ROBUSCH®

LIQUID RING VACUUM PUMPS AND COMPRESSORS

ROBUSCH®

RVS LIQUID RING PUMPS AND COMPRESSORS: COMPREHENSIVE PRODUCT RANGE TO MEET YOUR NEEDS

Designed for industrial reliability and performance, the Robuschi RVS series offers versatile solutions for vacuum and compression applications, ensuring efficient and dependable operation even in the most demanding environments.

Now we are able to offer two types of liquid ring pumps and compressors:

RVS monoblock series

KEY SPECIFICATIONS

- **Volume Flow**: Capable of handling up to 600 m^3/h of maximum flow.
- **Vacuum**: Achieving vacuum as low as 33 mbar(a).

Key Features and Benefits

1. Robust Monoblock Design
2. Superior Corrosion Resistance
3. Deposit-Free Operation
4. No Metal-to-Metal Contact
5. Enhanced Water Carryover Capacity

RVS series lantern and bareshaft pump

KEY SPECIFICATIONS

- **Volume Flow**: Capable of handling up to a 4,200 m^3/h of maximum flow.
- **Vacuum**: Achieving vacuum as low as 33 mbar(a).

Key Features and Benefits

1. Durable Construction
2. High Suction Capability
3. Non-Contaminating Operation
4. Energy Efficient
5. Low Maintenance

APPLICATIONS OF LIQUID RING PUMPS ACROSS VARIOUS INDUSTRIES

RVS liquid ring pumps are versatile and robust, making them suitable for a wide range of applications across different industries.

Ceramic and brick industry
- Degassing

Drying systems

Environmental engineering
- Filter technology – mobile processing of hydraulic oil
- Recovery of solvents
- Sanitation technology
- Vacuum tankers

Food and beverage industries
- Central vacuum systems
- Dairy industry
- Filling plants
- Filtering systems
- Food preservation
- Salt water desalination
- Sugar production
- Tobacco humidification
- Water degassing of beverages

Lifting and handling

- Medical industry
- Central vacuum systems
- Steam sterilization (autoclaves)

Packaging industry
- Blister pack machines
- Filling and sealing machines
- Filling PET bottles with beer
- Rolling machines

Plastics industry
- Adhesion of plastic parts
- Calibrating
- Degassing rubber parts
- EPS foaming
- Extruder degassing
- Granulate conveying
- Removal and compression of vinyl chloride gas

RVS MONOBLOCK SERIES

Robuschi offers a versatile and robust selection of liquid ring pumps and compressors designed to cater to a wide array of industrial applications.
This range is engineered for high efficiency, durability, and reliable performance, ensuring that all your operational requirements are met.

RVS monoblock series diving into the details

THRIVING IN EXTREME CONDITIONS

In demanding environments with high humidity and wet processes, lime scale and abrasion can severely impact pump performance. Our liquid ring pumps are engineered to overcome these challenges. By incorporating premium materials like stainless steel and ceramics, we guarantee reliable performance and longevity.

LIMESCALE-FREE OPERATION

The RVS monoblock series pump housings feature a unique ceramic internal coating that prevents calcification from fluid deposits. This innovative coating, developed in collaboration with industry experts, ensures years of optimal performance with minimal maintenance.

DEPENDABLE AND COST-EFFECTIVE

The new RVS monoblock series liquid ring vacuum pumps and compressors are designed for durability and reliability, outlasting modular pumps and significantly lowering your operating expenses.

GLOBAL COMPATIBILITY

The RVS monoblock pumps come with wide voltage range motors compatible with both 50 and 60 Hz frequencies, classified under protection class IP55 (insulation class F). All pumps are UL/CSA approved.

SECURE AND DURABLE

With stainless steel shafts, our pumps provide outstanding corrosion resistance.
They deliver safe and dependable performance even under the harshest conditions, such as in humid environments.

INNOVATIVE PUMP OPERATION EXPLAINED

Our pumps operate with a revolutionary design that maximizes efficiency and reliability:

Dynamic Components

- **Impeller** 4: This is the sole moving part inside the pump, rotating smoothly without any contact within the pump casing 2.
- **Liquid Ring** 1: A rotating liquid ring seals the impellor from the front and ensures the blades are tightly sealed against each other.

Gas Handling Process

- **Gas Inlet**: Gas enters through the inlet slot 6 and flows into the blade cells.
- **Stabilizing the Liquid Ring**: To maintain stability, liquid is continuously drawn into the compression chamber and expelled 3 along with the conveyed gas.

Innovative Compression System

- **Variable Compression Chambers**: The eccentric placement of the impellor within the casing creates varying compression chambers 5 during rotation. This unique design compresses the conveyed gas over a complete revolution.

