

Q-VAC

AUTOMATIC PRIMING SYSTEMS



The Comprehensive Source for Priming

Q-VAC provides a complete line of high quality vacuum priming systems for the municipal, industrial, agricultural, marine, and power industries. Each system is furnished as a fully tested and complete package. Q-VAC includes a full range of standard designs, a wide spectrum of performance levels, multiple vacuum technologies, and a complete assortment of options and priming accessories.

Why Vacuum Priming?

- Eliminates start up issues and continuously maintains prime
- Resolves the difficulties of multiple self-priming pumps, submersibles, and vertical turbine pumps
- Allows use of the most efficient, reliable, and lowest cost pump types
- Eliminates the need to fill pumps and suction piping with water
- A priming system is non-wetted and does not require expensive materials of construction
- Reduces the costs associated with downtime and frequent capital expenses
- One priming system needed per pump room
- Eliminates costly, unreliable foot valves
- Increases pump efficiency



Why Q-VAC?

Engineered for High Performance, Long Life, and Ease of Use

- Practical features provide dependable protection and easy maintenance
- Compact, efficient designs are trouble-free and quiet
- Automatic operation—the system only runs when needed
- AutoPurge and PLC controls standard on rotary vane systems
- PLC controls standard on duplex liquid ring systems, optional on simplex systems
- Multiple vacuum technologies and sizes to fit most every need
- The highest lifting capabilities—up to 33 vertical feet of water
- Excellent quality & value
- Low operating cost



Knowledgeability, Responsiveness, and Ease of Doing Business

- Vacuum system experts since 1975
- One source responsibility—priming systems, priming valves, water traps, etc.
- World-class in-house design by vacuum priming experts
- Short lead times
- System sizing, specification assistance, and CAD drawings available
- Worldwide sales & installations
- Made in the USA

