

DECO MAGAZINE

16

1/01

FEBRUARY

TORNOS

Nouvelle
identification

Eins und eins
macht drei !

Optimum use
of the polygon
function

Nuovi oli da taglio
che aumentano le
prestazioni

Leverans av
världsklass





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IMPRESSUM DECO-MAGAZINE 1/01

Industrial magazine dedicated
to turned parts:

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The changing face for TORNOS TECHNOLOGIES UK Ltd

10 years ago, in November 1990, I began my employment with TORNOS-BECHLER as an applications engineer in the United Kingdom. The company, at that time (including myself) had a workforce of 6 people.

During my turbulent first 5 years, growth at TORNOS TECHNOLOGIES UK Ltd was almost impossible. Our then current range of machines struggled to compete on price and technical specification with our competition, thus our customer base within the United Kingdom declined.

As well documented, approximately 5 years ago, our DECO 2000 range of products began their launch into the market place. We in the United Kingdom, for the first time since the MS-7 cam auto, were able to compete head to head with our major competitors. Our order intake and new customer base increased drastically to a present day level of 70+ machine installations into the UK market place per year.

This level of increase can also create problems, the most important being customer support. Steadily, over the past 3 years, our workforce has increased to a current operating level of 22 people. Of these 13 people are directly involved with the engineering support, offering a high level of applications, after-sales service and spare parts assistance to our end customers.



Early last year, it was plain to see that TORNOS TECHNOLOGIES UK Ltd required a new facility. Extra showroom and warehouse space was essential but, more urgently, the requirement for larger offices and training facilities.

In October 2000 our new "palace like" premises (as described by the Head of TORNOS, Dr A Menth), TORNOS House was opened, still located in Coalville, Leicestershire. In a very short period of time, our new facilities have proven essential in our growth but, more importantly, our customers have seen the TORNOS investment in both people and plant within the UK market.

As TORNOS, Moutier promotes "Let us take up the challenges of the future together". We at TORNOS TECHNOLOGIES UK Ltd understand the need for our United Kingdom operation to continue its growth and increase our market share of

sales with current DECO and MULTIDECO products and the future planned new fixed head products. I am sure that our developing infrastructure within the United Kingdom and planned further investment in Moutier will give us the platform to continue our growth and offer new levels of customer support.



John Stretton

John Stretton
Area Sales Manager

Options,

developments and rediscoveries...

The DECO 2000 comes with a large number of options and devices so that you can maximise your production.

In this edition, we shall discuss devices already well known for other machines and which have recently been adapted to the DECO 2000 13 a (advanced) and b (basic).

Option 5200

6-bucket part recovery unit

Application

This bucket system, available for the DECO 2000, operates to a concept suggested by TORNOS when work was carried out on cam-operated lathes and was not available for previous CNC generations.

For work machined without supervision, the fact that ejected parts can be distributed into various containers at a constant rate means that the production sequence times can be very closely monitored. Where there are any doubts as to the quality of the material, for example, it is possible to sort the parts according to the bar machined!

Should a bar of too small a diameter be produced, the entire incriminated container will consist of parts which vibrate, whilst the other containers would only contain the correct parts! The same applies in the event of an accident, such as a tool break. When restoring production flow, it is easily possible to determine the container from which the quality has deteriorated.

The parts recovery has been greatly enhanced.



Comment

An automation expert produced this device, and TORNOS provides all the services.

Compatibility

This device is supplied ex-works for all the DECO 13 machines and can, in principle, be adapted to all those

machines already in service. If you are interested, please consult us first for a compatibility analysis to establish whether the device can be fitted to your machine.

This device requires option 5210 – the electrical interface for connecting the parts recovery unit.

Technical characteristics

Dimensions:	739 x 440 mm
Bucket capacity:	1.7 litres
Power:	16 W
Electrical supply:	at the machine
Control:	declaration of option by a keep relay.
Facility of selecting bucket rotation after each bar or after a specific number of parts.	

Option for the DECO 13 b

We have already touched on this when the machine was first presented. The DECO 13 b was designed on the technological basis of other DECO products, with the clear intention of incorporating the maximum number of positive elements belonging to this family of machines.

We are now in a position to offer a specific number of options directly inspired from the DECO 13.

Option 4900

Device for extracting, removing and recovering long parts

The long parts produced are extracted by this unit via the counter-spindle.

Diameter of parts being extracted:
4 - 16 mm.

Max. length of parts: 565 mm.

Presented for DECO 13: DECO Mag 12.



Option 5420

Chip conveyor

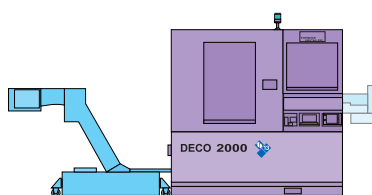
This conveyor removes the swarf from the machine, directly into a collector tank. The cutting oil is likewise stored in a tank away from the machine.

Discharge height: 1000 mm.

Belt speed: 1.3 m/min.

