STAMPING AND FORMING SYSTEMS

400 – 32,000 kN

SCHULER

Member of the ANDRITZ GROUP

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SCHULER SERVICE MADE FOR YOU

C-*FLEX*LINE.
MODULAR PRESSES FOR GREATER PRODUCTION FLEXIBILITY.

CFL 63.

MODULAR, FLEXIBLE, ERGONOMIC.

The modular structure of the C-*FLEX*line allows for fast and ergonomic changeovers at any time if production conditions change, from simple manual operation to fully automatic manufacturing. These user-friendly presses have a compact and ergonomic design and a small footprint.

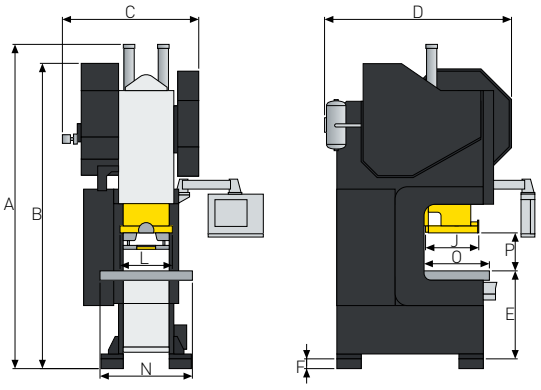
The presses can meet a wide range of requirements with two different control concepts. The »eco« version has an easy-to-use controller with a text display integrated in the control cabinet.

The »comfort« model is equipped with a 12-inch multi-function touch panel with a swivel arm. It also has an Internet connection which makes remote diagnostics possible.

BENEFITS

- Modular presses for greater production flexibility
- Durable, stress relief annealed press frame
- Ergonomic design with ideal leg room and working height
- Back gears allow for a high production capacity, even at low stroke rates
- Fast and safe changeover process with manual or motor-powered stroke and slide adjustment, brake resistance, and set-up mode with forward and reverse drive
- Hydraulic overload protection system for the press and die
- Frequency converter allows for a continuously variable slide speed
- Electronic cam switch gives precise control of the angle of peripheral devices combined with a process monitoring function (»comfort« variant)
- Pretensioned, low-maintenance wear-resistant roller guides prevent the slide from tilting – resulting in more accurate parts and a longer die lifespan

DATA AND FACTS



C-*FLEX*line.

C-*FLEX*LINE TECHNICAL DATA

MODEL	CFL 40	CFL 63	CFL 100	CFL 160	CFL 250
Press force [kN]	400	630	1,000	1,600	2,500
Working capacity [J]	900	2,750	6,000	17,000	23,000
Drive power [kW]	4	4	7,5	18.5	18.5
Stroke rate [H/min]	60–140	30–120	30–90	20–70	20–60
Slide dimensions, L×J [mm]	370×300	470×415	540×515	850×635	1,000×742
Bed dimensions, N×O [mm]	600×480	820×590	900×660	1250×750	1400×860
Shut height, P* [mm]	300	320	370	440	470
Opening in the bed [Ø] [mm]	120	165	165	165	165
Opening in the press upright (downward | backward) [mm]	275×210 | 310	310×320 | 410	410×370 | 470	510×440 | 510	630×530 | 630
Bed plate thickness [mm]	53	75	95	115	115
Centering hole in the slide [Ø] [mm]	50	50	50	60	60
Slide adjustment [mm]	70	100	100	110	130
Stroke adjustment [mm]	5–100	8–120	10–130	12–180	19–250
Depth of throat [mm]	220	280	334	370	442
Weight with standard equipment [kg]	3,000	5,000	7,000	14,000	23,000

DIMENSIONS

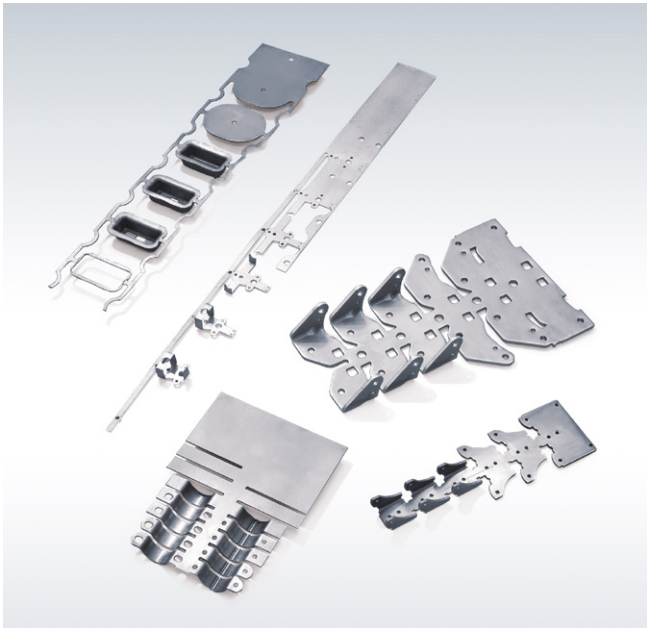
MODEL	CFL 40	CFL 63	CFL 100	CFL 160	CFL 250
Press height, A [mm]	2.611	3.070	3.225	3.780	4.420
Press height (without counterbalance cylinder), B [mm]	2.416	2.830	3.045	3.520	4.100
Press width, C [mm]	1.260	1.360	1.500	1.800	2.150
Press depth, D [mm]	1.477	1.700	1.950	2.460	3.000
Bed height (including plate), E [mm]	850	863	903	1.005	1.005
Height of damping elements (Beutler standard), F [mm]	approx. 70	approx. 90	approx. 90	approx. 100	approx. 100
T-slots in bed clamping plate / DIN 650 [mm]	a=22	a=22	a=22	a=22	a=22

*Largest stroke at the bottom, slide adjustment at the top, without clamping plate.

PRESSES WITH FLYWHEEL DRIVE.
MC SERIES.

These monoblock machines, used for stamping conventional sheet metal parts, have a high output, long die lifespan and produce high-precision components.

MC 3000 automatic blanking press with transfer system.



Precision-made parts.

MC AUTOMATIC BLANKING PRESS: A WIDE VARIETY OF PARTS AND A HIGH OUTPUT.

The automatic blanking presses are standard machines with a modular design and a comprehensive selection of standard equipment for stamping conventional sheet metal parts from coils.

They are the perfect solution for cost-effectively manufacturing high-quality parts, with a high output rate, in the 1,250 to 5,000 kN range.

TECHNICAL DATA

MODEL	MC 125	MC 200	MC 300	MC 400	MC 500
Press force [kN]	1,250	2,000	3,000	4,000	5,000
Bed length [mm]	**Bed width [mm]**				
1,400	1,000				
1,800		1,100			
2,200			1,300		
2,300		1,100			
2,600			1,300		
3,000				1,300	1,400
Kinematics of the mech. drive	eccentric	eccentric	eccentric	eccentric	eccentric
Number of pressure points	2	2	2	2	2
Shut height* [mm]	450	550	650	750	800
Slide adjustment [mm]	150	150	150	200	250
Slide stroke [mm]	20–180	20–220	40–315	40–315	40–315
Stroke rate [1/min]**	30–150	30–130	25–100	20–80	20–70

* Largest stroke at the bottom, slide adjustment at the top, with clamping plate. ** The stroke rate depends on the preset stroke height.

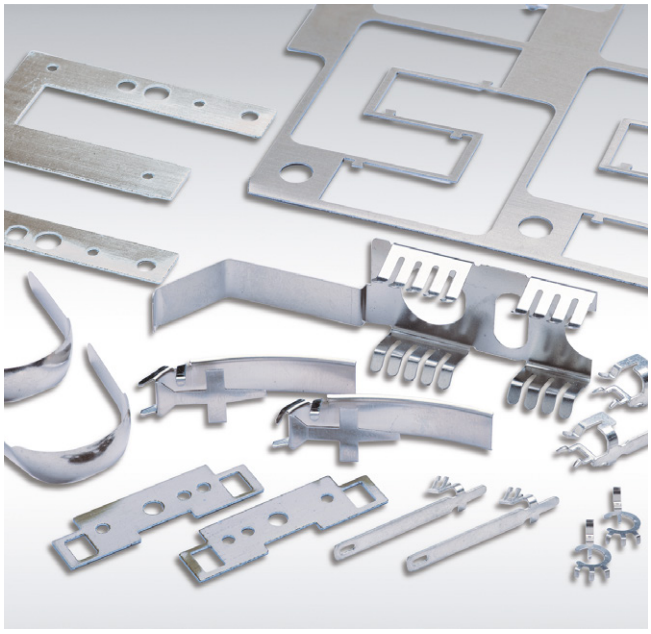
BENEFITS

- The frame of the monoblock machines is made from welded, stress-relief annealed steel. This gives it the necessary rigidity – which, together with the very low level of bed deflection, ensures that the parts are highly accurate and the dies have a long lifespan
- The transverse shafts turning in opposite directions compensate for the lateral rotation forces
- The long eight-fold guide system for the slide effectively absorbs the eccentric forces
- The press and the die have a continuously adjustable hydraulic overload protection system
- The web-based controller comes as standard with a 12" touch screen, is easy to use, and has ports for connecting a PLC
- Peripherals can be connected to the press control system and operated from the touch screen

PRESSES WITH FLYWHEEL DRIVE.
MCF SERIES.

MCF high-speed automatic blanking presses can be used to produce precision components, with a small die clearance, at a rate of up to 300 strokes per minute.

MCF 80 high-speed automatic blanking press.



A wide variety of parts.

