

Applications
Applications
Anwendungen

F02

Toolholders
Porte-outils d'extérieurs
Klemmhalter

F03

Boring bars
Porte-outils d'intérieurs
Bohrstangen

F07

Tool blocks
Blocs porte-lames
Trägerwerkzeuge

F08

Blades
Lames
Stechschwerter

F08

Top Notch Tools

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.....

F10

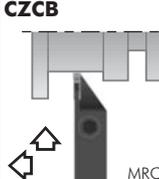
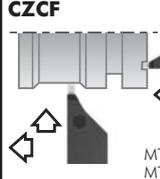
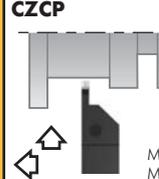
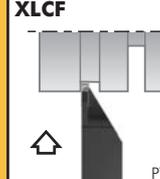
Cutting data
Conditions de coupe
Schnittdaten

F12

Toolholders - Porte-outils - Klemmhalter

Inserts

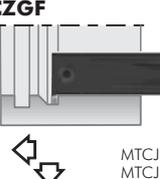
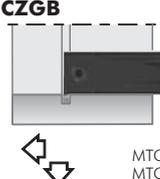
Turning

<p>CZGB</p>  <p>Page F.03 MTE 03/04 MRCN 03/04</p>	<p>CZFB</p>  <p>Page F.03 MTE 03/04 MRCN 03/04</p>	<p>CZCB</p>  <p>Page F.05 MRCN 1,6 ... MRCN 6,0</p>	<p>CZCF</p>  <p>Page F.05 MTC 3,0 MTC 4,0 MTR 3,0 MTR 3,8</p>	<p>CZCP</p>  <p>Page F.05 MTC 3,0 MTC 4,0 MTR 3,0 MTR 3,8</p>	<p>XLCF</p>  <p>Page F.06 PTNT 02 PTNT 03 PTNT 04</p>
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Automatic lathes

Boring bars - Barres d'alésage - Bohrstangen

Ceramic tools

<p>CZGF</p>  <p>Page F.07 MTCJ 3,0 MTCJ 4,0 MTRJ 3,0 MTRJ 3,8</p>	<p>CZGB</p>  <p>Page F.07 MTCJ 3,0 MTCJ 4,0 MTRJ 3,0 MTRJ 3,8</p>				
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Parting & grooving

Tool blocks - Blocks porte-lames - Trägerwerkzeuge

Threading

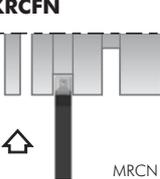
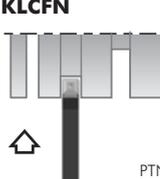
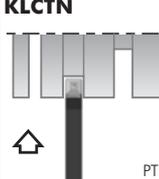
Drills

<p>KPTS</p>  <p>Page F.08</p>	<p>DPTS</p>  <p>Page F.08</p>				
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Blades- Lames - Stechschwerter

Cartridges

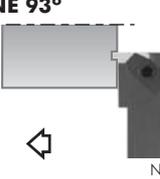
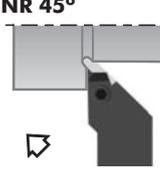
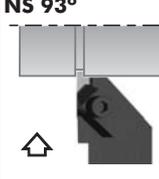
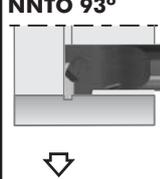
Brazed tools

<p>KRCFN</p>  <p>Page F.08 MRCN 2,2 ... MRCN 6,0</p>	<p>KLCFN</p>  <p>Page F.08 PTNT 02 ... PTNT 09</p>	<p>KLCTN</p>  <p>Page F.09 PTNT 02 ... PTNT 06</p>			
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Top Notch Tools - -

Milling cutters

Solid carbide

<p>NE 93°</p>  <p>Page F.10 N.. 2 N.. 3 N.. 4</p>	<p>NR 45°</p>  <p>Page F.10 N.. 3</p>	<p>NS 93°</p>  <p>Page F.10 N.. 2 N.. 3 N.. 4</p>	<p>NNTO 93°</p>  <p>Page F.11 N.. 2 N.. 3 N.. 4</p>		
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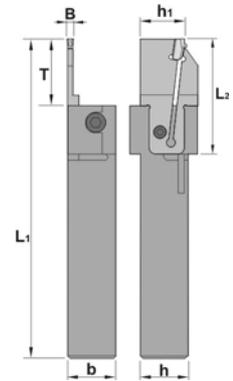
Boring heads

Arbors & adaptors

CZGB



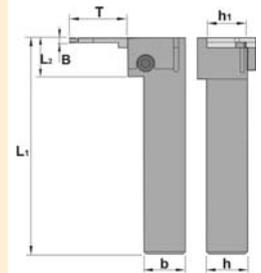
REF.	h	b	L1	L2	h1	B	T				
CZGB R/L 2020 M34	20	20	150	53	20	3-4	25-30	486	140	505	515
CZGB R/L 2525 M34	25	25	150	53	25	3-4	25-30	486	140	505	515
CZGB R/L 3232 P34	32	32	170	53	32	3-4	25-30	486	140	505	515



