Gear-Shaping Machines
LS 80-180 F
Productivity and flexibility

The new Liebherr LS 180 F gear shaping machine combines flexibility with productivity

**Productivity**
The LS 180 F is an extremely compact series production machine. Its integrated automation enables very fast loading of workpieces with a diameter of 180 mm and a maximum weight of 15 kg. Serial production runs are processed very economically through use of internal automation in the form of a ring loader. Additional high productivity is ensured by the shaper head newly developed by Liebherr. This shaper head impresses through its drive power and stiffness. This high drive power means up to 3,000 double strokes per minute can be achieved. This performance delivers outstanding productivity in gear production.

**Flexibility**
The structural design of an axially moving cutting head slide allows users to machine multiple gearings in one setting. The moving cutting head slide considerably minimises retooling, which in turn contributes to increasing added valued. Spur and helical gearings can be produced with ease on the LS 180 F.
The machine concept

LS 180 F highlights
- Automatic changeover from internal to external gear (twin-track cam system)
- SGA – gear shaping with crossed axes
- Small installation area
- 3,000 double strokes per minute (depending on the stroke length)
- SSM method (shuttle stroke method) as an option
- Conventional helical guides from predecessor shaper heads can be used
- Hydrostatically guided cutter spindle

Benefits of a vertical cutting head slide
- Possibility for shaping cluster gears, generating and non-generated profiles and segmented gears in one fixture
- Improved production quality as complete processing is possible in one setting without reclamping
- Long traverse distance for stroke position adjustment and correspondingly reduced equipment
- Utilisation of the maximum stroke length over the entire stroke adjustment range as there is no reciprocal interference between the stroke position and stroke length
- Cost reduction through lowering auxiliary process times, i.e. less effort for retooling and equipment setup

The axes
- 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
- Z6 – NC-lift station
- B4 – Tool relief motion
- B5 – Column swivel axis
- C1 – Rotary motion tool
- C2 – Rotary motion work piece
- C3 – Rotary motion ring loader
## Technical Data

<table>
<thead>
<tr>
<th></th>
<th>LS 80 F</th>
<th>LS 120 F</th>
<th>LS 150 F</th>
<th>LS 180 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal module</td>
<td>mm</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Max. cutting diameter</td>
<td>mm</td>
<td>80</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>Stroke length</td>
<td>mm</td>
<td>max. 70</td>
<td>max. 70</td>
<td>max. 70</td>
</tr>
<tr>
<td>Centre distance cutter spindle/work table</td>
<td>mm</td>
<td>-30 to 285</td>
<td>-30 to 285</td>
<td>-30 to 285</td>
</tr>
<tr>
<td>Column swivel axis (option)</td>
<td>°</td>
<td>-1 to +12</td>
<td>-1 to +12</td>
<td>-1 to +12</td>
</tr>
<tr>
<td>Stroke position range cutter head slide</td>
<td>mm</td>
<td>275</td>
<td>275</td>
<td>275</td>
</tr>
<tr>
<td>Stroke speeds infinitely variable as standard</td>
<td>DS/min</td>
<td>1,500/2,000/3,000*</td>
<td>1,500/2,000/3,000*</td>
<td>1,500/2,000/3,000*</td>
</tr>
<tr>
<td>Total weight</td>
<td>kg</td>
<td>approx. 13,000</td>
<td>approx. 13,000</td>
<td>approx. 13,000</td>
</tr>
<tr>
<td>Outside dimensions</td>
<td>(L x W x H) mm</td>
<td>5,000 x 3,480 x 2,950</td>
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<td>5,000 x 3,480 x 2,950</td>
</tr>
</tbody>
</table>

*depending on the stroke length