topDRILL Processing Machines
topCLEAR Washing Machines
Overview: Schraml Products
Schraml. best in glass processing

**topDRILL**

**PROCESSING MACHINES**

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  Processing machines
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- **topDRILL M-RX**
  Vertical double-sided CNC Drilling and Milling Center
  S. 8
- **topDRILL RX**
  Vertical double-sided Drilling Center with Automatic Tool Turret
  S. 12
- **topDRILL NC**
  Fully Automatic Vertical Double-Sided Drilling Center
  S. 16
- **topDRILL EASY**
  Vertical Double-sided Drilling Machine
  S. 18

**topCLEAR**

**WASHING MACHINES**

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  S. 22
- **topCLEAR ECO**
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topDRILL
PROCESSING MACHINES
The production of drill holes and countersink holes as well as inner, corner and edge cutouts requires processing solutions which are perfectly tailored to the customer’s needs. Among the machines of the topDRILL portfolio you will find the right solution for every application.

<table>
<thead>
<tr>
<th>Schraml topDRILL Machinery</th>
<th>M</th>
<th>RX</th>
<th>nc</th>
<th>Easy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside Processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drill holes</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>Countersinking</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
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<tr>
<td>Milling</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Grinding</td>
<td>✓</td>
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<tr>
<td>Machine design</td>
<td></td>
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<tr>
<td>Shapes</td>
<td>✓</td>
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<td>✓</td>
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<tr>
<td>Fully automatic</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>Automatic tool change</td>
<td>✓</td>
<td>✓</td>
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</tbody>
</table>

Especially for interiors and architecture, high-value glass is steadily rising in significance. Many doors, wall elements, cover panels, furniture parts, staircases and banisters are produced from glass. This wide variety of applications necessitates different levels of quality (for example for fittings, handles, sinks, sockets). Often the glass needs to be cut in special shapes which have to fit precisely into a given geometry. With the topDRILL series Schraml offers a big selection of processing machinery which provide many applications – from simple holes up to complex milling and grinding operations.

GLASS EDGE AND DETAILS

- Ground edge cutout (Mickey-Mouse)
- Countersink drill hole

FINAL PRODUCT
# topDRILL M-RX

## Vertical double-sided CNC Drilling and Milling Center

The fully automatic milling and drilling machine topDRILL M-RX makes a convincing argument with its high performance and its easy use. Drilling and countersinking processes are as easily accomplished as complex milling and grinding operations for corner, edge and inner cutouts. The vacuum belt system enables a flexible and continuous production. The drilling and milling center works fully automated and supports a data connection to external systems. The graphical input of the processing program as well as the automatic selection of all parameters for the drilling and milling processes support an easy, error-free operation.

### Machine configurations for any requirement

The topDRILL M-RX can be configured according to customer requirements. The linear-8 tool changer allows a very easy operation, the Roto-10 changers help increase the processing speed. Modular extensions of the machine length, the choice between two machine heights as well as the freely definable direction of movement give a range of customizing options. The intelligent machine design allows mounting the machine directly against a wall.

### Technical Data

<table>
<thead>
<tr>
<th>Glass height</th>
<th>Open at the top (M-RX 130) / 2,000 mm (M-RX 200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. processing height</td>
<td>1,300 mm (M-RX 130) / 2,000 mm (M-RX 200)</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>4 - 20 mm</td>
</tr>
<tr>
<td>Minimum glass size</td>
<td>400 x 160 mm</td>
</tr>
<tr>
<td>Maximum glass size</td>
<td>approx. 3,200 mm, can be increased with extension modules</td>
</tr>
<tr>
<td>Transport height</td>
<td>400 mm</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (+/- 1°)</td>
</tr>
<tr>
<td>Max. bore diameter</td>
<td>80 mm</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>0 - 12,000 rpm</td>
</tr>
<tr>
<td>Spindle power (rating)</td>
<td>2 x 5.5 kW</td>
</tr>
<tr>
<td>Number of tools</td>
<td>8 + 8 in case of Linear 8 / 10 + 10 in case of Roto 10</td>
</tr>
<tr>
<td>Max. load</td>
<td>150 kg/ton</td>
</tr>
</tbody>
</table>

