



Your partner in orthopaedic implants

Grinding, cutting and finishing tools

English

The Tyrolit Group

Tyrolit is one of the world's leading manufacturers of grinding and dressing tools, as well as a system provider for the construction industry. For over 100 years, our innovative tools and solutions have played a crucial role in technological advancements across various industries.

With roots in the heart of the Austrian Alps, Tyrolit combines the strengths of family values with a global vision and over a century of individual corporate and technological experience.

We aim to impress both internal and external target groups and foster fair, enduring partnerships. In pursuit of our goals, we consistently optimise the quality of our products and services while continuously adjusting our business processes to meet evolving market demands.



Tyrolit headquarters in Schwaz (Austria)

Facts & figures



80,000+
standard products



30+
global production sites



4,500+
valued employees



140+
countries within our reach



500+
patents worldwide

04	Competence at a glance
05	Application technology
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Your competent partner in medical technology

The demands in terms of quality and economic efficiency are continuously rising in the medical technology industry. This, in turn, means that grinding tools also have to meet higher requirements. Tyrolit has long-standing experience and a high level of expertise in grinding solutions for use in medical technology.

With a wide product range, we therefore are able to offer our customers particularly high-quality products for numerous grinding, cutting and polishing applications. Furthermore, Tyrolit tools guarantee optimum processes, higher productivity as well as absolute product safety.



Competence at a glance

Global
presence



Application
technology



Innovative
products



Customised
solutions



Application technology

The best grinding solutions for your processes

Expertise in cutting, grinding and polishing – this has characterised Tyrolit for over one hundred years. With the wealth of process expertise commanded by our specialist application engineers, we are able to provide our customers with reliable solutions in line with their demanding technical and economic expectations.

Your benefits

- + Global presence of our application engineers
- + Process solutions and optimisation for individual tasks
- + Cooperation with established machine manufacturers
- + Internal and external seminars and training courses

Customer-specific solutions

Tailored for your application

In order to ensure the best possible solution for your application, Tyrolit offers individually developed products for a wide range of applications.

Please see the following pages for a detailed description of available abrasive tools for machining hip and knee joints.



Innovative products for machining medical components

Based on the requirements of our medical technology customers, Tyrolit continuously produces new, high-quality and particularly cost-efficient products. All the development activities are conducted in close co-operation with machine manufacturers and universities. With numerous innovative products and solutions, Tyrolit has been successful in the medical industry for many years.

Vitrified CBN grinding tools with high grinding layers for extended wheel life on the machine:

Due to the special manufacturing process, very high grinding layers on single or double wheels are possible to decrease set-up costs in the grinding process.



ELASTIC fine grinding and polishing tools:

Tyrolit has been producing elastic-bonded grinding tools since 1985. These products have continuously been improved and adapted to meet the increasing requirements in terms of surface finish and design.



Resin bonded honing sleeves for increased productivity:

Especially developed for polishing femoral metal heads of the hip joint, the Tyrolit sleeve with a special resin bond system improves your surface quality and shortens the cycle time of your manufacturing process.





Grinding solutions for knee joints

Joint replacement surgery (hip and knee replacement) is considered the most effective intervention for osteoarthritis.

Tyrolit offers high performance tools for the machining of cast material, grinding and polishing of knee components. These products fulfill the high quality requirements of the manufacturing process.



Metal knee joints



Machining of Cast Material

- + Resin bonded cut-off wheels
- + Electroplated super-abrasive wheels
- + Ceramic belts



Profile Grinding

- + Electroplated super-abrasive wheels
- + Vitrified bonded CBN wheels
- + Conventional wheels



Deburring

- + Elastic wheels
- + Convolute wheels
- + Unitised wheels
- + Surface conditioning belts



Finishing

- + Elastic wheels
- + Cloth belts

1

Machining of
cast material

2

Profile grinding

3

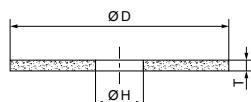
Deburring

4

Finishing

Cut-off cast material

Sample product portfolio



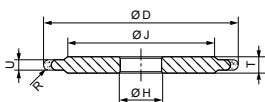
Shape 41



Application material	Shape	Coolant	Comment
Stainless steel	41F, 41N	With or without coolant	resin bonded fiber-reinforced
Cobalt chrome	41F	With or without coolant	resin bonded 1x or 2x fiber-reinforced Also available for low powered machines (15kW)
Titanium	41F, 41N	With or without coolant	resin bonded 1x or 2x fiber-reinforced

Fettling / de-gating

Sample product portfolio



Shape 14FF1



Application material	Shape	Coolant	Comment
Stainless steel and cobalt chrome	14FF1	With coolant	Electroplated CBN wheel
Titanium	14FF1	With coolant	Electroplated diamond wheel
Stainless steel and cobalt chrome	Belt	Without coolant	Ceramic belt

Customer-specific grinding tools can be produced upon request.

