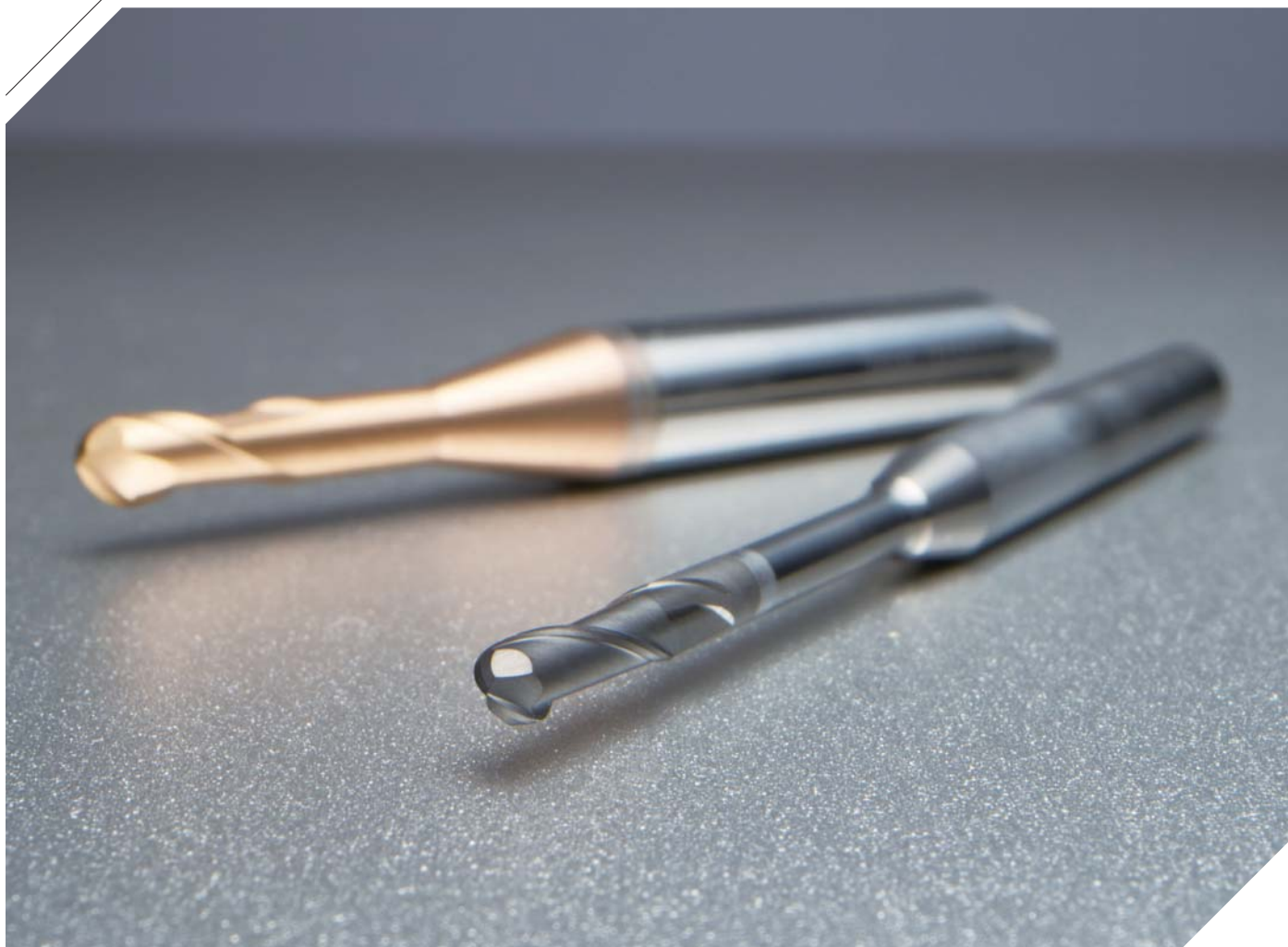


T Endmill

Endmill for Machining Dental Protheses

- Improved tool performance due to the optimized grade for each material
* ST4 : Titanium, Co-Cr / * ND3000 : Zirconia / * Carbide : PMMA, PEEK, Wax / * ETG : Glass-ceramic
- Differentiated tools specialized for each type of domestic and overseas CNC machines for the dental purpose



T Endmill

The need for dental implants has grown steadily in step with the increase in the aging global population. Accordingly, many companies are now actively developing dental CAD/CAM machines, and they compete by developing their own proprietary tool shapes. To meet the demand, KORLOY has released the T Endmill that helps customers stay ahead of the competition with a customized tool for each machine.

Dental CAD/CAM technology is continuously developing by taking advantage of X-ray and oral scanners, and many manufacturers have commercialized CNC machines to automate the previous manual process of manufacturing implants. As a result, machining time is significantly reduced, resulting in improved productivity and demands for tools with longer life.

The typical materials of dental prostheses, such as zirconia, titanium, Co-Cr, wax, and PMMA, have different physical and mechanical properties, and each requires an optimized tool solution.

T Endmill uses a specialized grade for each workpiece: ND3000 for zirconia, ST4 for titanium and Co-Cr, carbide for PMMA, PEEK and wax, and ETG for Glass-ceramic which guarantees excellent machinability due to its optimized blade design.

» **A dedicated tool for each machine**

- Meets marketplace demands

» **Optimized cutting-edge design**

- Enables excellent machinability

» **A specialized grade for each workpiece**

- Provides optimized performance for various materials of implants



Code system

T	Z	BE	2	025	-	053	-	N200	S06	(IME)
T Endmill Dental		Type BE: Ball Endmill FE: Flat Endmill RE: Radius Endmill		Cutting Diameter 025: 2.5 mm				Usable length N200: 20 mm		Machine maker
	Workpiece Z: Zirconia T: Titanium, Co-Cr W: Wax, PMMA		Flute count 2: 2 Flutes 3: 3 Flutes 4: 4 Flutes			Overall length 053: 53 mm			Shank Diameter S03: 3 mm S04: 4 mm S06: 6 mm	

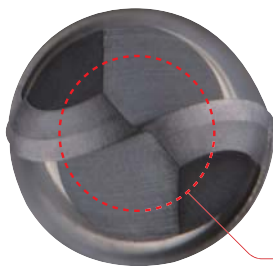
ET	B	006	-	040	-	N080	S04	(RO)
Electroplating Tool		Cutting Diameter 006: Ø0.6 mm				Usable length N080: 8 mm		Machine maker
	Shape B: Ball BT: Ball Taper F: Flat FT: Flat Taper R: Radius RT: Radius Taper			Overall length 040: 40 mm			Shank Diameter S03: 3 mm S04: 4 mm S06: 6 mm	

Features

- For machining dental prostheses made of zirconia, titanium, Co-Cr, wax, PMMA, etc.
- Optimized cutting performance by matching a proper grade with each type of material.
- Specialized tool shape for each machine type.

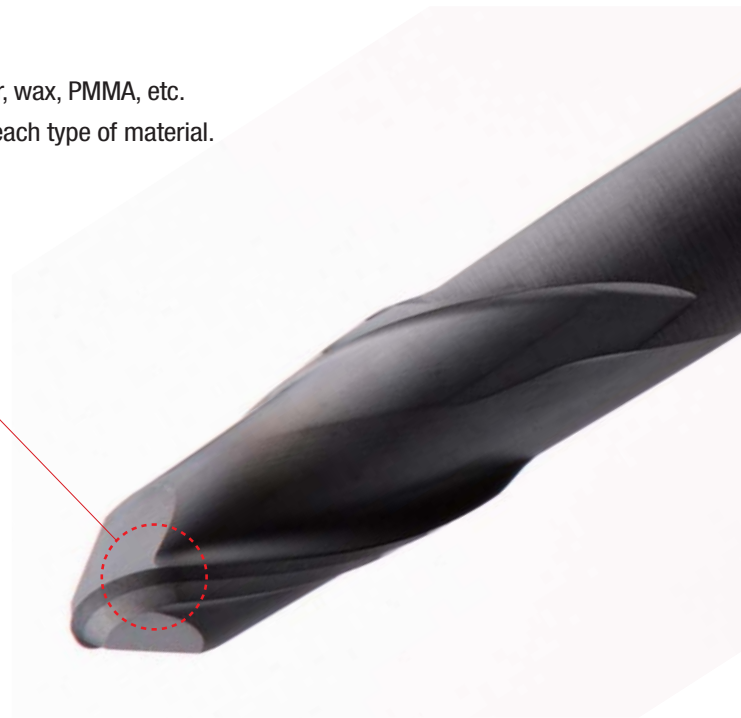
Tangential cutting-edge shape

- One-Pass Grinding applied.
- Inhibited unevenness and excellent finish in machined surfaces.



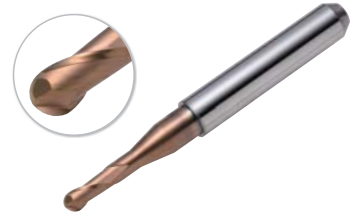
Center-Matched ball shape

- Optimized center shape ensures relief angle at the ball point.
- Cutting edges of the ball point shape provide excellent wear resistance and cutting performance.



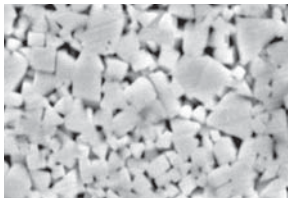
✓ Grade for Titanium & Co-Cr

- High hardness coating layer - Ensures stable cutting conditions from high Si contents and enhances wear resistance and frictional heat resistance through the application of TiSiN series coating layer.
- A grade optimized for interrupted machining of high hardness steels and wet cutting condition accompanying high thermal shock. The ultrafine substrate offers high toughness, ensuring stable performance.

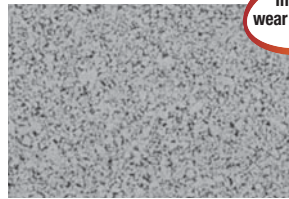


ST4 (TiSiN-coated grade)

1. Ultrafine substrate with high toughness



[Fine grade]

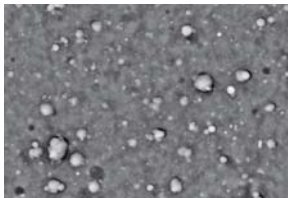


[Ultrafine grade]

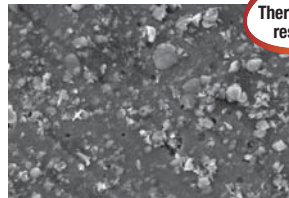
Improved
wear resistance

» Its tough and wear-resistant substrate is optimized for absorbing thermal shock which is concentrated on cutting edges when machining titanium & Co-Cr.

2. TiSiN coating with high thermal resistance



[Conventional coating]



[TiSiN coating]

Improved
Thermal shock
resistance

» Its high hardness TiSiN coating is optimized for machining titanium & Co-Cr. that causes thermal shock due to its low thermal conductivity.

✓ Grade for Zirconia

- High hardness diamond coating that is excellent in machining zirconia.
- Optimized for high speed and medium duty cutting due to its excellent grip to coated layers.



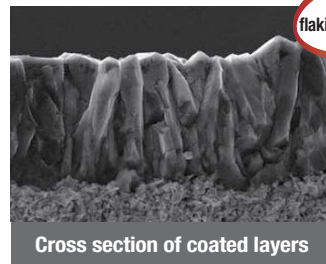
ND3000 (Diamond-coated grade)



Surface of ND3000

Excellent
wear resistance

High hardness diamond coating (Hv 10,000) provides excellent wear resistance



Cross section of coated layers

Excellent
flaking resistance

Specialized grade for zirconia provides excellent adhesion

» Inhibiting excessive flank wear caused by friction between zirconia material and clearance surface of the tool.

✓ Grade for Glass ceramic

- High hardness diamond electroplated coating with optimized particle shape that has stable tool life in machining glass ceramic
- Optimized for high speed and medium duty cutting due to its excellent grip to coated layer



ETG (Diamond-electroplated grade)



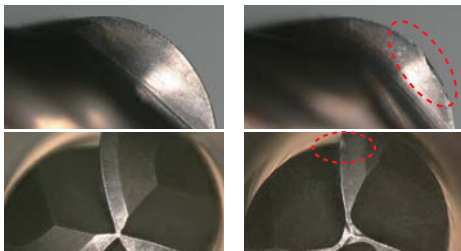
» Inhibiting excessive flank wear caused by friction between glass ceramic material and clearance surface of the tool.

