

The Gear-Shaping Machine LS 80 - 180



LIEBHERR

The Machine Concept

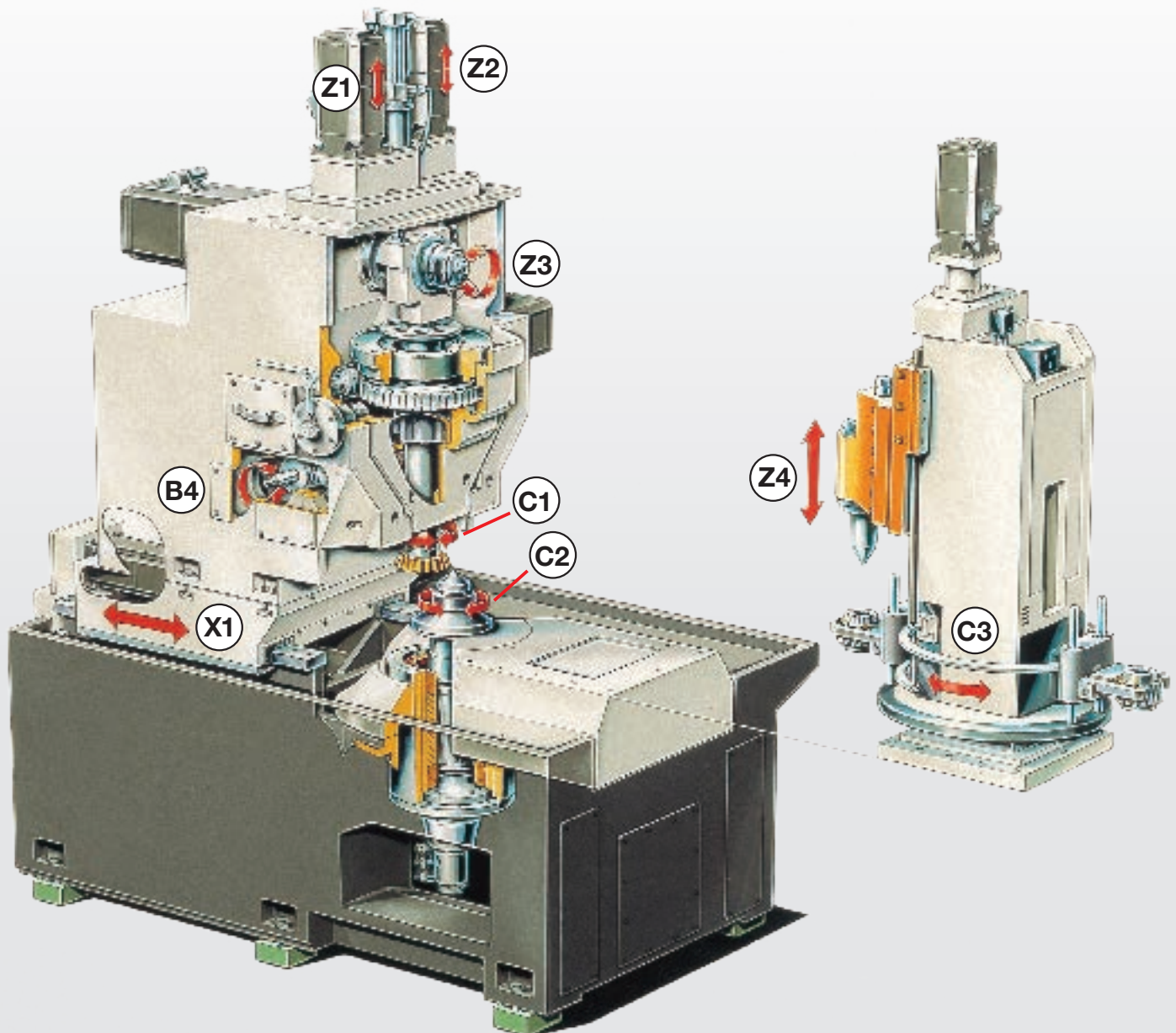
With the machines LS 80 – LS 180 Liebherr is introducing a new series of production gear shaping machines. The performance and flexibility of these machines are optimized for high production requirements.

