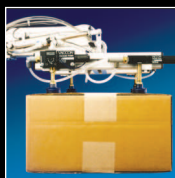


End-of-Arm Tooling

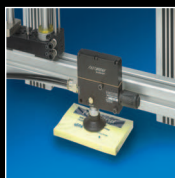
*Vaccon...
Better Design
Better Performance
Better Value
Simply Better!*



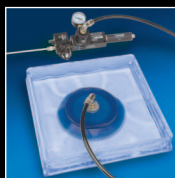
Cartridges



**Modular Vacuum
Pumps**



**Pneumatic Blow-off
Vacuum Pumps**



**Air Saver
Pumps**



**Adjustable Dirt
Tolerant Pumps**



Cups



**Material
Conveying**



**Air/Amplifiers
Blowers**

*Serving the:
Robotics, Automation, Packaging, Electronics, Printing, Automotive, Pharmaceutical,
Plastics, Food Processing, Chemical, Medical, Appliance, Laboratory, Glass, Paper, Gas,
Marine, Injection Molding, HVAC, and Process Control Industries for over 35 years*

VACCON

VACUUM PRODUCTS

We've made important changes to our catalog and website so you can find, configure and purchase products faster and easier than ever.

1. Find It:

Expanded product offering means the right product for the job. Comprehensive print catalog and website with integrated digital catalog improves searching and is available 24/7.



2. Configure It:

Exploded views show all options available for each product on one page. Build your pump online either with CAD or the online store configurator - get 2D/ 3D CAD models, images, part numbers and pricing for your exact configuration.

3. Buy It:

- Contact your local **Vaccon Distributor**
- Online store @ **www.vaccon.com**
- Contact Vaccon directly at **info@vaccon.com** or **508-359-7200**
- Use our **Live Online Chat** available on our website 8AM - 5PM, EST, Monday - Friday.

We understand the on-demand world and maintain a large inventory to ship same day for these in stock products.

Technical Support:

Our vacuum experts are proven problem solvers with years of practical, hands-on experience. Contact us by phone, email, online chat, or visit our website. Unsure which product or combination of products will work best in your application? Send your product to Vaccon for evaluation and product recommendation. We will test your product, take photos and videos, and email you with the results.



Your Local Distributor:

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	DF Series See Page.....	218			• Universal Mounting Brackets • Manifold Block/ Cup Mount	
					• Extrusions • Push-to-Connect Fittings	

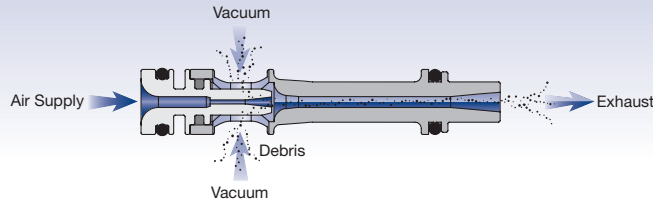
Why
VACCON
 VACUUM PRODUCTS
It's Simple!

How Vacuum Pumps Work

“Designed for Dirt” – Vaccon pumps don’t lose suction or require maintenance.

Vacuum pumps by nature, suck in the atmosphere they operate in. Whatever debris, dirt and/or dust are in the air will be drawn into the pump. Whether your application is carton erecting, pet food bagging or sheet feeding die-slick coated metal into a press, Vaccon pumps operate continuously without maintenance or vacuum filters that can clog, degrade performance, cause downtime and increase costs.

Vaccon Venturi Cartridges – The Indestructible Vacuum Engine



- **Non-clogging - no maintenance**

Vaccon’s advanced venturi design generates high internal velocities that carry dirt through and out of the pump. With no obstacles to impede flow or trap dirt, Vaccon pumps never lose suction or require maintenance. *It’s that simple.*

- **High flow - high performance**

Knowing that the majority of work is done above 9”Hg [305mbar], Vaccon specifically designed its single stage venturi’s to provide higher flows at the upper vacuum levels. In most cases, our flow rates at the upper levels exceed multi-stage pumps by a factor of 2 to 7 times.

- **Compact - close**

For 40 years, Vaccon’s design philosophy has been “Keep it simple and small.” Our compact, single stage venturi’s require little installation space and can be positioned close to the vacuum point for faster response, increased safety and greater productivity.

- **Streamlined design and quick assembly**

Now, Vaccon pumps can be mounted to T-slot extrusions making design and assembly quick and easy.



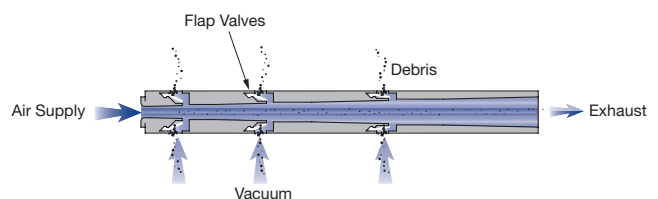
Vaccon’s Mid Series Venturi Vacuum Cartridges – Nylon – lightweight – non-clogging – debris passes through the venturi and out the exhaust.

Multi-stage Design Flaw - Flap Valves!

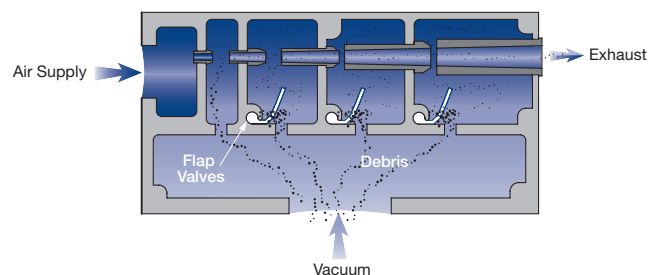
- Flap valves get stuck open from ingested debris.
- To protect these flap valves, an intake filter is required.
- Intake filters get clogged and cause loss of suction.
- Loss of suction causes production to stop until maintenance is performed and/or replacement of the intake filter and/or the flap valves occurs.

Result: Multi-stage pump flap valves cause downtime, increase operating expenses - maintenance and replacement costs

Typical in-line multi-stage pump



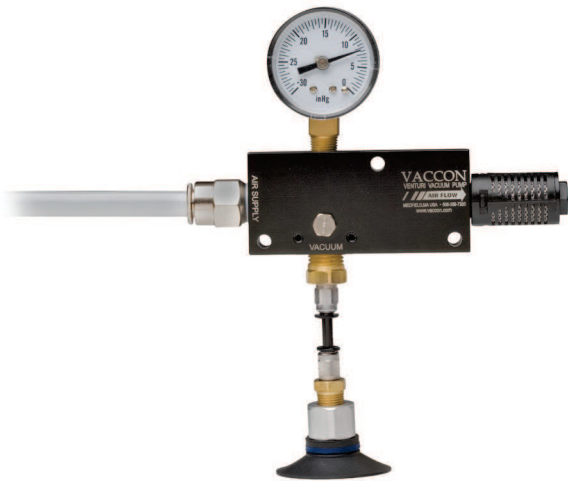
Typical multi-stage pump



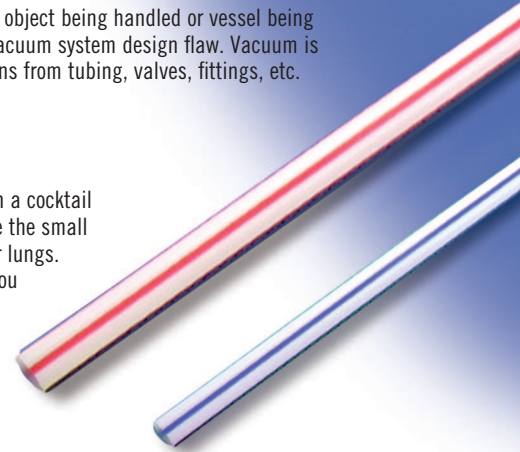
**When performance, production and reliability matter ...
It’s Vaccon Single-Stage Venturi’s – Simply Better!**

Design Your Vacuum System to Breathe... Avoid the #1 System Design Flaw.

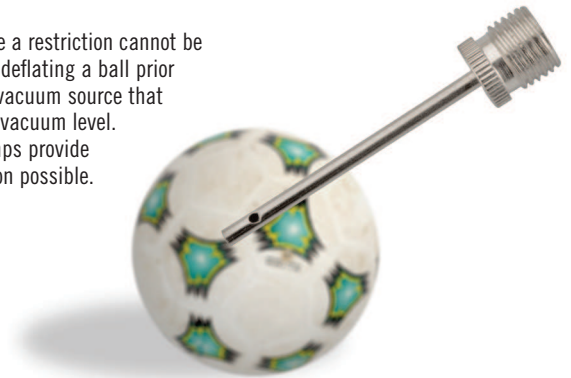
To ensure an efficient vacuum system, emphasis should be placed on the vacuum flow path beginning with the object being handled or vessel being evacuated and ending at the vacuum source. Improper sizing of the system components is the most common vacuum system design flaw. Vacuum is a low pressure power source (max value of 14.7 PSI, [1 bar]) whose effectiveness is easily reduced by restrictions from tubing, valves, fittings, etc.



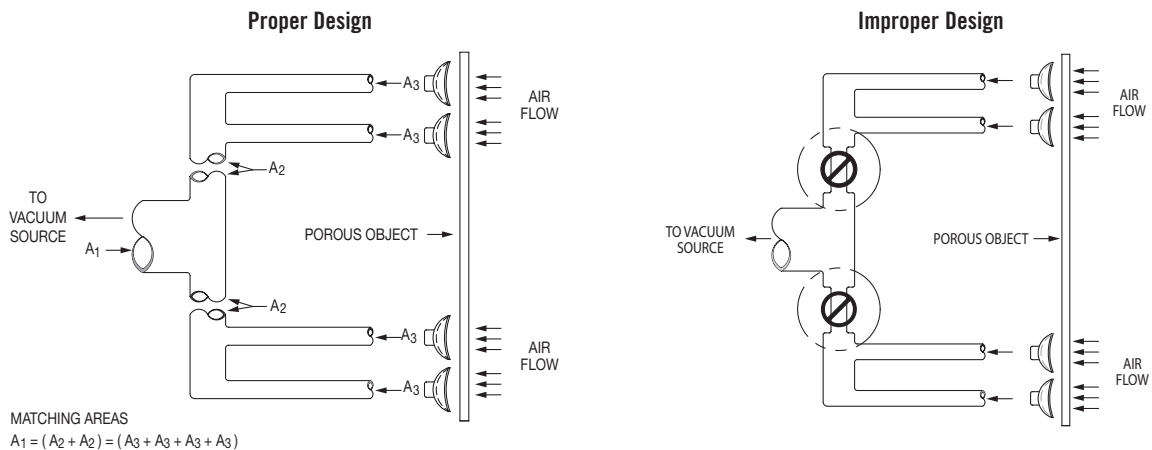
An excellent analogy is trying to breathe through a cocktail straw. It's almost impossible to survive because the small flow path will not allow enough air to reach your lungs. A drinking straw with its larger flow path let's you breathe much easier by allowing more flow.



In applications where a restriction cannot be eliminated i.e. when deflating a ball prior to shipping – use a vacuum source that can generate a high vacuum level. Vaccon H Series pumps provide the fastest evacuation possible.



To determine if your system is restricting vacuum flow, place a vacuum gauge at the pump. If the gauge reads vacuum when nothing is connected to the vacuum cup or a vessel is not attached, the system is restricting flow. If the system is not working, i.e. not picking up a porous object or not evacuating a vessel fast enough, a larger vacuum pump will not fix the system until the flow path size is increased.



Plumbing a vacuum system can be thought of like a municipal water distribution system where the lines closest to the pump are the largest and get smaller as they get to your house (vacuum cup/ vessel). The area of each branch of tubing should match that of the next branch and the main trunk line should be sized to handle the maximum flow. **Remember that just a small change in diameter causes a large change in area - a 2x change in diameter increases the area 4x.**

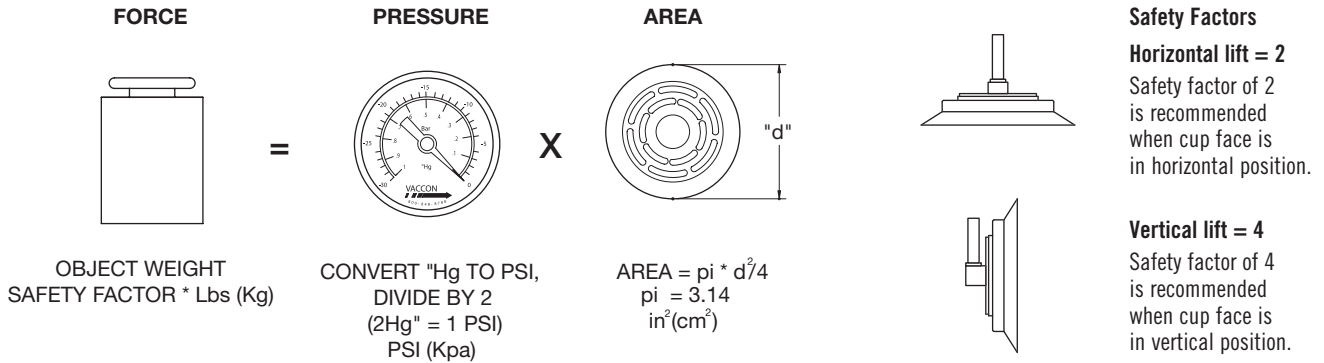
Vacuum Pump Selection Guide

1. Pick and Place/Material Handling:

Pick and Place/Material Handling refers to lifting, gripping, rotating and positioning of an object through the use of a vacuum pump and vacuum cup.

Use the Equation: Force = Pressure X Area to determine:

- Lifting capacity of the pump and cup
- Required vacuum area, i.e. diameter of the cup – see cup section for a more detailed explanation
- Required vacuum level of vacuum pump



Force = Pressure x Area where:

F = the weight of the objects in lbs [kg] multiplied by the safety factor above.

P = the expected vacuum level in PSI [Kpa], remember to convert "Hg to PSI by dividing by 2

A = the area of the vacuum cup measured in square inches. Use the equation $A = \frac{\pi d^2}{4}$

3 Vacuum Level Ranges:

- "L" or "F" Series 0-10"Hg, [0 to 339mbar] for low vacuum / high flow applications
- "M" or "D" Series 0-20"Hg, [0 to 677mbar] for medium vacuum / high flow applications
- "H" or "S" Series 0-28"Hg, [0 to 948mbar] for high vacuum / standard flow applications

3 Types of Material:

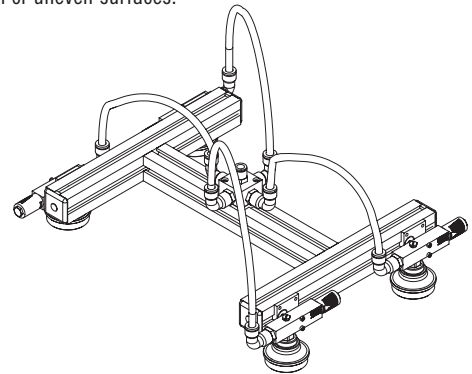
- Non-porous materials: steel, glass laminated chipboard, rigid plastic, semiconductors, etc.
- Porous materials: corrugated, wood, foam, felt, woven materials, objects with extremely rough or uneven surfaces.
- Flexible materials: plastic films, baked good, IV bags, paper bags – things that wrinkle.

Inexact Science

When handling porous materials such as corrugated or heavy fabric, it may be hard to choose the exact pump required because the leakage rate is not normally known. It is best to run a trial to test the ability of the pump to overcome the leakage. For existing systems, consult Vaccon for the equivalent pump size. For new applications, take advantage of Vaccon's 30 day Test & Evaluation program to ensure proper pump selection.

System Speed:

Cycle rate of the pump/cup system is determined by the evacuation speed of the venturi. **See Vessel Evacuation.**



Increase safety, reliability and speed by using one pump and one cup at each location. Should one cup fail the others will maintain their grip.

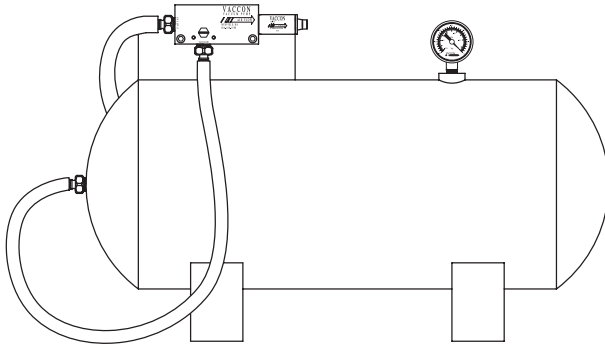
2. Vessel Evacuation:

In many process applications it is necessary to evacuate a vessel for the purpose of purging gases, leak testing and degassing viscous fluids. It may also be simply the length of tubing between the pump and cup.

Knowing the evacuation speed will help determine process completion time or the production rate of a pick and place system.

To find the speed, use the evacuation charts listed in the performance data for each venturi. Note that the charts are based on a one cubic foot volume.

1. Determine the total volume to be evacuated – vessel and/or vacuum lines (cu. ft.), 1728 cu. in = 1 cu. ft.
2. Desired vacuum level Hg [mbar] is determined by customer
3. Time to reach vacuum level (seconds) – determined by customer



Application Assumptions:

Vessel volume: 2 cu ft
 Vacuum line: 3/8" ID, 3 ft length

Application #1

Evacuate Vacuum Lines Between Vacuum Cup and Pump

Desired Vacuum level: 28"Hg
 Evacuation time: 10 seconds or less

1. Volume = Area of Tubing ID x Length

$$\frac{\pi d^2}{4} \times L = \frac{\pi (.375)^2}{4} \times 3' = 0.11045$$
2. Multiply 0.11045 x length of tubing in inches
 $0.11045 \times 36 = 3.976 \text{ cu. in.}$
3. Convert cu. in. to cu. ft – divide by 1728
 $3.976 / 1728 = 0.0023 \text{ cu. ft. (volume of tubing)}$
4. In evacuation chart – go to vacuum level required
 $28''\text{Hg} = 790.80 \text{ seconds per cu. ft.}$
5. Multiply cu. ft (0.0023 x 790.80) = 1.82 seconds

Answer:

Depending on the style of pump and options needed, choose from either the VP Series or J Series pumps – they all have the ability to meet your application requirements.

Application #2

Evacuate Vessel and Vacuum Lines Find Total System Volume

Desired Vacuum level: 28"Hg
 Evacuation time: 5 minutes or less

1. Add vessel volume + tubing volume (Application 1)
 $2 \text{ cu. ft} + 0.0023 \text{ cu. ft.} = 2.0023 \text{ cu. ft.}$
2. In evacuation chart – go to vacuum level required
 $28''\text{Hg}$ – start with smallest pump first until you find the time that meets your requirements.
 Note, you may have to go to larger pumps
3. Multiply cu. ft (2.0023 x 125) / 60 = 4.17 minutes

Answer:

Depending on the style of pump and options needed, choose from either the VP Series or J Series pumps – they all have the ability to meet your application requirements.

Model#	Evacuation Time in Seconds Based on 1 Cu. Ft. Volume /"Hg										
	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	27"Hg	28"Hg
60H	0.00	15.00	29.80	50.60	74.20	102.80	135.90	183.20	245.90	410.20	790.80
90H	0.00	6.50	12.30	18.90	32.50	47.00	65.40	92.20	130.00	222.20	281.30
100H	0.00	2.70	6.50	11.20	17.50	25.80	38.40	55.40	79.20	166.70	251.80
150H	0.00	2.30	3.80	6.50	10.20	14.10	21.30	44.90	55.00	81.00	125.00

Vacuum Terms and Definitions

Air Consumption:	The volume of compressed air required to power the pump.
Atmospheric Pressure:	The atmosphere that surrounds the Earth can be considered a reservoir of low pressure air. Its weight exerts a pressure that varies with temperature, humidity and altitude.
Barometer:	A device usually filled with mercury that measures atmospheric pressure.
Compressed Air Considerations:	1HP @ 80 PSI generates 4 SCFM of flow.
Standard or Average Atmospheric Pressure at Sea Level:	29.92"Hg or [760mm Hg]
Vacuum Flow:	The volume of free air induced by the vacuum pump per unit of time, expressed as standard cubic feet per minute – SCFM or [liters per minute - lpm]
Vacuum Force:	Equal to the vacuum level X the area of the vacuum surface, i.e. holding area of a vacuum cup.
Vacuum Level:	The magnitude of the suction created by the vacuum pump. The unit of measure is inches of Hg ("Hg) or (mbar). Vacuum level is affected by elevation and barometric pressure. For each 1,000 feet of elevation, vacuum level decreases by 1" of Hg.
Venturi's, Ejectors, Transducers, Generators:	All are air powered vacuum pumps, just different names.

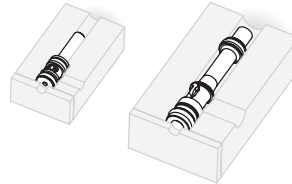
Facts to Remember:

- 50 mmHg = 1 PSI
- 1mmHg = 1 torr (vacuum)
- 1"Hg = 25.4 mmHg
- 2"Hg = 1 PSI
- 29.92"Hg = 100 Kpa
- 14.7 PSI = 100 Kpa
- 14.7 PSI = 29.92"Hg
- 14.7 PSI = 760 mmHg

Conversion Chart – Vacuum vs. Pressure				
% Vacuum	"Hg	mmHg	bar	PSI
10	3	76.92	-0.1	-1.47
20	6	153.85	-0.2	-2.94
30	9	230.77	-0.3	-4.41
40	12	307.69	-0.4	-5.88
50	15	384.62	-0.5	-7.35
60	18	461.54	-0.6	-8.82
70	21	538.46	-0.7	-10.29
80	24	615.38	-0.8	-11.76
90	27	692.31	-0.9	-13.23
100	30	769.23	-1.0	-14.70

Venturi Vacuum Cartridge Assemblies

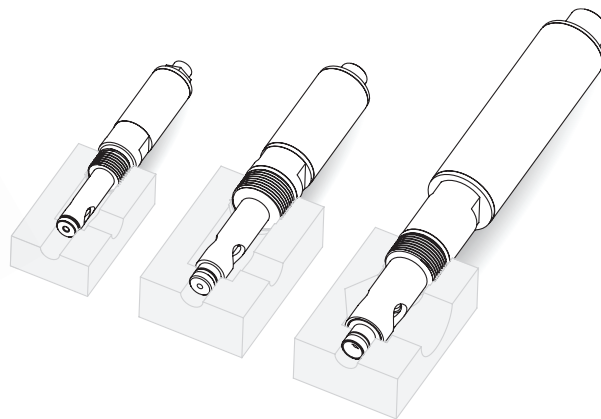
Vaccon's Venturi Vacuum Cartridges are the heart of the Modular Venturi Vacuum Pump. These cartridges are ideal for OEM's requiring custom vacuum applications. Vaccon's Venturi Vacuum Cartridges are available as Push-in or Threaded and in lightweight plastic or aluminum/brass for use in harsh environment. Cartridges can also be custom made in any material for use in extreme environments. Contact us for more info.



Min and Mid Series Push-In Cartridges

Push-In Venturi Vacuum Cartridges are used on all Modular Venturi Vacuum Pumps. Stand-alone cartridges are used in field interchanges and are ideal in many OEM applications.

See Page **8**



Mid and Max Series Threaded Cartridges

Threaded Venturi Vacuum Cartridges are used on all Modular Venturi Vacuum Pumps. Stand-alone cartridges are used in field interchanges and are ideal in many OEM applications.

See Page **20**

Cartridges

Push-In Venturi Vacuum Cartridges for Vaccon Pumps & OEM Equipment

For Min and Mid Series VP Pumps



Venturi cartridge in pump body or OEM cavity (Mid Series)



Mid Series Cartridges in Nylon



Custom Manifold with Min Series Cartridges

Standard Cartridges:

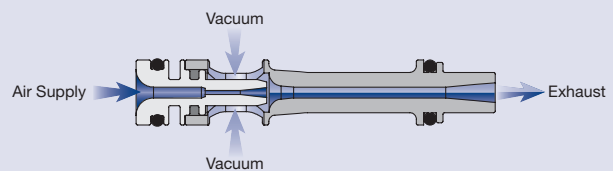
Vaccon offers 13 different single-stage venturi vacuum cartridges for the Min and Mid Series vacuum pumps and manifolds. Ideally suited for machine designers, venturi cartridges easily fit into OEM cavities creating an unrecognizable (proprietary) vacuum source. "Vaccon Cartridges - The Power Inside."

Vacuum cartridges are a combination of interchangeable nozzles and diffusers that enable you to optimize pump performance based on desired vacuum level, vacuum flow, evacuation speed and air consumption. If the product changes in size, porosity, or weight, you can refit the existing equipment with a different cartridge by simply swapping the entire cartridge, or just the nozzle or diffuser.

Changing cartridges can be performed in a matter of seconds, in the field with minimal downtime. Mid Series cartridges are color-coded based on performance characteristics for easy visual identification.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Flexible manufacturing environments
- Robotics / End-of-Arm Tooling
- Pick and place
- Integrate into blood or gas analysis machines
- Vessel evacuation
- Vacuum filling, vacuum chucking
- Medical Applications – diagnostic equipment, disposal products

Features/Benefits

- Saves space – eliminates the need for an external pump, install close to vacuum point
- High Productivity – powerful vacuum up to 28"Hg [948mbar], fast response time
- Compact & lightweight – reduces overall equipment weight
- Efficient – minimal air consumption, high performance
- Straight through design – reliable, no moving parts to wear out or get clogged, no maintenance
- Performance Optimization – precise control of flow and vacuum level

Performance Level Designations:

"L" 0-10"Hg, [0 to 339mbar] for low vacuum/high flow applications (not available for Min Series)

"M" 0-20"Hg, [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg, [0 to 948mbar] for high vacuum/standard flow applications

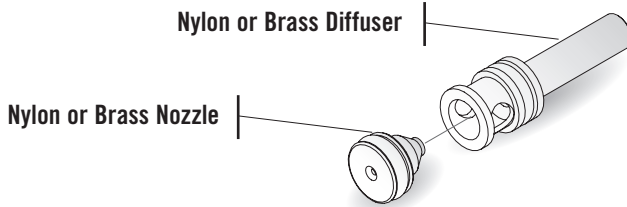
Cartridge Options:

- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional
- For chemical compatibility requirements, food or medical applications, custom materials and sizes are available including stainless steel (303, 304, 316, 316L), PVC, PEEK, Teflon®, Delrin® and more.

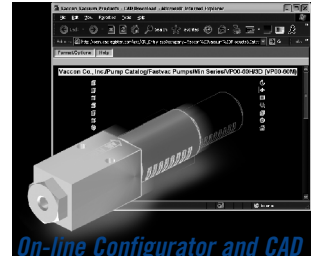
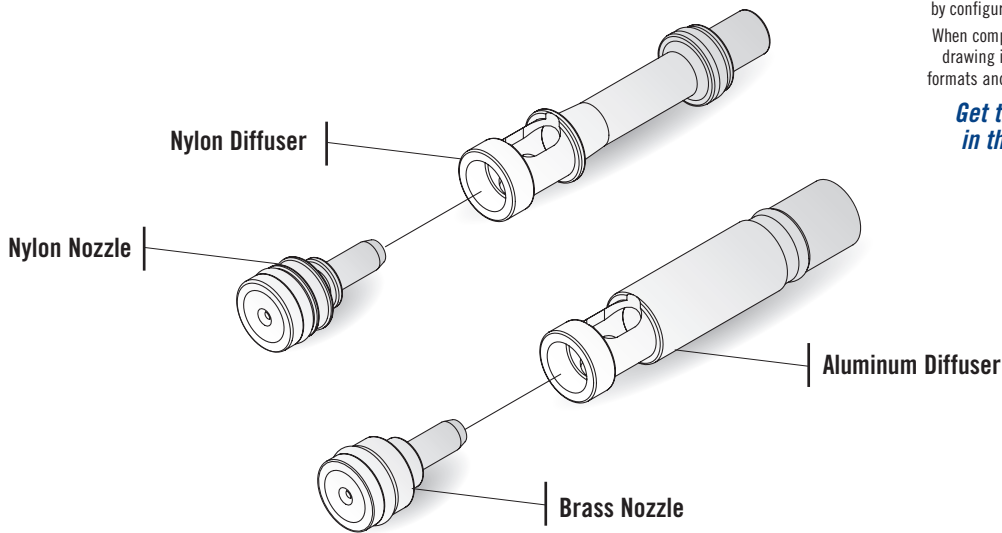
Push-In Venturi Vacuum Cartridges (Min and Mid Series) Configurations and Options:

All Vaccon cartridges offer a variety of options and accessories to meet your specific requirements. Please configure your cartridge from the options listed below.

CM60 – Min Series Cartridge = Nozzle & Diffuser with Buna N O-rings



C – Mid Series Cartridge = Nozzle & Diffuser with Buna N O-rings



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

Min Cartridges **CM60 - H - PL - 60**

Mid Cartridges **C - 60 - H - PL - 60**

P/N	Pump Style
CM60	Mini Cartridge (M or H only)
C	Mid Series Cartridges

P/N	Max. Flow Level
60	Mid Series Only
90	Mid Series Only
100	Mid Series Only
150	Mid Series Only

P/N	Operating Pressure
60	80 PSI [5.5BAR] - Standard 60 PSI [4.0BAR]

P/N	Material Selection
PL	Nylon - Standard Aluminum/Brass - Option

P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]

For complete Performance Data, see page 14.

Venturi Vacuum Cartridges

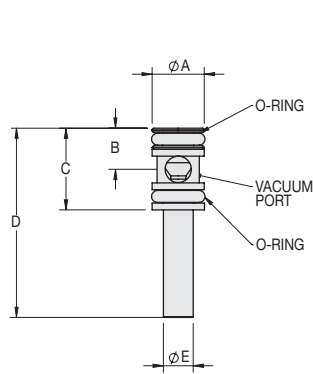
Min Series Push-In Venturi Cartridges: CM60 (M or H)



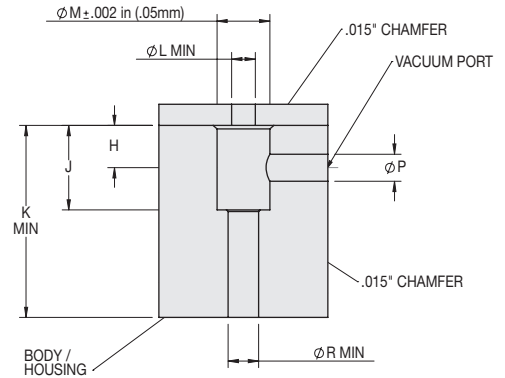
Part Number: CM60H-PL
Standard Material: Nylon-Black
Weight: 0.03 oz [0.8g]



Part Number: CM60H
Optional Material: Brass
Weight: 0.17 oz [4.7g]



Min Series Cartridge dimensions are the same for nylon and brass



Min Series Cartridge housing

Model #	Imperial Dimensions (in.)													
	A	B	C	D	E	F	H	J	K	L	M	N	P	R
CM60 (M, H) -PL	0.312	0.25	0.49	1.13	0.17									
CM60 (M, H)	0.312	0.25	0.49	1.13	0.17									
Housing						0.25	0.50	1.14	0.14	0.312	0.36	0.16	0.02	0.18
Model #	Metric Dimensions (mm)													
	A	B	C	D	E	F	H	J	K	L	M	N	P	R
CM60 (M, H) -PL	7.92	6.2	12.3	28.6	4.3									
CM60 (M, H)	7.92	6.2	12.3	28.6	4.3									
Housing						6.2	12.6	28.8	3.6	7.92	9.1	4.0	0.6	4.6

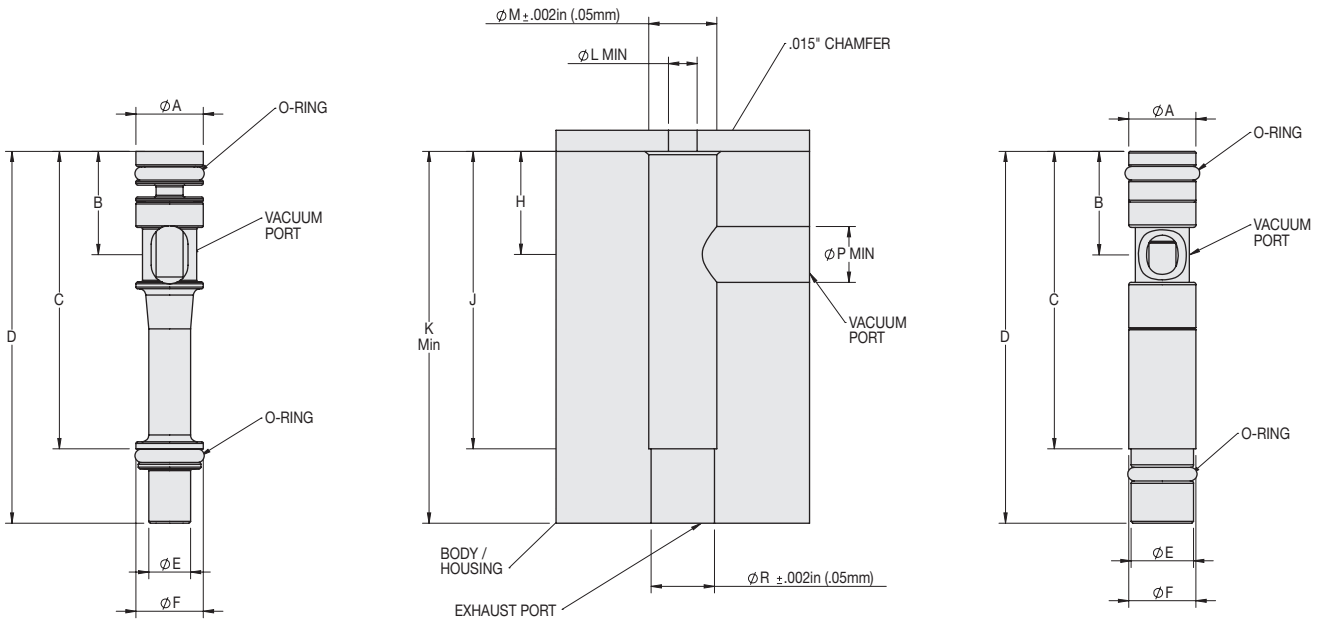
Min Series Push-In Venturi Cartridge Specifications:

- Cartridge Material:** Standard: Nylon & Buna-N O-rings
- Optional Materials:** Brass & Buna-N O-rings, Stainless Steel, PVC, Peek, Teflon®, Delrin®
Consult factory for availability
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -30°~250°F [-34°~121°C]
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Min Series Push-In Venturi Cartridge Operating and Installation Requirements:

- Supply Line:** Min. 5/32" [4mm], 1/4" O.D. [6mm] tube preferred for supply lines exceeding 3' [1M]
- Control Valve:** 3 way (faster part release), minimum orifice - 0.062" diameter [1.57mm]
- Vacuum Line:** 1/4" [6mm] tube preferred, for short runs 5/32" [4mm] may be used
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF125LPM. See Page 278.

Mid Series Push-In Venturi Cartridges C (60, 90, 100, 150) (L, M, H)



Cartridge housing for both nylon and metal cartridges

Part Number: C60, 90, 100, 150 (L, M, H) -PL
 Standard Material: Nylon
 Weight: 0.08 oz [2.3 g]

Part Number: C60, 90, 100, 150 (L, M, H)
 Optional Material: Aluminum/Brass
 Weight: 0.47 oz [13.2 g]

Model #	Imperial Dimensions (in.)														
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S
Nylon Cartridges - PL	0.402	0.61	1.76	2.20	0.25	0.402									
Metal Cartridges	0.402	0.61	1.76	2.20	0.37	0.402									
Housing							0.61	1.78	2.21	0.14	0.402	0.45	0.33	0.02	0.375
Model #	Metric Dimensions (mm)														
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S
Nylon Cartridges - PL	10.21	15.5	44.7	55.9	6.3	10.21									
Metal Cartridges	10.21	15.6	44.7	55.9	9.4	10.21									
Housing							15.5	45.1	56.1	3.6	10.21	11.3	8.3	0.5	9.53

Mid Series Push-In Cartridge Specifications:

- Cartridge Material:** Standard: Nylon, Buna-N O-rings
- Optional Materials:** Brass & Aluminum & Buna-N O-rings, Stainless Steel, PVC, Peek, Teflon®, Delrin®
Consult factory for availability
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -30°~250°F [-34°~121°C]
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

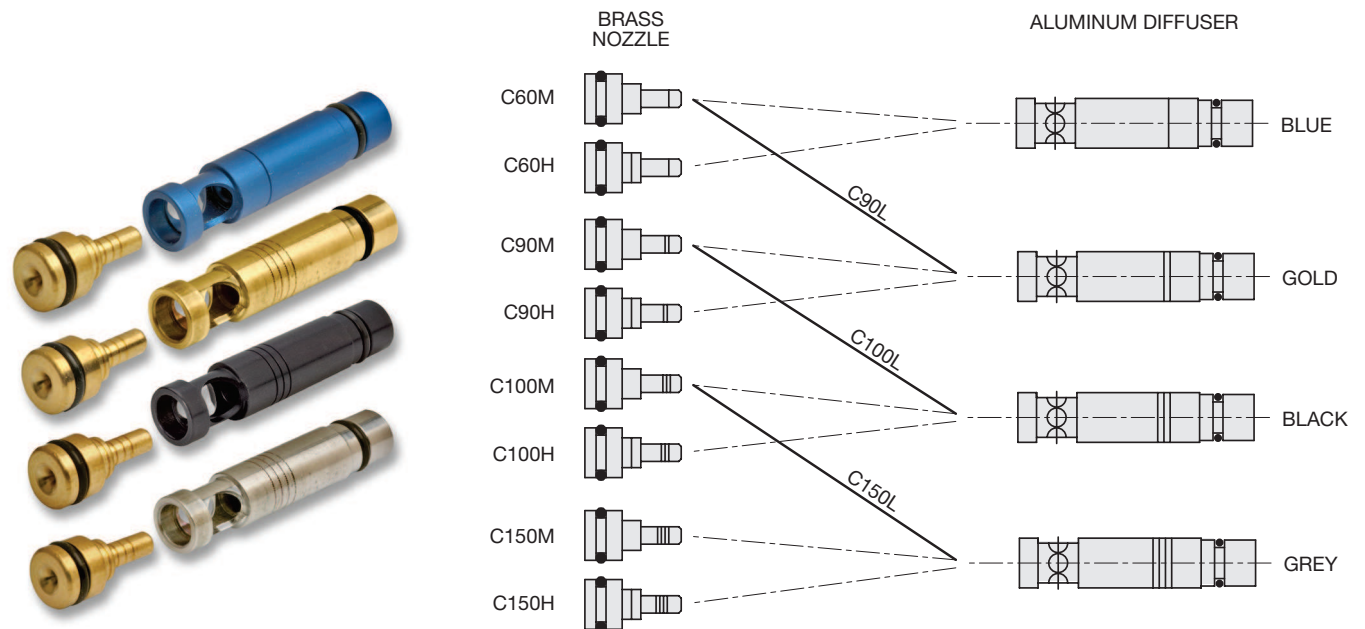
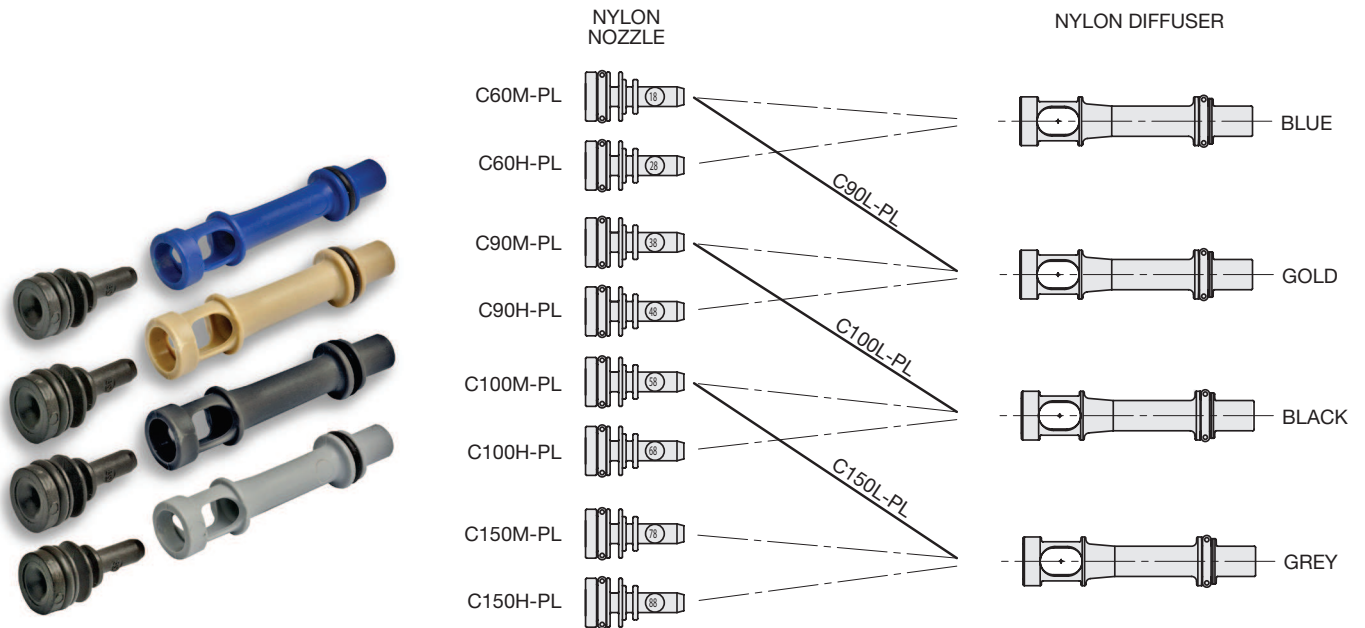
Mid Series Push-In Cartridge Operating and Installation Requirements:

- Cartridge size:** C60 (M, H) and C90 (L, M, H) C100 (L, M, H) and C150 (L, M, H)
- Supply Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF125LPM. See Page 278.



Venturi Vacuum Cartridges

Mid Series Push-In Cartridge Identification Chart



Custom Venturi Vacuum Cartridges

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications. Whether it's as simple as modifying a standard product, or more complex requiring new products with precise tolerances, or special materials, Vaccon has the solution.

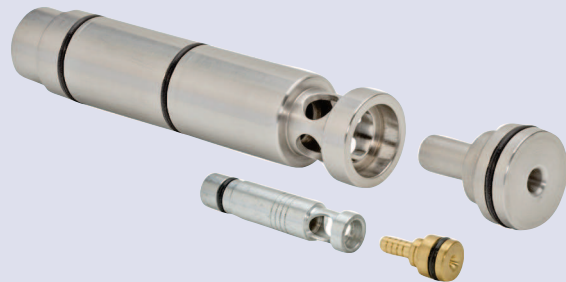
Custom materials available: Brass, Stainless Steel, PVC, Peek, Teflon®, Delrin® - consult factory.

Custom Cartridge: C350H-303 Stainless Steel

The C350H cartridge supplies the equivalent performance as VP90-350H or JS-350 vacuum pump. Designed to fit in a custom cavity. Other performance levels available. See Mid and Max Series Performance Data for options.

Common Applications:

- High temperature
- Caustic gas applications – smoke stack analysis
- Air testing
- Food processing
- Pharmaceutical
- Corrosive chemical processing



*Top: Custom made C350H-303 stainless steel venturi cartridge 5.375" L x 1" dia.
Bottom: Standard Mid Series C150H aluminum/brass cartridge is 2.2" L x 0.40" dia.
Both cartridges generate up to 28"Hg.*

Custom Min Series Cartridges in Nylon or Brass

Min Series cartridges are available in nylon or brass and can reach up to 28"Hg. Designed to fit in a custom cavity. Other performance levels available. See Min Series Performance Data for options.

Common Applications:

- Medical – disposable applications
- Electronic
- Air monitoring
- Gas/liquid sampling
- Pick and place of small items



*Top: Standard CM60 Min Series Cartridge 1.13" L x 0.31" dia.
Bottom: Custom CM60 Min Series Cartridge 1.06" L x 0.24" dia.*

Performance Data for Min Series Cartridges

M-Series Cartridges for Medium Vacuum Applications

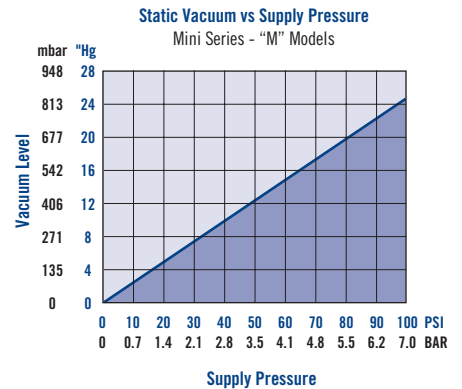
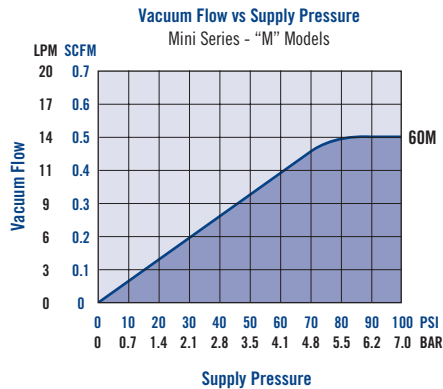
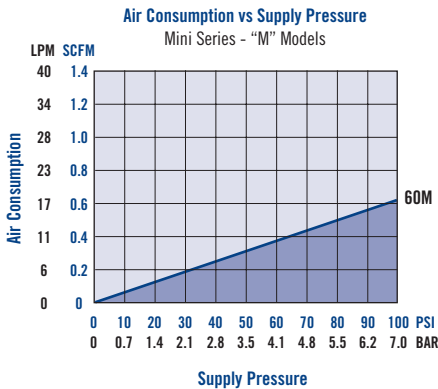
M is for “Medium” vacuum levels up to 20” Hg [677mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial - Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
CM60M	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
		Evacuation Time in Seconds based on 1 Cu. Ft. Volume/”Hg							
		0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00

Model #	Air Consumption L/min	Metric - Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677mbar
CM60M	14.2	0.0	11.3	8.5	6.2	4.2	2.3	0.8	0.0
		Evacuation Time in Seconds based on 1 Liter Volume / mbar							
		0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Min Series Cartridges

H-Series Cartridges for High Vacuum Applications

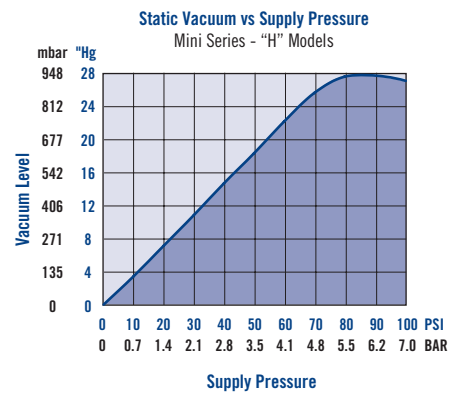
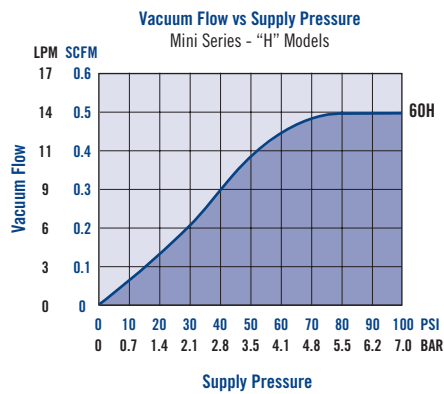
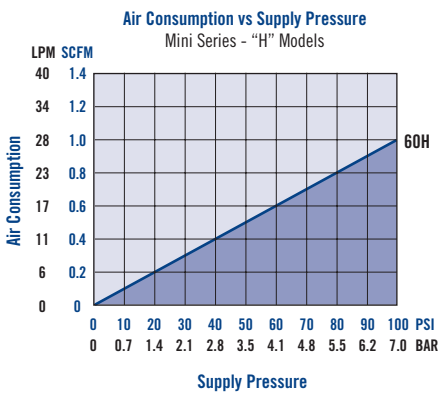
H is for “High” vacuum levels up to 28” Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.). The high vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

Model #	Air Consumption SCFM	Imperial - Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
CM60H	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
		Evacuation Time in Seconds based on 1 Cu. Ft. Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	928”Hg
		0.00	15.00	29.80	50.60	74.50	102.80	135.90	183.20	245.90	410.20	790.80

Model #	Air Consumption L/min	Metric - Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
CM60H	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
		0.00	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Cartridges

L-Series Cartridges for Low Vacuum Applications

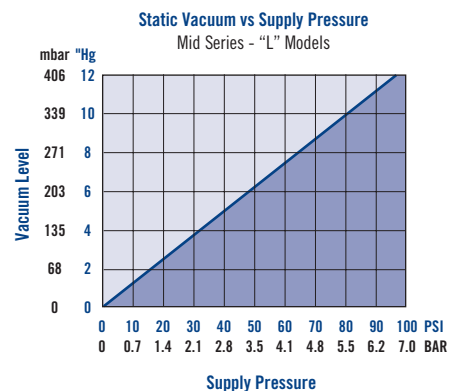
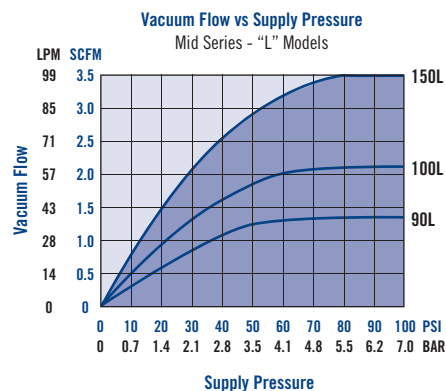
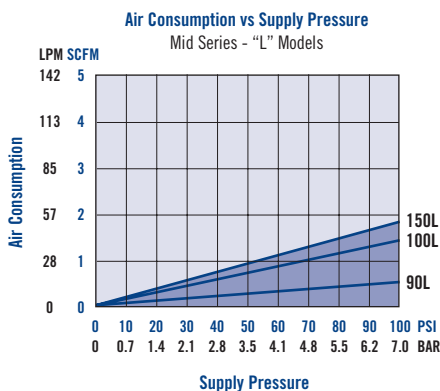
L is for “Low” vacuum levels up to 10” Hg [339mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0” Hg	3” Hg	6” Hg	9” Hg	10” Hg
90L	0.50	1.30	1.10	0.70	0.20	0.00
100L	1.40	2.10	1.60	1.10	0.50	0.00
150L	1.80	3.50	2.50	1.90	0.70	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0” Hg	3” Hg	6” Hg	9” Hg	10” Hg
90L		0.00	3.26	7.93	18.65	39.63
100L		0.00	2.33	4.66	10.88	24.0
150L		0.00	1.54	4.36	10.77	22.83

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
90L	14.2	36.8	31.1	19.8	5.7	0.0
100L	39.6	59.5	45.3	31.1	14.2	0.0
150L	51.0	99.1	70.8	53.8	19.8	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
90L		0.0	0.1	0.3	0.7	1.4
100L		0.0	0.1	0.2	0.4	0.9
150L		0.0	0.1	0.2	0.4	0.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Cartridges

M-Series Cartridges for Medium Vacuum Applications

M is for “Medium” vacuum levels up to 20” Hg [677mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
60M	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
90M	1.40	1.40	1.25	1.20	1.05	0.85	0.65	0.25	0.00
100M	1.80	2.10	2.00	1.85	1.75	1.60	1.25	0.80	0.00
150M	2.80	3.50	3.20	2.95	2.75	2.50	1.80	0.95	0.00

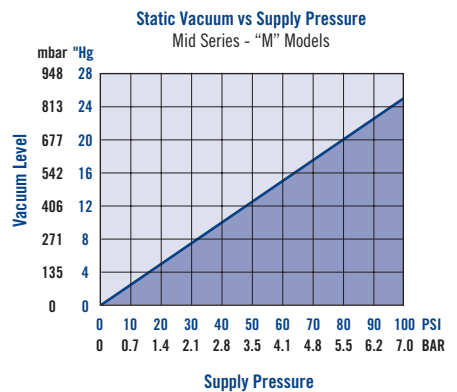
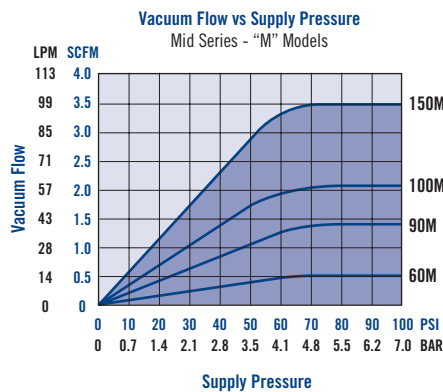
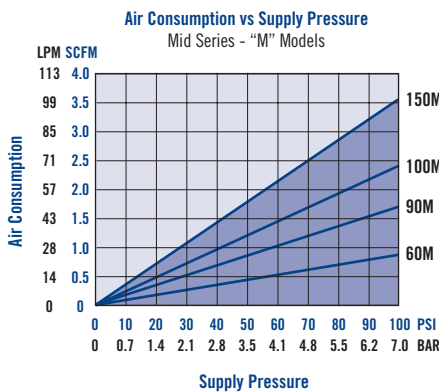
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
60M	0.50	0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00
90M	1.40	0.00	3.75	7.20	12.40	19.10	29.90	52.00	104.00
100M	1.80	0.00	2.65	5.80	9.90	16.20	22.90	36.20	56.60
150M	2.80	0.00	1.35	3.20	5.20	7.70	11.80	23.40	52.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
60M	14.2	14.2	11.3	8.5	6.2	4.2	2.3	0.8	0.0
90M	39.6	39.6	35.4	34.0	29.7	24.1	18.4	7.1	0.0
100M	51.0	59.5	56.6	52.4	49.6	45.3	35.4	22.7	0.0
150M	79.3	99.1	90.6	83.5	77.9	70.8	51.0	26.9	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
60M	14.2	0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0
90M	39.6	0.0	0.1	0.23	0.4	0.7	1.1	1.8	3.7
100M	51.0	0.0	0.1	0.2	0.3	0.6	0.8	1.3	2.0
150M	79.3	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Cartridges

H-Series Cartridges for High Vacuum Applications

H is for “High” vacuum levels up to 28” Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.). The High vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
60H	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
90H	1.80	1.20	1.00	0.95	0.90	0.85	0.75	0.70	0.52	0.47	0.20	0.00
100H	2.80	2.00	1.85	1.75	1.57	1.40	1.25	1.05	0.84	0.70	0.35	0.00
150H	4.80	3.20	2.80	2.50	2.30	2.00	1.60	1.40	1.20	0.80	0.50	0.00

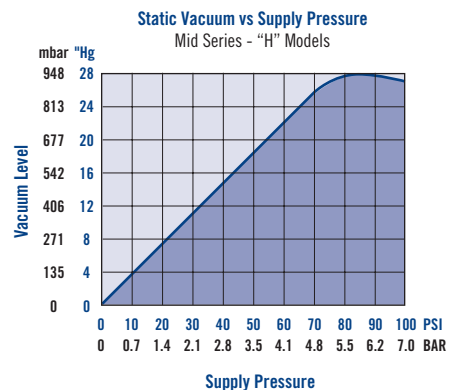
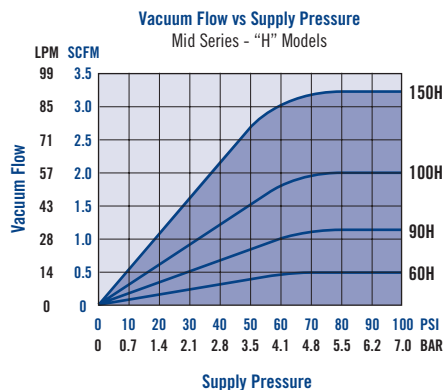
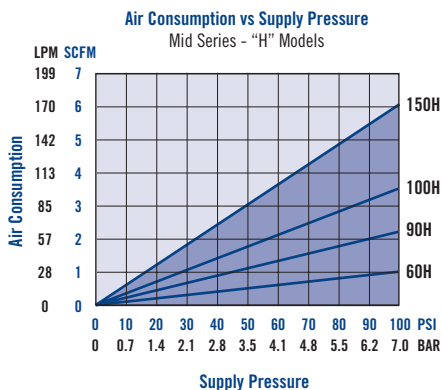
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg											
	0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg	
60H	0.00	15.00	29.80	50.60	74.50	102.80	135.90	183.20	245.90	410.20	790.80	
90H	0.00	6.50	12.30	18.90	32.50	47.00	65.40	92.20	130.00	222.20	281.30	
100H	0.00	2.70	6.50	11.20	17.50	25.80	38.40	55.20	79.20	166.70	251.80	
150H	0.00	2.30	3.80	6.50	10.20	14.20	21.30	44.90	55.00	81.00	125.00	

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
60H	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
90H	51.0	34.0	28.3	26.9	25.5	24.1	21.2	19.8	14.7	13.3	5.7	0.0
100H	79.3	56.6	52.4	49.6	44.5	39.6	35.4	29.7	23.8	19.8	9.9	0.0
150H	135.9	90.6	79.3	70.8	65.1	56.6	45.3	39.6	34.0	22.7	14.6	0.0

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar											
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar	
60H	0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9	
90H	0.0	0.2	0.4	0.7	1.1	1.7	2.3	3.3	4.6	7.8	9.9	
100H	0.0	0.1	0.2	0.4	0.6	0.9	1.4	1.9	2.8	5.9	8.9	
150H	0.0	0.1	0.1	0.2	0.3	0.5	0.8	1.6	1.9	2.9	4.4	

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Threaded Venturi Vacuum Cartridges for OEM Equipment & Applications



C200M-TH threaded cartridge shown in manifold block - assembled/ unassembled.



Mid & Max Series Threaded Cartridges with removable silencers

Ideal Applications:

- Flexible manufacturing environments
- Robotics / End-of-Arm Tooling
- Pick and place
- Integrate into blood or gas analysis machines
- Vessel evacuation
- Vacuum filling, vacuum chucking
- Medical Applications – diagnostic equipment, disposal products

Features/Benefits

- Saves space – eliminates the need for an external pump, install close to vacuum point
- High Productivity – powerful vacuum up to 28”Hg [948mbar], fast response time
- Compact & lightweight – reduces overall equipment weight
- Efficient – minimal air consumption, high performance
- Performance Optimization – precise control of flow and vacuum level

Standard Cartridges:

Vacon offers 23 single-stage threaded venturi vacuum cartridges in the Mid & Max Series. Ideally suited for machine designers, venturi cartridges easily fit into OEM cavities creating an unrecognizable (proprietary) vacuum source. “Vacon Cartridges - The Power Inside.”

Vacon threaded venturi vacuum cartridges offer a wide range of performance levels enabling you to optimize pump performance based on desired vacuum level, vacuum flow, evacuation speed and air consumption. If the product changes in size, porosity, or weight, you can re-fit the existing equipment with a different cartridge by simply swapping the entire cartridge, or just the nozzle or diffuser.

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications (not available for Mini Series)

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

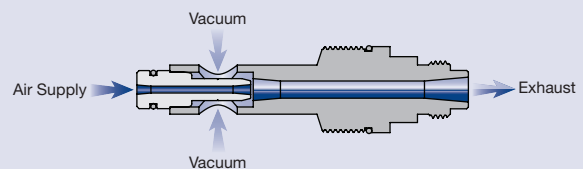
“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

Cartridge Options:

- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional
- For chemical compatibility requirements, food or medical applications, custom materials and sizes are available. Consult factory.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



Eliminate the Guesswork: Contact Us!

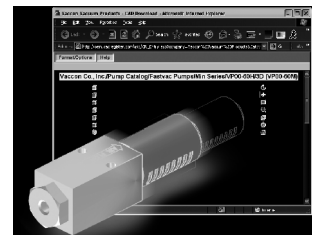
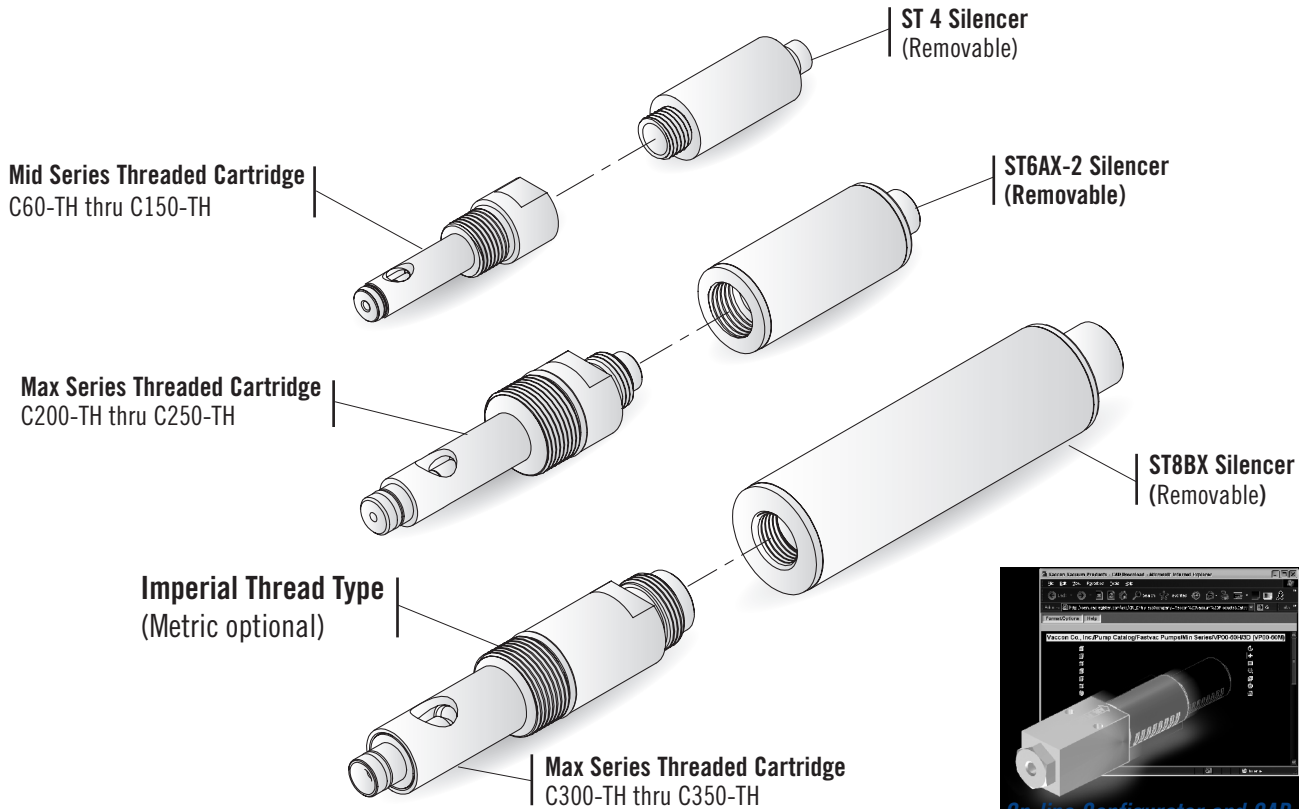
Vacuum technology isn't an exact science. To ensure proper product selection, Vacon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Threaded Venturi Vacuum Cartridges (Mid and Max Series) Configurations and Options:

Vaccon Mid & Max Series threaded cartridges are available with or without silencers. Vaccon strongly recommends the use of its ST Series silencers are designed with a straight through flow path that eliminates clogging by allowing the contaminants to pass directly through the silencer. Each silencer is tuned in proportion to its exhaust flow to minimize noise.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

Mid Cartridges **I - C60 - H - TH - 60**

P/N	Thread Type
I	Imperial Thread
	Metric Thread

P/N	Max. Flow Level
C60	Mid Series Only
C90	Mid Series Only
C100	Mid Series Only
C150	Mid Series Only
C200	Max Series Only
C250	Max Series Only
C300	Max Series Only
C350	Max Series Only

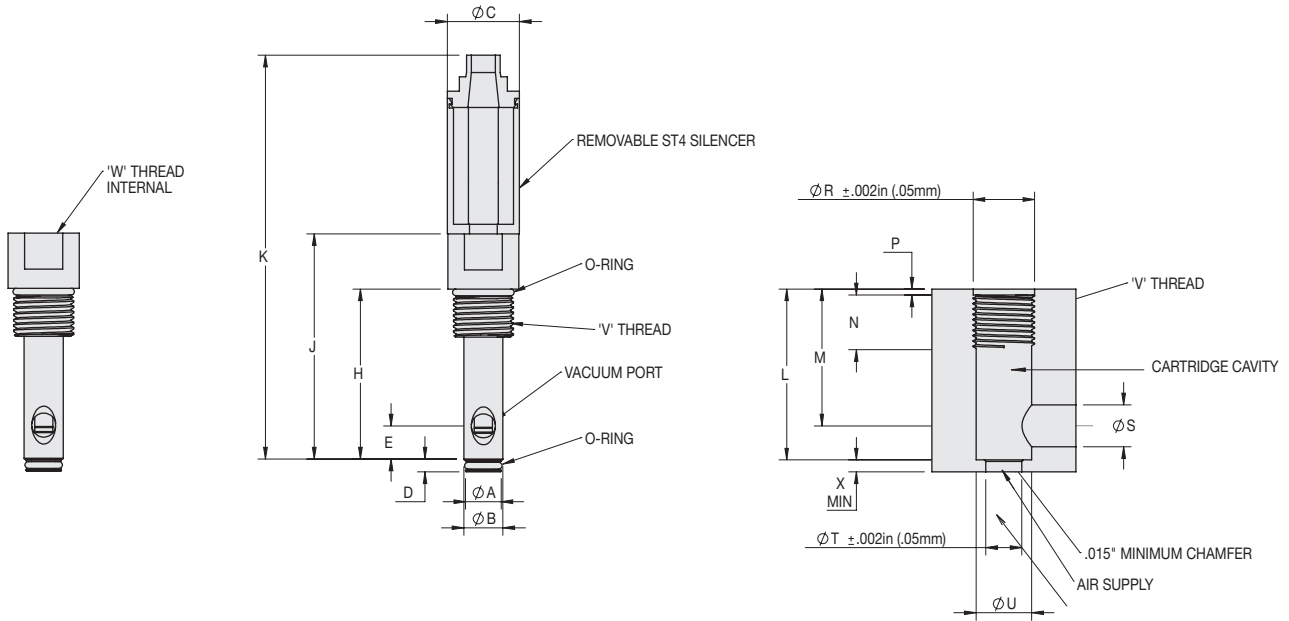
P/N	Operating Pressure
60	80 PSI [5.5BAR] - Standard
	60 PSI [4.0BAR]

P/N	Max. Vac Level
L	10"Hg [339mbar] (n/a C60)
M	20"Hg [677mbar]
H	28"Hg [948mbar]

For complete Performance Data, see page 26.

