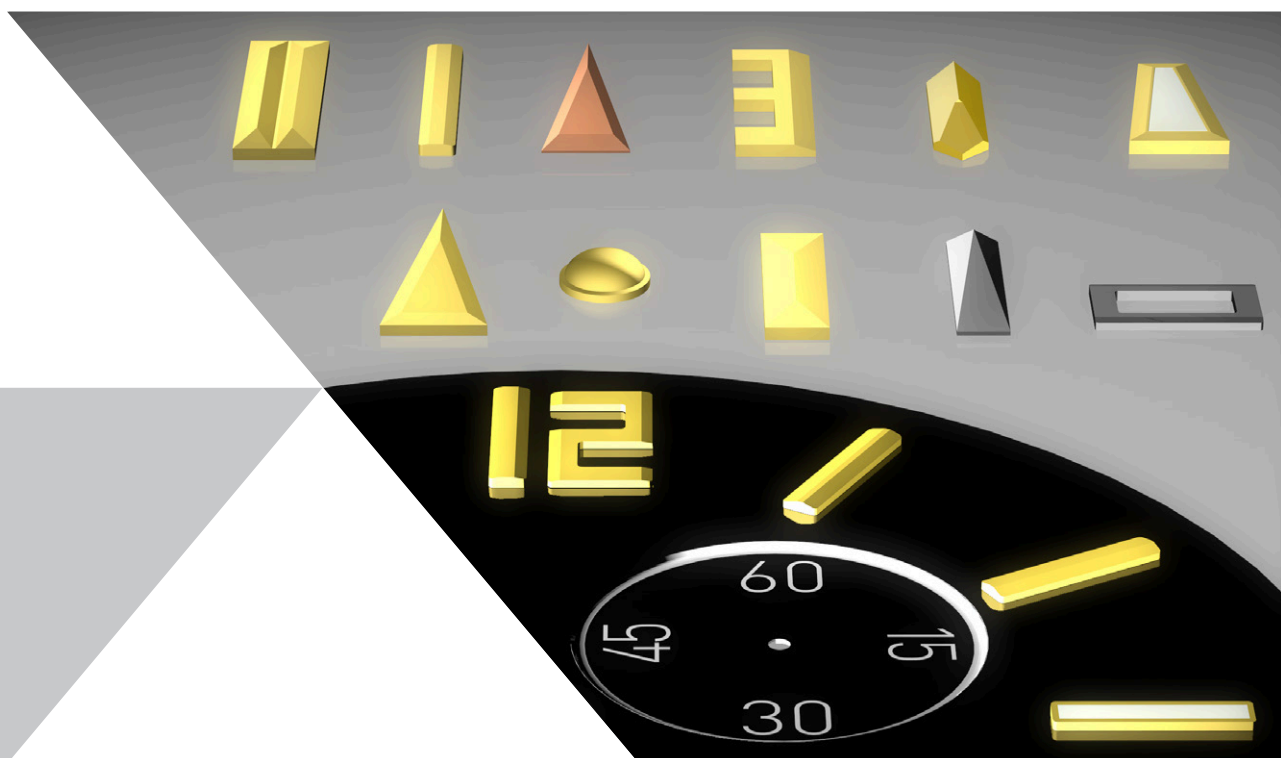


s230

Faceting and diamond finishing center for dials index



BUMOTEC s230

Automatic solution for faceting and diamond finishing dials index

The complete solution for finishing index

- › Machining and faceting index
- › Machining pockets for LumiNova
- › Contour milling

A flexible way for small and medium series

- › Full milling and diamond finishing process of indexes on pallets
- › Blanks positioning by HD camera
- › Simple programming

Effective and efficient solution

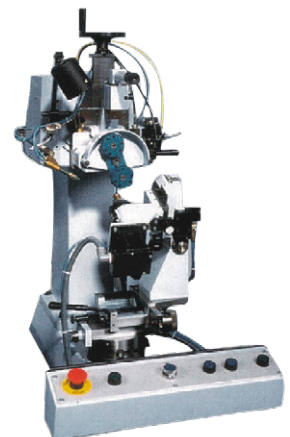
- › Combination of multiple operations on a single machine
- › An option of automatic pallet change
- › Unique solution for a variety specific parts





