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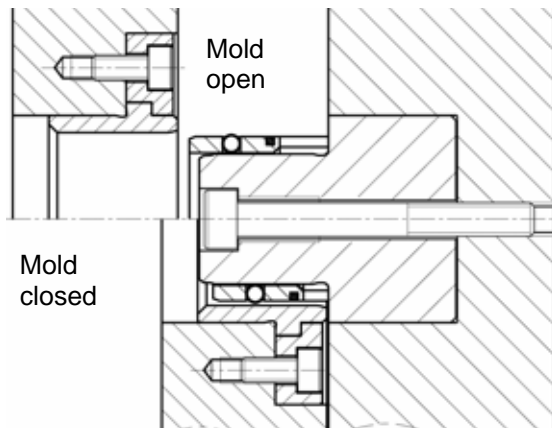
Press Release

Your Ref.
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Our Ref. Mr. S. Nobs – Manager Engineering
Date 06.07.10

World First – "Round Fine Centering System for the Mold Construction"

Play free Round Fine Centering system for centering the mold halves – a superior alternative to the conventional guide blocks (state-of-the-art).

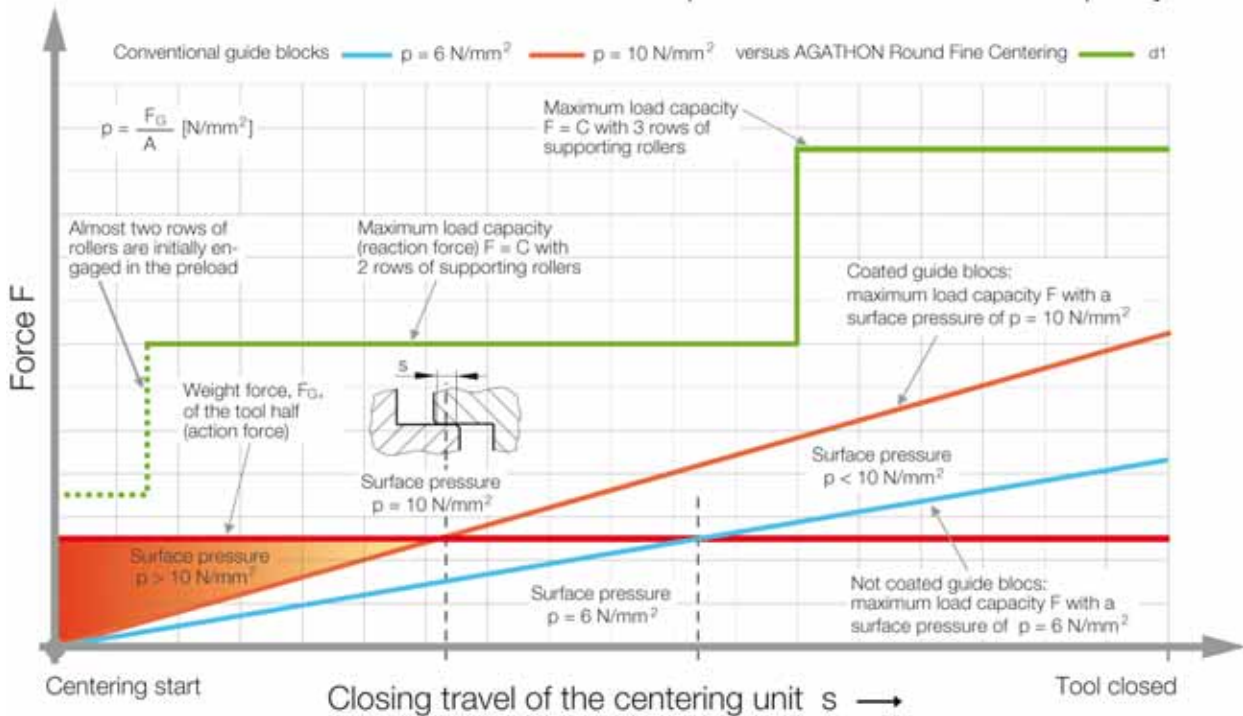
The latest product innovation by **AGATHON AG** is the standardized **Round Fine Centering** available from stock, made from roller bearing steel – patent pending. As a world first, AGATHON has developed a standardized Round Fine Centering system of innovative design over the past months which has successfully been tested at reference customers.



The demands made on molds as regards **Accuracy, use without lubricant** and **free from wear** are high and constantly rising – especially the centering of the mold halves is subject to such criteria.

By means of a preloaded **play free** fine centering, **maximum precision** may be achieved - the mold halves are closed without play, unnecessary burr formation/offset at the injection-molded part are avoided. When opening the mold, the injection-molded part is gently removed from the mold without damage.