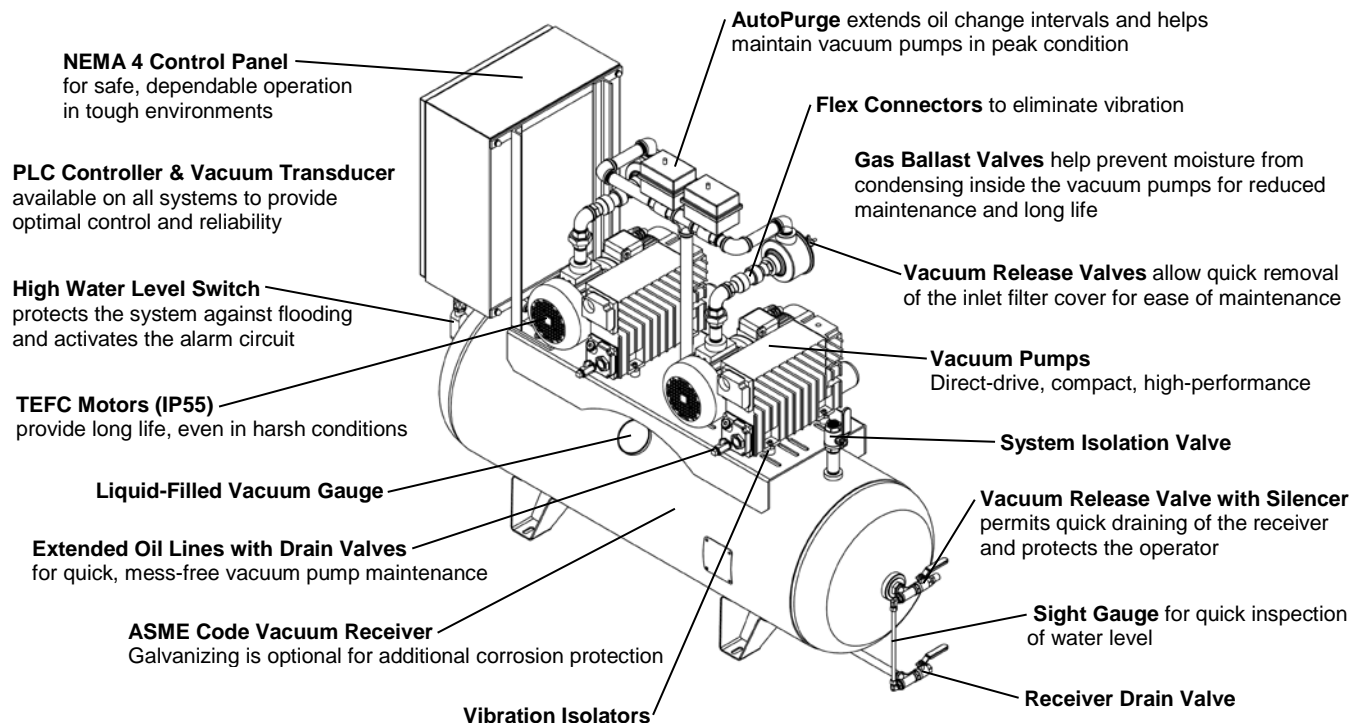


Innovative, User-Friendly Designs

Q-VAC priming systems are designed to provide the highest level of quality, performance, convenience, and value. With over 40 years of experience, our manufacturing capabilities, expertise, attention to detail, and service are unparalleled.

Q-VAC priming systems include a wide range of standard designs, performance levels, and accessories.

Each Q-VAC system is engineered with all the necessary accessories, controls, and safety devices needed for long, trouble-free operation. Convenience features like single point connections, extended oil lines with drain valves, and vacuum release valves are standard to facilitate quick and trouble-free maintenance.



Multiple Vacuum Technologies for Optimal Performance

Q-VAC priming systems using oil-lubricated rotary vane vacuum pumps provide the highest efficiency, lowest cost, and deepest vacuum levels. This technology is highly reliable and the easiest to install. This is the most common vacuum technology selected by our customers.

Q-VAC priming systems using liquid ring vacuum pumps offer high reliability, the largest flow capacities, and the lowest maintenance requirements. They are available in several materials of construction and have no metal-to-metal contact. Although liquid ring vacuum pumps require a continuous supply of fresh water during operation, they are undamaged when ingesting saturated air, small amounts of liquids, and soft solids.

Q-VAC priming system using oil-less piston vacuum pumps provide reliable, economical performance in a small package. Our miniature priming systems often incorporate piston technologies.

Q-VAC engineers are vacuum experts. When a special application requires it, we are able to design priming systems using a variety of additional vacuum technologies.



Simplex Systems Maintain Prime Automatically

Our QVS and QVP series simplex priming systems provide the basic performance and automatic controls needed to prime your pumps at the lowest cost and space requirements. Although these systems do not include all the advantages of our duplex priming systems, they are still designed and built by Q-VAC with features and quality unmatched in the industry.

For less critical, on-demand applications, our QVM series priming systems are available with manual controls.



Duplex Systems Offer Increased Reliability, Efficiency and Longevity

Our QVD series duplex priming systems provide advanced controls and the security of built-in redundancy. Since two vacuum pumps operate during initial priming, smaller vacuum pumps can be selected without sacrificing performance. However, to maximize efficiency after initial priming, only one vacuum pump runs during normal operation. Not only does this reduce power consumption and operating costs, it also reduces the run time on each vacuum pump to extend maintenance intervals and maximize life.

