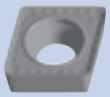
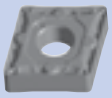
Overview of geometries of indexable cutting inserts

ISO designation codes in the INFO section

INFO

	CC...	ATORN	from page 30-94
		SARA TURN	from page 30-56
	CN...	ATORN	from page 30-95
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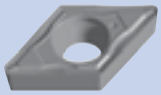	DC...	ATORN	from page 30-97
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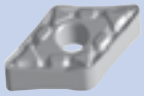	DN...	ATORN	from page 30-98
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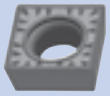
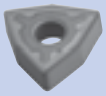
	SC...	ATORN	from page 30-100
		SARA TURN	from page 30-75
	SN...	ATORN	from page 30-100
		SARA TURN	from page 30-76
	TC...	ATORN	from page 30-101
		SARA TURN	from page 30-80

	TN...	ATORN	from page 30-101
		SARA TURN	from page 30-82
	VB...	ATORN	from page 30-102
		SARA TURN	from page 30-85
	VC...	ATORN	from page 30-102
		SARA TURN	from page 30-85
	VN...	SARA TURN	from page 30-87
	WN...	ATORN	from page 30-104
Machining aluminium		ATORN	from page 30-105
		ALULine	from page 30-93
CBN and PKD			from page 30-107

ISO indexable cutting inserts

ISO P

In the ISO-P range, general structural steel and unalloyed steel have up to 110 HB (Brinell hardness) and a carbon content of up to 0.55%. There is also low-alloy steel up to 180 HB and high-alloy steel from 200 HB – 400 HB and materials with a hardness of up to max. 48 HRc (Rockwell hardness).
The new turning grades with multilayer CVD layers are particularly suitable for cutting ISO-P materials.

The **SC25PT** type is most suitable for entry-level machining. Thanks to its balance between toughness and wear resistance, which are both in the mid-range, it is the first choice for machining light to medium cuts at medium cutting speeds.
The **SC15PT** type is highly wear-resistant. It is only suitable for smooth cuts and is less tough. With significantly interrupted cuts or heavy roughing cuts, the tough **SC35PT** type should be used.

The **SC20UT** and **SC40UT** types have a thinner CVD coating and therefore a precisely defined cutting edge. They are therefore very well suited to use on conventional machines.

The cutting materials are complemented in the ISO-P area by the **ST10UT** CERMET type. They are especially suitable for long-chipping steel materials (usually low carbon content < 0.25%) with a tendency to difficult chip breaking properties.

SC15PT

- HC-P15
  HC-M10
  HC-K25
- Wear-resistant type highly efficient and productive

Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 5.8%, composite carbides 6.4% WC balance

Grain size
1 - 2 µm

Hardness
HV 1550

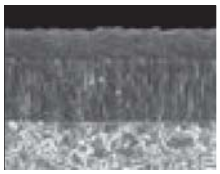
Coating
CVD, $Ti(Cn)+Al_2O_3$ 18.5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SC25PT

- HC-P25
  HC-M20
  HC-K30
- Universal steel type efficient and productive



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 7.0%, composite carbides 8.0% WC balance

Grain size
1 - 2 µm

Hardness
HV 1450

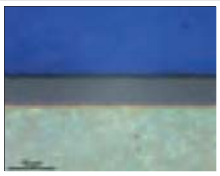
Coating
CVD, $Ti(Cn)+Al_2O_3$ 15 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

SC35PT

- HC-P35
  HC-M30
  HC-K35
- Very tough type, for difficult conditions of use



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 9.6%, composite carbides 6.8% WC rest

Grain size
1 - 2 µm

Hardness
HV 1460

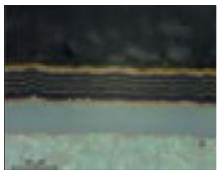
Coating
CVD, $Ti(Cn)+Al_2O_3$ 13 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

SC20UT

- HC-P20
  HC-M20
  HC-K30



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 7.0%, composite carbides 8.0% WC balance

Grain size
1 - 2 µm

Hardness
HV 1450

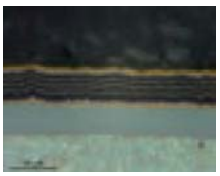
Coating
CVD, $Ti(Cn)+Al_2O_3$ 13 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SC40UT

- HC-P40
  HC-M35



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 5.8%, composite carbides 6.4% WC balance

Grain size
1 - 2 µm

Hardness
HV 1300

Coating
CVD, Ti(Cn)+Al_2O_3 13.0 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

ST10UT

- HT-P15
  HT-M10
  HT-K10
- **CERMET**

Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co/Ni 12.2%, WC 15%,
TaNbC 10.0%, TiCn balance

Hardness
HV 1620

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

ISO M

Indexable cutting inserts in the ISO-M area are mainly used in machining ferritic and martensitic stainless steel and austenitic stainless, usually acid-resistant steel (Ni content of over 20%). So-called duplex steel has a two-phase structure and consists of ferrite and austenite. Higher-alloyed duplex materials are also called super-duplex or hyper-duplex.

