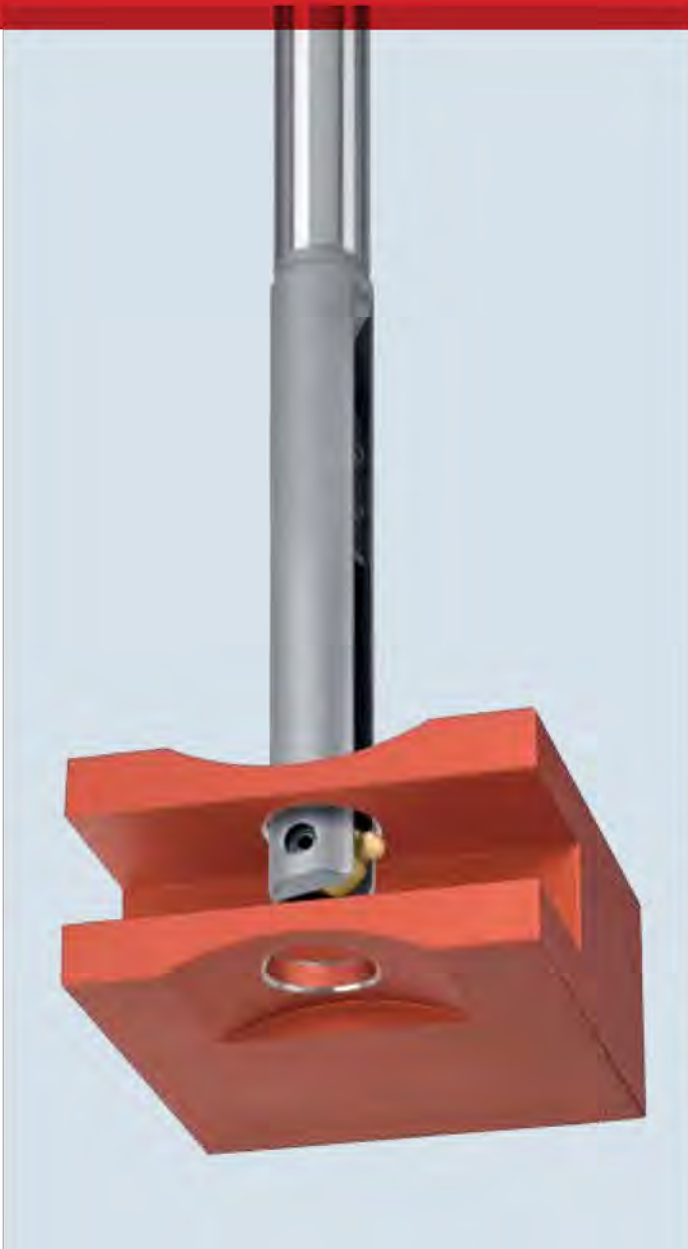# COFA

Deburring Tool for Elliptical or Contoured Surfaces

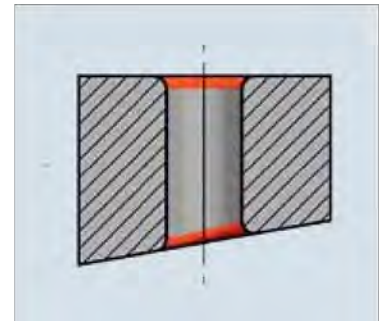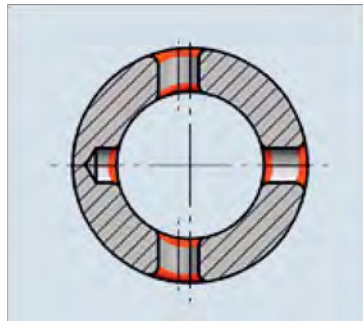**Replaceable solid carbide coated blades**

Consistent deburring of even and uneven bore edges

Breakthrough technology provides consistent quality

Sizes 2-30mm (.079-1.180") available from stock

Introduction

COFA

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

The HEULE COFA deburring tool removes burrs from the front and back of a drilled through hole without stopping or reversing the spindle. Whether you are deburring a flat surface or an irregular surface, the edge break is always even and consistent.

Deburr Elliptical Holes

The COFA tool will deburr the contours of an elliptical hole when two holes intersect or a hole is not perpendicular to the surface. The COFA with a standard blade can be used when the larger intersecting hole is two or more times the smaller or for surfaces up to 15°. Deburr more extreme contours by using a 30° blade with extra clearance relief.

Radiused Edge Breaks on Flat Parts

Deburr the front and back of any through hole with a smooth tapered edge break to relieve stress points and sharp corners. Use the blade with 10° clearance relief for better tool life when deburring flat parts.

Wide Range of Tools

Our COFA tool is a proven winner for any deburring challenge, and now with the addition of the COFA-C New Generation line, your process capability and efficiency is even further expanded to include threaded holes and larger edge breaks (see the COFA-C section page 55 for more information). COFA tools are avalable in a range of stock options sizes 2mm-30mm (.079"-1.180"). The COFA Cassette is designed for deburring even larger bores quickly and efficently.

513.860.9900   **HEULE PRECISION TOOLS**   **www.heuletool.com**
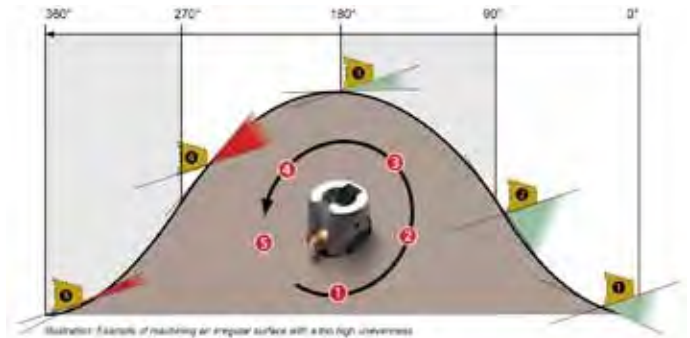
COFA

Introduction

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.
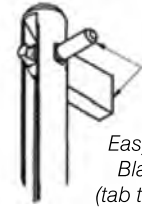
Typical Parts

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 - W**

| Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option |
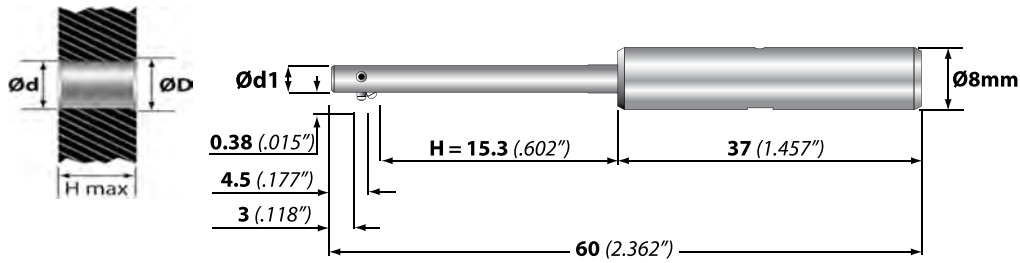
COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

Ød **ØD** **Ød1** **Ø8mm**

H max

0.38 (.015")
4.5 (.177")
3 (.118")

H = 15.3 (.602") **37** (1.457")

60 (2.362")

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

COFA Deburring Series 2

Ød		Ød1		ØD¹		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	2.2	.087	COFA2-2.0- ☐	COFA2b-2.0- ☐
2.1	.083	2.05	.081	2.3	.090	COFA2-2.1- ☐	COFA2b-2.1- ☐
2.2	.087	2.15	.085	2.4	.094	COFA2-2.2- ☐	COFA2b-2.2- ☐
2.3	.091	2.25	.089	2.5	.098	COFA2-2.3- ☐	COFA2b-2.3- ☐
2.4	.094	2.35	.092	2.6	.102	COFA2-2.4- ☐	COFA2b-2.4- ☐
2.5	.099	2.45	.096	2.7	.106	COFA2-2.5- ☐	COFA2b-2.5- ☐
2.6	.102	2.55	.100	2.8	.110	COFA2-2.6- ☐	COFA2b-2.6- ☐
2.7	.106	2.65	.104	2.9	.114	COFA2-2.7- ☐	COFA2b-2.7- ☐
2.8	.110	2.75	.108	3.0	.118	COFA2-2.8- ☐	COFA2b-2.8- ☐
2.9	.114	2.85	.112	3.1	.122	COFA2-2.9- ☐	COFA2b-2.9- ☐
3.0	.118	2.95	.116	3.2	.126	COFA2-3.0- ☐	COFA2b-3.0- ☐
3.1	.122	3.05	.120	3.3	.130	COFA2-3.1- ☐	COFA2b-3.1- ☐

