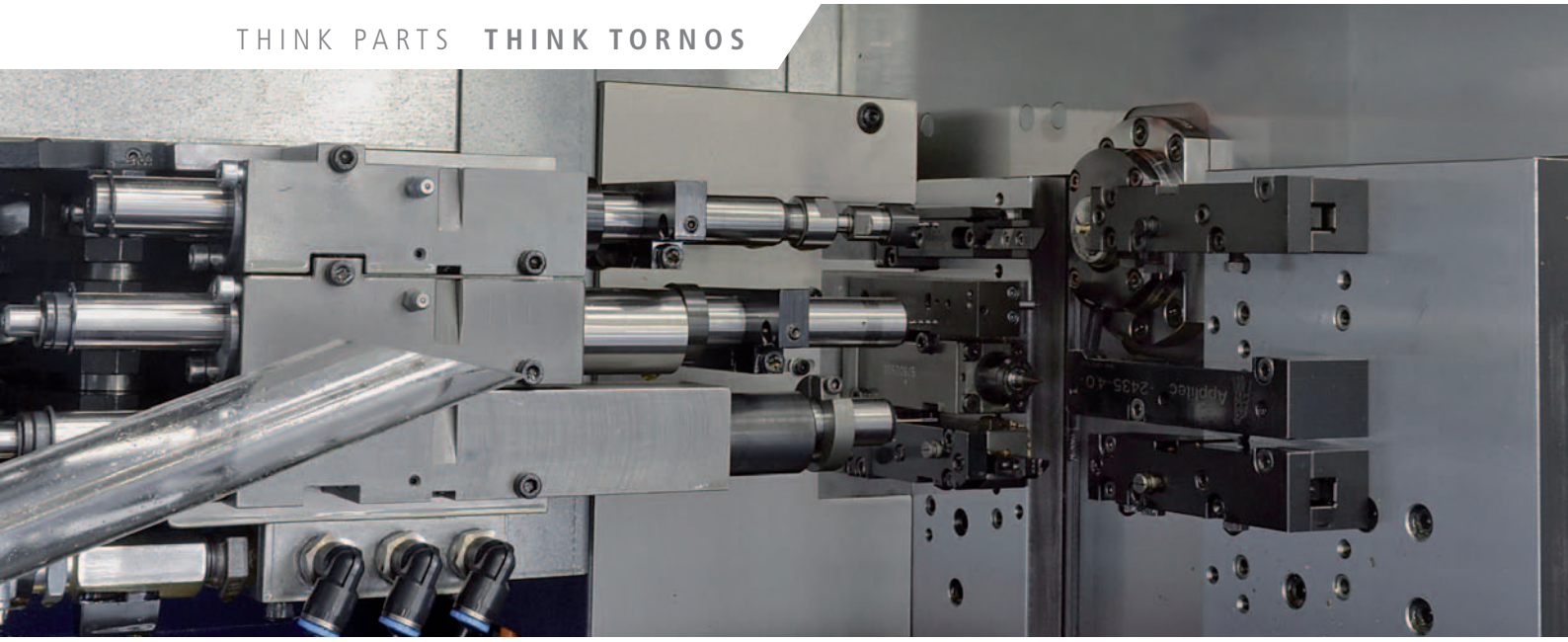
TORNOS

THINK PARTS **THINK TORNOS**



EvoDECO 10/EvoDECO 16

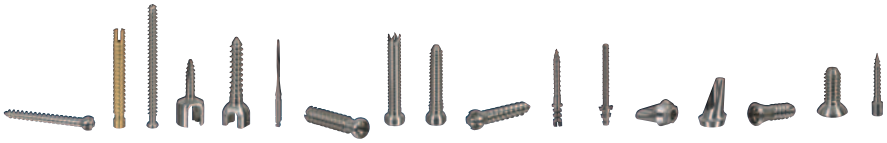
The evolution of a revolution !

For bars from 1 to 16 mm

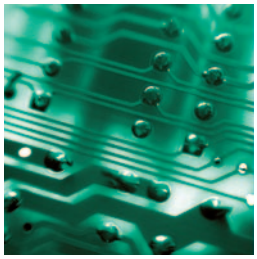
TORNOS PROVIDES SOLUTIONS TO HIGH-TECH INDUSTRIES SPECIALISING IN THE FOLLOWING SECTORS

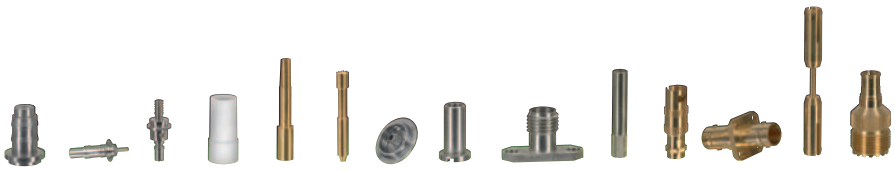
AUTOMOTIVE

MEDICAL



ELECTRONICS





MICROMECHANICS

EvoDECO in brief

Major technological development of the DECO platform

Productivity

- Up to 4 independent tool systems
- Possible to work on the material using 4 tools at the same time
- Significant level of autonomy without human intervention
- Exceptional strength, precision and reliability

Performance

- Up to 4 motors for rotating tools and special instruments
- Possible to work without guide bush on EvoDECO 16
- Powered spindles with synchronous motor
- B axis positioning*

Accessibility

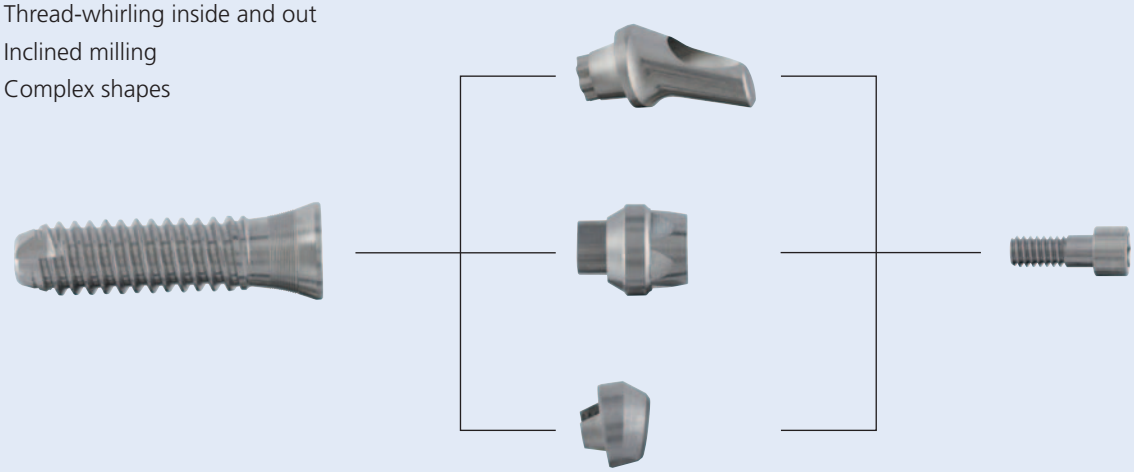
- Huge machining area
- Ergonomics designed with the operator in mind
- Integrated peripherals
- Easy to program thanks to TB-DECO software

