



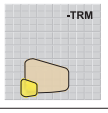


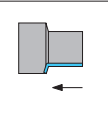
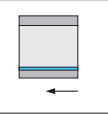


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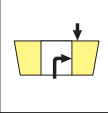
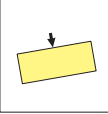
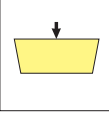
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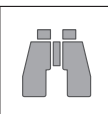
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Pastilhas

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Inovações na seção de torneamento

- o Recém projetada estrutura da visão geral e designação da ferramenta de corte
- o Descrição detalhada e exibição dos quebra cavacos

Faça a escolha certa seguindo apenas alguns passos

1

Seleção do material de corte

O material de corte é escolhido de acordo com o material a ser usinado

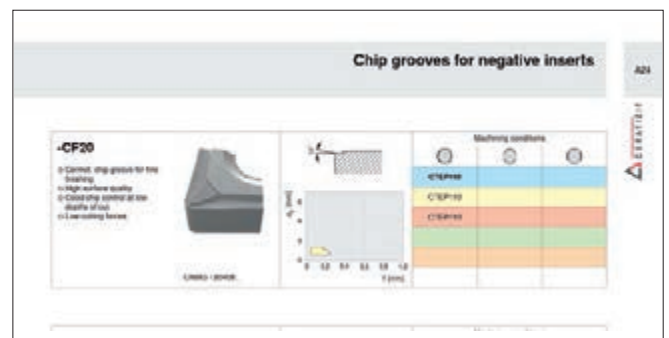
Grade overview

Grade designation	Standard designation		Type of coating	Application range											P	M	K	N	S	H	
	ISO	ANSI		01	05	10	15	20	25	30	35	40	45	50							
TDM407	IG P10	05	T																		
	HM05	-	T																		
	HC05	04	T																		
CTCP110	HC-P10	08	E																		
	HC-K08	08	E																		
	HC-M08	-	E																		
TDM10	IG P15	07	T																		
	HM10	-	T																		
	IG K10	08	T																		
CTCP115	HC-P15	07	C																		
	HC-K05	09	C																		
	HC-M05	-	C																		
CTCP125	HC-P20	06	C																		
	HC-K20	03	C																		
	HC-M20	-	C																		
CTCP135	HC-P25	05	B																		
	HC-K25	-	C																		
	HC-M25	-	C																		
CTPM026	HC-M20	-	P																		
	IG P20	05	T																		

2

Seleção do quebra cavaco

O quebra cavaco é escolhido baseado nas condições de usinagem e do material a ser usinado



3

Seleção do tipo de pastilha

Visão geral dos sistemas de ferramentas e tipos de pastilhas

Overview

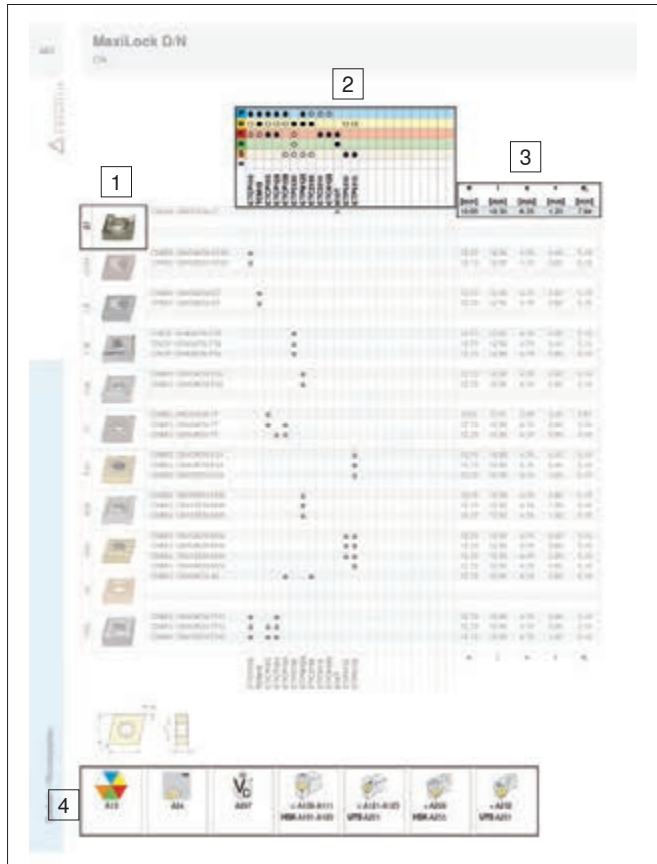
System	Angle	Designation
MaxiLock D-IN	90°	AS3-AS6
	55°	AS7-AS8
	90°	A70-A72
	90°	A73-A75
MaxiLock S	Others	AS2
	Others	AS2
Simplex N	90°	A97
	55°	A98

5

Seleção do tipo de pastilha

Esta página mostra as geometrias disponíveis e classes para a pastilha selecionada

- 1 Quebra cavacos
- 2 Classe de metal duro
- 3 As principais dimensões
- 4 Informações adicionais

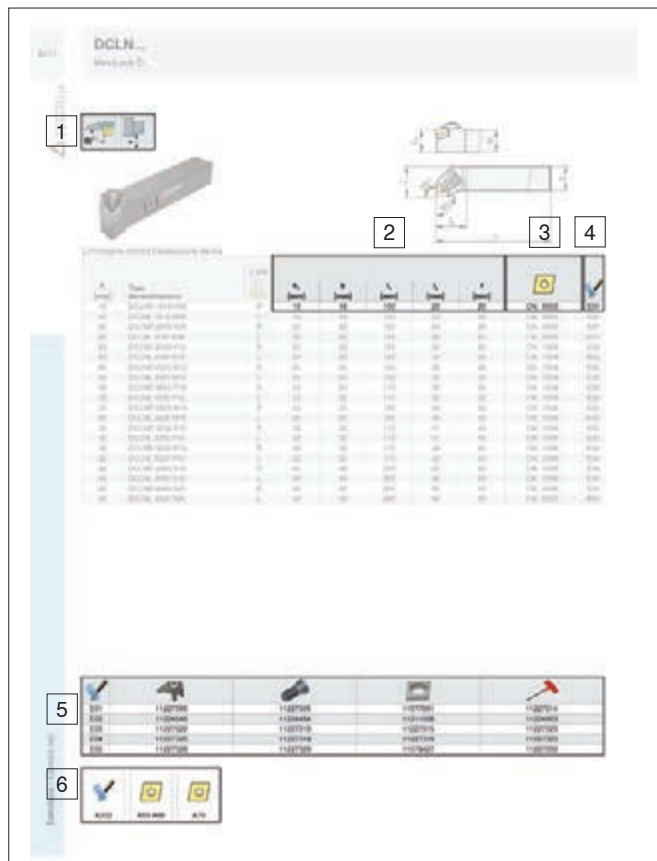


4

Seleção da ferramenta

Esta página mostra a gama de ferramentas de torneamento com as principais dimensões e informações sobre os tipos de pastilhas

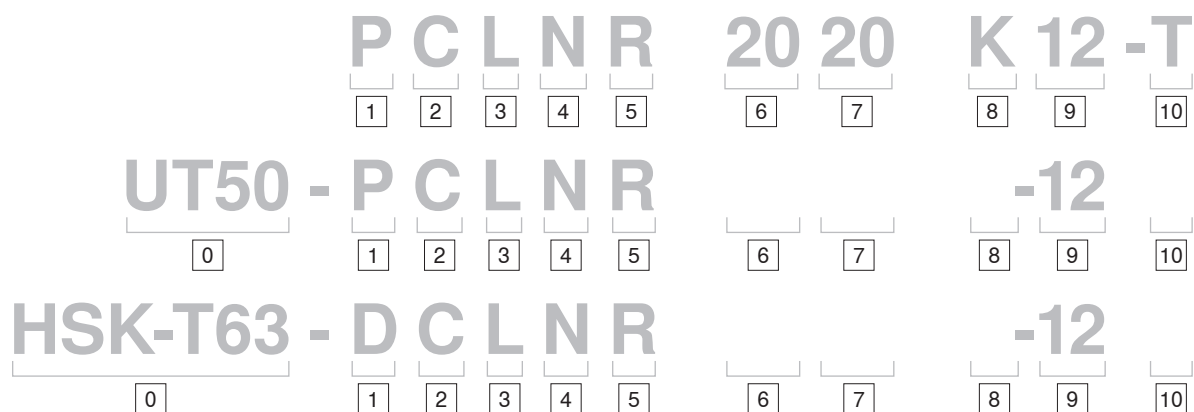
- 1 Aplicações possíveis
- 2 As principais dimensões
- 3 Referência de pastilha
- 4 Componentes
- 5 Visão geral dos componentes
- 6 Informações adicionais



Sistema de designação CERATIZIT

Porta ferramentas

A5



0

Sistema / tamanho

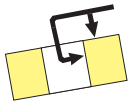
UT = UTS
 norma ISO 26622
 UT40 = UTS 40 mm
 UT50 = UTS 50 mm
 UT63 = UTS 63 mm

HSK-T
 norma ISO 12164
 HSK-T63 = 63mm
 HSK-T100 = 100mm

1

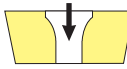
Sistema de fixação

D



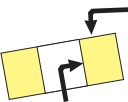
Fixação pela parte superior e pelo furo

S



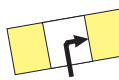
Fixação pelo centro parafuso

M




Fixação pela parte superior e pelo furo

P



Fixação pelo furo

C















Fixação pela face superior

X

X Versão especial


2

Formato da pastilha

Ângulo do formato		35°	V
		55°	D
		75°	E
		80°	C
Ângulo do formato		86°	M
		55°	K
		82°	B
Outros formatos		90°	L
		108°	P
		120°	H
		135°	O
		90°	R

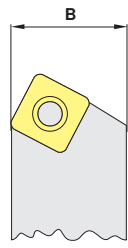
6

Altura da haste



7

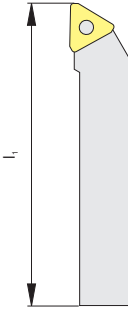
Largura da haste



8

Comprimento da ferramenta

l ₁ mm	l ₁ inch		l ₁ mm	l ₁ inch	
32	4.000	A	160	4.500	N
40	4.500	B	170	5.500	P
50	5.000	C	180	-	Q
60	6.000	D	200	6.000	R
70	7.000	E	250	7.000	S
80	8.000	F	300	8.000	T
90	5.500	G	350	5.500	U
100	5.625	H	400	3.500	V
110	5.300	J	450	3.500	W
125	14.000	K	500	3.750	Y
140	6.800	L	Especial		X
150	4.400	M			



3

Estilo

A	90°	B	75°	C	90°	D	45°	E	60°
F	90°	G	90°	H	107,5°	J	93°	K	75°
L	95°	M	50°	N	63°	P	117,5°	R	75°
S	45°	T	60°	U	93°	V	72,5°	W	60°
Y									85°

4

Ângulo de folga

3°	A	25°	F
5°	B	30°	G
7°	C	0°	N
15°	D	11°	P
20°	E	*)	O

*) Ângulos de folga não incluídos no programa standard. Informações adicionais são necessárias para escolha

5

Direção do corte

9

Comprimento da aresta de corte

10

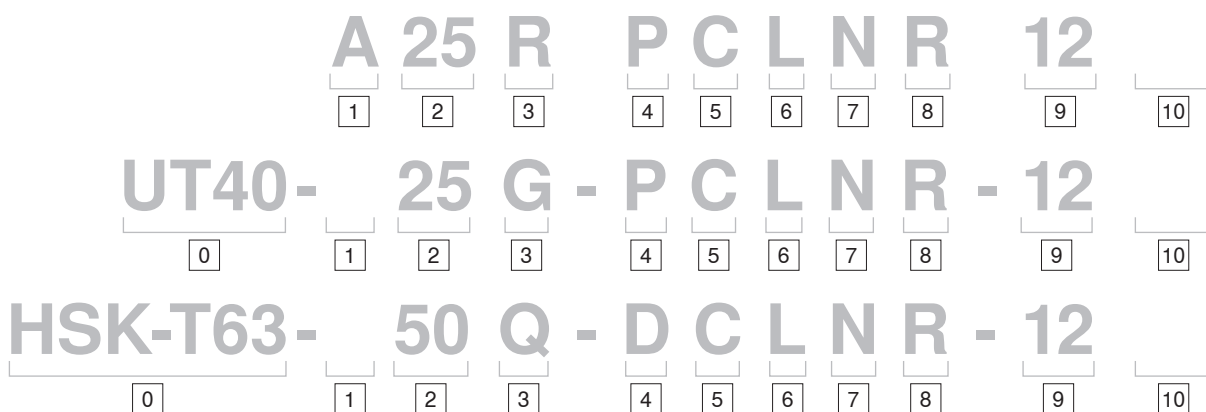
Especificação do fabricante

T = alavanca
 Comprimento especial (mm)
 Espessura da pastilha (diferente do standard)
 Versão especial (X..)
 Fabricante de máquina (específico)

Sistema de designação CERATIZIT

Torneamento interno

A7



0

Sistema / tamanho

UT = UTS
 norma ISO 26622
 UT40 = UTS 40 mm
 UT50 = UTS 50 mm
 UT63 = UTS 63 mm

HSK-T
 norma ISO 12164
 HSK-T63 = 63mm
 HSK-T100 = 100mm

1

Versão da haste

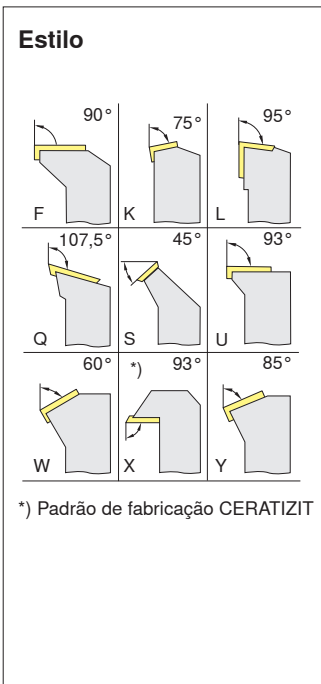
S Haste em aço	E Igual a C com refrigeração interna
A Haste em aço com refrigeração interna	F Igual a C com sistema anti-vibratório
B Haste em aço com sistema anti-vibratório	G Igual a C com refrigeração interna e sistema anti-vibratório
D Haste em aço com refrigeração interna e sistema anti-vibratório	H Metal pesado
C Haste em metal duro com ponta em aço	J Metal pesado com refrigeração interna

5

Formato da pastilha

Ângulo do formato	35°	V			
	55°	D			
	75°	E			
	80°	C			
	86°	M			
Ângulo do formato	55°	K			
	82°	B			
	85°	A			
90°	L		-		R
108°	P		90°		S
120°	H		60°		T
135°	O		80°		W

6



7

Ângulo de folga

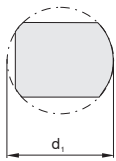
3°	A	25°	F
5°	B	30°	G
7°	C	0°	N
15°	D	11°	P
20°	E	*	O

*) Ângulos de folga não incluídos no programa standard. Informações adicionais são necessárias para escolha

2

Diâmetro da haste

d ₁ mm	d ₁ inch
08	Um número de dois dígitos mostra o diâmetro da ferramenta em 1/16 polegadas.
10	
12	
16	
20	
25	
32	
40	
50	
60	

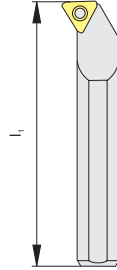


3

Comprimento da ferramenta

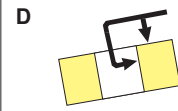
l ₁ mm	l ₁ inch	
80	3	F
100	3,5	H
110	4	J
125	4,5	K
140	5	L
150	5,5	M
160	6	N
170	6,5	P
180	6,75	Q
200	7	R
250	8	S
300	10	T
350	12	U
400	14	V
450	16	W
500	18	Y

Especial X

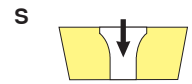


4

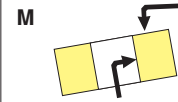
Sistema de fixação



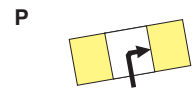
Fixação pela parte superior e pelo furo



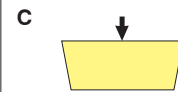
Fixação pelo centro parafuso



Fixação pela parte superior e pelo furo



Fixação pelo furo

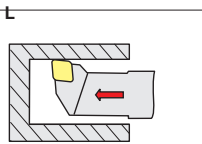
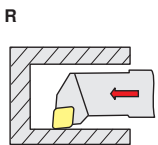


Fixação pela face superior

X Versão especial

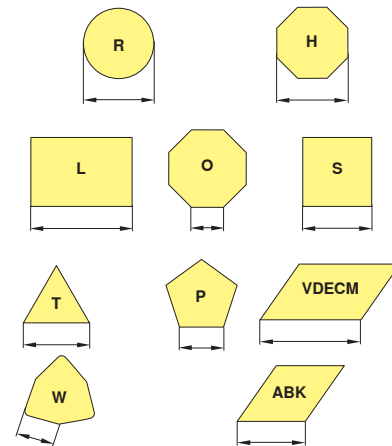
8

Direção do corte



9

Comprimento da aresta de corte



10

Especificação do fabricante

T = alavanca
 Comprimento especial (mm)
 Espessura da pastilha (diferente do standard)
 Versão especial (X..)
 Fabricante de máquina (específico)

Pastilha – métrico

C N M G 12 04 08 E N - M50

1 2 3 4 5 6 7 8 9 13

Pastilha – polegada

C N M G 4 3 2 E N - M50

1 2 3 4 5 6 7 8 9 13

Pastilha, CBN, cerâmica – métrico

C N G A 12 04 08 S N - 020D B 3

1 2 3 4 5 6 7 8 9 10 11 12

Pastilha, CBN, cerâmica – polegada

C N G A 4 3 2 S N - 020D B 3

1 2 3 4 5 6 7 8 9 10 11 12

1

Formato da pastilha

Ângulo do formato	35°	V
	55°	D
	75°	E
	80°	C
	86°	M
Ângulo do formato	55°	K
	82°	B
	85°	A
Outros formatos	90°	L
	108°	P
	120°	H
	135°	O
	-	R
	90°	S
	60°	T
80°	W	

2

Ângulo de folga

3°	A	25°	F
5°	B	30°	G
7°	C	0°	N
15°	D	11°	P
20°	E		

Ângulos de folga não incluídos no programa standard. Informações adicionais são necessárias para escolha } O

3

Tolerância

	d ±		m ±		s ±	
	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
A	0,025	.0010	0,005	.0002	0,025	.001
F	0,013	.0005	0,005	.0002	0,025	.001
C	0,025	.0010	0,013	.0005	0,025	.001
H	0,013	.0005	0,013	.0005	0,025	.001
E	0,025	.0010	0,025	.0010	0,025	.001
G	0,025	.0010	0,025	.0010	0,13	.005
J	0,05-0,15*	.002-.006*	0,005	.0002	0,025	.001
K	0,05-0,15*	.002-.006*	0,013	.0005	0,025	.001
L	0,05-0,15*	.002-.006*	0,025	.0010	0,025	.001
M	0,05-0,15*	.002-.006*	0,05-0,20	.003-.008*	0,13	.005
N	0,05-0,15*	.002-.006*	0,05-0,20	.003-.008*	0,025	.001
U	0,08-0,25*	.003-.010*	0,13-0,38	.005-.015*	0,13	.005

* depende do tamanho da pastilha

6

Espessura da pastilha

[inch]		[mm]		Índice	
[inch]	[mm]	[mm]	[inch]		
1/16	1,59	01	1		
3/32	2,38	02	2		
1/8	3,18	03	3		
5/32	3,97	T3			
3/16	4,76	04	4		
7/32	5,56	05			
1/4	6,35	06	6		
5/16	7,94	07	7		
3/8	9,52	09	9		

7

Raio de canto

[mm]		[inch]		Índice	
[mm]	[inch]	[mm]	[inch]		
≤ 0,05	.0015	00	X0		
0,1	.004	01	0		
0,2	.008	02	.5		
0,4	1/64	04	1		
0,8	1/32	08	2		
1,2	3/64	12	3		
1,6	1/16	16	4		
2,0	5/64	20	5		
2,4	3/32	24	6		
2,8	7/64	28	7		
3,2	1/8	32	8		

8

Aresta de corte

- F afiado
- E Arredondado
- T chanfrado
- S chanfrado e arredondado
- K chanfro duplo
- P chanfro duplo & brunido

9

Direção do corte

- R R
- L L
- N N

4

Formato da superfície superior

N		
R		
F		
A		
M, P		
G, P		
W		
T		
Q		
U		
B		
H		
C		
J		
X	Versão especial	

[inch]

Mudanças no círculo inscrito
IK < 1/4"

IK > 1/4"	IK < 1/4"
N / R / F	E
A / M / G	D
X	X

5

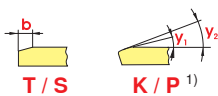
Comprimento da aresta de corte

Typ	ISO	ANSI	L		d		
			[mm]	[inch]	[mm]	[inch]	
C 	06	2	6,4	.250	6,35	.250	
	09	3	9,7	.382	9,525	.375	
	12	4	12,9	.508	12,70	.500	
	16	5	16,1	.634	15,875	.625	
	19	6	19,3	.760	19,05	.750	
	25	8	25,8	1.016	25,4	1.000	
S 	06	2	6,35	.250	6,35	.250	
	09	3	9,525	.375	9,525	.375	
	12	4	12,7	.500	12,7	.500	
	15	5	15,875	.625	15,875	.625	
	19	6	19,05	.750	19,05	.750	
	25	8	25,4	1.000	25,4	1.000	
D 	07	2	7,7	.303	6,35	.250	
	11	3	11,6	.457	9,525	.375	
	15	4	15,5	.610	12,70	.500	
V 	11	2	11,1	.437	6,35	.250	
	16	3	16,6	.653	9,525	.375	
	22	4	22,10	.870	12,70	.500	
T 	06	1.2	6,9	.272	3,97	.156	
	09	1.8	9,6	.378	5,56	.219	
	11	2	11,0	.433	6,35	.250	
	16	3	16,5	.650	9,525	.375	
	22	4	22,0	.079	12,70	.039	
	27	5	27,5	1.083	15,875	.625	
	33	6	33,0	1.299	19,05	.750	
	W 	06	3	6,5	.256	9,525	.375
		08	4	8,7	.331	12,70	.039
		10	5	10,9	.429	15,875	.625
	R 	06	2	6,35	.250	6,35	.250
		08	-	8,0	.315	8,0	.315
09		3	9,52	.375	9,52	.375	
10		-	10,0	.394	10,0	.394	
12		-	12,0	.472	12,0	.472	
12*		4	12,7	.488	12,70	.488	
15		5	15,875	.625	15,875	.625	
16		-	16,0	.630	16,0	.630	
19		6	19,05	.750	19,05	.750	
25		8	25,0	.984	25,0	.984	
25*		-	25,4	1.000	25,4	1.000	
31		10	31,75	1.250	31,75	1.250	
32	-	32,0	1.260	32,0	1.260		

*) versão polegada

10

Tipo de chanfro



	[mm]	[inch]		
015	0,15	.006	A	05°
020	0,20	.008	B	10°
025	0,25	.010	C	15°
050	0,50	.020	D	20°
075	0,75	.030	E	25°
100	1,00	.040	F	30°

1) Para arestas de corte com dois chanfros, duas letras serão usadas.

Por exemplo:

BE = ângulo de chanfro 1 = 10°
ângulo de chanfro 2 = 25°

11

Número de arestas de corte

somente de um lado		espessura total	
A		T	
B		U	
C		V	
D		W	
G		X	
H		Y	
bilateral		superfície de saída	
K		S	
L		F	
M		E	
N			
P			
Q			

12

Comprimento do segmento

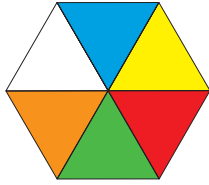


*) dimensão aproximada em mm

13

Designação do quebra cavaco

Informações do fabricante consulte a página A24



Material

Com base na norma VDI 3323 o guia CERATIZIT divide os materiais em seis grupos principais (P, M, K, N, S, H). Para cada um é dado uma cor, de acordo com o sistema parcialmente adotado na ISO 513.



Aço



Aço inoxidável



Ferro fundido



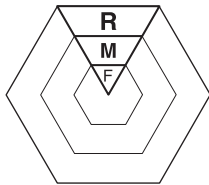
Metais não ferrosos e não metais



Ligas resistentes ao calor, titânio



Materiais endurecidos



Tipo de aplicação de usinagem

Cada segmento de cor é dividido em três seções, e cada seção indica o tipo de aplicação de usinagem relevante:

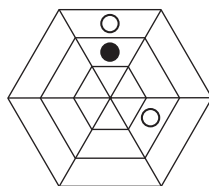
R = usinagem de desbaste



M = usinagem média



F = usinagem de acabamento

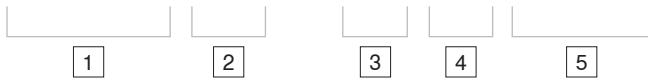


Aplicação

A área ideal de aplicação para cada pastilha é indicado por um círculo preto. Aplicações estendidas são indicadas por um círculo aberto. O Guia CERATIZIT fornece a você uma estrutura de fácil compreensão para escolher um produto e possibilita a redução do inventário de classes e geometrias.

- Aplicação principal
- Aplicação estendida

CTC P 1 2 5



1 Fabricante: CERATIZIT

2 Material da usinagem

- W Metal duro sem cobertura
- C Metal duro com cobertura CVD
- P Metal duro com cobertura PVD
- T Cermet sem cobertura
- E Cermet com cobertura
- N Nitreto de silício sem cobertura
- M Nitreto de silício com cobertura
- S Cerâmica mista
- K Cerâmica Whisker
- I Sialon
- D PCD
- B CBN
- L CBN com cobertura
- H HSS sinterizado

3 Principal aplicação (material)
Variante 1: número

- 1 Aço
- 2 Aço inox
- 3 Ferro fundido
- 4 Materiais não ferrosos
- 5 Ligas resistentes ao calor e titânio
- 6 Materiais endurecidos
- 7 Classe Universal para uma grande variedade de aplicações

Principal aplicação (material)
Variante 2: Letra - ISO

- P Aço
- M Aço inox
- K Ferro fundido
- N Materiais não ferrosos
- S Ligas resistentes ao calor e titânio
- H Materiais endurecidos
- X Classe Universal para uma grande variedade de aplicações

4 Principal aplicação (tipo de usinagem)

- 1 Torneamento
- 2 Fresamento
- 3 Corte e Canal
- 4 Furação
- 5 Rosqueamento
- 6 Outros
- 7 Classe universal para uma grande variedade de aplicações

5 ISO 513
Faixa de aplicação

- Por exemplo:
- 05
 - 10
 - 15
 - 25
 - 35 ISO P35
 - .
 - .
 - .

Visão geral das classes

Designação classe	Designação standard		*Tipo do material de corte	Gama de aplicação											P	M	K	N	S	H
	ISO	ANSI		01	05	10	15	20	25	30	35	40	45	50	Aço	Aço inox	Ferro fundido	Metais não ferrosos	Ligas resistentes ao calor	Materiais endurecidos
TCM407	HT-P10	C8	T												●					
	HT-M05	-	T													○				
	HT-K05	C4	T														○			
CSTEP110 COLORSTAR™	HE-P10	C8	E												●					
	HE-K05	C4	E														○			
	HE-M10	-	E													○				
TCM10	HT-P15	C7	T												●					
	HT-M10	-	T													●				
	HT-K10	C3	T														○			
CTCP115 BLACKSTAR™	HC-P15	C7	C												●					
	HC-K25	C2	C														●			
	HC-M10	-	C													○				
CTCP125 BLACKSTAR™	HC-P25	C6	C												●					
	HC-K30	C1	C														●			
	HC-M20	-	C													○				
CTCP135 COLORSTAR™	HC-P35	C5	C												●					
	HC-M25	-	C													○				
	HC-S25	-	C																○	
CTPM125 SILVERSTAR™	HC-M25	-	P													●				
	HC-P35	C5	P												●					
	HC-S25	-	P																○	
CTC2135	HC-M30	-	C													●				
	HC-P35	C5	C												○					
	HC-S35	-	C																○	
				01	05	10	15	20	25	30	35	40	45	50	● Aplicação Principal ○ Aplicação estendida					

Designação classe	Designação standard		*Tipo do material de corte	Gama de aplicação											P	M	K	N	S	H
	ISO	ANSI		01	05	10	15	20	25	30	35	40	45	50	Aço	Aço inox	Ferro fundido	Metais não ferrosos	Ligas resistentes ao calor	Materials endurecidos
CTI3105	CN-K05	C3	I														●			
	CN-S05	-	I																○	
CTN3105	CN-K05	C4	N														●			
CTS3105	CM-K05	C4	S														●			
	CM-H05	C4	S																	●
CTBK102	BH-K10	C3	B														●			
	BH-H25	C2	B																	●
CTBK104	BH-K10	C3	B														●			
	BH-H25	C2	B																	●
CTM3110	CC-K10	C3	M														●			
CTN3110	CN-K10	C3	N														●			
CTC3110	HC-K10	C3	C														●			
	HC-P10	C8	C												○					
CTCK120 BLACKSTAR™	HC-K20	C2	C														●			
	HC-P10	C8	C												○					
CTD4110	DP-N05	C4	D															●		
H210T	HW-N10	C3	W															●		
	HW-S10	-	W																●	
	HW-K10	C3	W														○			
AMZ	HC-N10	C3	P															●		
	HC-P10	C8	P												○					
	HC-K10	C3	P														○			
H10T	HW-N15	C3	W															●		
	HW-K15	C3	W														●			
				01	05	10	15	20	25	30	35	40	45	50	● Aplicação Principal ○ Aplicação estendida					

Visão geral das classes

Designação classe	Designação standard		*Tipo do material de corte	Gama de aplicação											P	M	K	N	S	H							
	ISO	ANSI		01	05	10	15	20	25	30	35	40	45	50	Aço	Aço inox	Ferro fundido	Metais não ferrosos	Ligas resistentes ao calor	Materiais endurecidos							
H216T	HW-N15	C3	W																						●		
	HW-K15	C3	W																						●		
CTP5110	HC-S15	-	P																							●	
	HC-M15	-	P																					○			
CTP5115	HC-S15	-	P																							●	
	HC-M15	-	P																					○			
CTL6115	BC-H15	C3	L																								●
				01 05 10 15 20 25 30 35 40 45 50											● Aplicação Principal ○ Aplicação estendida												

Metal duro

- HW** Metal duro sem cobertura, constituído de carboneto de tungstênio (WC)
HT¹⁾ Metal duro sem cobertura, constituído principalmente de carboneto de titânio (TiC) ou nitreto de titânio (TiN) ou ambos
HC Metal duro conforme acima, mas com cobertura

Cerâmica

- CA** Óxido de cerâmica, constituído principalmente de óxido de alumínio (Al_2O_3)
CM Cerâmica mista, baseado em óxido de alumínio (Al_2O_3), mas com diferentes componentes de óxido
CN Nitreto de cerâmica, constituído principalmente de nitreto de silício (Si_3N_4)
CC Cerâmica conforme acima, mas sem cobertura

Diamante

- DP²⁾** Diamante policristalino

Nitreto de boro



- BL²⁾** Nitreto de boro cúbico policristalino com baixo teor de CBN (40% - 65%)
BH²⁾ Nitreto de boro cúbico policristalino com alto teor de CBN (70% - 95%)
BC²⁾ Nitreto de boro cúbico policristalino com cobertura


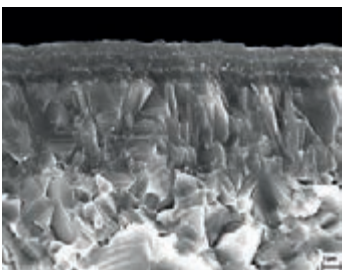
¹⁾ Estes carbonetos são também chamados de 'cermets'.



²⁾ Diamante policristalino e nitreto de boro cúbico policristalino são também chamados de materiais ultra-duros para usinagem.


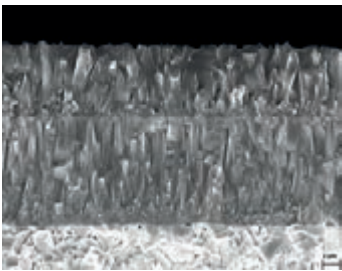
Descrição das classes


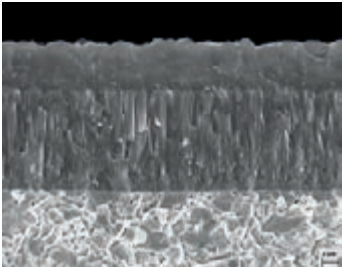
A17


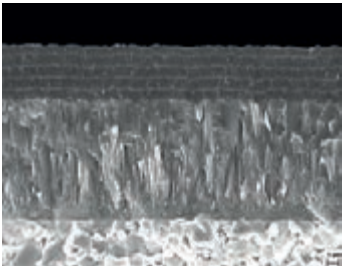
TCM407	HT-P10 HT-M05 HT-K05	
	<p>Especificação: Composição: Co/Ni 8.0%; WC 16.0%; TaNbC 10.0%; TiCN balanceado Dureza: HV₃₀ 1780</p> <p>Aplicação recomendada: Classe de cermet sem cobertura para acabamento preciso em aço.</p>	


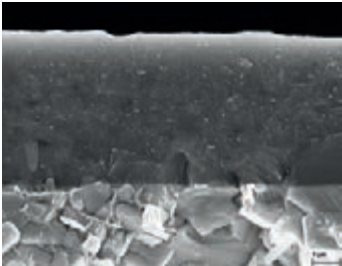
CTEP110 COLORSTAR™	HE-P10 HE-K05 HE-M10	
	<p>Especificação: Composição: Co/Ni 12.2%; WC 15.0%; TaNbC 10.0%; TiCN balanceado Tamanho do grão: fino Dureza: HV₃₀ 1620 Especificação da cobertura: CVD TiCN-Al₂O₃ multi-camada</p> <p>Aplicação recomendada: Classe de cermet com alta resistência para operações de acabamento em altas velocidades.</p>	


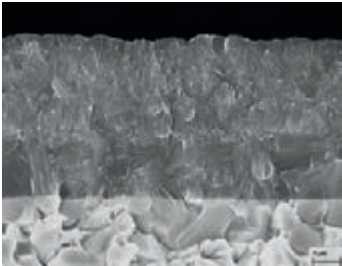
TCM10	HT-P15 HT-M10 HT-K10	
	<p>Especificação: Composição: cermet Co/Ni 12.2%; WC 15.0%; TaNbC 10.0%; TiCN balanceado Dureza: HV₃₀ 1620</p> <p>Aplicação recomendada: Classe de cermet sem cobertura para acabamento em aço temperado.</p>	

CTCP115 BLACKSTAR™	HC-P15 HC-K25 HC-M10	
	<p>Especificação: Composição: Co 5.8%; carbonetos mistos 6.4%; WC balanceado Tamanho do grão: 1 - 2 μm Dureza: HV₃₀ 1550 Especificação da cobertura: CVD TiCN-Al₂O₃</p> <p>Aplicação recomendada: Classe resistente ao desgaste de alto desempenho para usinagem de aço.</p>	

CTCP125 BLACKSTAR™	HC-P25 HC-K30 HC-M20	
	<p>Especificação: Composição: Co 7.0%; carbonetos mistos 8.0%; WC balanceado Tamanho do grão: 1 - 2 μm Dureza: HV₃₀ 1450 Especificação da cobertura: CVD TiCN-Al₂O₃</p> <p>Aplicação recomendada: Primeira escolha para usinagem universal de aços.</p>	


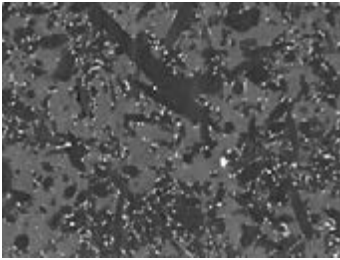

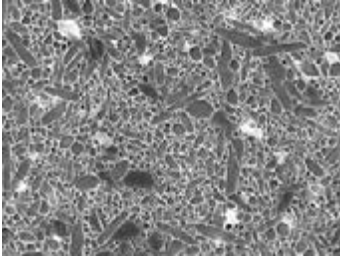

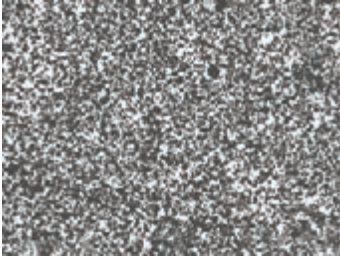

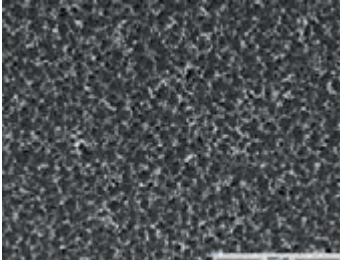
CTCP135 COLORSTAR™	HC-P35 HC-M25 HC-S25	
	<p>Especificação: Composição: Co 9.6%; carbonetos mistos 6.7%; WC balanceado Tamanho do grão: 1 - 2 μm Dureza: HV₃₀ 1460 Especificação da cobertura: CVD TiCN-Al₂O₃ multi-camada</p> <p>Aplicação recomendada: Excelente alternativa para fortes cortes interrompidos.</p>	


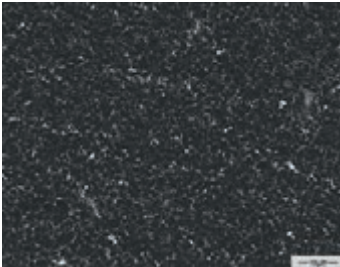
CTPM125 SILVERSTAR™	HC-M25 HC-P35 HC-S25	
	<p>Especificação: Composição: Co 9.6%; carbonetos mistos 7.8%; outros 0.4%; WC balanceado Tamanho do grão: 1 - 2 μm Dureza: HV₃₀ 1460 Especificação da cobertura: PVD TiAlTaN</p> <p>Aplicação recomendada: Primeira escolha para usinagem de aços austeníticos.</p>	



CTC2135	HC-M30 HC-P35 HC-S35	
	<p>Especificação: Composição: Co 9.6%; carbonetos mistos 7.4%; WC balanceado Tamanho do grão: 1 - 2 μm dureza: HV₃₀ 1400 Especificação da cobertura: CVD TiCN-TiNB multi-camada</p> <p>Aplicação recomendada: Classe de torneamento para aplicação em aços inoxidáveis.</p>	



Descrição das classes


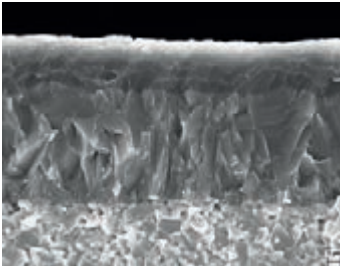
A19

CTI3105	CN-K05 CN-S05	
	<p>Especificação: Composição: α, β Sialon Dureza: HV₁₀ 1900</p> <p>Aplicação recomendada: O Sialon mais duro disponível no mercado; classe de alto desempenho para usinagem de ferro fundido e materiais com base de Ni.</p>	
CTN3105	CN-K05	
	<p>Especificação: Composição: β - Si₃N₄ Tamanho do grão: fino Dureza: HV₁₀ 1620</p> <p>Aplicação recomendada: Classe de silício universal para usinagem de ferro fundido.</p>	
CTS3105	CM-K05 CM-H05	
	<p>Especificação: Composição: Al₂O₃; TiC Tamanho do grão: > 1 μm Dureza: HV₃₀ 2100</p> <p>Aplicação recomendada: Classe de cerâmica mista é utilizada para torneamento em acabamento e torneamento em geral para aços, ferro fundido e rolos fabricados em ferro fundido coquilhado.</p>	
CTBK102	BH-K10 BH-H25	
	<p>Especificação: Composição: nitreto de boro cúbico (CBN) 90 vol.% + fase ligante metálica</p> <p>Aplicação recomendada: Primeira escolha em classe de CBN sólida para usinagem de ferro fundido.</p>	

CTBK104	BH-K10 BH-H25	
	<p>Especificação: Composição: nitreto de boro cúbico (CBN) 90 vol.% + fase ligante metálica</p> <p>Aplicação recomendada: Primeira escolha de classe de CBN sólido para ferro fundido e aços sinterizados em acabamento.</p>	


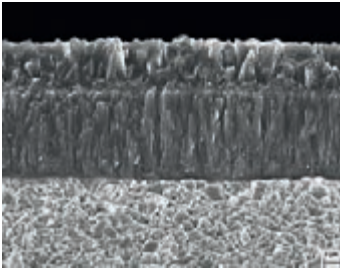

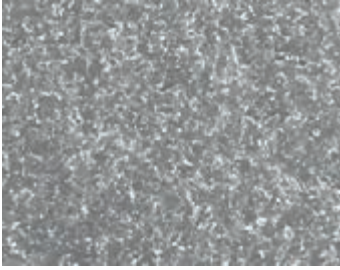

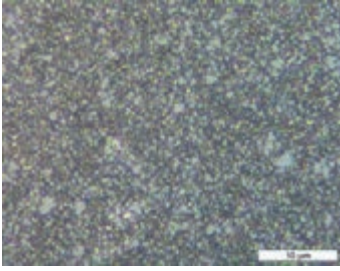

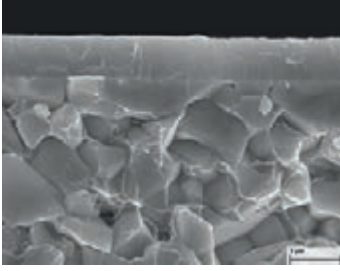
CTM3110	CC-K10	
	<p>Especificação: Composição: Si_3N_4 Tamanho do grão: $> 2 \mu\text{m}$ Dureza: HV_{30} 1550 Especificação da cobertura: CVD Ti (C,N) + TiN; $> 2\mu\text{m}$</p> <p>Aplicação recomendada: Nitreto de silício com cobertura para usinagem de ferro fundido com liga de cromo.</p>	


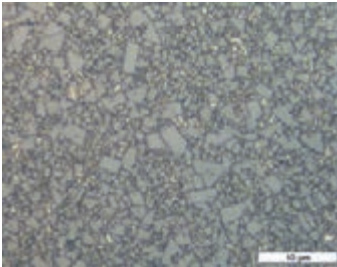
CTN3110	CN-K10	
	<p>Especificação: Composição: Si_3N_4 Tamanho do grão: $> 2 \mu\text{m}$ Dureza: HV_{10} 1500</p> <p>Aplicação recomendada: Classe de nitreto de silício para desbaste de ferro fundido em condições desfavoráveis de usinagem, exemplo: usinagem de rolos de laminação.</p>	


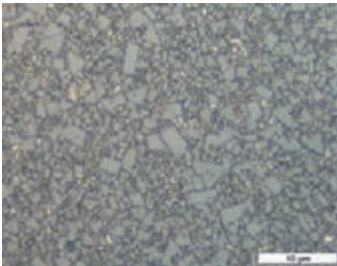
CTC3110	HC-K10 HC-P10	
	<p>Especificação: Composição: Co 6.0%; TaC 2.0%; WC balanceado Tamanho do grão: $1 \mu\text{m}$ Dureza: HV_{30} 1650 Especificação da cobertura: CVD TiCN-Al_2O_3 multi-camada</p> <p>Aplicação recomendada: Classe para usinagem de ferro fundido em altas velocidades de corte.</p>	


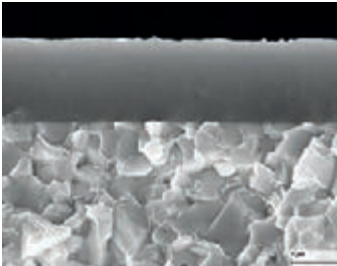
Descrição das classes


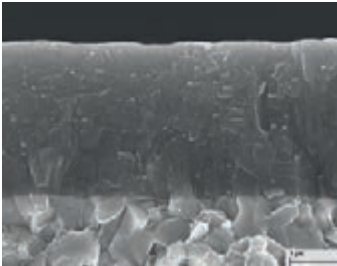
A21


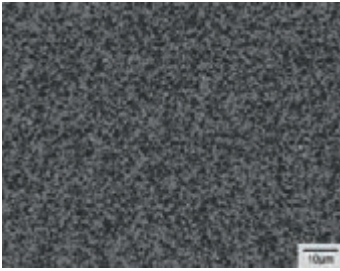
CTCK120 BLACKSTAR™	HC-K20 HC-P10	
	<p>Especificação: Composição: Co 6.0%; TaC 2.0%; WC balanceado Tamanho do grão: 1 μm Dureza: HV₃₀ 1630 Especificação da cobertura: CVD TiCN-Al₂O₃</p> <p>Aplicação recomendada: Classe para usinagem de ferro fundido com reservas de tenacidade alta para difíceis condições e corte interrompido.</p>	
CTD4110	DP-N05	
	<p>Especificação: Composição: Diamante policristalino (PCD) Tamanho do grão: ~ 5 μm</p> <p>Aplicação recomendada: Classe de diamante policristalino para usinagem de metais não ferrosos e materiais não metálicos.</p>	
H210T	HW-N10 HW-S10 HW-K10	
	<p>Especificação: Composição: Co 6.0%; WC balanceado Tamanho do grão: 0.8 μm Dureza: HV₃₀ 1850</p> <p>Aplicação recomendada: Classe de metal duro sem cobertura resistente ao desgaste para a usinagem de alumínio e outros metais não ferrosos.</p>	
AMZ	HC-N10 HC-P10 HC-K10	
	<p>Especificação: Composição: Co 6%; WC balanceado Tamanho do grão: 1 μm Dureza: HV₃₀ 1630 Especificação da cobertura: PVD TiAlN</p> <p>Aplicação recomendada: Classe de metal duro com cobertura para usinagem de alumínio.</p>	

H10T	HW-N15 HW-K15	
	<p>Especificação: Composição: Co 6.0%; WC balanceado Tamanho do grão: 1 μm Dureza: HV₃₀ 1630</p> <p>Aplicação recomendada: Classe de metal duro sem cobertura para usinagem de alumínio e outros metais não ferrosos.</p>	

H216T	HW-N15 HW-K15	
	<p>Especificação: Composição: Co 6.0%; WC balanceado Tamanho do grão: 1 μm Dureza: HV₃₀ 1630</p> <p>Aplicação recomendada: Classe de metal duro sem cobertura para usinagem de alumínio e outros metais não ferrosos.</p>	


CTP5110	HC-S15 HC-M15	
	<p>Especificação: Composição: Co 6.0%; WC balanceado Tamanho do grão: 0.8 μm Dureza: HV₃₀ 1820 Especificação da cobertura: PVD TiAlN</p> <p>Aplicação recomendada: Alternativa na usinagem de materiais resistentes ao calor.</p>	

CTP5115	HC-S15 HC-M15	
	<p>Especificação: Composição: Co 6.0%; WC balanceado Tamanho do grão: 0.8 μm Dureza: HV₃₀ 1820 Especificação da cobertura: PVD TiAlN-TiN</p> <p>Aplicação recomendada: Primeira escolha para usinagem de materiais resistentes ao calor.</p>	

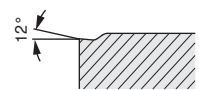
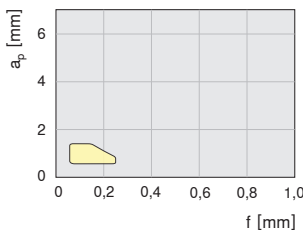
CTL6115	BC-H15	
	<p>Especificação: Composição: nitreto de boro cúbico (CBN) 50 Vol.% + fase ligante cerâmica Especificação da cobertura: PVD TiAlN</p> <p>Aplicação recomendada: Primeira escolha para usinagem de aço temperado em corte contínuo e corte levemente interrompido.</p>	

-CF20




- o Cermet: quebra cavaco para acabamento
- o Alto acabamento superficial
- o Bom controle de cavaco em baixas profundidades de corte
- o Baixas forças de corte



CNMG 120408..





Condições de usinagem

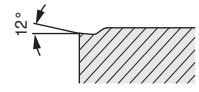
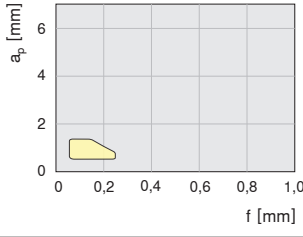
			
	CTEP110		
	CTEP110		
	CTEP110		

-CF




- o Cermet: quebra cavaco para acabamento fino
- o Alto acabamento superficial
- o Bom controle de cavaco em baixas profundidades de corte
- o Baixas forças de corte



CNMG 120408..





Condições de usinagem

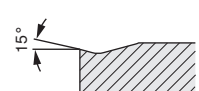
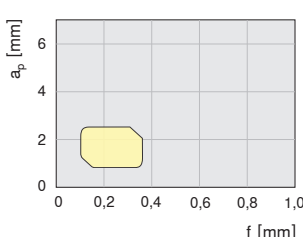
			
	TCM10		
	TCM10		
	TCM10		

-F30




- o Acabamento de aço inoxidável
- o Corte contínuo
- o Alto acabamento superficial
- o Bom controle de cavaco



CNMG 120408..





Condições de usinagem

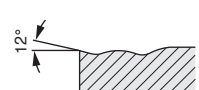
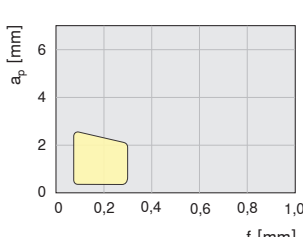
			
	CTPM125	CTPM125	
	CTPM125	CTPM125	

-TF




- o O melhor quebra cavaco para aço
- o Acabamento / torneamento de perfil
- o Bom controle de cavaco
- o Alto acabamento superficial
- o Baixas forças de corte




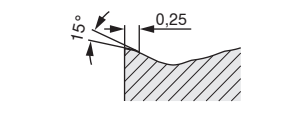



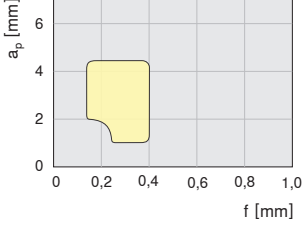
CNMG 120408..

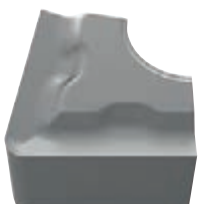
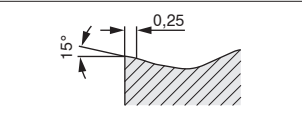



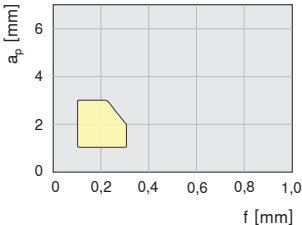




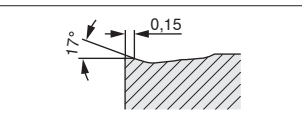



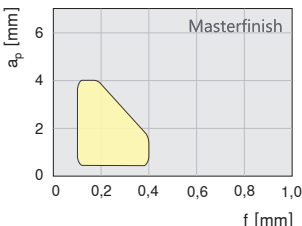
Condições de usinagem


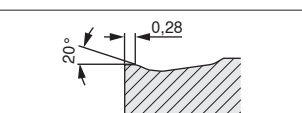



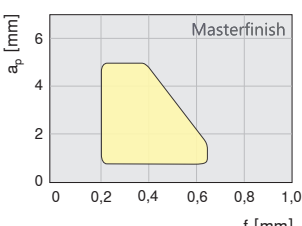
			
	CTCP115	CTCP125	CTCP135
	CTCP125	CTCP135	CTCP135
	CTCP125	CTCP125	CTCP125
	CTCP125	CTCP135	

Quebra cavacos para pastilhas negativas

-M30			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Primeira escolha para usinagem de aço inoxidável ○ Bom controle de cavaco ○ Pouca formação de rebarbas ○ Baixas forças de corte ○ Redução de aresta postiça ○ Indicado para máquinas instáveis 	CNMG 120408..		CTPM125	CTPM125	CTPM125
			CTPM125	CTPM125	CTPM125
				CTPM125	


-M34			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Primeira escolha para super ligas ○ Geometria de corte leve ○ Redução de aresta postiça ○ Baixas forças de corte 	CNMG 120408..				
			CTP5110 CTP5115	CTP5115	
			CTP5110 CTP5115	CTP5110 CTP5115	

-TFQ			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Geometria Masterfinish ○ Acabamento para média usinagem ○ Altos avanços ○ Alto acabamento superficial 	CNMG 120408..		CTCP115 CTEP110	CTCP125	
			CTEP110	CTCP125	
			CTEP110		

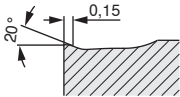
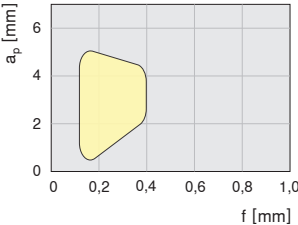
-TMQ			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Geometria Masterfinish ○ Desbaste leve para médio ○ Altos avanços ○ Alto acabamento superficial 	CNMG 120408..		CTCP115	CTCP125	
			CTCP115	CTCP125	
			CTCP115	CTCP125	




-TMF

- o Acabamento a média usinagem
- o Cavaco longo e aço macio
- o Bom controle de cavaco
- o Perfilamento




CNMG 120408..

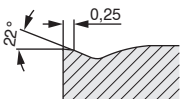
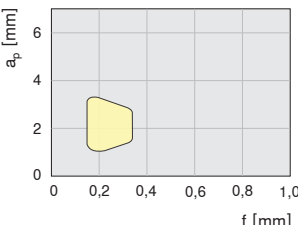
Condições de usinagem		
		
CTCP115	CTCP125	CTCP135
CTCP125	CTCP135	CTCP135
	CTCK120	
CTCP135		




-TM

- o Usinagem média
- o Quebra cavaco universal




CNMG 120408..

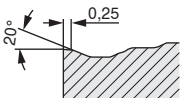
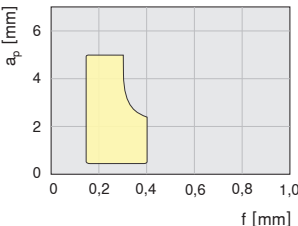
Condições de usinagem		
		
CTCP115	CTCP125	CTCP135
CTCP125	CTCP135	CTC2135
	CTCK120	
CTC2135	CTC2135	




-M50

- o Usinagem média
- o Primeira escolha para usinagem em aço
- o Aplicação universal




CNMG 120408..

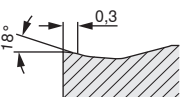
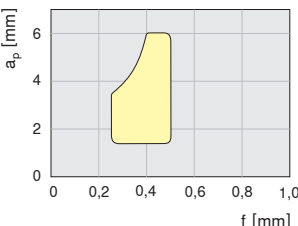
Condições de usinagem		
		
CTCP115	CTCP125	CTCP135
CTCP115	CTCP135	CTCP135
	CTCP125	CTCP125




-M60

- o Desbaste leve para médio
- o Aresta de corte estável
- o Corte interrompido
- o Crostas em peças fundidas ou forjadas


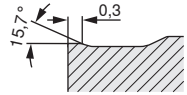



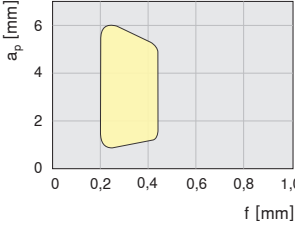



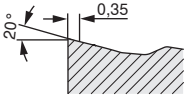



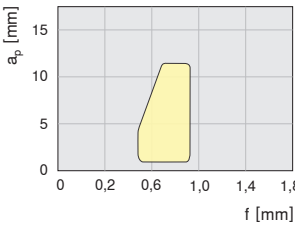
CNMG 120408..


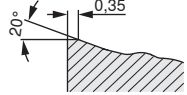



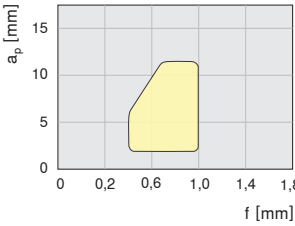




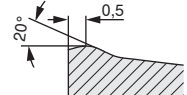



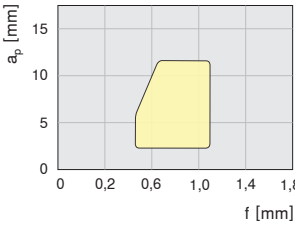
Condições de usinagem		
		
CTPM125	CTPM125	CTPM125
CTPM125	CTPM125	CTPM125
	CTPM125	CTPM125

Quebra cavacos para pastilhas negativas

-M70			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Desbaste leve para médio ○ Crostas em peças fundidas ou forjadas ○ Aresta de corte estável ○ Corte interrompido ○ Para blanques e peças forjadas 	CNMG 120408..		CTCP115	CTCP125	CTCP135
			CTCP125	CTC2135	CTC2135
			CTC3110 CTCP115	CTCK120	CTCP125


-R28			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Geometria de desbaste somente de um lado ○ Torneamento longitudinal e em face, perfilamento ○ Inconsistentes profundidades de corte ○ Para aços de altas resistências (800 N/mm²) ○ Bom controle de cavaco 	CNMM 190616..		CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP125

-R58			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Geometria de desbaste somente de um lado ○ Torneamento longitudinal e em face ○ Corte ligeiramente interrompido ○ Baixas forças de corte ○ Máquinas instáveis 	CNMM 190616..		CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP125

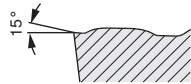
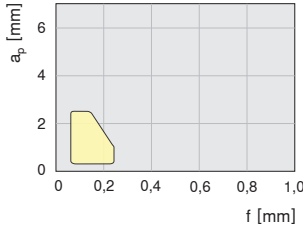
-R88			Condições de usinagem		
					
<ul style="list-style-type: none"> ○ Geometria de desbaste somente de um lado ○ Torneamento longitudinal e em face ○ Altos avanços ○ Grandes profundidades de corte ○ Corte fortemente interrompido 	CNMM 190616..		CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP135
			CTCP115	CTCP115 CTCP125	CTCP125

-CF05




- Cermet: classe para acabamento fino (periferia da pastilha retificada)
- Bom controle de cavaco
- Alto acabamento superficial
- Baixas forças de corte



CCGT 09T308..





Condições de usinagem

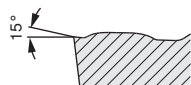
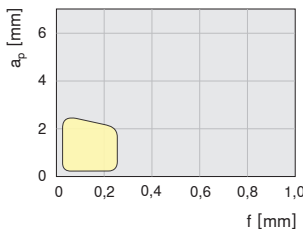
			
	CTEP110		
	CTEP110		
	CTEP110		

-SF




- Acabamento, torneamento de perfil
- Bom controle de cavaco
- Alto acabamento superficial
- Baixas forças de corte



CCGT 09T308..





Condições de usinagem


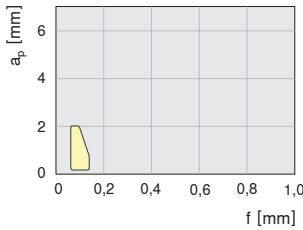
			
	CTCP115 TCM407	CTCP125 TCM10	CTCP135
	CTCP125	CTC2135	CTC2135
		CTCP125	CTCP125
	CTCP125	CTCP125	

-F23




- A melhor geometria para acabamento (periferia da pastilha retificada)
- Excelente acabamento superficial
- Boa repetibilidade
- Baixa profundidade de corte



CCGT 09T308..





Condições de usinagem

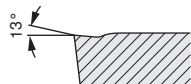
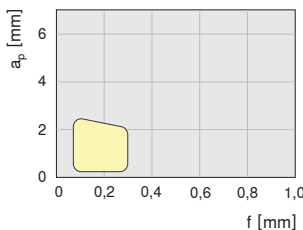
			
	CTP2120	CTP2120	
	CTP2120		
	CTP2120		
	CTP2120		

-CF55




- Cermet: usinagem de acabamento para média
- Baixas forças de corte
- Bom controle de cavaco
- Excelente acabamento superficial



CCMT 09T308..

Condições de usinagem

			
	CTEP110		
	CTEP110		
	CTEP110		

Quebra cavacos para pastilhas positivas

-SMF			Condições de usinagem		
<ul style="list-style-type: none"> ○ Acabamento em usinagem média ○ Baixas forças de corte ○ Bom controle de cavaco ○ Excelente acabamento superficial 	CCMT 09T308..		CTCP115 TCM10	CTCP125 TCM10	CTCP125
			CTCP125	CTCP135	CTCP135
			CTCP115		


-SM			Condições de usinagem		
<ul style="list-style-type: none"> ○ Usinagem média ○ Aplicação universal ○ Aresta de corte estável ○ Inconsistentes profundidades de corte ○ Ampla gama de aplicações 	CCMT 09T308..		CTCP115	CTCP125	CTCP135
			CTCP125	CTC2135	CTC2135
			CTC3110	CTCK120	CTCK120

-SMQ			Condições de usinagem		
<ul style="list-style-type: none"> ○ Geometria positiva Masterfinish ○ Acabamento em usinagem média ○ Altos avanços ○ Excelente acabamento superficial 	CCMT 09T308..		CTCP115	CTCP125	
			CTCP115	CTCP125	
			CTCP115	CTCP125	

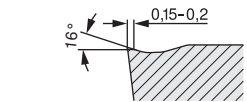
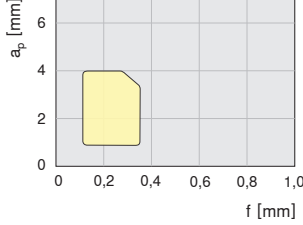
-M25			Condições de usinagem		
<ul style="list-style-type: none"> ○ Primeira escolha para acabamento em usinagem média de aço inoxidável ○ Corte liso ○ Excelente acabamento superficial ○ Redução de aresta postiça 	CCMT 09T308..				CTPM125
				CTPM125	CTPM125
			CTPM125	CTPM125	

-M55

- o Primeira escolha em desbaste médio de aço inoxidável
- o Corte contínuo ou levemente interrompido
- o Bom controle de cavaco
- o Aresta de corte estável




CCMT 09T308..

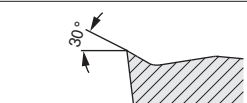
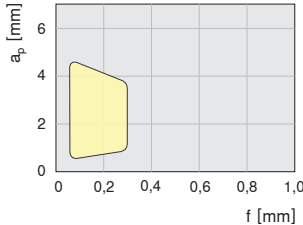
Condições de usinagem		
		CTPM125
	CTPM125	CTPM125
CTPM125	CTPM125	

-23P

- o Diminuição da adesão
- o Bom controle de cavaco para ligas de alumínio macio




CCGT 09T308..

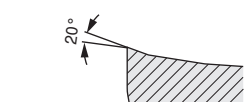
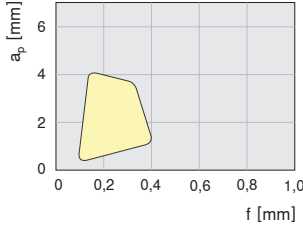
Condições de usinagem		
H216T	H216T	H216T

-25P

- o Aresta de corte afiada
- o Bom controle de cavaco para ligas de alumínio macio
- o Diminuição da adesão



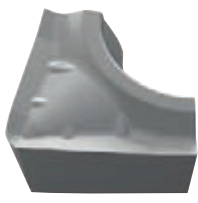
CCGT 09T308..

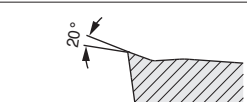
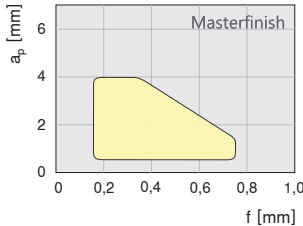
Condições de usinagem		
AMZ	AMZ	
AMZ	AMZ	
AMZ	AMZ	
H210T	H210T	H210T
AMZ	AMZ	

-25Q

- o Geometria Masterfinish
- o Altos avanços
- o Excelente acabamento superficial
- o Bom controle de cavaco para ligas de alumínio macio
- o Diminuição da adesão



CCGT 09T308..





Condições de usinagem		
H210T		
H210T	H210T	
H210T	H210T	
H210T	H210T	H210T
H210T	H210T	

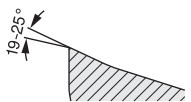
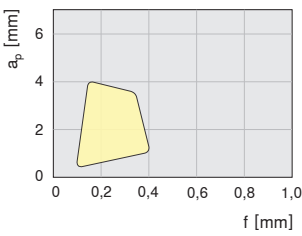
Quebra cavacos para pastilhas positivas




-27

- o Geometria universal para alumínio
- o Aresta de corte afiada
- o Ângulo de saída extremamente positivo
- o Diminuição da adesão
- o Altos avanços




CCGT 09T308..

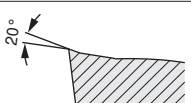
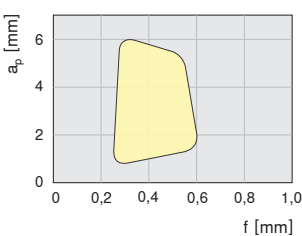
Condições de usinagem		
		
AMZ	AMZ	
AMZ	AMZ	
AMZ	AMZ	H10T
H10T	H10T	H10T




-29





- o Geometria para alumínio, contorno externo não retificada
- o Ângulo de saída positivo
- o Bom controle de cavaco
- o Usinagem média para desbaste

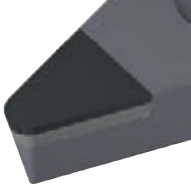









CCMT 09T308..

