Expertise in **threading solutions**

boccassini
utensili per filettare

Boccassini S.r.l. has been a leader in the manufacturing of high-quality threading tools for over 100 years.

Based in Italy, the company specializes in both standard and fully customized threading tools tailored to meet the specific needs of various industries.

With a century of experience, Boccassini continues to innovate, delivering precision, durability, and flexibility in its solutions.

Our commitment to quality and customized craftsmanship has made us a trusted partner for businesses around the world.

Our strengths

- 5000+ items ready on stock
- Short delivery times for Make-to-order and Engineering-to-order products
- High degree of customization based on the customer's needs
- No minimum order quantity
- Present in 50+ countries

Main industries served

- Automotive
- Aereospace
- Manufcaturing
- Construction
- Oil&Gas
- Medical devices
- Electronics
- Defense and Military
- Shipbuilding and Marine industry
- Energy and power generation
- Precision engineering
- Mining industry

Our standard production

The standard production of machine taps and dies includes all major threading geometries.

MACHINE TAPS

- **Straight Fluted geometry** with different types of chamfer: C – D – E – F
- **Spiral Point geometry** form «B» for through hole
- **Spiral Flute** 15° RSP for blind hole
- **Spiral Fluted** 35° RSP for blind hole

(These geometries are associated with tap dimensions that comply with DIN 371 and DIN 376 standards)

(These geometries can also be applied to Extra-long shafts)

- **Trapezium taps**
- **Form taps**
- **Drill taps**
- **Taps for wire thread inserts**
- **Nut taps**
- **Hand-taps sets**

DIES

- Round dies
- Bell dies
- Dies with mounting holes for automatic machines
- Dies with adjustment cuts for size regulation

THREAD MILLING CUTTERS

Thread milling cutters used for:

- Gildemeister
- Traub
- Index
- Giorgi
- Wickmann

Types of steel used in tool production

Machine Taps

- HSS
- HSS-E (Co 5%)
- HSS-E (Co 8%)
- HSSCo-PM
- Carbide

Dies

- HSS
- HSS-E (Co 5%)
- HSSCo-PM

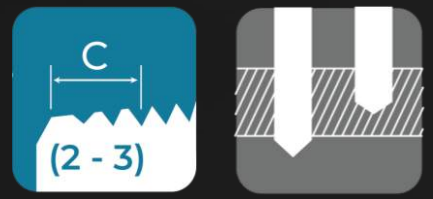
Thread milling cutters

- HSS
- HSS-E (Co 5%)

Types of threads used in standard geometries

- Coarse metric thread (from M1 up to M64)
- Fine metric thread (from Ø1 up to Ø140)
- American thread: UN – UNC – UNF – UNS – UNEF

  (These threads also include a radius profile in geometry 'J')
- British Standard threads: BSF – BSW
- GAS – RP – RC threads
- NPT – NPTF – NPSM threads
- PG thread
- Trapezium and ACME threads
- **Helicoil taps: EG Metric – EG American**



Applications of different Geometries

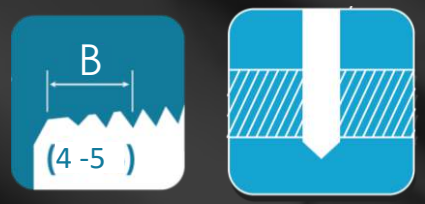
STRAIGHT FLUTED FORM «C» (2-3 THREADS)

HSS-E

- Suitable for materials with a tensile strength ranging from 200 to 1000 N/mm² or a hardness of up to HRC 30.
- Designed for materials with both long and short chips.
- Well-suited to both blind and through holes (maximum hole depth: 1.5xD).
- This thread length is the most commonly available option for our standard taps.

HSSCo-PM

- Suitable for materials with a tensile strength ranging from 200 to 1300 N/mm² or hardness of up to HRC 42.
- Designed for materials with both long and short chips.
- Well-suited to both blind and through holes (maximum hole depth: 1.5xD).



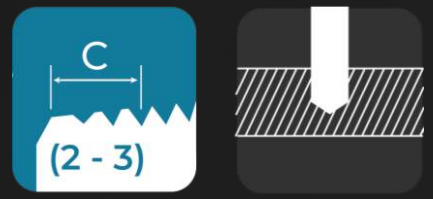
Spiral Point «B»
(4-5 threads)

HSS-E

- Suitable for materials with a tensile strength ranging from 200 to 800 N/mm² or a hardness of up to HRC 15.
- Designed for materials with long chips.
- For through holes (maximum hole depth: ≤3xD).

