

BSF

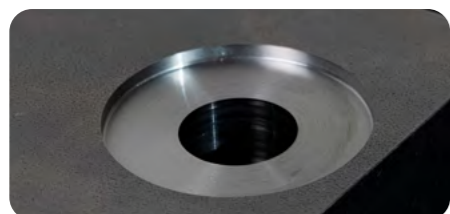
Efficient spotfacing up to 2.3 x bore diameter.
Reliable, economical and easy to use.

The advantages – Your benefit

BSF can be used on a wide variety of machines. Thanks to the modular system, BSF adapts to existing blade activation options.



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



The clean counterbores up to 2.3x diameter d in demanding materials and the above-average service life of the carbide blades are impressive.



BSF machines inaccessible bores automatically and without turning the workpiece. Reliable operation thanks to integrated blade window flushing.

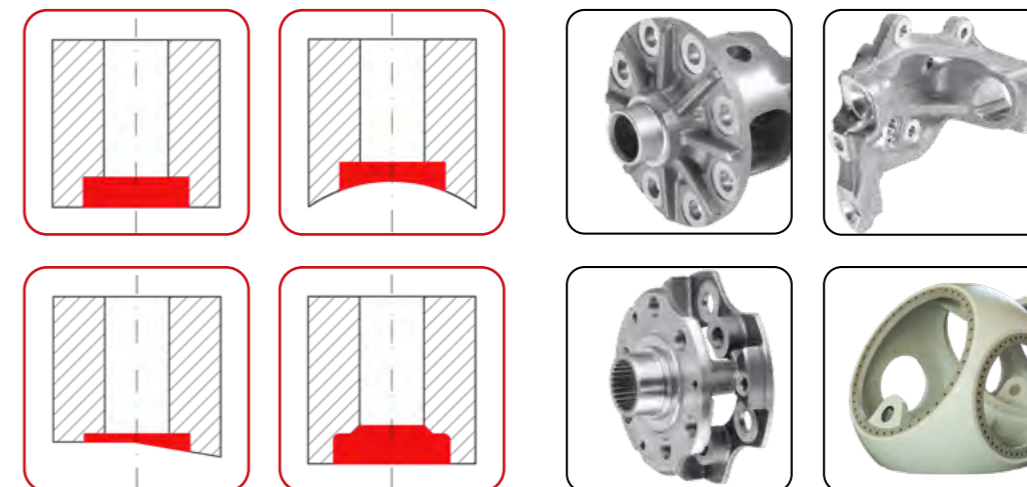
THE RANGE



Bore Ø range mm	C-bore Ø range mm	Working L. mm	Series	Catalogue Page
Ø6.5–Ø7.0	Ø9.5–Ø16.5	40.0	Series A	138
Ø7.5–Ø8.5	Ø11.0–Ø20.0	40.0	Series B	139
Ø9.0–Ø10.0	Ø13.5–Ø23.0	50.0	Series C	141
Ø10.5–Ø11.5	Ø15.5–Ø26.5	50.0	Series D	143
Ø12.0–Ø14.0	Ø18.0–Ø32.5	50.0	Series E	146
Ø14.5–Ø17.0	Ø21.5–Ø39.5	70.0	Series F	151
Ø17.5–Ø21.0	Ø26.0–Ø49.0	70.0	Series G	157

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

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 conversion kits, see page 170.



Standard BSF

Use on machines with integrated coolant. IC pressure min. 20 bar, max. 50 bar.



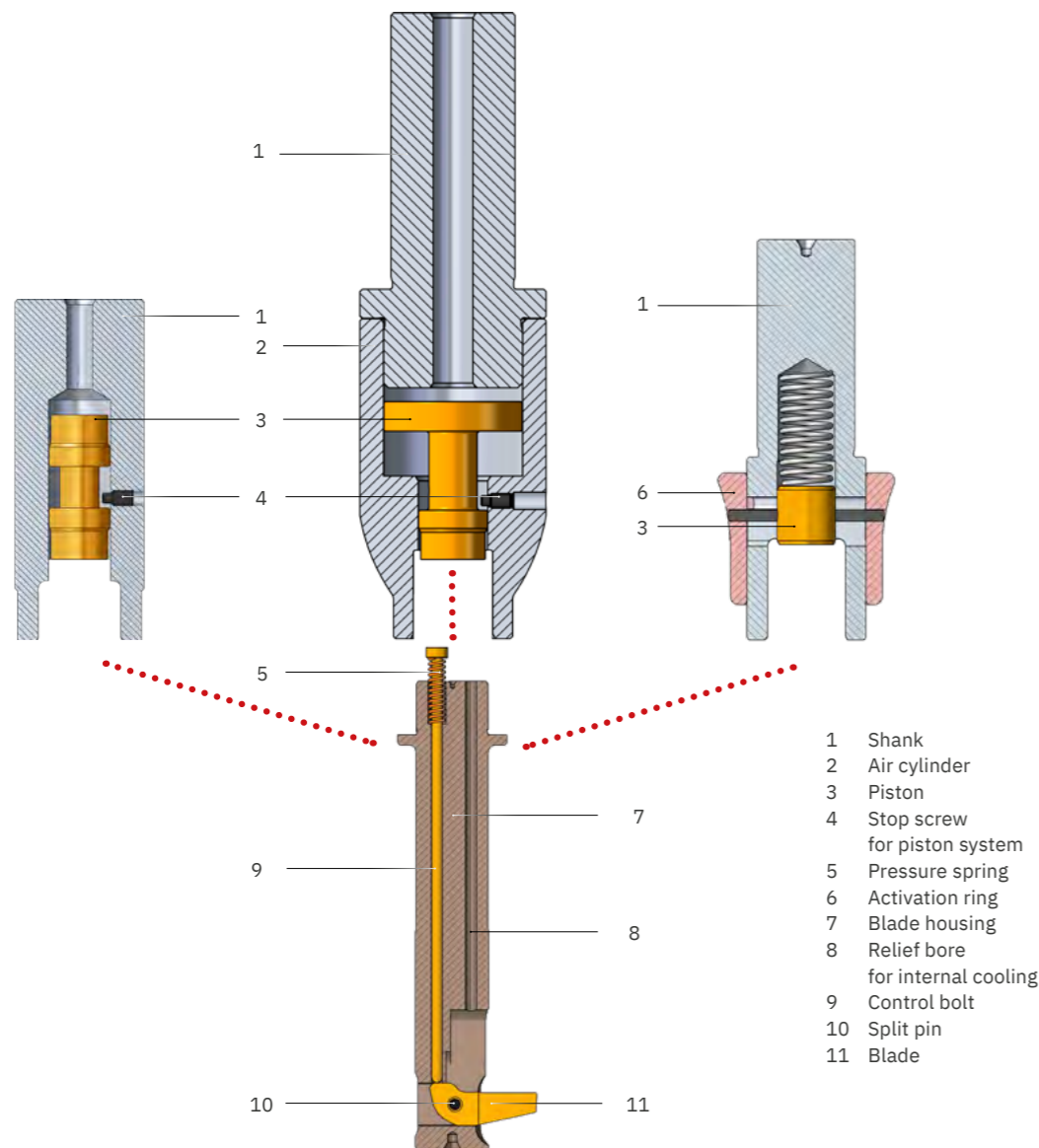
BSF Air

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



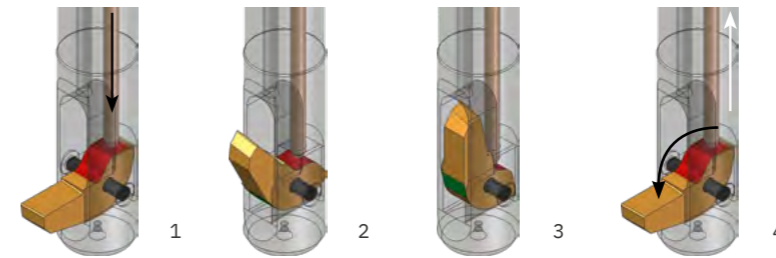
BSF Manual

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



- 1 Shank
- 2 Air cylinder
- 3 Piston
- 4 Stop screw for piston system
- 5 Pressure spring
- 6 Activation ring
- 7 Blade housing
- 8 Relief bore for internal cooling
- 9 Control bolt
- 10 Split pin
- 11 Blade

OPERATING PRINCIPLE



1 The internal coolant (IC), the air or manual actuation applies pressure on the piston. The blade is folded in by the control bolt, which presses on the back surface (red).

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 in the axial direction (Z-axis).

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.

COUNTERBORING TOLERANCE

Bore diameter tolerance in mm	+0.1 0	+0.2 0
Counterbore diameter tolerance in mm	±0.2 ¹⁾	±0.3 ¹⁾

¹⁾ For a narrower counterbore diameter tolerance band, see page 171.



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

Operating instructions

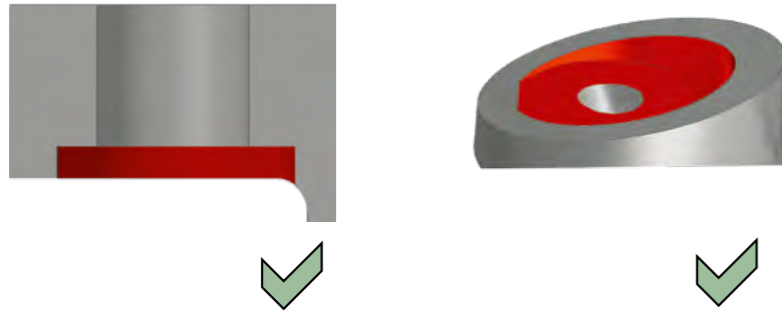
- > Blade change
- > Operating BSF Manual

heule.com > Service > Media & Download Centre



APPLICATION LIMITS

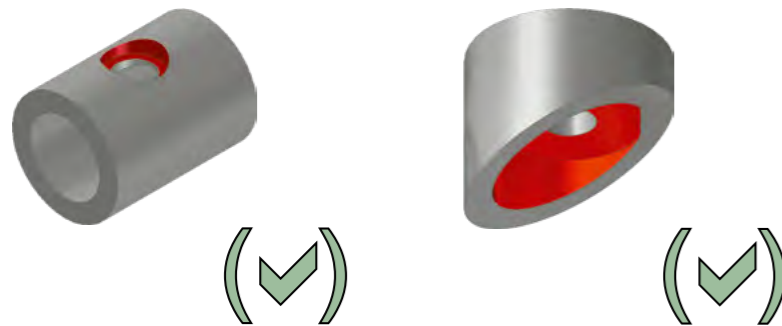
Machining possible



Surfaces or partially interrupted cuts up to a maximum pitch angle of 20° are permissible.

Important: Surface with interruption **must** be machined without internal cooling (IC) / compressed air until full cut is achieved.

Machining conditionally possible



Excessive curvatures or pitch angles can cause the blade and tool to break. Therefore, such applications are only feasible to a limited extent. The HEULE specialists are happy to advise you.

Machining not possible



Excessive pitch angles and fully interrupted cuts, such as with punching, slotting, etc., cause the blade and tool to break.

The SOLO tool system is capable of machining workpieces with a partially interrupted or completely interrupted cut (see page 178), presuming a suitable bore/counterbore ratio.

MACHINE REQUIREMENTS

	BSF Blade activation with internal coolant	BSF Air Blade activation with compressed air	BSF Manual Manual blade activation
Machine	<ul style="list-style-type: none"> Activation with coolant, internal coolant through spindle centre, at least 20 bar Operating pressure 20-50 bar. Attention: Reduce coolant pressure for soft materials! Coolant supply can be programmed on/off. Filtered coolant circuit with filter size $\leq 25 \mu\text{m}$ 	<ul style="list-style-type: none"> Activation with compressed air cooling through spindle centre, at least 5 bar Operating pressure up to 20 bar max. 	no specific machine requirements
Activation speed for unfolding the blade	up to 5000 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. This is recommended for those with a Weldon shank.		

CUTTING DATA

Description	Tensile str. RM (MPa)*	B*	Cutting speed	Working feed rate mm/rev					
				Series and bore diameter					
				A 6.50- 7.00	B 7.50- 8.50	C 9.00- 11.50	D 10.50- 11.50	E/F/G 12.00- 21.00	
P0	Low-carbon steel, long-chipping, C <0.25%	<530	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P1	Low-carbon steel, short-chipping, C <0.25%	<530	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P2	Steel with carbon content C >0.25%	>530	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P3	Alloy steel and tool steel, C >0.25%	600-850	A	30-50	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P4	Alloy steel and tool steel, C >0.25%	850-1400	A	30-50	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P5	Ferritic, martensitic and stainless PH steel	600-900	A	15-30	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
P6	High-strength ferritic, martensitic and PH stainless steel	900-1350	A	15-30	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
M1	Austenitic stainless steel	<600	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
M2	High-strength austenitic stainless steel	600-800	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
M3	Duplex stainless steel	<800	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
K1	Cast iron	125-500	A	50-90	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
K2	Ductile cast iron with up to medium strength	<600	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
K3	High-strength cast iron and bainitic cast iron	>600	A	40-70	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
N1	Wrought aluminium alloys	-	D	60-120	0.02-0.03	0.02-0.04	0.02-0.05	0.02-0.08	0.05-0.10
N2	Aluminium alloys with low Si content	-	D	60-120	0.02-0.03	0.02-0.04	0.02-0.05	0.02-0.08	0.05-0.10
N3	Aluminium alloys with high Si content	-	D	60-120	0.02-0.03	0.02-0.04	0.02-0.05	0.02-0.08	0.05-0.10
N4	Copper, brass and zinc base	-	D	50-90	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
S1	Iron-based heat-resistant alloys	500-1200	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
S2	Cobalt-based heat-resistant alloys	1000-1450	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
S3	Nickel-based heat-resistant alloys	600-1700	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08
S4	Titanium and titanium alloys	900-1600	A	10-20	0.01-0.02	0.01-0.03	0.02-0.04	0.03-0.06	0.03-0.08

* coating for blades

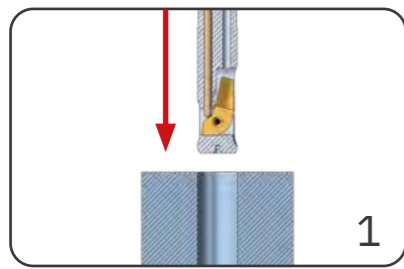


The cutting data listed are guide values! They depend on the amount of slope of the uneven surface. (e.g. high slope > low cutting value).
For materials that are difficult to machine, we recommend applying cutting speeds that are at the lower end of the range.