* option

Example of machining with EvoDECO 16

Material : Titanium

- Thanks to the machine's ability to manage multiple programs, it is possible to produce various workpieces consecutively on the same bar
- Thread-whirling inside and out
- Inclined milling
- Complex shapes



MAJOR TECHNOLOGICAL DEVELOPMENT OF THE DECO PLATFORM

EvoDECO 10 and EvoDECO 16 machining solutions designed to maximise productivity, performance, autonomy and accessibility.

Productivity

- Up to 4 completely independent tool systems
- Up to 10 numerical axes and 2 C axes which are perfectly interpolable
- Ultra-dynamic powered spindles with synchronous motors

Performance

- Up to 27 tools including 21 rotating tool (EvoDECO 16/10)
- Possible to work without guide bush (EvoDECO 16 only)
- Wide selection of instruments and peripherals (DECO line compatibility)
- Continuous temperature stabilisation
- Powered spindles offer high output and torque
- B axis positioning in counter operations

EvoDECO 10/EvoDECO 16

Accessibility

- Easy to program thanks to TB-DECO software (DECO line compatibility)
- Huge machining area
- Integration of peripherals
- Ergonomics designed with the operator in mind
- Numerical Y41 axis for centering tools in counter operations

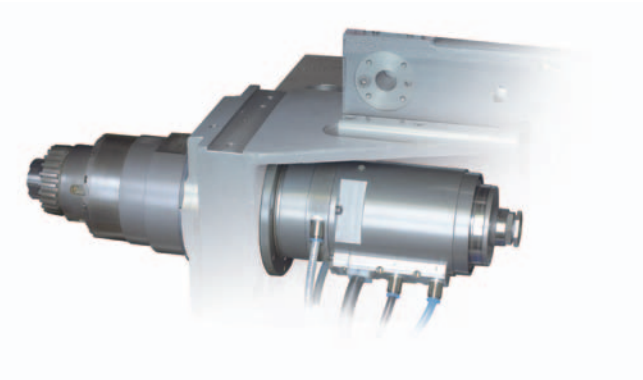
Autonomy

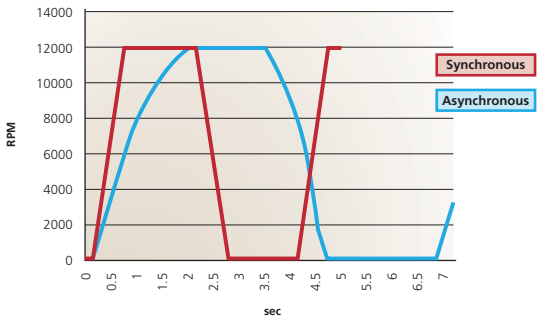
- Excellent removal of swarf and cutting oil
- Integration of peripherals
- Great machining autonomy without human intervention
- Automatic cyclical lubrication
- Integrated Tornos feeder (optional)

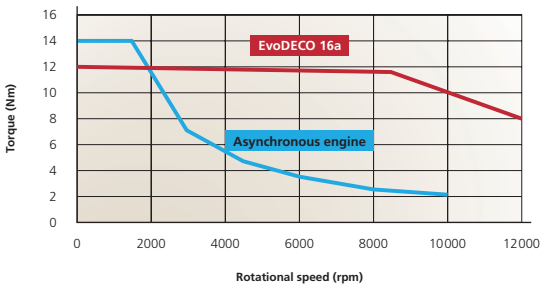
EvoDECO DRIVETRAIN AND TECHNOLOGY FOCUSSED ON…

New powered spindle technology

- Identical spindle and counter spindle with synchronous motors
- Integrated chiller unit
- Increase in power and torque on the main spindle and counter spindle
- Reduction in downtime (stoppage, indexing, acceleration, deceleration), 0 to 10 000 t/min in 0.5 seconds (EvoDECO 10)
- Elimination of noise and reduction in maintenance
- Double cone collet on EvoDECO 16 (option)

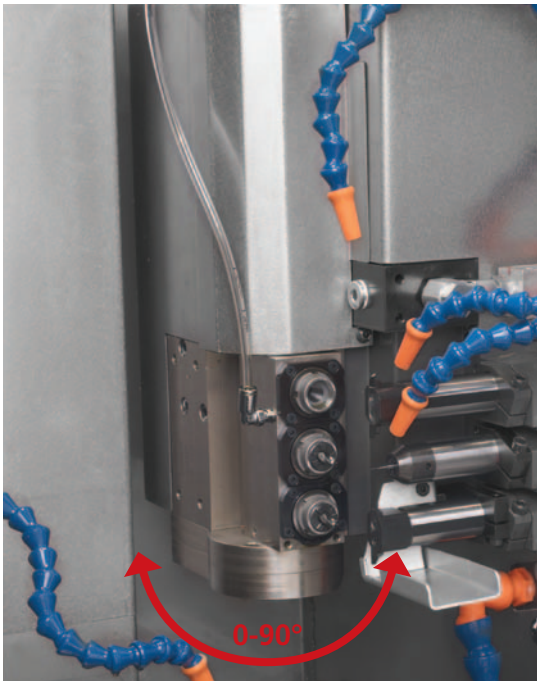






A B axis positioning for a better productivity

- 3 motorized machining positions
- Realisation of even more complex parts
- Reduction of setup time
- Improved precision and surface finishes
- Indexing range from 0-90°
- Resolution of 0,001°



