

**SYNCHRONIZED TAPPING**



**MHST** MACHINE TAPS

**HST SYNCHRO** TAP HOLDERS



## HST SYNCHRO

Modern CNC machine tapping centers are designed to synchronize spindle rotation with the feed axis. This applies in particular for "High Speed Tapping" (HST). The thread pitch that is dictated by the synchronized machine spindle does not necessarily match exactly the actual pitch of the threading tool.

In rigid tapping, especially when changing the feed direction, these small synchronization errors can lead to very high axial forces that have to be absorbed by the tap's thread flanks. This increased abrasive flank wear reduces the tool life of the tap as well as the surface quality and accuracy to gauge of the thread. Risking a significant decrease of process reliability, this may result in breakage of the threading tool.

Our HST SYNCHRO tap holder compensates synchronization errors and guarantees an exact thread pitch. A specially developed and patented mechanism compensates deviations of up to  $\pm 0.5$  mm. Unlike tap holders of other brands that use plastic parts for micro-compensation, the HST SYNCHRO features a metal component. In the course of time, plastic parts deform and harden until a compensation of synchronization errors is not ensured anymore. Compared to our HST SYNCHRO, tool life of these tap holders is much shorter.

During the tapping process, contaminants get into the tap holder and can therefore strongly affect its functioning. To counteract this, a regular cleaning is required. Unlike many competitive products which are damaged at temperatures above 60 °C and which are therefore insufficiently washable, the HST SYNCHRO withstands temperatures of up to 80 °C and can be completely cleaned.

Furthermore, many conventional synchro tap holders offer microcompensation of only  $\pm 0.2$  mm, which is expressively too low for the compensation of synchronization errors. The HST SYNCHRO ensures the necessary micro-compensation on tension and compression of  $\pm 0.5$  mm.

In general, all BASS cutting taps and roll taps are suitable for synchronized tapping, amongst which the high-performance taps of the MHST series were especially developed for this purpose (see right). The combination of HST SYNCHRO and MHST machine tap achieves the best result.

### Properties

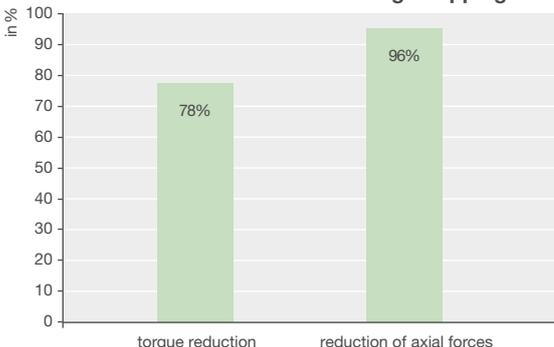
- suitable for lubricant pressure up to 80 bar
- only for synchronized machines
- for right hand and left hand threads
- for thread cutting and roll forming
- different shank types available

### Advantages

- reduction of axial forces by up to 96 %
- torque reduction before and after reversion of rotation by up to 78 %
- tool life increase by min. 30 % through lower friction
- lower tool costs
- higher process security
- better surface quality of the thread flanks
- reduced risk of tool breakage
- very good accuracy to gauge
- washable up to 80 °C

