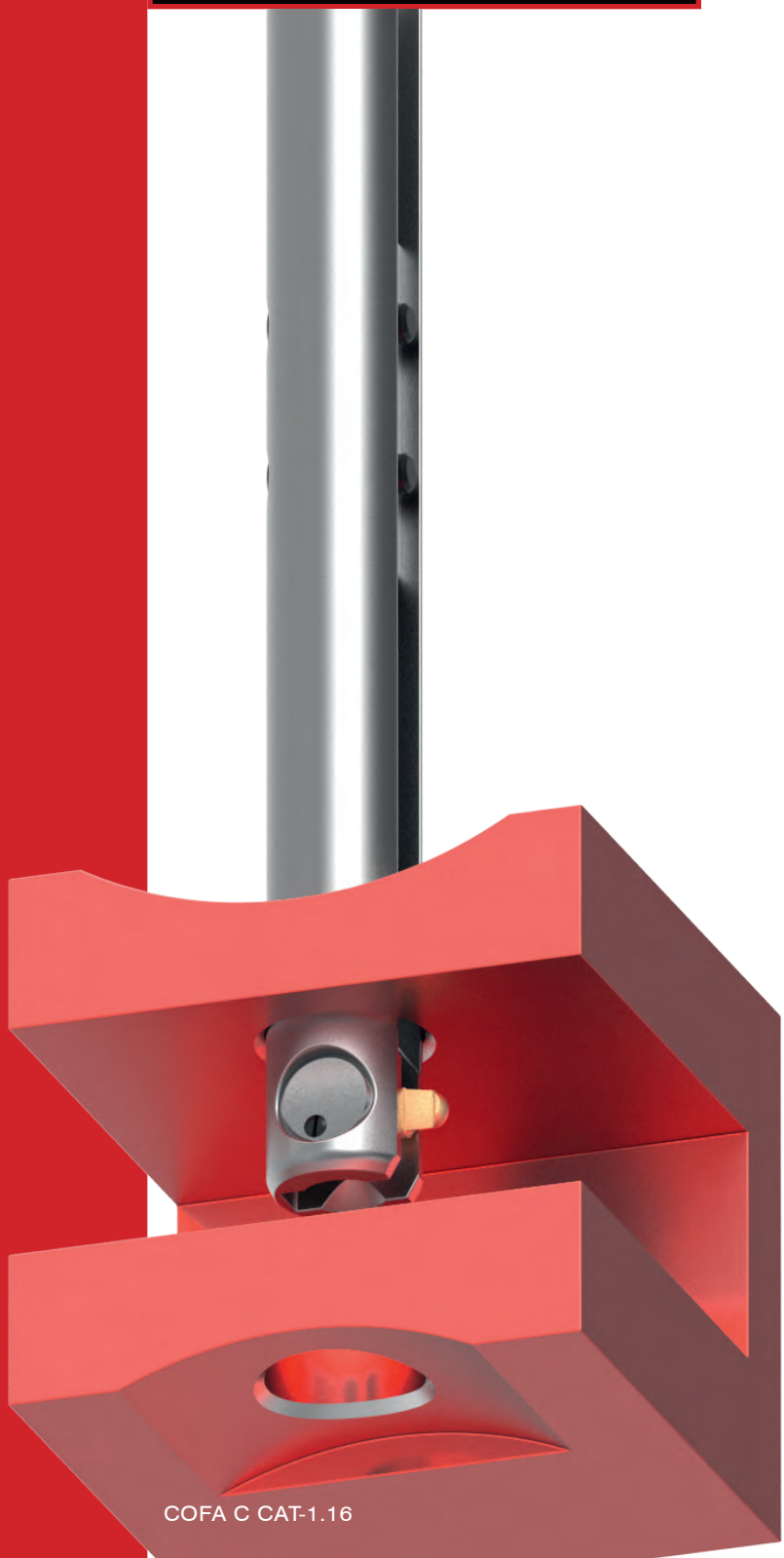
HEULE
PRECISION TOOLS

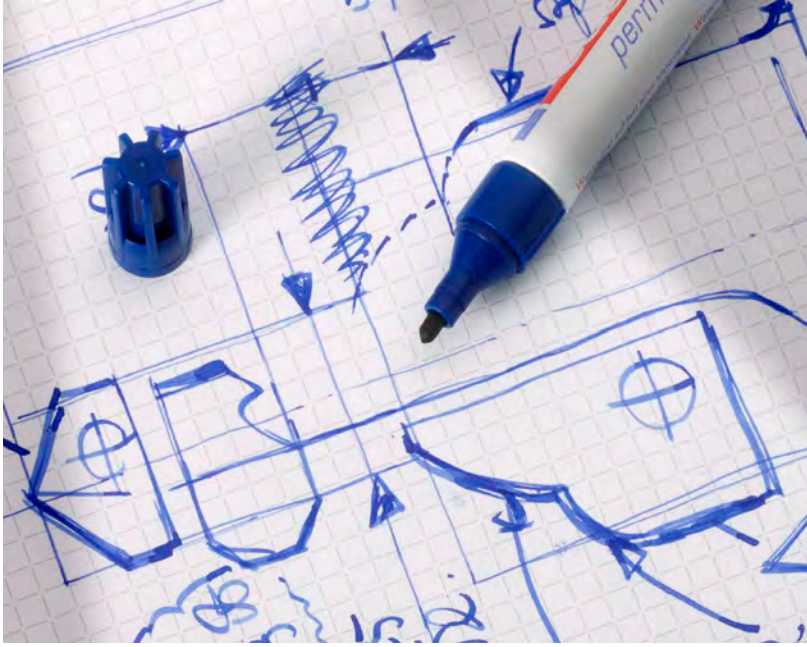
COFA

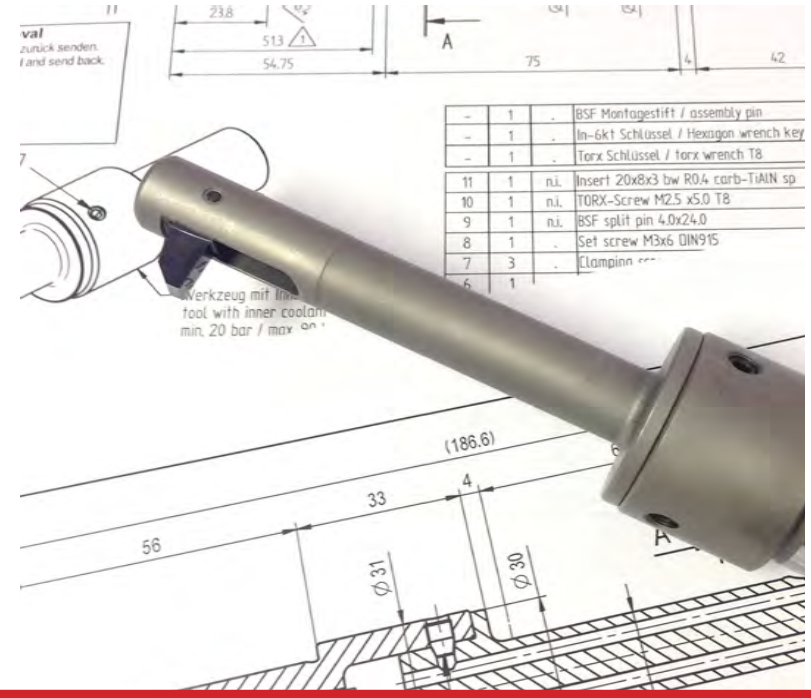


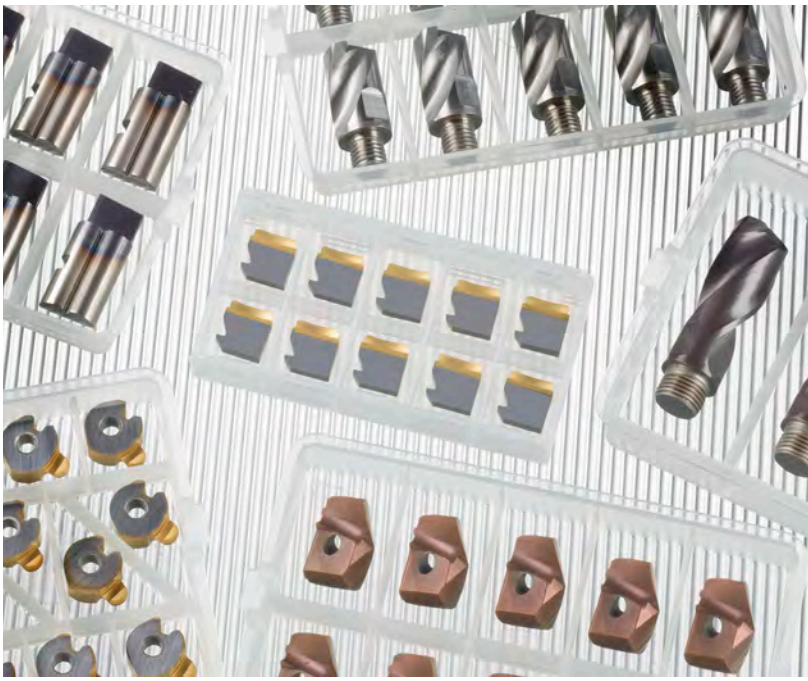
Deburring Tool for Elliptical or Contoured Surfaces

- Replaceable solid carbide coated blades
- Blade coatings offer longer tool life and increased performance
- Sizes 2-26mm (.079-1.024″) available from stock
- Breakthrough technology provides consistent quality

SWISS MADE







HEULE+
PRECISION TOOLS

The Innovator and Quality Leader
in the Cutting Tool Industry since 1961

Innovative Tools with Timesaving Results

Founded in 1961 by Heinrich Heule in the Rhine Valley of eastern Switzerland, HEULE continues to be a world leader in manufacturing of chamfering and deburring tools. After serving the European community for over 25 years, HEULE expanded to the United States. Heule Tool Corporation has been providing high quality chamfering and deburring tools to the North American market since 1988.

HEULE is committed to the values of quality, precision and service. Competent service, fast delivery times and customized solutions are the highest priorities. From all ranks, HEULE's committed and motivated expert staff carry out their work with reliability and professionalism. Customer's worldwide attest to the high quality standard HEULE provides and continually improves through innovative ideas and sophisticated technology.