Versatile Functionality

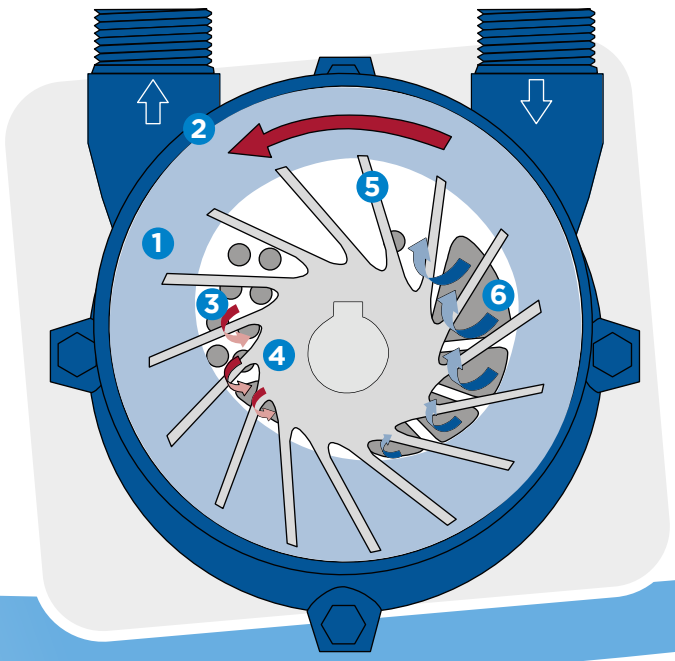
- **Dual Role as Compressors**: Our pumps naturally generate a pressure difference during operation, making them suitable for compressing gas from the surrounding atmosphere as well.

Continuous Liquid Management

- **Liquid Requirement**: For consistent operation, our pumps require a continuous supply of liquid, which exits with the conveyed gas on the discharge side. To streamline this process, we've developed standardized circuit units that recycle escaped operating liquid back into the pump. This innovation enables the pump to function with minimal or even without a permanent liquid supply.

Enhanced Efficiency through Condensation

- **Condensation Benefits**: Any steam components within the conveyed gas can condense and separate. This condensation leads to a volume reduction, significantly boosting the pump's overall performance by a condensation factor greater than 1.



RVS L2BV7 | RVS L2BV2 SERIES

MULTI-PURPOSE LIQUID RING PUMPS: **RVS L2BV7** AND **RVS L2BV2**

Our RVS LBV7 and RVS LBV2 liquid ring pumps are versatile, high-performance machines designed to save space and significantly reduce operating liquid consumption by up to 50%. These pumps are built with a variety of materials to suit different operational needs, ensuring durability and resistance to erosion and corrosion.

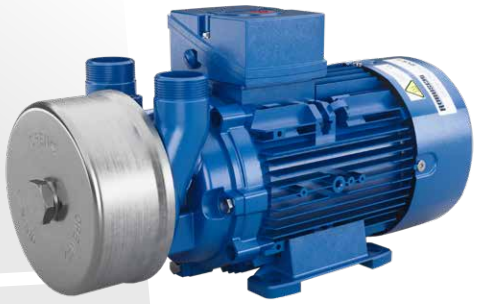
MATERIAL OPTIONS

1. **Stainless Steel**: Ideal for environments requiring high resistance to corrosion.
2. **Bronze**: Suitable for applications where non-sparking materials are needed.
3. **Ceramic**: Provides excellent resistance to wear and chemical attack.
4. **Cast Iron with Ceramic Coating**: Offers a balance of strength and corrosion resistance.

These liquid ring pumps are engineered to deliver high efficiency and reliability across a wide range of industrial applications. The choice of materials and construction ensures that they meet specific operational demands while providing long-term, maintenance-free service.

Key Features and Benefits

1. **Water Efficiency**: The pumps use up to 50% less water compared to conventional models, making them highly efficient in water usage.
2. **Material Versatility**: Available in various materials including stainless steel, bronze, ceramic, and cast iron with ceramic coating, allowing customization for specific applications.
3. **Corrosion and Erosion Resistance**: The tailored material combinations provide long-term resistance to erosion and corrosion, enhancing the pumps' durability.
4. **Quiet Operation**: The design ensures extremely quiet operation, free from cavitation issues.
5. **Durability**: Long-lasting performance is achieved through the use of ceramic coatings and reinforced stainless steel shafts.
6. **Quality Construction**: Top-quality roller bearings are used, ensuring reliable and smooth operation.