CZFB



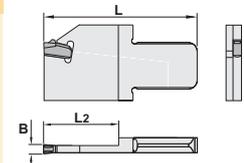
REF.	h	b	L1	L2	h1	B	T				
CZFB R/L 2525 M34	25	25	150	25	25	3-4	25-30	486	140	505	515
CZFB R/L 3232 P34	32	32	170	25	32	3-4	25-30	486	140	505	515



CZXB 00



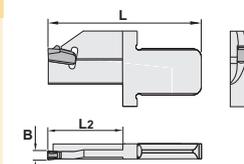
REF.	L	L2	B	Insert size
CZXB R/L 00X03	53	25	3	MRCN 03
CZXB R/L 00X04	53	25	4	MRCN 04



CZXB 40-50



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 4050X03	53	20	3	40-50	MTE 03
CZXB R/L 4050X04	53	20	4	40-50	MTE 04



Inserts

Turning

Automatic lathes

Ceramic tools

Parting & grooving

Threading

Drills

Cartridges

Brazed tools

Milling cutters

Solid carbide

Boring heads

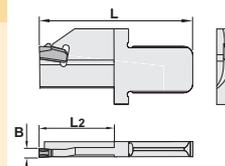
Arbors & adaptors

Inserts

CZXB 50-65



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 5065X03	53	20	3	50-65	MTE 03
CZXB R/L 5065X04	53	20	4	50-65	MTE 04



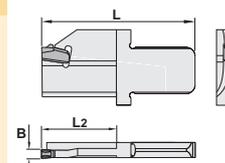
Turning

Automatic lathes

CZXB 65-92



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 6592X03	53	20	3	65-92	MTE 03
CZXB R/L 6592X04	53	20	4	65-92	MTE 04



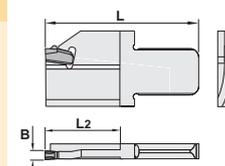
Ceramic tools

Parting & grooving

CZXB 90-122



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 90122X03	53	25	3	90-122	MTE 03
CZXB R/L 90122X04	53	25	4	90-122	MTE 04



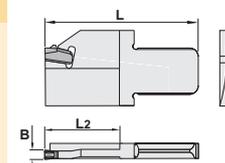
Threading

Drills

CZXB 120-160



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 120160X03	53	25	3	120-160	MTE 03
CZXB R/L 120160X04	53	25	4	120-160	MTE 04



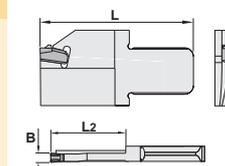
Cartridges

Brazed tools

CZXB 150-500



REF.	L	L2	B	Ø Range	Insert size
CZXB R/L 150500X03	53	25	3	150-500	MTE 03
CZXB R/L 150500X04	53	25	4	150-500	MTE 04



Milling cutters

Solid carbide

Boring heads

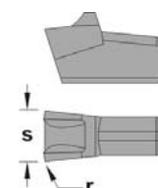


MTE



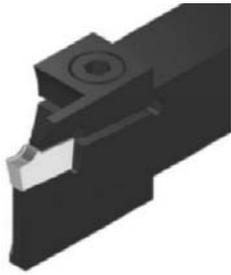
MRCN

REF.	s	r
MTE/MRCN 03	3,0	0,20
MTE/MRCN 04	4,0	0,20

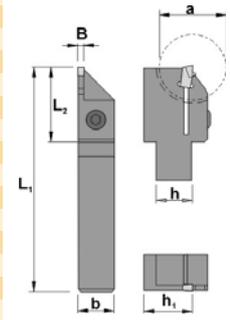


Arbors & adaptors

CZCB



REF.	h	b	L1	L2	h1	B	α	MRCN		
CZCB R/L 1010 J01	10	10	110	25	21	1,6	22	1,6	107	504
CZCB R/L 1010 J02	10	10	110	25	21	2,2	22	2,2	107	504
CZCB R/L 1212 J01	12	12	110	25	21	1,6	22	1,6	107	504
CZCB R/L 1212 J02	12	12	110	25	21	2,2	22	2,2	107	504
CZCB R/L 1612 J02	16	12	110	29	21	2,2	32	2,2	199	505
CZCB R/L 1612 J03	16	12	110	29	21	3,0	32	3,0	199	505
CZCB R/L 2016 K03	20	16	125	35	30	3,0	42	3,0	109	505
CZCB R/L 2016 K04	20	16	125	35	30	4,0	42	4,0	109	505
CZCB R/L 2016 K05	20	16	125	35	30	5,0	42	5,0	109	505
CZCB R/L 2016 K06	20	16	125	35	30	6,0	42	6,0	109	505
CZCB R/L 2520 M03	25	20	150	50	30	3,0	80	3,0	109	505
CZCB R/L 2520 M04	25	20	150	50	30	4,0	80	4,0	109	505
CZCB R/L 2520 M05	25	20	150	50	30	5,0	80	5,0	109	505
CZCB R/L 2520 M06	25	20	150	50	30	6,0	80	6,0	109	505