### Highlights

- Milling and drilling in one work step
- Two types of tool changers available
- Modular design
- Continuous production without loading times
- Flexible product change
- Highly dynamic vacuum system for secure hold
- Easy operation and programming

### Options

- Automatic drill dressing unit
- Vacuum system
- Air-conditioning unit for the switch cabinet
- Software interface and drawing programs

### Available software

- cadcam
- Interface
- PC Link

### Machine Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>L (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Power consumption (kW)</th>
<th>Operating air pressure (bar)</th>
<th>Air consumption (l/min)</th>
<th>Operating water pressure (bar)</th>
<th>Water consumption (l/min) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>topDRILL M-RX 130 Linear-8</td>
<td>6200</td>
<td>2755</td>
<td>2495</td>
<td>19</td>
<td>7</td>
<td>200</td>
<td>2 - 3</td>
<td>3,5</td>
</tr>
<tr>
<td>topDRILL M-RX 130 Roto-10</td>
<td>6200</td>
<td>3027</td>
<td>3364</td>
<td>19</td>
<td>7</td>
<td>200</td>
<td>2 - 3</td>
<td>3,5</td>
</tr>
<tr>
<td>topDRILL M-RX 200 Linear-8</td>
<td>6200</td>
<td>3027</td>
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<td>7</td>
<td>200</td>
<td>2 - 3</td>
<td>3,5</td>
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<tr>
<td>topDRILL M-RX 200 Roto-10</td>
<td>6200</td>
<td>3027</td>
<td>3364</td>
<td>19</td>
<td>7</td>
<td>200</td>
<td>2 - 3</td>
<td>3,5</td>
</tr>
</tbody>
</table>

* Water consumption if used with a water treatment system
topDRILL M-RX

Cycle times and scope of processing

The M-RX is the ideal solution for all drilling, sinking and milling processes. All machine configurations support fast, flexible and high-quality processing. The use of the Roto-10 tool changer on both processing spindles optimizes the cycle time when different tools are used on one glass sheet.

Advantages of the M-RX series

Fast and flexible processing
optimized for the fast processing of individual glass sheets – also for small batch sizes:
- Dynamic vacuum system without set-up time and also for shapes
- Roto-10 tool magazine directly on the spindle for anticipatory tool changes
- Drilling, (deep) countersinking, milling and grinding finished in one single cycle
- Perfectly adapted milling feed due to automatic parameter data

Fast and simple operation
without any specialist or CNC knowledge
- Graphical input of all processing operations
- Program generation for the next glass sheet during the processing
- Automatic selection of all processing parameters by the machine
- Autonomous setting of all auxiliary holes and puncture operations
- Program generation at the machine via network or USB

State-of-the-art machine technology
for a long machine lifetime and maximum precision
- Control of all movements by servo drives
- Solid ball screw for stroke and drill axes
- Fully automatic central lubrication of all essential machine components
- Network connection resp. remote maintenance option via remote access

Fast glass handling
for continuous production
- No set-up times for positioning the suction cups
- Different glass sizes, shapes and thicknesses without changeover
- Loading of the next glass sheet during the processing
- Trouble-free combination with previous or following module (e.g. washing machine)

Shower Door
- Dimensions: 800 x 1,800 mm
- 2 Mickey Mouse edge cutouts
- 1 handle drilling
Cycle time for the entire processing: 210 seconds

Swing Door
- Dimensions: 1,000 x 2,000 mm
- 2 pieces PT fittings
- 2 handle drilling
Cycle time for the entire processing: 240 seconds

Single-action Door
- Dimensions: 800 x 2,000 mm
- 6 drillings, all countersink drilling
Cycle time for the entire processing: 360 seconds
topDRILL RX

Vertical double-sided Drilling Center with Automatic Tool Turret

The topDRILL RX is the first choice for fully automatic drilling and sinking processes. The ingenious tool changer of the smart-5 series can be used very quickly, set up fast, and is absolutely easy to use. The speed-10 tool turret extends the maximum number of available tools. Countersink holes can be carried out at the front and back without restrictions, regardless of the drilling diameter. The first tool change is already carried out during the drilling process on the opposite side. The high-performance drilling spindles are water-cooled, extremely robust and durable. Maintenance costs are reduced to a minimum.