RVS L2BV7

RVS L2BV2

RVS L2BV5 SERIES

HIGH-VOLUME MONOBLOCK PUMPS: **RVS L2BV5** SERIES

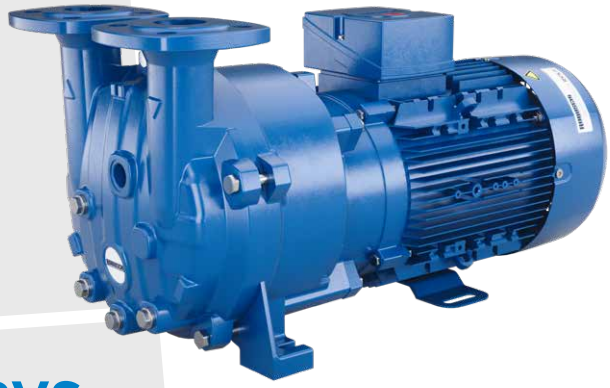
The RVS LBV5 series monoblock pumps are engineered to deliver exceptional volume flow, handling up to 600 m^3/h with suction pressures as low as 33 mbar (absolute). These pumps are particularly effective in applications requiring the movement of large quantities of liquids and can simultaneously act as condensers, doubling the suction volume when dealing with condensable vapor.

CONSTRUCTION AND MATERIAL DETAILS

1. **Reinforced Stainless Steel Shafts**: Provide robustness and resistance to deformation under heavy loads.
2. **Top-Quality Roller Bearings**: Ensure smooth and reliable operation over extended periods.
3. **Coated Pump Housing**: Adds an additional layer of protection against corrosive and abrasive materials, enhancing durability.

Key Features and Benefits

1. **High Suction Volume**: Capable of achieving suction volumes up to 600 m^3/h, making them ideal for large-scale liquid handling applications.
2. **Dual Functionality**: Operates as both a pump and a condenser, significantly increasing suction volume when managing condensable vapors.
3. **Durability**: Reinforced stainless steel shafts and coated pump housing provide resistance to wear and tear from solids, ensuring long-lasting performance.
4. **Continuous Lubrication**: Bearings are continuously lubricated, reducing maintenance needs and extending the lifespan of the pump.
5. **Noise and Vibration Reduction**: Designed to operate with low noise and minimal vibration, enhancing workplace safety and comfort.
6. **Energy Efficiency**: Optimized for energy saving, reducing operational costs.
7. **High-Quality Seals**: Equipped with standard guide ring seals to prevent leaks and maintain efficiency.
8. **Robust Construction**: Top-quality roller bearings and ceramic coatings contribute to the pump's longevity and reliable performance.



RVS L2BV5

RVS L2BV54 SERIES

RVS LBV54 LIQUID RING VACUUM PUMP: HIGH WATER CARRYOVER

The RVS LBV54 liquid ring vacuum pump is designed for applications involving high water carryover, capable of handling up to 6 m^3/h of liquid. This innovative pump reduces or even eliminates the need for pre-separation of liquids, making it highly efficient for processes involving damp gases. It delivers a high volume flow of up to 340 m^3/h and achieves intake pressures as low as 100 mbar (absolute).

ADVANTAGES IN DETAIL

1. **Operational Efficiency**: By managing high water carryover, the RVS LBV54 reduces the need for additional equipment and pre-separation steps, making the process more straightforward and less labor-intensive.
2. **Energy Savings**: The low power requirement translates to reduced energy consumption, which helps lower operational costs over time.
3. **Quiet Operation**: The pump's low noise level ensures a quieter working environment, which is beneficial for both operators and the surrounding area.
4. **Simple installation and Maintenance**: The simplified system design leads to easier and more cost-effective installation and maintenance, reducing the total cost of ownership.

Key Features and Benefits

1. **High Water Carryover**: Efficiently manages large quantities of liquid carryover, up to 6 m^3/h, streamlining operations.
2. **Elimination of Pre-separation**: Reduces or completely removes the need for pre-separation of liquids, simplifying the system and reducing complexity.
3. **High Volume Flow**: Delivers an impressive volume flow of up to 340 m^3/h, suitable for demanding applications.
4. **Low Power Requirement**: Designed to be energy-efficient, minimizing operational costs.
5. **Cost Reduction**: Significant savings in installation, operation, and service costs due to the elimination of additional water pumps and simplified process integration.

RVS L2BV54

RVS LANTERN AND BARESHAFT SERIES: ADVANCED. EFFICIENT. VERSATILE RANGE.

The RVS series liquid ring pumps (RVS 7, 14, 17, 21 /SG and RVS 23, 25, 30, 40, 60 /CT) are engineered with innovative features, making them capable of handling gas and vapors without contamination from lubricants, even in the presence of entrained liquids. With nearly isothermal gas compression, these pumps ensure efficient and reliable performance.

