



THINK PARTS THINK TORNOS



ELECTRONICS

Proven solutions in the electric and electronic field since its beginnings.



ELECTRONICS : PART OF OUR EVERYDAY LIVES !



Like the car sector or mechanical engineering, electronics also benefits from the technological progress made in small parts turning. In the electronics sector, the progress made in the miniaturisation of pcbs and the ever growing speed of communications tended to block out another, more mechanical sector, where precision and extreme demands are vital and the results of which are very tangible – namely the small parts turning sector !

Switching on the CD drive, mobile phone, GPS system, high-speed Internet communications and so on... all these are the result of a dazzling trend in software development and communica-

tion techniques. These latter depend directly on precision and new manufacturing techniques. The new materials used in these sectors demand precision and machinability. The manufacturing techniques have to be innovative and react immediately to market demands.

Tornos has come up with specialist, tried and tested solutions in this very demanding field. We would like to help you discover a little more. If you would like further information, please do not hesitate to contact your normal Tornos agent.

TO BE AT THE FOREFRONT OF TECHNOLOGY – THIS IS YOUR CHALLENGE !

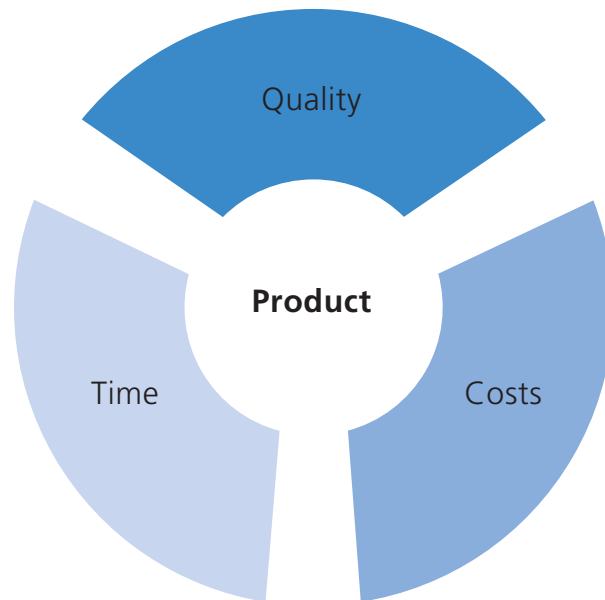
We think of the solutions that will enable you to achieve your objectives.



If it is your aim to develop successfully very precise and complex components to be incorporated in an electronic or networking system, then a company such as yours will permanently have to face the challenges involving its know-how and technological competence, in order to develop and offer new products ready to meet the ever increasing challenges of innovation.

The excellence of your engineering facilities, coupled with your experience, passion and desire to go beyond all limits, are vital for fast on-going development.

Indisputably, this is the core of your success.



Parameters	Implications
Product quality	enhanced product performance
Manufacturing costs	price competitiveness
Time	initial marketing launch
Leadership	market share

For this process, you have to think of the parts and numerous requirements that have to be met.

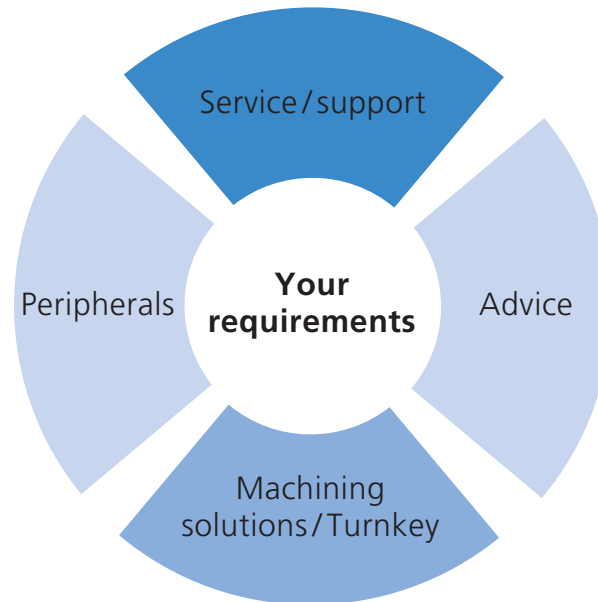
Whatever the sectors envisaged, i.e.:

- telephony
- telecommunications
- data processing
- house automation
- networking

all your developments will have to undergo a strict validation procedure at all manufacturing and industrialisation levels, irrespective of the proposed degree of incorporation of the final product. Without doubt, this process means that numerous parameters and their implications have to be taken into account.

