

FORMING THE FUTURE



SCHULER SERVOLINE FAST,
COMPACT AND FLEXIBLE

SUCCESSFUL LINE EXTENDED IN LINE
WITH DEMANDS.
OUTPUT RATE FROM 16 TO 23 STROKES PER MIN.

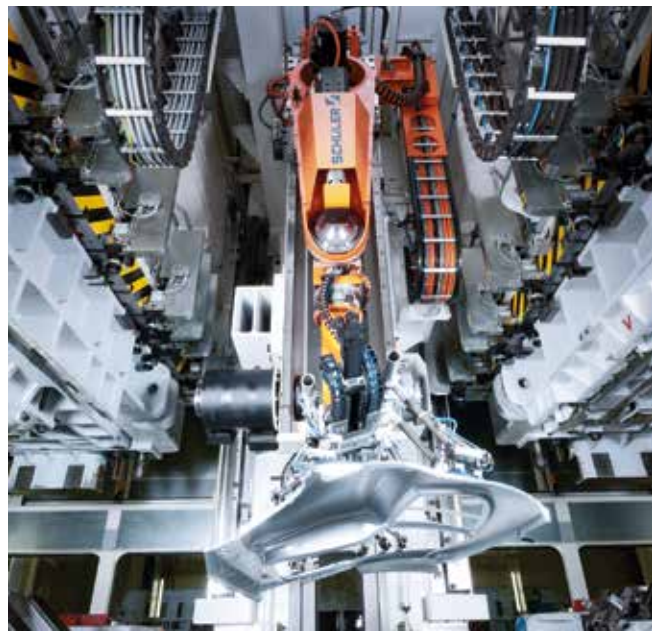


ServoLine23 L with Crossbar Feeder automation.

Schuler press lines with ServoDirect Technology are fast, compact and flexible. Since the first press line was started up in 2010, these lines are now in use at virtually all major automobile manufacturers. The press lines have made a name for themselves in Germany, Europe, America and China.

Equipped with Schuler destackers, Crossbar Feeders and End-of-Line system, the press lines prove impressive with their high output rate and quality with simultaneously fast die and tooling change times. Such a combination allows Schuler to make a decisive contribution towards reducing parts costs and optimizing the Total Cost of Ownership of press shops.

To provide optimum adjustment to the sizes and specific requirements of workpieces, Schuler offers the press lines with ServoDirect Technology in two sizes in line with demands: the Schuler ServoLine L and the Schuler ServoLine XL. The output rate ranges from 16 to 23 strokes per min.



The Crossbar Feeder from Schuler ensures reliable and fast transport of workpieces from one die to the next.

NETWORKED PRODUCTION PROCESS. SERVODIRECT TECHNOLOGY FROM SCHULER – CAN BE OPTIMALLY ADJUSTED TO THE WIDEST RANGE OF PRODUCTION DEMANDS.



Finished part deposit. The finished workpieces are deposited to the left and right of the conveyor belts by two robots.



Highly dynamic torque motors on the crown allow for a high level of flexibility.

SERVOLINE FROM SCHULER – MAXIMUM POWER WITH REDUCED ENERGY REQUIREMENTS.

Freely programmable slide movement. The slide movements of the press not only conserve resources, but most importantly they can be individually adjusted for each workpiece to the forming process, the die and parts transport. In the case of identical processes, this leads to increased outputs for single, double or quadruple parts for a flexible mixture of materials from steel, aluminum and high-strength steels.

HIGH-SPEED PRODUCTION FROM A TO Z – FROM THE BLANK TO THE FINISHED WORKPIECE.

Expertise from Schuler, the world market leader. Schuler has equipped the entire process with high efficiency state-of-the-art technology. As such, the optical centering device determines the exact position of the blanks and forwards this to the robots. Highly dynamic torque motors on the crown of the presses ensure a highly dynamic drive on the lines and a high degree of flexibility.

SERVODIRECT TECHNOLOGY FROM SCHULER – FURTHER DEVELOPED WITH NEW REQUIREMENTS IN MIND.

Forming technology for maximum workpiece quality.

ServoDirect Technology from Schuler is being continually further developed, in order to satisfy the ever increasing requirements of dies and design in the automobile industry.

Indeed, the entire line is gaining in terms of performance – while at the same time reducing energy requirements. Additional highlights include a new more efficient line control for an additional plus when it comes to speed, as well as integration of further manufacturing processes, such as welding or even riveting in the press line. In doing so, the press designed for large parts, the ServoLine18 XL, reaches a stroke rate of 18, whereas the ServoLine23 L boasts 23 strokes per min.

THE CROSSBAR FEEDER FROM SCHULER IS SETTING THE STANDARD FOR PRESS LINKAGE.

Faster and more flexible than ever. The Crossbar Feeder ensures the fast and reliable transport of workpieces from one press to the next. It offers seven degrees of freedom and significantly increases the line and process efficiency.

The Crossbar Feeder also offers two additional servo axes in order to also be able to re-orientate double parts. These axes can be used to independently swivel double parts away from each other, rotate them or shift them in the feed direction.