MCF HIGH-SPEED AUTOMATIC BLANKING PRESSES.

Schuler's high-speed automatic blanking presses have a modular design and can manufacture components at a rate of up to 300 strokes per minute.

Pretensioned rollers without play are used to guide the slide and this guarantees that the process has the required level of precision, creating the perfect conditions for manufacturing small components with a minimal die clearance.

PLAY VIDEO

www.schulergroup.com/youtube

TECHNICAL DATA

MODEL	MCF 63	MCF 80	MCF 100	MCF 125
Design	monoblock	monoblock	monoblock	monoblock
Press force [kN]	630	800	1,000	1,250
Bed length [mm]	**Bed width [mm]**			
1,000	700	700		
1,300			800	800
Kinematics of the mech. drive	eccentric	eccentric	eccentric	eccentric
Number of pressure points	2	2	2	2
Shut height* [mm]	350	350	400	400
Slide adjustment [mm]	60	70	90	100
Slide stroke [mm]	9–80	9–100	11–100	11–120
Stroke rate [1/min]**	30–300	30–300	30–280	30–280

* Largest stroke at the bottom, slide adjustment at the top. ** The stroke rate depends on the preset stroke height.

BENEFITS

- Continuously adjustable overload protection system for the press and die
- The fully automatic stroke and slide adjustment keeps changeover times to a minimum
- Roller guides for the slide
- Stress-relief annealed press frame
- Long die lifespan and high-precision parts
- The planetary gear train allows for a high capacity even at low speeds

PRESSES WITH FLYWHEEL DRIVE.
TMK SERIES.

Schuler's TMK knuckle-joint presses are all-rounders with press forces from 3,000 to 15,000 kN and bed lengths from 3,000 to 3,660 mm. The modular design of these presses means that they can be combined with a range of automation components and die change systems, making them the ideal solution for a variety of different production tasks.

These versatile knuckle-joint presses are easy to operate and change over, which guarantees high availability and cost-effectiveness.

The machines in the TMK series are genuine all-rounders that can be used to emboss, calibrate, bend, pierce, draw, and stamp a variety of components.

Efficient and modular – for the best results throughout the entire life cycle. The knuckle-joint presses from the TMK series are ideally suited to a wide range of forming jobs. The machines can cost-effectively blank, draw, emboss, punch, and calibrate parts in a single sequence of operations. The different stages in the process can also be combined with one another.

The knuckle-joint presses can be used with transfer or progressive dies. Accompanying coil feed lines consisting of a decoiler, straightener, and roll feed unit are also available. Mechanical or electronic transfer systems ensure that the materials and parts are transported safely.

Die change systems. The systems available include hook-in brackets, mechanical or motor-driven die change brackets, automatic die change frames, and tandem die change carts. This ensures that the right solution can be provided to meet every requirement.

TECHNICAL DATA

MODEL	TMK 250	TMK 400	TMK 630	TMK 800	TMK 1.000
Design	monoblock	monoblock	monoblock	monoblock	monoblock
Press force [kN]	2,500	4,000	6,300	8,000	10,000
Bed length [mm]			**Bed width [mm]**		
2,000	1,100				
2,500	1,100	1,200			
3,000		1,200	1,300	1,300	
3,660			1,500	1,500	
4,500					1,500
Kinematics of the mech. drive	knuckle joint	knuckle joint	knuckle joint	knuckle joint	knuckle joint
Number of pressure points	2	2	2	2	2
Shut height* [mm]	575	700	800	900	1,000
Slide adjustment [mm]	150	150	200	200	300
Slide stroke [mm]	120	200	200	300	300
Stroke rate [1/min]	20 – 110	20 – 85	20 – 80	10 – 60	15 – 40

* Largest stroke at the bottom, slide adjustment at the top.

BENEFITS

- The movement that is characteristic of knuckle-joint drives ensures an ideal impact velocity and results in high-precision components and a long die service life
- The widely positioned pressure points make the press highly resistant to tilting
- The extreme rigidity of the overall system guarantees a high level of repeatability, even if there are variations in the thickness and strength of the material
- The presses are ideal for processing high-strength steels
- A reduction in the cutting impact protects the die and lowers the noise level
- The pneumatic counterbalance system ensures that all the drive components and bearings have a long lifespan
- Two counter-rotating drives compensate for the lateral forces and reduce the stress on the slide guide system
- The pretensioned eight-fold roller guide for the slide guarantees a narrow die clearance
- The dry-running roller guides with lifetime lubrication ensure that there is no oil in the die installation area
- A careful choice of materials, a special surface finish, and a dispensing system for the lubrication result in a highly efficient slide bearing design

PRESSES WITH SERVO DRIVE.
MSP SERIES.

These presses can be flexibly adapted to any requirement – stamping, forming, cutting, embossing or drawing. The MSP series has press forces of 2,000 to 4,000 kN that lead to higher outputs compared against conventionally-driven presses.

MSP 200 stamping machine with ServoDirect technology and two connecting rods.

MSP 400 servo press in monoblock design.

STAMPING MACHINES AND SERVO PRESSES WITH SERVO DIRECTDRIVE.

Stamping machines and servo presses can run much more cost-effectively thanks to ServoDirect technology. The individual adjustment of the stroke height in combination with the reversing movement of the torque motor (oscillating stroke mode) leads to a significant increase in output compared to conventionally-driven presses.

Simultaneously the optimal adjustment of the slide kinematics to the process parameters results in a higher component quality and a longer die lifespan.

The backlash-free drive system which requires no lubrication consists of two electrically connected, freely programmable drive units with torque motor and knuckle joint. This significantly increases the reliability of the process as there is no longer a possibility of the process lubricants – and press lubricants getting mixed – making these machines ideal for the packaging and food industries.

The pre-programmed slide movement curves are designed for a range of different processes. An optional curve generator is available for users to program the slide movement themselves.

TECHNICAL DATA

MODEL	MSP 200	MSP 400
Design	monoblock	monoblock
Press force [kN]	2,000	4,000
Bed length [mm]	**Bed width [mm]**	
1,800	1,100	
3,000		1,400
Kinematics of the servo drive	knuckle joint servo	knuckle joint servo
Number of pressure points	2	2
Shut height* [mm]	500	600 / 700
Slide adjustment [mm]	150	200
Slide stroke [mm]	20 – 160	60 – 300
Stroke rate [1/min]**	3 – 130	3 – 90

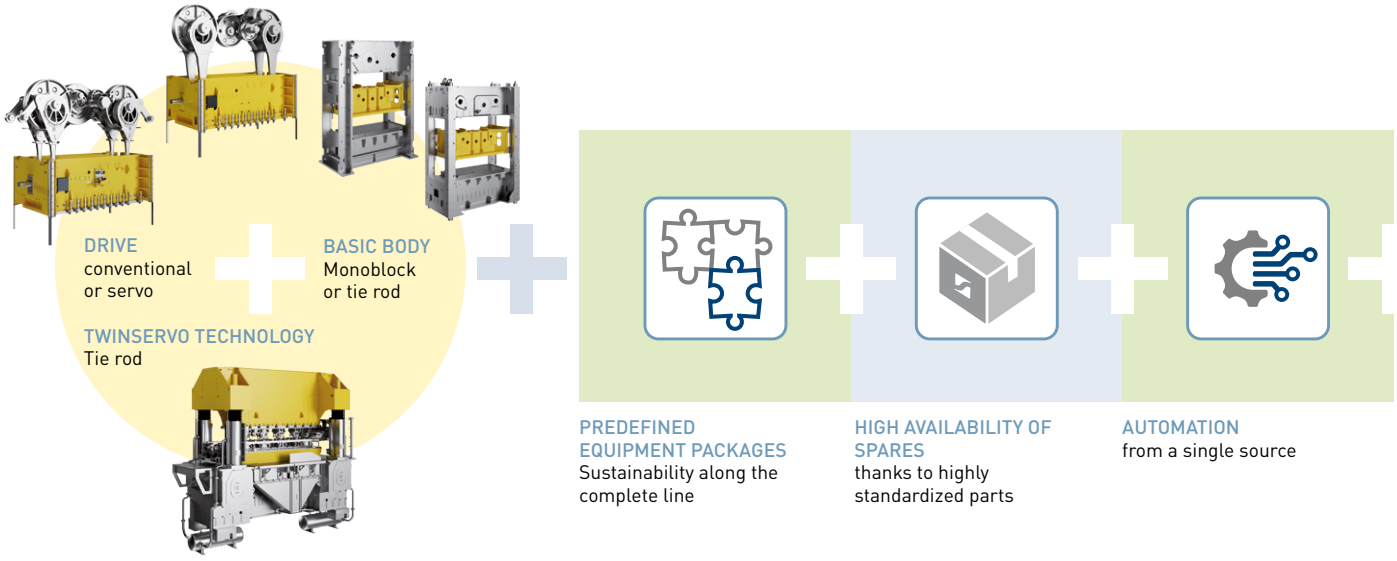
* Stroke at the bottom, adjustment at the top, with clamping plate.
**Stroke rate dependent on output of model as well as programmed stroke height and kinematics.

BENEFITS

- Significantly higher output compared to conventionally driven mechanical presses
- Five pre-programmed slide movement curves and curve generator ensure max. flexibility in the production process
- Attractive purchase price
- Short delivery times
- Easy and intuitive operation thanks to touchscreen with an individually configurable menu
- Longer die lifespan thanks to the optimal adjustment of the slide movement to the process parameters
- A backlash-free drive concept and widely positioned pressure points – allowing a smaller die clearance for more accurate stamping and forming parts
- Cost reduction thanks to intelligent energy management system and high energy efficiency: The electrical power consumption is reduced by up to 50 percent
- Condition-based maintenance concept with integrated maintenance plan and innovative condition monitoring
- The drive system requires no lubrication – leading to more reliable processes and greater efficiency

TRITON.
THE NEW PRESS CONCEPT FROM SCHULER.

