MQL SHRINKFIT HOLDERS
Safety first

Safety is our top priority

- Emergency Exit
- Emergency Number
- Protective Equipment
- Assembly Point
- Alarm
What is MQL?

- MQL: Minimum Quantity Lubrication
  - Mix of air and oil
  - Volume of coolant highly reduced
  - MQL1 and MQL2 technologies

- Main advantages
  - overall coolant costs reduced
  - keeps the machine environment and workpiece clean
  - reduces the need for recycling coolant floods
  - makes the recycling of chips easier
  - reduces the exposition of operators to chemicals
Requirements to implement MQL

- **Machine equipped for MQL**
  - MQL coolant supply unit
  - Spindle designed for MQL
  - Specific aspiration

- **Tool holder designed for MQL**
  - Specific internal design
  - Specific accessories

- **Tools designed for MQL**
  - Specific coolant channels
  - Tapered tool shank designed according to standard DIN 69090-3.

* Seco’s solution is designed according to DIN 69090-3; Other suppliers of MQL solutions may use their own, patented solutions.
MQL tool holders: Seco’s offer

- **EPB 5403M**
  - Shrinkfit holders (according to standard DIN 69090-3) and ready for MQL1 and MQL2
  - Coolant tubes and stop end screws to be ordered separately

- **Suitable for:**
  - Customers willing to run tests with different accessories to optimise a MQL process
  - Customers already equipped with MQL accessories

- **Code key**
  
  E9304 5403 0680 M → Designed for MQL1 and MQL2
MQL tool holders: Seco’s offer

- **EPB 5403M1**
  - Shrinkfit holders, according to standard DIN 69090-3, and equipped for MQL1
  - Coolant tube and stop end screw mounted when delivered
  - Laser marking allowing identification of the MQL1 solution
    - MQL marking in the HSK V-flange
    - Product description « M1 »

- **Code key**

  E9304 5403 0680 M1 ➔ Equipped for MQL1
  (one combination « tool holder +MQL1 accessories » possible)
MQL tool holders: Seco’s offer

- **EPB 5403M2**
  - Shrinkfit holders, according to standard DIN 69090-3, and equipped for MQL2
  - Coolant tube and stop end screw mounted when delivered
  - Laser marking allowing identification of the MQL12 solution
    - MQL marking in the HSK V-flange
    - Product description « M2 »

- **Code key**
  - **E9304 5403 0680 M2-1.9**
    - Equipped for MQL2 (several combinations « tool holder +MQL2 accessories » possible)
    - External diameter of the coolant Tube*
    - *see explanations in slides “MQL2”
MQL1: one channel

- Oil and air mixed before the machine spindle
- Conveyed through one channel to the tool holder
MQL1 coolant tube

- HSK-A63
  - conventional coolant tube
- HSK-A100
  - MQL1 coolant tube
  - Internal coolant diameter optimised for MQL
    - Tapered from Ø12 to Ø8mm
MQL1 stop end screw

- Adapted to MQL tool shank: taper according to standard DIN 690903-3

- Short and long version, depending on the length projection of the tool holder

Short version 19MQL1xxS

Long version 19MQL1xxL

Tapered contact surface
MQL1 accessories: code keys

- HSK-A63: MQL1 Shrinkfit holders use a conventional coolant tube 20E9304
- HSK-A100: specific coolant tube 20E9306M1  
  - the internal diameter adapted to optimize the MQL flow (tapered from Ø12 to Ø8mm).

- 2 stop screws available, for each tool shank diameters
- The choice between the short and the long version depends on the gauge length of the tool holder. See correspondence tables in catalogue pages.
MQL2: 2 channels

- Oil and air conveyed to the tool holder through 2 separate channels
- Oil and air mixed in the mixing chamber of the MQL2 coolant tube
Main difference between MQL1 and MQL 2 accessories

- MQL2: Coolant pipe of the coolant tube connecting to the stop end screw
- Several coolant tubes and stop end screws per tool shank diameter (see next slides)
MQL2 accessories

- Variety of MQL2 coolant tubes
  - For each tool shank diameter
  - Different coolant channels diameters
    - Depending on the coolant channels of the tool (see next slides)
  - Different pipe lengths
    - Depending on the tool projection

- Variety of MQL2 stop end screws
  - Selected in step with the MQL2 coolant tube above

- Refer to catalogue pages for details
MQL2 accessories: code keys

**MQL2 Coolant tube**

- Code corresponding to the length of the pipe:
  - 1 = short
  - 16 = longest

- Code corresponding to the internal diameter of the pipe:
  - A = smallest diameter
  - D = widest diameter

- E9304 = HSK-A63
- E9306 = HSK-A100

- Code: 20E9304 M2A 01

**MQL2 Stop screw**

- Code corresponding to the tool shank diameter:
  - 1 = smallest shank diameter
  - 2 = second smallest shank diameter
  - ... 9 = widest shank diameter

- Code corresponding to the internal diameter of the pipe:
  - A = Ø2mm
  - B = Ø2.9mm
  - C = Ø4.1mm
  - D = Ø5.4mm
  - D = widest diameter

- Code: 19MQL2A01

For MQL2
MQL2 accessories: selection

- Selection based on the coolant channels of the tools
- Cross-sectional ratio of 1 to 4
  \[ 1 \times A_{\text{tool}} \leq ADIF1 \leq 4 \times A_{\text{tool}} \]
- Several combinations: privilege ratio closest to 1
- Refer to the product pages in the catalogue for easier selection of the tools
## MQL1 vs. MQL2

<table>
<thead>
<tr>
<th>MQL 1</th>
<th>MQL 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible to change from a conventional coolant system to a MQL1 system.</td>
<td>Does not allow to switch from a conventional coolant system to a MQL2 system.</td>
</tr>
<tr>
<td>Can be implemented on multi-spindle machines.</td>
<td>Very complicated to implement on multi-spindle machines.</td>
</tr>
<tr>
<td>The rotational speed influences the quality of the flow (the flow must be adapted to the speed).</td>
<td>The rotational speed does not influence the quality of the flow (same flow quality, dependless of the speed).</td>
</tr>
<tr>
<td>Modification of the coolant parameters (quantity of coolant, ratio oil/air…) is very slow. Not convenient when quick tool changes are necessary.</td>
<td>Fast adaptation to parameter changes. Suitable when quick tool changes are needed.</td>
</tr>
<tr>
<td>Limited volumes/min of coolant can be delivered to the tool (150ml/min).</td>
<td>Higher volumes/min can be delivered to the tool (400ml/min).</td>
</tr>
<tr>
<td>Pressure 5 bars minimum required.</td>
<td>Pressure 4 bars minimum required.</td>
</tr>
</tbody>
</table>