

Please send us this fax!

We will send you the requested documentation by return.



Please turn over

Fax ++41 (0) 62 775 22 59

13th to 17th September 1999
Machine construction fair BRNO
Brno CZ



18th September 1999
FEHLMANN Open Day
Seon CH



22nd to 25th September 1999
9:00 a.m. to 6:00 p.m.
Saturday 9.00 a.m. to 12:00 a.m.

In-house exhibition
FEHLMANN
Seon CH



20th to 25th March 2000
TECHNI-SHOW
Utrecht NL



23rd to 27th May 2000
SIAMS
Moutier CH



27th June to 1st July 2000
METAV
Düsseldorf D



12th to 16th September 2000
AMB 2000
Stuttgart D



Preview
12th to 19th September 2001
EMO
Hanover D

REPORT

FEHLMANN



FEHLMANN Open Day
18th September 1999

FEHLMANN In-house exhibition
from 22nd to 25th September 1999



In this REPORT edition, next to our traditional products characteristics "handiness and precision", we would like to give you an understanding of above all the aspects flexibility and user-task orientated training in milling and drilling as a high-power system. We will tell you more about this starting from the next page but one where you will be introduced to the new PICOMAX 60-M with EROWA Robot, and on pages 8 and 9 with information on the new training concept.

I hope you enjoy reading this REPORT edition, and I am looking forward to welcoming you on our Open Day on 18th September or on the occasion of our demonstration days from the 22nd to 25th September in Seon!

Yours sincerely,
Frank Fehlmann

Editorial

This time: Frank Fehlmann, Assistant of General Management Sales Manager Export

Dear Readers,
Dear Partners,

We have the pleasure to celebrate in 1999 the 70th birthday of our company!

It was in 1929 that the mechanical workshop W. Fehlmann was founded in Seengen (Aargau) and already in 1932 the company was expanded for the first time and was entered in the local commercial register. Initially, column type drilling machines, simple hack-sawing machines as well as vices were produced. In the year 1952, Willi Fehlmann, getting his new diploma in engineering technology, took on the business management. Technical know-how from practical applications already marked our developments at that time and led to the production of the legendary precision drilling machine type TB 13 with milling characteristics. Our breakthrough were the supplementary precision coordinate tables, large numbers of which were already used on electro-erosion machines and which became our gate to the market. Today, our company produces yearly over 400 machining centres and precision drilling and milling machines for single-part and small lot production. These are subdivided in 10 machine types, for which the corresponding services are offered.

The new assembly hall was completed and taken into operation by the end of '98 - see figure on the lower right

PICOMAX 60-M
with EROWA Robot

The new modular
training concept
2000

PFÜLLER
Precision part
machining

New accessories
and machine
options

W. FEHLMANN LTD
MACHINE TOOL WORKS
PO Box 92, CH-5703 SEON
PHONE ++41 (0) 62 775 25 51
FAX ++41 (0) 62 775 22 59
E-MAIL: mail@fehlmann.com
INTERNET: <http://www.fehlmann.com>



AMB Stuttgart

For Fehlmann, this fair is becoming more and more important and has developed right into an actual "home exhibition" - not least because Stuttgart is only a stone's throw away from the Swiss border. The P20, the P54 TOP and the PICOMAX 60 were on exhibition.



Swissmechanic

From 23rd to 25th April 1999, the SWISSMECHANIC celebrated its 60th birthday.

On the occasion of the delegate's meeting on the SWISSMECHANIC, it was Frank Fehlmann who addressed the audience with a word of greeting. The aperitif sponsored by us took place at the "Grand Hôtel des Bains" near Yverdon. The REPORT editorial staff also wish SWISSMECHANIC a lot of success for the future!



FAWEM Bâle

from 24th to 28th November 1998

Occasion for the Swiss première of the PICOMAX 60-M, the "small" precision milling and drilling centre for conventional as well as high-speed machining. For our company, this machine is a kind of milestone and met with a lively response.



