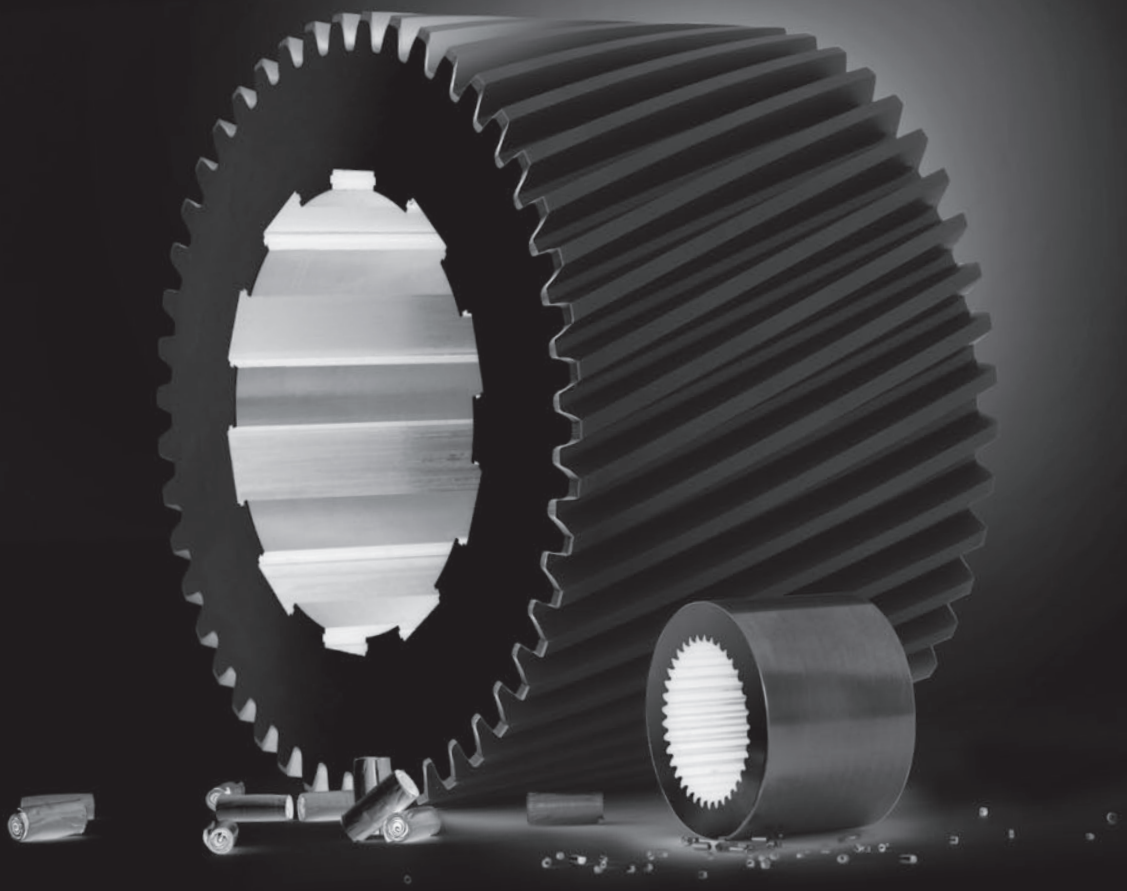
Maschinenfabrik
FRÖMAG

Innovation, Quality, and Operating Efficiency



This features FRÖMAG Machine Tools:

Operator friendly control
Dialogue control in plain language, parameter input via touchscreen

Short set up times
Nonproductive times are reduced to a minimum

Ideal operating height
Due to ergonomic design

Highest precision
Due to the use of highly balanced tooling equipment

Sturdy and steady design
This is based on the generally known FRÖMAG quality

Energy efficient machine operation
Due to effectiveness of the drive systems

Electromechanical servo-drives
This means the discontinuation of the disadvantages of hydraulically operated machines

FRÖMAG

We are not located in the area, which is well known as Germany`s location for the machine tool industry. But we are located where the industry revolution started in Germany. The Ruhr, where coal mines, steel mills, and breweries shaped the largest economic area in Europe, is FRÖMAG's home address. Declaredly not from the very beginning, but nowadays already for more than 60 years.

