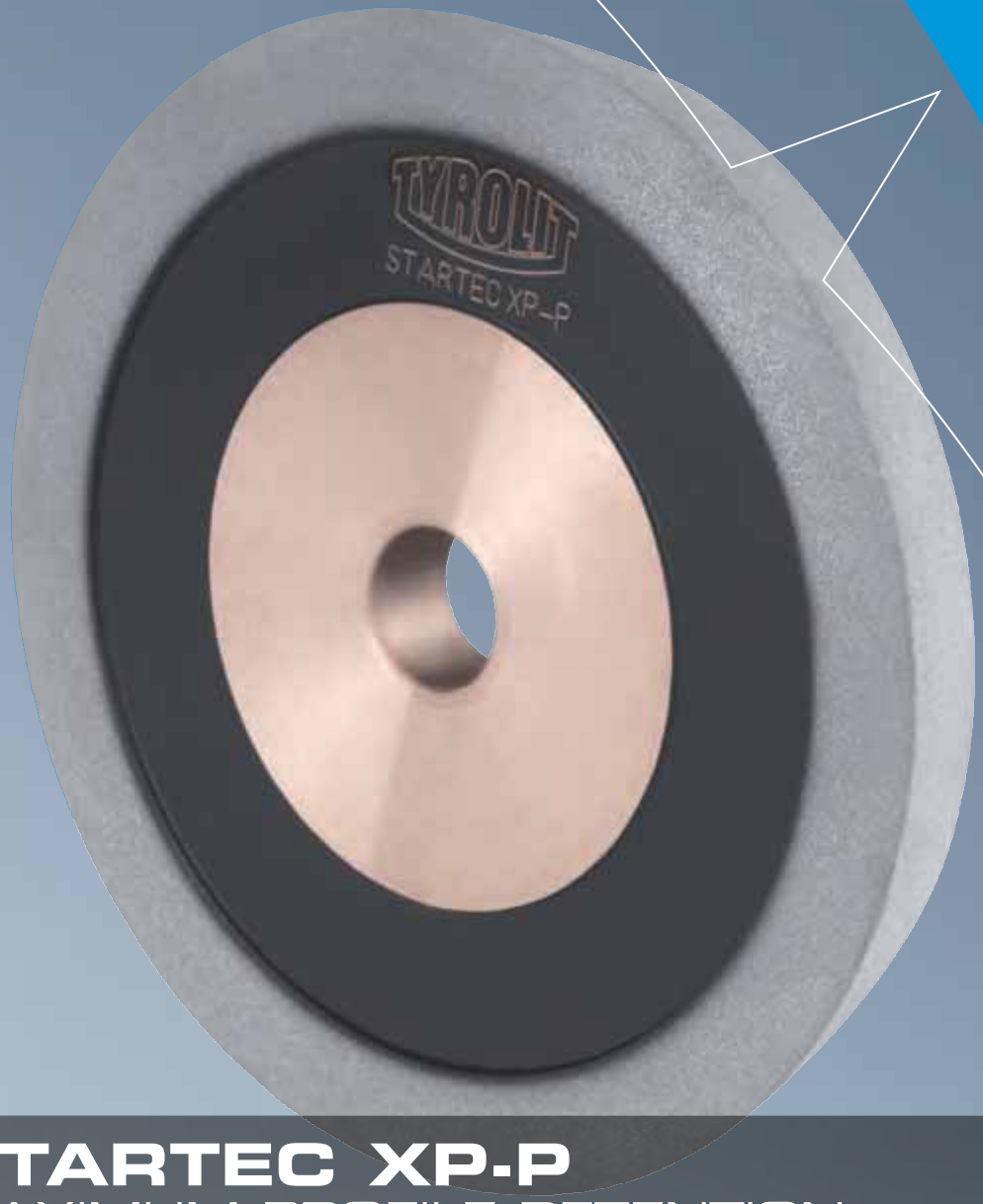


STARTEC XP-P

MAXIMUM PROFILE RETENTION IN TOOL GRINDING

- Excellent profile retention at the highest feed rates
- Lower process costs and increased productivity
- Highest precision for your tools