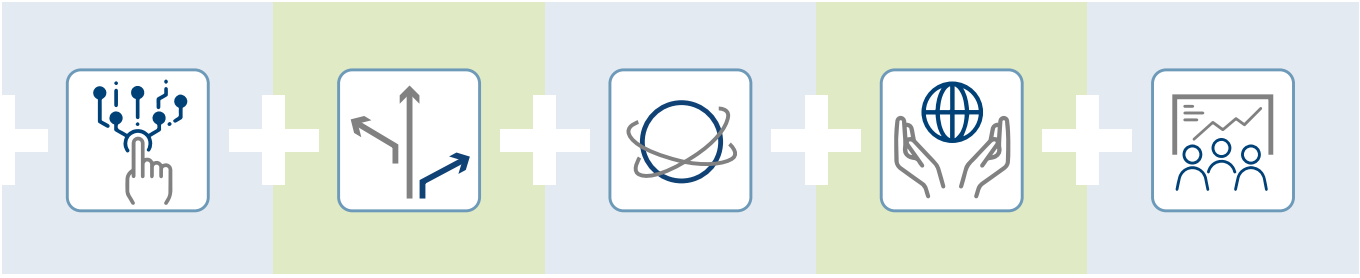
TRITON provides a solution for the most pressing industry issues. Schuler combined over 180 years of experience with the most innovative and advanced technologies of the future to create a new dimension in customer value.



The TRITON press concept – modular, efficient, from a single source, sustainable and future-orientated.

Made for your challenges. The TRITON – Future Press Concept is a modular series of mechanical presses, designed and produced to be robust, can be freely configured with a conventional flywheel or servo mechanical drive from 2,500 up to 32,000 kN and a range of bed sizes.

Schuler's TRITON concept features a monoblock design, either in a tie rod arrangement or in the innovative Schuler TwinService Technology. Tailored solutions for the premium segment of various production requirements are also possible. TRITON also has numerous future-orientated design advantages, that substantially differentiates it from other forming presses.



DIGITAL SOLUTIONS
for production, can be individually extended

INCREASED FLEXIBILITY
in production

WORLDWIDE
different requirements

SUSTAINABILITY
and saving resources

SKILLED STAFF RETENTION

Digitalization in production. The flexible implementation of additional digital solutions ensures a high degree of availability and equips the TRITON system for the future.

Direct access to sensor data through the IO link enables the evaluation of the collected data, for which patterns can be traced back to specific errors and root causes. This forms the basis for forward-looking maintenance and prevention measures.

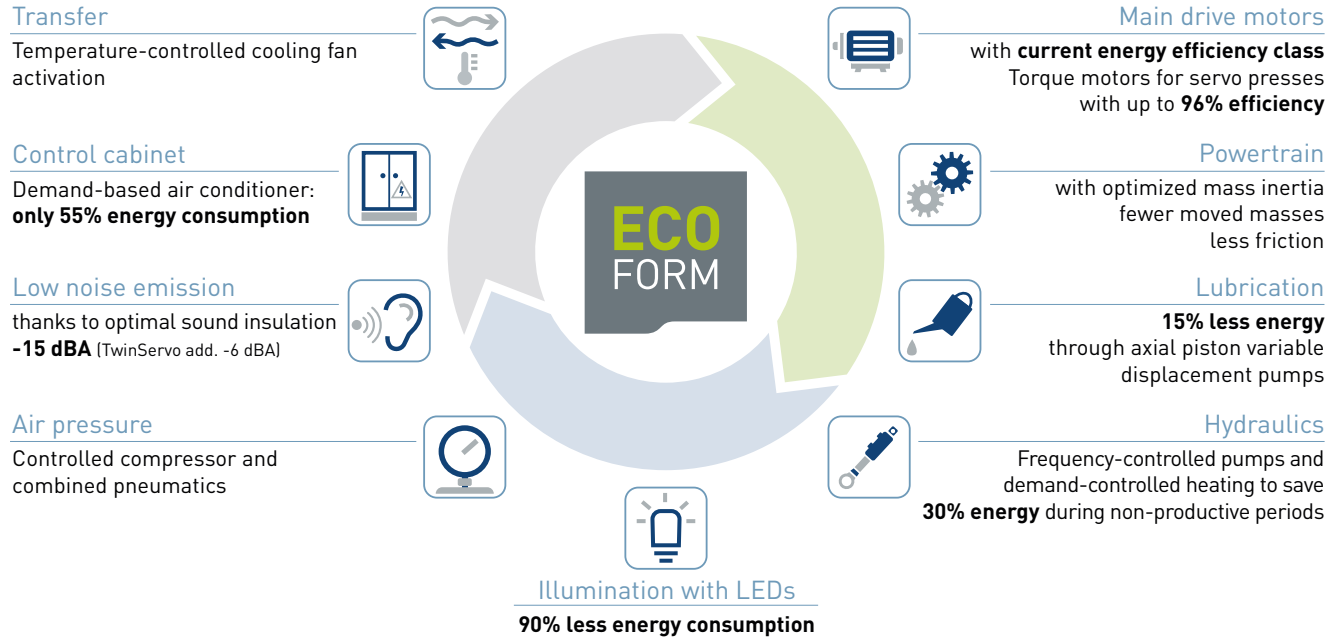
Flexibility in production. TRITON is highly automated. TRITON offers an optimal interplay of the entire system and shortens the set-up time for flexible applications through standardized interfaces – from material feed all the way through to conveyor. A uniform visualization enables simple and fast operation.

Guided die change and automated die change concepts adapt to your workflows and create best availabilities. This enables you to also stay productive with small production batches.

There are different requirements worldwide. Schuler operates production plants in Germany, China and Brazil, and is familiar with the different preconditions for technological requirements of production facilities in these markets.

TRITON presses meet the technological demands and expectations in the local markets, yet feature a uniform design and can be intelligently networked worldwide with the central departments of your company (to compare and monitor productivity).

More than 800 service experts at Schuler's worldwide locations can be reached 24/7 in an emergency and can quickly arrive on-site. Many components have been designed to be as uniform as possible, independent of the type of drive,



so that a higher availability of spares (up to 90%) is possible and available at all Schuler locations worldwide. Global gains in efficiency with highest on-site acceptance are the result thanks to local customizability.

Sustainability and resource saving. Press works are especially energy intensive to operate – creating a large carbon footprint. The high rigidity of Schuler's TRITON presses, the low deflection compared with other forming presses, and the press processes with reduced cutting impact and cutting gaps ensure a long lifespan of the press and its components. This includes a sustainable minimization of die wear – even under a full press force used selectively or continuously!

Our ECOFORM integrated in TRITON presses additionally ensures a minimal CO2 footprint and lower energy costs.

Retention of skilled workers. TRITON presses provide a technology geared towards increased security and a contemporary structure. The control system is modern and intuitive as the operation is guided. It offers a fast overview and helps rectify errors. Large touch screens also prevent input errors.

Trained personnel are hard to come by these days and TRITON presses can be efficiently and safely operated by untrained personnel after brief instruction.

TRITON
Future Press Concept

MADE FOR YOUR CHALLENGES

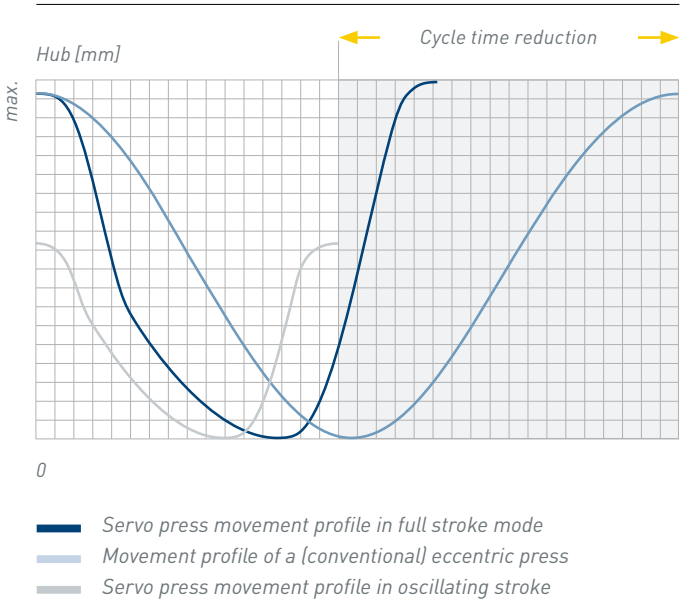
MORE INFORMATION

www.schulergroup.com/triton

TRITON-PRESSES WITH SERVO DRIVE.
MSD SERIES.

Our TRITON servo presses in monoblock design come ready assembled to your production facilities and can be quickly commissioned.

Servo press in monoblock design with a press force of 2,500 to 6,300 kN.



The ability to program the slide movement reduces the cycle time while leaving the forming speed unchanged.

Shortened assembly times on site. The monoblock press frame is made as a stress-free annealed welded structure and has a high stiffness. The preassembly takes place in our facilities: The MSD series comes to your factory compact and completely preassembled. Therefore, assembly at your plant is shortened and the commissioning and start of your production are hastened.

