

# **G420**

*Turn-mill center for high-performance  
machining of large workpieces*

# INDEX



*better.parts.faster.*

## Turning and milling – complete machining in new dimensions

The INDEX G420 is an innovative turn-mill center in a class of its own – especially when it comes to efficient production of large workpieces with high complexity and variance. Based on a rigid and vibration-damping machine bed in mineral cast monoblock design and generously dimensioned linear guides in X

and Z axes, the G420 stands for modern mechanical engineering and thus for excellent machining results with high productivity.

Three tool carriers – a powerful motorized milling spindle and 2 tool turrets – with a tool pool of up to 139 tools provide maximum flexibility for complete machining of

complex workpieces. A total of up to 16 productive axes ensure convincing work results without exception. The large and unique working area in this class excels with sophisticated features that allow simultaneous machining with the motorized milling spindle and the two tool turrets in a collision-free manner.

The vertically sloping interior paneling ensures optimum chip flow.

The chip conveyor can be mounted on the right or left side, depending on customer requirements.



The INDEX G420 stands for the manufacture of a wide range of products in many industries such as mechanical engineering, automotive and aviation.

#### **The machine concept**

- Identical main and counter spindles with spindle clearance D 102 mm
- Chuck D 315 mm (optionally up to D 400 mm)
- 3 tool carriers for up to 139 tools
- Powerful motorized milling spindle with proven Y/B quill kinematics for complex 5-axis milling operations
- Sophisticated working area concept for turning lengths up to 1,600 mm and variable machining options
- High thermal and mechanical stability
- High dynamic response (rapid traverse rate up to 50 m/min)
- Chip conveyor can be used on the left and right

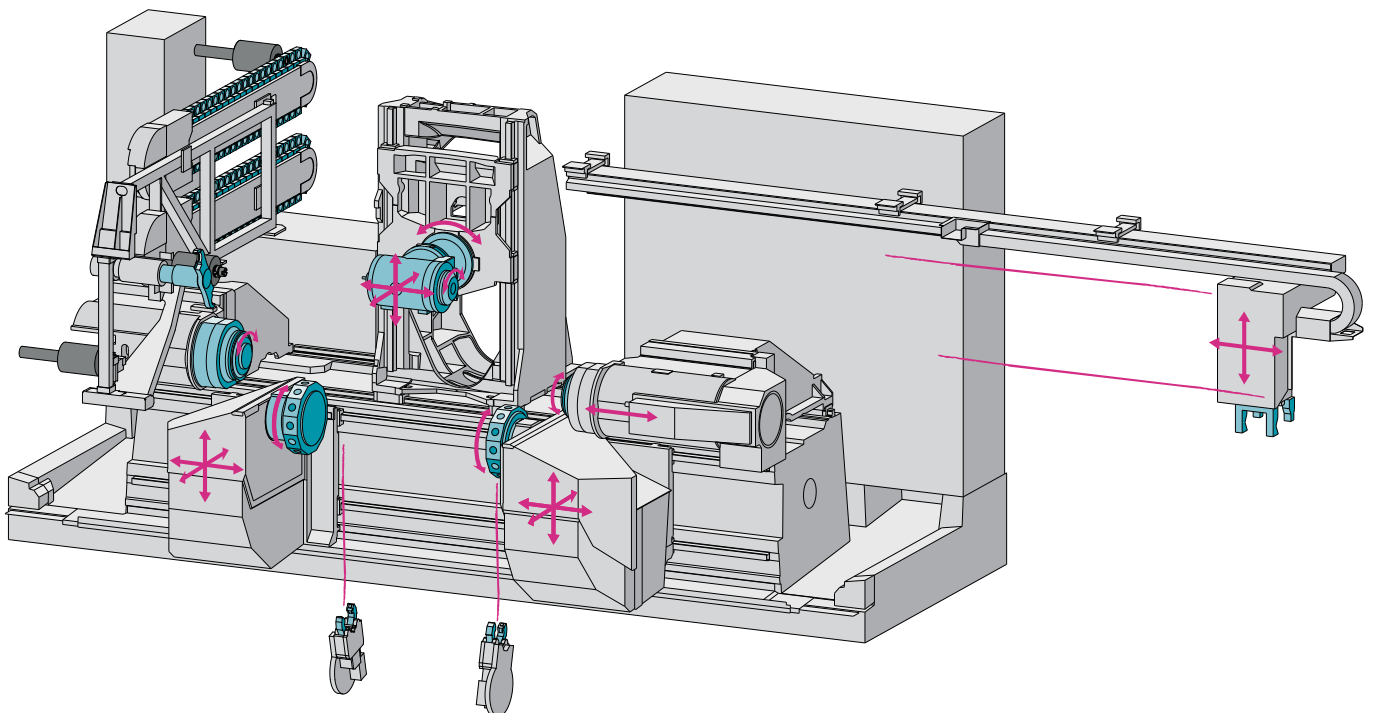


## Complete machining based on a modular system



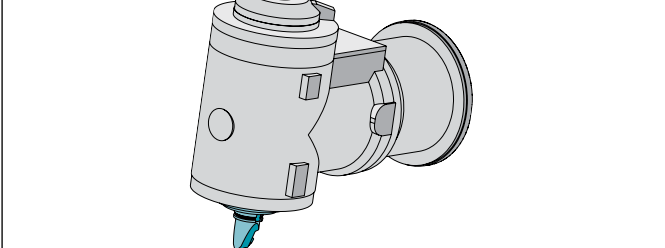

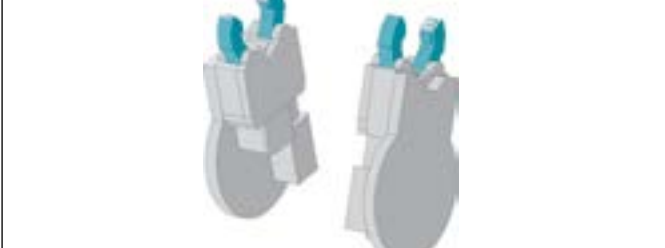

The INDEX G420 modular system offers a wide range of options. Up to 3 tool carriers can be integrated into the working area – all equipped with a Y axis. The working area offers ample space for machining any kind of workpieces. The working area can accommodate parts up to a length of 1600 mm. The powerful main and counter spindles are designed for bar diameters up to D 102 mm and for chuck parts up to D 315 mm (optionally D 400 mm). Turret steady rests are available for machining long or shaft-type parts.