The new PVD-coated SP20MT, SP25MT and SP35MT turning types are ideal for ISO-M materials.

The **SP25MT** type is the universal type for stainless steel machining. With its extremely smooth PVD layer, the adhesion tendency when machining Cr-Ni steel is reduced massively.
In the secondary application, low-alloy structural steel can be cut with this type at moderate cutting speeds. The good toughness of the substrate rounds off this type.

The **SP20MT** type is used in finishing. It has a slightly more heat-resistant substrate, which allows higher cutting speeds than with the SP25MT.
The toughness is reduced as a result.

The **SP35MT** type complements the new turning types available for ISO-M materials with selected geometries. It tends to be used in machining processes with lower cutting speeds or difficult cutting conditions.

SP20MT

- HC-M20
  HC-K20
- Special substrate for stainless steel

Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 10.0%, composite carbides 2.0% WC balance

Grain size
1 µm

Hardness
HV 1560

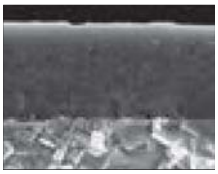
Coating
PVD, TiAlN, 2 - 5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

SP25MT

- HC-P35
  HC-M25
- for high cutting speeds, high process reliability



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 9.6%, composite carbides 7.8%, others, WC balance

Grain size
1 - 2 µm

Hardness
HV 1460

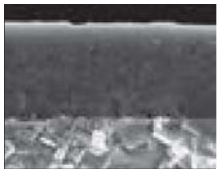
Coating
PVD, TiN / TiAlN, 6 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SP35MT

- HC-P35
  HC-M35
- Universal substrate for stainless steel in difficult conditions of use



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 8.0%, composite carbides 4.2% WC balance

Grain size
1.5 - 3 µm

Hardness
HV 1330

Coating
PVD, TiN / TiAlN, 6 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

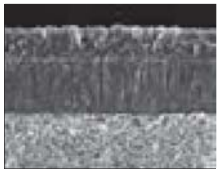
ISO K

Indexable cutting inserts for the ISO-K area are mainly used for cast iron that can be forged (GG) and spheroidal graphite iron (GGG), as well as for cast iron with vermicular graphite and bainitic cast iron with spheroidal graphite iron.

The new **SC20KT** turning type with its multilayer CVD layer was specially designed for machining cast iron materials. It has very good wear resistance with medium toughness.

SC20KT

- HC-P10
  HC-K20
- Heat-resistant universal type for cast iron machining



Toughness

1	2	3	4	5	6	7	8	9	10

Wear resistance

1	2	3	4	5	6	7	8	9	10

Composition
Co 6.0%, TaC 2.0% WC balance

Grain size
1 µm

Hardness
HV 1630

Coating
CVD, $Ti(C,N)+Al_2O_3$, 15.5 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

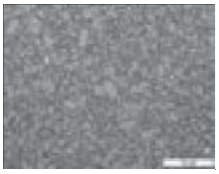
ISO N

Indexable cutting inserts for the ISO-N area are mainly used in machining aluminium and aluminium alloys (cast and forgeable alloys) with an Si content <13%.

Non-metallic materials such as thermosets and fibre-reinforced plastics can also be machined with this turning type. The new SW16NT and SP16NT SARATURN types have their main areas of application here.
The **SW16NT** type is an uncoated carbide type with polished cutting surfaces and is ideally suited for use with ISO-N materials because of the carbide composition.
The **SP16NT** type has a special PVD coating. This guarantees additional protection and higher wear resistance in the case of ISO-N materials with abrasive fillers. Because of the coating, it is very well suited for use with austenitic quenched ISO-M material.

SW16NT

- HW-K15
- Designed for machining aluminium, high heat-resistance, low adhesion tendency



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
1 µm

Hardness
HV 1630

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

SP16NT

- HW-K15
- Designed for machining aluminium, high heat-resistance, low adhesion tendency

Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
1 µm

Hardness
HV 1630

Coating
PVD, TiN/TiAlN, 6 µm

Applications

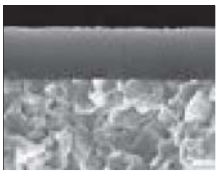
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

ISO S

Indexable cutting inserts for the ISO-S area are mainly used in machining highly heat-resistant alloys based on nickel-iron and cobalt. Titanium in its pure form or in alpha and beta alloys complete this ISO-S area. These materials which are extremely difficult to machine require a machining strategy adapted to the component which also depends on the machine.
The new **SP10ST** and **SP15ST** turning types with their PVD coating have been designed for use in these areas. The main application areas are light to medium cuts with a maximum of slight interruptions.