1 Machining of
cast material

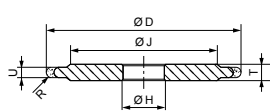
2 Profile grinding

3 Deburring

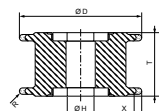
4 Finishing

A. HAAS machines

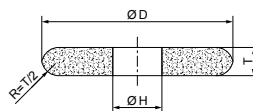
Sample product portfolio



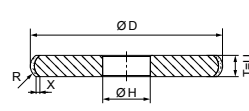
Shape 14FF1S -
single wheel



Shape 14FF1S -
double wheel



Shape 1F



Shape 1FF1



	Shape	Body	Comment
	14FF1S	Carbon fiber* Steel Aluminium Fibre-reinforced composite*	Vitrified CBN wheel Retipping possible
	1F		Conventional vitrified bonded
	1FF1	Steel	Electroplated CBN-wheel Removal of runners and bridges
	14F1M	Steel	Dressing wheel

Schuette and ANCA machines

Sample product portfolio



	Shape	Body	Comment
	1FF1S, 14FF1S	Carbon fiber* Steel Aluminium Fibre-reinforced composite*	Vitrified CBN wheel Retipping possible
	1F		Conventional vitrified bonded
	14F1M	Steel	Dressing wheel

Customer-specific grinding tools can be produced upon request.

* double layer wheel available

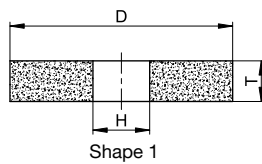
1 Machining of
cast material

2 Profile grinding

3 Deburring

4 Finishing

Elastic wheels



	Operation	Grit size	Vmax [m/s]	Comment
	Deburring	C46	20	Very soft

SCM belts



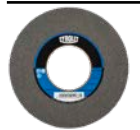
Shape	Surface conditioning	Ra (μm)	Surface conditioning	Ra (μm)
Belt	HD COARSE	1,60	A FINE	0,50
	HD MEDIUM	1,10	A VERY FINE	0,40
	A COARSE	1,00	S ULTRA FINE	0,30
	A MEDIUM	0,60		

Unitised compact wheels



Shape	Dimension	Grade	Max. RPM	Rec. speed
1CW	127 × 6 × 22,2	3 S FINE and 6 A MEDIUM	10 000	6 000
	152 × 3 × 25,4	2 S FINE to 8 A COARSE	7 500	4 500
	152 × 6 × 25,4	2 S FINE to 8 A COARSE	5 000	3 000

Convolute compact wheels



Shape	Dimension	Grade	Max. RPM	Rec. speed
1CW	152 × 13 × 25,4	7 S FINE to 9 S FINE-H	6 000	3 600
	152 × 25 × 76,2	7 S FINE to 9 S FINE-H	6 000	3 600
	203 × 25 × 76,2	7 S FINE to 9 S FINE-H	4 500	2 700
	203 × 50 × 76,2	7 S FINE to 9 S FINE-H	4 500	2 700

Customer-specific grinding tools can be produced upon request.

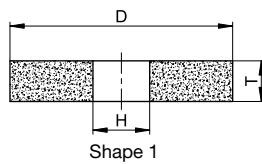
1 Machining of
cast material

2 Profile grinding

3 Deburring

4 Finishing

Elastic wheels



	Operation	Grit size	Vmax [m/s]	Comment
	Matting	C80	16	Soft
	Fine grinding	C150	20	Medium
	Ultra-fine grinding	C240	20	Medium-hard
	Pre-polishing	C400	32	Hard

Tyrolit Trine

Grit size [µm]	A6	A16	A30	A45	A65	A80
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Belts	Width	Length
	5mm - 450mm 1mm Increments	90mm - 10.800mm 1mm Increments for L < 1.000mm 5mm Increments for L ≥ 1.000mm

Length < 200mm: min. width = 50mm

Discs	Diameter	Backing
	20mm - 450mm 5mm Increments	TFC (Velcro) self-adhesive (PSA) plain

Standard: 115mm | 125mm | 150mm

Micro-replicated structure (pyramids), resin bond system, aluminium oxide, suitable for dry and wet grinding.



Customer-specific grinding tools can be produced upon request.



Grinding solutions for hip joints

Tyrolit offers high performance tools for the hip implant manufacturing process, with which the highest qualities and an increase in productivity of up to 50% can be achieved.



Metal and ceramic hip joints

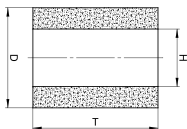
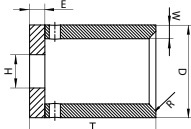
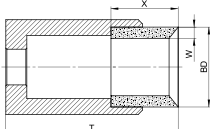
				
Chamfer and taper grinding + Vitrified bonded superabrasive wheels	Spherical grinding/honing + SiC conventional sleeves + Metal, resin or vitrified bonded superabrasive sleeves	Spherical pre-polishing + Resin bonded pre-polishing sleeves	Machining of acetabular liner + Vitrified bonded superabrasive discs + Metal, resin or vitrified bonded superabrasive sleeves	Stem finishing + Convolute wheels + Elastic wheels + Cloth belts and discs

Machining of metal hip joints

Metal femoral head

Spherical grinding

Sample product portfolio

				
Shape 5420	Shape 5460	Shape 2M7		
Operation	Shape	Comment	Semi-finished stock	
 Rough-grinding	2M7	CBN resin bond		
	2M7	CBN vitrified bond		
	5420	SiC vitrified bond	●	
Fine-grinding	2M7	CBN resin bond		
	5420	SiC vitrified bond	●	

● ... Available ex stock. To calculate the dimensions of the grinding tool, please provide a drawing of the hip ball.