Inserts

Turning

Automatic lathes

Ceramic tools

Parting & grooving

Threading

Drills

Cartridges

Brazed tools

Milling cutters

Solid carbide

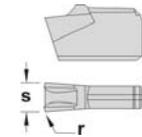
Boring heads

Arbors & adaptors

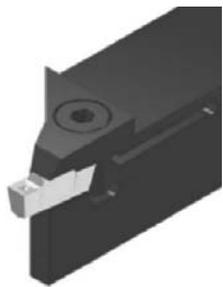


REF.	s	r
MRCN 1,6	1,6	0,15
MRCN 2,2	2,2	0,20
MRCN 3,0	3,0	0,20
MRCN 4,0	4,0	0,20
MRCN 5,0	5,0	0,30
MRCN 6,0	6,0	0,40

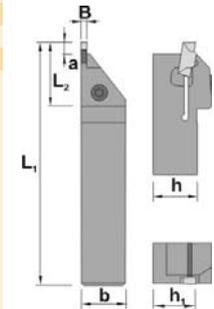
For more information see page: A.67



CZCF

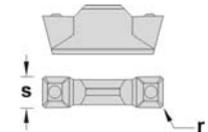


REF.	h	b	L1	L2	B	α	MT.		
CZCF R/L 1616 H34	16	16	100	24	3-4	4,5	3,0-4,0	199	505
CZCF R/L 2020 K34	20	20	125	24	3-4	4,5	3,0-4,0	109	505
CZCF R/L 2525 M34	25	25	150	24	3-4	4,5	3,0-4,0	109	505

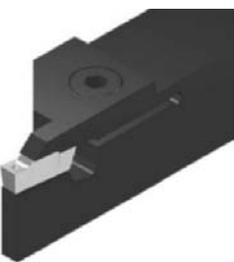


REF.	s	r
MT.. 3,0	3,0	0,15
MT.. 4,0	4,0	0,20
MT.. 3,0	3,0	1,50
MT.. 3,8	3,8	1,90

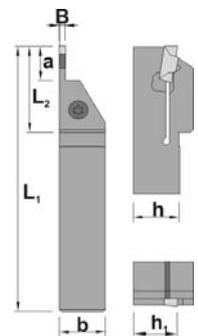
For more information see page: A.67



CZCP

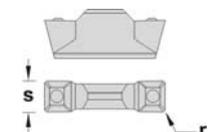


REF.	h	b	L1	L2	B	α	MT.		
CZCP R/L 1616 H34	16	16	100	30	3-4	12	3,0-4,0	199	505
CZCP R/L 2020 K34	20	20	125	30	3-4	12	3,0-4,0	109	505
CZCP R/L 2525 M34	25	25	150	30	3-4	12	3,0-4,0	109	505



REF.	s	r
MT.. 3,0	3,0	0,15
MT.. 4,0	4,0	0,20
MT.. 3,0	3,0	1,50
MT.. 3,8	3,8	1,90

For more information see page: A.67



Inserts

Turning

Automatic
lathes

Ceramic
tools

Parting &
grooving

Threading

Drills

Cartridges

Brazed
tools

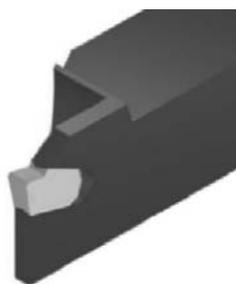
Milling
cutters

Solid
carbide

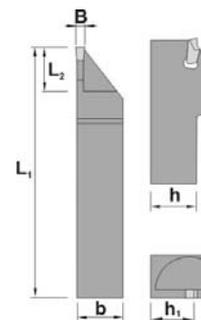
Boring
heads

Arbors &
adaptors

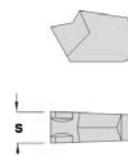
XLCF



REF.	h=h1	b	L1	L2	B	PTNT	
XLCF R/L 1010 J02	10	10	110	18	2	02	532
XLCF R/L 1212 J02	12	12	110	18	2	02	532
XLCF R/L 1612 J03	16	12	110	20	3	03	532
XLCF R/L 1612 J04	16	12	110	20	4	04	532
XLCF R/L 2012 K03	20	12	125	20	3	03	532
XLCF R/L 2012 K04	20	12	125	20	4	04	532
XLCF R/L 2020 K03	20	20	125	20	3	03	532
XLCF R/L 2020 K04	20	20	125	20	4	04	532
XLCF R/L 2525 M03	25	25	150	20	3	03	532
XLCF R/L 2525 M04	25	25	150	20	4	04	532



REF.	s
PTNT 02	2,10
PTNT 03	3,10
PTNT 04	4,10

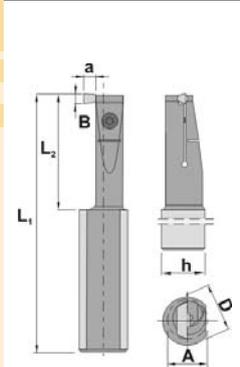


For more information see page: A.68

CZGF



REF.	D	A	h	L1	L2	B	α	MT..				
S20R CZGF R/L 34	20	16,5	18	200	40	3-4	5	3,0-4,0	150	520	-	-
S25R CZGF R/L 34	25	25,0	23	200	50	3-4	5	3,0-4,0	-	-	179	504
S32S CZGF R/L 34	32	30,0	30	250	60	3-4	5	3,0-4,0	-	-	179	504



