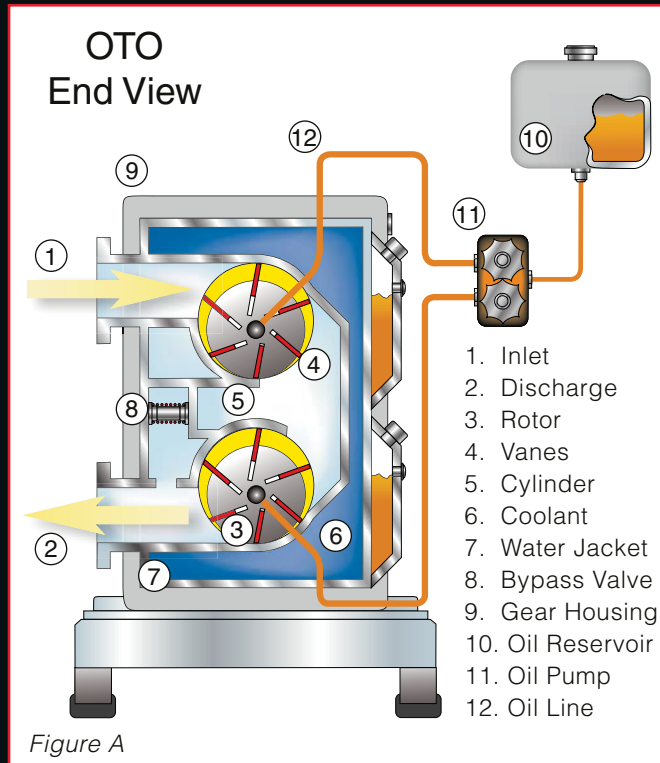


OTO Principle of Operation

Rietschle OTO Rotary Vane Vacuum pumps employ chemically resistant, composite vanes riding in a rotor with milled slots. The rotor is offset within the cylindrical housing (figure A). During rotation, centrifugal force allows the vanes to freely move in and out of lubricated slots as they follow the contour of the cylinder. A sealed pumping chamber is formed between adjacent vanes, the rotor and housing (yellow area). A thin film of fresh, metered oil lubricates the vanes, seals clearances and flushes corrosive agents and contaminants from the pump.

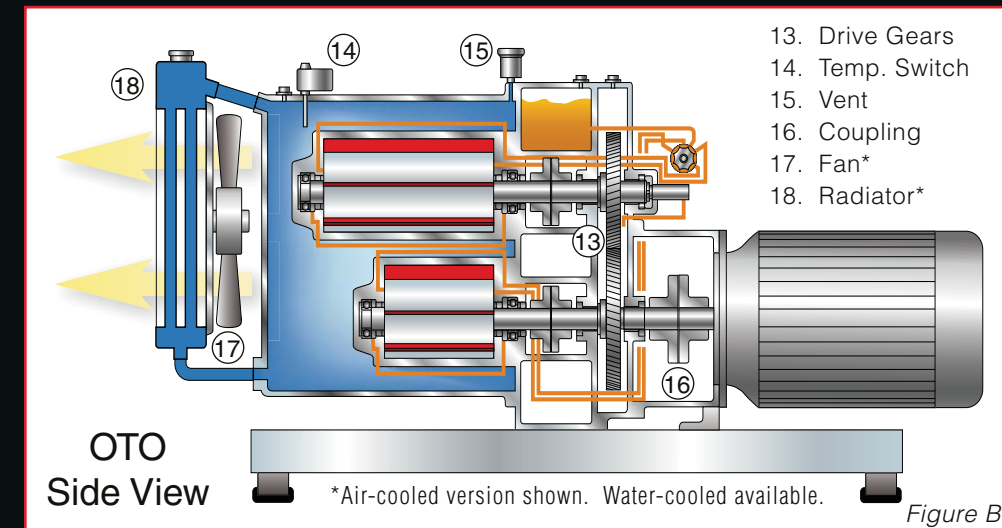
Process gas enters the pumping chamber as it passes the inlet port. Once past the inlet port, the gas becomes trapped between the vanes and is compressed as rotation decreases the volume of the chamber. When the chamber passes the discharge port, the compressed gas exits the pump (or enters the next compression stage). There are no inlet or discharge valves to stick, plug or fail.