SP10ST

- HC-M15
  HC-S15
- Especially for chrome-nickel steel, suitable for titanium machining



Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
8 µm

Hardness
HV 1820

Coating
PVD (Ti, Al) N, 4 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SP15ST

- HC-M15
  HC-S15
- Especially for chrome-nickel steel, suitable for titanium machining

Toughness
1 2 3 4 5 6 7 8 9 10

Wear resistance
1 2 3 4 5 6 7 8 9 10

Composition
Co 6.0%, WC balance

Grain size
8 µm

Hardness
HV 1820

Coating
PVD TiN + (Ti, Al) N + TiN, 4 µm

Applications

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

SARATURN Overview of positive chip breakers

The new chip breakers from the SARATURN range for positive indexable cutting inserts (5° and 7°)

The newly calculated chip breakers for individual use have been adapted to users' needs. Guaranteeing optimal chip breaking properties in daily use was the priority here.

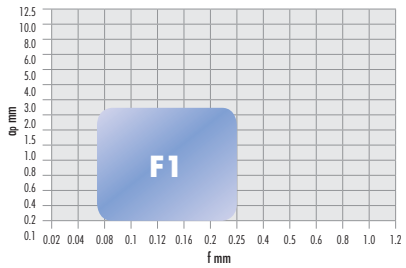
Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for positive geometries.
The best possible chip control even with small cutting depths and feeds, very good chip breaking properties, even with exotic materials with a significantly reduced tendency to form burs and the best possible surface quality are provided by the new SARATURN.

Chip breaker F1

ap	f
0.1 - 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping

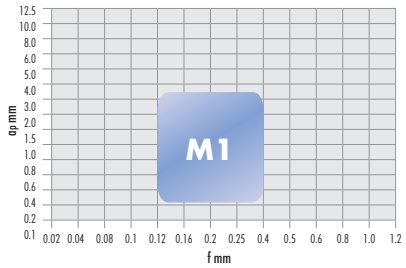


ISO P positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker M1

ap	f
0.25 - 3.5 mm	0.12 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application

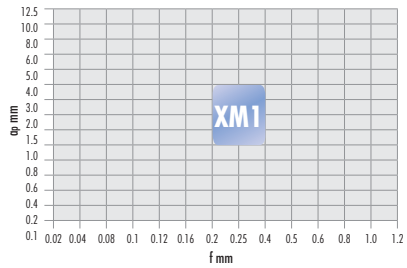


ISO P positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker XM1

ap	f
1.0 - 4.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application

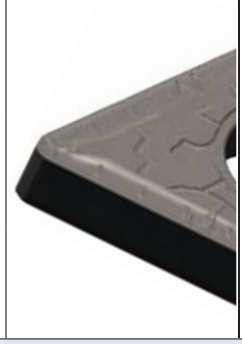


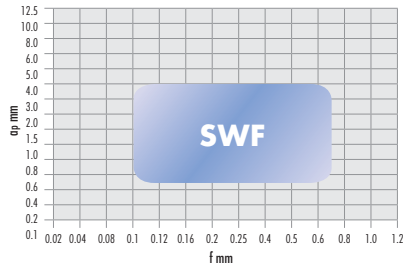
ISO P positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker SWF

ap	f
0.5 - 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials



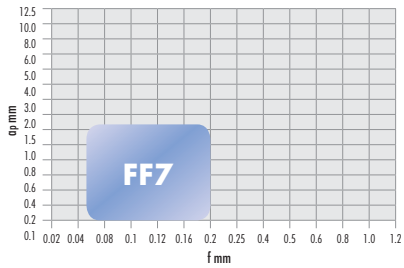


ISO P positive/negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker FF7, CERMET design

ap	f
0.1 – 1.65 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities

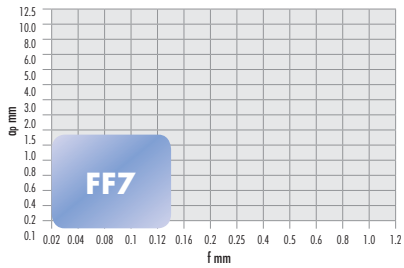


ISO P positive chip breaker		
ISO M positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker FF7, stainless steel design

ap	f
0.05 – 1.35 mm	0.02 - 0.14 mm/rev

- Special chip breaker for chrome-nickel steel and titanium machining
- "Sharp" chip breaker
- Soft chipping
- Extremely good chip control