Spring Choice: W, H, S, Z

¹ *The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.*

BLADE OPTIONS ► PG. 53

SPARE PARTS ► PG. 27

COFA

Series 2

Spare Parts
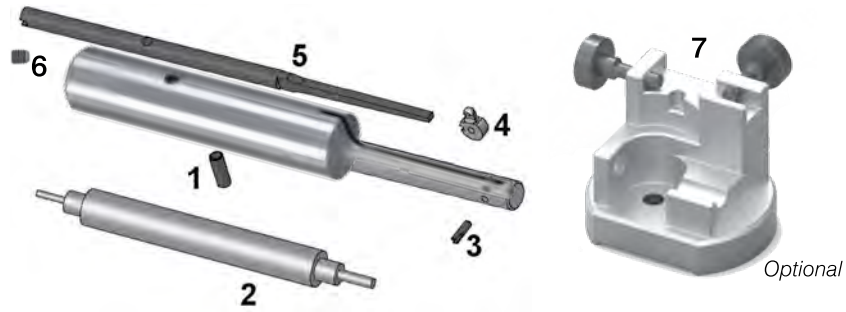
Optional

Spare Parts – COFA 2

1	2	3	4	5	6		7
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Set Screw	Wrench 1.3mm	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:

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

| Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option |

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

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PRECISION TOOLS

COFA

Deburring Tools –
For holes **3.0 - 4.1mm** .118 - .161"

Ød1

.53 *(.021")*
6 *(.236")*
4 *(.157")*

H = 20.8 *(.819")*   **36.5** *(1.437")*

Ø8mm

66 *(2.598")*

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

COFA Deburring Series 3

Ød		Ød1		ØD[1]		Complete Tool with Blade	
Min. Hole		Tool Diameter +0/- .03		Approx. Cutting Diameter		Front and Back Order Number	Back Only Order Number
mm	*inches*	mm	*inches*	mm	*inches*		
3.0	*.118*	**2.95**	*.116*	**3.3**	*.130*	**COFA3-3.0-** ☐	**COFA3b-3.0-** ☐
3.1	*.122*	**3.05**	*.120*	**3.4**	*.134*	**COFA3-3.1-** ☐	**COFA3b-3.1-** ☐
3.2	*.126*	**3.15**	*.124*	**3.5**	*.138*	**COFA3-3.2-** ☐	**COFA3b-3.2-** ☐
3.3	*.130*	**3.25**	*.128*	**3.6**	*.142*	**COFA3-3.3-** ☐	**COFA3b-3.3-** ☐
3.4	*.134*	**3.35**	*.132*	**3.7**	*.146*	**COFA3-3.4-** ☐	**COFA3b-3.4-** ☐
3.5	*.138*	**3.45**	*.136*	**3.8**	*.150*	**COFA3-3.5-** ☐	**COFA3b-3.5-** ☐
3.6	*.142*	**3.55**	*.140*	**3.9**	*.154*	**COFA3-3.6-** ☐	**COFA3b-3.6-** ☐
3.7	*.146*	**3.65**	*.144*	**4.0**	*.157*	**COFA3-3.7-** ☐	**COFA3b-3.7-** ☐
3.8	*.150*	**3.75**	*.148*	**4.1**	*.161*	**COFA3-3.8-** ☐	**COFA3b-3.8-** ☐
3.9	*.154*	**3.85**	*.152*	**4.2**	*.165*	**COFA3-3.9-** ☐	**COFA3b-3.9-** ☐
4.0	*.158*	**3.95**	*.156*	**4.3**	*.169*	**COFA3-4.0-** ☐	**COFA3b-4.0-** ☐
4.1	*.161*	**4.05**	*.159*	**4.4**	*.173*	**COFA3-4.1-** ☐	**COFA3b-4.1-** ☐

Spring Choice: W, H, S, Z

[1] *The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.*

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PRECISION TOOLS

Optional

Spare Parts – COFA 3

1	2	3	4	5	6		7
Retainer Pin	Assembly Pin	Split Pin	Blade	Spring	Set Screw	Wrench 1.3mm	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:
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**

| Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option |

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA

Series 4

Deburring Tools –
For holes **4.0 - 4.9mm** .157 - .193"

COFA

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA Deburring Series 4

Ød		Ød1		ØD[1]		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

[1] The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.

BLADE OPTIONS PG. 53

SPARE PARTS PG. 31

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PRECISION TOOLS

COFA Series 4 — Spare Parts
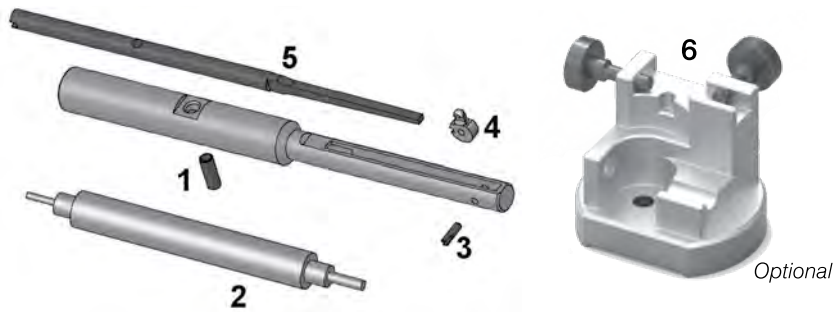
Optional

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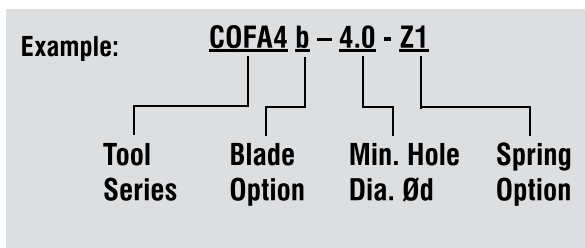Blades are available from stock as front and back cutting **(fab)** or back cutting only **(bco)**.

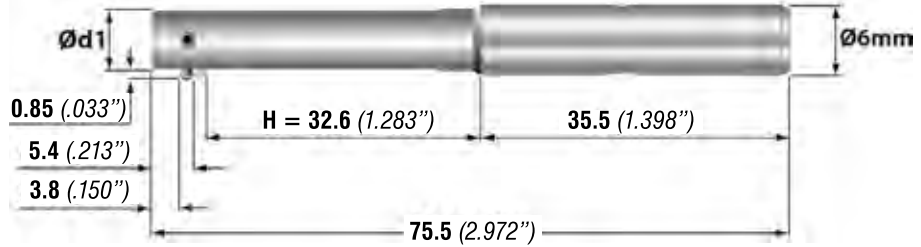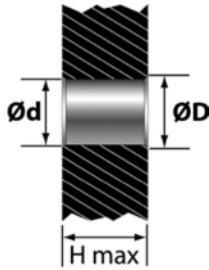| Blade Code	Blade Type	Geo.	Series 4
	TiN 20° Standard	fab	GH-C-M-0504
b		bco	GH-C-M-0914
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0744
yb		bco	GH-C-M-0854
x	TiN 30° Uneven Spec	fab	GH-C-M-0148
xb		bco	GH-C-M-0182

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.

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

| Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option |

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

HEULE PRECISION TOOLS

COFA

Deburring Tools –
For holes **5.0 - 5.9mm** .197 - .232"

Ød **ØD**

H max

Ød1

0.85 (.033")
5.4 (.213")
3.8 (.150")

H = 32.6 (1.283")   **35.5** (1.398")

Ø6mm

75.5 (2.972")

COFA Deburring Series 5

Ød		Ød1		ØD[1]		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

[1] The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.

BLADE OPTIONS PG. 53
SPARE PARTS PG. 33

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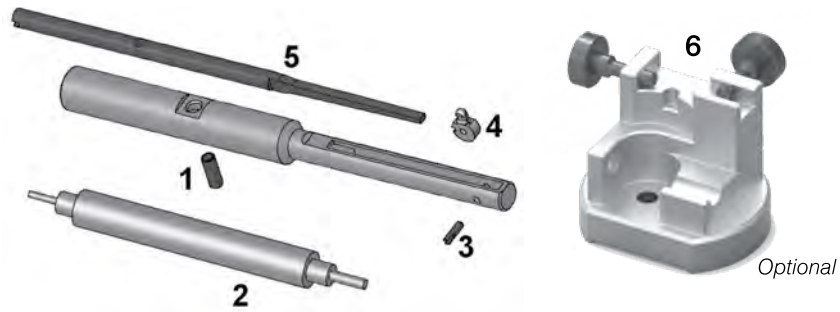
Optional

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	↓ Harder	Long Chipping Steel, Stainless
Z1	GH-C-E-0356		Titanium, Hardened Steel, Nickel Alloy

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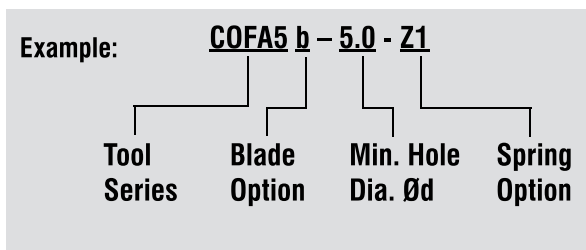
Blades are available from stock as front and back cutting (fab) or back cutting only (bco).