A very small amount of contaminated waste oil (see table) exits with the gas stream and is efficiently separated and collected in the waste oil receiver, where it can be sent to incineration or recycling.



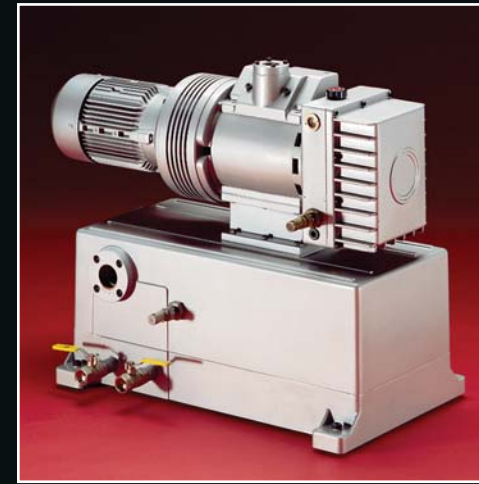
Modular stages are completely immersed in a bath of cooling water contained inside a water jacket (figure B). Full immersion of the stages eliminates problems due to localized hot spots. Temperature can be controlled to meet process demands, eliminate condensation and reduce problems associated with polymerization and gumming.

There are times when dry technology, like our **TWISTER® Dry Screw** vacuum pump, is a superior process choice.



Many demanding applications, however, are better served by our *flexible, economical* OTO product line. Consult with your Rietschle sales professional for help in selecting the best technology for your application.

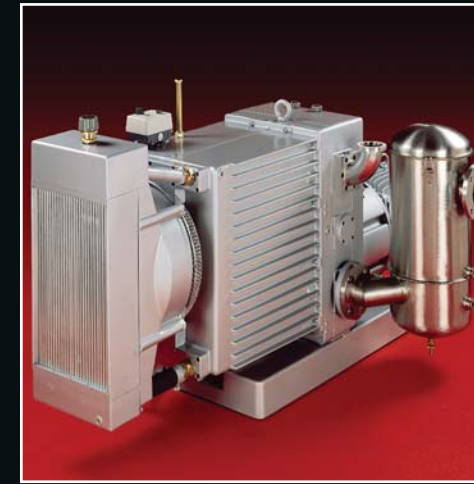
The Widest Range of Models, Sizes and Configurations for a Perfect Fit