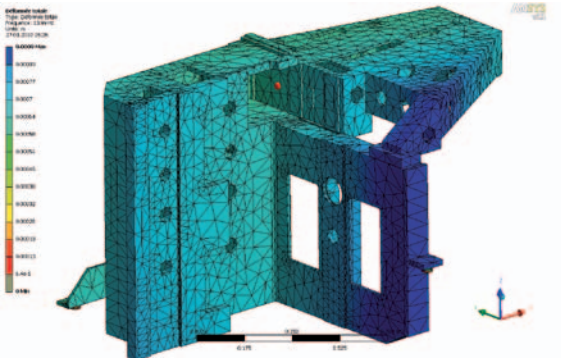
… PRODUCTIVITY AND PERFORMANCE

Working without a guide bush

- EvoDECO 16 only
- Reduced scrap length
- Possible to work with bars with higher tolerances

Increased rigidity

- Optimised machining performance (speeds and feeds) for increased productivity
- Higher quality finishes
- Increased machining precision
- Increased tool service life



Most powerful drivetrain ever designed

The EvoDECO platform relies on the drivetrain which was the key to the DECO platform's success :

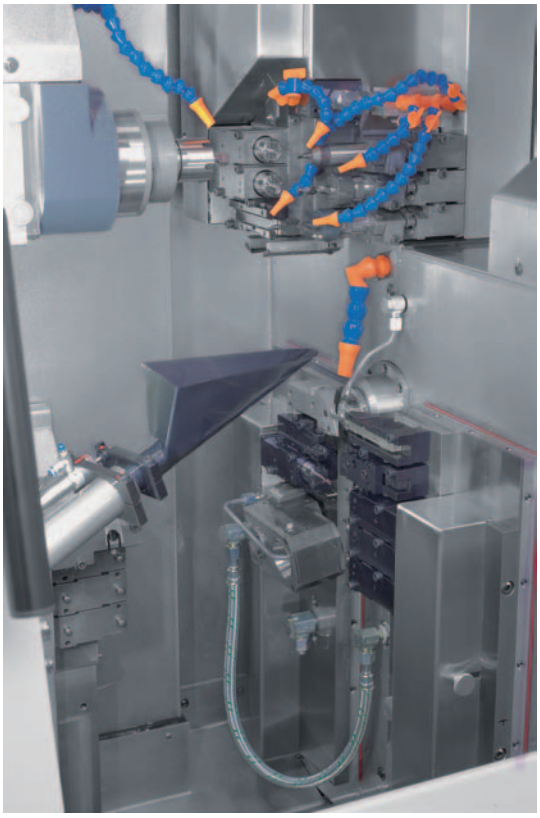
- 4 independent tool systems
- Possible to connect 4 tools simultaneously (3 in operation and 1 in secondary operation)
- Blank turning and finishing using the guide bush
- Possible to operate in differential mode (stroke progression) for simultaneous turning and drilling using the guide bush
- Counter operations can be carried out completely during concurrent operation time
- Up to 10 linear axes and 2 C axes (simultaneously)
- Up to 22 fixed tool positions including 10 rotating positions on the EvoDECO 10/10
- On EvoDECO 16/10, the number of tool positions rises to 27 including 15 rotating positions

AUTONOMY AND ACCESSIBILITY, THE GUARANTEE OF A GOOD RATE OF RETURN

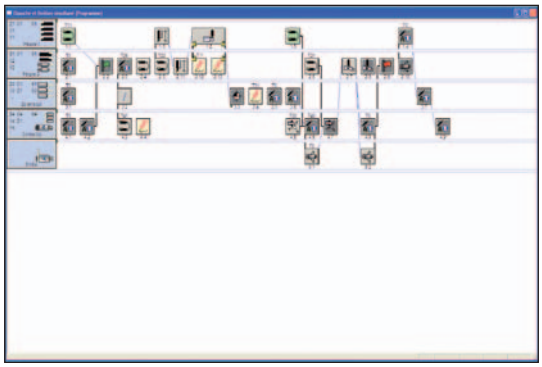
Programming

TB-DECO ADV programming software can be used to create programs for all single spindle products in the EvoDECO family.

- Easy to program, with icons for productive and non-productive operations
- Tool library
- Graphic synchronisation of simultaneous operations
- Calculation of actual machining time (Gantt chart)
- Check the program and tool trajectories using graphic simulation
- PC programming and transfer of programs via Ethernet or PCMCIA card
- Various machining macros for specific operations (thread chasing, drilling/unblocking cycles, machining of complex shapes, torx, etc.)
- Free update
- Tornos Software Hotline
- Program compatible with others in the DECO range



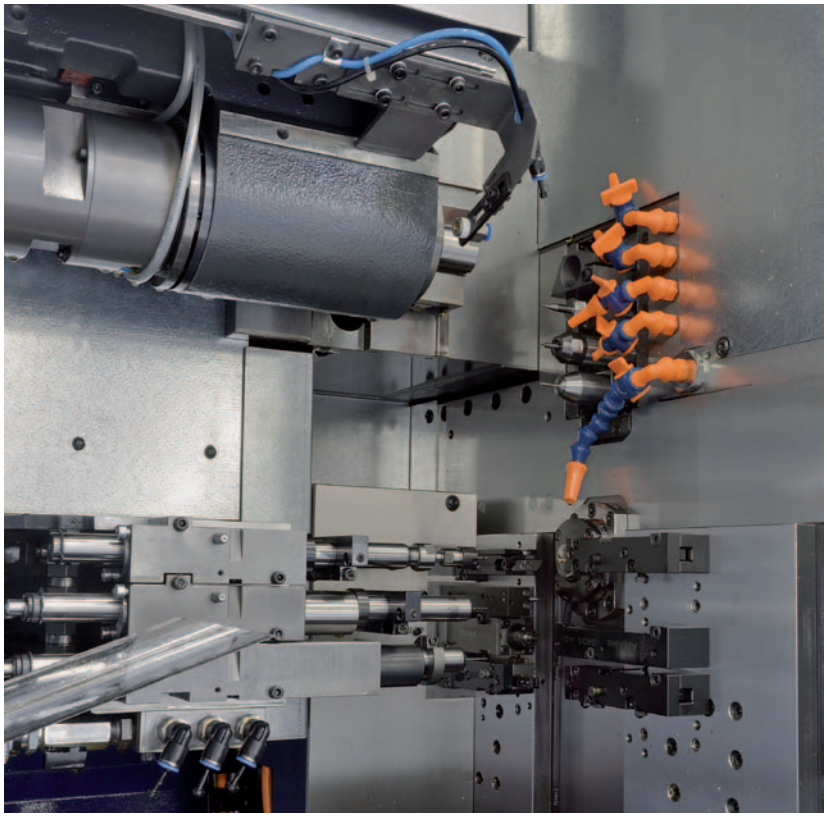
EvoDECO 16/10



Integrated PC

- Program editing on the machine.
- Service instructions available on the machine.
- Remote maintenance.
- Possibility to control various peripheral units.
- Large colour touch screen.
- USB.