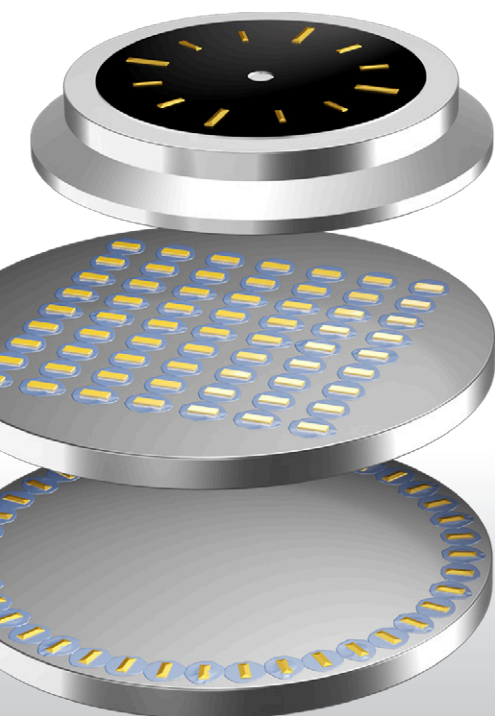
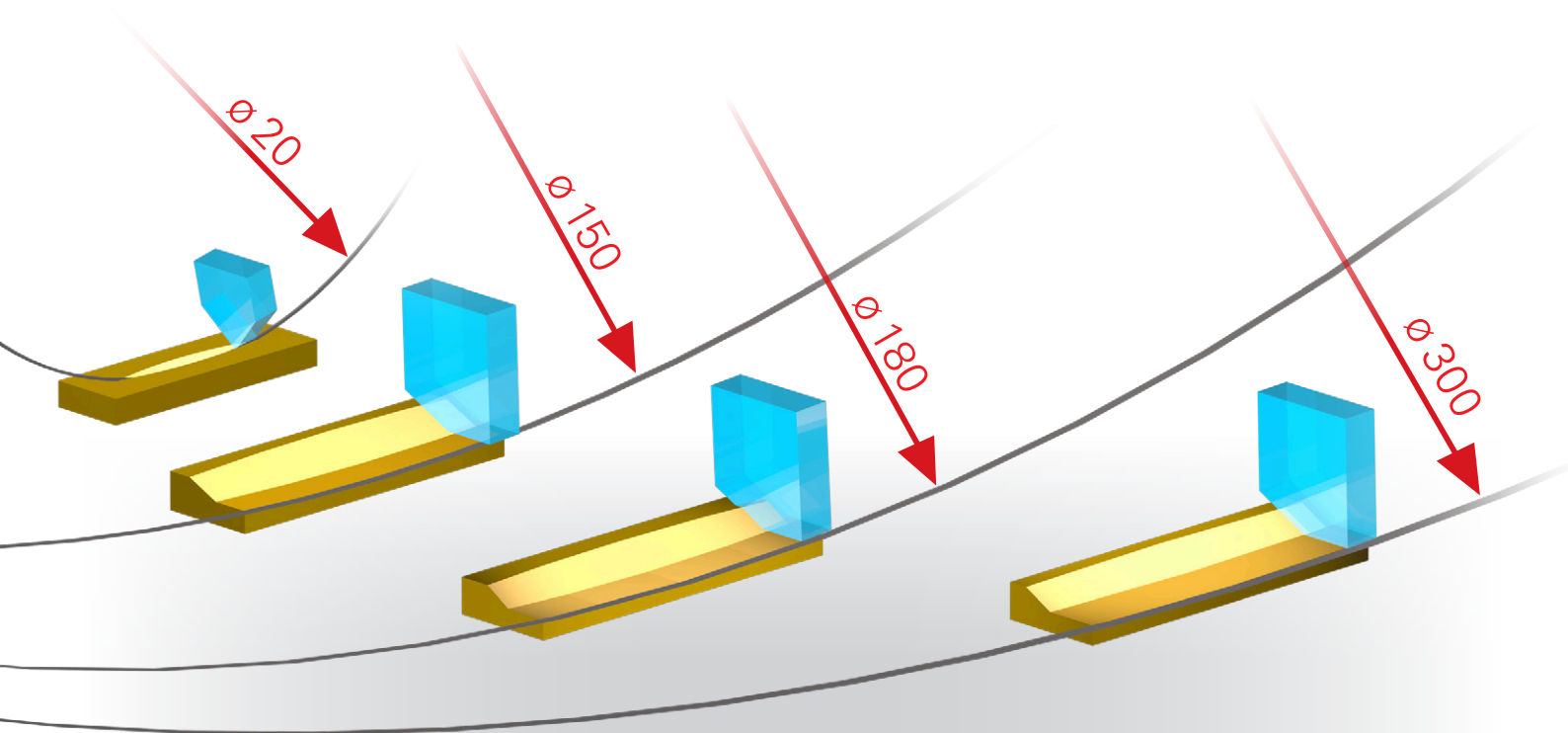
History

The machine Bumotec s230 is built in compliance with the high quality criteria of old diamond finishing machines still based in workshops around the world. The machine Bumotec s230 allows exceptional surface s faceting like the unequalled Posalux diamond finishing machines.



Diamond finishing process

Diamond finishing operations are performed by dives.
Tool holders allow various radius for a perfect visual appearance.



<Diamond finishing of stamps dials

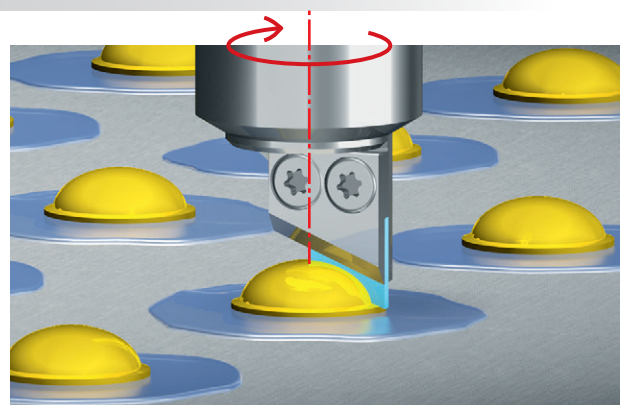
The embossed characters on the dials are directly finished on the machine.

Hemispheric forms

Half sphere machining is possible, thanks to the rotative diamond tools.>

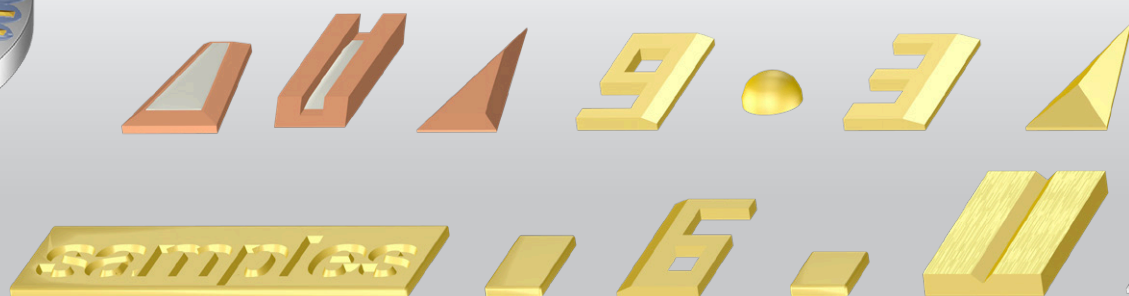
<Index disposition

The index positioning on removable pallets is optimized for the operations to be performed. The index are maintained by an adhesive.



