FELSOMAT

# FELSOMAT Hobbing Center 80




High-performance hobbing up to Ø 95 mm

# Understanding requirements. Creating value.

For many years, FELSOMAT has been developing and manufacturing high-performance gear hobbing machines designed to meet the demanding requirements of gear production. Experience gained from numerous customer projects has been directly incorporated into the development of these machines. The result is a portfolio of solutions precisely tailored to the key requirements of modern manufacturing operations: maximum productivity and process reliability, high machine availability, low cost per part, consistent machining quality, ease of operation, and maximum flexibility.

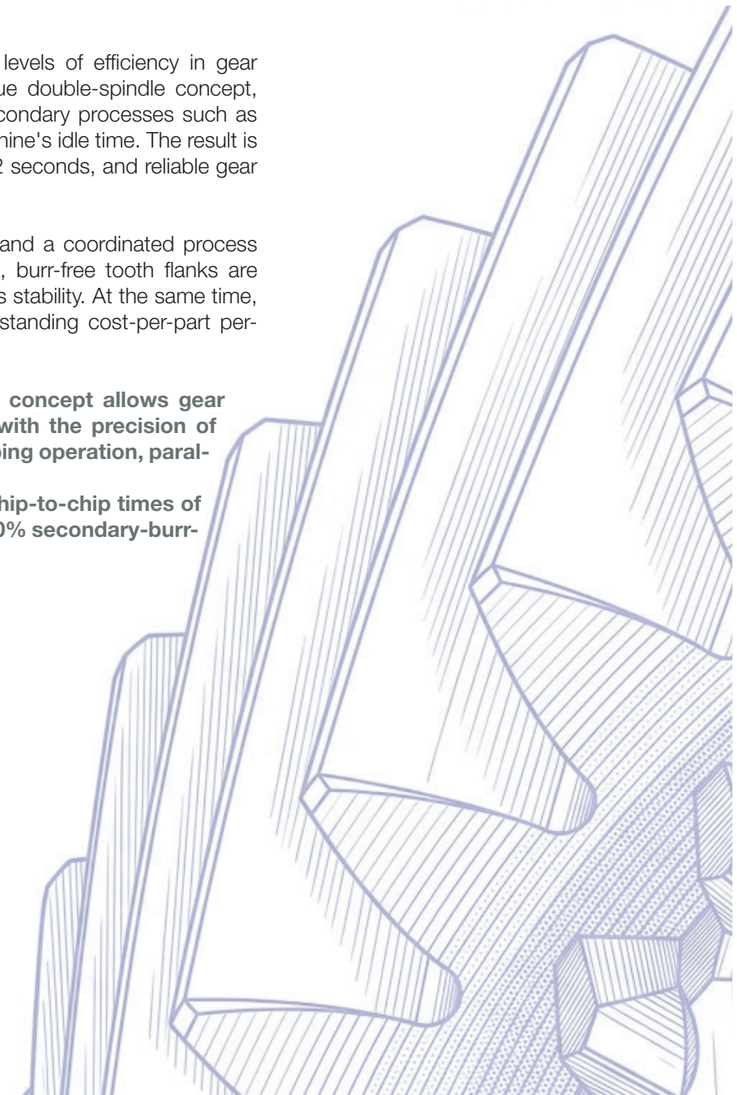
Innovative technologies such as the double-spindle concept, chamfering by Chamfer Skiving, intelligent process monitoring systems, and flexible automation solutions create the basis for efficient, autonomous, and future-ready production.

With the **F**ELSOMAT **H**obbing **C**enter **80**, new levels of efficiency in gear manufacturing are achieved. Thanks to its unique double-spindle concept, loading and unloading operations, along with secondary processes such as chamfering, are completed entirely within the machine's idle time. The result is high productivity, chip-to-chip times of less than 2 seconds, and reliable gear quality, all within a minimal machine footprint.

Due to the precise Chamfer Skiving technology and a coordinated process sequence of hobbing, chamfering, and hobbing, burr-free tooth flanks are reliably achieved while ensuring maximum process stability. At the same time, this combination of technologies delivers an outstanding cost-per-part performance.

**Unique in gear hobbing, the double-spindle concept allows gear components to be hobbed and chamfered with the precision of Chamfer Skiving technology in a single clamping operation, parallel to the main machining process.**
**This unique process combination achieves chip-to-chip times of less than two seconds while guaranteeing 100% secondary-burr-free tooth flanks.**

By integrating the ARGUS monitoring system, processes and machine components can be monitored and evaluated in real time. The collected data enables targeted process optimization, tool wear monitoring, machine condition analysis, and collision monitoring to increase process reliability and machine availability.



