

世界领先的动力工具专家  
**World Leading Live tool Expert**



西钛珂接骨螺钉旋风铣和瑞士车工具系统目录  
**THREAD WHIRLING & SWISS TOOLING**

**CATALOGUE 2013**



[www.westec-corp.com](http://www.westec-corp.com)

High efficient manufacturing of threads on implants:

### The perfect solution for medical technology!

-----最完美的接骨螺钉加工方案

100% made in Spain

As the specialist of thread whirling , we have attained an unmatched reputation as a result of many successful applications with vast cost reductions.

Surgical implants are typical products in the medical technology, such as bone screws or bone (cervical) plates, which are generally manufactured from titanium or stainless steel. In the manufacturing of implants, there are various manufacturing processes for producing external and internal threads in a highly efficient manner.

With its comprehensive product line, Madaula provides excellent precision and highest productivity. All threads are guaranteed to be completely burr-free.

Regardless which manufacturing process you pursue, Madaula is able to provide the matching solution for the manufacturing of threads on bone screws. Madaula has the perfect solution for every application, whether it is a single machining process using thread whirling on swiss-type (automatic) lathes or a two operation machining process while rough turning the screws and finishing (threading) them on special post thread milling or thread whirling machines.

**Madaula will find the most cost-effective and best technical**

#### Single machining process on swiss-type (automatic) lathes/ turning centre

##### External threads: Thread whirling on swiss-type (automatic) lathes

The basic requirement for whirling a thread using a single machining process on swiss-type lathes is a whirling attachment. Madaula supply you all of these attachment whatever the machine you owned, TORNOS, STAR,CITIZEN,TSuGAMI ,GILDEMEISTER, NEXTuRN,HANWHA ETC.

We offer two whirling system for you: circular inserts systems with 3 or 5 inserts and indexable inserts systems with 5 ,6, 9, or 12 insert .

##### 实现旋风铣需要具装备的设备:

- 1、一台具备C轴的纵切车床;
- 2、一只旋风铣动力刀座;
- 3、一套旋风铣成型刀具 (包括刀盘和刀片) :



machine 瑞士纵切车床



whirling attachment 旋风铣动力刀座

Implants 接骨螺钉



## 旋风铣加工流程

## Thread Whirling Procedure



The thread whirling spindle is set up in front of the work piece and rotates at high speed. The work spindle rotates at a lower speed in the same direction.



The required thread length is achieved. The whirling spindle moves first back radially and then axially thereafter.



Thread whirling begins. The thread is achieved through a rotating motion of the C-axis and a longitudinal motion of the Z-axis, only one of the whirling spindle's cutting edges is in operation during this process.

## Business Process Circle 旋风铣订购流程

### 1. Project consultancy 项目咨询

Our qualified sales team will consult with you on-site or by phone. We will explain and show you based on practice oriented examples how you can reduce your turned part manufacturing costs by as much as 60% and more with minimum amortisation. Send us your inquiry along with a part drawing by email or fax .

### 2. Project analysis and quotation 根据螺钉图纸报价

Our experience engineering team will analyse your part drawing and offer you both, the most economical and technical sound solution. Within a short period of time you will receive our process recommendation for your part along with a quotation.

## 旋风铣加工接骨螺钉的优势:

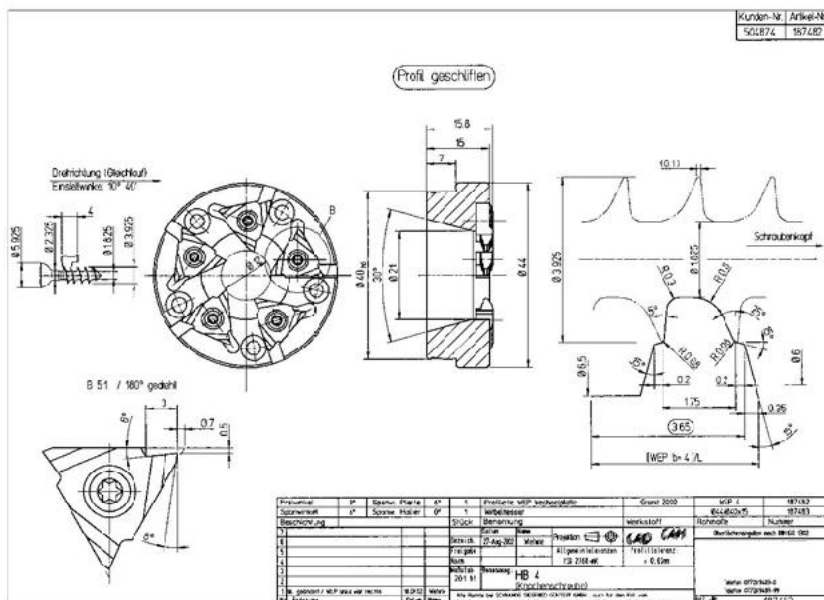
- 1、加工效率高，是传统方法效率的几倍甚至十几倍的效率，加工一次完成；不需要消除毛刺等后续工序；
- 2、加工出来的螺钉精度高，强度高；
- 3、可以直接安装在瑞士车机床上，具有很高的柔性，不需要重新花费大量的资金购买专用的新设备；大大提高了机器的使用效率，降低了加工成本；

### 3. Design 设计

Upon receipt of purchase order we will design the best possible tooling solution for processing your part. A detailed tool drawing will be made available to you for your review.

### 4. Manufacturing 制造并交货

Depending on geometry and material specification the profiles are manufactured on ultra-modern 5-axis CNC grinding centres, fully automated AGIE EDM machines with robot handling systems and cell management or a combination of both processes.





CIRCULAR INSERTS

旋风铣圆形刀片



旋风铣圆形刀片和刀盘

CIRCULAR WHIRLING SETS



TRIANGULAR WHIRLING SETS

旋风铣三角形刀片和刀盘



# Inserts & Rings

旋风铣刀片和刀盘

### GB Circular Whirling Tools

旋风铣圆形刀具:瑞士制造

**Type: 3 Circular inserts& rings**

3片装旋风铣圆形刀片和刀盘

Upon customers' request , we can offer the circular whirling tools with 5 inserts !Contact our sales staff for more information.

### Benifits

The classic 3 circular inserts and rings set , designed for medical implants high efficiency machining.

Circular inserts can be reground and low the cost.

3片装旋风铣圆形刀片和刀盘是我们加工接骨螺钉的经典款式，可以通过刃磨多次使用降低加工成本：



**rings**

3片装刀盘



**inserts**

旋风铣圆形刀片

**GB Circular Whirling Tools:** 旋风铣圆形刀具:瑞士制造

**Type :5 Circular inserts& rings**  
5片装旋风铣圆形刀片和刀盘

Upon customers' request , we can offer the circular whirling tools with 3 inserts !Contact our sales staff for more information.

### Benifits

The new 5 circular inserts and rings set , designed for medical implants high efficiency machining.

Circular inserts can be reground and low the cost.

5片装旋风铣圆形刀片和刀盘提高了加工效率，可以通过刃磨多次使用降低加工成本；



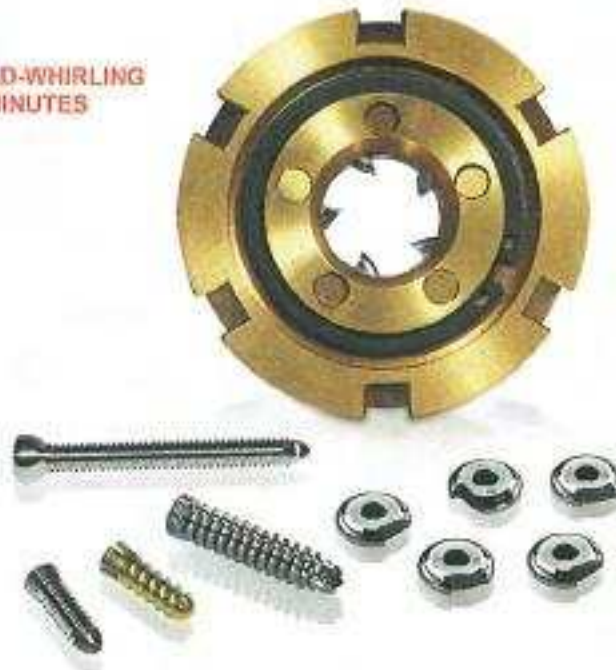
5 inserts& rings

标准旋风铣刀盘 (HSS材质制造)

**Thread-whirling head, with 3 or 5 blades  
for TORNOS DECO 13/20**

Screw threads suitable for medical technology applications have been produced for many years using the thread-whirling process on sliding headstock machines.

**CHANGE YOUR THREAD-WHIRLING  
HEAD, WITHIN 2 MINUTES**



Item #	Cutting Ø	# of blades	Remarks
17801	12 mm	3	Complete set, incl. knife setting tool
17821	12 mm	3	Exchange head for item # 17801
17802	6 mm	3	Complete set, incl. knife setting tool
17822	6 mm	3	Exchange head for item # 17802
17803	12 mm	5	Complete set, incl. knife setting tool
17823	12 mm	5	Exchange head for item # 17803

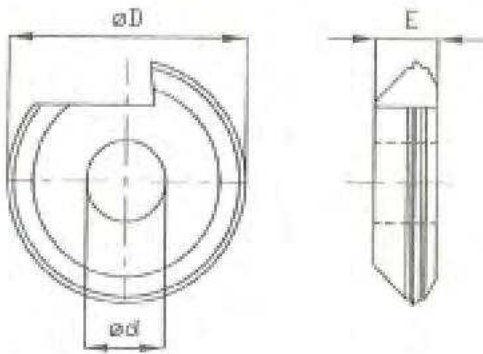
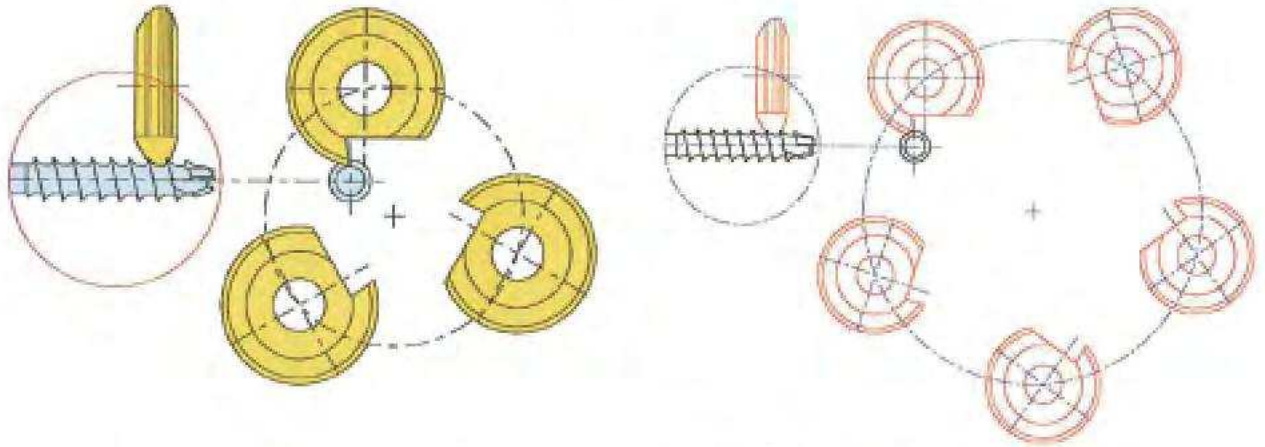
As well as a substantial increase in production, the **5-blade thread-whirling head** has also given rise to the other advantages listed below:

- Longer service lives
- Precision levels improved by  $\pm 0.005\text{mm}$
- Simplicity of operation
- Reduction in downtimes
- Reduction in costs per thread

For other brands and machines, please ask for quote.

标准旋风铣圆形刀片

**Circular form tools in tungsten carbide for threading**



**advantages:**

Higher lifespan

Minimum Radius = 0,02

For bone screws according to DIN 58810

HA 1,5 / HA 2 / HA 2,7 / HA 3,5 / HA 4,5 – HB 4 / HB 6,5

$\varnothing D$	$\varnothing d$	E	1 Set = pcs
15	5	4	3
15	5	4	5

Coating, other angles and dimensions on request,



### GB Triangular Whirling Tools

旋风铣三角形刀具：瑞士/德国制造

Type: 6 triangular inserts& rings

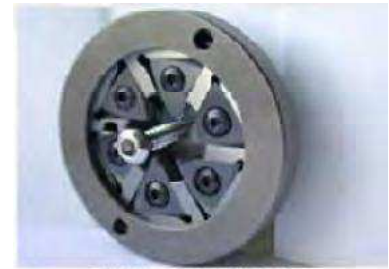
6片装旋风铣三角形刀片和刀盘

Upon customers' request , we can offer circular whirling tools and indexable inserts and rings with 5 ,6,9 ,12 inserts !  
Contact our sales staff for more information.

#### Benifits

The indexable inserts ,  
designed for medical implants high efficiency machining.  
compared with the circular inserts, avoiding regrinding ,more  
convenient to use .

6片装旋风铣三角形刀片和刀盘提高了加工效率，刀片可转位方便了使用；



TRIANGULAR WHIRLING SETS

rings



Triangular whirling inserts

inserts

### GB Highperformancne Whirling Tools

高性能9、12片装旋风铣刀具：瑞士/德国制造

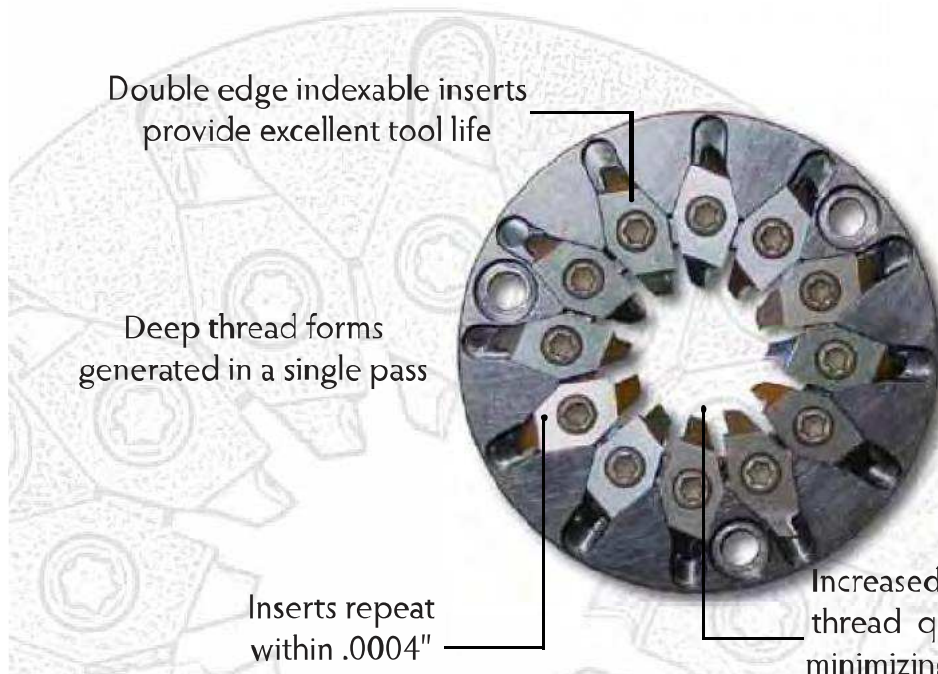
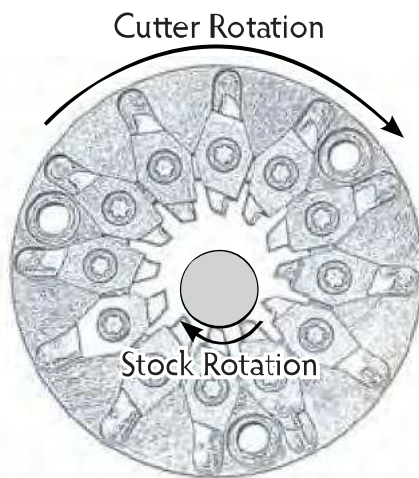
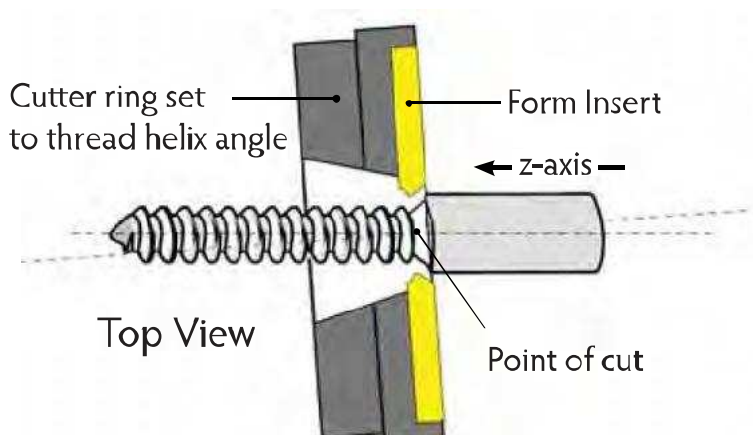


# High-Performance Thread Whirling Rings

## 9、12片装旋风铣简介



By employing more cutting teeth, it greatly enhances productivity by allowing increased speeds and feeds while maintaining rigid finish qualities required by the medical implant industry.



