

SHINKO SEIKI WATER RING VACUUM PUMPS

SW Series



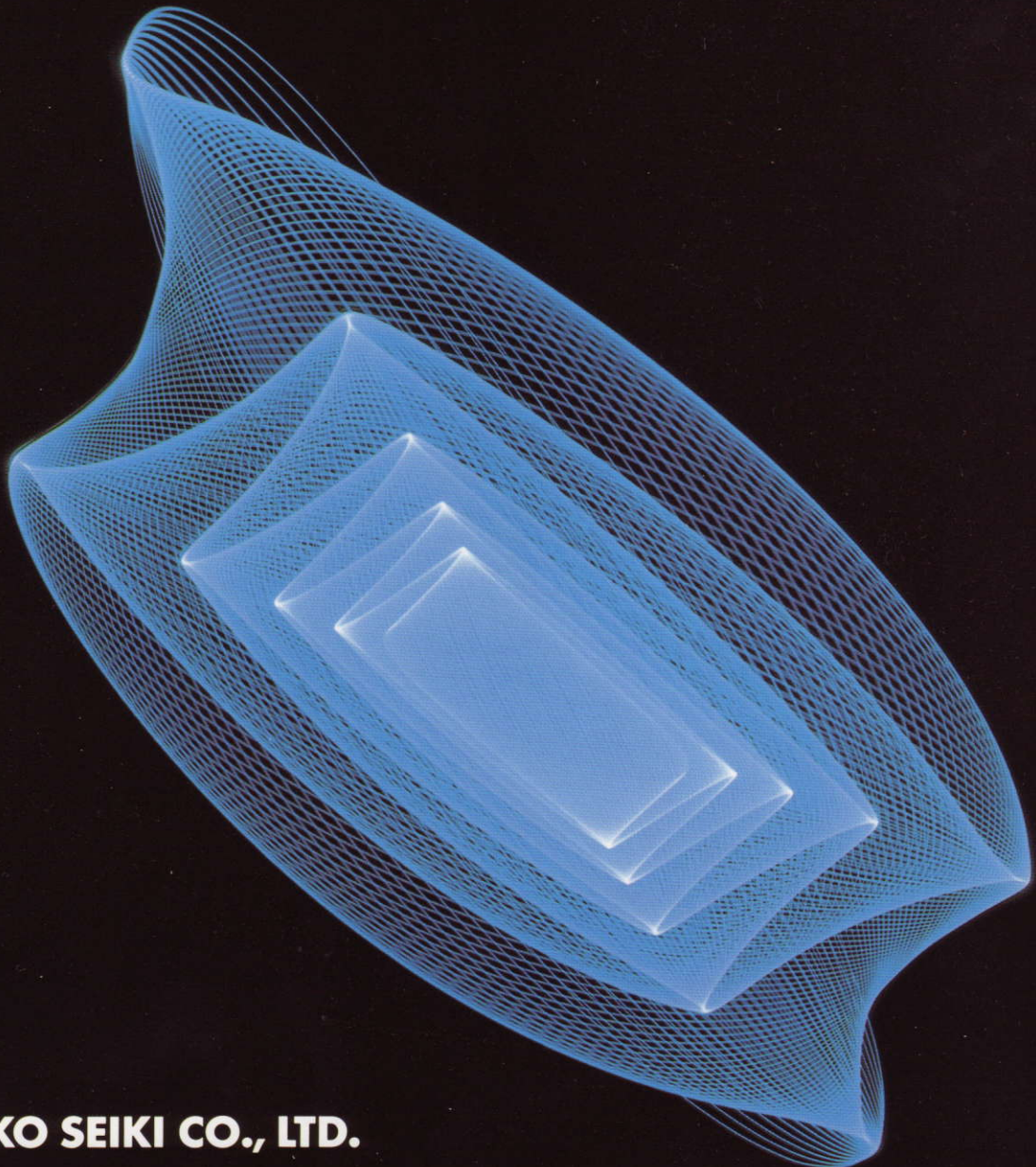
PERRY JOHNSON
REGISTRARS, INC.
SHIGA-MORIYAMA PLANT
ISO-9001:2000

CÔNG TY TNHH THƯƠNG MẠI DỊCH VỤ CƠ ĐIỆN

TIÊN PHONG



THE LEADING ELECTRIC MOTORS SUPPLIER IN VIET NAM



 SHINKO SEIKI CO., LTD.