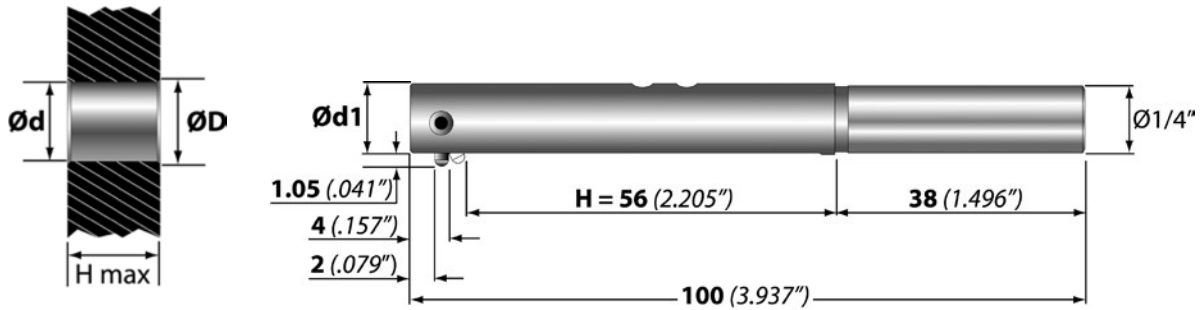| Blade Code	Blade Type	Geo.	Series 5
	TiN 20° Standard	fab	GH-C-M-0505
b		bco	GH-C-M-0915
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0745
yb		bco	GH-C-M-0855
x	TiN 30° Uneven Spec	fab	GH-C-M-0150
xb		bco	GH-C-M-0184

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.

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**

Tool Series — Blade Option — Min. Hole Dia. Ød — Spring Option

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA Deburring Series 6

Ød		Ød1		ØD[1]		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
6.0	*.236*	**5.8**	*.228*	**6.7**	*.264*	**COFA6-236-** ☐	**COFA6b-236-** ☐
6.2	*.244*	**6.0**	*.236*	**6.9**	*.272*	**COFA6-244-** ☐	**COFA6b-244-** ☐
6.4	*.252*	**6.2**	*.244*	**7.1**	*.280*	**COFA6-252-** ☐	**COFA6b-252-** ☐
6.6	*.260*	**6.4**	*.252*	**7.3**	*.287*	**COFA6-260-** ☐	**COFA6b-260-** ☐
6.8	*.268*	**6.6**	*.260*	**7.5**	*.295*	**COFA6-268-** ☐	**COFA6b-268-** ☐
7.0	*.276*	**6.8**	*.268*	**7.7**	*.303*	**COFA6-276-** ☐	**COFA6b-276-** ☐
7.2	*.284*	**7.0**	*.276*	**7.9**	*.311*	**COFA6-284-** ☐	**COFA6b-284-** ☐
7.4	*.291*	**7.2**	*.284*	**8.1**	*.319*	**COFA6-291-** ☐	**COFA6b-291-** ☐
7.6	*.299*	**7.4**	*.291*	**8.3**	*.327*	**COFA6-299-** ☐	**COFA6b-299-** ☐
7.8	*.307*	**7.6**	*.299*	**8.5**	*.335*	**COFA6-307-** ☐	**COFA6b-307-** ☐
8.0	*.315*	**7.8**	*.307*	**8.7**	*.342*	**COFA6-315-** ☐	**COFA6b-315-** ☐

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

[1] *The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.*

BLADE OPTIONS ▶ PG. **53**
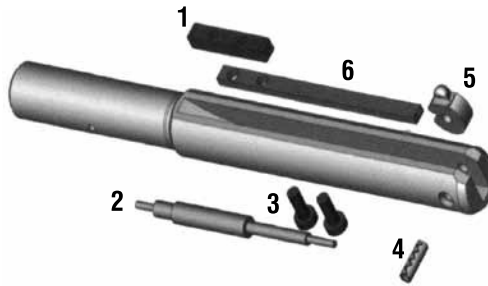
SPARE PARTS ▶ PG. **35**

Spare Parts – COFA 6

1	2	3	4	5	6
Retainer Block	Assembly Pin	Screw	Roll Pin	Blade	Spring
GH-C-E-0812	GH-C-V-0126	GH-H-S-0803	GH-C-E-0811	See Below	See Below

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-0321	Softer	Aluminum, Brass, Magnesium
H	GH-C-E-0322		Grey Cast Iron, Nodular Iron
S	GH-C-E-0323		Carbon Steel, Free Machining Steel
Z	GH-C-E-0324		Long Chipping Steel, Stainless
Z1	GH-C-E-0325		Titanium, Hardened Steel, Nickel Alloy
Z2	GH-C-E-0326	Harder	Nickel Alloy, etc
Z3	GH-C-E-0327		Nickel Alloy, etc

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

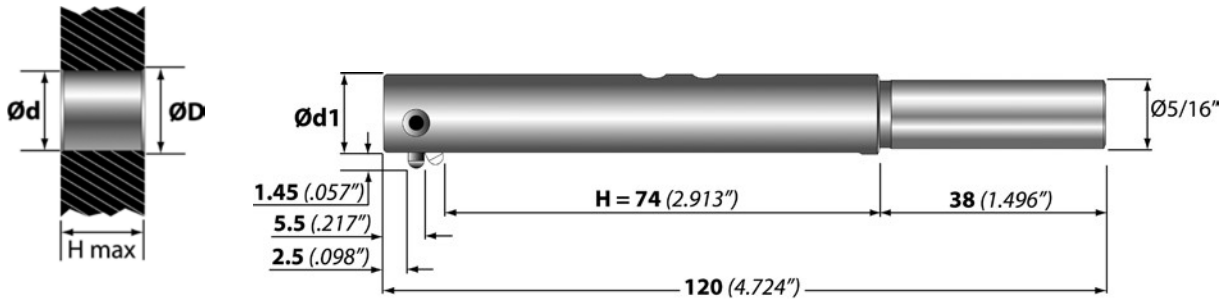| Blade Code	Blade Type	Geo.	Series 6
	TiN 20° Standard	fab	GH-C-M-0002
b		bco	GH-C-M-0012
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0442
yb		bco	GH-C-M-0452
x	TiN 30° Uneven Spec	fab	GH-C-M-0142
xb		bco	GH-C-M-0143

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.

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: **COFA6 b – 236 - Z1**

Tool Series   Blade Option   Min. Hole Dia. Ød (Inches)   Spring Option

PROGRAMMING ▶ PG. 46-47

CHANGE BLADES ▶ PG. 48-51

Ød ØD H max

Ød1
1.45 (.057")
5.5 (.217")
2.5 (.098")
H = 74 (2.913")
38 (1.496")
Ø5/16"
120 (4.724")
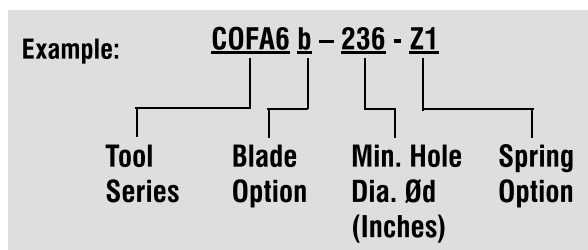
COFA Deburring Series 8