High Pressure Coolant required for adequate chip evacuation.

~ Example Whirling Application ~		3 Insert	6 Insert	High Output 12 insert
Sample Thread Parameters	Sample Machine Parameters:			
Major: .250"	Cutter RPM: 3833	C-Axis RPM: 8	C-Axis RPM: 16	C-Axis RPM: 32
Minor: .190"	Chipload: .0005"	Cycle Time: 5 mins	Cycle Time: 2.5 mins	Cycle Time: 1.25 mins
Length: 3.2"	SFM: 600			
Pitch: .080	Stock Size: .375"			

**GB** We offer complete solutions for medical implant manufacturing  
 我们完整的接骨螺钉旋风铣解决方案：我们可以给客户id提供机床、刀座和刀具的一站式服务；

Our solutions:

- \* machine;
- \* thread whirling attachments
- \* rings & inserts



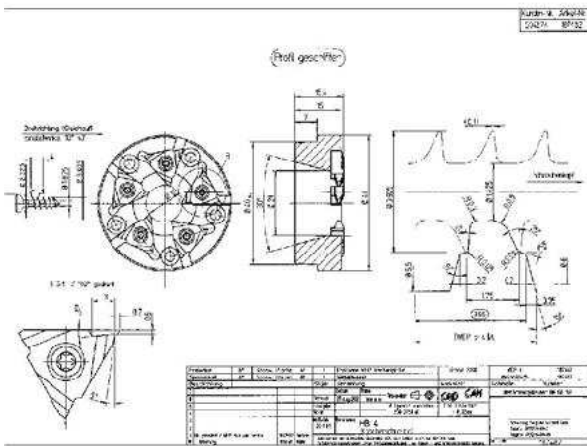
machine



inserts & rings



thread whirling attachments

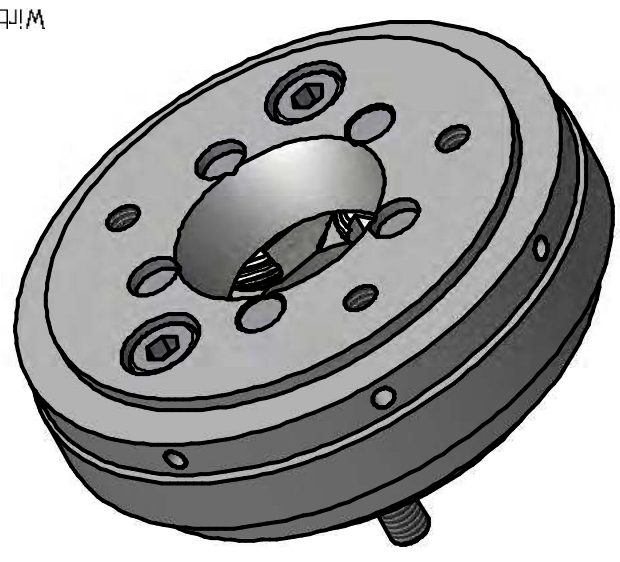
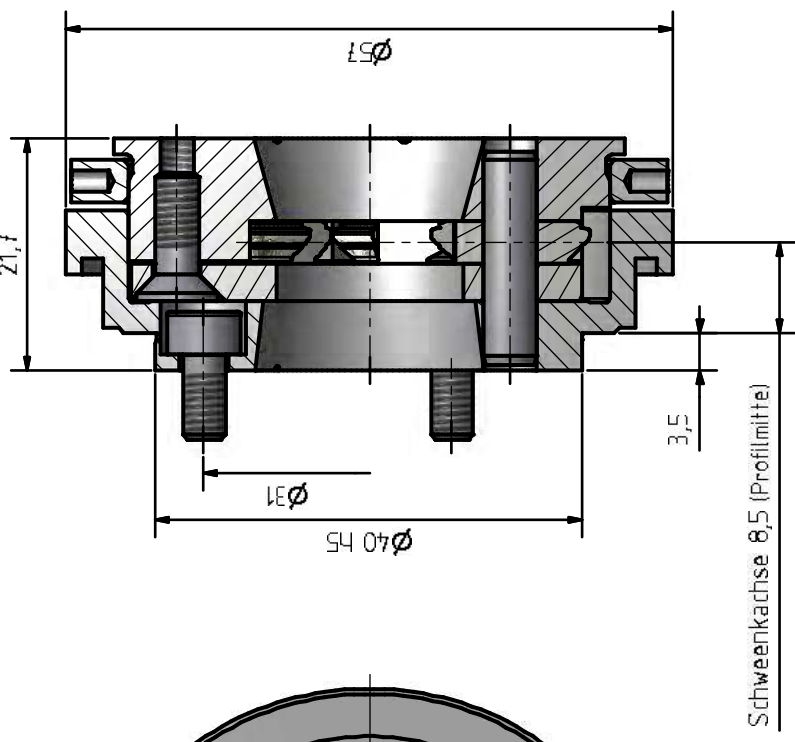
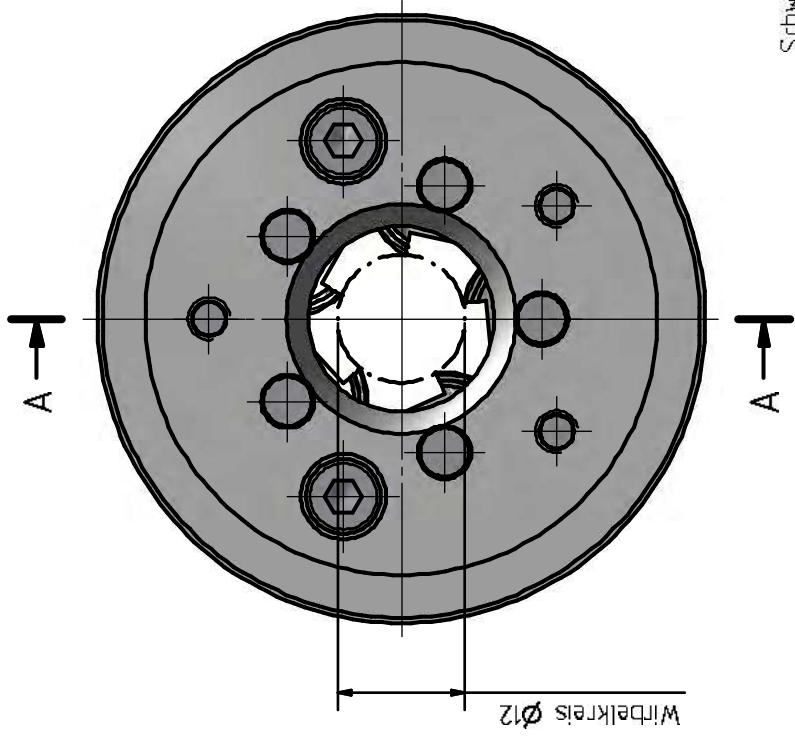


### Medical



# CASE STUDY: TOOL HOLDER FOR CIRCULAR INSERTS

案例学习：圆形刀盘和刀片

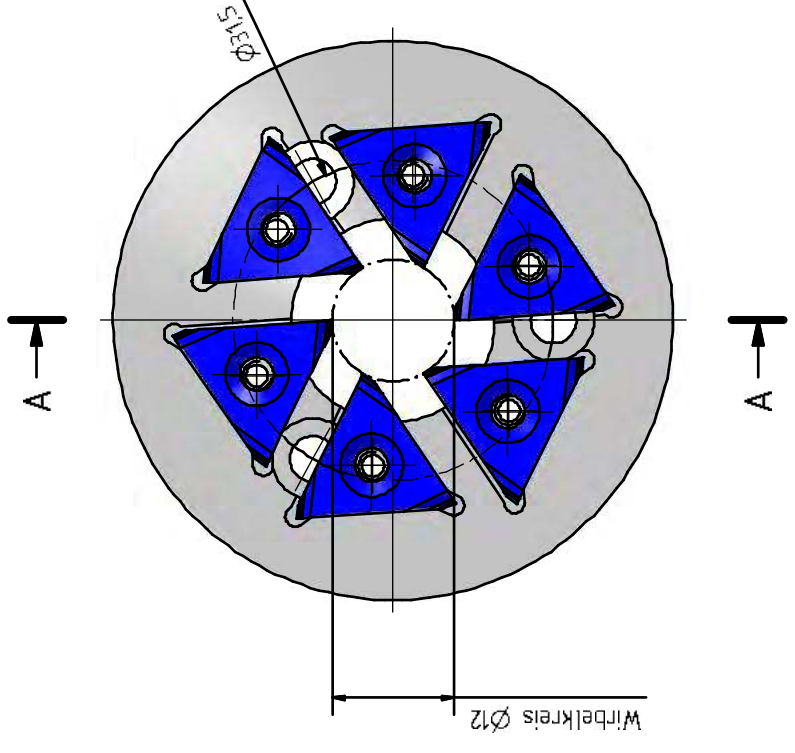
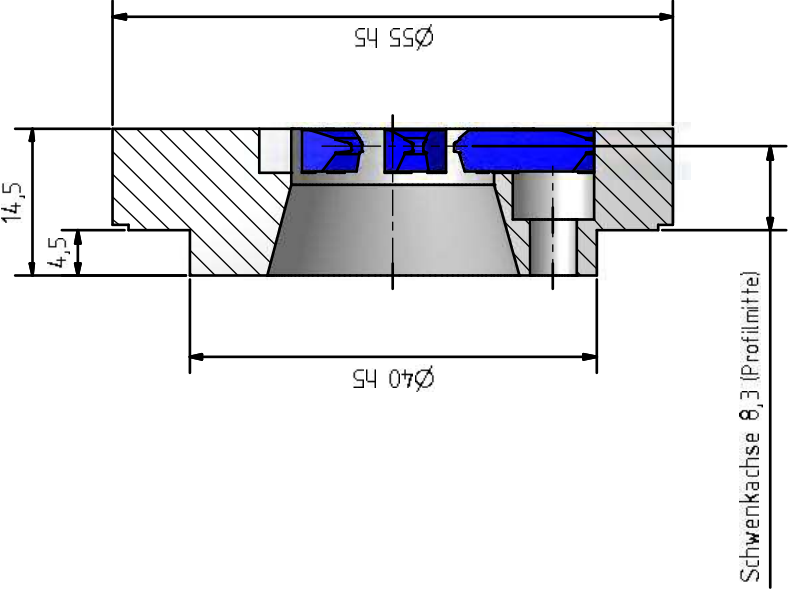


		Projektion Name Datum 13.04.2010 mka		Allgemeintoleranzen nach: ISO 2768-mH Diese Zeichnung ist Eigentum der Friedrich Glöck AG und darf ohne deren Einverständnis nicht verwendet werden	
		Maßstab 2:1		Wirbelkopf 502 0007	
		Material 2.1		Werkstücknummern nach ISO 13715 -11 -11 -11	
		Stückzahl 1		A3	
		Datum 13.04.2010		1	
		Name mka		6	
		Material 2.1		5	
		Werkstücknummern nach ISO 13715 -11 -11 -11		4	
		Stückzahl 1		3	
		Datum 13.04.2010		2	
		Name mka		1	

# CASE STUDY: TOOL HOLDER FOR TRIANGULAR INSERTS

案例学习：三角形刀盘和刀片

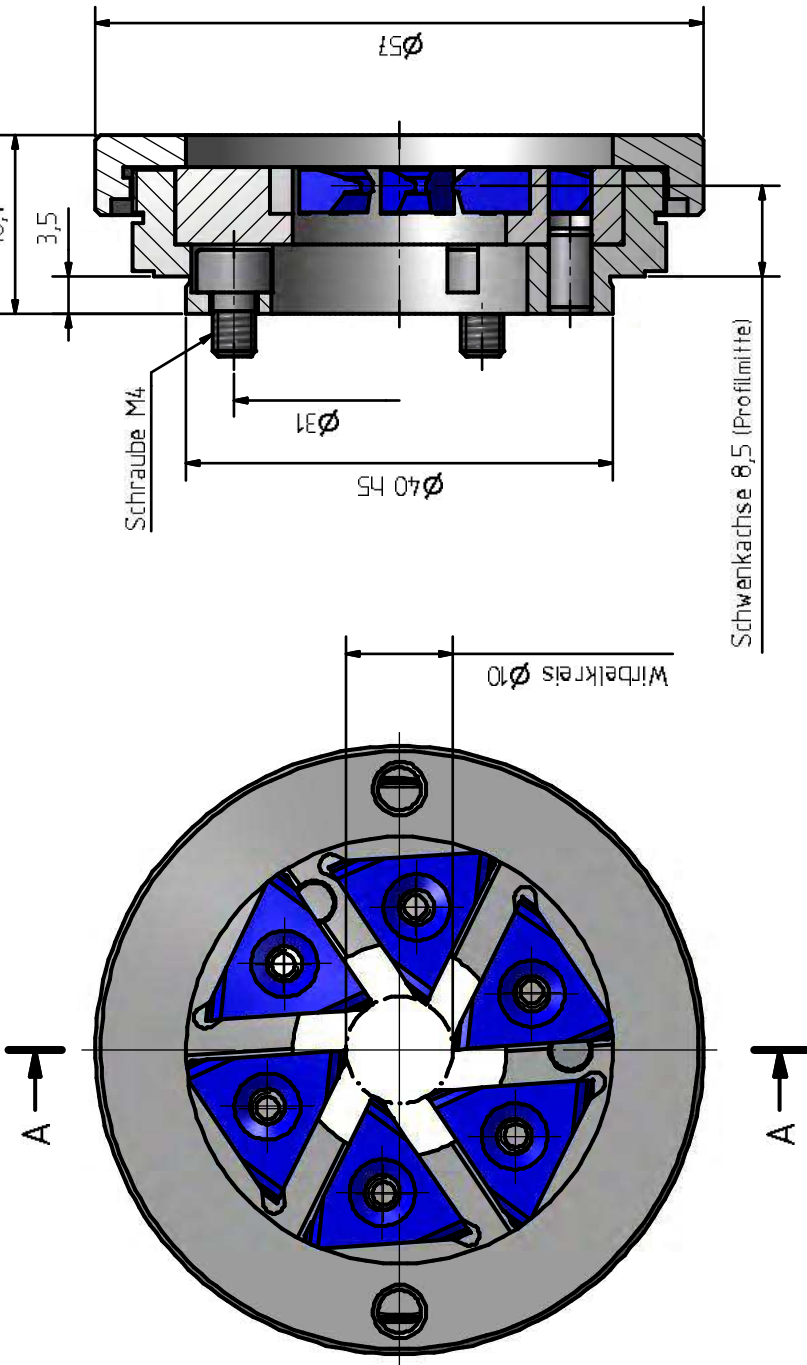
A-A (2 : 1)