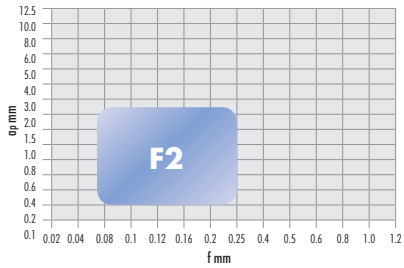


ISO M positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker F2

ap	f
0.2 – 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control in stainless steel
- Soft chipping

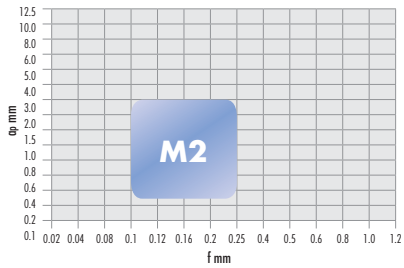


ISO M positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker M2

ap	f
0.3 – 3.0 mm	0.1 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application

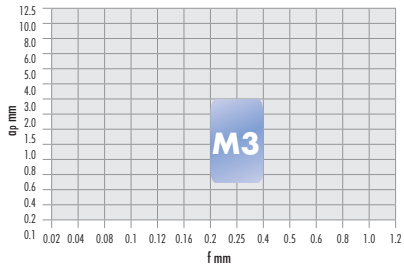


ISO M positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker M3

ap	f
0.5 – 3.0 mm	0.2 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application

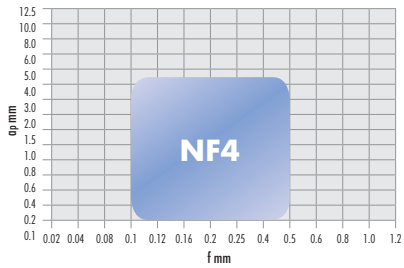


ISO K positive chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker NF4

ap	f
0.1 – 4.5 mm	0.1 - 0.5 mm/rev

- Chip breaker for aluminium machining
- Also suitable for plastics and non-ferrous metals
- High rake angle
- Also suitable for austenitic quenched steel up to a chip depth of 0.4 mm



ISO N positive chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

SARATURN Overview of negative chip breakers

INFO

The new chip breakers from the SARATURN range for negative indexable cutting inserts (0°)

The newly calculated chip breakers for individual use have been adapted to users' needs. The guarantee of optimised chip breaking properties in daily use was the priority here.

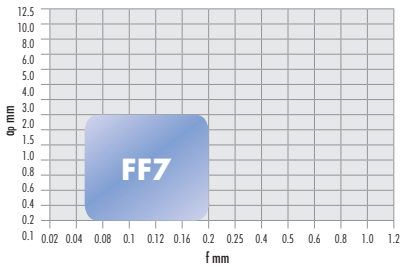
Adapted cutting edge preparation and enhanced surface treatment make the geometries even more efficient and more soft cutting. This is evident both in daily use and in series production as a result of an extended service life and lower machine loads. The latest insights in the development and modern cutting strategies of the individual ISO classes P, M, K, S and N were applied in the development of the chip breaker.

The benefits to the customer in terms of effectiveness, process reliability and material removal rate are the result. Elegant solutions are available for fine and ultra-fine finishing, medium machining and light roughing for negative geometries.
The best possible chip control even with small cutting depths and feeds, very good chip breaking properties, even with exotic materials with a significantly reduced tendency to form burs and the best possible surface quality are provided by the new SARATURN.

Chip breaker FF7, CERMET design

ap	f
0.1 – 2.0 mm	0.05 – 0.2 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities



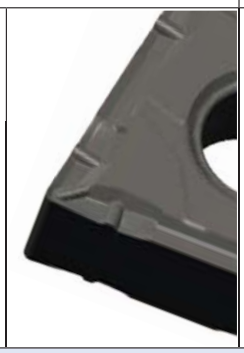
ISO P negative chip breaker

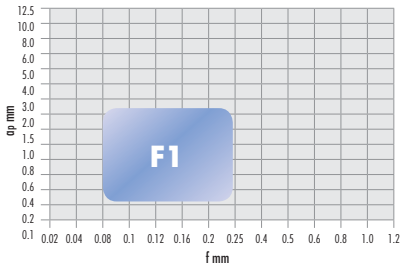
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker F1

ap	f
0.25 – 2.4 mm	0.08 - 0.24 mm/rev

- Long service life
- Optimised chip breaker for best possible chip control
- Soft chipping