✓ Performance evaluation

ST4 (Titanium)

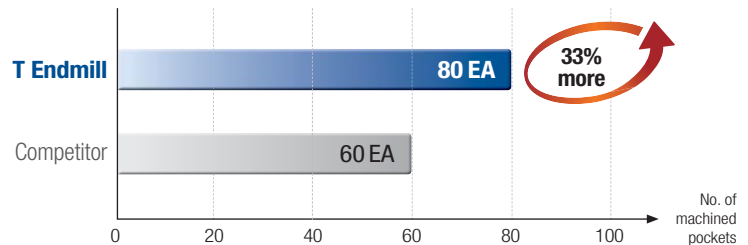
Cutting condition vc (m/min) = 150, fz (mm/t) = 0.08, ap (mm) = 0.13, ae (mm) = 0.7, wet

Tool TTBE2030-050 (Tool dia. = Ø3, ST4)



[T Endmill]

[Competitor]

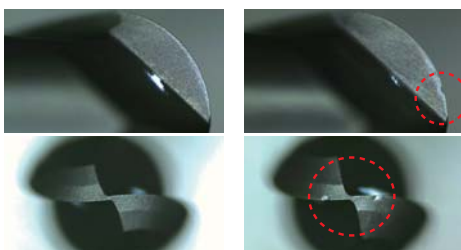


» Excellent resistance to toughness and wear due to the new grade ST4

Zirconia

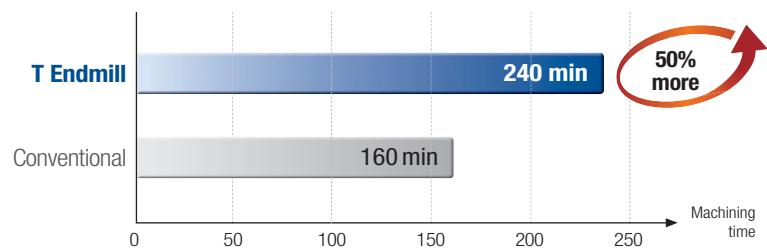
Cutting condition vc (m/min) = 138, fz (mm/t) = 0.05, ap (mm) = 0.1, ae (mm) = 0.6, Air

Tool TZBE2020-050 (Tool dia. = Ø2, ND3000)



[T Endmill]

[Conventional]



Recommended cutting conditions _ Zirconia

Grade	Size(Ø)	Roughing	Pre-finishing	Finishing	ap (mm)	ae (mm)	rpm (min ⁻¹)	vf (mm/min)
ND3000	0.6			●	0.05	0.05	63500	630
	1			●	0.1	0.1	38000	1050
	2	●			0.5	1	35000	1400
				●	0.15	0.15	35000	1400
	2.5	●			0.5	1.25	28000	1400
				●	0.15	0.15	28000	1400
	3	●			0.5	1.5	23500	1600
				●	0.15	0.15	23500	1600

Recommended cutting conditions _ Titanium

Grade	Size(Ø)	Roughing	Pre-finishing	Finishing	ap (mm)	ae (mm)	rpm (min ⁻¹)	vf (mm/min)
ST4	0.6			●	0.02	0.02	47750	480
	1		●		0.02	0.1	22000	900
				●	0.04	0.04	28500	1050
	1.5	●	●		0.05	0.45	15000	1050
				●	0.07	0.07	19000	1150
	2	●	●		0.1	0.6	11000	1050
				●	0.1	0.1	14500	1150
	2.5	●	●		0.1	0.75	9500	1050
				●	0.1	0.1	11500	1150
	3	●			0.15	1	9000	1150
				●	0.12	0.12	10500	1300

Recommended cutting conditions _ Co-Cr

Grade	Size(Ø)	Roughing	Pre-finishing	Finishing	ap (mm)	ae (mm)	rpm (min ⁻¹)	vf (mm/min)
ST4	0.6			●	0.02	0.02	63500	635
	1		●		0.02	0.1	28500	1150
				●	0.04	0.04	38000	1500
	1.5	●	●		0.05	0.45	19000	1500
				●	0.07	0.07	25000	2000
	2	●	●		0.1	0.6	14500	1500
				●	0.1	0.1	19000	2000
	2.5	●	●		0.1	0.75	11500	1375
				●	0.1	0.1	15500	1850
	3	●			0.15	1	14000	1700
				●	0.12	0.12	15900	1900

Caution

- Please adjust the above cutting conditions according to the state of your machine, the target shape and your purpose.
- Workpieces should be clamped rigidly. In case of vibrations, reduce RPM and feed rate by the same ratio.

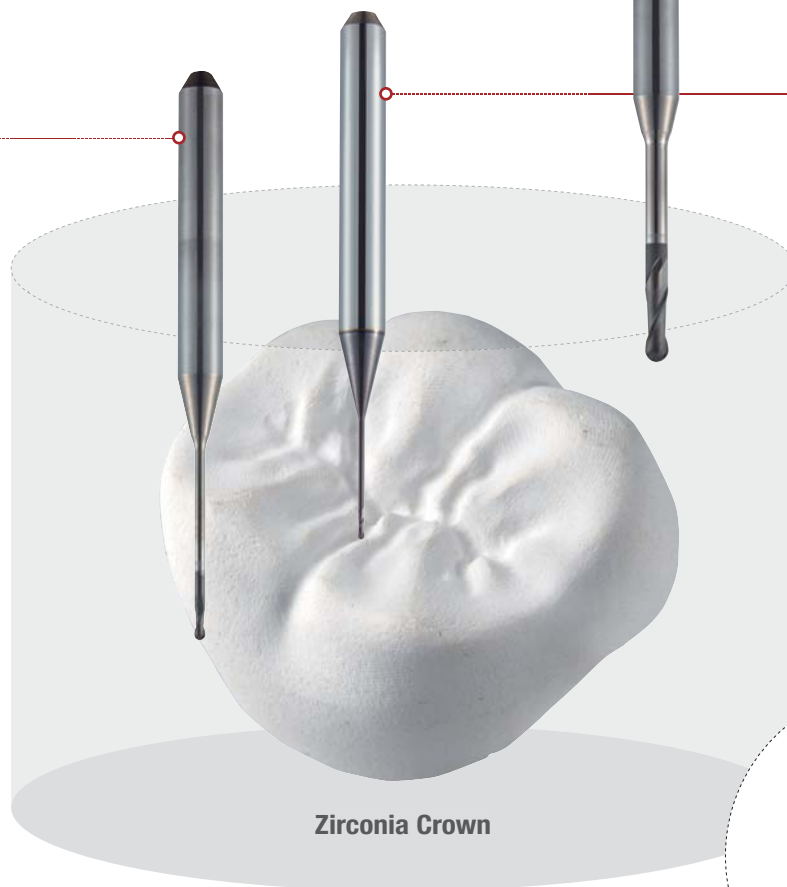
Application of tool

1. Zirconia/PMMA/PEEK/Wax Crown

※ Tool picture example is ND3000

Occlusal side

- » TZBE2020(Ø2, Roughing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 35000, vf = 1400, ap = 0.5, ae = 1, Dry
- » TWBE2020(Ø2, Roughing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 35000, vf = 1700, ap = 0.2, ae = 1, Dry



Zirconia Crown

Outer areas occlusal side

- » TZBE2010(Ø1, Finishing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 38000, vf = 1050, ap = 0.1, ae = 0.1, Dry
- » TWBE2010(Ø1, Finishing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 38000, vf = 1150, ap = 0.1, ae = 0.1, Dry

Top areas occlusal side

- » TZBE2006(Ø0.6, Finishing, Profile milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 63500, vf = 630, ap = 0.05, ae = 0.05, Dry
- » TWBE2006(Ø0.6, Finishing, Profile milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 63500, vf = 635, ap = 0.02, ae = 0.02, Dry

1. Zirconia/PMMA/PEEK/Wax Crown

※ Tool picture example is ND3000

Inner areas cavity side

- » TZBE2010(Ø1, Finishing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 38000, vf = 1050, ap = 0.1, ae = 0.1, Dry
- » TWBE2010(Ø1, Finishing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 38000, vf = 1150, ap = 0.1, ae = 0.1, Dry

Cavity side

- » TZBE2020(Ø2, Roughing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 35000, vf = 1400, ap = 0.5, ae = 1, Dry
- » TWBE2020(Ø2, Roughing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 35000, vf = 1700, ap = 0.2, ae = 1, Dry



Margin line cavity side

- » TZBE2020(Ø2, Semi-finishing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 35000, vf = 1200, ap = 0.15, ae = 0.15, Dry
- » TWBE2020(Ø2, Semi-finishing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 35000, vf = 1700, ap = 0.15, ae = 0.15, Dry
- » TZBE2010(Ø1, Finishing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 38000, vf = 1050, ap = 0.1, ae = 0.1, Dry
- » TWBE2010(Ø1, Finishing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 38000, vf = 1150, ap = 0.1, ae = 0.1, Dry

Margin line cavity side

- » TZBE2010(Ø1, Finishing, Helical milling)
- **Zirconia**
 - 1) Grade: ND3000
 - 2) Condition: rpm = 38000, vf = 1050, ap = 0.1, ae = 0.1, Dry
- » TWBE2010(Ø1, Finishing, Helical milling)
- **PMMA/PEEK/Wax**
 - 1) Grade: Non-coated
 - 2) Condition: rpm = 38000, vf = 1150, ap = 0.1, ae = 0.1, Dry

Application of tool

2. Titanium/Co-Cr Crown

※ Tool picture example is ST4

Occlusal side

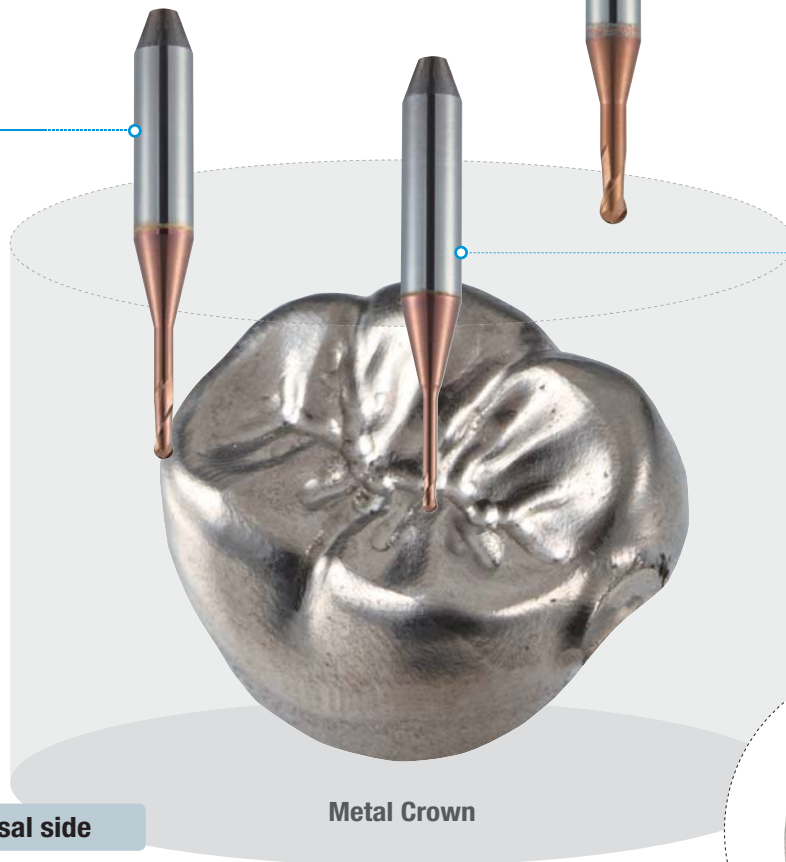
» TTBE2030(Ø3, Roughing, Helical milling)

- **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet

- **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=14000, vf=1700, ap=0.15, ae=1, Wet



Outer areas occlusal side

» TTBE2020(Ø2, Semi-Finishing, Helical milling)

- **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=11000, vf=1050, ap=0.1, ae=0.6, Wet

- **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=14500, vf=1500, ap=0.1, ae=0.6, Wet

» TTBE2015(Ø1.5, Finishing, Helical milling)

- **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

- **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=25000, vf=2000, ap=0.07, ae=0.07, Wet

Top areas occlusal side

» TTBE2010(Ø1, Finishing, Profile milling)

- **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=28500, vf=1050, ap=0.04, ae=0.04, Wet

- **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=38000, vf=1500, ap=0.04, ae=0.04, Wet

2. Titanium/Co-Cr Crown

※ Tool picture example is ST4

Inner areas cavity side

» TTBE2015(Ø1.5, Semi-Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=15000, vf=1050, ap=0.05, ae=0.45, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=19000, vf=1500, ap=0.05, ae=0.45, Wet

» TTBE2010(Ø1, Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=28500, vf=1050, ap=0.04, ae=0.04, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=38000, vf=1500, ap=0.04, ae=0.04, Wet

Cavity side

» TTBE2030(Ø3, Roughing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=14000, vf=1700, ap=0.15, ae=1, Wet



Outer areas cavity side

» TTBE2020(Ø2, Semi-Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=11000, vf=1050, ap=0.1, ae=0.6, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=14500, vf=1500, ap=0.1, ae=0.6, Wet

» TTBE2015(Ø1.5, Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=25000, vf=2000, ap=0.07, ae=0.07, Wet

Margin line cavity side

» TTBE2015(Ø1.5, Semi-Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=15000, vf=1050, ap=0.05, ae=0.45, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=19000, vf=1500, ap=0.05, ae=0.45, Wet

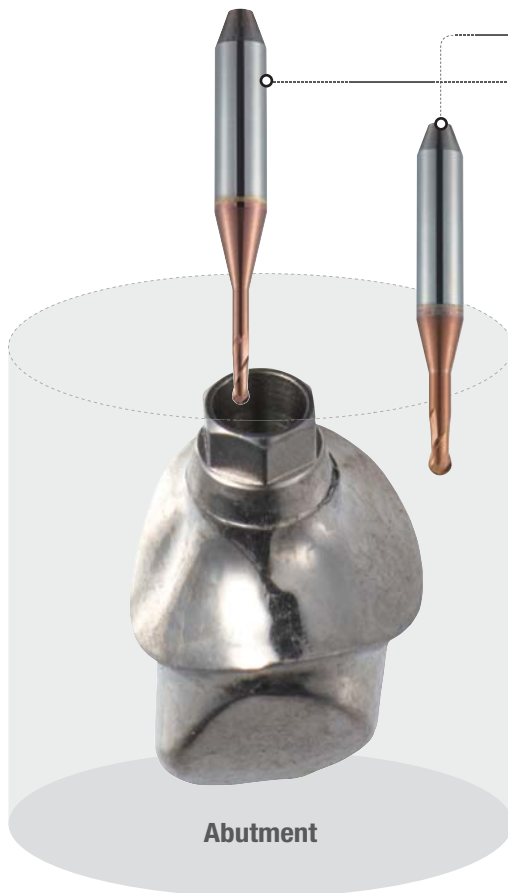
» TTBE2010(Ø1, Finishing, Helical milling)

- **Titanium**
 - 1) Grade: ST4
 - 2) Condition: rpm=28500, vf=1150, ap=0.04, ae=0.04, Wet
- **Co-Cr**
 - 1) Grade: ST4
 - 2) Condition: rpm=38000, vf=1500, ap=0.04, ae=0.04, Wet

Application of tool

3. Titanium abutment

※ Tool picture example is ST4



Cavity side

» TTBE2030(Ø3, Roughing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet

» TTBE2020(Ø2, Semi-Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=11000, vf=1050, ap=0.1, ae=0.6, Wet

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

Screwchannel cavity side

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

Occlusal side

» TTBE2030(Ø3, Roughing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet

» TTBE2020(Ø2, Semi-Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=11000, vf=1050, ap=0.1, ae=0.6, Wet

