226
VEX-P	1.5xd				
11.0–13.99 .433–.551	21.0 .827		1.0	C	228
14.0–17.00 .551–.669	25.5 1.004		1.0	D	230

If the required tool is not included in the standard range above, the **CUSTOM** range can offer you a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION

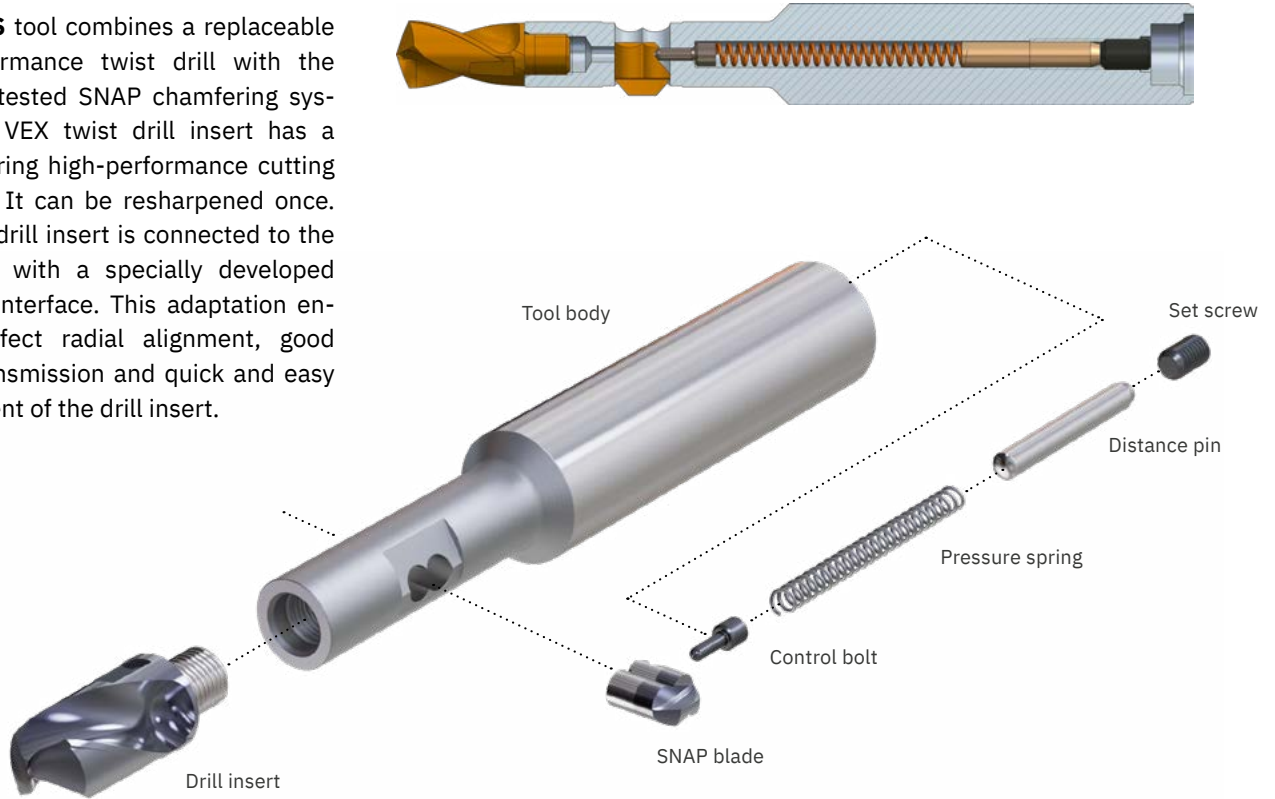


VEX

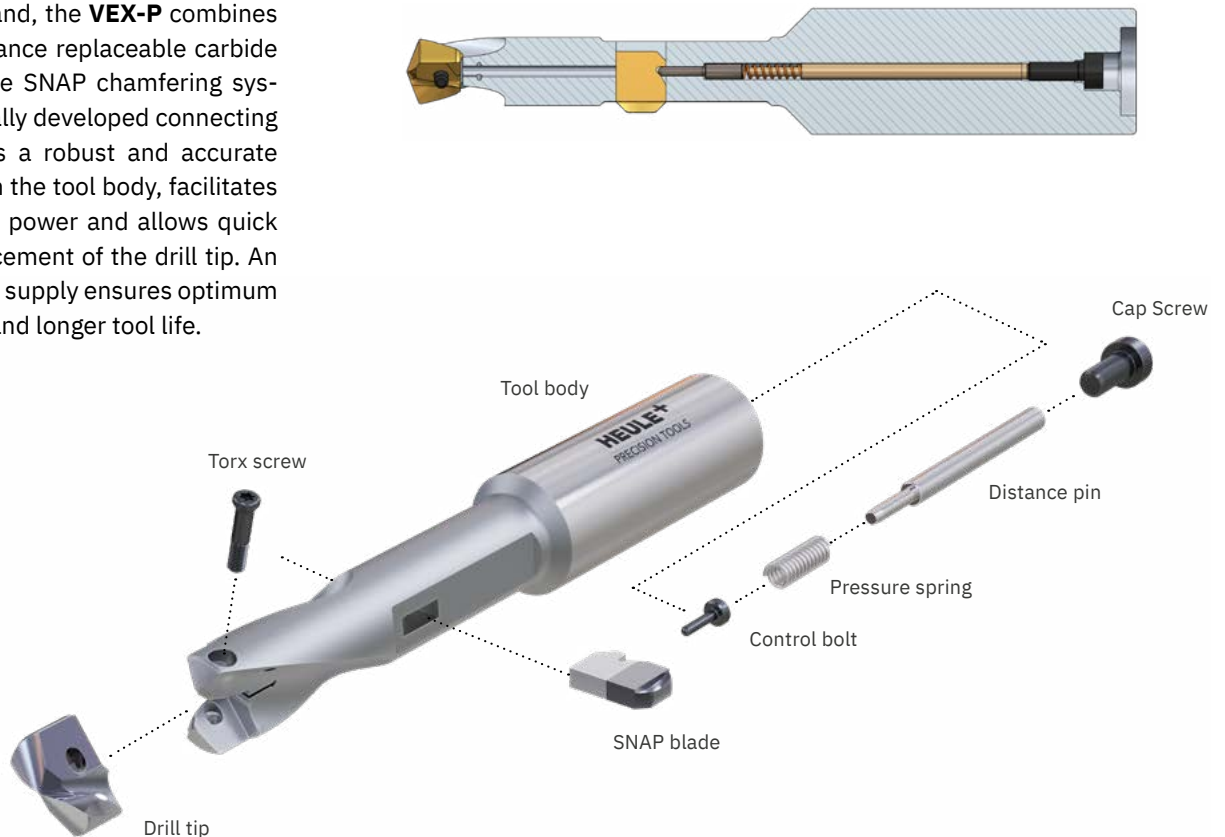
CUSTOM

TOOL DESIGN

The **VEX-S** tool combines a replaceable high-performance twist drill with the tried-and-tested SNAP chamfering system. The VEX twist drill insert has a self-centering high-performance cutting geometry. It can be resharpened once. The twist drill insert is connected to the tool body with a specially developed threaded interface. This adaptation ensures perfect radial alignment, good power transmission and quick and easy replacement of the drill insert.



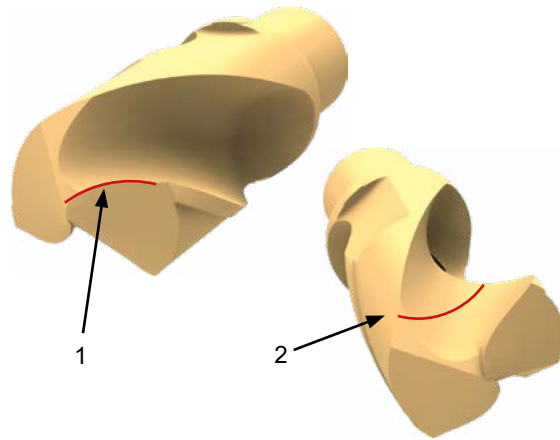
On the other hand, the **VEX-P** combines a high-performance replaceable carbide drill tip with the SNAP chamfering system. The specially developed connecting system ensures a robust and accurate connection with the tool body, facilitates transmission of power and allows quick and easy replacement of the drill tip. An internal coolant supply ensures optimum chip transport and longer tool life.



OPERATING PRINCIPLE

With the combination of drilling and chamfering tools, it is possible to drill the bore and simultaneously chamfer it forward and backward in a single operation.

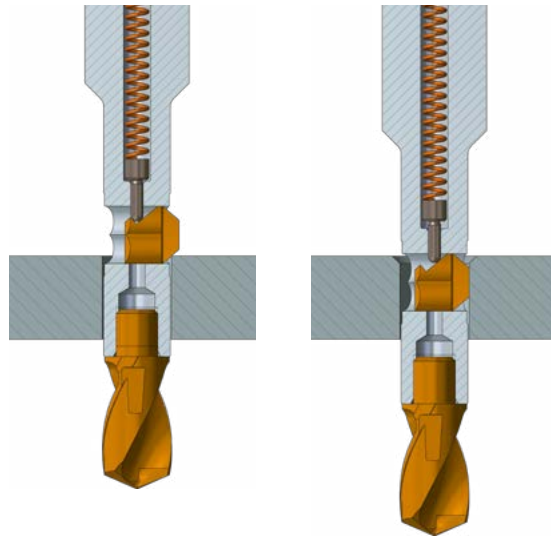
The VEX cutting geometry guarantees high drilling performance with short chip formation. The convex cutting edge (1), which merges into a concave flute angle, breaks the chips from long-chipping materials into short pieces. The large flutes ensure optimum chip removal (2).



The SNAP chamfering blade is kept movable by a spring-loaded control bolt in the tool body. The specially ground SNAP blade, which cuts forwards and backwards or backward cutting only, produces the desired chamfer in the working feed.

Upon reaching the defined chamfer size, the blade retracts into the tool body. The chamfer size and angle are geometrically defined by the blade and can only be changed by using a different SNAP blade.

A specially designed sliding section of the blade prevents the bore from being damaged. When exiting the bore, the spring-loaded control bolt returns the blade to its neutral position to machine the edge of the bore.



Operating instructions

> Blade change

heuletool.com > Service > Media & download center

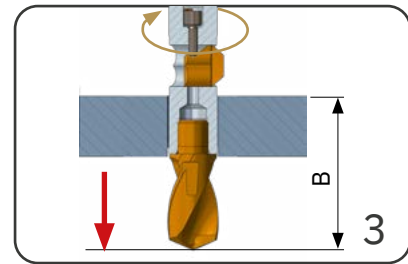
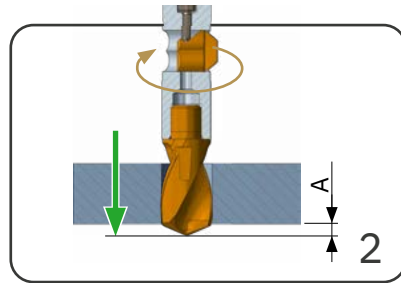
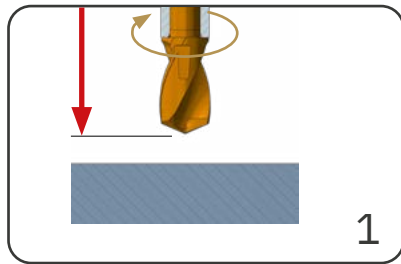
VEX-S



VEX-P



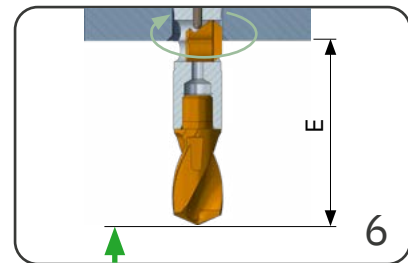
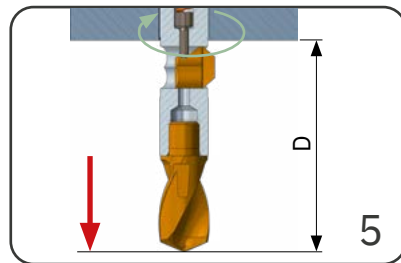
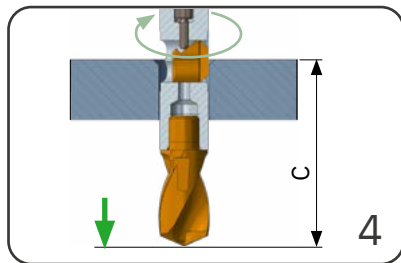
VEX-S PROCESS STEPS



- 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**



- Spindle speed **chamfering (!)**
- Working feed **chamfering (!)** to position **C**

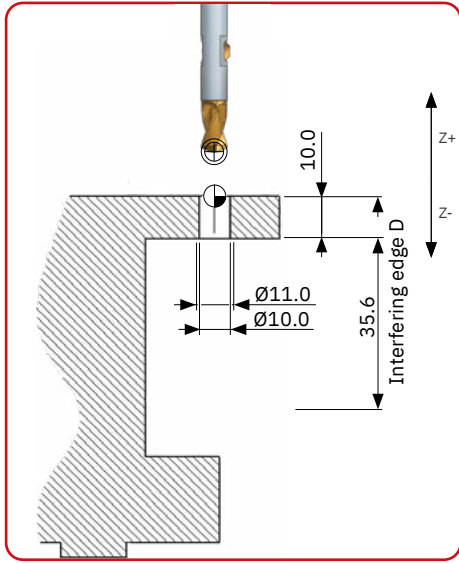
- Rapid feed to position **D**

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

DIMENSION TABLE FOR PROGRAMMING

	A	B		C		D		E	
		1xd	2xd	1xd	2xd	1xd	2xd	1xd	2xd
Series B Ø5.00–5.49	2.0 .079	17.9 .705	23.7 .933	21.9 .862	27.7 1.091	25.4 1.000	31.2 1.228	21.9 1.862	27.7 1.091
Series B Ø5.50–5.99	2.1 .083	18.8 .740	25.1 .988	22.8 .898	29.1 1.146	26.3 1.036	32.6 1.283	22.8 1.898	29.1 1.146
Series C Ø6.00–6.49	2.2 .087	19.6 .772	26.3 1.036	23.6 .929	30.3 1.193	27.1 1.067	33.8 1.331	23.6 1.929	30.3 1.193
Series C Ø6.50–6.99	2.3 .091	20.6 .811	27.9 1.098	24.6 .969	31.9 1.256	28.1 1.106	35.4 1.394	24.6 1.969	31.9 1.256
Series D Ø7.00–7.49	2.4 .095	22.8 .898	30.7 1.209	26.8 1.055	34.7 1.366	30.3 1.193	38.1 1.500	26.8 1.055	34.7 1.366
Series D Ø7.50–7.99	2.5 .099	23.6 .929	31.9 1.256	27.6 1.087	35.9 1.413	31.1 1.224	39.4 1.551	27.6 1.087	35.9 1.413
Series D Ø8.00–8.49	2.6 .102	24.4 .961	33.2 1.307	28.4 1.118	37.2 1.465	31.9 1.256	40.7 1.602	28.4 1.118	37.2 1.465
Series E Ø8.50–8.99	2.7 .106	25.6 1.008	34.9 1.374	29.6 1.165	38.9 1.531	33.1 1.303	42.4 1.669	29.6 1.165	38.9 1.531
Series E Ø9.00–9.49	2.8 .110	26.4 1.040	36.2 1.425	30.4 1.197	40.2 1.583	33.9 1.335	43.7 1.720	30.4 1.197	40.2 1.583
Series E Ø9.50–9.99	2.9 .114	27.3 1.075	37.6 1.480	31.3 1.232	41.6 1.638	34.8 1.370	45.5 1.791	31.3 1.232	41.6 1.638
Series E Ø10.00–10.49	2.9 .114	28.1 1.106	38.9 1.531	32.1 1.264	42.9 1.689	35.6 1.402	46.4 1.827	32.1 1.264	42.9 1.689
Series E Ø10.50–10.99	3.1 .122	29.1 1.146	40.2 1.583	33.1 1.303	44.2 1.740	36.6 1.441	47.7 1.878	33.1 1.303	44.2 1.740
Series F Ø11.00–11.49	3.1 .122	29.9 1.177	41.5 1.634	33.9 1.335	45.5 1.791	37.4 1.472	49.0 1.929	33.9 1.335	45.5 1.791

APPLICATION EXAMPLE



Application data

Material: Carbon Steels
 Bore Ø: 10.0 mm (.394)
 Chamfer Ø: 11.0 mm (.433)
 Workpiece: 10.0 mm (.394)
 Machining: both bore edges
 Cooling: External coolant

Tool, blade and drill insert selection

Tool: GH-Q-O-4060, max. bore depth 10.0 mm (.394)
 Chamfering blade: GH-Q-M-30215, forward and backward cutting
 Drill insert: P-S-E2-1000-1A, bore Ø10.0 mm (.394)

Cutting data drilling

Cutting speed Vc: 45–122 m/min.
 Working feed fz: 0.15–0.25 mm/rev

Cutting data chamfering

Cutting speed Vc: 150–400 SFM
 Working feed fz: .004–.008 IPR

VEX-S CUTTING DATA

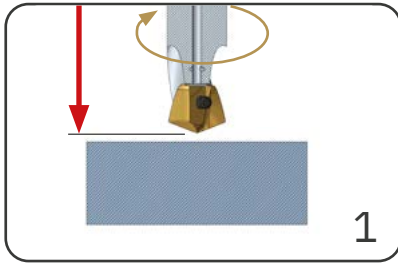
Material	Hardness BHN	Cutting Speed SFM MPM	IPR mm/rev		
			Bore Ø 5.0-6.5	Bore Ø 6.5-8.0	Bore Ø 8.0-11.5
Carbon Steels	100–250	150–400 45–122	.003–.005 0.08–0.13	.004–.008 0.10–0.20	.006–.010 0.15–0.25
Free machining Alloy	125–340	220–350 67–107	.003–.005 0.08–0.13	.004–.008 0.10–0.20	.006–.010 0.15–0.25
High Alloy Steel	250–350	130–220 40–67	.002–.004 0.05–0.10	.003–.005 0.08–0.15	.004–.008 0.10–0.20
Stainless Steel	140–250	100–160 30–50	.001–.002 0.03–0.05	.002–.004 0.05–0.10	.003–.005 0.08–0.13
Steel Castings	90–250	130–350 40–107	.002–.004 0.05–0.10	.003–.005 0.08–0.15	.004–.008 0.10–0.20
Grey Cast Iron	150–330	150–300 45–91	.004–.007 0.10–0.18	.006–.010 0.15–0.25	.008–.013 0.20–0.32
Nodular Cast Iron	140–310	130–220 40–67	.003–.006 0.08–0.15	.004–.009 0.10–0.23	.006–.012 0.15–0.30
Aluminum Alloys	30–180	210–600 65–183	.005–.007 0.13–0.18	.007–.010 0.17–0.25	.010–.013 0.25–0.32
Titanium Alloys *	120–334	90–130 27–40	.003–.006 0.08–0.15	.005–.008 0.13–0.20	.006–.010 0.15–0.25
Copper-Brass-Bronze	80–202	130–500 40–152	.003–.007 0.08–0.18	.004–.010 0.10–0.25	.006–.013 0.15–0.32

* Optional geometry available upon request.