Ød		Ød1		ØD[1]		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
8.0	*.315*	**7.8**	*.307*	**9.0**	*.354*	**COFA8-315-** ☐	**COFA8b-315-** ☐
8.2	*.323*	**8.0**	*.315*	**9.2**	*.362*	**COFA8-323-** ☐	**COFA8b-323-** ☐
8.4	*.331*	**8.2**	*.323*	**9.4**	*.370*	**COFA8-331-** ☐	**COFA8b-331-** ☐
8.6	*.339*	**8.4**	*.331*	**9.6**	*.378*	**COFA8-339-** ☐	**COFA8b-339-** ☐
8.8	*.346*	**8.6**	*.339*	**9.8**	*.386*	**COFA8-346-** ☐	**COFA8b-346-** ☐
9.0	*.354*	**8.8**	*.346*	**10.0**	*.394*	**COFA8-354-** ☐	**COFA8b-354-** ☐
9.2	*.362*	**9.0**	*.354*	**10.2**	*.402*	**COFA8-362-** ☐	**COFA8b-362-** ☐
9.4	*.370*	**9.2**	*.362*	**10.4**	*.409*	**COFA8-370-** ☐	**COFA8b-370-** ☐
9.6	*.378*	**9.4**	*.370*	**10.6**	*.417*	**COFA8-378-** ☐	**COFA8b-378-** ☐
9.8	*.386*	**9.6**	*.378*	**10.8**	*.425*	**COFA8-386-** ☐	**COFA8b-386-** ☐
10.0	*.394*	**9.8**	*.386*	**11.0**	*.433*	**COFA8-394-** ☐	**COFA8b-394-** ☐
10.2	*.402*	**10.0**	*.394*	**11.2**	*.441*	**COFA8-402-** ☐	**COFA8b-402-** ☐
10.4	*.409*	**10.2**	*.402*	**11.4**	*.449*	**COFA8-409-** ☐	**COFA8b-409-** ☐
10.6	*.417*	**10.4**	*.409*	**11.6**	*.457*	**COFA8-417-** ☐	**COFA8b-417-** ☐
10.8	*.425*	**10.6**	*.417*	**11.8**	*.465*	**COFA8-425-** ☐	**COFA8b-425-** ☐
11.0	*.433*	**10.8**	*.425*	**12.0**	*.473*	**COFA8-433-** ☐	**COFA8b-433-** ☐
11.2	*.441*	**11.0**	*.433*	**12.2**	*.480*	**COFA8-441-** ☐	**COFA8b-441-** ☐
11.4	*.449*	**11.2**	*.441*	**12.4**	*.488*	**COFA8-449-** ☐	**COFA8b-449-** ☐
11.6	*.457*	**11.4**	*.449*	**12.6**	*.496*	**COFA8-457-** ☐	**COFA8b-457-** ☐
11.8	*.465*	**11.6**	*.457*	**12.8**	*.504*	**COFA8-465-** ☐	**COFA8b-465-** ☐
12.0	*.473*	**11.8**	*.465*	**13.0**	*.512*	**COFA8-473-** ☐	**COFA8b-473-** ☐
12.2	*.480*	**12.0**	*.473*	**13.2**	*.520*	**COFA8-480-** ☐	**COFA8b-480-** ☐

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

[1] *The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.*

BLADE OPTIONS ▶ PG. **53**

SPARE PARTS ▶ PG. **37**

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO
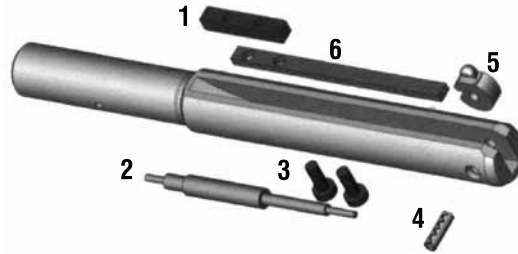
Spare Parts – COFA 8

1	2	3	4	5	6
Retainer Block	Assembly Pin	Screw	Roll Pin	Blade	Spring
GH-C-E-0808	GH-C-V-0111	GH-H-S-0517	GH-C-E-0810	See Below	See Below

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-0331	Softer	Aluminum, Brass, Magnesium
H	GH-C-E-0332		Grey Cast Iron, Nodular Iron
S	GH-C-E-0333		Carbon Steel, Free Machining Steel
Z	GH-C-E-0334		Long Chipping Steel, Stainless
Z1	GH-C-E-0335		Titanium, Hardened Steel, Nickel Alloy
Z2	GH-C-E-0336	Harder	Nickel Alloy, etc
Z3	GH-C-E-0337		Nickel Alloy, etc

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

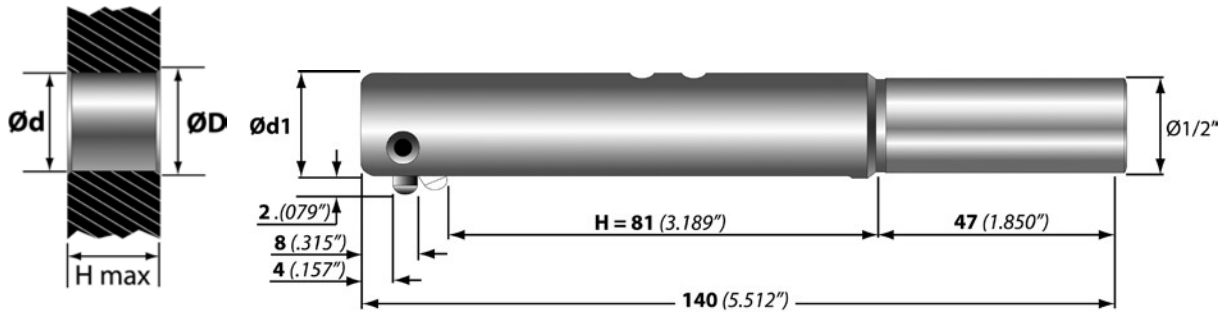| Blade Code	Blade Type	Geo.	Series 8
	TiN 20° Standard	fab	GH-C-M-0003
b		bco	GH-C-M-0013
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0443
yb		bco	GH-C-M-0453
x	TiN 30° Uneven Spec	fab	GH-C-M-0133
xb		bco	GH-C-M-0131

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.

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: COFA8 b – 315 - Z1

| Tool Series | Blade Option | Min. Hole Dia. Ød (Inches) | Spring Option |

COFA

Deburring Tools –
For holes **12.4 - 20.0mm** .488 - .788"

COFA

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO
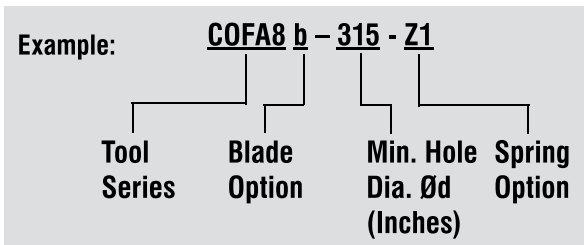
COFA Deburring Series 12

| Ød		Ød1		ØD¹		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
12.4	.488	12.2	.480	13.8	.543	COFA12-488- ☐	COFA12b-488- ☐
12.8	.504	12.6	.496	14.2	.559	COFA12-504- ☐	COFA12b-504- ☐
13.2	.520	13.0	.512	14.6	.575	COFA12-520- ☐	COFA12b-520- ☐
13.6	.536	13.4	.528	15.0	.591	COFA12-536- ☐	COFA12b-536- ☐
14.0	.551	13.8	.543	15.4	.606	COFA12-551- ☐	COFA12b-551- ☐
14.4	.567	14.2	.559	15.8	.622	COFA12-567- ☐	COFA12b-567- ☐
14.8	.583	14.6	.575	16.2	.638	COFA12-583- ☐	COFA12b-583- ☐
15.2	.599	15.0	.591	16.6	.654	COFA12-599- ☐	COFA12b-599- ☐
15.6	.614	15.4	.606	17.0	.669	COFA12-614- ☐	COFA12b-614- ☐
16.0	.630	15.8	.622	17.4	.685	COFA12-630- ☐	COFA12b-630- ☐
16.4	.646	16.2	.638	17.8	.701	COFA12-646- ☐	COFA12b-646- ☐
16.8	.662	16.6	.654	18.2	.717	COFA12-662- ☐	COFA12b-662- ☐
17.2	.677	17.0	.669	18.6	.732	COFA12-677- ☐	COFA12b-677- ☐
17.6	.693	17.4	.685	19.0	.748	COFA12-693- ☐	COFA12b-693- ☐
18.0	.709	17.8	.701	19.4	.764	COFA12-709- ☐	COFA12b-709- ☐
18.4	.725	18.2	.717	19.8	.780	COFA12-725- ☐	COFA12b-725- ☐
18.8	.740	18.6	.732	20.2	.795	COFA12-740- ☐	COFA12b-740- ☐
19.2	.756	19.0	.748	20.6	.811	COFA12-756- ☐	COFA12b-756- ☐
19.6	.772	19.4	.764	21.0	.827	COFA12-772- ☐	COFA12b-772- ☐
20.0	.788	19.8	.780	21.4	.843	COFA12-788- ☐	COFA12b-788- ☐

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

¹ The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.

BLADE OPTIONS ▶ PG. 53

SPARE PARTS ▶ PG. 39

HEULE
PRECISION TOOLS

COFA Series 12 — Spare Parts
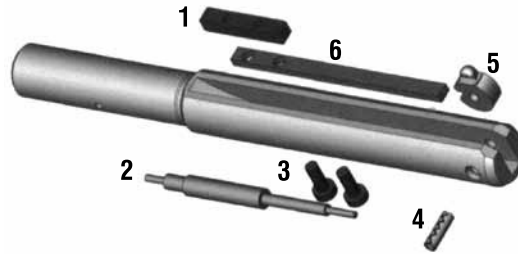
Spare Parts – COFA 12

1	2	3	4	5	6
Retainer Block	Assembly Pin	Screw	Roll Pin	Blade	Spring
GH-C-E-0800	GH-C-V-0100	GH-H-S-0530	GH-C-E-0801	See Below	See Below

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-0361	Softer	Aluminum, Brass, Magnesium
H	GH-C-E-0362		Grey Cast Iron, Nodular Iron
S	GH-C-E-0363		Carbon Steel, Free Machining Steel
Z	GH-C-E-0364		Long Chipping Steel, Stainless
Z1	GH-C-E-0365		Titanium, Hardened Steel, Nickel Alloy
Z2	GH-C-E-0366	Harder	Nickel Alloy, etc
Z3	GH-C-E-0367		Nickel Alloy, etc

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

Blade Code	Blade Type	Geo.	Series 12
	TiN 20° Standard	fab	GH-C-M-0007
b		bco	GH-C-M-0017
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0447
yb		bco	GH-C-M-0457
x	TiN 30° Uneven Spec	fab	GH-C-M-0105
xb		bco	GH-C-M-0104

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.