The machines are based on a common modular platform with proven components from the hobbing machine platform. Especially noteworthy are the direct table drive and the thermo-symmetric, liquid-circulated machine bed. For small face width parts, a RAPID version with max. 3000 strokes/min. is available. For tapered gears all models can be equipped with a swivel-type column for up to 12 swivel angle.

For the dry machining process, efficient and fast chip separation is a major prerequisite.

The process energy involved and the disposal of hot chips should not adversely affect the geometry of the machine. The redesigned work area with stainless steel lining improves the chip discharge.

The extremely short cutting times require short loading and unloading times. Modular automation systems are available for various types of workpieces, supplemented by integrated and peripheral workpiece storage systems.



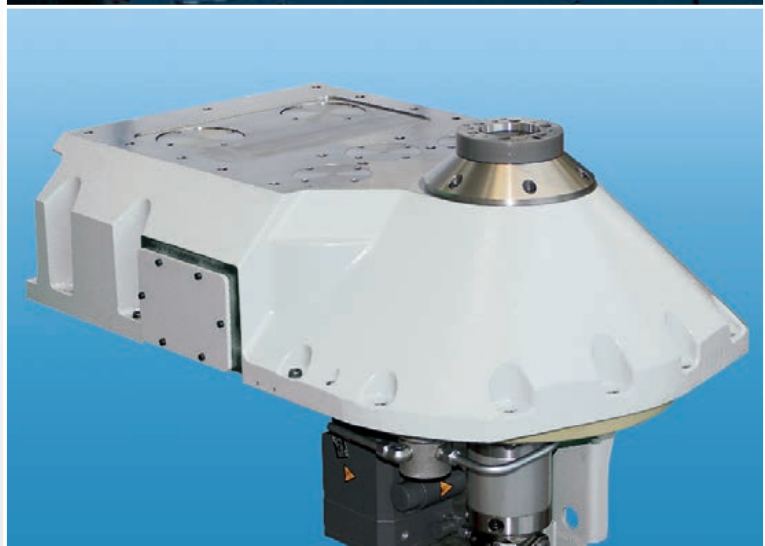
The Machine Bed as Technological Platform

Machining performance and gearing quality demand high standards from the mechanical and thermal stability of the machine. The machine bed serves as platform for various gearing technologies. With its symmetrical design, large wall thicknesses and internal coolant circulation cavities, the machine bed satisfies these requirements.



The Machine Table with Gear Drive

A backlash-free table drive is a requirement to achieve highest possible qualities. Our backlash free and high dynamic gear driven table drives meet all demands regarding speed and accuracy. Therefore we can meet, all of to-days and future process requirements.



The Radial Movable Column

The radial movable column contains the shaping head with the indexing drive for the tool, the stroke drive for the linear oscillating cutter spindle and the drive for the back-off cam.

All Liebherr machines of the LS series have a hydrostatic cutter spindle.



The Controls - Intelligence from Experience

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

With these customer-oriented options, we satisfy the demands of the international markets.

Versatile Workpiece Handling

The tailstock column enables manual and automatic loading / unloading of bore- and shaft-type parts for dry and wet machining.

The workpieces may optionally be clamped table-side with high clamping force or – for shorter cycle times – with an NC tailstock arm. Liebherr offers automatic loading/unloading and storage systems for a wide range of workpieces. Furthermore, the machine can be integrated into cell or line concepts.

