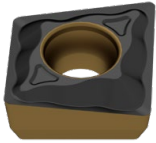


New products for machining technicians

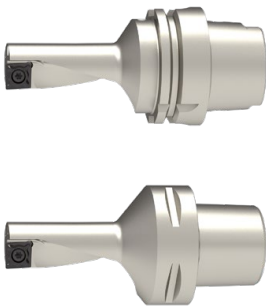
NEW ISO-P indexable inserts



Update of the reliable CVD EcoCut grades CTCP425 / CTCP435. With the update, the grades are more wear-resistant and have a wear-detection coating layer.

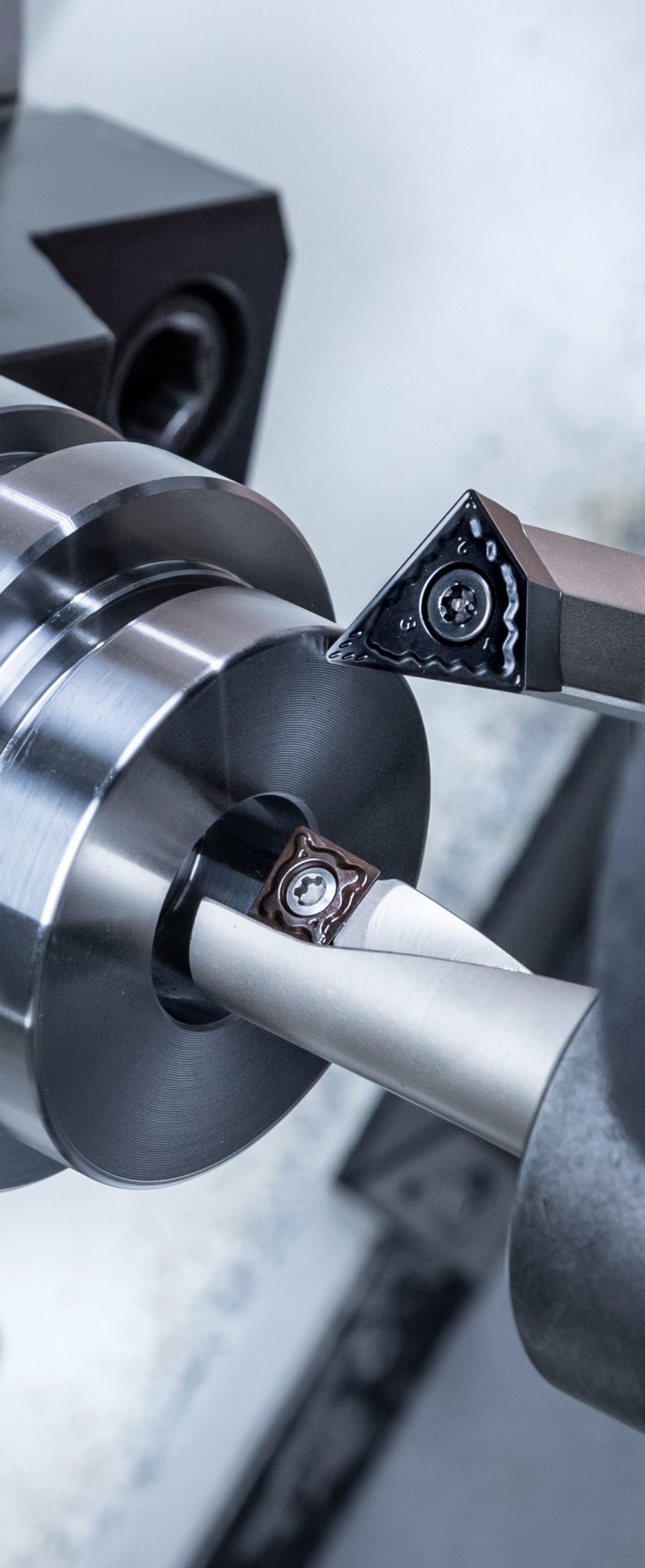
→ Page 11

NEW EcoCut Classic with direct machine interface



The new EcoCut Classic product range with direct machine interface performs the same application functions as all other EcoCut Classic tools, but the new monotools impress when it comes to stability – and therefore run quietly and very reliably. Furthermore, chip removal has been optimised thanks to the updated chip space, guaranteeing process security.

→ Page 15+16



Solid drilling and bore machining

- 1 HSS drilling
- 2 Solid carbide drilling
- 3 Indexable insert drilling
- 4 Reaming and Countersinking
- 5 Spindle Tooling

Threading

- 6 Taps and thread formers
- 7 Circular and Thread Milling
- 8 Thread turning

Turning

- 9 Turning Tools
- 10 Multifunctional Tools – EcoCut and FreeTurn
- 11 Grooving Tools
- 12 Miniature turning tools

Milling

- 13 HSS Milling Cutters
- 14 Solid Carbide milling cutters
- 15 Milling tools with indexable inserts

Clamping technology

- 16 Adaptors and Accessories
- 17 Workpiece clamping

- 18 Material examples

Table of contents

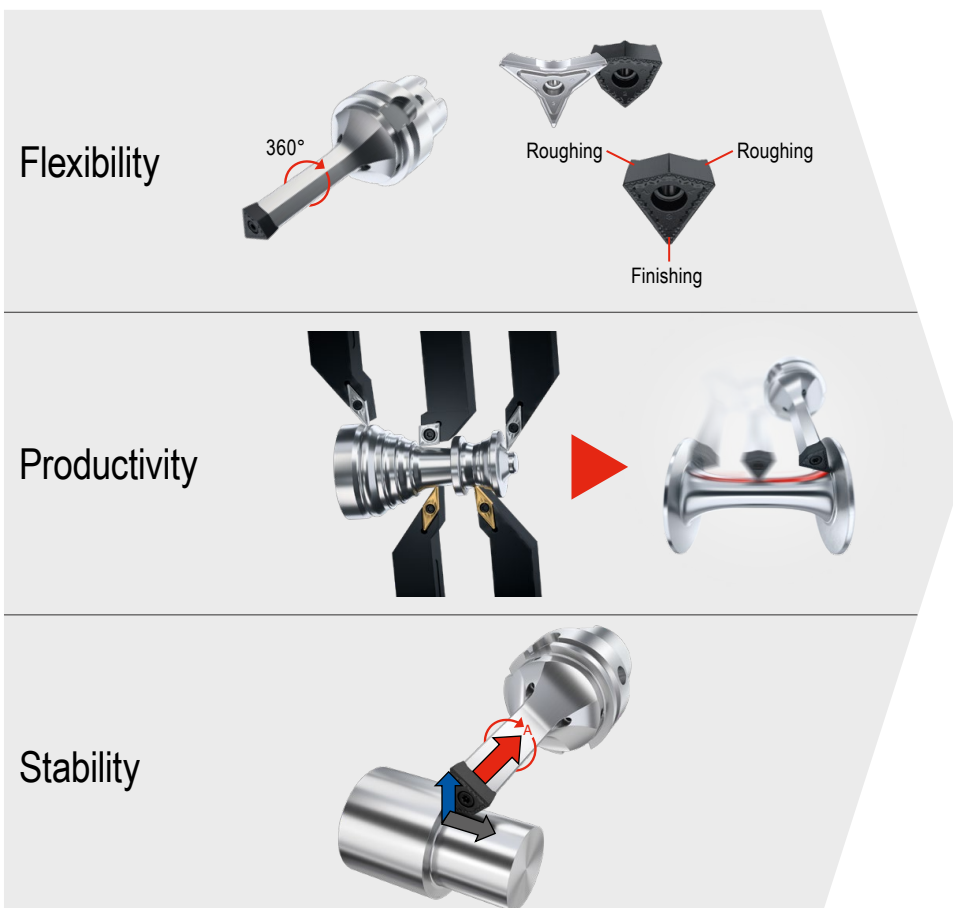
Advantages of FreeTurn / EcoCut	4+5
Example applications / explanation of symbols	5
Toolfinder	6+7
Product programme	8-26
Technical Information	
General cutting data	27-29
EcoCut Mini Cutting Data	30+31
EcoCut Classic Cutting Data	32+33
EcoCut ProfileMaster Cutting Data	34+35
FreeTurn cutting data	36
EcoCut chip breaker overview	37
FreeTurn chip breaker overview	38
Application information	39-47
Grade overview and application	48-50
FreeTurn / EcoCut designation system	51+52

CERATIZIT \ Performance

Premium quality tools for high performance.

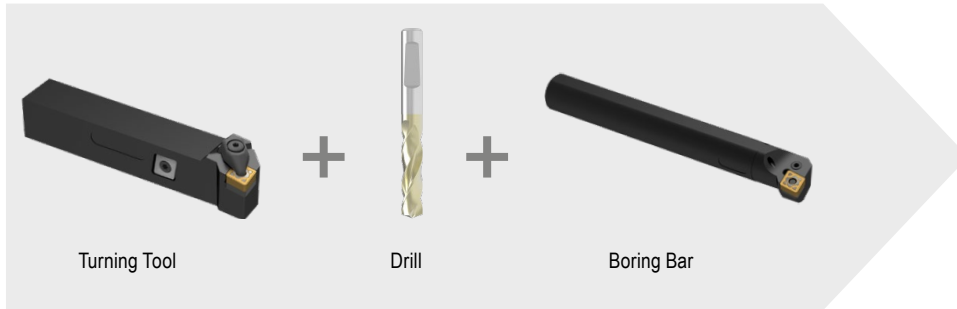
The premium quality tools from the **CERATIZIT Performance** product line have been designed for specific applications and are distinguished by their outstanding performance. If you make high demands on the performance of your production and want to achieve the very best results, we recommend the Premium tools in this product line.

Advantages of FreeTurn

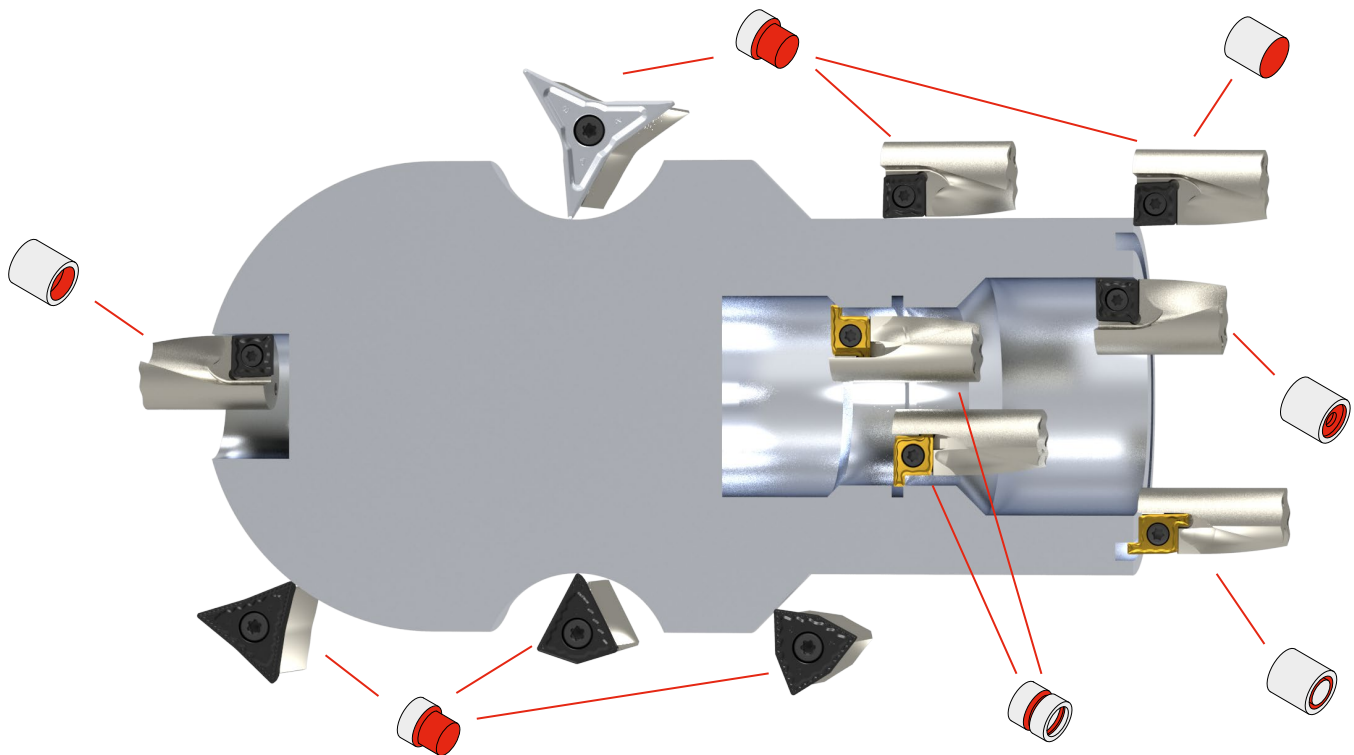


Advantages of EcoCut

- ▲ reduced machining time
- ▲ reduced need for tool positions
- ▲ generates flat bottom of hole
- ▲ less programming
- ▲ lower set-up costs / reduced setting time
- ▲ time savings due to fewer tool changes

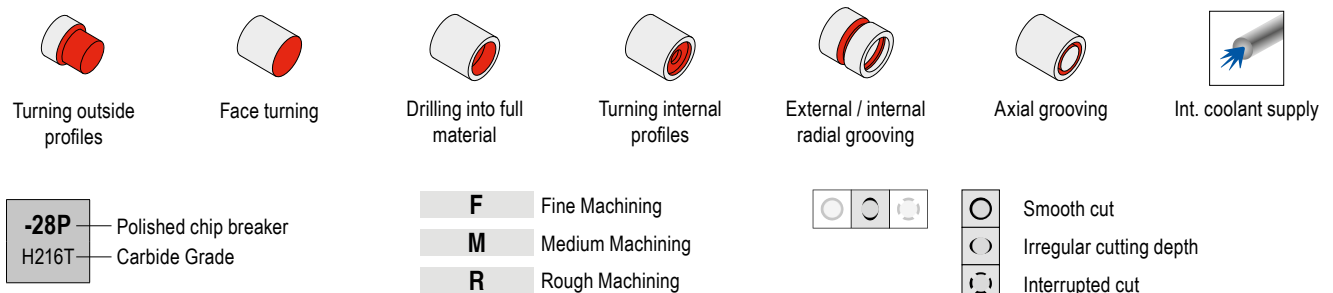


Application examples



10

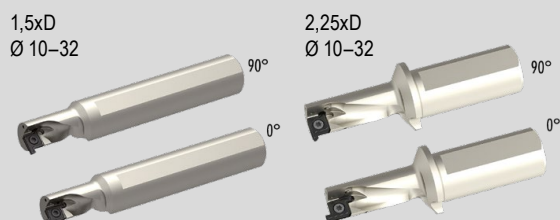
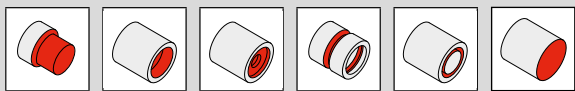
Symbol explanation



Toolfinder

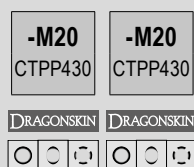
Tool system	EcoCut Mini				EcoCut Classic																																																															
Application																																																																				
Machine interface	 Adapter for EcoCut Mini → 9+10				 HSK-T 63 PSC 50 PSC 63																																																															
Lengths and diameters Versions	 2,25xD Ø 2-8 → 8 4,0xD Ø 2-8 → 8				 1,5xD Ø 8-32 → 12 2,25xD Ø 8-32 → 13 3,0xD Ø 8-32 → 14 2,25xD Ø 16-32 HSK-T → 15 2,25xD Ø 16-32 PSC → 16																																																															
Cutting material designation	<table><tr><td>CTPP435</td><td>CTPP435</td><td>CTWN425</td><td>CTWN425</td></tr><tr><td>DRAGONSKIN</td><td>DRAGONSKIN</td><td></td><td></td></tr></table>				CTPP435	CTPP435	CTWN425	CTWN425	DRAGONSKIN	DRAGONSKIN			<table><tr><td>CTCP425-P</td><td>-M50Q CTCP425-P</td><td>CTCP435-P</td><td>CTPP430</td><td>-27P H216T</td><td>-27Q H210T</td></tr><tr><td>DRAGONSKIN</td><td>DRAGONSKIN</td><td>DRAGONSKIN</td><td>DRAGONSKIN</td><td></td><td></td></tr></table>				CTCP425-P	-M50Q CTCP425-P	CTCP435-P	CTPP430	-27P H216T	-27Q H210T	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN																																										
CTPP435	CTPP435	CTWN425	CTWN425																																																																	
DRAGONSKIN	DRAGONSKIN																																																																			
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DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN																																																																	
Cutting conditions	<table><tr><td></td><td></td><td></td><td></td></tr><tr><td>Solid carbide</td><td>Solid carbide</td><td>Solid carbide</td><td>Solid carbide</td></tr><tr><td>Left-hand</td><td>Right-hand</td><td>Left-hand</td><td>Right-hand</td></tr></table>								Solid carbide	Solid carbide	Solid carbide	Solid carbide	Left-hand	Right-hand	Left-hand	Right-hand	<table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>M</td><td>M</td><td>M</td><td>M</td><td>M</td><td>M</td></tr><tr><td>XCNT</td><td>XCNT</td><td>XCNT</td><td>XCNT</td><td>XCET</td><td>XCET</td></tr></table>										M	M	M	M	M	M	XCNT	XCNT	XCNT	XCNT	XCET	XCET																														
Solid carbide	Solid carbide	Solid carbide	Solid carbide																																																																	
Left-hand	Right-hand	Left-hand	Right-hand																																																																	
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XCNT	XCNT	XCNT	XCNT	XCET	XCET																																																															
Application range	<table><tr><td>●</td><td>●</td><td></td><td></td></tr><tr><td>●</td><td>●</td><td></td><td></td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td></tr><tr><td>○</td><td>○</td><td>●</td><td>●</td></tr><tr><td>●</td><td>●</td><td>○</td><td>○</td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>				●	●			●	●			○	○	○	○	○	○	●	●	●	●	○	○	○	○	○	○	<table><tr><td>●</td><td>●</td><td>●</td><td>●</td><td></td><td></td></tr><tr><td>○</td><td>○</td><td>○</td><td>●</td><td></td><td></td></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>●</td><td>○</td></tr><tr><td></td><td></td><td></td><td>○</td><td>●</td><td>●</td></tr><tr><td></td><td></td><td>○</td><td>○</td><td>○</td><td>●</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>				●	●	●	●			○	○	○	●			○	○	○	○	●	○				○	●	●			○	○	○	●						
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EcoCut ProfileMaster