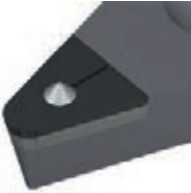






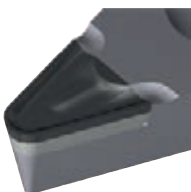


Condições de usinagem		
		
AMZ	AMZ	
AMZ	AMZ	
AMZ	AMZ	
H216T	H216T	H216T
AMZ	AMZ	

<p>-24P</p> <ul style="list-style-type: none"> o Para usinagem de alumínio forjado com menos de 1% de silício, metais não ferrosos, plásticos e metais refratários o Usinagem média e desbaste o Bom controle de cavaco e uma vasta gama de aplicações 		Condições de usinagem		
				
		H210T, H216T	H210T, H216T	H210T, H216T

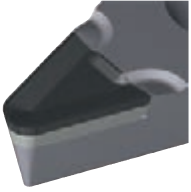



<p>-F4</p> <ul style="list-style-type: none"> o Segmento de PCD sem quebra cavaco o Adequado principalmente para corte interrompido o Tipos de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 		Condições de usinagem		
				
		CTD4110	CTD4110	CTD4110





<p>-F41</p> <ul style="list-style-type: none"> o Segmento de PCD o Quebra cavaco para bom controle de cavaco e pequena profundidade de corte o Tipos disponíveis de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 		Condições de usinagem		
				
		CTD4110	CTD4110	CTD4110





<p>-M4</p> <ul style="list-style-type: none"> o Segmento de PCD com pino de metal duro para melhor controle do cavaco em grandes profundidades de corte o Tipos disponíveis de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 		Condições de usinagem		
				
		CTD4110	CTD4110	CTD4110





<p>-M41</p> <ul style="list-style-type: none"> o Segmento de PCD com comprovado quebra cavaco M41 o Quebra cavaco otimizado para baixa pressão de corte e formador ideal de cavaco o Tipos disponíveis de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 		Condições de usinagem		
				
		CTD4110	CTD4110	CTD4110





Quebra cavacos para usinagem de rodas de alumínio





-R41		Condições de usinagem		
				
<ul style="list-style-type: none"> o Segmento de PCD com quebra cavaco R41 o Geometria de desbaste de até 4mm de profundidade o Tipos disponíveis de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 				
		CTD4110	CTD4110	CTD4110





-U41		Condições de usinagem		
				
<ul style="list-style-type: none"> o Segmento de PCD com quebra cavaco U41 o Quebra cavaco universal com bom controle de cavaco tanto para pequena e grande profundidade o Tipos disponíveis de preparação de aresta: afiada (F), arredondada (E), chanfrada (T) de acordo com o sistema de designação ISO 				
		CTD4110	CTD4110	CTD4110

<p>-M23</p> <ul style="list-style-type: none"> o Geometria de corte suave com excelente controle de cavaco para pequenas profundidades de corte em operações de acabamento 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125





<p>-R23</p> <ul style="list-style-type: none"> o Para alto acabamento superficial em operações de corte contínuo 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125

<p>-R53</p> <ul style="list-style-type: none"> o Geometria de corte suave com um ângulo de saída muito positiva em combinação com uma fase estável o Para torneamento médio 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125





<p>-R70</p> <ul style="list-style-type: none"> o Geometria de desbaste para usinagem de rodas ferroviárias o Geometria estável para longa vida da ferramenta o Muito bom controle de cavaco 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125





<p>-R71</p> <ul style="list-style-type: none"> o Geometria de acabamento para usinagem de rodas ferroviárias o Corte muito suave para alto acabamento superficial o Quebra cavaco especial para bom controle de cavaco - cavacos pequenos - a uma velocidade de corte baixa 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125





Quebra cavacos para usinagem de rodas ferroviárias





-R74 o Geometria universal para usinagem de rodas ferroviárias o Para corte suave, cavaco pequeno		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125





-R83 o Geometria para alta taxa de avanço e grande profundidade de corte bem como a tolerância do forjado variável o Muito bom controle de cavaco		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP125

<p>-11</p> <ul style="list-style-type: none"> o Para perfil de acabamento o Em aços gerais, aços inoxidáveis e ferro fundido o Aplicação em máquinas de baixa potência 		Condições de usinagem		
				
			CTCP125	CTCP135

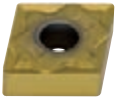



<p>-12</p> <ul style="list-style-type: none"> o Para perfilamento no intervalo médio o Em aços gerais, aços inoxidáveis e ferro fundido 		Condições de usinagem		
				
			CTCP125	CTCP135





<p>-EN</p> <ul style="list-style-type: none"> o Quebra cavaco universal para usinagem de aços em geral 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP135
		CTCP125	CTCP135	CTCP135
		CTC3110	CTCK120	CTCP125





<p>-ER/EL</p> <ul style="list-style-type: none"> o Solucionador de problemas para condições instáveis o Adequado para máquinas de baixa potência o Para aços em geral, apropriado como aplicação em aços inoxidáveis 		Condições de usinagem		
				
			CTCP125	CTCP135





<p>-F32</p> <ul style="list-style-type: none"> o Para acabamento de aços inoxidáveis o Aplicação para aços em geral e super ligas 		Condições de usinagem		
				
		CTP2120	CTP2120	
		CTP2120		
		CTP2120	CTP2120	
		CTP2120		

Quebra cavacos adicionais





-F34 ○ Estável, aresta de corte positiva ○ Também para corte ligeiramente interrompido		Condições de usinagem		
				
		CTP5115	CTP5115	
		CTP5115	CTP5115	





-F43 ○ Para acabamento e média usinagem em todos os aços inoxidáveis, aços em geral e super ligas		Condições de usinagem		
				
		CTC2135	CTC2135	CTC2135





-M42 ○ Para média usinagem em aços inoxidáveis ○ Aplicação em aços em geral e super ligas		Condições de usinagem		
				
		CTP2120	CTC2135	CTC2135

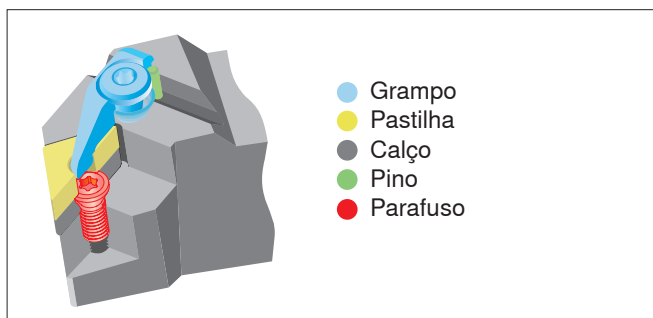
-M52 ○ Geometria universal para a usinagem de aços inoxidáveis ○ Aplicação em aços em geral e super ligas		Condições de usinagem		
				
		CTP2120	CTP2120	
		CTP2120	CTP2120	CTP2120
		CTP2120		

-R80 ○ Geometria de desbaste somente de um lado ○ Aços rolamentos ○ Crostas em peças fundidas ou forjadas		Condições de usinagem		
				
		CTCP125	CTCP125	CTCP125
		CTCP125	CTCP125	CTCP125

<p>-TR</p> <ul style="list-style-type: none"> o Desbaste leve a médio o Aços com alta resistência (>800 N/mm²) o Bom controle de cavaco o Corte interrompido 		Condições de usinagem		
				
		CTCP125	CTCP125	CTCP125
		CTCP125	CTCP125	CTCP125
		CTCP125	CTCP125	CTCP125

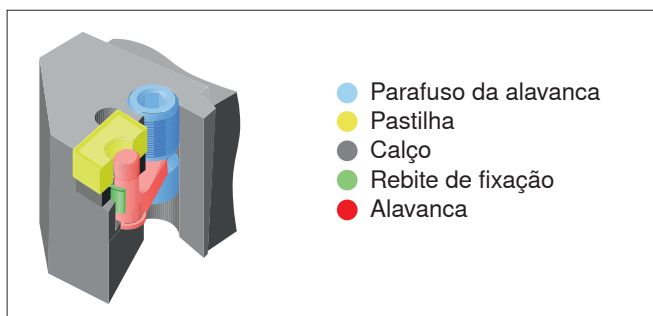
<p>-TRM</p> <ul style="list-style-type: none"> o Desbaste leve a médio o Aços rolamentos o Crostas em peças fundidas ou forjadas o Corte ligeiramente interrompido 		Condições de usinagem		
				
		CTCP115	CTCP125	CTCP135
		CTCP125	CTCP135	CTCP135
		CTCP125	CTCP135	

<p>-TRR</p> <ul style="list-style-type: none"> o Desbaste leve a médio o Aços com baixa resistência (300-800 N/mm²) o Materiais de cavacos longos o Corte interrompido 		Condições de usinagem		
				
		CTCP125	CTCP125	CTCP125
		CTCP125	CTCP125	CTCP125
		CTCP125	CTCP125	



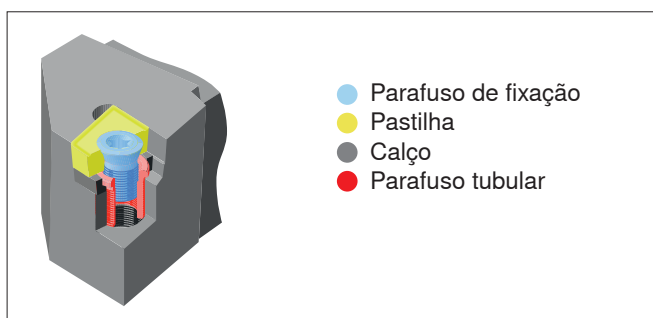
MaxiLock D

Primeira escolha para usinagem com pastilha negativa com furo. **Posicionamento preciso e seguro** da pastilha através **duplo efeito da fixação**.



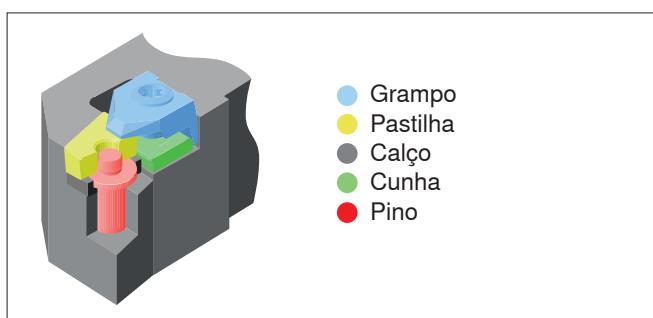
MaxiLock N

O sistema de fixação é adequado para todas as pastilhas negativas com furos. O acionamento do parafuso de fixação pode ser facilmente localizado tanto do lado superior quanto de lado inferior da ferramenta. Na posição de destravamento os elementos permanecem intactos.



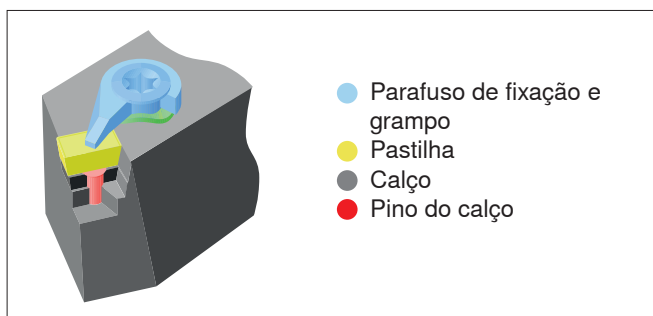
MaxiLock S

A forma do parafuso de fixação garante uma fixação segura da pastilha na ferramenta. A evacuação dos cavacos não é obstruída por elementos de fixação. Devido à posição da pastilha neutra o ângulo de saída é idêntico à forma e geometria da pastilha.




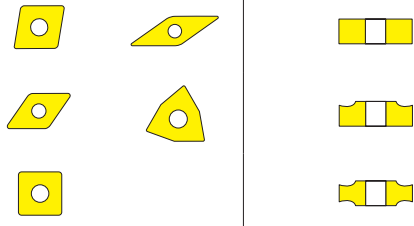

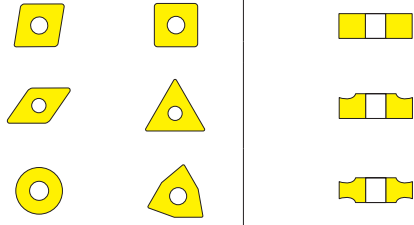

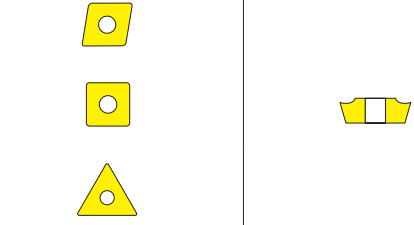

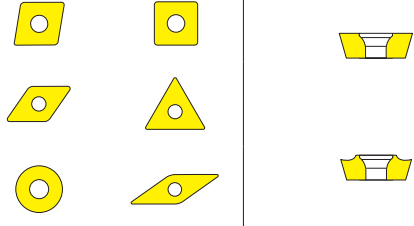

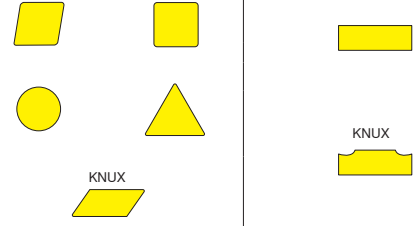

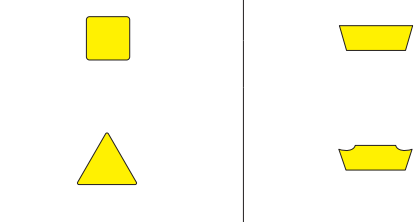
MaxiLock P

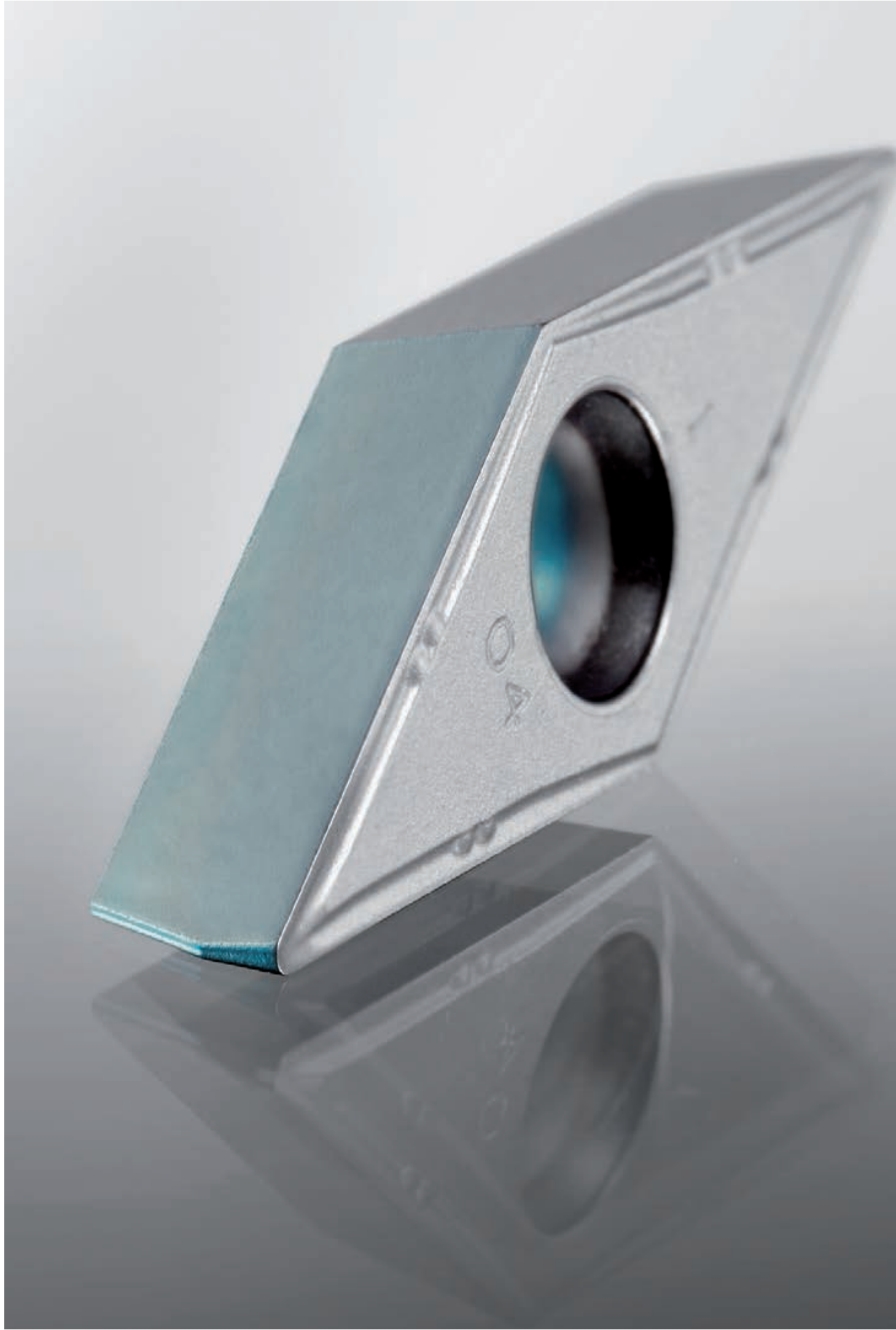
A pastilha com ângulo de folga de 7° e um furo cilíndrico é fixada com uma cunha e grampo contra um pino de fixação. Até 3 arestas de corte podem ser utilizadas (1 suporte de face).



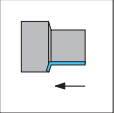
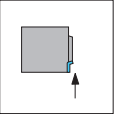
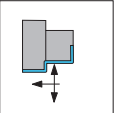
Simplex N / P

O testado e experimentado sistema de fixação CERATIZIT Simplex é caracterizado pela sua simplicidade. A pastilha é fixada por meio de um grampo. Não é adequado para cortes em retorno.

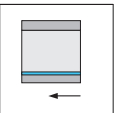
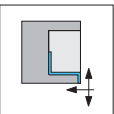
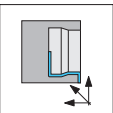
Sistema de fixação	Profundidade de corte / avanço (mm)						Perfil da pastilha	Formato da pastilha na superfície superior
	a_p		f		a_p			
	0,3 - 2,0		0,08 - 0,25		2,0 - 6,0			
	0,08 - 0,25		0,2 - 0,6		5,0 - 15,0			
MaxiLock D 	✓	✓	✓					
MaxiLock N 	✓	✓	✓					
MaxiLock P 			✓					
MaxiLock S 	✓	✓						
Simplex N 			✓					
Simplex P 	✓	✓						



Usinagem externa

	Torneamento longitudinal	A43-A47
	Torneamento de face	A48-A50
	Torneamento longitudinal/ face	A51
	Torneamento de perfil	A52-A54


Usinagem interna

	Mandrilamento	A55
	Mandrilamento e tornea- mento de face	A56-A57
	Torneamento de perfil	A58-A59

Usinagem externa

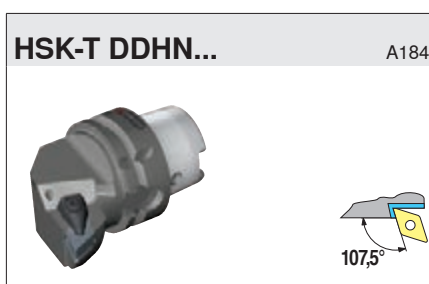
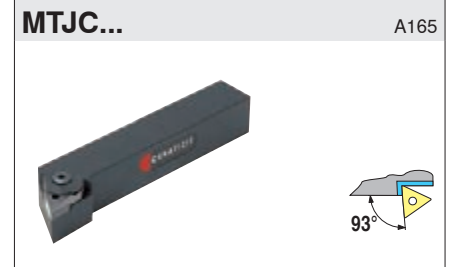
Torneamento longitudinal

DCBN... A109	DDJN... A112	DSBN... A113
DSDN... A114	DSSN... A116	DTJN... A117
DVJN... A118	DVVN... A119	PCBN... A121
PDJN... A124	PDNN... A125	PRDC... A126
PSBN... A128	PSDN... A129	PSSN... A131
PTGN... A133	PTTN... A134	SCAC... A136

<p>SCDC... A137</p> 	<p>SCMC... A140</p> 	<p>SCRC... A141</p> 
<p>SCSC... A142</p> 	<p>SDAC... A143</p> 	<p>SDJC... A145</p> 
<p>SDNC... A146</p> 	<p>SRDC... A147</p> 	<p>SRGC... A148</p> 
<p>SSBC... A149</p> 	<p>SSDC... A150</p> 	<p>SSSC... A152</p> 
<p>STAC... A153</p> 	<p>STGC... A156</p> 	<p>SVHC... A157</p> 
<p>SVJC... A158</p> 	<p>SVVC... A159</p> 	<p>SVZC/SVZP... A160</p> 

Usinagem externa

Torneamento longitudinal



HSK-T DSDN... A188




45°

HSK-T DCMN... A182




50°

HSK-T DDMN... A186



48°

HSK-T DVMN... A189




50°

HSK-T PRDC... A191




90°

HSK-T SDJC... A195



93°

HSK-T SVHC... A197




107,5°

HSK-T SVJC... A198



93°

HSK-T SCMC... A194



50°

HSK-T SDMC... A196




48°

HSK-T SVMC... A199



50°

UTS PDJN... A202



93°

UTS PDNN... A203



63°

UTS PRDC... A205



90°

UTS PSBN... A207



75°

UTS PSDN... A208



45°

UTS PSSN... A210



45°

UTS PTGN... A212



90°

Usinagem externa

Torneamento longitudinal

UTS SDHC...

A215



UTS SDJC...

A216



UTS SDNC...

A217



UTS SRDC...

A220



UTS SRGC...

A221



UTS SSDC...

A150



UTS SSSC...

A224



UTS SVHC...

A225



UTS SVJC...

A226



UTS SVVC...

A227



<p>DCKN... A110</p> 	<p>DSKN... A115</p> 	<p>DSSN... A116</p> 
<p>PCKN... A122</p> 	<p>PDJN... A124</p> 	<p>PRGC... A127</p> 
<p>PSKN... A130</p> 	<p>PSSN... A131</p> 	<p>PTFN... A132</p> 
<p>PTTN... A134</p> 	<p>SCFC... A138</p> 	<p>SCSC... A142</p> 
<p>SDHC... A144</p> 	<p>SDJC... A145</p> 	<p>SRGC... A148</p> 
<p>SSKC... A151</p> 	<p>SSSC... A152</p> 	<p>STCC... A154</p> 

Usinagem externa

Torneamento de face

<p>STFC... A155</p> 	<p>SVHC... A157</p> 	<p>MCLC... A161</p> 
<p>MSSC... A162</p> 	<p>MTFC... A163</p> 	<p>CCLN... A167</p> 
<p>CRGN... A170</p> 	<p>CTFN... A174</p> 	<p>CTRN... A176</p> 
<p>CTFP... A178</p> 	<p>CTSP... A180</p> 	<p>HSK-T DDHN... A184</p> 
<p>HSK-T DDUN... A187</p> 	<p>HSK-T PRSC... A192</p> 	<p>HSK-T SVHC... A197</p> 
<p>HSK-T SVUC... A200</p> 	<p>UTS PDJN... A202</p> 	<p>UTS PDUN... A204</p> 

UTS PRGC...

A206



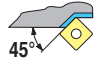
UTS PSKN...

A209



UTS PSSN...

A210



UTS PTFN...

A211



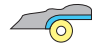
UTS SDUC...

A218



UTS SRGC...

A221



UTS SSKC...

A223



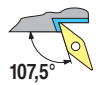
UTS SSSC...

A224



UTS SVHC...

A225



UTS SDXC...

A219



Usinagem externa

Torneamento longitudinal e face

DCLN...

A111



DWLN...

A120



PCLN...

A123



PWLN...

A135



SCLC...

A139



HSK-T DCLN...

A181



HSK-T DWLN...

A190



HSK-T SCLC...

A193



UTS PCLN...

A201



UTS PWLN...





A213



UTS SCLC...

A214



<p>DDJN... A112</p> 	<p>DTJN... A117</p> 	<p>DVJN... A118</p> 
<p>DVVN... A119</p> 	<p>PDJN... A124</p> 	<p>PDNN... A125</p> 
<p>PRDC... A126</p> 	<p>PRGC... A127</p> 	<p>PTTN... A134</p> 
<p>SCDC... A137</p> 	<p>SCMC... A140</p> 	<p>SDAC... A143</p> 
<p>SDHC... A144</p> 	<p>SDJC... A145</p> 	<p>SDNC... A146</p> 
<p>SRDC... A147</p> 	<p>SRGC... A148</p> 	<p>SVHC... A157</p> 

Usinagem externa

Torneamento de perfil

<p>SVJC... A158</p> 	<p>SVVC... A159</p> 	<p>SVZC/SVZP... A160</p> 
<p>MTJC... A165</p> 	<p>MTNC... A166</p> 	<p>CKJN... A168</p> 
<p>CRDN... A169</p> 	<p>CRGN... A170</p> 	<p>HSK-T DDHN... A184</p> 
<p>HSK-T DDJN... A185</p> 	<p>HSK-T DDUN... A187</p> 	<p>HSK-T DDMN... A186</p> 
<p>HSK-T DVMN... A189</p> 	<p>HSK-T PRDC... A191</p> 	<p>HSK-T PRSC... A192</p> 
<p>HSK-T SDJC... A195</p> 	<p>HSK-T SVHC... A197</p> 	<p>HSK-T SVJC... A198</p> 

HSK-T SVUC...

A200



HSK-T SCMC...

A194



HSK-T SDMC...

A196



HSK-T SVMC...

A199



UTS PDJN...

A202



UTS PDNN...

A203



UTS PDUN...

A204



UTS PRDC...

A205



UTS PRGC...

A206



UTS SDHC...

A215



UTS SDJC...

A216



UTS SDNC...

A217



UTS SDUC...

A218



UTS SRDC...

A220



UTS SRGC...

A221



UTS SVHC...

A225



UTS SVJC...

A226



UTS SVVC...

A227



Usinagem interna

Torneamento interno

DSKN...

A230



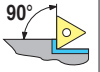
PSKN...

A234



PTFN...

A235



SCFC...

A237



SDXC...

A243



SSKC...

A244



SSSC...

A245



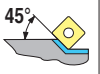
STFC...

A246



MSSC...

A251



CRSN...

A253



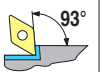
CTFP...

A254



UTS SDXC...

A266



UTS SSKC...

A267



UTS PSKN...

A209



Usinagem interna

Torneamento interno e face

A56

DCLN...

A228



DWLN...

A231



PCLN...

A232



PWLN...

A236



SCLC...

A238



CRSN...

A253



UTS PCLN...

A261



UTS PWLN...

A263



UTS SCLC...

A264



UTS PCLN...

A201



UTS PDJN...

A202



UTS PTFN...

A211



UTS PWLN...

A213



UTS SCLC...

A214



UTS SDHC...

A215



UTS SDJC...

A216



HSK-T DCLN...

A255



HSK-T DWLN...

A257



Usinagem interna

Torneamento interno e face

HSK-T SCLC...

A258



HSK-T DCLN...

A181



HSK-T DWLN...

A190



HSK-T DDJN...

A185



HSK-T DCMN...

A182



HSK-T SCLC...

A193



HSK-T SDJC...

A195



HSK-T SVJC...

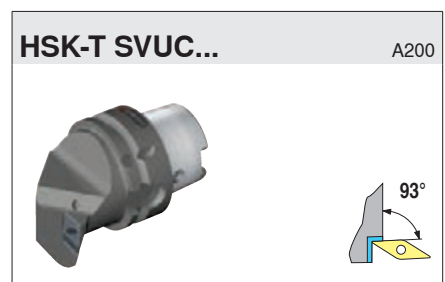
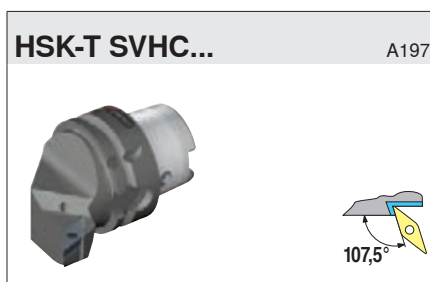
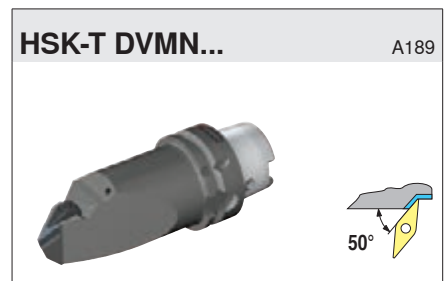
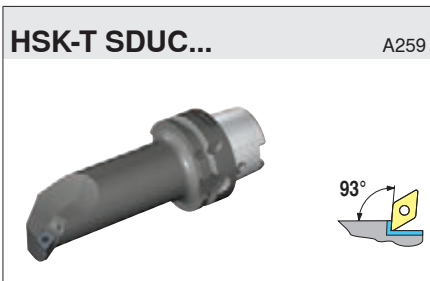
A198



HSK-T SCMC...

A194





Usinagem interna

Torneamento de perfil

HSK-T SDMC...

A196



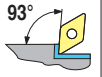
HSK-T SVMC...

A199



UTS PDUN...

A262



UTS SDUC...

A265



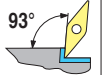
SVQC...

A268



SVUC...

A269



UTS PDUN...

A204



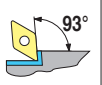
UTS SDUC...

A218










UTS SDXC...

A219






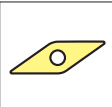




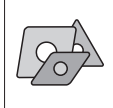
MaxiLock D/N

	80°	A63-A66
	55°	A67-A69
	90°	A70-A72
	60°	A73-A75
	35°	A76
	80°	A77-A78
	Outras / conjunto de rodas ferroviárias	A79-A81


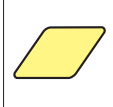
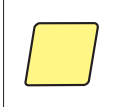

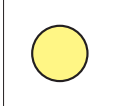
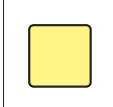

MaxiLock S

	80°	A82-A84
	55°	A85-A86
	0°	A87
	90°	A88
	60°	A89
	35°	A90-A91


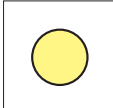
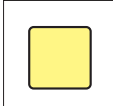

MaxiLock S

	Outras	A92
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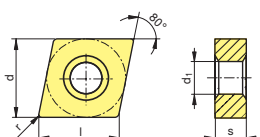
Simplex N

	80°	A97
	55°	A98
	75°	A98
	90°	A98
	0°	A99
	90°	A100
	60°	A101

Simplex P

	55°	A102
	0°	A103
	90°	A104
	60°	A105

		P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115	d	l	s	r	d _i		
		●	○	○	○	○	○														[mm]	[mm]	[mm]	[mm]	[mm]		
-TMF										●	●	●										12,70	12,90	4,76	0,40	5,16	
	CNMG 120404EN-TMF CNMG 120408EN-TMF									●	●	●										12,70	12,90	4,76	0,80	5,16	
-M42														●		●							12,70	12,90	4,76	0,40	5,16
	CNMG 120404EN-M42 CNMG 120408EN-M42													●		●						12,70	12,90	4,76	0,80	5,16	
	CNMG 120412EN-M42														●							12,70	12,90	4,76	1,20	5,16	
-M52														●									12,70	12,90	4,76	0,40	5,16
	CNMG 120404EN-M52 CNMG 120408EN-M52													●								12,70	12,90	4,76	0,80	5,16	
	CNMG 120412EN-M52														●							12,70	12,90	4,76	1,20	5,16	
-M50										●	●	●											12,70	12,90	4,76	0,40	5,16
	CNMG 120404EN-M50 CNMG 120408EN-M50									●	●	●										12,70	12,90	4,76	0,80	5,16	
	CNMG 120412EN-M50 CNMG 120416EN-M50										●	●										12,70	12,90	4,76	1,20	5,16	
	CNMG 160608EN-M50 CNMG 160612EN-M50										●	●										15,88	16,10	6,35	0,80	6,35	
	CNMG 160616EN-M50										●	●										15,88	16,10	6,35	1,20	6,35	
											●	●											12,70	12,90	4,76	0,40	5,16
											●	●											12,70	12,90	4,76	0,80	5,16
-TM										●	●	●							●				9,52	9,70	3,18	0,80	3,81
	CNMG 090308EN-TM CNMG 120408EN-TM									●	●	●							●			12,70	12,90	4,76	0,80	5,16	
	CNMG 120412EN-TM CNMG 120416EN-TM										●	●							●			12,70	12,90	4,76	1,20	5,16	
	CNMG 160608EN-TM CNMG 160612EN-TM										●	●										15,88	16,10	6,35	0,80	6,35	
	CNMG 160616EN-TM CNMG 190612EN-TM										●	●										15,88	16,10	6,35	1,20	6,35	
	CNMG 190616EN-TM										●	●										19,05	19,30	6,35	1,20	7,94	
											●	●										19,05	19,30	6,35	1,60	7,94	
											●	●											12,70	12,90	4,76	0,80	5,16
-TMQ										●	●												12,70	12,90	4,76	0,80	5,16
	CNMG 120408EN-TMQ CNMG 120412EN-TMQ									●	●											12,70	12,90	4,76	1,20	5,16	
-TRM										●	●	●											12,70	12,90	4,76	0,80	5,16
	CNMG 120408EN-TRM CNMG 120412EN-TRM									●	●	●										12,70	12,90	4,76	1,20	5,16	
	CNMG 120416EN-TRM CNMG 160612EN-TRM										●	●										15,88	16,10	6,35	1,20	6,35	
	CNMG 160616EN-TRM CNMG 190612EN-TRM										●	●										15,88	16,10	6,35	1,60	6,35	
											●	●											19,05	19,30	6,35	1,20	7,94
											●	●											19,05	19,30	6,35	1,60	7,94
-M60														●									12,70	12,90	4,76	0,80	5,16
	CNMG 120408EN-M60 CNMG 120412EN-M60													●								12,70	12,90	4,76	1,20	5,16	
	CNMG 120416EN-M60 CNMG 160612EN-M60														●							12,70	12,90	4,76	1,60	5,16	
																●						15,88	16,10	6,35	1,20	6,35	



A13

A24

A297

□ A109-A111
HSK A181-A183

□ A121-A123
UTS A201

○ A228
HSK A255

○ A232
UTS A261

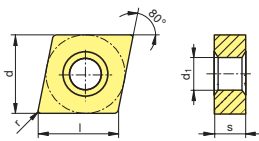
MaxiLock D/N

CN..

A65

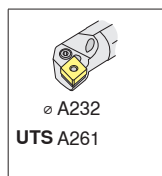
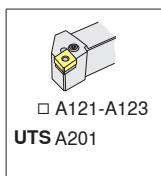
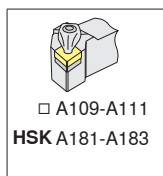
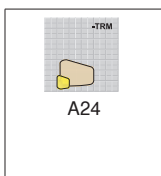
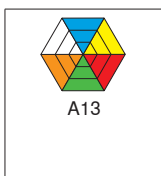
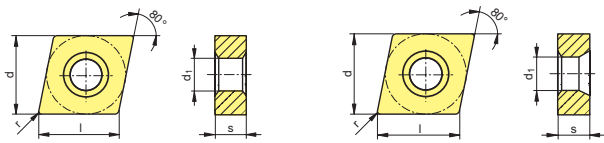


		P	M	K	N	S	H												d	l	s	r	d ₁									
		●	○	○	○			CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115								[mm]	[mm]	[mm]	[mm]	[mm]
-M70		CNMG 120408EN-M70																								12,70	12,90	4,76	0,80	5,16		
		CNMG 120412EN-M70																									12,70	12,90	4,76	1,20	5,16	
		CNMG 120416EN-M70																									12,70	12,90	4,76	1,60	5,16	
		CNMG 160608EN-M70																									15,88	16,10	6,35	0,80	6,35	
		CNMG 160612EN-M70																									15,88	16,10	6,35	1,20	6,35	
		CNMG 160616EN-M70																									15,88	16,10	6,35	1,60	6,35	
		CNMG 190612EN-M70																									19,05	19,30	6,35	1,20	7,94	
		CNMG 190616EN-M70																									19,05	19,30	6,35	1,60	7,94	
		CNMG 190624EN-M70																									19,05	19,30	6,35	2,40	7,94	
		CNMG 250924EN-M70																									25,40	25,80	9,52	2,40	9,12	
-R28		CNMM 120408EN-R28																								12,70	12,90	4,76	0,80	5,16		
		CNMM 120412EN-R28																								12,70	12,90	4,76	1,20	5,16		
		CNMM 120416EN-R28																								12,70	12,90	4,76	1,60	5,16		
		CNMM 160612EN-R28																									15,88	16,10	6,35	1,20	6,35	
		CNMM 160616EN-R28																									15,88	16,10	6,35	1,60	6,35	
		CNMM 190612EN-R28																									19,05	19,30	6,35	1,20	7,94	
		CNMM 190616EN-R28																									19,05	19,30	6,35	1,60	7,94	
CNMM 190624EN-R28																									19,05	19,30	6,35	2,40	7,94			
-R58		CNMM 120408EN-R58																								12,70	12,90	4,76	0,80	5,16		
		CNMM 120412EN-R58																								12,70	12,90	4,76	1,20	5,16		
		CNMM 120416EN-R58																								12,70	12,90	4,76	1,60	5,16		
		CNMM 160612EN-R58																									15,88	16,10	6,35	1,20	6,35	
		CNMM 160616EN-R58																									15,88	16,10	6,35	1,60	6,35	
		CNMM 190612EN-R58																									19,05	19,30	6,35	1,20	7,94	
		CNMM 190616EN-R58																									19,05	19,30	6,35	1,60	7,94	
		CNMM 190624EN-R58																									19,05	19,30	6,35	2,40	7,94	
CNMM 250924EN-R58																									25,40	25,80	9,52	2,40	9,12			
-TR		CNMM 120408EN-TR																								12,70	12,90	4,76	0,80	5,16		
		CNMM 120412EN-TR																								12,70	12,90	4,76	1,20	5,16		
		CNMM 160612EN-TR																									15,88	16,10	6,35	1,20	6,35	
		CNMM 160616EN-TR																									15,88	16,10	6,35	1,60	6,35	
CNMM 190616EN-TR																									19,05	19,30	6,35	1,60	7,94			
-TRR		CNMM 120408SN-TRR																								12,70	12,90	4,76	0,80	5,16		
		CNMM 120412SN-TRR																								12,70	12,90	4,76	1,20	5,16		
		CNMM 160612SN-TRR																									15,88	16,10	6,35	1,20	6,35	
		CNMM 160616SN-TRR																									15,88	16,10	6,35	1,60	6,35	
CNMM 190616SN-TRR																									19,05	19,30	6,35	1,60	7,94			
-R80		CNMM 190616SN-R80																								19,05	19,30	6,35	1,60	7,94		
		CNMM 190624SN-R80																								19,05	19,30	6,35	2,40	7,94		

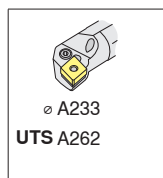
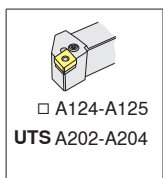
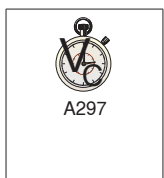
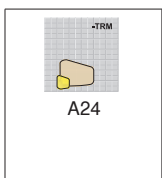
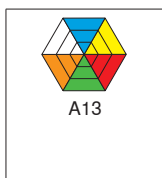
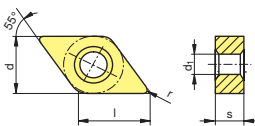


A13	A24	A297	□ A109-A111 HSK A181-A183	□ A121-A123 UTS A201	∅ A228 HSK A255	∅ A232 UTS A261
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	Image	Part Number	Material											d [mm]	l [mm]	s [mm]	r [mm]	d _i [mm]										
			P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135						CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115		
-R88		CNMM 190616SN-R88	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		19,05	19,30	6,35	1,60	7,94	
		CNMM 190624SN-R88	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		19,05	19,30	6,35	2,40	7,94
		CNMM 250924SN-R88	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		25,40	25,80	9,52	2,40	9,12
		CNMT 320932SN-R88	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		31,75	32,24	9,52	3,20	9,12
-R88Q		CNMM 190624SN-R88Q	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		19,05	19,30	6,35	2,40	7,94		
CN...A		CNMA 120404EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		12,70	12,90	4,76	0,40	5,16	
		CNMA 120408EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		12,70	12,90	4,76	0,80	5,16
		CNMA 120412EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		12,70	12,90	4,76	1,20	5,16
		CNMA 120416EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		12,70	12,90	4,76	1,60	5,16
		CNMA 160608EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		15,88	16,10	6,35	0,80	6,35
		CNMA 160612EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		15,88	16,10	6,35	1,20	6,35
		CNMA 160616EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		15,88	16,10	6,35	1,60	6,35
		CNMA 190612EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		19,05	19,30	6,35	1,20	7,94
		CNMA 190616EN	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○		19,05	19,30	6,35	1,60	7,94



			Material											d	l	s	r	d _i				
			P	M	K	N	S	H	Al	St	Ti	HT	HT									
			CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115							
			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]							
-M42		DNMG 110404EN-M42															9,52	11,60	4,76	0,40	3,81	
		DNMG 110408EN-M42																9,52	11,60	4,76	0,80	3,81
		DNMG 150404EN-M42																12,70	15,50	4,76	0,40	5,16
		DNMG 150408EN-M42																12,70	15,50	4,76	0,80	5,16
		DNMG 150604EN-M42																12,70	15,50	6,35	0,40	5,16
-M52		DNMG 150404EN-M52															12,70	15,50	4,76	0,40	5,16	
		DNMG 150408EN-M52																12,70	15,50	4,76	0,80	5,16
		DNMG 150604EN-M52																12,70	15,50	6,35	0,40	5,16
		DNMG 150608EN-M52																12,70	15,50	6,35	0,80	5,16
		DNMG 150612EN-M52																12,70	15,50	6,35	1,20	5,16
-M50		DNMG 110404EN-M50															9,52	11,60	4,76	0,40	3,81	
		DNMG 110408EN-M50																9,52	11,60	4,76	0,80	3,81
		DNMG 110412EN-M50																9,52	11,60	4,76	1,20	3,81
		DNMG 150404EN-M50																12,70	15,50	4,76	0,40	5,16
		DNMG 150408EN-M50																12,70	15,50	4,76	0,80	5,16
		DNMG 150412EN-M50																12,70	15,50	4,76	1,20	5,16
		DNMG 150416EN-M50																12,70	15,50	4,76	1,60	5,16
		DNMG 150604EN-M50																12,70	15,50	6,35	0,40	5,16
		DNMG 150608EN-M50																12,70	15,50	6,35	0,80	5,16
		DNMG 150612EN-M50																12,70	15,50	6,35	1,20	5,16
		DNMG 150616EN-M50																12,70	15,50	6,35	1,60	5,16
-TM		DNMG 110408EN-TM															9,52	11,60	4,76	0,80	3,81	
		DNMG 150608EN-TM																12,70	15,50	6,35	0,80	5,16
		DNMG 150612EN-TM																12,70	15,50		1,20	
		DNMG 150616EN-TM																12,70	15,50	6,35	1,60	5,16
-TMQ		DNMG 150608EN-TMQ															12,70	15,50	6,35	0,80	5,16	
		DNMG 150612EN-TMQ																12,70	15,50	6,35	1,20	5,16
-TRM		DNMG 110408EN-TRM															9,52	11,60	4,76	0,80	3,81	
		DNMG 110412EN-TRM																9,52	11,60	4,76	1,20	3,81
		DNMG 150412EN-TRM																12,70	15,50	4,76	1,20	5,16
		DNMG 150608EN-TRM																12,70	15,50	6,35	0,80	5,16
		DNMG 150612EN-TRM																12,70	15,50	6,35	1,20	5,16
-M60		DNMG 150608EN-M60															12,70	15,50	6,35	0,80	5,16	
		DNMG 150612EN-M60																12,70	15,50	6,35	1,20	5,16

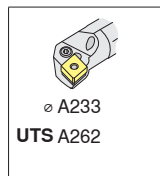
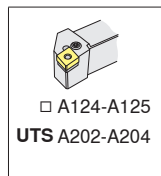
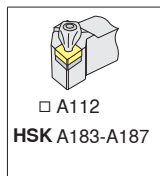
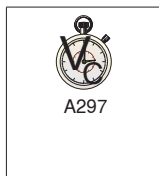
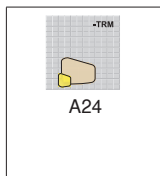
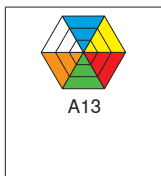
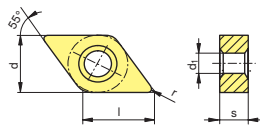


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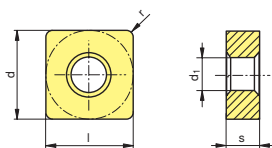
DN..



		P	M	K	N	S	H																	
		CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115										
		d	l	s	r	d ₁																		
		[mm]	[mm]	[mm]	[mm]	[mm]																		
-M70		DNMG 110408EN-M70														9,52	11,60	4,76	0,80	3,81				
		DNMG 110412EN-M70														9,52	11,60	4,76	1,20	3,81				
		DNMG 150408EN-M70														12,70	15,50	4,76	0,80	5,16				
		DNMG 150412EN-M70														12,70	15,50	4,76	1,20	5,16				
		DNMG 150416EN-M70														12,70	15,50	4,76	1,60	5,16				
		DNMG 150608EN-M70														12,70	15,50	6,35	0,80	5,16				
		DNMG 150612EN-M70														12,70	15,50	6,35	1,20	5,16				
		DNMG 150616EN-M70														12,70	15,50	6,35	1,60	5,16				
-R28		DNMM 150612EN-R28														12,70	15,50	6,35	1,20	5,16				
		DNMM 150616EN-R28														12,70	15,50	6,35	1,60	5,16				
-R58		DNMM 150612EN-R58														12,70	15,50	6,35	1,20	5,16				
		DNMM 150616EN-R58														12,70	15,50	6,35	1,60	5,16				
-TR		DNMM 150608EN-TR														12,70	15,50	6,35	0,80	5,16				
		DNMM 150612EN-TR														12,70	15,50	6,35	1,20	5,16				
DN..A		DNMA 150608EN														12,70	15,50	6,35	0,80	5,16				
		DNMA 150612EN														12,70	15,50	6,35	1,20	5,16				



		P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115	d	l	s	r	d _i	
		●	○	○	○	○															[mm]	[mm]	[mm]	[mm]	[mm]	
-F30														●							12,70	12,70	4,76	0,40	5,16	
														●								12,70	12,70	4,76	0,80	5,16
-TF											●											12,70	12,70	4,76	0,40	5,16
-M30														●								12,70	12,70	4,76	0,80	5,16
														●								12,70	12,70	4,76	1,20	5,16
-M34																			●	●		12,70	12,70	4,76	0,80	5,16
																			●	●		12,70	12,70	4,76	1,20	5,16
-TMF										●												12,70	12,70	4,76	0,80	5,16
											●											12,70	12,70	4,76	1,20	5,16
-M42																●						12,70	12,70	4,76	0,80	5,16
																●						12,70	12,70	4,76	1,20	5,16
-M52													●									12,70	12,70	4,76	0,80	5,16
-M50										●	●	●										12,70	12,70	4,76	0,80	5,16
										●	●	●										12,70	12,70	4,76	1,20	5,16
										●	●	●										12,70	12,70	4,76	1,60	5,16
										●	●	●										15,88	15,88	6,35	1,20	6,35
										●	●	●										15,88	15,88	6,35	1,60	6,35
-TM										●						●						12,70	12,70	4,76	0,80	5,16
										●												12,70	12,70	4,76	1,20	5,16
										●												12,70	12,70	4,76	1,60	5,16
-TRM										●												12,70	12,70	4,76	1,20	5,16
										●												12,70	12,70	4,76	1,60	5,16



A13	A24	A297	□ A113-A116 HSK A188	□ A128-A131 UTS A207-A210	∅ A230
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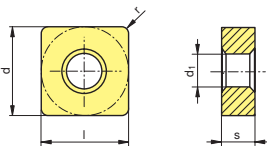
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SN..

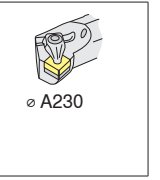
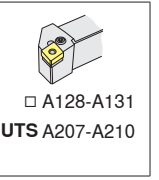
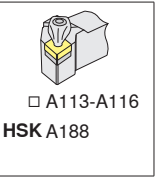
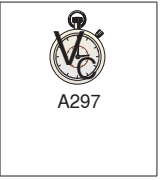
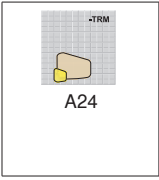
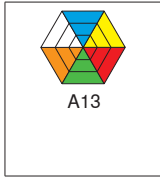
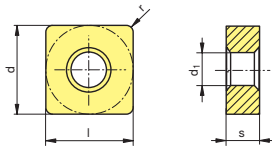
A71



																	d	l	s	r	d ₁	
																	[mm]	[mm]	[mm]	[mm]	[mm]	
-M60		SNMG 120408EN-M60	●	●	●	●	●	●	●								12,70	12,70	4,76	0,80	5,16	
		SNMG 120412EN-M60																12,70	12,70	4,76	1,20	5,16
		SNMG 120416EN-M60									●							12,70	12,70	4,76	1,60	5,16
-M70		SNMG 120408EN-M70			●	●	●				●	●					12,70	12,70	4,76	0,80	5,16	
		SNMG 120412EN-M70																12,70	12,70	4,76	1,20	5,16
		SNMG 120416EN-M70																12,70	12,70	4,76	1,60	5,16
		SNMG 150612EN-M70			●	●	●											15,88	15,88	6,35	1,20	6,35
		SNMG 150616EN-M70																15,88	15,88	6,35	1,60	6,35
		SNMG 190612EN-M70			●	●	●											19,05	19,05	6,35	1,20	7,94
		SNMG 190616EN-M70									●							19,05	19,05	6,35	1,60	7,94
		SNMG 190624EN-M70			●	●	●											19,05	19,05	6,35	2,40	7,94
SNMG 250924EN-M70				●												25,40	25,40	9,52	2,40	9,12		
-R28		SNMM 150612EN-R28			●	●	●										15,88	15,88	6,35	1,20	6,35	
		SNMM 150616EN-R28																15,88	15,88	6,35	1,60	6,35
		SNMM 190616EN-R28			●	●	●											19,05	19,05	6,35	1,60	7,94
		SNMM 250724EN-R28																25,40	25,40	7,94	2,40	9,12
		SNMM 250924EN-R28			●	●	●											25,40	25,40	9,52	2,40	9,12
-R58		SNMM 120408EN-R58			●	●	●										12,70	12,70	4,76	0,80	5,16	
		SNMM 120412EN-R58																12,70	12,70	4,76	1,20	5,16
		SNMM 150612EN-R58			●	●	●											15,88	15,88	6,35	1,20	6,35
		SNMM 150616EN-R58																15,88	15,88	6,35	1,60	6,35
		SNMM 190612EN-R58			●	●	●											19,05	19,05	6,35	1,20	7,94
		SNMM 190616EN-R58																19,05	19,05	6,35	1,60	7,94
		SNMM 190624EN-R58			●	●	●											19,05	19,05	6,35	2,40	7,94
		SNMM 250724EN-R58																25,40	25,40	7,94	2,40	9,12
		SNMM 250924EN-R58			●	●	●											25,40	25,40	9,52	2,40	9,12
-TR		SNMM 120408EN-TR				●											12,70	12,70	4,76	0,80	5,16	
		SNMM 120412EN-TR																12,70	12,70	4,76	1,20	5,16
		SNMM 150612EN-TR					●											15,88	15,88	6,35	1,20	6,35
		SNMM 190616EN-TR																19,05	19,05	6,35	1,60	7,94
		SNMM 250724EN-TR					●											25,40	25,40	7,94	2,40	9,12
-TRR		SNMM 190616SN-TRR					●										19,05	19,05	6,35	1,60	7,94	
		SNMM 250724SN-TRR						●										25,40	25,40	7,94	2,40	9,12
-R88		SNMM 190616SN-R88			●	●	●										19,05	19,05	6,35	1,60	7,94	
		SNMM 190624SN-R88			●	●	●											19,05	19,05	6,35	2,40	7,94
		SNMM 250724SN-R88			●	●	●											25,40	25,40	7,94	2,40	9,12
		SNMM 250732SN-R88			●	●	●											25,40	25,40	7,94	3,20	9,12
		SNMM 250924SN-R88			●	●	●											25,40	25,40	9,52	2,40	9,12
		SNMM 250932SN-R88			●	●	●											25,40	25,40	9,52	3,20	9,12
		SNMM 310932SN-R88			●	●	●											31,75	31,75	9,52	3,20	9,12
		SNMT 310932SN-R88			●	●	●											31,75	31,75	9,52	3,20	9,12



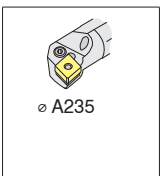
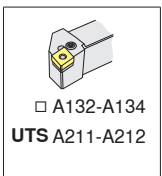
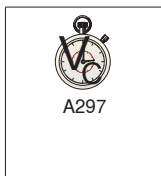
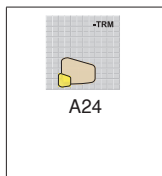
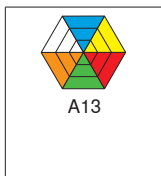
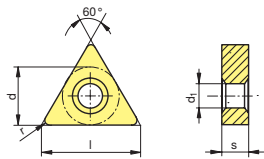
	SN..A	EN														d	l	s	r	d _i
			CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CIP5110	CTP5115	[mm]	[mm]	[mm]	[mm]	[mm]
	SNMA 120408EN															12,70	12,70	4,76	0,80	5,16
	SNMA 120412EN															12,70	12,70	4,76	1,20	5,16
	SNMA 120416EN															12,70	12,70	4,76	1,60	5,16
	SNMA 150616EN															15,88	15,88	6,35	1,60	6,35
	SNMA 190616EN															19,05	19,05	6,35	1,60	7,94
	SNMG 090308EN															9,52	9,52	3,18	0,80	3,81



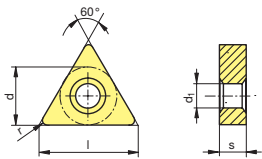
TN..



		P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115	d	l	s	r	d ₁			
		●	○	○																	[mm]	[mm]	[mm]	[mm]	[mm]			
-CF20	TNMG 160404EN-CF20							●														9,52	16,50	4,76	0,40	3,81		
	TNMG 160408EN-CF20							●															9,52	16,50	4,76	0,80	3,81	
	TNMG 160412EN-CF20							●																9,52	16,50	4,76	1,20	3,81
-F30	TNMG 160404EN-F30																						9,52	16,50	4,76	0,40	3,81	
	TNMG 160408EN-F30																							9,52	16,50	4,76	0,80	3,81
-TF	TNMG 110304EN-TF										●												6,35	11,00	3,18	0,40	2,26	
	TNMG 160404EN-TF									●	●	●												9,52	16,50	4,76	0,40	3,81
	TNMG 160408EN-TF									●	●													9,52	16,50	4,76	0,80	3,81
-M30	TNMG 160408EN-M30															●							9,52	16,50	4,76	0,80	3,81	
	TNMG 160412EN-M30															●							9,52	16,50	4,76	1,20	3,81	
-M34	TNMG 160408EN-M34																				●		9,52	16,50	4,76	0,80	3,81	
	TNMG 220404EN-M34																				●		12,70	22,00	4,76	0,40	5,16	
	TNMG 220408EN-M34																				●		12,70	22,00	4,76	0,80	5,16	
	TNMG 220416EN-M34																				●		12,70	22,00	4,76	1,60	5,16	
-TMF	TNMG 160404EN-TMF									●	●	●											9,52	16,50	4,76	0,40	3,81	
	TNMG 160408EN-TMF									●	●	●											9,52	16,50	4,76	0,80	3,81	
	TNMG 160412EN-TMF									●													9,52	16,50	4,76	1,20	3,81	
-M42	TNMG 160404EN-M42															●							9,52	16,50	4,76	0,40	3,81	
	TNMG 160408EN-M42															●							9,52	16,50	4,76	0,80	3,81	
-M52	TNMG 160404EN-M52																						9,52	16,50	4,76	0,40	3,81	
	TNMG 160408EN-M52																						9,52	16,50	4,76	0,80	3,81	
-M50	TNMG 160404EN-M50									●	●	●											9,52	16,50	4,76	0,40	3,81	
	TNMG 160408EN-M50									●	●	●											9,52	16,50	4,76	0,80	3,81	
	TNMG 160412EN-M50									●	●	●											9,52	16,50	4,76	1,20	3,81	
	TNMG 220408EN-M50									●	●	●											12,70	22,00	4,76	0,80	5,16	
	TNMG 220412EN-M50									●	●	●											12,70	22,00	4,76	1,20	5,16	
-TM	TNMG 160408EN-TM									●	●	●											9,52	16,50	4,76	0,80	3,81	
	TNMG 160412EN-TM									●	●	●				●							9,52	16,50	4,76	1,20	3,81	
	TNMG 220408EN-TM									●	●	●											12,70	22,00	4,76	0,80	5,16	
	TNMG 220412EN-TM									●	●	●											12,70	22,00	4,76	1,20	5,16	



			Material											d [mm]	l [mm]	s [mm]	r [mm]	d _i [mm]																				
			P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135						CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115												
-TRM		TNMG 160408EN-TRM	●	●	●	●	●	●	○	○																9,52	16,50	4,76	0,80	3,81								
		TNMG 160412EN-TRM	●	●	●	●	●	○	○																		9,52	16,50	4,76	1,20	3,81							
		TNMG 220408EN-TRM	●	●	●	●	●	○	○																			12,70	22,00	4,76	0,80	5,16						
		TNMG 220412EN-TRM	●	●	●	●	●	○	○																			12,70	22,00	4,76	1,20	5,16						
		TNMG 220416EN-TRM	●	●	●	●	●	○	○																			12,70	22,00	4,76	1,60	5,16						
-M60		TNMG 160408EN-M60										●														9,52	16,50	4,76	0,80	3,81								
		TNMG 160412EN-M60											●														9,52	16,50	4,76	1,20	3,81							
-M70		TNMG 160408EN-M70			●	●	●							●	●	●											9,52	16,50	4,76	0,80	3,81							
		TNMG 160412EN-M70			●	●	●								●	●											9,52	16,50	4,76	1,20	3,81							
		TNMG 220404EN-M70			●	●	●																				12,70	22,00	4,76	0,40	5,16							
		TNMG 220408EN-M70			●	●	●												●								12,70	22,00	4,76	0,80	5,16							
		TNMG 220412EN-M70			●	●	●											●									12,70	22,00	4,76	1,20	5,16							
		TNMG 220416EN-M70			●	●	●											●									12,70	22,00	4,76	1,60	5,16							
-R28		TNMM 220416EN-R28			●	●	●																			12,70	22,00	4,76	1,60	5,16								
-R58		TNMM 220412EN-R58			●	●	●																				12,70	22,00	4,76	1,20	5,16							
-TR		TNMM 160412EN-TR				●																					9,52	16,50	4,76	1,20	3,81							
		TNMM 220408EN-TR				●																					12,70	22,00	4,76	0,80	5,16							
		TNMM 220416EN-TR				●																					12,70	22,00	4,76	1,60	5,16							
		TNMM 270616EN-TR				●																					15,88	27,50	6,35	1,60	6,35							
-TRR		TNMM 160408SN-TRR				●																					9,52	16,50	4,76	0,80	3,81							
		TNMM 220412SN-TRR				●																					12,70	22,00	4,76	1,20	5,16							
TN..A		TNMA 160408EN															●	●									9,52	16,50	4,76	0,80	3,81							
		TNMA 160412EN																●	●								9,52	16,50	4,76	1,20	3,81							
		TNMA 160416EN																	●								9,52	16,50	4,76	1,60	3,81							
		TNMA 220408EN																	●	●							12,70	22,00	4,76	0,80	5,16							
		TNMA 220412EN																	●	●							12,70	22,00	4,76	1,20	5,16							
		TNMA 220416EN																	●								12,70	22,00	4,76	1,60	5,16							
EN		TNMG 110302EN				●																					6,35	11,00	3,18	0,20	2,26							
		TNMG 330924EN				●																						19,05	33,00	9,52	2,40	7,94						
																											d		l		s		r		d _i			



A13

A24

A297

□ A117

□ A132-A134
UTS A211-A212

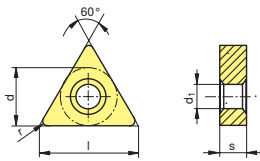
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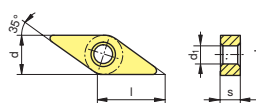


ER-EL	Image	Part Number	Material													d	l	s	r	d ₁						
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		TNMG 160404ER	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	9,52	16,50	4,76	0,40	3,81
		TNMG 160408EL	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	9,52	16,50	4,76	0,80	3,81
		TNMG 160408ER	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	9,52	16,50	4,76	0,80	3,81



A13	A24	A297	□ A117	□ A132-A134 UTS A211-A212	○ A235
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			CTEP110											d	l	s	r	d ₁		
			TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110						CTP5115	
-F32		VNGP 160402FN-F32																		
		VNGP 160404FN-F32																		
-F30		VNMG 160404EN-F30																		
		VNMG 160408EN-F30																		
-F40		VNMG 160404EN-F40																		
		VNMG 160408EN-F40																		
-M30		VNMG 160408EN-M30																		
-M34		VNMG 160404EN-M34																		
		VNMG 160408EN-M34																		
		VNMG 160412EN-M34																		
-M50		VNMG 160404EN-M50																		
		VNMG 160408EN-M50																		
		VNMG 160412EN-M50																		
-M40		VNMG 160404EN-M40																		
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A13

A24

A297

□ A118-A119
HSK A189

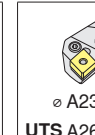
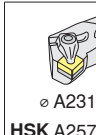
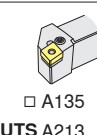
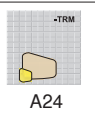
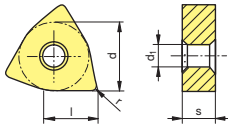
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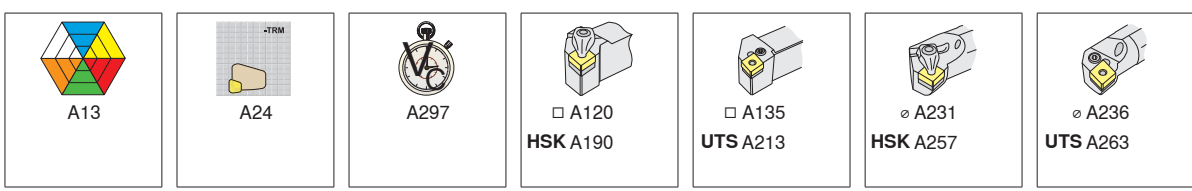
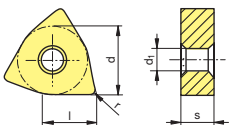


	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115																				
P	●	●	●	●	●	●	●	●	●	○	○																						
M	○	○	○	○	○	○	○	○	○	○	○	○	○																				
K	○	○	○	○	○	○	○	○	○	○	○	○	○																				
N											●																						
S												●	●																				
H						○	○	○																									

							d	l	s	r	d ₁				
							[mm]	[mm]	[mm]	[mm]	[mm]				
-CF20		WNMG 060404EN-CF20	●				9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-CF20	●				9,52	6,50	4,76	0,80	3,81				
		WNMG 080408EN-CF20	●				12,70	8,69	4,76	0,80	5,16				
-F30		WNMG 060404EN-F30				●	9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-F30				●	9,52	6,50	4,76	0,80	3,81				
		WNMG 080404EN-F30				●	12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-F30				●	12,70	8,69	4,76	0,80	5,16				
-TF		WNMG 060404EN-TF		●			9,52	6,50	4,76	0,40	3,81				
		WNMG 080404EN-TF		●			12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-TF		●			12,70	8,69	4,76	0,80	5,16				
-F34		WNMG 080408EN-F34									12,70	8,69	4,76	0,80	5,16
-M30		WNMG 060408EN-M30				●	9,52	6,50	4,76	0,80	3,81				
		WNMG 060412EN-M30				●	9,52	6,50	4,76	1,20	3,81				
		WNMG 080408EN-M30				●	12,70	8,69	4,76	0,80	5,16				
		WNMG 080412EN-M30				●	12,70	8,69	4,76	1,20	5,16				
-M34		WNMG 080408EN-M34								●	12,70	8,69	4,76	0,80	5,16
		WNMG 080412EN-M34								●	12,70	8,69	4,76	1,20	5,16
-TFQ		WNMG 060404EN-TFQ		●			9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-TFQ		●		●	9,52	6,50	4,76	0,80	3,81				
		WNMG 080404EN-TFQ		●			12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-TFQ		●		●	12,70	8,69	4,76	0,80	5,16				
		WNMG 080412EN-TFQ		●		●	12,70	8,69	4,76	1,20	5,16				
-TMF		WNMG 060404EN-TMF		●	●		9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-TMF		●	●		9,52	6,50	4,76	0,80	3,81				
		WNMG 080404EN-TMF		●	●		12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-TMF		●	●		12,70	8,69	4,76	0,80	5,16				
-M42		WNMG 060404EN-M42				●	9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-M42				●	9,52	6,50	4,76	0,80	3,81				
		WNMG 080404EN-M42				●	12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-M42			●	12,70	8,69	4,76	0,80	5,16					
		WNMG 080412EN-M42			●	12,70	8,69	4,76	1,20	5,16					
-M52		WNMG 060404EN-M52				●	9,52	6,50	4,76	0,40	3,81				
		WNMG 060408EN-M52				●	9,52	6,50	4,76	0,80	3,81				
		WNMG 080404EN-M52				●	12,70	8,69	4,76	0,40	5,16				
		WNMG 080408EN-M52			●	12,70	8,69	4,76	0,80	5,16					