Machine Manufacturers: A. HAAS, ANCA, Monnier & Zahner, Schuette, Studer, Thielenhaus.
We recommend the use of dedicated honing machines with force control.

Spherical pre-polishing

Sample product portfolio

Shape 5420

Operation	Shape	Comment	Semi-finished stock
Pre-polishing	5420	resin bond	●

● ... Available ex stock. To calculate the dimensions of the grinding tool, please provide a drawing of the hip ball.

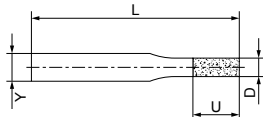
Machine Manufacturers: A. HAAS, ANCA, Monnier & Zahner, Schuette, Studer, Thielenhaus.
We recommend the use of dedicated honing machines with force control.

Customer-specific grinding tools can be produced upon request.

Machining of ceramic hip joints

Ceramic femoral head

Inside taper grinding

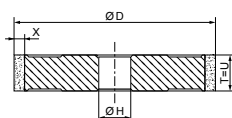


Shape 1A1W

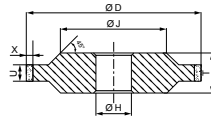


Shape	Comment
1A1W	Metal bond diamond mounted points

Chamfer grinding



Shape 1A1

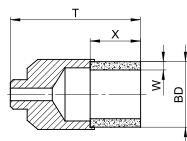


Shape 14A1



Shape	Comment
1A1 / 14A1	Vitrified bond diamond

Spherical grinding/honing



Shape 2M7



	Operation	Shape	Comment
	Pre-grinding	2M7	Metal and Vitrified diamond bond
	Fine-grinding	2M7	Vitrified diamond bond

To calculate the dimensions of the grinding tool, please provide a drawing of the hip ball.

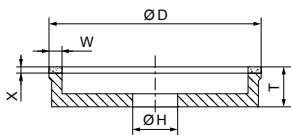
Machine Manufacturers: A. HAAS, ANCA, Monnier & Zahner, Schuette, Studer, Thielenhaus.
We recommend the use of dedicated honing machines with force control.

Customer-specific grinding tools can be produced upon request.

Machining of ceramic hip joints

Ceramic acetabular liner

Double disc surface grinding

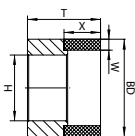


Shape 6A2



Shape	Comment
6A2SM	Vitrified diamond bond disc wheels Individual segment design Replating available

Spherical grinding/honing



Shape 2M9



Operation	Shape	Comment
Pre-grinding	2M9	Metal and Vitrified diamond bond
Fine-grinding	2M9	Vitrified diamond bond



To calculate the dimensions of the grinding tool, please provide a drawing of the hip ball.

Machine Manufacturers: A. HAAS, ANCA, Monnier & Zahner, Schuette, Studer, Thielenhaus.
We recommend the use of dedicated honing machines with force control.

Customer-specific grinding tools can be produced upon request.

Finishing of stem

Convolute compact wheels

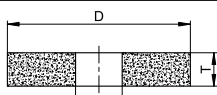


Shape 1CW

	Shape	Dimension	Grade	Max. RPM	Rec. speed
	1CW	152 × 13 × 25,4	7 S FINE to 9 S FINE-H	6 000	3 600
		152 × 25 × 76,2	7 S FINE to 9 S FINE-H	6 000	3 600
		203 × 25 × 76,2	7 S FINE to 9 S FINE-H	4 500	2 700
		203 × 50 × 76,2	7 S FINE to 9 S FINE-H	4 500	2 700

Elastic wheels

Standard dimensions and specifications



Shape 1

	Operation	Grit size	Vmax [m/s]	Comment
	Fine grinding	C150	20	Medium
	Ultra-fine grinding	C240	20	Medium-hard
	Pre-polishing	C400	32	Hard

Cloth belts and discs

Tyrolit Trine

Grit size [µm]	A6	A16	A30	A45	A65	A80
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Belts	Width	Length
	5mm - 450mm	90mm - 10.800mm
	1mm Increments	1mm Increments for L < 1.000mm 5mm Increments for L ≥ 1.000mm

Length < 200mm: min. width = 50mm

Discs	Diameter	Backing
	20mm - 450mm	TFC (Velcro)
	5mm Increments	self-adhesive (PSA) plain

Standard: 115mm | 125mm | 150mm

Micro-replicated structure (pyramids), resin bond system, aluminium oxide, suitable for dry and wet grinding.



Customer-specific grinding tools can be produced upon request.

Tyrolit - Schleifmittelwerke Swarovski AG & Co K.G.

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