SHINKO

Water Ring V



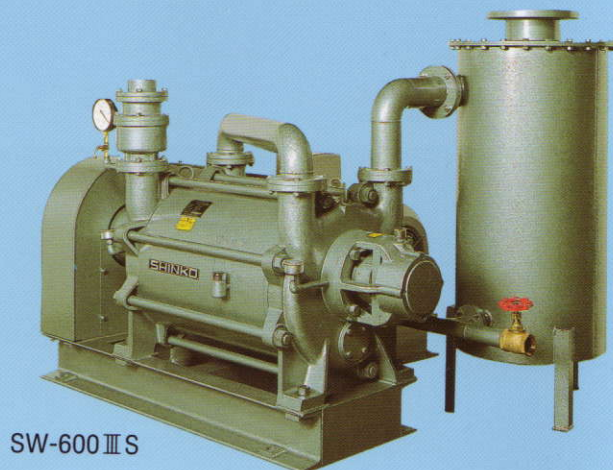
SW-S7



SW-150



SW-300S

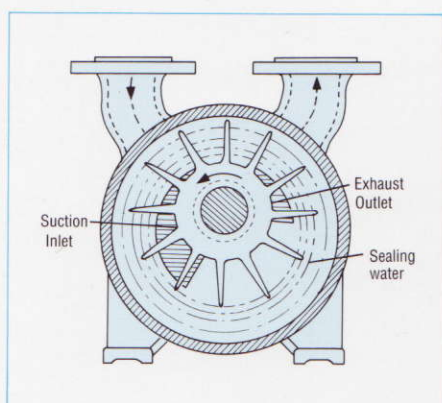


SW-600 III S

SHINKO SEIKI Water Ring Vacuum Pumps solve the problem of exhausting hydrous gas.

Structure and Principle of Operation

A water ring pump consists of a circular casing and an impeller installed eccentrically to the casing. When the casing is filled to the rated water level and the impeller is rotated, centrifugal force forms a large water ring of almost uniform thickness along the inner wall of the casing. By utilizing changes caused by rotation of the impeller in the cavity formed between the inner wall of the water ring and the vanes of the impeller, the functions of suction, compression and exhaust can be continuously maintained via the suction inlet and exhaust outlet provided on the side wall and inner wall of the impeller. Driving the impeller at high speed achieves high exhaust efficiency. The water functions as a sealing medium to exhaust every trace of gas entering from the inlet side.



Features

- Outstanding exhaust performance with hydrous gas.
- Two-stage pump arrangement achieves high performance at working pressures lower than 3×10^4 Pa.
- Inflammable and corrosive gases can be exhausted.
- Quiet operation, low vibration design.
- Rotational operation maintains continuous suction and exhaust, greatly reducing pulsations.
- Elimination of friction components inside the pump greatly reduces down time due to wear and the breakdown of parts.
- Both efficiency and ultimate pressure are superior to conventional NASH type pumps.
- Stainless steel or other corrosion resistant materials can be selected more easily based on operating conditions.
- A gland packing system is adopted for the shaft seal. Production of mechanical seal models is also possible.
- Non-polluting sealing water circulating type water ring vacuum pumps are also available.