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

Screwchannel occlusal side

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet



4. Titanium/Co-Cr Full Arch

※ Tool picture example is ST4

Cavity side

» TTBE2030(Ø3, Roughing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=14000, vf=1700, ap=0.15, ae=1, Wet

Abutment interface cavity side

» TTBE2015(Ø1.5, Semi-Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=15000, vf=1050, ap=0.05, ae=0.45, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1500, ap=0.05, ae=0.45, Wet

» TTBE2010(Ø1, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=28500, vf=1050, ap=0.04, ae=0.04, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=38000, vf=1500, ap=0.04, ae=0.04, Wet

Abutmentbase plane cavity side

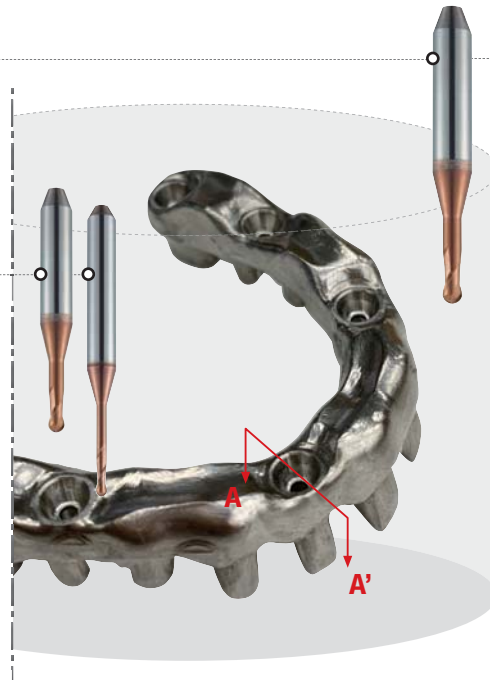
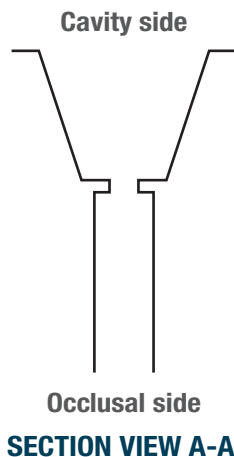
» TTFE4015(Ø1.5, Finishing, Face milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=25000, vf=2000, ap=0.07, ae=0.07, Wet



Occlusal side

» TTBE2030(Ø3, Roughing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=9000, vf=1150, ap=0.15, ae=1, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=14000, vf=1700, ap=0.15, ae=1, Wet

» TTBE2020(Ø2, Semi-Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=11000, vf=1050, ap=0.1, ae=0.6, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=14500, vf=1500, ap=0.1, ae=0.6, Wet

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=25000, vf=2000, ap=0.07, ae=0.07, Wet

Screwchannel occlusal side

» TTBE2015(Ø1.5, Finishing, Helical milling)

• **Titanium**

- 1) Grade: ST4
- 2) Condition: rpm=19000, vf=1150, ap=0.07, ae=0.07, Wet

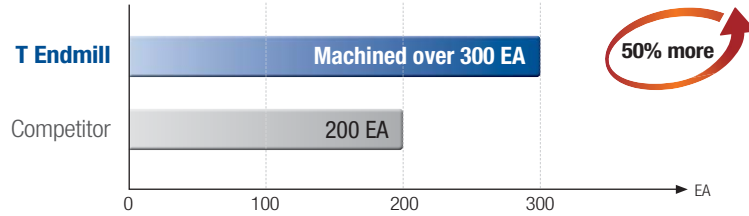
• **Co-Cr**

- 1) Grade: ST4
- 2) Condition: rpm=25000, vf=2000, ap=0.07, ae=0.07, Wet

Application examples

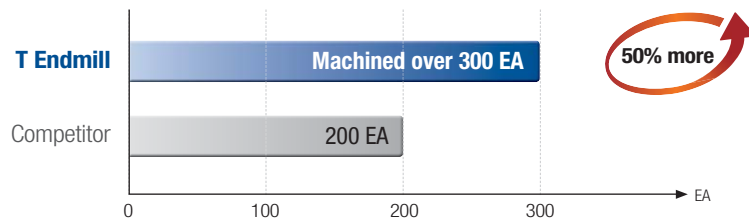
Zirconia crowns

Workpiece	Zirconia
Cutting condition	vc (m/min) = 140, fz (mm/t) = 0.05, ap (mm) = 0.1, ae (mm) = 0.6, dry
Tool	TZBE2020-045-N200S03 (DO) / ND3000



>> 50% more crowns than the competitor

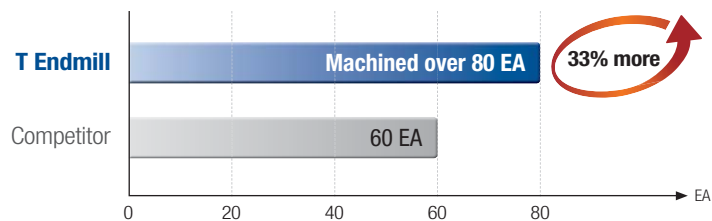
Workpiece	Zirconia
Cutting condition	vc (m/min) = 150, fz (mm/t) = 0.05, ap (mm) = 0.1, ae (mm) = 0.75, dry
Tool	TZBE2025-047-N170S03 (AMA) / ND3000



>> 50% more crowns than the competitor

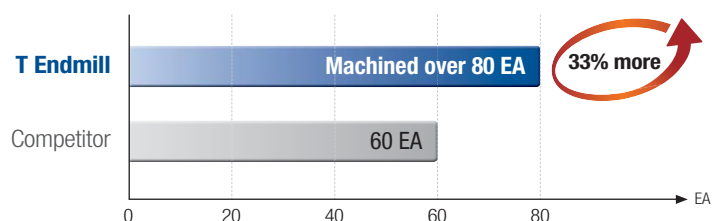
Titanium abutment

Workpiece	Titanium
Cutting condition	vc (m/min) = 150, fz (mm/t) = 0.05, ap (mm) = 0.1, ae (mm) = 0.5, dry
Tool	TTBE2030-045-N150S06 (IME) / ST4



>> 33% more crowns than the competitor

Workpiece	Titanium
Cutting condition	vc (m/min) = 170, fz (mm/t) = 0.05, ap (mm) = 0.12, ae (mm) = 0.3, dry
Tool	TTBE2020-040-N160S03 (WIE) / ST4

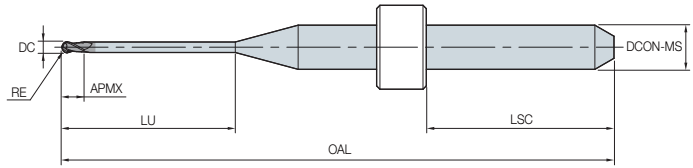


>> 33% more crowns than the competitor

AMANN GIRRBACH Type (Cera-Mill)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

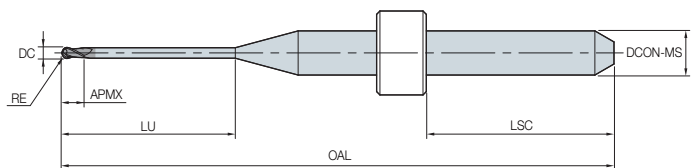
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-047-N170S03(AMA)	ND3000	2	2.5	1.25	6.3	17	47	3	20.5	R1
	TZBE2010-047-N170S03(AMA)		2	1	0.5	2	17	47	3	20.5	R1
	TZBE2006-047-N140S03(AMA)		2	0.6	0.3	1.2	14	47	3	20.5	R1
	TZBE2006-047-N070S03(AMA)		2	0.6	0.3	1.2	7	47	3	20.5	R1
	TZBE2003-047-N030S03(AMA)		2	0.3	0.15	0.6	3	47	3	20.5	R1
PMMA / PEEK / Wax	TWBE2025-047-N170S03(AMA)	Non-coated	2	2.5	1.25	6.3	17	47	3	20.5	R1
	TWBE1025-047-N170S03(AMA)		1	2.5	1.25	6.3	17	47	3	20.5	R1
	TWBE2010-047-N170S03(AMA)		2	1	0.5	2	17	47	3	20.5	R1
	TWBE1010-047-N170S03(AMA)		1	1	0.5	2	17	47	3	20.5	R1
	TWBE2006-047-N140S03(AMA)		2	0.6	0.3	1.2	14	47	3	20.5	R1
	TWBE1006-047-N140S03(AMA)		1	0.6	0.3	1.2	14	47	3	20.5	R1
	TWBE2006-047-N070S03(AMA)		2	0.6	0.3	1.2	7	47	3	20.5	R1
	TWBE1006-047-N070S03(AMA)		1	0.6	0.3	1.2	7	47	3	20.5	R1

* For details on ring types, see page 41.

CHARLY Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

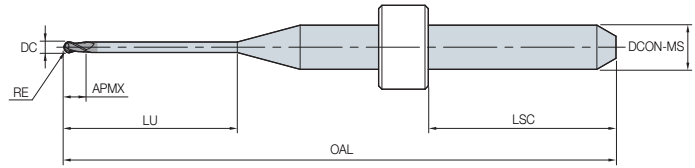
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2015-038-N120S03(CHA)	ND3000	2	1.5	0.75	3	12	38	3	11	R3
	TZBE2010-038-N120S03(CHA)		2	1	0.5	2	12	38	3	11	R3
	TZBE2005-038-N100S03(CHA)		2	0.5	0.25	1	10	38	3	11	R3
	TZFE2030-038-N060S03(CHA)		2	3	1.5	7.5	6	38	3	11	R3
PMMA / PEEK / Wax	TWBE2015-038-N120S03(CHA)	Non-coated	2	1.5	0.75	3	12	38	3	11	R3
	TWBE1015-038-N120S03(CHA)		1	1.5	0.75	3	12	38	3	11	R3
	TWBE2010-038-N120S03(CHA)		2	1	0.5	2	12	38	3	11	R3
	TWBE1010-038-N120S03(CHA)		1	1	0.5	2	12	38	3	11	R3
	TWBE2005-038-N100S03(CHA)		2	0.5	0.25	1	10	38	3	11	R3
	TWBE1005-038-N100S03(CHA)		1	0.5	0.25	1	10	38	3	11	R3

* For details on ring types, see page 41.

DOF Type (Craft Pro)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

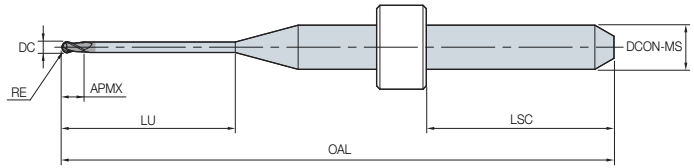
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-060-N250S06(DO)	ND3000	2	2	1	5	25	60	6	17	R7
	TZBE2010-060-N220S06(DO)		2	1	0.5	2	22	60	6	17	R7
	TZBE2020-055-N200S06(DO)		2	2	1	5	20	55	6	17	R7
	TZBE2010-055-N160S06(DO)		2	1	0.5	2	16	55	6	17	R7
	TZBE2006-050-N080S06(DO)		2	0.6	0.3	1.2	8	50	6	17	R7
	TZBE2003-050-N010S06(DO)		2	0.3	0.15	0.6	1	50	6	17	R7
	TZFE2015-050-N160S06(DO)		2	1.5	-	3	16	50	6	17	R7
	TZFE2006-050-N080S06(DO)		2	0.6	-	1.2	8	50	6	17	R7
PMMA / PEEK / Wax	TWBE2020-060-N250S06(DO)	Non-coated	2	2	1	5	25	60	6	17	R7
	TWBE1020-060-N250S06(DO)		1	2	1	5	25	60	6	17	R7
	TWBE2010-060-N220S06(DO)		2	1	0.5	2	22	60	6	17	R7
	TWBE1010-060-N220S06(DO)		1	1	0.5	2	22	60	6	17	R7
	TWBE2020-055-N200S06(DO)		2	2	1	5	20	55	6	17	R7
	TWBE1020-055-N200S06(DO)		1	2	1	5	20	55	6	17	R7
	TWBE2010-055-N160S06(DO)		2	1	0.5	2	16	55	6	17	R7
	TWBE1010-055-N160S06(DO)		1	1	0.5	2	16	55	6	17	R7
	TWBE2006-050-N080S06(DO)		2	0.6	0.3	1.2	8	50	6	17	R7
	TWBE1006-050-N080S06(DO)		1	0.6	0.3	1.2	8	50	6	17	R7

* For details on ring types, see page 41.

DOF Type (Craft Pro)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

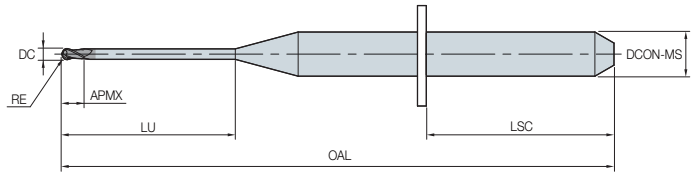
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2035-045-N130S06(D0)	ST4	2	3.5	1.75	8.8	13	45	6	17	R7
	TTBE3035-045-N130S06(D0)		3	3.5	1.75	8.8	13	45	6	17	R7
	TTBE2030-045-N130S06(D0)		2	3	1.5	7.5	13	45	6	17	R7
	TTBE3030-045-N130S06(D0)		3	3	1.5	7.5	13	45	6	17	R7
	TTBE2020-045-N120S06(D0)		2	2	1	5	12	45	6	17	R7
	TTBE3020-045-N120S06(D0)		3	2	1	5	12	45	6	17	R7
	TTBE2015-045-N100S06(D0)		2	1.5	0.75	3	10	45	6	17	R7
	TTBE3015-045-N100S06(D0)		3	1.5	0.75	3	10	45	6	17	R7
	TTBE2010-045-N090S06(D0)		2	1	0.5	2	9	45	6	17	R7
	TTBE3010-045-N090S06(D0)		3	1	0.5	2	9	45	6	17	R7
	TTBE2006-045-N030S06(D0)		2	0.6	0.3	1.2	3	45	6	17	R7
	TTFE4015-050-N150S06(D0)		4	1.5	-	3	15	50	6	17	R7
	TTFE4010-047-N070S06(D0)		4	1	-	2	7	47	6	17	R7
	TTFE4015-045-N070S06(D0)		4	1.5	-	3	7	45	6	17	R7
	TTRE4020-053-N180S06(D0)		4	2	0.2	5	18	53	6	17	R7
	TTRE4015-050-N150S06(D0)		4	1.5	0.2	3	15	50	6	17	R7
	TTRE4015-047-N070S06(D0)		4	1.5	0.2	3	7	47	6	17	R7
Glass Ceramic	ETB025-045-N130S06(D0)	ETG	-	2.5	1.25	13	13	45	6	17	R7
	ETB020-045-N120S06(D0)		-	2	1	12	12	45	6	17	R7
	ETB010-045-N100S06(D0)		-	1	0.5	10	10	45	6	17	R7
	ETBT006-045-N080S06(D0)		-	0.6	0.3	8	8	45	6	17	R7

* For details on ring types, see page 41.