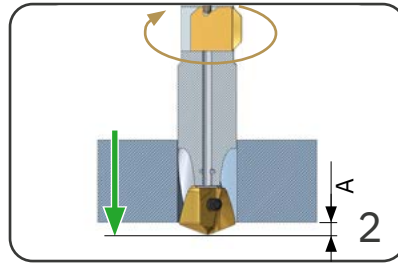
Note: Please find cutting data for chamfering blades (SNAP) on page 79

Important: Tool holder must be modified with blade locking mechanism for spindle speeds above 6'000 RPM.

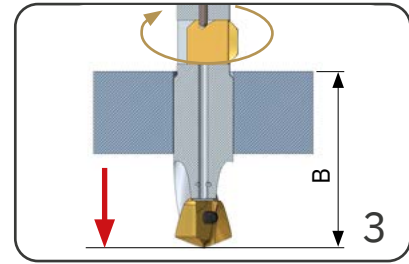
VEX-P PROCESS STEPS



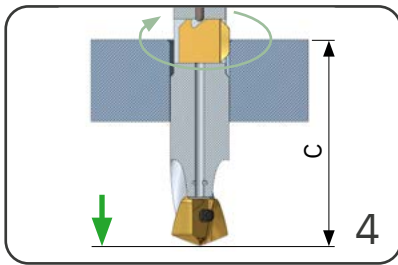
- Spindle speed **drilling (!)** on
- Internal coolant on
- Rapid feed to the front of the workpiece



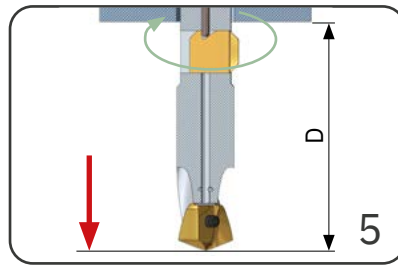
- Working feed **drilling (!)** to position **A**



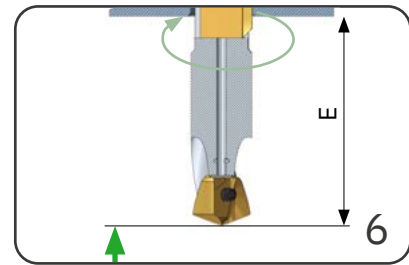
- Rapid feed to position **B**



- Spindle speed **chamfering (!)**
- Working feed **chamfering (!)** to position **C**



- Rapid feed to position **D**

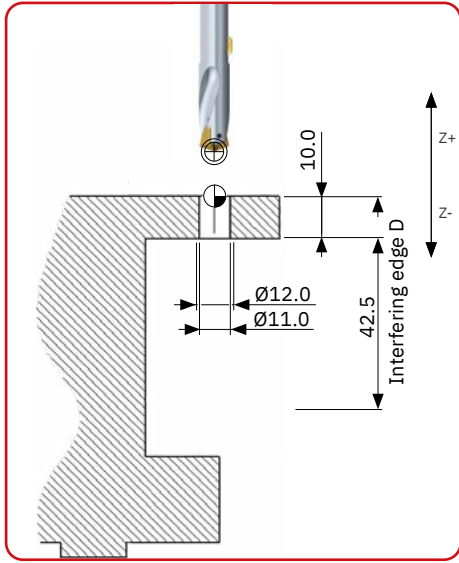


- Working feed **chamfering (!)** to position **E**
- Rapid feed out of the workpiece

DIMENSION TABLE FOR PROGRAMMING

	A		B		C		D		E	
Series C Ø11.00–11.49	2.5	.099	32.5	1.280	37.5	1.476	42.5	1.673	37.5	1.476
Series C Ø11.50–11.99	2.6	.102	33.3	1.311	38.3	1.547	43.3	1.705	38.3	1.547
Series C Ø12.00–12.49	2.7	.106	34.0	1.339	39.0	1.535	44.0	1.732	39.0	1.535
Series C Ø12.50–12.99	2.8	.110	34.8	1.370	39.8	1.567	44.8	1.764	39.8	1.567
Series C Ø13.00–13.49	2.9	.114	35.6	1.402	40.6	1.598	45.6	1.795	40.6	1.598
Series C Ø13.50–13.99	3.0	.118	36.3	1.429	41.3	1.626	46.3	1.823	41.3	1.626
Series D Ø14.00–14.49	3.1	.122	36.1	1.421	41.1	1.618	46.1	1.815	41.1	1.618
Series D Ø14.50–14.99	3.2	.126	36.8	1.449	41.8	1.646	46.8	1.843	41.8	1.646
Series D Ø15.00–15.49	3.3	.130	37.5	1.476	42.5	1.673	47.5	1.870	42.5	1.673
Series D Ø15.50–15.99	3.4	.134	38.3	1.547	43.3	1.705	48.3	1.902	43.3	1.705
Series D Ø16.00–16.49	3.5	.138	39.0	1.535	44.0	1.732	49.0	1.929	44.0	1.732
Series D Ø16.50–16.99	3.6	.142	39.8	1.567	44.8	1.764	49.8	1.961	44.8	1.764

APPLICATION EXAMPLE



Application data

Material: Carbon Steels
 Bore Ø: 11.0 mm (.433)
 Chamfer Ø: 12.0 mm (.472)
 Workpiece: 10.0 mm (.394)
 Machining: both bore edges
 Cooling: internal coolant

Tool, blade and drill tip selection

Tool: GH-Q-O-4250E, max. bore depth 17.2, with int. coolant
 Chamfering blade: GH-Q-M-03727, forward and backward cutting
 Drill tip: P-P-C-1100-1A, bore Ø11.0 (.433)

Cutting data drilling

Cutting speed Vc: 45–122 m/min.
 Working feed fz: 0.15–0.30 mm/rev

Cutting data chamfering

Cutting speed Vc: 100–160 SFM
 Working feed fz: .004–.008 IPR

VEX-P CUTTING DATA

Material	Hardness BHN	Cutting Speed SFM MPM	IPR mm/rev	
			Bore Ø 11.0–13.9	Bore Ø 14.0–16.9
Carbon Steels	100–250	150–400 45–122	.006–.012 0.15–0.30	.008–.014 0.20–0.35
Free machining Alloy	125–340	220–350 67–107	.006–.012 0.15–0.30	.007–.013 0.17–0.32
High Alloy Steel	250–350	130–220 40–67	.005–.010 0.13–0.25	.006–.012 0.15–0.30
Stainless Steel	140–250	100–160 30–50	.004–.008 0.10–0.20	.005–.008 0.12–0.20
Steel Castings	90–250	100–160 30–50	.004–.008 0.10–0.20	.005–.008 0.12–0.20
Grey Cast Iron	150–330	275–500 84–152	.008–.012 0.20–0.30	.008–.014 0.20–0.35
Nodular Cast Iron	140–310	275–450 84–137	.008–.013 0.20–0.33	.010–.014 0.25–0.35
Aluminum Alloys	30–180	300–600 90–183	.010–.016 0.25–0.40	.011–.016 0.27–0.40
Titanium Alloys **	120–334	300–425 90–130	.004–.006 0.10–0.15	.005–.008 0.12–0.20
Copper-Brass-Bronze	80–202	130–500 40–152	.004–.014 0.10–0.35	.006–.016 0.15–0.40

Carbide-TiAlN/TiN (drill and chamfer) recommendation * Recommended DLC coating

** Optional geometry available upon request.

Note: Please find cutting data for chamfering blades (SNAP) on page 79



The cutting data listed are guide values! For materials that are difficult to machine or uneven bore edges, we recommend applying cutting speeds that are at the lower end of the range.

Selecting the correct VEX tool

TOOL SELECTOR

The HEULE Tool Selector is the quickest and easiest way to find the right tool.

Send your search result along with your application data to the HEULE contact person near you. They will check the application and offer you options if required.

If your search produces no results, please contact HEULE with your application data anyway. We also develop customized solutions and are happy to advise you.

TOOL TABLES

Although the correct tool is generally selected by the bore-Ø to be produced, it is the bore depth (1xd, 2xd or 1.5xd) which determine the appropriate tool selection table in the catalog.

Next, the drill insert or drill tip is selected. The final selection is the chamfering blade.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form or by telephone.

Tool Selector

> Step-by-step guide to find the right solution

heuletool.com > Tool Selector > VEX



Tool Selector 

Still have questions?

> HEULE Consulting and Support

heuletool.com > contact



CONFIGURING VEX TOOLS

1. Select drill insert



The correct drill insert is determined according to the following criteria:

1.1 Bore depth

1xd (VEX-S)
2xd (VEX-S)
1.5xd (VEX-P)

1.2 Bore diameter

The drill inserts are available from stock in Ø increments of 0.5 mm. Other drill inserts in increments of 0.1 mm are available, but not necessarily from stock. Please inquire about availability and delivery date.

1.3 Coating

A: TiAlN for steel
D: DLC for aluminum alloys

Example VEX-S:

P-S-B2-0510-1A

P-S: Drill tip

B2: Series + bore depth 1xd

0510: Bore diameter 5.1 mm

1: Cutting material carbide

A: Coating for steel

Example VEX-P:

P-P-C-1100-1A

P-P: Drill tip

C: Series

1100: Bore diameter 11.0 mm

1: Cutting material carbide

A: Coating for steel

2. Select tool



The criteria for selecting the tool are:

2.1 Bore depth

1xd (VEX-S)
2xd (VEX-S)
1.5xd (VEX-P)

2.2 Bore diameter range

One tool covers a bore diameter range of 0.5 mm (e.g. 5.0–5.49).

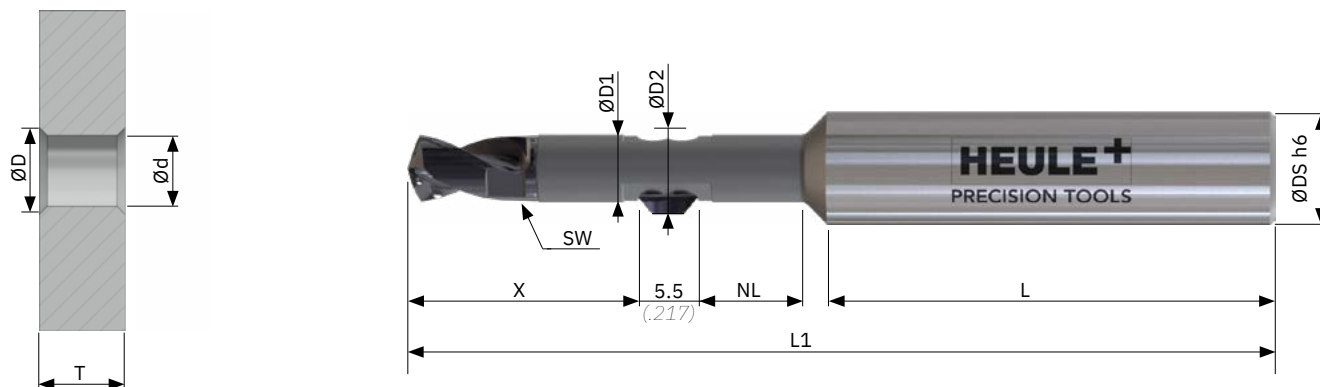
3. Select chamfering blade



Select the appropriate blade for the required chamfer diameter from the tool table.

Special blades offering additional chamfer diameters are available upon request.

VEX-S $\varnothing 5.0$ to 8.4 mm (.197" to .331") | Bore depth 1xd



Tool, drill tips and chamfer blade

Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d=8.33$ (.328"); P-S-D2-0833-1A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-S-D2-0833-1A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 221

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
5.0	.197	P-S-B2-0500-1A	GH-Q-O-4000
5.1	.201	P-S-B2-0510-1A	GH-Q-O-4000
5.5	.217	P-S-B2-0550-1A	GH-Q-O-4001
6.0	.236	P-S-C2-0600-1A	GH-Q-O-4052
6.35	1/4"	P-S-C2-0635-1A	GH-Q-O-4052
6.5	.256	P-S-C2-0650-1A	GH-Q-O-4053
6.8	.268	P-S-C2-0680-1A	GH-Q-O-4053
7.0	.276	P-S-D2-0700-1A	GH-Q-O-4054
7.14	9/32"	P-S-D2-0714-1A	GH-Q-O-4054
7.5	.295	P-S-D2-0750-1A	GH-Q-O-4055
7.94	5/16"	P-S-D2-0794-1A	GH-Q-O-4055
8.0	.315	P-S-D2-0800-1A	GH-Q-O-4056
8.4	.331	P-S-D2-0840-1A	GH-Q-O-4056

Blade Part no.							
front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
5.5	-30204	6.0	-30205	6.5	-30206	7.0	-30207
5.5	-30204	6.0	-30205	6.5	-30206	7.0	-30207
6.0	-30205	6.5	-30206	7.0	-30207	7.5	-30208
6.5	-30206	7.0	-30207	7.5	-30208	8.0	-30209
6.5	-30206	7.0	-30207	7.5	-30208	8.0	-30209
7.0	-30207	7.5	-30208	8.0	-30209	8.5	-30210
7.0	-30207	7.5	-30208	8.0	-30209	8.5	-30210
7.5	-30208	8.0	-30209	8.5	-30210	9.0	-30211
7.5	-30208	8.0	-30209	8.5	-30210	9.0	-30211
8.0	-30209	8.5	-30210	9.0	-30211	9.5	-30212
8.5	-30210	9.0	-30211	9.5	-30212	10.0	-30213
8.5	-30210	9.0	-30211	9.5	-30212	10.0	-30213
9.0	-30211	9.5	-30212	10.0	-30213	10.5	-30214



Parts in stock highlighted in green



Programming
Page 214

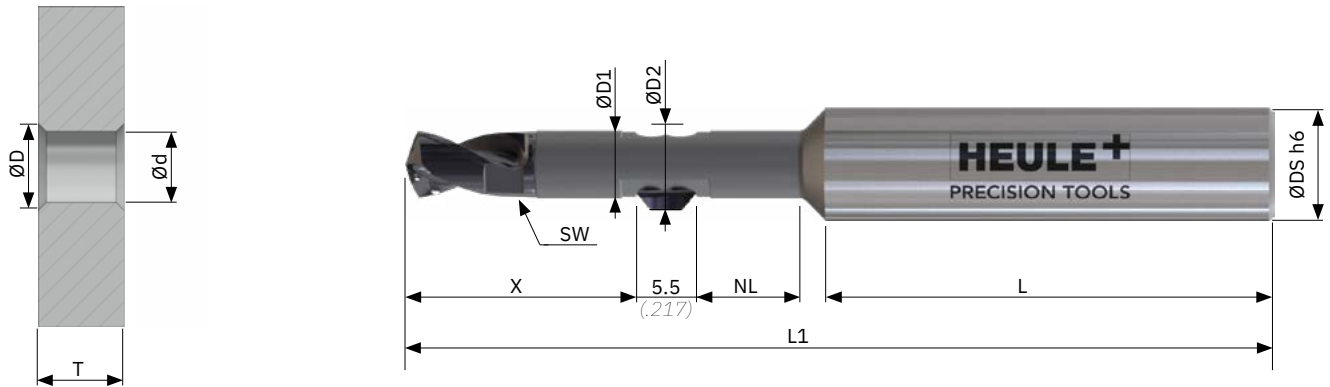


Cutting data
Page 215



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

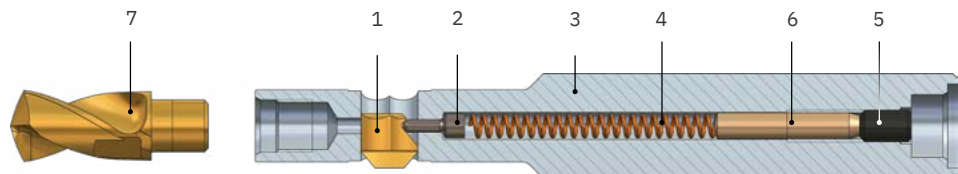
VEX-S $\varnothing 5.0$ to 8.4 mm (.197" to .331") | Bore depth 1xd



