

hard material matters



MaxiMill 211



EN



CERATIZIT - secrets of success

Secrets of success

- CERATIZIT is your partner for exceptional hard material solutions. Hard materials and tools from CERATIZIT - our solutions to complex problems are an integral part of our customers' success. Our products guarantee: economy - long life - speed! And it is precisely this combination which gives our business partners a direct competitive advantage.
- Premier performance is only possible through a total appreciation of the requirements of our business partners. A performance achieved through flexible thinking and continuous dialogue with our customers. A pioneering spirit and a deep understanding of powder metallurgy characterize the history of CERATIZIT. One of the attributes of our company philosophy is the search for perfection: target oriented - sustainably - passionately!
- Intensive research and development activities, taking into account the precise requirements and working processes of the customer, are today's investment for the solutions of tomorrow - and beyond.

Corporate values

- The views and focus of our business partners matter
- Innovative and flexible thinking matters
- Communication matters
- Employee development matters
- Professionalism matters
- Our environment matters



Tailored cutting tool solutions

- Cutting materials, coatings, inserts, tooling systems and machining solutions - all this is included in the cutting tool division at CERATIZIT.
- Worldwide well-known companies process advanced materials applying cutting tool products from CERATIZIT: from the automotive industry to the aerospace industry, mechanical engineering, and tool construction to the oil industry.
- The basis of these long-term business relations is the faith of the customers in the extensive know-how of the carbide specialists.

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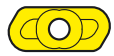


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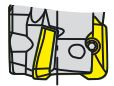


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MaxiMill 211 system

Tools

A260



A211



C211



A211-K



C211-K



G211



XDKT / XDHT inserts

27P

'The sharp one'



M..

'The universal one'



F..

'The soft cutting one'



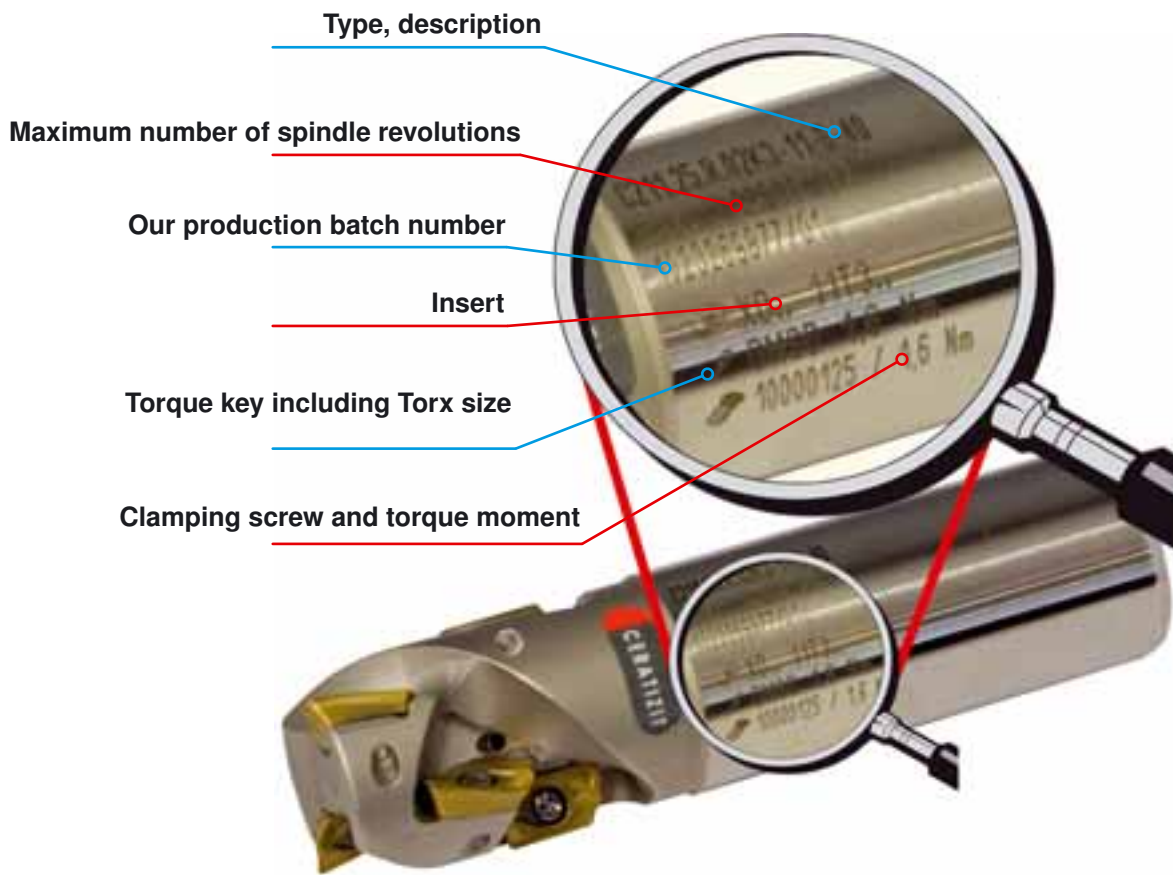
R..

'The robust one'



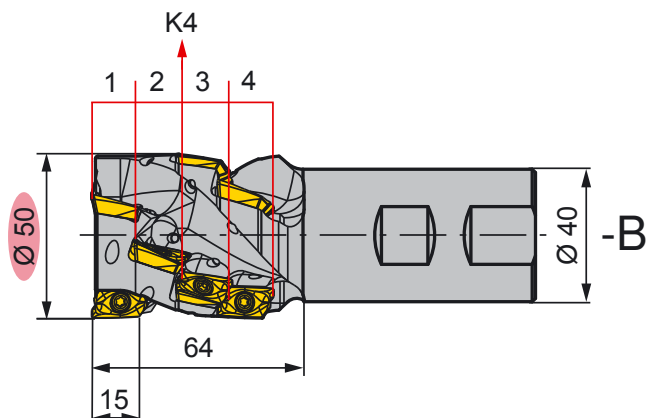
Marking

Tool description



Example: designation C211.50.R.03K4-15-B40-64

- C** = end mill
- 211** = insert milling cutter
- 50** = nominal diameter
- R** = right-hand rotation
- 03** = effective number of cutting edges
- K4** = number of insert rows
- 15** = cutting edge length
- B40** = Weldon shank, Ø 40 mm
- 64** = max. working length



Force compensation

through 'the notch'

The notch provides additional stability when plunging (up to $r\ 1.6\text{ mm}$). Reduced machining noise without vibration is therefore largely guaranteed.

The ADVANTAGE for cutting tool experts:

- Increased cutting performance
- Improved surface quality when machining pockets and slots



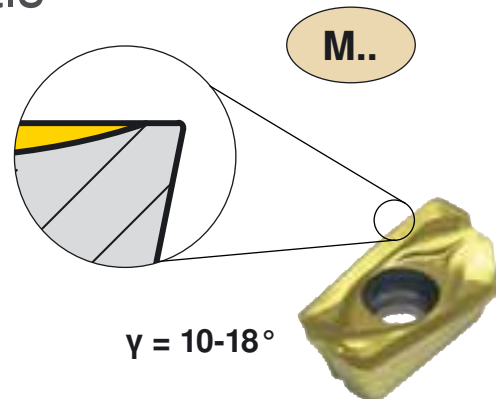
One solution for all materials

thanks to the geometries **F / M / R**

F = for non-ferrous metals, exotic materials, stainless steel

M = for universal application

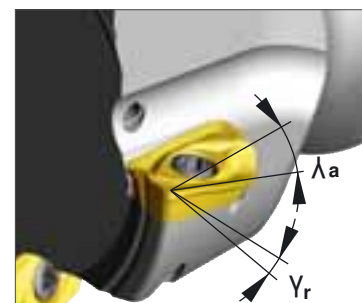
R = very high demands on stability



Quiet machining

thanks to light-cutting geometry

Highly positive position of the insert when mounted: soft cutting and reduced cutting noise!
Very good chip evacuation through optimized FEM chip pocket.



Innovative and flexible thinking matters

Long tool life

thanks to tool coating 'hard & tough'

The coating is both extremely hard and tough, which provides wear protection and corrosion resistance.

So an increase in the life of the tool is achieved.



Reliable clamping

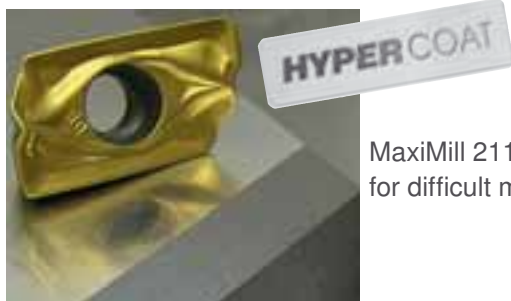
with the TorxPlus screw

The precise contact faces in combination with the TorxPlus clamping screw guarantee exact positioning of the insert. In this way close work piece tolerances are maintained and excellent surface quality is guaranteed even with high chip removal rates.



Maximum tool life

thanks to HyperCoat coating



MaxiMill 211 combined with HyperCoat is an unbeatable team even for difficult milling situations.

Compatible systems

- Wide selection of tools and inserts, chip grooves, radii and grades.

MaxiMill 211

- Maximum security
 - Machinability of all materials
 - Universal application

-F20



-F40



-F50



-M50



-R50



-R60



MaxiMill HSC 11

- Machining of non-ferrous metals and non metals
 - Maximum high-speed security
 - Maximum chip removal rate



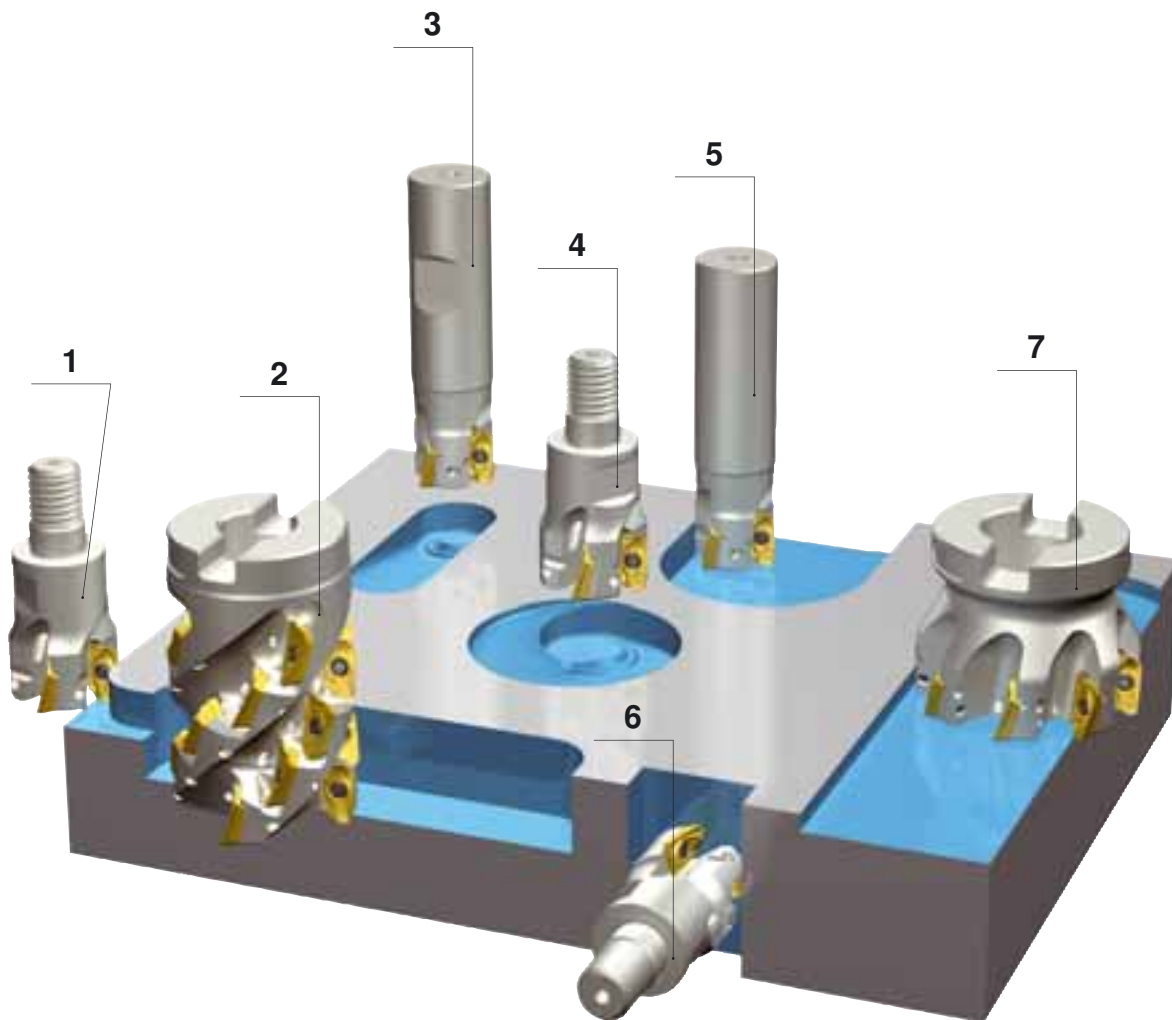
	[mm]	
	r	l ₁
	0,2	2,0
	0,4	1,8
	0,8	1,4
	1,2	1,4
	1,6	1,4

