

## TECHNOLOGY &amp; DATA

	FZ08 MT	FZ12 MT
Travel paths [X/Y/Z]	450 / 270 / 310 mm	550 / 320 / 420 mm
Acceleration [X/Y/Z]	10 / 15 / 20 m / s <sup>2</sup>	10 / 12 / 15 m / s <sup>2</sup>
Rapid feed speed	75 m/min	75 m/min
Spindle speed	up to 40,000 rpm	up to 24,000 rpm
Tool taper	HSK-E40 / A40	HSK-A50 / A63
Milling capacity St 60	30 cm <sup>3</sup> / min	80 cm <sup>3</sup> / min
Drilling capacity St 60	Ø12 mm	Ø18 mm
Thread cutting St 60	M8	M16
Tool places	24 (optionally up to 226)	24 (optionally up to 177)
Tool change time	ca. 0.8 sec.	ca. 0.9 sec.
Chip-to-chip times	ca. 1.9 sec.	ca. 2.4 sec.
<b>Turning spindle</b>		
Bar passage	up to Ø 65 mm	up to Ø 65 mm
Speed	up to 8,000 rpm	up to 8,000 rpm
Max. torque	90 Nm	90 Nm
Clamping pressure	adjustable	adjustable
<b>Tool revolver</b>		
Tool taper	Capto C4	Capto C4
Number of tools	12	12
Speed of driven tools	up to 5,000 rpm	up to 5,000 rpm
Centric clamp with tool turning axis	adjustable clamping pressure	adjustable clamping pressure
<b>Opposed spindle</b>		
Diameter	up to Ø65 mm	up to Ø65 mm
Speed	up to 6,500 rpm	up to 6,500 rpm
Max. torque	14.3 Nm	14.3 Nm
Clamping pressure	adjustable	adjustable

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# PRESSE focus

PRESS RELEASE

Machining centres for six-sided  
 complete machining (WB 4/2012)

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Double productivity by  
 simultaneous milling and turning

Machining centres for six-sided complete machining

## Double productivity by simultaneous milling and turning

With two new machining centres, CHIRON is now also offering simultaneous milling and full-fledged turning at the highest speed. The simultaneous use of two tools means double the productivity and significantly reduced throughput times.

BY F. STEPHAN AUCH

At the EMO 2011, CHIRON from Tuttlingen presented the FZ08 MT, whereby the „MT“ stands for „Mill Turn“ and for simultaneous milling and turning. The integration of a turning revolver makes it possible to use two tools simultaneously.

„MT stands for double the productivity in machining of bars with a diameter of up to 65 mm. The machining centres score points with the classic CHIRON advantages: the highest degree of precision, especially short chip-to-chip times and fast set up,“ says Dr. Claus Eppler, head of Research & Development at the long-established machine builder, describing the advantages of the new product.

A second, larger model with the designation FZ12 MT (illustration 1) will be presented for the first time at the Open House, from April 25 to 27 in Tuttlingen.

The full-fledged turning function is based on the use of a tool revolver with Capto C4 holding fixture for twelve tools, which can be driven at speeds of up to 5,000 rpm (illustration 2). „Compared to a standing tool in the milling spindle, the turning machining with the tool revolver is much more precise and delivers significantly improved cutting performance,“ explains Daniel Gems from the CHIRON's development department. The direct path measurement systems in all axes and highly dynamic linear drives in the ZR and V axes also help provide high precision in positioning and simultaneous operation. Besides this, the revolver disk can be equipped with a centric clamp for gripping and turning workpieces. This also allows six-sided complete machining if the customer does without an opposed



1 Die FZ12 MT mit Revolver, Gegenspindel und Stangenlader wird auf der CHIRON-Hausmesse Open House erstmals gezeigt

spindle. „The workpiece is securely clamped and the repeat accuracy for this is in the  $\mu$  range,“ Roger Schöpf, head of technical applications, adds.

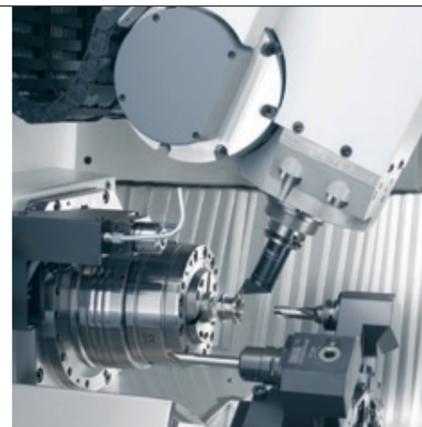
### Complex five-axis operation and six-sided machining

The modular assembly of the FZ08 MT and FZ12 MT with swivel head, turning spindle, tool revolver and optional opposed spindle (illustration 3) enables customer-specific configuration of the machining centres and their use in many fields. At the same time, the engineers optimised the machine for manufacture in continuous assembly so that the delivery times can be kept short. The opposing unit facing the main turning spindle is available as a plain turning-swivel axis (developed by CHIRON) which can be

swivelled by 225° (as BIC kinematics), whereby the C axis can be optionally provided as an integrated turning spindle. Thanks to a speed of 6,500 rpm and a maximum torque of 14.3 Nm, it is ready for powerful machining. „With this, complex and precise five-axis operation and workpiece machining from six sides can be done,“ according to head of development Dr. Eppler. The user also has the possibility to do without an opposing unit. In this case a finished part chute with a collection container take the place of the unneeded component.

