

# HCG - Horn Catalog Guide

## BROACHING

Broach Width Inch	BORE DIAMETER											
	.236"	.256"	.354"	.669"	.866"	1.063"	1.181"	1.260"	1.496"	1.575"	1.969"	≥ 2.559"

1/16"	105												
3/32"		105											
1/8"		105											
5/32"		105	110										
3/16"			110	117									
1/4"				117									
9/32"					117								
5/16"					117								
3/8"							117						
7/16"									117				
1/2"									117				
>1/2"									117				

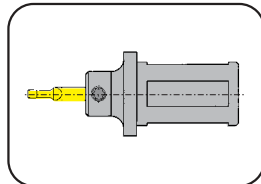
Broach Width Metric	BORE DIAMETER											
	6 mm	6.5 mm	9 mm	17 mm	22 mm	27 mm	30 mm	32 mm	38 mm	40 mm	50 mm	≥ 65 mm

1.98 mm	105												
2.0 mm	105												
2.1 mm	105												
2.98 mm		105											
3.0 mm		105											
3.1 mm		105											
3.98 mm		105	110										
4.0 mm		105	110										
4.1 mm		105	110										
4.98 mm			110	117									
5.0 mm			110										
5.01 mm				117									
5.98 mm				117									
6.01 mm				117									
6.12 mm					117								
7.13 mm						117							
7.98 mm					117								
8.01 mm					117								
8.13 mm								117					
9.98 mm							117						
10.01 mm							117						
10.13 mm										117			
11.97 mm									117				
12.01 mm									117				
12.15 mm											117		
>12.0 mm													117

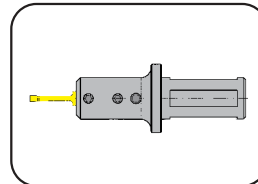
BROACHING SYSTEM 105/110/117



Toolholder  
Type 105/110

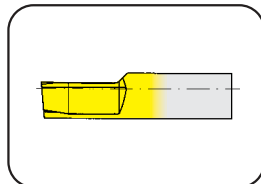


Type 105  
page Q2-Q3

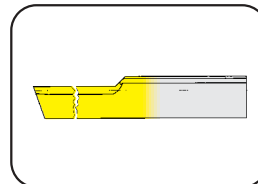


Type 110  
page Q2-Q3

Inserts  
Type 105/110

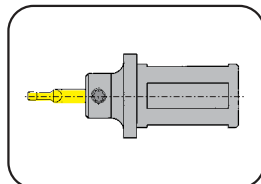


Broaching  
page Q4-Q7



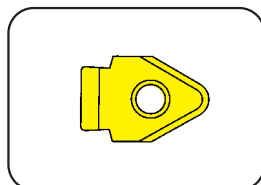
Chamfering  
page Q8

Toolholder  
Type 117

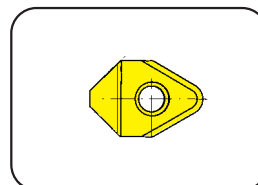


Type 117  
page Q10-Q11

Inserts  
Type 117



Broaching  
page Q12-Q15



Chamfering  
page Q16

# BROACHING

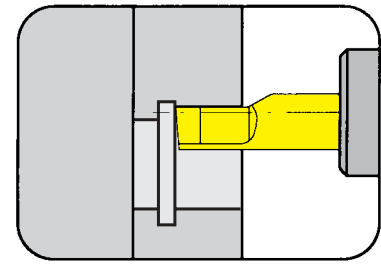
## (Keyways according Inch Standards)



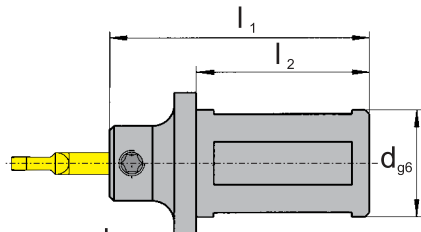
TOOLHOLDER type

# SBU105...

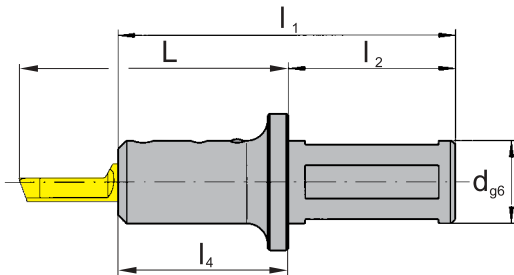
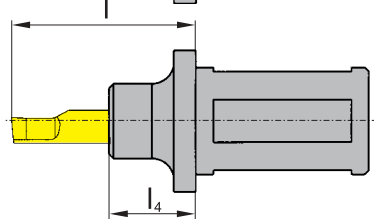
# SBU110...



Bore Ø from .236" (6.0 mm)



SB(U)105



SB(U)110

for use with insert

- Type NU105 / NU110  
N105 / N110



Part number	d <sub>g6</sub>	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	D <sub>min</sub>	Insert
SBU105.0750.1.01 SBU105.1000.1.01	.750 1.000	L = *l <sub>3</sub> + l <sub>4</sub>	2.375	1.575	.787	.236	N(U)105
SBU110.1000.1.02 SBU110.1250.1.02	1.000 1.250						

Further shank sizes upon request

\* see insert

Dimensions in inch

### Spare parts

Toolholder	Screw 	Torx screw driver 
SBU105... SBU110...	<b>6.075T15</b>	<b>T15</b>

# BROACHING

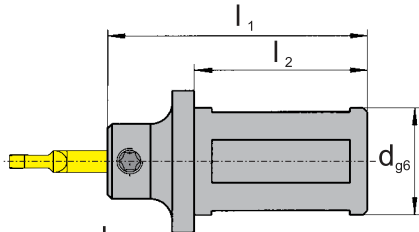
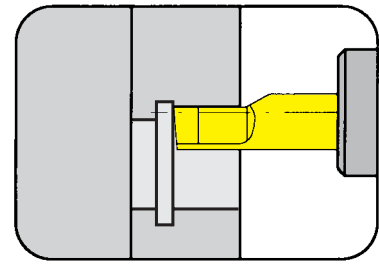
(Keyways according DIN138+DIN6885)