Where the business of coal mines and steel mills dictated the daily routine, gear boxes, gears, wheels, couplings, conveyor belts, and many others were needed to move goods from one location to the other.

The classical link between slot and feather key was required for all moving connected parts. This was the reason to found a facility for the fabrication of high quality machines for the production of keyways, splines, multiple grooves, or other profiles in bores of turning components.

Based on this demand FRÖMAG was founded as a family owned company, which it is up to now, to fulfill the requirements of the market for high precision, most modern and however operating efficient keyway-, broaching-, and slotting machines.

This business policy of the past »Quality made by FRÖMAG« is still our principle.

Quality is more for us than an advertisement spot for keyseating-, broaching- and slotting machines – always on the level of the best available updated technology – it is based on all our technical experience, skills and creativity.

All FRÖMAG machines are equipped with high class components and assembly groups so that everything results in a high quality products. This makes FRÖMAG machines different compared to others.

Each FRÖMAG machine contains more than half a century of experience, which results in the knowledge about the best functionality, most simple operation, energy effectiveness, and last but not least high performance and low cost of our products.

And, there is something we would like to mention again. Quality is and was our credo, which we will always keep in our mind for the future so that FRÖMAG customers are able to work effectively and produce the quality parts demanded by the market.

Quality, Reliability, and Operating Efficiency

Worldwide there are almost 6000 FRÖMAG machines, much valued due to their quality and reliability. They offer always cost saving solutions for the applications of end users in many fields of production.

- Drive technology (motors, gears and gear boxes, couplings)
- Pumps, controls and instruments, mechanical engineering
- Conveyance, wind power
- Automotive and components
- Individual solutions for a wide field of applications

The most modern equipment and highly qualified employees allow a wide in-house production depth. That`s why we know which components and assembly groups are used for FRÖMAG machines so that we are able to finally express with pride: where quality is used, quality gets out.

Most modern production lines

Maschinenfabrik
FRÖMAG

At the beginning of all projects, our engineering team is involved.

Integrated quality management, control-, and machine assembly.

Keyseating- and Profiling Machines

Keyseating- and Profiling Machines made by FRÖMAG

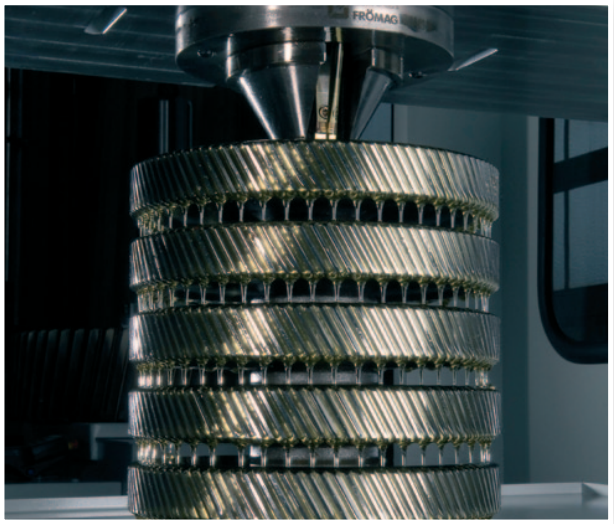
The electromechanically driven machines built by FRÖMAG fulfill the demands of the market for a modern machine tool with respect to short machining and set up times, diversity, user friendliness, energy efficiency, eco friendliness, and of course high quality, reliability, and cost effectiveness.

This model range is used especially for:

- Machining of keyways according to DIN and other standards.
- Machining of tapered keyways in cylindrical or tapered bores
- Serrations, splines, involute profiles, multiple keyways, tangential keyways, helical keyways.

Capacities depending on model range:

Keyway width: ***from 2 mm up to 250 mm***
Keyway length: ***max. 2000 mm***
Bores: ***starting at 10 mm***



Packet assembly

Workpieces with a relatively short height can be stacked. Consequently the complete stroke of the machine is used and the pure machining time per component is minimized. The stiffness of the electromechanical drives proves of value just at interrupted cutting sequence.