TOYO SEIKI

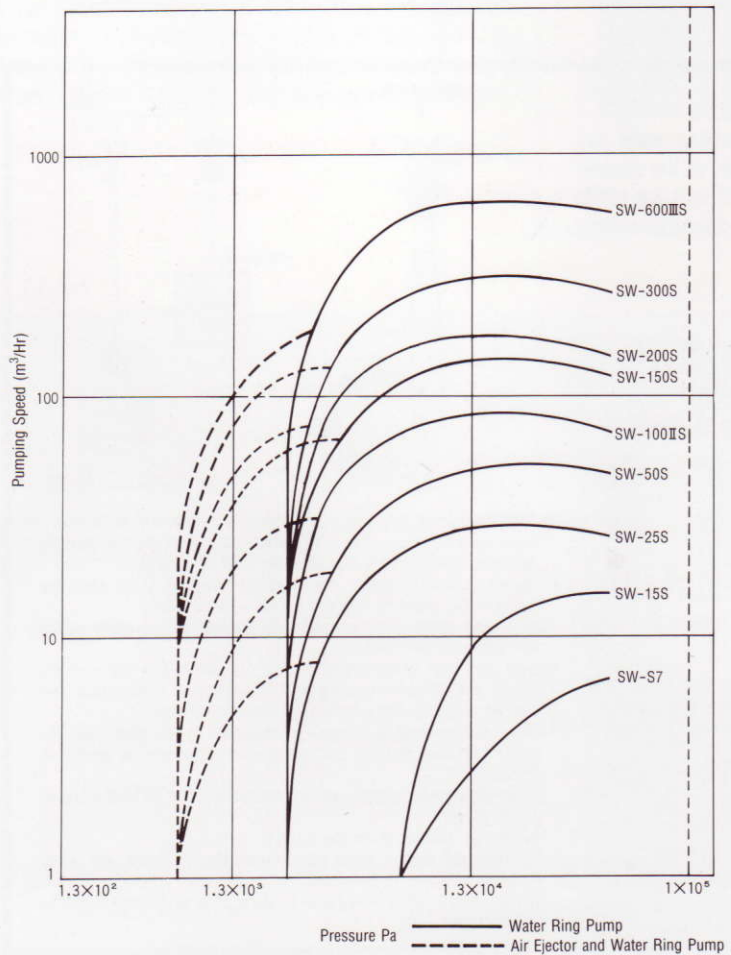
Vacuum Pumps

Specifications and Dimensions

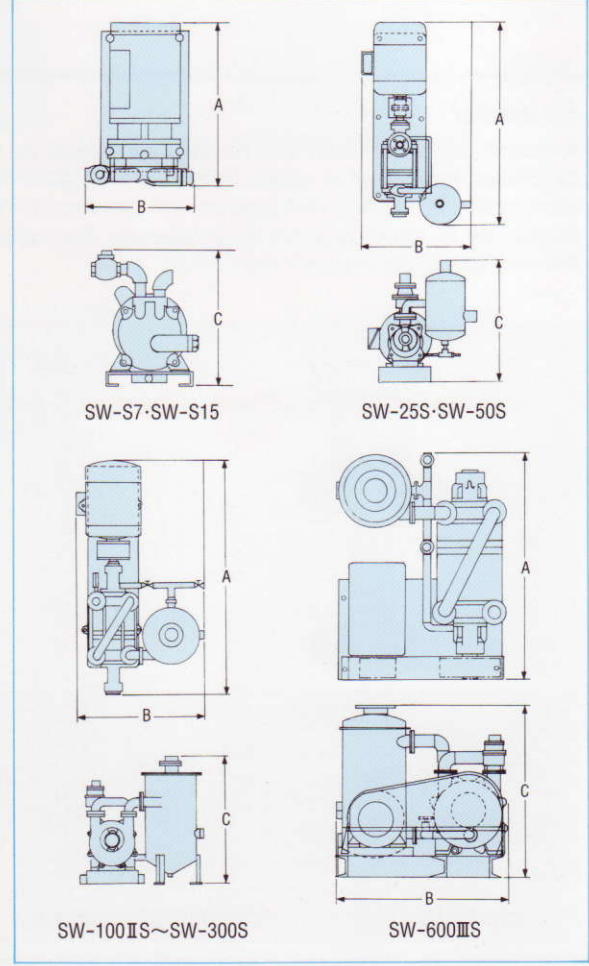
Model	Pumping speed L/min at 2×10^4 Pa		Ultimate pressure Pa		Rotating speed min^{-1}		Motor kW	Water supply L/min	Suction inlet dia.	Exhaust outlet dia.	Dimensions A×B×C mm	Weight kg
	60Hz	50Hz	Water temperature at 15°C	With air ejector	60Hz	50Hz						
SW-S7	105	90	6.7×10^3	—	3500	2900	0.4 (2P)	4	Rc $\frac{1}{2}$ (PT $\frac{1}{2}$)	Rc $\frac{1}{2}$ (PT $\frac{1}{2}$)	334×223×277	24
SW-S15	300	250	6.7×10^3	—	3500	2900	0.75 (2P)	5	Rc $\frac{1}{2}$ (PT $\frac{1}{2}$)	Rc $\frac{1}{2}$ (PT $\frac{1}{2}$)	363×240×353	24
SW-25S	450	370	2.3×10^3	1.3×10^2	3500	2900	1.5 (2P)	6	VF25	Rp1(PS1)	780×445×494	50
SW-50S	850	700	2.3×10^3	1.3×10^2	3500	2900	2.2 (2P)	8	VF25	Rp1(PS1)	820×454×494	58
SW-100IIS	1500	1250	2.3×10^3	8×10^2	1750	1450	3.7 (4P)	10	VF40	Rp2(PS2)	1000×590×605	120
SW-150S	2500	2100	2.3×10^3	8×10^2	1750	1450	5.5 (4P)	12	VF50	Rp2(PS2)	1154×713×625	140
SW-200S	3000	2500	2.3×10^3	8×10^2	1750	1450	7.5 (4P)	16	VF50	JIS10K-50A	1320×795×760	185
SW-300S	5500	4500	2.3×10^3	8×10^2	1750	1450	11(50Hz) (4P) 15(60Hz) (4P)	35	VF50	VG80	1610×895×877	350
SW-600IIS	10000		2.3×10^3	8×10^2	950		30 (4P)	80	VF80	JIS10K-150A	1560×1220×1200	700

