

# Solid carbide

Inserts

Face milling cutters

Square shoulder cutters

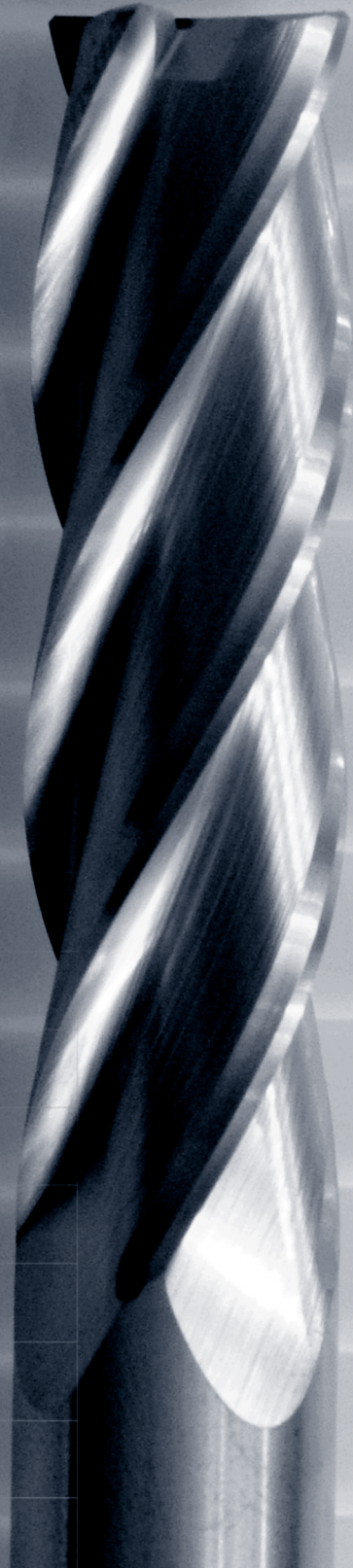
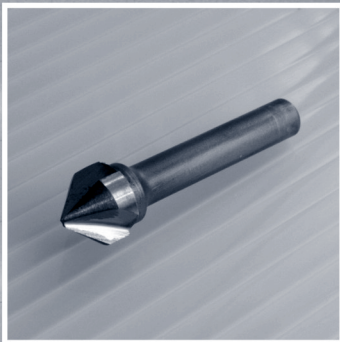
Slot cutters

Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide



# Solid carbide

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Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets


Profile milling

Solid carbide



## End mills

<b>6020</b> 2 Flutes  Page H.04	<b>6120</b> 2 Flutes (Long)  Page H.04	<b>7405</b> 2 Flutes  Page H.05	<b>7415</b> 2 Flutes (Long)  Page H.05	<b>6915</b> 2 Flutes  Page H.06	<b>6030</b> 3 Flutes  Page H.06
<b>6130</b> 3 Flutes (Long)  Page H.07	<b>6040</b> 4 Flutes  Page H.07	<b>6041</b> 4 Flutes  Page H.08	<b>6140</b> 4 Flutes (Long)  Page H.08	<b>6137</b> 6/8 Flutes  Page H.09	<b>6197</b> 6/8 Flutes  Page H.09
<b>6060</b> 6 Flutes  Page H.10					

## Torus end mills

<b>6327</b> 2 Flutes  Page H.11	<b>6337</b> 2 Flutes (Long)  Page H.11	<b>6427</b> 4 Flutes  Page H.12	<b>6437</b> 4 Flutes (Long)  Page H.12		
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## Contour end mills

<b>7965</b> 2 Flutes  Page H.13	<b>7975</b> 2 Flutes with front cut  Page H.13				
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## Ball nose end mills

<b>6320</b> 2 Flutes  Page H.14	<b>6420</b> 2 Flutes (Long)  Page H.14	<b>6945</b> 2 Flutes  Page H.15	<b>6955</b> 2 Flutes (Long)  Page H.15	<b>7597</b> 2 Flutes  Page H.16	<b>6330</b> 3 Flutes  Page H.16
<b>6430</b> 3 Flutes  Page H.17	<b>6340</b> 4 Flutes  Page H.17	<b>6440</b> 4 Flutes  Page H.18	<b>6521</b> 2 Flutes  Page H.19	<b>6541</b> 4 Flutes  Page H.19	

**Drills**

**7020**

Hard-metal twist drills  
2 Flutes



Page H.20

**7030**

Hard-metal twist drills  
3 Flutes



Page H.21

**7120**

Hard-metal twist drills  
2 Flutes (Long)



Page H.22

**Others**

**80**

Solid carbide center drill



Page H.23

**81**

Solid carbide center drill  
for C.N.C. 90°



Page H.23

**82**

Solid carbide center drill  
for C.N.C. 120°



Page H.24

**83**

Solid carbide  
Countersinks



Page H.24

**84**

Solid carbide  
Countersinks



Page H.25

**85**

Centerless ground  
carbide



Page H.25

**Tungsten carbide burrs**

**90**

Cylindrical



Page H.26

**91**

Cylindrical round top



Page H.26

**92**

Tree radius nose



Page H.27

**93**

Tree pointed



Page H.27

**94**

Cone



Page H.28

**95**

Olive (Egg)



Page H.28

**96**

Ball



Page H.29

**97**

Inverted cone



Page H.29

**98**

Deburring 60°



Page H.30

**99**

Deburring 90°

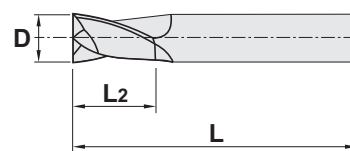


Page H.30

Inserts



**Characteristics:**  
Solid carbide 2 flutes end mills.



☆ Not suitable ★ Suitable ⬠ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
⬠	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6020

Ref.	Flutes	D	L	L2	K10	TiAlN
602001	2	1	40	5	○	○
602002	2	2	40	8	●	●
602003	2	3	40	12	●	●
602004	2	4	40	12	●	●
602005	2	5	50	14	●	●
602006	2	6	50	16	●	●
602007	2	7	60	20	●	●
602008	2	8	60	20	●	●
602009	2	9	60	20	●	●
602010	2	10	70	22	●	●
602011	2	11	70	22	●	●
602012	2	12	70	22	●	●
602014	2	14	75	25	●	○
602016	2	16	80	28	●	○
602018	2	18	80	28	●	○
602020	2	20	100	35	●	○
602022	2	22	100	35	○	○
602025	2	25	100	35	○	○
602030	2	30	100	35	○	○
602032	2	32	100	35	○	○

Face milling cutters

Square shoulder cutters

Slot cutters

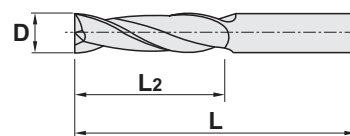
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**  
Solid carbide 2 flutes end mills.  
(Long)



☆ Not suitable ★ Suitable ⬠ Especially suitable

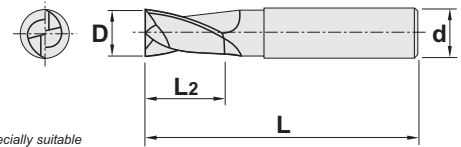
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
⬠	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6120

Ref.	Flutes	D	L	L2	K10	TiAlN
612003	2	3	60	25	○	○
612004	2	4	60	25	○	○
612005	2	5	70	30	○	○
612006	2	6	70	30	○	○
612008	2	8	80	35	○	○
612010	2	10	100	45	○	○
612012	2	12	100	45	○	○
612014	2	14	100	45	○	○
612016	2	16	100	45	○	○
612018	2	18	100	45	○	○
612020	2	20	125	55	○	○
612025	2	25	125	55	○	○
612032	2	32	125	55	○	○

**Characteristics:**  
Solid carbide 2 flutes torus end mills for aluminium.



☆ Not suitable ★ Suitable ✪ Especially suitable

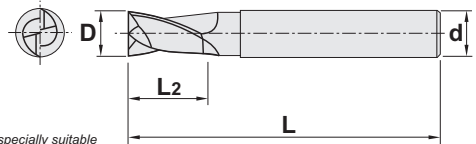
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	✪	✪	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 7405

Ref.	Flutes	D	d	L	L2	K10	TiAlN
740503	2	3	6	57	4	○	
740504	2	4	6	57	5	○	
740505	2	5	6	57	7	○	
740506	2	6	6	57	7	○	
740508	2	8	8	63	9	○	
740510	2	10	10	72	11	○	
740512	2	12	12	83	12	○	
740516	2	16	16	92	16	○	
740520	2	20	20	104	20	○	
740525	2	25	25	106	25	○	

**Characteristics:**  
Solid carbide 2 flutes torus end mills for aluminium. (Long)



☆ Not suitable ★ Suitable ✪ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	✪	✪	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 7415

Ref.	Flutes	D	d	L	L2	K10	TiAlN
741506	2	6	6	80	7	○	
741508	2	8	8	80	9	○	
741510	2	10	10	100	11	○	
741512	2	12	12	100	12	○	
741516	2	16	16	100	16	○	
741520	2	20	20	125	20	○	
741525	2	25	25	150	25	○	

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

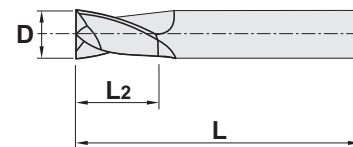
Specific applications and Sets

Profile milling

Solid carbide

### Characteristics:

Solid carbide 2 flutes end mills for aluminium.



