

DECO MAGAZINE

22

3/02

SEPTEMBER

E/F/D/I/P



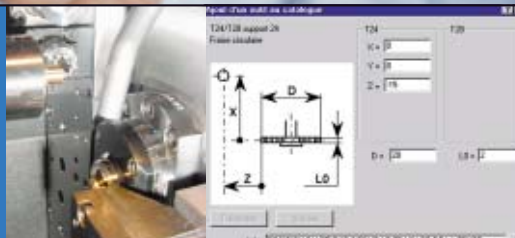
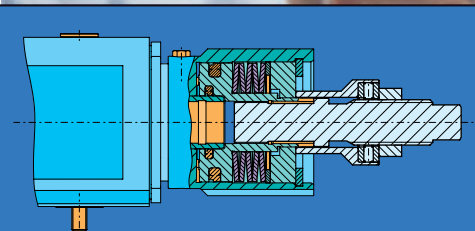
How to perform
counter-operation
milling using
platen 2

Le Brésil,
un partenaire
méconnu...

MULTIDECO:
Neues aus der Welt
der Mehrspindler

DECO 13a
e i suoi 10 assi

MOTOREX-FOCUS:
Alltid under tryck –
hydrauloljor





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IMPRESSUM

DECO-MAGAZINE 22 3/02

Circulation: 12 000 copies

Industrial magazine dedicated
to turned parts:

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DECO-MAG 22 is available in
two versions:

- English / French / German / Italian
- English / French / German / Swedish

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Ladies and Gentlemen,



For this edition of the DECO Magazine, the Tornos specialists have prepared a great menu that will enable you to make the best use of their information and data

In the chapter of the tricks, Stephane Carozza shows us how to mill in counter-operation by means of platen 2. This «simple trick» allows you to mill in extreme conditions. As a new option, the high pressure drilling with 350 bar offers another great solution that gives you the ability to machine bores with a minimum diameter of 0,8 mm up to a depth of 50 mm !

In the range of our innovations, you will discover the new version of DECO 13a, MULTIDECO 32/6i and MULTIDECO 20/6 hp. All these products have been developed to meet the high requirements of modern industry. Moreover, they take advantage from the power of TB-DECO.

DECO machines operating in the sun ? TORMEP allows us to discover the market of turned parts in Brazil. The highly successful story of this company owning several Decos proves that performance has no borders.

Motorex, our frequent partner in the DECO Magazine, explains to us all details related to hydraulic oil. Last but not least, you will discover a global partner for long turning: the WIBEMO company.

As listed above, the edition 22 of the DECO Magazine is very powerful. It perfectly illustrates TORNOS' wish to constantly offer more solutions that really correspond to today's and tomorrow's requirements. It also shows the will of our company to launch innovative and efficient solutions on the market of turned parts.

If you have any questions or remarks about the DECO Magazine, do not hesitate to communicate them to the following e-mail address : decomag@tornos.ch.

Should you have questions or comments concerning the technical articles, our specialists wait for your mails at following address: contact@tornos.ch.

I wish you pleasant reading

Pierre-Yves Kohler
Editor

How to perform counter-operation milling using platen 2

The exceptional versatility of the TB-DECO and vast kinematics available for the DECO machines allow the operators to perform very clever operations...

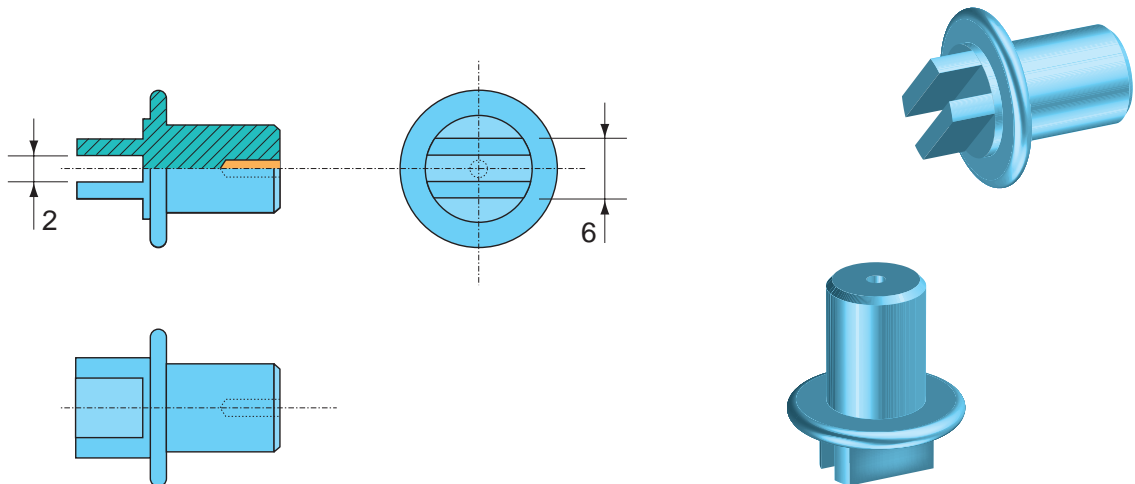
In this particular case, operation milling is impossible owing to the fragile nature of the part and because the number of tools for the DECO 10 limits machining facilities with tools working in counter-operation.

1. DESCRIPTION

Machining a part clamped in a counter-spindle with the miller on platen 2.

To machine the part below, it is impossible to mill the flats and slots as a main operation, because in this particular case, holding the part causes a problem.

On the other hand, it is possible to carry out turning and drilling as a main operation and then proceed with milling with the part in the counter-spindle and the cutters on platen 2.