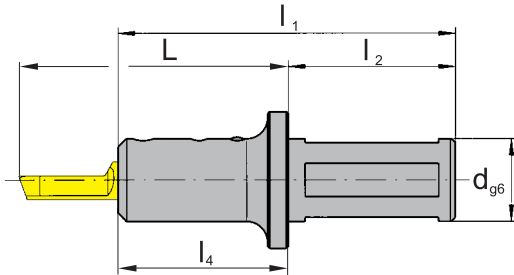
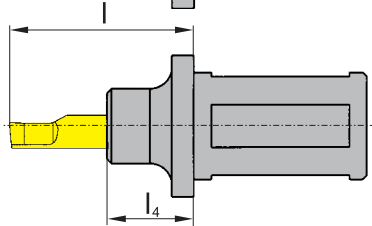
TOOLHOLDER type

## SB105... SB110...

Bore Ø from 6.0 mm



SB(U)105



SB(U)110

for use with insert

- Type NU105 / NU110  
N105 / N110



Part number	d <sub>g6</sub>	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>4</sub>	D <sub>min</sub>	Insert
SB105.0020.1.01 SB105.0025.1.01	20 25	L = *l <sub>3</sub> + l <sub>4</sub>	60 60	40	20	6.0	N(U)105
SB110.0025.1.02 SB110.0032.1.02	25 32		81	40	41		

Further shank sizes upon request

\* see insert

Dimensions in mm

### Spare parts

Toolholder	Screw 	Torx screw driver 
SB105... SB110...	6.075T15	T15

# BROACHING

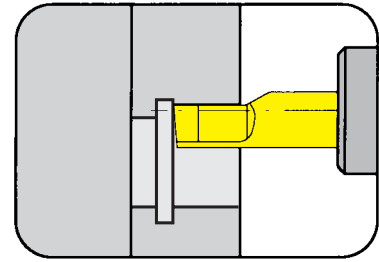
## (Keyways according Inch Standards)



INSERT type

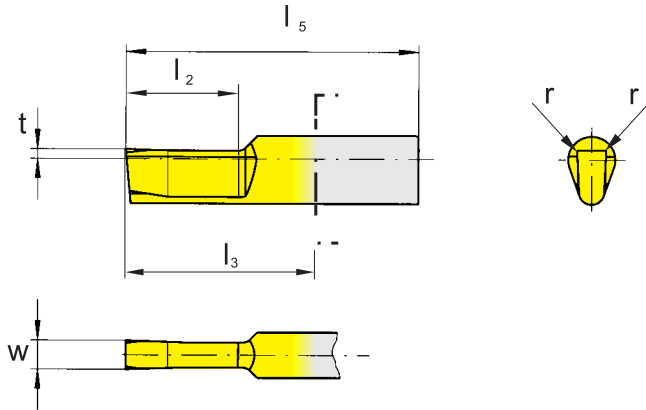
# NU105/NU110

Bore Ø from .236" (6.0 mm)



for use with toolholder

- Type SBU105 / SBU110  
SB105 / SB110



Part number	Fractional size	w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	D <sub>min</sub>	Toolholder type
NU105.0625.04.01	1/16"	.0635		1.181	.472	.709	.236	SBU105 SB105
NU105.0937.04.01	3/32"	.0948		1.181	.472	.709	.256	
NU105.1250.04.01	1/8"	.1260	.004	1.378	.591	.906	.256	
NU105.1562.04.01	5/32"	.1572		1.378	.591	.906	.256	
NU110.1562.08.04	5/32"	.1572		2.362	.984	1.339	.354	SBU110 SB110
NU110.1562.08.07	5/32"	.1572		2.953	1.575	2.126	.354	
NU110.1875.08.04	3/16"	.1885	.008	2.362	.984	1.339	.354	
NU110.1875.08.07	3/16"	.1885		2.953	1.575	2.126	.354	

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

Dimensions in inch

# BROACHING

## (Keyways according DIN138+DIN6885)

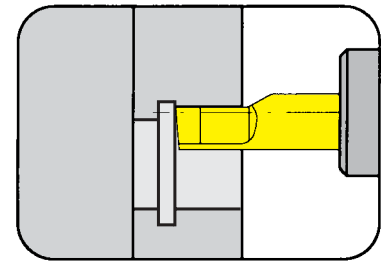


INSERT type

# N105/N110

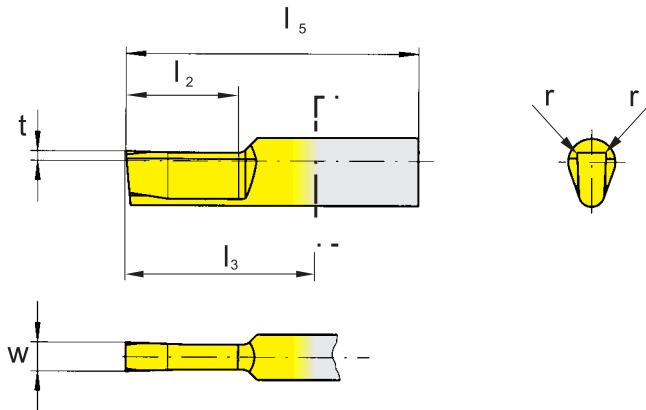
Tolerance Grade C11

Bore Ø from .236" (6.0 mm)



for use with toolholder

- Type SBU105 / SBU110  
SB105 / SB110



Part number	Nominal width	w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	usable from Ø	Toolholder type
N105.0210.2.08	2.0	2.1	0.35	30	12	18	6.0	SBU105 SB105
N105.0310.2.10	3.0	3.1	0.35	30	12	18	6.5	
N105.0310.2.13	3.0	3.1	0.5	30	12	18	6.5	
N105.0410.2.16	4.0	4.1	0.5	30	12	18	6.5	
N110.0410.05.04	4.0	4.1	0.5	60	25	34	9.0	SBU110 SB110
N110.0410.05.07	4.0	4.1	0.5	75	40	34	9.0	

