Washing machines for printing press parts

Cleaning solutions and solvent recovery.

www.dw-renzmann.de
D.W. RENZMANN Apparatebau GmbH

D.W. RENZMANN Apparatebau GmbH has been developing, manufacturing and selling cleaning and treatment systems for print shops and for paint and varnish producers for nearly 50 years.

Our core competency is the removal of stubborn residues and the handling of the flammable organic solvents or aggressive alkaline washing agents used for this purpose.

In addition to the design, manufacturing and sale of equipment, we also offer a comprehensive portfolio of services. On request, we will:

- perform profitability calculations with regard to performance, staff requirements, and investment and operating costs, taking into account all relevant legislation, regulations and guidelines
- create technical documentation for each product
- support and implement approval procedures and draw up applications to authorities
- connect your new equipment to pre-existing exhaust air or waste water treatment systems
- provide worldwide service, including commissioning, assembly, repair and maintenance, through our expert staff

RENZMANN equipment is used all over the world and has gained an international reputation for excellent quality.

Cleaning requirements

RENZMANN develops modern cleaning processes and technologies that comply with today’s increasingly restrictive environmental and occupational safety regulations and reflect the aim of sustainable environmental protection.

Cleaning methods

The ink residues on the press parts are dissolved or chemically destroyed through the action of the washing agent and then removed by the mechanical force of spray or high-pressure jets. Suitable washing agents include solvents, water-based alkaline agents or special cleaners. The type of cleaning equipment and cleaning technology are determined by the shape and quantity of the parts to be washed and by the type of soiling. The perfect combination of washing agent and cleaning technology ensures that residues are dissolved quickly and effectively and subsequently removed from the surfaces.

Requirements for the explosion protection of solvent washing machines

The potential hazards of cleaning equipment that is operated with flammable liquids, and the required precautions, are described in EN 12921-3 “Machines for surface cleaning and pre-treatment of industrial items using liquids or vapours – Part 3: Safety of machines using flammable cleaning liquids”. According to this standard, the spraying of solvent with a pressure > 0.7 bar permanently/regularly generates potentially explosive steam/air and aerosol/air mixtures corresponding to zone 0 inside the machine, regardless of the solvent’s flash point.

Leaks at the washing machine and residual solvent on the washed parts may also create an explosive atmosphere outside the machine; consequently, the surroundings of the machine must be classified as zone 1 (occasional presence of an explosive atmosphere) or zone 2 (rare presence of an explosive atmosphere).

External explosion protection

The outside of Renzmann solvent washing machines meets the requirements of ATEX category 2; the machines may therefore be operated in explosion hazard zone 1.

Internal explosion protection

When the solvent is heated to a temperature above its flash point and/or when aerosols are formed through the spraying of any solvent with a pressure of more than 0.7 bar or through the rotation of the washing brush, a potentially explosive solvent vapour/air or aerosol/air mixture is generated in the washing chamber. Consequently, the interior of such solvent washing machines is classified as zone 0 according to EN 12921-3 “Safety of machines using flammable cleaning liquids” (ch. 5.6.3.3).

The concept of RENZMANN solvent washing machines:

- The interior of the machines meets the requirements of category 1 devices; the washing machines may therefore be operated with zone 0 on the inside
- Electrical and moving mechanical components on the inside are Modele-examined in accordance with ATEX.
The solvent drawing and draining station by RENZMANN is used to discharge used solvent or residual ink from small containers like barrels, buckets, canisters or cans. It also lets the operator fill clean solvent into such containers. The buckets, canisters or cans can be cleaned after draining using a brush (accessory) with an integrated solvent line. An air extraction system protects the operator from solvent vapors. The drawing and draining station ensures a safe handling of solvent.