DOF Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

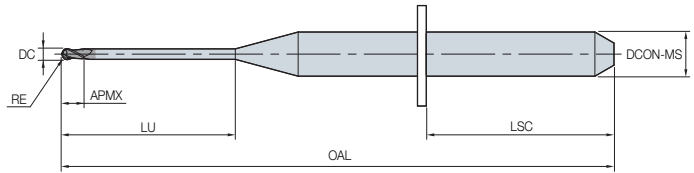
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-040-N160S04(DO)	ND3000	2	2	1	5	16	40	4	15	G2
	TZBE2010-040-N160S04(DO)		2	1	0.5	2	16	40	4	15	G2
	TZBE2006-040-N080S04(DO)		2	0.6	0.3	1.2	8	40	4	15	G2
	TZBE2020-045-N200S03(DO)		2	2	1	5	20	45	3	16.5	G1
	TZBE2010-045-N190S03(DO)		2	1	0.5	2	19	45	3	16.5	G1
PMMA / PEEK / Wax	TWBE2020-040-N160S04(DO)	Non-coated	2	2	1	5	16	40	4	15	G2
	TWBE1020-040-N160S04(DO)		1	2	1	5	16	40	4	15	G2
	TWBE2010-040-N160S04(DO)		2	1	0.5	2	16	40	4	15	G2
	TWBE1010-040-N160S04(DO)		1	1	0.5	2	16	40	4	15	G2
	TWBE2006-040-N080S04(DO)		2	0.6	0.3	1.2	8	40	4	15	G2
	TWBE1006-040-N080S04(DO)		1	0.6	0.3	1.2	8	40	4	15	G2
	TWBE2020-045-N200S03(DO)		2	2	1	5	20	45	3	16.5	G1
	TWBE1020-045-N200S03(DO)		1	2	1	5	20	45	3	16.5	G1
	TWBE2010-045-N190S03(DO)		2	1	0.5	2	19	45	3	16.5	G1
	TWBE1010-045-N190S03(DO)		1	1	0.5	2	19	45	3	16.5	G1

* For details on ring types, see page 41.

DOF Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

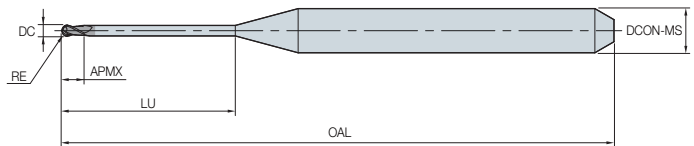
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2006-040-N080S04(DO)	ST4	2	0.6	0.3	1.2	8	40	4	15	G2
	TTBE2020-035-N100S04(DO)		2	2	1	5	10	35	4	15	G2
	TTBE3020-035-N100S04(DO)		3	2	1	5	10	35	4	15	G2
	TTBE2015-035-N100S04(DO)		2	1.5	0.75	3	10	35	4	15	G2
	TTBE3015-035-N100S04(DO)		3	1.5	0.75	3	10	35	4	15	G2
	TTBE2010-035-N100S04(DO)		2	1	0.5	2	10	35	4	15	G2
	TTBE3010-035-N100S04(DO)		3	1	0.5	2	10	35	4	15	G2
Glass Ceramic	ETB025-034-N130S04(DO)	ETG	-	2.5	1.25	13	13	34	4	15	G2
	ETB010-032-N110S04(DO)		-	1	0.5	11	11	32	4	15	G2
	ETBT006-032-N080S04(DO)		-	0.6	0.3	8	8	32	4	15	G2

* For details on ring types, see page 41.

ELBEN Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

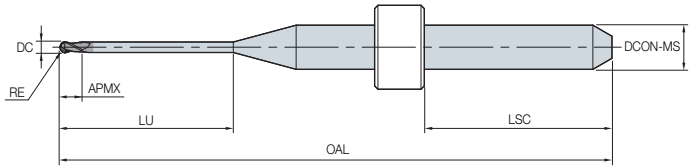
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N200S06(ELB)	ND3000	2	2	1	5	20	50	6	-	-
	TZBE2010-050-N160S06(ELB)		2	1	0.5	2	16	50	6	-	-
	TZBE2006-043-N080S06(ELB)		2	0.6	0.3	1.2	8	43	6	-	-
PMMA / PEEK / Wax	TWBE2020-050-N200S06(ELB)	Non-coated	2	2	1	5	20	50	6	-	-
	TWBE1020-050-N200S06(ELB)		1	2	1	5	20	50	6	-	-
	TWBE2010-050-N160S06(ELB)		2	1	0.5	2	16	50	6	-	-
	TWBE1010-050-N160S06(ELB)		1	1	0.5	2	16	50	6	-	-
	TWBE2006-043-N080S06(ELB)		2	0.6	0.3	1.2	8	43	6	-	-
	TWBE1006-043-N080S06(ELB)		1	0.6	0.3	1.2	8	43	6	-	-

* For details on ring types, see page 41.

IMES-ICORE Type (350i, 650i, 670i)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

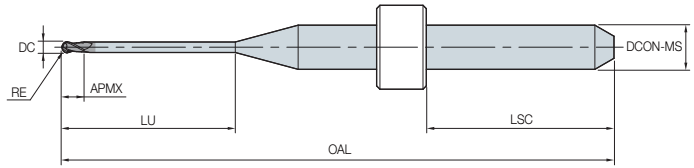
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-053-N200S06(IME)	ND3000	2	2.5	1.25	6.3	20	53	6	17	R7
	TZBE2020-053-N200S06(IME)		2	2	1	5	20	53	6	17	R7
	TZBE2010-053-N160S06(IME)		2	1	0.5	2	16	53	6	17	R7
	TZBE2010-053-N140S06(IME)		2	1	0.5	2	14	53	6	17	R7
	TZBE20065-053-N120S06(IME)		2	0.65	0.325	1.3	12	53	6	17	R7
	TZBE2006-053-N070S06(IME)		1	0.6	0.3	1.2	7	53	6	17	R7
PMMA / PEEK / Wax	TWBE2025-053-N200S06(IME)	Non-coated	2	2.5	1.25	6.3	20	53	6	17	R7
	TWBE1025-053-N200S06(IME)		1	2.5	1.25	6.3	20	53	6	17	R7
	TWBE2020-053-N200S06(IME)		2	2	1	5	20	53	6	17	R7
	TWBE1020-053-N200S06(IME)		1	2	1	5	20	53	6	17	R7
	TWBE2010-053-N160S06(IME)		2	1	0.5	2	16	53	6	17	R7
	TWBE1010-053-N160S06(IME)		1	1	0.5	2	16	53	6	17	R7
	TWBE2010-053-N140S06(IME)		2	1	0.5	2	14	53	6	17	R7
	TWBE1010-053-N140S06(IME)		1	1	0.5	2	14	53	6	17	R7
	TWBE20065-053-N120S06(IME)		2	0.65	0.325	1.3	12	53	6	17	R7
	TWBE10065-053-N120S06(IME)		1	0.65	0.325	1.3	12	53	6	17	R7
	TWBE2006-053-N070S06(IME)		2	0.6	0.3	1.2	7	53	6	17	R7
	TWBE1006-053-N070S06(IME)		1	0.6	0.3	1.2	7	53	6	17	R7

* For details on ring types, see page 41.

IMES-ICORE Type (350i, 650i, 670i)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

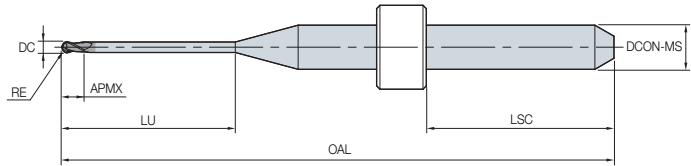
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2015-050-N120S06(IME)	ST4	2	1.5	0.75	3	12	50	6	17	R7
	TTBE3015-050-N120S06(IME)		3	1.5	0.75	3	12	50	6	17	R7
	TTBE2010-050-N100S06(IME)		2	1	0.5	2	10	50	6	17	R7
	TTBE3010-050-N100S06(IME)		3	1	0.5	2	10	50	6	17	R7
	TTBE2010-050-N080S06(IME)		2	1	0.5	2	8	50	6	17	R7
	TTBE3010-050-N080S06(IME)		3	1	0.5	2	8	50	6	17	R7
	TTBE2030-045-N150S06(IME)		2	3	1.5	7.5	15	45	6	17	R7
	TTBE3030-045-N150S06(IME)		3	3	1.5	7.5	15	45	6	17	R7
	TTBE2020-045-N120S06(IME)		2	2	1	5	12	45	6	17	R7
	TTBE3020-045-N120S06(IME)		3	2	1	5	12	45	6	17	R7
	TTBE2010-045-N080S06(IME)		2	1	0.5	2	8	45	6	17	R7
	TTBE3010-045-N080S06(IME)		3	1	0.5	2	8	45	6	17	R7
Glass Ceramic	ETB025-045-N150S06(IME)	ETG	-	2.5	1.25	15	15	45	6	17	R7
	ETB015-045-N100S06(IME)		-	1.5	0.75	10	10	45	6	17	R7
	ETB010-045-N100S06(IME)		-	1	0.5	10	10	45	6	17	R7
	ETBT006-045-N090S06(IME)		-	0.6	0.3	9	9	45	6	17	R7

* For details on ring types, see page 41.

IMES-ICORE Type (250i, 350i, 450i, 540i)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

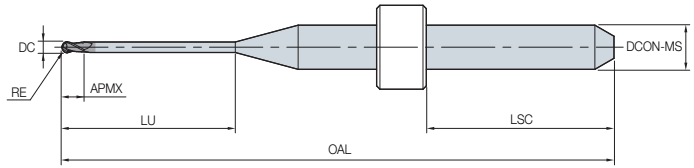
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-048-N200S03(IME)	ST4	2	2.5	1.25	6.3	20	48	3	17	R3
	TZBE2025-048-N125S03(IME)		2	2.5	1.25	6.3	13	48	3	17	R3
	TZBE2020-048-N200S03(IME)		2	2	1	5	20	48	3	17	R3
	TZBE2010-048-N160S03(IME)		2	1	0.5	2	16	48	3	17	R3
	TZBE2010-048-N140S03(IME)		2	1	0.5	2	14	48	3	17	R3
	TZBE2010-048-N120S03(IME)		2	1	0.5	2	12	48	3	17	R3
	TZBE2006-048-N080S03(IME)		2	0.6	0.3	1.2	8	48	3	17	R3
	TZBE2003-048-N010S03(IME)		2	0.3	0.15	0.6	1	48	3	17	R3
	TZFE2015-048-N150S03(IME)		2	1.5	-	3	15	48	3	17	R3
PMMA / PEEK / Wax	TWBE2025-048-N200S03(IME)	Non-coated	2	2.5	1.25	6.3	20	48	3	17	R3
	TWBE1025-048-N200S03(IME)		1	2.5	1.25	6.3	20	48	3	17	R3
	TWBE2025-048-N125S03(IME)		2	2.5	1.25	6.3	13	48	3	17	R3
	TWBE1025-048-N125S03(IME)		1	2.5	1.25	6.3	13	48	3	17	R3
	TWBE2020-048-N200S03(IME)		2	2	1	5	20	48	3	17	R3
	TWBE1020-048-N200S03(IME)		1	2	1	5	20	48	3	17	R3
	TWBE2010-048-N160S03(IME)		2	1	0.5	2	16	48	3	17	R3
	TWBE1010-048-N160S03(IME)		1	1	0.5	2	16	48	3	17	R3
	TWBE2010-048-N140S03(IME)		2	1	0.5	2	14	48	3	17	R3
	TWBE1010-048-N140S03(IME)		1	1	0.5	2	14	48	3	17	R3
	TWBE2010-048-N120S03(IME)		2	1	0.5	2	12	48	3	17	R3
	TWBE1010-048-N120S03(IME)		1	1	0.5	2	12	48	3	17	R3
	TWBE2006-048-N080S03(IME)		2	0.6	0.3	1.2	8	48	3	17	R3
	TWBE1006-048-N080S03(IME)		1	0.6	0.3	1.2	8	48	3	17	R3

* For details on ring types, see page 41.

IMES-ICORE Type (250i, 350i, 450i, 540i)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

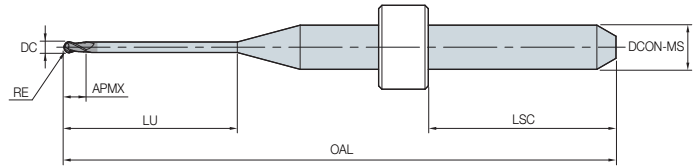
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2025-048-N125S03(IME)	ST4	2	2.5	1.25	6.3	13	48	3	17	R3
	TTBE3025-048-N125S03(IME)		3	2.5	1.25	6.3	13	48	3	17	R3
	TTBE2010-048-N120S03(IME)		2	1	0.5	2	12	48	3	17	R3
	TTBE3010-048-N120S03(IME)		3	1	0.5	2	12	48	3	17	R3
	TTBE2030-038-N120S03(IME)		2	3	1.5	7.5	12	38	3	14	R3
	TTBE3030-038-N120S03(IME)		3	3	1.5	7.5	12	38	3	14	R3
	TTBE2020-038-N120S03(IME)		2	2	1	5	12	38	3	14	R3
	TTBE3020-038-N120S03(IME)		3	2	1	5	12	38	3	14	R3
	TTBE2010-038-N090S03(IME)		2	1	0.5	2	9	38	3	14	R3
	TTBE3010-038-N090S03(IME)		3	1	0.5	2	9	38	3	14	R3
Glass Ceramic	ETB025-040-N130S03(IME)	ETG	-	2.5	1.25	13	13	40	3	14	R3
	ETB010-040-N100S03(IME)		-	1	0.5	10	10	40	3	14	R3
	ETBT006-040-N100S03(IME)		-	0.6	0.3	10	10	40	3	14	R3

* For details on ring types, see page 41.

