

**STARTEC**  
CNC TOOL GRINDING

A Company within the SWAROVSKI Group





## **CNC TOOL GRINDING WITH TYROLIT PRECISION GRINDING WHEELS**

Productivity requirements concerning the stock removal of the most diverse materials are increasing constantly. At the same time, the quality demands are becoming ever more stringent. These demands can only be satisfied by using perfectly ground cutting tools manufactured with state-of-the-art CNC tool grinding machines.

TYROLIT offers a perfectly matched range for this purpose, allowing you to take full advantage of your CNC machines to manufacture your cutting tools. While increasing your productivity, you also meet high quality requirements. In the following, you will find grinding tools that satisfy the demands of both tool manufacturers and tool regrinders.

The enclosed application engineering offers advice on the optimal use of the grinding tools.

The STARTEC product line is synonymous with high quality grinding tools that guarantee maximum productivity. In connection with the production and service of rotating tools, the STARTEC benefits are shown clearly:

- Increased productivity through high traverse speeds
- Reduction of non-productive times due to reduced wear
- Perfect quality through innovative bond systems and adapted grain qualities
- Comprehensive range available from stock

### **TYROLIT – masters of the art of grinding**

Drawing on their comprehensive process know-how, our application engineers reliably develop sustainable solutions.





## APPLICATION ENGINEERING CEMENTED CARBIDE MILLING CUTTERS



Parameters	Product line	Flute grinding	Clearance grinding	Face grinding	Gashing
Cutting speed $v_c^*$	STARTEC-BASIC	20 - 24 m/s	20 - 24 m/s	20 - 24 m/s	20 - 24 m/s
	STARTEC-HP	16 - 18 m/s	16 - 18 m/s	18 - 24 m/s	18 - 24 m/s
	<b>NEW</b> STARTEC XP	<b>16 - 22 m/s</b>	<b>16 - 22 m/s</b>	-	-
Infeed $a_e^{**}$	STARTEC-BASIC	Full depth of flute	0,3 - 1 mm	Depends on face geometry	Full depth of flute
	STARTEC-HP				
	<b>NEW</b> STARTEC XP	<b>Full depth of flute</b>	<b>&gt; 0,5 mm</b>	-	-
Traverse speed in the flute $V_f^{***}$	STARTEC-BASIC	50 - 100 mm/min	100 - 200 mm/min	30 - 35 mm/min	20 - 35 mm/min
	STARTEC-HP	80 - 160 mm/min	200 - 400 mm/min	30 - 80 mm/min	30 - 80 mm/min
	<b>NEW</b> STARTEC XP	<b>80 - 220 mm/min</b>	<b>200 - 400 mm/min</b>	-	-
Recommended specification	STARTEC-BASIC	DE643BS	1A1: DE643BS 11V9: DE643BS	DE643BS	12V9: DE643BS
	STARTEC-HP	DN54MH	1A1: DN543MH 11V9: DN643MC	DN643MC	12V9: DN643MC 1V1: DN543MH
	<b>NEW</b> STARTEC XP	<b>D54MXP</b>	<b>1A1: D54MXP</b>	-	-

\* The greater the wheel width, the lower the cutting speed

\*\* Depends on the power potential of the machine

\*\*\* Depends on the depth, length and spiral angle of the flute

## APPLICATION ENGINEERING CEMENTED CARBIDE DRILL BITS



Parameters	Product line	Flute grinding	Back grinding	Point grinding
				
Cutting speed $v_c^*$	STARTEC-BASIC	20 - 24 m/s	20 - 24 m/s	20 - 24 m/s
	STARTEC-HP	16 - 18 m/s	16 - 18 m/s	16 - 20 m/s
	<b>NEW</b> STARTEC XP	<b>16 - 22 m/s</b>	<b>16 - 22 m/s</b>	-
Infeed $a_e^{**}$	STARTEC-BASIC	Full depth of flute	0,3 - 1,5 mm	Depends on face geometry
	STARTEC-HP			
	<b>NEW</b> STARTEC XP	<b>Full depth of flute</b>	<b>&gt; 0,5 mm</b>	-
Traverse speed in the flute $V_t^{***}$	STARTEC-BASIC	40 - 80 mm/min up to 5 mm depth 20 - 60 mm/min over 5 mm depth	100 - 125 mm/min	10 - 15 mm/min
	STARTEC-HP	60 - 150 mm/min up to 5 mm depth 30 - 120 mm/min over 5 mm depth	200 - 300 mm/min	15 - 25 mm/min
	<b>NEW</b> STARTEC XP	<b>70 - 180 mm/min up to 5 mm depth</b> <b>30 - 120 mm/min over 5 mm depth</b>	<b>200 - 400 mm/min</b>	-
Recommended specification	STARTEC-BASIC	DE643PD	DE643BS	1A1 / 1V1: DE643PD 6A2: D54C75B
	STARTEC-HP	DN54MH	DN763MH	1A1 / 1V1: DN543MH
	<b>NEW</b> STARTEC XP	<b>D54MXP</b>	<b>D54MXP</b>	-