**Washing machine model ZEL**

| Dimensions of the discharge sink mm | 1200 x 500 |

*Subject to technical changes*

**Washing machine model PW**

- Explosion-proof, ATEX-compliant device for cleaning ink pumps with all common solvents
- The ink pumps, including the suction pipes and delivery hoses, rinse themselves by circulating the solvent stored in the machine reservoir
- Housing made of steel plate; solvent-resistant coating on the outside
- The stainless steel housing lid can be removed for cleaning
- The housing lid has openings for the pumps that are closed by flaps; the flaps open automatically under the pressure of the inserted suction pipe of the pump
- Air extraction unit with air slots and suction nozzle at the back of the housing lid

**Accessories**

- Explosion-proof power outlets provided by RENZMANN (instead of by the customer)
- Automatic filling and draining
- Air extraction system with powerful fan

<table>
<thead>
<tr>
<th>Washing machine model PW</th>
<th>Size 04</th>
<th>Size 06</th>
<th>Size 08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pumps</td>
<td>4</td>
<td>6</td>
<td>8</td>
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<tr>
<td>Internal air extraction system m³/h / kW</td>
<td>2500 / 0.75</td>
<td>2500 / 0.75</td>
<td>2500 / 0.75</td>
</tr>
<tr>
<td>Dimensions mm</td>
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</tr>
</tbody>
</table>

*Subject to technical changes*
Model HP

- Explosion-proof, ATEX-compliant device for manual cleaning with all common solvents
- Device with hinged lid and separate solvent reservoir integrated into the housing
- The items to be washed are placed on a grating
- Safety hand brush with a hose and flow regulator
- The supply of solvent to the brush is started via a foot-operated bar (dead man’s handle)
- A pneumatic diaphragm pump supplies solvent to the safety hand brush and can also be used to fill and drain the washing device

**Visual level marking**

- Strainer between the washing chamber and solvent reservoir
- Internal air extraction system with a powerful suction fan and vacuum valves

**Accessories**

- Alternative version with stainless steel housing
- Cleaning device for small parts
- Automatic filling and draining; the device can also be filled with solvent from existing systems or mobile containers
- Pneumatic lid; cleaning bath for soaking of parts with stubborn residues

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### Manual washing station model HP

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<thead>
<tr>
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<th>Size 18</th>
<th>Size 24</th>
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<tbody>
<tr>
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<tr>
<td><strong>Internal air extraction system m³/h / kW</strong></td>
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<td></td>
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</tbody>
</table>

*Subject to technical changes*
Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents

Top loader with a closed washing chamber and a separate, integrated washing solvent reservoir

The machine can only be operated when the machine lid is closed.

Stainless steel housing

The items to be washed are placed on a stainless steel grating

Spray rotors spray the parts from below, while a rigid spray washing system cleans them from above

Powerful unit of pump and explosion-proof motor for the “washing” and “draining” functions

Visual level marking

Strainer between the washing chamber and solvent reservoir

Internal air extraction system with a powerful suction fan and vacuum valves

Automatic washing program: washing – draining – internal air extraction; the program steps can be selected individually

**Accessories**

- Safety hand brush
- External filter
- Closed solvent circuit including a distillation unit with suitable output and a distillate container as a compact unit
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

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### Washing machine model 100

<table>
<thead>
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<tr>
<td><strong>Number of spray rotors</strong></td>
<td>1</td>
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<td>3</td>
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<td>600 x 400 x 600</td>
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<tr>
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<td>1100 / 0.75</td>
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</tbody>
</table>

*Subject to technical changes*
Model CLEANfleX

Like model 100, but with the following differences:

› Suitable for washing agents with a flash point > 55 °C or for water-based washing agents
› No explosion protection, but ATEX-compliant design
› An explosion-protected area is not required for installation
› Control system in the control cabinet directly at the machine, hence very compact installation without internal cabling
› Powerful unit of pump and explosion-proof motor for the “washing”, “filling” and “draining” functions
› Suction pipe with stainless steel corrugated hose for filling from / draining into a barrel
› The lid lock is released pneumatically once the aerosols in the machine have settled