The machine Bumotec s230 allows

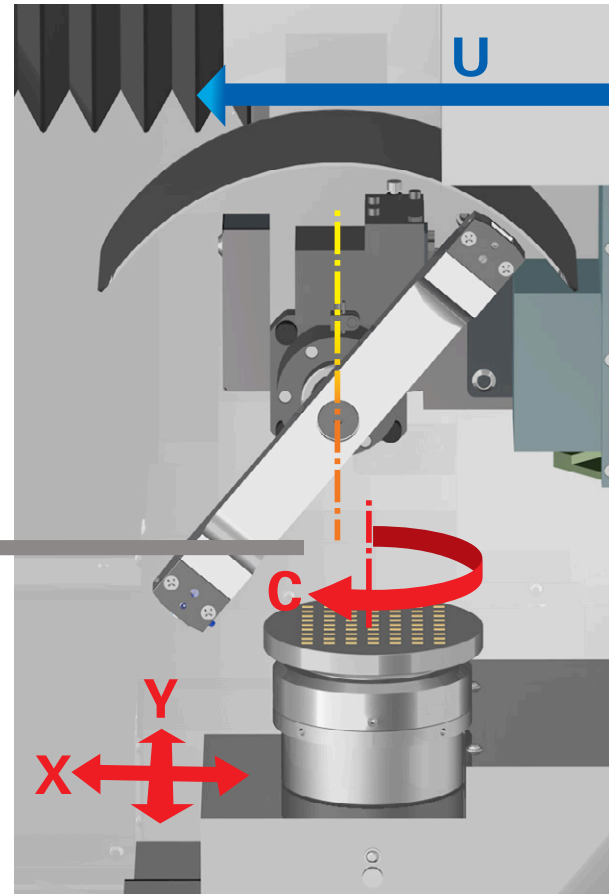
the production of a wide variety of index in various metals. Contrasts of different visual effects are performed by the use of diamond tools or solid carbide tools.



The complete solution

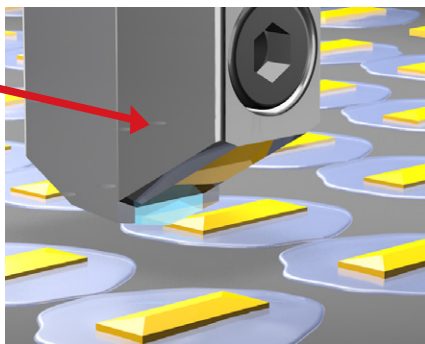
The different phases of the machining process are achievable with the equipment installed on the longitudinal axis U.

- 1 Optical recognition and origin definition of blanks
- 2 Diamond with the revolver toolholder
- 3 Machining of LumiNova pockets and micromilling

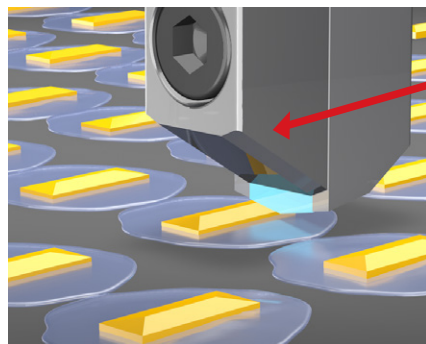


The toolholder on C axis is positioned on the X and Y axes.

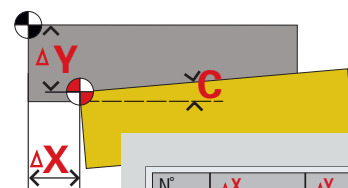
2



Side diamond



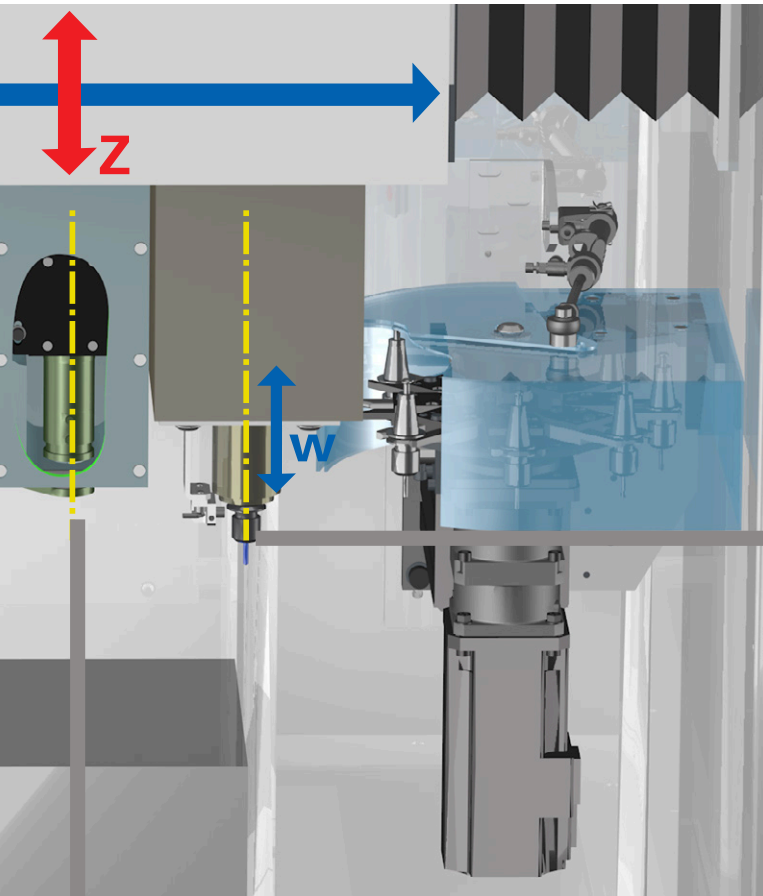
Longitudinal diamond



N°	ΔX	ΔY	α
15	+ 0.124	+ 0.190	+ 1.001
16	- 0.080	+ 0.158	- 0.930
17	- 0.200	- 0.042	- 2.090
18	+ 0.149	- 0.094	+ 2.455
19	+ 0.103	+ 0.008	- 0.058
20	+ 0.148	- 0.004	+ 1.345
21	- 0.099	- 1.506	- 2.912
22	+ 0.190	- 0.088	+ 0.300

Optical recognition of forms and positions

The target position of each index on the X, Y axes and angle C is programmed in the matrix management.