Optimizer. The user interface developed by Schuler features the »Optimizer« curve generator which, through optimal coordination of the slide kinematics and automation parameters, guarantees a high degree of process reliability.

Tryout. Maximum flexibility is required when trying out new dies. The set-up speed can be variably changed. The slide can be stopped in any position and its direction of travel can also be reversed if necessary. The Quick-Lift function enables the slide to travel to the top dead center at any point during the setup process.

TRITON – Future Press Concept. The TRITON modular system's benefits include uniformed parts, robustness, and is permanently designed for 100% press force, long lifespan, precision, die change, uniformed user interface, digital solutions, sustainability, and energy efficiency.

TECHNICAL DATA

MODEL	MSD 250	MSD 400	MSD 630
Design	monoblock	monoblock	monoblock
Press force [kN]	2,500	4,000	6,300
Bed length [mm]		**Bed width [mm]**	
2,000	1,100		
3,050		1,400	
4,000			1,800
Kinematics of the servo drive	eccentric servo	eccentric servo	eccentric servo
Shut height* [mm]	550	700	1,000
Slide adjustment [mm]	150	250	300
Slide stroke [mm]	32 – 160	60 – 300	80 – 400
Stroke rate [1/min]**	3 – 160	3 – 110	3 – 80

* Stroke at the bottom, adjustment at the top.
** The stroke rate depends on the output model as well as the preset stroke height and kinematics.

PLAY VIDEO

www.schulergroup.com/youtube

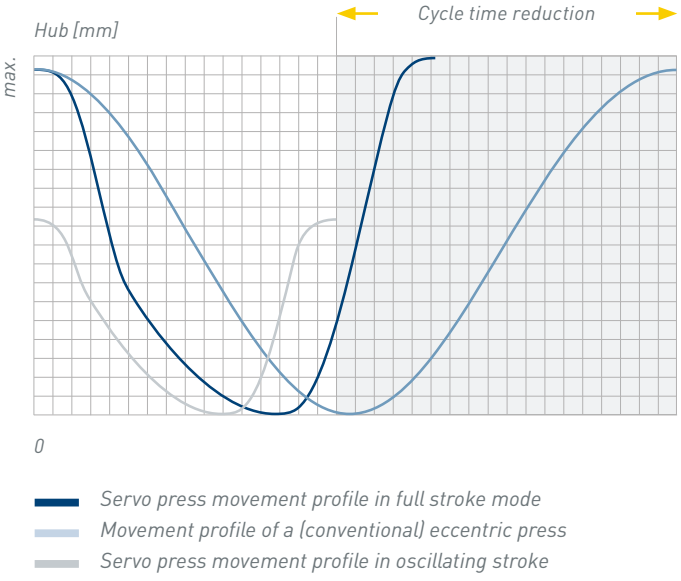
BENEFITS

- Pre-assembled delivery and shortened on-site assembly
- Significant increase in output compared to conventionally driven mechanical presses
- Freely programmable stroke heights and movement sequences permit maximum production flexibility
- Optimally adjusted movement sequences lead to improved part quality and a longer die lifespan
- Die tryout times are reduced because of the set-up and tryout functionality with Quick-Lift function

TRITON-PRESSES WITH SERVO DRIVE.
TSD SERIES.

TRITON servo presses in tie rod design allow for maximum production flexibility with larger components and also offer highly reliable processes, a long service life and low maintenance levels.

Servo press in tie rod design.



The individual programming of the slide movement reduces the cycle at the same forming speed.

Flexible, reliable, efficient. Servo presses in tie rod design can process a wide variety of components and materials, from simple stamped parts to highly complex structural parts made of materials ranging from aluminum to high-strength steel. The material is supplied from a coil or by a blank loader.

Optimizer. All servo presses of the TRITON Future Press Concept have a user interface developed by Schuler that features the »Optimizer« curve generator. The optimal coordination of the slide kinematics and the automation parameters guarantees a high degree of process reliability.

Tryout. Maximum flexibility is required when trying out new dies. The set-up speed can be variably changed. The slide can be stopped in any position, and its direction of travel can also be reversed if necessary. The Quick-Lift function enables the slide to travel to the top dead center at any point throughout the setup process.

TRITON – Future Press Concept. The TRITON modular system is consistent with the same important TRITON benefits with regard to uniformed parts, designed for 100% press force, long lifespan, precision, die change, uniformed user interface, digital solutions, sustainability, and energy efficiency.

TECHNICAL DATA

MODEL	TSD 630	TSD 800	TSD 1000	TSD 1250
Design	tie rod	tie rod	tie rod	tie rod
Press force [kN]	6,300	8,000	10,000	12,500
Bed length [mm]	**Bed width [mm]**			
4,000	1,800	1,800		
4,600		1,800	1,800	
5,100			1,800	1,800
6,100				1,800
Kinematics of the servo drive	eccentric servo	eccentric servo	eccentric servo	eccentric servo
Number of pressure points	2	2	2	2
Shut height* [mm]	1,000	1,000	1,100	1,200
Slide adjustment	300	300	300	300
Slide stroke [mm]	80 – 400	80 – 400	90 – 450	90 – 450
Stroke rate [1/min]**	3 – 80	3 – 80	3 – 60	3 – 53

MODEL	TSD 1250	TSD 1600	TSD 2000	TSD 2500	TSD 3200
Design	tie rod	tie rod	tie rod	tie rod	tie rod
Press force [kN]	12,500	16,000	20,000	25,000	32,000
Bed length [mm]	**Bed width [mm]**				
5,100	2,200				
6,100	2,200	2,500 2,750	2,500 2,750	2,500 2,750	
7,300			2,500 2,750	2,500 2,750	2,500 2,750
8,200				2,500 2,750	2,500 2,750
Kinematics of the servo drive	eccentric servo	eccentric servo	eccentric servo	eccentric servo	eccentric servo
Number of pressure points	4	4	4	4	4
Shut height* [mm]	1,200	1,300	1,400	1,400	1,400
Slide adjustment	300	350	350	350	400
Slide stroke [mm]	200 – 600	200 – 600	250 – 762	250 – 762	250 – 762
Stroke rate [1/min]**	3 – 50	3 – 42	3 – 38	3 – 32	3 – 32

* Stroke at the bottom, adjustment at the top.

** The stroke rate depends on the output model as well as the preset stroke height and kinematics.

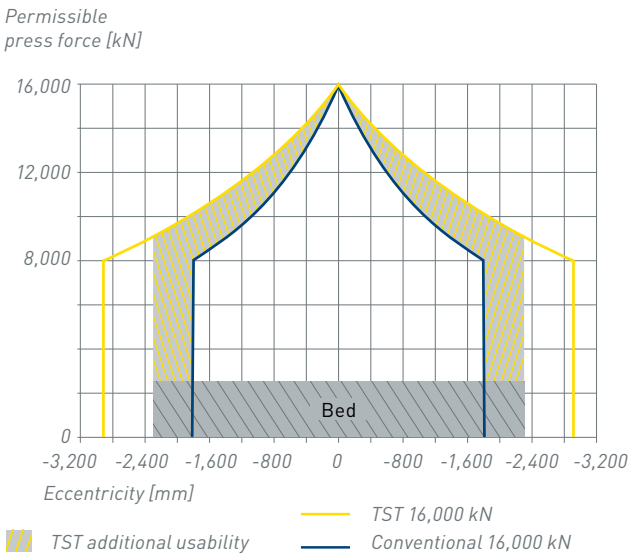
BENEFITS

- Freely programmable stroke heights and movement sequences permit maximum production flexibility
- Significant increase in output compared to conventionally-driven mechanical presses
- Movement sequences optimally adjusted to the respective forming requirements lead to improved part quality and a longer die lifespan
- Ideal for processing high-strength steels because the installation technology is resistant to cutting impacts
- Maximum availability due to long lifespan and low maintenance required
- Die tryout times are reduced because of the set-up and tryout functionalities with Quick-Lift function

TRITON-PRESSES WITH SERVO DRIVE.
TST SERIES.

The innovative Schuler TwinServo drive concept is unique worldwide and offers maximal eccentric load capacity for more flexibility in method planning.

Transfer press with TwinServo technology.



The higher eccentric load capacity of the TST series provides more flexibility in method planning.

Taking servo technology to the next level.
Presses with TwinServo technology feature a drive concept consisting of two separate torque motors in the press bed. Synchronization takes place electronically, and the arrangement leaves enough space for drawing cushions and scrap chutes.

The concept allows for highly flexible design of the die positioning: the increased permissible single stage forces and the much higher eccentric load capacity of the presses open up new possibilities for method planning.

The extremely high tilt resistance, combined with the reduction in deflection, leads to an improvement in the quality of the parts, reduces stresses on the die and shortens the die tryout times.

Due to the design, the press with TwinServo technology achieves a significantly higher output than a conventional top-driven press. The lighter drive components lead to a 25% lower rotational inertia compared with a conventional design, which leads to considerably improved dynamics.

TECHNICAL DATA

MODEL	TST 1000		TST 1250		TST 1600		TST 2000		TST 2500	TST 3000
Design	TwinServo		TwinServo		TwinServo		TwinServo		TwinServo	TwinServo
Press force [kN]	10,000		12,500		16,000		20,000		25,000	30,000
Bed length [mm]	**Bed width [mm]**									
4.600	1,800									
5.100			2,200							
6.100		2,000		2,200	1,800	2,500	2,500		2,500	
7.000								2,500	2,500	2,500
8.200									2,500	2,500
Kinematics of the servo drive	eccentric		eccentric		eccentric		eccentric		eccentric	eccentric
Number of pressure points	4		4		4		4		4	4
Shut height* [mm]	1,100	1,300	1,300		1,400	1,400	1,400		1,400	1,400
Slide adjustment	300	300	300		400	400	400		400	400
Slide stroke [mm]	150 – 450	200 – 600	200 – 600		150 – 450	200 – 600	250 – 700		250 – 762	250 – 762
Stroke rate [1/min]**	3 – 48	3 – 40	3 – 40		3 – 45	3 – 42	3 – 36		3 – 40	3 – 40

* Stroke at the bottom, adjustment at the top.