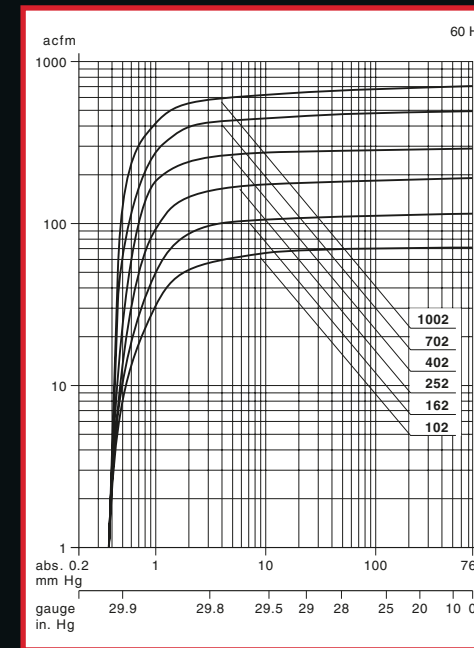
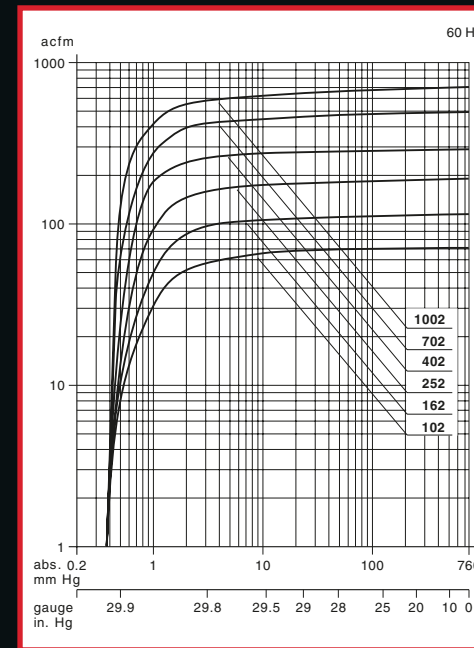
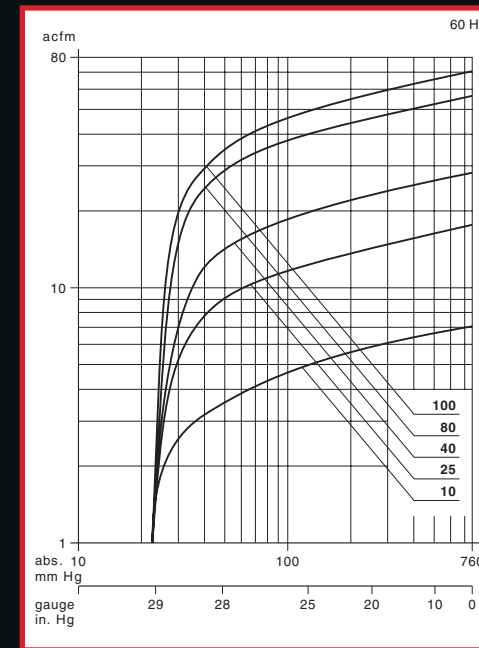
VLB Series



VLV Series



VWZ Series



For Demanding Laboratory, Process & Pilot Plant Applications

Rietschle Thomas
A Thomas Industries Company

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Bulletin No. 102-A

Rietschle Thomas



OTO Vacuum Pumps
Tough - Flexible - Reliable

The Latest Generation OTO Pumps “Tough – Flexible – Reliable”

Rietschle's latest generation of once through oiling vacuum pumps (OTO) is a cost-effective way to handle process streams containing aggressive gases, gummy carryover and high vapor loads. Our reliable OTO design offers excellent flexibility, control, low temperature operation, and can often be a better choice than dry screw, claw, liquid ring or recirculated oil pumps. These pumps incorporate the latest advancements in OTO design.

When to Use OTO Pumps

- Process Applications
- Aggressive Acids
- Reactive Gases
- Polymerization Concerns
- Higher Vacuum Required
- High Solvent Loads
- Variable Processes
- Batch Processes
- Temperature Limitations

Sizes and Configurations

Rietschle offers a large variety of sizes and configurations with capacities to 706 CFM. Available in one, two and three-stage designs, capacity and pressure ranges can be

extended significantly with boosters. Pumps can be air or water cooled, and designs are modular, making them easy to service. Fully packaged systems can be engineered to meet your exact process and control requirements.

Other Technologies

Recirculated oil pumps (rotary vane, rotary piston, etc.) are excellent for mild applications, but aggressive chemicals or vapors can contaminate the oil, leading to frequent oil changes. In these applications, OTO pumps can dramatically reduce oil consumption and maintenance, while improving reliability and performance.

Liquid ring pumps have limited end pressure capabilities, require complex controls, and contain sealing water or fluid that can become contaminated with process gases. This can lead to performance, corrosion or environmental problems, including expensive waste treatment. OTO pumps are usually less costly, more flexible, and able to attain deeper vacuum.



Dry pumps are more expensive, run hotter and may require more maintenance than OTO pumps in aggressive applications. They are excellent choices where oil absolutely cannot be tolerated, but OTO pumps are often a better alternative.

Engineering Expertise

Rietschle maintains a staff of highly qualified applications specialists and designers to custom engineer a complete system for your process. We also manufacture dry screw, claw, recirculated rotary vane, rotary lobe, and other technologies, so you never have to compromise. Our broad product line guarantees you the right technology, fit and performance characteristics for your application.