Tool dimension table

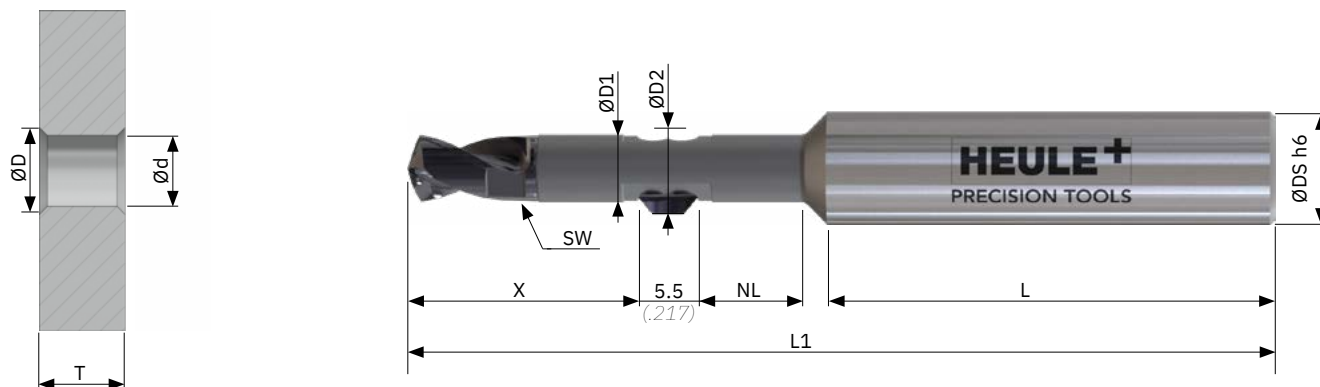
Bore size	Bore depth								Series
$\varnothing d$ mm	T	$\varnothing D1$	$\varnothing D2$	L	L1	NL	X	$\varnothing DS$	
5.00–5.49	5.0 .197	4.9 .193	$\varnothing D2 = \varnothing D + 0.6 \text{ mm } (.024)$	36.0 1.417	70.5 2.776	7.5 .295	18.9 0.744	8.0	B
5.50–5.99	5.5 .217	5.4 .213		36.0 1.417	71.6 2.819	8.0 .315	19.8 0.780	8.0	B
6.00–6.49	6.0 .236	5.9 .232		40.0 1.575	84.1 3.311	15.0 .591	20.6 0.811	10.0	C
6.50–6.99	6.5 .256	6.4 .252		40.0 1.575	86.1 3.390	16.0 .630	21.6 0.850	10.0	C
7.00–7.49	7.0 .276	6.9 .272		40.0 1.575	89.3 3.518	17.0 .669	23.8 0.937	10.0	D
7.50–7.99	7.5 .295	7.4 .291		40.0 1.575	91.1 3.587	18.0 .709	24.6 0.969	10.0	D
8.00–8.49	8.0 .315	7.9 .311		45.0 1.772	92.9 3.658	19.0 .748	25.4 1.000	12.0	D

Spare parts



Item	Description	Part no.	
1	Blade	see page 220	
2	Control bolt	GH-Q-E-0008	
3	Tool body	see page 232	
4	Spring	GH-H-F-0019	
5	Screw set Allen key for item 5	GH-H-S-0127 GH-H-S-2101	not included
6	Distance pin bore $\varnothing$ range 5.00–5.99 mm Distance pin bore $\varnothing$ range 6.00–7.99 mm Distance pin bore $\varnothing$ range 8.00–11.49 mm	GH-Q-E-0052 GH-Q-E-0048 GH-Q-E-0039	
7	Drill tip Wrench	see page 220 see page 232	not included

VEX-S $\varnothing 8.5$ to 11.1 mm (.335" to .437") | Bore depth 1xd



Tool, drill tips and chamfer blade

Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d=8.33$ (.328"); P-S-D2-0833-1A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-S-D2-0833-1A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 223

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
8.5	.335	P-S-E2-0850-1A	GH-Q-O-4057
8.73	.343	P-S-E2-0873-1A	GH-Q-O-4057
9.0	.354	P-S-E2-0900-1A	GH-Q-O-4058
9.35	.368	P-S-E2-0935-1A	GH-Q-O-4058
9.5	.374	P-S-E2-0950-1A	GH-Q-O-4059
9.53	.375	P-S-E2-0953-1A	GH-Q-O-4059
10.0	.394	P-S-E2-1000-1A	GH-Q-O-4060
10.3	.406	P-S-E2-1030-1A	GH-Q-O-4060
10.5	.413	P-S-F2-1050-1A	GH-Q-O-4061
11.0	.433	P-S-F2-1100-1A	GH-Q-O-4062
11.1	.437	P-S-F2-1110-1A	GH-Q-O-4062

Blade Part no.							
front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
9.0	-30211	9.5	-30212	10.0	-30213	10.5	-30214
9.5	-30212	10.0	-30213	10.5	-30214	11.0	-30215
9.5	-30212	10.0	-30213	10.5	-30214	11.0	-30215
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.5	-30214	11.0	-30215	11.5	-30216	12.0	-30217
11.0	-30215	11.5	-30216	12.0	-30217	12.5	-30218
11.0	-30215	11.5	-30216	12.0	-30217	12.5	-30218
11.5	-30216	12.0	-30217	12.5	-30218	13.0	-30219
11.5	-30216	12.0	-30217	12.5	-30218	13.0	-30219



Parts in stock highlighted in green



Programming
Page 214

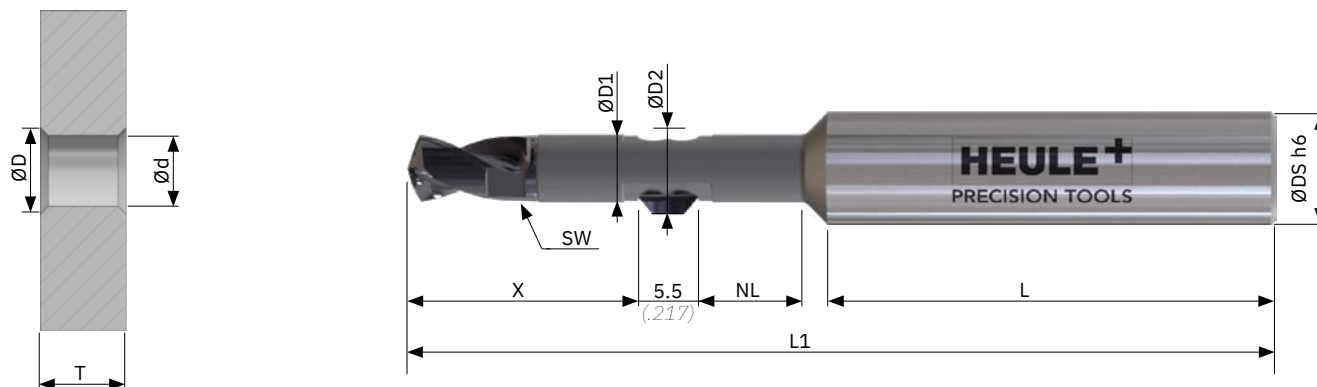


Cutting data
Page 215



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

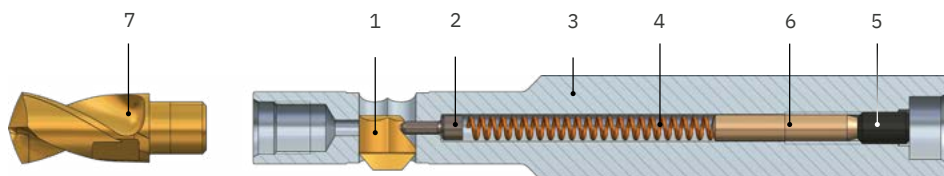
VEX-S $\varnothing 8.5$ to 11.1 mm (.335" to .437") | Bore depth 1xd



Tool dimension table

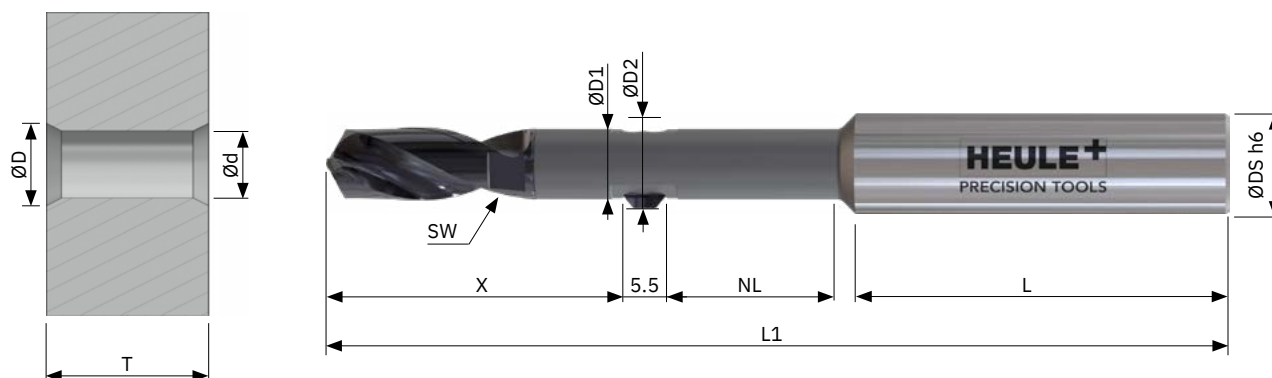
Bore size	Bore depth								Series
Ød mm	T	ØD1	ØD2	L	L1	NL	X	ØDS	
8.50–8.99	8.5 .335	8.4 .331	ØD2 = ØD + 0.6 mm (.024)	45.0 1.772	100.1 3.941	20.0 .787	26.6 1.047	12.0	E
9.00–9.49	9.0 .354	8.9 .350		45.0 1.772	101.9 4.012	21.0 .827	27.4 1.079	12.0	E
9.50–9.99	9.5 .374	9.4 .370		45.0 1.772	103.8 4.087	22.0 .866	28.3 1.114	12.0	E
10.00–10.49	10.0 .394	9.9 .390		45.0 1.772	106.0 4.173	23.0 .906	29.5 1.161	14.0	E
10.50–10.99	10.5 .413	10.4 .409		45.0 1.772	107.4 4.228	24.0 .945	30.1 1.185	14.0	F
11.00–11.49	11.0 .433	10.9 .429		45.0 1.772	108.9 4.287	24.0 .945	30.9 1.217	14.0	F

Spare parts



Item	Description	Part no.	
1	Blade	see page 222	
2	Control bolt	GH-Q-E-0008	
3	Tool body	see page 232	
4	Spring	GH-H-F-0019	
5	Screw set Allen key for item 5	GH-H-S-0127 GH-H-S-2101	not included
6	Distance pin	GH-Q-E-0039	
7	Drill tip Wrench	see page 222 see page 232	not included

VEX-S $\varnothing 5.0$ to 8.4 mm (.197" to .331") | Bore depth 2xd



Tool, drill tips and chamfer blade

Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d=8.33$ (.328"); P-S-D2-0833-1A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-S-D2-0833-1A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 225

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
5.0	.197	P-S-B4-0500-1A	GH-Q-O-4050
5.1	.201	P-S-B4-0510-1A	GH-Q-O-4050
5.5	.217	P-S-B4-0550-1A	GH-Q-O-4051
6.0	.236	P-S-C4-0600-1A	GH-Q-O-4052
6.35	1/4"	P-S-C4-0635-1A	GH-Q-O-4052
6.5	.256	P-S-C4-0650-1A	GH-Q-O-4053
6.8	.268	P-S-C4-0680-1A	GH-Q-O-4053
7.0	.276	P-S-D4-0700-1A	GH-Q-O-4054
7.14	9/32"	P-S-D4-0714-1A	GH-Q-O-4054
7.5	.295	P-S-D4-0750-1A	GH-Q-O-4055
7.94	5/16"	P-S-D4-0794-1A	GH-Q-O-4055
8.0	.315	P-S-D4-0800-1A	GH-Q-O-4056
8.4	.331	P-S-D4-0840-1A	GH-Q-O-4056

Blade Part no.							
front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
5.5	-30204	6.0	-30205	6.5	-30206	7.0	-30207
5.5	-30204	6.0	-30205	6.5	-30206	7.0	-30207
6.0	-30205	6.5	-30206	7.0	-30207	7.5	-30208
6.5	-30206	7.0	-30207	7.5	-30208	8.0	-30209
6.5	-30206	7.0	-30207	7.5	-30208	8.0	-30209
7.0	-30207	7.5	-30208	8.0	-30209	8.5	-30210
7.0	-30207	7.5	-30208	8.0	-30209	8.5	-30210
7.5	-30208	8.0	-30209	8.5	-30210	9.0	-30211
7.5	-30208	8.0	-30209	8.5	-30210	9.0	-30211
8.0	-30209	8.5	-30210	9.0	-30211	9.5	-30212
8.5	-30210	9.0	-30211	9.5	-30212	10.0	-30213
8.5	-30210	9.0	-30211	9.5	-30212	10.0	-30213
9.0	-30211	9.5	-30212	10.0	-30213	10.5	-30214



Parts in stock highlighted in green



Programming
Page 214

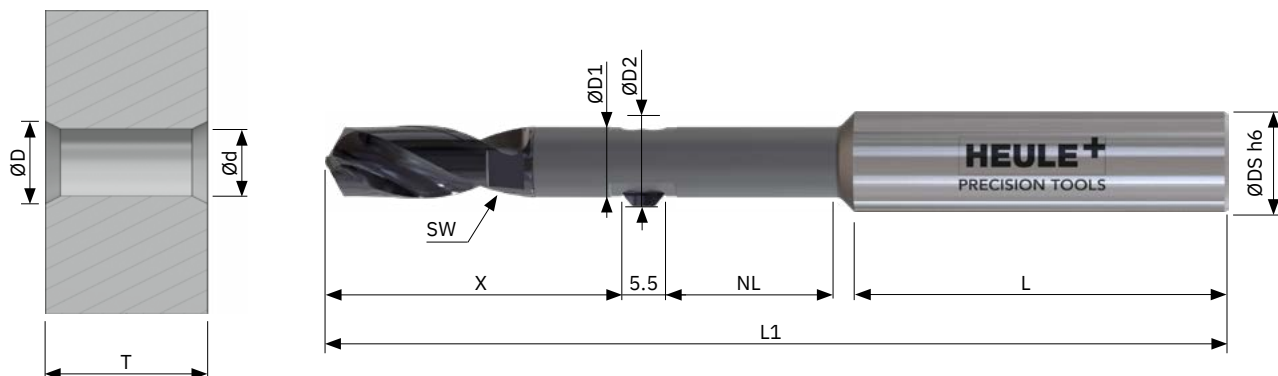


Cutting data
Page 215



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

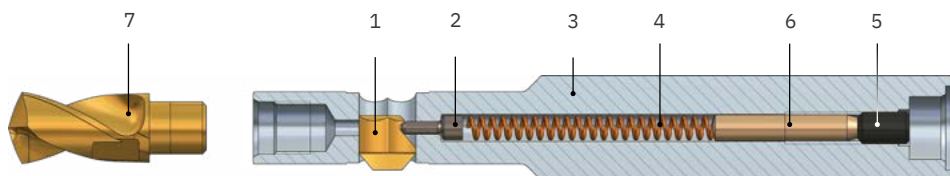
VEX-S $\varnothing 5.0$ to 8.4 mm (.197" to .331") | Bore depth 2xd