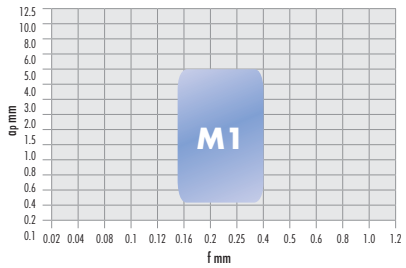
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker M1

ap	f
0.25 - 5 mm	0.15 - 0.4 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application



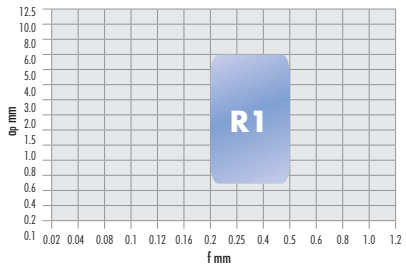
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	–

Chip breaker R1

ap	f
0.5 - 6 mm	0.2 - 0.5 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact
- Stabilised contact surfaces



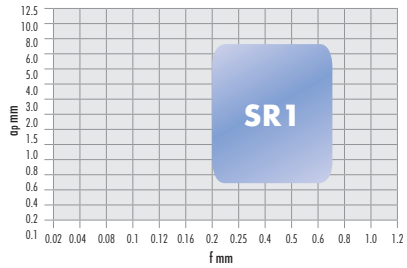
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	○	○

Chip breaker SR1

ap	f
0.5 - 7.5 mm	0.2 - 0.7 mm/rev

- Optimised chip breaker prevents crack formation and is temperature-resistant
- Improved cutting edge stability, prevents notching effect and notch impact



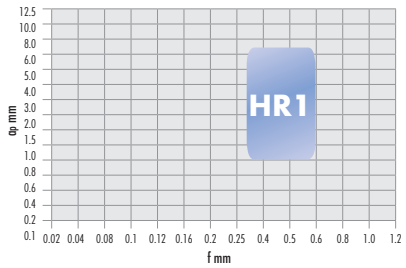
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker HR1

ap	f
0.8 - 7.0 mm	0.3 - 0.6 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency



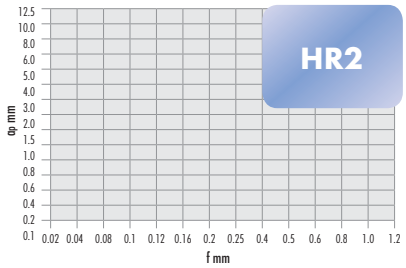
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR 2

ap	f
2.5 - 13 mm	0.4 - 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency



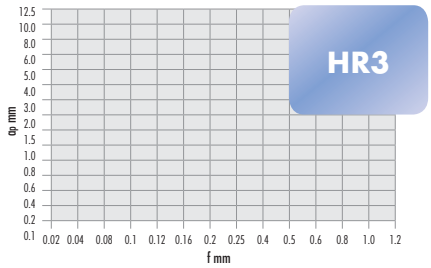
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR3

ap	f
2.0 – 13 mm	0.5 – 1.5 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Increased cutting force, temperature and vibration tendency



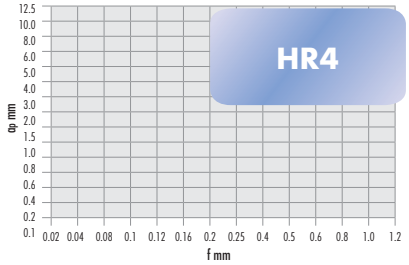
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HR4

ap	f
2.5 – 12 mm	0.2 – 1.3 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Chip breaker for difficult cuts
- Reduced cutting force, temperature and vibration tendency



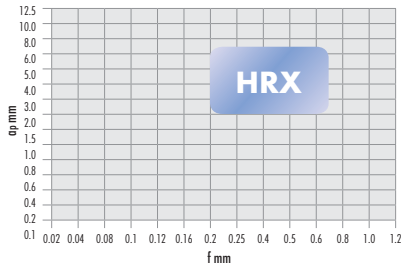
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker HRX

ap	f
2.0 – 7.0 mm	0.2 - 0.7 mm/rev

- One-sided chip breaker
- Maximum machining reliability
- Increased cutting force, temperature and vibration tendency