Thanks to their advanced design, the RVS series stands out for low water consumption, quiet operation, minimal vibration, and low-maintenance service, providing dependable performance across various applications. Available in a range of corrosion-resistant materials, these pumps are adaptable for a wide variety of industries.

Additionally, the RVS series can also function as compressors, offering flexibility and versatility for numerous industrial processes.

RVS 7 - 21/SG

RVS 23 - 25/CT

RVS 30 - 40/CT

RVS 60/CT

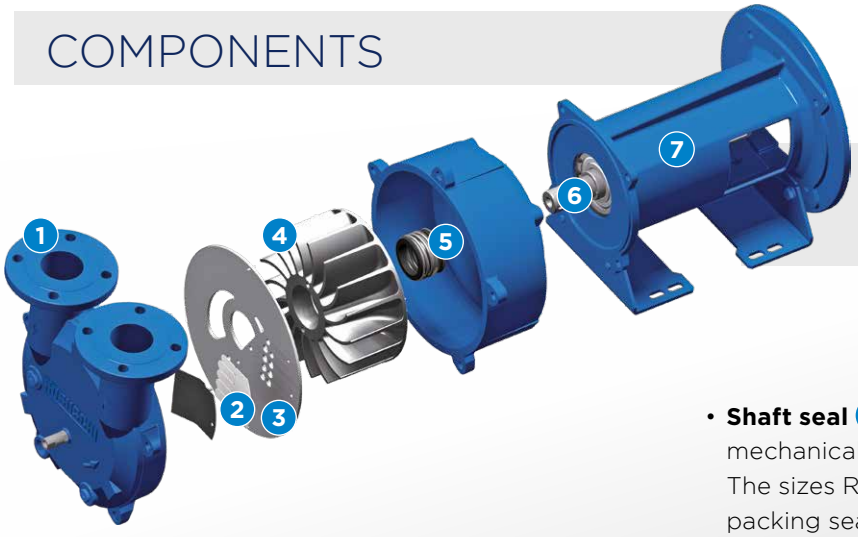
Key Features and Benefits

1. **High Suction Capability**: Handles high vapor content with ease, making it ideal for applications such as vacuum filtration, moisture extraction, and gas recovery.
2. **Durable Construction**: Built from corrosion-resistant materials, the RVS series ensures longevity and performance even when processing aggressive gases or liquids.
3. **Flexibility**: It provides the option to customize the motor according to the specific requirements of the application.
4. **Non-Contaminating Operation**: Oil-free liquid ring technology guarantees that no contaminants enter the gas stream, safeguarding your processes and product quality.
5. **Energy Efficient**: Optimized for reduced energy consumption, the RVS range minimizes operational costs while maintaining high performance.
6. **Low Maintenance**: The simple, robust design ensures minimal downtime, with easy access for routine checks and servicing.