IVOCLAR Type (PM7)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

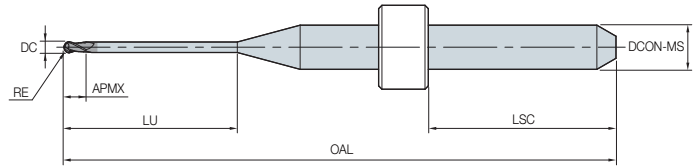
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-053-N200S06(IV0)	ND3000	2	2.5	1.25	6.3	20	53	6	18	R7
	TZBE2010-053-N140S06(IV0)		2	1	0.5	2	14	53	6	18	R7
	TZBE2005-053-N070S06(IV0)		2	0.5	0.25	1	7	53	6	18	R7
PMMA / PEEK / Wax	TWBE2050-059-N220S06(IV0)	Non-coated	2	5	2.5	12.5	22	59	6	18	R7
	TWBE1050-059-N220S06(IV0)		1	5	2.5	12.5	22	59	6	18	R7
	TWBE2025-059-N250S06(IV0)		2	2.5	1.25	6.3	25	59	6	18	R7
	TWBE1025-059-N250S06(IV0)		1	2.5	1.25	6.3	25	59	6	18	R7
	TWBE2010-052-N100S06(IV0)		2	1	0.5	2	10	52	6	18	R7
	TWBE1010-052-N100S06(IV0)		1	1	0.5	2	10	52	6	18	R7
	TWBE2005-049-N070S06(IV0)		2	0.5	0.25	1	7	49	6	18	R7
	TWBE1005-049-N070S06(IV0)		1	0.5	0.25	1	7	49	6	18	R7
	TWFE2015-049-N150S06(IV0)		2	1.5	-	3	15	49	6	18	R7
	TWFE1015-049-N150S06(IV0)		1	1.5	-	3	15	49	6	18	R7
Titanium / Co-Cr	TTBE2030-045-N150S06(IV0)	ST4	2	3	1.5	7.5	15	45	6	18	R7
	TTBE3030-045-N150S06(IV0)		3	3	1.5	7.5	15	45	6	18	R7
	TTBE2020-045-N120S06(IV0)		2	2	1	5	12	45	6	18	R7
	TTBE3020-045-N120S06(IV0)		3	2	1	5	12	45	6	18	R7
	TTBE2015-045-N120S06(IV0)		2	1.5	0.75	3	12	45	6	18	R7
	TTBE3015-045-N120S06(IV0)		3	1.5	0.75	3	12	45	6	18	R7
	TTBE2010-045-N090S06(IV0)		2	1	0.5	2	9	45	6	18	R7
	TTBE3010-045-N090S06(IV0)		3	1	0.5	2	9	45	6	18	R7
	TTBE2006-040-N015S06(IV0)		2	0.6	0.3	1.2	2	40	6	18	R7
	TTRE4030-045-N150S06(IV0)		4	3	0.5	7.5	15	45	6	18	R7
	TTRE4015-045-N150S06(IV0)		4	1.5	0.15	3	15	45	6	18	R7
Glass Ceramic	ETB030-050-N200S06(IV0)	ETG	-	3	1.5	20	20	50	6	18	R7
	ETB020-050-N185S06(IV0)		-	2	1	18.5	18.5	50	6	18	R7
	ETB010-050-N105S06(IV0)		-	1	0.5	10.5	10.5	50	6	18	R7
	ETBT005-045-N155S06(IV0)		-	0.5	0.25	15.5	15.5	45	6	18	R7

* For details on ring types, see page 41.

MANIX Type(ZX-5SD, MA-4)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

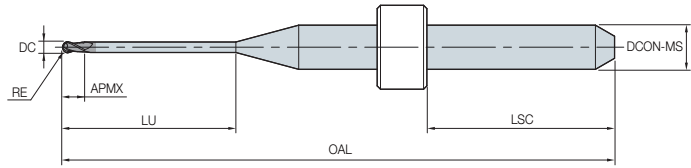
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N200S04(MAN)	ND3000	2	2	1	5	20	50	4	18.5	R5
	TZBE2010-050-N160S04(MAN)		2	1	0.5	2	16	50	4	18.5	R5
	TZBE2006-045-N140S04(MAN)		2	0.6	0.3	1.2	14	45	4	18.5	R5
	TZBE2006-045-N070S04(MAN)		2	0.6	0.3	1.2	7	45	4	18.5	R5
PMMA / PEEK / Wax	TWBE2020-050-N200S04(MAN)	Non-coated	2	2	1	5	20	50	4	18.5	R5
	TWBE1020-050-N200S04(MAN)		1	2	1	5	20	50	4	18.5	R5
	TWBE2010-050-N160S04(MAN)		2	1	0.5	2	16	50	4	18.5	R5
	TWBE1010-050-N160S04(MAN)		1	1	0.5	2	16	50	4	18.5	R5
	TWBE2006-050-N050S04(MAN)		2	0.6	0.3	1.2	5	50	4	18.5	R5
	TWBE1006-050-N050S04(MAN)		1	0.6	0.3	1.2	5	50	4	18.5	R5

* For details on ring types, see page 41.

MANIX Type(ZX-5SD, MA-4)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

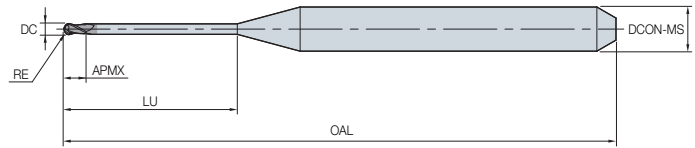
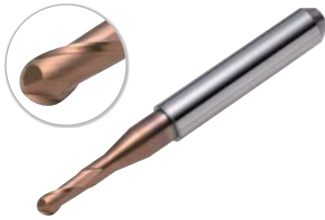
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2060-050-N200S06(MAN)	ST4	2	6	3	15	20	50	6	20	R6
	TTBE3060-050-N200S06(MAN)		3	6	3	15	20	50	6	20	R6
	TTBE2030-050-N120S06(MAN)		2	3	1.5	7.5	12	50	6	20	R6
	TTBE3030-050-N120S06(MAN)		3	3	1.5	7.5	12	50	6	20	R6
	TTBE2020-050-N120S06(MAN)		2	2	1	5	12	50	6	20	R6
	TTBE3020-050-N120S06(MAN)		3	2	1	5	12	50	6	20	R6
	TTBE2015-050-N100S06(MAN)		2	1.5	0.75	3	10	50	6	20	R6
	TTBE3015-050-N100S06(MAN)		3	1.5	0.75	3	10	50	6	20	R6
	TTBE2010-050-N100S06(MAN)		2	1	0.5	2	10	50	6	20	R6
	TTBE3010-050-N100S06(MAN)		3	1	0.5	2	10	50	6	20	R6
	TTBE2060-045-N160S06(MAN)		2	6	3	15	16	45	6	20	R6
	TTBE3060-045-N160S06(MAN)		3	6	3	15	16	45	6	20	R6
	TTBE2030-045-N130S06(MAN)		2	3	1.5	7.5	13	45	6	20	R6
	TTBE3030-045-N130S06(MAN)		3	3	1.5	7.5	13	45	6	20	R6
	TTBE2025-045-N120S06(MAN)		2	2.5	1.25	6.3	12	45	6	20	R6
	TTBE3025-045-N120S06(MAN)		3	2.5	1.25	6.3	12	45	6	20	R6
	TTBE2020-045-N120S06(MAN)		2	2	1	5	12	45	6	20	R6
	TTBE3020-045-N120S06(MAN)		3	2	1	5	12	45	6	20	R6
	TTBE2015-045-N100S06(MAN)		2	1.5	0.75	3	10	45	6	20	R6
	TTBE3015-045-N100S06(MAN)		3	1.5	0.75	3	10	45	6	20	R6
	TTBE2060-040-N100S06(MAN)		2	6	3	15	10	40	6	20	R6
	TTBE3060-040-N100S06(MAN)		3	6	3	15	10	40	6	20	R6

* For details on ring types, see page 41.

MAXX Type(DR100-5Z)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

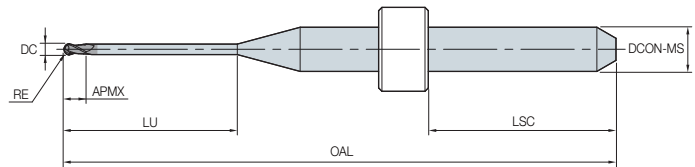
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N200S04(MAXX)	ND3000	2	2	1	5	20	50	4	-	-
	TZBE2010-050-N160S04(MAXX)		2	1	0.5	2	16	50	4	-	-
	TZBE2006-045-N160S04(MAXX)		2	0.6	0.3	1.2	16	45	4	-	-
PMMA / PEEK / Wax	TWBE2020-050-N200S04(MAXX)	Non-coated	2	2	1	5	20	50	4	-	-
	TWBE1020-050-N200S04(MAXX)		1	2	1	5	20	50	4	-	-
	TWBE2010-050-N160S04(MAXX)		2	1	0.5	2	16	50	4	-	-
	TWBE1010-050-N160S04(MAXX)		1	1	0.5	2	16	50	4	-	-
	TWBE2006-045-N160S04(MAXX)		2	0.6	0.3	1.2	16	45	4	-	-
	TWBE1006-045-N160S04(MAXX)		1	0.6	0.3	1.2	16	45	4	-	-

※ For details on ring types, see page 41.

MAXX Type(DS200-5Z)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

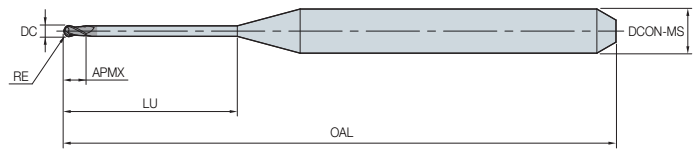
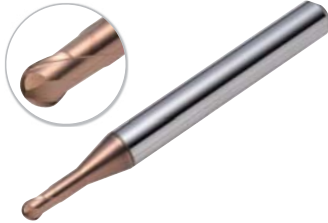
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2015-055-N200S03(MAXX)	ND3000	2	1.5	0.75	3	20	55	3	20.5	R2
	TZBE2020-045-N200S03(MAXX)		2	2	1	5	20	45	3	17	R2
	TZBE2010-045-N180S03(MAXX)		2	1	0.5	2	18	45	3	17	R2
	TZBE2010-045-N120S03(MAXX)		2	1	0.5	2	12	45	3	15	R2
	TZBE2006-045-N120S03(MAXX)		2	0.6	0.3	1.2	12	45	3	17	R2
	TZBE2006-045-N040S03(MAXX)		2	0.6	0.3	1.2	4	45	3	15	R2
	TZFE2010-045-N190S03(MAXX)		2	1	-	2	19	45	3	15	R2
PMMA / PEEK / Wax	TWBE2020-045-N200S03(MAXX)	Non-coated	2	2	1	5	20	45	3	17	R2
	TWBE1020-045-N200S03(MAXX)		1	2	1	5	20	45	3	17	R2
	TWBE2010-045-N180S03(MAXX)		2	1	0.5	2	18	45	3	17	R2
	TWBE1010-045-N180S03(MAXX)		1	1	0.5	2	18	45	3	17	R2
	TWBE2006-045-N120S03(MAXX)		2	0.6	0.3	1.2	12	45	3	17	R2
	TWBE1006-045-N120S03(MAXX)		1	0.6	0.3	1.2	12	45	3	17	R2

※ For details on ring types, see page 41.

MAXX Type (DM100 / DS-4WA)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

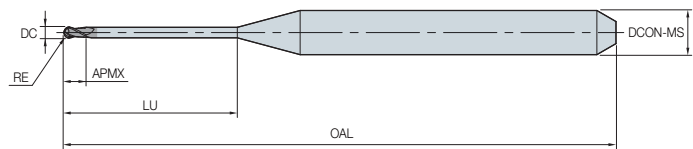
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2030-050-N120S06(MAXX)	ST4	2	3	1.5	7.5	12	50	6	-	-
	TTBE3030-050-N120S06(MAXX)		3	3	1.5	7.5	12	50	6	-	-
	TTBE2020-050-N120S06(MAXX)		2	2	1	5	12	50	6	-	-
	TTBE3020-050-N120S06(MAXX)		3	2	1	5	12	50	6	-	-
	TTBE2015-050-N100S06(MAXX)		2	1.5	0.75	3	10	50	6	-	-
	TTBE3015-050-N100S06(MAXX)		3	1.5	0.75	3	10	50	6	-	-
	TTBE2010-050-N100S06(MAXX)		2	1	0.5	2	10	50	6	-	-
	TTBE3010-050-N100S06(MAXX)		3	1	0.5	2	10	50	6	-	-

* For details on ring types, see page 41.

Neo Biotech Type (CAMELEON-CS)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

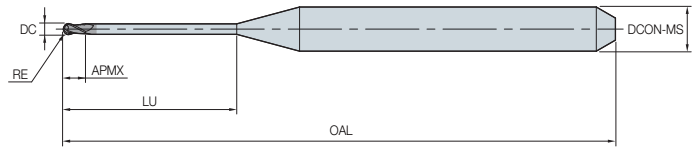
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-040-N200S03(NEO)	ND3000	2	2	1	5	20	40	3	-	-
	TZBE2010-040-N160S03(NEO)		2	1	0.5	2	16	40	3	-	-
	TZBE2005-040-N080S03(NEO)		2	0.5	0.25	1	8	40	3	-	-
PMMA / PEEK / Wax	TWBE2020-040-N200S03(NEO)	Non-coated	2	2	1	5	20	40	3	-	-
	TWBE1020-040-N200S03(NEO)		1	2	1	5	20	40	3	-	-
	TWBE2010-040-N160S03(NEO)		2	1	0.5	2	16	40	3	-	-
	TWBE1010-040-N160S03(NEO)		1	1	0.5	2	16	40	3	-	-
	TWBE2005-040-N080S03(NEO)		2	0.5	0.25	1	8	40	3	-	-
	TWBE1005-040-N080S03(NEO)		1	0.5	0.25	1	8	40	3	-	-

* For details on ring types, see page 41.