Of course, the INDEX G420 is also capable of simultaneous 5-axis machining.

The ergonomic setup and operating concept was of great importance for the new design. All relevant components are easily accessible for operating and maintenance personnel. Optionally, an integrated 2-axis workpiece handling system matched to the machining processes can be used for loading and unloading the machine.



# The components

	<p><b>Main and counter spindles</b></p> <ul style="list-style-type: none"> <li>• Max. speed 3,500 rpm</li> <li>• 41 kW, 920 Nm (40% DC)</li> <li>• Spindle clearance D 102 mm</li> <li>• Chuck diameter D 315 mm / D 400 optional</li> </ul>
	<p><b>Two turrets with 12 stations each</b></p> <ul style="list-style-type: none"> <li>• 12 live stations, each VDI 40 with W-serration</li> <li>• 5,400 rpm, 7,5 kW, 35 Nm (25% DC)</li> <li>• X axis 185 mm, rapid traverse rate 30 m/min</li> <li>• Y axis +/- 70 mm, rapid traverse rate 20 m/min</li> <li>• Z axis 1600 mm, rapid traverse rate 50 m/min</li> </ul>
	<p><b>Motorized milling spindle</b></p> <ul style="list-style-type: none"> <li>• 12,000 rpm, 26 kW (100% DC), 150 Nm (25% DC)</li> <li>• X axis 750 mm, rapid traverse rate 30 m/min</li> <li>• Y axis +/- 170 mm, rapid traverse rate 20 m/min</li> <li>• Z axis 1600 mm, rapid traverse rate 50 m/min</li> <li>• B axis -25°/+205°</li> </ul>
	<p><b>Tool magazine</b></p> <ul style="list-style-type: none"> <li>• single row: 58 tool locations HSK-T 63 / Capto-C6</li> <li>• double-row: 115 tool locations HSK-T 63 / Capto-C6</li> <li>• Tool weight max. 10 kg</li> <li>• Tool diameter max. D 160 mm</li> <li>• Tool length max. 500 mm</li> <li>• Setup station</li> </ul>
	<p><b>Tool steady rests (optional)</b></p> <ul style="list-style-type: none"> <li>• Clamping range 20 – 101 mm</li> </ul>
	<p><b>Workpiece handling unit (optional)</b></p> <ul style="list-style-type: none"> <li>• Integrated 2-axis workpiece handling unit</li> <li>• Workpiece diameter max. D 120 mm</li> <li>• Workpiece length max. 1000 mm</li> <li>• Workpiece weight max. 20 kg</li> </ul>

## Best performance for applications in the automotive, aerospace or mechanical engineering industries

INDEX offers its customers optimal solutions for flexible and efficient production. INDEX engineers have leveraged years of experience from many industries in product development. Products and processes are made ready for series production through feasibility studies, efficiency analyses and, above all, through close collaboration with customers. Due to the modu-

lar design and the great flexibility of INDEX products, customers can also utilize an extensive modular system.

The INDEX G420 turn-mill center offers the best performance for customers from the mechanical engineering, automotive



### Shaft

Industry: Automotive

Material: Steel

D 60 mm x 510 mm



### Rotor carrier

Industry: Aerospace

Material: Steel

D 140 mm x 285 mm

**Automotive**

**Aerospace**



and aerospace industries, with high availability and process reliability – the complete solution when it comes to high-performance machining of large workpieces.