EMO Paris

from 5th to 12th May 1999

The internationally important fair medium, which - as is known - alternately takes place in Hanover-Paris-Hanover-Milan. The flow of visitors met the expectations. The whole world met in the spacious fair centre "Villette"; people came from Europe, Asia and overseas and were most impressed with the products on exhibition!



Its success reflects the continuously rising acceptance of the FEHLMANN products in the field of milling. Also our houseband with their short "concerts" was well appreciated.

We were most pleased to meet with very many "old" friends but also to make the acquaintance of numerous new visitors! Temporarily, there was even a - friendly - thronging at our stand.

PICOMAX 60-M with EROWA-Robot: Your interface to the future.

4

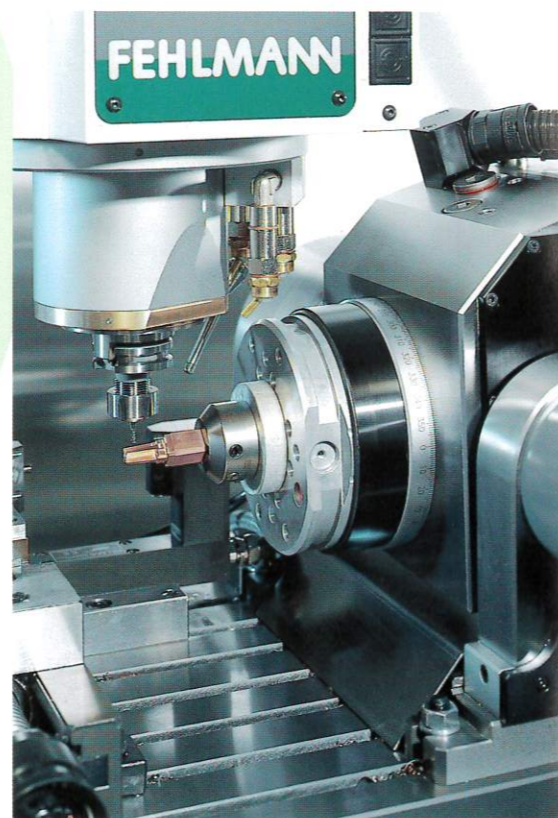
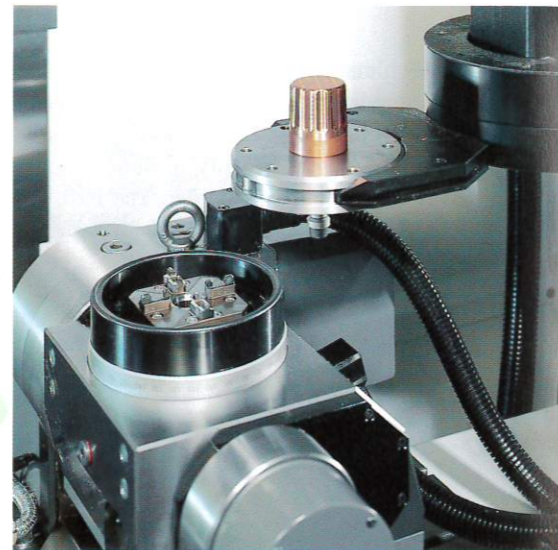
With the new PICOMAX 60-M / HSC (High Speed Cutting) with EROWA Robot and MCM processor (Milling Centre Manager) you will just work more economically.

The longer the tool and mould construction competition continues, the more it becomes a matter of prices. Ever shorter working times and the lack of skilled workers willing to work in shifts require new and innovative solutions. Using the unmanned night shift hours, your scheduling and delivery capacity will increase again.

With the PICOMAX 60 / EROWA-Robot, you will put theory into practice. But that's not all. One of these systems replaces three to four classical CNC milling machines. The "Milling Centre Manager" will keep up your flexibility also in automatic mode being able to "shift-in" an electrode if required where otherwise the electro-erosion machine would have to stop.