Tool dimension table

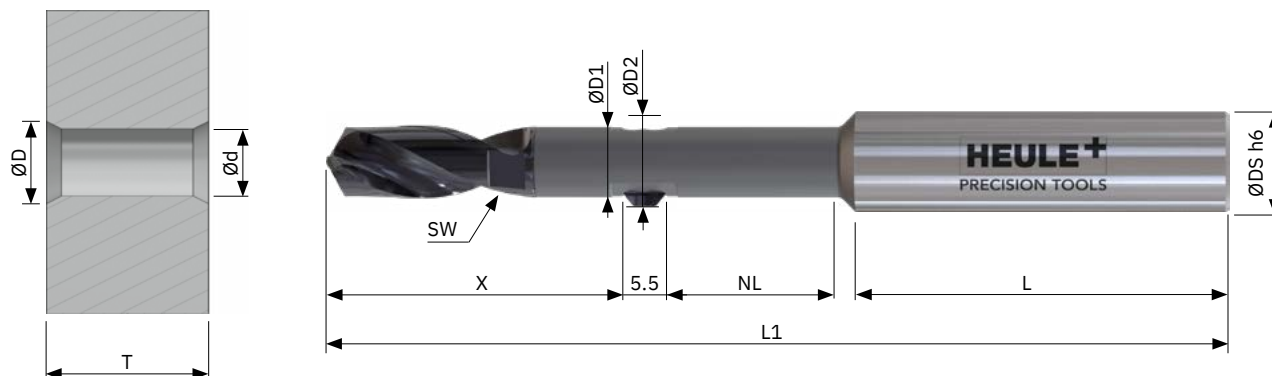
Bore size	Bore depth								Series
$\varnothing d$ mm	T	$\varnothing D1$	$\varnothing D2$	L	L1	NL	X	$\varnothing DS$	
5.00–5.49	10.0 .394	4.9 .193	$\varnothing D2 = \varnothing D + 0.6 \text{ mm } (.024)$	36.0 1.417	81.8 3.220	13.0 .512	24.7 0.972	8.0	B
5.50–5.99	11.0 .433	5.4 .213		36.0 1.417	83.9 3.303	14.0 .551	26.1 1.028	8.0	B
6.00–6.49	12.0 .472	5.9 .232		40.0 1.575	90.8 3.575	15.0 .591	27.3 1.075	10.0	C
6.50–6.99	13.0 .512	6.4 .252		40.0 1.575	93.3 3.673	16.0 .630	28.9 1.138	10.0	C
7.00–7.49	14.0 .551	6.9 .272		40.0 1.575	96.7 3.807	17.0 .669	31.6 1.244	10.0	D
7.50–7.99	15.0 .591	7.4 .291		40.0 1.575	98.7 3.886	18.0 .709	32.9 1.295	10.0	D
8.00–8.49	16.0 .630	7.9 .311		45.0 1.772	106.8 4.205	19.0 .748	33.3 1.311	12.0	D

Spare parts



Item	Description	Part no.	
1	Blade	see page 224	
2	Control bolt	GH-Q-E-0008	
3	Tool body	see page 232	
4	Spring	GH-H-F-0019	
5	Screw set Allen key for item 5	GH-H-S-0127 GH-H-S-2101	not included
6	Distance pin bore $\varnothing$ range 5.00–5.99 mm Distance pin bore $\varnothing$ range 6.00–7.99 mm Distance pin bore $\varnothing$ range 8.00–11.49 mm	GH-Q-E-0043 GH-Q-E-0048 GH-Q-E-0039	
7	Drill tip Wrench	see page 224 see page 232	not included

VEX-S $\varnothing 8.5$ to 11.1 mm (.335" to .437") | Bore depth 2xd



Tool, drill tips and chamfer blade

Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d=8.33$ (.328"); P-S-D2-0833-1A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-S-D2-0833-1A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 227

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
8.5	.335	P-S-E4-0850-1A	GH-Q-O-4057
8.73	.343	P-S-E4-0873-1A	GH-Q-O-4057
9.0	.354	P-S-E4-0900-1A	GH-Q-O-4058
9.35	.368	P-S-E4-0935-1A	GH-Q-O-4058
9.5	.374	P-S-E4-0950-1A	GH-Q-O-4059
9.53	.375	P-S-E4-0953-1A	GH-Q-O-4059
10.0	.394	P-S-E4-1000-1A	GH-Q-O-4060
10.3	.406	P-S-E4-1030-1A	GH-Q-O-4060
10.5	.413	P-S-F4-1050-1A	GH-Q-O-4061
11.0	.433	P-S-F4-1100-1A	GH-Q-O-4062
11.1	.437	P-S-F4-1110-1A	GH-Q-O-4062

Blade Part no.							
front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
9.0	-30211	9.5	-30212	10.0	-30213	10.5	-30214
9.5	-30212	10.0	-30213	10.5	-30214	11.0	-30215
9.5	-30212	10.0	-30213	10.5	-30214	11.0	-30215
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.0	-30213	10.5	-30214	11.0	-30215	11.5	-30216
10.5	-30214	11.0	-30215	11.5	-30216	12.0	-30217
11.0	-30215	11.5	-30216	12.0	-30217	12.5	-30218
11.0	-30215	11.5	-30216	12.0	-30217	12.5	-30218
11.5	-30216	12.0	-30217	12.5	-30218	13.0	-30219
11.5	-30216	12.0	-30217	12.5	-30218	13.0	-30219



Parts in stock highlighted in green



Programming
Page 214

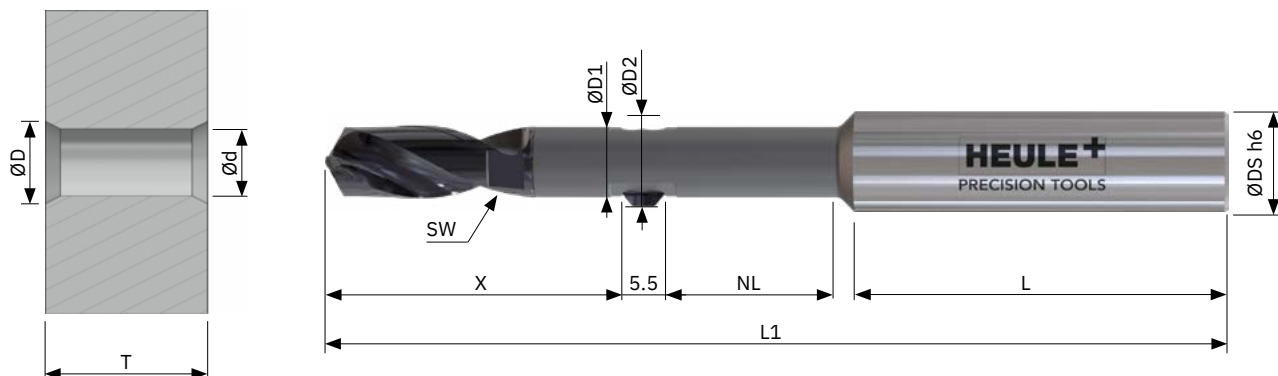


Cutting data
Page 215



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

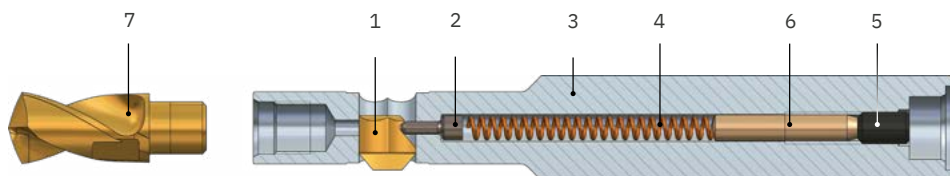
VEX-S $\varnothing 8.5$ to 11.1 mm (.335" to .437") | Bore depth 2xd



Tool dimension table

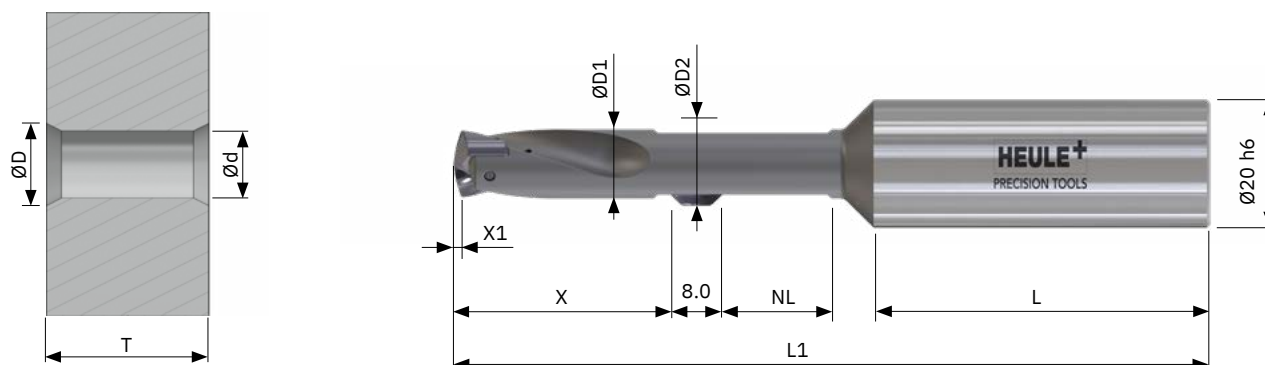
Bore size	Bore depth									Series
$\varnothing d$ mm	T	$\varnothing D1$	$\varnothing D2$	L	L1	NL	X	$\varnothing DS$		
8.50–8.99	17.0 .669	8.4 .331	$\varnothing D2 = \varnothing D + 0.6 \text{ mm } (.024)$	40.0 1.575	109.1 4.295	20.0 .787	35.8 1.409	12.0		E
9.00–9.49	18.0 .709	8.9 .350		45.0 1.772	111.2 4.378	21.0 .827	37.2 1.465	12.0		E
9.50–9.99	19.0 .748	9.4 .370		45.0 1.772	113.3 4.461	22.0 .866	38.6 1.520	12.0		E
10.00–10.49	20.0 .787	9.9 .390		45.0 1.772	116.4 4.583	23.0 .906	39.9 1.571	14.0		E
10.50–10.99	21.0 .827	10.4 .409		45.0 1.772	118.5 4.665	24.0 .945	41.2 1.622	14.0		F
11.00–11.49	22.0 .866	10.9 .429		45.0 1.772	120.5 4.744	25.0 .984	42.5 1.673	14.0		F

Spare parts



Item	Description	Part no.	
1	Blade	see page 226	
2	Control bolt	GH-Q-E-0008	
3	Tool body	see page 232	
4	Spring	GH-H-F-0019	
5	Screw set Allen key for item 5	GH-H-S-0127 GH-H-S-2101	not included
6	Distance pin	GH-Q-E-0052	
7	Drill tip Wrench	see page 226 see page 232	not included

VEX-P $\varnothing 11.0$ to 13.9 (.433" to .547") | Bore depth 1.5xd



Tool, drill tips and chamfer blade

Standard tool **without** drill tip or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Drill tips are also available in increments of 0.1 mm in diameter. Special sizes or geometries are available on request
- An internal coolant supply ensures optimum chip transport and longer tool life
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-P-C-1100-1A
- See dimensions on page 229

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
11.0	.433	P-P-C-1100-1A	GH-Q-O-4250E
11.1	.437	P-P-C-1110-1A	GH-Q-O-4250E
11.5	.453	P-P-C-1150-1A	GH-Q-O-4251E
11.9	.469	P-P-C-1190-1A	GH-Q-O-4251E
12.0	.472	P-P-C-1200-1A	GH-Q-O-4252E
12.5	.492	P-P-C-1250-1A	GH-Q-O-4253E
12.7	.500	P-P-C-1270-1A	GH-Q-O-4253E
13.0	.511	P-P-C-1300-1A	GH-Q-O-4254E
13.5	.531	P-P-C-1350-1A	GH-Q-O-4255E

Blade Part no.							
front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
11.5	-03726	12.0	-03727	12.5	-03728		
12.0	-03727	12.5	-03728	13.0	-03729		
12.0	-03727	12.5	-03728	13.0	-03729		
12.5	-03728	13.0	-03729	13.5	-03730		
12.5	-03740	13.0	-03741	13.5	-03742	14.0	-03743
13.0	-03741	13.5	-03742	14.0	-03743	14.5	-03744
13.0	-03741	13.5	-03742	14.0	-03743	14.5	-03744
13.5	-03742	14.0	-03743	14.5	-03744	15.0	-03745
14.0	-03743	14.5	-03744	15.0	-03745	15.5	-03746



Parts in stock highlighted in green



Programming
Page 216

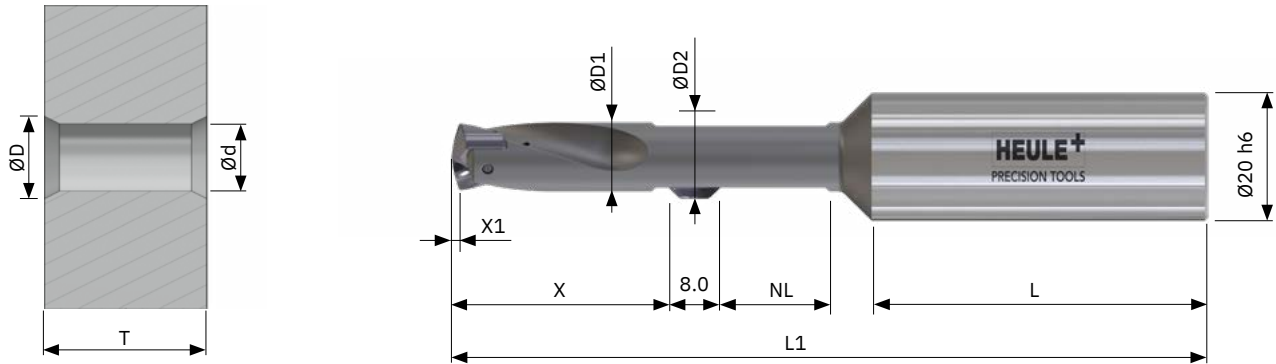


Cutting data
Page 217



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

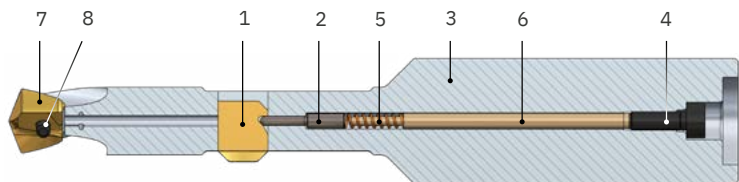
VEX-P $\varnothing 11.0$ to 13.9 (.433" to .547") | Bore depth 1.5xd



Tool dimension table

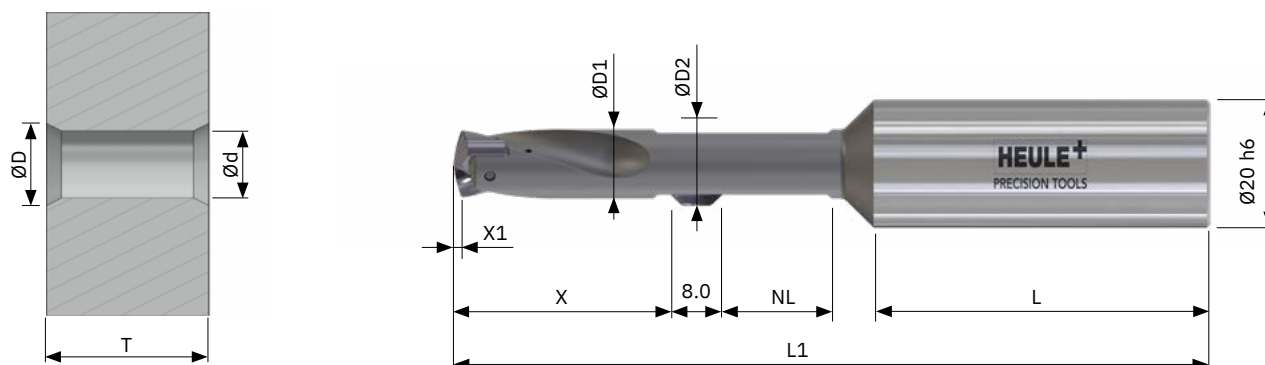
Bore size $\varnothing d$ mm	Bore depth T	$\varnothing D1$	$\varnothing D2$	L	L1	NL	X	X1	Series
11.00–11.49	17.2 .677	10.8 .425	$\varnothing D2 = \varnothing D + 0.6 \text{ mm } (.024)$	52.0 2.047	116.9 4.602	17.2 .677	33.5 1.319	2.5 .099	C
11.50–11.99	18.0 .709	11.3 .445		52.0 2.047	118.2 4.654	18.0 .709	34.3 1.350	2.6 .102	C
12.00–12.49	18.7 .736	11.8 .465		52.0 2.047	119.4 4.701	18.7 .736	35.1 1.382	2.7 .106	C
12.50–12.99	19.5 .768	12.3 .484		52.0 2.047	120.7 4.752	19.5 .768	35.8 1.409	2.8 .110	C
13.00–13.49	20.2 .795	12.8 .504		52.0 2.047	121.9 4.799	20.2 .795	36.6 1.441	2.9 .114	C
13.50–13.99	21.0 .827	13.3 .524		52.0 2.047	123.2 4.850	21.0 .827	37.3 1.469	3.0 .118	C