\* The greater the wheel width, the lower the cutting speed





\*\* Depends on the power potential of the machine

\*\*\* Depends on the depth, length and spiral angle of the flute



## APPLICATION ENGINEERING HSS MILLING CUTTERS



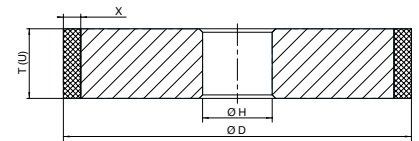
Parameters	Product line	Flute grinding	Clearance grinding	Face grinding	Gashing
					
Cutting speed $v_c^*$	STARTEC-BASIC	22 - 40 m/s	22 - 40 m/s	22 - 40 m/s	22 - 40 m/s
Infeed $a_e^{**}$	STARTEC-BASIC	Full depth of flute	0,3 - 1,5 mm	Depends on face geometry	Full depth of flute
Traverse speed in the flute $V_t^{***}$	STARTEC-BASIC	100 - 200 mm/min up to 5 mm 80 - 150 mm/min over 5 mm depth	150 - 300 mm/min up to 5 mm 150 - 300 mm/min over 5 mm depth	60 - 70 mm/min	40 - 50 mm/min 30 - 70 mm/min
Recommended specification	STARTEC-BASIC	BL1263PD WS $\varnothing \leq 10$ mm BL1263PD	BL1263PD WS $\varnothing \leq 10$ mm BL763PD	BL1263PD WS $\varnothing \leq 10$ mm BL763PD	BL1263PD WS $\varnothing \leq 10$ mm BL763PD

\* The greater the wheel width, the lower the cutting speed  
 \*\* Depends on the power potential of the machine  
 \*\*\* Depends on the depth, length and spiral angle of the flute



## STANDARD GRINDING TOOLS FOR THE PRODUCTION OF ROTATING CUTTING TOOLS

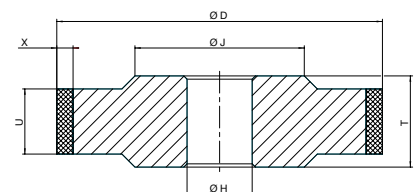
### FLUTE GRINDING



#### Shape 1A1

**NEW**

D	T	H	U	X	Specification for Cemented Carbide	TN	Stock
75	6	20	6	6	STARTEC XP D54MXP	614714	*
75	10	20	10	6	STARTEC XP D54MXP	614722	*
100	6	20	6	6	STARTEC XP D54MXP	614723	*
100	6	31,75	6	6	STARTEC XP D54MXP	614721	Rfs
100	10	20	10	6	STARTEC XP D54MXP	614725	*
100	10	31,75	10	6	STARTEC XP D54MXP	614720	Rfs
100	12	20	12	6	STARTEC XP D54MXP	614726	*
100	15	20	15	6	STARTEC XP D54MXP	619105	*
100	15	31,75	15	6	STARTEC XP D54MXP	614687	Rfs
125	6	20	6	6	STARTEC XP D54MXP	619106	*
125	10	20	10	6	STARTEC XP D54MXP	614707	*
125	15	20	15	6	STARTEC XP D54MXP	619107	*
125	15	31,75	15	6	STARTEC XP D54MXP	614701	Rfs
150	6	20	6	6	STARTEC XP D54MXP	614684	*
150	6	20	6	10	STARTEC XP D54MXP	614694	
150	10	20	10	6	STARTEC XP D54MXP	614704	*
150	10	20	10	10	STARTEC XP D54MXP	614711	
150	12	20	12	10	STARTEC XP D54MXP	614698	*
150	15	20	15	6	STARTEC XP D54MXP	619109	*

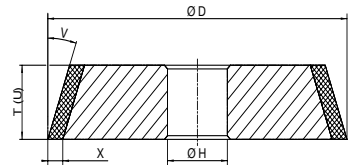


#### Shape 14A1

**NEW**

D	T	H	U	X	Specification for Cemented Carbide	TN	Stock
75	8	20	4	6	STARTEC XP D54MXP	617705	*
75	8	20	6	6	STARTEC XP D54MXP	617706	*

\* ... available from stock | Rfs ... reworking from stock | On request, we also manufacture customised grinding tools.