The FEHLMANN solution has its own special advantages:

- At Fehlmann, you will get everything from a single source. Towards the customer, we are responsible for the entire system, i.e. not only for the sale but also for training, start-up and application-specific customer support, and of course for warranty as well as customer services.
- The extremely flexible job management is perfectly suited for single part and lot production.
- With the workshop orientated operation and control, job tables are set up by operators in the workshop and continuously matched to the actual conditions right at the shop. If for instance a special tool is missing, another part is simply handled first without interruption of the automatic system operation.
- The good accessibility to the CNC machine is kept up as loading is made laterally.
- Also without automatic loading, the machine can be operated without restrictions
- The maximum absolute precision and repeatability is granted even if the production is running all around the clock.



5

The Milling Centre Manager (MCM), the 'control and command centre' of the entire system.

Developed by FEHLMANN for a comfortable and safe operation using the Windows surface. It is just by a 'mouseclick' using the job-table that the parts are loaded/unloaded, that various spark gaps are set at electrodes etc.... Any programming errors (e.g. radius compensation error) are detected by the MCM. With very little downtimes, the faulty program with the affected part is unloaded and visually marked for the machine operator to take notice. After that, a new part is changed in and machined automatically. Interfaces to production planning systems are available and can be matched to the customer specific requirements.

- Control of the system via 'mouseclick' and job-table
- Various spark gap definitions with the same CNC program also for free forming surfaces.
- All system results are logged (operating times, loading and unloading of the parts, etc...)
- Automatic dialling of a Pikett phone number in case the system is down.



PICOMAX 60-M / EROWA-Robot

PICOMAX 60-M with dividing/swivelling unit ATS 160, the ideal machine for tool and mould construction.

6 Precise copper and graphite electrodes can thus be machined as economically as mould inserts in high-tensile and hardened tool steel. The dividing/swivelling unit with integrated EROWA interface allows for the complete 5-face machining of one part with maximum precision. Chucking and re-chucking the parts can thus be dropped. The programming of the dividing/swivelling unit ATS 160 is perfectly supported by cycles of the HEIDENHAIN TNC 426 control unit.

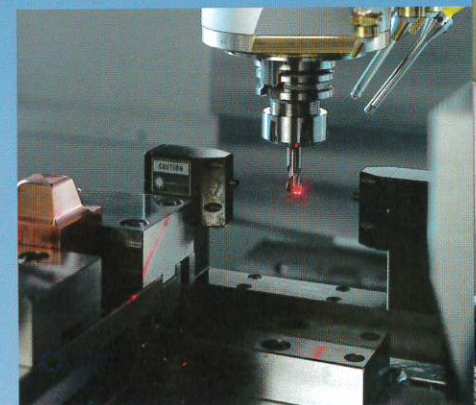
- High spindle speed without compromising the high torque.
- Quiet, smooth and low-vibration machine operation for a high surface finish.
- Maximum precision also in 5-face machining.
- Standard equipment with direct measuring systems, temperature compensation etc...
- Optimum accessibility of the part by the spindle.
- Maximum operating comfort.

EROWA – Easy Hand, the ultimate in economy.

With the ITS 50 part holder for a maximum of 60 work pieces (or the ITS 148 for a maximum of 30 work pieces), ultra long unmanned shifts can be run. The utilisation potential and thus the overall economy of the system are thus drastically increased on the whole.