Features	Benefits
• OTO technology	• Flexible, reliable, handles aggressive gases and high vapor loads
• Broadest size range	• Exact fit for your process, lower capital cost
• Vertical or horizontal designs	• Fits any space requirement
• Modular construction	• Easy to replace stages, minimize downtime, leave piping & wiring in place
• 1, 2 or 3-stage designs	• Wide range of choices to meet end pressure requirements
• Air or water cooling	• Cool operation, flexibility, utilities management
• Stages fully immersed	• Even cooling, temperature control, reduces polymerization and plugging
• Gear drive transmission	• Positive, reliable, low maintenance
• Adjustable oil metering pump	• Precise control, ability to adjust to changing process demands
• Integral oil reservoir	• Compact, secure
• Optional boosters	• Extends capacity and attainable vacuum level

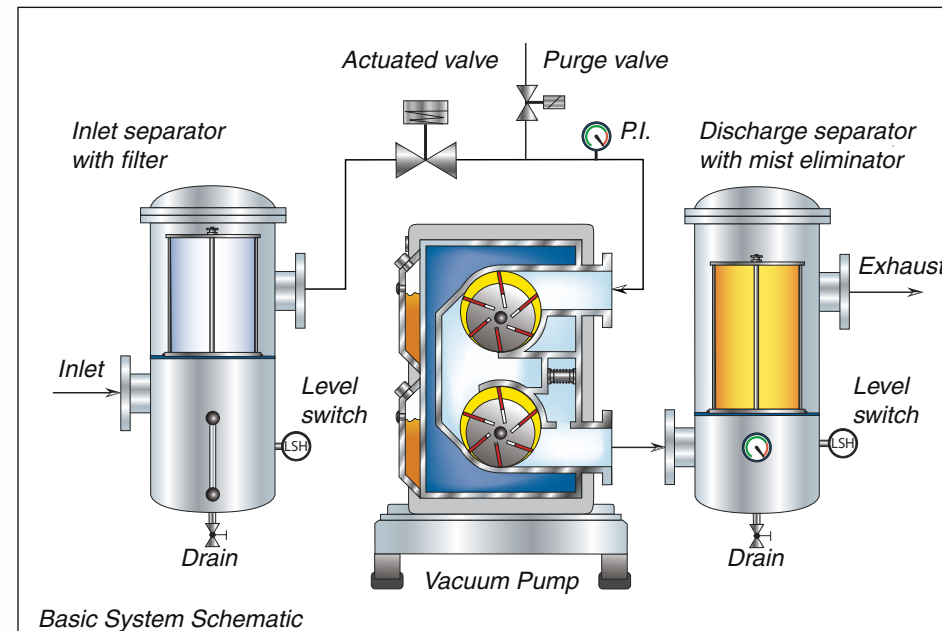
Designed for Performance & Easy Maintenance “Economical to Buy, Install, Operate and Service”

System Design

Most OTO systems include a vacuum pump, inlet separator with filter, system isolation and purge valves, and a discharge separator with mist eliminator. This basic arrangement is adequate for many demanding applications.

Chemical, laboratory and other complex applications may require additional accessories and controls, customized to meet process requirements. Rietschle offers a full line of accessories, including:

- Panels and Controls
- Pre & Post Condensers
- Knockout Pots
- Discharge Separators
- Scrubbers
- Temperature Control
- Variable Speed Drives
- Extended Oil Reservoirs