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

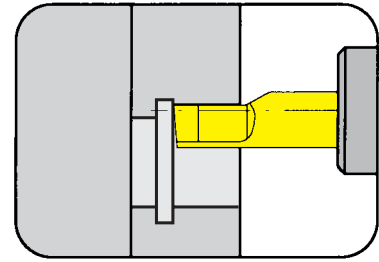
Dimensions in mm

INSERT type

## N105/N110

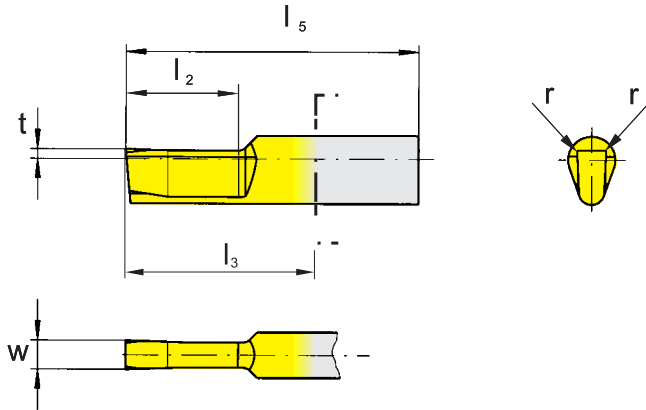
Tolerance Grade P9

Bore Ø from .236" (6.0 mm)



for use with toolholder

- Type SBU105 / SBU110  
SB105 / SB110



Part number	Nominal width	w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	usable from Ø	Toolholder type
N105.0198.01.01	2.0	1.98	0.1	30	12	18	6.0	SBU105 SB105
N105.0298.01.01	3.0	2.98	0.1	30	12	18	6.5	
N105.0397.01.01	4.0	3.98	0.1	35	15	23	6.5	
N110.0397.02.04	4.0	3.98	0.2	60	25	34	9.0	SBU110 SB110
N110.0397.02.07	4.0	3.98	0.2	75	40	54	9.0	
N110.0497.02.04	5.0	4.98	0.2	60	25	34	9.0	
N110.0497.02.07	5.0	4.98	0.2	75	40	54	9.0	

Carbide grades			
MG12	TN35	TI25	TA45
		●	

- Standard
- Semistandard

Please check price and delivery for all ○ items

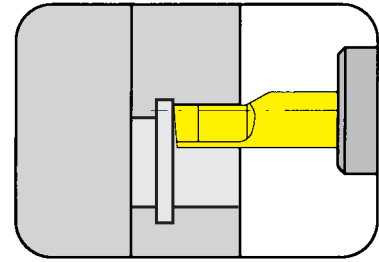
Dimensions in mm

INSERT type

## N105/N110

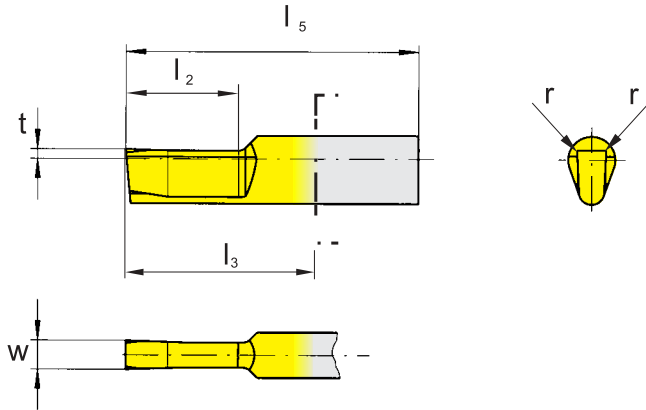
Tolerance Grade JS9

Bore Ø from .236" (6.0 mm)



for use with toolholder

- Type SBU105 / SBU110  
SB105 / SB110



Part number	Nominal width	w	r	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	usable from Ø	Toolholder type
N105.0200.01.01	2.0	2.0	0.1	30	12	18	6.0	SBU105 SB105
N105.0300.01.01	3.0	3.0	0.1	30	12	18	6.5	
N105.0400.01.01	4.0	4.0	0.1	35	15	23	6.5	
N105.0400.02.01	4.0	4.0	0.2	35	15	23	6.5	
N110.0400.02.04	4.0	4.0	0.2	60	25	34	9.0	SBU110 SB110
N110.0400.02.07	4.0	4.0	0.2	75	40	54	9.0	
N110.0500.02.04	5.0	5.0	0.2	60	25	34	9.0	
N110.0500.02.07	5.0	5.0	0.2	75	40	54	9.0	

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

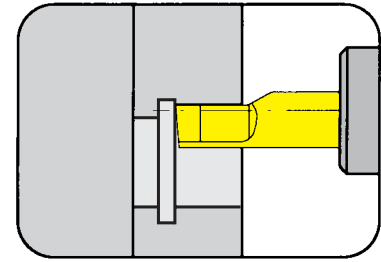
Dimensions in mm

INSERT type

## N105/N110

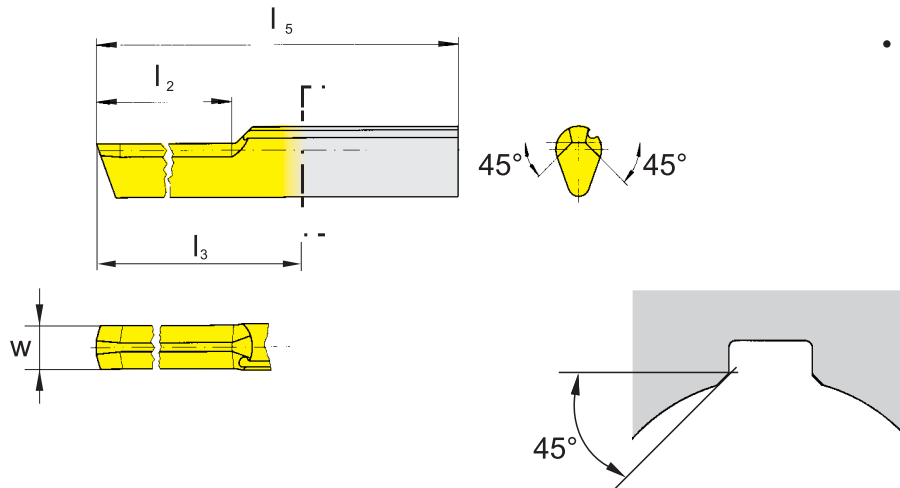
Chamfering

Bore Ø from .236" (6.0 mm)



for use with toolholder

- Type SBU105 / SBU110  
SB105 / SB110



Part number	Chamfer	w	l <sub>5</sub>	l <sub>2</sub>	l <sub>3</sub>	usable from Ø	Toolholder type
<b>N105.4545.2.6</b>	45°	.177(4.5)	1.181(30)	.472(12)	.709(18)	.236(6.0)	<b>SBU105</b> <b>SB105</b>
<b>N105.4545.3.6</b>	45°	.177(4.5)	1.378(35)	.787(20)	.906(23)	.236(6.0)	<b>SBU105</b> <b>SB105</b>
<b>N110.4545.4.9</b>	45°	.248(6.3)	2.362(60)	.984(25)	1.339(34)	.354(9.0)	<b>SBU110</b> <b>SB110</b>
<b>N110.4545.7.9</b>	45°	.248(6.3)	2.953(75)	1.575(40)	2.126(54)	.354(9.0)	<b>SBU110</b> <b>SB110</b>