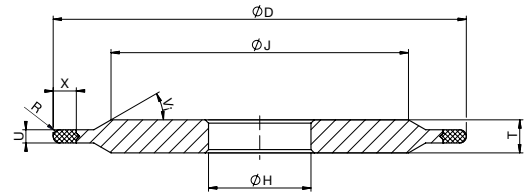


### Shape 1V1

**NEW**

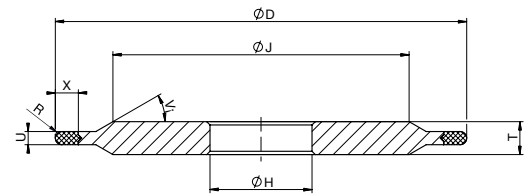
D	T	H	U	X	V°	Specification for Cemented Carbide	TN	Stock
75	6	20	6	6	15	STARTEC XP D54MXP	614777	*
75	8	20	8	6	15	STARTEC XP D54MXP	614774	
75	8	20	8	10	15	STARTEC XP D54MXP	614775	*
75	10	20	10	10	15	STARTEC XP D54MXP	614778	*
100	6	20	6	6	15	STARTEC XP D54MXP	614769	*
100	6	31,75	6	6	15	STARTEC XP D54MXP	614770	Rfs
100	10	20	10	6	15	STARTEC XP D54MXP	614773	
100	10	31,75	10	6	15	STARTEC XP D54MXP	614768	
100	10	20	10	10	15	STARTEC XP D54MXP	614767	*
100	10	31,75	10	10	15	STARTEC XP D54MXP	614765	Rfs
100	12	20	12	6	15	STARTEC XP D54MXP	614758	*
100	12	20	12	6	45	STARTEC XP D54MXP	614753	*
100	15	20	15	6	15	STARTEC XP D54MXP	614763	
100	15	31,75	15	6	15	STARTEC XP D54MXP	614757	
100	15	20	15	10	15	STARTEC XP D54MXP	614751	*
100	15	31,75	15	10	15	STARTEC XP D54MXP	619110	Rfs
125	6	20	6	6	15	STARTEC XP D54MXP	614743	*
125	6	31,75	6	6	15	STARTEC XP D54MXP	614729	Rfs
125	10	20	10	6	15	STARTEC XP D54MXP	614748	
125	10	31,75	10	6	15	STARTEC XP D54MXP	614780	
125	10	20	10	10	15	STARTEC XP D54MXP	614735	*
125	10	31,75	10	10	15	STARTEC XP D54MXP	614785	Rfs
125	12	20	12	6	15	STARTEC XP D54MXP	614786	*
125	12	20	12	6	45	STARTEC XP D54MXP	614781	*
125	15	20	15	6	15	STARTEC XP D54MXP	614741	
125	15	31,75	15	6	15	STARTEC XP D54MXP	614731	
125	15	20	15	10	15	STARTEC XP D54MXP	614746	*
125	15	31,75	15	10	15	STARTEC XP D54MXP	614783	Rfs
150	10	20	10	10	10	STARTEC XP D54MXP	614779	*

\* ... available from stock | Rfs ... reworking from stock | On request, we also manufacture customised grinding tools.



### Shape 14F1R

D	T	H	U	X	R	Specification for Cemented Carbide	TN	Specification for HSS	TN
100	10	20	3	5	1,5	STARTEC-BASIC DE643BS	494480	STARTEC-BASIC BL1263PD	494528
150	10	20	1,2	5	0,6	STARTEC-BASIC DE643BS	494485	STARTEC-BASIC BL1263PD	494529
150	10	20	2	5	1	STARTEC-BASIC DE643BS	494491	STARTEC-BASIC BL1263PD	494530