HSSCo-PM

- Suitable for materials with a tensile strength ranging from 200 to 1300 N/mm² or a hardness of up to HRC 42.
- Designed for materials with both long and short chips.
- For through holes (maximum hole depth: 3xD).



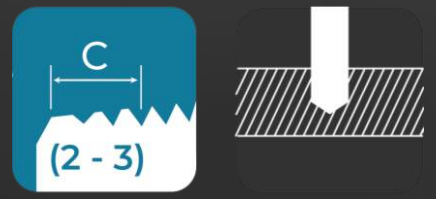
Spiral form 15° RSP
(2-3 threads)

HSS-E

- Suitable for materials with a tensile strength ranging from 200 to 1000 N/mm² or a hardness of up to HRC 30.
- Designed for materials with long chips.
- For blind holes (maximum hole depth: ≤1.5xD).

HSSCo-PM

- Suitable for materials with a tensile strength ranging from 500 to 1300 N/mm² or a hardness of up to HRC 42.
- Designed for materials with long chips.
- For blind holes (maximum hole depth: 2xD).



Spiral form 35° RSP
(2-3 threads)

HSS-E

- Suitable for materials with a tensile strength ranging from 200 to 800 N/mm² or a hardness of up to HRC 25.
- Designed for materials with long chips.
- For blind holes (maximum hole depth: ≤3xD)

HSSCo-PM

- Suitable for materials with a tensile strength ranging from 500 to 1300 N/mm² or a hardness of up to HRC 42.
- Designed for materials with long chips.
- For blind holes (maximum hole depth: 2xD).

Tr

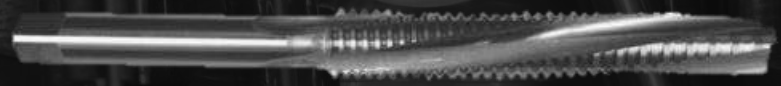
Trapezium Taps

STRAIGHT FLUTED TRAPEZIUM TAPS

- For through-hole
- Designed for short-chip material such as: brass, cast iron.
- Threading depth: (≤2xD)

SPIRAL FLUTED TRAPEZIUM TAPS WITH INTERRUPTED THREAD

- For through-hole
- Designed for long-chip material such as soft steels, aluminum, bronze, plastic.
- Threading depth: (≤2xD)



A wide range of products

EXTRA-LONG SHAFTS	FORM TAP	DRILL TAPS	WIRE THREAD INSERTS TAPS
			
SL	FORM	DRILL	EG

Our «special» production

Dedicated to specific needs

What do we mean with «Special tools»?

Specific profiles and pitches compliant to existing norms

(Make to order)

Ready-on-stock specific tolerances of standard threads

(Make to stock)

SPECIAL TOOLS

Custom-made products
(Engineering to order)

Ready-on-stock special tolerances of standard threads

Special profiles and tolerances on several sizes such as:

- Metric thread : 6G – 6E – 7H - 8G – 6HX – 6GX etc. and dies equivalents

Oversizes from +0,05 up to +0,50

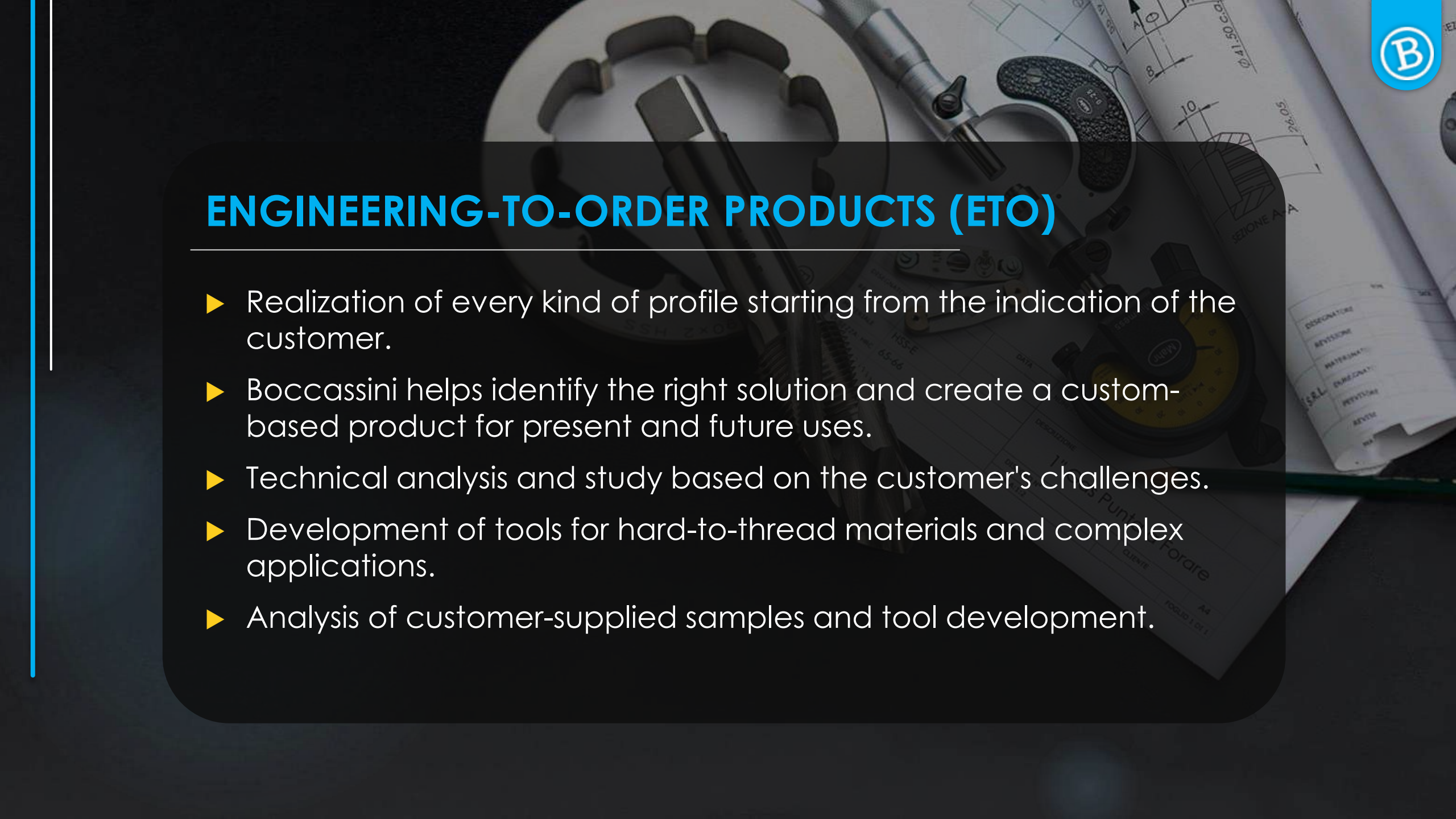
- American thread: 1B – 2B – 3B – 2BX – 3BX and dies equivalents
- Gas thread: Oversizes from +0,05 up to +0,30
- Interrupted thread profiles on most of the geometries

Make-to-Order products (MTO)

Special profiles compliant to existing norms

- Round Profile according to DIN 405 – DIN 20400 – Rd
- Asymetric profile: SGF – SGS
- Diwidag profile
- Edison profile
- Spiralock profile
- A 705 combinate profile

- Every possible combination of diameter and pitch for Metric and American threads up to 120mm/4’
- Custom tolerances up to +50
- Available in 10 working days or less



ENGINEERING-TO-ORDER PRODUCTS (ETO)

- Realization of every kind of profile starting from the indication of the customer.
- Boccassini helps identify the right solution and create a custom-based product for present and future uses.
- Technical analysis and study based on the customer's challenges.
- Development of tools for hard-to-thread materials and complex applications.
- Analysis of customer-supplied samples and tool development.

Analysis and technical study according to the customer's needs

Process

The customer informs Boccassini about the problem, which can be communicated in various ways:

- A technical drawing
- A sample
- A phone call
- A direct visit to the customer's location by our techinician

PROBLEM ANALYSIS

- Selection of threading geometry and tool dimensions based on the provided information.
- Selection of tool material and possible coatings.
- Initial drawing to be sent to the customer.
- Approval of the drawing.
- Formulation of an offer in terms of price and delivery time.
- Customer's order confirmation.
- Creation of a technical sheet and initiation of production.
- Creation of an ad-hoc reference code to guarantee consistent replication for future orders.

-Case Study-

Special set of long taps with special pilot

Customer's request

Dear Ms. Liliana,

With regards to your offer we would like to offer the bellow-mentioned set of taps:

SET OF HAND TAPS (SET OF 4 TAPS)
M6 6 sets
L = 200mm, No.1 with cylindrical guide section R5x5mm, l4 = 60mm
Marking: EZE 374/1, EZE374/2, EZE374/3, EZE374/4 every set
Drawing: Sd6019532

SET OF HAND TAPS (SET OF 4 TAPS)
M10 6 sets
L = 270mm, No.1 with cylindrical guide section R8,4x8mm, l4 = 60mm
Marking: EZE 375/1, EZE375/2, EZE375/3, EZE375/4 every set
Drawing: Sd6019533