Inserts

Turning

Automatic lathes

Ceramic tools

Parting & grooving

Threading

Drills

Cartridges

Brazed tools

Milling cutters

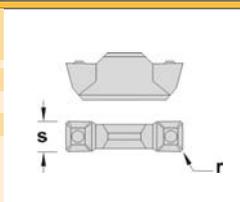
Solid carbide

Boring heads

Arbors & adaptors



REF.	s	r
MT.. 3,0	3,0	0,15
MT.. 4,0	4,0	0,20
MT.. 3,0	3,0	1,50
MT.. 3,8	3,8	1,90

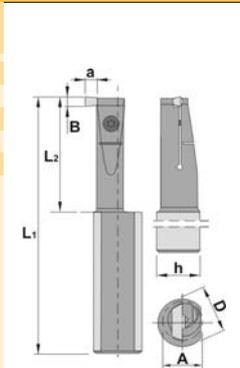


For more information see page: A.67,68

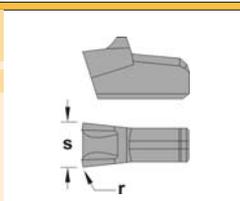
CZGB



REF.	D	A	h	L1	B	α	MCRN				
S16M CZGB R/L 03	16	15,0	15	150	3	4	3,0	150	520	-	-
S20R CZGB R/L 03	20	16,5	18	200	3	6	3,0	150	520	-	-
S25S CZGB R/L 03	25	25,0	23	250	3	8	3,0	-	-	179	504
S20R CZGB R/L 04	20	16,5	18	200	4	6	4,0	-	-	179	504
S25S CZGB R/L 04	25	25,0	23	250	4	8	4,0	-	-	179	504



REF.	s	r
MRCN 3,0	3,0	0,20
MRCN 4,0	4,0	0,20



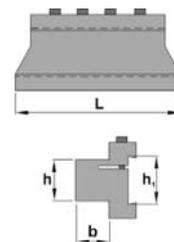
For more information see page: A.67

Inserts

KPTS



REF.	h1	L	h	b	100 504	
KPTS 1916	19	76	16	16	100	504
KPTS 2616	26	87	16	16	101	505
KPTS 2620	26	87	20	20	101	505
KPTS 2625	26	87	25	25	101	505
KPTS 3220	32	100	20	20	101	505
KPTS 3225	32	110	25	25	101	505
KPTS 3232	32	120	32	32	101	505
KPTS 5250	52	135	50	50	102	506



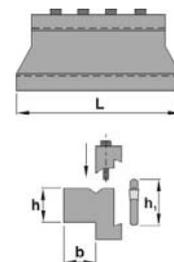
Turning

Automatic lathes

DPTS



REF.	h1	L	h	b	100 504	
DPTS 1916	19	76	16	16	100	504
DPTS 2620	26	87	20	20	101	505
DPTS 2625	26	87	25	25	101	505
DPTS 3220	32	100	20	20	101	505
DPTS 3225	32	110	25	25	101	505
DPTS 3232	32	120	32	32	101	505
DPTS 5250	52	135	50	50	102	506



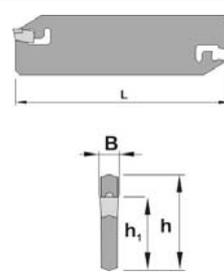
Ceramic tools

Parting & grooving

KRCFN



REF.	h	L	h1	B	MRCN	533
KRCF N 1901 X02	19	86	15,4	2,2	2,2	533
KRCF N 2601 J02	26	110	21,4	2,2	2,2	533
KRCF N 2602 J03	26	110	21,4	3,0	3,0	533
KRCF N 2603 J04	26	110	21,4	4,0	4,0	533
KRCF N 2604 J05	26	110	21,4	5,0	5,0	533
KRCF N 2605 J06	26	110	21,4	6,0	6,0	533
KRCF N 3202 M03	32	150	25,0	3,0	3,0	533
KRCF N 3203 M04	32	150	25,0	4,0	4,0	533
KRCF N 3204 M05	32	150	25,0	5,0	5,0	533
KRCF N 3205 M06	32	150	25,0	6,0	6,0	533

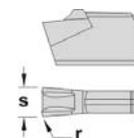


Threading

Drills



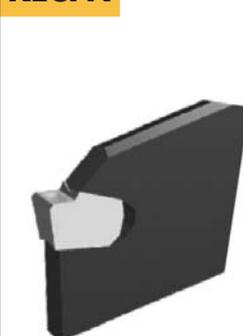
REF.	s	r
MRCN 2,2	2,2	0,2
MRCN 3,0	3,0	0,2
MRCN 4,0	4,0	0,2
MRCN 5,0	5,0	0,3
MRCN 6,0	6,0	0,4



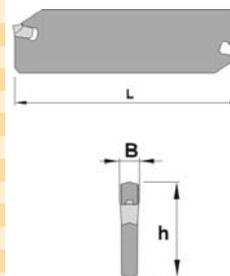
For more information see page: A.67

Cartridges

KLCFN



REF.	h	L	B	PTNT	532
KLCF N 1901 X02	19	86	2,1	02	532
KLCF N 2601 J02	26	110	2,1	02	532
KLCF N 2602 J03	26	110	3,1	03	532
KLCF N 2603 J04	26	110	4,1	04	532
KLCF N 2604 J05	26	110	5,1	05	532
KLCF N 2605 J06	26	110	6,1	06	532
KLCF N 3201 M02	32	150	2,1	02	532
KLCF N 3202 M03	32	150	3,1	03	532
KLCF N 3203 M04	32	150	4,1	04	532
KLCF N 3204 M05	32	150	5,1	05	532
KLCF N 3205 M06	32	150	6,1	06	532
KLCF N 3207 M08	32	150	8,1	08	532
KLCF N 3208 M09	32	150	9,1	09	532
KLCF N 5207 X08	53	190	8,1	08	532
KLCF N 5208 X09	53	190	9,1	09	532
KLCF N 5307 X08	53	260	8,1	08	532
KLCF N 5308 X09	53	260	9,1	09	532