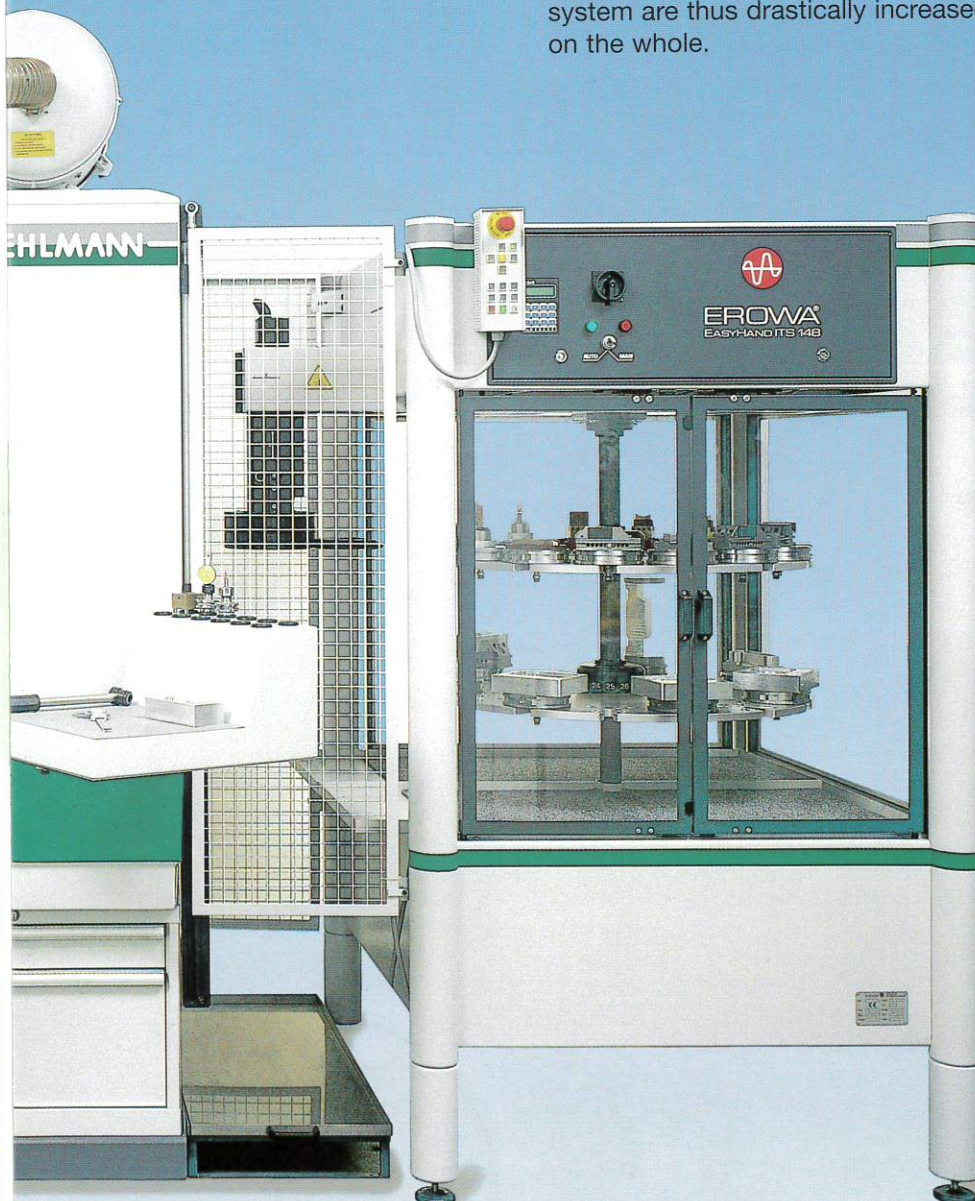
The EROWA – Easy Hand can precisely be matched to the customer specific requirements. The EROWA interface guarantees a repeatability of 0.002 mm.

- Optimum accessibility.

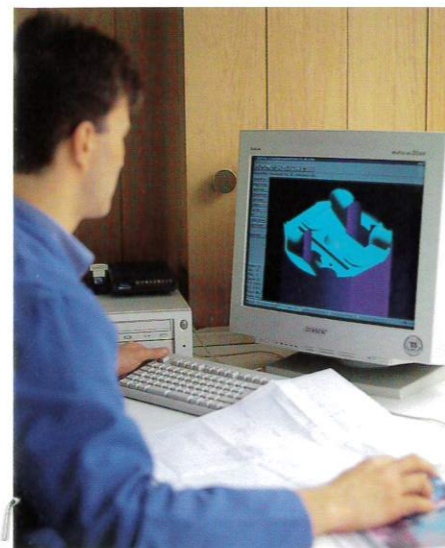


Also, the machine options and accessories easily meet individual requests of the customers.