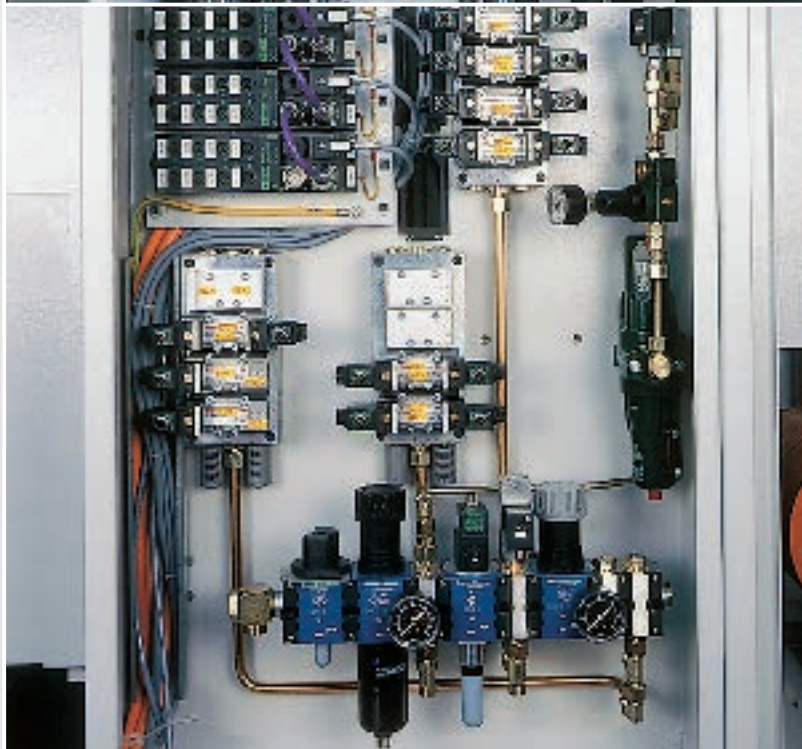
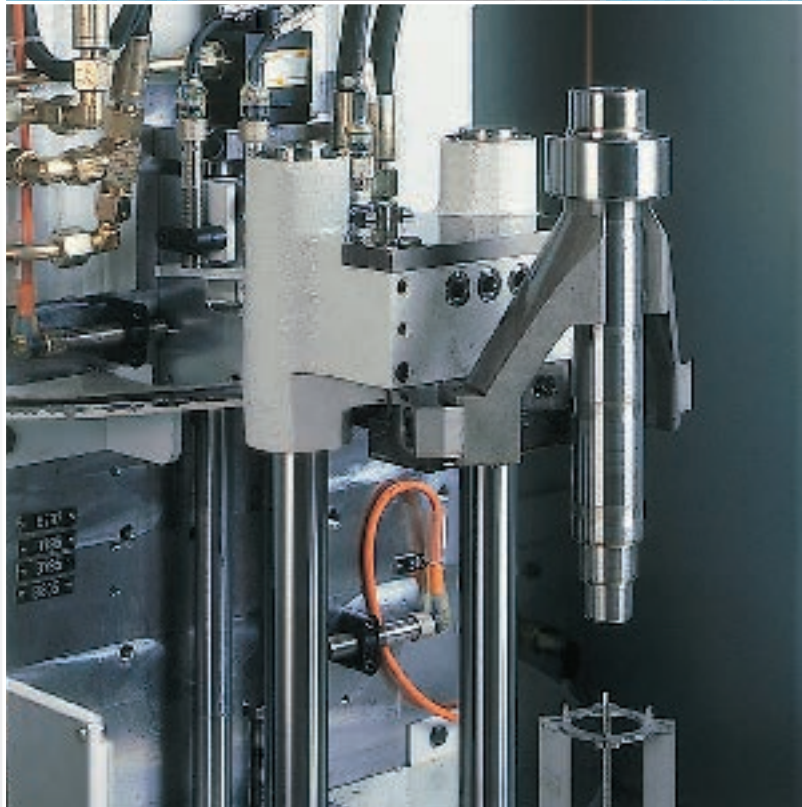
The machine offers quick change-over possibilities for flexible use via a quick change system for workpiece gripper and fixtures.

Automation - for any Requirement

The Liebherr automation systems are based on long experience, i.e. they are proven and effective solutions. For stand-alone machines, machining cells or production lines Liebherr is the competent partner.

