SCREWLINE SP
The dry vacuum solution for industrial applications
The innovative, modular design of the SCREWLINE SP allows these pumps to be used where reliable, and low maintenance vacuum technology is demanded. The cantilevered design allows easy access to the rotors for in-situ cleanability in short time.

- The SCREWLINE SP pump design minimizes build-up of layers and maximizes potential cleaning intervals
- The vacuum system is designed to pass all extracted vapors to the exhaust, no maintenance intensive and sensitive pre-filtration or condenser systems necessary
- The user is able to help himself in case of unexpected pump contamination
- Leybold uses own developed, standard components and combines these in modular skids, enabling us to offer cost-competitive with fast delivery for each individual demand

SCREWLINE SP Benefits

- Very rugged, for demanding processes
- Aluminium chamber construction
- Air-cooling
- Easy to disassemble pump chamber for on site cleaning by end user
- Monitoring system
- Certified according to ATEX RL 2014/34/EU
Leybold SCREWLINE SP dry compressing screw vacuum pumps are extremely robust and meet the special demands of industrial heavy duty processes.

**Typical Applications**

- Industrial systems and machinery
- Large area coating
- Food packaging
- Photovoltaic lamination
- Industrial furnaces / heat treatment (hardening, annealing, sintering, carburization, melting)
- Industrial coating
- Electrical industry
- Metallurgical systems
- Display coating
- Semiconductor industry
- Food processing
- Load lock chambers
- Degassing
- Research and development
- Space simulation
- Lamps and tubes manufacture
- Automotive industry
- Food freeze-drying
- Leak detection
Low Maintenance required

Maintenance on SCREWLINE SP pumps will usually be limited to a regular visual inspection of the pump and the annual change of gear oil and oil filter.

The heat exchanger (standard air cooling) can be cleaned on-site by simply blowing it out with compressed air.

The pump chamber may be cleaned from process deposits with the optional purge kit if necessary.

Explosion protection ATEX

SCREWLINE SP vacuum pumps are approved as ATEX certified models for Zone 2 and 3.

These pumps comply with the ATEX Guideline requirements (ATEX RL 2014/34/EU)

As standard, all SCREWLINE SP ATEX pumps are equipped with a barrier gas control unit.

Design Features

- Two synchronized, cantilevered positive displacement rotors form the pump chamber and ensure multistage compression with very few components
- Non-contact and practically wear-free shaft seals
- The cantilevered rotors avoid bearings in the vacuum and ensure easy accessibility of the pump chamber for cleaning at the same time
- Integrated rotor cooling and air cooling from the outside via thermal link (SCREWLINE SP pumps stay significantly cooler than comparable screw pumps in the market)
- Water cooling device for use in air-conditioned rooms is available as an option
- SCREWLINE SP pumps are available as O2 models for pumping pure oxygen
- SCREWLINE SP pumps can handle unlimited amounts of Argon

Range of Accessories

The comprehensive line of accessories allows for optimum adaptation to the individual requirements of the different applications:

- Exhaust silencer
- Roots pump adapter
- Gas ballast valve - manual or solenoid
- Dust filter
- Flushing kit for simple pump chamber cleaning
- Purge gas retrofit kit
- Non-return valve

SCREWLINE SP vacuum pumps are equipped with the SP-Guard monitoring system as standard to monitor vital operating parameters constantly. The SP-Guard indicates critical operating conditions at an early stage.
Dry pump technology you can rely on

Your Requirements
- High system availability
- Minimum maintenance complexity
- High vapor tolerance and particle compatibility
- Simple on-site cleaning
- Environment compliant production
- Low operating and investment costs

Our Solution

Best system uptime
- Minimum downtimes, maximum availability and maximum ruggedness through an application optimized design
- Reduced process time in batch operation or short cycles - high effective pumping speed also at low intake pressures

Most robust system design
- SCREWLINE SP pumps are in “heavy-duty” design and are tolerant against unexpected process loads

Flexibility
- Expandable to pump systems by adding Roots pumps
- Universal flanges facilitate easy and flexible system integration
- Modular range of accessories

“Help Yourself” Concept
- In case of contamination, the user can self-clean the inside surfaces of the pump chamber

Lowest cost-of-ownership
- Environment friendly, low operating costs
- Minimized operation costs by widely reduced maintenance - no production of contaminated waste oil, no waste disposal costs

Low maintenance demands
- Extended maintenance intervals, low servicing complexity - just an annual gear oil change is necessary
- Maintenance friendly, quick and easy accessibility to all servicing points

Smart process control
- The SP-Guard monitors important operating parameters

Easy serviceability
**SCREWLINE SP Systems**

Vacuum systems for individual requirements

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SCREWLINE SP screw vacuum pumps have been well proven in demanding industrial applications for many years. SCREWLINE SP vacuum systems have been designed to handle pressures in the rough and medium vacuum range, i.e. the pressure range from atmospheric pressure to $10^{-2}$ mbar.