- Auto Drain System
- Auto Purge System
- Auto Flush System
- Complete Packages

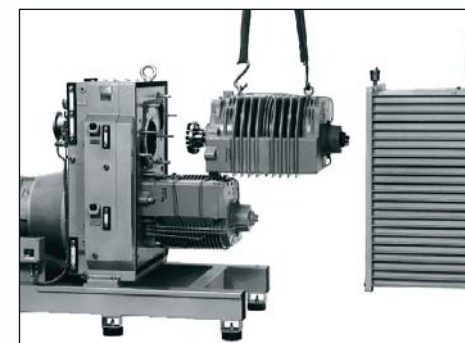
Staged Systems

If you need higher capacity and/or vacuum, Rietschle offers a line

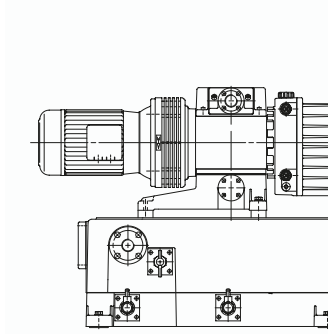
of rugged rotary lobe boosters. Combined in series with our OTO vacuum pumps, these systems can handle virtually any process requirement. Our broad experience will ensure a successful OTO installation, regardless of the complexity of your application.

Fast, Easy Service

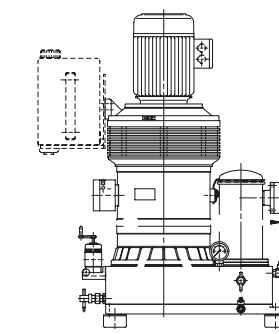
Modular stages reduce and simplify maintenance. Remove the water jacket for quick access and replacement. Keep new or rebuilt spare stages on the shelf for rapid turn around. Process piping/wiring can be left in place, making the job even easier. Gear drive means no belts to slip or replace, resulting in optimum performance and reliability.



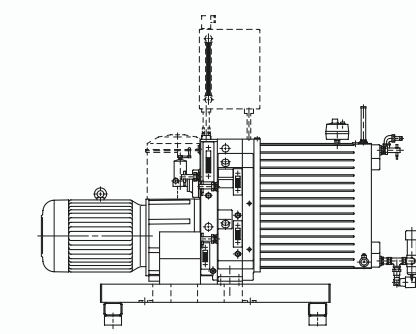
Engineering & Technical Data “Performance, Dimensions, Weight”



VLB Series
1 Stage
7 – 71 CFM
22.5 mmHgA



VLV Series
2 & 3 Stages
7 – 71 CFM
0.375 mmHgA*



VWZ Series
2 Stages
71 – 706 CFM
0.375 mmHgA

	Model No.	Flow cfm	Press. mmHgA	Motor hp	Wt. lbs	Oil l/hr	Noise dBA	Inlet in.	L in.	W in.	H in.
V L B	10	7	22.5	3/4	208	0.041	76	1/2	28	17	24
	25	18	22.5	1-1/2	232	0.041	76	3/4	30	17	24
	40	28	22.5	2	268	0.041	76	1	33	17	24
	80	57	22.5	5	399	0.083	76	1-1/2	37	17	30
V L V	100	71	22.5	5	423	0.083	80	1-1/2	38	17	30
	25	19	0.375	2	319	0.078	76	1/2	23	15	35
	40	28	0.375	3	371	0.078	76	3/4	23	15	38
	60	42	0.375	5	432	0.078	76	1	23	15	40
V W Z	80	57	0.375	5	501	0.078	76	1-1/2	23	15	41
	100	71	0.375	5	545	0.078	77	1-1/2	23	15	43
	102	71	0.375	7-1/2	995	0.156	72	2-1/2	56	24	38
	162	113	0.375	10	1010	0.156	73	2-1/2	57	24	38
	252	177	0.375	15	1092	0.194	74	2-1/2	68	24	38
V W Z	402	283	0.375	20	1221	0.194	75	2-1/2	68	24	38
	702	494	0.375	40	4041	0.410	81	4	94	32	55
	1002	706	0.375	50	5353	1.312	82	4	94	32	55

Notes:

- For capacity at operating pressure, see performance curves.
- Pressure listed above is ultimate end pressure (without booster) expressed in mmHgA.
- VLV 2-stage models are shown above. 3-stage models can reach end pressures to 0.015 mmHgA. (15 microns)
- Oil consumption is in liters per hour.
- All dimensions are in inches and include motor. VWZ dimensions are for the water-cooled version.
- All connections are NPT or ANSI flanged.
- Boosters are available for increased capacity and/or lower absolute pressures.