** The stroke rate depends on the output model as well as the preset stroke height and kinematics.

TwinServo presses with a height of approx. 6 meters are considerably shorter than traditional models. The total footprint is around 30% smaller. Additionally, the positioning of the drives in the bottom part of the press results in optimal noise protection.

TRITON – Future Press Concept. The TRITON modular system is consistent with the same important TRITON benefits with regard to uniformed parts, designed for 100% press force, long lifespan, precision, die change, uniformed user interface, digital solutions, sustainability and energy efficiency.

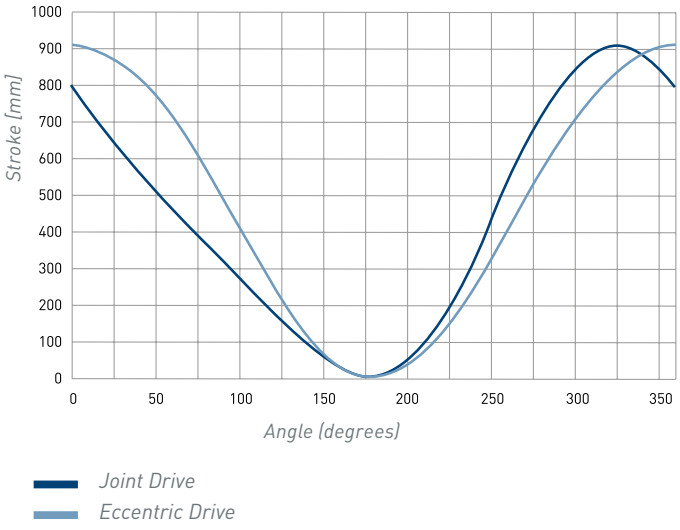
BENEFITS

- Innovative drive concept with two electronically synchronized torque motors in the press bed
- A larger eccentric load at the same press force
- A 30% reduction in deflection
- Active parallel positioning of the slide
- A better view of the work area
- Sound insulation reduces noise levels for operating staff
- No oil in the work area
- Smaller footprint
- Integrated Optimizer curve generator
- Die tryout times are reduced because of the set-up and tryout functionality with Quick-Lift function

TRITON PRESSES WITH CONVENTIONAL DRIVE.
TME AND TML SERIES.

TRITON presses are also available with conventional drives in the same sizes.

TME TRITON press with mechanical drive.



Comparison of eccentric drive and joint drive.

Conventional drive. TRITON presses with conventional drives all feature a tie rod design, ranging from 630 t to 1,250 t press force in 2-point suspension with eccentric drive and 1,600 t upwards in 4-point suspension with joint drive. The presses are also user-friendly.

The Link Drive is a type of mechanical drive which enables a higher quality adaptation to your process. This is because in contrast to a traditional eccentric drive (for which the downward movement of the slide is identical to the upward movement), the Link Drive ensures that the slide is slower in the forming zone. The upward movement of the slide is faster and compensates for the loss of speed in the downward movement to keep the cycle time the same as an eccentric press. The benefits include a higher forming quality, and an increased lifespan of the die and press, as the shocks during the forming process are lower.

TRITON – Future Press Concept. The TRITON modular system is consistent with the same important TRITON benefits with regard to uniformed parts, designed for 100% press force, long lifespan, precision, die change, uniformed user interface, digital solutions, sustainability and energy efficiency.

TECHNICAL DATA FOR MODELS WITH ECCENTRIC DRIVE

Design	TME 630	TME 800	TME 1000	TME 1250	TME 1250
Design	tie rod	tie rod	tie rod	tie rod	tie rod
Press force [kN]	6,300	8,000	10,000	12,500	12,500
Bed length [mm]	**Bed width [mm]**				
4.000	1,800	1,800			
4.600		1,800	1,800		
5.100			1,800	1,800	2,200
6.100				1,800	2,200
Kinematics of the mech. drive	eccentric	eccentric	eccentric	eccentric	eccentric
Number of pressure points	2	2	2	2	4
Shut height* [mm]	1,000	1,000	1,100	1,200	1,200
Slide adjustment [mm]	300	300	300	300	300
Slide stroke [mm]	400	450	500	500	600
Stroke rate [1/min]	10–60	10–55	10–45	10–40	10–35

TECHNICAL DATA FOR MODELS WITH JOINT DRIVE

MODEL	TML 1600		TML 2000		TML 2500		TML 3200	
Design	tie rod		tie rod		tie rod		tie rod	
Press force [kN]	16,000		20,000		25,000		32,000	
Bed length [mm]	**Bed width [mm]**							
6.100	2,500	2,750	2,500	2,750	2,500	2,750		
7.300			2,500	2,750	2,500	2,750	2,500	2.750
8.200					2,500	2,750	2,500	2.750
Kinematics of the mech. drive	link		link		link		link	
Number of pressure points	4		4		4		4	
Shut height* [mm]	1,300		1,400		1,400		1,400	
Slide adjustment [mm]	350		350		350		400	
Slide stroke [mm]	762		914		914		914	
Stroke rate [1/min]	10–30		10–28		10–28		10–28	

* Stroke at bottom, adjustment at top.

TME2 – Mechanical with eccentric drive

- Flywheel as energy storage for a high energy capacity
- Very low friction losses in bearing zones
- High stroke rates

TML4 – Mechanical with joint drive

- Flywheel as energy storage for a high energy capacity
- Optimal curve progression for forming
- Low inertia

BENEFITS

- Simple operation
- Flywheel as energy storage for a high working capacity
- From 1,600 t with Link Drive for complex components
- Sliding speed is approx. one third slower than the eccentric drive in the operating area
- High part quality
- Less die wear and lower sound emissions

AUTOMATION FROM SCHULER.
MORE FLEXIBILITY – AUTOMATICALLY.

Benefit from Schuler Automation's latest developments, including components specifically customized for the highly dynamic requirements of servo presses.

»Power Line« coil feed line for dynamic production processes.

»Power Feed« highly dynamic roll feed.

COIL FEEDING LINES

Precise material feed from the coil to ProgDie and transfer presses consisting of a decoiler, straightener, and loop unit. Coil feeding lines of the Power Line are the ideal supplement for highly dynamic servo presses and are particularly suitable for the production of structural parts and components from materials with sensitive surfaces.

ROLL FEEDS

Shortening of the automation time especially for highly dynamic presses thanks to the »Power Feed« roll feed. More dynamics and precision thanks to servo direct drives and maintenance free planetary gears with minimal play.

»ProTrans« three-axis transfer system with servo drive.

Blank loader.

THREE-AXIS TRANSFER SYSTEM

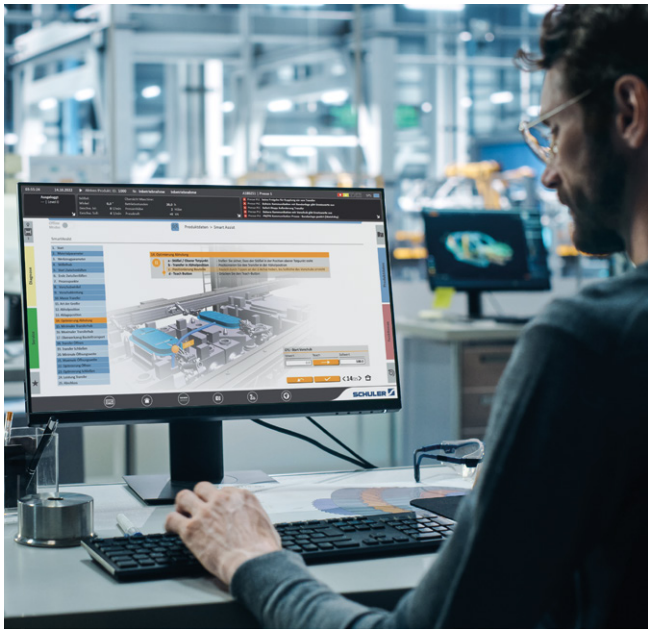
High performance transfer generation in three sizes for a wide range of applications. The motorization via servo drives which have a low vibration tendency and short die changing times ensure high output performance.

BLANK LOADER

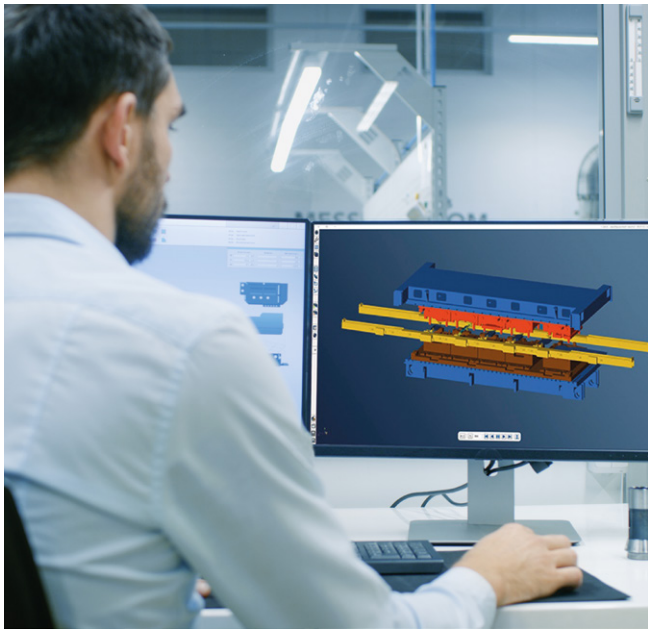
Blank loaders ensure maximum flexibility and efficiency as a standalone solution or in combination with a roll feed system.