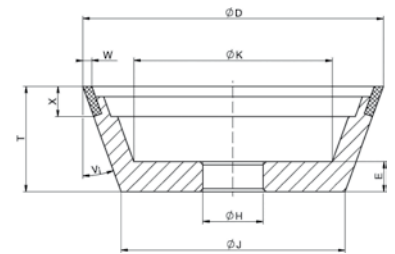
### Shape 14F1

D	T	H	U	X	R	Specification for Cemented Carbide	TN	Specification for HSS	TN
100	10	20	4	6	2	STARTEC-BASIC DE643BS	494495	STARTEC-BASIC BL1263PD	494531
125	10	20	4	6	2	STARTEC-BASIC DE643BS	494506	STARTEC-BASIC BL1263PD	494535
125	10	20	8	10	4	STARTEC-BASIC DE643BX	494510	STARTEC-BASIC BL1263PD	494536
150	10	20	4	6	2	STARTEC-BASIC DE643BS	494515	STARTEC-BASIC BL1263PD	494538
150	10	20	5	6	2,5	STARTEC-BASIC DE643BS	494525	STARTEC-BASIC BL1263PD	494540



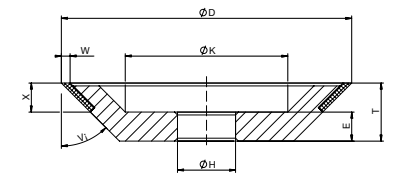


## GRINDING OF CLEARANCE ANGLES AND FACE GEOMETRIES



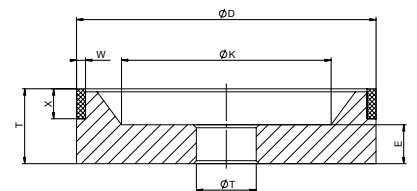
**Shape 11V9**

D	T	H	W	X	V°	Specification for Cemented Carbide	TN	Stock	Specification for HSS	TN	Stock
75	30	20	2	10	20	STARTEC-HP DN643MC	529895	*	STARTEC-BASIC BL1263PD	75669	*
100	35	20	2	10	20	STARTEC-HP DN643MC	530074	*	STARTEC-BASIC BL1263PD	949953	*
125	35	20	2	10	20	STARTEC-HP DN643MC	530077	*	STARTEC-BASIC BL1263PD	494643	*



**Shape 12V9**

D	T	H	W	X	V°	Specification for Cemented Carbide	TN	Stock	Specification for HSS	TN	Stock
100	20	20	2	10	45	STARTEC-HP DN643MC	530078	*	STARTEC-BASIC BL1263PD	75679	*
125	25	20	2	10	45	STARTEC-HP DN643MC	530079	*	STARTEC-BASIC BL1263PD	75685	*
150	25	20	2	10	45	STARTEC-BASIC DE643BS	494650		STARTEC-BASIC BL1263PD	494652	



**Shape 6A9**

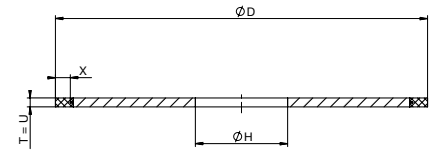
D	T	H	W	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
75	30	20	3	10	STARTEC-BASIC DE643BS	494675	STARTEC-BASIC BL1263PD	494677
100	30	20	3	10	STARTEC-BASIC DE643BS	403512	STARTEC-BASIC BL1263PD	494678
125	30	20	3	10	STARTEC-BASIC DE643BS	494676	STARTEC-BASIC BL1263PD	337974

\* ... available from stock | On request, we also manufacture customised grinding tools.



## GRINDING TOOLS FOR REGRINDING OF ROTATING CUTTING TOOLS

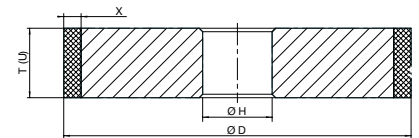
### CUT-OFF GRINDING



#### Shape 1A1R

D	T	H	U	X	Specification for Cemented Carbide	TN	Stock	Specification for HSS	TN
100	1	20	1	5	D126C100B	100660	*	B151C100B	881767
125	1	20	1	5	D126C100B	101000	*	B151C100B	164485
150	1	20	1	7	D126C100B	494688		B151C100B	494701
200	1,2	20	1,2	7	D126C100B	858531		B151C100B	39880
250	1,2	20	1,2	5	D126C100B	412224		B151C100B	494715
300	1,5	20	1,5	7	D126C100B	403700		B151C100B	494716