Oil tank capacity: 240 litres approximately.

Presented for DECO 13: DECO Mag 11.



Option 5255

Tool lubrication pump, 20 bars with additional tank

This device considerably increases tool lubrication whilst drilling with oil hole drills or removing vast quantities of material.

Flow rate: 1 to 25 litres/min. adjustable

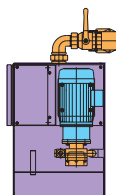
Max. pressure: 20 bars

Nominal power: 1.5 kW,

asynchronous motor

Tank capacity: approx. 60 litres

Presented for DECO 13:
DECO Mag 12

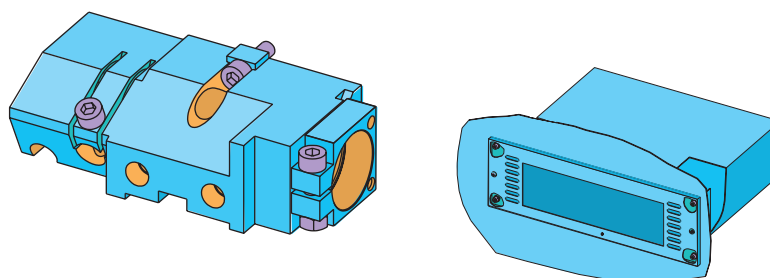


Options 2000

High-frequency spindle

Application

This high-frequency spindle was designed for operations not requiring large amounts of material removal. This device is particularly suited to milling / slitting and cross- and end-piece drilling operations. The air-cooled motor and high-frequency spindle are supplied with a 1:4 reducing gear, based on the working speed range.



Comment

This spindle requires the use of a high-frequency generator (the equipment needed to incorporate this into the machine is available) and the D30 tool holder.

Assembly is designed for position T11, T21 to T23 on the DECO 13 b and for position T11 (T21 without reducing gear) and T34 (T41/51 without reducing gear) on the DECO 13 advanced.

Compatibility

Fully interchangeable between the DECO 13 a (advanced) and b (basic)

Technical characteristics

Spindle speed without reducing gear:	2000-40,000 rpm
Spindle speed with 1:4 reducing gear:	500-10,000 rpm
Output power:	210 W to 30,000 rpm

One plus one equals

three!

SCHAUBLIN staff has been incorporated into the research and development division of the TORNOS SA design structure.



At the time of acquiring SCHAUBLIN SA, we commented extensively on our perception of the quality of the workforce, the almost philosophical approach to the job and the same striving towards precision. We feel that these are extremely positive points which should enable us to go even further in creating products that will meet the requirements of both present and future clients.

After one year's intensive work, we wanted to see how things were going with Patrick Schüttel, project leader for the technical incorporation of TORNOS-SCHAUBLIN products. He is also currently in charge of the "new DECO fixed head machine" project.

DM: Good day to you, Mr. Schüttel. From an employee aspect, how did this merger go?

Well, those involved, regarded this development stage of their work as an excellent opportunity. It is quite obvious that the first six months of incorporation were the most difficult, what with new premises, new colleagues, a new organisational structure and new management systems – to quote but the most immediately obvious – all of which had to be "assimilated" by our new colleagues. This stage is now behind us and I would like to congratulate our workforce. At the same time, it is also essential to congratulate the TORNOS teams, who were assigned to all the different products. Specialists

working on 10-mm capacity machines had to come to grips with the 42-mm capacity machine, which was quite an undertaking. Acquired and routine solutions suddenly turned out to be somewhat inappropriate.

To get an idea of this difference in product, we'll compare ourselves with a car manufacturer, used to manufacturing small sports cars, who suddenly changes course and designs heavy-duty lorries. Like such a manufacturer, we can call on the experience of our design departments specialising in cars and lorries. Keeping to this imagery the test and special applications department could be compared to an F1 team of car designers.

Editorial
Forum
Interview
News
Presentation
Technical
The present

DM: Technically, what constituted the first phase of incorporation?

In the immediate term, we had to be sure that the production of SCHAUBLIN products could be incorporated into our own production system. To do this, all products had to be re-introduced into our production management system and the 3D bodies had to be re-designed. Then, to continue with the process, the commercial division specified incorporation priorities and we had to draw up guidelines on reapplying all the data so as to guarantee perfect industrialisation at TORNOS.

DM: To summarise, if I understood correctly, an "Ex-SCHAUBLIN" technical office was set up in Moutier, with the aim of changing the method of work?

In fact, it's more than that. A vast range of talents were utilised from the designers of the DECO, MULTIDECO and headstock machines. This led to the formation of multi-discipline teams, so as to enhance the experience gained by all and create synergies. All those involved in research and development were affected by this renewal and its consequences.

DM: Could the SCHAUBLIN experience influence the new DECO 2000 products?

Of course! Because of this incorporation, we are two years ahead in large capacity product development. TORNOS does not really have much experience in this sector. The setback compared with TORNOS-SCHAUBLIN products enabled us to benefit from a vast historical background and from the wealth of experience gained by SCHAUBLIN.