#### comparison:

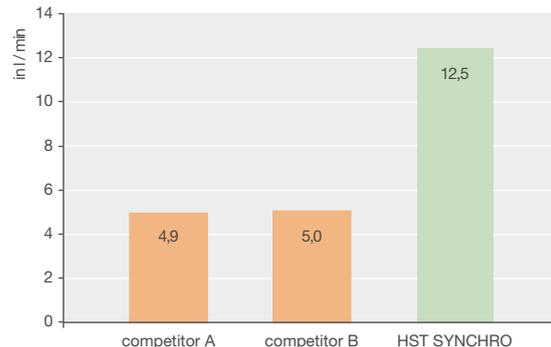
#### BASS HST SYNCHRO vs. rigid tapping



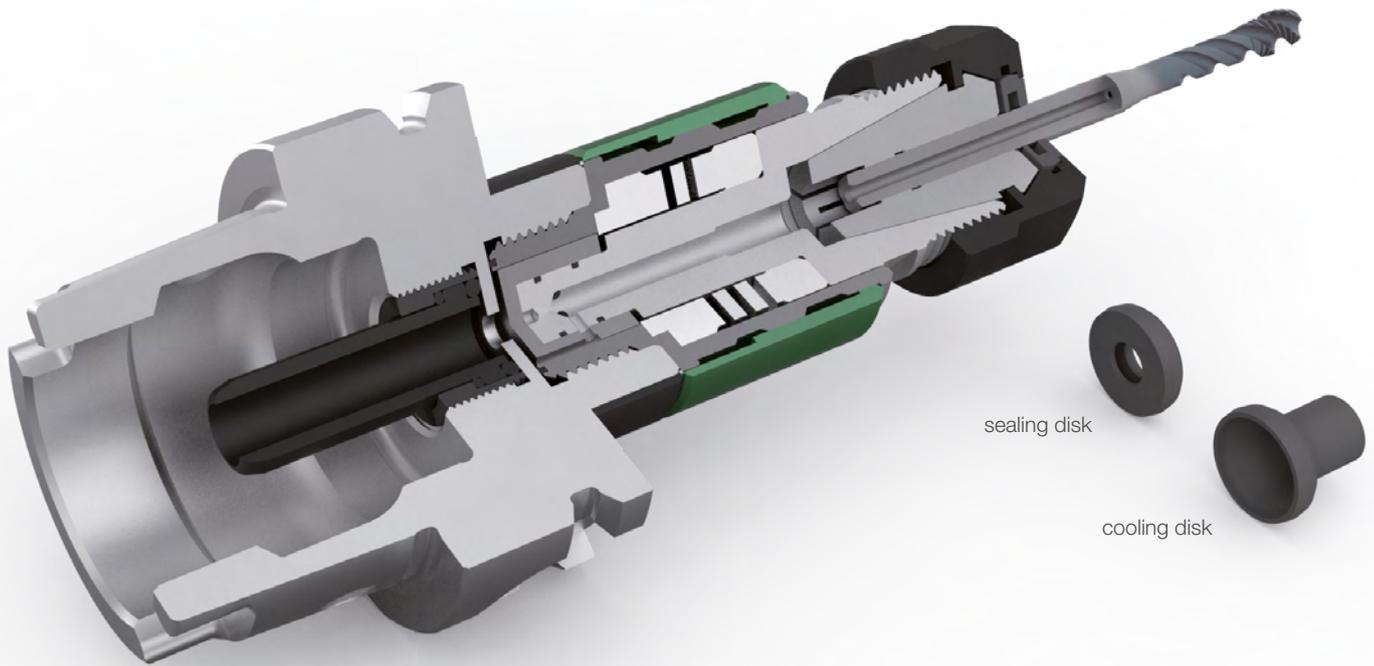
result with HST SYNCHRO and MHST cutting tap

#### comparison:

#### flow volumes



without cutting tap, collet and clamping nut 100% in accordance with machine: 19 l/min



## AN UNBEATABLE TANDEM

### HST SYNCHRO tap holders and MHST cutting taps

With HST SYNCHRO and MHST machine taps, you receive a harmonized system. This enables you to achieve process-secure machining for many different workpiece materials, high tool-life and high thread quality.

BASS MHST machine taps have high clearance angles. This reduces friction during threading operations and results in lower cutting edge temperatures. Hence increased part production can be attained with higher cutting speed.



### Advantages MHST machine taps

- tools for universal application in many workpiece materials
- high cutting speed
- high tool-life
- reduced machine downtime
- process-reliable machining and low quality costs
- accurate threads with high surface quality
- precise thread depths without program adjustment
- reduction of the tool variety and economy of magazine compartments
- reduced stock-keeping

#### blind hole

- DOMINANT MHST45 HK TIN
- DOMINANT MHST45 HK HL
- DOMINANT MHST45 KA HK HL

#### through hole

- VARIANT MHST HK TIN
- VARIANT MHST KR HK TIN

For further information, see BASS main catalog.

## HST SYNCHRO

Our tap holder for standard applications in different sizes with straight shank or HSK-shank. Upon request, we can offer further shank types. In the DUO version, the measurement can be adjusted from both sides of the tap holder.

- range of dimensions from M2 to M30
- straight shank DIN 1835 B/E
- HSK-A DIN 69893 A



## HST SYNCHRO SL

Our tap holder for the machining of parts with interfering edges in serial production. The extended shank allows the use of favorably priced threading tools in standard lengths. The extensions are integrated into standard tap holders.