→ 18

→ 19

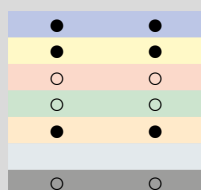


M

M

PM-R

PM-L

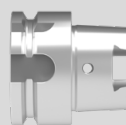


→ 17

→ 17

→ v_c Page 28

FreeTurn



HSK-T 63



PSC 63

HSK-T

LPR = 100
LPR = 125



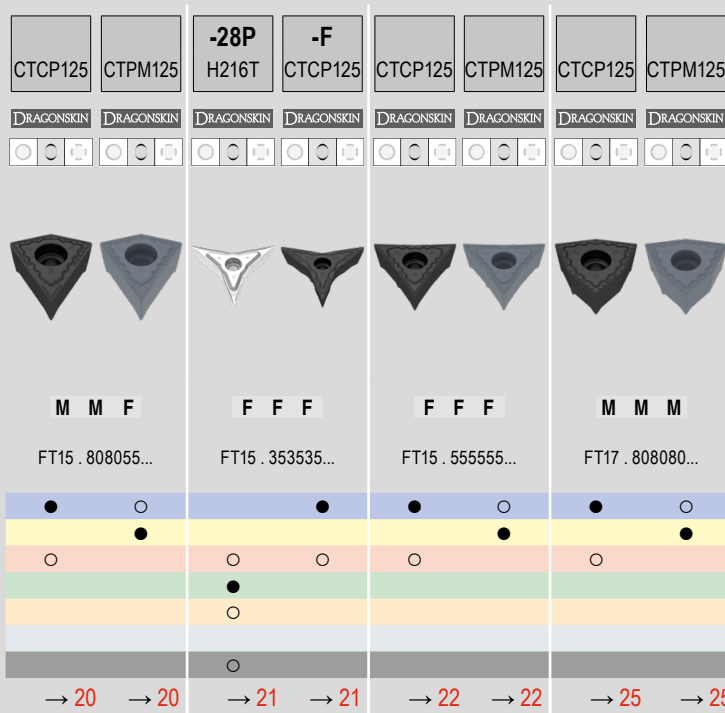
→ 23+26

PSC

LPR = 100
LPR = 125



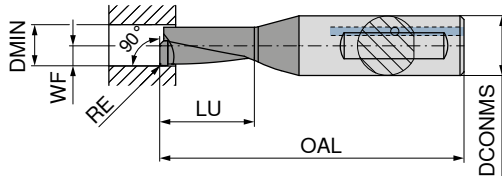
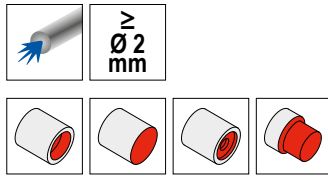
→ 24+26



→ v_c Page 29

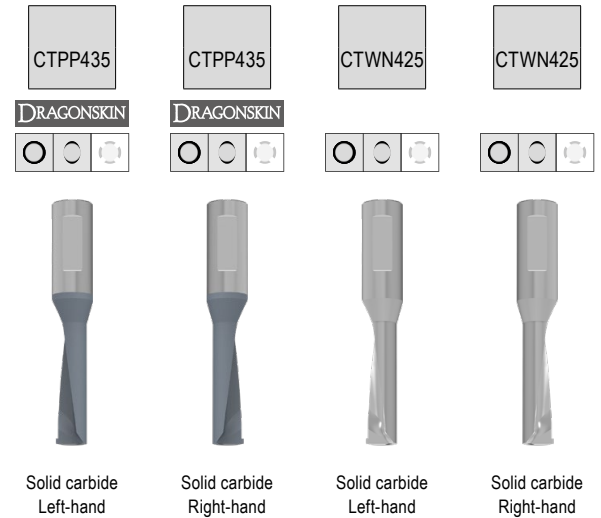
EcoCut – Mini

▲ Drilling and turning tool for small diameters



Illustrations show right-hand versions

ISO designation	DMIN mm	DCONMS mm	OAL mm	LU mm	WF mm	RE mm				
ECM 02 R/L 2,25D	2,0	4	28	4,50	1,00	0,1				
ECM 02 R/L 2,25D AL	2,0	4	28	4,50	1,00	0,1				
ECM 02 R/L 4,00D	2,0	4	31	8,00	1,00	0,1				
ECM 02 R/L 4,00D AL	2,0	4	31	8,00	1,00	0,1				
ECM 02,5 R/L 2,25D	2,5	4	29	5,63	1,25	0,1				
ECM 02,5 R/L 2,25D AL	2,5	4	29	5,63	1,25	0,1				
ECM 02,5 R/L 4,00D	2,5	4	33	10,00	1,25	0,1				
ECM 02,5 R/L 4,00D AL	2,5	4	33	10,00	1,25	0,1				
ECM 03 R/L 2,25D	3,0	4	31	6,75	1,50	0,1				
ECM 03 R/L 2,25D AL	3,0	4	31	6,75	1,50	0,1				
ECM 03 R/L 4,00D	3,0	4	35	12,00	1,50	0,1				
ECM 03 R/L 4,00D AL	3,0	4	35	12,00	1,50	0,1				
ECM 03,5 R/L 2,25D	3,5	4	32	7,88	1,75	0,1				
ECM 03,5 R/L 2,25D AL	3,5	4	32	7,88	1,75	0,1				
ECM 03,5 R/L 4,00D	3,5	4	37	14,00	1,75	0,1				
ECM 03,5 R/L 4,00D AL	3,5	4	37	14,00	1,75	0,1				
ECM 04 R/L 2,25D	4,0	6	35	9,00	2,00	0,2				
ECM 04 R/L 2,25D AL	4,0	6	35	9,00	2,00	0,2				
ECM 04 R/L 4,00D	4,0	6	41	16,00	2,00	0,2				
ECM 04 R/L 4,00D AL	4,0	6	41	16,00	2,00	0,2				
ECM 05 R/L 2,25D	5,0	6	37	11,25	2,50	0,2				
ECM 05 R/L 2,25D AL	5,0	6	37	11,25	2,50	0,2				
ECM 05 R/L 4,00D	5,0	6	45	20,00	2,50	0,2				
ECM 05 R/L 4,00D AL	5,0	6	45	20,00	2,50	0,2				
ECM 06 R/L 2,25D	6,0	8	38	13,50	3,00	0,2				
ECM 06 R/L 2,25D AL	6,0	8	38	13,50	3,00	0,2				
ECM 06 R/L 4,00D	6,0	8	49	24,00	3,00	0,2				
ECM 06 R/L 4,00D AL	6,0	8	49	24,00	3,00	0,2				
ECM 07 R/L 2,25D	7,0	8	42	15,75	3,50	0,2				
ECM 07 R/L 2,25D AL	7,0	8	42	15,75	3,50	0,2				
ECM 07 R/L 4,00D	7,0	8	53	28,00	3,50	0,2				
ECM 07 R/L 4,00D AL	7,0	8	53	28,00	3,50	0,2				
ECM 08 R/L 2,25D	8,0	8	45	18,00	4,00	0,2				
ECM 08 R/L 2,25D AL	8,0	8	45	18,00	4,00	0,2				
ECM 08 R/L 4,00D	8,0	8	57	32,00	4,00	0,2				
ECM 08 R/L 4,00D AL	8,0	8	57	32,00	4,00	0,2				
P							●	●		
M							●	●		
K							○	○	○	○
N							○	○	●	●
S							●	●	○	○
H										
O							○	○	○	○



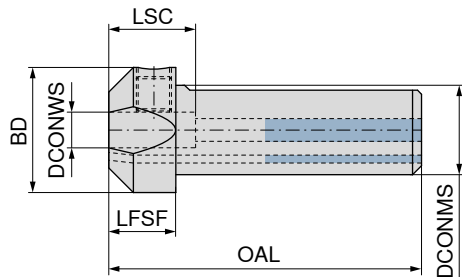
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		425	425
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		426	426
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		451	451
302	302		
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306	306		
		456	456
312	312		
		462	462
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316	316		
		466	466

→ v_c Page 28

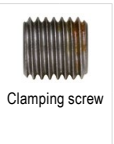
EcoCut – Adapter Mini

Scope of supply:

Toolholder with one clamping screw and one screwdriver



							70 800 ...
Designation	DCONWS mm	DCONMS mm	BD mm	OAL mm	LFSF mm	LSC mm	
EC-ADX16-04	4	16	22	59	14	18	716
EC-ADX20-04	4	20	25	64	14	18	720
EC-ADX16-06	6	16	22	59	14	18	976
EC-ADX20-06	6	20	25	64	14	18	996
EC-ADX16-08	8	16	22	59	14	18	978
EC-ADX20-08	8	20	25	64	14	18	998



Clamping screw

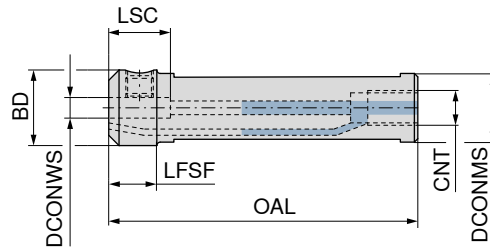
Spare parts
for Article no.

			70 950 ...
70 800 716	M5x10 ISO 4026		867
70 800 720	M5x10 ISO 4026		867
70 800 976	M8x1x8 - SW4		123
70 800 996	M8x1x8 - SW4		123
70 800 978	M8x1x8 - SW4		123
70 800 998	M8x1x8 - SW4		123

EcoCut – Mini adapter with coolant connection thread

Scope of supply:

Toolholder with one clamping screw and one screwdriver



70 801 ...

Designation	DCONWS mm	DCONMS mm	BD mm	OAL mm	LFSF mm	LSC mm	CNT	
ECA 16-04	4	16	20,0	75	14	18	G 1/8	716
ECA 20-04	4	20	19,6	90	14	18	G 1/8	720
ECA 22-04	4	22	21,6	110	14	18	G 1/8	722
ECA 16-06	6	16	22,0	75	14	18	G 1/8	816
ECA 20-06	6	20	22,0	90	14	18	G 1/8	820
ECA 22-06	6	22	21,6	110	14	18	G 1/8	822
ECA 16-08	8	16	22,0	75	14	18	G 1/8	916
ECA 20-08	8	20	22,0	90	14	18	G 1/8	920
ECA 22-08	8	22	21,6	110	14	18	G 1/8	922



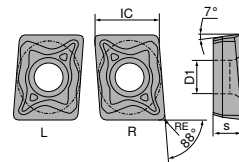
70 950 ...

Spare parts for Article no.

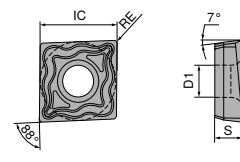
70 801 716	M5X8 - DIN 913	13200
70 801 720	M5X8 - DIN 913	13200
70 801 722	M5X8 - DIN 913	13200
70 801 816	M8x1x8 - SW4	123
70 801 820	M8x1x8 - SW4	123
70 801 822	M8x1x8 - SW4	123
70 801 916	M8x1x8 - SW4	123
70 801 920	M8x1x8 - SW4	123
70 801 922	M8x1x8 - SW4	123

XCNT / XCET

Designation	S mm	D1 mm	IC mm
XC.T 0401..	1,80	2,10	4,5
XC.T 0502..	2,10	2,25	5,8
XC.T 0602..	2,38	2,50	6,5
XC.T 0703..	3,18	2,80	7,6
XC.T 0803..	3,18	3,40	8,5
XC.T 09T3..	3,97	3,40	9,6
XC.T 10T3..	3,97	4,40	10,6
XC.T 1304..	4,76	5,30	13,5
XC.T 1705..	5,56	5,30	17,5



XC. T 04..



XC. T 05../06../07../08../09../10../13../17..

XCNT / XCET

		NEW		NEW		NEW					
		-EN CTCP425-P		-M50Q CTCP425-P		-EN CTCP435-P		-EN CTPP430	-27P H216T	-27Q H210T	
		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN		DRAGONSKIN			
		M XCNT		M XCNT		M XCNT		M XCNT	M XCET	M XCET	
		70 386 ...		70 386 ...		70 386 ...		70 386 ...	70 286 ...	70 286 ...	
ISO	RE mm										
040102EL	0,2	72001				82001		920			
040102ER	0,2	72201				82201		922			
040102FL	0,2								620	120	
040102FR	0,2								622	122	
040104EL	0,4	70001		75001		80001		900			
040104ER	0,4	70201		75201		80201		902			
040104FL	0,4								600	100	
040104FR	0,4								602	102	
050202EN	0,2	72301				82301		923			
050202FN	0,2								623	123	
050204EN	0,4	70301		75301		80301		903			
050204FN	0,4								603	103	
060202EN	0,2	72401				82401		924			
060202FN	0,2								624	124	
060204EN	0,4	70401		75401		80401		904			
060204FN	0,4								604	104	
070304EN	0,4	70501		75501		80501		905			
070304FN	0,4								605	105	
080304EN	0,4	70601		75601		80601		906			
080304FN	0,4								606	106	
09T304EN	0,4	70701		75701		80701		907			
09T304FN	0,4								607	107	
10T304EN	0,4	70801		75801		80801		908			
10T304FN	0,4								608	108	
10T308EN	0,8	73801		78801		83801		938			
10T308FN	0,8								628	128	
130404EN	0,4	71001		76001		81001		910			
130404FN	0,4								610	110	
130408EN	0,8	74001		79001		84001		940			
130408FN	0,8								611	111	
170508EN	0,8	71201		76201		81201		912			
170508FN	0,8								612	112	
P		●		●		●		●			
M		○		○		○		●			
K		○		○		○		○	●	○	
N								○	●	●	
S						○		○	○	●	
H											
O								○	○	○	

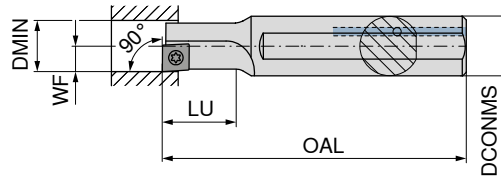
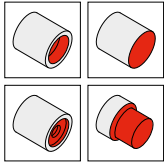
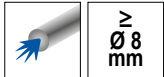
→ v_c Page 28

EcoCut – Classic 1.5xD

▲ Drilling and turning tool

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions



Left-hand

Right-hand

70 805 ...

70 804 ...

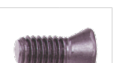
ISO designation	DMIN mm	DCONMS mm	OAL mm	LU mm	WF mm	torque moment Nm	Insert		
ECC 08 L 1,5D 04	8	12	80	12,0	4,0	0,4	XC.T 0401..EL	008 ²⁾	
ECC 08 R 1,5D 04	8	12	80	12,0	4,0	0,4	XC.T 0401..ER		008 ¹⁾
ECC 10 R/L 1,5D 05	10	12	90	15,0	5,0	0,7	XC.T 0502..	010	010
ECC 12 R/L 1,5D 06	12	16	100	18,0	6,0	1,0	XC.T 0602..	012	012
ECC 14 R/L 1,5D 07	14	16	110	21,0	7,0	1,2	XC.T 0703..	014	014
ECC 16 R/L 1,5D 08	16	20	125	24,0	8,0	2,2	XC.T 0803..	016	016
ECC 18 R/L 1,5D 09	18	25	135	27,0	9,0	2,2	XC.T 09T3..	018	018
ECC 20 R/L 1,5D 10	20	25	150	30,0	10,0	3,2	XC.T 10T3..	020	020
ECC 25 R/L 1,5D 13	25	32	180	37,5	12,5	5,0	XC.T 1304..	025	025
ECC 32 R/L 1,5D 17	32	40	200	48,0	16,0	5,0	XC.T 1705..	032	032

1) Note! Right-hand insert on right-hand tool

2) Note! Left-hand insert on left-hand tool



Key D



Clamping screw

80 950 ...

70 950 ...

Spare parts
for Article no.

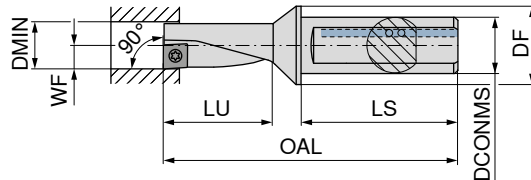
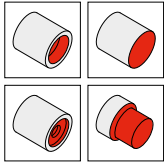
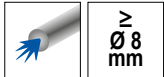
70 805 008	T06 - IP	123	M1,8x3,6 - IP	862
70 804 008	T06 - IP	123	M1,8x3,6 - IP	862
70 805 010 / 70 804 010	T06 - IP	123	M2x4,3 - IP	863
70 805 012 / 70 804 012	T07 - IP	124	M2,2x5 - IP	856
70 805 014 / 70 804 014	T08 - IP	125	M2,5x6 - IP	857
70 805 016 / 70 804 016	T09 - IP	126	M3x7 - IP	819
70 805 018 / 70 804 018	T09 - IP	126	M3x7 - IP	819
70 805 020 / 70 804 020	T15 - IP	128	M3,5x8,6 - IP	859
70 805 025 / 70 804 025	T20 - IP	129	M4,5x10,5 - IP	864
70 805 032 / 70 804 032	T20 - IP	129	M4,5x10,5 - IP	864

EcoCut – Classic 2.25xD

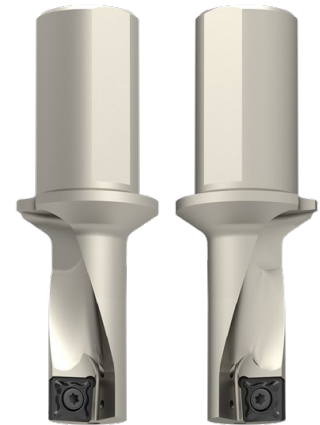
▲ Drilling and turning tool

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions



Left-hand

Right-hand

70 805 ...