### Numerous innovations

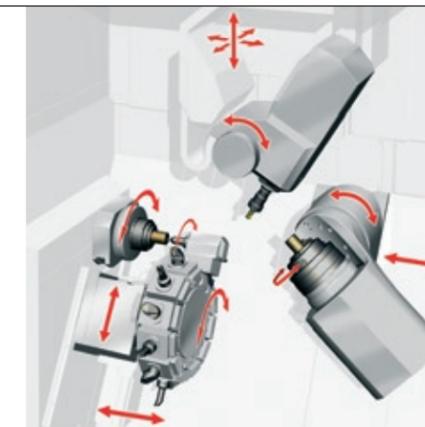
„The workpiece removal via the opposed spindle is one of the many new features we have implemented in the MTs and which reduce the space requirements for bar machining,“ Roger Schöpf reports. The opposed spindle



2 Im Bild unten der Werkzeugrevolver mit zwölf Werkzeugen und vollwertiger Drehfunktion



3 Blick in den Arbeitsraum der FZ12 MT mit Schwenkopf, Drehspindel, Werkzeugrevolver und optionaler Gegenspindel



can unload the finished parts overhead on the right machine side. „We placed a particular emphasis during the design of the machines on optimised dimensions and rigidities and excellent thermal stability,“ Dr. Eppler continues: „A part of this is the free chip fall in the open base, which leads to heat being quickly conducted out of the machine. The newly developed mineral casting frame is thermally very stable since all the axes are assembled at the work area rear wall. These are all factors which aid the accuracy of the machines.“ Further improvements include the new machine design with lighter colours, the use of an LED signal tower and a newly designed operating control panel in 19-inch format.

### Speed and dynamics are in the foreground

Besides precision – true to the company slogan „Seconds Ahead“ – speed and dynamics are in the foreground at CHIRON. Both MT models offer high axis accelerations and rapid feeds of up to 75 m/min. The chip-to-chip time for the smaller version is 1.9 seconds; for the FZ12 MT it is 2.4 seconds. The tool change is done within 0.8 seconds and 0.9 seconds, respectively. The swivelable main spindle of both models has a speed of up to 30,000 rpm as well as up to 226 available tool places. While the traverse paths of the X, Y and Z axes in the FZ08 MT are 450 mm, 270 mm and 310 mm, the FZ12 MT has 550 mm, 320 mm and 420 mm, meaning more space for the machining of larger workpieces. Both models can machine diameters of up to 65 mm.

### Individual configuration thanks to numerous equipment options

The many equipment options which are available for both models also contribute to versatility. Among these are, for example, an

automated supply of bars, spindle probes for testing of workpieces, a laser supported drill break check and a coolant supply of up to 150 bar through the spindle. With the Power Safe package from CHIRON, a comprehensive energy efficiency solution is available. For the control, the customer has the choice between a Siemens 840D Solution Line and a Fanuc 31i-B5.

### Variety of application options

The new CHIRON machining centres for bar machining are mostly used in medical engineering, the watch and jewellery industry, machine and vehicle manufacture and the aerospace industry. Both MT models provide efficient performance for milling, drilling and thread cutting. That is why the machining centres can be used in nearly any industry to machine small and medium-sized workpieces with complex contours from bars. ■

→ WB110567

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### i NACHGEFRAGT

Zwei Fragen an Entwicklungsleiter Dr. Claus Eppler

Herr Dr. Eppler, CHIRON hat die FZ08 MT auf der EMO vorgestellt, die Präsentation der FZ12 MT folgt jetzt auf der ›Open House‹ im April. Welche Erwartungen verknüpfen Sie mit den Neuheiten?

Dr. Eppler: Zum einen wollen wir unseren Kunden aus der Stangenbearbeitung in puncto Produktivität und Vielfaltigkeit zwei sehr attraktive neue Fertigungszentren bieten. Mit dem Angebot, zeitgleich fräsen und vollwertig drehen zu können, sprechen wir außerdem neue Kundenkreise aus der Großserienfertigung an.

### Wie sind die ersten Reaktionen?

Dr. Eppler: Sehr positiv, sowohl von bestehenden Kunden als auch von Unternehmen, die bei der Stangenbearbeitung bislang auf andere Hersteller setzen. Viele Gespräche auf der EMO haben dies gezeigt, ebenfalls geht dies aus den Anfragen hervor, die wir seitdem erhalten haben. Außerdem spüren wir das Interesse und die Neugierde auf die Präsentation der FZ12 MT bei der Open House im April.

### i HERSTELLER

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