PROCESS MANAGEMENT FROM SCHULER.
IT TOOLS.

Schuler: the perfect solution. We offer you special IT tools so that our machines can produce their best results on-site, for your special requirements.



Schuler IT Tools shorten the time needed for set-up and get the maximum performance out of the machine.



The production parameters for the press, transfer and feed are efficiently and simply optimized offline by the manufacturing machine.

Efficient set-up and optimization. **Smart Assist** enables even inexperienced operators and setup staff to set up and optimize dies quickly thanks to its simple and intuitive operation.

Die setup has never been so easy. Step by step, the assistant guides you through the setup process, during which die and machine parameters are recorded. The movement curves of the slide, transfer and roll feed are fully automatically optimized from the data collected.

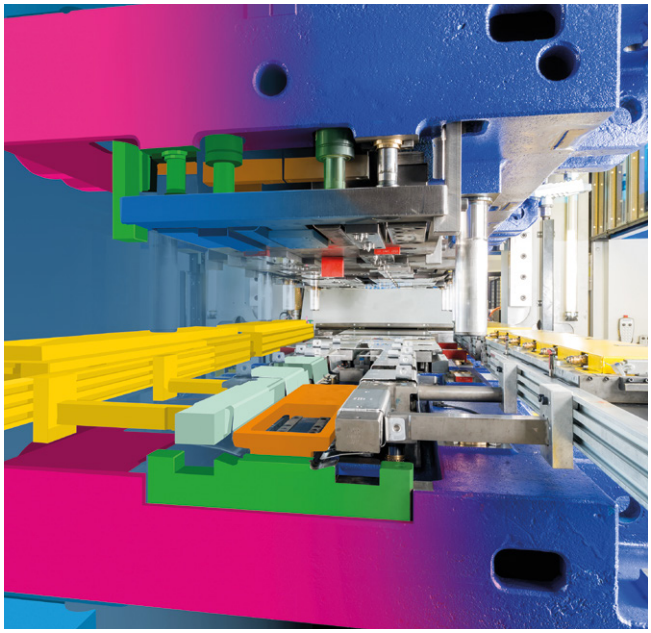
The **DigiSim®** run simulation is a software developed by Schuler for the simple visualization of the parts flow-through as well as the optimization of the stroke rate of transfer presses. Movements can be easily taken into account in addition to the mutually occurring movements of the slide with die and transfer rails. This enables collisions between all elements to be identified and easily eliminated.

Workflows of presses, which do not originate from the Schuler group, can also be optimized with the advanced **DigiSim® Unlimited**.

PROCESS MANAGEMENT FROM SCHULER.
SERVICES.

Many aspects in the technical field are becoming more complicated and sophisticated. Schuler's services are the simple solution.

Our experts analyze your processes and provide valuable insights.



Simulation and optimization of the production process with regard to output and energy consumption.

Training. We teach the optimal interaction between press technology and die design.

Our **die design training**, which is order and system-independent, is best completed before installation to gain the most benefit. The many years of experience of our Schuler experts ensure your press is off to an optimal start.

After the installation, and during the **process optimization,** the dies are jointly optimized for production. This process is primarily aimed at increasing productivity and die lifespan as well as optimizing energy consumption.

Services. Our experts analyze your die design and provide valuable tips to attain the best possible output from your press. We run a **virtual simulation** of your digital die, during which both the clearance in the parts flow and additional movement on the gripper rail are visualized. The evaluation enables you to optimize your die designs already in the design stage.

We generate component-specific clearance curves for you to optimally support your design. This saves you from having to invest in your own software and appointing or training extra personnel.

DIGITAL SOLUTIONS.
DIGITALIZATION IN THE PRESS SHOP.

Digitize your press shop with Metris Digital Solutions and boost your output.

TAP INTO THE BENEFITS OF DIGITALIZATION.

Have you ever wondered how you can use digitalization to boost the productivity of your press shop? As a leading supplier in the field of metal forming, we want to help you increase your efficiency and boost the productivity of your presses.

With its Digital Solutions, Schuler offers you new opportunities to boost the productivity of your press shop:

- Set up dies easier than ever
- Monitor production systems
- Track parts from start to finish
- Protect dies, prevent damage
- Get immediate assistance from experts
- Put your system to the ultimate test.

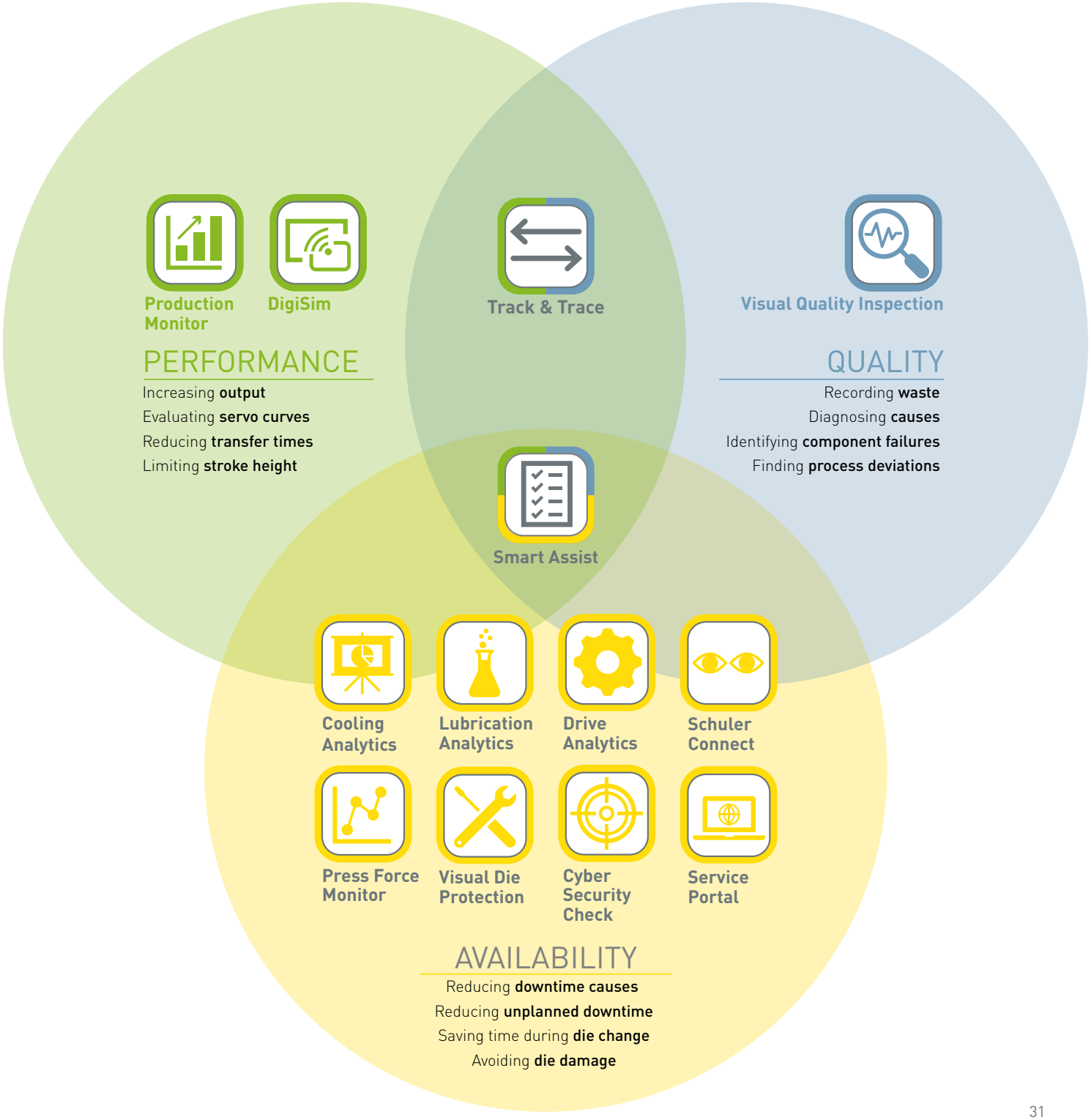
Embark on the path to digitalization with Metris. Reliable, uncomplicated, and customized to your individual needs.

digital@schulergroup.com

MORE INFORMATION

https://digitalsuite.schulergroup.com/en/

SCHULER MACHINE APPLICATIONS.
OVERALL EQUIPMENT EFFICIENCY.



HIGH-SPEED STAMPING PRESSES.
BMK AND EMKH SERIES.

BMK and EMKH high-speed stamping presses provide quality from the first to the last part.
hey ensure reliable mass production of technical discs with durable and low wear.

EMKH 300 with sound enclosure for further processing of the disc blanks.

Typical components are technical discs, shims, blanks, shaft retaining rings, link plates and locking washers.