In all, the internal engineering concept of these products is the same as the DECO and MULTIDECO products. However, in quite a number of sectors, the wide experience in large capacity machines is being felt and we can now proceed on a very sound and tested basis in the production of a new machine,

which will incorporate the experience gained with the DECO. For example, the headstocks, tooling and machine casing will be radically new systems based on the matching of skills and experience.

DM: Why are you particularly quoting these aspects?

Each part being currently developed is analysed. It is our intention to exploit the benefits without the drawbacks and to match these up in the best possible way. The items mentioned are those that we have already found radical new solutions, maximising the benefits of previous solutions.



DM: Historically, SCHAUBLIN could, on the one hand, be regarded by the market as being a supplier of highly specific products specifically adapted to special turning centre tasks, whilst on the other hand, it could also be regarded as a supplier of "unit" products, such as the CCN lathes. Do you believe that this would be compatible with TORNOS?

Our commercial policy is very different, but we should not mix the commercial and technical aspects. In technological terms, we based ourselves on the DECO platform and designed a new machine, based on SCHAUBLIN experience to a certain extent, but mainly on the experience gained with the DECO in terms of rationalisation and industrialisation. Consequently, this new product will be completely incorporated in the DECO philosophy, which consists in offering a machine with an unbeatable quality-

to-price ratio and allowing everyone to benefit from the latest technology.

By using this approach, we were able to create synergies and benefit from the vast experience of our new colleagues in the design of large capacity products.

We have also taken up and analysed, point by point, all those elements constituting a machine of this type and a large production machine, so that we can produce according to a quality adapted to all requirements whilst providing the overall quality of the product.

DM: This would mean that quality is to the bare minimum and that the machine could only last for a limited time?

Not at all! We do not think in terms of quality to limit the useful life of the machines. What we are doing according to this concept is to avoid producing excess quality and thereby make our clients pay unjustified costs, which in no way affect the results they are entitled to expect from a newly purchased machine.

DM: You are talking a lot about this new product. Could you perhaps unveil some of its characteristics to our readers and give us an idea when it will be launched?

Our aim is to launch this product at the EMO in Hanover.

This is a single-spindle, headstock lathe with a capacity of 42 mm and fitted with 12 axes controlled by the PNC-DECO. It is a high production machine with a high level of



One plus one equals three!



power (nearly 40 kVA). This lathe can be used to machine very simple to highly complex parts and run with 4 tools simultaneously.

DM: *You have already spoken about the integration and the benefits of various existing technologies at TORNOS and SCHAUBLIN, and you've also talked about a positive construction synergy. Basically, what is new in this product?*

One of the typical examples of this addition $1 + 1 = 3$ is the headstock. The solution adopted, which takes account of all the cumulated experience gained, is a novel feature in the turning sector, since this relates to a direct drive spindle (not displaced) but at the same time it is not a motospindle.

As for the tool systems, they comprise 4 rapid change (typically SCHAUBLIN) tools (typically DECO) of a standard type (DIN 69983 HSK). These tool systems, which provide convenience, rapid assembly and unrivalled precision, are not, as yet, available in the wide variety of pro-

duction solutions that we are involved in.

DM: *Would this not mean that it would be difficult to find the tooling for this new product?*

No. Numerous manufacturers with distribution networks throughout the world feel that this product has enormous potential and are currently involved in producing an offer for all tooling required. The requirements of our market are such, that in terms of production, strength and production rates, tooling solutions must be as available worldwide as possible.

DM: *This obviously relates to a new "large-scale tooling development" for TORNOS. Are you not wary of unsettling customers?*

Let us make one thing clear. Even if this relates to an innovation – since with this category of machines and dimensions, we have no option but to go over to another tooling range – overall, the product is different

from the lathes currently on offer.

For the first time, we are talking about a lathe with headstock – thus obviously another type of lathe. On the other hand, our clients will be given full opportunity to familiarise themselves very quickly, because fundamentally, this machine works to the DECO 2000 concept!



Just as the DECO 2000 raised customer expectations with regard to sub-spindle lathes, our aim with this new product is to provide a real positive addition to the current headstock lathe market, by combining experience and DECO technology!

Optimum

use of the polygon function

The entire range of DECO single spindle machines can be used for polygon operations. The aim of this article is not to explain the principle of polygon functioning but to provide greater detail when this principle is applied to the TB-DECO.

Polygon functioning requires the perfect synchronisation between the main spindle driving the part and the cutter used for the polygon operation. To make things easier, the main spindle will be referred to as the master spindle, whilst the spindle driving the cutter for the polygon operation will be referred to as the slave spindle. If this synchronisation is incorrectly programmed, then faults may be observed on the parts.



Radial polygon milling attachment, max rotation speed 8000 RPM.

Function G ?51

Polygon mode is initiated by code G ?51. The question mark identifies the slave spindle number.

For example: spindle S2 to be synchronised, code G251, spindle S5, code G551.

