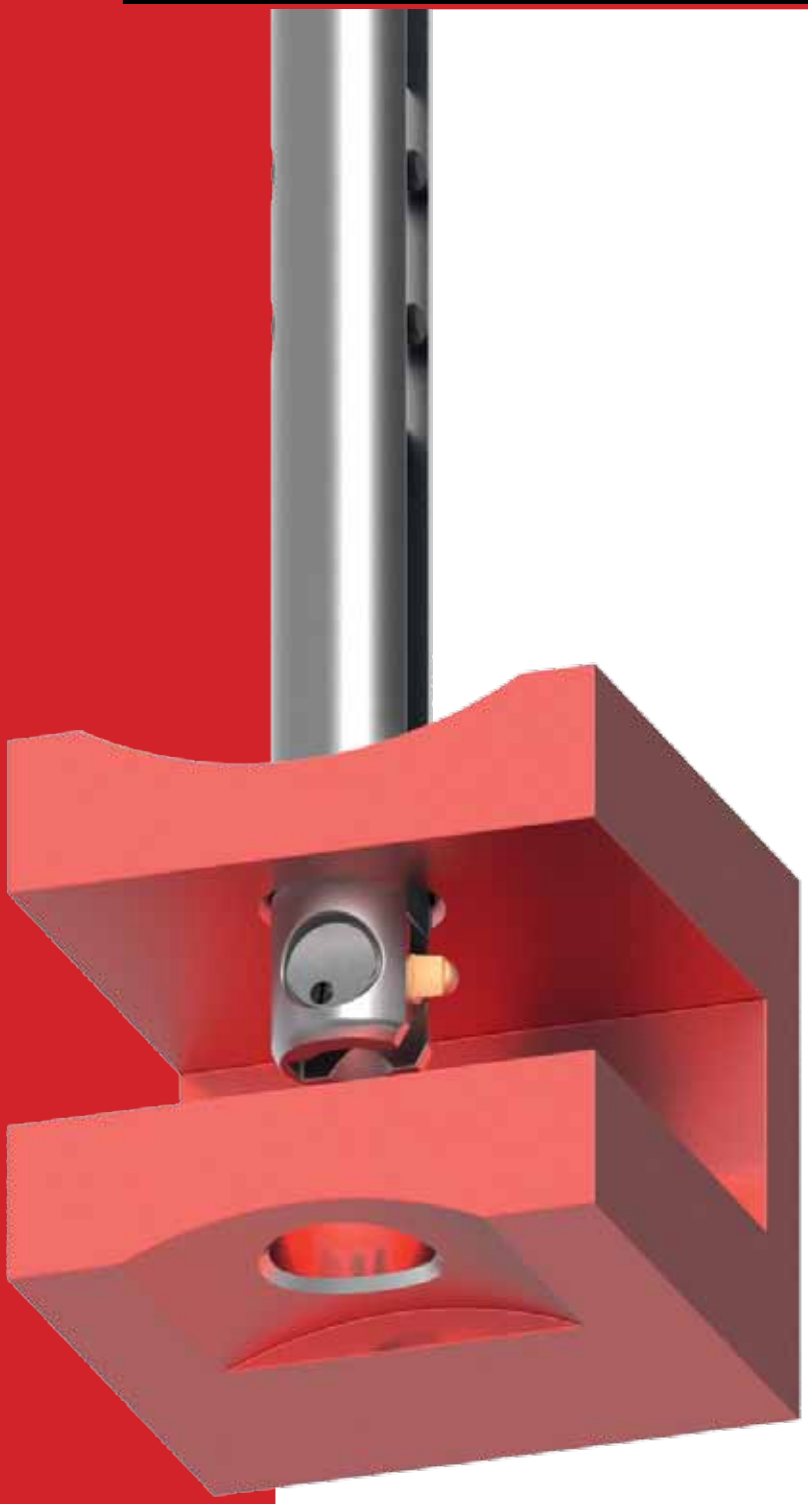
HEULE
PRECISION TOOLS

COFA-C



New Generation Deburring Tool for Elliptical or Contoured Surfaces

- Designed for added durability
- Suitable for threaded bores and larger edge breaks
- Shorter working length for a more stable tool
- Newly-designed blade holder for better guidance and longer spring life

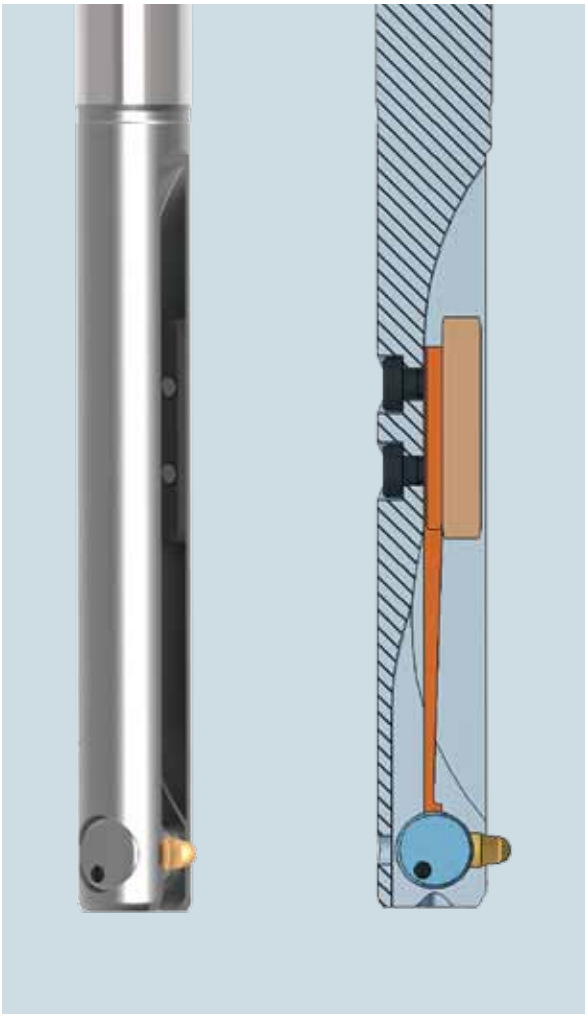
SWISS MADE

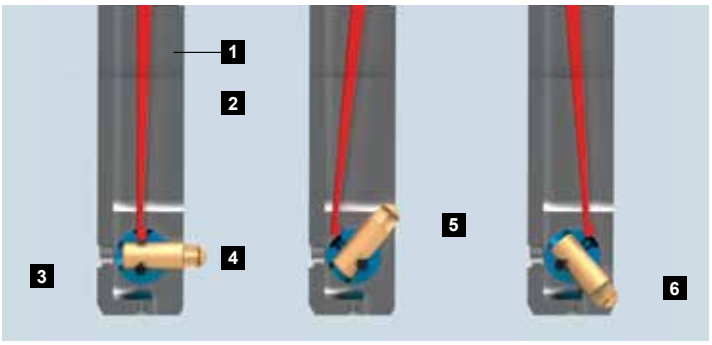
Cat. No. HTC019

The COFA-C Series

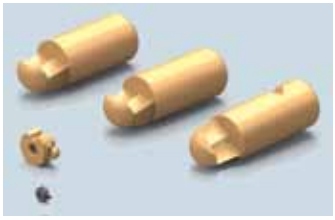
C-Series tooling functions the same as our standard proven COFA products. The COFA-C allows larger break edge sizes, with different choices & sizes of carbide coated blades. The cutting blade is held in a separate steel blade holder shich allows less wear to the spring and quicker exchangeability of each insert. C-Series adds more capability by allowing pre-chamfering of threaded holes on uneven surfaces.