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

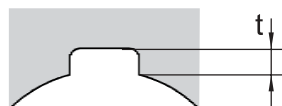
Please check price and delivery for all ○ items

Dimensions in inch (mm)

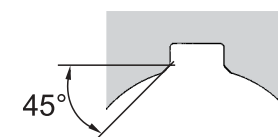
## SUMMARY - CHOICE OF THE BROACHING TOOLS



Broaching



Chamfering



Width of groove DIN				Insert Part number	l <sub>2</sub>	Toolholder Part number	Insert Part number	Toolholder Part number
Width	Tol.	D <sub>min</sub>	t					
2	C11	8	1.0	N105.0210.2.08	12	SBU105... SB105...	N105.4545.2.6	SBU105... SB105...
3	C11	10	1.8	N105.0310.2.10	12			
3	C11	13	1.8	N105.0310.2.13	12			
4	C11	16	2.0	N105.0410.2.16	12			
4	C11	16	2.0	N110.0410.05.04	25	SBU110... SB110...	N110.4545.4.9 N110.4545.7.9	SBU110... SB110...
4	C11	16	2.0	N110.0410.05.07	40			
2	P9	6	1.1	N105.0198.01.01	12	SBU105... SB105...	N105.4545.2.6	SBU105... SB105...
3	P9	8	1.5	N105.0298.01.01	12			
4	P9	10	1.9	N105.0397.01.01	15			
4	P9	10	1.9	N110.0397.02.04	25	SBU110... SB110...	N110.4545.4.9 N110.4545.7.9 N110.4545.4.9 N110.4545.7.9	SBU110... SB110...
4	P9	10	1.9	N110.0397.02.07	40			
5	P9	12	2.4	N110.0497.02.04	25			
5	P9	12	2.4	N110.0497.02.07	40			
2	JS9	6	1.1	N105.0200.01.01	12	SBU105... SB105...	N105.4545.2.6	SBU105... SB105...
3	JS9	8	1.5	N105.0300.01.01	12			
4	JS9	10	1.9	N105.0400.01.01	12			
4	JS9	10	1.9	N105.0400.02.01	15			
4	JS9	10	1.9	N110.0400.02.04	25	SBU110... SB110...	N110.4545.4.9 N110.4545.7.9 N110.4545.4.9 N110.4545.7.9	SBU110... SB110...
4	JS9	10	1.9	N110.0400.02.07	40			
5	JS9	12	2.4	N110.0500.02.04	25			
5	JS9	12	2.4	N110.0500.02.07	40			

Dimensions in mm

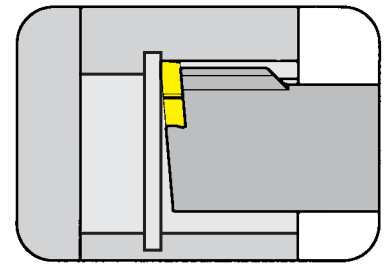
# BROACHING

## (Keyways according Inch Standards)

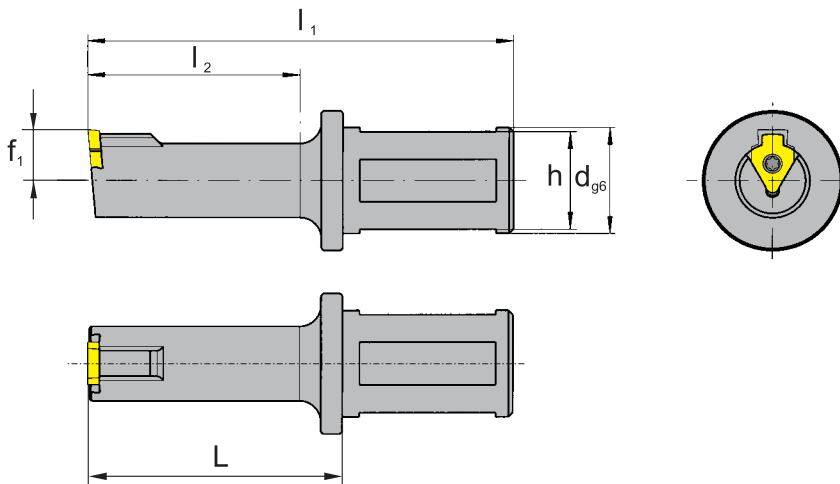


TOOLHOLDER type

# SHU117...



Bore Ø from **.669" (17.0 mm)**



for use with insert



- Type SU117/S117

Part number	d <sub>g6</sub>	h	l <sub>1</sub>	l <sub>2</sub>	L	f <sub>1</sub>	D <sub>min</sub>	Form	Insert
<b>SHU117.0100.1.10</b>	1.000	.921	3.550	1.575	1.975	.374	<b>.669</b>	A	
<b>SHU117.0910.1.10</b>	1.000	.921	4.000	1.970	2.430	.472	<b>.866</b>	A	
<b>SHU117.1000.1.10</b>	1.000	.921	4.000	1.970	2.430	.472	<b>.866</b>	B	
<b>SHU117.0125.1.16</b>	1.250	1.171	4.000	1.970	2.430	.659	<b>1.181</b>	C	
<b>SHU117.1250.1.16</b>	1.250	1.171	4.000	1.970	3.370	.866	<b>1.496</b>	D	
<b>SHU117.0125.2.16</b>	1.250	1.171	4.950	2.950	3.370	.659	<b>1.181</b>	C	
<b>SHU117.1250.2.16</b>	1.250	1.171	4.950	2.950	3.346	.866	<b>1.496</b>	D	

Further shank sizes upon request

Dimensions in inch

### Spare parts

Toolholder	Screw 	Torx screw driver 
SHU117...1.10	<b>4.09T15</b>	<b>T15</b>
SHU117...1.16	<b>5.12T20</b>	<b>T20</b>
SHU117...2.16	<b>5.12T20</b>	<b>T20</b>

