RING ROLLING LINES FOR THE MANUFACTURING OF SEAMLESS RINGS

FORMING THE FUTURE

Schuler is the world market leader in metal forming technology. The company supplies presses, automation solutions, dies, process know-how, and services for the entire metalworking industry and lightweight automotive design. Customers include automobile manufacturers and suppliers as well as companies from the forging, household appliances, packaging, energy, and electronics industries. Schuler is the leading supplier of minting presses and supplies system solutions for aerospace, rail transport, and large pipe manufacturing. Following the acquisition of toolmaker AWEBA and a majority stake in Chinese press manufacturing company Yadon, Schuler employs around 6,600 members of staff in 40 countries. The Austrian ANDRITZ Group holds a majority share in Schuler.

ABOUT THE SCHULER GROUP – WWW.SCHULERGROUP.COM
FORGING AND ROLLING.
TURN-KEY SYSTEMS FOR THE MANUFACTURING OF RINGS.

Schuler forging. System solutions from Schuler offer customers worldwide a decisive advantage when it comes to quality, in all temperature ranges:

- Systems for hot forging
- Systems for warm forging
- Systems for cold forging

In the field of hot forging, Schuler produces turn-key systems for the manufacture of rolled rings.

Customized forging and rolling procedures from Schuler. These systems enable seamless rings to be manufactured in accordance with specific, required properties. Seamless rings are used in motors, bearings, aircraft turbines and many other different components. Modern forming processes from Schuler, such as double-sided pre-punching, enable the production of an optimal fiber structure.

The advantages of the Schuler ring rolling line are as follows:

- The position of the upper mandrel bearing and thus the length of the roller mandrels can be adjusted to the geometry of the ring, resulting in a significantly reduced bending and die load.
- The roller mandrel’s additional drive unit means all forming tools can continue to rotate during non-productive time. This guarantees optimal and even cooling.
- The innovative machine concept with reduced installation height enables outstanding accessibility for quick changing of the roller mandrel.
- The cassette design of the main roller enables die changing in just a few minutes, guaranteeing economical operation.
- Robust machine design and large bearings as well as the use of proven Schuler technology in the field of drive and control technology ensure high availability of the system.
Hydraulic press for forging ring blanks (MH-3000).

Manufacturing of flat and tall rings on the same ring rolling line.

TURN-KEY SYSTEM FOR THE MANUFACTURING OF RINGS

1 Loading manipulator
2 Rotary hearth furnace
3 Unloading manipulator
4 Robot
5 Hydraulic forging press
6 Robot
7 Ring rolling line
Designs of Schuler ring rolling lines: Machines from the standard range are suitable for common applications. Versions for special ring dimensions or even increased forming forces for materials that are difficult to form, are available on request.

<table>
<thead>
<tr>
<th>Standard range</th>
<th>Radial rolling force (kN)</th>
<th>Axial rolling force (kN)</th>
<th>Max. outside diameter of ring (mm)</th>
<th>Max. ring height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20/16 – 800/200</td>
<td>200</td>
<td>160</td>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>25/20 – 800/200</td>
<td>250</td>
<td>200</td>
<td>800</td>
<td>200</td>
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<tr>
<td>32/25 – 1000/200</td>
<td>320</td>
<td>250</td>
<td>1,000</td>
<td>200</td>
</tr>
<tr>
<td>40/32 – 1250/250</td>
<td>400</td>
<td>320</td>
<td>1,250</td>
<td>250</td>
</tr>
<tr>
<td>50/40 – 1500/250</td>
<td>500</td>
<td>400</td>
<td>1,500</td>
<td>250</td>
</tr>
<tr>
<td>63/50 – 1750/350</td>
<td>630</td>
<td>500</td>
<td>1,750</td>
<td>350</td>
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<tr>
<td>80/63 – 2000/400</td>
<td>800</td>
<td>630</td>
<td>2,000</td>
<td>400</td>
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<tr>
<td>100/80 – 2500/400</td>
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<td>800</td>
<td>2,500</td>
<td>480</td>
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<tr>
<td>125/100 – 3000/550</td>
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<td>1,000</td>
<td>3,000</td>
<td>550</td>
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<tr>
<td>160/125 – 4000/650</td>
<td>1,600</td>
<td>1,250</td>
<td>4,000</td>
<td>650</td>
</tr>
<tr>
<td>200/160 – 5000/700</td>
<td>2,000</td>
<td>1,600</td>
<td>5,000</td>
<td>700</td>
</tr>
<tr>
<td>250/200 – 6000/800</td>
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<td>6,000</td>
<td>800</td>
</tr>
<tr>
<td>315/250 – 7000/900</td>
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<td>2,500</td>
<td>7,000</td>
<td>900</td>
</tr>
<tr>
<td>400/315 – 8000/1000</td>
<td>4,000</td>
<td>3,150</td>
<td>8,000</td>
<td>1,000</td>
</tr>
<tr>
<td>500/400 – 8000/1250</td>
<td>5,000</td>
<td>4,000</td>
<td>8,000</td>
<td>1,250</td>
</tr>
</tbody>
</table>

AUTOMATIC TURN-KEY SYSTEM FOR THE MANUFACTURING OF SEAMLESS RINGS WITH ROTARY HEARTH FURNACE, HYDRAULIC PRELIMINARY FORGING PRESS AND THE SCHULER RING ROLLING LINE
UPPER BEARING ADJUSTMENT

Advantages:
- Better crane accessibility due to low installation height
- Use of mandrels with different lengths

MAIN ROLLER CASSETTE – MANDREL BEARING CASSETTE

Advantages:
- Quick die change
- The right die for every ring
- Set up can continue during production

MANDREL DRIVE

Advantages:
- Even cooling around entire circumference
- Low wear during start-up
OPTIMAL ROLLING PROCESSES.
CONTROL SYSTEMS FOR TURN-KEY SYSTEMS.

The control program guarantees optimal rolling processes. The program takes into account the special requirements of rings.

Machine control:
- Design with Siemens TIA Portal
- Clear illustration of the process parameters
- Process sequences are freely programmable
- Simple parameter input
- Comprehensive product data management
- Maintenance-friendly
- User management with several password levels

Master control:
- Overview of the entire line
- Simple part and error tracking
- Several production plans possible
- Connection to a production information system
- Safety concept for the entire system
Over 900 service employees worldwide provide expert support 24/7 in close cooperation with you – our partners. Our main priority is always to ensure the maximum productivity and safety of your production equipment in order to secure your company’s continued success.

With over 175 years of experience and expertise, we can guarantee the best possible support for the operation of your machines – and not only those supplied by Schuler, but by all other manufacturers. Whatever the situation, Schuler Service has the right solution for your specific needs.

Schuler Service offers a tailored portfolio of services covering the entire life cycle of your equipment.

Want to know more about our full range of services? Simply scan the QR code with the camera of your smartphone or tablet.

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