- Various parts and tool clamping options can be selected.
- The dividing/swivelling unit ATS 160 can be equipped with an EROWA ITS 50 or PowerChuck F-clamping system.
- Measuring probes or laser system for the non-contact measurement of tools and for wear or tool breakage control.
- 3D-touch probe system for fixing the part zero point and for measuring part surfaces.
- Chip conveyor and high-pressure internal cooling through the spindle.



Modular structure and adapting to any customer request.



Technology course
In this course, the participants also learn about general things on the CAD/CAM subject.
As early as during the design of a 3D part, the later required part precision and surface finish must be taken into consideration.



Group courses
Training is held in small groups. In this way, the instructor can individually deal with the questions of single class participants.

User course P54 TNC 310
Leaving apart the modular concept, we offer a very practice orientated 2-days in-house user course for the PICOMAX 54 Top. Chips are certainly no taboo on these training days!

Today, it becomes more and more important to fully utilise the maximum productivity of investments within the shortest time possible. The CNC-technology and high-speed machining become more and more a matter of course. Our training team has taken up the challenge of this trend and aligned our training program to this request without compromise.

Since 1975, we have been building machines with CNC control units. At that time, programming was very sophisticated even for simple parts. While programming was made easier by the day, the complexity of the parts as well as the function scope of the control units were rising at the same time. Recently, the HSC technology (P82/P60) has additionally pushed this development. The universal Heidenhain control unit TNC 426 was expanded by appropriate high-speed functions (jerk reduction, look ahead etc.). In HSC technology, programming and machining can hardly be separated anymore (see training module No. 5 in particular).

The modular training program
The widely varying previous knowledge and experience of our course participants was the main organisational problem to solve when putting together the training program. With the new modular solution, we can easily concentrate on CNC beginners and CNC pro's at the same time.

Modules can be combined at random. Furthermore, there is of course the option to join modules 1 to 3 within one training week.



Im Theorieraum stehen die vollwertigen CNC-Steuern der verschiedenen Maschinentypen zur Verfügung.



Training week

Monday	Tuesday	Wednesday	Thursday	Friday
Module 1		Module 2		Module 3
8901 - 012 Programming course for beginners Contents: Basis of the Heidenhain control units Machine types: P51 (CNC), P55, P60, P80, P82, P100		8901 - 022 Programming course for advanced users Contents: Expanded functions of the TNC 426 Machine types: P55, P60, P80, P82		8901 - 031 5-axes programming course Contents: ATS programming Machine types: P60, P82

Further course modules to select

Course P 54

Course dates according to prior agreement			
Module 4	Module 5	Special course	P54 / TNC310
8902 - 00x Start-up Contents: Instructions about machine and accessory in operation and programming, Machine types: All machines	8901 - 052 Technology training P60 / P82 Contents: 2-days practice orientated HSC milling course Machine types: P60, P82	Organisation, company and special courses Contents: According to prior agreement Machine types: All machines	8901 - 002 User course Contents: 2-days instruction directly at the machine

We would like to introduce you to our partners:

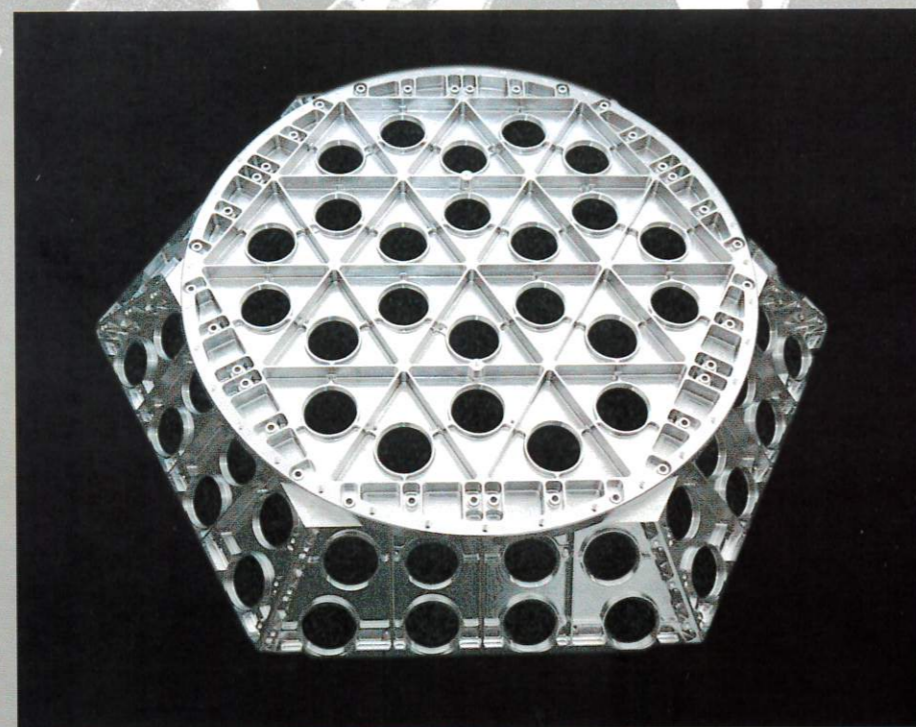
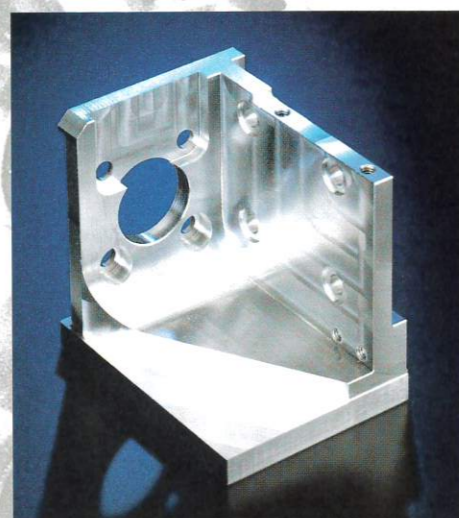
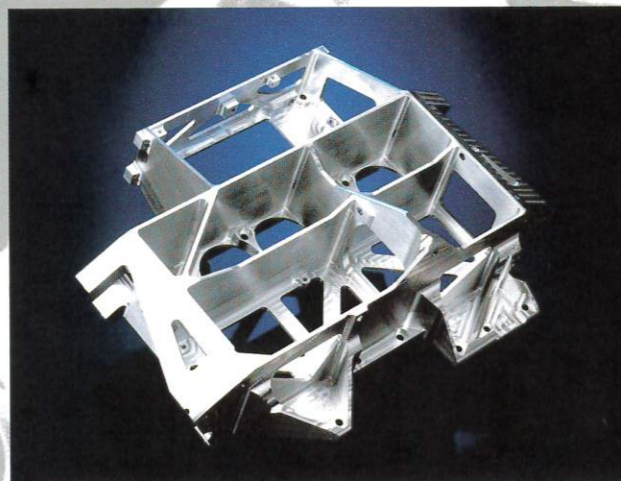
PFÜLLER

Precision part machining.

A company's history like from a fairytale...

10 Our partnership started in June 1994 with the purchase of a PICOMAX 80 CNC 2/3-W... but lets start right from the beginning:

Steffen Pfüller founded his company in 1992 in Gornsdorf/Erzgebirge. At that time, it was very difficult to obtain orders as a newly founded company. He worked with conventional machines in the field of milling, turning, drilling, grinding and gearing. But already in 1994, the first employee was hired and the same year in June, the mentioned Fehlmann CNC machine was purchased. The market positioning now specially aimed at the manufacturing of micro-electronic parts in all materials - which marked the final breakthrough. Further Fehlmann machines were added, and in 1995, the first FEHLMANN 5-axes machine could be installed to even increase the part precision. The site at Gornsdorf did not offer any expansion options, the reason why the company built a new 1000m² hall in the industrial area of Stollberg. The hall was completed in March 1998. In the very same year, they took another big step forward on their way to the 'high-tech company' in the field of machining by buying a FEHLMANN PICOMAX 82 with automatic part loading. The PFÜLLER company has today a staff of 15 employees in 2-shifts operation.



