SHAFT HOBBING WITH INTEGRATED CHAMFERING

FHC 150 S Flexible Hobbing Center

FELSOMAT®

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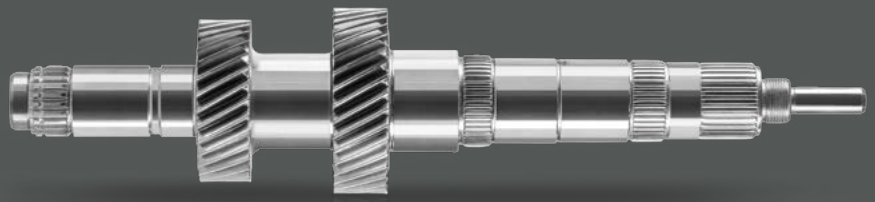
The most innovative hobbing technology for transmission shafts

The Felsomat hobbing-deburring-chamfering center is designed specifically for an environmentally friendly dry hobbing process. With the integration of multiple chamfering and deburring units it is now possible to manufacture two different gears on one shaft in one set up. Following chamfering and deburring it is also possible to have a high speed finish pass of the gear teeth to optimize hard finishing operations. The highest productivity in the smallest footprint– the Felsomat FHC 150 S is the optimal solution to manufacture transmission components at the lowest cost per piece.



High performance facts:

- Shortest cycle times with the highest material removal rate
- Finish machining to the final gear quality due to 1 or 2 cut technology
- Integrated chamfering with the option of 2 cut technology
- Short idle times through efficient integrated automation
- Increased tool life leading to lowest cost per piece
- Singular construction design with lift hooks for easy redeployment
- Well designed operator access and ergonomic tooling and work holding facilitates fast changeover < 10 min
- Easy operator interface with intelligent technology software package
- Optional steady rest for long shafts

The competitive edge with superior machine technology

Machine base

- Maximum rigidity with optimum damping characteristics guaranteed by the massive cast iron machine base with a closed loop steel frame
- Form fit assembly faces for the work piece spindle and the linear guide rails made from high tensile steel, all machined in one set up for the highest accuracy
- Thermally stable with chips free falling into the chip trough and the stainless steel work area covers isolated from the machining components

Work piece spindle for higher productivity

- The torque style spindle motor, liquid cooled with a high resolution Heidenhain encoder, ensures a dynamic feedback control system and an excellent synchronisation of the work piece spindle
- The maintenance free direct driven spindle design guarantees a high technical availability

Cross slide ZX

- Slide design with short cantilever made from high tensile nodular iron
- The ZX cross slide with integrated tool swivel axis has generous dimensioned linear guide ways with up to 6 roller pads per axis and absolute encoded linear scales

Tangential slide Y

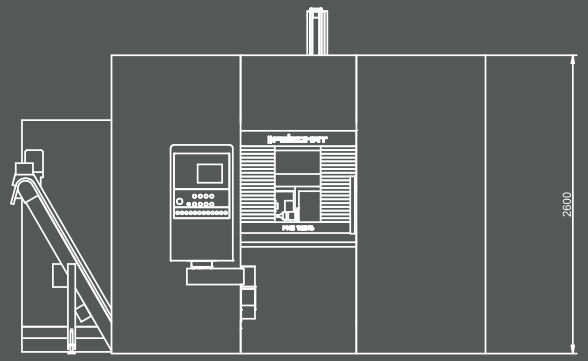
- The tangential slide made from high tensile mono block steel with generous guide ways for the slide and the counter support. To achieve extreme stiffness of the system the complete slide is clamped hydraulically during the machining of the work piece

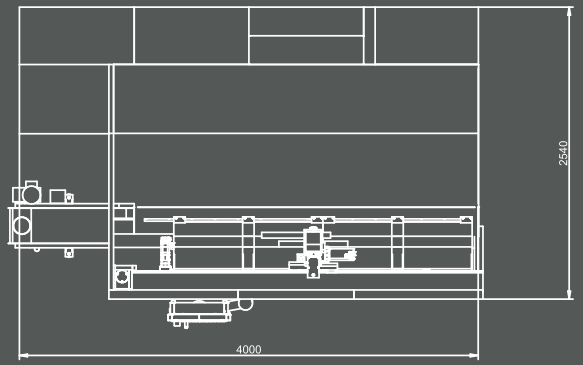
Direct driven hob head

- The high speed spindle offers high torque at the low rpm range, and has sufficient reserve for the introduction of future hob cutter materials

Quick and easy tool change

- The hob head moves into a vertical orientation for an ergonomically simple tool change process