Two parameters must be programmed after G ?51.

1. Parameter R

Parameter R contains the polygon ratio between the master and slave spindles. This ratio will determine the number of faces, which can be obtained for the part.

Reminder: number of faces on the part = number of cutter teeth x polygon ratio R.

For example: parts with 6 faces, cutter with 3 teeth = ratio of 2!

Tip

A ratio of less than 1 can be programmed in R as follows. Take the ratio in the form of a fraction, multiply the denominator by the factor 256 and add the numerator.

For example: ratio $\frac{1}{2} = (256 \times 2) + 1 = 513$. Input R513 and the slave spindle will turn at a ratio of $\frac{1}{2}$ compared with the master spindle.

2. Parameter Q

Parameter Q acts on the angular phase shift expressed as a [°] of the polygon form. If a polygon phase shift is required in relation to another form of machining, then apply the following rule:

◆ Phase shifting in degrees must be multiplied by the polygon ratio contained in the variable R of code G ?51.

Warning

A negative value in parameter Q reverses the slave spindle direction of rotation.

On the other hand, value Q=0 does not reverse the direction of rotation.

Spindle rotation

It is essential that the two spindles are rotating prior to proceeding with polygon operations. What is more, these spindles must be running at a steady speed before engaging polygon mode. A steady speed means that both the master and slave spindles must not be in an acceleration or deceleration phase.

Regarding the slave spindle, the programmed speed must be equal to the future speed required for the polygon operations. This speed can easily be worked out by multiplying the rpm of the master spindle by the ratio R of code G ?51.

Example: ratio R : 2.

Master spindle S1 = M103 S3000.
Slave spindle S2 = M203 S6000.

Tool geometry

Reminder of the theoretical geometries of the polygon unit on the different DECO machines:

Machine	Position	Geometries		
		X	Y	Z
DECO 7/10	T22-T24	0	0	-15
DECO 13	T23-T24	0	25	-25
	T25 (G917)	0	0	-25
DECO 13 b/bi	T11	0	25	-25
DECO 20/26	T22-T24	0	20	-20
	T25 (G917)	0	0	-20

Hold time

A hold time must be programmed after code G ?51 so as to allow sufficient time for the two spindles to become synchronised. If this hold time is omitted, then the start of the polygon form could show up defects (kinks, for example) or even worse, could result in the cutter teeth breaking.

Macro G917

The macro G917 used on the DECO 13 and DECO 20/26 must only be programmed if the polygon unit is to be used on position T25. In this position, the lack of travel along axis Y2 requires interpolation according to a given angle between axes Y2/X2. Consult HELP for further details on the programming of this macro.

Reminder

A lot of the information provided for this tip can be found in the programming Help installed in the TB-DECO.

These Help options are powerful tools, which unfortunately are underused. Please make use of them and treat them as a basis for knowledge.

Example
from ISO code:

G251 R2 Q0
G4 X0.7
G1 Z1=2 G100
G1 X2=10 G100
G1 Z1=-15 F0.05
G1 X2=15 F0.1
G1 X2=35 G100
G250

G95 synchronous feed

The programmed feed rate in the polygon operation must be calculated in relation to the number of turns of the polygon cutter. In order to guarantee this synchronous feed rate G95 (mm/turns) it is essential to configure the "Config broche..." [Config spindle] tab correctly. To do this, select "Automatic reference" and from the scrolling list Sm1=, activate the polygon spindle used, for example, S2.

Next edition:

New macro versions with the TB-DECO version 5.05.



World class supply

Thirty years ago a small family run business supplying high volume turned parts and specialist fasteners was founded. In the three decades that have followed the company has grown into one of the most advanced manufacturing and supply facilities of its kind in the UK.



NEIDA is a global company. From its humble beginnings it has developed its manufacturing and supply chain divisions simultaneously with the result that it can offer one of the most comprehensive turned parts and specialist fastener supply solutions currently available. With the UK manufacturing complemented by NEIDA AG (Switzerland) and a presence in the US, the company is commercially engaged with some of the world's largest corporations.

The founder and chairman of NEIDA, Mr Gerry Brown attributes his company's growth to one simple principle – strategic investment, both in machinery and people. Of this maxim Mr Brown comments, "In order to maintain a leading position in the turned parts market place it has always been necessary to invest in the very latest machine technology. With advanced machines comes the need to employ a higher level of skill in

personnel. As our ability to offer a greater range of precision parts developed, our quality and general administration functions evolved in line with our advanced manufacturing capability."

Although the company has benefited from continued investment, it runs lean. The new purpose built facility at Trentham Lakes, Stoke-on-Trent is in itself a testament to the principle of simple and cost effective operation. From its initial design, the plans were laid to ensure a structured growth of the manufacturing and commercial divisions.