Neo Biotech Type (Z-MATCH / CAMELEON)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

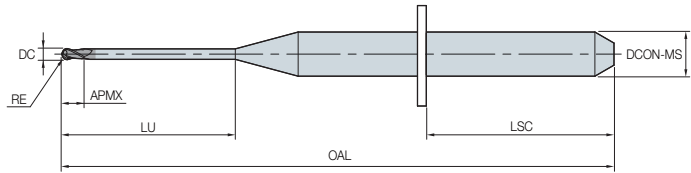
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-055-N200S06(NEO)	ND3000	2	2	1	5	20	55	6	-	-
	TZBE2010-055-N160S06(NEO)		2	1	0.5	2	16	55	6	-	-
	TZBE2005-055-N080S06(NEO)		2	0.5	0.25	1	8	55	6	-	-
PMMA / PEEK / Wax	TWBE2020-055-N200S06(NEO)	Non-coated	2	2	1	5	20	55	6	-	-
	TWBE1020-055-N200S06(NEO)		1	2	1	5	20	55	6	-	-
	TWBE2010-055-N160S06(NEO)		2	1	0.5	2	16	55	6	-	-
	TWBE1010-055-N160S06(NEO)		1	1	0.5	2	16	55	6	-	-
	TWBE2005-055-N080S06(NEO)		2	0.5	0.25	1	8	55	6	-	-
	TWBE1005-055-N080S06(NEO)		1	0.5	0.25	1	8	55	6	-	-
Titanium / Co-Cr	TTBE2030-055-N100S06(NEO)	ST4	2	3	1.5	7.5	10	55	6	-	-
	TTBE3030-055-N100S06(NEO)		3	3	1.5	7.5	10	55	6	-	-
	TTBE2020-055-N080S06(NEO)		2	2	1	5	8	55	6	-	-
	TTBE3020-055-N080S06(NEO)		3	2	1	5	8	55	6	-	-
	TTBE2015-055-N080S06(NEO)		2	1.5	0.75	3	8	55	6	-	-
	TTBE3015-055-N080S06(NEO)		3	1.5	0.75	3	8	55	6	-	-
	TTBE2030-045-N100S06(NEO)		2	3	1.5	7.5	10	45	6	-	-
	TTBE3030-045-N100S06(NEO)		3	3	1.5	7.5	10	45	6	-	-
	TTBE2020-045-N070S06(NEO)		2	2	1	5	7	45	6	-	-
	TTBE3020-045-N070S06(NEO)		3	2	1	5	7	45	6	-	-
	TTBE2015-045-N070S06(NEO)		2	1.5	0.75	3	7	45	6	-	-
	TTBE3015-045-N070S06(NEO)		3	1.5	0.75	3	7	45	6	-	-

* For details on ring types, see page 41.

REDON Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

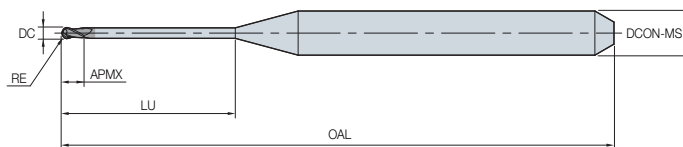
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-040-N160S04(RED)	ND3000	2	2	1	5	16	40	4	14	C1
	TZBE2010-040-N150S04(RED)		2	1	0.5	2	15	40	4	14	C1
PMMA / PEEK / Wax	TWBE2020-040-N160S04(RED)	Non-coated	2	2	1	5	16	40	4	14	C1
	TWBE1020-040-N160S04(RED)		1	2	1	5	16	40	4	14	C1
	TWBE2010-040-N150S04(RED)		2	1	0.5	2	15	40	4	14	C1
	TWBE1010-040-N150S04(RED)		1	1	0.5	2	15	40	4	14	C1
Titanium / Co-Cr	TTBE2020-040-N080S04(RED)	ST4	2	2	1	5	8	40	4	14	C1
	TTBE3020-040-N080S04(RED)		3	2	1	5	8	40	4	14	C1
	TTBE2015-040-N100S04(RED)		2	1.5	0.75	3	10	40	4	14	C1
	TTBE3015-040-N100S04(RED)		3	1.5	0.75	3	10	40	4	14	C1
	TTBE2010-040-N080S04(RED)		2	1	0.5	2	8	40	4	14	C1
	TTBE3010-040-N080S04(RED)		3	1	0.5	2	8	40	4	14	C1
	TTFE4020-040-N090S04(RED)		4	2	-	5	9	40	4	14	C1
	TTFE4015-040-N050S04(RED)		4	1.5	-	3	5	40	4	14	C1
	TTFE2005-040-N030S04(RED)		2	0.5	-	1	3	40	4	14	C1
	TTFE2003-040-N170S04(RED)		2	0.3	-	0.6	17	40	4	14	C1
	TTRE4025-040-N100S04(RED)		4	2.5	0.5	6.3	10	40	4	14	C1
	TTRE4015-040-N060S04(RED)		4	1.5	0.2	3	6	40	4	14	C1
Glass Ceramic	ETB025-040-N150S04(RED)	ETG	-	2.5	1.25	15	15	40	4	14	C1
	ETB015-040-N080S04(RED)		-	1.5	0.75	8	8	40	4	14	C1
	ETB010-040-N100S04(RED)		-	1	0.5	10	10	40	4	14	C1
	ETB006-040-N060S04(RED)		-	0.6	0.3	6	6	40	4	14	C1

* For details on ring types, see page 41.

ROLAND Type (DWX-30, DWX-50, DWX-51D, DWX-52D)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

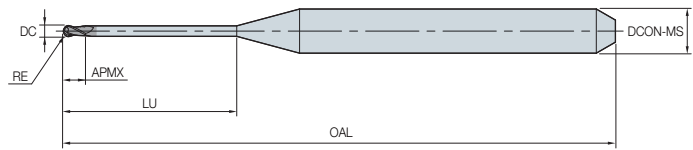
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2030-050-N200S04(ROL)	ND3000	2	3	1.5	7.5	20	50	4	-	-
	TZBE2020-050-N200S04(ROL)		2	2	1	5	20	50	4	-	-
	TZBE2020-050-N140S04(ROL)		2	2	1	5	14	50	4	-	-
	TZBE2010-050-N200S04(ROL)		2	1	0.5	2	20	50	4	-	-
	TZBE2010-050-N160S04(ROL)		2	1	0.5	2	16	50	4	-	-
	TZBE2010-050-N120S04(ROL)		2	1	0.5	2	12	50	4	-	-
	TZBE2006-050-N140S04(ROL)		2	0.6	0.3	1.2	14	50	4	-	-
	TZBE2006-050-N060S04(ROL)		2	0.6	0.3	1.2	6	50	4	-	-
	TZBE2003-050-N015S04(ROL)		2	0.3	0.15	0.6	2	50	4	-	-
	TZFE2010-050-N160S04(ROL)		2	1	-	2	16	50	4	-	-
PMMA / PEEK / Wax	TWBE2030-050-N200S04(ROL)	Non-coated	2	3	1.5	7.5	20	50	4	-	-
	TWBE1030-050-N200S04(ROL)		1	3	1.5	7.5	20	50	4	-	-
	TWBE2020-050-N200S04(ROL)		2	2	1	5	20	50	4	-	-
	TWBE1020-050-N200S04(ROL)		1	2	1	5	20	50	4	-	-
	TWBE2020-050-N140S04(ROL)		2	2	1	5	14	50	4	-	-
	TWBE1020-050-N140S04(ROL)		1	2	1	5	14	50	4	-	-
	TWBE2010-050-N200S04(ROL)		2	1	0.5	2	20	50	4	-	-
	TWBE1010-050-N200S04(ROL)		1	1	0.5	2	20	50	4	-	-
	TWBE2010-050-N160S04(ROL)		2	1	0.5	2	16	50	4	-	-
	TWBE1010-050-N160S04(ROL)		1	1	0.5	2	16	50	4	-	-
	TWBE2010-050-N120S04(ROL)		2	1	0.5	2	12	50	4	-	-
	TWBE1010-050-N120S04(ROL)		1	1	0.5	2	12	50	4	-	-
	TWBE2006-050-N140S04(ROL)		2	0.6	0.3	1.2	14	50	4	-	-
	TWBE1006-050-N140S04(ROL)		1	0.6	0.3	1.2	14	50	4	-	-
	TWBE2006-050-N060S04(ROL)		2	0.6	0.3	1.2	6	50	4	-	-
	TWBE1006-050-N060S04(ROL)		1	0.6	0.3	1.2	6	50	4	-	-

* For details on ring types, see page 41.

ROLAND Type (DWX-30, DWX-50, DWX-51D, DWX-52D)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

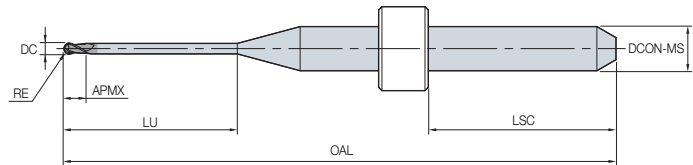
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Titanium / Co-Cr	TTBE2020-050-N140S04(ROL)	ST4	2	2	1	5	14	50	4	-	-
	TTBE3020-050-N140S04(ROL)		3	2	1	5	14	50	4	-	-
	TTBE2010-050-N120S04(ROL)		2	1	0.5	2	12	50	4	-	-
	TTBE3010-050-N120S04(ROL)		3	1	0.5	2	12	50	4	-	-
	TTBE2006-050-N060S04(ROL)		2	0.6	0.3	1.2	6	50	4	-	-
Glass Ceramic	ETB020-050-N170S04(ROL)	ETG	-	2	1	17	17	50	4	-	-
	ETB010-050-N120S04(ROL)		-	1	0.5	12	12	50	4	-	-
	ETB006-050-N100S04(ROL)		-	0.6	0.3	10	10	50	4	-	-

* For details on ring types, see page 41.

SIRONA Type (MC-X5)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

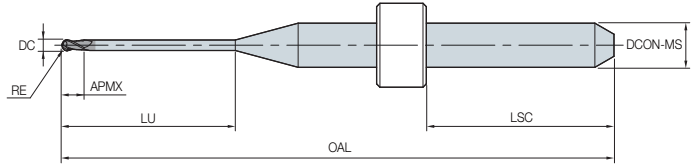
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-044-N240S03(SIR)	ND3000	2	2.5	1.25	6.3	24	44	3	14	R3
	TZBE2010-044-N170S03(SIR)		2	1	0.5	2	17	44	3	14	R3
	TZBE2005-044-N090S03(SIR)		2	0.5	0.25	1	9	44	3	14	R3
	TZBE2005-044-N060S03(SIR)		2	0.5	0.25	1	6	44	3	14	R3
PMMA / PEEK / Wax	TWBE2025-044-N240S03(SIR)	Non-coated	2	2.5	1.25	6.3	24	44	3	14	R3
	TWBE1025-044-N240S03(SIR)		1	2.5	1.25	6.3	24	44	3	14	R3
	TWBE2010-044-N170S03(SIR)		2	1	0.5	2	17	44	3	14	R3
	TWBE1010-044-N170S03(SIR)		1	1	0.5	2	17	44	3	14	R3
	TWBE2005-044-N060S03(SIR)		2	0.5	0.25	1	6	44	3	14	R3
	TWBE1005-044-N060S03(SIR)		1	0.5	0.25	1	6	44	3	14	R3
Titanium / Co-Cr	TTBE2025-044-N240S03(SIR)	ST4	2	2.5	1.25	6.3	24	44	3	14	R3
	TTBE3025-044-N240S03(SIR)		3	2.5	1.25	6.3	24	44	3	14	R3
	TTBE2010-044-N170S03(SIR)		2	1	0.5	2	17	44	3	14	R3
	TTBE3010-044-N170S03(SIR)		3	1	0.5	2	17	44	3	14	R3
	TTBE2020-038-N120S03(SIR)		2	2	1	5	12	38	3	14	R3
	TTBE3020-038-N120S03(SIR)		3	2	1	5	12	38	3	14	R3
	TTBE2010-038-N080S03(SIR)		2	1	0.5	2	8	38	3	14	R3
	TTBE3010-038-N080S03(SIR)		3	1	0.5	2	8	38	3	14	R3

* For details on ring types, see page 41.

UP3D Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

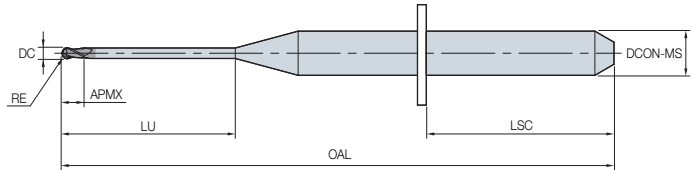
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N160S04(UP3)	ND3000	2	2	1	5	16	50	4	18	R4
	TZBE2010-050-N160S04(UP3)		2	1	0.5	2	16	50	4	18	R4
	TZBE2006-050-N140S04(UP3)		2	0.6	0.3	1.2	14	50	4	18	R4
	TZBE2006-050-N080S04(UP3)		2	0.6	0.3	1.2	8	50	4	18	R4
PMMA / PEEK / Wax	TWBE2020-050-N160S04(UP3)	Non-coated	2	2	1	5	16	50	4	18	R4
	TWBE1020-050-N160S04(UP3)		1	2	1	5	16	50	4	18	R4
	TWBE2010-050-N160S04(UP3)		2	1	0.5	2	16	50	4	18	R4
	TWBE1010-050-N160S04(UP3)		1	1	0.5	2	16	50	4	18	R4
	TWBE2006-050-N080S04(UP3)		2	0.6	0.3	1.2	8	50	4	18	R4
	TWBE1006-050-N080S04(UP3)		1	0.6	0.3	1.2	8	50	4	18	R4

* For details on ring types, see page 41.