Flexible configuration, solid quality

The topDRILL RX can be configured depending on the customer’s requirements. In addition to the two types of tool changer, the modular extension of the machine length, the choice between two machine heights as well as the freely definable direction of movement give a range of customizing options. All drilling and countersinking operations are precisely produced in one clamping process. The torque control prevents glass breakage during countersink drilling. Standard includes processing of both float and laminated safety glass sheets.

Highlights

- Compact, modular design
- Automatic tool change at front and back
- Automatic length measuring of the tools
- Continuous production without loading times
- Easy operation and programming

Options

- Automatic drill sharpening unit
- Y-axis ball screw for smart-5 (standard in case of roto-10)
- Vacuum system
- Air-conditioning unit for the switch cabinet
- Software interface and drawing programs

Technical Data

<table>
<thead>
<tr>
<th></th>
<th>L1** (mm)</th>
<th>L2** (mm)</th>
<th>L3 (mm)</th>
<th>L4** (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Power consumption (kW)</th>
<th>Operating air pressure (bar)</th>
<th>Air consumption (l/min)</th>
<th>Operating water pressure (bar)</th>
<th>Water consumption (l/min)*</th>
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<tbody>
<tr>
<td>topDRILL RX 130</td>
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<td>4032</td>
<td>2397</td>
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<td>6 - 7</td>
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<td>1000</td>
<td>4032</td>
<td>2397</td>
<td>2401</td>
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<td>6 - 7</td>
<td>10</td>
<td>2 - 3</td>
<td>0,5</td>
<td></td>
</tr>
<tr>
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<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
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<td>1000</td>
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<td>1000</td>
<td>1000</td>
<td>6 - 7</td>
<td>2 - 3</td>
<td>2 - 3</td>
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</tr>
<tr>
<td>smart-5</td>
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<td>1000</td>
<td>1000</td>
<td>6 - 7</td>
<td>2 - 3</td>
<td>2 - 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>roto-10</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
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<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
<td>or 2000</td>
</tr>
</tbody>
</table>

* Water consumption if used with a water treatment system
** Extension modules
The RX is the ideal solution for all drilling and countersinking processes. All machine configurations allow fast, flexible and high-quality processing.

**Glass sheet**
- Dimensions: 1,000 x 1,000 mm
- 10 drillings standard

Cycle time for the entire processing: 160 seconds

**Glass sheet**
- Dimensions: 1,000 x 1,000 mm
- 4 drillings, countersunk double-sided

Cycle time for the entire processing: 160 seconds

**Single-action door**
- Dimensions: 800 x 2,000 mm
- 6 drillings, all countersink drilling

Cycle time for the entire processing: 320 seconds

**Intelligent and fast cycle**
- Simultaneous drilling from front and back (starting at 6mm) - for faster cycle times
- Simple tool changing during drilling or countersinking - cycle time reduction
- 5 resp. 10 drills or countersinks per side, individually programmable
- Automatic calculation of the drill depth using a stored formula
- Fully automatic measuring of the tool length - for drills and countersinks

**Easy operation**
- Fully automated processing, no adjustments on the machine required
- Fully automatic recognition and adjustment of the drill length resp. drilling parameters
- Programming, data import or adjustments also during the operation
- User manual and spare parts list available online on the screen

**Fast glass handling**
for continuous production
- No set-up times for positioning the suction cups
- Different glass sizes, shapes and thicknesses without changeover
- Loading of the next glass sheet during the processing
- Trouble-free combination with previous or following module (e.g. washing machine)
- No scratches or glass breakages due to the vertical construction
topDRILL nc

**Fully Automatic Vertical Double-Sided Drilling Center**

The topDRILL nc is a fully automatic double-sided glass drilling machine with digital drilling heads and an automatic glass transport. All movements are controlled via the 15 inch display, manual adjustments are not required. The drills are automatically measured after every change, the operator only has to mount the glass sheet and start the program. Glass thicknesses of up to 40 mm and drilling diameters of up to 100 mm support a flexible production.

**Freely configurable**

The topDRILL nc can be configured according to the customer’s requirements. The modular extension of the machine length, the choice between two machine heights as well as the freely definable direction of movement give a range of customizing options. Versatile extensions – such as an automatic drill sharpening unit or a data connection to an ERP system – allow adapting the topDRILL nc to the specific requirements of the production.