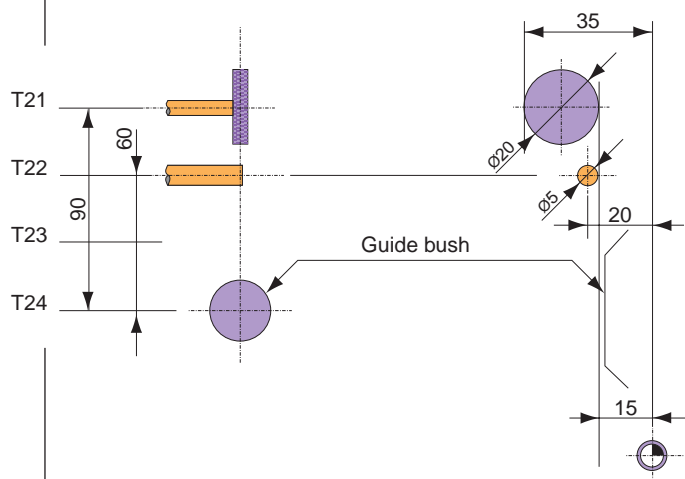


In this example, the slot will be executed with a circular cutter mounted in position T21 and the flats will be executed with an end miller, in position T22.

To machine these two operations, position T24 (blank position) must be facing the guide bush to avoid any collision between the tools from platen 1 and those of platen 2.

The millers are positioned by axis X2 and the milling operations are executing by displacing (X4) the counter spindle.

2. POSITIONING THE MILLERS AND COUNTER-SPINDLE



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How to perform counter-operation milling

3. TOOL CATALOGUE

For this particular example, 4 tools will have to be created:

We would like to point out that when machining with a circular miller or end miller, platen 2 will be in the following position: T24 facing the guide bush.

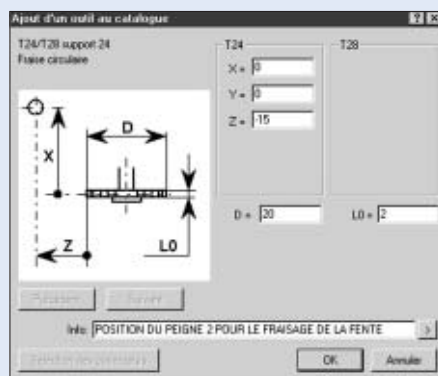
This is why it is necessary to create 2 fictitious tools in position T24.

The first tool will be used when working with the circular miller and the second, when working with the end miller.

Comment: For points a) and b), only the X and Y geometries are needed.

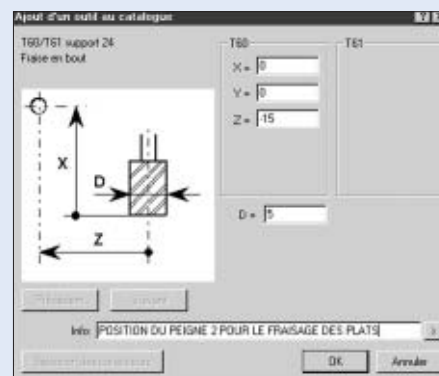
a) T24/T24

defines the position of platen 2 for milling the slot



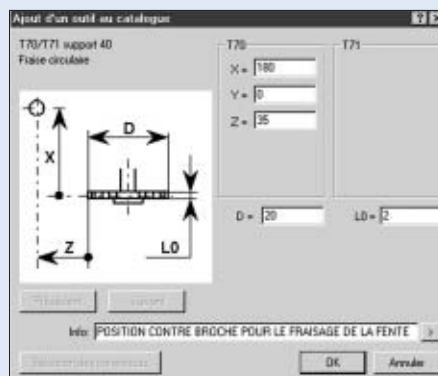
b) T60/T24

defines the position of platen 2 for milling flats



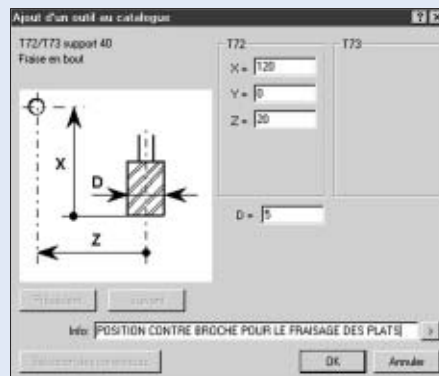
c) T70/T40

defines the position of the counter-spindle for milling the slot



d) T72/T40

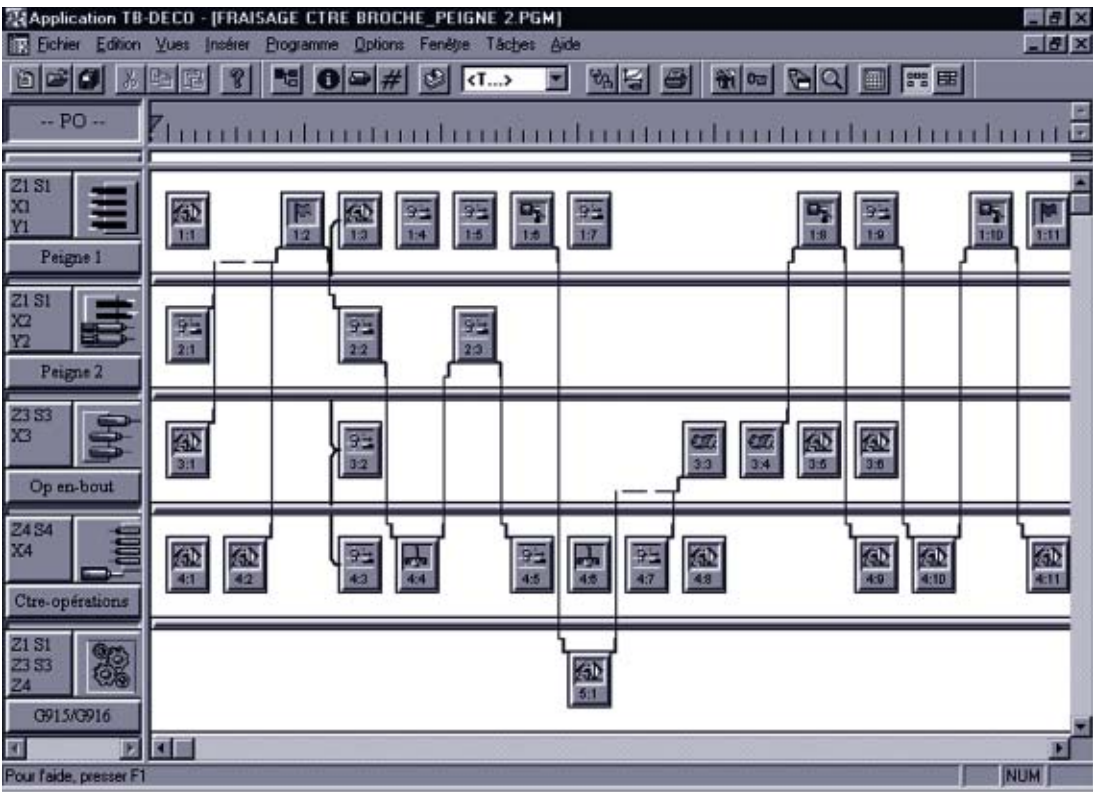
defines the position of the counter-spindle for milling flats



Comment: The distance between positions T24 and T21 is 90 mm. Consequently, the geometry X4 is 90mm x 2 = 180 mm (diameter value).