		<table border="1"> <tr><td>P</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td></tr> <tr><td>M</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>K</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>S</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>H</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>														P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	N															S															H															d	l	s	r	d _i
P	●	●	●	●	●	●	●	●	●	●	●	●	●	●																																																																																																
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○																																																																																																
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○																																																																																																
N																																																																																																														
S																																																																																																														
H																																																																																																														
		CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115	[mm]	[mm]	[mm]	[mm]	[mm]																																																																																											
-M50		WNMG 060404EN-M50		●	●	●									9,52	6,50	4,76	0,40	3,81																																																																																											
		WNMG 060408EN-M50		●	●	●									9,52	6,50	4,76	0,80	3,81																																																																																											
		WNMG 060412EN-M50		●	●	●									9,52	6,50	4,76	1,20	3,81																																																																																											
		WNMG 080404EN-M50		●	●	●									12,70	8,69	4,76	0,40	5,16																																																																																											
		WNMG 080408EN-M50		●	●	●									12,70	8,69	4,76	0,80	5,16																																																																																											
		WNMG 080412EN-M50		●	●	●									12,70	8,69	4,76	1,20	5,16																																																																																											
-TM		WNMG 060408EN-TM		●	●	●			●						9,52	6,50	4,76	0,80	3,81																																																																																											
		WNMG 080408EN-TM		●	●	●			●						12,70	8,69	4,76	0,80	5,16																																																																																											
		WNMG 080412EN-TM		●	●	●			●						12,70	8,69	4,76	1,20	5,16																																																																																											
-TMQ		WNMG 080408EN-TMQ			●										12,70	8,69	4,76	0,80	5,16																																																																																											
		WNMG 080412EN-TMQ			●										12,70	8,69	4,76	1,20	5,16																																																																																											
-TRM		WNMG 060408EN-TRM			●										9,52	6,50	4,76	0,80	3,81																																																																																											
		WNMG 060412EN-TRM			●										9,52	6,50	4,76	1,20	3,81																																																																																											
		WNMG 080408EN-TRM			●										12,70	8,69	4,76	0,80	5,16																																																																																											
		WNMG 080412EN-TRM			●										12,70	8,69	4,76	1,20	5,16																																																																																											
-M60		WNMG 080416EN-TRM			●										12,70	8,69	4,76	1,60	5,16																																																																																											
		WNMG 060408EN-M60						●							9,52	6,50	4,76	0,80	3,81																																																																																											
		WNMG 060412EN-M60						●							9,52	6,50	4,76	1,20	3,81																																																																																											
		WNMG 080408EN-M60						●							12,70	8,69	4,76	0,80	5,16																																																																																											
-M70		WNMG 080412EN-M60						●							12,70	8,69	4,76	1,20	5,16																																																																																											
		WNMG 060408EN-M70			●										9,52	6,50	4,76	0,80	3,81																																																																																											
		WNMG 060412EN-M70			●										9,52	6,50	4,76	1,20	3,81																																																																																											
		WNMG 080408EN-M70			●				●	●					12,70	8,69	4,76	0,80	5,16																																																																																											
	WNMG 080412EN-M70			●				●	●					12,70	8,69	4,76	1,20	5,16																																																																																												
	WNMG 080416EN-M70			●				●	●					12,70	8,69	4,76	1,60	5,16																																																																																												



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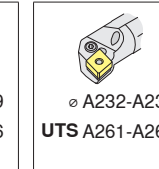
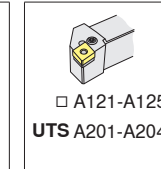
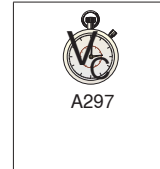
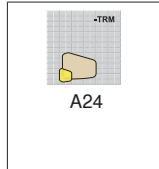
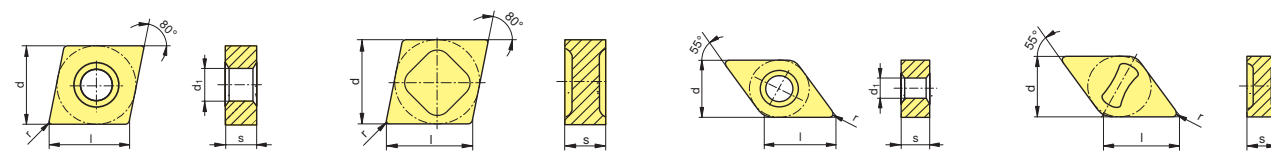
CN.. - DN.. (outros materiais de corte)

A79

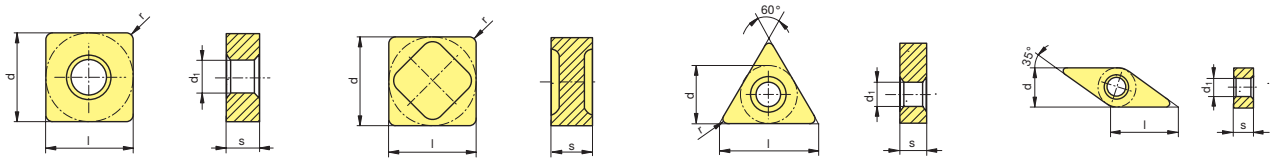


P																										
M																										
K	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
N																										
S	○																									
H																										

																							d	l	s	r	d _i	
																							[mm]	[mm]	[mm]	[mm]	[mm]	
CN..A		CNGA 120408SN-025C								•													12,70	12,90	4,76	0,80	5,16	
		CNGA 120408TN-020D								•	•												12,70	12,90	4,76	0,80	5,16	
		CNGA 120412SN-020D								•														12,70	12,90	4,76	1,20	5,16
		CNGA 120412SN-025C																						12,70	12,90	4,76	1,20	5,16
		CNGA 120412TN-020D									•													12,70	12,90	4,76	1,20	5,16
		CNGA 160608SN-028C										•												15,88	16,10	6,35	0,80	6,35
		CNGA 160616SN-028C																						15,88	16,10	6,35	1,60	6,35
CNGA 160616TN-020D										•												15,88	16,10	6,35	1,60	6,35		
CN..A-B		CNGA 120404SN-013E_B3																					12,70	12,90	4,76	0,40	5,16	
		CNGA 120408SNQ-013E_B2																					12,70	12,90	4,76	0,80	5,16	
		CNGA 120408SN-013E_B3																					12,70	12,90	4,76	0,80	5,16	
		CNGA 120412SN-013E_B3																						12,70	12,90	4,76	1,20	5,16
CN..X		CNGX 120712TN-020D							•	•													12,70	12,90	7,94	1,20		
		CNGX 120716TN-020D							•	•													12,70	12,90	7,94	1,60		
		CNGX 160716TN-020D								•													15,88	16,10	7,94	1,60		
		CNNX 120716TN-020D								•	•												12,70	12,90	7,94	1,60		
DN..A		DNGA 150604TN-020D																					12,70	15,50	6,35	0,40	5,16	
		DNGA 150608TN-020D									•												12,70	15,50	6,35	0,80	5,16	
		DNGA 150612TN-020D									•												12,70	15,50	6,35	1,20	5,16	
		DNGA 150616TN-020D									•												12,70	15,50	6,35	1,60	5,16	
DN..A-B		DNGA 150404SN-013E_B3																					12,70	15,50	4,76	0,40	5,16	
		DNGA 150408SN-013E_B3																					12,70	15,50	4,76	0,80	5,16	
		DNGA 150608SN-013E_B3																					12,70	15,50	6,35	0,80	5,16	
		DNGA 150612SN-013E_B3																					12,70	15,50	6,35	1,20	5,16	
DN..X		DNGX 120712TN-020D																					10,00	12,30	7,94	1,20		



	SN..A	SNGA 120408SN-025C SNGA 120412SN-025C SNGA 120412TN-020D	Material						d [mm]	l [mm]	s [mm]	r [mm]	d _i [mm]	
			P	M	K	N	S	H						
			CTI3105	CTN3105	CTS3105	CTBK102	CTM3110	CTN3110	CTL6115					
	SN..X	SNGX 120712TN-020D SNGX 120716TN-020D SNGX 150716TN-020D SNGX 150716TN-040D SNNX 120716TN-020D	●	●	●									
	TN..A-C	TNGA 160408SN-013E_C3						●						
	TN..A	TNGA 160408TN-020D		●										
	VN..A-B	VNGA 160404SN-013E_B3 VNGA 160408SN-013E_B3 VNGX 160408SN-010E_B3						●	●					
	VN..A	VNGA 160408TN-020D VNGA 160412TN-020D		●	●									








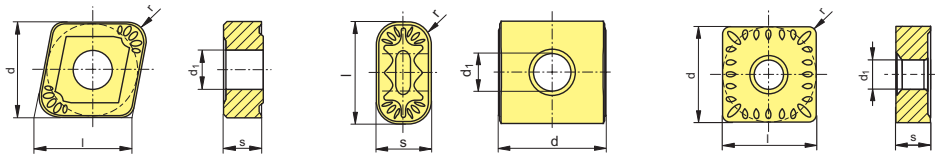
A13	A24	A297	□ A113-A119 HSK A188-A189	□ A128-A134 UTS A207-A212	∅ A230	∅ A234-A235
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
MaxiLock D/N

CN.. LN.. SN.. (pastilhas para usinagem de rodas ferroviárias)

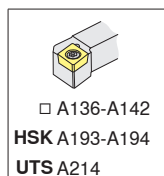
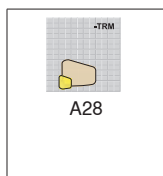
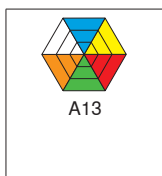
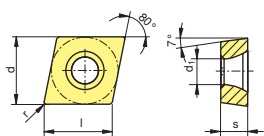


		P	M	K	N	S	H	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H10T	CTP5110	CTP5115	d	l	s	r	d _i
		●	○	○	○	○															[mm]	[mm]	[mm]	[mm]	[mm]
CN..X		●	○	○	○	○				●							●				19,05	19,30	7,94	4,00	7,93
-R70		○	○	○	○	○				●	●										19,05	19,05	10,00	4,00	6,35
-R74		○	○	○	○	○				●	●										19,05	19,05	10,00	4,00	6,35
-R70		○	○	○	○	○				●	●										21,00	21,00	10,50	4,00	7,84
-R71		○	○	○	○	○				●	●										21,00	21,00	10,50	4,00	7,84



 A13	 A34	 A297	 □ A270
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																	d	l	s	r	d_i									
				TCM407	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H210T	AMZ						H10T	CTP4115	H216T	CTW7120	CTP5115				
P	M	K	N	S	H																									
-23P		CCGT 060202FN-23P																						6,35	6,40	2,38	0,20	2,80		
		CCGT 060204FN-23P																							6,35	6,40	2,38	0,40	2,80	
		CCGT 09T304FN-23P																							9,52	9,70	3,97	0,40	4,40	
		CCGT 09T308FN-23P																							9,52	9,70	3,97	0,80	4,40	
-25P		CCGT 060202FN-25P																						6,35	6,40	2,38	0,20	2,80		
		CCGT 060204FN-25P																						6,35	6,40	2,38	0,40	2,80		
		CCGT 09T302FN-25P																						9,52	9,70	3,97	0,20	4,40		
		CCGT 09T304FN-25P																						9,52	9,70	3,97	0,40	4,40		
		CCGT 09T308FN-25P																						9,52	9,70	3,97	0,80	4,40		
		CCGT 120402FN-25P																						12,70	12,90	4,76	0,20	5,50		
		CCGT 120404FN-25P																						12,70	12,90	4,76	0,40	5,50		
		CCGT 120408FN-25P																						12,70	12,90	4,76	0,80	5,50		
-25Q		CCGT 060204FN-25Q																						6,35	6,40	2,38	0,40	2,80		
		CCGT 09T304FN-25Q																						9,52	9,70	3,97	0,40	4,40		
		CCGT 09T308FN-25Q																						9,52	9,70	3,97	0,80	4,40		
		CCGT 120404FN-25Q																						12,70	12,90	4,76	0,40	5,50		
		CCGT 120408FN-25Q																						12,70	12,90	4,76	0,80	5,50		
-27		CCGT 060202FN-27																						6,35	6,40	2,38	0,20	2,80		
		CCGT 060204FN-27																						6,35	6,40	2,38	0,40	2,80		
		CCGT 09T302FN-27																						9,52	9,70	3,97	0,20	4,40		
		CCGT 09T304FN-27																						9,52	9,70	3,97	0,40	4,40		
		CCGT 09T308FN-27																						9,52	9,70	3,97	0,80	4,40		
		CCGT 120402FN-27																						12,70	12,90	4,76	0,20	5,50		
		CCGT 120404FN-27																						12,70	12,90	4,76	0,40	5,50		
		CCGT 120408FN-27																						12,70	12,90	4,76	0,80	5,50		
-29		CCMT 060204EN-29																						6,35	6,40	2,38	0,40	2,80		
		CCMT 09T304EN-29																						9,52	9,70	3,97	0,40	4,40		
		CCMT 09T308EN-29																						9,52	9,70	3,97	0,80	4,40		
-CF05		CCGT 060202EN-CF05																						6,35	6,40	2,38	0,20	2,80		
		CCGT 060204EN-CF05																						6,35	6,40	2,38	0,40	2,80		
		CCGT 09T302EN-CF05																						9,52	9,70	3,97	0,20	4,40		
		CCGT 09T304EN-CF05																						9,52	9,70	3,97	0,40	4,40		
		CCGT 09T308EN-CF05																						9,52	9,70	3,97	0,80	4,40		
-F23		CCGT 060200FN-F23																						6,35	6,40	2,38	0,00	2,80		
		CCGT 060201FN-F23																						6,35	6,40	2,38	0,10	2,80		
		CCGT 09T300FN-F23																						9,52	9,70	3,97	0,00	4,40		
		CCGT 09T301FN-F23																						9,52	9,70	3,97	0,10	4,40		
-CF55		CCMT 060204EN-CF55																						6,35	6,40	2,38	0,40	2,80		
		CCMT 09T304EN-CF55																						9,52	9,70	3,97	0,40	4,40		
		CCMT 09T308EN-CF55																						9,52	9,70	3,97	0,80	4,40		
		CCMT 120404EN-CF55																						12,70	12,90	4,76	0,40	5,50		



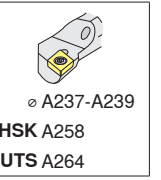
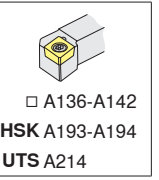
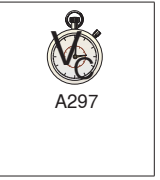
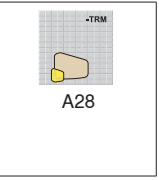
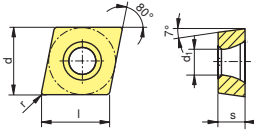
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CC..

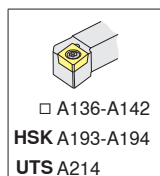
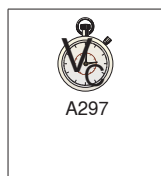
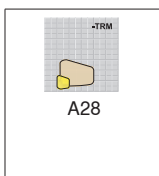
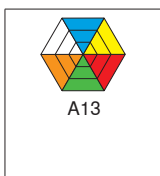
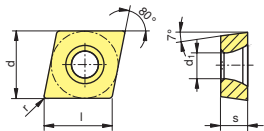










P	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○
M	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

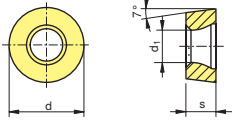
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																												[mm]	[mm]	[mm]	[mm]	[mm]
-SF	CCGT 060202EN-SF	●	●	●	●	●																						6,35	6,40	2,38	0,20	2,80
	CCGT 060204EN-SF	●	●	●	●	●																						6,35	6,40	2,38	0,40	2,80
	CCGT 09T302EN-SF	●	●	●	●	●																						9,52	9,70	3,97	0,20	4,40
	CCGT 09T304EN-SF	●	●	●	●	●																						9,52	9,70	3,97	0,40	4,40
	CCGT 09T308EN-SF		●	●	●	●																						9,52	9,70	3,97	0,80	4,40
	CCGT 120404EN-SF		●	●	●	●																						12,70	12,90	4,76	0,40	5,50
	CCMT 060204EN-SF		●	●	●	●	●			●																		6,35	6,40	2,38	0,40	2,80
	CCMT 09T304EN-SF		●	●	●	●	●			●																		9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-SF		●	●	●	●	●																					9,52	9,70	3,97	0,80	4,40
	CCMT 120404EN-SF		●	●	●	●	●																					12,70	12,90	4,76	0,40	5,50
	CCMT 120408EN-SF		●	●	●	●	●																					12,70	12,90	4,76	0,80	5,50
	CPMT 060204EN-SF		●	●	●	●	●																					6,35	6,40	2,38	0,40	2,80
	CPMT 060208EN-SF		●	●	●	●	●																					6,35	6,40	2,38	0,80	2,80
	CPMT 09T304EN-SF		●	●	●	●	●																					9,52	9,70	3,97	0,40	4,40
CPMT 09T308EN-SF		●	●	●	●	●																					9,52	9,70	3,97	0,80	4,40	
-M25	CCMT 060204EN-M25								●																			6,35	6,40	2,38	0,40	2,80
	CCMT 09T304EN-M25								●																			9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-M25								●																			9,52	9,70	3,97	0,80	4,40
-F43	CCMT 09T304EN-F43									●																		9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-F43									●																		9,52	9,70	3,97	0,80	4,40
-SMF	CCMT 060204EN-SMF			●	●	●																						6,35	6,40	2,38	0,40	2,80
	CCMT 060208EN-SMF			●	●	●																						6,35	6,40	2,38	0,80	2,80
	CCMT 09T304EN-SMF			●	●	●	●																					9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-SMF			●	●	●	●																					9,52	9,70	3,97	0,80	4,40
	CCMT 120404EN-SMF			●	●	●	●																					12,70	12,90	4,76	0,40	5,50
CCMT 120408EN-SMF			●	●	●	●			●																		12,70	12,90	4,76	0,80	5,50	
-M55	CCMT 060204EN-M55								●																			6,35	6,40	2,38	0,40	2,80
	CCMT 09T304EN-M55								●																			9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-M55								●																			9,52	9,70	3,97	0,80	4,40
	CCMT 120404EN-M55								●																			12,70	12,90	4,76	0,40	5,50
CCMT 120408EN-M55								●																			12,70	12,90	4,76	0,80	5,50	
-SM	CCGT 060202EN-SM				●	●																						6,35	6,40	2,38	0,20	2,80
	CCMT 060204EN-SM				●	●				●																		6,35	6,40	2,38	0,40	2,80
	CCMT 060208EN-SM				●	●				●																		6,35	6,40	2,38	0,80	2,80
	CCMT 09T304EN-SM				●	●	●			●																		9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-SM				●	●	●			●																		9,52	9,70	3,97	0,80	4,40
	CCMT 09T312EN-SM				●	●	●			●		●																9,52	9,70	3,97	1,20	4,40
	CCMT 120404EN-SM				●	●	●			●																		12,70	12,90	4,76	0,40	5,50
	CCMT 120408EN-SM				●	●	●			●																		12,70	12,90	4,76	0,80	5,50
	CCMT 120412EN-SM				●	●	●			●																		12,70	12,90	4,76	1,20	5,50



	-SMQ	CC..W	TCM407 CTEP110 TCM10 CTCP115 CTCP125 CTCP135 CTP2120 CTPM125 CTC2135 CTC3110 CTCK120 H210T AMZ H10T CTP4115 H216T CTW7120 CTP5115	P M K N S H	TCM407 CTEP110 TCM10 CTCP115 CTCP125 CTCP135 CTP2120 CTPM125 CTC2135 CTC3110 CTCK120 H210T AMZ H10T CTP4115 H216T CTW7120 CTP5115	d	l	s	r	d _i
						[mm]	[mm]	[mm]	[mm]	[mm]
	CCMT 09T304EN-SMQ					9,52	9,70	3,97	0,40	4,40
	CCMT 09T308EN-SMQ					9,52	9,70	3,97	0,80	4,40
	CCMT 120404EN-SMQ					12,70	12,90	4,76	0,40	5,50
	CCMT 120408EN-SMQ					12,70	12,90	4,76	0,80	5,50
	CCGW 09T304FN					9,52	9,70	3,97	0,40	4,40



	<table border="1"> <tr><td>P</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>●</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>M</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>K</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>N</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>S</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr><td>H</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>												P	●	●	●	●	●	●	○	○	○	○	○	○	M	○	○	○	○	○	○	○	○	○	○	○	○	K	○	○	○	○	○	○	○	○	○	○	○	○	N	○	○	○	○	○	○	○	○	○	○	○	○	S	○	○	○	○	○	○	○	○	○	○	○	○	H													TCM407	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H210T	AMZ	H10T	CTP4115	H216T	CTW7120	CTP5115	RCGT 0803MOFN-25P	RCMT 0803MOEN-25	d	s	d ₁
	P	●	●	●	●	●	●	○	○	○	○	○	○																																																																																																				
M	○	○	○	○	○	○	○	○	○	○	○	○																																																																																																					
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TCM407	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H210T	AMZ	H10T	CTP4115	H216T	CTW7120	CTP5115	[mm]	[mm]	[mm]																																																																																													
-25P													●						8,00	3,18	3,40																																																																																												
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-27																●			6,00	2,38	2,80																																																																																												
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-M23				●	●														16,00	6,35	5,30																																																																																												
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-SMF										●									16,00	6,35	5,30																																																																																												
-SM						●	●												6,00	2,38	2,80																																																																																												
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						●	●													25,00	7,94	7,20																																																																																											
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-R23					●	●													25,00	7,94	7,20																																																																																												
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-R53					●	●													25,00	7,94	7,20																																																																																												
						●	●													32,00	9,52	9,50																																																																																											
-R83					●	●													25,00	7,94	7,70																																																																																												
						●	●													32,00	9,52	9,50																																																																																											



A13



A28



A297



□ A126-A127

HSK A191-A192

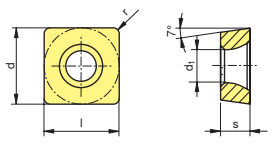
UTS A205-A206



□ A147-A148

UTS A220-A221

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-27P		SCGT 09T304FN-27																			9,52	9,52	3,97	0,40	4,40
		SCGT 09T308FN-27																			9,52	9,52	3,97	0,80	4,40
		SCGT 09T308FN-27P																			9,52	9,52	3,97	0,80	4,40
		SCGT 120408FN-27																			12,70	12,70	4,76	0,80	5,50
-CF05		SCGT 09T304EN-CF05		●																9,52	9,52	3,97	0,40	4,40	
		SCGT 09T308EN-CF05		●																9,52	9,52	3,97	0,80	4,40	
-CF55		SCMT 09T304EN-CF55		●																9,52	9,52	3,97	0,40	4,40	
		SCMT 09T308EN-CF55		●																9,52	9,52	3,97	0,80	4,40	
-SF		SCGT 09T304EN-SF		●																9,52	9,52	3,97	0,40	4,40	
		SCGT 09T308EN-SF			●															9,52	9,52	3,97	0,80	4,40	
		SCMT 09T304EN-SF					●													9,52	9,52	3,97	0,40	4,40	
		SCMT 09T308EN-SF					●													9,52	9,52	3,97	0,80	4,40	
		SCMT 120408EN-SF					●													12,70	12,70	4,76	0,80	5,50	
-M25		SCMT 09T304EN-M25								●									9,52	9,52	3,97	0,40	4,40		
-SMF		SCMT 09T304EN-SMF				●													9,52	9,52	3,97	0,40	4,40		
		SCMT 09T308EN-SMF				●													9,52	9,52	3,97	0,80	4,40		
		SCMT 120408EN-SMF					●												12,70	12,70	4,76	0,80	5,50		
-M55		SCMT 09T308EN-M55								●									9,52	9,52	3,97	0,80	4,40		
		SCMT 120408EN-M55								●									12,70	12,70	4,76	0,80	5,50		
-SM		SCMT 09T304EN-SM				●	●	●											9,52	9,52	3,97	0,40	4,40		
		SCMT 09T308EN-SM				●	●	●			●	●							9,52	9,52	3,97	0,80	4,40		
		SCMT 120408EN-SM				●	●	●			●	●							12,70	12,70	4,76	0,80	5,50		
		SCMT 120412EN-SM				●	●	●			●	●							12,70	12,70	4,76	1,20	5,30		





A13



A28



A297



□ A149-A152
UTS A222-A224



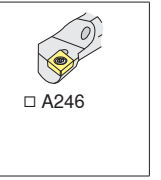
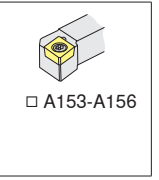
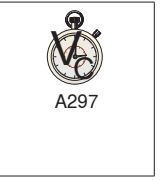
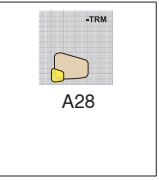
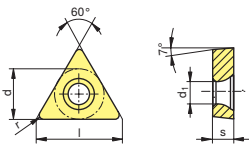
○ A244-A245
UTS A267

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TC..



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		TCM407	CTEP110	TCM10	CTCP115	CTCP125	CTCP135	CTP2120	CTPM125	CTC2135	CTC3110	CTCK120	H210T	AMZ	H10T	CTP4115	H216T	CTW7120	CTP5115						[mm]	[mm]	[mm]	[mm]	[mm]																																																																																																																																	
-27		TCGT 110202FN-27													●											6,35	11,00	2,38	0,20	2,80																																																																																																																																
		TCGT 110204FN-27													●	●											6,35	11,00	2,38	0,40	2,80																																																																																																																															
		TCGT 16T302FN-27													●	●											9,52	16,50	3,97	0,20	4,40																																																																																																																															
		TCGT 16T304FN-27													●	●											9,52	16,50	3,97	0,40	4,40																																																																																																																															
		TCGT 16T308FN-27													●	●											9,52	16,50	3,97	0,80	4,40																																																																																																																															
-CF05		TCGT 110202EN-CF05		●																						6,35	11,00	2,38	0,20	2,80																																																																																																																																
		TCGT 110204EN-CF05		●																						6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCGT 110208EN-CF05		●																						6,35	11,00	2,38	0,80	2,80																																																																																																																																
		TCGT 16T304EN-CF05		●																						9,52	16,50	3,97	0,40	4,40																																																																																																																																
-CF55		TCMT 110204EN-CF55		●																						6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 16T308EN-CF55		●																						9,52	16,50	3,97	0,80	4,40																																																																																																																																
-SF		TCGT 110202EN-SF			●																					6,35	11,00	2,38	0,20	2,80																																																																																																																																
		TCGT 110204EN-SF		●																						6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCGT 16T304EN-SF			●																					9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 110204EN-SF				●																				6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 110208EN-SF					●																			6,35	11,00	2,38	0,80	2,80																																																																																																																																
		TCMT 16T304EN-SF						●																		9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 16T308EN-SF							●																	9,52	16,50	3,97	0,80	4,40																																																																																																																																
-M25		TCMT 090204EN-M25							●																	5,56	9,60	2,38	0,40	2,50																																																																																																																																
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		TCMT 16T304EN-M25									●															9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 16T308EN-M25										●														9,52	16,50	3,97	0,80	4,40																																																																																																																																
-F43		TCMT 110204EN-F43										●														6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 16T304EN-F43											●													9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 16T308EN-F43												●												9,52	16,50	3,97	0,80	4,40																																																																																																																																
-SMF		TCMT 110204EN-SMF			●																					6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 110208EN-SMF				●		●																		6,35	11,00	2,38	0,80	2,80																																																																																																																																
		TCMT 16T304EN-SMF					●																			9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 16T308EN-SMF						●																		9,52	16,50	3,97	0,80	4,40																																																																																																																																
-M55		TCMT 090204EN-M55							●																	5,56	9,60	2,38	0,40	2,50																																																																																																																																
		TCMT 110204EN-M55								●																6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 16T308EN-M55											●													9,52	16,50	3,97	0,80	4,40																																																																																																																																
-SM		TCGT 110202EN-SM							●																	6,35	11,00	2,38	0,20	2,80																																																																																																																																
		TCMT 090204EN-SM												●												5,56	9,60	2,38	0,40	2,50																																																																																																																																
		TCMT 110204EN-SM													●											6,35	11,00	2,38	0,40	2,80																																																																																																																																
		TCMT 110208EN-SM														●										6,35	11,00	2,38	0,80	2,80																																																																																																																																
		TCMT 16T304EN-SM															●									9,52	16,50	3,97	0,40	4,40																																																																																																																																
		TCMT 16T308EN-SM																●								9,52	16,50	3,97	0,80	4,40																																																																																																																																
		TCMT 16T312EN-SM																								9,52	16,50	3,97	1,20	4,40																																																																																																																																
	TCMT 220408EN-SM																									12,70	22,00	4,76	0,80	5,30																																																																																																																																









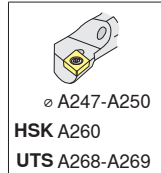
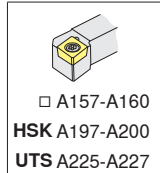
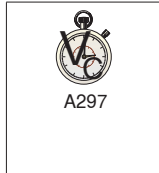
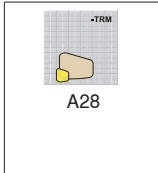
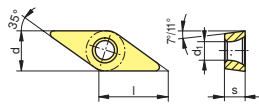
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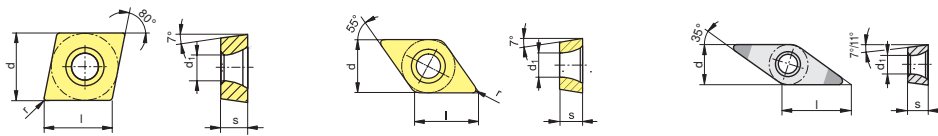
VC..



		Material / Workpiece												d	l	s	r	d ₁									
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-SF		VCVT 110301EN-SF	●	●	●	●	●																				
		VCVT 110302EN-SF	●	●	●	●	●																				
		VCVT 110304EN-SF	●	●	●	●	●																				
		VCVT 110308EN-SF	●	●	●	●	●																				
		VCVT 160404EN-SF	●	●	●	●	●																				
		VCVT 160408EN-SF	●	●	●	●	●																				
		VCMT 160404EN-SF	●		●	●	●																				
		VCMT 160408EN-SF			●	●																					
-M25		VCMT 160404EN-M25						●																			
		VCMT 160408EN-M25						●																			
-SMF		VCVT 110302EN-SMF					●																				
		VCMT 110304EN-SMF		●	●	●	●																				
		VCMT 160404EN-SMF		●	●	●	●																				
		VCMT 160408EN-SMF		●	●	●	●																				
-M55		VCMT 160404EN-M55						●																			
		VCMT 160408EN-M55						●																			
-SM		VCMT 160404EN-SM			●	●	●			●	●	●															
		VCMT 160406EN-SM			●																						
		VCMT 160408EN-SM			●	●					●	●	●														
		VCMT 160412EN-SM					●					●	●														
VC..W		VCMW 160404FN														●											



			Material			d	l	s	r	d _i
			P	M	K					
			CTBK104	CTD4110	CTL6115	[mm]	[mm]	[mm]	[mm]	[mm]
CC..W-B		CCGW 09T304FN_B3	●			9,52	9,70	3,97	0,40	4,40
		CCGW 09T304SN-013E_B3		●		9,52	9,70	3,97	0,40	4,40
		CCGW 09T304TN-020D_B3	●			9,52	9,70	3,97	0,40	4,40
		CCGW 09T308FN_B3	●			9,52	9,70	3,97	0,80	4,40
		CCGW 09T308SN-013E_B3		●		9,52	9,70	3,97	0,80	4,40
CCGW 09T308TN-020D_B3	●			9,52	9,70	3,97	0,80	4,40		
DC..W-A		DCGW 070208FN_A3	●			6,35	7,75	2,38	0,80	2,80
		DCGW 070208TN-020D_A3	●			6,35	7,75	2,38	0,80	2,80
DC..W-B		DCGW 11T304FN_B3	●			9,52	11,60	3,97	0,40	4,40
		DCGW 11T304SN-013E_B3		●		9,52	11,60	3,97	0,40	4,40
		DCGW 11T304TN-020D_B3	●			9,52	11,60	3,97	0,40	4,40
		DCGW 11T308SN-013E_B3		●		9,52	11,60	3,97	0,80	4,40
-F4		VCUW 160408FL-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160408FN-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160408FR-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160408TL-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160408TN-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160408TR-F4	●			9,52	16,60	4,76	0,80	4,40
		VCUW 160412FL-F4	●			9,52	16,60	4,76	1,20	4,40
		VCUW 160412FR-F4	●			9,52	16,60	4,76	1,20	4,40
		VCUW 160412TL-F4	●			9,52	16,60	4,76	1,20	4,40
		VCUW 160412TN-F4	●			9,52	16,60	4,76	1,20	4,40
		VCUW 160412TR-F4	●			9,52	16,60	4,76	1,20	4,40
		VCUW 220530FL-F4	●			12,70	22,10	5,56	3,00	5,50
		VCUW 220530FR-F4	●			12,70	22,10	5,56	3,00	5,50
		VCUW 220530TL-F4	●			12,70	22,10	5,56	3,00	5,50
		VCUW 220530TN-F4	●			12,70	22,10	5,56	3,00	5,50
		VCUW 220530TR-F4	●			12,70	22,10	5,56	3,00	5,50
		VPUW 220516FL-F4	●			12,70	22,10	5,56	1,60	5,50
		VPUW 220516FN-F4	●			12,70	22,10	5,56	1,60	5,50
		VPUW 220516FR-F4	●			12,70	22,10	5,56	1,60	5,50
		VPUW 220516TL-F4	●			12,70	22,10	5,56	1,60	5,50
VPUW 220516TN-F4	●			12,70	22,10	5,56	1,60	5,50		
VPUW 220516TR-F4	●			12,70	22,10	5,56	1,60	5,50		



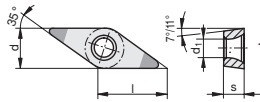
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MaxiLock S

CC.. DC.. VC.. (outros materiais de corte)

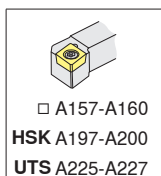
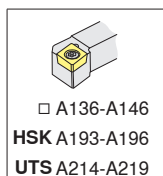
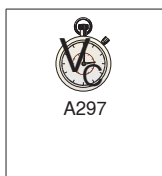
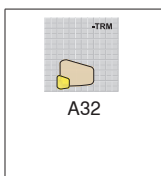
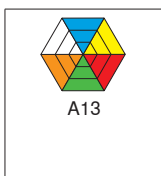
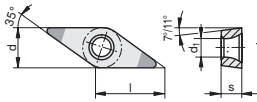


																					P	M	K	N	S	H	CTBK104
																						[mm]	[mm]	[mm]	[mm]	[mm]	
-F41		VCUT 160408FL-F41																				9,52	16,60	4,76	0,80	4,40	
		VCUT 160408FN-F41				●																	9,52	16,60	4,76	0,80	4,40
		VCUT 160408FR-F41				●																	9,52	16,60	4,76	0,80	4,40
		VCUT 160408TL-F41				●																	9,52	16,60	4,76	0,80	4,40
		VCUT 160408TN-F41				●																	9,52	16,60	4,76	0,80	4,40
		VCUT 160408TR-F41				●																	9,52	16,60	4,76	0,80	4,40
		VCUT 160412FL-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 160412FN-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 160412FR-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 160412TL-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 160412TN-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 160412TR-F41				●																	9,52	16,60	4,76	1,20	4,40
		VCUT 220530FL-F41				●																	12,70	22,10	5,56	3,00	5,50
		VCUT 220530FN-F41				●																	12,70	22,10	5,56	3,00	5,50
		VCUT 220530FR-F41				●																	12,70	22,10	5,56	3,00	5,50
		VCUT 220530TL-F41				●																	12,70	22,10	5,56	3,00	5,50
		VCUT 220530TN-F41				●																	12,70	22,10	5,56	3,00	5,50
		VCUT 220530TR-F41				●																	12,70	22,10	5,56	3,00	5,50
		VPUT 220516FL-F41				●																	12,70	22,10	5,56	1,60	5,50
		VPUT 220516FN-F41				●																	12,70	22,10	5,56	1,60	5,50
VPUT 220516FR-F41				●																	12,70	22,10	5,56	1,60	5,50		
VPUT 220516TL-F41				●																	12,70	22,10	5,56	1,60	5,50		
VPUT 220516TN-F41				●																	12,70	22,10	5,56	1,60	5,50		
VPUT 220516TR-F41				●																	12,70	22,10	5,56	1,60	5,50		
-M4		VCUW 160408FN-M4				●																9,52	16,60	4,76	0,80	4,40	
		VCUW 160412FN-M4				●																	9,52	16,60	4,76	1,20	4,40
		VCUW 160412TN-M4				●																	9,52	16,60	4,76	1,20	4,40
		VCUW 220530FN-M4				●																	12,70	22,10	5,56	3,00	5,50
		VCUW 220530TN-M4				●																	12,70	22,10	5,56	3,00	5,50
		VPUW 220516FN-M4				●																	12,70	22,10	5,56	1,60	5,50
VPUW 220516TN-M4				●																	12,70	22,10	5,56	1,60	5,50		



A13	A32	A297	□ A136-A146 HSK A193-A196 UTS A214-A219	□ A157-A160 HSK A197-A200 UTS A225-A227	∅ A237-A243 HSK A258-A259 UTS A264-A266	∅ A247-A250 HSK A260 UTS A268-A269
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			P			M			K			N			S			H				
			CTBK104	CTD4110	CTL6115	CTBK104	CTD4110	CTL6115	CTBK104	CTD4110	CTL6115	CTBK104	CTD4110	CTL6115	CTBK104	CTD4110	CTL6115	CTBK104	CTD4110	CTL6115		
			d	l	s	r	d _i															
			[mm]	[mm]	[mm]	[mm]	[mm]															
-M41		VCUT 160408FL-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408FN-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408FR-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408TL-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408TN-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408TR-M41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160412FL-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412FN-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412FR-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412TL-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412TN-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412TR-M41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 220530FL-M41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530FN-M41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530FR-M41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530TL-M41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530TN-M41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530TR-M41	●						12,70	22,10	5,56	3,00	5,50									
		VPUT 220516FL-M41	●						12,70	22,10	5,56	1,60	5,50									
		VPUT 220516FN-M41	●						12,70	22,10	5,56	1,60	5,50									
VPUT 220516FR-M41	●						12,70	22,10	5,56	1,60	5,50											
VPUT 220516TL-M41	●						12,70	22,10	5,56	1,60	5,50											
VPUT 220516TN-M41	●						12,70	22,10	5,56	1,60	5,50											
VPUT 220516TR-M41	●						12,70	22,10	5,56	1,60	5,50											
-U41		VCUT 160408FN-U41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160408TN-U41	●						9,52	16,60	4,76	0,80	4,40									
		VCUT 160412FN-U41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 160412TN-U41	●						9,52	16,60	4,76	1,20	4,40									
		VCUT 220530FN-U41	●						12,70	22,10	5,56	3,00	5,50									
		VCUT 220530TN-U41	●						12,70	22,10	5,56	3,00	5,50									
		VPUT 220516FN-U41	●						12,70	22,10	5,56	3,00	5,50									
VPUT 220516TN-U41	●						12,70	22,10	5,56	3,00	5,50											

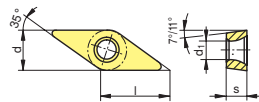
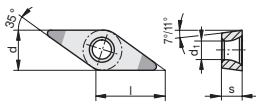


MaxiLock S

CC.. DC.. VC.. (outros materiais de corte)



			Material											d	l	s	r	d ₁	
			P																
			M																
			Material											d	l	s	r	d ₁	
			K																
			N																
			Material											d	l	s	r	d ₁	
			S																
			H																
			CTBK104	CTD4110	CTL6115														
-R41		VCUT 160408FL-R41													9,52	16,60	4,76	0,80	4,40
		VCUT 160408FN-R41	●												9,52	16,60	4,76	0,80	4,40
		VCUT 160408FR-R41	●												9,52	16,60	4,76	0,80	4,40
		VCUT 160408TL-R41	●												9,52	16,60	4,76	0,80	4,40
		VCUT 160408TN-R41	●												9,52	16,60	4,76	0,80	4,40
		VCUT 160408TR-R41	●												9,52	16,60	4,76	0,80	4,40
		VCUT 160412FL-R41	●												9,52	16,60	4,76	1,20	4,40
		VCUT 160412FN-R41	●												9,52	16,60	4,76	1,20	4,40
		VCUT 160412FR-R41	●												9,52	16,60	4,76	1,20	4,40
		VCUT 160412TL-R41	●												9,52	16,60	4,76	1,20	4,40
		VCUT 160412TR-R41	●												9,52	16,60	4,76	1,20	4,40
		VCUT 220530FL-R41	●												12,70	22,10	5,56	3,00	5,50
		VCUT 220530FN-R41	●												12,70	22,10	5,56	3,00	5,50
		VCUT 220530FR-R41	●												12,70	22,10	5,56	3,00	5,50
		VCUT 220530TL-R41	●												12,70	22,10	5,56	3,00	5,50
		VCUT 220530TN-R41	●												12,70	22,10	5,56	3,00	5,50
		VCUT 220530TR-R41	●												12,70	22,10	5,56	3,00	5,50
		VPUT 220516FL-R41	●												12,70	22,10	5,56	1,60	5,50
		VPUT 220516FN-R41	●												12,70	22,10	5,56	1,60	5,50
		VPUT 220516FR-R41	●												12,70	22,10	5,56	1,60	5,50
VPUT 220516TL-R41	●												12,70	22,10	5,56	1,60	5,50		
VPUT 220516TN-R41	●												12,70	22,10	5,56	1,60	5,50		
VPUT 220516TR-R41	●												12,70	22,10	5,56	1,60	5,50		
VC..W-B		VBGW 160404SN-013E-B3			●									9,52	16,60	4,76	0,40	4,40	
		VCGW 110302SN-010E_B3			●									6,35	11,10	3,18	0,20	2,80	
		VCGW 110304FN_B3	●											6,35	11,10	3,18	0,40	2,90	
		VCGW 110304TN-020D_B3	●											6,35	11,10	3,18	0,40	2,90	
		VCGW 160408FN_B3	●											9,52	16,60	4,76	0,80	4,40	
		VCGW 160408TN-020D_B3	●											9,52	16,60	4,76	0,80	4,40	
FN		VCUW 160404FN		●										9,52	16,60	4,76	0,40	4,40	
		VCUW 160412FN		●										9,52	16,60	4,76	1,20	4,40	
		VCUW 160416FN		●										9,52	16,60	4,76	1,60	4,40	
		VCUW 220530FN-F4		●										12,70	22,10	5,56	3,00	5,50	
					CTBK104	CTD4110	CTL6115												



A13



A32



A297



□ A136-A146
 HSK A193-A196
 UTS A214-A219






□ A157-A160
 HSK A197-A200
 UTS A225-A227

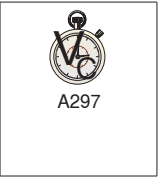
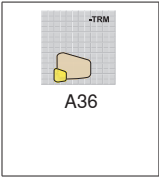
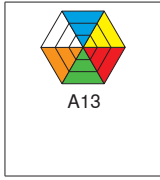
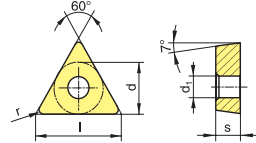
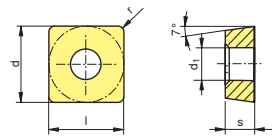
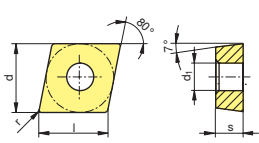


○ A237-A243
 HSK A258-A259
 UTS A264-A266

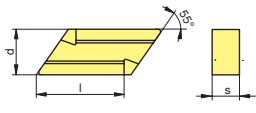


○ A247-A250
 HSK A260
 UTS A268-A269

			CTCPC															d [mm]	l [mm]	s [mm]	r [mm]	d ₁ [mm]												
			P	M	K	N	S	H	1	2	3	4	5	6	7	8	9						10	11	12	13	14	15						
CC..X		CCMX 120408EN	•	•	•																							12,70	12,90	4,76	0,80	5,16		
SC..X		SCMX 120408EN			•	•																							12,70	12,70	4,76	0,80	5,16	
		SCMX 190616EN				•	•																							19,05	19,05	6,35	1,60	7,93
TC..X		TCMX 160404EN		•	•	•																							9,52	16,50	4,76	0,40	3,81	
		TCMX 160408EN		•	•	•																								9,52	16,50	4,76	0,80	3,81
		TCMX 160412EN		•	•	•																								9,52	16,50	4,76	1,20	3,81
		TCMX 220404EN					•	•																						12,70	22,00	4,76	0,40	5,16
		TCMX 220408EN						•	•																					12,70	22,00	4,76	0,80	5,16
		TCMX 220412EN						•	•																					12,70	22,00	4,76	1,20	5,16



			Legend											d	l	s	r						
			P	M	K	N	S	H	CTCP125	CTCP135	CTS3105	CTBK102	CTN3110					CTC3110	CTD4110	CTD4125	H10T		
-11		KNUX 160405EL-11	●	○	●	●						○							9,52	16,00	4,76	0,50	
		KNUX 160405ER-11	●	○	●	●						●								9,52	16,00	4,76	0,50
		KNUX 160410EL-11	●	○	●	●														9,52	16,00	4,76	1,00
		KNUX 160410ER-11	●	○	●	●														9,52	16,00	4,76	1,00
-12		KNUX 160405EL-12	●	○	●	●													9,52	16,00	4,76	0,50	
		KNUX 160405ER-12	●	○	●	●						●								9,52	16,00	4,76	0,50
		KNUX 160410EL-12	●	○	●	●														9,52	16,00	4,76	1,00
		KNUX 160410ER-12	●	○	●	●														9,52	16,00	4,76	1,00



A13

A36

A297


A168

Simplex P

RC..



												d	s					
		CTCP125	CTCP135	CTS3105	CTBK102	CTN3110	CTC3110	CTD4110	CTD4125	H10T								
P	●	●	●							○								
M	○	○																
K	●	●	●	●	●	●	●			●								
N										●	●	●						
S		○																
H			●	●														

RC.X		RCGX 060600TN-020D	RCGX 070400SN-050C	RCGX 090700PN-075CF	RCGX 090700PN-100CF	RCGX 090700SN-200C	RCGX 090700TN-020D	RCGX 120700PN-100CF	RCGX 120700PN-150CF	RCGX 120700SN-200C	RCGX 120700TN-020D	RCGX 151000PN-100CF	RCGX 151000SN-200C	RCGX 191000PN-100CF	RCGX 191000SN-200C	RCGX 251200PN-100CF	RCGX 251200PN-200CE	RCGX 251200PN-200CF	RCGX 251200SN-200C	d	s	
																				[mm]	[mm]	
			●			●				●											6,00	6,20
			●																		7,00	4,76
				●							●										9,52	7,70
				●																	9,52	7,70
				●								●									9,52	7,70
				●																	12,70	7,70
				●																	12,70	7,70
				●			●														12,70	7,70
				●					●												12,70	7,70
				●																	15,80	10,00
				●																	15,80	10,00
				●																	19,05	10,00
				●																	19,05	10,00
				●																	25,40	12,00
				●																	25,40	12,00
				●								●									25,40	12,00
				●																	25,40	12,00

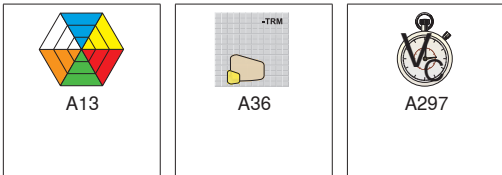
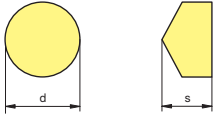
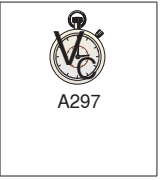
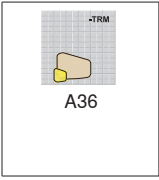
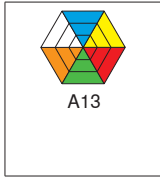
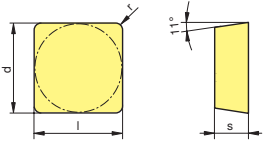


	Image	Code	Material											d [mm]	l [mm]	s [mm]	r [mm]			
			P	M	K	N	S	H	CTCP125	CTCP135	CTS3105	CTBK102	CTN3110					CTC3110	CTD4110	CTD4125
-57		SPMR 090308EN-57	●	○	●	○	○										9,52	9,52	3,18	0,80
SPMR		SPMR 090304EN			●												9,52	9,52	3,18	0,40
		SPMR 120304EN			●												12,70	12,70	3,18	0,40
		SPMR 120308EN	●	●													12,70	12,70	3,18	0,80
SPMR-R		SPMR 120308ER			●											12,70	12,70	3,18	0,80	
SP..N		SPUN 120308EN			●						●					12,70	12,70	3,18	0,80	

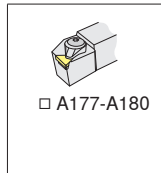
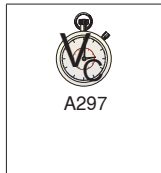
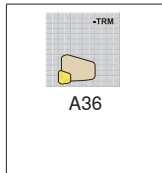
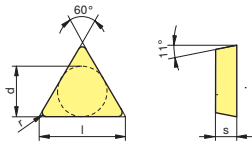


Simplex P

TP..

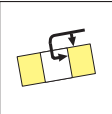
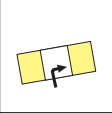

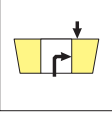
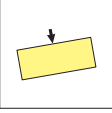
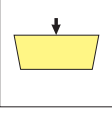


		P	M	K	N	S	H	CTCP125	CTCP135	CTS3105	CTBK102	CTN3110	CTC3110	CTD4110	CTD4125	H10T	d	l	s	r			
		●	○	●	●	○		●	○	●	●	●	●	●	●		[mm]	[mm]	[mm]	[mm]			
-D														●			9,52	16,50	3,18	0,40			
-57										●							9,52	16,50	3,18	0,80			
TPGN										●							9,52	16,50	3,18	0,40			
TP..N										●							6,35	11,00	3,18	0,40			
														●			6,35	11,00	3,18	0,40			
												●					6,35	11,00	3,18	0,80			
								●	●			●						9,52	16,50	3,18	0,40		
															●			9,52	16,50	3,18	0,40		
								●	●							●			9,52	16,50	3,18	0,80	
																●			9,52	16,50	3,18	0,80	
																	●			9,52	16,50	3,18	1,20
																			12,70	22,00	4,76	0,80	
TPMR										●							6,35	11,00	3,18	0,40			
										●							6,35	11,00	3,18	0,80			
										●							9,52	16,50	3,18	0,40			
										●							9,52	16,50	3,18	0,80			
										●		●						9,52	16,50	3,18	0,80		
TPMR-RL										●							6,35	11,00	3,18	0,40			
										●							6,35	11,00	3,18	0,40			
										●							9,52	16,50	3,18	0,40			
										●							9,52	16,50	3,18	0,40			
										●							9,52	16,50	3,18	0,80			
										●							9,52	16,50	3,18	0,80			

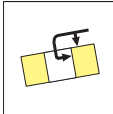
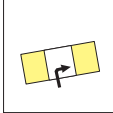
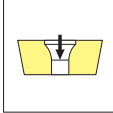
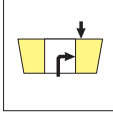
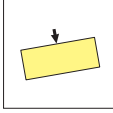
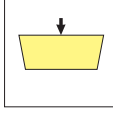




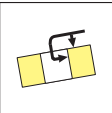
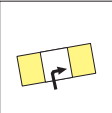
Usinagem externa - haste quadrada

	MaxiLock D	A109-A120
	MaxiLock N	A121-A135
	MaxiLock S	A136-A160
	MaxiLock P	A161-A166
	Simplex N	A167-A176
	Simplex P	A177-A180

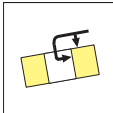
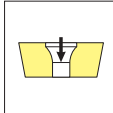
Usinagem interna - haste cilíndrica

	MaxiLock D	A228-A231
	MaxiLock N	A232-A236
	MaxiLock S	A237-A250
	MaxiLock P	A251-A252
	Simplex N	A253
	Simplex P	A254

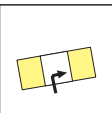
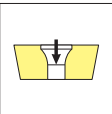
Usinagem externa - HSK-T

	MaxiLock D	A181-A190
	MaxiLock N	A191-A192
	MaxiLock S	A193-A200

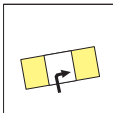
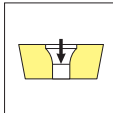
Usinagem interna - HSK-T

	MaxiLock D	A255-A257
	MaxiLock S	A258-A269

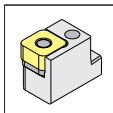
Usinagem externa - UTS

	MaxiLock N	A201-A213
	MaxiLock S	A214-A227

Usinagem interna - UTS

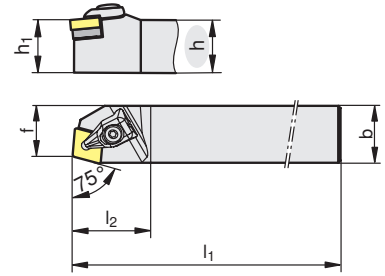
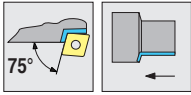
	MaxiLock N	A261-A263
	MaxiLock S	A264-A269

Usinagem de rodas ferroviárias




	Rodas ferroviárias - cápsulas	A270
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DCBN...




MaxiLock D

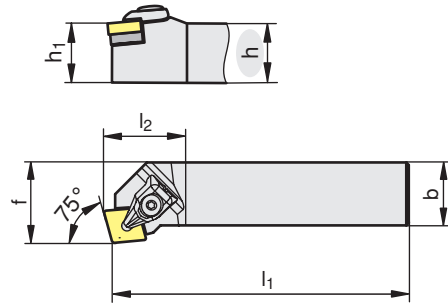
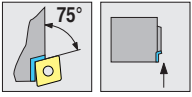


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
								CN.. 1204..	E01
25	DCBNR 2525 M12	R	25	25	150	32	22	CN.. 1204..	E01
25	DCBNL 2525 M12	L	25	25	150	32	22	CN.. 1204..	E01

				
E01	11224545	11224494	11211558	11224503

		
A303	A63-A66	A79



A imagem mostra ferramenta direita

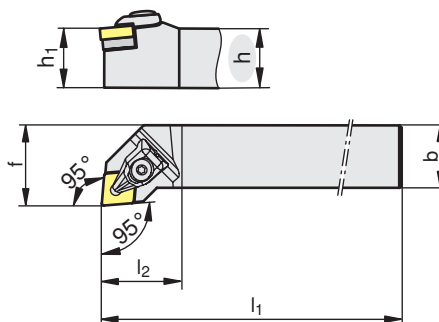
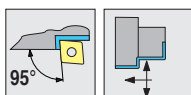
h [mm]	Tipo, descrição	L N R	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	DCKNR 2525 M12	R	25	25	150	29,1	32	CN.. 1204..	E01
25	DCKNL 2525 M12	L	25	25	150	29,1	32	CN.. 1204..	E01

E01	11224545	11224494	11211558	11224503	




A303	A63-A66	A79






DCLN...

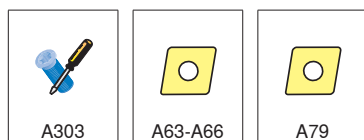
MaxiLock D

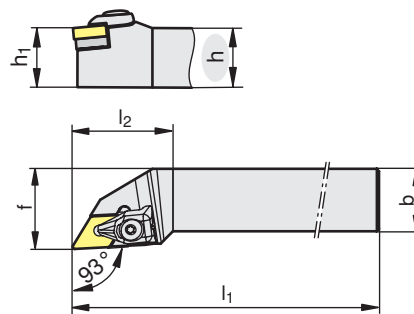
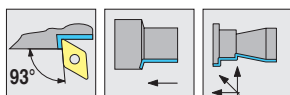


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	DCLNR 1616 H09	R	16	16	100	23	20	CN.. 0903..	E01
16	DCLNL 1616 H09	L	16	16	100	23	20	CN.. 0903..	E01
20	DCLNR 2020 K09	R	20	20	125	24	25	CN.. 0903..	E01
20	DCLNL 2020 K09	L	20	20	125	24	25	CN.. 0903..	E01
20	DCLNR 2020 K12	R	20	20	125	32	25	CN.. 1204..	E02
20	DCLNL 2020 K12	L	20	20	125	32	25	CN.. 1204..	E02
25	DCLNR 2525 M12	R	25	25	150	32	32	CN.. 1204..	E02
25	DCLNL 2525 M12	L	25	25	150	32	32	CN.. 1204..	E02
32	DCLNR 3225 P12	R	32	25	170	32	32	CN.. 1204..	E02
32	DCLNL 3225 P12	L	32	25	170	32	32	CN.. 1204..	E02
25	DCLNR 2525 M16	R	25	25	150	38	32	CN.. 1606..	E03
25	DCLNL 2525 M16	L	25	25	150	38	32	CN.. 1606..	E03
32	DCLNR 3232 P16	R	32	32	170	37	40	CN.. 1606..	E03
32	DCLNL 3232 P16	L	32	32	170	37	40	CN.. 1606..	E03
32	DCLNR 3232 P19	R	32	32	170	42	40	CN.. 1906..	E04
32	DCLNL 3232 P19	L	32	32	170	42	40	CN.. 1906..	E04
40	DCLNR 4040 S19	R	40	40	250	42	50	CN.. 1906..	E04
40	DCLNL 4040 S19	L	40	40	250	42	50	CN.. 1906..	E04
40	DCLNR 4040 S25	R	40	40	250	60	50	CN.. 2509..	E05
40	DCLNL 4040 S25	L	40	40	250	60	50	CN.. 2509..	E05

				
E01	11227306	11227305	11577861	11227314
E02	11224545	11224494	11211558	11224503
E03	11227322	11227318	11227315	11227323
E04	11227325	11227318	11227316	11227323
E05	11227328	11227329	11579427	11227330

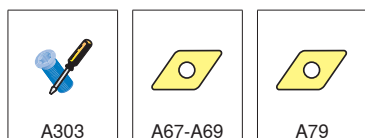




A imagem mostra ferramenta direita

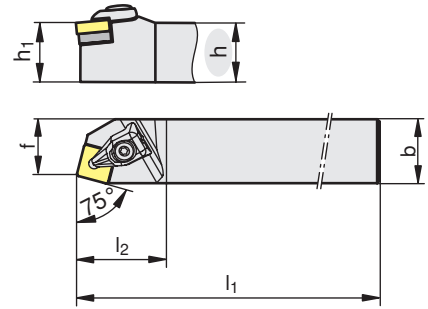
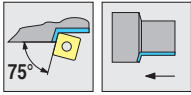
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	DDJNR 1616 H11	R	16	16	100	33	20	DN.. 1104..	E01
16	DDJNL 1616 H11	L	16	16	100	33	20	DN.. 1104..	E01
20	DDJNR 2020 K11	R	20	20	125	40	25	DN.. 1104..	E01
20	DDJNL 2020 K11	L	20	20	125	40	25	DN.. 1104..	E01
25	DDJNR 2525 M11	R	25	25	150	40	32	DN.. 1104..	E01
25	DDJNL 2525 M11	L	25	25	150	40	32	DN.. 1104..	E01
20	DDJNR 2020 K15	R	20	20	125	40	25	DN.. 1506..	E02
20	DDJNL 2020 K15	L	20	20	125	40	25	DN.. 1506..	E02
25	DDJNR 2525 M15	R	25	25	150	40	32	DN.. 1506..	E02
25	DDJNL 2525 M15	L	25	25	150	40	32	DN.. 1506..	E02
32	DDJNR 3225 P15	R	32	25	170	40	32	DN.. 1506..	E02
32	DDJNL 3225 P15	L	32	25	170	40	32	DN.. 1506..	E02

E01	11258694	11227305	11227308	11227314
E02	11224545	11224494	11211562	11224503











DSBN...

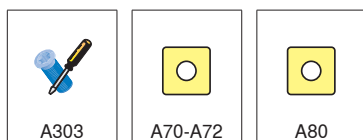
MaxiLock D



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	DSBNR 2020 K12	R	20	20	125	35	17	SN.. 1204..	E01
20	DSBNL 2020 K12	L	20	20	125	35	17	SN.. 1204..	E01
25	DSBNR 2525 M12	R	25	25	150	35	22	SN.. 1204..	E01
25	DSBNL 2525 M12	L	25	25	150	35	22	SN.. 1204..	E01
25	DSBNR 2525 M15	R	25	25	150	43	22	SN.. 1506..	E02
25	DSBNL 2525 M15	L	25	25	150	43	22	SN.. 1506..	E02
32	DSBNR 3232 P15	R	32	32	170	42	27	SN.. 1506..	E02
32	DSBNL 3232 P15	L	32	32	170	42	27	SN.. 1506..	E02
32	DSBNR 3232 P19	R	32	32	170	48	27	SN.. 1906..	E03
32	DSBNL 3232 P19	L	32	32	170	48	27	SN.. 1906..	E03
40	DSBNR 4040 S19	R	40	40	250	48	35	SN.. 1906..	E03
40	DSBNL 4040 S19	L	40	40	250	48	35	SN.. 1906..	E03
40	DSBNR 4040 S25	R	40	40	250	57	35	SN.. 2507..	E04
40	DSBNL 4040 S25	L	40	40	250	57	35	SN.. 2507..	E04

				
E01	11224545	11224494	11211561	11224503
E02	11227322	11227318	11247269	11227323
E03	11227325	11227318	11227317	11227323
E04	11227328	11227329	11227319	11227330



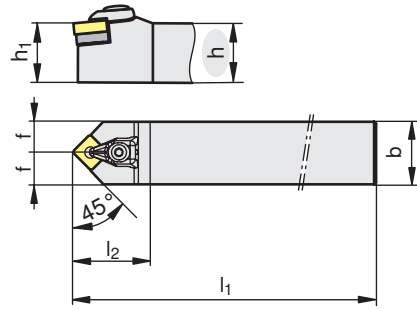
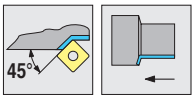


Imagem mostra ferramenta direita

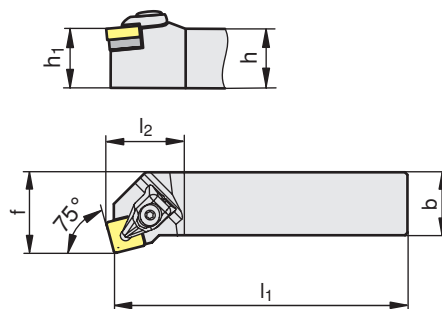
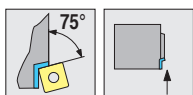
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	DSDNN 2020 K12	N	20	20	125	38	10	SN.. 1204..	E01
25	DSDNN 2525 M12	N	25	25	150	38	12,5	SN.. 1204..	E01

E01	11224545	11224494	11211561	11224503

A303	A70-A72	A80

DSKN...