Comparison of maximum load capacity



In case of conventional guide blocks, the centering surfaces slide on each other, **making wear unavoidable**. At the start of the centering, the permissible surface pressure p_{zul} is exceeded several times (Fig. 1), surface pressures of up to 2500 N/mm^2 are generated. This quickly destroys the surface. Only after a **sufficient overlap** of both centering surfaces will the pressure drop allowing for a low-wear "sliding" centering process. However, as wear already occurs at the start of the centering, it will be 'rolled in' until the end of the centering process finally destroying the surface.



The requirement made on a low-wear (wear-free) centering can be realized using a round roller centering. Thanks to the precise axial positioning of the roller cage, **almost two rows of rollers are simultaneously engaged** in the preload at the centering start – this guarantees a **high initial load capacity** and a **long cycle life without noticeable wear**. The initial load capacity with two rows of rollers engaged is **equivalent to that of** approx. 16 rows of balls. The round centering may be used with minimum quantity lubrication. Even without lubricant, e.g. for production in clean room environments.

Due to these characteristics, the Round Fine Centering is perfectly suited for mass production and/or mold tools which must be closed with high precision.

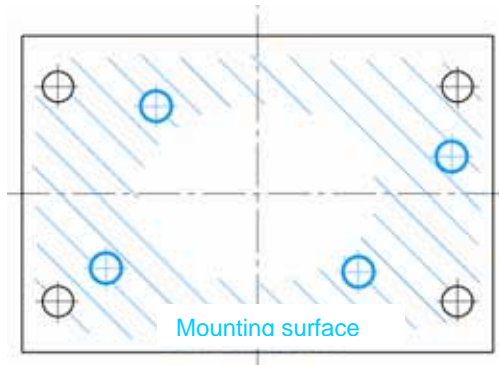


Fig. 3

Complex technical plastic parts (e.g. thin-walled injection molding) and also clean room production – to name just a few – are leading to ever higher demands being made on the tools.

Depending on the application and space available, two or more fine centering units may be used. The design engineer is **free to choose** the arrangement and number of centering units to be used (Fig.3). Also uneven numbers of centering units may be installed.

Especially for **Short cycle times**, which are common usage with fast mold tools of 3 sec, the tribological advantages of the rolling elements may be used to full capacity.

Using the round fine centering, small differences in the expansion of the mold halves can be compensated for – high-performance injection-molding tools are temperature controlled homogeneously, they exhibit small expansion differences and are perfectly suited for such applications. The round fine centering is available in 3 different sizes for mold dimensions from 150mm up to approx. 1,000mm. The temperature limit in operation lies at approx. 150°C.

Summary: Advantages - Customer benefits of the Round Fine Centering System Standard 7990:

- Low total cost, low manufacturing cost of the cylindrical location bore
- High design freedom, play free, for short cycle times
- No noticeable wear & tear: can e.g. be used in clean rooms
- Little to no maintenance, use with minimum quantity lubrication
- Thanks to the precise axial positioning of the roller cage, almost two rows of rollers are simultaneously engaged in the preload at the centering start - this guarantees a high initial load capacity and a long cycle life. The initial load capacity with two rows of rollers engaged is equivalent to that of approx. 16 rows of balls.

Messrs. **AGATHON AG Normalien** is considered the worldwide leading manufacturer of cutting die standard parts as well as of **guiding elements** in mold, **machine, apparatus and jig construction**.

The products of the Swiss company excel at optimum material quality, maximum surface roughness and closest tolerances.

Delivery from stock and an excellent price/performance ratio are further persuasive features.

Construction is facilitated by a CAD catalog to be downloaded from the Internet.

For custom-tailored products, we offer comprehensive consulting and support in design and development. The high **AGATHON quality standard is granted by the ISO 9001 certification**.

The **guide elements program** for **mold construction** comprises:

- **Miniature ball guides**
- **Pillars and bushes according to AGATHON as well as ISO-/DIN standard**
- **Sliding guide bushes** for high loads with minimum sliding play
- **Ball cages** for smooth and play free running (patented)
- **Ball cages** for play free running, high rigidity and for radial forces (patented)
- **Special guides**, e.g. rustproof materials, ball cages from special plastic (for use at high temperatures), profile rollers for line contact etc.

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The products guarantee:

- *interchangeability*: closer form and position tolerances (bushes js4 at installation diameter)
- *simplified assembly*: chamfers f8
- *higher load capacity*: Number and arrangement of rolling elements
- *longer life cycle*: optimized infeeds, reduced play of rolling elements

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