

**Precision meets Motion**



**Manual**

***EWS* . Slot**

***EWS***  
**Tool Technologies**

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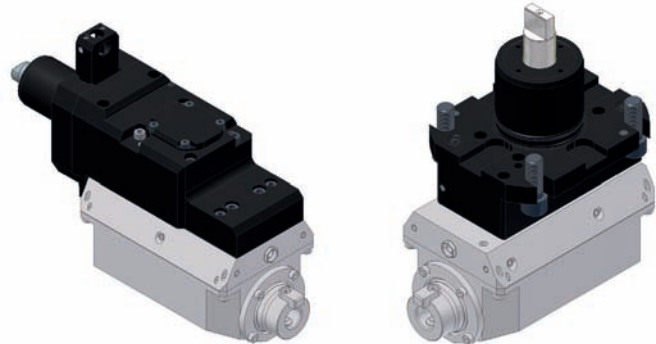
**6.1. Broaching tool for BMT star turret**

**6.2. Broaching tool for VDI disk-type turret**

**Appendix**

## 1. Identification

**Type:** **EWS . Slot**  
**Designation:** Broaching tool  
**Manufacturer:** EWS Weigele GmbH & Co. KG  
 Maybachstr. 1  
 73066 Uhingen  
 Tel. +49 (0)7161 93040-100  
 www.ews-tools.de



## 2. Product specification

### 2.1. 2.1 Functions and scope of application

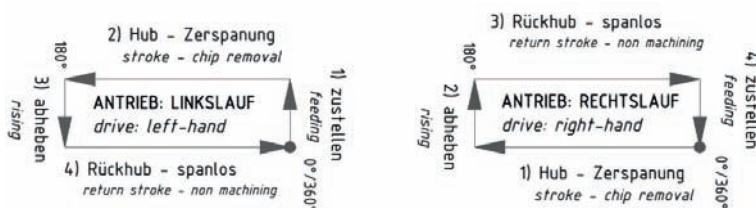
The **EWS . Slot** is a driven tool for broaching on lathes within a complete machining process adding a new dimension to the economic production of internal profiles (e.g. key slots or internal gears).

### 2.2. Safe and correct use

The driving direction of the **EWS . Slot** differs according to the application and the gear design. Please observe the notes applied on the tool and the drawing.

### 2.3. Technical data

Dimensions:	see drawing
Maximum number of strokes:	1000 rpm (one rotation = 1 stroke)
Stroke length:	35 mm
Effective length:	32 mm
Maximum torque at drive:	20 Nm
Transmission:	1:1 (1 stroke/rotation)
Maximum feeding:	0.08 mm/Hub (depending on material)
Rising degree with return stroke:	approx. 0.3 mm
Direction of drive rotation:	see label on tool
Maximum slot width:	8 mm



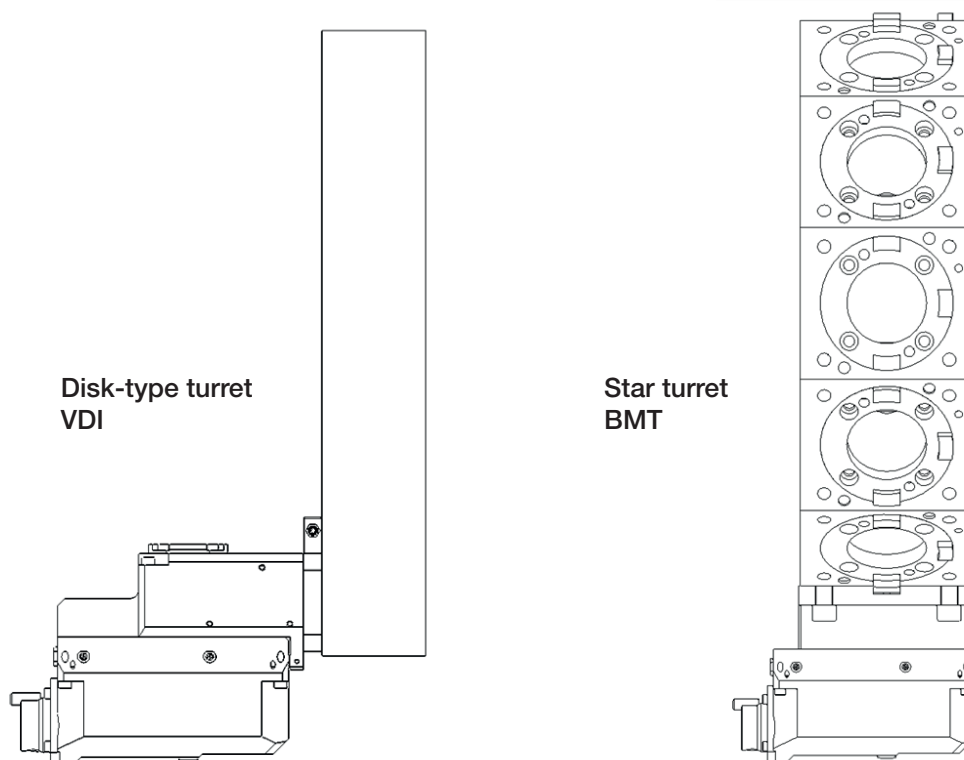
Motion sequence with 1 rotation of the drive spindle (sequence depending on turret type)

## EWS . Slot

### Manual

#### 2.4. Machine requirements

- Workspace: When swinging the turret using the **EWS . Slot**, sufficient space must be provided to ensure that there will be no collision with the turret socket or the housing.
- Drive torque: See torque/cutting force diagram
- Starting torque: Minimum 15 Nm
- Turret type: Slot variations for disk-type and star turret both with VDI and with BMT shank holders are available.



#### 2.5. Protection of persons

The operator of the **EWS . Slot** has to comply with the provisions of the applicable industrial safety regulations.

#### 2.6. Safe disposal

The operator has to comply with the provisions of the applicable environment protection regulations.

## 3. Operating instructions

### 3.1. Setting up

When mounting the **EWS . Slot** to the turret, insert the straight shank into the location hole of the turret. In doing so take care that the position of the dual flat drive at the tool head is in conformity with the slot of the machine drive.

Furthermore, make sure that the O-ring at the shank is not damaged.

### 3.2. Tool change

#### 3.2.1. Clamping the tool

The tool is designed for cutting edges and their carriers made by the Horn Company (see appendix or [www.phorn.de](http://www.phorn.de)).

Clean the location hole and the bearing surface at the broaching tool when changing the tool. Place the insert holder into the adaptor ensuring the path of contact of the sliding block into the slot. Furthermore, the insert holder has to fit flat at the bearing surface. Lock the holder using the clamp screw (tightening torque = 20 Nm).

#### 3.2.2. Removing the tool

After releasing the clamp screw, you can remove the insert holder. In case of a tight insert holder, firstly remove the sliding block, afterwards you can detach the insert holder with a rotary motion.

### 3.3. Handling

Prior to the machining using the **EWS . Slot**, the workpiece must meet the following conditions:

For internal and external machining, an undercut at the end of the tool run-out with a minimum width of 1 mm must be provided. In the case of poor chip removal, an undercut width of 2 mm is even recommended. The size of the undercut diameter must be determined to ensure a run-out of the cutting during the complete machining.

For the internal machining (key slot or internal gears), an additional pre-drilling or pre-milling operation is required. (also see: 4. Manufacturing Examples)

The programming parameters for slotting are identical to those for milling. Machining is performed during the stroke. The feeding movement occurs continuously during stroke and return stroke through the feed drive of the X-axis. The edge is raised by the integrated raising device.

The stroke length is constantly 35 mm. At the beginning of the stroke an idle movement of 1.5 mm is required and the end of the stroke an idle movement of 1.5 mm is required, resulting in a maximum machining length of 32 mm. Shorter machining lengths will result in longer idle movements (distance to the workpiece).

## **EWS . Slot**

### **Manual**

#### **3.4. Cleaning and maintenance**

##### **3.4.1. Cleaning**

Cleaning the broaching tool using a cloth or brush is sufficient. Compressed air may be used only for cleaning the location hole. It is not permitted to clean the complete broaching tool using compressed air, as this might push particles into the interior of the tool causing damage. Never use petroleum ether or industrial washing machines for cleaning!

##### **3.4.2. Care**

Whenever the broaching tool is not used, lubricate the bare part of the pusher with oil for protection against corrosion.