### **Flange**

Industry: Mechanical engineering  
Material: Steel  
D 178 mm x 120 mm



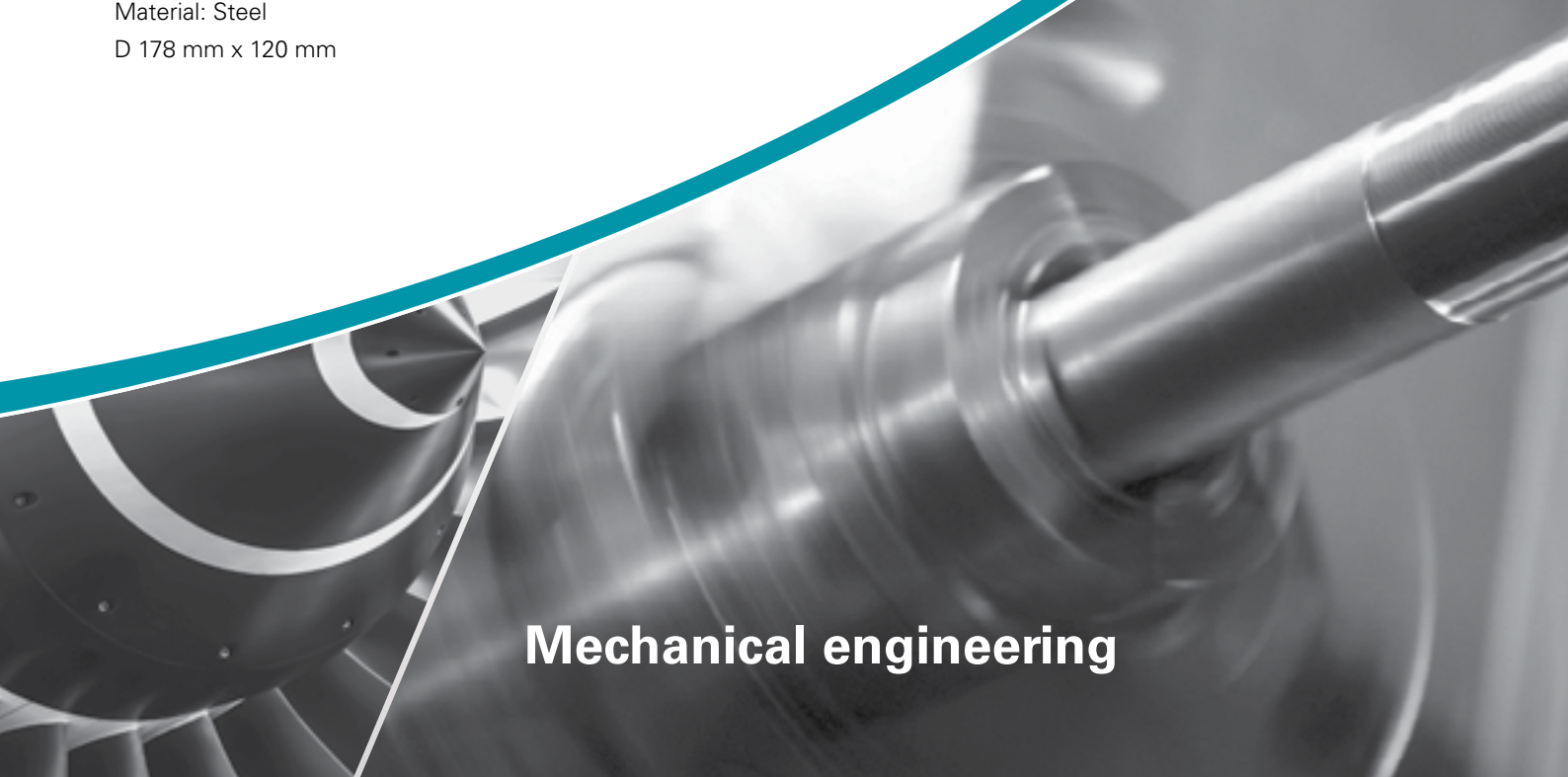
### **Turret head**

Industry: Mechanical engineering  
Material: Steel  
D 273 mm x 76 mm



### **Bearing flange**

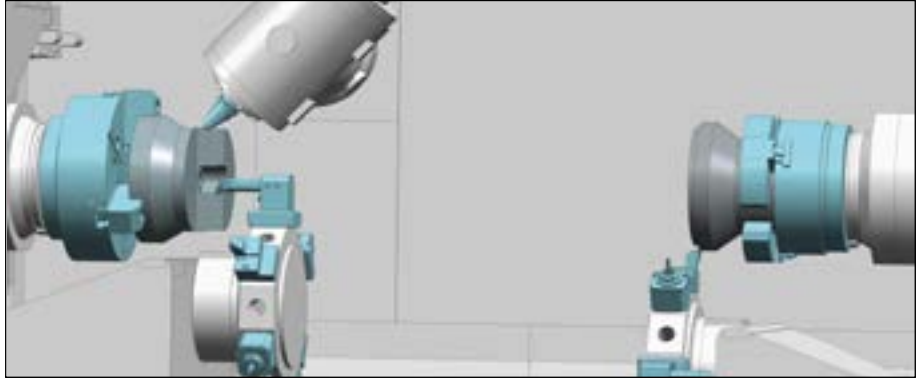
Industry: Mechanical engineering  
Material: Steel  
D 129 mm x 136 mm



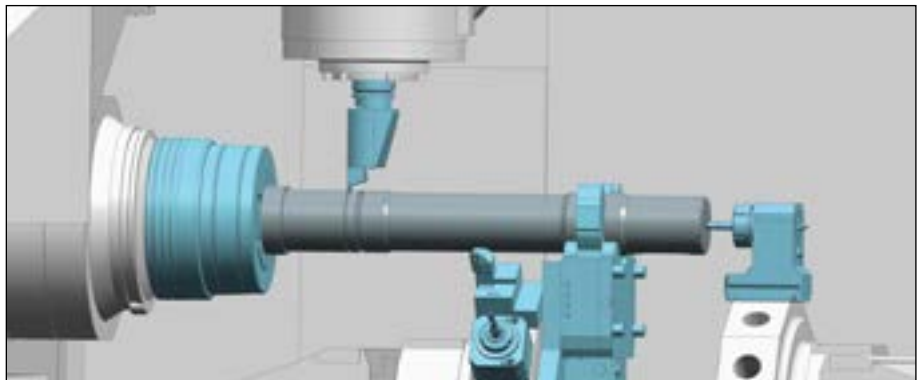
## **Mechanical engineering**

## Large degrees of freedom in the working area for a wide range of machining options

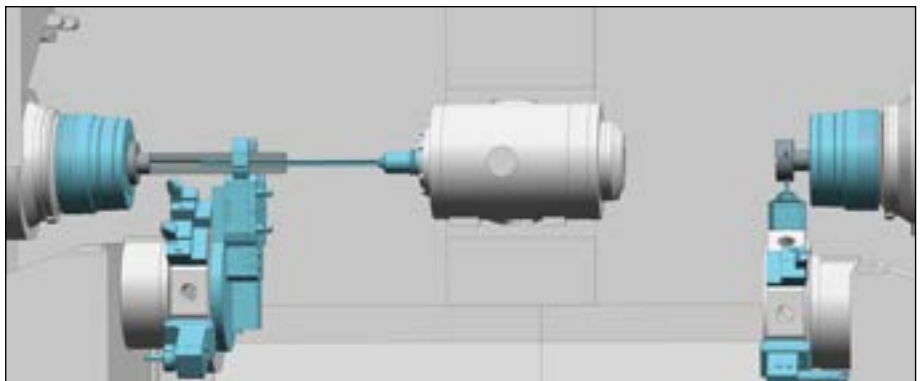
Maximum productivity by simultaneous machining with 3 tools