	[mm]	
	r	l ₁
	2,0	1,4
	2,5	1,4
	3,2	0,8
	4,0	-
	5,0	-

Application

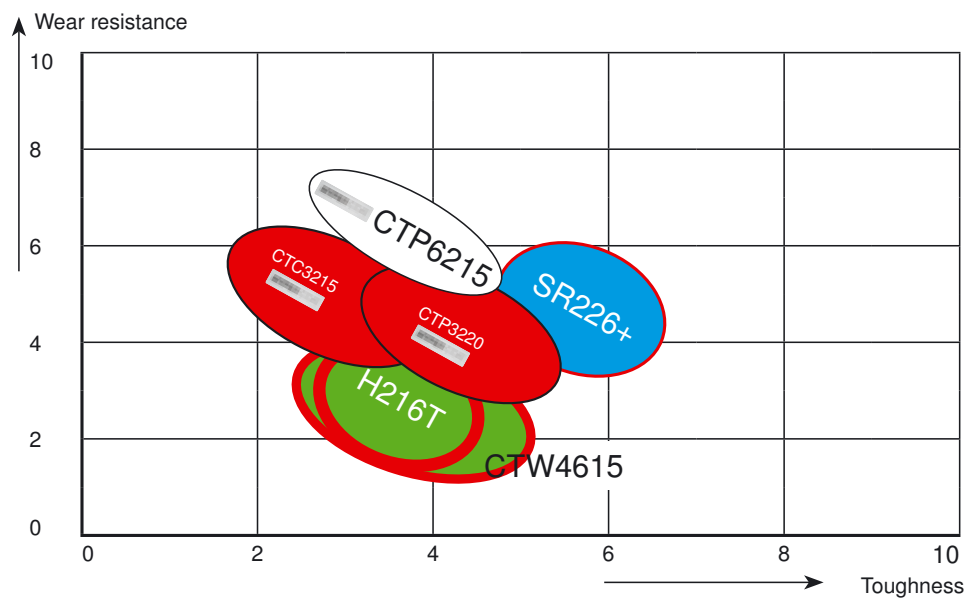
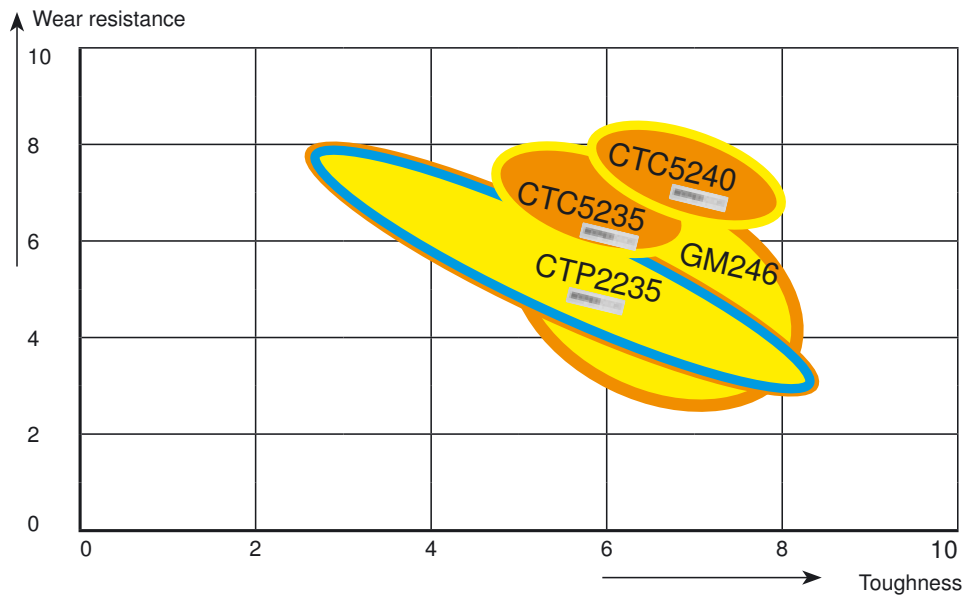
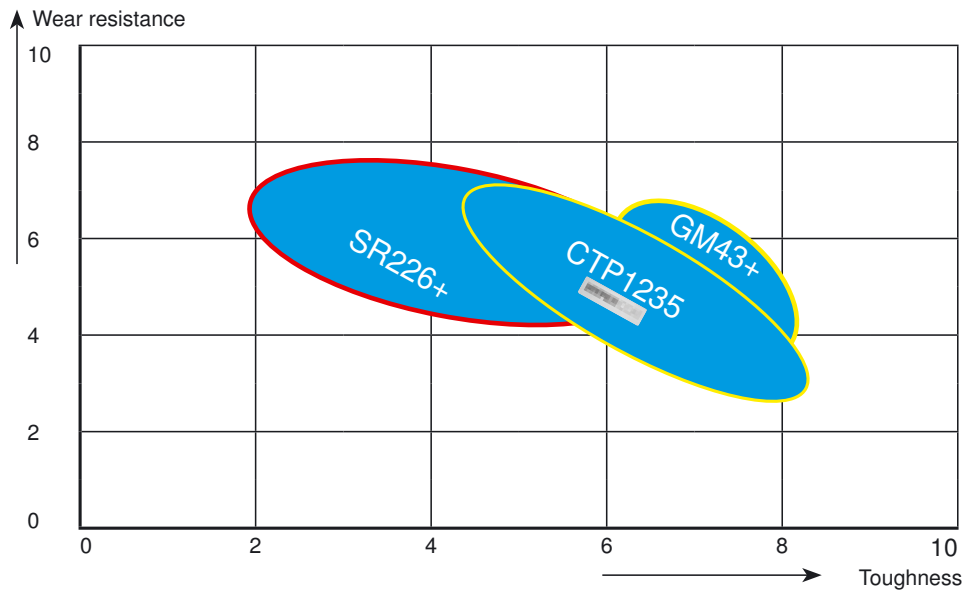
MaxiMill 211 offers a solution for every milling application

- 1 Peripheral milling
- 2 Shoulder milling
- 3 Angled ramping & ramping
- 4 Axial plunging & helical plunge milling
- 5 Trochoidal groove milling
- 6 Slot milling
- 7 Shoulder & face milling



		
	Ø 10 – 160 mm (400)	 07  11  15

Grade overview



Grade overview

Grade designation	Standard designation	Cutting material	Application range								A	R	F	N	S	H					
			01	05	10	15	20	25	30	35	40	45	50	Steel	Stainless	Cast iron	Non ferrous metals	Heat resistant	Hard materials		
CTC3215	HC-K15	C																			
CTC5235	HC-M35	C																			
CTC5240	HC-M40	C																			
CTP1235	HC-P35	P																			
	HC-M30	P																			
CTP2235	HC-P40	P																			
	HC-M40	P																			
CTP6215	HC-K15	P																			
CTW4615	HW-K15	W																			
GM246	HC-P40	C																			
	HC-M40	C																			
GM43+	HC-P35	C																			
	HC-M35	C																			
H216T	HW-K15	W																			
SR226+	HC-P25	C																			
	HC-M25	C																			
	HC-K20	C																			
			01	05	10	15	20	25	30	35	40	45	50	● Main application							
														○ Extended application							





EXOTIC

COMPETENCE IN THE MACHINING OF EXOTIC HIGH-TECH ALLOYS

Not long ago materials such as titanium, super alloys and stainless steels were considered extremely exotic. They were only used rarely, were inordinately expensive, and machining them meant that the manufacturers had to face virtually unsolvable challenges.

Companies applying CERATIZIT tools define the concept 'exotic' in a different way. CERATIZIT has become a specialist for the machining of demanding materials thanks to long standing experience in the field of material science, very good contacts in the industry (also to OEMs), the consistently implemented segment strategy focussing on difficult to machine materials and in-depth knowledge in the fields of development and application engineering.

Economic CERATIZIT solutions are available for the following materials:



HIGH TENSILE STAINLESS STEELS

- Duplex
- Jetheat
- 17-4PH



TITANIUM ALLOYS

- TiAl 6 V4
- Ti-10-2-3
- Ti-5-5-5-3

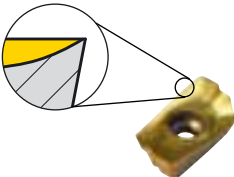
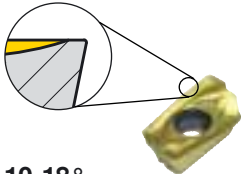
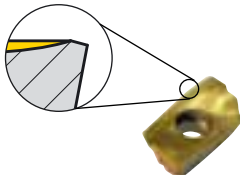


SUPER ALLOYS

- Inconel®
- Hastelloy®
- Nimonic®



Chip grooves

Chip groove	Material	Machining situation and stability				Machining type F / M / R
						
 $\gamma = 12-30^\circ$	27P	X	X	X		F
	F20	X	X	X		F
	F40	X	X			F
	F50	X	X			F
 $\gamma = 10-18^\circ$	M50		X	X		M
	R50			X	X	R
 $\gamma = 0-12^\circ$	R60			X	X	R

MasterGuide:

-  Steel
-  Stainless
-  Cast iron
-  Non ferrous metals
-  Heat resistant materials
-  Titanium alloys
-  Hard materials

-  Main application
-  Extended application

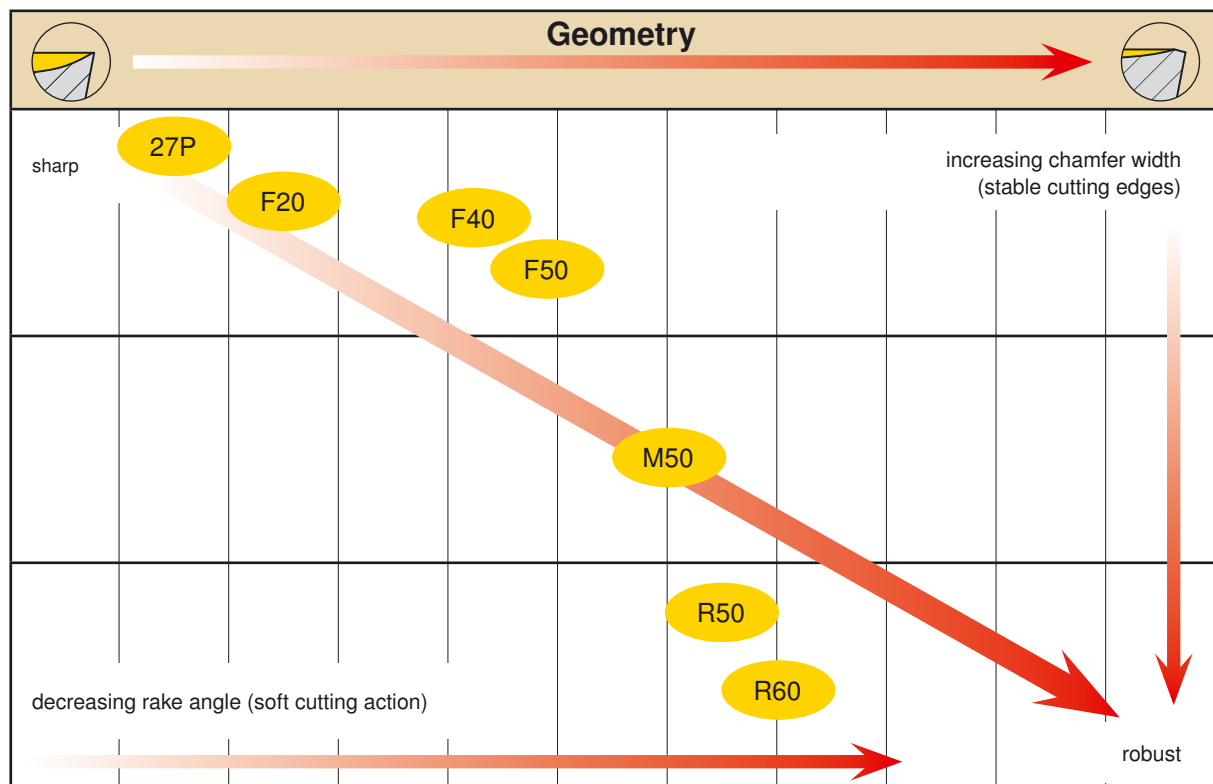
Machining situation and stability:

-  excellent
-  good
-  acceptable
-  difficult

Machining type:

- F Fine machining
- M Medium machining
- R Rough machining

Chip grooves



CERATIZIT corporate values

1 The point of view and focus of our business partners matter

- Instead of talking product with customers, we work on real solutions for business partners.

2 Innovative and flexible thinking matters

- We have the power to challenge state-of-the-art technologies and the courage to develop intelligent alternatives.
- Our speed of thought and decisive actions give us a leading edge.

3 Communication matters

- Trust and respect enable open communication.
- We show who we are and how we feel.
- We keep our promises.
- We are open to and accept constructive criticism.

4 Employee development matters

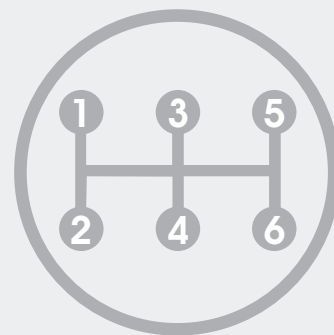
- We continuously invest in human capital and offer outstanding internal development opportunities.
- We attract talents around the world and create a favourable environment for long term growth.

5 Professionalism matters

- We strive to be professional in everything we do.
- Our performance leads to results and growth which are always above average.

6 Our environment matters

- Environmental protection is a matter of each employee - at home and at work.
- As a company we guarantee the community to be a 'considerate neighbour'.



Inserts

XD.. 07

-F40		-M50										
r [mm]	Type, description	SR226+	CTP1235	CTC5235	CTC5240	CTP2235	d [mm]	l [mm]	s [mm]	l ₁ [mm]	d ₁ [mm]	
0.40	XDKT 070304ER-F40	●	●	●	●		4.90	7.80	3.15	1.2	2.50	
0.40	XDKT 070304SR-M50	●	●			●	4.90	7.80	3.15	1.2	2.50	
		Steel	●	●	○	○	○					
		Stainless	○	○	●	○	○					
		Cast iron	●	●	○	○	○					
		Non ferrous metals	○	○	○	○	○					
		Heat resistant	○	○	○	○	○					
		Hard materials										
		● Main application										
		○ Extended application										
		● International CERATIZIT range, for present availability see price list										
Ordering example: 10 pieces XDKT 070304ER-F40 CTC5240												

	A211-07 29	C211-07 20	G211-07 26		
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Inserts

XD.. 11

-27P		-F20		-F40		-F50		-M50	
-R50									

r [mm]	Type, description	CTW4615	H216T	CTC3215	SR226+	CTP1235	GM43+	CTC5235	CTC5240	d [mm]	l [mm]	s [mm]	l ₁ [mm]	d ₁ [mm]
0.20	XDHT 11T302FR-27P		●							6.80	10.00	3.50	2.0	2.80
0.40	XDHT 11T304FR-27P		●							6.80	10.00	3.50	1.8	2.80
0.80	XDHT 11T308FR-27P		●							6.80	10.00	3.50	1.4	2.80
1.20	XDHT 11T312FR-27P		●							6.80	10.00	3.50	1.4	2.80
1.60	XDHT 11T316FR-27P		●							6.80	10.00	3.50	1.4	2.80
2.00	XDHT 11T320FR-27P		●							6.80	10.00	3.50	1.4	2.80
2.50	XDHT 11T325FR-27P		●							6.80	10.00	3.50	1.4	2.80
3.20	XDHT 11T332FR-27P		●							6.80	10.00	3.50	0.8	2.80
4.00	XDHT 11T340FR-27P		●							6.80	10.00	3.50		2.80
5.00	XDHT 11T350FR-27P		●							6.80	10.00	3.50		2.80
0.20	XDKT 11T302FR-F20	●								6.80	10.00	3.80	2.0	2.80
0.40	XDKT 11T304FR-F20	●								6.80	10.00	3.80	1.8	2.80
0.40	XDKT 11T304ER-F40							●	●	6.80	10.00	3.80	1.7	2.80
0.40	XDKT 11T304SR-F50				●	●	●			6.80	10.00	3.80	1.8	2.80
0.40	XDKT 11T304SR-M50				●	●	●			6.80	10.00	3.80	1.8	2.80
0.40	XDKT 11T304SR-R50					●	●			6.80	10.00	3.80	1.8	2.80

Steel

Stainless

Cast iron

Non ferrous metals

Heat resistant

Hard materials

● Main application

○ Extended application

● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces XDHT 11T302FR-27P H216T

	A211-11 30	C211-11 21-22	G211-11 27	A260/054 34	
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Inserts

