

1. DIAMETAL

2. BIMU

3. IFANGER

4. ARNO

5. SPHINX

6. ZEUS

7. PRAMET

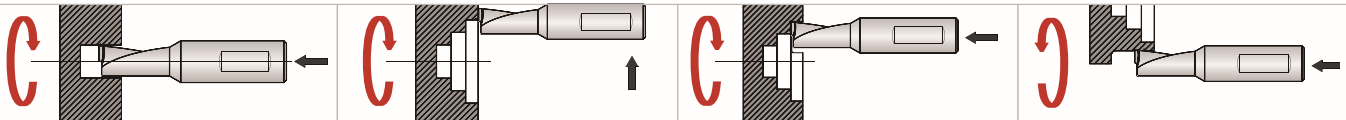
8. BECKER

9. WHIZCUT



SHARK-CUT® Mini :

Turning and boring $\geq \text{Ø } 4 \text{ mm}$
Solid carbide tool



Drilling with flat bottom face

Facing operations

Turning of internal profiles

Turning of external profiles

SHARK-CUT® Standard:

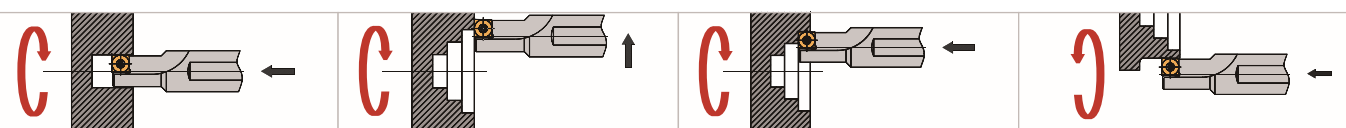
Turning and boring $\geq \text{Ø } 8 \text{ mm}$



1,5 x D

2,25 x D

3 x D



Drilling with flat bottom face

Facing operations

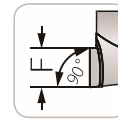
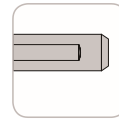
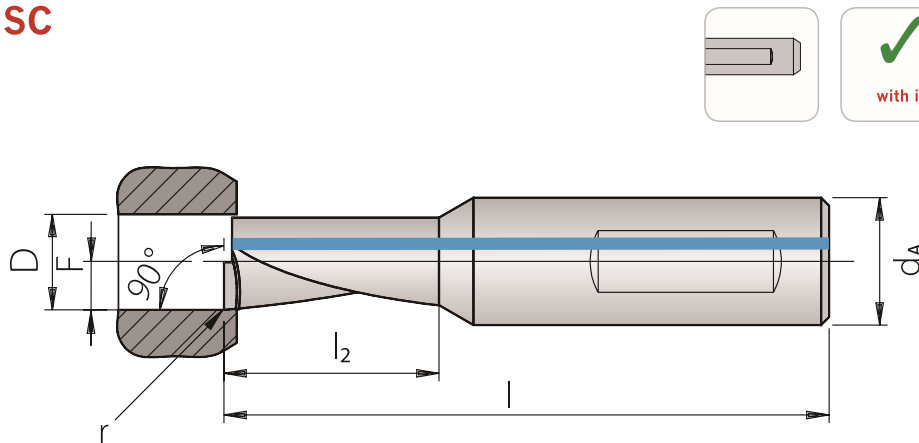
Turning of internal profiles