##### **3.4.3. Maintenance**

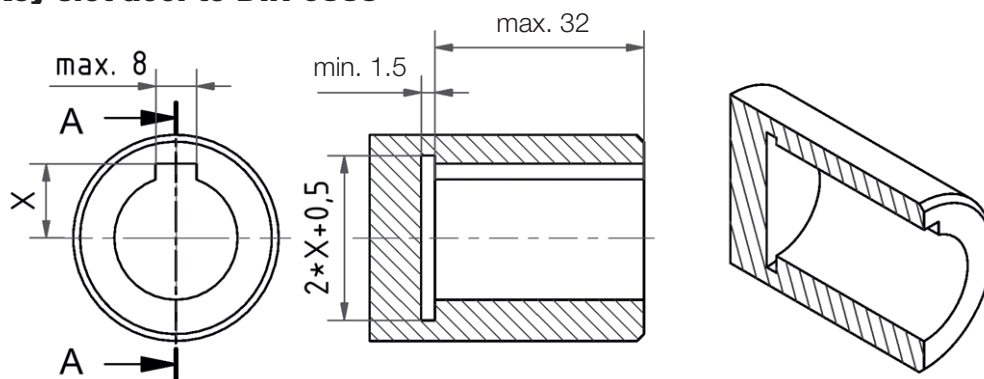
**EWS . Slot** is permanently lubricated and maintenance-free.  
We recommend performing an annual inspection.

#### **3.5. Guarantee and warranty**

The Standard Conditions of Sale and Delivery of the manufacturer apply (see [www.ews-tools.de](http://www.ews-tools.de)).

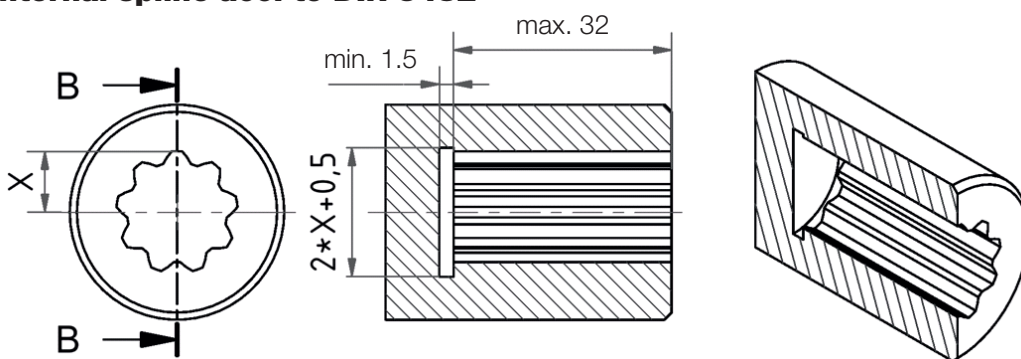
**4. Manufacturing examples**

**Key slot acc. to DIN 6885**



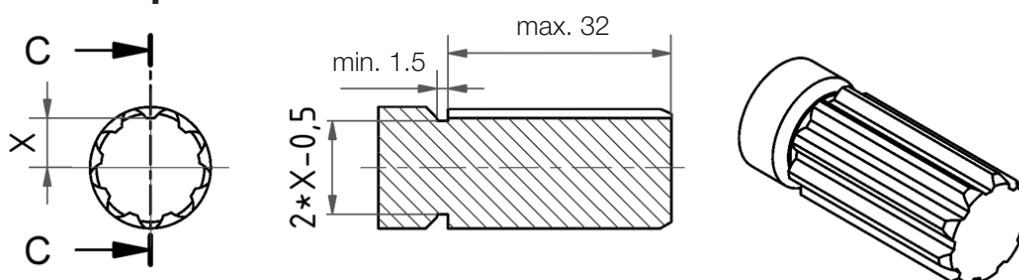
*The maximum key slot width of 8mm may not be exceeded.*