XD.. 11

Inserts

XD.. 15

-F20	-F40	-F50	-M50	-R50

r [mm]	Type, description	CTW4615	CTC3215	SR226+	CTP1235	CTC5235	CTC5240	CTP2235							
										d [mm]	l [mm]	s [mm]	l ₁ [mm]	d ₁ [mm]	
0.80	XDKT 150508FR-F20	●								9.30	14.00	5.56	1.6	4.40	
0.80	XDKT 150508ER-F40					●	●			9.30	14.00	5.56	1.6	4.40	
0.80	XDKT 150508SR-F50			●	●					9.30	14.00	5.56	1.6	4.40	
0.80	XDKT 150508SR-M50		●	●	●					9.30	14.00	5.56	1.6	4.40	
0.80	XDKT 150508SR-R50		●	●	●					9.30	14.00	5.56	1.6	4.40	

Steel			●	●	○				
Stainless			○	○	●				
Cast iron	●	●	●	●	○				
Non ferrous metals	●								
Heat resistant					●	●			
Hard materials									

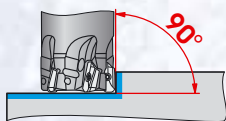
● Main application

○ Extended application

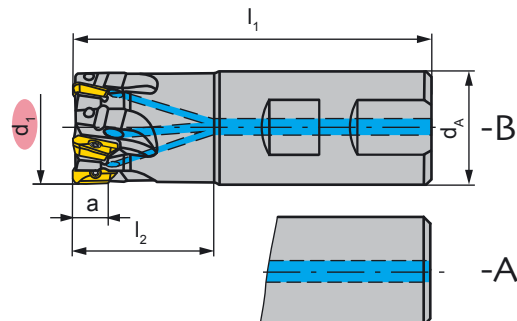
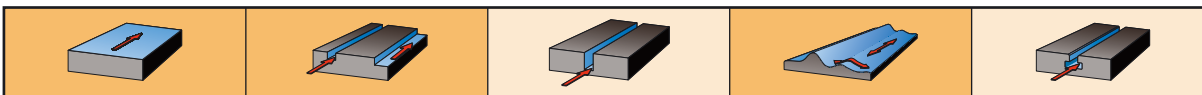
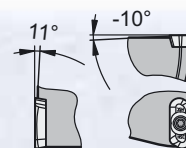
● International CERATIZIT range, for present availability see price list

Ordering example: 10 pieces XDKT 150508FR-F20 CTW4615

	A211-15 32	C211-15 24	G211-15 28	A260/056 35	
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Shoulder & slot milling cutters C211-07



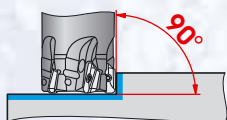
d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]	 z	
10	C211.10.R.01-07-A-20	61,0	20	10	6	72.000	1	XD_T 0703..
12	C211.12.R.02-07-A-20	66,5	20	12	6	66.600	2	XD_T 0703..
16	C211.16.R.03-07-A-32-165	165,0	32	16	6	17.760	3	XD_T 0703..
16	C211.16.R.04-07-A-25	74,5	25	16	6	50.400	4	XD_T 0703..
20	C211.20.R.04-07-A-40-200	200,0	40	20	6	12.600	4	XD_T 0703..
20	C211.20.R.05-07-A-25	77,0	25	20	6	44.280	5	XD_T 0703..
25	C211.25.R.05-07-A20-50-225	225,0	50	20	6	11.280	5	XD_T 0703..
25	C211.25.R.06-07-A20-32	84,0	32	20	6	39.840	6	XD_T 0703..
32	C211.32.R.08-07-A25-40	98,0	40	25	6	36.240	8	XD_T 0703..
16	C211.16.R.04-07-B-25	74,5	25	16	6	50.400	4	XD_T 0703..
20	C211.20.R.05-07-B-25	77,0	25	20	6	44.280	5	XD_T 0703..
25	C211.25.R.06-07-B20-32	84,0	32	20	6	39.840	6	XD_T 0703..
32	C211.32.R.08-07-B25-40	98,0	40	25	6	36.240	8	XD_T 0703..

Ordering example: 1 piece C211.10.R.02-07-A-20

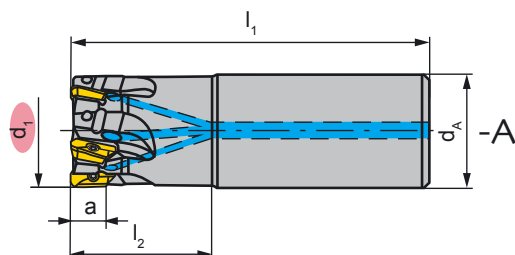
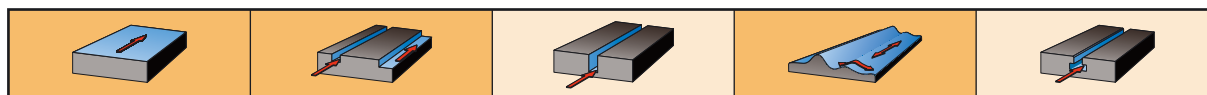
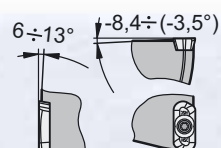
Supply details: cutter body and clamping screws for inserts

	d ₁ [mm]			
XD_T 0703..	10 - 32	10006888/M2,2X4,2/07IP	10006918/TORX 07IP	DMSD 1,0Nm/SORT 07IP

	XD_T 0703..  16				
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Shoulder & slot milling cutters C211-11



d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]	 z	
16	C211.16.R.02-11-A-25	75	25	16	10	42.000	2	XD_T 11T3..
16	C211.16.R.02-11-A-32-165	165	32	16	10	14.800	2	XD_T 11T3..
16	C211.16.R.02-11-A15-32-165	165	32	15	10	14.800	2	XD_T 11T3..
20	C211.20.R.02-11-A19-40-200	200	40	19	10	10.500	2	XD_T 11T3..
20	C211.20.R.03-11-A-25	77	25	20	10	36.900	3	XD_T 11T3..
20	C211.20.R.02-11-A-25	77	25	20	10	36.900	2	XD_T 11T3..
20	C211.20.R.03-11-A-32-165	165	32	20	10	15.800	3	XD_T 11T3..
20	C211.20.R.02-11-A-40-200	200	40	20	10	10.500	2	XD_T 11T3..
25	C211.25.R.03-11-A-32	90	32	25	10	33.200	3	XD_T 11T3..
25	C211.25.R.04-11-A-32	90	32	25	10	33.200	4	XD_T 11T3..
25	C211.25.R.04-11-A-40-165	165	40	25	10	19.900	4	XD_T 11T3..
25	C211.25.R.02-11-A-50-225	225	50	25	10	9.400	2	XD_T 11T3..
25	C211.25.R.03-11-A-50-225	225	50	25	10	9.400	3	XD_T 11T3..
25	C211.25.R.03-11-A24-50-225	225	50	24	10	9.400	3	XD_T 11T3..
32	C211.32.R.04-11-A-40	102	40	32	10	30.200	4	XD_T 11T3..
32	C211.32.R.05-11-A-40	102	40	32	10	30.200	5	XD_T 11T3..
32	C211.32.R.05-11-A25-40	102	40	25	10	30.200	5	XD_T 11T3..
32	C211.32.R.04-11-A25-40	102	40	25	10	30.200	4	XD_T 11T3..
32	C211.32.R.05-11-A-50-165	165	50	32	10	20.900	5	XD_T 11T3..
32	C211.32.R.02-11-A-64-250	250	64	32	10	8.500	2	XD_T 11T3..
32	C211.32.R.04-11-A-64-250	250	64	32	10	8.500	4	XD_T 11T3..
32	C211.32.R.04-11-A31-64-250	250	64	31	10	8.500	4	XD_T 11T3..

Ordering example: 1 piece C211.16.R.02-11-A-25

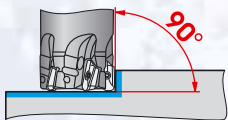
Supply details: cutter body and clamping screws for inserts



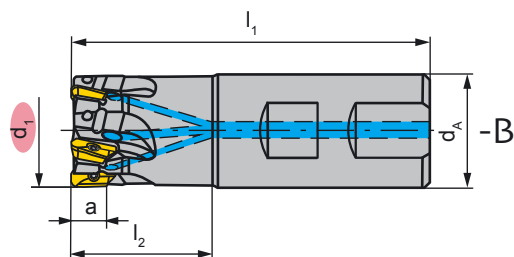
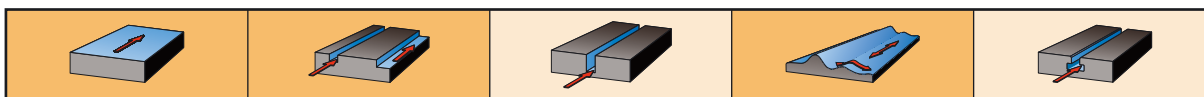
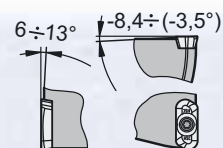
Insert radius > 1.6 mm: modify tool body.

	d ₁ [mm]			
XD_T 11T3..	16 - 32	10000126/M2,5X5,6/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP

	XD_T 11T3..  17-18					
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Shoulder & slot milling cutters C211-11



d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]		
12,0	C211.12.R.01-11-B-20	75	20	16	10	55.500	1	XD_T 11T3..
15,7	C211.15.7.R.02-11-B-25	75	25	16	10	42.000	2	XD_T 11T3..
16,0	C211.16.R.02-11-B-25	75	25	16	10	42.000	2	XD_T 11T3..
19,7	C211.19.7.R.03-11-B-25	77	25	20	10	36.900	3	XD_T 11T3..
20,0	C211.20.R.02-11-B-25	77	25	20	10	36.900	2	XD_T 11T3..
20,0	C211.20.R.03-11-B-25	77	25	20	10	36.900	3	XD_T 11T3..
24,7	C211.24.7.R.04-11-B-32	90	32	25	10	33.200	4	XD_T 11T3..
25,0	C211.25.R.03-11-B-32	90	32	25	10	33.200	3	XD_T 11T3..
25,0	C211.25.R.04-11-B-32	90	32	25	10	33.200	4	XD_T 11T3..
31,7	C211.31.7.R.05-11-B-40	102	40	32	10	30.200	5	XD_T 11T3..
32,0	C211.32.R.04-11-B-40	102	40	32	10	30.200	4	XD_T 11T3..
32,0	C211.32.R.05-11-B25-40	102	40	25	10	30.200	5	XD_T 11T3..
32,0	C211.32.R.05-11-B-40	102	40	32	10	30.200	5	XD_T 11T3..
40,0	C211.40.R.06-11-B-50	122	50	40	10	27.700	6	XD_T 11T3..

Ordering example: 1 piece C211.12.R.01-11-B-20

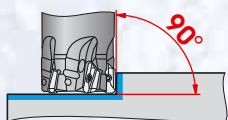
Supply details: cutter body and clamping screws for inserts



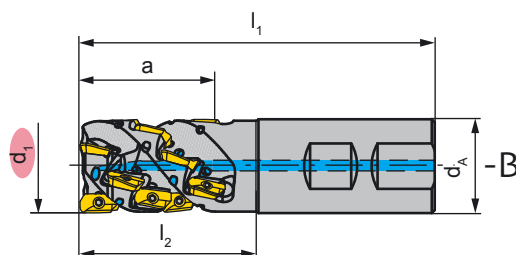
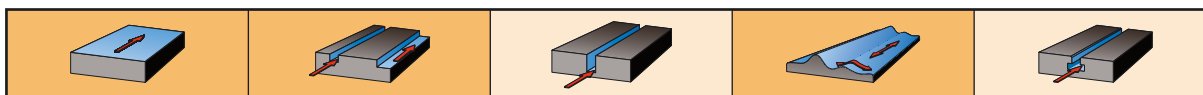
Insert radius > 1.6 mm: modify tool body.

	d ₁ [mm]			
XD_T 11T3..	12	10005892/M2,5X5,0/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP
XD_T 11T3..	16 - 32	10000126/M2,5X5,6/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP

	XD_T 11T3..  17-18					
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Shoulder & slot milling cutters C211-11K



d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]	n			
25	C211.25.R.02K3-11-B-40	97	40	25	27,0	22.200	6		2	XD_T 11T3..
25	C211.25.R.02K4-11-B-50	107	50	25	37,0	19.400	8		2	XD_T 11T3..
25	C211.25.R.02K5-11-B-60 *	117	60	25	45,5	19.400	10		2	XD_T 11T3..
32	C211.32.R.02K4-11-B-50	111	50	32	37,0	20.200	8		2	XD_T 11T3..
32	C211.32.R.03K5-11-B-60	121	60	32	45,5	20.200	15		3	XD_T 11T3..
40	C211.40.R.03K4-11-B32-50	110	50	32	37,0	18.500	12		3	XD_T 11T3..
40	C211.40.R.04K5-11-B32-60	120	60	32	45,5	18.500	20		4	XD_T 11T3..

Ordering example: 1 piece C211.25.R.02K3-11-B-40

Supply details: cutter body and clamping screws for inserts

n = total number of inserts

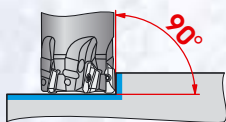
* = for profile milling only



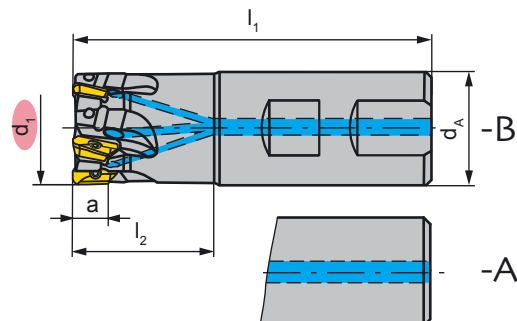
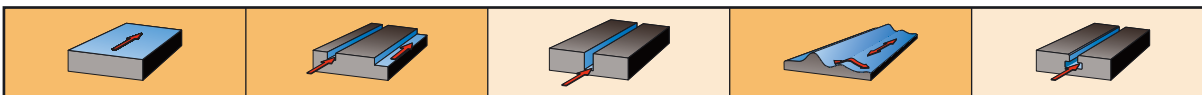
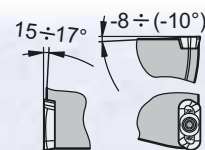
Insert radius > 1.6 mm: modify tool body.

	d ₁ [mm]			
XD_T 11T3..	25	10000126/M2,5X5,6/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP
XD_T 11T3..	32 - 40	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP

	 XD_T 11T3.. 17-18				
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Shoulder & slot milling cutters C211-15



d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]		
25	C211.25.R.02-15-A-32	90	32	25	14	26.560	2	XD_T 1505..
25	C211.25.R.02-15-A-50-225	225	50	25	14	7.520	2	XD_T 1505..
32	C211.32.R.03-15-A-40	103	40	32	14	24.160	3	XD_T 1505..
32	C211.32.R.03-15-A-63-250	250	63	32	14	6.800	3	XD_T 1505..
40	C211.40.R.04-15-A32-50	110	50	32	14	22.160	4	XD_T 1505..
40	C211.40.R.03-15-A32-50-275	275	50	32	14	6.120	3	XD_T 1505..
25	C211.25.R.02-15-B-32	90	32	25	14	26.560	2	XD_T 1505..
25	C211.25.R.02-15-B20-32	83	32	20	14	26.560	2	XD_T 1505..
32	C211.32.R.03-15-B-40	103	40	32	14	24.160	3	XD_T 1505..
32	C211.32.R.03-15-B25-40	96	40	25	14	24.160	3	XD_T 1505..
40	C211.40.R.04-15-B-50	122	50	40	14	22.160	4	XD_T 1505..
40	C211.40.R.04-15-B32-50	110	50	32	14	22.160	4	XD_T 1505..