John Stretton, Area Sales Manager for TORNOS TECHNOLOGIES UK said of the building "The first thing that strikes you about NEIDA is the efficiency of the layout which is evenly balanced with the right amount of free space and natural light. In many ways it is very similar to the style of factory used by other leading European manufacturers and is a credit to NEIDA's commitment to creating the optimum manufacturing environment".

NEIDA began manufacturing in the late 1980's with 6 Escomatic coil fed cam auto's, they now run a complete shop of 36 machines and have recently added the very latest NC version.

The development of a five-year strategic procurement plan for the TORNOS DECO 2000 range of machines was the next step towards creating the optimum manufacturing facility.

Neil Brown, NEIDA's Managing Director has, like the Chairman, seen the company develop from its foundation. "The hardest decision for any manufacturing company is in what type and make of machine to invest in. The Escomatic has given NEIDA an excellent grounding from which to develop expertise in more advanced production techniques. Through our European manufacturing partners we offer a vast range of parts but found that there was an increasing demand from specific market sectors for single operation production of highly complex components.



The DECO 2000 range met this exacting demand and on evaluation proved its capabilities. We began our planned investment with two DECO 2000 - 10 mm capacity back in 1998 with a schedule to purchase a further two machines each year. Thanks in part to the support of TORNOS UK in providing technical backup and additional training, this target has already been exceeded. Our fleet comprises of 4 DECO - 10 mm 9 axis, 1 DECO - 13 mm 10 axis and 2 DECO - 20 mm 10 axis (with 25,4 mm capacity)".

In addition to the purpose built factories, environmental issues are addressed by the use of two ad-

vanced reclamation systems. The first ensures each machine is served by a centralised oil mist extraction system, the oil being recovered, filtered and then re-used in the manufacturing process. The second system ensures swarf recovered from the machining process is collected and centrifuged producing dry swarf and reclaimable cutting oil, which can be reclaimed via the raw material supplier. The recovered oil is clarified and re-used in the manufacturing process. This gives NEIDA the ability to maintain highly competitive prices for its product while achieving an enviable level of environmental awareness. In view of this commitment, its environmental management system will be accredited to ISO14001 during 2001. NEIDA worked with TORNOS TECHNOLOGIES UK in deve-

At the heart of the company's total quality philosophy is in-process control. This regime ensures each production run is monitored at predetermined intervals. This attention to detail in terms of in-process performance, combined with Measurement System Analysis (MSA), Machine Capability and Statistical Process Control (SPC), effectively eliminates any further costly inspection of the product.

As well as the advance manufacturing facility NEIDA operates a global turned parts procurement function within its Commercial Operations Department headed by Commercial Director, Mr David Brown. The purpose of this is to provide a single source purchasing facility for high quality and specialised turned parts. When asked why clients would want this service in preference to using their own

includes advanced stock management systems such as Kanban, JIT or Direct Line Feed ensure our clients receive the most effective logistic solution possible".

"In summary NEIDA specialise in consolidating several existing suppliers into one efficiently managed single supply source for their clients at a substantially reduced cost and with a higher level of quality in terms of both product and supply. As for the future, NEIDA looks forward to further developing its presence in emerging technology markets such as telecommunications".

loping a range of swarf conveyors with increased capability for the various materials being processed and to improve product quality.

NEIDA accepts that its ISO9000 certification is now considered an industry standard, and so continually develops its quality management system in order to lead the competition with the planned implementation of more advanced quality assurance systems, namely QS9000. Specific expertise in highly demanding markets such as telecommunication connectors ensures that NEIDA already operates a wide range of complex quality procedures including APQP (Advanced Product Quality Planning) and PPAP (Production Part Approval Process).

buying teams, David Brown replied, "I am invariably asked to explain by potential clients how we can possibly source product any more effectively than their own buyers. My answer is simple, our supplier development teams are working with manufacturing partners that we have traded with for many years. When it comes to price each supplier has enjoyed a considerable volume of our business, and as such reciprocates with a highly competitive cost structure. This price advantage coupled with thirty years experience in turned parts allows us to offer an excellent commercial package. Our service also

We wish NEIDA every success for the future and look forward to being a part of their continued investment strategy.

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MSF 522/8

A new barfeed for the MULTIDECO 20/8

After several years of promoting our integral bar feeders for the MULTIDECO 26/6 and MULTIDECO 20/6 machines, we are now intending to launch a new unit of the same type for the MULTIDECO 20/8.

As the technology used in the previous models have now been tried and tested, the new integral MSF 522/8 type bar feeder has been designed in the same way.



The market demands experienced by our customers require machines with bar feeders and not just with bar guides. Maximum production automation, reduced floor area and labour to produce series runs, are the main features considered when developing the MSF 522/8.

A brief technical description

The MSF 522/8 is designed for high production rates and is of a very strong design. It loads round and hexagonal bars for diameters of 5 mm to 22 mm (\varnothing 24 mm with bar preparation).

Rotating the bars in an oil bath (max. speed 5000 rpm) reduces friction and attenuates vibrations. This helps to increase the quality of parts machined on the MULTIDECO 20/8.