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**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass height (open)</td>
<td>Top (130 nc) / 2,600 mm (240 nc)</td>
</tr>
<tr>
<td>Max. processing height</td>
<td>1,300 mm (130 nc) / 2,400 mm (240 nc)</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>3 - 40 mm</td>
</tr>
<tr>
<td>Minimum glass size</td>
<td>400 x 150 mm</td>
</tr>
<tr>
<td>Maximum glass size</td>
<td>Approx. 3,200 mm, can be increased up to 8,000 mm with extension modules</td>
</tr>
<tr>
<td>Transport height</td>
<td>400 mm</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (+/- 1°)</td>
</tr>
<tr>
<td>Max. bore diameter</td>
<td>100 mm</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>0 – 5,000 rpm</td>
</tr>
<tr>
<td>Spindle power (rating)</td>
<td>2 x 5.5 kW</td>
</tr>
<tr>
<td>Max. load</td>
<td>150 kg/lm</td>
</tr>
</tbody>
</table>

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**Highlights**

- Very compact construction and modular design
- Automatic drilling length measuring
- All movement axes with servo motors
- Simple operation and programming

**Options**

- Automatic drill sharpening unit
- Quick-change system for CMX drills
- Air-conditioning unit for switch cabinet
- Software interface and drawing programs

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**Available software**

- TDI-draft
- Interface

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**topDRILL nc**

<table>
<thead>
<tr>
<th>Model</th>
<th>L1** (mm)</th>
<th>L2** (mm)</th>
<th>L3 (mm)</th>
<th>L4** (mm)</th>
<th>L5** (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Power consumption (kW)</th>
<th>Operating air pressure (bar)</th>
<th>Air consumption (l/min)</th>
<th>Operating water pressure (bar)</th>
<th>Water consumption (l/min)</th>
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<tbody>
<tr>
<td>topDRILL 130 nc</td>
<td>1000</td>
<td>1000</td>
<td>4034</td>
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<td>2095</td>
<td>2401</td>
<td>12.5</td>
<td>6.7</td>
<td>10</td>
<td>2.3</td>
<td>0.5</td>
</tr>
<tr>
<td>topDRILL 240 nc</td>
<td>1000</td>
<td>1000</td>
<td>4034</td>
<td>1000</td>
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<td>2095</td>
<td>2401</td>
<td>12.5</td>
<td>6.7</td>
<td>10</td>
<td>2.3</td>
<td>0.5</td>
</tr>
</tbody>
</table>

* Water consumption if used with a water treatment system
** Extension module
**topDRILL Easy**

**Vertical Double-sided Drilling Machine**

The topDRILL easy is a double-sided glass drilling machine with digital display for motorized setting of the drilling height. The manual handwheel allows fine adjustments to 1/10 mm. Marking the drill holes or additional laser markings are no longer necessary. The length adjustment via a double row of foldable, serial limit stops allows rapid processing of glass sheets of the same size. The glass sheet is transported manually. The patented drilling depth adjustment and the operation via central hand lever at the front render any adjustment for the glass thickness unnecessary. The drilling speed can be adjusted continuously, a selector switch activates one-sided drilling.

**Configuration options**

Extension modules allow an easy extension of the maximum possible processing glass length of the topDRILL to the customer’s requirements. The optional DRITOP CMX quick-change system minimizes the set-up times of the machine. The topDRILL easy offers convincing arguments with its demonstrable, decades-long durability as well as its high precision with easy operation.

---

**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass height</td>
<td>Open at the top</td>
</tr>
<tr>
<td>Max. processing height</td>
<td>1,300 mm</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>3 - 30 mm</td>
</tr>
<tr>
<td>Minimum glass size</td>
<td>200 x 100 mm</td>
</tr>
<tr>
<td>Maximum glass size</td>
<td>2,500 x 1,500 mm</td>
</tr>
<tr>
<td>Transport height</td>
<td>600 mm</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (± 1°)</td>
</tr>
<tr>
<td>Max. bore diameter</td>
<td>100 mm</td>
</tr>
<tr>
<td>Spindle speed</td>
<td>0 - 5,000 rpm</td>
</tr>
<tr>
<td>Spindle power (rating)</td>
<td>2 x 5,5 kW</td>
</tr>
<tr>
<td>Max. load</td>
<td>100 Kg/lin</td>
</tr>
</tbody>
</table>

