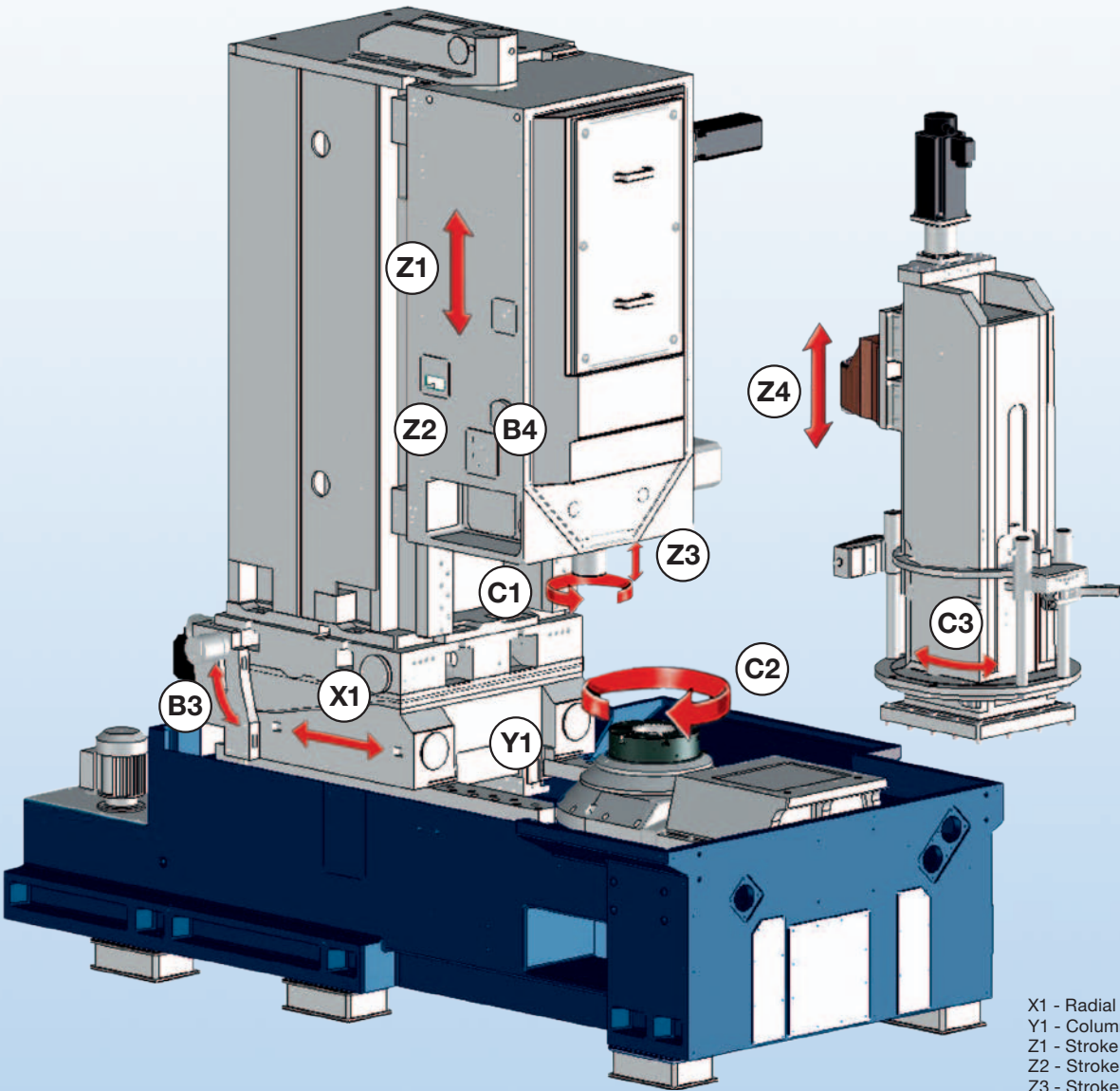


# Gear-Shaping Machines

## LFS and LSE 600 - 1600

## and WSC 800 - 1600



X1 - Radial travel main column  
Y1 - Column offset  
Z1 - Stroke position adjustment  
Z2 - Stroke length adjustment  
Z3 - Stroke travel tool  
Z4 - Vertical travel tailstock arm  
B3 - Swivel of column  
B4 - Tool relief motion  
C1 - Rotary motion tool  
C2 - Rotary motion work piece  
C3 - Rotary motion ring loader