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: **COFA12 b – 488 - Z1**

| Tool Series | Blade Option | Min. Hole Dia. Ød (Inches) | Spring Option |

HEULE PRECISION TOOLS

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA Series 12OS

Deburring Tools –
For holes **20.5 - 30.0mm** .807 - 1.181"

COFA

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA Deburring Series 12 OVERSIZE - METRIC

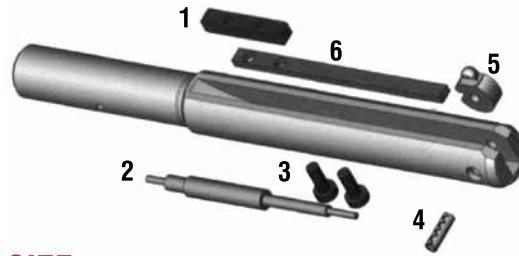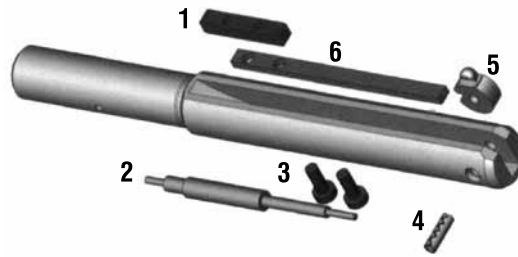| Ød		Ød1		ØD[1]		Complete Tool with Blade	
Min. Hole mm inches		Tool Dia. mm inches		Approx. Cutting Dia. mm inches		Front and Back Order Number	Back Only Order Number
20.5	.807	20.3	.799	21.8	.858	COFA12-20.5-☐	COFA12b-20.5-☐
20.8	.819	20.6	.811	22.2	.874	COFA12-20.8-☐	COFA12b-20.8-☐
21.0	.827	20.8	.819	22.4	.882	COFA12-21.0-☐	COFA12b-21.0-☐
21.2	.835	21.0	.827	22.6	.890	COFA12-21.2-☐	COFA12b-21.2-☐
21.5	.847	21.3	.838	23.0	.906	COFA12-21.5-☐	COFA12b-21.5-☐
22.0	.866	21.8	.858	23.4	.921	COFA12-22.0-☐	COFA12b-22.0-☐
22.5	.886	22.3	.878	23.9	.941	COFA12-22.5-☐	COFA12b-22.5-☐
22.8	.898	22.6	.890	24.2	.953	COFA12-22.8-☐	COFA12b-22.8-☐
23.0	.905	22.8	.898	24.4	.960	COFA12-23.0-☐	COFA12b-23.0-☐
23.2	.914	23.0	.906	24.6	.969	COFA12-23.2-☐	COFA12b-23.2-☐
23.5	.925	23.3	.917	24.9	.981	COFA12-23.5-☐	COFA12b-23.5-☐
24.0	.945	23.8	.937	25.4	1.000	COFA12-24.0-☐	COFA12b-24.0-☐
24.5	.965	24.3	.957	25.9	1.020	COFA12-24.5-☐	COFA12b-24.5-☐
24.8	.977	24.6	.969	26.2	1.031	COFA12-24.8-☐	COFA12b-24.8-☐
25.0	.984	24.8	.976	26.4	1.039	COFA12-25.0-☐	COFA12b-25.0-☐
25.5	1.004	25.3	.996	26.9	1.059	COFA12-25.5-☐	COFA12b-25.5-☐
26.0	1.024	25.8	1.016	27.4	1.079	COFA12-26.0-☐	COFA12b-26.0-☐
26.5	1.043	26.3	1.035	27.9	1.098	COFA12-26.5-☐	COFA12b-26.5-☐
26.8	1.055	26.6	1.047	28.2	1.110	COFA12-26.8-☐	COFA12b-26.8-☐
27.0	1.063	26.8	1.055	28.4	1.118	COFA12-27.0-☐	COFA12b-27.0-☐
* 27.2	1.071	27.0	1.063	28.6	1.126	COFA12-27.2-☐	COFA12b-27.2-☐
* 27.5	1.083	27.3	1.075	28.9	1.138	COFA12-27.5-☐	COFA12b-27.5-☐
* 28.0	1.102	27.8	1.094	29.4	1.157	COFA12-28.0-☐	COFA12b-28.0-☐
* 28.5	1.122	28.3	1.114	29.9	1.177	COFA12-28.5-☐	COFA12b-28.5-☐
* 29.0	1.142	28.8	1.134	30.4	1.197	COFA12-29.0-☐	COFA12b-29.0-☐
* 29.5	1.162	29.3	1.154	30.9	1.217	COFA12-29.5-☐	COFA12b-29.5-☐
* 30.0	1.181	29.8	1.173	31.4	1.236	COFA12-30.0-☐	COFA12b-30.0-☐

* Non-stock standard item with extended delivery time

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

[1] The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.

BLADE OPTIONS ▶ PG. 53

SPARE PARTS ▶ PG. 41

HEULE
PRECISION TOOLS

Spare Parts – COFA 12 OVERSIZE

1	2	3	4	5	6
Retainer Block	Assembly Pin	Screw	Roll Pin	Blade	Spring
GH-C-E-0800	GH-C-V-0130	GH-H-S-0513	GH-C-E-0807	See Below	See Below

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-0361	Softer	Aluminum, Brass, Magnesium
H	GH-C-E-0362		Grey Cast Iron, Nodular Iron
S	GH-C-E-0363		Carbon Steel, Free Machining Steel
Z	GH-C-E-0364		Long Chipping Steel, Stainless
Z1	GH-C-E-0365		Titanium, Hardened Steel, Nickel Alloy
Z2	GH-C-E-0366	Harder	Nickel Alloy, etc
Z3	GH-C-E-0367		Nickel Alloy, etc

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 12
	TiN 20° Standard	fab	GH-C-M-0007
b		bco	GH-C-M-0017
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0447
yb		bco	GH-C-M-0457
x	TiN 30° Uneven Spec	fab	GH-C-M-0105
xb		bco	GH-C-M-0104

How to Order:

The COFA tool provides different blade and spring options to create the most effective tool for any application depend-ing 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: COFA12 b – 20.5 - Z1

Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA Deburring Series 12 OVERSIZE - METRIC*

| Ød	Ød1	ØD[1]	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
*30.5 *1.201*	30.3 *1.193*	31.9 *1.256*	COFA12-30.5-☐	COFA12b-30.5-☐
*31.0 *1.221*	30.8 *1.213*	32.4 *1.276*	COFA12-31.0-☐	COFA12b-31.0-☐
*31.5 *1.240*	31.3 *1.232*	32.9 *1.295*	COFA12-31.5-☐	COFA12b-31.5-☐
*32.0 *1.260*	31.8 *1.252*	33.4 *1.315*	COFA12-32.0-☐	COFA12b-32.0-☐
*32.5 *1.280*	32.3 *1.272*	33.9 *1.335*	COFA12-32.5-☐	COFA12b-32.5-☐
*33.0 *1.299*	32.8 *1.291*	34.4 *1.354*	COFA12-33.0-☐	COFA12b-33.0-☐
*33.5 *1.318*	33.3 *1.311*	34.9 *1.374*	COFA12-33.5-☐	COFA12b-33.5-☐
*34.0 *1.339*	33.8 *1.331*	35.4 *1.394*	COFA12-34.0-☐	COFA12b-34.0-☐
*34.5 *1.358*	34.3 *1.350*	35.9 *1.413*	COFA12-34.5-☐	COFA12b-34.5-☐
*35.0 *1.378*	34.8 *1.370*	36.4 *1.433*	COFA12-35.0-☐	COFA12b-35.0-☐
*35.5 *1.398*	35.3 *1.390*	36.9 *1.453*	COFA12-35.5-☐	COFA12b-35.5-☐
*36.0 *1.417*	35.8 *1.409*	37.4 *1.472*	COFA12-36.0-☐	COFA12b-36.0-☐
*36.5 *1.437*	36.3 *1.429*	37.9 *1.492*	COFA12-36.5-☐	COFA12b-36.5-☐
*37.0 *1.457*	36.8 *1.449*	38.4 *1.512*	COFA12-37.0-☐	COFA12b-37.0-☐
*37.5 *1.477*	37.3 *1.469*	38.9 *1.531*	COFA12-37.5-☐	COFA12b-37.5-☐
*38.0 *1.496*	37.8 *1.488*	39.4 *1.551*	COFA12-38.0-☐	COFA12b-38.0-☐
*38.5 *1.516*	38.3 *1.508*	39.9 *1.571*	COFA12-38.5-☐	COFA12b-38.5-☐
*39.0 *1.536*	38.8 *1.528*	40.4 *1.591*	COFA12-39.0-☐	COFA12b-39.0-☐
*39.5 *1.555*	39.3 *1.547*	40.9 *1.610*	COFA12-39.5-☐	COFA12b-39.5-☐
*40.0 *1.575*	39.8 *1.567*	41.4 *1.630*	COFA12-40.0-☐	COFA12b-40.0-☐

* Non-stock standard item with extended delivery time

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

[1] The deburring result varies depending on material, cutting data and application. The indicated dimension is the theoretically possible maximum. The spring has to be selected accordingly.