EvoDECO 10/EvoDECO 16

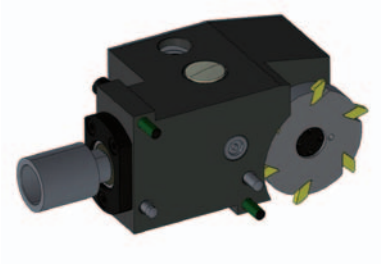


EvoDECO 10/10

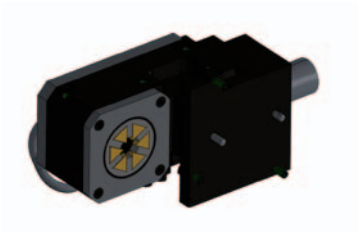
Ergonomics
The wide machining area enables the operator to access the tools easily and guarantees effective removal of swarf. The integration of the SBF feeder control directly on the machine's NC facilitates programming and the use of the EvoDECO.

Autonomy
To improve the machine's profitability, the EvoDECO has been designed to enable long periods of operation without human intervention. The preheating system, the independent spindle cooling circuit, the automatic filtration of swarf and the automatic cyclical lubrication – many systems which ensure the EvoDECO's autonomy.

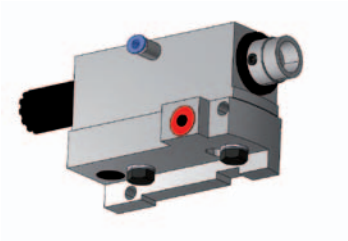
EvoDECO 10
VERSATILITY…



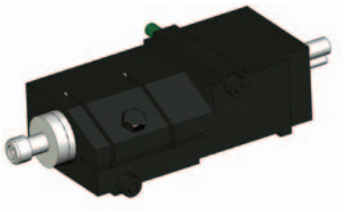
Radial polygon operation equipment



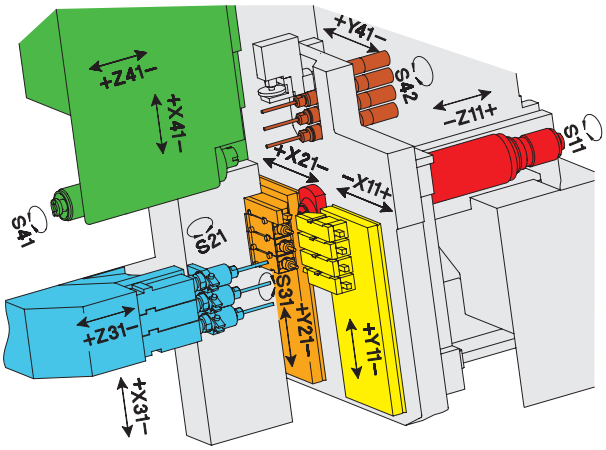
Device for milling external threads using high speed tool rotation (thread whirling)

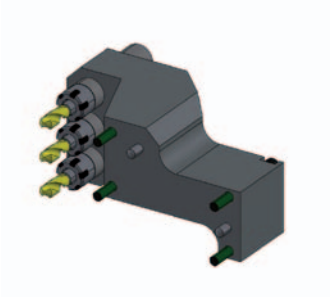


Gear hobbing machine



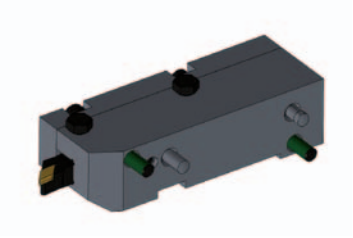
Adaptation for high frequency drill / milling tool (10,000 rpm)





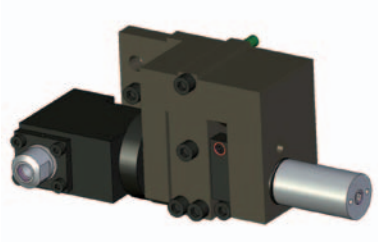
3-bore base for tools fixed to end

Tool holder for multiple turning tools

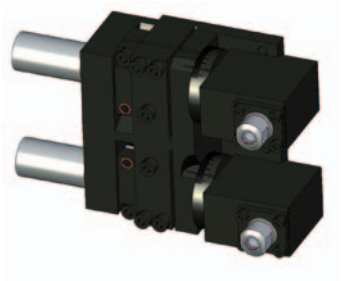


Tool holder for single turning tool

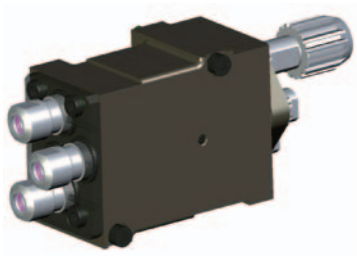
EvoDECO 16
SPECIAL EQUIPMENT : A FEW EXAMPLES



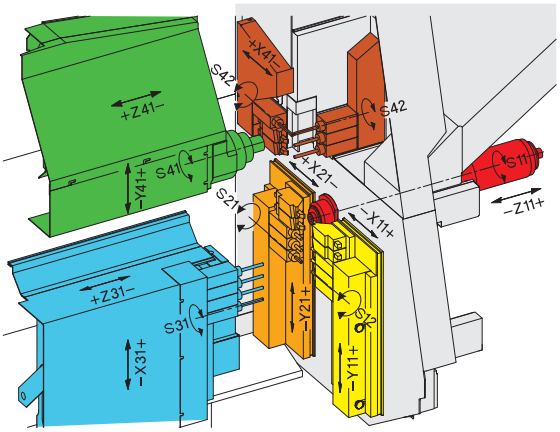
Drill / milling tool, inclinable
from 0° to 90°