Note: 1. Weight does not include motor.

Performance Curves



External Structures



Special Specifications

Sealing Water Circulating Vacuum Pump



Specifications and Dimensions

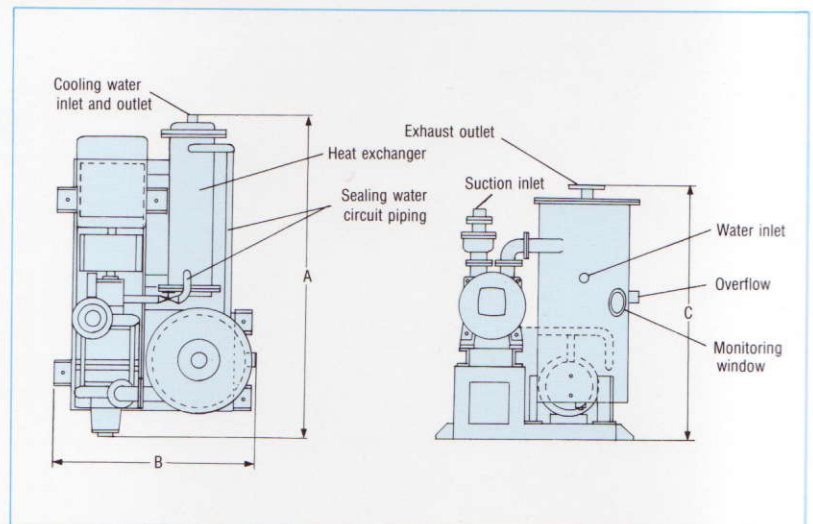
Model	Pumping speed L/min at 2×10^4 Pa		Ultimate pressure with water temp. of 28°C Pa	Rotating speed min^{-1}		Motor kW	Sealing water L/min	Cooling water L/min	Dimensions A×B×C mm	Weight kg
	60Hz	50Hz		60Hz	50Hz					
SW-25SC	450	370	2.3×10^3	3500	2900	1.5 (2P)	7	12	780×630×730	135
SW-50SC	850	700	2.3×10^3	3500	2900	2.2 (2P)	8	13	820×652×730	150
SW-100ISC	1500	1250	2.3×10^3	1750	1450	3.7 (4P)	18	17	1000×710×890	255
SW-150SC	2500	2100	2.3×10^3	1750	1450	5.5 (4P)	20	33	1200×770×1020	310
SW-200SC	3000	2500	2.3×10^3	1750	1450	7.5 (4P)	25	45	1416×825×1045	450
SW-300SC	5500	4600	2.3×10^3	1750	1450	11 (50Hz) (4P) 15 (60Hz) (4P)	50	80	1610×1100×1360	770
SW-600SC	10000		2.3×10^3	1000		30 (4P)	100	170	1850×1700×1930	1650

Note: 1. Weight does not include motor.