Ordering example: 1 piece C211.25.R.02-15-A-32

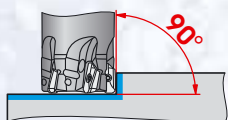
Supply details: cutter body and clamping screws for inserts



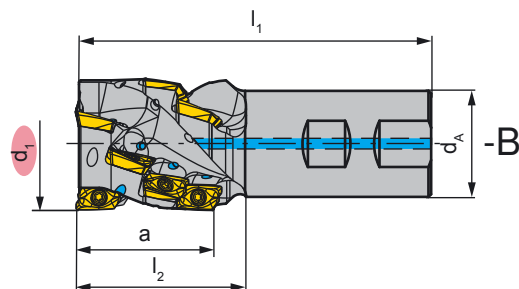
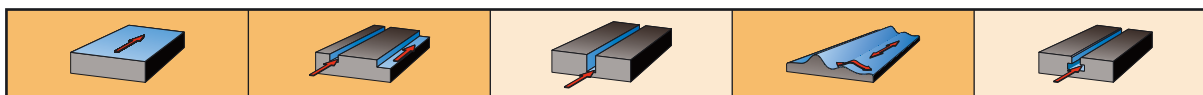
Insert radius > 2.5 mm: modify tool body.

	d ₁ [mm]			
XD_T 1505..	25 - 40	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP

	XD_T 1505..  19				
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Shoulder & slot milling cutters C211-15K



d ₁ [mm]	Type, description	l ₁ [mm]	l ₂ [mm]	d _A [mm]	a [mm]	n _{max} [min ⁻¹]	n			
40	C211.40.R.02K3-15-B32-60	120	60	32	38,0	14.800	6		2	XD_T 1505..
50	C211.50.R.03K4-15-B40-64	134	64	40	50,5	13.600	12		3	XD_T 1505..

Ordering example: 1 piece C211.40.R.02K3-15-B32-60

Supply details: cutter body and clamping screws for inserts

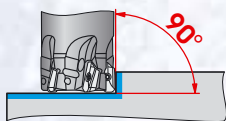
n = total number of inserts



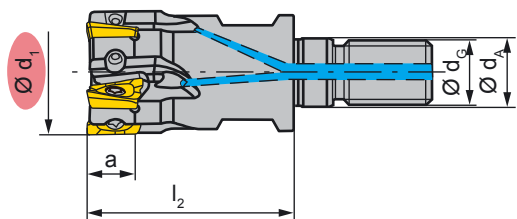
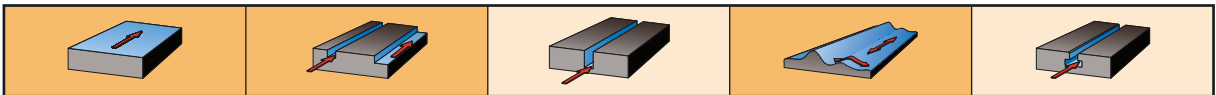
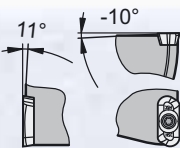
Insert radius > 2.5 mm: modify tool body.

	d ₁ [mm]			
XD_T 1505..	40 - 50	DMSD 3,2Nm/SORT 15IP	10006887/M3,5X8,6/15IP	10006919/TORX 15IP

	XD_T 1505..  19				
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Shoulder & slot milling cutters G211-07



d ₁ [mm]	Type, description	l ₂ [mm]	d _A [mm]	d _G [mm]	a [mm]	n _{max} [min ⁻¹]		
16	G211.16.R.04-07	27	8,5	8	6	50.400	4	XD_T 0703..
20	G211.20.R.05-07	33	10,5	10	6	44.280	5	XD_T 0703..
25	G211.25.R.06-07	35	12,5	12	6	39.480	6	XD_T 0703..
32	G211.32.R.08-07	35	17,0	16	6	36.240	8	XD_T 0703..

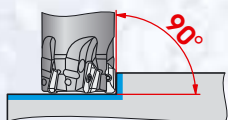
Ordering example: 1 piece G211.16.R.04-07

Supply details: cutter body and clamping screws for inserts

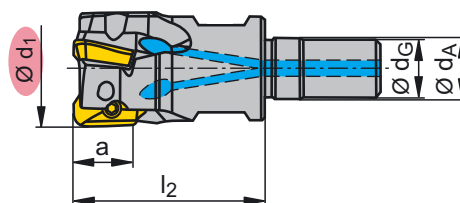
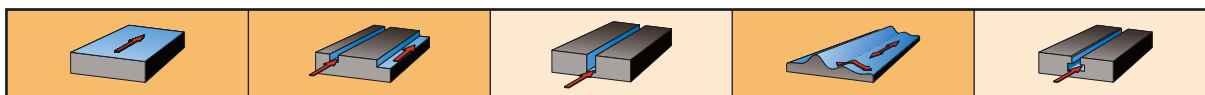
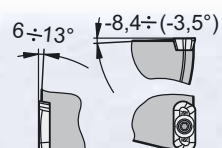
n_{max} = depends on the overhang and number of interfaces in the complete tool

	d ₁ [mm]			
XD_T 0703..	16 - 32	10006888/M2,2X4,2/07IP	10006918/TORX 07IP	DMSD 1,0Nm/SORT 07IP

	XD_T 0703..  16				
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Shoulder & slot milling cutters G211-11



d ₁ [mm]	Type, description	l ₂ [mm]	d _A [mm]	d _G [mm]	a [mm]	n _{max} [min ⁻¹]		
16	G211.16.R.02-11	27	8,5	8	10	42.000	2	XD_T 11T3..
20	G211.20.R.02-11	33	10,5	10	10	36.900	2	XD_T 11T3..
20	G211.20.R.03-11	33	10,5	10	10	36.900	3	XD_T 11T3..
25	G211.25.R.03-11	35	12,5	12	10	33.200	3	XD_T 11T3..
25	G211.25.R.04-11	35	12,5	12	10	33.200	4	XD_T 11T3..
32	G211.32.R.04-11	35	17,0	16	10	30.200	4	XD_T 11T3..
32	G211.32.R.05-11	35	17,0	16	10	30.200	5	XD_T 11T3..
40	G211.40.R.05-11	35	17,0	16	10	27.700	5	XD_T 11T3..
40	G211.40.R.06-11	35	17,0	16	10	27.700	6	XD_T 11T3..

Ordering example: 1 piece G211.16.R.02-11

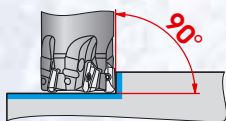
Supply details: cutter body and clamping screws for inserts



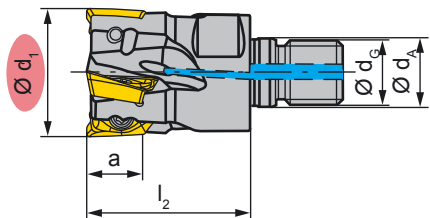
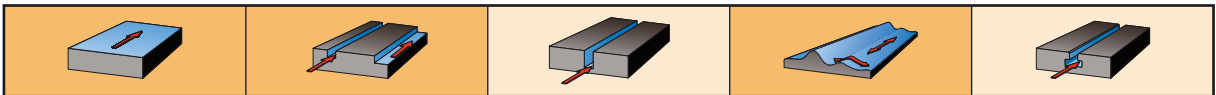
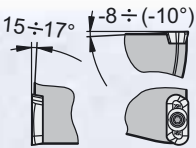
Insert radius > 1.6 mm: modify tool body.
* n_{max} depends on the overall tool length and number of interfaces

	d ₁ [mm]			
XD_T 11T3..	16 - 40	10000126/M2,5X5,6/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP

	XD_T 11T3..  17-18				
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Shoulder & slot milling cutters G211-15



d ₁ [mm]	Type, description	l ₂ [mm]	d _A [mm]	d _G [mm]	a [mm]	n _{max} [min ⁻¹]	z	
25	G211.25.R.02-15	35	12,5	12	14	26.560	2	XD_T 1505..
32	G211.32.R.03-15	35	17,0	16	14	30.200	3	XD_T 1505..
40	G211.40.R.04-15	35	17,0	16	14	27.700	4	XD_T 1505..

Ordering example: 1 piece G211.25.R.02-15

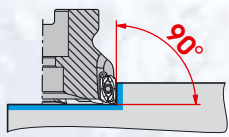
Supply details: cutter body and clamping screws for inserts



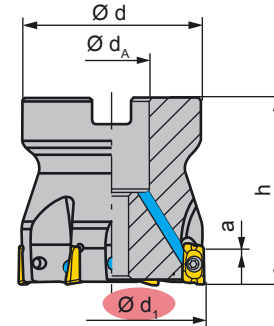
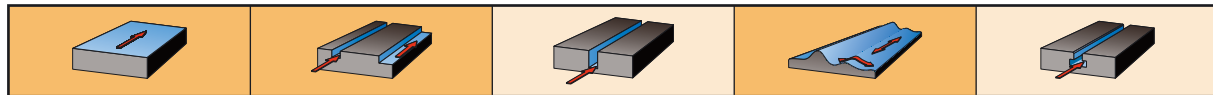
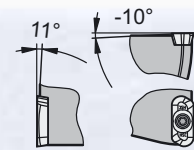
Insert radius > 2.5 mm: modify tool body.
n_{max} = depends on the overhang and number of interfaces in the complete tool

	d ₁ [mm]			
XD_T 1505..	25 - 40	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP

	XD_T 1505.. 19				
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Shoulder & slot milling cutters A211-07



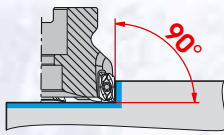
d_1 [mm]	Type, description	h [mm]	a [mm]	d [mm]	d_A [mm]	n_{max} [min ⁻¹]		
32	A211.32.R.06-07	32	6	30	16	36.240	6	XD_T 0703..
32	A211.32.R.08-07	32	6	30	16	36.240	8	XD_T 0703..
40	A211.40.R.08-07	40	6	38	16	33.240	8	XD_T 0703..
40	A211.40.R.10-07	40	6	38	16	33.240	10	XD_T 0703..
50	A211.50.R.10-07	40	6	43	22	30.480	10	XD_T 0703..
50	A211.50.R.12-07	40	6	43	22	30.480	12	XD_T 0703..

Ordering example: 1 piece A211.32.R.06-07

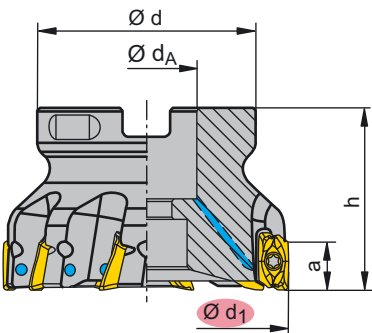
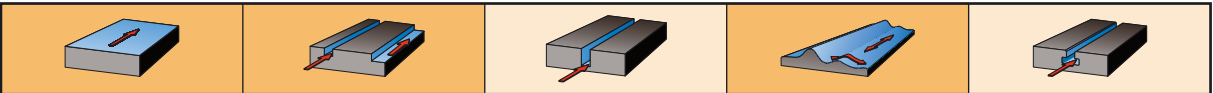
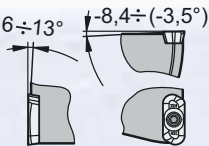
Supply details: cutter body and clamping screws for inserts

	d_1 [mm]				
XD_T 0703..	32	10006888/M2,2X4,2/07IP	10006918/TORX 07IP	DMSD 1,0Nm/SORT 07IP	7818267/M8,0x30,0
XD_T 0703..	40 - 50	10006888/M2,2X4,2/07IP	10006918/TORX 07IP	DMSD 1,0Nm/SORT 07IP	
					
		S4/SW4			

	XD_T 0703..  16				
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Shoulder & slot milling cutters A211-11



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	n _{max} [min ⁻¹]		
40	A211.40.R.04-11	40	10	38	16	27.700	4	XD_T 11T3..
40	A211.40.R.06-11	40	10	38	16	27.700	6	XD_T 11T3..
50	A211.50.R.05-11	40	10	43	22	25.400	5	XD_T 11T3..
50	A211.50.R.08-11	40	10	43	22	25.400	8	XD_T 11T3..
63	A211.63.R.06-11	40	10	48	22	23.300	6	XD_T 11T3..
63	A211.63.R.10-11	40	10	48	22	23.300	10	XD_T 11T3..
80	A211.80.R.07-11	50	10	58	27	21.300	7	XD_T 11T3..
80	A211.80.R.10-11	50	10	58	27	21.300	10	XD_T 11T3..
80	A211.80.R.12-11	50	10	58	27	21.300	12	XD_T 11T3..
100	A211.100.R.08-11	50	10	78	32	19.600	8	XD_T 11T3..
100	A211.100.R.14-11	50	10	78	32	19.600	14	XD_T 11T3..
125	A211.125.R.10-11	63	10	88	40	17.900	10	XD_T 11T3..
160	A211.160.R.13-11	63	10	98	40	16.500	13	XD_T 11T3..

Ordering example: 1 piece A211.40.R.04-11

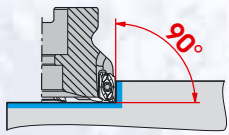
Supply details: cutter body and clamping screws for inserts



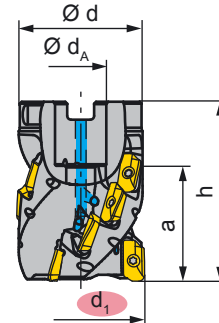
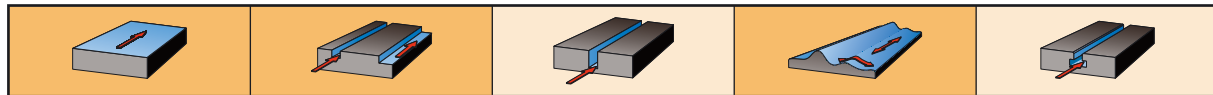
Insert radius > 1.6 mm: modify tool body.

	d ₁ [mm]				
XD_T 11T3..	40	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	7818267/M8,0x30,0
XD_T 11T3..	50	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	7818268/M10,0X31,0
XD_T 11T3..	63 - 160	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	
					
		S4/SW4			
		7812301/SW 5			

	XD_T 11T3..  17-18				
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Shoulder & slot milling cutters A211-11K



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	n _{max} [min ⁻¹]	n			
40	A211.40.R.03K4-11	56	37,0	38	16	18.500	12		3	XD_T 11T3..
40	A211.40.R.04K4-11	55	37,0	38	16	18.500	16		4	XD_T 11T3..
40	A211.40.R.04K5-11 *	65	45,5	38	16	18.500	20		4	XD_T 11T3..
50	A211.50.R.04K5-11	65	45,5	43	22	17.000	20		4	XD_T 11T3..
50	A211.50.R.05K5-11	65	45,5	43	22	17.000	25		5	XD_T 11T3..
50	A211.50.R.05K6-11 *	74	54,5	43	22	17.000	30		5	XD_T 11T3..