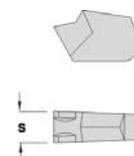
Milling cutters

Solid carbide

Boring heads

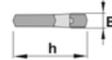
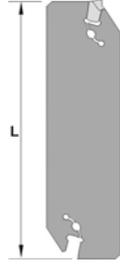


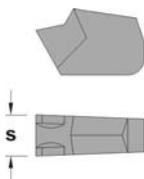
REF.	s
PTNT 02	2,10
PTNT 03	3,10
PTNT 04	4,10
PTNT 05	5,10
PTNT 06	6,10
PTNT 08	8,10
PTNT 09	9,10



For more information see page: A.68

Arbors & adaptors

KLCTN	REF.	h	L	B	PTNT		
	KLCT N 1901 X02	19	86	2,1	02	532	
	KLCT N 2601 J02	26	110	2,1	02	532	
	KLCT N 2602 J03	26	110	3,1	03	532	
	KLCT N 2603 J04	26	110	4,1	04	532	
	KLCT N 2604 J05	26	110	5,1	05	532	
	KLCT N 2605 J06	26	110	6,1	06	532	
	KLCT N 3201 M02	32	150	2,1	02	532	
	KLCT N 3202 M03	32	150	3,1	03	532	
	KLCT N 3203 M04	32	150	4,1	04	532	
	KLCT N 3204 M05	32	150	5,1	05	532	
	KLCT N 3205 M06	32	150	6,1	06	532	

	REF.	s	
	PTNT 02	2,10	
	PTNT 03	3,10	
	PTNT 04	4,10	
	PTNT 05	5,10	
	PTNT 06	6,10	

For more information see page: A.68

Inserts

Turning

Automatic lathes

Ceramic tools

Parting & grooving

Threading

Drills

Cartridges

Brazed tools

Milling cutters

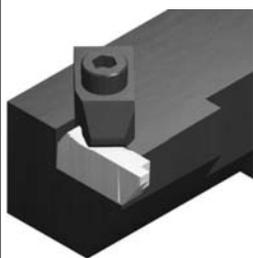
Solid carbide

Boring heads

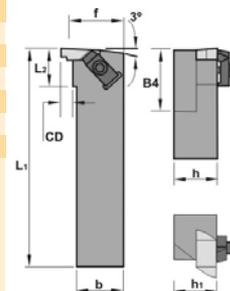
Arbors & adaptors

Inserts

NE 93°



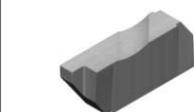
REF.	h-h1	b	L1	L2	f	N..			
NE R/L 1616 H02	16	16	100	25,40	20	2	TF-75	TF-74	474
NE R/L 2020 K02	20	20	125	25,40	25	2	TF-75	TF-74	474
NE R/L 2525 M02	25	25	150	25,40	32	2	TF-75	TF-74	474
NE R/L 2525 M03	25	25	150	50,80	32	3	TF-73	TF-72	475
NE R/L 3225 P03	32	25	170	50,80	32	3	TF-73	TF-72	475
NE R/L 2525 M04	25	25	150	50,80	35	4	TF-73	TF-72	475
NE R/L 3225 P04	32	25	170	50,80	35	4	TF-73	TF-72	475
NE R/L 3232 P04	32	32	170	50,80	40	4	TF-73	TF-72	475



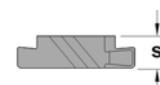
Turning

Automatic lathes

Ceramic tools



REF.	D	A	T
N.. 2	4,76	5,56	3,81
N.. 3	9,53	8,74	4,95
N.. 4	9,53	11,51	6,48



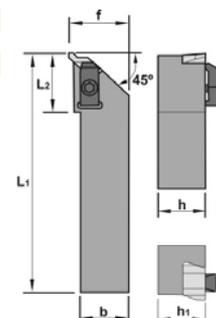
For more information see page: A.68,69

Parting & grooving

NR 45°



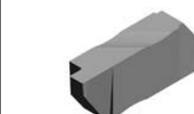
REF.	h-h1	b	L1	L2	f	N..			
NR R/L 2020 K03	20	20	125	32	25	3	TF-73	TF-72	475
NR R/L 2525 M03	25	25	150	32	32	3	TF-73	TF-72	475
NR R/L 3225 P03	32	25	170	32	32	3	TF-73	TF-72	475