70 804 ...

ISO designation	DMIN mm	DCONMS mm	DF mm	OAL mm	LU mm	LS mm	WF mm	torque moment Nm	Insert		
ECC 08 L 2,25D 04	8	10	15	60,0	18,0	38	4,0	0,4	XC.T 0401..EL	108 ²⁾	
ECC 08 R 2,25D 04	8	10	15	60,0	18,0	38	4,0	0,4	XC.T 0401..ER		108 ¹⁾
ECC 10 R/L 2,25D 05	10	12	18	69,5	22,5	42	5,0	0,7	XC.T 0502..	110	110
ECC 12 R/L 2,25D 06	12	16	22	78,0	27,0	45	6,0	1,0	XC.T 0602..	112	112
ECC 14 R/L 2,25D 07	14	16	23	83,5	31,5	45	7,0	1,2	XC.T 0703..	114	114
ECC 16 R/L 2,25D 08	16	20	28	94,0	36,0	50	8,0	2,2	XC.T 0803..	116	116
ECC 18 R/L 2,25D 09	18	25	36	109,5	40,5	56	9,0	2,2	XC.T 09T3..	118	118
ECC 20 R/L 2,25D 10	20	25	35	111,0	45,0	56	10,0	3,2	XC.T 10T3..	120	120
ECC 25 R/L 2,25D 13	25	32	44	129,0	56,5	60	12,5	5,0	XC.T 1304..	125	125
ECC 32 R/L 2,25D 17	32	40	54	158,0	72,0	70	16,0	5,0	XC.T 1705..	132	132

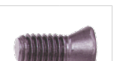
1) Note! Right-hand insert on right-hand tool

2) Note! Left-hand insert on left-hand tool

10



Key D



Clamping screw

80 950 ...

70 950 ...

Spare parts
for Article no.

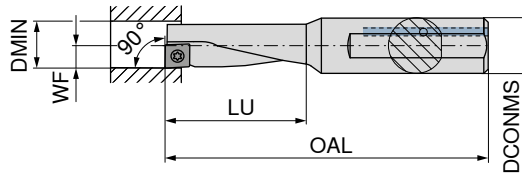
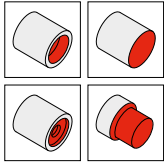
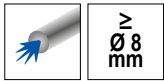
70 805 108	T06 - IP	123	M1,8x3,6 - IP	862
70 804 108	T06 - IP	123	M1,8x3,6 - IP	862
70 805 110 / 70 804 110	T06 - IP	123	M2x4,3 - IP	863
70 805 112 / 70 804 112	T07 - IP	124	M2,2x5 - IP	856
70 805 114 / 70 804 114	T08 - IP	125	M2,5x6 - IP	857
70 805 116 / 70 804 116	T09 - IP	126	M3x7 - IP	819
70 805 118 / 70 804 118	T09 - IP	126	M3x7 - IP	819
70 805 120 / 70 804 120	T15 - IP	128	M3,5x8,6 - IP	859
70 805 125 / 70 804 125	T20 - IP	129	M4,5x10,5 - IP	864
70 805 132 / 70 804 132	T20 - IP	129	M4,5x10,5 - IP	864

EcoCut – Classic 3xD – Heavy metal

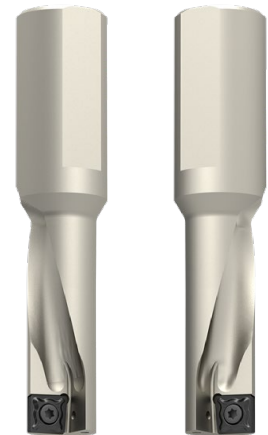
- ▲ Drilling and turning tool
- ▲ vibration-damped

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions



Left-hand

Right-hand

70 805 ...

70 804 ...

ISO designation	DMIN mm	DCONMS mm	OAL mm	LU mm	WF mm	torque moment Nm	Insert		
ECC 08 L 3,00D 04 H	8	12	80	24	4,0	0,4	XC.T 0401..EL	608 ²⁾	
ECC 08 R 3,00D 04 H	8	12	80	24	4,0	0,4	XC.T 0401..ER		608 ¹⁾
ECC 10 R/L 3,00D 05 H	10	12	85	30	5,0	0,7	XC.T 0502..	610	610
ECC 12 R/L 3,00D 06 H	12	16	95	36	6,0	1,0	XC.T 0602..	612	612
ECC 14 R/L 3,00D 07 H	14	16	100	42	7,0	1,2	XC.T 0703..	614	614
ECC 16 R/L 3,00D 08 H	16	20	110	48	8,0	2,2	XC.T 0803..	616	616
ECC 18 R/L 3,00D 09 H	18	25	125	54	9,0	2,2	XC.T 09T3..	618	618
ECC 20 R/L 3,00D 10 H	20	25	130	60	10,0	3,2	XC.T 10T3..	620	620
ECC 25 R/L 3,00D 13 H	25	32	150	75	12,5	5,0	XC.T 1304..	625	625
ECC 32 R/L 3,00D 17 H	32	40	185	96	16,0	5,0	XC.T 1705..	632	632

1) Note! Right-hand insert on right-hand tool

2) Note! Left-hand insert on left-hand tool



Key D



Clamping screw

80 950 ...

70 950 ...

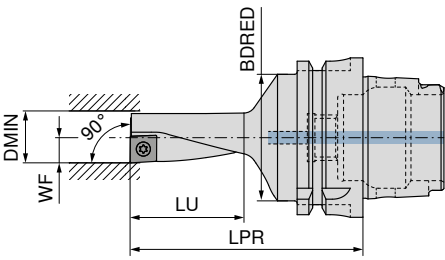
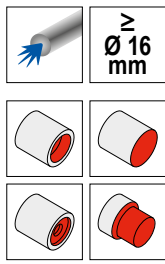
Spare parts for Article no.

70 805 608	T06 - IP	123	M1,8x3,6 - IP	862
70 804 608	T06 - IP	123	M1,8x3,6 - IP	862
70 805 610 / 70 804 610	T06 - IP	123	M2x4,3 - IP	863
70 805 612 / 70 804 612	T07 - IP	124	M2,2x5 - IP	856
70 805 614 / 70 804 614	T08 - IP	125	M2,5x6 - IP	857
70 805 616 / 70 804 616	T09 - IP	126	M3x7 - IP	819
70 805 618 / 70 804 618	T09 - IP	126	M3x7 - IP	819
70 805 620 / 70 804 620	T15 - IP	128	M3,5x8,6 - IP	859
70 805 625 / 70 804 625	T20 - IP	129	M4,5x10,5 - IP	864
70 805 632 / 70 804 632	T20 - IP	129	M4,5x10,5 - IP	864

EcoCut – HSK-T 2.25xD

Scope of supply:

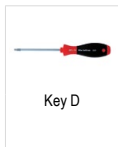
Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions



ISO designation	Adapter	LPR mm	LU mm	BDRED mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand		Right-hand	
									74 591 ...		74 590 ...	
HSK-T 63 ECC 16 R/L 2,25D 08	HSK-T 63	84	36,00	50	8,0	16	2,2	XC.T 0803..		51637		51637
HSK-T 63 ECC 20 R/L 2,25D 10	HSK-T 63	92	45,00	50	10,0	20	3,2	XC.T 10T3..		52037		52037
HSK-T 63 ECC 25 R/L 2,25D 13	HSK-T 63	104	56,25	50	12,5	25	5,0	XC.T 1304..		52537		52537
HSK-T 63 ECC 32 R/L 2,25D 17	HSK-T 63	120	72,00	50	16,0	32	5,0	XC.T 1705..		53237		53237



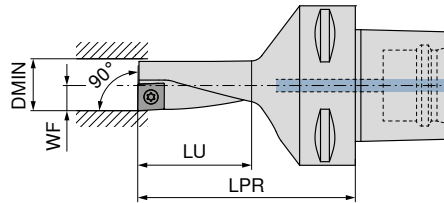
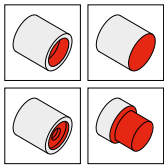
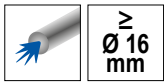
Spare parts
for Article no.

		80 950 ...		70 950 ...	
74 590 51637 / 74 591 51637	T09 - IP	126	M3x7 - IP	819	
74 590 52037 / 74 591 52037	T15 - IP	128	M3,5x8,6 - IP	859	
74 590 52537 / 74 590 53237	T20 - IP	129	M4,5x10,5 - IP	864	
74 591 52537 / 74 591 53237	T20 - IP	129	M4,5x10,5 - IP	864	

EcoCut – Classic PSC 2,25xD

Scope of supply:

Toolholder with 1 clamping screw + 2 spare screws and screwdriver



Illustrations show right-hand versions

NEW

NEW



ISO designation	Adapter	LPR mm	LU mm	WF mm	DMIN mm	torque moment Nm	Insert	Left-hand 74 591 ...		Right-hand 74 590 ...	
PSC 50 ECC 16 R/L 2,25D 08	PSC 50	70	36,00	8,0	16	2,2	XC.T 0803..		51694		51694
PSC 50 ECC 20 R/L 2,25D 10	PSC 50	81	45,00	10,0	20	3,2	XC.T 10T3..		52094		52094
PSC 50 ECC 25 R/L 2,25D 13	PSC 50	93	56,25	12,5	25	5,0	XC.T 1304..		52594		52594
PSC 50 ECC 32 R/L 2,25D 17	PSC 50	110	72,00	16,0	32	5,0	XC.T 1705..		53294		53294
PSC 63 ECC 16 R/L 2,25D 08	PSC 63	75	36,00	8,0	16	2,2	XC.T 0803..		51693		51693
PSC 63 ECC 20 R/L 2,25D 10	PSC 63	86	45,00	10,0	20	3,2	XC.T 10T3..		52093		52093
PSC 63 ECC 25 R/L 2,25D 13	PSC 63	97	56,25	12,5	25	5,0	XC.T 1304..		52593		52593
PSC 63 ECC 32 R/L 2,25D 17	PSC 63	114	72,00	16,0	32	5,0	XC.T 1705..		53293		53293

Spare parts for Article no.

Spare parts for Article no.			Left-hand 80 950 ...		Right-hand 70 950 ...	
74 590 51694 / 74 590 51693	T09 - IP	126	M3x7 - IP		819	
74 590 52094 / 74 590 52093	T15 - IP	128	M3,5x8,6 - IP		859	
74 590 52594 / 74 590 53294	T20 - IP	129	M4,5x10,5 - IP		864	
74 590 52593 / 74 590 53293	T20 - IP	129	M4,5x10,5 - IP		864	
74 591 51694 / 74 591 51693	T09 - IP	126	M3x7 - IP		819	
74 591 52094 / 74 591 52093	T15 - IP	128	M3,5x8,6 - IP		859	
74 591 52594 / 74 591 53294	T20 - IP	129	M4,5x10,5 - IP		864	
74 591 52593 / 74 591 53293	T20 - IP	129	M4,5x10,5 - IP		864	



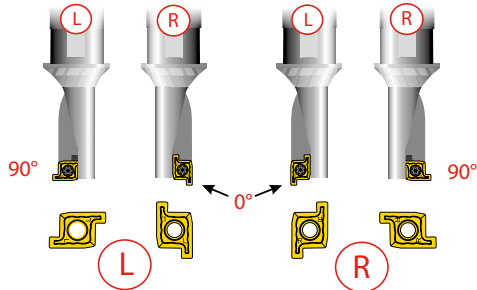
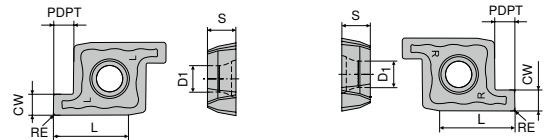
Key D



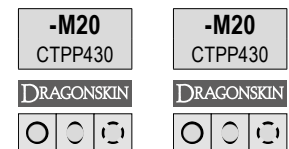
Clamping screw

PM-R / PM-L

Designation	CW mm	PDPT mm	L mm	S mm	D1 mm
PM 10 G 201504	2,0	1,5	5,0	2,10	2,1
PM 12 G 201804	2,0	1,8	6,0	2,30	2,5
PM 16 G 252004	2,5	2,0	8,0	2,80	3,4
PM 20 G 302504	3,0	2,5	10,0	3,70	4,0
PM 25 G 353004	3,5	3,0	12,5	4,50	4,4
PM 32 G 404004	4,0	4,0	16,0	5,60	6,0



PM-L / PM-R



ISO	RE mm		
PM 10 G 201504	0,4	510	511
PM 12 G 201804	0,4	515	516
PM 16 G 252004	0,4	520	521
PM 20 G 302504	0,4	525	526
PM 25 G 353004	0,4	530	531
PM 32 G 404004	0,4	535	536
P		●	●
M		●	●
K		○	○
N		○	○
S		●	●
H			
O		○	○

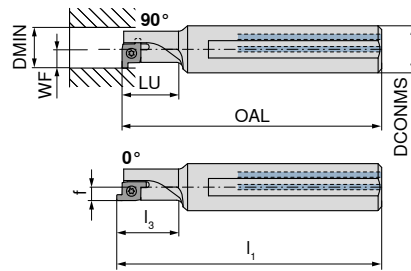
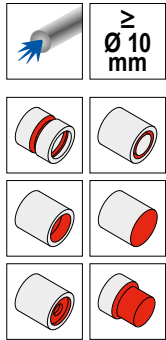
→ v_c Page 28

EcoCut – ProfileMaster 1.5xD

▲ Drilling, turning and grooving tool

Scope of supply:

Toolholder with one clamping screw and one screwdriver

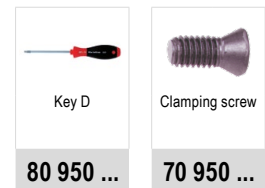


Illustrations show right-hand versions



ISO designation	DMIN mm	DCONMS mm	OAL mm	LU mm	WF mm	l ₁ mm	l ₃ mm	f mm	torque moment Nm	Insert	Left-hand 70 821 ...	Right-hand 70 820 ...
PMC 10 R/L 1,5D	10	12	80	15	5,0				0,4	PM 10R/L	010 ¹⁾	010 ¹⁾
PMC 12 R/L 1,5D	12	16	90	18	6,0				1,0	PM 12R/L	012 ¹⁾	012 ¹⁾
PMC 16 R/L 1,5D	16	20	125	24	8,0	127,3	26,3	5,7	2,2	PM 16R/L	016	016
PMC 20 R/L 1,5D	20	25	150	30	10,0	152,8	32,8	7,2	2,2	PM 20R/L	020	020
PMC 25 R/L 1,5D	25	32	180	38	12,5	183,3	40,8	9,2	3,2	PM 25R/L	025	025
PMC 32 R/L 1,5D	32	40	200	48	16,0	204,3	52,3	11,7	5,0	PM 32R/L	032	032

1) only usable as 90° version



Spare parts for Article no.

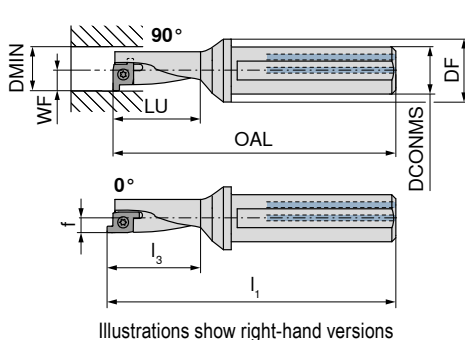
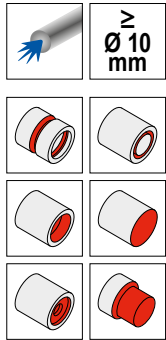
70 820 010 / 70 821 010	123	862
70 820 012 / 70 821 012	124	137
70 820 016 / 70 821 016	126	008
70 820 020 / 70 821 020	128	009
70 820 025 / 70 821 025	128	859
70 820 032 / 70 821 032	129	010

EcoCut – ProfileMaster 2.25xD

▲ Drilling, turning and grooving tool

Scope of supply:

Toolholder with one clamping screw and one screwdriver

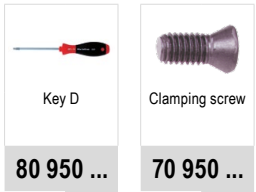


Illustrations show right-hand versions



ISO designation	DMIN mm	DCONMS mm	DF mm	OAL mm	LU mm	WF mm	I ₁ mm	I ₃ mm	f mm	torque moment Nm	Insert	Left-hand 70 821 ...		Right-hand 70 820 ...	
PMC 10 R/L 2,25D	10	12	18	72,4	22,50	5,0				0,4	PM 10R/L			110 ¹⁾	110 ¹⁾
PMC 12 R/L 2,25D	12	16	22	78,0	27,00	6,0				1,0	PM 12R/L			112 ¹⁾	112 ¹⁾
PMC 16 R/L 2,25D	16	20	28	96,5	36,00	8,0	98,8	38,3	5,7	2,2	PM 16R/L			116	116
PMC 20 R/L 2,25D	20	25	32	111,0	45,00	10,0	113,8	47,8	7,2	2,2	PM 20R/L			120	120
PMC 25 R/L 2,25D	25	32	44	132,6	56,25	12,5	135,9	59,6	9,2	3,2	PM 25R/L			125	125
PMC 32 R/L 2,25D	32	40	54	158,0	72,00	16,0	162,3	76,3	11,7	5,0	PM 32R/L			132	132

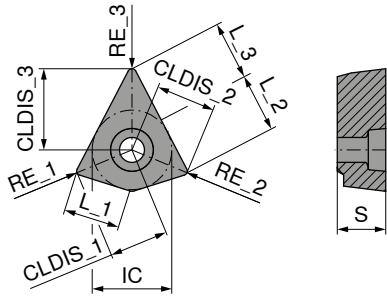
1) only usable as 90° version



Spare parts for Article no.