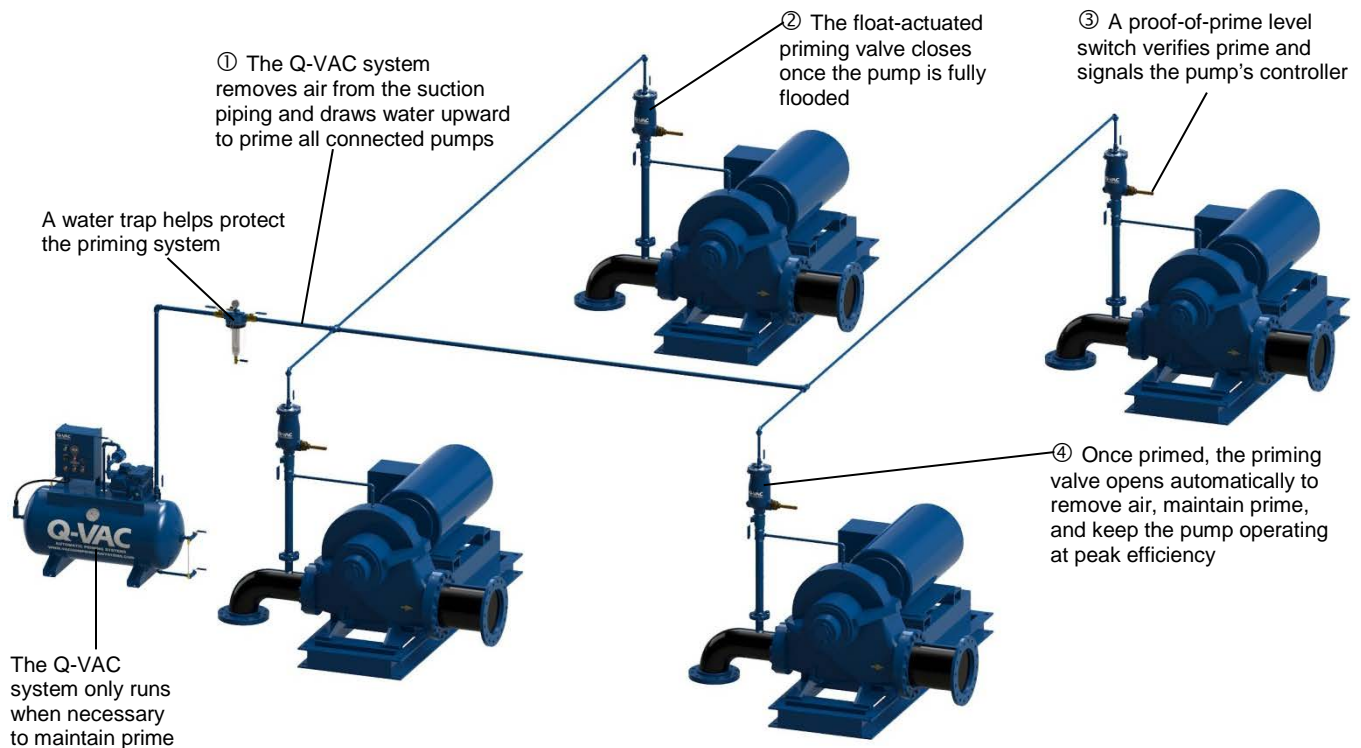
Q-VAC duplex priming systems include our standard PLC controller and vacuum transducer to provide unsurpassed system control and reliability. Other standard control panel features include an illuminated LCD display, HMI touchpad, LED indicator lights, alarm horn, and dry alarm contacts. Programming features include automatic alternation, lead-lag control, frequent start protection, hour meters, system operation status, and alarms. Q-VAC duplex priming systems have everything necessary for long life and reliability.



AutoPurge Helps Maintain Vacuum Pumps in Peak Condition

Q-VAC's AutoPurge system is a standard feature for all rotary vane systems. This feature adds special programming and NEMA 4 electrically operated isolation valves for each vacuum pump. When signaled to stop by the PLC, the isolation valve will close and the vacuum pump will draw in fresh, dry air through a special port prior to shutting down. This feature can greatly extend oil change intervals and helps maintain the vacuum pumps in peak condition.

Q-VAC Keeps Pumps Primed Automatically



Principle of Operation

A Q-VAC priming system operates automatically to establish and maintain a prime on all connected pumps. This is accomplished by piping a vacuum line from the Q-VAC system to a priming valve installed in the suction piping and housing of each pump. The differential pressure created by the priming system draws water up the suction line, lifting it into each pump. As air is removed, and the vacuum level increases, the water level will rise until the pump is fully flooded and the float-actuated priming valve closes. Should the water level drop at any time, the priming valve will open and vacuum within the air receiver will immediately restore the water level to ensure that the prime is never lost.



It is important to note that during automatic operation the priming system operates independently from the pumps being served and will cycle on only when needed to maintain a preset vacuum range.