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

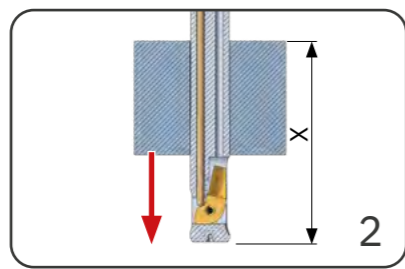
BSF PROCESS STEPS



- Rapid feed to 1.0 mm in front of the bore
- Spindle stop!
- Internal coolant on (20–50 bar)
- Dwell time 2–5 sec.

Example
 G0 Z+1 M5
 M88 (internal coolant on¹⁾)
 G4X3

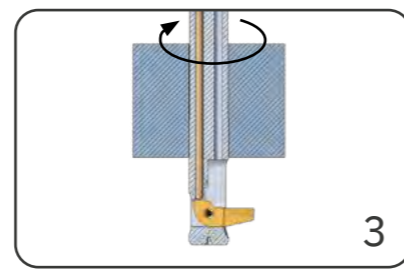
¹⁾ Machine command for internal coolant ON (M88), OFF (M89). Your machine may have different M commands for internal coolant (see manufacturer's specifications for the control unit)



- Rapid feed to position X

G0 Z-54.5²⁾

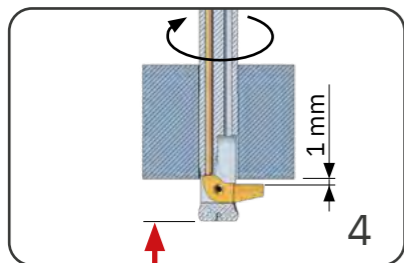
²⁾ 54.5 = 30.0 mm + swing length AL (see page 144) 22.5 mm + safety clearance 2.0 mm



- Switch off internal coolant
- Activation speed on
- Dwell time 1–2 sec³⁾

M89 (internal coolant off)
 S2000 M3
 G4X2

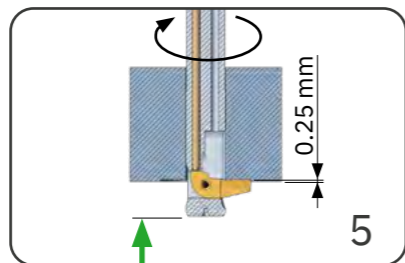
³⁾ Take into account the pressure reduction time of the internal coolant system for the machine in question



- Rapid feed up to the bore edge, observe safety clearance of 1.0 mm
- Cutting speed set
- External coolant on

G0 Z-40.6⁴⁾
 S400 M3
 M8

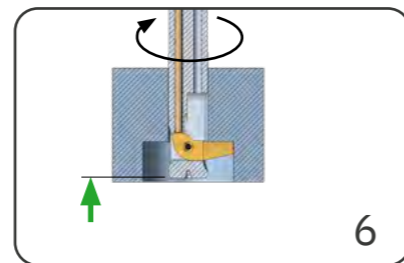
⁴⁾ 40.6 = 30.0 + 9.6 + 1.0



- Working feed until blade is fully in the cut

G1 Z-39.35⁵⁾ F20

⁵⁾ 39.35 = 30.0 + 9.6 - 0.25



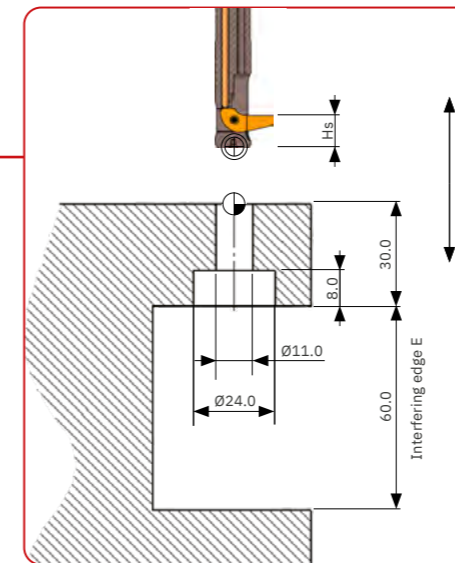
- Internal coolant on
- Working feed to counterbore depth
- Free cutting without internal coolant recommended⁷⁾

M88
 G1 Z-31.6⁶⁾

⁶⁾ 31.6 = 30.0 + 9.6 - 8.0

⁷⁾ For soft materials, machine approx. 1.0 mm before counterbore depth without internal coolant

APPLICATION AND PROGRAMMING EXAMPLE



Counterbore M10 for socket head cap screw with inner hexagonal recess in accordance with DIN 974-1

Application data

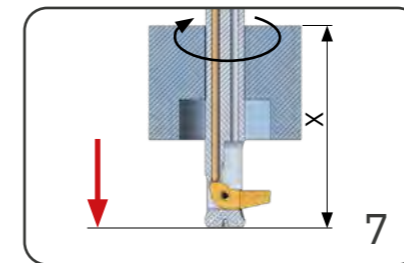
Bore Ø:	Ø11.0 mm
Material:	C45
Counterbore Ø:	Ø24.0 mm
Counterbore depth:	8.0 mm

Tool and blade selection

Tool:	BSF-D-1100/050-12.0
Blade:	BSF-M-D-1A-12.0
Swing length AL:	22.5 mm
Blade height Hs:	9.6 mm

Cutting data

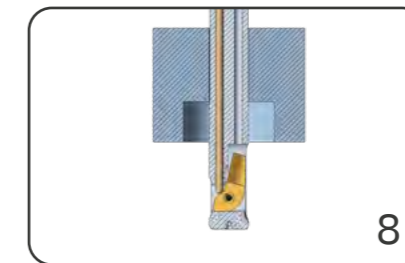
Cutting speed V _c :	30 m/min.
Tool working feed:	0.05 mm/rev
Activation speed:	Counterbore ratio 24.0: 11.0 = 2.18 > 2000 rpm



- Internal coolant off
- External coolant off
- Rapid feed to position X

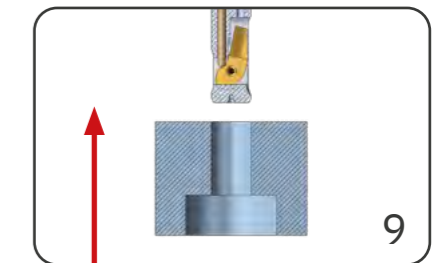
M89
 M9
 G0 Z-54.5⁸⁾

⁸⁾ 54.5 = 30.0 + 22.5 + 2.0



- Spindle stop!
- Internal coolant on 20–50 bar
- Dwell time 2–5 sec.

M5
 M88
 G4X3



- Rapid feed out of the workpiece

G0 Z1
 M89

Selecting the correct BSF tool

TOOL SELECTOR TOOL TABLES

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 customised 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 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 enquiry form (www.heule.com > contact) or by telephone.

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 manually, with internal spindle coolant or compressed air.

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: aluminium, see also the information in the cutting data table).

Tool Selector

> Get reliable help to find the right solution

heule.com/en/tool-selector/bsf



Tool Selector 

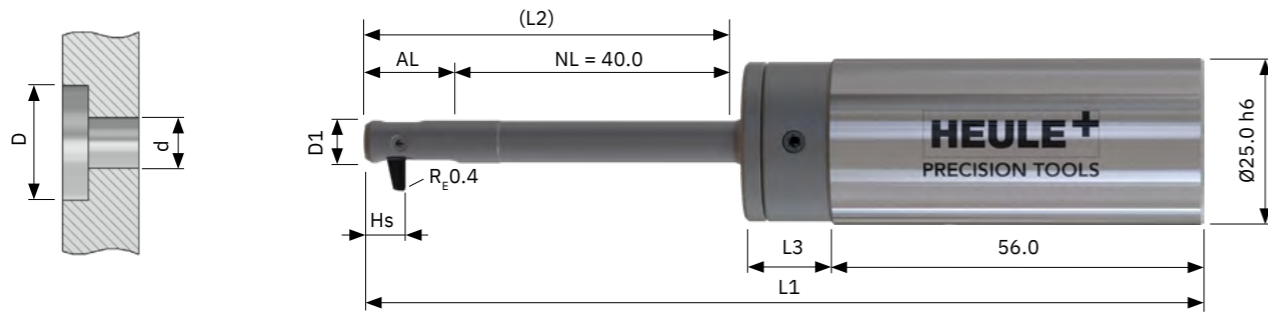
Still have questions?

> HEULE Consulting and Support

heule.com/en/contact



BSF Bore Ø 6.5 mm and Ø7.0 mm | Series A



Tools and blades

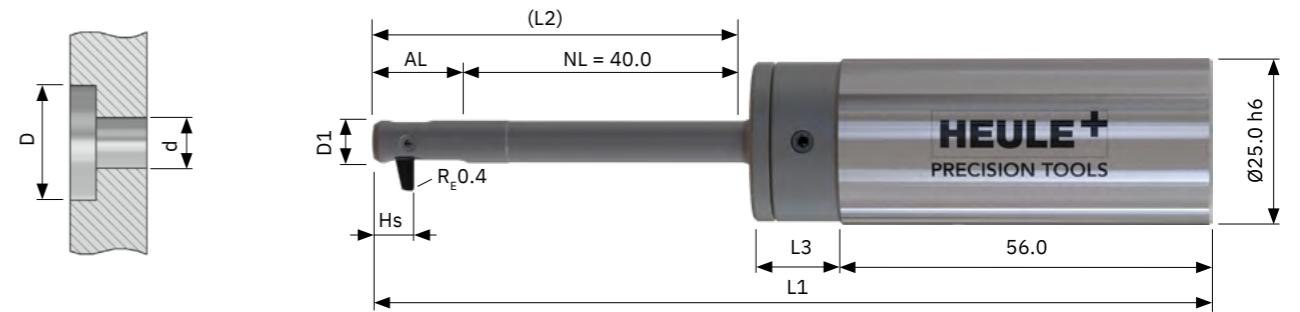
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-A-**1D**-3.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
6.50	6.40	9.50	14.25	6.15	127.75	54.25	13.50	BSF-A-0650/040-6.5	BSF-M-A-1A-3.0	
		10.00						BSF-A-0650/040-7.0		
		10.50						BSF-A-0650/040-7.5		
		11.00						BSF-A-0650/040-6.5	BSF-M-A-1A-4.5	
		11.50						BSF-A-0650/040-7.0		
		12.00						BSF-A-0650/040-7.5		
		12.50						BSF-A-0650/040-6.5	BSF-M-A-1A-6.0	
		13.00						BSF-A-0650/040-7.0		
		13.50						BSF-A-0650/040-7.5		
	14.00						BSF-A-0650/040-6.5	BSF-M-A-1A-7.5		
	14.50						BSF-A-0650/040-7.0			
	15.00						BSF-A-0650/040-7.5			
	7.00	6.90	10.00	15.00	6.15	128.50	55.00	13.50	BSF-A-0700/040-7.0	BSF-M-A-1A-3.0
			10.50						BSF-A-0700/040-7.5	
			11.00						BSF-A-0700/040-8.0	
11.50								BSF-A-0700/040-7.0	BSF-M-A-1A-4.5	
12.00								BSF-A-0700/040-7.5		
12.50								BSF-A-0700/040-8.0		
13.00								BSF-A-0700/040-7.0	BSF-M-A-1A-6.0	
13.50								BSF-A-0700/040-7.5		
14.00								BSF-A-0700/040-8.0		
14.50							BSF-A-0700/040-7.0	BSF-M-A-1A-7.5		
15.00							BSF-A-0700/040-7.5			
15.50							BSF-A-0700/040-8.0			
16.00							BSF-A-0700/040-7.0	BSF-M-A-1A-9.0		
16.50							BSF-A-0700/040-7.5			

Parts in stock highlighted in green

BSF Bore Ø 7.5 mm and Ø8.0 mm | Series B



Tools and blades

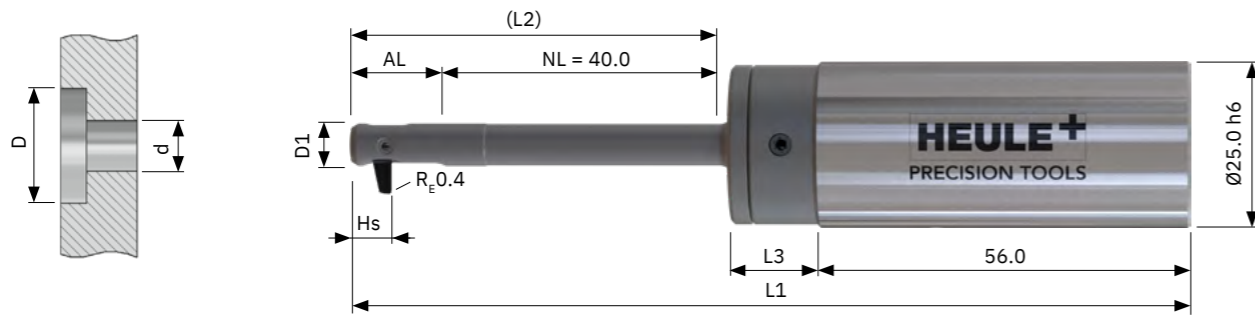
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-B-**1D**-3.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
7.50	7.40	11.00	17.00	7.55	130.50	57.00	13.50	BSF-B-0750/040-7.5	BSF-M-B-1A-3.5
		11.50						BSF-B-0750/040-8.0	
		12.00						BSF-B-0750/040-8.5	
		12.50						BSF-B-0750/040-7.5	BSF-M-B-1A-5.0
		13.00						BSF-B-0750/040-8.0	
		13.50						BSF-B-0750/040-8.5	
		14.00						BSF-B-0750/040-7.5	BSF-M-B-1A-6.5
		14.50						BSF-B-0750/040-8.0	
		15.00						BSF-B-0750/040-8.5	
	15.50						BSF-B-0750/040-7.5	BSF-M-B-1A-8.0	
	16.00						BSF-B-0750/040-8.0		
	16.50						BSF-B-0750/040-8.5		
	17.00						BSF-B-0750/040-7.5	BSF-M-B-1A-9.5	
	17.50						BSF-B-0750/040-8.0		
	8.00	7.90	11.50	17.00	7.55	130.50	57.00	13.50	BSF-B-0800/040-8.0
12.00								BSF-B-0800/040-8.5	
12.50								BSF-B-0800/040-9.0	
13.00								BSF-B-0800/040-8.0	BSF-M-B-1A-5.0
13.50								BSF-B-0800/040-8.5	
14.00								BSF-B-0800/040-9.0	
14.50								BSF-B-0800/040-8.0	BSF-M-B-1A-6.5
15.00								BSF-B-0800/040-8.5	
15.50								BSF-B-0800/040-9.0	
16.00							BSF-B-0800/040-8.0	BSF-M-B-1A-8.0	
16.50							BSF-B-0800/040-8.5		
17.00							BSF-B-0800/040-9.0		
17.50							BSF-B-0800/040-8.0	BSF-M-B-1A-9.5	
18.00							BSF-B-0800/040-8.5		
18.50							BSF-B-0800/040-9.0		