RVS 7 | RVS 14 | RVS 16 | RVS 17 | RVS 21
RVS 23 | RVS 25 | RVS 30 | RVS 40 | RVS 60 SERIES

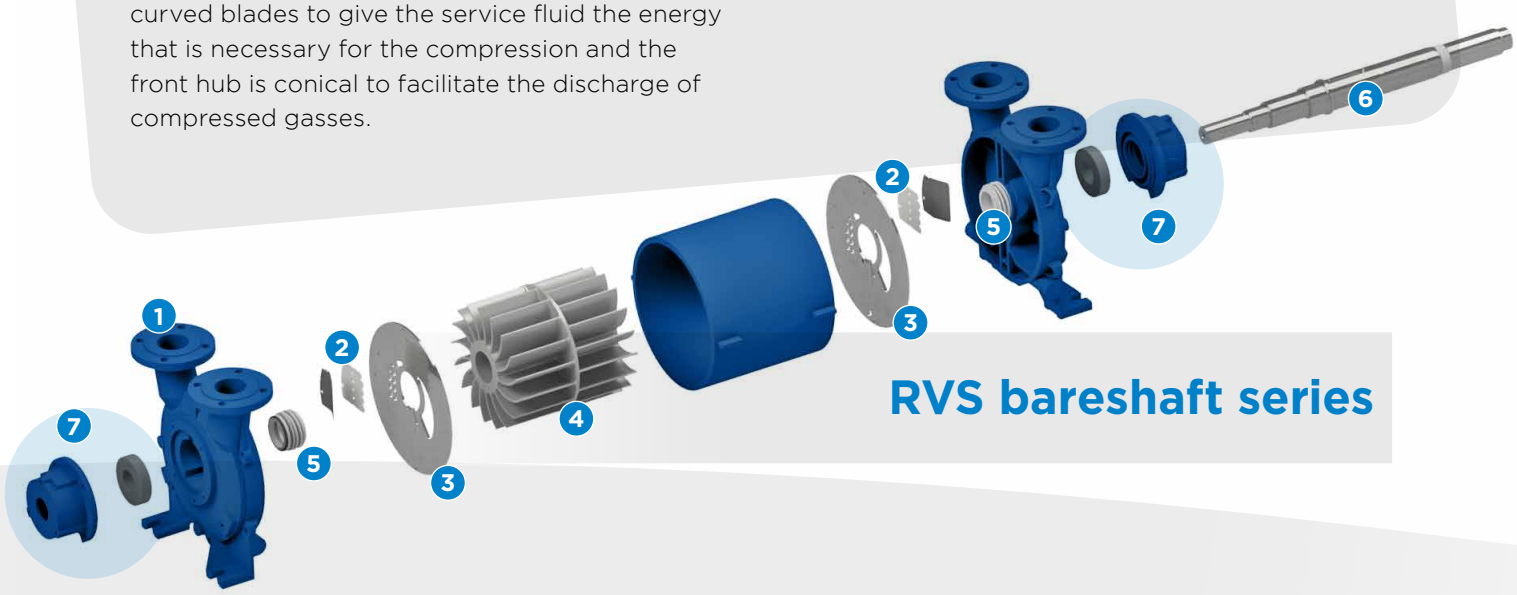
RVS series diving into the details

COMPONENTS



RVS lantern series

- **Casing** 1: Reduced consumptions, thanks to the efficient layout of the internal intake and delivery gas baffles.
- **Automatic valve** 2: The automatic valve makes it possible to adopt the compression ratio of the pump at the installation conditions, with less energetic consumption.
- **Plate** 3: A greater volumetric efficiency is possible thanks to the stainless steel laser-cut patented distribution plate and to the good layout of the intake and discharge lights.
- **Impeller** 4: The impeller is fitted with forward curved blades to give the service fluid the energy that is necessary for the compression and the front hub is conical to facilitate the discharge of compressed gasses.
- **Shaft seal** 5: The RVS 7÷25 includes single mechanical seals flushed from the service fluid. The sizes RVS 30÷60 can be installed both packing seals flushed from the service fluid or from the outside, both double mechanical seals.
- **Shaft** 6: The heavy-duty shaft is protected from the contact with the service fluid and conveyed gas, except for the RVS sizes 23 and 25, because the are made of stainless material (see the page Material execution).
- **Support** 7:
  RVS 3÷21/SG: cantilever impeller on the support with shielded self-lubricating bearings.
  RVS 23÷25: equipped with two supports with self-lubricating bearings.
  RVS 30÷60: lubrication with external greaser.



RVS bareshaft series

LIQUID RING PUMP AND COMPRESSOR SYSTEMS

We provide a comprehensive range of system solutions to meet diverse industrial needs, including those for food packaging, food processing, degassing and drying.

Our range includes systems with RVS pumps, reaching up to 33 mbar(a) of vacuum, pressure up to 2,000 mbar(g) and 4,200 m^3/h of maximum flow.

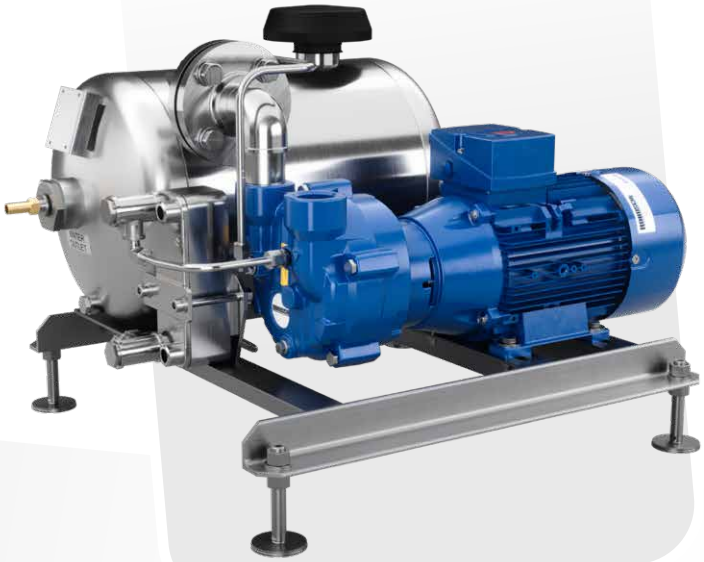
LIQUID RING PUMP AND COMPRESSOR SYSTEMS WITH RVS MONOBLOCK SERIES PUMPS

L-SVT OPEN CIRCUIT

To ensure stable performance, liquid ring pumps require a constant supply of operating liquid, which exits the unit along with the conveyed gas on the discharge side. To reduce or eliminate the need for a continuous fresh liquid supply, we have developed standardized circuit systems.