In connection with a high vacuum stage, operating pressures down in to the $10^{-7}$ mbar range can be attained.

The design criteria for SCREWLINE SP vacuum systems are, besides pump-down time and operating pressures, the process conditions, media properties and gas throughputs as well as branch and product specific standards and regulations.

**SCREWLINE SP Vacuum System Benefits**

- Reduced cost of ownership, e.g. energy and maintenance
- High system availability
- Process-adapted pumping speed and ultimate pressures
- Space saving owing to a compact design
- Easy to maintain and service

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**System Components**

The possibilities of designing and producing simple as well as complex customized vacuum systems are highly varied.

For this reason, Leybold provides a number of different components for assembling such systems:

- Roots pumps RUVAC WA(U), WS(U) and WH(U)
- Adapter versions
- Special valves (SECUVAC)
- Frequency converters
- Silencers with integrated dust filter
- Frames of the required construction also movable (on castors, for example)
- Electronic controllers according to customer specifications, including solutions with electrical cabinets
- Silencing hoods
- Covers also for outdoor installations
- Subsystems for integration within customers plants

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**Suitable Accessories**

The comprehensive range of accessories permits optimum adaptation to individual requirements in different applications.

A number of standard modules as well as numerous supplementing components are available for building complex vacuum systems. Custom solutions for specific applications are also possible.
Tailor-made for every application

Technical Features

SCREWLINE SP pump systems are combinations of individual pumps whereby Roots vacuum pumps are typically employed on the intake side. The working pressure range of pump systems is depending on the number of Roots vacuum pumps, but will extend in any case without interruptions to atmospheric pressure.

Pump systems with screw pumps are capable to attain a base pressure of $10^{-3}$ mbar already in connection with one single Roots pump. Multi-stage combinations with Roots vacuum pumps of all systems are capable of attaining pressures below $10^{-4}$ mbar.

Custom Pump Systems

Most users will find the matching pump system for their application in our range of standard pump systems. Please contact us for custom designed vacuum solutions for special processes and high pumping speeds.

We are specialized in the design and production of tailor-made pump systems according to individual needs and customer specifications.

Typical Applications

SCREWLINE SP pump systems are proven in various applications from industry, research and chemistry. Primarily focused on processes for metal production and processing, drying and degassing, thermal treatment, coating of solar components and semiconductor manufacture, as well as surface refinement.
### Technical data

#### Ordering information

<table>
<thead>
<tr>
<th>SCREWLINE SP</th>
<th>SP 250</th>
<th>SP 630</th>
<th>SP 630 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. pumping speed (50/60 Hz)</td>
<td>m³/h</td>
<td>270 / 330</td>
<td>630</td>
</tr>
<tr>
<td>Ultimate pressure (50/60 Hz)</td>
<td>mbar</td>
<td>≤ 0.01 / ≤ 0.005</td>
<td>≤ 0.01</td>
</tr>
<tr>
<td>Nominal motor power (50/60 Hz)</td>
<td>kW</td>
<td>7.3 / 9.2</td>
<td>15</td>
</tr>
<tr>
<td>Motor power consumption at ultimate pressure (50/60 Hz)</td>
<td>kW</td>
<td>&lt; 5.9 / &lt; 7.2</td>
<td>&lt; 11</td>
</tr>
<tr>
<td>Motor current / motor voltage</td>
<td>50 Hz</td>
<td>16 A / 400 V</td>
<td>28 A / 400 V</td>
</tr>
<tr>
<td></td>
<td>50 Hz</td>
<td>32 A / 200 V</td>
<td>56 A / 200 V</td>
</tr>
<tr>
<td></td>
<td>60 Hz</td>
<td>15.5 A / 460 V</td>
<td>24 A / 460 V</td>
</tr>
<tr>
<td></td>
<td>60 Hz</td>
<td>31.5 A / 210 V</td>
<td>52 A / 210 V</td>
</tr>
<tr>
<td>Cooling</td>
<td>Air</td>
<td>Air</td>
<td>Water</td>
</tr>
<tr>
<td>Noise level (50/60 Hz)</td>
<td>dB(A)</td>
<td>≤ 68 / 72</td>
<td>≤ 72 / 75</td>
</tr>
<tr>
<td>Flange connections</td>
<td>50 Hz</td>
<td>EN 1092-2 PN 6 - DN 65</td>
<td>EN 1092-2 PN 6 - DN 65</td>
</tr>
<tr>
<td>at the intake and exhaust side</td>
<td>60 Hz</td>
<td>EN 1092-2 PN 16 - DN 65</td>
<td>EN 1092-2 PN 16 - DN 100</td>
</tr>
<tr>
<td></td>
<td>ISO 1609 -1986 (E) 63 (DN 63 ISO-K)</td>
<td>ISO 1609 -1986 (E) 100 (DN 100 ISO-K)</td>
<td></td>
</tr>
<tr>
<td>Weight, approx.</td>
<td>kg</td>
<td>450</td>
<td>530</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>mm</td>
<td>1350 x 530 x 880</td>
<td>1630 x 660 x 880</td>
</tr>
</tbody>
</table>