Turning of external profiles

Inserts – Solid carbide

SHARK-CUT® Mini

SC

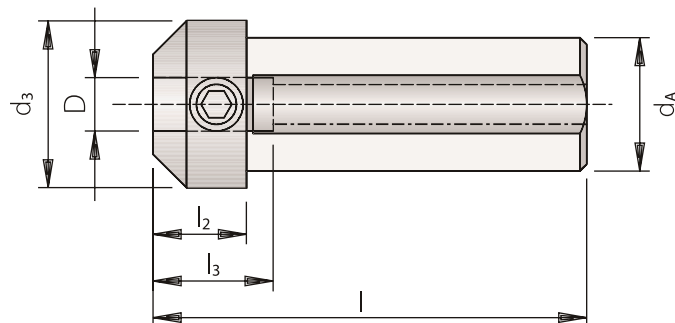


Right-hand execution shown

Designation	D	l	l ₂	d _A	F	r	Grades	
							coated	uncoated
							AL350	AK10
SC04L-009SP	4	35	9,00	6	2,0	0,2	●	
SC04L-009SP-ALU	4	35	9,00	6	2,0	0,2		●
SC04R-009SP	4	35	9,00	6	2,0	0,2	●	
SC04R-009SP-ALU	4	35	9,00	6	2,0	0,2		●
SC04L-016SP	4	41	16,00	6	2,0	0,2	●	
SC04L-016SP-ALU	4	41	16,00	6	2,0	0,2		●
SC04R-016SP	4	41	16,00	6	2,0	0,2	●	
SC04R-016SP-ALU	4	41	16,00	6	2,0	0,2		●
SC05L-011SP	5	37	11,25	6	2,5	0,2	●	
SC05L-011SP-ALU	5	37	11,25	6	2,5	0,2		●
SC05R-011SP	5	37	11,25	6	2,5	0,2	●	
SC05R-011SP-ALU	5	37	11,25	6	2,5	0,2		●
SC05L-020SP	5	45	20,00	6	2,5	0,2	●	
SC05L-020SP-ALU	5	45	20,00	6	2,5	0,2		●
SC05R-020SP	5	45	20,00	6	2,5	0,2	●	
SC05R-020SP-ALU	5	45	20,00	6	2,5	0,2		●
SC06L-013SP	6	38	13,50	8	3,0	0,2	●	
SC06L-013SP-ALU	6	38	13,50	8	3,0	0,2		●
SC06R-013SP	6	38	13,50	8	3,0	0,2	●	
SC06R-013SP-ALU	6	38	13,50	8	3,0	0,2		●
SC06R-013SP-R0,40	6	38	13,50	8	3,0	0,4	●	
SC06L-024SP	6	49	24,00	8	3,0	0,2	●	
SC06L-024SP-ALU	6	49	24,00	8	3,0	0,2		●
SC06R-024SP	6	49	24,00	8	3,0	0,2	●	
SC06R-024SP-ALU	6	49	24,00	8	3,0	0,2		●

Designation	D	l	l ₂	d _A	F	r	Grades	
							coated	uncoated
							AL350	AK10
SC07L-015SP	7	42	15,75	8	3,5	0,2	●	
SC07L-015SP-ALU	7	42	15,75	8	3,5	0,2		●
SC07R-015SP	7	42	15,75	8	3,5	0,2	●	
SC07R-015SP-ALU	7	42	15,75	8	3,5	0,2		●
SC07L-028SP	7	53	28,00	8	3,5	0,2	●	
SC07L-028SP-ALU	7	53	28,00	8	3,5	0,2		●
SC07R-028SP	7	53	28,00	8	3,5	0,2	●	
SC07R-028SP-ALU	7	53	28,00	8	3,5	0,2		●
SC08L-018SP	8	45	18,00	8	4,0	0,2	●	
SC08L-018SP-ALU	8	45	18,00	8	4,0	0,2		●
SC08R-018SP	8	45	18,00	8	4,0	0,2	●	
SC08R-018SP-ALU	8	45	18,00	8	4,0	0,2		●
SC08L-032SP	8	57	32,00	8	4,0	0,2	●	
SC08L-032SP-ALU	8	57	32,00	8	4,0	0,2		●
SC08R-032SP	8	57	32,00	8	4,0	0,2	●	
SC08R-032SP-ALU	8	57	32,00	8	4,0	0,2		●

Holder

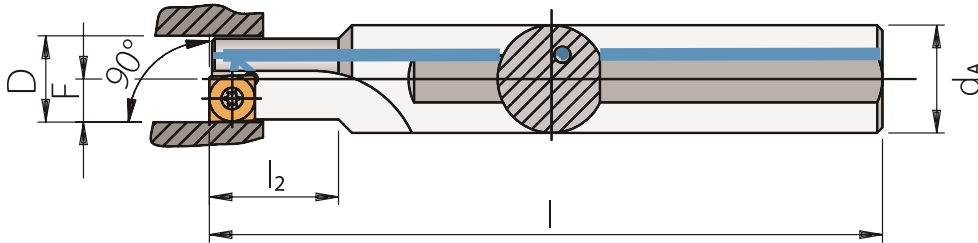
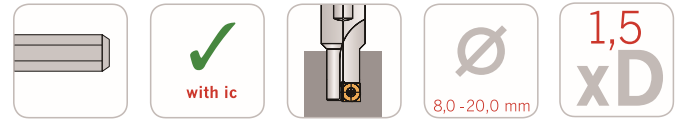


Holder

Designation	D	d ₃	l	l ₂	l ₃	d _A	Clambingscrew
SC AD20-06	6	25	65	14	18	20	7897990
SC AD20-08	8	25	65	14	18	20	7897990

Drilling depth up to $1.5 \times D$

SHARK-CUT® Standard



Holder

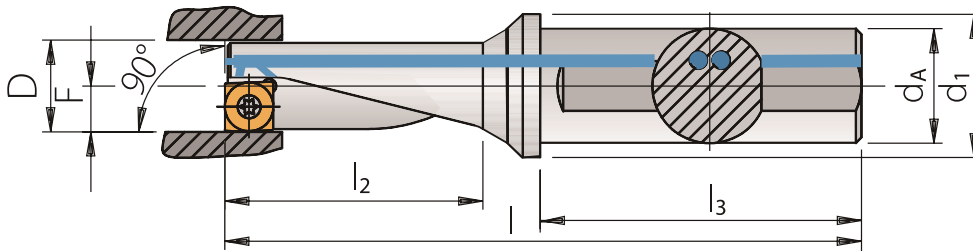
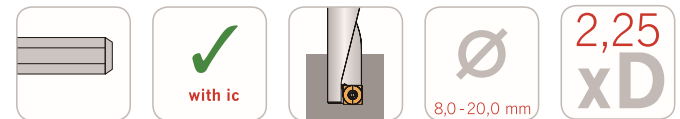
Right-hand execution shown

Designation	D	l	l ₂	d _A	F	Wendeschneidplatte Insert Inserto
SC08R/L-0012G-04-IP** *	8	80	12,0	12	4,0	LPET / LPNT 0401..
SC10R/L-0015G-05-IP*	10	90	15,0	12	5,0	LPET / LPNT 0502..
SC12R/L-0018G-06-IP*	12	100	18,0	16	6,0	LPET / LPNT 0602..
SC14R/L-0021G-07-IP*	14	110	21,0	16	7,0	LPET / LPNT 0703..
SC16R/L-0024G-08-IP*	16	125	24,0	20	8,0	LPET / LPNT 0803..
SC18R/L-0027G-09-IP*	18	135	27,0	25	9,0	LPET / LPNT 09T3..
SC20R/L-0030G-10-IP*	20	150	30,0	25	10,0	LPET / LPNT 10T3..