Venturi Vacuum Cartridges

Mid Series Threaded Cartridges I- C60/ 150-TH



Part Number: C60M-TH/ C150H-TH

Standard Material: Anodized Aluminum
 Weight: .069 oz [19.5 g]

Model #	Imperial Dimensions (in.)																		
C60/ 150-TH	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	U	V	W	X
Cartridge	0.37	0.41	0.75	0.13	0.36	1.78	2.36	4.22	-	-	-	-	-	-	-	-	5/8-18 UNF	1/4-18 NPS	-
Cavity	-	-	-	-	-	-	-	-	1.78	1.43	0.63	0.06	0.64	0.44	0.38	0.58	5/8-18 UNF	-	0.13
Model #	Metric Dimensions (mm)																		
I-C60/ 150-TH	A	B	C	D	E	H	J	K	L	M	N	P	R	S	T	U	V	W	X
Cartridge	9.40	10.36	19.05	3.18	9.14	45.21	59.94	107.06	-	-	-	-	-	-	-	-	M16x1.0	1/4-18 NPS	-
Cavity	-	-	-	-	-	-	-	-	45.21	36.32	16.00	1.60	16.26	11.11	9.53	14.68	M16x1.0	-	3.30

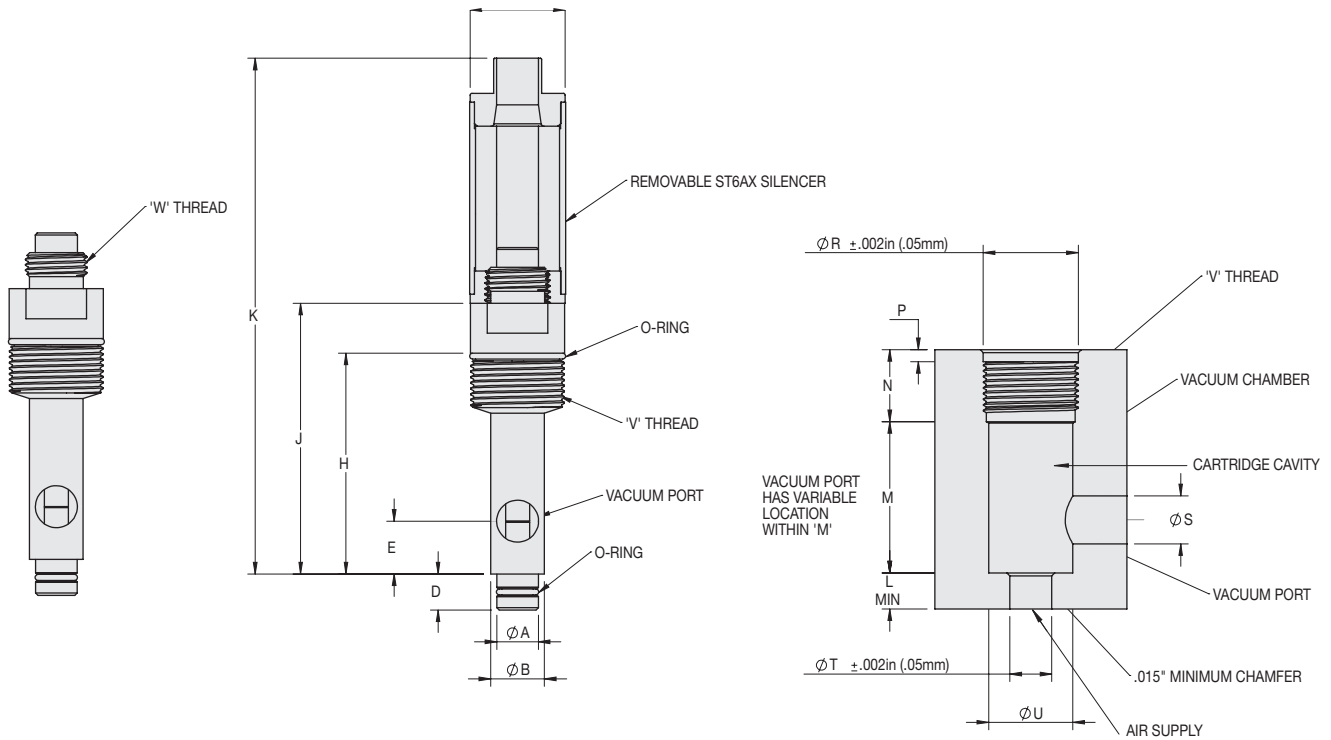
Mid Series Threaded Cartridge Specifications:

- Cartridge Material:** Standard: Anodized Aluminum, Buna-N O-rings
- Optional Materials:** Brass & Aluminum & Buna-N O-rings, Stainless Steel, PVC, Peek, Teflon®, Delrin®
Consult factory for availability
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -30°~250°F [-34°~121°C]
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Mid Series Threaded Cartridge Operating and Installation Requirements:

- Cartridge size:** C60(M, H)-TH and C90(L, M, H)-TH C100(L, M, H)-TH and C150(L, M, H)-TH
- Supply Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF125LPM. See Page 278.

Max Series Threaded Cartridges C200/ 250-TH



Part Number: C200L-TH/ C250H-TH

Standard Material: Anodized Aluminum

Weight: 1.87 oz [53.0 g]

Model #	Imperial Dimensions (in.)																	
C200/ 250-TH	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
Cartridge	0.43	0.56	1.00	0.38	0.55	1.74	2.30	2.82	5.37	-	-	-	-	-	-	-	-	7/8-20 UNEF
Cavity	-	-	-	-	-	-	-	-	-	2.33	1.58	0.75	0.13	0.99	0.50	0.437 ± .002	0.88	7/8-20 UNEF
Model #	Metric Dimensions (in.)																	
I- C200/ 250-TH	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
Cartridge	11.00	14.22	25.40	9.65	13.97	44.20	58.42	71.63	136.42	-	-	-	-	-	-	-	-	M25x1.5
Cavity	-	-	-	-	-	-	-	-	-	59.18	40.13	19.05	3.30	25.15	12.70	11.10 ± .002	22.35	M25x1.5

Max Series Threaded Cartridge Specifications:

Cartridge Material: Standard: Anodized Aluminum, Buna-N O-rings

Optional Materials: Brass & Aluminum & Buna-N O-rings, Stainless Steel, PVC, Peek, Teflon®, Delrin®
Consult factory for availability

Medium: Filtered (50 Micron) un-lubricated, non-corrosive dry gases

Operating Temperature: -30°~250°F [-34°~121°C]

Operating Pressure: 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Max Series Threaded Cartridge Operating and Installation Requirements:

Cartridge size: C200(L, M, H)-TH

C250(L, M, H)-TH

Supply Line: 3/8" O.D. [6mm] tube recommended

3/8" O.D. [10mm] tube recommended

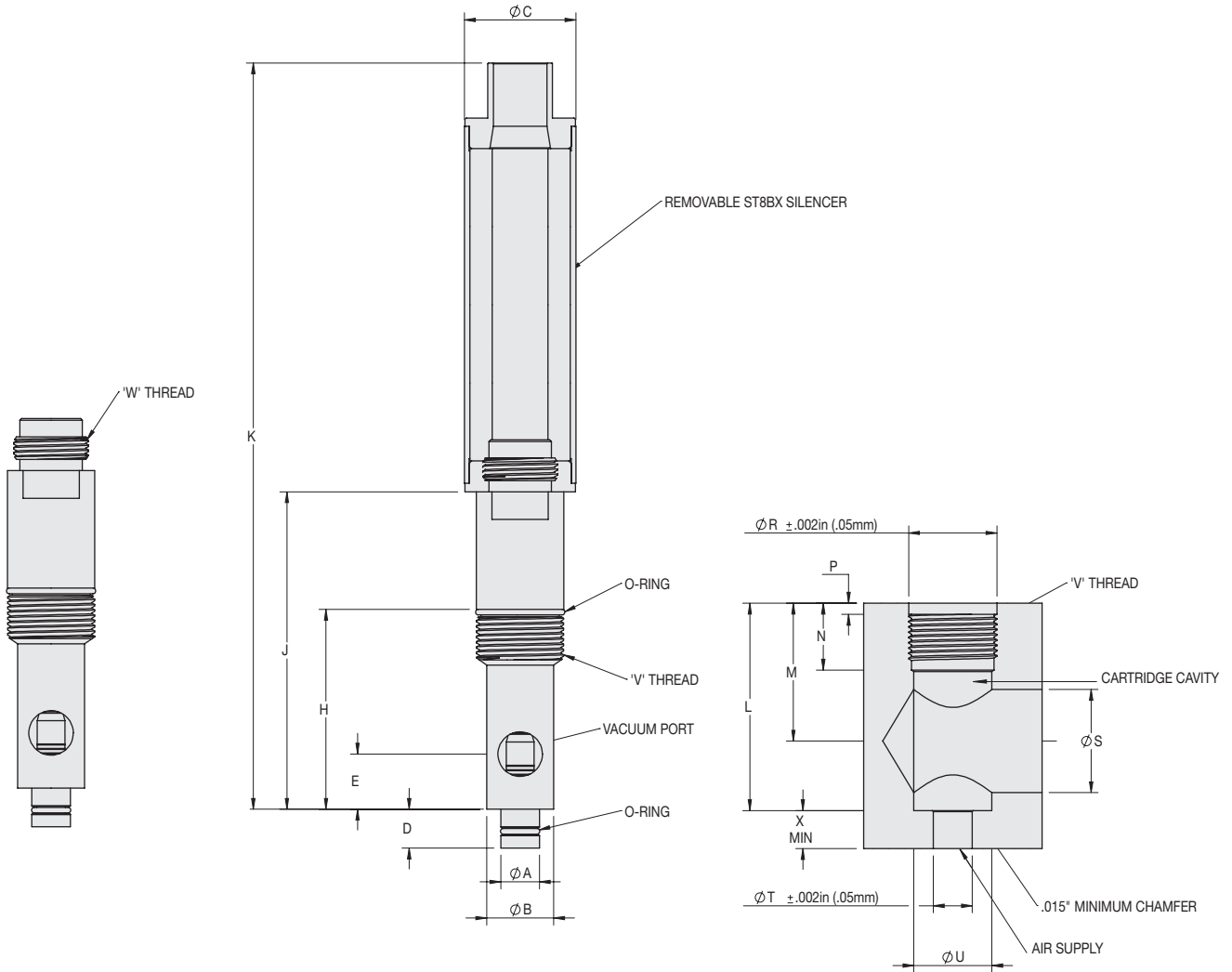
Vacuum Line: 3/8" O.D. [6mm] tube recommended

3/8" O.D. [10mm] tube recommended

Vacuum Line Filtration: Typically filters are not required, if desired Vaccon recommends – VF125LPM. See Page 278.

Venturi Vacuum Cartridges

Max Series Threaded Cartridges - C300/ 350-TH



Part Number: C300L-TH/ C350H-TH

Standard Material: Anodized Aluminum

Weight: 3.06 oz [86.8 g]

Model #	Imperial Dimensions (in.)																	
C300/ 350-TH	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
Cartridge	0.43	0.75	1.25	0.44	0.62	1.68	2.24	3.56	8.36	-	-	-	-	-	-	-	-	7/8-20 UNEF
Cavity	-	-	-	-	-	-	-	-	-	2.33	1.55	0.75	0.13	0.99	1.16	0.437 $\pm .002$	0.88	7/8-20 UNEF
Model #	Metric Dimensions (in.)																	
I-C300/ 350-TH	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
Cartridge	11.00	19.05	31.75	11.18	15.70	42.55	56.90	90.35	212.39	-	-	-	-	-	-	-	-	M25x1.5
Cavity	-	-	-	-	-	-	-	-	-	59.06	39.24	19.05	3.18	25.15	29.36	11.10 $\pm .002$	22.35	M25x1.5

Max Series Threaded Cartridge Specifications:

Cartridge Material:	Standard: Anodized Aluminum, Buna-N O-rings
Optional Materials:	Brass & Aluminum & Buna-N O-rings, Stainless Steel, PVC, Peek, Teflon®, Delrin® Consult factory for availability
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-30°~250°F [-34°~121°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Max Series Threaded Cartridge Operating and Installation Requirements:

Cartridge size:	C300(L, M, H)-TH	C350(L, M, H)-TH
Supply Line:	3/8" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See Page 278.	

Performance Data for Mid Series Threaded Cartridges

L-Series Cartridges for Low Vacuum Applications

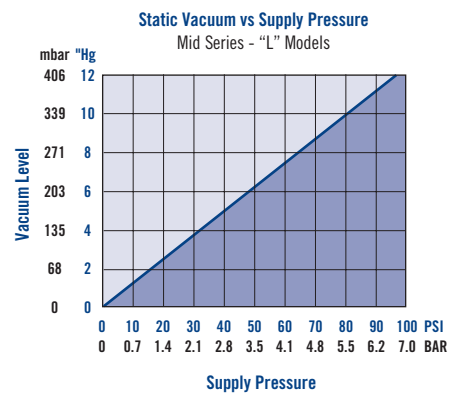
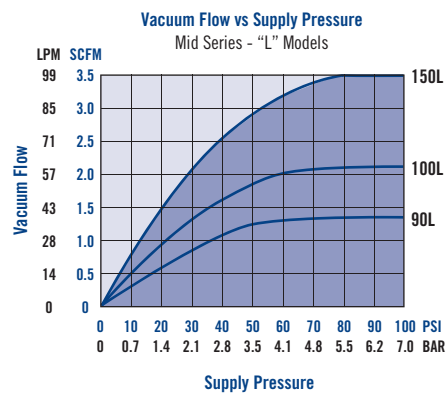
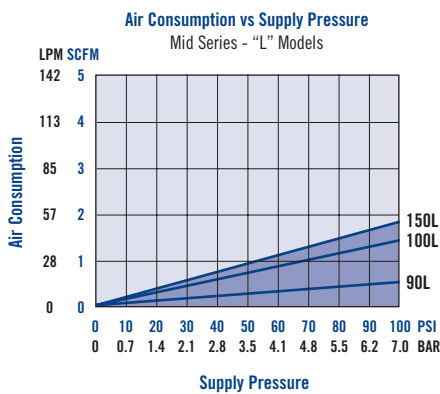
L is for “Low” vacuum levels up to 10” Hg [339mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0” Hg	3” Hg	6” Hg	9” Hg	10” Hg
C90L-TH	0.50	1.30	1.10	0.70	0.20	0.00
C100L-TH	1.40	2.10	1.60	1.10	0.50	0.00
C150L-TH	1.80	3.50	2.50	1.90	0.70	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0” Hg	3” Hg	6” Hg	9” Hg	10” Hg
C90L-TH		0.00	3.26	7.93	18.65	39.63
C100L-TH		0.00	2.33	4.66	10.88	24.0
C150L-TH		0.00	1.54	4.36	10.77	22.83

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
C90L-TH	14.2	36.8	31.1	19.8	5.7	0.0
C100L-TH	39.6	59.5	45.3	31.1	14.2	0.0
C150L-TH	51.0	99.1	70.8	53.8	19.8	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
C90L-TH		0.0	0.1	0.3	0.7	1.4
C100L-TH		0.0	0.1	0.2	0.4	0.9
C150L-TH		0.0	0.1	0.2	0.4	0.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Threaded Cartridges

M-Series Cartridges for Medium Vacuum Applications

M is for “Medium” vacuum levels up to 20” Hg [677mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
C60M-TH	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
C90M-TH	1.40	1.40	1.25	1.20	1.05	0.85	0.65	0.25	0.00
C100M-TH	1.80	2.10	2.00	1.85	1.75	1.60	1.25	0.80	0.00
C150M-TH	2.80	3.50	3.20	2.95	2.75	2.50	1.80	0.95	0.00

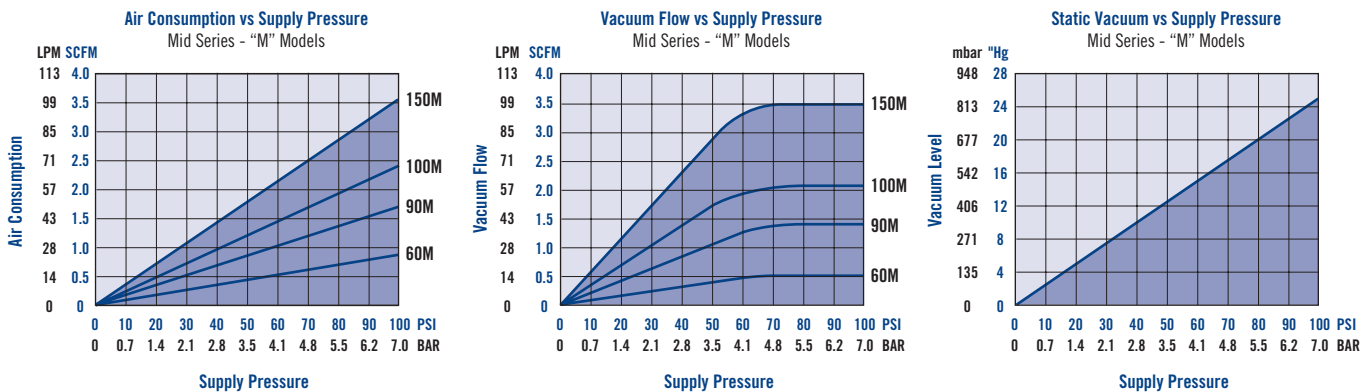
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
C60M-TH	0.50	0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00
C90M-TH	1.40	0.00	3.75	7.20	12.40	19.10	29.90	52.00	104.00
C100M-TH	1.80	0.00	2.65	5.80	9.90	16.20	22.90	36.20	56.60
C150M-TH	2.80	0.00	1.35	3.20	5.20	7.70	11.80	23.40	52.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
C60M-TH	14.2	14.2	11.3	8.5	6.2	4.2	2.3	0.8	0.0
C90M-TH	39.6	39.6	35.4	34.0	29.7	24.1	18.4	7.1	0.0
C100M-TH	51.0	59.5	56.6	52.4	49.6	45.3	35.4	22.7	0.0
C150M-TH	79.3	99.1	90.6	83.5	77.9	70.8	51.0	26.9	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
C60M-TH	14.2	0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0
C90M-TH	39.6	0.0	0.1	0.23	0.4	0.7	1.1	1.8	3.7
C100M-TH	51.0	0.0	0.1	0.2	0.3	0.6	0.8	1.3	2.0
C150M-TH	79.3	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Threaded Cartridges

H-Series Cartridges for High Vacuum Applications

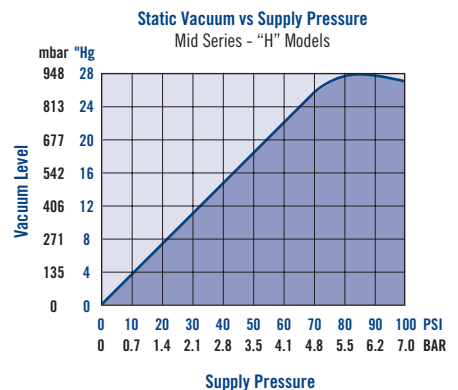
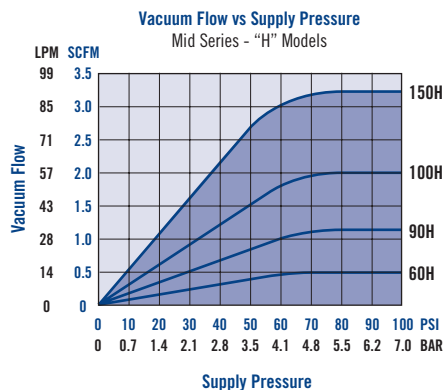
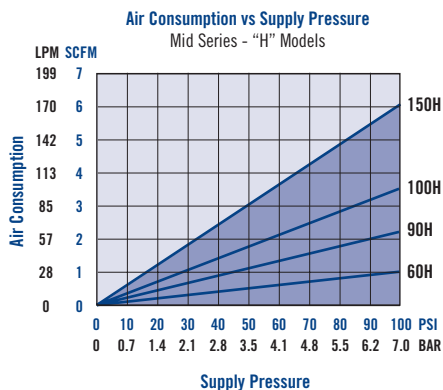
H is for “High” vacuum levels up to 28” Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.). The High vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
C60H-TH	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
C90H-TH	1.80	1.20	1.00	0.95	0.90	0.85	0.75	0.70	0.52	0.47	0.20	0.00
C100H-TH	2.80	2.00	1.85	1.75	1.57	1.40	1.25	1.05	0.84	0.70	0.35	0.00
C150H-TH	4.80	3.20	2.80	2.50	2.30	2.00	1.60	1.40	1.20	0.80	0.50	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
C60H-TH		0.00	15.00	29.80	50.60	74.50	102.80	135.90	183.20	245.90	410.20	790.80
C90H-TH		0.00	6.50	12.30	18.90	32.50	47.00	65.40	92.20	130.00	222.20	281.30
C100H-TH		0.00	2.70	6.50	11.20	17.50	25.80	38.40	55.20	79.20	166.70	251.80
C150H-TH		0.00	2.30	3.80	6.50	10.20	14.20	21.30	44.90	55.00	81.00	125.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
C60H-TH	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
C90H-TH	51.0	34.0	28.3	26.9	25.5	24.1	21.2	19.8	14.7	13.3	5.7	0.0
C100H-TH	79.3	56.6	52.4	49.6	44.5	39.6	35.4	29.7	23.8	19.8	9.9	0.0
C150H-TH	135.9	90.6	79.3	70.8	65.1	56.6	45.3	39.6	34.0	22.7	14.6	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
C60H-TH		0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9
C90H-TH		0.0	0.2	0.4	0.7	1.1	1.7	2.3	3.3	4.6	7.8	9.9
C100H-TH		0.0	0.1	0.2	0.4	0.6	0.9	1.4	1.9	2.8	5.9	8.9
C150H-TH		0.0	0.1	0.1	0.2	0.3	0.5	0.8	1.6	1.9	2.9	4.4

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Max Series Threaded Cartridges

L-Series Cartridges for Low Vacuum Applications

L is for “Low” vacuum levels up to 10”Hg [339 mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
C200L-TH	2.80	6.00	5.80	4.30	1.70	0.00
C250L-TH	4.80	9.50	7.90	5.70	2.20	0.00
C300L-TH	7.80	20.00	14.00	9.50	3.50	0.00
C350L-TH	12.50	28.00	18.00	12.30	4.50	0.00

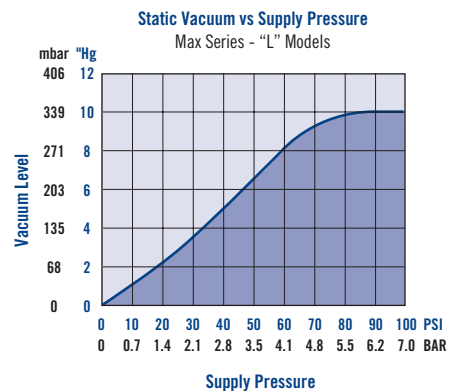
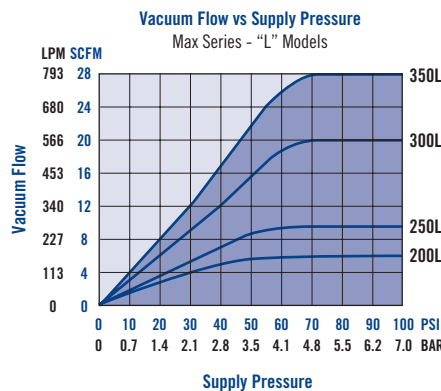
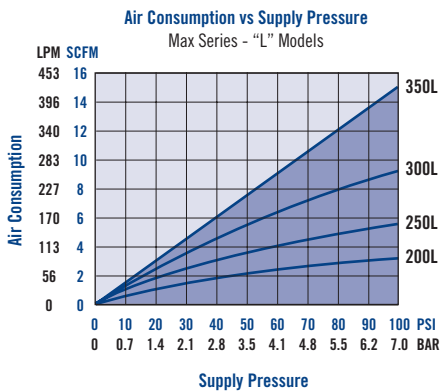
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
C200L-TH	2.80	0.00	0.77	2.05	4.62	13.34
C250L-TH	4.80	0.00	0.52	1.28	3.08	7.95
C300L-TH	7.80	0.00	0.26	0.77	1.80	4.10
C350L-TH	12.50	0.00	0.00	0.52	1.28	2.82

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
C200L-TH	79.3	169.9	164.2	121.8	48.1	0.0
C250L-TH	135.9	269.0	223.7	161.4	62.3	0.0
C300L-TH	220.9	566.3	396.4	269.0	99.1	0.0
C350L-TH	354.0	792.9	509.7	348.3	127.4	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
C200L-TH	79.3	0.0	0.0	0.1	0.2	0.5
C250L-TH	135.9	0.0	0.0	0.0	0.1	0.3
C300L-TH	220.9	0.0	0.0	0.0	0.1	0.1
C350L-TH	354.0	0.0	0.0	0.0	0.0	0.1

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Max Series Threaded Cartridges

M-Series Cartridges for Medium Vacuum Applications

M is for “Medium” vacuum levels up to 20”Hg [667 mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
C200M-TH	4.80	6.00	5.30	4.90	4.00	3.50	2.50	1.10	0.00
C250M-TH	7.80	9.50	9.20	8.30	7.00	4.70	3.40	2.20	0.00
C300M-TH	12.50	20.00	19.00	16.30	13.80	8.10	5.50	3.30	0.00
C350M-TH	22.00	28.00	24.00	19.40	16.80	14.50	11.20	4.80	0.00

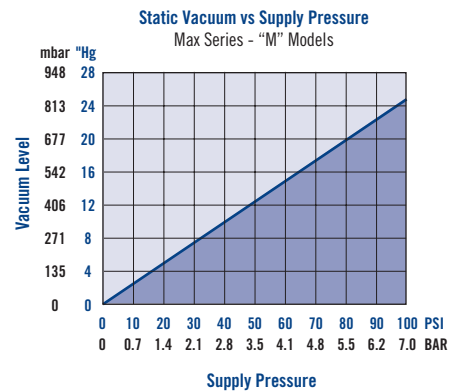
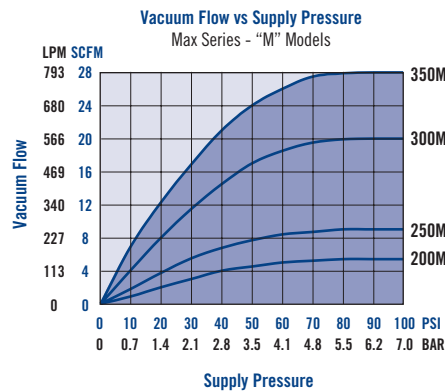
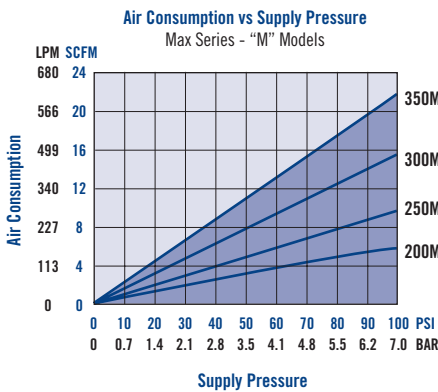
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg							
	0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
C200M-TH	0.00	0.75	1.90	3.20	5.30	8.70	17.10	42.60
C250M-TH	0.00	0.45	1.10	2.40	3.80	6.00	9.70	15.40
C300M-TH	0.00	0.00	0.00	1.10	1.80	2.70	4.60	8.70
C350M-TH	0.00	0.00	0.00	1.00	1.50	2.10	4.30	8.40

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
C200M-TH	135.9	169.9	150.1	138.8	113.3	99.1	70.8	31.1	0.0
C250M-TH	220.9	269.0	260.5	235.0	198.2	133.1	96.3	62.3	0.0
C300M-TH	354.0	566.3	538.0	461.6	390.8	229.4	155.7	93.4	0.0
C350M-TH	623.0	792.9	679.6	549.3	475.7	410.6	317.1	135.9	0.0

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
C200M-TH	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.5
C250M-TH	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5
C300M-TH	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3
C350M-TH	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Max Series Threaded Cartridges

H-Series Cartridges for High Vacuum Applications

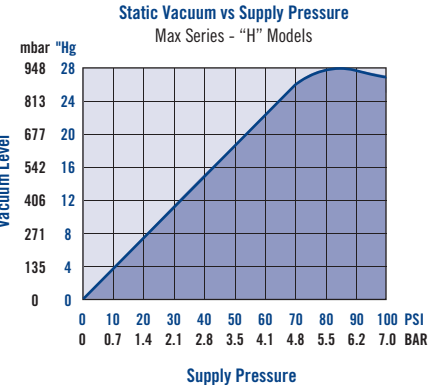
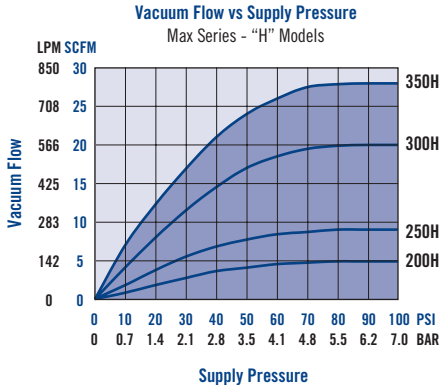
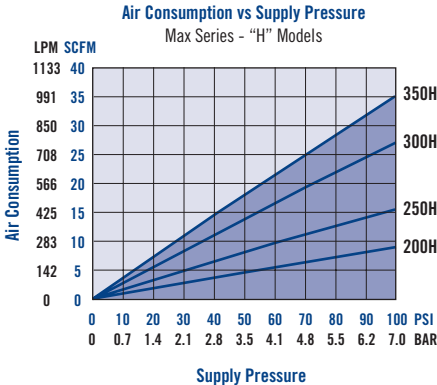
H is for “High” vacuum levels up to 28”Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.) The high vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
C200H-TH	7.80	5.40	4.70	3.85	3.30	3.00	2.60	2.10	1.60	1.20	0.60	0.00
C250H-TH	12.50	9.00	8.50	7.85	7.00	6.50	5.30	3.90	2.50	1.80	0.90	0.00
C300H-TH	22.00	20.00	17.00	14.00	12.70	12.00	10.00	7.40	4.90	2.70	1.30	0.00
C350H-TH	28.00	28.00	22.00	18.70	15.90	14.50	11.80	8.10	5.70	4.50	2.25	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
C200H-TH		0.00	1.20	2.10	3.40	5.20	7.70	11.50	20.00	33.50	62.60	98.10
C250H-TH		0.00	0.75	1.30	2.20	3.50	5.60	9.10	17.40	30.10	56.00	76.00
C300H-TH		0.00	0.00	0.80	1.20	2.00	2.80	3.90	5.90	11.10	32.70	60.00
C350H-TH		0.00	0.00	0.00	1.20	1.90	2.30	3.40	5.30	8.80	26.00	44.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	814 mbar	914 mbar	948 mbar
C200H-TH	220.9	152.9	133.1	109.0	93.4	85.0	73.6	59.5	45.3	34.0	17.0	0.0
C250H-TH	354.0	254.9	240.7	222.3	198.2	184.1	150.1	110.4	70.8	51.0	25.5	0.0
C300H-TH	623.0	566.3	481.4	396.4	359.6	339.8	238.2	209.5	138.8	76.5	36.8	0.0
C350H-TH	792.9	792.9	623.0	529.5	450.2	410.6	334.1	229.4	161.4	127.4	63.7	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	814 mbar	914 mbar	948 mbar
C200H-TH		0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.7	1.2	2.2	3.5
C250H-TH		0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.1	2.0	2.7
C300H-TH		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	1.2	2.1
C350H-TH		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.9	1.6

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



In keeping pace with industry's need for improved automation and material handling methods, Vaccon introduced the VP Series Modular Venturi Vacuum Pump. The VP Series provides maximum design flexibility by using a modular component approach. Integrating a venturi vacuum pump, sensors, and solenoid valves within one assembly, the VP Series provides complete vacuum systems capable of interfacing with computerized control systems.



VP00 Series – Standard Pump

Designed for point-of-use installation - The VP00 Series vacuum pumps offer a high vacuum venturi in several compact, lightweight configurations that are ideal for small part pick and place applications. Other common applications include fast evacuation of small vessels for purging operations and water/air analyzers. These compact pumps require little installation space and can be positioned close to the vacuum point for fast response.

See Page **34**



VP01BV Series – Solenoid Controlled Version

VP01BV Min Series pumps are solenoid-controlled miniature venturi vacuum pumps that generate vacuum only when needed, minimizing compressed air consumption. The integral solenoid valve provides instantaneous response for high speed assembly and pick and place applications.

See Page **38**



VP01QRBV Series – Solenoid Controlled with Blow-Off Version

The VP01QRBV Min Series are solenoid-controlled miniature venturi vacuum pumps that feature a second solenoid to control blow-off air for rapid part release. The integral suck and blow circuit design provides instantaneous response for high speed assembly and pick and place applications. The blow-off is at line pressure, and is internally plumbed so that only one air and vacuum line is required.

See Page **42**



VPOX Series – Pneumatic Blow-Off

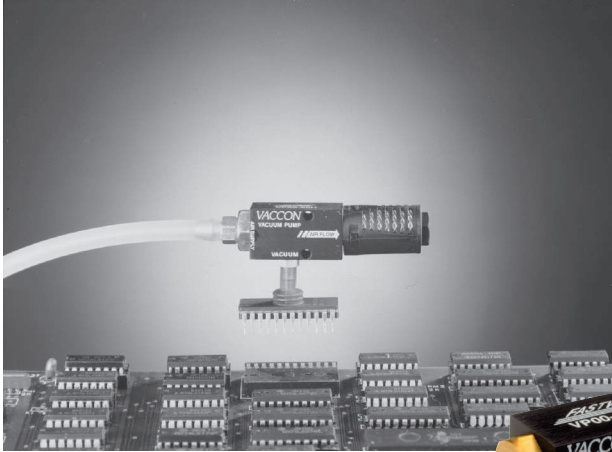
The VPOX & VPOX-ADJ air-powered venturi vacuum pumps are trusted for accurate part placement and rapid part release. The reliable Fastbreak Min Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required.

See Page **46**

Min Series

Min Series Venturi Vacuum Pump with Silencer

VP00



VP00-60H picks and places IC chips on circuit boards



VP00-60H Standard Pump

Ideal Applications:

- Small part pick and place
- Integrated circuit handling
- Small vessel evacuation
- Sampling for liquid and gas analysis

Features/Benefits

- High productivity – powerful vacuum up to 28”Hg [948mbar]
- Mounts Easily – square body, compact and lightweight
- Fast Response – installs close to vacuum point
- Efficient – minimal air consumption
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Standard Pump:

The VP00 Min Series air-powered venturi vacuum pumps are highly efficient, capable of reaching 28”Hg [948mbar], and dirt tolerant. The VP00s use minimal compressed air and include a silencer for quiet operation. Lightweight and compact, they easily mount close to the vacuum point for fast response.

Performance Level Designations:

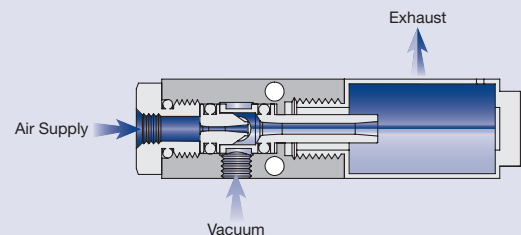
“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications
“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Factory installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- ST2 (straight-through) silencer allows ingested debris to exit the pump without clogging
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply (80 PSI [5.5BAR] standard, 60 PSI [4.0BAR] optional).

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



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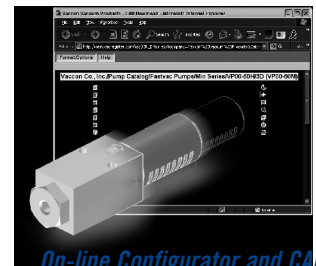
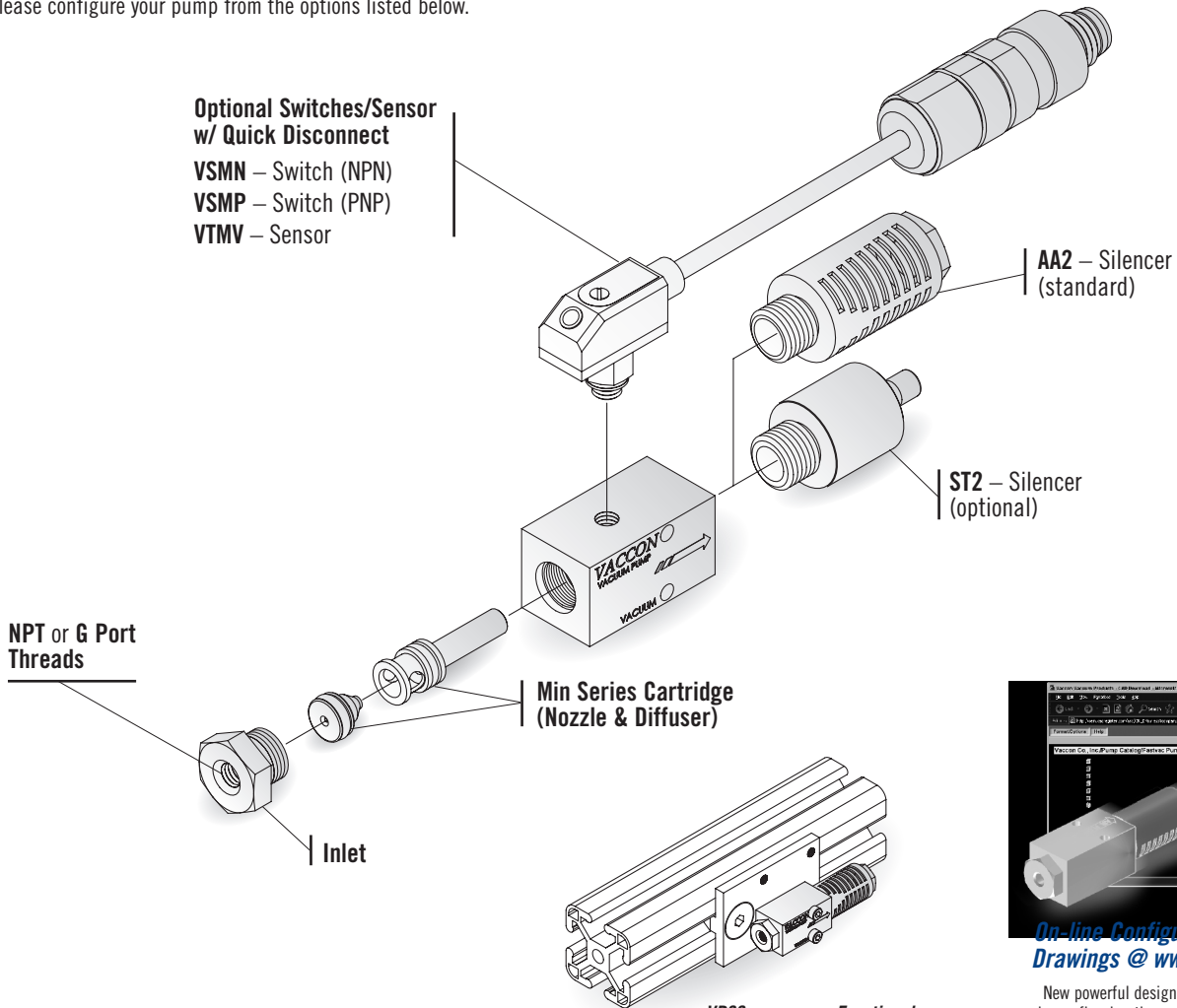
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP00-60 (M, H) Min Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

VP00 pumps are Fractional and Metric T-Slot compatible. See EOAT Section.

How to Specify:

VP00-60 H - 60 - ST2 - VSMP

P/N	Imperial Thread
VP00-60	10-32

P/N	Metric Thread
I-VP00-60	M5

P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

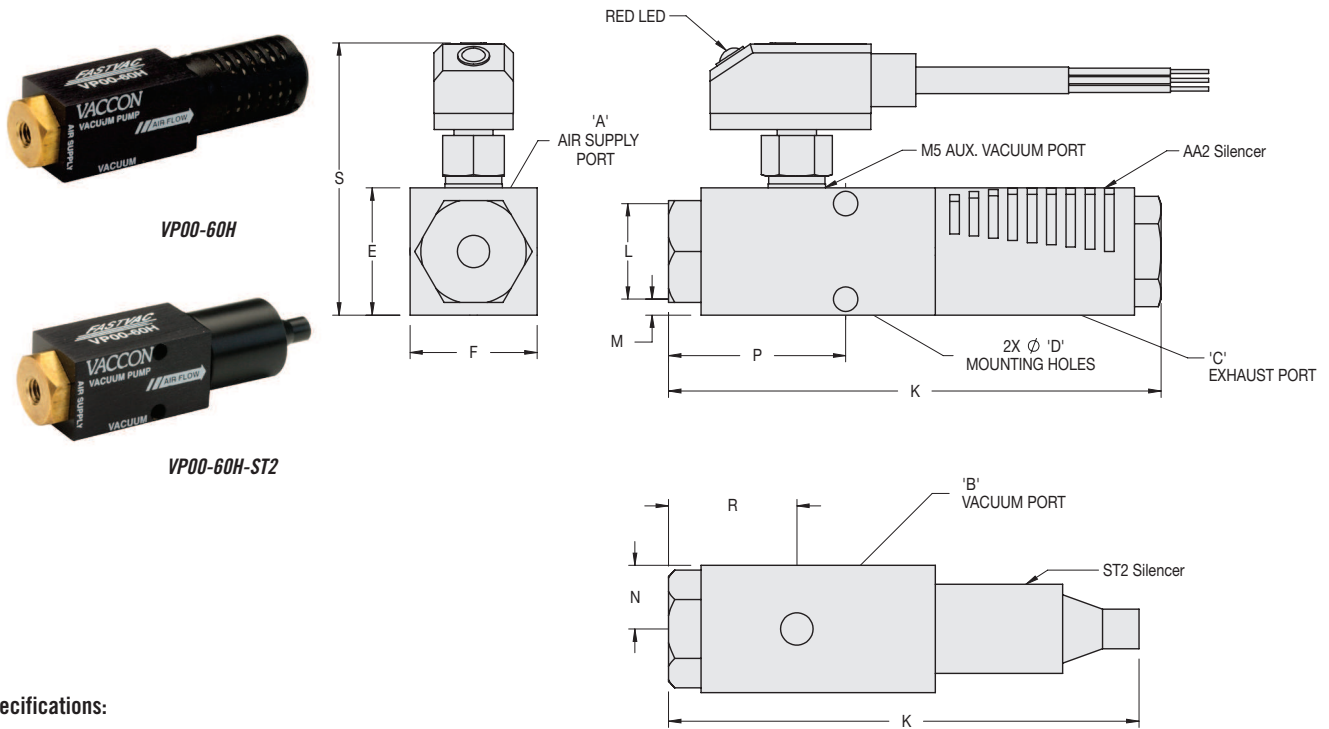
P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output

P/N	Silencer
	AA2 – Closed End (Standard)
-ST2	Straight-Through

For complete Performance Data, see page 50.

Modular Venturi Vacuum Pumps – Min Series

Standard Pump: VP00-60 (M or H)



Specifications:

Weight 0.86 oz [24.3g]
 Noise Level 58dB

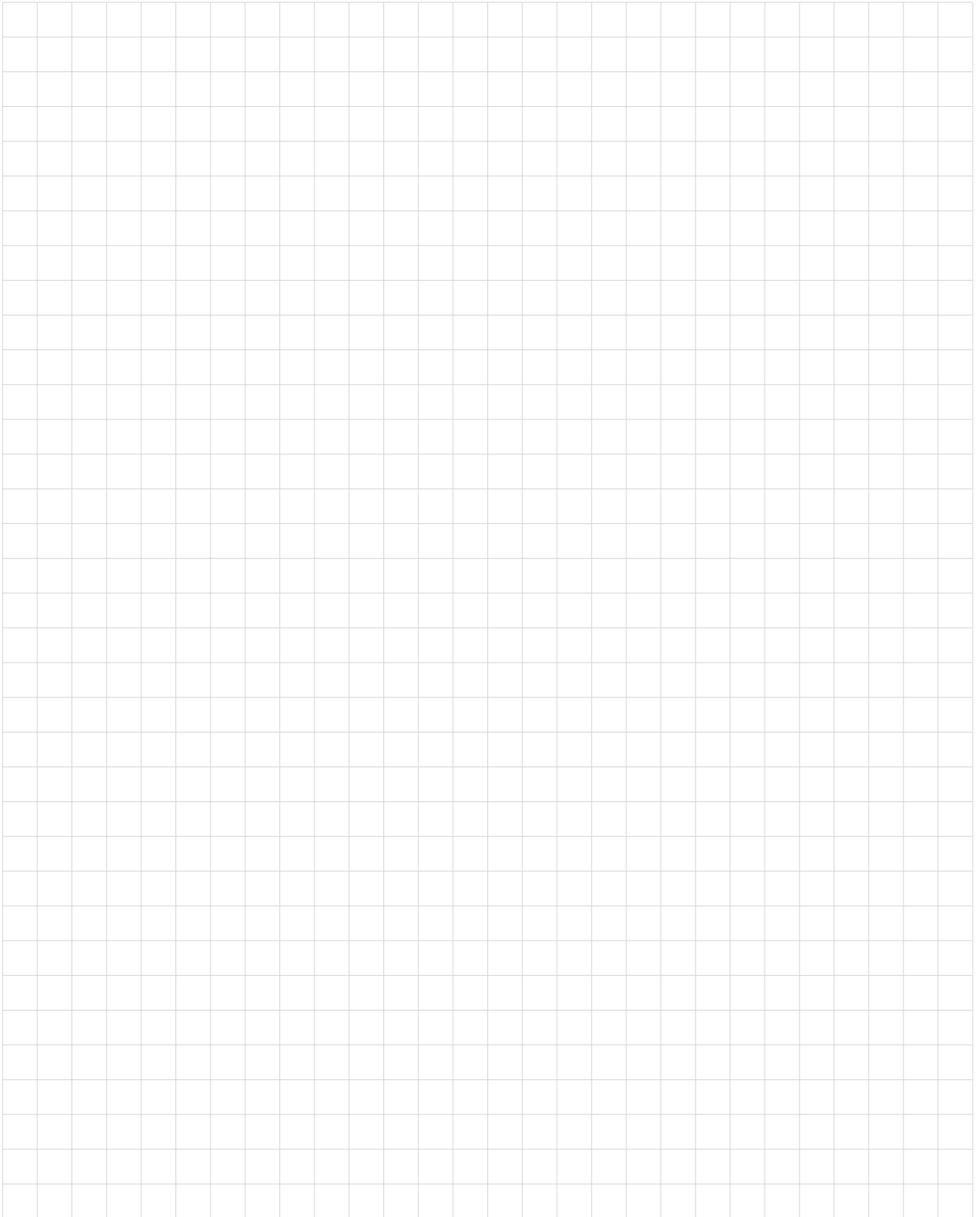
Model #	Imperial Dimensions (in.)													
VP00	A	B	C	D	E	F	K	L	M	N	P	R	S	T
w/AA2	10-32	10-32	1/8 NPT F	0.12	0.62	0.62	2.42	0.47	0.08	0.31	0.71	0.63	1.33	0.00
w/ST2							2.31							
Model #	Metric Dimensions (mm)													
I-VP00	A	B	C	D	E	F	K	L	M	N	P	R	S	T
w/AA2	M5	M5	G 1/8	3.0	15.75	15.75	61.468	11.94	2.03	7.87	18.03	16.00	33.78	0.00
w/ST2							58.674							

VP00 Pump Standard Specifications:

Pump Material: Anodized Aluminum (For silencer material, see page 264 - 266.)
Cartridge Material: Nylon, Buna-N O-ring (Other material available, see page 8)
Medium: Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature: 30°F~250°F [-34°~121°C]
Operating Pressure: 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VP00 Operating and Installation Requirements:

Supply Line: Min. 5/32" [4mm], 1/4" O.D. [6mm] tube preferred for supply lines exceeding 3' [1M]
Control Valve: 3 way/2 position (faster part release), minimum orifice – 0.062" diameter [1.57mm]
Vacuum Line: 1/4" [6mm] tube preferred, for short runs 5/32" [4mm] may be used
Vacuum Line Filtration: Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.
Mounting: Mounting holes accept 4-40 or M3 screws



Min Series Venturi Vacuum Pump with Integral Solenoid Valve and Silencer

VP01BV



VP01BV-60H-ST2

Standard Pump:

VP01BV Min Series pumps are solenoid-controlled miniature venturi vacuum pumps that generate vacuum only when needed, minimizing compressed air consumption. The integral solenoid valve provides instantaneous response for high speed assembly and pick and place applications.

Lightweight and compact, VP01BV pumps are placed directly at the point of use to eliminate plumbing between components and to ensure high cycle rates for increased productivity. Extremely dirt tolerant, filters are not required.

Add a Vaccon ultra-miniature vacuum switch or sensor for a vacuum achieved/part present signal.

Performance Level Designations:

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

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Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

Small part pick and place for applications requiring accurate part placement:

- Automated assembly
- Robotics
- Material Handling

Features/Benefits:

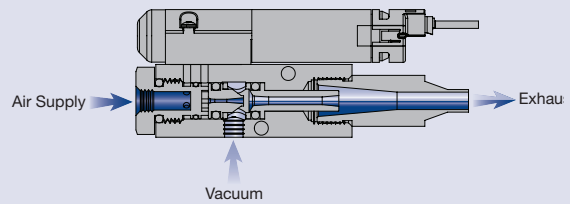
- High productivity – Cycle rates up to 4800/min for fast part release
- Minimal air consumption – provides instantaneous vacuum as needed
- Reliable part detection – factory-installed miniature vacuum switches or sensors
- Fast Response – installs close to vacuum point – no delay due to long plumbing lines
- Easy installation – modular design speeds installation and minimizes assembly
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ Straight-through design, non-clogging
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- ST2 (straight-through) silencer that allows ingested debris to exit the pump without clogging
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional

Principles of Operation: VP01BV

To create vacuum, supply compressed air to a N.C. solenoid valve and energize the valve. Compressed air flows to the miniature venturi cartridge producing instant vacuum at the vacuum port. To release the part, de-energize the solenoid valve. The flow of air to the venturi stops instantly, and the rush of incoming atmospheric air breaks the vacuum.



VP01BV Standard Pump Specifications:

Body Material:	Anodized Aluminum (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	0°~122° F [-18°~65°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

3-Way Valve Specifications

Valve Type:	Base Mounted 3-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24 VDC [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Fixed leads, 24 AWG, 18"
LED Indicator:	No

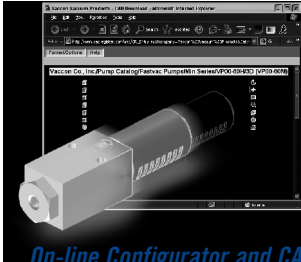
VP01BV Operating and Installation Requirements:

Operating Pressure:	80 PSI [5.5 BAR]. Set regulator to 80 PSI (or pre-designated pressure) when pump is operating
Supply Line:	1/4" O.D. [6mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.
Mounting Holes:	Mounting holes accept #4-40 [M3] screws

Modular Venturi Vacuum Pumps – Min Series

VP01BV Min Series Configurations and Options:

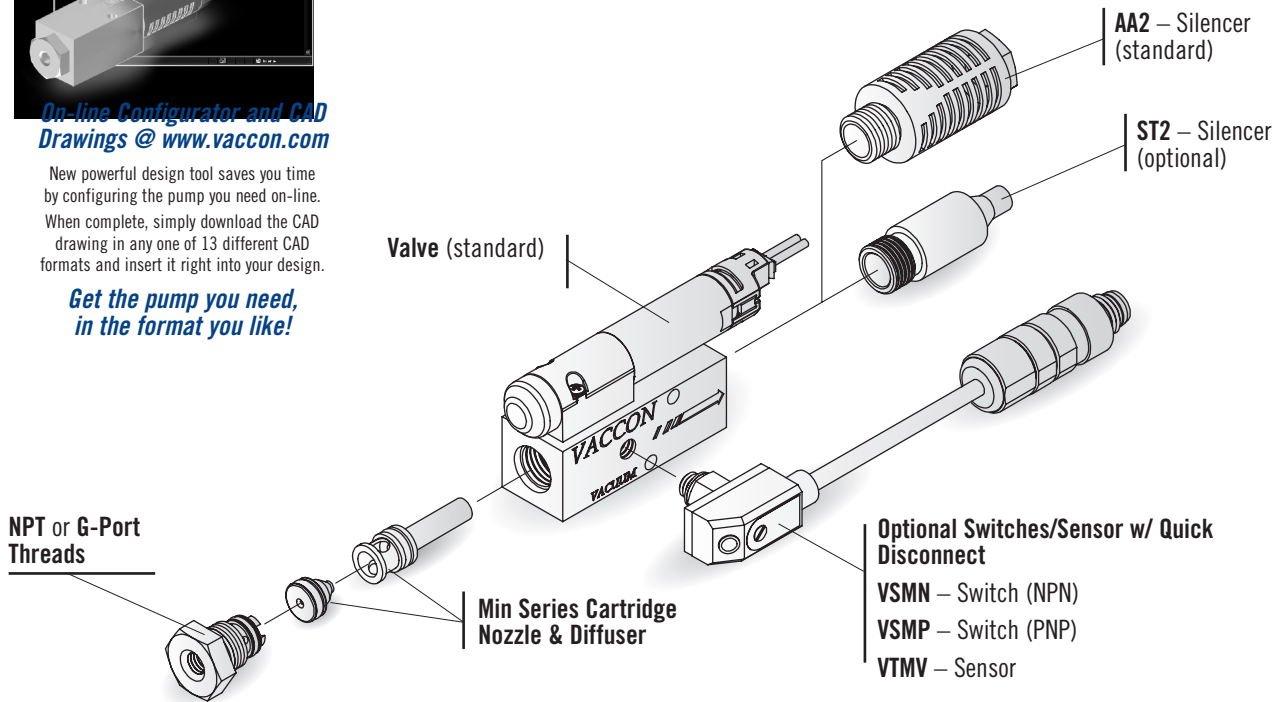
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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



How to Specify:

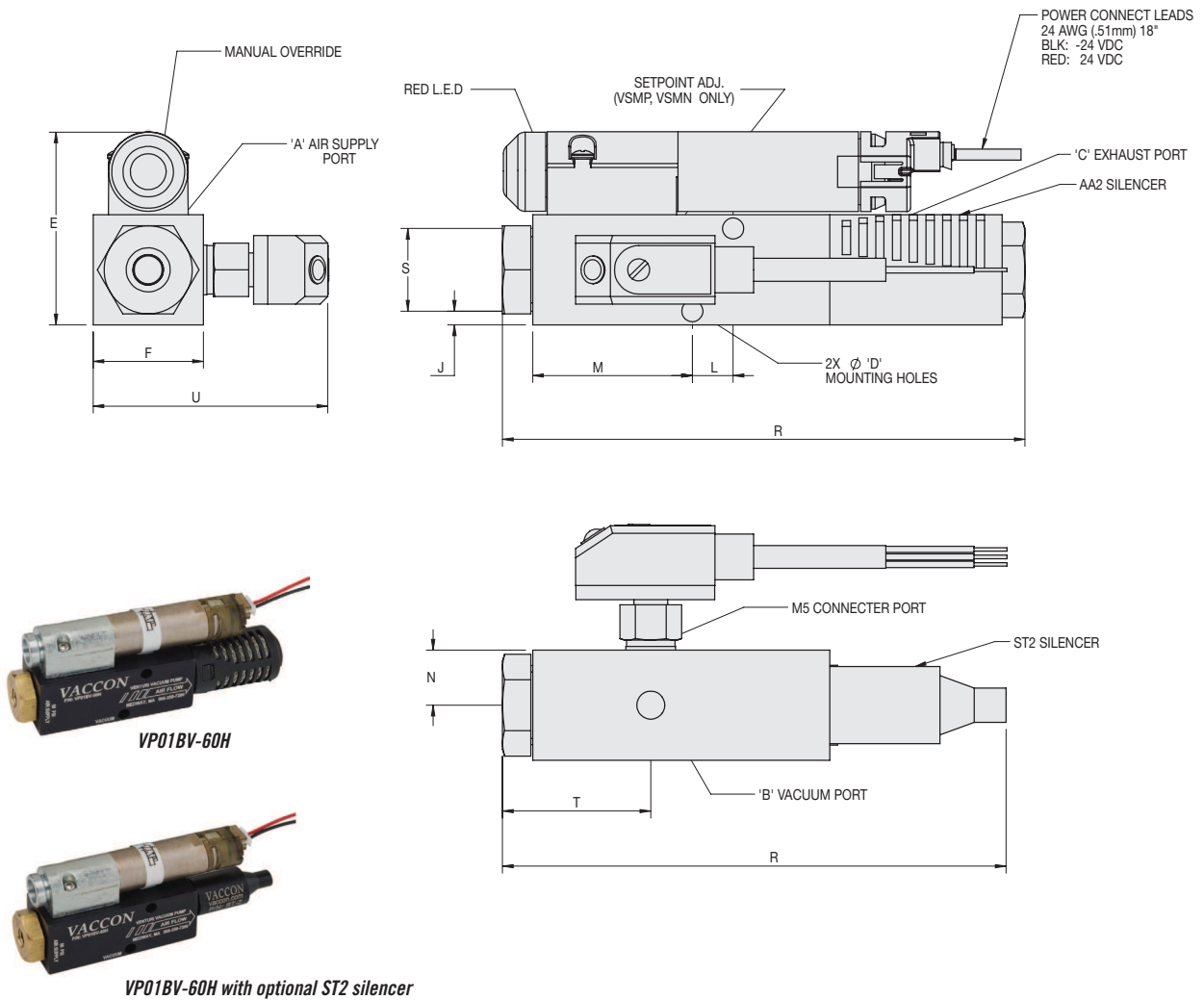
VP01BV-60 H - 60 - ST2 - VTMV

P/N	Imperial Thread
VP01BV-60	10-32
P/N	Metric Thread
I-VP01BV-60	M5
P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
	AA2 Closed End (Standard)
ST2	Straight-Through

For complete Performance Data, see page 50.

Standard Pump: VP01BV-60 (M or H)



Specifications:

Weight: 2.50 oz [71.0 g]
 Noise Level: 58 dB

Model #	Imperial Dimensions (in.)													
	A	B	C	D	E	F	J	L	M	N	R	S	T	U
VP01BV														
W AA2											2.96			
W ST2	10-32 F	10-32 F	1/8F NPT	0.12	1.09	0.63	0.08	0.23	0.91	0.31	2.86	0.47	0.84	1.34
w VSMP/VTMV											N/A			
Model #	Metric Dimensions (mm)													
	A	B	C	D	E	F	J	L	M	N	R	S	T	U
I-VP01BV														
W AA2											75.184			
W ST2	M5	M5	G1/8	3.048	27.686	16.002	2.032	5.842	23.114	7.874	72.644	11.938	21.336	34.036
w VSMP/VTMV											N/A			

Min Series Venturi Vacuum Pump with Solenoid Operated Vacuum and Blow-off

VP01QRBV



VP01QRBV-ST2

Standard Pump:

VP01QRBV Min Series are solenoid-controlled miniature venturi vacuum pumps that feature a second solenoid to control blow-off air for rapid part release.

The integral vacuum and blowoff circuit design provides instantaneous response for high speed assembly and pick and place applications. The blow-off is at line pressure, and is internally plumbed so that only one air and vacuum line is required.

The compact, lightweight, dirt tolerant pump can be placed directly at the point of use. No filters are required.

Add a Vaccon ultra-miniature vacuum switch or sensor for a vacuum achieved/part present signal.

Performance Level Designations:

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

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Ideal Applications:

Small part pick and place for applications requiring accurate part placement:

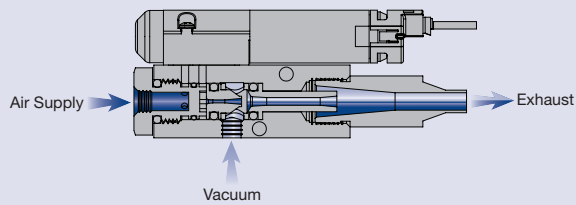
- Automated assembly
- Robotics
- Material handling

Features/Benefits:

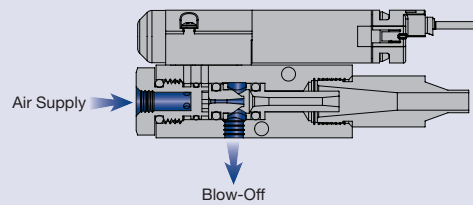
- Precise control – individual electrical connections let you control the vacuum and the blow-off duration time
- Fast response – no delay due to long plumbing lines; installs close to vacuum point
- Instantaneous vacuum as needed – minimal air consumption
- Productivity – fast part release with high cycle rates up to 4800/min
- Accurate part positioning from positive vacuum and rapid blow-off
- Easy installation – modular design speeds installation and minimizes assembly
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- ST2 (straight-through) silencer that allows ingested debris to exit the pump without clogging
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional.