SET OF HAND TAPS (SET OF 4 TAPS)
M6 4 sets
L = 175mm, No.1 with cylindrical guide section R5x5mm, l4 = 25mm
Marking: EZE 374/1, EZE374/2, EZE374/3, EZE374/4 every set
Drawing: Sd6017925

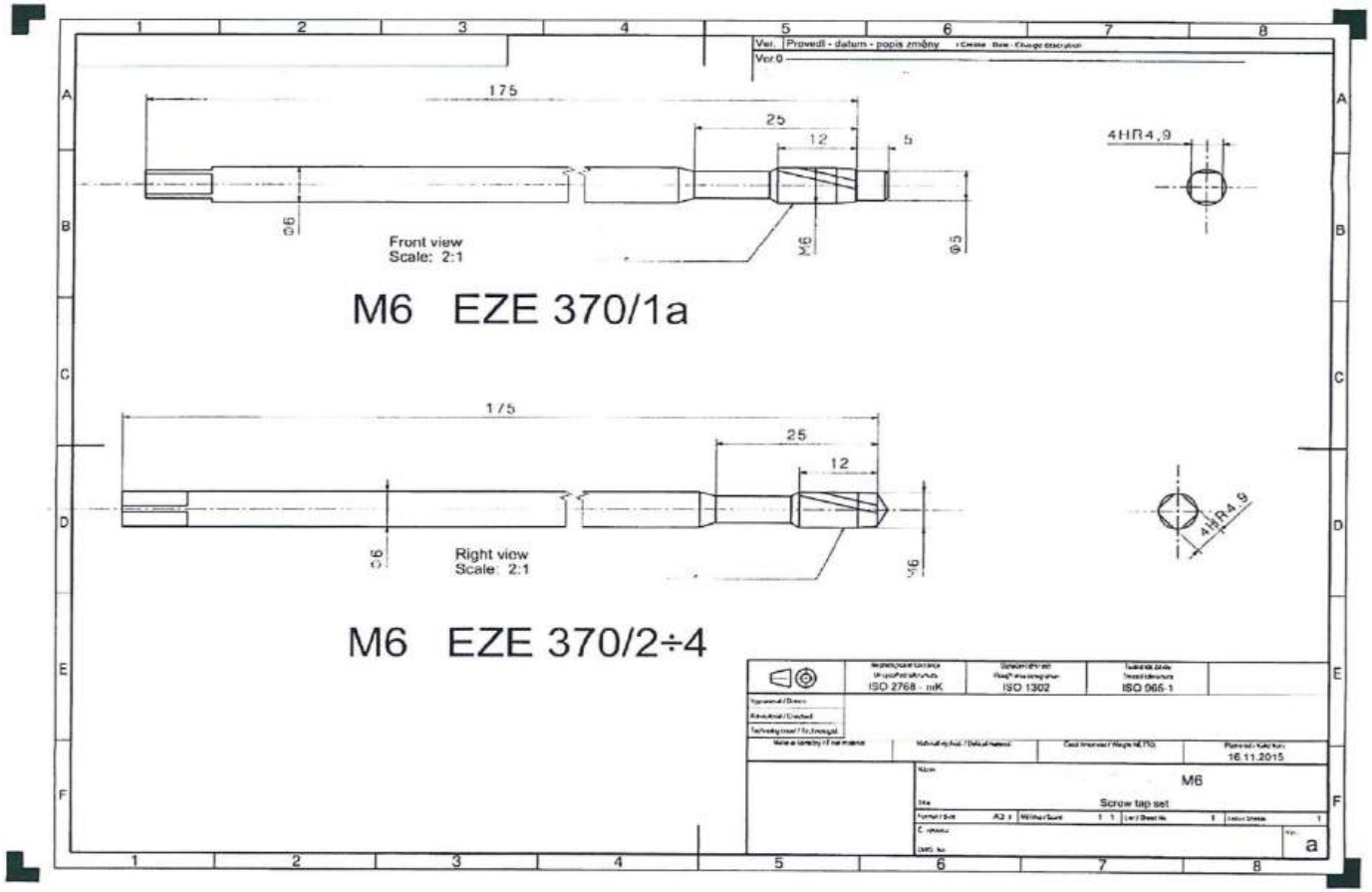
Requested time of delivery: 10/06/2024

Best regards,

-Case Study-

Special set of long taps with special pilot

Drawing sent by the customer



-Case Study-

Special set of long taps with special pilot

Once we received the drawing of the taps, this particular production required specific complex techniques due to:

- Extremely long tap length for a small thread diameter.
- A pilot that needed to be excluded from the manufacturing process.
- Short delivery time.