Key Benefits

1. **Minimal water consumption**
2. **Mechanically controlled water levels**
3. **Durable and reliable design**
4. **Modular configuration**
5. **Motors compatible with various voltage ranges**



L-SVG CLOSED CIRCUIT

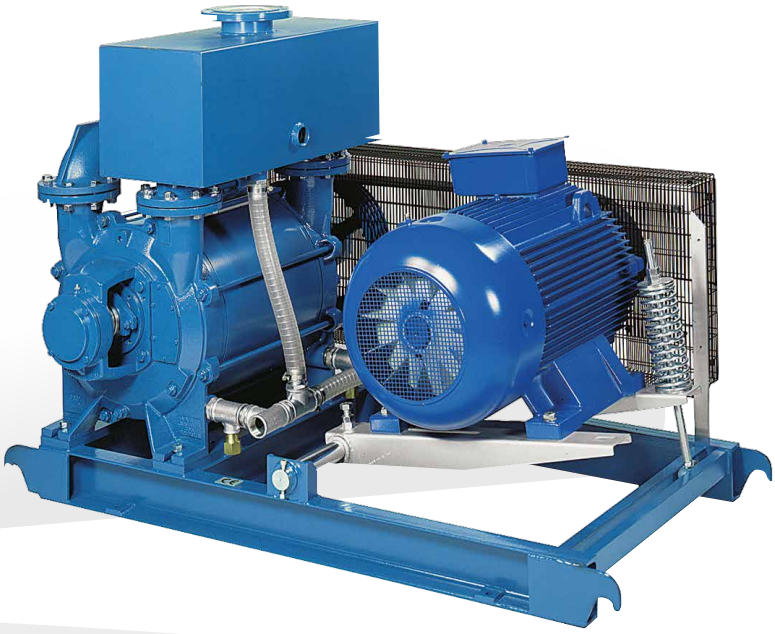
In L-SVG vacuum pumps and compressors, the closed circuit system ensures that compression heat is efficiently dissipated through a heat exchanger. The operating liquid and cooling water remain separate, preventing any impurities or condensates from mixing with the cooling fluid. The operating liquid circulates in a closed loop (compressor, separator, heat exchanger), while the cooling water heats up without contamination. Compressed gas and the operating liquid are directed into the separator through the pump's compression port, with heat from compression and condensation transferred to the cooling liquid via heat exchangers.

LIQUID RING PUMP AND COMPRESSOR SYSTEMS WITH RVS SERIES PUMPS

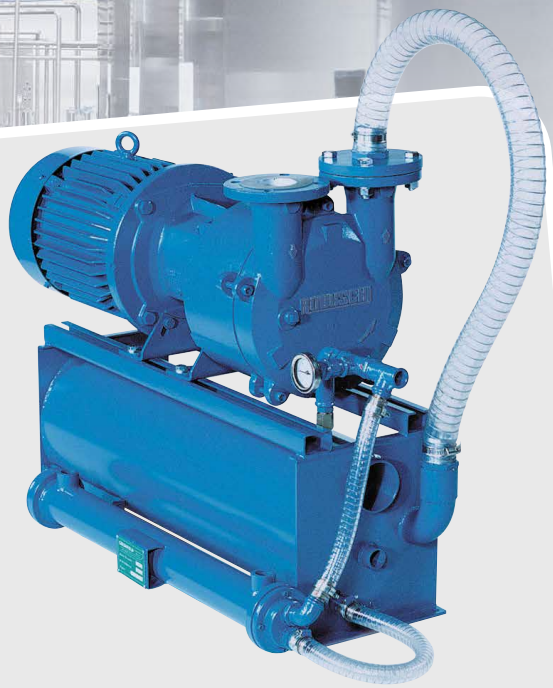
CRVS – LRVS SYSTEMS

The LRVS vacuum compact systems feature a belt and pulley drive with a patented motor oscillating suspension system. This innovative design reduces the load on both the motor bearings and pump by maintaining consistent belt tension over time. As a result, the system easily accommodates different motor sizes without changing the overall unit dimensions. The V-belt drive enables the vacuum pump to operate at an optimal speed, ensuring the necessary capacity for the system without energy waste.

The CRVS vacuum compact systems come equipped with a pump that is elastically coupled directly to the electric motor, ensuring perfect alignment and long-lasting, efficient operation. The CRVS system features a specially designed base for high stiffness and reduced vibrations, providing reliable and smooth performance.



Both the CRVS and LRVS units include a recovery manifold, allowing for partial water recirculation and significant service water savings (see the Accessories section for more details).