**Internal spline acc. to DIN 5482**



*The maximum size of the profile must be calculated.*

**External spline acc. to DIN 5482**

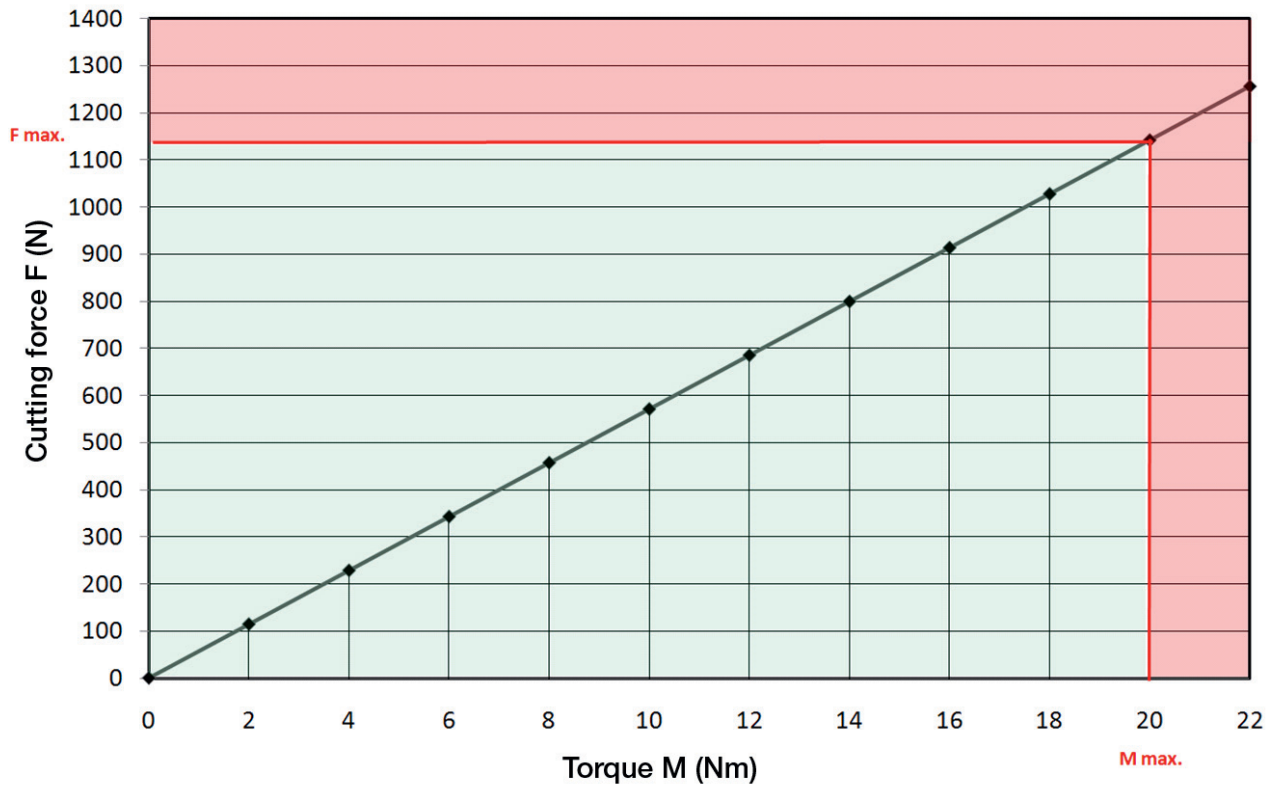


*The maximum size of the profile must be calculated.*

**EWS . Slot**

**Manual**

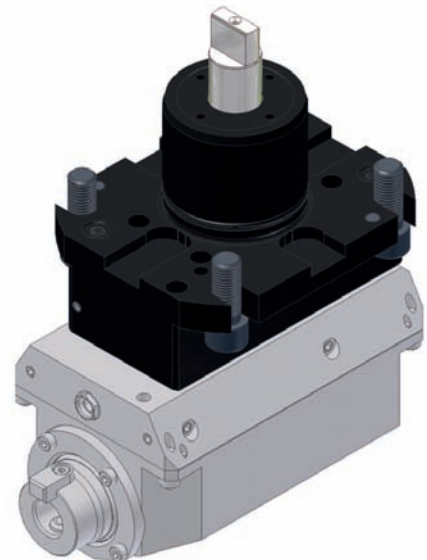
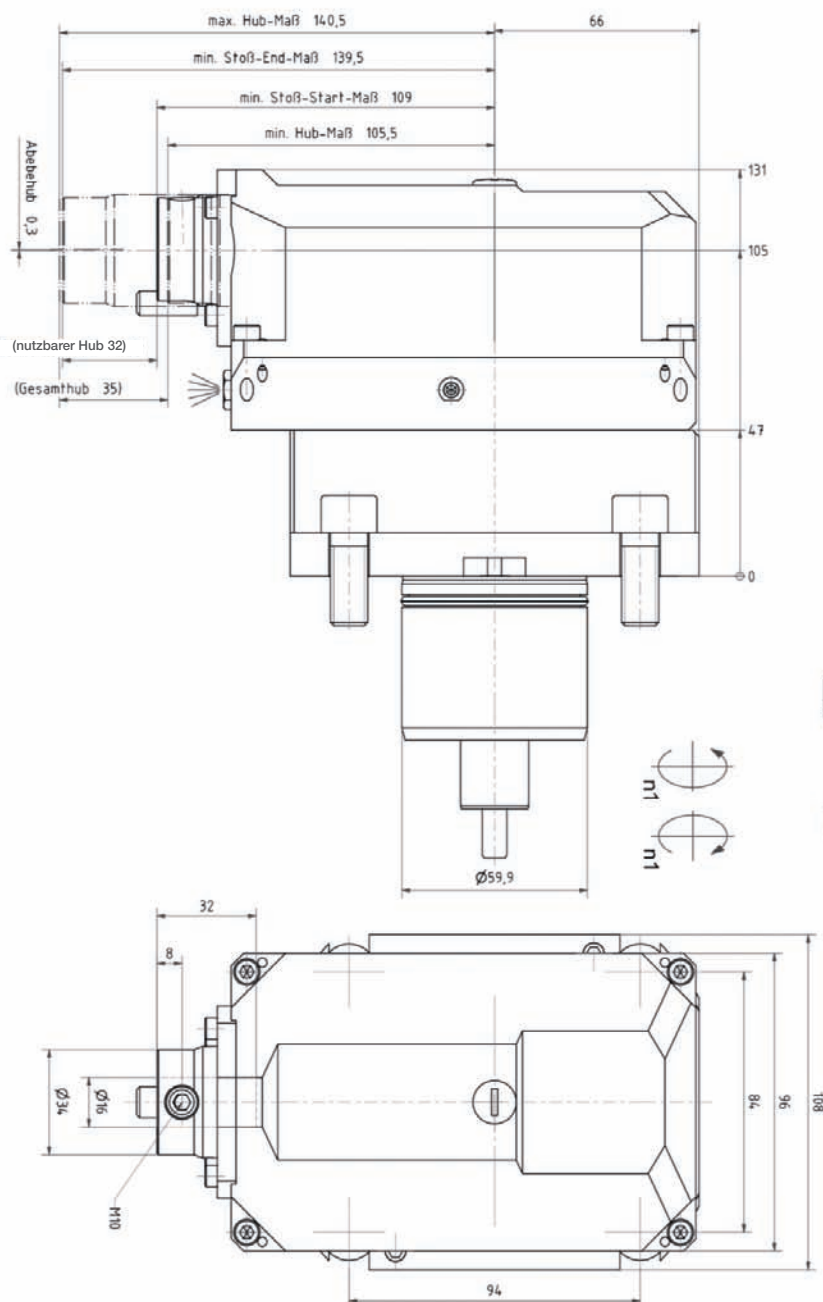
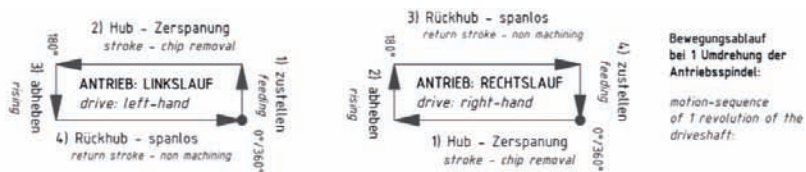
**5. Torque/cutting force diagram**



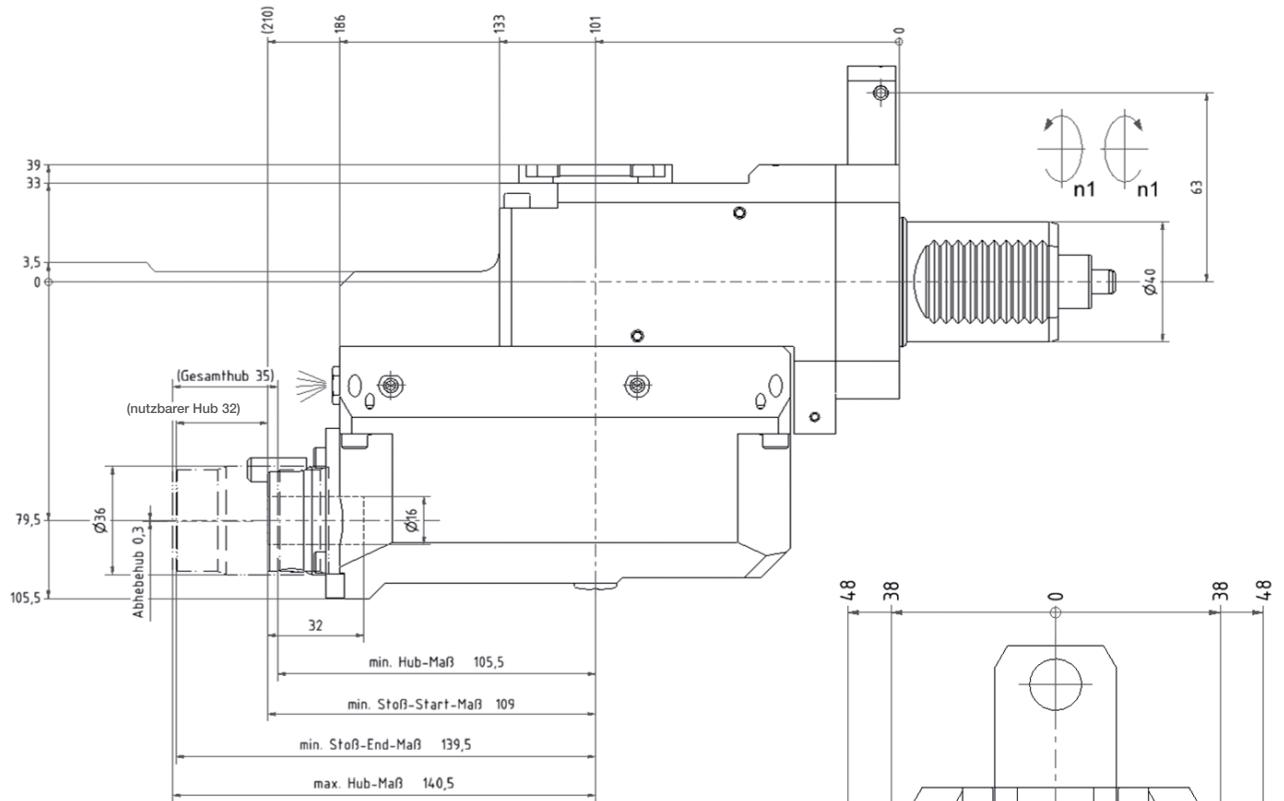


## 6. Product examples

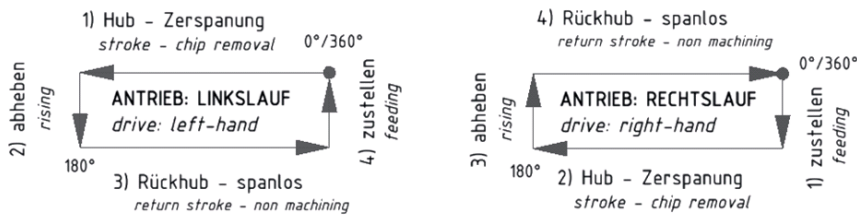
### 6.1. Broaching tool for BMT star turret