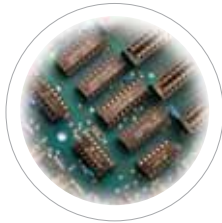
OUR TECHNOLOGY AT YOUR SERVICE

Your requirements are our challenge and our experience in the electronic sector is your solution !



- Tornos has been developing products that have been marketed throughout the world by thousands of people for more than 120 years. The company's reputation speaks for itself.
- The experience we have gained over the past years in the electronics and networking sectors means that we can provide you with efficient machining solutions.
- We are currently acknowledged as the leader in this sector. We have focussed our innovation processes (kinematics, equipment, etc.) and earmarked the necessary resources for developing the various leading sectors of industry, especially the industrial networking and interfacing sector.
- Because we listen to what our clients require, we can design, manufacture and distribute a vast array of different types of products that meet the highly specific requirements of high precision and complex parts.
- Consequently, we design products that are dedicated to solutions that can be perfectly matched to suit any targeted market sector.
- We offer different kinematic systems for the high performance production machines based on the dimensions of your parts and their type.
- Of the 4000 or more DECO machines already delivered throughout the world, a large proportion is involved in the production of parts for the electronics and networking sectors. These are machined from bars with a diameter from 1 to 32 mm, made from all kinds of material, ranging from non-ferrous metals to the most complex of steels to undergo machining.

NUMEROUS DIFFERENT TYPES OF PARTS



You produce very demanding products and Tornos will come up with tried and tested solutions to cover a very broad spectrum of parts.

For example :

- Telephony, mobile phones, palmtops
- Data processing, pocket PC
- Medical, apparatus, pacemaker
- Aeronautics
- Household goods

- Measuring instruments (test points)
- Defence (radar)
- Optical fibres
- High frequency technology

We will be pleased to help you find the best solution to suit your production processes.

DECO CONCEPT

With more than several thousand lathes supplied around the world to more than one thousand clients, the DECO concept, which was launched in 1996, no longer needs to prove itself with respect to feasibility, precision or productivity. A new numeric control concept, coupled with programming software for a PC (Windows based), enables Tornos, by way of the DECO concept, to propose a system, which is still unrivalled. As true pioneers in terms of improving productivity, programming facilities and versatility of use, coupled with user-friendliness, we can now provide our know-how to benefit you.

Some of the strong points of the system :

- Ideal solution for the production of just-in-time parts
- Kinematics of the lathes centered around feasibility for highly sophisticated parts and high outputs (simultaneous operations and operations in hidden time)
- System for pre-setting fixed and rotating tools, in order to optimise settings during starting up and to shorten actual setting times
- Processes and equipment for specific machining operations, in order to achieve quality requirements (surface finish) and accuracy (dimensional and geometric)
- High-speed milling for micro-machining by contouring special shapes
- Programming axis C or machining by polar coordinates, a facility provided by the TB-DECO
- Programming and pre-setting in hidden time
- "Macro client" programming assistance software, based on your requirements when machining special and complex shapes
- Transmission of programs via RS 232, PCM CIA card, Ethernet network
- Parameterised programming (part families)
- Tool life management, rigid tapping function, etc.

and much more...

Permanent support

Tornos will make its specialists available to you before, during and even after the sale and provision of services, such as training or support, taking account of the very demanding requirements of the electronics/networking sector.

Please do not hesitate to contact us.

CONNECTORS



Copper
85 secs.



Brass
40 secs.



Brass
60 secs.



C11 BE
21 secs.



Brass
33 secs.



Brass
33 secs.



Brass
60 secs.



MS 58
43 secs.



Bronze
24 secs.



Cu Be
77 secs.



Zn 39PB3
8,4 secs.



Bronze
40 secs.



BZ4
25 secs.



Cu Zn 39PB3
38 secs.



Brass
33 secs.



Brass
40 secs.

CONNECTORS



Brass
15 secs.



Brass
54 secs.



Bronze
43 secs.



Brass
35 secs.



C97
40 secs.



Brass
27 secs.



Brass
27 secs.



Brass
27 secs.



C97
60 secs.



C97
60 secs.



Brass
34 secs.



Brass
34 secs.



Brass
60 secs.



Aluminium
66 secs.