The interchangeability of the synthetic bar guides means that actual guiding can be better suited to the diameters of bars being machined.

3 capacities are available:

5 – 8 mm (10 mm)
8 – 13 mm (16 mm)
13 – 22,5 mm (24 mm)

All bar feeders are fitted with guide steadies comprising of a system of interchangeable shells adapted to the bar diameters being used.

This solution optimises guiding when the bars leave the bar feeder, thereby reducing the gap between the guide channels and clamping tubes of the MULTIDECO. This would also avoid any vibrations.

A few practical points

In order to guarantee reduced handling, the bars are loaded in bundles. Bar transfer from the stacker to the MULTIDECO 20/8 is 100 % automatic.

The loading capacity (max. 2000 kg) means that this unit is suited to unmanned production.

Handling operations are simplified thanks to an automatic control system which manages the various loading, thrust, feed and calibration operations, as well as extracting the part from the chute at the rear.

The bar-end software system controls and detects any risks of short parts.

Besides this, the introduction of setting parameters and the display of any alarms are managed directly via the screen and console of the MULTIDECO 20/8. Only one user interface guarantees rational operation.

A solution for the future

The major economic benefits of the MSF 522/8 bar feeder are its minimal space requirements and reduced handling operations,

especially at a time when labour and floor space costs are of prime importance.

Thanks to this new product, which will be available from June 2001 onwards, the company will be able to offer an efficient and rational high-production tool.

It is the aim of TORNOS to provide you with an overall solution, which will guarantee high rates of production and high levels of precision.

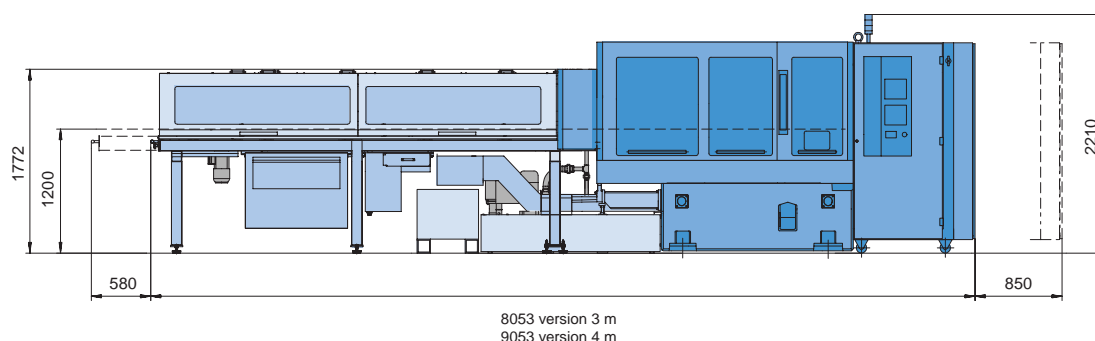
Our specialists will be pleased to help you with any further information.

*P. Neukomm
Product manager
Multi-spindles*

Let us take up the challenges of the future together.

E

General characteristics: ROBOBAR MSF 522/8



- ◆ Rotation of bars in an oil bath, maximum speed 5000 rpm.
- ◆ Bar capacity min. Ø 5 mm max. Ø 22 mm, without preparation (Ø 24 with bar end preparation).
- ◆ 3 capacities of bar guides 5 - 8 mm, 8 - 13 mm and 13 - 22.5 mm.

- ◆ Change of capacity ~ 3 hours.
- ◆ Loading by bar bundle, capacity 2000 kg, except for square and profiled special stock.
- ◆ Retraction of stock carriage by 580 mm (manual).
- ◆ Maximum productivity up to 48 p/min. (camshaft speed).

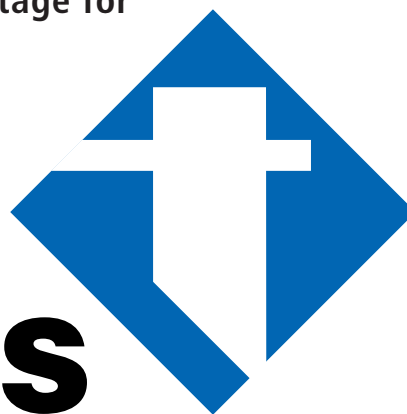
New

identification

TORNOS-BECHLER is changing its name and logo as part of its renewal:

This represents an important stage for the company.

TORNOS



After several changes in name and logo, in the wake of bringing together those companies forming the Group, the company's present image has been well ingrained for many years.

The arrival of TORNOS-SCHAUBLIN, followed by TORNOS-HOLDING and TORNOS-GROUP involved in the financial sector, somewhat complicated our presence on the market and could lead to confusion both at customer and company level in terms of understanding.

The decision was taken today, to simplify this diversity of images. TORNOS-BECHLER will now be known simply as TORNOS!

Perpetual development

Having an identity well illustrated by the blue square at the top with the wording in black, the general appearance of the logo will remain the same; the initial «T», which may represent a tool, will stay but the components «b» and «Bechler» will

be deleted so as to provide clarity and strength.