Available for hole sizes 6mm (.236“) and up. The C-Series product also offers a complete range of cassettes for each series.





1 - Tool Body
2 - Spring
3 - Blade Holder
4 - Blade C6-C12
5 - Front Cutting Edge
6 - Back Cutting Edge



C-Series Offers Extra-large Break Edge

For blade change videos visit:

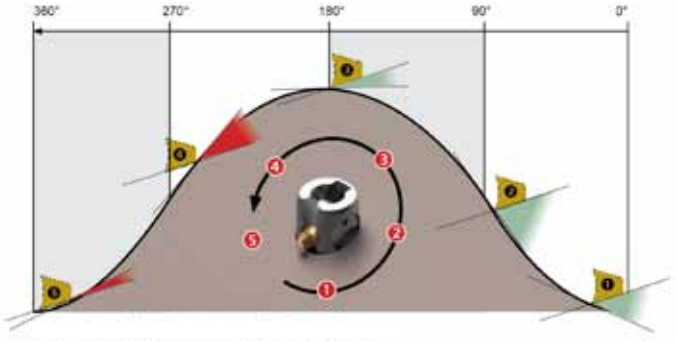
www.HeuleTool.com

How Does It Work?

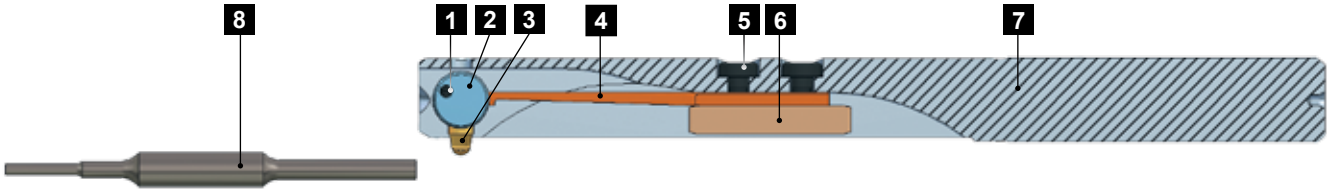
Controlled by a simple spring, the carbide cutting blade follows the contour of the hole's surface removing all burrs while creating an even tapered corner break. The blade does not cut as it passes through the bore and will not damage the hole's surface.

The edge break begins only at the point where the blade makes contact with the material and then tapers the hole's edge. This allows for faster feed rates since the tool slows itself down as it enters the through hole.

The simple concept of the COFA tool has no adjusting screws or presetting requirements. Only a choice of common tool sizes and spring strengths for various materials and hole sizes.



Tool Description



1 Split pin
2 Blade holder
3 Blade
4 Spring
5 Screw
6 Retainer block
7 Tool body
8 Assembly pin

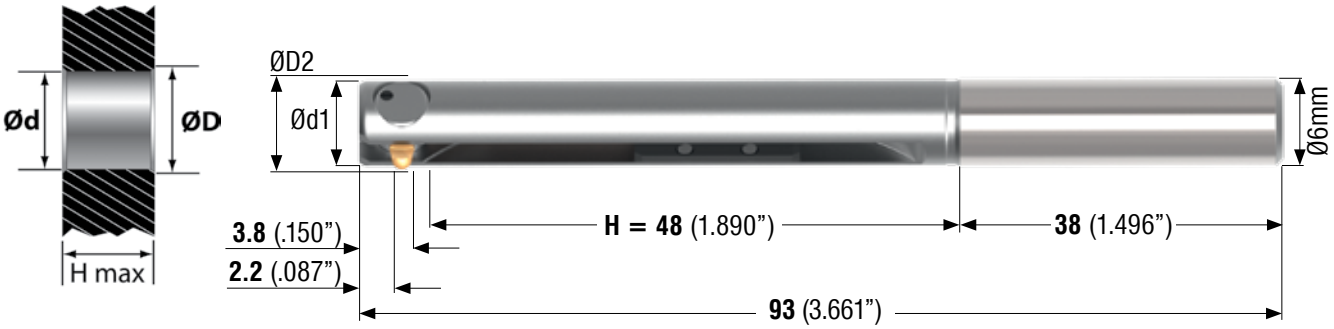
How to Order:

The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined. **Blades sold separately for COFA-C series.**

1. Choose the tool that best fits the hole diameter.
2. Choose the spring that best fits the material.
3. Choose the blade that best fits the hole geometry and edge break size (for all series).

Example: C8 - 8.0 - Z1 and C8-M-0006-A

- C8 - **Tool Series**
- 8.0 - **Min. Hole Dia. Ød (mm)**
- Z1 - **Spring Option**
- C8-M-0006-A - **Blade Option**



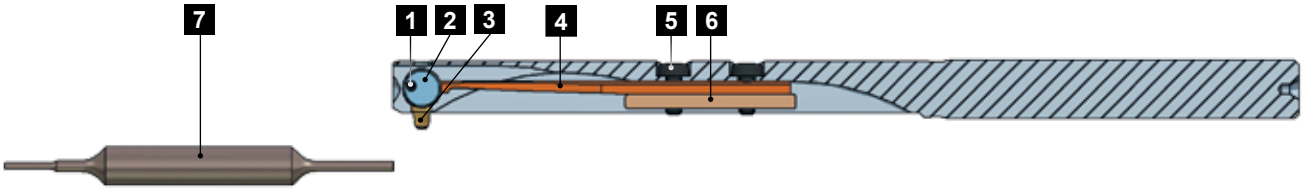
ØD2 = D + 1.3
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C6

Ød		Ød1		ØD			Tool without Blade
Min. Hole mm	*inches*	Tool Dia. mm	*inches*	Approx. Cutting Dia. mm	*inches*	Approx. Cutting Dia. mm *inches*	Tool Order Number
				Medium Blade		Large Blade	
6.0	*.236*	**5.8**	*.228*	**7.0**	*.276*	**7.4** *.291*	**C6-6.0-** ☐
6.2	*.244*	**6.0**	*.236*	**7.2**	*.283*	**7.6** *.299*	**C6-6.2-** ☐
6.4	*.252*	**6.2**	*.244*	**7.4**	*.291*	**7.8** *.307*	**C6-6.4-** ☐
6.6	*.260*	**6.4**	*.252*	**7.6**	*.299*	**8.0** *.315*	**C6-6.6-** ☐
6.8	*.268*	**6.6**	*.260*	**7.8**	*.307*	**8.2** *.323*	**C6-6.8-** ☐
7.0	*.276*	**6 .8**	*.268*	**8.0**	*.315*	**8.4** *.331*	**C6-7.0-** ☐
7.2	*.283*	**7.0**	*.276*	**8.2**	*.323*	**8.6** *.339*	**C6-7.2-** ☐
7.4	*.291*	**7.2**	*.283*	**8.4**	*.331*	**8.8** *.346*	**C6-7.4-** ☐
7.6	*.299*	**7.4**	*.291*	**8.6**	*.339*	**9.0** *.354*	**C6-7.6-** ☐
7.8	*.307*	**7.6**	*.299*	**8.8**	*.346*	**9.2** *.362*	**C6-7.8-** ☐
8.0	*.315*	**7.8**	*.307*	**9.0**	*.354*	**9.4** *.370*	**C6-8.0-** ☐

Blades sold separately for COFA-C Series, see Blade Options

Spring Choice: **W, H, S, Z, Z1, Z2, Z3**



Spare Parts – COFA C6

1	2	3	4	5	6	7	
Split Pin	Blade Holder	Blade	Spring	Screw	Retainer Block	Assembly Pin	Fixture*
C6-E-0003	C6-E-0001	See Below	See Below	GH-H-S-0803	GH-C-E-0812	C6-V-0006	C6-V-0008

*See Page 70

Spring Options:

The cutting force of the COFA tool is controlled by a flat spring Choose the proper spring for the material being machined.