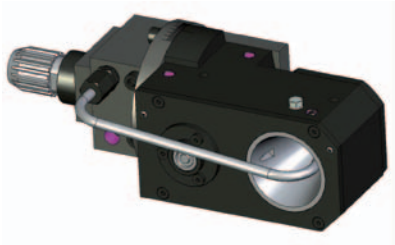


Drill / double milling tool
inclinable +/- 30°

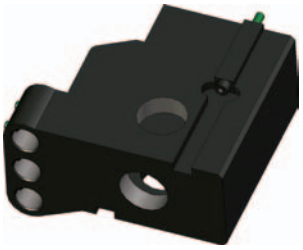


Unit with 3 rotating
spindles





Device for milling external threads
using high speed tool rotation
(thread whirling)



3-bore support for tools
at end

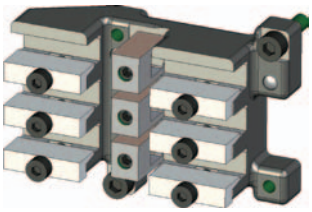
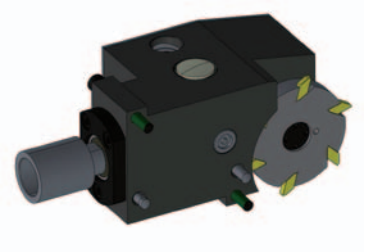


Plate for 3 turning tools



Radial polygon operation
equipment

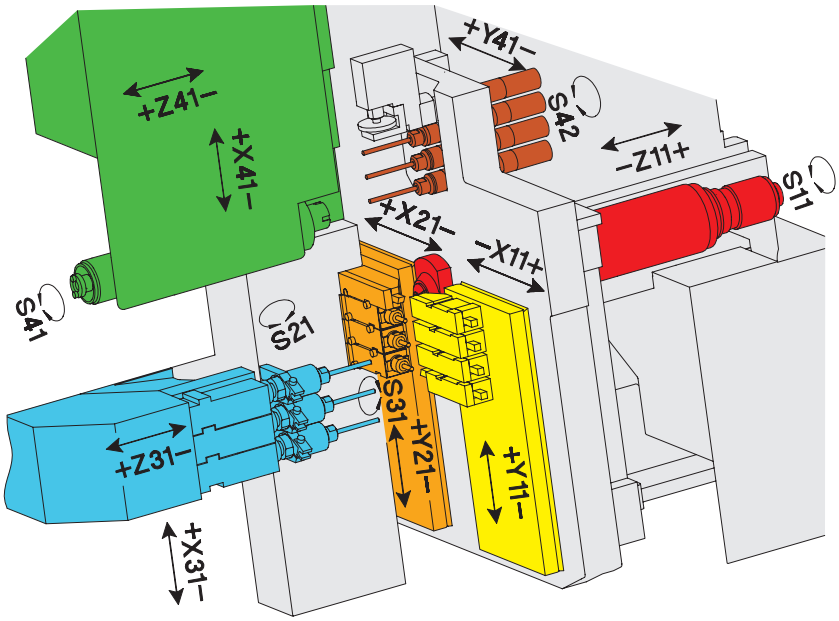
- The choice of tool holder system has been made with a view to achieving complete versatility and a very high level of flexibility
- All types of tool holder are equipped with a quick change system and adapter for pre-setting tool
- Compatible with equipment developed for the DECO

EvoDECO 10

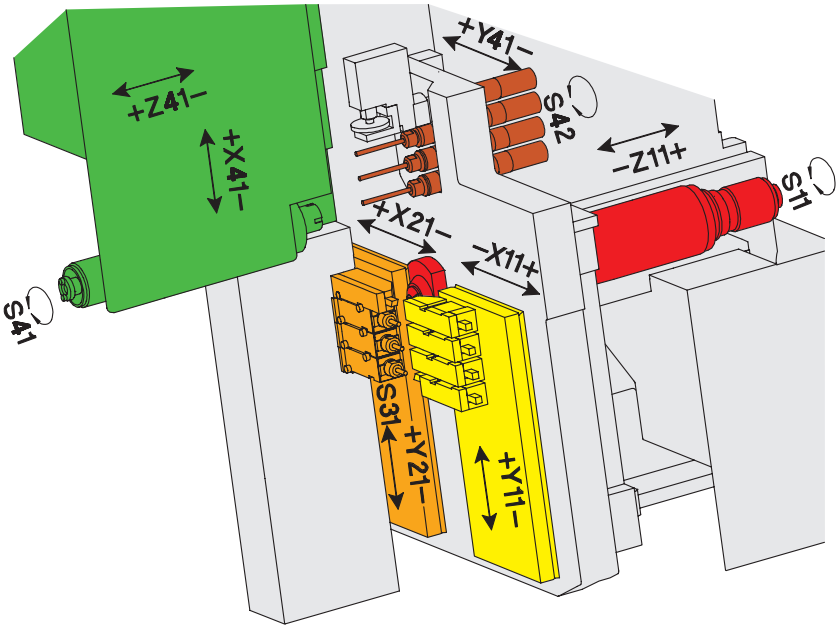
EvoDECO 10 drivetrain

EvoDECO 10 in 2 basic versions:

- 8 axes with independent counter spindle, 19 tool positions including 7 rotating positions
- 10 axes with independent counter spindle and combined unit, 22 tool positions including 10 rotating positions
- As for the EvoDECO 16, all versions of the EvoDECO 10 accept the C11 (spindle) and C41 axes (counter spindle) as standard



10-axis drivetrain



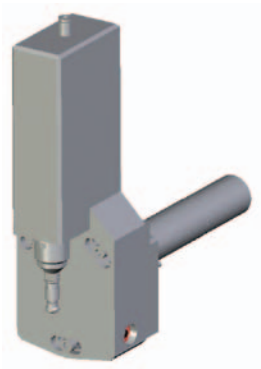
8-axis drivetrain

EvoDECO 10

Z11	C11	S11
Sliding headstock	Sliding headstock C axis	Main spindle
X11 / Y11		
Platen 1		
X21 / Y21		S21
Platen 2		Rotating spindle on guide bush
X31 / Z31		S31
End attachment		Rotating spindle on combined unit
X41 / Y41 / Z41	C41	S41
Counter spindle Y41 regulating spindle	Counter spindle C axis	Counter spindle
		S42
		Rotating spindle and secondary operation (transverse and longitudinal)

New numerical Y41 axis for centering tools in secondary operation on the EvoDECO 10/10.