To provide verification that a pump is primed and ready to run, a proof-of-prime level switch, installed in the priming valve, provides a signal that can be connected to the pump's motor controller or used to actuate a prime status indicator light.

In the unlikely event that a priming valve fails and water begins to flood the priming system, a high water level switch, installed in the air receiver, will activate the alarm circuit and shut the priming system off to prevent system damage. To allow remote monitoring of certain alarm conditions, dry alarm contacts are standard within the Q-VAC control panel.

A Q-VAC priming system will increase water pump efficiency by removing entrained air while eliminating the possibility of a pump becoming air bound. Automatic operation of a Q-VAC priming system ensures that every connected pump is always primed.

Standard Rotary Vane Priming Systems



Simplex Rotary Vane Priming Systems

Simplex Model	Max Flow (60 Hz)		Max Flow (50 Hz)		Max Vacuum		Motor (60 Hz)		Motor (50 Hz)		Noise (dBA)		Vacuum Receiver		System Inlet
	ACFM	M ³ /HR	ACFM	M ³ /HR	In Hg	mbar	HP	kW	HP	kW	60 Hz	50 Hz	Gallons	Liters	NPT
QVP-6RV-30H-AP	5.3	9	4.7	8	29.86	2	0.4	0.3	0.33	0.25	60	58	30	114	1/2"
QVP-10RV-30H-AP	8	14	7	12	29.86	2	0.6	0.45	0.5	0.37	62	60	30	114	1/2"
QVP-14RV-60H-AP	12	21	10.6	18	29.86	2	1.2	0.9	1	0.75	66	64	60	227	3/4"
QVP-20RV-60H-AP	17	29	14.7	25	29.9	0.5	1.2	0.9	1	0.75	65	62	60	227	3/4"
QVP-31RV-80H-AP	28	48	23.5	40	29.9	0.5	1.8	1.35	1.5	1.1	68	66	80	303	1"
QVP-51RV-120H-AP	44	75	35	60	29.9	0.5	2.4	1.8	2	1.5	70	68	120	454	1.5"
QVP-76RV-120H-AP	74	125	62	105	29.9	0.5	3.6	2.7	3	2.2	70	68	120	454	1.5"
QVP-111RV-120H-AP	106	180	88	150	29.9	0.5	4.8	3.6	4	3	72	70	120	454	1.5"
QVP-146RV-200H-AP	144	245	121	205	29.9	0.5	6.4	4.8	5.4	4	74	72	200	757	2"
QVP-212RV-200H-AP	215	365	180	305	29.9	0.5	8.7	6.5	7.4	5.5	76	74	200	757	2"

Duplex Rotary Vane Priming Systems

Duplex Model	Max Flow (60 Hz)		Max Flow (50 Hz)		Max Vacuum		Motor (60 Hz)		Motor (50 Hz)		Noise (dBA)		Vacuum Receiver		System Inlet
	ACFM	M ³ /HR	ACFM	M ³ /HR	In Hg	mbar	HP	kW	HP	kW	60 Hz	50 Hz	Gallons	Liters	NPT
QVD-6RV-60H-AP	5.3	9	4.7	8	29.86	2	0.4	0.3	0.33	0.25	60	58	60	227	3/4"
QVD-10RV-60H-AP	8	14	7	12	29.86	2	0.6	0.45	0.5	0.37	62	60	60	227	3/4"
QVD-14RV-60H-AP	12	21	10.6	18	29.86	2	1.2	0.9	1	0.75	66	64	60	227	3/4"
QVD-20RV-80H-AP	17	29	14.7	25	29.9	0.5	1.2	0.9	1	0.75	65	62	80	303	1"
QVD-31RV-80H-AP	28	48	23.5	40	29.9	0.5	1.8	1.35	1.5	1.1	68	66	80	303	1"
QVD-51RV-120H-AP	44	75	35	60	29.9	0.5	2.4	1.8	2	1.5	70	68	120	454	1.5"
QVD-76RV-120H-AP	74	125	62	105	29.9	0.5	3.6	2.7	3	2.2	70	68	120	454	1.5"
QVD-111RV-200H-AP	106	180	88	150	29.9	0.5	4.8	3.6	4	3	72	70	200	757	2"
QVD-146RV-240H-AP	144	245	121	205	29.9	0.5	6.4	4.8	5.4	4	74	72	240	908	2"
QVD-212RV-240H-AP	215	365	180	305	29.9	0.5	8.7	6.5	7.4	5.5	76	74	240	908	2"

Data is listed for each vacuum pump at standard atmospheric conditions and is subject to a 10% tolerance.