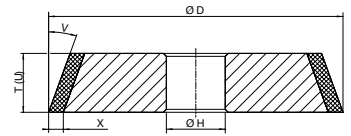
### GENERAL APPLICATION



#### Shape 1A1

D	T	H	U	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
75	4	20	4	6	STARTEC-BASIC DE643BS	494719	STARTEC-BASIC BL913PD	28511
75	6	20	6	6	STARTEC-BASIC DE643BS	494721	STARTEC-BASIC BL913PD	494749
75	10	20	10	6	STARTEC-BASIC DE643BS	494722	STARTEC-BASIC BL913PD	210642
100	6	20	6	6	STARTEC-BASIC DE643BS	494723	STARTEC-BASIC BL913PD	263583
100	6	31,75	6	6	STARTEC-BASIC DE643BS	494724	STARTEC-BASIC BL913PD	494750
100	10	20	10	6	STARTEC-BASIC DE643BS	437298	STARTEC-BASIC BL913PD	36247
100	10	31,75	10	6	STARTEC-BASIC DE643BS	494725	STARTEC-BASIC BL913PD	494753
100	12	20	12	6	STARTEC-BASIC DE643BS	494728	STARTEC-BASIC BL913PD	348111
100	15	20	15	6	STARTEC-BASIC DE643BS	437299	STARTEC-BASIC BL913PD	217036
100	15	31,75	15	6	STARTEC-BASIC DE643BS	494729	STARTEC-BASIC BL913PD	494755
125	6	20	6	6	STARTEC-BASIC DE643BS	494730	STARTEC-BASIC BL913PD	494757
125	10	20	10	6	STARTEC-BASIC DE643BS	494732	STARTEC-BASIC BL913PD	315
125	15	20	15	6	STARTEC-BASIC DE643BS	494734	STARTEC-BASIC BL913PD	126471
125	15	31,75	15	6	STARTEC-BASIC DE643BS	494735	STARTEC-BASIC BL913PD	494758
150	6	20	6	6	STARTEC-BASIC DE643BS	494737	STARTEC-BASIC BL913PD	494759
150	10	20	10	6	STARTEC-BASIC DE643BS	494747	STARTEC-BASIC BL913PD	308441
150	15	20	15	6	STARTEC-BASIC DE643BS	494748	STARTEC-BASIC BL913PD	405183

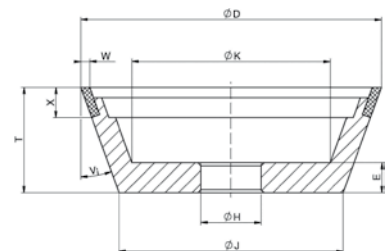
\* ... available from stock | On request, we also manufacture customised grinding tools.



### Shape 1V1

D	T	H	U	X	V°	Specification for Cemented Carbide	TN	Specification for HSS	TN
75	6	20	6	6	15	STARTEC-BASIC DE643BS	494766	STARTEC-BASIC BL913PD	494798
100	6	20	6	6	15	STARTEC-BASIC DE643BS	494768	STARTEC-BASIC BL913PD	403134
100	6	31,75	6	6	15	STARTEC-BASIC DE643BS	494770	STARTEC-BASIC BL913PD	403294
100	10	20	10	6	15	STARTEC-BASIC DE643BS	494771	STARTEC-BASIC BL913PD	194953
100	10	31,75	10	6	15	STARTEC-BASIC DE643BS	494773	STARTEC-BASIC BL913PD	494800
100	12	20	12	6	15	STARTEC-BASIC DE643BS	494774	STARTEC-BASIC BL913PD	494801
100	12	20	12	6	45	STARTEC-BASIC DE643BS	494775	STARTEC-BASIC BL913PD	451899
100	15	20	15	6	15	STARTEC-BASIC DE643BS	494776	STARTEC-BASIC BL913PD	287127
100	15	31,75	15	6	15	STARTEC-BASIC DE643BS	494777	STARTEC-BASIC BL913PD	494802
125	6	20	6	6	15	STARTEC-BASIC DE643BS	494782	STARTEC-BASIC BL913PD	494810
125	6	31,75	6	6	15	STARTEC-BASIC DE643BS	494784	STARTEC-BASIC BL913PD	494805
125	10	20	10	6	15	STARTEC-BASIC DE643BS	494786	STARTEC-BASIC BL913PD	494811
125	10	31,75	10	6	15	STARTEC-BASIC DE643BS	494788	STARTEC-BASIC BL913PD	494812
125	12	20	12	6	15	STARTEC-BASIC DE643BS	494789	STARTEC-BASIC BL913PD	494813
125	12	20	12	6	45	STARTEC-BASIC DE643BS	494791	STARTEC-BASIC BL913PD	297867
125	15	20	15	6	15	STARTEC-BASIC DE643BS	494795	STARTEC-BASIC BL913PD	494815
125	15	31,75	15	6	15	STARTEC-BASIC DE643BS	494797	STARTEC-BASIC BL913PD	494816