High Uptime - Friendly Maintenance

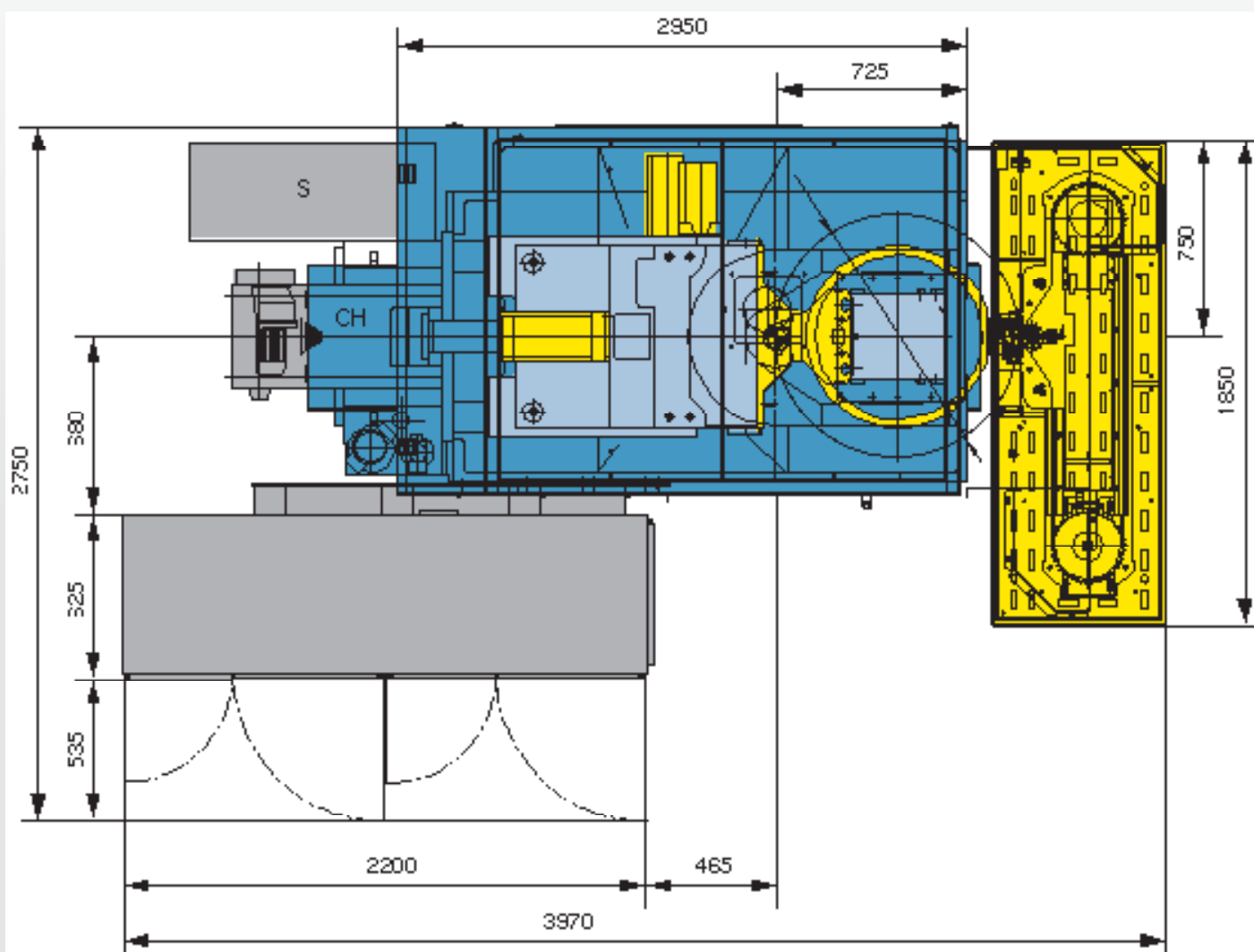
The high performance of the machine requires low down-times and an easy maintainability. This is a prime asset of Liebherr. Therefore all control elements are integrated in the machine housing with ideal accessibility.



Technical Data

		LS 80	LS 120	LS 150	LS 180
Max. cutting diameter	mm	80	125	150	180
Max. nominal module for steel	mm	3 (5)			
Stroke length	mm	30 (55)			
Gear width (standard)	mm	26 (48)			
Table diameter	mm	145			
Table speed	min ⁻¹	150			
Center distance spindle/table	min. mm	-15	-25	-30/-25*	-35/-25*
	max. mm	+220			
Spindle inclination	Grad	-0.5...+0.5			
Max. Stroke speed (Standard)	DS/min	1,500			
- Max. Stroke speed (option)	DS/min	1,800			
- Max. Stroke speed (option)	DS/min	3,000			
Weight of machine with tailstock column	appr. kg	13,000			
Total connected load	appr. kVA	30-40			

*with steady column



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. These 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 employs approximately 1,200 people 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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