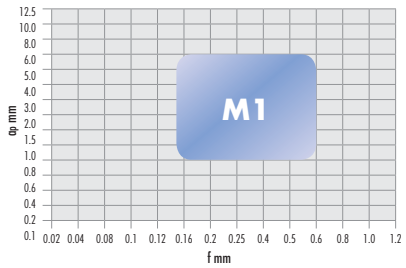
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker M1

ap	f
0.8 – 6 mm	0.15 – 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application



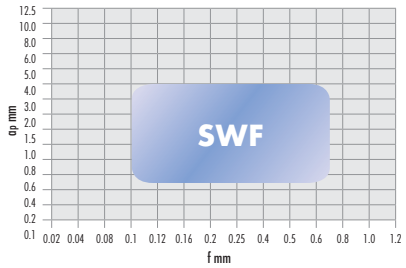
ISO P negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
○	●	●

Chip breaker SWF

ap	f
0.5 – 4.0 mm	0.1 - 0.7 mm/rev

- Maximum surface quality
- Double feed possible with the same Ra
- Soft cutting
- Also for non-rusting materials



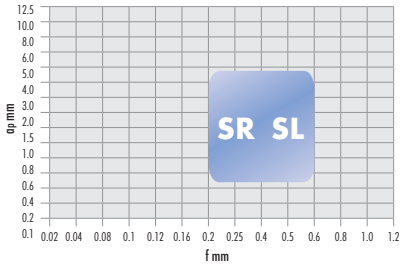
ISO P positive/negative chip breaker

Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker SR and SL

ap	f
0.5 - 4.8 mm	0.2 - 0.6 mm/rev

- Soft chipping
- "Sharp" cutting edge
- Universal application
- Established chip level

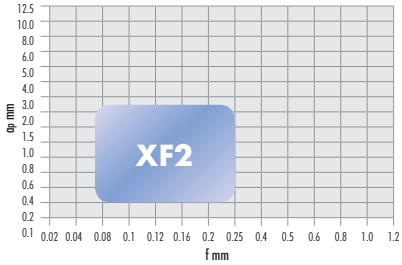


ISO P negative chip breaker		
ISO M negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker XF2

ap	f
0.2 - 2.5 mm	0.07 - 0.25 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- For best surface qualities

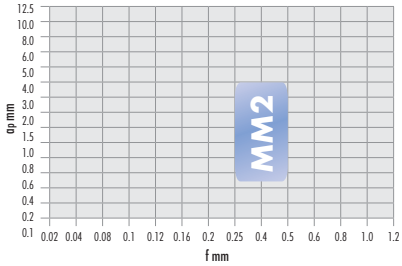


ISO M negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

Chip breaker MM2

ap	f
0.5 - 4.0 mm	0.25 - 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities

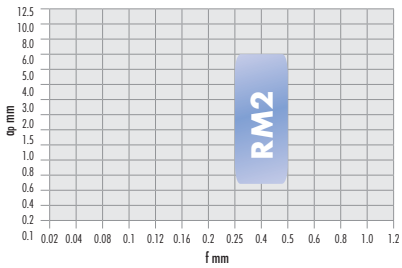


ISO M negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker RM2

ap	f
0.5 - 6.0 mm	0.25 - 0.5 mm/rev

- Specially developed for low cutting forces
- Optimised chip breaker to prevent burr formation
- For best surface qualities
- For light to medium roughing

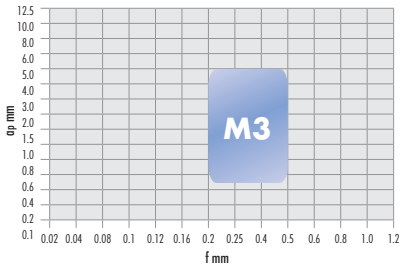


ISO M negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	–

Chip breaker M3

ap	f
0.5 - 5.0 mm	0.2 - 0.5 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Universal application

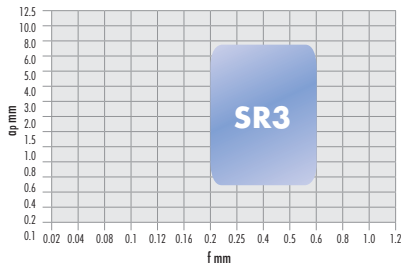


ISO K negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker SR3

ap	f
0.5 - 7.5 mm	0.2 - 0.6 mm/rev

- Long service life
- Optimised chip breaker prevents crack formation and is temperature-resistant
- Light to medium roughing work