**6.2. Broaching tool for VDI disk-type turret**



**Bewegungsablauf** *motion-sequence*  
bei 1 Umdrehung der *of 1 revolution of the*  
Antriebsspindel: *driveshaft:*



# TECHNOLOGIEVORSPRUNG IST HORN

HORN - LEADERS IN GROOVING TECHNOLOGY



## NUTSTOSSEN auf CNC-Maschinen

### STOSSWERKZEUGE TYP SB105/SB110 und SH117

BROACHING on CNC machines  
BROACHING TOOLS TYPE SB105/SB110 and SH117



Zur Direktaufnahme in der Maschine und  
Nutstoßgerät EWS-Slot

For direct mounting in the Machine as well as for  
broaching device EWS-Slot

- **EINSTECHEN**
  - GROOVING
- **ABSTECHEN**
  - PARTING OFF
- **NUTFRÄSEN**
  - GROOVE MILLING
- **NUTSTOSSEN**
  - BROACHING
- **KOPIERFRÄSEN**
  - PROFILE MILLING
- **BOHREN**
  - DRILLING
- **REIBEN**
  - REAMING



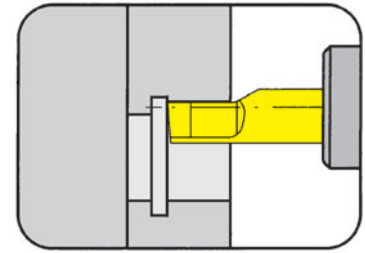
Hartmetall-Werkzeugfabrik  
Paul Horn GmbH  
Unter dem Holz 33-35  
72072 Tübingen  
Tel.: +49 (0)7071 / 7004-0  
Fax: +49 (0)7071 / 7 28 93  
info@phorn.de  
www.phorn.de



### KLEMMHALTER Typ

TOOLHOLDER Type

## SB105

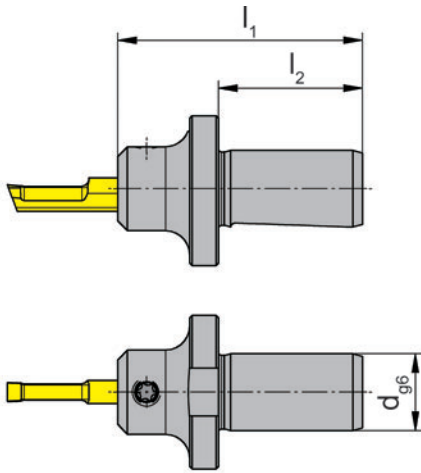


Bohrungs-Ø ab	Bore Ø from	6,0 mm
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für Nutstoßgerät EWS-Slot  
usable for broaching device EWS-Slot

für Schneidplatte  
for use with Insert

Typ N105  
Type



Bestellnummer Part number	d	l <sub>1</sub>	l <sub>2</sub>
<b>SB105.0016.E1.01</b>	16	51	30

Ausführungen für weitere Geräteschnittstellen auf Anfrage  
Further sizes for other device interfaces upon request

Abmessungen in mm  
Dimensions in mm

**Einspannlänge der Platten = 12 mm!**  
**Clamping length of the inserts = 12 mm!**

### Ersatzteile

Spare parts

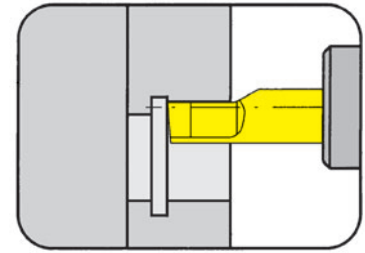
Klemmhalter Toolholder	Spannschraube Screw	TORX PLUS®-Schlüssel TORX PLUS® Wrench
SB105.0016.E1.01	<b>6.075T15P</b>	<b>T15PQ</b>

# NUTSTOSSEN BROACHING



**KLEMMHALTER Typ**  
TOOLHOLDER Type

## SB110

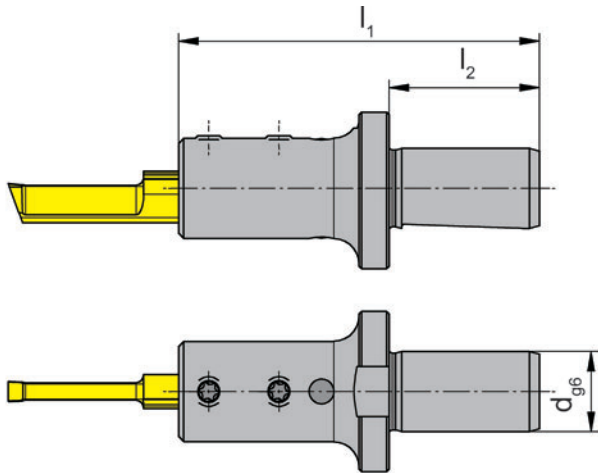


Bohrungs-Ø ab      Bore Ø from      9,0 mm

für Nutstoßgerät EWS-Slot  
usable for broaching device EWS-Slot

für Schneidplatte  
for use with Insert

Typ    N110  
Type



Bestellnummer Part number	d	l <sub>1</sub>	l <sub>2</sub>
<b>SB110.0016.E1.02</b>	16	72	30

Ausführungen für weitere Geräteschnittstellen auf Anfrage  
Further sizes for other device interfaces upon request

Abmessungen in mm  
Dimensions in mm

**Einspannlänge der Platten = 26 mm!**  
Clamping length of the inserts = 26 mm!

### Ersatzteile Spare parts

Klemmhalter Toolholder	Spannschraube Screw	TORX PLUS®-Schlüssel TORX PLUS® Wrench
SB110.0016.E1.02	<b>6.075T15P</b>	<b>T15PQ</b>

# NUTSTOSSEN

## BROACHING

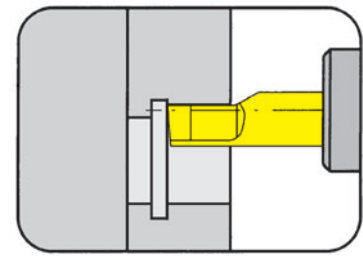


### SCHNEIDPLATTE Typ

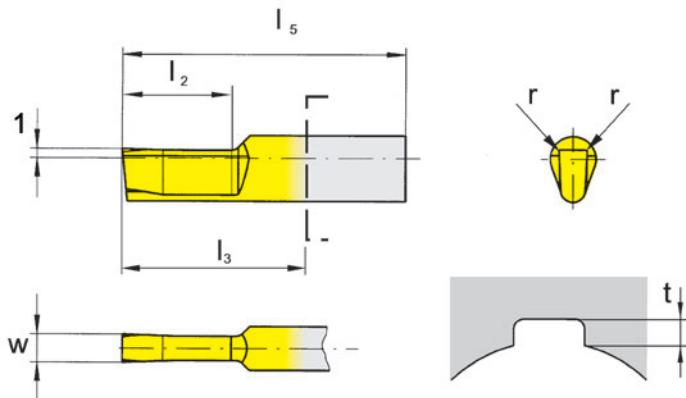
INSERT Type

## N105/N110

Toleranzklasse C11  
Tolerance grade C11



Bohrungs-Ø ab      Bore Ø from      6,0 mm



für Klemmhalter  
for use with Toolholder

Typ    SB105  
Type   SB110

Längsnuten nach DIN138  
Keyways according to DIN138

Bestellnummer Part number	Nutabmessungen n. DIN Dimensions of groove DIN			w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	einsetzbar ab Ø usable from Ø	Halter Toolholder	MG12	TA45	Ti25
	Breite C11 Width C11	D <sub>min</sub>	t										
N105.0210.2.08	2	8	1,0	2,11	0,35				6,0	SB105		▲	
N105.0310.2.10	3	10	1,8	3,11	0,35	30	12	18	6,5		▲		
N105.0310.2.13	3	13	1,8	3,11	0,50				6,5		▲		
N105.0410.2.16	4	16	2,0	4,13	0,50				6,5		▲		
N110.0410.05.04	4	16	2,0	4,13	0,50	60	25	34	9,0	SB110		▲	
N110.0410.05.07						75	40	49	9,0		▲		
N110.0510.05.04	-	-	-	5,13	0,50	60	25	34	9,0		▲		
N110.0510.05.07						75	40	49	9,0		▲		

- ▲ ab Lager / on stock    Δ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- o bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