SWISS MADE

AEROSPACE CERTIFIED TOOLING

ONEOPERATION

HeuleTool.com (513) 860-9900

Heule Tool Corporation
131 Commerce Drive | Loveland, Ohio 45140

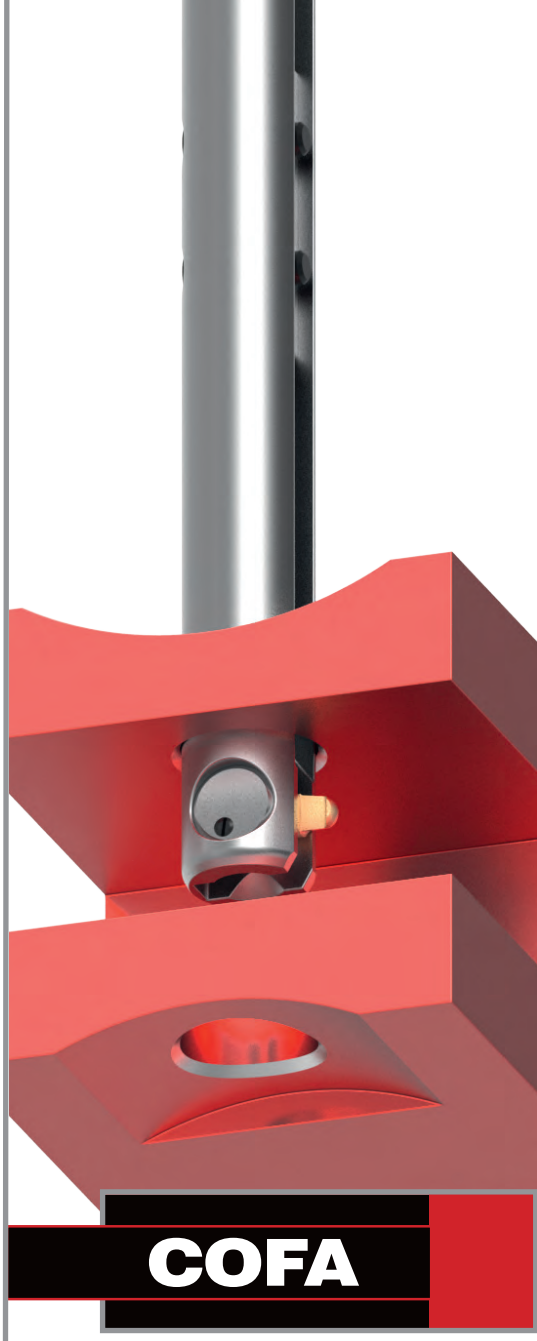
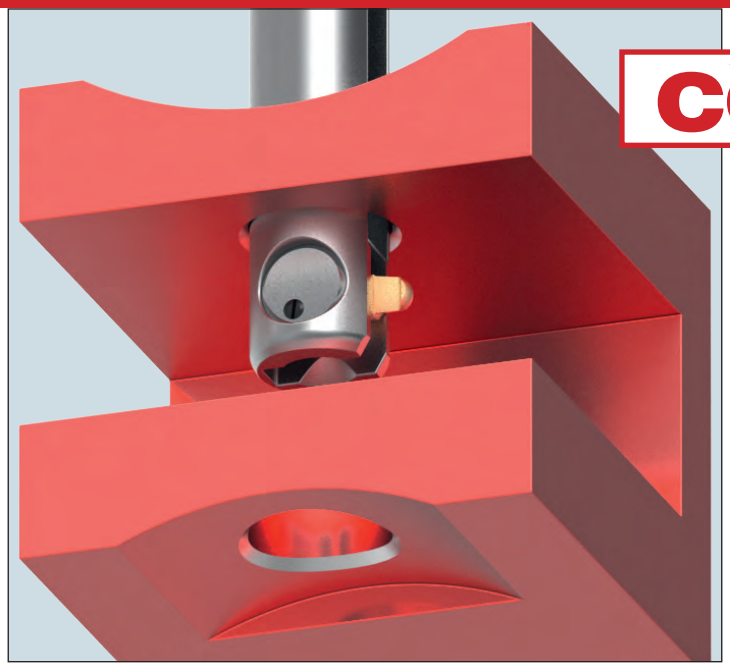


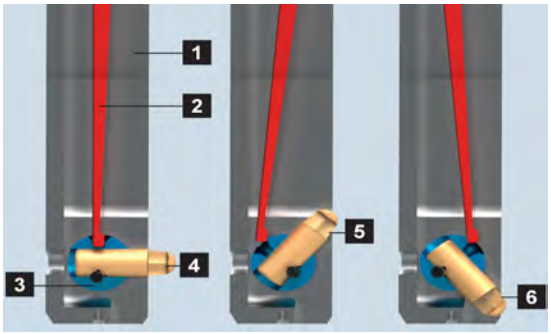
Table of Contents



COFA

Elliptical Deburring Tool with Exchangable Blade Options

Blade Working Principle

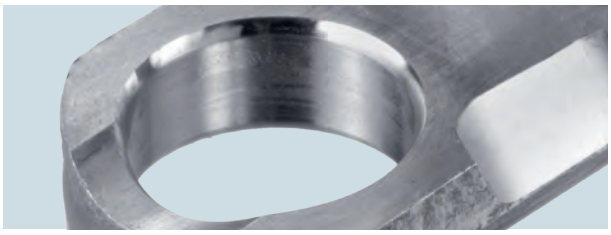


1 Tool Body
2 Spring
3 Blade Holder
4 Blade
5 Cutting edge forward
6 Cutting edge backward

Typical Applications

COFA has been specifically designed for front and back deburring on even and uneven bore edges, in one operation. It radially removes the burrs from the bore edges. Independent of the Z-position of the work piece, the deburring capacity of the tool does not vary.

The tool concept is suitable for both soft and difficult to machine materials. This is done without the need for preadjustments. The blades are made out of coated carbide and guarantee a long tool life. They are interchangeable according to the required deburring capacity. Typical applications are forks, yokes, common rails, castings, tubes with cross bores and other work pieces with cross bores in main bores.



The COFA system guarantees a consistent, radially shaped deburring of even and uneven bore edges.

Study Details

TOOL
COFA C6-6.09-S
C6-M-0021-T

PRODUCTION
3500 Per Day
3 Cells
1 hole per part

MACHINE
Vertical machining center with robot load

MATERIAL
Cast steel

PROCESSING
Tool: COFA C6-6.0-S
Speed: 1100 RPM
Feed: 140 mm/m (5.5 IPM)
Life: 3500 holes
Cycle Time: 3.62 seconds per hole

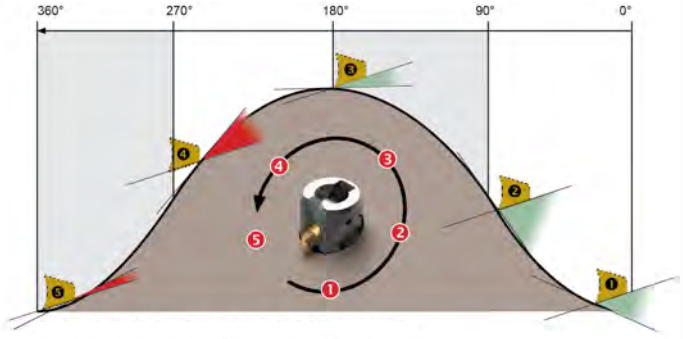
REMARKS
Customer had trouble leaving the drill cap in the 23mm bore. They used a bore scope to 100% insepcct. Now this is not needed.

How Does It Work?

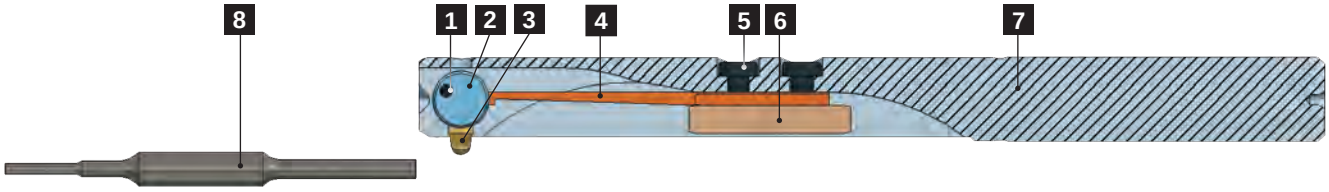
Controlled by a simple spring, the carbide cutting blade follows the contour of the hole's surface removing all burrs while creating an even tapered corner break. The blade does not cut as it passes through the bore and will not damage the hole's surface.

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:

Ordering is simple. 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.

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

The COFA Family

The COFA tool family consists of three different tool designs. The COFA 2 and 3 share a similar design, and the COFA 4 and 5 share a slightly different design. The COFA C series C6, C8, C12 and C20 represents the larger size range in Heule's latest development. The illustrations on this page show the design differences between the tools.

The design differs due to the dimensional restriction of each tool. The blade and the blade holder form a complete unit in the COFA 2/3. In the COFA 4/5, the blade and the blade holder are held in the tool body by a rollpin. In the COFA C series, these are seperate components.

The design principle of the single-piece blade has been in use successfully for decades. The C series design within the larger tools, consists of an independant blade that is fit into a more rigidly guided blade holder. This increases the already long tool life as well as the process capability. The blade itself needs less material and can be changed fast and easily. There are different blade sizes available for the same tool body to allow different deburring sizes based upon the specifc application.

Image: COFA 2

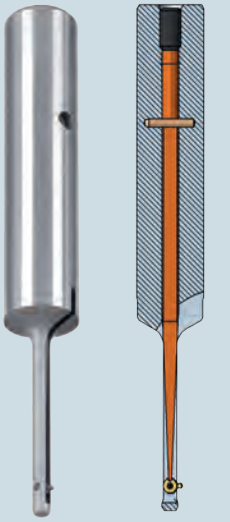


Image: COFA C12

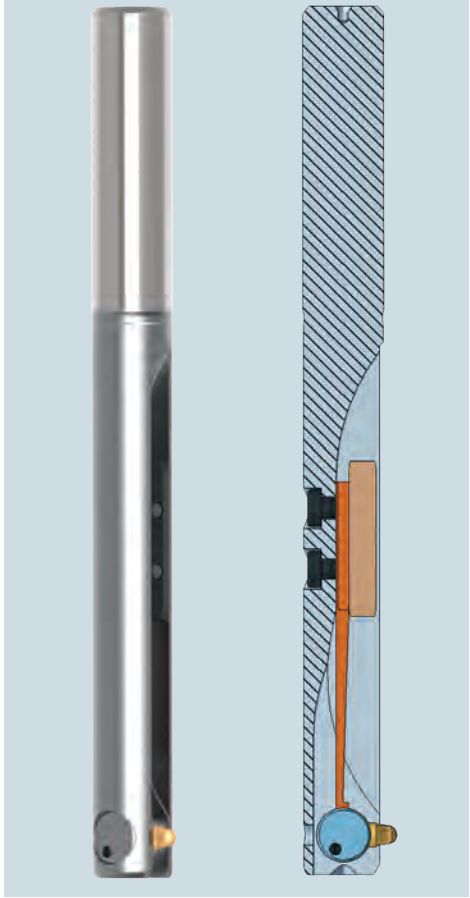
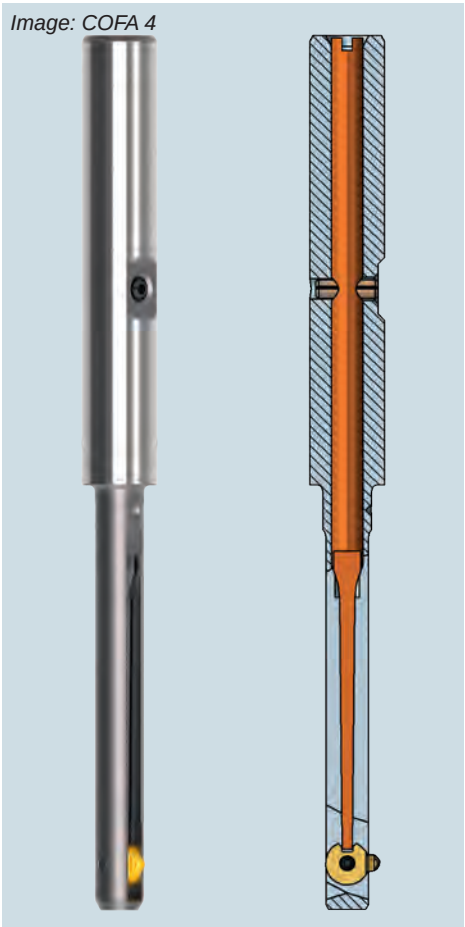


Image: COFA 4



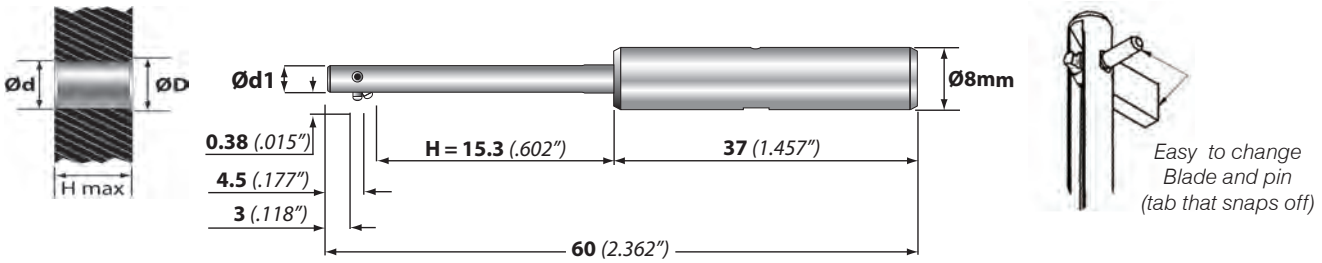
Product Range

The product range consists of tools for use in bore diameters ranging from 2 mm to 26 mm. In addition to using cassettes, any bore diameter can be deburred. The deburring capacity (radially) is 0.1 up to 2.25 mm depending on the bore dimension and blade selection. Within each tool range, there are various diameters available to apply to any specific bore diameter and deburring requirements.

