Hobbing Machines
LC 180 / 280

LIEBHERR

Increased Performance

Hob head

The new hob head stands for greater flexibility and productivity. Workpieces up to a module of 5 millimeters can be machined. The spindle speed has been increased by 50 % to 2,250 revolutions per minute compared to the predecessor model. At the same time, the shift distance has been extended by 11 % to 200 millimeters, and the maximum tool diameter has been enhanced by 67 % to 150 millimeters.

- Drive power: 13 kW
- Speed of hob spindle: 2,250 rpm
- Max. module: 5 mm
- Shift distance: 200 mm
- Max. hob diameter: 150 mm

Dry machining with stainless steel housing

Thanks to an integrated complete stainless steel housing (optional), thermal influences that normally occur in dry machining can be minimized. This ensures consistent machining results and exceptionally high process reliability. In addition, chip accumulation can be prevented. The easy, fast cleaning of the machine is another benefit.

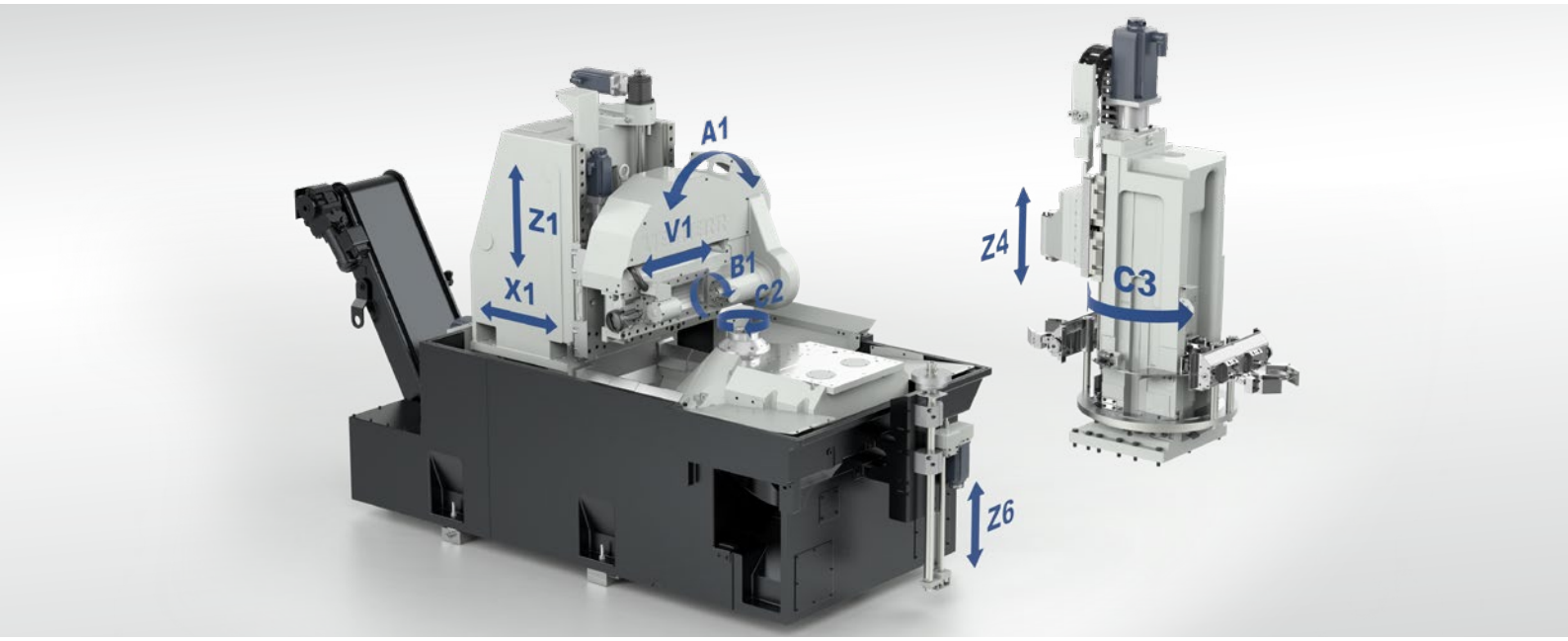
LHGearTec: Safe and easy set-up of processes

The touch-based LHGearTec features importing of workpiece and tool data in GDE and DIN4000 formats. This enables digital and automated workflow which increases ease of use and operator safety.

The LHGearTec user interface not only includes process monitoring and support for the set-up procedure, but also the “Defining bad hob sectors” function, thereby taking advantage of the maximum tool life.

Another benefit is the standardized data profiles for collecting process and machine data. This information can be transferred via OPC UA or MTConnect to higher-level systems.