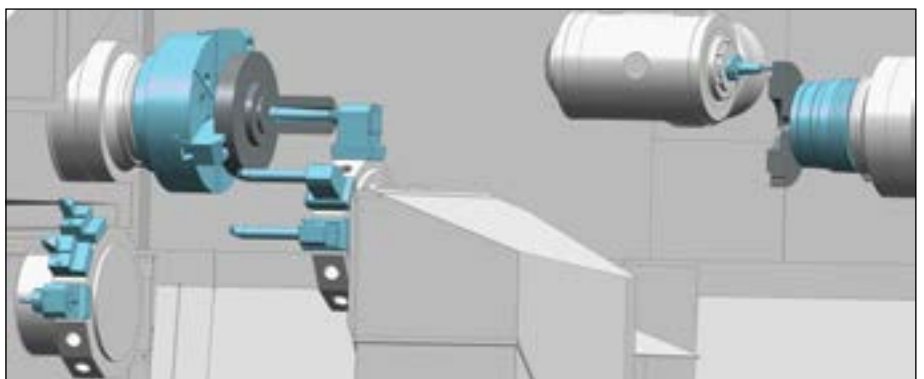
Flexible shaft machining through the use of turret steady rests



Use of tools up to 500 mm length in the motorized milling spindle, e.g., for deep-hole drilling applications with the highest precision.



Maximum freedom from collisions due to "submergence" of the lower tool carriers.





# Integrated automation solutions for efficient production



The integrated workpiece handling unit is available as an option. It can be used for loading and unloading as well as for the removal of remnants and is suitable for parts weighing up to 20 kg and with a diameter of up to D 120 mm.

The handling unit is equipped with 2 CNC axes that are operated from the machine control.

Further individual automation solutions, such as conveyor belts or robot handling with ancillary functions, can be integrated on a customer-specific basis.


*Removal of finished parts (or feeding) using a workpiece-specific gripper*

*Workpiece handling system moves to the removal point without collisions*



*Gripper places finished part at the removal point*





### Motorized milling spindle

12.000 rpm / 150 Nm with  
position clamping

### Tool magazine

with up to 115 tool locations  
HSK-T63 / Capto-C6

### Main spindle

D 102 mm / 3,500 rpm /  
800/920 Nm  
(100 / 40 % DC)

### Y-B quill

with torque motor  
for high precision

### Tool turret

12 tool locations each /  
VDI 40 / 5,400 rpm /  
7.5 kW / 35 Nm (25 % DC)  
optionally: Turret steady rest





### Working area

Vertical walls  
for optimum chip flow

### 2-axis workpiece handling unit

for parts up to 20 kg and  
D 120 mm

### Working area

with turning lengths up to  
1,600 mm

### Turret slides

with linear axes:  
Y +/-70 mm / X 185 mm

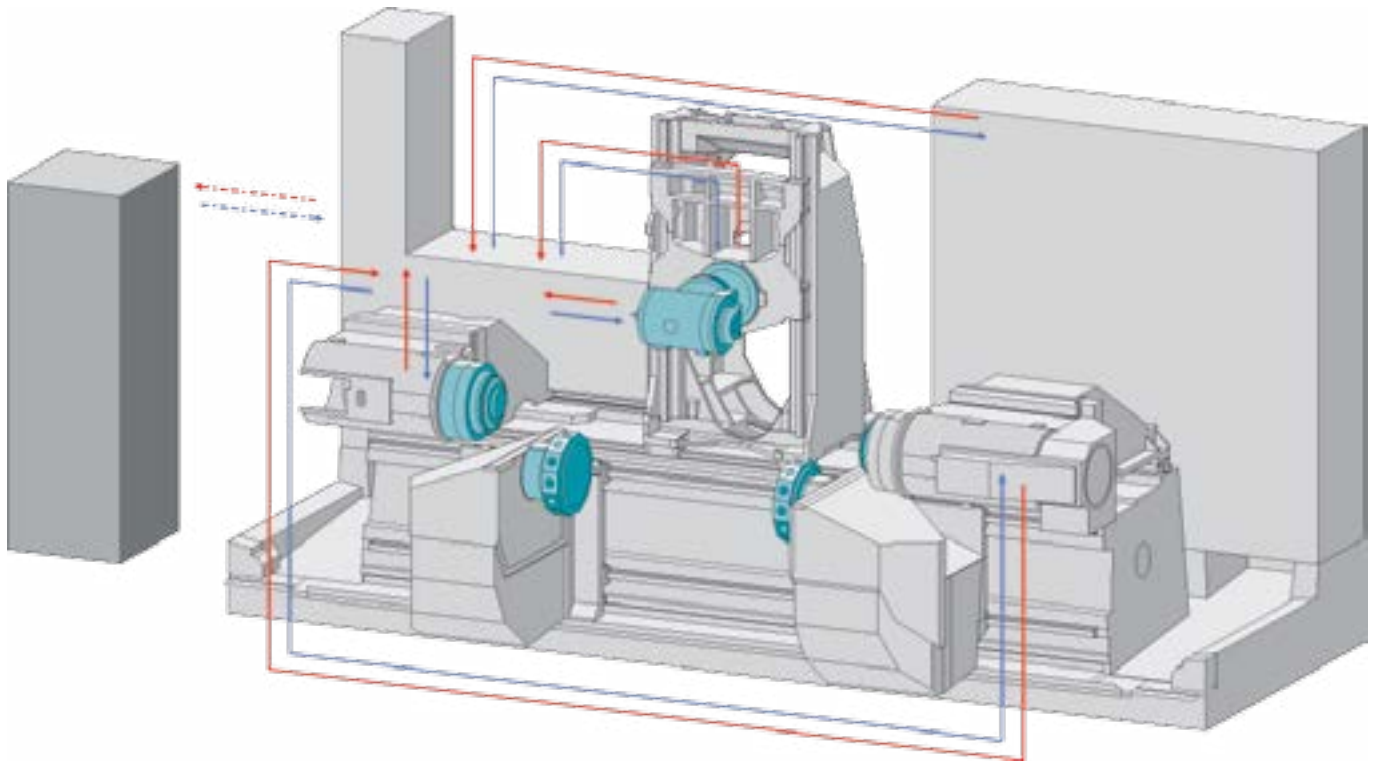
### Counter spindle

D 102 mm / 3,500 rpm /  
800/920 Nm (100/40 % DC)