Bore	Max. Deburring Capacity[1]	Tool Series
Ø 2.0 – Ø 3.1 mm	0.15 mm	COFA 2
Ø 3.0 – Ø 4.1 mm	0.25 mm	COFA 3
Ø 4.0 – Ø 5.0 mm	0.25 mm	COFA 4
Ø 5.0 – Ø 6.0 mm	0.35 mm	COFA 5
Ø 6.0 – Ø 8.4 mm	0.70 mm	COFA C6
ab Ø 10 mm	0.70 mm	COFA C6 cassette
Ø 8.0 – Ø 12.4 mm	0.90 mm	COFA C8
ab Ø 14 mm	0.90 mm	COFA C8 cassette
Ø 12.0 – Ø 22.0 mm	1.40 mm	COFA C12
ab Ø 20 mm	1.40 mm	COFA C12 cassette
Ø 20.0 – Ø 26.0 mm	2.25 mm	COFA C20
ab Ø 25 mm	2.25 mm	COFA C20 cassette

[1)] The deburring result differs due to material, cutting data and application. The value listed is the maximum that is theoretically achievable. The spring has to be selected accordingly.

*For more information regarding the COFA series, please visit www.HeuleTool.com or check out our full line catalog

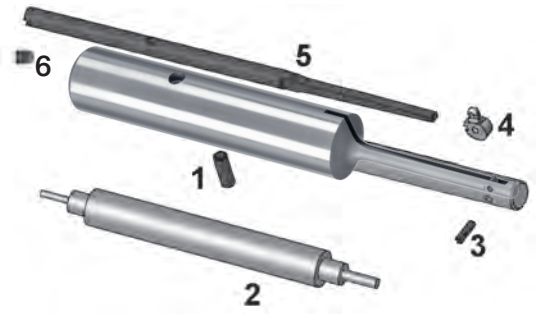


Easy to change Blade and pin (tab that snaps off)

COFA Deburring Series 2

Ød		ØD1		ØD		Complete Tool with Blade	
Min. Hole mm	*inches*	Tool Diameter +0/- .03 mm	*inches*	Approx. Cutting Diameter mm	*inches*	Front and Back Order Number	Back Only Order Number
2.0	*.079*	**1.95**	*.077*	**2.3**	*.091*	**COFA2-2.0-** ☐	**COFA2b-2.0-** ☐
2.1	*.083*	**2.05**	*.081*	**2.4**	*.095*	**COFA2-2.1-** ☐	**COFA2b-2.1-** ☐
2.3	*.091*	**2.25**	*.089*	**2.6**	*.102*	**COFA2-2.3-** ☐	**COFA2b-2.3-** ☐
2.5	*.099*	**2.45**	*.096*	**2.8**	*.110*	**COFA2-2.5-** ☐	**COFA2b-2.5-** ☐
2.7	*.106*	**2.65**	*.104*	**3.0**	*.118*	**COFA2-2.7-** ☐	**COFA2b-2.7-** ☐
2.9	*.114*	**2.85**	*.112*	**3.2**	*.126*	**COFA2-2.9-** ☐	**COFA2b-2.9-** ☐
3.0	*.118*	**2.95**	*.116*	**3.3**	*.130*	**COFA2-3.0-** ☐	**COFA2b-3.0-** ☐
3.1	*.122*	**3.05**	*.120*	**3.4**	*.134*	**COFA2-3.1-** ☐	**COFA2b-3.1-** ☐

Spring Choice: W, H, S, Z



Optional

Spare Parts – COFA 2

1	2	3	4	5	6		7
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Set Screw	Wrench	Fixture
GH-H-S-1017	C2-V-0001	C2-E-0002	See Below	See Below	GH-H-S-0135	GH-H-S-2106	C3-V-0002

Spring Options:

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

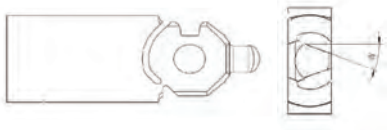
Spring Code	Order Number	Typical Materials *Large or Heavy Burrs may require a stronger spring*	
W	C2-E-0013	Softer	Aluminum, Brass, Magnesium
H	C2-E-0014		Grey Cast Iron, Nodular Iron
S	C2-E-0015		Carbon Steel, Free Machining Steel
Z*	C2-E-0016	Harder	Nickel, Titanium, Stainless

* Not recommended with COFA2-2.0 tool.

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 2
	TiALN 20° Standard	fab	C2-M-0006-A
b		bco	C2-M-0016-A
y	TiALN 10°	fab	C2-M-0007-A
yb		bco	C2-M-0017-A



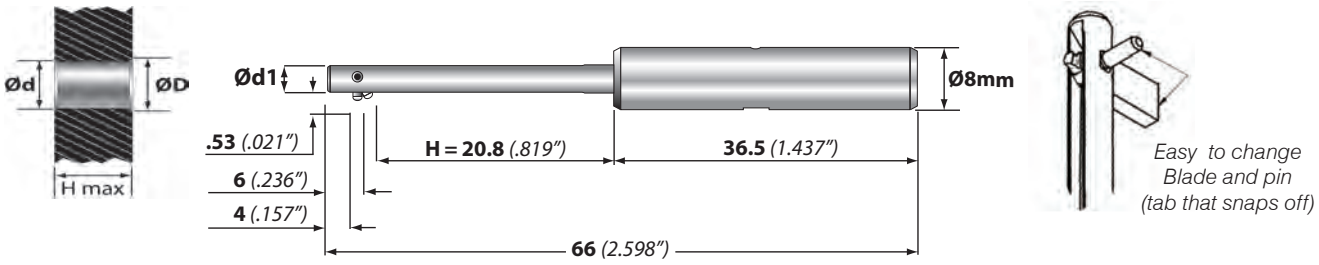
How to Order:

Ordering is simple. 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.

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

Example: COFA2 b – 2.0 - W

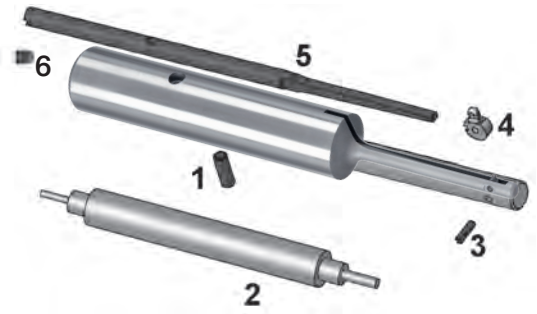
- COFA2 — Tool Series
- b — Blade Option
- 2.0 — Min. Hole Dia. Ød (Inches)
- W — Spring Option



COFA Deburring Series 3

Ød		Ød1		ØD		Complete Tool with Blade	
Min. Hole mm	*inches*	Tool Diameter +0/- .03 mm	*inches*	Approx. Cutting Diameter mm	*inches*	Front and Back Order Number	Back Only Order Number
3.0	.118	2.95	.116	3.4	.134	COFA3-3.0- ☐	COFA3b-3.0- ☐
3.1	.122	3.05	.120	3.5	.138	COFA3-3.1- ☐	COFA3b-3.1- ☐
3.3	.130	3.25	.128	3.7	.146	COFA3-3.3- ☐	COFA3b-3.3- ☐
3.5	.138	3.45	.136	3.9	.154	COFA3-3.5- ☐	COFA3b-3.5- ☐
3.7	.146	3.65	.144	4.1	.161	COFA3-3.7- ☐	COFA3b-3.7- ☐
3.9	.154	3.85	.152	4.3	.169	COFA3-3.9- ☐	COFA3b-3.9- ☐
4.0	.158	3.95	.156	4.4	.173	COFA3-4.0- ☐	COFA3b-4.0- ☐
4.1	.161	4.05	.159	4.5	.177	COFA3-4.1- ☐	COFA3b-4.1- ☐

Spring Choice: W, H, S, Z



Optional

Spare Parts – COFA 3

1	2	3	4	5	6		7
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Set Screw	Wrench	Fixture
GH-H-S-1017	C3-V-0001	C3-E-0002	See Below	See Below	GH-H-S-0135	GH-H-S-2106	C3-V-0002

Spring Options:

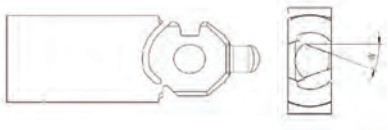
The cutting force of the COFA tool is controlled by a flat spring Choose the proper spring for the material being machined.

Spring Code	Order Number	Typical Materials *Large or Heavy Burrs may require a stronger spring*	
W	C3-E-0013	Softer	Aluminum, Brass, Magnesium
H	C3-E-0014	↕	Grey Cast Iron, Nodular Iron
S	C3-E-0015	↕	Carbon Steel, Free Machining Steel
Z	C3-E-0016	Harder	Nickel, Titanium, Stainless

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 3
	TiALN 20° Standard	fab	C3-M-0006-A
b		bco	C3-M-0016-A
y	TiALN 10°	fab	C3-M-0007-A
yb		bco	C3-M-0017-A



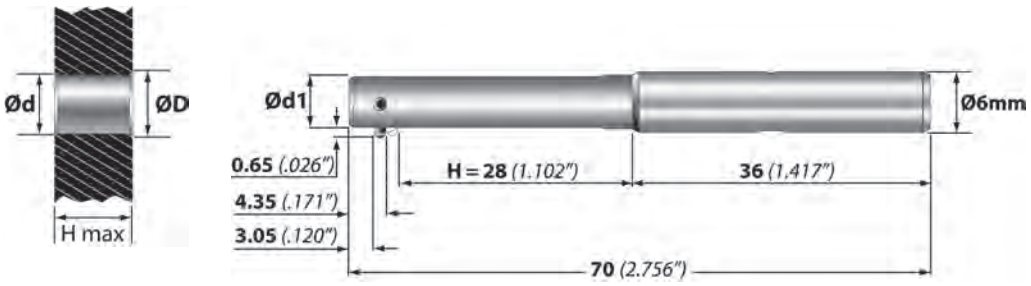
How to Order:

Ordering is simple. 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.