## The Machine Concept

The Liebherr-Gear Shaping Machines are a synonym for gear wheel production at the highest stage and stand for high quality, economy and productivity. This is not least due to the modular platform system, which enables the alternatives of different platforms. By selecting the corresponding modules, the machine can be adapted optimal to the respective process. Depending on the corresponding application, it is possible to select between a electromechanical and hydraulic shaping head. The hydraulic shaping head is used for machining of big gears and big module. The electromechanical shaping head provides advantages at high stroke rates and in connection with the NC-helical guide. Furthermore, the constructive execution enables the production of the most various components with minimum setup effort.

### Characteristics

- Moveable cutter head slide
- 6 NC axes
- various no. of stroke ranges executable
- Fast return stroke (optional)
- Stroke length up to 440 mm (optional)
- Automatic back-off cam switching (optional)
- Up to 3 different back-off cams

### The machine bed as a platform

Performance and accuracy require a mechanically rigid and themally stable machine. The machine bed with its thermo-symmetrical design meets the high demands for the different gear cutting technologies.

### The machine table

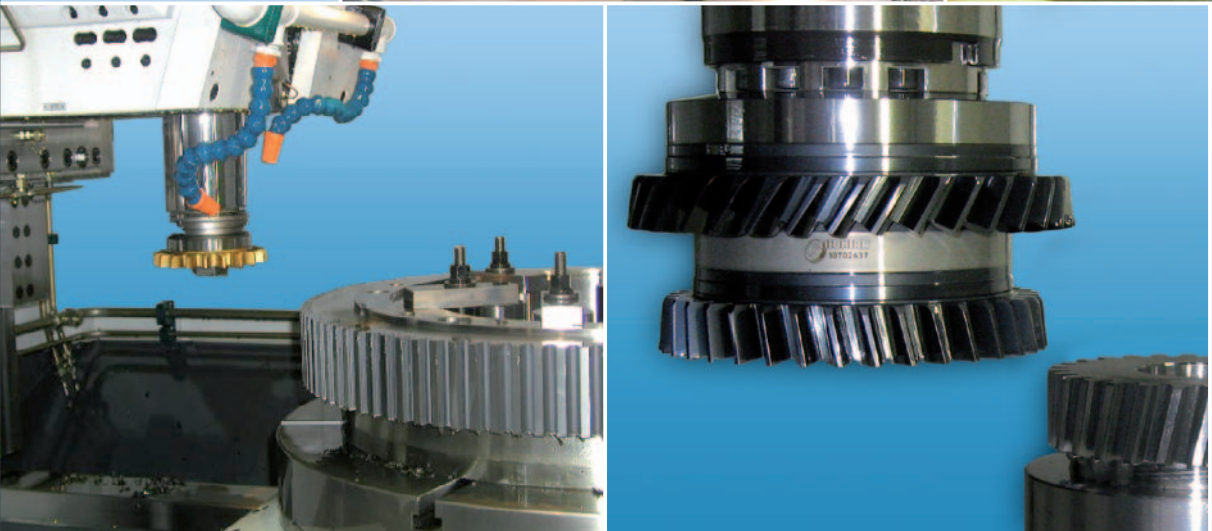
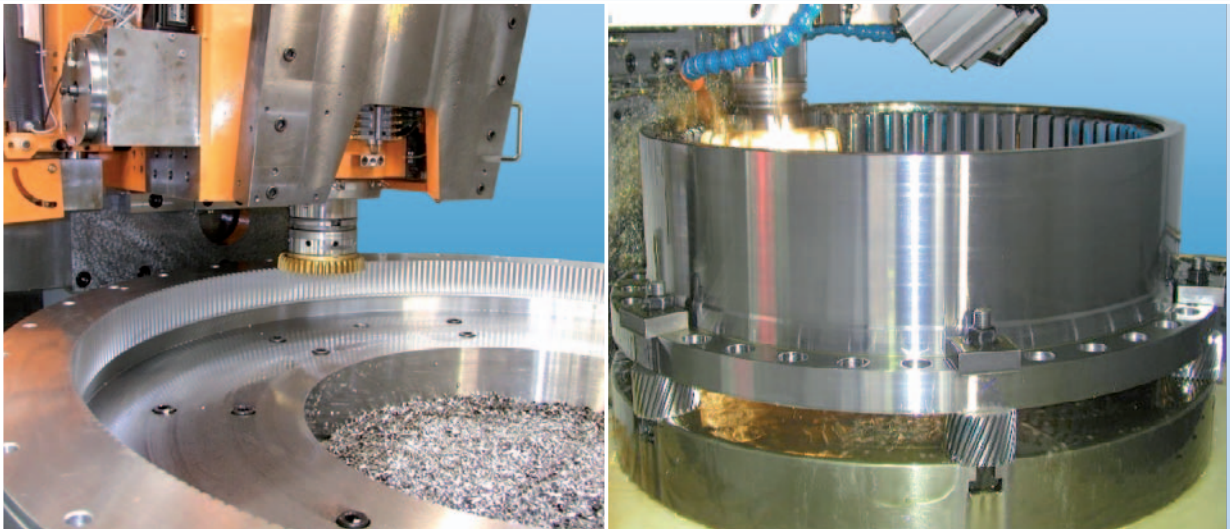
The tables are executed with a wearless high-precision hydrostatic bearing. Double worm drives, free from backlash, are exclusively used as table drive.