P	●
M	●
K	●
S	
N	●
H	

Abmessungen in mm  
Dimensions in mm

HM-Sorten  
Carbide Grades

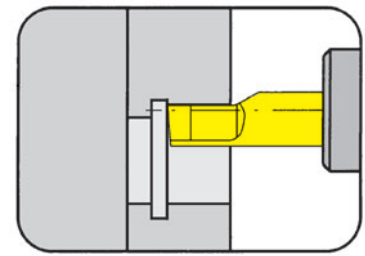
# NUTSTOSSEN BROACHING



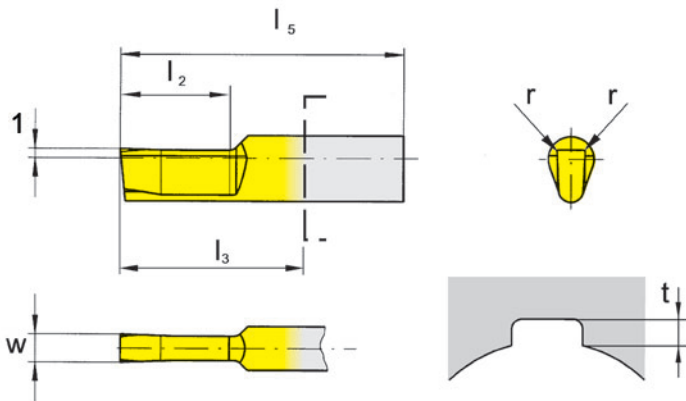
## SCHNEIDPLATTE Typ INSERT Type

## N105/N110

Toleranzklasse P9  
Tolerance grade P9



Bohrungs-Ø ab      Bore Ø from      6,0 mm



für Klemmhalter  
for use with Toolholder

Typ      SB105  
Type     SB110

Längsnuten nach DIN6885  
Keyways according to DIN6885

Bestellnummer Part number	Nutabmessungen n. DIN Dimensions of groove DIN			w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	einsetzbar ab Ø usable from Ø	Halter Toolholder	MG12	TA45	Ti25	
	Breite P9 Width P9	D <sub>min</sub>	t											
N105.0198.01.01	2	6	1,1	1,98	0,1	30	12	18	6,0	SB105		▲		
N105.0298.01.01	3	8	1,5	2,98		30	12	18	6,5			▲		
N105.0397.01.01	4	10	1,9	3,98		35	15	23	6,5			▲		
N110.0397.02.04	4	10	1,9	3,98	0,2	60	25	34	9,0	SB110		▲		
N110.0397.02.07	4	10	1,9	3,98		75	40	49					▲	
N110.0497.02.04	5	12	2,4	4,98		60	25	34					▲	
N110.0497.02.07	5	12	2,4	4,98		75	40	49					▲	

- ▲ ab Lager / on stock    Δ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

Abmessungen in mm  
Dimensions in mm

P	●	
M	●	
K	●	
S		
N	●	
H		

HM-Sorten  
Carbide Grades

# NUTSTOSSEN

## BROACHING

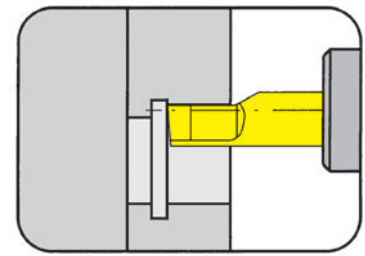


### SCHNEIDPLATTE Typ

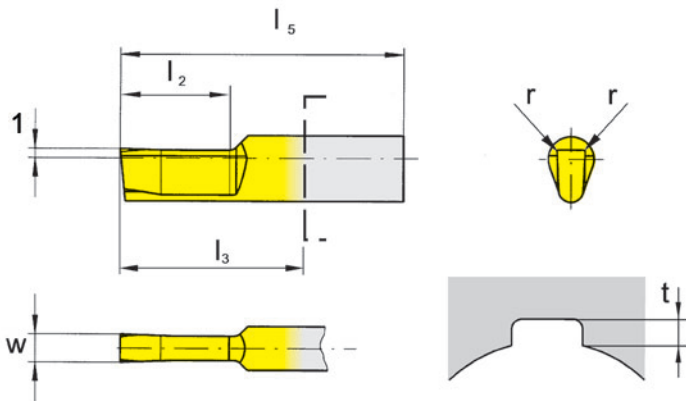
INSERT Type

## N105/N110

Toleranzklasse JS9  
Tolerance grade JS9



Bohrungs-Ø ab      Bore Ø from      6,0 mm



für Klemmhalter  
for use with Toolholder

Typ      SB105  
Type     SB110

Längsnuten nach DIN6885  
Keyways according to DIN6885

Bestellnummer Part number	Nutabmessungen n. DIN Dimensions of groove DIN			w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	einsetzbar ab Ø usable from Ø	Halter Toolholder		MG12	TA45	Ti25		
	Breite JS9 Width JS9	D <sub>min</sub>	t													
N105.0200.01.01	2	6	1,1	2	0,1	30	12	18	6,0	SB105			▲			
N105.0300.01.01	3	8	1,5	3	0,1	30	12	18	6,5				▲			
N105.0400.01.01	4	10	1,9	4	0,1	35	15	23	6,5				▲			
N105.0400.02.01	4	10	1,9	4	0,2	35	15	23	6,5				▲			
N110.0400.02.04	4	10	1,9	4	0,2	60	25	34	9,0	SB110			▲			
N110.0400.02.07	4	10	1,9	4		75	40	49							▲	
N110.0500.02.04	5	12	2,4	5		60	25	34							▲	
N110.0500.02.07	5	12	2,4	5		75	40	49							▲	

- ▲ ab Lager / on stock    Δ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- o bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

P	●
M	●
K	●
S	
N	●
H	

Abmessungen in mm  
Dimensions in mm

HM-Sorten  
Carbide Grades



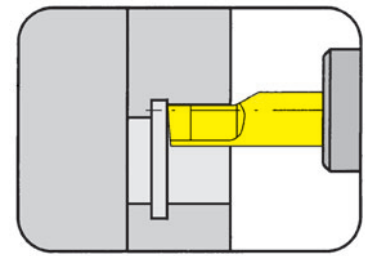
# NUTSTOSSEN - FASEN

## BROACHING - CHAMFERING

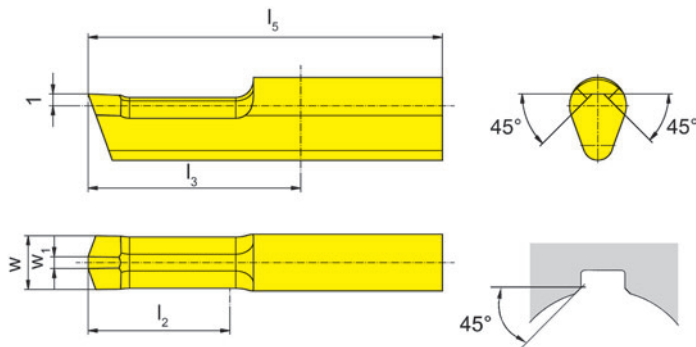


**SCHNEIDPLATTE Typ**  
INSERT Type

# N105/N110



Bohrungs-Ø ab      Bore Ø from      6,0 mm



für Klemmhalter  
for use with Toolholder

Typ      SB105  
Type     SB110

Fasen  
Chamfering

Bestellnummer Part number	Fase Chamfer	w	w <sub>1</sub>	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	einsetzbar ab Ø usable from Ø	Klemmhalter Toolholder	MG12	TA45	TI25
<b>N105.4545.2.6</b>	45°	4,5	1	30	12	18	6	<b>SB105</b>		▲	
<b>N105.4545.3.6</b>				35	20	23					
<b>N110.4545.4.9</b>	45°	6,3	2	60	25	34	9	<b>SB110</b>		▲	
<b>N110.4545.7.9</b>				75	40	49					

- ▲ ab Lager / on stock    Δ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- o bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