Ordering example: 1 piece A211.40.R.03K4-11

Supply details: cutter body and clamping screws for inserts

n = total number of inserts

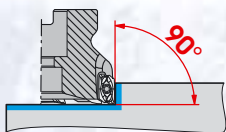
* = for profile milling only



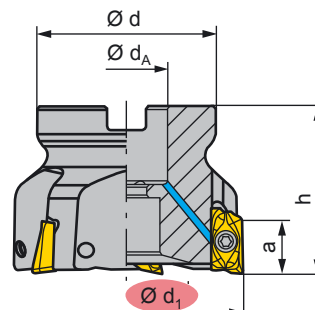
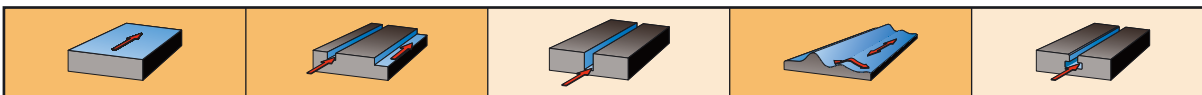
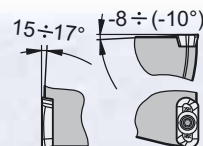
Insert radius > 1.6 mm: modify tool body.

	d ₁ [mm]				
XD_T 11T3..	40	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	
XD_T 11T3..	50	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	
					
		S-10007790/M16,0X6,0/SW06	7818123/M8X25/DIN912-12.9		
		S-10007791/M20,0X7,0/SW08	7818124/M10X25/DIN912-12.9		

	XD_T 11T3..  17-18				
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Shoulder & slot milling cutters A211-15



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	n _{max} [min ⁻¹]		
40	A211.40.R.03-15	40	14	38	16	22.160	3	XD_T 1505..
40	A211.40.R.04-15	40	14	38	16	22.160	4	XD_T 1505..
50	A211.50.R.03-15	40	14	43	22	20.320	3	XD_T 1505..
50	A211.50.R.05-15	40	14	43	22	20.320	5	XD_T 1505..
63	A211.63.R.04-15	45	14	48	22	18.640	4	XD_T 1505..
63	A211.63.R.06-15	45	14	48	22	18.640	6	XD_T 1505..
80	A211.80.R.05-15	50	14	58	27	17.040	5	XD_T 1505..
80	A211.80.R.08-15	50	14	58	27	17.040	8	XD_T 1505..
100	A211.100.R.06-15	50	14	78	32	15.680	6	XD_T 1505..
100	A211.100.R.10-15	50	14	78	32	15.680	10	XD_T 1505..
125	A211.125.R.07-15	63	14	88	40	14.320	7	XD_T 1505..
125	A211.125.R.11-15	63	14	88	40	14.320	11	XD_T 1505..
160	A211.160.R.08-15	63	14	93	40	13.200	8	XD_T 1505..
160	A211.160.R.12-15	63	14	93	40	13.200	12	XD_T 1505..

Ordering example: 1 piece A211.40.R.03-15

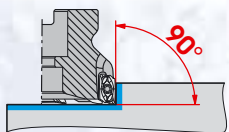
Supply details: cutter body and clamping screws for inserts



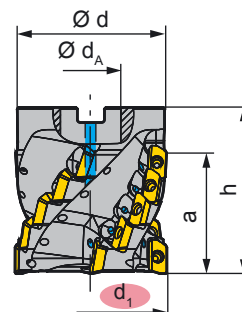
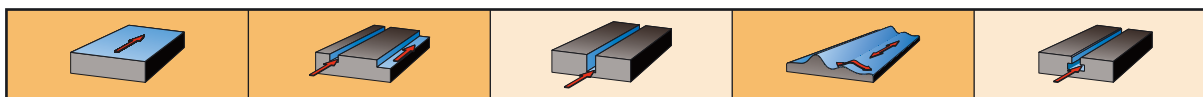
Insert radius > 2.5 mm: modify tool body.

	d ₁ [mm]				
XD_T 1505..	40	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP	7818267/M8,0x30,0
XD_T 1505..	50	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP	7818268/M10,0X31,0
XD_T 1505..	63 - 160	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP	
					
		S4/SW4			
		7812301/SW 5			

	XD_T 1505.. 				
	19				



Shoulder & slot milling cutters A211-15K



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	n _{max} [min ⁻¹]	n			
50	A211.50.R.03K4-15	74	50,5	43	22	13.600	12		3	XD_T 1505..
50	A211.50.R.03K5-15	88	63,0	43	22	13.600	15		3	XD_T 1505..
63	A211.63.R.03K4-15	74	50,5	58	27	12.500	12		3	XD_T 1505..
63	A211.63.R.04K6-15	102	75,5	58	27	12.500	24		4	XD_T 1505..
80	A211.80.R.04K5-15	88	63,0	78	32	11.360	20		4	XD_T 1505..
80	A211.80.R.05K6-15	102	75,5	78	32	11.360	30		4	XD_T 1505..

Ordering example: 1 piece A211.50.R.03K4-15

Supply details: cutter body and clamping screws for inserts

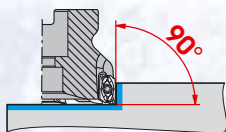
n = total number of inserts



Insert radius > 2.5 mm: modify tool body.

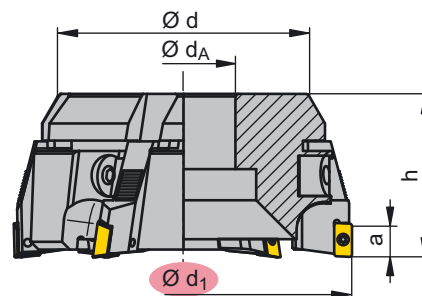
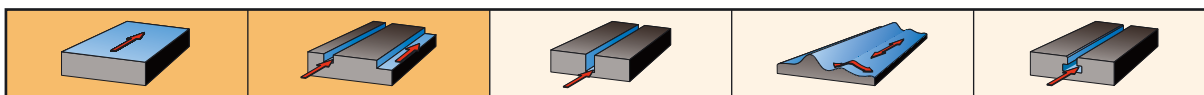
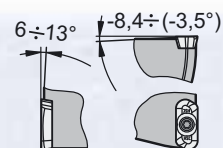
	d ₁ [mm]				
XD_T 1505..	50	10006919/TORX 15IP	10006887/M3,5X8,6/15IP	DMSD 3,2Nm/SORT 15IP	
XD_T 1505..	63	10006919/TORX 15IP	10006887/M3,5X8,6/15IP	DMSD 3,2Nm/SORT 15IP	
XD_T 1505..	80	10006919/TORX 15IP	10006887/M3,5X8,6/15IP	DMSD 3,2Nm/SORT 15IP	
					
		S-10007791/M20,0X7,0/SW08	7818124/M10X25/DIN912-12.9		
		S-10007821/M24,0X9,0/SW10	7818125/M12X30/DIN912-12.9		
		S-10007822/M30,0X9,0/SW14	S-10007786/M16,0X40,0/DIN912-12.9		

	XD_T 1505..  19				
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Shoulder & slot milling cutters

A260/054



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	 [kg]	 z	
89	A260.08.R.05/054	52	10	66	27	1,33	5	XD_T 11T3..
109	A260.10.R.06/054	52	10	89	32	1,95	6	XD_T 11T3..
132	A260.12.R.07/054	63	10	95	40	3,50	7	XD_T 11T3..
167	A260.16.R.10/054	63	10	130	40	6,05	10	XD_T 11T3..
207	A260.20.R.12/054	63	10	172	60	9,92	12	XD_T 11T3..
257	A260.25.R.14/054	63	10	222	60	16,76	14	XD_T 11T3..
322	A260.31.R.18/054	80	10	280	60	31,53	18	XD_T 11T3..
407	A260.40.R.22/054	80	10	365	60	67,59	22	XD_T 11T3..

Ordering example: 1 piece A260.08.R.05/054

Supply details: cutter body, cassettes, clamping screws, wedges, clamping screws for inserts, S4 clamping key, eccentric key

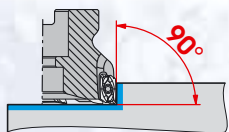


Insert radius > 1.6 mm: modify tool body.

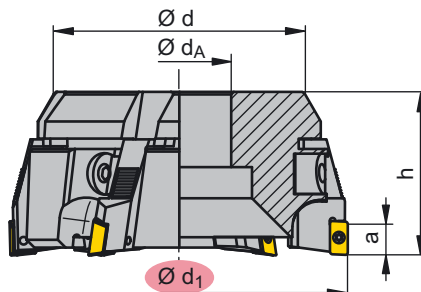
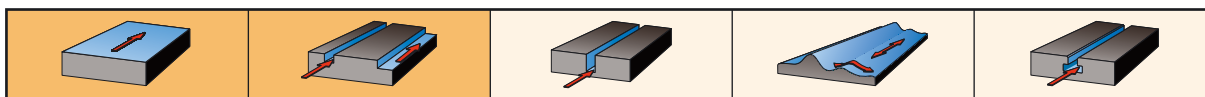
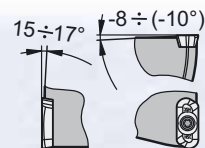
	d ₁ [mm]				
XD_T 11T3..	89 - 407	10000125/M2,5X7,3/08TP	10000276/TORX 08IP	DMSD 1,6Nm/SORT 08IP	7818044/M8X21/R-L
					
		S4/SW4	7818043/K	7818048/EXZS	

	7818054/KA				
					

	XD_T 11T3..				
					
	17-18				



Shoulder & slot milling cutters A260/056



d ₁ [mm]	Type, description	h [mm]	a [mm]	d [mm]	d _A [mm]	 [kg]	 z	
89	A260.08.R.05/056	52	14	66	27	1,33	5	XD_T 1505..
109	A260.10.R.06/056	52	14	89	32	1,95	6	XD_T 1505..
132	A260.12.R.07/056	63	14	95	40	3,50	7	XD_T 1505..
167	A260.16.R.10/056	63	14	130	40	6,05	10	XD_T 1505..
207	A260.20.R.12/056	63	14	172	60	9,92	12	XD_T 1505..
257	A260.25.R.14/056	63	14	222	60	16,76	14	XD_T 1505..
322	A260.31.R.18/056	80	14	280	60	31,53	18	XD_T 1505..
407	A260.40.R.22/056	80	14	365	60	67,59	22	XD_T 1505..

Ordering example: 1 piece A260.08.R.05/056

Supply details: cutter body, cassettes, clamping screws, wedges, clamping screws for inserts, S4 clamping key, eccentric key



Insert radius > 2.5 mm: modify tool body.

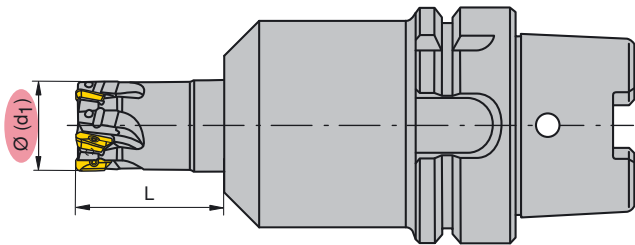
	d ₁ [mm]				
XD_T 1505..	89 - 407	10006887/M3,5X8,6/15IP	10006919/TORX 15IP	DMSD 3,2Nm/SORT 15IP	7818044/M8X21/R-L
					
		S4/SW4	7818043/K	7818048/EXZS	

	7818056/KA 				
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	XD_T 1505..  19				
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Rev numbers, modification to tool body

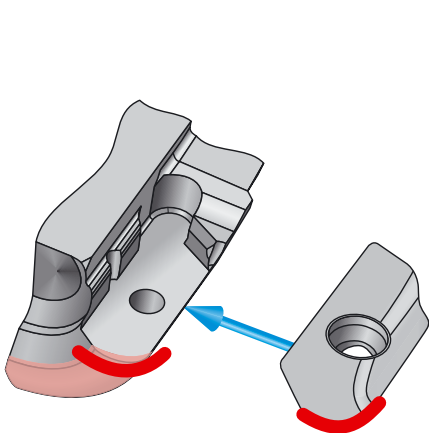
Maximum rpm in relation to overhang L



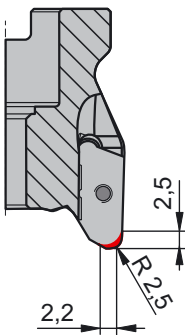
The revolution number must be adapted according to the machining situation and the selected tool shank.