70 820 110 / 70 821 110	123	862
70 820 112 / 70 821 112	124	137
70 820 116 / 70 821 116	126	008
70 820 120 / 70 821 120	128	009
70 820 125 / 70 821 125	128	859
70 820 132 / 70 821 132	129	010

FT15 . 808055



Designation	IC mm	CLDIS_1 mm	L_1 mm	CLDIS_2 mm	L_2 mm	CLDIS_3 mm	L_3 mm	S mm
FT15 M 808055R080804-MMF	15	11,22	10,8	11,22	11,4	15,78	11,4	9,14
FT15 M 808055R08-MMF	15	11,22	10,8	11,22	11,2	15,31	11,2	9,14
FT15 M 808055R121208-MMF	15	11,00	10,7	11,00	11,2	15,31	11,2	9,14

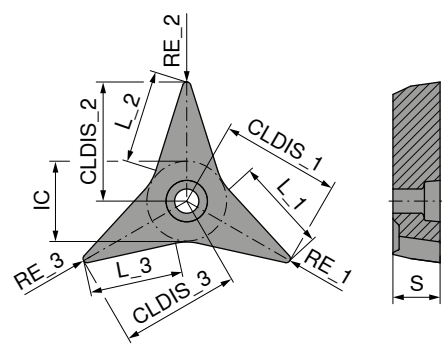


ISO	RE_1 mm	RE_2 mm	RE_3 mm
FT15 M 808055R080804-MMF	0,8	0,8	0,4
FT15 M 808055R08-MMF	0,8	0,8	0,8
FT15 M 808055R121208-MMF	1,2	1,2	0,8

P			
M			
K			
N			
S			
H			
O			

→ v_c Page 29

FT15 . 353535



Designation	IC mm	CLDIS_1 mm	L_1 mm	CLDIS_2 mm	L_2 mm	CLDIS_3 mm	L_3 mm	S mm
FT15 G 353535R04-28P	15	24,01	16,10	24,01	16,10	24,01	16,10	9,14
FT15 G 353535R08-28P	15	23,08	15,20	23,08	15,20	23,08	15,20	9,14
FT15 G 353535R08-F	15	23,08	14,96	23,08	14,96	23,08	14,96	9,14

ISO	RE_1 mm	RE_2 mm	RE_3 mm
FT15 G 353535R04-28P	0,4	0,4	0,4
FT15 G 353535R08-28P	0,8	0,8	0,8
FT15 G 353535R08-F	0,8	0,8	0,8

P	•
M	
K	○
N	●
S	○
H	
O	○

NEW

-F

CTCP125

DRAGONSKIN

FT15 . 353535...

74 077 ...

00400

-28P

H216T

DRAGONSKIN

FT15 . 353535...

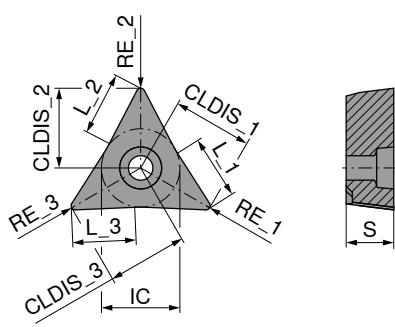
74 001 ...

20200

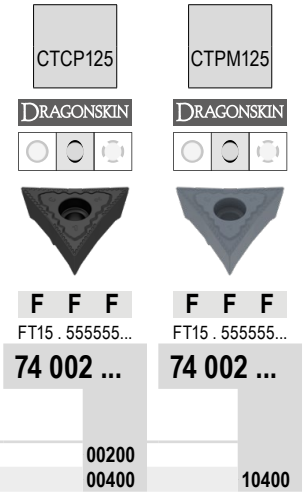
20400

→ v_c Page 29

FT15 . 555555



Designation	IC mm	CLDIS_1 mm	L_1 mm	CLDIS_2 mm	L_2 mm	CLDIS_3 mm	L_3 mm	S mm
FT15 M 555555R04-FFF	15	15,78	12,6	15,78	12,6	15,78	12,6	9,14
FT15 M 555555R08-FFF	15	15,31	12,3	15,31	12,3	15,31	12,3	9,14



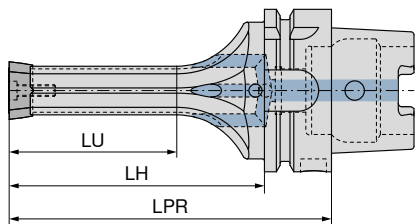
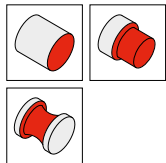
ISO	RE_1 mm	RE_2 mm	RE_3 mm		
FT15 M 555555R04-FFF	0,4	0,4	0,4	00200	
FT15 M 555555R08-FFF	0,8	0,8	0,8	00400	10400
P				●	○
M					●
K				○	
N					
S					
H					
O					

FreeTurn – HSK-T tool holder FT15

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply

Scope of supply:

Toolholder with one clamping screw and one screwdriver

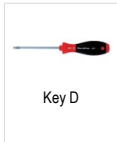


Figures show version FT15 . 808055...

						DirectCooling
						74 700 ...
ISO designation	Adapter	LPR mm	LH mm	LU mm	Insert	
HSK-T63-100-FT15 353535	HSK-T 63	100	74	40	FT15 . 353535...	00137
HSK-T63-100-FT15 808055	HSK-T 63	100	74	40	FT15 . 808055...	00537
HSK-T63-100-FT15 555555	HSK-T 63	100	74	40	FT15 . 555555...	00337
HSK-T63-125-FT15 353535	HSK-T 63	125	99	65	FT15 . 353535...	00237
HSK-T63-125-FT15 808055	HSK-T 63	125	99	65	FT15 . 808055...	00637
HSK-T63-125-FT15 555555	HSK-T 63	125	99	65	FT15 . 555555...	00437

Spare parts
Adapter

HSK-T 63	T20 - IP	80 950 ...	121	M4,5x18 - IP	70 950 ...	25900
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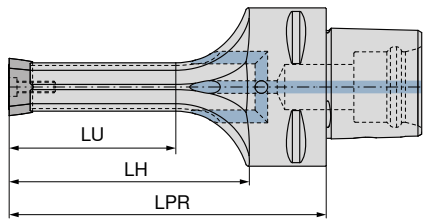
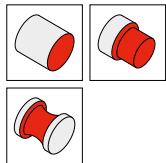


FreeTurn – PSC tool holder FT15

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply

Scope of supply:

Toolholder with one clamping screw and one screwdriver



Figures show version FT15 . 808055...

						DirectCooling
						74 700 ...
ISO designation	Adapter	LPR mm	LH mm	LU mm	Insert	
PSC-63-100-FT15 353535	PSC 63	100	69,4	40	FT15 . 353535...	00193
PSC-63-100-FT15 808055	PSC 63	100	69,3	40	FT15 . 808055...	00593
PSC-63-100-FT15 555555	PSC 63	100	69,6	40	FT15 . 555555...	00393
PSC-63-125-FT15 353535	PSC 63	125	94,4	65	FT15 . 353535...	00293
PSC-63-125-FT15 808055	PSC 63	125	94,3	65	FT15 . 808055...	00693
PSC-63-125-FT15 555555	PSC 63	125	94,6	65	FT15 . 555555...	00493

Spare parts

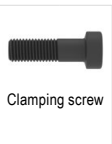
Adapter

PSC 63	T20 - IP	121	M4,5x18 - IP	25900
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Key D

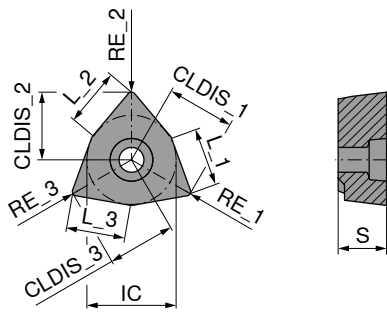
80 950 ...



Clamping screw

70 950 ...

FT17 . 808080



Designation	IC mm	CLDIS_1 mm	L_1 mm	CLDIS_2 mm	L_2 mm	CLDIS_3 mm	L_3 mm	S mm
FT17 M 808080R04-MMM	17	13,00	11,3	13,00	11,3	13,00	11,3	9,14
FT17 M 808080R08-MMM	17	12,78	11,3	12,78	11,3	12,78	11,3	9,14
FT17 M 808080R12-MMM	17	12,56	11,2	12,56	11,2	12,56	11,2	9,14



ISO	RE_1 mm	RE_2 mm	RE_3 mm
FT17 M 808080R04-MMM	0,4	0,4	0,4
FT17 M 808080R08-MMM	0,8	0,8	0,8
FT17 M 808080R12-MMM	1,2	1,2	1,2

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

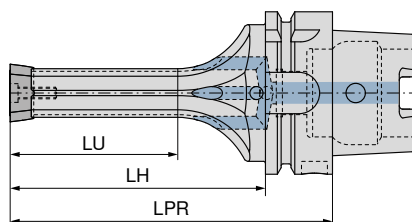
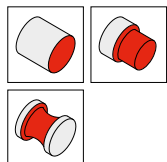
→ v_c Page 29

FreeTurn – HSK-T tool holder FT17

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply

Scope of supply:

Toolholder with one clamping screw and one screwdriver



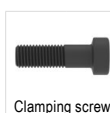
DirectCooling
74 701 ...

ISO designation	Adapter	LPR mm	LH mm	LU mm	Insert
HSK-T63-100-FT17 808080	HSK-T 63	100	74	40	FT17 . 808080...
HSK-T63-125-FT17 808080	HSK-T 63	125	99	65	FT17 . 808080...

**00737
00837**



80 950 ...



70 950 ...

Spare parts

Adapter

HSK-T 63

121

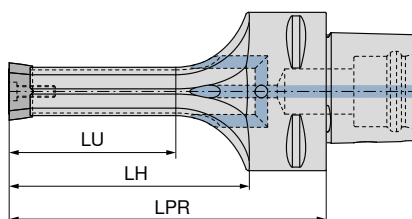
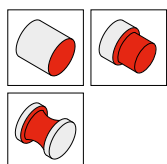
25900

FreeTurn – PSC tool holder FT17

- ▲ Tool holder for FreeTurn indexable insert
- ▲ DirectCooling coolant supply

Scope of supply:

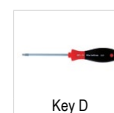
Toolholder with one clamping screw and one screwdriver



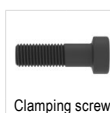
DirectCooling
74 701 ...

ISO designation	Adapter	LPR mm	LH mm	LU mm	Insert
PSC-63-100-FT17 808080	PSC 63	100	69,3	40	FT17 . 808080...
PSC-63-125-FT17 808080	PSC 63	125	94,3	65	FT17 . 808080...

**00793
00893**



80 950 ...



70 950 ...

Spare parts

Adapter

PSC 63

121

25900

Material examples for cutting data tables

	Material sub-group	Index	Composition / Structure / Heat treatment	Tensile strength N/mm ² / HB / HRC	Material number	Material designation	Material number	Material designation
P	Unalloyed steel	P.1.1	< 0,15 % C	Annealed	420 N/mm ² / 125 HB	1.0401	C15	1.1141 Ck15
		P.1.2	< 0,45 % C	Annealed	640 N/mm ² / 190 HB	1.1191	C45E	1.0718 9SMnPb28
		P.1.3		Tempered	840 N/mm ² / 250 HB	1.1191	C45E	1.0535 C55
		P.1.4	< 0,75 % C	Annealed	910 N/mm ² / 270 HB	1.1223	C60R	1.0535 C55
		P.1.5		Tempered	1010 N/mm ² / 300 HB	1.1223	C60R	1.0727 45S20
	Low-alloy steel	P.2.1		Annealed	610 N/mm ² / 180 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.2		Tempered	930 N/mm ² / 275 HB	1.7131	16MnCr5	1.6587 17CrNiMo6
		P.2.3		Tempered	1010 N/mm ² / 300 HB	1.7225	42CrMo4	1.3505 100Cr6
		P.2.4		Tempered	1200 N/mm ² / 375 HB	1.7225	42CrMo4	1.3505 100Cr6
	High-alloy steel and high-alloy tool steel	P.3.1		Annealed	680 N/mm ² / 200 HB	1.4021	X20Cr13	1.4034 X46Cr13
		P.3.2		Hardened and tempered	1100 N/mm ² / 300 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
		P.3.3		Hardened and tempered	1300 N/mm ² / 400 HB	1.2343	X38CrMoV5-1	1.4034 X46Cr13
	Stainless steel	P.4.1	Ferritic / martensitic	Annealed	680 N/mm ² / 200 HB	1.4016	X6Cr17	1.2316 X36CrMo16
		P.4.2	Martensitic	Tempered	1010 N/mm ² / 300 HB	1.4112	X90CrMoV18	1.2316 X36CrMo16
M	Stainless steel	M.1.1	Austenitic / austenitic-ferritic	Quenched	610 N/mm ² / 180 HB	1.4301	X5CrNi18-10	1.4571 X6CrNiMoTi17-12-2
		M.2.1	Austenitic	Tempered	300 HB	1.4841	X15CrNiSi25-21	1.4539 X1NiCrMoCu25-20-5
		M.3.1	Austenitic / ferritic (Duplex)		780 N/mm ² / 230 HB	1.4462	X2CrNiMoN22-5-3	1.4501 X2CrNiMoCuWN25-7-4
K	Grey cast iron	K.1.1	Pearlitic / ferritic		350 N/mm ² / 180 HB	0.6010	GG-10	0.6025 GG-25
		K.1.2	Pearlitic (martensitic)		500 N/mm ² / 260 HB	0.6030	GG-30	0.6045 GG-45
	Spherulitic graphite cast iron	K.2.1	Ferritic		540 N/mm ² / 160 HB	0.7040	GGG-40	0.7060 GGG-60
		K.2.2	Pearlitic		845 N/mm ² / 250 HB	0.7070	GGG-70	0.7080 GGG-80
	Malleable iron	K.3.1	Ferritic		440 N/mm ² / 130 HB	0.8035	GTW-35-04	0.8045 GTW-45
		K.3.2	Pearlitic		780 N/mm ² / 230 HB	0.8165	GTS-65-02	0.8170 GTS-70-02
N	Aluminium wrought alloy	N.1.1	Non-hardenable		60 HB	3.0255	Al99,5	3.3315 AlMg1
		N.1.2	Hardenable	Age-hardened	340 N/mm ² / 100 HB	3.1355	AlCuMg2	3.2315 AlMgSi1
	Cast aluminium alloy	N.2.1	≤ 12 % Si, non-hardenable		250 N/mm ² / 75 HB	3.2581	G-AlSi12	3.2163 G-AlSi9Cu3
		N.2.2	≤ 12 % Si, hardenable	Age-hardened	300 N/mm ² / 90 HB	3.2134	G-AlSi5Cu1Mg	3.2373 G-AlSi9Mg
		N.2.3	> 12 % Si, non-hardenable		440 N/mm ² / 130 HB		G-AlSi17Cu4Mg	G-AlSi18CuNiMg
	Copper and copper alloys (bronze/brass)	N.3.1	Free-machining alloys, PB > 1 %		375 N/mm ² / 110 HB	2.0380	CuZn39Pb2 (Ms58)	2.0410 CuZn44Pb2
		N.3.2	CuZn, CuSnZn		300 N/mm ² / 90 HB	2.0331	CuZn15	2.4070 CuZn28Sn1As
		N.3.3	CuSn, lead-free copper and electrolytic copper		340 N/mm ² / 100 HB	2.0060	E-Cu57	2.0590 CuZn40Fe
	Magnesium alloys	N.4.1	Magnesium and magnesium alloys		70 HB	3.5612	MgAl6Zn	3.5312 MgAl3Zn
S	Heat-resistant alloys	S.1.1	Fe - basis	Annealed	680 N/mm ² / 200 HB	1.4864	X12NiCrSi 36-16	1.4865 G-X40NiCrSi38-18
		S.1.2		Age-hardened	950 N/mm ² / 280 HB	1.4980	X6NiCrTiMoVB25-15-2	1.4876 X10NiCrAlTi32-20
		S.2.1	Ni or Co basis	Annealed	840 N/mm ² / 250 HB	2.4631	NiCr20TiAl (Nimonic80A)	3.4856 NiCr22Mo9Nb
		S.2.2		Age-hardened	1180 N/mm ² / 350 HB	2.4668	NiCr19Nb5Mo3 (Inconel 718)	2.4955 NiFe25Cr20NbTi
		S.2.3		Cast	1080 N/mm ² / 320 HB	2.4765	CoCr20W15Ni	1.3401 G-X120Mn12
	Titanium alloys	S.3.1	Pure titanium		400 N/mm ²	3.7025	Ti99,8	3.7034 Ti99,7
		S.3.2	Alpha + beta alloys	Age-hardened	1050 N/mm ² / 320 HB	3.7165	TiAl6V4	Ti-6246 Ti-6Al-2Sn-4Zr-6Mo
		S.3.3	Beta alloys		1400 N/mm ² / 410 HB	Ti555.3	Ti-5Al-5V-5Mo-3Cr	R56410 Ti-10V-2Fe-3Al
H	Hardened steel	H.1.1		Hardened and tempered	46–55 HRC			
		H.1.2		Hardened and tempered	56–60 HRC			
		H.1.3		Hardened and tempered	61–65 HRC			
		H.1.4		Hardened and tempered	66–70 HRC			
	Chilled iron	H.2.1		Cast	400 HB			
	Hardened cast iron	H.3.1		Hardened and tempered	55 HRC			
O	Non-metal materials	O.1.1	Plastics, duroplastic		≤ 150 N/mm ²			
		O.1.2	Plastics, thermoplastic		≤ 100 N/mm ²			
		O.2.1	Aramid fibre-reinforced		≤ 1000 N/mm ²			
		O.2.2	Glass/carbon-fibre reinforced		≤ 1000 N/mm ²			
		O.3.1	Graphite					

* Tensile strength

Cutting data standard values for EcoCut

Index	DRAGONSKIN				DRAGONSKIN			
	EcoCut Mini CTWN425	EcoCut Mini CTPP435	EcoCut Classic CTCP425-P	EcoCut Classic CTCP435-P	EcoCut Classic CTPP430	EcoCut Classic H210T	EcoCut Classic H216T	EcoCut ProfileMaster CTPP430
	v_c in m/min							
P.1.1		145	270	230	180			170
P.1.2		125	235	200	155			140
P.1.3		105	200	165	130			115
P.1.4		100	190	155	125			105
P.1.5		90	175	140	110			95
P.2.1		130	240	200	160			145
P.2.2		100	185	155	120			105
P.2.3		90	175	140	110			95
P.2.4		70	130	105	80			60
P.3.1		105	185	160	115			110
P.3.2		70	135	110	85			75
P.3.3		30	80	60	55			40
P.4.1		105	185	160	115			110
P.4.2		85	160	130	100			95
M.1.1		105	160	160	115			110
M.2.1		65			85			75
M.3.1		95			110			100
K.1.1	140	140	205	185	160	110	170	180
K.1.2	115	120	205	185	140	90	130	260
K.2.1	150	140	200	180	160	120	180	160
K.2.2	110	120	200	180	140	85	130	250
K.3.1	170	150	195	175	125	140	190	130
K.3.2	140	125	195	175	110	110	160	230
N.1.1	300	40			40	40	60	300
N.1.2	50	290			290	290	310	200
N.2.1	300	290			290	290	60	300
N.2.2	300	190			190	190	460	200
N.2.3	450	340			340	340	60	150
N.3.1	350	240			240	240	460	300
N.3.2	350	240			240	240	460	300
N.3.3	250	190			190	190	360	200
N.4.1	200	140			140	140	260	200
S.1.1	40	35		35	55	35	45	35
S.1.2	30	30		30	55	25	35	30
S.2.1	30	20		20	55	25	35	20
S.2.2	25	15		15	55	20	25	15
S.2.3	20	15		15	55	20	20	15
S.3.1	90	85		85	70	65	110	85
S.3.2	55	40		40	60	45	70	40
S.3.3	40	30		30	40	30	50	30
H.1.1								
H.1.2								
H.1.3								
H.1.4								
H.2.1								
H.3.1								
O.1.1	130	110			110	110	155	130
O.1.2								
O.2.1	105	95			95	95	140	105
O.2.2								
O.3.1								



The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. $\pm 20\%$ according to the usage conditions.