MaxiLock D

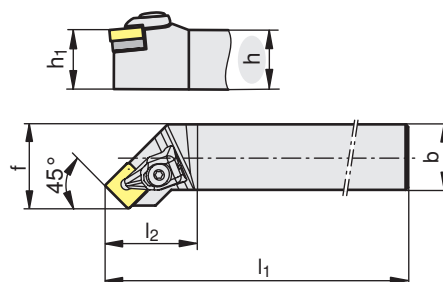
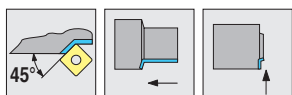


A imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	DSKNR 2525 M12	R	25	25	150	31,0	32	SN.. 1204..	E01
25	DSKNL 2525 M12	L	25	25	150	31,0	32	SN.. 1204..	E01






E01	11224545	11224494	11211561	11224503




A303	A70-A72	A80



A imagem mostra ferramenta direita

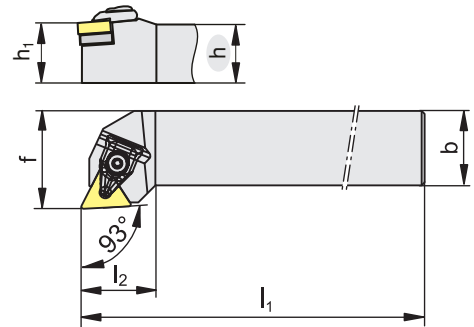
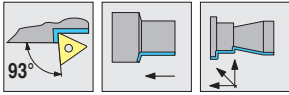
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
								SN.. 1204..	
20	DSSNR 2020 K12	R	20	20	125	35	25	SN.. 1204..	E01
20	DSSNL 2020 K12	L	20	20	125	35	25	SN.. 1204..	E01
25	DSSNR 2525 M12	R	25	25	150	35	32	SN.. 1204..	E01
25	DSSNL 2525 M12	L	25	25	150	35	32	SN.. 1204..	E01
32	DSSNR 3225 P12	R	32	25	170	35	32	SN.. 1204..	E01
32	DSSNL 3225 P12	L	32	25	170	35	32	SN.. 1204..	E01

				
E01	11224545	11224494	11211561	11224503




		
A303	A70-A72	A80


DTJN...


MaxiLock D

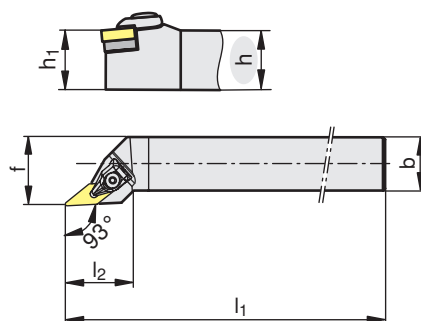
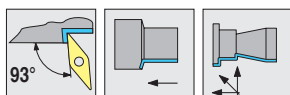


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	DTJNR 2020 K16	R	20	20	125	23	25	TN.. 1604..	E01
20	DTJNL 2020 K16	L	20	20	125	23	25	TN.. 1604..	E01
25	DTJNR 2525 M16	R	25	25	150	24	32	TN.. 1604..	E01
25	DTJNL 2525 M16	L	25	25	150	24	32	TN.. 1604..	E01

				
E01	11227306	11227305	11344329	11227314

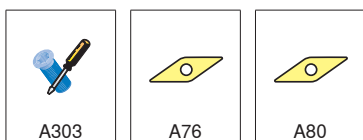
		
A303	A73-A75	A80



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	DVJNR 2020 K16	R	20	20	125	39	25	VN.. 1604..	E01
20	DVJNL 2020 K16	L	20	20	125	39	25	VN.. 1604..	E01
25	DVJNR 2525 M16	R	25	25	150	39	32	VN.. 1604..	E01
25	DVJNL 2525 M16	L	25	25	150	39	32	VN.. 1604..	E01

E01	11258694	11227305	11227311	11227314



DVVN...

MaxiLock D

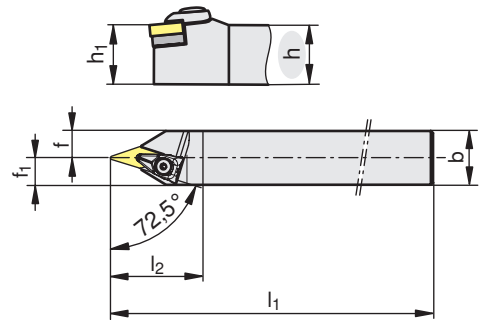
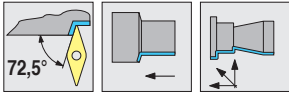






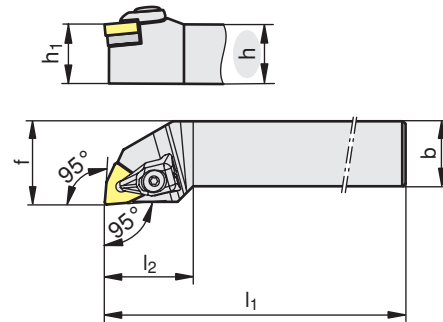
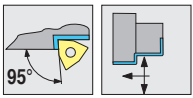


Imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 									
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	f ₁ [mm]			
20	DVVNN 2020 K16	N	20	20	125	43	7,5	12,5	VN.. 1604..	E01	
25	DVVNN 2525 M16	N	25	25	150	43	12,5	12,5	VN.. 1604..	E01	






				
E01	11258694	11227305	11227311	11227314

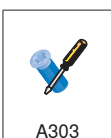
		
A303	A76	A80



A imagem mostra ferramenta direita

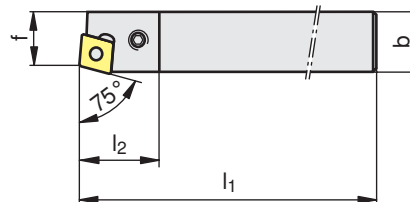
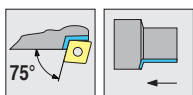
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	DWLN R 1616 H06	R	16	16	100	25	20	WN.. 0604..	E01
16	DWLN L 1616 H06	L	16	16	100	25	20	WN.. 0604..	E01
20	DWLN R 2020 K06	R	20	20	125	27	25	WN.. 0604..	E01
20	DWLN L 2020 K06	L	20	20	125	27	25	WN.. 0604..	E01
25	DWLN R 2525 M06	R	25	25	150	27	32	WN.. 0604..	E01
25	DWLN L 2525 M06	L	25	25	150	27	32	WN.. 0604..	E01
20	DWLN R 2020 K08	R	20	20	125	34	25	WN.. 0804..	E02
20	DWLN L 2020 K08	L	20	20	125	34	25	WN.. 0804..	E02
25	DWLN R 2525 M08	R	25	25	150	34	32	WN.. 0804..	E02
25	DWLN L 2525 M08	L	25	25	150	34	32	WN.. 0804..	E02

				
E01	11227306	11227305	11227310	11227314
E02	11224545	11224494	11211563	11224503



PCBN...

MaxiLock N

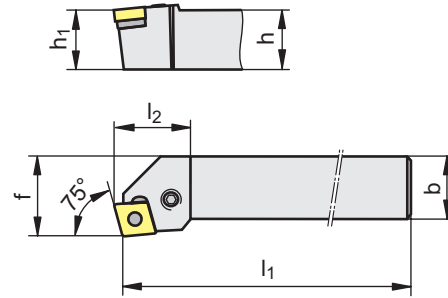
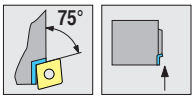


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
25	PCBNR 2525 M12-T	R	25	25	150	27,7	22	CN.. 1204..	E01
25	PCBNL 2525 M12-T	L	25	25	150	27,7	22	CN.. 1204..	E01
25	PCBNR 2525 M16-T	R	25	25	150	31,8	22	CN.. 1606..	E02
25	PCBNL 2525 M16-T	L	25	25	150	31,8	22	CN.. 1606..	E02
32	PCBNR 3232 P19-T	R	32	32	170	38,0	27	CN.. 1906..	E03
32	PCBNL 3232 P19-T	L	32	32	170	38,0	27	CN.. 1906..	E03

E01	59446	59568	59437	59430	86176	4771	140587
E02	59443	59451	59438	59426	86177	4771	140589
E03	59448	59569	59439	59434	86178	4209	140590

A303	A63-A66	A79



A imagem mostra ferramenta direita

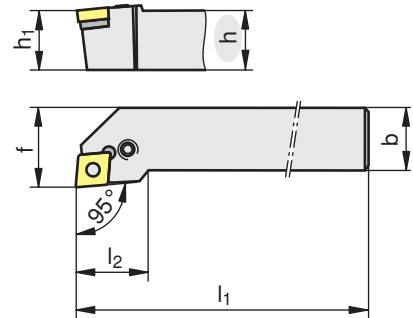
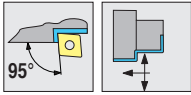
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	PCKNR 2525 M12-T	R	25	25	150	31,4	32	CN.. 1204..	E01
25	PCKNL 2525 M12-T	L	25	25	150	31,4	32	CN.. 1204..	E01

E01	59446	59568	59437	59430	86176	4771	140587




A303	A63-A66	A79









PCLN...

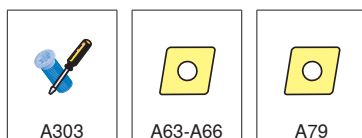
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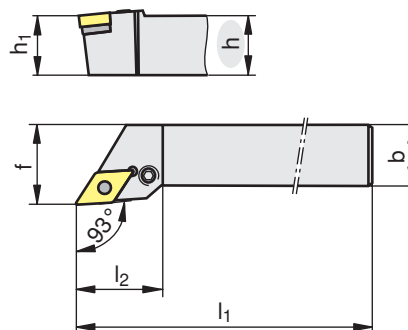


A imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	PCLNR 1616 H12-T	R	16	16	100	26,2	20	CN.. 1204..	E01
16	PCLNL 1616 H12-T	L	16	16	100	26,2	20	CN.. 1204..	E01
20	PCLNR 2020 K12-T	R	20	20	125	27,4	25	CN.. 1204..	E02
20	PCLNL 2020 K12-T	L	20	20	125	27,4	25	CN.. 1204..	E02
25	PCLNR 2525 M12-T	R	25	25	150	28	32	CN.. 1204..	E02
25	PCLNL 2525 M12-T	L	25	25	150	28	32	CN.. 1204..	E02
32	PCLNR 3225 P12-T	R	32	25	170	32,6	32	CN.. 1204..	E02
32	PCLNL 3225 P12-T	L	32	25	170	32,6	32	CN.. 1204..	E02
25	PCLNR 2525 M16-T	R	25	25	150	32,7	32	CN.. 1606..	E03
25	PCLNL 2525 M16-T	L	25	25	150	32,7	32	CN.. 1606..	E03
32	PCLNR 3232 P16-T	R	32	32	170	32,6	40	CN.. 1606..	E03
32	PCLNL 3232 P16-T	L	32	32	170	32,6	40	CN.. 1606..	E03
32	PCLNR 3232 P19-T	R	32	32	170	38	40	CN.. 1906..	E04
32	PCLNL 3232 P19-T	L	32	32	170	38	40	CN.. 1906..	E04
40	PCLNR 4040 S19-T	R	40	40	250	38	50	CN.. 1906..	E04
40	PCLNL 4040 S19-T	L	40	40	250	38	50	CN.. 1906..	E04
40	PCLNR 4040 S25	R	40	40	250	50	50	CN.. 2509..	E05
40	PCLNL 4040 S25	L	40	40	250	50	50	CN.. 2509..	E05

							
E01	59442	59568	59437	59430	86176	4771	140586
E02	59446	59568	59437	59430	86176	4771	140587
E03	59443	59451	59438	59426	86177	4771	140589
E04	59448	59569	59439	59434	86178	4209	140590
E05	59449	11294214	59440	59435	86182	4496	

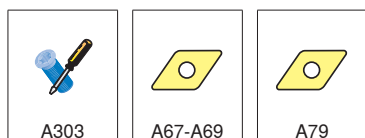




A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	PDJNR 1616 H11	R	16	16	100	26	20	DN.. 1104..	E01
16	PDJNL 1616 H11	L	16	16	100	26	20	DN.. 1104..	E01
20	PDJNR 2020 K11	R	20	20	125	30	25	DN.. 1104..	E01
20	PDJNL 2020 K11	L	20	20	125	30	25	DN.. 1104..	E01
25	PDJNR 2525 M11	R	25	25	150	30	32	DN.. 1104..	E01
25	PDJNL 2525 M11	L	25	25	150	30	32	DN.. 1104..	E01
20	PDJNR 2020 K15-T	R	20	20	125	34,9	25	DN.. 1506..	E02
20	PDJNL 2020 K15-T	L	20	20	125	34,9	25	DN.. 1506..	E02
25	PDJNR 2525 M15-T	R	25	25	150	34,7	32	DN.. 1506..	E02
25	PDJNL 2525 M15-T	L	25	25	150	34,7	32	DN.. 1506..	E02
32	PDJNR 3225 P15-T	R	32	25	170	34,7	32	DN.. 1506..	E02
32	PDJNR 3232 P15-T	R	32	32	170	34,7	40	DN.. 1506..	E02
32	PDJNL 3225 P15-T	L	32	25	170	34,7	32	DN.. 1506..	E02
32	PDJNL 3232 P15-T	L	32	32	170	34,7	40	DN.. 1506..	E02

							
E01	59445	293140	293147	293143	86174	4770	293151
E02	59443	59570	59437	59432	86176	4771	140591



PDNN...

MaxiLock N

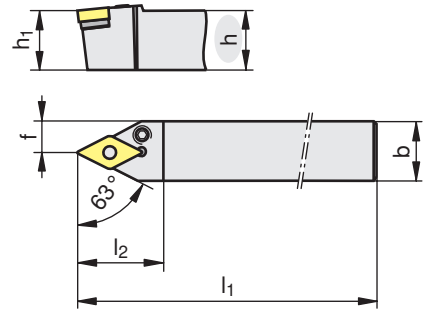
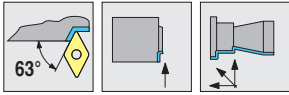















Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	PDNNR 2525 M11	R	25	25	150	30	12,5	DN.. 1104..	E01
25	PDNNL 2525 M11	L	25	25	150	30	12,5	DN.. 1104..	E01
25	PDNNR 2525 M15-T	R	25	25	150	37,4	12,5	DN.. 1506..	E02
25	PDNNL 2525 M15-T	L	25	25	150	37,4	12,5	DN.. 1506..	E02

							
E01	59445	293140	293147	293143	86174	4770	293151
E02	59443	59570	59437	59432	86176	4771	140591

		
A303	A67-A69	A79

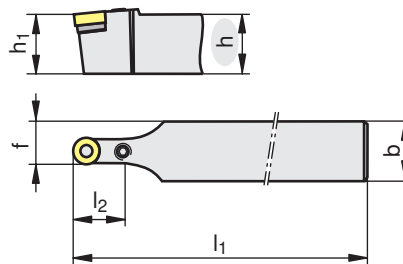
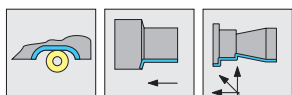
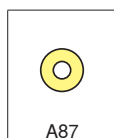


Imagem mostra ferramenta direita

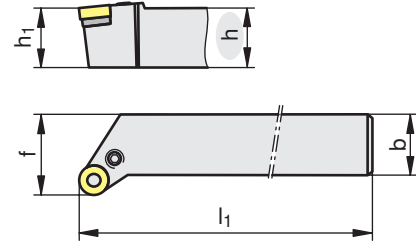
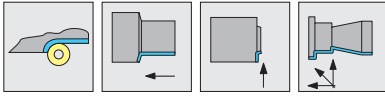
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	PRDCN 2525 M12-T	N	25	25	150	24	18,5	RC.. 1204..	E01
32	PRDCN 3225 P12-T	N	32	25	170	24	18,5	RC.. 1204..	E01
32	PRDCN 3225 P16-T	N	32	25	170	28	20,5	RC.. 1606..	E02
32	PRDCN 3232 P20-T	N	32	32	170	32	26	RC.. 2006..	E03
40	PRDCN 4040 S25-T	N	40	40	250	42	32,5	RC.. 2507..	E04

E01	59445	154563	59436	154568	86174	4770	154578
E02	154575	154564	154577	154570	86176	4771	154579
E03	59441	154565	59438	154571	86177	4773	154580
E04	154576	154566	59439	154572	86178	4209	154581














PRGC...

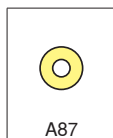
MaxiLock N

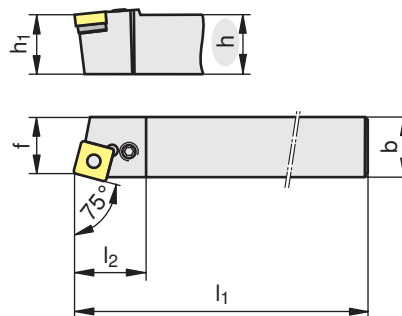
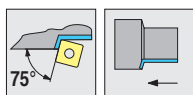


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	f [mm]		
25	PRGCR 2525 M12-T	R	25	25	150	32	RC.. 1204..	E01
25	PRGCL 2525 M12-T	L	25	25	150	32	RC.. 1204..	E01
32	PRGCR 3225 P12-T	R	32	25	170	32	RC.. 1204..	E01
32	PRGCL 3225 P12-T	L	32	25	170	32	RC.. 1204..	E01
32	PRGCR 3225 P16-T	R	32	25	170	32	RC.. 1606..	E02
32	PRGCR 3232 P20-T	R	32	32	170	40	RC.. 2006..	E03
32	PRGCL 3232 P20-T	L	32	32	170	40	RC.. 2006..	E03
40	PRGCR 4040 S25-T	R	40	40	250	50	RC.. 2507..	E04
40	PRGCL 4040 S25-T	L	40	40	250	50	RC.. 2507..	E04

							
E01	59445	154563	59436	154568	86174	4770	154578
E02	154575	154564	154577	154570	86176	4771	154579
E03	59441	154565	59438	154571	86177	4773	154580
E04	154576	154566	59439	154572	86178	4209	154581

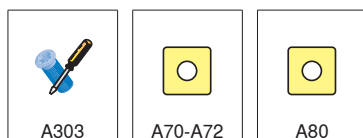




A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	PSBNR 2020 K12-T	R	20	20	125	27,5	17	SN.. 1204..	E01
20	PSBNL 2020 K12-T	L	20	20	125	27,5	17	SN.. 1204..	E01
25	PSBNR 2525 M12-T	R	25	25	150	27,5	22	SN.. 1204..	E01
25	PSBNL 2525 M12-T	L	25	25	150	27,5	22	SN.. 1204..	E01
32	PSBNR 3225 P12-T	R	32	25	170	32	22	SN.. 1204..	E01
32	PSBNL 3225 P12-T	L	32	25	170	32	22	SN.. 1204..	E01
25	PSBNR 2525 M15-T	R	25	25	150	32,5	22	SN.. 1506..	E02
25	PSBNL 2525 M15-T	L	25	25	150	32,5	22	SN.. 1506..	E02
32	PSBNR 3232 P15-T	R	32	32	170	32	27	SN.. 1506..	E02
32	PSBNL 3232 P15-T	L	32	32	170	32	27	SN.. 1506..	E02
32	PSBNR 3232 P19-T	R	32	32	170	39,2	27	SN.. 1906..	E03
32	PSBNL 3232 P19-T	L	32	32	170	39,2	27	SN.. 1906..	E03
40	PSBNR 4040 S19-T	R	40	40	250	38,5	35	SN.. 1906..	E03
40	PSBNL 4040 S19-T	L	40	40	250	38,5	35	SN.. 1906..	E03
40	PSBNR 4040 S25-T	R	40	40	250	48,0	35	SN.. 2507..	E04
40	PSBNL 4040 S25-T	L	40	40	250	48,0	35	SN.. 2507..	E04

E01	59446	59564 / 59547	59437	59430	86176	4771	140595
E02	59443	59549	59438	59426	86177	4771	140596
E03	59448	59566	59439	59434	86178	4209	140597
E04	59449	59567	59440	59435	86182	4496	140599



PSDN...

MaxiLock N

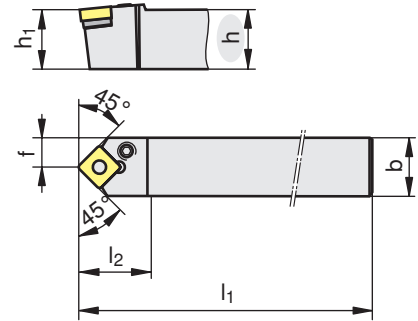
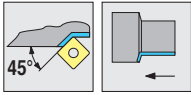














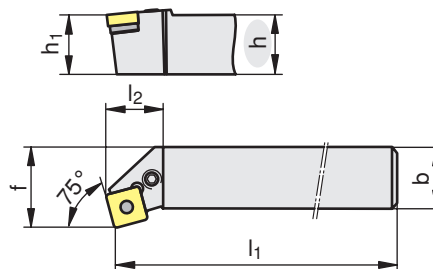
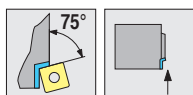


Imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
16	PSDNN 1616 H09-T	N	16	16	100	21,5	8,0	SN.. 0903..	E01
20	PSDNN 2020 K12-T	N	20	20	125	27,6	10,0	SN.. 1204..	E02
25	PSDNN 2525 M12-T	N	25	25	150	27,6	12,5	SN.. 1204..	E02
32	PSDNN 3225 P19-T	N	32	25	170	40,4	12,5	SN.. 1906..	E03
40	PSDNN 4040 S25-T	N	40	40	250	48,8	20	SN.. 2507..	E04









							
E01	59445	59562	59436	59429	86174	4770	154584
E02	59446	59564 / 59547	59437	59430	86176	4771	140595
E03	59448	59566	59439	59434	86178	4209	140597
E04	59449	59567	59440	59435	86182	4496	140599

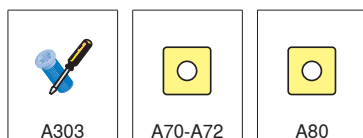
		
A303	A70-A72	A80



A imagem mostra ferramenta direita

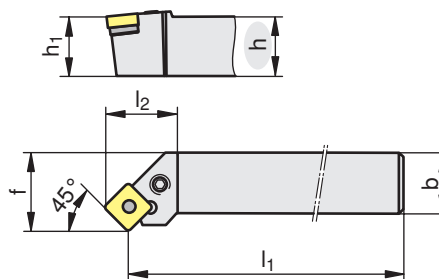
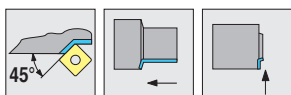
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	PSKNR 1616 H09-T	R	16	16	100	18,6	20	SN.. 0903..	E01
16	PSKNL 1616 H09-T	L	16	16	100	18,6	20	SN.. 0903..	E01
20	PSKNR 2020 K12-T	R	20	20	125	24,1	25	SN.. 1204..	E02
20	PSKNL 2020 K12-T	L	20	20	125	24,1	25	SN.. 1204..	E02
25	PSKNR 2525 M12-T	R	25	25	150	24,1	32	SN.. 1204..	E02
25	PSKNL 2525 M12-T	L	25	25	150	24,1	32	SN.. 1204..	E02
32	PSKNR 3225 P12-T	R	32	25	170	24,1	32	SN.. 1204..	E02
32	PSKNL 3225 P12-T	L	32	25	170	24,1	32	SN.. 1204..	E02
40	PSKNR 4040 S19-T	R	40	40	250	38,3	50	SN.. 1906..	E03

							
E01	59445	59562	59436	59429	86174	4770	154584
E02	59446	59564 / 59547	59437	59430	86176	4771	140595
E03	59448	59566	59439	59434	86178	4209	140597



PSSN...

MaxiLock N



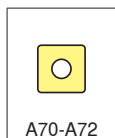
A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	PSSNR 1616 H09-T	R	16	16	100	23,0	20	SN.. 0903..	E01
16	PSSNL 1616 H09-T	L	16	16	100	23,0	20	SN.. 0903..	E01
20	PSSNR 2020 K12-T	R	20	20	125	27,3	25	SN.. 1204..	E02
20	PSSNL 2020 K12-T	L	20	20	125	27,3	25	SN.. 1204..	E02
25	PSSNR 2525 M12-T	R	25	25	150	29,3	32	SN.. 1204..	E02
25	PSSNL 2525 M12-T	L	25	25	150	29,3	32	SN.. 1204..	E02
32	PSSNR 3225 P12-T	R	32	25	170	29,3	32	SN.. 1204..	E02
32	PSSNL 3225 P12-T	L	32	25	170	29,3	32	SN.. 1204..	E02
25	PSSNR 2525 M15-T	R	25	25	150	32,5	32	SN.. 1506..	E03
32	PSSNR 3232 P15-T	R	32	32	170	37,5	40	SN.. 1506..	E03
32	PSSNR 3232 P19-T	R	32	32	170	40,2	40	SN.. 1906..	E04
32	PSSNL 3232 P19-T	L	32	32	170	40,2	40	SN.. 1906..	E04
40	PSSNR 4040 S25-T	R	40	40	250	48,8	50	SN.. 2507..	E05

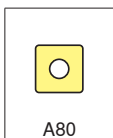
E01	59445	59562	59436	59429	86174	4770	154584
E02	59446	59564 / 59547	59437	59430	86176	4771	140595
E03	59443	59549	59438	59426	86177	4771	140596
E04	59448	59566	59439	59434	86178	4209	140597
E05	59449	59567	59440	59435	86182	4496	140599



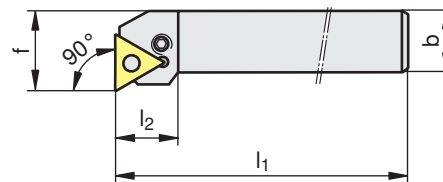
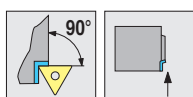
A303






A70-A72



A80



A imagem mostra ferramenta direita

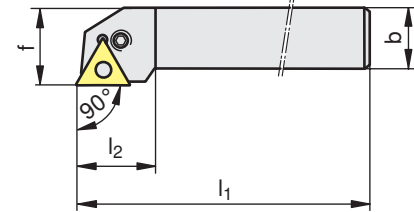
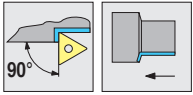
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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16	PTFNL 1616 H16-T	L	16	16	100	20,2	20	TN.. 1604..	E01
20	PTFNR 2020 K16-T	R	20	20	125	20,5	25	TN.. 1604..	E01
20	PTFNL 2020 K16-T	L	20	20	125	20,5	25	TN.. 1604..	E01
25	PTFNR 2525 M16-T	R	25	25	150	25	32	TN.. 1604..	E01
25	PTFNL 2525 M16-T	L	25	25	150	25	32	TN.. 1604..	E01
25	PTFNR 2525 M22-T	R	25	25	150	25,2	32	TN.. 2204..	E02
25	PTFNL 2525 M22-T	L	25	25	150	25,2	32	TN.. 2204..	E02
32	PTFNR 3225 P22-T	R	32	25	170	25	32	TN.. 2204..	E02
32	PTFNL 3225 P22-T	L	32	25	170	25	32	TN.. 2204..	E02

							
E01	59445	59556	59436	59429	86174	4770	140601
E02	59446	59557	59437	59430	86176	4771	140602














PTGN...


MaxiLock N

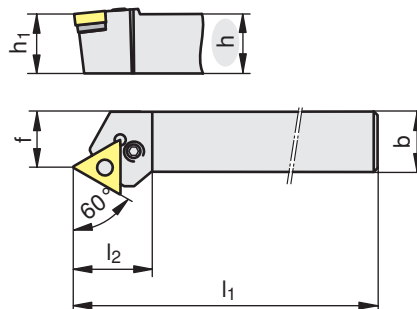


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	PTGNR 1616 H16-T	R	16	16	100	20	20	TN.. 1604..	E01
16	PTGNL 1616 H16-T	L	16	16	100	20	20	TN.. 1604..	E01
20	PTGNR 2020 K16-T	R	20	20	125	20	25	TN.. 1604..	E01
20	PTGNL 2020 K16-T	L	20	20	125	20	25	TN.. 1604..	E01
25	PTGNR 2525 M16-T	R	25	25	150	22,2	32	TN.. 1604..	E01
25	PTGNL 2525 M16-T	L	25	25	150	22,2	32	TN.. 1604..	E01
32	PTGNR 3225 P16-T	R	32	25	170	22	32	TN.. 1604..	E01
32	PTGNL 3225 P16-T	L	32	25	170	22	32	TN.. 1604..	E01
25	PTGNR 2525 M22-T	R	25	25	150	29	32	TN.. 2204..	E02
25	PTGNL 2525 M22-T	L	25	25	150	29	32	TN.. 2204..	E02
32	PTGNR 3232 P22-T	R	32	32	170	29	40	TN.. 2204..	E02
32	PTGNL 3232 P22-T	L	32	32	170	29	40	TN.. 2204..	E02

							
E01	59445	59556	59436	59429	86174	4770	140601
E02	59446	59557	59437	59430	86176	4771	140602

		
A303	A73-A75	A80



A imagem mostra ferramenta direita

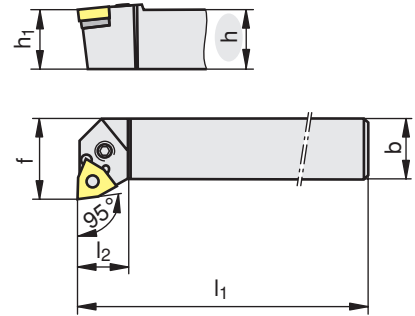
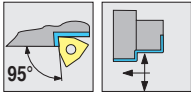
h [mm]	Tipo, descrição	L N R	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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20	PTTNL 2020 K16-T	L	20	20	125	25,9	17	TN.. 1604..	E01
25	PTTNR 2525 M22-T	R	25	25	150	32,7	22	TN.. 2204..	E02
25	PTTNL 2525 M22-T	L	25	25	150	32,7	22	TN.. 2204..	E02

E01	59445	59556	59436	59429	86174	4770	140601
E02	59446	59557	59437	59430	86176	4771	140602














PWLN...

MaxiLock N

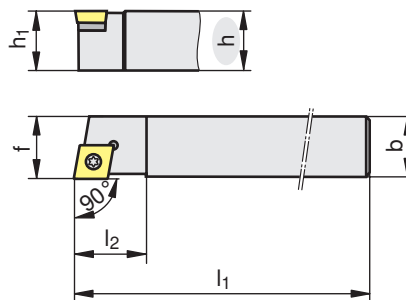
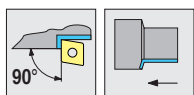


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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16	PWLN L 1616 H06	L	16	16	100	20	20	WN.. 0604..	E01
20	PWLN R 2020 K06	R	20	20	125	25	25	WN.. 0604..	E01
20	PWLN L 2020 K06	L	20	20	125	25	25	WN.. 0604..	E01
25	PWLN R 2525 M06	R	25	25	150	25	32	WN.. 0604..	E01
25	PWLN L 2525 M06	L	25	25	150	25	32	WN.. 0604..	E01
20	PWLN R 2020 K08	R	20	20	125	22	25	WN.. 0804..	E02
20	PWLN L 2020 K08	L	20	20	125	22	25	WN.. 0804..	E02
25	PWLN R 2525 M08	R	25	25	150	22	32	WN.. 0804..	E02
25	PWLN L 2525 M08	L	25	25	150	22	32	WN.. 0804..	E02
32	PWLN R 3225 P08	R	32	25	170	22	32	WN.. 0804..	E02
32	PWLN L 3225 P08	L	32	25	170	22	32	WN.. 0804..	E02

							
E01	59445	293139	293147	59429	86174	4770	293148
E02	59446	218151	59437	59430	86176	4771	222127

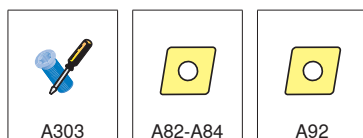




A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R 							
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8	SCACR 0808 K06	R	8	8	125	9	8	CC.. 0602..	E01
8	SCACL 0808 D06	L	8	8	60	9	8	CC.. 0602..	E01
8	SCACL 0808 K06	L	8	8	125	9	8	CC.. 0602..	E01
10	SCACR 1010 E06	R	10	10	70	9	10	CC.. 0602..	E01
10	SCACR 1010 M06	R	10	10	150	9	10	CC.. 0602..	E01
10	SCACL 1010 E06	L	10	10	70	9	10	CC.. 0602..	E01
10	SCACL 1010 M06	L	10	10	150	9	10	CC.. 0602..	E01
12	SCACR 1212 F09	R	12	12	80	13	12	CC.. 09T3..	E02
12	SCACR 1212 M09	R	12	12	150	13	12	CC.. 09T3..	E02
12	SCACL 1212 F09	L	12	12	80	13	12	CC.. 09T3..	E02
12	SCACL 1212 M09	L	12	12	150	13	12	CC.. 09T3..	E02
14	SCACR 1414 M09	R	14	14	150	13	14	CC.. 09T3..	E02
14	SCACL 1414 M09	L	14	14	150	13	14	CC.. 09T3..	E02
16	SCACR 1616 H09	R	16	16	100	13	16	CC.. 09T3..	E03
16	SCACL 1616 H09	L	16	16	100	13	16	CC.. 09T3..	E03
20	SCACR 2020 K12	R	20	20	125	17	20	CC.. 1204..	E04
20	SCACL 2020 K12	L	20	20	125	17	20	CC.. 1204..	E04

E01	24645				8095010200	29280
E02	24647				8095010500	82271
E03	24647	69216	69294	69293		82756
E04	54981	61006	69296	69293		74208



SCDC...

MaxiLock S

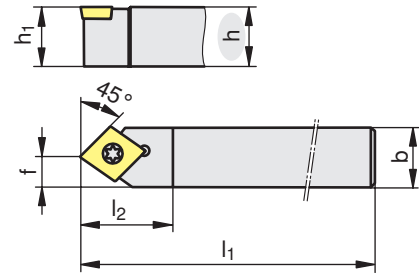
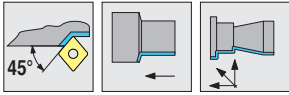







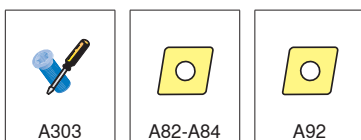
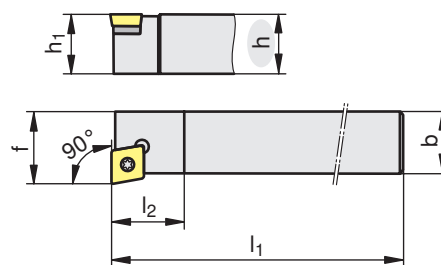
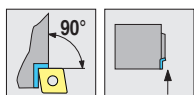


Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
8	SCDCL 0808 K06	L	8	8	125	13	4	CC.. 0602..	E01
10	SCDCL 1010 M06	L	10	10	150	13	5	CC.. 0602..	E01
12	SCDCL 1212 M09	L	12	12	150	18	6	CC.. 09T3..	E02
14	SCDCL 1414 M09	L	14	14	150	18	7	CC.. 09T3..	E02

			
E01	24645	8095010200	29280
E02	24647	8095010500	82271

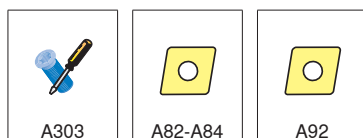




A imagem mostra ferramenta direita

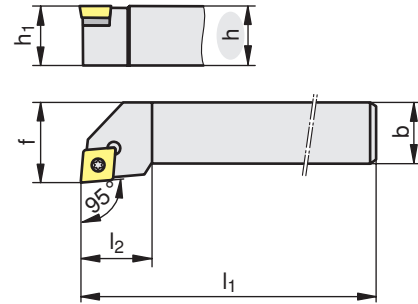
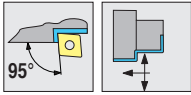
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
8	SCFCR 0808 D06	R	8	8	60	10	10	CC.. 0602..	E01
8	SCFCL 0808 D06	L	8	8	60	10	10	CC.. 0602..	E01
10	SCFCR 1010 E06	R	10	10	70	10	12	CC.. 0602..	E01
10	SCFCL 1010 E06	L	10	10	70	10	12	CC.. 0602..	E01
12	SCFCL 1212 F09	L	12	12	80	13	16	CC.. 09T3..	E02
16	SCFCL 1616 H09	L	16	16	100	13	20	CC.. 09T3..	E03
20	SCFCL 2020 K12	L	20	20	125	17	25	CC.. 1204..	E04

E01	24645				8095010200	29280
E02	24647				8095010500	82271
E03	24647	69216	69294	69293		82756
E04	54981	61006	69296	69293		74208













SCLC...

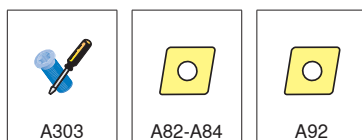
MaxiLock S



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
8	SCLCR 0808 D06	R	8	8	60	9	10	CC.. 0602..	E01
8	SCLCL 0808 D06	L	8	8	60	9	10	CC.. 0602..	E01
10	SCLCR 1010 E06	R	10	10	70	9	12	CC.. 0602..	E01
10	SCLCL 1010 E06	L	10	10	70	9	12	CC.. 0602..	E01
12	SCLCR 1212 F09	R	12	12	80	15	16	CC.. 09T3..	E02
12	SCLCL 1212 F09	L	12	12	80	15	16	CC.. 09T3..	E02
16	SCLCR 1616 H09	R	16	16	100	17	20	CC.. 09T3..	E03
16	SCLCL 1616 H09	L	16	16	100	17	20	CC.. 09T3..	E03
20	SCLCR 2020 K09	R	20	20	125	17	25	CC.. 09T3..	E03
20	SCLCL 2020 K09	L	20	20	125	17	25	CC.. 09T3..	E03
16	SCLCR 1616 H12	R	16	16	100	20	20	CC.. 1204..	E04
16	SCLCL 1616 H12	L	16	16	100	20	20	CC.. 1204..	E04
20	SCLCR 2020 K12	R	20	20	125	20	25	CC.. 1204..	E04
20	SCLCL 2020 K12	L	20	20	125	20	25	CC.. 1204..	E04
25	SCLCR 2525 M12	R	25	25	150	20	32	CC.. 1204..	E04
25	SCLCL 2525 M12	L	25	25	150	20	32	CC.. 1204..	E04
32	SCLCR 3225 P12	R	32	25	170	20	32	CC.. 1204..	E04
32	SCLCL 3225 P12	L	32	25	170	20	32	CC.. 1204..	E04

						
E01	24645				8095010200	29280
E02	24647				8095010500	82271
E03	24647	69216	69294	69293		82756
E04	54981	61006	69296	69293		74208



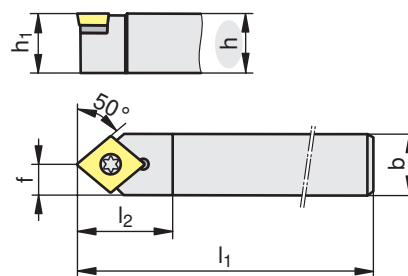
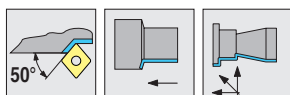
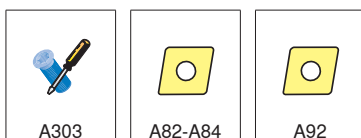


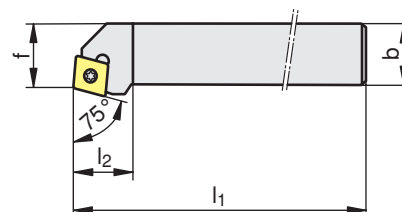
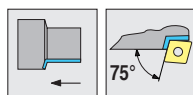
Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
16	SCMCN 1616 H12	N	16	16	100	25	8	CC.. 1204..	E01
20	SCMCN 2020 K12	N	20	20	125	25	10	CC.. 1204..	E01
25	SCMCN 2525 M12	N	25	25	150	25	12,5	CC.. 1204..	E01
32	SCMCN 3225 P12	N	32	25	170	25	12,5	CC.. 1204..	E01



SCRC...

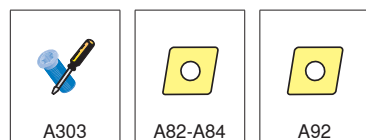
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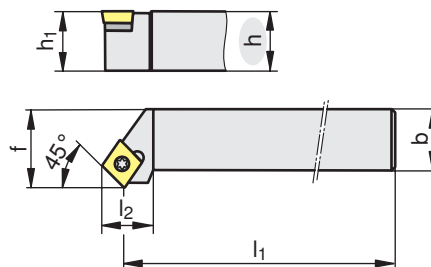
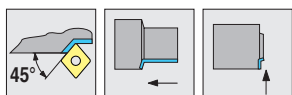


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
10	SCRRCR 1010 E06	R	10	10	70	10	11	CC.. 0602..	E01
12	SCRRCR 1212 F09	R	12	12	80	16	13	CC.. 09T3..	E02
12	SCRCL 1212 F09	L	12	12	80	16	13	CC.. 09T3..	E02
16	SCRRCR 1616 H09	R	16	16	100	17	17	CC.. 09T3..	E03
16	SCRCL 1616 H09	L	16	16	100	17	17	CC.. 09T3..	E03
20	SCRRCR 2020 K09	R	20	20	125	17	22	CC.. 09T3..	E03
20	SCRCL 2020 K09	L	20	20	125	17	22	CC.. 09T3..	E03
16	SCRRCR 1616 H12	R	16	16	100	20	17	CC.. 1204..	E04
20	SCRRCR 2020 K12	R	20	20	125	20	22	CC.. 1204..	E04
20	SCRCL 2020 K12	L	20	20	125	20	22	CC.. 1204..	E04
25	SCRRCR 2525 M12	R	25	25	150	20	27	CC.. 1204..	E04
25	SCRCL 2525 M12	L	25	25	150	20	27	CC.. 1204..	E04
32	SCRRCR 3225 P12	R	32	25	170	20	27	CC.. 1204..	E04
32	SCRCL 3225 P12	L	32	25	170	20	27	CC.. 1204..	E04

E01	24645				8095010200	29280
E02	24647				8095010500	82271
E03	24647	69216	69294	69293		82756
E04	54981	61006	69296	69293		74208





A imagem mostra ferramenta direita

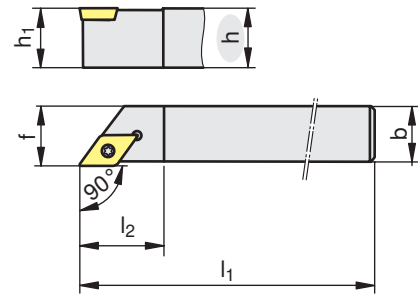
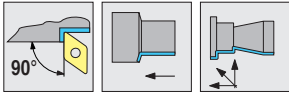
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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20	SCSCR 2020 K12	R	20	20	125	20	25	CC.. 1204..	E01
20	SCSCL 2020 K12	L	20	20	125	20	25	CC.. 1204..	E01
25	SCSCR 2525 M12	R	25	25	150	20	32	CC.. 1204..	E01
25	SCSCL 2525 M12	L	25	25	150	20	32	CC.. 1204..	E01

E01	54981	61006	69296	69293	74208	




A303	A82-A84	A92





SDAC...

MaxiLock S

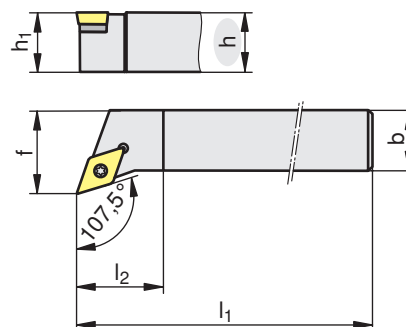
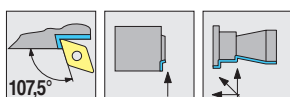


A imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
8	SDACR 0808 K07	R	8	8	125	14	8	DC.. 0702..	E01
8	SDACL 0808 K07	L	8	8	125	14	8	DC.. 0702..	E01
10	SDACR 1010 M07	R	10	10	150	14	10	DC.. 0702..	E01
10	SDACL 1010 M07	L	10	10	150	14	10	DC.. 0702..	E01
12	SDACR 1212 M07	R	12	12	150	14	12	DC.. 0702..	E01
12	SDACL 1212 M07	L	12	12	150	14	12	DC.. 0702..	E01
12	SDACR 1212 M11	R	12	12	150	21	12	DC.. 11T3..	E02
12	SDACL 1212 M11	L	12	12	150	21	12	DC.. 11T3..	E02
14	SDACR 1414 M11	R	14	14	150	21	14	DC.. 11T3..	E02
14	SDACL 1414 M11	L	14	14	150	21	14	DC.. 11T3..	E02

			
E01	24645	8095010200	29280
E02	24647	8095010500	82271

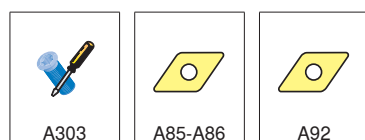




A imagem mostra ferramenta direita

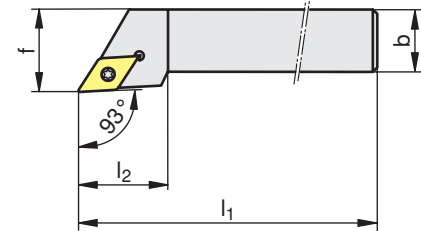
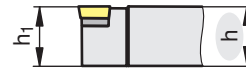
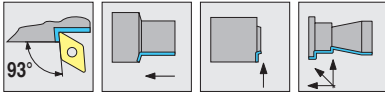
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
10	SDHCR 1010 E07	R	10	10	70	7,6	12	DC.. 0702..	E01
10	SDHCL 1010 E07	L	10	10	70	7,6	12	DC.. 0702..	E01
12	SDHCR 1212 F07	R	12	12	80	12,2	16	DC.. 0702..	E01
12	SDHCL 1212 F07	L	12	12	80	12,2	16	DC.. 0702..	E01
16	SDHCR 1616 H11	R	16	16	100	11,6	20	DC.. 11T3..	E02
16	SDHCL 1616 H11	L	16	16	100	11,6	20	DC.. 11T3..	E02
20	SDHCR 2020 K11	R	20	20	125	14,1	25	DC.. 11T3..	E02
20	SDHCL 2020 K11	L	20	20	125	14,1	25	DC.. 11T3..	E02
25	SDHCR 2525 M11	R	25	25	150	20,5	32	DC.. 11T3..	E02
25	SDHCL 2525 M11	L	25	25	150	20,5	32	DC.. 11T3..	E02

						
E01	24645				8095010200	29280
E02	24647	26146	69294	69293		29278









SDJC...

MaxiLock S



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
8	SDJCR 0808 D07	R	8	8	60	13	10	DC.. 0702..	E01
8	SDJCL 0808 D07	L	8	8	60	13	10	DC.. 0702..	E01
10	SDJCR 1010 E07	R	10	10	70	13	12	DC.. 0702..	E01
10	SDJCL 1010 E07	L	10	10	70	13	12	DC.. 0702..	E01
12	SDJCR 1212 F07	R	12	12	80	14,3	16	DC.. 0702..	E01
12	SDJCL 1212 F07	L	12	12	80	14,3	16	DC.. 0702..	E01
16	SDJCR 1616 H11	R	16	16	100	19,3	20	DC.. 11T3..	E02
16	SDJCL 1616 H11	L	16	16	100	19,3	20	DC.. 11T3..	E02
20	SDJCR 2020 K11	R	20	20	125	19,9	25	DC.. 11T3..	E02
20	SDJCL 2020 K11	L	20	20	125	19,9	25	DC.. 11T3..	E02
25	SDJCR 2525 M11	R	25	25	150	21,2	32	DC.. 11T3..	E02
25	SDJCL 2525 M11	L	25	25	150	21,2	32	DC.. 11T3..	E02
32	SDJCR 3225 P11	R	32	25	170	21,2	32	DC.. 11T3..	E02
32	SDJCL 3225 P11	L	32	25	170	21,2	32	DC.. 11T3..	E02

						
E01	24645				8095010200	29280
E02	24647	26146	69294	69293		29278

		
A303	A85-A86	A92

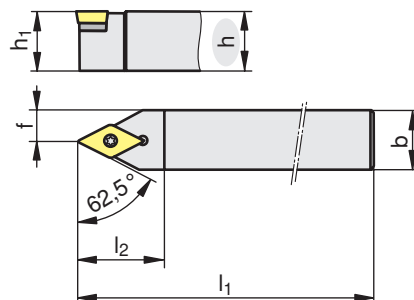
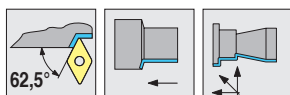







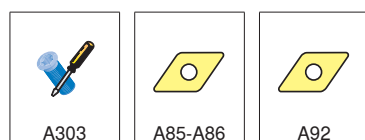


Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	f [mm]		
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8	SDNCN 0808 K07	N	8	8	125	4	DC.. 0702..	E01
10	SDNCN 1010 E07	N	10	10	70	5	DC.. 0702..	E01
10	SDNCN 1010 M07	N	10	10	150	5	DC.. 0702..	E01
12	SDNCN 1212 F07	N	12	12	80	6	DC.. 0702..	E01
12	SDNCN 1212 M07	N	12	12	150	6	DC.. 0702..	E01
12	SDNCN 1212 M11	N	12	12	150	6	DC.. 11T3..	E02
14	SDNCN 1414 M11	N	14	14	150	7	DC.. 11T3..	E02
16	SDNCN 1616 H11	N	16	16	100	8	DC.. 11T3..	E03
20	SDNCN 2020 K11	N	20	20	125	10	DC.. 11T3..	E03
25	SDNCN 2525 M11	N	25	25	150	12,5	DC.. 11T3..	E03

						
E01	24645				8095010200	29280
E02	24647				8095010500	82271
E03	24647	26146	69294	69293		29278



SRDC...

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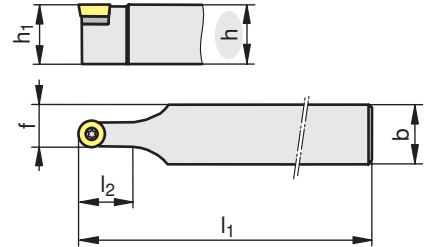
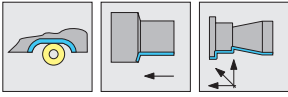












Imagem mostra ferramenta direita

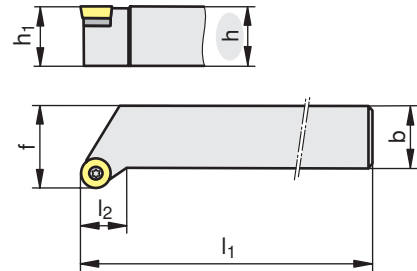
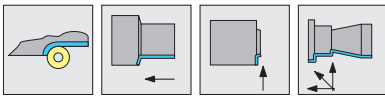
h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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16	SRDCN 1616 H06	N	16	16	100	12	11	RC.. 0602..	E01
20	SRDCN 2020 K06	N	20	20	125	12	13	RC.. 0602..	E01
25	SRDCN 2525 M06	N	25	25	150	12,4	15,5	RC.. 0602..	E01
16	SRDCN 1616 H08	N	16	16	100	16	12	RC.. 0803..	E02
20	SRDCN 2020 K08	N	20	20	125	16,5	14	RC.. 0803..	E02
25	SRDCN 2525 M08	N	25	25	150	16,5	16,5	RC.. 0803..	E02
16	SRDCN 1616 H10	N	16	16	100	20,9	13	RC.. 1003..	E03
20	SRDCN 2020 K10	N	20	20	125	20	15	RC.. 1003..	E03
25	SRDCN 2525 M10	N	25	25	150	20,9	17,5	RC.. 1003..	E03

						
E01	24645				8095010200	29280
E02	77613				8095010200	82272
E03	24647	24838	69294	69293		36305



A303

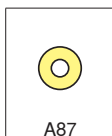
A87



A imagem mostra ferramenta direita

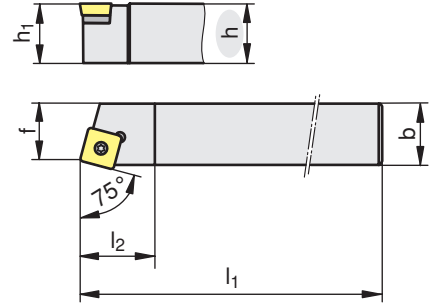
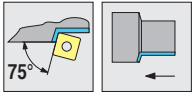
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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12	SRGCL 1212 F06	L	12	12	80	12,5	16	RC.. 0602..	E01
16	SRGCR 1616 H06	R	16	16	100	12,5	20	RC.. 0602..	E01
20	SRGCR 2020 K06	R	20	20	125	15,0	25	RC.. 0602..	E01
20	SRGCL 2020 K06	L	20	20	125	15,0	25	RC.. 0602..	E01
25	SRGCR 2525 M06	R	25	25	150	18,5	32	RC.. 0602..	E01
25	SRGCL 2525 M06	L	25	25	150	18,5	32	RC.. 0602..	E01
16	SRGCR 1616 H08	R	16	16	100	13,6	20	RC.. 0803..	E02
16	SRGCL 1616 H08	L	16	16	100	13,6	20	RC.. 0803..	E02
20	SRGCR 2020 K08	R	20	20	125	16,1	25	RC.. 0803..	E02
25	SRGCR 2525 M08	R	25	25	150	19,6	32	RC.. 0803..	E02
25	SRGCL 2525 M08	L	25	25	150	19,6	32	RC.. 0803..	E02
16	SRGCR 1616 H10	R	16	16	100	13,6	20	RC.. 1003..	E03
16	SRGCL 1616 H10	L	16	16	100	13,6	20	RC.. 1003..	E03
20	SRGCR 2020 K10	R	20	20	125	16,1	25	RC.. 1003..	E03
20	SRGCL 2020 K10	L	20	20	125	16,1	25	RC.. 1003..	E03
25	SRGCR 2525 M10	R	25	25	150	19,6	32	RC.. 1003..	E03
25	SRGCL 2525 M10	L	25	25	150	19,6	32	RC.. 1003..	E03

E01	24645				8095010200	29280
E02	77613				8095010200	82272
E03	24647	24838	69294	69293		36305






SSBC...

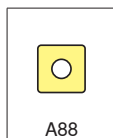
MaxiLock S



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
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16	SSBCL 1616 H09	L	16	16	100	20	13	SC.. 09T3..	E01
20	SSBCR 2020 K09	R	20	20	125	20	17	SC.. 09T3..	E01
20	SSBCR 2020 K12	R	20	20	125	20	17	SC.. 1204..	E02
20	SSBCL 2020 K12	L	20	20	125	20	17	SC.. 1204..	E02
25	SSBCR 2525 M12	R	25	25	150	20	22	SC.. 1204..	E02
25	SSBCL 2525 M12	L	25	25	150	20	22	SC.. 1204..	E02

					
E01	24647	69214	69294	69293	82757
E02	54981	69199	69296	69293	82270



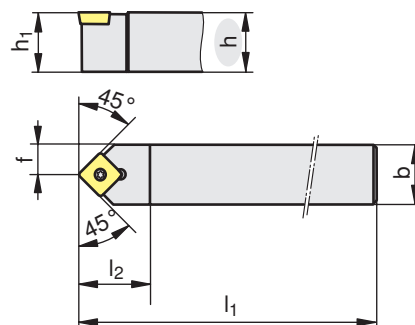
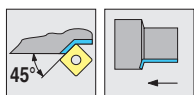
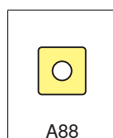
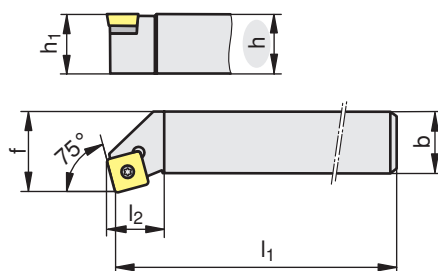
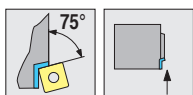


Imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	SSDCN 1212 F09	N	12	12	80	16	6	SC.. 09T3..	E01
16	SSDCN 1616 H09	N	16	16	100	20	8	SC.. 09T3..	E02
20	SSDCN 2020 K09	N	20	20	125	20	10	SC.. 09T3..	E02
16	SSDCN 1616 H12	N	16	16	100	25	8	SC.. 1204..	E03
20	SSDCN 2020 K12	N	20	20	125	25	10	SC.. 1204..	E03
25	SSDCN 2525 M12	N	25	25	150	25	12,5	SC.. 1204..	E03


E01	24647				8095010500	82271
E02	24647	69214	69294	69293		82757
E03	54981	69199	69296	69293		82270

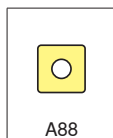


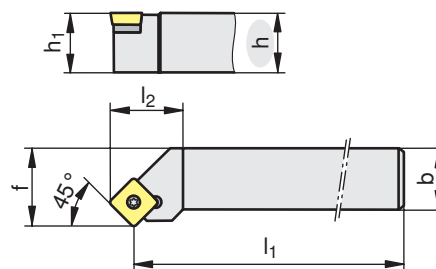
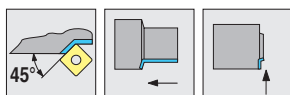


A imagem mostra ferramenta direita




h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
16	SSKCR 1616 H09	R	16	16	100	17,5	20	SC.. 09T3..	E01
16	SSKCL 1616 H09	L	16	16	100	17,5	20	SC.. 09T3..	E01
20	SSKCR 2020 K09	R	20	20	125	22,5	25	SC.. 09T3..	E01
20	SSKCL 2020 K09	L	20	20	125	22,5	25	SC.. 09T3..	E01
20	SSKCR 2020 K12	R	20	20	125	23,5	25	SC.. 1204..	E02
25	SSKCR 2525 M12	R	25	25	150	23,5	32	SC.. 1204..	E02


					
E01	24647	69214	69294	69293	82757
E02	54981	69199	69296	69293	82270

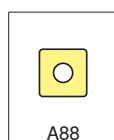




A imagem mostra ferramenta direita

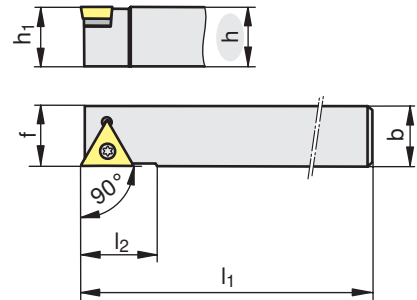
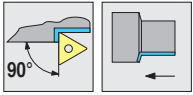
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	SSSCR 1212 F09	R	12	12	80	18	16	SC.. 09T3..	E01
12	SSSCL 1212 F09	L	12	12	80	18	16	SC.. 09T3..	E01
16	SSSCR 1616 H09	R	16	16	100	20	20	SC.. 09T3..	E02
16	SSSCL 1616 H09	L	16	16	100	20	20	SC.. 09T3..	E02
20	SSSCR 2020 K09	R	20	20	125	20	25	SC.. 09T3..	E02
20	SSSCL 2020 K09	L	20	20	125	20	25	SC.. 09T3..	E02
16	SSSCR 1616 H12	R	16	16	100	25	20	SC.. 1204..	E03
16	SSSCL 1616 H12	L	16	16	100	25	20	SC.. 1204..	E03
20	SSSCR 2020 K12	R	20	20	125	25	25	SC.. 1204..	E03
20	SSSCL 2020 K12	L	20	20	125	25	25	SC.. 1204..	E03
25	SSSCR 2525 M12	R	25	25	150	25	32	SC.. 1204..	E03
25	SSSCL 2525 M12	L	25	25	150	25	32	SC.. 1204..	E03
32	SSSCR 3225 P12	R	32	25	170	25	32	SC.. 1204..	E03

						
E01	24647				8095010500	82271
E02	24647	69214	69294	69293		82757
E03	54981	69199	69296	69293		82270










STAC...

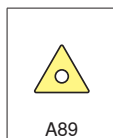
MaxiLock S



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
10	STACR 1010 K09	R	10	10	125	12	10	TC.. 0902..	E01
10	STACL 1010 K09	L	10	10	125	12	10	TC.. 0902..	E01
12	STACR 1212 K11	R	12	12	125	15	12	TC.. 1102..	E02
12	STACL 1212 K11	L	12	12	125	15	12	TC.. 1102..	E02
14	STACR 1414 K11	R	14	14	125	15	14	TC.. 1102..	E02

			
E01	56652	8095010100	82273
E02	24645	8095010200	29280



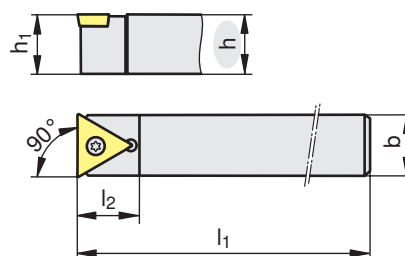
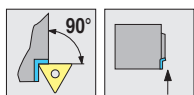
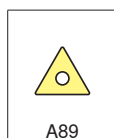


Imagem mostra ferramenta direita

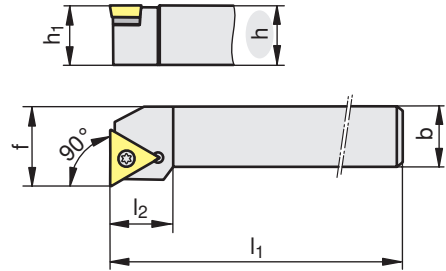
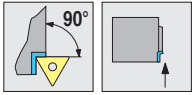
h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
8	STCCN 0808 K09	N	8	8	125	11	0	TC.. 0902..	E01
10	STCCN 1010 K11	N	10	10	125	15	0	TC.. 1102..	E02
12	STCCN 1212 K11	N	12	12	125	15	0	TC.. 1102..	E02
14	STCCN 1414 K11	N	14	14	125	21	0	TC.. 1102..	E02
16	STCCN 1616 K11	N	16	16	125	24	0	TC.. 1102..	E02

E01	56652	8095010100	82273
E02	24645	8095010200	29280






STFC...

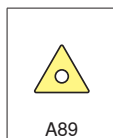
MaxiLock S

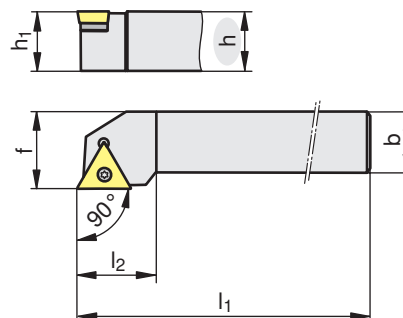
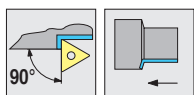


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	STFCR 1212 F11	R	12	12	80	15	16	TC.. 1102..	E01
12	STFCL 1212 F11	L	12	12	80	15	16	TC.. 1102..	E01
16	STFCR 1616 H16	R	16	16	100	20	20	TC.. 16T3..	E02
16	STFCL 1616 H16	L	16	16	100	20	20	TC.. 16T3..	E02
20	STFCR 2020 K16	R	20	20	125	20	25	TC.. 16T3..	E02
20	STFCL 2020 K16	L	20	20	125	20	25	TC.. 16T3..	E02
25	STFCR 2525 M16	R	25	25	150	20	32	TC.. 16T3..	E02
25	STFCL 2525 M16	L	25	25	150	20	32	TC.. 16T3..	E02

						
E01	24645				8095010200	29280
E02	24647	69209	69294	69293		82758

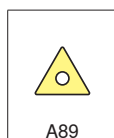




A imagem mostra ferramenta direita

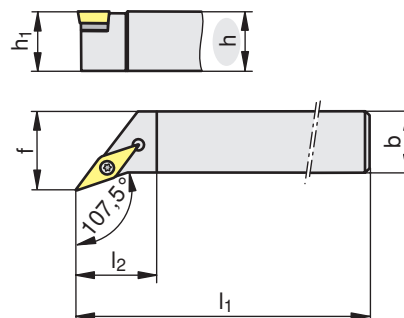
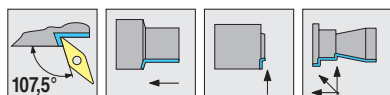
h [mm]	Tipo, descrição	L N R	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
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10	STGCL 1010 E09	L	10	10	70	12	12	TC.. 0902..	E01
12	STGCR 1212 F11	R	12	12	80	15	16	TC.. 1102..	E02
12	STGCL 1212 F11	L	12	12	80	15	16	TC.. 1102..	E02
16	STGCR 1616 H16	R	16	16	100	22	20	TC.. 16T3..	E03
16	STGCL 1616 H16	L	16	16	100	22	20	TC.. 16T3..	E03
20	STGCR 2020 K16	R	20	20	125	22	25	TC.. 16T3..	E03
20	STGCL 2020 K16	L	20	20	125	22	25	TC.. 16T3..	E03
25	STGCR 2525 M16	R	25	25	150	22	32	TC.. 16T3..	E03
25	STGCL 2525 M16	L	25	25	150	22	32	TC.. 16T3..	E03

E01	56652				8095010100	82273
E02	24645				8095010200	29280
E03	24647	69209	69294	69293		82758













SVHC...