Tool Ø (d ₁) [mm]	211-07			211-11			211-15		
	n _{max} [min ⁻¹]			n _{max} [min ⁻¹]			n _{max} [min ⁻¹]		
	L = 2xØ	L = 3xØ	L = 5xØ	L = 2xØ	L = 3xØ	L = 5xØ	L = 2xØ	L = 3xØ	L = 5xØ
10	72.000	57.600	46.100	—	—	—	—	—	—
12	66.600	54.073	38.276	55.500	45.061	31.897	—	—	—
16	50.400	40.920	29.040	42.000	34.100	24.200	—	—	—
20	44.280	34.200	23.400	36.900	28.500	19.500	—	—	—
25	39.840	29.280	18.480	33.200	24.400	15.400	26.560	19.520	12.320
32	36.240	25.080	14.280	30.200	20.900	11.900	24.160	16.720	9.520
40	33.240	21.600	10.800	27.700	18.000	9.000	22.160	14.400	7.200
50	30.480	18.480	7.320	25.400	15.400	6.100	20.320	12.320	4.880
63	—	—	—	23.300	12.900	3.700	18.640	10.320	2.960
80	—	—	—	21.300	10.600	—	17.040	8.480	—
100	—	—	—	19.600	8.400	—	15.680	6.720	—
125	—	—	—	17.900	—	—	14.320	—	—
160	—	—	—	16.500	—	—	13.200	—	—

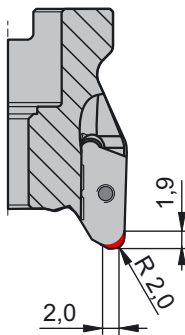
Modification to tool body (modify front profile)



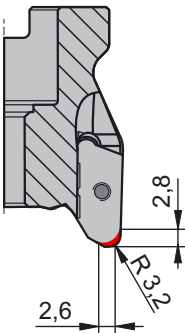
211-11
> r 1,6 mm



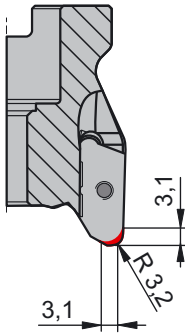
211-15
> r 2,5 mm



211-15
> r 4,0 mm

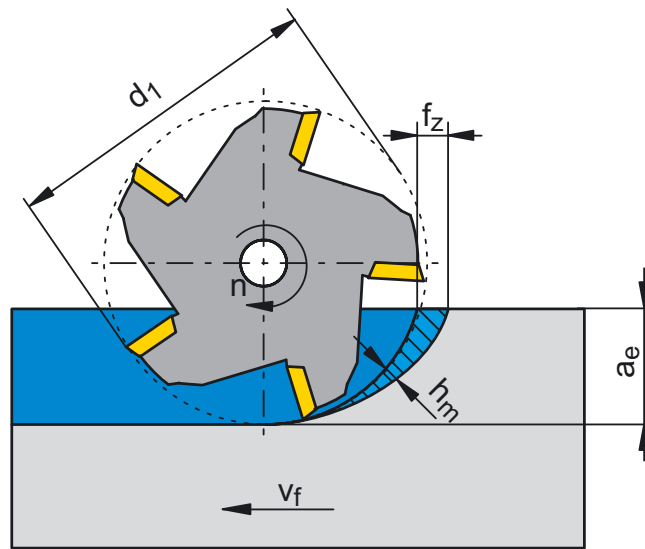


211-15
> r 5,0 mm



Average chip thickness h_m

Feed rate correction f_z



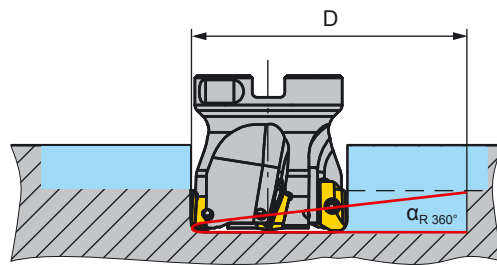
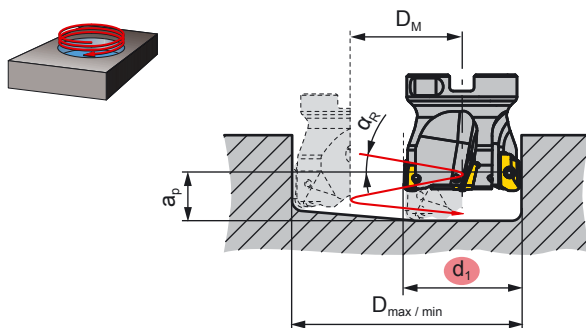
Feed rate f_z calculation:

Material	N/mm ²	h_m [mm]
Steel	... - 800	0,16
Steel	800 - 1000	0,14
Steel	1000 - 1200	0,12
Steel	1200 - ...	0,10
Stainless	... - 750	0,15
Stainless	750 - 900	0,13
Stainless	900 - 1150	0,11
Stainless	1150 - ...	0,09

	0,1 x d_1	0,2 x d_1	0,3 x d_1	0,4 x d_1	0,75 x d_1	1 x d_1
h_m [mm]	Corrected feed rate values (f_z)					
0,16	0,40	0,36	0,29	0,25	0,18	0,16
0,15	0,40	0,34	0,27	0,24	0,17	0,15
0,14	0,40	0,31	0,26	0,22	0,16	0,14
0,13	0,40	0,29	0,24		0,15	0,13
0,12	0,40	0,27	0,22	0,19	0,14	0,12
0,11	0,35	0,25	0,20	0,17	0,13	0,11
0,10	0,32	0,22	0,18	0,16	0,12	0,10
0,09	0,28	0,20	0,16	0,14	0,10	0,09

Application data MaxiMill 211-07

Helical plunge milling



D_{max} [mm] = maximum diameter for flat bottom ground

D_{min} [mm] = minimum hole diameter

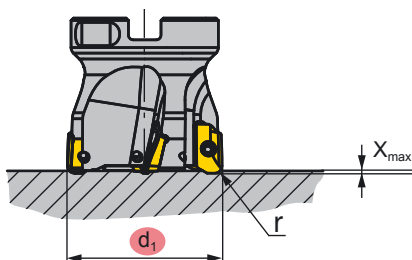
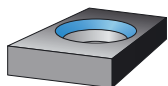
$D_M = D_{max} - d_1$ or $D_{min} - d_1$

d_1 [mm]	$D_{max} / r 0,4$ [mm]	D_{min} [mm]	$\alpha_{R \max}$ [°]
10	19	13	5,5
12	23	17	6,0
16	31	25	3,0
20	39	33	2,0
25	49	43	1,5
32	63	57	1,2
40	79	73	0,8
50	99	93	0,7

$$a_p \text{ [mm]} = D_M \times \pi \times \tan \alpha_R$$

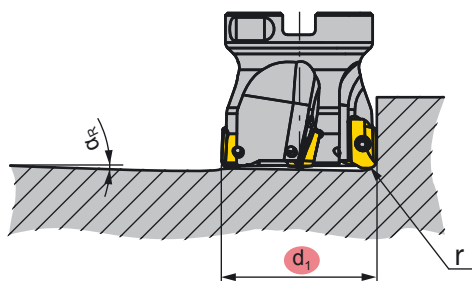
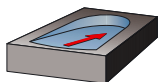
d_1 [mm]	D [mm]	$\alpha_{R \max 360^\circ}$ [°]
10	13	5,5
12	17	6,0
16	25	3,0
20	33	2,0
25	43	1,5
32	57	1,2
40	73	0,8
50	93	0,7

Axial plunging



d_1 [mm]	X_{max} [mm]
10	0,8
12	0,8
16	0,8
20	0,8
25	0,8
32	0,8
40	0,8
50	0,8

Angled ramping

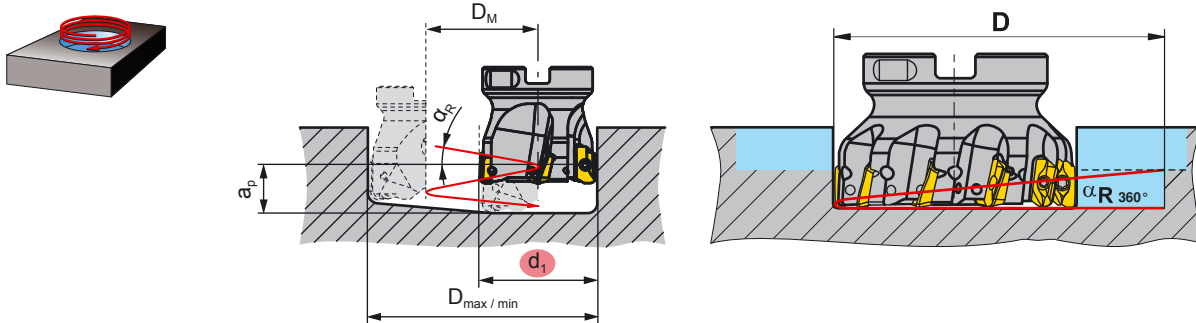


d_1 [mm]	α_R [°]
10	11,0
12	7,9
16	4,3
20	3,0
25	2,5
32	1,6
40	1,2
50	1,0

Application data

MaxiMill 211-11

Helical plunge milling



D_{max} [mm] = maximum diameter for flat bottom ground

D_{min} [mm] = minimum hole diameter

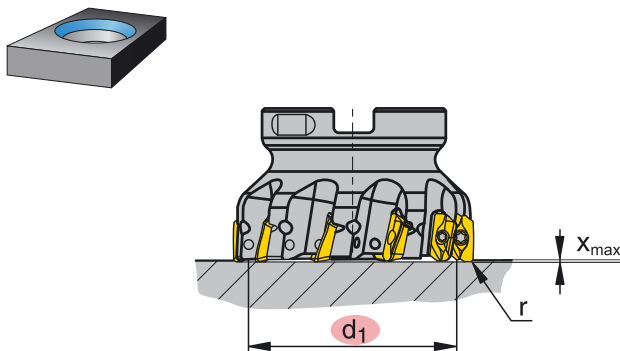
$D_M = D_{max} - d_1$ or $D_{min} - d_1$

d_1 [mm]	$D_{max} / r 0,8$ [mm]	D_{min} [mm]	$\alpha_{R \max}$ [°]
12	21	14	16,0
16	29	18	9,5
20	37	30	7,0
25	47	40	4,5
32	61	53	3,2
40	77	72	2,2
50	98	93	1,7
63	123	118	1,5
80	157	152	1,0
100	197	191	0,8
125	247	242	0,6
160	317	312	0,4

$$a_p \text{ [mm]} = D_M \times \pi \times \tan \alpha_R$$

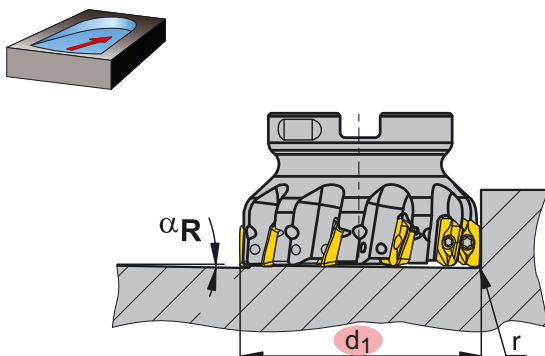
d_1 [mm]	D [mm]	$\alpha_{R \max 360^\circ}$ [°]
12	14	16,0
16	18	9,5
20	30	7,0
25	40	4,5
32	53	3,2
40	72	2,2
50	93	1,7
63	118	1,5
80	152	1,0
100	191	0,8
125	242	0,6
160	312	0,4

Axial plunging



d_1 [mm]	X_{max} [mm]
12	1,3
16	1,5
20	2,0
25	2,0
32	1,8
40	1,6
50	1,6
63	1,6
80	1,6
100	1,6
125	1,6
160	1,6

Angled ramping

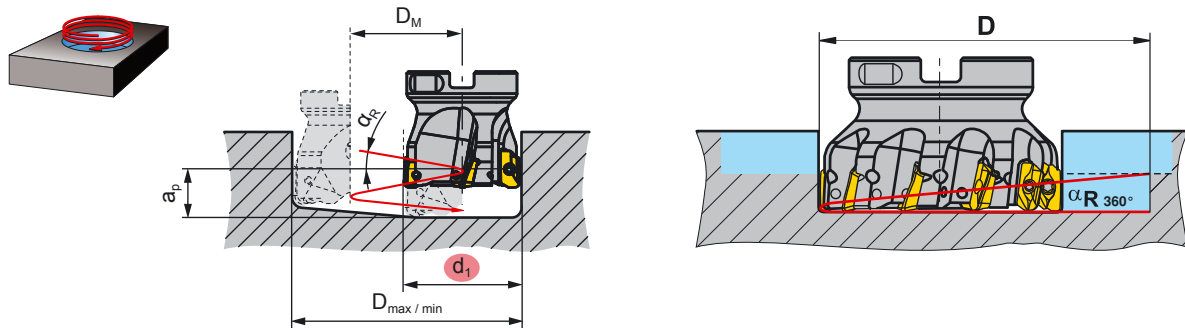


d_1 [mm]	α_R [°]
12	18,0
16	10,8
20	9,8
25	7,5
32	4,8
40	2,9
50	2,2
63	1,8
80	1,4
100	1,1
125	0,8
160	0,65

Application data

MaxiMill 211-15

Helical plunge milling



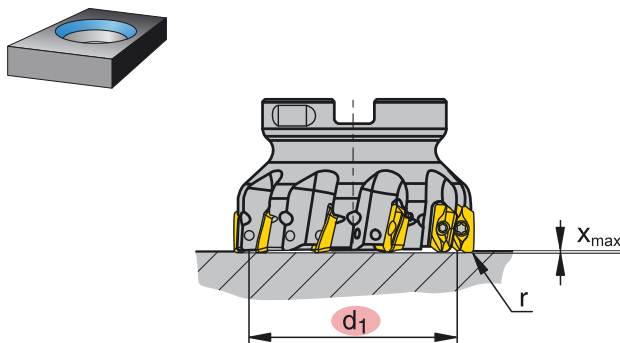
D_{max} [mm] = maximum diameter for flat bottom ground
 D_{min} [mm] = minimum hole diameter
 $D_M = D_{max} - d_1$ or $D_{min} - d_1$

d_1 [mm]	$D_{max} / r \ 0,8$ [mm]	D_{min} [mm]	$\alpha_R \max$ [°]
25	48	37	7,5
32	62	47	5,0
40	78	63	3,2
50	98	86	2,5
63	124	111	1,5
80	158	147	1,3
100	198	190	1,1
125	248	240	0,9
160	318	310	0,6

$$a_p \text{ [mm]} = D_M \times \pi \times \tan \alpha_R$$

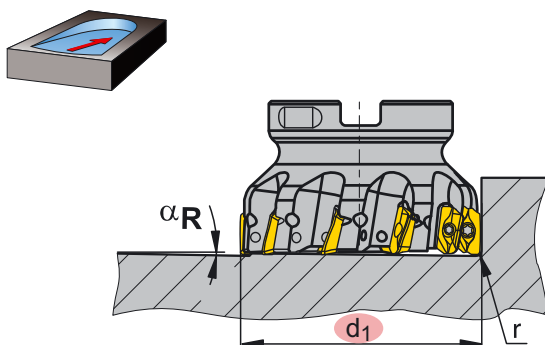
d_1 [mm]	D [mm]	$\alpha_R \max \ 360^\circ$ [°]
25	37	7,5
32	47	5,0
40	63	3,2
50	86	2,5
63	111	1,5
80	147	1,3
100	190	1,1
125	240	0,9
160	310	0,6

Axial plunging



d_1 [mm]	X_{max} [mm]
25	2,7
32	2,5
40	2,5
50	2,5
63	2,5
80	2,5
100	2,5
125	2,5
160	2,5

Angled ramping



d_1 [mm]	α_R [°]
25	9,5
32	6,8
40	5,1
50	2,5
63	2,5
80	2,0
100	1,5
125	0,9
160	0,7

Cutting data

Tool, material

Recommendations for economic milling

	v_c [m/min]	f_z [mm]	a_p [mm]		v_c [m/min]	f_z [mm]	a_p [mm]
	MaxiMill 211-07						
	300 - 60	0,03 - 0,10	0,20 - 6,0				
	220 - 40	0,03 - 0,10	0,20 - 6,0				
	3000 - 70	0,03 - 0,10	0,20 - 6,0				
	100 - 30	0,03 - 0,08	0,20 - 4,0				

