

The Hobbing Machines LC 600-2000



LIEBHERR

The Machine Concept

For the development of this machine series the characteristics of the very successful new machine generation from Liebherr was systematically transferred to the application of the universal machines LC 600 – LC 2000.

The necessary flexibility for different applications is achieved with a two-piece machine bed. With this concept the machines can be optimally configured to customer specific requirements. The self-supporting, very rigid design permits a machine installation directly on the floor, without a special foundation.

Chip removal is accomplished through the machine bed with the main chip conveyor arranged lengthwise.

The machine bed and laterally arranged coolant tanks hold approx. 800 l of coolant.

The Hob Head

Maintenance-free, high-dynamic AC drive technology with different ratios for the backlash-free cutter drive provide the torque required for high performance cutting, at spindle speeds up to 1000 rpm and up to 45 kW. The hob arbor mounting can be with hollow shaft taper (HSK) to DIN 69893 or with ISO taper.

Optionally, there is an internal hob head available as quick change unit for single indexing internal machining.

The Machine Table

Dual worm wheel drives or direct drives are used for a backlash-free table drive. The table spindle is equipped with hydrostatic radial and axial bearings for high table loads, up to 60/95/120 kN and maximum radial rigidity. The water cooled AC table drive ensures highest accuracy and reliability. Large table bores accommodate hydraulic clamping cylinders for actuating workpiece clamping fixtures.

The CNC Control

Reliability and maintainability are the characteristics for the control technology of the Liebherr hobbing machines. The compact electrical cabinet contains all control and drive elements. A swivel-type operator panel allows optimal machine operation.

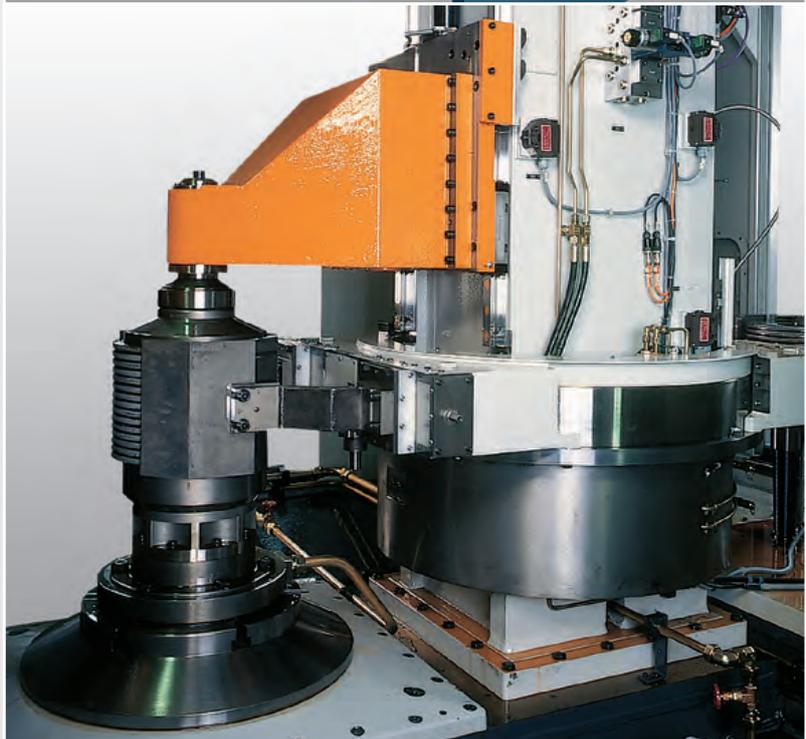
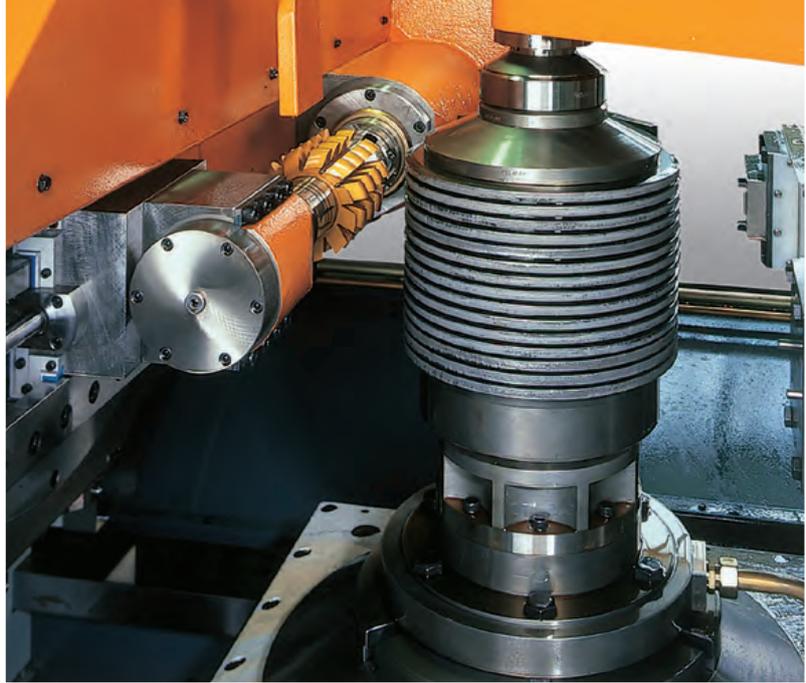
In standard, the machines are delivered with Siemens-control in connection with Siemens drives.