Allgemeintoleranzen nach: ISO 2768-mH				Diese Zeichnung ist Eigentum der Friedrich Glörr AG und darf ohne deren Einverständnis nicht verwendet werden.	
Datum: 21.12.2019 Name: mka		Material: St50 Maßstab: 2:1		Wirbelkopf 501 0004	
Werkstückgröße nach ISO 3171: 11,13,413		Status: überreife		Blatt: 1 von: A3	

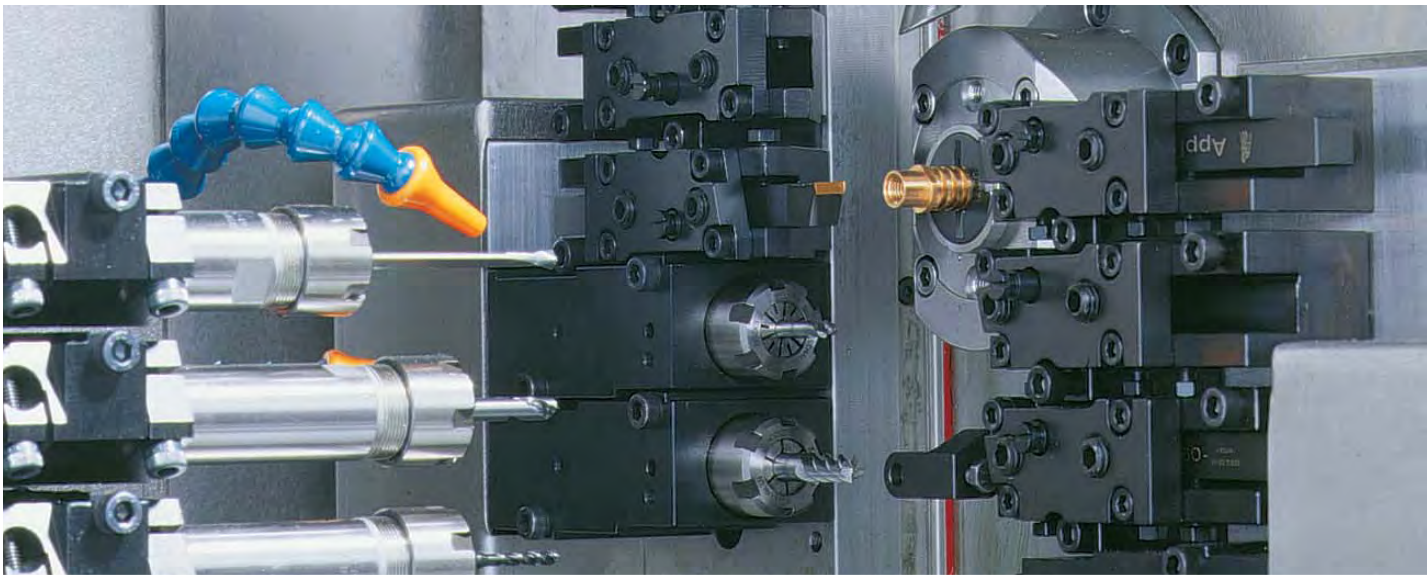
# CASE STUDY : TOOL HOLDER FOR TRIANGULAR INSERTS

案例学习：三角形刀盘和刀片



		Allgemeineinheiten nach: ISO 2768-MH	
Diese Zeichnung ist Eigentum der Friedrich Glor AG und darf ohne deren Einverständnis nicht verwendet werden			
Projektion		Name	
Datum 21.12.2009		mka	
Maßstab 2:1		Material	
Werkstückentwurf nach ISO 13715		11	
1		A3	
Wirbelkopf 501 0007			
Status		Datum	
4		5	
6		6	

# 瑞士车动力刀座 及工具系统



# Passion for precision

Precise and rigid manufacture  
Adaptable to all types of machines  
100% Checked and tested  
High speed rotation  
Longer toll life

## Adjustable coolant nozzle

Buse orientable pour l'arrosage  
Ugello refrigerante regolabile

## Improved sealing design combining a labyrinth and optimized friction seals to get hermetically sealed spindles

Amélioration de la conception de l'étanchéité en combinant un labyrinthe et joints à friction optimisée pour obtenir une parfaite étanchéité

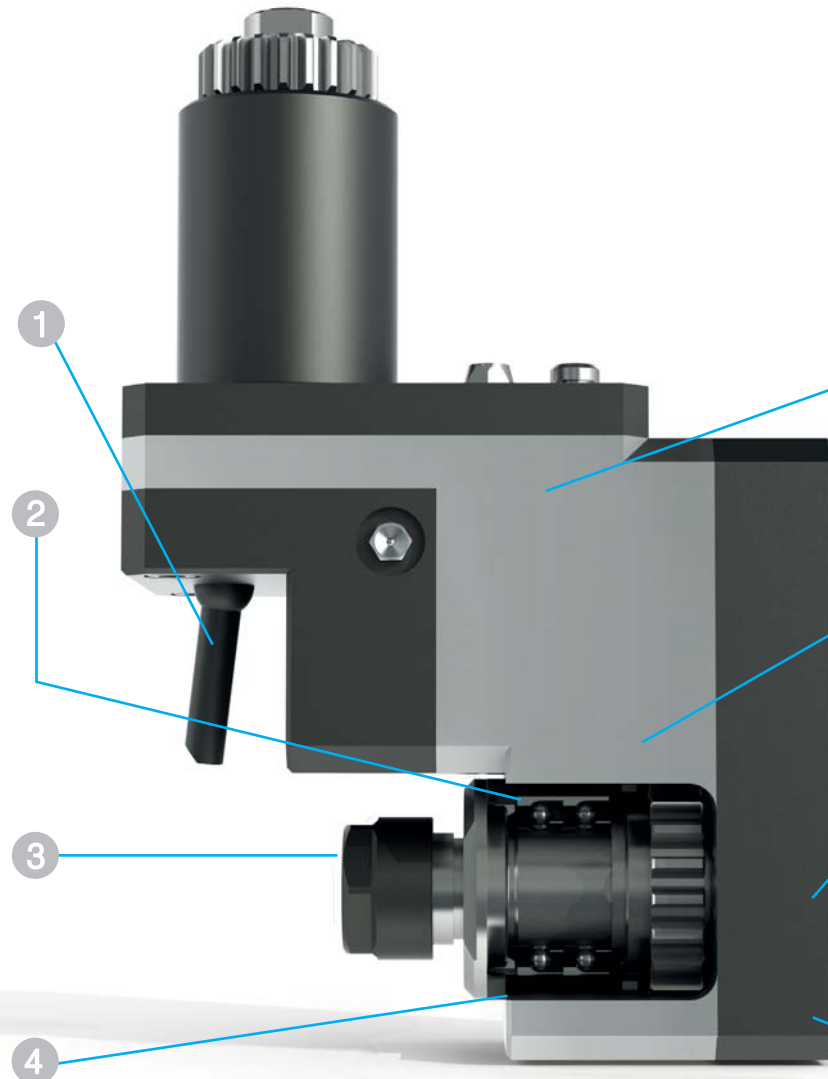
Design migliorato che combina labirinti e guarnizioni di tenuta, ottimizzati per ottenere mandrini ermetici

## Multiple output options

Multiples options de sortie  
Diverse opzioni di uscita

## Primary labyrinth seal

Joint à labyrinthe primaire  
Tenuta primaria a labirinto



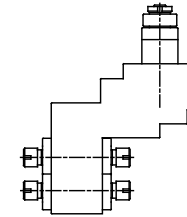
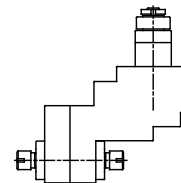
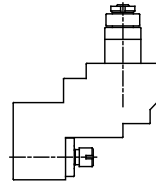
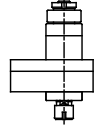
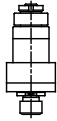
5 Hand matched or ground spiral bevel gears to minimize backlash.  
Smooth and quiet running with higher torque  
Engrenages conique-spirales rectifiés ou rodés pour un jeu minimale.  
Fonctionnement souple et silencieux avec un couple élevé.  
Abbinato a ingranaggi conici a spirale per ridurre al minimo il contraccolpo.  
Fluida e silenzioso con una coppia più elevata


6 High precision P4 quality preloaded bearings  
Roulements de haute précision précharges  
Cuscinetti di alta precisione qualità P4 precaricati

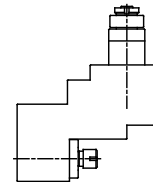
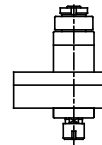
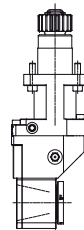
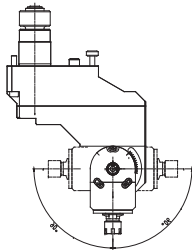
7 Available with coolant through the spindle up to 80 bar.  
Disponible avec passage du liquide de refroidissement à travers de la broche  
Disponibili con refrigerante interno (mandrino)



8 High grade synthetic grease for long life lubrication  
Lubrification à la graisse à longue durée de vie  
Grasso sintetico per la lubrificazione a lunga durata









<b>Code</b>	CZ.000.A20 (BSC-210)	CZ.002.A20 (BSC-510)	CZ.011.A20	CZ.008.A20 (BSE-1007)	CZ.029.A20-4 (BSE-2007)
<b>Type</b>	Axial	Axial Speeder	Radial Set-Back	Radial Double Output	Radial 4 Spindle
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	6.000	15.000 	6.000	6.000	6.000
<b>Ratio</b>	1:1	1:3	1:1	1:1	1:1



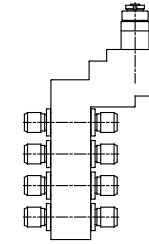
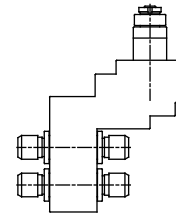
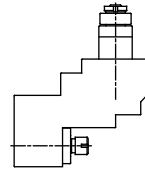
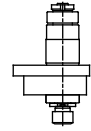
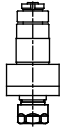
<b>Code</b>	CZ.021.A20 (BSA-107)	CZ.035.A20	CZ.003.A20	CZ.013.A20
<b>Type</b>	Radial Set-Back Adjustable $\pm 90^\circ$	Thread Whirling $\pm 12,5^\circ$	Axial Offset Reducer	Radial Subspindle Speeder
<b>Output</b>	ER-11	Cutting head	ER-20	ER-11
<b>Speed</b> RPM Max	6.000	6.000	3.000 	10.000 
<b>Ratio</b>	1:1	1:1	2:1	1:2


Symbology

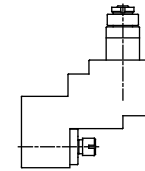
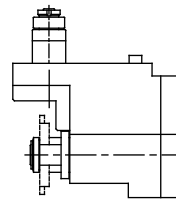
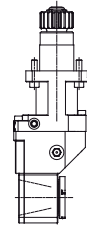
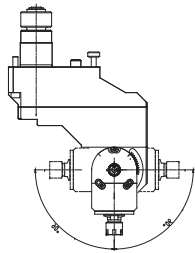
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer


# CITIZEN

MODEL  
A32 VII







<b>Code</b>	CZ.000.A32 (GSC-1110)	CZ.002.A32 (BSC-610)	CZ.011.A32	CZ.008.A32-4 (BSE-3207)	CZ.008.A32-8 (BSE-3208)
<b>Type</b>	Axial	Axial Speeder	Radial Set-Back	Radial 4 Spindle	Radial 8 Spindle
<b>Output</b>	ER-16	ER-11	ER-16	ER-16	ER-16
<b>Speed</b> RPM Max	5.000	15.000	5.000	5.000	5.000
<b>Ratio</b>	1:1	1:3 	1:1	1:1	1:1



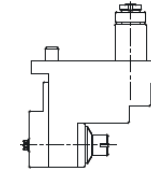
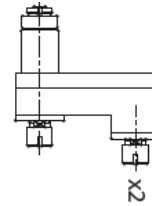
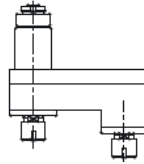
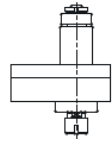
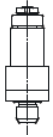
<b>Code</b>	CZ.021.A32 (BSA-3107)	CZ.035.A32	CZ.034.A32 (BSF-509)	CZ.013.A32
<b>Type</b>	Radial Set-Back Adjustable $\pm 90^\circ$	Thread Whirling $\pm 12,5^\circ$	Polygon Maker	Radial Speeder
<b>Output</b>	ER-11	Cutting head	$\varnothing 10$	ER-11
<b>Speed</b> RPM Max	5.000	6.000	5.000	15.000 
<b>Ratio</b>	1:1	1:1	1:1	1:3

## Symbology

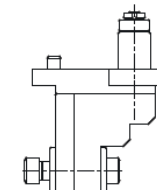
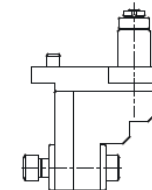
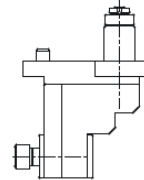
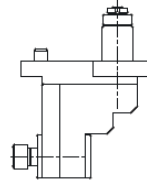
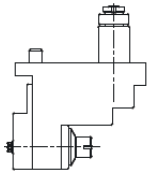
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# CITIZEN

MODEL  
K12/K16



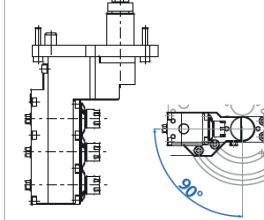
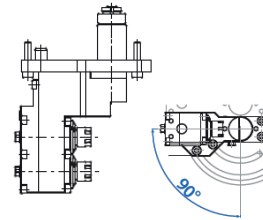
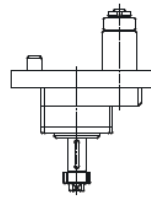
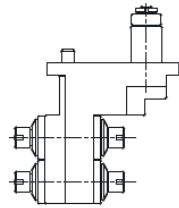
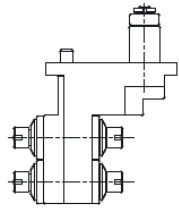
<b>Code</b>	CZ.000.K12/K16 (GSC-807)	CZ.002.K12/K16 (GSC-807 - 3X)	CZ.023.K12/K16 (GSC-860)	CZ.023.K12/K16S (GSC-860S - 2X)	CZ.011.K12/K16 (GSE-2607)
<b>Type</b>	Axial	Axial Speeder	Axial Double Output	Axial Double Output Speeder	Radial Set-Back
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	6.000	15.000	6.000	6.000/12.000	6.000
<b>Ratio</b>	1:1	1:3	1:1	1:1/1:2	1:1