Comment: The distance between positions T24 and T22 is 60 mm. Consequently, the geometry X4 is 60 mm x 2 = 120 mm (diameter value).

4. PROGRAM



Operation 2:2	Indexing of position T62 support T24 G1 G100 Y2=0 T62 G1 G100 X2=6 (In this example, the width over flats is 6mm)
Operation 4:3	Displacing the counter-spindle to face the end miller T72 G1 G100 X4=0 Z4=10 T72
Operation 4:4	Milling flats
Operation 2:2	Indexing position T24 support T24 G1 G100 Y2=0 T24 G1 G100 X2=0
Operation 4:3	Displacing the counter-spindle to face the circular miller T70 G1 G100 X4=0 Z4=10 T70
Operation 4:4	Milling the slot
Operation 1:6	Front turning T11
Operation 1:8	Rear turning T12
Operation 4:7	Position of the counter-spindle for extraction

With this number you will discover the extremely high potential of high-pressure drilling at 350 bar as well as the other two new options to maximize the capacity of the DECO machines.

Client application

*This specific application does not, as yet, have an option number.
A high-pressure drilling device at 350 bar – what phenomenal power !*



Application

Executing bores at diameters less than 1.2 mm in highly demanding materials (titanium or stainless steel, for example) is now possible whilst ensuring high quality and maintaining minimum drift!

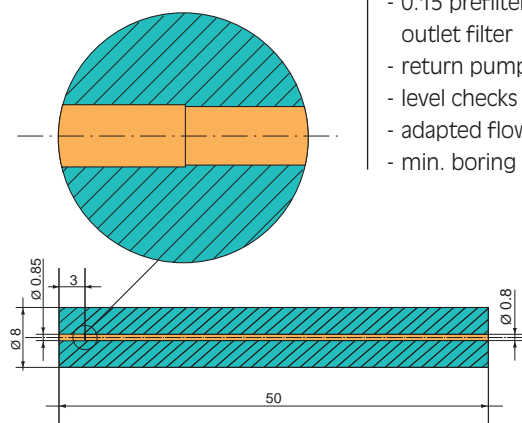
Numerous areas of activity require the execution of ever more precise and complex parts. The constraints imposed on machine manufacturers are becoming more and more complex. The innovation work at TORNOS, which supplies customer-specific solutions, never stops. In the medical sector, in particular, machining developments in bio-compatible substances are on-going.

The high-pressure drilling system, marketed by TORNOS since 1998, did not allow the execution of holes with a diameter of less than 1.2 mm owing to a lack of pressure (power). In fact, this device only achieved a maximum of 140 bar.

Nowadays, the new system is capable of 350 bar! Thanks to numerous practical tests, we were able to demonstrate that it was possible to drill holes with a diameter of 0.8 mm over a depth of 50 mm in the most demanding of materials.

These results are achieved by using special drills and by constantly cooling the tool head; the microscopic chips are instantaneously ejected by pressurized oil.

This new device, which is the outcome of numerous tests and studies, is now available for all the DECO machines and clearly demonstrates the intention of TORNOS constantly to offer solutions, so that its clients can go that step further and really benefit from DECO!



It is now possible to complete more and more complex parts and master the entire machining process, prices and lead times.

Comment

Special attention must be paid to the preparation of the tapping hole, the viscosity and temperature of the oil. The flow rate of the cooling fluid must be constant. Use of an oil cooler (option 5460) is recommended.

This device requires option 5017 (interface with peripherals)

Compatibility

All DECO machines

Technical characteristics

- unit independent of the machine
- 80 liter tank
- motorized pump, 5 cm³
- outlet pressure 350 bar
- 0.15 prefilter and 0.025 mm outlet filter
- return pump
- level checks
- adapted flow rate and pressure
- min. boring diameter 0.8 mm

Results

- bored materials: stainless steel 303, 316L and titanium.
- boring tool, dia. 0.8 mm with oil hole
- boring depth 50 mm (62 x diameter)
- material rotation: 10,000 rpm
- lathe feed: 0.002 mm
- mean deviation over 50 mm: 0.05/0.1 mm

Option 5255

20 bar pump with three independent outlets

Application

This device is intended for the use of tools lubricated from the inside. The three outlets mean that machining capacity has increased considerably.

It is now possible to use such tools for operations and counter-operations!

Each of the three outlets can be engaged or disengaged independently of the part program.

This option also allows for an increase in the volume of oil and its flow rate, thereby ensuring improved cooling of the machining area and better chip evacuation.

Comment

This group is identical to option 5250 but also comprises three valves so as to combine the outlet positions of the lubricant on the end unit or on the counter-operation station.

This option cannot be mounted simultaneously with option 5250 or 5252 (conventional 20 bar pump) and requires option 5017 (interface with peripherals)

Compatibility

DECO 13a, 13b and 13bi

Technical characteristics

- additional 60 liter tank
- controls for M functions for each of the outlets
- this device is available ex-works; a TORNOS engineer will be pleased to provide a retrofit.



Option 0950

Light clamping on the main spindle

Application

This device is designed to replace the clamping system of the main spindle with a light and adjustable clamping system.

This will make it possible to adapt the clamping force to the material bar. A very high-quality bar (e.g. Ra 0.1) can now be clamped without it being marked.