Spare parts



Item	Description	Bore $\varnothing$ range 11.00–11.99 mm	Bore $\varnothing$ range 12.00–13.99 mm
1	Blade	see page 228	see page 228
2	Control bolt	GH-Q-E-0078	GH-Q-E-0002
3	Tool body	see page 232	see page 232
4	Cap Screw Hex wrench for item 4	GH-H-S-0538-1 see page 232	GH-H-S-0524-1 see page 232
5	Spring	GH-H-F-0027	GH-H-F-0012
6	Distance pin	GH-Q-E-0503	GH-Q-E-0514
7	Drill tip	see page 228	see page 228
8	Torx screw M2.2x10.2 T7 Torx wrench for item 8	GH-H-S-0038 see page 232	GH-H-S-0038 see page 232

VEX-P $\varnothing 14.0$ to 17.0 (.551" to .669") | Bore depth 1.5xd



Tool, drill tips and chamfer blade

Standard tool **without** drill tip or chamfer blade

- Drill tips and blades (SNAP5) are sold separately
- Drill tips are also available in increments of 0.1 mm in diameter. Special sizes or geometries are available on request
- An internal coolant supply ensures optimum chip transport and longer tool life
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-P-C-1100-1A
- See dimensions on page 231

Bore Ø		Drill tips part no.	Tool part no.
d			
14.0	.551	P-P-D-1400-1A	GH-Q-O-4256E
14.3	.562	P-P-D-1430-1A	GH-Q-O-4256E
14.5	.571	P-P-D-1450-1A	GH-Q-O-4257E
15.0	.591	P-P-D-1500-1A	GH-Q-O-4258E
15.5	.610	P-P-D-1550-1A	GH-Q-O-4259E
15.9	.5/8"	P-P-D-1590-1A	GH-Q-O-4259E
16.0	.630	P-P-D-1600-1A	GH-Q-O-4260E
16.5	.650	P-P-D-1650-1A	GH-Q-O-4261E
17.0	.669	P-P-D-1700-1A	GH-Q-O-4261E

Blade Part no.							
front & back cutting (FAB) / GS geometry							
ØD	GH-Q-M-	ØD	GH-Q-M-	ØD	GH-Q-M-	ØD	GH-Q-M-
14.5	-03744	15.0	-03745	15.5	-03746	16.0	-03747
14.5	-03744	15.0	-03745	15.5	-03746	16.0	-03747
15.0	-03745	15.5	-03746	16.0	-03747	16.5	-03748
15.5	-03746	16.0	-03747	16.5	-03748	17.0	-03749
16.0	-03747	16.5	-03748	17.0	-03749	17.5	-03750
16.5	-03748	17.0	-03749	17.5	-03750	18.0	-03751
16.5	-03748	17.0	-03749	17.5	-03750	18.0	-03751
17.0	-03749	17.5	-03750	18.0	-03751	18.5	-03752
17.5	-03750	18.0	-03751	18.5	-03752	19.0	-03753



Parts in stock highlighted in green



Programming
Page 216

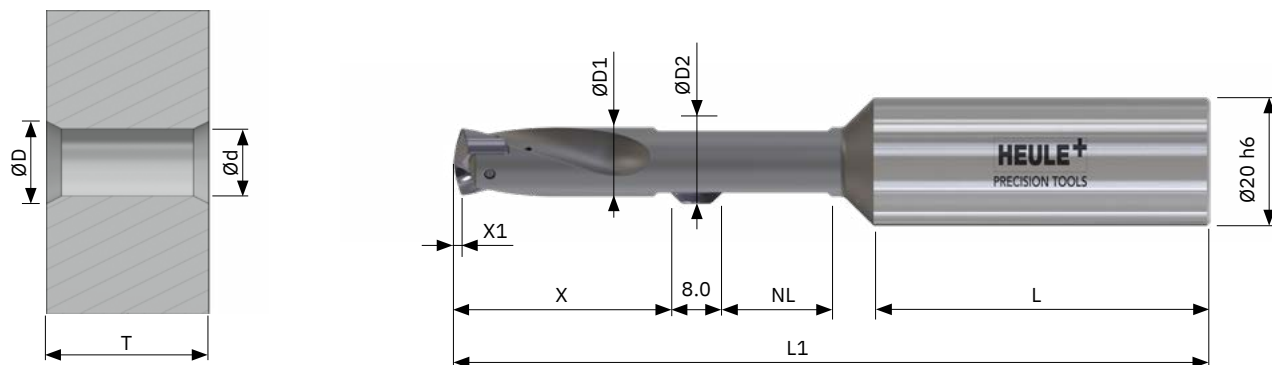


Cutting data
Page 217



Tool Selector –
Product selection made easy
heuletool.com > Tool Selector > VEX

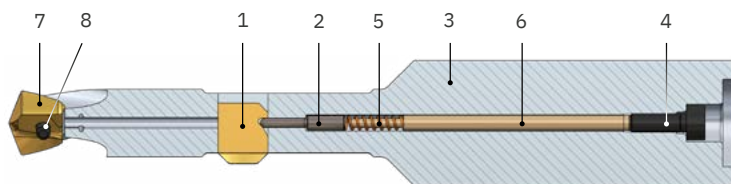
VEX-P $\varnothing 14.0$ to 17.0 (.551" to .669") | Bore depth 1.5xd



Tool dimension table

Bore size	Bore depth								Series
$\varnothing d$ mm	T	$\varnothing D1$	$\varnothing D2$	L	L1	NL	X	X1	
14.00–14.49	21.7 .854	13.8 .543	$\varnothing D2 = \varnothing D + 0.6 \text{ mm } (.024)$	52.0 2.047	123.4 4.858	21.7 .854	37.1 1.461	3.1 .122	D
14.50–14.99	22.5 .886	14.3 .563		52.0 2.047	124.7 4.909	22.5 .886	37.8 1.488	3.2 .126	D
15.00–15.49	23.2 .913	14.8 .583		52.0 2.047	125.9 4.957	23.2 .913	38.6 1.520	3.3 .130	D
15.50–15.99	24.0 .945	15.3 .602		52.0 2.047	127.2 5.008	24.0 .945	39.3 1.547	3.4 .134	D
16.00–16.49	24.7 .972	15.8 .622		52.0 2.047	128.4 5.055	24.7 .972	40.1 1.579	3.5 .138	D
16.50–17.00	25.5 1.004	16.3 .642		52.0 2.047	129.7 5.106	25.5 1.004	40.8 1.606	3.6 .142	D

Spare parts



Item	Description	Bore $\varnothing$ range 14.00–15.49 mm	Bore $\varnothing$ range 15.50–17.00 mm
1	Blade	see page 230	see page 230
2	Control bolt	GH-Q-E-0002	GH-Q-E-0002
3	Tool body	see page 232	see page 232
4	Cap Screw Hex wrench for item 4	GH-H-S-0524-1 see page 232	GH-H-S-0524-1 see page 232
5	Spring	GH-H-F-0012	GH-H-F-0012
6	Distance pin	GH-Q-E-0514	GH-Q-E-0515
7	Drill tip	see page 230	see page 230
8	Torx screw M2.5x12 T8 Torx wrench for item 8	GH-H-S-0035 see page 232	GH-H-S-0035 see page 232

BORE DEPTH 1XD & 2XD

Bore size Ød mm	Series	Bore depth 1xD		Bore depth 2xD	
		Tool body Part no.	Wrench Part no.	Tool body Part no.	Wrench Part no.
5.00–5.49	B	GH-Q-G-4000	GH-H-S-2301	GH-Q-G-4050	GH-H-S-2301
5.50–5.99	B	GH-Q-G-4001	GH-H-S-2301	GH-Q-G-4051	GH-H-S-2301
6.00–6.49	C	GH-Q-G-4052	GH-H-S-2301	GH-Q-G-4052	GH-H-S-2301
6.50–6.99	C	GH-Q-G-4053	GH-H-S-2301	GH-Q-G-4053	GH-H-S-2301
7.00–7.49	D	GH-Q-G-4054	GH-H-S-2302	GH-Q-G-4054	GH-H-S-2302
7.50–7.99	D	GH-Q-G-4055	GH-H-S-2302	GH-Q-G-4055	GH-H-S-2302
8.00–8.49	D	GH-Q-G-4056	GH-H-S-2302	GH-Q-G-4056	GH-H-S-2302
8.50–8.99	E	GH-Q-G-4057	GH-H-S-2303	GH-Q-G-4057	GH-H-S-2303
9.00–9.49	E	GH-Q-G-4058	GH-H-S-2303	GH-Q-G-4058	GH-H-S-2303
9.50–9.99	E	GH-Q-G-4059	GH-H-S-2303	GH-Q-G-4059	GH-H-S-2303
10.00–10.49	E	GH-Q-G-4060	GH-H-S-2303	GH-Q-G-4060	GH-H-S-2303
10.50–10.99	F	GH-Q-G-4061	GH-H-S-2303	GH-Q-G-4061	GH-H-S-2303
11.00–11.49	F	GH-Q-G-4062	GH-H-S-2303	GH-Q-G-4062	GH-H-S-2303

BORE DEPTH 1.5XD

Bore size Ød mm	For Cap Screw:		For Torx Screw:			
	Hex Wrench Part no.	mm	Recommended: Precision Torque Wrench		Alternative: Torx Wrench	
			Part no.	Description	Part no.	Nm
11.00–11.49	GH-H-S-2100	2.5	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
11.50–11.99	GH-H-S-2100	2.5	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
12.00–12.49	GH-H-S-2103	3.0	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
12.50–12.99	GH-H-S-2103	3.0	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
13.00–13.49	GH-H-S-2103	3.0	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
13.50–13.99	GH-H-S-2103	3.0	HT-TX-H-0002	IP7 Torx bit (1.1 Nm)	GH-H-S-2001	1.1
14.00–14.49	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2
14.50–14.99	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2
15.00–15.49	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2
15.50–15.99	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2
16.00–16.49	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2
16.50–17.00	GH-H-S-2103	3.0	HT-TX-H-0003	T8 Torx bit (1.2 Nm)	GH-H-S-2002	1.2

VEX-S: SETTING THE BLADE FORCE



The blade force can be adjusted using the set screw. The blade force should be set so high that the blade extends completely after exiting the bore. This ensures that the blade can also provide the necessary cutting force. The tougher the material, the harder the spring should be set.

However, the blade force does not affect the chamfer diameter. An adapted spring force increases the blade's service life and improves the quality of the chamfer.

A high blade force is required for extremely tough materials. The spring can be replaced for this purpose: GH-H-F-0041.

How it works:
Clockwise rotation increases the spring load (tough steel, Inconel, titanium).

Anti-clockwise rotation reduces the spring load (aluminum).



Important!

The blade force does not affect the chamfer diameter. It is essentially determined by the blade selected. Each blade produces a defined chamfer diameter.

Setting details for blade force

Tool	Thread size	max. screw-in depth	Number of revolutions
SNAP5	M3	6.0 mm	approx. 12

Note: VEX-P has preset blade force and is non-adjustable.

Question	Causes	Remedy
Built-up edge	• Cutting speed too low • Insufficient cooling / lubrication • Incorrect coating for the material	• Increase cutting speed • Increase coolant pressure • Select another coating
Chip jam	• Working feed rate too high for chip removal • Drill insert too short for bore depth • Insufficient cooling	• Reduce working feed rate • With VEX-S, use a longer drill insert or improve drilling cycle • Increase coolant pressure
Large burr formation at the exit of the bore	• Cutting values too high • Insufficient cooling • Drill insert/head worn	• Reduce cutting speed • Increase coolant pressure • Replace drill insert/head
Fluctuating accuracy	• Working feed rate too high • Insufficient cooling • Spindle/setup not stable	• Reduce working feed rate • Increase coolant pressure • Check radial run-out • Check spindle and setup stability
Poor surface quality	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable • Drill insert/head worn	• Increase or reduce working feed rate and cutting speed • Increase coolant pressure • Check radial run-out • Check spindle and setup stability • Replace drill insert or head • Improve drilling process
Vibration / chatter	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Increase or reduce the cutting speed • Increase or reduce the working feed rate • Increase coolant pressure • Check radial run-out • Check spindle and setup stability
Wear on cutting edge	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Increase cutting speed • Reduce working feed rate • Increase coolant pressure • Check spindle and setup stability
Wear on cross-cutting edge	• Working feed rate too high • Insufficient cooling • Spindle/setup not stable	• Reduce working feed rate • Increase coolant pressure • Check spindle and setup stability

Question	Causes	Remedy
Wear on guiding section	• incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Reduce cutting speed • Reduce working feed rate • Increase coolant pressure • Check radial run-out • Check spindle and setup stability
Break of cutting edge	• incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Increase cutting speed • Increase coolant pressure • Check spindle and setup stability
Break of top of drill insert	• Working feed rate too high • Insufficient cooling • Spindle/setup not stable	• Reduce working feed rate • Increase coolant pressure • Check spindle and setup stability
No chamfer or chamfer not consistent	• see FAQ for SNAP on page 110	

COMBI

Completely finished in one operation.
Simultaneous drilling and chamfering,
front and back in one single pass.

The advantages – Your benefit



COMBI combines the patented SNAP chamfering technology with a standard spade drill into a single tool.

One operation and the bore is complete, including chamfer on both bore edges, without turning the workpiece and without changing tools.



For bores from a diameter of 9.5 mm to 35.0 mm and bore depths of 1xd. For additional solutions, see **CUSTOM**.



Chamfering blades are made of carbide with coatings for specific workpiece materials.

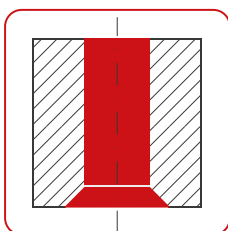
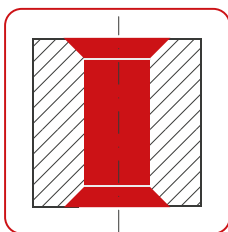


THE RANGE

Bore Ø range		Max. bore depth		Chamfer size max.		Series	Catalog page
9.5–11.09	.374–.437	14.0	.551	1.0	.039	Y	244
11.1–12.99	.437–.511	14.0	.551	1.0	.039	Z	244
13.0–17.99	.512–.708	18.0	.709	1.0	.039	0	244
18.0–24.99	.707–.984	24.0	.945	1.0	.039	1	246
25.0–35.0	.984–1.378	38.0	1.496	1.0	.039	2	246

If the required tool is not included in the standard range above, the **CUSTOM** range can offer you a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION



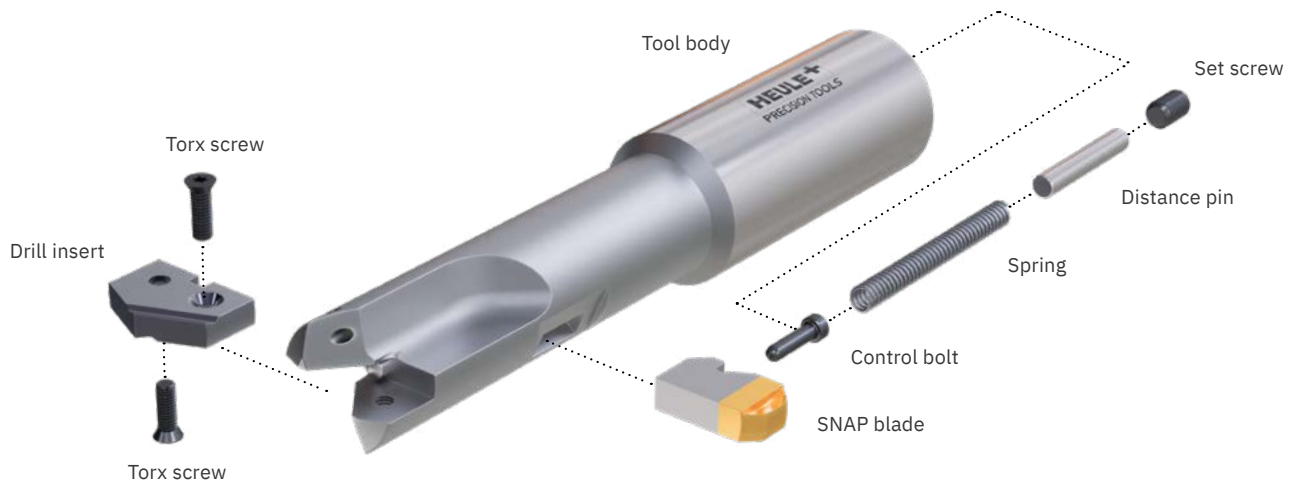
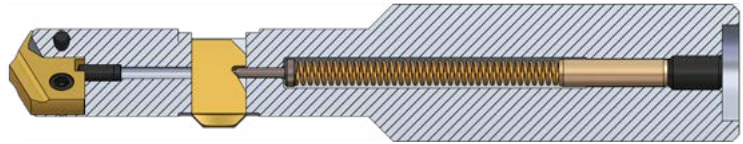
COMBI

CUSTOM

TOOL DESIGN

The COMBI tool is a unique innovation combining the proven throw-away style drill blades with HEULE's patented SNAP chamfering system to create a single tool. This tool offers several machining operations in one machine cycle and thus saving time, money and space.

The SNAP chamfering system provides high quality consistent chamfers on every bore.