Spring Code	Order Number	Typical Materials *Large or Heavy Burrs may require a stronger spring*	
W	C6-E-0008	Softer ↑	Aluminum, Brass, Magnesium
H	C6-E-0009		Grey Cast Iron, Nodular Iron
S	C6-E-0010		Carbon Steel, Free Machining Steel
Z	C6-E-0011		Long Chipping Steel, Stainless
Z1	C6-E-0012		Titanium, Hardened Steel, Nickel Alloy
Z2	C6-E-0013	↓ Harder	Nickel Alloy, etc
Z3	C6-E-0014		Nickel Alloy, etc

Blade Options:

Blades are available from stock as front and back cutting (fab) or back cutting only (bco).

Blade Type	Geo.	Medium Blade TiAlN Coated	Large Blade TiAlN Coated
20° Standard	fab	C6-M-0006-A	C6-M-0001-A
	bco	C6-M-0026-A	C6-M-0021-A
10° Flat Surfaces	fab	C6-M-0007-A	C6-M-0002-A
	bco	C6-M-0027-A	C6-M-0022-A
30° Uneven Surfaces	fab	C6-M-0009-A	C6-M-0004-A
	bco	C6-M-0029-A	C6-M-0024-A

How to Order:

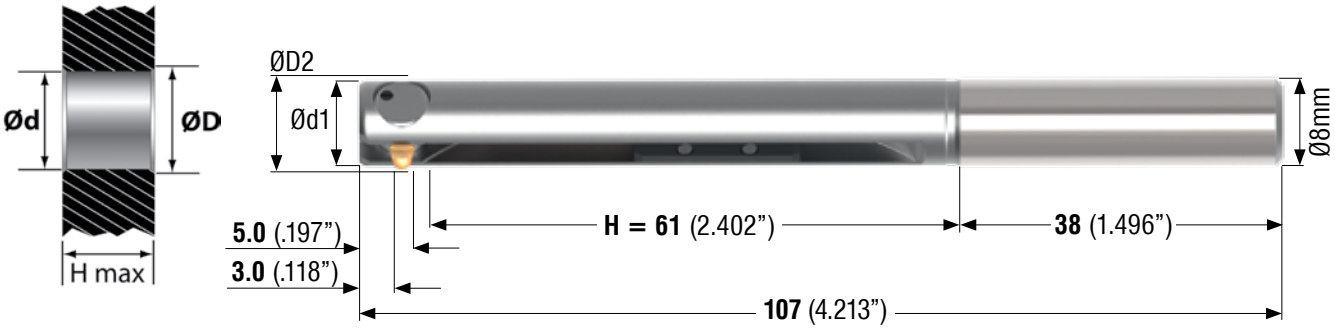
The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined. **Blades sold separately for COFA-C series.**

1. Choose the tool that best fits the hole diameter.
2. Choose the spring that best fits the material.
3. Choose the blade that best fits the hole geometry and edge break size.

Example: C6 - 6.0 - Z1 and C6-M-0006-A

- C6 – Tool Series
- 6.0 – Min. Hole Dia. Ød (mm)
- Z1 – Spring Option
- C6-M-0006-A – Blade Option

PROGRAMMING PG. 68-69
CHANGE BLADES PG. 70



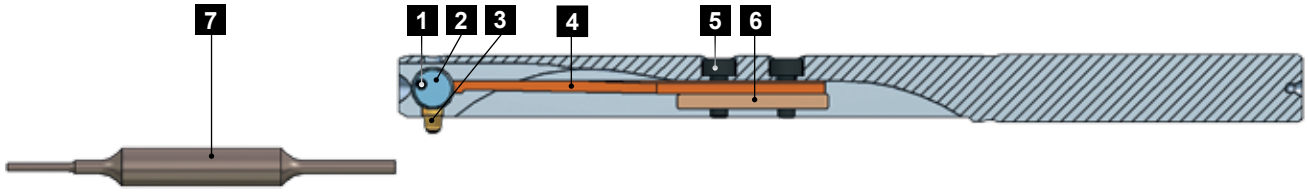
ØD2 = D + 1.6
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C8

Ød Min. Hole mm *inches*	Ød1 Tool Dia. mm *inches*	ØD Approx. Cutting Dia. mm *inches*	ØD Approx. Cutting Dia. mm *inches*	Tool without Blade Tool Order Number
		Medium Blade	Large Blade	
8.0 .315	7.8 .307	9.2 .362	9.8 .386	C8-8.0-☐
8.2 .323	8.0 .315	9.4 .370	10.0 .394	C8-8.2-☐
8.4 .331	8.2 .323	9.6 .378	10.2 .402	C8-8.4-☐
8.6 .339	8.4 .331	9.8 .386	10.4 .409	C8-8.6-☐
8.8 .346	8.6 .339	10.0 .394	10.6 .417	C8-8.8-☐
9.0 .354	8.8 .346	10.2 .402	10.8 .425	C8-9.0-☐
9.2 .362	9.0 .354	10.4 .409	11.0 .433	C8-9.2-☐
9.4 .370	9.2 .362	10.6 .417	11.2 .441	C8-9.4-☐
9.6 .378	9.4 .370	10.8 .425	11.4 .449	C8-9.6-☐
9.8 .386	9.6 .378	11.0 .433	11.6 .457	C8-9.8-☐
10.0 .394	9.8 .386	11.2 .441	11.8 .465	C8-10.0-☐
10.2 .402	10.0 .394	11.4 .449	12.0 .472	C8-10.2-☐
10.4 .409	10.2 .402	11.6 .457	12.2 .480	C8-10.4-☐
10.6 .417	10.4 .409	11.8 .465	12.4 .488	C8-10.6-☐
10.8 .425	10.6 .417	12.0 .472	12.6 .496	C8-10.8-☐
11.0 .433	10.8 .425	12.2 .480	12.8 .504	C8-11.0-☐
11.2 .441	11.0 .433	12.4 .488	13.0 .512	C8-11.2-☐
11.4 .449	11.2 .441	12.6 .496	13.2 .520	C8-11.4-☐
11.6 .457	11.4 .449	12.8 .504	13.4 .528	C8-11.6-☐
11.8 .465	11.6 .457	13.0 .512	13.6 .535	C8-11.8-☐
12.0 .472	11.8 .465	13.2 .520	13.8 .543	C8-12.0-☐

Blades sold separately for COFA-C Series, see Blade Options

Spring Choice: W, H, S, Z, Z1, Z2, Z3



Spare Parts – COFA C8

1	2	3	4	5	6	7	
Split Pin	Blade Holder	Blade	Spring	Screw	Retainer Block	Assembly Pin	Fixture*
C8-E-0003	C8-E-0001	See Below	See Below	GH-H-S-0517	GH-C-E-0808	C8-V-0005	C8-V-0007

*See Page 70

Spring Options:

The cutting force of the COFA tool is controlled by a flat spring. Choose the proper spring for the material being machined.