A specially profiled bar (e.g. fluted profile) can also be clamped without the profiles suffering any deformation or crushing.

This device also allows the operator to master fine clamping when using a tube made from thin walled material.

Comment

This option comprises a set of spring washers and the pertinent tooling for mounting this unit.

The use of this device means that it is no longer possible to achieve the max. clamping force of 650 daN.

The adjustment of the actual clamping force is determined by

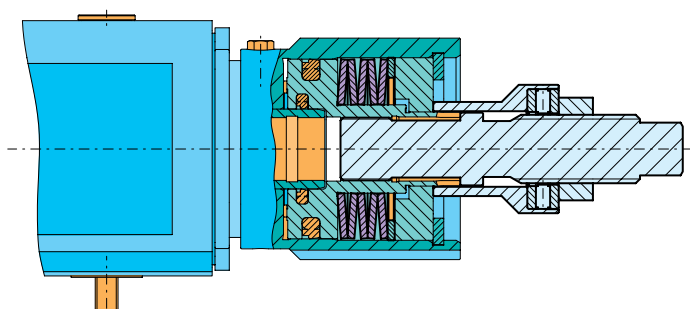
the operator – there is no automatic control unit for selecting the clamping force.

Compatibility

DECO 13a, 13b and 13bi

Technical characteristics

- permanently adjustable force
- max. force of 460 daN

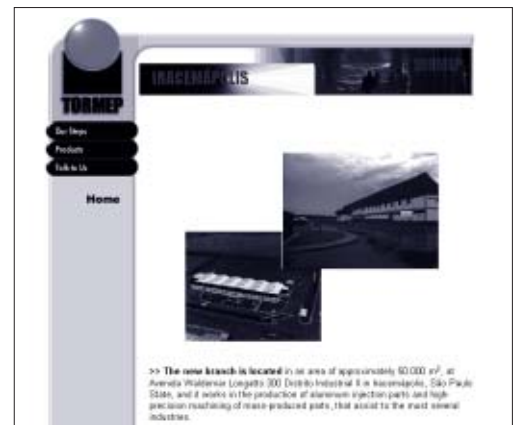


Brazil –

an underestimated partner...



In this edition of DECO Magazine, we would like to help you discover new countries. To achieve this, DECO Magazine visited the Tormep company located in Brazil.



For those of you who do not know Brazil, it is quite easy to confuse its capital, Brasília, with that of Argentina (Buenos Aires). This name is also easily spoken in the same breath as football, carnivals and sun-drenched beaches.

However, it also covers industry, commerce, technology, the service industries and agriculture... It is a vast country with a surface area of more than 8.5 million km² and 169 million inhabitants. Its gross national product amounts to more than 500 billion US Dollars and is growing at a respectable rate, despite showing up weaknesses.

Tormep could pass as a grain of sand in this vast, South American market, but we are looking at a company with two production sites in the cities of Campinas and Iracemapolis, in the state of São Paulo. This company employs 220 staff and this year, achieved gross

sales of approx. 30 million R\$ (13 million US Dollars). In the Brazilian machining Tormep ranks amongst the top quality group of companies. Their parts production for such major clients as TRW, Xerox, Robert Bosch, Valeo, Magnetti Marelli, Arno, Electrolux and Multibras is steadily on the increase. The main competitors of Tormep in the small parts turning sector can be counted on the fingers of one hand, but it should be said that throughout the country as a whole, there are about 500 companies offering similar services, mainly in the south and south east of Brazil.

How did Tormep succeed in standing out from all the other companies? "We re-invested 80 % of our profits in modernizing our fleet of machines", was the answer given to us by Mr. José Mario Lanelli, Chairman of the company. Whilst a

large proportion of the competition is working with run-of-the-mill machines, Tormep is constantly seeking out the latest technology machines, to develop its company. The result is that Tormep is the biggest client of TORNOS in Brazil. These companies use seven machines from the Swiss company, two SAS 16.6 and five DECO machines. It also has a lot of cam-operated lathes which were purchased over thirty years ago by the company.

TORNOS machines only represent 10 % of the total of Tormep's fleet of machines, whilst according to Mr. Lanelli, they offer a maximum contribution in producing high-quality parts for the aeronautical and car industries, the electronics industry and for electrical domestic appliances. Tormep, for example, manufactures the axes for the Xerox photocopying machines, the bottom aluminum parts of Arno domestic irons and the axes for the components of the French Valeo



company, a major supplier to the automobile industry, exporting to Mexico.

Mr. Lanelli has been familiar with TORNOS products since he was 14 years old, when he worked in a small parts turning shop. "They were already known then for their good quality", he said. Of Italian descent, the boy grew up and completed his technical training. He created a partnership with a few friends and in 1964 established his own small parts turning company,

forcing the company to open another plant at Iracemapolis on an area of land of 45000 m² with a built-on surface area of 6000 m².

Nowadays, Tormep is one of the large Brazilian small parts turning companies. It has certification to ISO 9000 and 9002 and is preparing for the TS, the certification, according to Tormep, to replace all the others vis-à-vis all car manufacturers. Tormep is also active in protecting the environment. It encourages awareness in its em-

were a great help to Tormep. Apart from guaranteeing high-quality parts, they offer increased flexibility and considerably speed up the production process. "With a TORNOS machine, we were able to cut production time by up to 40 %".



Icape, which he gave up a few years later to devote himself entirely to Tormep, the company he created in 1966. In order to manage his business in the best possible way, Mr. Lanelli attended company economics and management courses, as well as studying economic and financial sciences. His company, located in the "Industrial Park" – a district of Campina – has been growing consistently and now occupies a surface area of 8000 m², including a built-on surface area of 6000 m². With the growth of the town of Campinas (the town takes up 801 km² for 968,172 inhabitants), this site was earmarked to become a residential area, thereby

employees and encourages the recycling of industrial waste. "Everything is collected together and sent for recycling or processing". To do this, we call upon specialist companies, that sort the chemical elements and provide adequate processing, Mr. Lanelli told us.

