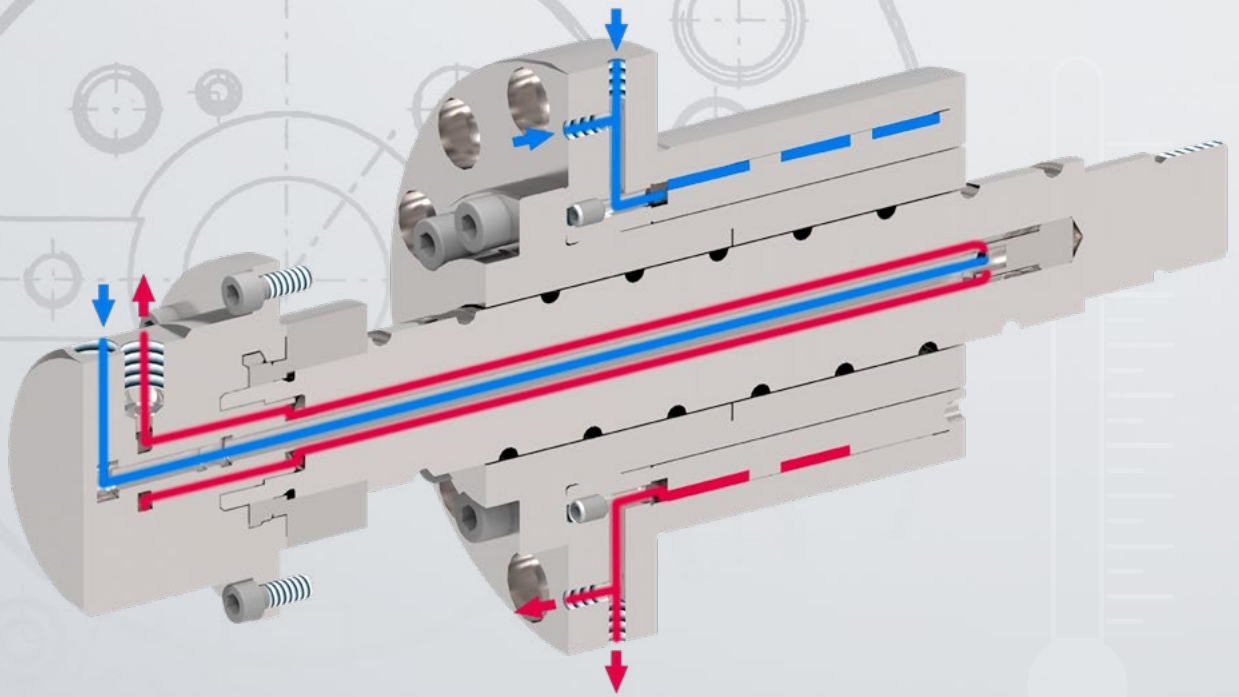


# SCHNEEBERGER

AM  
Precision



## Cooling Systems for Ball Screws

Solutions for constant working temperatures under dynamic operating conditions

## Consistent operating temperatures – for high-precision performance results and high velocities

In practice, our ball screws show impressively low friction and very low power loss, thus achieving extreme efficiency. High acceleration and high velocities can still lead to raised work piece temperatures. For these high-strain applications A.MANNESMANN offers a diverse range of cooling possibilities.

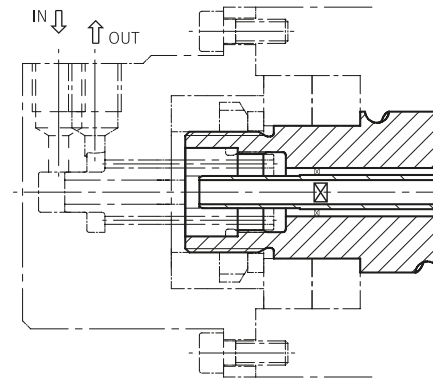
### Specific temperature regulation – for consistent operating conditions

By cooling the ball screws the small amount of friction heat is directly removed. This achieves almost constant thermal operating conditions.

These cooling systems reduce the heat transfer to adjacent machine components, thus increasing the ball screw's positioning accuracy linearly over its entire operational lifetime. In addition, cooling reduces undesired changes in preload and contributes to constant lubricant viscosity during operation. All of this reduces wear and tear and increases service life.

### Three cooling systems

Depending on the actual operation there are three cooling options: cooling the spindle, cooling the nut or both.



### 1 Cooling the ball screw spindle

Heat dissipation is achieved by a central coolant channel that runs the entire spindle length. This contains a flow of cooling liquid, which cools the spindle down to the exact desired temperature.

We also offer alternative drilling options for special constructions.