Spring Code	Order Number	Typical Materials *Large or Heavy Burrs may require a stronger spring*	
W	C8-E-0008	Softer ↑	Aluminum, Brass, Magnesium
H	C8-E-0009		Grey Cast Iron, Nodular Iron
S	C8-E-0010		Carbon Steel, Free Machining Steel
Z	C8-E-0011		Long Chipping Steel, Stainless
Z1	C8-E-0012		Titanium, Hardened Steel, Nickel Alloy
Z2	C8-E-0013	↓ Harder	Nickel Alloy, etc
Z3	C8-E-0014		Nickel Alloy, etc

Blade Options:

Blades are available from stock as front and back cutting (fab) or back cutting only (bco).

Blade Type	Geo.	Medium Blade TiAlN Coated	Large Blade TiAlN Coated
20° Standard	fab	C8-M-0006-A	C8-M-0001-A
	bco	C8-M-0026-A	C8-M-0021-A
10° Flat Surfaces	fab	C8-M-0007-A	C8-M-0002-A
	bco	C8-M-0027-A	C8-M-0022-A
30° Uneven Surfaces	fab	C8-M-0009-A	C8-M-0004-A
	bco	C8-M-0029-A	C8-M-0024-A

How to Order:

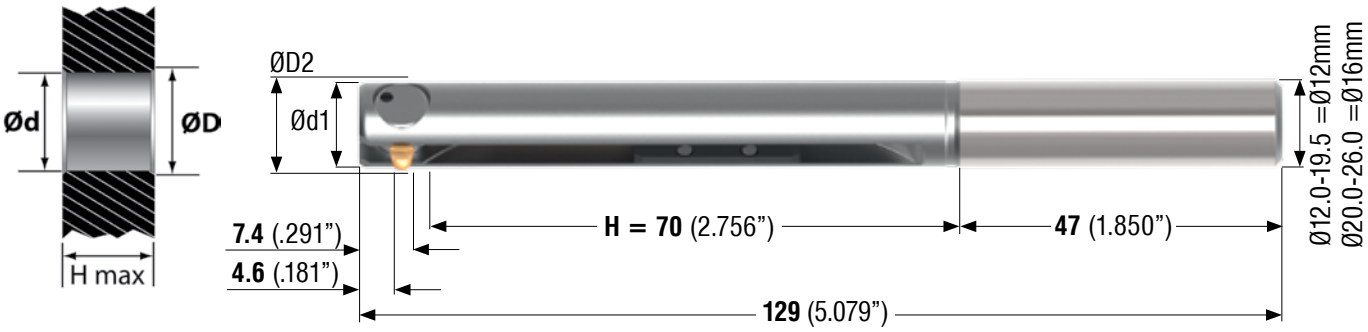
The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined. **Blades sold separately for COFA-C series.**

1. Choose the tool that best fits the hole diameter.
2. Choose the spring that best fits the material.
3. Choose the blade that best fits the hole geometry.

Example: C8 - 8.0 - Z1 and C8-M-0006-A

- C8 – Tool Series
- 8.0 – Min. Hole Dia. Ød (mm)
- Z1 – Spring Option
- C8-M-0006-A – Blade Option

PROGRAMMING PG. 68-69
CHANGE BLADES PG. 70



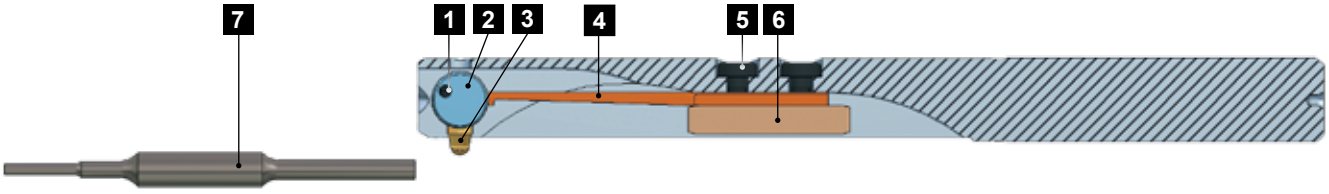
ØD2 = D + 2.2
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C12

Ød		Ød1		ØD		ØD		Tool without Blade
Min. Hole		Tool Dia.		Approx. Cutting Dia.		Approx. Cutting Dia.		Tool Order Number
mm	*inches*	mm	*inches*	mm	*inches*	mm	*inches*	
				Medium Blade		Large Blade		
12.0	*.472*	**11.8**	*.465*	**13.6**	*.535*	**14.8**	*.583*	**C12-12.0-** ☐
12.5	*.492*	**12.3**	*.484*	**14.1**	*.555*	**15.3**	*.602*	**C12-12.5-** ☐
13.0	*.512*	**12.8**	*.504*	**14.6**	*.575*	**15.8**	*.622*	**C12-13.0-** ☐
13.5	*.531*	**13.3**	*.524*	**15.1**	*.594*	**16.3**	*.642*	**C12-13.5-** ☐
14.0	*.551*	**13.8**	*.543*	**15.6**	*.614*	**16.8**	*.661*	**C12-14.0-** ☐
14.5	*.571*	**14.3**	*.563*	**16.1**	*.634*	**17.3**	*.681*	**C12-14.5-** ☐
15.0	*.591*	**14.8**	*.583*	**16.6**	*.654*	**17.8**	*.701*	**C12-15.0-** ☐
15.5	*.610*	**15.3**	*.602*	**17.1**	*.673*	**18.3**	*.720*	**C12-15.5-** ☐
16.0	*.630*	**15.8**	*.622*	**17.6**	*.693*	**18.8**	*.740*	**C12-16.0-** ☐
16.5	*.650*	**16.3**	*.642*	**18.1**	*.713*	**19.3**	*.760*	**C12-16.5-** ☐
17.0	*.669*	**16.8**	*.661*	**18.6**	*.732*	**19.8**	*.780*	**C12-17.0-** ☐
17.5	*.689*	**17.3**	*.681*	**19.1**	*.752*	**20.3**	*.799*	**C12-17.5-** ☐
18.0	*.709*	**17.8**	*.701*	**19.6**	*.772*	**20.8**	*.819*	**C12-18.0-** ☐
18.5	*.728*	**18.3**	*.720*	**20.1**	*.791*	**21.3**	*.839*	**C12-18.5-** ☐
19.0	*.748*	**18.8**	*.740*	**20.6**	*.811*	**21.8**	*.858*	**C12-19.0-** ☐
19.5	*.768*	**19.3**	*.760*	**21.1**	*.831*	**22.3**	*.878*	**C12-19.5-** ☐
20.0	*.787*	**19.8**	*.780*	**21.6**	*.850*	**22.8**	*.898*	**C12-20.0-** ☐
20.5	*.807*	**20.3**	*.795*	**22.1**	*.870*	**23.3**	*.917*	**C12-20.5-** ☐
21.0	*.827*	**20.8**	*.819*	**22.6**	*.890*	**23.8**	*.937*	**C12-21.0-** ☐
21.5	*.846*	**21.3**	*.839*	**23.1**	*.909*	**24.3**	*.957*	**C12-21.5-** ☐
22.0	*.866*	**21.8**	*.858*	**23.6**	*.929*	**24.8**	*.976*	**C12-22.0-** ☐
22.5	*.886*	**22.3**	*.878*	**24.1**	*.949*	**25.3**	*.996*	**C12-22.5-** ☐
23.0	*.906*	**23.8**	*.898*	**24.6**	*.969*	**25.8**	*1.016*	**C12-23.0-** ☐
23.5	*.925*	**23.3**	*.917*	**25.1**	*.988*	**26.3**	*1.035*	**C12-23.5-** ☐
24.0	*.945*	**23.8**	*.937*	**25.6**	*1.008*	**26.8**	*1.055*	**C12-24.0-** ☐
24.5	*.965*	**24.3**	*.957*	**26.1**	*1.028*	**27.3**	*1.075*	**C12-24.5-** ☐
25.0	*.984*	**24.8**	*.976*	**26.6**	*1.047*	**27.8**	*1.094*	**C12-25.0-** ☐
25.5	*1.004*	**25.3**	*.996*	**27.1**	*1.067*	**28.3**	*1.114*	**C12-25.5-** ☐
26.0	*1.024*	**25.8**	*1.016*	**27.6**	*1.087*	**28.8**	*1.134*	**C12-26.0-** ☐