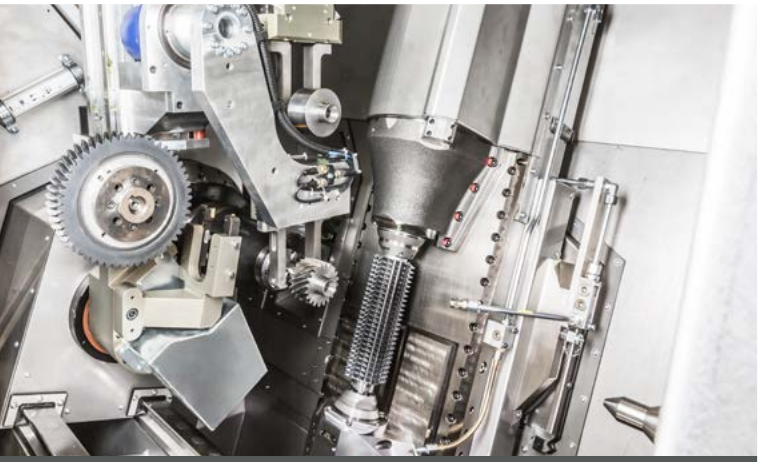


Technical data FHC 150 S

Work piece			
Max. outside diameter		[mm]	150
Max. work piece length		[mm]	600
Max. modul		[mm]	4
Hob cutter			
Hobbing diameter min./max.		[mm]	50 – 100
Hobbing tool length min./max.		[mm]	200 – 310
Hobbing teeth length max.		[mm]	224
Hobbing arbor dia. cylindrical shaft		[mm]	32
Counter support short taper Ref. Dia.		[mm]	25
Number of chamfering and deburring tools, max.			3
Machine			
Hobbing spindle power		[kW]	23
Hobbing spindle speed range max.		[1/min]	5.500
Work piece spindle power		[kW]	15
Work piece spindle speed range max.		[1/min]	620
Axial travel max. (Z-axis)		[mm]	1000
Radial travel max. (X-axis)		[mm]	110
Axis distance min./max.		[mm]	52 – 162
Swivel range of hob head (A-axis)		[°]	+/- 35
Tangential travel max. (Y-axis)		[mm]	200
Travel tailstock – work piece		[mm]	600
Max. feed and speed rate	axial	[m/min]	40
	radial	[m/min]	40
	tangential	[m/min]	18
Control			Siemens 840 D
Electric			
Total connected load approx.		[kW]	45
Weight			
Weight of the basic machine approx.		[kg]	12.000
Foot print			
Basic machine (without chip bin) approx.		[m]	2,55 x 4,0

Dimensions and values are depending on gear tooth parameter and work piece material specifications and have to be considered individually.

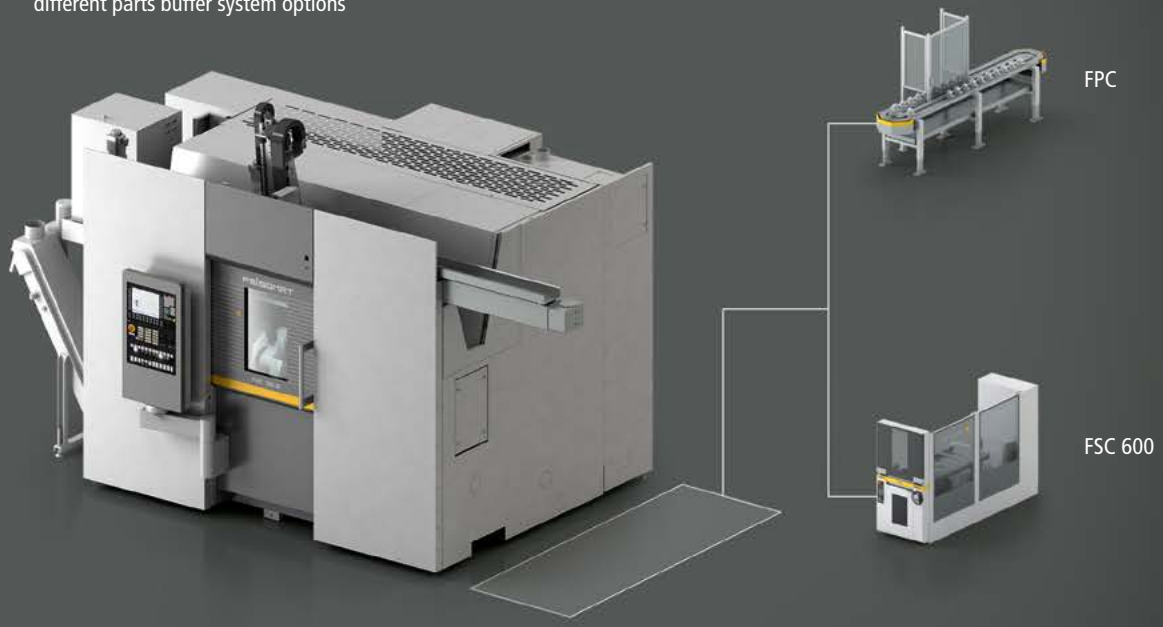
Integrated chamfering for the optimum gear quality
with the 2-path cut strategy.



Short idle time by the integrated automation system
with high dynamic axis and optimized travel ways.

The competetive edge.
Hobbing with the most comprehensive range of integrated technologies

Standard-automation platform with
different parts buffer system options



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