The fact that the company is part of one of the largest countries does not, of course, shield it from attack from the many hundreds of smaller Brazilian machining companies, which are pushing down prices with the aim of unsettling the market. Against this background, the TORNOS machines

The machines produced in Moutier enabled us to proceed with the complete production of a part and with much faster setting times. This allows us to guarantee large-scale and faster production, which in turn is reflected in the price and lead times and corresponds to our customers' just-in-time policies. Another benefit is the high degree of repeatability of vast numbers of measurements to meet the requirements of customers scattered throughout the world.

Programming the TORNOS machines is also carried out by all Tormep engineers. Mr. Ocimar Mariano da Silva, head of produc-

Brazil – an underestimated partner...



tion for the company, explained that "the TB-DECO software means that machine programming can be carried out on an external PC away from the machine, allowing us to execute virtual pre-production simulations as such". Walcemir Gomes Ribeiro, a company engineer, summarizes in one sentence what the TORNOS concept has come to mean for him : "Anyone capable of building such highly-developed machines cannot allow himself to forget anything. It is very difficult to make a mistake and the programming security is very high".

Mr. Ribeiro learned how to use a TORNOS machine with an engineer from Moutier. However, he lacked the programming training – "I learnt everything all by my self" he said.

Apart from investigating means of increasing the productivity of parts executed, Tormep is also investing in rationalizing production by encouraging the creativity of its employees. They introduced a new "Execution" project that encourages employees to submit and try out new ideas. They are also involved in a profit-sharing scheme and benefit from a friendly atmosphere with the management. Almost 90 % of employees are engineers who have undergone practical and theoretical training at Tormep, with the training supplied by the machine suppliers.

Using these strategies, Tormep was successful in overcoming the difficulties facing the Brazilian market,

which was badly hit by the rationalization of electricity as enforced by the government last year (happily this is now but a bad memory). They were also able to rise above the Argentinean crisis and the gradual depreciation of the Real against the Dollar. The company's gross sales in Reals went up by 30 % compared with sales four years ago. However, the problem is that the deflation of the Dollar is putting strong brakes on the import of new machines. Mr. Lanelli explained that "four years ago, whilst one dollar was worth 1 Real and 20 Centavos, our gross sales rose to 22 million Reals, which corresponds to a value of 20 million dollars. This year, we shall achieve a turnover of 30 million Reals, which corresponds to a value of 13 million dollars given the exchange rate of 2 Reals 50 Centavos. The difficulties of maintaining the rates of machine imports can easily be seen."

Despite everything Tormep invested 2.4 million US dollars between January 2001 and April 2002 purchasing machines for the Campinas plant and a further 1.4 million US dollars to fit out the Itacemapolis plant. In order to increase the returns from strong currencies so as to invest in new plant and machinery, Tormep looked to new horizons – namely exports. The idea is to offer small turned parts to customers in Mexico and the USA.

Tormep is still continuing to analyze its markets and TORNOS wishes it a lot of success.

According to Mr. Lanelli, the local agent provides a good and efficient service. The local agent, Mr. Hans Peter Jaggi understands the customers' problems and works out fast and efficient solutions on behalf of his clients.

Precimac

Precimac Comércio e Representação de Maquinas de Precisão Ltda is the agent of TORNOS in Brazil. Managed by a Swiss national, Mr. Hans Peter Jaggi, who has a vast amount of experience in the machine sector, Precimac has been working for TORNOS



since it was established in 1994. Apart from Tormep, Precimac sells TORNOS machines to many other Brazilian companies, such as Autocam do Brasil Usinagem Ltda., Parker Hannifin Industria e Comércio Ltda and Conexao Sistemas de Protese Ltda amongst others.

In Brazil, TORNOS machines are essentially used in the car industry, the electronics industry, dental medicine, the orthopedics industry, the aeronautical industry and also in the packing industry.



MOTOREX-Focus:

Always under pressure – hydraulic oils

Hydraulics involves the transmission of energy and signals in liquid form. It transmits the force and power for starting-up, control and motion. In the majority of cases, pressurized, mineral-oil-based or synthetic fluids are used. However, these hydraulic systems are being used less and less for modern automatic lathes; the trend is to demand ever more from such machines and we shall now highlight some of the significant points.

The MOTOREX laboratory carries out numerous valuable analyses for its industrial clients. What is more, they are completely free of charge.

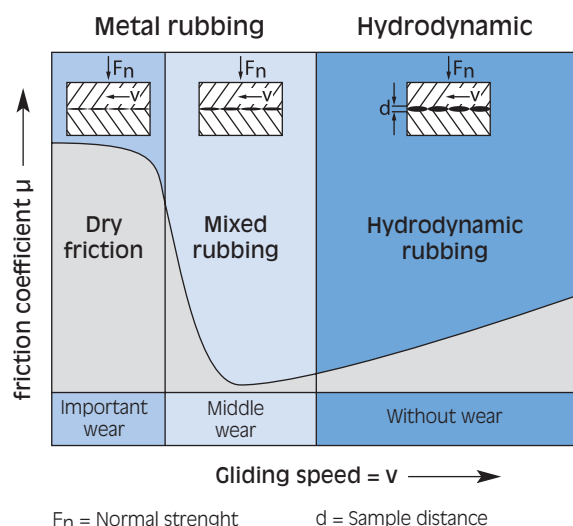


The principle of lubrication specifies that two moving surfaces must be separated from each other by a lubrication film within a specific temperature range. In this context, the requirements and main tasks of the hydraulic fluids are as follows:

- ◆ Prevention of wear, corrosion, pitting (crumbling of elementary parts along the material surface), oxidation and rust.
 - ◆ Stability of properties – these must be guaranteed over the longest time possible.
 - ◆ Ability to maintain dirt in suspension and then remove it – with the same applying to water absorption (EPD additives).
 - ◆ Convenience – the fluid must not foam and must be compatible with the most commonly used sealing materials.
 - ◆ Good compatibility with the environment (e.g. bio-degradable for MOTOREX OEKOSYNT).
- When operating temperatures are very low, Stick-Slip additives ensure smooth movement.**



Let us
consider some
of the
major points
from
the menu



The Stribeck curve shows us the relevant friction and wear values.