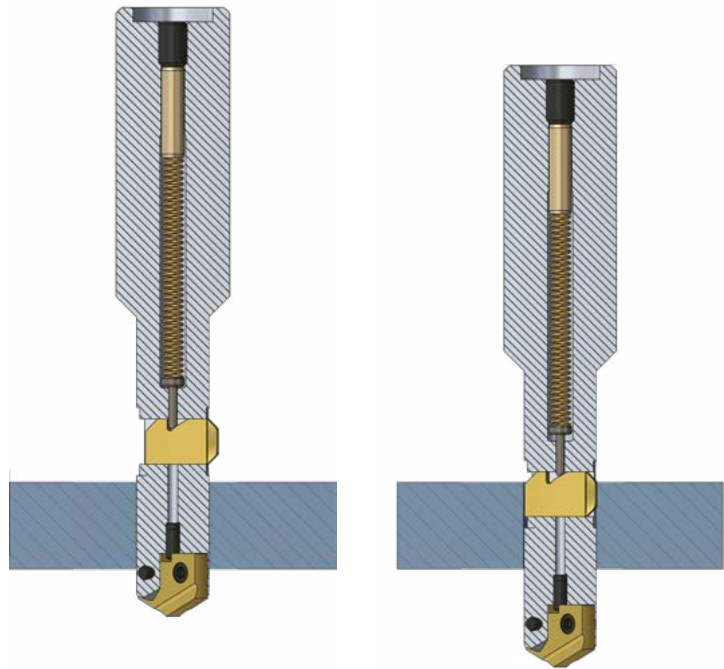


OPERATING PRINCIPLE

The COMBI tool uses a standard spade drill and SNAP chamfer blade to create drilled holes that are chamfered and deburred on the front and back of the workpiece in one operation.

The drill forward feeds completely through the workpiece until the spade drill insert clears the part. Then rapid feed so the SNAP blade is within clearance of the top of the part. Feed the tool forward to produce the front chamfer. When the SNAP blade is retracted in the bore, only the guiding surface touches the bore, protecting it from damage while the tool is fed through the part in rapid feed. There is no stopping or reversing the spindle.

When the blade reaches the back of the part past the burr, the chamfer blade extends to the cutting position and then the tool is retracted with the same working feed and speed. When the blade is again in the bore, the tool can be rapid fed out and on to the next bore.



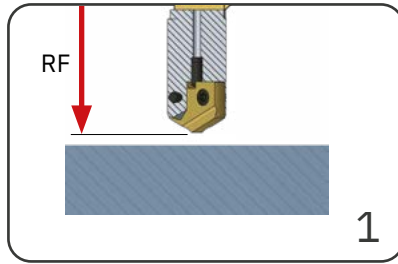
Operating instructions

> Blade change

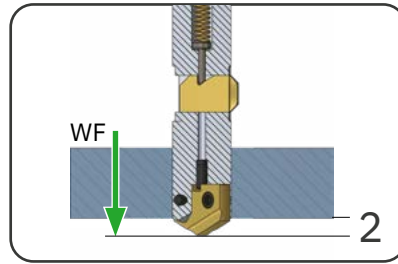
heuletool.com > Service > Media & download center



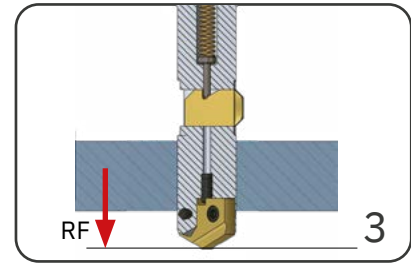
COMBI PROCESS STEPS



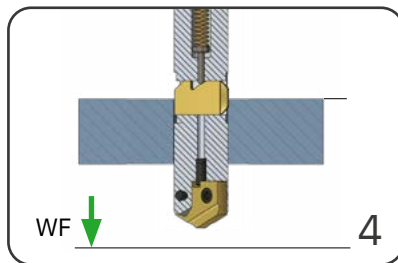
Rapid feed the tool to within clearance of the workpiece.



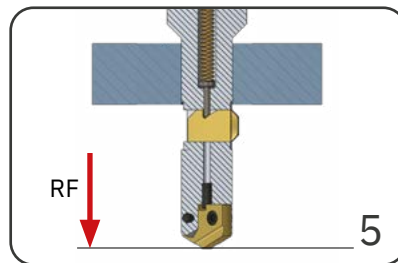
With forward working feed (WF), feed the tool through the workpiece until the hole is drilled and the drill tip is clear of the bore.



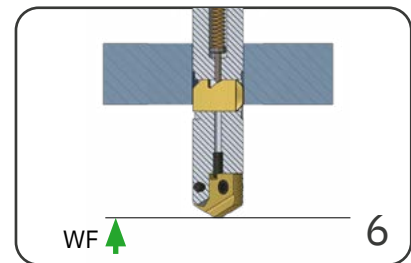
Rapid feed the tool so the SNAP blade is within clearance of the workpiece top surface or burr.



With working feed, cut the top chamfer. Continue feeding until the SNAP blade is completely retracted into the tool body.

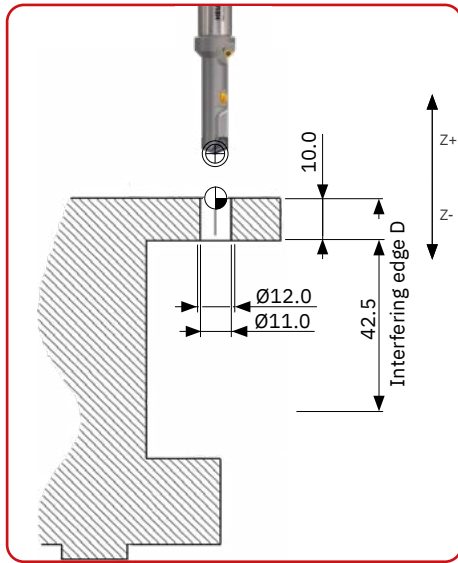


Use rapid feed to position the SNAP blade on the far side of the part. Position the tool so the SNAP blade is completely extended and clear of the part or burr.



With back working feed, cut the back chamfer. When the SNAP blade is completely within the tool and clear of the back surface, the tool can be extracted with rapid feed.

APPLICATION EXAMPLE



Application data

Material: Aluminum
 Bore Ø: 11.0 mm (.433)
 Chamfer Ø: 12.0 mm (.472)
 Workpiece: 10.0 mm (.394)
 Machining: both bore edges
 Cooling: internal coolant

Tool, blade and drill tip selection

Tool: GH-Q-O-3445, max. bore depth 12.0, with int. coolant
 Chamfering blade: GH-Q-M-03727, forward and backward cutting
 Drill tip: P-A-Y-1100-2D, bore Ø11.0 (.433)

Cutting data drilling

Cutting speed Vc: 800–1200 SFM
 Working feed fz: .007–.008 IPR

Cutting data chamfering

Cutting speed Vc: 210–400 SFM
 Working feed fz: .004–.012 IPR

CUTTING DATA

Material	Hardness BHN	Cutting Speed SFM MPM	IPR mm/rev			
			Bore Ø 9.5–11.5	Bore Ø 13.0–17.0	Bore Ø 18.0–24.0	Bore Ø 25.0–35.0
Carbon Steels*	100–250	220–320 67–98	.004–.006 0.10–0.15	.007–.008 0.18–0.20	.008–.010 0.20–0.25	.012–.014 0.30–0.35
Free machining Alloy*	125–340	260–320 79–98	.005–.006 0.13–0.15	.008–.009 0.20–0.23	.010–.012 0.25–0.30	.012–.015 0.30–0.38
High Alloy Steel*	250–350	140–250 43–76	.004–.006 0.10–0.15	.006–.008 0.15–0.20	.007–.011 0.18–0.28	.009–.013 0.23–0.33
Stainless Steel*	140–250	120–160 37–49	.005–.006 0.13–0.15	.007–.008 0.18–0.20	.008–.009 0.20–0.23	.010–.011 0.25–0.28
Steel Castings	90–250	130–350 40–107	.005–.006 0.13–0.15	.006–.008 0.15–0.20	.007–.010 0.18–0.25	.008–.012 0.20–0.30
Grey Cast Iron	150–330	240–320 73–98	.005–.006 0.13–0.15	.007–.009 0.18–0.23	.008–.011 0.20–0.28	.012–.015 0.30–0.38
Aluminum Alloys	30–180	800–1200 244–366	.007–.008 0.18–0.20	.011–.013 0.28–0.33	.014–.016 0.35–0.40	.014–.020 0.35–0.50

Note: Please find cutting data for chamfering blades (SNAP) on page 79

* HSS (Cobalt) is recommended when cutting steel



The cutting data listed are guide values! For materials that are difficult to machine or uneven bore edges, we recommend applying cutting speeds that are at the lower end of the range.

Selecting the correct COMBI tool

TOOL TABLES

The correct tool is generally selected by the bore-Ø to be produced. Next, the drill insert is selected. The final selection is the chamfering blade.

If the standard does not fit your needs, please do not hesitate to contact your HEULE representative for advice, either using the inquiry form or by telephone.

Still have
questions?

> HEULE Consulting and
Support

heuletool.com > contact



CONFIGURING COMBI TOOLS

1. Select drill insert



The correct drill insert is determined according to the following criteria:

1.1 Bore diameter

The drill inserts are available from stock in Ø increments of 0.5 mm. Other drill inserts in increments of 0.1 mm are available, but not necessarily from stock. Please inquire about availability and delivery date.

1.2 Cutting material

- 1: HSS
- 2: Carbide

1.3 Coating

- A: TiAlN for steel
- D: DLC for aluminum alloys

Example:

P-A-Y-0950-2A

Y: Series

0950: Bore diameter 9.5 mm

2: Cutting material carbide

A: Coating for steel

2. Select tool



Select the appropriate tool for the bore diameter corresponding to your application in the tool table.

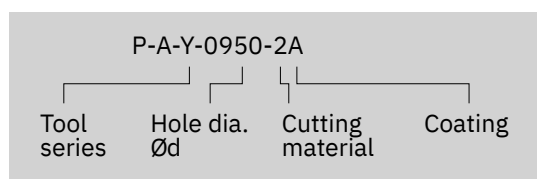
3. Select chamfering blade



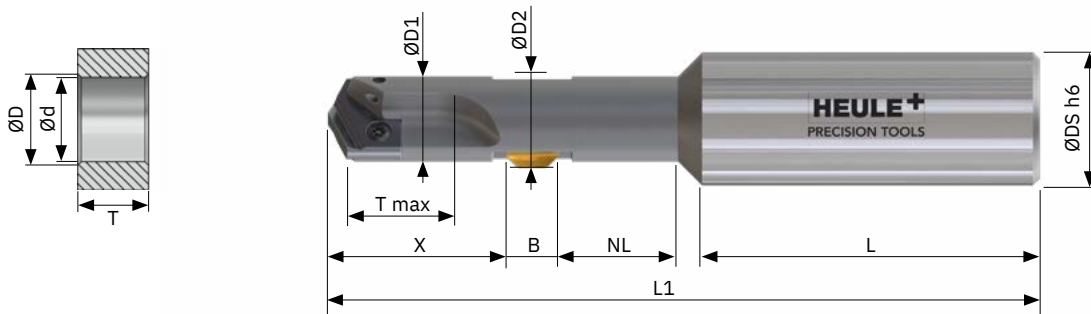
Select the appropriate blade for the required chamfer diameter from the tool table.

Special blades offering additional chamfer diameters are available upon request.

Overview



COMBI $\varnothing 9.5$ to 17.9 mm (.374" to .704") | Bore depth 1xd



Tool, drill tips and chamfer blade

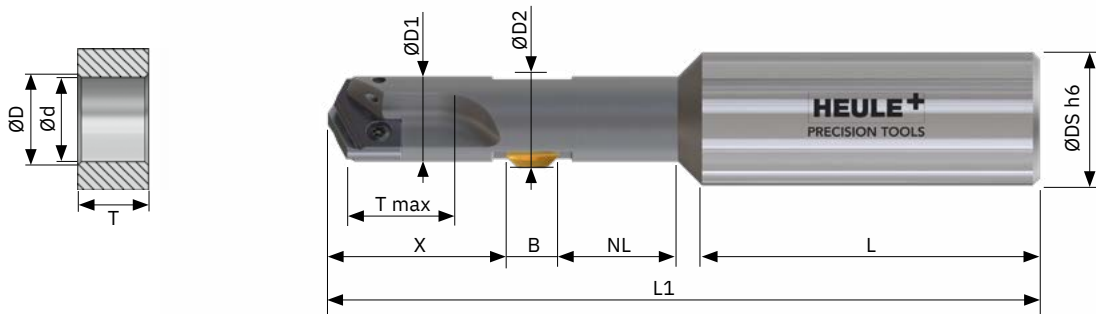
Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d=13.75$ (.541"); P-A-0-1375-2A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-A-0-1375-2A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 245

Bore $\varnothing$ d	Drill tips part no.	Tool part no.
9.53 .375	P-A-Y-0953-2A	GH-Q-O-3441
10.0 .394	P-A-Y-1000-2A	GH-Q-O-3441
10.32 13/32"	P-A-Y-1032-2A	GH-Q-O-3445
10.5 .413	P-A-Y-1050-2A	GH-Q-O-3445
11.0 .433	P-A-Y-1100-2A	GH-Q-O-3445
11.1 7/16"	P-A-Z-1110-2A	GH-Q-O-3449
11.5 .453	P-A-Z-1150-2A	GH-Q-O-3449
11.91 15/32"	P-A-Z-1191-2A	GH-Q-O-3449
12.0 .472	P-A-Z-1200-2A	GH-Q-O-3453
12.5 .492	P-A-Z-1250-2A	GH-Q-O-3453
12.7 1/2"	P-A-Z-1270-2A	GH-Q-O-3453
13.0 .511	P-A-0-1300-2A	GH-Q-O-3457S
13.5 .531	P-A-0-1350-2A	GH-Q-O-3457S
14.0 .551	P-A-0-1400-2A	GH-Q-O-3457S
14.29 9/16"	P-A-0-1429-2A	GH-Q-O-3457S
14.5 .571	P-A-0-1450-2A	GH-Q-O-3457S
15.0 .591	P-A-0-1500-2A	GH-Q-O-3461S
15.5 .610	P-A-0-1550-2A	GH-Q-O-3461S
15.88 5/8"	P-A-0-1588-2A	GH-Q-O-3461S
16.0 .630	P-A-0-1600-2A	GH-Q-O-3461S
16.5 .650	P-A-0-1650-2A	GH-Q-O-3461S
17.0 .669	P-A-0-1700-2A	GH-Q-O-3461S
17.46 11/16"	P-A-0-1746-2A	GH-Q-O-3461S

Blade Part no. front & back cutting (FAB) / GS geometry							
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
10.0	-03723	10.5	-03724	11.0	-03725		
10.5	-03724	11.0	-03725	11.5	-03726		
11.0	-03725	11.5	-03726	12.0	-03727		
11.0	-03725	11.5	-03726	12.0	-03727		
11.5	-03726	12.0	-03727	12.5	-03728		
11.5	-03726	12.0	-03727	12.5	-03728		
12.0	-03727	12.5	-03728	13.0	-03729		
12.5	-03728	13.0	-03729	13.5	-03730		
12.5	-03740	13.0	-03741	13.5	-03742	14.0	-03743
13.0	-03741	13.5	-03742	14.0	-03743	14.5	-03744
13.5	-03742	14.0	-03743	14.5	-03744	15.0	-03745
13.5	-03742	14.0	-03743	14.5	-03744	15.0	-03745
14.0	-03743	14.5	-03744	15.0	-03745	15.5	-03746
14.5	-03744	15.0	-03745	15.5	-03746	16.0	-03747
15.0	-03745	15.5	-03746	16.0	-03747	16.5	-03748
15.0	-03745	15.5	-03746	16.0	-03747	16.5	-03748
15.5	-03746	16.0	-03747	16.5	-03748	17.0	-03749
16.0	-03747	16.5	-03748	17.0	-03749	17.5	-03750
16.5	-03748	17.0	-03749	17.5	-03750	18.0	-03751
16.5	-03748	17.0	-03749	17.5	-03750	18.0	-03751
17.5	-03749	17.5	-03750	18.0	-03751	18.5	-03752
18.0	-03750	18.0	-03751	18.5	-03752	19.0	-03753
18.5	-03751	18.5	-03752	19.0	-03753	19.5	-03754

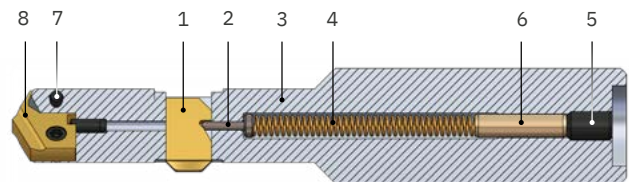
COMBI $\varnothing 9.5$ to 17.9 mm (.374" to .704") | Bore depth 1xd



