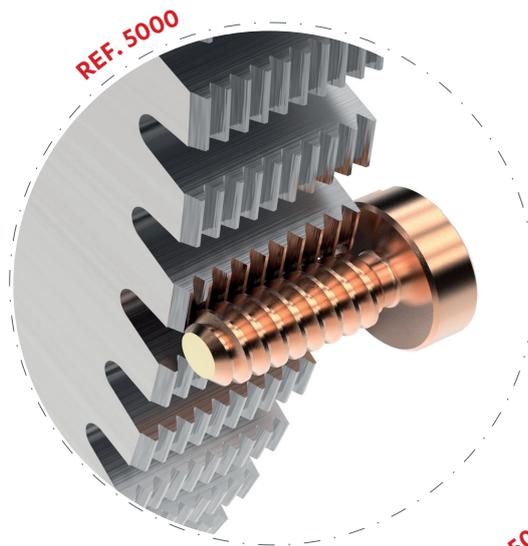


THREAD POLYGONING CUTTER



With traditional machining, the production of micro-screws can be challenging and can represent a considerable production time. With the **5000 series** polygon milling cutters, standard or special profiles can be generated very quickly and in very high quality.

It will only take a few seconds to obtain a perfect thread. The innovations of Louis Bélet SA allow, among other things, to produce very fine, longer threads or by drastically reducing the vibrations and thus the facets induced by them.

The **5000 series** polygon milling cutters are ground on our profiling machines designed and assembled by our teams. They enable us to produce perfect profiles while maintaining flexibility in terms of the size of the tool or the profile to be produced.

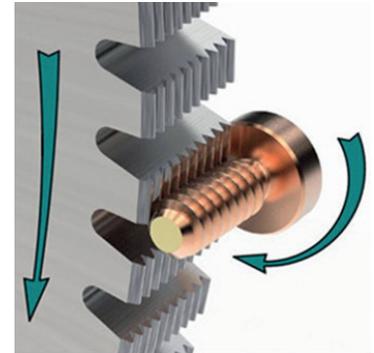
PRINCIPLE

Polygon turning requires a synchronization of the spindles. Often, a dedicated tool holder for swiss machines is required.

The spindle of the 5000 polygon cutter and the workpiece must be driven at the same speed.

This means that **N_{mill} = N_{piece}**.

The thread is produced by driving into the material. No lateral movement is necessary and the screw is produced in a few seconds. The rotational speeds vary depending on the material to be machined.



QUALITY OF SURFACE FINISH

«The result obtained with your tools is similar or even better than traditional threading by turning! »

Here is a testimonial from a customer who uses our tools which makes us particularly proud of our achievements.

Indeed, the surface finish is often the obstacle that keeps customers from using this technology.

The attention paid to the production of the **5000 milling cutters** as well as the singularity of our grinders make our technology meet the needs of the most demanding companies.

REVERSO

Innovation is in Louis Bélet's DNA. In order to maximize the longevity of our 5000 tools, a grinding principle has been developed by our R&D teams in order to double the life of this tool.

Once the critical wear of a face has been reached, you simply turn the tool over and continue your operation. No more need for regrinding or worrying about the direction of rotation of the tool.

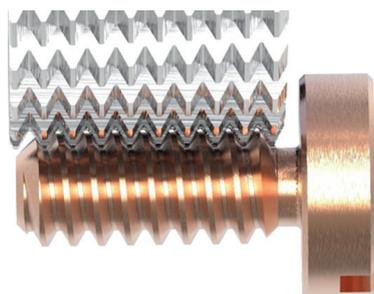
The **5000 Reverso series** is completely neutral in this respect!



CUSTOM MADE

The features of this **5000 polygon tool** can be customized to your needs. Initially imagined for the watchmaking field, these tools quickly became the reference for the realization of screws in large volumes in various fields such as medical or precision connectors.

Pitches between 50.30 and 51.4 mm for tool diameters of 40 or 45 mm are available as standard. Profile and pitch dimensions or dedicated tool diameter are as many possibilities as we can offer for these tools. Do not hesitate to challenge us!



SPECIAL

Whether it is for the dental, medical or any other market, the realization of special, conical or **custom threads** is subject to arduous programming, high machining times and complex production monitoring.

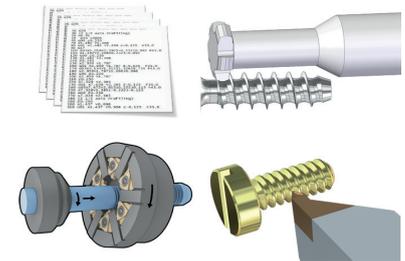
The realization of threads by polygon machining is known in several industries, including watchmaking. The idea was therefore to use this manufacturing process and apply it to thread geometries that are as exotic as they are widespread.

Based on the complex shape of a dental implant, the development of this tool required all the know-how and knowledge of all the sectors of Louis Bélet SA, from the technical department to production!

CHALLENGE...

There are several technologies available to produce this **special type of thread**. Form milling, chasing inserts or thread whirling solutions are all proven production methods. While these techniques are effective for simple cylindrical threads, programming can become long and tedious for more complex profiles, such as threads with tapered entry or with 2 intersecting shapes.