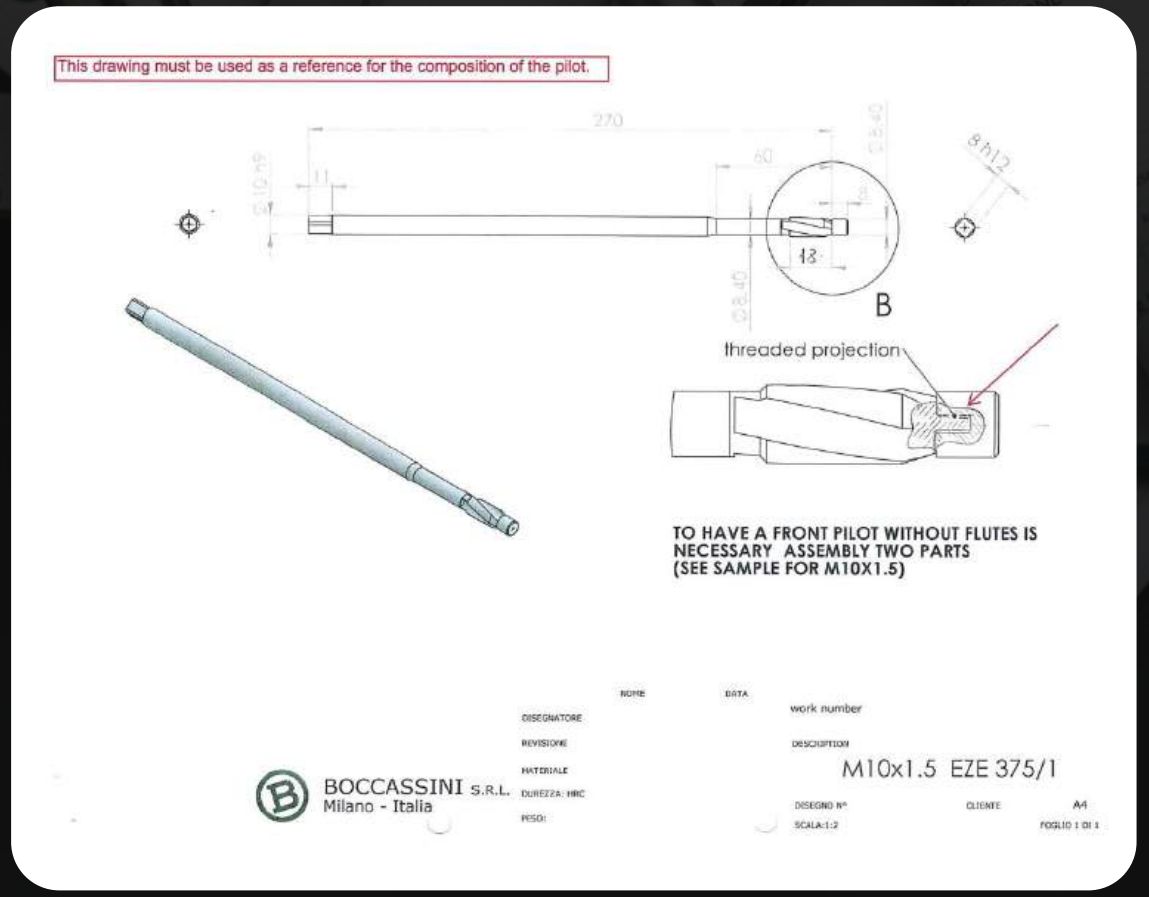
-Case Study-

Special set of long taps with special pilot

BOCCASSINI'S PROPOSED SOLUTION

"We have applied several modifications, as shown in the attached drawing. The key changes are as follows:

To meet the tight deadline of 15 working days, we used available blanks, modified the pilot, and implemented a front-threaded reduction. The tempered pilots, with internal threads, were precisely mounted onto the tap. Additionally, a special adhesive was applied to ensure optimal performance."