Compressed air is supplied to both N.C. solenoid valves simultaneously. To create vacuum, energize the first solenoid valve to allow the compressed air to flow to the miniature venturi cartridge resulting in instant vacuum at the vacuum port.



To release the part, de-energize the vacuum solenoid while energizing the blow-off solenoid. Because the blow-off air is at line pressure, a very powerful blow-off will be created.

VPO1QRBV Standard Pump Specifications:

Body Material:	Anodized Aluminum (For silencer material, see page 364 - 266.)
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	0°~122° F [-18°~65°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

3-Way Valve Specifications

Valve Type:	Base Mounted 3-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24 VDC [-15% to =10% Nominal]
Average Life:	100 million cycles
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Fixed leads, 24 AWG, 18"
LED Indicator:	No

VPO1QRBV Operating and Installation Requirements:

Operating Pressure:	80 PSI [5.5 BAR]. Set regulator to 80 PSI (or pre-designated pressure) when pump is operating
Supply Line:	1/4" O.D. [6mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.
Mounting Holes:	Mounting holes accept #4-40 [M3] screws

Modular Venturi Vacuum Pumps – Min Series

VP01QRBV Min Series Configurations and Options:

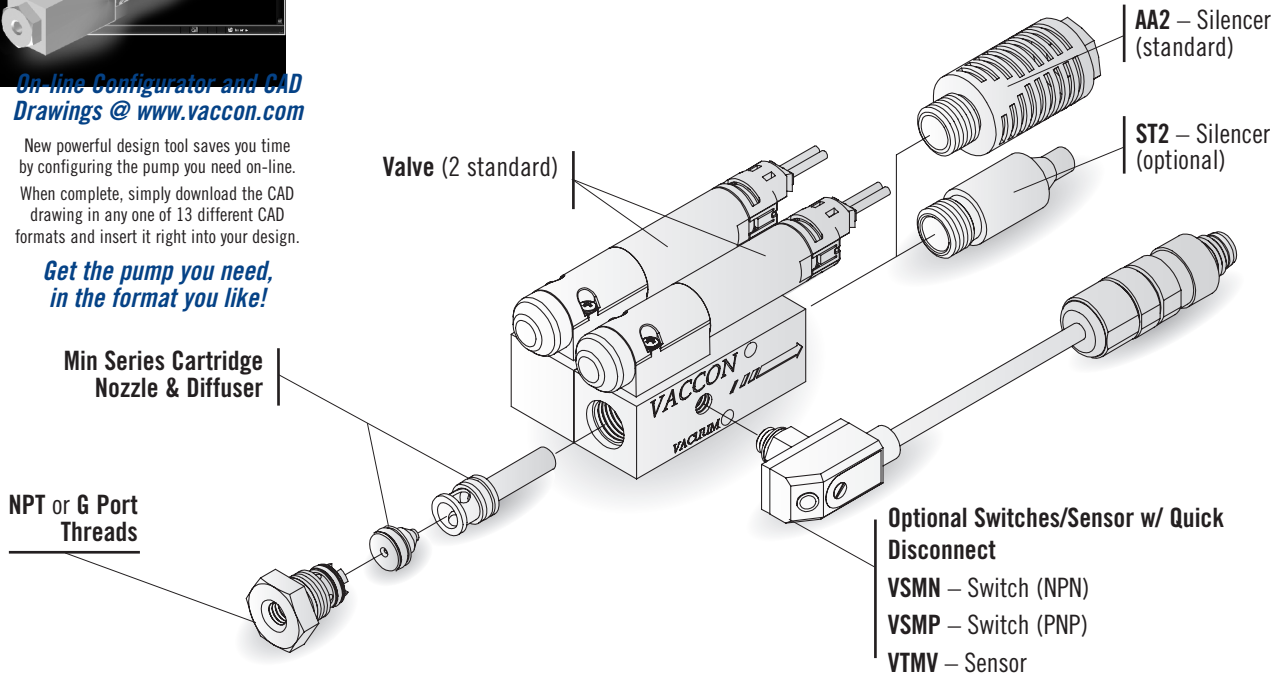
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



How to Specify:

VP01QRBV - 60 H - 60 - ST2 - VSMP

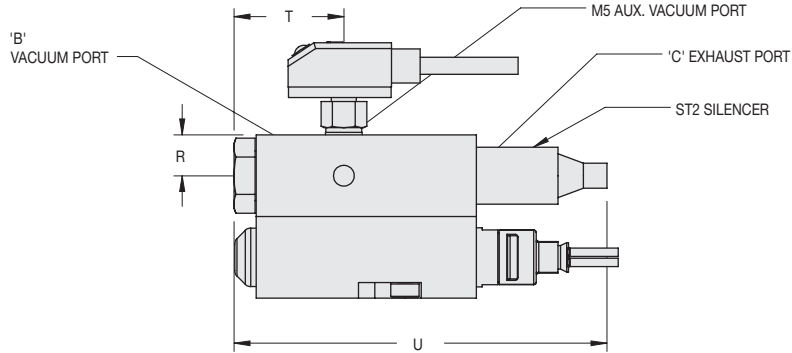
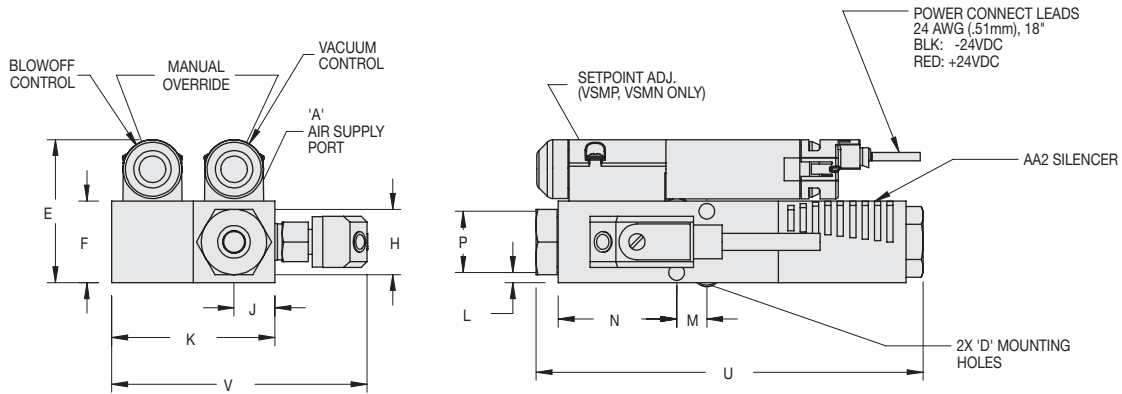
P/N	Imperial Thread
VP01QRBV-60	NPT
P/N	Metric Thread
I-VP01QRBV-60	G Port
P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output

P/N	Silencer
AA2	Closed End (Standard)
ST2	Straight Through

For complete Performance Data, see page 50.

Standard Pump: VP01QRBV-60 (M or H)



Specifications:

Weight: 4.59 oz [130.0 g]
Noise Level: 58 dB

Model #	Imperial Dimensions (in.)																	
VP01QRBV	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
W AA2	10-32	10-33	1/8 NPT F	0.12	1.10	0.63	0.50	0.31	1.25	0.08	0.23	0.91	0.47	0.31	0.17	0.84	2.96	1.96
W ST2																	2.86	
w VSMP/VTMV																	N/A	
Model #	Metric Dimensions (mm)																	
I-VP01QRBV	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V
W AA2	M3	M3	G 1/8	3.05	27.94	16.00	12.70	7.87	31.75	2.03	5.84	23.01	11.94	7.87	4.32	21.34	75.18	49.68
W ST2																	72.64	
w VSMP/VTMV																	N/A	

Miniature Venturi Vacuum Pump with Pneumatic Blow-off and Silencer

Fastbreak Min Series: VPOX & VPOX-ADJ



VPOX-60H-ST2 Fastbreak blow-off pump with vacuum cup, spring leveler assembly for rapid part release



VPOX-60H

Standard Pump:

VPOX & VPOX-ADJ air-powered venturi vacuum pumps are trusted for accurate part placement and rapid part release. The reliable Fastbreak Min Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required.

The integrated pneumatic high-speed blow off on the VPOX pump provides a fixed-duration blow off, based on the volume of the housing. With the VPOX-ADJ adjustable vacuum pump, you can control the intensity of the blow-off using one fingertip adjustment knob. (Customer-supplied directional control valve with exhaust required.)

For applications where you need to control the duration of the blow-off, please see VP01QRBV Series on page 44.

For applications where you need a solenoid operated pump with a pneumatic blow-off, please see VP2XV on page 76.

Product Update: The VP61 Series has been discontinued. The VP2X is an equivalent pump.

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

Small part pick and place for applications requiring accurate part placement and rapid part release:

- ~ Integrated circuits
- ~ Packaging machines
- ~ High speed labeling machines
- ~ Sheet feeders
- ~ Robotic end effectors
- ~ Automated assembly

Features/Benefits:

- Fast Response – compact, lightweight, and installs close to vacuum point
- Trouble free operation:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ Automatically cleans vacuum lines
 - ~ No downtime
- High productivity – rapid part release, cycle rates up to 900/min
- Modular design – add vacuum sensors and solenoid valves to create a complete vacuum system
- Multiple functions from just one PLC output – requires fewer outputs, less costly, easy to program
- Reliable part detection – factory installed miniature vacuum switches or sensors

Performance Level Designations:

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum /high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

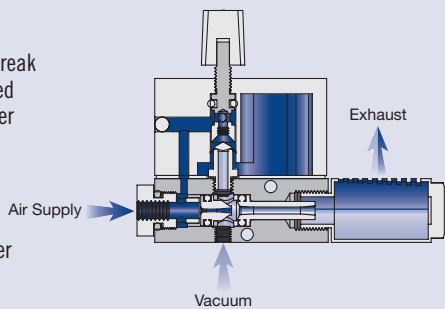
Pump Options:

- ADJ version allows the user to set the intensity of the blow-off from no blow-off to full blow-off
- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- ST2 (straight-through) silencer that allows ingested debris to exit the pump without clogging
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional

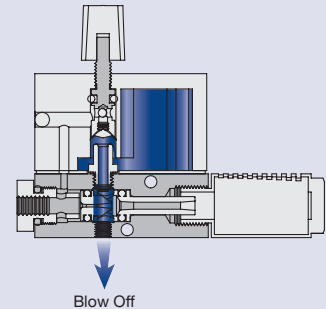
Principles of Operation: VPOX, VPOX-ADJ

Fastbreak pumps provide both suction and blow-off with a single supply of compressed air controlled by a solenoid valve.

Utilizing quick exhaust valve technology, Fastbreak pumps store compressed air in the upper chamber while simultaneously generating vacuum. The quick exhaust diaphragm seals the compressed air chamber from the suction line.



To release the part, the solenoid valve* is de-energized. The vacuum stops and the rapid drop in pressure shifts the quick exhaust diaphragm into the up position allowing the store compressed air to vent into the vacuum line.



When handling small and lightweight parts, choose the adjustable version (-ADJ) shown above to control the blow-off intensity.

*Note: The (customer supplied) solenoid valve controlling the compressed air to the Fastbreak pump must vent to atmosphere for the quick exhaust valve to actuate properly.

VPOX and VPOX-ADJ Standard Pump Specifications:

Body Material:	Anodized Aluminum, Nebar, Brass, Buna-N, Vinyl, Nylon, Alloy Steel (For silencer material, see page 264 - 266)
Cartridge Material:	Nylon, Buna-N O-ring, (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	+32°~125° F [0°~52°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures
Cycle Rates:	Up to 900/min
Blow-off Response Time:	Instantaneous
Orientation:	Any position
Blow-off Duration:	100 milliseconds (based on system design)

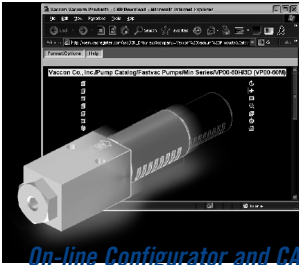
VPOX and VPOX-ADJ Operating and Installation Requirements:

Cartridge Size:	CM60 (M or H)
Supply Line:	Min. 5/32 [4mm], Preferred 1/4" O.D. [6mm] tube for supply lines exceeding 3' (1M)
Control Valve:	3-way/2 position – minimum orifice - 0.093" [2.5mm]
Vacuum Line:	Preferred 1/4" [6mm] for short runs 5/32" [4mm] may be used
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.
Mounting Holes:	Mounting holes accept 4-40 [M3] screws

Modular Venturi Vacuum Pumps – Min Series

VPOX & VPOX-ADJ: Fastbreak Min Series Configurations and Options:

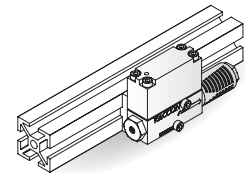
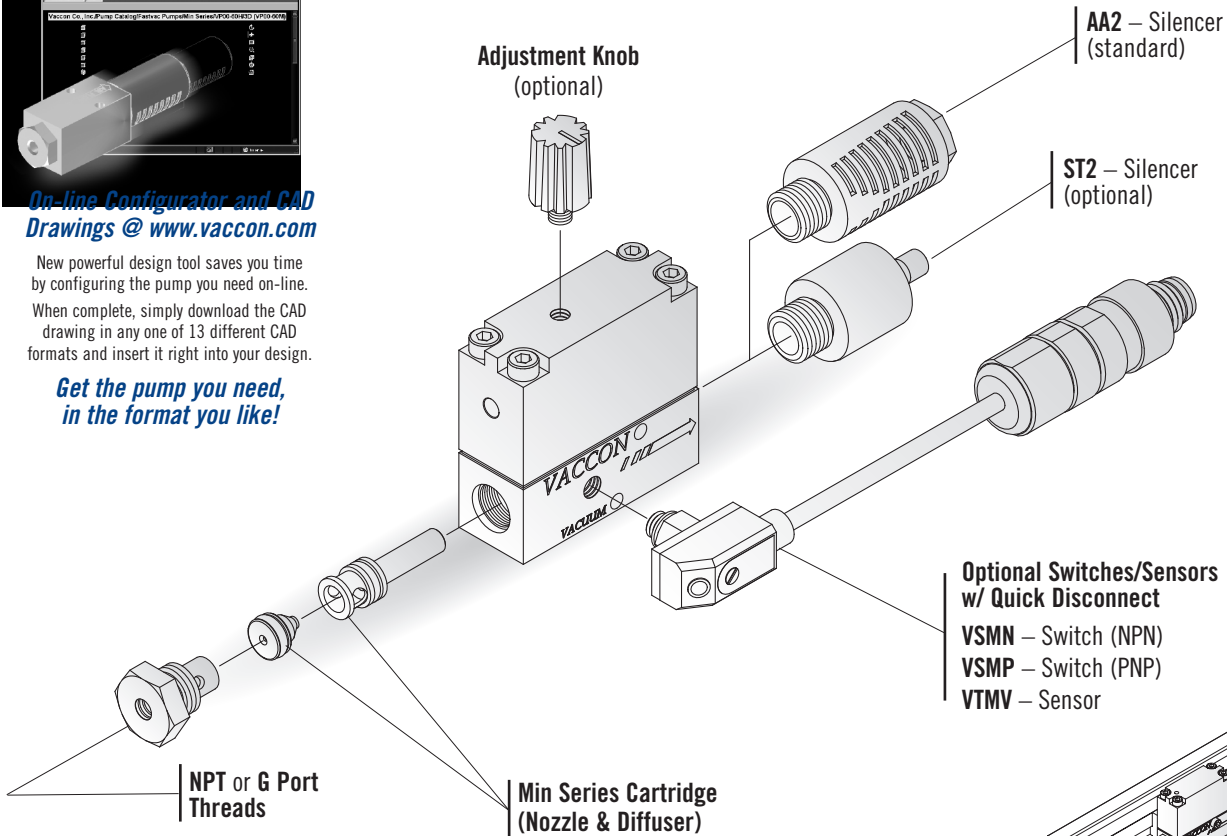
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VPOX pumps are Fractional and Metric T-Slot compatible. See EOAT Section.

How to Specify:

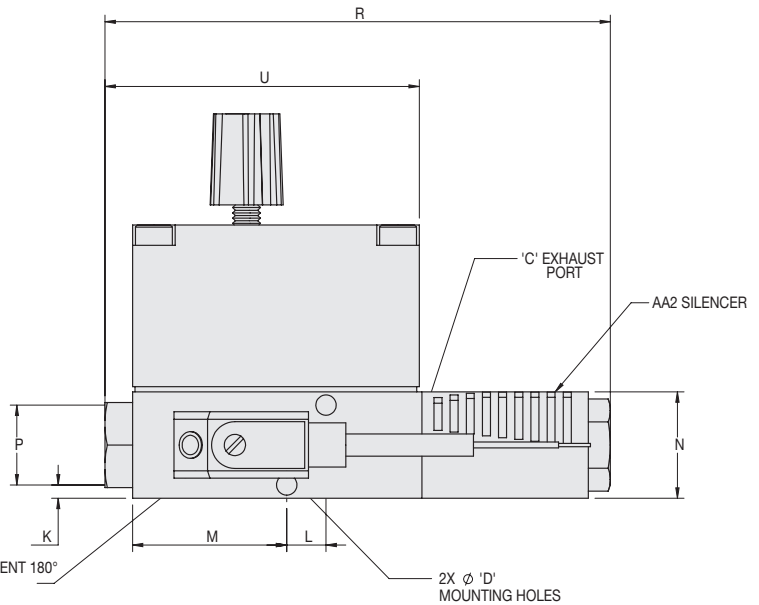
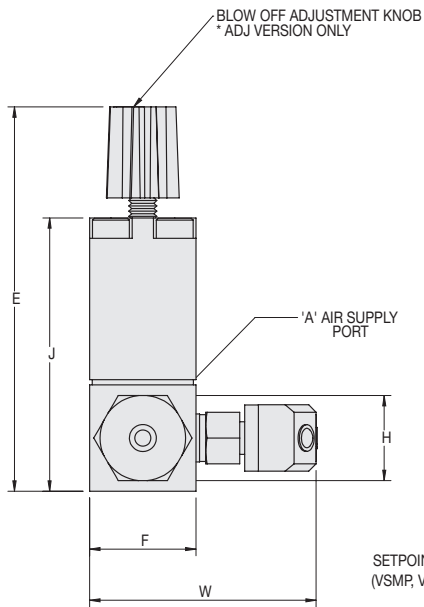
VPOX - 60 H - [] - ADJ - ST2 - []

P/N	Imperial Thread
VPOX	NPT
P/N	Metric Thread
I-VPOX	G Port
P/N	Max. Flow Level
-60	Standard
P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI (Standard)
-60	60 PSI

P/N	Switch/Sensor
	None – Standard
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
	AA2 Closed End (Standard)
-ST2	Straight-Through
P/N	Adjustable Blow-Off
	Not Adjustable (Standard)
ADJ	Adjustable Blow-off

For complete Performance Data, see page 50.

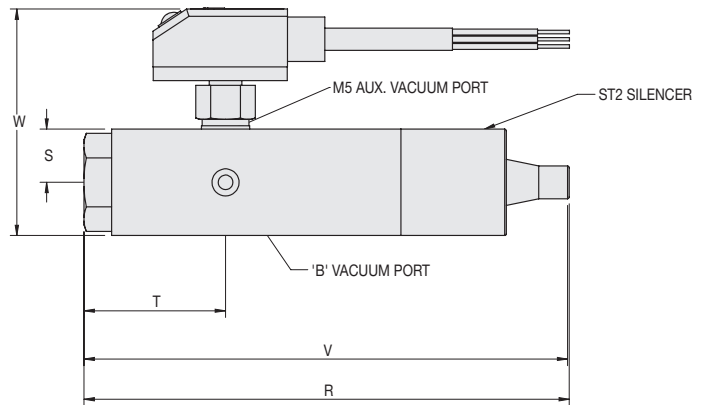
Standard: VPOX-60 (M, H) - (ADJ) Pump



VPOX-60M-ADJ



VPOX-60H-ST2



Specifications:

Weight 2.6 oz [74g]
Noise Level 68 dB

Model #	Imperial Dimensions (in.)																		
VPOX	A	B	C	D	E*	F	J	K	L	M	N	P	R	S	T	U	V	W	
w/AA2	10-32	10-32	1/8 NPT F	0.12	2.26	0.63	1.61	0.078	0.23	0.91	0.63	0.47	2.97	0.31	0.83	1.69	2.84	1.33	
w/ST2													2.85						
Model #	Metric Dimensions (mm)																		
I-VPOX	A	B	C	D	E*	F	J	K	L	M	N	P	R	S	T	U	V	W	
w/AA2	M3	M3	G 1/8	3.0	57.40	16.00	40.89	1.9812	5.84	23.11	15.88	11.91	75.44	7.87	21.08	42.93	72.14	33.78	
w/ST2													72.39						

*-ADJ Version Only

Performance Data for Min Series Vacuum Pumps

For Pump Models: VPO0, VPO1BV, VPO1QRBV, VPOX

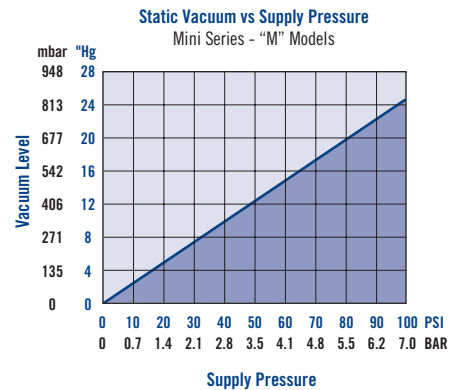
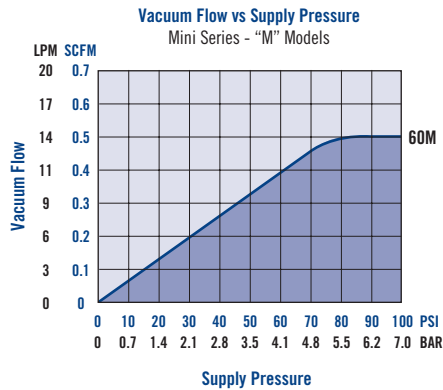
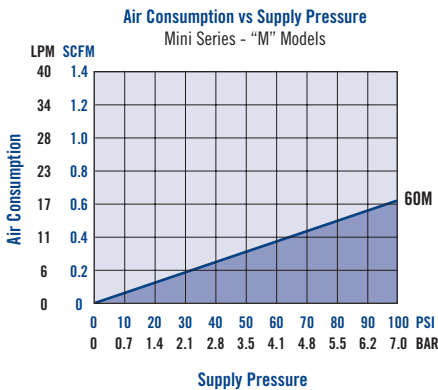
M-Series Pumps for Medium Vacuum Applications

M is for “Medium” vacuum levels up to 20” Hg [677mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles).

Model #	Air Consumption SCFM	Imperial - Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
60M	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
		Evacuation Time in Seconds based on 1 Cu. Ft. Volume/”Hg							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
		0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00

Model #	Air Consumption L/min	Metric - Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677mbar
60M	14.16	14.2	11.3	8.5	6.2	4.2	2.3	0.8	0.0
		Evacuation Time in Seconds based on 1 Liter Volume / mbar							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677mbar
		0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.



Performance Data for Min Series Vacuum Pumps

For Pump Models: VPO0, VPO1BV, VPO1QRBV, VPOX

H-Series Venturis – High Vacuum Applications

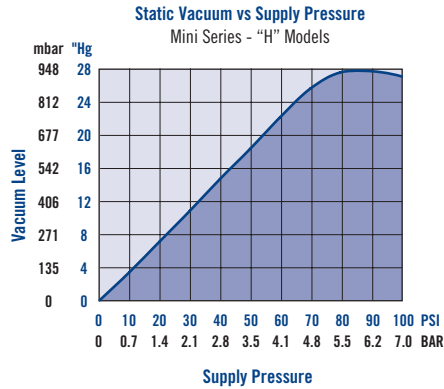
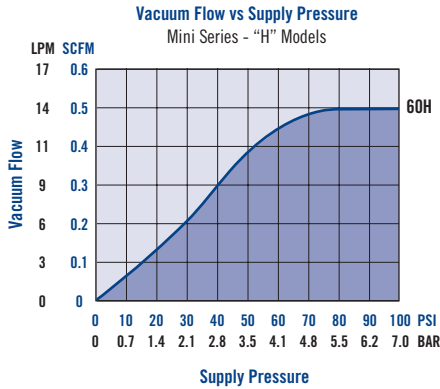
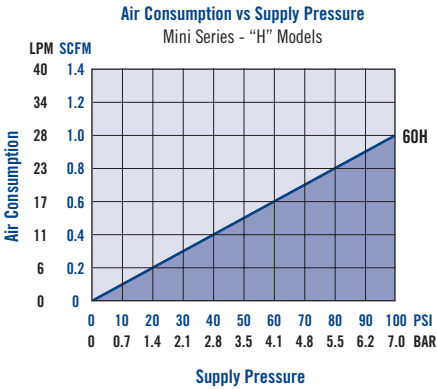
H is for “High” vacuum levels up to 28”Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0 “Hg	3 “Hg	6 “Hg	9 “Hg	12 “Hg	15 “Hg	18 “Hg	21 “Hg	24 “Hg	27 “Hg	28 “Hg
60H	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
		Evacuation Time in Seconds based on 1 Cu. Ft. Volume/”Hg										
		0 “Hg	3 “Hg	6 “Hg	9 “Hg	12 “Hg	15 “Hg	18 “Hg	21 “Hg	24 “Hg	27 “Hg	28 “Hg
		0.00	15.00	29.80	50.60	74.50	102.80	135.90	182.20	245.90	410.20	790.80

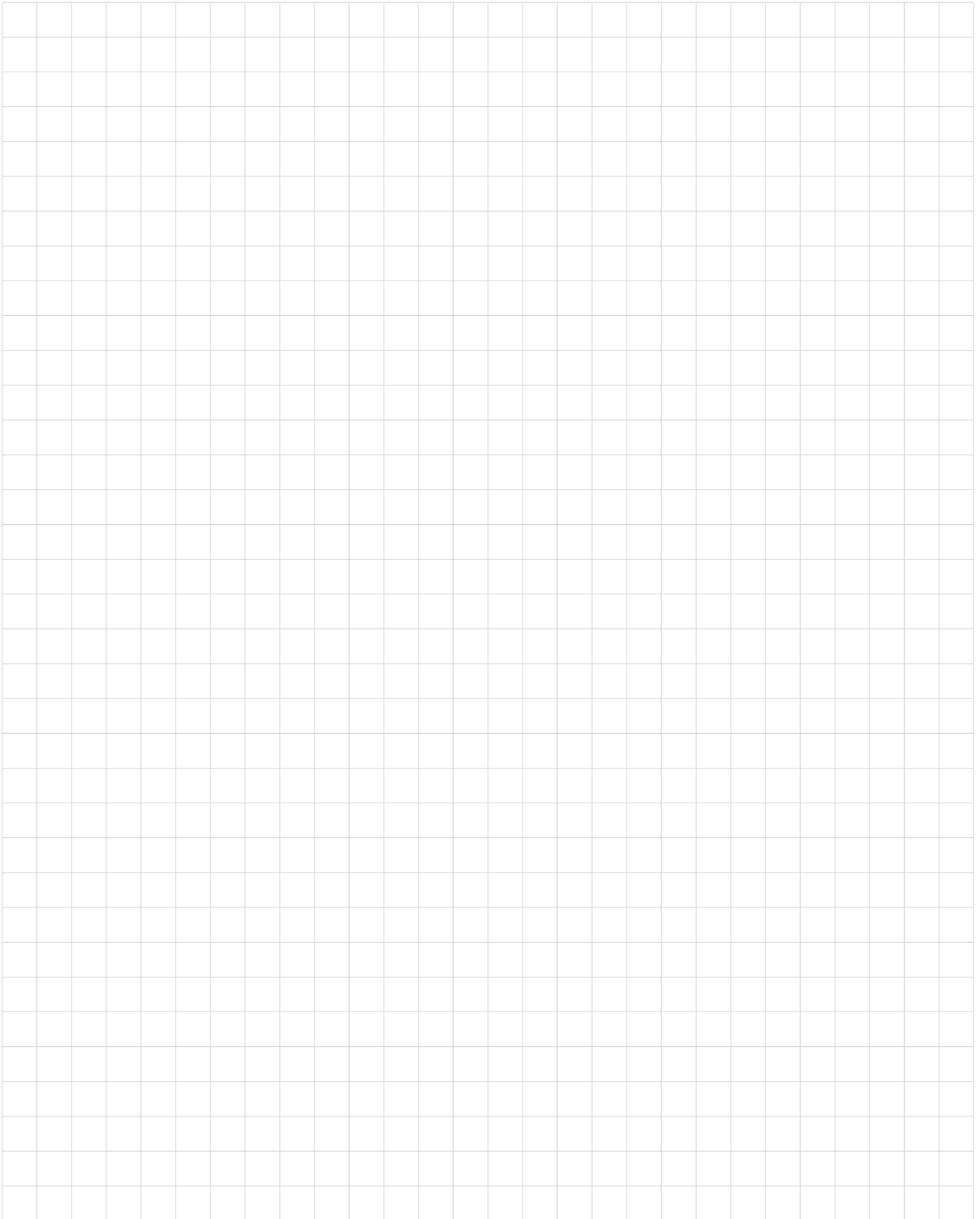
Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
60H	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
		0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Multi-port Venturi Vacuum Pumps



VP10 Series – Standard Pump



Designed for versatile performance in limited space applications - Designed for the "A-La-Carte" choices required when solving application issues.

See Page **54**

VP1X Series – Pneumatic Blow-Off



Vaccon's FASTBREAK vacuum pumps with high speed blow-off are ideal for pick & place applications that require accurate placement and rapid release.

See Page **58**

VP10-MP Series – Multi Port Version



The VP10-MP Series provides the flexibility of the VP10 Modular design with an integral 4 Port vacuum manifold.

See Page **62**

VP10-AC Series – Apple Core Mount



Combine the features of the VP10 Series pump with the ease and position flexibility of the "Apple Core" mounting system.

See Page **66**

VP20/ VP20BV Series – Standard Pump



Vaccon's FASTBREAK vacuum pumps with high speed blow-off. Ideal for pick & place applications. Now available with integral valve.

See Page **70**

VP2X/ VP2XBV Series – Pneumatic Blow-Off



Vaccon's FASTBREAK vacuum pumps with high speed blow-off. Ideal for pick & place applications. Now available with integral valve.

See Page **76**

VP20-MP/ VP20BV-MP Series – Multi Port Version



The VP20-MP Series provides the flexibility of the VP20 Modular design with an integral 4 Port vacuum manifold. Now available with integral valve.

See Page **82**

VP20-AS Series – Solenoid Controlled with Blow-Off Version



The Mid Series Air Saver Pump use the same modular venturi construction as all of our Mid Series Modular Venturi Vacuum Pumps. Now available with integral valve.

See Page **88**

VP35 Series – Standard Pump



These Modular Venturi Vacuum Pumps are manufactured with an integral Solenoid valve for process control.

See Page **92**

VP50 – Pilot Control



All pneumatic pilot controlled venturi vacuum pumps that feature an integral check valve and air pilot controlled blowoff.

See Page **96**

VMBV/ VMF – Segmented Modular Manifolds



Custom Vacuum Manifolds are individual vacuum segments with a common air supply that provides independent vacuum to multiple locations.

See Page **100**

Mid-size Venturi Vacuum Pump with Interchangeable Cartridges and Silencer

VP10



VP10-100H holds 4 tees for screen printing application



VP10-60M

Standard Pump:

The VP10 Mid Series air-powered venturi vacuum pumps are highly efficient, capable of reaching 28”Hg [948mbar], dirt tolerant, and include a silencer for quiet operation. Lightweight and compact, they can be easily mounted close to the vacuum point for fast response.

All Mid Series pumps incorporate Vaccon’s interchangeable venturi cartridge system that allows designers to choose from 11 different cartridge assemblies to optimize pump performance to meet their specific application needs.

Performance Level Designations:

“L” 0-10”Hg [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg [0 to 948mbar] for high vacuum/standard flow applications

Ideal Applications:

- Pick and place small part or medium size object
- End-of-Arm-Tooling/Robotic systems
- Packaging
- Vessel evacuation
- Vacuum clamping/holding fixtures

Features/Benefits

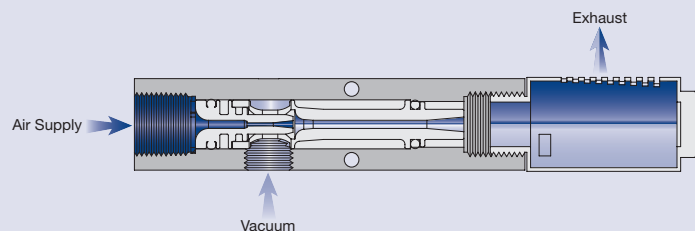
- Customize your pump performance with interchangeable venturi cartridges
- Safe operation – high flow, strong holding force
- High productivity – powerful vacuum up to 28”Hg [948mbar]
- Compact & lightweight – modular design speeds installation
- Efficient – minimal air consumption
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels.
- Factory installed miniature vacuum switches/sensors with quick disconnect for reliable part detection.
- Silencers– ST4 (straight-through) silencer won’t clog. STAA4 silencers for ultra quiet operation.
- G port threads for metric machines – an “I” prefix designates products with metric threads.
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



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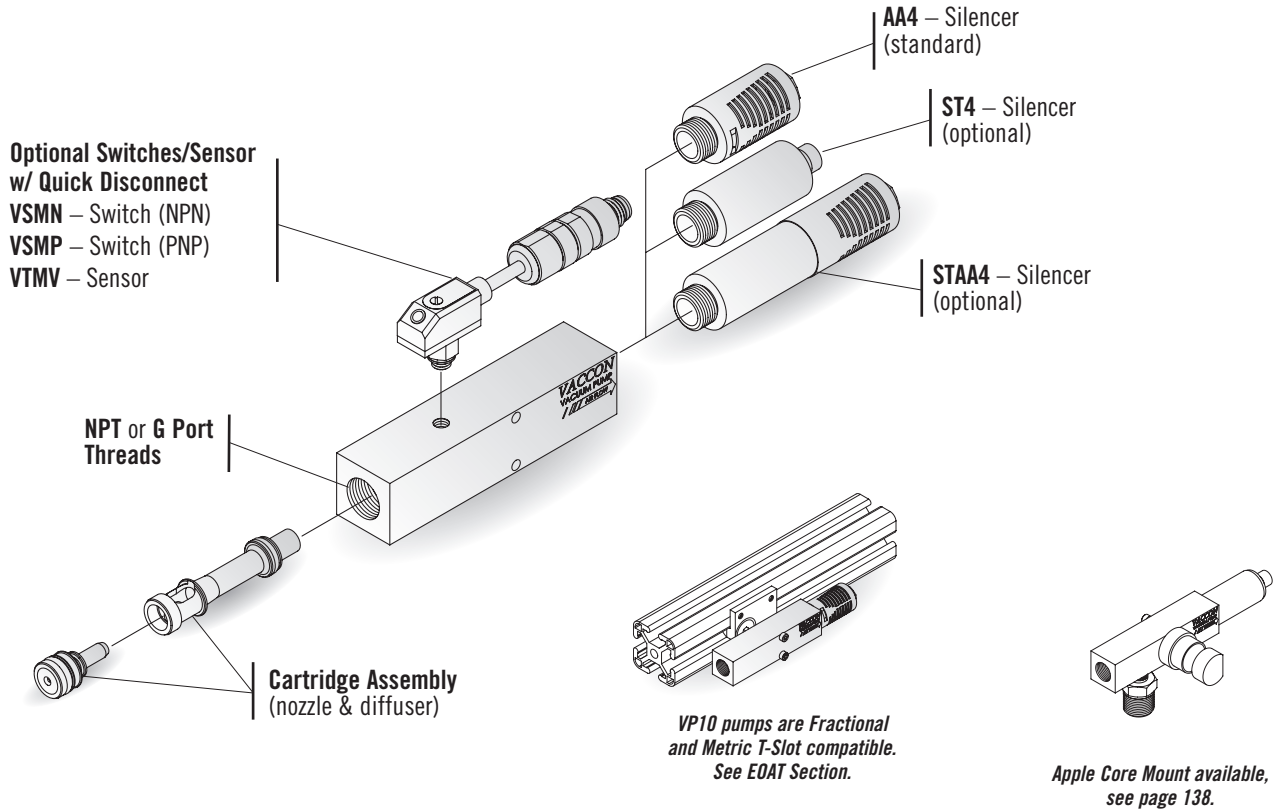
Vacuum technology isn’t an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP10- (60, 90, 100, 150) (L, M, H) Mid Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



How to Specify:

VP10 - 60 H - 60 - ST4 -

P/N	Imperial Thread
VP10	NPT
P/N	Metric Thread
I-VP10	G Port
P/N	Max. Flow Level
-60 (Not Available in L)	
-90	
-100	
-150	
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 Bar] (Std)
-60	60 PSI [4.0 Bar]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
	AA4 - Closed End (Standard)
ST4	Straight-Through
STAA4	Hybrid

For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

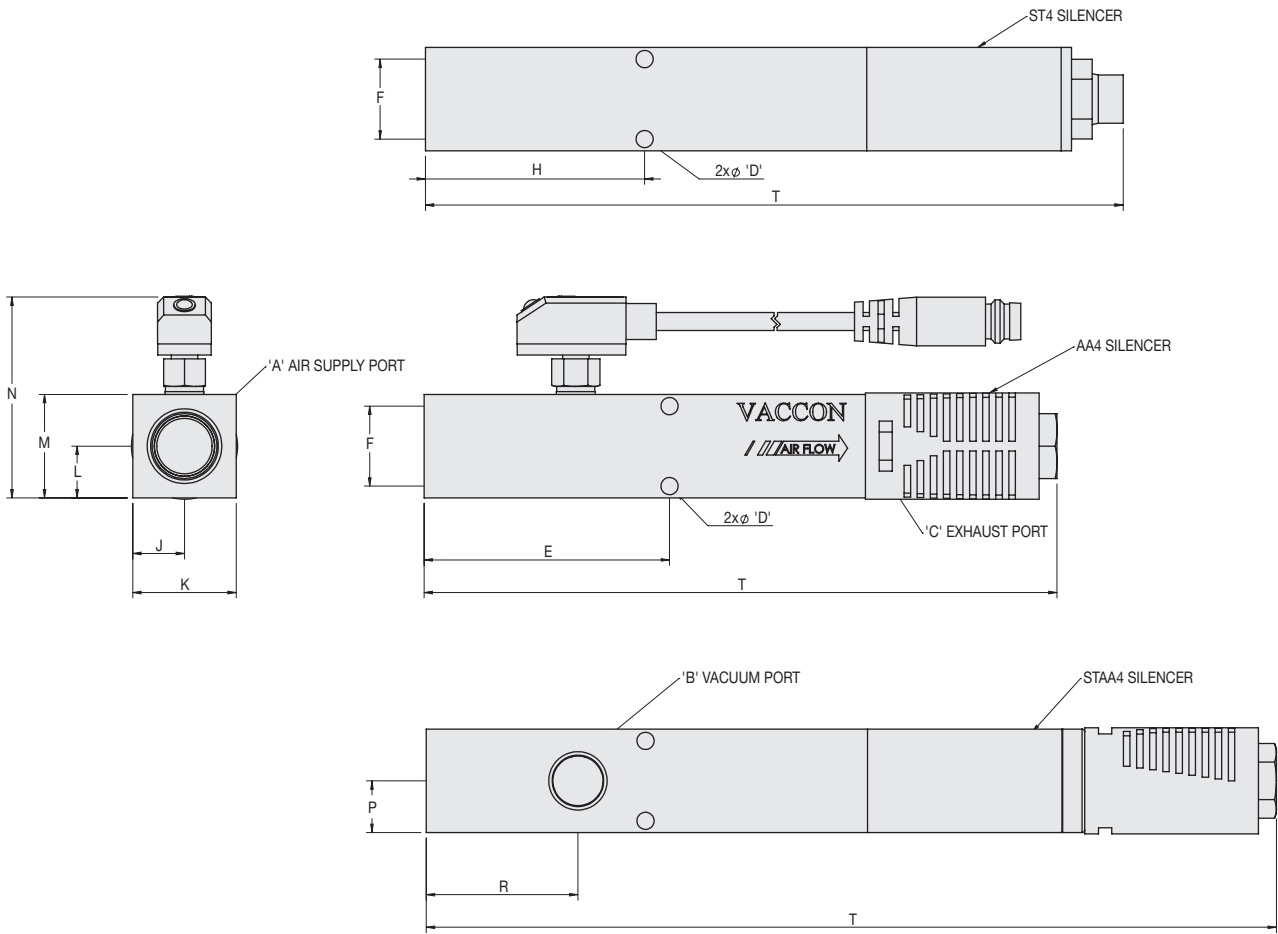
VP10 Pump Standard Specifications:

Pump Material:	Anodized Aluminum (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N O-ring (Other materials available - See page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gasses
Operating Temperature:	-30°~250° F [-34°~121°C]
Operating Pressure:	80 PSI [5.5 BAR] Standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VP10 Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.	
Control Valve:	3 way/2 position (faster part release), minimum orifice – 0.125 ID [3mm]	
Mounting Holes:	Mounting holes accept 4-40 [M3] screws	

VP10- (60, 90, 100, 150) (L, M, H)



VP10-100H with AA4 silencer.

Specifications:

Weight: 2.38 oz [67.5g]
Noise Level: 64dB



VP10-90M with ST4 silencer.

Specifications:

Weight: 2.47 oz [70 g]
Noise Level: 66dB



VP10-100H with STAA4 silencer.

Specifications:

Weight: 2.84 oz [80.6 g]
Noise Level: 58dB

Model #	Imperial Dimensions (in.)														
VP10	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T
w/AA4	1/4 NPT F	1/8 NPT F	1/4 NPT F	0.12	1.78	0.58	1.59	0.38	0.75	0.38	0.75	2.08	0.38	1.10	4.59
w/ST4															5.06
w/STAA4															6.17
Model #	Metric Dimensions (mm)														
I- VP10)	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T
w/AA4	G 1/4	G 1/8	G 1/4	3.05	45.21	14.73	40.39	9.53	19.05	9.53	19.05	52.83	9.53	27.94	116.59
w/ST4															128.52
w/STAA4															156.59

Mid Series Fastbreak Venturi Vacuum Pump with Pneumatic Blow-off and Silencer

VP1X & VP1X-ADJ



Standard Pump:

VP1X & VP1X-ADJ air-powered venturi vacuum pumps are trusted for accurate part placement and rapid part release. The reliable Fastbreak Mid Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required.

The integrated pneumatic high-speed blow off on the VP1X pump provides a fixed-duration blow off, based on the volume of the housing. With the VP1X-ADJ adjustable vacuum pump, you can control the intensity of the blow-off using one fingertip adjustment knob. (Customer-supplied directional control valve with exhaust required.)

For applications where you need to control the duration of the blow-off, please see VP35 Series on page 92.

For applications where you need a solenoid operated pump with a pneumatic blow-off, please see VP2XV on page 76.

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Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place applications requiring accurate part placement and rapid part release:
 - ~ Palletizing
 - ~ Packaging machines
 - ~ High speed labeling machines
 - ~ Sheet feeders
 - ~ Robotic end effectors
 - ~ Automated assembly

Features/Benefits:

- Fast Response – compact, lightweight, and installs close to vacuum point
- Trouble free operation:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ Automatically cleans vacuum lines
 - ~ No downtime
- High productivity – rapid part release, cycle rates up to 900/min
- Modular design – add vacuum sensors and solenoid valves to create a complete vacuum system
- Multiple functions from just one PLC output – requires fewer outputs, less costly, easy to program
- Reliable part detection – factory installed miniature vacuum switches or sensors

Performance Level Designations:

- “L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications
- “M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications
- “H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

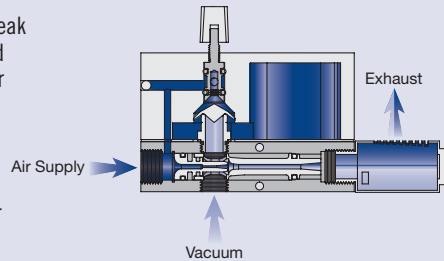
Pump Options:

- ADJ version allows the user to set the intensity of the blow-off from no blow-off to full blow-off
- Interchangeable venturi cartridges – 11 different performance levels
- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- Silencers – ST4 (straight-through) silencer won't clog, or STAA4 silencers for ultra quiet operation
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional

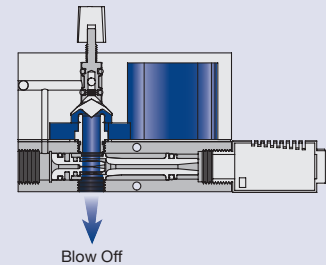
Principles of Operation: VP1X & VP1X-ADJ

Fastbreak pumps provide both suction and blow-off with a single supply of compressed air controlled by a solenoid valve.

Utilizing quick exhaust valve technology, Fastbreak pumps store compressed air in the upper chamber while simultaneously generating vacuum. The quick exhaust diaphragm seals the compressed air chamber from the suction line.



When the part is to be released, the solenoid valve* is de-energized. The vacuum stops and the rapid drop in pressure shifts the quick exhaust diaphragm into the up position allowing the store compressed air to vent into the vacuum line.



When handling small and lightweight parts, choose the adjustable version (-ADJ) shown above to control the blow-off intensity.

***Note:** A customer supplied solenoid valve controlling the compressed air to the Fastbreak pump must be in close proximity to the pump and vent to atmosphere for the quick exhaust valve to actuate properly.

VP1X and VP1X-ADJ Standard Pump Specifications:

Body Material:	Anodized Aluminum, Nebar, Brass, Buna-N, Vinyl, Nylon, Alloy Steel (For silencer material, see page 264 - 266.)	
Cartridge Material:	Nylon, Buna-N O-ring (Other materials available, see page 8)	
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases	
Operating Temperature:	+32°~125° F [0°~52°C]	
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures	
Cycle Rates:	Up to 900/min	
Blow-off Response Time:	Instantaneous	
Orientation:	Any position	
Blow-off Duration:	100 milliseconds (based on system design)	

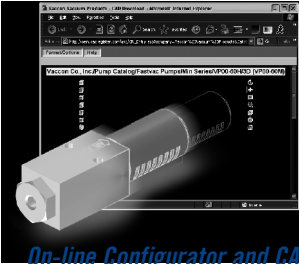
VP1X and VP1X-ADJ Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF-125LPM – See page 278	Typically filters are not required, if desired Vaccon recommends – VF-250F – See page 278
Control Valve:	3 way/2 position, minimum orifice - 0.125" ID [3mm]	
Mounting Holes:	Mounting holes accept 4-40 [M3] screws	

Modular Venturi Vacuum Pumps – Mid Series

VP1X & VP1X-ADJ Fastbreak Mid Series Configurations and Options:

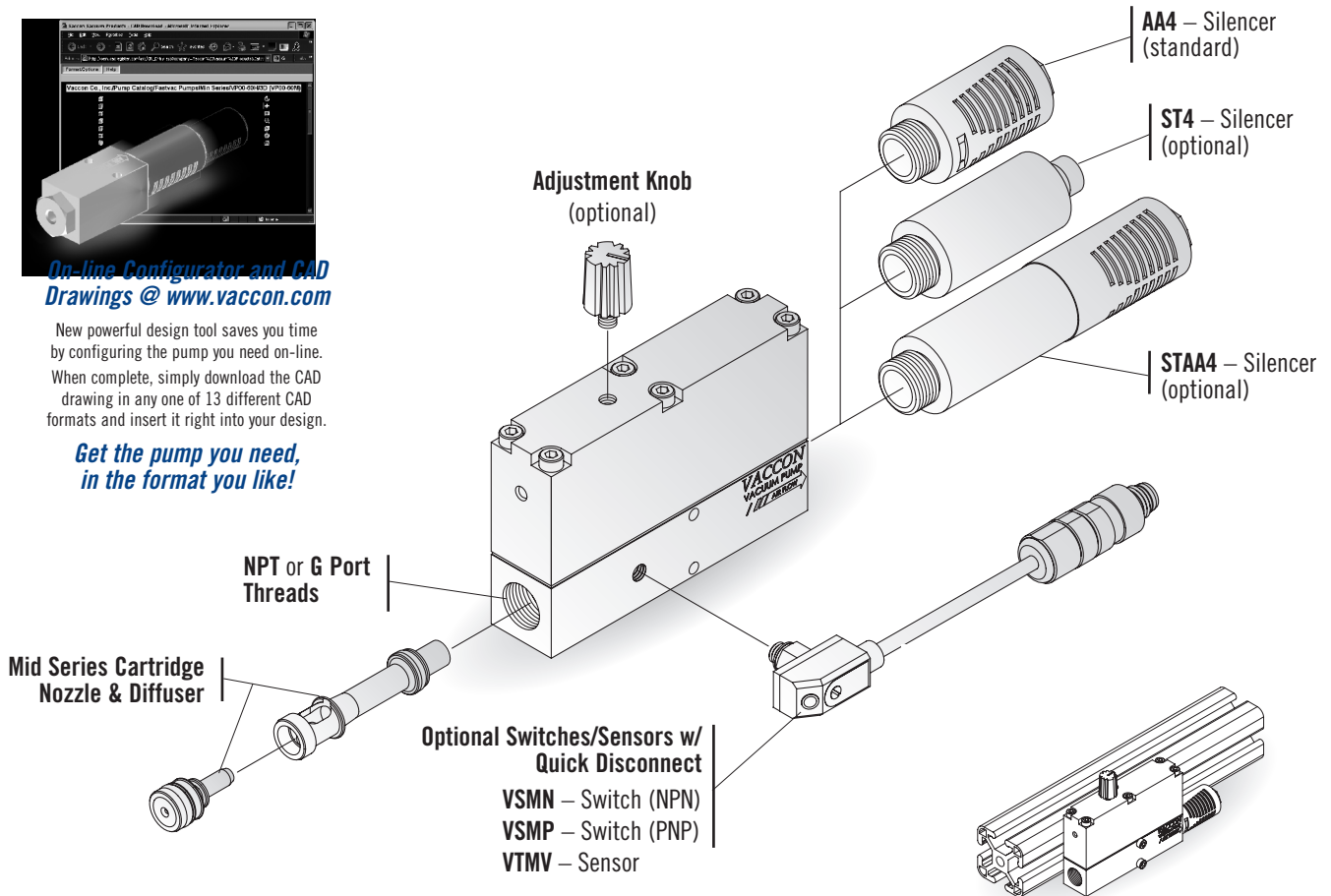
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VP1X pumps are Fractional and Metric T-slot compatible. See EOAT Section.

How to Specify:

VP1X - 60 H - [] - ADJ - ST4 - []

P/N	Imperial Thread
VP1X	NPT
P/N	Metric Thread
I-VP1X	G Port
P/N	Max. Flow Level
-60	
-90	
-100	
-150	
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
-60	60 PSI [4.0 BAR]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
	AA4 Closed End (Standard)
ST4	Straight-through
STAA4	Hybrid
P/N	Adjustable Blow-off
	Not Adjustable (Standard)
ADJ	Adjustable Blow-off

For complete Performance Data, see page 106.

Standard: VP1X - (60, 90, 100, 150) (L, M or H) (-ADJ) Pump



VP1X-90H-ADJ with AA4

Specifications:

Weight 5.7 oz [162g]
Noise Level 64 dB



VP1X-60M with ST4

Specifications:

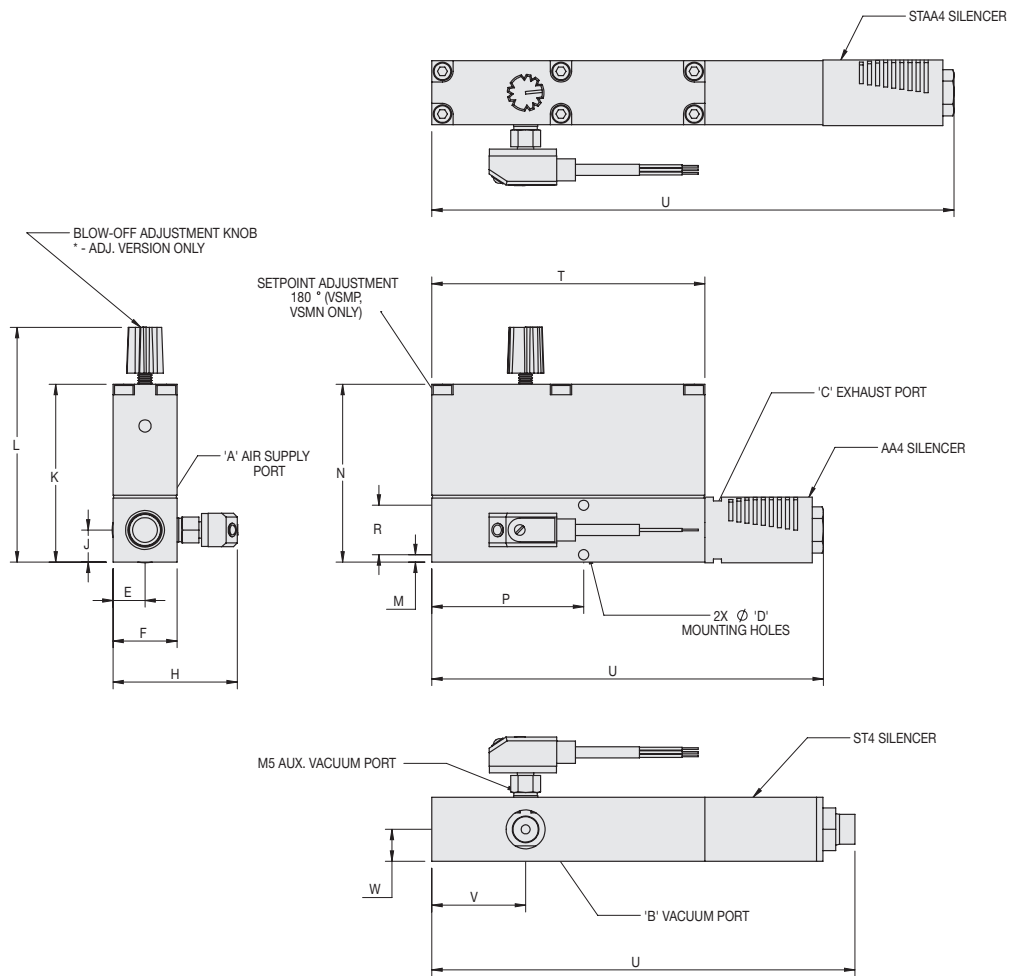
Weight 5.8 oz [162g]
Noise Level 66 dB



VP1X-100M-ADJ with STAA4

Specifications:

Weight 6.0 oz [162g]
Noise Level 58 dB



Model #	Imperial Dimensions (in.)																	
VP1X (ADJ)	A	B	C	D	E	F	H	J	K	L*	M	N	P	R	T	U	V	W
w/AA4	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.21	0.38	0.75	1.46	0.38	2.08	2.75	0.09	2.08	1.78	1.78	3.20	6.18	1.10	0.38
w/ST4																4.60		
w/STAA4																5.06		
Model #	Metric Dimensions (mm)																	
I- VP1X (ADJ)	A	B	C	D	E	F	H	J	K	L*	M	N	P	R	T	U	V	W
w/AA4	G 1/4	G 1/4	G 1/4	5.33	9.65	19.05	37.08	9.53	52.86	69.85	2.29	52.83	45.21	45.21	81.28	156.97	27.94	9.53
w/ST4																116.84		
w/STAA4																128.52		

*-ADJ Version Only

Mid Series Multi-port Venturi Vacuum Pumps with Silencers

VP10-MP



VP10-100H-MP with manifold blocks and cups removes injection molded parts.



VP10-90M-MP

Vaccon's new Multi-port venturi vacuum pumps combine a venturi with a manifold to distribute vacuum to multiple locations. The result is a compact vacuum generation and distribution system for End-of-Arm Tools and applications where one pump powers multiple cups.

VP10-MP pumps have 4 vacuum ports that distribute vacuum equally to 4 locations with "Home-Run" plumbing. The streamlined design minimizes vacuum loss, maximizes vacuum flow and speeds cycle times for safe, efficient lifting operations.

In addition to the 4 topside vacuum ports, there is an additional port that can be plumbed to a compressed air source to provide a blow-off. The manifold design allows the one compressed air connection to feed blow-off air to all vacuum locations simultaneously, saving the need to plumb a separate blow-off line to each location.

An M5 threaded port allows you to connect a Vaccon miniature vacuum sensor/switch to provide an electrical signal for vacuum achieved/part present and to alert failures.

Ideal Applications:

- End-of-Arm Tooling/Robotics
- Pick and place
- Flexible manufacturing
- Packaging – carton erecting, robotic palletizing
- Automation assembly

Features/Benefits

- High performance – vacuum up to 28" Hg [948mbar]
- High production – fast cycle times with shot to shot consistency
- High flow – maintains strong holding force, overcomes leakage
- Home Run plumbing – saves compressed air
- Easy mounting – fractional and metric T-slot compatible
- Time saving – pre-designed, factory assembled, quick installation
- Safe operation – no electricity needed at pump
- Reliable – non-clogging, trouble free operation

Performance Level Designations:

"L" 0-10" Hg [0 to 339mbar] for low vacuum/high flow applications

"M" 0-20" Hg [0 to 677mbar] for medium vacuum/high flow applications

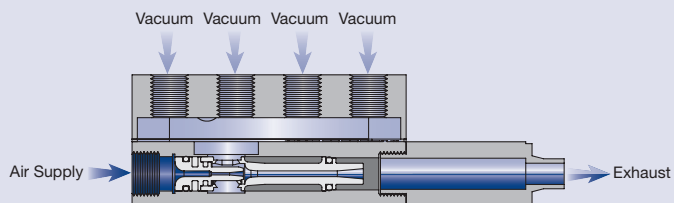
"H" 0-28" Hg [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels (VP10 & VP20 Series only)
- Silencers - ST4 (straight-through) silencers won't clog, STAA4 silencers for ultra quiet operation
- Miniature sensors or switches with quick disconnect
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard (60 PSI [4.0 BAR] option)

Principles of Operation:

Vacuum is produced by supplying compressed air to a Mid series venturi cartridge and is distributed to the vacuum manifold ports, the switch/sensor port and the optional blow-off port if required.



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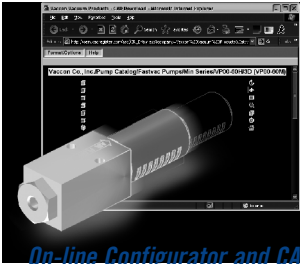
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP10- (60, 90, 100, 150) (L, M, H) -MP Series Configurations and Options:

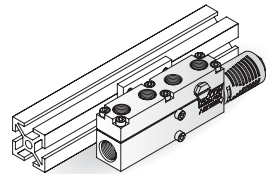
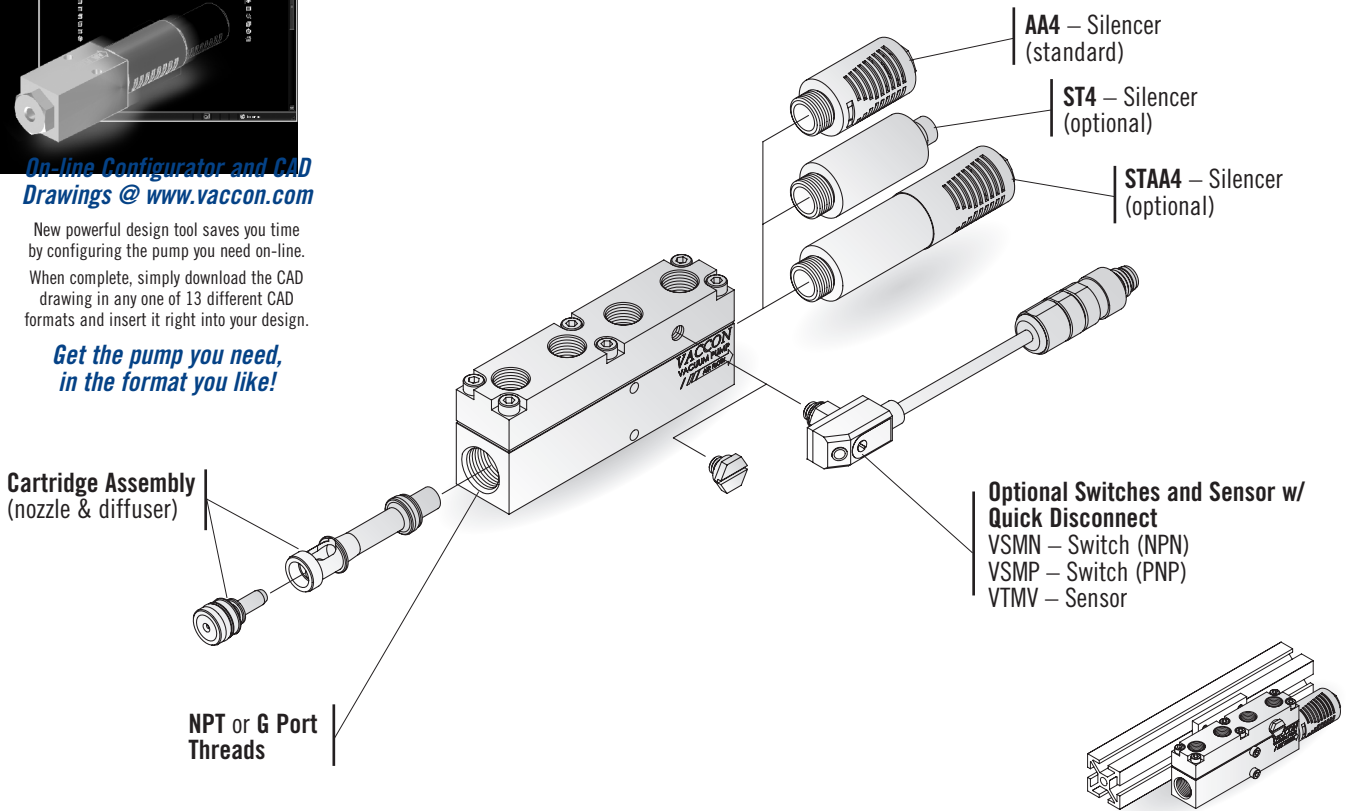
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VP10-MP pumps are Fractional and Metric T-Slot compatible. See EOAT Section.