1) Prevention of wear

When some parts of the machine rub against one another, this causes a lubricating film to be produced. This film must achieve a certain thickness so that the two metal surfaces are efficiently separated. Apart from speed, this film depends above all, on viscosity, temperature and the current load.

It goes without saying that it is not always possible to avoid certain unfavorable production combinations, such as excess loads, high temperatures and low speeds. This could give rise to the different metals making contact. Some oil components are therefore of vital importance. The additives generate a chemical reaction with the metal surface, thereby forming protection layers. The HLP oils have such additives (for example, MOTOREX COREX HLP ISO 2 – 680).

2) Versatility of oils

Brilliant: hydraulic fluids for many areas of application.

The major benefit of hydraulic fluids intended for several areas of application is that these fluids al-

ways have the same viscosity required, irrespective of the ambient temperature. This is achieved by the viscosity index correctors (additives). For small parts turning, with respect to lathes not necessarily working 24 hours around the clock, down-times definitely affect the thermal behavior of the machines and their hydraulic systems.

The fact that the fluids can be applied to several areas of use also simplifies storage and minimizes the risk of interchangeability, thereby leading to a significant reduction in capital commitment (e.g. MOTOREX COREX EP IV).

3) Ideal: regular checks

Downtimes represent a significant criterion when reaching a commercial decision on the hydraulic fluid to be used. The precise state of the oil and its ability to maintain its properties can only be established by way of precise analyses.

MOTOREX is fully equipped for this task. In its specialist laboratory, the company analyses the pertinent properties of hydraulic fluid. The laboratory can also analyze some of the mixture with another oil and detect any micro-particles of metal. The MOTOREX after-sales service is able to interpret the results and give you professional advice.

If you require more information on 'hydraulics', please contact the MOTOREX experts at the following address:

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CH-4901 Langenthal
Or send us an e-mail :
motorex@motorex.ch

DECO 13a

Changes for 2002

The DECO 13a machines have generated a consistent increase in sales, thereby ensuring their continued success. Since their launch at the end of 1999, the DECO13 has witnessed a rapid expansion in sales with a good number of clients now possessing more than one.



Consistency and longevity are guaranteed – a new task, or a unit that is launched today, can be perfectly adapted to the first DECO 13 machines, which made their appearance in 1999.

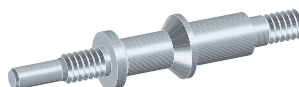
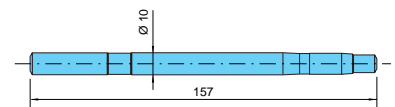
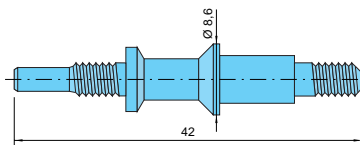
Unlike the DECO 7/10 machines, there is no deviation for a more simple version. The company offers the DECO 13bi for the more straightforward parts. The new DECO 13a was presented to the world for the first time at the SIAMS trade fair, held in May this year. It goes without saying that all the options already available for the DECO 13 are compatible with the DECO 13a.

Almost 600 DECO 13 machines have been installed since the end of 1999. This success naturally encouraged us to continue to improve the solution proposed. The technological changes nearly always occur unnoticed but make their presence felt in the undisputed efficiency of the machine.

The gap in the market for sliding headstock machines relates to the 13/16 mm diameter range, which represents the greatest number of machines installed in small parts turning shops. To meet this vast requirement, all manufacturers concerned have several lathes corresponding to this capacity range. With their varied and fixed kinematics, these lathes are endeavoring to meet the most diverse market requirements, with some having to be adapted to accommodate specific options (connector industry, medical sector etc.).

TORNOS offers a complete, highly modular solution with the DECO 13a, whose performance is always

at its technological peak and which is constantly being upgraded. For example, the TB-DECO software naturally follows the pattern of PC performance, with version 6.00 soon ready for sale.



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Let us look at some of these modifications via the menu:

Cowling

The new version ensures good thermal stability by the flow of air inside the electrical compartment and also an extremely good seal, mainly when drilling under high pressure or during machining, which causes considerable oil splashing.

Seal

The internal armature was completely redesigned. The internal partitions and walls are secured by casings, which guarantee a perfect seal.

Z1 drive kinematics

The spindle slide guide was fully rethought. The rails and shoes are much stronger and have been re-located (the guide shoe tracking is

dle and counter-spindle at a maximum of 10,000 rpm. (The old versions were able to reach speeds of 12,000 rpm but in practice, they were not taken beyond 9000 rpm). The stops and indexing are more efficient, the overall motor dimensions are reduced by 23 %, whilst torque has gone up 20 % and the overall amplifier dimensions are 20 % less. The Fanuc also guarantees better rotational stability and acceleration performance, as well as improved sealing. In practical terms, the reduction in cable volume, by using smaller sections and connecting the modules with only one cable, as opposed to 3 previously, means that assembly and maintenance times are reduced and hence reliability increased.

From the spring of 2003, the DECO 13a will be fitted with a new performance-enhancing element,

namely a new, high-performance SBF-216 bar feeder, which will be controlled by the machine itself.

This bar feeder will be a variation of the SBF-532, (dedicated to DECO 20a and 26a) launched in March of this year at the SIMODEC and not yet widely operational at the production sites. This new bar feeder will have the same assets as the larger model, such as the multiple guide channel and interchangeable pusher, operated by a simple ratchet mechanism.

Would you like further information about this new version ? Our engineers will be pleased to assist. Please contact:

TORNOS – Customer Services
Tel 0041 32 494-4444

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quite different). These changes result in better shock absorption of machining stresses, increased strength and much easier installation of the drives.

Axis Y4

Compensation of the moving mass of axis Y4 by way of a spring reduces mechanical stress, thereby increasing the useful life of the drives and guide elements.