BLADE OPTIONS → PG. 53

SPARE PARTS → PG. 43

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

Spare Parts – COFA 12 OVERSIZE

1	2	3	4	5	6
Retainer Block	Assembly Pin	Screw	Roll Pin	Blade	Spring
GH-C-E-0800	GH-C-V-0130	GH-H-S-0513	GH-C-E-0807	See Below	See Below

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-0361	Aluminum, Brass, Magnesium
H	GH-C-E-0362	Grey Cast Iron, Nodular Iron
S	GH-C-E-0363	Carbon Steel, Free Machining Steel
Z	GH-C-E-0364	Long Chipping Steel, Stainless
Z1	GH-C-E-0365	Titanium, Hardened Steel, Nickel Alloy
Z2	GH-C-E-0366	Nickel Alloy, etc
Z3	GH-C-E-0367	Nickel Alloy, etc

(Softer → Harder)

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 12
	TiN 20° Standard	fab	GH-C-M-0007
b		bco	GH-C-M-0017
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0447
yb		bco	GH-C-M-0457
x	TiN 30° Uneven Spec	fab	GH-C-M-0105
xb		bco	GH-C-M-0104

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.

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: **COFA12 b – 30.5 - Z1**

| Tool Series | Blade Option | Min. Hole Dia. Ød | Spring Option |

PROGRAMMING ▸ PG. 46-47

CHANGE BLADES ▸ PG. 48-51

Cassette Deburring Tools

Ød	Hole Diameter
ØD	Chamfer Diameter
Ød1	Tool Diameter
x	Offset from Center

Order Number (Cassette Only)	Minimum Hole Ød mm inches	L1	L2	L3	HK	L5	BK	Ød1
*COFA6-CAS-☐	13 .512	60 2.36	2.0 .079	4.0 .157	7.55 .297	12 .472	7.6 .299	Ød - 1.1
*COFA8-CAS-☐	16 .630	80 3.15	2.5 .098	5.5 .216	9.65 .380	20 .787	9.0 .354	Ød - 1.4
COFA12-CAS-☐	25 .984	93 3.66	4.0 .157	8.0 .315	15.0 .590	16 .630	14.0 .551	Ød - 2.5

Spring Choice: W, H, S, Z, Z1, Z2, Z3
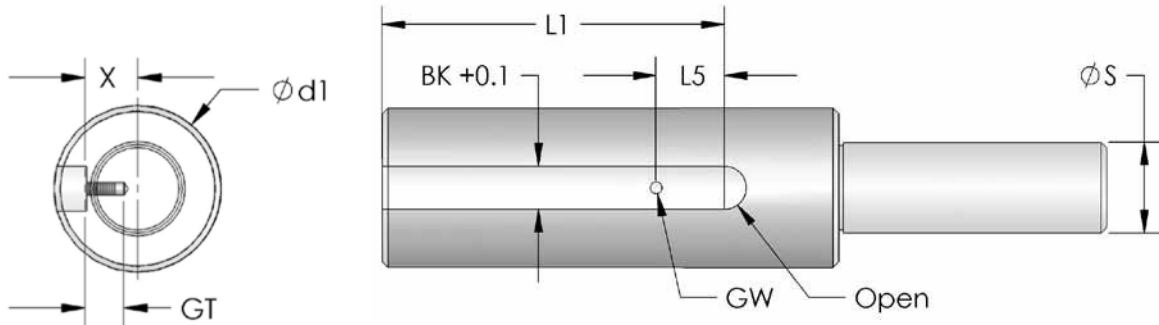
Cassette	Calc. of the "X" - Offset					
	MAX Edge Break	GW	GT	OAL (min)	OAL	Ød
Series 6 (ØDmax= Ød + 1.1)	X = Ød/2 – 6.6	M2.5	6 .236	70 + Ls	Customer Specific:	Customer Specific:
Series 8 (ØDmax= Ød + 1.4)	X = Ød/2 – 8.3	M3	7.5 .295	90 + Ls		
Series 12 (ØDmax= Ød + 1.8)	X = Ød/2 – 13.1	M4	8.0 .315	103 + Ls		

Recommended Dimensions		
Ød1	Shank ØS	Ls
Ø13 - 16	Ø1/2 s.s.	47 1.850
Ø16 - 30	Ø5/8 s.s.	48 1.890
Ø30 - 50	Ø1" s.s.	58 2.283
Ø50+	Ø1.125 s.s.	58 2.283

* Non-stock standard item with extended delivery time

COFA — Series CAS

Cassette Deburring Tools
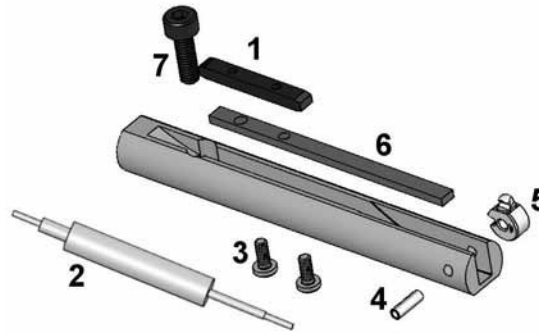
Spare Parts – Cassette

Cassette	1 Retainer Block	2 Assembly Pin	3 Screw	4 Roll Pin	5 Blade	6 Spring	7 Cap Screw
SERIES 6	GH-C-E-0812	GH-C-V-0126	GH-H-S-0803	GH-C-E-0811	See Below	See Below	GH-H-S-0533
SERIES 8	GH-C-E-0808	GH-C-V-0111	GH-H-S-0517	GH-C-E-0810	See Below	See Below	GH-H-S-0538
SERIES 12	GH-C-E-0800	GH-C-V-0100	GH-H-S-0530	GH-C-E-0801	See Below	See Below	GH-H-S-0519

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	Typical Materials *Large or Heavy Burrs may require a stronger spring*		Series 6	Series 8	Series 12
W	Softer	Alum., Brass, Magnesium	GH-C-E-0321	GH-C-E-0331	GH-C-E-0361
H		Cast Iron, Nodular Iron	GH-C-E-0322	GH-C-E-0332	GH-C-E-0362
S		Steel, Free Machining Steel	GH-C-E-0323	GH-C-E-0333	GH-C-E-0363
Z		Long Chip Steel, Stainless	GH-C-E-0324	GH-C-E-0334	GH-C-E-0364
Z1		Ti, Hardened Steel, Ni Alloy	GH-C-E-0325	GH-C-E-0335	GH-C-E-0365
Z2	Harder	Nickel Alloy, etc	GH-C-E-0326	GH-C-E-0336	GH-C-E-0366
Z3		Nickel Alloy, etc	GH-C-E-0327	GH-C-E-0337	GH-C-E-0367

Blade Options:

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

Blade Code	Blade Type	Geo.	Series 6	Series 8	Series 12
	TiN 20° Standard	fab	GH-C-M-0002	GH-C-M-0003	GH-C-M-0007
b		bco	GH-C-M-0012	GH-C-M-0013	GH-C-M-0017
y	TiCN 10° Flat Surfaces	fab	GH-C-M-0442	GH-C-M-0443	GH-C-M-0447
yb		bco	GH-C-M-0452	GH-C-M-0453	GH-C-M-0457
x	TiN 30° Uneven Spec	fab	GH-C-M-0142	GH-C-M-0133	GH-C-M-0105
xb		bco	GH-C-M-0143	GH-C-M-0131	GH-C-M-0104

PROGRAMMING ▶ PG. 46-47

CHANGE BLADES ▶ PG. 48-51

COFA   COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

COFA

Programming Information

$$H = d/D$$
$$H\ max = 0.5$$

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. All cutting data below are standard values. Deburr more extreme contours by using the 30° blade with extra clearance relief.
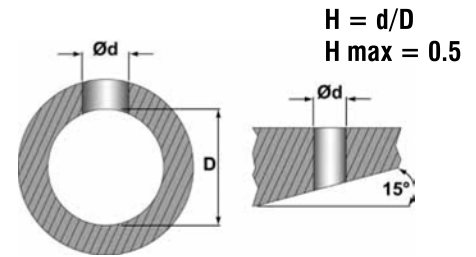
Spring Information

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.