** Right-hand holder → Right-hand indexable insert
Left-hand holder → Left-hand indexable insert

Remark: Holders will be supplied with clamping screws and spare screws, however without key.

* Available from Q1/2017

Drilling depth up to $2.25 \times D$ 

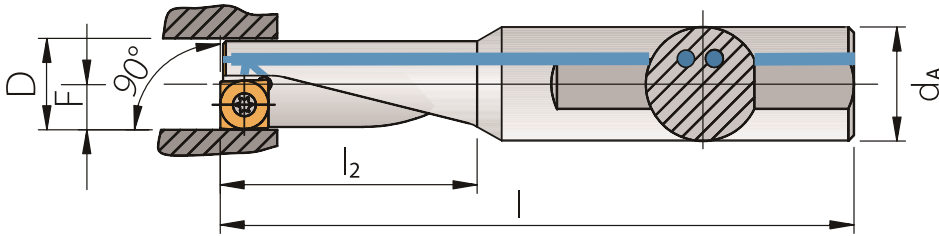
Holder

Right-hand execution shown

Designation	D	l	l ₂	l ₃	d ₁	d _A	F	Insert
SC08R/L-0018SP-04-IP** *	8	60,0	18,0	38	12	10	4,0	LPET / LPNT 0401..
SC10R/L-0023SP-05-IP*	10	69,5	22,5	42	16	12	5,0	LPET / LPNT 0502..
SC12R/L-0027SP-06-IP*	12	78,0	27,0	45	20	16	6,0	LPET / LPNT 0602..
SC14R/L-0032SP-07-IP*	14	83,5	31,5	45	20	16	7,0	LPET / LPNT 0703..
SC16R/L-0036SP-08-IP*	16	94,0	36,0	50	25	20	8,0	LPET / LPNT 0803..
SC18R/L-0041SP-09-IP*	18	109,5	40,5	56	32	25	9,0	LPET / LPNT 09T3..
SC20R/L-0045SP-10-IP*	20	111,0	45,0	56	32	25	10,0	LPET / LPNT 10T3..

** Right-hand holder → Right-hand indexable insert
Left-hand holder → Left-hand indexable insert

Remark: Holders will be supplied with clamping screws and spare screws, however without key.



Vibration damped!

3
xD

Holder

Right-hand execution shown

Designation	D	l	l ₂	d _A	F	Insert
SC08R/L-0024SP-04-IP** *	8	80	24	12	4,0	LPET / LPNT 0401..
SC10R/L-0030SP-05-IP*	10	85	30	12	5,0	LPET / LPNT 0502..
SC12R/L-0036SP-06-IP*	12	95	36	16	6,0	LPET / LPNT 0602..
SC14R/L-0042SP-07-IP*	14	100	42	16	7,0	LPET / LPNT 0703..
SC16R/L-0048SP-08-IP*	16	110	48	20	8,0	LPET / LPNT 0803..
SC18R/L-0054SP-09-IP*	18	125	54	25	9,0	LPET / LPNT 09T3..
SC20R/L-0060SP-10-IP*	20	130	60	25	10,0	LPET / LPNT 10T3..

** Right-hand holder → Right-hand indexable insert
Left-hand holder → Left-hand indexable insert

Remark: Holders will be supplied with clamping screws and spare screws, however without key.

* Available from Q1/2017

Geometry

SHARK-CUT®

-ALU



- 우수한 절삭성과 절삭 부하를 최소한 연마급 폴리싱 인서트.
- 하이포지티브(Highpositive) 형상.
- 알루미늄과 비철재료 및 합성물의 가공을 위한 특별한 형상의 칩 브레이커.

-EN/ER/EL



- 강철과 스테인리스강 및 주철(cast iron)을 적용 가능한 일반적인 형상의 칩 브레이커.

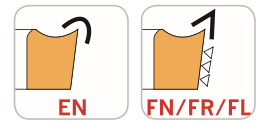
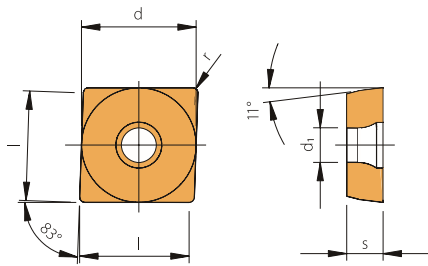
-WI/AWI



- 와이퍼(wiper)타입으로 인한 뛰어난 표면 조도.
- 와이퍼(wiper) 날끝 형상.
- 칩브레이커로 인한 고속 가공이 가능함으로 생산성 증대 가능.