Parts in stock highlighted in green

BSF Bore Ø 8.5 mm | Series B




Tools and blades

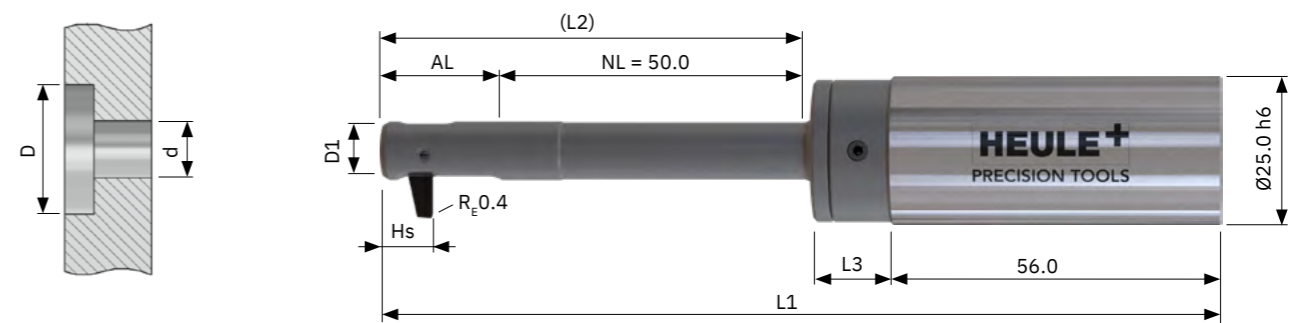
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-B-**1D**-3.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
8.50	8.40	12.00	17.75	7.55	131.25	57.75	13.50	BSF-B-0850/040-8.5	BSF-M-B-1A-3.5
		12.50						BSF-B-0850/040-9.0	
		13.00						BSF-B-0850/040-9.5	
		13.50						BSF-B-0850/040-8.5	BSF-M-B-1A-5.0
		14.00						BSF-B-0850/040-9.0	
		14.50						BSF-B-0850/040-9.5	
		15.00						BSF-B-0850/040-8.5	BSF-M-B-1A-6.5
		15.50						BSF-B-0850/040-9.0	
		16.00						BSF-B-0850/040-9.5	
		16.50						BSF-B-0850/040-8.5	BSF-M-B-1A-8.0
		17.00						BSF-B-0850/040-9.0	
		17.50						BSF-B-0850/040-9.5	
		18.00						BSF-B-0850/040-8.5	BSF-M-B-1A-9.5
		18.50						BSF-B-0850/040-9.0	
		19.00						BSF-B-0850/040-9.5	
		19.50						BSF-B-0850/040-8.5	BSF-M-B-1A-11.0
		20.00						BSF-B-0850/040-9.0	

 Parts in stock highlighted in green

BSF Bore Ø 9.0 mm and Ø9.5 mm | Series C



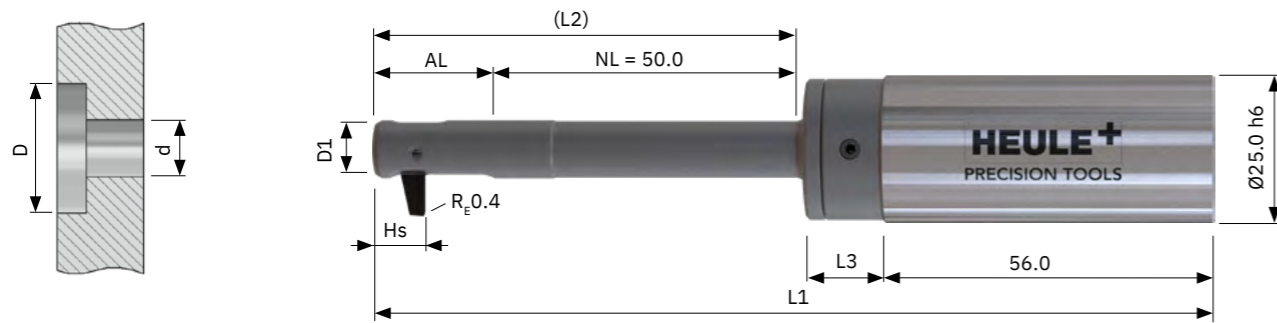
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-C-**1D**-4.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.		
9.00	8.90	13.50	20.25	8.55	143.75	70.25	13.50	BSF-C-0900/050-9.5	BSF-M-C-1A-4.0		
		14.00						BSF-C-0900/050-10.0			
		14.50						BSF-C-0900/050-10.5			
		15.00						BSF-C-0900/050-9.5	BSF-M-C-1A-5.5		
		15.50						BSF-C-0900/050-10.0			
		16.00						BSF-C-0900/050-10.5			
		16.50						BSF-C-0900/050-9.5	BSF-M-C-1A-7.0		
		17.00						BSF-C-0900/050-10.0			
		17.50						BSF-C-0900/050-10.5			
		18.00						BSF-C-0900/050-9.5	BSF-M-C-1A-8.5		
		18.50						BSF-C-0900/050-10.0			
		19.00						BSF-C-0900/050-10.5			
		19.50						BSF-C-0900/050-9.5	BSF-M-C-1A-10.0		
		20.00						BSF-C-0900/050-10.0			
		20.50						BSF-C-0900/050-10.5			
		21.00						BSF-C-0900/050-9.5	BSF-M-C-1A-11.5		
		9.50	9.40	14.00	20.25	8.55	143.75	70.25	13.50	BSF-C-0950/050-10.0	BSF-M-C-1A-4.0
				14.50						BSF-C-0950/050-10.5	
				15.00						BSF-C-0950/050-11.0	
				15.50						BSF-C-0950/050-10.0	BSF-M-C-1A-5.5
16.00								BSF-C-0950/050-10.5			
16.50								BSF-C-0950/050-11.0			
17.00								BSF-C-0950/050-10.0	BSF-M-C-1A-7.0		
17.50								BSF-C-0950/050-10.5			
18.00								BSF-C-0950/050-11.0			
18.50								BSF-C-0950/050-10.0	BSF-M-C-1A-8.5		
19.00								BSF-C-0950/050-10.5			
19.50								BSF-C-0950/050-11.0			
20.00						BSF-C-0950/050-10.0	BSF-M-C-1A-10.0				
20.50						BSF-C-0950/050-10.5					
21.00						BSF-C-0950/050-11.0					
21.50						BSF-C-0950/050-10.0	BSF-M-C-1A-11.5				
22.00						BSF-C-0950/050-10.5					

BSF Bore Ø 10.0 mm | Series C



Tools and blades

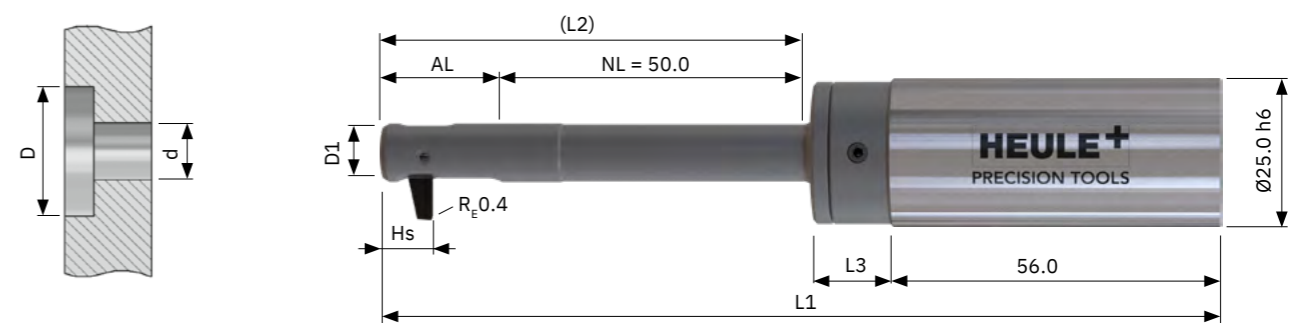
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-C-**1D**-4.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
10.00	9.90	14.50	20.25	8.55	143.75	70.25	13.50	BSF-C-1000/050-10.5	BSF-M-C-1A-4.0
		15.00						BSF-C-1000/050-11.0	
		15.50						BSF-C-1000/050-11.5	
		16.00						BSF-C-1000/050-10.5	BSF-M-C-1A-5.5
		16.50						BSF-C-1000/050-11.0	
		17.00						BSF-C-1000/050-11.5	
		17.50						BSF-C-1000/050-10.5	BSF-M-C-1A-7.0
		18.00						BSF-C-1000/050-11.0	
		18.50						BSF-C-1000/050-11.5	
		19.00						BSF-C-1000/050-10.5	BSF-M-C-1A-8.5
		19.50						BSF-C-1000/050-11.0	
		20.00						BSF-C-1000/050-11.5	
		20.50						BSF-C-1000/050-10.5	BSF-M-C-1A-10.0
		21.00						BSF-C-1000/050-11.0	
		21.50						BSF-C-1000/050-11.5	
		22.00						BSF-C-1000/050-10.5	BSF-M-C-1A-11.5
		22.50						BSF-C-1000/050-11.0	
		23.00						BSF-C-1000/050-11.5	

Parts in stock highlighted in green

BSF Bore Ø 10.5 mm | Series D



Tools and blades

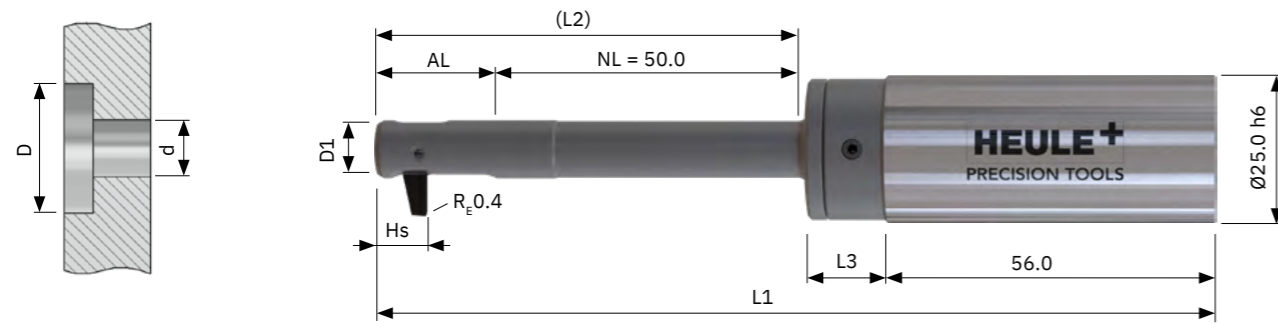
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-D-**1D**-4.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
10.50	10.40	15.50	22.50	9.60	146.00	72.50	13.50	BSF-D-1050/050-11.0	BSF-M-D-1A-4.5
		16.00						BSF-D-1050/050-11.5	
		16.50						BSF-D-1050/050-12.0	
		17.00						BSF-D-1050/050-12.5	
		17.50						BSF-D-1050/050-13.0	
		18.00						BSF-D-1050/050-11.0	BSF-M-D-1A-7.0
		18.50						BSF-D-1050/050-11.5	
		19.00						BSF-D-1050/050-12.0	
		19.50						BSF-D-1050/050-12.5	
		20.00						BSF-D-1050/050-13.0	
		20.50						BSF-D-1050/050-11.0	BSF-M-D-1A-9.5
		21.00						BSF-D-1050/050-11.5	
		21.50						BSF-D-1050/050-12.0	
		22.00						BSF-D-1050/050-12.5	
		22.50						BSF-D-1050/050-13.0	
		23.00						BSF-D-1050/050-11.0	BSF-M-D-1A-12.0
		23.50						BSF-D-1050/050-11.5	
		24.00						BSF-D-1050/050-12.0	
		24.50						BSF-D-1050/050-12.5	

Parts in stock highlighted in green

BSF Bore Ø 11.0 mm | Series D



Tools and blades

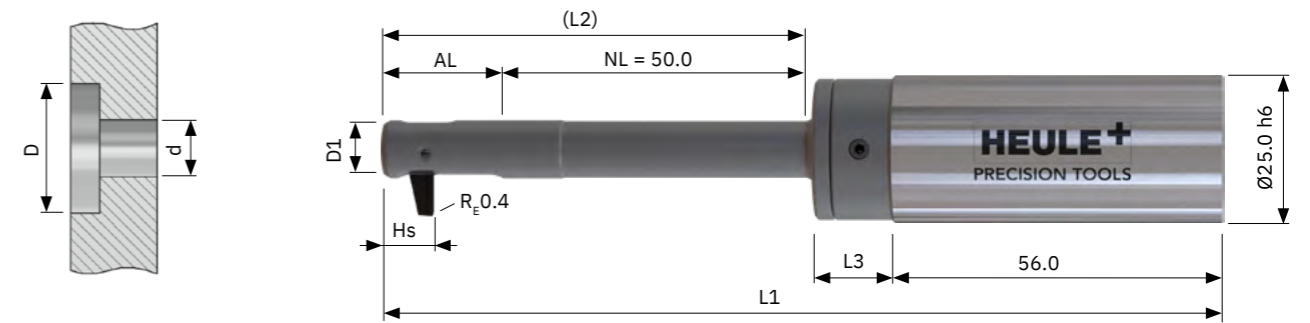
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-D-**1D**-4.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
11.00	10.90	16.00	22.50	9.60	146.00	72.50	13.50	BSF-D-1100/050-11.5	BSF-M-D-1A-4.5
		16.50						BSF-D-1100/050-12.0	
		17.00						BSF-D-1100/050-12.5	
		17.50						BSF-D-1100/050-13.0	
		18.00						BSF-D-1100/050-13.5	
		18.50						BSF-M-D-1A-7.0	
		19.00							BSF-D-1100/050-11.5
		19.50							BSF-D-1100/050-12.0
		20.00							BSF-D-1100/050-12.5
		20.50							BSF-D-1100/050-13.0
		21.00						BSF-M-D-1A-9.5	
		21.50							BSF-D-1100/050-11.5
		22.00							BSF-D-1100/050-12.0
		22.50							BSF-D-1100/050-12.5
		23.00							BSF-D-1100/050-13.0
		23.50						BSF-M-D-1A-12.0	
		24.00							BSF-D-1100/050-11.5
		24.50							BSF-D-1100/050-12.0
		25.00							BSF-D-1100/050-12.5
		25.50							BSF-D-1100/050-13.0
25.50	BSF-D-1100/050-13.5								