SERVODIRECT TECHNOLOGY – PRESS LINES FOR MAXIMUM COST EFFECTIVENESS



- Very high output rate
- High degree of flexibility
- Reduced parts costs
- Freely programmable slide movement
- Optimum adjustment to various forming processes
- Automation with destacker and Crossbar Feeder from the latest generation
- Compact design of the press line
- Die and tooling change fully automated in three minutes
- Only one tooling per press gap
- Die tryout in jog mode with slow, defined speed
- User-friendly user interfaces
- Ergonomic parts discharge
- Easy-to-maintain technology, as flywheel, clutch and brake are a thing of the past

ENERGY COST SAVINGS OF UP TO 50 PERCENT. ENERGY MANAGEMENT WITH SCHULER ECOFORM.

Reduced costs, increased efficiency, and more cost-effective: A sustainable approach to resources and energy conserves the environment, while reducing parts costs on a permanent basis.



Destacking the blanks. Two robots from Schuler suspended on linear axes alternately destack the blanks and reliably deposit them on a conveyor belt.

This is particularly the case for energy-intensive processes such as forming. With this in mind, Schuler ECOFORM offers efficient energy management. The result: Energy cost savings of up to 50 percent on servo press lines when compared to conventional mechanical high-speed press lines.

Systematic and integral. Schuler ECOFORM optimizes the interaction between all components through to the use of new procedures and system solutions. As such, the new servo press lines feature their own DC supply, speed-controlled and regenerative drive systems (Smart Grid), intelligent standby and break switches as well as components such as energy-efficient bed cushions. In the Schuler energy passport, electrical load data are also presented for various operating states and stroke rates, so that similar lines are comparable and ISO 14955 Part 4 is fulfilled.

And last but not least: By increasing the output level alone, the energy consumption per part can be decreased in the long term.

SUSTAINABLE FORMING SOLUTIONS

With the aid of Schuler ECOFORM, we can improve the energy requirements of sub-assemblies, system solutions, forming processes and methods. ECOFORM offers you: a press shop energy analysis, the use of energy-efficient components, innovative system solutions, intelligent control solutions and practice-oriented consulting. Schuler ECOFORM is a pioneering program that achieves a perfect combination of innovation, sustainability and economic efficiency.



SUSTAINABLE
FORMING SOLUTIONS

SMART FEATURES.

INTELLIGENT SERVOLINE FUNCTIONS.

Smart features for flexible and efficient production.

Thanks to intelligent functions, day-to-day work on the press line is simplified, meaning that the line can be efficiently used at any time. In addition to functions, which within the ECOFORM framework lead to increased energy efficiency and improved system availability, additional applications are available for efficient use of the line.

Effective die try-out. Thanks to the integrated die spotting function, dies can be directly incorporated into the line. Various parameters for the try-out can be directly entered in the visualization, meaning that the process can be performed quickly and effectively.

Reduced downtimes. Incorrect assembly of the drawing pins can lead to die damage in no time at all and thus bring the line to a standstill. As a preventive measure, a test stroke can be executed on the ServoLine. The control detects faults and stops the drawing cushion stroke to prevent any collisions.

Intelligent die change. The die change on the ServoLine is performed in less than 3 minutes, supported by several functionalities such as preselection of die change type, indicator for the duration of the last two die changes and status messages.



In the control room, the line operator has an overview and control of the complete production process.

PERFORMANCE ACROSS THE ENTIRE LINE. THE MODELS OF SCHULER SERVOLINE.

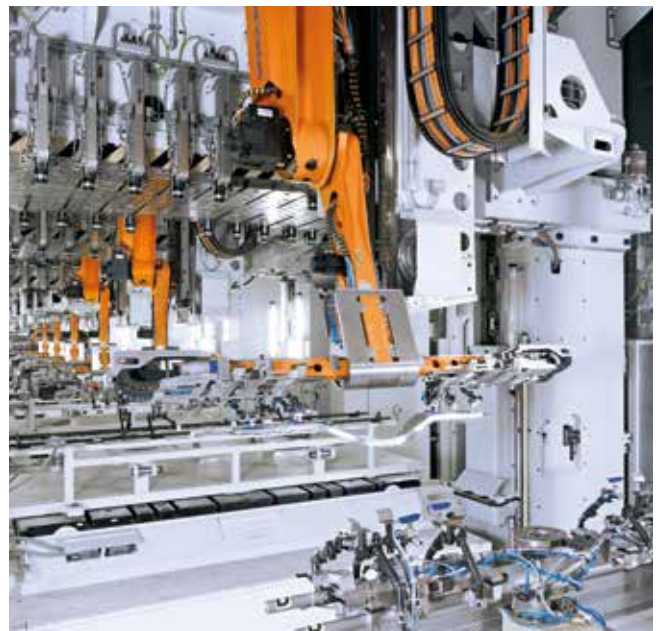


Five-stage press line with ServoDirect Technology and Crossbar Feeder automation.

ServoLine23 L – the fastest press line in the world.