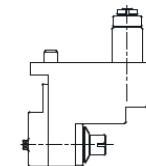
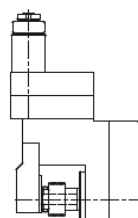
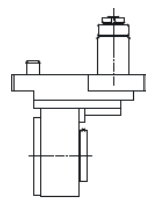
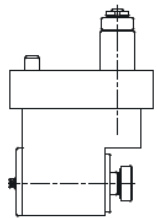
<b>Code</b>	CZ.013.K12/K16 (GSE-2607-2X)	CZ.033.K12/K16 (GSE-2707)	CZ.013.K12/K16 (GSE-2707 - 2X)	CZ.008.K12/K16 (GSE-2708)	CZ.008.K12/K16S (GSE-2307-2X)
<b>Type</b>	Radial Set-Back Speeder	Radial Subspindle	Radial Subspindle Speeder	Radial Double Output	Radial Double Output Speeder
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	12.000	6.000	12.000	6.000	12.000
<b>Ratio</b>	1:2	1:1	1:2	1:1	1:2

### Symbology

- Internal coolant
- High frequency
- Speeder
- Reducer



<b>Code</b>	CZ.029.K12/K16-4 (GSE-2207)	CZ.029.K12/K16-S (GSE-2507-2X)	CZ.038.K12/K16 (GSS-350)	CZ.051.K12/K16-A	CZ.051.K12/K16-B
<b>Type</b>	Radial 4 Spindles	Radial 4 Spindles Speeder	Axial Saw-Mill Reducer	Radial Double Adjustable 0 - 90°	Radial Triple Adjustable 0 - 90°
<b>Output</b>	ER-11	ER-11	Ø13	ER-11	ER-8
<b>Speed</b> RPM Max	6.000	12.000	3.000	6.000	6.000
<b>Ratio</b>	1:1	1:2	2:1	1:1	1:1



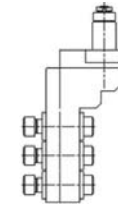
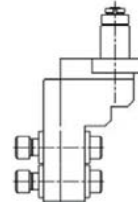
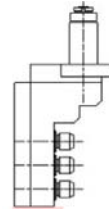
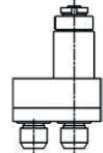
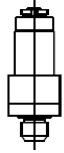
<b>Code</b>	CZ.034.K12/K16	CZ.035.K12/K16 (GSW-101)	CZ.036.K12/K16	CZ.000.K12 POST (GSC-1107)	CZ.011.K12 POST (GSS-1430)
<b>Type</b>	Polygon Maker Reducer	Thread Whirling ± 15°	Gear Hobbing	Axial Back Spindle	Radial Back Spindle
<b>Output</b>	Ø13	Cutting Head	Ø8	ER-11	ER-11
<b>Speed</b> RPM Max	2.000	6.000	6.000	6.000	6.000
<b>Ratio</b>	3:1	1:1	1:1	1:1	1:1

Symbology

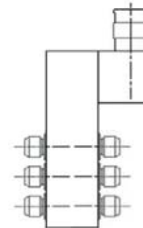
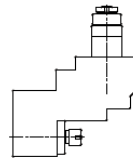
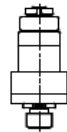
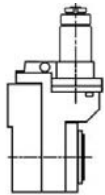
- Internal coolant
- High frequency
- Speeder
- Reducer

# CITIZEN

MODEL  
L20E-IX







<b>Code</b>	CZ.000.L20N (GSC-1210)	CZ.023.L20N (GSC-1307)	CZ.029.L20N (GSC-3010)	CZ.008.L20N/4 (GSE-3107)	CZ.008.L20N/6 (GSE-3207)
<b>Type</b>	Axial	Axial Double Output	Radial 3 Spindles	Radial 4 Spindles	Radial 6 Spindles
<b>Output</b>	ER-16	ER-11	ER-16	ER-11	ER-11
<b>Speed</b> RPM Max	5.000	5.000	5.000	5.000	5.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1



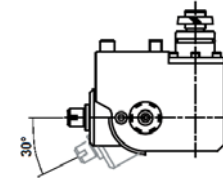
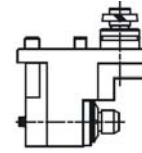
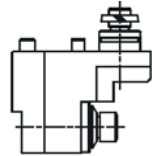
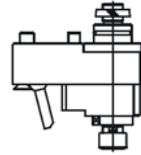
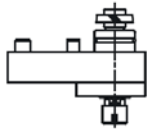
<b>Code</b>	CZ.035.L20N	CZ.002.L20 POST (GSE-3307)	CZ.011.L20 POST (GSS-1330)	GDF507-MM	
<b>Type</b>	Thread Whirling	Axial Back Tools	Radial Back Tools	Back Tools	
<b>Output</b>	Cutting Head	ER-16	ER-16	Ø19,05	
<b>Speed</b> RPM Max	5.000	5.000	5.000	-	
<b>Ratio</b>	1:1	1:1	1:1	-	

Symbology

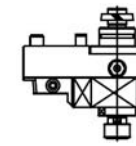
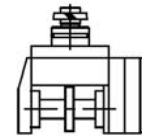
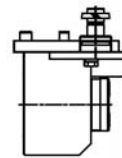
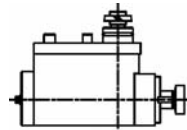
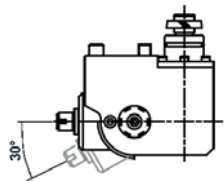
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# CITIZEN

MODEL  
M12/M16T



<b>Code</b>	CZ.000.M12/M16T (MSC-106)	CZ.002.M12/M16T (MSC-106-2X)	CZ.011.M12/M16T (MSE-106)	CZ.013.M12/M16T (MSE-106-3X)	CZ.021.M12/M16T (MSA-103)
<b>Type</b>	Axial	Axial Speeder	Radial Set-Back	Radial Speeder	Radial Adjustable 0-30°
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	6.500	13.000	6.500	15.000	6.500
<b>Ratio</b>	1:1	1:2	1:1	1:3	1:1



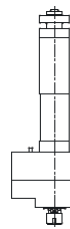
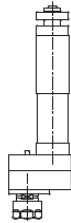
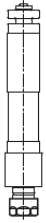
<b>Code</b>	CZ.021.M12/M16TS (MSA-103-3X)	CZ.034.M12/M16T (MSP-160)	CZ.035.M12/M16T (MSW-101)	CZ.036.M12/M16T (MSH-132)	CZ.050.M12/M16T
<b>Type</b>	Radial Adjustable 0-30° Speeder	Polygon Maker Reducer	Thread Whirling ± 15°	Gear Hobbing	Axial "Y" Axis Adjustable ±6,5°
<b>Output</b>	ER-8	∅ 16	Cutting Head	Cyl-Shaft	ER-11
<b>Speed</b> RPM Max	15.000	4.000	6.000	2.000	6.500
<b>Ratio</b>	1:3	3:1	2:1	3:1	1:1

Symbology

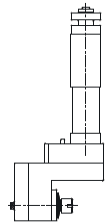
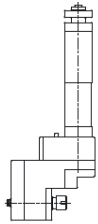
- Internal coolant
- High frequency
- Speeder
- Reducer

# CITIZEN

MODEL  
M20/M32



<b>Code</b>	CZ.000.M20/M32 (GSC-510)	CZ.001.M20/M32	CZ.002.M20/M32 (GSC-510-3X)	CZ.008.M20/M32 (GSE-306)	CZ.008.M20/M32S (GSE-306-3X)
<b>Type</b>	Axial	Axial Offset	Axial Speeder	Radial Double Output	Radial Double Output Speeder
<b>Output</b>	ER-16	ER-16	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	5.000	5.000	15.000	5.000	15.000
<b>Ratio</b>	1:1	1:1	1:3	1:1	1:3



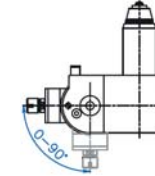
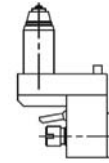
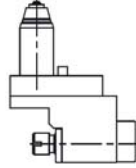
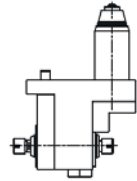
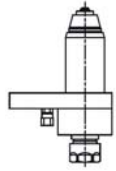
<b>Code</b>	CZ.011.M20/M32 (GSE-507)	CZ.013.M20/M32	CZ.021.M20/M32 (GSA-107)	CZ.035.M20/M32	CZ.038.M20/M32 (GSS-510)
<b>Type</b>	Radial Set-Back	Radial Speeder	Radial Adjustable Speeder	Thread Whirling $\pm 25^\circ$	Axial Saw-Mill
<b>Output</b>	ER-11	ER-11	ER-11	Cutting Head	$\varnothing 13$
<b>Speed</b> RPM Max	5.000	15.000	15.000	6.000	2.500
<b>Ratio</b>	1:1	1:3	1:2,5	1:1	2:1


Symbology

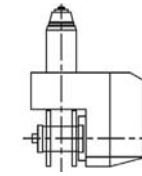
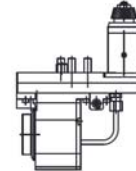
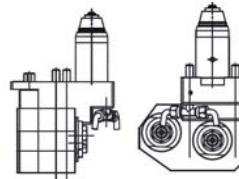
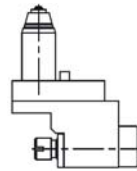
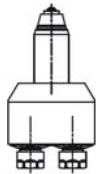
- Internal coolant
- High frequency
- Speeder
- Reducer



# CITIZEN

MODEL  
M20/M32T







<b>Code</b>	CZ.000.M20/M32T (KSC-110-K)	CZ.008.M20/M32T (KSE-110)	CZ.011.M20/M32T	CZ.013.M20/M32T (KSE-110-2X)	CZ.021.M20/M32T (KSA-107-S)
<b>Type</b>	Axial	Radial Double Output	Radial Set-Back	Radial Set-Back Speeder	Radial Adjustable
<b>Output</b>	ER-16	ER-16	ER-20-A	ER-11	ER-11
<b>Speed</b> RPM Max	5.000	5.000	5.000	10.000 	5.000
<b>Ratio</b>	1:1	1:1	1:1	1:2	1:1



<b>Code</b>	CZ.023.M20/M32T (KSC-510)	CZ.017.M20/M32T (KSE-110KAI)	CZ.029.M20/M32T	CZ.035.M20/M32T (KSW-101)	CZ.036.M20/M32T (KSS-660)
<b>Type</b>	Axial Double Output	Radial Set-Back Coolant Through 	Radial 2 Spindles	Thread Whirling $\pm 15^\circ$	Gear Hobbing
<b>Output</b>	ER-16	ER-16	ER-16	Cutting Head	Cyl-Shaft
<b>Speed</b> RPM Max	5.000	5.000	5.000	5.000	2.000 
<b>Ratio</b>	1:1	1:1	1:1	1:1	3:1

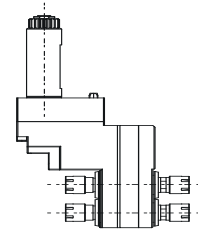
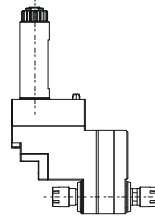
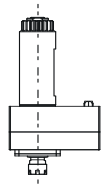
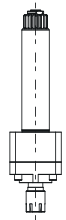
### Symbology



-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

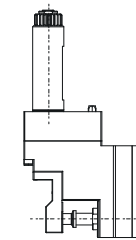
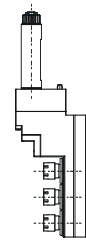
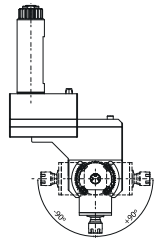
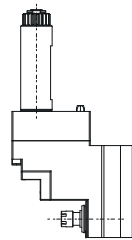
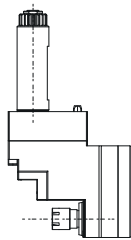



# DOOSAN

MODEL  
PUMA ST16/20/32







Code	DN.000.ST	DN.002.ST	DN.003.ST	DN.008.ST-2	DN.008.ST-4
Type	Cross rotary tool holder unit	Speeder cross rotary tool holder	Reducer cross rotary tool holder unit	2 Opposite output front rotary tool holder unit	4 Opposite output front rotary tool holder unit
Output	ER-16	ER-11 	ER-20 	ER-16	ER-16
Speed RPM Max	8.000	15.000	4.000	8.000	8.000
Ratio	1:1	1:2	2:1	1:1	1:1



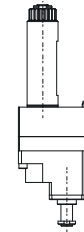
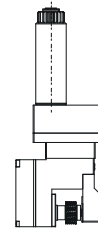
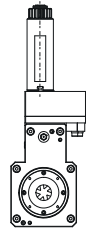
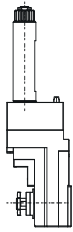
Code	DN.011.ST	DN.013.ST	DN.021.ST	DN.029.ST-3	DN.030.ST
Type	Front rotary tool holder unit	Speeder front rotary tool holder unit	Spindle adjustable angle unit $\pm 90^\circ$	Multiple output front rotary tool holder unit	Slotting unit
Output	ER-16	ER-16 	ER-11	ER-16	ER-16
Speed RPM Max	8.000	15.000	8.000	8.000	8.000
Ratio	1:1	1:2	1:1	1:1	1:1

## Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# DOOSAN

MODEL  
PUMA ST16/20/32



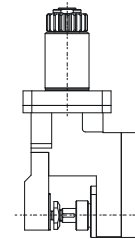
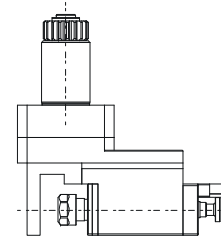
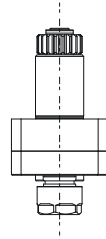
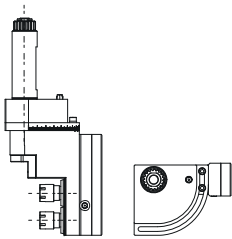
**Code** DN.034.ST DN.035.ST DN.036.ST DN.038.ST

**Type** Polygon maker unit Thread whirling unit Gear hobbing unit Cross milling unit

**Output** Ø12 - Ø8 Ø12

**Speed** RPM Max 8.000 8.000 8.000 4.000 

**Ratio** 1:1 1:1 1:1 2:1



**Code** DN.051.ST DN.000.STB DN.011.STB DN.030.STB





**Type** Spindle adjustable 0-90° Back op. rotary tool holder Back op. front rotary tool Back op. slotting unit

**Output** ER-16 ER-16 ER-16 Ø13

**Speed** RPM Max 8.000 6.000 6.000 6.000

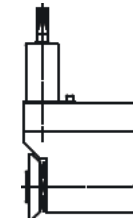
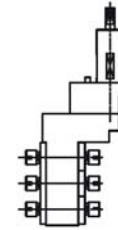
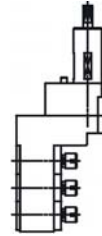
**Ratio** 1:1 1:1 1:1 1:1



## Symbology

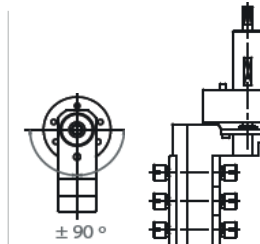
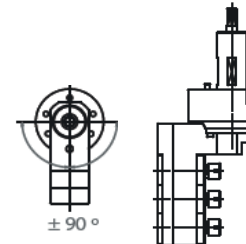
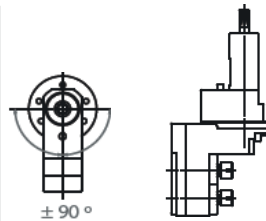
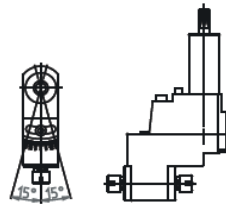
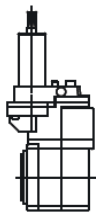
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# HANVHA