- Ease of centering tool holders and instruments thanks to numerical corrections (increment 0.001 mm)
- Reduction in adjustment and changeover time in general
- Stroke of the numerical Y41 axis +/- 1 mm
- Possible to perform gear hobbing in secondary operation



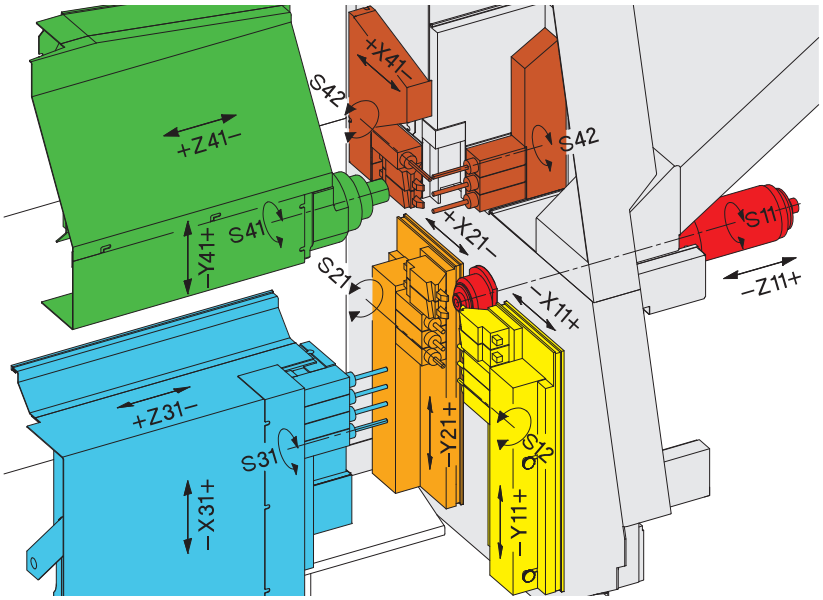
Gear hobbing attachment

EvoDECO 16

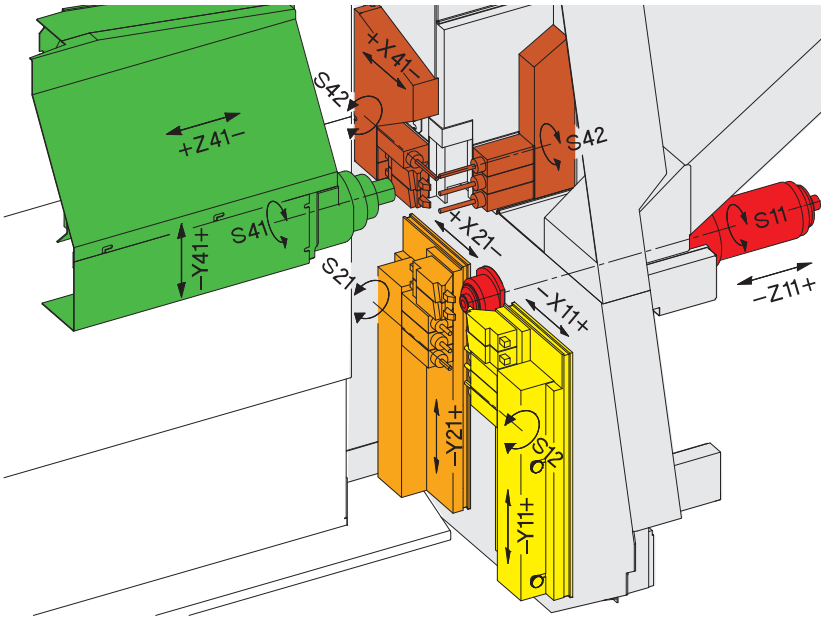
EvoDECO 16 drivetrain

EvoDECO 16 in 2 basic versions:

- 8 axes with independent counter spindle, 22 tool positions including 12 turning positions
- 10 axes with independent counter spindle and combined unit, 27 tool positions including 15 turning positions
- On all versions, the C11 (spindle) and C41 (counter spindle) axes further broaden the capabilities of the machine



10-axis drivetrain



8-axis drivetrain

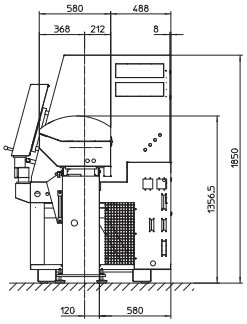
EvoDECO 16

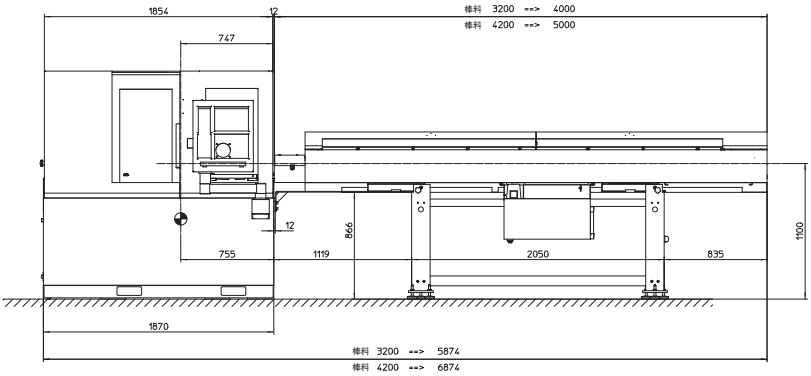
Z11	C11	S11
Sliding headstock	Sliding headstock C axis	Main spindle
X11 / Y11		S12
Platen 1		Rotating spindle on guide bush
X21 / Y21		S21
Platen 2		Rotating spindle on guide bush
X31 / Z31		S31
End attachment		Rotating spindle on combined unit
X41 / Y41 / Z41	C41	S41
Counter spindle	C axis counter spindle	Counter spindle
		S42
		Rotating spindle and secondary operation (transverse and longitudinal)

