

Compass | Precision technique

Recommendations – Products and their use



Telescopic crowns

Precious and non-precious metal alloys and titanium

Tapered crowns

Precious and non-precious metal alloys, titanium and ceramics

Abutments

Titanium/Non-precious metals

Very fine milling and polishing

Precious and non-precious metal alloys and titanium

Channel/shoulder, channel/shoulder/pin and T-attachments

Precious and non-precious metal alloys

Shank types

We recommend tools with a shank diameter of 3.00 mm (ISO 123).

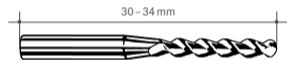
Compared to tools with a shank diameter of 2.35 mm, the chucking surface is larger, which provides:

- Greater chucking force
- Improved safety

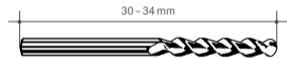
Increased precision of the chucks when clamping tools with a diameter of 3.00 mm:

- Improved radial runout accuracy

ISO 123 Short handpiece Ø 3.00 mm



ISO 103 Short handpiece Ø 2.35 mm



Features of the milling device

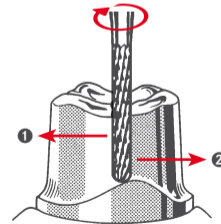
- Precision spindle
Maximum concentricity deviation 0.02 mm
- Speed range:
1.000 - 25.000 rpm
- Shank types:
103, 104, 123, 124

Auxiliaries

- High-efficiency milling oil 9758
 - guarantees optimum surfaces
 - protects the tools
- Wax
 - For ultra-fine milling
- Waxit
 - Prevents clogging
- Long-fibre cotton
 - For ultra-fine grinding and polishing
- Diamond paste 7 μm , 9301
 - For ultra-fine grinding

Milling direction

- ① + ② Milling direction of the tool
- ① Milling in rotational direction:
in clockwise direction
 - ② Milling in contra-rotational direction:
direction: anti-clockwise rotation



Material

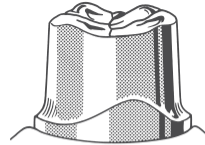
	Precious metal	Precious metal - reduced Non-precious metal	Titanium	Ceramic
Characteristics	<ul style="list-style-type: none"> • Easy to cut → Flow chips • Low resistance to penetration → Reduced material hardness 	<ul style="list-style-type: none"> • Hard to cut → discontinuous chips • High resistance to penetration → Increased material hardness 	<ul style="list-style-type: none"> • Harder to cut → Tends to clog up the instrument, material builds up on the blades • High resistance to penetration 	<ul style="list-style-type: none"> • Hard to cut • Very high resistance to penetration → hard, brittle, temperature sensitive
Results	<ul style="list-style-type: none"> • Very shiny, smooth surfaces ($R_z < 1 \mu\text{m}$) 	<ul style="list-style-type: none"> • Fine surfaces ($R_z 1 - 1,5 \mu\text{m}$) • Increased durability of the instruments thanks to speed reduction 	<ul style="list-style-type: none"> • Fine surfaces ($R_z 1 - 1,5 \mu\text{m}$) • Less accumulation of material on the blades thanks to the reduction of the speed 	<ul style="list-style-type: none"> • very shiny, smooth surfaces ($R_z < 1 \mu\text{m}$)

General information

Recommended tools/optimum speeds

☺_{opt.} = optimum speed/rpm

	Precious metal	Semi-precious metal	Non-precious metal/titanium	Zirconium oxide
	E	E	GE+XE	
Rough work	☺ _{opt.} 10.000	☺ _{opt.} 6.000	☺ _{opt.} 6.000	-
	F	S	S	M
Fine work	☺ _{opt.} 10.000	☺ _{opt.} 6.000	☺ _{opt.} 6.000	☺ _{opt.} 160.000
	F	S	S	F
Ultra-fine work	☺ _{opt.} 3.000	☺ _{opt.} 3.000	☺ _{opt.} 3.000	☺ _{opt.} 160.000
	Cutters	Cutters	Cutters	
Pre-polishing	-	☺ _{opt.} 6.000	☺ _{opt.} 6.000	-
				EF
Polishing	☺ _{opt.} 6.000	☺ _{opt.} 6.000	☺ _{opt.} 6.000	☺ _{opt.} 160.000
				UF
High-shine polishing	☺ _{opt.} 6.000	☺ _{opt.} 6.000	☺ _{opt.} 6.000	☺ _{opt.} 160.000
	Polishers	Polishers	Polishers	Galvanic diamond abrasives