Inserts

SHARK-CUT®



Shown FN-Insert

LPET

Designation	l	d	s	r	d ₁	coated			uncoated
						AL10	AM35C	AR26C	AK10
LPET 040104FL-ALU	4,0	4,5	1,80	0,4	2,10	●			●
LPET 040104FR-ALU	4,0	4,5	1,80	0,4	2,10	●			●
LPET 050204FN-ALU	5,0	5,8	2,10	0,4	2,25	●			●
LPET 060204FN-ALU	6,0	6,5	2,38	0,4	2,50	●			●
LPET 070304FN-ALU	7,0	7,6	3,18	0,4	2,80	●			●
LPET 080304FN-ALU	8,0	8,5	3,18	0,4	3,40	●			●
LPET 09T304FN-ALU	9,0	9,6	3,00	0,4	3,40	●			●
LPET 10T304FN-ALU	10,0	10,6	3,97	0,4	4,40	●			●
LPET 040102FL-AWI	4,0	4,5	1,80	0,2	2,10	●			●
LPET 040102FR-AWI	4,0	4,5	1,80	0,2	2,10	●			●
LPET 040104FL-AWI	4,0	4,5	1,80	0,4	2,10	●			●
LPET 040104FR-AWI	4,0	4,5	1,80	0,4	2,10	●			●
LPET 050202FN-AWI	5,0	5,8	2,10	0,2	2,25	●			●
LPET 050204FN-AWI	5,0	5,8	2,10	0,4	2,25	●			●
LPET 060202FN-AWI	6,0	6,5	2,38	0,2	2,50	●			●
LPET 060204FN-AWI	6,0	6,5	2,38	0,4	2,50	●			●
LPET 070304FN-AWI	7,0	7,6	3,18	0,4	2,80	●			●
LPET 080304FN-AWI	8,0	8,5	3,18	0,4	3,40	●			●
LPET 09T304FN-AWI	9,0	9,6	3,97	0,4	3,40	●			●
LPET 10T304FN-AWI	10,0	10,6	3,97	0,4	4,40	●			●
LPET 10T308FN-AWI	10,0	10,6	3,97	0,8	4,40	●			●
LPET 060204EN-WI	6,0	6,5	2,38	0,4	2,50		●	●	
LPET 070304EN-WI	7,0	7,6	3,18	0,4	2,80		●	●	
LPET 080304EN-WI	8,0	8,5	3,18	0,4	3,40		●	●	
LPET 09T304EN-WI	9,0	9,6	3,97	0,4	3,40		●	●	
LPET 10T304EN-WI	10,0	10,6	3,97	0,4	4,40		●	●	

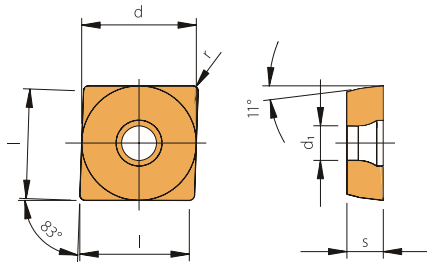
* Right-hand holder → Right-hand indexable insert

● Dimension "d" measured to height "s"

● Main application

○ Secondary application

P	●	●	●	
M	●	○		
K	○		●	○
N				●
S	○	○		
H	○			



Shown EN-Insert

LPNT



Designation	l	d	s	r	d ₁	coated							uncoated	
						AK2015	AL350	AM35C	AM4130	AM5035	AP2225	AP2235	AR26C	AP40
LPNT 040102EL	4,0	4,5	1,80	0,2	2,10		●	●					●	
LPNT 040102ER	4,0	4,5	1,80	0,2	2,10		●	●					●	
LPNT 040104EL	4,0	4,5	1,80	0,4	2,10		●	●	●	●	●	●	●	
LPNT 040104ER	4,0	4,5	1,80	0,4	2,10	●	●	●	●	●	●	●	●	●
LPNT 050202EN	5,0	5,8	2,10	0,2	2,25		●	●	●	●	●	●	●	●
LPNT 050204EN	5,0	5,8	2,10	0,4	2,25	●	●	●	●	●	●	●	●	●
LPNT 060202EN	6,0	6,5	2,38	0,2	2,50		●	●	●	●	●	●	●	●
LPNT 060204EN	6,0	6,5	2,38	0,4	2,50	●	●	●	●	●	●	●	●	●
LPNT 070304EN	7,0	7,6	3,18	0,4	2,80		●	●	●	●	●	●	●	●
LPNT 080304EN	8,0	8,5	3,18	0,4	3,40	●	●	●	●	●	●	●	●	●
LPNT 09T304EN	9,0	9,6	3,97	0,4	3,40	●	●	●	●	●	●	●	●	●
LPNT 10T304EN	10,0	10,6	3,97	0,4	4,40	●	●	●	●	●	●	●	●	●
LPNT 10T308EN	10,0	10,6	3,97	0,8	4,40		●	●					●	●
LPNT 080304EN-WI	8,0	8,5	3,18	0,4	3,40				●	●	●			
LPNT 09T304EN-WI	9,0	9,6	3,97	0,4	3,40				●	●	●			
LPNT 10T304EN-WI	10,0	10,6	3,97	0,4	4,40				●	●	●			