Cutting data standard values for FreeTurn

Index	F		M		-28P
	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	DRAGONSKIN	
	CTCP125	CTPM125	CTCP125	CTPM125	H216T
	v _c in m/min		v _c in m/min		v _c in m/min
P.1.1	295	205	295	205	
P.1.2	255	170	255	170	
P.1.3	215	140	215	140	
P.1.4	200	130	200	130	
P.1.5	180	120	180	120	
P.2.1	260	175	260	175	
P.2.2	195	130	195	130	
P.2.3	180	120	180	120	
P.2.4	130	80	130	80	
P.3.1	170	140	170	140	
P.3.2	105	95	105	95	
P.3.3	45	50	45	50	
P.4.1	170	140	170	140	
P.4.2	140	120	140	120	
M.1.1		140		140	
M.2.1		100		100	
M.3.1		130		130	
K.1.1	170		170		170
K.1.2	160		160		130
K.2.1	180		180		180
K.2.2	160		160		130
K.3.1	200		200		190
K.3.2	160		160		160
N.1.1					1650
N.1.2					1350
N.2.1					1200
N.2.2					1100
N.2.3					600
N.3.1					525
N.3.2					500
N.3.3					375
N.4.1					275
S.1.1					45
S.1.2					35
S.2.1					35
S.2.2					25
S.2.3					20
S.3.1					110
S.3.2					70
S.3.3					50
H.1.1					
H.1.2					
H.1.3					
H.1.4					
H.2.1					
H.3.1					
O.1.1					160
O.1.2					
O.2.1					140
O.2.2					
O.3.1					

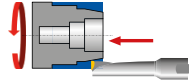


The cutting data is strongly influenced by external conditions, such as the stability of the tool and workpiece clamping, material and type of machine. The specified values represent guideline cutting data that can be adjusted by approx. $\pm 20\%$ according to the usage conditions.

Depth of Cut and Feedrate for EcoCut Mini

Turning

2.25xD

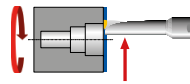


EcoCut Mini Size	Depth of Cut a_p in mm									
	0,25	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.									
ECM 02..	0,02–0,07	0,02–0,07								
ECM 02,5..	0,02–0,07	0,02–0,07	0,02–0,05							
ECM 03..	0,02–0,07	0,02–0,07	0,02–0,05	0,02–0,05						
ECM 03,5..	0,02–0,07	0,02–0,07	0,02–0,05	0,02–0,05	0,02–0,05					
ECM 04..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,07	0,01–0,05				
ECM 05..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04			
ECM 06..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04		
ECM 07..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04	
ECM 08..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04

4xD

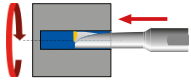
EcoCut Mini Size	Depth of Cut a_p in mm									
	0,25	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.									
ECM 02..	0,02–0,05	0,01–0,05								
ECM 02,5..	0,02–0,05	0,01–0,05								
ECM 03..	0,02–0,05	0,02–0,05	0,01–0,05							
ECM 03,5..	0,02–0,05	0,02–0,05	0,02–0,05	0,01–0,05						
ECM 04..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,01–0,05					
ECM 05..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,085	0,02–0,06	0,01–0,04				
ECM 06..	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,085	0,02–0,06	0,01–0,04				
ECM 07..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,03–0,08	0,02–0,06	0,01–0,04			
ECM 08..	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,1	0,04–0,095	0,03–0,08	0,02–0,06	0,01–0,04		

Face turning



EcoCut Mini Size	2,25xD		4xD	
	$a_{p \max}$ in mm	f in mm/rev.	$a_{p \max}$ in mm	f in mm/rev.
ECM 02..	0,30	0,01–0,05	0,30	0,01–0,03
ECM 02,5..	0,30	0,01–0,05	0,30	0,01–0,03
ECM 03..	0,50	0,01–0,06	0,50	0,01–0,04
ECM 03,5..	0,50	0,01–0,06	0,50	0,01–0,04
ECM 04..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 05..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 06..	0,70	0,03–0,07	0,70	0,02–0,05
ECM 07..	1,00	0,04–0,08	1,00	0,03–0,06
ECM 08..	1,00	0,04–0,08	1,00	0,03–0,06

Depth of Cut and Feedrate for EcoCut Mini

Drilling
Feed rate

EcoCut Mini Size	2,25xD	4xD
	f in mm/rev.	f in mm/rev.
ECM 02..	0,0025–0,0075	0,0025–0,005
ECM 02,5..	0,0025–0,010	0,0025–0,005
ECM 03..	0,0025–0,0125	0,0025–0,010
ECM 03,5..	0,0025–0,0150	0,0025–0,010
ECM 04..	0,005–0,030	0,005–0,0125
ECM 05..	0,005–0,030	0,005–0,015
ECM 06..	0,005–0,030	0,005–0,020
ECM 07..	0,005–0,035	0,005–0,025
ECM 08..	0,005–0,040	0,005–0,030

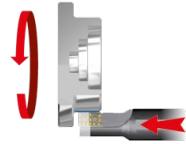
max. bore depth

EcoCut Mini Size	2,25xD	4xD
	Max. hole depth in mm	Max. hole depth in mm
ECM 02..	4,50	8,0
ECM 02,5..	5,63	10,0
ECM 03..	6,75	12,0
ECM 03,5..	7,88	14,0
ECM 04..	9,0	16,0
ECM 05..	11,25	20,0
ECM 06..	13,5	24,0
ECM 07..	15,75	28,0
ECM 08..	18,0	32,0

Depth of Cut and Feedrate for EcoCut Classic

Turning

1.5xD



EcoCut Classic Size	Depth of Cut a_p in mm											
	1	2	3	4	5	6	7	8	9	10	12	14
	Feed rate f in mm/rev.											
ECC 08	0,06–0,12	0,06–0,12	0,04–0,10	0,02–0,08								
ECC 10	0,07–0,15	0,07–0,15	0,05–0,13	0,04–0,11	0,02–0,09							
ECC 12	0,08–0,16	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12	0,02–0,10						
ECC 14	0,09–0,18	0,09–0,18	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,02–0,11					
ECC 16	0,10–0,20	0,10–0,20	0,10–0,20	0,10–0,20	0,08–0,18	0,06–0,16	0,04–0,14	0,02–0,12				
ECC 18	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,05–0,16	0,03–0,13			
ECC 20	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,11–0,23	0,09–0,21	0,07–0,19	0,05–0,17	0,03–0,15		
ECC 25	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,11–0,24	0,09–0,22	0,07–0,20	0,03–0,16	
ECC 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,14–0,30	0,15–0,30	0,15–0,30	0,13–0,28	0,11–0,26	0,07–0,22	0,03–0,18

Feed f may be increased by 50–75 % when using -M50Q and -27Q.

2.25xD

EcoCut Classic Size	Depth of Cut a_p in mm										
	1,0	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	6,0	7,0
	Feed rate f in mm/rev.										
ECC 08	0,06–0,12	0,04–0,10	0,02–0,08								
ECC 10	0,07–0,15	0,05–0,13	0,03–0,11	0,02–0,09							
ECC 12	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12	0,02–0,10						
ECC 14	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,04–0,13	0,02–0,11					
ECC 16	0,10–0,20	0,10–0,20	0,09–0,19	0,07–0,17	0,05–0,15	0,03–0,13					
ECC 18	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,05–0,16	0,03–0,14				
ECC 20	0,12–0,24	0,12–0,24	0,12–0,24	0,12–0,24	0,10–0,22	0,08–0,20	0,06–0,18	0,04–0,16			
ECC 25	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,13–0,26	0,12–0,25	0,10–0,23	0,08–0,21	0,06–0,19	0,04–0,17	
ECC 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,14–0,29	0,12–0,27	0,10–0,25	0,08–0,23	0,05–0,20

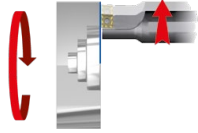
Feed f may be increased by 50–75 % when using -M50Q and -27Q.

3xD

EcoCut Classic Size	Depth of Cut a_p in mm								
	1,0	2,0	2,5	3,0	3,5	4,0	5,0	6,0	7,0
	Feed rate f in mm/rev.								
ECC 08	0,05–0,10	0,02–0,06							
ECC 10	0,06–0,11	0,03–0,07							
ECC 12	0,06–0,12	0,04–0,10	0,02–0,08						
ECC 14	0,07–0,13	0,05–0,11	0,02–0,09						
ECC 16	0,07–0,15	0,06–0,14	0,04–0,12	0,02–0,09					
ECC 18	0,08–0,16	0,08–0,16	0,06–0,14	0,04–0,12					
ECC 20	0,09–0,18	0,09–0,18	0,09–0,18	0,07–0,16	0,05–0,14	0,03–0,12			
ECC 25	0,10–0,19	0,10–0,19	0,10–0,19	0,08–0,17	0,06–0,15	0,03–0,13			
ECC 32	0,11–0,22	0,11–0,22	0,11–0,22	0,11–0,22	0,09–0,20	0,07–0,18	0,03–0,14		

Depth of Cut and Feedrate for EcoCut Classic

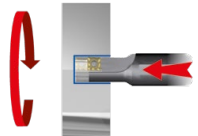
Face turning



EcoCut Classic Size	1,5xD		2,25xD		3xD	
	a _p in mm	f in mm/rev.	a _p in mm	f in mm/rev.	a _p in mm	f in mm/rev.
ECC 08	2,00	0,05–0,10	1,90	0,04–0,09	1,10	0,04–0,07
ECC 10	2,50	0,06–0,12	2,20	0,05–0,10	1,20	0,04–0,09
ECC 12	3,00	0,07–0,14	2,60	0,06–0,12	1,40	0,05–0,11
ECC 14	3,50	0,08–0,16	3,00	0,07–0,14	1,60	0,06–0,12
ECC 16	4,00	0,09–0,18	3,40	0,08–0,16	1,90	0,06–0,13
ECC 18	4,50	0,10–0,20	3,80	0,09–0,18	2,00	0,07–0,14
ECC 20	5,00	0,11–0,22	4,20	0,10–0,20	2,20	0,08–0,15
ECC 25	6,00	0,12–0,24	5,00	0,11–0,22	2,60	0,09–0,18
ECC 32	8,00	0,13–0,27	6,00	0,12–0,25	3,00	0,10–0,20

Drilling

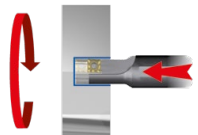
Feed rate



EcoCut Classic Size	1,5xD	2,25xD	3xD
	f in mm/rev.	f in mm/rev.	f in mm/rev.
ECC 08	0,01–0,04	0,01–0,04	0,01–0,02
ECC 10	0,01–0,05	0,01–0,05	0,01–0,03
ECC 12	0,01–0,05	0,01–0,05	0,01–0,04
ECC 14	0,01–0,07	0,01–0,07	0,01–0,05
ECC 16	0,02–0,08	0,02–0,08	0,02–0,06
ECC 18	0,03–0,09	0,03–0,09	0,03–0,07
ECC 20	0,03–0,10	0,03–0,10	0,03–0,08
ECC 25	0,03–0,12	0,03–0,12	0,04–0,09
ECC 32	0,05–0,15	0,05–0,15	0,05–0,11

10

max. bore depth

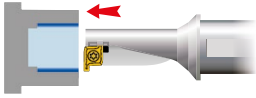


EcoCut Classic Size	1,5xD	2,25xD	3xD
	Max. hole depth in mm	Max. hole depth in mm	Max. hole depth in mm
ECC 08	12,0	18,0	24,0
ECC 10	15,0	22,5	30,0
ECC 12	18,0	27,0	36,0
ECC 14	21,0	31,5	42,0
ECC 16	24,0	36,0	48,0
ECC 18	27,0	40,5	54,0
ECC 20	30,0	45,0	60,0
ECC 25	37,5	56,5	75,0
ECC 32	48,0	72,0	96,0

Depth of Cut and Feedrate for EcoCut ProfileMaster 90°

Turning

1,5xD



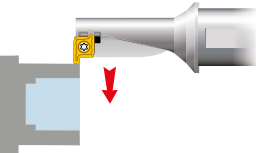
EcoCut ProfileMaster Size	Depth of Cut a_p in mm							
	1	2	3	4	5	6	7	8
	Feed rate f in mm/rev.							
EC PM 10	0,07–0,20	0,05–0,17	0,02–0,12					
EC PM 12	0,07–0,20	0,05–0,17	0,02–0,12					
EC PM 16	0,10–0,25	0,07–0,23	0,05–0,21	0,02–0,17				
EC PM 20	0,12–0,27	0,10–0,26	0,007–0,24	0,05–0,20	0,02–0,14			
EC PM 25	0,15–0,30	0,15–0,30	0,13–0,28	0,10–0,26	0,05–0,22	0,02–0,18		
EC PM 32	0,15–0,30	0,15–0,30	0,15–0,30	0,15–0,30	0,10–0,27	0,07–0,24	0,05–0,21	0,02–0,15

2,25xD

EcoCut ProfileMaster Size	Depth of Cut a_p in mm							
	1	2	3	4	5	6	7	8
	Feed rate f in mm/rev.							
EC PM 10	0,07–0,19	0,02–0,13						
EC PM 12	0,07–0,19	0,02–0,13						
EC PM 16	0,10–0,25	0,07–0,21	0,02–0,13					
EC PM 20	0,12–0,27	0,07–0,24	0,05–0,19					
EC PM 25	0,15–0,30	0,10–0,27	0,07–0,23	0,02–0,15				
EC PM 32	0,15–0,30	0,15–0,30	0,10–0,27	0,07–0,23	0,02–0,15			

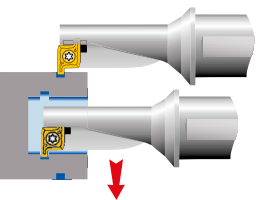
Face turning

1.5xD and 2.25xD



EcoCut ProfileMaster Size	Depth of Cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 10	0,02–0,15	0,02–0,15				
EC PM 12	0,02–0,15	0,02–0,15				
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 20	0,08–0,22	0,08–0,22	0,08–0,22	0,08–0,22		
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

Internal + external – radial grooving

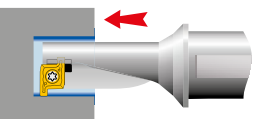


EcoCut ProfileMaster Size	1,5xD
	f in mm/rev.
EC PM 10	0,01–0,08
EC PM 12	0,02–0,10
EC PM 16	0,04–0,15
EC PM 20	0,04–0,16
EC PM 25	0,07–0,20
EC PM 32	0,08–0,22

EcoCut ProfileMaster Size	2,25xD
	f in mm/rev.
EC PM 10	0,01–0,08
EC PM 12	0,02–0,10
EC PM 16	0,04–0,15
EC PM 20	0,04–0,16
EC PM 25	0,07–0,20
EC PM 32	0,08–0,22

Drilling

Feed and max. hole depth



EcoCut ProfileMaster Size	1,5xD	
	f in mm/rev.	Max. hole depth in mm
EC PM 10	0,01–0,05	15,0
EC PM 12	0,01–0,06	18,0
EC PM 16	0,02–0,09	24,0
EC PM 20	0,03–0,10	30,0
EC PM 25	0,04–0,12	37,5
EC PM 32	0,04–0,14	48,0

EcoCut ProfileMaster Size	2,25xD	
	f in mm/rev.	Max. hole depth in mm
EC PM 10	0,01–0,05	22,5
EC PM 12	0,01–0,06	27,0
EC PM 16	0,02–0,09	36,0
EC PM 20	0,03–0,10	45,0
EC PM 25	0,04–0,12	56,3
EC PM 32	0,04–0,14	72,0

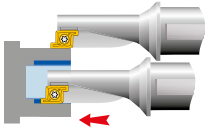
Depth of Cut and Feedrate for EcoCut ProfileMaster 0°



EcoCut ProfileMaster Sizes 10 and 12 can not be used as 0° version.