Accessories

› Anilox roller support
› Anilox roller rotating system
› Rinsing with washing agent (>55 °C)
› Rinsing with water which is then discharged automatically
› Air extraction system
› Heating of the water-based washing agent
› Heat-insulated washing machine housing
› Hot lye equipment

<table>
<thead>
<tr>
<th>Washing machine model CLEANfleX</th>
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<tr>
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<td>10 / 4.1</td>
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<tr>
<td>Internal air extraction system m³/h / kW</td>
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<td>3000 x 1500 x 1500</td>
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</tbody>
</table>

* Subject to technical changes
Model 130

- Automatic washing program: washing – draining – internal air extraction; the program steps can be selected individually

**Accessories**
- Hose rinsing device
- Safety hand brush
- Self-cleaning device
- External strainer to replace the strainer in the washing machine
- Automatic lid lock
- Pneumatic lid
- Solvent cooler; alternatively: with thermostatic valve, water cooler or recooler
- External air extraction system
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

**Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents**

- Top loader with a closed washing chamber and a separate, integrated washing solvent reservoir
- The machine can only be operated when the machine lid is closed.
- Removable stainless steel washing basket for the items to be washed
- Spray washing system with oscillating, rotating spray pipes arranged below and to the sides of the items to be washed; rigid spray rinsing system
- Powerful unit of washing pump and explosion-proof motor
- Removable filter elements protect the spraying system from foreign matter
- A strainer in the washing machine protects pumps and connected pipes
- Filling level control for the integrated solvent reservoir (operating level, max. level)
- Internal air extraction system with powerful fan and pneumatic inlet and air admixture valves

**Washing machine model 130**

<table>
<thead>
<tr>
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<td>83 / 20</td>
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<tr>
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**Washing machine model 130**

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<td>Washing pump capacity m³/h / kW</td>
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<td>115 / 28</td>
<td>133 / 36</td>
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<tr>
<td>Internal air extraction system m³/h / kW</td>
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<td>3500 / 2.5</td>
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<td>L x W x H</td>
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*Subject to technical changes*
Model 140

Combination of parts washing machine model 130 and impression cylinder washing machine model 150. Includes the removable stainless steel washing basket of model 130 and impression cylinder supports similar to those of model 150 and can therefore clean both types of items.

<table>
<thead>
<tr>
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<table>
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<td>600 x 500 x 2700</td>
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<tr>
<td>Washing pump capacity m³/h / kW</td>
<td>66 / 15</td>
<td>100 / 24</td>
<td>133 / 36</td>
<td>166 / 36</td>
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<tr>
<td>Internal air extraction system m³/h / kW</td>
<td>2200 / 1.85</td>
<td>2200 / 1.85</td>
<td>3500 / 2.5</td>
<td>5000 / 3.6</td>
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<tr>
<td>Dimensions mm</td>
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<td>6400 x 2100 x 1460</td>
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<td>5200 x 2400 x 1800</td>
<td>6200 x 2400 x 1800</td>
</tr>
</tbody>
</table>

* Subject to technical changes
Accessories

- Stainless steel washing carriage
- Impression cylinder support rack
- Impression cylinder washing carriage including cylinder rotating mechanism
- Washing carriage for containers
- Infeed device for printing cartridges
- Hose rinsing device
- Self-cleaning device
- Solvent cooler; alternatively: with thermostatic valve, water cooler or recooler
- External air extraction system
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents

- Front loader with closed washing chamber than can be loaded at ground level
- The machine can only be operated when the lifting door is closed
- Spray washing system with oscillating, rotating spray pipes
- Rigid spray rinsing system
- Powerful unit of washing pump and explosion-proof motor
- A return pump with explosion-proof motor that is adapted to the output of the washing pump circulates back the injected solvent
- Drain container with filling level control, connected to the evacuation pump
- The washing solvent is supplied from a separate precipitation container
- A removable strainer basket protects pumps, pipes and the spraying system from foreign matter
- Inspection and maintenance flap
- Internal air extraction system with a powerful fan and pneumatic air inlet and air admixture valves
- Automatic washing program (PLC): washing – draining – rinsing – draining – internal air extraction; the program steps can be selected individually