Rapida E 32-3-425-LPC

Rapida E 32-3-425-PPC

Rapida E 32-3-425-APC

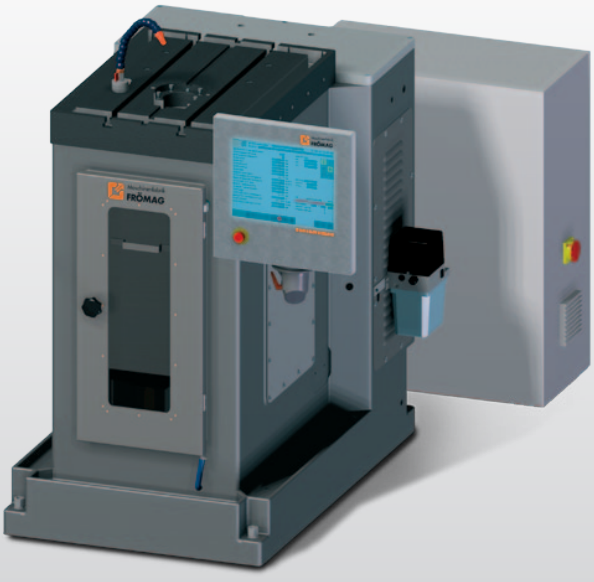
Frömag Controls

FRÖMAG machines can be equipped with different controls
The machines with the LPC versions have a 5.7" touch screen and are mainly used for standard single keyways.

The PPC version has a 10" touch screen and a programme storage for 300 different components.

The LPC and PPC version allow, in addition to machining of standard keyways, the cutting of multiple keyways, splines etc. by using the machine control.

The APC version with a 15" touch screen offers in addition to the programmes of the LPC and PPC the option »workpiece recognition«. Furthermore, graphic supported pictures on the screen of the control, the machining of tapered keyways, parallel keyways in tapered bores, involute splines, helical keyways, oil grooves, tangential keyways and different other internal profiles is possible. Some of these profiles may require special tooling and cutters.
Programme storage for 600 different keyways.



Rapida E 70-600-APC

different controls:

LPC 5.7" Touchscreen

PPC 10" Touchscreen

APC 15" Touchscreen

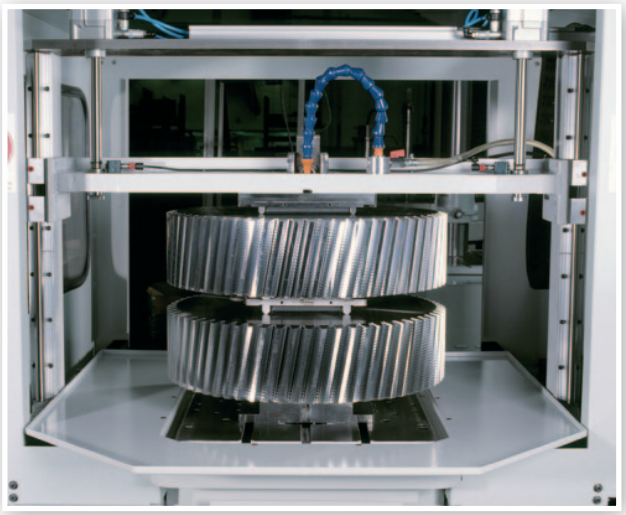
Switchable to all conventional languages by touch button on the screen.