Steel
162 secs.



Steel
70 secs.

PRECISION PARTS



Steel 303
40 secs.



Steel 303
40 secs.



Steel 303
30 secs.



Steel 430 F
32 secs.



Steel 416 F
120 secs.



Steel 430 F
42 secs.

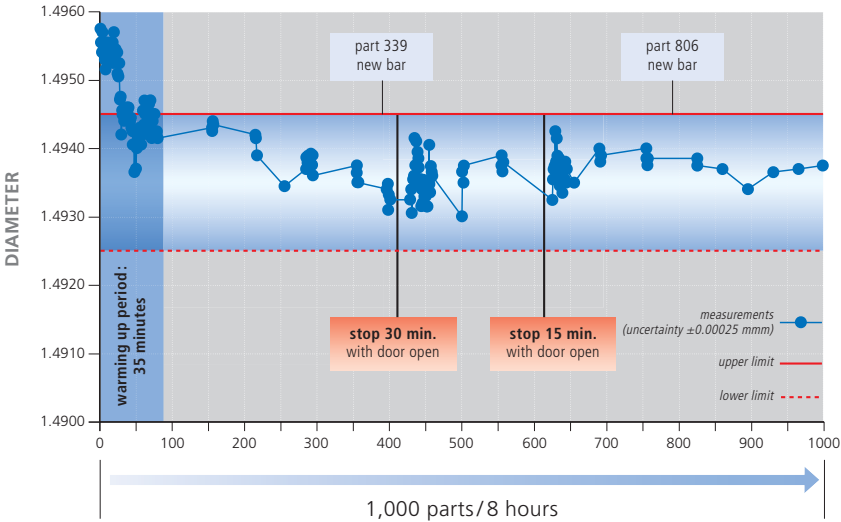


Steel 303
70 secs.



Sus 303
32 secs.

Measurements during 8 hours production



Test Conditions	
Ambient temperature	21-25 °C
Material	SUS 303 cu
Oil	Mineral oil
Measured diameter	1,5 mm
Cycle time	32 sec.
Spindle speed	8'000 rpm
Feed rate	0,01 mm/rev.
Depth of cut	0,2 mm
Number of parts produced	1'000
Results	
Total deviation after warm up	1,4 μ
<i>Including stops and bar changes</i>	

Do you need further information concerning specific operations?
Do not hesitate to contact your Tornos specialist!

REMARKABLE OPERATIONS



Teeth milling
Real size 35 mm



Polar coordinate milling
Real size 23 mm



Eccentric machining
Real size 20 mm

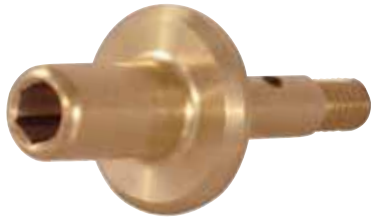


Form material
Real size 14 mm



Special slots squeezing
Real size 18 mm

REMARKABLE OPERATIONS



Broaching
Real size 26 mm



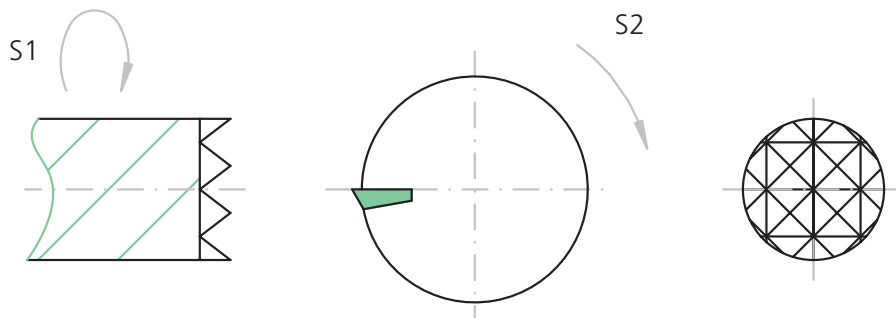
C Axis
Real size 29 mm



Bending
Real size 24 mm



Front polygon milling
Real size 18 mm



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TORNOS PROVIDES SOLUTIONS TO HIGH-TECHNOLOGY INDUSTRIES, IN THE FOLLOWING SECTORS IN PARTICULAR :



Automotive



Medical



Electronics



Watchmaking & Micromechanics

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Conforms to the European CE/CEM Safety Standards

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