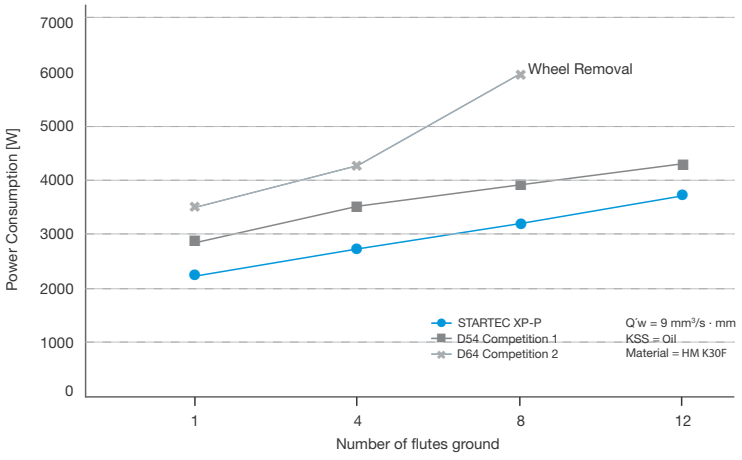
A Company of the SWAROVSKI Group

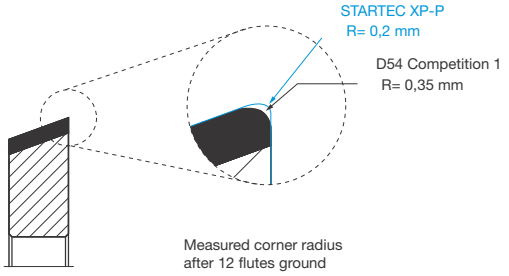
TYROLIT

STARTEC XP-P
MAXIMUM PROFILE RETENTION IN TOOL GRINDING

Producing high quality cutting tools on today's CNC grinding machines requires the most efficient use of these machines. A significant cost reduction can only be achieved with optimum utilization of the available machine capacity. To use all the advantages of the CNC tool grinding machines, an innovative grinding wheel becomes a prerequisite.

Tyrolit's STARTEC XP-P product line has already proven itself in meeting the demands of cutting performance and quality. STARTEC XP-P provides optimized profile retention at significant lower spindle power consumption. Thanks to an innovative selection of raw materials and approved productions methods, TYROLIT ensures the highest quality level of all your grinding products.





Product and user benefits

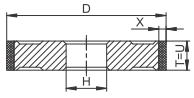
- Excellent Form Holding
- Ease of Dress
- Higher Metal Removal Rates & G-Ratios
- Lower Grinding Forces
- Reduced Cycle Time
- More Parts per Dress
- Better Surface Finish
- Popular wheels in Stock

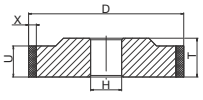
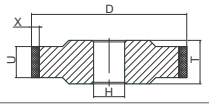
STARTEC XP-P superabrasive wheels are delivered unconditioned, requiring the wheel face to be opened up or conditioned prior to grinding. A conditioning or dressing stick is provided with each wheel. Only a perfect conditioning procedure will ensure the optimum cutting ability of STARTEC XP-P. Dressing instructions and an overview of the STARTEC product line accompany each wheel.

The end quality of each part ground together with reduced cycle time and extended wheel life are the major advantages of the new STARTEC XP-P line. With most common sizes and shapes in stock, call 800-223-0457 for a guaranteed test today.

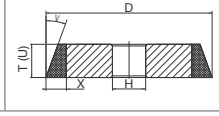
STARTEC XP-P
MANUFACTURING CAPABILITIES

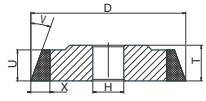
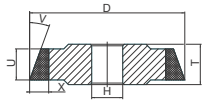
A1 SHAPES

Shape		D	T = U	X	H
1A1		50	6 - 15	6	As Specified
		75	6 - 20	6, 10	
		100, 125	6 - 20	6, 10, 15	
		150	8 - 20	6, 10, 15	
		175	8 - 20	6, 10	
		200	10 - 20	6, 10	
		212	> 7 - 20	15	

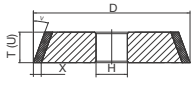
Shape		D	U	X	Tmax	H
3A1		75	4 - 10	6, 10	Shape 3: T=U+3 Shape 14: T=U+6	As Specified
		100, 125	4 - 20			
		150, 175	6 - 20			
14A1		200	8 - 20			
		212	4 - 7	15		

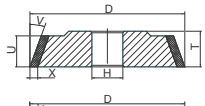
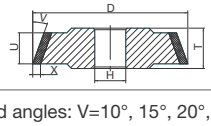
B1 SHAPES

Shape		D	T = U	X	H
1B1		75	6 - 16	10	As Specified
		100, 125, 150	6 - 20	10, 15	
		200	10 - 20	10	

Shape		D	U	X	Tmax	H
3B1		75	4 - 16	10	Shape 3: T=U+3 Shape 14: T=U+6	As Specified
		100, 125	4 - 20	10, 15		
14B1		150	6 - 20	10,15		
		200	6 - 20	10		

V1 SHAPES

Shape		D	T = U	X	V°	H
1V1		75, 100, 125	6 - 20	6, 10	≤ 45	As Specified
		150	8 - 20	6, 10	≤ 30	
		175	12 - 18	10	≤ 25	
		200	10 - 20	6, 10	≤ 45	

Shape		D	U	X	V°	Tmax	H
3V1		75	4 - 10	6, 10	≤ 45	Shape 3: T=U+3 Shape 14: T=U+6	As Specified
		100, 125	4 - 20				
14V1		150, 175	6 - 20				
		200	8 - 20				

Standard angles: V=10°, 15°, 20°, 30°, 35°, 45° | Customized grinding tools manufactured upon request.