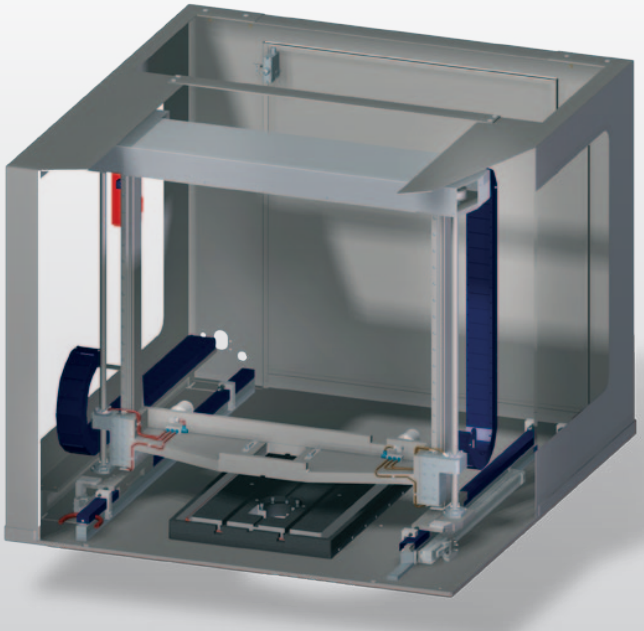
FRÖMAG clamping bridges

Fully automatic working sequence

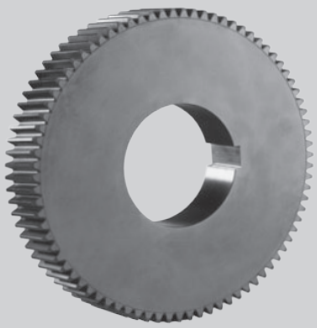
FRÖMAG keyseating and profiling machines can be equipped with clamping bridges. This additional feature allows, in connection with automatic indexing tables, a fully automatic working sequence of larger components which require long machining times (involute splines etc.).

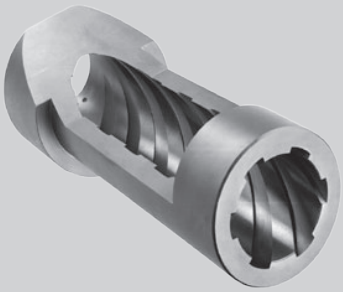
After set up of the machine and the adjustment of the component, the automatic sequence will be activated. After the first spline (keyway) is finished, the cutter drives back into the zero position, the clamping bridge will be lifted automatically, the indexing table turns the component into the next position, the bridge clamps the part again and the cutting sequence for the next spline starts again.





Workpiece samples:





Electromechanical slotting machines

Programme »upcutting with a guided tool«

The electromechanical drive system of the FRÖMAG keyseating machines allows the changeover from the standard programme »keyseating« to the programme »upcutting«. This allows for example, cutting of keyways, oil grooves etc. in blind holes. Special tooling and cutting tools are necessary.

Electromechanical slotting machines

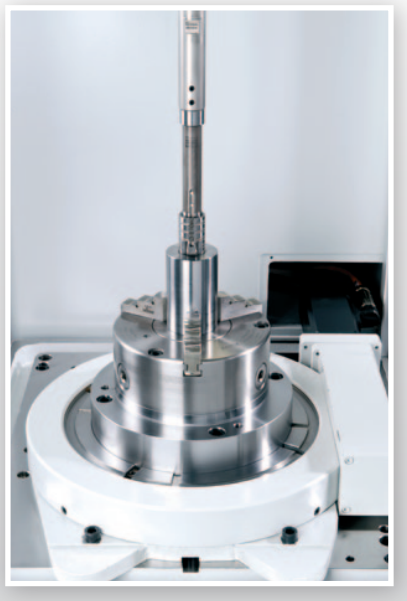
For large batch production of oil grooves in blind holes, FRÖMAG offers its Electromechanical Vertical Slotting machine. A distinguished feature of this machine is its self-centering tool. Due to the geometry of the slotting hub and the integrated cutter, the tool will be accepted in the bore floating on the lubricant film. A damage of the bore by the tool is consequently eliminated.

This vertical electromechanical slotting machine with self-centering tool is mainly used for:

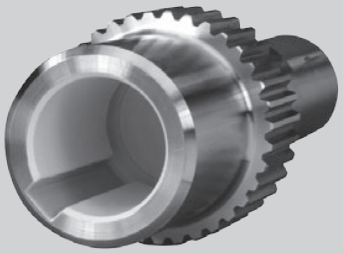
- Keyways and profiles in blind holes
- Oil grooves for control bushings for servo supported steering (automotive) blind and though going bores

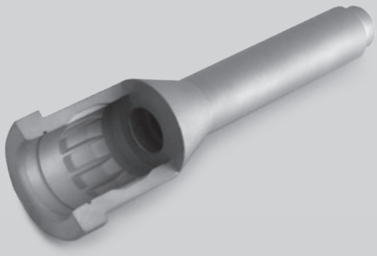
Machining dimensions:

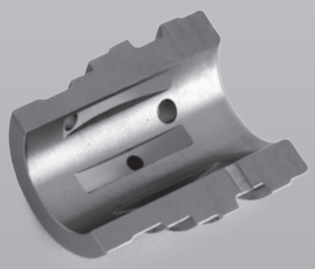
Keyway width: ***from 2 mm – 32 mm***
Keyway length: ***max. 300 mm***
Bores: ***from 10 mm***



Workpiece samples:







Electromechanical Broaching Machines

FRÖMAG Internal Vertical Broaching Machines

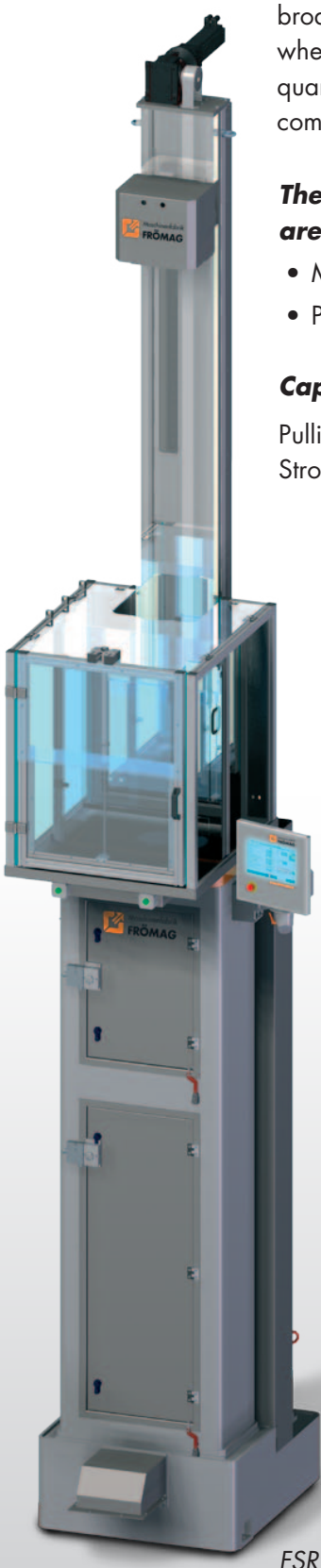
Broaching, is a chip removal machining procedure with a multi-toothed tool, which performs the chipping at the component. The aim is to finish the profile to be broached in one pass. The broaching process is always used when profiles with high accuracy, high surface quality, and large quantities are requested. The broaching tool is pulled through a component to produce the required profile.

These broaching machines are mainly used for:

- Machining of internal keyways,
- Profiles and splines in through going bores

Capacities depending on model range:

Pulling force: ***6 – 30 tons (60 – 300 kN)***
Stroke length: ***600 – 2000 mm***



FSR18-2-2000-MZ-PPC

FSR9-2-1250-RST-PPC

Workpiece samples:

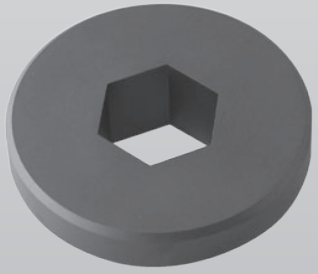


Table Up Broaching Machines

FRÖMAG electromechanical Table Up Broaching Machines

In addition to the advantages of the classical broaching machines, the electromechanical Table Up Broaching machines can be erected at ground level without a pit. So, it can be used as a stand-alone machine or linked in a transfer line.

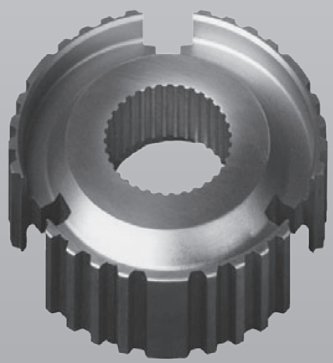
Due to it's ergonomical design, the machine can be operated manually without any additional platform. Furthermore, the low operation height of these machine types can be linked to other production machines.