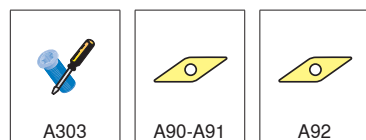
MaxiLock S

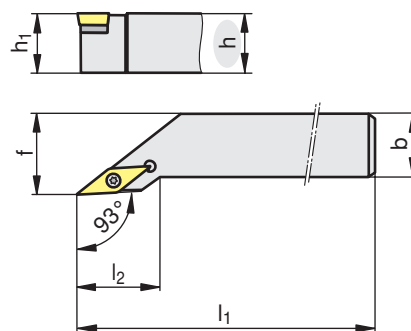
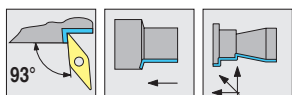


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	SVHCR 1212 F11	R	12	12	80	11,9	16	VC.. 1103..	E01
12	SVHCL 1212 F11	L	12	12	80	11,9	16	VC.. 1103..	E01
16	SVHCR 1616 H11	R	16	16	100	11,9	20	VC.. 1103..	E01
16	SVHCL 1616 H11	L	16	16	100	11,9	20	VC.. 1103..	E01
20	SVHCR 2020 K11	R	20	20	125	14,7	25	VC.. 1103..	E01
20	SVHCL 2020 K11	L	20	20	125	14,7	25	VC.. 1103..	E01
25	SVHCR 2525 M11	R	25	25	150	20,1	32	VC.. 1103..	E01
25	SVHCL 2525 M11	L	25	25	150	20,1	32	VC.. 1103..	E01
20	SVHCR 2020 K16	R	20	20	125	13,7	25	VC.. 1604..	E02
20	SVHCL 2020 K16	L	20	20	125	13,7	25	VC.. 1604..	E02
25	SVHCR 2525 M16	R	25	25	150	20,0	32	VC.. 1604..	E02
25	SVHCL 2525 M16	L	25	25	150	20,0	32	VC.. 1604..	E02
32	SVHCR 3225 P16	R	32	25	170	20,0	32	VC.. 1604..	E02
32	SVHCL 3225 P16	L	32	25	170	20,0	32	VC.. 1604..	E02
25	SVHCR 2525 M22	R	25	25	150	21,9	32	VC.. 2205..	E03
25	SVHCL 2525 M22	L	25	25	150	21,9	32	VC.. 2205..	E03
32	SVHCR 3225 P22	R	32	25	170	21,9	32	VC.. 2205..	E03
32	SVHCL 3225 P22	L	32	25	170	21,9	32	VC.. 2205..	E03

						
E01	24645				8095010200	29280
E02	24647	26147	69294	69293		29279
E03	54981	119008	69296	69293		118849

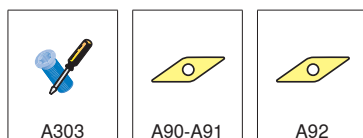




A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	SVJCR 1212 F11	R	12	12	80	21,6	16	VC.. 1103..	E01
12	SVJCL 1212 F11	L	12	12	80	21,6	16	VC.. 1103..	E01
16	SVJCR 1616 H11	R	16	16	100	21,6	20	VC.. 1103..	E01
16	SVJCL 1616 H11	L	16	16	100	21,6	20	VC.. 1103..	E01
20	SVJCR 2020 K11	R	20	20	125	23	25	VC.. 1103..	E01
20	SVJCL 2020 K11	L	20	20	125	23	25	VC.. 1103..	E01
25	SVJCR 2525 M11	R	25	25	150	25,5	32	VC.. 1103..	E01
25	SVJCL 2525 M11	L	25	25	150	25,5	32	VC.. 1103..	E01
20	SVJCR 2020 K16	R	20	20	125	29,4	25	VC.. 1604..	E02
20	SVJCL 2020 K16	L	20	20	125	29,4	25	VC.. 1604..	E02
25	SVJCR 2525 M16	R	25	25	150	32,5	32	VC.. 1604..	E02
25	SVJCL 2525 M16	L	25	25	150	32,5	32	VC.. 1604..	E02
32	SVJCR 3225 P16	R	32	25	170	32,5	32	VC.. 1604..	E02
32	SVJCL 3225 P16	L	32	25	170	32,5	32	VC.. 1604..	E02

E01	24645				8095010200	29280
E02	24647	26147	69294	69293		29279



SVVC...

MaxiLock S

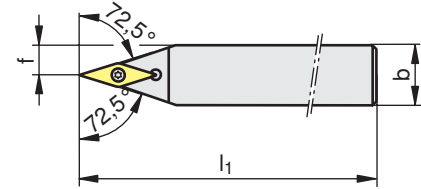
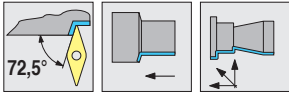









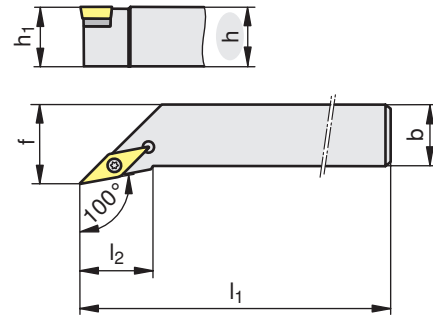
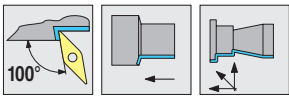


Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 						
			h_1 [mm]	b [mm]	l_1 [mm]	f [mm]		
12	SVVCN 1212 F11	N	12	12	80	6	VC.. 1103..	E01
16	SVVCN 1616 H11	N	16	16	100	8	VC.. 1103..	E01
20	SVVCN 2020 K11	N	20	20	125	10	VC.. 1103..	E01
25	SVVCN 2525 M11	N	25	25	150	12,5	VC.. 1103..	E01
20	SVVCN 2020 K16	N	20	20	125	10	VC.. 1604..	E02
25	SVVCN 2525 M16	N	25	25	150	12,5	VC.. 1604..	E02
32	SVVCN 3225 P16	N	32	25	170	12,5	VC.. 1604..	E02

						
E01	24645				8095010200	29280
E02	24647	26147	69294	69293		29279





A imagem mostra ferramenta direita

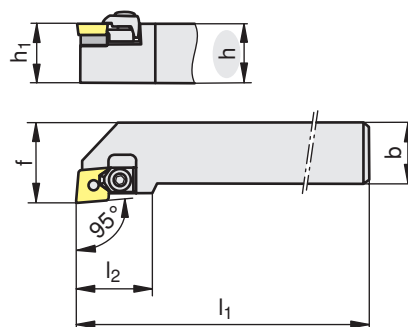
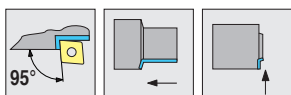
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	SVZCR 2525 M16	R	25	25	150	27,3	32	VC.. 1604..	E01
25	SVZCL 2525 M16	L	25	25	150	27,3	32	VC.. 1604..	E01
25	SVZPR 2525 M22-16	R	25	25	150	32,3	32	VP.. 2205..	E02
25	SVZPL 2525 M22-16	L	25	25	150	32,3	32	VP.. 2205..	E02

E01	24647	26147	69294	69293	29279
E02	54981	148206	69296	69293	260199



MCLC...

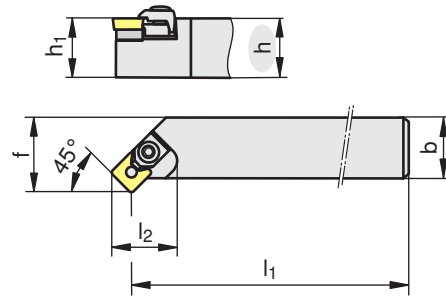
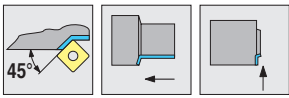
MaxiLock P



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	MCLCL 2020 K12	L	20	20	125	35	25	CC.. 1204..	E01
25	MCLCR 2525 M12	R	25	25	150	35	32	CC.. 1204..	E01
25	MCLCL 2525 M12	L	25	25	150	35	32	CC.. 1204..	E01

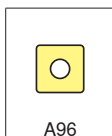




A imagem mostra ferramenta direita

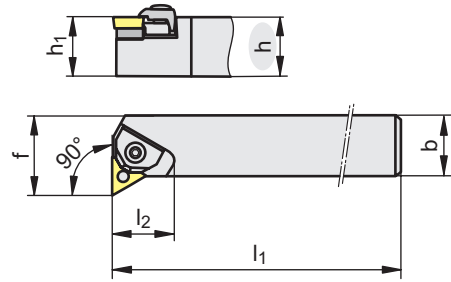
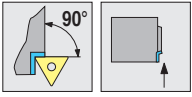
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	MSSCR 2020 K12	R	20	20	125	32	25	SC.. 1204..	E01
20	MSSCL 2020 K12	L	20	20	125	32	25	SC.. 1204..	E01
25	MSSCR 2525 M12	R	25	25	150	28	32	SC.. 1204..	E01
25	MSSCL 2525 M12	L	25	25	150	28	32	SC.. 1204..	E01
32	MSSCR 3225 P12	R	32	25	170	28	32	SC.. 1204..	E01
32	MSSCL 3225 P12	L	32	25	170	28	32	SC.. 1204..	E01

E01	4726	26111	4735	4740	8095010600	4745



MTFC...

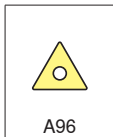
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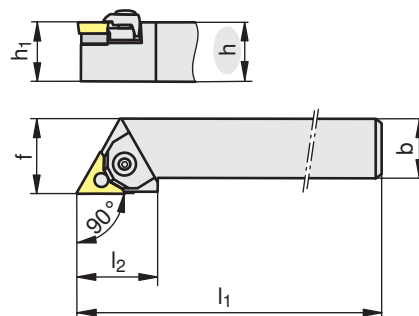
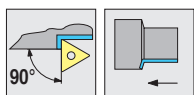


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	MTFCR 2525 M16	R	25	25	150	25	32	TC.. 1604..	E01

E01	4724	26123	4734	4738	8095010600	4743

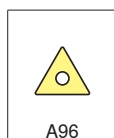




A imagem mostra ferramenta direita

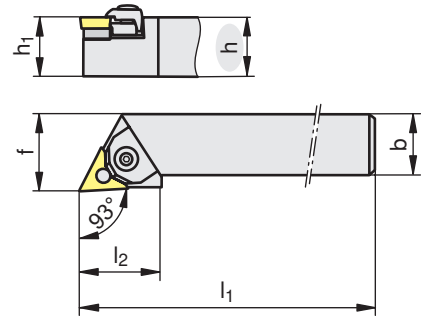
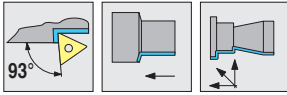
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	MTGCR 2020 K16	R	20	20	125	32	25	TC.. 1604..	E01
20	MTGCL 2020 K16	L	20	20	125	32	25	TC.. 1604..	E01
25	MTGCR 2525 M16	R	25	25	150	32	32	TC.. 1604..	E01
25	MTGCL 2525 M16	L	25	25	150	32	32	TC.. 1604..	E01
25	MTGCR 2525 M22	R	25	25	150	35	32	TC.. 2204..	E02

E01	4724	26123	4734	4738	8095010600	4743
E02	4725	4719	4735	4739	8095010600	4744













MTJC...

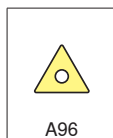
MaxiLock P



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	MTJCR 2020 K16	R	20	20	125	32	25	TC.. 1604..	E01
20	MTJCL 2020 K16	L	20	20	125	32	25	TC.. 1604..	E01
25	MTJCR 2525 M16	R	25	25	150	32	32	TC.. 1604..	E01
25	MTJCL 2525 M16	L	25	25	150	32	32	TC.. 1604..	E01
32	MTJCR 3225 P16	R	32	25	170	32	32	TC.. 1604..	E01
32	MTJCL 3225 P16	L	32	25	170	32	32	TC.. 1604..	E01
25	MTJCR 2525 M22	R	25	25	150	35	32	TC.. 2204..	E02

						
E01	4724	26123	4734	4738	8095010600	4743
E02	4725	4719	4735	4739	8095010600	4744



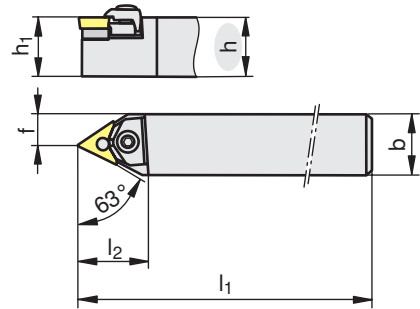
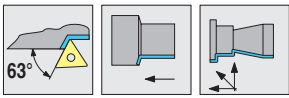
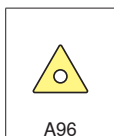


Imagem mostra ferramenta direita

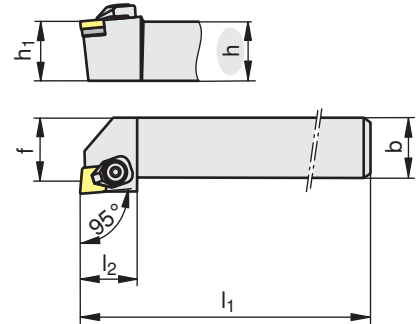
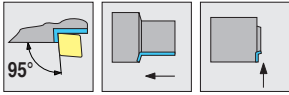
h [mm]	Tipo, descrição	L N R	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	MTNCR 2020 K16	R	20	20	125	26	10	TC.. 1604..	E01
25	MTNCR 2525 M16	R	25	25	150	26	12,5	TC.. 1604..	E01
25	MTNCL 2525 M16	L	25	25	150	26	12,5	TC.. 1604..	E01

E01	4724	26123	4734	4738	8095010600	4743







CCLN...

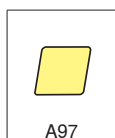
Simplex N

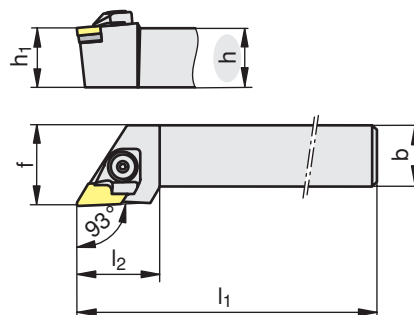
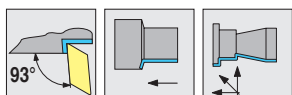


A imagem mostra ferramenta direita



h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	CCLNR 2525 M09	R	25	25	150	26	32	CN.. 0903..	E01
25	CCLNR 2525 M12	R	25	25	150	27	32	CN.. 1204..	E02
25	CCLNL 2525 M12	L	25	25	150	27	32	CN.. 1204..	E02







								
E01	4259	54742	4211	4261		8095010600		71533
E02					4209		220985	

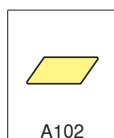
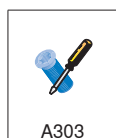




A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	L N R	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	CKJNR 2525 M16	R	25	25	150	35	32	KN.. 1604R..	E01
25	CKJNL 2525 M16	L	25	25	150	35	32	KN.. 1604L..	E02

							
E01	149397	106014	4210	149395	149400	149399	4209
E02	149397	106009	4210	149396	149400	149399	4209



CRDN...

Simplex N

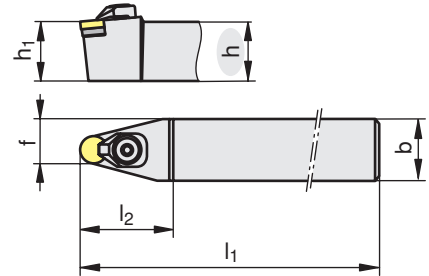
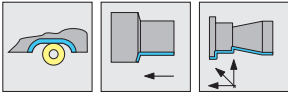










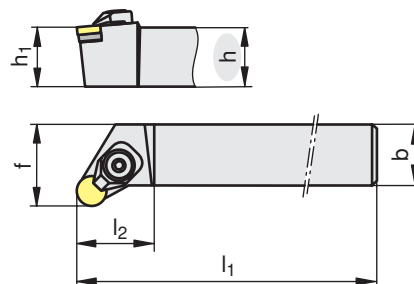


Imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
25	CRDNN 2525 M09	N	25	25	150	35	12,5	RN.. 0903..	E01
32	CRDNN 3232 P09	N	32	32	170	35	16	RN.. 0903..	E01
25	CRDNN 2525 M12	N	25	25	150	35	12,5	RN.. 1203..	E02
32	CRDNN 3232 P12	N	32	32	170	35	16	RN.. 1203..	E02
40	CRDNN 4040 R12	N	40	40	200	35	20	RN.. 1203..	E02
25	CRDNN 2525 M12-04	N	25	25	150	35	12,5	RN.. 1204..	E03

						
E01	4259	40187	4211	4261	8095010600	40505
E02	4259	40192	4210	4261	8095010600	40506
E03	4259	146066	4210	4261	8095010600	146868

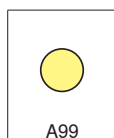




A imagem mostra ferramenta direita

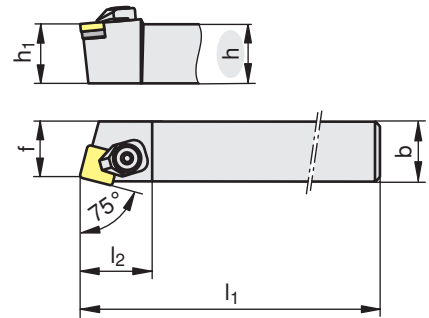
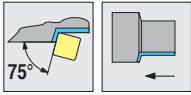
h [mm]	Tipo, descrição	L N R 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	CRG NR 2020 K09	R	20	20	125	21	25	RN.. 0903..	E01
25	CRG NR 2525 M09	R	25	25	150	21	32	RN.. 0903..	E01
25	CRG NL 2525 M09	L	25	25	150	21	32	RN.. 0903..	E01
32	CRG NR 3232 P09	R	32	32	170	21	40	RN.. 0903..	E01
32	CRG NL 3232 P09	L	32	32	170	21	40	RN.. 0903..	E01
25	CRG NR 2525 M12	R	25	25	150	21	32	RN.. 1203..	E02
25	CRG NL 2525 M12	L	25	25	150	21	32	RN.. 1203..	E02
32	CRG NR 3232 P12	R	32	32	170	21	40	RN.. 1203..	E02
32	CRG NL 3232 P12	L	32	32	170	21	40	RN.. 1203..	E02
40	CRG NR 4040 R12	R	40	40	200	21	50	RN.. 1203..	E02
40	CRG NL 4040 R12	L	40	40	200	21	50	RN.. 1203..	E02
25	CRG NR 2525 M12-04	R	25	25	150	21	32	RN.. 1204..	E03
25	CRG NL 2525 M12-04	L	25	25	150	21	32	RN.. 1204..	E03

E01	4259	40187	4211	4261	8095010600	40505
E02	4259	40192	4210	4261	8095010600	40506
E03	4259	146066	4210	4261	8095010600	146868













CSBN...

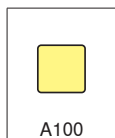
Simplex N



A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	CSBNR 2525 M09	R	25	25	150	25	22	SN.. 0903..	E01
25	CSBNL 2525 M09	L	25	25	150	25	22	SN.. 0903..	E01
25	CSBNR 2525 M12-03	R	25	25	150	29	22	SN.. 1203..	E02
25	CSBNL 2525 M12-03	L	25	25	150	29	22	SN.. 1203..	E02
25	CSBNR 2525 M12	R	25	25	150	32	22	SN.. 1204..	E03

								
E01						4209	8095008700	
E02						4209	220985	
E03	4147	26122	4210	4265	4213	4209		4283



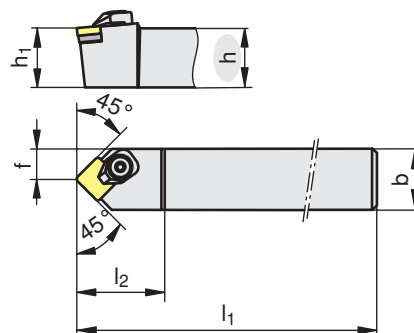
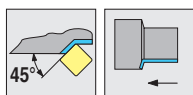
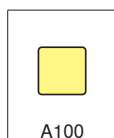


Imagem mostra ferramenta direita

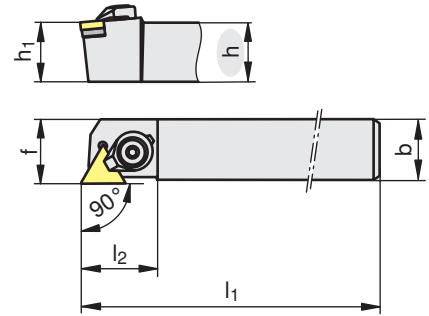
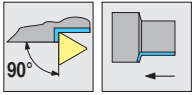
h [mm]	Tipo, descrição	LNR	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
25	CSDNN 2525 M09	N	25	25	150	25	12,5	SN.. 0903..	E01
32	CSDNN 3232 P12-03	N	32	32	170	28	16	SN.. 1203..	E02
25	CSDNN 2525 M12	N	25	25	150	34	12,5	SN.. 1204..	E03

E01	4259		4299	4211	4261			8095010600	41917
E02	4259		26122	4210	4261			8095010600	11963665
E03		4147	26122	4210	4265	4213	4209		4283






CTAN...

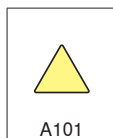
Simplex N

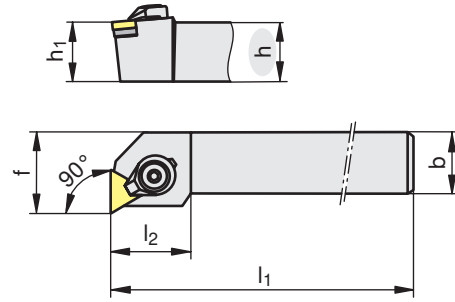
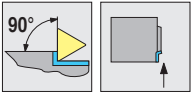


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h_1 [mm]	b [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
20	CTANR 2020 K16	R	20	20	125	30	20,5	TN.. 1604..	E01
25	CTANR 2525 M16	R	25	25	150	30	25,5	TN.. 1604..	E01

							
E01	4147	26124	4210	4265	4213	4209	4287

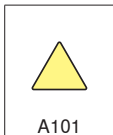




A imagem mostra ferramenta direita

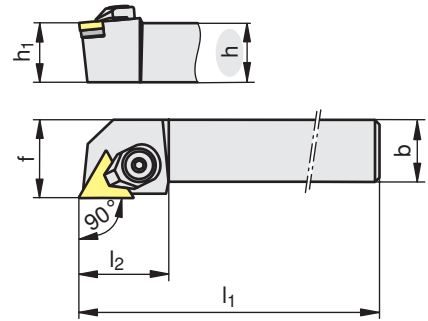
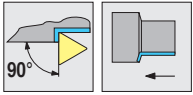
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	CTFNR 1212 F11	R	12	12	80	15	16	TN.. 1103..	E01

E01	4524	4523	8095010500













CTGN...

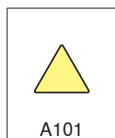
Simplex N

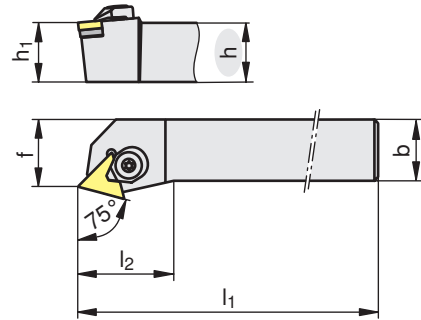
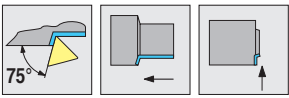


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	CTGNR 1212 F11	R	12	12	80	16	16	TN.. 1103..	E01
12	CTGNL 1212 F11	L	12	12	80	16	16	TN.. 1103..	E01
25	CTGNR 2525 M11	R	25	25	150	25	32	TN.. 1103..	E02

						
E01	4524			4523	8095010500	
E02	4259	4300	4211	4261	8095010600	4288

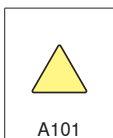




A imagem mostra ferramenta direita

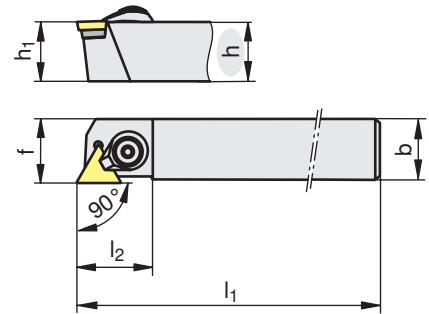
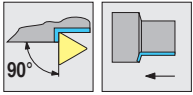
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	CTRNR 1212 F11	R	12	12	80	17,5	13	TN.. 1103..	E01

E01	4524	4523	8095010500






CTAP...

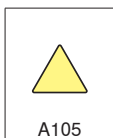
Simplex P

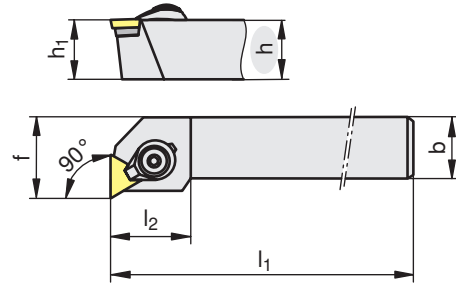
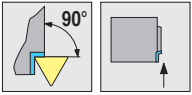


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
20	CTAPR 2020 K16	R	20	20	125	30	20,5	TP.. 1603..	E01
20	CTAPL 2020 K16	L	20	20	125	30	20,5	TP.. 1603..	E01
25	CTAPR 2525 M16	R	25	25	150	30	25,5	TP.. 1603..	E01
25	CTAPL 2525 M16	L	25	25	150	30	25,5	TP.. 1603..	E01

							
E01	4147	26126	4210	4265	4213	4209	4292

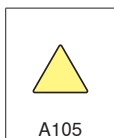




A imagem mostra ferramenta direita

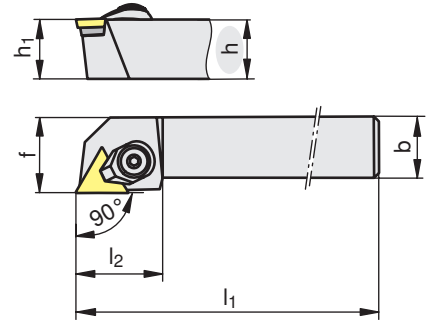
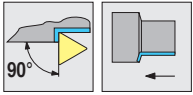
h [mm]	Tipo, descrição	LNR 							
			h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	CTFPR 1212 F11	R	12	12	80	14	16	TP.. 1103..	E01
20	CTFPR 2020 K16	R	20	20	125	28	25	TP.. 1603..	E02
25	CTFPR 2525 M16	R	25	25	150	32	32	TP.. 1603..	E02
25	CTFPL 2525 M16	L	25	25	150	32	32	TP.. 1603..	E02

E01	4524				4523			8095010500	
E02		4147	26126	4210	4265	4213	4209		4292



CTGP...

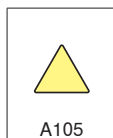
Simplex P

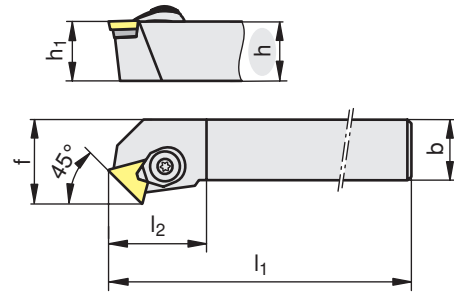
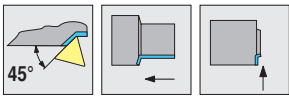


A imagem mostra ferramenta direita

h [mm]	Tipo, descrição	LNR 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
10	CTGPR 1010 E11	R	10	10	70	16,5	12	TP.. 1103..	E01
12	CTGPR 1212 F11	R	12	12	80	16,5	16	TP.. 1103..	E01
12	CTGPL 1212 F11	L	12	12	80	16,5	16	TP.. 1103..	E01

E01	4524	4523	8095010500

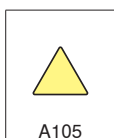




A imagem mostra ferramenta direita

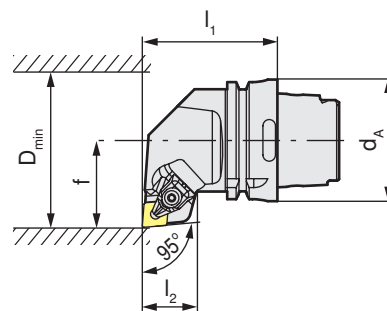
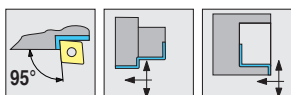
h [mm]	Tipo, descrição	L N R 	h ₁ [mm]	b [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]		
12	CTSPR 1212 F11	R	12	12	80	16	16	TP.. 1103..	E01

E01	4524	4523	8095010500



HSK-T DCLN...

MaxiLock D



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DCLNR-12	R	70	28	100	45	CN.. 1204..	E01
63	HSK-T63-DCLNL-12	L	70	28	100	45	CN.. 1204..	E01
63	HSK-T63-DCLNR-16	R	70	28	125	45	CN.. 1606..	E02
63	HSK-T63-DCLNL-16	L	70	28	125	45	CN.. 1606..	E02
63	HSK-T63-DCLNR-19	R	70	28	125	45	CN.. 1906..	E03
63	HSK-T63-DCLNL-19	L	70	28	125	45	CN.. 1906..	E03
100	HSK-T100-DCLNR-12	R	80	28	125	55	CN.. 1204..	E01
100	HSK-T100-DCLNL-12	L	80	28	125	55	CN.. 1204..	E01
100	HSK-T100-DCLNR-19	R	80	28	125	55	CN.. 1906..	E03
100	HSK-T100-DCLNL-19	L	80	28	125	55	CN.. 1906..	E03

E01	11224545	11224494	11211558	11224503
E02	11227322	11227318	11227315	11227323
E03	11227325	11227318	11227316	11227323

A303	A63-A66	A79

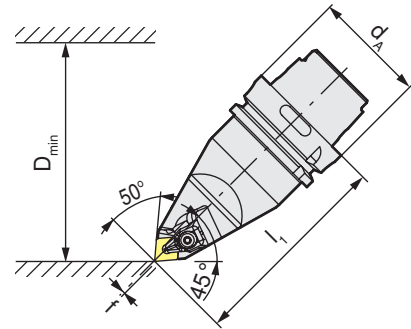
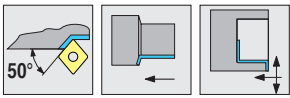


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DCMNN-12	N	115	110	0	CN.. 1204..	E01
100	HSK-T100-DCMNN-12	N	150	115	0	CN.. 1204..	E01

E01	11224545	11224494	11211558	11224503

A303	A63-A66	A79

HSK-T DCMN+DDMN...

MaxiLock D

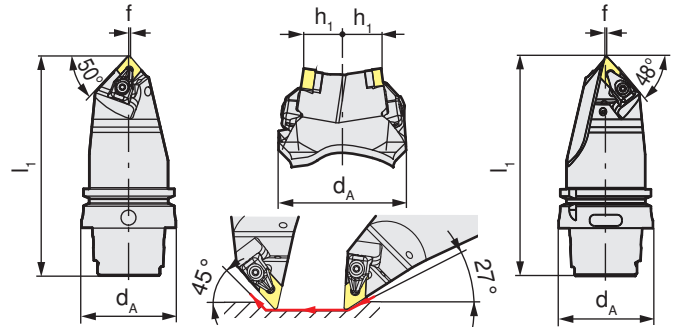
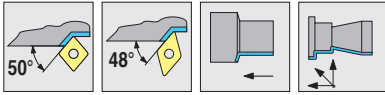


Imagem mostra ferramenta esquerda

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	h_1 [mm]	f [mm]		
63	HSK-T63-DCMNL12+DDMNL15	L	115	20	0,5	CN.. 1204.. / DN.. 1506..	E01
100	HSK-T100-DCMNL12+DDMNL15	L	150	20	0,5	CN.. 1204.. / DN.. 1506..	E01

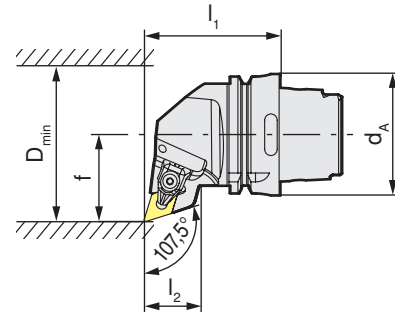
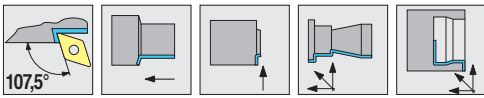


Nota:

Torneamento de face possível até máx. Ø 78 mm

E01	11224545	11224494	11211558	11211562	11224503

A303	A63-A66	A79	A67-A69	A79



A imagem mostra ferramenta direita

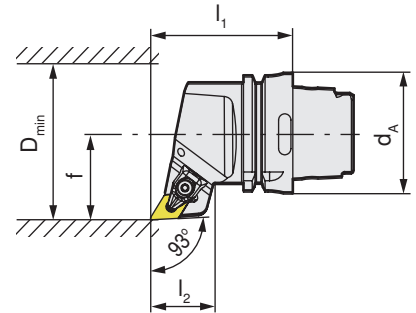
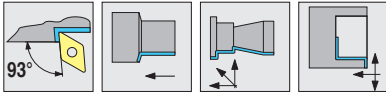
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DDHNR-15	R	70	28	125	45	DN.. 1506..	E01
63	HSK-T63-DDHNL-15	L	70	28	125	45	DN.. 1506..	E01

E01	11224545	11224494	11211562	11224503			




A303	A67-A69	A79

HSK-T DDJN...

MaxiLock D

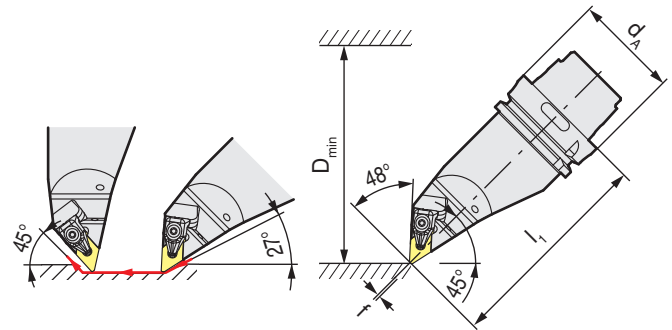
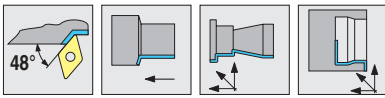


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DDJNR-15	R	75	33	125	45	DN.. 1506..	E01
63	HSK-T63-DDJNL-15	L	75	33	125	45	DN.. 1506..	E01
100	HSK-T100-DDJNR-15	R	85	33	125	55	DN.. 1506..	E01
100	HSK-T100-DDJNL-15	L	85	33	125	55	DN.. 1506..	E01

				
E01	11224545	11224494	11211562	11224503

		
A303	A67-A69	A79



A imagem mostra ferramenta direita

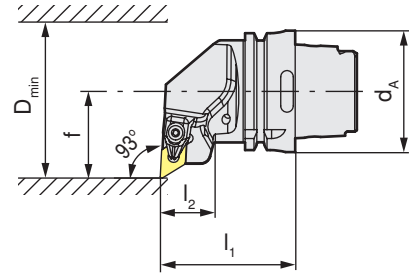
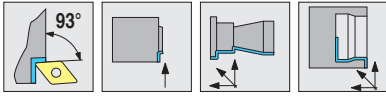
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DDMNL-15	L	130	110	0	DN.. 1506..	E01
100	HSK-T100-DDMNL-15	L	160	120	0	DN.. 1506..	E01

E01	11224545	11224494	11211562	11224503

A303	A67-A69	A79

HSK-T DDUN...

MaxiLock D



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DDUNR-15	R	70	28	125	45	DN.. 1506..	E01
63	HSK-T63-DDUNL-15	L	70	28	125	45	DN.. 1506..	E02
100	HSK-T100-DDUNR-15	R	80	26	125	55	DN.. 1506..	E02
100	HSK-T100-DDUNL-15	L	80	26	125	55	DN.. 1506..	E02

E01	11224545		11211562	11211563	11224503
E02	11224545	11224494	11211562		11224503



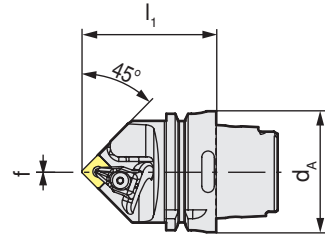
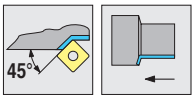
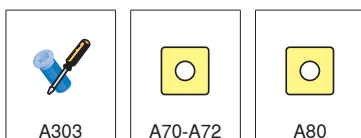


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
63	HSK-T63-DSDNN-12	N	70	0	SN.. 1204..	E01
63	HSK-T63-DSDNN-15	N	75	0	SN.. 1506..	E02
100	HSK-T100-DSDNN-12	N	80	0	SN.. 1204..	E01
100	HSK-T100-DSDNN-19	N	85	0	SN.. 1906..	E03

E01	11224545	11224494	11211561	11224503
E02	11227322	11227318	11247269	11227323
E03	11227325	11227318	11227317	11227323



HSK-T DVMN...

MaxiLock D

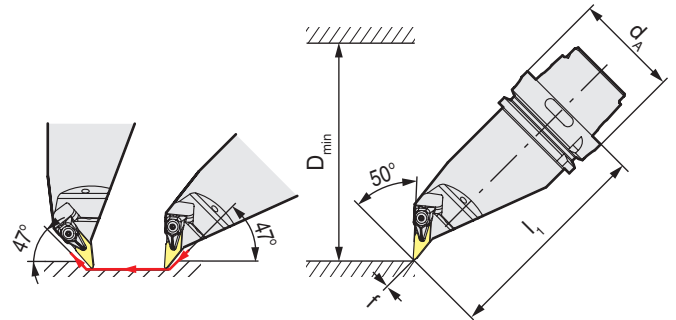
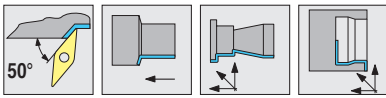
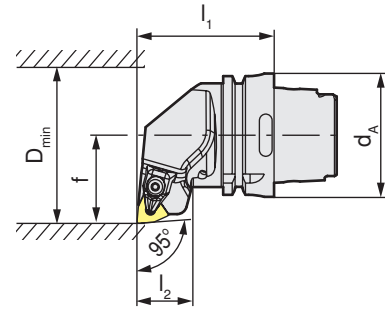
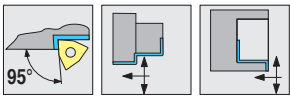


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DVMNL-16	L	130	110	0	VN.. 1604..	E01
100	HSK-T100-DVMNL-16	L	160	120	0	VN.. 1604..	E01

E01	11258694	11227305	11227311	11227314

A303	A76	A80



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-DWLNR-08	R	70	28	125	45	WN.. 0804..	E01
63	HSK-T63-DWLNL-08	L	70	28	125	45	WN.. 0804..	E01
100	HSK-T100-DWLNR-08	R	80	28	125	55	WN.. 0804..	E01
100	HSK-T100-DWLNL-08	L	80	28	125	55	WN.. 0804..	E01

E01	11224545	11224494	11211563	11224503



HSK-T PRDC...

MaxiLock N

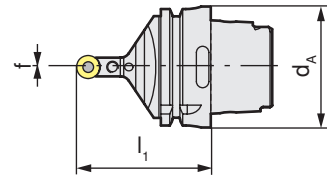
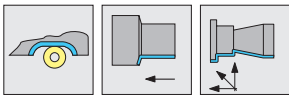
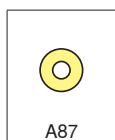
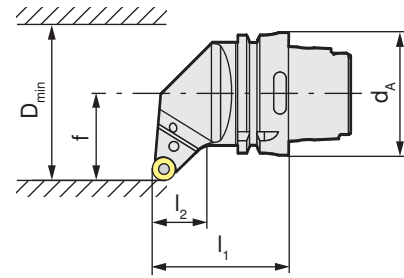
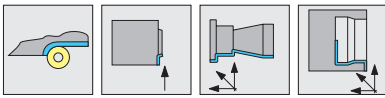


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
63	HSK-T63-PRDCN-12	N	70	0	RC.. 1204..	E01
100	HSK-T100-PRDCN-12	N	80	0	RC.. 1204..	E01
100	HSK-T100-PRDCN-16	N	80	0	RC.. 1606..	E02

E01	59445	154563	59436	154568	86174	4770	154578
E02	154575	154564	154577	154570	86176	4771	154579

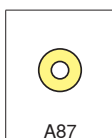




A imagem mostra ferramenta direita

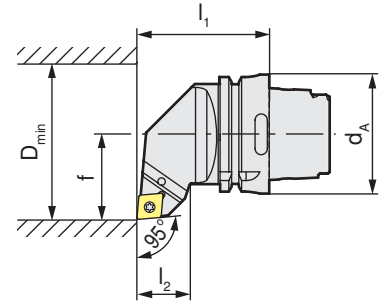
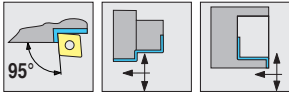
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-PRSCR-12	R	70	26	100	45	RC.. 1204..	E01
63	HSK-T63-PRSCL-12	L	70	26	100	45	RC.. 1204..	E01
100	HSK-T100-PRSCR-12	R	80	19	106	55	RC.. 1204..	E01
100	HSK-T100-PRSCL-12	L	80	19	106	55	RC.. 1204..	E01
100	HSK-T100-PRSCR-16	R	80	25	125	55	RC.. 1606..	E02
100	HSK-T100-PRSCL-16	L	80	25	125	55	RC.. 1606..	E02

E01	59445	154563	59436	154568	86174	4770	154578
E02	154575	154564	154577	154570	86176	4771	154579



HSK-T SCLC...

MaxiLock S



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SLCR-12	R	70	28	100	45	CC.. 1204..	E01
63	HSK-T63-SCLCL-12	L	70	28	100	45	CC.. 1204..	E01

E01	54981	61006	69296	69293	74208

A303	A82-A84	A92

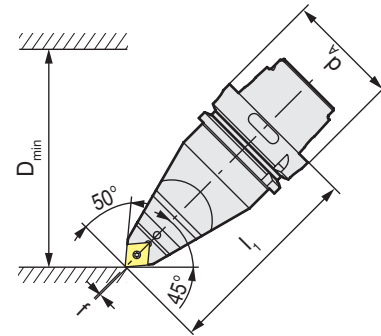
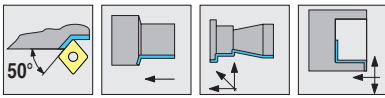


Imagem mostra ferramenta direita

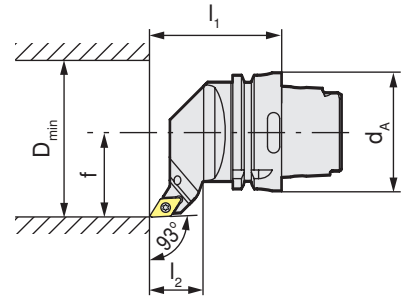
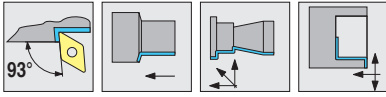
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SCMCN-12	N	115	110	0	CC.. 1204..	E01

E01	54981	61006	69296	69293	74208

A303	A82-A84	A92

HSK-T SDJC...

MaxiLock S



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SDJCR-11	R	70	28	100	45	DC.. 11T3..	E01
63	HSK-T63-SDJCL-11	L	70	28	100	45	DC.. 11T3..	E01

E01	24647	26146	69294	69293	29278	

A303	A85-A86	A92

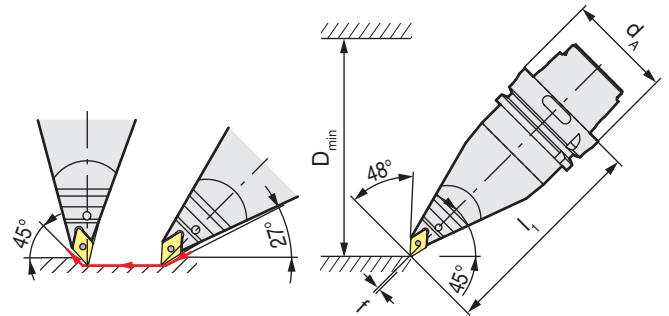
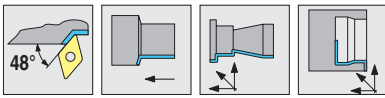





Imagem mostra ferramenta esquerda

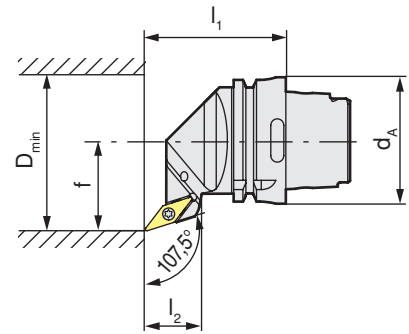
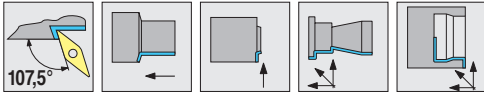
d_A [mm]	Tipo, descrição	L N R	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SDMCL-11	L	130	110	0	DC.. 11T3..	E01

					
E01	24647	26146	69294	69293	29278

		
A303	A85-A86	A92

HSK-T SVHC...

MaxiLock S

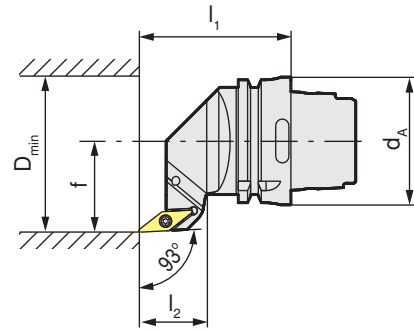
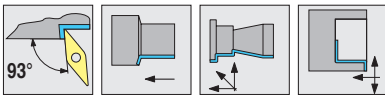


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SVHCR-16	R	70	28	100	45	VC.. 1604..	E01
63	HSK-T63-SVHCL-16	L	70	28	100	45	VC.. 1604..	E01

E01	24647	26147	69294	69293	29279

A303	A90-A91	A92



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SVJCR-16	R	75	33	100	45	VC.. 1604..	E01
63	HSK-T63-SVJCL-16	L	75	33	100	45	VC.. 1604..	E01

E01	24647	26147	69294	69293	29279

A303	A90-A91	A92

HSK-T SVMC...

MaxiLock S

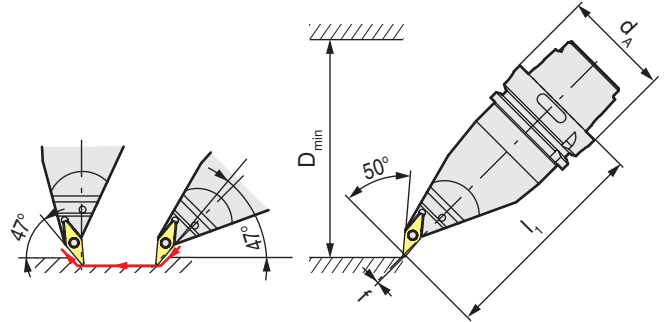
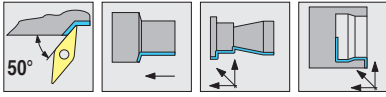
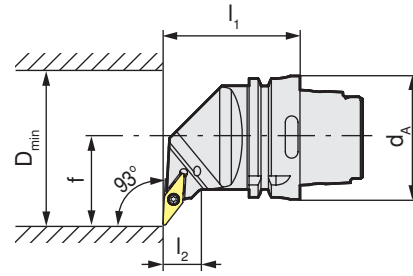
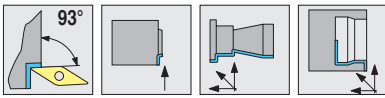


Imagem mostra ferramenta esquerda

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SVMCL-16	L	130	110	0	VC.. 1604..	E01

E01	24647	26147	69294	69293	29279	

A303	A90-A91	A92



A imagem mostra ferramenta direita

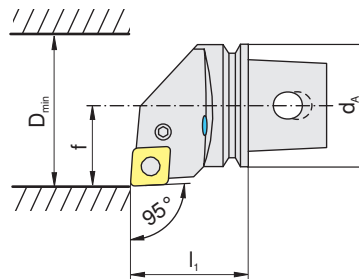
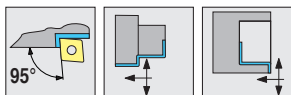
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-SVUCR-16	R	70	20	100	45	VC.. 1604..	E01
63	HSK-T63-SVUCL-16	L	70	20	100	45	VC.. 1604..	E01

E01	24647	26147	69294	69293	29279

A303	A90-A91	A92

UTS PCLN...

MaxiLock N

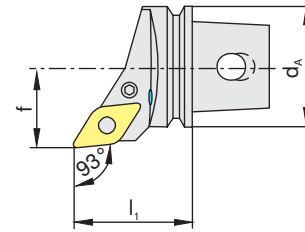
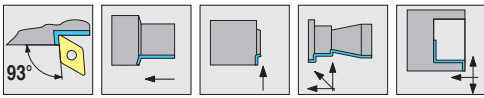


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-PCLNR-12	R	40	54	27	CN.. 1204..	E01
40	UT40-PCLNL-12	L	40	54	27	CN.. 1204..	E01
50	UT50-PCLNR-12	R	50	70	35	CN.. 1204..	E02
50	UT50-PCLNL-12	L	50	70	35	CN.. 1204..	E02
50	UT50-PCLNR-16	R	50	70	35	CN.. 1606..	E03
50	UT50-PCLNL-16	L	50	70	35	CN.. 1606..	E03
63	UT63-PCLNR-12	R	60	86	43	CN.. 1204..	E04
63	UT63-PCLNL-12	L	60	86	43	CN.. 1204..	E04
63	UT63-PCLNR-16	R	60	86	43	CN.. 1606..	E05
63	UT63-PCLNL-16	L	60	86	43	CN.. 1606..	E05
63	UT63-PCLNR-19	R	60	86	43	CN.. 1906..	E06
63	UT63-PCLNL-19	L	60	86	43	CN.. 1906..	E06

E01	59446	59568	59437	59430	86176	194263	4771	140587
E02	59446	59568	59437	59430	86176	225429	4771	140587
E03	59443	59451	59438	59426	86177	225429	4771	140589
E04	59446	59568	59437	59430	86176	225430	4771	140587
E05	59443	59451	59438	59426	86177	225430	4771	140589
E06	59448	59569	59439	59434	86178	225430	4209	140590

A303	A63-A66	A79



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-PDJNR-11	R	40	27	DN.. 1104..	E01
40	UT40-PDJNL-11	L	40	27	DN.. 1104..	E01
40	UT40-PDJNR-15	R	40	27	DN.. 1506..	E02
40	UT40-PDJNL-15	L	40	27	DN.. 1506..	E02
50	UT50-PDJNR-15	R	50	35	DN.. 1506..	E03
50	UT50-PDJNL-15	L	50	35	DN.. 1506..	E03
63	UT63-PDJNL-11	L	60	43	DN.. 1104..	E04
63	UT63-PDJNR-15	R	60	43	DN.. 1506..	E05
63	UT63-PDJNL-15	L	60	43	DN.. 1506..	E05

E01	59445	293140	293147	293143	86174	194263	4770	293151
E02	59443	59570	59437	59432	86176	194263	4771	140591
E03	59443	59570	59437	59432	86176	225429	4771	140591
E04	59445	293140	293147	293143	86174	225430	4770	293151
E05	59443	59570	59437	59432	86176	225430	4771	140591



UTS PDNN...

MaxiLock N

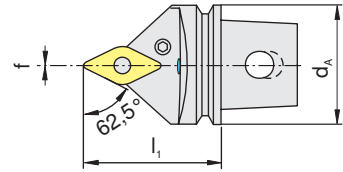
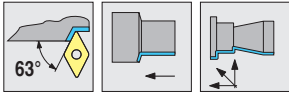
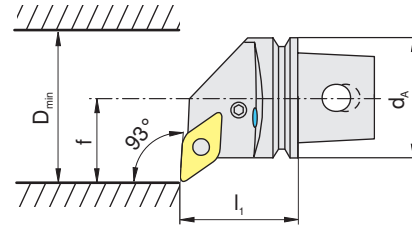
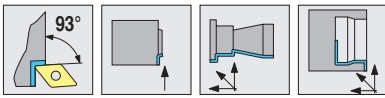


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
40	UT40-PDNNR-15	R	45	0	DN.. 1506..	E01
40	UT40-PDNNL-15	L	45	0	DN.. 1506..	E01
63	UT63-PDNNR-15	R	60	0	DN.. 1506..	E02
63	UT63-PDNNL-15	L	60	0	DN.. 1506..	E02

E01	59443	59570	59437	59432	86176	194263	4771	140591
E02	59443	59570	59437	59432	86176	225430	4771	140591

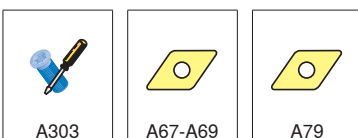
A303	A67-A69	A79



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-PDUNR-11	R	40	49	27	DN.. 1104..	E01
40	UT40-PDUNL-11	L	40	49	27	DN.. 1104..	E01
40	UT40-PDUNR-15	R	40	49	27	DN.. 1506..	E02
40	UT40-PDUNL-15	L	40	49	27	DN.. 1506..	E02
50	UT50-PDUNR-15	R	50	62	35	DN.. 1506..	E03
50	UT50-PDUNL-15	L	50	62	35	DN.. 1506..	E03
63	UT63-PDUNR-15	R	60	77	43	DN.. 1506..	E04
63	UT63-PDUNL-15	L	60	77	43	DN.. 1506..	E04

E01	59445	293140	293147	293143	86174	194263	4770	293151
E02	59443	59570	59437	59432	86176	194263	4771	140591
E03	59443	59570	59437	59432	86176	225429	4771	140591
E04	59443	59570	59437	59432	86176	225430	4771	140591



UTS PRDC...

MaxiLock N

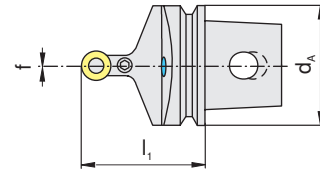
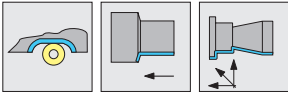
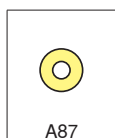
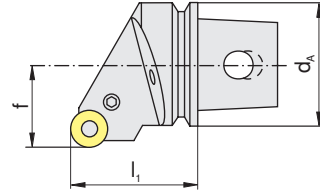
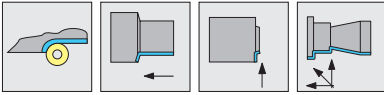


Imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
50	UT50-PRDCN-12	N	50	0	RC.. 1204..	E01
63	UT63-PRDCN-16	N	60	0	RC.. 1606..	E02

E01	59445	154563	59436	154568	86174	225429	4770	154578
E02	154575	154564	154577	154570	86176	225430	4771	154579

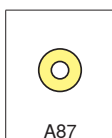




A imagem mostra ferramenta direita

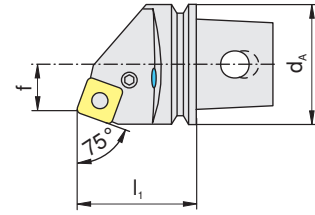
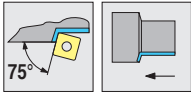
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
50	UT50-PRGCR-12	R	50	35	RC.. 1204..	E01
50	UT50-PRGCR-16	R	50	35	RC.. 1606..	E02
63	UT63-PRGCL-16	L	60	43	RC.. 1606..	E03

E01	59445	154563	59436	154568	86174	225429	4770	154578
E02	154575	154564	154577	154570	86176	225429	4771	154579
E03	154575	154564	154577	154570	86176	225430	4771	154579



UTS PSBN...

MaxiLock N



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
40	UT40-PSBNL-12	L	40	17	SN.. 1204..	E01
63	UT63-PSBNL-12	L	60	27	SN.. 1204..	E02
63	UT63-PSBNL-15	L	60	27	SN.. 1506..	E03
63	UT63-PSBNR-19	R	60	27	SN.. 1906..	E04
63	UT63-PSBNL-19	L	60	27	SN.. 1906..	E04

E01	59446	59564	59437	59430	86176	194263	4771	140595
E02	59446	59564	59437	59430	86176	225430	4771	140595
E03	59443	59549	59438	59426	86177	225430	4771	140596
E04	59448	59566	59439	59434	86178	225430	4209	140597

A303	A70-A72	A80

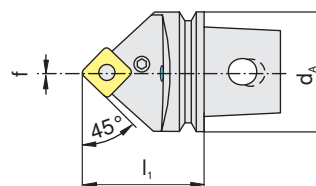
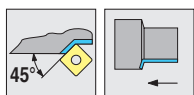


Imagem mostra ferramenta direita

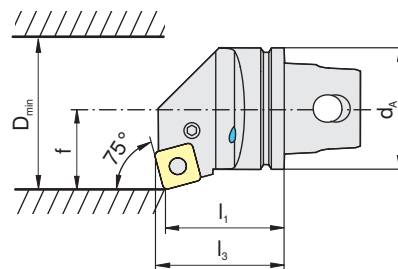
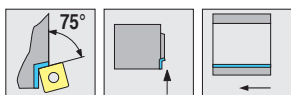
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-PSDNN-12	N	40	0	SN.. 1204..	E01
63	UT63-PSDNN-15	N	60	0	SN.. 1506..	E02

E01	59446	59564	59437	59430	86176	194263	4771	140595
E02	59443	59549	59438	59426	86177	225430		

A303	A70-A72	A80

UTS PSKN...

MaxiLock N

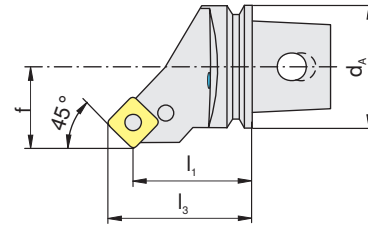
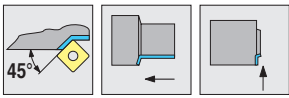


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_3 [mm]	D_{min} [mm]	f [mm]		
40	UT40-PSKNL-12	L	40	44,0	49	27	SN.. 1204..	E01
63	UT63-PSKNL-19	L	60	66,0	80	43	SN.. 1906..	E02
63	UT63-PSKNR-19	L	60	66,0	80	43	SN.. 1906..	E02

E01	59446	59564	59437	59430	86176	194263	4771	140595
E02	59448	59566	59439	59434	86178	225430	4209	140597

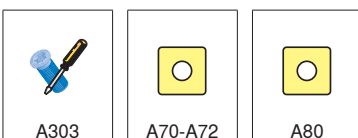
 A303	 A70-A72	 A80
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A imagem mostra ferramenta direita

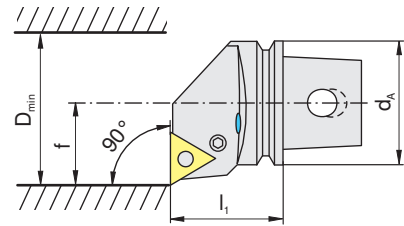
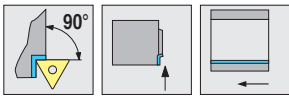
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_3 [mm]	f [mm]		
40	UT40-PSSNR-12	R	40	48,0	27	SN.. 1204..	E01
40	UT40-PSSNL-12	L	40	48,0	27	SN.. 1204..	E01
63	UT63-PSSNL-12	L	60	68,0	43	SN.. 1204..	E02
63	UT63-PSSNR-19	R	60	72,0	43	SN.. 1906..	E03

E01	59446	59564	59437	59430	86176	194263	4771	140595
E02	59446	59564	59437	59430	86176	225430	4771	140595
E03	59448	59566	59439	59434	86178	225430	4209	140597



UTS PTFN...

MaxiLock N

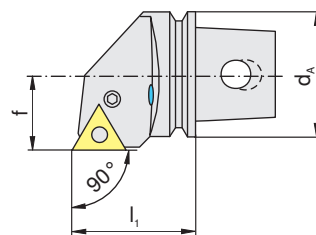
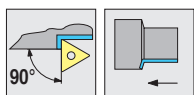


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-PTFNR-16	R	40	54	27	TN.. 1604..	E01
40	UT40-PTFNL-16	L	40	54	27	TN.. 1604..	E01
50	UT50-PTFNL-16	L	50	63	35	TN.. 1604..	E02
63	UT63-PTFNR-16	R	60	80	43	TN.. 1604..	E03

E01	59445	59556	59436	59429	86174	194263	4770	140601
E02	59445	59556	59436	59429	86174	225429	4770	140601
E03	59445	59556	59436	59429	86174	225430	4770	140601

A303	A73-A75	A80



A imagem mostra ferramenta direita

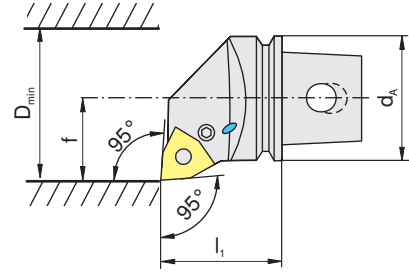
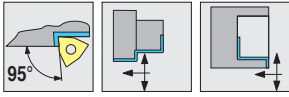
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-PTGNR-16	R	40	27	TN.. 1604..	E01
40	UT40-PTGNL-16	L	40	27	TN.. 1604..	E01
63	UT63-PTGNR-16	R	60	43	TN.. 1604..	E02

E01	59445	59556	59436	59429	86174	194263	4770	140601
E02	59445	59556	59436	59429	86174	225430	4770	140601

A303	A73-A75	A80

UTS PWLN...

MaxiLock N

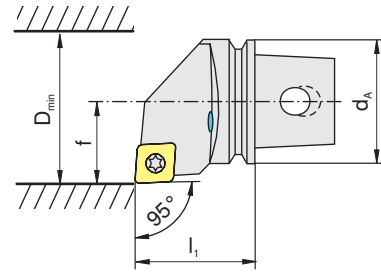
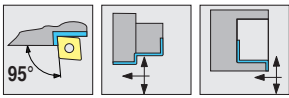


A imagem mostra ferramenta direita




d _A [mm]	Tipo, descrição	LNR 	l ₁ [mm]	D _{min} [mm]	f [mm]		
40	UT40-PWLNR-06	R	40	49	27	WN.. 0604..	E01
40	UT40-PWLNL-06	L	40	49	27	WN.. 0604..	E01
40	UT40-PWLNR-08	R	40	49	27	WN.. 0804..	E02
40	UT40-PWLNL-08	L	40	49	27	WN.. 0804..	E02
50	UT50-PWLNR-08	R	50	62	35	WN.. 0804..	E03
50	UT50-PWLNL-08	L	50	62	35	WN.. 0804..	E03
63	UT63-PWLNR-08	R	60	77	43	WN.. 0804..	E04
63	UT63-PWLNL-08	L	60	77	43	WN.. 0804..	E04








E01	59445	293139	293147	59429	86174	194263	4770	293148
E02	59446	218151	59437	59430	86176	194263	4771	222127
E03	59446	218151	59437	59430	86176	225429	4771	222127
E04	59446	218151	59437	59430	86176	225430	4771	222127

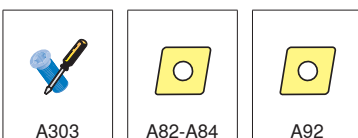




A imagem mostra ferramenta direita

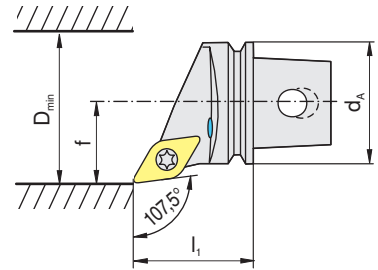
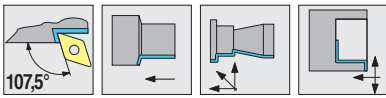
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-SCLCR-12	R	40	54	27	CC.. 1204..	E01
40	UT40-SCLCL-12	L	40	54	27	CC.. 1204..	E01
50	UT50-SCLCR-12	R	50	64	35	CC.. 1204..	E02
50	UT50-SCLCL-12	L	50	64	35	CC.. 1204..	E02

						
E01	54981	61006	69296	194263	69293	74208
E02	54981	61006	69296	225429	69293	74208







UTS SDHC...


MaxiLock S

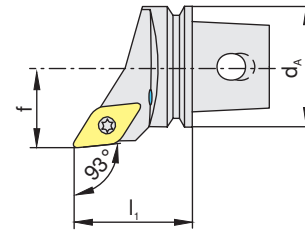
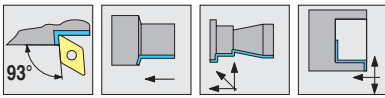


A imagem mostra ferramenta direita




d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-SDHCR-11	R	40	49	27	DC.. 11T3..	E01
40	UT40-SDHCL-11	L	40	49	27	DC.. 11T3..	E01



						
E01	24647	26146	69294	194263	69293	29278



		
A303	A85-A86	A92



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-SDJCR-11	R	40	27	DC.. 11T3..	E01
40	UT40-SDJCL-11	L	40	27	DC.. 11T3..	E01

						
E01	24647	26146	69294	194263	69293	29278

		
A303	A85-A86	A92

UTS SDNC...