How to Specify:

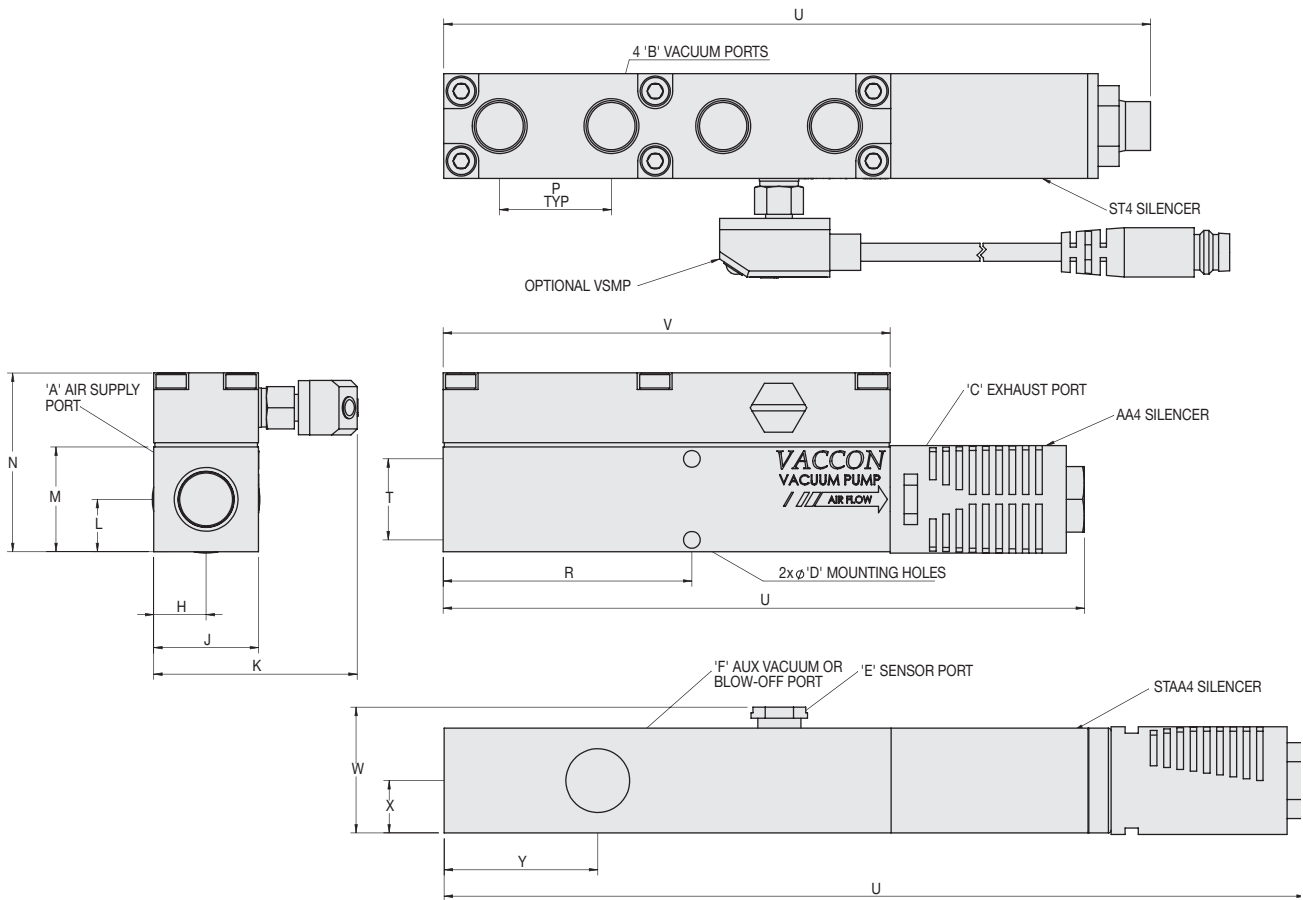
VP10 - 60 H - 60 - MP - ST4 - VSMP

P/N	Imperial Thread
VP10	NPT
P/N	Metric Thread
I-VP10	G Port
P/N	Max. Flow Level
60	
90	
100	
150	
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
	AA4 Closed-End (Standard)
ST4	Straight -Through
STAA4	Hybrid Silencer
P/N	Operating Pressure
	80 PSI [5.5 Bar] (Standard)
60	60 PSI [4.0 Bar]

For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

Standard Pump: VP10- (60, 90, 100, 150) (L, M, H)- MP



VP10-90H-MP



VP10-100M-MP-ST4



VP10-150L-MP-STAA4

Specifications:

Weight	4.1 oz [115g]	4.5 oz [131g]	4.6 oz [131]
Noise Level	62 dB	68 dB	64 dB

Model #	Imperial Dimensions (in.)																			
VP10-MP with	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W	X	Y
w/AA4	1/4	1/8	1/4	0.13	10-32	1/4	1.46	0.75	1.46	0.38	0.75	1.28	0.80	1.78	0.58	3.20	3.20	0.9	0.375	1.10
w/ST4	NPT F	NPT F	NPT F			NPT F										5.06				
w/STAA4																6.17				
Model #	Metric Dimensions (mm)																			
I- VP10-MP with	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W	X	Y
w/AA4	G 1/4	G 1/8	G 1/4	3.30	M5	G 1/4	37.08	19.05	36.98	9.53	19.05	32.49	20.32	45.21	14.73	81.28	9.7	9.7	25.4	G 1/8
w/ST4																128.5				
w/STAA4																156.59				

VP10-MP Pump Standard Specifications:

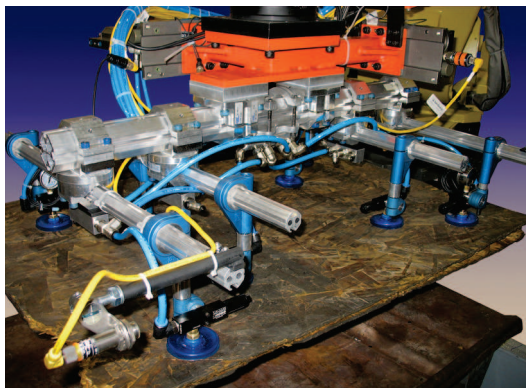
Pump Material:	Anodized Aluminum (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N O-ring (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-30°~250° F [-34°~121°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VP10-MP Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.	
Control Valve:	3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]	
Mounting Holes:	Mounting holes accept 4-40 [M3] screws	

Venturi Vacuum Pump with Apple Core Style Mount

VP10 and VP1X Series Mid Size Pumps with Interchangeable Cartridges and Optional Pneumatic Blow-off



End-of-Arm Tool with multiple VP10-100M-AC vacuum pump/apple core assemblies for picking and placing worn plywood slipsheets for palletizing operation.

“Apple Core” pumps combine the features of the VP10 or VP1X Series pumps with the ease and position flexibility of the apple core mounting system. As an integral part of the pump, the apple core mount and clamp creates a swivel arm assembly that allows the pump/cup to rotate 360 degrees in 2 axis positions – ideal for handling curved parts.

Extend the usefulness of your automation investment by increasing its flexibility to handle a variety of parts using Vaccon’s apple core style pumps where position adjustments are fast and easy. Choose from the 11 interchangeable venturi cartridges to optimize performance, minimize air consumption and maximize holding force.

The Apple Core pin mounts on either side of the pump and is easily swapped from one side to the other in the field to accommodate new configurations as needed. The pin mounts are undercut to slide past the fastening screw for quick assembly and remain captured during operation. Slide the assembly along the fixed extension shaft (FEB40-2, 3) and clamp in place to set the vertical position.

The VP1X Series features an all-pneumatic High Speed Blow-off function. A pressurized volume chamber onboard provides a rapid blowoff once the compressed air is shut off to the venturi – two functions with only one air line. This eliminates the need for an additional air valve which would have to fill lengths of tubing to reach the cups, further reducing compressed air consumption.

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Vacuum technology isn’t an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- End-of-Arm-Tooling
- Press load & unload automotive automation
- Robotic assembly
- Pick and place
- Sheet feeding
- Stamping press transfer

Features/Benefits

- Positioning flexibility – safe handling of curved parts and surfaces
- Performance Versatility – interchangeable Venturi Cartridge Design
- Quiet Operation – straight-through, non-clogging silencers
- Easy Installation – one air line connection
- High Production – fast part release blow-off (up to 900 cycles/min)
- Compact – no external plumbing required for blow-off
- Efficient – minimal compressed air consumption



VP1X-90H-AC vacuum pump with pneumatic blow-off with Vaccon’s apple core style mount.

Vaccon Apple Core pumps, mounts and clamps are standardized to be retrofitted where non-Vaccon apple core style tooling is used.

Standard Pump and Apple Core Assembly

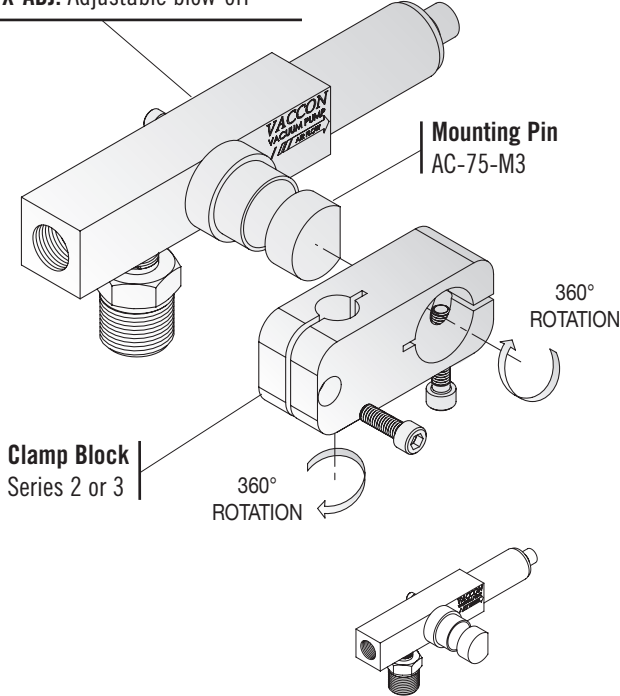
- **Material:** Anodized aluminum
- **Operating pressure:** 60 PSI for peak performance
- **ST4 silencer** – straight-through silencer won’t clog

Pump/Apple Core Options:

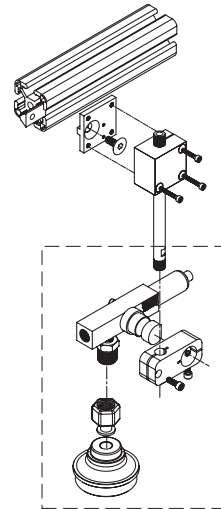
- 2 Vacuum levels: Medium “M” 0-20”Hg [0 to 677mbar] or High “H” 0-28”Hg [0 to 948mbar]
- 4 Vacuum flow rates: see page 106 for complete performance data
- Integral Vacuum Switch/Sensor available for “Part Present” Signal

Venturi Pumps with Apple Core Mount & Clamp – Configurations and Options:

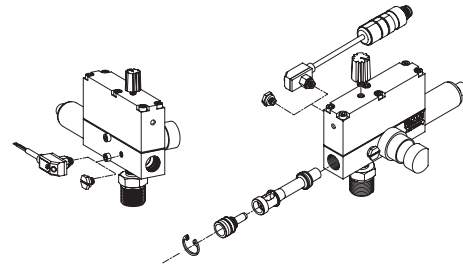
VP10: Vacuum Pump - shown
VP1X: Vacuum Pump with blow-off
VP1X-ADJ: Adjustable blow-off



VP10 Venturi Vacuum Pump
 with Interchangeable Cartridge and optional
 Ultra-Mini Sensor/Switch & Quick Disconnect



Extrusions with UB:
 Universal Bracket and
 FEB: Fixed Extension
 Bracket. Other brackets
 and levelers available.



VP1X and VP1X-ADJ Venturi Vacuum Pump
 with blow-off (adjustable option) with Interchangeable Cartridge
 and optional Ultra-Mini Sensor/ Switch & Qk Disconnect

How to Specify:

VP1X - 100 M - ADJ - AC75-MP-2 - VSMP

P/N	Body Style- Imperial Thread
VP10	Vacuum Pump
VP1X	Vacuum Pump with Blow-off

P/N	Body Style- Metric Thread
I-VP10	Vacuum Pump
I-VP1X	Vacuum Pump with Blow-off

P/N	Max. Flow Level
-60	
-90	
-100	
-150	

P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]

P/N	Switch/Sensor
	None - Standard
-VSMN	Switch - NPN
-VSMP	Switch - PNP
-VTMV	Sensor - 1-5VDC Output

P/N	Clamp Blocks & Mounting Pin
AC75-MB-2	Clamp Block Series 2
AC75-MB-3	Clamp Block Series 3
AC75-M3	Mounting Pin and Hardware

P/N	Adjustable Blow-off
-ADJ	for VP1X & I-VP1X pumps only

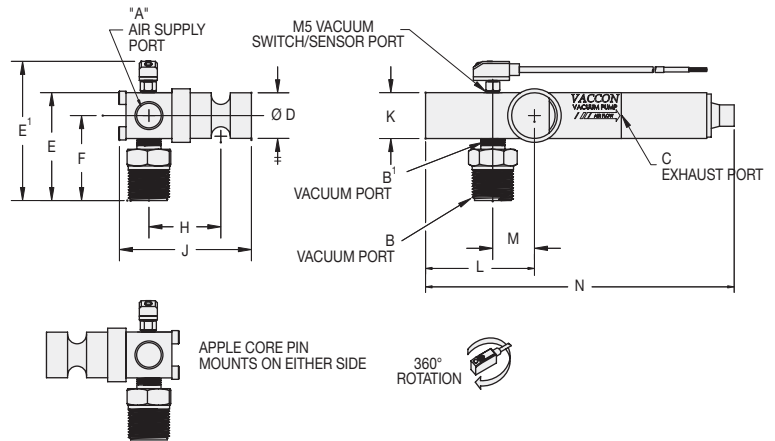
For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

VP10-(60, 90, 100, 150) (M or H) - AC - Optional Switch/ Sensor Quick Disconnect



Left: VP10-AC with Fixed Extension Bracket
Right: VP10-AC pump with Apple Core mount.



Specifications:

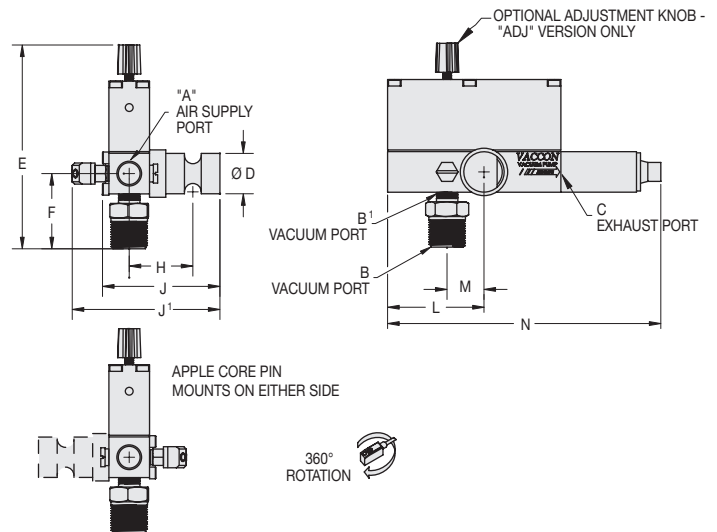
Noise Level 66dB

Model #	Imperial Dimensions (in.)													Weight*
	A	B	B'	C	D	E / E'	F	H	J	K	L	M	N	
VP10-AC	1/4" NPT F	3/8" NPT M	1/8" NPT F	1/4" NPT F	0.75	1.79 / 2.28	1.39	1.18	2.16	0.75	1.78	0.68	5.05	5 / 6 oz.
	Metric Dimensions [mm]													
	A	B	B'	C	D	E / E'	F	H	J	K	L	M	N	Weight*
G 1/4	G 3/8	G 1/8	G 1/4	19.1	45.5 / 57.9	35.3	30.0	54.9	19.1	45.2	17.3	128.3	145 / 176 g	

VP1X-(60, 90, 100, 150) (M or H)-(ADJ)-AC - Optional Switch/ Sensor Quick Disconnect



Left: VP1X-ADJ-AC with Fixed Extension Bracket.
Right: VP1X-ADJ-AC with Apple Core mount.



Specifications:

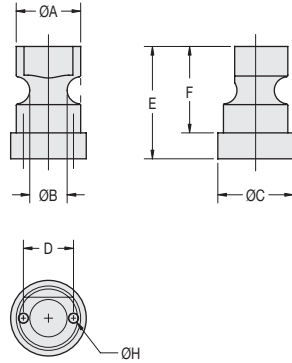
Noise Level 66dB

Model #	Imperial Dimensions (in.)													Weight*
	A	B	B'	C	D	E	F	H	J / J'	K	L	M	N	
VP1X-AC & VP1X-ADJ-AC	1/4" NPT F	3/8" NPT M	1/8" NPT F	1/4" NPT F	0.75	3.76	1.39	1.18	2.2 / 2.73	N/A	1.78	0.68	5.05	8 / 9 oz.
	Metric Dimensions [mm]													
	A	B	B'	C	D	E	F	H	J / J'	K	L	M	N	Weight*
G 1/4	G 3/8	G 1/8	G 1/4	19.1	95.5	35.3	30.0	55.9 / 69.3	N/A	45.2	17.3	128.3	238 / 269 g	

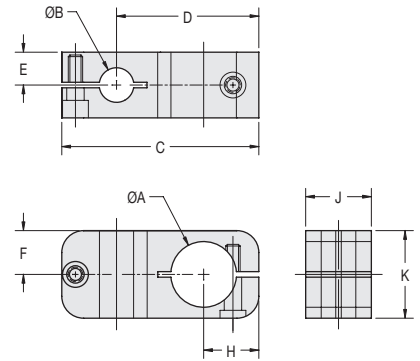
Apple Core Mounting Pin and Clamps



Mounting Pin AC75-M3



Clamp Block AC75-MB-2 & AC75-MB-3



Model #		Dimensions									Weight
		A	B	C	D	E	F	H	J	K	
AC75-M3 Mounting Pin	in	0.75	0.43	0.88	0.58	1.30	1.00	M3 x 0.5	N/A	N/A	0.9 oz
	mm	19.1	11.0	22.2	14.7	33.0	25.4	M3 x 0.5	N/A	N/A	25.5 g
AC75-MB-2 Clamp Series 2	in	0.75	0.40	2.25	1.63	0.38	0.50	0.63	0.75	1.00	1.7 oz
	mm	19.1	10.0								48.2 g
AC75-MB-3 Clamp Series 3	in	0.75	0.59	[57.2]	[41.3]	[9.5]	[12.7]	[16.0]	[19.1]	[25.4]	1.5 oz
	mm	19.1	15.0								42.5 g

How to Specify:

Choose the clamp size (Series 2 or 3) that corresponds to the Fixed Extension Bracket size (Series 2 or Series 3). Order by part number as separate line items. i.e. **AC75-MB-3**

VP10, VP1X & VP1X-ADJ Pump Standard Specifications:

Pump Material: Anodized Aluminum (For silencer material, See page 264 - 266.)
Cartridge Material: Nylon, Buna-N O-ring (Other materials available - See Page 8)
Medium: Filtered (50 Micron) un-lubricated, non-corrosive dry gas
Operating Temperature: -30°~250° F [-34°~121°C]
Operating Pressure: 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VP10, VP1X & VP1X-ADJ Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends VF125LPM – See Page 278	Typically filters are not required, if desired Vaccon recommends VF250F – See Page 278

Control Valve: 3 way (faster part release), minimum orifice – 0.125" ID [3mm]

Mounting Holes: Mounting holes accept 4-40 [M3] screws

Mid-size Venturi Vacuum Pump with Interchangeable Cartridges and Silencer

VP20/ VP20BV



VP20-90M pump with SX-5 switch monitors presence of box. No filters required.



VP20BV-150H with optional ports for vacuum gauge and sensor/switch

Standard Pump:

VP20 Mid Series air-powered venturi vacuum pumps are the most commonly used pumps for pick and place applications due to their ease of mounting and the variety of options and accessories available.

Vaccon Mid Series vacuum pumps provide maximum design versatility: designers specify only the features necessary for their specific application. VP20BV offers a 2-way integrated valve. Vaccon's interchangeable venturi cartridge system enhances manufacturing flexibility, enabling designers to choose the vacuum level, vacuum flow, evacuation speed and air consumption based on any one of 11 venturi cartridges.

Performance Level Designations:

"L" 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications

"M" 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications

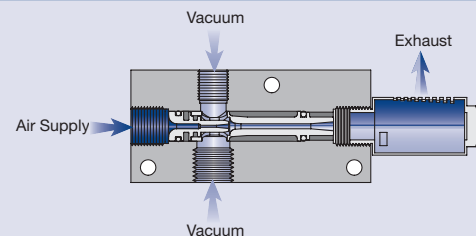
"H" 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels
- Vacuum sensors/switches with quick disconnect provide electrical signal for vacuum achieved/part present, will interface with PLC's and computerized control systems
- 2-way Integrated valve - 24vdc, normally closed
- Vacuum gauges – provides visual monitoring, helpful when setting vacuum sensor and troubleshooting
- Silencers – ST4 (straight-through) silencer won't clog. STAA4 silencers for ultra quiet operation
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] option)

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place small or medium size objects
- End-of-Arm-Tooling/Robotic systems
- Packaging
- Bag/box opening
- Vessel evacuation
- Vacuum clamping/holding fixtures

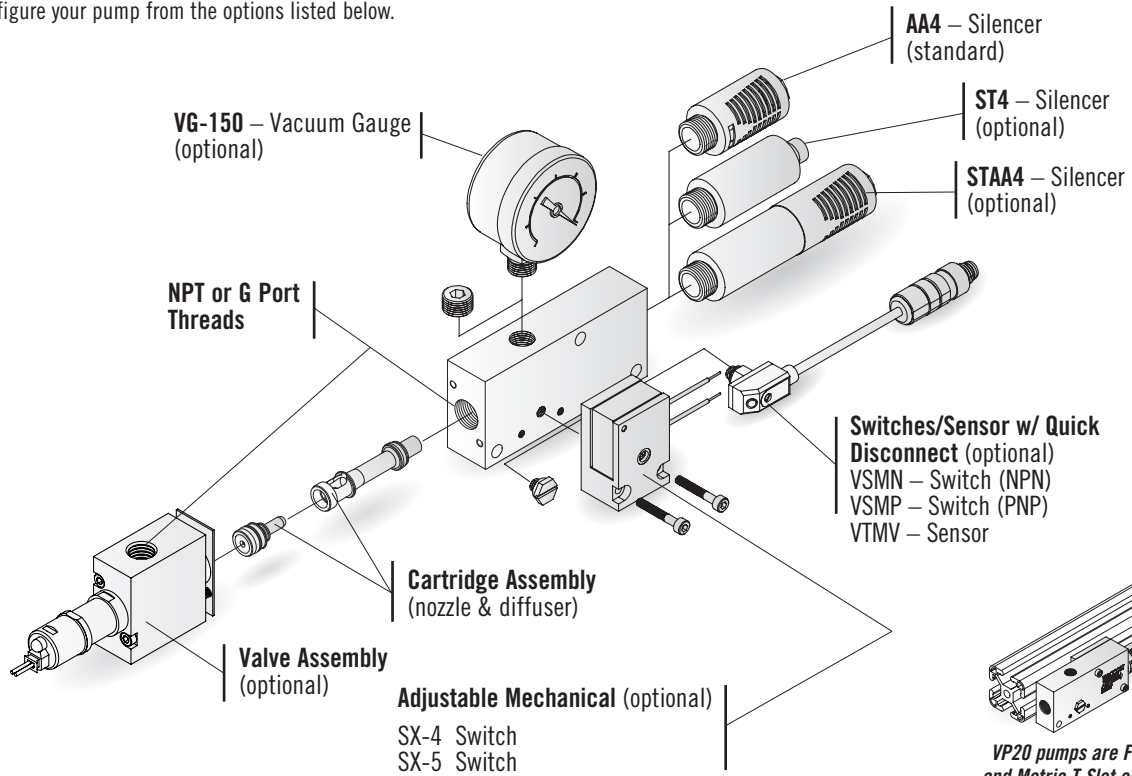
Features/Benefits

- Customize your pump performance with interchangeable venturi cartridges
- Safe operation – high flow, overcomes leakage providing a strong holding force
- Mounts easily – square body, compact and lightweight
- High productivity – powerful vacuum up to 28"Hg [948mbar]
- Fast response – installs close to vacuum point
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Modular Venturi Vacuum Pumps – Mid Series

VP20- (60, 90, 100, 150) (L, M, H) Mid Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



How to Specify:

VP20 - 60 H - 60 - ST4 - VSMP

P/N Imperial Thread-NPT

VP20 No Valve
VP20BV with Valve Assy

P/N Metric Thread-G Port

I-VP20 No Valve
I-VP20BV with Valve

P/N Max. Flow Level

60 (Not Available in L)
90
100
150

P/N Max. Vac Level

L 10"Hg [339mbar]
M 20"Hg [677mbar]
H 28"Hg [948mbar]

P/N Operating Pressure

80 PSI [5.5 Bar] (Std)
60 60 PSI [4.0 Bar]

P/N Switch/Sensor

None (Standard)
VSMN Switch – NPN
VSMP Switch – PNP
VTMV Sensor – 1-5VDC Output
SX-4 Switch – 2-14.8"Hg
SX-5 Switch – 7.4-30"Hg

P/N Silencer

AA4 - Closed End (Standard)
ST4 Straight-Through
STAA4 Hybrid

P/N Vacuum Gauge

VG-150 Vaccon does not recommend shipping gauges attached to pumps. Please specify as a separate line item.

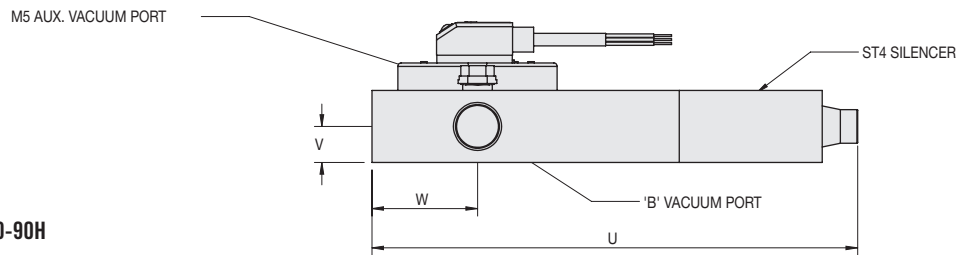
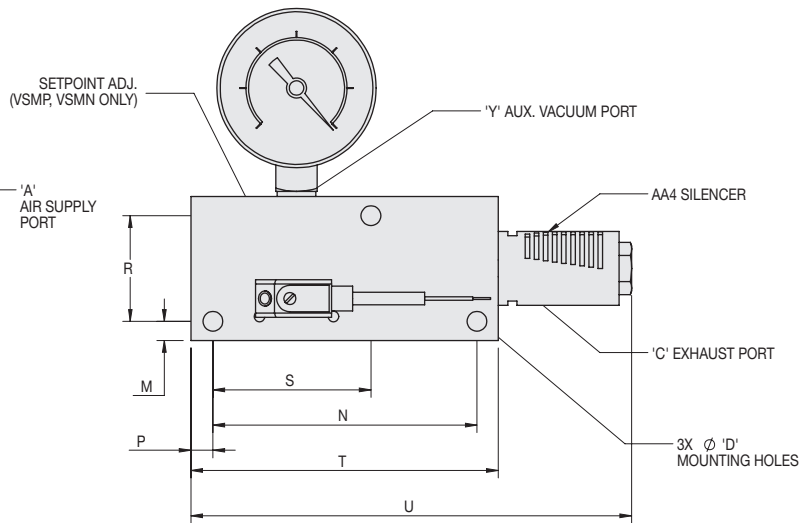
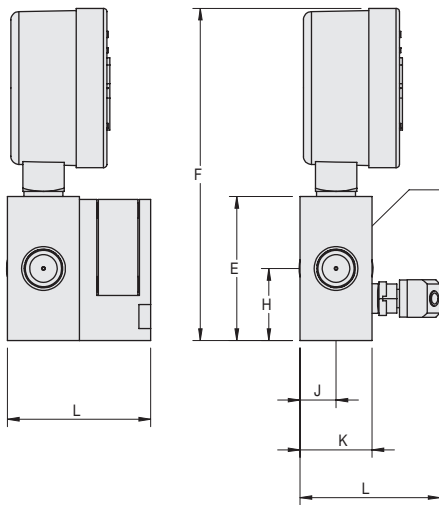
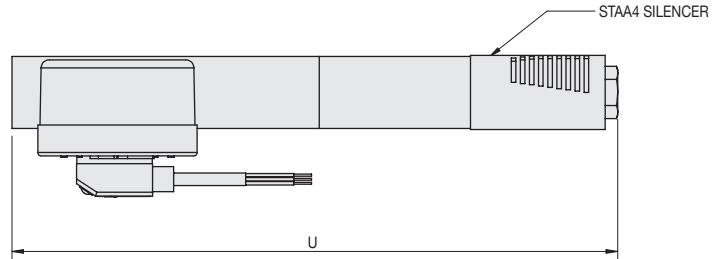
For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

Standard Pump: VP20 - (60, 90, 100, 150) (L, M, H)



Standard VP20-90H with AA4 silencer.



Specifications: Standard VP20-90H

Weight: 5.1 oz [146g]

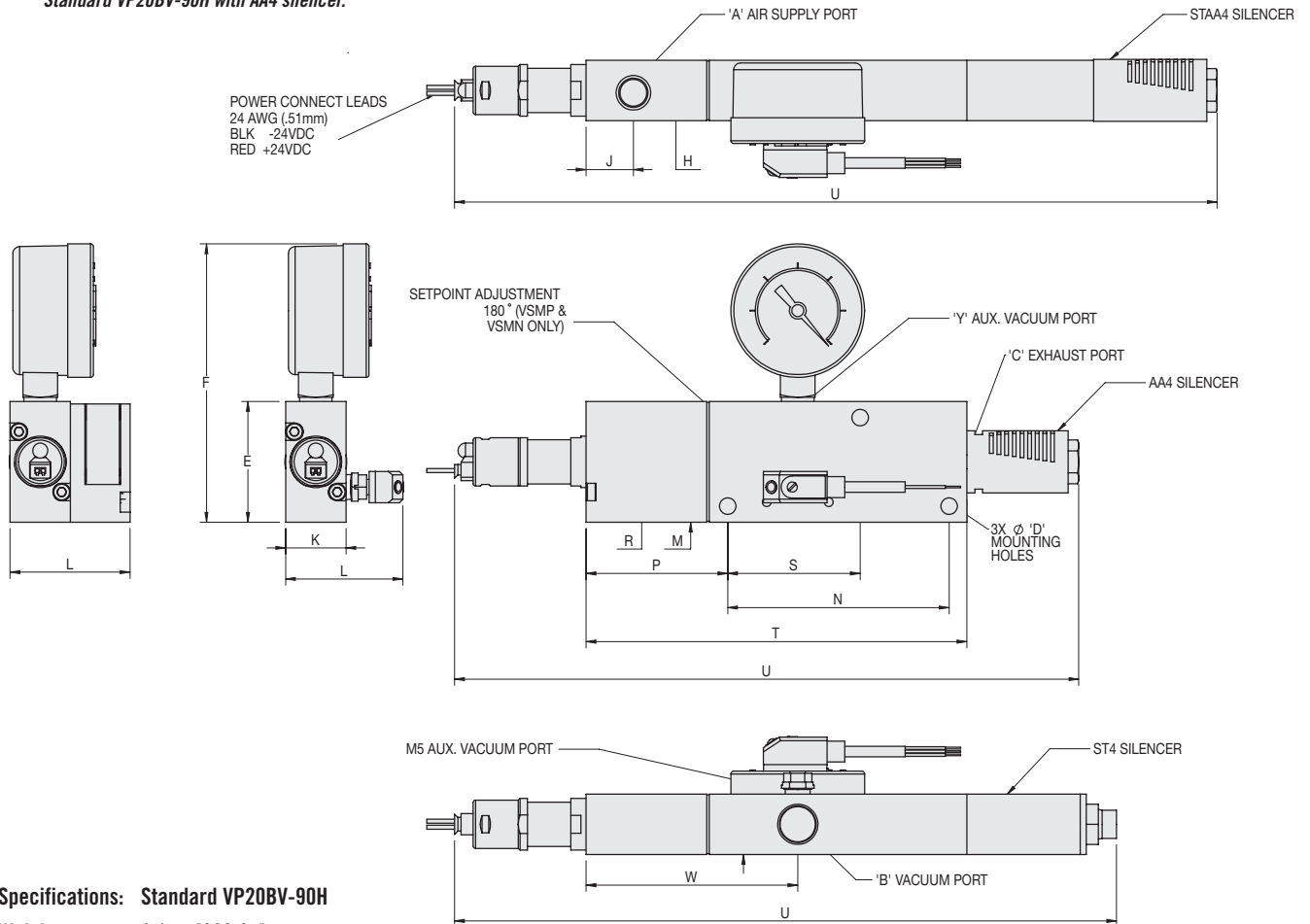
Noise Level: 64dB

Model #	Imperial Dimensions (in.)																					
VP20 with	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	
w/AA4	1/4	1/4	1/4	0.21	1.50	3.46	0.75	0.38	0.75	1.46	0.20	2.75	0.23	1.30	1.65	3.20	4.59		0.38	0.38	1.00	1/8
w/ST4	NPT F	NPT F	NPT F														5.06					
w/STAA4																	6.31					
Model #	Metric Dimensions (mm)																					
I- VP20 with	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	
w/AA4				5.3	38.1	87.9	19.1	9.7	19.1	37.1	5.1	69.9	5.8	33.0	41.9	81.3	116.6		9.7	9.7	25.4	G 1/8
w/ST4	G 1/4	G 1/4	G 1/4														128.5					
w/STAA4																	160.3					

Standard Pump: VP20BV - (60, 90, 100, 150) (L, M, H)



Standard VP20BV-90H with AA4 silencer.



Specifications: Standard VP20BV-90H

Weight: 8.1 oz [229.6g]

Noise Level: 64dB

Model #	Imperial Dimensions (in.)																				
VP20BV	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
w/AA4	1/4	1/4	1/4	0.21	1.50	3.46	0.75	0.38	0.75	1.46	0.20	2.75	0.23	1.30	1.65	3.20	4.59	0.38	0.38	1.00	1/8
w/ST4	NPT F	NPT F	NPT F														5.06				
w/STAA4																	6.31				
Model #	Metric Dimensions (mm)																				
I- VP20BV	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
w/AA4	G 1/4	G 1/4	G 1/4	5.3	38.1	87.9	19.1	9.7	19.1	37.1	5.1	69.9	5.8	33.0	41.9	81.3	116.6	9.7	9.7	25.4	G 1/8
w/ST4																	128.5				
w/STAA4																	160.3				

Modular Venturi Vacuum Pumps – Mid Series

VP20 Pump Standard Specifications:

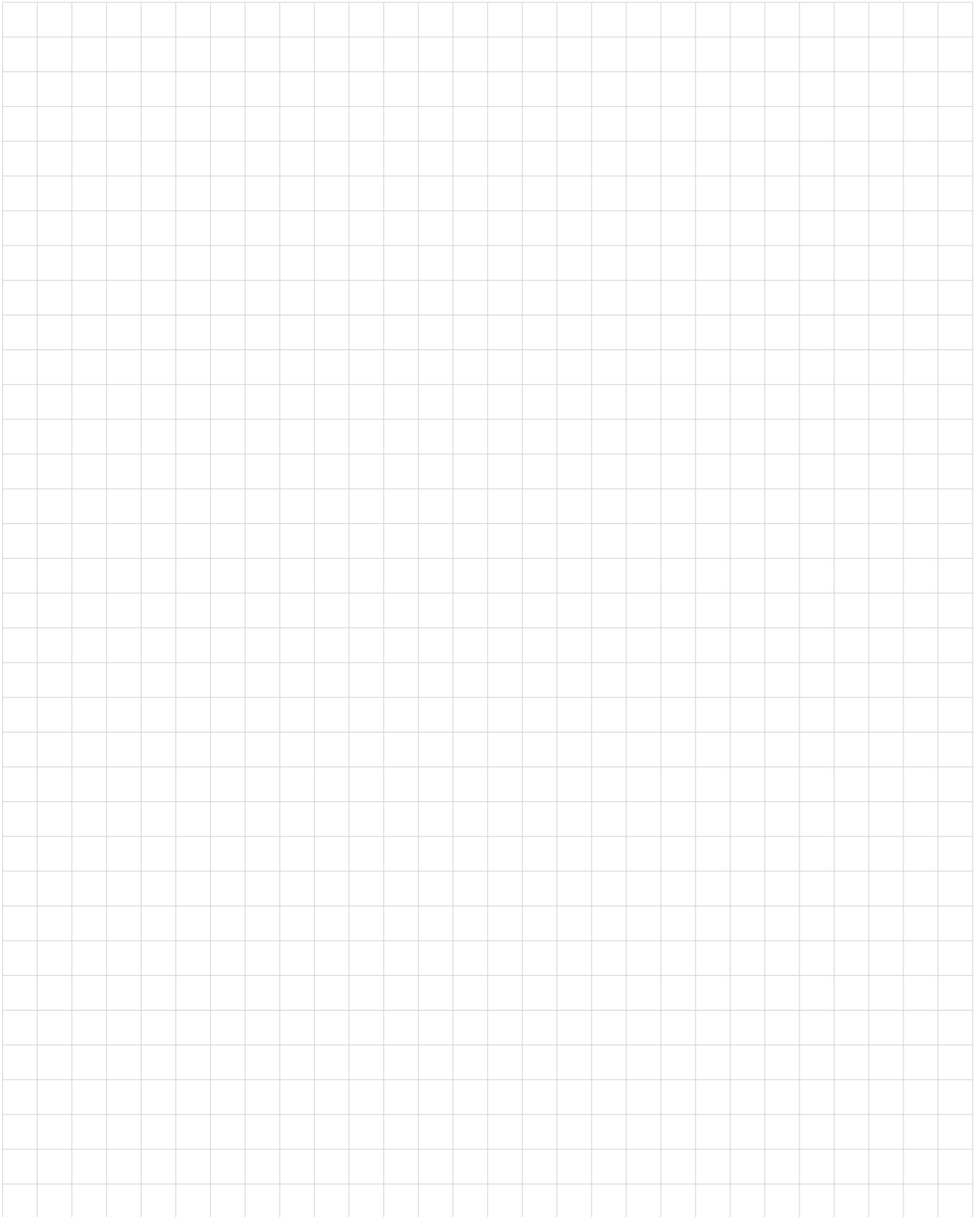
Pump Material:	Anodized Aluminum (For silencer material, see page 264 - 266)
Cartridge Material:	Nylon, Buna-N O-ring (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-30°~250° F [-34°~121°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24 VDC [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

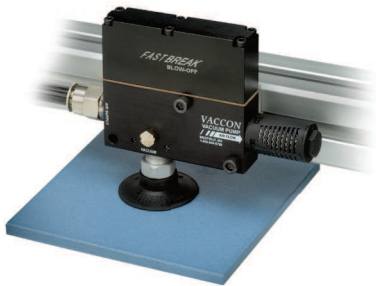
VP20 Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.	
Control Valve:	3 way/2 position (faster part release), minimum orifice – 0.125 ID [3mm]	
Mounting Holes:	Mounting holes accept 10-32 or M5 screws	



Mid Series Fastbreak Venturi Vacuum Pump with Pneumatic Blow-off and Silencer

VP2X & VP2X-ADJ VP2XBV & VP2XBV-ADJ



VP2X-60H accurately stacks tiles with rapid part release blow-off.



VP2X-90M



VP2XBV-90M-ADJ-ST4-VSMP

Standard Pump:

VP2X & VP2X-ADJ air-powered venturi vacuum pumps are trusted for accurate part placement and rapid part release. The reliable Fastbreak Mid Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required.

The integrated pneumatic high-speed blow off on the VP2X pump provides a fixed-duration blow off, based on the volume of the housing. With the VP2X-ADJ adjustable vacuum pump, you can control the intensity of the blow-off using one fingertip adjustment knob. (Customer-supplied directional control valve with exhaust required).

VP2XBV and VP2XBV-ADJ pumps offer an optional 2-way integrated valve.

For applications where you need to control the duration of the blow-off, please see VP35 Series on page 97.

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Vaccon technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

Pick and place applications requiring accurate part placement and rapid part release:

- ~ Palletizing
- ~ Packaging machines
- ~ High speed labeling machines
- ~ Sheet feeders
- ~ Robotic end effectors
- ~ Automated assembly

Features/Benefits:

- Fast Response – Compact, lightweight, and installs close to vacuum point
- Trouble free operation:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ Automatically cleans vacuum lines
 - ~ No downtime
- High productivity – Rapid part release, cycle rates up to 900/min
- Modular design – Add vacuum sensors and solenoid valves to create a complete vacuum system
- Multiple functions from just one PLC output – Requires fewer outputs, less costly, easy to program
- Reliable part detection – Factory installed miniature vacuum switches or sensors

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

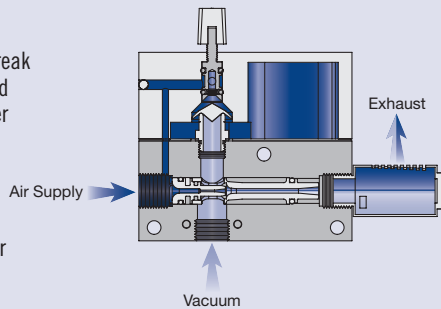
Pump Options:

- ADJ version allows the user to set the intensity of the blow-off from no blow-off to full blow-off
- Interchangeable venturi cartridges – 11 different performance levels
- 2-way Integrated valve - 24vdc, normally closed
- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- Silencers – ST4 (straight-through) silencer won't clog, or STAA4 silencers for ultra quiet operation
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional

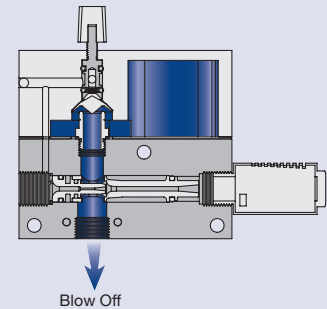
Principles of Operation: VP2X & VP2X-ADJ

Fastbreak pumps provide both suction and blow-off with a single supply of compressed air controlled by a solenoid valve.

Utilizing quick exhaust valve technology, Fastbreak pumps store compressed air in the upper chamber while simultaneously generating vacuum. The quick exhaust diaphragm seals the compressed air chamber from the suction line.



When the part is to be released, the solenoid valve* is de-energized. The vacuum stops and the rapid drop in pressure shifts the quick exhaust diaphragm into the up position allowing the store compressed air to vent into the vacuum line.



When handling small and lightweight parts, choose the adjustable version (-ADJ) shown above to control the blow-off intensity.

*Note: A customer supplied solenoid valve controlling the compressed air to the Fastbreak pump must be in close proximity to the pump and vent to atmosphere for the quick exhaust valve to actuate properly.

VP2X and VP2X-ADJ Standard Pump Specifications:

Body Material:	Anodized Aluminum, Nebar, Brass, Buna-N, Vinyl, Nylon, Alloy Steel (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N O-ring, (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	+32°~125° F [0°~52°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures
Cycle Rates:	Up to 900/min
Blow-off Response Time:	Instantaneous
Orientation:	Any position
Blow-off Duration:	100 milliseconds (based on system design)

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24 VDC [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

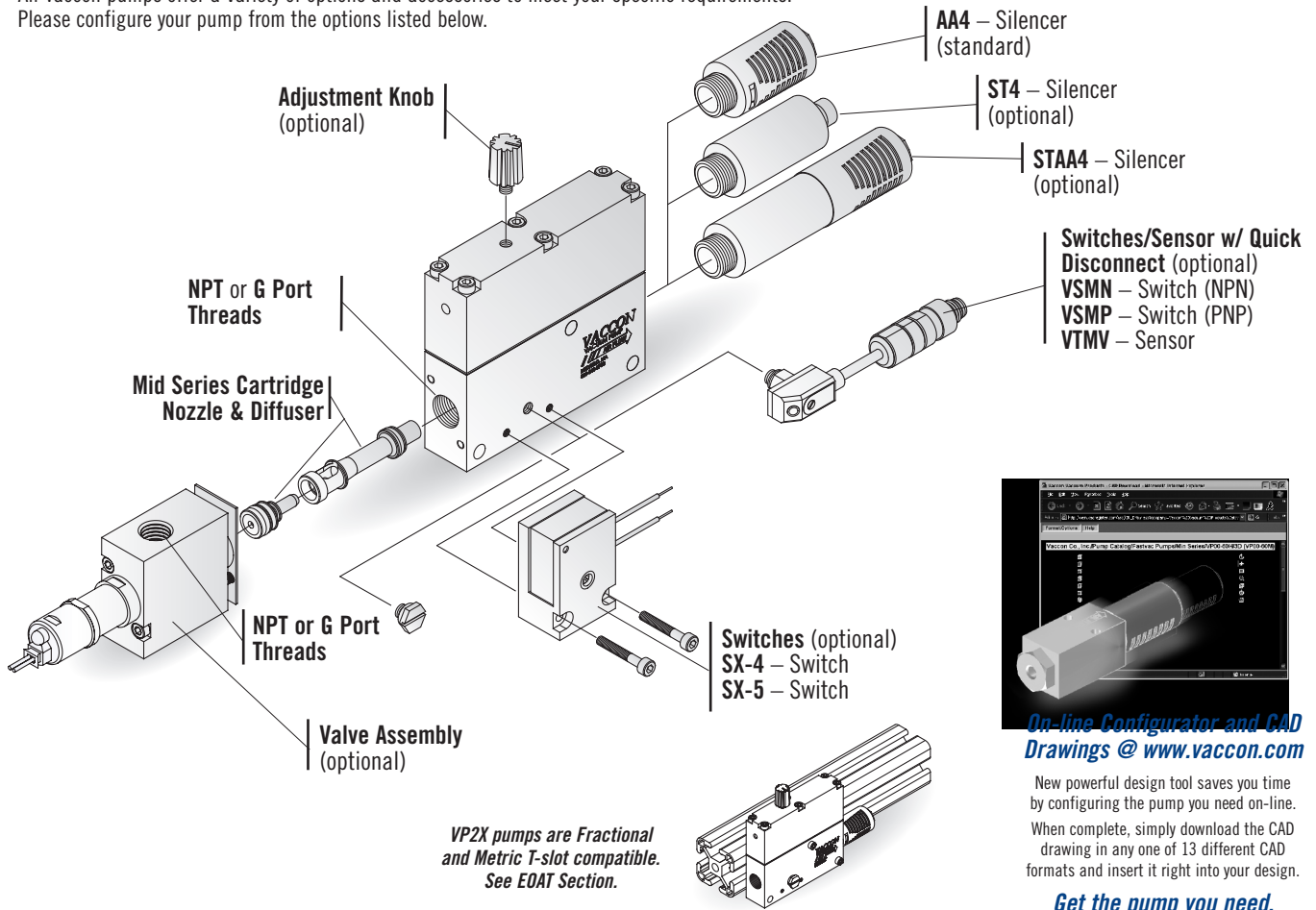
VP2X and VP2X-ADJ Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF-125LPM – See page 278	Typically filters are not required, if desired Vaccon recommends – VF-250F – See page 278
Control Valve:	3 way/2 position, minimum orifice - 0.125" ID [3mm]	
Mounting Holes:	Mounting holes accept 10-32 [M5] screws	

Modular Venturi Vacuum Pumps – Mid Series

VP2X & VP2X-ADJ Fastbreak Mid Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VP2X - 60 H - - ADJ - ST4 - VSMP

P/N	Imperial Thread-NPT
VP2X	No Valve
VP2XBV	with Valve Assy
P/N	Metric Thread-G Port
I-VP20	No Valve
I-VP20BV	with Valve
P/N	Max. Flow Level
-60	(Not Available in L)
-90	
-100	
-150	
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

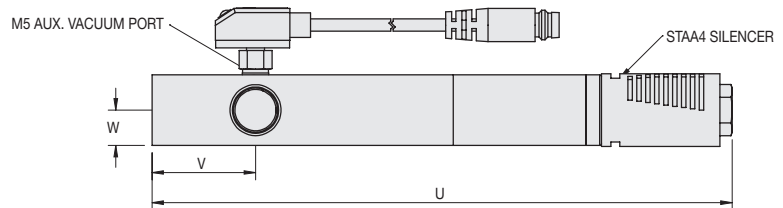
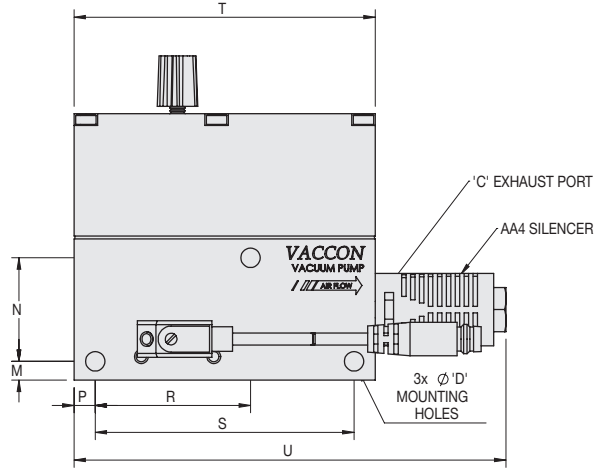
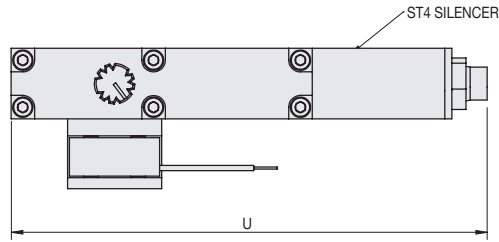
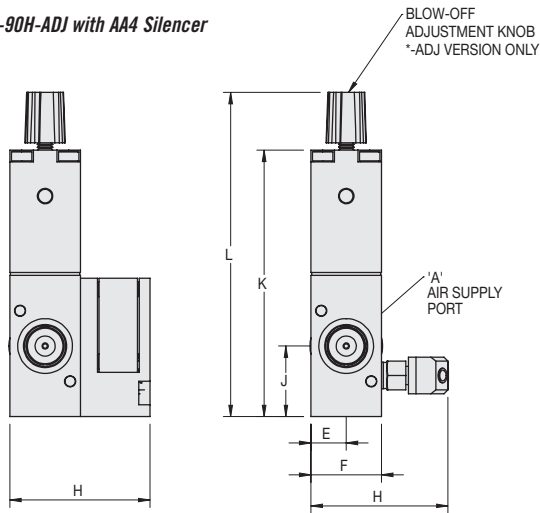
P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMO	Switch – PNP
VTMV	Sensor – 1-5VDC Output
SX-4	Switch – 2-14.8"Hg
SX-5	Switch – 7.4-30"Hg
P/N	Silencer
	AA4 – Closed end (Standard)
ST4	Straight-Through
STAA4	Hybrid
P/N	Adjustable Blow-off
	Not Adjustable (Standard)
ADJ	Adjustable Blow-off

For complete Performance Data, see page 106.

Standard Pump: VP2X-(60, 90, 150) (L, M or H) (-ADJ)



VP2X-90H-ADJ with AA4 Silencer



Specifications:

Weight Standard VP2X - 8.4 oz [238g]
Noise Level 64 dB

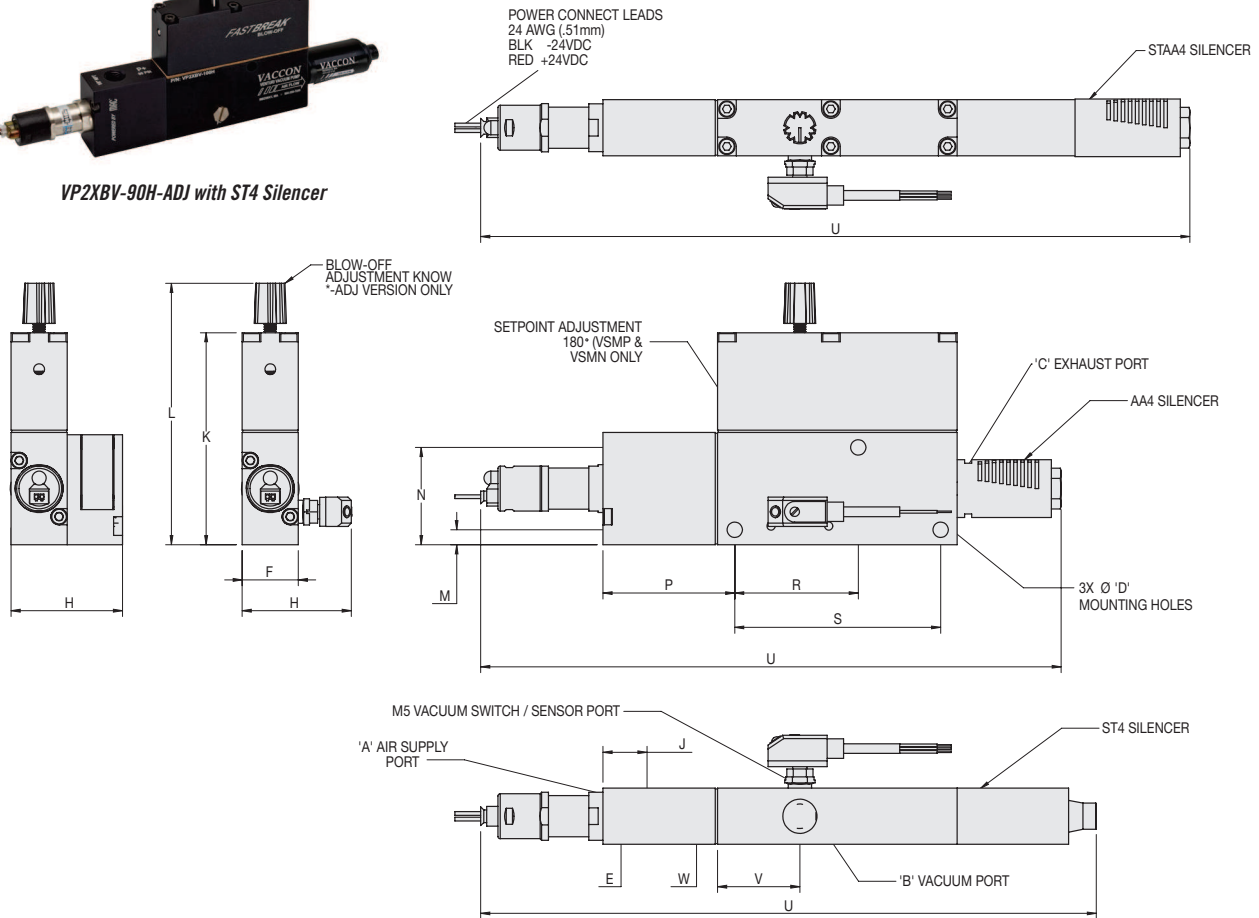
Model #	Imperial Dimensions (in.)																		
VP2X (ADJ)	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
w/STAA4	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.21	0.38	0.75	N/A	0.75	2.83	3.49	0.20	1.10	0.23	1.65	2.75	3.20	6.31	1.10	0.375
w/AA4							N/A										4.59		
w/ST4							N/A										5.06		
w/VSMMP							1.46										N/A		
w/SX4							1.49										N/A		
Model #	Metric Dimensions (mm)																		
I-VP2X (ADJ)	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
w/STAA4	G 1/4	G 1/4	G 1/4	5.33	9.65	19.05	N/A	19.05	71.88	88.65	5.08	27.94	5.84	41.91	69.85	81.28	160.27	27.94	9.53
w/AA4							N/A										116.59		
w/ST4							N/A										128.52		
w/VSMMP							37.80										N/A		
w/SX4							37.85										N/A		

Modular Venturi Vacuum Pumps – Mid Series

Standard Pump: VP2XBV-(60, 90, 100, 150) (L, M or H) (-ADJ)



VP2XBV-90H-ADJ with ST4 Silencer



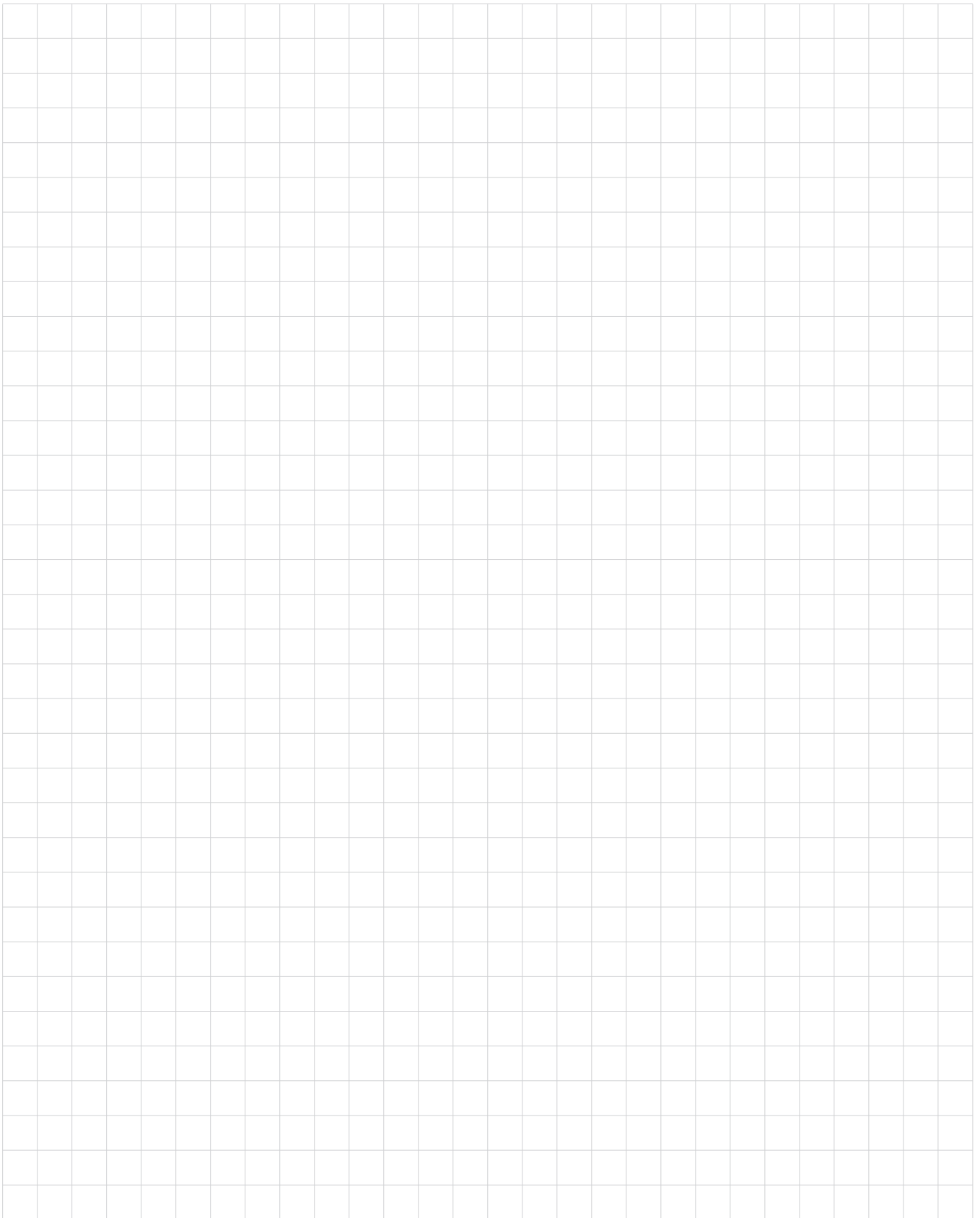
Specifications:

Weight Standard VP2XBV - 11.4oz [323.2]

Noise Level 64 dB

Model #	Imperial Dimensions (in.)																		
VP2XBV (ADJ)	A	B	C	D	E	F	H	J	K	L*	M	N	P	R	S	U	V	W	Y
w/STAA4							N/A									9.47			
w/AA4							N/A									7.75			
w/ST4	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.21	0.38	0.75	N/A	0.59	2.83	3.49	0.20	1.30	1.76	1.65	2.75	8.22	1.10	0.38	1/8 NPT
w/VSMP							1.46									N/A			
w/SX4							1.49									N/A			
Model #	Metric Dimensions (mm)																		
I-VP2XBV (ADJ)	A	B	C	D	E	F	H	J	K	L*	M	N	P	R	S	U	V	W	Y
w/STAA4							N/A									240.6			
w/AA4							N/A									196.9			
w/ST4	G 1/8	G 1/4	G 1/4	5.3	9.7	19.1	N/A	14.9	71.9	88.6	5.1	33.0	44.7	41.9	69.9	208.8	27.9	9.7	G 1/8
w/VSMP							37.1									N/A			
w/SX4							37.8									N/A			

*-ADJ Version Only



Mid Series Multi-port Venturi Vacuum Pumps with Silencers

VP20/ VP020BV-MP



VP20-60M-MP with vacuum cup assembly transfers wooden plug spools for carpet roll application.

VP20BV-90H-MP with ST4 silencer

Ideal Applications:

- End-of-Arm Tooling/Robotics
- Pick and place
- Flexible manufacturing
- Packaging – carton erecting, robotic palletizing
- Automation assembly

Features/Benefits

- High performance – vacuum up to 28”Hg [948mbar]
- High production – fast cycle times with shot to shot consistency
- High flow – maintains strong holding force, overcome leakage
- Home Run plumbing – saves compressed air
- Easy mounting – fractional and metric T-slot compatible
- Time saving – pre-designed, factory assembled, quick installation
- Safe operation – no electricity needed at pump
- Reliable – non-clogging, trouble free operation

Vaccon’s Multi-port venturi vacuum pumps combine a venturi with a manifold to distribute vacuum to multiple locations. The result is a compact vacuum generation and distribution system for End-of-Arm Tools and applications where one pump powers multiple cups.

VP20-MP pumps have 4 vacuum ports that distribute vacuum equally to 4 locations with “Home-Run” plumbing. The streamlined design minimizes vacuum loss, maximizes vacuum flow and speeds cycle times for safe, efficient lifting operations. VP20BV-MP offers an optional integrated valve.

In addition to the 4 topside vacuum ports, there is a port fitted with a 1.5” diameter glycerin filled vacuum gauge and another port that can be plumbed to a compressed air source to provide a blow-off. The manifold design allows one compressed air connection to feed blow-off air to all vacuum locations simultaneously, saving the need to plumb a separate blow-off line.

An M5 threaded port allows you to connect a Vaccon miniature vacuum sensor/switch to provide an electrical signal for vacuum achieved/part present and to alert failures.

Performance Level Designations:

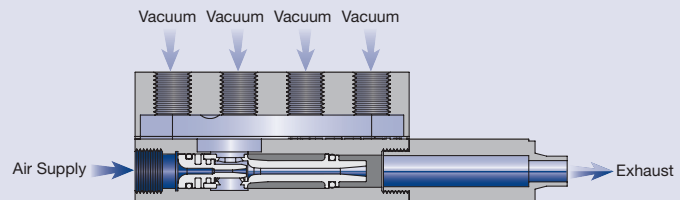
- “L” 0-10”Hg [0 to 339mbar] for low vacuum/high flow applications
- “M” 0-20”Hg [0 to 677mbar] for medium vacuum/high flow applications
- “H” 0-28”Hg [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels – (VP10 & VP20 Series only)
- Silencers - ST4 (straight-through) silencers won’t clog, STAA4 silencers for ultra quiet operation
- Integrated 2-way valve - 24vdc, normally closed
- Miniature sensors or switches with quick disconnects
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard (60 PSI [4.0 BAR] option)

Principles of Operation:

Vacuum is produced instantly by supplying compressed air to a Mid series venturi cartridge and is distributed to the vacuum manifold ports, gauge port, switch/sensor port and the optional blow-off port if required.



Eliminate the Guesswork: Contact Us!