Contrary to conventional vertical broaching machines, the component is moved in relation to the fixed broaching tool. This particular method of broaching in connection with the electromechanical drives of the FRÖMAG Table Up Broaching Machines exceeds the accuracies of the classical broaching machines also in consideration of the surface quality.

Capacities depending on model range:

Pulling force:
10 – 20 tons (100 – 200kN)
Stroke length:
1000 – 2000 mm

Workpiece samples:



Electromechanical Short Stroke Broaching Machines

FRÖMAG electromechanical Short Stroke Broaching Machines

The procedure »short stroke broaching« is a special type of application invented by FRÖMAG and protected by patent law. This procedure is a highly economic process to produce keyways in internal bores, in large batches, and fully automatically in several passes. Special designed short broaches facilitate a wedge to be pushed behind the broach automatically. This avoids the manual manipulation of shims to be used for multiple passes to gain the required keyway depth.

High broaching and return speeds result in a high productivity and reduce the unit cost.

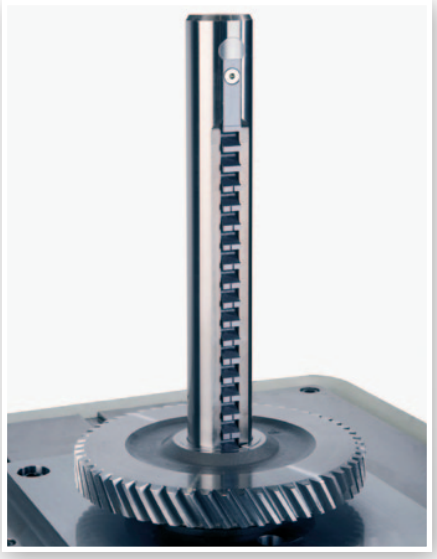
Compared to conventional, vertical-, or horizontal broaches, the short stroke broaching machine offers due to its compact design, and the short broaches (4-5 times shorter than standard broaches) and considerable space reduction.

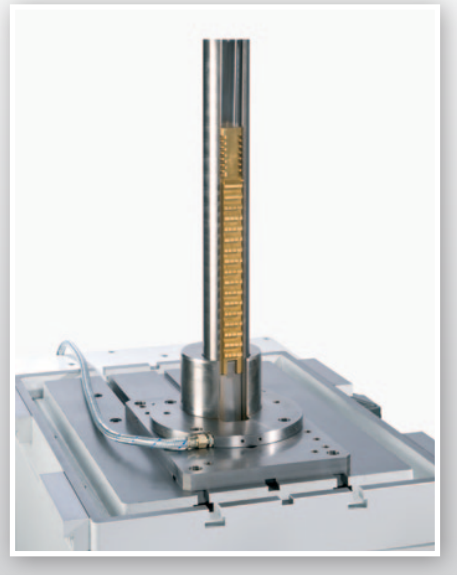
This model range is especially used for:

- Machining of keyways according to DIN or other standards for large recurrent batches and applications with a stress of short cycle times in automatic machine mode.

Capacities depending on model range:

Pulling force: ***4 – 7 tons (40 – 70 kN)***
Stroke length: ***max. 750 mm***





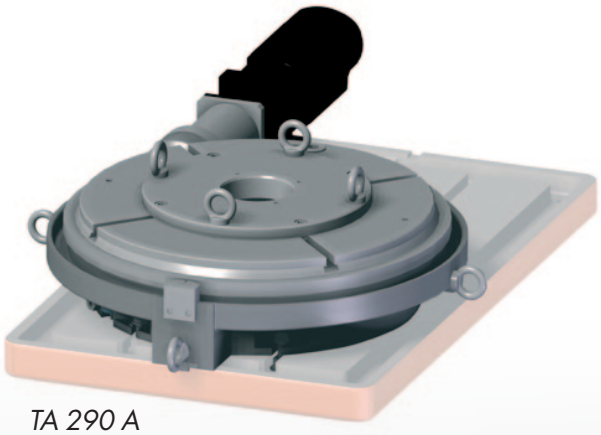
Indexing tables

FRÖMAG manual and automatic indexing tables

FRÖMAG Indexing tables are used for example, for the production of internal splines according to DIN or other standards, multiple keyways, helical gears, and other profiles or keyways apart from each other. Manual indexing tables are produced for bores up to 400 mm and can be equipped for direct or indirect division.