High-performance and reliable –the best performance for high part quantities and large-scale production. High-speed automatic stamping presses in the BMK and EMKH series increase production quantities, improve quality, and optimize unit costs of mass produced products with greater strength and thicker material. The BMK delivers high parts quality at constantly high production speeds with up to 3,000 parts per minute from the stamping operation off the coil. The dynamic slide mass balancing compensates the vibration of the press and guarantees exceptionally smooth runs. The horizontal design also supports compressed air-controlled parts removal, making a separate parts removal device superfluous. Each production system can be equipped with a coil feed line and is durable, low-wear, and reliable.

Well-designed down to the last detail. The EMKH uses a slope conveyor that individually positions the blanks for embossing. The knuckle-joint bottom drive is directly connected to an active part in the die, permitting stroke rates of up to 750 parts per minute, depending on the component.

TECHNICAL DATA

Model	BMK 200	EMKH 150	EMKH 200	EMKH 300
Design	compact press with knuckle joint drive in monoblock design			
Press force [kN]	2,000	1,500	2,000	3,000
Bed dimensions [l × w in mm]	650 × 600			
Slide dimensions [l × w in mm]	720 × 420			
Height of stroke [mm]	65			
Stroke rate [rpm]	80 – 250	up to 750	up to 650	up to 500
Kinematics of the mech. drive	knuckle joint	knuckle joint	knuckle joint	knuckle joint
Ejector force [kN]	200			
Raw part dimensions [mm]		up to 32	up to 40	up to 60

Further specifications of the machine depend on the shape and thickness of the blanks.

BENEFITS

- Economical production of mass-produced products with high strength
- Efficient, safe parts removal
- Dynamic mass balancing of the slide for particularly quiet runs
- Mechanic cam-controlled ejector, adjustable timing
- Small tolerances thanks to simultaneous blanking of the inner and outer contours
- Best parts quality with low center deviations and high plane parallelism
- Durable, low wear and reliable

PRESSES FOR ALUMINUM FORMING.
PAL/PAZ SERIES.

The press models PAL/PAZ have been developed especially for producing containers and cans out of aluminum or tinplate.

PAZ 630 aluminum forming press.

Aluminum containers for the food industry.

The PAZ 630 is a closed and flexible single frame construction with welded and stress-relief annealed design. The size of the oscillating weight mounted on the backside of the machine gives the machine a high working capacity. The prestressed roller guides are extremely precise and do not heat up. Stroke and slide are servo adjustable. The slide weight is counterbalanced pneumatically.

The PAL 400 is a double-walled, expansive C-frame construction. By mounting an additional armature rod and installing additional oscillating weights the rigidity and the working capacity can be improved.

TECHNICAL DATA

MODEL	PAL 40	PAZ 63
Press force [kN]	400	630
Depth of throat [mm]	350	–
Bed width [mm]	975	1,300
Bed depth [mm]	650	950
Slide width [mm]	340	1,300
Slide depth [mm]	265	820
Slide adjustment [mm]	100	100
Slide stroke [mm]	80–180	16–160
Shut height* [mm]	475	650
Opening in the bed [mm]	600 × 420	1,000 × 600
Drive power (depending on unit) [kW]	15	15
Stroke rate** [rpm]	40–150	30–150
Weight with standard equipment [kg]	7,000	13,000
Opening in the press frame (backwards) [mm]	740	
Overload stroke with mechanical breaking plate [mm]	13	
Overload stroke with hydraulic overload protection device [mm]		20

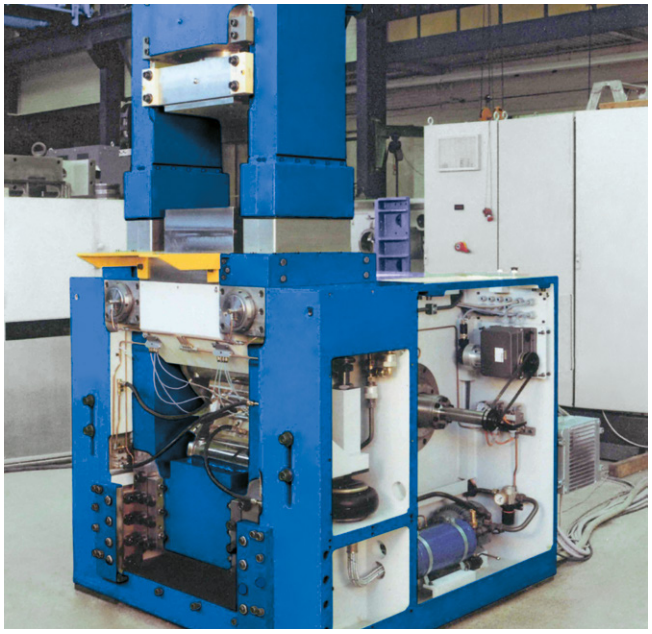
* Stroke at the bottom, without fixing plate, without slide plate
** In a vibration cushioned arrangement max. 135 strokes per minute.

BENEFITS

- Customized system solution from the coil to the finished product
- Generously dimensioned shut height, stroke height, and bed length
- User-friendly 12" touch screen with interfaces for peripheral equipment
- Production lines for test runs and training of operator personnel in Switzerland

HIGH-PERFORMANCE FOR EMBOSSING AND CALIBRATING.
EMK SERIES.

Presses in the EMK series have press forces from 3,600 to 10,000 kN, enabling fast and cost-effective production of embossed and calibrated parts.



EMK 630 with knuckle-joint bottom drive.

Typical components are engine and gearbox components, locks and fittings, hand tools, cutlery as well as insignias and medals.

Precise embossing and calibrating. Optimum product quality with high output, long die lifespan, low service and maintenance costs, and tight product tolerances. The EMK series knuckle-joint presses are the problem solvers when it comes to high-precision, complex embossing, and calibration parts.

The knuckle-joint bottom drive provides all the advantages of a low center of gravity: low construction height, high stability, and quiet runs. The press frame functions as the slide, while the bed is rigidly connected to the housing. The knuckle-joint kinematics reduce the slide speed during forming and give the material enough time for plastic flow. This results in long die lifespan and efficiently produced precision parts for a wide range of applications.

TECHNICAL DATA

Model	EMK 360	EMK 630	EMK 1000
Design	compact press with knuckle joint drive in monoblock design		
Press force [kN]	3,600	6,300	10,000
Bed length [mm]	**Bed width [mm]**		
525	500		
580		750	
670			650
Kinematics of the mechanical drive	knuckle joint	knuckle joint	knuckle joint
Number of pressure points	2	2	2
Shut height [mm]	407	450	450
Slide adjustment [mm]	7	50	50
Slide stroke [mm]	90	100	100
Stroke rate [rpm]	32 – 80	20 – 60	20 – 45

BENEFITS

- Compact, space saving, and robust knuckle-joint lower drive
- Low die wear thanks to almost shock-free contact with the workpiece
- Highly rigid system
- Low construction height
- High stability and quiet runs

THE RADIATOR SPECIALISTS.
RMK SERIES.

The RMK knuckle-joint presses are the specialists when it comes to the manufacture of flat radiators. They are available with press forces of 3,550 or 15,000 kN and as individual equipment versions or complete system solutions – for fast, highly efficient processes.

RMK 1500 radiator press with double knuckle-joint upper drive.

Flat radiator with different embossing stages.

Cost effective and reliable – from the coil to the formed radiator panel. The RMK series knuckle-joint presses enable precise embossing of radiator panels with exceptionally low material consumption. An optimal stroke rate is achieved through precise coordination of the entire system.

All models are equipped with two knuckle-joint systems, working in parallel, which ensures maximum precision and precise forming. The only exception is the RMK 355 model, that can achieve comparable results with just one knuckle-joint system due to its compact dimensions.

Dies and die change systems from a single source. Schuler possesses years of experience in the radiator industry and offers mature technology and tried-and-tested system components. The press is run-in with the original die and original coil material to ensure rapid commissioning.

Depending on the bed width, single, double, or sandwich dies can be used. The die change systems are precisely tailored to suit the system –according to requirements: From suspension consoles, mechanical, or motorized die change consoles to tandem die change cars.

TECHNICAL DATA

Model	RMK 630	RMK 1500
Design	compact press with knuckle joint drive in monoblock design	
Press force [kN]	6,300	15,000
Bed length [mm]	**Bed width [mm]**	
1,500	1,200	
2,500		1,500
Kinematics of the mechanical drive	knuckle joint	knuckle joint
Shut height [mm]	550 - 710	550 - 710
Slide adjustment [mm]	10	10
Slide stroke [mm]	80	80
Stroke rate [rpm]	30 – 85	20 – 70
Possible panel size	1 × 900	2 × 900

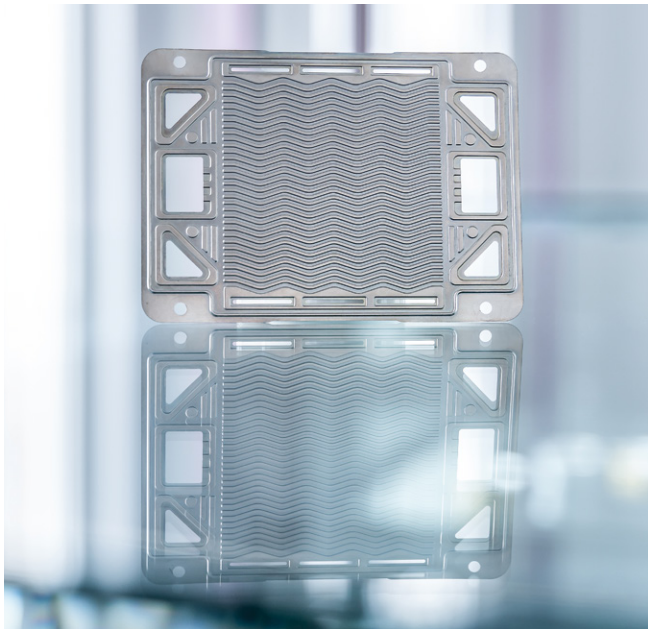
BENEFITS

- Optimum stroke rate thanks to precise coordination of the entire system
- Extremely high rigidity for precise results
- High component accuracy, low die wear and maximum process reliability
- Very easy to use
- Optimized slide bearing guide thanks to special materials, surfaces and multi-circuit lubrication supply
- Long lifespan for all components thanks to counterbalance system

SOLUTIONS FOR METALLIC BIPOLAR PLATES.
BPL 25 TMK AND BPL 25 TSK SERIES.