The essential features of these advanced controls are:

- PC based control technology
- digital drive technology
- integrated PLC
- advanced field bus systems (profi bus)
- TFT flat screen
- optional network integration
- dialog input tailored to gear machining
- Teleservice
- Diagnostic tools

Automation

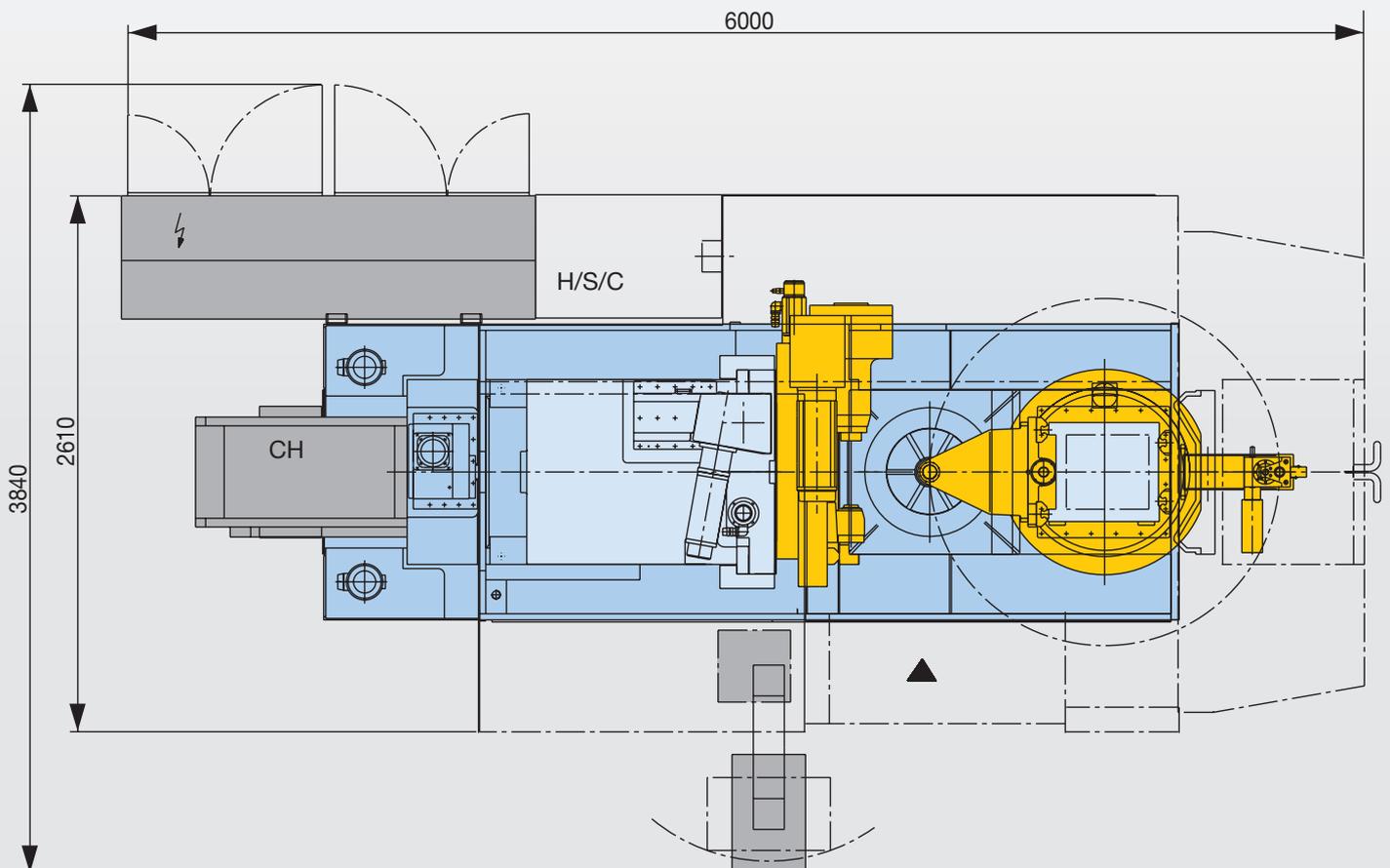
Workpieces up to 800 mm diameter can be automatically loaded and unloaded with a 2-station ringloader. Parallel grippers with adjustable diameter range are used for a large part variety.



