BASS
TECHNIK FÜR GEWINDE

HST SYNCHRO **MMS /MQL**

for 1- and 2-channel systems
with MQL pressure up to 10 bar

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HST SYNCHRO MMS (MQL)

The versatile design of our tap holder for MQL machining allows use with both 1- and 2-channel system. A simple change of the transfer unit in the HSK shank qualifies the tap holder for automatic (HSK-A) or manual tool change (HSK-C).

The HST SYNCHRO MMS prevents accumulations of oil or leakage and thus ensures that the maximum volume flow of the aerosol reaches the threading tool or the tool operating area respectively. Furthermore, our tap holder conforms to the requirements of different company standards, as well as to the DIN 69090 for MQL processing technology.

The HST SYNCHRO MMS for MQL pressure up to 10 bar is recognizable by its green ring between HSK-shank and identification sleeve.

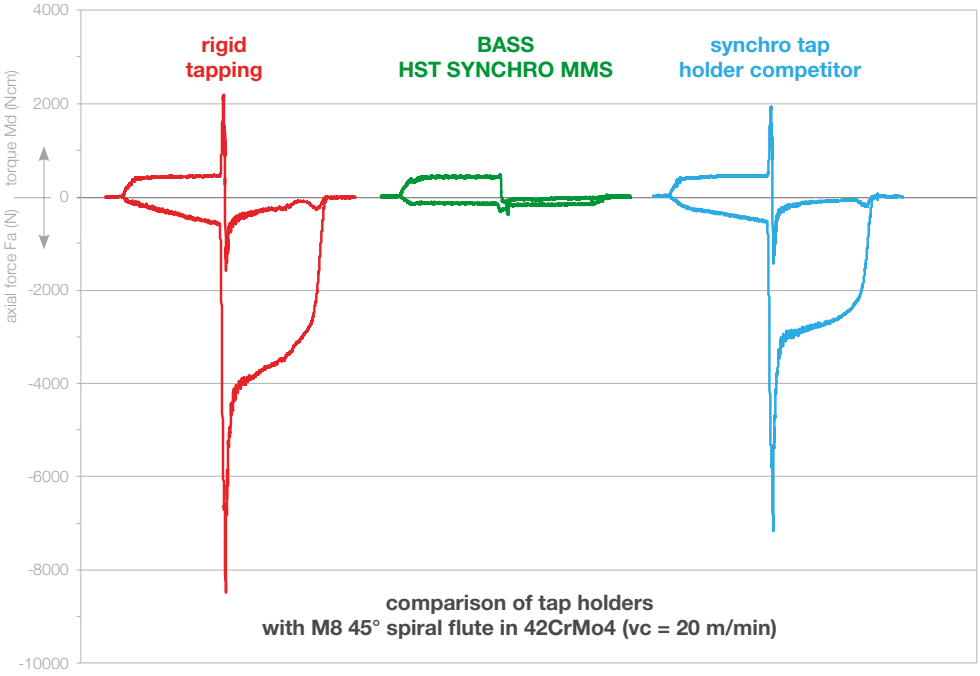
Like the HST SYNCHRO, it features a patented steel spring component for a microcompensation of ± 0.5 mm, ensuring a longer tool life compared to tap holders of other brands. By compensating the synchronization errors between rotation and feed spindle, it minimizes the otherwise high friction force on the tap flanks.

In order to ensure a reliable transfer of the aerosol from the HST SYNCHRO MMS to the threading tool, it is vital to choose a suitable axially adjustable setting screw (AES). The different AES are adapted to the corresponding threading tool regarding the square dimensions and transfer connection (internal or external cone – see right).

The elastic fixation of the AES absorbs axial forces that occur when tightening the clamping nut. Thus, it avoids damage of the AES so that even frequent tightening of the clamping nut will not affect the leak tightness.

The AES has an adjustment way of at least 3 mm. The positioning of the adjustment screw can be corrected both from the tool-side as from the shank-side through the HSK.