1 Contouring



- Use in the laboratory turbine, in the milling device
- Supply water cooling
- Apply low contact pressure

Diamond abrasives, medium

- ZR373M.025, 0°
- ZR374M.025, 1°
- ZR986M.012, 0°
- ZR371M.025, 2°

🔄 opt. 160.000 rpm

2 Ultra-fine grinding



- Use in the laboratory turbine, in the milling device
- Supply water cooling
- Apply low contact pressure

Diamond abrasives, fine

- ZR373F.025, 0°
- ZR374F.025, 1°
- ZR986F.012, 0°
- ZR371F.025, 2°

🔄 opt. 160.000 rpm

Zirconium oxide



Primary crowns

made of zirconium oxide

3 Pre-polishing



- Use in the laboratory turbine, in the milling device
- Supply water cooling
- Apply low contact pressure

Diamond abrasive, extra-fine

- ZR373EF.025, 0° ○ ZR374EF.025, 1°
- ZR986EF.012, 0° ○ ZR371EF.025, 2°

↻_{opt.} 160.000 rpm

4 High-shine polishing



- Use in the laboratory turbine, in the milling device
- Supply water cooling
- Apply low contact pressure

Diamond abrasive, ultra-fine

- ZR373UF.025, 0° ○ ZR374UF.025, 1°
- ZR986UF.012, 0° ○ ZR371UF.025, 2°

↻_{opt.} 160.000 rpm

Handy hint:

For optimum results,
carry out all 4 steps!



Zirconium oxide



1 Milling of wax



- Lubricate cutter with Waxit
- Milling in rotational direction
- The surface achieved is very fine, so that the use of the wax scaler 266R can be omitted

H 364 RA.010/015/023
TC Wax cutter

opt. 3.000 rpm

Wax

2 Rough milling

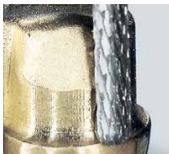


- Lubricate cutter with milling oil
- Milling in contra-rotational direction

H 364 RE.010/015/023
Coarse TC cutter for precious metal

opt. 10.000 rpm

Precious metal



Telescopic crowns

made of precious metal alloys

3 Fine milling



- Lubricate cutter with milling oil
- Milling in contra-rotational direction

○ H 364 RF.010/015/023
Fine TC cutter for precious metal

↻_{opt.} 10.000 rpm

4 Ultra-fine milling/polishing

- see page



Precious metal



1 Milling of wax



- Lubricate cutter with Waxit
- Milling in rotational direction
- The surface achieved is very fine, so that the use of the wax scaler 266 R can be omitted

H 364 RA.010/015/023

TC wax cutter

opt. 3.000 rpm

Wax

2 Rough milling



- Lubricate cutter with milling oil
- Milling in contra-rotational direction

● **H 364 RGE.010/015/023**

●● **H 364 RXE.010/015/023**

Coarse TC cutter for non-precious metal and titanium

opt. 6.000 rpm

Non-precious metal/titanium



Telescopic crowns

made of non-precious metal alloys/titanium

3 Fine milling



- Lubricate cutter with milling oil
- Milling in contra-rotational direction

H 364 R.010/015/023

Fine TC cutter for non-precious
and semi-precious metal and titanium

↻_{opt.} **6.000 rpm**

4 Ultra-fine milling/polishing

- see page



Non-precious metal/titanium



1 Milling of wax



- Lubricate cutter with Waxit
- Milling in rotational direction
- The surface achieved is very fine, so that the use of the wax scaler 355 can be omitted