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

Example: COFA3 b – 3.0 - W

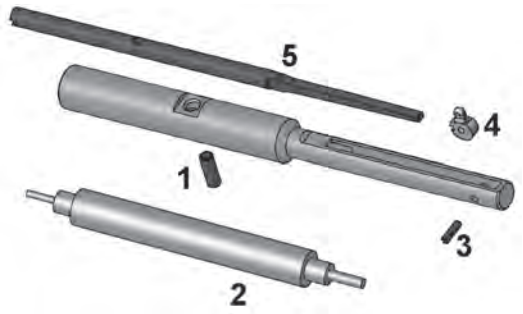
- COFA3 — Tool Series
- b — Blade Option
- 3.0 — Min. Hole Dia. Ød (Inches)
- W — Spring Option

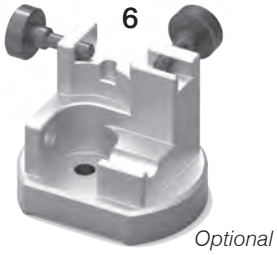


COFA Deburring Series 4

Ød	Ød1	ØD	Complete Tool with Blade	
Min. Hole mm *inches*	Tool Dia. mm *inches*	Approx. Cutting Dia. mm *inches*	Front and Back Order Number	Back Only Order Number
4.0 .157	3.9 .154	4.5 .177	COFA4-4.0- ☐	COFA4b-4.0- ☐
4.1 .161	4.0 .157	4.6 .181	COFA4-4.1- ☐	COFA4b-4.1- ☐
4.2 .165	4.1 .161	4.7 .185	COFA4-4.2- ☐	COFA4b-4.2- ☐
4.3 .169	4.2 .165	4.8 .189	COFA4-4.3- ☐	COFA4b-4.3- ☐
4.4 .173	4.3 .169	4.9 .193	COFA4-4.4- ☐	COFA4b-4.4- ☐
4.5 .177	4.4 .173	5.0 .197	COFA4-4.5- ☐	COFA4b-4.5- ☐
4.6 .181	4.5 .177	5.1 .201	COFA4-4.6- ☐	COFA4b-4.6- ☐
4.7 .185	4.6 .181	5.2 .205	COFA4-4.7- ☐	COFA4b-4.7- ☐
4.8 .189	4.7 .185	5.3 .209	COFA4-4.8- ☐	COFA4b-4.8- ☐
4.9 .193	4.8 .189	5.4 .213	COFA4-4.9- ☐	COFA4b-4.9- ☐

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





Optional

Spare Parts – COFA 4

1	2	3	4	5	6
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Fixture
GH-H-S-0902	GH-C-V-0206	GH-C-E-0819	See Below	See Below	GH-C-V-0541

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	GH-C-E-0342	Softer ↑	Aluminum, Brass, Magnesium
H	GH-C-E-0343		Grey Cast Iron, Nodular Iron
S	GH-C-E-0344		Carbon Steel, Free Machining Steel
Z	GH-C-E-0345		Long Chipping Steel, Stainless
Z1	GH-C-E-0346	↓ Harder	Titanium, Hardened Steel, Nickel Alloy

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 4
	TiALN 20° Standard	fab	GH-C-M-0504
b		bco	GH-C-M-0914
y	TiALN 10° Flat Surfaces	fab	GH-C-M-0764
yb		bco	GH-C-M-0874
x	TiALN 30° Uneven Spec	fab	GH-C-M-0148
xb		bco	GH-C-M-0182

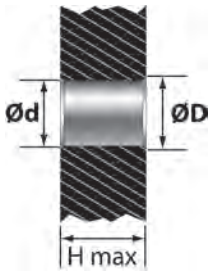
How to Order:

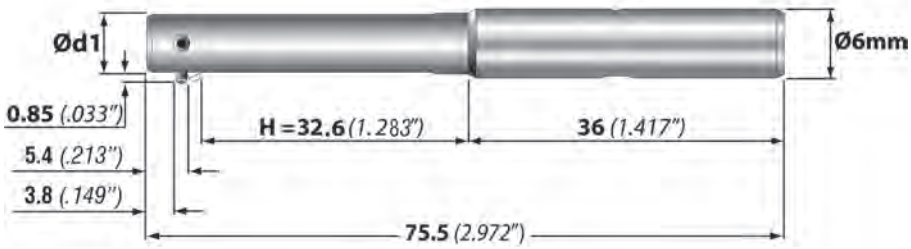
Ordering is simple. The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined.

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

Example: COFA4 b – 4.0 - Z1

- COFA4 — Tool Series
- b — Blade Option
- 4.0 — Min. Hole Dia. Ød (Inches)
- Z1 — Spring Option

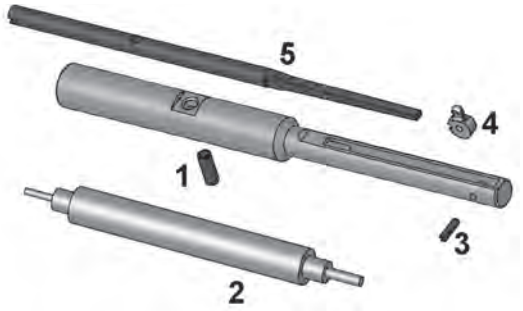


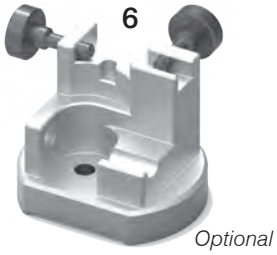


COFA Deburring Series 5

Ød	Ød1	ØD	Complete Tool with Blade	
Min. Hole mm *inches*	Tool Dia. mm *inches*	Approx. Cutting Dia. mm *inches*	Front and Back Order Number	Back Only Order Number
5.0 *.197*	**4.9** *.193*	**5.7** *.224*	**COFA5-5.0-** ☐	**COFA5b-5.0-** ☐
5.1 *.201*	**5.0** *.197*	**5.8** *.228*	**COFA5-5.1-** ☐	**COFA5b-5.1-** ☐
5.2 *.205*	**5.1** *.201*	**5.9** *.232*	**COFA5-5.2-** ☐	**COFA5b-5.2-** ☐
5.3 *.209*	**5.2** *.205*	**6.0** *.236*	**COFA5-5.3-** ☐	**COFA5b-5.3-** ☐
5.4 *.213*	**5.3** *.209*	**6.1** *.240*	**COFA5-5.4-** ☐	**COFA5b-5.4-** ☐
5.5 *.217*	**5.4** *.213*	**6.2** *.244*	**COFA5-5.5-** ☐	**COFA5b-5.5-** ☐
5.6 *.220*	**5.5** *.217*	**6.3** *.248*	**COFA5-5.6-** ☐	**COFA5b-5.6-** ☐
5.7 *.224*	**5.6** *.220*	**6.4** *.252*	**COFA5-5.7-** ☐	**COFA5b-5.7-** ☐
5.8 *.228*	**5.7** *.224*	**6.5** *.256*	**COFA5-5.8-** ☐	**COFA5b-5.8-** ☐
5.9 *.232*	**5.8** *.228*	**6.6** *.260*	**COFA5-5.9-** ☐	**COFA5b-5.9-** ☐

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





Optional

Spare Parts – COFA 5

1	2	3	4	5	6
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Fixture
GH-H-S-0902	GH-C-V-0211	GH-C-E-0820	See Below	See Below	GH-C-V-0541

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	GH-C-E-0352	Softer ↑	Aluminum, Brass, Magnesium
H	GH-C-E-0353		Grey Cast Iron, Nodular Iron
S	GH-C-E-0354		Carbon Steel, Free Machining Steel
Z	GH-C-E-0355		Long Chipping Steel, Stainless
Z1	GH-C-E-0356	↓ Harder	Titanium, Hardened Steel, Nickel Alloy

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 5
	TiALN 20° Standard	fab	GH-C-M-0505
b		bco	GH-C-M-0915
y	TiALN 10° Flat Surfaces	fab	GH-C-M-0765
yb		bco	GH-C-M-0875
x	TiALN 30° Uneven Spec	fab	GH-C-M-0150
xb		bco	GH-C-M-0184

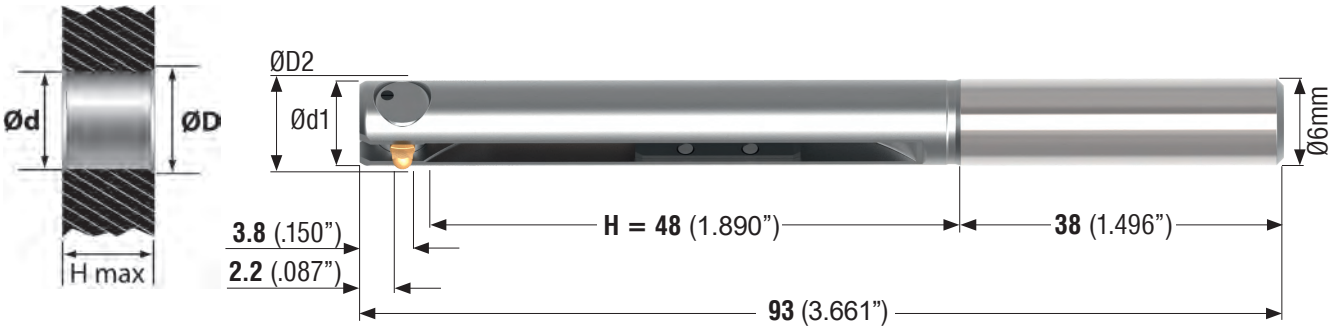
How to Order:

Ordering is simple. 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.

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

Example: COFA5 b – 5.0 - Z1

- COFA5 — Tool Series
- b — Blade Option
- 5.0 — Min. Hole Dia. Ød (Inches)
- Z1 — Spring Option



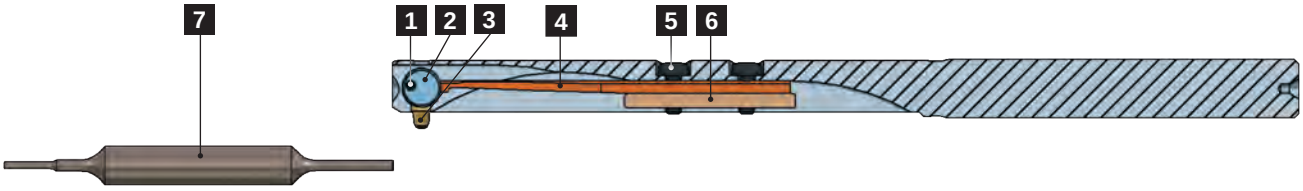
ØD2 = D + 1.3
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

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

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

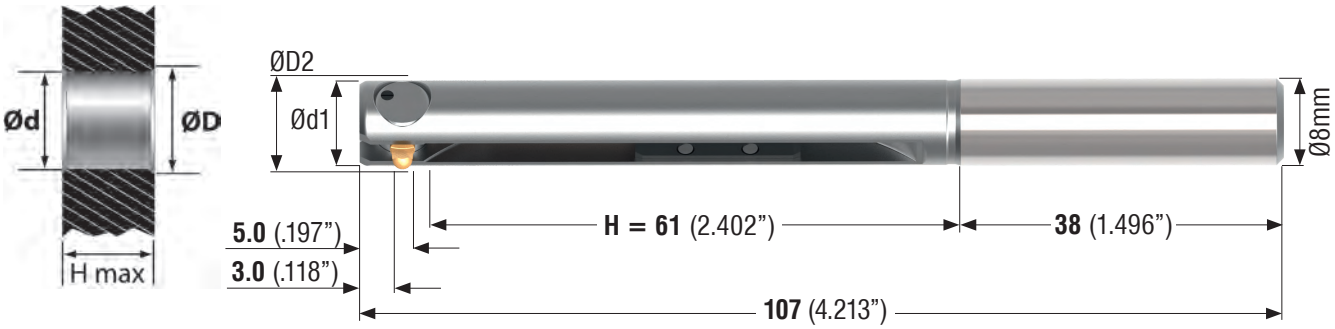
How to Order:

Ordering is simple. 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.