### SSM (Shuttle Stroke Method)

The SSM-method was developed in order to extend the availability of Gear Cutting Machines. Herewith, oversized cutting widths, being larger than the maximum working range of the machine, can be realized. The required cutting width is divided into several partial lengths with the corresponding stroke lengths. With corresponding infeed, these partial lengths are machined subsequently until the total cutting width is reached.



## Machining Examples



Electromechanical shaping head



Hydraulic shaping head



Technical Data

LFS-Gear Shaping Machines with mechanically driven shaping heads

	LFS	600	700	800	1000	1200	1400	1600
Max. normal module	mm	12	12	12	12	12	12	12
Max. cutting diameter	mm	600	700	800	1000	1200	1400	1600
Stroke length	mm	180/240	180/240	180/240	180/240	180/240	180/240	180/240
Centre distance cutter spindle/work table	mm	0 ... 480	0 ... 530	0 ... 600	0 ... 650	0 ... 700	135...1030	135...1130
Axis angle cutter spindle/work table in conjunction with column swivel axis -1 ... +12°	deg.	±0,15/±0,28/±0,4 (according to shaping head)						
Stroke position range cutter head slide	mm	300 ... 1050						
Stroke speeds	DS/min	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600
Feed rotary axis cutter	mm/min	4.000	4.000	4.000	4.000	4.000	4.000	4.000
Total weight	appr. kg	21.000	22.000	22.000	23.000	24.000	24.000	26.000

WSC-Gear Shaping Machines with hydraulically driven shaping heads

	WSC	800	1000	1200	1400	1600
Max. normal module	mm	16/22	16/22	16/22	16/22	16/22
Max. cutting diameter	mm	800	1.000	1.200	1.400	1.600
Stroke length	mm	270/440	270/440	270/440	270/440	270/440
Centre distance cutter spindle/work table	mm	0 ... 600	0 ... 700	0 ... 820	50 ... 1.000	50 ... 1.100
Stroke position range cutter head slide	mm	400 ... 1.400 (according to machine configuration)				
Stroke speeds	DS/min	270/200	270/200	270/200	270/200	270/200
Feed rotary axis cutter	mm/min	4.000	4.000	4.000	4.000	4.000
Total weight	appr. kg	22.000	22.000	23.000	24.000	26.000