Abmessungen in mm  
Dimensions in mm

P	●	
M	●	
K	●	
S		
N	●	
H		

HM-Sorten  
Carbide Grades

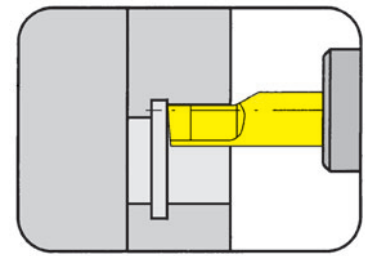
# NUTSTOSSEN - INNENSECHSKANT

## BROACHING - HEXAGON SOCKET



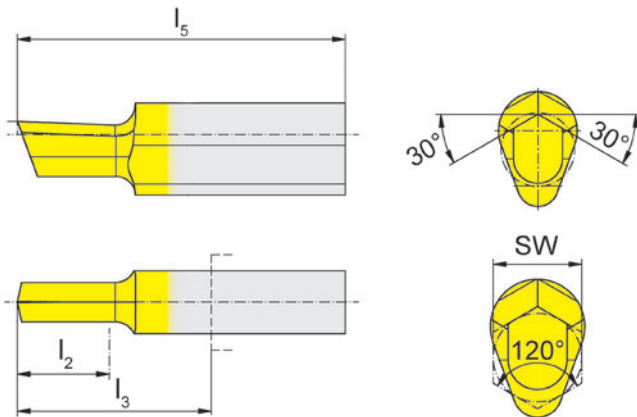
**SCHNEIDPLATTE Typ**  
INSERT Type

# N105/N110



Innensechskant ab Hexagon socket from

SW 2,5



für Klemmhalter  
for use with Toolholder

Typ SB105  
Type

Innensechskant  
Hexagon socket

Bestellnummer Part number	SW	$l_2$	$l_3$	$l_5$	Grundbohrung Blind hole	Klemmhalter Toolholder	MG12	TA45	TI25
<b>N105.SW25.25.01</b>	2,5	4,0	13	25	2,5	SB105		▲	
<b>N105.SW30.30.01</b>	3,0	4,5	13	25	3,0			△	
<b>N105.SW35.35.01</b>	3,5	5,5	13	25	3,5			△	
<b>N105.SW40.40.01</b>	4,0	6,0	13	25	4,0			△	
<b>N105.SW45.45.01</b>	4,5	7,0	13	25	4,5			△	
<b>N105.SW56.56.01</b>	5,0 / 6,0	9,0	13	25	5,0 / 6,0			△	
<b>N105.SW80.80.01</b>	8,0	12,0	18	30	8,0			△	

- ▲ ab Lager / on stock    △ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

Abmessungen in mm  
Dimensions in mm

P	•	
M	•	
K	•	
S	•	
N	•	
H		

HM-Sorten  
Carbide grades

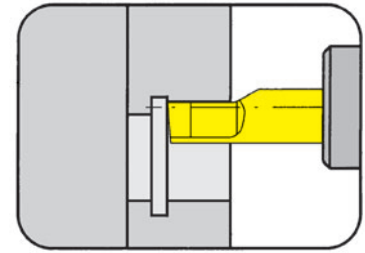
# NUTSTOSSEN - TORX

## BROACHING - TORX

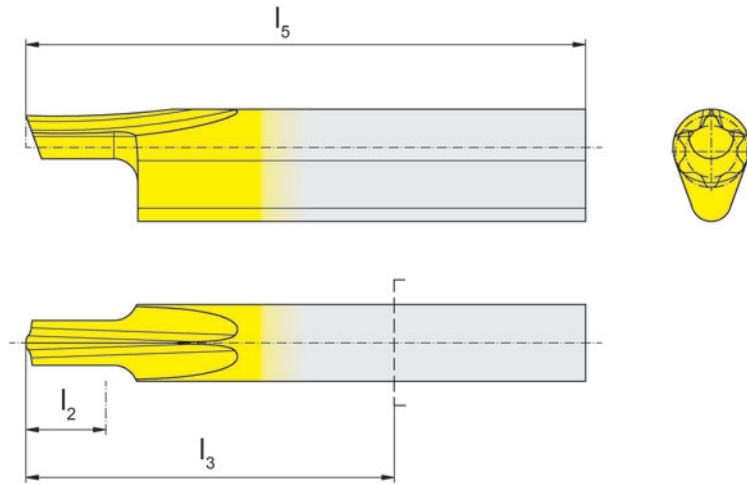


**SCHNEIDPLATTE Typ**  
INSERT Type

# N105

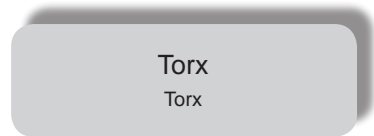


Torx ab Torx from T15



für Klemmhalter  
for use with Toolholder

Typ SB105  
Type



Bestellnummer Part number	Torx	l <sub>2</sub>	l <sub>3</sub>	l <sub>5</sub>	Grundbohrung Blind hole	Klemmhalter Toolholder	MG12	TA45	Ti25
N105.TX15.24.03	T15	4			2,41	SB105		Δ	
N105.TX20.28.03	T20	4	23	35	2,85			Δ	
N105.TX25.32.03	T25	5			3,24			Δ	
N105.TX30.40.03	T30	5			4,03			Δ	
							P	•	
							M	•	
							K	•	
							S	•	
							N	•	
							H		

- ▲ ab Lager / on stock Δ 4 Wochen / 4 weeks
- Haupteinsatzbereich / main recommendation
- o bedingt einsetzbar / alternative recommendation
- unbeschichtete HM-Sorten / uncoated grades
- beschichtete HM-Sorten / coated grades
- bestückt/Cermet / brazed/Cermet

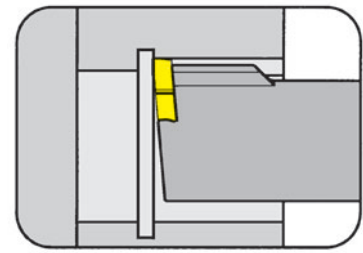
Abmessungen in mm  
Dimensions in mm

HM-Sorten  
Carbide grades

### KLEMMHALTER Typ

TOOLHOLDER Type

# SH117

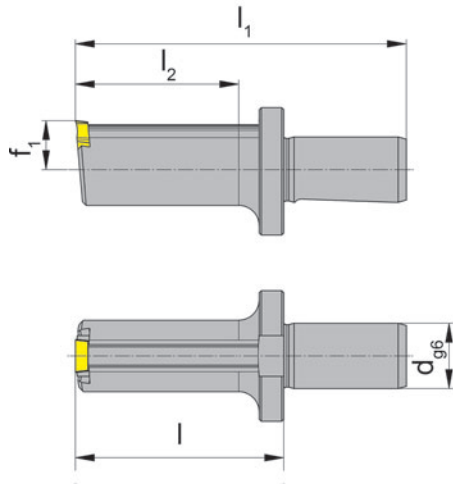


Bohrungs-Ø ab      Bore Ø from      17,0 mm

nur für Nutstoßgeräte EWS-Slot  
only usable for broaching devices EWS-Slot

für Schneidplatte  
for use with Insert

Typ      S117  
Type



Bestellnummer Part number	d	l	l <sub>1</sub>	l <sub>2</sub>	D <sub>min</sub>	f <sub>1</sub>	Form Form
SH117.1716.E1.10 SH117.1716.E2.10	16	41 51	71 81	30 40	17	9,5	A
SH117.0016.E1.10 SH117.0016.E2.10	16	41 51	71 81	30 40	22	12,0	B

Ausführungen für weitere Geräteschnittstellen auf Anfrage  
Further sizes for other device interfaces upon request

Abmessungen in mm  
Dimensions in mm

### Ersatzteile

Spare parts

Klemmhalter Toolholder	Spannschraube Screw	TORX PLUS®-Schlüssel TORX PLUS® Wrench
SH117....	4.09T15P	T15PQ