Tool dimension table

Bore size	Bore depth													
$\varnothing d$ mm	T	$\varnothing D1$	$\varnothing D2$	B	L	L1	NL	X	$\varnothing DS$	Series				
9.50–10.19	12.0 .472	9.4 .370	+ = $\varnothing D + 0.6$ mm	8.0 .315	50.0 1.969	102.3 4.028	17.0 .669	21.3 .839	20.0	Y				
10.20–11.09	12.0 .472	10.0 .394		8.0 .315	50.0 1.969	102.3 4.028	17.0 .669	21.3 .839	20.0	Y				
11.10–11.99	12.0 .472	10.8 .425		8.0 .315	50.0 1.969	102.3 4.028	17.0 .669	21.3 .839	20.0	Z				
12.00–12.99	14.0 .551	11.8 .465	+ = $\varnothing D + 0.8$ mm	8.0 .315	50.0 1.969	104.8 4.126	18.0 .709	24.3 .957	20.0	Z				
13.00–14.99	16.0 .630	12.8 .504		8.0 .315	50.0 1.969	107.3 4.224	18.0 .709	26.8 1.055	20.0	0				
15.00–17.99	18.0 .709	14.8 .583		8.0 .315	50.0 1.969	115.8 4.560	24.0 .945	29.8 1.173	20.0	0				

Spare parts



Item	Description	Part no.
1	Blade	see page 244
2	Control bolt	GH-Q-E-0002
3	Tool body	
4	Spring	GH-H-F-0007
5	Set screw	GH-H-S-0119
6	Distance pin	see page 248
7	Torx Screw	see page 248
8	Drill tips	see page 244



Parts in stock highlighted in green

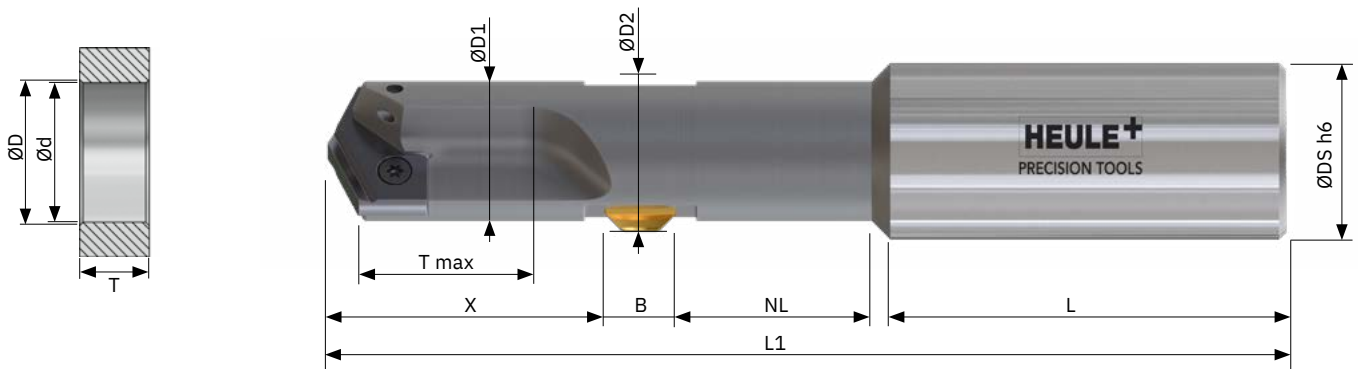


Programming
Page 240



Cutting data
Page 241

COMBI $\varnothing 18.0$ to 35.0 mm (.709" to 1.378") | Bore depth 1xd



Tool, drill tips and chamfer blade

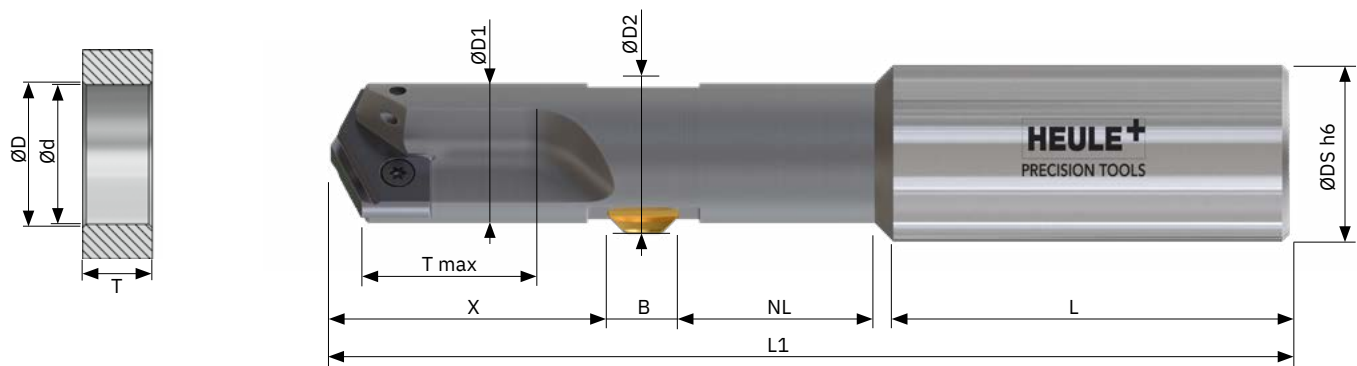
Standard tool **without** drill or chamfer blade

- Drill tips and blades (SNAP) are sold separately
- Special drill tip sizes are available: Order example: $\varnothing d = 26.5$ (1.043"); P-A-2-2650-2A
- Different coatings available: A: TiAlN for steel / D: DLC for aluminum alloys. Order example: P-A-D-2650-2A
- The achievable chamfer diameter may vary slightly depending on application parameters
- See dimensions on page 247

Bore $\varnothing$		Drill tips part no.	Tool part no.
d			
18.0	.709	P-A-1-1800-2A	GH-Q-O-3465S
18.5	.728	P-A-1-1850-2A	GH-Q-O-3465S
19.05	3/4"	P-A-1-1905-2A	GH-Q-O-3465S
19.5	.768	P-A-1-1950-2A	GH-Q-O-3465S
20.0	.787	P-A-1-2000-2A	GH-Q-O-3469S
21.0	.827	P-A-1-2100-2A	GH-Q-O-3469S
22.0	.866	P-A-1-2200-2A	GH-Q-O-3469S
23.0	.906	P-A-1-2300-2A	GH-Q-O-3469S
24.0	.945	P-A-1-2400-2A	GH-Q-O-3469S
25.0	.984	P-A-2-2500-2A	GH-Q-O-3473S
25.4	1.000	P-A-2-2540-2A	GH-Q-O-3473S
26.0	1.023	P-A-2-2600-2A	GH-Q-O-3473S
27.0	1.063	P-A-2-2700-2A	GH-Q-O-3473S
28.0	1.102	P-A-2-2800-2A	GH-Q-O-3473S
29.0	1.141	P-A-2-2900-2A	GH-Q-O-3473S
30.0	1.181	P-A-2-3000-2A	GH-Q-O-3477S
31.0	1.220	P-A-2-3100-2A	GH-Q-O-3477S
31.75	1 1/4"	P-A-2-3175-2A	GH-Q-O-3477S
32.0	1.260	P-A-2-3200-2A	GH-Q-O-3477S
33.0	1.300	P-A-2-3300-2A	GH-Q-O-3477S
34.0	1.339	P-A-2-3400-2A	GH-Q-O-3477S
35.0	1.378	P-A-2-3500-2A	GH-Q-O-3477S

Blade Part no.					
front & back cutting (FAB) / GS geometry					
$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-	$\varnothing D$	GH-Q-M-
19.0	-03753	19.5	-03754	20.0	-03755
19.5	-03754	20.0	-03755	20.5	-03756
20.0	-03755	20.5	-03756	21.0	-03757
20.5	-03756	21.0	-03757	21.5	-03758
21.0	-03770	22.0	-03771	23.0	-03772
22.0	-03771	23.0	-03772	24.0	-03773
23.0	-03772	24.0	-03773	25.0	-03774
24.0	-03773	25.0	-03774	26.0	-03775
25.0	-03774	26.0	-03775	27.0	-03776
26.0	-03775	27.0	-03776	28.0	-03777
26.0	-03775	27.0	-03776	28.0	-03777
27.0	-03776	28.0	-03777	29.0	-03778
28.0	-03777	29.0	-03778	30.0	-03779
29.0	-03778	30.0	-03779	31.0	-03780
30.0	-03779	31.0	-03780	32.0	-03781
31.0	-03780	32.0	-03781	33.0	-03782
31.0	-03780	32.0	-03781	33.0	-03782
32.0	-03781	33.0	-03782	34.0	-03783
33.0	-03782	34.0	-03783	35.0	-03784
34.0	-03783	35.0	-03784	36.0	-03785
35.0	-03784	36.0	-03785	37.0	-03786
36.0	-03785	37.0	-03786	38.0	-03787

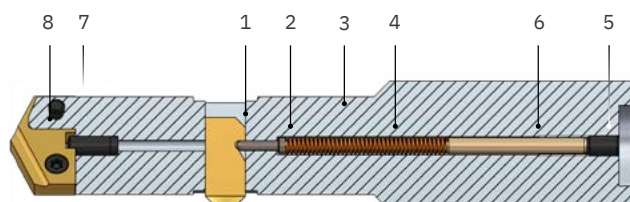
COMBI $\varnothing 18.0$ to 35.0 mm (.709" to 1.378") | Bore depth 1xd



Tool dimension table

Bore size	Bore depth												
Ød mm	T	ØD1	ØD2	B	L	L1	NL	X	ØDS	Series			
18.00–19.99	20.0 .787	17.5 .689	= ØD + 0.8mm	8.0 .315	56.0 2.205	125.6 4.945	22.0 .866	34.6 1.362	25.0	1			
20.00–24.99	24.0 .945	19.8 .780		= ØD + 1.0mm	8.0 .315	56.0 2.205	136.6 5.379	28.0 1.102	39.6 1.559	25.0	1		
25.00–29.99	30.0 1.181	24.2 .953	10.0 .394		60.0 2.362	155.6 6.126	32.0 1.260	48.6 1.913	32.0	2			
30.00–34.99	38.0 1.496	29.8 1.173	10.0 .394		60.0 2.362	171.6 6.756	40.0 1.575	59.6 2.346	32.0	2			

Spare parts



Item	Description	Bore $\varnothing$ range 18.00–19.99 mm	Bore $\varnothing$ range 20.00–35.00 mm
1	Blade	see page 246	see page 246
2	Control bolt	GH-Q-E-0002	GH-Q-E-0003
3	Tool body		
4	Spring	GH-H-F-0007	GH-H-F-0011
5	Set screw	GH-H-S-0119	GH-H-S-0119
6	Distance pin	see page 248	see page 248
7	Torx Screw	see page 248	see page 248
8	Drill tips	see page 246	see page 246



Parts in stock highlighted in green



Programming
Page 240



Cutting data
Page 241

COMBI spare parts

Bore size Ød mm	Series	Distance pin Part no.	Torx screw Part no.
9.50–10.19	Y	GH-Q-E-0021	GH-H-S-0070 (IP7)
10.20–11.09	Y	GH-Q-E-0021	GH-H-S-0070 (IP7)
11.10–11.99	Z	GH-Q-E-0021	GH-H-S-0071 (IP7)
12.00–12.99	Z	GH-Q-E-0021	GH-H-S-0071 (IP7)
13.00–14.99	0	GH-Q-E-0021	GH-H-S-0066 (T8)
15.00–17.99	0	GH-Q-E-0022	GH-H-S-0067 (IP8)
18.00–19.99	1	GH-Q-E-0023	GH-H-S-0068 (IP9)
20.00–24.99	1	GH-Q-E-0023	GH-H-S-0069 (IP9)
25.00–29.99	2	GH-Q-E-0025	GH-H-S-0072 (IP15)
30.00–34.99	2	GH-Q-E-0026	GH-H-S-0072 (IP15)

COMBI FAQ

Question	Causes	Remedy
Built-up edge	• Cutting speed too low • Insufficient cooling / lubrication • Incorrect coating for the material	• Increase cutting speed • Increase coolant pressure • Select another coating
Chip jam	• Working feed rate too high for chip removal • Drill flute too short for bore depth • Insufficient cooling	• Reduce working feed rate • Increase coolant pressure • Control chip length with peck cycle
Large burr formation at the exit of the bore	• Cutting values too high • Insufficient cooling • Drill insert/head worn	• Reduce cutting speed • Increase coolant pressure • Replace drill insert
Fluctuating accuracy	• Working feed rate too high • Insufficient cooling • Spindle/setup not stable	• Reduce working feed rate • Use proper screw torque settings • Check radial run-out • Check spindle and setup stability
Poor surface quality	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable • Drill insert/head worn	• Increase or reduce working feed rate and cutting speed • Increase coolant pressure • Check radial run-out • Check spindle and setup stability • Replace drill insert • Improve drilling process
Vibration / chatter	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Increase or reduce the cutting speed • Increase or reduce the working feed rate • Increase coolant pressure • Check radial run-out • Check spindle and setup stability • Use proper screw torque settings
Wear on cutting edge	• Incorrect cutting values • Insufficient cooling • Spindle/setup not stable	• Increase cutting speed • Reduce working feed rate • Increase coolant pressure • Check spindle and setup stability

SNAP18 MODULE

Your drill body.
Our chamfering module.
Your time savings.

The advantages – Your benefit

Combine your tried-and-tested drill body with the advantages of the SNAP18 module. Reduce the number of process steps and thus time and costs. For maximum optimization, two modules for higher working feed rates can also be integrated into one drill body.

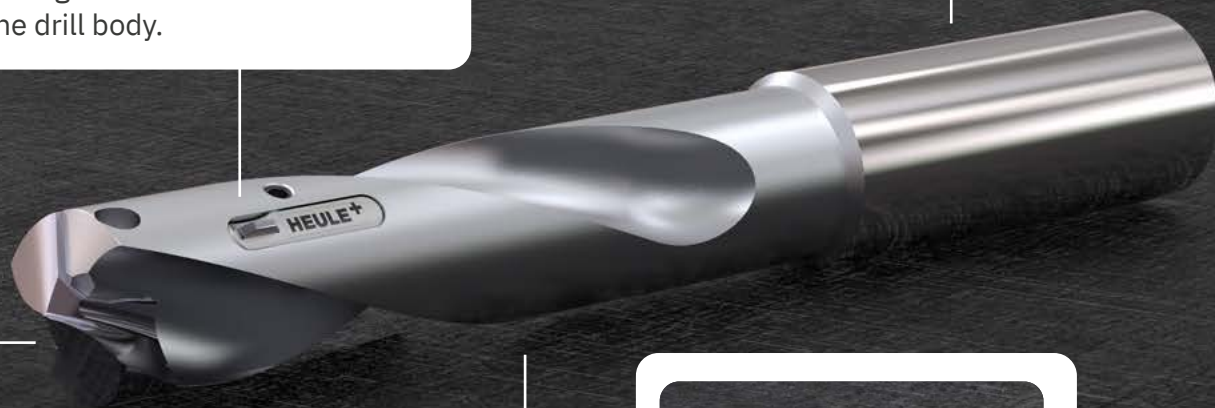
Just one operation and the bore is complete, including chamfer on both bore edges, without turning the workpiece and without changing tools.



Clean, reliable and repeatable results. The chamfering capacity is 0.5 to 1.0 mm depending on the blade selected.



The module is designed for drill bodies from a bore diameter of 18.0 mm. It is positioned approx. 25.0 mm behind the drill insert.





THE RANGE

Module

Bore Ø range	Max. chamfering capacity	Series	Part no.
18.0–50.0* .709–1.969	1.0 .039	SNAP18	SMC18-O-0900

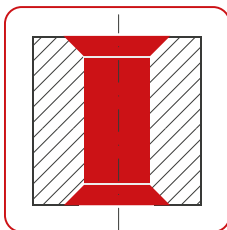
* There is a smaller option for chamfering only starting from 12.0 mm.

Blade DR geometry 90°

Chamfering capacity	Part no. forward and backward cutting		Part no. backward cutting only	
	Coating A for steel, titanium, Inconel	Coating D for aluminum	Coating A for steel, titanium, Inconel	Coating D for aluminum
0.5 .020	SMC18-M-0200-A	SMC18-M-0300-D	SMC18-M-0250-A	SMC18-M-0350-D
1.0 .039	SMC18-M-0210-A	SMC18-M-0310-D	SMC18-M-0260-A	SMC18-M-0360-D

The SNAP18 Module is designed for integration into standard drills. Please contact us should you have an application to ensure smooth integration. If the required tool is not included in the range above, the **CUSTOM** range can offer you a possible solution. If required, we can also develop custom solutions that are fully tailored to your application.

FIELD OF APPLICATION



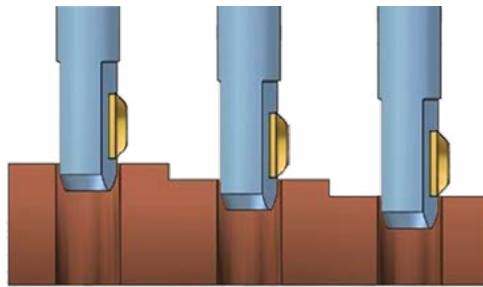
OPERATING PRINCIPLE

SNAP technology at the core

The guiding section of the blade causes the blade to retract into the tool body once the maximum chamfer size has been achieved. As a result, parts with fluctuating tolerances of surface/edge positions (i.e. with castings), are machined with consistent chamfer results every time. The spherically ground sliding section of the blade enables the tool to pass through the workpiece without damaging the surface of the bore.