The axes configuration on the machine Bumotec s230

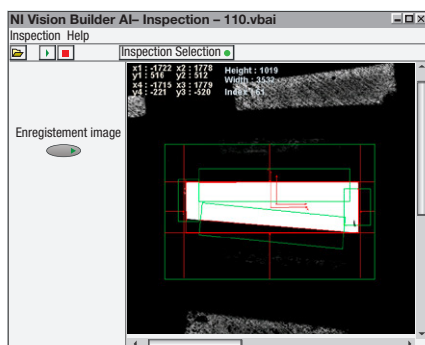
The machine Bumotec s230 has 3 working positions on U axis:

- 1** Optical detection of the exact positions of each index.
- 2** The diamonding of all index surfaces in all directions for a maximum brilliance.
- 3** The tools loading from the 8 positions tool magazine on the high frequency vertical spindle.

All movements on X,Y and C axes are performed by the table under the high frequency spindle.

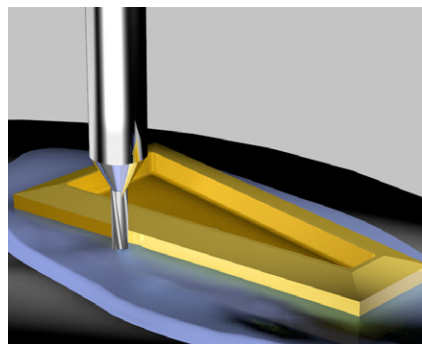
1

3



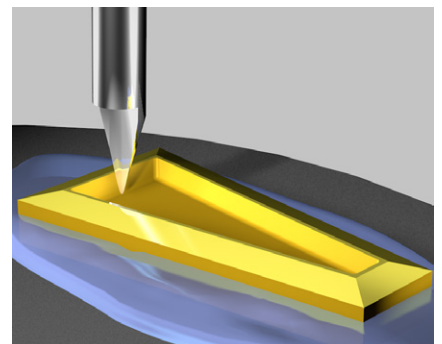
Automatic correction

The optical camera determines the actual position of the index edges in X,Y and C in order to determine a new origin for each form in a precision better than 0.01 mm.



Contour milling

The index contour is machined with the high frequency vertical spindle.

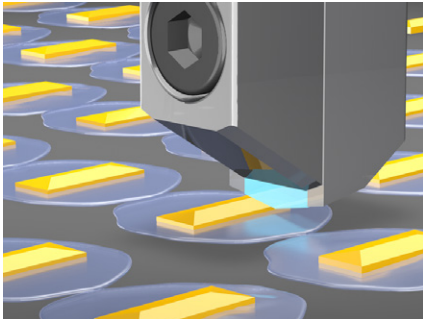


Luminova pocket

The location for the reception of the LumiNova luminous paste is machined by the high frequency spindle with if necessary corner lifts to ensure a minimum radius.

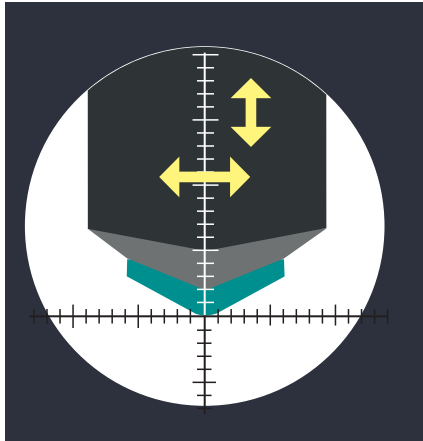
The tool holders

- ▶ Diamond tool holders of diameter 20 mm to 300 mm
- ▶ Tool holders magazine for milling, boring and engraving tools



Diamond tool

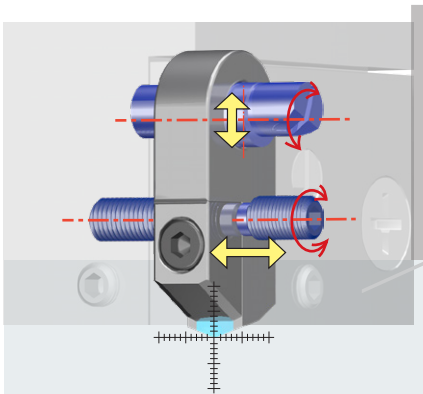
A wide variety of standard tools are available on the market for all types of forms.



Tools preparation

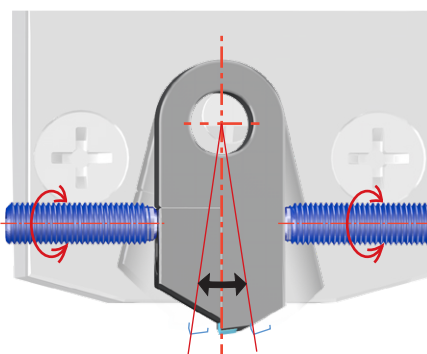
Tools preparation takes place outside the machine on a setting table.