Blades sold separately for COFA-C Series, see Blade Options

Spring Choice: W, H, S, Z, Z1, Z2, Z3



Spare Parts – COFA C12

1	2	3	4	5	6	7	
Split Pin	Blade Holder	Blade	Spring	Screw	Retainer Block	Assembly Pin	Fixture*
C12-E-0003	C12-E-0001	See Below	See Below	GH-H-S-0530	GH-C-E-0800	C12-V-0005	C12-V-0018

*See Page 70

Spring Options:

The cutting force of the COFA tool is controlled by a flat spring Choose the proper spring for the material being machined.

Spring Code	Order Number	Typical Materials *Large or Heavy Burrs may require a stronger spring*	
W	C12-E-0008	Softer	Aluminum, Brass, Magnesium
H	C12-E-0009		Grey Cast Iron, Nodular Iron
S	C12-E-0010		Carbon Steel, Free Machining Steel
Z	C12-E-0011		Long Chipping Steel, Stainless
Z1	C12-E-0012		Titanium, Hardened Steel, Nickel Alloy
Z2	C12-E-0013	Harder	Nickel Alloy, etc
Z3	C12-E-0014		Nickel Alloy, etc

Blade Options:

Blades are available from stock as front and back cutting (fab) or back cutting only (bco).

Blade Type	Geo.	Medium Blade TiAlN Coated	Large Blade TiAlN Coated
20° Standard	fab	C12-M-0006-A	C12-M-0001-A
	bco	C12-M-0026-A	C12-M-0021-A
10° Flat Surfaces	fab	C12-M-0007-A	C12-M-0002-A
	bco	C12-M-0027-A	C12-M-0022-A
30° Uneven Surfaces	fab	C12-M-0009-A	C12-M-0004-A
	bco	C12-M-0029-A	C12-M-0024-A

How to Order:

The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined. **Blades sold separately for COFA-C series.**

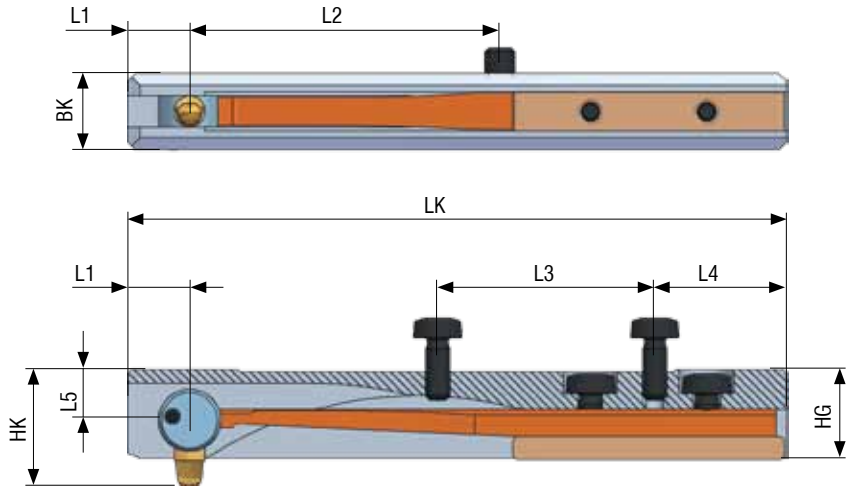
1. Choose the tool that best fits the hole diameter.
2. Choose the spring that best fits the material.
3. Choose the blade that best fits the hole geometry.

Example: C12 - 15.0 - Z1 and C12-M-0006-A

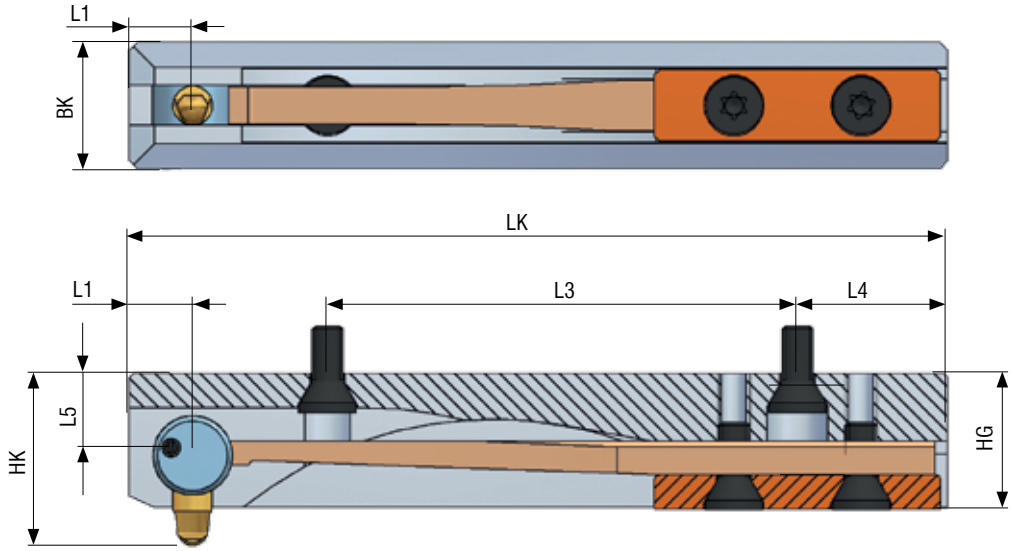
- C12 – Tool Series
- 15.0 – Min. Hole Dia. Ød (mm)
- Z1 – Spring Option
- C12-M-0006-A – Blade Option

PROGRAMMING PG. 68-69
CHANGE BLADES PG. 70

COFA C6 Cassette



COFA C8/C12 Cassette

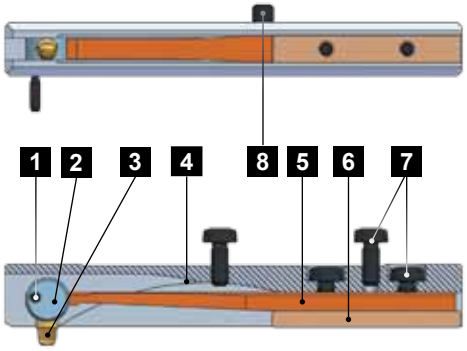


The COFA Cassette is used for installation into combination tools and cassette holders. The holder can be ordered from Heule Tool, or the customers can use their own, utilizing the following specificiations:

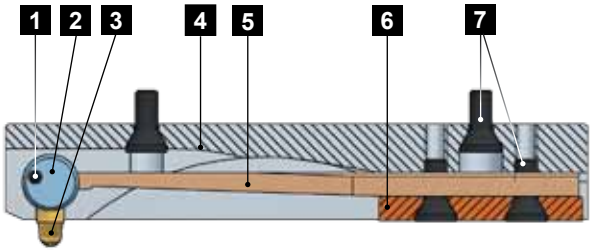
				Cass. without Blade
Tool Series	Min. Bore size	Max Chamfer size	Blade	Cassette Order Number
C6	10.0	See Page 67	See Page 59	C6-0-0900- ☐
C8	14.0	See Page 67	See Page 61	C8-0-0900- ☐
C12	20.0	See Page 67	See Page 63	C12-0-0900- ☐

Spring Choice: W, H, S, Z, Z1, Z2, Z3

COFA C6



COFA C8/C12



Spare Parts – Cassette

	1	2	3	4	5	6	7	8
Cassette	Split Pin	Blade Holder	Blade	Tool Body	Spring	Retainer Block	Screw	Set Screw
SERIES 6	C6-E-0003	C6-E-0001	See Page 59	C6-G-0900	See Below	GH-C-E-0812	GH-H-S-0803	GH-H-S-0137
SERIES 8	C8-E-0003	C8-E-0001	See Page 61	C8-G-0900	See Below	C8-E-0800	GH-H-S-0050	
SERIES 12	C12-E-0003	C12-E-0001	See Page 63	C12-G-0900	See Below	C12-E-0800	GH-H-S-0012	

Spring Options:

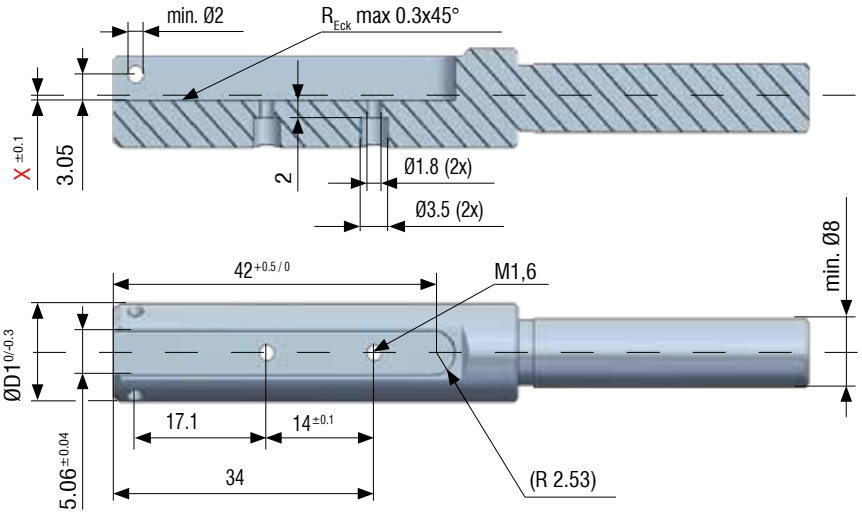
The cutting force of the COFA tool is controlled by a flat spring
Choose the proper spring for the material being machined.

Spring Code	Order Number		Typical Materials *Large or Heavy Burrs may require a stronger spring*
W	The order numbers for the springs are identical with those for the standard tools. C6 - page 59 C8 - page 61 C12 - page 63	Softer	Aluminum, Brass, Magnesium
H			Grey Cast Iron, Nodular Iron
S			Carbon Steel, Free Machining Steel
Z			Long Chipping Steel, Stainless
Z1			Titanium, Hardened Steel, Nickel Alloy
Z2		Harder	Nickel Alloy, etc

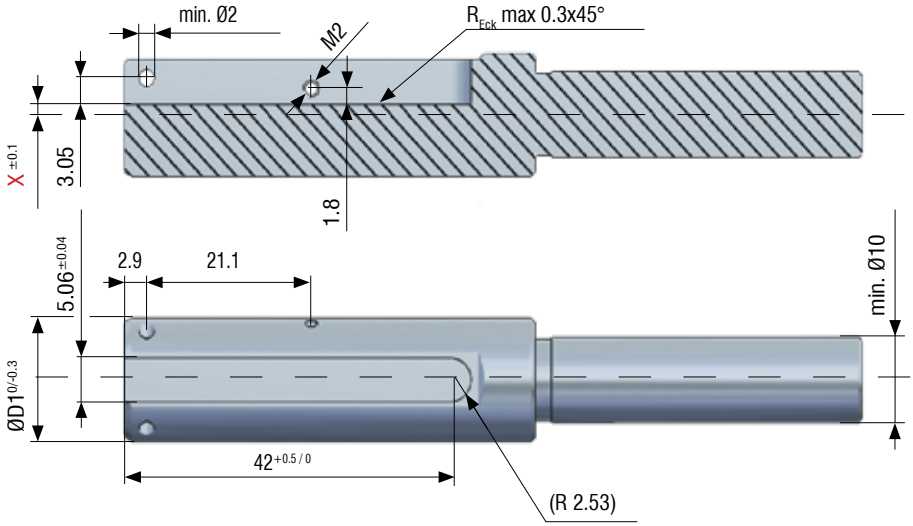
Measurements

Type	BK	HG	LK	HK	L1	L2	L3	L4	L5
C6	5.0	5.8	42.5	see pg 69	4.0	20.0	14.0	8.5	3.3
C8	8.0	8.5	51.5		4.0	-	29.6	9.5	5.2
C12	10.0	13.0	60.0		7.5	-	35.0	8.5	7.7