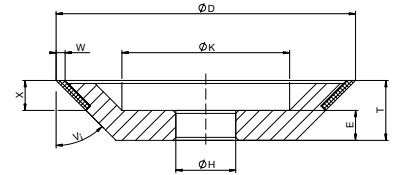
## REGRINDING DRY AMIGO | DIAGO PRODUCT LINE



### Shape 11V9

D	T	H	W	X	V°	Specification for CC	TN	Stock	Specification 2 for CC	TN	Stock	Specification for HSS	TN	Stock
75	30	20	2	10	20	DIAGO D126C75B	679634	*	DIAGO D64C50B	721301	*	AMIGO B126C75B	640777	*
100	35	20	2	10	20	DIAGO D126C75B	675309	*	DIAGO D64C50B	675272	*	AMIGO B126C75B	617388	*
100	35	31,75	2	10	20	DIAGO D126C75B	675066		DIAGO D64C50B	919374		AMIGO B126C75B	638087	
100	35	20	3	10	20	DIAGO D126C75B	675318	*	DIAGO D64C50B	721303		AMIGO B126C75B	636398	*
125	40	20	2	10	20	DIAGO D126C75B	688808		DIAGO D64C50B	436496		AMIGO B126C75B	641854	*
125	40	20	3	10	20	DIAGO D126C75B	679946	*	DIAGO D64C50B	813512		AMIGO B126C75B	871544	

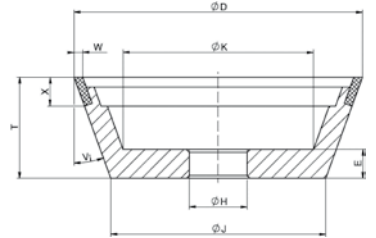
\* ... available from stock | On request, we also manufacture customised grinding tools.



### Shape 12V9

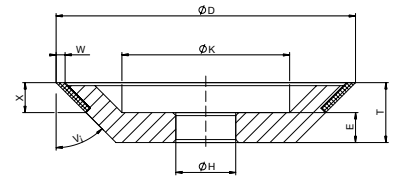
D	T	H	W	X	V°	Specification for CC	TN	Stock	Specification 2 for CC	TN	Stock	Specification for HSS	TN	Stock
75	20	20	2	6	45	DIAGO D126C75B	696324	*	DIAGO D64C50B	721319	*	AMIGO B126C75	703242	*
100	20	20	2	10	45	DIAGO D126C75B	689930	*				AMIGO B126C75	636658	*
125	25	20	2	10	45	DIAGO D126C75B	311250	*	DIAGO D64C50B	934746		AMIGO B126C75	840506	*
150	25	20	2	10	45	DIAGO D126C75B	494994		DIAGO D64C50B	268823		AMIGO B126C75	917415	

## REGRINDING WET (WITH COOLANT) STARTEC-BASIC PRODUCT LINE



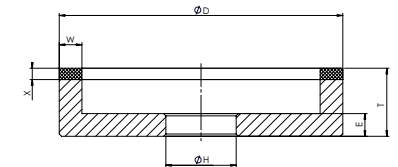
### Shape 11V9

D	T	H	W	X	V°	Specification for CC	TN	Stock	Specification for HSS	TN	Stock
75	30	20	2	10	20	STARTEC-BASIC DE643BS	390970	*	STARTEC-BASIC BL763PD	494983	*
100	35	20	2	10	20	STARTEC-BASIC DE643BS	357223	*	STARTEC-BASIC BL763PD	494985	*
100	35	31,75	2	10	20	STARTEC-BASIC DE643BS	494972		STARTEC-BASIC BL763PD	901440	
100	35	20	3	10	20	STARTEC-BASIC DE643BS	532514	*	STARTEC-BASIC BL763PD	532564	
125	40	20	2	10	20	STARTEC-BASIC DE643BS	494978	*	STARTEC-BASIC BL763PD	494987	*
125	40	20	3	10	20	STARTEC-BASIC DE643BS	494976		STARTEC-BASIC BL763PD	494988	