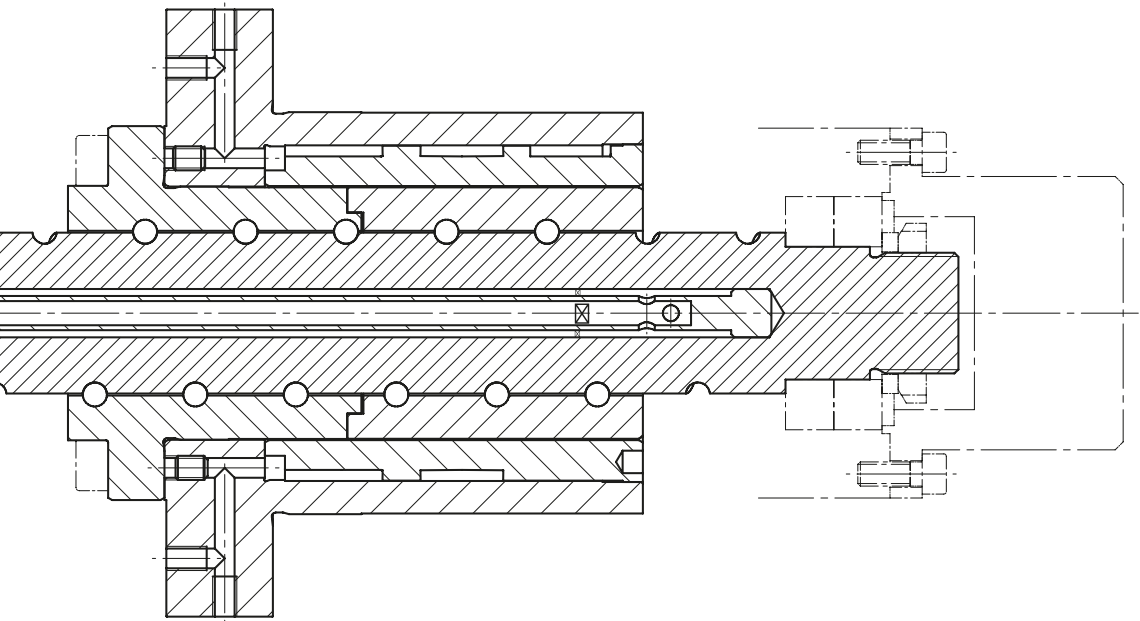
Ball screw spindle with coolant channel

### Economic Advantages

- High travel speeds
- High acceleration values
- Less wear and tear
- Longer service life
- Shorter warm-up phase, faster production capability
- 3 cooling concepts available (spindle, nut or both combined)

### Technical Advantages

- Precise temperature control
- Constant operating conditions
- Reduced heat transfer to adjacent machine components
- No undesired changes in preload
- Constant lubricant viscosity
- Precise, tight-tolerance temperature control
- High positioning accuracy



### 2 Cooling the Ball Screw Nut

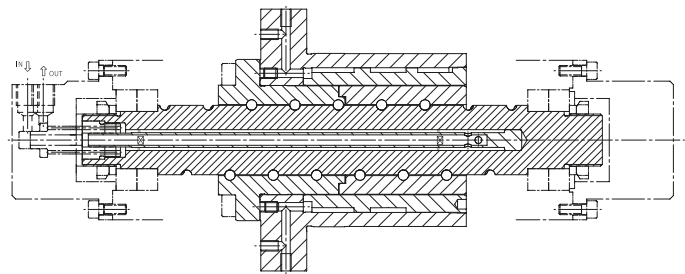
Cooling the ball screw nut is achieved by means of a cooling jacket surrounding the nut bracket. This can be provided in the form of an external bushing or as a built-in part of the nut.

**External cooling:** The ball screw nut is inserted into the cooling jacket. With this method ball screws can be cooled without additional effort – even subsequently.

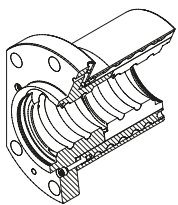
**Internal cooling:** The cooling bushing is a built-in part of the ball screw nut. This nut cooling system is very compact and only takes up minimal additional space.

### 3 Combined Spindle and Nut Cooling

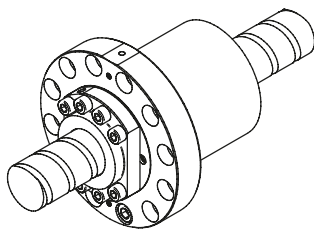
By cooling both spindle and nut optimal cooling efficiency is achieved.



Spindle and nut cooling system



Internal nut cooling



External nut cooling

### Advantage of a Cooling System

By using a cooling system it is possible to keep the ball screw's operational temperature convincingly stable: the amount of cooling water and the inlet temperature can be regulated to achieve tight-tolerance temperature control.

This leads to a significantly reduced warm-up phase in machine tools, so that production capability is reached quickly.

### Thermal Requirements and Manufacture

Feel free to contact us regarding your thermal problems and requirements. We will gladly advise you without any obligation.

Should you require more than a standard cooling system we can provide you with custom-made individual cooling solutions.



# The A.MANNESMANN Service

For all our ball screw products we offer comprehensive service and support during construction, assembly and during their complete service time:

- Constructive advice
- Parameter calculation and evaluation
- Specification of optimum lubrication
- On-site support
- Support during assembly
- Damage analysis
- Overhaul and repair
- Training

We are happy to provide you personally with detailed information. You can find an overview on our website.

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