MODEL  
XD-20/26H  
Cross drill tooling







<b>Code</b>	HW.002.XD2	HW.021.XD2	HW.029.XD2/3	HW.029.XD2/6	HW.030.XD2/A
<b>Type</b>	Axial Speeder	Radial Adjustable $\pm 90^\circ$	Radial 3 Spindles	Radial 6 Spindles	Saw-Mill
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	$\varnothing 16$
<b>Speed</b> RPM Max	15.000 	8.000	8.000	8.000	4.000 
<b>Ratio</b>	1:3	1:1	1:1	1:1	3:1



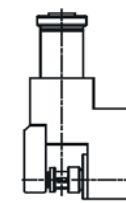
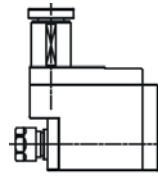
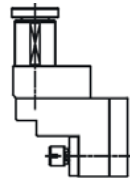
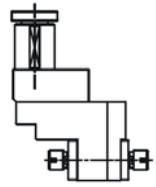
<b>Code</b>	HW.035.XD2	HW.051.XD2/2A	HW.051.XD2/2B	HW.051.XD2/3	HW.051.XD2/6
<b>Type</b>	Thread Whirling $\pm 15^\circ$	Radial Adjustable $\pm 15^\circ$ Double Output	Radial Adjustable $\pm 90^\circ$ 2 Spindles	Radial Adjustable $\pm 90^\circ$ 3 Spindles	Radial Adjustable $\pm 90^\circ$ 6 Spindles
<b>Output</b>	Cutting Head	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	8.000	8.000	8.000	8.000	8.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1


Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer





# HANVHA

MODEL  
XD-20/26H  
Back end tooling



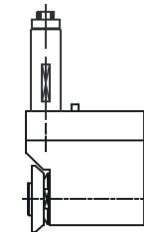
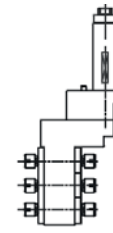
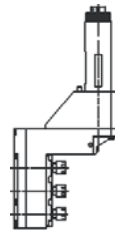
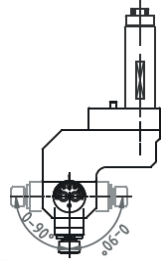
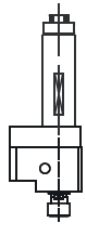
Code	HW.008.XD2/BE	HW.011.XD2/BE	HW.014.XD2/BE	HW.021.XD2/BE	HW.030.XD2/BE
Type	Radial Double Output	Radial Set-Back	Radial Set-Back Reducer	Radial Adjustable 0-90°	Saw-Mill
Output	ER-11	ER-11	ER-16	ER-11	Ø13
Speed RPM Max	9.500	9.000	9.000 	8.000	6.000
Ratio	1:1	1:1	1,5:1	1:1	1:1



## Symbology

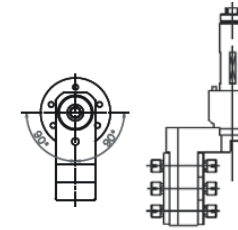
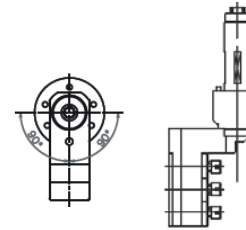
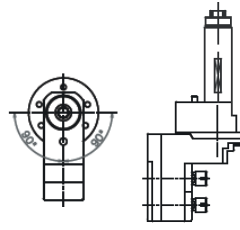
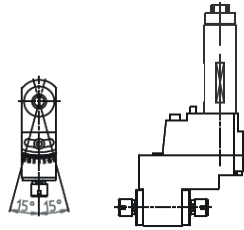
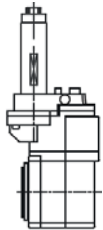
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# HANVHA

MODEL  
XD-32/35/38H







<b>Code</b>	HW.002.XD3	HW.021.XD3	HW.029.XD3/3	HW.029.XD3/6	HW.030.XD3/B
<b>Type</b>	Axial Speeder	Radial Adjustable $\pm 90^\circ$	Radial 3 Spindles	Radial 6 Spindles	Adjustable Saw-Mill
<b>Output</b>	ER-11	ER-11	ER-11M	ER-11	$\varnothing 16$
<b>Speed</b> RPM Max	15.000 	8.000	8.000	8.000	3.000 
<b>Ratio</b>	1:3	1:1	1:1	1:1	3:1



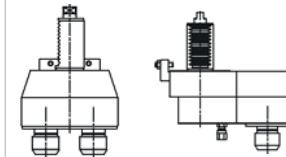
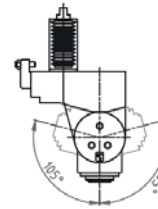
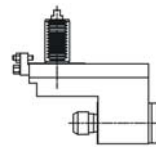
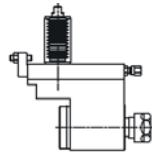
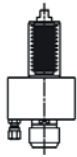
<b>Code</b>	HW.035.XD3	HW.051.XD3/2A	HW.051.XD3/2B	HW.051.XD3/3	HW.051.XD3/6
<b>Type</b>	Thread Whirling $\pm 15^\circ$	Radial Adjustable $\pm 15^\circ$ Double Output	Radial Adjustable $\pm 90^\circ$ 2 Spindles	Radial Adjustable $\pm 90^\circ$ 3 Spindles	Radial Adjustable $\pm 90^\circ$ 6 Spindles
<b>Output</b>	Cutting Head	ER-11	ER-11	ER-11M	ER-11
<b>Speed</b> RPM Max	8.000	9.500	8.000	8.000	8.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1

Symbology

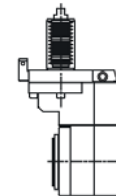
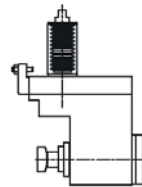
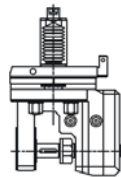
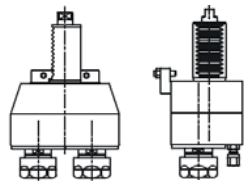
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# HANVHA

MODEL  
STL-32/35/38H



Code	HW.000.STL	HW.010.STL	HW.011.STL	HW.021.STL	HW.023.STL/A
Type	Axial	Radial Sub Spindle	Radial Set-Back	Radial Adjustable $\pm 105^\circ$	Axial Offset 2 Spindles
Output	ER-20	ER-20	ER-20	ER-16	ER-20
Speed RPM Max	6.000	6.000	6.000	6.000	6.000
Ratio	1:1	1:1	1:1	1:1	1:1



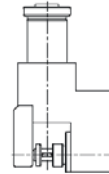
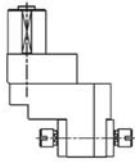
Code	HW.023.STL/B	HW.030.STL	HW.034.STL	HW.035.STL
Type	Axial Offset 2 Spindles	Gear Hobbing	Polygon Maker	Thread Whirling $\pm 15^\circ$
Output	ER-20	$\varnothing 16$	$\varnothing 16$	Cutting Head
Speed RPM Max	6.000	6.000	6.000	6.000
Ratio	1:1	1:1	1:1	2:1

### Symbology

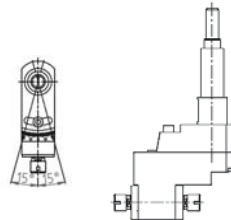
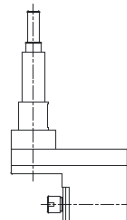
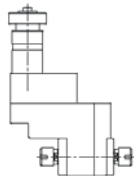
- Internal coolant
- High frequency
- Speeder
- Reducer

# HANVHA

MODEL  
 SL 26/32/35 HPII  
 SL 26/32/35 HPD  
 SL 20/26S - SL 20/26H







Code	HW.008.SL35	HW.011.SL35	HW.030.SL33HP
Type	Radial Double Output	Radial Set-back	Saw-Mill
Output	ER-11	WELDON Ø10	Ø10
Speed RPM Max	5.000	5.000	
Ratio	1:1	1:1	1:1



Code	HW.008.SL20/26S	HW.011.SL20/26	HW.051.SL20/26H
Type	Radial Double Output	Radial Set-Back	Radial Adjustable $\pm 15^\circ$
Output	ER-11	ER-11	ER-11
Speed RPM Max	9.500	9.500	9.500
Ratio	1:1	1:1	1:1

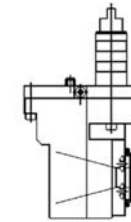
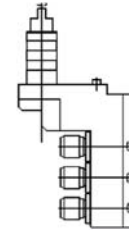
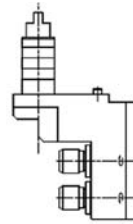
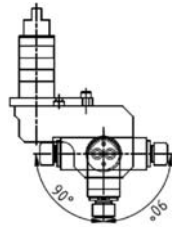
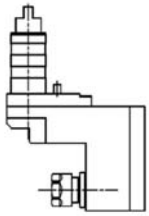
## Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

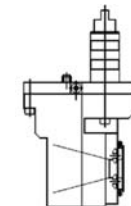
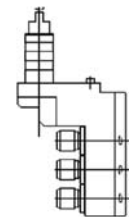
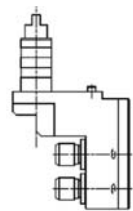
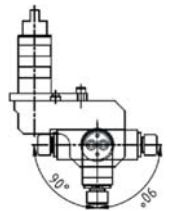
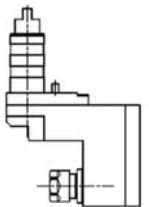
# NEXTURN

MODEL

SA12B - SA20B - SA32B/M  
SA12B/20B/32B, SA12M/20M/32M  
SA20P/26P/32B/38P







Code	NX.011.B/M	NX.021.B/M	NX.029.B/M2	NX.029.B/M3	NX.035.B/M
Type	Radial Set-Back	Radial Adjustable $\pm 90^\circ$	Radial 2 Spindles	Radial 3 Spindles	Thread Whirling
Output	ER-11	ER-11	ER-11	ER-11	Cutting head
Speed RPM Max	8.000	8.000	8.000	8.000	5.000
Ratio	1:1	1:1	1:1	1:1	1:1



Code	NX.011.P	NX.021.P	NX.029.P2	NX.029.P3	NX.035.P
Type	Radial Set-Back	Radial Adjustable $\pm 90^\circ$	Radial 2 Spindles	Radial 3 Spindles	Thread Whirling
Output	ER-11	ER-11	ER-11	ER-11	Cutting head
Speed RPM Max	8.000	8.000	8.000	8.000	5.000
Ratio	1:1	1:1	1:1	1:1	1:1

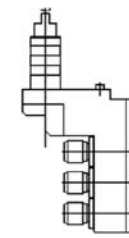
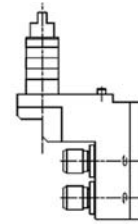
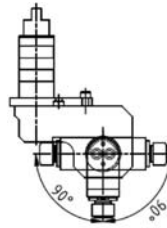
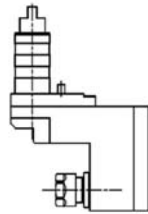
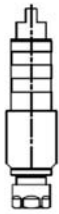
Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

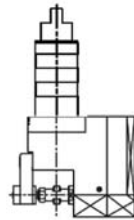
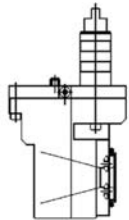



# NEXTURN

MODEL  
SA20PY/26PY/32PY/38PY  
Modular







<b>Code</b>	NX.000.PY	NX.011.PY	NX.021.PY	NX.029.PY2	NX.029.PY3
<b>Type</b>	Axial	Radial Set-Back	Radial Adjustable $\pm 90^\circ$	Radial 2 Spindles	Radial 3 Spindles
<b>Output</b>	ER-16	ER-16	ER-16	ER-11	ER-11
<b>Speed</b> RPM Max	8.000	8.000	8.000	8.000	8.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1



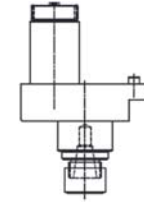
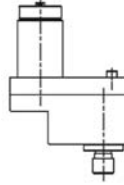
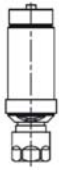
<b>Code</b>	NX.035.PY	NX.030.PY			
<b>Type</b>	Thread Whirling	Saw-Mill			
<b>Output</b>	Cutting head	-			
<b>Speed</b> RPM Max	5.000	4.000 			
<b>Ratio</b>	1:1	2:1			



Symbology

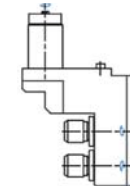
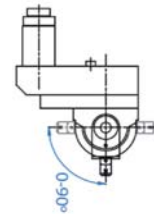
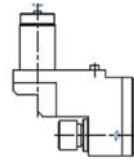
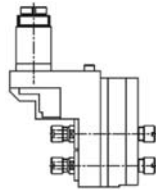
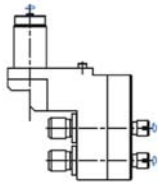
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer


# STAR

MODEL  
 ECAS 12/20, SV12/20/32  
 SR20R-RIII, SR32J, SV32J  
 Ø34







<b>Code</b>	ST.000.34 (331-50)	ST.000.34L (571-55)	ST.001.34	ST.002.34	ST.003.34
<b>Type</b>	Axial	Axial Long	Axial Offset	Axial Speeder	Axial Offset Reducer
<b>Output</b>	ER-16	ER-16	ER-11	ER-11	ER-16
<b>Speed</b> RPM Max	6.000	6.000	6.000	15.000 	4.000 
<b>Ratio</b>	1:1	1:1	1:1	1:3,64	2:1



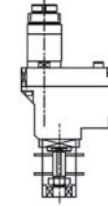
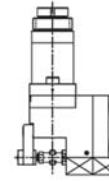
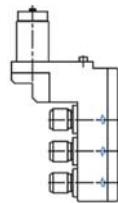
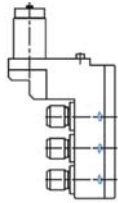
<b>Code</b>	ST.008.34C (421-59)	ST.008.34D (661-59)	ST.011.34 (581-52)	ST.021.34	ST.029.34A only SR32
<b>Type</b>	Radial 90° 4 Spindles	Radial 90° 4 Spindles	Radial Set-Back	Radial Adjustable	Radial 2 Spindles
<b>Output</b>	ER-11 + ER16	ER-11	ER-16	ER-8	ER-16
<b>Speed</b> RPM Max	6.000	6.000	6.000	24.000 	6.000
<b>Ratio</b>	1:1	1:1	1:1	1:3	1:1

## Symbology

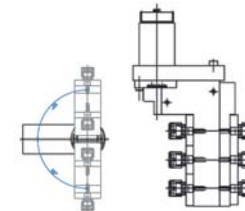
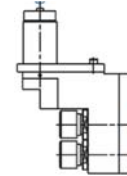
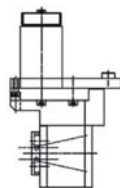
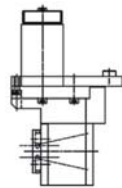
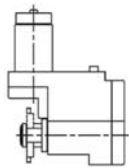
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# STAR