### Shape 12V9

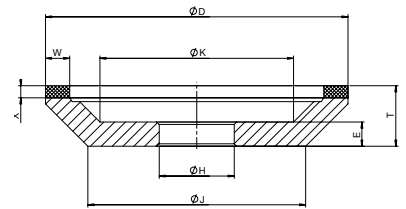
D	T	H	W	X	V°	Specification for CC	TN	Stock	Specification for HSS	TN	Stock
75	20	20	2	6	45	STARTEC-BASIC DE643BS	495020	*	STARTEC-BASIC BL763PD	495030	
100	20	20	2	10	45	STARTEC-BASIC DE643BS	532510	*	STARTEC-BASIC BL763PD	532571	*
100	20	20	3	10	45	STARTEC-BASIC DE643BS	532529	*	STARTEC-BASIC BL763PD	532576	
125	25	20	2	10	45	STARTEC-BASIC DE643BS	363993	*	STARTEC-BASIC BL763PD	495027	*
125	25	20	3	10	45	STARTEC-BASIC DE643BS	532540	*	STARTEC-BASIC BL763PD	532579	
150	25	20	2	10	45	STARTEC-BASIC DE643BS	495025		STARTEC-BASIC BL763PD	495026	



### Shape 6A2

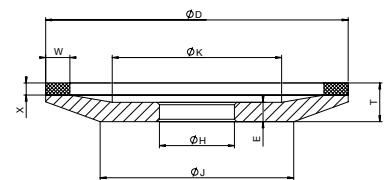
D	T	H	W	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
125	30	20	5	3	D54C75B	495034	STARTEC-BASIC BL913PD	495038
150	35	20	5	3	D54C75B	495035	STARTEC-BASIC BL913PD	495037

\* ... available from stock | On request, we also manufacture customised grinding tools.



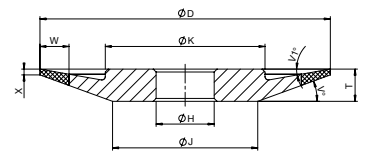
### Shape 12A2D

D	T	H	W	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
100	25	20	5	3	D54C75B	495041	B91C100B	495046
125	25	20	15	3	D54C75B	495044	B91C100B	173085



### Shape 12A2

D	T	H	W	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
150	18	20	5	3	D54C75B	495048	B91C100B	495047



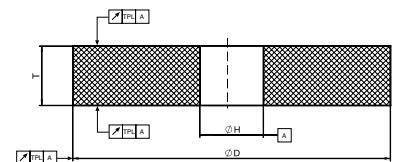
### Shape 4BT9

D	T	H	W	X	Specification for Cemented Carbide	TN	Specification for HSS	TN
75	8	20	6	1	D126C75B	495049	STARTEC-BASIC BL1263PD	495038
100	10	20	10	1	D126C75B	495051	STARTEC-BASIC BL1263PD	495037
125	10	20	10	1	D126C75B	495053	STARTEC-BASIC BL1263PD	495058

## DRESSING AND SHARPENING

### Shape 1

D	T	H	Specification	TN	Stock	Note
250	12	51	C80H8V15	250491	*	Standard hardness, for grit sizes 151 - 64
250	12	51	C80J5V15	619701	*	Harder than standard, for grit sizes 151 - 64
250	12	51	C120H5AV18	413027	*	For grit sizes < 64

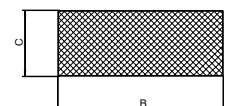


### Reducing ring

D	T	H	Specification	TN	Stock	Note
51	9	32	Reduzerring	911408	*	Available free of charge
32	6	20	Reduzerring	111434	*	Available free of charge

### Shape 90AS

B	C	L	Specification	TN	Stock	Note
25	13	200	89A240H5AV83	932780	*	For grit sizes > 35
24	13	200	89A600J5AV83	577953	*	For grit sizes <= 35



\* ... available from stock | On request, we also manufacture customised grinding tools.



## APPLICATION ENGINEERING – RECOMEMENDED PROCESS PARAMETERS

The values in this table are an indication of the grinding process (stock removal) performance Q'w. The optimum traverse speed vt for your application with STARTEC XP can be determined via the infeed (profile depth) ae. The feed values that can be achieved are dependent on the workpiece diameter, the coolant/ lubricant used on the available machine power.