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**Highlights**

- Very compact, modular design
- Single lever operation of the entire drilling process
- Motorized setting of the drilling height with digital display
- Patented system for the adjustment of drilling depth and drill wear

**Options**

- CMX Drill Quick-Change System

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**Glass height**

<table>
<thead>
<tr>
<th>Name</th>
<th>L1 (mm)</th>
<th>L2 (mm)</th>
<th>L3 (mm)</th>
<th>B (mm)</th>
<th>H (mm)</th>
<th>Power consumption (kW)</th>
<th>Operating air pressure (bar)</th>
<th>Operating water pressure (bar)</th>
<th>Water consumption (l/min)</th>
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<tbody>
<tr>
<td>topDRILL 130 Easy</td>
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<td>2040</td>
<td>1000</td>
<td>1465</td>
<td>2233</td>
<td>4,2</td>
<td>6 - 7</td>
<td>10</td>
<td>2 - 3</td>
</tr>
</tbody>
</table>

* Water consumption if used with a water treatment system
** Extension modules
topCLEAR
WASHING MACHINES
Vertical flat glass washing machines for all requirements

We have been supplying and installing the glass washing machines of the topCLEAR series for about 20 years. With the gathered experience of over 600 installations, the washing machines have been constantly optimized and adapted to the changing customer requirements. topCLEAR washing machines are currently available in 3 different models. All of them can be expanded with a variety of useful equipment options. We are sure we can provide the right solution for your requirements.

Many advantages included in the standard:
- Stainless design of base frame and machine body as well as all built-in components in the washing zone
- Narrow roller spacing inside and outside the machine for safe, problem free processing of short glasses
- Sound absorption box for fan perfectly insulates against operational noise
- Clear, easy to use operating units
- Partially or fully automatic water circulation system saves energy and resources
- Extensive and clear documentation for operation and maintenance tasks

Extensions and additional modules
Depending on the customer’s requirements, the topCLEAR washing machines can be equipped with additional inlet and outlet modules. Those modules can of course be adapted to your needs in working height and equipment.

Combination with other devices
The topCLEAR series is ideal for combination with other devices. Both vertical grinding and drilling machines, as well as feeding systems, film applicators or tilting tables – even from non-LiSEC manufacturers – can be easily connected.

OVERVIEW topCLEAR WASHING MACHINES

<table>
<thead>
<tr>
<th>Schraml topCLEAR Machines</th>
<th>ECO</th>
<th>SPECIAL</th>
<th>SUPER</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass thickness 3-12 mm</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Glass thickness 3-20 mm</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Working height (roller height) ca. 600 mm</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Increase working height</td>
<td>○</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Distance between rollers only 120 mm</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>All transport rollers individually driven, ball bearing mounted</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Rollers with slip clutch on input and output module</td>
<td>○</td>
<td>-</td>
<td>-</td>
<td>If connected to other machines</td>
</tr>
<tr>
<td>Basic frame, machine body and water tank in stainless steel</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Doors front- and rear side, guards in polycarbonate</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Spraying tubes for brushes and rinsing section plastic</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Spraying tubes for brushes and rinsing section stainless steel</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Glass support frame for drying section in stainless steel</td>
<td>-</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Water heating with adjustable thermostat</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Sensor for water level and protection resistance</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td>Control lamp on operator panel</td>
</tr>
<tr>
<td>Submersible pump with stainless rotor</td>
<td>✓</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>High-pressure centrifugal pump with filter</td>
<td>-</td>
<td>-</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Noise reduction box for ventilator, with air filter</td>
<td>✓</td>
<td>-</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Additional driving motors with bottleneck function</td>
<td>○</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Light panels on outlet side</td>
<td>○</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>AutoStart System with inverter for soft start of brushes</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Reduction of energy and wear</td>
</tr>
<tr>
<td>Pre-washing area with high pressure pump, separate tank</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>In case of very dirty glass</td>
</tr>
<tr>
<td>Soft brushes frontside for soft coated glass</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

✓ Standard, ○ Optional, - Not available
topCLEAR ECO
Washing machine

topCLEAR ECO is our basic machine for professional glass processing. All parts in contact with water are made from stainless materials. The standard version is already over-equipped with all practical features.

Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. processing height</td>
<td>1.3 m / 1.6 m</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>4 - 12 mm / 4 - 20 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>270 x 50 mm / 300 x 50 mm</td>
</tr>
<tr>
<td>Construction</td>
<td>Open at the top</td>
</tr>
<tr>
<td>Length of the inlet table</td>
<td>1400 mm / modularly expandable</td>
</tr>
<tr>
<td>Length of the outlet table</td>
<td>2000 mm / modularly expandable</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (+/- 1°)</td>
</tr>
<tr>
<td>Transport height</td>
<td>600 mm (+/- 20mm) / optional increase</td>
</tr>
<tr>
<td>Number of brushes</td>
<td>4 brushes</td>
</tr>
<tr>
<td>Transport speed</td>
<td>1 - 5 m/min</td>
</tr>
</tbody>
</table>

Highlights

- All important machine components made from stainless steel
- Individual water pump for each pair of brushes
- Water heating system with thermostat
- Variable working speed with variator
- Noise reduction box for ventilator

Options

- Increase working height
- Rollers with slip clutch on input and output module
- Additional driving motors with bottleneck function
- Light panels on outlet side
- Soft brushes from side for soft coated glass

- Distance between rollers only 120 mm
- Each roller individually driven
- Suitable for small pieces

- Washing brushes with shaft in stainless steel
- Extra strong clamping of glass
- Compact installation

- Water tank with individual pump for each pair of brushes
- Water heating with thermostat
- Water filler
**TopCLEAR Special**

Washing machine for professional cleaning of glass up to 12 mm thickness

TopCLEAR Special is the perfect washing machine for industrial glass processing, as long as no extreme glass thicknesses are processed. A particular advantage is the extremely easy access to the machine for user-friendly maintenance. TopCLEAR Special can be individually configured to meet the needs of solar production and multi-shift operation.

### Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. processing height</td>
<td>1.5 m / 1.6 m</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>4 - 12 mm / 4 - 20 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>270 x 50 mm</td>
</tr>
<tr>
<td>Construction</td>
<td>Open at the top</td>
</tr>
<tr>
<td>Length of the inlet table</td>
<td>1400 mm / modularly expandable</td>
</tr>
<tr>
<td>Length of the outlet table</td>
<td>2000 mm / modularly expandable</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (+/- 1°)</td>
</tr>
<tr>
<td>Transport height</td>
<td>600 mm (+/- 20mm) / optional increase</td>
</tr>
<tr>
<td>Number of brushes</td>
<td>4 brushes</td>
</tr>
<tr>
<td>Transport speed</td>
<td>1 - 5 m/min</td>
</tr>
</tbody>
</table>

### Highlights
- All important machine components made from stainless steel
- Doors front- and rearside as maintenance entry
- Guards in polycarbonate behind the doors
- Individual water pump for each pair of brushes

### Options
- Increase working height
- Rollers with slip clutch on input and output module
- Additional driving motors with bottleneck function
- Light panels on outlet side
- AutoStart System with inverter for soft-start of brushes
- Pre-washing area with high pressure pump, separate tank
- Soft brushes frontside for soft coated glass

- Doors front- and rearside for easy maintenance
- Plexiglas guards for inspection
- Additional noise reduction

- Ingenious - AutoStart system activates brushes, pump and ventilator only when needed (optional).
Professional series for thick-glass processing up to 20 mm

topCLEAR Super is what we call our extremely robust series for thick glass processing, especially grinding. Any glass thickness up to 20 mm can be processed without further adjustment.

Technical Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. processing height</td>
<td>1.5 m / 1.6 m</td>
</tr>
<tr>
<td>Glass thickness</td>
<td>4 - 20 mm</td>
</tr>
<tr>
<td>Minimum size</td>
<td>320 x 50 mm</td>
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<tr>
<td>Construction</td>
<td>Open at the top / Close at the top</td>
</tr>
<tr>
<td>Length of the inlet table</td>
<td>2.000 mm / modularly expandable</td>
</tr>
<tr>
<td>Length of the outlet table</td>
<td>2.000 mm / modularly expandable</td>
</tr>
<tr>
<td>Angle of inclination</td>
<td>7° (+/- 1°)</td>
</tr>
<tr>
<td>Transport height</td>
<td>600 mm (+/- 20mm) / optional increase</td>
</tr>
<tr>
<td>Number of brushes</td>
<td>4 brushes</td>
</tr>
<tr>
<td>Transport speed</td>
<td>1 - 5 m/min / 1 - 6 m/min</td>
</tr>
</tbody>
</table>