H 356 RA, $1^{\circ}/2^{\circ}/4^{\circ}/6^{\circ}$
TC wax cutter

🔄_{opt.} 3.000 rpm

Wax

2 Rough milling

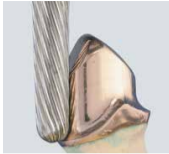


- Lubricate cutter with milling oil
- Milling in contra-rotational direction

H 356 RSE, $1^{\circ}/2^{\circ}/4^{\circ}/6^{\circ}$
Coarse TC cutter for precious metal

🔄_{opt.} 10.000 rpm

Precious metal



Tapered crowns

made of precious metal alloys

3 Fine milling



- Lubricate cutter with milling oil
- Milling in contra-rotational direction

○ H 356 RF, 1°/2°/4°/6°
Fine TC cutter for precious metal

↻_{opt.} 10.000 rpm

4 Ultra-fine milling/polishing

- see page



Precious metal



2 Rough milling

- Lubricate cutter with milling oil
- Milling in contra-rotational direction



● H 356 RGE, 2°/4°/6°

●● H 356 RXE, 1°/2°

Coarse TC cutter for non-precious metal, titanium

🔄 opt. 6.000 rpm

Non-precious metal/titanium

1 Milling of wax

- Lubricate cutter with Waxit
- Milling in rotational direction
- The surface achieved is very fine, so that the use of the wax scaler 355 can be omitted



H 356 RA, 1°/2°/4°/6°

TC wax cutter

🔄 opt. 3.000 rpm

Wax



Tapered crowns

made of non-precious metal alloys/titanium

3 Fine milling



- Lubricate cutter with milling oil
- Milling in contra-rotational direction

H 356 RS, 1°/2°/4°/6°

Fine TC cutter for non-precious and semi-precious metal and titanium

↻_{opt.} **6.000 rpm**

4 Ultra-fine milling/polishing

- see page



Non-precious metal/titanium



1 Coarse cutters



- Use in the micro-motor, in the milling device
- Lubricate cutter with milling oil
- Soak cotton wool in milling oil

●● H364KRXE, 0°
●● H347RXE, 2°

2 Fine cutter



- Use in the micro-motor, in the milling device
- Lubricate cutter with milling oil
- Soak cotton wool in milling oil

H364KRS, 0°
H347RS, 2°

⌚_{opt.} 6.000 rpm

⌚_{opt.} 6.000 rpm

Titanium/non-precious metal



Implant abutments

made of titanium/non-precious metal alloys

1 Coarse cutters



- Use in the laboratory turbine with water cooling
- Milling in contra-rotational direction
- Equally suitable for primary crowns, bars etc.

- H373Q, 0°
- H371Q, 2°
- H376Q, 4°

↻ opt. 160.000 rpm

2 Fine cutter



- Use in the laboratory turbine with water cooling
- Milling in contra-rotational direction
- Equally suitable for primary crowns, bars etc.

- H373F, 0°
- H371F, 2°
- H376F, 4°

↻ opt. 160.000 rpm

Handy hint:

For optimum results
use with spray cooling



Titanium/non-precious metal

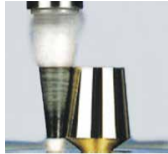


1 Very fine milling

Work with last bur used

- Fill chip spaces with wax
- Lubricate cutter with milling oil
- Milling in contra-rotational direction

☺ opt. 3.000 rpm

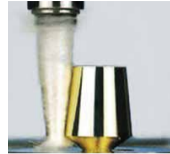


2 Polishing

Work with last bur used

- Cover bur with cotton wool
- Apply diamond paste (7 μ m)
- Soak cotton wool in milling oil

☺ opt. 3.000 rpm



3 High-shine polishing

Work with last bur used

- Cover bur with fresh cotton wool
- Soak cotton wool in milling oil

☺ opt. 3.000 rpm

Precious metal/non-precious metal/titanium



Very fine milling/polishing

with cotton wool or special polishers for use in the milling device

1 Pre-polishing

To protect the polishers:

- Do not start polishing until the surface is very finely ground
- Work without pressure
- Polish without irrigation



9440 C.060, 0°

opt. 6.000 rpm

2 Polishing

To protect the polishers:

- Do not start polishing until the surface is very finely ground
- Work without pressure
- Polish without irrigation



9440 M.060, 0°

opt. 6.000 rpm

3 High-shine polishing

To protect the polishers:

- Do not start polishing until the surface is very finely ground
- Work without pressure
- Polish without irrigation

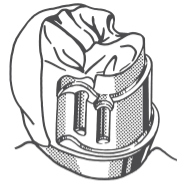


9440 F.060, 0°

opt. 6.000 rpm



Precious metal/non-precious metal/titanium



1 Milling of the channels

- Feed (A) with feed slide (0.05 mm at max.)
- Axial feed (B) with milling spindle



H 21 XL.007/010/012
TC channel cutter

opt. 3.000 rpm

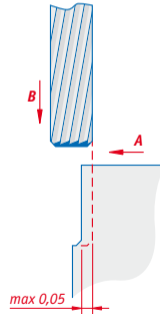
2 Milling of the shoulder

- Lubricate cutter with milling oil



H 294.029
TC shoulder cutter

opt. 3.000 rpm



Precious metal



Channel/shoulder and channel/shoulder/pin attachments

made of precious metal alloys

3 Punch marking

- Axial feed with milling spindle
- Punch marking to centre the twist drill



H 370.009
TC Centring bur

↻_{opt.} 5.000 rpm

4 Drilling

- Lubricate drill with milling oil
- Drill with low pressure
- Remove chips frequently (lift drill)



H 206.007/010/012
TC spiral drill

↻_{opt.} 10.000 rpm

5 Fine work

of the bore hole

- Lubricate drill with milling oil
- Drill with low pressure
- Remove chips frequently (lift drill)



H 210.007/010/012
TC tube bur

↻_{opt.} 10.000 rpm

Friction post bore





1 Punch marking

- Axial feed with milling spindle
- Punch marking to centre the twist drill



H 370.009
TC centring bur

🔄_{opt.} 5.000 rpm

2 Drilling

- Lubricate drill with milling oil
- Drill with low pressure
- Remove chips frequently (lift drill)
- Axial feed with milling spindle



H 206.010
TC spiral drill

🔄_{opt.} 6.000 rpm

3 Adjusting the shoulder

- Lubricate drill with milling oil
- Axial feed with milling spindle



H 294.029
TC shoulder cutter

🔄_{opt.} 3.000 rpm

3 Milling of the T-groove

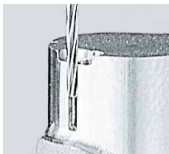
- Feed (A) with feed slide (0.05 mm at max.)
- Axial feed (B) with milling spindle



H 33XLQ.009
TC groove cutter

🔄_{opt.} 3.000 rpm

Non-precious metal alloy



"T" attachment

made of non-precious metal alloys

4 Fine milling

of the T-groove

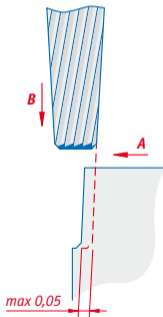
- Feed (A) with feed slide (0.05 mm at max.)
- Axial feed (B) with milling spindle
- Lubricate the drill with milling oil
- Fill chip spaces with wax



H 33XLQ.009/012/014/017

TC groove cutter

↻_{opt.} 2.000 rpm



5 Milling

of the passage

- Feed (A) with feed slide (0.05 mm at max.)
- Axial feed (B) with milling spindle



H 33XLQ.009

TC groove cutter

↻_{opt.} 3.000 rpm

Non-precious metal alloy



Milling block

for clamping laboratory implants
and retention pins

- Two-piece construction, suitable for cylindrical and slightly tapered laboratory implants (clamping range: 1.0 - 6.5 mm)
- For use on a model table



150.555

German utility model DE 20 2008 006 553



Accessories



Dressing block

for polishers

1 Dressing polishers



150.461M

- Dressing of the radius on the upper side of the block
- Dressing the polisher to the desired angle at the appropriate diamond coated, inclined surface of the block
- Perform rotary movements in order to avoid scratches on the polisher

2 Smoothing polishers



150.461F

- Smoothing of the radius
- Smoothing of the circumferential surface of the polisher in order to prevent the transmission of scratches onto the workpiece

Attention: Very slim polishers should only be dressed on block 150.461F!

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