MaxiLock S

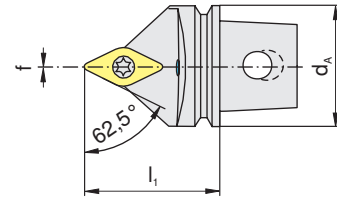
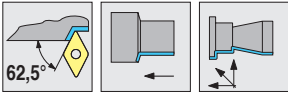
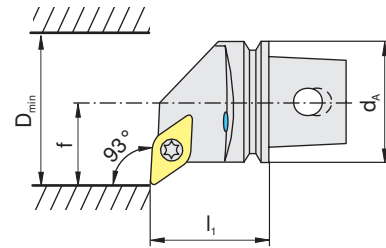
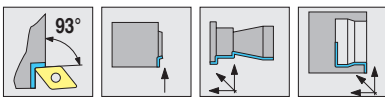


Imagem mostra ferramenta direita




d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
40	UT40-SDNCN-11	N	40	0	DC.. 11T3..	E01








E01	24647	26146	69294	194263	69293	29278

A303	A85-A86	A92



A imagem mostra ferramenta direita

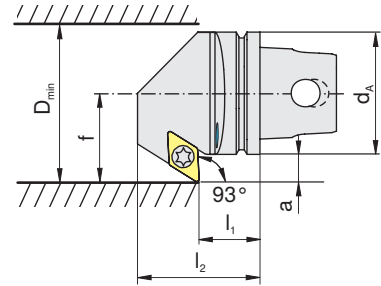
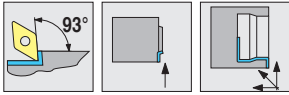
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	D_{min} [mm]	f [mm]		
40	UT40-SDUCL-11	L	40	49	27	DC.. 11T3..	E01
50	UT50-SDUCR-11	R	50	64	35	DC.. 11T3..	E02
50	UT50-SDUCL-11	L	50	64	35	DC.. 11T3..	E02

						
E01	24647	26146	69294	194263	69293	29278
E02	54981	26146	69294	225429	69293	29278




		
A303	A85-A86	A92

UTS SDXC...

MaxiLock S



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	D_{min} [mm]	f [mm]	a [mm]		
40	UT40-SDXCR-11	R	20	40	52	29	9	DC.. 11T3..	E01

						
E01	54981	26146	69294	194263	69293	29278

		
A303	A85-A86	A92

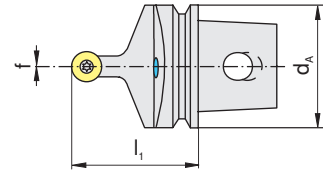
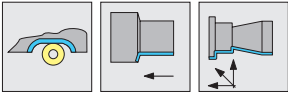
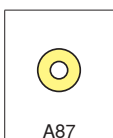


Imagem mostra ferramenta direita

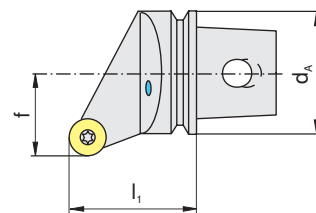
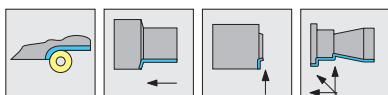
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-SRDCN-10	N	40	0	RC.. 1003..	E01

E01	24647	24838	69294	194263	69293	36305



UTS SRGC...

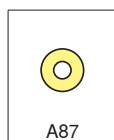
MaxiLock S



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
40	UT40-SRGCR-06	R	40	27	RC.. 0602..	E01
40	UT40-SRGCL-06	L	40	27	RC.. 0602..	E01
40	UT40-SRGCR-08	R	40	27	RC.. 0803..	E02
40	UT40-SRGCL-08	L	40	27	RC.. 0803..	E02
40	UT40-SRGCR-10	R	40	27	RC.. 1003..	E03

E01	24645			194263		24643	29280
E02	77613			194263		24643	82272
E03	24647	24838	69294	194263	69293		36305



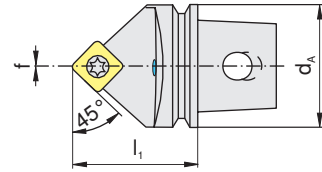
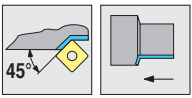
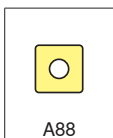


Imagem mostra ferramenta direita

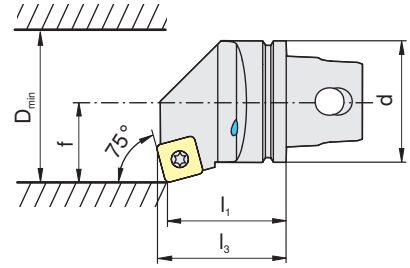
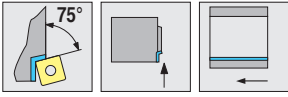
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-SSDCN-12	N	40	0	SC.. 1204..	E01

E01	54981	69199	69296	194263	69293	82270



UTS SSKC...

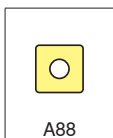
MaxiLock S

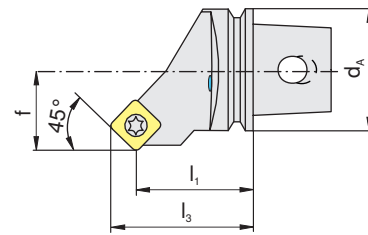
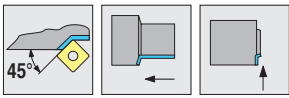


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_3 [mm]	D_{min} [mm]	f [mm]		
40	UT40-SSKCL-12	L	40	44,0	54	27	SC.. 1204..	E01

E01	54981	69199	69296	194263	69293	82270

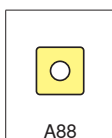




A imagem mostra ferramenta direita

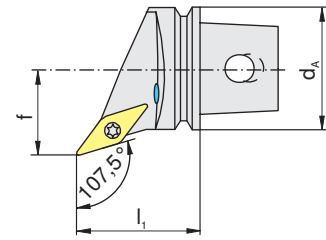
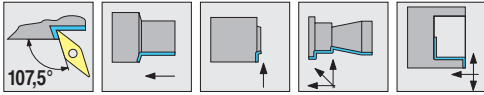
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_3 [mm]	f [mm]		
40	UT40-SSSCR-12	R	40	48,0	27	SC.. 1204..	E01
40	UT40-SSSCL-12	L	40	48,0	27	SC.. 1204..	E01

E01	54981	69199	69296	194263	69293	82270












UTS SVHC...

MaxiLock S

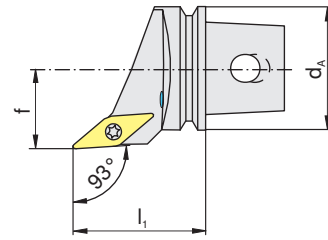
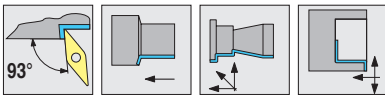


A imagem mostra ferramenta direita




d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-SVHCR-16	R	40	27	VC.. 1604..	E01
40	UT40-SVHCL-16	L	40	27	VC.. 1604..	E01
63	UT63-SVHCR-16	R	60	43	VC.. 1604..	E02
63	UT63-SVHCL-16	L	60	43	VC.. 1604..	E02








						
E01	24647	37493 / 26147	69294	194263	69293	29279 / 83343
E02	24647	37493 / 26147	69294	225430	69293	29279 / 83343





A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	f [mm]		
40	UT40-SVJCR-16	R	45	27	VC.. 1604..	E01
40	UT40-SVJCL-16	L	45	27	VC.. 1604..	E01
50	UT50-SVJCR-16	R	50	35	VC.. 1604..	E02
50	UT50-SVJCL-16	L	50	35	VC.. 1604..	E02
63	UT63-SVJCR-16	R	60	43	VC.. 1604..	E03
63	UT63-SVJCL-16	L	60	43	VC.. 1604..	E03

						
E01	24647	26147 / 37493	69294	194263	69293	29279 / 83343
E02	24647	26147 / 37493	69294	225429	69293	83343 / 29279
E03	24647	26147 / 37493	69294	225430	69293	29279 / 83343



UTS SVVC...

MaxiLock S

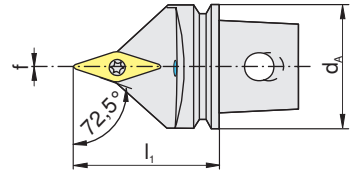
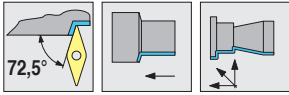
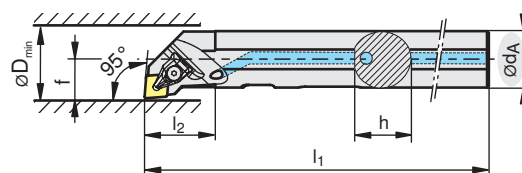
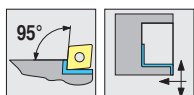


Imagem mostra ferramenta direita




d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	f [mm]		
40	UT40-SVVCN-16	N	45	0	VC.. 1604..	E01






E01	24647	37493 / 26147	69294	194263	69293	83343

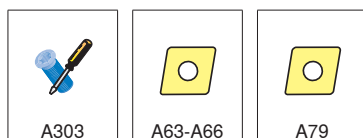
A303	A90-A91	A92



A imagem mostra ferramenta direita

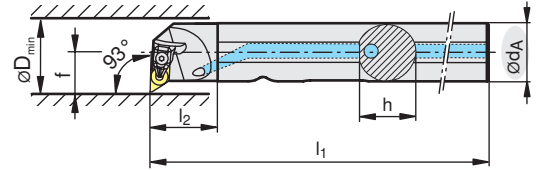
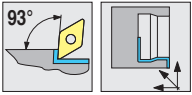
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]	 	
								CN.. 0903..	E01
20	A20Q DCLNL 09	L	19	180	35	13	25	CN.. 0903..	E01
20	A20Q DCLNR 09	R	19	180	35	13	25	CN.. 0903..	E01
25	A25R DCLNL 12	L	24	200	36	17	32	CN.. 1204..	E02
25	A25R DCLNR 12	R	24	200	36	17	32	CN.. 1204..	E02
32	A32S DCLNL 12	L	31	250	40	22	40	CN.. 1204..	E03
32	A32S DCLNR 12	R	31	250	40	22	40	CN.. 1204..	E03
40	A40T DCLNL 12	L	39	300	45	27	50	CN.. 1204..	E03
40	A40T DCLNR 12	R	39	300	45	27	50	CN.. 1204..	E03
50	A50U DCLNL 16	L	47	350	45	35	63	CN.. 1606..	E04

				
E01	11227306	11227305	11577861	11227314
E02	11224545	11224494		11224503
E03	11224545	11224494	11211558	11224503
E04	11227322	11227318	11227315	11227323











DDUN...




MaxiLock D

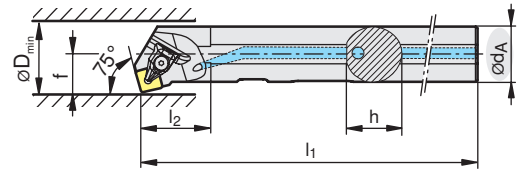
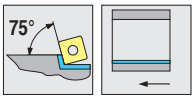


A imagem mostra ferramenta direita




d_A [mm]	Tipo, descrição	LNR 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
25	A25R DDUNL 11	L	24	200	30	17	32	DN.. 1104..	E01
25	A25R DDUNR 11	R	24	200	30	17	32	DN.. 1104..	E01
32	A32S DDUNL 11	L	31	250	40	22	40	DN.. 1104..	E01
32	A32S DDUNR 11	R	31	250	40	22	40	DN.. 1104..	E01
40	A40T DDUNL 15	L	39	300	45	27	50	DN.. 1506..	E02
40	A40T DDUNR 15	R	39	300	45	27	50	DN.. 1506..	E02






				
E01	11258694	11227305	11227308	11227314
E02	11224545	11224494	11211562	11224503




		
A303	A67-A69	A79



A imagem mostra ferramenta direita

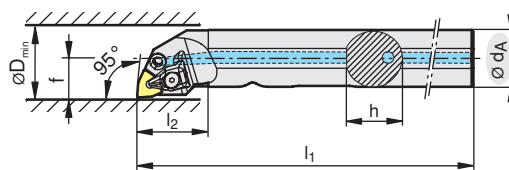
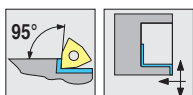
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
32	A32S DSKNL 12	L	31	250	40	22	40	SN.. 1204..	E01
32	A32S DSKNR 12	R	31	250	40	22	40	SN.. 1204..	E01



				
E01	11224545	11224494	11211561	11224503

		
A303	A70-A72	A80




DWLN...

MaxiLock D



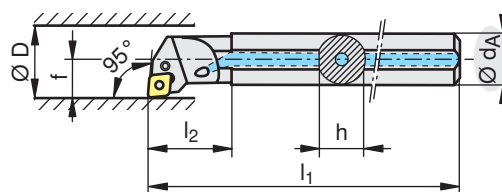
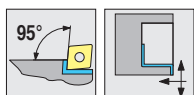
-  Versão A com furo de refrigeração
-  Versão S sem furo de refrigeração



A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
25	A25R DWLNL 06	L	24	200	32	17	32	WN.. 0604..	E01
25	A25R DWLNR 06	R	24	200	32	17	32	WN.. 0604..	E01
32	A32S DWLNL 08	L	31	250	40	22	40	WN.. 0804..	E02
32	A32S DWLNR 08	R	31	250	40	22	40	WN.. 0804..	E02
40	A40T DWLNL 08	L	39	300	45	27	50	WN.. 0804..	E02
40	A40T DWLNR 08	R	39	300	45	27	50	WN.. 0804..	E02
25	S25T DWLNR 08	R	23	300	40	17	32	WN.. 0804..	E03
32	S32U DWLNR 08	R	30	350	40	22	40	WN.. 0804..	E04
40	S40V DWLNR 08	R	38	400	45	27	50	WN.. 0804..	E04




					
E01	11227306	11232874	11227305	11227310	11227314
E02	11224545	11232874	11224494	11211563	11224503
E03	11224545				11224503
E04	11224545		11224494	11211563	11224503











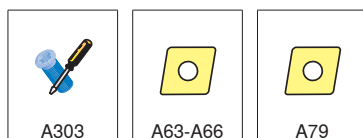


-  Versão A com furo de refrigeração
-  Versão S sem furo de refrigeração

A imagem mostra ferramenta direita

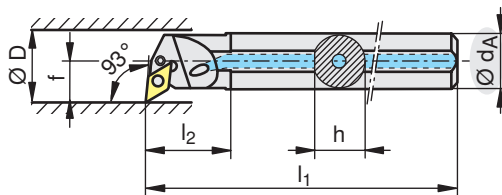
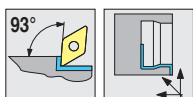
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
25	A25R PCLNL 12	L	23	200	36	17	32	CN.. 1204..	E01
25	A25R PCLNR 12	R	23	200	36	17	32	CN.. 1204..	E01
32	A32S PCLNL 12	L	30	250	50	22	40	CN.. 1204..	E01
32	A32S PCLNR 12	R	30	250	50	22	40	CN.. 1204..	E01
40	A40T PCLNL 12	L	38	300	60	27	50	CN.. 1204..	E02
40	A40T PCLNR 12	R	38	300	60	27	50	CN.. 1204..	E02
25	S25T PCLNL 12	L	23	300	22	17	32	CN.. 1204..	E01
25	S25T PCLNR 12	R	23	300	22	17	32	CN.. 1204..	E01
32	S32U PCLNL 12	L	30	350	24,1	22	40	CN.. 1204..	E01
32	S32U PCLNR 12	R	30	350	24,1	22	40	CN.. 1204..	E01
40	S40V PCLNL 12	L	38	400	24,1	27	50	CN.. 1204..	E02
40	S40V PCLNR 12	R	38	400	24,1	27	50	CN.. 1204..	E02
50	S50W PCLNL 16	L	47	450	31	35	63	CN.. 1606..	E03
50	S50W PCLNR 16	R	47	450	31	35	63	CN.. 1606..	E03


							
E01	59442	59568	59437	59430	86176	4771	140586
E02	59446	59568	59437	59430	86176	4771	140587
E03	59443	59451	59438	59426	86177	4771	140589






PDUN...









MaxiLock N





 Versão A com furo de refrigeração

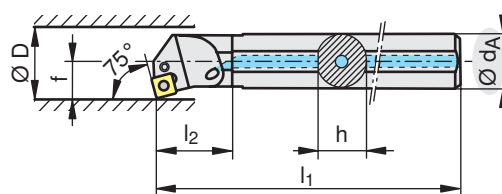
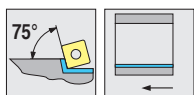
 Versão S sem furo de refrigeração

A imagem mostra ferramenta direita




d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
20	A20Q PDUNL 11	L	18,5	180		16	28	DN.. 1104..	E01
20	A20Q PDUNR 11	R	18,5	180		16	28	DN.. 1104..	E01
25	A25R PDUNL 11	L	23	200		18,5	32	DN.. 1104..	E02
25	A25R PDUNR 11	R	23	200		18,5	32	DN.. 1104..	E02
32	A32S PDUNL 11	L	30	250		22	40	DN.. 1104..	E02
32	A32S PDUNR 11	R	30	250		22	40	DN.. 1104..	E02
32	A32S PDUNL 15	L	30	250	50	22	40	DN.. 1506..	E03
32	A32S PDUNR 15	R	30	250	50	22	40	DN.. 1506..	E03
40	A40T PDUNL 15	L	38	300	60	27	50	DN.. 1506..	E03
40	A40T PDUNR 15	R	38	300	60	27	50	DN.. 1506..	E03
50	S50W PDUNL 15	L	47	450		35	63	DN.. 1506..	E03
50	S50W PDUNR 15	R	47	450		35	63	DN.. 1506..	E03


							
E01	293145			293144		4770	293152
E02	59445	293140	293147	293143	86174	4770	293151
E03	59443	59570	59437	59432	86176	4771	140591

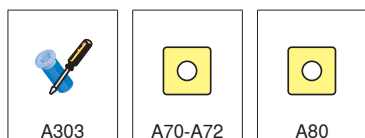
		
A303	A67-A69	A79



A imagem mostra ferramenta direita

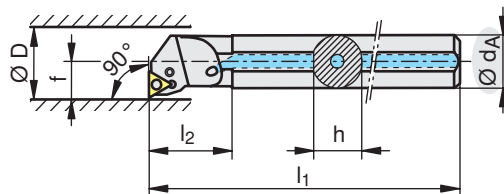
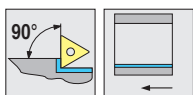
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
25	A25R PSKNL 12	L	23	200	36	17	32	SN.. 1204..	E01
25	A25R PSKNR 12	R	23	200	36	17	32	SN.. 1204..	E01
32	A32S PSKNL 12	L	30	250	50	22	40	SN.. 1204..	E01
32	A32S PSKNR 12	R	30	250	50	22	40	SN.. 1204..	E01
40	A40T PSKNL 12	L	38	300	60	27	50	SN.. 1204..	E02
40	A40T PSKNR 12	R	38	300	60	27	50	SN.. 1204..	E02


							
E01	59442	59547	59437	59430	86176	4771	140594
E02	59446	59547	59437	59430	86176	4771	140595






PTFN...









MaxiLock N


 Versão A com furo de refrigeração

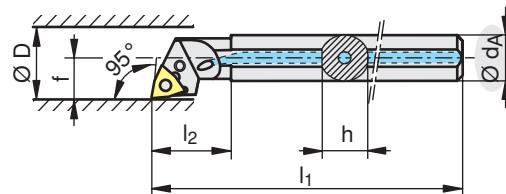
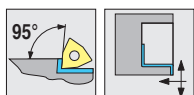
 Versão S sem furo de refrigeração

A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	LNR 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
16	A16M PTFNL 11	L	15	150	29	11	20	TN.. 1103..	E01
16	A16M PTFNR 11	R	15	150	29	11	20	TN.. 1103..	E01
20	A20Q PTFNL 11	L	18,5	180	32	13	25	TN.. 1103..	E01
20	A20Q PTFNR 11	R	18,5	180	32	13	25	TN.. 1103..	E01
25	A25R PTFNL 16	L	23	200	36	17	32	TN.. 1604..	E02
25	A25R PTFNR 16	R	23	200	36	17	32	TN.. 1604..	E02
32	A32S PTFNL 16	L	30	250	50	22	40	TN.. 1604..	E02
32	A32S PTFNR 16	R	30	250	50	22	40	TN.. 1604..	E02
25	S25T PTFNR 16	R	23	300	17,5	17	32	TN.. 1604..	E02
40	A40T PTFNL 22	L	38	300	60	27	50	TN.. 2204..	E03
40	A40T PTFNR 22	R	38	300	60	27	50	TN.. 2204..	E03
50	S50W PTFNR 22	R	47	450	35	35	63	TN.. 2204..	E03

							
E01	59444			59427		4773	140600
E02	59445	59556	59436	59429	86174	4770	140601
E03	59446	59557	59437	59430	86176	4771	140602

		
A303	A73-A75	A80



A imagem mostra ferramenta direita

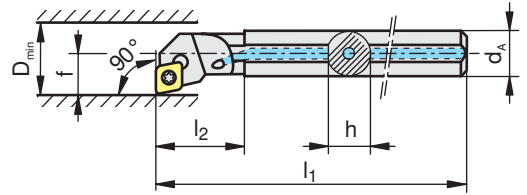
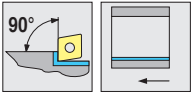
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
16	A16M PWLNL 06	L	15	150		11	21	WN.. 0604..	E01
16	A16M PWLNR 06	R	15	150		11	21	WN.. 0604..	E01
20	A20Q PWLNL 06-1	L	19	180		13	25	WN.. 0604..	E01
20	A20Q PWLNR 06-1	R	19	180		13	25	WN.. 0604..	E01
25	A25R PWLNL 06	L	23	200		17	32	WN.. 0604..	E02
25	A25R PWLNR 06	R	23	200		17	32	WN.. 0604..	E02
32	A32S PWLNL 06	L	30	250		22	40	WN.. 0604..	E02
32	A32S PWLNR 06	R	30	250		22	40	WN.. 0604..	E02
32	A32S PWLNL 08	L	30	250	50	22	40	WN.. 0804..	E03
32	A32S PWLNR 08	R	30	250	50	22	40	WN.. 0804..	E03
40	A40T PWLNL 08	L	38	300	60	27	50	WN.. 0804..	E03
40	A40T PWLNR 08	R	38	300	60	27	50	WN.. 0804..	E03

E01	310913			293141		4773	293150
E02	59445	293139	293147	59429	86174	4770	293148
E03	59446	218151	59437	59430	86176	4771	222127










SCFC...




MaxiLock S

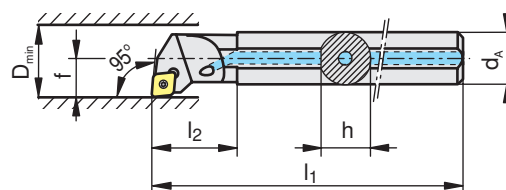
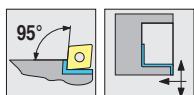




A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
8	A08F SCFCR 06	R	7,6	80	17	5	11	CC.. 0602..	E01
8	A08F SCFCL 06	L	7,6	80	17	5	11	CC.. 0602..	E01
10	A10H SCFCR 06	R	9,5	100	19	7	13	CC.. 0602..	E01
10	A10H SCFCL 06	L	9,5	100	19	7	13	CC.. 0602..	E01
12	A12K SCFCR 06	R	11,5	125	22	9	16	CC.. 0602..	E01
12	A12K SCFCL 06	L	11,5	125	22	9	16	CC.. 0602..	E01




			
E01	76913	8095010200	82274

		
A303	A82-A84	A92

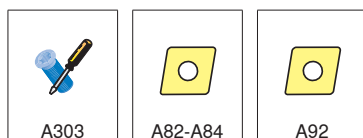


-  Versão A com furo de refrigeração
-  Versão S sem furo de refrigeração

A imagem mostra ferramenta direita

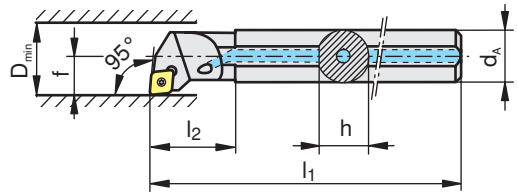
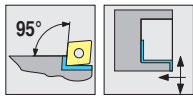
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
8	A08F SCLCR 06	R	7,6	80	17	5	11	CC.. 0602..	E01
8	S08H SCLCR 06	R	7,2	100	8	5	11	CC.. 0602..	E01
8	A08F SCLCL 06	L	7,6	80	17	5	11	CC.. 0602..	E01
8	S08H SCLCL 06	L	7,2	100	8	5	11	CC.. 0602..	E01
10	A10H SCLCR 06	R	9,5	100	19	7	13	CC.. 0602..	E01
10	S10K SCLCR 06	R	9	125	10	7	13	CC.. 0602..	E01
10	A10H SCLCL 06	L	9,5	100	19	7	13	CC.. 0602..	E01
10	S10K SCLCL 06	L	9	125	10	7	13	CC.. 0602..	E01
12	A12K SCLCR 06	R	11,5	125	22	9	16	CC.. 0602..	E01
12	S12Q SCLCR 06	R	11	180	10	9	16	CC.. 0602..	E01
12	A12K SCLCL 06	L	11,5	125	22	9	16	CC.. 0602..	E01
12	S12Q SCLCL 06	L	11	180	10	9	16	CC.. 0602..	E01
16	A16M SCLCR 09	R	15	150	29	11	20	CC.. 09T3..	E02
16	S16R SCLCR 09	R	14,5	200	16	11	20	CC.. 09T3..	E02
16	A16M SCLCL 09	L	15	150	29	11	20	CC.. 09T3..	E02
16	S16R SCLCL 09	L	14,5	200	16	11	20	CC.. 09T3..	E02
20	A20Q SCLCR 09	R	18,5	180	32	13	25	CC.. 09T3..	E03
20	S20S SCLCR 09	R	18	250	16	13	25	CC.. 09T3..	E02
20	A20Q SCLCL 09	L	18,5	180	32	13	25	CC.. 09T3..	E03
20	S20S SCLCL 09	L	18	250	16	13	25	CC.. 09T3..	E02
25	A25R SCLCR 09	R	23	200	36	17	32	CC.. 09T3..	E03
25	S25T SCLCR 09	R	23	300	16	17	32	CC.. 09T3..	E04
25	A25R SCLCL 09	L	23	200	36	17	32	CC.. 09T3..	E03
25	S25T SCLCL 09	L	23	300	16	17	32	CC.. 09T3..	E04
32	A32S SCLCR 12	R	30	250	50	22	40	CC.. 1204..	E05
32	A32S SCLCL 12	L	30	250	50	22	40	CC.. 1204..	E05
40	A40T SCLCR 12	R	38	300	60	27	50	CC.. 1204..	E05
40	A40T SCLCL 12	L	38	300	60	27	50	CC.. 1204..	E05

						
E01	76913				8095010200	82274
E02	54976				8095010500	82275
E03	165795				8095010500	183936
E04	24647				8095010500	82271
E05	54981	61006	69296	69293		74208



SCLC... com haste de metal duro

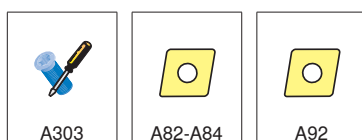
MaxiLock S

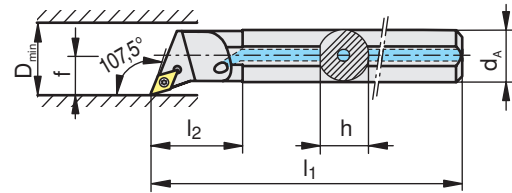
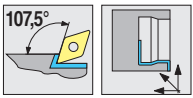


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	LNR 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
8	E08H SCLCR 06	R	7,6	100		6	11	CC.. 0602..	E01
8	E08H SCLCL 06	L	7,6	100		6	11	CC.. 0602..	E01
10	E10K SCLCR 06	R	9	125	10	7	13	CC.. 0602..	E01
10	E10K SCLCL 06	L	9	125	10	7	13	CC.. 0602..	E01
12	E12Q SCLCR 06	R	11,5	180	10	9	16	CC.. 0602..	E01
12	E12Q SCLCL 06	L	11,5	180	10	9	16	CC.. 0602..	E01
16	E16R SCLCR 09	R	15	200	16	11	20	CC.. 09T3..	E02
16	E16R SCLCL 09	L	15	200	16	11	20	CC.. 09T3..	E02
20	E20S SCLCR 09	R	18,5	250	16	13	25	CC.. 09T3..	E03
20	E20S SCLCL 09	L	18,5	250	16	13	25	CC.. 09T3..	E03
25	E25T SCLCR 09	R	23	300	16	17	32	CC.. 09T3..	E04
25	E25T SCLCL 09	L	23	300	16	17	32	CC.. 09T3..	E04

E01	76913		8095010200	82274
E02	54976		8095010500	82275
E03	165795		8095010500	183936
E04	24647		8095010500	82271

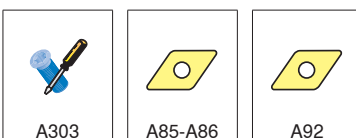




A imagem mostra ferramenta direita

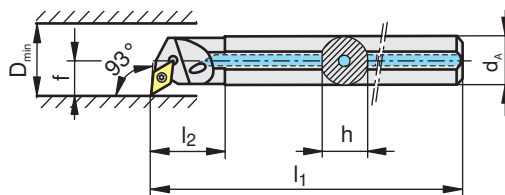
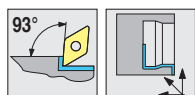
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
12	A12K SDQCR 07	R	11,5	125	22	9	16	DC.. 0702..	E01
12	A12K SDQCL 07	L	11,5	125	22	9	16	DC.. 0702..	E01
16	A16M SDQCR 07	R	15	150	29	11	20	DC.. 0702..	E01
16	A16M SDQCL 07	L	15	150	29	11	20	DC.. 0702..	E01
20	A20Q SDQCR 07	R	18,5	180	32	13	25	DC.. 0702..	E01
20	A20Q SDQCL 07	L	18,5	180	32	13	25	DC.. 0702..	E01
25	A25R SDQCR 11	R	23	200	36	17	32	DC.. 11T3..	E02
25	A25R SDQCL 11	L	23	200	36	17	32	DC.. 11T3..	E02
32	A32S SDQCR 11	R	30	250	50	22	40	DC.. 11T3..	E03
32	A32S SDQCL 11	L	30	250	50	22	40	DC.. 11T3..	E03
40	A40T SDQCR 11	R	38	300	60	27	50	DC.. 11T3..	E03
40	A40T SDQCL 11	L	38	300	60	27	50	DC.. 11T3..	E03

E01	24645				8095010200	29280
E02	165795				8095010500	183936
E03	24647	26146	69294	69293		29278



SDUC...

MaxiLock S






Versão A com furo de refrigeração

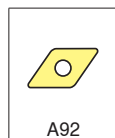
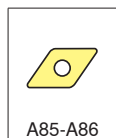


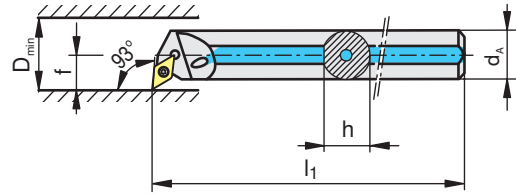
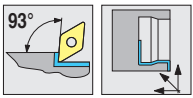
Versão S sem furo de refrigeração

A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	LNR 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
12	A12K SDUCR 07	R	11,5	125	22	9	16	DC.. 0702..	E01
12	S12Q SDUCR 07	R	11	180	12,5	9	16	DC.. 0702..	E01
12	A12K SDUCL 07	L	11,5	125	22	9	16	DC.. 0702..	E01
12	S12Q SDUCL 07	L	11	180	12,5	9	16	DC.. 0702..	E01
16	A16M SDUCR 07	R	15	150	29	11	20	DC.. 0702..	E01
16	S16R SDUCR 07	R	14,5	200	16,5	11	20	DC.. 0702..	E01
16	A16M SDUCL 07	L	15	150	29	11	20	DC.. 0702..	E01
16	S16R SDUCL 07	L	14,5	200	16,5	11	20	DC.. 0702..	E01
20	A20Q SDUCR 07	R	18,5	180	32	13	25	DC.. 0702..	E01
20	S20S SDUCR 07	R	18	250	20,5	13	25	DC.. 0702..	E01
20	A20Q SDUCL 07	L	18,5	180	32	13	25	DC.. 0702..	E01
20	A20Q SDUCR 11	R	18,5	180	32	13	25	DC.. 11T3..	E02
20	S20S SDUCR 11	R	18	250	16	13	25	DC.. 11T3..	E03
20	A20Q SDUCL 11	L	18,5	180	32	13	25	DC.. 11T3..	E04
25	A25R SDUCR 11	R	23	200	36	17	32	DC.. 11T3..	E04
25	S25T SDUCR 11	R	23	300	26	17	32	DC.. 11T3..	E05
25	A25R SDUCL 11	L	23	200	36	17	32	DC.. 11T3..	E04
25	S25T SDUCL 11	L	23	300	26	17	32	DC.. 11T3..	E05
32	A32S SDUCR 11	R	30	250	50	22	40	DC.. 11T3..	E05
32	S32U SDUCR 11	R	30	350	33	22	40	DC.. 11T3..	E05
32	A32S SDUCL 11	L	30	250	50	22	40	DC.. 11T3..	E05
40	A40T SDUCR 11	R	38	300	60	27	50	DC.. 11T3..	E05
40	A40T SDUCL 11	L	38	300	60	27	50	DC.. 11T3..	E05

						
E01	24645				8095010200	29280
E02	54976				8095010500	183936
E03	54976				8095010500	82275
E04	165795				8095010500	183936
E05	24647	26146	69294	69293		29278

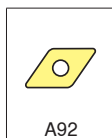
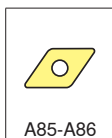




A imagem mostra ferramenta direita

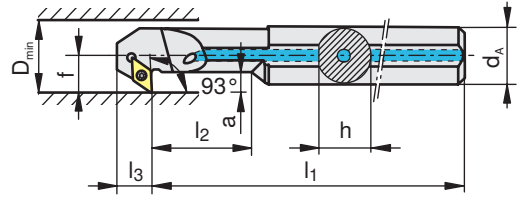
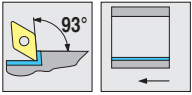
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	f [mm]	D_{min} [mm]		
12	E12Q SDUCR 07	R	11,5	180	9	16	DC.. 0702..	E01
12	E12Q SDUCL 07	L	11,5	180	9	16	DC.. 0702..	E01
16	E16R SDUCR 07	R	15	200	11	20	DC.. 0702..	E01
16	E16R SDUCL 07	L	15	200	11	20	DC.. 0702..	E01
20	E20S SDUCR 11	R	18,5	250	13	25	DC.. 11T3..	E02
20	E20S SDUCL 11	L	18,5	250	13	25	DC.. 11T3..	E02
25	E25T SDUCR 11	R	23	300	17	32	DC.. 11T3..	E03
25	E25T SDUCL 11	L	23	300	17	32	DC.. 11T3..	E03

E01	24645	8095010200	29280
E02	165795	8095010500	183936
E03	24647	8095010500	82271










SDXC...

MaxiLock S

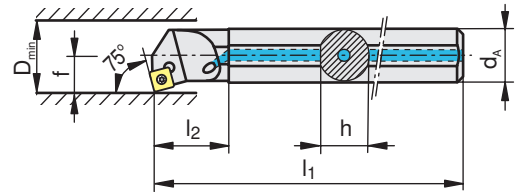
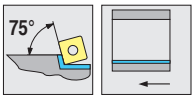


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	L N R 	l ₁ [mm]	l ₂ [mm]	l ₃ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]	a [mm]		
12	A12K SDXCR 07	R	125		12,0		16	9	4	DC.. 0702..	E01
12	A12K SDXCL 07	L	125		12,0		16	9	4	DC.. 0702..	E01
16	A16M SDXCR 07	R	150		12,0		20	11	4	DC.. 0702..	E01
16	A16M SDXCL 07	L	150		12,0		20	11	4	DC.. 0702..	E01
20	A20Q SDXCR 11	R	180		16,5		25	13	6,2	DC.. 11T3..	E02
20	A20Q SDXCL 11	L	180		16,5		25	13	6,2	DC.. 11T3..	E02
25	A25R SDXCR 11	R	200		16,8		32	17	9,2	DC.. 11T3..	E02
25	A25R SDXCL 11	L	200		16,8		32	17	9,2	DC.. 11T3..	E02

			
E01	24645	8095010200	29280
E02	165795	8095010500	183936

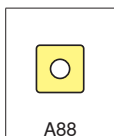




A imagem mostra ferramenta direita

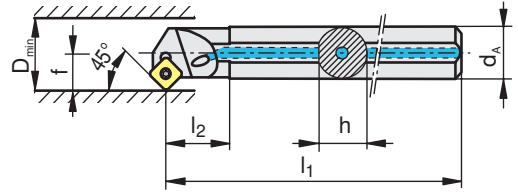
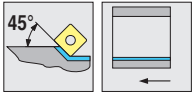
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
								SC.. 09T3..	
16	A16M SSKCR 09	R	15	150	29	11	20	SC.. 09T3..	E01
16	A16M SSKCL 09	L	15	150	29	11	20	SC.. 09T3..	E01
20	A20Q SSKCR 09	R	18,5	180	32	13	25	SC.. 09T3..	E02
20	A20Q SSKCL 09	L	18,5	180	32	13	25	SC.. 09T3..	E02
25	A25R SSKCR 09	R	23	200	36	17	32	SC.. 09T3..	E02
25	A25R SSKCL 09	L	23	200	36	17	32	SC.. 09T3..	E02

E01	54976	8095010500	82275
E02	165795	8095010500	183936



SSSC...




MaxiLock S









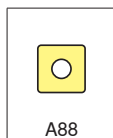
Versão A com furo de refrigeração

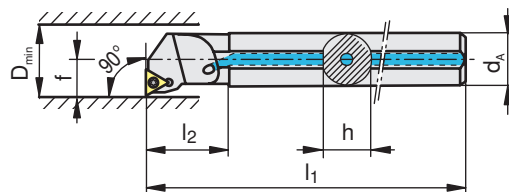
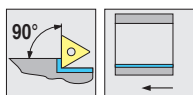
Versão S sem furo de refrigeração

A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
16	A16M SSSCR 09	R	15	150	29	11	20	SC.. 09T3..	E01
16	S16R SSSCR 09	R	14,5	200	8,4	11	20	SC.. 09T3..	E01
16	A16M SSSCL 09	L	15	150	29	11	20	SC.. 09T3..	E01
20	A20Q SSSCR 09	R	18,5	180	32	13	25	SC.. 09T3..	E02
20	A20Q SSSCL 09	L	18,5	180	32	13	25	SC.. 09T3..	E02
25	A25R SSSCR 09	R	23	200	36	17	32	SC.. 09T3..	E02
25	A25R SSSCL 09	L	23	200	36	17	32	SC.. 09T3..	E02
32	A32S SSSCR 12	R	30	250	50	22	40	SC.. 1204..	E03
32	A32S SSSCL 12	L	30	250	50	22	40	SC.. 1204..	E03
40	A40T SSSCR 12	R	38	300	60	27	50	SC.. 1204..	E03
40	A40T SSSCL 12	L	38	300	60	27	50	SC.. 1204..	E03

						
E01	54976				8095010500	82275
E02	165795				8095010500	183936
E03	54981	69199	69296	69293		82270



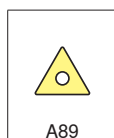


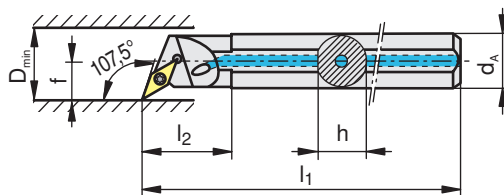
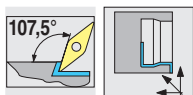
- Versão A com furo de refrigeração
- Versão S sem furo de refrigeração

A imagem mostra ferramenta direita




d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
10	A10H STFCR 09	R	9,5	100	19	7	13	TC.. 0902..	E01
10	A10H STFCL 09	L	9,5	100	19	7	13	TC.. 0902..	E01
12	A12K STFCR 11	R	11,5	125	22	9	16	TC.. 1102..	E02
12	A12K STFCL 11	L	11,5	125	22	9	16	TC.. 1102..	E02
16	A16M STFCR 11	R	15	150	29	11	20	TC.. 1102..	E02
16	S16R STFCR 11	R	14,5	200	13	11	20	TC.. 1102..	E02
16	A16M STFCL 11	L	15	150	29	11	20	TC.. 1102..	E02
20	A20Q STFCR 11	R	18,5	180	32	13	25	TC.. 1102..	E02
20	S20S STFCR 11	R	18	250	13	13	25	TC.. 1102..	E02
20	A20Q STFCL 11	L	18,5	180	32	13	25	TC.. 1102..	E02
25	A25R STFCR 16	R	23	200	36	17	32	TC.. 16T3..	E03
25	A25R STFCL 16	L	23	200	36	17	32	TC.. 16T3..	E03
32	A32S STFCR 16	R	30	250	50	22	40	TC.. 16T3..	E03
32	A32S STFCL 16	L	30	250	50	22	40	TC.. 16T3..	E03
40	A40T STFCR 16	R	38	300	60	27	50	TC.. 16T3..	E03
40	A40T STFCL 16	L	38	300	60	27	50	TC.. 16T3..	E03

E01	56652				8095010100	82273
E02	24645				8095010200	29280
E03	24647	69209	69294	69293		82758



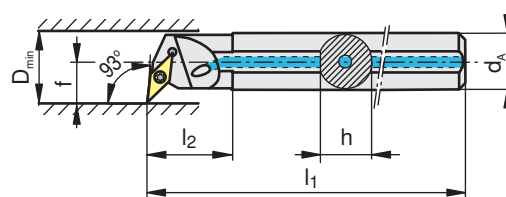
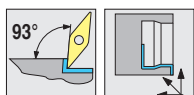


A imagem mostra ferramenta direita




d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
16	A16M SVQCR 11	R	15	150	29	11	20	VC.. 1103..	E01
16	A16M SVQCL 11	L	15	150	29	11	20	VC.. 1103..	E01
20	A20Q SVQCR 11	R	18,5	180	32	13	25	VC.. 1103..	E01
20	A20Q SVQCL 11	L	18,5	180	32	13	25	VC.. 1103..	E01
25	A25R SVQCR 11	R	23	200	36	17	32	VC.. 1103..	E01
25	A25R SVQCL 11	L	23	200	36	17	32	VC.. 1103..	E01
32	A32S SVQCR 16	R	30	250	50	22	40	VC.. 1604..	E02
32	A32S SVQCL 16	L	30	250	50	22	40	VC.. 1604..	E02
40	A40T SVQCR 16	R	38	300	60	27	50	VC.. 1604..	E02
40	A40T SVQCL 16	L	38	300	60	27	50	VC.. 1604..	E02

						
E01	24645				8095010200	29280
E02	24647	26147	69294	69293		29279





A imagem mostra ferramenta direita

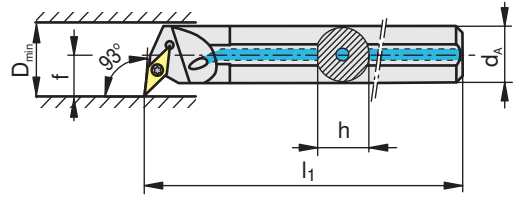
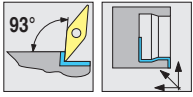
d _A [mm]	Tipo, descrição	L N R 	h [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	D _{min} [mm]		
16	A16M SVUCR 11	R	15	150	29	11	20	VC.. 1103..	E01
16	A16M SVUCL 11	L	15	150	29	11	20	VC.. 1103..	E01
20	A20Q SVUCR 11	R	18,5	180	32	13	25	VC.. 1103..	E01
20	A20Q SVUCL 11	L	18,5	180	32	13	25	VC.. 1103..	E01
25	A25R SVUCR 11	R	23	200	36	17	32	VC.. 1103..	E01
25	A25R SVUCL 11	L	23	200	36	17	32	VC.. 1103..	E01
32	A32S SVUCR 16	R	30	250	50	22	40	VC.. 1604..	E02
32	A32S SVUCL 16	L	30	250	50	22	40	VC.. 1604..	E02
40	A40T SVUCR 16	R	38	300	60	27	50	VC.. 1604..	E02
40	A40T SVUCL 16	L	38	300	60	27	50	VC.. 1604..	E02

						
E01	24645				8095010200	29280
E02	24647	26147	69294	69293		29279










SVUC... com haste de metal duro

MaxiLock S

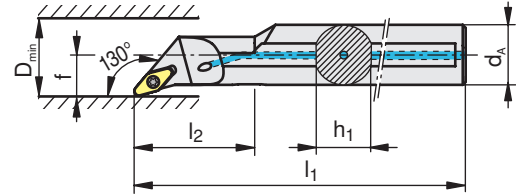
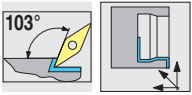


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	f [mm]	D_{min} [mm]		
16	E16R SVUCR 11	R	15	200	11	20	VC.. 1103..	E01
16	E16R SVUCL 11	L	15	200	11	20	VC.. 1103..	E01
20	E20S SVUCR 11	R	18,5	250	13	25	VC.. 1103..	E01
20	E20S SVUCL 11	L	18,5	250	13	25	VC.. 1103..	E01
25	E25T SVUCR 11	R	23	300	17	32	VC.. 1103..	E01
25	E25T SVUCL 11	L	23	300	17	32	VC.. 1103..	E01

			
E01	24645	8095010200	29280

		
A303	A90-A91	A92



A imagem mostra ferramenta direita

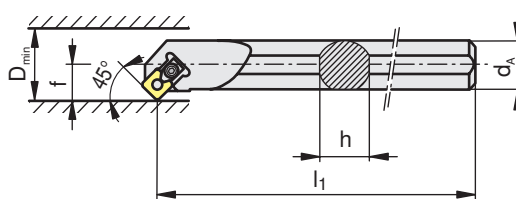
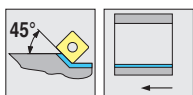
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
40	A40S SVXCR 22	R	37	250	80	27	45	VC.. 2205..	E01
40	A40S SVXCL 22	L	37	250	80	27	45	VC.. 2205..	E01
40	A40S SVXPR 22-16	R	37	250	80	27	45	VP.. 2205..	E01
40	A40S SVXPL 22-16	L	37	250	80	27	45	VP.. 2205..	E01

E01	54981	194263	8095010500



MSSC...

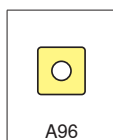
MaxiLock P

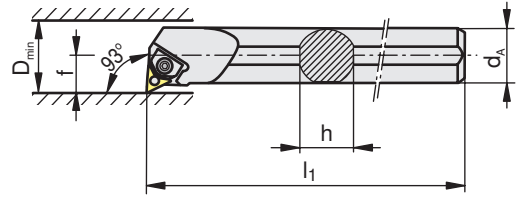
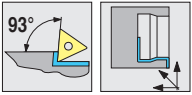


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	h [mm]	l_1 [mm]	f [mm]	D_{min} [mm]		
32	S32S MSSCR 12	R	30	250	22	40	SC.. 1204..	E01
32	S32S MSSCL 12	L	30	250	22	40	SC.. 1204..	E01

E01	4726	26139	5205	5660	8095010600	5664

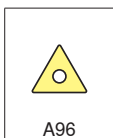




A imagem mostra ferramenta direita

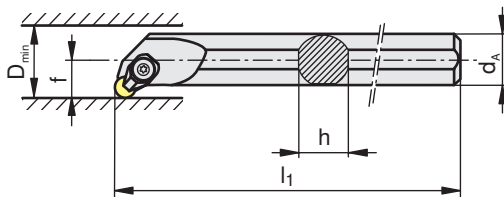
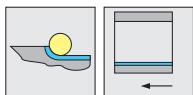
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	f [mm]	D_{min} [mm]		
32	S32S MTUCR 16	R	30	250	22	40	TC.. 1604..	E01
32	S32S MTUCL 16	L	30	250	22	40	TC.. 1604..	E01
40	S40T MTUCR 16	R	38	300	27	50	TC.. 1604..	E01

E01	4724	26137	5204	5658	8095010600	5662



CRSN...

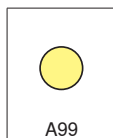
Simplex N

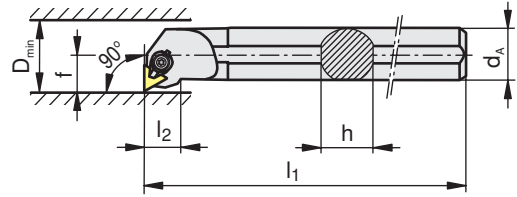
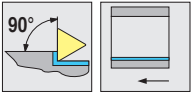


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	h [mm]	l_1 [mm]	f [mm]	D_{min} [mm]		
32	S32U CRSNR 09	R	30	350	22	40	RN.. 0903..	E01

E01	4259	40187	4211	4261	8095010600	40505

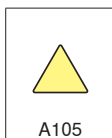




A imagem mostra ferramenta direita

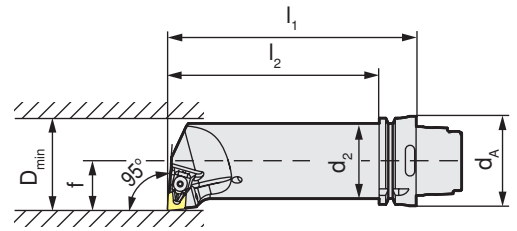
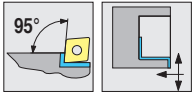
d_A [mm]	Tipo, descrição	L N R 	h [mm]	l_1 [mm]	l_2 [mm]	f [mm]	D_{min} [mm]		
12	S12Q CTFPR 11	R	11	180	15	9	16	TP.. 1103..	E01
12	S12Q CTFPL 11	L	11	180	15	9	16	TP.. 1103..	E01
16	S16R CTFPR 11	R	14,5	200	15	11	20	TP.. 1103..	E01
16	S16R CTFPL 11	L	14,5	200	15	11	20	TP.. 1103..	E01
20	S20S CTFPR 11	R	18	250	15	13	25	TP.. 1103..	E01
20	S20S CTFPL 11	L	18	250	15	13	25	TP.. 1103..	E01
25	S25T CTFPR 16	R	23	300	20	17	32	TP.. 1603..	E02
25	S25T CTFPL 16	L	23	300	20	17	32	TP.. 1603..	E02
32	S32U CTFPR 16	R	30	350	20	22	40	TP.. 1603..	E02
32	S32U CTFPL 16	L	30	350	20	22	40	TP.. 1603..	E02

E01	4524			4523	8095010500	4527
E02	4259	26126	4210	4261	8095010600	4294



HSK-T DCLN...

MaxiLock D

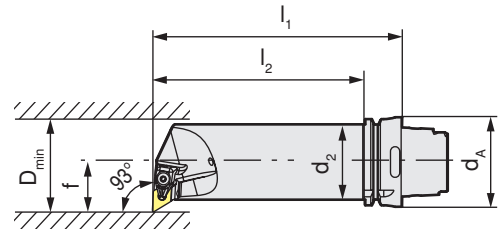
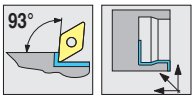


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-50Q-DCLNR-12	R	175	149	50	63	35	CN.. 1204..	E01
63	HSK-T63-50Q-DCLNL-12	L	175	149	50	63	35	CN.. 1204..	E01

E01	11224545	11224494	11211558	11224503

A303	A63-A66	A79



A imagem mostra ferramenta direita

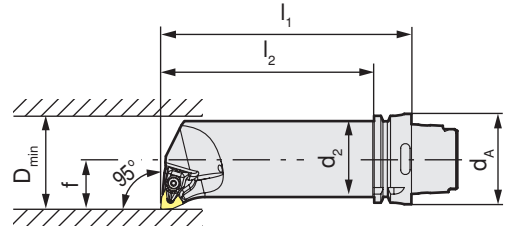
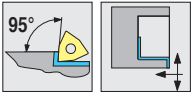
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-50Q-DDUNR-15	R	175	149	50	63	35	DN.. 1506..	E01
63	HSK-T63-50Q-DDUNL-15	L	175	149	50	63	35	DN.. 1506..	E01

E01	11224545	11224494	11211562	11224503




A303	A67-A69	A79




HSK-T DWLN...

MaxiLock D

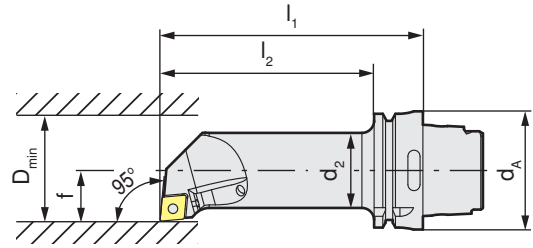
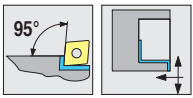


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-50Q-DWLN-R-08	R	175	149	50	63	35	WN.. 0804..	E01
63	HSK-T63-50Q-DWLN-L-08	L	175	149	50	63	35	WN.. 0804..	E01

				
E01	11224545	11224494	11211563	11224503





A imagem mostra ferramenta direita

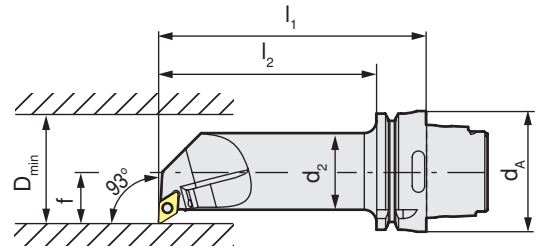
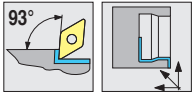
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-40L-SCLCR-12	R	140	114	40	50	27	CC.. 1204..	E01
63	HSK-T63-40L-SCLCL-12	L	140	114	40	50	27	CC.. 1204..	E01

E01	54981	61006	69296	69293	74208

A303	A82-A84	A92

HSK-T SDUC...

MaxiLock S

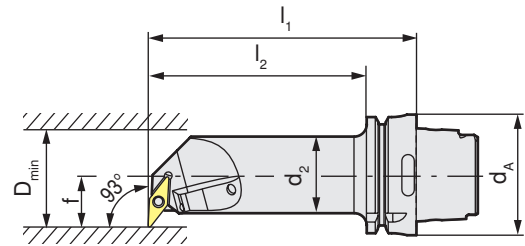
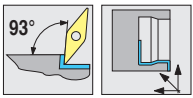


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	LNR 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
63	HSK-T63-40L-SDUCR-11	R	140	114	40	50	27	DC.. 11T3..	E01
63	HSK-T63-40L-SDUCL-11	L	140	114	40	50	27	DC.. 11T3..	E01

E01	24647	26146	69294	69293	29278

A303	A85-A86	A92



A imagem mostra ferramenta direita

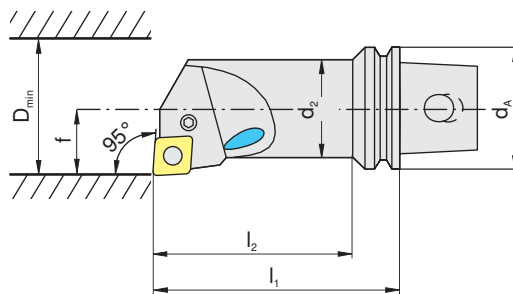
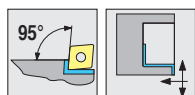
d _A [mm]	Tipo, descrição	L N R 	l ₁ [mm]	l ₂ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]		
63	HSK-T63-40L-SVUCR-16	R	140	114	40	50	27	VC.. 1604..	E01
63	HSK-T63-40L-SVUCL-16	L	140	114	40	50	27	VC.. 1604..	E01

E01	24647	26147	69294	69293	29279

A303	A90-A91	A92

UTS PCLN...

MaxiLock N

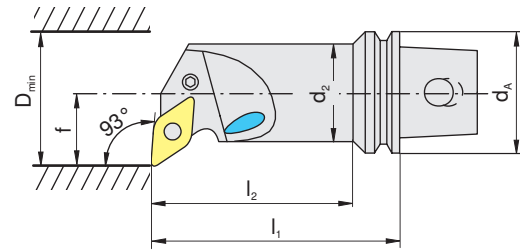
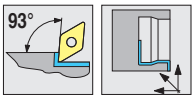


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	LNR 							
			l ₁ [mm]	l ₂ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]		
40	UT40-25G-PCLNR-12	R	90	75	25	32	17	CN.. 1204..	E01
40	UT40-25G-PCLNL-12	L	90	75	25	32	17	CN.. 1204..	E01
40	UT40-32H-PCLNR-12	R	100	86	32	40	22	CN.. 1204..	E02
40	UT40-32H-PCLNL-12	L	100	86	32	40	22	CN.. 1204..	E01
50	UT50-40J-PCLNL-12	L	110	82	40	49	27	CN.. 1204..	E03
63	UT63-40J-PCLNL-12	L	110	82	40	49	27	CN.. 1204..	E04

E01	59442	59568	59437	59430	86176	194263	4771	140587
E02	59442	59568	59437	59430	86176	194263		
E03	59442	59568	59437	59430	86176	225429	4771	140586
E04	59446	59568	59437	59430	86176	225430	4771	140587

A303	A63-A66	A79



A imagem mostra ferramenta direita

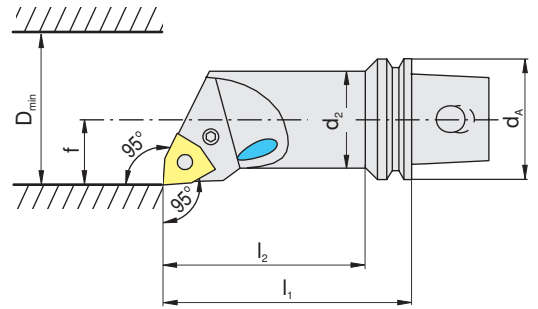
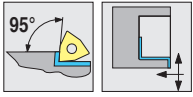
d _A [mm]	Tipo, descrição	L N R 	l ₁ [mm]	l ₂ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]		
40	UT40-25G-PDUNR-11	R	90	75	25	32	18,5	DN.. 1104..	E01
40	UT40-25G-PDUNL-11	L	90	75	25	32	18,5	DN.. 1104..	E01
40	UT40-32H-PDUNL-15	L	100	86	32	40	22	DN.. 1506..	E02
50	UT50-25G-PDUNL-11	L	90	70	25	32	18,5	DN.. 1104..	E03
50	UT50-40J-PDUNR-15	R	110	82	40	49	27	DN.. 1506..	E04
63	UT63-32H-PDUNR-15	R	100	66	32	40	22	DN.. 1506..	E05
63	UT63-40J-PDUNR-15	R	110	82	40	49	27	DN.. 1506..	E05

E01	59445	293140	293147	293143	86174	194263	4770	293151	
E02	59443	59570	59437	59432	86176	194263	4771	140591	
E03	59445	293140	293147	293143	86174	225429	4770	293151	
E04	59443	59570	59437	59432	86176	225429	4771	140591	
E05	59443	59570	59437	59432	86176	225430	4771	140591	



UTS PWLN...

MaxiLock N

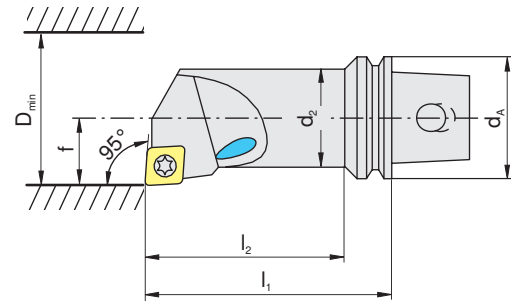
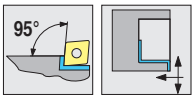


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	LNR 	l ₁ [mm]	l ₂ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]		
40	UT40-25G-PWLNL-06	L	90	75	25	35	17	WN.. 0604..	E01
40	UT40-32H-PWLNLR-08	R	100	86	32	49	22	WN.. 0804..	E02
40	UT40-32H-PWLNL-08	L	100	86	32	49	22	WN.. 0804..	E02
50	UT50-40J-PWLNL-08	L	110	82	40	49	27	WN.. 0804..	E03
63	UT63-40J-PWLNLR-08	R	110	82	40	49	27	WN.. 0804..	E04

E01	59445	293139	293147	59429	86174	194263	4770	293148
E02	59446	218151	59437	59430	86176	194263	4771	222127
E03	59446	218151	59437	59430	86176	225429	4771	222127
E04	59446	218151	59437	59430	86176	225430	4771	222127

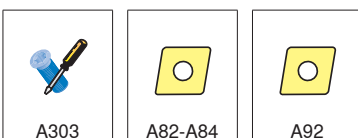




A imagem mostra ferramenta direita

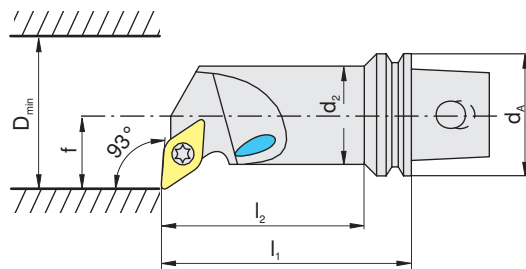
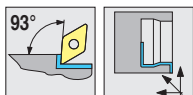
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
40	UT40-20D-SLCR-09	R	60	45	20	24	13	CC.. 09T3..	E01
40	UT40-20D-SCLCL-09	L	60	45	20	24	13	CC.. 09T3..	E01
40	UT40-25G-SLCR-09	R	90	75	25	31	17	CC.. 09T3..	E01
40	UT40-25G-SCLCL-09	L	90	75	25	31	17	CC.. 09T3..	E01
40	UT40-32J-SLCR-12	R	110	96	32	40	22	CC.. 1204..	E02
40	UT40-32F-SLCR-12	R	80	65	32	40	22	CC.. 1204..	E02
40	UT40-32J-SCLCL-12	L	110	96	32	40	22	CC.. 1204..	E02
40	UT40-32F-SCLCL-12	L	80	65	32	40	22	CC.. 1204..	E02
50	UT50-20H-SLCR-09	R	100	70	20	25	13	CC.. 09T3..	E03
50	UT50-32K-SLCR-12	R	125	96	32	40	22	CC.. 1204..	E04
50	UT50-32K-SCLCL-12	L	125	96	32	40	22	CC.. 1204..	E04

E01	165795			194263		8095010500	183936
E02	54981	61006	69296	194263	69293		74208
E03	165795			225429		8095010500	183936
E04	54981	61006	69296	225429	69293		74208














UTS SDUC...

MaxiLock S

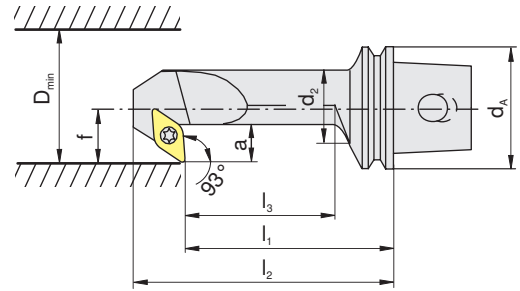
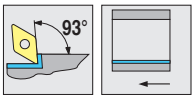


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	L N R 							
			l ₁ [mm]	l ₂ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]		
40	UT40-20D-SDUCR-11	R	60	45	20	24	13	DC.. 11T3..	E01
40	UT40-20D-SDUCL-11	L	60	45	20	24	13	DC.. 11T3..	E01
40	UT40-25E-SDUCR-11	R	70	55	25	31	17	DC.. 11T3..	E01
40	UT40-25E-SDUCL-11	L	70	55	25	31	17	DC.. 11T3..	E01
40	UT40-32F-SDUCR-11	R	80	65	32	40	22	DC.. 11T3..	E02
40	UT40-32F-SDUCL-11	L	80	65	32	40	22	DC.. 11T3..	E02

							
E01	165795			194263		8095010500	183936
E02	24647	26146	69294	194263	69293		29278

		
A303	A85-A86	A92



A imagem mostra ferramenta direita

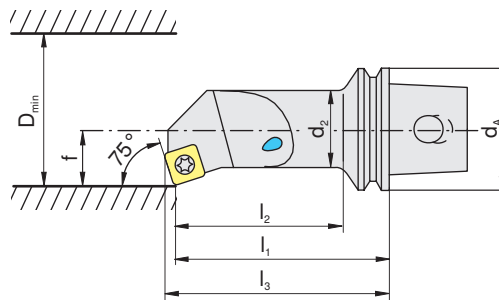
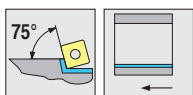
d _A [mm]	Tipo, descrição	L N R 	l ₁ [mm]	l ₂ [mm]	l ₃ [mm]	d ₂ [mm]	D _{min} [mm]	f [mm]	a [mm]		
40	UT40-20D-SDXCR-11	R	60	77	45,0	20	24	13	8	DC.. 11T3..	E01
40	UT40-32F-SDXCR-11	R	80	97	65,0	32	40	22	10	DC.. 11T3..	E02
40	UT40-20D-SDXCL-11	L	60	77	45,0	20	24	13	8	DC.. 11T3..	E01
40	UT40-32F-SDXCL-11	L	80	97	65,0	32	40	22	10	DC.. 11T3..	E02

E01	165795			194263		8095010500	183936
E02	24647	26146	69294	194263	69293		29278














UTS SSKC...