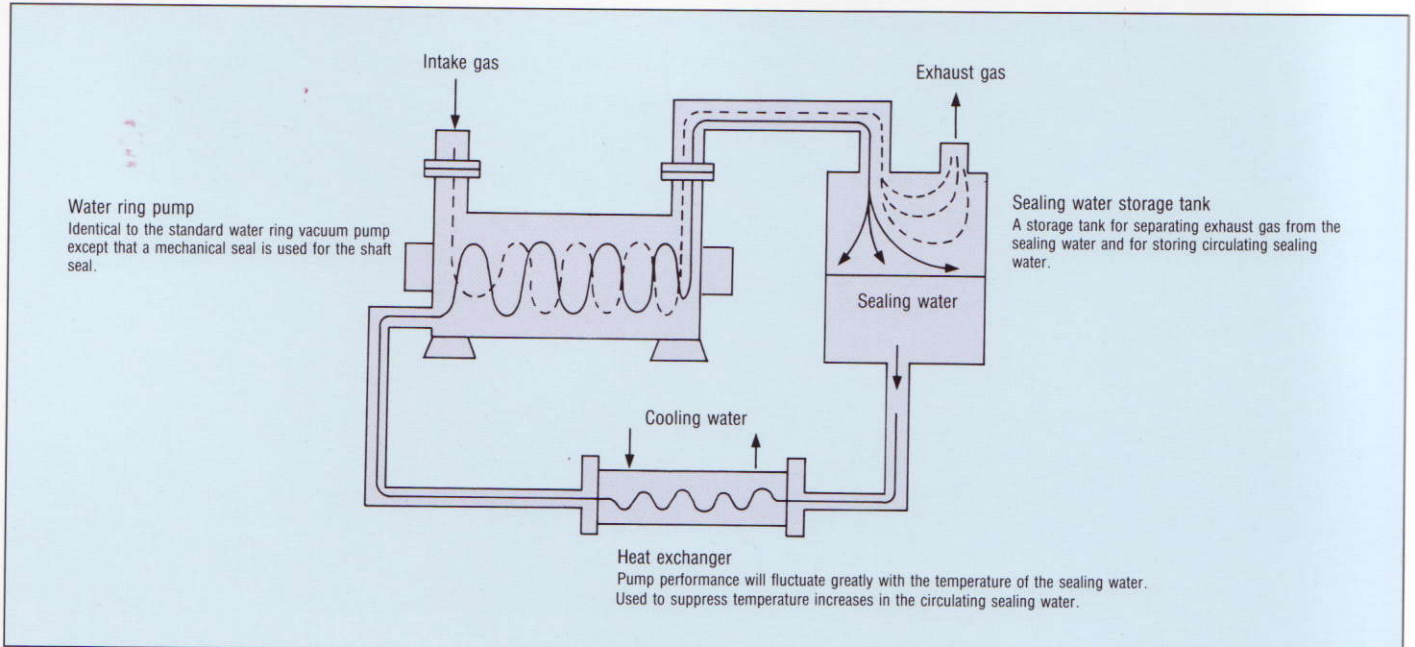
Non-polluting exhaust gas prevents emission of toxic gas.

Depending upon the nature of the intake gas, environmental pollution caused by the exhaust gas may occur due to solution or mixing of the intake gas with the sealing water. A non-polluting design was achieved by circulating the sealing water to prevent direct outflow of the water into the atmosphere. The sealing water is cooled with a heat exchanger, and the circulation circuit is an enclosed structure.

External Structures



Flow Chart



There are two types in water ring pumps: sealing water circulating pumps and all-stainless steel pumps. The type of pump is selected according to the application. Models adopting a mechanical seal or shaft seal are available for each type.

All-Stainless Steel Water Ring Vacuum Pump

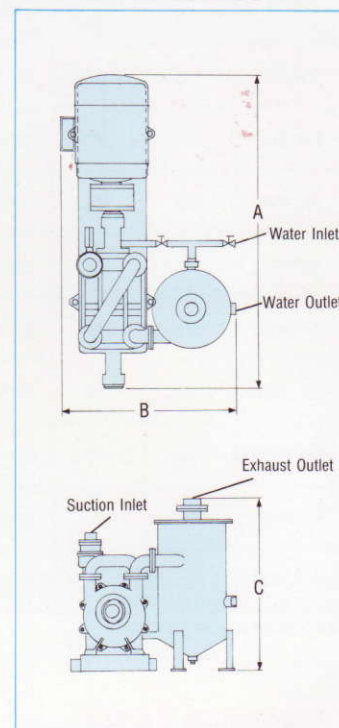
All-stainless steel water ring vacuum pumps are available for use in the chemical industry, in which a variety of corrosive gases may be used. These pumps are made of materials which are resistant to the intake gas for superior corrosion resistance, and to assure stable performance and excellent durability. A gland packing system is adopted for the shaft seal.