☆ Not suitable ★ Suitable ⬠ Especially suitable

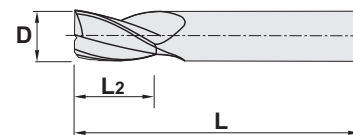
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>					
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6915			D	L	L2	K10	TiAlN
Ref.	691501	2	1,0	38	5	○	
	691501.5	2	1,5	38	5	○	
	691502	2	2,0	38	8	○	
	691502.5	2	2,5	38	8	○	
	691503	2	3,0	38	12	○	
	691504	2	4,0	40	12	○	
	691505	2	5,0	50	14	○	
	691506	2	6,0	50	16	○	
	691508	2	8,0	63	20	○	
	691510	2	10,0	72	22	○	
	691512	2	12,0	73	22	○	
	691514	2	14,0	75	25	○	
	691516	2	16,0	82	28	○	
	691518	2	18,0	84	28	○	
	691520	2	20,0	104	35	○	

### Characteristics:

Solid carbide 3 flutes end mills.



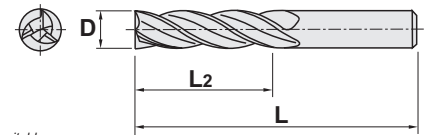
☆ Not suitable ★ Suitable ⬠ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>					
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6030			D	L	L2	K10	TiAlN
Ref.	603001	3	1	40	5	○	○
	603002	3	2	40	8	●	○
	603003	3	3	40	12	●	○
	603004	3	4	40	12	●	○
	603005	3	5	50	14	●	○
	603006	3	6	50	16	●	○
	603007	3	7	60	20	●	○
	603008	3	8	60	20	●	○
	603010	3	10	70	22	●	○
	603012	3	12	70	22	●	○
	603014	3	14	75	25	●	○
	603016	3	16	80	28	●	○
	603018	3	18	80	28	●	○
	603020	3	20	100	35	●	○
	603025	3	25	100	35	○	○

**Characteristics:**  
Solid carbide 3 flutes end mills.  
(Long)



☆ Not suitable ★ Suitable ♻️ Especially suitable

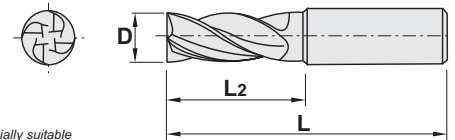
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6130

Ref.	Flutes	D	L	L2	K10	TiAlN
613003	3	3	60	25	○	
613004	3	4	60	25	○	
613005	3	5	70	30	○	
613006	3	6	70	30	○	
613007	3	7	80	35	○	
613008	3	8	80	35	○	
613010	3	10	100	45	○	
613012	3	12	100	45	○	
613014	3	14	100	45	○	
613016	3	16	100	45	○	
613018	3	18	100	45	○	
613020	3	20	125	55	○	
613022	3	22	125	55	○	
613025	3	25	125	55	○	
613030	3	30	125	55	○	
613032	3	32	125	55	○	

**Characteristics:**  
Solid carbide 4 flutes end mills.



☆ Not suitable ★ Suitable ♻️ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6040

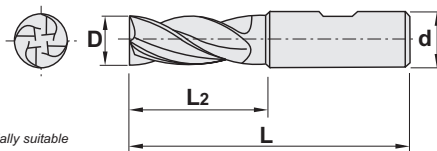
Ref.	Flutes	D	L	L2	K10	TiAlN
604001	4	1	40	5	○	○
604002	4	2	40	8	●	●
604003	4	3	40	12	●	●
604004	4	4	40	12	●	●
604005	4	5	50	14	●	●
604006	4	6	50	16	●	●
604007	4	7	60	20	●	●
604008	4	8	60	20	●	●
604009	4	9	60	20	●	●
604010	4	10	70	22	●	●
604012	4	12	70	22	●	●
604014	4	14	75	25	●	●
604016	4	16	80	28	●	●
604018	4	18	80	28	●	●
604020	4	20	100	35	●	●
604022	4	22	100	35	○	
604025	4	25	100	35	○	○
604030	4	30	100	35	○	
604032	4	32	100	35	○	



Inserts



**Characteristics:**  
Solid carbide 4 flutes end mills.  
DIN 6527L30°



☆ Not suitable   ★ Suitable   ★ Especially suitable											
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6041

Ref.	Flutes	D	d	L	L2	K10	TiAIN
604102	4	2	6	50	6	○	
604103	4	3	6	57	7	○	
604104	4	4	6	57	8	○	
604105	4	5	6	57	10	○	
604106	4	6	6	57	10	○	
604107	4	7	8	63	13	○	
604108	4	8	8	63	16	○	
604109	4	9	10	72	16	○	
604110	4	10	10	72	19	○	
604111	4	11	12	83	22	○	
604112	4	12	12	83	22	○	
604113	4	13	14	83	22	○	
604114	4	14	14	83	22	○	
604115	4	15	16	92	26	○	
604116	4	16	16	92	26	○	
604118	4	18	18	92	26	○	
604120	4	20	20	104	32	○	
604122	4	22	25	104	32	○	
604125	4	25	25	104	32	○	
604130	4	30	32	104	32	○	
604132	4	32	32	104	32	○	

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

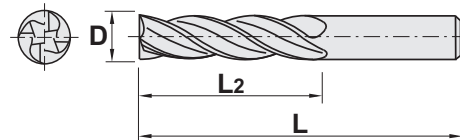
Specific applications and Sets

Profile milling

Solid carbide



**Characteristics:**  
Solid carbide 4 flutes end mills.  
(Long)



☆ Not suitable   ★ Suitable   ★ Especially suitable											
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

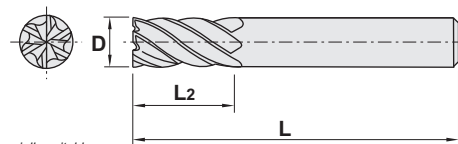
Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6140

Ref.	Flutes	D	L	L2	K10	TiAIN
614003	4	3	60	25	○	
614004	4	4	60	25	○	
614005	4	5	70	30	○	
614006	4	6	70	30	○	
614007	4	7	80	35	○	
614008	4	8	80	35	○	
614010	4	10	100	45	○	
614012	4	12	100	45	○	
614014	4	14	100	45	○	
614016	4	16	100	45	○	
614018	4	18	100	45	○	
614020	4	20	125	55	○	
614022	4	22	125	55	○	
614025	4	25	125	55	○	
614030	4	30	125	55	○	
614032	4	32	125	55	○	

**Characteristics:**

Solid carbide end mills (Positive rake angle).  
For hard machining.



☆ Not suitable ★ Suitable ♻️ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	♻️	★	♻️	★	★	★	★

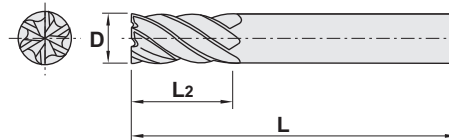
Normally available for immediate delivery ●  
Only available in a limited quantity ○

# 6137

Ref.	Flutes	D	L	L2	K10	TiAlN
613706	6	6	60	20		○
613708	6	8	80	25		○
613710	6	10	80	30		○
613712	6	12	100	36		○
613716	6	16	106	46		○
613720	8	20	125	60		○
613725	8	25	150	75		○

**Characteristics:**

Solid carbide end mills (Negative rake angle).  
For hard machining.



