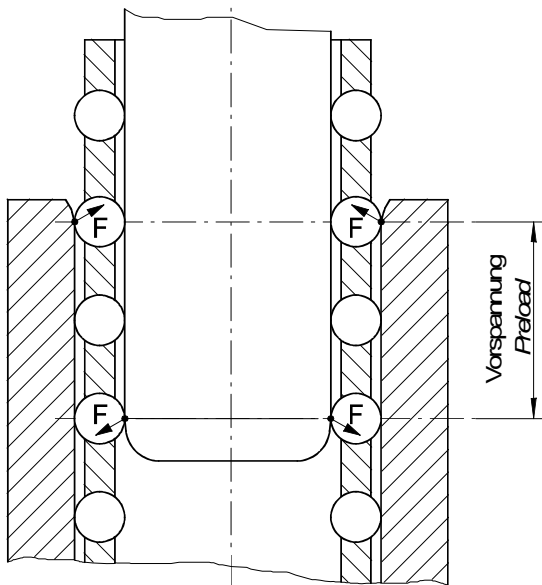


## Staking method for ball cages (patented) and lead-in geometry on guide pillars and bushings

With a new staking method Agathon Ltd., Standards has succeeded in manufacturing ball cages with a better retention force of the balls and to reduce the radial ball clearance. Thanks to this method, the ball is held on its whole circumference, and the cage material is optimally deformed.

In combination with a new lead-in geometry on pillars and bushings, which is obtained by a new production process, the impact when the balls run into the preload has been considerably diminished and thus extends the service life of the guide element. At the same time the problem of "cage creeping" is clearly reduced.

The following sketch shows the occurring forces on bushing, cage and pillar when running into the preload:

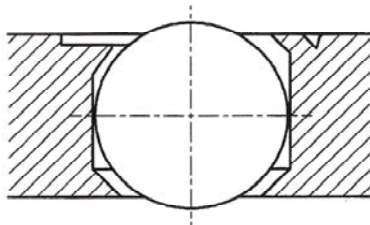


### Lead-in geometry for pillars and bushings

- Advantages:**
- long service life
  - maximum guiding lengths in preload areas on pillars and bushes

**new design**

**old design**



### Special staking method

#### Higher retention force of the ball

The ball is held better on its whole circumference and has reduced **ball clearance** thanks to the special retention process.

- Advantages:**
- low risk of **loosing the ball**
  - min. wear of the cage, because of much smaller impact to the cage when the balls run into the preload

## Roller cage, special retaining pockets for rollers

Roller guides are used whenever a high rigidity of the guide unit is required (e.g. foil cutting) or when there occur considerable radial forces during application.

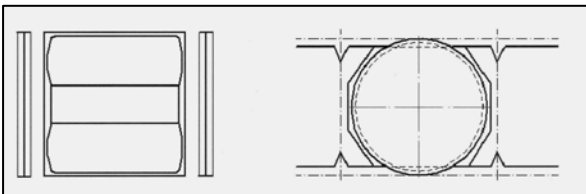
A special process is used to realize the retaining pocket for the roller cages. This optimization allows also a precise staking and presents the following advantages:

- no friction is caused by the cage on the roll off areas of the roller bearing (against pillar and bushing)
- minimal friction between roller bearing and retaining pocket due to an improved surface quality on the contact surfaces of the retaining pockets
- defined, optimized clearance of the roller bearing inside the cage (roller bearings are only staked from the outside)
- better shape consistency of the retaining pocket and more precise conformity of the axis from cage and retaining pocket

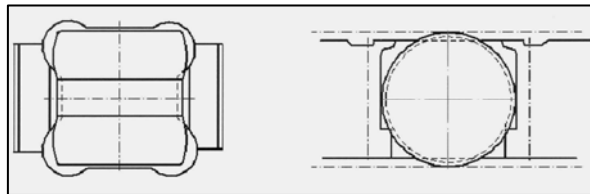
These improvements reduce the wear on the cage and roller bearings. The life span of the Roller Cage and the guide can thereby clearly be extended.

### Special retaining pocket and staking

old execution



new execution



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#### Direktwahl

Telefon : +41 (0)32 617 4504

Telefax : +41 (0)32 617 4704

e-mail : markus.allenspach@agathon.ch

#### Niederlassungen

AGATHON Inc.

Bethel, CT 06801-USA

AGATHON (U.K.) Ltd.

Daventry Northants NN11 5EA