EvoDECO 10

TECHNICAL SPECIFICATIONS		EvoDECO 10/10	EvoDECO 10/8
		10 linear axes + 2 C axes	8 linear axes + 2 C axes
		4 independent tool systems	3 independent tool systems
Main spindle (Z11 / S11 / C11)			
Max. bar capacity	mm	10	10
Standard workpiece length with rotating guide bush	mm	100	100
Spindle speed of rotation	rpm	0 to 14 000	0 to 14 000
Spindle output	kW	6,5 / 10,1	6,5 / 10,1
Max. constant torque	Nm	4,8 / 6,5	4,8 / 6,5
Spindle stoppage time (10,000 rpm to 0)	sec	0,5	0,5
Mild steel drilling capacity	mm	6	6
Mild steel tapping capacity		M6	M6
Guide bush holder (X11 / Y11 / S21) (X21 / Y21)			
Number of tool positions on guide bush		8 / 2 x 4	8 / 2 x 4
Cross section of rotating tools		8 x 8	8 x 8
Positions for rotating tools		4	4
Rotating tools speed of rotation	rpm	100 to 12 000	100 to 12 000
Rotating tools output	kW	1,1	1,1
Steel drilling / rotating tool capacity	mm	4	4
Rotating tool / steel tapping		M4	M4
End attachment (X31 / Y31 / S31)			
Number of tool positions		3	-
Positions for rotating tools		3	-
Speed of rotation of rotating tools	rpm	100 to 12 000	-
Output of rotating tools	kW	1,1	-
Steel drilling / rotating tool capacity	mm	4	-
Rotating tool / steel tapping capacity		M4	-
Counter spindle (Z41 / Y41 / S41 / C41)			
Max. bar capacity	mm	10	10
Insertion length of workpiece into spindle	mm	100	100
Spindle speed of rotation	rpm	0 to 14 000	0 to 14 000
Spindle output	kW	5,1 / 7	5,1 / 7
Max. constant torque	Nm	3,4 / 4,8	3,4 /4,8
Stoppage time (10,000 rpm to 0)	sec	0,5	0,5
Mild steel drilling capacity	mm	6	6
Mild steel tapping capacity		M6	M6
Secondary operation (X41 / S42)			
Number of tool positions		4	4
Positions for rotating tools		4	4
Rotating tools speed of rotation	rpm	100 to 9 000	100 to 9 000
Rotating tools output	kW	1,1	1,1
Steel drilling / rotating tool capacity	mm	4	4
Rotating tool / steel tapping capacity		M4	M4
Max. total number of tools		21	18
Distribution of tool operations / secondary operations		18 / 4	15 / 4

Basic machine equipment	EvoDECO 10/10	EvoDECO 10/8
Rotating guide bush	x	x
S21 rear platen rotating tool motor	x	x
S31 end attachment rotating tool motor	x	-
S42 rotating tool motor in secondary operation	x	x
C11 + C41 axes	x	x
Interpolation in polar coordinates	x	x
Fine tuning of the clamping force on S41 counter spindle	x	x
Pneumatic ejection of workpiece + oil cleaning of collet	x	x
Automatic centralised lubrication cycle	x	x
Beacon (3 colours)	x	x
Cooling pump with self-cleaning filter	x	x
Timer for preheating cutting oil	x	x
Fire extinguisher interface	x	x
TB DECO ADV programming software	x	x



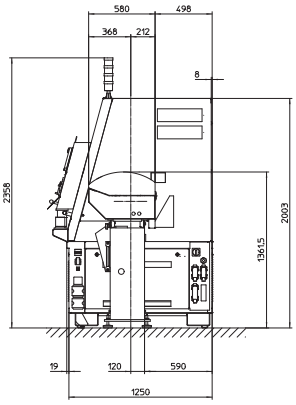


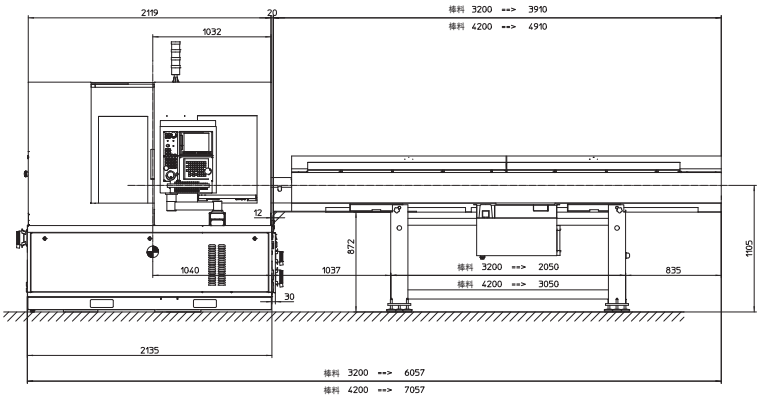
GENERAL SPECIFICATIONS		
Max. length	mm	1870
Max. width	mm	1140
Max. height	mm	1850
Weight	kg	1650
Cutting oil pan capacity	l	200
Cooling pump output	kW	0,75
Max. pressure	bar	5
Cooling pump output	l / min	27,6
Colours : RAL 7035 grey, RAL 5013 blue		
CE / CEM certified		

EvoDECO 16

TECHNICAL SPECIFICATIONS		EvoDECO 16/10	EvoDECO 16/8
		10 linear axes + 2 C axes	8 linear axes + 2 C axes
		4 independent tool systems	3 independent tool systems
Main spindle (Z11 / S11 / C11)			
Max. bar capacity	mm	16	16
Standard workpiece length with rotating guide bush	mm	180	180
Spindle speed of rotation	rpm	0 to 12 000	0 to 12 000
Spindle output	kW	9,8 / 12	9,8 / 12
Max. constant torque	Nm	12,1 / 15,8	12,1 / 15,8
Spindle stoppage time (8,000 rpm to 0)	sec	0,7	0,7
Mild steel drilling capacity	mm	10	10
Mild steel tapping capacity		M10	M10
Guide bush holder (X11 / Y11 / S21) (X21 / Y21 / S12)			
Number of tool positions on guide bush		10 / 2 x 5	10 / 2 x 5
Cross section of turning tools		12 x 12 / 12,7 x 12,7	12 x 12 / 12,7 x 12,7
Positions for rotating tools		6 / 2 x 3	6 / 2 x 3
Rotating tools speed of rotation	rpm	100 to 8 000	100 to 8 000
Output of rotating tools	kW	0,55 / 1,1	0,55 / 1,1
Steel drilling / rotating tool capacity	mm	8	8
Rotating tool / steel tapping capacity		M6	M6
End attachment (X31 / Y31 / S31)			
Number of tool positions		4	-
Positions for rotating tools		3	-
Speed of rotation of rotating tools	rpm	100 to 8 000	-
Output of rotating tools	kW	0,55 / 1,1	-
Steel drilling / rotating tool capacity	mm	8	-
Rotating tool / steel tapping capacity		M6	-
Counter spindle (Z41 / Y41 / S41 / C41)			
Max. bar capacity	mm	16	16
Insertion length of workpiece into spindle	mm	150	150
Spindle speed of rotation	rpm	0 to 12 000	0 to 12 000
Spindle output	kW	9,8 / 12	9,8 / 12
Max. constant torque	Nm	12,1 / 15,8	12,1 / 15,8
Stoppage time (8,000 rpm to 0)	sec	0,7	0,7
Mild steel drilling capacity	mm	10	10
Mild steel tapping capacity		M10	M10
Secondary operation (X41 / S42)			
Number of tool positions		6	6
Positions for rotating tools		6	6
Rotating tools speed of rotation	rpm	100 to 8 000	100 to 8 000
Output of rotating tools	kW	1,5 / 2,2	1,5 / 2,2
Steel drilling / rotating tool capacity	mm	8	8
Rotating tool / steel tapping capacity		M6	M6
Max. total number of tools		27	22
Distribution of tool operations / secondary operations		19 / 8	14 / 8
B axis positioning (option) in counter operations			
Number of rotating tools			3
Max. RPM of spindles	rpm		0 to 8 000
Power at 100% / 40%	kW		1,5 / 2,2
Torque	Nm		4,77 / 7
Type of collet			ER / ESX 12
Max. clamping capacity	mm		7
Min. programmable increment	Degree		0 to 90
B axis resolution	Degree		0,001