1) With connected exhaust gas line at ultimate pressure
2) Standard at the discharge flange
3) ATEX cat 3i acc. to 2014/34/EG
4) Not suitable for ATEX applications

### Ordering Information*

<table>
<thead>
<tr>
<th>SCREWLINE SP dry screw pump, equipped with</th>
<th>SP 250</th>
<th>SP 630</th>
<th>SP 630 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual gas ballast 50 Hz</td>
<td>115 001</td>
<td>117 007</td>
<td>117 107</td>
</tr>
<tr>
<td>60 Hz</td>
<td>115 001</td>
<td>117 008</td>
<td>117 108</td>
</tr>
<tr>
<td>Purge gas unit, manual gas ballast and castors 50 Hz</td>
<td>115 006</td>
<td>–</td>
<td>117 117</td>
</tr>
<tr>
<td>60 Hz</td>
<td>115 006</td>
<td>–</td>
<td>117 118</td>
</tr>
<tr>
<td>Purge gas unit, manual gas ballast and ATEX cat 3i</td>
<td>50 Hz</td>
<td>–</td>
<td>117 017</td>
</tr>
<tr>
<td>60 Hz</td>
<td>–</td>
<td>117 018</td>
<td>–</td>
</tr>
<tr>
<td>Solenoid gas ballast ATEX cat 3i</td>
<td>50 Hz</td>
<td>115 003</td>
<td>–</td>
</tr>
<tr>
<td>60 Hz</td>
<td>115 003</td>
<td>–</td>
<td>117 115</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th></th>
<th>SP 250</th>
<th>SP 630</th>
<th>SP 630 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust silencer</td>
<td>119 002</td>
<td>119 001</td>
<td></td>
</tr>
<tr>
<td>Exhaust silencer, maintainable</td>
<td>119 003V</td>
<td>119 004V</td>
<td></td>
</tr>
<tr>
<td>Roots pump adapter</td>
<td>119 022</td>
<td>119 021</td>
<td></td>
</tr>
<tr>
<td>Dust filter</td>
<td>951 68</td>
<td>951 72</td>
<td></td>
</tr>
<tr>
<td>Intermediate piece, suitable to the intake flange</td>
<td>119 019</td>
<td>119 020</td>
<td></td>
</tr>
<tr>
<td>Non-return valve for the exhaust</td>
<td>119 011</td>
<td>119 010</td>
<td></td>
</tr>
<tr>
<td>Purge gas retrofit kit</td>
<td>119 031</td>
<td>119 030</td>
<td></td>
</tr>
<tr>
<td>Flushing kit</td>
<td>119 015V02</td>
<td>119 015V02</td>
<td></td>
</tr>
</tbody>
</table>

### SCREWLINE SP system

<table>
<thead>
<tr>
<th>Pump system complete (adapter version), pallet mounted</th>
<th>SP 250</th>
<th>SP 630</th>
</tr>
</thead>
<tbody>
<tr>
<td>with RUVAC WAU 501</td>
<td>502 466 V001</td>
<td>–</td>
</tr>
<tr>
<td>with RUVAC WAU 2001</td>
<td>–</td>
<td>502 472 V003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pump system complete, frame mounted</th>
<th>SP 250</th>
<th>SP 630</th>
</tr>
</thead>
<tbody>
<tr>
<td>with RUVAC WH 2500</td>
<td>503 158 V001</td>
<td>–</td>
</tr>
<tr>
<td>with RUVAC WH 4400</td>
<td>–</td>
<td>503 163 V005</td>
</tr>
</tbody>
</table>

* Selection from the product range. For detailed information on our full scope of SCREWLINE SP pump model versions, motor voltages and accessories please refer to our Leybold Full Line Catalog. Visit our webshop www.leyboldproducts.com.

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**Leybold**

**Pioneering products. Passionately applied.**