Vacuum technology isn’t an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP20- (60, 90, 100, 150) (L, M, H) -MP Series Configurations and Options:

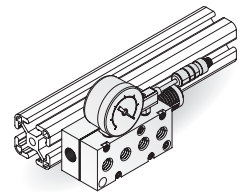
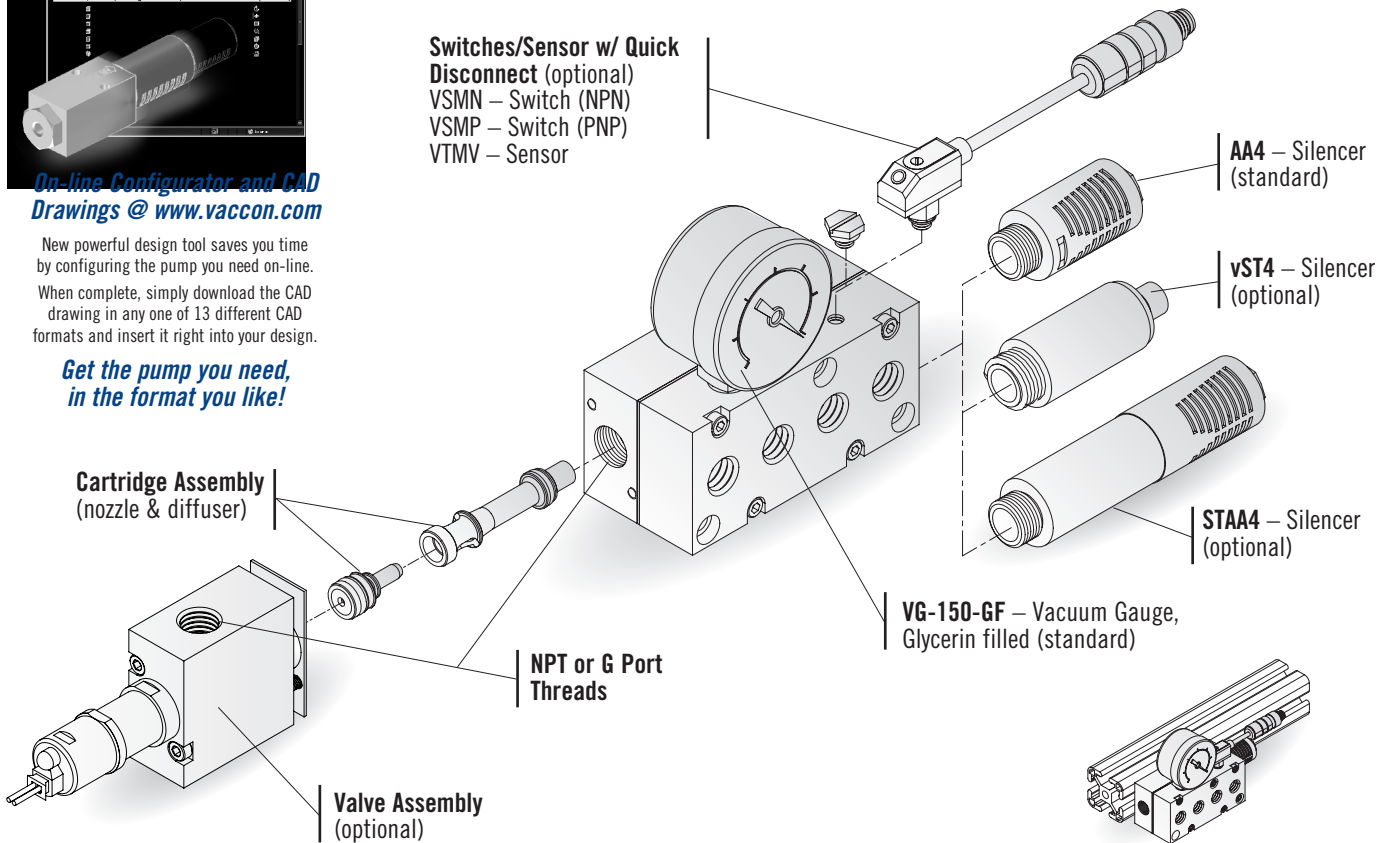
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VP20-MP pumps are Fractional and Metric T-Slot compatible. See EOAT Section.

How to Specify:

VP20 - 60 H - 60 - MP - ST4 - VSMP

P/N Imperial Thread-NPT

VP20 No Valve
 VP20BV with Valve Assy

P/N Metric Thread-G Port

I-VP20 No Valve
 I-VP20BV with Valve

P/N Max. Flow Level

60 (Not Available in L)
 90
 100
 150

P/N Max. Vac Level

L 10"Hg [339mbar]
 M 20"Hg [677mbar]
 H 28"Hg [948mbar]

P/N Switch/Sensor

None (Standard)
 VSMN Switch – NPN
 VSMP Switch – PNP
 VTMV Sensor – 1-5VDC Output

P/N Silencer

AA4 Closed-End (Standard)
 ST4 Straight -Through
 STAA4 Hybrid Silencer

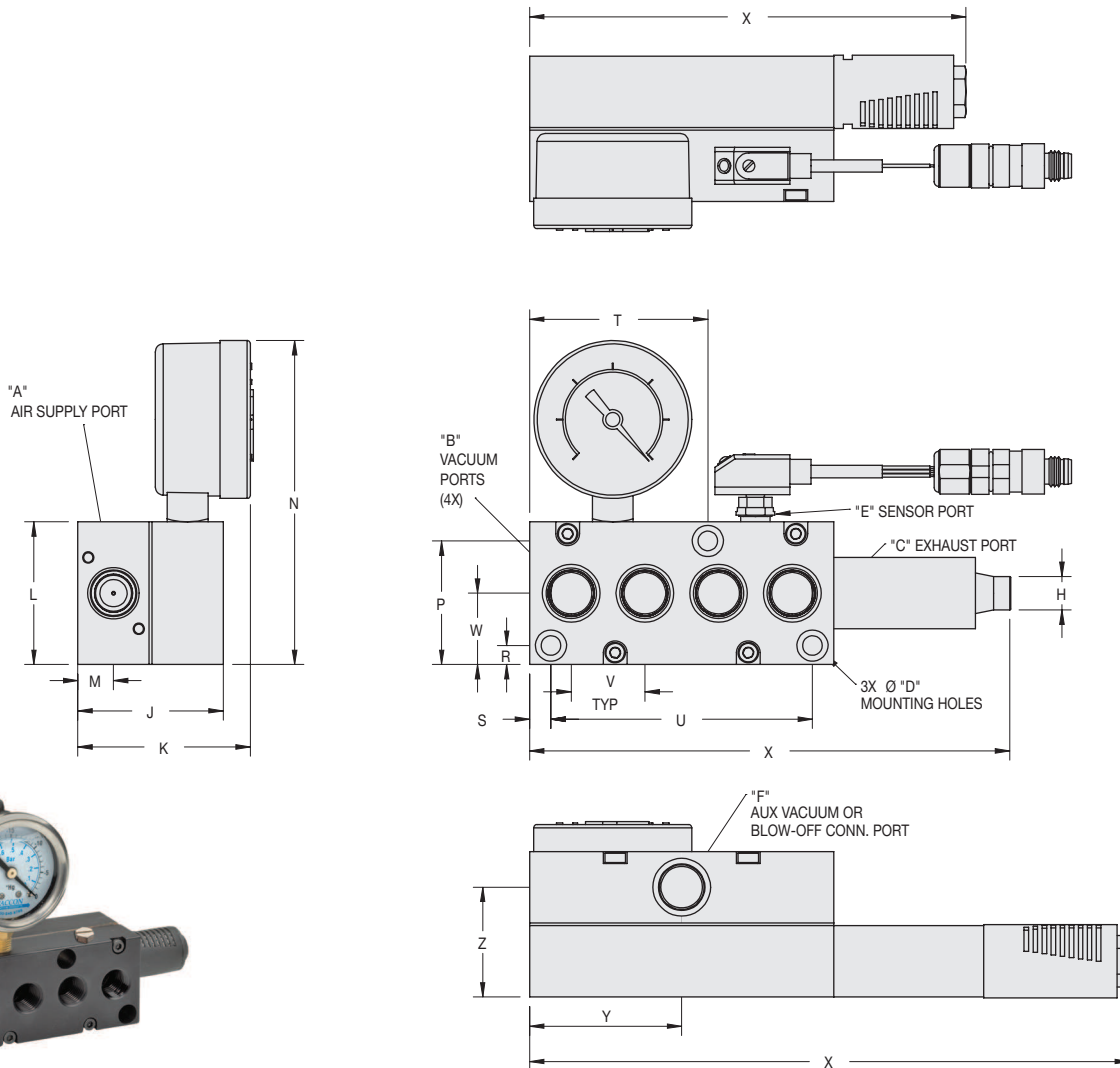
P/N Operating Pressure

80 PSI [5.5 Bar] (Standard)
 60 PSI [4.0 Bar]

For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

Standard Pump: VP20- (60, 90, 100, 150) (L, M, H) - MP

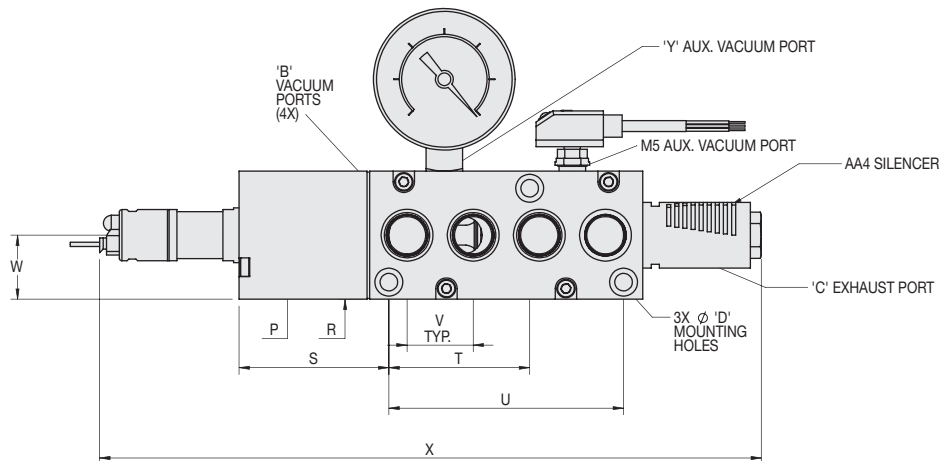
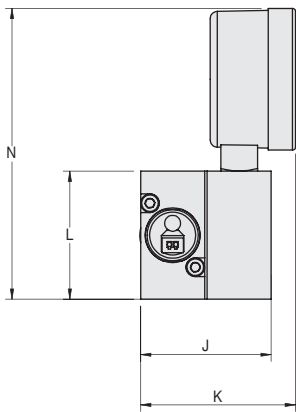
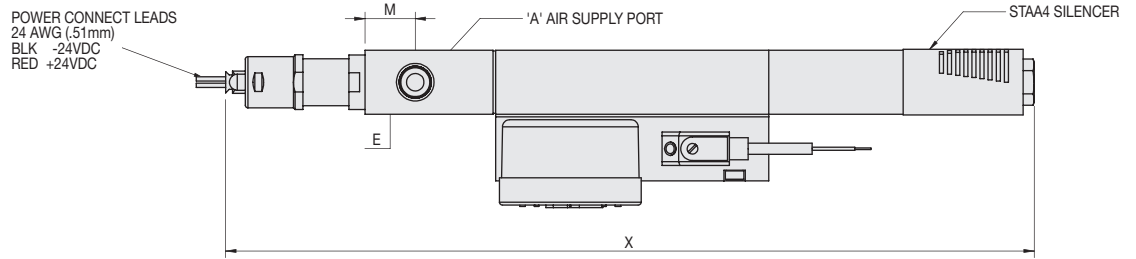


Specifications:

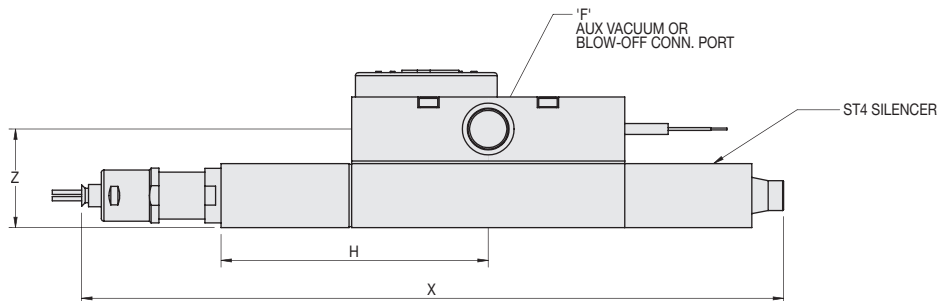
Weight Standard VP20-MP - 12oz [340g]
 Noise Level 64 dB

Model #	Imperial Dimensions (in.)																					
VP20-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
w/AA4	1/4	1/4	1/4	0.21	M5	1/4	N/A	1.53	1.82	1.50	0.38	3.40	1.30	0.20	0.23	3.41	2.75	0.78	0.75	4.59		
w/ST4	NPT F	NPT F	NPT F			NPT F	0.35													5.05	3.13	1.16
w/STAA4							N/A													6.31		
Model #	Metric Dimensions (mm)																					
I-VP20-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
w/AA4							N/A													116.6		
w/ST4	G 1/4	G 1/4	G 1/4	5.3	M5	G 1/4	8.9	38.9	46.2	38.1	9.7	86.4	33.0	5.1	5.8	86.6	69.9	19.8	19.1	128.3	79.5	29.5
w/STAA4							N/A													160.3		

Standard Pump: VP20BV- (60, 90, 100, 150) (L, M, H) - MP



VP20BV-90H-MP



Specifications:

Weight Standard VP20BV-MP - 16.1oz [456.4g]

Noise Level 64 dB

Model #	Imperial Dimensions (in.)																					
VP20BV-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
w/AA4	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.20	0.38	1/4 NPT F	3.13	1.53	1.82	1.50	0.59	3.41	1.50	0.20	1.76	1.65	2.75	0.78	0.75	7.75	1/8 NPT	1.16
w/ST4																				8.22		
w/STAA4																				9.47		
Model #	Metric Dimensions (mm)																					
I-VP20BV-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
w/AA4	G 1/4	G 1/4	G 1/4	5.1	9.65	G 1/4	79.50	38.86	46.23	38.10	14.97	86.61	38.10	5.08	44.70	41.91	69.85	19.69	19.05	196.85	G 1/8	29.46
w/ST4																				208.79		
w/STAA4																				240.54		

Modular Venturi Vacuum Pumps – Mid Series

VP20-MP Pump Standard Specifications:

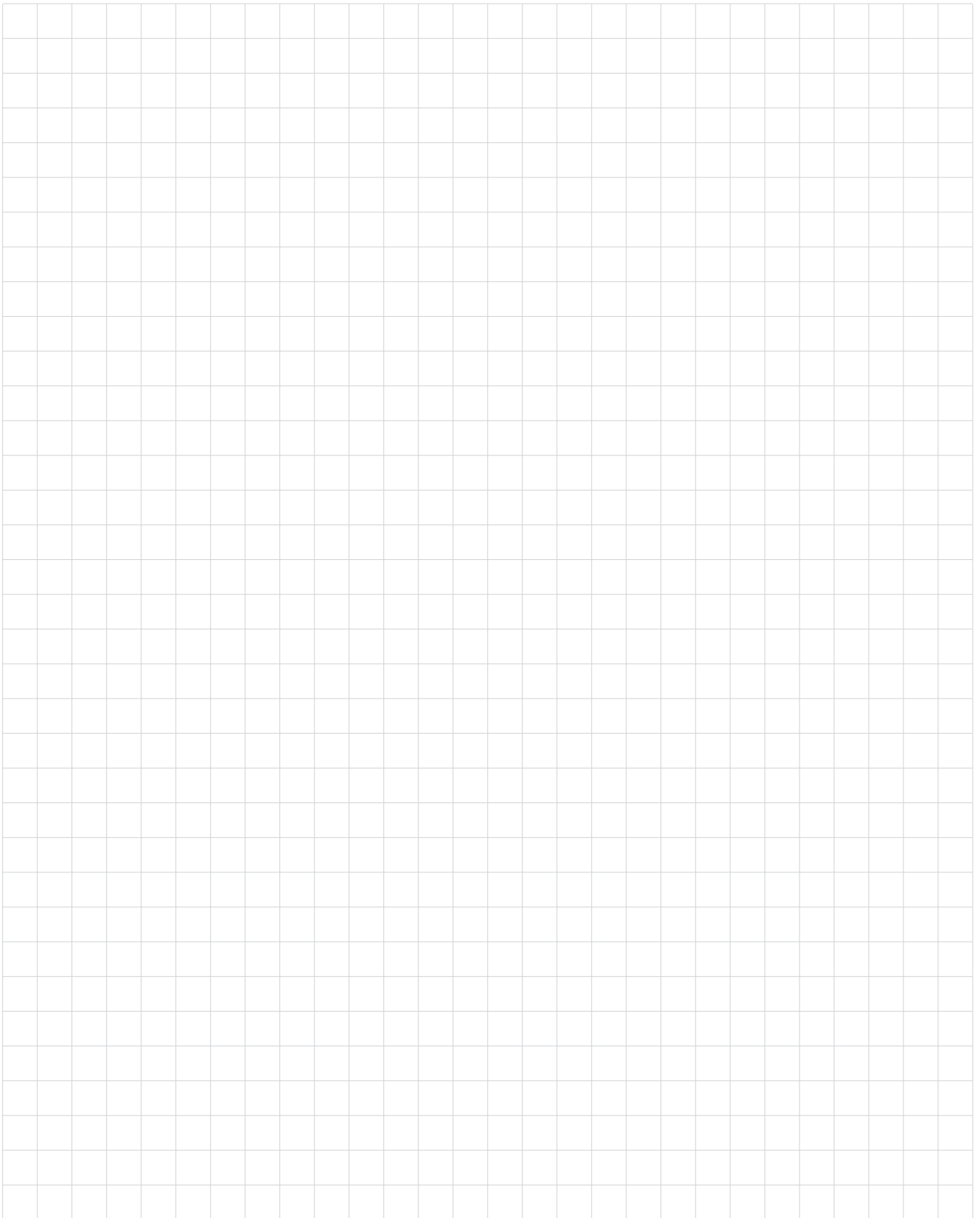
Pump Material:	Anodized Aluminum (For silencer material, see page 264 - 266)
Cartridge Material:	Nylon, Buna-N O-ring (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-30°~250° F [-34°~121°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications:

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP20-MP Operating and Installation Requirements:

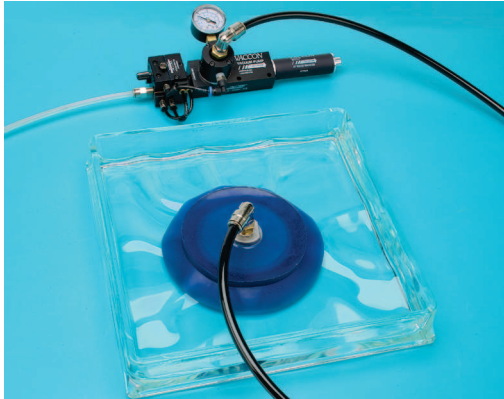
Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.	
Control Valve:	3 way/2 position (faster part release), minimum orifice – 0.125" [3mm]	
Mounting Holes:	Mounting holes accept 10-32 or M5 screws	



VP Pumps with Air Saver Technology

On-Demand Vacuum – Saves Air – Safe Operation

VP20-AS



Air Saver pumps safely handle non-porous products i.e. glass handling operations



VP80-200H-AS

Standard Pump:

Vaccon's Air Saver Pumps are an all-pneumatic system that minimizes compressed air usage by creating, monitoring and maintaining vacuum for safe energy efficient operations.

For pick and place applications handling non-porous materials, the Air Saver pumps will maintain a strong holding force, conserve compressed air, and hold the part even if the compressed air supply is interrupted providing an extra level of safety when handling large loads.

For vessel evacuation applications such as wood and composite clamping, Air Saver pumps maintain vacuum for long periods of time and only consume compressed air to overcome system leaks resulting in 90% air savings.

The system includes a venturi vacuum pump, vacuum check valve, air piloted air valve and all-pneumatic vacuum switch. The switch is adjustable from 0 to 28"Hg [948mbar] and the hysteresis is 3"Hg [102mbar].

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Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place
- Press transfer lines – load and unload
- Vacuum clamping and chucking
- Vacuum bagging
- Vessel evacuation
- Vacuum forming

Features/Benefits:

- Powerful vacuum up to 28"Hg [948mbar] – rapid evacuation
- Energy efficient – compressed air on only when needed, automatic shut-off
- Intrinsically safe to operate – all pneumatic – no electricity required
- High vacuum flows provide dependable vacuum holding force
- Reliable – operates trouble free:
 - ~ No moving parts to wear or clog
 - ~ No maintenance
 - ~ No downtime
 - ~ Quiet

Performance Level Designations:

"M" 0-20"Hg, [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg, [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

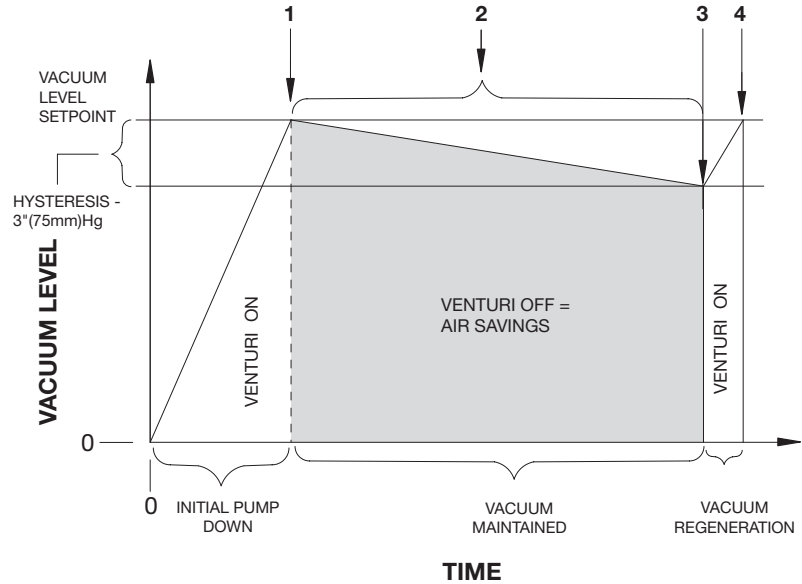
- Interchangeable venturi cartridges – 8 different performance levels – VP20-AS only
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] option

Principles of Operation: Air Saver Pumps

The pneumatic vacuum switch is the brain within the Air Saver system. It constantly monitors and controls the vacuum level as required based on customer specifications. Minimizing leaks in plumbing lines and connections extends the “venturi off” cycle and maximizes air savings. Below is a brief overview of the air saver cycle.

Determine the maximum vacuum level desired, then adjust the switch to the vacuum level setpoint.

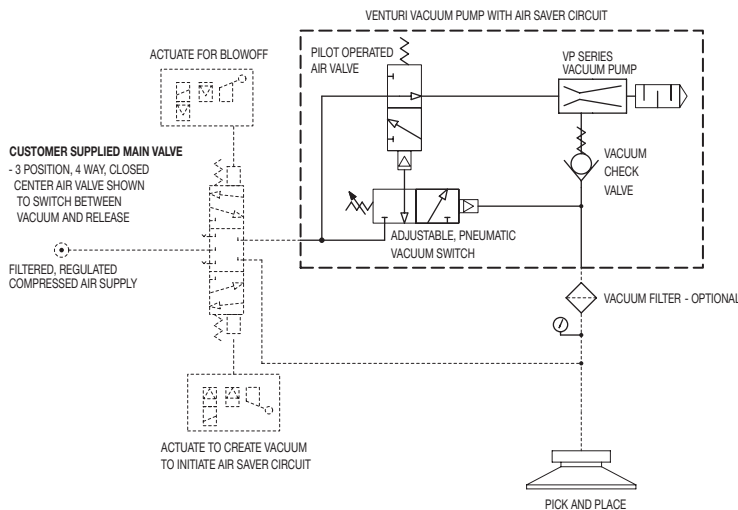
1. Once the vacuum level set-point is reached, the switch turns the pump off, stopping the flow of air to the venturi – air savings.
2. The integral check valve maintains the vacuum level.
3. Should there be a leak and the vacuum level decrease (Hysteresis 3”Hg [102mbar]), the pneumatic switch automatically re-energizes the venturi to bring the system back to the pre-set vacuum level set-point.
4. Then the switch de-energizes the venturi pump, (stopping the flow of air to the venturi – air savings) and the air saving cycle starts again.



Although compressed air savings will vary by application and system design, typically Vaccon Air Saver pumps will achieve a 90% energy cost savings.

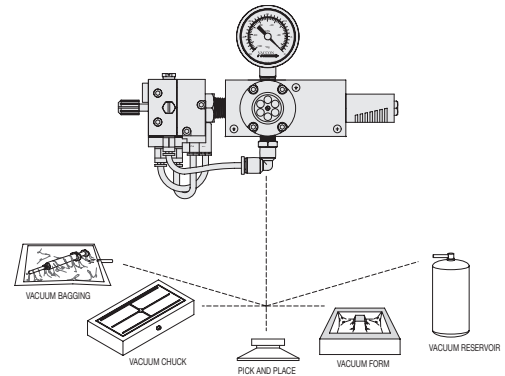
Vaccon Air Saver Circuit for Pick & Place/Part Release Applications

System Schematic with 3 Position Closed Center 4 Way Valve



Design Tip: For applications requiring a gentle part-release, cycle the blow-off valve for a short duration time. For applications requiring a rapid blow-off, cycle the valve for a longer duration.

Sizing an Air Saver Pump



To select a pump:

1. Determine the desired evacuation time (speed)
2. Calculate the total volume of air to be evacuated in the system including vacuum lines, vessel/cavity size, cups, etc.
3. Determine the desired vacuum level, “Hg/mbar

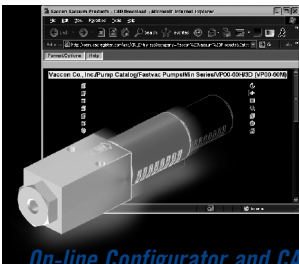
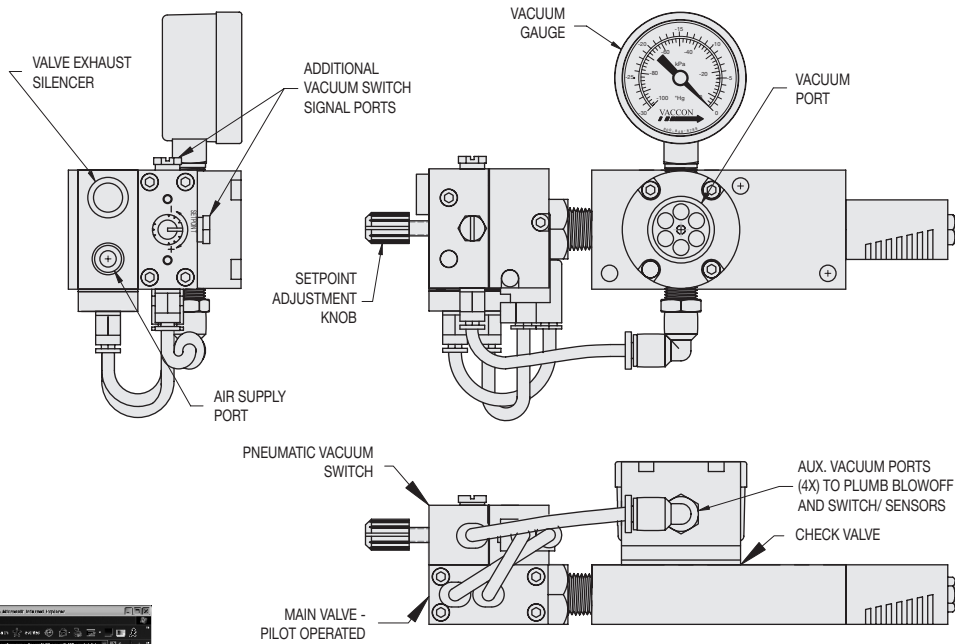
Application ex.: Evacuate 2 cu.ft. of air in 1 minute (60 sec) at a vacuum level of 21”Hg

Formula: Time (60 sec)/Cu. ft (2) = 30 seconds per cu.ft. (evacuation speed)

Consult pump Performance Data beginning on page 148. Under the evacuation time chart, look for 21” Hg and find the evacuation time that is closest to 30 seconds. In this example, a VP80-200H would be the best model with an evacuation time of 20 seconds.

Modular Venturi Vacuum Pumps – Mid Series

Standard Air Saver Circuit Schematic: VP20-AS Pump Shown



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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

All Air-Saver Pumps pumps are Fractional and Metric T-Slot compatible.

How to Specify:

VP20 - 100 - H - AS

P/N Imperial Thread

VP20 NPT

P/N Metric Thread

I-VP20 G Port

P/N Max. Flow Level

-60 (VP20 only)

-90 (VP20 only)

-100 (VP20 only)

-150 (VP20 only)

P/N Operating Pressure

80 PSI [5.5 Bar] (Standard)

60 PSI [4.1 Bar]

P/N Max. Vac Level

M 20"Hg [677mbar]

H 28"Hg [948mbar]

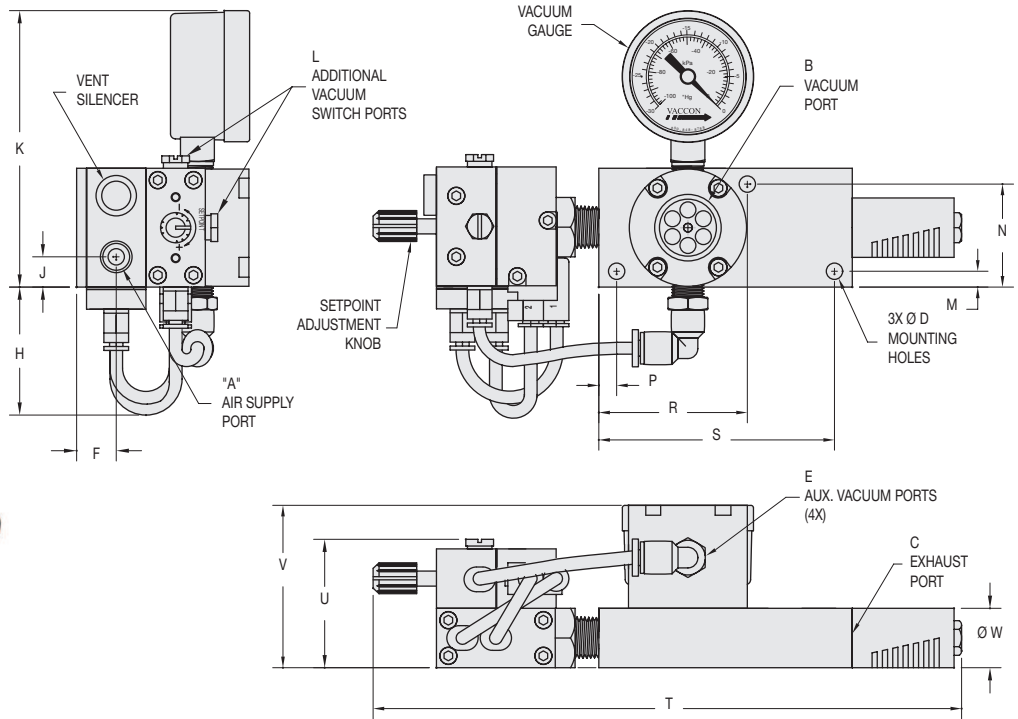
For complete Performance Data, see page 106.

Modular Venturi Vacuum Pumps – Mid Series

Standard: VP20-(60, 90, 100, 150) (M, H) -AS Pump

Specifications:

Weight 15 oz [425 g]
Noise Level 64 dB



Model #	Imperial Dimensions (in.)																		
VP20-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
	1/8 NPT F	1/2 NPT F	1/4 NPT F	0.21	1/8 NPT F	0.50	1.62	3.82	3.49	10-32 F	0.20	1.30	0.23	1.88	2.95	7.43	1.62	2.05	0.75
Model #	Metric Dimensions (mm)																		
I-VP20-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
	G 1/8	G 1/2	G 1/4	5.2	G 1/8	12.7	41.1	97.0	88.6	M5	5.1	33.0	5.7	47.6	74.9	188.7	41.2	52.1	19.1

Air Saver Pump Standard Specifications:

Pump Body Material: Anodized Aluminum (For silencer material, see page 264 - 266.)
Cartridge Material: VP20- Nylon, Buna-N O-Ring
Medium: Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature: -30°~250° F [-34°~121°C]
Operating Pressure: 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Air Saver Operating and Installation Requirements:

Supply Line & Vacuum Line – VP20: 60 & 90 Cartridges = 1/4" O.D. [6mm] tube recommended
 100 & 150 Cartridges = 3/8" O.D. [8mm] tube recommended
Vacuum Line Filtration: Typically filters are not required, if desired Vaccon recommends (see page 278):
 VP20's = VF125LPM or VF250F
Mounting Holes: Mounting holes accept 10-32 [M5] screws

Mid Series Venturi Vacuum Pump with Solenoid Operated Vacuum and Blow-off

VP35



Standard Pump:

VP35 Mid Series are solenoid-controlled venturi vacuum pumps that feature a second solenoid to control blow-off air for rapid part release. VP35 pumps generate vacuum only when needed, minimizing compressed air consumption.

Design flexibility is further increased with our interchangeable venturi cartridge system. Choosing from 11 different venturi cartridges, designers optimize performance to meet their needs.

Lightweight and compact, VP35 pumps are placed at the point of use to eliminate plumbing between components and to ensure high cycle rates for increased productivity. Extremely dirt tolerant, filters are not required. Push-to-connect air supply and vacuum lines save space and assembly time.

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

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Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

Pick and place for applications requiring accurate part placement:

- Automated assembly
- Robotics
- Material handling

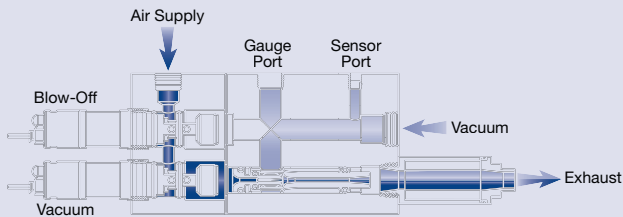
Features/Benefits:

- Precise control – individual electrical connections let you control the vacuum and the blow-off duration time.
- Instantaneous vacuum as needed – minimal air consumption
- High Productivity – fast part release with cycle rates up to 2700/min
- Accurate part positioning from positive vacuum and rapid blow-off
- Easy installation – modular design speeds installation and minimizes assembly
- Fast response – no delay due to long plumbing lines; installs close to vacuum point
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No maintenance
 - ~ No downtime

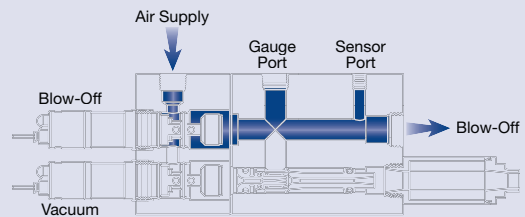
Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels
- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- ST4 (straight-through) silencer that allows ingested debris to pass through pump without clogging or STAA4 hybrid silencer for ultra quiet operation
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional.

Principles of Operation: VP35



Compressed air is supplied to both N.C. solenoid valves simultaneously. To create vacuum, energize the first solenoid valve to allow the compressed air to flow to the venturi cartridge resulting in instant vacuum at the vacuum port.



To release the part, de-energize the vacuum solenoid while energizing the blow-off solenoid. Because the blow-off air is at line pressure a very powerful blow-off will be created.

VP35 Standard Pump Specifications:

Body Material:	Anodized Aluminum, Buna-N, Brass, Acetal (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-23°~122° F [-5°~50°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

2-Way Valve Specifications

Valve Type:	Integral 2-way solenoid, 24vdc, Normally closed
Valve Body Material:	Copper, Nylon, Stainless Steel
Valve Seal Material:	Buna-N
Valve Operating Pressure:	0 to 100 PSI [0 to 7 BAR]
Average Life:	50 million cycles or better
Power Consumption:	24vDC: 1.3 watts, 110vAC: 1.0 watts
Response Time:	8 milliseconds
Cycle Rate:	45 cycles per second
Electrical Connection:	2 pole plug-in cable with 24 AWG, 3' [1M] flying leads
Manual Override:	Yes, non-locking, spring return

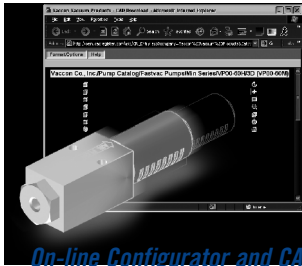
VP35 Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF250F. See page 278.	
Mounting Holes:	Mounting holes accept 10-32 [M5] screws	

Modular Venturi Vacuum Pumps – Mid Series

VP35 Mid Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.

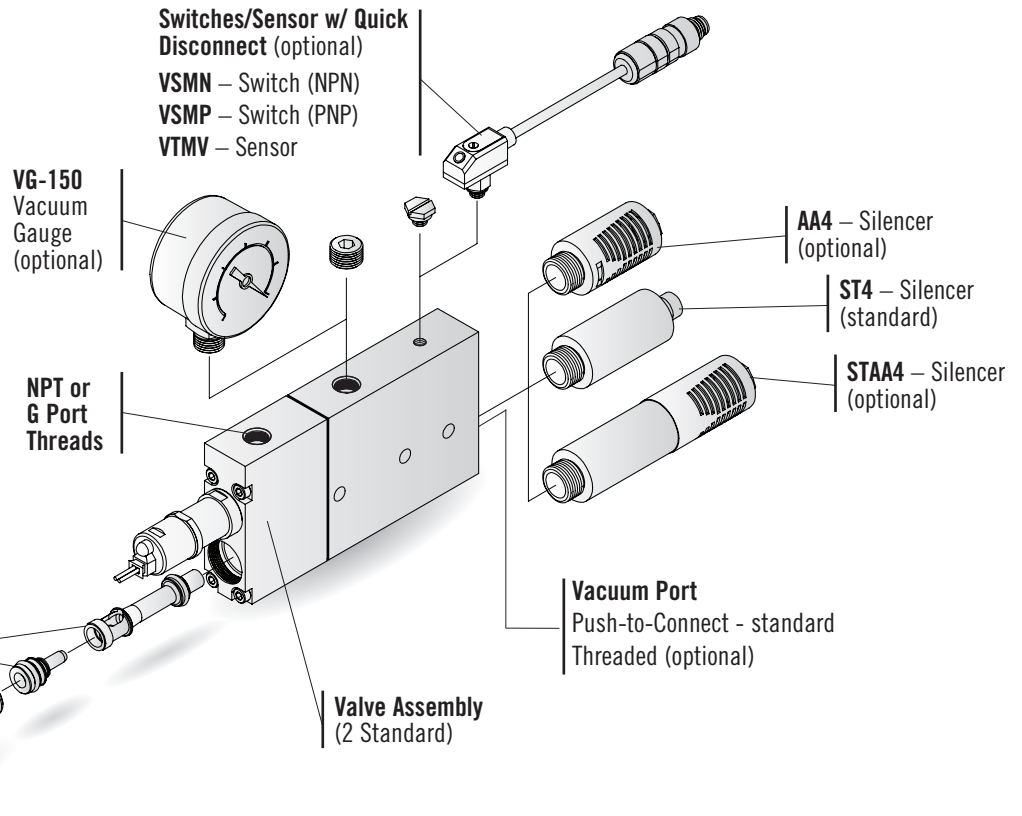


On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

Mid Series Cartridge Nozzle & Diffuser



How to Specify:

VP35 - 60 H - 60 - VSMP - 0

P/N	Imperial Thread
VP35	NPT
P/N	Metric Thread
I-VP35	G Port
P/N	Max. Flow Level
-60 (Not Available in L)	
-90	
-100	
-150	
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]
P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

P/N	Vacuum Port
0	PTC (Standard)
1	3/8"/10mm
P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Silencer
AA4	ST4 - Straight-Through (Std)
STAA4	Closed-End Hybrid
P/N	Vacuum Gauge
VG-150	Vaccon does not recommend shipping gauges attached to pumps. Please specify as a separate line item.

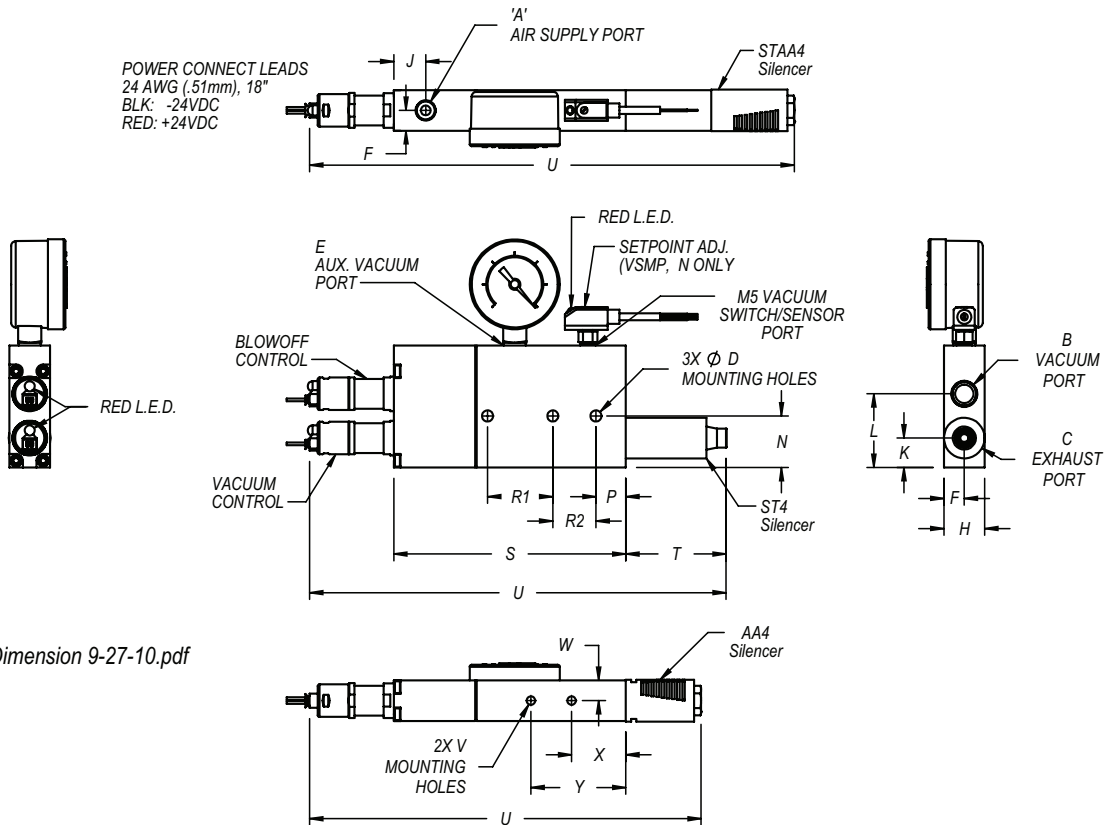
For complete Performance Data, see page 106.

VP35-(60, 90, 100, 150) (L, M, H)/(24vDC or 110vAC): Optional Vacuum Gauge VG-150, Ultra Mini Switches/ Sensor and Quick Disconnect -QD



VP35-100M with ST-2 Silencer.

For optional silencer dimensions, see page XXX



VP35 Dimension 9-27-10.pdf

Specifications:

Weight: 11.5 oz [328g]
Noise Level: 66 dB

Model #	Imperial Dimensions (in.)																				
VP35	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
w/AA4	1/8	1/4	1/4	0.21	1/8	0.36	0.75	0.59	0.54	1.36	0.80	0.95	0.55	1.20	4.28	1.85	7.22	10-32	0.38	1.00	1.75
w/ST4	NPT F	NPT F	NPT F														7.68				
w/STAA4																	8.94				
Model #	Metric Dimensions (mm)																				
VP35	A	B	C	D	E	F	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	X
w/AA4																		183.4	20.7	54.4	95.2
w/ST4	G 1/8	G 1/8	G 1/8	5.3	G 1/8	9.1	19.1	15.0	13.7	34.5	20.3	24.1	14.0	30.5	108.7	47.0	195.1				
w/STAA4																	227.1				

All Pneumatic, Pilot Controlled Venturi Vacuum Pumps

VP50 Series



VP50



VP50-AS



VP50-ASP

Standard Pump:

The all pneumatic VP50 Series are air pilot controlled venturi vacuum pumps that feature an integral check valve and air pilot controlled blowoff for rapid part release or vacuum line clean out.

Using air pilot control, VP50 Series pumps generate vacuum only when needed, minimizing compressed air consumption.

The unique, compact design of the VP50 Series allows for easy integration close to the work area for faster response.

There are three versions of the VP50 Series available:

VP50 – Air pilot vacuum control and blowoff;

VP50-AS – Integrated air saver circuit, for reduced air consumption and pilot controlled blowoff;

VP50-ASP – Air pilot controlled vacuum with integrated air saver circuit, and pilot controlled blowoff. The VP50-ASP, also, has a pneumatic signal output for vacuum setpoint notification.

Eliminate the Guesswork: Contact Us!

Vaccon technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pneumatic Pick and Place Systems
- Manual Material Handling Systems
- Vessel Evacuation

Features/Benefits:

- Compact, lightweight design
- All pneumatic - no electric power required
- Precise control - individual pneumatic connections let you control the vacuum and the blowoff duration time.
- Instantaneous vacuum as needed - minimal air consumption
- Accurate part positioning from positive vacuum and rapid blowoff
- Easy installation - modular design speeds installation and minimizes assembly
- Fast response - installs close to vacuum point reducing delay due to long plumbing lines
- Reliable, trouble-free operation:
 - No maintenance
 - No downtime

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Interchangeable venturi cartridges – 11 different performance levels
- Miniature vacuum switches or sensors with quick disconnect, for reliable part detection, are available.

VP50 Standard Pump Specifications:

Body Material:	Anodized Aluminum, Buna-N, Brass, Acetal (For silencer material, see page 264 - 266.)
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8)
Check Valve Material:	Polypropylene, Buna-N, Stainless Steel
Gasket Material:	NEBAR Red
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-23°~122° F [-5°~50°C]
Operating Pressure:	80 PSI [5.5 BAR]

3-Way Valve Specifications

Valve Type:	Integral 3-way cartridge, pilot actuated, Normally closed
Valve Body Material:	Brass, Aluminum
Valve Seal Material:	Buna-N
Valve Operating Pressure:	0 to 100 PSI [0 to 7 BAR]
Average Life:	50 million cycles or better

VP50 Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H) and C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended
Pilot Line:	5/32" O.D. [4mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, for this series, for use in clean environments. If dirt and/ oils are present Vaccon recommends – VF250F. See page 278.
Mounting Holes:	0.201 Dia.

How to Specify:

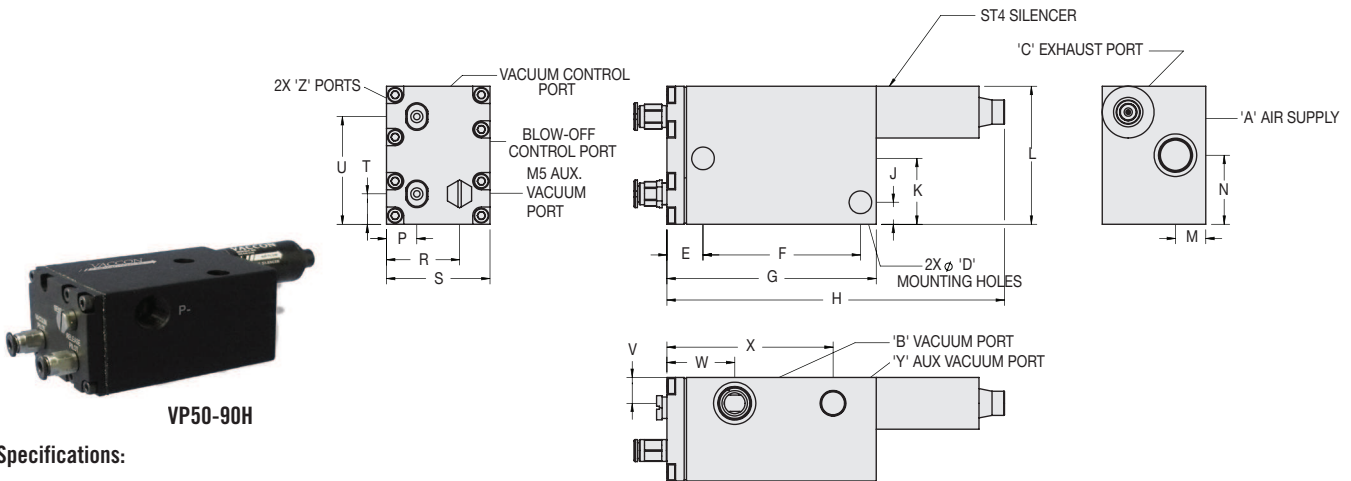
VP50 - 60 H - AS

P/N	Imperial Thread
VP50	NPT
P/N	Metric Thread
I-VP50	G Port
P/N	Max. Flow Level
-60 (Not Available in L)	
-90	
-100	
-150	

P/N	Air Saver
	Standard
ST4	Air Saver
STAA4	Air Saver w/ Full Pilot Control

P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]

Modular Venturi Vacuum Pumps – Mid Series

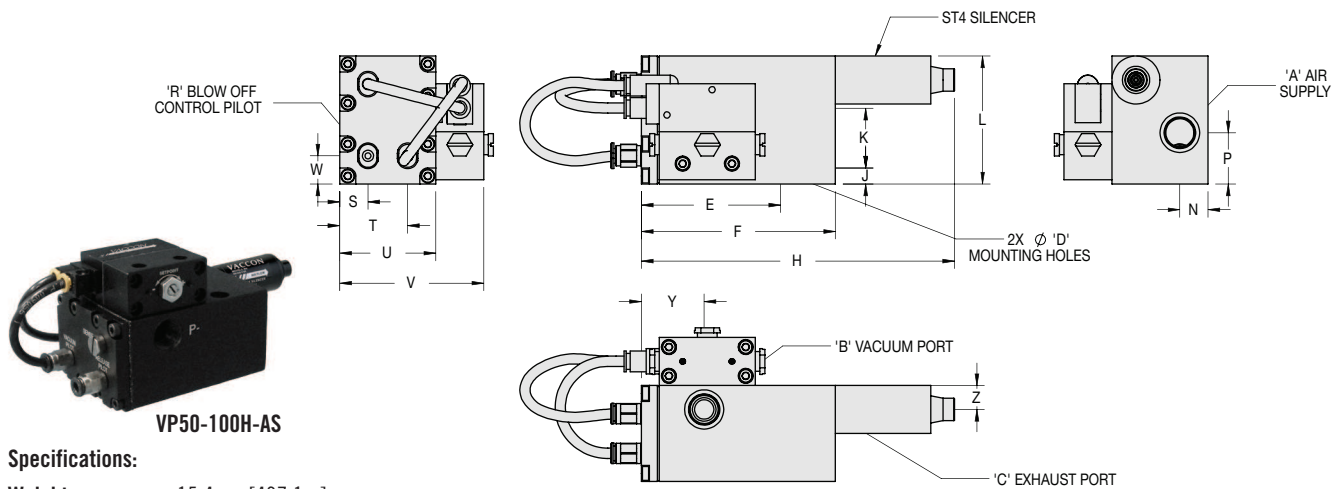


VP50-90H

Specifications:

Weight: 12.8 oz [363.8 g]
Noise Level: 66 dB

Model #	Imperial Dimensions (in.)																						
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
VP50	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.33	0.52	2.28	3.03	4.89	0.32	0.95	2.00	0.44	1.00	0.44	1.06	1.50	0.44	1.56	0.38	0.98	2.41	1/8 NPT F	5/32
Model #	Metric Dimensions (mm)																						
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
I-VP50	G 1/4	G 1/4	G 1/4	8.33	13.21	57.91	76.96	124.21	8.08	24.23	50.80	11.18	25.40	11.18	M3	38.10	11.18	39.62	9.65	24.89	61.11	G 1/8	M3



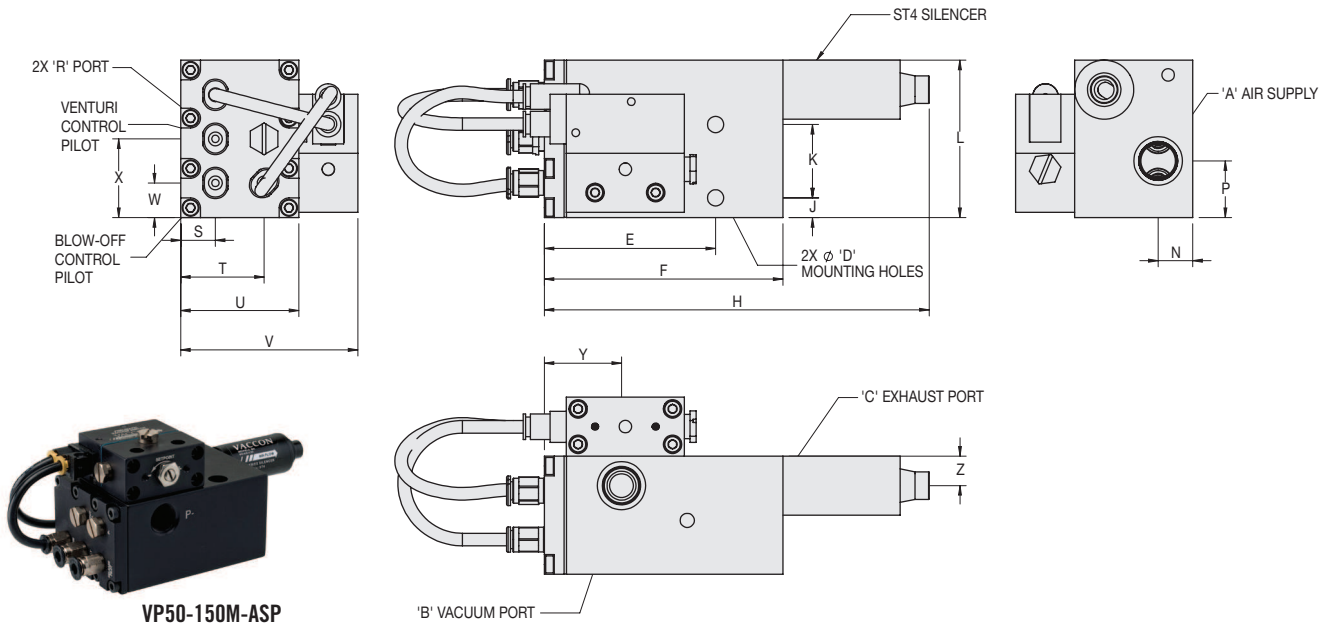
VP50-100H-AS

Specifications:

Weight: 15.4 oz [437.1 g]
Noise Level: 66 dB

Model #	Imperial Dimensions (in.)																			
	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	Y	Z
VP50-AS	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.21	2.18	3.03	4.89	0.25	0.93	2.00	0.44	0.80	5/32	0.44	1.06	1.50	2.25	0.44	0.98	0.38
Model #	Metric Dimensions (mm)																			
	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	Y	Z
I-VP50-AS	G 1/4	G 1/4	G 1/4	5.33	55.37	76.96	124.21	6.35	23.62	50.80	11.18	20.32	M3	11.18	26.92	38.10	57.15	11.18	24.89	9.53

Modular Venturi Vacuum Pumps – Mid Series



VP50-150M-ASP

Specifications:

Weight: 15.6 oz [442.1 g]
Noise Level: 66 dB

Model #	Imperial Dimensions (in.)																				
	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	X	Y	Z
VP50-ASP	1/4 NPT F	1/4 NPT F	1/4 NPT F	0.21	2.18	3.03	4.89	0.25	0.93	2.00	0.44	0.72	5/32	0.44	1.06	1.50	2.25	0.44	1.00	0.98	0.38
Model #	Metric Dimensions (mm)																				
	A	B	C	D	E	F	H	J	K	L	N	P	R	S	T	U	V	W	X	Y	Z
I-VP50-ASP	G 1/4	G 1/4	G 1/4	5.33	55.37	76.96	124.21	6.35	23.62	50.80	11.18	18.29	M3	11.18	26.92	38.10	57.15	11.18	25.40	24.89	9.53

Mid Series Segmented Vacuum Manifolds

VMBV



Flexible automation – Four, six station manifolds control an End-of-Arm Tool that configures different zones of cups to handle a wide variety of stamped metal parts. No tool change required.



VMBV-3A-90H-1-0-0-0

Standard Manifolds:

The VMBV Mid Series Segmented Vacuum Manifolds are individual vacuum segments with a common air supply that provides independent vacuum to multiple locations.

Segments can be individually configured or they can all be the same. All segments offer integral NC solenoid control for vacuum creation. For added functionality, specify a valve for blow-off and a vacuum switch/sensor for part present/vacuum achieved feedback.

Design flexibility is further increased with our interchangeable venturi cartridge system that allows designers to optimize performance by choosing from 11 venturi cartridges. (see page 8).

Large internal flow paths allow ingested debris to pass through the segments without clogging. Push-to-connect air supply and vacuum lines save space and assembly time.

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place
- Robotic assembly
- Material handling

Features/Benefits:

- Precise control – control both the vacuum and the blow-off duration time.
- Fast response – no delay due to long plumbing lines; installs close to vacuum point
- Instantaneous vacuum as needed – minimal air consumption
- High productivity – cycle rates up to 2700/min
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No downtime
 - ~ No filters required

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

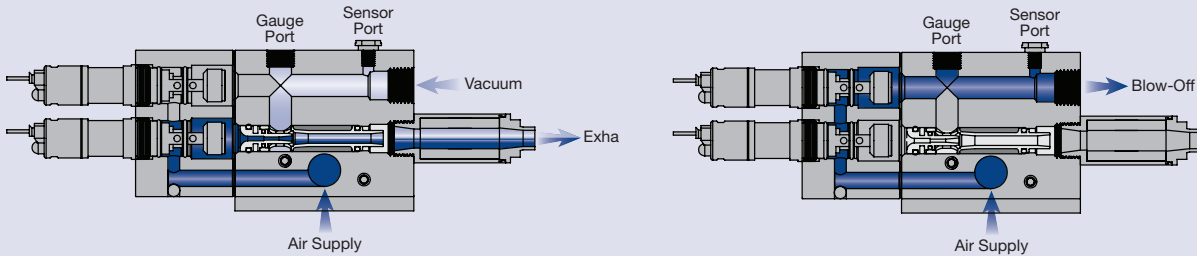
Segmented Manifold Options:

- Interchangeable Venturi cartridges – 11 different performance levels
- Miniature vacuum switches/sensors with quick disconnect for reliable part detection
- On-board integral control valves – 24vDC
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional.

Principles of Operation: VMBV

Compressed air is supplied to both N.C. solenoid valves simultaneously (if outfitted with blow-off function). To create vacuum, energize the first solenoid valve to allow the compressed air to flow to the venturi cartridge resulting in instant vacuum at the vacuum port.

To release the part, de-energize the vacuum solenoid while energizing the blow-off solenoid. Because the blow-off air is at line pressure a very powerful blow-off will be created.



Note: Each segment of the manifold operates independently, but uses a common air supply located on the standoff on both ends of the assembly. Both air supply ports may be used if the number of pump segments requires more volume.

VMBV Manifold Segment Standard Specifications:

Body Material:	Anodized Aluminum, Buna-N, Brass, Acetal (For silencer material, see page 266)
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-23°~122° F [-5°~50°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

2-Way Pilot Valve Specifications

Valve Type:	Integral 2-way solenoid, 24vdc, Normally closed
Valve Body Material:	Copper, Nylon, Stainless Steel
Valve Seal Material:	Buna-N
Valve Operating Pressure:	0 to 100 PSI [0 to 7 BAR]
Average Life:	50 million cycles
Power Consumption:	1.3 watts
Response Time:	8 milliseconds
Cycle Rate:	45 cycles per second
Electrical Connection:	2 pole plug-in cable with 24 AWG, 3' [1M] flying leads
Manual Override:	Yes, non-locking, spring return

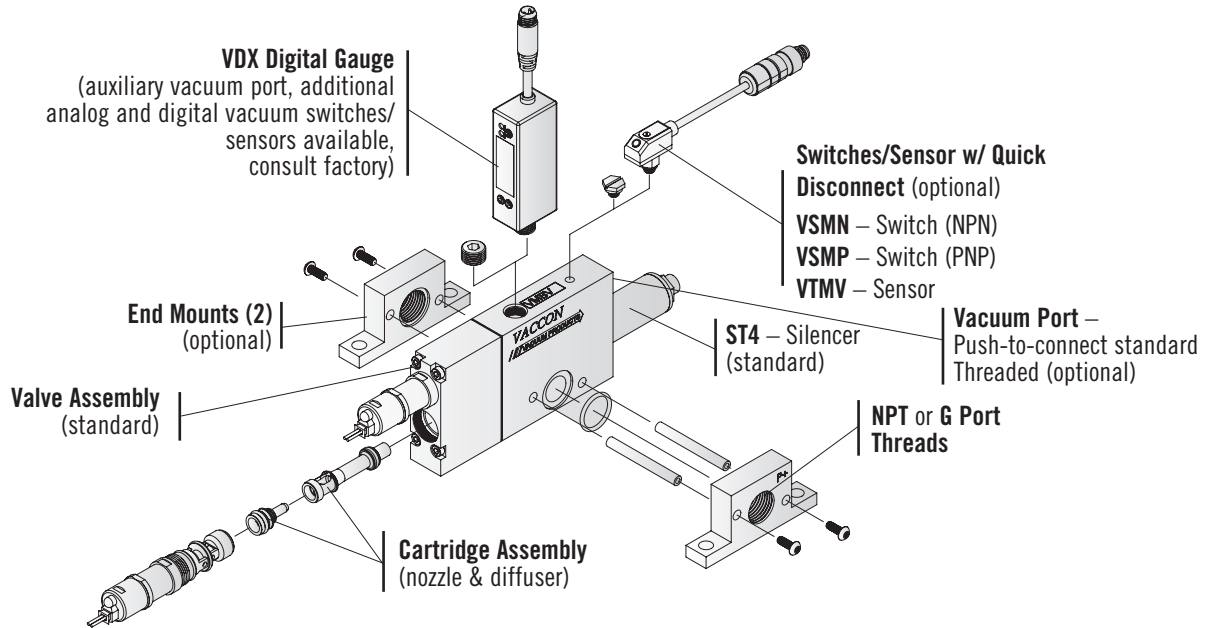
VMBV Operating and Installation Requirements:

Cartridge size:	C60 (M, H) and C90 (L, M, H)	C100 (L, M, H) and C150 (L, M, H)
Supply Line:	1/4" O.D. [6mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF250F. See page 278.	
Mounting Holes:	Mounting holes accept 10-32 [M5] screws	

Modular Venturi Vacuum Pumps – Mid Series

VMBV Segmented Manifold Mid-Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



How to specify segments with the same options:

To order a 5 station manifold with all segments configured the same, specify the total number of segments first and then the letter "A" for "all the same."

Segment 1: **VMBV 5 A - 60 H - 0 - 0 - 0 - 0**

How to specify segments with different options:

Segment numbers are left to right when facing the vacuum port. Please see next page.

To order a 3-station manifold with different configurations, specify the total number of segments after "VMBV" and then list each line separately.