Standard Liquid Ring Priming Systems



Simplex Liquid Ring Priming Systems

Simplex Model	Max Flow (60 Hz)		Max Flow (50 Hz)		Max Vacuum		Motor (60 Hz)		Motor (50 Hz)		Noise (dBA)		Vacuum Receiver		System Inlet
	ACFM	M ³ /HR	ACFM	M ³ /HR	In Hg	mbar	HP	kW	HP	kW	60 Hz	50 Hz	Gallons	Liters	NPT
QVS-6LR-30H	5.7	10	4.5	7.6	28.5	47	0.7	0.52	0.5	0.37	68	66	30	114	1/2"
QVS-20LR-60H	20	34	15	25	29	33	1.5	1.1	1	0.8	68	66	60	227	3/4"
QVS-35LR-80H	35	60	28	48	29	33	3	2.2	2	1.5	70	68	80	303	1"
QVS-60LR-120H	60	102	45	76	29	33	5.5	4	4	3	73	71	120	454	1.5"
QVS-75LR-120H	75	127	60	102	29	33	5.5	4	4	3	73	71	120	454	1.5"
QVS-100LR-200H	99	168	80	136	29	33	7.5	5.5	5.5	4	73	72	200	757	2"
QVS-145LR-200H	145	246	122	207	29	33	10	7.5	7.5	5.5	73	72	200	757	2"
QVS-200LR-200H	200	340	170	289	29	33	15	11	10	7.5	75	74	200	757	2"

Duplex Liquid Ring Priming Systems

Duplex Model	Max Flow (60 Hz)		Max Flow (50 Hz)		Max Vacuum		Motor (60 Hz)		Motor (50 Hz)		Noise (dBA)		Vacuum Receiver		System Inlet
	ACFM	M ³ /HR	ACFM	M ³ /HR	In Hg	mbar	HP	kW	HP	kW	60 Hz	50 Hz	Gallons	Liters	NPT
QVD-6LR-60H	5.7	10	4.5	7.6	28.5	47	0.7	0.52	0.5	0.37	68	66	60	227	3/4"
QVD-20LR-80H	20	34	15	25	29	33	1.5	1.1	1	0.8	68	66	80	303	1"
QVD-35LR-120H	35	60	28	48	29	33	3	2.2	2	1.5	70	68	120	454	1.5"
QVD-60LR-120H	60	102	45	76	29	33	5.5	4	4	3	73	71	120	454	1.5"
QVD-75LR-120H	75	127	60	102	29	33	5.5	4	4	3	73	71	120	454	1.5"
QVD-100LR-200H	99	168	80	136	29	33	7.5	5.5	5.5	4	73	72	200	757	2"
QVD-145LR-240H	145	246	122	207	29	33	10	7.5	7.5	5.5	73	72	240	908	2"
QVD-200LR-240H	200	340	170	289	29	33	15	11	10	7.5	75	74	200	757	2"

Liquid Ring Seal Water Requirements

Model Number	QVS-6LR-30H	QVS-20LR-60H	QVS-35LR-80H	QVS-60LR-120H	QVS-75LR-120H	QVS-100LR-200H	QVS-200LR-200H	QVS-145LR-200H	QVD-6LR-60H	QVD-20LR-80H	QVD-35LR-120H	QVD-60LR-120H	QVD-75LR-120H	QVD-100LR-200H	QVD-145LR-240H	QVD-200LR-240H
USGPM	1.25	0.75	2	4	4	4	6	5	1.25	1	2	4	4	4	5	6
LPM	4.7	3	7.6	15.2	15	15	23	19	4.7	3.8	7.6	15.2	15	15	19	23

Liquid ring system performance is based on 60°F (15°C) seal water.
Data is listed for each vacuum pump at standard atmospheric conditions and is subject to a 10% tolerance.