☆ Not suitable ★ Suitable ♻️ Especially suitable

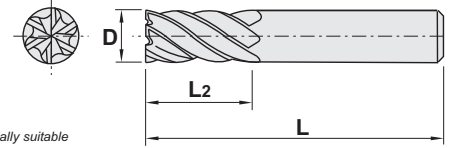
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	♻️	♻️	★	★	♻️	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

# 6197

Ref.	Flutes	D	L	L2	K10	TiAlN
619706	6	6	60	20		○
619708	6	8	80	25		○
619710	6	10	80	30		○
619712	6	12	100	36		○
619716	6	16	106	46		○
619720	8	20	125	60		○
619725	8	25	150	75		○

**Characteristics:**  
Solid carbide 6 flutes end mills.



☆ Not suitable   ★ Suitable   ✦ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
✦	✦	✦	✦	✦	✦	★	✦	★	★	✦	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6060			D	L	L2	K10	TiAlN
Ref.	606003	6	3	40	12	●	○
	606004	6	4	40	12	●	○
	606005	6	5	50	14	●	○
	606006	6	6	50	16	●	○
	606007	6	7	60	20	●	○
	606008	6	8	60	20	●	○
	606009	6	9	60	20	●	○
	606010	6	10	70	22	●	○
	606011	6	11	70	22	●	○
	606012	6	12	70	22	●	○
	606014	6	14	75	25	●	○
	606016	6	16	80	28	●	○
	606018	6	18	80	28	●	○
	606020	6	20	100	35	●	○
	606022	6	22	100	35	●	○
	606025	6	25	100	35	●	○

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

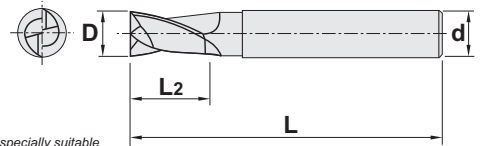
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**  
Solid carbide 2 flutes torus end mills.



☆ Not suitable ★ Suitable ♣ Especially suitable

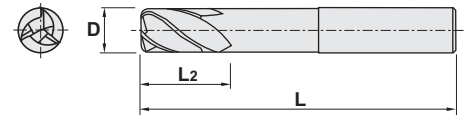
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	♣	♣	♣	♣	★	♣	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6327

Ref.	Flutes	D	d	L	L2	K10	TiAlN
632703	2	3	6	57	4		○
632704	2	4	6	57	5		○
632705	2	5	6	57	6		○
632706	2	6	6	57	7		○
632708	2	8	8	63	9		○
632710	2	10	10	72	11		○
632712	2	12	12	83	12		○
632716	2	16	16	92	16		○
632718	2	18	18	92	18		○
632720	2	20	20	104	20		○

**Characteristics:**  
Solid carbide 2 flutes torus end mills.  
(Long)



☆ Not suitable ★ Suitable ♣ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	♣	♣	♣	♣	★	♣	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6337

Ref.	Flutes	D	L	L2	K10	TiAlN
633706	2	6	80	7		○
633708	2	8	80	9		○
633710	2	10	100	11		○
633712	2	12	120	12		○
633716	2	16	160	16		○

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

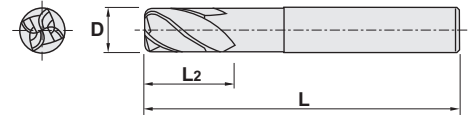
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**  
Solid carbide 4 flutes torus end mills.



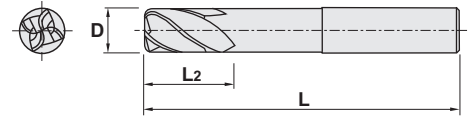
☆ Not suitable ★ Suitable ⚙ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	⚙	⚙	⚙	★	☆	⚙	★	☆	☆	☆

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6427			D	L	L2	K10	TiAlN
Ref.	642706	4	6	57	7		○
	642708	4	8	63	9		○
	642710	4	10	72	11		○
	642712	4	12	83	12		○
	642716	4	16	92	16		○
	642718	4	18	92	18		○
	642720	4	20	104	20		○

**Characteristics:**  
Solid carbide 4 flutes torus end mills.  
(Long)



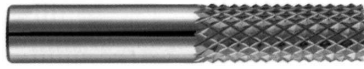
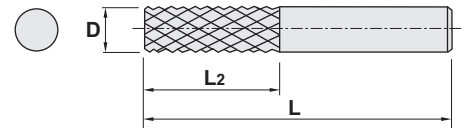
☆ Not suitable ★ Suitable ⚙ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	⚙	⚙	⚙	★	☆	⚙	★	☆	☆	☆

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6437			D	L	L2	K10	TiAlN
Ref.	643706	4	6	80	7		○
	643708	4	8	80	9		○
	643710	4	10	100	11		○
	643712	4	12	120	12		○
	643716	4	16	160	16		○

**Characteristics:**  
Solid carbide 2 flutes contour end mills for plastics.



☆ Not suitable ★ Suitable ⚙ Especially suitable

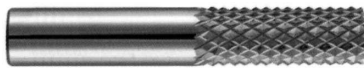
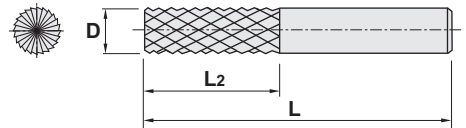
Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	★	★	★	★	★	★	⚙

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 7965

Ref.	Flutes	D	L	L2	K10	TiAlN
796502	2	2	38	10	○	
796503	2	3	38	12	○	
796504	2	4	40	15	○	
796505	2	5	50	16	○	
796506	2	6	50	18	○	
796508	2	8	63	25	○	
796510	2	10	72	30	○	
796512	2	12	73	30	○	
796514	2	14	75	30	○	
796516	2	16	82	30	○	
796518	2	18	84	32	○	
796520	2	20	104	35	○	

**Characteristics:**  
Solid carbide 2 flutes contour end mills for plastics, with front cut.



☆ Not suitable ★ Suitable ⚙ Especially suitable

Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	★	★	★	★	★	★	⚙

Normally available for immediate delivery ●  
Only available in a limited quantity ○

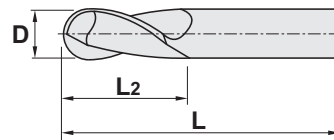
## 7975

Ref.	Flutes	D	L	L2	K10	TiAlN
797502	2	2	38	10	○	
797503	2	3	38	12	○	
797504	2	4	40	15	○	
797505	2	5	50	16	○	
797506	2	6	50	18	○	
797508	2	8	63	25	○	
797510	2	10	72	30	○	
797512	2	12	73	30	○	
797514	2	14	75	30	○	
797516	2	16	82	30	○	
797518	2	18	84	32	○	
797520	2	20	104	35	○	

Inserts



**Characteristics:**  
Solid carbide 2 flutes ball nose end mills.



☆ Not suitable   ★ Suitable   ⬠ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
⬠	⬠	⬠	⬠	★	⬠	★	⬠	★	★	⬠	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6320

Ref.	Flutes	D	L	L2	K10	TiAlN
632001	2	1	40	5	○	○
632002	2	2	40	8	●	●
632003	2	3	40	12	●	●
632004	2	4	40	12	●	●
632005	2	5	50	14	●	●
632006	2	6	50	16	●	●
632008	2	8	60	20	●	●
632010	2	10	70	22	●	●
632012	2	12	70	22	●	●
632014	2	14	75	25	○	○
632016	2	16	80	28	○	○
632018	2	18	80	28	○	○
632020	2	20	100	35	○	○
632025	2	25	100	35	○	○

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

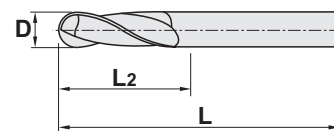
Specific applications and Sets

Profile milling

Solid carbide



**Characteristics:**  
Solid carbide 2 flutes ball nose end mills.  
(Long)



☆ Not suitable   ★ Suitable   ⬠ Especially suitable

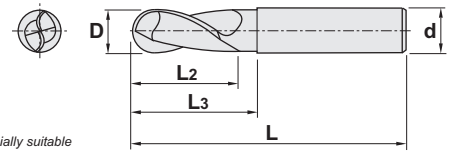
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
⬠	⬠	⬠	⬠	★	⬠	★	⬠	★	★	⬠	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6420

Ref.	Flutes	D	L	L2	K10	TiAlN
642003	2	3	60	25	●	●
642004	2	4	60	25	●	●
642005	2	5	70	30	●	●
642006	2	6	70	30	●	●
642008	2	8	80	35	●	●
642010	2	10	100	45	●	●
642012	2	12	100	45	●	●
642014	2	14	100	45	○	○
642016	2	16	100	45	●	●
642018	2	18	100	45	○	○
642020	2	20	125	55	●	●
642025	2	25	125	55	○	○

**Characteristics:**  
Solid carbide 2 flutes ball nose end mills for aluminium.



☆ Not suitable ★ Suitable ✪ Especially suitable

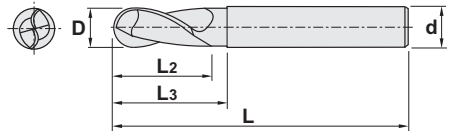
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	✪	✪	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