UPCERA Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

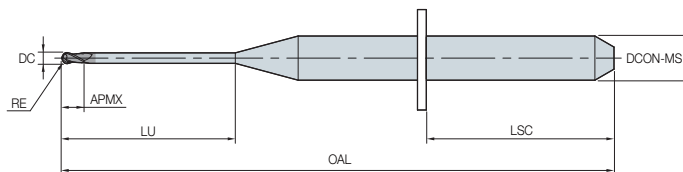
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-040-N160S03(UPC)	ND3000	2	2	1	5	16	40	3	13	G1
	TZBE2010-040-N160S03(UPC)		2	1	0.5	2	16	40	3	13	G1
	TZBE2006-040-N100S03(UPC)		2	0.6	0.3	1.2	10	40	3	13	G1
PMMA / PEEK / Wax	TWBE2020-040-N160S03(UPC)	Non-coated	2	2	1	5	16	40	3	13	G1
	TWBE1020-040-N160S03(UPC)		1	2	1	5	16	40	3	13	G1
	TWBE2010-040-N160S03(UPC)		2	1	0.5	2	16	40	3	13	G1
	TWBE1010-040-N160S03(UPC)		1	1	0.5	2	16	40	3	13	G1
	TWBE2006-040-N100S03(UPC)		2	0.6	0.3	1.2	10	40	3	13	G1
	TWBE1006-040-N100S03(UPC)		1	0.6	0.3	1.2	10	40	3	13	G1
	TWBE1006-050-N080S04(UP3)		1	0.6	0.3	1.2	8	50	4	18	R4

* For details on ring types, see page 41.

VHF Type (K5, R5, S1, S2)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

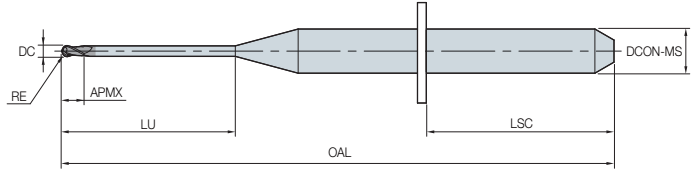
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-040-N200S03(VH)	ND3000	2	2	1	5	20	40	3	13	G1
	TZBE2020-040-N160S03(VH)		2	2	1	5	16	40	3	13	G1
	TZBE2010-040-N160S03(VH)		2	1	0.5	2	16	40	3	13	G1
	TZBE2006-040-N110S03(VH)		2	0.6	0.3	1.2	11	40	3	13	G1
	TZBE2006-040-N085S03(VH)		2	0.6	0.3	1.2	8.5	40	3	13	G1
	TZBE2006-040-N030S03(VH)		2	0.6	0.3	1.2	3	40	3	13	G1
PMMA / PEEK / Wax	TWBE2020-040-N160S03(VH)	Non-coated	2	2	1	5	16	40	3	13	G1
	TWBE1020-040-N160S03(VH)		1	2	1	5	16	40	3	13	G1
	TWBE2010-040-N160S03(VH)		2	1	0.5	2	16	40	3	13	G1
	TWBE1010-040-N160S03(VH)		1	1	0.5	2	16	40	3	13	G1
	TWBE2010-040-N140S03(VH)		2	1	0.5	2	14	40	3	13	G1
	TWBE1010-040-N140S03(VH)		1	1	0.5	2	14	40	3	13	G1
	TWBE2006-040-N085S03(VH)		2	0.6	0.3	1.2	8.5	40	3	13	G1
	TWBE1006-040-N085S03(VH)		1	0.6	0.3	1.2	8.5	40	3	13	G1
	TWBE2006-040-N030S03(VH)		2	0.6	0.3	1.2	3	40	3	13	G1
	TWBE1006-040-N030S03(VH)		1	0.6	0.3	1.2	3	40	3	13	G1
	TWRE2025-040-N160S03(VH)		2	2.5	0.1	6.3	16	40	3	13	G1
	TWRE1025-040-N160S03(VH)		1	2.5	0.1	6.3	16	40	3	13	G1

* For details on ring types, see page 41.

VHF Type(K4, N4, Z4)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

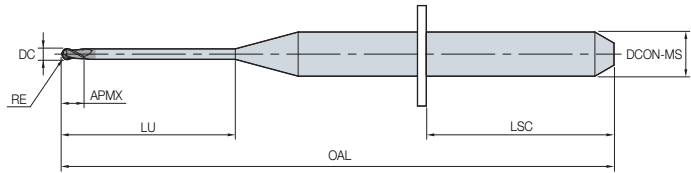
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-035-N160S03(VH)	ND3000	2	2	1	5	16	35	3	11	G1
	TZBE2010-035-N160S03(VH)		2	1	0.5	2	16	35	3	11	G1
	TZBE2010-035-N130S03(VH)		2	1	0.5	2	13	35	3	11	G1
	TZBE2006-035-N110S03(VH)		2	0.6	0.3	1.2	11	35	3	11	G1
	TZBE2006-035-N085S03(VH)		2	0.6	0.3	1.2	9	35	3	11	G1
	TZBE2006-035-N030S03(VH)		2	0.6	0.3	1.2	3	35	3	11	G1
	TZFE2006-035-N030S03(VH)		2	0.6	0.3	1.2	3	35	3	11	G1
PMMA / PEEK / Wax	TWBE2020-035-N160S03(VH)	Non-coated	2	2	1	5	16	35	3	11	G1
	TWBE1020-035-N160S03(VH)		1	2	1	5	16	35	3	11	G1
	TWBE2010-035-N160S03(VH)		2	1	0.5	2	16	35	3	11	G1
	TWBE1010-035-N160S03(VH)		1	1	0.5	2	16	35	3	11	G1
	TWBE2010-035-N130S03(VH)		2	1	0.5	2	13	35	3	11	G1
	TWBE1010-035-N130S03(VH)		1	1	0.5	2	13	35	3	11	G1
	TWBE2006-035-N110S03(VH)		2	0.6	0.3	1.2	11	35	3	11	G1
	TWBE1006-035-N110S03(VH)		1	0.6	0.3	1.2	11	35	3	11	G1
	TWBE2006-035-N085S03(VH)		2	0.6	0.3	1.2	9	35	3	11	G1
	TWBE1006-035-N085S03(VH)		1	0.6	0.3	1.2	9	35	3	11	G1
	TWBE2006-035-N030S03(VH)		2	0.6	0.3	1.2	3	35	3	11	G1
	TWBE1006-035-N030S03(VH)		1	0.6	0.3	1.2	3	35	3	11	G1
Titanium / Co-Cr	TTBE2020-035-N160S03(VH)	ST4	2	2	1	5	16	35	3	11	G1
	TTBE3020-035-N160S03(VH)		3	2	1	5	16	35	3	11	G1
	TTBE2010-035-N130S03(VH)		2	1	0.5	2	13	35	3	11	G1
	TTBE3010-035-N130S03(VH)		3	1	0.5	2	13	35	3	11	G1
	TTBE2006-035-N010S03(VH)		2	0.6	0.3	1.2	1	35	3	11	G1
	TTRE2012-035-N080S03(VH)		2	1.2	0.1	2.4	8	35	3	11	G1
Glass Ceramic	ETB024-035-N160S03(VH)	ETG	-	2.4	1.2	16	16	35	3	11	G1
	ETBT012-035-N090S03(VH)		-	1.2	0.6	9	9	35	3	11	G1
	ETB010-035-N080S03(VH)		-	1	0.5	8	8	35	3	11	G1
	ETBT006-035-N055S03(VH)		-	0.6	0.3	5.5	5.5	35	3	11	G1
	ETB006-035-N040S03(VH)		-	0.6	0.3	4	4	35	3	11	G1

* For details on ring types, see page 41.

WIELAND Type (Zenotec Select Hybrid)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium / Co-Cr	ST4	0~-0.015



(mm)

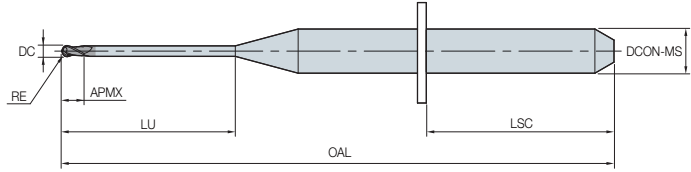
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-040-N200S03(WIE)	ND3000	2	2.5	1.25	6.3	20	40	3	13	G1
	TZBE2025-040-N150S03(WIE)		2	2.5	1.25	6.3	15	40	3	13	G1
	TZBE2020-040-N170S03(WIE)		2	2	1	5	17	40	3	13	G1
	TZBE2010-040-N170S03(WIE)		2	1	0.5	2	17	40	3	13	G1
	TZBE2010-040-N140S03(WIE)		2	1	0.5	2	14	40	3	13	G1
	TZBE2006-040-N120S03(WIE)		2	0.6	0.3	1.2	12	40	3	13	G1
	TZBE2006-040-N070S03(WIE)		2	0.6	0.3	1.2	7	40	3	13	G1
	TZBE2003-040-N010S03(WIE)		2	0.3	0.15	0.6	1	40	3	13	G1
PMMA / PEEK / Wax	TWBE2025-040-N200S03(WIE)	Non-coated	2	2.5	1.25	6.3	20	40	3	13	G1
	TWBE1025-040-N200S03(WIE)		1	2.5	1.25	6.3	20	40	3	13	G1
	TWBE2025-040-N150S03(WIE)		2	2.5	1.25	6.3	15	40	3	13	G1
	TWBE1025-040-N150S03(WIE)		1	2.5	1.25	6.3	15	40	3	13	G1
	TWBE2020-040-N170S03(WIE)		2	2	1	5	17	40	3	13	G1
	TWBE1020-040-N170S03(WIE)		1	2	1	5	17	40	3	13	G1
	TWBE2010-040-N170S03(WIE)		2	1	0.5	2	17	40	3	13	G1
	TWBE1010-040-N170S03(WIE)		1	1	0.5	2	17	40	3	13	G1
	TWBE2010-040-N130S03(WIE)		2	1	0.5	2	13	40	3	13	G1
	TWBE1010-040-N130S03(WIE)		1	1	0.5	2	13	40	3	13	G1
	TWBE2006-040-N070S03(WIE)		2	0.6	0.3	1.2	7	40	3	13	G1
	TWBE1006-040-N070S03(WIE)		1	0.6	0.3	1.2	7	40	3	13	G1
Titanium / Co-Cr	TTBE2025-040-N150S03(WIE)	ST4	2	2.5	1.25	6.3	15	40	3	13	G1
	TTBE3025-040-N150S03(WIE)		3	2.5	1.25	6.3	15	40	3	13	G1
	TTBE2020-040-N160S03(WIE)		2	2	1	5	16	40	3	13	G1
	TTBE3020-040-N160S03(WIE)		3	2	1	5	16	40	3	13	G1
	TTBE2010-040-N130S03(WIE)		2	1	0.5	2	13	40	3	13	G1
	TTBE3010-040-N130S03(WIE)		3	1	0.5	2	13	40	3	13	G1
Glass Ceramic	ETB030-040-N180S03(WIE)	ETG	-	3	1.5	18	18	40	3	13	G1
	ETB020-040-N170S03(WIE)		-	2	1	17	17	40	3	13	G1
	ETB010-040-N085S03(WIE)		-	1	0.5	8.5	8.5	40	3	13	G1
	ETB005-040-N095S03(WIE)		-	0.5	0.25	9.5	9.5	40	3	13	G1

* For details on ring types, see page 41.

WIELAND Type (Zenotec Mini)



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

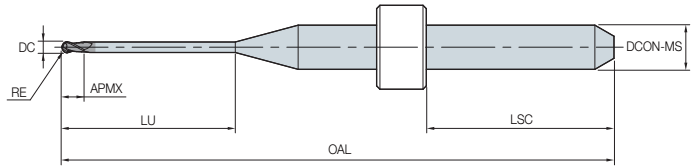
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2025-035-N200S03(WIE)	ND3000	2	2.5	1.25	6.3	20	35	3	11	G1
	TZBE2025-035-N150S03(WIE)		2	2.5	1.25	6.3	15	35	3	11	G1
	TZBE2020-035-N160S03(WIE)		2	2	1	5	16	35	3	11	G1
	TZBE2010-035-N160S03(WIE)		2	1	0.5	2	16	35	3	11	G1
	TZBE2010-035-N140S03(WIE)		2	1	0.5	2	14	35	3	11	G1
	TZBE2006-035-N070S03(WIE)		2	0.6	0.3	1.2	7	35	3	11	G1
	TZBE2003-035-N003S03(WIE)		2	0.3	0.15	0.6	0	35	3	11	G1
PMMA / PEEK / Wax	TWBE2025-035-N200S03(WIE)	Non-coated	2	2.5	1.25	6.3	20	35	3	11	G1
	TWBE1025-035-N200S03(WIE)		1	2.5	1.25	6.3	20	35	3	11	G1
	TWBE2025-035-N150S03(WIE)		2	2.5	1.25	6.3	15	35	3	11	G1
	TWBE1025-035-N150S03(WIE)		1	2.5	1.25	6.3	15	35	3	11	G1
	TWBE2020-035-N170S03(WIE)		2	2	1	5	17	35	3	11	G1
	TWBE1020-035-N170S03(WIE)		1	2	1	5	17	35	3	11	G1
	TWBE2010-035-N160S03(WIE)		2	1	0.5	2	16	35	3	11	G1
	TWBE1010-035-N160S03(WIE)		1	1	0.5	2	16	35	3	11	G1
	TWBE2010-035-N130S03(WIE)		2	1	0.5	2	13	35	3	11	G1
	TWBE1010-035-N130S03(WIE)		1	1	0.5	2	13	35	3	11	G1
	TWBE2006-035-N070S03(WIE)		2	0.6	0.3	1.2	7	35	3	11	G1
	TWBE1006-035-N070S03(WIE)		1	0.6	0.3	1.2	7	35	3	11	G1
Titanium / Co-Cr	TTBE2025-035-N150S03(WIE)	ST4	2	2.5	1.25	6.3	15	35	3	11	G1
	TTBE3025-035-N150S03(WIE)		3	2.5	1.25	6.3	15	35	3	11	G1
	TTBE2020-035-N160S03(WIE)		2	2	1	5	16	35	3	11	G1
	TTBE3020-035-N160S03(WIE)		3	2	1	5	16	35	3	11	G1
	TTBE2010-035-N130S03(WIE)		2	1	0.5	2	13	35	3	11	G1
	TTBE3010-035-N130S03(WIE)		3	1	0.5	2	13	35	3	11	G1

* For details on ring types, see page 41.