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: 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



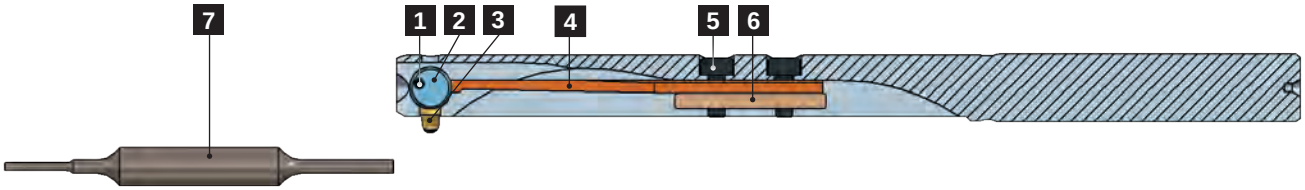
ØD2 = D + 1.6
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C8

Ød		Ød1		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		
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

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

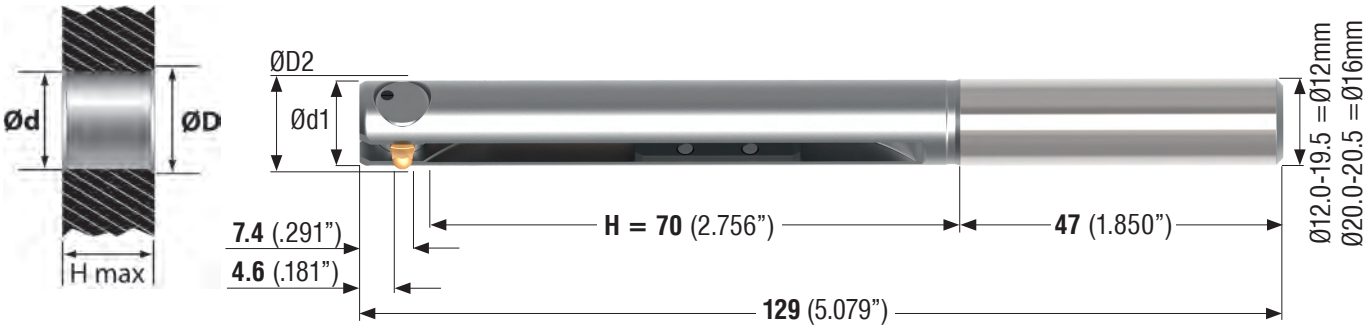
How to Order:

Ordering is simple. 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.

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



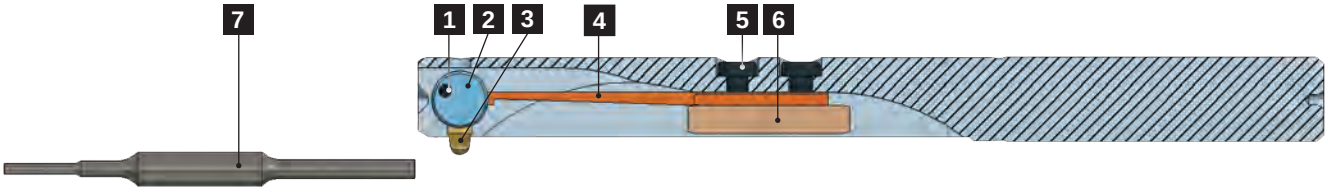
ØD2 = D + 2.2
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C12

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	
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 .5602	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-☐

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-0006

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

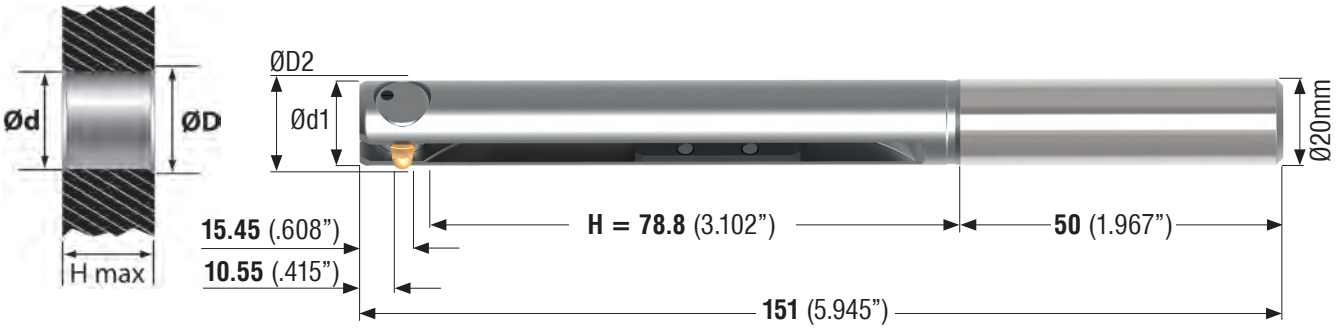
How to Order:

Ordering is simple. 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.

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



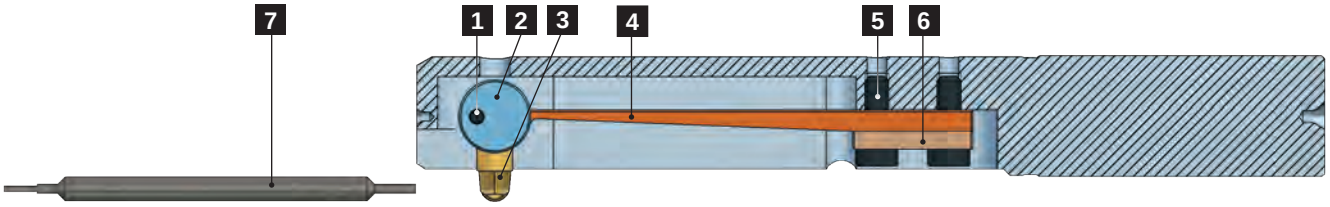
ØD2 = D + 3.4 (Small/Med)
ØD2 = D + 3.7 (Large)
ØD2 = Swing Diameter
Ød1 = Tool Body Diameter

COFA Deburring Series C20

Ød Min. Hole mm *inches*	Ød1 Tool Dia. mm *inches*	ØD Approx. Cutting Dia. mm *inches*	ØD Approx. Cutting Dia. mm *inches*	ØD Approx. Cutting Dia. mm *inches*	Tool without Blade Tool Order Number
		Small Blade	Medium Blade	Large Blade	
20 .787	19.8 .780	21.8 .858	23.0 .906	24.6 .969	C20-20.0-☐
20.5 .807	20.3 .799	22.3 .878	23.5 .925	25.1 .988	C20-20.5-☐
21 .827	20.8 .819	22.8 .898	24.0 .945	25.6 1.008	C20-21.0-☐
21.5 .846	21.3 .839	23.3 .917	24.5 .965	26.1 1.028	C20-21.5-☐
22 .866	21.8 .858	23.8 .937	25.0 .984	26.6 1.047	C20-22.0-☐
22.5 .886	22.3 .878	24.3 .957	25.5 1.004	27.1 1.067	C20-22.5-☐
23 .906	22.8 .898	24.8 .976	26.0 1.024	27.6 1.087	C20-23.0-☐
23.5 .925	23.3 .917	25.3 .996	26.5 1.044	28.1 1.106	C20-23.5-☐
24 .945	23.8 .937	25.8 1.016	27.0 1.063	28.6 1.126	C20-24.0-☐
24.5 .965	24.3 .957	26.3 1.036	27.5 1.083	29.1 1.146	C20-24.5-☐
25 .984	24.8 .976	26.8 1.055	28.0 1.102	29.6 1.165	C20-25.0-☐
25.5 .996	25.3 1.004	27.3 1.075	28.5 1.122	30.1 1.185	C20-25.5-☐
26 1.024	25.8 1.016	27.8 1.094	29.0 1.142	30.6 1.205	C20-26.0-☐

Blades sold separately for Cofa C Series, see Blade Options

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



Spare Parts – COFA C20

1	2	3	4	5	6	7
Split Pin	Blade Holder	Blade	Spring	Screw	Retainer Block	Assembly Pin
C20-E-0003	C20-E-0001	See Below	See Below	GH-H-S-0543	C20-E-0800	C20-V-0009

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	C20-E-0008	Softer	Aluminum, Brass, Magnesium
H	C20-E-0009		Grey Cast Iron, Nodular Iron
S	C20-E-0010		Carbon Steel, Free Machining Steel
Z	C20-E-0011		Long Chipping Steel, Stainless
Z1	C20-E-0012		Titanium, Hardened Steel, Nickel Alloy
Z2	C20-E-0013	Harder	Nickel Alloy, etc

Blade Options:

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

Blade Type	Geo.	Small Blade C20-M-	Med. Blade C20-M-	Lrg. Blade C20-M-
20° Standard	fab	-0011-A	-0006-A	-0001-A
	bco	-0031-A	-0026-A	-0021-A
10° Flat Surfaces	fab	-0012-A	-0007-A	-0002-A
	bco	-0032-A	-0027-A	-0022-A
30° Uneven Surfaces	fab	-0014-A	-0009-A	-0004-A
	bco	-0034-A	-0029-A	-0024-A

How to Order:

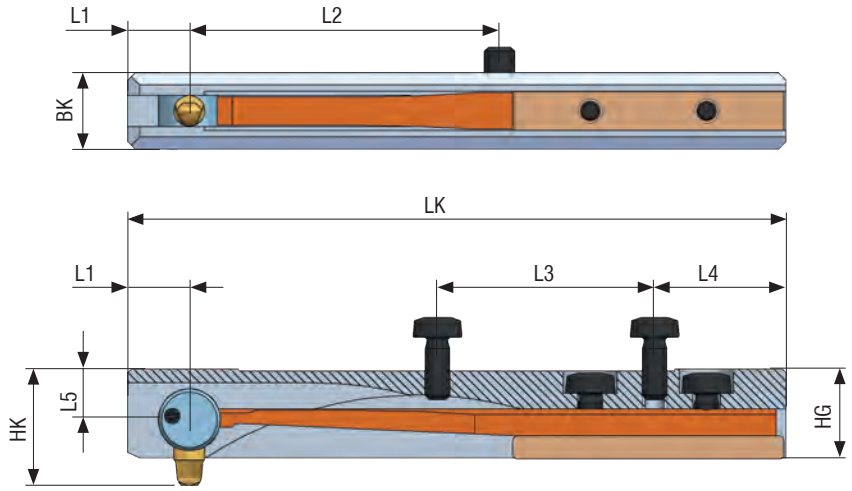
Ordering is simple. The COFA tool provides different blade and spring options to create the most effective tool for any application depending on the hole geometry and type of material being machined.

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.

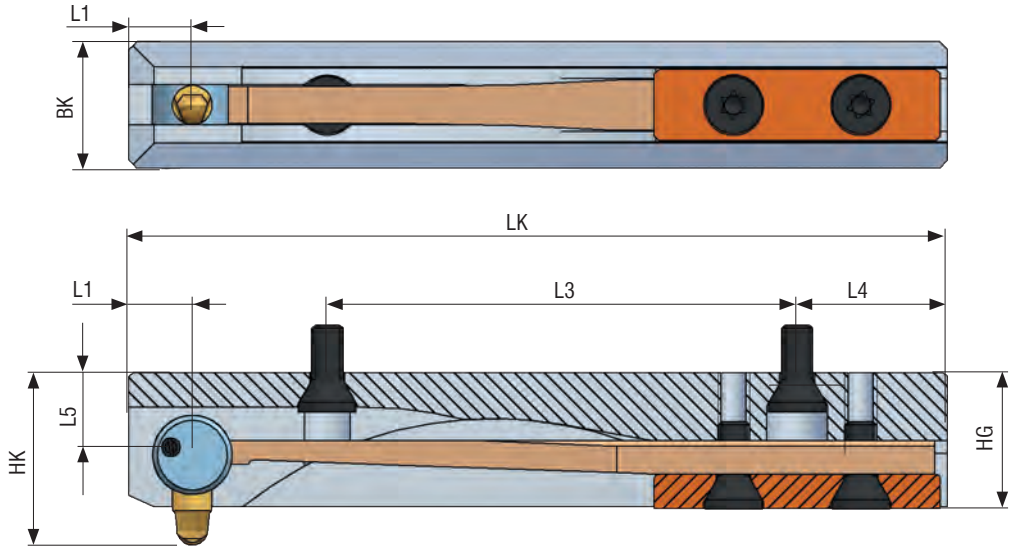
Example: C20 - 20.0 - Z1 and C20-M-0011-A

- C20 – Tool Series
- 20.0 – Min. Hole Dia. Ød (mm)
- Z1 – Spring Option
- C20-M-0011-A – Blade Option

COFA C6 Cassette



COFA C8/C12/C20 Cassette

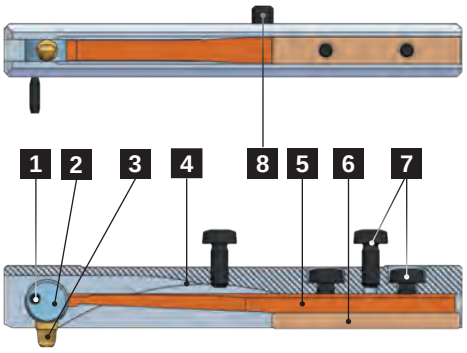


The COFA Cassette is used for installation into combination tools and cassette holders. The holder can be ordered from Heule Tool, or the customers can use their own, utilizing the following specificiations:

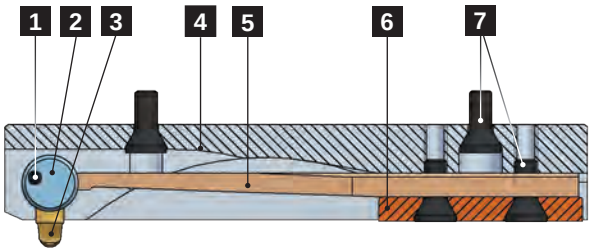
Tool Series	Bores >Ød	ØD	Blade	Cass. without Blade Cassette Order Number
C6	10.0	See Page 26	See Page 15	C6-0-0900- ☐
C8	14.0	See Page 26	See Page 18	C8-0-0900- ☐
C12	20.0	See Page 26	See Page 20	C12-0-0900- ☐
C20	25.0	See Page 26	See Page 22	C20-0-0900- ☐

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

COFA C6



COFA C8/C12/C20



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 15	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 18	C8-G-0900	See Below	C8-E-0800	GH-H-S-0050	
SERIES 12	C12-E-0003	C12-E-0001	See Page 20	C12-G-0900	See Below	C12-E-0800	GH-H-S-0012	
SERIES 20	C20-E-0003	C20-E-0001	See Page 22	C20-G-0900	See Below	C20-E-0800	GH-H-S-0543	

Spring Options:

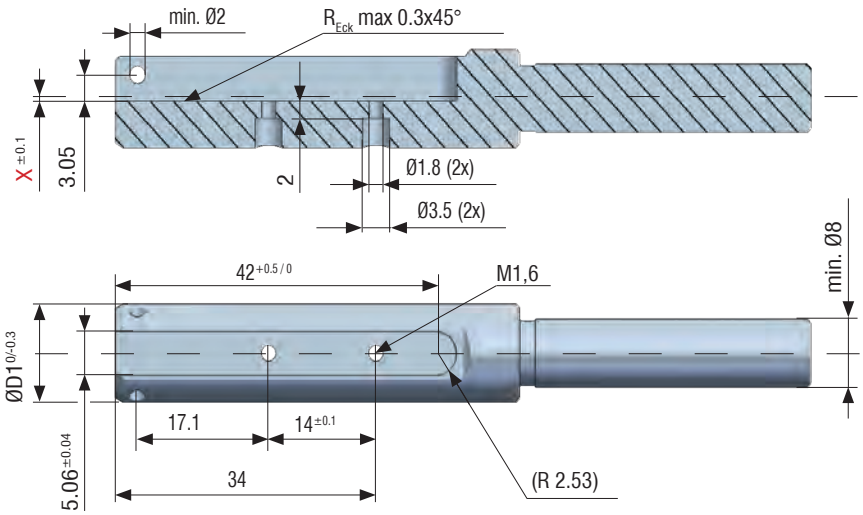
The cutting force of the COFA tool is controlled by a flat spring
Choose the proper spring for the material being machined.

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 16 C8 - page 18 C12 - page 20 C20 - page 22	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

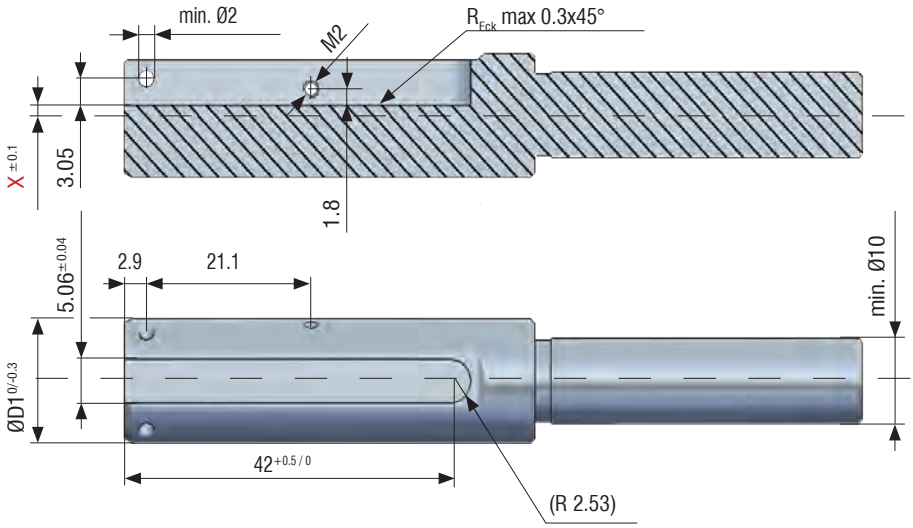
Measurements

Type	BK	HG	LK	HK	L1	L2	L3	L4	L5
C6	5.0	5.8	42.5	see page 26	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
C20	13.0	18.7	96.0		12.0	-	35.0	28.0	10.0

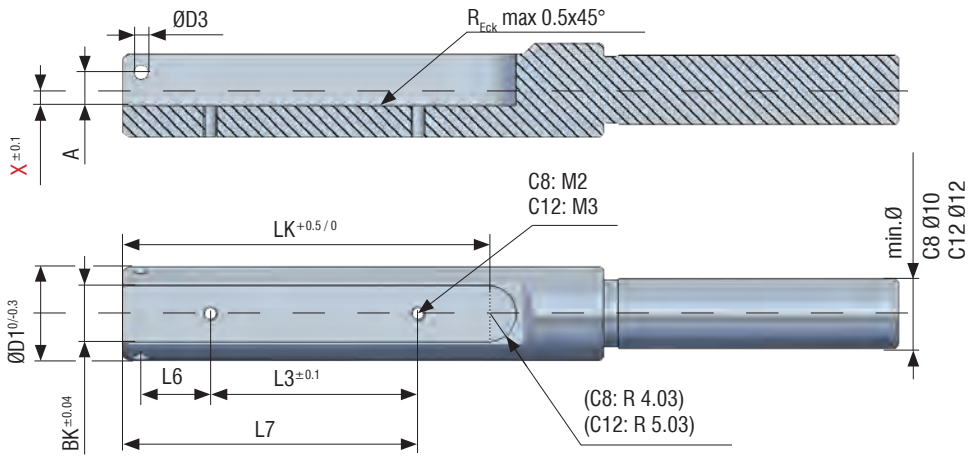
COFA C6 Ø10.0-14.99



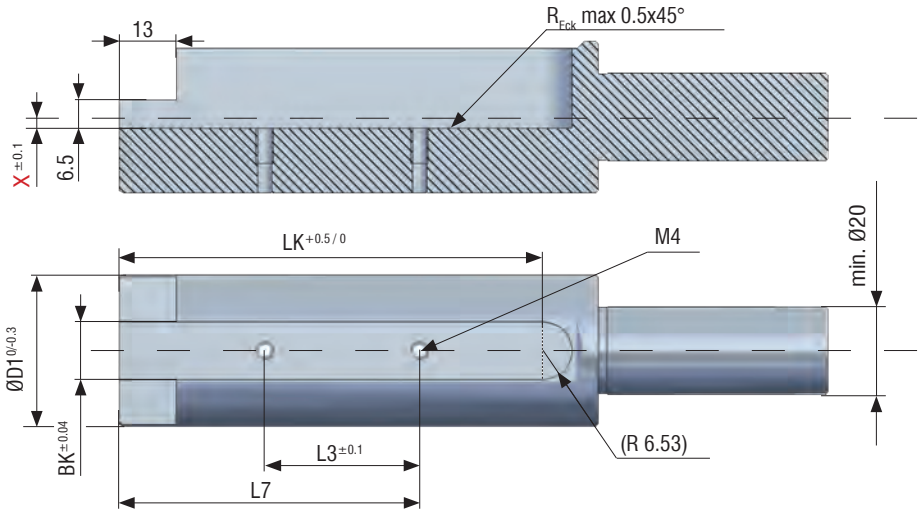
COFA C6 Ø15.0 -



COFA C8 / C12



COFA C20

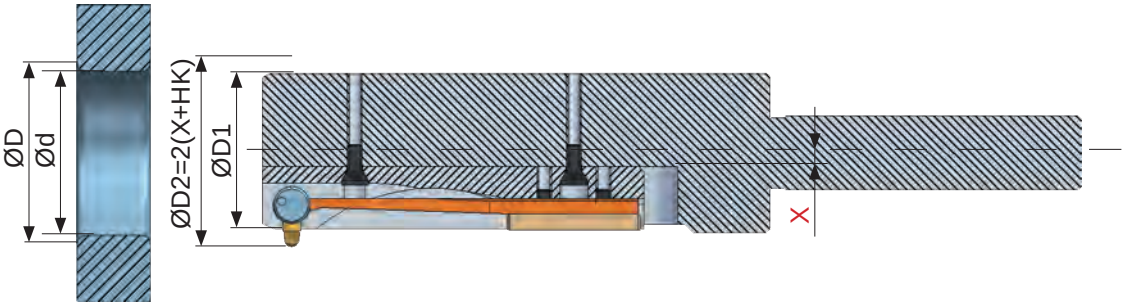


Limiting Values

From Bore Ø	C6 Ø10.0		C8 Ø14.0		C12 Ø20.0		C20 Ø25.0		
	M	L	M	L	M	L	M	M	L
max. ØD	Ød + 0.8	Ød + 1.4	Ød + 1.1	Ød + 1.8	Ød + 1.5	Ød + 2.8	Ød + 1.8	Ød + 3.0	Ød + 4.5
max. ØD1	Ød - 0.5		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
C20	13.06	96.5	5.0	35.0	24.0	68.0		-	6.53



HK Measurements

Type	S	M	L
C6	-	7.6	7.8
C8	-	10.6	11.0
C12	-	15.6	16.2
C20	22.6	23.3	24.2

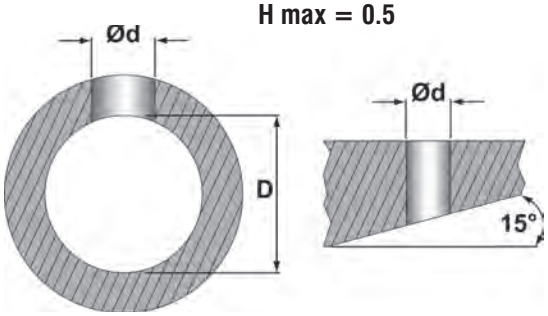
X Formula

Type	Formula
C6	X = Ød/2 - 6.3
C8	X = Ød/2 - 9.2
C12	X = Ød/2 - 13.7
C20	X = Ød/2 - 20.0

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

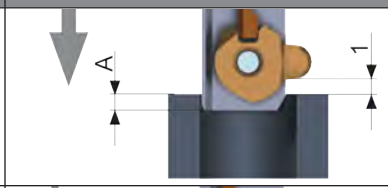
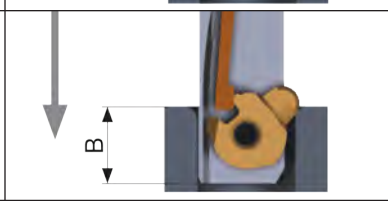
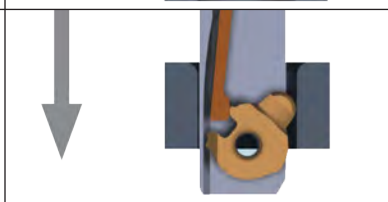
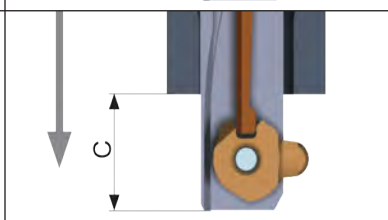
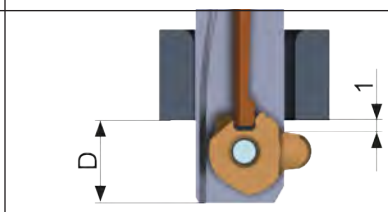
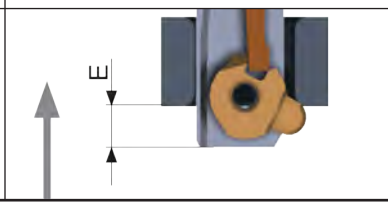


Spring Information

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.