Q10

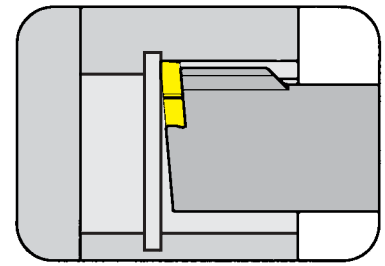
# BROACHING

## (Keyways according DIN138+DIN6885)

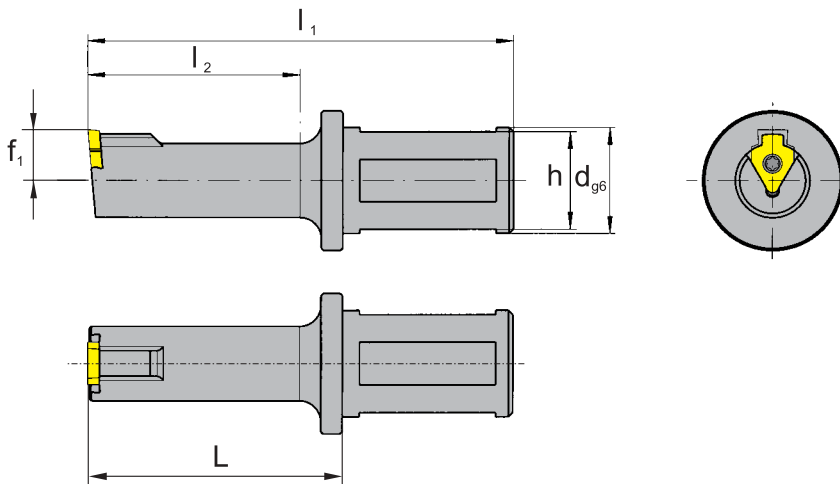


TOOLHOLDER type

# SH117...



Bore Ø from .669" (17.0 mm)



for use with insert



- Type SU117/S117

Part number	d <sub>g6</sub>	h	l <sub>1</sub>	l <sub>2</sub>	L	f <sub>1</sub>	D <sub>min</sub>	Form	Insert
SH117.1725.1.10	25	23	90	40	50	9.5	17	A	SU117 S117
SH117.0025.1.10	25	23	100	50	60	12.0	22	B	
SH117.3032.1.16	32	30	100	50	60	16.5	30	C	
SH117.0032.1.16	32	30	100	50	60	22.0	38	D	
SH117.3032.2.16	32	30	125	75	85	16.5	30	C	
SH117.0032.2.16	32	30	125	75	85	22.0	38	D	

Further shank sizes upon request

Dimensions in mm

### Spare parts

Toolholder	Screw 	Torx screw driver 
SH117...1.10	<b>4.09T15</b>	<b>T15</b>
SH117...1.16	<b>5.12T20</b>	<b>T20</b>
SH117...2.16	<b>5.12T20</b>	<b>T20</b>

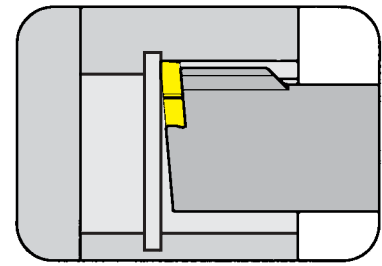
# BROACHING

## (Keyways according Inch Standards)

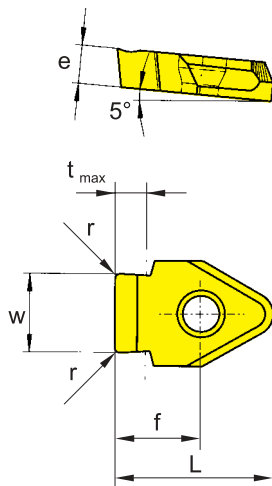


INSERT type

# SU117...



Bore Ø from .669" (17.0 mm)  
Depth of groove up to .335" (8.5 mm)



for use with toolholder

- Type SHU117  
SH117

Part number	Fractional Size	w	r	e	f	L	t <sub>max</sub>	D <sub>min</sub>	** Toolholder
SU117.1875.08.10*	3/16"	.1885			.256	.571	.106	.669	A
SU117.2500.08.10*	1/4"	.2510			.256	.571	.134	.669	A
SU117.2812.08.10	9/32"	.2828	.008	.118	.315	.630	.161	.866	B
SU117.3125.08.10	5/16"	.3140			.315	.630	.161	.866	B
SU117.3750.12.14	3/8"	.3765					.197	1.181	C
SU117.4375.12.14	7/16"	.4390	.012	.236	.441	.815	.224	1.496	D
SU117.5000.12.14	1/2"	.5015					.260	1.496	D
SU117.5000.20.14	>1/2"	.5015	.020	.236	.441	.815	.335	1.496	D

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

Dimensions in inch

\* If used with toolholder SHU117.0910.1.10 Dmin = .866"

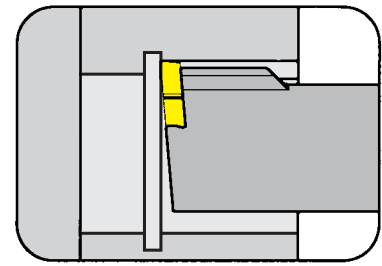
- \*\* A: SHU117.0100.1.10 / SH117.1725.1.10  
 B: SHU117.1000.1.10 / SH117.0025.1.10  
 C: SHU117.0125.1.16 / SHU117.0125.2.16  
 SH117.3032.1.16 / SH117.3032.2.16  
 D: SHU117.1250.1.16 / SHU117.1250.2.16  
 SH117.0032.1.16 / SH117.0032.2.16