In the first instance, the change is fairly small and should not entail any loss in identity, whilst cohesion and perpetuity are guaranteed.

From now onwards, instead of TORNOS-BECHLER and TORNOS-SCHAUBLIN, a single, powerful **TORNOS** will be responsible for the business units, for example:



These measures are an expression of current linguistic trends

After conducting a survey from amongst our clients, the various brochures and even our colleagues and agents in all parts of the world, we were told that the «shortened» **TORNOS** was already being frequently used in spoken language.

In a number of countries, the dichotomy between TORNOS-BECHLER and TORNOS-TECHNOLOGIES has, for a long time now, been crying out for this simplification.

The decision adopted today represents nothing more than «putting things back where they belong».

A prudent inflection

The various business units, just like TORNOS SERVICES (and other possible future units) are then inflected by the wording in a small blue band. As for TORNOS-TECHNOLOGIES the only changes it had to bear was the disappearance of the letter «b» and the apparition of the blue band.

time) and the launch of very targeted, new products, which will meet the requirements of the new markets earmarked.

The renewal is well illustrated in the change in logo. **TORNOS** is changing with the times and undergoing permanent development so that it can best meet your requirements. In pursuing this third renewal project, **TORNOS** will be setting up the means of providing you with solutions to your demands.



In this way **TORNOS** is focussing its name and image with the aim of reinforcing its specialist position in the automatic turning sector.

All aspects associated with this new logo will gradually be changed during the course of 2001, so as to achieve the optimum use of this image on all carriers.

Renewal : A strong promise

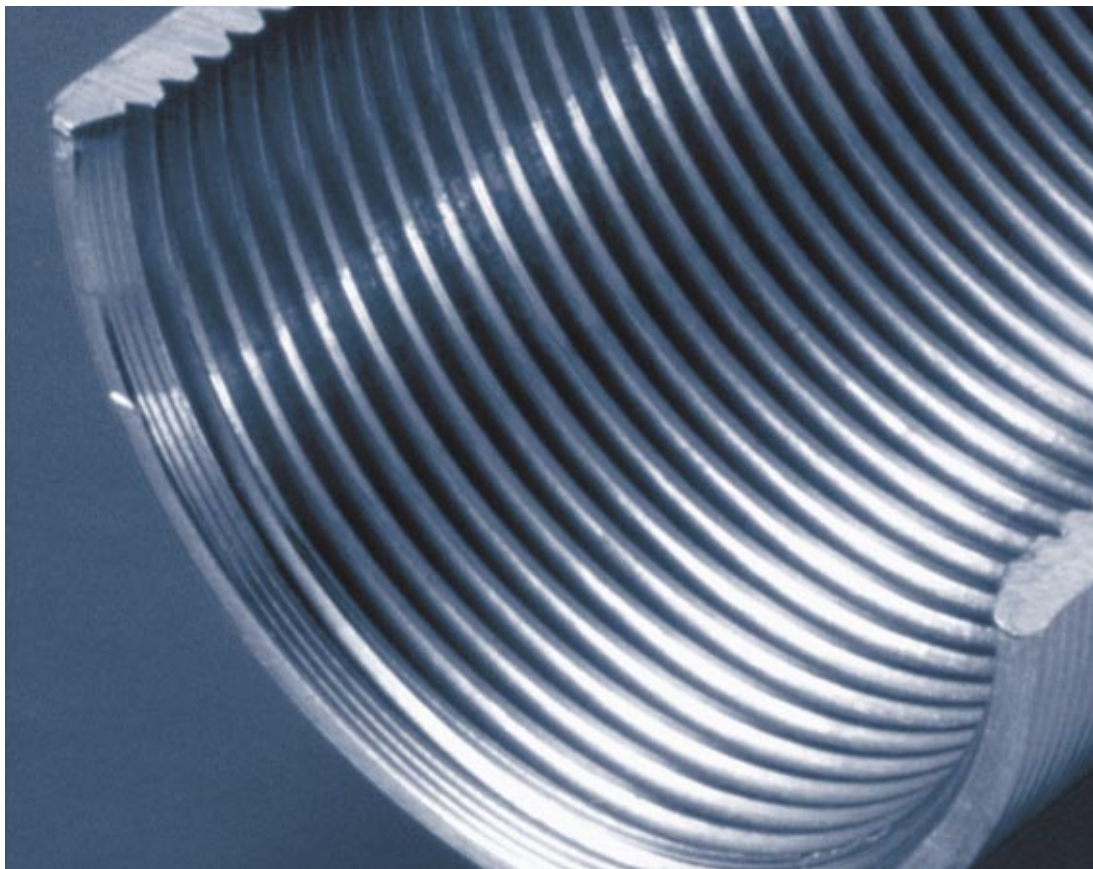
This phase of renewal within the company is under way. Following the complete changes in our range, production, philosophy and so on... a major new phase will start in 2001 with the doubling of our productivity (for the second

Our wish is that this new logo be synonymous with a promise and our never-ending commitment to serve you to the best of our ability.