Specifications and Dimensions

Model	Pumping speed L/min at 2×10^4 Pa		Ultimate pressure Pa		Rotating speed min^{-1}		Motor kW	Water supply L/min	Suction inlet dia.	Exhaust outlet dia.	Dimensions A×B×C mm	Weight kg
	60Hz	50Hz	Water temperature at 15°C	With air ejector	60Hz	50Hz						
SW-25AS	450	370	2.3×10^3	1.3×10^2	3500	2900	1.5 (2P)	6	VF25	Rp1(PS1)	780×445×494	50
SW-50AS	850	700	2.3×10^3	1.3×10^2	3500	2900	2.2 (2P)	8	VF25	Rp1(PS1)	846×454×494	58
SW-100AS	1630	1350	2.3×10^3	8×10^2	1750	1450	5.5 (4P)	12	VF50	JIS10K-50A	1210×812×730	180
SW-200AS	2700	2100	2.3×10^3	8×10^2	1750	1450	7.5 (4P)	16	VF50	JIS10K-50A	1302×796×755	185
SW-300AS	4400	3700	2.3×10^3	8×10^2	1750	1450	11(50Hz) (4P) 15(60Hz) (4P)	35	VF50	VG80	1740×895×878	350

Note: 1. Weight does not include motor.

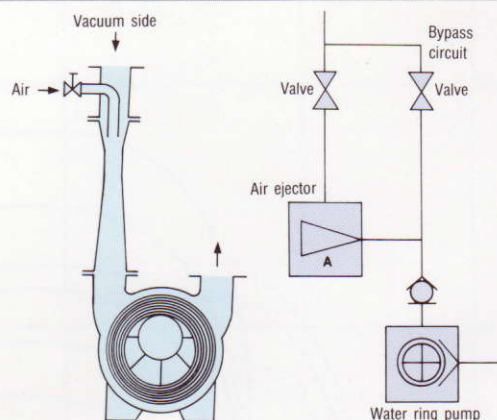
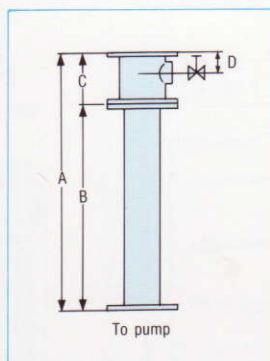
External Structures



Options

Air ejector

A vacuum (8×10^2 Pa) lower than the vapor pressure of the sealing water can be obtained by using an air ejector installed at the suction inlet of the sealing water pump. The suction inlet pressure can vary from 8×10^3 to 1.3×10^4 Pa because the air ejector is driven by air induction. The pump operates quietly and there is very little change in drive power.



■ Please note the following concerning installation and operation.

- Used for a large capacity installation. A bypass circuit is required particularly when there is a problem with exhaust time.
- During manual operation, open the air induction valve when the pump intake pressure reaches $5 \times 10^3 \sim 7 \times 10^3$ Pa.
- Automatic operation is possible with the use of a vacuum switch and air induction solenoid.
- Dust and mist in the intake gas can adhere to the inside of the nozzle and diffuser, causing a deterioration in performance. Be sure to regularly disassemble and clean these parts.
- The following causes should be suspected in the event that the intake pressure remains unchanged even when the air ejector is actuated.
 - Insufficient air supply due to resistance in the air intake line of the ejector
 - Foreign matter inside the ejector
 - Increased sealing water temperature due to insufficient water being supplied to the pump
 - Decreased performance due to worn parts or leakage from the shaft seal

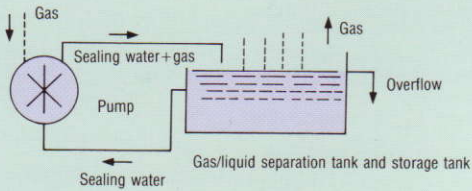
Model	Dimensions mm				Suction inlet dia.	Exhaust outlet dia.	Air inlet valve diameter	Weight kg
	A	B	C	D				
SAE-25	208	118	90	30	VF25	VG25	$\frac{1}{4}$ B	3.6
SAE-50	245	155	90	30	VF25	VG25	$\frac{1}{4}$ B	3.8
SAE-100II	312	202	110	30	VF50	VG40	$\frac{3}{8}$ B	7
SAE-150	382	272	110	30	VF50	VG50	$\frac{3}{8}$ B	7.4
SAE-200	336	236	100	40	VF50	VG50	$\frac{1}{2}$ B	6
SAE-300	450	340	110	45	VF50	VG50	$\frac{3}{4}$ B	9
SAE-600	595	475	120	70	VF80	VG80	1B	24