* Right-hand holder → Right-hand indexable insert

① Dimension "d" measured to height "s"

● Main application

○ Secondary application

P	○	○	○	○	○	●	●	●		●
M		●	●	●	●	○	○			
K	●						●	○	●	
N										
S		○	○	●	○					
H										

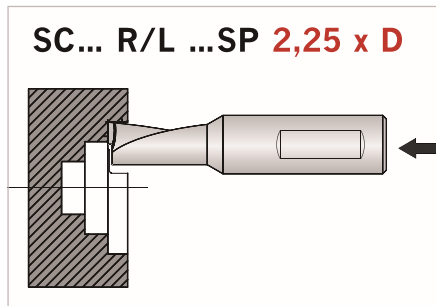
Recommended cutting datas

SHARK-CUT®

ISO	Material	Tensile strength (N/mm ²)	Cutting speed V _c (m/min)											
			coated									uncoated		
			AK2015	AL10	AL350	AM35C	AM4130	AM5035	AP2225	AP2235	AR26C	AK10	AP40	
P	Unalloyed steel and cast steel	< 0.15 % C / hardened and tempered	350	120 - 220	200 - 300	120 - 230	140 - 250	120 - 250	120 - 230	150 - 300	140 - 280	150 - 280	-	80 - 140
		0.15 - 0.45 % C / hardened and tempered	650	100 - 160	170 - 280	80 - 160	100 - 180	80 - 180	80 - 160	120 - 220	100 - 200	120 - 200	-	70 - 100
		> 0.45 % C / hardened and tempered	1000	80 - 130	150 - 250	50 - 130	70 - 150	50 - 130	50 - 130	70 - 160	50 - 150	100 - 170	-	50 - 100
	Low alloyed steel and cast steel	annealed	600	100 - 160	170 - 270	80 - 160	100 - 180	80 - 180	80 - 160	120 - 220	100 - 200	120 - 200	-	60 - 100
		hardened and tempered	900	70 - 130	160 - 250	60 - 130	80 - 150	60 - 150	60 - 130	100 - 180	80 - 160	90 - 160	-	50 - 90
			1200	60 - 110	150 - 220	60 - 100	70 - 120	60 - 120	60 - 100	80 - 140	70 - 130	80 - 140	-	50 - 80
	High alloyed steel	annealed	700	90 - 140	-	80 - 140	100 - 160	80 - 170	80 - 140	110 - 190	100 - 180	110 - 180	-	60 - 80
	High alloyed tool steel and cast steel	hardened	1100	60 - 110	-	50 - 100	60 - 120	50 - 130	50 - 100	70 - 150	60 - 140	80 - 140	-	-
Stainless steel	ferritic, annealed	700	-	160 - 280	50 - 200	100 - 180	50 - 200	50 - 200	110 - 220	100 - 200	-	-	-	
Cast steel	martensitic, hardened and tempered	1000	-	140 - 280	50 - 150	80 - 150	50 - 150	50 - 150	100 - 180	80 - 150	-	-	-	
M	Stainless steel	austenitic and austenitic / ferritic, chilled	450-600	-	140 - 280	50 - 190	100 - 190	50 - 180	50 - 190	100 - 200	100 - 180	-	-	50 - 150
		600-900	-	-	50 - 100	-	50 - 130	50 - 100	-	-	-	-	-	40 - 90
K	Cast iron	pearlitic / ferritic	500-700	140 - 240	170 - 300	-	-	120 - 200	-	130 - 280	120 - 250	120 - 200	100 - 150	-
		pearlitic / martensitic	700-850	140 - 240	150 - 270	-	-	100 - 180	-	130 - 280	120 - 250	120 - 200	100 - 150	-
			800-1100	120 - 190	120 - 240	-	-	80 - 230	-	110 - 220	100 - 200	100 - 160	80 - 120	-
	Cast iron with nodular graphite	ferritic	550	130 - 240	140 - 230	-	-	120 - 200	-	120 - 280	110 - 250	110 - 200	100 - 140	-
pearlitic		800	130 - 240	120 - 170	-	-	100 - 180	-	120 - 280	110 - 250	110 - 200	100 - 140	-	
Malleable cast iron	ferritic	450	120 - 240	150 - 200	-	-	90 - 160	-	110 - 280	100 - 250	100 - 200	100 - 160	-	
	pearlitic	750	120 - 240	140 - 200	-	-	70 - 150	-	110 - 280	100 - 250	100 - 200	100 - 160	-	
N	Aluminium alloys long chipping	not heat treatable	200	-	800 - 1300	-	-	80 - 2000	-	-	-	-	100 - 500	-
		heat treatable, heat treated	350	-	400 - 900	-	-	80 - 1500	-	-	-	-	100 - 300	-
	Cast aluminium alloys	≤ 12 % Si, heat treated	250	-	250 - 800	-	-	80 - 1500	-	-	-	-	100 - 500	-
		≤ 12 % Si, heat treatable, heat treated	300	-	200 - 550	-	-	80 - 1300	-	-	-	-	100 - 300	-
≤ 12 % Si, not heat treatable		450	-	200 - 550	-	-	80 - 600	-	-	-	-	100 - 300	-	
Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-	-	-	-	80 - 400	-	-	-	-	100 - 500	-	
	Brass, Bronze	300	-	-	-	-	80 - 400	-	-	-	-	100 - 500	-	
	Aluminium bronze	500	-	-	-	-	80 - 300	-	-	-	-	100 - 300	-	
	Copper and elektrolyte copper	200	-	-	-	-	80 - 200	-	-	-	-	100 - 300	-	
Non-ferrous materials	Duroplastic	-	-	-	-	-	60 - 160	-	-	-	-	80 - 180	-	
	Re-inforced plastics	-	-	-	-	-	50 - 140	-	-	-	-	60 - 150	-	
	Hard rubber	-	-	-	-	-	80 - 200	-	-	-	-	100 - 250	-	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	-	20 - 50	20 - 50	-	20 - 90	20 - 50	-	20 - 50	-	-	-
		Fe-alloyed, heat treated	950	-	20 - 50	20 - 40	-	20 - 90	20 - 40	-	20 - 40	-	-	-
		Ni- or Co-alloyed, annealed	800	-	15 - 40	15 - 25	-	20 - 90	15 - 25	-	15 - 20	-	-	-
		Ni- or Co-alloyed, casting	1100	-	15 - 30	-	-	20 - 90	10 - 20	-	10 - 20	-	-	-
		Ni- or Co-alloyed, heat treated	1200	-	15 - 30	-	-	20 - 90	10 - 20	-	10 - 20	-	-	-
Titanium alloys	Pure titan	500-700	-	-	50 - 120	-	40 - 100	50 - 120	-	50 - 120	-	50 - 120	-	
Alpha- and Beta-alloys	heat treated	700-1000	-	-	30 - 50	-	30 - 90	30 - 50	-	30 - 50	-	30 - 50	-	
H	Hardened steel	hardened	55 HRC	-	-	-	-	-	-	-	-	-	-	
		60 HRC	-	-	-	-	-	-	-	-	-	-	-	
	Hard cast iron	casting	41 HRC	-	-	-	-	-	-	-	-	-	-	
Hardened cast iron	hardened	55 HRC	-	-	-	-	-	-	-	-	-	-		