# 6945

Ref.	Flutes	D	d	L	L2	L3	K10	TiAIN
694502	2	2	6	57	4	6	○	
694503	2	3	6	57	6	9	○	
694504	2	4	6	57	8	12	○	
694505	2	5	6	57	10	15	○	
694506	2	6	6	57	12	20	○	
694508	2	8	8	63	16	20	○	
694510	2	10	10	72	20	31	○	
694512	2	12	12	83	24	37	○	
694516	2	16	16	92	32	43	○	
694520	2	20	20	104	40	53	○	

**Characteristics:**  
Solid carbide 2 flutes ball nose end mills for aluminium. (Long)



☆ Not suitable ★ Suitable ✪ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	✪	✪	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

# 6955

Ref.	Flutes	D	d	L	L2	L3	K10	TiAIN
695502	2	2	6	80	4	12	○	
695503	2	3	6	80	6	15	○	
695504	2	4	6	80	8	18	○	
695505	2	5	6	80	10	25	○	
695506	2	6	6	80	12	30	○	
695508	2	8	8	80	16	35	○	
695510	2	10	10	100	20	40	○	
695512	2	12	12	120	24	50	○	
695516	2	16	16	160	32	55	○	
695520	2	20	20	160	40	60	○	



Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

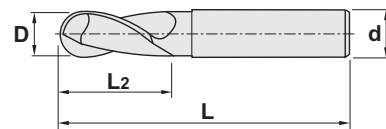
Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**

Solid carbide 2 flutes ball nose end mills.



☆ Not suitable ★ Suitable ⬠ Especially suitable

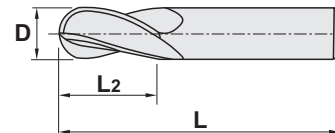
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>					
★	★	⬠	⬠	⬠	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

7597			D	d	L	L2	K10	TIAlN
Ref.	759702	2	2	6	80	6		○
	759703	2	3	6	80	7		○
	759704	2	4	6	80	8		○
	759705	2	5	6	80	10		○
	759706	2	6	6	80	10		○
	759708	2	8	8	100	16		○
	759710	2	10	10	120	19		○
	759712	2	12	12	120	22		○
	759716	2	16	16	160	26		○
	759720	2	20	20	160	32		○
	759725	2	25	25	160	32		○

**Characteristics:**

Solid carbide 3 flutes ball nose end mills.



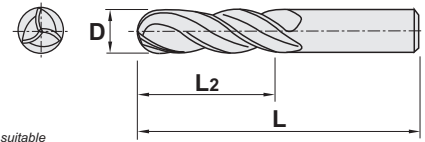
☆ Not suitable ★ Suitable ⬠ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>					
⬠	⬠	⬠	⬠	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6330			D	L	L2	K10	TIAlN
Ref.	633001	3	1	40	5	○	
	633002	3	2	40	8	○	
	633003	3	3	40	12	○	
	633004	3	4	40	12	○	
	633005	3	5	50	14	○	
	633006	3	6	50	16	○	
	633007	3	7	60	20	○	
	633008	3	8	60	20	○	
	633009	3	9	60	20	○	
	633010	3	10	70	22	○	
	633011	3	11	70	22	○	
	633012	3	12	70	22	○	
	633013	3	13	75	25	○	
	633014	3	14	75	25	○	
	633015	3	15	75	25	○	
	633016	3	16	80	28	○	
	633018	3	18	80	28	○	
	633020	3	20	100	35	○	
	633022	3	22	100	35	○	
	633025	3	25	100	35	○	
	633030	3	30	100	35	○	
	633032	3	32	100	35	○	

**Characteristics:**  
Solid carbide 3 flutes ball nose end mills.



☆ Not suitable ★ Suitable ⚙ Especially suitable

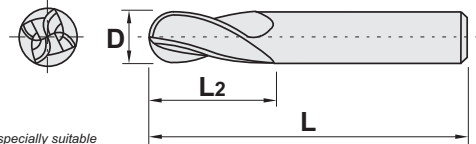
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6430

Ref.	Flutes	D	L	L2	K10	TiAlN
643003	3	3	60	25	○	
643004	3	4	60	25	○	
643005	3	5	70	30	○	
643006	3	6	70	30	○	
643008	3	8	80	35	○	
643010	3	10	100	45	○	
643012	3	12	100	45	○	
643014	3	14	100	45	○	
643016	3	16	100	45	○	
643018	3	18	100	45	○	
643020	3	20	125	55	○	
643022	3	22	125	55	○	
643025	3	25	125	55	○	
643030	3	30	125	55	○	
643032	3	32	125	55	○	

**Characteristics:**  
Solid carbide 4 flutes ball nose end mills.



☆ Not suitable ★ Suitable ⚙ Especially suitable

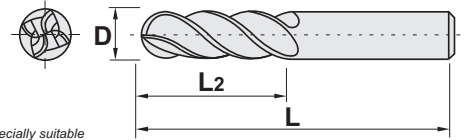
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 6340

Ref.	Flutes	D	L	L2	K10	TiAlN
634001	4	1	40	5	●	○
634002	4	2	40	8	●	○
634003	4	3	40	12	●	○
634004	4	4	40	12	●	○
634005	4	5	50	14	●	○
634006	4	6	50	16	●	○
634008	4	8	60	20	●	○
634010	4	10	70	22	●	○
634012	4	12	70	22	●	○
634014	4	14	75	25	●	○
634016	4	16	80	28	●	○
634018	4	18	80	28	●	○
634020	4	20	100	35	●	○
634025	4	25	100	35	●	○

**Characteristics:**  
Solid carbide 4 flutes ball nose end mills.  
(Long)



☆ Not suitable   ★ Suitable   ★ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6440			D	L	L2	K10	TiAIN
Ref.	644003	4	3	60	25	○	○
	644004	4	4	60	25	○	○
	644005	4	5	70	30	○	○
	644006	4	6	70	30	○	○
	644008	4	8	80	35	○	○
	644010	4	10	100	45	○	○
	644012	4	12	100	45	○	○
	644014	4	14	100	45	○	○
	644016	4	16	100	45	○	○
	644018	4	18	100	45	○	○
	644020	4	20	125	55	○	○
	644025	4	25	125	55	○	○

Inserts

Face milling cutters

Square shoulder cutters

Slot cutters

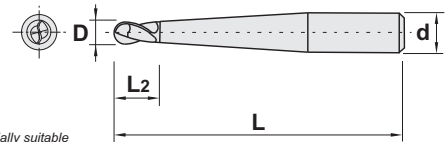
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**  
Solid carbide 2 flutes ball nose copy milling cutters.



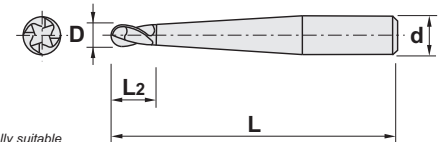
☆ Not suitable ★ Suitable ♻️ Especially suitable

Steels					INOX <	INOX >	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	♻️	♻️	♻️	★	♻️	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

6521		✳️	D	d	L	L2	K10	TiAlN
Ref.	652103	2	3	6	57	4		●
	652104	2	4	6	57	5		●
	652105	2	5	8	63	6		●
	652106	2	6	8	63	6		●
	652108	2	8	10	72	10		●
	652110	2	10	12	73	12		●

**Characteristics:**  
Solid carbide 4 flutes ball nose copy milling cutters.



☆ Not suitable ★ Suitable ♻️ Especially suitable

Steels					INOX <	INOX >	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics
★	★	★	♻️	♻️	♻️	★	♻️	★	★	★	★

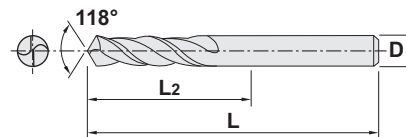
Normally available for immediate delivery ●  
Only available in a limited quantity ○

6541		✳️	D	d	L	L2	K10	TiAlN
Ref.	654104	4	4	8	100	6		●
	654105	4	5	8	63	6		○
	654105L	4	5	8	100	6		●
	654106	4	6	8	63	6		○
	654106L	4	6	10	100	9		●
	654108	4	8	10	72	10		○
	654108L	4	8	10	100	12		●
	654110	4	10	12	73	12		○
	654110L	4	10	12	100	15		●
	654112	4	12	16	150	15		●

Inserts



**Characteristics:**  
Hard-metal twist drills  
2 Flutes  
DIN 6539 3xD Z=2



☆ Not suitable ★ Suitable ⬤ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
⬤	⬤	⬤	⬤	★	★	★	⬤	⬤	⬤	⬤	⬤

Normally available for immediate delivery ●  
Only available in a limited quantity ○