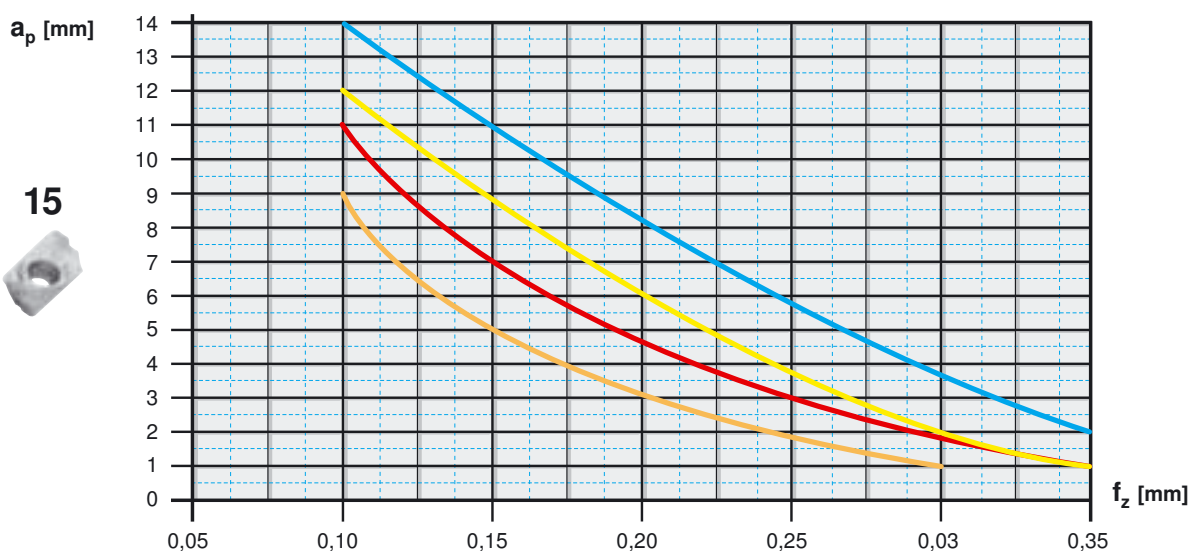
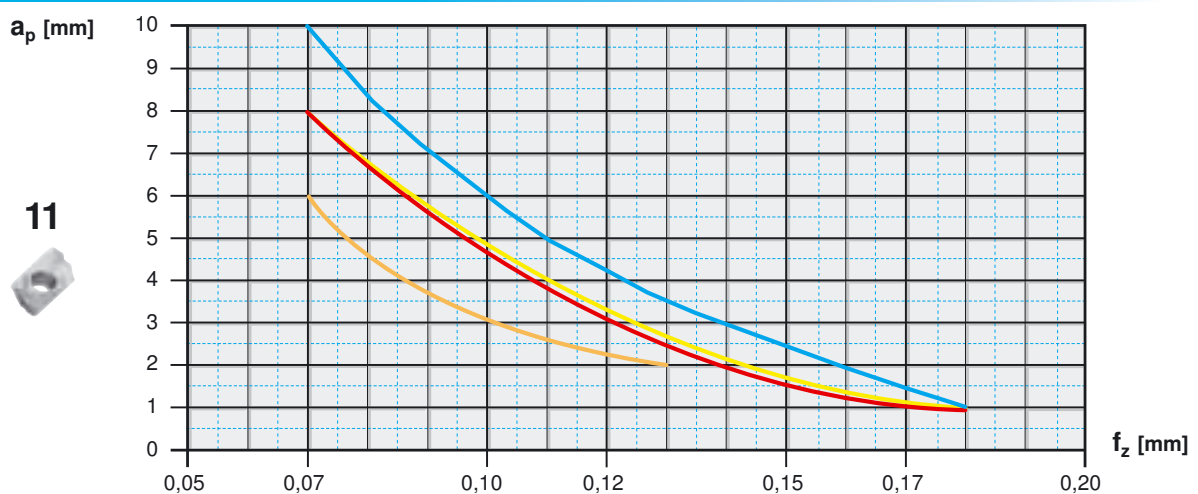
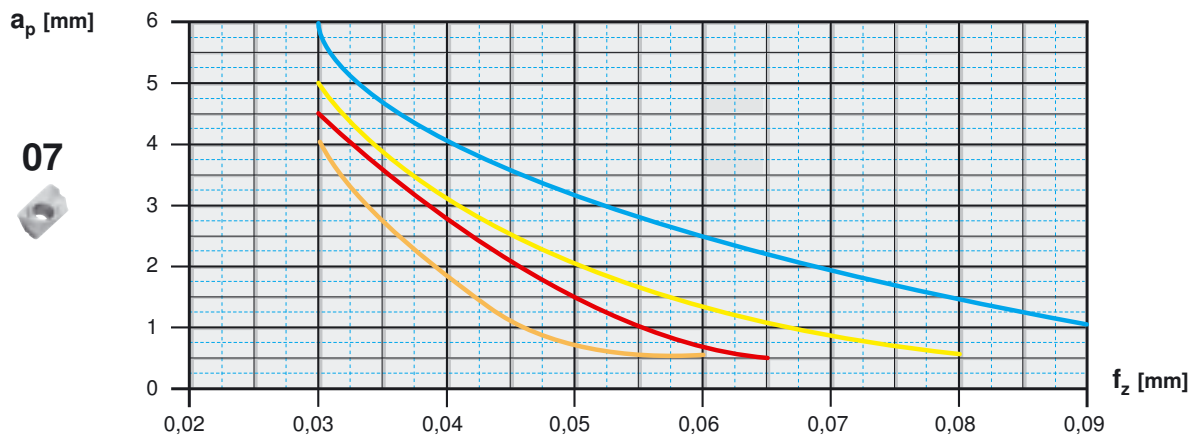
	MaxiMill 211-11 / 260-054			MaxiMill 211-11K		
	350 - 60	0,05 - 0,20	0,20 - 10	300 - 100	0,05 - 0,20	$\leq a$
	250 - 40	0,05 - 0,20	0,20 - 10	200 - 80	0,05 - 0,20	$\leq a$
	350 - 70	0,05 - 0,20	0,20 - 10	300 - 110	0,05 - 0,20	$\leq a$
	3000 - 200	0,10 - 0,25	0,25 - 10	2000 - 300	0,10 - 0,25	$\leq a$
	110 - 20	0,05 - 0,15	2,0 - 4,0	80 - 40	0,05 - 0,15	$\leq a$
	60 - 30	0,05 - 0,10	0,5 - 4,0	50 - 30	0,05 - 0,10	$\leq a$

	MaxiMill 211-15 / 260-056			MaxiMill 211-15K		
	350 - 100	0,08 - 0,35	1,0 - 14,0	300 - 120	0,08 - 0,35	$\leq a$
	250 - 150	0,08 - 0,35	1,0 - 14,0	200 - 150	0,08 - 0,35	$\leq a$
	350 - 110	0,08 - 0,35	1,0 - 14,0	300 - 130	0,08 - 0,35	$\leq a$
	3000 - 300	0,12 - 0,40	1,0 - 14,0	2500 - 400	0,12 - 0,40	$\leq a$
	90 - 25	0,08 - 0,20	1,0 - 8,0	80 - 25	0,08 - 0,20	$\leq a$

$v_c \rightarrow$ see also: cutting data - grades/materials

Starting parameters for example materials

	Example materials	
	High alloyed steel	1.000 N/mm ²
	Stainless steel, austenitic	600 N/mm ²
	Grey cast iron pearlitic, ferritic	HB 180
	Super alloys, Ni-base, hardened	1.450 N/mm ²

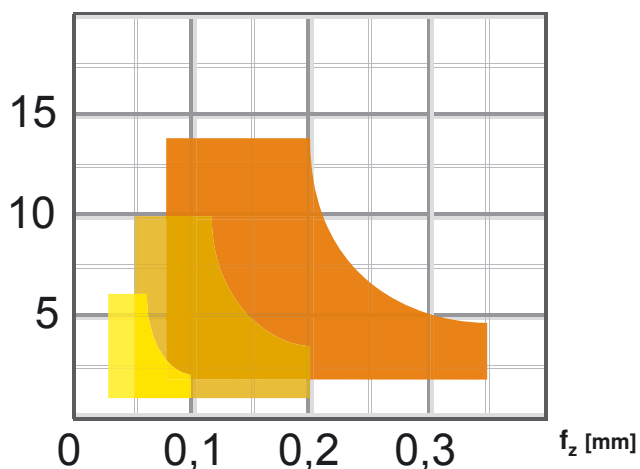




Recommendations for economic milling

211

a_p [mm]



l [mm]

a_p

f_z



07

0,2 - 6

0,03 - 0,10

11

0,2 - 10

0,05 - 0,20

15

1,0 - 14

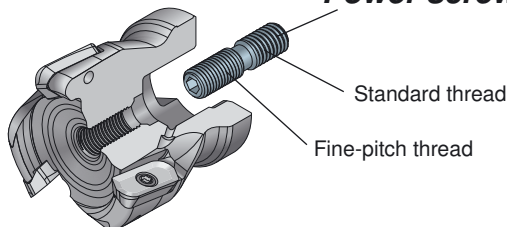
0,08 - 0,35

How to use the power screw

Power screw:

- > 3 x clamping force of a standard cap-head screw
- > Stronger cutter body thanks to no counter-bore for cap-head screw
- > The use of a torque screwdriver is recommended.

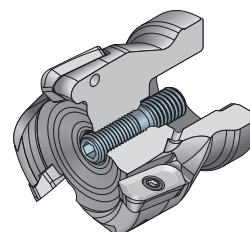
Power screw



1

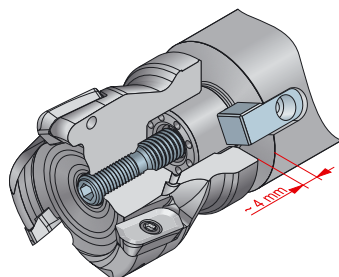
The fine-pitch part of the power screw is threaded into the milling cutter

2



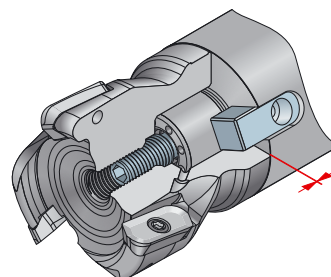
Turn the power screw carefully until the stop (as screw was delivered)

3



In order to guarantee an optimum connection of tool and shank a gap of 4 mm is required between cutter body and adapter prior to final clamping.

4



Turn power screw

Torque:

$\varnothing d_1 = 40 \text{ mm} \rightarrow 15 \text{ Nm!}$

$\varnothing d_1 = 50 \text{ mm} \rightarrow 20 \text{ Nm!}$



Milling of hard materials (≥ 45 HRC)

Recommendations for machining		
l_2		
z		
$a_{e \max} = 75\%$		
Adapter		
Cooling		
Ramp angle		
Starting values (52 - 60 HRC)	$f_z = 0,05 \text{ mm}$ $V_c = 30 - 60 \text{ m/min}$ $a_p = 0,5 - 2,5 \text{ mm}$	

MaxiMill 211-11

Radial force compensation through 'the notch' when helical plunging or ramping: ($r < 2.0 \text{ mm}$)

Radial force compensation

- The notch provides additional stability when plunging.
- Reduced machining noise and vibration are therefore guaranteed.

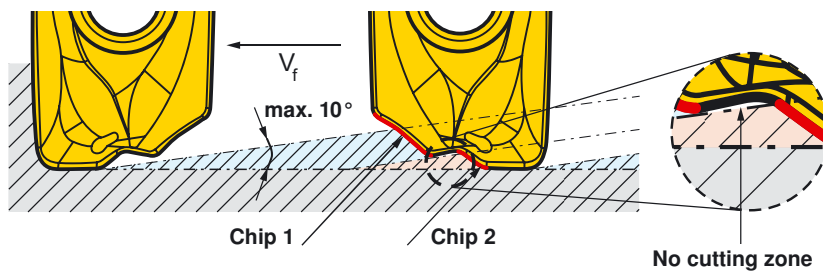
The ADVANTAGE for cutting tool experts:

- Increased cutting performance
- Improved surface quality when machining pockets and slots



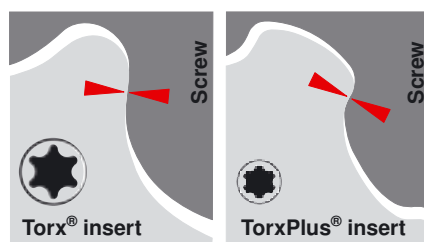
Swarf control

- Low cutting pressure
- Low power consumption
- Optimum chip evacuation
- Minimum vibration
- Very good chip formation



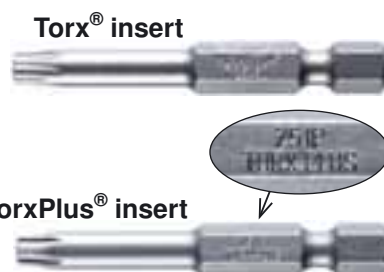


From the Torx® to the TorxPlus® screw ...



The TorxPlus® screwdrivers provide better transmission of torque moments than Torx® standard tools.

The considerably larger contact face of the TorxPlus® screwdriver in the TorxPlus® screw guarantees longer service life of both the tool and the screw.



Spare parts, torque moments, accessories

	Torque key 10006918/TORX 07IP 10000276/TORX 08IP 10006919/TORX 15IP	Non-slip handle	Mount clamping screw. The TorxPlus screwdriver transmits a higher torque moment compared to the Torx profile.
	Clamping screw 10006888/M2,2X4,2/07IP 10005892/M2,5X5,0/08TP 10000126/M2,5X5,6/08TP 10000125/M2,5X7,3/08TP 10006887/M3,5X8,6/15IP	Recommended torque value: 1.0 Nm 1.6 Nm 1.6 Nm 1.6 Nm 3.2 Nm 	For safe mounting of the insert. Special steel with very high hardness and toughness.
	Special grease 7730102/GREASE	5 g tube	Should always be on the workbench. Makes removal of the clamping screw easier.
	Torque screwdriver DMSD 1.0Nm/SORT 07IP DMSD 1.6Nm/SORT 08IP DMSD 3.2Nm/SORT 15IP	Set with handle. One tool holder and 5 inserts.	For the correct torque moment. A tool that guarantees safe machining. Non-slip handle, even when touching it with oily hands.
	DMSD 1-5Nm/SORT	Set with handle and tool.	Torque moment can be adjusted.
	Power screw 7818267/M8,0x30,0 7818268/M10,0x31,0	Torque moments: 15 Nm 20 Nm	Easy and safe handling. Fixed safely with screws in the tool and increases stability of tools with a small Ø.
	Socket headed cap screw 7818123/M8,0x25,0/DIN912-12.9 7818123/M10,0x25,0/DIN912-12.9 7818123/M12,0x30,0/DIN912-12.9 S-10007786/M16,0x40,0/DIN912-12.9	Torque moments: 30 Nm 50 Nm 80 Nm 110 Nm	For safe mounting of shell milling cutters.
	Blanking plug S-10007790/M16,0x6,0/SW06 S-10007791/M20,0x7,0/SW08 S-10007821/M24,0x9,0/SW10 S-10007822/M30,0x9,0/SW14		Blanking plug for helical flute end mill with coolant supply or central supply of compressed air.
 	Cassette A260/054 7818054/KA Cassette A260/056 7818056/KA	 A260/054  A260/056	All cassettes fit into all tool bodies.