The locations



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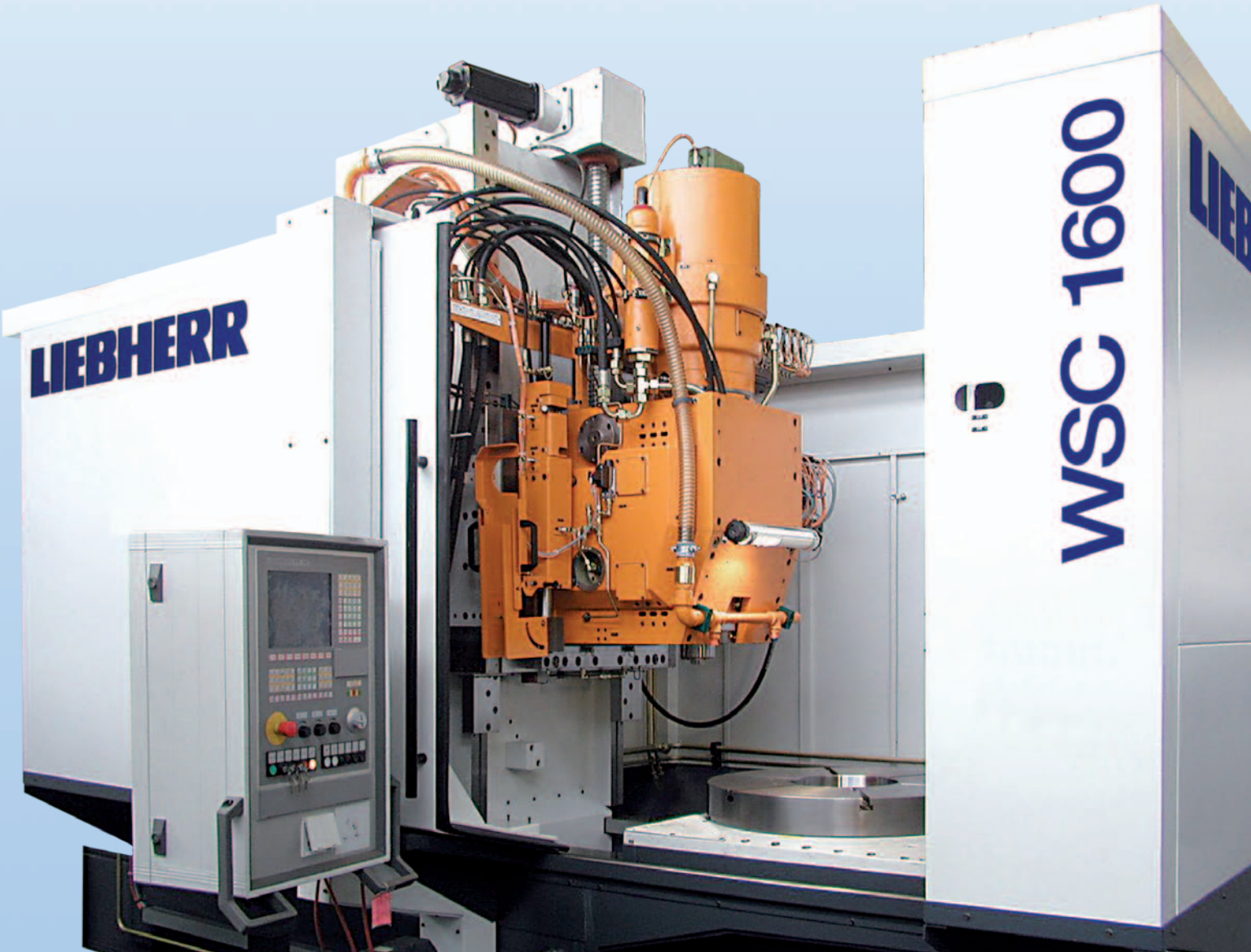


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Gear-Shaping Machines  
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LIEBHERR