Our new product lines

Our new product lines

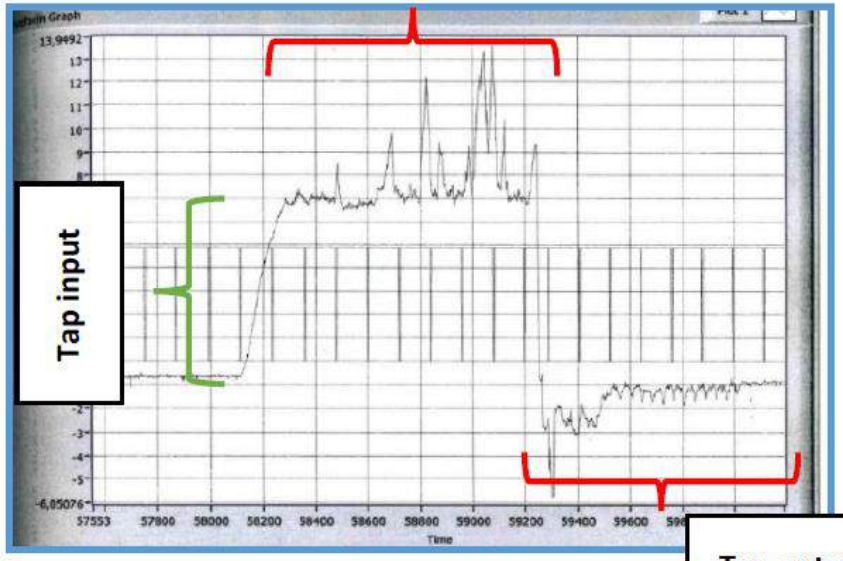
The High-Performance solution was developed as part of a study conducted in collaboration with the Politecnico di Milano. This advancement was necessary due to the rapidly growing use of special alloys, particularly in the aerospace, medical, and automotive sectors.

We recently developed other 3 lines of products with specific applications for Nichel and Titanium alloys

- One of the initial steps in developing this tool was analyzing the forces involved during the threading of hard-to-machine materials.
- Following the initial study and prototype development, we conducted specific machining tests, comparing our results with those of equivalent products manufactured by Boccassini's main competitors.

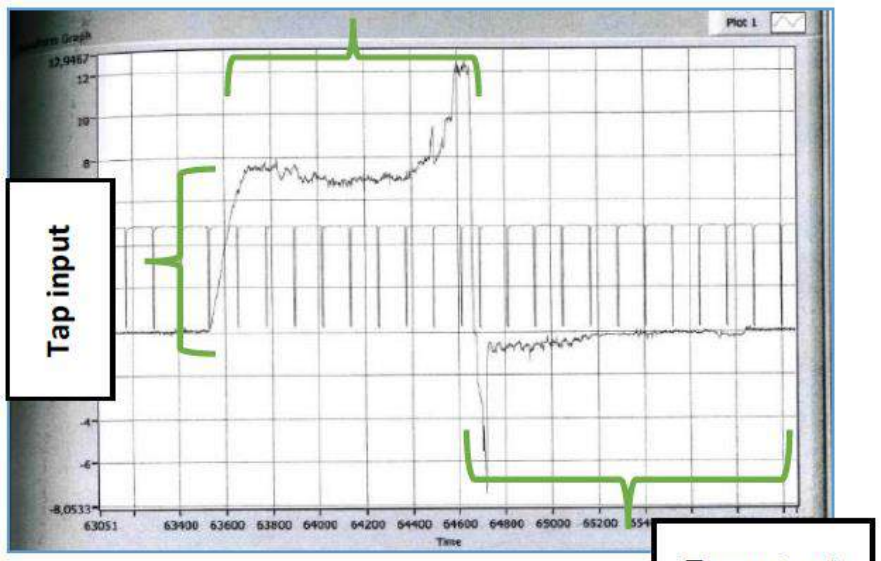
HP Taps

Torque Index - Standard Tap VS HP Tap



Graph. 1

Graph 1 shows a curve of a tool before our engineering. The aspect of the curve is characterized by a quite strong discontinuity in the tendency.



Graph. 2

Graph 2 shows a graph with correct parameters after our treatment. You will notice the regular tendency of the curve.

HP Taps

These are universal taps with a standard tolerance class, featuring an 'X' coefficient. All HP taps are made from Powder Metal Steel. While these taps are versatile, they are primarily designed for stainless steels and high-alloy steels with tensile strengths up to 1300-1400 N/mm².

Examples of stainless steels include:

- Martensitic 400 series, such as X20 Cr or X40 Cr (the only stainless steel that can be thermally tempered)
- Ferritic, chromium stainless steel (typically used for low-quality cutlery and sinks)
- Austenitic, including the 300 series like X5 Cr and X8 C

HP Taps

We have developed two dedicated geometries for chips' removal

1) **Spiral Point «B»** geometry for though hole up to 3xD

- Neutral or ZHL/TiN coated
- Possibility of adding inner cooling (axial and radial) IKR

2) **Spiral Flute** (45° RSP) geometry with particularly twisted flute for blind holes up to 3xD

- Neutral or ZHL/TiN coated
- Possibility of adding inner cooling (axial) IK

HP Taps

We also have dedicated one geometry for deformation

Forming Tap – Number and geometries of the cuts dedicated to all the different sizes