Let us take up the challenges of the future together !

MOTOREX- Focus

Performance-enhancing cutting oils – and the machine-operating hour amazingly has 80 minutes.



Particular attention has been paid to the dimensional stability of the internal thread.

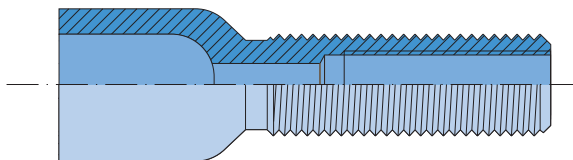
The earth still rotates at the same speed around its own axis, as it has always done. In contrast modern small-parts turning has become many times faster in recent years! Correctly speaking, a machine hour remains a machine hour, but what counts in the end is the output capacity, tool life and machining quality achieved. The most modern machining centres, the latest tools and peak metallurgical performance, coupled with the newly developed cutting oils from the MOTOREX SWISSCUT family, bring about a dramatic increase in per-

formance of up to 30 %. The new SWISSCUT cutting oil range will be launched on the market in the early summer of 2001.

Analytical tests provide clarity

The intention of MOTOREX was to conduct various test runs in order

to analyse, in particular, the demanding machining processes, such as internal thread cutting, deep-hole drilling, milling etc. Three different cutting oil qualities were tested on the same machine, using identical tools and machining materials. A representative part



The demanding small-parts turning part for the test.

was designed for the test. A tolerance of up to < 0.01 mm and an Ra-value (see box) of Ra 0.2 – 0.4 in μm was specified as the quality feature.

The Ra-value provides the following information:

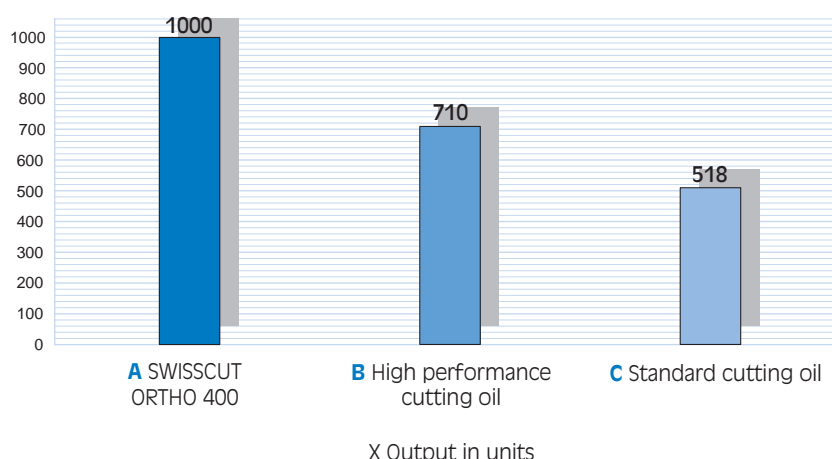
The Ra-value provides information in the measuring unit μm micrometers (1 micrometer = 0.001 mm) on the average roughness of the surface. It is the arithmetical mean of all the values of the roughness profile (diagram) – also referred to as centre-line average surface roughness. A different Ra value is produced for each machining operation (milling, drilling, turning, cutting, polishing etc.) for coarse, normal or precision machining. The smaller the Ra value, the better the surface quality.

**DIN 4762, DIN 4768,
ISO 4287/1**

The steel used

The workpiece was produced from high-strength, drawn steel of the type ETG 100 with a guaranteed elongation limit of Rp0,2 (N/mm²) according to prEN10277. This steel is particularly suitable for a time-optimised machining process. It has uniformly high strength over the entire bar cross-section, short chips, it retains its shape even during asymmetrical machining operations and so on. What is more, no additional operations, such as hardening, straightening, grinding and deburring, are required, which again has a very positive effect on cycle times.

Target 1000 workpieces X-minutes



The result is convincing: the use of SWISSCUT ORTHO 400 enabled the quantity produced in the same period of time to be significantly increased.

MOTOREX Synergy Project

Revolutionary new developments, such as those from MOTOREX SWISSCUT ORTHO, are only possible in close co-operation with machine and tool manufacturers. Knowledge gained from such synergies is described by MOTOREX as so-called Synergy Projects. MOTOREX makes skilled use of these synergies and incorporates the knowledge obtained in new products. In this way, MOTOREX provides the basic condition to ensure its successful presence in the ever more demanding small parts turning market, for cutting oils as well.

Would you like to ask the experts from MOTOREX a question in rela-

tion to performance optimisation in your company?

If so, please contact:

MOTOREX AG
Customer Services, Key word
"Performance optimisation"
P.O. Box, CH-4901 Langenthal
or send an e-mail to:
motorex@motorex.com

Read
the special article
from MOTOREX on the
new generation of
SWISSCUT cutting oil
in number 17
of the
DECO MAGAZINE.