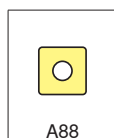
MaxiLock S

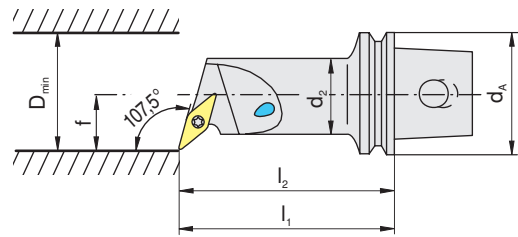
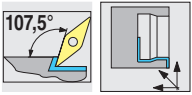


A imagem mostra ferramenta direita

d _A [mm]	Tipo, descrição	L N R 	l ₁ [mm]	l ₂ [mm]	l ₃ [mm]	D _{min} [mm]	d ₂ [mm]	f [mm]		
40	UT40-20D-SSKCL-09	L	60	45	63,0	24	20	13	SC.. 09T3..	E01
40	UT40-32F-SSKCL-12	L	80	65	84,0	40	32	22	SC.. 1204..	E02

							
E01	165795			194263		8095010500	183936
E02	54981	69199	69296	194263	69293		82270

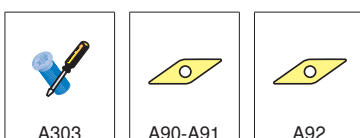




A imagem mostra ferramenta direita

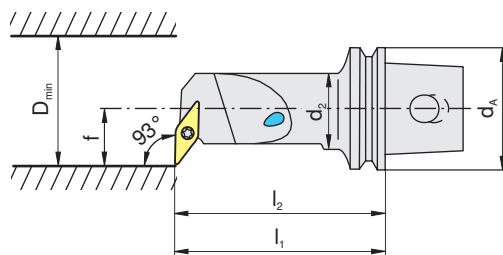
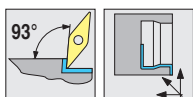
d_A [mm]	Tipo, descrição	L N R 	l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
40	UT40-20D-SVQCR-11	R	60	45	20	24	13	VC.. 1103..	E01
40	UT40-20D-SVQCL-11	L	60	45	20	24	13	VC.. 1103..	E01
40	UT40-25E-SVQCL-11	L	70	55	25	31	17	VC.. 1103..	E01
40	UT40-32F-SVQCL-16	L	80	65	32	40	22	VC.. 1604..	E02

E01	24645			194263		8095010200	29280
E02	24647	37493 / 26147	69294	194263	69293		29279 / 83343



UTS SVUC...

MaxiLock S

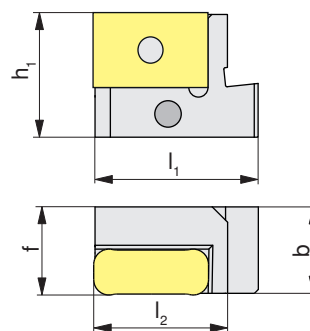


A imagem mostra ferramenta direita

d_A [mm]	Tipo, descrição	L N R							
			l_1 [mm]	l_2 [mm]	d_2 [mm]	D_{min} [mm]	f [mm]		
40	UT40-20D-SVUCR-11	R	60	45	20	24	13	VC.. 1103..	E01
40	UT40-20D-SVUCL-11	L	60	45	20	24	13	VC.. 1103..	E01
40	UT40-25E-SVUCR-11	R	70	55	25	31	17	VC.. 1103..	E01
40	UT40-25E-SVUCL-11	L	70	55	25	31	17	VC.. 1103..	E01
40	UT40-32F-SVUCR-16	R	80	65	32	40	22	VC.. 1604..	E02
40	UT40-32F-SVUCL-16	L	80	65	32	40	22	VC.. 1604..	E02

E01	24645			194263		8095010200	29280
E02	24647	37493 / 26147	69294	194263	69293		29279 / 83343

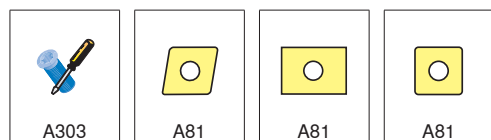
A303	A90-A91	A92

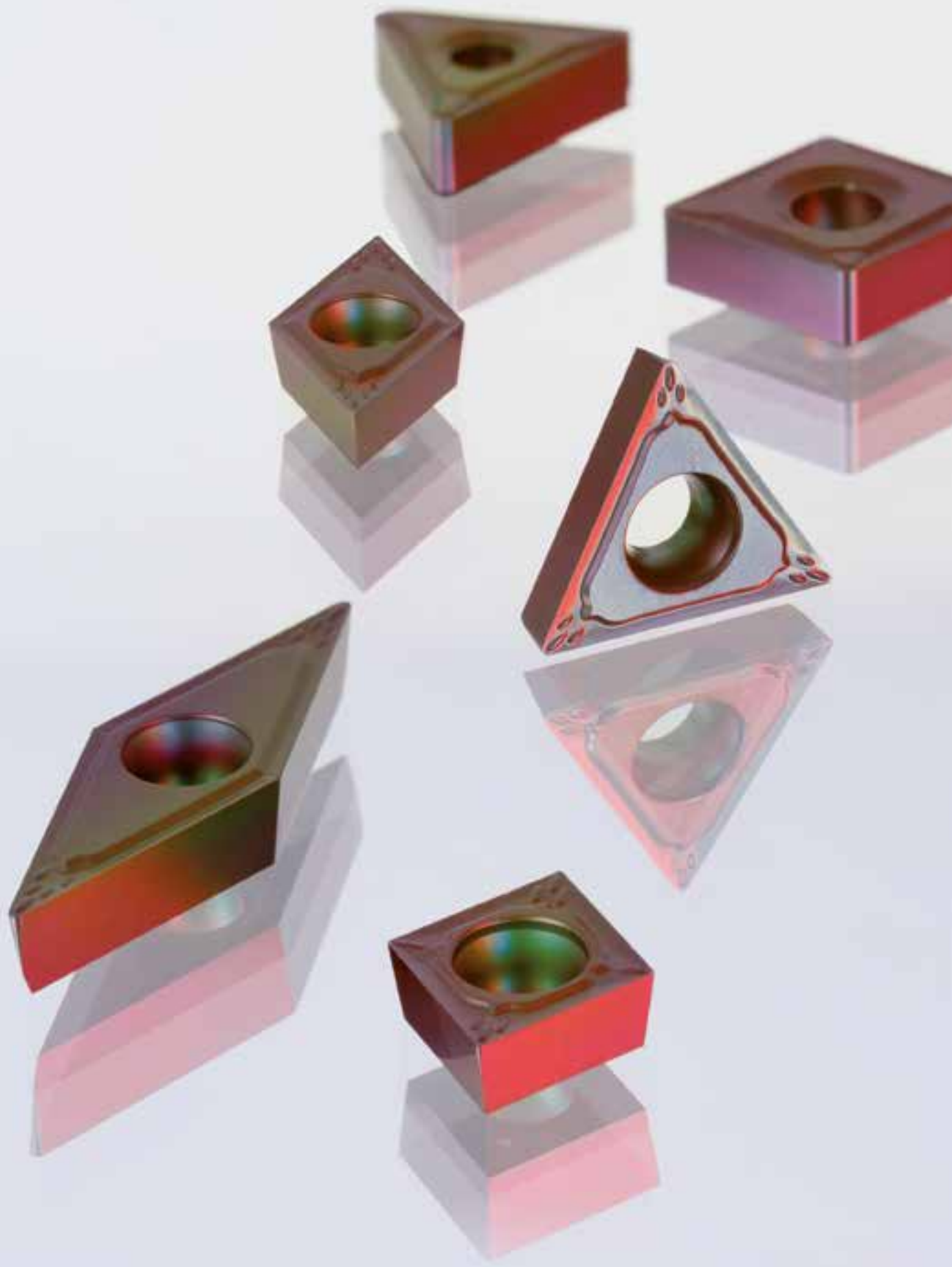


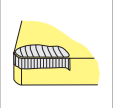

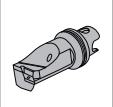





A imagem mostra ferramenta direita (LNUX 30..)

h ₁ [mm]	Tipo, descrição	L N R 						
			l ₁ [mm]	l ₂ [mm]	b [mm]	f [mm]		
31	RK 3219-C19R	R	42,7	36,5	17,9	19	CNMX 19..	E01
31	RK 3223-C19R	R	42,7	36,5	21,9	23	CNMX 19..	E01
31	RK 3219-C19L	L	42,7	36,5	17,9	19	CNMX 19..	E01
31	RK 3223-C19L	L	42,7	36,5	21,9	23	CNMX 19..	E01
32	RK 3219-19R	R	43,0	35	18,6	19	LNUX 19..	E02
32	RK 3223-19R	R	42,5	35	22,5	23	LNUX 19..	E02
32	RK 3219-19L	L	43,0	35	18,6	19	LNUX 19..	E02
32	RK 3223-19L	L	42,5	35	22,5	23	LNUX 19..	E02
32	RK 3223-30R	R	43,0	35	22,5	23	LNUX 30..	E02
32	RK 3223-30L	L	43,0	35	22,5	23	LNUX 30..	E02
32	RK 3226-21R	R	43,0	35	24,8	26	SNMG 21..	E03
32	RK 3226-21L	L	43,0	35	24,8	26	SNMG 21..	E03

E01	59448	357187		59439	59434	86178	4209
E02	59441				59433		4771
E03	59448		308268	59439	59434	86178	4209



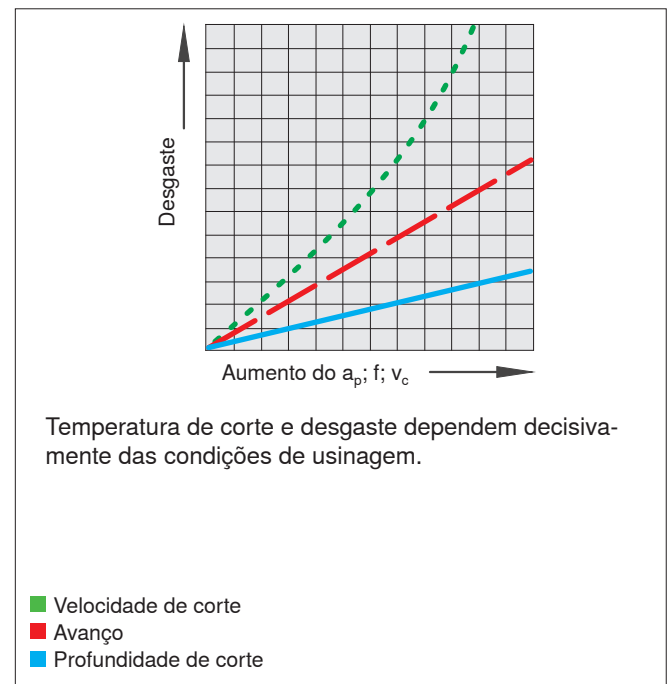
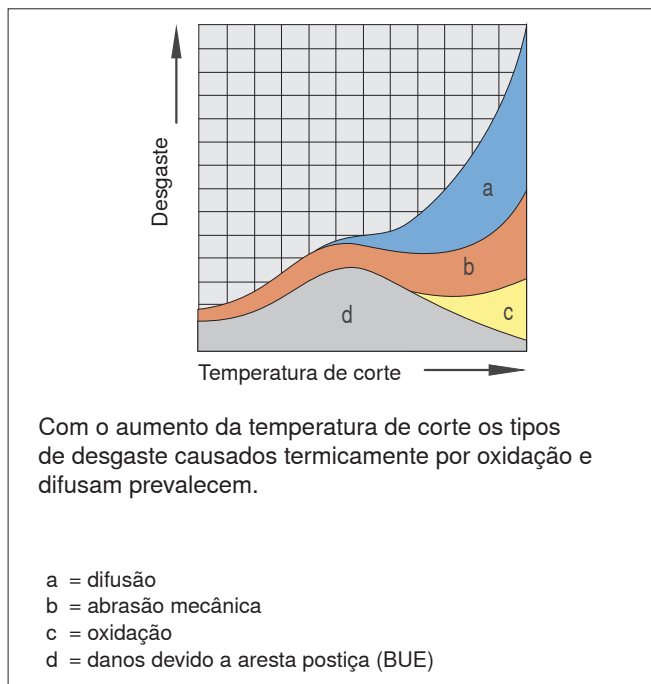



	Tipos de desgaste, medidas corretivas	A273-A276
	Superfície	A277-A280
	Sistemas de ferramentas UTS / HSK	A281-A284
	Fórmulas	A285
	Informações sobre o material	A286-A289
	Código ISO-ANSI	A290-A296
	Dados de corte	A297
	Componentes	A303

Causas de desgaste

Desgaste é causado simultaneamente através da tensão mecânica e térmica na aresta de corte.
As causas mais comuns são

- o Abrasão mecânica
- o Danos devido a aresta postiça (BUE)
- o Processos de oxidação
- o Difusão



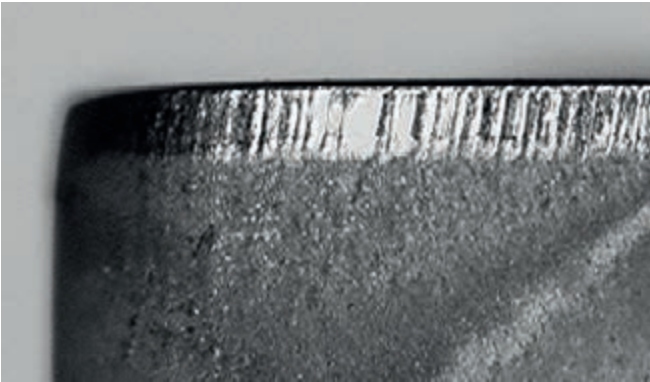


Benefícios das coberturas no metal duro

Depositando cobertura em ferramentas de metal duro influencia positivamente nas características de desgaste.

As vantagens da cobertura sobre o metal duro consiste na redução de:

- o Atrito
- o Troca de temperatura
- o Oxidação
- o Difusão



Abrasão no flanco, desgaste normal depois de um certo tempo de usinagem.

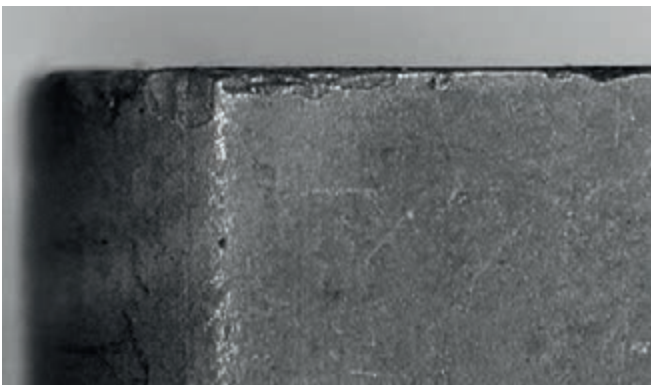
Desgaste de flanco

Razões

- Velocidade de corte muito alta
- Classe de metal duro com resistência ao desgaste insuficiente
- Avanços incorretos

Soluções

- Reduzir a velocidade de corte
- Selecione a classe de metal duro mais resistente ao desgaste
- Adaptar o avanço para a velocidade de corte e profundidade de corte (aumentar avanço)



Por tensão mecânica excessiva na aresta de corte, fratura e lascamento podem ocorrer.

Lascamento de aresta

Razões

- Classe com resistência ao desgaste muito alta
- Vibração
- Avanço e profundidade de corte muito alta ou excessiva
- Corte interrompido
- Danos devido a cavacos

Soluções

- Use classe mais tenaz
- Use geometria de aresta negativa com quebra cavaco
- Aumentar a estabilidade (ferramenta, peça)



O cavaco quente que está sendo evacuado causa craterização na face inclinada da aresta de corte.

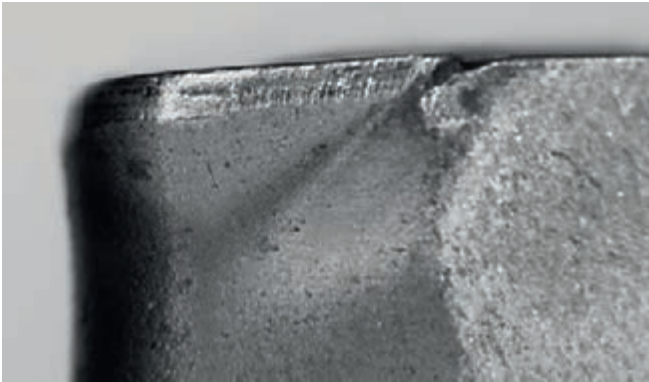
Craterização

Razões

- Velocidade de corte e / ou avanço muito alto
- Ângulo de saída pequeno
- Classe com baixa resistência ao desgaste
- Refrigeração insuficiente

Soluções

- Reduzir a velocidade de corte e / ou avanço
- Aumentar a quantidade de refrigeração e / ou pressão, otimizar fornecimento de refrigerante
- Usar classe com alta resistência à formação de craterização



Alta temperatura de usinagem e tensão mecânica simultâneas podem levar a deformação plástica.

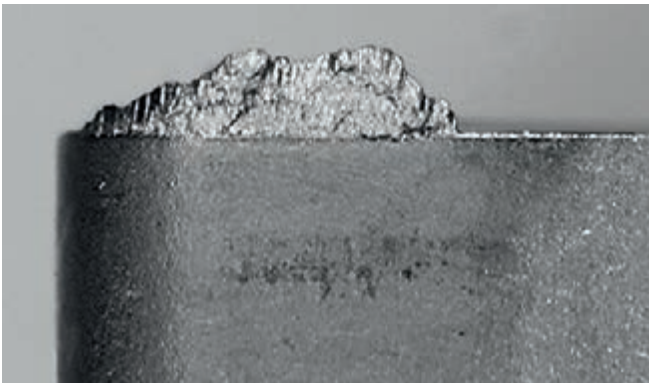
Deformação plástica

Razões

- Temperatura de usinagem muito alta, causando amolecimento do substrato
- Coberturas danificadas
- Quebra cavaco muito estreito

Soluções

- Reduzir velocidade de corte
- Escolher classe de metal duro com maior resistência ao desgaste
- Fornecer refrigeração



Aresta postiça ocorre quando o cavaco não é evacuado adequadamente devido a insuficiente temperatura de corte.

Aresta postiça

Razões

- Velocidade de corte muito baixa
- Ângulo de saída muito pequeno
- Classe de metal duro errada
- Falta de refrigeração

Soluções

- Aumento da velocidade de corte
- Aumento do ângulo de saída
- Aplique cobertura TiN
- Use emulsão com concentração mais elevada



Tensão excessiva na pastilha causa ruptura.

Quebra da pastilha

Razões

- Tensão excessiva no material de corte
- Falta de estabilidade
- Ângulo de canto muito pequeno
- Chanfro excessivo

Soluções

- Use material de corte mais resistente
- Use chanfro de proteção na aresta
- Aumentar arredondamento de aresta
- Use geometria mais estável

Tipo de problema												Medidas corretivas		
Tipo de desgaste						Problemas da peça				Controle de cavacos				
Desgaste no flanco	Craterização	Lascamento de aresta	Deformação plástica	Quebra de pastilha	Aresta postiça	Vibração	Formação de pinos e rebarbas	Superfície trepidada	Qualidade da superfície	Cavaco muito longo (cavacos emaranhados)	Cavaco muito curto (cavacos fragmentados)			
↓	↓		↓		↑	↓			↑	↓		Velocidade de corte	Dados de corte	
≈		↓	↓	↓		↑		↓	↓	↑	↓	Avanço		
	↓	↓					↓	↓	↓			Avanço - área central		
		↑	≈		↓	≈	↓	↓	↓	↓	↑	Quebra cavaco	↓ -R ↓ -M ↓ -F ↑	Seleção das pastilhas
↑		↑	↑			↓	↓	↓	↑			Raio de canto	grande ↓ ↑ pequeno	
↑	↑	↓	↑	↓								Classe do metal duro	Resistência ao desgaste ↓ ↑ tenacidade	
		≈		≈		≈		≈	≈			Fixação da peça	Critério geral	
		≈		≈		≈		≈	≈			Fixação da peça de trabalho		
		≈		≈		≈			↓			Em balanço		
≈		≈				≈	≈		≈			Altura da ponta		
○	≈		○		○		○		○	○		Refrigeração		

↑ elevação, incremento, grande influência

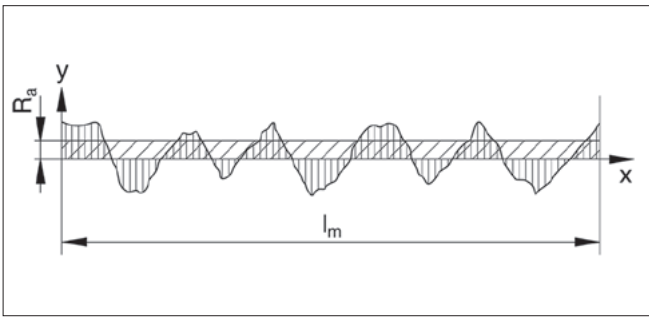
↓ evitar, reduzir grande influência

≈ verificar, otimizar

↑ elevação, incremento pequena influência

↓ evitar, reduzir pequena influência

○ utilizar

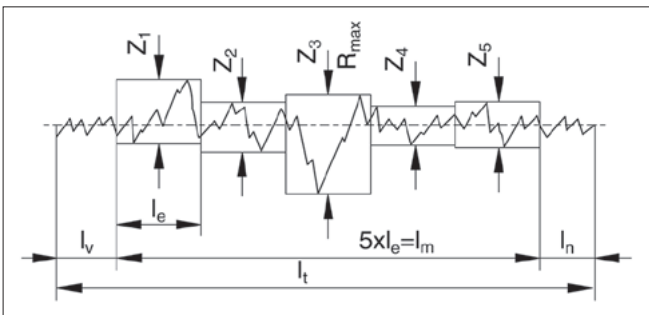


Valor da rugosidade média R_a DIN (4768)

Isto é definido com a média aritmética das somas absolutas do perfil de rugosidade R dentro de todo o comprimento médio l_m .

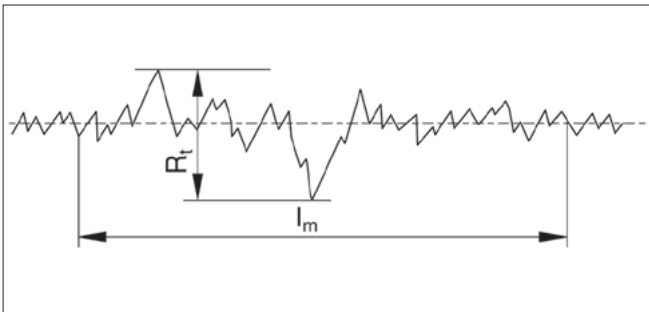
Profundidade média de rugosidade R_z (DIN 4768)

Isto é definido com o valor médio resultante das profundidades individuais de rugosidade de cinco comprimentos individuais medidos sucessivamente l_e .



Profundidade única de rugosidade superficial $Z_1 \dots Z_5$

Esta é a distância vertical entre o ponto mais alto e o mais baixo do perfil de rugosidade R dentro de um único comprimento de medida l_e .



Profundidade máxima de rugosidade superficial R_t (DIN 4768/1)

Esta é a distância entre a elevação e depressão da linha dentro do comprimento medido (distância referência) do perfil filtrado de acordo com DIN 4768 folha 1.

Qualidade da superfície de acordo com o método de fabricação

Símbolo superficial de acordo com ISO 1302	novo	0,025	0,05	0,1	0,2	0,4	0,8	1,6	3,2	6,3	12,5	25	50
Símbolo superficial de acordo com ISO 3141	até agora	▽▽▽▽				▽▽▽			▽▽		▽		
Índice de rugosidade		N 1	N 2	N 3	N 4	N 5	N 6	N 7	N 8	N 9	N 10	N 11	N 12
Média aritmética	R_a [μm]	0,025	0,05	0,1	0,2	0,4	0,8	1,6	3,2	6,3	12,5	25	50
Profundidade da rugosidade superficial	R_z [μm]	0,25	0,63	1	1,6	2,5	4-6,3	10	16-25	40	63	100	160
Torneamento longitudinal Torneamento da face													
Torneamento longitudinal Torneamento de face													
Retífica longitudinal Retífica superficial													

☐ ≙ Rugosidade superficial (produzido por meio de métodos especiais)

☐ ≙ Rugosidade superficial (produzido por meio de métodos de produções convencionais)

☐ ≙ Rugosidade superficial (produzido por meio de métodos de usinagem de desbaste)

Superfície e rugosidade

Tabela de comparação dos sistemas de medição (métrica comparado com polegadas) de rugosidade superficial

R_{tmax} [μm]	CLA/ R_a [μm]	CLA [μ'']	RMS [μm]	RMS [μ'']
0,06	0,02	0,75	0,02	0,8
0,1	0,03	1,2	0,04	13
0,2	0,06	2,5	0,08	2,8
0,3	0,09	3,7	0,1	4,2
0,4	0,13	5	0,14	5,6
0,5	0,16	6,7	0,18	6,9
0,6	0,19	7,5	0,21	8,3
0,7	0,22	8,7	0,25	9,7
0,8	0,25	10	0,28	11,1
0,9	0,28	11,2	0,32	12,5
1	0,31	12,5	0,35	14
1,2	0,38	15,8	0,42	16,7
1,5	0,47	18,8	0,53	20,9
1,8	0,57	22,6	0,64	25,5
2	0,64	25,1	0,78	27,9
2,4	0,73	30,1	0,85	33,4
2,8	0,89	35,2	0,99	39
3	0,95	37,6	1,06	41,9
3,5	1,11	43,9	1,24	48,8
4	1,27	50,2	1,41	55,8
5	1,59	62,7	1,77	69,7
6	1,91	75,5	2,12	83,6
7	2,22	87,5	2,48	92,6
8	2,54	100	2,83	111,7
10	3,18	125,5	3,54	140
20	6,64	251,5	7,8	279
40	12,7	502	14,1	558
60	19,1	755	21,2	836
125	39,5	1560	43,5	1750
200	64	2510	78	2790

1 μm = 0,001 mm = 39,37 μ''

1 μ'' = 0,000001" = 0,0000254 mm

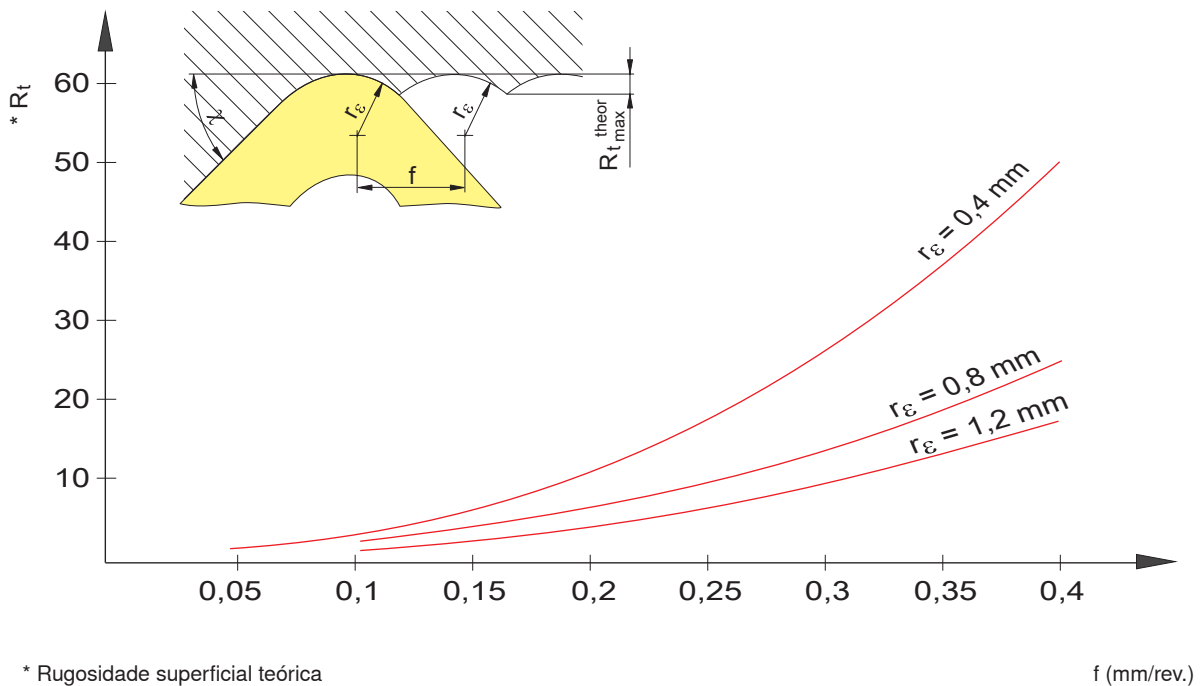
CLA (linha central média)

RMS (raiz quadrática média)

Acabamento superficial teórico

A rugosidade superficial máxima teórica com torneamento, $R_{t\text{theor.}}$ é a combinação de taxa de avanço e raio de ponta.

$$R_{t\text{theor.}} = \left(r_\epsilon - \sqrt{r_\epsilon^2 - \frac{f^2}{4}} \right) \cdot 1000 \quad \text{ou aproximadamente} \quad R_{t\text{theor.}} = \frac{0.125 \cdot f^2}{r_\epsilon}$$



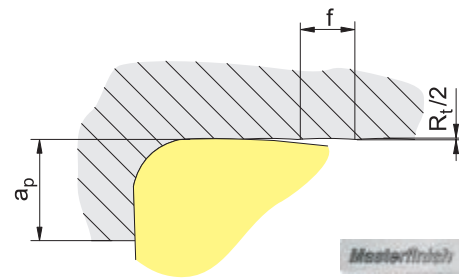
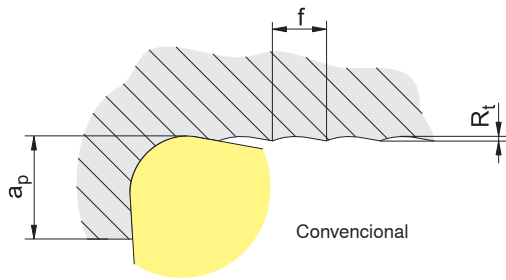
Dados de corte para avanço

Faixa de rugosidade R_z in μm	$R_{t\text{max}}$	correspondente a valor R_a	Rugosidade índice	ISO 1302	Raio de canto r_ϵ (mm) e avanço f (mm/rev.)			
					$r_\epsilon = 0,4$	$r_\epsilon = 0,8$	$r_\epsilon = 1,2$	$r_\epsilon = 1,6$
63 - 100	$\sqrt{R_t 100}$	12,5 - 25	N 11	25 $\sqrt{\quad}$	—	0,51	0,69	0,81
40 - 63	$\sqrt{R_t 63}$	6,3 - 25	N 10	12,5 $\sqrt{\quad}$	0,27	0,43	0,56	0,68
31,5 - 40	$\sqrt{R_t 40}$	4,9 - 6,3	N 9	6,3 $\sqrt{\quad}$	0,25	0,37	0,49	0,57
25 - 31,5	$\sqrt{R_t 31,5}$	4,0 - 4,9			0,22	0,32	0,41	0,47
16 - 25	$\sqrt{R_t 25}$	2,5 - 4,0	N 8	3,2 $\sqrt{\quad}$	0,20	0,28	0,36	0,39
10 - 16	$\sqrt{R_t 16}$	1,6 - 2,5			0,15	0,22	0,29	0,31
6,3 - 10	$\sqrt{R_t 10}$	1,0 - 1,6	N 7	1,6 $\sqrt{\quad}$	0,10	0,13	0,18	0,20

Princípio de funcionamento / benefício

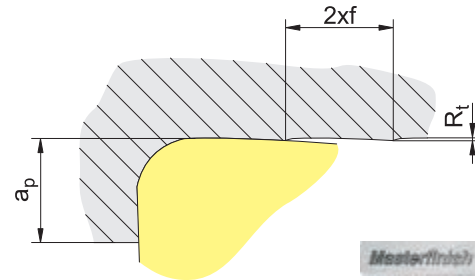
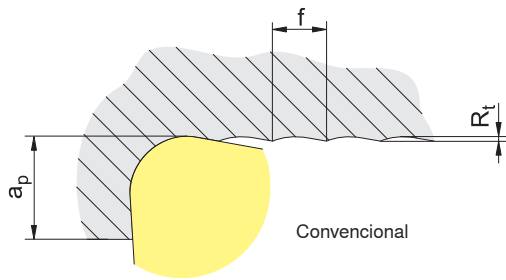
Acabamento superficial melhorado

Com a mesma taxa de avanço uma pastilha com a aresta de corte 'Masterfinish' atinge um valor de rugosidade R_a melhor do que com uma pastilha convencional.



Menor tempo de usinagem

Para alcançar o mesmo valor de R_a com uma pastilha standard, um avanço duas vezes maior pode ser aplicado, do que com pastilhas com ponta 'Masterfinish' (= menor tempo de produção por peça!).



LT	15	MM	Pastilha: WNMG 080408EN-TMR v_c : 200 m/min a_p : 1,0 mm f : 0,4 mm
RA	5.63	UM	
RZ	24.76	UM	
RMAX	26.24	UM	
RPM	14.68	UM	
VER	25	UM	
HOR	LC	2.5	MM

LT	15	MM	Pastilha: WNMG 080408EN-TFQ v_c : 200 m/min a_p : 1,0 mm f : 0,4 mm
RA	1.02	UM	
RZ	6.16	UM	
RMAX	7.36	UM	
RPM	3.80	UM	
VER	25	UM	
HOR	LC	2.5	MM

Sistema de ferramentas universal UTS

Fixação manual (radial)

Girando o parafuso para a direita (aprox. 3.5 voltas) a haste de fixação se move para o centro. Devido às esferas angulares, as esferas de aperto são empurradas dentro dos orifícios da ferramenta, puxando-a para a face de localização e dentro do adaptador. Durante este movimento o adaptador é elasticamente deformado permitindo verdadeira localização cone e face.

Isto resulta numa conexão precisa e estável.

Com fixação manual o parafuso tem que ser fixado aplicando um torque definido:

Torques:

UT40 16 Nm

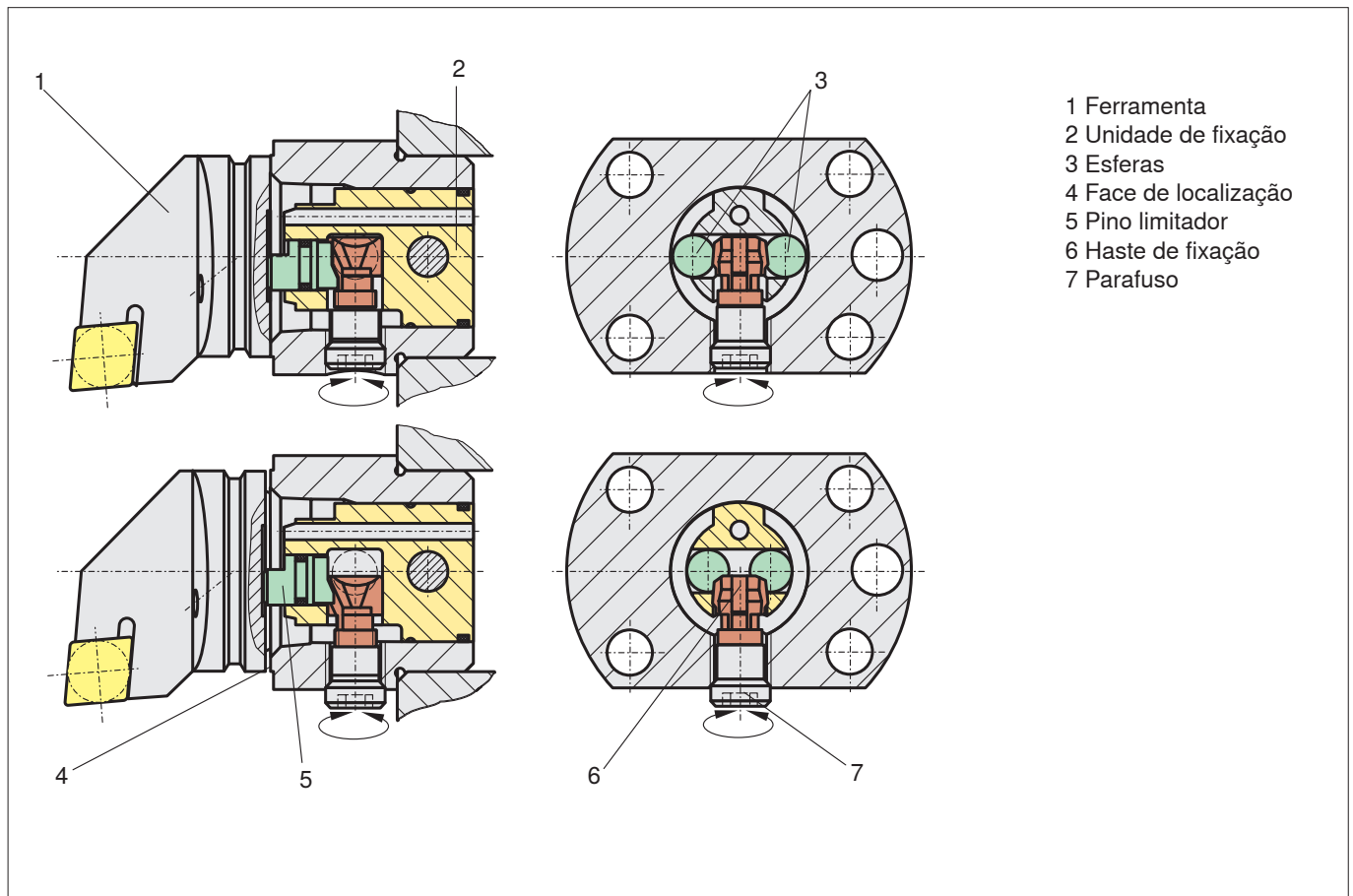
UT50 32 Nm

UT63 50 Nm

Para soltar a ferramenta basta girar o parafuso para a

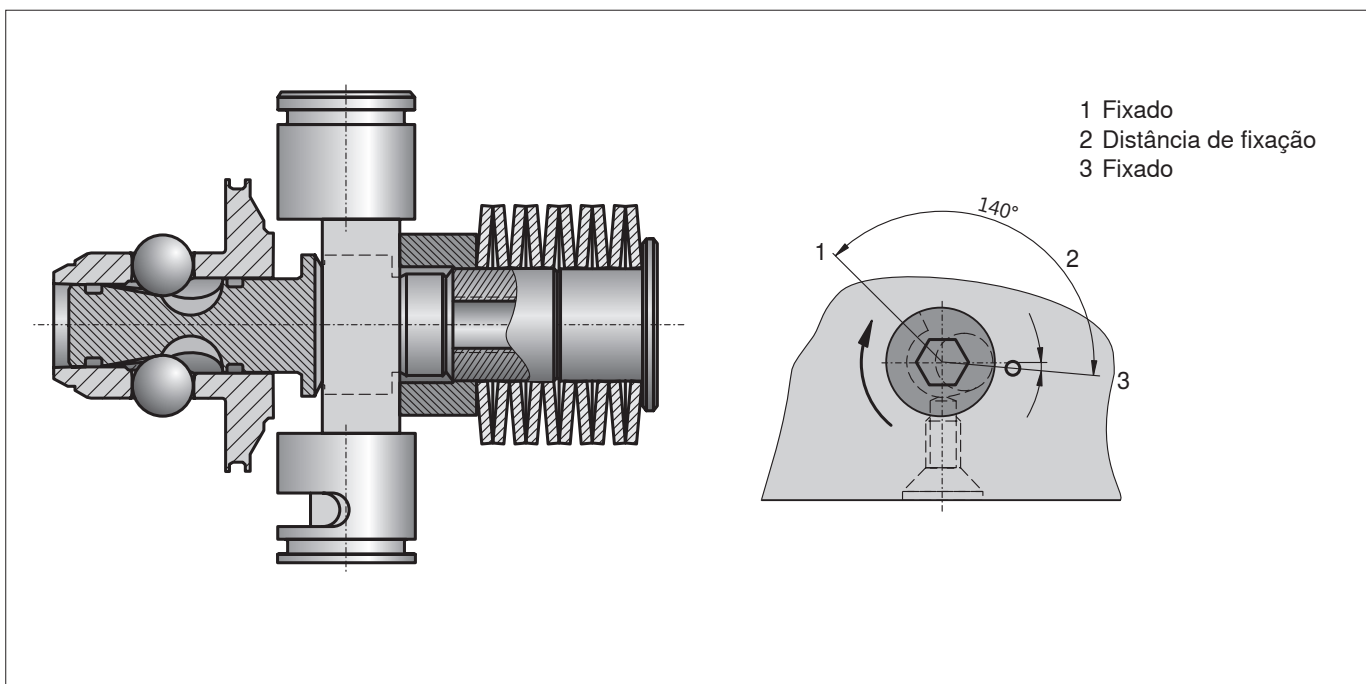
esquerda. A haste de fixação se desloca para fora e as esferas de aperto se retraem.

O cone mantém-se na condição auto-bloqueado (razão de conicidade 1:10). A ferramenta de corte é liberada através de um impulso axial positiva do pino limitador.



Fixação manual é aplicada principalmente no campo de construções modulares e tornos com intervalos mais longos de trocas de ferramentas. A construção extremamente compacta e curta representa uma vantagem adicional.

Com o MaxiFlex UTS o acionamento completo da trava rápida é conseguida por uma rotação de 140° de um parafuso excêntrico. O princípio das esferas de fixação é mantido, mas a força de fixação é produzida através das molas de disco. Ambos, quando fixar e soltar ferramentas de corte, a rotação do came é limitada através de um batente fixo. Portanto uma chave de torque não é mais necessária para trava rápida do MaxiFlex UTS.



Vantagens especiais

- 140° rotação da chave para fixar e soltar
- Tempo de troca de ferramentas reduzido consideravelmente
- Faz troca de ferramentas em áreas de difícil acesso

Define forças de fixação através do conjunto de disco de molas

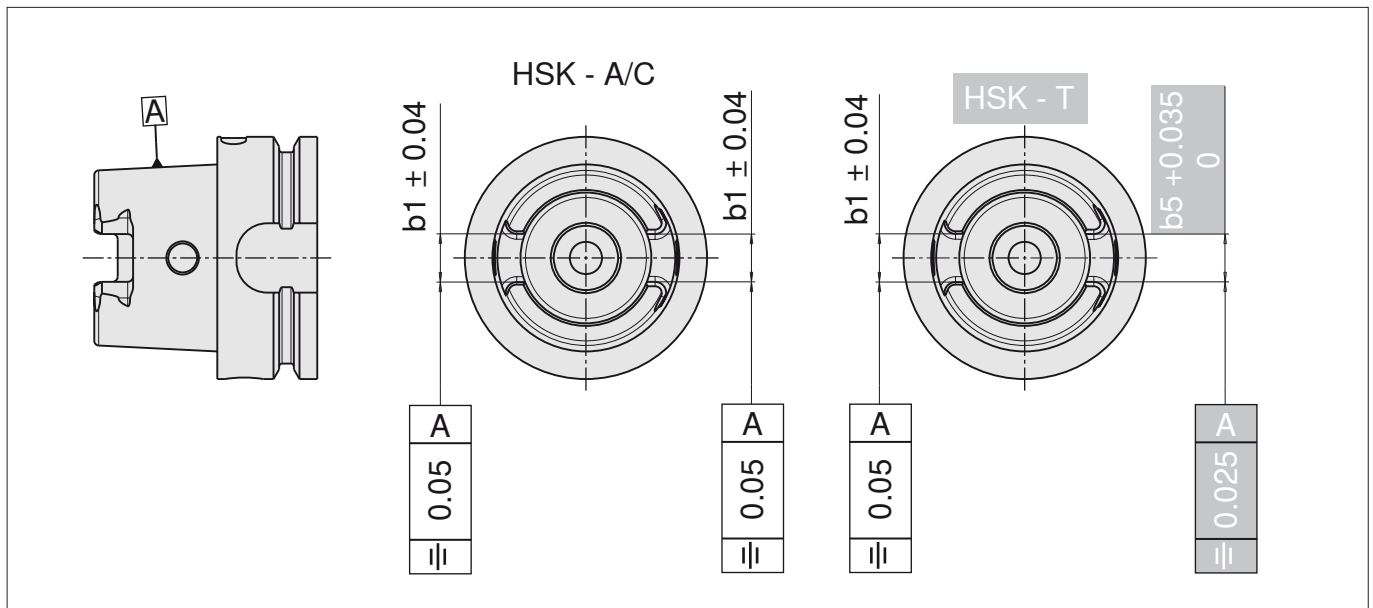
- Chave de torque NÃO É MAIS NECESSÁRIA
- Forças de fixação constantes
- Mais segurança e vida útil mais longa da ferramenta

As possibilidades da **trava rápida MaxiFlex UTS quick lock** são especialmente úteis **em tornos com troca frequente de ferramentas**.

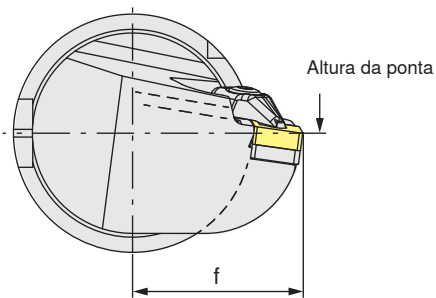
O que é HSK-T

O 'T' significa 'Torneamento'. O HSK-T tem a forma de um cone HSK tipo, forma A / C (ISO 12164-1 e 2) e pode ser fundamentalmente distinto a partir deste cone pela suas tolerâncias mais apertadas.

Desta forma, a precisão de posicionamento radial (altura da ponta) que é de decisiva importância para o torneamento é garantida. O HSK-T é padronizado de acordo com a ISO 12164-3 (cone externo - ferramenta) e -4 (cone interno - adaptador).

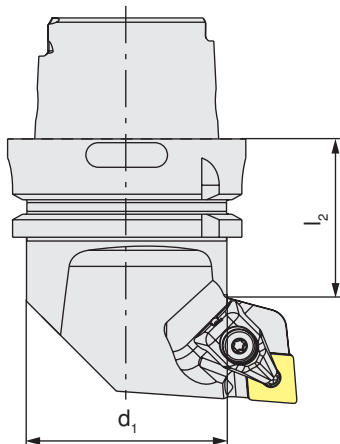


Benefício



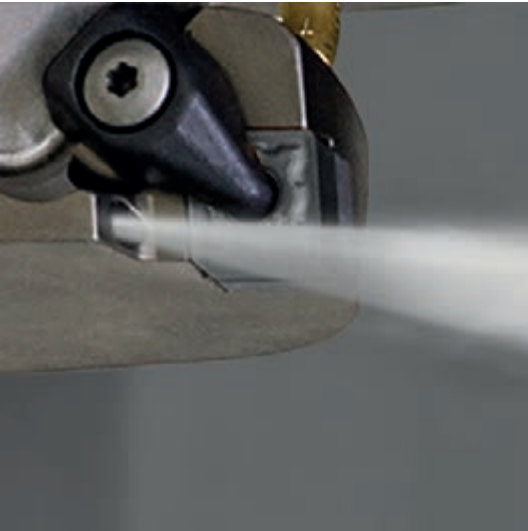
Precisão perfeita – também quando se trata da altura da ponta

A posição da aresta de corte, no HSK-T63, $f = 45$ mm é reduzida para ± 0.13 mm e no HSK-T100, dimensão $f = 55$ mm para ± 0.11 mm.



Aplicados em todas as máquinas com HSK-T ou HSK-A no fuso

Em todas as ferramentas CERATIZIT HSK-T as dimensões d_1 e l_2 atendem a norma ISO 12164-1 (HSK-A). Portanto, eles podem ser aplicados em máquinas de trocas automáticas concebidas para ferramentas do tipo HSK-A.



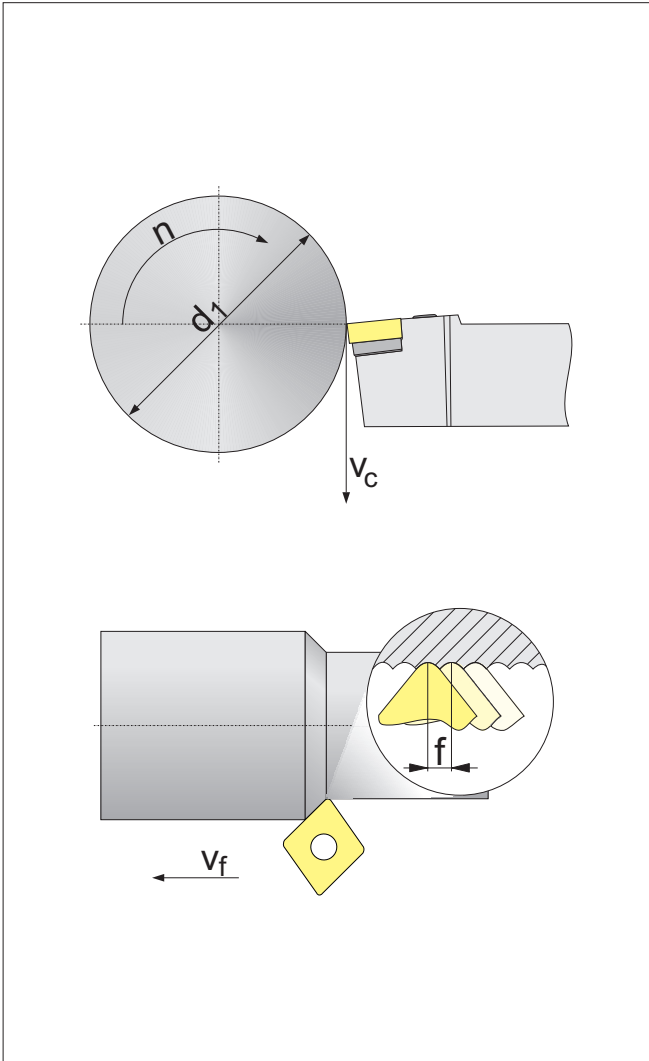
Fornecimento de refrigeração otimizada = processos de produção mais eficientes

O design inovador do furo de refrigeração garante que o líquido refrigerante atinja precisamente a aresta de corte, o que garante resfriamento eficiente para melhorar a vida útil da ferramenta e reduzir o tempo de produção. Adequado para mínima quantidade de lubrificação (MQL).

Programa completo de ferramentas para set-up de máquina único

O programa de ferramentas CERATIZIT HSK-T é projetado especialmente para usinagem de set-up único. No presente está disponível no estoque nos tamanhos HSK-T63 e HSK-T100 e cobre de forma otimizada todos os tipos de usinagem:

- Cabeças de torneamento para torneamento externo e interno
- Cabeças de ferramentas para corte e canal
- Ferramentas EcoCut multi-função
- Suportes para ferramentas quadradas e hastes cilíndricas
- Extensões e reduções
- Adaptadores HSK-T - UT / KM
- Adaptadores para ferramentas rotativas HSK-A



Velocidade de corte (v_c)

$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \quad [\text{m/min}]$$

Rotações por minuto (n)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad [\text{rev./min}]$$

Avanço (v_f)

$$v_f = f \cdot n \quad [\text{mm/min}]$$

Programa de Fórmulas CERATIZIT CT-CALC

PC - cálculo de auxílio de parâmetros de usinagem

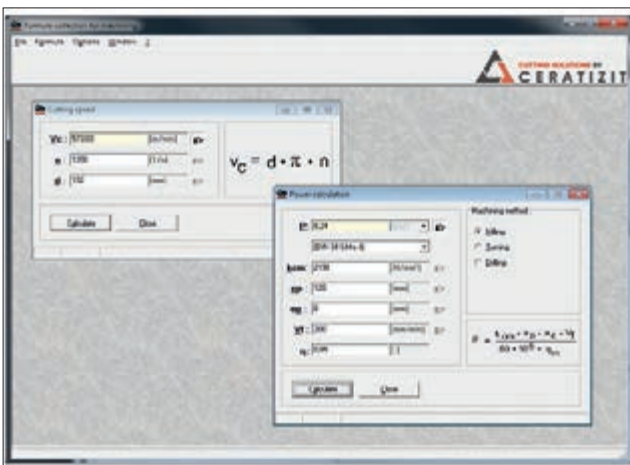
- o Velocidade de corte
- o Taxa de remoção do cavaco
- o Consumo de potência
- o Espessura média do cavaco

Idiomas

DE, EN, FR, IT, ES, DA, SE, FI

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Resistência à tração N/mm ²	Vickers HV	Brinell HB	Rockwell HRC	Shore C
575	180	171		
595	185	176		
610	190	181		
625	195	185		
640	200	190	12	
660	205	195	13	
675	210	199	14	
690	215	204	15	
705	220	209	15	28
720	225	214	16	
740	230	219	17	29
755	235	223	18	
770	240	228	20.3	30
785	245	233	21.3	
800	250	238	22.2	31
820	255	242	23.1	32
835	260	247	24	33
850	265	252	24.8	
865	270	257	25.6	
880	275	261	26.4	34
900	280	268	27.1	
915	285	271	27.8	35
930	290	276	28.5	
950	295	280	29.2	36
965	300	285	29.8	37
995	310	295	31	38
1030	320	304	32.2	39
1060	330	314	33.3	40
1095	340	323	34.3	41
1125	350	333	35.5	42
1155	360	342	36.6	43
1190	370	352	37.7	44
1220	380	361	38.8	45
1255	390	371	39.8	46
1290	400	380	40.8	47
1320	410	390	41.8	48
1350	420	399	42.7	
1385	430	409	43.6	49
1420	440	418	44.5	
1455	450	428	45.3	51
1485	460	437	46.1	52
1520	470	447	46.9	53
1555	480	465	47.7	54
1595	490	466	48.4	

Resistência à tração N/mm ²	Vickers HV	Brinell HB	Rockwell HRC	Shore C
1630	500	475	49.1	57
1665	510	485	49.8	58
1700	520	494	50.5	59
1740	530	504	51.1	60
1775	540	513	51.7	61
1810	550	523	52.3	62
1845	560	532	53	63
1880	570	542	53.6	64
1920	580	551	54.1	65
1955	590	561	54.7	66
1995	600	570	55.2	67
2030	610	580	55.7	68
2070	620	589	56.3	69
2105	630	599	56.8	70
2145	640	608	57.3	71
2180	650	618	57.8	72
2210	660	628	58.3	73
2240	665	633	58.8	74
2280	670	638	59.3	
2310	675	643	59.8	75
2350	680	648	60.3	76
2380	685	653	61.1	77
2410	690	658	61.3	78
2450	695	663	61.7	79
2480	710	668	62.2	80
2520	720	678	62.6	81
2550	730	683	63.1	82
2590	740	693	63.5	
2630	750	703	63.9	83
2660	760	708	64.3	84
2700	770	718	64.7	85
2730	780	723	65.1	
2770	790	733	65.5	86
2800	800	738	65.9	
2840	810	748	66.3	87
2870	820	753	66.7	88
2910	830	763	67	
2940	840	768	67.4	89
2980	850		67.7	
3010	860		68.1	90
3050	870		68.4	
3080	880		68.7	91
3120	890		69	
3150	900		69.3	92
3190	910		69.6	
3220	920		69.9	
3260	930		70.1	

Os valores apresentados são aproximados de acordo com DIN EN ISO18265 (02-2004)

Comparação de materiais

Alemanha DIN	Mat. no.	Reino Unido BS	França AFNOR	Suécia SS	Estados Unidos AISI	Japão JIS	Kc1.1 N/mm ²	mc	grupo VDI 3323
10 SPb 20	1.0722		10 PbF 2		11 L 08		1350	0,20	1
100 Cr 6	1.2067	BL 3	Y 100 C 6		L 3	SUU2	1775	0,24	6/9
105 WCr 6	1.2419		105 WC 13			SKS31	1775	0,24	6/9
12 CrMo 9 10	1.7380	1501-622 Gr. 31; 45	10 CD 9.10	2218	A 182-F22	SPVA,SCMV4	1675	0,24	6/7
12 Ni 19	1.5680		Z 18 N 5		2515		2450	0,23	10/11
13 CrMo 4 4	1.7335	1501-620 Gr. 27	15 CD 3.5	2216	A 182-F11; F12	SPVAF12	1675	0,24	6/7
14 MoV 6 3	1.7715	1503-660-440					1675	0,24	6/7
14 Ni 6	1.5622		16 N 6		A 350-LF 5		1675	0,24	6/7
14 NiCr 10	1.5732		14 NC 11		3415	SNC415(H)	1675	0,24	6/7
14 NiCr 14	1.5752	655 M 13	12 NC 15		3310; 9314	SNC815(H)	1675	0,24	6/7
14 NiCrMo 13 4	1.6657						1675	0,24	6/7
15 Cr 3	1.7015	523 M 15	12 C 3		5015		1675	0,24	6/7
15 CrMo 5	1.7262		12 CD 4			SCM415(H)	1675	0,24	6/7
15 Mo 3	1.5415	1501-240	15 D 3	2912	A 204 Gr. A		1675	0,24	6/7
16 MnCr 5	1.7131	527 M 17	16 MC 5	2511	5115	SCR415	1675	0,24	6/7
16 Mo 5	1.5423	1503-245-420			4520	SB450M	1675	0,24	6/7
17 CrNiMo 6	1.6587	820 A 16	18 NCD 6				1675	0,24	6/7
21 NiCrMo 2	1.6523	805 M 20	20 NCD 2	2506	8620	SNCM220(H)	1725	0,24	6/8
25 CrMo 4	1.7218	1717 CDS 110	25 CD 4 S	2225	4130	SM420;SCM430	1725	0,24	6/8
28 Mn 6	1.1170	150 M 28	20 M 5		1330		1500	0,22	2
32 CrMo 12	1.7361	722 M 24	30 CD 12	2240			1775	0,24	6/9
34 Cr 4	1.7033	530 A 32	32 C 4		5132	SCR430(H)	1725	0,24	6/8
34 CrMo 4	1.7220	708 A 37	35 CD 4	2234	4135; 4137	SCM432;SCCRM3	1775	0,24	6/9
34 CrNiMo 6	1.6582	817 M 40	35 NCD 6	2541	4340	SNCM447	1775	0,24	6/9
35 S 20	1.0726	212 M 36	35 MF 4	1957	1140		1525	0,22	2/3
36 CrNiMo 4	1.6511	816 M 40	40 NCD 3		9840	SNCM447	1775	0,24	6/9
36 Mn 5	1.1167						1525	0,22	2/3
36 NiCr 6	1.5710	640 A 35	35 NC 6		3135	SNC236	1800	0,24	3/9
38 MnSi 4	1.5120						1800	0,24	3/9
39 CrMoV 13 9	1.8523	897 M 39					1775	0,24	6/9
40 Mn 4	1.1157	150 M 36	35 M 5		1039		1525	0,22	2/3
40 NiCrMo 2 2	1.6546	311-Type 7	40 NCD 2		8740	SNCM240	1775	0,24	6/9
41 Cr 4	1.7035	530 M 40	42 C 4		5140	SCR440(H)	1775	0,24	6/9
41 CrAlMo 7	1.8509	905 M 39	40 CAD 6.12	2940	A 355 Cl. A	SACM645	1775	0,24	6/9
41 CrMo 4	1.7223	708 M 40	42 CD 4 TS	2244	4142; 4140	SCM440	1775	0,24	6/9
42 Cr 4	1.7045	530 A 40	42 C 4 TS	2245	5140	SCR440	1775	0,24	6/9
42 CrMo 4	1.7225	708 M 40	42 CD 4	2244	4142; 4140	SCM440(H)	1775	0,24	6/9
45 WCrV 7	1.2542	BS 1		2710	S 1		1775	0,24	6/9
50 CrV 4	1.8159	735 A 50	50 CV 4	2230	6150	SUP10	1775	0,24	6/9
55 Cr 3	1.7176	527 A 60	55 C 3	2253	5155	SUP9(A)	1775	0,24	6/9
55 NiCrMoV 6	1.2713		55 NCDV 7		L 6	SKH1;SKT4	1775	0,24	6/9
55 Si 7	1.0904	250 A 53	55 S 7	2085; 2090	9255		1775	0,24	6/9
58 CrV 4	1.8161						1775	0,24	6/9
60 SiCr 7	1.0961		60 SC 7		9262		1775	0,24	6/9
9 SMn 28	1.0715	230 M 07	S 250	1912	1213	SUM22	1350	0,21	1
9 SMn 36	1.0736	240 M 07	S 300		1215		1350	0,21	1
9 SMnPb 28	1.0718		S 250 Pb	1914	12 L 13	SUM22L	1350	0,21	1
9 SMnPb 36	1.0737		S 300 Pb	1926	12 L 14		1350	0,21	1
Al99	3.0205						700	0,25	21
AlCuMg1	3.1325						700	0,25	22
AlMg1	3.3315						700	0,25	21

Alemanha DIN	Mat. no.	Reino Unido BS	França AFNOR	Suécia SS	Estados Unidos AISI	Japão JIS	Kc1.1 N/mm ²	mc	grupo VDI 3323
AlMgSi1	3.2315						700	0,25	22
C 105 W1	1.1545		Y1 105	1880	W 110	SK3	1675	0,24	3
C 125 W	1.1663		Y2 120		W 112		1675	0,24	3
C 15	1.0401	080 M 15	AF3 7 C 12; XC 18	1350	1015	S15C	1350	0,21	1
C 22	1.0402	050 A 20	AF 42 C 20	1450	1020	S20C, S22C	1350	0,21	1
C 35	1.0501	060 A 35	AF 55 C 35	1550	1035	S35C	1525	0,22	2/3
C 45	1.0503	080 M 46	AF 65 C 45	1650	1045	S45C	1525	0,22	2/3
C 55	1.0535	070 M 55		1655	1055	S55C	1675	0,24	3
C 60	1.0601	080 A 62	CC 55		1060	S60C	1675	0,24	3
Cf 35	1.1183					S35C	1525	0,22	2/3
Cf 53	1.1213					S50C	1525	0,22	2/3
Ck 101	1.1274	060 A 96		1870	1095		1675	0,24	3
Ck 15	1.1141	080 M 15	XC 15; XC 18	1370	1015	S15C	1350	0,21	1
Ck 55	1.1203	070 M 55	XC 55		1055	S55C	1675	0,24	3
Ck 60	1.1221	080 A 62	XC 60	1665; 1678	1060	S58C	1675	0,24	3
CoCr20W15Ni	2.4764						3300	0,24	35
CuZn15	2.0240						700	0,27	27
CuZn36Pb3	2.0375						700	0,27	26
E-Cu57	2.0060						700	0,27	28
G-AlSi10Mg	3.2381						700	0,25	24
G-AlSi12	3.2581						700	0,25	23
G-AlSi9Cu3	3.2163						700	0,25	23
G-CuSn5ZnPb	2.1096						700	0,27	26
G-CuZn40Fe	2.0590						700	0,27	28
G-X 120 Mn 12	1.3401	Z 120 M 12	Z 120 M 12		A 128 (A)		3300	0,24	35
G-X 20 Cr 14	1.4027	420 C 29	Z 20 C 13 M			SCS2	1875	0,21	12/13
G-X 40 NiCrSi 38 18	1.4865	330 C 40					2600	0,24	31
G-X 45 CrSi 9 3	1.4718	401 S 45	Z 45 CS 9		HNV 3		2450	.23	10/11
G-X 5 CrNi 13 4	1.4313	425 C 11	Z 5 CN 13.4	2385	CA 6-NM		1875	0,21	12/13
G-X 5 CrNiMoNb 18 10	1.4581	318 C 17	Z 4 CNDNb 18.12 M				2150	.0,2	14
G-X 6 CrNi 18 9	1.4308	304 C 15	Z 6 CN 18.10 M	2333	CF-8		2150	.0,2	14
G-X 6 CrNiMo 18 10	1.4408						2150	.0,2	14
G-X 7 Cr 13	1.4001						1875	0,21	12/13
GG-10	.6010		Ft 10 D	01 10-00	A48-20 B	FC100	1150	.0,2	15
GG-15	.6015	Grade 150	Ft 15 D	01 15-00	A48-25 B	FC150	1150	.0,2	15
GG-20	.6020	Grade 220	Ft 20 D	01 20-00	A48-30 B	FC200	1150	.0,2	15
GG-25	.6025	Grade 260	Ft 25 D	01 25-00	A48-40 B	FC250	1250	0,24	15/16
GG-30	.6030	Grade 300	Ft 30 D	01 30-00	A48-45 B	FC300	1350	0,28	16
GG-35	.6035	Grade 350	Ft 35 D	01 35-00	A48-50 B	FC350	1350	0,28	16
GG-40	.6040	Grade 400	Ft 40 D	01 40-00	A48-60 B	FC400	1350	0,28	16
GGG-35.3	.7033					FCD350	1225	0,25	17
GGG-40	.7040	SNG 420/12	FGS 400-12	0717-02	60-40-18	FCD400	1225	0,25	17
GGG-40.3	.7043	SNG 370/17	FGS 370-17	0717-15		FCD400	1225	0,25	17
GGG-50	.7050	SNG 500/7	FGS 500-7	0727-02	65-45-12	FCD500	1350	0,28	18
GGG-60	.7060	SNG 600/3	FGS 600-3	0732-03	80-55-06	FCD600	1350	0,28	18
GGG-70	.7070	SNG 700/2	FGS 700-2	0737-01	100-70-03	FCD700	1350	0,28	18
GGG-NiCr 20 2	.7660	S-NiCr 20 2	S-NC 20 2		A 439 Type D-2		1350	0,28	18
GGG-NiMn 13 7	.7652	S-NiMn 13 7	S-NM 13 7				1350	0,28	18
GS-Ck 45	1.1191	080 M 46	XC 42	1672	1045	S45C	1525	0,22	2/3
GTS-35-10	.8135	B 340/12	MN 35-10				1225	0,25	19
GTS-45-06	.8145	P 440/7					1420	0,3	20