Easy installation

A pocket for mounting the SNAP18 Module is machined in the drill body as close as possible to the drill insert. The crucial advantage here is that you can utilize your own tried-and-tested drill technology without having to change drill supplier.

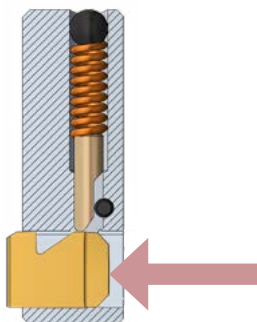


BLADE CHANGE

A single screw holds the module in the drill body. To change the blade, loosen the screw, remove the module and replace the carbide blade in seconds using the assembly aid for blade change.

Assembly aid for blade change

PRO version for more frequent blade changes and BASIC for occasional blade changes.



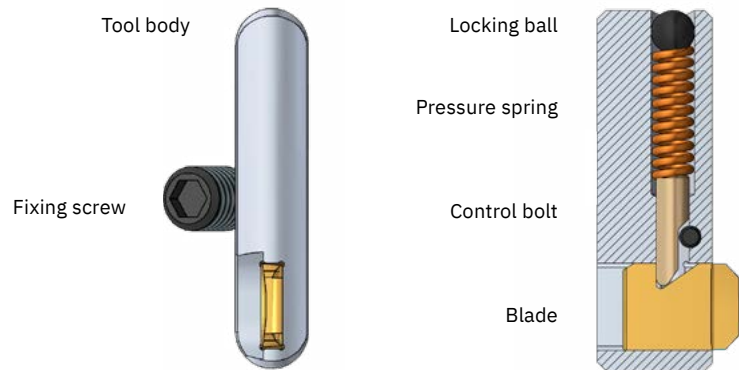
PRO
Part no. SMC18-V-0006



BASIC
Part no. SMC18-V-0010

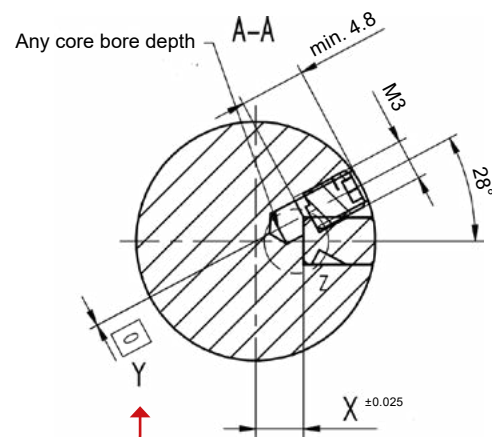
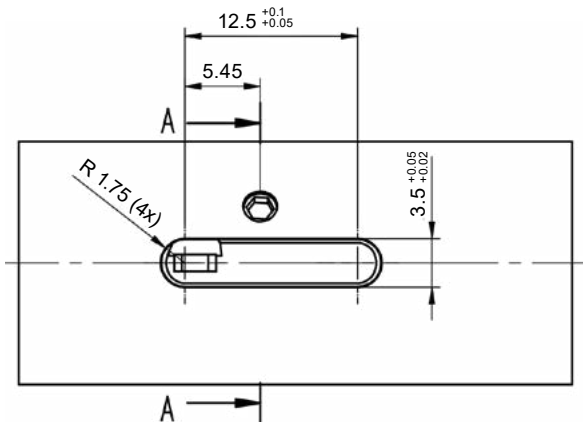
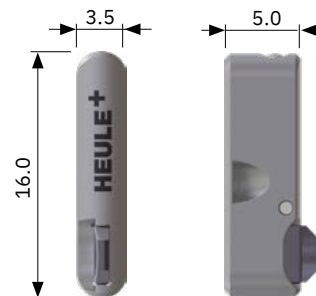
TOOL DESIGN

Both the module and the blades were developed for the tough industrial environment and designed for series production. The compact tool concept with few wearing parts delivers impressive performance.



INSTALLATION INSTRUCTIONS

The existing drill body must be machined with a pocket by the customer – in consultation with the drill body manufacturer. A single screw holds the module in the drill body.



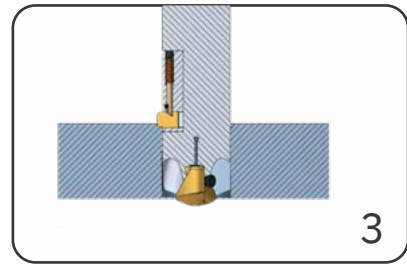
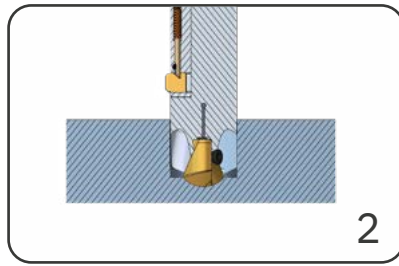
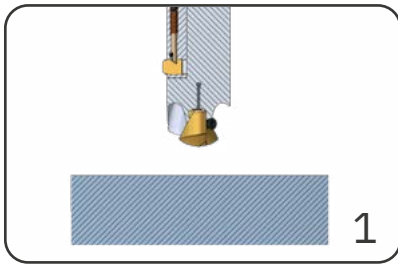
Formula for calculating dimension Y:

$$Y = \frac{(\text{bore diameter} - 18.0)}{2} \times \sin(28^\circ)$$

Formula for calculating dimension X:

$$X = \frac{\text{Bore diameter}}{2} - 5.5$$

PROCESS STEPS SNAP18 MODULE

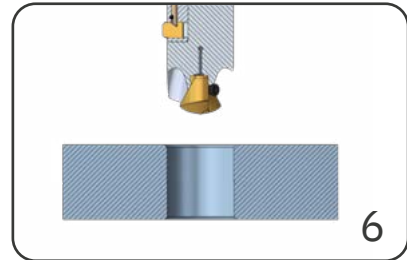
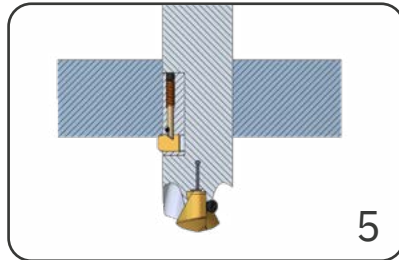
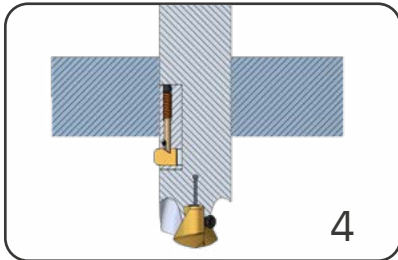


The direction of rotation does not need to be changed and the spindle does not need to be stopped at any point during the machining process. The drill tool is positioned in front of the workpiece in rapid feed.

Drill the bore (according to the manufacturer's cutting data) until the module blade is just above the upper edge of the bore.

IMPORTANT:
Drilling and chamfering can be done simultaneously.

Carry out chamfering (according to the HEULE cutting data) until the blade is fully retracted (chamfer depth +1mm).



Complete the drilling process and move to the starting position for machining the back edge (burr height + 1 mm).

Carry out chamfering until the blade is fully retracted (chamfer depth +1 mm).

IMPORTANT:
To avoid blade breakage, the edge of the bore must always (even after the machine stops!) be traversed through at working speed and working feed.

Move out of the workpiece in rapid feed and move to the next bore.

Operating instructions

> Blade change

heuletool.com > Service >
Media & download center



CUTTING DATA

Material	Hardness BHN	SFM <i>MPM</i>	IPR <i>mm/rev</i>
Carbon Steels	100–250	150–250 <i>45–64</i>	.001–.003 <i>0.02–0.07</i>
Free machining Alloy	125–340	100–260 <i>67–107</i>	.001–.002 <i>0.02–0.05</i>
High Alloy Steel	250–350	65–160 <i>20–49</i>	.001–.002 <i>0.02–0.05</i>
Stainless Steel	140–250	30–100 <i>9–30</i>	.001–.002 <i>0.02–0.05</i>
Steel Castings	90–250	130–230 <i>40–70</i>	.001–.002 <i>0.02–0.05</i>
Grey Cast Iron	150–330	150–300 <i>45–91</i>	.001–.003 <i>0.02–0.07</i>
Nodular Cast Iron	140–310	130–220 <i>40–67</i>	.001–.002 <i>0.02–0.05</i>
Aluminum Alloys	30–180	210–400 <i>64–121</i>	.001–.003 <i>0.02–0.07</i>
Nickel-based Alloys	140–310	30–65 <i>9–20</i>	.001–.002 <i>0.02–0.05</i>
Titanium Alloys	120–334	30–65 <i>9–20</i>	.001–.002 <i>0.02–0.05</i>
Copper-Brass-Bronze	80–202	65–300 <i>20–91</i>	.001–.003 <i>0.02–0.07</i>

¹⁾ Higher cutting feed rates can be achieved by installing two or more modules.



The cutting values for drilling are generally higher than those for chamfering. With the installation of at least two SNAP 18 Modules, the chamfering performance can be optimized to such an extent that little or no compromise needs to be made in terms of processing speed.

CUSTOM

Customized tools for maximum output.

The advantages – Your benefit

Special requirements sometimes require custom solutions. Be it in relation to the complexity of the task to be solved, or the demand for maximum economic efficiency and process reliability.

As a manufacturer with its own development team and testing center, HEULE has decades of experience and expertise to solve demanding problems in the shortest possible time.



Tried and tested HEULE technology is customized to your specific application.



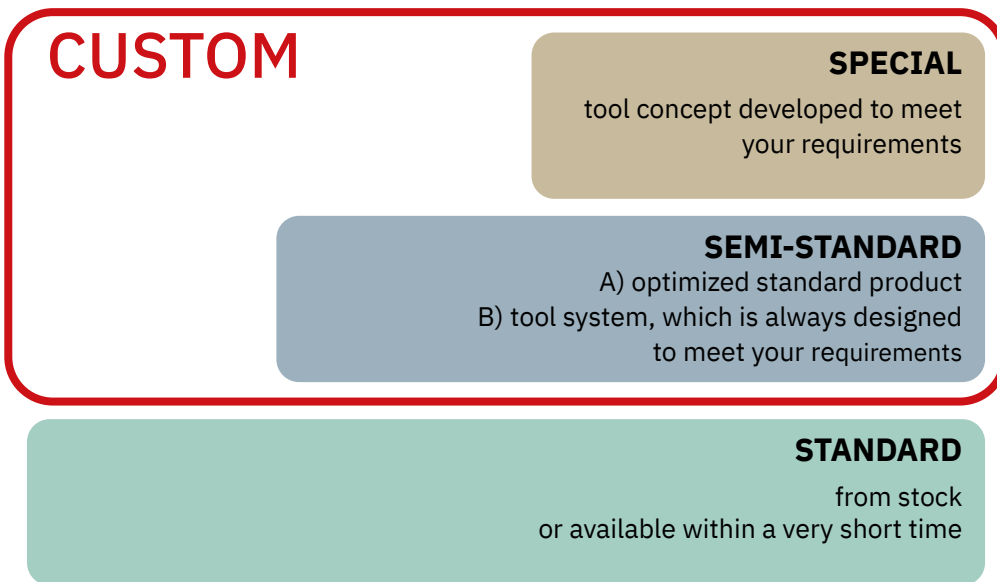
Whether a modified standard tool or a customized solution, our focus is on optimizing your machining process for maximum reduction of your unit costs.

OUR RANGE OF SOLUTIONS

Our mission is to **reduce your production costs**. This involves several components: **optimized process times, long service life of the cutting tools, maximum process reliability and simple maintenance and availability of the tool.**

If a tool from our standard range only fulfils your requirements to a limited extent: no problem. As an innovative problem solver, HEULE offers the option of customizing. You receive a semi-standard tool customized to your requirements or we can develop a custom solution for you.

With our development team, test center and production under one roof, we can offer you solutions that exceed your expectations in the shortest possible time. The cornerstone for this is open communication and partnership-based cooperation.



**OUR
PERFORMANCE
PACKAGE**

Page 10

Great support on the way to the optimum solution!

CONSULTING AND SUPPORT

Supporting your manufacturing process is our goal. Our HEULE support team provides the expertise and know-how to bring your solution to life. We offer a personal service and are always ready to help.

Service	Description
Consulting during the Design Stage	Our experts will help you to design your tool and process. We will provide you with the necessary technical information and support you in the design process.
Technical Consulting	Our experts will help you to design your tool and process. We will provide you with the necessary technical information and support you in the design process.
Individual Solutions	Our experts will help you to design your tool and process. We will provide you with the necessary technical information and support you in the design process.
Testing at the HEULE Test Centre	Our experts will help you to design your tool and process. We will provide you with the necessary technical information and support you in the design process.
Tool Test	Our experts will help you to design your tool and process. We will provide you with the necessary technical information and support you in the design process.

Superior Tests at the Customer's Plant

Programming Support

On Site Commissioning

After Sales Service

CUSTOM

257

Custom solutions

SEMI-STANDARD TOOLS

Standard tools from the COFA, DL2, SNAP, DEFA, BSF and VEX product groups can be adapted and modified to achieve the required result. Such solutions deviate only slightly from the standard and therefore do not have to be designed from scratch. Possible modifications include:

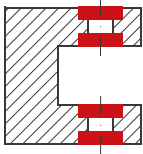
- a shorter or longer working length
- customized tool dimensions to fit your bore
- modified blade geometry
- a special blade coating
- etc.

The **SOLO** tool system and the tools for cross bore deburring from the **X-BORES** series (**COFA-X**, **SNAP-X** and **CBD**) are always designed and optimized to meet your requirements.

SOLO

Tool for spotfacing and counterboring on any machine, forwards and backwards in one operation.

For details see page 200

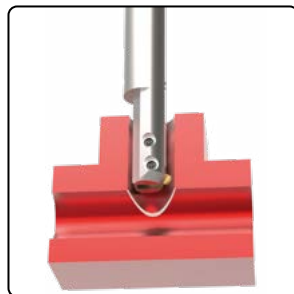
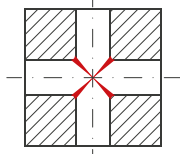


COFA-X



Deburring tool for cross bores up to a bore ratio of 1:1.

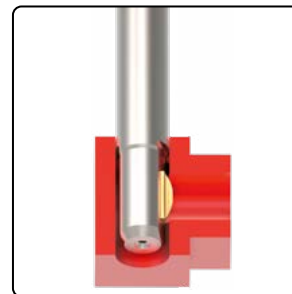
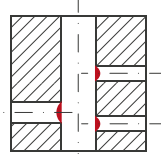
For details see page 56



SNAP-X



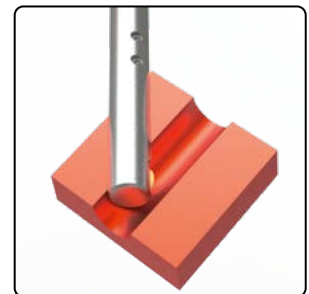
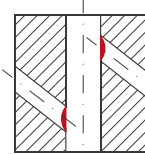
Tool for penetrating the main bore, which deburrs the incoming cross bores.



CBD



Deburring tool for bore intersections with a small ratio of main bore to cross bore that enters the cross bore at a very flat angle.



SPECIAL TOOLS

These are tool solutions that are developed, designed and produced for specific applications. HEULE draws on tried and tested HEULE technologies and combines or adapts them according to your requirements.

Are you looking for a new solution?
Get in touch with us!
We look forward to hearing from you.



Get in contact

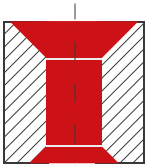
> HEULE Consulting and Support

heuletool.com > contact



EXAMPLE: COMBINATION TOOLS

Combination tools combine several operations in one tool for maximum efficiency in a single operation
(For example: drilling, countersinking, chamfering backwards)



CHECKLIST FOR FEASIBILITY CHECK

Workpiece

Workpiece 3D model (STEP, DXF)
Material, hardness, surface

Production information

Production volume per year
Machine (type, internal cooling, ext. cooling, compressed air)
Cycle time
Shank type

Current solution

Description of the current tool/solution
Production sequence
Special requirements

New solution

Important aspects and requirements of the new solution

On-site worldwide

HEULE+
PRECISION TOOLS



✚ Head office

HEULE Werkzeug AG
Balgach / Switzerland
Tel. +41 71 726 38 38
info@heule.com
www.heule.com

✚ Subsidiaries

HEULE Tool Corporation
Loveland OH / USA
Tel. +1 513 860 9900
info@heuletool.com
www.heuletool.com

● Global Sales Network

50 exclusive partners in
35 countries worldwide
www.heule.com

HEULE Precision Tools
(Wuxi) Co. Ltd.
Wuxi / China
Tel. +86 510 8202 2404
china@heule.cn
www.heule.cn

HEULE Korea Co.Ltd.
Gyeonggi-do / South Korea
Tel. +82 31 8005 8392
info@heule.co.kr
www.heule.com/kr

HEULE Germany GmbH
Wangen im Allgäu / Germany
Tel. +49 7522 99990 60
info@heule.de
www.heule.de

ONE OPERATION