MODEL  
 ECAS 12/20, SV12/20/32  
 SR20R-RIII, SR32J, SV32J  
 Ø34



<b>Code</b>	ST.029.34B (661-51) only SR32	ST.029.34C only SR20	ST.029.34S	ST.030.34	ST.030.34D (541-54)
<b>Type</b>	Radial 3 Spindles	Radial 3 Spindles	Radial 2 Spindles Speeder	Saw-Mill	Axial saw-mill double
<b>Output</b>	ER-16	ER-16	ER-16	Ø13	Ø13
<b>Speed</b> RPM Max	6.000	6.000	8.000	5.000	2.800
<b>Ratio</b>	1:1	1:1	1:2	2:1	2,67:1



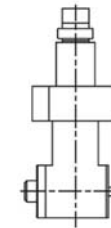
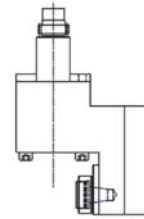
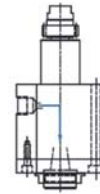
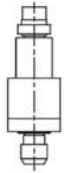
<b>Code</b>	ST.034.34 (541-91)	ST.035.34 (541-78)	ST.035.34/15	ST.051.34A	ST.051.34B
<b>Type</b>	Polygon Maker	Thread Whirling ±12,5°	Thread Whirling ±15°	Radial Double Output Swiveling	Radial 6 Spindle Swiveling ±90°
<b>Output</b>	Ø13	Cutting Head	Cutting Head	ER-16	ER-11
<b>Speed</b> RPM Max	6.000	5.000	6.000	6.000	6.000
<b>Ratio</b>	1:1	1,3:1	1:1	1:1	1:1



Symbology

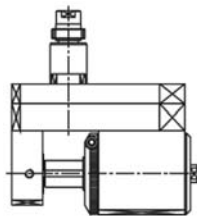
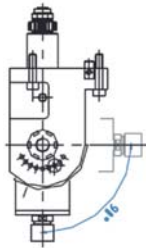
- Internal coolant
- High frequency
- Speeder
- Reducer


# STAR

MODEL  
 ECAS 12/20, SR16RII  
 SR20R-RIII, SR32J, SV32J  
 Ø22 Back operation







<b>Code</b>	ST.000.22A (541-61)	ST.000.22B (571-61)	ST.005.22	ST.011.22	ST.014.22
<b>Type</b>	Axial	Axial	Axial w/ht Coolant Through 	Radial Set-Back	Radial Reducer
<b>Output</b>	ER-11	ER-16	ER-11A	ER-11A	ER-8
<b>Speed</b> RPM Max	6.000	6.000	6.000	6.000	4.500 
<b>Ratio</b>	1:1	1:1	1:1	1:1	1,3:1



<b>Code</b>	ST.021.22	ST.030.22			
<b>Type</b>	Radial Adjustable 0-90°	Saw-Mill			
<b>Output</b>	ER-11	Ø13 / Ø16			
<b>Speed</b> RPM Max	6.000	2.700 			
<b>Ratio</b>	1:1	2,18:1			

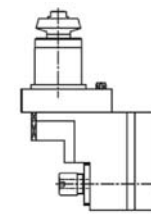
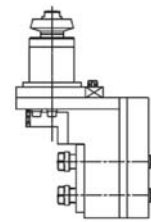
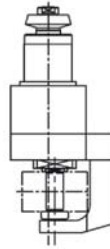
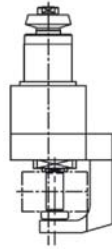
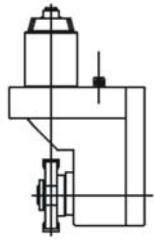


## Symbology

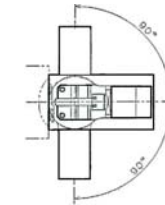
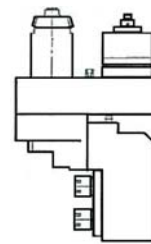
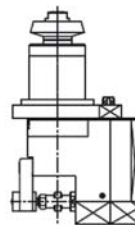
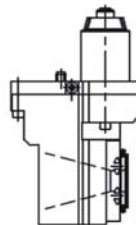
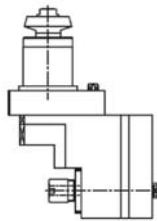
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# STAR

MODEL  
SV-38R Model 19101 (B-axis)







<b>Code</b>	ST.034.SV38 (341-91)	ST.030.SV38 (431-53)	ST.030.SV38 (431-54)	ST.029.SV38S (431-63)	ST.011.SV38 (431-62-52)
<b>Type</b>	Polygon Maker	Saw-Mill Double	Saw-Mill Double	Radial Double Output	Radial Set-Back
<b>Output</b>	Ø16	Ø13	Ø13	ER-20	ER-16
<b>Speed</b> RPM Max	3.000 ↓	2.000 ↓	2.000 ↓	6.000	6.000
<b>Ratio</b>	2:1	2:1	2:1	1:1	1:1



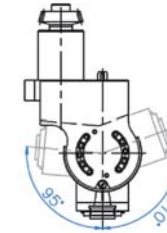
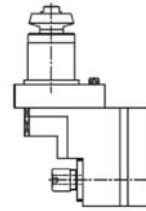
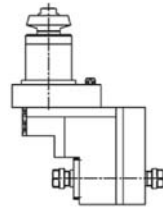
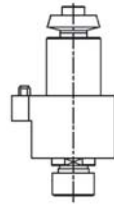
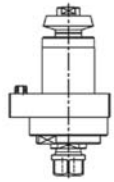
<b>Code</b>	ST.011.SV38B (581-56)	ST.035.SV38 (431-56)	ST.030.SV38 (431-58)	ST.051.SV38 (191-01)
<b>Type</b>	Radial Back-Tools	Thread Whirling	Saw-Mill	Radial B-Axis double adjustable ±90°
<b>Output</b>	ER-16	Cutting Head	Ø13	ER-16
<b>Speed</b> RPM Max	6.000	3.000 ↓	3.000 ↓	6.000
<b>Ratio</b>	1:1	2:1	2:1	1:1

Symbology

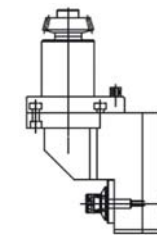
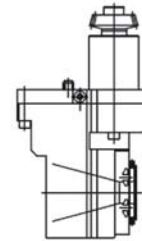
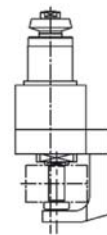
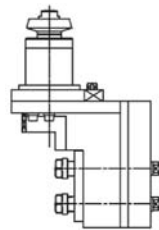
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# STAR

MODEL  
ECAS 20T/32T  
KNC32, SV32, SV38







<b>Code</b>	ST.000.32A (201-50)	ST.000.32B (581-51)	ST.008.32 (201-56)	ST.011.32 (201-52)	ST.021.32A/B
<b>Type</b>	Axial	Axial	Radial Double Output	Radial Set-Back	Radial Adjustable +95° / -110°
<b>Output</b>	ER-16	ER-20	ER-11	ER-16	ER-16 / ER-20
<b>Speed</b> RPM Max	6.000	6.000	6.000	6.000	8.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1



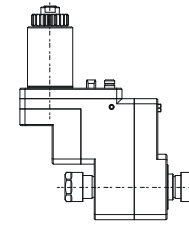
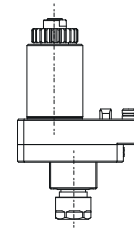
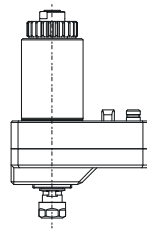
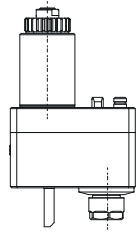
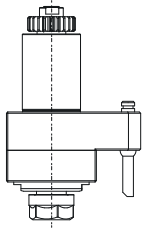
<b>Code</b>	ST.023.32 (431-51)	ST.029.32 (581-55)	ST.030.32 (431-54)	ST.035.32	ST.051.32A/B (421-55)
<b>Type</b>	Axial Double Output	Radial Double Output Adjustable	Saw-Mill	Thread Whirling ±15°	Radial Swiveling ±90°
<b>Output</b>	ER-16	ER-11	Ø16	Cutting Head	ER-11/ER-16
<b>Speed</b> RPM Max	6.000	6.000	2.000 ↓	4.000 ↓	6.000
<b>Ratio</b>	1:1	1:1	1:0,298	1,5:1	1:1



## Symbology

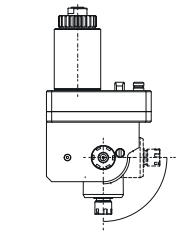
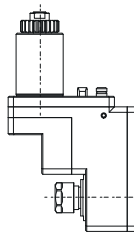
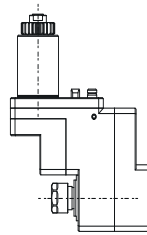
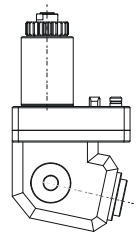
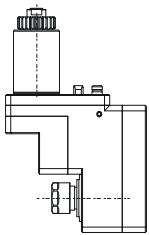
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer



# STAR

MODEL  
SF-25







Code	ST.000.SF25	ST.001.SF25	ST.002.SF25	ST.003.SF25	ST.008.SF25
Type	Heavy duty cross drilling unit	Offset cross drilling unit	Speeder cross drilling unit	Reducer cross drilling unit	Front and back drilling unit
Output	ER-20	ER-16	ER-11	ER-20	ER-16
Speed RPM Max	8.000	8.000	15.000 	4.000 	8.000
Ratio	1:1	1:1	1:2	2:1	1:1



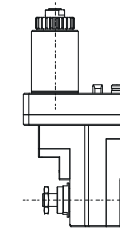
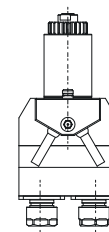
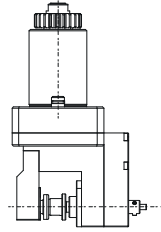
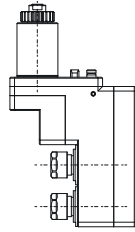
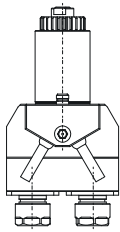
Code	ST.011.SF25	ST.012.SF25	ST.013.SF25	ST.017.SF25	ST.021.SF25
Type	Front drilling unit	Back op. drilling unit $\neq 90^\circ$	Speeder front drilling unit	Front IC drilling unit 80 bar 	Back op. adjustable $\pm 90^\circ$
Output	ER-16	ER-16	ER-11	ER-16	ER-11
Speed RPM Max	8.000	8.000	15.000 	8.000	8.000
Ratio	1:1	1:1	1:2	1:1	1:1



Symbology

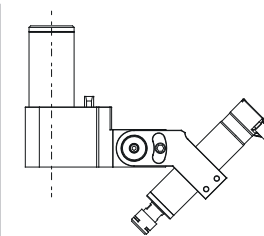
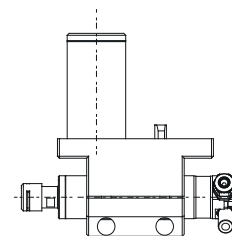
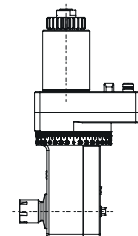
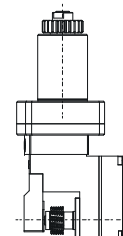
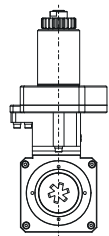
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer




# STAR

MODEL  
SF-25







Code	ST.023.SF25	ST.029.SF25	ST.030.SF25	ST.033.SF25	ST.034.SF25
Type	Double output cross drilling unit	Double output front drilling unit	Saw cutting unit	Double IC cross drilling unit 80 bar 	Polygon maker unit
Output	ER-16	ER-16	Ø13	ER-16	ER-16
Speed RPM Max	8.000	8.000	4.000 	8.000	8.000
Ratio	1:1	1:1	2:1	1:1	1:1



Code	ST.035.SF25	ST.036.SF25	ST.051.SF25	High frequency spindle	High frequency spindle
Type	Thread whirling unit	Gear hobbing unit	Back op. ±90° adjustable angle	Front unit	Front unit with adjustable angle
Output	-	Ø8	ER-16	ER-8	ER-8
Speed RPM Max	8.000	5.000 	8.000	80.000 	80.000 
Ratio	1:1	1.5:1	1:1	*Includes converter + slip ring unit for turret mounting	

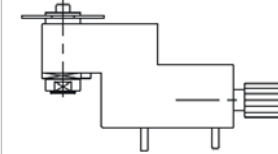
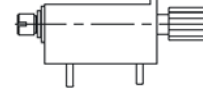
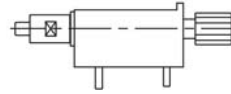
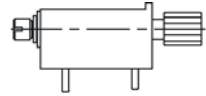
### Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

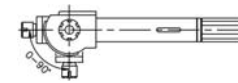
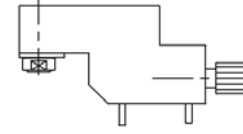
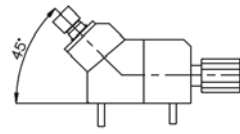
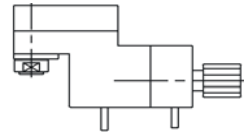
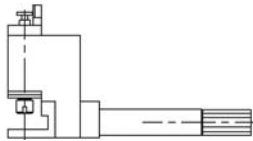


# TORNOS

MODEL  
DECO 7/10  
EVODECO 10



<b>Code</b>	DE.000.10/C	DE.000.10	DE.038.10	DE.002.10	DE.008.10
<b>Type</b>	Axial	Axial Gang	Axial Saw-Mill	Axial Speeder Gang	Radial Double Output
<b>Output</b>	ER-11 or End Mill	ER-11	End mill	ER-11	ER-11 + Saw Cutter
<b>Speed</b> RPM Max	12.000	12.000	12.000	24.000	12.000
<b>Ratio</b>	1:1	1:1	1:1	1:4	1:1



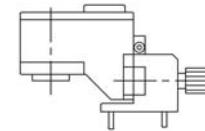
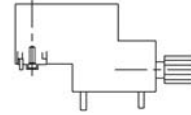
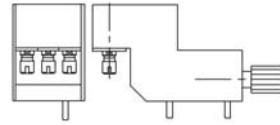
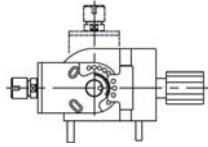
<b>Code</b>	DE.011.10C	DE.011.10	DE.012.10	DE.013.10	DE.021.10/C
<b>Type</b>	Radial 90°	Radial 90° Gang	Radial Fixed Angle	Radial 90° Speeder	Radial Adjustable 0-90°
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	12.000	12.000	12.000	24.000	12.000
<b>Ratio</b>	1:1	1:1	1:1	1:3	1:1


## Symbology

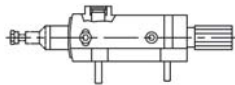
- Internal coolant
- High frequency
- Speeder
- Reducer

# TORNOS

MODEL  
DECO 7/10  
EVODECO 10







<b>Code</b>	DE.021.10	DE.023.10/3	DE.029.10	DE.034.10	DE.035.10
<b>Type</b>	Radial Adjustable Gang	Axial 3 Spindles	Radial 3 Spindles	Polygon Maker	Thread Whirling $\pm 22,5^\circ$
<b>Output</b>	ER-11	ER-11	ER-8	$\varnothing 10$	Cutting Head
<b>Speed</b> RPM Max	12.000	12.000	12.000	12.000	6.000 
<b>Ratio</b>	1:1	1:1	1:1	1:1	1.5:1



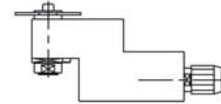
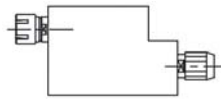
<b>Code</b>	DE.036.10	DE.050.10			
<b>Type</b>	High Precision Gear Hobbing	Axial "Y" Axis			
<b>Output</b>	Gear cutter	ER-11			
<b>Speed</b> RPM Max	12.000	12.000			
<b>Ratio</b>	1:1	1:1			