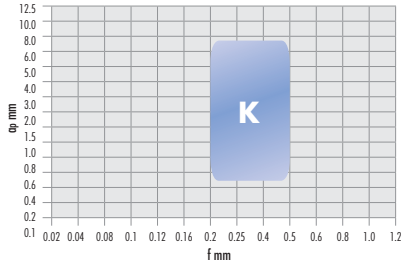


ISO K negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	○

Chip breaker K

ap	f
0.5 - 7.5 mm	0.2 - 0.5 mm/rev

- Prevents crack formation and is temperature-resistant
- Universal application

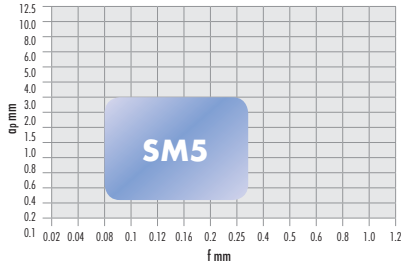


ISO K negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	●	●

Chip breaker SM5

ap	f
0.25 - 3.0 mm	0.08 - 0.3 mm/rev

- Especially for chrome-nickel steel
- Soft chipping
- "Sharp" cutting edge



ISO S negative chip breaker		
Continuous cut	Slightly interrupted cut	Significantly interrupted cut
●	–	–

SARATURN

An ace in any application

CCGT ISO indexable cutting inserts, ground

- **80° rhombic, positive 7°, ground peripherally**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- **for stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium Rm 440 Vc 60-120 m/min**
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**, if the radius changes, the cutting data must be adjusted

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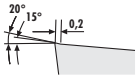
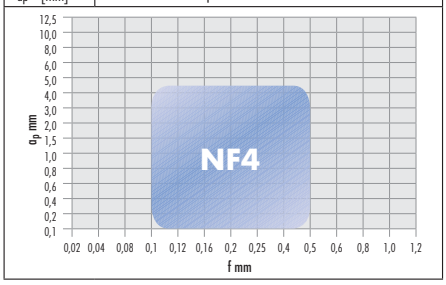
Especially for machining aluminium

Chip breaker *NF4*

F finishin ○	M medium ○	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
Universal application 			CCGT 060201-NF4			○	●	○		SW 16 NT	10	**366601** 0116	7,50
			CCGT 060202-NF4			○	●	○		SW 16 NT	10	366601 0216	7,50
					○	○	●	○		SP 16 NT	10	366601 0417	9,30
			CCGT 060204-NF4			○	●	○		SW 16 NT	10	366601 0316	7,50
					○	○	●	○		SP 16 NT	10	366601 0517	9,30
			CCGT 09T302-NF4			○	●	○		SW 16 NT	10	366601 0616	7,95
					○	○	●	○		SP 16 NT	10	366601 0717	9,70
			CCGT 09T304-NF4			○	●	○		SW 16 NT	10	366601 0816	7,95
					○	○	●	○		SP 16 NT	10	366601 0917	9,70
			CCGT 09T308-NF4			○	●	○		SW 16 NT	10	366601 1016	7,95
					○	○	●	○		SP 16 NT	10	366601 1117	9,70
			CCGT 120404-NF4			○	●	○		SW 16 NT	10	366601 1216	9,30
					○	○	●	○		SP 16 NT	10	366601 1317	11,15
			CCGT 120408-NF4			○	●	○		SW 16 NT	10	366601 1416	9,30
					○	○	●	○		SP 16 NT	10	366601 1517	11,15

3135

ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 45	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	



CCMT - *CCGT* ISO indexable cutting inserts

- **80° rhombic, positive 7°**
- One-sided chip breaker design
- Chip breaker **FF7 stainless steel design SP20MT** for **titanium** hardness Rm* 400, Vc up to 140 m/min possible
- **CCGT** ground peripherally
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 63% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

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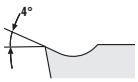
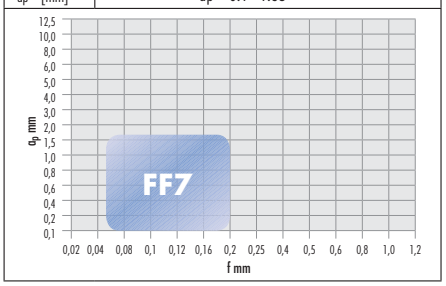
Chip breaker *FF7*, CERMET design

F finishin ●	M medium -	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
Micro finishin 			CCMT 060204-FF7	●	○	○				ST 10 UT	10	**366603** 0140	5,40
			CCMT 09T304-FF7	●	○	○				ST 10 UT	10	366603 0240	6,10

3135

ISO	ST 10 UT
ISO P steel	Vc = 160 - 270
ISO M stainless steel	Vc = 130 - 240
ISO K cast iron	Vc = 220 - 350
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.05 - 0.2 ap = 0.1 - 1.65