Machine concept



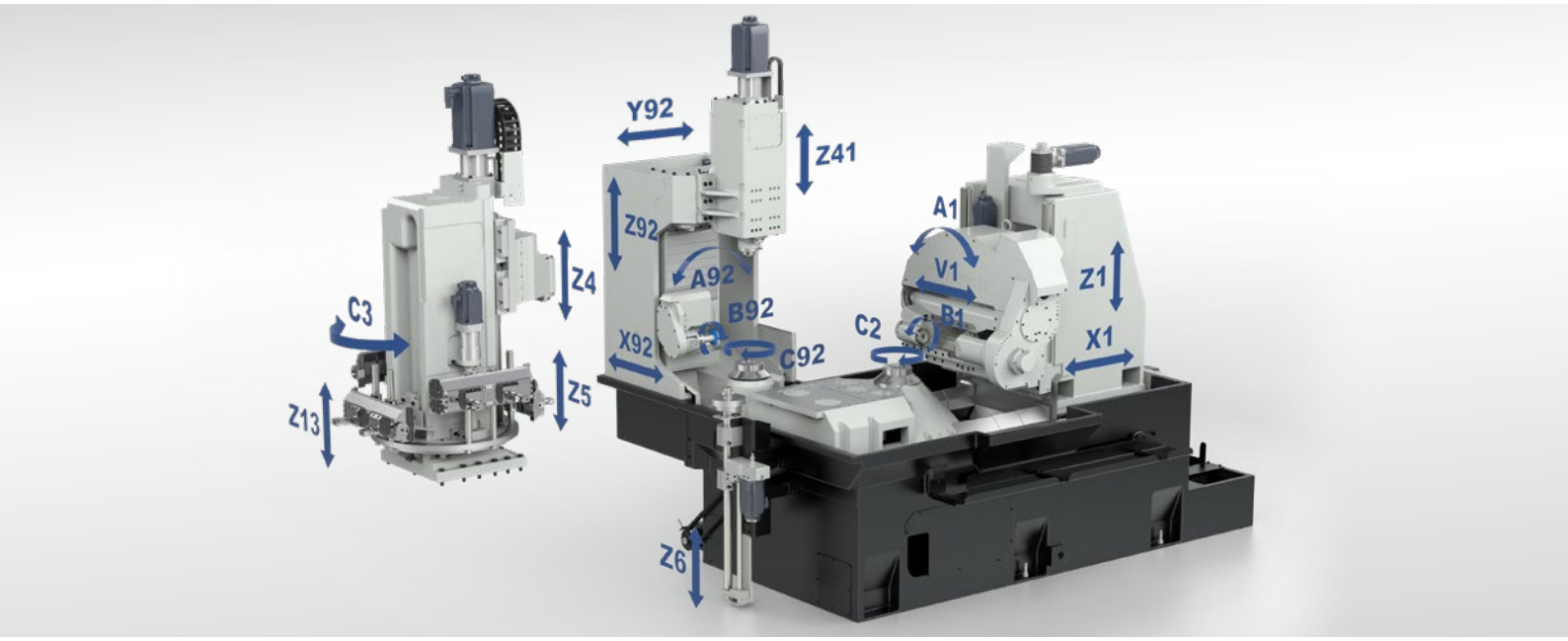
Axes

X1: Radial movement of column slide
V1: Tangential movement of tool
Z1: Axial movement of hob head
B1: Rotary movement of tool
C2: Rotary movement of workpiece
A1: Swivel movement of tool
Z4: Vertical movement of counter column
C3: Rotary movement of ringloader

The new LC 180/280 machine platform allows for a modular design. By doing this, many different technological applications or customer-specific requirements can be implemented. Liebherr gear hobbing machines are customized to the requirements of universal usability. The high-performance gear hobbing machines are productive and produce in the highest quality with maximum availability.

- Optimized base frame rigidity thanks to FEM simulation
- Thermo-symmetric machine design and integrated temperature compensation for consistently high quality
- Safe and problem-free chip removal
- High flexibility for various processes:
  - Gears, shafts, worm gears
  - Cluster gears
  - Skive hobbing/finish hobbing
  - Timing between gear and other contours
  - Special profile hobbing
- Wet and dry machining
- Hook-ready machine with a low space requirement, easy to transfer

LC 180/280 DC with integrated ChamferCut unit



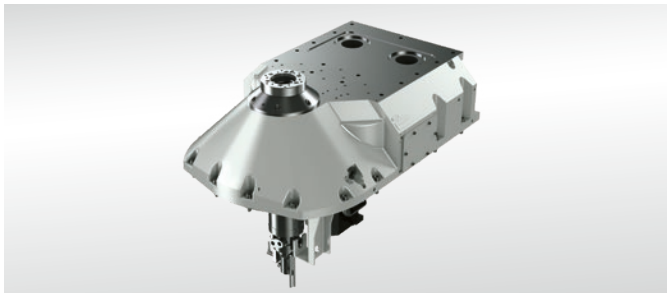
Fast. Economic. Precise.
The ChamferCut process