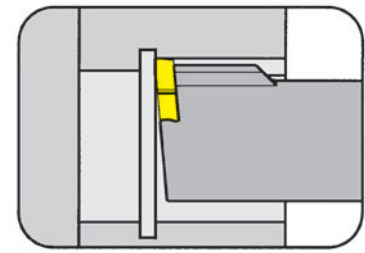
# NUTSTOSSEN mit EWS-Slot

## BROACHING with EWS-Slot



**KLEMMHALTER Typ**  
TOOLHOLDER Type

# SH117

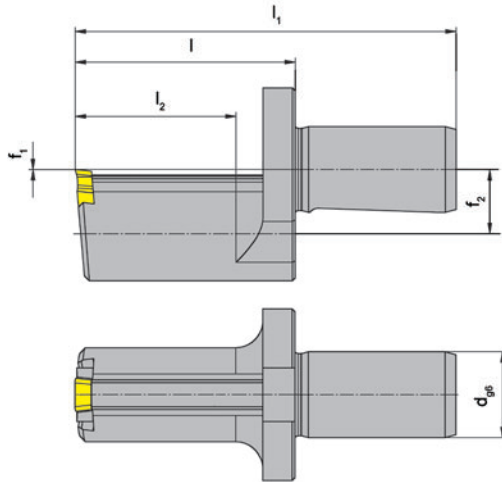


Bohrungs-Ø ab      Bore Ø from      17,0 mm

für Nutstoßgerät EWS-Slot  
usable for broaching device EWS-Slot

für Schneidplatte  
for use with Insert

Typ      S117  
Type



Längsnuten nach  
DIN138+DIN6885

Keyways according to  
DIN138+DIN6885

Bestellnummer Part number	d	l	l <sub>1</sub>	l <sub>2</sub>	D <sub>min</sub>	f <sub>1</sub>	f <sub>2</sub>	Form Form
SH117.1716.E1.0.10 SH117.1716.E2.0.10	16	41 51	71 81	30 40	17	-	9,5	A
SH117.0016.E1.0.10 SH117.0016.E2.0.10	16	41 51	71 81	30 40	22	-	12,0	B

Ausführungen für weitere Geräteschnittstellen auf Anfrage  
Further sizes for other device interfaces upon request

Abmessungen in mm  
Dimensions in mm

**Ersatzteile**  
Spare parts

Klemmhalter Toolholder	Spannschraube Screw	TORX PLUS®-Schlüssel TORX PLUS® Wrench
SH117....	4.09T15P	T15PQ

# NUTSTOSSEN BROACHING



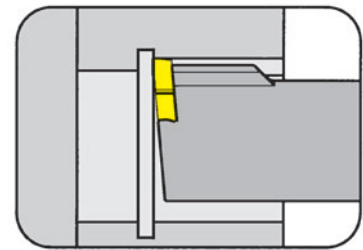
## SCHNEIDPLATTE Typ

INSERT Type

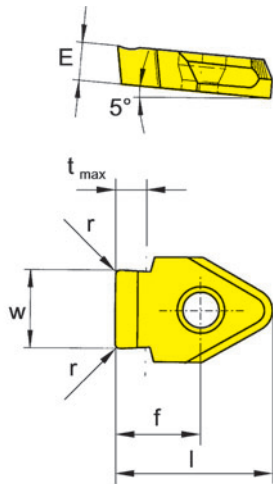
## S117

Toleranzklasse C11

Tolerance grade C11



Bohrungs-Ø ab	Bore Ø from	22,0 mm
Nuttiefe bis	Depth of groove up to	3,4 mm



für Klemmhalter  
for use with Toolholder

Typ SH117  
Type

Längsnuten nach DIN138  
Keyways according to DIN138

Bestellnummer Part number	Nw	w	r	E	l	t <sub>max</sub>	D <sub>min</sub>	f	Form Form	Längsnuten nach DIN138			
										MG12	TA45	TN35	TI25
S117.0610.22	6	6,12	0,85			2,6	22				▲		
S117.0710.27	7	7,13	0,85	3	16	3,3	27	8,0	B		▲		
S117.0810.32	8	8,13	1,05			3,4	32				▲		
										P	•		
										M	•		
										K	•		
										S	•		
										N	•		
										H			

▲ ab Lager / on stock Δ 4 Wochen / 4 weeks

● Haupteinsatzbereich / main recommendation

o bedingt einsetzbar / alternative recommendation

■ unbeschichtete HM-Sorten / uncoated grades

■ beschichtete HM-Sorten / coated grades

■ bestückt/Cermet / brazed/Cermet

Abmessungen in mm

Dimensions in mm

HM-Sorten

Carbide grades

### Hinweis:

Die Form der Schneidplatte muss der Halterform entsprechen.

Bsp.: Klemmhalter Form A = Schneidplatte Form A

### Note:

The insert form must correspond to the holder form.

E.g.: Form A Toolholder = Form A Insert

# NUTSTOSSEN BROACHING



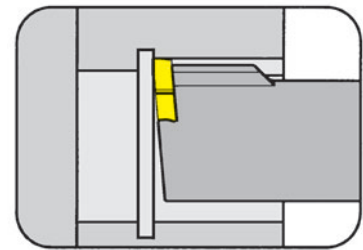
## SCHNEIDPLATTE Typ

INSERT Type

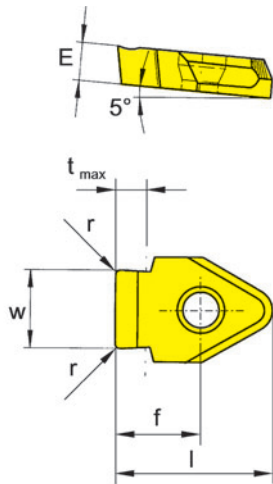
## S117

Toleranzklasse P9

Tolerance grade P9



Bohrungs-Ø ab	Bore Ø from	17,0 mm
Nuttiefe bis	Depth of groove up to	4,1 mm



für Klemmhalter  
for use with Toolholder

Typ SH117  
Type

Längsnuten nach  
DIN6885  
Keyways according to DIN6885

Bestellnummer Part number	Nw	w	r	E	l	t <sub>max</sub>	D <sub>min</sub>	f	Form Form	MG12	TA45	TN35	TI25
S117.0497.02.10	5	4,98	0,2	3	14,5	2,7	17	6,5	A		▲		
S117.0597.02.10	6	5,98	0,2	3	14,5	3,4	17	6,5	A		▲		
S117.0796.02.10	8	7,98	0,2	3	16,0	4,1	22	8,0	B		▲		
										P	•	•	•
										M	•	•	•
										K	•	•	•
										S	•	•	•
										N	•	•	•
										H			

▲ ab Lager / on stock Δ 4 Wochen / 4 weeks

• Haupteinsatzbereich / main recommendation

o bedingt einsetzbar / alternative recommendation

unbeschichtete HM-Sorten / uncoated grades

beschichtete HM-Sorten / coated grades

bestückt/Cermet / brazed/Cermet

P	•	•	•
M	•	•	•
K	•	•	•
S	•	•	•
N	•	•	•
H			

Abmessungen in mm

Dimensions in mm

HM-Sorten  
Carbide grades

### Hinweis:

Die Form der Schneidplatte muss der Halterform entsprechen.

Bsp.: Klemmhalter Form A = Schneidplatte Form A

### Note:

The insert form must correspond to the holder form.

E.g.: Form A Toolholder = Form A Insert

# NUTSTOSSEN BROACHING

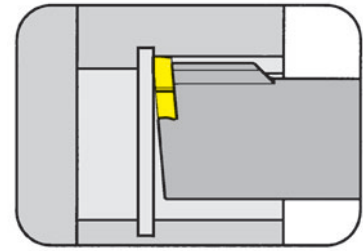


## SCHNEIDPLATTE Typ

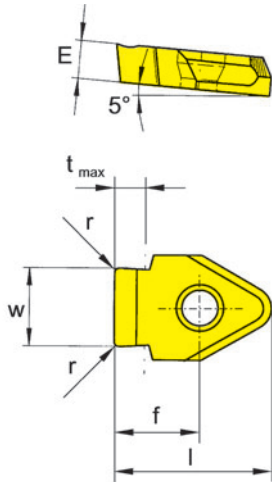
INSERT Type

## S117

Toleranzklasse JS9  
Tolerance grade JS9



Bohrungs-Ø ab	Bore Ø from	17,0 mm
Nuttiefe bis	Depth of groove up to	4,1 mm



für Klemmhalter  
for use with Toolholder

Typ SH117  
Type

Längsnuten nach  
DIN6885  
Keyways according to DIN6885

Bestellnummer Part number	Nw	w	r	E	l	t <sub>max</sub>	D <sub>min</sub>	f	Form Form	MG12	TA45	TN35	TI25
S117.0500.02.10	5	5,01	0,2	3	14,5	2,7	17	6,5	A		▲		
S117.0600.02.10	6	6,01	0,2	3	14,5	3,4	17	6,5	A		▲		
S117.0800.02.10	8	8,01	0,2	3	16,0	4,1	22	8,0	B		▲		
										P	•	•	•
										M	•	•	•
										K	•	•	•
										S	•	•	•
										N	•	•	•
										H			

▲ ab Lager / on stock Δ 4 Wochen / 4 weeks

• Haupteinsatzbereich / main recommendation

o bedingt einsetzbar / alternative recommendation

■ unbeschichtete HM-Sorten / uncoated grades

■ beschichtete HM-Sorten / coated grades

■ bestückt/Cermet / brazed/Cermet

Abmessungen in mm

Dimensions in mm

### Hinweis:

Die Form der Schneidplatte muss der Halterform entsprechen.