### Mineral cast bed

in monoblock design for  
excellent rigidity and thermal  
stability

## The cooling concept: efficient use of energy



### Intelligent use of proven cooling principles:

- **Targeted heat dissipation**

All high-loss heat sources of the INDEX G420 are cooled directly by multiple fluid circuits. In addition to the cooling circuits for the main spindle, counter spindle, and motorized milling spindle, as well as the torque drive of the B axis, the hydraulic system and control cabinet also have a separate cooling circuit. The lost heat energy

is absorbed directly in the coolant and removed from a central location of the machine.

- **Economic use of waste heat**

The INDEX "cold water interface" allows the heat loss energy stored in the cooling medium to be removed from a central location and conveyed for another use, if required, e.g., production hall heating service water heating, or process heating for oth-

er production steps. The recovery of machine waste heat enables a sustainable reduction of energy costs in the company.

- **Climate-neutral dissipation of heat**

The cold water interface provides the ability to dissipate heat in a climate-neutral manner, if the machine waste heat stored in the cooling medium cannot be used otherwise. The necessary cooling unit can be used with the help of the

water interface first on the outside of the production hall and secondly also centrally for several machines. This offers a considerable energy savings potential for production hall heating dissipation/climate control or increased efficiency as a result of centralized heat disposal.





## The cockpit for easy integration of the machine in your business organization



### Focus on production and control – Industry 4.0 included.

The iXpanel operating concept provides access to networked production. With iXpanel, your staff always has all relevant information for efficient production right at the machine. iXpanel is already included in the standard and can be individually extended. You can use iXpanel as you want it for your business organization – that's Industry 4.0 tailored to your needs.

### Future-proof.

iXpanel integrates the latest control generation SIEMENS S840D sl. Use iXpanel intuitively through an 18.5" touch monitor.



### Productive.

Maximum performance through comprehensive technology cycles and programming screens, e.g., for optimum turning, milling and drilling, especially when using several tools simultaneously.

### Intelligent.

The machine always starts with the control home screen. Other functions can always be displayed on a second screen, and the operator enjoys direct, activity-related assistance already in the standard version, such as workpiece drawing, setup lists, programming tools, documentation, etc., right at the machine.

### Virtual & open.

With the optional VPC box (industrial PC), iXpanel opens up the world of Virtual Machine with the 3 operating modes

- CrashStop
- RealTime mode
- Independent simulation (VM on board) directly at the control.

Thanks to the VPC box, the machine can be integrated into your IT structure without restrictions.