Parts in stock highlighted in green

BSF Bore Ø 11.5 mm | Series D



Tools and blades

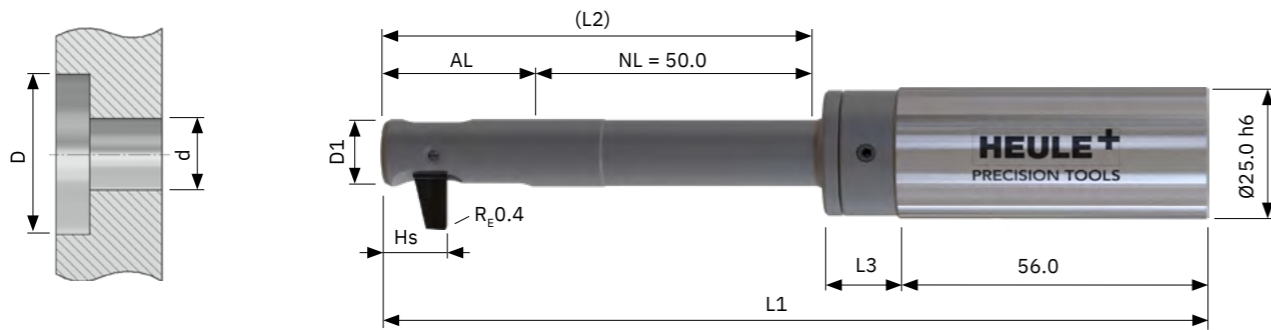
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-D-**1D**-4.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
11.50	11.40	16.50	23.75	9.60	147.25	73.75	13.50	BSF-D-1150/050-12.0	BSF-M-D-1A-4.5
		17.00						BSF-D-1150/050-12.5	
		17.50						BSF-D-1150/050-13.0	
		18.00						BSF-D-1150/050-13.5	
		18.50						BSF-D-1150/050-14.0	
		19.00						BSF-M-D-1A-7.0	
		19.50							BSF-D-1150/050-12.0
		19.50							BSF-D-1150/050-12.5
		20.00							BSF-D-1150/050-13.0
		20.50							BSF-D-1150/050-13.5
		21.00						BSF-M-D-1A-9.5	
		21.50							BSF-D-1150/050-12.0
		22.00							BSF-D-1150/050-12.5
		22.50							BSF-D-1150/050-13.0
		23.00							BSF-D-1150/050-13.5
		23.50						BSF-M-D-1A-12.0	
		24.00							BSF-D-1150/050-12.0
		24.50							BSF-D-1150/050-12.5
		25.00							BSF-D-1150/050-13.0
		25.50							BSF-D-1150/050-13.5
26.00	BSF-M-D-1A-14.5								
26.50		BSF-D-1150/050-14.0							
26.50	BSF-D-1150/050-12.0								

Parts in stock highlighted in green

BSF Bore Ø 12.0 mm | Series E



Tools and blades

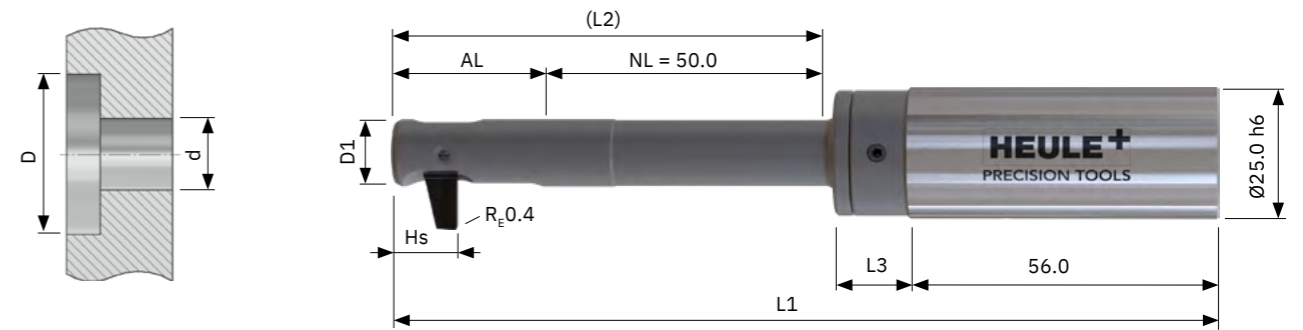
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-E-**1D**-5.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
12.00	11.90	18.00	26.75	11.40	150.25	76.75	13.50	BSF-E-1200/050-13.0	BSF-M-E-1A-5.0
		18.50						BSF-E-1200/050-13.5	
		19.00						BSF-E-1200/050-14.0	
		19.50						BSF-E-1200/050-14.5	
		20.00						BSF-E-1200/050-15.0	
		20.50						BSF-E-1200/050-13.0	
		21.00						BSF-E-1200/050-13.5	
		21.50						BSF-E-1200/050-14.0	
		22.00						BSF-E-1200/050-14.5	
		22.50						BSF-E-1200/050-15.0	
		23.00						BSF-E-1200/050-13.0	BSF-M-E-1A-10.0
		23.50						BSF-E-1200/050-13.5	
		24.00						BSF-E-1200/050-14.0	
		24.50						BSF-E-1200/050-14.5	
		25.00						BSF-E-1200/050-15.0	
		25.50						BSF-E-1200/050-13.0	
		26.00						BSF-E-1200/050-13.5	
		26.50						BSF-E-1200/050-14.0	
		27.00						BSF-E-1200/050-14.5	
		27.50						BSF-E-1200/050-15.0	
		28.00						BSF-E-1200/050-13.0	BSF-M-E-1A-15.0

Parts in stock highlighted in green

BSF Bore Ø 12.5 mm | Series E



Tools and blades

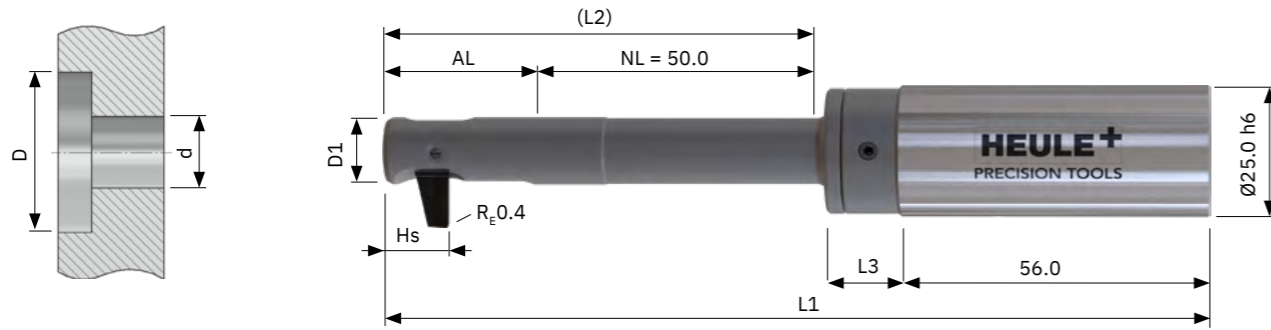
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-E-**1D**-5.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
12.50	12.40	18.50	26.75	11.40	150.25	76.75	13.50	BSF-E-1250/050-13.5	BSF-M-E-1A-5.0
		19.00						BSF-E-1250/050-14.0	
		19.50						BSF-E-1250/050-14.5	
		20.00						BSF-E-1250/050-15.0	
		20.50						BSF-E-1250/050-15.5	
		21.00						BSF-E-1250/050-13.5	
		21.50						BSF-E-1250/050-14.0	
		22.00						BSF-E-1250/050-14.5	
		22.50						BSF-E-1250/050-15.0	
		23.00						BSF-E-1250/050-15.5	
		23.50						BSF-E-1250/050-13.5	BSF-M-E-1A-10.0
		24.00						BSF-E-1250/050-14.0	
		24.50						BSF-E-1250/050-14.5	
		25.00						BSF-E-1250/050-15.0	
		25.50						BSF-E-1250/050-15.5	
		26.00						BSF-E-1250/050-13.5	
		26.50						BSF-E-1250/050-14.0	
		27.00						BSF-E-1250/050-14.5	
		27.50						BSF-E-1250/050-15.0	
		28.00						BSF-E-1250/050-15.5	
		28.50						BSF-E-1250/050-13.5	BSF-M-E-1A-15.0
		29.00						BSF-E-1250/050-14.0	

Parts in stock highlighted in green

BSF Bore Ø 13.0 mm | Series E



Tools and blades

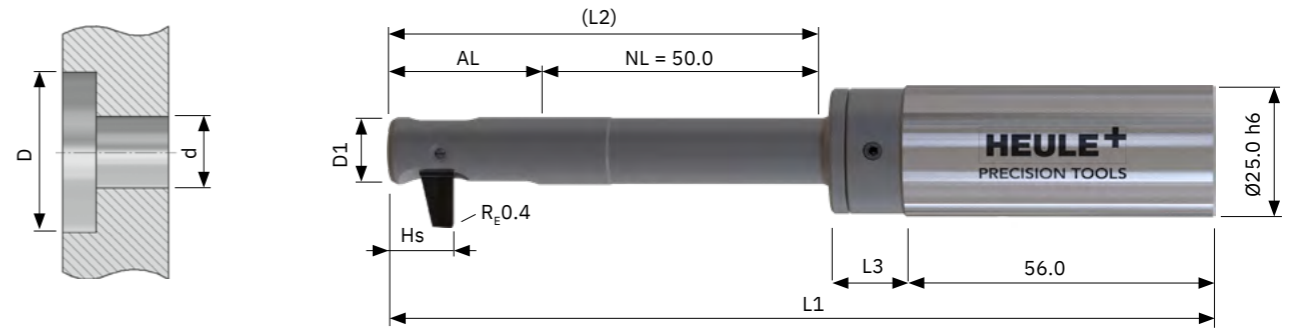
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-E-**1D**-5.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
13.00	12.90	19.00	26.75	11.40	150.25	76.75	13.50	BSF-E-1300/050-14.0	BSF-M-E-1A-5.0
		19.50						BSF-E-1300/050-14.5	
		20.00						BSF-E-1300/050-15.0	
		20.50						BSF-E-1300/050-15.5	
		21.00						BSF-E-1300/050-16.0	
		21.50						BSF-E-1300/050-14.0	
		22.00						BSF-E-1300/050-14.5	
		22.50						BSF-E-1300/050-15.0	
		23.00						BSF-E-1300/050-15.5	
		23.50						BSF-E-1300/050-16.0	
		24.00						BSF-E-1300/050-14.0	BSF-M-E-1A-10.0
		24.50						BSF-E-1300/050-14.5	
		25.00						BSF-E-1300/050-15.0	
		25.50						BSF-E-1300/050-15.5	
		26.00						BSF-E-1300/050-16.0	
		26.50						BSF-E-1300/050-14.0	
		27.00						BSF-E-1300/050-14.5	
		27.50						BSF-E-1300/050-15.0	
		28.00						BSF-E-1300/050-15.5	
		28.50						BSF-E-1300/050-16.0	
		29.00						BSF-E-1300/050-14.0	BSF-M-E-1A-15.0
		29.50						BSF-E-1300/050-14.5	
		30.00						BSF-E-1300/050-15.0	

Parts in stock highlighted in green

BSF Bore Ø 13.5 mm | Series E



Tools and blades

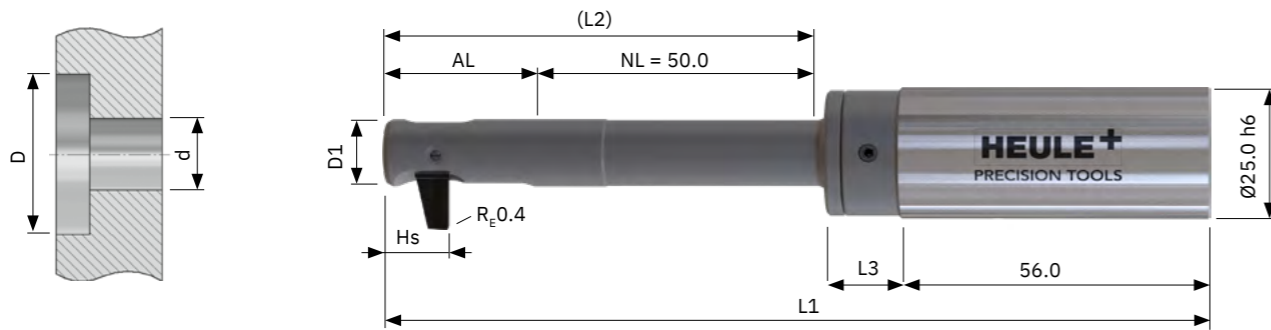
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-E-**1D**-5.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
13.50	13.40	19.50	26.75	11.40	150.25	76.75	13.50	BSF-E-1350/050-14.5	BSF-M-E-1A-5.0
		20.00						BSF-E-1350/050-15.0	
		20.50						BSF-E-1350/050-15.5	
		21.00						BSF-E-1350/050-16.0	
		21.50						BSF-E-1350/050-16.5	
		22.00						BSF-E-1350/050-14.5	
		22.50						BSF-E-1350/050-15.0	
		23.00						BSF-E-1350/050-15.5	
		23.50						BSF-E-1350/050-16.0	
		24.00						BSF-E-1350/050-16.5	
		24.50						BSF-E-1350/050-14.5	BSF-M-E-1A-10.0
		25.00						BSF-E-1350/050-15.0	
		25.50						BSF-E-1350/050-15.5	
		26.00						BSF-E-1350/050-16.0	
		26.50						BSF-E-1350/050-16.5	
		27.00						BSF-E-1350/050-14.5	
		27.50						BSF-E-1350/050-15.0	
		28.00						BSF-E-1350/050-15.5	
		28.50						BSF-E-1350/050-16.0	
		29.00						BSF-E-1350/050-16.5	
		29.50						BSF-E-1350/050-14.5	BSF-M-E-1A-15.0
		30.00						BSF-E-1350/050-15.0	
		30.50						BSF-E-1350/050-15.5	
		31.00						BSF-E-1350/050-16.0	
31.50	BSF-E-1350/050-16.5								