Turning

1,5xD



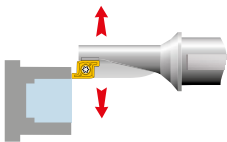
EcoCut ProfileMaster Size	Depth of cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 16	0,04–0,20	0,04–0,20	0,04–0,20			
EC PM 20	0,06–0,22	0,06–0,22	0,06–0,22	0,06–0,22		
EC PM 25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	
EC PM 32	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28

2,25xD

EcoCut ProfileMaster Size	Depth of cut a_p in mm					
	1,0	1,5	2,0	2,5	3,0	3,5
	Feed rate f in mm/rev.					
EC PM 16	0,04–0,20	0,04–0,20	0,04–0,20			
EC PM 20	0,06–0,22	0,06–0,22	0,06–0,22	0,06–0,22		
EC PM 25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	0,08–0,25	
EC PM 32	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28	0,10–0,28

Face turning

1,5xD

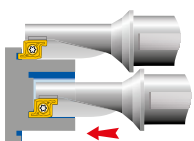


EcoCut ProfileMaster Size	Depth of cut a_p in mm						
	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.						
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20				
EC PM 20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25		
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

2,25xD

EcoCut ProfileMaster Size	Depth of cut a_p in mm						
	1,0	1,5	2,0	2,5	3,0	3,5	4,0
	Feed rate f in mm/rev.						
EC PM 16	0,05–0,20	0,05–0,20	0,05–0,20				
EC PM 20	0,05–0,20	0,05–0,20	0,05–0,20	0,05–0,20			
EC PM 25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25		
EC PM 32	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25	0,10–0,25

Axial grooving external + internal



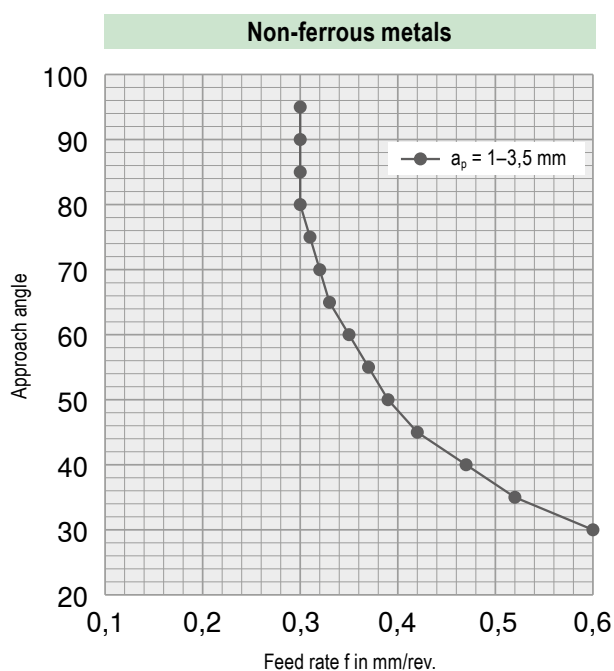
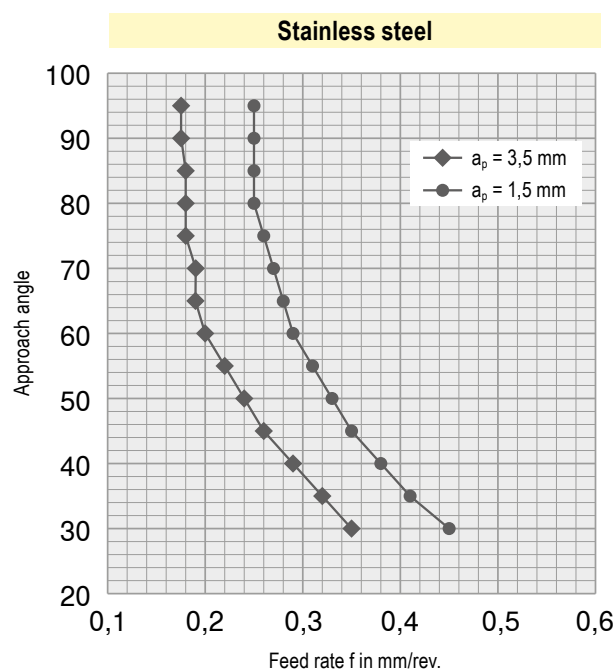
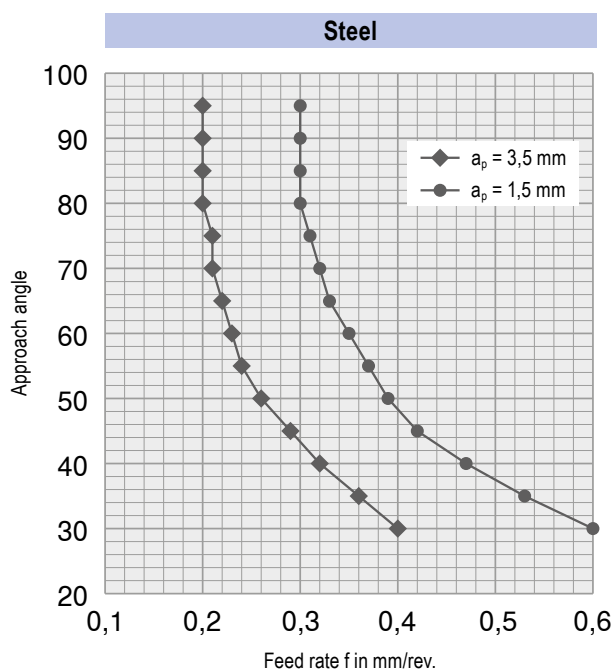
EcoCut ProfileMaster Size	1,5xD
	Feed rate f in mm/rev.
EC PM 16	0,02–0,12
EC PM 20	0,04–0,14
EC PM 25	0,06–0,18
EC PM 32	0,08–0,20

EcoCut ProfileMaster Size	2,25xD
	Feed rate f in mm/rev.
EC PM 16	0,02–0,12
EC PM 20	0,04–0,14
EC PM 25	0,06–0,18
EC PM 32	0,08–0,20

10

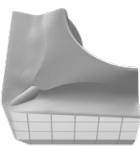
Initial curves for FreeTurn

	Material				Inserts		v_c in m/min	Cooling
Steel	1.7225	42CrMo4	1010 N/mm ²	P.2.3	FT1x M 80xxxxR08 -M	CTCP125	200	Emulsion
Stainless steel	1.4301	X5CrNi18-10	610 N/mm ²	M.1.1	FT1x M 80xxxxR08 -M	CTPM125	140	Emulsion
Non-ferrous metals	3.2341	G-AlSi 5 Mg	200 N/mm ²	N2.2	FT1x G 35xxxxR08-28P	H210T	1100	Emulsion

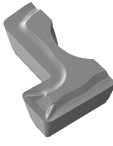


Chip Breakers Overview

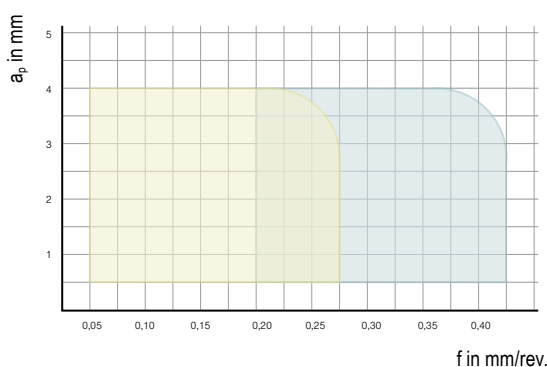
EcoCut Classic

Model	Smooth cut	Irregular cutting depth	Interrupted cut	Sectional illustration
				f mm
-EN ▲ Universal geometry ▲ Excellent chip breakage ▲ Positive cutting edge ▲ Low to medium feeds		CTCP425-P	CTCP435-P / CTPP430	CTPP430 / CTCP435-P
		CTCP425-P / CTPP430	CTPP430	CTPP430
		CTCP425-P	CTCP435-P / CTPP430	CTCP435-P
		CTPP430	CTPP430	CTPP430
		CTCP435-P / CTPP430	CTCP435-P / CTPP430	CTCP435-P
		CTCP435-P / CTPP430	CTCP435-P / CTPP430	CTCP435-P
-M50Q ▲ With wiper geometry ▲ Excellent surface qualities ▲ Good chip formation ▲ Medium to high feeds		CTCP425-P	CTCP425-P	
		CTCP425-P		
		CTCP425-P	CTCP425-P	
-27P ▲ Positive cutting edge ▲ Periphery ground ▲ Polished rake face ▲ First choice for non-ferrous metals				
		H216T	H216T	H216T
		H216T	H216T	H216T
		H216T	H216T	
		H216T	H216T	
-27Q ▲ With wiper geometry ▲ Extremely positive geometry ▲ Periphery ground ▲ Low adhesion				
		H210T	H210T	
		H210T	H210T	
		H210T	H210T	
		H210T	H210T	

EcoCut ProfileMaster

-M20 ▲ Positive geometry ▲ Universal application ▲ Low to medium feeds		CTPP430	CTPP430	CTPP40
		CTPP430	CTPP430	CTPP430
		CTPP430	CTPP430	CTPP430
		CTPP430	CTPP430	CTPP430
		CTPP430	CTPP430	CTPP430
		CTPP430	CTPP430	CTPP430

Application area of -EN and -M50Q chip breakers

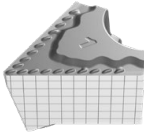
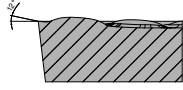
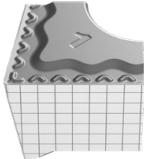
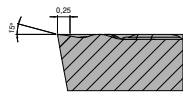
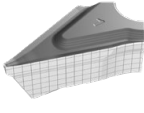
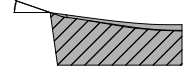


EcoCut Classic 2.25xD – ECC16 – XCNT 080304

■ = -M50Q
■ = Standard

Chip Breakers Overview

FreeTurn

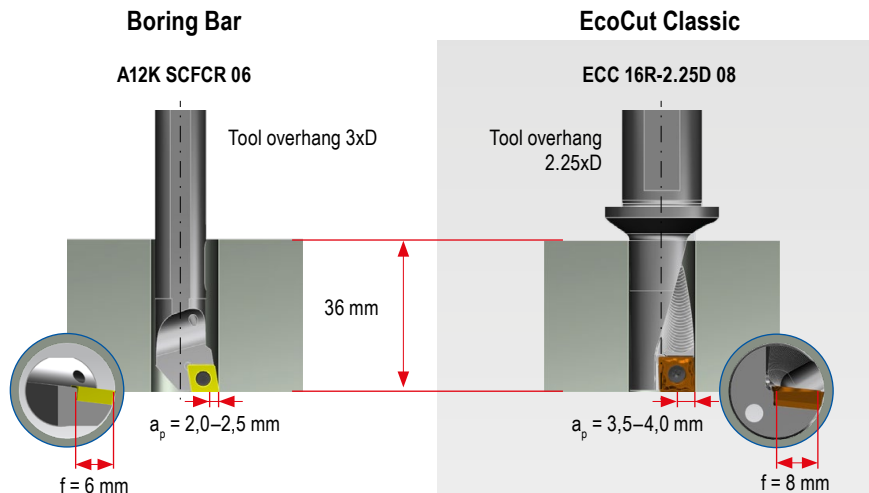
	Model	Smooth cut 	Irregular cutting depth 	Interrupted cut 	Sectional illustration
					f mm
-F ▲ Traditional finishing geometry ▲ High surface quality ▲ First choice for finishing steel		CTCP125	CTCP125		 0–6
		CTCP125	CTCP125		
-M ▲ Average to rough machining ▲ Aggressive chip breaker		CTPM125	CTPM125		 0–6
		CTPM125	CTPM125		
-28P ▲ Traditional finishing geometry ▲ Sharp cutting edge ▲ First choice for aluminium					 0–1,8
		H216T	H216T	H216T	
		H216T	H216T	H216T	
		H216T	H216T		
		H216T	H216T		

EcoCut Classic – Application as the most stable boring tool

EcoCut can be used not only as a multifunctional tool. In comparison with a boring bar EcoCut used as a pure boring tool gives the user enormous benefits.

Example: machining bores, 16 mm diameter by 36 mm depth

Differences in the tool



Your Advantages

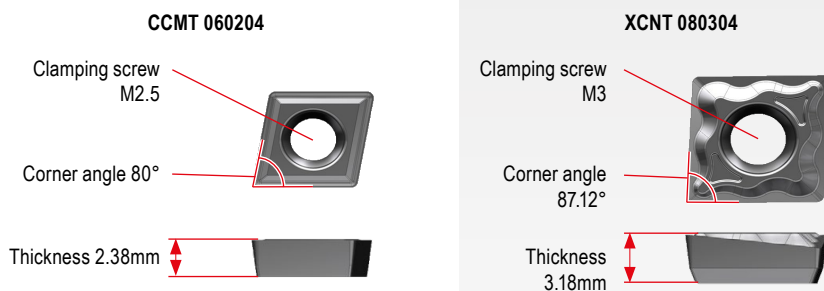
Large, stable toolholder

- ▲ Absorption of high cutting forces
- ▲ Low vibration
- ▲ Chip Booster for perfect cooling and chip evacuation

Benefits

- ▲ High surface quality
- ▲ Perfect chip control
- ▲ Max. process security

Differences in the insert



Large and stable insert

- ▲ Increased process security
- ▲ Enables large depths of cut
- ▲ Higher cutting data
- ▲ Higher tool life

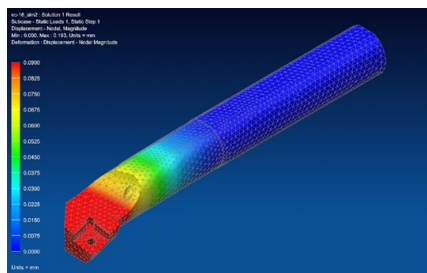
Benefits

- ▲ Reduction in machining time
- ▲ Increased productivity
- ▲ Reduced tooling costs

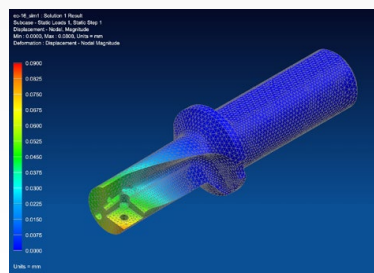
Stability Comparison

Calculation using FEM

A load of 1000 N on the insert seat corresponds to an approx. a_p of 2.0 mm and f 0.2 mm



Deflection 0.19mm

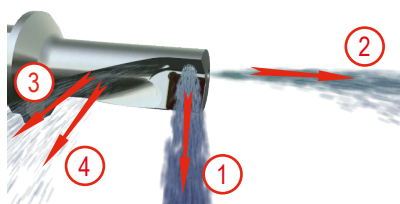


Deflection 0.08mm

Practical experience shows:

- ▲ Reduced machining time by up to 75 %
- ▲ Increase in tool life by 400 % possible

Innovative chip removal – Chip-Booster



EcoCut tools are equipped with a unique coolant and chip removal system.

(1) Cooling of the indexable insert

(2) General coolant stream

(3) Chip booster for improved chip transport

(4) Chip booster prevents chips from getting stuck between tool and workpiece



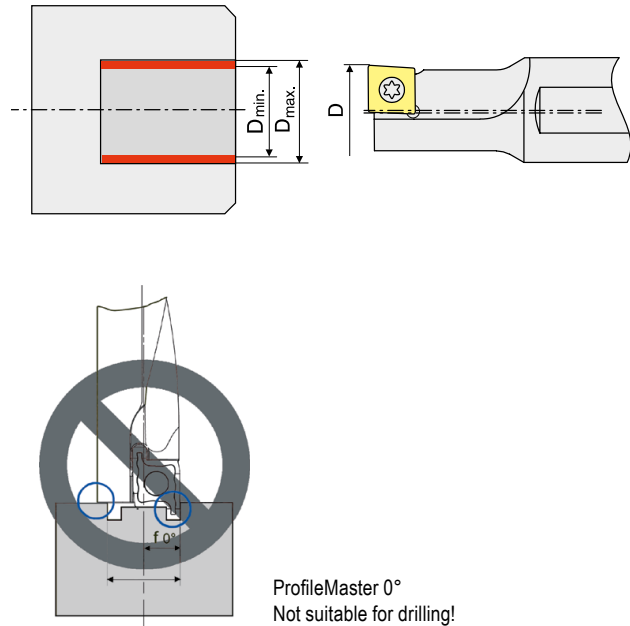
For maximum chip transport efficiency when drilling, coolant pressure must be 3–6 bar minimum (optimal 7–10 bar).

Application Tips

Drilling Off centre

Due to the special construction of the EcoCut tool and insert, off-centre drilling is possible.

Deviations from the tool nominal $\varnothing$, can be achieved (see adjacent table).