Schuler offers systems for the mass production of metal bipolar plates for fuel cells as a manufacturer of leading technologies in all areas of forming technology.

The diverse knuckle joint presses are easy to operate and offer quick die changing – for high availability and cost effectiveness.



Typical example of a single bipolar plate.

Efficient and modular – for optimal results over the entire life cycle. The BPL 25 series, based on the highly accurate TMK knuckle joint press series, has been successful for many years and has been especially adapted to suit the requirements of manufacturing bipolar plates by forming. These include, for example, minimizing the deflection of the bed and slide. A lower deflection of the machine is achieved thanks to the use of knuckle joint kinematics. There is no need for a soft oil cushion for hydraulic overload protection as a knuckle joint is never moved in the extended position. This, in turn, increases the rigidity of the machine. The machine can be driven by a conventional flywheel or innovative servo technology depending on the customer requirements.

Schuler, through its subsidiary Aweba, also offers the die technology for bipolar plates in addition to the required automation features such as coil line and part handling, combining all advantages from a single source.

MORE INFORMATION

www.schulergroup.com/fuel-cell

TECHNICAL DATA BIPOLAR PLATE PRESSES WITH CONVENTIONAL DRIVE

MODEL	BPL 25 (TMK 800)	BPL 25 (TMK 1250)	BPL 25 (TMK 1600)	BPL 25 (TMK 2000)
Design	monoblock	tie rod	tie rod	tie rod
Press force [kN]	8,000	12,500	16,000	20,000
Bed length [mm]	**Bed width [mm]**			
2,500		1,200	1,200	
3,000	1,200	1,200	1,400	1,400
Kinematics of the mechanical drive	knuckle joint	knuckle joint	knuckle joint	knuckle joint
Number of pressure points	2	2	2	2
Shut height* [mm]	700	700	700	700
Slide adjustment [mm]	150	200	200	200
Slide stroke [mm]	120	120	120	120
Stroke rate [1/min]	20 – 80	15 – 60	15 – 60	15 – 60

TECHNICAL DATA BIPOLAR PLATE PRESSES WITH SERVO DRIVE

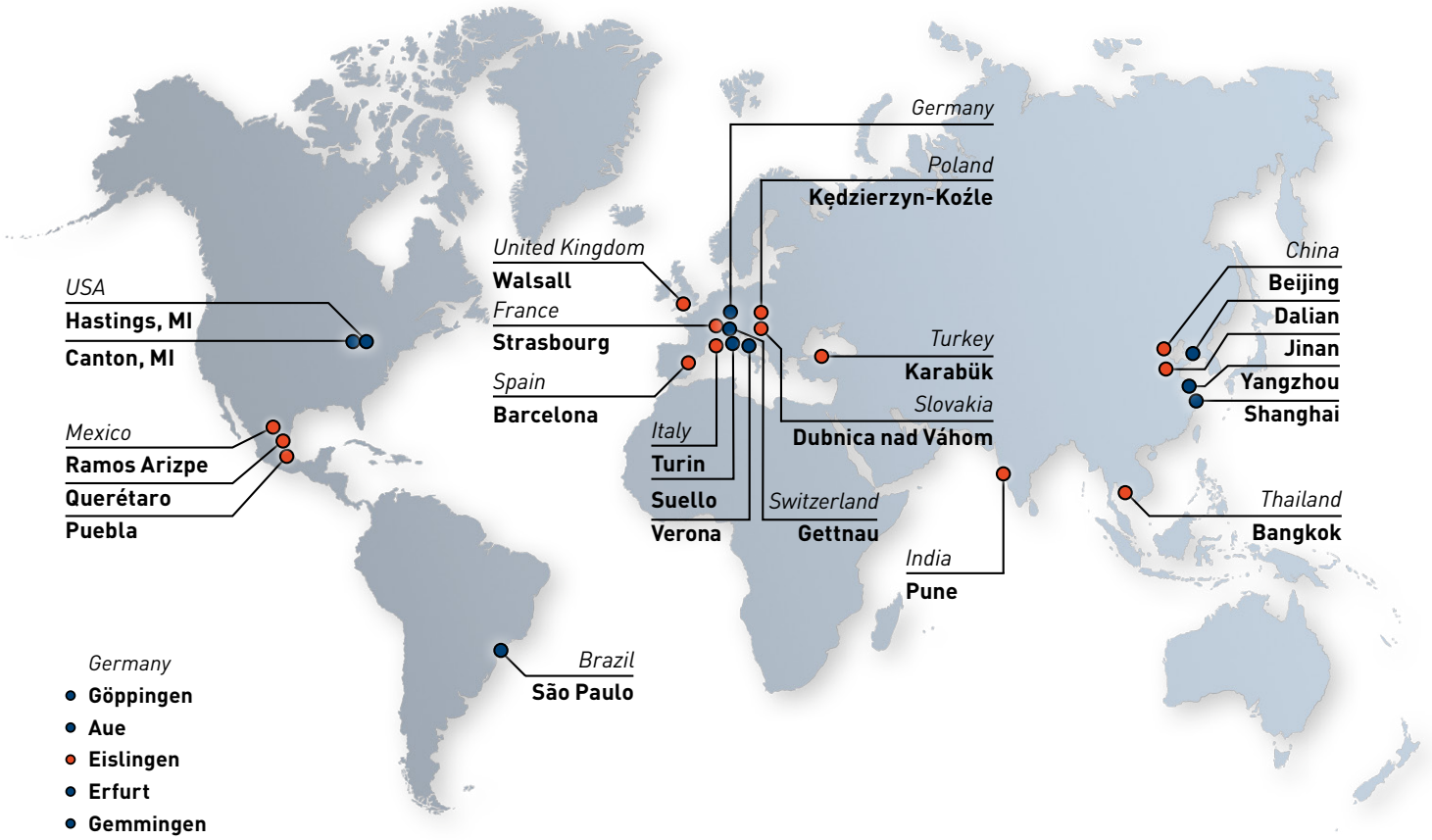
MODEL	BPL 25 (TSK 800)	BPL 25 (TSK 1250)	BPL 25 (TSK 1600)	BPL 25 (TSK 2000)
Design	monoblock	tie rod	tie rod	tie rod
Press force [kN]	8,000	12,500	16,000	20,000
Bed length [mm]	**Bed width [mm]**			
2,500		1,200	1,200	
3,000	1,200	1,200	1,400	1,400
Kinematics of the servo drive	knuckle joint	knuckle joint	knuckle joint	knuckle joint
Number of pressure points	2	2	2	2
Shut height* [mm]	700	700	700	700
Slide adjustment [mm]	150	200	200	200
Slide stroke [mm]	120	120	120	120
Stroke rate [1/min]	20 – 80	15 – 60	15 – 60	15 – 60

* Stroke at bottom, adjustment at top.

BENEFITS

- Production of up to 60 bipolar plates a minute
- Precoated material can be processed
- Forming unit, coil feed and parts handling from a single source
- Tried-and-tested knuckle joint press technology as the basis for maximum accuracy

GLOBAL WITH CLOSE CLIENT PROXIMITY.
SCHULER SERVICE AND PRODUCTION.



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THE SERVICE IN METAL FORMING TECHNOLOGY

Quick help with your system
24/7 Hotline & Remote Support

Service centers worldwide
Field Service

Quick and easy
Spare Parts Service

For Schuler or third-party presses
Smart Modernization Solutions

Remain flexible at all times in production
More than 400 Used Presses

Increase efficiency with digital solutions
Digital Solutions

Achieve your financial and ecological goals
Eco-Form Package & Energy Monitor

WHEN BUSINESS AS USUAL BECOMES TOTAL SATISFACTION.

DISCOVER NOW HOW THE NEW SCHULER SERVICE CAN BENEFIT YOU.

Service – Made for you stands for service that is precisely tailored to your needs. Regardless of what type of press or system you work with.
Fast. Competent. Reliable.

Visit our website:
service.schulergroup.com

SERVICE
MADE
FOR YOU

MORE INFORMATION

ABOUT THE SCHULER GROUP – WWW.SCHULERGROUP.COM

Schuler offers customized cutting-edge technology in all areas of forming – from the networked press to press shop planning. In addition to presses, our products include automation, dies, process know-how and service for the entire metalworking industry. Within the Metris platform by ANDRITZ, Schuler brings together digital solutions for networking forming technology and develops them continuously to further improve line productivity and availability. For battery production in gigafactories, Schuler provides equipment and services in the process steps of cell assembly and formation. Our customers include automotive manufacturers and suppliers, as well as companies in the forging, household appliance and electrical industries. Presses from the Schuler Group mint coins for more than 180 countries. Founded in 1839 at our headquarters in Göppingen, Germany, Schuler has approx. 5,000 employees at production sites in Europe, China and the Americas, as well as service companies in more than 40 countries. The company is part of the international technology group ANDRITZ.

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