Parts in stock highlighted in green

BSF Bore Ø 14.0 mm | Series E



Tools and blades

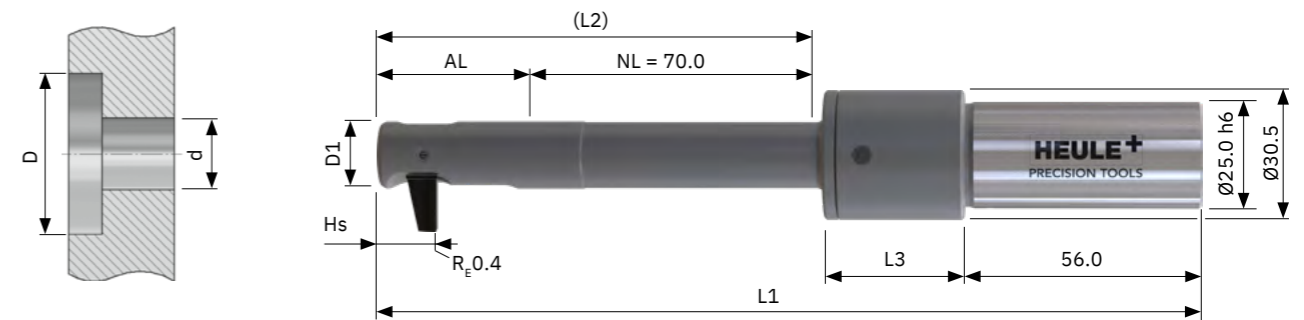
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-E-**1D**-5.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
14.00	13.90	20.00	28.00	11.40	151.50	78.00	13.50	BSF-E-1400/050-15.0	BSF-M-E-1A-5.0
		20.50						BSF-E-1400/050-15.5	
		21.00						BSF-E-1400/050-16.0	
		21.50						BSF-E-1400/050-16.5	
		22.00						BSF-E-1400/050-17.0	
		22.50						BSF-E-1400/050-15.0	BSF-M-E-1A-7.5
		23.00						BSF-E-1400/050-15.5	
		23.50						BSF-E-1400/050-16.0	
		24.00						BSF-E-1400/050-16.5	
		24.50						BSF-E-1400/050-17.0	
		25.00						BSF-E-1400/050-15.0	BSF-M-E-1A-10.0
		25.50						BSF-E-1400/050-15.5	
		26.00						BSF-E-1400/050-16.0	
		26.50						BSF-E-1400/050-16.5	
		27.00						BSF-E-1400/050-17.0	
		27.50						BSF-E-1400/050-15.0	BSF-M-E-1A-12.5
		28.00						BSF-E-1400/050-15.5	
		28.50						BSF-E-1400/050-16.0	
		29.00						BSF-E-1400/050-16.5	
		29.50						BSF-E-1400/050-17.0	
		30.00						BSF-E-1400/050-15.0	BSF-M-E-1A-15.0
		30.50						BSF-E-1400/050-15.5	
		31.00						BSF-E-1400/050-16.0	
		31.50						BSF-E-1400/050-16.5	
		32.00						BSF-E-1400/050-17.0	
		32.50						BSF-E-1400/050-15.0	BSF-M-E-1A-17.5

Parts in stock highlighted in green

BSF Bore Ø 14.5 mm | Series F



Tools and blades

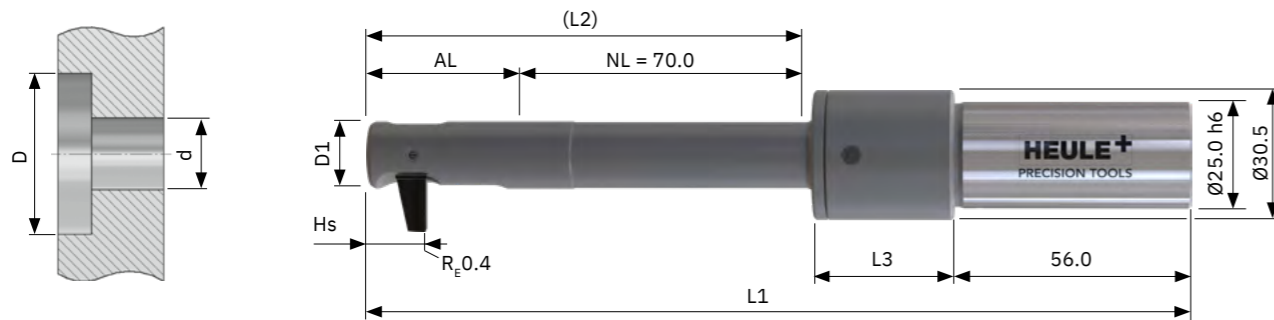
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
14.50	14.40	21.50	30.75	13.40	193.75	100.75	33.00	BSF-F-1450/070-16.0	BSF-M-F-1A-5.5
		22.00						BSF-F-1450/070-16.5	
		22.50						BSF-F-1450/070-17.0	
		23.00						BSF-F-1450/070-17.5	
		23.50						BSF-F-1450/070-18.0	
		24.00						BSF-F-1450/070-18.5	BSF-M-F-1A-9.0
		24.50						BSF-F-1450/070-19.0	
		25.00						BSF-F-1450/070-16.0	
		25.50						BSF-F-1450/070-16.5	
		26.00						BSF-F-1450/070-17.0	
		26.50						BSF-F-1450/070-17.5	BSF-M-F-1A-12.5
		27.00						BSF-F-1450/070-18.0	
		27.50						BSF-F-1450/070-18.5	
		28.00						BSF-F-1450/070-19.0	
		28.50						BSF-F-1450/070-16.0	
		29.00						BSF-F-1450/070-16.5	BSF-M-F-1A-16.0
		29.50						BSF-F-1450/070-17.0	
		30.00						BSF-F-1450/070-17.5	
		30.50						BSF-F-1450/070-18.0	
		31.00						BSF-F-1450/070-18.5	
		31.50						BSF-F-1450/070-19.0	BSF-M-F-1A-16.0
		32.00						BSF-F-1450/070-16.0	
		32.50						BSF-F-1450/070-16.5	
		33.00						BSF-F-1450/070-17.0	
		33.50						BSF-F-1450/070-17.5	

Parts in stock highlighted in green

BSF Bore Ø 15.0 mm | Series F



Tools and blades

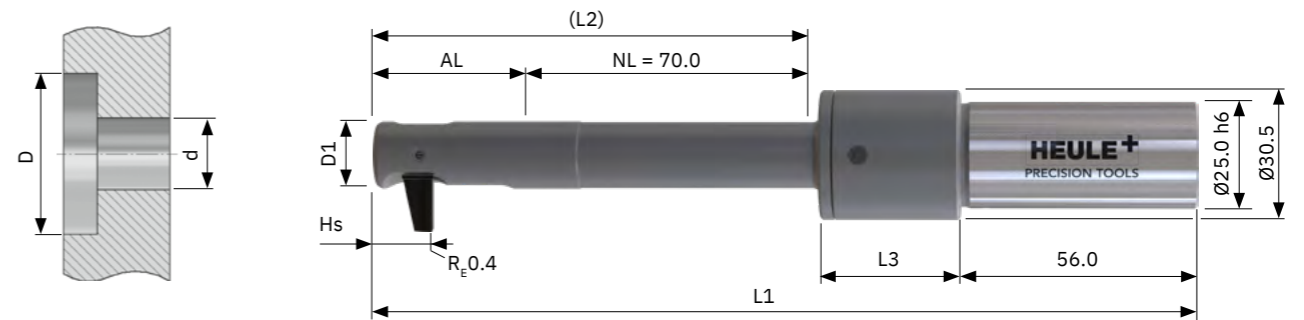
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
15.00	14.90	22.00	30.75	13.40	193.75	100.75	33.00	BSF-F-1500/070-16.5	BSF-M-F-1A-5.5	
		22.50						BSF-F-1500/070-17.0		
		23.00						BSF-F-1500/070-17.5		
		23.50						BSF-F-1500/070-18.0		
		24.00						BSF-F-1500/070-18.5		
		24.50						BSF-F-1500/070-19.0		
		25.00						BSF-F-1500/070-19.5		
		25.50						BSF-F-1500/070-16.5		BSF-M-F-1A-9.0
		26.00						BSF-F-1500/070-17.0		
		26.50						BSF-F-1500/070-17.5		
		27.00						BSF-F-1500/070-18.0		
		27.50						BSF-F-1500/070-18.5		
		28.00						BSF-F-1500/070-19.0		
		28.50						BSF-F-1500/070-19.5		
		29.00						BSF-F-1500/070-16.5	BSF-M-F-1A-12.5	
		29.50						BSF-F-1500/070-17.0		
		30.00						BSF-F-1500/070-17.5		
		30.50						BSF-F-1500/070-18.0		
		31.00						BSF-F-1500/070-18.5		
		31.50						BSF-F-1500/070-19.0		
		32.00						BSF-F-1500/070-19.5		
		32.50						BSF-F-1500/070-16.5		BSF-M-F-1A-16.0
		33.00						BSF-F-1500/070-17.0		
		33.50						BSF-F-1500/070-17.5		
		34.00						BSF-F-1500/070-18.0		
		34.50						BSF-F-1500/070-18.5		

Parts in stock highlighted in green

BSF Bore Ø 15.5 mm | Series F



Tools and blades

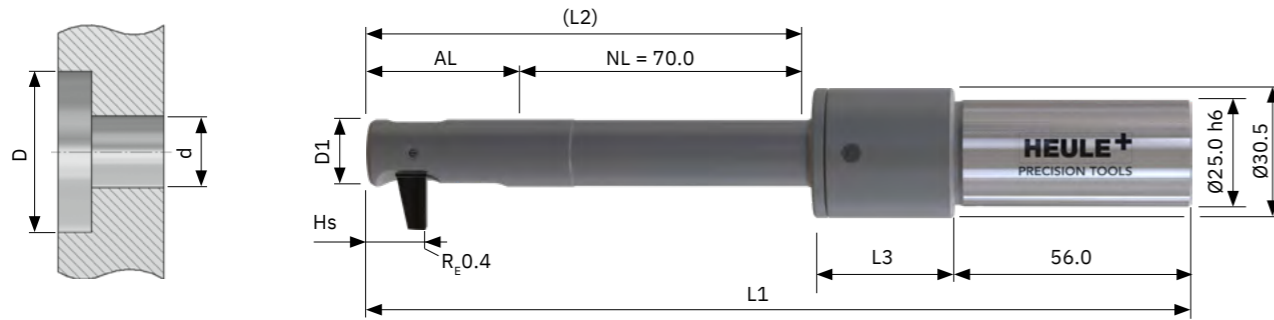
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
15.50	15.40	22.50	30.75	13.40	193.75	100.75	33.00	BSF-F-1550/070-17.0	BSF-M-F-1A-5.5	
		23.00						BSF-F-1550/070-17.5		
		23.50						BSF-F-1550/070-18.0		
		24.00						BSF-F-1550/070-18.5		
		24.50						BSF-F-1550/070-19.0		
		25.00						BSF-F-1550/070-19.5		
		25.50						BSF-F-1550/070-20.0		
		26.00						BSF-F-1550/070-17.0		BSF-M-F-1A-9.0
		26.50						BSF-F-1550/070-17.5		
		27.00						BSF-F-1550/070-18.0		
		27.50						BSF-F-1550/070-18.5		
		28.00						BSF-F-1550/070-19.0		
		28.50						BSF-F-1550/070-19.5		
		29.00						BSF-F-1550/070-20.0		
		29.50						BSF-F-1550/070-17.0	BSF-M-F-1A-12.5	
		30.00						BSF-F-1550/070-17.5		
		30.50						BSF-F-1550/070-18.0		
		31.00						BSF-F-1550/070-18.5		
		31.50						BSF-F-1550/070-19.0		
		32.00						BSF-F-1550/070-19.5		
		32.50						BSF-F-1550/070-20.0		
		33.00						BSF-F-1550/070-17.0		BSF-M-F-1A-16.0
		33.50						BSF-F-1550/070-17.5		
		34.00						BSF-F-1550/070-18.0		
		34.50						BSF-F-1550/070-18.5		
		35.00						BSF-F-1550/070-19.0		
		35.50						BSF-F-1550/070-19.5		
		36.00						BSF-F-1550/070-20.0		