The measuring microscope allows quick and accurate mounting of the tools.



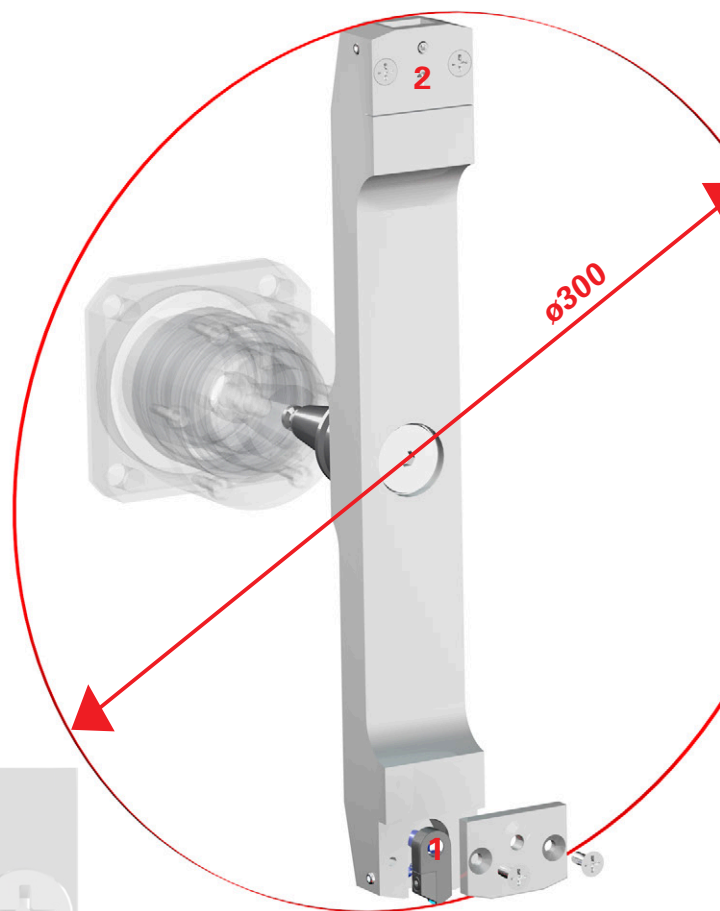
Tools setting

The lateral alignment of the tool is performed by micrometer screw adjustment and the tool height by an eccentric screw.



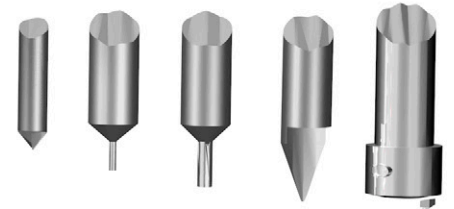
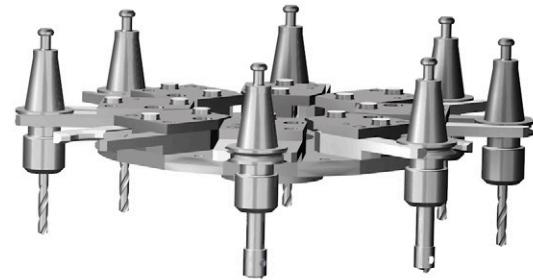
Angular adjustment

The fine adjustment of the cutting angles is performed by micrometer screws.



Revolver tool holders 2 positions, \varnothing 300 mm

The use of a large diameter tool holder insure a high gloss finishing surface.

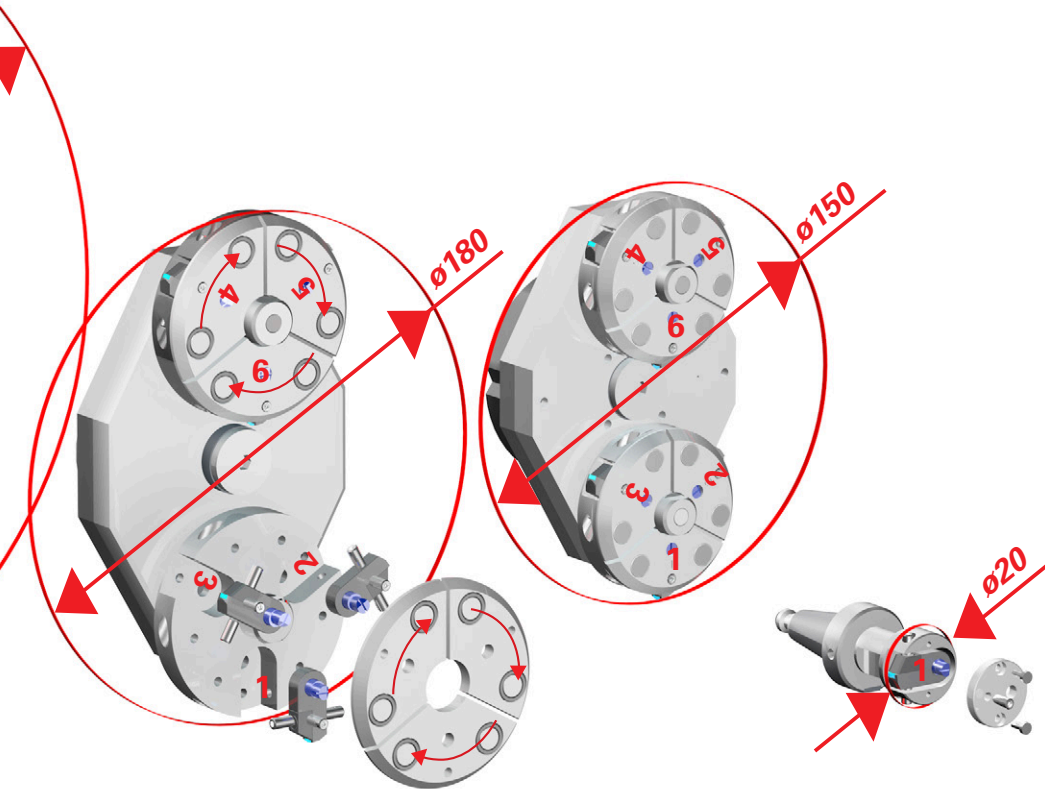


Tool holder magazine

The 8 positions tool holder magazine allows the automatic tools loading in the vertical spindle for milling, machining contour or engraving. The loading process is done automatically by the pneumatic clamping. The production of complex parts or the use of brother's tools is possible.