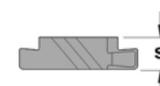
Threading

Drills

Cartridges



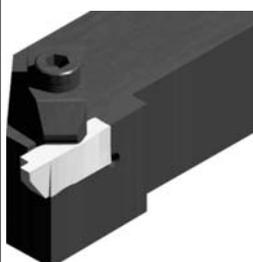
REF.	D	A	T
N.. 3	9,53	8,74	4,95



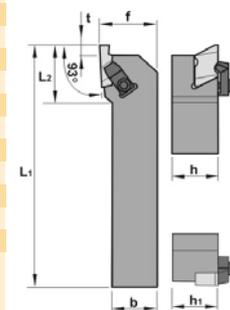
For more information see page: A.68,69

Brazed tools

NS 93°



REF.	h-h1	b	L1	L2	f	N..					
NS R/L 1010 E02	10	10	70	6,35	14	2	TF-74	TF-75	-	-	474
NS R/L 1212 F02	12	12	80	6,35	16	2	TF-74	TF-75	-	-	474
NS R/L 1616 H02	16	16	100	6,35	20	2	TF-74	TF-75	-	-	474
NS R/L 2020 K02	20	20	125	6,35	25	2	TF-74	TF-75	-	-	474
NS R/L 2525 M02	25	25	150	6,35	32	2	TF-74	TF-75	-	-	474
NS R/L 2020 K03	20	20	125	9,65	25	3	TF-72	TF-73	-	-	474
NS R/L 2525 M03	25	25	150	9,65	32	3	TF-72	TF-73	-	-	474
NS R/L 3225 P03	32	25	170	9,65	32	3	TF-72	TF-73	-	-	474
NS R/L 3232 P03	32	32	170	9,65	40	3	TF-72	TF-73	-	-	474
NS R/L 2525 M04	25	25	150	9,65	32	4	TF-72	TF-73	321	185	475
NS R/L 3225 P04	32	25	170	9,65	32	4	TF-72	TF-73	321	185	475
NS R/L 3232 P04	32	32	170	9,65	40	4	TF-72	TF-73	321	185	475

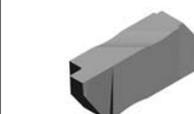


Milling cutters

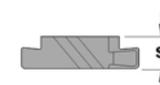
Solid carbide

Boring heads

Arbors & adaptors

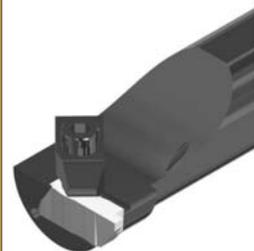


REF.	D	A	T
N.. 2	4,76	5,56	3,81
N.. 3	9,53	8,74	4,95
N.. 4	9,53	11,51	6,48

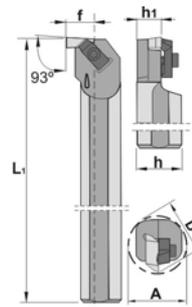


For more information see page: A.68,69

NNTO 93°



REF.	D	h	h1	L1	f	A	N..			
A12M-NNTO R/L 02	12	11	5,5	150	11	18,5	2	TF-147	TF-146	474
A16M-NNTO R/L 02	16	15	7,5	150	11	22,0	2	TF-75	TF-74	474
A20Q-NNTO R/L 02	20	18	9,0	180	13	26,0	2	TF-75	TF-74	474
A25R-NNTO R/L 02	25	23	11,5	200	17	34,0	2	TF-75	TF-74	474
A25R-NNTO R/L 03	25	23	11,5	200	17	34,0	3	TF-73	TF-72	475
A32S-NNTO R/L 03	32	30	15,0	250	22	44,0	3	TF-73	TF-72	475
A40T-NNTO R/L 03	40	37	18,5	300	27	54,0	3	TF-73	TF-72	475
A40T-NNTO R/L 04	40	37	18,5	300	27	54,0	4	TF-73	TF-72	475
A50U-NNTO R/L 04	50	47	23,5	350	35	70,0	4	TF-73	TF-72	475



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Milling cutters

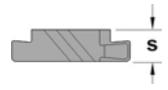
Solid carbide

Boring heads

Arbors & adaptors



REF.	D	A	T
N.. 2	4,76	5,56	3,81
N.. 3	9,53	8,74	4,95
N.. 4	9,53	11,51	6,48



For more information see page: A.68,69

Inserts

Nominal cutting speed for parting

Material	HB	Condition	Basic qualities			Specific cutting force N/mm ²	
			TIN32	PM25	KM15		
			Cutting speed m/min.				
Unalloyed steel	P 125 150 200	C=0.15%	200-150	160-120		1900	
		C=0.35%	190-140	150-110		2100	
		C=0.60%	170-120	130-90		2250	
Low alloyed steel	180	Annealed	180-130	140-100		2100	
	275	Hardened	160-110	120-80		2600	
	300	Hardened	150-100	110-70		2700	
	350	Hardened	140-90	90-60		2850	
High alloyed steel	200	Annealed	110-90	70-60		2600	
	325	Hardened	70-50	45-30		3900	
Stainless steel	200	Martensitic/Ferritic	170-120	130-90		2300	
Steel	180	Unalloyed	130-90	100-60		2000	
	200	Low alloyed	115-75	90-50		2500	
	225	High alloyed	100-60	80-40		2700	
Stainless steel annealed	M 180		170-120	130-90	100-60	2450	
Heat resistant alloys	200	Annealed			50-30	3000	
	280	Aged				40-20	3050
	250	Annealed	Ni or Co base		20-10	3500	
	350	Aged				20-10	4150
	320	Cast				20-10	4150
Titanium alloys	400	Ti				1520	
	950	Cast α , almost α and $\alpha + \beta$				1675	
	1050	Aged cast $\alpha + \beta$				1690	
Hardened steel	K 220 250	Hardened steel				4500	
		Manganese steel 12%					
Malleable cast iron	130	Ferritic	140-110		100-80	1100	
	230	Pearlitic	100-70		70-50	1100	
Cast iron	180	Low tensile strength	110-85		80-60	1100	
	260	High tensile strength	100-70		70-50	1500	
Nodular SG iron	160	Ferritic	100-70		70-50	1100	
	250	Pearlitic	85-60		60-40	1800	
Aluminium alloys	60	Non heat treatable	1500	1500	1000	500	
	100	Heat treatable	500	500	420	800	
Aluminium alloys (cast)	75	Non heat treatable	1500	1500	1000	750	
	90	Heat treatable	750	750	650	900	
Bronze-Brass alloys	110	Lead alloys, Pb > 1%	300	300	300	700	
	90	Brass, red brass	200	200	200	750	
	100	Bronze and lead-free copper	150	150	150	1750	