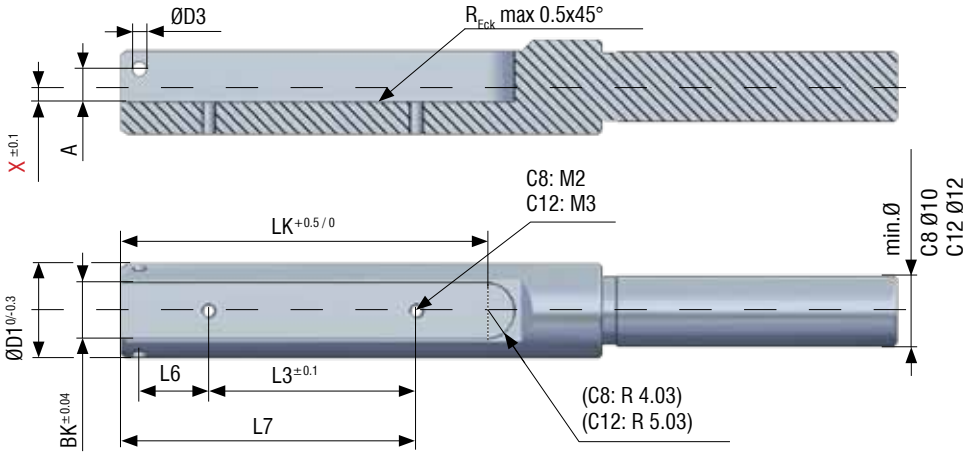
COFA C6 Ø10.0-14.99



COFA C6 Ø15.0 -



COFA C8 / C12

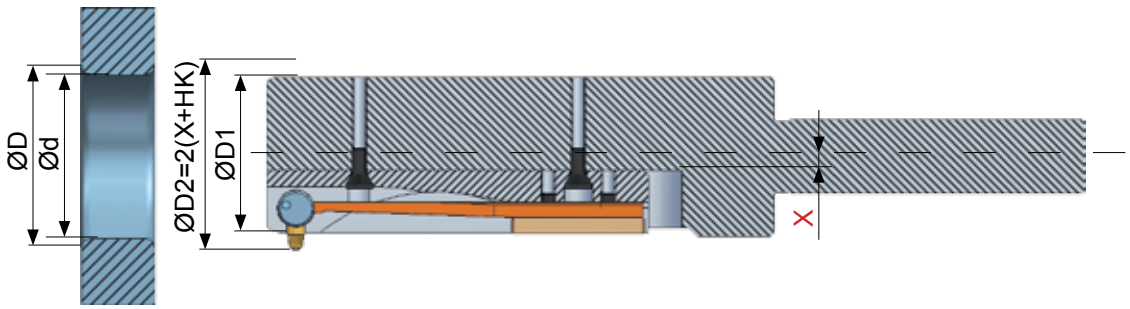


Limiting Values

From Bore Ø	C6 Ø10.0		C8 Ø14.0		C12 Ø20.0	
	M	L	M	L	M	L
max. ØD	Ød + 0.8	Ød + 1.4	Ød + 1.1	Ød + 1.8	Ød + 1.5	Ød + 2.8
max. ØD1	Ød - 0.5		Ød - 0.5		Ød - 0.5	

Measure Table Cassette Holder

Type	BK	LK	D3	L3	L6	L7	X	A	R
C6	s.p. 30	42.5	s.p.30	s.p. 30	s.p. 30	s.p. 30	Must be calculated for every application (see below formula)	s.p. 30	s.p. 30
C8	8.06	52.0	2.0	29.55	9.85	42.05		4.70	4.03
C12	10.06	61.0	3.0	35.0	11.1	51.5		6.45	5.03



HK Measurements

Type	S	M	L
C6	-	7.6	7.8
C8	-	10.6	11.0
C12	-	15.6	16.2

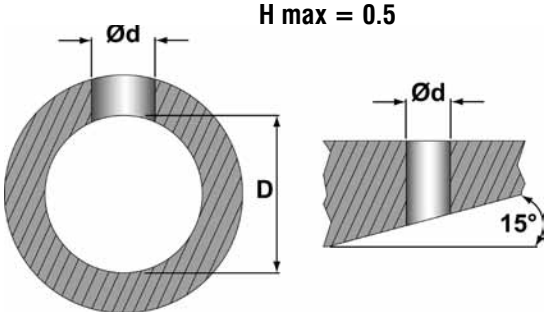
X Formula

Type	Formula
C6	X = Ød/2 - 6.3
C8	X = Ød/2 - 9.2
C12	X = Ød/2 - 13.7

Technical Information

For the standard COFA tool, the maximum cross hole to main hole ratio is 2:1 and the maximum surface angle is 15°. Above these values, the cutting insert may not have enough clearance. With irregular surfaces, the RPM must be lowered but the feed rate is unaffected. Deburr more extreme contours by using the 30° blade with extra clearance relief.

H = d/D
H max = 0.5



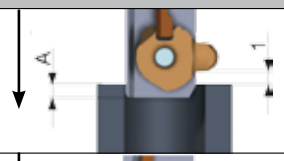
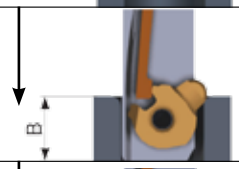
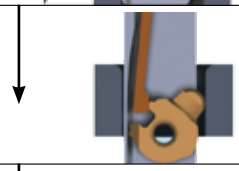
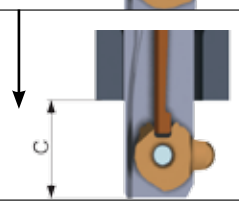
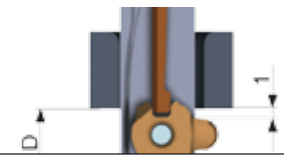
Spring Information

The spring gives cutting force to the carbide blade and the COFA tool easily accommodates several spring sizes. For easier cutting materials such as aluminum, a softer "W" spring is recommended. For harder materials or alloys, a stiffer spring is recommended.

MATERIAL	BHN	Spring Index	Ø6- Ø26 SPEED (SFM)* Carbide-TiALN	
			SFM	IPR
Low Carbon Steels 1010, 1020, 1513	*100-200*	H-Z	120-340	.006-.014
Med. Carbon Steels 1030, 1040, 1050, 1524	*125-250*	H-Z	100-280	.006-.014
Free Machining Alloy 4140, 4150, 4130	*125-250* *125-340*	H-S S-Z	60-240	.006-.014
High Alloy Steel 4340	*250-350*	S-Z1	60-200	.006-.01
Stainless Steel 301, 316, 17-4PH etc.	*140-250*	S-Z2	40-175	.006-.01
Steel Castings	*90-225* *150-250*	H-S Z	30-240	.006-.012
Gray Cast Iron	*150-250* *200-330*	H H-S	50-330	.008-.016
Nodular Cast Iron	*140-220* *220-310*	H H-S	50-300	.006-.012
Aluminum Alloys	*30-180*	W-H	80-600	.008-.016
Nickel Base Alloys	*140-220* *220-310*	Z1-Z3 Z2-Z3	15-80	.005-.01
Titanium Alloys		Z1-Z3	15-80	.005-.01
Copper-Brass-Bronze	*80-85* *135-202*	H H-S	80-600	.008-.016

*NOTICE

All listed cutting data are standard values only! The cutting values depend on the amount of slope of the uneven bore edge. (i.e. high slope > low cutting value). The feed also depends on the sloping ratio. In case of hard to machine materials or uneven bore edges, we recommend to apply cutting speeds that are at the lower end of the range.

For Front & Back Deburring		For Back Only Deburring
Step 1: Referencing the front of the tool. Rapid traverse the tool the distance "A" into the hole. This will give .040"(1) clearance from the cutter.		For back deburring only, the COFA tool can rapid traverse through the top hole without damage to your hole surface.
Step 2: In forward working feed machine the top surface of the hole by moving to distance "B". *(Ref. the front of the tool)*		
Step 3: Rapid traverse through the hole. The hole cannot be damaged.		**Step 1:** Rapid traverse through the hole. The hole cannot be damaged.
Step 4: 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)*		**Step 2:** 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)*
Step 5: *(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)*		**Step 3:** *(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)*
Step 6: In back working feed, move to distance "E" to machine the rear surface. *(Ref. the front of the tool) Rapid Out*		**Step 4:** In back working feed, move to distance "E" to machine the rear surface. *(Ref. the front of the tool) Rapid out.*

NOTE:

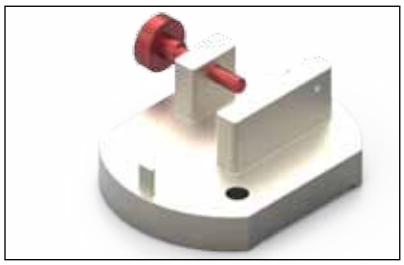
Important - Please pay attention to irregular surfaces! Please consider unevenness when programming the distances.