INSERT type

## S117...

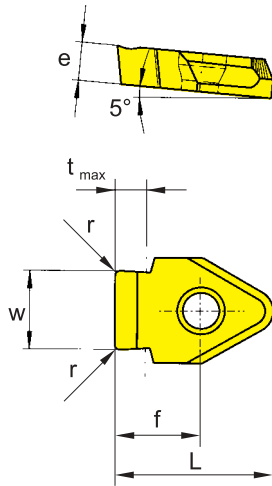
Tolerance Grade C11

Bore Ø from .866" (22.0 mm)  
Depth of groove up to .335" (8.5 mm)



for use with toolholder

- Type SHU117  
SH117



Part number	Width of groove Tol. C11	w	r	e	f	L	t <sub>max</sub>	D <sub>min</sub>	* Toolholder
<b>S117.0610.22</b>	6.0	6.12	0.85	3.0	8.0	16	2.6	<b>22</b>	B
<b>S117.0710.27</b>	7.0	7.13	0.85	3.0	8.0	16	3.3	<b>27</b>	B
<b>S117.0810.32</b>	8.0	8.13	1.05	3.0	8.0	16	3.4	<b>32</b>	B
<b>S117.1014.40</b>	10.0	10.13	1.05	6.0	11.2	21	4.2	<b>40</b>	D
<b>S117.1214.50</b>	12.0	12.15	1.35	6.0	11.2	21	5.1	<b>50/60</b>	D
<b>S117.1614.70</b>	16.0	12.15	1.75	6.0	11.2	21	6.6	<b>70/80</b>	D
<b>S117.2414.100</b>	24.0	12.15	2.25	6.0	11.2	21	8.5	<b>100</b>	D

Carbide grades

MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

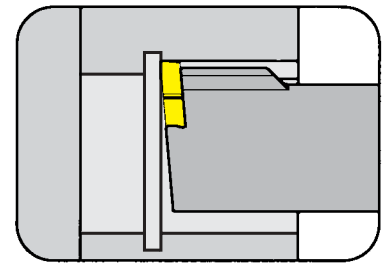
Dimensions in mm

\* B: SHU117.1000.1.10 / SH117.0025.1.10  
D: SHU117.1250.1.16 / SHU117.1250.2.16  
SH117.0032.1.16 / SH117.0032.2.16

## INSERT type

# S117...

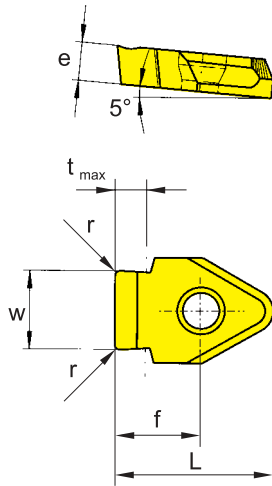
Tolerance Grade P9



Bore Ø from	.669" (17.0 mm)
Depth of groove up to	.224" (5.7 mm)

for use with toolholder

- Type SHU117  
SH117



Part number	Width of groove Tol. P9	w	r	e	f	L	t <sub>max</sub>	D <sub>min</sub>	* Toolholder
<b>S117.0497.02.10</b>	5.0	4.98	0.2	3.0	6.5	14.5	2.7	<b>17</b>	A
<b>S117.0597.02.10</b>	6.0	5.98	0.2	3.0	6.5	14.5	3.4	<b>17</b>	A
<b>S117.0796.02.10</b>	8.0	7.98	0.2	3.0	8.0	16	4.1	<b>22</b>	B
<b>S117.0996.03.14</b>	10.0	9.98	0.3	6.0	11.2	21	4.2	<b>30</b>	C
<b>S117.1196.03.14</b>	12.0	11.97	0.3	6.0	11.2	21	5.7	<b>38</b>	D

Carbide grades			
MG12	TN35	TI25	TA45
		●	

- Standard
- Semistandard

Please check price and delivery for all ○ items

Dimensions in mm

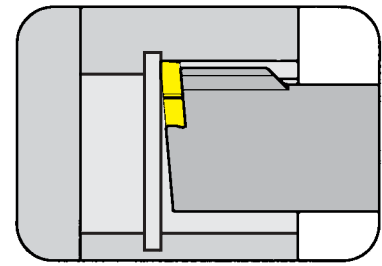
- \* A: SHU117.0100.1.10 / SH117.1725.1.10
- B: SHU117.1000.1.10 / SH117.0025.1.10
- C: SHU117.0125.1.16 / SHU117.0125.2.16  
SH117.3032.1.16 / SH117.3032.2.16
- D: SHU117.1250.1.16 / SHU117.1250.2.16  
SH117.0032.1.16 / SH117.0032.2.16

INSERT type

## S117...

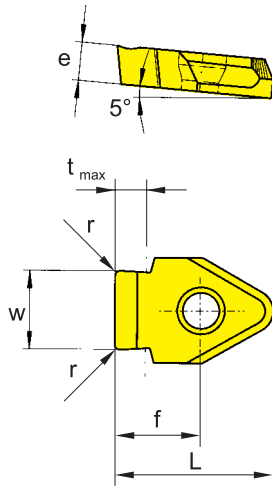
Tolerance Grade JS9

Bore Ø from	.669" (17.0 mm)
Depth of groove up to	.335" (8.5 mm)



for use with toolholder

- Type SHU117  
SH117



Part number	Width of groove Tol. JS9	w	r	e	f	L	t <sub>max</sub>	D <sub>min</sub>	* Toolholder
<b>S117.0500.02.10</b>	5.0	5.01	0.2	3.0	6.5	14.5	2.7	<b>17</b>	A
<b>S117.0600.02.10</b>	6.0	6.01	0.2	3.0	6.5	14.5	3.4	<b>17</b>	A
<b>S117.0800.02.10</b>	8.0	8.01	0.2	3.0	8.0	16	4.1	<b>22</b>	B
<b>S117.1000.03.14</b>	10.0	10.01	0.3	6.0	11.2	21	4.2	<b>30</b>	C
<b>S117.1200.03.14</b>	12.0	12.01	0.3	6.0	11.2	21	5.7	<b>38</b>	D
<b>S117.1200.05.14</b>	from 12.0	12.0	0.5	6.0	11.2	21	8.5	<b>65</b>	D

Carbide grades

MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

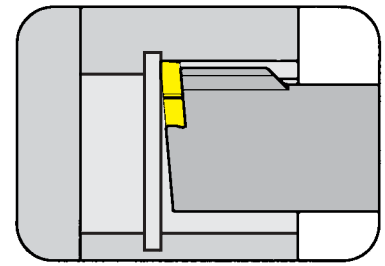
Dimensions in mm

- \* A: SHU117.0100.1.10 / SH117.1725.1.10
- B: SHU117.1000.1.10 / SH117.0025.1.10
- C: SHU117.0125.1.16 / SHU117.0125.2.16  
SH117.3032.1.16 / SH117.3032.2.16
- D: SHU117.1250.1.16 / SHU117.1250.2.16  
SH117.0032.1.16 / SH117.0032.2.16