Standard tools

Toolmakers provide a full range of standard tools and special tool on request.

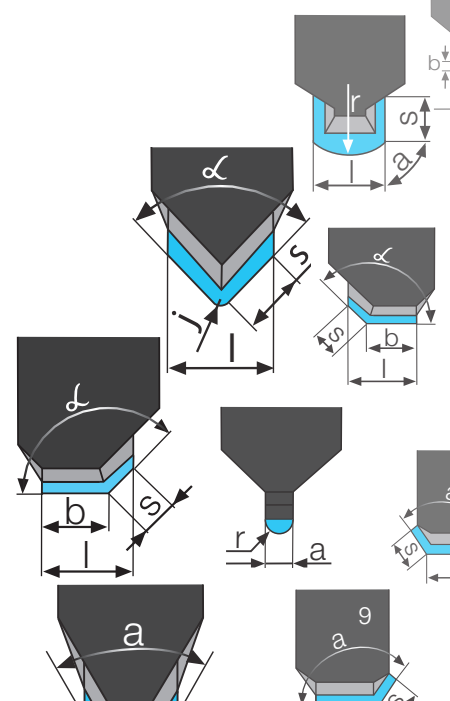


Revolver tool holders 6 positions, $\varnothing 180 / \varnothing 150$ mm

During the machining process the indexing from one to the other six positions of tool holder is performed automatically by programming choices.

Simple tool holder, $\varnothing 20$ mm

The tool holder $\varnothing 20$ mm allow the use of smaller radius tools to achieve other brilliance effects.



Variety of clamping pallets

- ▶ High precision pallets
- ▶ Universal vacuum pallets
- ▶ Automation unit for high autonomy

High precision clamping

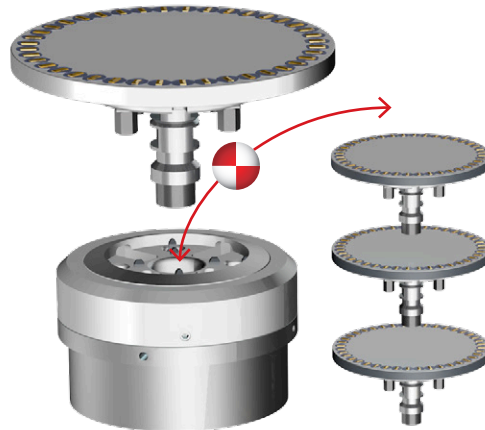
The high precision clamping system insures the repeatability of precise clamping in μ . The repeatability of the clamping pallet allows visual inspections during the machining process. Systems3R, Erowa, Yerly or other systems can be adapted.

Pneumatic clamping

The universal vacuum system of pallets ensures the angular positioning by pins keying. The optical camera system takes care of the individual positioning of each index.

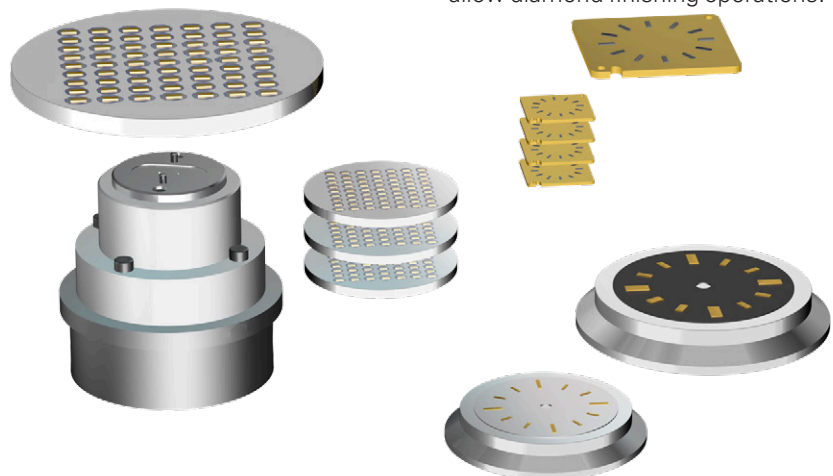
Height probe

The control of the pallets height is checked before the machining process. A new Z origin is then defined and recorded.



Index on working plate

The indexes are mounted on a plate to allow diamond finishing operations.



Stamped dials

The dial is mounted on a pallet to allow diamond finishing operations.



Automation

A variety of automation systems are available to ensure a high autonomy in production.