Solid carbide

Boring heads

Arbors & adaptors

Nominal cutting speed for grooving

Material	HB	Condition	External			Internal / Axial			Specific cutting force N/mm ²				
			TIN32	PM25	KM15	TIN32	PM25	KM15					
			Cutting speed m/min.										
Unalloyed steel P	125	C=0.15%	200-150	160-120		140-105	110-85		1900				
	150	C=0.35%	190-140	150-110		135-100	105-80		2100				
	200	C=0.60%	170-120	130-90		120-85	90-60		2250				
Low alloyed steel	180	Annealed	180-130	140-100		125-90	100-70		2100				
	275	Hardened	160-110	120-80		110-80	85-55		2600				
	300	Hardened	150-100	110-70		105-70	80-50		2700				
	350	Hardened	140-90	90-60		100-60	60-45		2850				
High alloyed steel	200	Annealed	110-90	70-60		80-60	50-45		2600				
	325	Hardened	70-50	45-30		80-35	32-20		3900				
Stainless steel	200	Martensitic/Ferritic	170-120	130-90		120-85	90-60		2300				
Steel	180	Unalloyed	130-90	100-60		90-60	70-45		2000				
	200	Low alloyed	115-75	90-50		80-50	60-35		2500				
	225	High alloyed	100-60	80-40		70-45	55-30		2700				
Stainless steel annealed M	180		170-120	130-90	100-60	120-85	90-60	70-45	2450				
Heat resistant alloys	200	Annealed											
	280	Aged								Iron base	50-30	50-30	3000
	250	Annealed								Ni or Co base	40-20	40-20	3050
	350	Aged									30-20	30-20	3500
	320	Cast									20-10	20-10	4150
1050	Cast	20-10	20-10	4150									
Titanium alloys	400	Ti			175				1520				
	950	Cast α , almost α and $\alpha + \beta$			72				1675				
	1050	Aged cast $\alpha + \beta$			65				1690				
Hardened steel K	220	Hardened steel							4500				
	250	Manganese steel 12%											
Malleable cast iron	130	Ferritic	140-110		100-80	100-80		100-80	1100				
	230	Pearlitic	100-70		70-50	70-50		70-50	1100				
Cast iron	180	Low tensile strength	110-85		80-60	80-60		80-60	1100				
	260	High tensile strength	100-70		70-50	70-50		70-50	1500				
Nodular SG iron	160	Ferritic	100-70		70-50	70-50		70-50	1100				
	250	Pearlitic	85-60		60-40	60-45		60-40	1800				
Aluminium alloys	60	Non heat treatable	1500	1500	1000	1050	1050	700	500				
	100	Heat treatable	500	500	420	350	350	300	800				
Aluminium alloys (cast)	75	Non heat treatable	1500	1500	1000	1050	1050	700	750				
	90	Heat treatable	750	750	650	525	525	460	900				
Bronze-Brass alloys	110	Lead alloys, Pb > 1%	300	300	300	210	210	210	700				
	90	Brass, red brass	200	200	200	140	140	140	750				
	100	Bronze and lead-free copper	150	150	150	105	105	105	1750				