Cutting data

Grades / materials

Work piece material		Type of treatment / alloy		VDI 3323 group	Hardness HB
A	Non alloyed steel	annealed	$\leq 0,15\% \text{ C}$	1	125
		annealed	$0,15\% - 0,45\% \text{ C}$	2	150 - 250
		tempered	$\geq 0,45\% \text{ C}$	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Stainless steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	-
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	$< 12\% \text{ Si}$	23	80
		hardened	$< 12\% \text{ Si}$	24	90
		non hardened	$> 12\% \text{ Si}$	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	-
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	-
			fibre reinforced plastics	29	-
			hard rubber	30	-
S	Heat resistant alloys	annealed	Fe base	31	200
		hardened	Fe base	32	280
		annealed	Ni or Co base	33	250
		hardened	Ni or Co base 30 - 58 HRC	34	-
		cast	Ni or Co base 1500 - 2200 Nmm ²	35	-
	Titanium alloys		Ni or Co base	36	R _m 440*
			alpha + beta alloys	37	R _m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

* R_m = ultimate tensile strength, measured in MPa

Cutting data

Grades / materials

[illegible]

   Recommended application

 ☐ Possible application

Cutting data

Grades / materials

Work piece material		Type of treatment / alloy		VDI 3323 group	Hardness HB
A	Non alloyed steel	annealed	$\leq 0,15\% \text{ C}$	1	125
		annealed	$0,15\% - 0,45\% \text{ C}$	2	150 - 250
		tempered	$\geq 0,45\% \text{ C}$	3	300
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		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Stainless steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
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		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	-
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	$< 12\% \text{ Si}$	23	80
		hardened	$< 12\% \text{ Si}$	24	90
		non hardened	$> 12\% \text{ Si}$	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	-
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	-
			fibre reinforced plastics	29	-
			hard rubber	30	-
S	Heat resistant alloys	annealed	Fe base	31	200
		hardened	Fe base	32	280
		annealed	Ni or Co base	33	250
		hardened	Ni or Co base 30 - 58 HRC	34	-
		cast	Ni or Co base 1500 - 2200 Nmm ²	35	-
	Titanium alloys		Ni or Co base	36	R _m 440*
			alpha + beta alloys	37	R _m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

* R_m = ultimate tensile strength, measured in MPa

Cutting data

Grades / materials

Coated carbide							
CTC5240		CTP1235		CTP2235		CTP6215	
□ v_c [m/min]	☒ v_c [m/min]	□ v_c [m/min]	☒ v_c [m/min]	□ v_c [m/min]	☒ v_c [m/min]	☒ v_c [m/min]	☒ v_c [m/min]
-	-	100-220	70-180	150 - 260	90 - 180	-	-
-	-	100-220	70-180	150 - 260	90 - 180	-	-
-	-	100-220	70-180	150 - 260	90 - 180	-	-
-	-	80-220	70-170	80 - 220	70 - 160	-	-
-	-	80-220	70-170	80 - 220	70 - 160	-	-
-	-	80-220	70-170	80 - 220	70 - 160	-	-
-	-	80-180	60-140	90 - 180	70 - 140	-	-
-	-	80-180	60-140	90 - 180	70 - 140	-	-
-	-	70-180	60-140	70 - 180	60 - 140	-	-
-	-	70-180	60-140	70 - 180	60 - 140	-	-
-	-	60-200	40-140	60 - 200	60 - 140	-	-
-	-	60-200	40-140	60 - 200	60 - 140	-	-
-	-	60-200	40-140	60 - 200	60 - 140	-	-
-	-	60-200	40-140	60 - 200	60 - 140	-	-
-	-	-	-	-	-	180 - 350	180 - 350
-	-	-	-	-	-	140 - 280	140 - 280
-	-	-	-	-	-	130 - 250	130 - 250
-	-	-	-	-	-	100 - 200	100 - 200
-	-	-	-	-	-	150 - 320	150 - 320
-	-	-	-	-	-	120 - 250	120 - 250
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	30 - 250	-	-	-	-	-	-
-	10 - 60	-	-	-	-	-	-
-	20 - 60	-	-	-	-	-	-
-	10 - 50	-	-	-	-	-	-
-	10 - 40	-	-	-	-	-	-
-	60 - 120	-	-	-	-	-	-
-	40 - 80	-	-	-	-	-	-
-	-	-	-	-	-	40 - 60	-
-	-	-	-	-	-	30 - 50	-
-	-	-	-	-	-	80 - 100	-
-	-	-	-	-	-	30 - 60	-

 Recommended application

  ☐ Possible application

Cutting data

Grades / materials

Work piece material		Type of treatment / alloy		VDI 3323 group	Hardness HB
A	Non alloyed steel	annealed	$\leq 0,15\% \text{ C}$	1	125
		annealed	$0,15\% - 0,45\% \text{ C}$	2	150 - 250
		tempered	$\geq 0,45\% \text{ C}$	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Stainless steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	-
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
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		hardened	$< 12\% \text{ Si}$	24	90
		non hardened	$> 12\% \text{ Si}$	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	-
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	-
			fibre reinforced plastics	29	-
			hard rubber	30	-
S	Heat resistant alloys	annealed	Fe base	31	200
		hardened	Fe base	32	280
		annealed	Ni or Co base	33	250
		hardened	Ni or Co base 30 - 58 HRC	34	-
		cast	Ni or Co base 1500 - 2200 Nmm ²	35	-
	Titanium alloys		Ni or Co base	36	R _m 440*
			alpha + beta alloys	37	R _m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

* R_m = ultimate tensile strength, measured in MPa

Cutting data

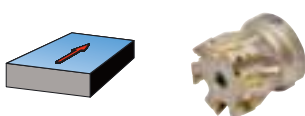
Grades / materials

[illegible]

   Recommended application

 ☐ Possible application

Machining examples



Criteria, objective:

- Reduce machining time
- Process security during entire tool life

Result:

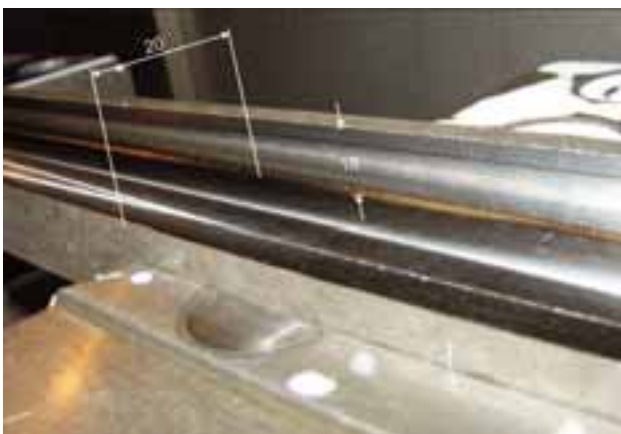
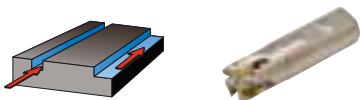
Cycle time reduced by 33%

- CERATIZIT 7.85 min.
- Competitor 10.47 min.
- Tool life 24 m
- 2 cuts $a_p = 2$ mm per cut

Work piece: stop
Material: C45 (1.0503)
Strength: 800 N/mm²
Tool: A211.50.R.08-11
Insert: XDKT 11T308SR-M50
Grade: SR226+
Coolant: dry machining

Cutting

parameters:	CERATIZIT	Competitor
v_c = [m/min]	300	300
v_f = [mm]	3,057	2,292
f_z = [mm]	0.2	0.2
a_p = [mm]	2	2
a_e = [mm]	40	40
n = [min ⁻¹]	1,910	1,910
z =	8	6



Criteria, objective:

- Productivity
- Process security

Result:

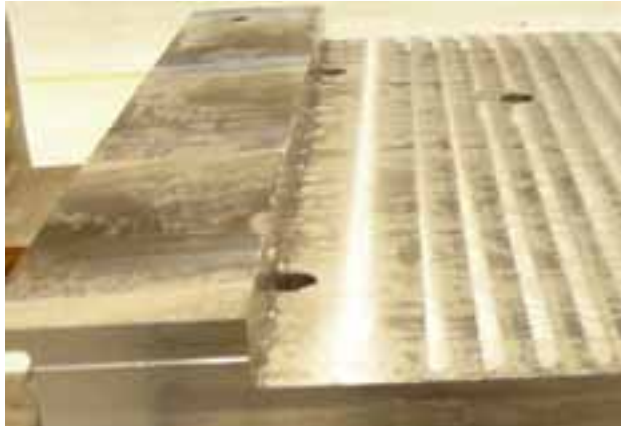
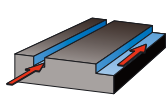
- Feed rate per tooth (f_z) increased by +60%
- Minimum vibration

Work piece: L-section rail
Material: ST37 (1.0037)
Strength: 400 N/mm²
Machine: AXA machining centre
Tool: C211.20.R.03-11-B-25
Insert: XDKT 11T308SR-M50
Grade: SR226+
Coolant: dry machining

Cutting

parameters:	CERATIZIT
v_c = [m/min]	251
v_f = [mm]	1,800 – 2,604
f_z = [mm]	0.15 – 0.217
a_p = [mm]	3
a_e = [mm]	20
n = [min ⁻¹]	4,000
z =	3

Machining examples



Criteria, objective:

- Maximize tool life
- Maximize intervals between tool changes
- Cutting performance

Result:

Compared to previous machining operations:

- Double cutting performance
- Tool life increased by 50%

Excellent process security:

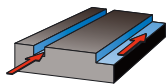
- Regular wear of cutting edge when full-slot or shoulder milling

Work piece: test block
 Material: TiAl6V4 (titanium alloy, 3.7146)
 Machine: DNC 42
 Tool: A211.63.R.05K4-11
 Insert: XDKT 11T308ER-F40
 Grade: CTC5240
 Coolant: emulsion

Cutting

parameters:

	CERATIZIT Groove milling	CERATIZIT Shoulder milling
v_c = [m/min]	30	45
v_f = [mm]	114	191
f_z = [mm]	0.15	0.17
a_p = [mm]	12 – 15	27
a_e = [mm]	63	20
Q = [cm ³ /min]	86 – 107	103
Tool life = [min]	95	35



Criteria, objective:

- Reduce machining time
- Process security (machining of the welding seam)

Result:

- Machining time reduced by 50%
- Double table feed
- Excellent process security

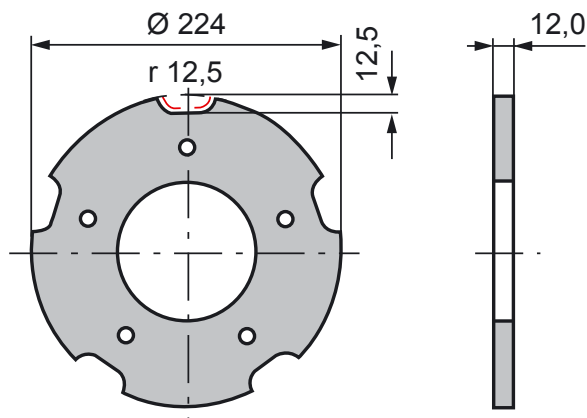
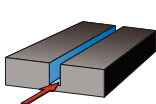
Work piece: wheel suspension (heavy transporter)
 Material: ST52 and SQ 690L
 Strength: 490 N/mm²
 Machine: DMC 160
 Tool: A211.80.R.12-11
 Insert: XDKT 11T304SR-R50
 Grade: CTP1235
 Coolant: dry machining

Cutting

parameters:

	CERATIZIT	Competitor
v_c = [m/min]	180	180
v_f = [mm]	1031	515
f_z = [mm]	0.12	0.12
a_p = [mm]	3 – 4	3 – 4
a_e = [mm]	40 – 70	40 – 70
Q = [cm ³ /min]	164 – 288	82 – 144

Machining examples



Criteria, objective:

- Reduce machining time
- Cycle time 2 min

Result:

- Double tool life
- Double cutting depth
- Tool life 4 times higher

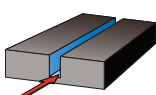
Cost reduction:

- Machining time minus 50 %
- Annual cost saving > 60,000 euros

Work piece: transmission disc (profile milling)
 Material: SS2172(1.0841)
 Machine: Mazak-Multiplex
 Tool: C211.25.R.04-11-B-32
 Insert: XDKT 11T308SR-F50
 Grade: CTP1235
 Coolant: dry machining

Cutting

parameters:	CERATIZIT	Competitor
v_c = [m/min]	265	265
v_f = [mm]	2,024	2,024
f_z = [mm]	0.15	0.20
a_p = [mm]	6	3
a_e = [mm]	12	12
Q = [cm ³ /min]	145	72
Pieces per cutting edge	312	78



Criteria, objective:

- Reduce machining time
- Increase tool life
- Process security

Result:

Double productivity:

- Tool life of cutting edge increased 3 times

Improved process security:

- Essentially improved chip formation
- No edge chipping
- Regular wear

Work piece: water cooled ring (groove milling)
 Material: X9CrNiSiNc21-11-2 (1.4835)
 Machine: Fadal, CNC
 Tool: G211.32.R.05-11-35
 Insert: XDKT 11T308ER-F40
 Grade: CTC5240
 Coolant: dry machining

Cutting

parameters:	CERATIZIT	Competitor
v_c = [m/min]	40	40
v_f = [mm]	250	80
f_z = [mm]	0.125	0.10
a_p = [mm]	2	2
a_e = [mm]	32	32
Q = [cm ³ /min]	16	5

Machining examples



Criteria, objective:

- Reduce number of tool types
- Maximize intervals between tool changes
- Eliminate regrinding costs for solid carbide milling cutters

Result:

- Only one tool is applied

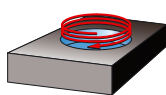
Reduced process costs:

- Time saving around 40 %
- No regrinding costs
- Readjustment no longer necessary
- Roughing and finishing in one machining operation

Work piece: turret disk (groove milling)
 Material: 31CrMoV9 (1050N/mm²)
 Machine: IndexG400
 Tool: C211.25.R.04-11-B-32
 Insert: XDKT 11T308SR-M50
 Grade: CTP1235

Cutting

parameters:	CERATIZIT	Competitor
v_c = [m/min]	140	140
v_f = [mm]	712	534
f_z = [mm]	0.1	0.1
a_p = [mm]	2	2
a_e = [mm]	25	25
Q = [cm ³ /min]	35	26
z =	4	3



Criteria, objective:

- Define performance limits
- Machining with parameters in the limit range
- Process security
- Dry machining

Result:

- Reduced machining noise
- No vibration
- Swarf is kept away from the work piece surface

Work piece: test block of customer
 Material: ST37 (1.0037)
 Strength: 400 N/mm²
 Machine: 5-axis machining centre, DMU
 Tool: A211.50.R.08-11
 Insert: XDKT 11T308SR -M50
 Grade: CTP1235
 Coolant: dry machining

Cutting

parameters:	CERATIZIT
v_c = [m/min]	300
v_f = [mm]	1,824
f_z = [mm]	0.12
a_p = [mm]	1.5
a_e = [mm]	50
n = [min ⁻¹]	1,900
z =	8



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