- Neutral or TiN coated
- Possibility of adding inner cooling (axial) IK or radial IKR
- Possibility of adding outer lubrication channels

NI Taps (Nichel and Nichel alloys taps)

- We have developed a tap with a 25° RSP and specialized cutting geometries, ideal for blind holes in high-strength nickel/chrome alloys and tempered alloy steels with tensile strengths up to 1300 N/mm²

  Usage: up to 2xD

- The spiral point 'B' tap can be produced for through holes as a Make-to-Orrder

TI Taps

- This tap with a 15° RSP is used for pure titanium and titanium alloys.
- We have selected a unique geometry that is suitable for both through and blind holes.
- This type of tap is also suitable for tempered alloy steels up to 1300 N/mm² and nickel/chrome alloys

T/N Taps (Titanium-Nichel Alloys)

- These taps can be used for titanium-nickel alloys, which can return to their original shape after stress. This type of tap is also suitable for tempered alloy steels up to 1300 N/mm² and nickel/chrome alloys.
- Two geometries available:
  - Spiral Point «B» for through holes
  - 45° RSP for blind holes

Surface treatments and Coatings

We can enhance the tool's performance using different types of coatings:

- ***VAP***: (**Vaporization Treatment**)- Reduces friction between the tool and the workpiece, improves tap sliding, and prevents chip adhesion.
- ***NIT***: (**Nitriding**) - Increases surface hardness, making the nitrided taps suitable for abrasive materials like cast iron and aluminum alloys with a high silicon content.
- ***TiN***: (**Titanium nitride coating**)- Recommended for processing abrasive materials or materials prone to cold welding. This coating increases threading speed and enhances tool durability.
- ***TiCN***: (**Titanium Carbonitrides Coating**) - Offers greater hardness compared to TiN, allowing for higher threading speeds."

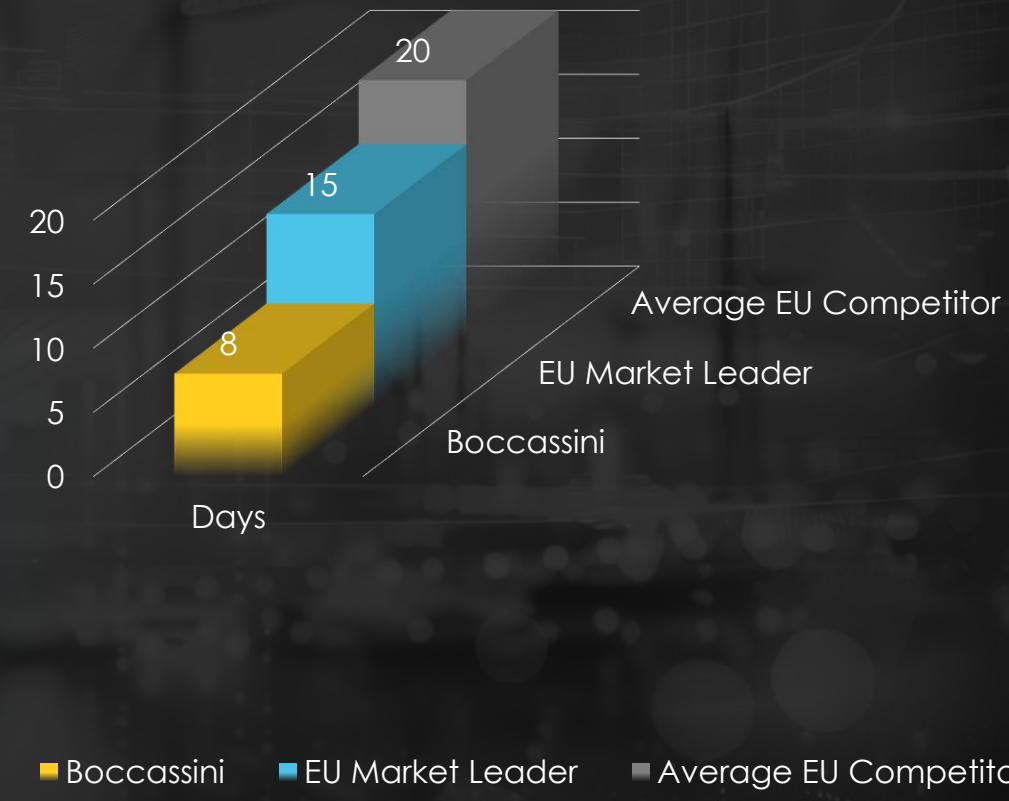
Surface treatments and Coatings

- ***TiAlN* (Titanium Aluminum Nitride Coating)**: Used for machining abrasive materials like cast iron, aluminum alloys with silicon, reinforced plastics, or for high-temperature applications where cooling is insufficient.
- ***CrN* (Chromium Nitride Coating)**: Used as a replacement for chromium plating, suitable for machining copper and its alloys, titanium, and aluminum alloys without silicon.
- ***ZHL* (High Hardness and Temperature Resistance Coating)**: Offers high hardness, excellent temperatureresistance, and superior sliding properties.