Priming Valves

Our float-operated air-release valves have been specifically designed for priming applications and comply with both AWWA C512 standards and NSF 61 requirements. The long body design and level sensitive float eliminate leakage issues and allow use in both clean water and wastewater applications. The heavy-duty cast iron construction includes a durable, non-stick fusion bonded epoxy coating both internally and externally for exceptional abrasion and chemical resistance. Additionally, all internal trim is 316SS to provide long life, even in aggressive water. At least one priming valve is recommended for each pump being primed.

Materials of Construction

Body and Cover	Cast Iron ASTM A126, Class B
Trim	Stainless Steel, Type 316
Internal / External Coating	Fusion Bonded Epoxy
Priming Valve Orifice Button (PVO)	Buna-N



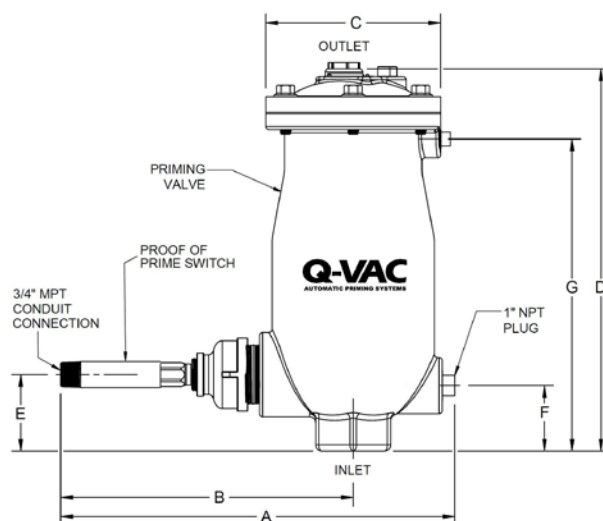
Sizing

Even a properly designed priming system will not operate as desired if there are flow restrictions caused by improperly selected valves or piping. The vacuum experts at Q-VAC will ensure that each priming system, including priming valves, is sized properly for peak performance and efficiency. For larger applications, multiple priming valves or our HFPC series priming chambers will be considered.

Prime Verification

A weatherproof proof-of-prime level switch, sometimes referred to as a “pump protector”, is normally used to signal when a pump is primed, or to provide warning if the prime has been lost. This signal can be connected to the centrifugal pump’s motor controller, an alarm, or to a prime status panel. A SPDT switch is standard; however a DPDT switch is an available option. One proof-of-prime switch is recommended for each pump being primed.

Dimensional Information



MODEL	A (in)	B (in)	C (in)	D (in)	E (in)	F (in)	G (in)	INLET (FNPT)	OUTLET (FNPT)	PVO (in)	WEIGHT (lbs)
QV-38P2-WLCS	15.78	11.71	7	15.31	3.06	2.63	12.5	2"	1/2"	5/16	41.3
QV-45P3-WLCS	16.86	12.25	9.5	17.56	3.07	2.53	14	2"	1"	1/2	73.8

Priming Chambers

Our standard priming chambers operate automatically and are designed for high flow applications where the use of typical priming valves would be too restrictive and costly. Standard features include an ASME code vacuum chamber constructed with butt joint weld circumferential joints, NSF 61 epoxy coated interior, flanged inlet, pneumatic isolation valve, 316 stainless steel level probes, and automatic controls and indicators housed in a NEMA 4 enclosure.



Priming Status Panels

For installations that require a visual display of prime status, Q-VAC offers custom engineered Priming Status Panels. These local indicator panels provide a visual display of each pump's prime status, can signal a remote alarm, or can be used to prevent pumps from starting if they are not primed. Standard features of these UL / CUL labeled panels include a NEMA 4 enclosure, LED indicator lights, terminal strip connections, dry contacts, and engraved tags.