Parts in stock highlighted in green

BSF Bore Ø 16.0 mm | Series F




Tools and blades

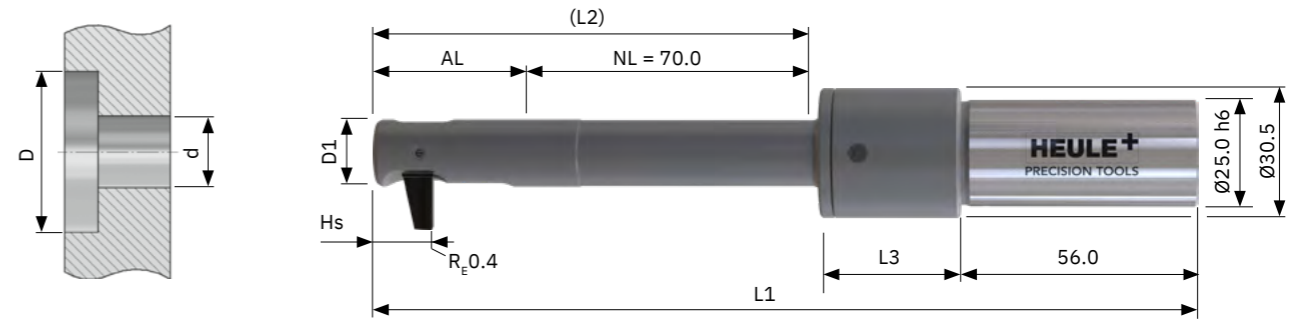
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
16.00	15.90	23.00	32.50	13.40	195.50	102.50	33.00	BSF-F-1600/070-17.5	BSF-M-F-1A-5.5
		23.50						BSF-F-1600/070-18.0	
		24.00						BSF-F-1600/070-18.5	
		24.50						BSF-F-1600/070-19.0	
		25.00						BSF-F-1600/070-19.5	
		25.50						BSF-F-1600/070-20.0	
		26.00						BSF-F-1600/070-20.5	
		26.50						BSF-F-1600/070-17.5	
		27.00						BSF-F-1600/070-18.0	
		27.50						BSF-F-1600/070-18.5	
		28.00						BSF-F-1600/070-19.0	
		28.50						BSF-F-1600/070-19.5	
		29.00						BSF-F-1600/070-20.0	
		29.50						BSF-F-1600/070-20.5	
		30.00						BSF-F-1600/070-17.5	BSF-M-F-1A-12.5
		30.50						BSF-F-1600/070-18.0	
		31.00						BSF-F-1600/070-18.5	
		31.50						BSF-F-1600/070-19.0	
		32.00						BSF-F-1600/070-19.5	
		32.50						BSF-F-1600/070-20.0	
		33.00						BSF-F-1600/070-20.5	
		33.50						BSF-F-1600/070-17.5	
		34.00						BSF-F-1600/070-18.0	
		34.50						BSF-F-1600/070-18.5	
		35.00						BSF-F-1600/070-19.0	
		35.50						BSF-F-1600/070-19.5	
		36.00						BSF-F-1600/070-20.0	
		36.50						BSF-F-1600/070-20.5	
		37.00						BSF-F-1600/070-17.5	BSF-M-F-1A-19.5

 Parts in stock highlighted in green

BSF Bore Ø 16.5 mm | Series F




Tools and blades

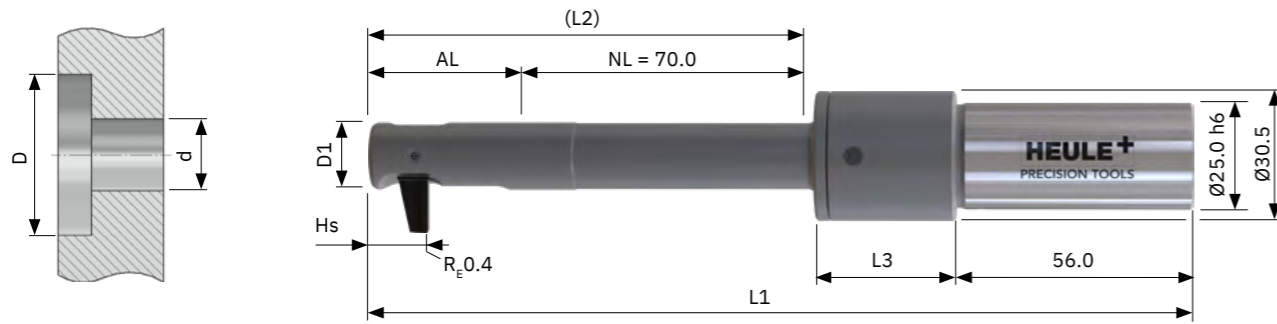
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
16.50	16.40	23.50	32.50	13.40	195.50	102.50	33.00	BSF-F-1650/070-18.0	BSF-M-F-1A-5.5
		24.00						BSF-F-1650/070-18.5	
		24.50						BSF-F-1650/070-19.0	
		25.00						BSF-F-1650/070-19.5	
		25.50						BSF-F-1650/070-20.0	
		26.00						BSF-F-1650/070-20.5	
		26.50						BSF-F-1650/070-21.0	
		27.00						BSF-F-1650/070-18.0	
		27.50						BSF-F-1650/070-18.5	
		28.00						BSF-F-1650/070-19.0	
		28.50						BSF-F-1650/070-19.5	
		29.00						BSF-F-1650/070-20.0	
		29.50						BSF-F-1650/070-20.5	
		30.00						BSF-F-1650/070-21.0	
		30.50						BSF-F-1650/070-18.0	BSF-M-F-1A-12.5
		31.00						BSF-F-1650/070-18.5	
		31.50						BSF-F-1650/070-19.0	
		32.00						BSF-F-1650/070-19.5	
		32.50						BSF-F-1650/070-20.0	
		33.00						BSF-F-1650/070-20.5	
		33.50						BSF-F-1650/070-21.0	
		34.00						BSF-F-1650/070-18.0	
		34.50						BSF-F-1650/070-18.5	
		35.00						BSF-F-1650/070-19.0	
		35.50						BSF-F-1650/070-19.5	
		36.00						BSF-F-1650/070-20.0	
		36.50						BSF-F-1650/070-20.5	
		37.00						BSF-F-1650/070-21.0	
		37.50						BSF-F-1650/070-18.0	BSF-M-F-1A-19.5
		38.00						BSF-F-1650/070-18.5	

 Parts in stock highlighted in green

BSF Bore Ø 17.0 mm | Series F



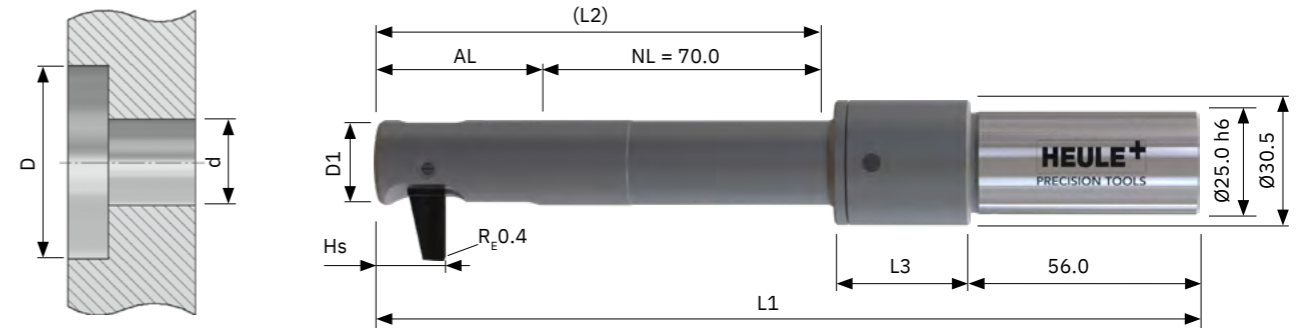
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-F-**1D**-5.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
17.00	16.90	24.00	32.50	13.40	195.50	102.50	33.00	BSF-F-1700/070-18.5	BSF-M-F-1A-5.5	
		24.50						BSF-F-1700/070-19.0		
		25.00						BSF-F-1700/070-19.5		
		25.50						BSF-F-1700/070-20.0		
		26.00						BSF-F-1700/070-20.5		
		26.50						BSF-F-1700/070-21.0		
		27.00						BSF-F-1700/070-21.5		
		27.50						BSF-F-1700/070-18.5		BSF-M-F-1A-9.0
		28.00						BSF-F-1700/070-19.0		
		28.50						BSF-F-1700/070-19.5		
		29.00						BSF-F-1700/070-20.0		
		29.50						BSF-F-1700/070-20.5		
		30.00						BSF-F-1700/070-21.0		
		30.50						BSF-F-1700/070-21.5		
		31.00						BSF-F-1700/070-18.5		BSF-M-F-1A-12.5
		31.50						BSF-F-1700/070-19.0		
		32.00						BSF-F-1700/070-19.5		
		32.50						BSF-F-1700/070-20.0		
	33.00	BSF-F-1700/070-20.5								
	33.50	BSF-F-1700/070-21.0								
	34.00	BSF-F-1700/070-21.5								
	34.50	BSF-F-1700/070-18.5	BSF-M-F-1A-16.0							
	35.00	BSF-F-1700/070-19.0								
	35.50	BSF-F-1700/070-19.5								
	36.00	BSF-F-1700/070-20.0								
	36.50	BSF-F-1700/070-20.5								
	37.00	BSF-F-1700/070-21.0								
	37.50	BSF-F-1700/070-21.5								
	38.00	BSF-F-1700/070-18.5	BSF-M-F-1A-19.5							
	38.50	BSF-F-1700/070-19.0								
	39.00	BSF-F-1700/070-19.5								
	39.50	BSF-F-1700/070-20.0								

BSF Bore Ø 17.5 mm | Series G



Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

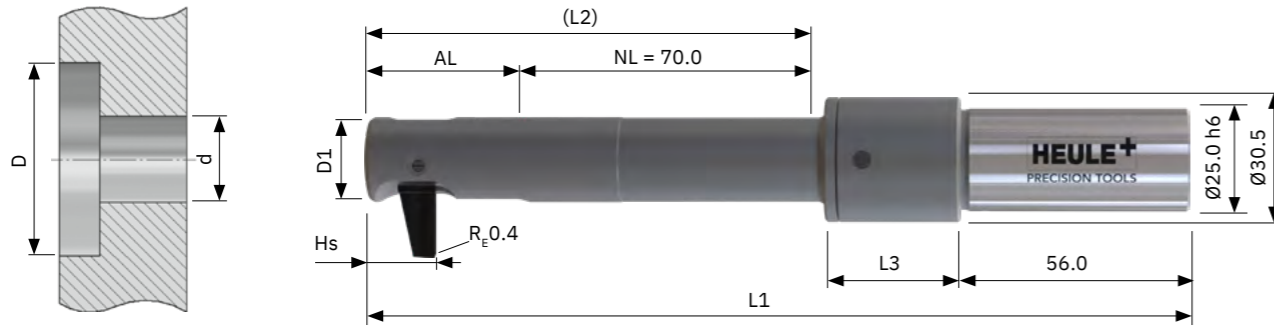
- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
17.50	17.40	26.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1750/070-20.0	BSF-M-G-1A-6.0	
		26.50						BSF-G-1750/070-20.5		
		27.00						BSF-G-1750/070-21.0		
		27.50						BSF-G-1750/070-21.5		
		28.00						BSF-G-1750/070-22.0		
		28.50						BSF-G-1750/070-22.5		
		29.00						BSF-G-1750/070-23.0		
		29.50						BSF-G-1750/070-23.5		
		30.00						BSF-G-1750/070-24.0		
		30.50						BSF-G-1750/070-20.0		BSF-M-G-1A-10.5
		31.00						BSF-G-1750/070-20.5		
		31.50						BSF-G-1750/070-21.0		
		32.00						BSF-G-1750/070-21.5		
		32.50						BSF-G-1750/070-22.0		
		33.00						BSF-G-1750/070-22.5		
		33.50						BSF-G-1750/070-23.0		
		34.00						BSF-G-1750/070-23.5		
		34.50						BSF-G-1750/070-24.0		
		35.00						BSF-G-1750/070-20.0	BSF-M-G-1A-15.0	
		35.50						BSF-G-1750/070-20.5		
		36.00						BSF-G-1750/070-21.0		
		36.50						BSF-G-1750/070-21.5		
		37.00						BSF-G-1750/070-22.0		
		37.50						BSF-G-1750/070-22.5		
		38.00						BSF-G-1750/070-23.0		
		38.50						BSF-G-1750/070-23.5		
		39.00						BSF-G-1750/070-24.0		
		39.50						BSF-G-1750/070-20.0	BSF-M-G-1A-19.5	
		40.00						BSF-G-1750/070-20.5		
		40.50						BSF-G-1750/070-21.0		



Parts in stock highlighted in green

BSF Bore Ø 18.0 mm | Series G




Tools and blades

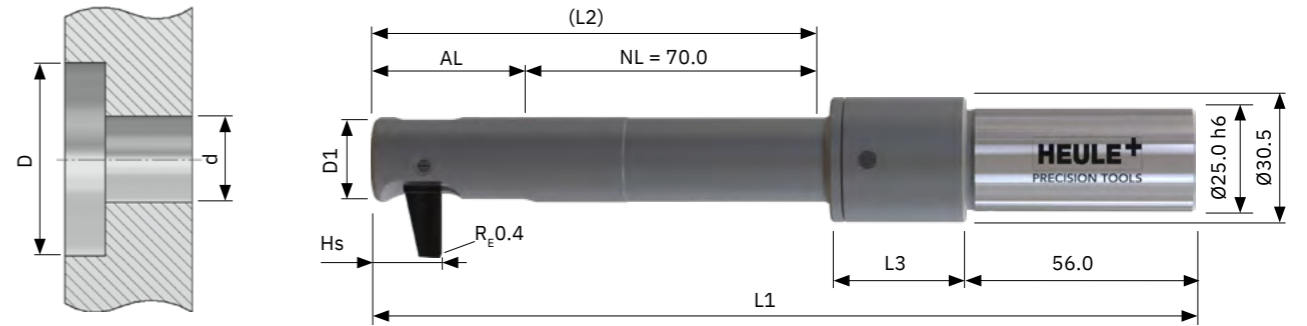
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.								
18.00	17.90	26.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1800/070-20.5	BSF-M-G-1A-6.0								
		27.00															
		27.50															
		28.00															
		28.50															
		29.00															
		29.50															
		30.00															
		30.50															
		31.00															
		31.50															
		32.00															
		32.50															
		33.00															
		33.50															
		34.00															
		34.50															
		35.00															
		18.50						18.40		27.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1850/070-21.0	BSF-M-G-1A-6.0
										27.50							
										28.00							
										28.50							
										29.00							
										29.50							
		19.00						18.90		31.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1800/070-20.5	BSF-M-G-1A-10.5
										31.50							
										32.00							
										32.50							
										33.00							
										33.50							
	34.00																
	34.50																
	35.00																
	35.50																
	36.00																
	36.50																
19.50	18.90	35.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1800/070-20.5	BSF-M-G-1A-15.0								
		36.00															
		36.50															
		37.00															
		37.50															
		38.00															
		38.50															
		39.00															
		39.50															
		40.00															
		40.50															
		41.00															
41.50																	