YENA Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

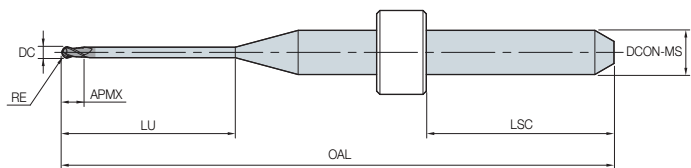
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-045-N160S04(YEN)	ND3000	2	2	1	5	16	45	4	15.5	R4
	TZBE2010-045-N160S04(YEN)		2	1	0.5	2	16	45	4	15.5	R4
	TZBE2006-045-N070S04(YEN)		2	0.6	0.3	1.2	7	45	4	15.5	R4
PMMA / PEEK / Wax	TWBE2020-045-N160S04(YEN)	Non-coated	2	2	1	5	16	45	4	15.5	R4
	TWBE1020-045-N160S04(YEN)		1	2	1	5	16	45	4	15.5	R4
	TWBE2010-045-N160S04(YEN)		2	1	0.5	2	16	45	4	15.5	R4
	TWBE1010-045-N160S04(YEN)		1	1	0.5	2	16	45	4	15.5	R4
	TWBE2006-045-N070S04(YEN)		2	0.6	0.3	1.2	7	45	4	15.5	R4
	TWBE1006-045-N070S04(YEN)		1	0.6	0.3	1.2	7	45	4	15.5	R4

* For details on ring types, see page 41.

YOURCERA Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium/Co-Cr	ST4	0~-0.015



(mm)

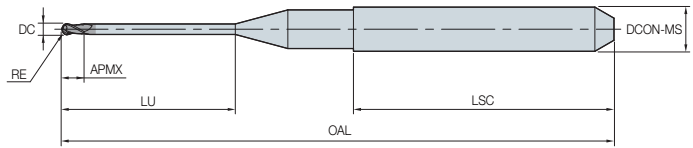
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N160S04(YOU)	ND3000	2	2	1	5	16	50	4	17	R4
	TZBE2010-050-N160S04(YOU)		2	1	0.5	2	16	50	4	17	R4
	TZBE2006-050-N080S04(YOU)		2	0.6	0.3	1.2	8	50	4	17	R4
PMMA / PEEK / Wax	TWBE2020-050-N160S04(YOU)	Non-coated	2	2	1	5	16	50	4	17	R4
	TWBE1020-050-N160S04(YOU)		1	2	1	5	16	50	4	17	R4
	TWBE2010-050-N160S04(YOU)		2	1	0.5	2	16	50	4	17	R4
	TWBE1010-050-N160S04(YOU)		1	1	0.5	2	16	50	4	17	R4
	TWBE2006-050-N080S04(YOU)		2	0.6	0.3	1.2	8	50	4	17	R4
	TWBE1006-050-N080S04(YOU)		1	0.6	0.3	1.2	8	50	4	17	R4

* For details on ring types, see page 41.

ZIRKONZAHN M1/M4 Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0--0.02
Titanium	PC2010	0--0.015
Co-Cr	PC2510	0--0.015



(mm)

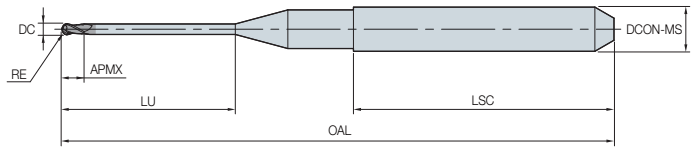
Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-050-N180S06(ZIR)	ND3000	2	2	1	5	18	50	6	23	-
	TZBE2010-050-N120S06(ZIR)		2	1	0.5	2	12	50	6	23	-
	TZBE2005-050-N090S06(ZIR)		2	0.5	0.25	1	9	50	6	23	-
PMMA / PEEK / Wax	TWBE2020-050-N170S06(ZIR)	Non-coated	2	2	1	5	17	50	6	23	-
	TWBE1020-050-N170S06(ZIR)		1	2	1	5	17	50	6	23	-
	TWBE2010-050-N120S06(ZIR)		2	1	0.5	2	12	50	6	23	-
	TWBE1010-050-N120S06(ZIR)		1	1	0.5	2	12	50	6	23	-
	TWBE2010-050-N060S06(ZIR)		2	1	0.5	2	6	50	6	23	-
	TWBE1010-050-N060S06(ZIR)		1	1	0.5	2	6	50	6	23	-
	TWBE2005-050-N090S06(ZIR)		2	0.5	0.25	1	9	50	6	23	-
	TWBE1005-050-N090S06(ZIR)		1	0.5	0.25	1	9	50	6	23	-
	TWFE2015-050-N170S06(ZIR)		2	1.5	-	3	17	50	6	23	-
	TWFE1015-050-N170S06(ZIR)		1	1.5	-	3	17	50	6	23	-
Titanium / Co-Cr	TTBE2030-050-N180S06(ZIR)	ST4	2	3	1.5	7.5	18	50	6	23	-
	TTBE3030-050-N180S06(ZIR)		3	3	1.5	7.5	18	50	6	23	-
	TTBE2030-050-N050S06(ZIR)		2	3	1.5	7.5	5	50	6	23	-
	TTBE3030-050-N050S06(ZIR)		3	3	1.5	7.5	5	50	6	23	-
	TTBE2020-050-N180S06(ZIR)		2	2	1	5	18	50	6	23	-
	TTBE3020-050-N180S06(ZIR)		3	2	1	5	18	50	6	23	-
	TTBE2020-050-N120S06(ZIR)		2	2	1	5	12	50	6	23	-
	TTBE3020-050-N120S06(ZIR)		3	2	1	5	12	50	6	23	-
	TTBE2020-050-N030S06(ZIR)		2	2	1	5	3	50	6	23	-
	TTBE3020-050-N030S06(ZIR)		3	2	1	5	3	50	6	23	-
	TTBE2010-050-N120S06(ZIR)		2	1	0.5	2	12	50	6	23	-
	TTBE3010-050-N120S06(ZIR)		3	1	0.5	2	12	50	6	23	-
	TTBE2010-050-N035S06(ZIR)		2	1	0.5	2	4	50	6	23	-
	TTBE3010-050-N035S06(ZIR)		3	1	0.5	2	4	50	6	23	-

* For details on ring types, see page 41.

ZIRKONZAHN M5 Type



Application	Grade	ØD Tolerance
Zirconia	ND3000	0~-0.02
Titanium	PC2010	0~-0.015
Co-Cr	PC2510	0~-0.015



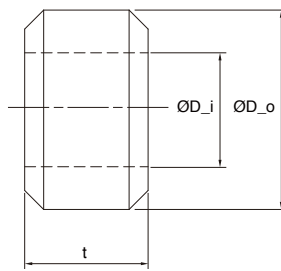
(mm)

Application	Designation	Grade	ZEFP	DC	RE	APMX	LU	OAL	DCON-MS	LSC	Ring
Zirconia	TZBE2020-057-N180S03(ZIR)	ND3000	2	2	1	5	18	57	3	30	-
	TZBE2010-057-N160S03(ZIR)		2	1	0.5	2	16	57	3	30	-
	TZBE2010-057-N120S03(ZIR)		2	1	0.5	2	12	57	3	30	-
	TZBE2005-057-N095S03(ZIR)		2	0.5	0.25	1	9.5	57	3	30	-
	TZBE2003-057-N060S03(ZIR)		2	0.3	0.15	0.6	6	57	3	30	-
PMMA / PEEK / Wax	TWBE2020-057-N170S03(ZIR)	Non-coated	2	2	1	5	17	57	3	30	-
	TWBE1020-057-N170S03(ZIR)		1	2	1	5	17	57	3	30	-
	TWBE2010-057-N160S03(ZIR)		2	1	0.5	2	16	57	3	30	-
	TWBE1010-057-N160S03(ZIR)		1	1	0.5	2	16	57	3	30	-
	TWBE2010-057-N065S03(ZIR)		2	1	0.5	2	6.5	57	3	30	-
	TWBE1010-057-N065S03(ZIR)		1	1	0.5	2	6.5	57	3	30	-
	TWBE2005-057-N095S03(ZIR)		2	0.5	0.25	1	9.5	57	3	30	-
	TWBE1005-057-N095S03(ZIR)		1	0.5	0.25	1	9.5	57	3	30	-
	TWFE2015-057-N175S03(ZIR)		2	1.5	-	3	18	57	3	30	-
	TWFE1015-057-N175S03(ZIR)		1	1.5	-	3	18	57	3	30	-

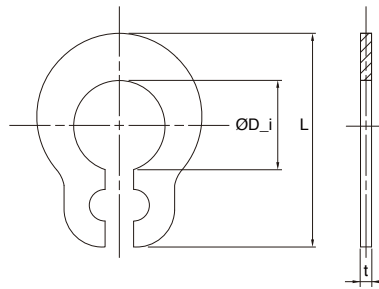
* For details on ring types, see page 41.

[Stop ring specification]

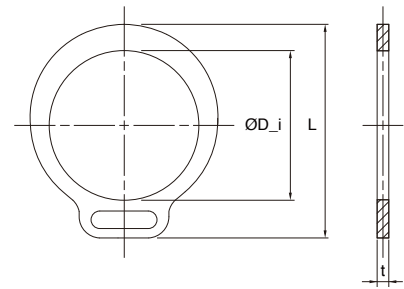
- Ring size and type vary depending on dental milling machines



< General type ring >



< G type ring >



< C type ring >

(mm)

Type	Code	Ring size			Shank size			Material
		ØD_i	ØD_o (L)	t	Ø3	Ø4	Ø6	
General type ring	R1	Ø3	Ø5.8	6.2	●			Steel
	R2	Ø3	Ø6	4.5	●			Brass
	R3	Ø3	Ø7.55	4.45	●			Acetal
	R4	Ø4	Ø7.7	5		●		Acetal
	R5	Ø4	Ø8	4		●		Brass/Steel
	R6	Ø6	Ø8	4			●	Brass
	R7	Ø6	Ø10.5	6.5			●	Acetal/Brass
G type ring	G1	6.3	Ø2.85	0.6	●			Steel
	G2	8.4	Ø3.8	0.8		●		Steel
C type ring	C1	Ø6	Ø2.5	0.4		●		Steel

* Stop ring can be made to order when specified sizes are send to an adjacent KORLOY sales office

* Stop rings can be colored as required

- **Steel:** pink, gold, black, silver

- **Acetal:** White, black, red, blue, yellow, green

[Label specification]

- Tools are categorized by label color according to application

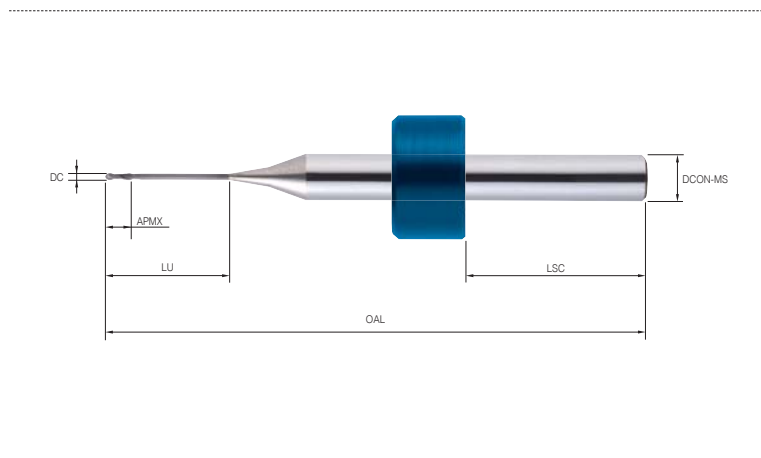
Application	Grade	Label
Zirconia	ND3000	
Titanium / Co-Cr	ST4	
PMMA / PEEK / Wax	Non-coated	
Glass ceramic	ETG	

[T Endmill custom order form]

- Stop rings and other tool resources can be made to order

[Data Sheet]

Type of machine	
Workpiece	
Dental material	
Cutting diameter (DC)	
Shank diameter (DCON-MS)	
Cutting length (APMX)	
Neck length (LU)	
Stop ring position (LSC)	
Overall length (OAL)	
Stop ring shape	



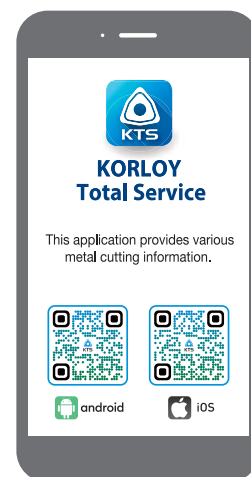
For the safe metalcutting

- Use safety supplies such as protective gloves to prevent possible injury while touching the edge of tools.
- Use safety glasses or safety cover to hedge possible dangers. Inappropriate usage or excessive cutting condition may lead tool's breakage or even the fragment's scattering.
- Clamp the workpiece tightly enough to prevent its movement while its machining.
- Properly manage the tool change phase because the inordinately used tool can be easily broken under the excessive cutting load or severe wear, and it may threat the operator's safety.
- Use safety cover because chips evacuated during cutting are hot and sharp and may cause burns and cuts. To remove chips safely, stop machining, put on protective gloves, and use a hook or other tools.
- Prepare for fire prevention measures as the use of the non-water soluble cutting oil may cause fire.
- Use safety cover and other safety supplies because the spare parts or the tools can be pulled out due to centrifugal force while high speed machining.



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