It impresses users with its flexibility, high degree of productivity, low parts costs and energy efficiency. This model is not only ideally suited to the manufacture of steel and aluminum workpieces, but enables fast machining of high-strength steels with process reliability.

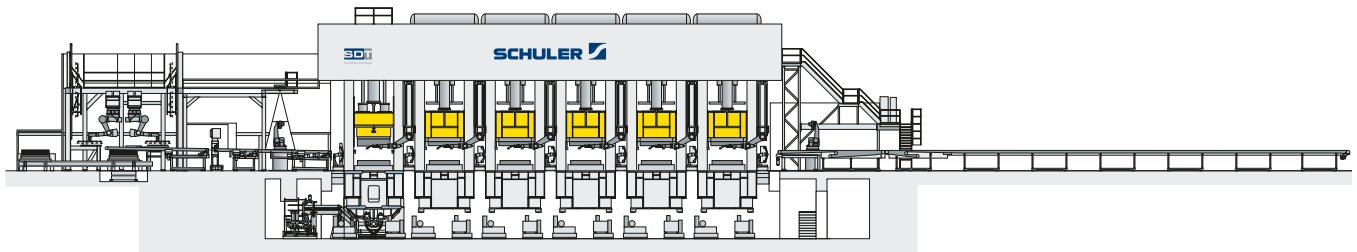
ServoLine16 XL – gain flexibility. With a maximum output rate of 16 strokes per minute, the ServoLine16 XL is an excellent starting point when it comes to servo technology. Compared with a conventional line, it offers increased flexibility due to the free programming of slide movements. As such, the widest range of workpieces can be manufactured to a optimum quality level.



Fast and reliable workpiece transport.

ServoLine18 XL – increase efficiency. The Schuler Servo Line18 XL promises a very high output rate as well as fast startup of series production for large workpieces made from the widest range of materials.

DigiSim 2.0 – precise simulation from the offset. Flexibility is complex. An exact simulation can be used to control this complexity, so that ultimately all parameters are tailored to each other. As such, the simulation starts during the method planning stage and runs through the entire process up to the line optimization. This saves time and costs for the try-out.



	ServoLine23 L	ServoLine18 XL	ServoLine16 XL
Output at maximum stroke rate	23	18	16
Max. press stroke rate	28	22	20
Min. press stroke rate (at full press force)	3	3	3
Drive	SDT	SDT	SDT
Number of main motors head press	3 × 390	4 × 390	3 × 690
Number of main motors follow-on presses	2 × 390	2 × 390 (3×)	2 × 690
Motor cooling system	Water	Water	Air
Slide stroke head press (mm)	1,100	1,300	1,100
Slide stroke follow-on presses (mm)	1,100	1,300	1,100
Press force head press (kN)	20,000	25,000 (21,000)	25,000 (20,000)
Press force follow-on presses (kN)	14,000	12,000 (18,000)	10,000 (16,000)
Clamping area max. (mm × mm)	3,600 × 2,000	4,600 × 2,500	4,600 × 2,500
Max. die size (mm × mm)	4,100 × 2,100	5,000 × 2,600	5,000 × 2,600

AUTOMATION BY SCHULER. PERFORMANCE ACROSS THE ENTIRE LINE.

Flexible End-of-Line systems and automatic finished part stacking system consistently ensure a high output rate.



Transfer of finished workpieces from the shuttle to the robot.

Flexible End-of-Line solutions from Schuler. With the End-of-Line systems from Schuler, finished workpieces can be processed with an output of up to 23 strokes/minute – quickly, reliably and with maximum part safety. For each ServoLine model, a perfect solution is available in order to further process finished parts. The line can optionally be equipped with an automatic quality control system.



Robots pick up the finished parts from the belt and put them into storage.

Finished part stacking systems for fast and workpiece-protecting further processing of pressed parts. The automatic, flexible finished part stacking system from Schuler works with suspended robots, which can also be moved on rails. To smoothly position and stack the finished parts, the system is equipped with a camera system. The robots pick up the finished parts in the correct position and stack them in the parts container. Correction data from the camera monitoring are directly restored to the robots. The automatic finished part stacking system can be used to stack single, double and quadruple parts. In the case of single parts, up to four robots are used. Double and quadruple removal is performed with up to eight robots, whereby two robots alternately stack the same container.

SCHULER SERVICE.

STATE-OF-THE-ART SERVICE FOR MORE PERFORMANCE.

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

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.



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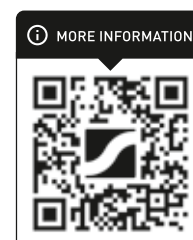
ABOUT THE SCHULER GROUP – WWW.SCHULERGROUP.COM

Schuler is the technological and global market leader in the field of forming technology. The company provides presses, automation solutions, dies, process expertise and service for the entire metalworking industry and for lightweight automobile construction. Its customers include automotive manufacturers and suppliers, as well as companies in the forging, household appliance, packaging, energy and electronics industries. Schuler is a leading supplier of minting presses and implements system solutions for a wide range of different high-tech sectors. The company has a presence in approximately 40 countries with roughly 6 600 employees. Schuler is majority-owned by the Austrian ANDRITZ Group.

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