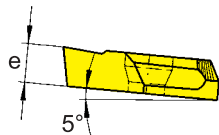
INSERT type

## S117...

Chamfering

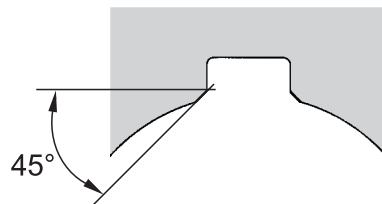
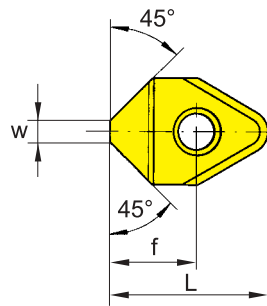


Bore Ø from .669" (17.0 mm)



for use with toolholder

- Type SHU117  
SH117



Part number	Chamfer	w	e	f	L	D <sub>min</sub>	** Toolholder
<b>S117.1545.10*</b>	45°	.059(1.5)	.118(3.0)	.315(8.0)	.630(16.0)	<b>&gt;.669(17.0)</b>	A
<b>S117.3045.10</b>	45°	.118(3.0)	.118(3.0)	.315(8.0)	.630(16.0)	<b>&gt;.866(22.0)</b>	B
<b>S117.6045.14</b>	45°	.236(6.0)	.236(6.0)	.441(11.2)	.827(21.0)	<b>&gt;1.181(30.0)</b> <b>&gt;1.496(38.0)</b>	C D

Carbide grades			
MG12	TN35	TI25	TA45
			●

- Standard
- Semistandard

Please check price and delivery for all ○ items

Dimensions in inch(mm)

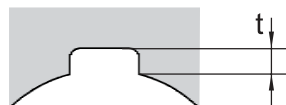
\* If used with toolholder SHU117.0910.1.10 Dmin = .866"

- \*\* A: SHU117.0100.1.10 / SH117.1725.1.10  
 B: SHU117.1000.1.10 / SH117.0025.1.10  
 C: SHU117.0125.1.16 / SHU117.0125.2.16  
 SH117.3032.1.16 / SH117.3032.2.16  
 D: SHU117.1250.1.16 / SHU117.1250.2.16  
 SH117.0032.1.16 / SH117.0032.2.16

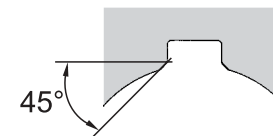
## SUMMARY - CHOICE OF THE BROACHING TOOLS TYPE S117



Broaching



Chamfering



Width of groove DIN				Insert		Toolholder		Toolholder	
Width	Tol.	D <sub>min</sub>	t	Part number	w	Part number	l <sub>2</sub>	Part number	l <sub>2</sub>
6	C11	22	2,6	S117.0610.22	6,12	SH117.0025.1.10	50		
7	C11	27	3,3	S117.0710.27	7,13	SH117.0025.1.10	50		
8	C11	32	3,4	S117.0810.32	8,13	SH117.0025.1.10	50		
10	C11	40	4,2	S117.1014.40	10,13	SH117.0032.1.16	50	SH117.0032.2.16	75
12	C11	50/60	5,1	S117.1214.50	12,15	SH117.0032.1.16	50	SH117.0032.2.16	75
16	C11	70/80	6,6	S117.1614.70	12,15	SH117.0032.1.16	50	SH117.0032.2.16	75
24	C11	100	8,5	S117.2414.100	12,15	SH117.0032.1.16	50	SH117.0032.2.16	75
5	P9	17	2,7	S117.0497.02.10	4,98	SH117.1725.1.10	40		
6	P9	17	3,4	S117.0597.02.10	5,98	SH117.1725.1.10	40		
8	P9	22	4,1	S117.0796.02.10	7,98	SH117.0025.1.10	50		
10	P9	30	4,2	S117.0996.03.14	9,98	SH117.3032.1.16	50	SH117.3032.2.16	75
12	P9	38	5,7	S117.1196.03.14	11,97	SH117.0032.1.16	50	SH117.0032.2.16	75
5	JS9	17	2,7	S117.0500.02.10	5,01	SH117.1725.1.10	40		
6	JS9	17	3,4	S117.0600.02.10	6,01	SH117.1725.1.10	40		
8	JS9	22	4,1	S117.0800.02.10	8,01	SH117.0025.1.10	50		
10	JS9	30	4,2	S117.1000.03.14	10,01	SH117.3032.1.16	50	SH117.3032.2.16	75
12	JS9	38	5,7	S117.1200.03.14	12,01	SH117.0032.1.16	50	SH117.0032.2.16	75
12	JS9	65	8,5	S117.1200.05.14	12,0	SH117.0032.1.16	50	SH117.0032.2.16	75

Insert	Toolholder		Toolholder	
Part number	Part number	l <sub>2</sub>	Part number	
S117.3045.10	SH117.0025.1.10	50		
S117.3045.10	SH117.0025.1.10	50		
S117.3045.10	SH117.0025.1.10	50		
S117.6045.14	SH117.0032.1.16	50	SH117.0032.2.16	
S117.6045.14	SH117.0032.1.16	50	SH117.0032.2.16	
S117.6045.14	SH117.0032.1.16	50	SH117.0032.2.16	
S117.6045.14	SH117.0032.1.16	50	SH117.0032.2.16	
S117.1545.10	SH117.1725.1.10	40		
S117.1545.10	SH117.1725.1.10	40		
S117.3045.10	SH117.0025.1.10	50		
S117.6045.10	SH117.3032.1.16	50	SH117.3032.2.16	75
S117.6045.10	SH117.0032.1.16	50	SH117.0032.2.16	75
S117.1545.10	SH117.1725.1.10	40		
S117.1545.10	SH117.1725.1.10	40		
S117.3045.10	SH117.0025.1.10	50		
S117.6045.10	SH117.3032.1.16	50	SH117.3032.2.16	75
S117.6045.10	SH117.0032.1.16	50	SH117.0032.2.16	75
S117.6045.10	SH117.0032.1.16	50	SH117.0032.2.16	75