EcoCut Mini	Tool nominal- $\varnothing$	Work piece bore $\varnothing$	
	D in mm	D _{min.} in mm	D _{max.} in mm
ECM 02 L/R - ...D	2	1,95	2,1
ECM 02,5 L/R - ...D	2,5	2,45	2,6
ECM 03 L/R - ...D	3	2,95	3,15
ECM 03,5 L/R - ...D	3,5	3,45	3,65
ECM 04 R/L - ...D	4	3,90	4,20
ECM 05 R/L - ...D	5	4,90	5,20
ECM 06 R/L - ...D	6	5,90	6,20
ECM 07 R/L - ...D	7	6,90	7,20
ECM 08 R/L - ...D	8	7,90	8,20

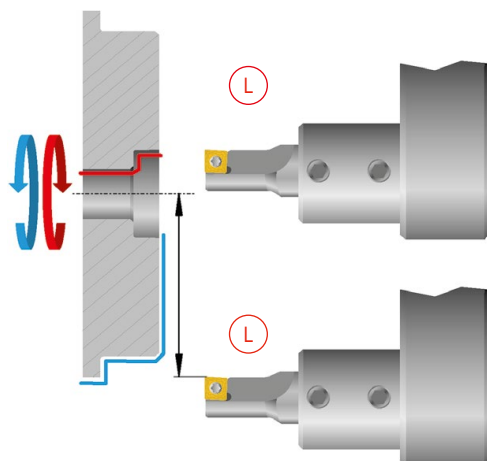
EcoCut Classic	Tool nominal- $\varnothing$	Work piece bore $\varnothing$	
	D in mm	D _{min.} in mm	D _{max.} in mm
ECC 08 R/L - ... 04	8	7,85	8,30
ECC 10 R/L - ... 05	10	9,85	10,50
ECC 12 R/L - ... 06	12	11,85	12,50
ECC 14 R/L - ... 07	14	13,85	14,50
ECC 16 R/L - ... 08	16	15,85	16,50
ECC 18 R/L - ... 09	18	17,85	18,50
ECC 20 R/L - ... 10	20	19,80	20,50
ECC 25 R/L - ... 13	25	24,80	25,80
ECC 32 R/L - ... 17	32	31,80	33,00

EcoCut ProfileMaster	Tool nominal- $\varnothing$	Work piece bore $\varnothing$	
	D in mm	D _{min.} in mm	D _{max.} in mm
PM 10R/L ...	10	9,85	12
PM 12R/L ...	12	11,85	15
PM 16R/L ...	16	15,85	19
PM 20R/L ...	20	19,80	24
PM 25R/L ...	25	24,80	29
PM 32R/L ...	32	31,80	38

Machining over centre

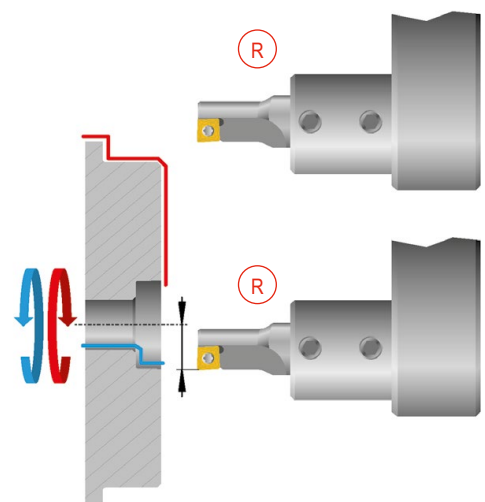
Problem

In case of insufficient movement of the machine across the centre line, the external diameter can not be machined with the same tool.



Solution

Use a right hand EcoCut tool.

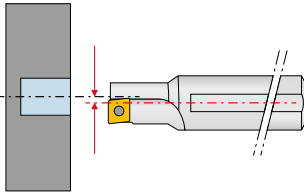


Application Tips

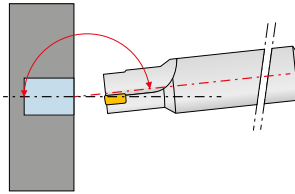
With axial displacement there is the danger of collision!

Problems

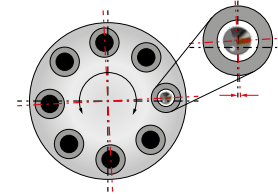
Displacement in x-direction:



Angular error:



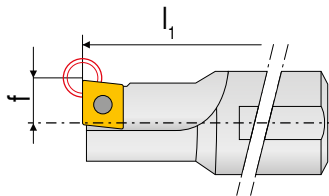
Turret position error:



Remedy

When pre-setting the tool:

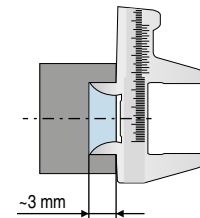
- ▲ Definition as an internal turning tool for programming



- ▲ Enter the tool nominal $\varnothing$ as bore target $\varnothing$

At the machine:

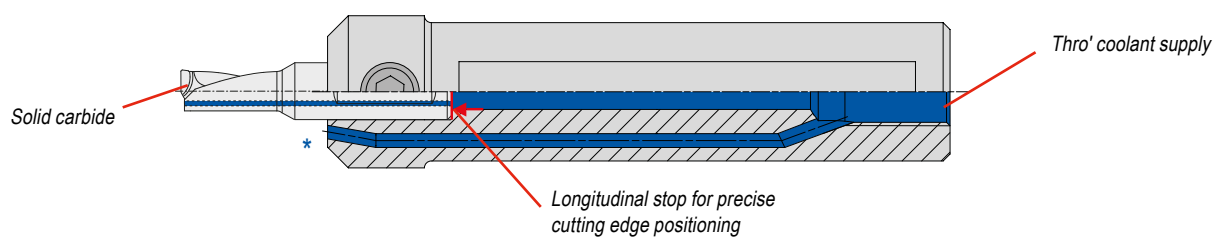
- ▲ Make measuring cut, approx. 3 mm deep
- ▲ Measure drilled diameter produced



- ▲ If necessary correct drilling $\varnothing$
- ▲ Start machining

10

EcoCut Mini adapter – Design

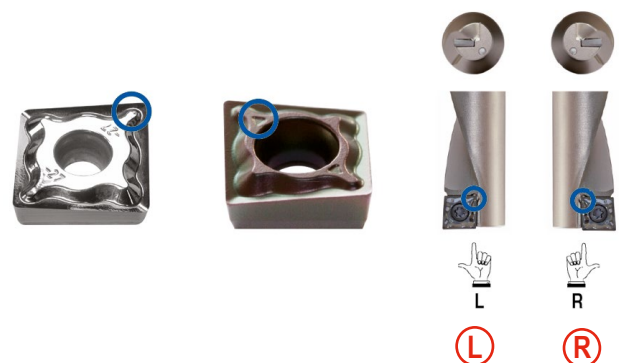


* Cross-section rotated by 90° for clarity

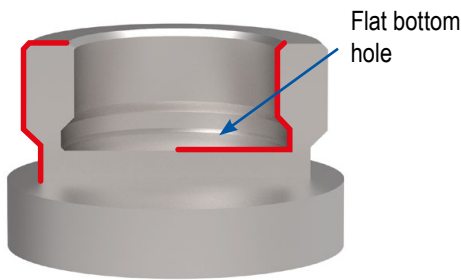
Mounting of the insert for EcoCut Classic

For tools up to $\varnothing$ 8 mm right and left handed inserts are required.
From $\varnothing$ 10-32 mm neutral inserts are used.

Note!
Ensure correct installation position.



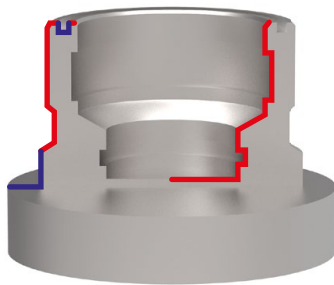
EcoCut ProfileMaster – the highlight with regard to efficiency



Right hand tool



right hand insert



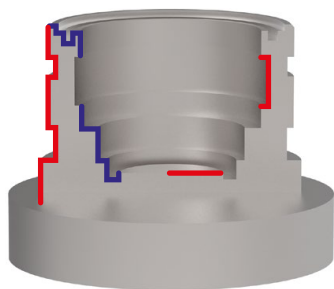
Right hand tool



left hand insert



right hand insert



Left hand tool

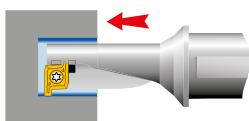


right hand insert

Right hand tool

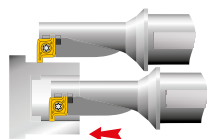


Version 90°



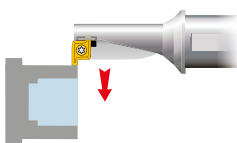
Drilling into solid material
with flat bottom hole

Boring

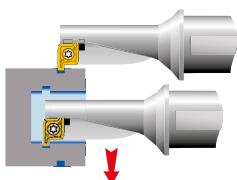


Turning External Diameters

Turning Internal Diameters



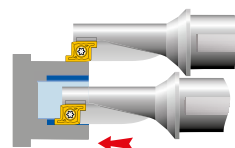
Turning Profiles



External radial grooving

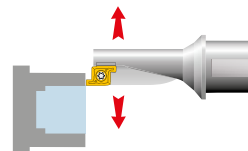
Internal radial grooving

Version 0°

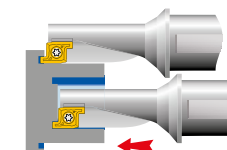


Turning External Diameters

Turning Internal Diameters



Turning Profiles



Axial grooving external

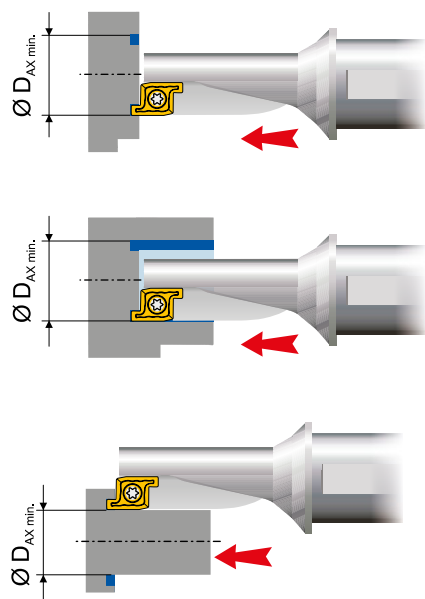
Axial grooving internal



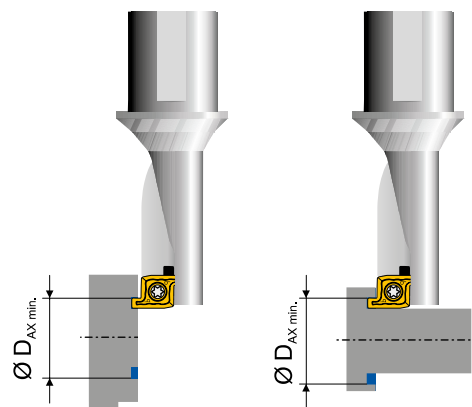
For maximum chip transport efficiency when drilling, coolant pressure must be 3 - 6 bar minimum (optimal 7 - 10 bar).

EcoCut ProfileMaster – Axial Grooving

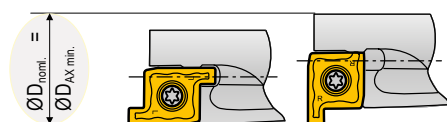
0° (from Ø 16 mm)



90°

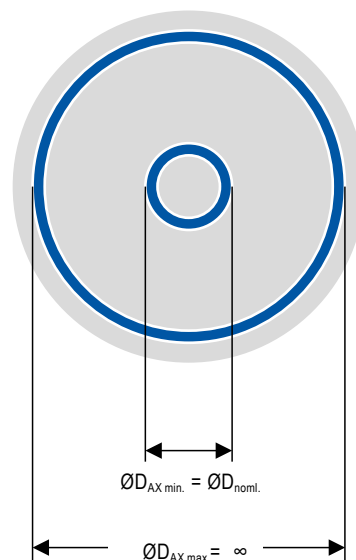


EcoCut ProfileMaster	ØD _{noml.} mm	ØD _{AX min.} mm	ØD _{AX max.} mm
PM 10R/L 1,5D	10	10	> 10
PM 10R/L 2,25D	10	10	> 10
PM 12R/L 1,5D	12	12	> 12
PM 12R/L 2,25D	12	12	> 12
PM 16R/L 1,5D	16	16	> 16
PM 16R/L 2,25D	16	16	> 16
PM 20R/L 1,5D	20	20	> 20
PM 20R/L 2,25D	20	20	> 20
PM 25R/L 1,5D	25	25	> 25
PM 25R/L 2,25D	25	25	> 25
PM 32R/L 1,5D	32	32	> 32
PM 32R/L 2,25D	32	32	> 32



- ØD_{noml.} = Nominal tool diameter
- ØD_{AX min.} = smallest diameter for axial grooving
- ØD_{AX max.} = largest diameter for axial grooving

$$\text{ØD}_{\text{AX min.}} = \text{ØD}_{\text{noml.}}$$



10

Application Tips

Recommendation for Optimum Results

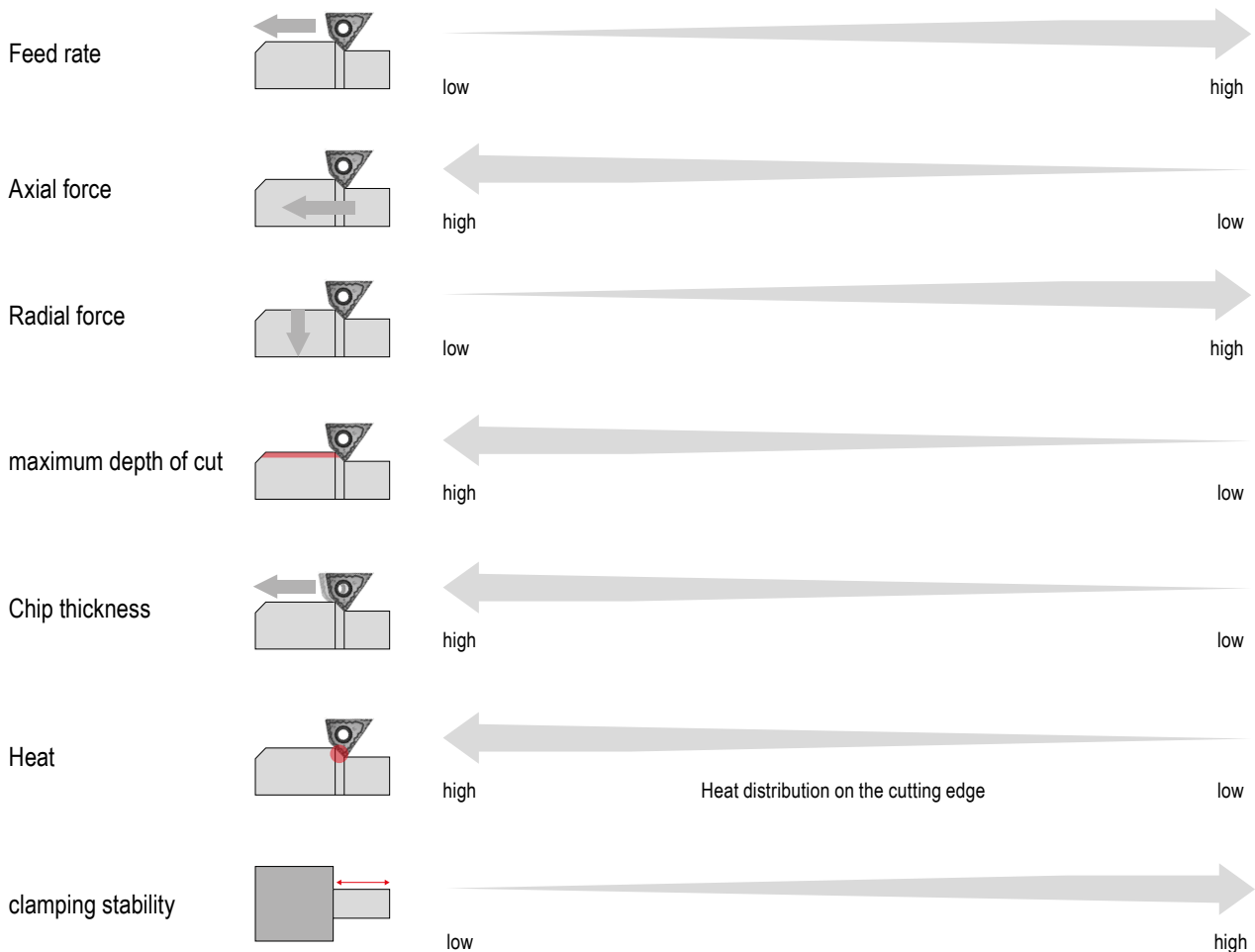
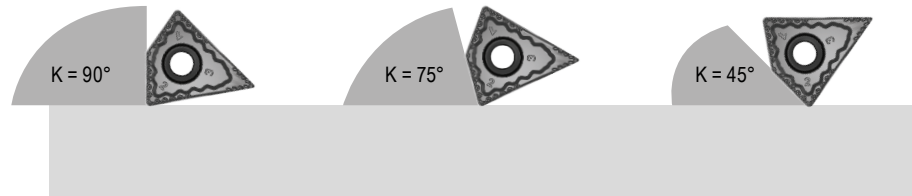
Type of problem										
Type of wear				Work piece problems		Swarf control		Remedy measures	Cutting data	
Edge breakage	Built-up edge	Wear on clearance face	Plastic deformation	Vibration	Surface quality	Chip too long (snarl chip)	Chip too short (fragmented chip)			
	↑	↓	↓	↓	↑	↓			Cutting speed	
↓		~	↓	↑	↓	↑	↓		Feed rate	
↑		↑	↑	↓	↑				Insert selection	Corner radius
↓		↑	↑							↑ larger ↓ smaller
									General criteria	Tool Material
										↑ Wear resistance ↓ toughness
~				~	~				General criteria	Tool clamping
~				~	~					Work piece clamping
~				~	↓					Overhang
~		~		~	~					Tip height
	●	●	●		●	●				Cooling lubricant