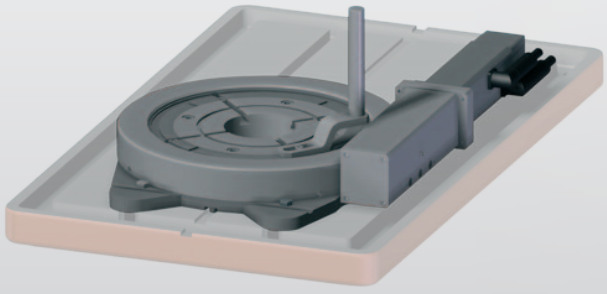
Automatic indexing tables are driven by servo motors. The computation (indexing) is effected eletromecanically and controlled by the main machine CNC. The data is input at the touch screen of the control panel.

Automatic Indexing tables starting with the model TA400A and larger are equipped with two servo drives (Master and Slave). This mode of drive allows a backlash free revolution of the rotary table enabling the machining of internal helical splines.



TA 290 A

TA 400 AE



TA 180 A

Special purpose machines

FRÖMAG special machines

Electromechanical horizontal slotting machine

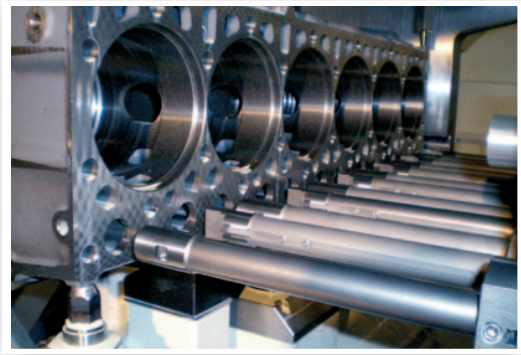
This range of machines is preferably used in transfer lines to machine keyways in cylinder crank cases with max. 12 simultaneously working slotting tools.

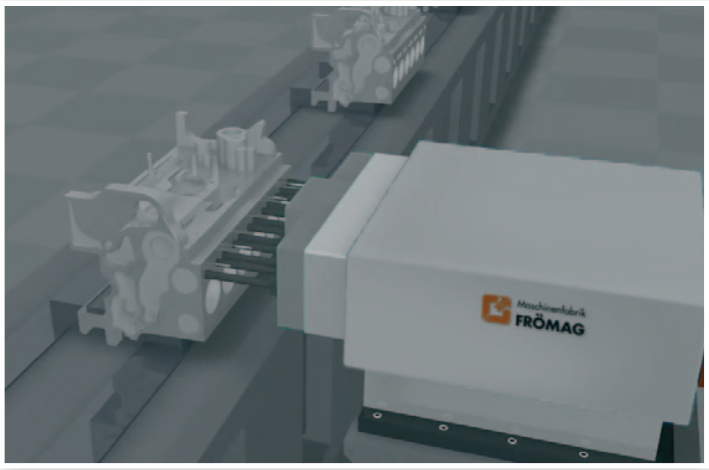
These machines are customized designed and produced.

This unit basically consists of three slotting aggregates, each with four slotting tools.

Machining a six cylinder crank case, all twelve slotting tools are moved oscillating in an axial direction. Machining a four cylinder crank case, one slotting unit is stopped so that only eight tools are in circuit.

Depending on the size of the keyways the pure machining time for one crank case is appr. 80 – 120 sec