Not to mention the machining time for this part which can take several minutes and thus represent a time-consuming step in the production of the part.



THEORY IS FINE, BUT...

The simulation of these parts encouraged us to continue the development. However, a major unknown was the possibility of producing these tools. Indeed, the complexity of the suggested thread and its precision required all the know-how and experience of our development and production teams.

Our special machines, designed in-house, were used to produce these **special thread polygon** cutters.

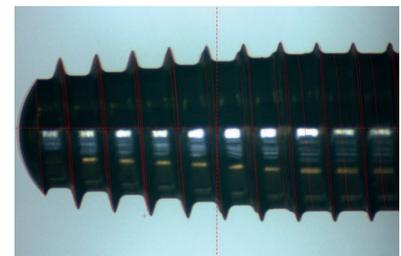
With the use of this new tool, the complicated programming of the machine is as if integrated into the milling cutter, thus saving a lot of set-up time.



MEASUREMENTS

Production of the first parts was carried out on two types of machines: Swiss type machine and Machining center

In both cases, the production of the **special thread** comprising a conical part and a straight part with two different thread shapes was achieved in less than 10 seconds in titanium! As can be seen in the picture below, the desired profile (in red) perfectly matches the geometry of the part! A new challenge taken up by the Louis Bélet teams!



NEW OPPORTUNITIES

In addition to **threads with special geometries**, this polygon milling technique allows us to open new possibilities, such as the production of conical, variable pitch threads or eccentric parts!

All this with the same advantages mentioned before, namely : Easiness of adjustment and programming, rapid machining in less than 10 seconds, freedom of thread geometry, stability of the machining process

Simply contact us for any custom shape you should have!

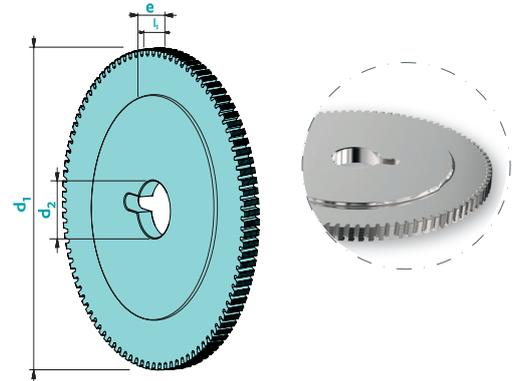


Thread polygoning cutter

5000

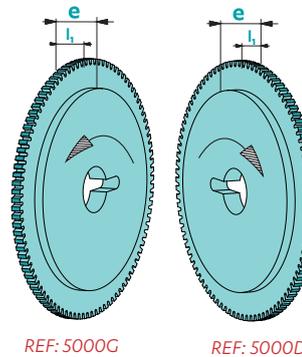
Material	Vc uncoated	Vc coated	Uncoated	Coated	Rec. Coating
Steel < 700 N/mm ²	100	-	■	-	-
Steel > 700 N/mm ²	80	-	■	-	-
Stainless steel	70	-	■	-	-
Cast iron	90	-	■	-	-
Copper	170	-	■	-	-
Brass - Bronze	160	-	■	-	-
Aluminium	200	-	■	-	-
Gold - Silver	160	-	■	-	-
Platinum - Palladium	-	-	-	-	-
Superalloys	50	-	■	-	-
Titanium	60	-	■	-	-

not adapted - adapted ■ highly adapted ■



Tolerances e: +/-0.01
d₂: H3

Art. n°	Ø nominal	Pitch	d ₁	e	l ₁	d ₂	Z
REF S0.30d45	S0.30	0.080	45	3	0.80	8	96
REF S0.35d45	S0.35	0.090	45	3	0.90	8	96
REF S0.40d45	S0.40	0.100	45	3	1.00	8	96
REF S0.50d45	S0.50	0.125	45	3	1.25	8	96
REF S0.60d45	S0.60	0.150	45	3	1.50	8	96
REF S0.70d45	S0.70	0.175	45	3	1.75	8	96
REF S0.80d45	S0.80	0.200	45	3	2.00	8	96
REF S0.90d45	S0.90	0.225	45	3	2.25	8	96
REF S1.00d45	S1.00	0.250	45	3	2.50	8	96
REF S1.20d45	S1.20	0.250	45	3	2.50	8	96
REF S1.40d45	S1.40	0.300	45	3	3.00	8	96
<hr/>							
REF S0.30d40	S0.30	0.080	40	5	0.80	10	84
REF S0.35d40	S0.35	0.090	40	5	0.90	10	84
REF S0.40d40	S0.40	0.100	40	5	1.00	10	84
REF S0.50d40	S0.50	0.125	40	5	1.25	10	84
REF S0.60d40	S0.60	0.150	40	5	1.50	10	84
REF S0.70d40	S0.70	0.175	40	5	1.75	10	84
REF S0.80d40	S0.80	0.200	40	5	2.00	10	84
REF S0.90d40	S0.90	0.225	40	5	2.25	10	84
REF S1.00d40	S1.00	0.250	40	5	2.50	10	84
REF S1.20d40	S1.20	0.250	40	5	2.50	10	84
REF S1.40d40	S1.40	0.300	40	5	3.00	10	84



Available uncoated or coated

■ Z84 Z96

λ 5° γ 5°

CARB