*Recommended 10° cutting blades

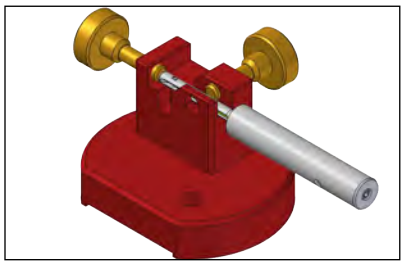
MATERIAL			FEED (IPR)	Ø2 - Ø6 SPEED (SFM) Carbide-TiALN		Ø6- Ø40 SPEED (SFM) Carbide-TiALN	
	BHN	Spring Index		Flat*	Uneven	Flat*	Uneven
Low Carbon Steels 1010, 1020, 1513	*100-200*	H-Z	0.008-0.014	60-160	45-95	190-340	120-260
Med. Carbon Steels 1030, 1040, 1050, 1524	*125-250*	H-Z	0.008-0.014	65-130	40-75	180-280	100-200
Free Machining Alloy 4140, 4150, 4130	*125-250* *125-340*	H-S S-Z	0.008-0.014 0.006-0.012	67-100 45-95	33-65 22-65	180-240 120-200	90-180 60-140
High Alloy Steel 4340	*250-350*	S-Z1	0.006-0.010	45-85	22-65	120-200	60-140
Stainless Steel 301, 316, 17-4PH etc.	*140-250*	S-Z2	0.006-0.010	33-110	15-45	100-175	40-110
Steel Castings	*90-225* *150-250*	H-S Z	0.008-0.012 0.006-0.010	50-110 22-75	33-75 11-45	130-240 60-120	90-200 30-100
Gray Cast Iron	*150-250* *200-330*	H H-S	0.008-0.016 0.007-0.012	50-110 22-75	22-65 18-45	130-330 90-210	60-110 50-140
Nodular Cast Iron	*125-260* *200-300*	H H-S	0.008-0.012 0.006-0.012	50-130 40-105	26-65 18-45	130-300 100-180	70-180 50-140
Aluminum Alloys	*30-180*	W-H	0.008-0.016	75-225	30-110	200-600	80-250
Nickel Base Alloys	*140-220* *220-310*	Z1-Z3 Z2-Z3	0.005-0.010 0.004-0.008	11-38 7-29	7-25 7-20	30-80 20-45	20-50 15-40
Titanium Alloys		Z1-Z3	0.005-0.010	11-38	7-30	30-80	15-50

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.

Tool Type	A	B-Flat	B-Irregular	C*	D*	E-Flat*	E-Irregular*
COFA 2	.067" (1.7)	.177" (4.5)	.194" (4.9)	.177" (4.5)	.169" (4.3)	.059" (1.5)	.040" (1.0)
COFA 3	.098" (2.5)	.236" (6.0)	.260" (6.6)	.236" (6.0)	.217" (5.5)	.078" (2.0)	.055" (1.4)
COFA 4	.079" *(2.0)*	.217" *(5.5)*	.240" *(6.1)*	.217" *(5.5)*	.209" *(5.3)*	.071" *(1.8)*	.048" *(1.2)*
COFA 5	.090" *(2.3)*	.276" *(7.0)*	.286" *(7.3)*	.272" *(6.9)*	.252" *(6.4)*	.087" *(2.2)*	.037" *(0.9)*
C6	.043" *(1.1)*	.228" *(5.8)*	.268" *(6.8)*	.268" *(6.8)*	.193" *(4.9)*	.031" *(0.8)*	-.003" *(-0.8)*
C8	.075" *(1.9)*	.299" *(7.6)*	.347" *(8.8)*	.335" *(8.5)*	.240" *(6.1)*	.047" *(1.2)*	-.016" *(-0.4)*
C12	.134" *(3.4)*	.437" *(11.1)*	.512" *(13.0)*	.492" *(12.5)*	.339" *(8.6)*	.039" *(1.0)*	-.039" (-1.0)
C20 Small	.370" *(9.3)*		.882" *(22.4)*	.874" *(22.2)*	.661" *(16.8)*		-.142" *(3.6)*
C20 Large	.370" *(9.3)*		.965" *(24.5)*	.925" *(23.5)*	.661" *(16.8)*		.059" *(1.5)*

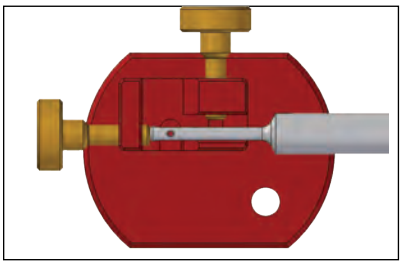
*Plus Material Thickness

How to Change the Blades
COFA Series 2 and 3 with Fixture:

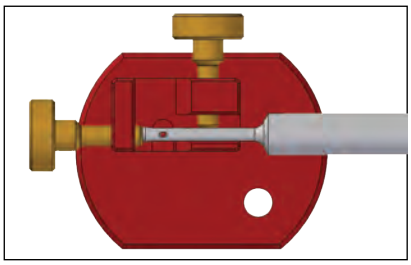


The COFA C2 and C3 blades can be installed and removed by clamping the tool in the COFA assembly fixture.

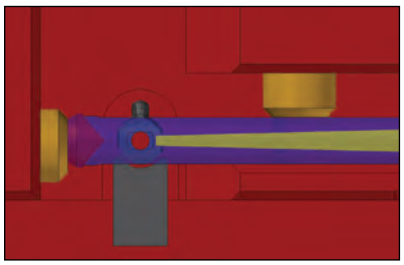
Fixture Order Number:
C3-V-0002



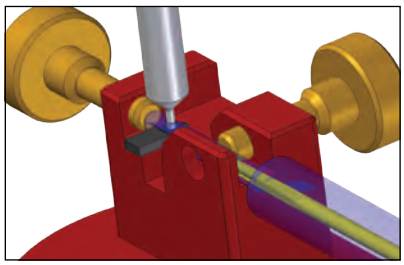
Position the blade pin hole over the fixture pin hole by adjusting the set screw at the end of the assembly fixture.



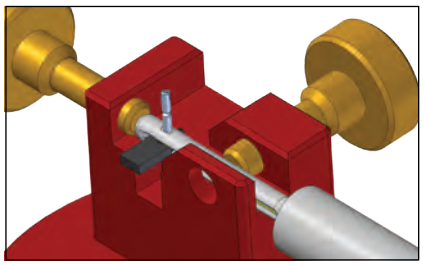
Lay the tool firmly into the assembly fixture, positioning the tool with the longer spring slot facing the clamping screw. Tighten the clamping screw.



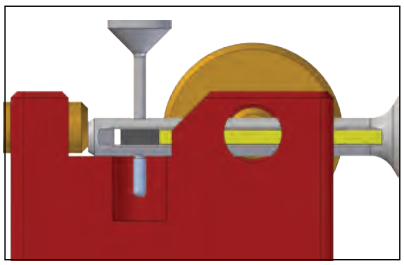
Install the blade into the blade window, nose first, so the nose of the blade is on the same side as the larger spring slot opening. Make sure, the bottom slot on the blade is engaged with the end of the spring.



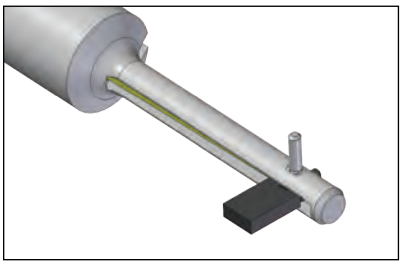
Use the assembly pin to make sure the blade hole and the pin hole are aligned. Press the assembly pin all the way through to the larger diameter.



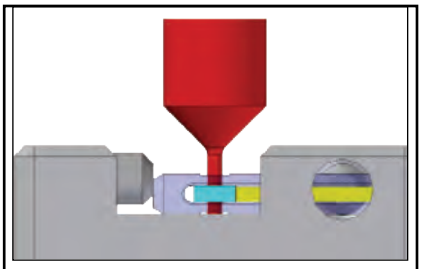
Remove the assembly pin and install the longer (and smaller diameter) of the split pin into the pin hole and blade hole.



Carefully using the other end of the assembly pin drive the split pin flush with the pin hole of the tool.



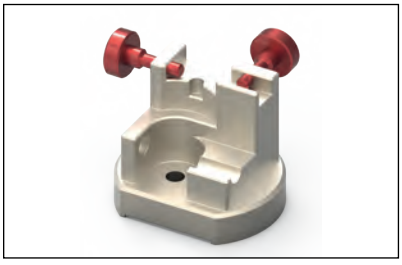
Remove the tool from the fixture. Using your fingers break off the blade tab and longer end of the split pin.



Disassembly: With the tool in the fixture, position tool with longer spring slot facing opposite of the clamp screw. Tighten. Use the small end of the pin, drive the split pin out. With the help of the small end of the pin, push the blade out.

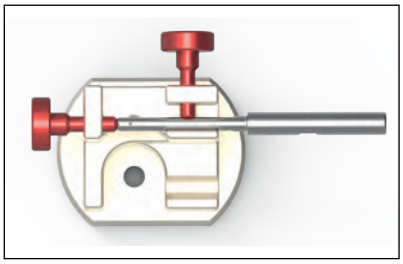
*COFA assembly fixture is not mandatory to remove blades

How to Change the Blades
COFA Series 4 and 5 with Fixture:

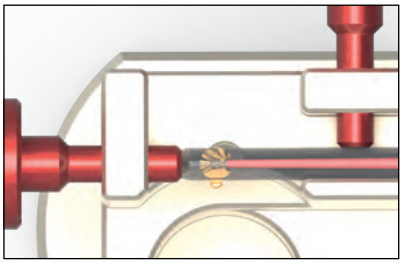


Assembly device for tool types COFA 4 and 5.

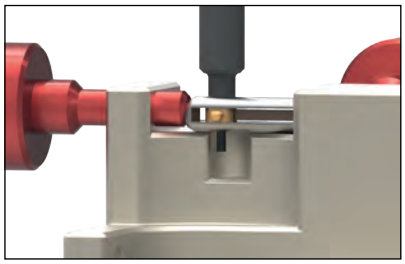
Fixture Order Number:
GH-C-V-0541



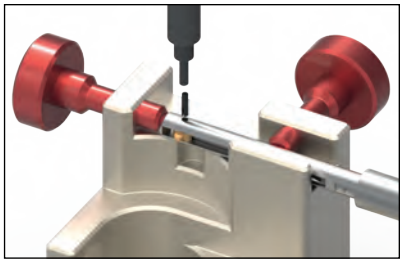
Position the tool so that the larger spring recess of the shaft is on the clamp screw side and the pin hole is over the assembly fixture hole. Tighten the clamping screw to secure the tool.



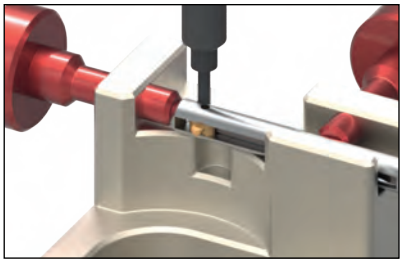
Insert the blade into the tool with the blade groove orientated towards the spring. Please observe the marks on the tool body.