CNC control

Variable	CHAN1	AUTO	WKA.DIR\IND_V_02_013.WPD INP280_010.MPF	
			Programme arrêté	Copy from NC
			SKP ROV SBL1	
----- DEFINE GENERAL -----				
Name:	Value:	Description:		
NUM_PORTE_OUTILS	1	Num.Porte Out. Horiz		
TOOLRAD	91.27	Rayon de l'outil		
;				
ACTIVE_PALPEUR	0	Active Mesure (1/ON) (0/OFF)		
HEIGHZ_POSAGE	42	Hauteur posage		
HEIGHT_INDEX	0.35	Hauteur Index [VALEUT POSITIF]		
TOLLER_POSAGE	2	Tollerance de mesure hauteur Posage (+/-)		
WCART_MAX	0.01	Tollerance écart MAX Posage		
HEIGHT_SECURITY	0.3	Distance de sécurité pour accostage(VALEUR POSITIF)		
;				
ALPHA_XY	0	R190		
TYPE_ALGIN	0	Type Rond = 1. Rectangle = 0.		
ALPHA_ORIG	0	Angle d'origine		
NB_INDEX	64	nb d'index (RECT et ROND)		
NB_COLS	8	nb colonnes (RECT)		
START_X	-38.5	coordonnee X du 1er index (RECT)		
START_Y	-38.5	coordonnee Y du 1er index (RECT)		
RAYON	0	Rayon de positionnement (ROND)		
START_B	0	Angle de depart (ROND)		
STEP_X	11	pas en X (RECT)		
STEP_Y	11	pas en Y (RECT)		
STEP_B	0	pas de l'angle (zero si regul) (ROND)		
<div style="display: flex; justify-content: space-between;"> GENERAL POSAGE CUTTING DELTA_AXIS CAMERE </div>				

Simple programming

Program changes are done directly on the machine console. Pre-developed programs are available to simplify the machining adjustment by the operator.

Simple programming interface on Windows.

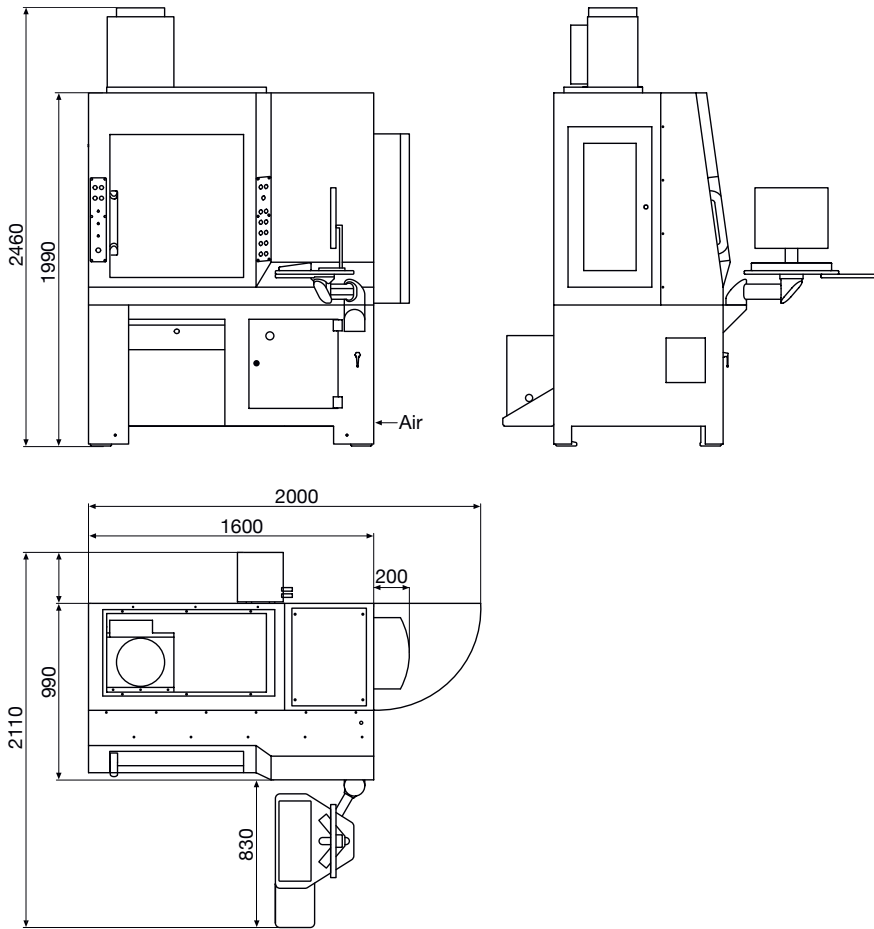


Machine	CHAN1	AUTO	WKS.DIR\COSMO.WPD 4799_ENG.MPF	Fct. G + transf.
Reset canal			Programme abandonné	Fonctions auxil
			ROV	Broches
SCM	Position	Delta	Broche maître S1	Avance axe
X	0.000 mm	0.000	Réel 0.000 t/min	Blocs de progr.
Y	0.000 mm	0.000	Csg. 0.000 t/min	Zoom val. réelle
Z	160.000 mm	0.000	Pos 0 deg.	Valeur réelle SCP
C	0.000 deg	0.000	Puiss 100.0 %	Niveaux de progr.
SP1	0.000 deg	0.000	Puiss 0%	
G500			Avance [mm/min]	
Bloc courant WKS\COSMO\4799_ENG.MPF			Réel 0.000 100.0%	
;%_N_INP_010_ENG.MPF			Csg. 0.000	
			Outil	
			Outil présélectionné:	
			G01 G40	
<div style="display: flex; justify-content: space-between;"> Ecraser mémoire Décalage DRF Influence sur prog. Recherche de bloc Manivelle Correction progr. Liste progr. </div>				

Operator accessibility

During production the machines statements scroll across the display. Which make it easy to do.

Accessories and layout.

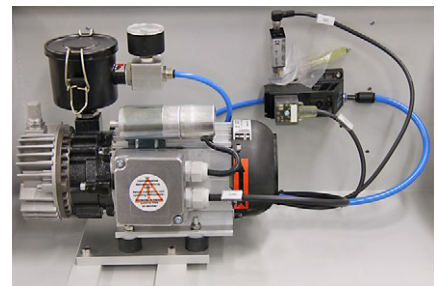


Oil mist suction

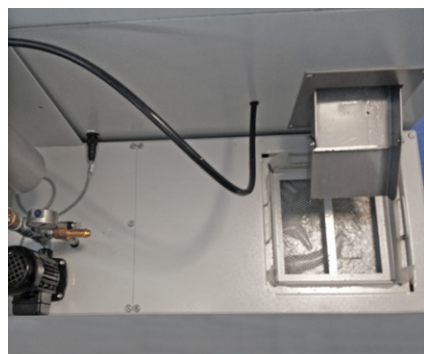
for a work environment clean and healthy



Autonomous vacuum unit



External lubrication system



Minimum lubrication unit air/oil



Technical data

Base machine

CNC machining center for faceting and milling of indexes. Materials: gold, platinum, silver brass and other non-ferrous alloys.