**18.5" TOUCHSCREEN MONITOR**

**STANDARD** included as standard

**OPTION**

Industry 4.0 features



Order documents



Customer data



Workpiece counter



Production Status



Drawings



Setup sheet



Notes



Information center



Maintenance & care



User management



Technology computer



Programming help



VPC Box



Virtual machine 3D simulation



VirtualPro Programming Studio



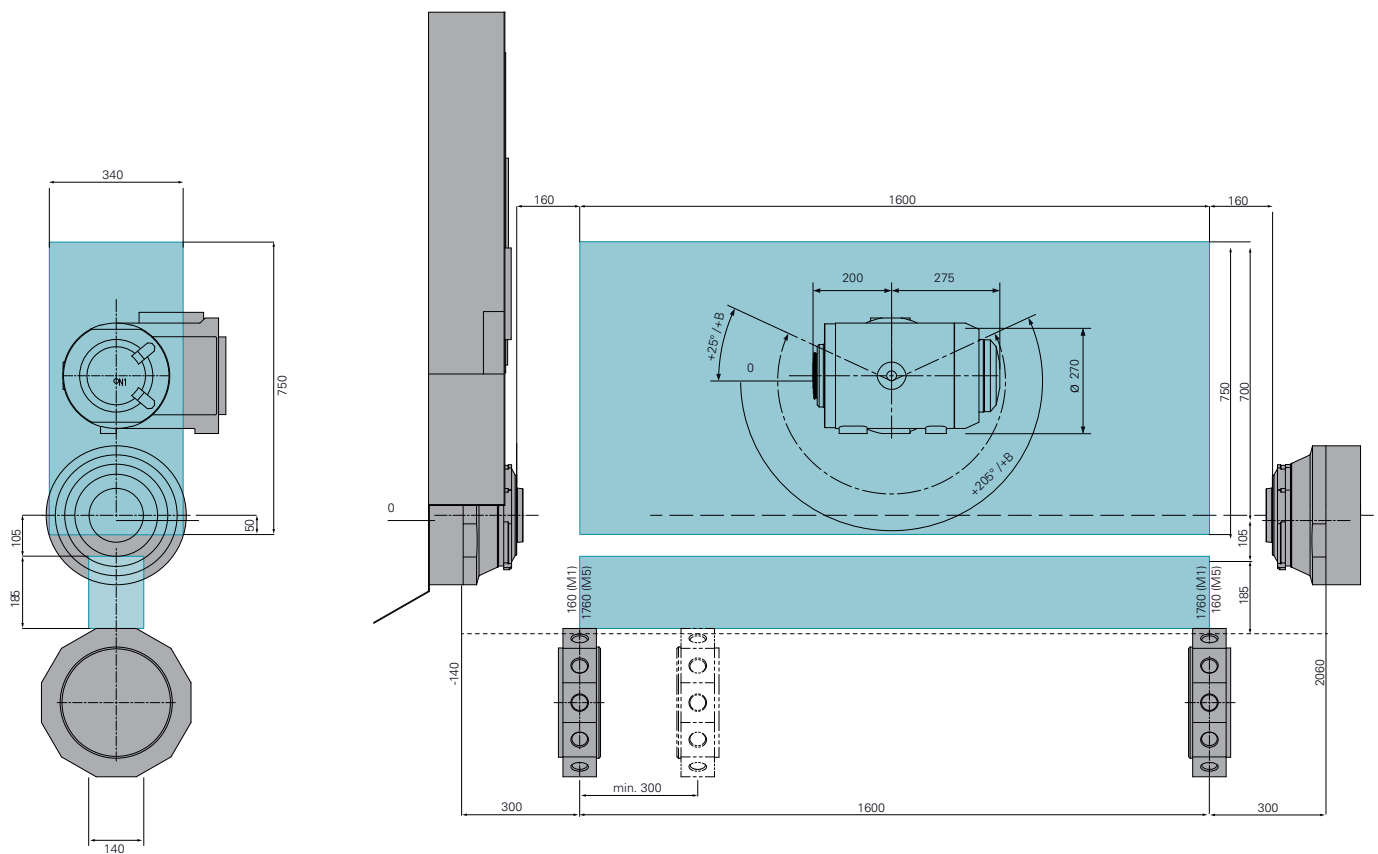
Custom applications

+ many more standard features

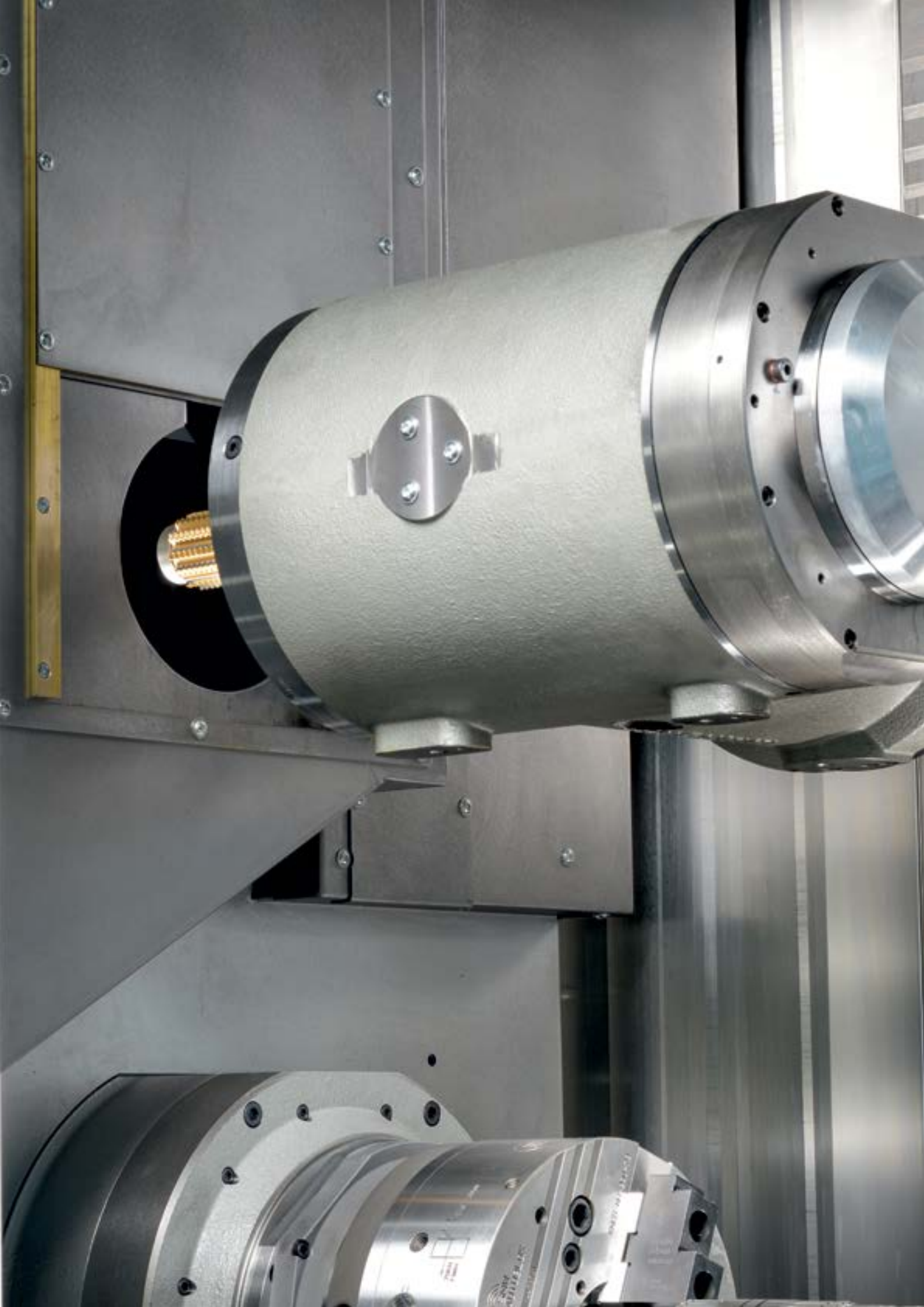
Automatic tool change with up to 115 tool locations HSK-T63 / Capto-C6