Technical Data

		LC 600	LC 700	LC 800	LC 1000	LC 1200	LC 1400	LC 1600	LC 1800	LC 2000
Max. workpiece diameter	mm	600	700	800	1000	1200	1400	1600	1800	2000
Max. nominal module for steel	mm	16	16	20/24	20/24	20/24	20/24	20/24	20/24	20/24
Max. Hob slide travel	mm	1000	1000	1000/1400	1000/1400	1000/1400	1000/1400	1000/1400	1000/1400	1000/1400
Table diameter	mm	535	630	700	800	900	1100	1200	1200	1200
Table speed	min ⁻¹	40/80	40/80	25/50	25/50	25/50	10	10	10	10
Centre distance cutter/table	min. mm	50	50	55	55	55	180	180	180	180
	max. mm	440	500	560	680	800	980	1080	1200	1300
Hob head swivel angle	degrees	± 45	± 45	± 35	± 35	± 35	± 35	± 35	± 35	± 35
Hob arbor mounting		SK 45/HSK-A 80			SK 50/HSK-A 100					
Max. shift/tangential travel	mm	220/300	220/300	320	320	320	320	320	320	320
Max. hob diameter	mm	210	210	315/450	315/450	315/450	315/450	315/450	315/450	315/450
Max. hob length	mm	260	260	430/605	430/605	430/605	430/605	430/605	430/605	430/605
Cutter speeds	min ⁻¹	375/500/750/1.000			275/360/450/600					
Drive power - cutter spindle	kW	30	30	30/45	30/45	30/45	30/45	30/45	30/45	30/45
Machine weight with tailstock column	appr. kg	21.000	22.000	23.000	24.000	24.500	26.000	26.500	26.500	26.500
Total connected power	max. kVA	65	65	80	80	80	80	80	80	80

* Direct drive



Machine Tools and Automation Systems by Liebherr

With around sixty years of experience in the field, Liebherr is one of the world's leading manufacturers of CNC gear-cutting machines, gear-cutting tools and automation systems. The company's innovative products are the result of advanced ideas, highly qualified employees and the latest manufacturing systems at each of their locations. They are characterised by economy, ease of use, quality and reliability in combination with a high degree of flexibility. Liebherr has approximately 1200 employees in the field of machine tools and automation technology and has production facilities in Kempten and Ettlingen (Germany), Collegno (Italy), Saline (Michigan, USA) and Bangalore (India). They are supported by expert and reliable marketing and service specialists at a large number of locations worldwide.

System Solutions for Gear Cutting Machines

The Liebherr range in the field of gear cutting machines includes gear hobbing machines, gear shaping machines and hobbing and profile grinding machines, all noted for their high degree of stability and availability. Liebherr can supply all technologies required for the manufacture of high-quality gears and is continuously developing these technologies. Particular importance is attached to the energy efficiency of the machines.

Gear cutting machines from Liebherr are supplied to renowned manufacturers of gears and gearboxes as well as large-scale slewing rings worldwide. They are in demand primarily from the automotive and construction machinery industries and also increasingly from the windpower industry for the manufacture of gears for wind turbines.

High-Quality Gear Cutting Tools

Liebherr manufactures high-quality precision tools for the soft and hard machining of gears and all Liebherr gear cutting machines are fitted with these tools. The range also includes Lorenz stock tools and products customised for specific applications.

Automation Systems for a Wide Range of Applications

Liebherr has a wide range of products for linear portals, pallet-handling systems, conveyor systems and robot integration for projects in all areas of production and can provide above-average availability of systems.

www.liebherr.com



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