<table>
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<th>Washing machine model 300</th>
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<td>Washing pump capacity m³/h / kW</td>
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<td>147 / 36</td>
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<td>Leistung Rückförderpumpe m³/h / kW</td>
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<td>8000 / 3.6</td>
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<td>2000</td>
<td>3000</td>
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* Subject to technical changes
Model 310

- Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents
- Front loader with a closed washing chamber and a separate, integrated washing solvent reservoir
- The machine can only be operated when the lifting door is closed
- Removable stainless steel washing basket for the items to be washed
- Spray washing system with oscillating, rotating spray pipes
- Rigid spray rinsing system
- Powerful unit of washing pump and explosion-proof motor
- Removable strainers protect the spraying system, washing pump and pipes from foreign matter
- Inspection and maintenance flap on the rear part of the machine top
- Filling level control for the integrated solvent reservoir (operating level, max. level)
- Internal air extraction system with a powerful fan and pneumatic air inlet and air admixture valves
- Automatic washing program: washing – draining – rinsing – draining – internal air extraction; the program steps can be selected individually

### Washing machine model 310

<table>
<thead>
<tr>
<th>Size</th>
<th>Working width / height / length mm</th>
<th>Washing pump capacity m³/h / kW</th>
<th>Internal air extraction system m³/h / kW</th>
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<td>Size 20</td>
<td>1000 x 800 x 2000</td>
<td>66 / 15</td>
<td>3000 / 2.5</td>
</tr>
<tr>
<td>Size 25</td>
<td>1000 x 800 x 2500</td>
<td>83 / 20</td>
<td>3000 / 2.5</td>
</tr>
<tr>
<td>Size 30</td>
<td>1000 x 800 x 3000</td>
<td>100 / 24</td>
<td>4000 / 3.6</td>
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<td>Size 35</td>
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<td>115 / 28</td>
<td>4000 / 3.6</td>
</tr>
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<td>Size 40</td>
<td>1000 x 800 x 4000</td>
<td>133 / 36</td>
<td>4000 / 3.6</td>
</tr>
</tbody>
</table>

### Accessories

- Impression cylinder support rack
- Wheeled support for the washing basket, alternatively stationary basket support, both with optional pneumatic lifting and lowering mechanism for convenient loading and unloading
- Hose rinsing device
- Self-cleaning device
- External air extraction system
- Solvent cooler; alternatively: with thermostatic valve, water cooler or recooler
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

### Model 310W

Like model 310, but with the following differences:

- Suitable for water-based washing agents
- No explosion protection, but ATEX-compliant design
- Rinsing with water which is then discharged automatically
- Heating of the water-based washing agent
- Heat-insulated washing machine housing
- Hot/lye equipment

*Subject to technical changes*
Model 3400

- Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents
- Front loader with a closed washing chamber and a separate, integrated washing solvent reservoir
- The machine can only be operated when the hinged door is closed
- Removable stainless steel washing basket for the items to be washed
- Spray washing system with oscillating, rotating spray pipes
- Rigid spray rinsing system
- Powerful unit of washing pump and explosion-proof motor
- Removable strainers protect the spraying system, washing pump and pipes from foreign matter
- Filling level control for the integrated solvent reservoir (operating level, max. level)
- Internal air extraction system with a powerful fan and pneumatic air inlet and air admixture valves
- Automatic washing program: washing – draining – rinsing – draining – internal air extraction; the program steps can be selected individually