Water Traps

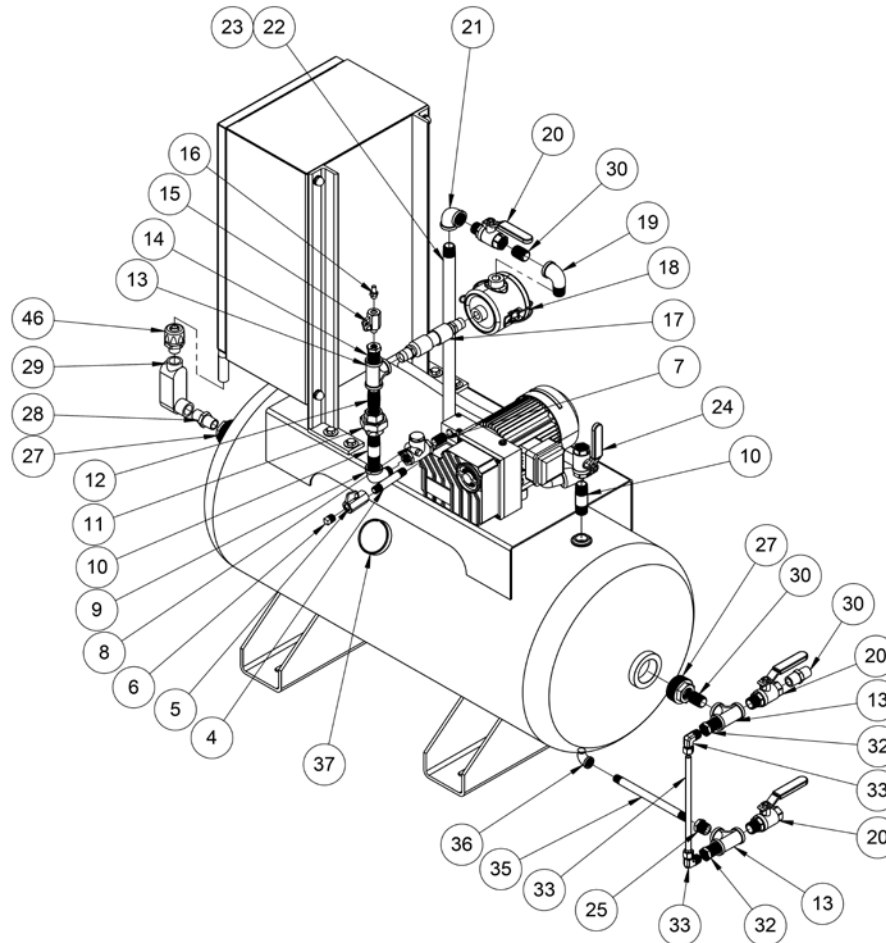
As a recommended accessory, our CVA series water trap should be installed in the main vacuum line to provide additional system protection from flooding. Each water trap includes a corrosion-resistant aluminum head, a clear polycarbonate housing to show accumulated liquid, an internal baffle to separate harmful liquids from the inlet air, a stainless steel separator screen, a 316 stainless steel ball float, elastomer ball seat, inlet and outlet isolation valves, a vacuum release valve to facilitate draining, a drain valve, and a liquid filled vacuum gauge. Standard connection sizes are available from 1/2" to 4" NPT.



Model	Width (in)	Height (in)	Connections (FPT)	Capacity (gallons)
CVA-050R	11.77	19.7	1/2"	0.4
CVA-075R	12.23	19.7	3/4"	0.4
CVA-100R	12.71	19.7	1"	0.4
CVA-125R	13.88	19.7	1-1/4"	0.4
CVA-150R	14.46	19.7	1-1/2"	0.4
CVA-200	17.96	21.5	2"	1
CVA-250	21.72	21.5	2-1/2"	1
CVA-300	27.25	25.12	3"	2
CVA-400	29.01	25.12	4"	2

Specification Assistance and CAD Drawings

We are an easy company to do business with and strive to make life easier for the customers, designers and engineers who partner with us. Our Sales & Engineering Consultants are ready to provide expert sizing and selection assistance, written specifications, budget pricing, and CAD drawings for all your projects in a prompt, professional manner.