Cutting Data

Material	Hardness BHN	Spring Index	COFA 2/3/4/5 Carbide-TiN IPR mm/rev	COFA 2/3/4/5 Carbide-TiN SFM MPM	COFA 6/8/12 Carbide-TiN IPR mm/rev	COFA 6/8/12 Carbide-TiN SFM MPM
Carbon Steels	100-250	H-Z	.002-.006 0.05-0.15	40-160 12-49	.006-.012 0.15-0.30	100-340 30-104
Free Machining Alloy	125-340	H-Z	.002-.006 0.05-0.15	22-100 7-30	.006-.014 0.15-0.30	60-240 18-73
High Alloy Steel	250-350	S-Z1	.002-.006 0.05-0.15	22-85 7-26	.006-.010 0.15-0.25	60-200 18-60
Stainless Steel	140-250	S-Z2	.002-.006 0.05-0.15	15-110 4-34	.006-.010 0.15-0.25	40-175 12-53
Grey Cast Iron	150-330	H-S	.002-.006 0.05-0.15	18-110 5-34	.008-.016 0.20-0.40	50-330 15-100
Nodular Cast Iron	140-310	H-S	.002-.006 0.05-0.15	18-130 5-40	.006-.012 0.15-0.30	50-300 15-91
Aluminum Alloys	30-180	W-H	.002-.006 0.05-0.15	30-200 9-61	.008-.016 0.20-0.35	80-600 24-183
Nickel-based Alloys	220-310	Z1-Z3	.002-.006 0.05-0.15	7-38 2-12	.005-.010 0.12-0.25	15-80 5-24
Titanium Alloys		Z1-Z3	.002-.006 0.05-0.15	7-38 2-12	.005-.010 0.12-0.25	15-80 5-24
Copper-Brass-Bronze	80-202	S	.002-.006 0.05-0.15	30-200 9-61	.008-.016 0.20-0.40	80-600 24-183

NOTE: 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 applying cutting speeds that are at the lower end of the range for uneven bore edges.

HEULE
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COFA   Programming Information

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 will not 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)
COFA 6	.039" (1.0)	.217" (5.5)	.258" (6.5)	.236" (6.0)	.197" (5.0)	.020" (0.5)	-.018" (-0.5)
COFA 8	.059" (1.5)	.276" (7.0)	.324" (8.2)	.315" (8.0)	.256" (6.5)	.0 (0)	-.049" (-1.2)
COFA 12	.118" (3.0)	.394" (10)	.468" (11.9)	.472" (12)	.354" (9.0)	.079" (2.0)	0

* Plus Material Thickness

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

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

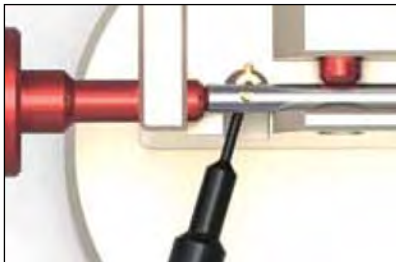Assembly device for tool type COFA 2 and 3.

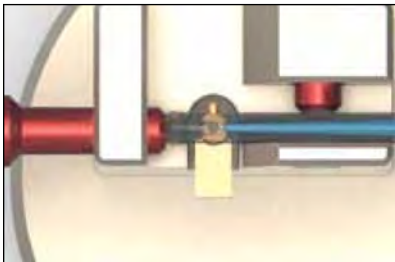Fixture Order Number: C3-V-0002

Adjust the tool lengthwise so that the blade bore is above the recess for the roll pin. Then clamp the tool. Make sure that the larger spring recess in the shaft is on clamp screw side.


Push the roll pin out of the tool by using the smaller diameter of the assembly pin.

Push out the blade by using the smaller diameter of the assembly pin.

Insert the new blade nose first. The nose must be on the side of the shaft where the larger spring recess is (observe the mark on the tool). The spring must engage with the groove of the blade.

Center the blade with the help of the assembly pin. Its smaller diameter serves for pre-centering.

Insert roll pin with its longer and thinner section first.

Use assembly pin to push roll pin level with blade. Then unclamp the tool.

Brake off the assembly aid extensions of the blade and from the roll pin manually.

▶ **Blade Change Videos:
HeuleTool.com**

*COFA assembly fixture is recommended 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
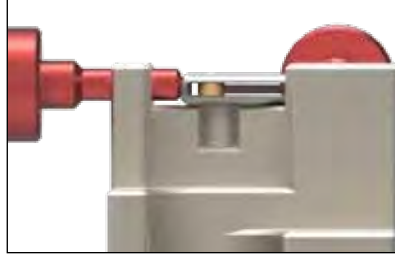
Adjust the tool lengthwise so that the blade bore is above the recess for the split pin. Clamp the tool as shown.
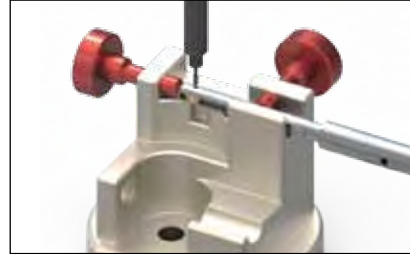
Push the split pin carefully out of the bore. Make sure you apply the assembly pin to the split end of the pin. If necessary, use a small hammer.
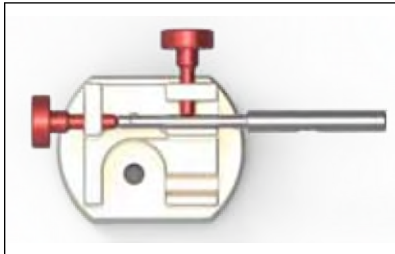
Push out the blade by means of the long end of the assembly pin.

Insert the new blade into the tool with the blade groove orientated towards the spring. Please observe the marks on the tool body.
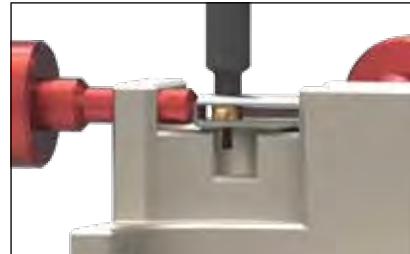
Guide the assembly pin with its long end through the bore and center the blade.

Insert the split pin manually with the split end upwards. Then push it with the assembly pin.
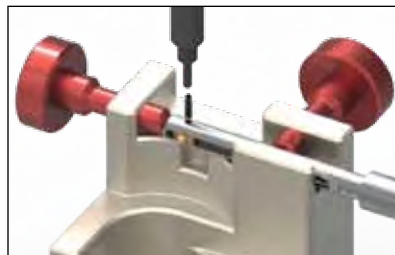
The assembly pin must be level with both sides of the tool body.

Blade Change Videos:
HeuleTool.com

*COFA assembly fixture is recommended to remove blades

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

How to Change the Blades (without fixture) COFA Series 2, 3, 4 and 5:

Step 1:
Line up the assembly pin on the side with the solid end of the split pin (opposite side of the split end).
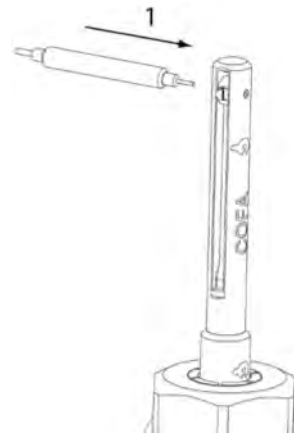
Step 2:
(2a) Remove the split pin out of the tool body by pressing the assembly pin from the solid end of the split pin. (2b) The blade will fall out of the tool. Carefully use a hammer if necessary.
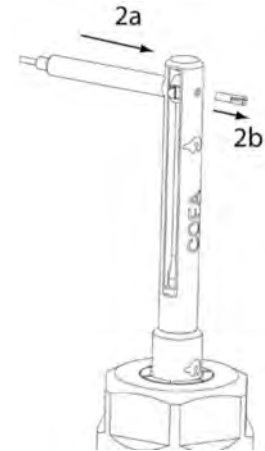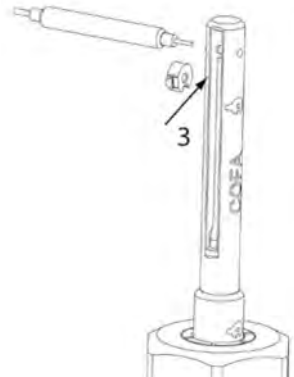
NOTE:
HEULE recommends that you use a new split pin with each blade change and throw out the old pin.

Step 3:
Insert the blade in the tool body with the notch down towards the spring. Use the mark on the tool body to reference the correct position.

Step 4:
(4a) Line up the blade with the split pin hole using the assembly pin given with each tool. (4b) Insert the solid end of the split pin in the hole on the opposite side of the assembly pin and manually press into place. Using a small hammer or mallet, carefully press in the split pin on the split end into the hole.