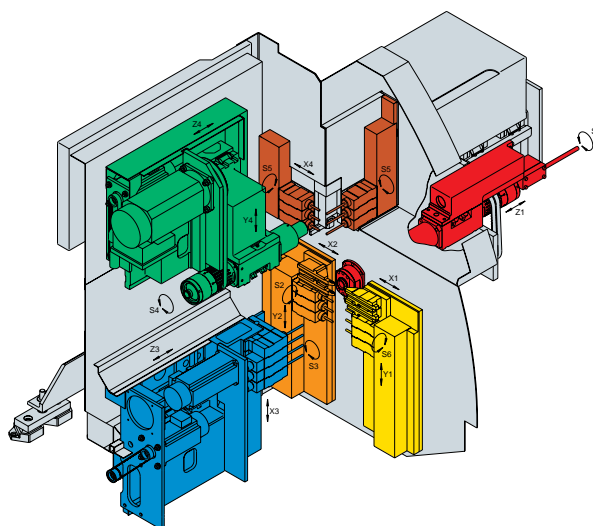
What is more, the above four modifications have reduced the noise level generated by the machine.

Fanuc 16i TB control

The new generation of Fanuc sets has led to notable improvements in motorization and control: the increase in memory to 64,000 steps now means that more and more complex parts can be executed. The new spindle and axes motors guarantee exemplary behaviour of the motors, which rotate the spin-

DECO 13a and its 10 axes

The DECO 13a machine has 10 numeric axes (+ 2 C-axes). We would like to demonstrate what this includes for just one axis:



- ◆ section of the frame
- ◆ a slide
- ◆ guide rails
- ◆ a mechanical mobile element (headstock or tailstock spindle, tool system)
- ◆ auxiliary motorization (tailstock rotation or tool rotation)
- ◆ ballscrew
- ◆ axes motor
- ◆ movement, positioning, synchronization controls...

All this, multiplied by 10 equals the DECO 13a !



E

MULTIDECO:

Presentation of the latest features

TORNOS presented a brand new concept of an PNC multispindle lathe at the EMO 2001 – an “all-in-one” turning unit (machine, incorporated bar feeder, universal swarf conveyor) – namely the MULTIDECO 32/6i.

MULTIDECO 32/6i



This first world presentation was soon followed by the actual launch of the machine and use of a new cowl, to provide improved convenience of use and accessibility. The machine has sliding doors on the side for complete removal of the top section. The taps for adjusting the cooling flow are located on the outside of the machine. Movement of the counter-spindle is controlled by a safety mechanism, thereby reducing counter-operation dead time, which frequently result in long running times. A new counter-spindle with simplified setting, which is fully hydraulic, provides optimum clam-

ping. A numerically controlled counter-spindle axis with a safety mechanism considerably increases the speed of the machine.

The addition of a cross slide on the station allows for more longitudinal turning operations whilst the operating console with support and colour screen enable the operator to work properly on both sides of the machine.

The Fanuc 16i TB numeric control has a better performance whilst the new Alpha i drive generation is more powerful and compact.

In designing this new generation of machines, the engineers of TORNOS took account of the experience gained by the users, so as to improve operator friendliness and convenience of use.

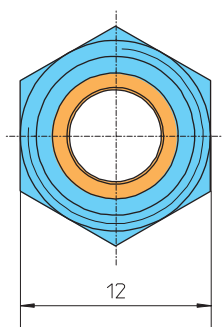
One of the greatest requirements in the machining sector is, without doubt, precision. Since cooling of the workpiece spindles now takes place by a cutting oil flow system, the machine temperature stabilizes very quickly and temperature fluctuations are now controlled. Precision is remarkably improved.

MULTIDECO 20/6hp

The first NC multispindle machine, capable of executing complex parts at production rates comparable to cam-operated lathes, has been designed by TORNOS: – the MULTIDECO 20/6hp (high productivity).

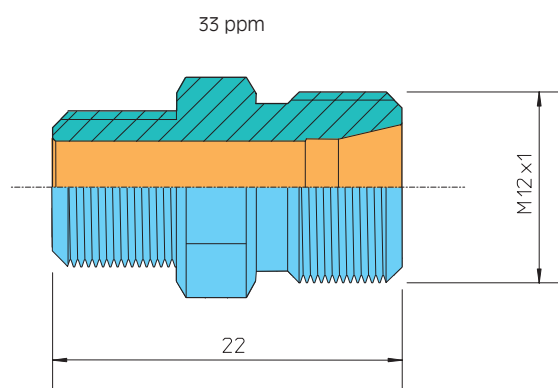
The Swiss company never quite succeeded in its aim of combining very high productivity and complexity, up until now. Since 1997, with its first MultiDeco machines, TORNOS can now offer an even more efficient solution to the multispindle market, thanks to the TB-DECO concept. These machines are capable of executing parts at production rates never before achieved with respect to numeric control and high levels of complexity. The advantages of the DECO concept, namely the combination of versatility and productivity are always appreciated by clients.

Up to now, the cam-operated machine production rates remained unequalled and it was the aim of



TORNOS engineers to achieve these exceptional productivity rates.

Thanks to the new developments in its Research and Development department, TORNOS SA has now found a way to compete with the



productivity rates of the cam-operated machines for medium to complex parts, whilst retaining machining by longitudinal turning.



►►► MULTIDECO 20/6hp

This achievement is attributed to the inventiveness and know-how of its designers who have made various modifications and adaptations, i.e. at mechanical planning level, control electronics, safety (mechanical) and parts recovery. These changes resulted in increased acceleration and faster movement of the different axes, thereby considerably reducing unproductive down-times.

This machine was developed so that it could react better to market requirements, where more and more complex parts at low cost are in demand. It could execute parts up to 24 mm in diameter and 40 mm in length at the exceptional rates of 30-45 parts per minute, depending on complexity.

MULTIDECO 20/6hp is part of a range of multispindle machines benefiting from the advantages of the

DECO concept: programming in masked time, its exceptional versatility, its high rate of productivity and reliability. Added to these are the mechanical properties that guarantee high precision.

With its MULTIDECO range, TORNOS can offer modern and high-performance machines thereby enabling their clients to face the challenges of modern industry with zest.

Nowadays,

many leading companies are making use of the MULTIDECO technology, to quote Berger in Germany as one example.