How to Specify:

Segment 1: **VMBV3 - 1 - 60 H - 0 - 1 - 1 - 0**

Segment 2: **VMBV3 - 2 - 90 M - 0 - 1 - 1 - 0**

Segment 3: **VMBV3 - 3 - 100 H - 0 - 1 - 1 - 0**

P/N	Imperial Thread
VMBV	NPT
P/N	Metric Thread
I-VMBV	G Port
P/N	Segments
(1-10) A	Total number of segments, followed by "A" – all segments the same.
1	Segment 1
2	Segment 2
3	Segment 3
P/N	Max. Flow Level
-60	(Not Available in L)
-90	
-100	
-150	

P/N	Vacuum Ports
0	PTC Standard (3/8"/10mm)
1	Threaded (1/4"/G1/4)
P/N	Switch/Sensor
0	None (Standard)
1	VSMN – Switch NPN
2	VSMP – Switch PNP
3	VTMV – Sensor 1-5VDC Output
P/N	Blow-off
0	None (Standard)
1	Full
P/N	Operating Pressure
0	80 PSI [5.5 BAR] (Standard)
1	60 PSI [4.0 BAR]
P/N	Max. Vac Level
L	10"Hg [339mbar]
M	20"Hg [677mbar]
H	28"Hg [948mbar]

For complete Performance Data, see page 106.

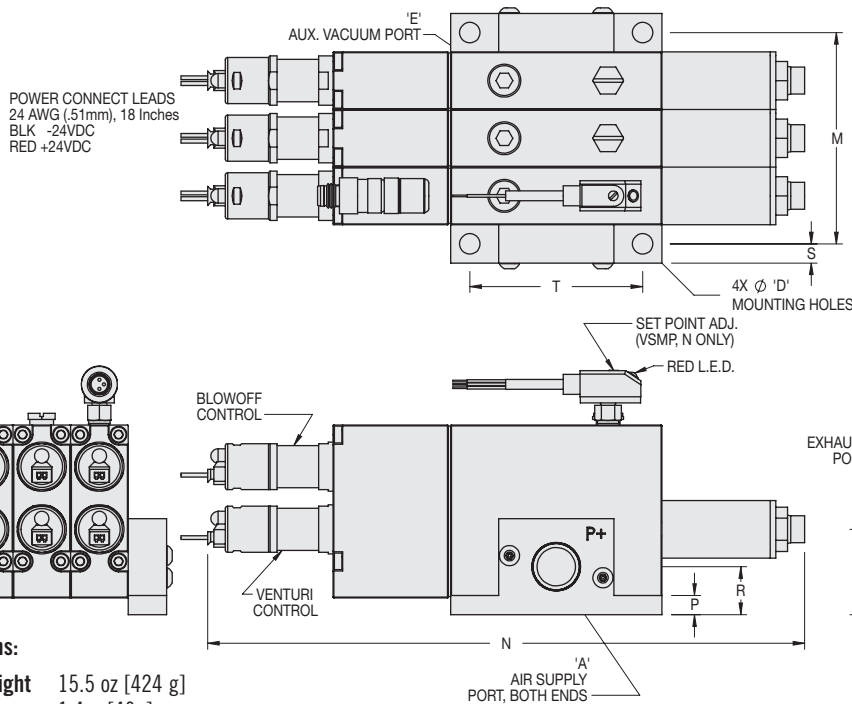
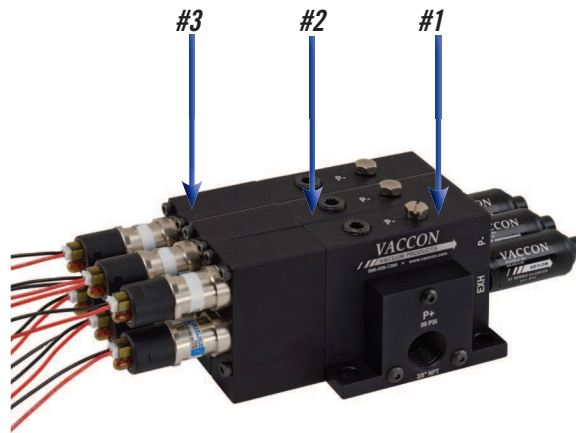
Standard Manifold: VMBV - # – (60, 90, 100, 150) (L, M, H)

3 Station Manifold – VMBV with options:

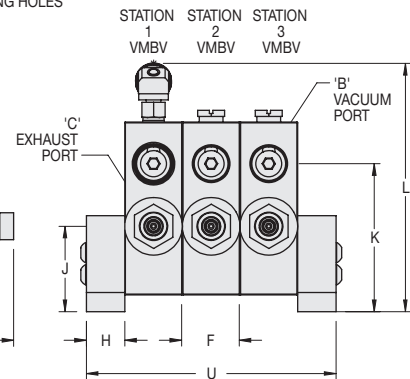
Segment 3 includes blow-off/no sensor

Segment 2 includes sensor/no blow-off

Segment 1 includes blow-off and sensor



Manifold segments are defined from left to right when facing the vacuum port.



Specifications:

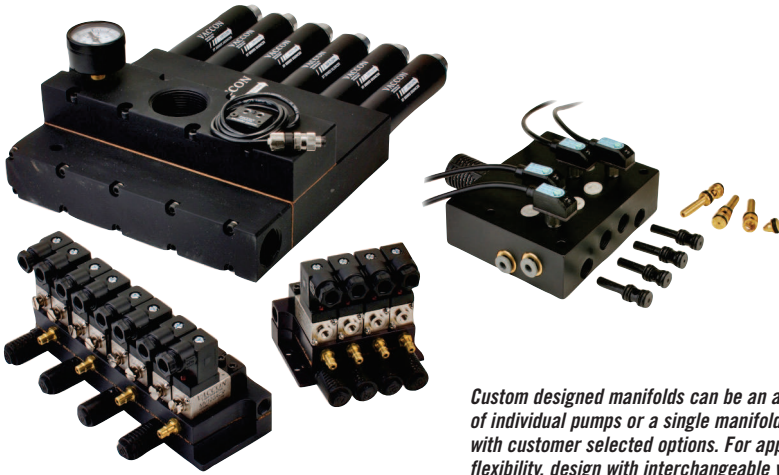
Segment Weight	15.5 oz [424 g]
End Mounts	1.4 oz[40g]
Noise Level	68 dB

Model #	Imperial Dimensions (in.)																
	A	B*	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U
VMBV	3/8 NPT F	3/8" PTC	1/4 NPT F	0.27	1/8 NPT F	0.75	0.50	1.11	1.93	3.23	2.75	7.77	0.25	0.63	0.25	2.25	3.25
Model #	Metric Dimensions (mm)																
	A	B*	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U
I-VMBV	G 3/8	10mm PTC	G 1/4	6.86	G 1/8	19.05	12.70	28.19	49.02	82.04	69.85	197.36	6.35	16.00	6.35	57.15	82.55

*PTC – Push-to-connect fitting is standard. Consult factory for 1/4" NPT (G 1/4) threads.

Custom Vacuum Manifold

VMF



Custom designed manifolds can be an array of individual pumps or a single manifold block with customer selected options. For application flexibility, design with interchangeable venturi cartridges. For chemical compatibility or hazardous environments, design using seal-less (no o-rings) pre-set, fixed venturi cartridges.

Ideal Applications:

- Pick and place
- End-of-arm Tooling/Robotics
- Packaging
- Vessel Evacuation
- Vacuum clamping/holding fixtures

Features/Benefits:

- Custom designed – you choose size, shape, options and performance specifications
- Economic – instant vacuum as needed, minimal air consumption
- Easy to install – pre-assembled with customer specified connections
- Precise control – individual electrical connections
- Reliable – trouble free operation
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear out
 - ~ No flap valves to stick open
 - ~ No filters required

Standard Manifolds:

All Fixed Length Vacuum Manifolds and modules are designed and manufactured to meet specific customer application requirements for new or existing equipment.

VMF manifolds offer designers the freedom and flexibility to create the most efficient and economic vacuum manifold system to meet their automation environment. In many applications a variety of pneumatic components such as venturi vacuum cartridges, solenoid valves, check valves, vacuum switches, pressure regulators and ball valves are combined to make a complete pneumatic circuit offering both vacuum and pressure. Vaccon engineers are experts at designing modules that are compact, energy efficient, fast acting and easy-to-install.

Whether it's an inkjet printer, automotive End-of-Arm tool, nitrogen tire filling module, IC handler or inflation/deflation module for an RV, Vaccon has the most powerful and reliable vacuum solution.

All manifolds are made of anodized aluminum unless otherwise requested.

Performance Level Designations:

“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

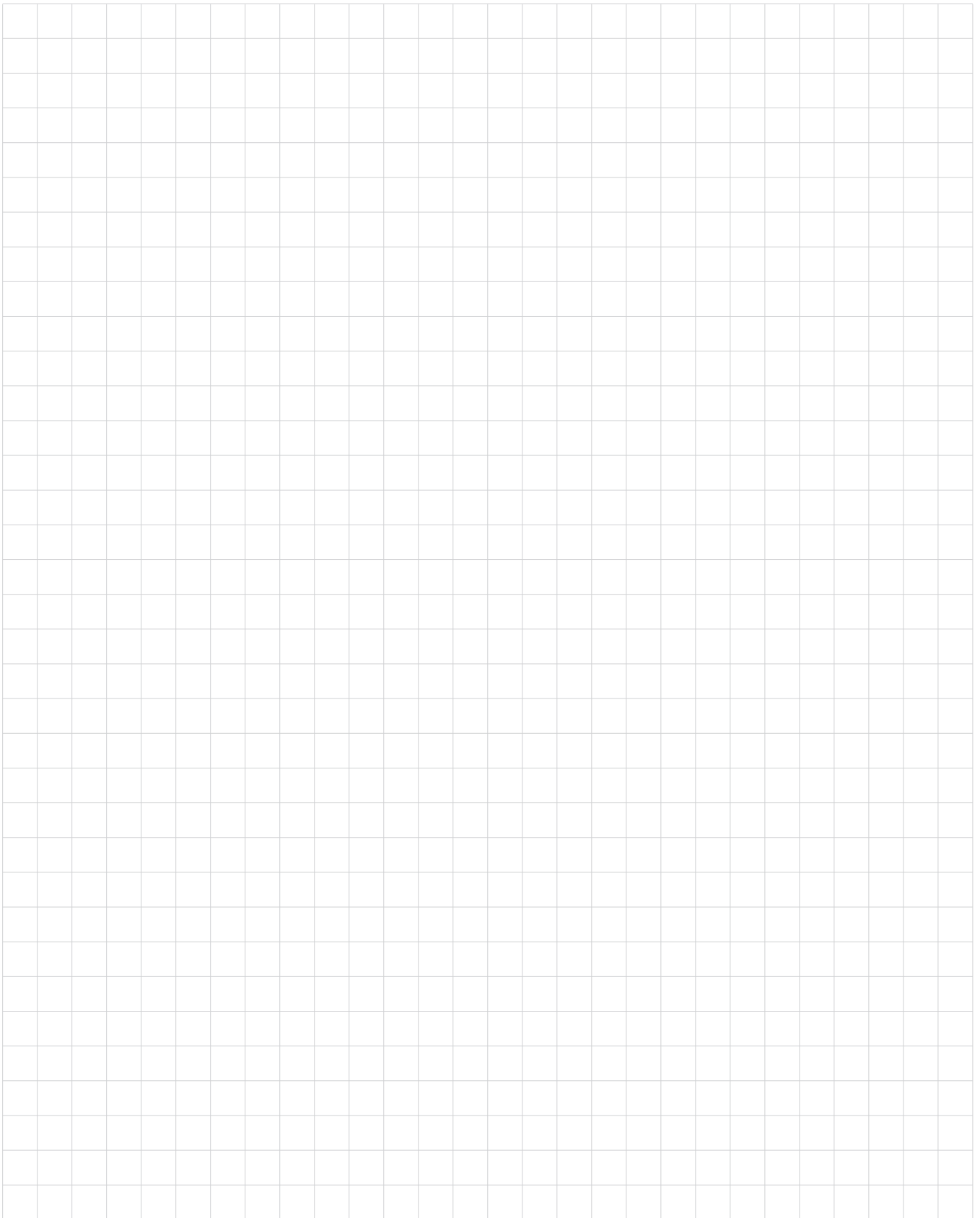
“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

Fixed Length Manifold Options:

- Independent or common vacuum and air supply lines
- Choice of port sizes and locations – simplify connections, plumbing flexibility and tubing sizes
- Push to Connect fittings and/or threaded ports
- G Port threads for metric machines
- Mini and Mid Series interchangeable venturi cartridges – application versatility
- Individual pumps or single manifold block – for easy assembly or add-on capabilities
- Size and shape – to meet customer specifications or existing machine footprint
- Internal check valves for holding vacuum or allowing atmospheric air in
- Vacuum switches/sensors with quick disconnect for reliable part detection
- Choice of operating pressures to meet machine and factory air supply
- Control valves (24vDC) for precise control of vacuum and blow-off
- Vacuum gauges for visual monitoring
- Silencers for quiet, safe operation
- Custom materials available for chemical compatibility, heat and environmental requirements, food and medical applications – Consult factory.

All Custom Length Manifolds are made to order. Please contact Vaccon Engineering for design assistance.



Performance Data for Mid Series Pumps

For Pump Models: VP10, VP10-MP, VP1X, VP20, VP20BV, VP20-MP, VP20BV-MP, VP2X, VP2XBV, VP35, and Manifolds

L-Series Venturis – Low Vacuum Applications

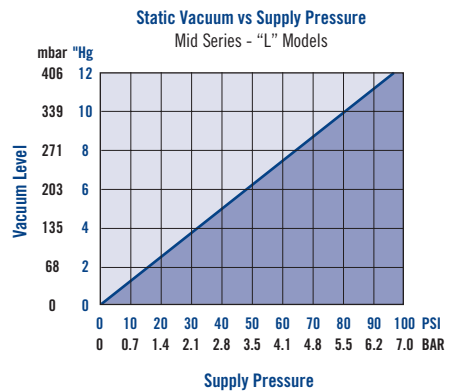
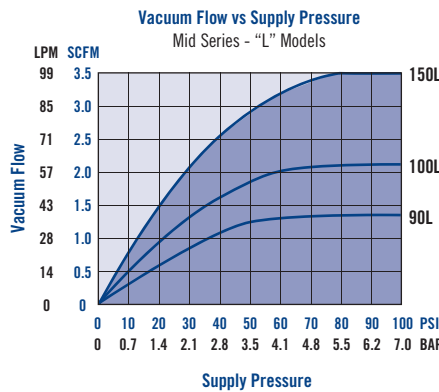
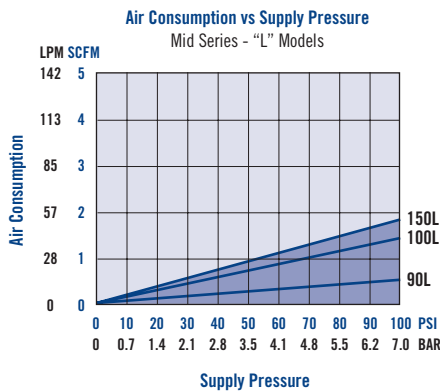
L is for “Low” vacuum levels up to 10”Hg [339 mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
90L	0.50	1.30	1.10	0.70	0.20	0.00
100L	1.40	2.10	1.60	1.10	0.50	0.00
150L	1.80	3.50	2.50	1.90	0.70	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
90L		0.00	3.26	7.93	18.65	39.63
100L		0.00	2.33	4.66	10.88	24.00
150L		0.00	1.54	4.36	10.77	22.83

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
90L	14.2	36.8	31.1	19.8	5.7	0.0
100L	39.6	59.5	45.3	31.1	14.2	0.0
150L	51.0	99.1	70.8	53.8	19.8	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
90L		0.0	0.1	0.3	0.7	1.4
100L		0.0	0.1	0.2	0.4	0.9
150L		0.0	0.1	0.2	0.4	0.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Pumps

For Pump Models: VP10, VP10-MP, VP20, VP20BV, VP20-AS, VP20-MP, VP20BV-MP, VP2X, VP2XBV, VP35, and Manifolds

M-Series Venturis –Medium Vacuum Applications

M is for “Medium” vacuum levels up to 20”Hg [677 mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles.)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
60M	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
90M	1.40	1.40	1.25	1.20	1.05	0.85	0.65	0.25	0.00
100M	1.80	2.10	2.00	1.85	1.75	1.60	1.25	0.80	0.00
150M	2.80	3.50	3.20	2.95	2.75	2.50	1.80	0.95	0.00

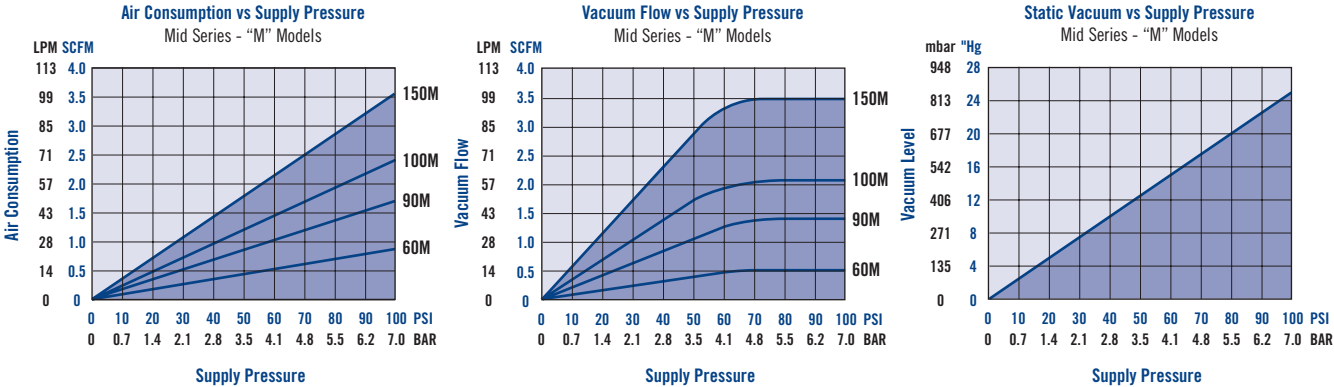
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg							
	0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
60M	0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00
90M	0.00	3.75	7.20	12.40	19.10	29.90	52.00	104.00
100M	0.00	2.65	5.80	9.90	16.20	22.90	36.20	56.60
150M	0.00	1.35	3.20	5.20	7.70	11.80	23.40	52.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
60M	14.2	14.2	11.3	8.5	6.2	4.2	2.3	0.8	0.0
90M	39.6	39.6	35.4	34.0	29.7	24.1	18.4	7.1	0.0
100M	51.0	59.5	56.6	52.4	49.6	45.3	35.4	22.7	0.0
150M	79.3	99.1	90.6	83.5	77.9	70.8	51.0	26.9	0.0

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
60M	0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0
90M	0.0	0.1	0.3	0.4	0.7	1.1	1.8	3.7
100M	0.0	0.1	0.2	0.3	0.6	0.8	1.3	2.0
150M	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.8

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Mid Series Pumps

For Pump Models: VP10, VP10-MP, VP1X, VP20, VP20BV, VP20-AS, VP20-MP, VP20BV-MP, VP2X, VP2XBV, VP35, VP50, and Manifolds

H-Series Venturis – High Vacuum Applications

H is for “High” vacuum levels up to 28”Hg [948 mbar] for applications involving non-porous materials (steel, plastic, glass, etc.) The High vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27 Hg	28”Hg
60H	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
90H	1.80	1.20	1.00	0.95	0.90	0.85	0.75	0.70	0.52	0.47	0.20	0.00
100H	2.80	2.00	1.85	1.75	1.57	1.40	1.25	1.05	0.84	0.70	0.35	0.00
150H	4.80	3.20	2.80	2.50	2.30	2.00	1.60	1.40	1.20	0.80	0.50	0.00

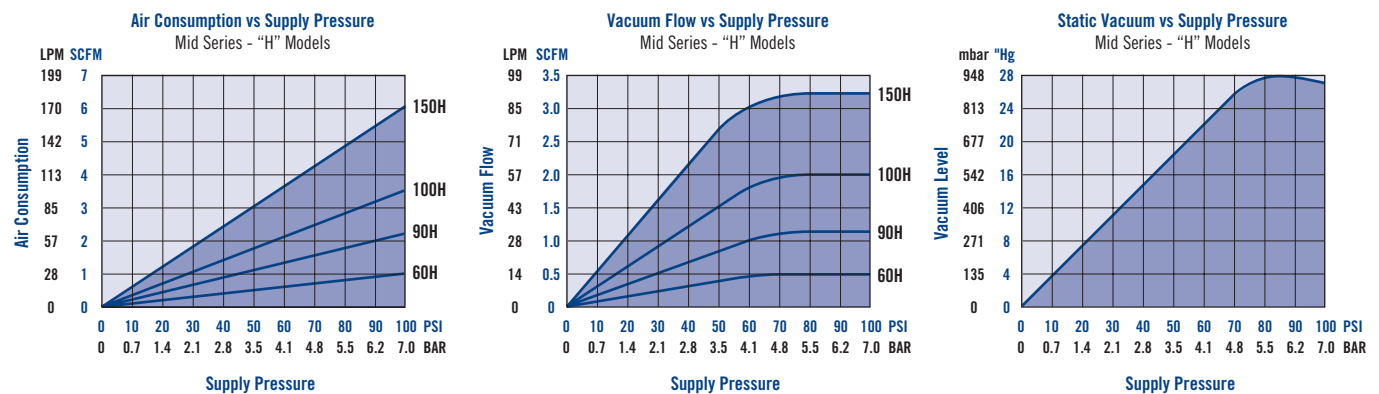
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
60H		0.00	15.00	29.80	50.60	74.50	102.80	135.90	183.20	245.90	410.20	790.80
90H		0.00	6.50	12.30	18.90	32.50	47.00	65.40	92.20	130.00	222.20	281.30
100H		0.00	2.70	6.50	11.20	17.50	25.80	38.40	55.20	79.20	166.70	251.80
150H		0.00	2.30	3.80	6.50	10.20	14.20	21.30	44.90	55.00	81.00	125.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
60H	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
90H	51.0	34.0	28.3	26.9	25.5	24.1	21.2	19.8	14.7	13.3	5.7	0.0
100H	79.3	56.6	52.4	49.6	44.5	39.6	35.4	29.7	23.8	19.8	9.9	0.0
150H	135.9	90.6	79.3	70.8	65.1	56.6	45.3	39.6	34.0	22.7	14.2	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	914 mbar	948 mbar
60H		0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9
90H		0.0	0.2	0.4	0.7	1.1	1.7	2.3	3.3	4.6	7.8	9.9
100H		0.0	0.1	0.2	0.4	0.6	0.9	1.4	1.9	2.8	5.9	8.9
150H		0.0	0.1	0.1	0.2	0.4	0.5	0.8	1.6	1.9	2.9	4.4

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.

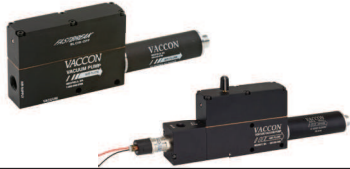




VP80 / VP80BV Series – Standard Pump

Designed for Flow - The VP80 Max Series air-powered venturi vacuum pumps provide high vacuum flow rates for the rapid evacuation of large volumes of air or for overcoming leakage in order to sustain high vacuum levels while handling porous materials. Available with integrated valve.

See Page **110**



VP8X / VP8XBV Series – Pneumatic Blow-Off

The reliable VP8X & VP8X-ADJ Fastbreak Max Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required. Available with integrated valve.

See Page **116**



VP80-/ VP80BV-MP, VP80/ VP80BV-250-MP, VP90-MP Series – Multi Port Version

The VP80-/ VP90-MP Series provide the power of Vaccon's Max Series design with integral 4 or 6 Port vacuum manifolds and glycerine filled vacuum gauges. VP80-MP Series available with integrated valve.

See Page **122**



VP80-AS and VP90-AS Series – Air Saver Version

Vaccon's Air Saver Pumps are an all-pneumatic system that minimizes compressed air usage by creating, monitoring and maintaining vacuum for safe energy efficient operations. The VP90-300 and 350 Max Series Air Saver Pumps provide for very high vacuum flow rate for applications involving moderately porous materials, or material with a rough uneven sealing surface, such as plywood.

See Page **134**



VP80/ VP80BV-250 Series – Standard Pump

The VP80-250 Max Series air-powered venturi vacuum pumps provide an even higher vacuum flow rate for larger evacuation applications or porous material handling operations. Available with integrated valve.

See Page **140**



VP90 Series – Standard Pump

Max Performance - Highly efficient, capable of reaching 28"Hg [948mbar], with flow rates up to 28 SCFM [793 l/min], the VP90's are also dirt tolerant. The standard FA-51 silencer also makes the VP90 Series whisper quiet.

See Page **146**



VP92 Series - Valve Controlled Vacuum Pump

High Flow - Solenoid controlled, designed to interface directly on a MAC 92 Series Sub Base. Integral valve control for vacuum blowoff for rapid part release. Interchangeable threaded venturi cartridges - 3 different performance levels.

See Page **150**

Max Series

Max-size Venturi Vacuum Pump with Silencer

VP Max Series: VP80-200/ VP80BV-200



VP80-200M transfers boxes for palletizing operation

VP80BV-200H

Standard Pump:

The VP80-200 and VP80BV-200 Max Series air-powered venturi vacuum pumps provide high vacuum flow rates for the rapid evacuation of large volumes of air or for overcoming leakage in order to sustain high vacuum levels while handling porous materials. The VP80BV-200 Max Series pumps offer an integrated valve for saved air and increased production cycles.

Highly efficient, capable of reaching 28”Hg [948mbar], the VP80’s are also dirt tolerant and include a straight-through silencer for quiet operation. Unlike the Mid Series pumps that use interchangeable cartridge assemblies, the Max Series pumps (VP80 & VP90’s) use a non-removable press-fit venturi assembly.

Performance Level Designations:

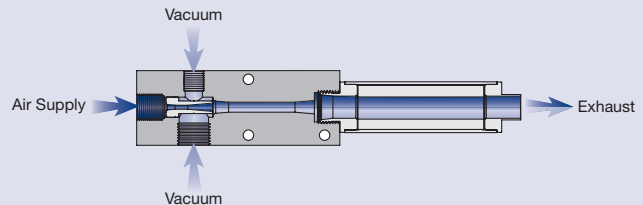
“L” 0-10”Hg, [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg, [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg, [0 to 948mbar] for high vacuum/standard flow applications

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



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Vacuum technology isn’t an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place medium to large size objects
- End-of-Arm Tooling/Robotics
- Vessel evacuation – molds/tanks/bottles/drums
- Packaging – bag/box/carton folding and handling
- Vacuum clamping/holding – fixtures, veneers
- Vacuum filling/bottling operations

Features/Benefits:

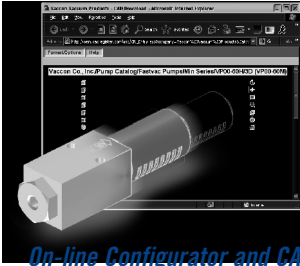
- High performance – powerful vacuum up to 28”Hg [948mbar]
- Compact & lightweight, rugged body construction
- Fast response – mounts close to vacuum point
- Efficient – minimal air consumption
- Safe operation
 - ~ No electricity needed at the pump
 - ~ High flow overcomes leakage – maintains a strong holding force
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Vacuum gauge
- Silencers: STAA6 for ultra-quiet operation, FA-51-3/8 for high flow applications
- Integrated 2-way valve - 24vdc, normally closed
- G port threads for metric machines – products with an “I” prefix designates metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional

VP80-200 (L, M, H) Max Series Configurations and Options:

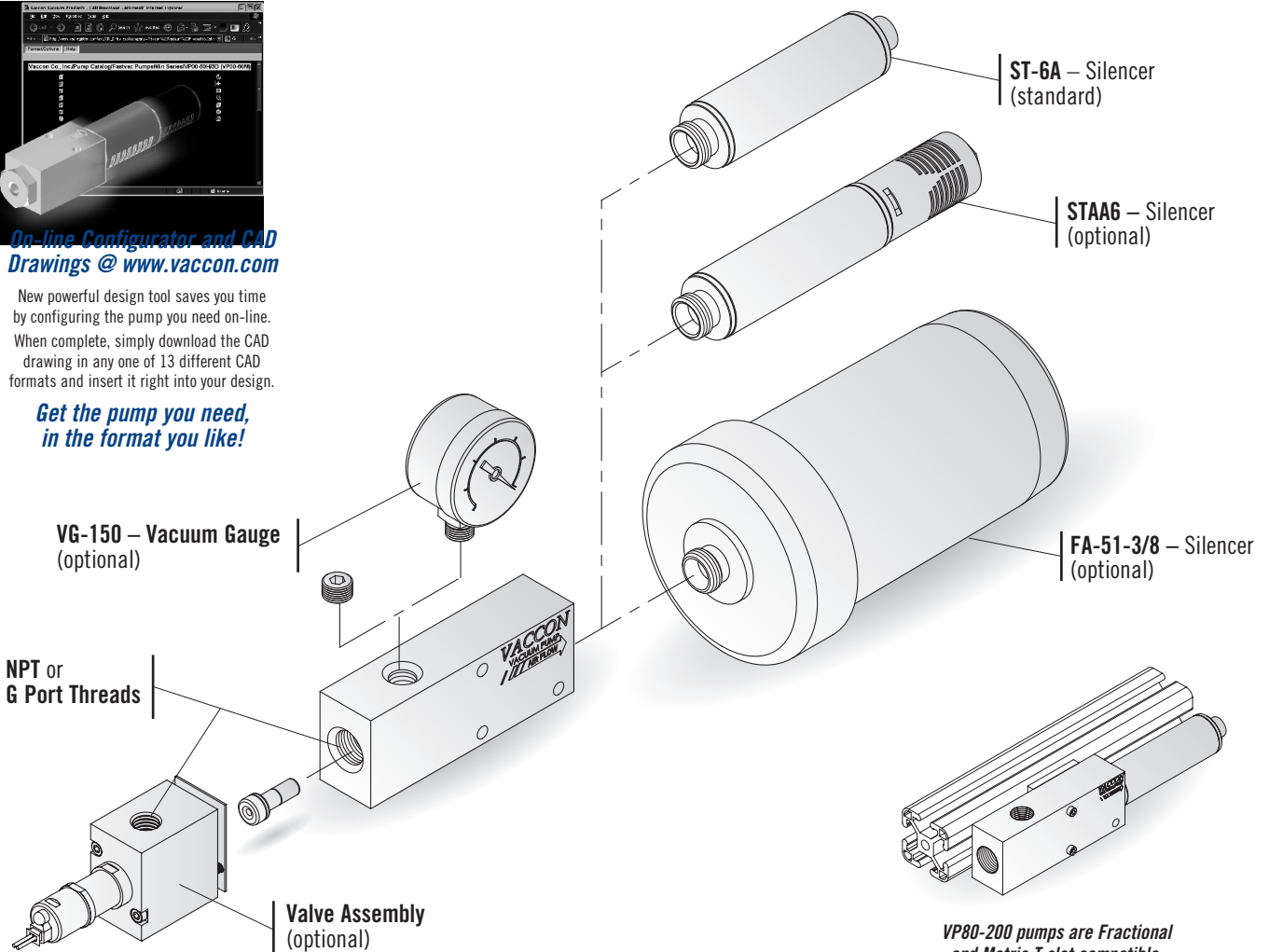
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VP80-200 pumps are Fractional and Metric T-slot compatible. See EOAT Section.

How to Specify:

VP80-200 - H - [] - []

P/N	Imperial Thread-NPT
VP80-200	No Valve
VP80BV-200	with Valve Assy

P/N	Metric Thread-G Port
I-VP80-200	No Valve
I-VP80BV-200	with Valve

P/N	Max. Vac Level
L	10"Hg [339 mbar]
M	20"Hg [677 mbar]
H	28"Hg [948 mbar]

P/N	Silencer
ST-6A	Straight-Through (Standard)
STAA6	Hybrid
FA-51-3/8	High Flow

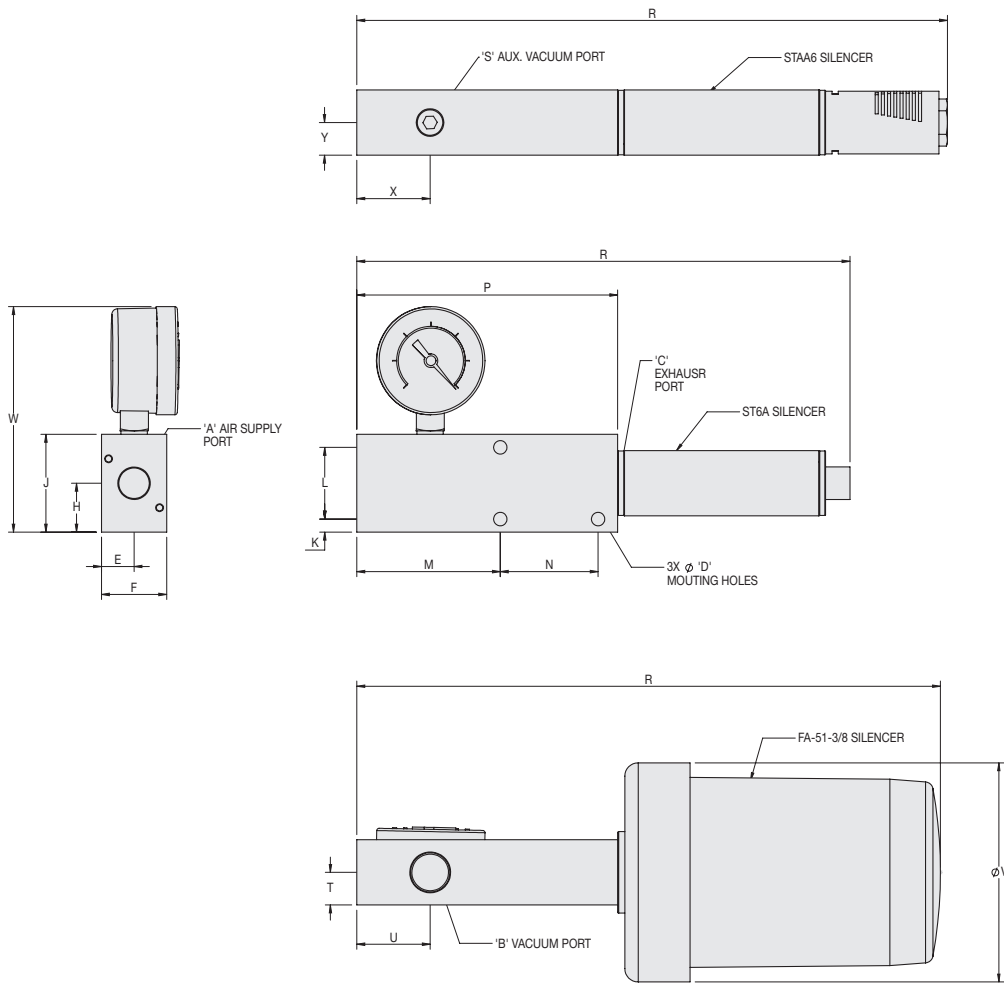
P/N	Operating Pressure
-60	80 PSI [5.5 Bar] (Standard)
-60	60 PSI [4.0 Bar]

P/N	Vacuum Gauge
VG-150	Vaccon does not recommend shipping gauges attached to pumps. Please specify as a separate line item.

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

Standard Pump: VP80-200 (L, M, H)



Specifications:

VP80-200H with ST-6A silencer.

Weight 10.2 oz [290 g]
Noise Level 72dB

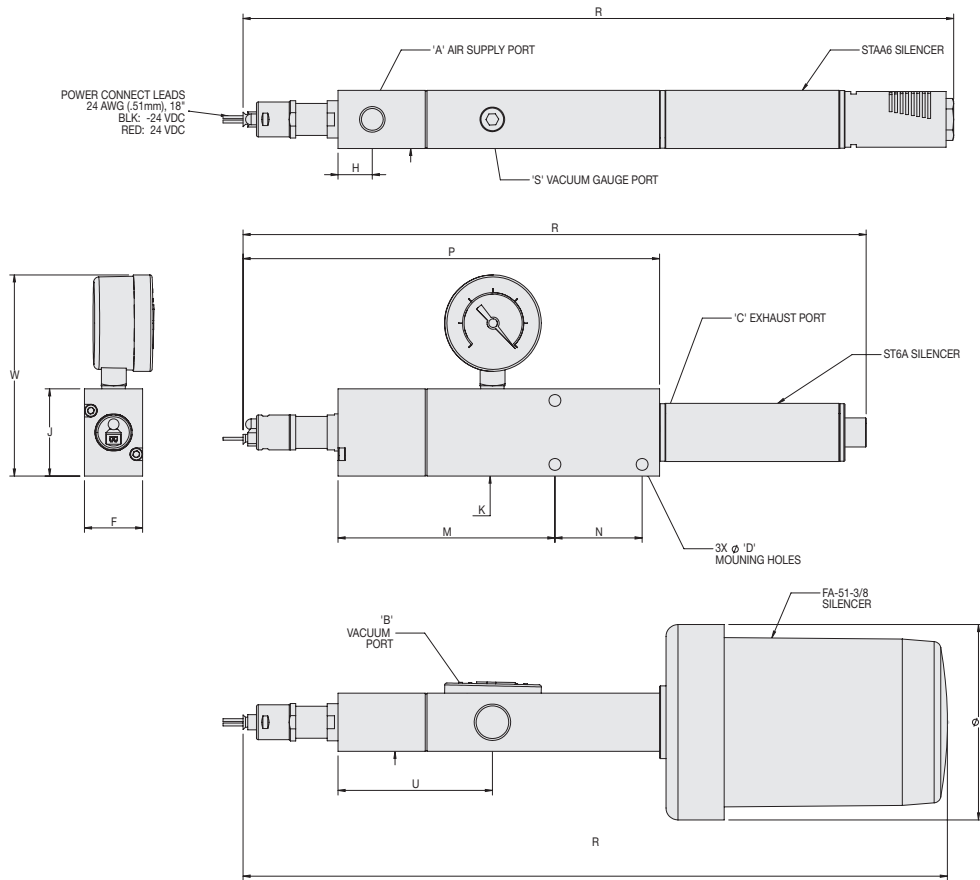
10.5 oz [298g]
 65dB

VP80-200H with FA51-3/8 optional silencer and VG-150 vacuum gauge.

1 lb 5 oz [595 g]
 72dB

Model #	Imperial Dimensions (in.)																				
VP80-200	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
W STAA6	1/4 NPT F	3/8 NPT F	3/8 NPT F	0.21	0.50	1.00	0.75	1.50	0.20	1.10	2.20	1.50	4.00	9.05	1/8 NPT F	0.50	1.13	3.36	3.46	1.12	0.50
W ST-6A														7.57							
W FA-51-3/8														9.74							
Model #	Metric Dimensions (mm)																				
I-VP80-200	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
W STAA6	G 1/4	G 3/8	G 3/8	5.3	12.7	25.4	19.1	38.1	5.1	27.9	55.9	38.1	101.6	229.9	G 1/8	12.7	28.7	85.3	87.9	28.4	12.7
W ST-6A														192.3							
W FA-51-3/8														247.4							

Standard Pump: VP80BV-200 (L, M, H)



Specifications: VP80BV-200H with ST-6A silencer

Weight 14.3 oz [404.2 g]
Noise Level 72dB

Specifications: VP80BV-200H with optional STAAG silencer

Weight 14.6 OZ [413.9G]
Noise Level 65dB

Specifications: VP80BV-200H with FA51-3/8 optional silencer and VG-150 vacuum gauge.

Weight 1 lb 9 oz [707.6 g]
Noise Level 72dB

Model #	Imperial Dimensions (in.)																						
VP80BV-200	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W				
W STAAG	1/8 NPT F	3/8 NPT F	3/8 NPT F	0.21	0.50	1.00	0.59	1.50	0.20	1.10	3.73	1.50	7.16	12.22	1/8 NPT F	0.50	2.66	3.36	3.46				
W ST-6A														10.72									
W FA-51-3/8														12.11									
Model #	Metric Dimensions (mm)																						
I-VP80BV-200	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W				
W STAAG														310.4	G 1/8	12.7	67.6	85.3	87.9				
W ST-6A	G 1/8	G 3/8	G 3/8	5.3	12.7	25.4	15.0	38.1	5.1	27.9	94.7	38.1	181.9	272.3									
W FA-51-3/8														307.6									

Modular Venturi Vacuum Pumps – Max Series

VP80-200/ VP80BV-200 Pump Standard Specifications:

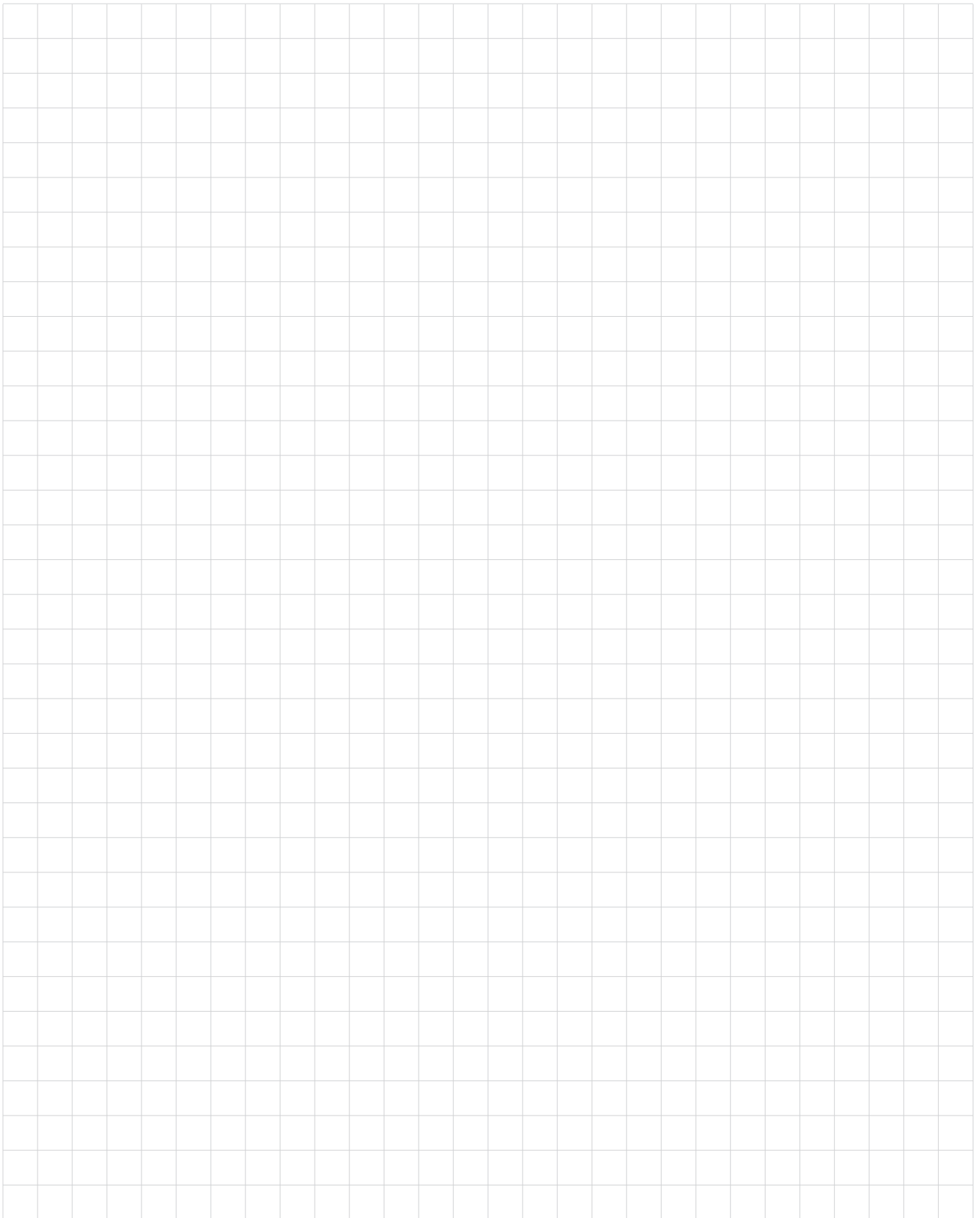
Pump Body Material:	Anodized Aluminum (For silencer material, see page 264 - 269.)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100°~ +400° F [-73°~ +204°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP80-200/ VP80BV-20 Operating and Installation Requirements:

Supply Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Mounting:	Mounting holes accept #10-32 or M5 screws



Max Series Venturi Vacuum Pump with Pneumatic Blow-off and Silencer

Fastbreak Max Series: VP8X & VP8X-ADJ/ VP8XBV & VP8XBV-ADJ



VP8X-200H



VP8XBV-200M-ADJ

Standard Pump:

VP8X & VP8X-ADJ and VP8XBV & VP8XBV-ADJ air-powered venturi vacuum pumps are trusted for accurate part placement and rapid part release. The reliable Fastbreak Max Series provides both vacuum and blow-off in one pump, using only one compressed air line. No electricity required.

The integrated pneumatic high-speed blow off on the VP8X and VP8XBV pumps provide a fixed-duration blow off, based on the volume of the housing. With the VP8X-ADJ and VP8XBV-ADJ adjustable vacuum pumps, you can control the intensity of the blow-off using one fingertip adjustment knob. (Customer-supplied directional control valve with exhaust required.) The VP8XBV pumps offer an integrated valve for saved air and increased production cycles.

Performance Level Designations:

"L" 0-10"Hg, [0 to 339mbar] for low vacuum/high flow applications

"M" 0-20"Hg, [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg, [0 to 948mbar] for high vacuum/standard flow applications

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To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

Pick and place applications requiring accurate part placement and rapid part release:

- ~ Palletizing
- ~ Packaging machines
- ~ High speed labeling machines
- ~ Sheet feeders
- ~ Robotic end effectors
- ~ Automated assembly

Features/Benefits:

- Fast Response – compact, lightweight, and installs close to vacuum point
- Trouble free operation:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ Automatically cleans vacuum lines
 - ~ No downtime
- High productivity – rapid part release, cycle rates up to 900/min
- Modular design – add vacuum sensors and solenoid valves to create a complete vacuum system
- Multiple functions from just one PLC output – requires fewer outputs, less costly, easy to program
- Reliable part detection – factory installed miniature vacuum switches or sensors

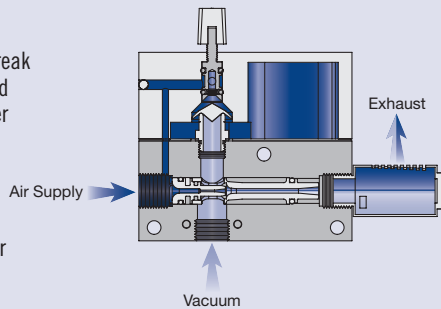
Pump Options:

- ADJ version allows the user to set the intensity of the blow-off from no blow-off to full blow-off
- Integrated 2-way valve - 24vdc, normally closed
- Factory-installed miniature vacuum switches or sensors with quick disconnect for reliable part detection
- FA-51-3/8 silencer for high flow applications, STAA6 hybrid silencer for ultra-quiet operation
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional

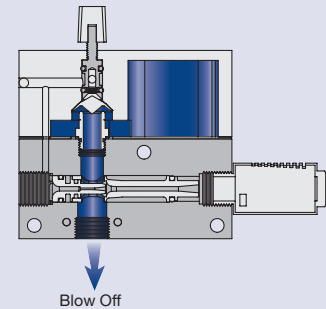
Principles of Operation: VP8X & VP8X-ADJ

Fastbreak pumps provide both suction and blow-off with a single supply of compressed air controlled by a solenoid valve.

Utilizing quick exhaust valve technology, Fastbreak pumps store compressed air in the upper chamber while simultaneously generating vacuum. The quick exhaust diaphragm seals the compressed air chamber from the suction line.



When the part is to be released, the solenoid valve* is de-energized. The vacuum stops and the rapid drop in pressure shifts the quick exhaust diaphragm into the up position allowing the store compressed air to vent into the vacuum line.



When handling small and lightweight parts, choose the adjustable version (-ADJ) shown above to control the blow-off intensity.

*Note: A customer supplied solenoid valve controlling the compressed air to the Fastbreak pump must be in close proximity to the pumps and vent to atmosphere for the quick exhaust valve to actuate properly.

VP8X and VP8X-ADJ/ VP8XBV and VP8XBV-ADJ Standard Pump Specifications:

Body Material:	Anodized Aluminum, Nebar, Brass, Buna-N, Vinyl, Nylon, Alloy Steel (Buna-N on ADJ pumps only) (For silencer material, see page 264 - 269.)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	+32°~125° F [0°~52°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures
Cycle Rates:	Up to 900/min
Blow-off Response Time:	Instantaneous
Orientation:	Any position
Blow-off Duration:	100 milliseconds (based on system design)

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

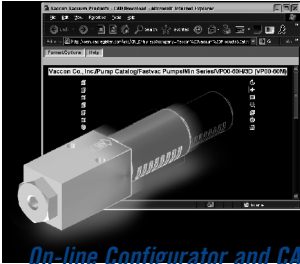
VP8X and VP8X-ADJ/ VP8XBV and VP8XBV-ADJ Operating and Installation Requirements:

Supply Line:	3/8" O.D. [10mm] tube recommended, not to exceed 3' [1M]
Vacuum Line:	3/8" O.D. [10mm] tube recommended, not to exceed 3' [1M]
Control Valve:	3 way/2 position, minimum orifice - 0.156" diameter [4mm]
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Mounting Holes:	Mounting holes accept #10-32 [M5] screws

Modular Venturi Vacuum Pumps – Max Series

VP8X & VP8X-ADJ Fastbreak Max Series Configurations and Options:

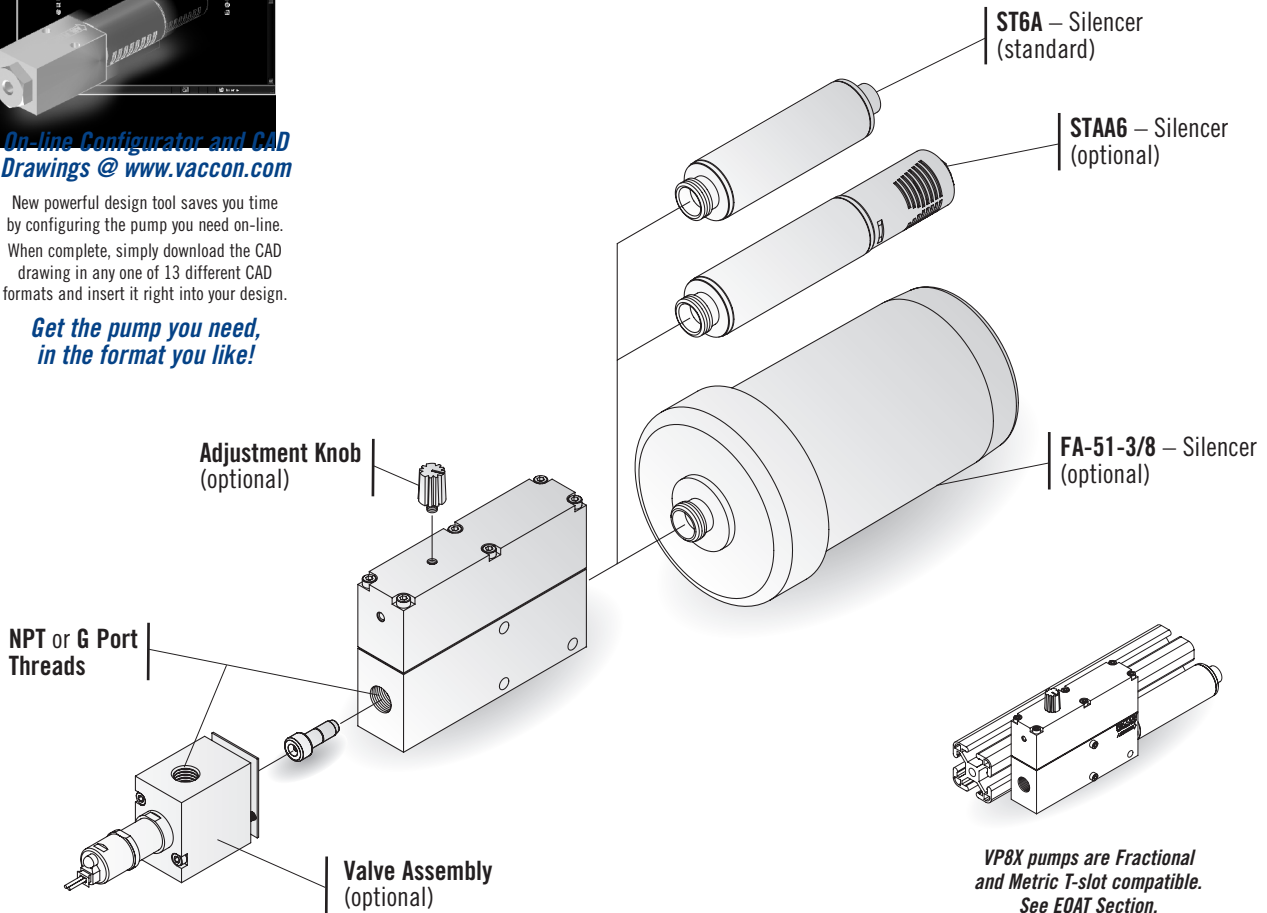
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



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How to Specify:

VP8X-200 - H - 60 - ADJ -

P/N Imperial Thread-NPT

VP8X-200 No Valve
VP8XBV-200 with Valve Assy

P/N Metric Thread-G Port

I-VP8X-200 No Valve
I-VP8XBV-200 with Valve

P/N Max. Vac Level

L 10"Hg [339 mbar]
M 20"Hg [677 mbar]
H 28"Hg [948 mbar]

P/N Silencer

ST-6A Straight-Through (Standard)
STAA6 Hybrid
FA-51-3/8 High Flow

P/N Adjustable Blow-off

Not Adjustable (Standard)
ADJ Adjustable Blow-off

P/N Operating Pressure

80 PSI [5.5 Bar] (Standard)
60 PSI [4.1 Bar]

For complete Performance Data, see page 154.

Standard Pump: VP8X-200 (L, M or H) (-ADJ)



VP8X-200H-ADJ with ST6A Silencer

Specifications:

Weight 15 oz [425g]
Noise Level 72 dB



VP8X-200M with STAA6 Silencer

Specifications:

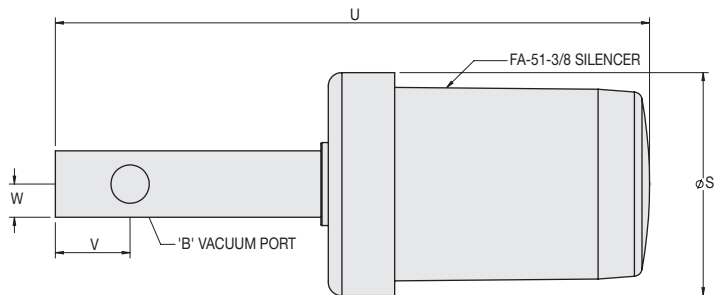
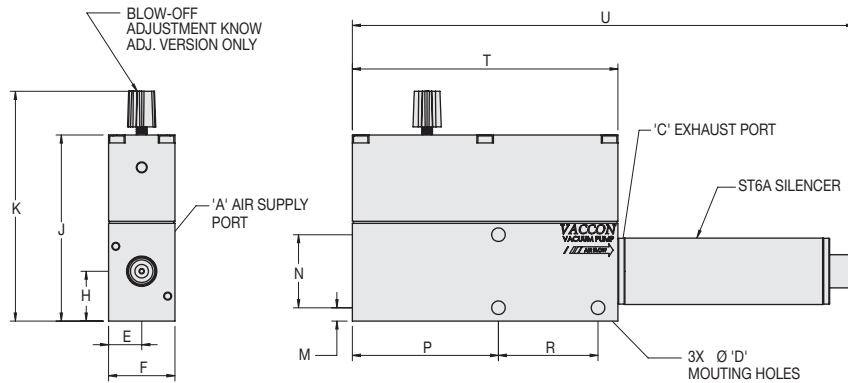
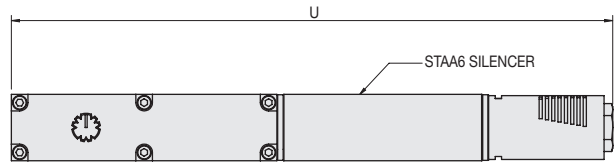
Weight 15.6 oz [442g]
Noise Level 64 dB



VP8X-200H-ADJ with FA-51-3/8 silencer

Specifications:

Weight 2 lbs [1kg]
Noise Level 73 dB

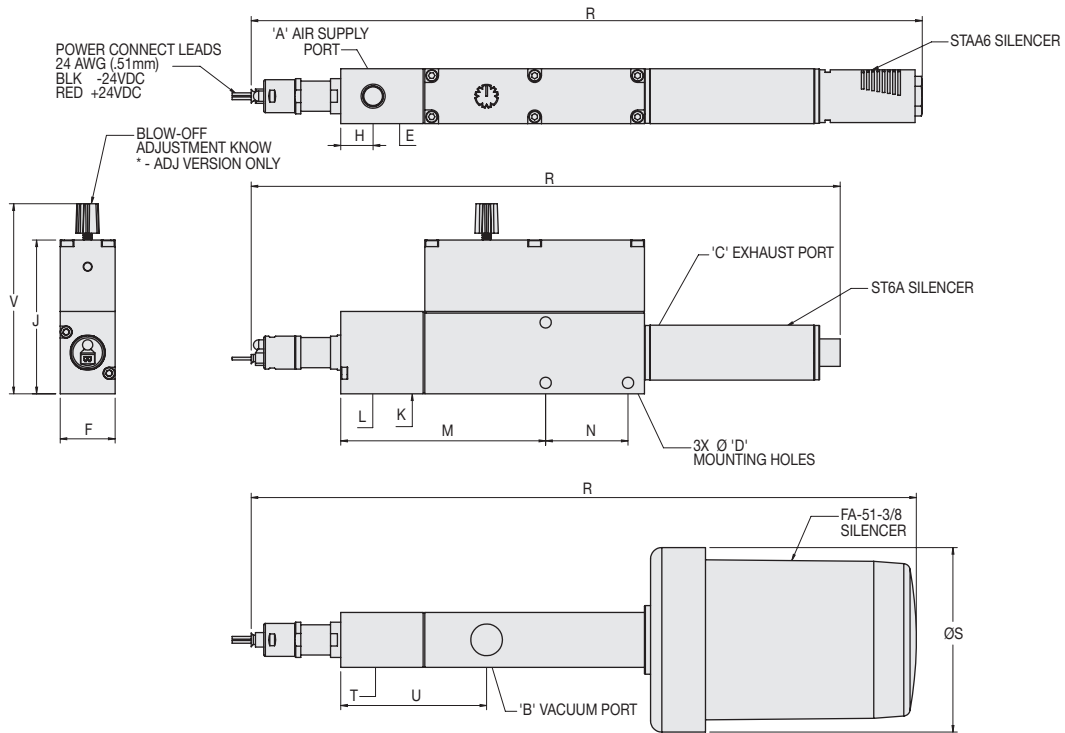


Model #	Imperial Dimensions (in.)																	
VP8X-200 (ADJ)	A	B	C	D	E	F	H	J	K*	M	N	P	R	S	T	U	V	W
w/ST-6A																7.56		
w/STAA6	1/4 NPT F	3/8 NPT F	3/8 NPT F	0.21	0.50	1.00	0.75	2.80	3.46	0.20	1.10	2.20	1.50	3.36	4.00	9.06	1.13	0.50
w/FA-51-3/8																8.95		
Model #	Metric Dimensions (mm)																	
I-VP8X-200 (ADJ)	A	B	C	D	E	F	H	J	K*	M	N	P	R	S	T	U	V	W
w/ST-6A																192.0		
w/STAA6	G 1/4	G 3/8	G 3/8	5.3	12.7	25.4	19.1	71.1	87.9	5.1	27.9	55.9	38.1	85.3	101.6	230.1	28.6	12.7
w/FA-51-3/8																227.3		

*-ADJ Version Only

Modular Venturi Vacuum Pumps – Max Series

Standard Pump: VP8XBV-200 (L, M or H) (-ADJ)



VP8XBV-200H-ADJ with ST6A Silencer

Specifications:

Weight 19.1 oz [541.5g]
Noise Level 72 dB



VP8XBV-200M with STAA6 Silencer

Specifications:

Weight 19.7 oz [558.5g]
Noise Level 64 dB



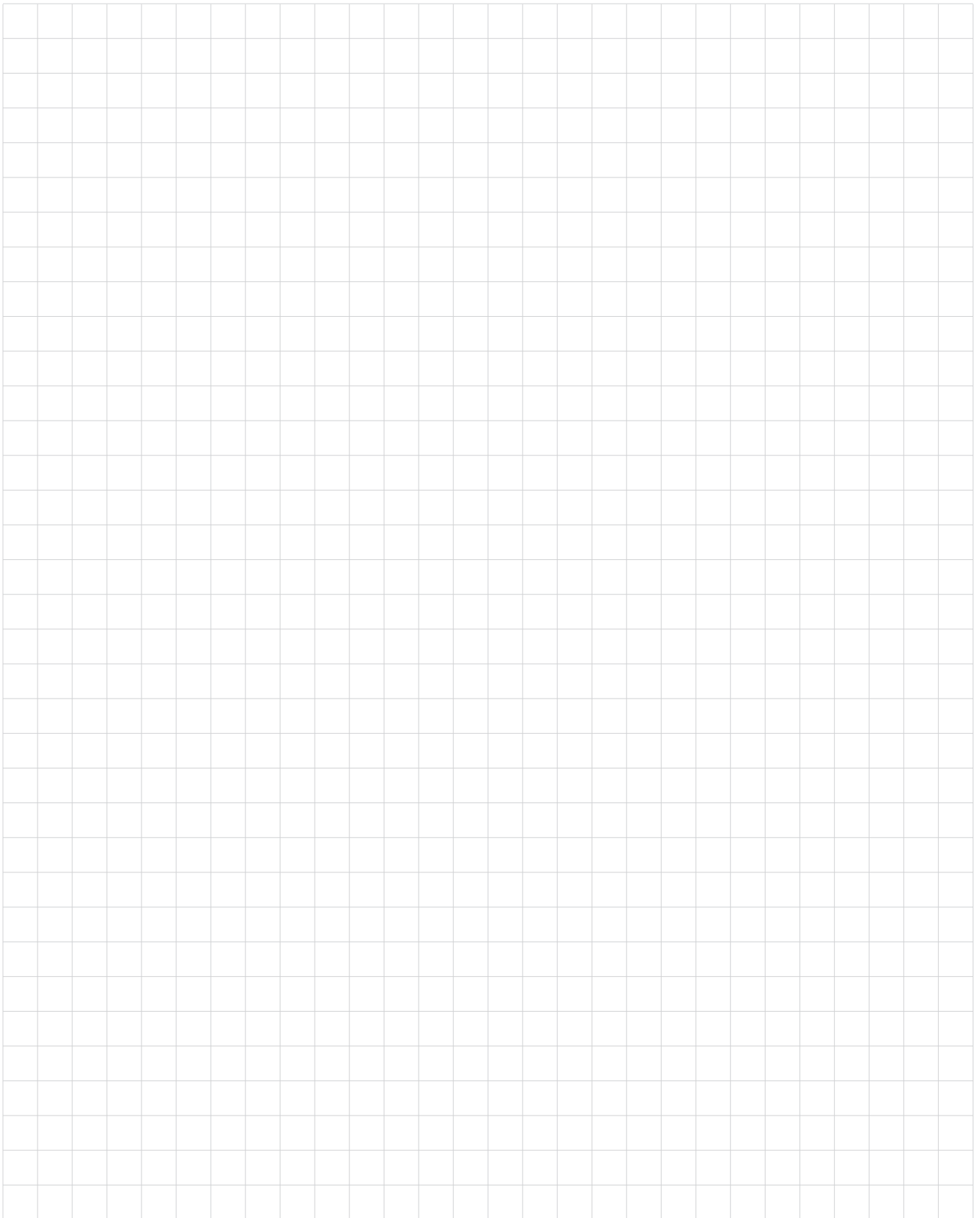
VP8XBV-200H-ADJ with FA-51-3/8 silencer

Specifications:

Weight 2 lbs 4 oz [1.021kg]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																
VP8XBV-200 (ADJ)	A	B	C	D	E	F	H	J	K	L	M	N	R	S	T	U	V*
w/STAA6													12.22				
w/ST-6A	1/4 NPT F	1/4 NPT F	3/8 NPT F	0.21	0.50	1.00	0.59	2.80	0.20	1.10	3.73	1.50	10.73	3.36	0.50	2.66	3.46
w/FA-51-3/8													12.11				
Model #	Metric Dimensions (mm)																
I-VP8XBV-200 (ADJ)	A	B	C	D	E	F	H	J	K	L	M	N	R	S	T	U	V*
w/STAA6													310.4				
w/ST-6A	G 1/4	G 1/4	G 3/8	5.3	12.7	25.4	15.0	71.1	5.1	27.9	94.7	38.1	272.4	85.3	12.7	67.6	87.9
w/FA-51-3/8													307.7				

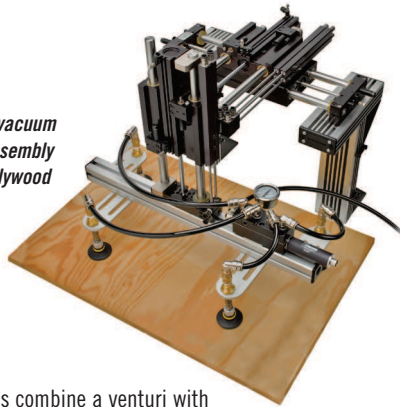
*-ADJ Version Only



Multi-port Venturi Vacuum Pumps with Silencers

Multi-port Pumps: Max Series VP80/ VP80BV-MP & VP90-MP

VP80-200M-MP with vacuum cup/spring leveler assembly transfers sheets of plywood



VP80BV-200H-MP

Vaccon's new Multi-port venturi vacuum pumps combine a venturi with a manifold to distribute vacuum to multiple locations. The result is a compact vacuum generation and distribution system for End-of-Arm Tools and applications where one pump powers multiple cups.