Examples of Applications for Circulating the Ring Water

(1) Large Storage Pool

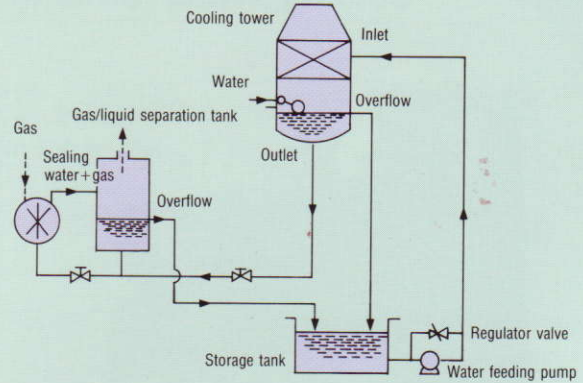
Sealing water flowing from a gas/liquid separation tank enters a large storage pool and is naturally air-cooled. The cooling pool can also double as a gas/liquid separation tank.

Because gases are released from the liquid's surface into the atmosphere, this configuration is not suitable for use with sealing water containing toxic gases and vapors, but is effective for intermittent operation with small pumps in water conservation applications.



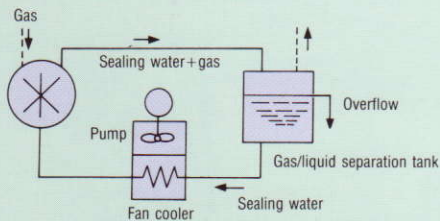
(2) Cooling Tower

In this configuration, the cooling tower forcibly cools the sealing water flowing from the gas/liquid separation tank via the large storage tank. A water feeding pump is required. The same precautions for toxic gases as noted in application 1 are required. A cooling tower is appropriate for a water ring pump with a comparatively large capacity.



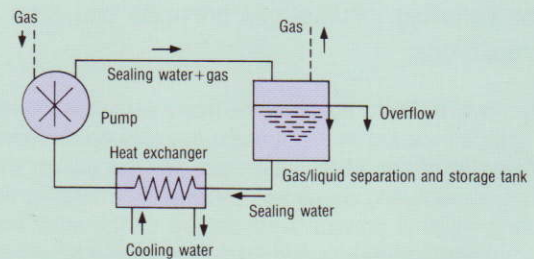
(3) Fan Cooler

As the sealing water passes through the fin tube, the water is forcibly cooled externally with a fan cooler. The fan cooler configuration is suitable for exhausting toxic gases, as the circulation circuit can be arranged as an enclosure. Due to the construction of the fan cooler, it is not suitable for systems with a large circulation flow.



(4) Water-cooled heat exchanger

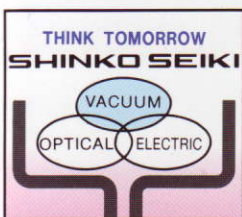
The sealing water is cooled by either a multi-tube or plate heat exchanger. As with application 3, the water-cooled heat exchanger configuration can be used with toxic gases as the circuit can be arranged as an enclosure. This is the most common configuration, and can be used for a wide range of applications.



Primary Applications

- Electronics Wafer adsorption and transfer, vacuum adsorber
- Chemicals Solvent recovery, distillation of alcohol, oils, perfumes, bulk resins
- Pharmaceuticals Disinfection, sterilization of medical equipment, freeze drying of pharmaceuticals, microorganisms, and blood
- Food industry Vacuum packing, vacuum transportation of powders
- Textile, paper industries Steam setting of threads, dehydration of pulp materials

- ★ Specifications and appearance are subject to change without notice for product improvement.
- ★ For inquiries, please contact our Kobe office or Tokyo office.



SHINKO SEIKI CO., LTD.

Kobe Branch Office: 35, Nishimachi, Chuo-ku, Kobe 650-0038, Japan
Tel. +81-78-332-3400, Fax. +81-78-332-3710

Tokyo Branch Office: 4-2-16, Nihonbashi muromachi, Chuo-ku, Tokyo 103-0022, Japan
Tel. +81-3-3271-2156, Fax. +81-3-3281-4709

Head Office: 3-1-35, Takatsukadai, nishi-ku, Kobe 651-2271, Japan
Tel. +81-78-991-3011, Fax. +81-78-991-2860

Factories: Kobe, Shiga, Tokyo

URL: <http://www.shinko-seiki.com>