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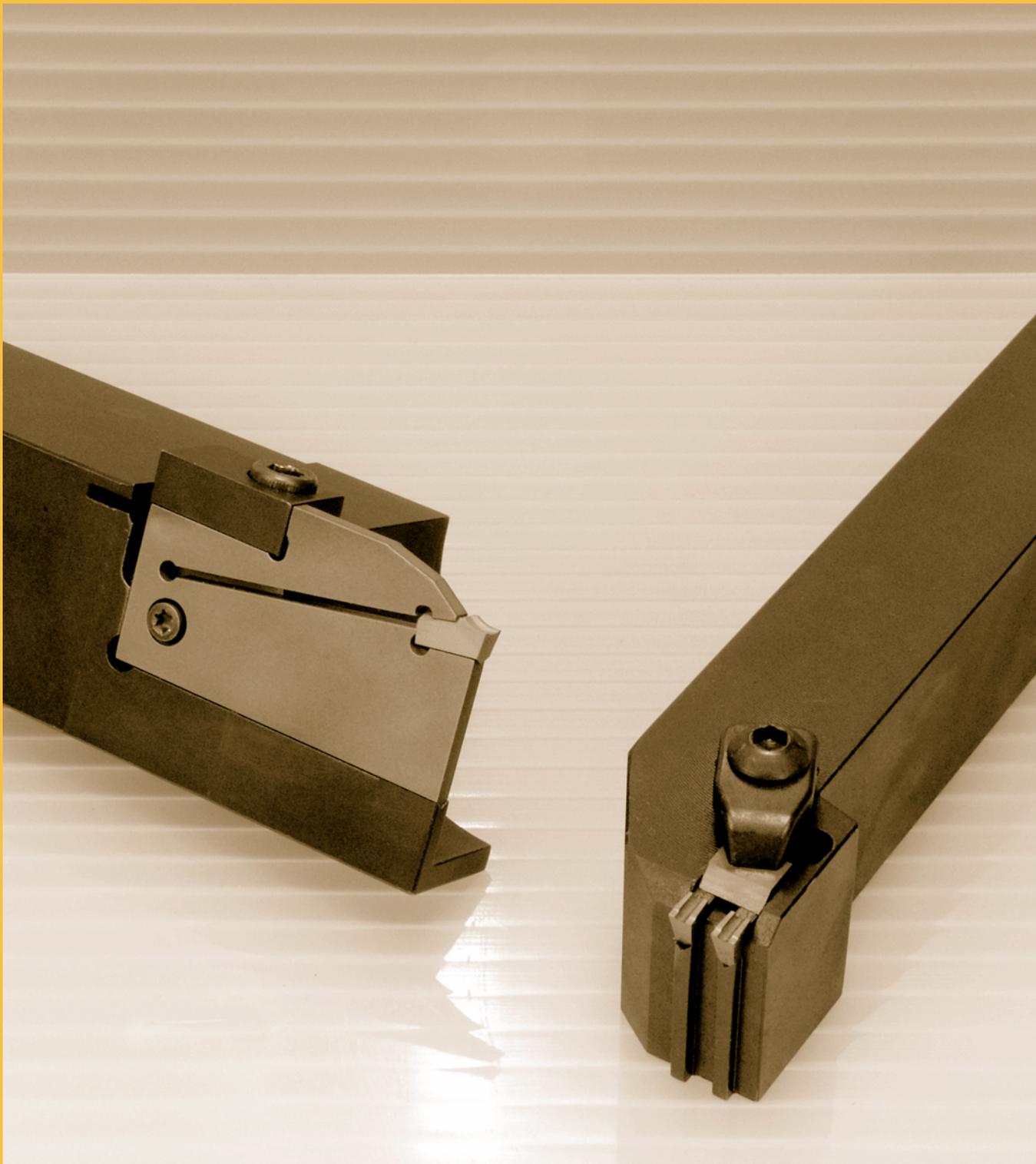
Solid carbide

Boring heads

Arbors & adaptors

Nominal cutting speed for profiling

Material	HB	Condition	Basic qualities			Specific cutting force N/mm ²
			TIN32	PM25	KM15	
			Cutting speed m/min.			
Unalloyed steel P	125	C=0.15%	200	160		1900
	150	C=0.35%	190	150		2100
	200	C=0.60%	170	130		2250
Low alloyed steel	180	Annealed	180	140		2100
	275	Hardened	160	120		2600
	300	Hardened	150	110		2700
	350	Hardened	140	90		2850
High alloyed steel	200	Annealed	130	100		2600
	325	Hardened	100	60		3900
Stainless steel	200	Martensitic/Ferritic	170	130		2300
Steel	180	Unalloyed	130	100		2000
	200	Low alloyed	115	90		2500
	225	High alloyed	100	70		2700
Stainless steel annealed M	180		170	120	100	2450
Heat resistant alloys	200	Annealed		60	3000	
	280	Aged				50
	250	Annealed	Ni or Co base	30	3500	
	350	Aged		20	4150	
	320	Cast		20	4150	
Titanium alloys	400	Ti		175	1520	
	950	Cast α , almost α and $\alpha + \beta$		72	1675	
	1050	Aged cast $\alpha + \beta$		65	1690	
Hardened steel K	220	Hardened steel				4500
	250	Manganese steel 12%				
Malleable cast iron	130	Ferritic	140		100	1100
	230	Pearlitic	110		70	1100
Cast iron	180	Low tensile strength	110		100	1100
	260	High tensile strength	100		70	1500
Nodular SG iron	160	Ferritic	100		100	1100
	250	Pearlitic	85		70	1800
Aluminium alloys	60	Non heat treatable	1500	1500	1000	500
	100	Heat treatable	500	500	420	800
Aluminium alloys (cast)	75	Non heat treatable	1500	1500	450	750
	90	Heat treatable	750	750	300	900
Bronze-Brass alloys	110	Lead alloys, Pb > 1%	300	300	300	700
	90	Brass, red brass	200	200	200	750
	100	Bronze and lead-free copper	150	150	150	1750



Very often some special tools are required to achieve different kinds of application, either to reduce the time of machining or because there is no standard tool which can accomplish a specific machining operation. KIMU MECANIC gives to his customers the possibility of manufacturing this kind of tooling, starting from a drawing or making a study about the piece which must be machined. The wide range of possibilities offered by the manufacture of special tooling helps to solve all kind of machining problems from the small to the aerospace industry.

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