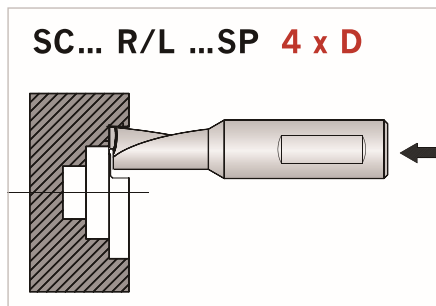
The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

Turning



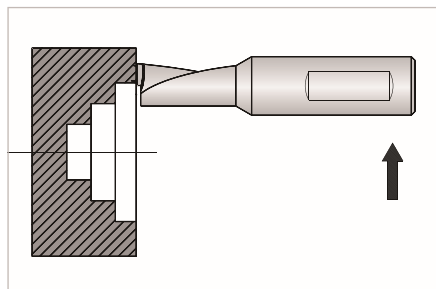
SHARK-CUT®-Ø (mm)	Depth of cut (mm)							
	0,5	1	1,5	2	2,5	3	3,5	4
Feed rate f (mm/U)								
SC04	0,10	0,10	0,08	0,05	–	–	–	–
SC05	0,10	0,10	0,09	0,06	0,04	–	–	–
SC06	0,10	0,10	0,10	0,08	0,06	0,04	–	–
SC07	0,10	0,10	0,10	0,10	0,08	0,06	0,04	–
SC08	0,10	0,10	0,10	0,10	0,10	0,08	0,06	0,04

Turning



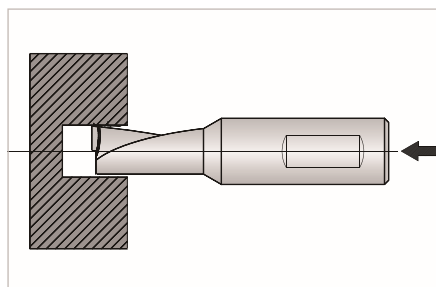
SHARK-CUT®-Ø (mm)	Depth of cut (mm)					
	0,5	1	1,5	2	2,5	3
Feed rate f (mm/U)						
SC04	0,10	0,08	0,050	–	–	–
SC05	0,10	0,09	0,060	0,040	–	–
SC06	0,10	0,09	0,060	0,040	–	–
SC07	0,10	0,10	0,080	0,060	0,040	–
SC08	0,10	0,10	0,085	0,075	0,055	0,040

Facing



SHARK-CUT®-Ø (mm)	SC...R/L...SP (2,25 x D)		SC...R/L...SP-ALU (4 x D)	
	ap (mm)	f (mm/U)	ap (mm)	f (mm/U)
SC04	0,7	0,07	0,7	0,05
SC05	0,7	0,07	0,7	0,05
SC06	0,7	0,07	0,7	0,05
SC07	1,0	0,08	1,0	0,06
SC08	1,0	0,08	1,0	0,06