The standard HST SYNCHRO MMS is available for collet sizes ER 20 (M4-M12) and ER 25 (M10-M20).



comparison of tap holders with M8 45° spiral flute in 42CrMo4 (vc = 20 m/min)

Comparison of axial force and torque

The HST SYNCHRO MMS compensates synchronization errors of the hole centerline spindle rotation and the feed axis of the CNC machine. In the majority of cases, these synchronization errors appear at low cutting speed, rotational speed stop or change of the feed direction.

Subsequently, high torques and axial forces reduce the tool life of the threading tool and have negative effects on the thread quality.

As shown in the chart left, our patented steel spring element compensates the high torques and axial forces.

Wrenches
for tightening of the clamping nut, have to be ordered separately.

- ER 20
- ER 25

Adjustment spanner for axial adjustment screw (AES)
long hexagon socket wrench, for adjustment of the AES also from the shank-side of the HST SYNCHRO MMS.

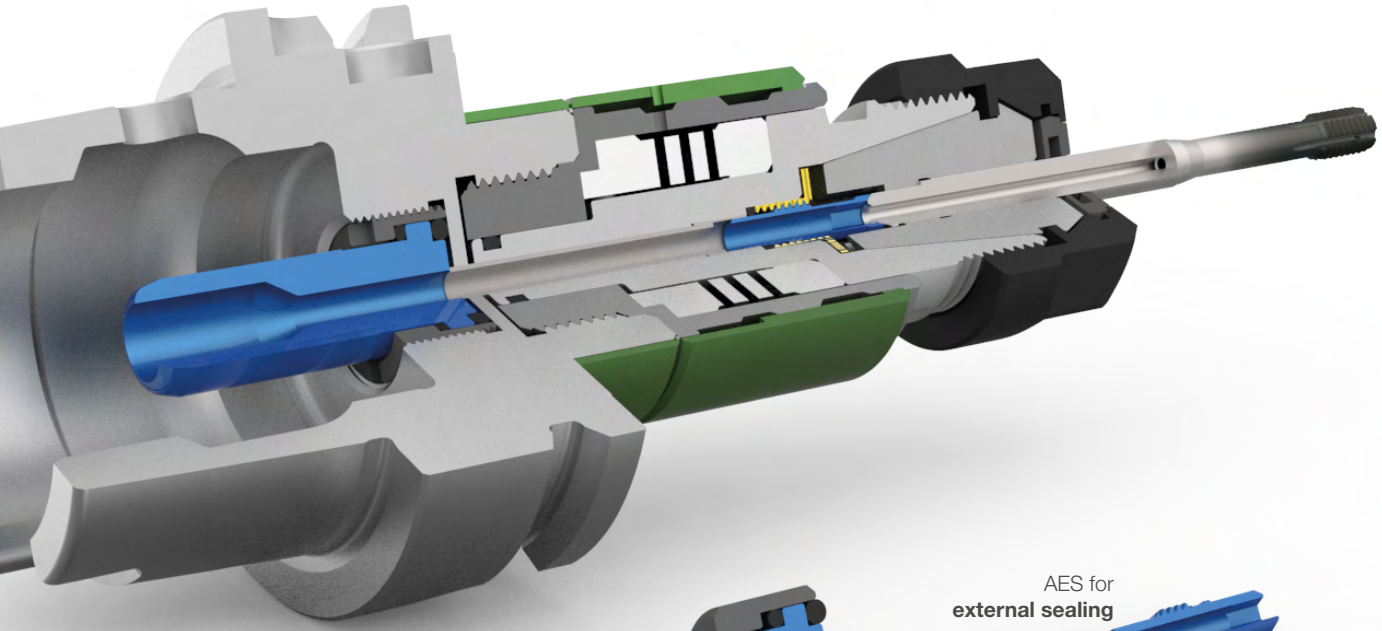
- spanner size 2.5
- spanner size 3.0

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 20-GB
- ER 25-GB

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

- ER 20
- ER 25



AES for
external sealing

AES for
internal sealing

2-channel system
automatic change

1-channel system
automatic change

manual change

Axial adjustment screw (AES)
adjusts the protruding length of the threading tool from the HST SYNCHRO and guarantees a secure transfer of the aerosol.