## Highlights FHC 80

**1.** Chip-to-chip times of less than two seconds
- » The double-spindle with swiveling drum is unique in gear hobbing
- » Simultaneous machining using both workpiece spindles
- » Loading and unloading, part orientation, and similar operations are performed during non-productive time
- » High machine availability through minimized tool change and setup times

**2.** Guaranteed burr-free secondary machining
- » Chamfer Skiving is a chip-removing technology that avoids material deformation completely
- » The process sequence of hobbing – chamfering – hobbing ensures 100% burr-free tooth flanks
- » Ideal conditions for subsequent hard finishing processes

**3.** Precision chamfering with Chamfer Skiving
- » Chamfer geometry, angle, and size can be precisely defined by design
- » Complete machining in a single setup eliminates deviations caused by reclamping of the workpiece
- » High precision and repeatability
- » Chamfering tool costs below 1 cent per workpiece

**4.** Cost efficiency and process reliability
- » Continuous process monitoring and evaluation with ARGUS
- » Real-time tool wear monitoring and machine condition analysis
- » Integrated crash and collision monitoring

CHAMFER SKIVING

**Precision chamfering of gears in an integrated, high-productivity process.**

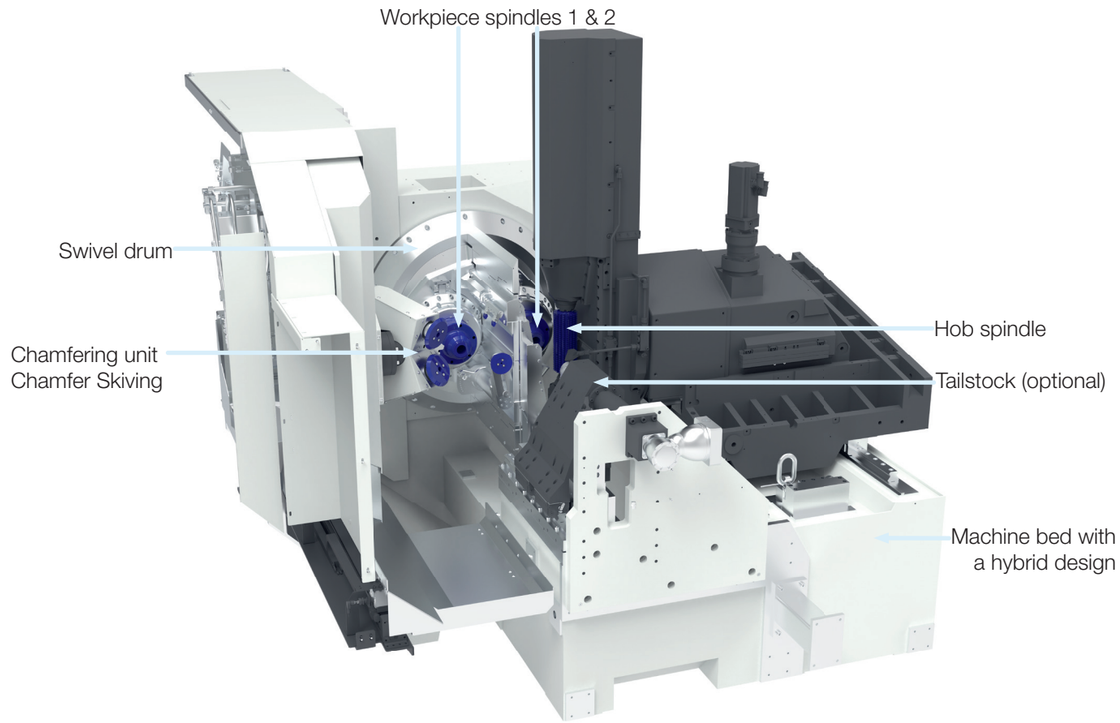
- » No material deformation
- » No secondary burrs or material buildup
- » Chamfering possible on components with interfering contours
- » Tool design for optimal chamfer angles
- » Long tool life
- » Easy operation



# Our machine concept

### Machine concept highlights

- The double-spindle concept lets machining operations run in parallel, including gear hobbing and chamfering, reducing non-productive time and increasing production output.
- Maximum rigidity combined with optimum damping characteristics is achieved through a robust hybrid machine bed with mineral-cast filling.
- Direct drives in combination with direct measuring systems ensure high dynamics and positioning accuracy.
- The control interface is straightforward to operate and program resulting in short setup times and high machine availability.
- Tool-free hob exchange with automatic tool clamping system.
- Efficient technologies combined with low tool costs reduce total manufacturing costs.