**Accessories**

- Wheeled washing basket support
- Impression cylinder support rack

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<table>
<thead>
<tr>
<th>Washing machine model 3400</th>
<th>Size 15</th>
<th>Size 20</th>
<th>Size 25</th>
<th>Size 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working width / height / length mm</td>
<td>1500 x 500 x 1000</td>
<td>2000 x 500 x 1000</td>
<td>2500 x 500 x 1000</td>
<td>3000 x 500 x 1000</td>
</tr>
<tr>
<td>Washing pump capacity m³/h / kW</td>
<td>50 / 12.5</td>
<td>66 / 15</td>
<td>83 / 20</td>
<td>100 / 24</td>
</tr>
<tr>
<td>Internal air extraction system m³/h / kW</td>
<td>2200 / 1.85</td>
<td>2200 / 1.85</td>
<td>3000 / 2.5</td>
<td>3000 / 3.6</td>
</tr>
<tr>
<td>Dimensions mm</td>
<td>3350 x 2300 x 2600</td>
<td>3850 x 2300 x 2600</td>
<td>4350 x 2300 x 2600</td>
<td>4850 x 2300 x 2600</td>
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<td>Required space mm</td>
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<td>5000 x 4500 x 3000</td>
<td>5500 x 4500 x 3000</td>
<td>6000 x 4500 x 3000</td>
</tr>
</tbody>
</table>

*Subject to technical changes*
Model 3400e

- Explosion-proof, ATEX-compliant washing machine for cleaning with all common solvents
- Front loader with a closed washing chamber and a separate, integrated washing solvent reservoir
- The machine can only be operated when the hinged door is closed
- Removable stainless steel washing basket for the items to be washed
- Spray washing system with oscillating, rotating spray pipes
- Rigid spray rinsing system
- Powerful unit of washing pump and explosion-proof motor
- Removable strainers protect the spraying system, washing pump and pipes from foreign matter
- Filling level control for the integrated solvent reservoir (operating level, max. level)
- Internal air extraction system with a powerful fan and pneumatic air inlet and air admixture valves
- Automatic washing program: washing – draining – rinsing – draining – ventilating and simultaneous movement of the spray pipes

**Accessories**
- Automatic door lock
- Self-cleaning device
- Pneumatic hinged door
- Solvent cooler
- Internal air extraction during rinsing with washing agent from a commercial container
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

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<table>
<thead>
<tr>
<th>Washing machine model 3400e</th>
<th>Size 15</th>
<th>Size 25</th>
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</thead>
<tbody>
<tr>
<td>Working width / height / length mm</td>
<td>1500 x 500 x 1000</td>
<td>2500 x 500 x 1000</td>
</tr>
<tr>
<td>Washing pump capacity m³/h / kW</td>
<td>37 / 12.5</td>
<td>62 / 20</td>
</tr>
<tr>
<td>Internal air extraction system m³/h / kW</td>
<td>2200 / 1.3</td>
<td>2200 / 1.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions mm</th>
<th>L x W x H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 15</td>
<td>3250 x 2300 x 2560</td>
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<tr>
<td>Size 25</td>
<td>4600 x 2300 x 2560</td>
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<td>Required space mm</td>
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<tr>
<td>Transport clearance mm</td>
<td>3200 x 2000 x 2000</td>
</tr>
</tbody>
</table>

* Subject to technical changes
Model 3500

Like model 3400, but with the following differences:

- Self-cleaning device
- Solvent cooler; alternatively, with thermostatic valve, water cooler or recirculator
- External air extraction system
- Solvent concentration measuring and regulating system for connection to an exhaust air cleaning system

**Model 3500W**

Like model 3500, but with the following differences:

- Suitable for water-based washing agents
- No explosion protection, but ATEX-compliant design
- Rinsing with water which is then discharged automatically
- Heating of the water-based washing agent
- Heat-insulated washing machine housing
- Hot lye equipment