Drilling

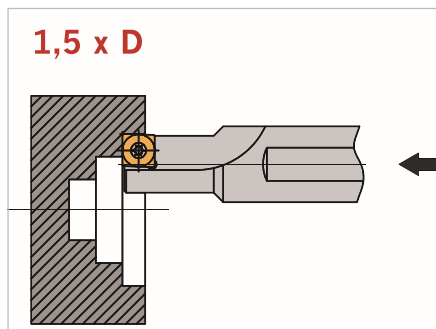


SHARK-CUT®-Ø (mm)	SC...R/L...SP (2,25 x D)	SC...R/L...SP-ALU (4 x D)
	f (mm/U)	
SC04	0,005 - 0,030	0,005 - 0,020
SC05	0,005 - 0,030	0,005 - 0,020
SC06	0,005 - 0,030	0,005 - 0,020
SC07	0,005 - 0,035	0,005 - 0,025
SC08	0,005 - 0,040	0,005 - 0,030

Recommended cutting data

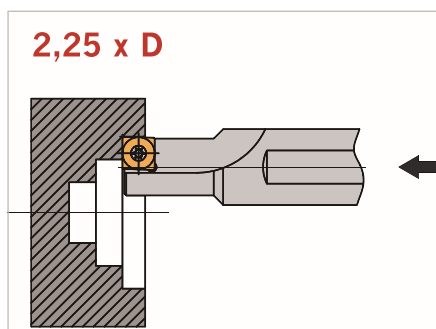
SHARK-CUT®

Turning



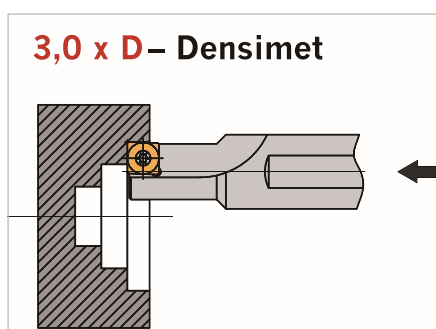
SHARK-CUT® -Ø (mm)	Depth of cut a_p (mm)											
	1	2	3	4	5	6	7	8	9	10	12	14
Feed rate f (mm/U)												
SC08...(LP...04)	0,12	0,11	0,10	0,07	-	-	-	-	-	-	-	-
SC10...(LP...05)	0,15	0,15	0,12	0,10	0,09	-	-	-	-	-	-	-
SC12...(LP...06)	0,16	0,16	0,15	0,13	0,12	0,10	-	-	-	-	-	-
SC14...(LP...07)	0,18	0,18	0,18	0,15	0,13	0,11	-	-	-	-	-	-
SC16...(LP...08)	0,20	0,20	0,20	0,19	0,17	0,15	0,14	0,12	-	-	-	-
SC18...(LP...09)	0,21	0,21	0,21	0,21	0,19	0,17	0,16	0,14	-	-	-	-
SC20...(LP...10)	0,22	0,22	0,22	0,22	0,22	0,21	0,19	0,17	0,16	0,15	-	-

Turning



SHARK-CUT® -Ø (mm)	Depth of cut a_p (mm)								
	1	2	2,5	3	3,5	4	5	6	7
Feed rate f (mm/U)									
SC08...(LP...04)	0,12	0,09	0,07	-	-	-	-	-	-
SC10...(LP...05)	0,15	0,12	0,10	0,09	-	-	-	-	-
SC12...(LP...06)	0,16	0,16	0,13	0,12	0,10	-	-	-	-
SC14...(LP...07)	0,18	0,18	0,16	0,14	0,11	-	-	-	-
SC16...(LP...08)	0,20	0,20	0,18	0,16	0,14	0,12	-	-	-
SC18...(LP...09)	0,21	0,21	0,20	0,18	0,16	0,14	-	-	-
SC20...(LP...10)	0,22	0,22	0,22	0,21	0,19	0,17	0,12	-	-

Turning



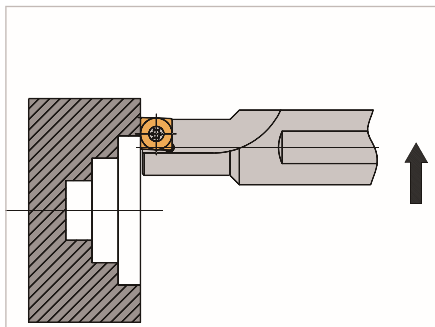
SHARK-CUT® -Ø (mm)	Depth of cut a_p (mm)								
	1	2	2,5	3	3,5	4	5	6	7
Feed rate f (mm/U)									
SC08...(LP...04)	0,12	0,09	0,07	-	-	-	-	-	-
SC10...(LP...05)	0,13	0,11	0,09	0,07	-	-	-	-	-
SC12...(LP...06)	0,15	0,13	0,12	0,11	0,10	-	-	-	-
SC14...(LP...07)	0,16	0,16	0,15	0,13	0,11	-	-	-	-
SC16...(LP...08)	0,18	0,18	0,17	0,15	0,13	0,12	-	-	-
SC18...(LP...09)	0,20	0,20	0,18	0,17	0,15	0,14	-	-	-
SC20...(LP...10)	0,22	0,22	0,22	0,21	0,19	0,16	0,14	-	-

Turning

Material	Modulus of elasticity (kg/mm ²)	Thickness (g/cm ³)
Densimet	360	17,50
Steel	210	7,85

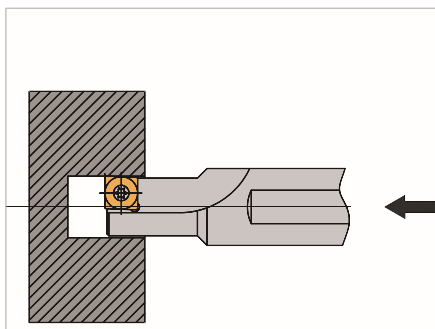
Absolute precision, excellent surface quality and improved tool life have been achieved as a result of the high modulus of elasticity and density since these particularly reduce vibrations.