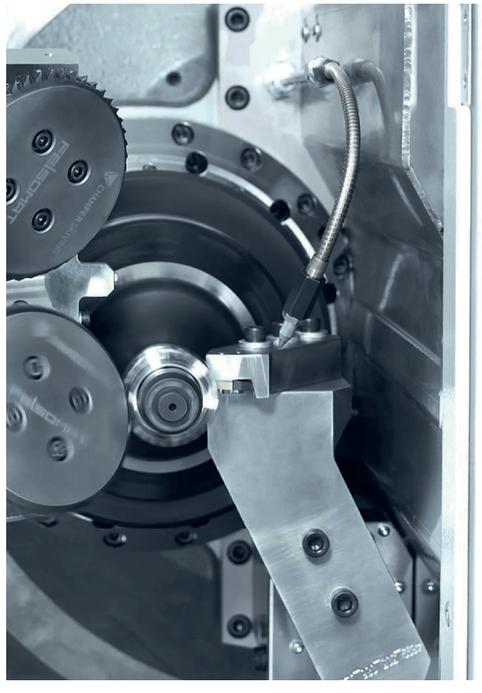



### Standard equipment

- Two horizontal workpiece spindles integrated into a swiveling drum
- Direct drives for the workpiece spindles and the hob spindle
- Absolute measuring systems on all linear axes
- Separate work areas designed for dry machining
- Cooling units for the workpiece spindles and the electrical cabinet
- Chip conveyor

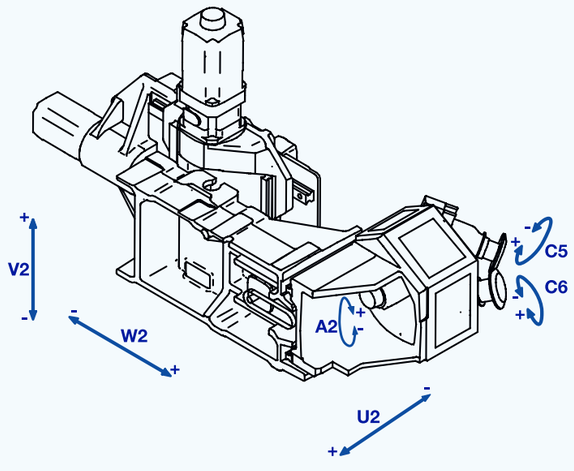
### Options (excerpt)

- Chamfering with Chamfer Skiving
- Tailstock for shaft machining
- Application-specific tooling
- Vacuum extraction systems
- Workpiece conveyor systems
- Automation solutions with gantry systems, stacking cells, robot cells, and more