 Parts in stock highlighted in green

BSF Bore Ø 18.5 mm | Series G



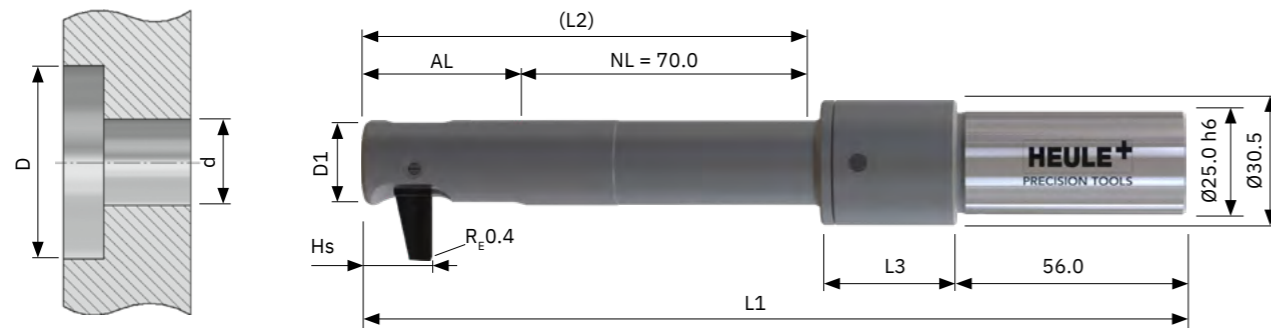
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g. BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.								
18.50	18.40	27.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1850/070-21.0	BSF-M-G-1A-6.0								
		27.50															
		28.00															
		28.50															
		29.00															
		29.50															
		30.00															
		30.50															
		31.00															
		31.50															
		32.00															
		32.50															
		33.00															
		33.50															
		34.00															
		34.50															
		35.00															
		35.50															
		19.00						18.90		31.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1850/070-21.0	BSF-M-G-1A-10.5
										32.00							
										32.50							
										33.00							
										33.50							
										34.00							
		19.50						18.90		35.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1850/070-21.0	BSF-M-G-1A-15.0
										36.50							
										37.00							
										37.50							
										38.00							
										38.50							
	39.00																
	39.50																
	40.00																
	40.50																
	41.00																
	41.50																

BSF Bore Ø 19.0 mm | Series G



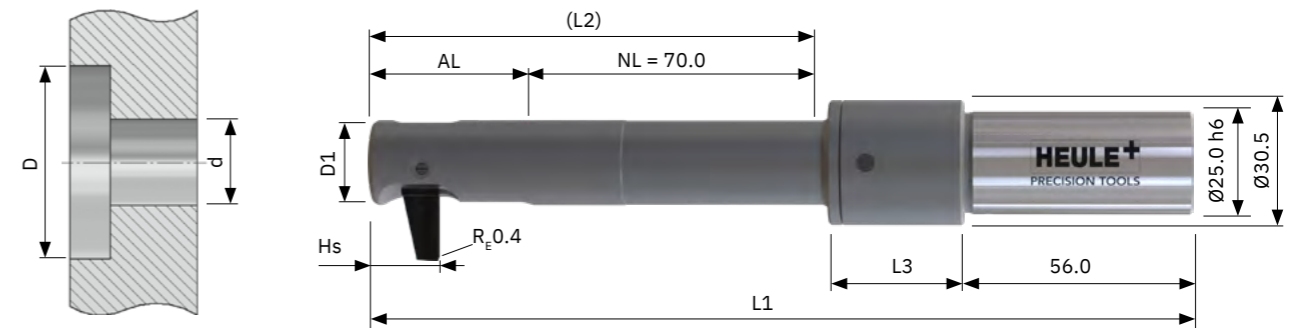
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
19.00	18.90	27.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1900/070-21.5	BSF-M-G-1A-6.0	
		28.00								
		28.50								
		29.00								
		29.50								
		30.00								
		30.50								
		31.00								
		31.50								
		32.00								
		32.50								
		33.00								
	19.50	19.40	28.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-22.0	BSF-M-G-1A-6.0
			28.50							
			29.00							
			29.50							
			30.00							
			30.50							
			31.00							
			31.50							
			32.00							
			32.50							
			33.00							
			33.50							
	20.00	19.90	33.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-23.0	BSF-M-G-1A-10.5
			34.00							
			34.50							
			35.00							
			35.50							
			36.00							
			36.50							
			37.00							
			37.50							
			38.00							
			38.50							
			39.00							
	20.50	20.40	39.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-23.5	BSF-M-G-1A-10.5
			39.50							
			40.00							
			40.50							
			41.00							
			41.50							
			42.00							
			42.50							
			43.00							
			43.50							
			44.00							
			44.50							

BSF Bore Ø 19.5 mm | Series G



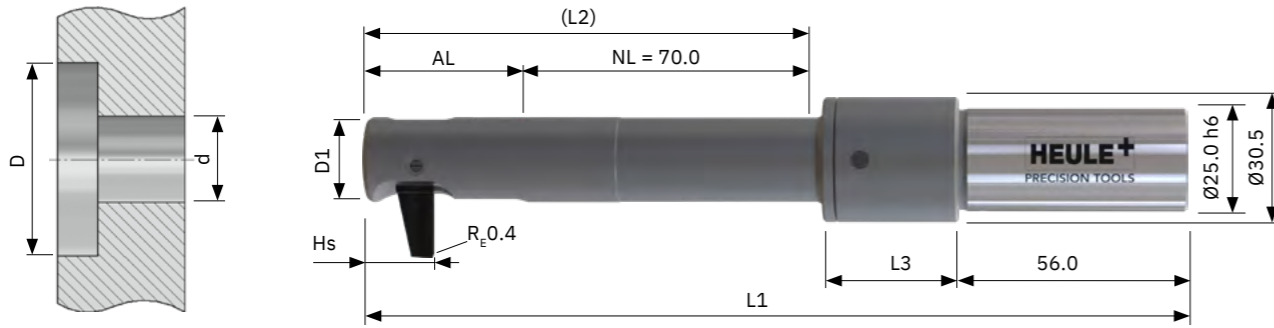
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.	
19.50	19.40	28.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-22.0	BSF-M-G-1A-6.0	
		28.50								
		29.00								
		29.50								
		30.00								
		30.50								
		31.00								
		31.50								
		32.00								
		32.50								
		33.00								
		33.50								
	20.00	19.90	33.50	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-23.0	BSF-M-G-1A-10.5
			34.00							
			34.50							
			35.00							
			35.50							
			36.00							
			36.50							
			37.00							
			37.50							
			38.00							
			38.50							
			39.00							
	20.50	20.40	39.00	37.25	16.30	200.25	107.25	33.00	BSF-G-1950/070-23.5	BSF-M-G-1A-10.5
			39.50							
			40.00							
			40.50							
			41.00							
			41.50							
			42.00							
			42.50							
			43.00							
			43.50							
			44.00							
			44.50							

BSF Bore Ø 20.0 mm | Series G



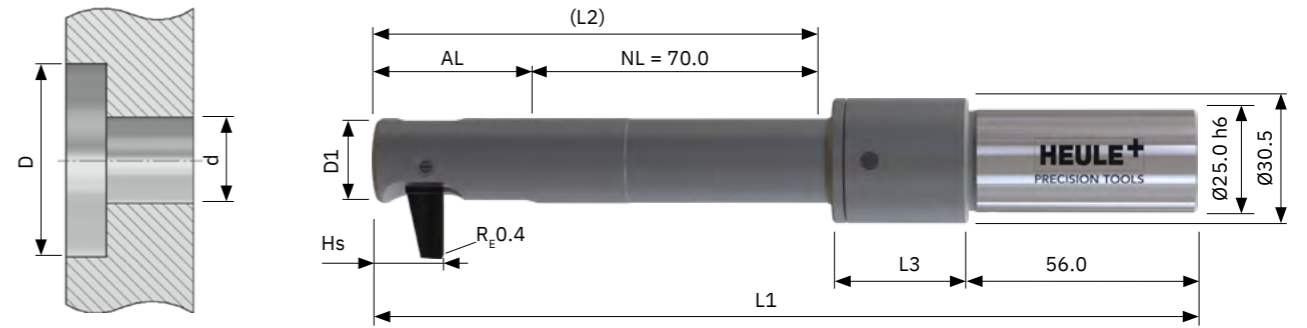
Tools and blades

Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
20.00	19.90	28.50	37.25	16.30	200.25	107.25	33.00	BSF-G-2000/070-22.5	BSF-M-G-1A-6.0
		29.00						BSF-G-2000/070-23.0	
		29.50						BSF-G-2000/070-23.5	
		30.00						BSF-G-2000/070-24.0	
		30.50						BSF-G-2000/070-24.5	
		31.00						BSF-G-2000/070-25.0	
		31.50						BSF-G-2000/070-25.5	
		32.00						BSF-G-2000/070-26.0	
		32.50						BSF-G-2000/070-26.5	
		33.00						BSF-G-2000/070-22.5	
		33.50						BSF-G-2000/070-23.0	
		34.00						BSF-G-2000/070-23.5	
		34.50						BSF-G-2000/070-24.0	
		35.00						BSF-G-2000/070-24.5	
		35.50						BSF-G-2000/070-25.0	
		36.00						BSF-G-2000/070-25.5	
		36.50						BSF-G-2000/070-26.0	
		37.00						BSF-G-2000/070-26.5	
		37.50						BSF-G-2000/070-22.5	BSF-M-G-1A-15.0
		38.00						BSF-G-2000/070-23.0	
		38.50						BSF-G-2000/070-23.5	
		39.00						BSF-G-2000/070-24.0	
		39.50						BSF-G-2000/070-24.5	
		40.00						BSF-G-2000/070-25.0	
		40.50						BSF-G-2000/070-25.5	
		41.00						BSF-G-2000/070-26.0	
		41.50						BSF-G-2000/070-26.5	

BSF Bore Ø 20.0 mm | 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 part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
20.00	19.90	42.00	37.25	16.30	200.25	107.25	33.00	BSF-G-2000/070-22.5	BSF-M-G-1A-19.5
		42.50						BSF-G-2000/070-23.0	
		43.00						BSF-G-2000/070-23.5	
		43.50						BSF-G-2000/070-24.0	
		44.00						BSF-G-2000/070-24.5	
		44.50						BSF-G-2000/070-25.0	
		45.00						BSF-G-2000/070-25.5	
		45.50						BSF-G-2000/070-26.0	
		46.00						BSF-G-2000/070-26.5	

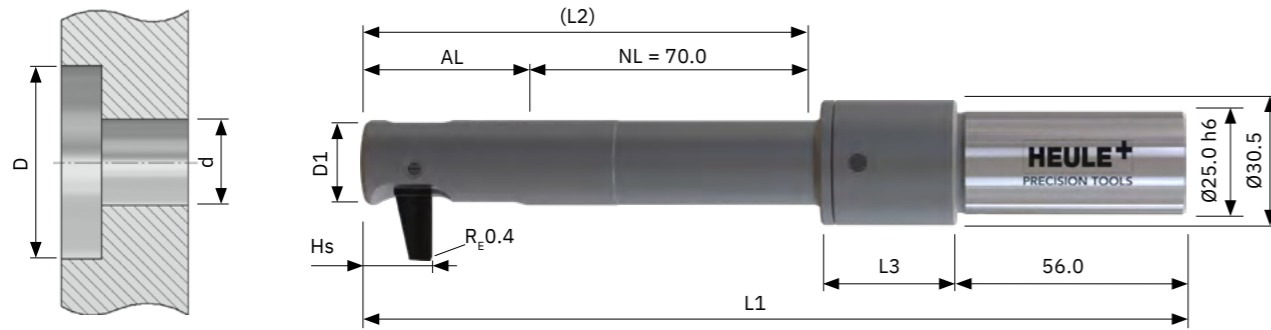
 Parts in stock highlighted in green

 Programming
Page 135

 Cutting data
Page 132

 Tool Selector –
Product selection made easy
heule.com/en/tool-selector/bsf

BSF Bore Ø 20.5 mm | Series G




Tools and blades

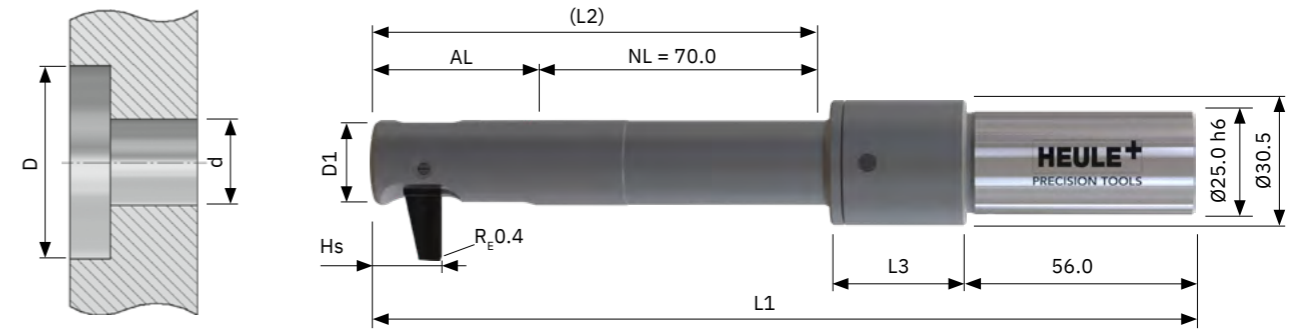
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
20.50	20.40	29.00	39.50	16.30	202.50	109.50	33.00	BSF-G-2050/070-23.0	BSF-M-G-1A-6.0
		29.50						BSF-G-2050/070-23.5	
		30.00						BSF-G-2050/070-24.0	
		30.50						BSF-G-2050/070-24.5	
		31.00						BSF-G-2050/070-25.0	
		31.50						BSF-G-2050/070-25.5	
		32.00						BSF-G-2050/070-26.0	
		32.50						BSF-G-2050/070-26.5	
		33.00						BSF-G-2050/070-27.0	
		33.50						BSF-G-2050/070-23.0	
		34.00						BSF-G-2050/070-23.5	
		34.50						BSF-G-2050/070-24.0	
		35.00						BSF-G-2050/070-24.5	
		35.50						BSF-G-2050/070-25.0	
		36.00						BSF-G-2050/070-25.5	
		36.50						BSF-G-2050/070-26.0	
		37.00						BSF-G-2050/070-26.5	
		37.50						BSF-G-2050/070-27.0	
		38.00						BSF-G-2050/070-23.0	BSF-M-G-1A-15.0
		38.50						BSF-G-2050/070-23.5	
		39.00						BSF-G-2050/070-24.0	
		39.50						BSF-G-2050/070-24.5	
		40.00						BSF-G-2050/070-25.0	
		40.50						BSF-G-2050/070-25.5	
		41.00						BSF-G-2050/070-26.0	
		41.50						BSF-G-2050/070-26.5	
		42.00						BSF-G-2050/070-27.0	