About Us

Q-VAC is the comprehensive source for priming and offers a complete line of vacuum priming systems for the municipal, industrial, agricultural, marine, and power industries.

For decades, Q-VAC has been providing the best value in automatic priming systems. Q-VAC systems are engineered to provide the highest level of quality, performance, convenience, and value. With over 40 years of experience, our manufacturing capabilities, expertise, and attention to detail are unparalleled.

Q-VAC is a product of Combined Fluid Products Company (CFP). Established in 1975, CFP is renowned for product knowledge and application expertise, along with prompt, reliable service and the finest products available at competitive prices. Not only is CFP the comprehensive source for priming, CFP is a leading source for vacuum and compressed air pumps and systems, blowers, air knife systems, lubricants, and filters. CFP serves the OEM, distributor, and end user domestically and internationally from offices in Alabama, Illinois, Indiana, Michigan and Wisconsin.



Combined Fluid Products Company • 805 Oakwood Road • Lake Zurich, IL 60047 • USA
US Toll Free: (800) 521-2083 • Phone: +1 (847) 540-0054 • Fax: +1 (847) 540-0513
Email: sales@combinedfluidproducts.com • Website: www.vacuumprimingsystems.com



Priming System Application Guide

PLEASE COMPLETE AND FAX THIS FORM TO +1 (847) 540-0513
An easy, online version is available at www.vacuumprimingsystems.com

Name: _____ Title: _____

Company: _____

Street: _____

City: _____ State/Province: _____

Zip/Postal Code: _____ Country: _____

Telephone: _____ Ext: _____ Email: _____

1. What is the total volume that needs to be primed? _____ Ft³
(Suction inlet piping + displacement of pump(s))?
2. What vertical lift is needed from the lowest water level? _____ Feet
3. How quickly does the system need to be primed? _____ Minutes
4. What is the altitude of the installation site? _____ Feet Above Sea Level
5. Will the system be installed indoors? _____
6. What type of system is required, simplex or duplex? _____
7. Do you need automatic (standard) or manual controls? _____
8. What vacuum technology is preferred? Factory's choice, rotary vane, liquid ring, or piston?
Why? _____
9. How many pumps will be connected to the priming system? _____
10. What operating voltage is needed? _____ Volts _____ Hz _____ Phase
11. How many priming systems are needed? _____
12. Are there any special requirements? _____
13. Will your company be purchasing the priming system or specifying it for others? _____
14. Will this purchase be for resale? _____
15. What is the project name/reference? _____
16. When will the priming system for this project be ordered? _____
17. When will the priming system need to be on-site for installation? _____

Questions? Please contact our experienced Sales & Engineering Consultants
US Toll Free: (800) 521-2083, Phone: +1 (847) 540-0054, Email: experts@vacuumprimingsystems.com

Q-VAC

AUTOMATIC PRIMING SYSTEMS

Why Vacuum Priming?

Continuously maintains prime

Eliminates start-up issues

Reduces construction and equipment expenses

Increases pumping efficiencies

Only one system needed per pump room

Why Q-VAC?

Innovative, user-friendly designs

High performance, small footprint

Prompt, professional service

Worldwide sales and installations

Trouble-free, quiet operation

Vacuum experts since 1975



The Comprehensive Source for Priming

Q-VAC offers a full range of standard designs, a wide spectrum of performance levels, multiple vacuum technologies, and a complete assortment of options and priming accessories. As your leading source, Q-VAC Automatic Priming Systems are engineered to provide the highest level of quality, performance, convenience, and value. Our manufacturing capabilities, expertise, attention to detail, and service are unmatched in the industry.



Combined Fluid Products Company • 805 Oakwood Road • Lake Zurich, IL 60047 • USA
US Toll Free: (800) 521-2083 • Phone: +1 (847) 540-0054 • Fax: +1 (847) 540-0513
Email: experts@vacuumprimingsystems.com • Website: www.vacuumprimingsystems.com