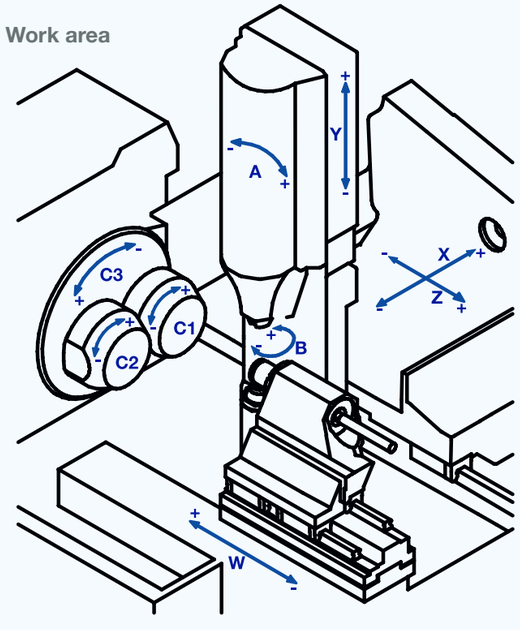




### Chamfering unit – Chamfer Skiving

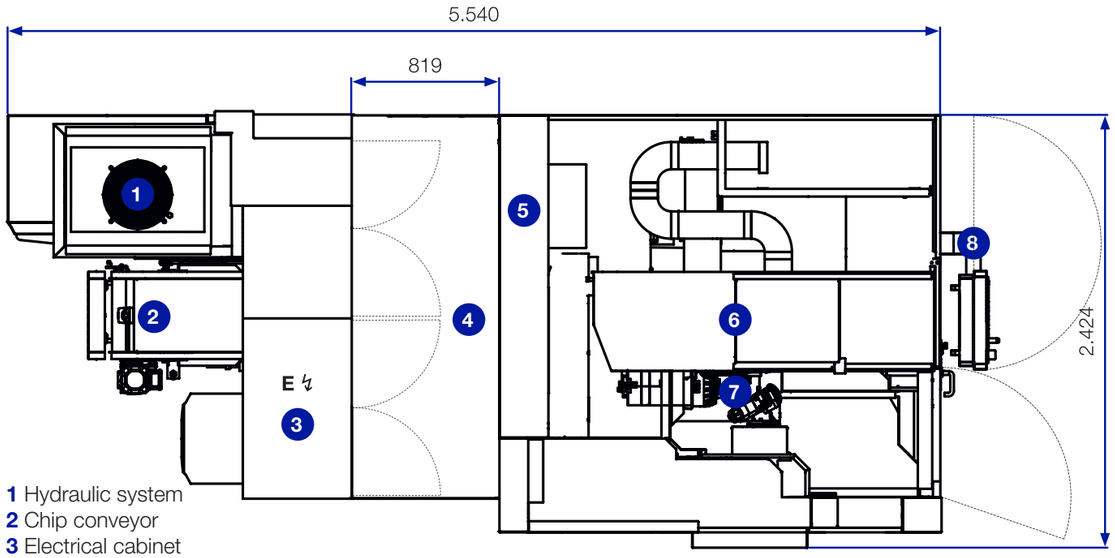



### Work area




| | | | | | |
|---|---|---|---|---|---|
| **A** | Hob head swivel motion | **C5/C6** | Chamfer Skiving unit rotation | **X** | Hob head slide radial movement |
| **A2** | Chamfering tool rotation | **U2** | Chamfering tool infeed | | |
| **B** | Hob rotation | **V2** | Chamfering unit vertical axis | **Y** | Hob radial movement |
| **C1/C2** | Workpiece spindles 1 & 2 | **W** | Tailstock axial movement | **Z** | Hob head slide axial movement |
| **C3** | Swivel axis of the swivel drum | **W2** | Horizontal axis | | |

# Technical data




**1** Hydraulic system
**2** Chip conveyor
**3** Electrical cabinet
**4** Maintenance aisle
**5** Pneumatic
**6** Gear hobbing work area
**7** Chamfering work area
**8** Control panel

| FHC 80 | |
|---|---|
| Workpiece diameter, max. | 95 mm |
| Workpiece length, max. | 200 mm |
| Module, max. | 3 mm |
| Hob diameter, max. | 70 mm |
| Hob length, max. | 276 mm |
| Number of workpiece spindles | 2 |
| Spindle interface (DIN 55026) | A5 |
| Number of hob spindles | 1 |
| Drive power hobbing spindle (100% DC) | 8.8 kW |
| Drive torque hobbing spindle (100% DC) | 42 Nm |
| Spindle speed hobbing spindle (100% DC) | 7,500 rqm |
| Shifting range (Y-axis), max. | 190 mm |
| Control | Siemens SINUMERIK ONE |
| Footprint, approx. | 13 $m^2$ |
| Weight with chamfering unit and tailstock, approx. | 11,500 kg |

Subject to technical changes.



# Flexible automation solutions



FHC 80 with pallet conveyor



FHC 80 with highway conveyor system



FHC 80 with FSC stacking cell

Fluctuating production volumes and increasing product variety require adaptable manufacturing concepts. Conventional rigid systems quickly reach their limits in such environments.

FELSOMAT's modular automation concept provides the flexibility and efficiency needed for modern production: stand-alone machines can be interlinked, expanded, or replaced as required, with minimal modification effort.

Standardized automation modules enable the seamless integration of additional processes such as flipping parts over, measuring, and cleaning. At the same time, the concept provides the basis for a continuous material flow, intelligent machine connectivity, and the gradual evolution toward autonomous manufacturing systems. Processes can be monitored transparently and adapted automatically as requirements change. This leads to efficient use of resources. The result is higher productivity, maximum availability, and future-proof manufacturing.

## FELSOMAT makes the difference

- From flexible to autonomous: automation tailored to your needs
- Modular scalability with the flexibility to expand at any time
- Intelligent networking of machines and processes
- Integrated quality monitoring and process control
- Reduced operator effort, increased productivity
- Future-proof through easy retrofitting and digitalization
- Highest availability for cost-effective manufacturing

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**Locally specialized.**

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