IMPORTANT:
The split pin must be below the tool body surface. If necessary, use the assembly pin and hammer to press the split pin completely in. Make sure it does not stick out on either side of the tool body.

Step 5:
Series 2 and 3 Only: Using your fingers break off the blade tab and longer end of the split pin.
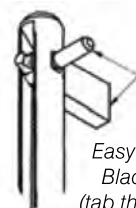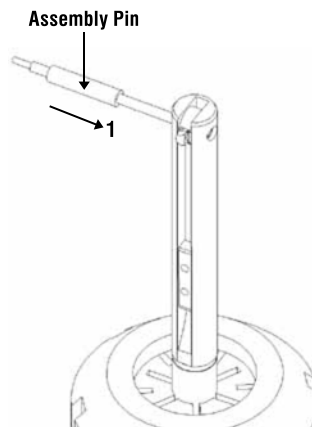
*Easy to change
Blade and pin
(tab that snaps off)*

Blade Change Videos:
HeuleTool.com

HEULE
PRECISION TOOLS

COFA

Changing Blades

How to Change the Blades
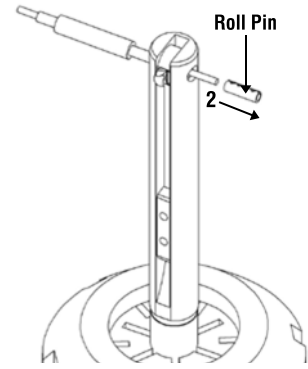## COFA Series 6, 8, and 12:

STEP 1:
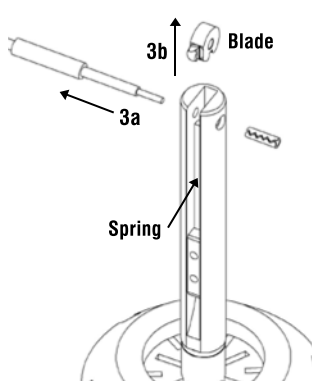Insert the long end of the assembly pin into the roll pin.

STEP 2:
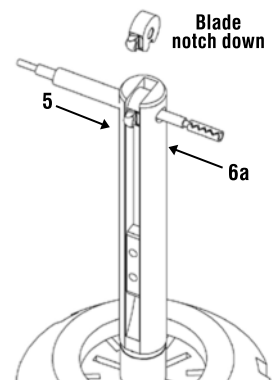Drive the roll pin out of the tool body. Keep the roll pin to reuse it.

STEP 3:
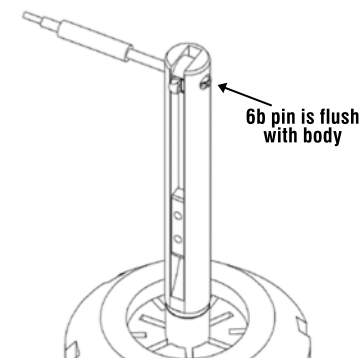Remove the assembly pin and then remove the blade.

STEP 4:
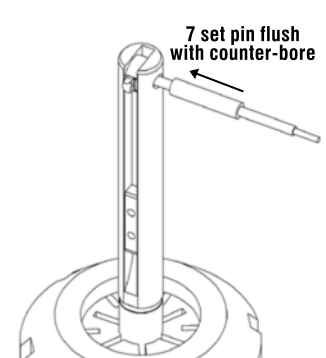Place new blade into the tool with the notch on the end of the spring.

STEP 5:
Place the long end of the assembly pin through the holes to align the blade in the tool.

STEP 6:
Place the roll pin on the end of the assembly pin and hammer it into the tool. Use the assembly pin to maintain the proper alignment.

STEP 7:
Place the short end of the assembly pin into the roll pin and drive the assembly pin so it seats against the counterbore.

Assembly Pin

1

Roll Pin

2

3b   Blade

3a

Spring

Blade notch down

5

6a

7 set pin flush with counter-bore

6b pin is flush with body

Blade Change Videos:
HeuleTool.com

COFA

COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

HEULE
PRECISION TOOLS

COFA | COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

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.

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Blade Options

Standard Blade Options:

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

Blade Code	Blade Type	Geo.	Series 2 C2-M-	Series 3 C3-M-	Series 4 GH-C-M-	Series 5 GH-C-M-	Series 6 GH-C-M-	Series 8 GH-C-M-	Series 12 GH-C-M-
	TiN 20° Standard	fab	-0006-A*	-0006-A*	-0504	-0505	-0002	-0003	-0007
b		bco	-0016-A*	-0016-A*	-0914	-0915	-0012	-0013	-0017
y	TiCN 10° Flat Surfaces	fab	-0007-A*	-0007-A*	-0744	-0745	-0442	-0443	-0447
yb		bco	-0017-A*	-0017-A*	-0854	-0855	-0452	-0453	-0457
x	TiN 30° Uneven Spec	fab	-0009-A*	-0009-A*	-0148	-0150	-0142	-0133	-0105
xb		bco	-0019-A*	-0019-A*	-0182	-0184	-0143	-0131	-0104

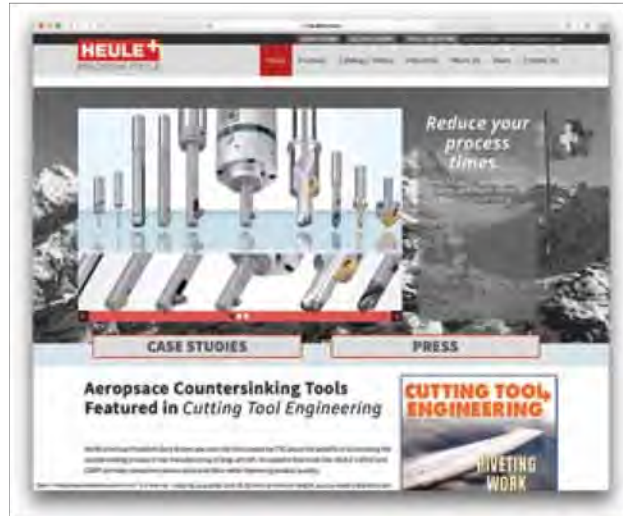** TIALN is standard for COFA Series 2 and 3*

Special Blade Options:

To order a standard COFA tool with a special insert (those not marked with an *), add a 'k' behind the series number to indicate the tool is without the standard insert and then order the special blades separately.
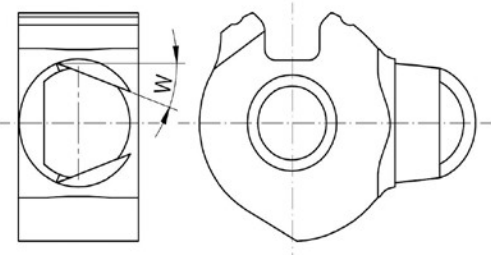
For example: 1 pc   COFA8k-315-H - COFA Tool Holder without insert
                      5 pc   GH-C-M-0083 - COFA8 Blade, DLC 10° *special*

Note: These items are non-stock standard items with extended delivery time.

Blade Type	Geo.	Series 4	Series 5	Series 6	Series 8	Series 12
DLC 20° Diamond	fab	GH-C-M-0584	GH-C-M-0585	GH-C-M-0082	GH-C-M-0083	GH-C-M-0087
	bco	GH-C-M-0994	GH-C-M-0995	GH-C-M-0092	GH-C-M-0093	GH-C-M-0097
DLC 10° Flat Surfaces	fab	GH-C-M-0784	GH-C-M-0785	GH-C-M-0482	GH-C-M-0483	GH-C-M-0487
	bco	GH-C-M-0894	GH-C-M-0895	GH-C-M-0492	GH-C-M-0493	GH-C-M-0497
TiALN 20° Spec Coat	fab	GH-C-M-0564	GH-C-M-0565	GH-C-M-0062	GH-C-M-0063	GH-C-M-0067
	bco	GH-C-M-0974	GH-C-M-0975	GH-C-M-0072	GH-C-M-0073	GH-C-M-0077
TiALN 10° Flat Surfaces	fab	GH-C-M-0764	GH-C-M-0765	GH-C-M-0462	GH-C-M-0463	GH-C-M-0467
	bco	GH-C-M-0874	GH-C-M-0875	GH-C-M-0472	GH-C-M-0473	GH-C-M-0477
Uncoated 20°	fab	GH-C-M-0524	GH-C-M-0525	GH-C-M-0022	GH-C-M-0023	GH-C-M-0027
	bco	GH-C-M-0934	GH-C-M-0935	GH-C-M-0032	GH-C-M-0033	GH-C-M-0037
Uncoated 10°	fab	GH-C-M-0724	GH-C-M-0725	GH-C-M-0422	GH-C-M-0423	GH-C-M-0427
	bco	GH-C-M-0834	GH-C-M-0835	GH-C-M-0432	GH-C-M-0433	GH-C-M-0437

COFA COFA-C | SNAP | VEX-S | VEX-P | COMBI | DEFA | GH-K | BSF | SOLO

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