With the LC 180/280 DC, the ChamferCut unit is integrated on the operator side. This unit was developed towards user-friendliness. As such, the machine operator has unobstructed accessibility to both machining positions. Chip removal has also been significantly improved. Using the proven Liebherr ringloader concept, the workpiece can be transferred quickly and efficiently between the gear hobbing and chamfering machining positions.The ChamferCut process takes place parallel to gear hobbing. The ChamferCut unit is controlled using 6 CNC axes as standard. Set-up or corrections and adjustments to varying flank corrections can be executed quickly and easily using the user-friendly software.

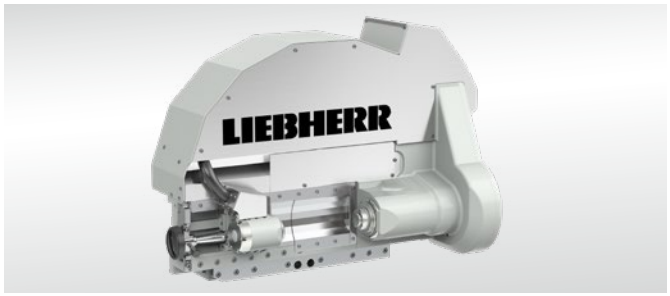
Your advantages

- Parallel gear hobbing and defined deburring/chamfering
- Dry and wet machining possible
- Precision chamfering geometry
- Premium chamfer quality and reproducibility
- No bulging or material deformation
- Tooth root chamfering as standard
- Very long tool life – ChamferCut tools can be easily reground 15 to 20 times at low cost
- Lowest tool cost compared to traditional processes
- Short amortization period thanks to low tool costs per workpiece
- Module from 0.8 to 42 mm possible
- Second hobbing cut is unnecessary – therefor increased tool life
- Short set-up times

Table drives and hob heads

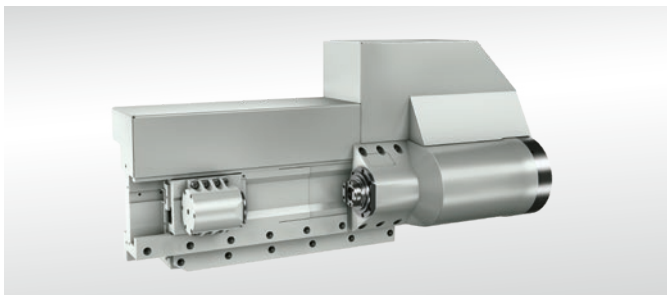


Gearbox



Gearbox

Direct



Direct

Machine table

For gear manufacturing, a workpiece drive with absolutely zero backlash is required. A table drive featuring preloaded zero-backlash spur gears and high torque is available for the application of universal technology. For high performance cutting (HPC), a highly-dynamic direct drive is available that fulfills all speed and precision requirements.

Hob head

Besides the default gear driven hob head, a directly driven hob head is available as an option. The directly driven hob head is distinguished by its high speeds of up to 6,000 rpm and its high drive power of 23 kW. It offers sufficient reserves for future tool developments. The hob head with a gearbox is exceptionally well suited for particularly high torque requirements.

Drive		Gearbox	Direct
Drive power	kW	5.8	19.0
Speed	min^{-1}	250	800

Drive		Gearbox	Direct
Drive power	kW	13,2	23,0
Speed	min^{-1}	2.250	6.000
Max. hob diameter	mm	150	90
Max. shift distance		200	180

Maintenance-friendly and energy efficient

Optimum machine accessibility during maintenance work is important for ensuring productivity. For this purpose, all necessary maintenance access points are equipped with doors. Moreover, for the additional monitoring of specific signals quickly and easily, window panes are inserted into the maintenance doors. As a result, the machine operator or servicing personnel can read the signals from outside in very little time. Additionally, an enclosure for the hydraulics has been integrated into the new machine design, which serves to continuously reduce the hydraulic power unit noise.

Energy and resource efficiency

Liebherr has analyzed its gear cutting machines throughout extensive tests. An average of 5 kW of power is saved compared to machines that are not optimized.