- HSK-A DIN 69893 A
- standard extension lengths: 50, 100, 150, 200 mm
- customer-specific solutions on request



## HST SYNCHRO QCA

Our tap holder with quick change system. The HST SYNCHRO QCA allows tool change in the machine without using wrenches. Conventional quick change systems have large radial play between tap holder and quick change adapter, which affects the functioning of the tap holder significantly. The QCA quick change adapter was especially designed for the use in the HST SYNCHRO tap holder. Reducing the play to a minimum, it guarantees reliable functioning.

- range of dimensions from M4 to M16
- straight shank DIN 1835 B/E
- HSK-A DIN 69893 A



## HST SYNCHRO 10

Our tap holder for small dimensions to compensate for axial positional deviations of  $\pm 0.4$  mm. The total length can be continuously adjusted from 100 mm down to 60 mm by shortening the straight shank.

- range of dimensions from M1 to M3
- individually adjustable
- straight shank DIN 1835 B/E



## HST SYNCHRO 100

Our tap holder for large dimensions. For compensation of axial deviations of  $\pm 1,5$  mm.

- range of dimensions from M30 to M48
- straight shank DIN 1835 B/E



## HST SYNCHRO MMS (MQL)

Our tap holder for minimum quantity lubrication, combined with our MQL threading tools, avoids accumulations of the lubricant ensuring that the lubricant reaches the tool operating area. This guarantees high tool life and process security.

- HSK-A DIN 69893 A
- for 1-channel and 2-channel MQL systems
- for further information, see BASS leaflet MMS/MQL



### Collet with internal square

for the secure holding of threading tools. The internal square of the collet and the square at the threading tool's shank create a positive fitting that guarantees torque transmission.

- ER 11-GB
- ER 20-GB
- ER 25-GB
- ER 40-GB
- ER 08\*
- ER 08\*



\*without internal square

### Sealing disk

ensures that the lubricant is transferred into the threading tool without loss and prevents pollution of the collet.

- ER 20
- ER 25
- ER 40
- ER 50



### Cooling disk

for improved lubrication along the shank. When tapping through and blind holes, the process security can be increased by using a blind hole tap with axial coolant bore combined with a cooling disk. For simple through hole machining, we recommend to combine the cooling disks with a spiral pointed tap without internal coolant.

- ER 20
- ER 25



### Clamping nut

for easy assembly of collet and threading tool. The tightening of the clamping nut pushes the collet into the tapered socket in the HST SYNCHRO. The collet closes, tightly fixing the threading tool. The special internal contour of the clamping nut enables quick and easy disassembly of collet and threading tool. BASS clamping nuts ERC / ERM C are suitable for internal coolant and can be used with sealing or cooling disks.

- ERC 20
- ERC 25
- ERC 40
- ERC 50
- ER 08
- ER 11
- ERM C 20



### Wrenches

for tightening of the clamping nut.

- ER 08
- ER 11
- ER 20
- ER 25
- ER 40
- ER 50
- ERM 20



### Torque wrench

for secure tightening of the clamping nut. By setting the recommended tightening torque, you avoid damages on tap and tap holder. Suitable torque wrench heads have to be ordered separately.



For detailed product information, see BASS main catalog. The prices can be found in our current pricelist.

### Axial adjustment screw (AES)

adjusts the protruding length of the threading tool from HST SYNCHRO. Required for multispindle use, adjustment key separately available.



### Coolant tube for HSK shanks

For the secure coolant supply from the machine to the HST SYNCHRO. Spanners for fastening / loosening have to be ordered separately.

- HSK 63A
- HSK 100A



### Weldon adapter

for adaption of HST SYNCHRO tap holders with straight shank. One adapter for different HST SYNCHRO sizes.

- DIN 69871 A/D for SK 40 and SK 50
- MAS-BT for BT 40 and BT 50
- DIN 2080 for SK 40 and SK50
- DIN 69893 A for HSK 100A



### Pull stud

for the secure holding of SK shanks in the machine.

- SK 40
- SK 50



### Quick change adapter for ER collet

specially developed for the HST SYNCHRO QCA – reduces the play to a minimum

- ER 20



### Tool holding fixture

holds the HST SYNCHRO so that the clamping nut can be tightened without the help of a second wrench.

- HST SYNCHRO 20
- HST SYNCHRO 40
- HST SYNCHRO 60
- HST SYNCHRO 80



### Tool holding block

holds the HST SYNCHRO, allowing a tightening of the clamping nut with both hands.

- HSK 63A
- HSK 100A



### Scope of delivery

A clamping nut for internal coolant and coolant tube is included in delivery.

Wrenches, collet, cooling disk, sealing disk and axial adjustment screw have to be ordered separately.



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