Comparação de materiais

Alemanha DIN	Mat. no.	Reino Unido BS	França AFNOR	Suécia SS	Estados Unidos AISI	Japão JIS	Kc1.1 N/mm ²	mc	grupo VDI 3323
GTS-55-04	.8155	P 510/4	MP 50-5				1420	0,3	20
GTS-65-02	.8165	P 570/3	MP 60-3				1420	0,3	20
GTS-70-02	.8170	P 690/2	IP 70-2				1420	0,3	20
NiCr20TiAl	2.4631	HR 401; 601	Nimonic 80 A				3300	0,24	33
NiCr22Mo9Nb	2.4856		Inconel 625				3300	0,24	33
NiCu30Al	2.4375		Monel K 500				3300	0,24	34
NiFe25Cr20NbTi	2.4955						3300	0,24	34
S 18-0-1	1.3355	BT 1	Z 80 WCV 18-04-01		T 1		2450	0,23	10/11
S 18-1-2-5	1.3255	BT 4	Z 80 WKCV 18-05-04-0		T 4		2450	0,23	10/11
S 2-9-2	1.3348		Z 100 DCWV 09-04-02-	2782	M 7		2450	0,23	10/11
S 6-5-2	1.3343	BM 2	Z 85 WDCV 06-05-04-0	2722	M 2	SKH9; SKH51	2450	0,23	10/11
S 6-5-2-5	1.3243		Z 85 WDKCV 06-05-05-	2723		SKH55	2450	0,23	10/11
TiAl6V4	3.7165	TA 10 bis TA 13	T-A 6 V				2110	0,22	37
X 10 Cr 13	1.4006	410 S 21	Z 12 C 13	2302	410; CA-15	SUS410	1875	0,21	12/13
X 10 CrNiMoNb 18 12	1.4583				318		2150	0,2	14
X 10 CrNiS 18 9	1.4305	303 S 21	Z 10 CNF 18.09	2346	303		2150	0,2	14
X 100 CrMoV 5 1	1.2363	BA 2	Z 100 CDV 5	2260	A 2		2450	0,23	10/11
X 12 CrMoS 17	1.4104		Z 10 CF 17	2383	430 F	SUS430F	1875	0,21	12/13
X 12 CrNi 17 7	1.4310	301 S 21	Z 12 CN 17.07		301		2150	0,2	14
X 12 CrNi 22 12	1.4829					SUS301	1350	0,28	16
X 12 CrNi 25 21	1.4845	310 S24	Z 12 CN 25.20	2361	310 S	SUH310; SUS310S	2150	0,2	14
X 12 CrNiTi 18 9	1.4878	321 S 20	Z 6 CNT 18.12 (B)	2337	321		2150	0,2	14
X 12 NiCrSi 36 16	1.4864	NA 17	Z 12 NCS 37.18		330	SUH330	2600	0,24	31
X 15 CrNiSi 20 12	1.4828	309 S 24	Z 15 CNS 20.12		309	SUH309	1350	0,28	16
X 165 CrMoV 12	1.2601			2310			2450	0,23	10/11
X 2 CrNiMo 18 13	1.4440						2150	0,2	14
X 2 CrNiMoN 17 13 3	1.4429	316 S 62	Z 2 CND 17.13 Az	2375	316 LN	SUS316LN	2150	0,2	14
X 2 CrNiN 18 10	1.4311	304 S 62	Z 2 CN 18 .10	2371	304 LN	SUS304LN	2150	0,2	14
X 20 CrNi 17 2	1.4057	431 S 29	Z 15 CN 16.02	2321	431	SUS431	1875	0,21	12/13
X 210 Cr 12	1.2080	BD 3	Z 200 C 12		D 3		2450	0,23	10/11
X 210 CrW 12	1.2436			2312			2450	0,23	10/11
X 30 WCrV 9 3	1.2581	BH 21	Z 30 WCV 9		H 21	SKD5	2450	0,23	10/11
X 40 CrMoV 5 1	1.2344	BH 13	Z 40 CDV 5	2242	H 13	SKD61	2450	0,23	10/11
X 46 Cr 13	1.4034	420 S 45	Z 40 C 14				1875	0,21	12/13
X 5 CrNi 18 9	1.4301	304 S 15	Z 6 CN 18.09	2332; 2333	304; 304 H	SUS304	2150	0,2	14
X 5 CrNiMo 17 13 3	1.4436	316 S 16	Z 6 CND 17.12	2343	316	SUS316	2150	0,2	14
X 5 CrNiMo 18 10	1.4401	316 S 16	Z 6 CND 17.11	2347	316	SUS316	2150	0,2	14
X 53 CrMnNiN 21 9	1.4871	349 S 54	Z 52 CMN 21.09		EV 8		1875	0,21	12/13
X 6 Cr 13	1.4000	403 S 17	Z 6 C 13	2301	403	SUS403	1875	0,21	12/13
X 6 Cr 17	1.4016	430 S 15	Z 8 C 17	2320	430	SUS430	1875	0,21	12/13
X 6 CrMo 17	1.4113	434 S 17	Z 8 CD 17.01	2325	434	SUS434	1875	0,21	12/13
X 6 CrNiMoTi 17 12 2	1.4571	320 S 31	Z 6 CNT 17.12	2350	316 Ti		2150	0,2	14
X 6 CrNiNb 18 10	1.4550	347 S 17	Z 6 CNNb 18.10	2338	347		2150	0,2	14
X 6 CrNiTi 18 10	1.4541	321 S 12	Z 6 CNT 18.10	2337	321		2150	0,2	14
X2 CrNi 18-8	1.4317						2150	0,2	14

	ISO	ANSI
CCGT	CCGT 060200FN-F23	CCGT 21.5X0FN-F23
	CCGT 060201FN	CCGT 21.50FN
	CCGT 060201FN-F23	CCGT 21.50FN-F23
	CCGT 060202EN-SF	CCGT 21.5.5EN-SF
	CCGT 060202EN-SM	CCGT 21.5.5EN-SM
	CCGT 060202FN	CCGT 21.5.5FN
	CCGT 060202FN-23P	CCGT 21.5.5FN-23P
	CCGT 060202FN-25P	CCGT 21.5.5FN-25P
	CCGT 060202FN-27	CCGT 21.5.5FN-27
	CCGT 060204EN-SF	CCGT 21.51EN-SF
	CCGT 060204FN	CCGT 21.51FN
	CCGT 060204FN-23P	CCGT 21.51FN-23P
	CCGT 060204FN-25P	CCGT 21.51FN-25P
	CCGT 060204FN-25Q	CCGT 21.51FN-25Q
	CCGT 060204FN-27	CCGT 21.51FN-27
	CCGT 09T300FN-F23	CCGT 32.5X0FN-F23
	CCGT 09T301FN	CCGT 32.50FN
	CCGT 09T301FN-F23	CCGT 32.50FN-F23
	CCGT 09T302EN-SF	CCGT 32.5.5EN-SF
	CCGT 09T302FN	CCGT 32.5.5FN
	CCGT 09T302FN-25P	CCGT 32.50.5FN-25P
	CCGT 09T302FN-27	CCGT 32.5.5FN-27
	CCGT 09T304EN-SF	CCGT 32.51EN-SF
	CCGT 09T304FN	CCGT 32.51FN
	CCGT 09T304FN-23P	CCGT 32.51FN-23P
	CCGT 09T304FN-25P	CCGT 32.51FN-25P
	CCGT 09T304FN-25Q	CCGT 32.51FN-25Q
	CCGT 09T304FN-27	CCGT 32.51FN-27
	CCGT 09T308EN-SF	CCGT 32.52EN-SF
	CCGT 09T308FN	CCGT 32.52FN
	CCGT 09T308FN-23P	CCGT 32.52FN-23P
	CCGT 09T308FN-25P	CCGT 32.52FN-25P
	CCGT 09T308FN-25Q	CCGT 32.52FN-25Q
	CCGT 09T308FN-27	CCGT 32.52FN-27
	CCGT 120402FN-25P	CCGT 43.5FN-25P
	CCGT 120402FN-27	CCGT 43.5FN-27
	CCGT 120404EN-SF	CCGT 431EN-SF
	CCGT 120404FN	CCGT 431FN
	CCGT 120404FN-25P	CCGT 431FN-25P
	CCGT 120404FN-25Q	CCGT 431FN-25Q
	CCGT 120404FN-27	CCGT 431FN-27
	CCGT 120408FN	CCGT 432FN
	CCGT 120408FN-25P	CCGT 432FN-25P
	CCGT 120408FN-25Q	CCGT 432FN-25Q
	CCGT 120408FN-27	CCGT 432FN-27
CCGW	CCGW 060202FN	CCGW 21.5.5FN
	CCGW 060204FN	CCGW 21.51FN
	CCGW 09T301FN	CCGW 32.50FN
	CCGW 09T302FN	CCGW 32.5.5FN
	CCGW 09T304FN	CCGW 32.51FN
CCGW 09T308FN	CCGW 32.52FN	
CCMT	CCMT 060204EN-29	CCMT 21.51EN-29
	CCMT 060204EN-SF	CCMT 21.51EN-SF

	ISO	ANSI	
CCMT	CCMT 060204EN-SM	CCMT 21.51EN-SM	
	CCMT 060204EN-SMF	CCMT 21.51EN-SMF	
	CCMT 060208EN-SM	CCMT 21.52EN-SM	
	CCMT 060208EN-SMF	CCMT 21.52EN-SMF	
	CCMT 09T304EN-29	CCMT 32.51EN-29	
	CCMT 09T304EN-F43	CCMT 32.51EN-F43	
	CCMT 09T304EN-SF	CCMT 32.51EN-SF	
	CCMT 09T304EN-SM	CCMT 32.51EN-SM	
	CCMT 09T304EN-SMF	CCMT 32.51EN-SMF	
	CCMT 09T304EN-SMQ	CCMT 32.51EN-SMQ	
	CCMT 09T308EN-29	CCMT 32.52EN-29	
	CCMT 09T308EN-F43	CCMT 32.52EN-F43	
	CCMT 09T308EN-SF	CCMT 32.52EN-SF	
	CCMT 09T308EN-SM	CCMT 32.52EN-SM	
	CCMT 09T308EN-SMF	CCMT 32.52EN-SMF	
	CCMT 09T308EN-SMQ	CCMT 32.52EN-SMQ	
	CCMT 120404EN-SF	CCMT 431EN-SF	
	CCMT 120404EN-SM	CCMT 431EN-SM	
	CCMT 120404EN-SMF	CCMT 431EN-SMF	
	CCMT 120404EN-SMQ	CCMT 431EN-SMQ	
	CCMT 120408EN-SF	CCMT 432EN-SF	
	CCMT 120408EN-SM	CCMT 432EN-SM	
	CCMT 120408EN-SMF	CCMT 432EN-SMF	
	CCMT 120408EN-SMQ	CCMT 432EN-SMQ	
	CCMT 120412EN-SM	CCMT 433EN-SM	
	CCMX	CCMX 09T304SN	CCMX 32.51SN
		CCMX 09T308SN	CCMX 32.52SN
		CCMX 120408EN	CCMX 432EN
	CNGA	CNGA 120408SN-025C	CNGA 432SN-025C
		CNGA 120408TN-020D	CNGA 432TN-020D
		CNGA 120412SN-020D	CNGA 433SN-020D
		CNGA 120412SN-025C	CNGA 433SN-025C
CNGA 160608SN-028C		CNGA 542SN-028C	
CNGA 160616SN-028C		CNGA 544SN-028C	
CNGA 160616TN-020D		CNGA 544TN-020D	
CNGG	CNGG 120404EN-CF	CNGG 431EN-CF	
	CNGM 190612FN-27	CNGM 643FN-27	
CNGN	CNGN 120404TN-020D	CNGN 431TN-020D	
	CNGN 120408TN-020D	CNGN 432TN-020D	
CNGN	CNGN 120416SN-020D	CNGN 434SN-020D	
	CNGN 120712PN-100CF	CNGN 453PN-100CF	
	CNGN 120712SN-025C	CNGN 453SN-025C	
	CNGN 120716PN-100CF	CNGN 454PN-100CF	
	CNGN 120716PN-150CF	CNGN 454PN-150CF	
	CNGN 120716SN-025C	CNGN 454SN-025C	
	CNGN 160716SN-025C	CNGN 554SN-025C	
	CNGN 160716SN-200C	CNGN 554SN-200C	
	CNGP	CNGP 120402FN-F32	CNGP 43.5FN-F32
		CNGP 120408FN-F32	CNGP 432FN-F32
CNMA	CNMA 120404EN	CNMA 431EN	
	CNMA 120408EN	CNMA 432EN	
	CNMA 120412EN	CNMA 433EN	
CNMA 120412FN	CNMA 433FN		

Designação

ISO - ANSI

	ISO	ANSI
	CNMA 120412TN-020D	CNMA 433TN-020D
	CNMA 120416EN	CNMA 434EN
	CNMA 120416FN	CNMA 434FN
	CNMA 120416TN-020D	CNMA 434TN-020D
	CNMA 160608EN	CNMA 542EN
	CNMA 160612EN	CNMA 543EN
	CNMA 160616EN	CNMA 544EN
	CNMA 190612EN	CNMA 643EN
	CNMA 190616EN	CNMA 644EN
CNMG	CNMG 090304EN-TF	CNMG 321EN-TF
	CNMG 090308EN-TM	CNMG 322EN-TM
	CNMG 120404EN-42	CNMG 431EN-42
	CNMG 120404EN-CF	CNMG 431EN-CF
	CNMG 120404EN-M42	CNMG 431EN-M42
	CNMG 120404EN-M52	CNMG 431EN-M52
	CNMG 120404EN-TF	CNMG 431EN-TF
	CNMG 120404EN-TFQ	CNMG 431EN-TFQ
	CNMG 120404EN-TMF	CNMG 431EN-TMF
	CNMG 120408EN-42	CNMG 432EN-42
	CNMG 120408EN-CF	CNMG 432EN-CF
	CNMG 120408EN-M42	CNMG 432EN-M42
	CNMG 120408EN-M52	CNMG 432EN-M52
	CNMG 120408EN-TF	CNMG 432EN-TF
	CNMG 120408EN-TFQ	CNMG 432EN-TFQ
	CNMG 120408EN-TM	CNMG 432EN-TM
	CNMG 120408EN-TMF	CNMG 432EN-TMF
	CNMG 120408EN-TMM	CNMG 432EN-TMM
	CNMG 120408EN-TMQ	CNMG 432EN-TMQ
	CNMG 120408EN-TMR	CNMG 432EN-TMR
	CNMG 120412EN-CF	CNMG 433EN-CF
	CNMG 120412EN-M42	CNMG 433EN-M42
	CNMG 120412EN-M52	CNMG 433EN-M52
	CNMG 120412EN-TF	CNMG 433EN-TF
	CNMG 120412EN-TFQ	CNMG 433EN-TFQ
	CNMG 120412EN-TM	CNMG 433EN-TM
	CNMG 120412EN-TMF	CNMG 433EN-TMF
	CNMG 120412EN-TMM	CNMG 433EN-TMM
	CNMG 120412EN-TMQ	CNMG 433EN-TMQ
	CNMG 120412EN-TRM	CNMG 433EN-TRM
	CNMG 120416EN-TM	CNMG 434EN-TM
	CNMG 120416EN-TRM	CNMG 434EN-TRM
	CNMG 160608EN-TM	CNMG 542EN-TM
	CNMG 160612EN-TM	CNMG 543EN-TM
	CNMG 160612EN-TMR	CNMG 543EN-TMR
	CNMG 160616EN-TRM	CNMG 544EN-TRM
	CNMG 190612EN-TM	CNMG 643EN-TM
	CNMG 190612EN-TMR	CNMG 643EN-TMR
	CNMG 190616EN-TMR	CNMG 644EN-TMR
CNMM	CNMM 120408EN-TR	CNMM 432EN-TR
	CNMM 120408SN-TRR	CNMM 432SN-TRR
	CNMM 120412EN-TR	CNMM 433EN-TR
	CNMM 120412SN-TRR	CNMM 433SN-TRR
	CNMM 160612EN-TR	CNMM 543EN-TR

	ISO	ANSI
	CNMM 160612SN-TRR	CNMM 543SN-TRR
	CNMM 160616EN-TR	CNMM 544EN-TR
	CNMM 160616SN-TRR	CNMM 544SN-TRR
	CNMM 190612EN-TR	CNMM 643EN-TR
	CNMM 190612SN-TRR	CNMM 643SN-TRR
	CNMM 190616EN-TR	CNMM 644EN-TR
	CNMM 190616SN-R80	CNMM 644SN-R80
	CNMM 190616SN-TRR	CNMM 644SN-TRR
	CNMM 190624SN-R80	CNMM 646SN-R80
CNMN	CNMN 090308FN	CNMN 322FN
	CNMN 090308TN-020D	CNMN 322TN-020D
	CNMN 090312TN-020D	CNMN 323TN-020D
	CNMN 090316TN-020D	CNMN 324TN-020D
	CNMN 120412FN	CNMN 433FN
	CNMN 120412TN-020D	CNMN 433TN-020D
	CNMN 120416FN	CNMN 434FN
	CNMN 120416TN-020D	CNMN 434TN-020D
CNMX	CNMX 120404SN	CNMX 431SN
	CNMX 120408EN	CNMX 432EN
	CNMX 120408SN	CNMX 432SN
	CNMX 120412SN	CNMX 433SN
	CNMX 120712SN-020D	CNMX 453SN-020D
	CNMX 120716SN-020D	CNMX 454SN-020D
	CNMX 190740SN	CNMX 65XSN-020D
DCGT	DCGT 070200FN-F23	DCGT 21.5X0FN-F23
	DCGT 070201EN-SF	DCGT 21.50EN-SF
	DCGT 070201FN	DCGT 21.50FN
	DCGT 070201FN-F23	DCGT 21.50FN-F23
	DCGT 070202EN-SF	DCGT 21.5.5EN-SF
	DCGT 070202EN-SM	DCGT 21.5.5EN-SM
	DCGT 070202FN	DCGT 21.5.5FN
	DCGT 070202FN-25P	DCGT 21.5.5FN-25P
	DCGT 070202FN-27	DCGT 21.5.5FN-27
	DCGT 070204EN-SF	DCGT 21.51EN-SF
	DCGT 070204FN	DCGT 21.51FN
	DCGT 070204FN-23P	DCGT 21.51FN-23P
	DCGT 070204FN-25P	DCGT 21.51FN-25P
	DCGT 070204FN-27	DCGT 21.51FN-27
	DCGT 11T300FN-F23	DCGT 32.5X0FN-F23
	DCGT 11T302EN-SF	DCGT 32.5.5EN-SF
	DCGT 11T302FN	DCGT 32.5.5FN
	DCGT 11T302FN-25P	DCGT 32.5.5FN-25P
	DCGT 11T302FN-27	DCGT 32.5.5FN-27
	DCGT 11T304EN-SF	DCGT 32.51EN-SF
	DCGT 11T304FL-25Q	DCGT 32.51FL-25Q
	DCGT 11T304FN	DCGT 32.51FN
	DNMG 150608EN-TMF	DNMG 442EN-TMF
	DNMG 150608EN-TMR	DNMG 442EN-TMR
	DNMG 150612EN-CF	DNMG 443EN-CF
	DNMG 150612EN-TF	DNMG 443EN-TF
	DNMG 150612EN-TFQ	DNMG 443EN-TFQ
	DNMG 150612EN-TM	DNMG 443EN-TM
	DNMG 150612EN-TM	DNMG 443EN-TM

ISO	ANSI	
	DNMG 150612EN-TMM	DNMG 443EN-TMM
	DNMG 150612EN-TMQ	DNMG 443EN-TMQ
	DNMG 150612EN-TMR	DNMG 443EN-TMR
	DNMG 150616EN-TM	DNMG 444EN-TM
	DNMG 150616EN-TMM	DNMG 444EN-TMM
	DNMG 150616EN-TMR	DNMG 444EN-TMR
	DNMG 150616EN-TRM	DNMG 444EN-TRM
DNMM	DNMM 150608EN-TR	DNMM 442EN-TR
	DNMM 150612EN-TR	DNMM 443EN-TR
DNMX	DNMX 150608SN	DNMX 442SN
	DNMX 150708SN-020D	DNMX 452SN-020D
	DNMX 150712SN-020D	DNMX 453SN-020D
	DNMX 150716SN-020D	DNMX 454SN-020D
ENGN	ENGN 130704TN-020D	ENGN 451TN-020D
	ENGN 130708TN-020D	ENGN 452TN-020D
	ENGN 130712SN-025E	ENGN 453TN-025D
	ENGN 130712TN-020D	ENGN 453TN-020D
	ENGN 130716SN-025E	ENGN 454TN-025E
	ENGN 130716SN-200C	ENGN 454TN-200C
	ENGN 130732TN-020D	ENGN 458TN-020D
KNUX	KNUX 160405EL-11	
	KNUX 160405EL-12	
	KNUX 160405ER-11	
	KNUX 160405ER-12	
	KNUX 160410EL-11	
	KNUX 160410EL-12	
	KNUX 160410ER-11	
	KNUX 160410ER-12	
LNMN	LNMN 6688PN-150CE	
RCGT	RCGT 0602MOEN-SM	
	RCGT 0602MOFN-27	
	RCGT 0803MOEN-SM	
	RCGT 0803MOFN-25P	
	RCGT 0803MOFN-27	
	RCGT 1003MOFN-27	
RCGX	RCGX 070400SN-050C	RCGX 2.53SN-050C
	RCGX 090700PN-075CF	RCGX 35PN-075CF
	RCGX 090700PN-100CF	RCGX 35PN-100CF
	RCGX 090700SN-200C	RCGX 35SN-200C
	RCGX 090700TN-020D	RCGX 35TN-020D
	RCGX 120700PN-100CF	RCGX 45PN-100CF
	RCGX 120700PN-150CF	RCGX 45PN-150CF
	RCGX 120700SN-200C	RCGX 45SN-200C
	RCGX 120700TN-020D	RCGX 45TN-020D
	RCGX 151000PN-100CF	RCGX 5(6.3)PN-100CF
	RCGX 151000PN-150CF	RCGX 5(6.3)PN-150CF
	RCGX 151000SN-200C	RCGX 5(6.3)SN-200C
	RCGX 191000PN-100CF	RCGX 6(6.3)PN-100CF
	RCGX 191000PN-200CF	RCGX 6(6.3)PN-200CF
	RCGX 191000SN-200C	RCGX 6(6.3)SN-200C
	RCGX 251200PN-100CF	RCGX 88PN-100CF
	RCGX 251200PN-200CF	RCGX 88PN-200CF
	RCGX 251200SN-200C	RCGX 88SN-200C

ISO	ANSI	
RCMT	RCMT 0803MOEN-25	
	RCMT 1003MOSN-SM	
	RCMT 1204MOSN-SM	
	RCMT 1606MOSN-SM	
	RCMT 2006MOSN-SM	
	RCMT 2507MOSN-SM	
	RCMT 3209MOSN-SM	
RNGN	RNGN 060400TN-020D	RNGN 23TN-020D
	RNGN 120400PN-150CF	RNGN 43PN-150CF
	RNGN 120700PN-150CF	RNGN 45PN-150CF
	RNGN 120700SN-020D	RNGN 45SN-020D
	RNGN 120700SN-200C	RNGN 45SN-200C
	RNGN 120700TN-020D	RNGN 45TN-020D
	RNGN 150700PN-150CE	RNGN 55PN-150CE
	RNGN 150700SN-200C	RNGN 55SN-200C
	RNGN 190700PN-100CF	RNGN 65PN-100CF
	RNGN 190700PN-150CE	RNGN 65PN-150CE
	RNGN 190700SN-200C	RNGN 65SN-200C
	RNGN 190700TN-020D	RNGN 65TN-020D
	RNGN 250700PN-100CF	RNGN 85PN-100CF
	RNGN 250700PN-200CE	RNGN 85PN-200CE
	RNGN 250700TN-020D	RNGN 85TN-020D
	RNGN 310900PN-100CF	RNGN 106PN-100CF
	RNGN 310900PN-215CF	RNGN 106PN-215CF
RNMN	RNMN 090300FN	RNMN 32FN
	RNMN 090300TN-020D	RNMN 32TN-020D
	RNMN 120300TN-020D	RNMN 42TN-020D
	RNMN 120400FN	RNMN 43FN
	RNMN 120400TN-020D	RNMN 43TN-020D
	RNMN 250400TN-050D	RNMN 83TN-050D
	RNMN 250600TN-050D	RNMN 84TN-050D
SCGT	SCGT 09T304EN-SF	SCGT 32.51EN-SF
	SCGT 09T308FN-27P	SCGT 32.52FN-27P
	SCGT 120408FN-25P	SCGT 432FN-25P
	SCGT 120408FN-27	SCGT 432FN-27
SCMT	SCMT 09T304EN-SF	SCMT 32.51EN-SF
	SCMT 09T304EN-SM	SCMT 32.51EN-SM
	SCMT 09T304EN-SMF	SCMT 32.51EN-SMF
	SCMT 09T308EN-SF	SCMT 32.52EN-SF
	SCMT 09T308EN-SM	SCMT 32.52EN-SM
	SCMT 09T308EN-SMF	SCMT 32.52EN-SMF
	SCMT 120408EN-SF	SCMT 432EN-SF
	SCMT 120408EN-SM	SCMT 432EN-SM
	SCMT 120408EN-SMF	SCMT 432EN-SMF
	SCMT 120412EN-SM	SCMT 433EN-SM
SCMX	SCMX 120408EN	SCMX 432EN
	SCMX 120412EN	SCMX 433EN
	SCMX 190612EN	SCMX 643EN
	SCMX 190616EN	SCMX 644EN
SNGA	SNGA 120408SN-025C	SNGA 432SN-025C
	SNGA 120412SN-025C	SNGA 433SN-025C
SNGN	SNGN 090308SN-025C	SNGN 322SN-025C
	SNGN 120408SN-015D	SNGN 432SN-015D

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ISO - ANSI

	ISO	ANSI
	SNGN 120408TN-020D	SNGN 432TN-020D
	SNGN 120412PN-150CF	SNGN 433PN-150CF
	SNGN 120412SN-015D	SNGN 433SN-015D
	SNGN 120412TN-020D	SNGN 433TN-020D
	SNGN 120716PN-100CF	SNGN 454PN-100CF
	SNGN 120716PN-150CF	SNGN 454PN-150CF
	SNGN 120716SN-025C	SNGN 454SN-025C
	SNGN 120716SN-200C	SNGN 454SN-200C
	SNGN 120720PN-100CF	SNGN 455PN-100CF
	SNGN 120720PN-150CF	SNGN 455PN-150CF
	SNGN 120720SN-200C	SNGN 455SN-200C
	SNGN 120730PN-028C	SNGN 457.5PN-028C
	SNGN 150712TN-020D	SNGN 553TN-020D
	SNGN 150716PN-150CF	SNGN 554PN-150CF
	SNGN 150720SN-200C	SNGN 555SN-200C
	SNGN 190716PN-150CF	SNGN 654PN-150CF
	SNGN 190716SN-025E	SNGN 654SN-025E
	SNGN 190716TN-020D	SNGN 654TN-020D
	SNGN 190720PN-100CF	SNGN 655PN-100CF
	SNGN 190720SN-200C	SNGN 655SN-200C
	SNGN 190720TN-020D	SNGN 655TN-020D
	SNGN 250724PN-100CF	SNGN 856PN-100CF
	SNGN 250724PN-150CE	SNGN 856PN-150CE
	SNGN 250724SN-050C	SNGN 856SN-050C
	SNGN 250724SN-200C	SNGN 856SN-200C
	SNGN 250924PN-100CF	SNGN 866PN-100CF
	SNGN 250924PN-150CE	SNGN 866PN-150CE
	SNGN 250924SN-030E	SNGN 866SN-030E
	SNGN 250924SN-200C	SNGN 866SN-200C
	SNGN 250924TN-020D	SNGN 866TN-020D
SNMA	SNMA 120408EN	SNMA 432EN
	SNMA 120412TN-020D	SNMA 433TN-020D
	SNMA 120416EN	SNMA 434EN
	SNMA 150616EN	SNMA 544EN
	SNMA 190616EN	SNMA 644EN
SNMG	SNMG 090308EN	SNMG 322EN
	SNMG 120404EN-TF	SNMG 431EN-TF
	SNMG 120408EN-M42	SNMG 432EN-M42
	SNMG 120408EN-M52	SNMG 432EN-M52
	SNMG 120408EN-TM	SNMG 432EN-TM
	SNMG 120408EN-TMF	SNMG 432EN-TMF
	SNMG 120412EN-M42	SNMG 433EN-M42
	SNMG 120412EN-TM	SNMG 433EN-TM
	SNMG 120412EN-TMF	SNMG 433EN-TMF
	SNMG 120412EN-TMR	SNMG 433EN-TMR
	SNMG 120412EN-TRM	SNMG 433EN-TRM
	SNMG 120416EN-TM	SNMG 434EN-TM
	SNMG 120416EN-TMR	SNMG 434EN-TMR
	SNMG 150612EN-TMR	SNMG 543EN-TMR
	SNMG 150616EN-TMR	SNMG 544EN-TMR
	SNMG 190612EN-TMR	SNMG 643EN-TMR
	SNMG 190616EN-TMR	SNMG 644EN-TMR
SNMM	SNMM 120408EN-TR	SNMM 432EN-TR

	ISO	ANSI
	SNMM 120408EN-TUB	SNMM 432EN-TUB
	SNMM 120412EN-TR	SNMM 433EN-TR
	SNMM 150612EN-TR	SNMM 543EN-TR
	SNMM 190612EN-TUB	SNMM 643EN-TUB
	SNMM 190616EN-TR	SNMM 644EN-TR
	SNMM 190616SN-TRR	SNMM 644SN-TRR
	SNMM 250724EN-TR	SNMM 856EN-TR
	SNMM 250724SN-TRR	SNMM 856SN-TRR
SNMN	SNMN 090308FN	SNMN 322FN
	SNMN 090308TN-020D	SNMN 322TN-020D
	SNMN 090312FN	SNMN 323FN
	SNMN 090312TN-020D	SNMN 323TN-020D
	SNMN 090316FN	SNMN 324FN
	SNMN 090316TN-020D	SNMN 324TN-020D
	SNMN 120312FN	SNMN 423FN
	SNMN 120312TN-020D	SNMN 423TN-020D
	SNMN 120316FN	SNMN 424FN
	SNMN 120316TN-020D	SNMN 424TN-020D
	SNMN 120412FN	SNMN 433FN
	SNMN 120412TN-020D	SNMN 433TN-020D
	SNMN 120416FN	SNMN 434FN
	SNMN 120416TN-020D	SNMN 434TN-020D
SNMX	SNMX 120712SN-020D	SNMX 453SN-020D
	SNMX 120716SN-020D	SNMX 454SN-020D
SNUN	SNUN 120412EN	SNUN 433EN
	SNUN 120416EN	SNUN 434EN
SPMR	SPMR 090304EN	SPMR 321EN
	SPMR 090308EN-57	SPMR 322EN-57
	SPMR 120304EN	SPMR 421EN
	SPMR 120308EN	SPMR 422EN
	SPMR 120308ER	SPMR 422ER
SPUN	SPUN 120308EN	SPUN 422EN
	SPUN 120312EN	SPUN 423EN
TCGT	TCGT 090202FN	TCGT 1.81.5.FN
	TCGT 090204FN	TCGT 1.81.51.FN
	TCGT 110202EN-SF	TCGT 21.5.5EN-SF
	TCGT 110202EN-SM	TCGT 21.5.5EN-SM
	TCGT 110202FN-27	TCGT 21.5.5FN-27
	TCGT 110204EN-SF	TCGT 21.51EN-SF
	TCGT 110204FN	TCGT 21.51FN
	TCGT 110204FN-27	TCGT 21.51FN-27
	TCGT 110208EN-SF	TCGT 21.52EN-SF
	TCGT 110208FN	TCGT 21.52FN
	TCGT 16T302FN-27	TCGT 32.5.5FN-27
	TCGT 16T304EN-SF	TCGT 32.51EN-SF
	TCGT 16T304FN	TCGT 32.51FN
	TCGT 16T304FN-27	TCGT 32.51FN-27
	TCGT 16T308EN-SF	TCGT 32.52EN-SF
	TCGT 16T308FN	TCGT 32.52FN
	TCGT 16T308FN-27	TCGT 32.52FN-27
TCMT	TCMT 090204EN-SM	TCMT 1.81.51EN-SM
	TCMT 110204EN-F43	TCMT 21.51EN-F43
	TCMT 110204EN-SF	TCMT 21.51EN-SF

	ISO	ANSI
	TCMT 110204EN-SM	TCMT 21.51EN-SM
	TCMT 110204EN-SMF	TCMT 21.51EN-SMF
	TCMT 110208EN-SF	TCMT 21.52EN-SF
	TCMT 110208EN-SM	TCMT 21.52EN-SM
	TCMT 110208EN-SMF	TCMT 21.52EN-SMF
	TCMT 16T304EN-F43	TCMT 32.51EN-F43
	TCMT 16T304EN-SF	TCMT 32.51EN-SF
	TCMT 16T304EN-SM	TCMT 32.51EN-SM
	TCMT 16T304EN-SMF	TCMT 32.51EN-SMF
	TCMT 16T308EN-F43	TCMT 32.52EN-F43
	TCMT 16T308EN-SF	TCMT 32.52EN-SF
	TCMT 16T308EN-SM	TCMT 32.52EN-SM
	TCMT 16T308EN-SMF	TCMT 32.52EN-SMF
	TCMT 220408EN-SM	TCMT 432EN-SM
TCMW	TCMW 16T304FN	TCMW 32.51FN
TCMX	TCMX 160404EN	TCMX 331EN
	TCMX 160408EN	TCMX 332EN
	TCMX 160412EN	TCMX 333EN
	TCMX 220404EN	TCMX 431EN
	TCMX 220408EN	TCMX 432EN
	TCMX 220412EN	TCMX 433EN
TNGA	TNGA 160408TN-020D	TNGA 332TN-020D
TNGN	TNGN 110308TN-020D	TNGN 222TN-020D
	TNGN 160408TN-020D	TNGN 332TN-020D
	TNGN 220408TN-020D	TNGN 432TN-020D
TNMA	TNMA 160408EN	TNMA 332EN
	TNMA 160412EN	TNMA 333EN
	TNMA 220408EN	TNMA 432EN
	TNMA 220412EN	TNMA 433EN
	TNMA 220416EN	TNMA 434EN
TNMG	TNMG 110302EN	TNMG 22.5EN
	TNMG 110304EN-TF	TNMG 221EN-TF
	TNMG 160404EN-CF	TNMG 331EN-CF
	TNMG 160404EN-M42	TNMG 331EN-M42
	TNMG 160404EN-M52	TNMG 331EN-M52
	TNMG 160404EN-TF	TNMG 331EN-TF
	TNMG 160404EN-TMF	TNMG 331EN-TMF
	TNMG 160404ER	TNMG 331ER
	TNMG 160408EL	TNMG 332EL
	TNMG 160408EN-CF	TNMG 332EN-CF
	TNMG 160408EN-M42	TNMG 332EN-M42
	TNMG 160408EN-M52	TNMG 332EN-M52
	TNMG 160408EN-TF	TNMG 332EN-TF
	TNMG 160408EN-TM	TNMG 332EN-TM
	TNMG 160408EN-TMF	TNMG 332EN-TMF
	TNMG 160408EN-TMR	TNMG 332EN-TMR
	TNMG 160408ER	TNMG 332ER
	TNMG 160412EN-CF	TNMG 333EN-CF
	TNMG 160412EN-TF	TNMG 333EN-TF
	TNMG 160412EN-TM	TNMG 333EN-TM
	TNMG 160412EN-TMF	TNMG 333EN-TMF
	TNMG 160412EN-TMR	TNMG 333EN-TMR
	TNMG 160412EN-TRM	TNMG 333EN-TRM

	ISO	ANSI
	TNMG 220408EN-TM	TNMG 432EN-TM
	TNMG 220408EN-TMR	TNMG 432EN-TMR
	TNMG 220408EN-TRM	TNMG 432EN-TRM
	TNMG 220412EN-TM	TNMG 433EN-TM
	TNMG 220412EN-TMR	TNMG 433EN-TMR
	TNMG 220412EN-TRM	TNMG 433EN-TRM
	TNMG 220416EN-TM	TNMG 434EN-TM
	TNMG 220416EN-TMR	TNMG 434EN-TMR
	TNMG 220416EN-TRM	TNMG 434EN-TRM
TNMM	TNMM 160408EN-TR	TNMM 332EN-TR
	TNMM 160408SN-TRR	TNMM 332SN-TRR
	TNMM 160412EN-TR	TNMM 333EN-TR
	TNMM 220408EN-TR	TNMM 432EN-TR
	TNMM 220412EN-TR	TNMM 433EN-TR
	TNMM 220412SN-TRR	TNMM 433SN-TRR
	TNMM 220416EN-TR	TNMM 434EN-TR
	TNMM 270612EN-TUB	TNMM 543EN-TUB
	TNMM 270616EN-TR	TNMM 544EN-TR
TNMMN	TNMMN 110304FN	TNMMN 221FN
	TNMMN 110304TN-020D	TNMMN 221TN-020D
	TNMMN 110308FN	TNMMN 222FN
	TNMMN 110308TN-020D	TNMMN 222TN-020D
	TNMMN 110312TN-020D	TNMMN 223TN-020D
TNMX	TNMX 160408SN	TNMX 332SN
TNUN	TNUN 160308EN	TNUN 322EN
	TNUN 160412EN	TNUN 333EN
	TNUN 160416EN	TNUN 334EN
TPGN	TPGN 160304TN-020D	TPGN 321TN-020D
TPMR	TPMR 110304EL	TPMR 221EL
	TPMR 110304EN	TPMR 221EN
	TPMR 110304ER	TPMR 221ER
	TPMR 110308EN	TPMR 222EN
	TPMR 160304EL	TPMR 321EL
	TPMR 160304EN	TPMR 321EN
	TPMR 160304ER	TPMR 321ER
	TPMR 160308EL	TPMR 322EL
	TPMR 160308EN	TPMR 322EN
	TPMR 160308EN-57	TPMR 322EN-57
	TPMR 160308ER	TPMR 322ER
TPUN	TPUN 110304EN	TPUN 221EN
	TPUN 110308EN	TPUN 222EN
	TPUN 160304EN	TPUN 321EN
	TPUN 160304FN	TPUN 321FN
	TPUN 160308EN	TPUN 322EN
	TPUN 160308FN	TPUN 322FN
	TPUN 160312EN	TPUN 323EN
	TPUN 220408EN	TPUN 432EN
	TPUN 220412EN	TPUN 433EN
VCGT	VCGT 110300FN-F23	VCGT 22X0FN-F23
	VCGT 110301EN-SF	VCGT 220EN-SF
	VCGT 110301FN-F23	VCGT 220FN-F23
	VCGT 110302EN-SF	VCGT 220.5EN-SF
	VCGT 110302EN-SMF	VCGT 22.5EN-SMF

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	ISO	ANSI
	VCGT 110302FN-25P	VCGT 220.5FN-25P
	VCGT 110302FN-27	VCGT 22.5FN-27
	VCGT 110304EN-SF	VCGT 221EN-SF
	VCGT 110304FL-25Q	VCGT 221FL-25Q
	VCGT 110304FN-25P	VCGT 221FN-25P
	VCGT 110304FN-27	VCGT 221FN-27
	VCGT 110304FR-25Q	VCGT 221FR-25Q
	VCGT 110308EN-SF	VCGT 222EN-SF
	VCGT 110308FN-27	VCGT 222FN-27
	VCGT 160400FN-F23	VCGT 33X0FN-F23
	VCGT 160401FN-F23	VCGT 330FN-F23
	VCGT 160404EN-SF	VCGT 331EN-SF
	VCGT 160404FN-25P	VCGT 331FN-25P
	VCGT 160404FN-27	VCGT 331FN-27
	VCGT 160408EN-SF	VCGT 332EN-SF
	VCGT 160408FN-25P	VCGT 332FN-25P
	VCGT 160408FN-27	VCGT 332FN-27
	VCGT 160412FN-25P	VCGT 333FN-25P
	VCGT 160412FN-27	VCGT 333FN-27
	VCGT 220530FN-25P	VCGT 43.57.5FN-25P
	VCGT 220530FN-27	VCGT 43.57.5FN-27
VCMT	VCMT 110304EN-SMF	VCMT 221EN-SMF
	VCMT 160404EN-29	VCMT 331EN-29
	VCMT 160404EN-SF	VCMT 331EN-SF
	VCMT 160404EN-SM	VCMT 331EN-SM
	VCMT 160404EN-SMF	VCMT 331EN-SMF
	VCMT 160406EN-SM	
	VCMT 160408EN-29	VCMT 332EN-29
	VCMT 160408EN-SF	VCMT 332EN-SF
	VCMT 160408EN-SM	VCMT 332EN-SM
	VCMT 160408EN-SMF	VCMT 332EN-SMF
	VCMT 160412EN-25	VCMT 333EN-25
	VCMT 160412EN-29	VCMT 333EN-29
	VCMT 160412EN-SM	VCMT 333EN-SM
	VCMT 220530EN-25	VCMT 447EN-25
VCMW	VCMW 160404FN	VCMW 331FN
VCUW	VCUW 160404FL	VCUW 331FL
	VCUW 160404FN	VCUW 331FN
	VCUW 160404FR	VCUW 331FR
	VCUW 160408FL	VCUW 332FL
	VCUW 160408FN	VCUW 332FN
	VCUW 160408FN-F3	VCUW 332FN-F3
	VCUW 160408FN-M4	VCUW 332FN-M4
	VCUW 160408FR	VCUW 332FR
	VCUW 160412FN	VCUW 333FN
	VCUW 160412FN-F3	VCUW 333FN-F3
	VCUW 160412FN-M4	VCUW 333FN-M4
	VCUW 160412TN-M4	VCUW 333TN-M4
	VCUW 160416FN	VCUW 334FN
	VCUW 220530FN	VCUW 43.57.5FN
	VCUW 220530FN-M4	VCUW 43.57.5FN-M4
VNGA	VNGA 160408TN-020D	VNGA 332TN-020D
	VNGA 160412TN-020D	VNGA 333TN-020D

	ISO	ANSI
VNGP	VNGP 160402FN-F32	VNGP 33.5FN-F32
	VNGP 160404FN-F32	VNGP 331FN-F32
VNMG	VNMG 160404EN-F40	VNMG 331EN-F40
	VNMG 160404EN-M40	VNMG 331EN-M40
	VNMG 160408EN-F40	VNMG 332EN-F40
	VNMG 160408EN-M40	VNMG 332EN-M40
VPGT	VPGT 220516FN-25P	VPGT 444FN-25P
	VPGT 220516FN-27	VPGT 43.54FN-27
VPMT	VPMT 220516EN-25	VPMT 43.54EN-25
VPUW	VPUW 220516FN-F3	VPUW 43.54FN-F3
	VPUW 220516FN-M4	VPUW 43.54FN-M4
	VPUW 220612FN-F3	VPUW443FN-F3
WNMG	WNMG 060404EN-CF	WNMG 231EN-CF
	WNMG 060404EN-M42	WNMG 231EN-M42
	WNMG 060404EN-M52	WNMG 231EN-M52
	WNMG 060404EN-TF	WNMG 231EN-TF
	WNMG 060404EN-TFQ	WNMG 331EN-TFQ
	WNMG 060404EN-TMF	WNMG 231EN-TMF
	WNMG 060408EN-CF	WNMG 232EN-CF
	WNMG 060408EN-M42	WNMG 232EN-M42
	WNMG 060408EN-M52	WNMG 232EN-M52
	WNMG 060408EN-TFQ	WNMG 332EN-TFQ
	WNMG 060408EN-TM	WNMG 232EN-TM
	WNMG 060408EN-TMF	WNMG 232EN-TMF
	WNMG 060408EN-TMM	WNMG 232EN-TMM
	WNMG 060408EN-TRM	WNMG 232EN-TRM
	WNMG 060412EN-TMF	WNMG 233EN-TMF
	WNMG 060412EN-TRM	WNMG 233EN-TRM
	WNMG 080404EN-M42	WNMG 431EN-M42
	WNMG 080404EN-M52	WNMG 431EN-M52
	WNMG 080404EN-TF	WNMG 431EN-TF
	WNMG 080404EN-TFQ	WNMG 431EN-TFQ
	WNMG 080404EN-TMF	WNMG 431EN-TMF
	WNMG 080408EN-CF	WNMG 432EN-CF
	WNMG 080408EN-M42	WNMG 432EN-M42
	WNMG 080408EN-M52	WNMG 432EN-M52
	WNMG 080408EN-TF	WNMG 432EN-TF
	WNMG 080408EN-TFQ	WNMG 432EN-TFQ
	WNMG 080408EN-TM	WNMG 432EN-TM
	WNMG 080408EN-TMF	WNMG 432EN-TMF
	WNMG 080408EN-TMM	WNMG 432EN-TMM
	WNMG 080408EN-TMQ	WNMG 432EN-TMQ
	WNMG 080408EN-TMR	WNMG 432EN-TMR
	WNMG 080408EN-TMR	WNMG 432EN-TMR
	WNMG 080412EN-CF	WNMG 433EN-CF
	WNMG 080412EN-M42	WNMG 433EN-M42
	WNMG 080412EN-TFQ	WNMG 433EN-TFQ
	WNMG 080412EN-TM	WNMG 433EN-TM
	WNMG 080412EN-TMF	WNMG 433EN-TMF
	WNMG 080412EN-TMM	WNMG 433EN-TMM
	WNMG 080412EN-TMQ	WNMG 433EN-TMQ
	WNMG 080412EN-TMR	WNMG 433EN-TMR
	WNMG 080412EN-TRM	WNMG 433EN-TRM

Dados de corte

Material da peça		Tipo de tratamento / liga		Grupo VDI 3323	Dureza HB
P	Aço sem liga	recozido	C ≤ 0.15 %	1	125
		recozido	C 0.15 % - 0.45 %	2	150 - 250
		temperado	C ≥ 0.45 %	3	300
	Aço de baixa liga	recozido		6	180
		temperado		7 / 8	250 - 300
		temperado		9	350
	Aço de alta liga	recozido		10	200
		temperado		11	350
	Aço inoxidável	recozido	ferrítico / martensítico	12	200
		temperado	martensítico	13	325
tratado termicamente		ferrítico / martensítico	13	200	
M	Aço inoxidável	temperado	austenítico	14	180
		temperado	ferrítico / austenítico (Duplo)	14	230 - 260
		endurecido	austenítico, endurecida por precipitação (PH)	14	330
K	Ferro fundido cinzento		perlítico / ferrítico	15	180
			perlítico / martensítico	16	260
	Ferro fundido nodular		ferrítico	17	160
			perlítico	18	250
	Ferro fundido maleável		ferrítico	19	130
		perlítico	20	230	
N	Ligas de alumínio forjado	não temperáveis		21	60
		endurecido		22	100
	Ligas de alumínio fundido	não temperáveis	< 12 % Si	23	75
		endurecido	< 12 % Si	24	90
		não temperáveis	> 12 % Si	25	130
	Cobre e ligas de cobre (bronze, latão)		liga de usinagem (1% Pb)	26	(110)
			latão, bronze vermelho	27	90
			bronze	28	100
			cobre isento de chumbo e cobre eletrolítico	28	100
	Materiais não metálicos		plásticos termofixos	29	-
		plásticos reforçados com fibras	29	-	
		borracha dura	30	-	
S	Ligas resistentes ao calor	recozido	base de Fe	31	200
		endurecido	base de Fe	32	280
		recozido	base de Ni ou Co	33	250
		endurecido	base de Ni ou Co 30 - 58 HRC	34	(350)
		fundido	base de Ni ou Co 1500 - 2200 N/mm ²	35	(320)
	Ligas de titânio		titânio puro	36	R _m 440*
			ligas de alpha + beta	37	R _m 1050*
H	Aço temperado	temperado e revenido		38	55 HRC
		temperado e revenido		39	60 HRC
	Ferro fundido coquilhado	fundido		40	400
	Ferro fundido temperado	temperado e revenido		41	55 HRC

* R_m = resistência a tração, medido em MPa

Dados de corte

Material da peça		Tipo de tratamento / liga		Grupo VDI 3323	Dureza HB
P	Aço sem liga	recozido	C ≤ 0.15 %	1	125
		recozido	C 0.15 % - 0.45 %	2	150 - 250
		temperado	C ≥ 0.45 %	3	300
	Aço de baixa liga	recozido		6	180
		temperado		7 / 8	250 - 300
		temperado		9	350
	Aço de alta liga	recozido		10	200
		temperado		11	350
	Aço inoxidável	recozido	ferrítico / martensítico	12	200
		temperado	martensítico	13	325
tratado termicamente		ferrítico / martensítico	13	200	
M	Aço inoxidável	temperado	austenítico	14	180
		temperado	ferrítico / austenítico (Duplo)	14	230 - 260
		endurecido	austenítico, endurecida por precipitação (PH)	14	330
K	Ferro fundido cinzento		perlítico / ferrítico	15	180
			perlítico / martensítico	16	260
	Ferro fundido nodular		ferrítico	17	160
			perlítico	18	250
	Ferro fundido maleável		ferrítico	19	130
		perlítico	20	230	
N	Ligas de alumínio forjado	não temperáveis		21	60
		endurecido		22	100
	Ligas de alumínio fundido	não temperáveis	< 12 % Si	23	75
		endurecido	< 12 % Si	24	90
		não temperáveis	> 12 % Si	25	130
	Cobre e ligas de cobre (bronze, latão)		liga de usinagem (1% Pb)	26	(110)
			latão, bronze vermelho	27	90
			bronze	28	100
			cobre isento de chumbo e cobre eletrolítico	28	100
	Materiais não metálicos		plásticos termofixos	29	-
		plásticos reforçados com fibras	29	-	
		borracha dura	30	-	
S	Ligas resistentes ao calor	recozido	base de Fe	31	200
		endurecido	base de Fe	32	280
		recozido	base de Ni ou Co	33	250
		endurecido	base de Ni ou Co 30 - 58 HRC	34	(350)
		fundido	base de Ni ou Co 1500 - 2200 N/mm ²	35	(320)
	Ligas de titânio		titânio puro	36	R _m 440*
			ligas de alpha + beta	37	R _m 1050*
H	Aço temperado	temperado e revenido		38	55 HRC
		temperado e revenido		39	60 HRC
	Ferro fundido coquilhado	fundido		40	400
	Ferro fundido temperado	temperado e revenido		41	55 HRC

* R_m = resistência a tração, medido em MPa

CTN3105	CTS3105	CTBK102	CTBK104	CTM3110	CTN3110	CTC3110	CTCK120	CTD4110
v_c	v_c	v_c	v_c	v_c	v_c	v_c	v_c	v_c
[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]
							230 - 450	
							200 - 340	
							160 - 270	
							200 - 360	
							150 - 290	
							130 - 260	
							150 - 290	
							100 - 260	
							160 - 290	
							130 - 250	
							180 - 250	
300 - 1500	***400 - 1200		500 - 2000	500 - 1100	500 - 1100	250 - 450	150 - 400	
200 - 800	***150 - 500			300 - 800	300 - 800	220 - 350	180 - 350	
200 - 700	***250 - 600			200 - 600	200 - 600	220 - 380	200 - 380	
200 - 700		**200 - 700		250 - 450	250 - 450	200 - 350	160 - 300	
300 - 1000				300 - 800	300 - 800	200 - 400	200 - 350	
250 - 700				250 - 600	250 - 600	180 - 320	160 - 300	
								300 - 4000
								300 - 1500
								300 - 4000
								300 - 2000
								200 - 700
								100 - 700
								100 - 1500
								300 - 3000
								80 - 300
								80 - 300
								50 - 200
		100 - 250						
		100 - 250						
	40 - 200	100 - 200						
	30 - 180	100 - 200						
	70 - 200		30 - 120					
	60 - 70		30 - 120					

Os dados de corte não são indicações obrigatórias para o usuário. Recomenda-se adaptá-las as condições atuais.
 ** De ferro fundido GGG60 em diamante / *** unicamente para acabamento

Dados de corte



Material da peça		Tipo de tratamento / liga		Grupo VDI 3323	Dureza HB
P	Aço sem liga	recozido	C ≤ 0.15 %	1	125
		recozido	C 0.15 % - 0.45 %	2	150 - 250
		temperado	C ≥ 0.45 %	3	300
	Aço de baixa liga	recozido		6	180
		temperado		7 / 8	250 - 300
		temperado		9	350
	Aço de alta liga	recozido		10	200
		temperado		11	350
	Aço inoxidável	recozido	ferrítico / martensítico	12	200
		temperado	martensítico	13	325
tratado termicamente		ferrítico / martensítico	13	200	
M	Aço inoxidável	temperado	austenítico	14	180
		temperado	ferrítico / austenítico (Duplo)	14	230 - 260
		endurecido	austenítico, endurecida por precipitação (PH)	14	330
K	Ferro fundido cinzento		perlítico / ferrítico	15	180
			perlítico / martensítico	16	260
	Ferro fundido nodular		ferrítico	17	160
			perlítico	18	250
	Ferro fundido maleável		ferrítico	19	130
		perlítico	20	230	
N	Ligas de alumínio forjado	não temperáveis		21	60
		endurecido		22	100
	Ligas de alumínio fundido	não temperáveis	< 12 % Si	23	75
		endurecido	< 12 % Si	24	90
		não temperáveis	> 12 % Si	25	130
	Cobre e ligas de cobre (bronze, latão)		liga de usinagem (1% Pb)	26	(110)
			latão, bronze vermelho	27	90
			bronze	28	100
			cobre isento de chumbo e cobre eletrolítico	28	100
	Materiais não metálicos		plásticos termofixos	29	-
		plásticos reforçados com fibras	29	-	
		borracha dura	30	-	
S	Ligas resistentes ao calor	recozido	base de Fe	31	200
		endurecido	base de Fe	32	280
		recozido	base de Ni ou Co	33	250
		endurecido	base de Ni ou Co 30 - 58 HRC	34	(350)
		fundido	base de Ni ou Co 1500 - 2200 N/mm ²	35	(320)
	Ligas de titânio		titânio puro	36	R _m 440*
			ligas de alpha + beta	37	R _m 1050*
H	Aço temperado	temperado e revenido		38	55 HRC
		temperado e revenido		39	60 HRC
	Ferro fundido coquilhado	fundido		40	400
	Ferro fundido temperado	temperado e revenido		41	55 HRC

* R_m = resistência a tração, medido em MPa

H210T	AMZ	H10T	H216T	CTP5110	CTP5115	CTL6115
v_c	v_c	v_c	v_c	v_c	v_c	v_c
[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]	[m/min]
	110 - 160					
	90 - 140					
	80 - 120					
	90 - 130					
	80 - 120					
	70 - 90					
	90 - 110					
	70 - 90					
	160 - 220					
	70 - 110					
	-			150 - 230	130 - 220	
	90 - 140			140 - 190	120 - 180	
				60 - 100	50 - 90	
140 - 200	180 - 220	120 - 160	120 - 160			
100 - 160	140 - 180	90 - 140	90 - 140			
160 - 200	160 - 220	130 - 170	130 - 170			
110 - 150	120 - 180	90 - 130	90 - 130			**200 - 700
160 - 220	180 - 240	140 - 200	140 - 200			
140 - 180	160 - 200	120 - 160	120 - 160			
300 - 3000	300 - 3200	300 - 2500	300 - 2500			
200 - 2500	200 - 2800	200 - 2000	200 - 2000			
400 - 2000	400 - 2000	400 - 1500	400 - 1500			
400 - 1800	400 - 2000	400 - 1500	400 - 1500			
200 - 1000	200 - 1200	200 - 800	200 - 800			
250 - 800	250 - 1000	250 - 600	250 - 600			
200 - 800	200 - 1000	200 - 600	200 - 600			
150 - 600	150 - 800	150 - 400	150 - 400			
150 - 400	150 - 500	150 - 300	150 - 300			
100 - 220	80 - 200	80 - 180	80 - 180			
80 - 200	80 - 220	60 - 150	60 - 150			
100 - 300	100 - 320	100 - 250	100 - 250			
35 - 50	30 - 50			80 - 120	80 - 120	
25 - 40	20 - 40			60 - 100	60 - 100	
25 - 40	20 - 40			35 - 90	35 - 90	
20 - 30	18 - 30			30 - 50	30 - 50	100 - 250
15 - 25	15 - 25			30 - 45	30 - 45	100 - 250
80 - 140	80 - 140			70 - 120	70 - 120	
40 - 100	40 - 100			40 - 70	40 - 70	
						100 - 200
						100 - 200

Os dados de corte não são indicações obrigatórias para o usuário. Recomenda-se adaptá-las as condições atuais.
 ** De ferro fundido GGG60 em diante

	Material	Tipo, descrição
	154568	H 000341/H
	154570	H 000342/H
	154571	H 000343/H
	154572	H 000344/H
	293141	7853608/H
	293143	7853610/H
	293144	7853611/H
	59426	H 000840/H
	59427	H 011446/H
	59429	H 018440/H
	59430	H 023441/H
	59432	H 024447/H
	59433	H 028443/H
	59434	H 033442/H
	59435	H 038444/H
	4724	7880101/K
	4725	7880102/K
	4726	7880103/K
	11224545	SET-02-D
	11227306	SET-01-D
	11227322	SET-03-D
	11227325	SET-04-D
	11227328	SET-05-D
	11258694	SET-01L-D
	149395	70.5-824/SP
	149396	70.5-825/SP
	4261	7485865/SP
	4265	7485869/SP
	4523	7830001/SP
	4738	7880601/KE
	4739	7880602/KE
	4740	7880603/KE
	5658	7880606/KE
	5660	7880608/KE
	69294	7883102/B M 3,5
	69296	7883101/B M 4,5
	4210	7480901/KN 3x10
	4211	7480902/KN 2,6x10
	4734	7880401/PS
	4735	7880402/PS
	5204	7880408/PS
	5205	7880407/PS
	154577	R 000467/R
	293147	7853806/R
	59436	R 018463/R
	59437	R 023461/R
	59438	R 025464/R
	59439	R 033462/R
	59440	R 038465/R
	149400	70.5-841/F+S
	4213	7480910/FS
	149399	70.5-848/F
	11232874	HY-M5

	Material	Tipo, descrição
	86174	M 018470/MO
	86176	M 018471/MO
	86177	M 022473/MO
	86178	M 022472/MO
	86182	M 028474/MO
	194263	7896900/O-RING 40
	225429	7896940/O-RING 50
	225430	7896941/O-RING 63




	Material	Tipo, descrição
	118849	7883911/SORT
	11963665	7485927/SORT
	140586	7853400/SORT
	140587	7853401/SORT
	140589	7853402/SORT
	140590	7853403/SORT
	140591	7853404/SORT
	140594	7853407/SORT
	140595	7853408/SORT
	140596	7853409/SORT
	140597	7853410/SORT
	140599	7853411/SORT
	140600	7853412/SORT
	140601	7853413/SORT
	140602	7853414/SORT
	146868	7817913/SORT
	154578	7853416/SORT
	154579	7853417/SORT
	154580	7853418/SORT
	154581	7853419/SORT
	154584	7853421/SORT
	183936	7883914/SORT
	222127	7853422/SORT
	260199	7883912/SORT
	29278	7815900/SORT
	29279	7815901/SORT
	29280	7815902/SORT
	293148	7853423/SORT
	293150	7853425/SORT
	293151	7853426/SORT
	293152	7853427/SORT
	36305	7817902/SORT
	40505	7817911/SORT
	40506	7817912/SORT
	41917	7485926/SORT
	4283	7485901/SORT
	4287	7485906/SORT
	4288	7485907/SORT
	4292	7485911/SORT
	4294	7485915/SORT
	4527	7830005/SORT
	4743	7880901/SORT
	4744	7880902/SORT
	4745	7880903/SORT
	4746	7880904/SORT
	5662	7880912/SORT
	5664	7880914/SORT
	71533	7830509/SORT
	74208	7883901/SORT
	82270	7883902/SORT
	82271	7883906/SORT
	82272	7883907/SORT
	82273	7883908/SORT
	82274	7883909/SORT
	82275	7883910/SORT
	82756	7883903/SORT
	82757	7883904/SORT
	82758	7883905/SORT
	83343	7815903/SORT










	Material	Tipo, descrição
	154575	S 000433/S
	154576	S 000432/S
	293145	7853711/S
	310913	7853712/S
	59441	S 000425/S ISK 3MM
	59442	S 000458/S ISK 3MM
	59443	S 000831/S ISK 3MM
	59444	S 011429/S ISK 2MM
	59445	S 018420/S ISK 2,5MM
	59446	S 023421/S ISK 3MM
	59448	S 033422/S ISK 4MM
	59449	S 038427/S ISK 5MM
	11211558	U-CN12T3-D
	11227315	U-CN1604-D
	11227316	U-CN1905-D
	11294214	U-CN2507
	11577861	U-CN0903-D
	11579427	U-CN2506-D
	26132	7880004/HM-U
	357187	10006885/HM-U CNMX1907
	54742	7830501/HM-U
	59451	U 000152/HM-U
	59568	U 112150/HM-U
	59569	U 123151/HM-U
	61006	7883002/HM-U
	69216	7883001/HM-U
	11211562	U-DN15T3-D
	11227308	U-DN1103-D
	26146	7815000/HM-U
	293140	7853521/HM-U
	59570	U 153150/HM-U
	106009	U 000051L/HM-U
	106014	U 000051R/HM-U
	154563	U 000351/U
	154564	U 000352/U
	154565	U 000353/U
	154566	U000354/U
	24838	7817002/HM-U
	40187	7817008/HM-U RN 0903
	40192	7817009/HM-U
	11211561	U-SN12T3-D
	11227317	U-SN1905-D
	11227319	U-SN2506-D
	11247269	U-SN1504-D
	26111	7880003/HM-U
	26122	7480312/HM-U SN 1203
	26139	7880010/HM-U
	308268	3673051/HM-U SN 2110
	4299	7485940/HM-U
	59547	U 000456/HM-U
	59549	U 000457/HM-U
	59562	U 053450/HM-U
	59564	U 063451/HM-U
	59566	U 083452/HM-U
	59567	U 092453/HM-U
	69199	7883004/HM-U
	69214	7883003/HM-U



Componentes

	Material	Tipo, descrição
	11344329	U-TN1603-D
	26123	7880001/HM-U
	26124	7480313/HM-U TN 1603
	26126	7480316/HM-U TPMX1604
	26137	7880008/HM-U
	4300	7485941/HM-U
	4719	7880002/HM-U
	59556	U 013950/HM-U
	59557	U 021953/HM-U
69209	7883005/HM-U	
	11227311	U-VN1603-D
	119008	7815004/HM-U
	148206	7815005/HM-U
	26147	7815002/HM-U
	37493	7815003/HM-U
	11211563	U-WN08T3-D
	11227310	U-WN0603-D
	218151	7853519/HM-U
	293139	7853520/HM-U

	Material	Tipo, descrição	Tamanho da chave
	24643	7830006/TORX T08 F	T08
	4209	7480412/SW 4	SW4
	4496	7812301/SW 5	SW5
	4770	7882201/SW 2,5	SW2,5
	4771	7882202/SW 3	SW3
	4773	7882301/SW 2	SW2
	69293	7883301/KOMBI T15	T15
	8095010100	SD-T07-60mm	T07
	8095010200	SD-T08-60mm	T08
	8095010500	SD-T15-80mm	T15
	8095010600	SD-T20-100mm	T20
	11224503	S-15IP-T	T15IP
	11227314	S-09IP-T	T09IP
	11227323	S-20IP-T	T20IP
	11227330	S-25IP-T	T25IP

	Material	Tipo, descrição	l [mm]	Medida da rosca	Tamanho da chave	
	11224494	M4,5x12-15IP/10002887	12	M4,5	T15	
	11227305	M3,0x7,0-09IP/10003007	7,0	M3,0	T09IP	
	11227318	M5x14-20IP/10003023	14	M5	T20	
	11227329	M6x16-25IP/10003048	16	M6	T25IP	
	165795	7883209/M3,5X8,6/T15	8,6	M3,5	T15	
	24645	7815101/M2,5X6,0/T08	6	M2,5	T08	
	24647	7815102/M3,5X11,0/T15	11	M3,5	T15	
	4259	7485860/M6,0X16,2/T20	16,2	M6	T20	
	4524	7830002/M4,0X10/T15	10	M4	T15	
	54976	7722111/M3,5X7,2/T15	7,2	M3,5	T15	
	54981	7883202/M4,5X12/T15	12	M4,5	T15	
	56652	7722113/M2,2X5/T07	5	M2,2	T07	
	76913	7883204/M2,5X5/T08	5	M2,5	T08	
	77613	7883203/M3,0X7,3/T08	7,3	M3	T08	
		149397	70.5-865/S	25	M6	SW4,5
		4147	7480210/M8X20	23	M8	SW4