Bsp.: Klemmhalter Form A = Schneidplatte Form A

### Note:

The insert form must correspond to the holder form.

E.g.: Form A Toolholder = Form A Insert

HM-Sorten  
Carbide grades

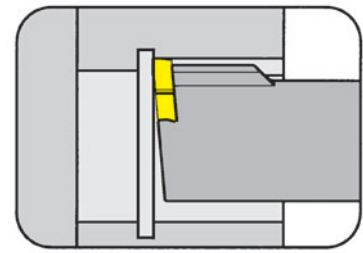


# NUTSTOSSEN-FASEN BROACHING-CHAMFERING



**SCHNEIDPLATTE Typ**  
INSERT Type

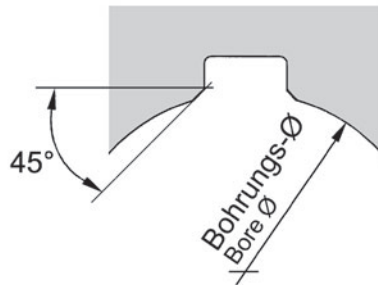
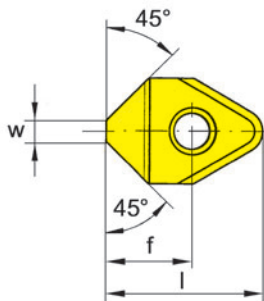
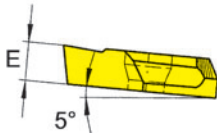
## S117



Bohrungs-Ø ab      Bore Ø from      17,0 mm

für Klemmhalter  
for use with Toolholder

Typ      SH117  
Type



Fasen  
Chamfering

Bestellnummer Part number	Nw	w	E	l	D <sub>min</sub>	f	Form Form	HM-Sorten			
								MG12	TA45	TN35	TI25
<b>S117.1545.10</b>	2	1,5	3	16	17	8,0	A		▲		
<b>S117.3045.10</b>	3	3,0	3	16	22	8,0	B		▲		
<b>S117.6045.14</b>	6	6,0	6	21	30 / 38	11,2	C / D		▲		

▲ ab Lager / on stock    Δ 4 Wochen / 4 weeks

● Haupteinsatzbereich / main recommendation

○ bedingt einsetzbar / alternative recommendation

■ unbeschichtete HM-Sorten / uncoated grades

■ beschichtete HM-Sorten / coated grades

■ bestückt/Cermet / brazed/Cermet

	MG12	TA45	TN35	TI25
P	•	•	•	•
M	•	•	•	•
K	•	•	•	•
S	•	•	•	•
N	•	•	•	•
H	•	•	•	•

Abmessungen in mm  
Dimensions in mm

HM-Sorten  
Carbide grades

**Hinweis:**

Die Form der Schneidplatte muss der Halterform entsprechen.  
Bsp.: Klemmhalter Form A = Schneidplatte Form A

**Note:**

The insert form must correspond to the holder form.  
E.g.: Form A Toolholder = Form A Insert

**Tipps und Tricks**

- Am Nutende einer Sackbohrung muss eine Stoßauslaufnut oder ein Freistich vorhanden sein.
- Heben Sie das Werkzeug beim Rückhub an.
- Eine Kühlmittelzufuhr von Emulsionen oder Öl in der Bohrung, ist von entscheidendem Vorteil. Hierdurch werden die Späne aus der Bohrung gespült. Auch der Schmiereffekt des Kühlmediums hat sich bei fast allen Anwendungen positiv auf die Oberflächenbeschaffenheit der Nut und die Standzeit ausgewirkt.
- Wenn möglich sollte oben (Position 12 Uhr) gestoßen werden, damit der Stoßzyklus nicht durch anfallende Späne beeinträchtigt wird.
- Vorsicht bei beengten Bohrungen! Kollisionsgefahr am Rücken!
- Messen Sie das Werkzeug korrekt aus. Beachten Sie das Anstellmaß beim Programmieren des ersten Hubes.

**Tips and tricks**

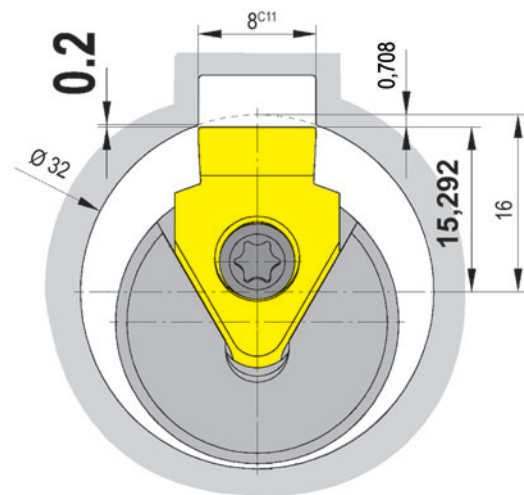
- An undercut is necessary at the end of the broached groove for tool run out.
- The insert should be in contact with material
- The use of oil or emulsion as a coolant helps to improve toll life and surface finish and also helps with the chip evacuation out of the bore
- The tool should be set at the 12 o'clock position to ensure that chips fall away from the groove.
- Setting of the tool is very important. Double check the component diameter before taking the first pass.
- Measure the tool accurately and pay close attention to the component diameter when programming the first stroke

**Bearbeitungsbeispiel:**

Bohrungs-Ø 32 mm, Nutbreite 8 mm:  
 Bei einem Bohrungsradius von 16 mm und einer Sicherheit von 0,2 mm an den Eckradien der Schneidplatte muss das Werkzeug in der X-Achse auf Anstellmaß 15,292 mm (bzw. X 30,584) eingestellt werden, um einen kollisionsfreien Hub zu gewährleisten.

**Machining example:**

Bore diameter 32 mm, groove width 8 mm:  
 At a radius of 16 mm and with a clearance of 0,2 mm safety at the r 0,2 mm corner radii, the tool has to be set at 15,292 mm in X-axis to avoid any collision at the beginning of the process.



**Berechnung Anstellmaß  $b_1$ :**

Calculation of the start position  $b_1$ :

$$c^2 = a^2 + b^2$$

$$b^2 = c^2 - a^2$$

$$b = \sqrt{c^2 - a^2}$$

$$b = \sqrt{16^2 - 4^2}$$

$$b = 15,491933$$

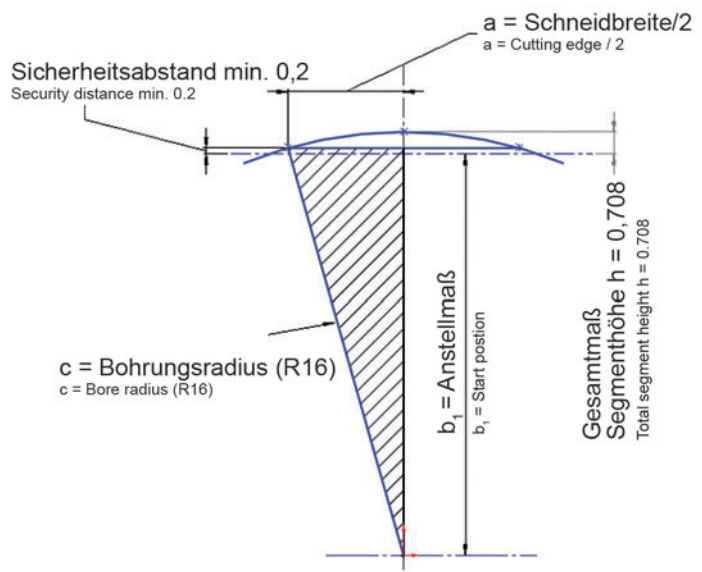
$$b_1 = b - \text{Sicherheitsabstand}$$

Clearance distance

$$b_1 = 15,492 - 0,2 = 15,292 \text{ mm}$$

→ ergibt einen Anstell-Ø von 30,584 mm

→ equals as a start position at Ø 30.584 mm





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