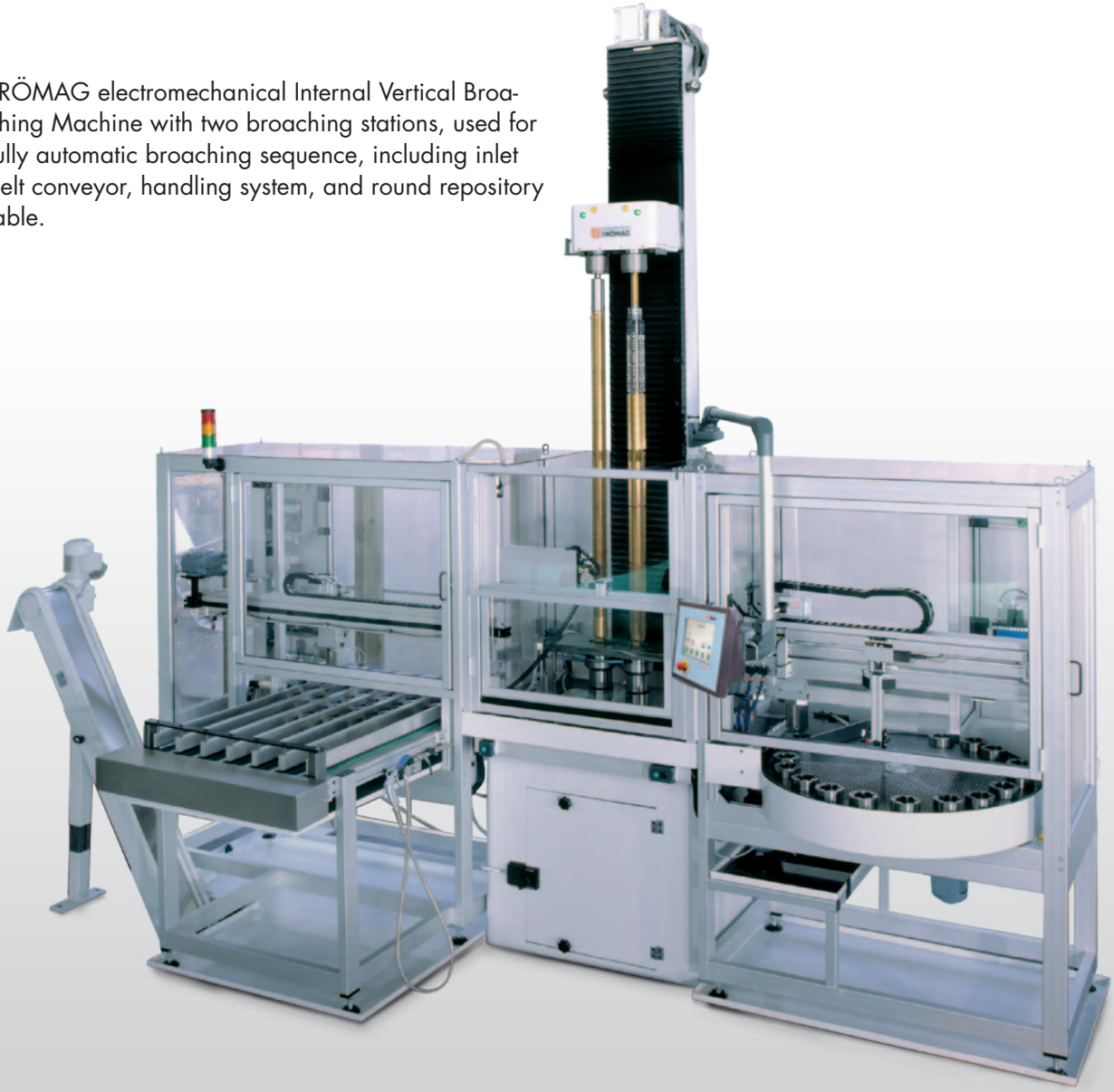




This model range is especially used for:

- Use in transfer lines
- Machining of cylinder crank cases
- Customized applications

FRÖMAG electromechanical Internal Vertical Broaching Machine with two broaching stations, used for fully automatic broaching sequence, including inlet belt conveyor, handling system, and round repository table.



FRÖMAG is your reliable partner for:

- Keyseating- and Profiling Machines
- Electromechanical Slotting Machines
- Electromechanical Broaching Machines
- Special Purpose Machines

We would be pleased to be of service.

Ask us for solutions!

Maschinenfabrik FRÖMAG

Maschinenfabrik FRÖMAG GmbH & Co.KG
P.O.Box 1261 · D-58718 Fröndenberg · Am Klingelbach 2 · D-58730 Fröndenberg
Tel +49 (0) 23 73 / 756 - 0 · Fax +49 (0) 23 73 / 756 - 33
www.froemag.com · e-mail: info@froemag.com