 Parts in stock highlighted in green

BSF Bore Ø 20.5 mm | Series G – continued




Tools and blades

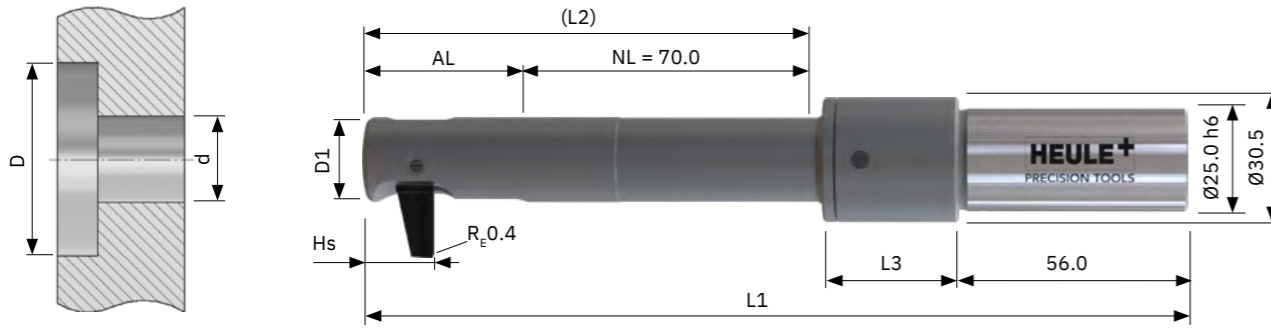
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-19.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
20.50	20.40	42.50	39.50	16.30	202.50	109.50	33.00	BSF-G-2050/070-23.0	BSF-M-G-1A-19.5
		43.00						BSF-G-2050/070-23.5	
		43.50						BSF-G-2050/070-24.0	
		44.00						BSF-G-2050/070-24.5	
		44.50						BSF-G-2050/070-25.0	
		45.00						BSF-G-2050/070-25.5	
		45.50						BSF-G-2050/070-26.0	
		46.00						BSF-G-2050/070-26.5	
		46.50						BSF-G-2050/070-27.0	
		47.00						BSF-G-2050/070-23.0	
		47.50						BSF-G-2050/070-23.5	

 Parts in stock highlighted in green

BSF Bore Ø 21.0 mm | 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 part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-6.0).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
21.00	20.90	29.50	39.50	16.30	202.50	109.50	33.00	BSF-G-2100/070-23.5	BSF-M-G-1A-6.0
		30.00						BSF-G-2100/070-24.0	
		30.50						BSF-G-2100/070-24.5	
		31.00						BSF-G-2100/070-25.0	
		31.50						BSF-G-2100/070-25.5	
		32.00						BSF-G-2100/070-26.0	
		32.50						BSF-G-2100/070-26.5	
		33.00						BSF-G-2100/070-27.0	
		33.50						BSF-G-2100/070-27.5	
		34.00						BSF-G-2100/070-23.5	
		34.50						BSF-G-2100/070-24.0	
		35.00						BSF-G-2100/070-24.5	
		35.50						BSF-G-2100/070-25.0	
		36.00						BSF-G-2100/070-25.5	
		36.50						BSF-G-2100/070-26.0	
		37.00						BSF-G-2100/070-26.5	
		37.50						BSF-G-2100/070-27.0	
		38.00						BSF-G-2100/070-27.5	
		38.50						BSF-G-2100/070-23.5	BSF-M-G-1A-15.0
		39.00						BSF-G-2100/070-24.0	
		39.50						BSF-G-2100/070-24.5	
		40.00						BSF-G-2100/070-25.0	
		40.50						BSF-G-2100/070-25.5	
		41.00						BSF-G-2100/070-26.0	
		41.50						BSF-G-2100/070-26.5	
		42.00						BSF-G-2100/070-27.0	
		42.50						BSF-G-2100/070-27.5	

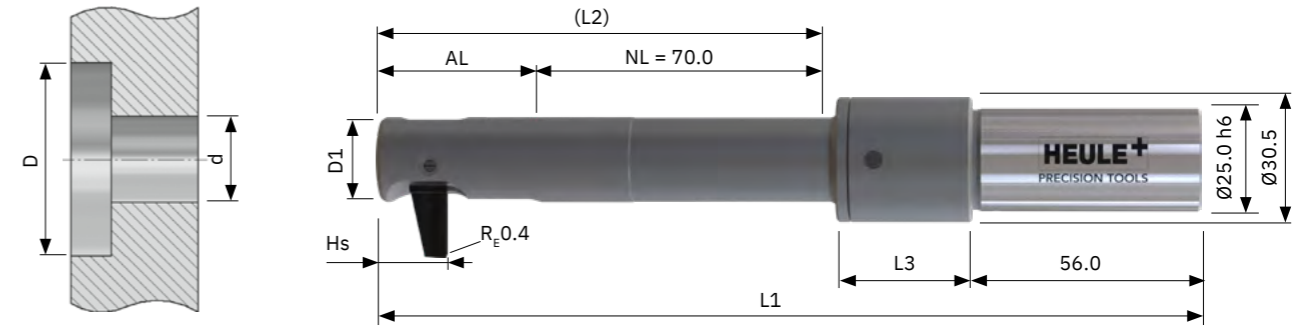
 Parts in stock highlighted in green

 Programming
Page 135

 Cutting data
Page 132

 Tool Selector –
Product selection made easy
heule.com/en/tool-selector/bsf

BSF bore Ø 21.0 mm | Series G – continued




Tools and blades

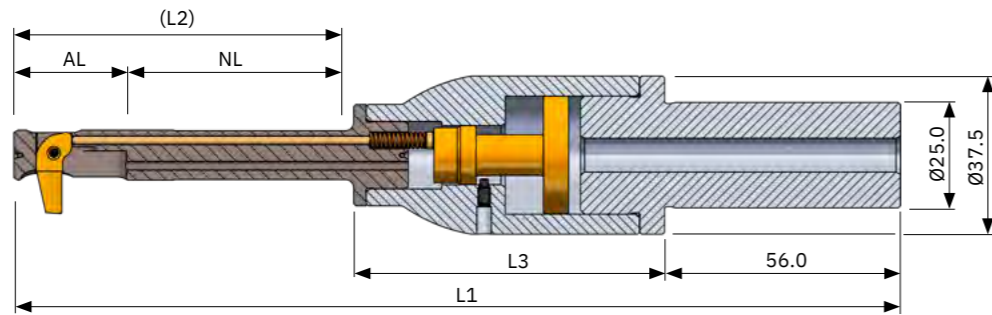
Standard tool **without** blade. The blade must be ordered separately.

- Activation with internal coolant. For BSF Air, add A to the part no. (**BSFA-**) and M for BSF Manual (**BSFM-**).
- With cylindrical shank. Optional, but not from stock: Weldon > suffix "-HB", Whistle Notch > suffix "-HE"
- Standard blade coating "1A" for steel alloys. For aluminium, change part no. to "1D" (e.g: BSF-M-G-**1D**-19.5).

Bore Ø d mm	Tool Ø D1 mm	C-bore Ø D mm	AL mm	HS mm	L1 mm	L2 mm	L3 mm	Tool Part no.	Blade Part no.
21.00	20.90	43.00	39.50	16.30	202.50	109.50	33.00	BSF-G-2100/070-23.5	BSF-M-G-1A-19.5
		43.50						BSF-G-2100/070-24.0	
		44.00						BSF-G-2100/070-24.5	
		44.50						BSF-G-2100/070-25.0	
		45.00						BSF-G-2100/070-25.5	
		45.50						BSF-G-2100/070-26.0	
		46.00						BSF-G-2100/070-26.5	
		46.50						BSF-G-2100/070-27.0	
		47.00						BSF-G-2100/070-27.5	
		47.50						BSF-G-2100/070-23.5	
		48.00						BSF-G-2100/070-24.0	
		48.50						BSF-G-2100/070-24.5	
		49.00						BSF-G-2100/070-25.0	

 Parts in stock highlighted in green

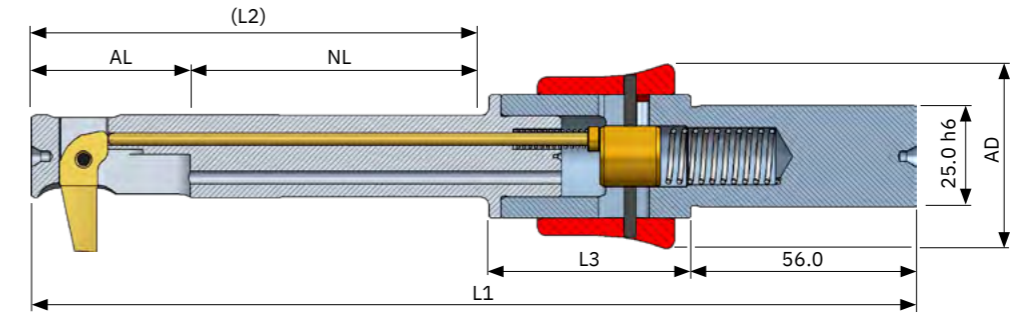
BSF Air



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 Ø 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 conversion kits

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			
IK	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			
IK	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



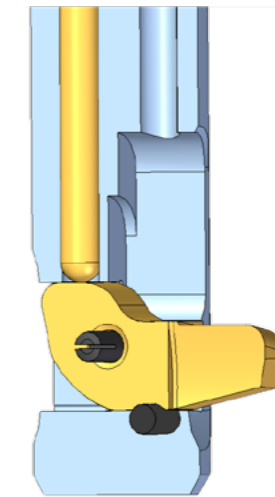
BSF options

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.

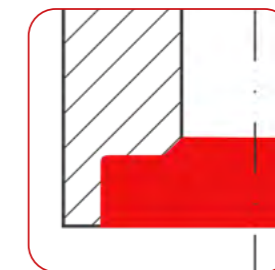


BSF-P: The additional interlocking bolt in the blade housing helps to position the blade more precisely.

Counterboring with inside chamfers

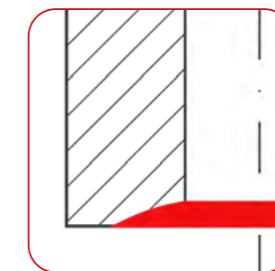
BSF carbide blades can also be produced with custom forms. A common example is the additional cutting of an internal chamfer.

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



Spherical formed blades

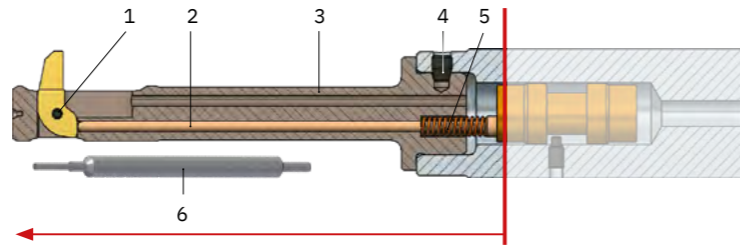
The higher counterboring accuracy of the BSF-P version and the manufacturing process make additional customer specifications possible, e.g. spherical convex form.



BSF

INDIVIDUAL

BSF spare parts



	1	2	3	4	5	6
	Split pin	Control bolt	Blade housing	Clamping screw	Pressure spring	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
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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 FAQ

Question	Causes	Remedy
<ul style="list-style-type: none"> Blade folds out automatically when the spindle stops (vertical machining). 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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.
<ul style="list-style-type: none"> No counterbore after machining 	<ul style="list-style-type: none"> Blade does not fold out 	<ul style="list-style-type: none"> 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.
<ul style="list-style-type: none"> Blade does not fold in reliably 	<ul style="list-style-type: none"> Internal coolant pressure too low Air pressure on the machine spindle too low 	<ul style="list-style-type: none"> Minimum pressure is 20 bar. If this pressure cannot be reached, switch to BSF Air or BSF Manual if possible. 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.
<ul style="list-style-type: none"> Is coolant filtration necessary? 	<ul style="list-style-type: none"> Yes. Excessively contaminated cooling medium impairs the activation operation of the blade. 	<ul style="list-style-type: none"> The cooling medium must be cleaned with a minimum filter size of 25 µm.
<ul style="list-style-type: none"> Can machining be done with internal coolant or compressed air? 	<ul style="list-style-type: none"> Yes. This helps to remove chips and cool the tool/blade. 	<ul style="list-style-type: none"> Attention: The blade must be fully in the cut before the internal coolant is switched on.
<ul style="list-style-type: none"> I have a bore with H7 tolerance. Will the BSF damage the finished bore? 	<ul style="list-style-type: none"> It is possible that the BSF will leave marks on the finished bore. 	<ul style="list-style-type: none"> We recommend using the BSF tool on a pre-machining diameter.
<ul style="list-style-type: none"> Does it matter from which side the split pin is inserted when changing the blade? 	<ul style="list-style-type: none"> No 	
<ul style="list-style-type: none"> Is it possible to hold the BSF tool in a shrink-fit chuck? 	<ul style="list-style-type: none"> No. The shank is made of tool steel and has a different thermal expansion compared to carbide tools. 	
<ul style="list-style-type: none"> The blade housing is assembled onto the shank with 3 clamping screws. Is there a recommended location or position? 	<ul style="list-style-type: none"> No, the tool works in any position. 	