raise, increase large influence
 raise, increase small influence

avoid, reduce large influence
 avoid, reduce small influence

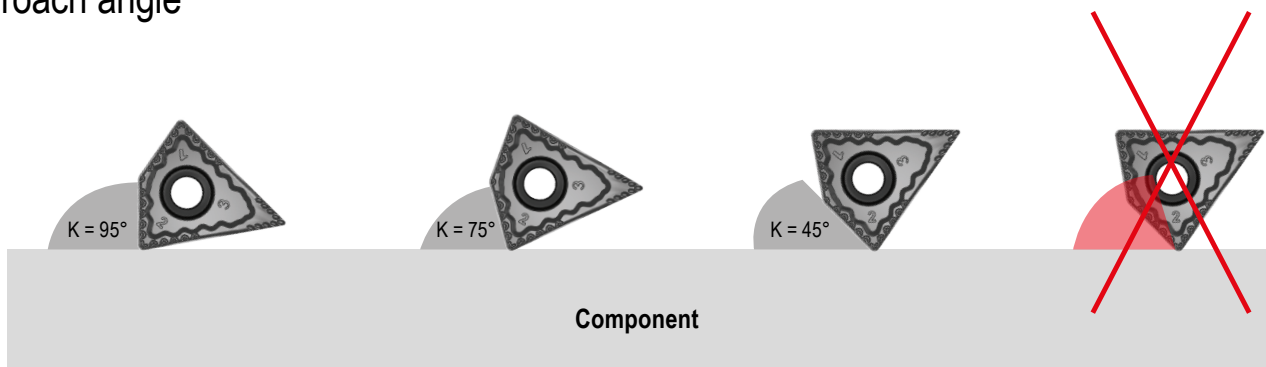
control, optimize
 use

Factors influencing the selection of the correct cutting angle



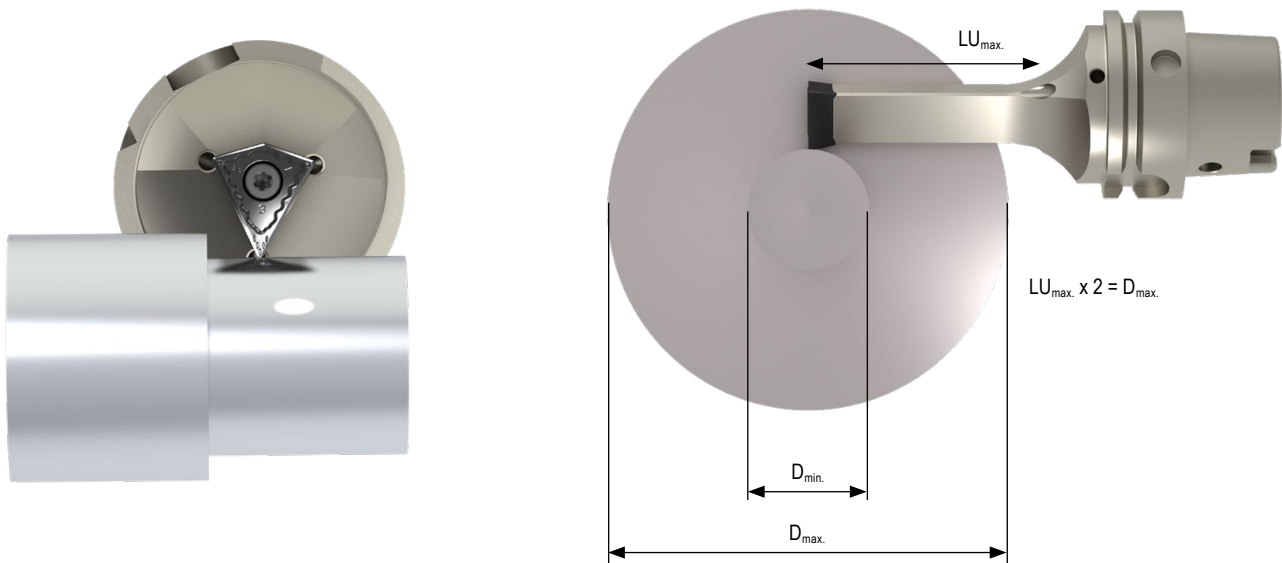
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Approach angle



The approach angle always works from the edge of the component to the main cutting edge (tool).

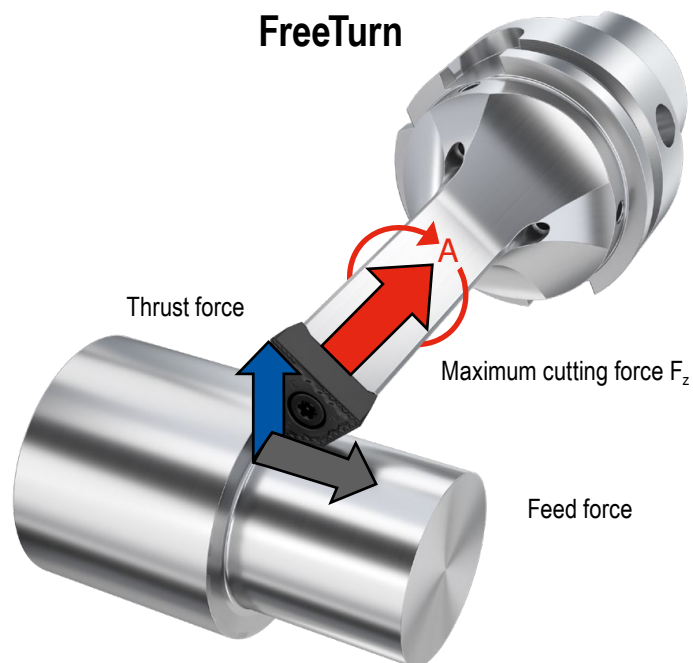
Tool / workpiece length ratio



This table shows the diameter ranges you can work in with the different tool lengths.

Tool	D _{max.} in mm	200	190	180	170	160	150	140	130	120	110	100	90	80
PSC-63-100-FT 808055	D _{min.} in mm					127	115	102	88	73	56	34	0	0
PSC-63-125-FT 808055	D _{min.} in mm	138	125	110	90	70	42	0	0	0	0	0	0	0

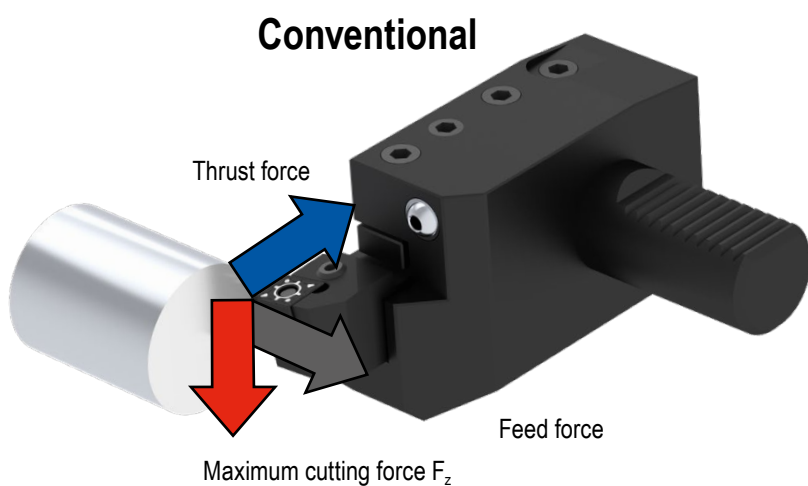
Force data from the process



Practical test

Steel machining
shaft $\varnothing$ 60 mm
1.7227 / 42CrMoS4
 R_m 850 Nm

Cutting data:
 $v_c = 175$ m/min.
 $f = 0.3$ mm/rev.
 $a_p = 3.0$ mm
 $K = 95^\circ$



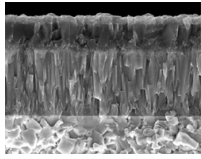
10

FreeTurn		Conventional
2136 N	F XYZ	2206 N
920 N	F XY (feed force)	2143 N
1928 N	Maximum cutting force F_z	526 N

Grade description

EcoCut Classic

CTCP425-P



ISO P25 | M20 | K30

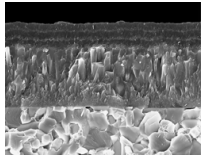

Specification:

Composition: Co 7.0%; mixed carbides 8.1%; WC balance | Grain size: 1-2 μm | Hardness: HV₃₀ 1470 |
Coating specification: CVD Ti(CN) + Al₂O₃ multi-layer

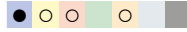
Recommended application:

The wear-resistant solution for steel and cast iron under stable conditions and with high cutting speed

CTCP435-P



ISO P35 | M30 | K40 | S25

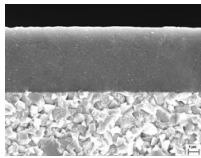

Specification:

Composition: Co 9.6%; mixed carbides 7.8%; others 0.4%; WC balance | Grain size: 1-2 μm | Hardness: HV₃₀ 1400 |
Coating specification: CVD Ti(C,N) + Al₂O₃ multi-layer

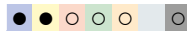
Recommended application:

The reliable choice when machining steel and cast iron under unstable conditions.

CTPP430



ISO | P30 | M25 | K30 | N25 | S25 | O25

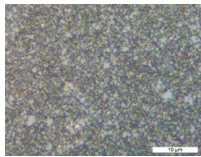

Specification:

Composition: Co 9.0%; others 0.75%; WC balance | Grain size: 0.85 μm | Hardness: HV₃₀ 1590 | Coating specification: PVD TiAlN

Recommended application:

The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

H210T



ISO | K10 | N10 | S10 | O10

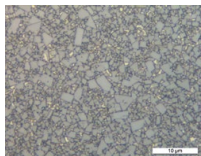

Specification:

Composition: Co 6.0%; WC balance | Grain size: 0.8 μm | Hardness: HV₃₀ 1850

Recommended application:

The wear-resistant uncoated carbide grade for the machining of aluminium and other non-ferrous metals.

H216T



ISO | K15 | N15 | S15 | O10


Specification:

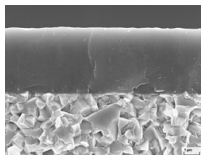
Composition: Co 6.0%; WC balance | Grain size: 1 μm | Hardness: HV₃₀ 1630

Recommended application:

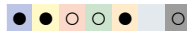
The uncoated carbide grade for the machining of aluminium and other non-ferrous metals

EcoCut Mini

CTPP435



ISO P35 | M30 | K30 | N30 | S30 | O30

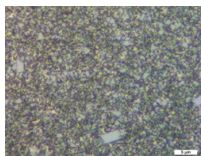

Specification:

Composition: Co 10.3%; others 1.2%; WC balance | Grain size: 0.7 μm | Hardness: HV₃₀ 1600 | Coating specification: PVD TiN / TiAlN

Recommended application:

The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

CTWN425



ISO K20 | N25 | S25 | O25


Specification:

Composition: Co 10.3%; others 1.2%; WC balance | Grain size: 0.7 μm (submicron grade) | Hardness: HV₃₀ 1600

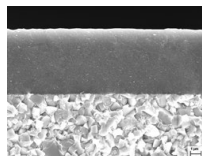
Recommended application:

The uncoated carbide grade for the machining of aluminium and other non-ferrous metals.

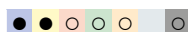
Grade description

EcoCut ProfileMaster

CTPP430



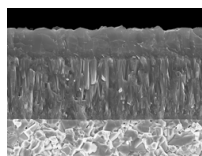
ISO | P30 | M25 | K30 | N25 | S25 | O25

**Specification:**Composition: Co 9.0%; others 0.75%; WC balance | Grain size: 0.85 µm | Hardness: HV₃₀ 1590 | Coating specification: PVD TiAlN**Recommended application:**

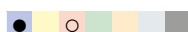
The universal high-performance grade for steel, austenitic steel and heat-resistant alloys

FreeTurn

CTCP125

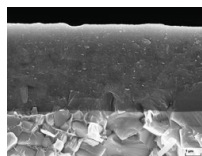


ISO | P25 | K25

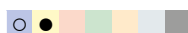
**Specification:**Composition: Co 7.0%; mixed carbides 8.0%; WC balance | Grain size: 1 - 2 µm | Hardness: HV₃₀ 1450 |Coating specification: CVD TiCN-Al₂O₃**Recommended application:**

The first choice for the universal machining of steel

CTPM125



ISO | P35 | M25

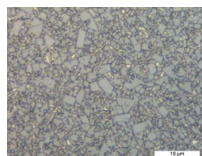
**Specification:**Composition: Co 9.6%; mixed carbides 7.8%; others 0.4%; WC balance | Grain size: 1 - 2 µm | Hardness: HV₃₀ 1460 |

Coating specification: PVD TiAlTaN

Recommended application:

The first choice for the machining of austenitic steels

H216T

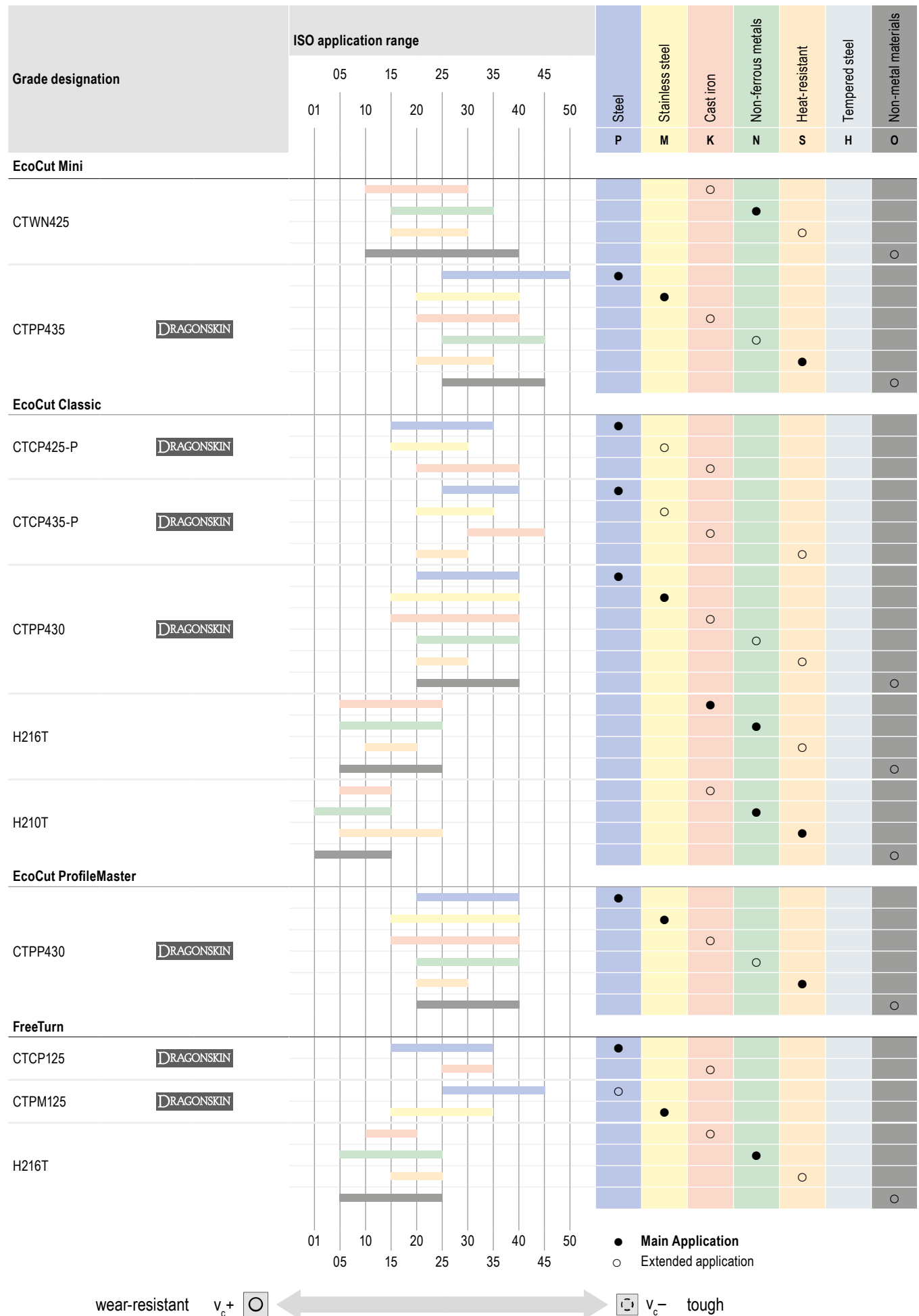


ISO | K15 | N15 | S15 | O10

**Specification:**Composition: Co 6.0%; WC balance | Grain size: 1 µm | Hardness: HV₃₀ 1630**Recommended application:**

The uncoated carbide grade for the machining of aluminium and other non-ferrous metals

Application



Designation System

EcoCut – indexable insert designation

X C E T 17 05 08 F N - 27P

1 2 3 4 5 6 7 8 9 10



- | | |
|-------------------|--------------------|
| 1 Insert shape | 6 Insert thickness |
| 2 Clearance angle | 7 Corner radius |
| 3 Tolerances | 8 Cutting edge |
| 4 Characteristics | 9 Direction of cut |
| 5 Cutting length | 10 Chip groove |

EcoCut – holder designation

ECC 32 R - 3.0D 17 H

1 2 3 4 5 6

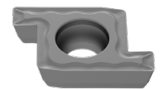


- | | |
|--------------------------|-----------------------------------|
| 1 System | 4 maximum hole depth |
| 2 Nominal diameter in mm | 5 insert size |
| 3 Direction of cut | 6 Tool holder version in Densimet |

EcoCut ProfileMaster – indexable insert designation

PM 25 R G 35 30 04 - M20

1 2 3 4 5 6 7 8



- | | |
|--------------------------|-------------------------|
| 1 ProfileMaster | 5 Groove width in mm/10 |
| 2 Nominal diameter in mm | 6 Groove depth in mm/10 |
| 3 Direction of cut | 7 Corner radius |
| 4 Version | 8 Chip groove |

EcoCut ProfileMaster – holder designation

PMC 25 R - 2.25D

1 2 3 4

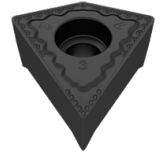


- | | |
|--------------------------|----------------------|
| 1 ProfileMaster | 3 Direction of cut |
| 2 Nominal diameter in mm | 4 maximum hole depth |

10

Designation System

FreeTurn – indexable insert designation



FT15 M/G 808055R080804 Q MMF CTCP125

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

- | | |
|--|--|
| 1 FreeTurn | 7 Corner radius 1 in mm |
| 2 Nominal diameter in mm | 8 Corner radius 2 in mm |
| 3 ISO tolerance (M = sintered, G = polished) | 9 Corner radius 3 in mm |
| 4 Cutter angle 1 in degrees | 10 Wiper geometry |
| 5 Cutter angle 2 in degrees | 11 Chip breaker (M = medium, F = fine) |
| 6 Cutter angle 3 in degrees | 12 Carbide Grade |

FreeTurn – holder designation

HSK - T63 - 100 - FT15 808055

1 2 3 4 5 6 7 8



- | | |
|-------------------|-----------------------------|
| 1 System | 5 Nominal diameter in mm |
| 2 Size | 6 Cutter angle 1 in degrees |
| 3 Overhang length | 7 Cutter angle 2 in degrees |
| 4 FreeTurn | 8 Cutter angle 3 in degrees |