Key Benefits

1. **Minimal water consumption**
2. **Durable and reliable design**
3. **Modular configuration**

COMPONENTS

- **Level gauge (optional equipment)** 1
- **Gas discharge** 2
- **Gas suction** 3
- **Thermometer** 4
- **Liquid ring vacuum pump RVS** 5
- **Heat exchanger** 6
- **Electric motor** 7
- **Tank** 8

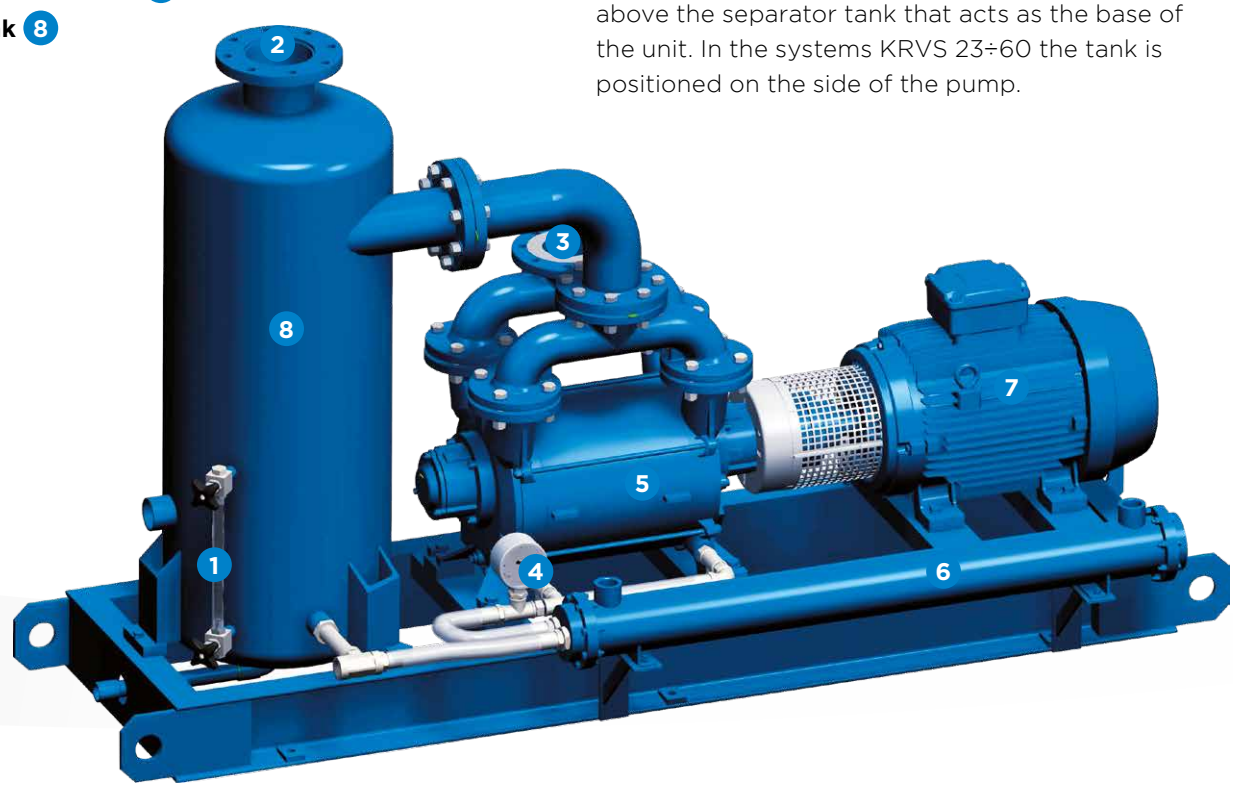
KRVS SYSTEMS

The KRVS units are designed for vacuum generation across a wide range of industries, including chemical, petrochemical, pharmaceutical, textiles, and more. **These systems incorporate RVS liquid ring vacuum pumps, complete with a separation tank for partial recirculation of the service fluid and corresponding connection pipes (/P). In the total recirculation version (/T), the unit is equipped with a heat exchanger**.

The separator tank not only facilitates fluid recirculation but also reduces noise at the pump discharge. The partial recirculation units (/P) are an efficient solution from Robuschi, recovering the majority of the service liquid required for the pump. A minimal fresh fluid supply is still necessary to prevent overheating of the liquid ring, which could affect pump efficiency. Depending on the vacuum level required, up to 70% of the fluid can be recovered (refer to the corresponding table for details).

The KRVS units with total recirculation (/T) are ideal for handling polluted gases and liquids, where disposal is a concern. In these cases, the pump operates in a closed circuit, and the heat exchanger cools the service fluid without direct contact between the cooling fluid and the service fluid. The temperature of the service fluid can be adjusted by regulating the flow of the cooling fluid.