## 7020

Ref.	D	L	L2	K10	Ref.	D	L	L2	K10
702000.5	0.5	26	6	●	702006.8	6.8	74	34	●
702000.6	0.6	26	6	●	702006.9	6.9	74	34	●
702000.7	0.7	26	6	●	702007.0	7.0	74	34	●
702000.8	0.8	26	6	●	702007.1	7.1	74	34	●
702000.9	0.9	26	6	●	702007.2	7.2	74	34	●
702001.0	1.0	26	6	●	702007.3	7.3	74	34	●
702001.1	1.1	28	7	●	702007.4	7.4	74	34	●
702001.2	1.2	30	8	●	702007.5	7.5	74	34	●
702001.3	1.3	30	8	●	702007.6	7.6	79	36	●
702001.4	1.4	32	9	●	702007.7	7.7	79	36	●
702001.5	1.5	32	9	●	702007.8	7.8	79	36	●
702001.6	1.6	34	10	●	702007.9	7.9	79	36	●
702001.7	1.7	34	10	●	702008.0	8.0	79	36	●
702001.8	1.8	36	11	●	702008.1	8.1	79	36	●
702001.9	1.9	36	11	●	702008.2	8.2	79	36	●
702002.0	2.0	38	12	●	702008.3	8.3	79	36	●
702002.1	2.1	38	12	●	702008.4	8.4	79	36	●
702002.2	2.2	40	13	●	702008.5	8.5	79	36	●
702002.3	2.3	40	13	●	702008.6	8.6	84	40	●
702002.4	2.4	43	14	●	702008.7	8.7	84	40	●
702002.5	2.5	43	14	●	702008.8	8.8	84	40	●
702002.6	2.6	43	14	●	702008.9	8.9	84	40	●
702002.7	2.7	46	16	●	702009.0	9.0	84	40	●
702002.8	2.8	46	16	●	702009.1	9.1	84	40	●
702002.9	2.9	46	16	●	702009.2	9.2	84	40	●
702003.0	3.0	46	16	●	702009.3	9.3	84	40	●
702003.1	3.1	49	18	●	702009.4	9.4	84	40	●
702003.2	3.2	49	18	●	702009.5	9.5	84	40	●
702003.3	3.3	49	18	●	702009.6	9.6	86	43	●
702003.4	3.4	52	20	●	702009.7	9.7	86	43	●
702003.5	3.5	52	20	●	702009.8	9.8	86	43	●
702003.6	3.6	52	20	●	702009.9	9.9	86	43	●
702003.7	3.7	52	20	●	702010.0	10.0	86	43	●
702003.8	3.8	55	22	●	702010.2	10.2	86	43	●
702003.9	3.9	55	22	●	702010.5	10.5	86	43	●
702004.0	4.0	55	22	●	702011.0	11.0	95	47	●
702004.1	4.1	55	22	●	702011.5	11.5	95	47	●
702004.2	4.2	55	22	●	702012.0	12.0	102	51	●
702004.3	4.3	58	24	●	702012.5	12.5	102	51	●
702004.4	4.4	58	24	●	702013.0	13.0	102	51	●
702004.5	4.5	58	24	●	702013.5	13.5	107	54	●
702004.6	4.6	58	24	●	702014.0	14.0	107	54	●
702004.7	4.7	58	24	●	702014.5	14.5	111	56	●
702004.8	4.8	62	26	●	702015.0	15.0	111	56	●
702004.9	4.9	62	26	●	702015.5	15.5	115	58	●
702005.0	5.0	62	26	●	702016.0	16.0	115	58	●
702005.1	5.1	62	26	●	702016.5	16.5	119	60	●
702005.2	5.2	62	26	●	702017.0	17.0	119	60	●
702005.3	5.3	62	26	●	702017.5	17.5	123	62	●
702005.4	5.4	66	28	●	702018.0	18.0	123	62	●
702005.5	5.5	66	28	●	702018.5	18.5	127	64	●
702005.6	5.6	66	28	●	702019.0	19.0	127	64	●
702005.7	5.7	66	28	●	702019.5	19.5	131	66	●
702005.8	5.8	66	28	●	702020.0	20.0	131	66	●
702005.9	5.9	66	28	●					
702006.0	6.0	66	28	●					
702006.1	6.1	70	31	●					
702006.2	6.2	70	31	●					
702006.3	6.3	70	31	●					
702006.4	6.4	70	31	●					
702006.5	6.5	70	31	●					
702006.6	6.6	70	31	●					
702006.7	6.7	70	31	●					

Square shoulder cutters

Slot cutters

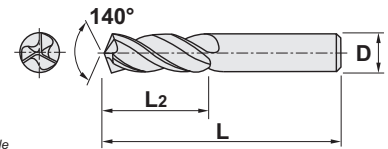
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

**Characteristics:**  
 Hard-metal twist drills  
 3 Flutes  
 DIN 6539 3xD Z=3



☆ Not suitable ★ Suitable ♣ Especially suitable

Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
★	★	★	★	★	★	★	♣	★	♣	♣	★

Normally available for immediate delivery ●  
 Only available in a limited quantity ○

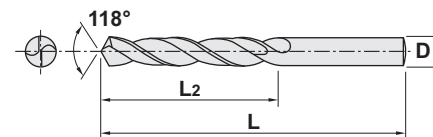
# 7030

Ref.	D	L	L2	K10	Ref.	D	L	L2	K10
703003.0	3.0	46	16	●	703009.3	9.3	84	40	○
703003.1	3.1	49	18	○	703009.4	9.4	84	40	○
703003.2	3.2	49	18	○	703009.5	9.5	84	40	○
703003.3	3.3	49	18	○	703009.6	9.6	89	43	○
703003.4	3.4	52	20	○	703009.7	9.7	89	43	○
703003.5	3.5	52	20	○	703009.8	9.8	89	43	○
703003.6	3.6	52	20	○	703009.9	9.9	89	43	○
703003.7	3.7	52	20	○	703010.0	10.0	89	43	●
703003.8	3.8	55	22	○	703010.2	10.2	89	43	○
703003.9	3.9	55	22	○	703010.5	10.5	89	43	○
703004.0	4.0	55	22	●	703011.0	11.0	95	47	●
703004.1	4.1	55	22	○	703011.5	11.5	95	47	○
703004.2	4.2	55	22	○	703012.0	12.0	102	51	●
703004.3	4.3	58	24	○	703012.5	12.5	102	51	○
703004.4	4.4	58	24	○	703013.0	13.0	102	51	●
703004.5	4.5	58	24	○	703013.5	13.5	107	54	○
703004.6	4.6	58	24	○	703014.0	14.0	107	54	●
703004.7	4.7	58	24	○	703014.5	14.5	111	56	○
703004.8	4.8	62	26	○	703015.0	15.0	111	56	●
703004.9	4.9	62	26	○	703015.5	15.5	115	58	○
703005.0	5.0	62	26	●	703016.0	16.0	115	58	●
703005.1	5.1	62	26	○	703016.5	16.5	119	60	○
703005.2	5.2	62	26	○	703017.0	17.0	119	60	●
703005.3	5.3	62	26	○	703017.5	17.5	123	62	○
703005.4	5.4	66	28	○	703018.0	18.0	123	62	●
703005.5	5.5	66	28	○	703018.5	18.5	127	64	○
703005.6	5.6	66	28	○	703019.0	19.0	127	64	●
703005.7	5.7	66	28	○	703019.5	19.5	131	66	○
703005.8	5.8	66	28	○	703020.0	20.0	131	66	●
703005.9	5.9	66	28	○					
703006.0	6.0	66	28	●					
703006.1	6.1	70	31	○					
703006.2	6.2	70	31	○					
703006.3	6.3	70	31	○					
703006.4	6.4	70	31	○					
703006.5	6.5	70	31	○					
703006.6	6.6	70	31	○					
703006.7	6.7	70	31	○					
703006.8	6.8	74	34	○					
703006.9	6.9	74	34	○					
703007.0	7.0	74	34	●					
703007.1	7.1	74	34	○					
703007.2	7.2	74	34	○					
703007.3	7.3	74	34	○					
703007.4	7.4	74	34	○					
703007.5	7.5	74	34	○					
703007.6	7.6	79	36	○					
703007.7	7.7	79	36	○					
703007.8	7.8	79	36	○					
703007.9	7.9	79	36	○					
703008.0	8.0	79	36	●					
703008.1	8.1	79	36	○					
703008.2	8.2	79	36	○					
703008.3	8.3	79	36	○					
703008.4	8.4	79	36	○					
703008.5	8.5	79	36	○					
703008.6	8.6	84	40	○					
703008.7	8.7	84	40	○					
703008.8	8.8	84	40	○					
703008.9	8.9	84	40	○					
703009.0	9.0	84	40	●					
703009.1	9.1	84	40	○					
703009.2	9.2	84	40	○					