VP80-MP pumps have 4 vacuum ports that distribute vacuum equally to 4 locations while the VP90-MP pumps have 6 vacuum ports that distribute vacuum equally to 6 locations, both with "Home-Run" plumbing. The streamlined design minimizes vacuum loss, maximizes vacuum flow and speeds cycle times for safe, efficient lifting operations. VP80BV-MP pumps offer an integrated valve for saved air and increased production cycles.

In addition to the 4/6 topside vacuum ports, there is a port fitted with a 1.5" diameter glycerin filled vacuum gauge and another port that can be plumbed to a compressed air source to provide a blow-off. The manifold design allows one compressed air connection to feed blow-off air to all vacuum locations simultaneously, saving the need to plumb separate blowoff lines.

An M5 threaded port allows you to connect a Vaccon miniature vacuum sensor/switch to provide an electrical signal for vacuum achieved/part present and to alert failures.

Ideal Applications:

- Robotics/End-of-Arm Tooling
- Pick and place
- Flexible manufacturing
- Packaging – carton erecting, robotic palletizing
- Automation assembly

Features/Benefits

- High performance – vacuum up to 28"Hg [948mbar]
- High production – fast cycle times with shot to shot consistency
- High flow – maintains strong holding force, overcome leakage
- Home Run plumbing – saves compressed air
- Easy mounting – fractional and metric T-slot compatible
- Time saving – pre-designed, factory assembled, quick installation
- Safe operation – no electricity needed at pump
- Reliable – non-clogging, trouble free operation

Performance Level Designations:

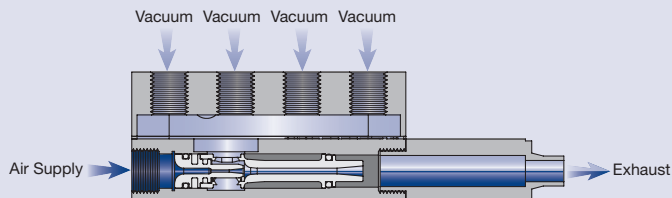
- “L” 0-10"Hg [0 to 339mbar] for low vacuum/high flow applications
- “M” 0-20"Hg [0 to 677mbar] for medium vacuum/high flow applications
- “H” 0-28"Hg [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Silencer options vary per model
- Integrated 2-way valve - 24vdc, normally closed
- Miniature sensors or switches with quick disconnects
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard (60 PSI [4.0 BAR] option)

Principles of Operation:

Vacuum is produced instantly by supplying compressed air to a Max series venturi and is distributed to the vacuum manifold ports, gauge port, the switch/sensor port and the optional blow-off port if required.



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Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP80-200 (L, M, H) -MP Series Configurations and Options:

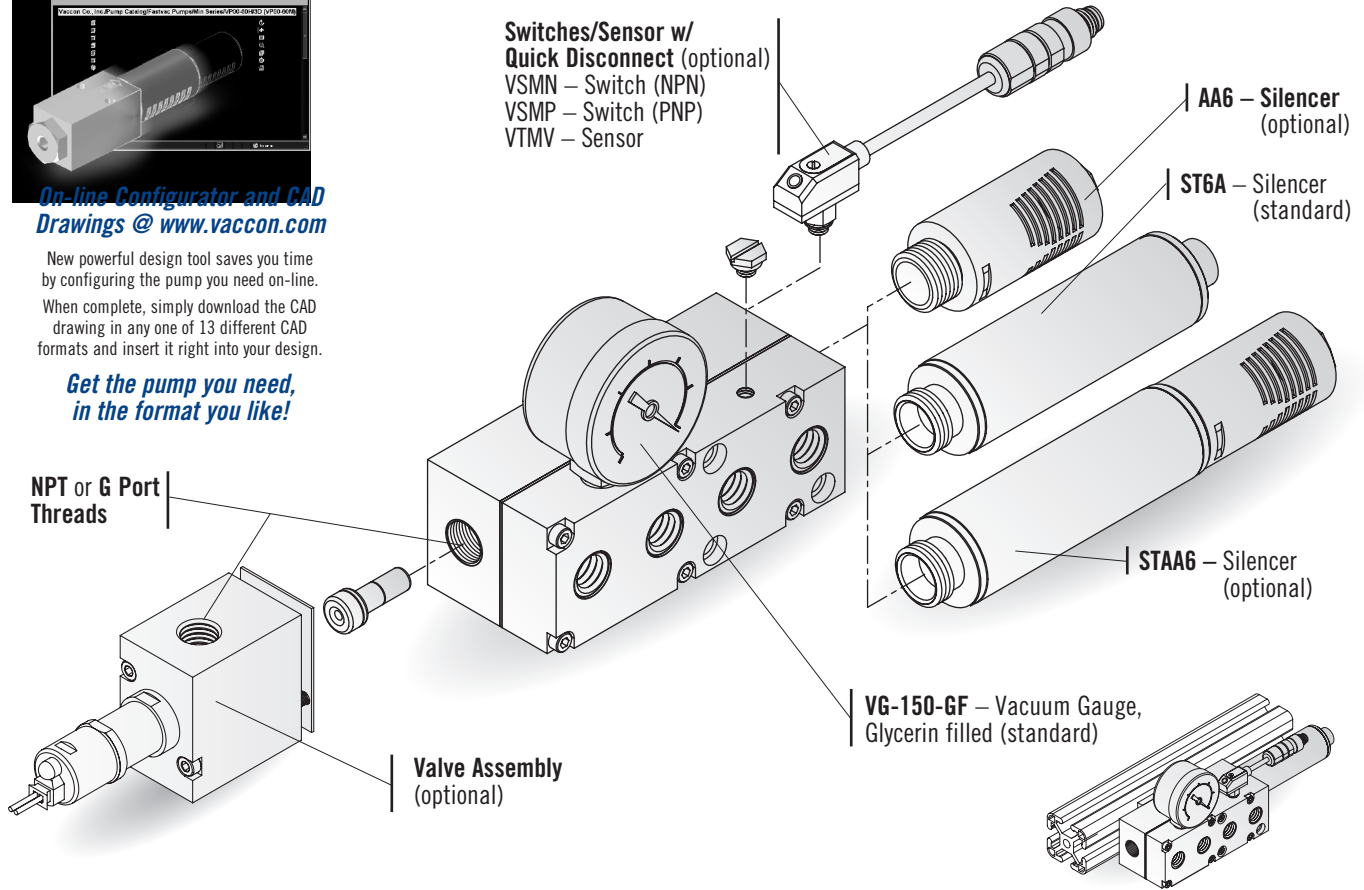
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

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VP80-200 pumps are Fractional and Metric T-slot compatible. See EOAT Section.

How to Specify:

VP80-200 H - MP - AA6 - VSMP

P/N Imperial Thread-NPT

VP80-200 No Valve
 VP80BV-200 with Valve Assy

P/N Metric Thread-G Port

I-VP80-200 No Valve
 I-VP80BV-200 with Valve

P/N Max. Vac Level

L 10"Hg [339 mbar]
 M 20"Hg [677 mbar]
 H 28"Hg [948 mbar]

P/N Operating Pressure

-60 80 PSI [5.5 Bar] (Std)
 60 PSI [4.1 Bar]

P/N Switch/Sensor

None (Standard)
 VSMN Switch – NPN
 VSMP Switch – PNP
 VTMV Sensor – 1-5VDC Output

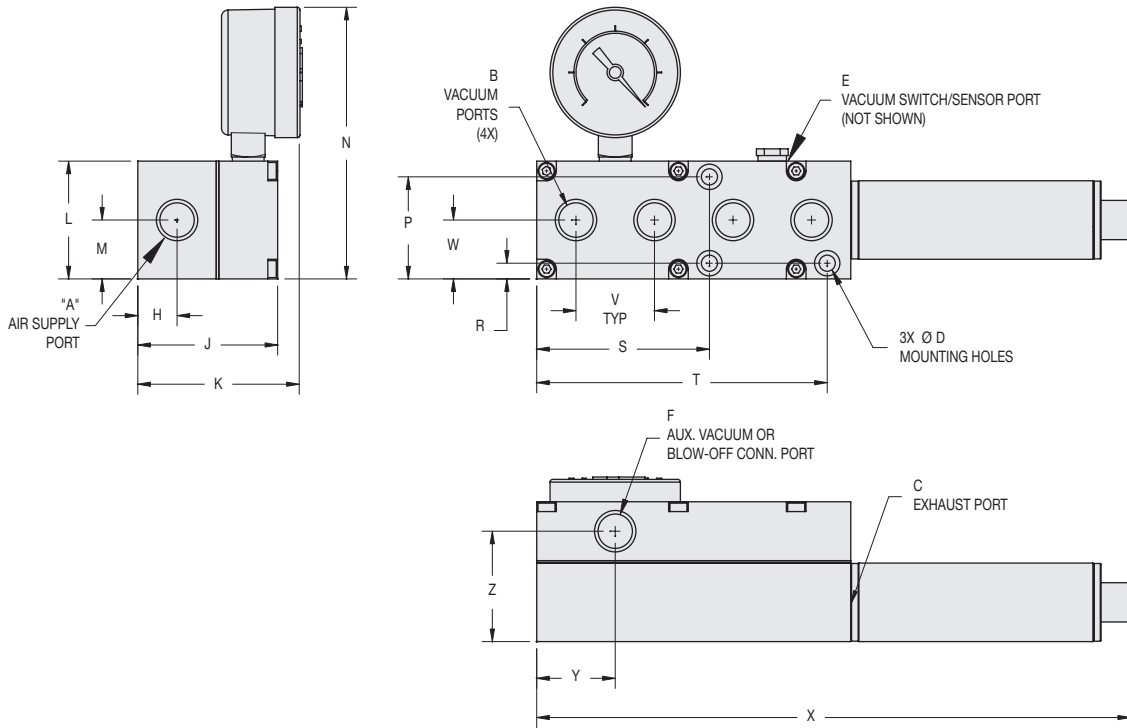
P/N Silencer

ST6A Straight-Through (Std)
 AA6 Closed End
 STAA6 Hybrid

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

VP80-200 (L, M, H) -MP Pump – AA6 or STAA6 Silencers, and Ultra-Mini Switch/ Sensor



Specifications: For VP80-MP with **ST6A**
Weight 20 oz [567 g]
Noise Level 70 dB

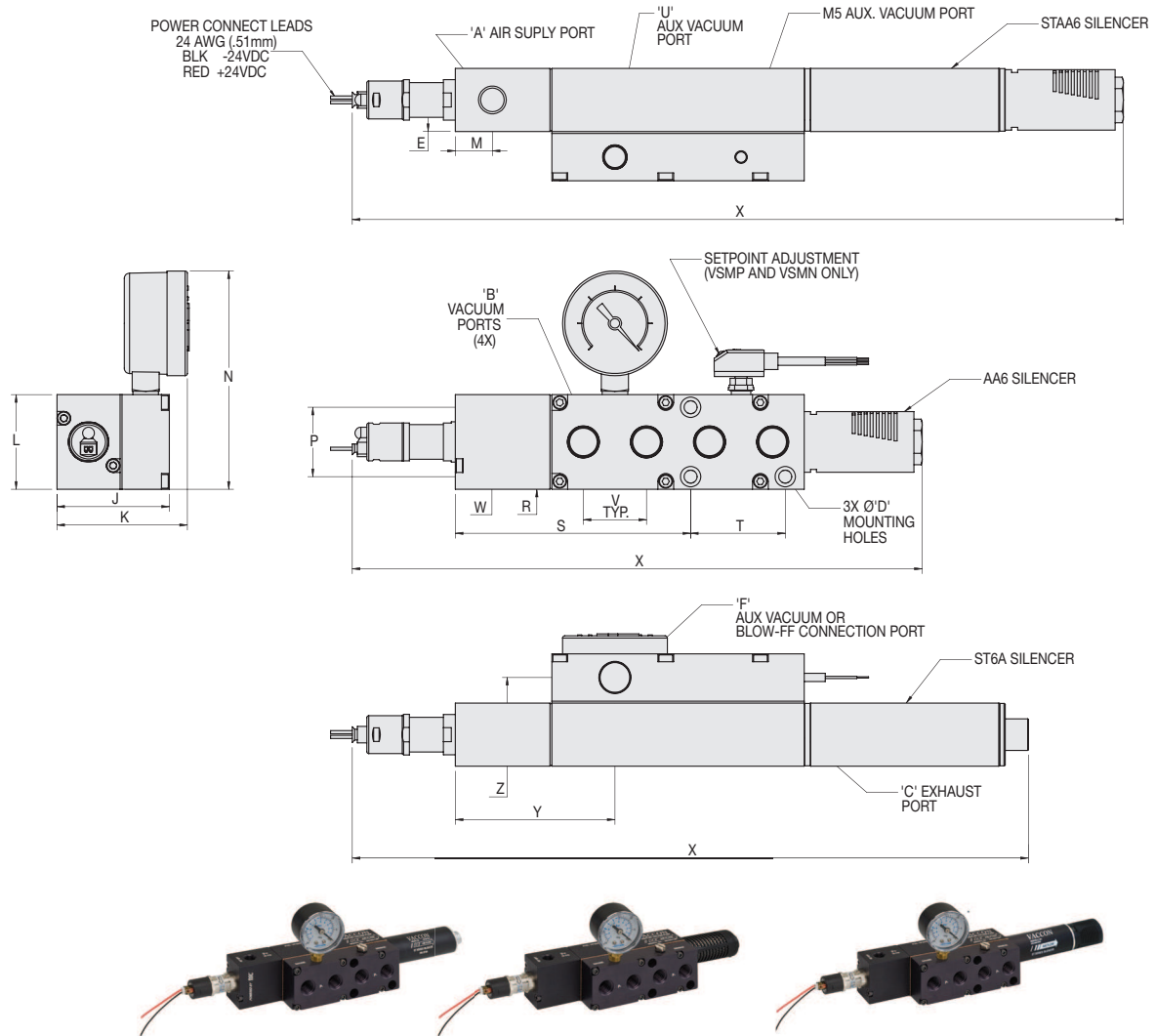
AA6
 18 oz [510 g]
 72 dB

STAA6
 21 oz [595 g]
 64 dB

Model #	Imperial Dimensions (in.)																					
VP80-200-MP w/	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
ST-6A	1/4 NPT F	1/4 NPT F	3/8 NPT F	0.21	M5	1/4 NPT F	0.50	1.78	2.06	1.50	0.75	3.46	1.30	0.20	2.20	3.70	N/A	1.00	0.75	7.56	1.00	1.41
AA6																				6.00		
STAA6																				9.00		
Model #	Metric Dimensions (mm)																					
I-VP80-200-MP w/	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
ST-6A	G 1/4	G 1/4	G 3/8	5.2	M5	G 1/4	12.7	45.2	52.2	38.1	19.1	87.9	33.0	5.1	55.9	94.0	N/A	25.4	19.1	192.0	25.4	35.7
AA6																				152.4		
STAA6																				228.6		

Modular Venturi Vacuum Pumps – Max Series

VP80BV-200 (L, M, H) -MP Pump – Optional integrated 2-way valve, AA6 or STAA6 Silencers, and Ultra-Mini Switch/ Sensor with QD-Quick Disconnect



Specifications: For VP80BV-MP with ST6A

Weight 24 oz [681 g]
 Noise Level 70 dB

AA6

22 oz [624 g]
 72 dB

STAA6

25 oz [709 g]
 64 dB

Model #	Imperial Dimensions (in.)																				
VP80BV-200-MP w/	A	B	C	D	E	F	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
ST-6A	1/8 NPT F	1/4 NPT F	3/8 NPT F	0.21	0.50	1/4 NPT F	1.78	2.07	1.50	0.59	3.46	1.10	0.20	3.73	1.50	1/8 NPT	1.00	0.75	9.03	2.53	1.41
AA6																			10.72		
STAA6																			12.22		
Model #	Metric Dimensions (mm)																				
I-VP80BV-200-MP w/	A	B	C	D	E	F	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
ST-6A	G 1/8	G 1/4	G 3/8	5.3	12.7	G 1/4	45.2	52.6	38.1	15.0	87.9	27.9	5.1	94.7	38.1	G 1/8	25.4	19.1	229.36	64.3	35.8
AA6																			272.29		
STAA6																			310.39		

Modular Venturi Vacuum Pumps – Max Series

VP80/ VP80BV-200-MP Pump Standard Specifications:

Pump & Cartridge Material:	Anodized Aluminum (For silencer material, see page 264 - 266.)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100°~ +400° F [-73°~ +204°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications

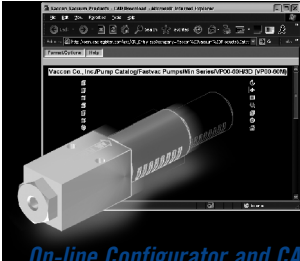
Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP80/ VP80BV-200-MP Operating and Installation Requirements:

Supply Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Control Valves:	3 way/2 position (faster part release) – minimum orifice 0.25" [6mm]
Mounting Holes:	Mounting holes accept #10-32 or M5 screws

VP80/ VP80BV-250 (L, M, H)-MP Series Configurations and Options:

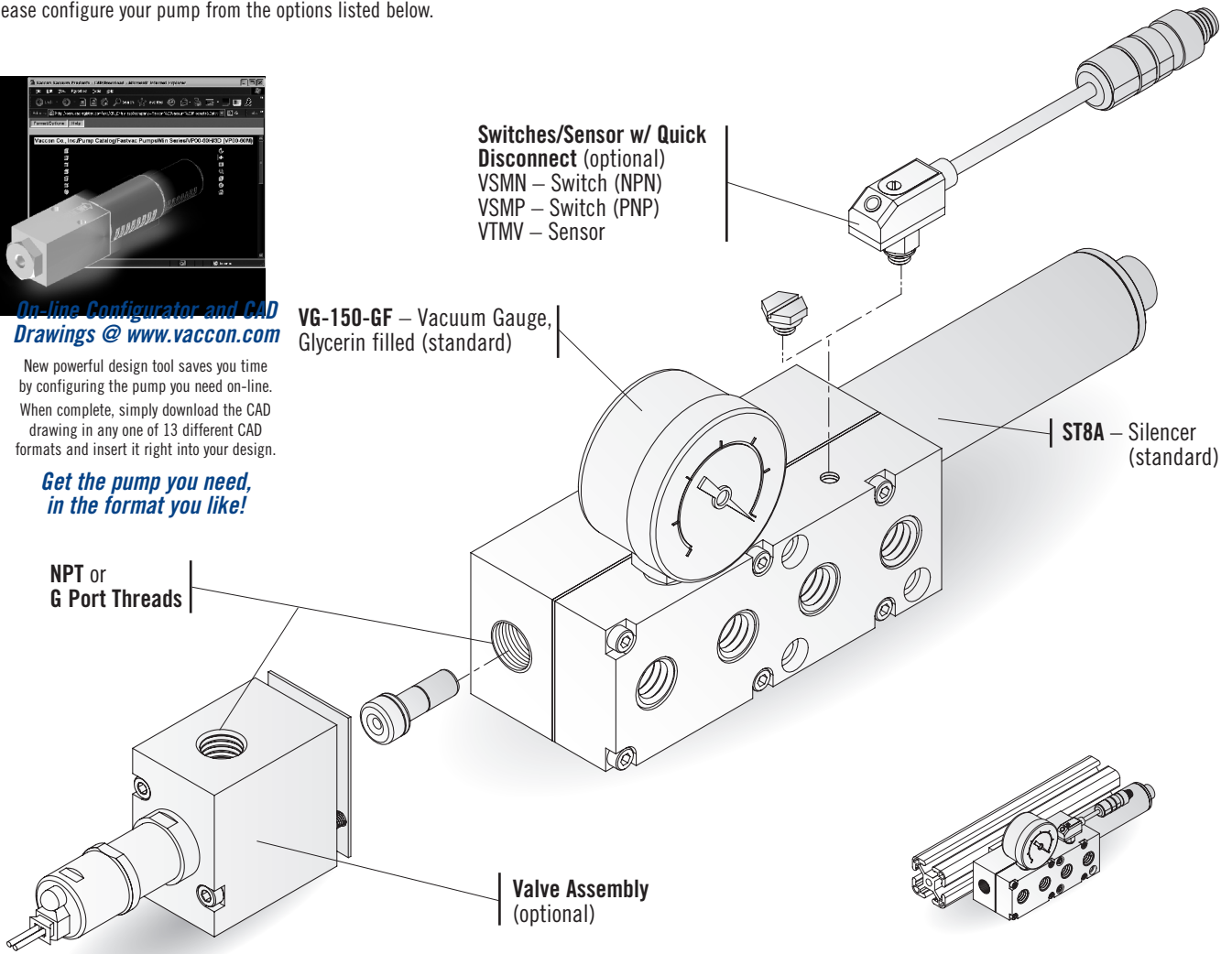
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



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Get the pump you need, in the format you like!



VP80-250 MP pumps are Fractional and Metric T-slot compatible. See EOAT Section.

How to Specify:

VP80-250 H - 60 - MP - VSMP

P/N	Imperial Thread-NPT
VP80-250	No Valve
VP80BV-250	with Valve Assy*

P/N	Metric Thread-G Port
I-VP80-250	No Valve
I-VP80BV-250	with Valve*

P/N	Max. Vac Level
L	10"Hg [339 mbar]
M	20"Hg [677 mbar]
H*	28"Hg [948 mbar]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output

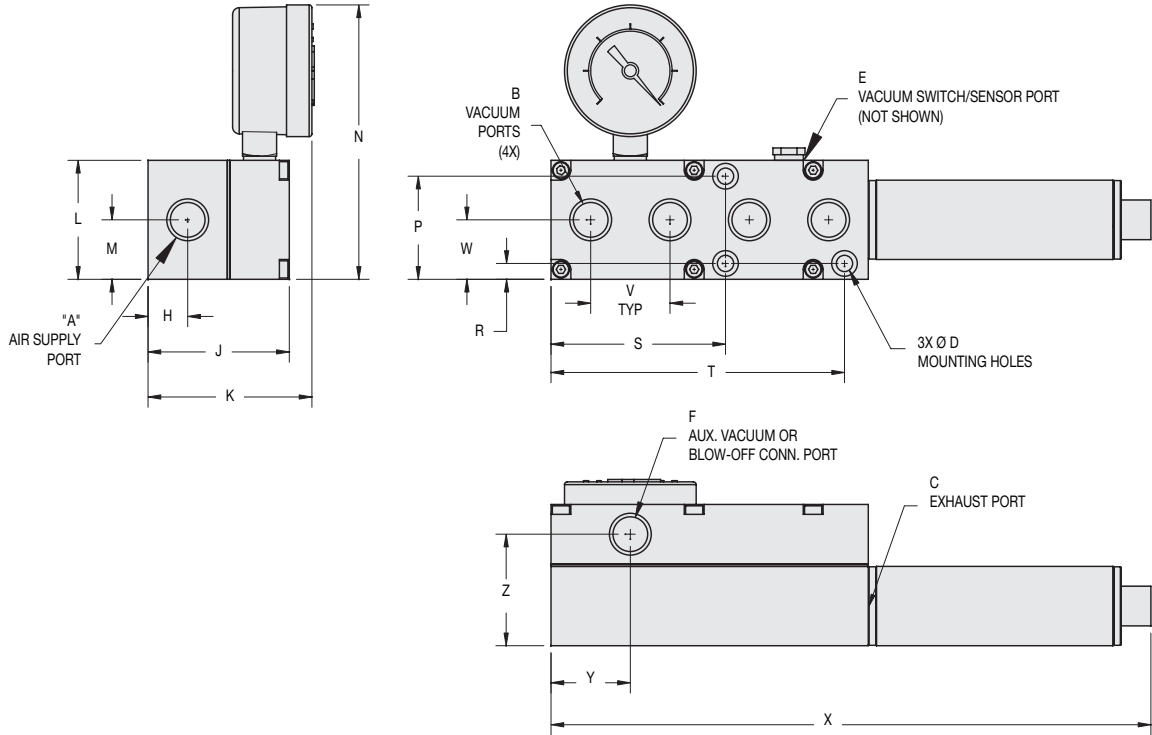
P/N	Operating Pressure
	80 PSI [5.5 Bar] (Standard)
60	60 PSI [4.0 Bar]

* Note: Valve Assembly (BV) is not available with the "250-H" version.

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

VP80-250 (L, M, H)-MP Pump with Optional Ultra-Mini Switch/ Sensor and QD-Quick Disconnect



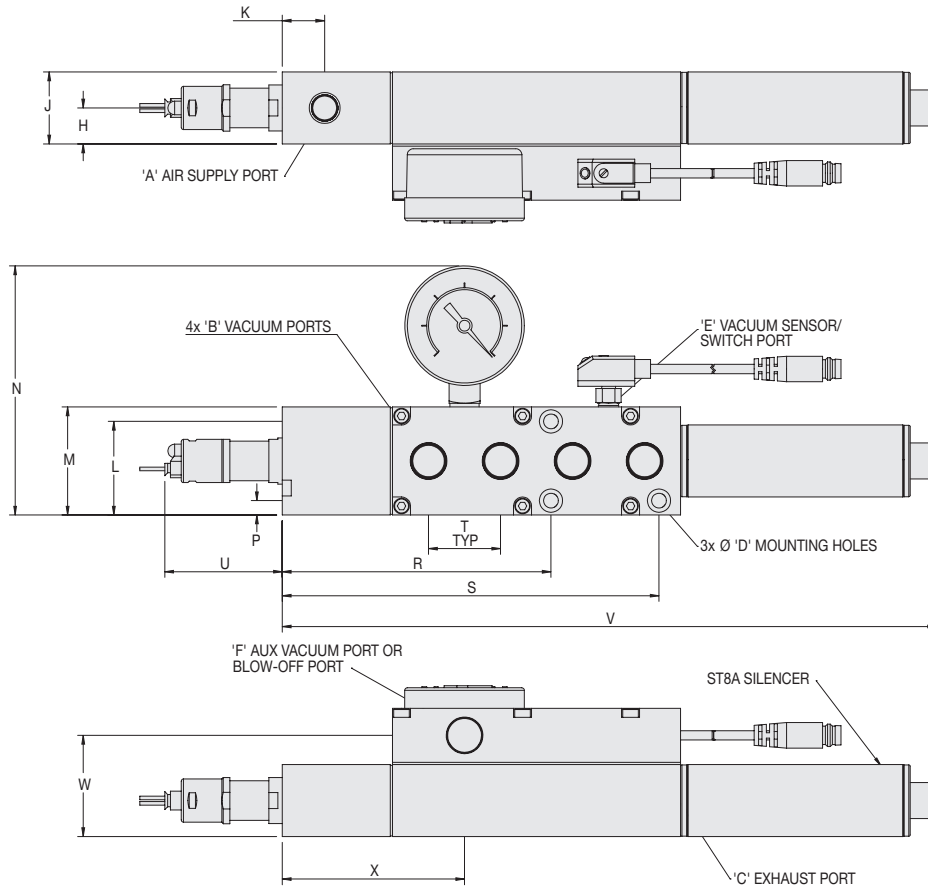
VP80-250-MP

Specifications:

Weight Standard VP80-250-MP: 21 oz [595g]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																					
VP80-250-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
	3/8 NPT F	1/4 NPT F	1/2 NPT F	0.21	M5	1/4 NPT F	0.50	1.78	2.07	1.50	0.75	3.46	1.30	0.20	2.20	3.70	N/A	1.00	0.75	7.56	1.00	1.41
Model #	Metric Dimensions (mm)																					
I-VP80-250-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
	G 3/8	G 1/4	G 1/2	5.2	M5	G 1/4	12.7	45.2	52.5	38.1	19.1	87.9	33.0	5.1	55.9	94.0	N/A	25.4	19.1	192.1	25.4	35.7

VP80BV-250 (L, M, H)-MP Pump with Optional Ultra-Mini Switch/ Sensor and QD-Quick Disconnect



VP80BV-250M-MP

Specifications:

Weight Standard VP80BV-250-MP: 25.1 oz [709.2g]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																			
VP80BV-250-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
	1/8 NPT F	1/4 NPT F	1/2 NPT F	0.21	10-32	1/4 NPT F	0.50	1.00	0.59	1.30	1.50	3.46	0.20	3.73	5.23	1.00	1.63	9.08	1.41	2.53
Model #	Metric Dimensions (mm)																			
I-VP80BV-250-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
	G 1/8	G 1/4	G 1/2	5.3	M5	G 1/4	12.7	25.4	14.9	33.0	38.0	87.9	5.1	94.7	132.8	25.4	41.5	230.7	35.7	64.3

Modular Venturi Vacuum Pumps – Max Series

VP80-250/ VP80BV-250-MP Pump Standard Specifications:

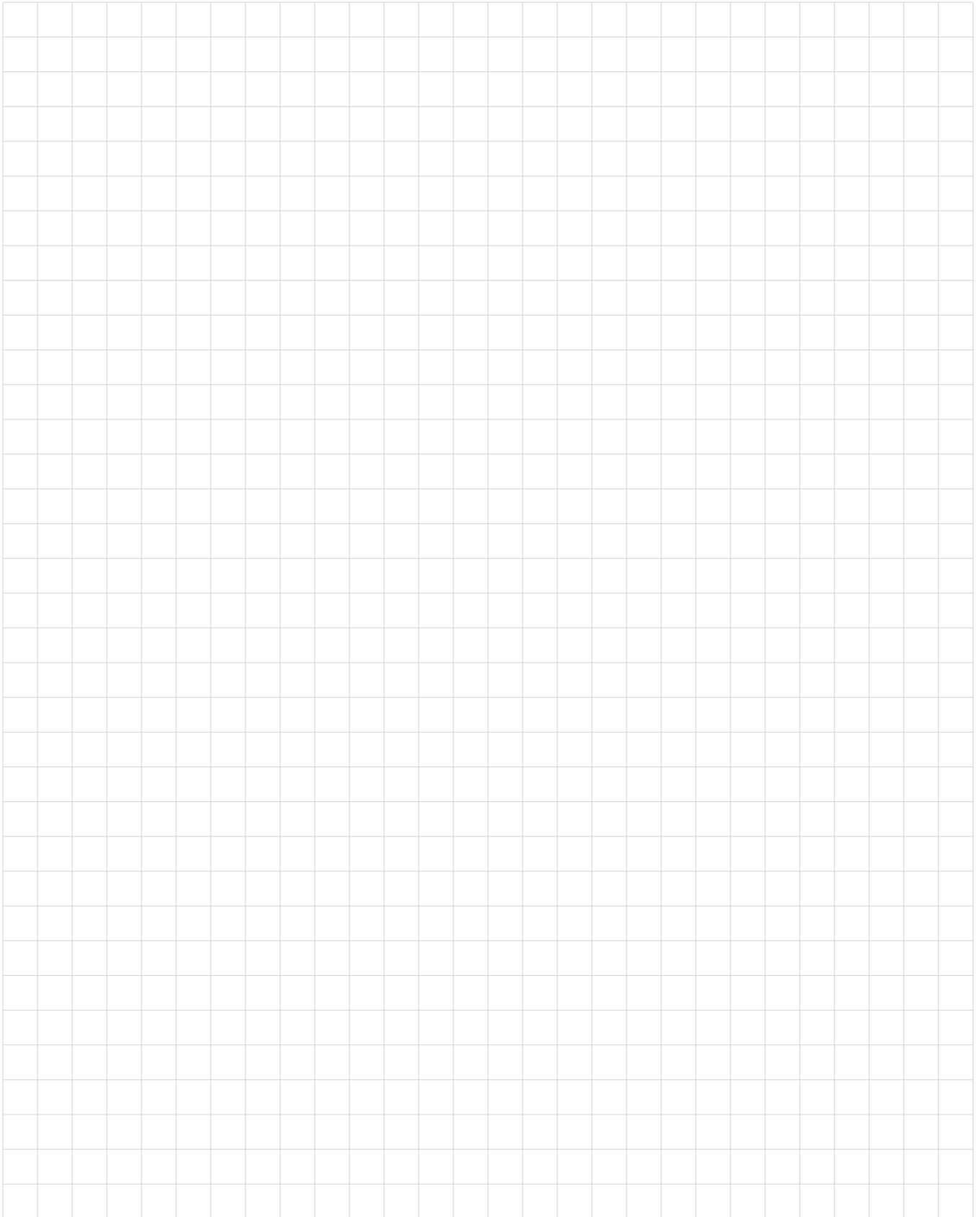
Pump & Cartridge Material:	Anodized Aluminum (For silencer material, see page 266)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100° ~ +400° F [-73° ~ +204°C]
Operating Pressure:	80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP80-250/ VP80BV-250-MP Operating and Installation Requirements:

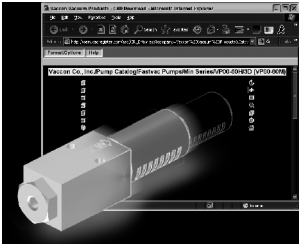
Supply Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line:	3/8" O.D. [10mm] tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Control Valves:	3 way/2 position (faster part release) – minimum orifice 0.25" [6mm]
Mounting Holes:	Mounting holes accept #10-32 or M5 screws



Modular Venturi Vacuum Pumps – Max Series

VP90-300 & 350 (L, M, H)-MP Series Configurations and Options:

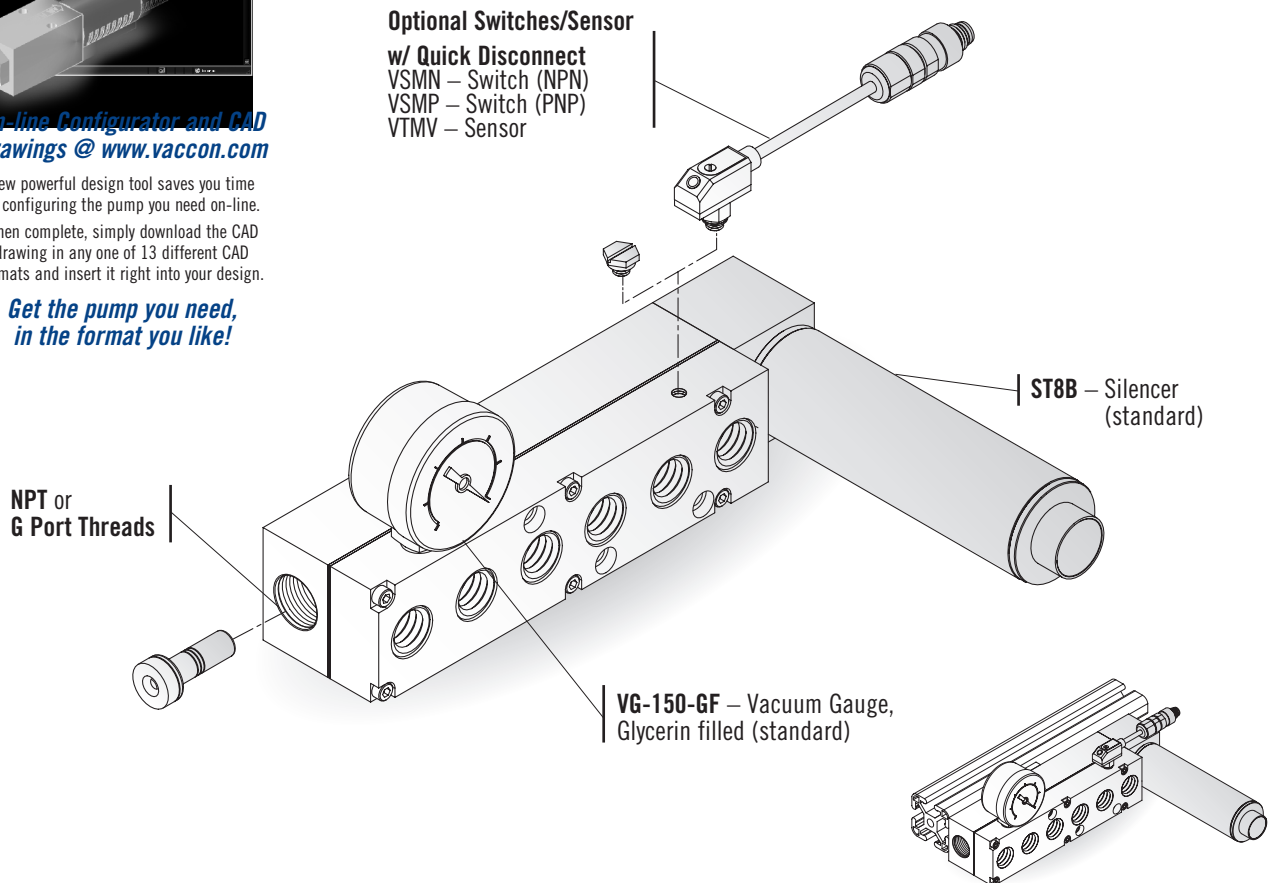
All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



VP90-300/350 MP pumps are Fractional and Metric T-slot compatible. See EOAT Section.

How to Specify:

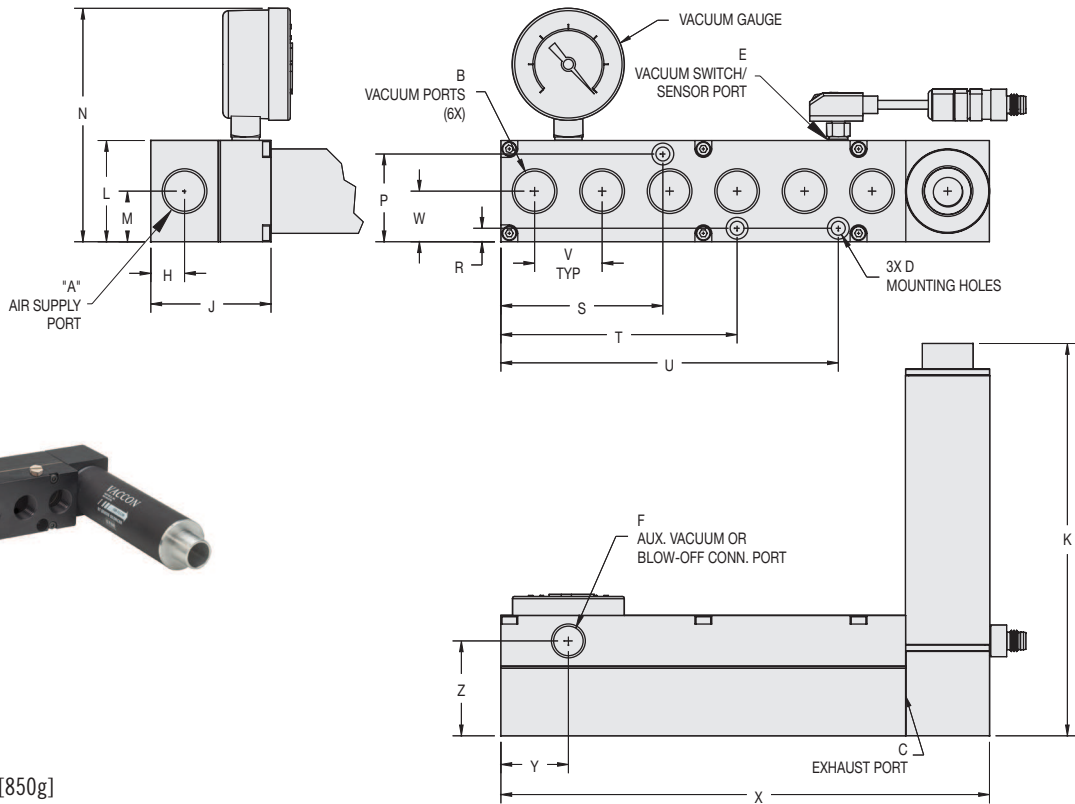
VP90-300 M - 60 - MP - VSMP

P/N	Imperial Thread
VP90-300	NPT
VP90-350	NPT
P/N	Metric Thread
I-VP90-300	G Port
I-VP90-350	G Port
P/N	Max. Vac Level
L	10"Hg [339 mbar]
M	20"Hg [677 mbar]
H	28"Hg [948 mbar]

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor – 1-5VDC Output
P/N	Operating Pressure
	80 PSI [5.5] Bar (Standard)
60	60 PSI [4.0] Bar

For complete Performance Data, see page 154.

VP90-300 & VP90-350 (L, M, H)-MP Pump with Optional Ultra-Mini Switch/ Sensor and QD-Quick Disconnect



Specifications:

Weight 30 oz [850g]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																				
VP90-300/ 350-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
	3/8 NPT F	1/2 NPT F	1/2 NPT F	0.21	1/8 NPT	1/8 NPT F	0.50	1.78	0.2	1.50	0.75	3.41	1.10	2.4	3.50	5.00	1.00	0.75	10.56	1.00	1.41
Model #	Metric Dimensions (mm)																				
I-VP90-300/ 350-MP	A	B	C	D	E	F	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
	G 3/8	G 1/2	G 1/2	5.3	G 1/8	G 1/8	12.7	45.2	5.1	38.1	19.1	86.6	27.9	61.0	88.9	127.0	25.4	19.1	268.2	25.4	35.8

VP90-300/350-MP Pump Standard Specifications:

- Pump & Cartridge Material:** Anodized Aluminum (For silencer material, see page 266)
- Medium:** Filtered (100 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -100°~ +400° F [-73°~ +204°C]
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

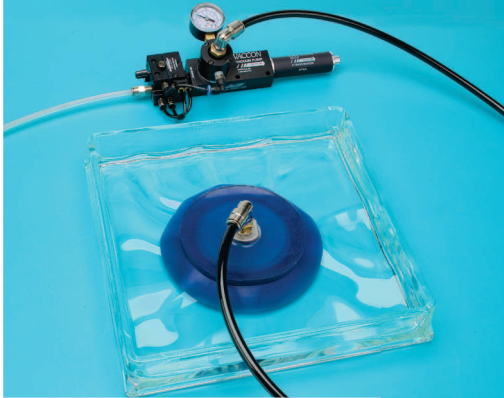
VP90-300/350-MP Operating and Installation Requirements:

- Supply Line:** 1/2" O.D. [12mm] tube recommended
- Vacuum Line:** 1/2" O.D. [12mm] tube recommended – 3/4" [22mm] for vacuum lines exceeding 3' (1M)
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
- Control Valve:** 3 way/2 position (faster part release), minimum orifice – 0.25" [6mm]
- Mounting Holes:** Mounting holes accept #10-32 or M5 screws

VP Pumps with Air Saver Technology

On-Demand Vacuum – Saves Air – Safe Operation

Max Series Venturi Pumps



Air Saver pumps safely handle non-porous products i.e. glass handling operations



VP90-300H-AS

Standard Pump:

Vaccon's Air Saver Pumps are an all-pneumatic system that minimizes compressed air usage by creating, monitoring and maintaining vacuum for safe energy efficient operations.

For pick and place applications handling non-porous materials, the Air Saver pumps will maintain a strong holding force, conserve compressed air, and hold the part even if the compressed air supply is interrupted providing an extra level of safety when handling large loads.

For vessel evacuation applications such as wood and composite clamping, Air Saver pumps maintain vacuum for long periods of time and only consume compressed air to overcome system leaks resulting in 90% air savings.

The system includes a venturi vacuum pump, vacuum check valve, air piloted air valve and all-pneumatic vacuum switch. The switch is adjustable from 0 to 28"Hg [948mbar] and the hysteresis is 3"Hg [102mbar].

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place
- Press transfer lines – load and unload
- Vacuum clamping and chucking
- Vacuum bagging
- Vessel evacuation
- Vacuum forming

Features/Benefits:

- Powerful vacuum up to 28"Hg [948mbar] – rapid evacuation
- Energy efficient – compressed air on only when needed, automatic shut-off
- Intrinsically safe to operate – all pneumatic – no electricity required
- High vacuum flows provide dependable vacuum holding force
- Reliable – operates trouble free:
 - ~ No moving parts to wear or clog
 - ~ No maintenance
 - ~ No downtime
 - ~ Quiet

Performance Level Designations:

"M" 0-20"Hg, [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28"Hg, [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

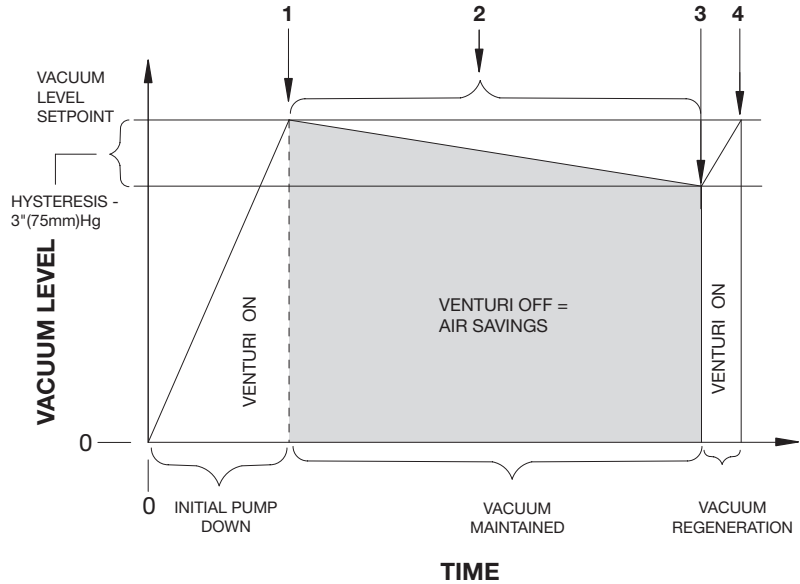
- Interchangeable venturi cartridges – 8 different performance levels – VP20-AS only
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] option

Principles of Operation: Air Saver Pumps

The pneumatic vacuum switch is the brain within the Air Saver system. It constantly monitors and controls the vacuum level as required based on customer specifications. Minimizing leaks in plumbing lines and connections extends the “venturi off” cycle and maximizes air savings. Below is a brief overview of the air saver cycle.

Determine the maximum vacuum level desired, then adjust the switch to the vacuum level setpoint.

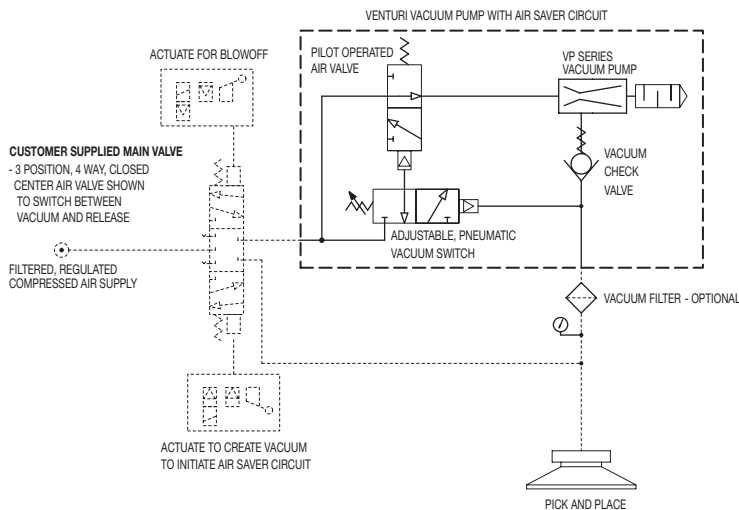
1. Once the vacuum level set-point is reached, the switch turns the pump off, stopping the flow of air to the venturi – air savings.
2. The integral check valve maintains the vacuum level.
3. Should there be a leak and the vacuum level decrease (Hysteresis 3”Hg [102mbar]), the pneumatic switch automatically re-energizes the venturi to bring the system back to the pre-set vacuum level set-point.
4. Then the switch de-energizes the venturi pump, (stopping the flow of air to the venturi – air savings) and the air saving cycle starts again.



Although compressed air savings will vary by application and system design, typically Vaccon Air Saver pumps will achieve a 90% energy cost savings.

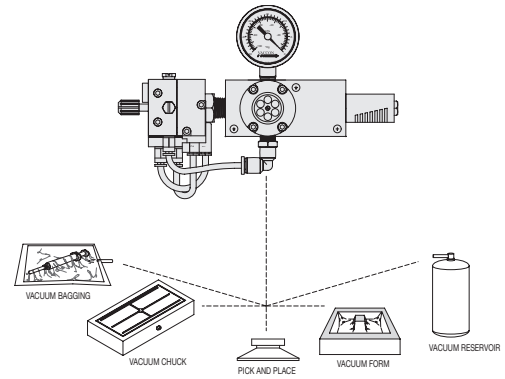
Vaccon Air Saver Circuit for Pick & Place/Part Release Applications

System Schematic with 3 Position Closed Center 4 Way Valve



Design Tip: For applications requiring a gentle part-release, cycle the blow-off valve for a short duration time. For applications requiring a rapid blow-off, cycle the valve for a longer duration.

Sizing an Air Saver Pump



To select a pump:

1. Determine the desired evacuation time (speed)
2. Calculate the total volume of air to be evacuated in the system including vacuum lines, vessel/cavity size, cups, etc.
3. Determine the desired vacuum level, “Hg/mbar

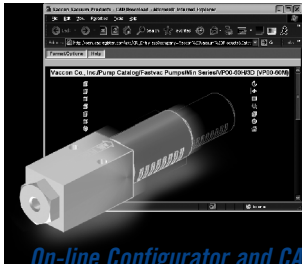
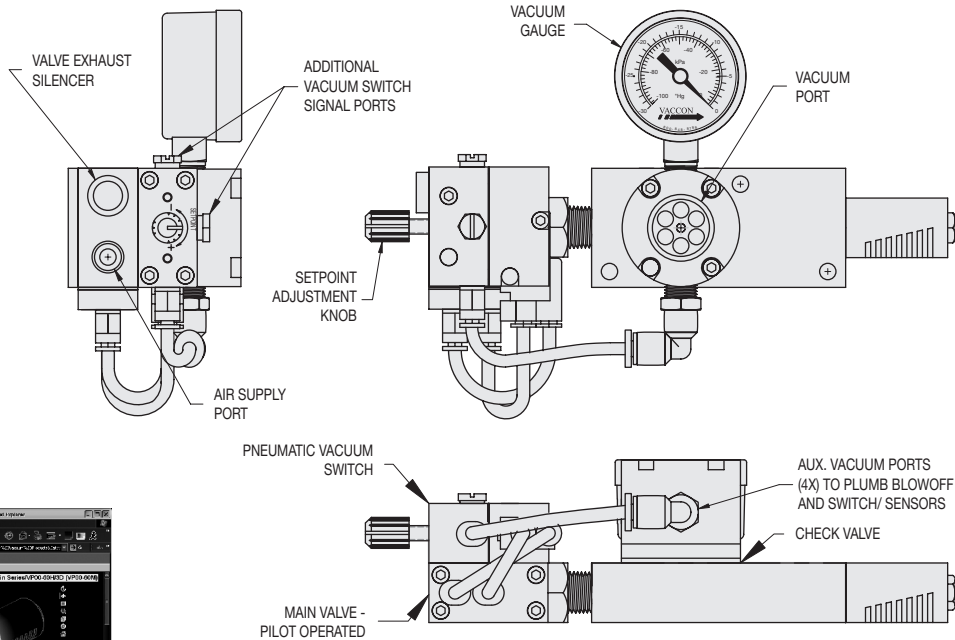
Application ex.: Evacuate 2 cu.ft. of air in 1 minute (60 sec) at a vacuum level of 21”Hg

Formula: Time (60 sec)/Cu. ft (2) = 30 seconds per cu.ft. (evacuation speed)

Consult pump Performance Data beginning on page 148. Under the evacuation time chart, look for 21” Hg and find the evacuation time that is closest to 30 seconds. In this example, a VP80-200H would be the best model with an evacuation time of 20 seconds.

Modular Venturi Vacuum Pumps – Max Series

Standard Air Saver Circuit Schematic: VP80-AS Pump Shown



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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

All Air-Saver Pumps pumps are Fractional and Metric T-Slot compatible.

How to Specify:

VP80 - 200 - H - AS

P/N	Imperial Thread
VP80	NPT
VP90	NPT

P/N	Metric Thread
I-VP80	G Port
I-VP90	G Port

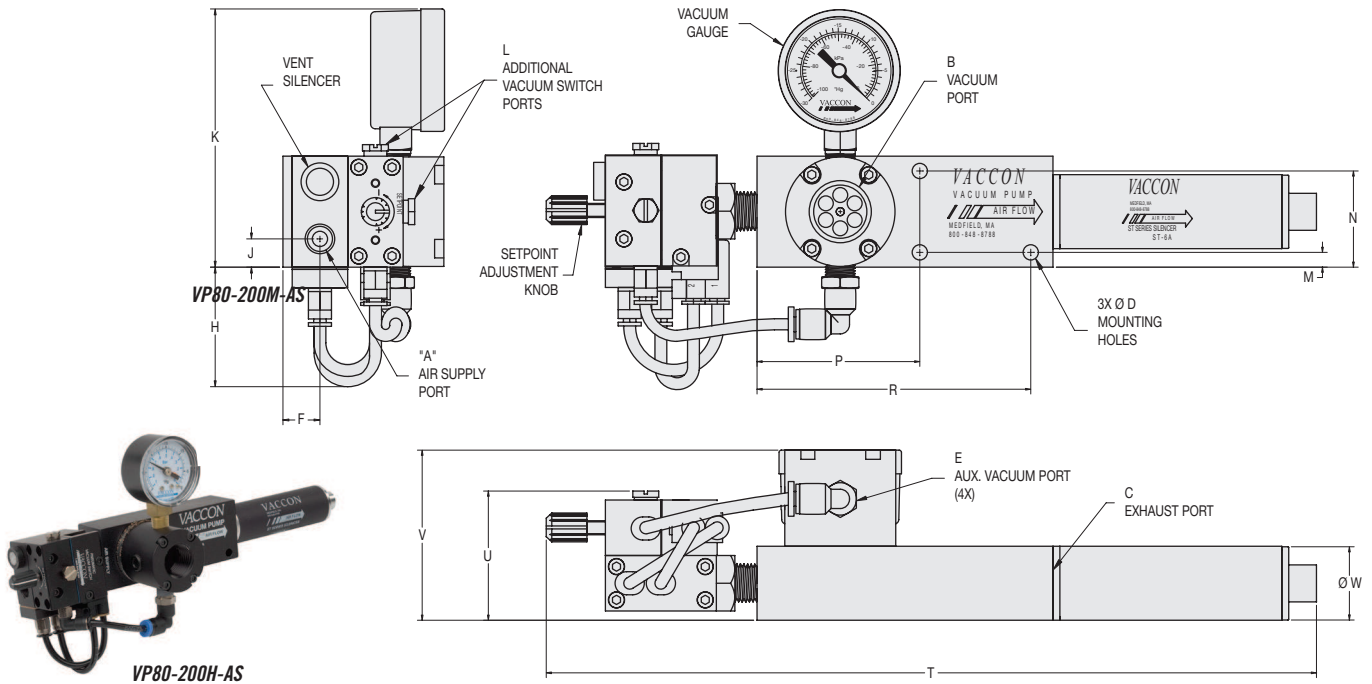
P/N	Max. Flow Level
-200 (VP80 only)	80 PSI only
-250 (VP80 only)	
-300 (VP90 only)	
-350 (VP90 only)	

P/N	Operating Pressure
	80 PSI [5.5 Bar] (Standard)
-60	60 PSI [4.1 Bar]

P/N	Max. Vac Level
M	20"Hg [677mbar]
H	28"Hg [948mbar]

For complete Performance Data, see page 154.

VP80-200 (M, H)-AS Pump



Specifications:

Weight 1 lb 5 oz [595g]
 Noise Level 72 dB

Model #	Imperial Dimensions (in.)																		
VP80-200-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
	1/8 NPT F	1/2 NPT F	3/8 NPT F	0.21	1/8 NPT F	0.50	1.62	3.82	3.49	10-32 F	0.20	1.30	2.20	3.70	N/A	10.41	1.75	2.30	1.00
Model #	Metric Dimensions (mm)																		
I-VP80-200-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
	G 1/8	G 1/2	G 3/8	5.2	G 1/8	12.7	41.1	97.0	88.6	M5	5.1	33.0	55.9	94.0	N/A	264.5	44.3	58.4	25.4

Air Saver Pump Standard Specifications:

Pump Body Material: Anodized Aluminum (For silencer material, see page 264 - 269.)
Cartridge Material: VP80's & 90's – Aluminum
Medium: Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature: -30°~250° F [-34°~121°C]
Operating Pressure: 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Air Saver Operating and Installation Requirements:

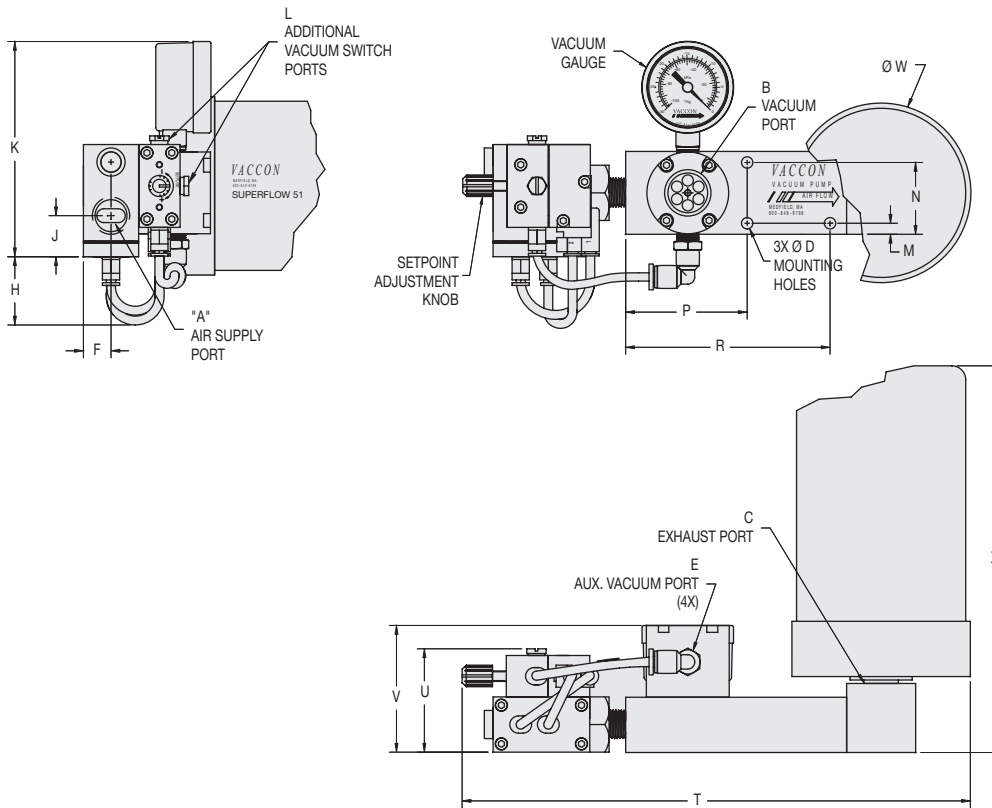
Supply Line & Vacuum Line – VP80: 80-200 = 3/8" O.D. [10mm] tube preferred
 80-250 = 1/2" O.D. [12mm] tube preferred
VP90: 90-300 & 90-350 Cartridges – minimum = 1/2" O.D. [12mm] tube preferred

Vacuum Line Filtration: Typically filters are not required, if desired Vaccon recommends (see page 278):
 VP80's = VF375F
 VP90's = VF500F

Mounting Holes: Mounting holes accept 10-32 [M5] screws

Modular Venturi Vacuum Pumps – Max Series

Standard VP80-250 (M, H)-AS Pump

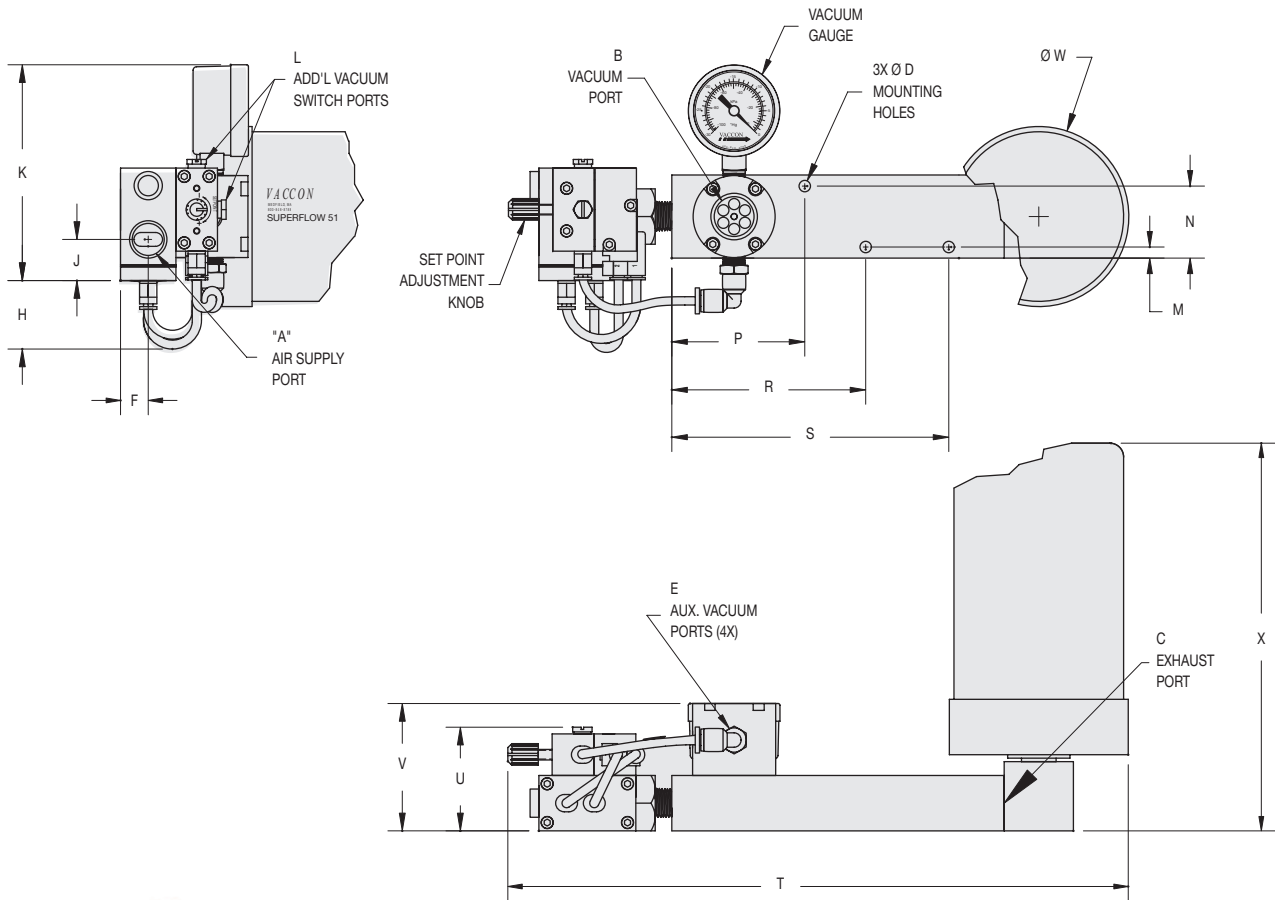


Specifications:

Weight 2 lb 4 oz [1021 g]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																			
VP80-250-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
	3/8 NPT F	1/2 NPT F	1/2 NPT F	0.21	1/8 NPT F	0.50	1.26	0.74	3.90	10-32 F	0.20	1.30	2.20	3.70	N/A	9.20	1.87	2.30	3.23	7.00
Model #	Metric Dimensions (mm)																			
I-VP80-250-AS	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
	G 3/8	G 1/2	G 1/2	5.2	G 1/8	12.7	32.0	18.9	99.0	M5	5.1	33.0	55.9	94.0	N/A	233.7	47.5	58.4	82.0	177.8

Standard: VP90-300 or 350 (M, H)-AS Pump



Specifications:

Weight 2 lb 9 oz [1162 g]
Noise Level 73 dB

Model #	Imperial Dimensions (in.)																			
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
VP90-300/350-AS	3/8 NPT F	1/2 NPT F	1/2 NPT F	0.21	1/8 NPT F	0.50	1.24	0.74	3.90	10-32 F	0.20	1.30	2.40	3.50	5.00	11.20	1.87	2.30	3.23	7.00
Model #	Metric Dimensions (mm)																			
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X
I-VP90-300/350-AS	G 3/8	G 1/2	G 1/2	5.2	G 1/8	12.7	31.4	18.9	99.0	M5	5.1	33.0	61.0	88.9	127.0	284.5	47.5	58.4	82.0	177.8

Max-size Venturi Vacuum Pump with Silencer

VP Max Series: VP80-250/ VP80BV-250



VP80-250H

Standard Pump:

The VP80-250 Max Series air-powered venturi vacuum pumps provide high vacuum flow rates for the rapid evacuation of large volumes of air or for overcoming leakage in order to sustain high vacuum levels while handling porous materials.