Berger, which was established in 1955 has developed into an international company with a workforce of around 1,300 employees. Its head office is located in Memmingen in Germany and its European production sites are located in Ummendorf and Ottobeuren. Other production units were opened in Canada, the USA and Switzerland. Berger exports its products to North America, Mexico and within Europe.

Berger is an exclusive supplier. The company produces small precision turned parts with a diameter of 4 to 52 mm and lengths of up to 220 mm. Its parts are used in the electronics, medical, and pharmaceutical sectors, but above all, in the automobile industry. The materials used for manufacturing the parts are stainless steel, chromium steel, carbon, brass, aluminium and copper.

The strengths of the Berger company are its ability to serve its partners and to react precisely to their requirements. Production takes place in several stages: the first is in participating in development, followed by the development of the manufacturing process. The company then produces a prototype so that it can start with a pre-series run of the product on a production machine. If the pre-series run proves satisfactory, Berger proceeds with a series run of the parts, which then undergo quality testing prior to delivery. No faulty or un-

finished product ever leaves the plant.

Berger is a major partner and key supplier to the accessories industry. This company is certified by several large clients, including Bosch, Siemens, Daimler, Ford, General Motors and so on.

The fleet of machines at Berger comprises approx. 700 machines of different types. These range from single and multispindle lathes to transfer and grinding machines. Berger has about 86 TORNOS cam-operated multispindle machines. The company purchased its first

MULTIDECO machine in the autumn of 1999 and by June 2002 it possessed 17 machines. The company has just signed an order for several more machines. Berger is the largest European client of TORNOS with respect to MULTIDECO machines.

TORNOS is also the largest supplier of machines to the Berger company.

For further information on the MULTIDECO, please contact our experts on ++41 32 494-4444.



Mr. Jaquier
and
Mr. Berger

Searching for a global partner for small parts turning...

In this article, we are continuing with the series that presents partners for small parts turning. For this edition, our journalist visited the Wibemo plant at Rebeuvelier in Switzerland.



The new ultra-modern Wibemo plant, located right in the open countryside.

Making a slight detour along a small country road, there suddenly emerged a small village in the Jura region, completely lost in amongst the meadows. After having crossed this quaint sun-drenched village, we stumbled upon the ultra-modern buildings of the company – what a contrast!

We were welcomed by Mr. Liechti, head of customer services. Right from the start of our interview, the latter pointed out that the company was not a supplier of tooling, but rather a specialist in providing relevant customer solutions. Wibemo is a complete supplier disposing of a vast range of different products. Many customers rightly consider the plant as a decentralized purchasing center.

The company responds to the most demanding requirements in the following areas: hard metal

chisels with hard-soldered inserts produced by the company, clamping devices, bush guides and chucks, equipment for bar feeders, pushers, cable clamps etc., also produced by the company, Schaublin chucks, tool holders, centering, drilling, threading and tapping tools... (including those specific to the DECO).

The company also has a wide variety of cutting tools in stock and will supply all types of specific tools on request. Knurling wheels and diamond grinding wheels complete this range.

As we soon found out, Wibemo is both a retailer and a producer and can supply anything with respect to cutting tools, clamping equipment, equipment and spares for bar feeders and old cam-operated lathes.

As Mr. Thierry Bendit, the Manager, pointed out, the company is governed by an overriding concept: "By combining our own production with that of other manufacturers, we can offer a wide and complete range, so that our customers can really benefit from major advantages in terms of simplicity and technical expertise..."

To go one better, Mr. Liechti emphasized that the company's strong points "were a large stock, short lead times, excellent technical knowledge and extreme flexibility in handling business, to the point where numerous clients in the small parts turning industry regard us as their purchasing department". Questioned about the quality-to-price ratio, our hosts proudly admitted that the Wibemo prices were competitive throughout Switzerland and generally of interest in other countries. In fact, the entire "service" section represents a real competitive advantage for its customers.

Despite an approach that can be considered as that of a retailer, Wibemo also has considerable technical expertise and a vast range of innovative products.

In the hard metal sector, for example, one of the recurrent problems is the real need to have hard metal qualities that allow for perfect

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machining of such metals as soft steel, and for executing special runs that require the machining of copper and bronze. In order to allow their customers to benefit from solutions that are consistently being fine-tuned to their requirements, Wibemo developed close relations with the new-quality carbon producers, so as to dispense with the problems of cutting edge bonding. This problem, which is associated with the fusion of certain copper alloy components and carbon, is known by all those in the trade, but unfortunately has still not been resolved. The new carbon versions sold by the company completely eradicate this problem (see test results below).

With the same concern of wishing to provide its customers with assistance, this company markets a slide for bars undergoing small parts turning, which was produced by a manufacturer of the region.

Wibemo is active throughout the world. When asked about the effects of the latest market trends, the managers of the company confessed that they were quite affected but it was thanks to the extremely wide range of products that it was able to face up to the situation. Some sectors are doing quite well, such as the medical, horology and automobile sectors. The demands are clearly much more stringent than before, since the market has become more difficult. Mr. Liechti confirmed: "The problems are more complex and there are many more technical requirements because nowadays, those companies in work are producing more complex parts, which means that we must always adapt to these "...

At human level, this company acts as a supplier providing specialist advice that is found nowhere else.

If necessary, the customers are supplied with a considerable volume of technical know-how. The Customer Services Department will visit customers, if necessary and tests can also be conducted on their premises.

The Wibemo company today

Established in 1967
15 employees

Sales: CHF 4 million

Markets: Swiss 55%

Export: Europe, Taiwan, India, Japan, USA, Mexico, etc...

Current plant built in 1999-2000

Over the last 5 years: change from a family-run business to a small and medium-sized company

At the time we printed the magazine, the results of the tests done at customer's plant had unfortunately not been completed. They will be published in the next issue along with the technical description.



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Wibemo is the exclusive retailer for this product throughout the world. Almost 100 clients are already benefiting from this... Designed to provide assistance with the loading, handling and storage of bars weighing up to 2 tonnes, this device is available in three options for receiving two boxes, four boxes or even large billets... What is more, these slides can easily be handled by one person alone.