Control

Siemens 840DI-SL

Optics

Camera VGA Sony XCD-V60 (640 x 480 pixel) Cell size 3.75 x 3.75µm

Optic focal 5.2 x 3.9 mm

Software QMT Vision Inspector

Communication TCP-IP

Lighting adapted to flat metal surfaces

Axes

Axis X cnc

Axis Y cnc

Axis Z cnc

Axis U cnc

Linear axes motor drive with online resolver on ballscrew

Axis C cnc

Horizontal spindle

Torque à 6000 min-1

Power

RPM

Tool holder interface

Tool release

Milling head

Vertical spindle

Power

RPM

Tool holder interface

Tool release

Max. ø tool

Quality

Precision

Lubrication

Microlubrication (controlled vaporization)

Options

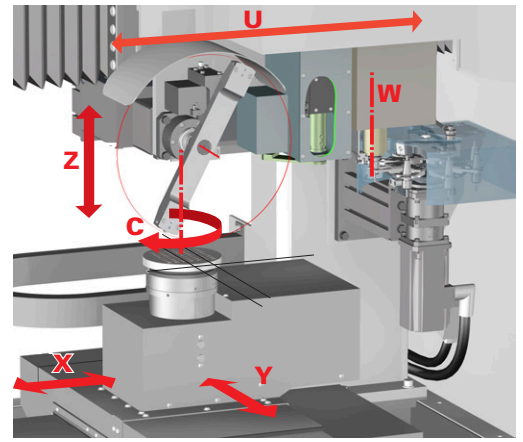
Indexing system for milling head 6 tools

Pallets clamping

Chip suctions

Oil mist suction

External lubrication system



stroke 150 mm

stroke 150 mm

stroke 123 mm

stroke 375 mm

angle 0-360° non-stop

1.1Nm

1 KW

0 à 4000 min-1

ISO 20

pneumatic

ø20 à 300 mm

2 KW

Max. 45'000min-1

ISO 10

pneumatic

max. 7 mm

± 0.010 mm

Vogel Lubrilean Basic unit

ø150 mm

EROWA, 3R or specific customer

The Bumotec know-how at your service

Application

For over 40 years Bumotec provides machining centers in the fields of watchmaking, medical, aerospace and micromechanics. The experience accumulated with our customers allow us to offer our expertise in the realization of your projects.

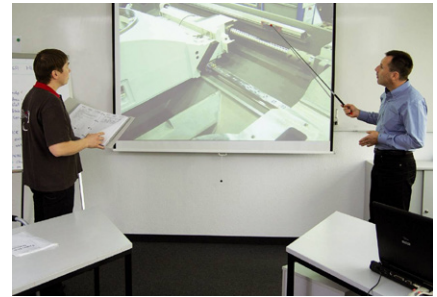
You get an analysis of your production needs, the feasibility study, the development of manufacturing strategy, selection of tooling, machining programming, implementation and machine ready on your production. Your specifications - our turnkey solutions



Formation

A team of technicians provides training on machines Bumotec to your teams. From programming to maintenance, your employees will learn the optimal use of the equipment available. Depending on your knowledge, we customize your training request.

The operator benefits the knowledge and skilled use of Bumotec machine to ensure a maximum level of production and competitiveness. Do not settle for only a high-performance machining center Bumotec, give you the ability to maximize profit.



Service

Do not worry about disruption on your equipment. A global network of experts is available to respond quickly to your requests. Whether we talk of inspection, maintenance, repair, troubleshooting,

Bumotec makes every effort to respond promptly with spare parts and qualified technician to restart production as soon as possible. The delivery of original parts Bumotec worldwide from Switzerland or offshore stocks, ensure speed, quality and performance.



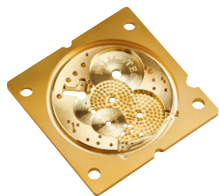
Global network

We guarantee speed of our services through worldwide presence and proximity.



S-191 The complete solution for watchmaking and jewelry

- ▶ Upscale speed and dynamics
- ▶ Exceptional accuracy
- ▶ Batch or unit production
- ▶ Linear drives and motors
- ▶ 5 axes simultaneous machining
- ▶ Combined mill-turn machining
- ▶ Resolution 1/10 micron



The combination of milling and turning allows the manufacturing of a large variety of complex parts in tough and precious materials.



The high performance machining center 5 axes adapted for each individual challenge in watchmaking and jewelry.



Milling/Turning on X-Y-Z axes

- B-Axis swiveling spindle
- C-Axis integrated in machining table
- Turning function option
- Allows multiple clamping systems



The logo for starrag, featuring the word "starrag" in white lowercase letters on a red background. The red background consists of a horizontal bar that tapers to the right, and a separate red square to its right.

Starrag Group

—
Berthiez
Bumotec
Dörries
Droop+ Rein
Heckert
Scharmann
SIP
Starrag
TTL
WMW

Bumotec SA
Route du Rontet 17
1625 Sâles
Suisse

T +41 26 351 00 00
F +41 26 351 00 99

admin@bumotec.ch
www.bumotec.ch

Alle Angaben in diesem Prospekt gelten als vertraglich zugesichert, wenn sie von uns ausdrücklich einzeln schriftlich bestätigt werden.

© by Baumgartner Marketing Werbung PR