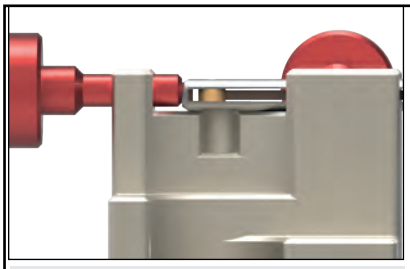
For positioning, push the long end of the assembly pin through the bore.



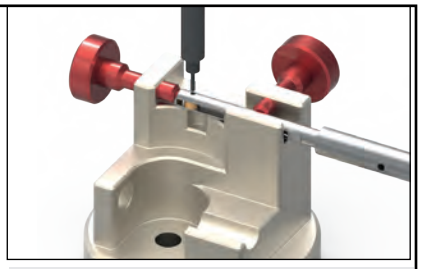
Insert the solid end of the split pin in the hole Then push it with the assembly pin.



The assembly pin must be flush with both sides of the tool body.

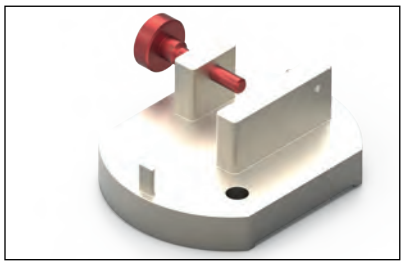


Disassembly: Position the tool so the pin hole is over the fixture pin hole and the solid end of the split pin is facing up.



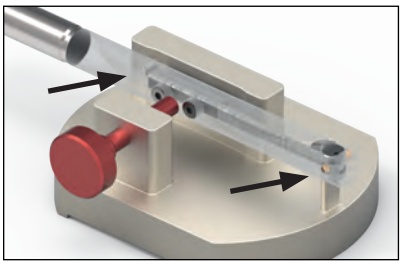
Push the roll pin carefully out of the bore. If necessary, use a small hammer.

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

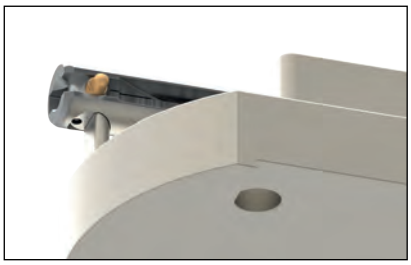


The COFA series blades can be installed and removed by clamping the tool in the COFA assembly fixture.

Fixture Order Number:
C6-V-0008, C8-V-0007, C12-V-0006

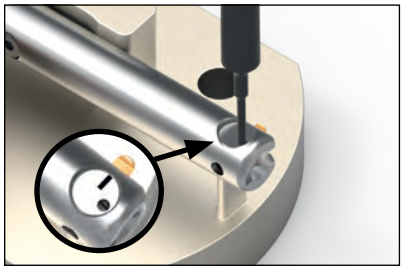


Place tool into the assembly device so that support pin from the assembly device enters into the spring recess behind the fixing strip and that the tool holder lies with its contour flush on the front rest.

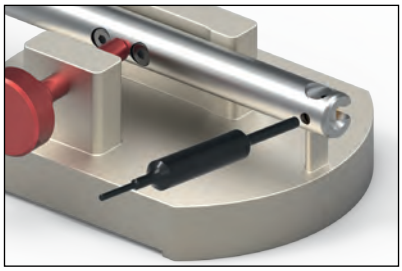


Make sure that the bore with the roll pin is entirely free.

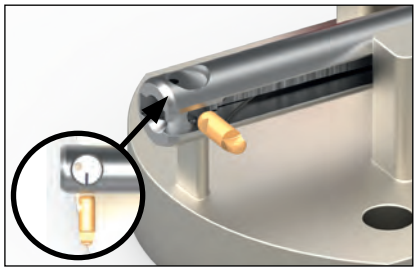
Then, clamp the tool.



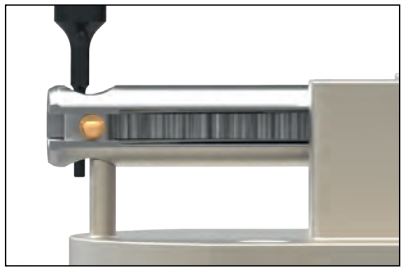
There is a line mark on the black roll pin. Push the roll pin through the tool holder by using the smaller diameter assembly pin (same direction for disassembly and assembly).



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.



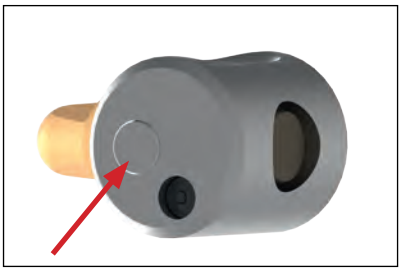
In order to define the right position of the blade and to pre-center for the new roll pin, push the assembly pin in the roll pin hole.

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

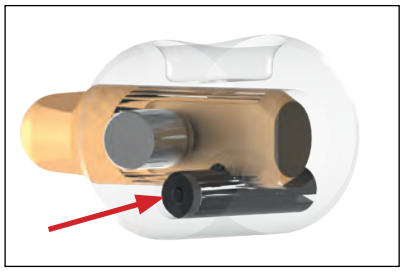
Loosen clamping screw and take the tool into your hands. Manually brake off the projecting section of the roll pin at the predetermined breaking point.

*COFA assembly fixture is not mandatory to remove blades

Blade Holder Detail



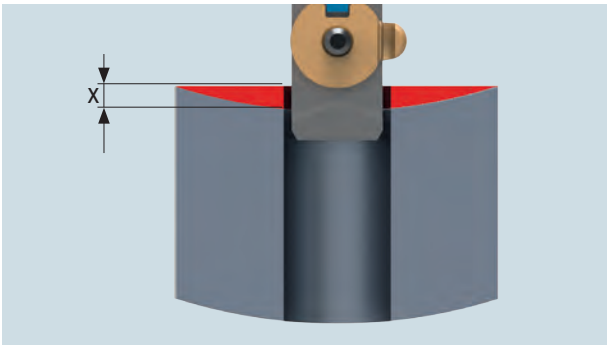
The positioning pin (red arrow) is a fixed component of the tool holder. The positioning pin and the black roll pin are responsible for the correct position of the blade.



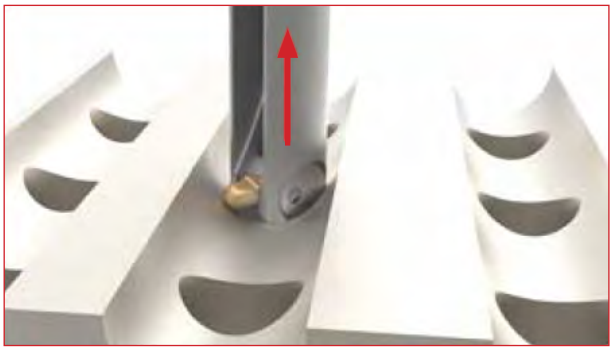
Only the roll pin may be removed for dismounting the blade.

Note:
When changing the blade the positioning pin can not be removed.

Prevention of Blade Breakage due to Unevenness



Pay attention to irregular surfaces and consider an uneven X when programming the distances.



When machining uneven bores, it is important to stop the spindle before retracting the tool out of the bore. This will prevent the blade from hitting the slope of the exterior.

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

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.

Return to info@heuletool.com

HEULE Application Data Sheet
For Deburring – Chamfering

Interest:

- ☐ Front and Back Deburring
- ☐ Front and Back Chamfering
- ☐ Combination Tooling
- ☐ Back Spotfacing
- ☐ Back Only Deburring
- ☐ Back Only Chamfering
- ☐ Front Countersinking
- ☐ Other_____

Information for:

- ☐ Purchase Order_____
- ☐ Request for Quotation (RFQ)
- ☐ Request for Tool Test Approval
- ☐ Requesting Technical Help

Date Needed:

- ☐ By_____
- ☐ Urgent

Company Name:_____ **Date:**_____

Contact Name:_____ **Phone:**_____

Address:_____ **Fax:**_____

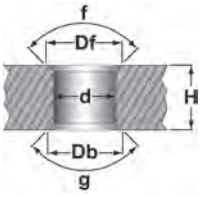
_____ **Email:**_____

City:_____ **State:**_____ **Zip:**_____

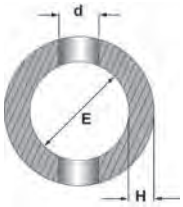
Problem Description: (Please specify any issues and include drawing or part print)

Part Configuration: (Fill in values that apply):

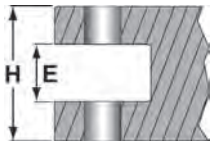
REF: Part name/Drawing number:_____



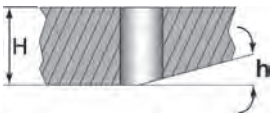
☐ Straight Hole Deburring/Chmf.



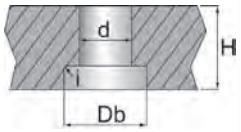
☐ Tube or I.D. Deburring



☐ Inline Holes Deburring/Chmf.



☐ Irregular Surface



☐ Back Counterboring

d = _____ + _____ **f =** _____

Df = _____ + _____ **g =** _____

Db = _____ + _____ **h =** _____

H = _____ **i =** _____

E = _____ **Surface Finish Req. =** _____

In Process Hole Size: _____

Material:_____ **Hardness:**_____

Production (Yr.):_____ **Cycle Time:**_____

Sequence (1, 2, 3, etc.):

___Drill ___Bore ___Tap

___Ream ___Deburr/Chmf.

Other Information/Sketch:

Machine Type:_____

Shank Size:_____

Feed Unit:_____ **Hydrl.**_____ **Pneum.**_____ **Elec.**

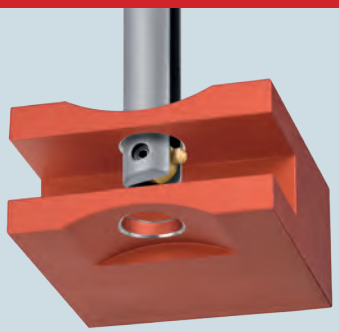
Back Feed Control? Y or N **Interrupted Cuts/Cross Holes? Y or N**

Over 50 Years of Manufacturing Cutting Tools

HEULE manufactures cutting tools of the highest quality and precision consistent with Swiss craftsmanship for use in the machine tools of some of the world's largest manufacturers; and the smallest machine shops.

CHAMFERING / DEBURRING

COFA
SNAP
GH-S
DEFA

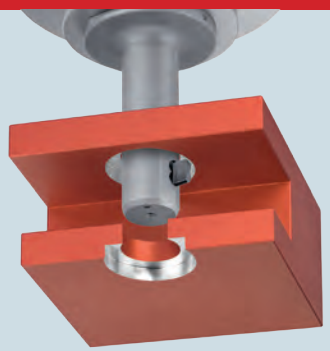


COUNTERSINKING

GH-K
COMP

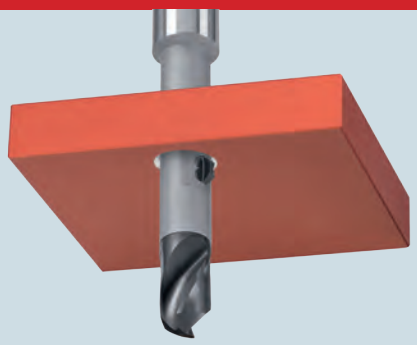
BACK SPOTFACING

BSF
SOLO
GH-Z/E



DRILLING

VEX-P
VEX-S
COMBI



HEULE
PRECISION TOOLS

HEULE TOOL CORPORATION
131 Commerce Drive
Loveland, Ohio 45140
USA

Phone (513) 860-9900
Fax (513) 860-9992
info@heuletool.com
www.heuletool.com

HEULE WERKZEUG AG
Wegenstrasse 11/Postfach
9436 Balgach
Switzerland

Phone +41 71 726 38 38
Fax +41 71 726 38 39
www.heule.com

ISO 9001:2008 Company