Inserts



**Characteristics:**  
Hard-metal twist drills 2 flutes  
(Long)  
DIN 338 5xZ Z=2



Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
★	★	★	★	★	★	★	★	★	★	★	★

☆ Not suitable   ★ Suitable   ★ Especially suitable

Normally available for immediate delivery ●  
Only available in a limited quantity ○

### 7120

Ref.	D	L	L2	K10	Ref.	D	L	L2	K10
712001.0	1.0	34	12	●	712007.3	7.3	109	69	○
712001.1	1.1	36	14	○	712007.4	7.4	109	69	○
712001.2	1.2	38	16	○	712007.5	7.5	109	69	○
712001.3	1.3	38	16	●	712007.6	7.6	117	75	○
712001.4	1.4	40	18	○	712007.7	7.7	117	75	○
712001.5	1.5	40	18	○	712007.8	7.8	117	75	○
712001.6	1.6	43	20	○	712007.9	7.9	117	75	○
712001.7	1.7	43	20	○	712008.0	8.0	117	75	●
712001.8	1.8	46	22	○	712008.1	8.1	117	75	○
712001.9	1.9	46	22	○	712008.2	8.2	117	75	○
712002.0	2.0	49	24	●	712008.3	8.3	117	75	○
712002.1	2.1	49	24	○	712008.4	8.4	117	75	○
712002.2	2.2	53	27	○	712008.5	8.5	117	75	○
712002.3	2.3	53	27	○	712008.6	8.6	125	81	○
712002.4	2.4	57	30	○	712008.7	8.7	125	81	○
712002.5	2.5	57	30	○	712008.8	8.8	125	81	○
712002.6	2.6	57	30	○	712008.9	8.9	125	81	○
712002.7	2.7	60	33	○	712009.0	9.0	125	81	●
712002.8	2.8	60	33	○	712009.1	9.1	125	81	○
712002.9	2.9	60	33	○	712009.2	9.2	125	81	○
712003.0	3.0	60	33	●	712009.3	9.3	125	81	○
712003.1	3.1	65	33	○	712009.4	9.4	125	81	○
712003.2	3.2	65	36	○	712009.5	9.5	125	81	○
712003.3	3.3	65	36	○	712009.6	9.6	133	87	○
712003.4	3.4	70	36	○	712009.7	9.7	133	87	○
712003.5	3.5	70	39	○	712009.8	9.8	133	87	○
712003.6	3.6	70	39	○	712009.9	9.9	133	87	○
712003.7	3.7	70	39	○	712010.0	10.0	133	87	●
712003.8	3.8	75	43	○	712010.2	10.2	133	87	○
712003.9	3.9	75	43	○	712010.5	10.5	133	87	○
712004.0	4.0	75	43	●	712010.8	10.8	142	94	○
712004.1	4.1	75	43	○	712011.0	11.0	142	94	●
712004.2	4.2	75	43	○	712011.5	11.5	142	94	○
712004.3	4.3	80	47	○	712012.0	12.0	151	101	●
712004.4	4.4	80	47	○	712012.5	12.5	151	101	○
712004.5	4.5	80	47	○	712013.0	13.0	151	101	●
712004.6	4.6	80	47	○	712013.5	13.5	160	108	○
712004.7	4.7	80	47	○	712014.0	14.0	160	108	●
712004.8	4.8	86	52	○	712014.5	14.5	169	114	○
712004.9	4.9	86	52	○	712015.0	15.0	169	114	●
712005.0	5.0	86	52	●	712015.5	15.5	178	120	○
712005.1	5.1	86	52	○	712016.0	16.0	178	120	●
712005.2	5.2	86	52	○					
712005.3	5.3	86	52	○					
712005.4	5.4	93	57	○					
712005.5	5.5	93	57	○					
712005.6	5.6	93	57	○					
712005.7	5.7	93	57	○					
712005.8	5.8	93	57	○					
712005.9	5.9	93	57	○					
712006.0	6.0	93	57	●					
712006.1	6.1	101	63	○					
712006.2	6.2	101	63	○					
712006.3	6.3	101	63	○					
712006.4	6.4	101	63	○					
712006.5	6.5	101	63	○					
712006.6	6.6	101	63	○					
712006.7	6.7	101	63	○					
712006.8	6.8	109	69	○					
712006.9	6.9	109	69	○					
712007.0	7.0	109	69	●					
712007.1	7.1	109	69	○					
712007.2	7.2	109	69	○					

Face milling cutters

Square shoulder cutters

Slot cutters

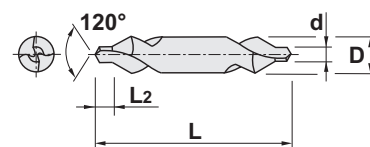
Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide

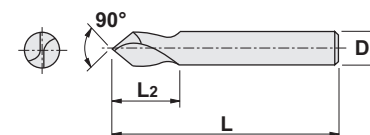
**Characteristics:**  
Solid carbide center drill.



☆ Not suitable ★ Suitable ✦ Especially suitable

80		Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics	Normally available for immediate delivery ● Only available in a limited quantity ○	
		<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	★	★	★	★	★	★	★		
		D	d	L	L2	K10		TiAlN							
Ref.	800000.80	3,15	0,80	38	1,3	●									
	800001.00	3,15	1,00	38	1,6	●									
	800001.25	3,15	1,25	38	1,9	●									
	800001.60	4,00	1,60	38	2,4	●									
	800002.00	5,00	2,00	50	2,9	●									
	800002.50	6,00	2,50	50	3,6	●									
	800003.15	8,00	3,15	60	4,4	○									
	800004.00	10,00	4,00	60	5,6	○									
	800005.00	12,00	5,00	60	6,0	○									

**Characteristics:**  
Solid carbide center drill for C.N.C.  
90°



☆ Not suitable ★ Suitable ✦ Especially suitable

81		Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics	Normally available for immediate delivery ● Only available in a limited quantity ○	
		<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	★	★	★	★	★	★	★		
		D	L	L2	K10		TiAlN								
Ref.	810006	6	50	16	●										
	810008	8	60	20	●										
	810010	10	70	22	●										
	810012	12	70	22	●										
	810014	14	75	25	○										
	810016	16	80	25	○										
	810020	20	100	30	○										

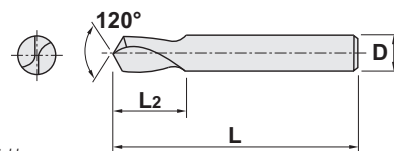
Solid carbide  
Drills  
Boring heads  
Arbors and adaptors



Inserts



**Characteristics:**  
Solid carbide center drill for C.N.C.  
120°



Face milling cutters

Square shoulder cutters

Slot cutters

Porcupine cutters

Specific applications and Sets

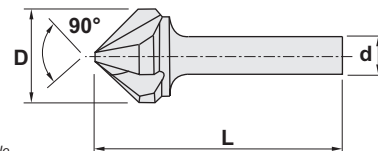
Profile milling

Solid carbide

☆ Not suitable ★ Suitable ⬠ Especially suitable

		Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics	Normally available for immediate delivery ● Only available in a limited quantity ○				
		<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC								D	L	L2	K10	TiAlN
82	Ref.	★	★	★	★	★	★	★	★	★	★	★						
	820006						6		50						50	16	●	
	820008						8		60						60	20	●	
	820010						10		70						70	22	●	
	820012						12		70						70	22	●	
	820014						14		75						75	25	○	
	820016						16		80						80	25	○	
	820020						20		100						100	30	○	

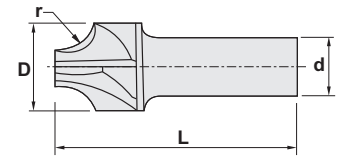
**Characteristics:**  
Solid carbide countersinks 3 flutes.  
45°



☆ Not suitable ★ Suitable ⬠ Especially suitable

		Steels					INOX < 850 N/mm <sup>2</sup>	INOX > 850 N/mm <sup>2</sup>	CAST IRON	Ti	Cu, Ms	Al	Plastics	Normally available for immediate delivery ● Only available in a limited quantity ○					
		<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC								D	d	L	z	K10	TiAlN
83	Ref.	★	★	★	★	★	★	★	★	★	★	★							
	833005.3						5,3		6						6	50	3	○	
	833005.8						5,8		6						6	50	3	○	
	833006.3						6,3		6						6	50	3	○	
	833007.3						7,3		6						6	50	3	○	
	833008.3						8,3		6						6	50	3	○	
	833009.4						9,4		8						8	50	3	○	
	833010.4						10,4		6						6	50	3	○	
	833012.4						12,4		8						8	56	3	○	
	833013.4						13,4		8						8	60	3	○	
	833014.4						14,4		8						8	60	3	○	
	833016.5						16,4		10						10	60	3	○	
	833019.5						19,5		10						10	60	3	○	
	833020.5						20,5		10						10	60	3	○	
	833025.0						25,0		10						10	67	3	○	
	833031.0						31,0		12						12	71	3	○	