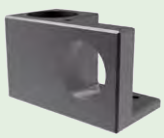
Tool holding fixture for HST SYNCHRO
holds the HST SYNCHRO so that the clamping nut can be tightened without the help of a second wrench.

- HST SYNCHRO 40
- HST SYNCHRO 60

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.

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

- HSK 63A

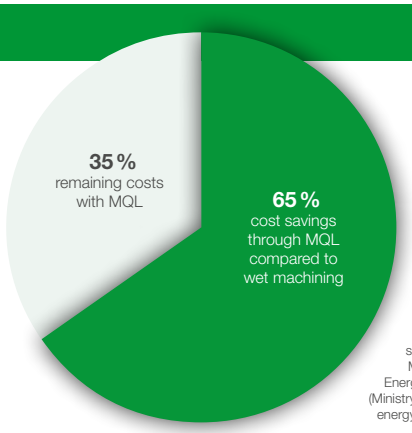


Advantages at a glance

- reduction of axial forces by up to 96%
- torque reduction before and after reversion of rotation by up to 78%
- tool life increase through lower friction on flanks
- improved thread quality
- higher process security
- elastic fixation of the AES avoids deformation or cracking
- suitable for MQL pressures up to 10 bar
- long service life through a patented steel spring compensation mechanism
- washable up to 80 °C

Cost advantages through MQL vs. wet machining

- no disposal costs of used lubricant (MQL is a loss lubrication)
- reduction of cleaning costs due to less oil on workpieces and chips
- shorter drying time of the workpieces
- additives against bacterial contamination of the lubricant are not necessary
- reduction of maintenance, inspection and recycling of lubricants
- no more lubricant filtration to remove material residue or small chips
- no need of circulating pumps, cooling units and their maintenance
- lower energy requirement of the lubricant pumps



source: www.umweltschutz-bw.de
Ministerium für Umwelt, Klima und Energiewirtschaft Baden-Württemberg
(Ministry for the environment, climate and energy industry of Baden-Württemberg)

Basic principle of minimum quantity lubrication

Minimum Quantity Lubrication (MQL/MMS) means lubrication by an aerosol consisting of oil and compressed air with an oil consumption of 50 ml per hour or less.

The aerosol can be supplied to the tool operating area either externally through a separate nozzle or internally through machine spindle, tool holder and tool.

The external nozzle sprays the aerosol on the tool and workpiece only briefly before machining – additional lubrication supply to the tool operating area during machining is not possible.

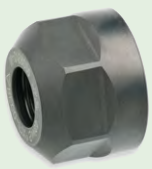
The internal MQL-supply on the other hand guarantees lubrication of the tool operating area also during machining.

There are two MQL systems for internal supply:

- **1-channel system:** The aerosol is prepared outside the machine in a separate MQL device and afterwards flows through the machine to the tool operating area. The oil content of the aerosol cannot be adjusted very precisely and may vary greatly from one manufacturer of MQL devices to another.
- **2-channel system:** Oil and air are fed through separate lines, and the aerosol is created in the tool holder and thus close to the tool operating area. In this system, oil and air can be mixed in a very variable, precisely adjustable percentage. The feed through two separate lines makes this system more complex than the 1-channel system.

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 are suitable for internal coolant and can be used with sealing or cooling disks.

- ERC 20
- ERC 25

MQL transfer unit for HSK shanks
for the secure transfer of the lubricant from the machine to the HST SYNCHRO MMS. Available for 1-channel and/or 2-channel system and for automatic or manual tool change.