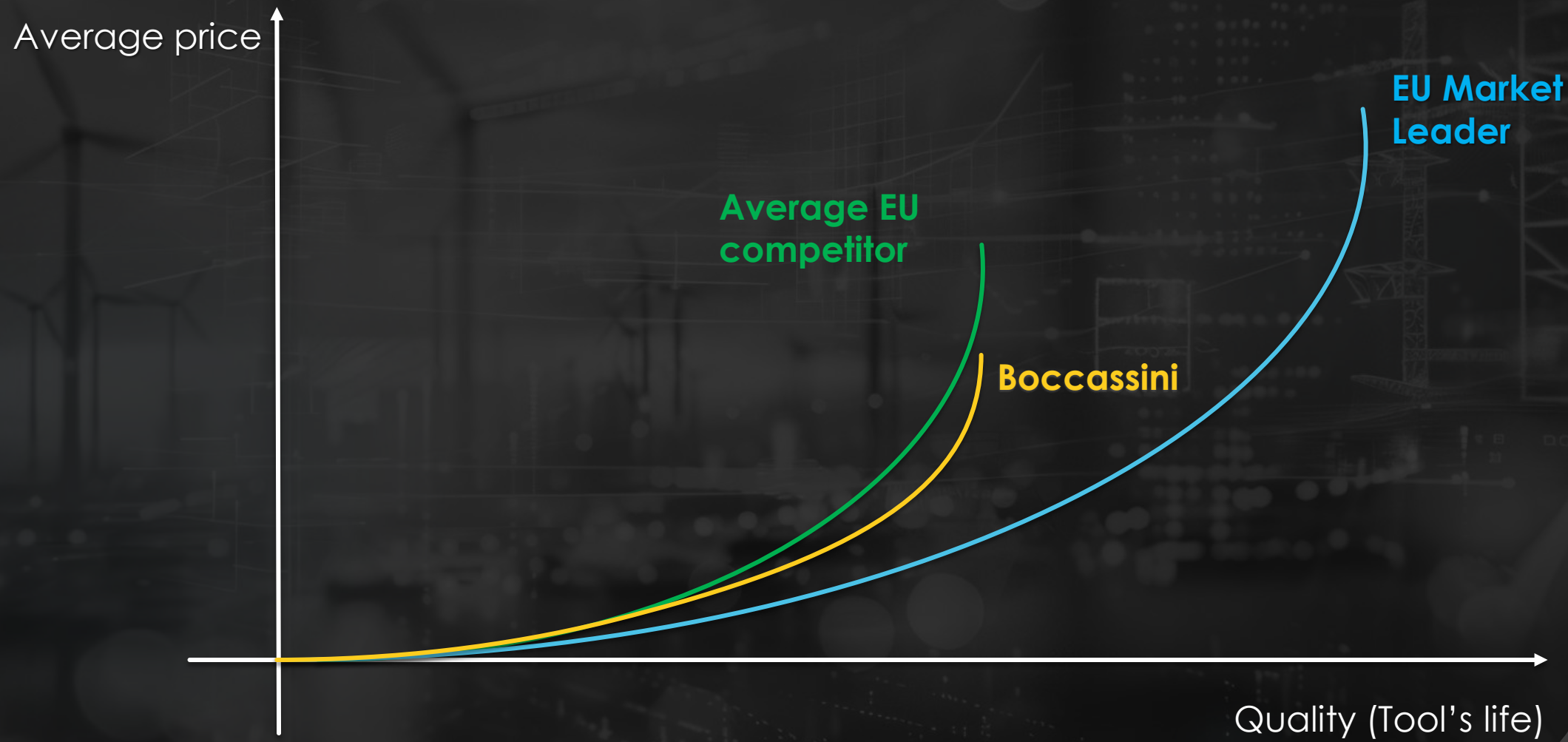
Third-Party Coating Partners: Major third-party companies, such as Balzers and Ionbond Italy, apply coatings to our tools. These partners are recognized globally for their reliability, quality, and service.

Comparison with other manufacturers

DELIVERY TIME OF «SPECIAL TOOLS»



Comparison with other manufacturers (Special tools)



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