### Working area

#### Dimensions



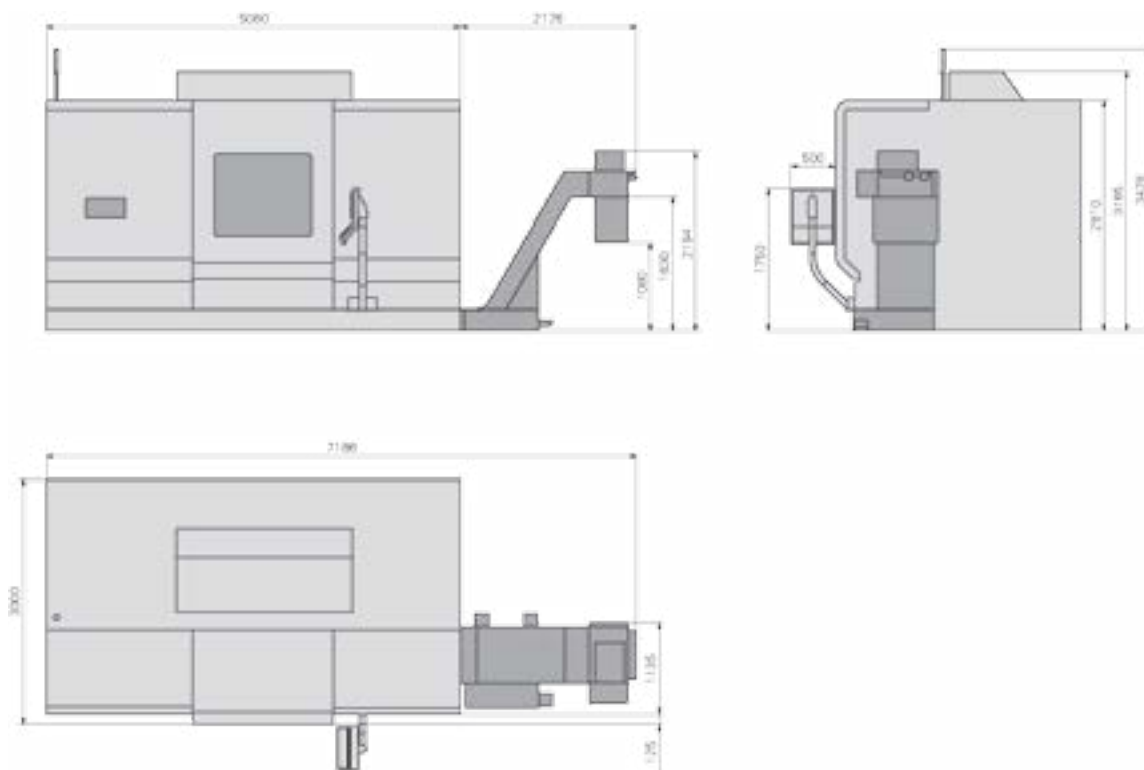




## INDEX G420

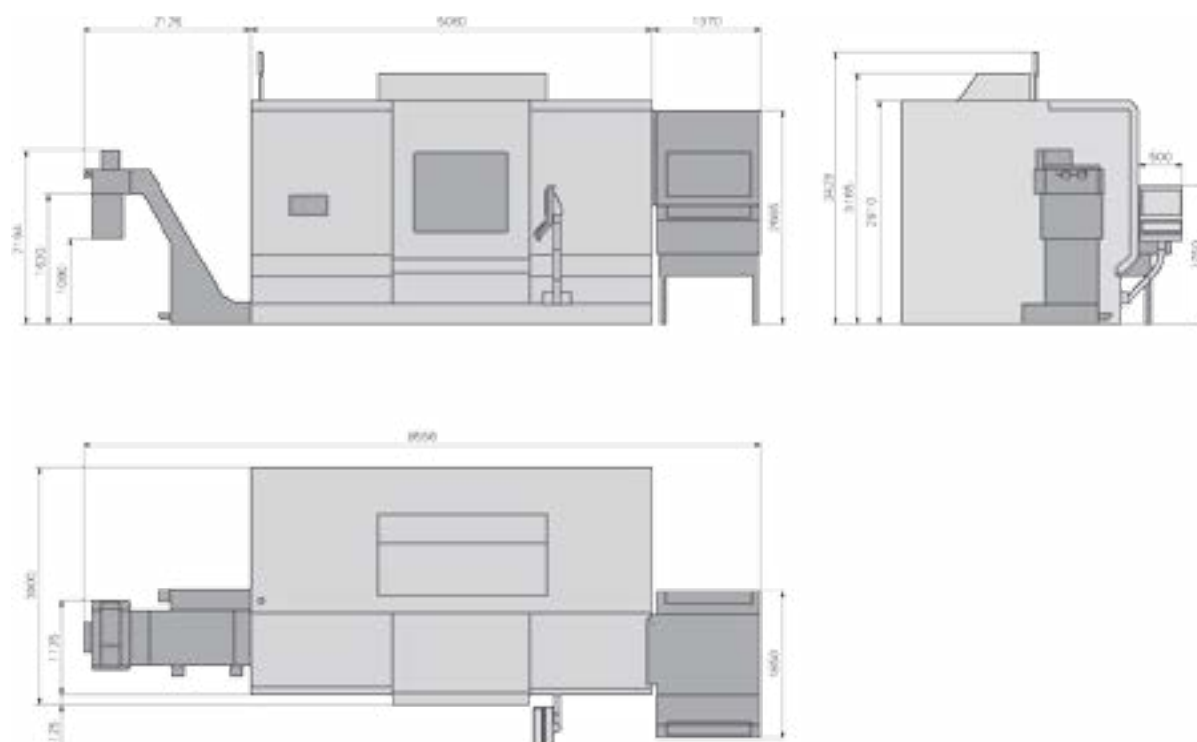
### Floor plan

with chip conveyor on the right



### Floor plan

with chip conveyor on the left / workpiece handling unit





# Technical data

Working range		
Turning length	mm	1600
Main spindle and counter spindle		
Spindle clearance	mm	102
Spindle head ISO 702/1		A8
• Max. speed	rpm	3,500
• Drive power (100% / 40% DC)	kW	34 /41
• Torque (100%/40% DC)	Nm	800 /920
Chuck diameter	mm	315 (400 optional)
C axis resolution	deg.	0.001
Upper tool carrier / motorized milling spindle		
Tooling system DIN 69893-7 / ISO 26623		HSK-T63 / Capto-C6
• Max. speed	rpm	12,000 (HSK-T63); 18,000 (Capto-C6)
• Drive power (100% DC)	kW	26 (HSK-T63); 27.5 (Capto-C6)
• Torque (100% / 25% DC)	Nm	110 / 150 (HSK-T63); 75 / 100 (Capto-C6)
Slide travel X, rapid traverse rate, feed force	mm / m/min / N	750 / 30 / 10,000
Slide travel Y, rapid traverse rate, feed force	mm / m/min / N	+/-170 / 20 / 11,000
Slide travel Z, rapid traverse rate, feed force	mm / m/min / N	1600 / 50 / 9,000
B axis swivel range	deg.	-25 / +205 / +/-115
Tool magazine		
Tooling system		HSK-T63 / Capto-C6
Tool magazine stations		58 / 115
Tool weight max.	kg	10
Tool diameter max.	mm	160
Tool length max.	mm	500
Tilting torque max.	Nm	15
Tool carrier bottom left / right / turret		
Tooling system DIN 69880		VDI -40 with W-serration
Number of stations (live)		12
• Max. speed	rpm	5,400
• Drive power (25% DC)	kW	7.5
• Torque (100%/25% DC)	Nm	20 /35
Slide travel X, rapid traverse rate, feed force	mm / m/min / N	185 / 30 / 10,000
Slide travel Y, rapid traverse rate, feed force	mm / m/min / N	+/-70 / 20 / 11,000
Slide travel Z, rapid traverse rate, feed force	mm / m/min / N	1900 / 50 / 9,000
Turret steady rest		
Turret steady rest clamping range (with chip guard)	mm	20 - 101
Workpiece handling unit (optional)		
Workpiece weight / workpiece length max.	kg / mm	20 /1,000
Workpiece diameter max. for removal operation	mm	102
Workpiece diameter max. for feed/removal operation	mm	120
General data		
Length x width x height	mm	5060 x 3000 x 3165
Weight	t	approx. 23
Connected power	kW	112
Control		Siemens S840D sl

**BRAZIL // Sorocaba**

INDEX Tornos Automaticos Ind. e Com. Ltda.  
 Rua Joaquim Machado 250  
 18087-280 Sorocaba - SP  
 Phone +55 15 2102 6017  
 vendas@indextornos.com.br  
 br.index-traub.com

**CHINA // Shanghai**

INDEX Trading (Shanghai) Co., Ltd.  