Basic machine equipment	EvoDECO 16/10	EvoDECO 16/8
Rotating guide bush	x	x
S21 rear platen rotating tool motor	x	x
S12 front platen rotating tool motor	x	x
S31 end attachment rotating tool motor	x	-
S42 rotating tool motor in secondary operation	x	x
C11 + C41 axes	x	x
Interpolation in polar coordinates	x	x
Fine tuning of the clamping force on S41 counter spindle		xx
Pneumatic ejection of workpiece + oil cleaning of collet	x	x
Automatic centralised lubrication cycle	x	x
Beacon (3 colours)	x	x
Cooling pump with self-cleaning filter	x	x
Timer for preheating cutting oil	x	x
Fire extinguisher interface	x	x
TB DECO ADV programming software	x	x





GENERAL SPECIFICATIONS		
Max. length	mm	2135
Max. width	mm	1250
Max. height	mm	2004
Weight	kg	2700
Cutting oil pan capacity	l	200
Cooling pump output	kW	0,75
Max. pressure	bar	5
Cooling pump output	l / min	27,6
Colours : RAL 7035 grey, RAL 5013 blue		
CE / CEM certified		

TORNOS S.A.
Rue Industrielle 111
CH - 2740 Moutier
Tel. +41 (0)32 494 44 44
Fax +41 (0)32 494 49 03
contact@tornos.com
www.tornos.com

TORNOS TECHNOLOGIES DEUTSCHLAND GmbH
Karlsruher Str. 38
D - 75179 Pforzheim
Tel. +49 (0)7231 / 910 70
Fax +49 (0)7231 / 910 750
contact@tornos.de

TORNOS TECHNOLOGIES FRANCE
Boîte postale 330
St-Pierre en Faucigny
F - 74807 La Roche
s / Foron Cedex
Tel. +33 (0)4 50 038 333
Fax +33 (0)4 50 038 907
contact@tornos.fr

TORNOS TECHNOLOGIES IBÉRICA
Pol. Ind. El Congost
Avda. St Julià, 206 Nave 8
E - 08403 Granollers
Tel. +34 93 846 59 43
Fax +34 93 849 66 00
comercial.tti@tornos.com

TORNOS TECHNOLOGIES ITALIA SRL
Via Cesare Pavese 21
I - 20090 Opera / MI
Tel. +39 02 57 68 15 01
Fax +39 02 57 68 15 230
italia.contact@tornos.com

TORNOS TECHNOLOGIES US CORPORATION
840 Parkview Boulevard
US - Lombard, IL 60148
Tel. +1 630 812 2040
Fax +1 630 812 2039
info-us@tornos.com
www.tornos.us

TORNOS TECHNOLOGIES UK LTD
Tornos House
Whitwick Business Park
Coalville
UK - Leicestershire LE67 4JQ
Tel. +44 (0) 1530 513100
Fax +44 (0) 1530 814212
sales@tornos.co.uk

TORNOS TECHNOLOGIES POLAND Sp. z o.o.
Ul. Spółdzielcza 37-39
55-080 Kąty Wrocławskie
Poland
Tel. +48 71 33 85 618
Fax +48 71 33 85 617
poland.contact@tornos.com

TORNOS DO BRASIL, Ltda
Av. Dourado, no 587,
Bairro Aquário, Vinhedo - SP
CEP 13280-000 - Brasil
Tel. +55 19 38861182
brazil.contact@tornos.com

TORNOS TECHNOLOGIES (Shanghai) LTD
Hui Feng Creativity Garden
Feng Yu Building, 1-2F
No. 239, Xitai Rd, Xu Hui District
CN - Shanghai 200232
Tel. +86 21 6235 1235
Fax +86 21 6235 1938
china.contact@tornos.com

TORNOS BEIJING OFFICE
Rm.1706, Tower A
Dongyu Office Building
Jia #1 Shuguang Xili
Chaoyang District
CN - Beijing 100028
Tel. +86 10 5979 8583
Fax +86 10 5822 0483
beijing.contact@tornos.com

TORNOS TECHNOLOGIES ASIA LTD
Unit 4, Ground Floor, Transport City Building
1-7 Shing Wan Road
Tai Wai, Shatin
N.T., Hong Kong
Tel. +852 2691 2633
Fax +852 2691 2133
asiapacific.contact@tornos.com

TORNOS S.A. THAILAND REPRESENTATIVE OFFICE
7th Floor, 19, Bangna -Trad Soi 34,
Bangna -Trad KM. 3 Road.
Bangna, Bangkok, 10260
Thailand
Tel. +66 2746 8840-1
Fax +66 2746 8842
thailand.contact@tornos.com

TORNOS TECHNOLOGIES ASIA LTD MALAYSIA REPRESENTATIVE OFFICE
No. 1-1-11, Ground Floor & 1-2-11,
First Floor, One Terrace Plus,
Tingkat Mahsuri 4,
11900 Bayan Lepas,
PENANG, MALAYSIA
Tel. +60 4 642 6562 / 4 642 6563
Fax +60 4 642 6561
malaysia.contact@tornos.com

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