Automatic Clamping Set HSK

Type overview

Clamping system with springs

- clamping set with guided segment collet, compact guide through segments, which means less imbalance of the clamping set
- with positive taper lock mounting

Clamping system with SUPER-LOCK

- with standardised RÖHM turning performance for speeds up to 36000 rpm
- with retaining collet, for quick and easy tool change
- with positive taper lock mounting
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Design principle

Components and construction groups

**For speeds up to 10000 rpm**

- **Clamping unit - Construction group III**
  1. Non-rotating distributor for coolant lubricant or air
  2. Non-rotating distributor for hydraulic unclamping
  3. Unclamping piston
  4. Strike control ring
  5. Spring package
  6. Draw bar

- **Draw bar extension - Construction group II**
  7. Draw bar extension

- **Clamping set - Construction group I**
  8. Counter nut
  9. Collet actuator
  10. Collet
  11. Spindle
  12. Positive Taper Lock - tool HSK

**For high speeds**

- **Stationary opening unit - Construction group VI**
  1. Non-rotating distributor for coolant lubricant
  2. Connections for actuation, air blast
  3. Non-rotating housing
  4. Unclamping piston

- **Clamping unit SEH - Construction group III**
  5. Draw bar
  6. Ring for stroke control
  7. Spring package
  8. Connecting pipe

- **Draw bar extension - Construction group II**
  9. Draw bar extension

- **Clamping set -Construction group I**
  10. Collet actuator
  11. Collet
  12. Counter nut
  13. Spindle
  14. Tool
Automatic RÖHM positiv taper lock system was specially designed as complement for the manual positiv taper lock clamping. Following items were taken particularly into account:

- Steady clamping force due the symmetric clamping surfaces of the clamping segments
- Compact power flow resulting in high static and dynamic rigidity of the tool joint
- High power amplification by transmission of the clamping set
- Automatic lock by collet actuator in the clamping set
- Forced controlled release of the collet by taper sleeve during the tool exchange
- Automatic ejection of the tool by the collet actuator during release
- Sealed central coolant supply system
- Perfect suitable to be built into the spindles of machine tools and machining centers

The advantages of the positive taper lock system originates in the combination of defined radial pretensioned taper and tool face stop. A safe transmission of the torque is archived by the elastic deformation of the taper resulting in a gap-free connection with the tool. High interchanging and repeating accuracy is leading to increased production quality during the machining compared with the traditional machining.

The clamping process is started by the spings and the movement transmitted by the draw bar to the clamping set in direction FZ. The clamping segments of the collet are pushed to the outside by the collet actuator. The clamping forces are multiple amplified by the angled arrangement of the contact areas. The produced axial forces FA and radial forces FR result in a pretensioned status of the positive taper on the entire taper area and, the axial contact area. The proportion of the axial contact force is over 80 % of the total clamping force. This explains the importance of the size of the axial contact area concerning the critical load and rigidity of the taper and hollow shank joint.

See also DIN 69893 - Hollow taper shanks type B, D and F. Hollow taper shanks type A and C have two additional positive drive grooves at the end of the taper which interlock with the tool mounting and produce a form-locking, orientated radial positioning.

During the release the tool will be positive unlocked and ejected from the tool spindle by the collet actuator and taper sleeve.