Aerospacial parts machined by PFÜLLER on the 5-axes machine - highly complex parts in the most various materials.

Project example:
Anti-coincidence system for the INTEGRAL spectrometer.

DaimlerChrysler Aerospace
Jena-Optronik GmbH



The PFÜLLER production hall almost looks like our own demonstration room. At present, the following FEHLMANN machines are being used here:

- 2 PICOMAX 82 5-axes machines with automatic loader
- 1 PICOMAX 82 5-axes
- 1 PICOMAX 80 5 axes
- 3 PICOMAX 80 4-axes
- 3 PICOMAX 54

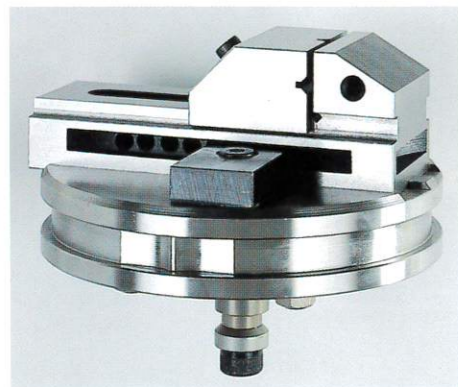
Asking Steffen Pfüller for the reasons why his company trusts in the FEHLMANN technology so completely, you will get the following answer:

« Generally, high precision is what these machines are based on. Not to mention other excellent characteristics as the good accessibility and flexibility. Furthermore, the 4/5-axes dividing unit is perfectly suited for the highly accurate small lot production. Additionally, and considering the high performance, these machines require very little space. Not to forget the very praxis orientated competence of the FEHLMANN company. »





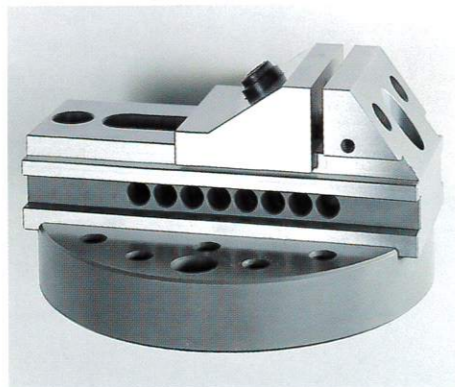
NEW ACCESSORIES and machine options



Precision vice for multi-face machining

Jaw width 50 mm,
Jaw height 25 mm,
Max. clamping width 76 mm,
To be used on the AT125 / ATS160
Order number: 4873-660

Required: Flange Erowa 4873-662 (figure on the left) or Universal Flange 4873-661 (on the right).



Precision vice for multi-face machining

Jaw width 70 mm,
Jaw height 30.5 mm,
Max. clamping width 91 mm,
To be used on the AT125 / ATS160
Order number: 4873-670