**Characteristics:**  
Solid carbide countersinks with radius.



☆ Not suitable ★ Suitable ⚙ Especially suitable

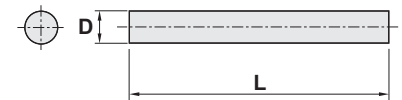
Steels					INOX	INOX	CAST IRON	Ti	Cu, Ms	Al	Plastics
<400 N/mm <sup>2</sup>	<850 N/mm <sup>2</sup>	<1.100 N/mm <sup>2</sup>	<1.300 N/mm <sup>2</sup>	>45 HRC	< 850 N/mm <sup>2</sup>	> 850 N/mm <sup>2</sup>					
★	★	★	★	★	★	★	★	★	★	★	★

Normally available for immediate delivery ●  
Only available in a limited quantity ○

# 84

Ref.	D	d	r	L	z	K10	TiAlN
844001.00	8,0	8	1,00	50	4	●	
844001.25	8,0	8	1,25	50	4	○	
844001.50	10,0	10	1,50	50	4	○	
844001.75	10,0	10	1,75	50	4	○	
844002.00	12,0	12	2,00	50	4	●	
844002.25	12,0	12	2,25	50	4	○	
844002.50	12,0	12	2,50	50	4	○	
844003.00	14,0	12	3,00	55	4	●	
844003.50	16,0	12	3,50	55	4	○	
844004.00	16,0	12	4,00	60	4	●	
844004.50	18,0	12	4,50	60	4	○	
844005.50	20,0	16	5,00	65	4	●	
844006.00	21,0	16	6,00	65	4	●	
844008.00	26,5	20	8,00	70	4	●	
844010.00	32,0	20	10,00	70	4	○	
844012.00	38,0	20	12,00	75	6	○	

**Characteristics:**  
Centerless ground carbide.



# 85

Normally available for immediate delivery ●  
Only available in a limited quantity ○

Ref.	D	L	K10	TiAlN
850002	2	100	●	
850003	3	100	●	
850004	4	100	●	
850005	5	100	●	
850006	6	100	●	
850007	7	100	●	
850008	8	100	●	
850009	9	100	●	
850010	10	100	●	
850012	12	100	●	
850014	14	100	○	
850016	16	100	○	
850018	18	100	○	
850020	20	100	○	

Inserts

Face milling cutters

Square shoulder cutters

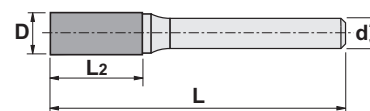
Slot cutters

Porcupine cutters

Specific applications and Sets

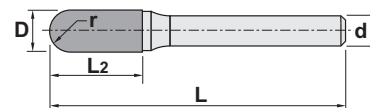
Profile milling

Solid carbide



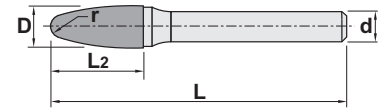
		Characteristics: Cylindrical - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	90003	3	3	40	14	-	●	
	90006	6	3	44	14	-	●	
	90008	8	6	63	18	-	●	
	90010	10	6	65	20	-	●	
	90012	12	6	70	25	-	●	
	90016	16	6	70	25	-	●	

		Characteristics: Cylindrical - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	90106	6	3	44	14	-	●	
	90108	8	6	63	18	-	●	
	90110	10	6	65	20	-	●	
	90112	12	6	70	25	-	●	
	90116	16	8	70	25	-	●	



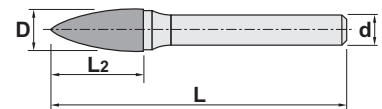
		Characteristics: Cylindrical round top - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	91003	3	3	40	14	1,5	●	
	91006	6	3	44	14	3,0	●	
	91008	8	6	63	18	4,0	●	
	91010	10	6	65	20	5,0	●	
	91012	12	6	70	25	6,0	●	
	91016	16	8	70	25	8,0	●	

		Characteristics: Cylindrical round top - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	91106	6	3	44	14	3,0	●	
	91108	8	6	63	18	4,0	●	
	91110	10	6	65	20	5,0	●	
	91112	12	6	70	25	6,0	●	
	91116	16	8	70	25	8,0	●	



920		Characteristics: Tree radius nose - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
Ref.		D	d	L	L <sub>2</sub>	r	K10	TiAIN
92003		3	3	40	12	0,8	●	
92006		6	3	44	14	1,5	●	
92008		8	6	61	16	2,0	●	
92010		10	6	65	20	2,5	●	
92012		12	6	70	25	3,0	●	
92016		16	8	70	25	5,0	●	

921		Characteristics: Tree radius nose - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
Ref.		D	d	L	L <sub>2</sub>	r	K10	TiAIN
92106		6	3	44	14	1,5	●	
92108		8	6	61	16	2,0	●	
92110		10	6	65	20	2,5	●	
92112		12	6	70	25	3,0	●	
92116		16	8	70	25	5,0	●	



930		Characteristics: Tree pointed - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
Ref.		D	d	L	L <sub>2</sub>	r	K10	TiAIN
93003		3	3	40	12	-	●	
93006		6	3	44	14	-	●	
93008		8	6	62	16	-	●	
93010		10	6	65	20	-	●	
93012		12	6	70	25	-	●	
93016		16	8	72	27	-	●	

931		Characteristics: Tree pointed - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
Ref.		D	d	L	L <sub>2</sub>	r	K10	TiAIN
93106		6	3	44	14	-	●	
93108		8	6	62	16	-	●	
93110		10	6	65	20	-	●	
93112		12	6	70	25	-	●	
93116		16	8	72	27	-	●	

Inserts

Face milling cutters

Square shoulder cutters

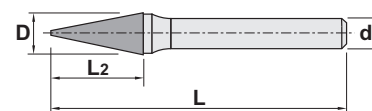
Slot cutters

Porcupine cutters

Specific applications and Sets

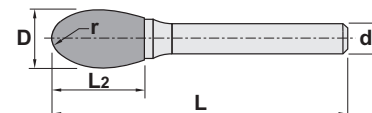
Profile milling

Solid carbide



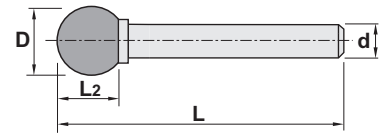
		Characteristics: Cone - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	94003	3	3	50	12	-	●	
	94006	6	3	44	14	-	●	
	94008	8	6	62	16	-	●	
	94010	10	6	63	18	-	●	
	94012	12	6	65	20	-	●	
	94016	16	8	70	25	-	●	

		Characteristics: Cone - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	94106	6	3	44	14	-	●	
	94108	8	6	62	16	-	●	
	94110	10	6	63	18	-	●	
	94112	12	6	65	20	-	●	
	94116	16	8	70	25	-	●	



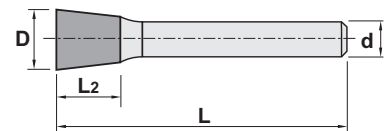
		Characteristics: Olive (Egg) - Straight					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	95003	3	3	40	6	1,2	●	
	95006	6	3	39	9	2,5	●	
	95008	8	6	59	14	3,7	●	
	95010	10	6	61	16	4,0	●	
	95012	12	6	65	20	5,0	●	
	95016	16	8	70	25	6,5	●	

		Characteristics: Olive (Egg) - Crossed					Normally available for immediate delivery ●	
							Only available in a limited quantity ○	
		D	d	L	L2	r	K10	TIAIN
Ref.	95106	6	3	39	9	2,5	●	
	95108	8	6	59	14	3,7	●	
	95110	10	6	61	16	4,0	●	
	95112	12	6	65	20	5,0	●	
	95116	16	8	70	25	6,5	●	



960		Characteristics: Ball - Straight					Normally available for immediate delivery ●	
		D	d	L	L2	r	Only available in a limited quantity ○	
Ref.							K10	TiAIN
96003	3	3	40	3	-	●		
96006	6	3	35	5	-	●		
96008	8	6	52	7	-	●		
96010	10	6	54	9	-	●		
96012	12	6	56	11	-	●		
96016	16	8	59	14	-	●		

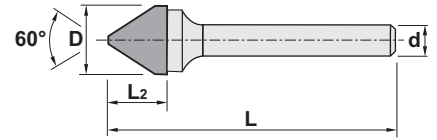
961		Characteristics: Ball - Crossed					Normally available for immediate delivery ●	
		D	d	L	L2	r	Only available in a limited quantity ○	
Ref.							K10	TiAIN
96106	6	3	35	5	-	●		
96108	8	6	52	7	-	●		
96110	10	6	54	9	-	●		
96112	12	6	56	11	-	●		
96116	16	8	59	14	-	●		