Symbology

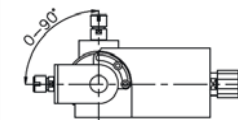
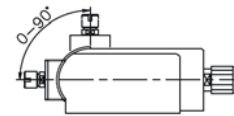
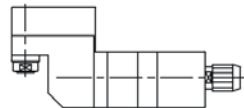
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TORNOS

MODEL  
DECO 13  
EVODECO 16







<b>Code</b>	DE.000.13S/M/L	DE.001.13	DE.003.13	DE.008.13	DE.011.13
<b>Type</b>	Axial Short, Medium, Long	Axial Offset	Axial Offset Reducer	Radial Double Output	Radial 90°
<b>Output</b>	ER-20	ER-20	End mill - ER-20	ER-11 + saw cutter	ER-11
<b>Speed</b> RPM Max	10.000	10.000	2.000 ↓	10.000	10.000
<b>Ratio</b>	1:1	1:1	3:1	1:1	1:1



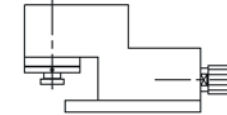
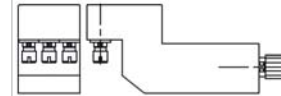
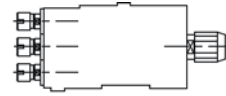
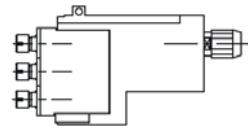
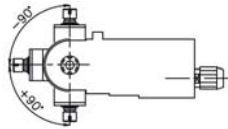
<b>Code</b>	DE.012.13	DE.013.13	DE.033.13	DE.021.13	DE.021.13/S
<b>Type</b>	Fixed Angle	Radial 90° Speeder	Radial 90° Subspindle	Radial Adjustable 0-90°	Radial Adjustable 0-90° Short
<b>Output</b>	ER-16 or ER-20	ER-11	ER-11	ER-11	ER-11
<b>Speed</b> RPM Max	10.000	24.000 ↑	10.000	10.000	10.000
<b>Ratio</b>	1:1	1:3	1:1	1:1	1:1

Symbology

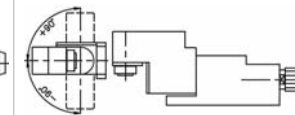
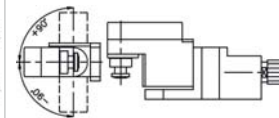
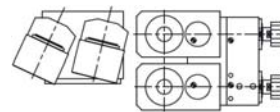
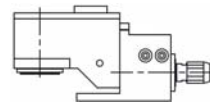
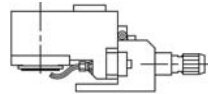
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TORNOS

MODEL  
DECO 13  
EVODECO 16



<b>Code</b>	DE.021.13C	DE.021.13/3	DE.023.13/3	DE.029.13	DE.034.13
<b>Type</b>	Radial Adjustable $\pm 90^\circ$	Radial Adjustable 3 Spindle	Axial 3 Spindles	Radial 3 Spindle	Polygon Maker
<b>Output</b>	ER-11	ER-11	ER-11	ER-11	$\varnothing 16$
<b>Speed</b> RPM Max	10.000	10.000	10.000	10.000	10.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1



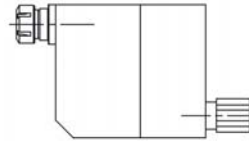
<b>Code</b>	DE.035.13/15	DE.035.13/25	DE.035.13/2	DE.051.13/A	DE.051.13/B
<b>Type</b>	Thread Whirling $\pm 15^\circ$	Thread Whirling $\pm 25^\circ$	Thread Whirling $\pm 25^\circ$ Double Head	Radial Adjustable "Y" axis $\pm 90^\circ$	Radial Adjustable "Y" axis $\pm 90^\circ$
<b>Output</b>	Cutting Head	Cutting Head	Cutting Head	$\varnothing 13$	ER-11
<b>Speed</b> RPM Max	6.000	6.000	6.000	10.000	10.000
<b>Ratio</b>	1:1	1:1	1:1	1:1	1:1




Symbology

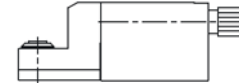
- Internal coolant
- High frequency
- Speeder
- Reducer


# TORNOS

MODEL  
DECO 20/26







Code	DE.000.20S/M/L	DE.005.20S/M/L	DE.001.20	DE.002.20	CZ.003.20/C10
Type	Axial Short, Medium, Long	Axial Whit High Pressure Short, Medium, Long 	Axial Offset	Axial Offset Speeder	Axial Offset Reducer
Output	ER-25	ER-25	ER-25	ER-11	ER-25
Speed RPM Max	8.000	8.000	8.000	24.000 	3.000 
Ratio	1:1	1:1	1:1	1:3	10:1



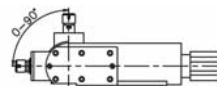
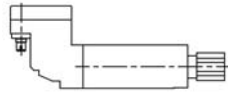
Code	DE.003.20C3	DE.038.20	DE.011.20	DE.011.20/S	DE.012.20
Type	Axial Offset Reducer	Axial Saw-Mill	Radial 90°	Radial 90° Subspindle	Radial Fixed Angle Any Angle
Output	ER-25	Ø22	ER-16	ER-16	ER-11
Speed RPM Max	2.000 	8.000	8.000	8.000	8.000
Ratio	3:1	1:1	1:1	1:1	1:1


Symbology

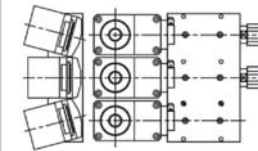
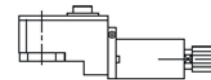
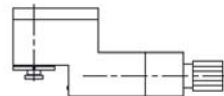
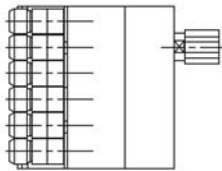
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer


# TORNOS

MODEL  
DECO 20/26







Code	DE.013.20	DE.015.20	DE.021.20S	DE.021.20L	DE.023.20/3
Type	Radial 90° Speeder	Adjustable Milling Cutter and Gear Hobbing	Radial Adjustable Short	Radial Adjustable Long	Axial 3 Spindle
Output	ER-8	Ø22	ER-11	ER-11	ER-11
Speed RPM Max	15.000 	6.000	8.000	8.000	8.000
Ratio	1:3	1:1	1:1	1:1	1:1



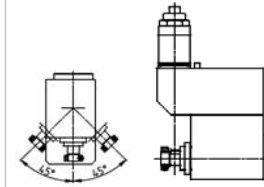
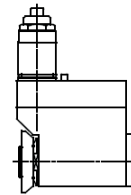
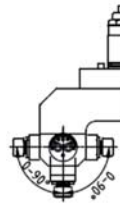
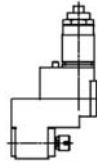
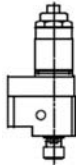
Code	DE.023.20/6	DE.034.20	DE.034.20R	DE.035.20	DE.035.20/3
Type	Axial 6 Spindle	Polygon Maker	Polygon maker reducer	Thread whirling ±15°	Thread Whirling ±15° Triple Head
Output	ER-11	Ø16	Ø16	Cutting Head	Cutting Head
Speed RPM Max	8.000	8.000	4.000 	6.000	6.000
Ratio	1:1	1:1	2:1	1:1	1:1




Symbology

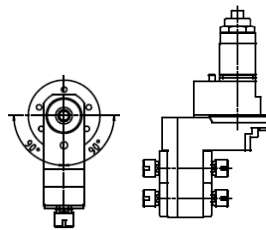
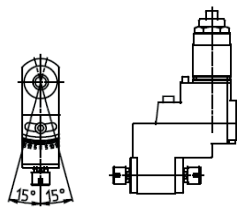
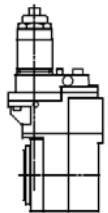
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TORNOS

MODEL  
GAMMA 20/5 - 20/6







<b>Code</b>	GM.002.20CD	GM.011.20CD	GM.021.20CD	GM.030.20CD	GM.030.20ACD
<b>Type</b>	Axial Speeder	Radial Set-Back	Radial Adjustable	Polygon Maker	Adjustable Saw-Mill
<b>Output</b>	ER-11	ER-16	ER-11	Ø16	Ø16
<b>Speed</b> RPM Max	15.000 	8.000	8.000	4.000 	4.000 
<b>Ratio</b>	1:3	1:1	1:1	3:1	3:1



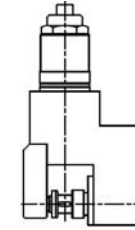
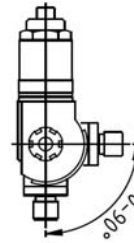
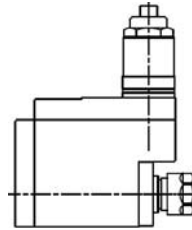
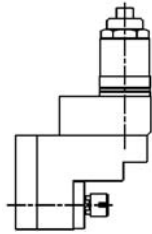
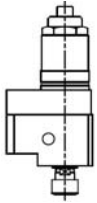
<b>Code</b>	GM.035.20CD	GM.051.20CD	GM.051.202CD		
<b>Type</b>	Thread Whirling ±15°	Radial adjustable ±15° Double Output	Radial adjustable ±90° 4 Spindles		
<b>Output</b>	Cutting Head	ER-16	ER-16		
<b>Speed</b> RPM Max	8.000	8.000	8.000		
<b>Ratio</b>	1:1	1:1	1:1		



Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer





# TORNOS

MODEL  
**GAMMA 20/5 - 20/6**  
 Back end tooling



Code	GM.002.20BE	GM.011.20BE	GM.014.20BE	GM.021.20BE	GM.030.20BE
Type	Axial Speeder	Radial Set-Back	Radial Set-Back Reducer	Radial Adjustable	Saw-Mill
Output	ER-11	ER-11	ER-16	ER-11	Ø13
Speed <small>RPM Max</small>	15.000 	9.000	6.000 	8.000	6.000
Ratio	1:3	1:1	1,5:1	1:1	1:1

## Symbology

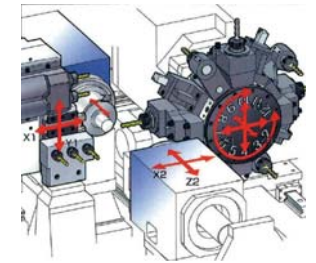
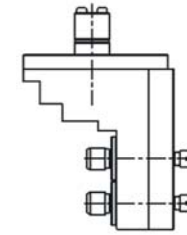
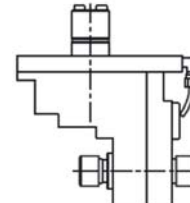
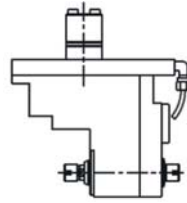
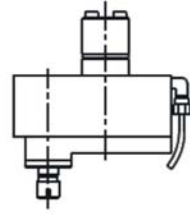
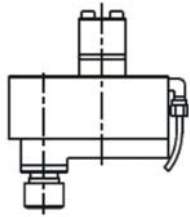
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer



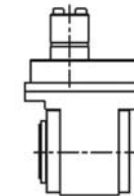
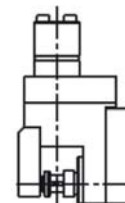
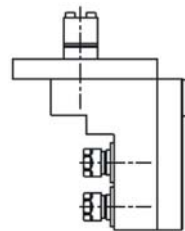
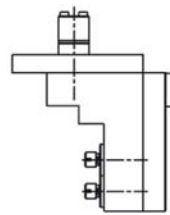
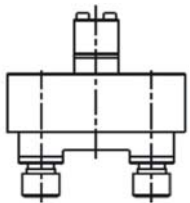
# TSUGAMI

MODEL

BH20/38, BH20Z



Code	TS.001.BH	TS.002.BH	TS.008.BHA	TS.008.BHC	TS.008.BHD
Type	Axial Offset	Axial Speeder	Radial Double Output Speeder	Radial Double Output	Radial 4 Spindles
Output	ER-16	ER-11	ER-11	ER-11	ER-16/ER-11
Speed RPM Max	5.000	8.000	8.000	5.000	5.000
Ratio	1:1	1:2	1:2	1:1	1:1



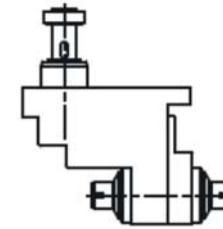
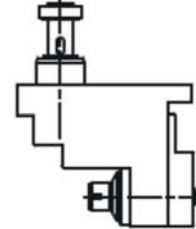
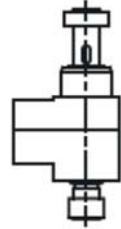
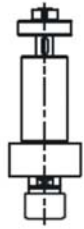
Code	TS.023.BH	ST.008.BHE	TS.008.BHF	TS.030.BH	TS.035.BH
Type	Axial Double Output	Radial Double Output Speeder	Radial Double Output	Gear Hobbing	Thread whirling
Output	ER-16	ER-11	ER-16	∅13	Cutting Head
Speed RPM Max	5.000	8.000	5.000	4.000	4.000
Ratio	1:1	1:2	1:1	1:1	1:1


Symbology

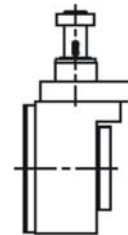
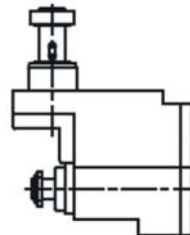
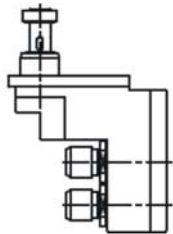
- Internal coolant
- High frequency
- Speeder
- Reducer

# TSUGAMI

MODEL  
HS20/38







<b>Code</b>	TS.000.HS	TS.002.HS	TS.038.HS	TS.011.HS	TS.008.HS
<b>Type</b>	Axial	Axial Speeder	Axial Saw-Mill	Radial Set-Back	Radial Double Output
<b>Output</b>	ER-16	ER-16	Ø12	ER-11	ER-11
<b>Speed</b> RPM Max	8.000	15.000 	8.000	8.000	8.000
<b>Ratio</b>	1:1	1:2	1:1	1:1	1:1



<b>Code</b>	TS.029.HS	TS.021.HS	TS.034.HS	TS.035.HS
<b>Type</b>	Radial 2 Outputs Adjustable	Radial Adjustable 0-90°	Polygon Maker	Thread Whirling ±15°
<b>Output</b>	ER-16	ER-11	Ø13	Cutting Head
<b>Speed</b> RPM Max	8.000	8.000	8.000	8.000
<b>Ratio</b>	1:1	1:1	1:1	1:1

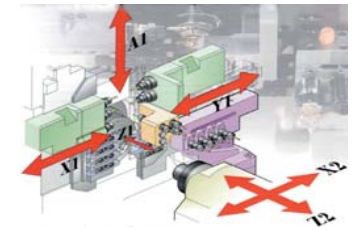
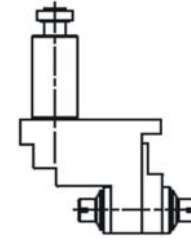
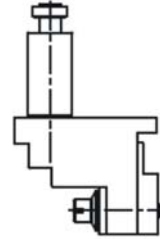
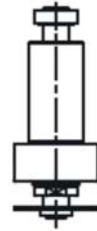
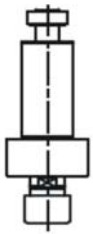