Spanners for assembly have to be ordered separately.

- HSK 63A

Scope of delivery for HST SYNCHRO MMS*:
1 pc clamping nut DIN ISO 15488 for internal coolant
1 pc axial adjustment screw (AES) of your choice
1 pc MQL transfer unit of your choice

*Wrench set, collet, sealing disk and adjustment spanner for AES are to be ordered separately.

Threading tools for MQL machining

Like the HST SYNCHRO MMS, our threading tools for MQL machining also meet the DIN 69090-4 and various factory standards. For example, the transfer points on the tool shank are available with an inner cone of 60° or an outer cone of 90°. Both designs provide a process-reliable transfer of the aerosol.

The **DURAMAX GAL** is a catalog product for minimum quantity lubrication and is available with axial coolant outlet "**MKA**" or with radial coolant outlets "**MKR**". The **DURAMAX GAL MKR AK BT** is also available in solid carbide.

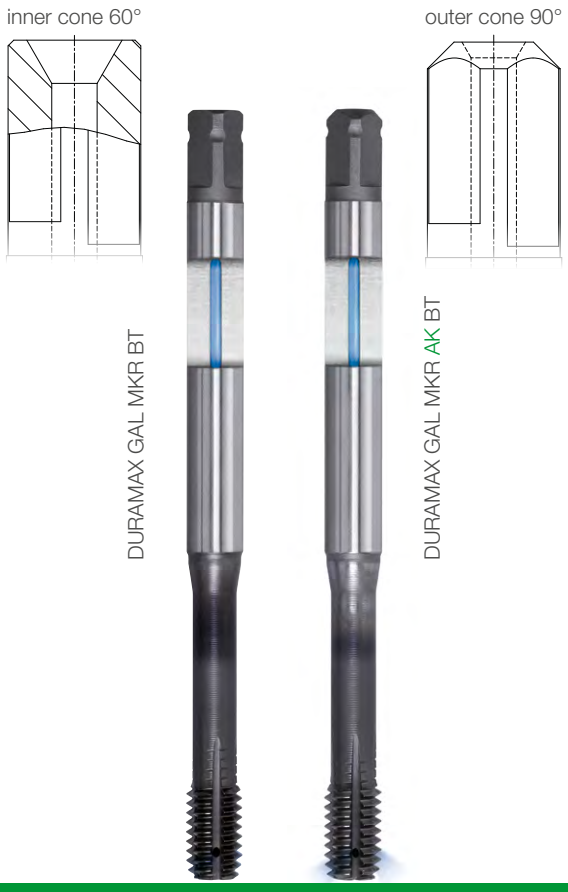
The inner cooling channels are optimized to prevent oil sacking and dead spaces. The aerosol is directed safely and without loss to the processing area. All coolant outlets are evenly supplied with aerosol. We guarantee an optimum flow volume matched to the respective tool dimensions.

30% more tool life with the multi-groove

A special feature of the **MKA BT MG** version is the multi-groove (MG). The innovative geometry of the internationally patented groove shape ensures „clean" machining with MQL. Small material particles, which can dissolve during machining and contaminate the tool as well as the workpiece, are picked up by the multi-groove and then removed. Compared to a conventional groove form, the service life increases by up to 30%. There is no need for subsequent component cleaning.

Further information and the video on the multi-groove can be found at www.bass-tools.com/multigroove.

Besides standard products, we also have experiences in individual solutions with MQL for tapping and roll tapping. We look forward to your inquiry.



An unbeatable tandem – DURAMAX GAL and HST SYNCHRO MMS.

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VDA AUTOMOTIVE QUALITY 6.4 MANAGEMENT SYSTEMS

ISO QUALITY 9001 MANAGEMENT SYSTEMS

ISO ENVIRONMENTAL 14001 MANAGEMENT SYSTEMS

ISO ENERGY 50001 MANAGEMENT SYSTEMS

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