STARTEC XP-P
RECOMMENDED PROCESS PARAMETERS

The values in this table provide an insight into performance during the grinding process Q'_w. Take the existing infeed (profile depth a_e) to determine the recommended feed rate v_t for use with STARTEC XP-P. The feed rate values depend on workpiece diameter, flute angle, coolant supply and the machine power that can be utilized.

Calculation formula

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

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

Guideline

V_C	
STARTEC XP-P	16 – 22 m/s

Q'_w	
Standard range	3 – 6 mm³/s · mm
TOP PERFORMANCE range	7 – 10 mm³/s · mm

Q'_w Table [mm³/s · mm]

	Feed v_t [mm/min]									
Profile depth a_e [mm]	50	60	70	80	100	120	140	160	180	200
2,6						5,2	6,1	6,9	7,8	8,7
2,8						5,6	6,5	7,5	8,4	9,3
3,0					5,0	6,0	7,0	8,0	9,0	10,0
3,2					5,3	6,4	7,5	8,5	9,6	10,7
3,4					5,7	6,8	7,9	9,1	10,2	11,3
3,6				4,8	6,0	7,2	8,4	9,6	10,8	
3,8				5,1	6,3	7,6	8,9	10,1	11,4	
4,0				5,3	6,7	8,0	9,3	10,7	12,0	
4,2			4,9	5,6	7,0	8,4	9,8	11,2		
4,4			5,1	5,9	7,3	8,8	10,3	11,7		
4,6		4,6	5,4	6,1	7,7	9,2	10,7			
4,8		4,8	5,6	6,4	8,0	9,6	11,2			
5,0		5,0	5,8	6,7	8,3	10,0	11,7			
5,5	4,6	5,5	6,4	7,3	9,2	11,0	12,8			
6,0	5,0	6,0	7,0	8,0	10,0	12,0	14,0			
6,5	5,4	6,5	7,6	8,7	10,8	13,0				
7,0	5,8	7,0	8,2	9,3	11,7	14,0				

v_t Starting value

v_t Optimization potential

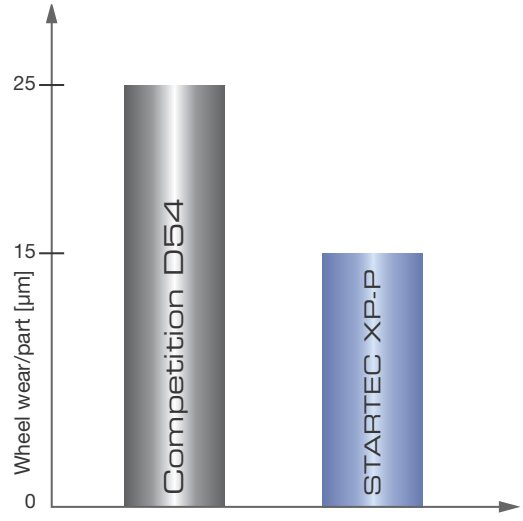
Reading direction

STARTEC XP-P
APPLICATION EXAMPLE

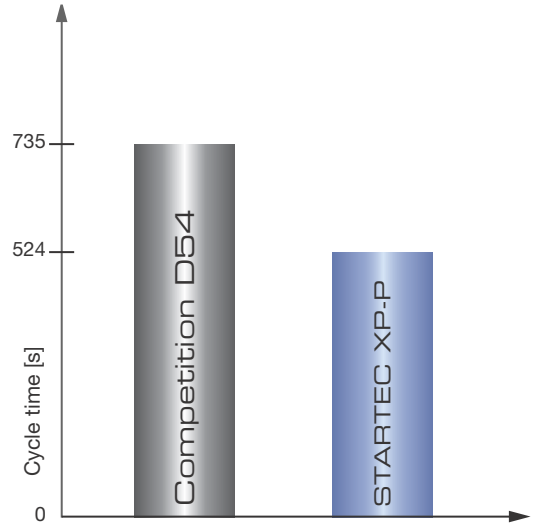
Grinding Task	
Workpiece	Milling cutter, 4 cutting edges, 2 flute angles, different pitch of the cutting edges
Dimensions	Diameter d = 16 mm Flute length l = 38 mm Core diameter dk = 8,4 mm
Material	K10
Machine	WALTER VISION
Coolant	Oil, 90 l/min, 8 bar

Initial situation	
Grinding wheel	Competition D54
Parameters	v_c = 20 m/s, a_e = 3,8 mm v_t = 50 mm/min Q'_w = 3,17 $mm^3/s \cdot mm$
Condition	after 25 pieces

Optimized situation	
New grinding wheel	TYROLIT STARTEC XP-P 1B1 150x16x20 16-15 V20° D54MXPP
New parameters	v_c = 18 m/s, a_e = 3,8 mm, v_t = 150 mm/min Q'_w = 9,5 $mm^3/s \cdot mm$
Condition	after 100 pieces
Summary	Feed increased by 200% Sharpening interval extended by 300% Reduction in wheel wear by 40% Machine capacity increased by 30%
Reduction of the total process time about 30%	



40% reduction in wheel wear



30% reduction in cycle time

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