Q'w table [ mm<sup>3</sup>/s . mm ]

		Traverse speed vt [mm/min]											
		30	40	50	60	70	80	100	120	140	160	180	200
Infeed ae [mm]	2,6	1,3	1,7	2,2	2,6	3,0	3,5	4,3	5,2	6,1	6,9	7,8	8,7
	2,8	1,4	1,9	2,3	2,8	3,3	3,7	4,7	5,6	6,5	7,5	8,4	9,3
	3,0	1,5	2,0	2,5	3,0	3,5	4,0	5,0	6,0	7,0	8,0	9,0	10,0
	3,2	1,6	2,1	2,7	3,2	3,7	4,3	5,3	6,4	7,5	8,5	9,6	10,7
	3,4	1,7	2,3	2,8	3,4	4,0	4,5	5,7	6,8	7,9	9,1	10,2	11,3
	3,6	1,8	2,4	3,0	3,6	4,2	4,8	6,0	7,2	8,4	9,6	10,8	12,0
	3,8	1,9	2,5	3,2	3,8	4,4	5,1	6,3	7,6	8,9	10,1	11,4	12,7
	4,0	2,0	2,7	3,3	4,0	4,7	5,3	6,7	8,0	9,3	10,7	12,0	13,3
	4,2	2,1	2,8	3,5	4,2	4,9	5,6	7,0	8,4	9,8	11,2	12,6	14,0
	4,4	2,2	2,9	3,7	4,4	5,1	5,9	7,3	8,8	10,3	11,7	13,2	14,7
	4,6	2,3	3,1	3,8	4,6	5,4	6,1	7,7	9,2	10,7	12,3	13,8	15,3
	4,8	2,4	3,2	4,0	4,8	5,6	6,4	8,0	9,6	11,2	12,8	14,4	16,0
	5,0	2,5	3,3	4,2	5,0	5,8	6,7	8,3	10,0	11,7	13,3	15,0	16,7
	5,5	2,8	3,7	4,6	5,5	6,4	7,3	9,2	11,0	12,8	14,7	16,5	18,3
	6,0	3,0	4,0	5,0	6,0	7,0	8,0	10,0	12,0	14,0	16,0	18,0	20,0
	6,5	3,3	4,3	5,4	6,5	7,6	8,7	10,8	13,0	15,2	17,3	19,5	21,7
7,0	3,5	4,7	5,8	7,0	8,2	9,3	11,7	14,0	16,3	18,7	21,0	23,3	
7,5	3,8	5,0	6,3	7,5	8,8	10,0	12,5	15,0	17,5	20,0	22,5	25,0	
8,0	4,0	5,3	6,7	8,0	9,3	10,7	13,3	16,0	18,7	21,3	24,0	26,7	
8,5	4,3	5,7	7,1	8,5	9,9	11,3	14,2	17,0	19,8	22,7	25,5	28,3	
9,0	4,5	6,0	7,5	9,0	10,5	12,0	15,0	18,0	21,0	24,0	27,0	30,0	
9,5	4,8	6,3	7,9	9,5	11,1	12,7	15,8	19,0	22,2	25,3	28,5	31,7	
10,0	5,0	6,7	8,3	10,0	11,7	13,3	16,7	20,0	23,3	26,7	30,0	33,3	



vt Start value



vt Optimization potential



Reading direction

$$Q'_w = \frac{a_e \cdot v_t}{60} \Rightarrow v_t = \frac{Q'_w \cdot 60}{a_e}$$

Q'w Standard: 5 - 8 mm<sup>3</sup>/s . mm

Q'w TOP PERFORMANCE: 9 - 12 mm<sup>3</sup>/s . mm

Cutting speed with STARTEC XP: Vc = 16 - 20 m/s



## APPLICATION ENGINEERING – **SOLUTIONS EXPERTISE**

**Successful enterprises expect not only top products from their partners, but also process know-how and a program of comprehensive support for their individual requirements.**

Concentration on the production and supply of top quality tools is in itself no longer sufficient. Good “software” has to be offered alongside the “hardware”. With the wealth of process expertise commanded by our team of application engineers we are able to provide our customers with sustained solutions in line with today’s demanding technical and economical expectations.



### **Clarify the task**

We place great emphasis on knowing the targets of our customers. Application engineering specialists analyze the task in detail. A requirements profile which takes technological and profitability aspects into account is then drawn up together with the customer.



### **Define the concept**

The team of experienced application engineers defines approaches to the solution, calling on the additional input from our specialists from R & D and our in-house test center as required.



### **Realize the solution**

The process solution is then taken direct to the customer where it is put into practice on the relevant machine. Within the scope of a sustained process optimization the application engineer sets the mode of operation for the grinding tool, the interaction between machine, workpiece, material, cooling lubricant and kinematical parameters.



### **Share the know-how**

Our know-how in the field of grinding technology is crucial to successful cooperation. A one-off optimization is not the solution for the customer. Sustained results come from the continuous application of the experience on a broad basis. Service is also offered to our customers by way of practice-oriented information, data preparation, trainings and seminars.

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