Dimensions in mm

## Programming example

```

> N1001
> G59 X0 Z100 Y0
> G26
> G92 S2000
> T0101 ...
> ...
> ...
> ...
> N7
> M5 T0707
> M17
> G59 C0
> G0 C0
> G0 X30 Z10
> N100
> N50
> G91
> G1 U1,5 F5000
> G1 W-30 F10000
> G1 U-1,45
> G0 W30
> N60
> G22 P50Q60 H30
> N200
> G0 C90
> G90
> G0 X30 Z10
> G22 P100Q200 H1
> G90
> G0 Z50

```

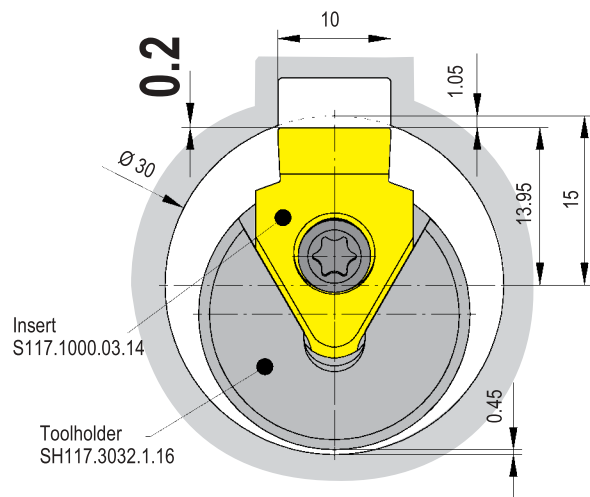


### Important:

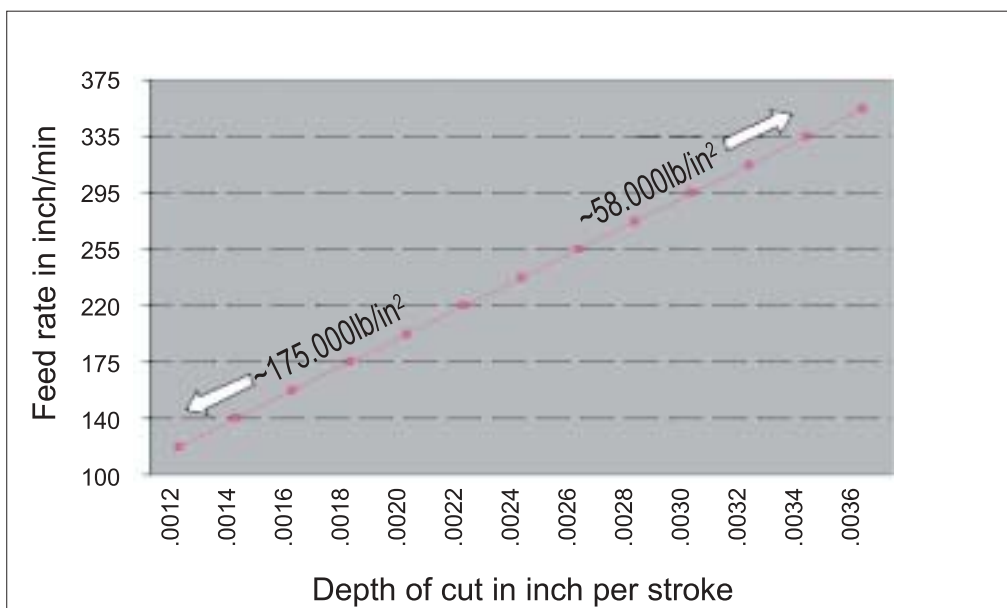
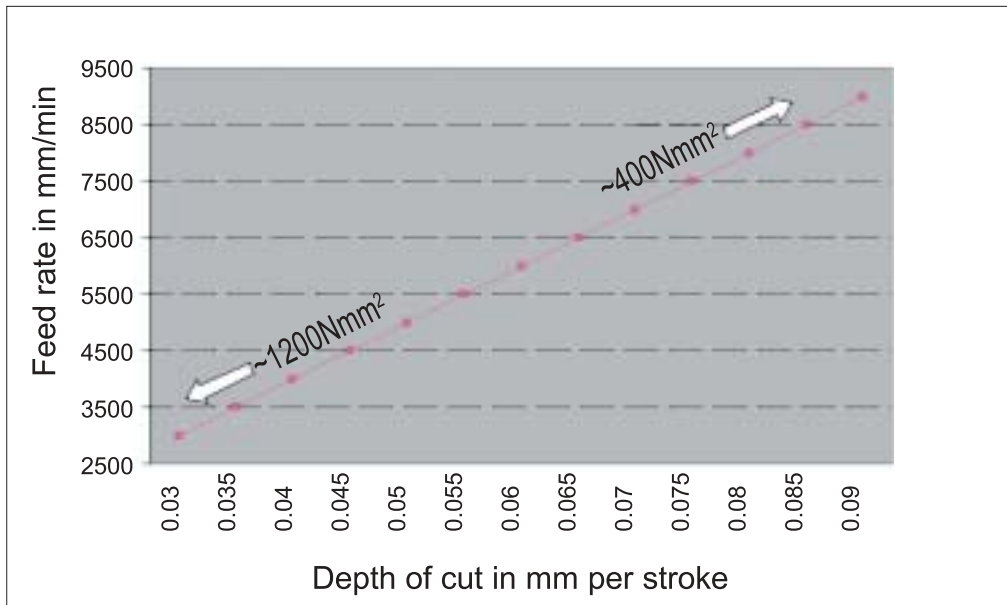
It is recommended to avoid the contact of the cutting edge on the flanks of the groove during the return move of the tool by moving the insert completely out of the groove.

### For example:

Bore diameter 30 mm, groove width 10 mm:  
At a radius of 15 mm and with a clearance of 0.2 mm for safety at the R0.2 corner radii, the tool has to be set at 13.95 mm in X-axis to avoid any collision at the beginning of the process.



## Depth of Cut and Feed rate based on Material Strength



### Tips and tricks

- △ An undercut is necessary at the end of the broached groove for tool run out.
- △ The insert should not touch the bottom of the groove as the tool retracts.
- △ Setting of the tool is very important. Double check the component diameter before taking the first pass.
- △ Using oil or emulsion helps to achieve better surface finish and flush chips out of the component.
- △ The tool should be set at the 12 o'clock position to ensure that chips fall away from the groove.