### Accessories

- Impression cylinder support rack
- Hose rinsing device

**Washing machine model 3500**

<table>
<thead>
<tr>
<th></th>
<th>Size 20</th>
<th>Size 30</th>
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</thead>
<tbody>
<tr>
<td>Working width / height / length mm</td>
<td>2000 x 500 x 2000</td>
<td>2000 x 500 x 3000</td>
</tr>
<tr>
<td>Washing pump capacity m³/h / kW</td>
<td>133 / 36</td>
<td>133 / 36</td>
</tr>
<tr>
<td>Internal air extraction system m³/h / kW</td>
<td>4000 / 2.5</td>
<td>4000 / 2.5</td>
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<tr>
<td>L x W x H</td>
<td>L x W x H</td>
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<tr>
<td>Dimensions mm</td>
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</tr>
<tr>
<td>Required space mm</td>
<td>9000 x 5300 x 3700</td>
<td>10000 x 5300 x 3700</td>
</tr>
<tr>
<td>Transport clearance mm</td>
<td>3500 x 3200 x 2100</td>
<td>4500 x 3600 x 2100</td>
</tr>
</tbody>
</table>

*Subject to technical changes*
What can you expect from RENZMANN?

In the planning phase

We work with you to define the steps and responsibilities of the project and to determine what, if anything, needs to be done to prepare your premises for the installation of the equipment. During the quotation stage, we will already create process diagrams and installation plans and define the interfaces to on-site energy supply systems (power, compressed air, steam from an on-site system, thermal oil) and to waste water and exhaust air systems. During the quotation stage, we will already create process diagrams and installation plans and define the interfaces to on-site energy supply systems (power, compressed air, steam from an on-site system, thermal oil) and to waste water and exhaust air systems.

We determine the profitability of your project in terms of performance, staff requirements, investment and operating costs, taking into account all relevant laws, regulations and guidelines.

The RENZMANN laboratory offers the possibility of testing all cleaning processes used by RENZMANN with original washing machines and original items to be washed under realistic conditions. Our customers can evaluate the test results achieved with various washing machine models and cleaning processes. These test results, which are painstakingly documented in writing and with photos, form the basis of the cleaning qualities that RENZMANN warrants in the purchase contract.

Customers are also invited to observe the treatment of contaminated washing solvent in distillation units.

We will not only support you in choosing the best cleaning process for your requirements; we will also draw up a detailed plan for the installation of your new washing machine or washing system (which may include several washing machines, a distillation unit, containers, pumps, fittings etc.) in the rooms provided and for its connection to the on-site energy supply, exhaust air and waste water removal systems.

And of course you can also rely on our support in your dealings with authorities, architects and advisers, and in drawing up approval documents.

After you place your order

In addition to the documents you have already received, we will provide you with the piping diagrams, pneumatic plans and circuit diagrams for your future equipment.

To ensure a smooth assembly and commissioning of your new equipment, our sales and service staff will help you draw up appropriate plans and supply checklists.

After your new equipment is delivered

We take service literally – we want to serve our customers. Our top priority is to ensure smooth proceedings on your premises. To eliminate potential problems from the start, we offer to have our staff check the conditions on site and determine the possibilities of connecting our products to existing equipment.

Our technicians are highly trained and experienced professionals. They assemble, commission, repair and service our equipment around the globe. All our technicians undergo regular training and requalification in line with the relevant regulations.

Once the equipment has been commissioned, we will train your staff in the operation of the new machines.

If you ever need spare parts, we will do our utmost to ensure that you receive the required components as quickly as possible.

And after that?

Once your equipment has been put into operation, our staff is still available to answer any questions that might come up.

We offer regular maintenance for our products, with special focus on explosion protection, and will also perform the recurrence inspection that is required by law. We will also be happy to undertake any necessary repairs. You will receive documents certifying the recurrence inspection and the perfect working order of your equipment. This certificate is part of your explosion protection document and proves that you have fulfilled your responsibilities regarding maintenance and monitoring. And as an added bonus, you will keep your equipment in top condition. Compliance with this legal requirement increases the safety of your staff and prevents conflicts with supervisory authorities.