Tool Type	A	B	C*	D	E*
C6	.043" *(1.1)*	.268" *(6.8)*	.268" *(6.8)*	.193" *(4.9)*	-.03"(-0.8)
C8	.075" *(1.9)*	.347" *(8.8)*	.335" *(8.5)*	.240" *(6.1)*	-.016 *(-0.4)*
C12	.134" *(3.4)*	.512" *(13.0)*	.492" *(12.5)*	.339" *(8.6)*	-.039" (-1.0)

*Plus Material Thickness

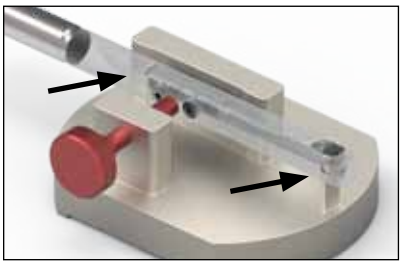
How to Change the Blades
COFA Series C6/C8/C12 with Fixture:

For blade change videos visit:
www.HeuleTool.com



The COFA series blades can be installed and removed by clamping the tool in the COFA assembly fixture.

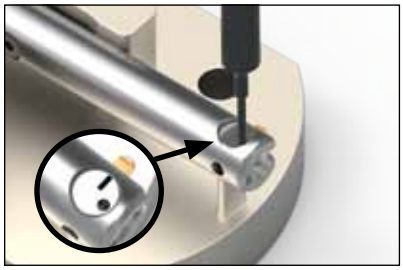
Fixture Order Number:
C6-V-0008, C8-V-0007, C12-V-0018



Place tool into the assembly device so that support pin from the assembly device enters into the spring recess behind the fixing strip and that the tool holder lies with its contour flush on the front rest.

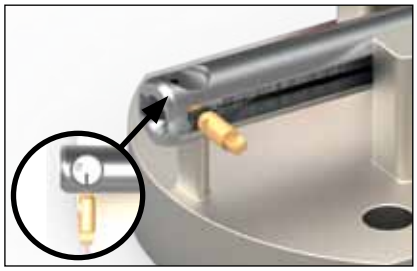
Make sure that the bore with the roll pin is entirely free.

Then, clamp the tool.



There is a line mark on the black roll pin. Push the roll pin through the tool holder by using the smaller diameter assembly pin (same direction for disassembly and assembly).

Use the assembly pin to make sure the blade hole and the pin hole are aligned. Press the assembly pin all the way through to the larger diameter.



Insert new blade with cutting edge up into the blade holder. Make sure that the blade is pushed in from the line mark side.

In order to define the right position of the blade and to pre-center for the new roll pin, push the assembly pin in the roll pin hole.

Insert new roll pin short section first into the hole until the back end of the pin is flush with tool holder.

Loosen clamping screw and take the tool into your hands. Manually brake off the projecting section of the roll pin at the predetermined breaking point.

*COFA assembly fixture is not mandatory to remove blades

Technical Information C-Series Cutting Blade and Holder

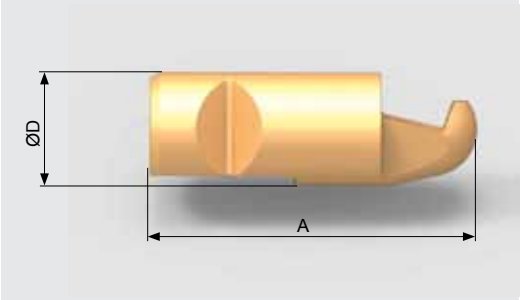


Table (mm)

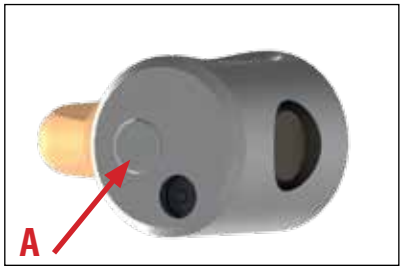
	COFA C6		COFA C8		COFA C12	
Size	**M**	**L**	**M**	**L**	**M**	**L**
ØD	**Ø2.0**	**Ø2.0**	**Ø2.5**	**Ø2.5**	**Ø3.5**	**Ø3.5**
A	**6.05**	**6.25**	**7.54**	**7.85**	**11.37**	**11.98**

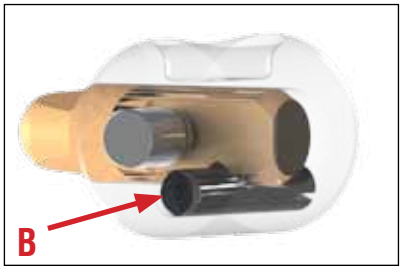
Blade	Geo.	Series C6		Series C8		Series C12	
		M - Med	L - Lrg	M - Med	L - Lrg	M - Med	L - Lrg
TiAlN 10°	*Fab*	C6-M-0007-A	C6-M-0002-A	C8-M-0007-A	C8-M-0002-A	C12-M-0007-A	C12-M-0002-A
	bco	C6-M-0027-A	C6-M-0022-A	C8-M-0027-A	C8-M-0022-A	C12-M-0027-A	C12-M-0022-A
TiAlN 20°	*Fab*	C6-M-0006-A	C6-M-0001-A	C8-M-0006-A	C8-M-0001-A	C12-M-0006-A	C12-M-0001-A
	bco	C6-M-0026-A	C6-M-0021-A	C8-M-0026-A	C8-M-0021-A	C12-M-0026-A	C12-M-0021-A
TiAlN 30°	*Fab*	C6-M-0009-A	C6-M-0004-A	C8-M-0009-A	C8-M-0004-A	C12-M-0009-A	C12-M-0004-A
	bco	C6-M-0029-A	C6-M-0024-A	C8-M-0029-A	C8-M-0024-A	C12-M-0029-A	C12-M-0024-A
*Tin 10°	*Fab*	C6-M-0007-T	C6-M-0002-T	C8-M-0007-T	C8-M-0002-T	C12-M-0007-T	C12-M-0002-T
	bco	C6-M-0027-T	C6-M-0022-T	C8-M-0027-T	C8-M-0022-T	C12-M-0027-T	C12-M-0022-T
*TiN 20°	*Fab*	C6-M-0006-T	C6-M-0001-T	C8-M-0006-T	C8-M-0001-T	C12-M-0006-T	C12-M-0001-T
	bco	C6-M-0026-T	C6-M-0021-T	C8-M-0026-T	C8-M-0021-T	C12-M-0026-T	C12-M-0021-T
*TiN 30°	*Fab*	C6-M-0009-T	C6-M-0004-T	C8-M-0009-T	C8-M-0004-T	C12-M-0009-T	C12-M-0004-T
	bco	C6-M-0029-T	C6-M-0024-T	C8-M-0029-T	C8-M-0024-T	C12-M-0029-T	C12-M-0024-T

*Non-Stock Items (T); Please inquire about stock or delivery times for all non-standard Items
(Fab=Front & Back Cutting/ bco = Back Cutting Only)
Explanation & Other Coatings (Last Letter in order number designates coating)
A: Coating (TiAlN) Standard
T: Coating (TiN) General Purpose
D: Coating (DLC) Diamond for Aluminum

The positioning pin (A) is a fixed component of the Blade holder and is used to properly position the cutting blade. This pin should not be removed.

The split Pin (B) may be removed for dismounting the blade. One split pin is given with each cutting blade ordered.





PROBLEM	EXPLANATION	SOLUTION
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

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.