970		Characteristics: Inverted cone - Straight					Normally available for immediate delivery ●	
		D	d	L	L2	r	Only available in a limited quantity ○	
Ref.							K10	TiAIN
97003	3	3	40	3	-	●		
97006	6	3	36	6	-	●		
97008	8	6	53	8	-	●		
97010	10	6	55	10	-	●		
97012	12	6	57	12	-	●		
97016	16	8	60	15	-	●		

971		Characteristics: Inverted cone - Crossed					Normally available for immediate delivery ●	
		D	d	L	L2	r	Only available in a limited quantity ○	
Ref.							K10	TiAIN
97106	6	3	36	6	-	●		
97108	8	6	53	8	-	●		
97110	10	6	55	10	-	●		
97112	12	6	57	12	-	●		
97116	16	8	60	15	-	●		

Inserts



Face milling cutters

# 98

Characteristics: Deburring 60°

Normally available for immediate delivery ●

Only available in a limited quantity ○

Ref.	D	d	L	L2	K10	TIAIN
98006	6	3	50	6	●	
98008	8	6	53	8	●	
98010	10	6	55	10	●	
98012	12	6	57	12	●	
98016	16	6	61	16	●	

Square shoulder cutters

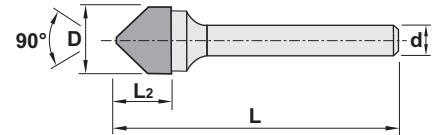
Slot cutters

Porcupine cutters

Specific applications and Sets

Profile milling

Solid carbide



# 99

Characteristics: Deburring 90°

Normally available for immediate delivery ●

Only available in a limited quantity ○

Ref.	D	d	L	L2	K10	TIAIN
99006	6	6	50	6	●	
99008	8	6	53	8	●	
99010	10	6	55	10	●	
99012	12	6	57	12	●	
99016	16	6	61	16	●	



Solid carbide

Drills

Boring heads

Arbors and adaptors



Inserts

Face milling  
cuttersSquare shoulder  
cutters

Slot cutters

Porcupine cutters

Specific applications  
and Sets

Profile milling

Solid carbide

## Cutting data for solid carbide

Material	Condition	Feed rate S=mm/2 Ø						Coolant	Cutting speed m/min
		2-3	4-6	7-10	11-15	16-20	21-32		
Structural steel	R.400/600	0.015	0.02	0.03	0.04	0.05	0.07	Emulsion	60-80 40-60 30-50
	R.600/1000	0.01	0.015	0.02	0.03	0.04	0.06		
	R.1000/1400	0.01	0.01	0.02	0.03	0.04	0.06		
Tool steel	HB 230	0.01	0.01	0.02	0.03	0.04	0.06	Emulsion	30-50 30-40
	HB 230/285	0.01	0.01	0.02	0.03	0.04	0.06		
Stainless steel	Cr. Mo	0.01	0.01	0.02	0.03	0.04	0.04	Emulsion cutting oil	30-50 20-40
	Cr. Ni	0.01	0.01	0.02	0.02	0.03	0.05		
Semi-steel	To 220	0.01	0.02	0.04	0.06	0.07	0.09	Dry-emulsion	80-100
Malleable cast iron	Over 220	0.01	0.02	0.03	0.04	0.05	0.07	Dry-emulsion	60-90
Cast steel	R. 800	0.01	0.02	0.03	0.04	0.05	0.07	Emulsion	70-130
Titanium and titanium alloys	456	0.01	0.02	0.02	0.03	0.04	0.06	Emulsion	30-60
Aluminium & alloys	10% SI	0.02	0.03	0.05	0.07	0.10	0.12	Emulsion	500-800 250-500
	18% SI	0.01	0.02	0.03	0.05	0.07	0.10		
Brass, copper, bronze	456	0.01	0.02	0.03	0.05	0.07	0.10	Dry-emulsion	140-250
Layered plastics	456	0.02	0.03	0.05	0.07	0.10	0.13	Dry with suction	100-200

## Cutting data for solid carbide drills

Material	Condition	Feed rate S=mm/2 Ø				Coolant	Cutting speed m/min
		1 - 3	4 - 7	8 - 13	14 - 20		
Structural steel	R.800 R.800-1000 R.1000-1200 R.1200-1400	0.01-0.03	0.02-0.05	0.05-0.08	0.08-0.12	Emulsion	80-100 70-100 60-90 50-70
		0.01-0.03	0.02-0.04	0.04-0.07	0.07-0.10		
		0.01-0.02	0.02-0.03	0.03-0.06	0.06-0.08		
		0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.06		
Tool steel HRC 20/30	HB 230 HB 230/285	0.01-0.02	0.02-0.03	0.03-0.06	0.06-0.08	Emulsion	30-40 20-30
		0.01-0.02	0.02-0.03	0.03-0.04	0.04-0.07		
Steel HRC 50		0.005-0.01	0.01-0.02	0.02-0.03	0.03	Emulsion	8-12
Stainless steel	To 230	0.01-0.02	0.02-0.05	0.05-0.08	0.08-0.10	Emulsion	25-40
Semi-steel	To 285	0.02	0.03-0.06	0.06-0.09	0.10-0.16	Dry	60-90
Malleable cast iron	R. 700	0.02	0.02-0.04	0.04-0.08	0.09-0.15	Dry	70-100
Cast steel		0.01-0.02	0.02-0.05	0.05-0.08	0.08-0.14	Emulsion	60-90
Titanium & titanium alloys		0.005-0.01	0.01-0.03	0.04-0.08	0.8-0.10	Emulsion cutting oil	30-60
Aluminium & alloys	10% SI 12% SI	0.03-0.06	0.06-0.08	0.08-0.13	0.14-0.20	Emulsion	100-140 50-60
		0.01-0.04	0.04-0.06	0.06-0.09	0.09-0.12		
Brass, Copper, Bronze		0.03-0.06	0.06-0.10	0.10-0.15	0.15-0.20	Dry	60-120
Layered plastics		0.02-0.04	0.04-0.06	0.06-0.08	0.08-0.12	Dry	60-120

### Cutting data for tungsten carbide burrs

Material	Condition	HB	Kind of teeth		Cutting speed m/min
			Straight cut	Crossed cut	
Unalloyed steel	C<0,25% C<1<0,80% C,40%	110-310	● ● ●	● ● ●	800-1200 800-1200 800-1200
Low alloyed steel	Annealed Hardened	125-225 220-450	●	● ●	700-1000 600-800
High alloyed steel	Annealed Hardened	150-250 250-500	●	● ●	600-800 600-800
High alloyed steel	Annealed high speed steel (HSS) Hardened tool steel	150-250 250-350	●	● ●	600-800 600-800
Stainless steel	Ferritic-martensitic	150-270	●	●	600-800
Steel casting	Unalloyed Low alloyed High alloyed	150-250	● ● ●	● ● ●	600-800 600-800 600-800
Stainless steel	Austenitic	150-270	●	●	600-800
Stainless steel castings	Ferritic-Martensitic Austenitic Manganese steel	200 200 250	● ● ●	● ● ●	400 300 160
Malleable cast iron	Ferritic - Short chip Pearlitic - Long chip	110-145 200-230	● ●	● ●	750 650
Grey cast iron	High traction resistant Low traction resistant	180 260	● ●	● ●	950 700
Nodular cast iron	Ferritic Pearlitic	160 250	● ●	● ●	650 550
Shell cast iron		400	●	●	160

#### Practical advice

- The indicated data are recommended for manual applications with a strength of 5-25N.
- Increase the cutting speed for light deburring.
- For heavy operations, for instance by a robot, the cutting speed must be reduced.

#### Straight cutting flutes burrs

- Best surface finishing.
- Maximum chip removal in soft materials.
- Excellent tool life.
- Produce needle chips.



#### Crossed cutting flutes burrs

- Allow a lower spindle speed.
- Smoother operation, even allow speeds.
- High chip removal in hard and soft materials.
- Produce short and rounded chips.



<b>Type 90</b>  Surfaces and smooth edges	<b>Type 91</b>  Radius and surfaces	<b>Type 92</b>  General shapes	<b>Type 93</b>  Curved shapes with narrow spaces	<b>Type 94</b>  Narrow spaces
<b>Type 95</b>  Complicated shapes	<b>Type 96</b>  Welded shapes and holes in curved surfaces	<b>Type 97</b>  Inverted cone shape	<b>Type 98</b>  30° Degrees chamfering	<b>Type 99</b>  45° Degrees chamfering