- Regenerative drive technology
- Use of efficient cabinet coolers
- LED technology lighting
- Coolant supply and conditioning using speed-controlled pumps

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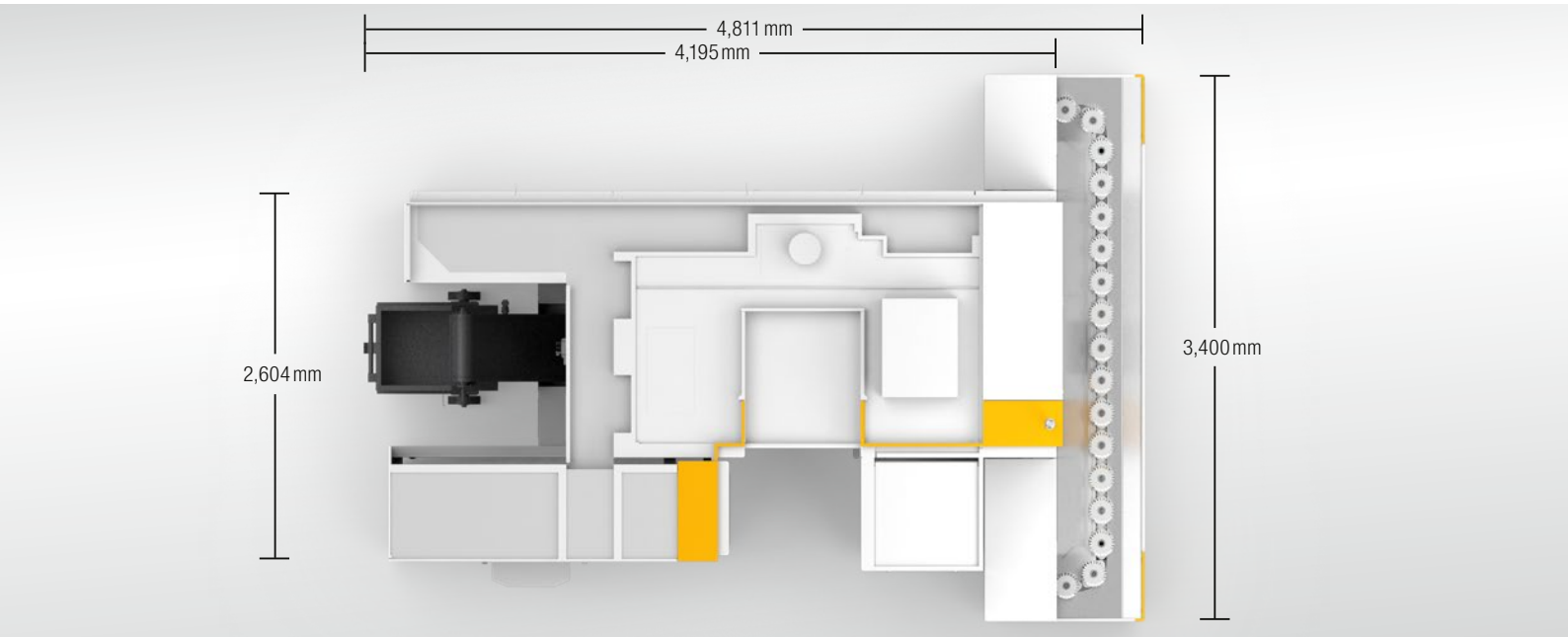
Alliance Member
Partner of the Engineering Industry Sustainability Initiative

Also available

- Pneumatics-free automation system (conveyor with stops, distributer)
- Monitoring of air consumption with leakage monitoring
- Reduction of oil carryover
- Workpiece spinning fixture and chip centrifuge
- Water/air heat exchanger with regulated fan (energy and noise)
- Intelligent stand-by mode with automatic, timed warm-up cycle

Technical data



		LC 180	LC 280
Max. workpiece diameter	mm	180	280
Max. nominal module for steel	mm	5	5
Max. workpiece weight	kg	15	15
Max. workpiece length	mm	500	500
Max. hob slide travel	mm	400	400

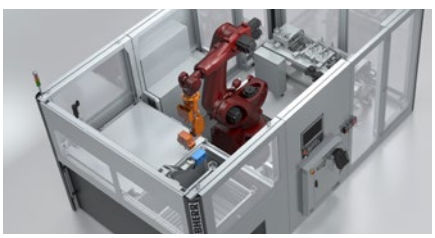
		LC 180	LC 280
Table diameter	mm	145	145
Center distance hob / workpiece	Min. mm	10	10
	Max. mm	280	280
Hob head swivel angle	°	± 45	± 45
Total weight	approx. kg	13,000	13,000

Automation solutions

Depending on the application, Liebherr offers the right for gear cutting machine automation. For such purposes, you have fast and flexible automation methods at your disposal.

- Conveyor belt automation in diverse designs
- Palletizing cells with different basket sizes
- Robot loading with varied makes of robots

Thanks to our longtime experience in the development and production of automated systems, any customer demands and requirements for automation concepts can be implemented professionally and within a short amount of time.



Your solution provider

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