Facing



SHARK-CUT®-Ø (mm)	1,5 x D		2,25 x D		3 x D – Densimet	
	ap (mm)	f (mm/U)	ap (mm)	f (mm/U)	ap (mm)	f (mm/U)
SC08...(LP...04)	2,00	0,10	1,50	0,07	1,00	0,10
SC10...(LP...05)	2,50	0,12	2,00	0,12	1,20	0,12
SC12...(LP...06)	3,00	0,15	2,50	0,14	1,50	0,15
SC14...(LP...07)	3,50	0,16	3,00	0,15	1,70	0,16
SC16...(LP...08)	4,00	0,17	3,50	0,16	2,00	0,17
SC18...(LP...09)	5,00	0,18	3,50	0,17	2,30	0,18
SC20...(LP...10)	5,00	0,20	4,00	0,18	2,50	0,20

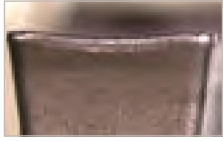
Drilling



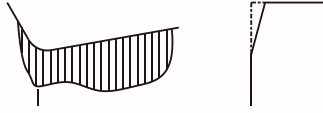
SHARK-CUT®-Ø (mm)	1,5 - 2,25 x D	3 x D – Densimet
	f (mm/U)	f (mm/U)
SC08...(LP...04)	0,01 - 0,04	0,01 - 0,02
SC10...(LP...05)	0,01 - 0,05	0,01 - 0,03
SC12...(LP...06)	0,01 - 0,05	0,01 - 0,04
SC14...(LP...07)	0,01 - 0,07	0,01 - 0,05
SC16...(LP...08)	0,02 - 0,08	0,02 - 0,06
SC18...(LP...09)	0,03 - 0,09	0,03 - 0,07
SC20...(LP...10)	0,03 - 0,10	0,03 - 0,08

Wear and its solution 인서트 마모에 대한 해결방법

Flank wear 플랭크 마모



측면 마모, 일정 가공시간 후의 일반 마모.



원인/이유: • 너무 빠른 절삭 속도
• 피삭재에 비해 부족한 내마모성을 가진 초경 사용
• 절삭유 공급 부족

해결책: • 절삭 속도 줄이기
• 내마모성이 더 큰 초경 소재로 변경
• 절삭유 투입 위치 및 공급량 최적화



높은 가공 온도와 동시에 기계적 스트레스는 플라스틱 변형을 야기할 가능성이 있다.



원인/이유: • 소재 변형을 초래하는 너무 높은 가공 온도
• 너무 낮은 내열성/내마모성을 가진 초경 소재 사용
• 부정확한 절삭유 공급

해결책: • 절삭속도 줄이기
• 더 높은 내마모성을 가진 초경 소재 선택
• 절삭유 투입 위치 및 공급량 최적화

Edge chipping 모서리 조각



절삭부위의 과도한 기계적 스트레스 때문에 파열과 칩핑이 발생할 수 있다.



원인/이유: • 너무 높은 내마모성을 가진 소재 사용
• 진동
• 과도한 절입 및 절삭 조건

해결책: • 더 내구성이 높은 초경 소재 사용
• 네거티브 절단 날 사용(사프한 날 사용)
• 소재파이에 맞는 홀더 돌출타입 사용, 중심 센터 확인
• 절단 모서리의 안정성의 증대 위해 절삭 조건 및 속도 줄이기

Built-up edge 빌드업 엷지



낮은 절삭 온도 때문에 칩이 떨어지지 않고 소재에 붙어 버리면 빌드업 엷지(build-up edge)가 발생한다.



원인/이유: • 낮은 절삭 속도
• 칩브레이커의 경사각 낮음.
• 잘못된 소재
• 부정확한 절삭유 공급

해결책: • 절삭속도 늘리기
• 칩브레이커의 경사각 늘리기
• TiN-코팅 적용하기
• 고농축 에멀전 사용하기

Cratering 크레이터링



가공중 고열의 칩은 절단 모서리의 경사면에 크레이터링(cratering)을 야기한다.



원인/이유: • 과도한 절입 및 절삭 조건
• 너무 얇은 칩 브레이커 각도
• 피삭재에 비해 부족한 내마모성을 가진 초경 사용
• 부정확한 절삭유 공급

해결책: • 절삭 조건 및 속도 줄이기
• 절삭유 투입 위치 및 공급량 최적화
• 크레이터링(cratering) 저항이 더 강한 초경 소재 사용.

Notching 노치



최대 절단 깊이에서의 노치



원인/이유: • 절삭 날의 산화
• 절삭 날의 과도한 열

해결책: • 절단 깊이를 다양하게 나누어 작업
• 절삭 속도 줄이기
• 냉각수 공급 늘리기