### Symbology

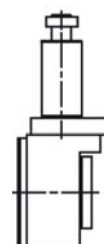
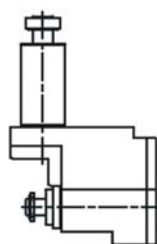
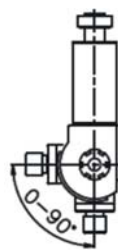
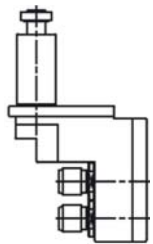
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TSUGAMI

MODEL  
BN12/20







Code	TS.000.BN	TS.002.BN	TS.038.BN	TS.011.BN	TS.008.BN
Type	Axial Offset	Axial Speeder	Axial Saw-Mill	Radial Set-Back	Radial Double Output
Output	ER-16	ER-11	Ø12	ER-11	ER-11
Speed RPM Max	8.000	15.000 	8.000	8.000	8.000
Ratio	1:1	1:2	1:1	1:1	1:1



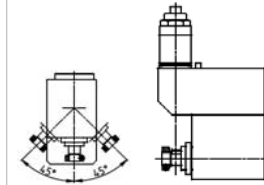
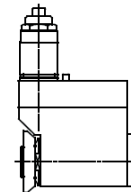
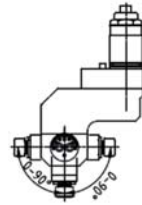
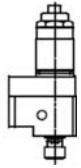
Code	TS.029.BN	ST.021.BN	TS.008.BN	TS.035.BN
Type	Axial Double Output Adjustable	Radial Adjustable 0-90°	Polygon Maker	Thread whirling
Output	ER16	ER-11	Ø13	Cutting Head
Speed RPM Max	8.000	8.000	8.000	8.000
Ratio	1:1	1:1	1:1	1:1




## Symbology

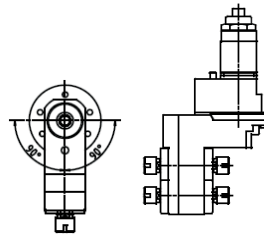
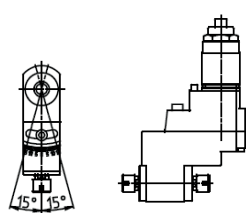
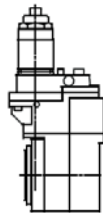
-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TSUGAMI

MODEL  
S205







<b>Code</b>	TS.002.S205	TS.011.S205	TS.021.S205	TS.030.S205A	TS.030.S205B
<b>Type</b>	Axial Speeder	Radial Set-Back	Radial Adjustable $\pm 90^\circ$	Polygon Maker	Adjustable Saw-Mill
<b>Output</b>	ER-11	ER-16	ER-11	$\varnothing 16$	$\varnothing 16$
<b>Speed</b> RPM Max	15.000 	8.000	8.000	4.000 	4.000 
<b>Ratio</b>	1:3	1:1	1:1	3:1	3:1



<b>Code</b>	TS.035.S205	TS.051.S205A	TS.051.S205B		
<b>Type</b>	Thread whirling $\pm 15^\circ$	Radial Adjustable $\pm 15^\circ$ Double Output	Radial Adjustable $\pm 90^\circ$ 4 Spindles		
<b>Output</b>	Cutting Head	ER-16	ER-16		
<b>Speed</b> RPM Max	8.000	8.000	8.000		
<b>Ratio</b>	1:1	1:1	1:1		

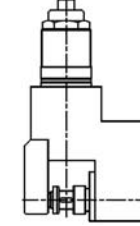
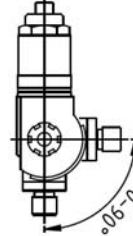
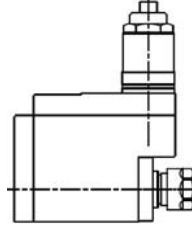
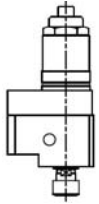




## Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# TSUGAMI





MODEL  
S205  
Back end tooling



Code	TS.002.S205BE	TS.011.S205BE	TS.014.S205BE	TS.021.S205BE	TS.030.S205BE
Type	Axial Speeder	Radial Set-Back	Radial Set-Back Reducer	Radial Adjustable 0-90°	Saw-Mill
Output	ER-11	ER-11	ER-16	ER-11	Ø13
Speed RPM Max	15.000 	9.000	9.000 	8.000	6.000
Ratio	1:3	1:1	1,5:1	1:1	1:1



## Symbology

-  Internal coolant
-  High frequency
-  Speeder
-  Reducer

# Accessories

## Collets

Standard



Tapping without compensation



Tapping ET-1 with compensation



## Clamping Nuts

Std



Mini (M)



Internal (A)



Sealed



## Sealing Discs

Standard sealing disc



Type	Standard			Tapping without compensation			Tapping ET-1 with compensation			Clamping Nuts				Sealing Discs		
	Order n°	Range Ø	Increment	Order n°	Range Ø	Increment	Order n°	Range Ø	Increment	Order n°	Order n°	Order n°	Order n°	Order n°	Range Ø	Increment
ER-8	1108.XXX00	1-5	0.5								3508.00000					
ER-11	1111.XXX00	1-7	0.5	1411.XXX00	1-7	0.5	1512.XXX00	1-7	0.5	3411.00000	3511.00000	3311.00000	3411.2XXX0 Ø Range1-5			
ER-16	1116.XXX00	1-10	1	1416.XXX00	4-9	1	1516.XXX00	1-10	0.5	3416.00000	3516.00000	3316.00000	3416.20000	3916.0XXX0	3-10	0.5
ER-20	1120.XXX00	1-13	1	1420.XXX00	4-12	1	1520.XXX00	1-13	0.5	3420.00000	3520.00000	3320.00000	3420.20000	3920.0XXX0	3-13	0.5
ER-25	1125.XXX00	1-16	1	1425.XXX00	4-16	1	1525.XXX00	1-16	0.5	3425.00000	3525.00000	3325.00000	3425.20000	3925.0XXX0	3-16	0.5
ER-32	1132.XXX00	2-20	1	1432.XXX00	4-20	1	1532.XXX00	2-20	0.5	3432.00000		3332.00000	3432.20000	3932.0XXX0	3-20	0.5
ER-40	1140.XXX00	3-26	1	1440.XXX00	6-22	1	1540.XXX00	3-26	0.5	3440.00000		3340.00000	3440.20000	3940.0XXX0	3-26	0.5
ER-50	1150.XXX00	10-34	2	1450.XXX00	22-32	3				3450.00000						

How to order. Example / Exemple comment commander / Esempio di ordinazione: ER-16 Standard collet / Range 3-2.5 = 1116.03000

# Everything is possible

Customized products for Innovative solutions: We match the tool to the part and the machine.

Our team of engineers and technicians are working to create new products, which enhance the machine capability and increase the productivity of our customers.

## Successful technical experience

and market knowledge.

## Engineers and technicians

working together.

## Ingenuity and open mind

to find the best solutions.



Continuous innovation: We ensure close cooperation with our customers worldwide.



**GB We offer the following high precision tools for increasing your productivity.**

我们提供以下西班牙、德国及瑞士合作伙伴制造的纵切车床专用刀具，提高您的生产率！



Swiss made rotary broaching tools

### Rotary broaching tools 多边形冲头及刀柄

Rotary / Wobble Broaching on Swiss Type CNC Machines is becoming a cost effective way to produce hex and hexlobular drive features in one operation. The Broaching process takes only seconds to produce the profile and parts can be finished complete out of the machine without the need for the broaching to be performed as a secondary operation. Broach holders are designed specifically to make broaching fast & easy to perform in machines such as Citizen, Star, Tsugami, Tornos & other Swiss Turning centers.

### Floating reamers for Micro holes reaming 高精度浮动铰刀柄及铰刀

Orbitally Floating Micro Reamer Holders can be your solution to solving reaming problems with micro reamers. These reaming holders ensure extreme precision of small holes.

Designed with a "True Orbital Float" Feature in the front and back axis, the floating micro reamer holder perfectly aligns the reamer with the hole to provide a perfectly round hole to the correct size.

The proprietary precision bearing design ensures that the tool always returns to the center position upon completion of the reaming operation, to ensure consistency from piece to piece. Float sensitivity is adjustable to accommodate different diameter reamers.



Swiss made floating micro reamers



### Kurling tools 滚花刀及刀柄

We offer complete kurling tools for swiss type or other machine .

### ID Whirling Tools 内旋风铣刀(内螺纹铣刀)



ID whirling tools

Orthopedic or dental high tech applications call often for a maximum in precision and longevity. Our ID whirling tools (thread mills) precisely and efficiently produce internal threads on bone screws and bone (cervical) plates. The whirling tools for internal machining are available in thread sizes from M1 to M5, and with 1 or 3 flutes, or can be customized to customer requirements.





Polygon turning

## Polygon Turning 多边形车刀

Using a polygon turning attachment or a tool spindle operating in sync, Polygon turning is used for parts made from non-ferrous metals i.e. brass, aluminum and steel i.e. 12L14. The radial plunging procedure also allows flats being machined behind the collar. Axial, longitudinal turning is used to create long flats.

### Advantages

- Flats are produced directly on the lathe in a single process.
- Elimination of milling process
- Polygon turning is quicker than milling.
- Integrated production on a single machine increases process reliability.
- Cuts costs drastically.



Swiss made slitting saws and arbors

## Slitting Saws and Arbors 锯片及锯片刀柄

we carries a full line of Solid Carbide Slitting Saws made by Switzerland. Available from stock in either fine and extra-fine tooth configurations with teeth counts ranging from 40-120 teeth per saw. A full line of Saw Arbors are also available. Some arbors feature a tool bore for adding an extra live tool and for ultra precision applications.

### Advantages

- Superior Surface Finishes
- Increased Tool Life
- Ground side clearance
- Increased number of teeth, ideal for cutting hard materials

## Solutions For High Efficiency 高效成型车削刀具

Indexable form turning tools can improve the efficiency and reduce your cost extremely.





## Denitool® Standard Program

### MicroTurn A/S

- Micro turning tools with cutting tips for
- ID turning & copying in min. bore  $\varnothing$  2.8 mm
  - ID grooving in min. bore  $\varnothing$  3.8 mm
  - Face grooving
  - ID threading in min. bore  $\varnothing$  3.1 mm

PVD coated turning tips in Denalloy® special alloy are far superior in performance and tool life to any standard carbide tips on the market.

The toolholders are equipped for coolant connections and are suitable for right or left hand cutting tips. Precision toolholders for the cutting tip assure very accurate positioning while replacing the tool.



### MicroTurn D

Micro turning tools for

- ID turning operations in min. bore  $\varnothing$  4.8 mm with 80° diamond inserts CD 04

MicroTurn boring bars with internal cooling are available in steel or with carbide shank.

These boring bars can also be used in live tooling setups and are perfectly suitable for finish machining.

Carbide shanks allow boring up to 6 x  $\varnothing$



### MiniTools

Mini turning tools for

- ID turning operations in min. bore  $\varnothing$  5.8 mm with 80° trigon inserts WC 02
- ID turning operations in min. bore  $\varnothing$  8.0 mm with 80° diamond inserts CP 05

A wide range of toolholders and inserts with optimized cutting angles and coatings for very sophisticated lathe works.

The optimized design assures very low vibration and efficient cutting performance with large cutting depth and low feedrate in hard to cut materials.



### HardTurn System

High performance carbide inserts with "SuperHard" coatings and optimized, high-rigidity carbide bars for small diameter ID boring of hardened material up to 62 HRC.

- Application range starting at bore  $\varnothing$  8.7 mm with 80° diamond inserts CP 05





### Turning 60°

Turning tools with triangle inserts type TP 11 & TP 16 for difficult to machine turning operations.

- ID operation range starting at bore  $\varnothing$  13 mm with 60° triangle inserts TP 11
- Efficient turning operations - even of extremely instable (long and slim) work pieces - are possible with the sharp, optimized inserts, creating extremely low cutting forces.

Cost effective solutions due to inserts with three cutting edges.



### MicroCopy G

- Micro copying tools for ID turning operations in min. bore  $\varnothing$  6.0 mm with 45° diamond inserts GC 04

### MicroCopy 35°

- Micro copying tools for ID turning operations in min. bore  $\varnothing$  8.0 mm with 35° diamond inserts VC 05

### MiniCopy 35°

- Mini copying tools for ID turning operations in min. bore  $\varnothing$  12,5 mm with 35° diamond inserts VC 07

### Copy 35°

- Copying tools for ID turning operations in min. bore  $\varnothing$  20,0 mm with 35° diamond inserts VC 13

These small profile inserts and the offset boring bars allow extremely deep boring.

Boring bars with internal cooling in steel or with carbide shank as well as toolholders for external operation are available.



### Milling Cutter Program

A range of precision milling, slot milling and chamfering tools. These tools were developed for machine builders, as well as for mold and die. With these tools chamfering on even small grooves can be done easily and countersinking on holes as small as  $\varnothing$  2 mm.

Chamfering tools are available in standard angles 90°, 75°, 60°, 45° and 30°.

Other angles on request.

Denitool® also carries high performance inserts with different high-tech coatings.

### Countersink Cutter 90°:

When it comes to countersink operations the new milling cutters have a superior design thanks to the optimized position of the cutting edge. The vibration free running and the soft cut avoid subsequent burr operations.



**Denitool Vario®**

The rotary precision adjustable fine-boring system.

Interchangeable insert carriers with precision guides and adjustments along with different shank sizes provide flexibility in application.

- Vario Mini for Ø range 9.8 ÷ 11.8 mm
- Vario Standard for Ø range 11.8 ÷ 21.8 mm



**Denitool Modulo D®**

The economic modular tool system for turning machines and combined CNC millturn centers with system interfaces HSK, KM, Capto etc.

Interchangeable highly accurate, high-tensile insert carriers with different positioning angles for the high positive Denitool® inserts as well as for third party products.



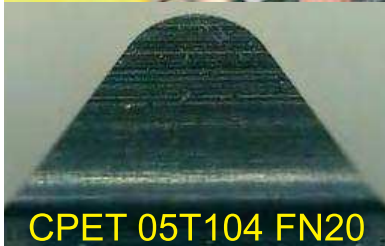
MULTI-FUNCTION TOOL HYDROMAT-TYPE HEAD

**Denitool®**

**Custom Made Special Tools**

Several years of experience in design and manufacturing of machining tools as well as sophisticated technical equipment enables Denitool® to respond flexibly and with accuracy to customers individual needs for problem solving solutions by offering the optimal tool for each application.

Denitool® develops and manufactures special tools for any type of inserts available in the market. Upon request inserts with individually ground geometries are manufactured as well.



CPET 05T104 FN20

**Denitool®**

**Product Philosophy**

Denitool® manufactures Swiss Quality Products that meet the highest quality standards.

Qualified personnel, sophisticated manufacturing methods and the Denitool® TQM System (Total Quality Management) guarantee the constant high quality level of Denitool® products.

Conception and development of new products are executed with the highest care. The exclusive use of high quality material, manufacturing- and refining processes, high demands on our suppliers as well as on our employees are the basis of the excellent performance of Denitool® Products.





微信公众平台账号



欧洲制造技术(EMT)上海办事处

西钛珂 (上海)工业技术有限公司

WESTEC (SHANGHAI) INDUSTRIAL TECH. CO.LTD

Tel.:86-21-37709286 Fax: 86-21-37709287

E-mail: [info@westec-corp.com](mailto:info@westec-corp.com) [www.westec-corp.com](http://www.westec-corp.com)