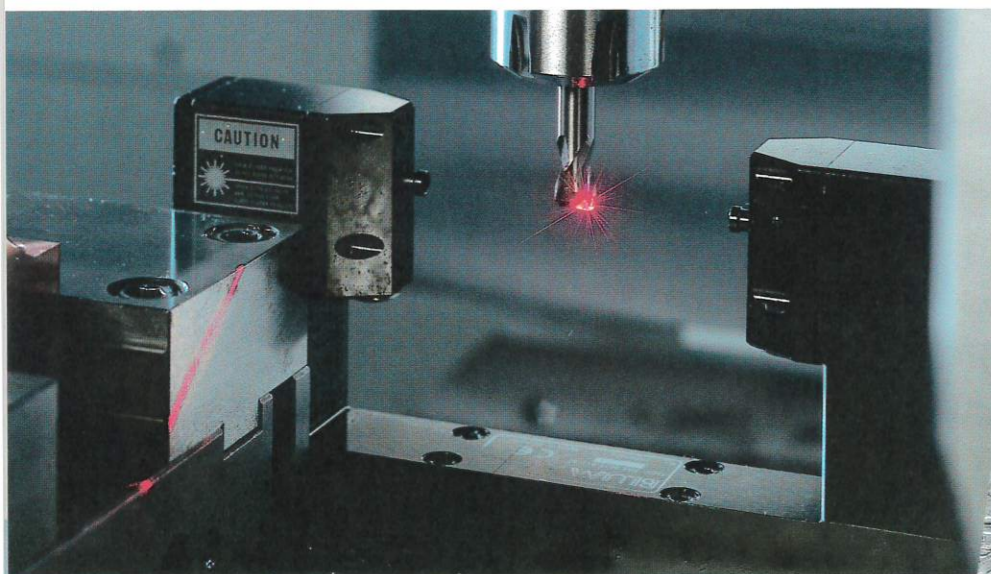
The economical lubricating system ECOLUB

For minimum-volume lubrication in high-speed machining of materials like aluminium, copper and hardened steel. The minimum volume lubricating system is installed in a lockable steel housing. Pneumatically operated piston-type pumps guarantee a precise metering of the higher operating pressure. Individual setting options of the production rate and the spraying air through each individual nozzle plus a continuous lubricating foam application due to an integrated cycle control.



The complete accessory catalogue

Please note our fax order form on page 13



Laser system for part set-up and toolbreakage control

Designed for its use in machining centres, the system is well able to monitor even the smallest tools for breakage and to directly measure the length and diameter of stationary and rotating tools with μm precision. The basic version allows for testing and measuring tools starting from a diameter of 0.3 mm up to 63 mm. The optical unit of transmitter and receiver is protected from coolant and chips by a pneumatically actuated lock and sealing air.

Invitation to our demonstration days 1999

Wednesday, 22nd to Friday, 24th September from 9:00 a.m. to 6:00 p.m.
Saturday, 25th September from 9:00 a.m. to 12:00 a.m.

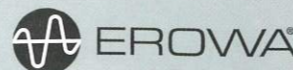
Presentation of the new FEHLMANN **PICOMAX 60-M with EROWA-Robot**
Universal milling and drilling, conventional and high speed applications

Seminar daily from 10:00 a.m. to 11:00 a.m.
Intelligent automation for economical tool building (only in German)

Referent: Markus Sager, Sales Manager Central Europe, EROWA Inter AG, 6233 Büron

Practice related machine demonstrations
The entire FEHLMANN program

Please register in time with the fax form on the right or using the enclosed invitation card. Of course, food and drinks will be served for your comfort.
Our exhibition partners



Please send us the following documents without obligation:

- Please send us the leaflet "FEHLMANN manufacturing program 2000"
- Please send us the FEHLMANN accessories catalogue including price list
- Please send us the documentation on the PICOMAX 60 with EROWA-Robot
- Please send us a detailed offer for
 - the PICOMAX 60-M
 - the PICOMAX 20
 - the all-round machine PICOMAX 54 TOP
 - the PICOMAX 100 / PICOMAX 100 XL
 - the PICOMAX

Registration for the demonstration days from 22nd to 25th September 1999

Date Number of persons

- in the morning in the afternoon
- Seminar participation (each day at 10:00 a.m.)

Please call us ! RE3 09 99

Company.....

Responsible.....

Address.....

Post code / city.....

Country.....

Phone.....

Fax..... E-mail.....

Date..... Visa.....

W. FEHLMANN LTD, MACHINE TOOL WORKS,
PO Box 92, CH-5703 SEON

PHONE ++41 (0) 62 775 25 51, FAX ++41 (0) 62 775 22 59

E-MAIL: mail@fehlmann.com INTERNET: http://www.fehlmann.com