 No.526, Fute East 3<sup>rd</sup> Road  
 Shanghai 200131  
 Phone +86 21 54176637  
 china@index-traub.com  
 www.index-traub.cn

**CHINA // Dalian**

INDEX DALIAN Machine Tool Ltd.  
 17 Changxin Road  
 Dalian 116600  
 Phone +86 411 8761 9788  
 dalian@index-traub.com  
 www.index-traub.cn

**DENMARK // Langeskov**

INDEX-TRAUB Danmark  
 Havretoften 1  
 5550 Langeskov  
 Phone +45 30681790  
 b.olsen@index-traub.dk  
 www.index-traub.dk

**GERMANY // Esslingen**

INDEX-Werke GmbH & Co. KG Hahn & Tessky  
 Plochingen Strasse 92  
 73730 Esslingen  
 Phone +49 711 3191-0  
 info@index-werke.de  
 www.index-werke.de

**GERMANY // Deizisau**

INDEX-Werke GmbH & Co. KG Hahn & Tessky  
 Plochingen Strasse 44  
 73779 Deizisau  
 Phone +49 711 3191-0  
 info@index-werke.de  
 www.index-werke.de

**GERMANY // Reichenbach**

INDEX-Werke GmbH & Co. KG Hahn & Tessky  
 Hauffstrasse 4  
 73262 Reichenbach  
 Phone +49 7153 502-0  
 info@index-werke.de  
 www.index-werke.de

**FINLAND // Helsinki**

INDEX-TRAUB Finland  
 Hernepellontie 27  
 00710 Helsinki  
 Phone +35 8 108432001  
 pekka.virkki@index-traub.fi  
 www.index-traub.fi

**FRANCE // Paris**

INDEX France Sarl  
 1A, Avenue du Québec / Z.A. de Courtabœuf  
 91941 Les Ulis Cedex  
 Phone +33 1 69187676  
 info@index-france.fr  
 www.index-france.fr

**FRANCE // Bonneville**

INDEX France Sarl  
 399, Av. de La Roche Parnale  
 74130 Bonneville Cedex  
 Phone +33 4 50256534  
 info@index-france.fr  
 www.index-france.fr

**NORWAY // Oslo**

INDEX-TRAUB Norge  
 Postbox 2842  
 0204 Oslo  
 Phone +46 8 505 979 00  
 h.sars@index-traub.se  
 www.index-traub.no

**RUSSIA //Toglyatti**

INDEX RUS  
 Lesnaya street 66  
 445011 Toglyatti  
 Phone +7 8482 691 905  
 indexrus.info@gmail.com  
 ru.index-traub.com

**SWEDEN // Stockholm**

INDEX-TRAUB Nordic AB  
 Fagerstagatan 2  
 16308 Spånga  
 Phone +46 8 505 979 00  
 h.sars@index-traub.se  
 www.index-traub.se

**SLOVAKIA // Malacky**

INDEX Slovakia s.r.o.  
 Vinohrádok 5359  
 901 01 Malacky  
 Phone +34 654 9840  
 info@index-werke.de  
 sk.index-traub.com

**U.S.A. // Noblesville**

INDEX Corporation  
 14700 North Point Boulevard  
 Noblesville, IN 46060  
 Phone +1 317 770 6300  
 sale@index-usa.com  
 www.index-usa.com

*better.parts.faster.*

**INDEX**  
**TRAUB**

**INDEX-Werke GmbH & Co. KG  
 Hahn & Tessky**

Plochingen Strasse 92  
 73730 Esslingen, Germany

Phone +49 711 3191-0  
 Fax +49 711 3191-587  
 info@index-werke.de  
 www.index-werke.de