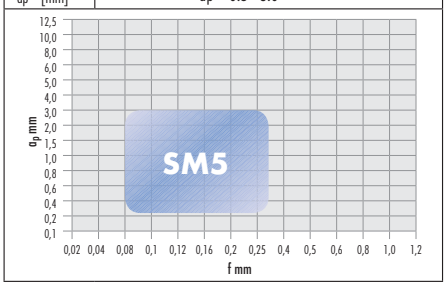


Chip breaker *SM5* negative

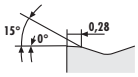
F finishin ○	M medium ●	R roughing -	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
Finishing/medium machining			TNMG 160408-SM5		○			●		SP 10 ST	10	**366672** 0132	8,–
					○			●		SP 15 ST	10	366672 0231	8,–

3135

ISO	SP 10 ST	SP 15 ST
ISO M stainless steel	Vc = 60 - 230	Vc = 50 - 220
ISO S superalloys	Vc = 30 - 120	Vc = 30 - 120
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 to 0.3 ap = 0.5 - 3.0	

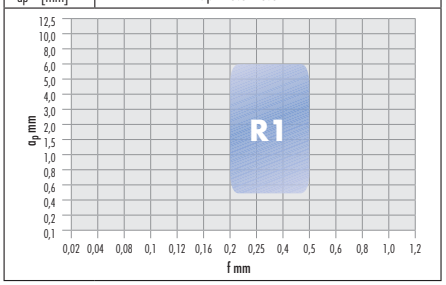


Chip breaker *R1* negative

F finishin -	M medium ○	R roughing ●	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
Roughing 			TNMG 160408-R1	●	○	○				SC 25 PT	10	**366674** 0125	8,–
			TNMG 160412-R1	●	○	○				SC 25 PT	10	366674 0325	8,–

3135

ISO	SC 25 PT
ISO P steel	Vc = 100 - 240
ISO M stainless steel	Vc = 70 - 210
ISO K cast iron	Vc = 120 - 250
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.2 - 0.5 ap = 0.5 - 6.0

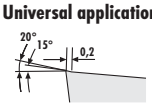


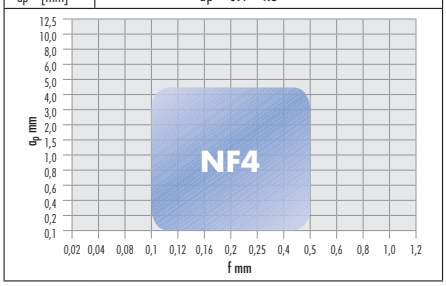
VCGT ISO indexable cutting inserts, ground

- **55° rhombic, positive 7°**
- One-sided chip breaker design
- Suitable for aluminium, plastic and non-ferrous metals
- **SW16NT** uncoated
- **SP16NT** coated, also suitable for finishing **stainless steel** (**austenitic, quenched**)
- for **stainless steel** max. ap = 0.4 mm at Vc max 140 m/min
- **SP16NT** for **titanium** Rm* 440 Vc 60 - 120 m/min
- Minimum ap feed always 63% of the corner radius "r"
- Maximum ap feed is 35% of the cutting edge length
- Cutting data recommendations apply for a corner radius **r = 0.4 mm**

Especially for machining aluminium

Chip breaker *NF4*

F finishin ○	M medium ○	R roughing ○	SARATURN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		art.no.	€
Universal application 			VCGT 110302-NF4			○	●	○		SW 16 NT	10	**366680** 0116	10,–
					○	○	●	○		SP 16 NT	10	366680 0317	12,10
			VCGT 110304-NF4		○	○	●	○		SP 16 NT	10	366680 0417	12,10
						○	●	○		SW 16 NT	10	366680 0216	10,30
			VCGT 130302-NF4			○	●	○		SW 16 NT	10	366680 0616	10,60
			VCGT 130304-NF4			○	●	○		SW 16 NT	10	366680 0516	10,60
			VCGT 160404-NF4			○	●	○		SW 16 NT	10	366680 0717	12,50
					○	○	●	○		SP 16 NT	10	366680 0917	14,10
			VCGT 160408-NF4			○	●	○		SW 16 NT	10	366680 1017	12,50
					○	○	●	○		SP 16 NT	10	366680 1217	14,10
			VCGT 160412-NF4		○	○	●	○		SP 16 NT	10	366680 1317	14,10
			VCGT 220530-NF4		○	○	●	○		SP 16 NT	10	366680 1417	16,95

3135

ISO	SP 16 NT	SW 16 NT
ISO M stainless steel	Vc = 50 - 140	
ISO K cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S superalloys	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/U] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5