Highlights

- Stronger machine frame in stainless steel
- Doors front- and rear side, polycarbonate guards
- Individual water pumps for each pair of brushes
- Sensor for water level and shutdown
- High pressure centrifugal pumps made of stainless steel

Options

- Increase working height
- Rollers with slip clutch on input and output module
- Additional driving motors with bottleneck function
- Light panels on outlet side
- AutoStart System with inverter for soft-start of brushes
- Pre-washing area with high pressure pump, separate tank

- Stainless steel centrifugal pump below washing area
- Water tank with heating
- Sensor for water level with indicator lamp

- Overhead drive for brushes and glass transport
- Individual motor per brush or per pair of brushes (if closed construction)
- Soft brushes frontside for soft coated glass
For increased performance and profitability: LiSEC

Facts and figures:
- 1961 founding year
- 1 strong brand
- 1,200 employees
- 230 million Euros turnover (2016)
- 7 - 8 % of turnover for R&D
- 60 R&D specialists
- 500 software installations worldwide
- 3,500 gas filling presses worldwide
- 20 sites
- 90% export rate
- 35 % equity ratio
- more than 250 patents

Reliable processes, good quality, solid profit: LiSEC solutions provide flat glass processors around the world with security and drive in a challenging environment.

For the last 50 years, we have been working hard to enable you to sustainably boost the efficiency, the system availability and the quality output of your flat glass production process. Thanks to forward-looking thinking, continuously striving to find the best solution and a great deal of personal commitment from our employees, we have grown from a one-man company to a technology leader.

Our advanced solutions generate a great cost-to-benefit ratio throughout the entire lifecycle of your machines and systems.

Customers around the world can benefit from this: be they experienced manufacturers or newcomers to the industry; from family businesses to industrial glass processors. Three main factors are essential for long-term success:

1. Complete System Provider
Only LiSEC can offer you all solutions required for flat glass processing from a single source. Our well-established team of specialists for engineering, automation, machine construction and service develops tailor-made solutions to ensure your competitive edge.

2. Operational know-how
As the only solution provider in the flat glass processing business with more than 50 years of operational know-how, we know from first-hand experience how to handle glass. We can communicate eye to eye because we are familiar with the challenges you face.

3. Service
In order to help our customers quickly on site, we have developed the worldwide largest service network in the flat glass industry. High service availability, start-up support and consulting are the added value of our services.

The benefits:
- Over 50 years of partnership, pioneering spirit and stability
- Investment security due to the size of our company
- Leading technology with a high resale value
- Great cost-to-benefit ratio throughout the entire system lifecycle

For increased performance and profitability: LiSEC

SCHRAMLM member of the LiSEC group
The new LiSEC Competence Center for research, production and training in the field of flat glass processing was opened in Hausmenning at the end of 2015. It aligns completely with the LiSEC claim „Best in Glass Processing“. The Competence Center „Glass Forum“ makes LiSEC the only machine manufacturer on the market who profitably processes flat glass. This operator know-how allows LiSEC to share and therefore fully understand their customers’ problems and challenges.

The „Glass Forum“, a LiSEC investment of approximately five million Euros, accommodates the latest LiSEC technologies for each step of glass processing – from cutting and edge processing to a sophisticated sheet logistics system to the production of insulating glass units and laminated safety glass including tempering. In the Glass Forum, flat glass is processed under real life production conditions. The state-of-the-art plants and software applications are also used for research, testing and training.

**Facts and figures:**
- Opened October 2015
- Latest LiSEC technologies
- 70 employees
- Investment 5 million Euros
- 15 million Euros turnover
- Approx. 100 customer visits per year
- Glass storage with 96 rack positions
- 3 insulating glass lines
- 3 cutting lines for float, laminated and special glass
- Automatic sorting/shuttle logistics
- Planned ahead maintenance schedule
- Automatic production planning and machine addressing
- Bidirectional office – machine communication in real-time