In the systems KRVS 7÷21 the pump is positioned above the separator tank that acts as the base of the unit. In the systems KRVS 23÷60 the tank is positioned on the side of the pump.



COMPREHENSIVE RANGE OF ACCESSORIES

RVS MONOBLOCK SERIES

Non-return Valves

Prevent backflow, ensuring smooth and efficient operation.
They can be screwed directly onto the pump inlet for L2BV7 and L2BV2 and for vertical installation between flanges for L2BV2.

Cavitation Protection Valves

Safeguard the pump from cavitation, prolonging its lifespan.
It is available for all RVS monoblock series.

Flow Limiters

Control the flow rate, enhancing performance and efficiency.
Flow limiters with adapter for limiting the operating liquid quantity independently of the inlet pressure (1– 6 bar(abs)).

Connecting and Mating flanges

Provide secure connections for easy installation and maintenance.
Screwed flanges for L-BV7: 2 screwed flanges including screws and gaskets.

Screwed mating flange for L-BV5

according to DIN EN 1092-1, PN16 with gasket and screws

1 single flange with welding neck flange acc. to DIN EN 1092-1, PN10, with gasket and screws.

Liquid Separators

Separate liquid from gas in the pump system, optimizing functionality. It is available with adapter for operating liquid return line and cavitation protection, gaskets and screws. It is available for RVS monoblock series: L2BV2, L2BV7, L2BV5. According to the series, it could be a different type.

Gas Ejectors

Aid in removing gases, improving pump performance in specific applications. By installing a gas jet pump upstream of the vacuum pump, it is possible to achieve suction pressures up to 10 mbar (abs.). (driving air: 20 °C, 1013 mbar). It is available for all RVS monoblock series. According to the series, it could be a different type.

FOR **MAXIMUM FLEXIBILITY**

RVS LANTERN AND BARESHAFT SERIES

Anti-cavitation valves

VGI: a new anti-cavitation device, which operates by means of a direct non-condensable gas injection into the compression chamber.
The VGI device consists of a calibrated orifice, which is specific for each pump size, and of a non return valve, which was specifically designed to prevent the outflow of service fluid when the pump stops.
This reduces thus the injection load losses.
The non-condensable gas is also supplied to the pump straight after the closing of the suction phase, avoiding, therefore, the pump's volumetric efficiency penalizing. The device is made of stainless steel.
In the RVS ATEX version, the valve is connected to the separator tank or inert gas tank.

Vacuum breaker valve VDF

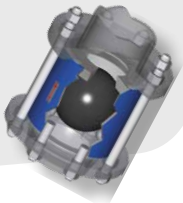
It can be inserted on the suction of RVS vacuum pumps, as a safety valve and it allows the calibration of the vacuum degree.

Automatic drainage valve VAD

It ensures the correct level of service fluid during the pump start-up phase, by draining the possible access of fluid and preventing thus damaging start-ups.

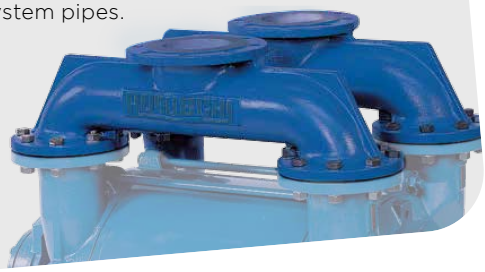
Check valve VAC

It ensures the maintenance of the vacuum degree in systems with on/off adjustment. At the same time, this ensures minimum load losses during the suction phase.



Manifolds

They make it possible an easy and speedy connection of the pump to the system pipes.



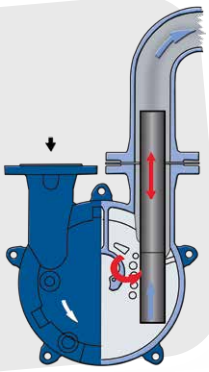
Air/fluid separator CR

(available for the sizes RVS 23- 60)

It separates the liquid from the gas and allows the partial recovery of the service liquid. Recirculation pipe is provided separately. Especially designed for pump inlet pressure lower than 500 mbar absolute.
For higher pressure please contact Robuschi.

Silencers

They are inserted into the pumps nozzles to dampen the noise generated by the pump characteristic frequency. They are particularly useful when the pump discharge does not need to be conveyed.



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Maximum uptime. Extending performance.

We provide a range of services to ensure our customers' machines are well maintained to deliver maximum performance.
We offer preventative and planned maintenance programs, genuine parts, on-site service, professional maintenance and efficient training.
Within our service portfolio, you will find many and varied options and services needed to get optimal performance, maximum uptime and operating efficiency from your Robuschi equipment.

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