Highly efficient, capable of reaching 28”Hg [948mbar], the VP80’s are dirt tolerant and include a silencer for quiet operation. Unlike the Mid series pumps that use interchangeable cartridge assemblies, the Max series pumps (VP80 & VP90’s) use a non-removable press-fit venturi assembly.

VP80BV-250 pumps offer an integrated valve for saved air and increased production cycles.

Performance Level Designations:

“L” 0-10”Hg [0 to 339mbar] for low vacuum/high flow applications

“M” 0-20”Hg [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg [0 to 948mbar] for high vacuum/standard flow applications

Ideal Applications:

- Rapid evacuation of large volumes of air
- Pick and place medium to large size objects
- End-of-Arm Tooling/Robotics
- Vessel evacuation – molds/tanks/bottles/drums
- Packaging – bag/box/carton folding and handling
- Vacuum clamping/holding – fixtures, veneers

Features/Benefits:

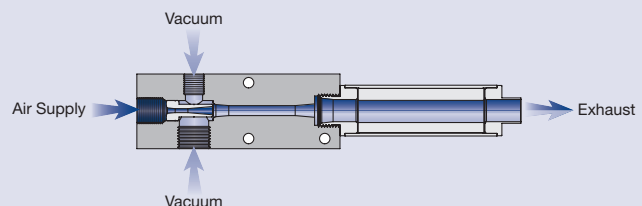
- High performance – powerful vacuum up to 28”Hg [948mbar]
- Compact & lightweight, rugged body construction
- Fast response – mounts close to vacuum point
- Efficient – minimal air consumption
- Safe operation
 - ~ No electricity needed at the pump
 - ~ High flow overcomes leakage – maintains a strong holding force
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Vacuum gauge
- Silencers: ST-8B with 90° elbow attachment for compact space requirements or ST-8A without elbow for ease of mounting, ST (straight-through silencers) allow dirt to pass through and won’t clog, FA-51-1/2 silencer with elbow for high flow applications
- G port threads for metric machines – an “I” prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



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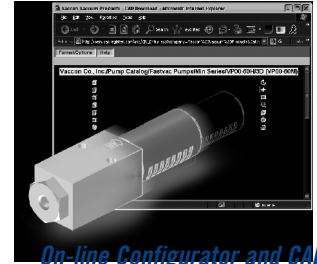
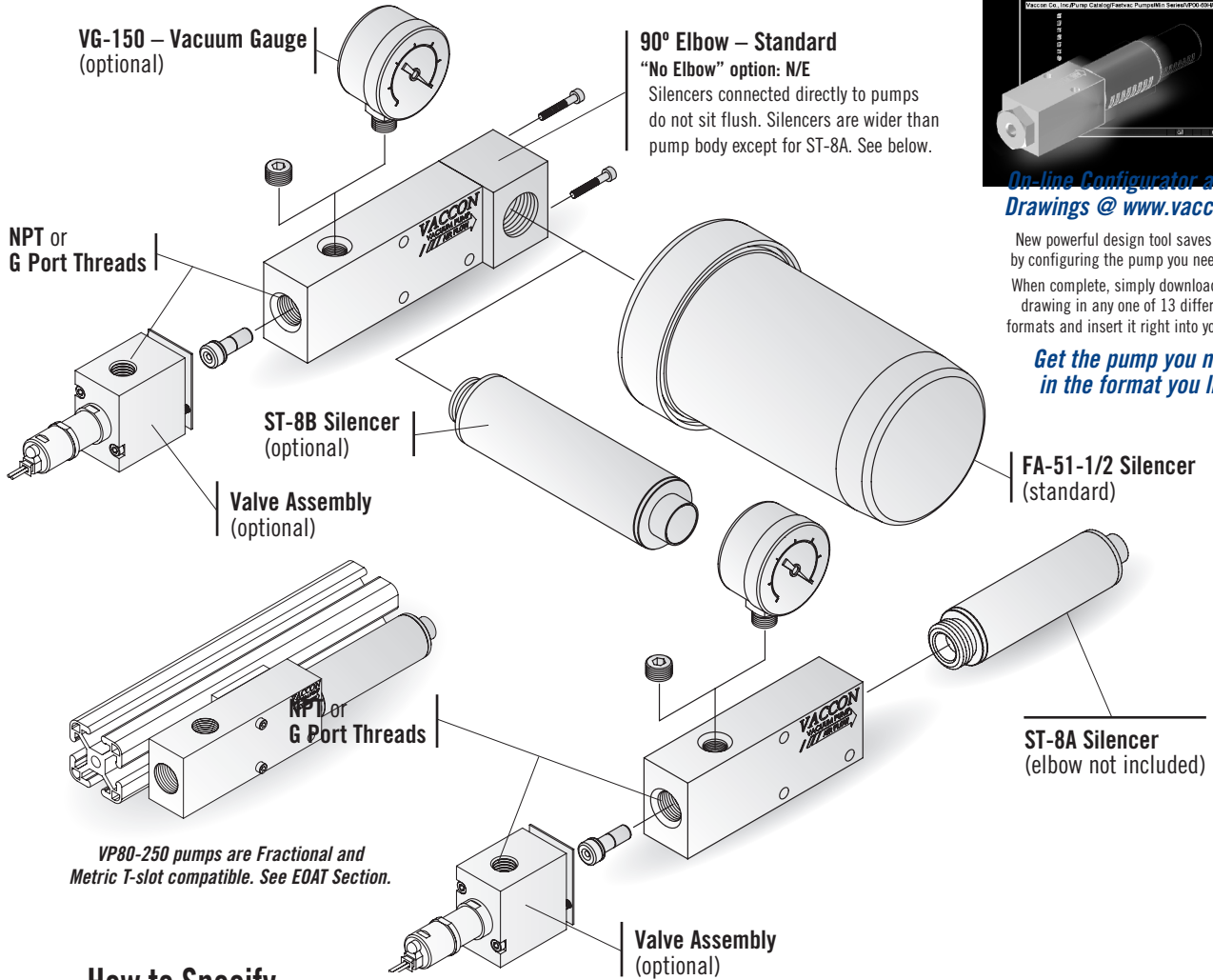
Vacuum technology isn’t an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP80/ VP80BV-250 (L, M, H) Series Max Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



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New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VP80-250 - H - 60 - ST8B

P/N	Imperial Thread-NPT
VP80-250	No Valve
VP80BV-250	with Valve Assy*
P/N	Metric Thread-G Port
I-VP80-250	No Valve
I-VP80BV-250	with Valve*
P/N	Max. Vac Level
L	10"Hg [339 mbar]
M	20"Hg [677 mbar]
H*	28"Hg [948 mbar]

P/N	Silencer
FA-51-1/2	High Flow - Standard
N/E	FA-51-1/2 - No Elbow
ST-8B	Straight-Through With Elbow
ST-8A	Straight-Through No Elbow
P/N	Operating Pressure
80	PSI [5.5 Bar] (Standard)
-60	PSI [4.1 Bar]

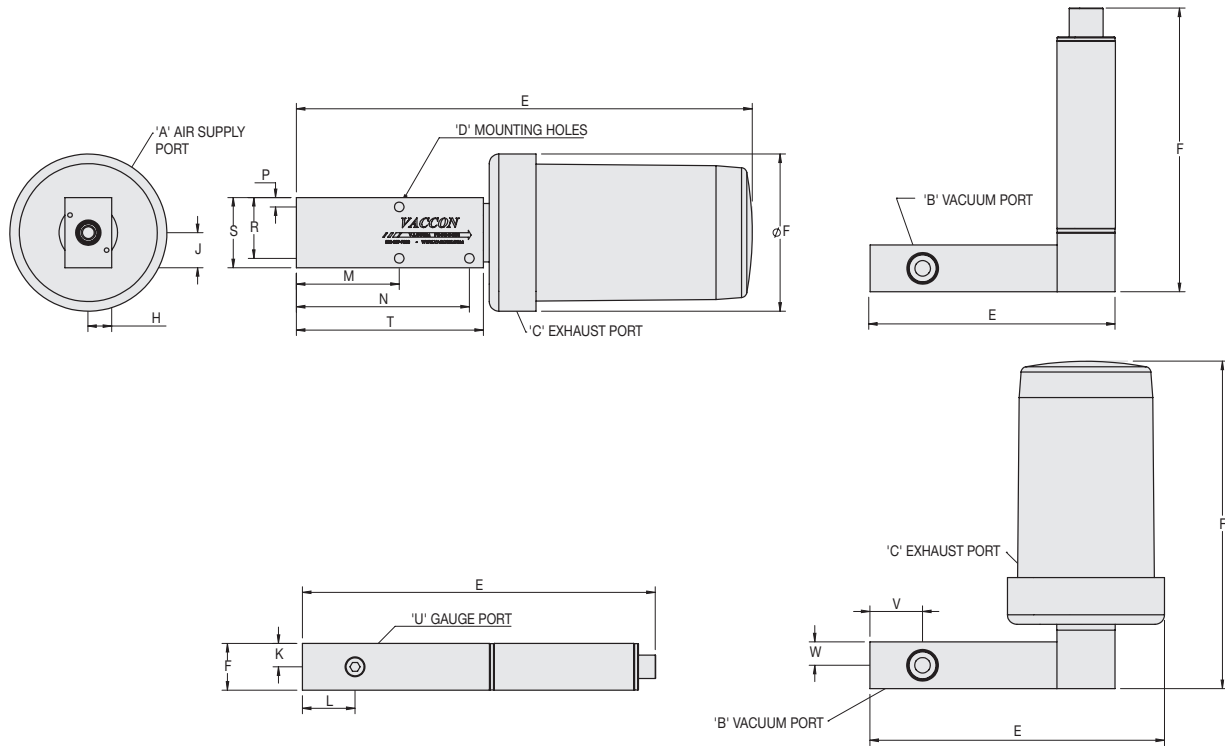
P/N	Vacuum Gauge
VG-150	Vaccon does not recommend shipping gauges attached to pumps. Please specify as a separate line item.

*Note: Valve Assembly (BV) is not available with the “250-H” version.

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

Standard Pump: VP80-250 (L, M, H)



VP80-250H with ST-8A silencer.



VP80-250H with ST-8B Silencer and VG-150 vacuum gauge.



Standard VP80-250M includes FA-51-1/2 silencer.

Specifications:

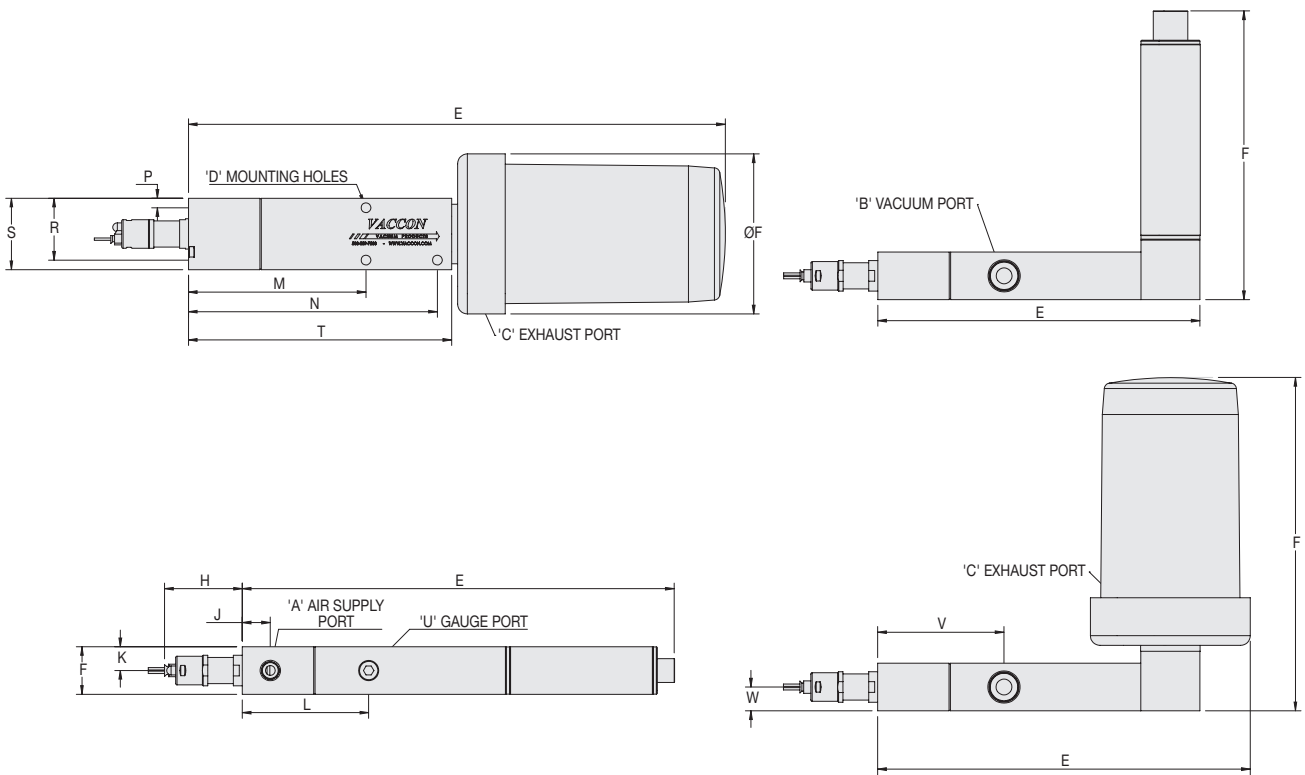
Weight: 10 oz [384g]
Noise Level: 75dB

14 oz [397g]
 73dB

1 lb. 8 oz [680g]
 73dB

Model #	Imperial Dimensions (in.)																		
VP80-250	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
STD					6.30	7.00													
N/E	1/4	3/8	1/2	0.21	9.75	3.36	0.50	0.75	0.50	2.66	2.20	3.70	0.20	1.30	1.50	5.53	1/8	2.66	0.50
ST-8B	NPT F	NPT F	NPT F		5.27	6.07													
ST-8A					7.54	1.00													
Model #	Metric Dimensions (mm)																		
I-VP80-250	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
STD					160.0	177.9													
N/E	G 1/4	G 3/8	G 1/2	5.3	247.7	85.3	12.7	19.1	12.7	67.4	55.9	94.0	5.1	33.0	38.1	140.5	G 1/8	67.4	12.7
ST-8B					133.9	154.1													
ST-8A					191.5	25.4													

VP80BV-250 (L, M, H) Pump



VP80BV-250H w/ ST-8A



VP80BV-250M w/ ST-8B



VP80BV-250H-NE w/ VG-150 vacuum gauge

Specifications:

Weight: 14.1 oz [399.7g]
Noise Level: 75dB

1 lb 2.4 oz [513.6]
 73dB

1 lb 10.5oz [751.3]
 72dB

Model #	Imperial Dimensions (in.)																		
VP80BV-250	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
STD					7.83	7.00													
N/E	1/8	3/8	1/2	0.21	11.28	3.36	1.63	0.53	0.50	2.66	3.73	5.23	0.20	1.30	1.50	5.53	1/8 NPT F	2.66	0.50
ST-8B	NPT F	NPT F	NPT F		6.77	6.07													
ST-8A					9.07	1.00													
Model #	Metric Dimensions (mm)																		
I-VP80BV-250	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W
STD				5.3	198.9	177.9	41.4	13.5	12.7	67.4	94.7	132.8	5.1	33.0	38.1	140.5	G 1/8	67.4	12.7
N/E					247.7	85.3													
ST-8B	G 1/8	G 3/8	G 1/2		133.9	154.1													
ST-8A					191.5	25.4													

Modular Venturi Vacuum Pumps – Max Series

VP80-/ VP80BV-250 Pump Standard Specifications:

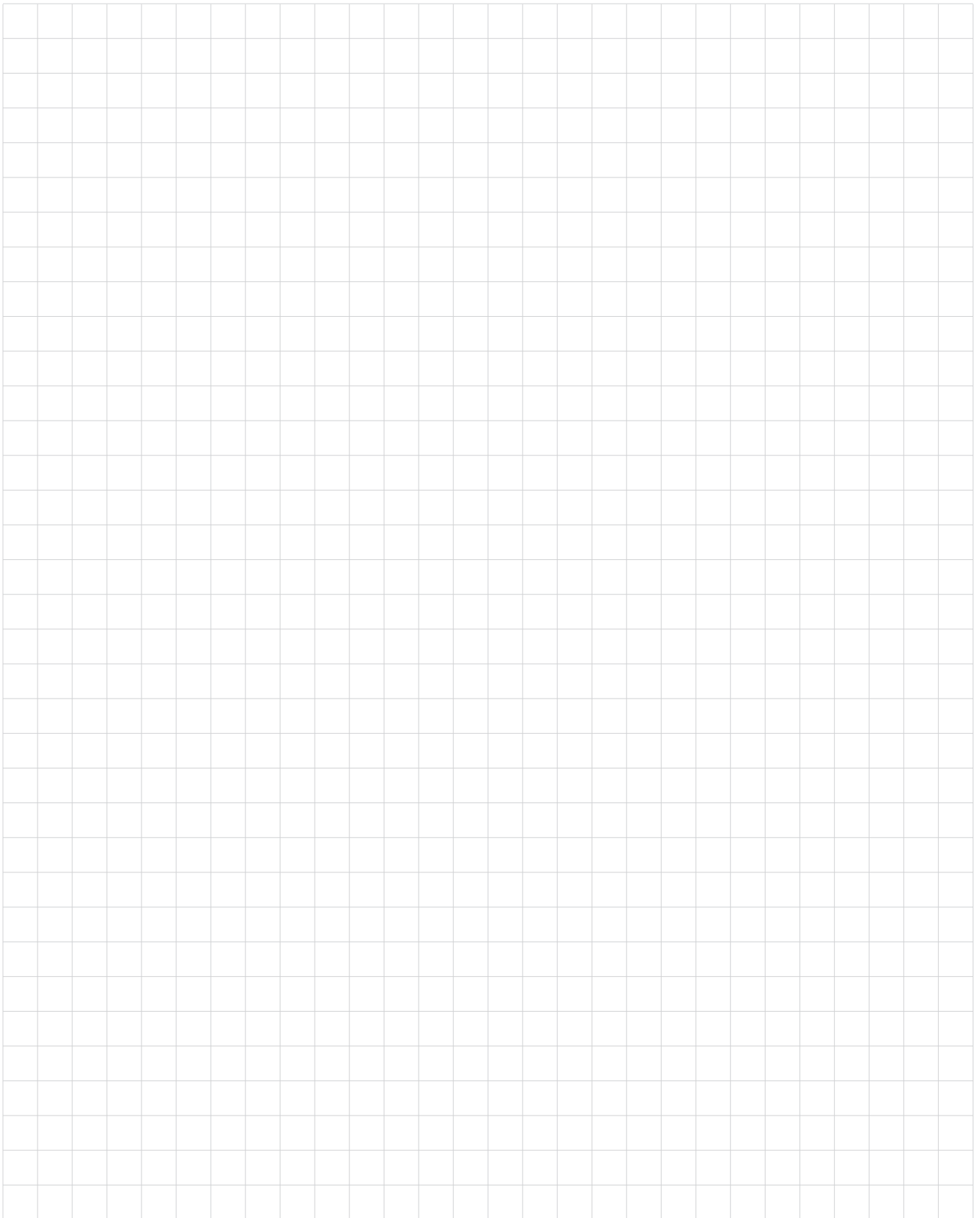
Pump Material:	Anodized Aluminum (For silencer material, see page 266 - 269.)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100° ~ +400° F [-73° ~ +204°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP80-/ VP80BV-250 Operating and Installation Requirements:

Supply Line:	Minimum recommended – 3/8" O.D. (10mm) Preferred – 1/2" [12mm] OD tubing
Vacuum Line:	Minimum recommended – 3/8" O.D. (10mm) Preferred – 1/2" [12mm] OD tubing
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Mounting:	Mounting holes accept #10-32 or M5 screws



Max-size Venturi Vacuum Pump with Silencer.

VP Max Series: VP90-300 & 350



VP90-350M-ST8B handles dirty, heavy, irregular shaped products for the stonework industry



VP90-350H

Standard Pump:

The VP90-300 & 350 Max Series air-powered venturi vacuum pumps provide high vacuum flow rates for the rapid evacuation of large volumes of air or for overcoming leakage in order to sustain high vacuum levels while handling porous materials.

Highly efficient, capable of reaching 28" Hg [948mbar], the VP90's are dirt tolerant and include a silencer for quiet operation. Unlike the Mid series pumps that use interchangeable cartridge assemblies, the Max series pumps (VP80 & VP90's) use a non-removable press-fit venturi assembly.

Performance Level Designations:

"L" 0-10" Hg [0 to 339mbar] for low vacuum/high flow applications

"M" 0-20" Hg [0 to 677mbar] for medium vacuum/high flow applications

"H" 0-28" Hg [0 to 948mbar] for high vacuum/standard flow applications

Ideal Applications:

- Pick and place of large/heavy/porous objects
- Rapid evacuation of large volumes of air
- Vacuum filling
- Vessel evacuation
- One pump powers multiple suction cups
- End-of-Arm Tooling/Robotics
- Packaging – bag/box/carton folding and handling
- Vacuum clamping/holding – fixtures, veneers

Features/Benefits:

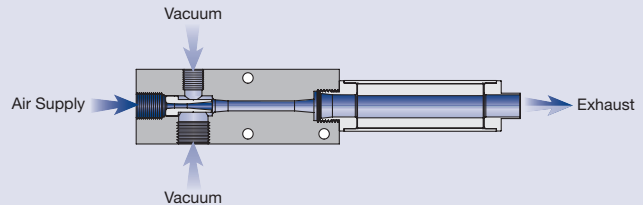
- High performance – powerful vacuum up to 28" Hg [948mbar]
- Compact & lightweight, rugged body construction
- Fast response – mounts close to vacuum point
- Efficient – minimal air consumption
- Safe operation
 - ~ No electricity needed at the pump
 - ~ High flow overcomes leakage – maintains a strong holding force
- Reliable – operates trouble free:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Vacuum gauge
- Silencers: ST-8B – straight through silencer allows dirt to pass through, without clogging
- 90° elbow attachment for silencers for compact space requirements
- G port threads for metric machines – products with an "I" prefix designates metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice, it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port, located between the nozzle and diffuser. The nozzle and diffuser combine to create a venturi vacuum cartridge.



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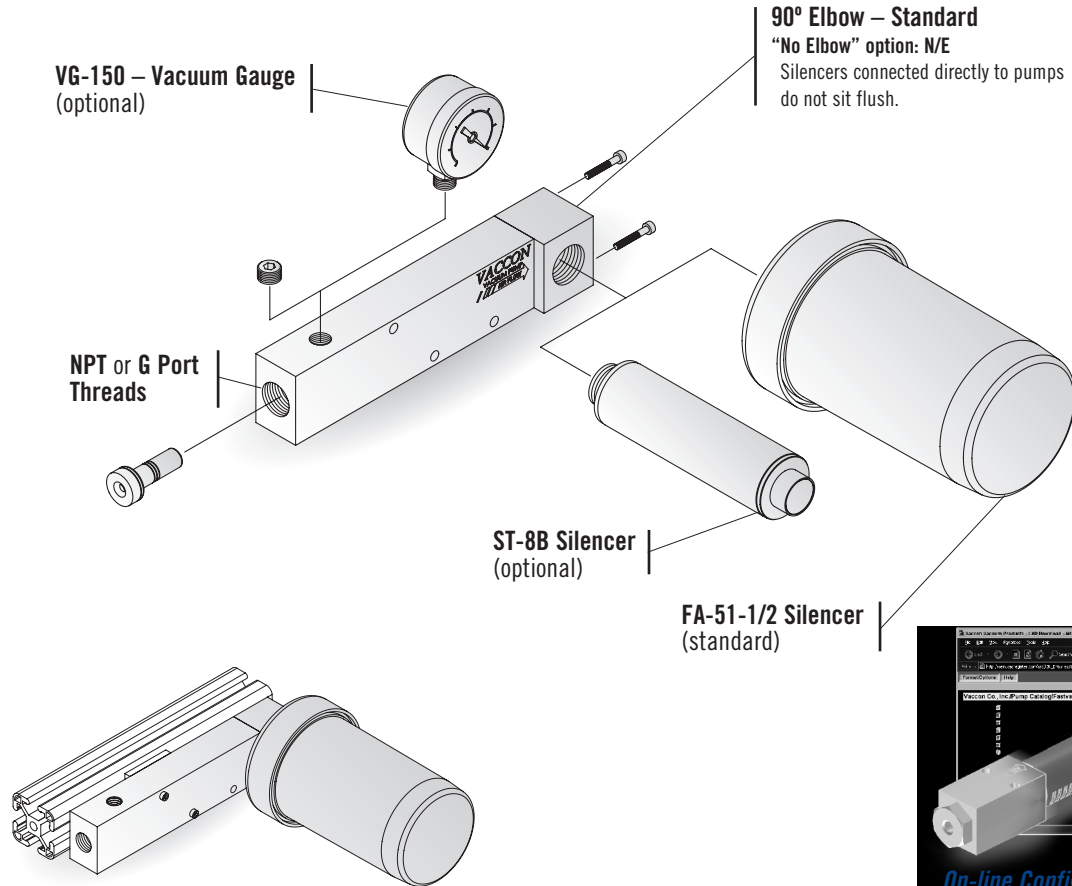
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

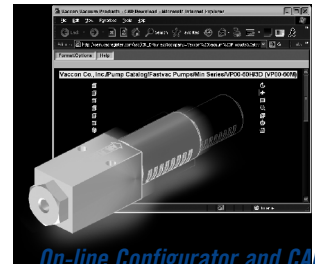
For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP90-300 & 350 (L, M, H) Max Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



VP90-300 & 350 pumps are Fractional and Metric T-Slot compatible. See EOAT Section.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VP90-300 - M - 60 - ST8B

P/N	Imperial Thread
VP90-300	NPT
VP90-350	NPT

P/N	Metric Thread
I-VP90-300	G Port
I-VP90-350	G Port

P/N	Max. Vac Level
L	10"Hg [339 mbar]
M	20"Hg [677 mbar]
H	28"Hg [948 mbar]

P/N	Silencer
FA-51-1/2	High Flow (Standard)
N/E	FA-51-1/2 - No Elbow
ST-8B	Straight-Through With Elbow
N/E-ST-8B	Straight-Through Without Elbow

P/N	Operating Pressure
80	80 PSI [5.5 Bar] (Standard)
-60	60 PSI [4.1 Bar]

P/N	Vacuum Gauge
VG-150	Vaccon does not recommend shipping gauges attached to pumps. Please specify as a separate line item.

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

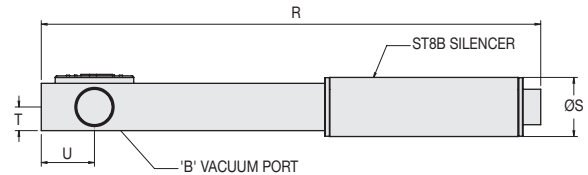
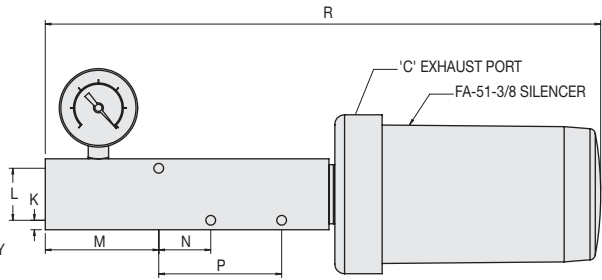
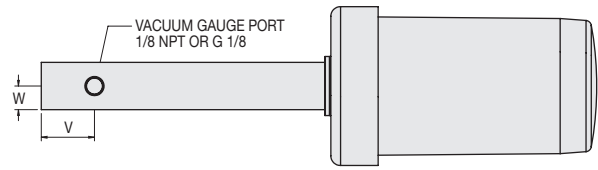
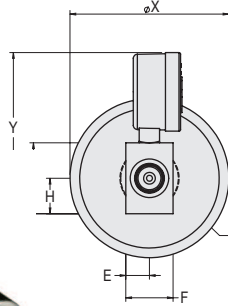
Standard: VP90-300 & VP90-350 (L, M, H) Pump



VP90-350H with ST-8B silencer and VG-150 vacuum gauge.



VP90-350H includes FA-51-1/2 silencer.



Specifications:

Weight VP90-300/ 350 with ST-8B: 11b 3 oz [539g]
 Noise Level VP90-300/ 350 with ST-8B: 73dB

VP90-300/ 350 WITH FA-51-1/2 SILENCER: 11b 12 oz [794g]
 VP90-300/ 350 WITH FA-51-1/2 SILENCER: 70dB

Model #	Imperial Dimensions (in.)																					
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
VP90-300/ 350 w/ FA-51-3/8 ST-8B	3/8 NPT F	1/2 NPT	1/2 NPT	0.21	0.5	1.00	0.75	1.5	0.2	1.10	2.40	1.10	2.60	11.75 10.56 N/A	1.25	0.5	1.13	1.125	0.5	3.36	3.41	1.16
Model #	Metric Dimensions (mm)																					
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
I-VP90- 300/ 350 w/ FA-51-3/8 ST-8B	G 3/8	G 1/2	G 1/2	5.3	12.7	25.4	19.1	38.1	5.1	27.9	61.0	27.9	66.0	298.45 268.22 N/A	31.8	12.7	28.6	28.6	12.7	85.3	86.6	29.5

VP90-300 & VP90-350 (L, M, H) Pump with optional ST-8B Silencer and VG-150 Vacuum Gauge

VP90 Pump Standard Specifications:

Pump Material:	Anodized Aluminum (For silencer material, see page 266 - 269.)
Medium:	Filtered (100 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100°~ +400° F [-73°~ +204°C]
Operating Pressure:	80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VP90 Operating and Installation Instructions:

Supply Line:	Minimum recommended – 1/2" O.D. [12mm] OD tubing
Vacuum Line:	Minimum recommended – 1/2" O.D. tubing – Preferred – 3/4" [22mm] for vacuum lines exceeding 3' [1M]
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF500F. See page 278.
Mounting:	Mounting holes accept #10-32 or M5 screws

Max-size Valve Controlled Venturi Vacuum Pump

VP92 Max Series



VP92 with optional VDXN electronic vacuum switch with digital display

Standard Pump:

The VP92 Series vacuum pumps are solenoid controlled, designed to interface directly onto a MAC 92 Series Sub Base. These high flow vacuum pumps can be used directly in a valve stack to provide vacuum, rather than compressed air in a cylinder port. This eliminates the need for additional vacuum pumps and pneumatic components within an automation system.

The valve control on the 92 Series vacuum pump plugs directly into the sub base for easy system control.

The valve controlled vacuum pumps also have an integral valve control for vacuum blowoff for rapid part release or vacuum line clean out.

The 92 Series vacuum pumps are easily installed and/ or relocated via two mounting screws making a change out from a compressed air system to vacuum in only a few minutes.

The 92 Series vacuum pumps incorporated threaded venturi cartridges, allowing for instant performance adjustment changes.

Ideal Applications:

- Pneumatic Pick and Place Systems
- Automated Material Handling Systems
- Automated Packaging Systems

Features/Benefits:

- Direct MAC 92 Series Sub Base interface
- High Speed integral 2-way direct acting valves
- Precise control- individual electrical connections let you control the vacuum and the blowoff duration time
- Instantaneous vacuum as needed - minimal air consumption
- Easy installation - modular design speeds installation and minimizes assembly
- Reliable, trouble free operation:
 - ~ No moving parts to wear
 - ~ No maintenance
 - ~ No downtime

Performance Level Designations:

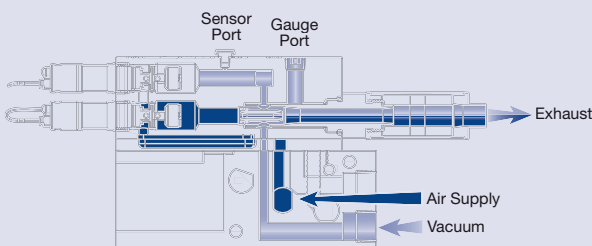
“M” 0-20”Hg [0 to 677mbar] for medium vacuum/high flow applications

“H” 0-28”Hg [0 to 948mbar] for high vacuum/standard flow applications

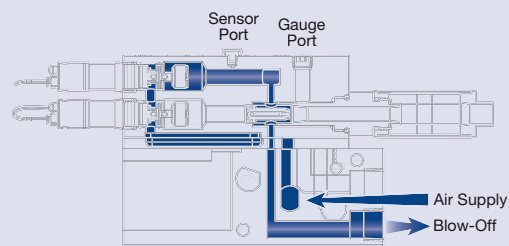
Pump Options:

- Interchangeable threaded venturi cartridges - 3 different performance levels: 200M, 200H, 250M
- Miniature vacuum switches or sensor with quick disconnect for reliable part detection.

Principles of Operation: VP92



Compressed air is supplied to both N.C. solenoid valves simultaneously. To create vacuum, energize the first solenoid valve to allow the compressed air to flow to the venturi cartridge resulting in instant vacuum at the vacuum port.



To release the part, de-energize the vacuum solenoid while energizing the blow-off solenoid. Because the blow-off air is at line pressure a very powerful blow-off will be created.

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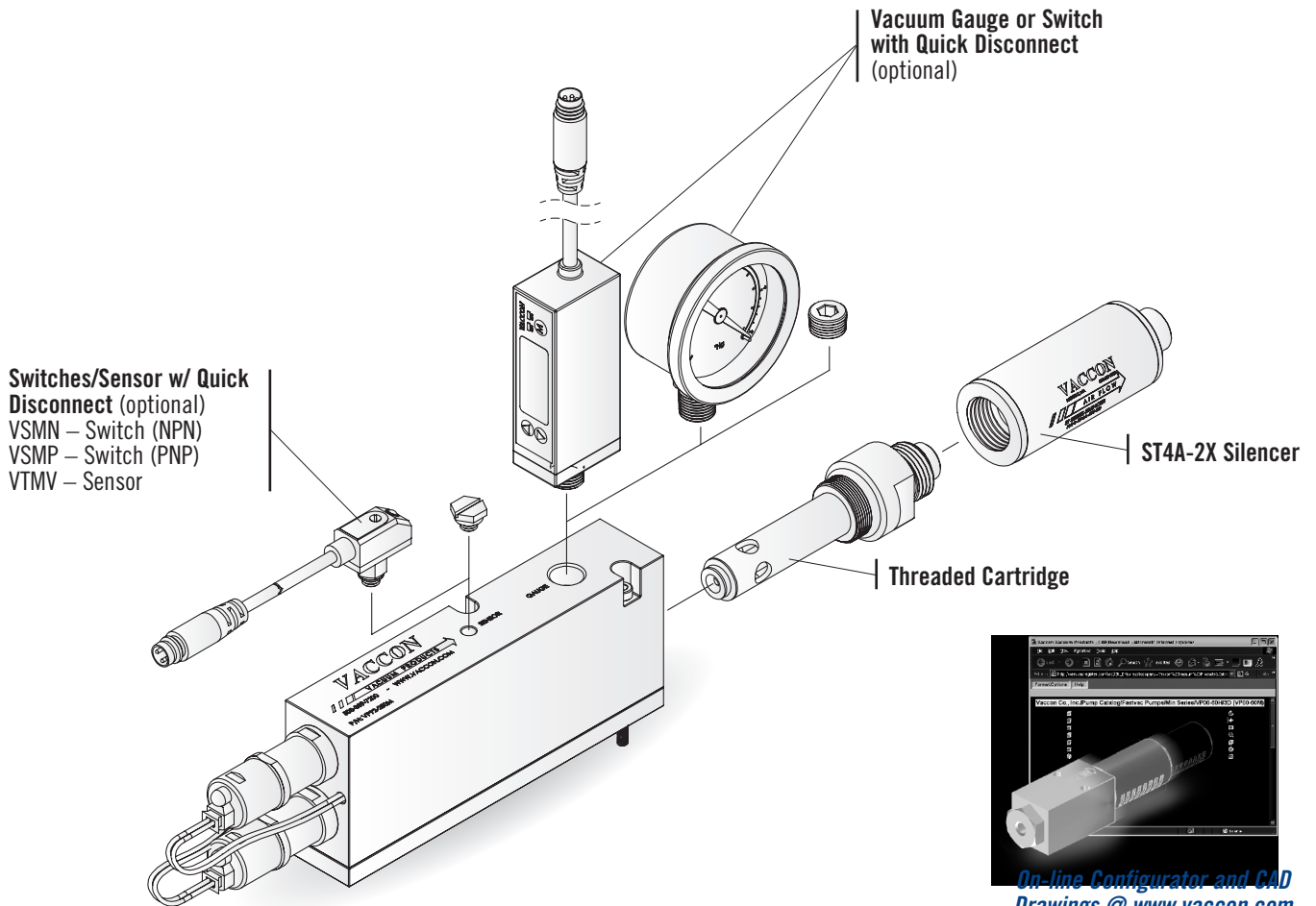
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VP92 (M, H) Max Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VP92 - 200 - 60 -

P/N	Performance
200M	20" Hg [677 mbar]
200H	28" Hg [948 mbar]
250M	20" Hg [677 mbar]

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Std)
60	60 PSI [4.0 BAR]

P/N	Gauge/Switch
	None (Standard)
VG-150	Vacuum Gauge
VDXP	Programmable Vacuum Switch – PNP
VDXN	Programmable Vacuum Switch – NPN

P/N	Switch/Sensor
	None (Standard)
1	VSMN – Switch NPN
2	VSMP – Switch PNP
3	VTMV – Sensor 1-5VDC Output

For complete Performance Data, see page 154.

Modular Venturi Vacuum Pumps – Max Series

VP92 Pump Standard Specifications:

Pump Material:	Anodized Aluminum, Buna-N
Cartridge Material:	Nylon, Buna-N (Other materials available, see page 8.)
Seal Material:	Vinyl
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-23°~ 122° F [-5°~ 50°C]
Operating Pressure:	80 PSI [5.5 BAR]

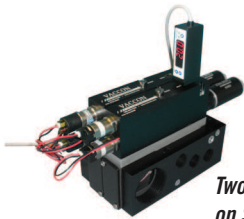
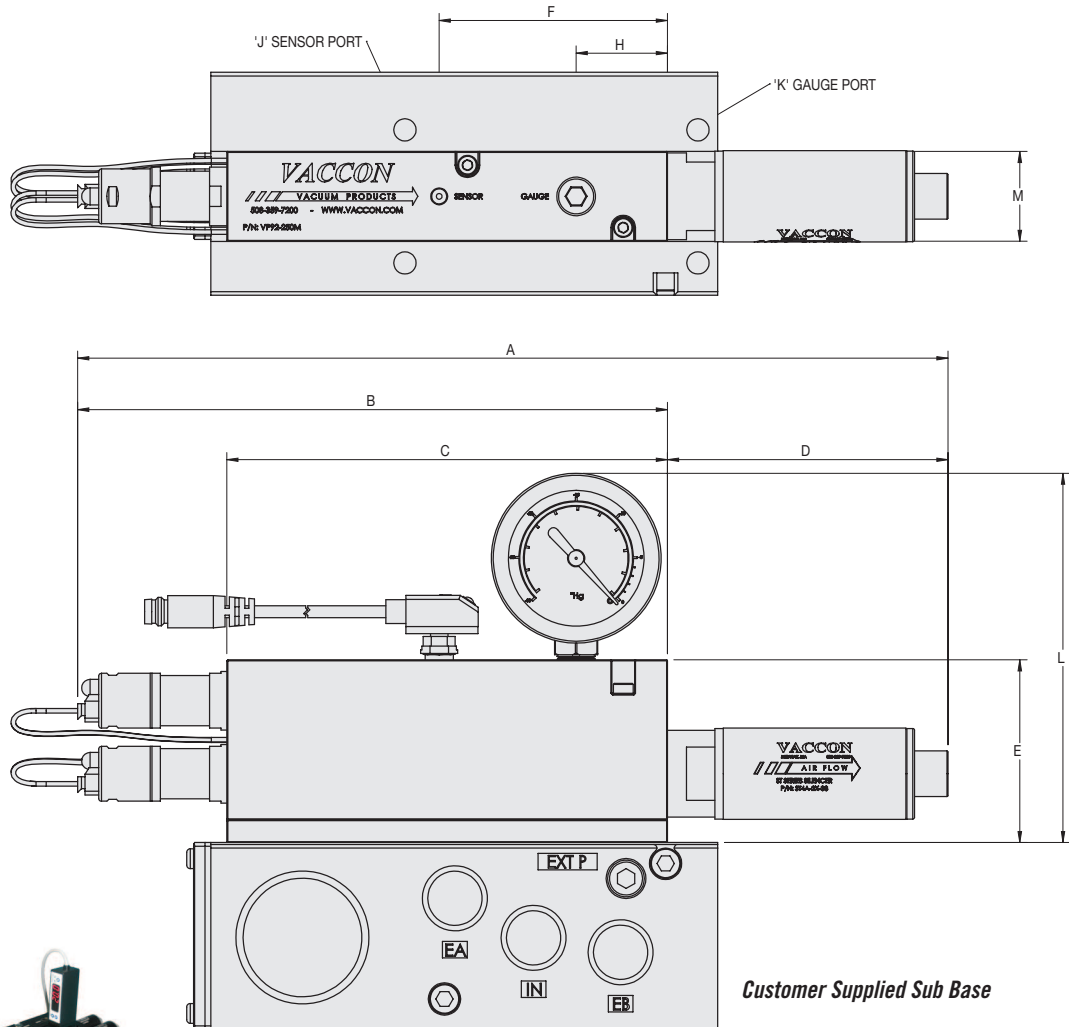
Optional 2-Way Valve Specifications

Valve Type:	Base Mounted 2-Way, Solenoid Valve, Normally closed
Valve Body Material:	Brass, Aluminum, Buna-N
Valve Operating Pressure:	Vacuum to 120 psi [-1 to 8 bar]
Electrical:	24vdc [-15% to +10% Nominal]
Average Life:	100 million cycles or better
Power Consumption:	4 watts
Response Time:	6 milliseconds
Cycle Rate:	80 cycles/second
Electrical Connection:	Plug- JST Connector with 24 AWG, 18" leads
LED Indicator:	Yes

VP92 Operating and Installation Requirements:

Vacuum Line:	3/8" O.D. (10mm) tube recommended
Vacuum Line Filtration:	Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.
Mounting:	(2) M5 screws

Modular Venturi Vacuum Pumps – Max Series



Two VP92's mounted on Sub Base

Specifications:

Weight: Standard VP92: 13.6 oz [385g]*
Noise Level: 68dB

*NOTE: (Does not include customer supplied Sub Base)

Model #	Imperial Dimensions (in.)										
	A	B	C	D	E	F	H	J	K	L	M
VP92 w/ ST-8B	9.53	7.01	5.37	2.51	2.00	3.05	1.55	10-32	1/8 NPT	4.04	0.98
Model #	Metric Dimensions (mm)										
	A	B	C	D	E	F	H	J	K	L	M
I-VP92 w/ ST-8B	242.0	178.0	136.3	63.8	50.8	77.5	39.4	M5	G 1/8	102.6	25.0

Performance Data for Max Series Pumps & Cartridges

For Pump Models: VP80, VP80BV, VP8X, VP8XBV, VP8XV, VP80-AS, VP80-MP, VP80BV-MP, VP90, VP90-AS, VP90-MP, and Manifolds

L-Series Venturis – Low Vacuum Applications

L is for “Low” vacuum levels up to 10”Hg [339 mbar] for applications handling delicate parts, thin walled materials and for process control.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
200L	2.80	6.00	5.80	4.30	1.70	0.00
250L	4.80	9.50	7.90	5.70	2.20	0.00
300L	7.80	20.00	14.00	9.50	3.50	0.00
350L	12.50	28.00	18.00	12.30	4.50	0.00

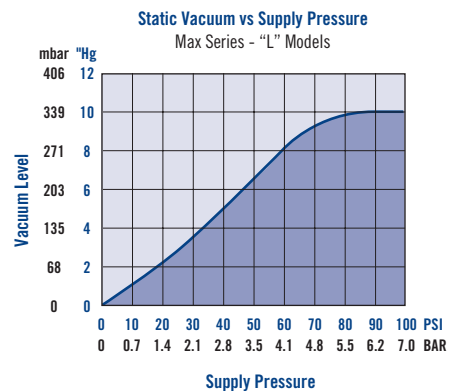
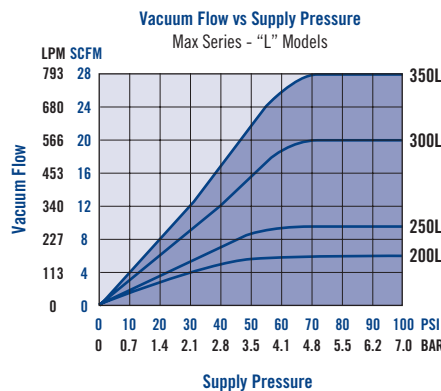
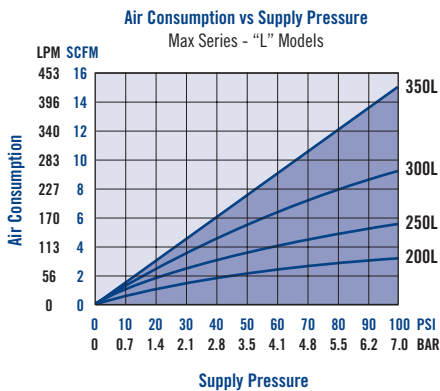
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
200L	2.80	0.00	0.77	2.05	4.62	13.34
250L	4.80	0.00	0.52	1.28	3.08	7.95
300L	7.80	0.00	0.26	0.77	1.80	4.10
350L	12.50	0.00	0.00	0.52	1.28	2.82

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
200L	79.3	169.9	164.2	121.8	48.1	0.0
250L	135.9	269.0	223.7	161.4	62.3	0.0
300L	220.9	566.3	396.4	269.0	99.1	0.0
350L	354.0	792.9	509.7	348.3	127.4	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar
200L	79.3	0.0	0.0	0.1	0.2	0.5
250L	135.9	0.0	0.0	0.0	0.1	0.3
300L	220.9	0.0	0.0	0.0	0.1	0.1
350L	354.0	0.0	0.0	0.0	0.0	0.1

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Max Series Pumps & Cartridges

For Pump Models: VP80, VP80BV, VP8X, VP8XBV, VP8XV, VP80-AS, VP80-MP, VP80BV-MP, VP90, VP90-AS, VP90-MP, VP92* and Manifolds

M-Series Venturis – Medium Vacuum Applications

M is for "Medium" vacuum levels up to 20"Hg [667 mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

*NOTE: VP92 Performance Levels: 200M, 250M, and 200H only.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level ("Hg)							
		0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	20"Hg
200M	4.80	6.00	5.30	4.90	4.00	3.50	2.50	1.10	0.00
250M	7.80	9.50	9.20	8.30	7.00	4.70	3.40	2.20	0.00
300M	12.50	20.00	19.00	16.30	13.80	8.10	5.50	3.30	0.00
350M	22.00	28.00	24.00	19.40	16.80	14.50	11.20	4.80	0.00

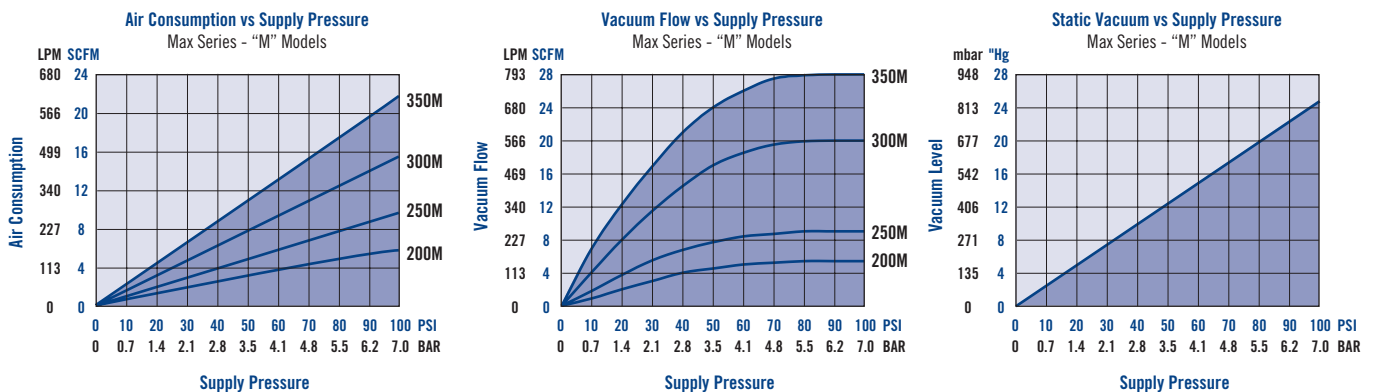
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/"Hg							
	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	20"Hg
200M	0.00	0.75	1.90	3.20	5.30	8.70	17.10	42.60
250M	0.00	0.45	1.10	2.40	3.80	6.00	9.70	15.40
300M	0.00	0.00	0.00	1.10	1.80	2.70	4.60	8.70
350M	0.00	0.00	0.00	1.00	1.50	2.10	4.30	8.40

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
200M	135.9	169.9	150.1	138.8	113.3	99.1	70.8	31.1	0.0
250M	220.9	269.0	260.5	235.0	198.2	133.1	96.3	62.3	0.0
300M	354.0	566.3	538.0	461.6	390.8	229.4	155.7	93.4	0.0
350M	623.0	792.9	679.6	549.3	475.7	410.6	317.1	135.9	0.0

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	677 mbar
200M	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.5
250M	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5
300M	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3
350M	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for Max Series Pumps & Cartridges

For Pump Models: VP80, VP80BV, VP8X, VP8XBV, VP8XV, VP80-AS, VP80-MP, VP80BV-MP, VP90, VP90-AS, VP90-MP, VP92* and Manifolds

H-Series Venturis – High Vacuum Applications

H is for “High” vacuum levels up to 28”Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.) The high vacuum level provides high vacuum force for lifting heavy materials and holding them securely.

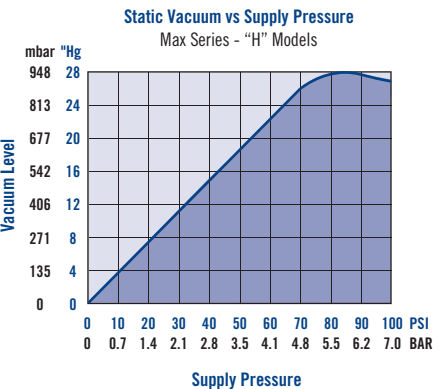
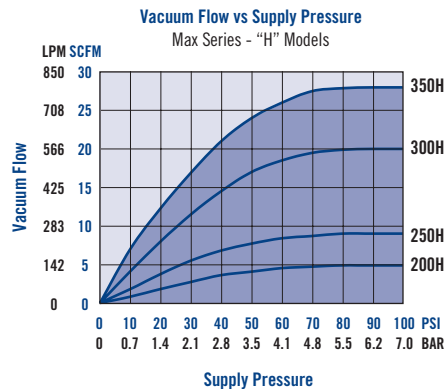
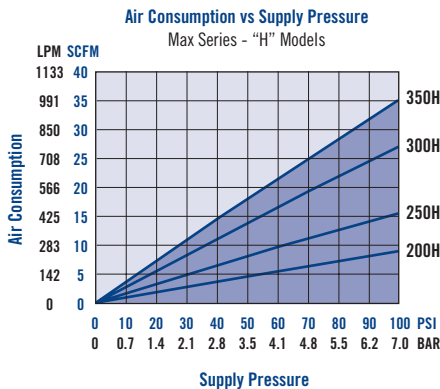
*NOTE: VP92 Performance Levels: 200M, 250M, and 250H only.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
200H	7.80	5.40	4.70	3.85	3.30	3.00	2.60	2.10	1.60	1.20	0.60	0.00
250H	12.50	9.00	8.50	7.85	7.00	6.50	5.30	3.90	2.50	1.80	0.90	0.00
300H	22.00	20.00	17.00	14.00	12.70	12.00	10.00	7.40	4.90	2.70	1.30	0.00
350H	28.00	28.00	22.00	18.70	15.90	14.50	11.80	8.10	5.70	4.50	2.25	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
200H		0.00	1.20	2.10	3.40	5.20	7.70	11.50	20.00	33.50	62.60	98.10
250H		0.00	0.75	1.30	2.20	3.50	5.60	9.10	17.40	30.10	56.00	76.00
300H		0.00	0.00	0.80	1.20	2.00	2.80	3.90	5.90	11.10	32.70	60.00
350H		0.00	0.00	0.00	1.20	1.90	2.30	3.40	5.30	8.80	26.00	44.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	814 mbar	914 mbar	948 mbar
200H	220.9	152.9	133.1	109.0	93.4	85.0	73.6	59.5	45.3	34.0	17.0	0.0
250H	354.0	254.9	240.7	222.3	198.2	184.1	150.1	110.4	70.8	51.0	25.5	0.0
300H	623.0	566.3	481.4	396.4	359.6	339.8	238.2	209.5	138.8	76.5	36.8	0.0
350H	792.9	792.9	623.0	529.5	450.2	410.6	334.1	229.4	161.4	127.4	63.7	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	814 mbar	914 mbar	948 mbar
200H		0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.7	1.2	2.2	3.5
250H		0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.1	2.0	2.7
300H		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	1.2	2.1
350H		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.9	1.6

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Vaccon offers a High Level Venturi Vacuum Pump in a variety of performance ranges. Each HighVac Series Pump is capable of 29.5"Hg @ Sea Level.



HVP Series – HighVac Pump

The high vacuum level and compact size of the HVP pump allows you to incorporate smaller and more efficient components in your design. Often used to replace expensive, noisy, heat generating, electric pumps, HVP pumps are quiet and maintenance free, ideal for small shops, labs and recharging HVAC systems.

See Page

158

HighVac Pumps

High Vacuum Venturi Pump up to 29.5" Hg with Silencer

HighVac Series: HVP 100, 200, 300



HVP-100 degassing viscous liquids such as silicone and other mold compounds



HVP Series

Ideal Applications:

- Process control
- Vessel evacuation
- HVAC applications
- Degassing

Features/Benefits:

- High performance – powerful vacuum up to 29.5" Hg [999mbar]
- Fast response time – no delay due to long plumbing lines; mounts in-line and installs close to vacuum point
- Efficient minimal air consumption
- Compact, lightweight and modular – easy to install
- Safe operation – no electricity needed at the pump
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Standard Pump:

The HighVac Series of air-powered venturi vacuum pumps generate vacuum levels up to 29.5" Hg [999mbar] and offer a wide range of vacuum flow rates.

The high vacuum level and compact size of the HVP pump allows you to incorporate smaller and more efficient components in your design. Often used to replace expensive, noisy, heat generating, electric pumps, HVP pumps are quiet and maintenance free, ideal for small shops, labs and recharging HVAC systems.

Pump Options:

- Factory-installed miniature sensors or switches to provide electrical signal for vacuum achieved, part present. Will interface with PLC's and computerized control systems.

Please note: Vacuum Level = The magnitude of suction created by the vacuum pump. Vacuum level is effected by elevation and barometric pressure. For each 1,000 feet of elevation, the vacuum level that the pump can acheive decreases by approximately 1" Hg [33.9mbar].

Eliminate the Guesswork: Contact Us!

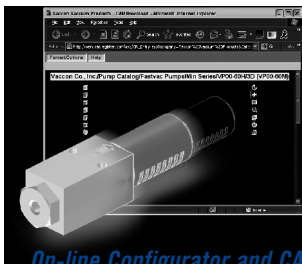
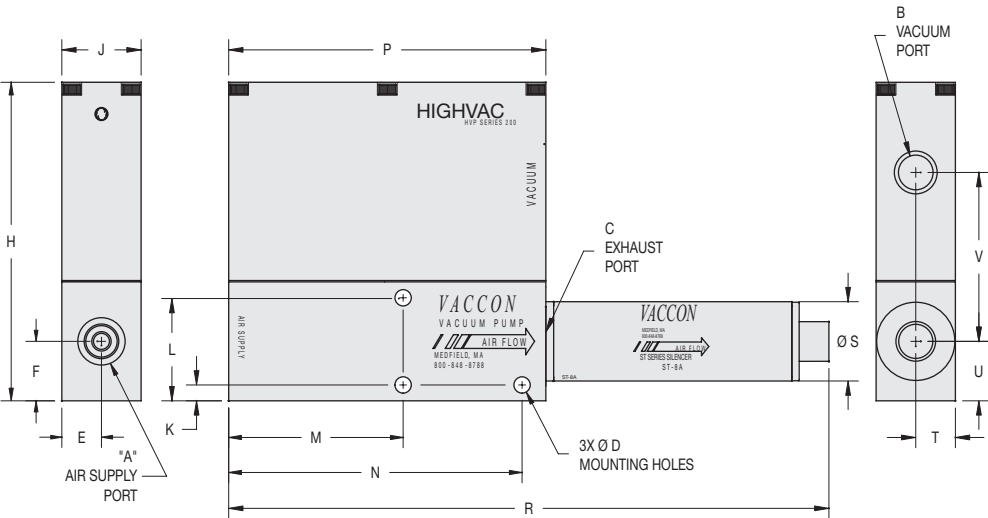
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

HVP HighVac Series Configurations and Options:

Drawing below is representative of all HVP pumps.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!



Specifications:
Weight 9oz [255g]
Noise Level 71 dB



Specifications:
Weight 1 lb 11 oz [765g]
Noise Level 74 dB



Specifications:
Weight 2 lb [907g]
Noise Level 79 dB

Model #	Imperial Dimensions (in.)														
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S
HVP-100	1/4 NPTF	1/8 NPTF	1/4 NPTF	0.12	0.38	0.38	2.28	0.75	0.09	0.67	1.78	N/A	3.20	5.06	0.75
HVP-200	1/4 NPTF	1/4 NPTF	1/2 NPTF	0.21	0.50	0.75	4.02	1.00	0.20	N/A	2.20	3.70	4.00	7.57	1.00
HVP-300	3/8 NPTF	1/4 NPTF	1/2 NPTF	0.21	0.50	0.75	4.02	1.00	0.20	N/A	2.50	4.00	5.00	9.81	1.25

HVP Pump Standard Specifications:

- Pump Material:** Anodized Aluminum (For silencer material, see Silencer section – see page 264 - 266.)
- Cartridge Material:** Nylon, Buna-N (Other materials available, see page 8)
- Medium:** Filtered (50 Micron) un-lubricated, noncorrosive dry gases
- Operating Temperature:** -30°~250° F [-34°~121°C]
- Operating Pressure:** 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

HVP Pump Installation Requirements:

- Vacuum Line & Supply Line – HVP100/200:** 3/8" O.D. [10mm] tube recommended
- Vacuum Line Filtration – HVP100/200:** Typically filters are not required, if desired Vaccon recommends – VF250. See page 278.
- Vacuum Line & Supply Line – HVP300:** 5/8" O.D. [16mm] tube recommended
- Vacuum Line Filtration – HVP300:** Typically filters are not required, if desired Vaccon recommends – VF375. See page 278.
- Mounting Holes:** HVP-100 = 4-40 [M3], HVP-200/300 = #10-32 [M5] screws



HVP Series - Performance Data

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	29.5”Hg
HVP-100	4.90	1.30	1.20	1.10	1.00	0.90	0.90	0.90	0.80	0.60	0.30	0.00
HVP-200	8.60	3.45	3.25	3.05	2.75	2.45	2.05	1.90	1.60	1.30	0.90	0.00
HVP-300	22.00	6.00	5.10	4.70	4.40	4.10	3.60	3.00	2.60	1.80	0.90	0.00
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	29.5”Hg
HVP-100		0.00	6.50	12.30	18.90	32.50	40.00	52.50	72.50	98.00	135.50	281.30
HVP-200		0.00	2.30	3.80	6.50	10.20	14.10	20.00	29.50	44.00	67.50	125.00
HVP-300		0.00	1.20	2.10	3.40	5.20	7.70	11.50	16.30	24.00	39.50	98.10

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508mbar	609 mbar	711 mbar	813 mbar	914 mbar	999 mbar
HVP-100	138.8	36.8	34.0	31.1	28.3	25.5	25.5	25.5	22.7	17.0	8.5	0.0
HVP-200	243.5	97.7	92.0	86.4	77.9	69.4	58.0	53.8	45.3	36.8	25.5	0.0
HVP-300	623.0	169.9	144.4	133.1	124.6	116.1	101.9	85.0	73.6	51.0	25.5	0.0
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0 mbar	102 mbar	203 mbar	305 mbar	339 mbar	508mbar	609 mbar	711 mbar	813 mbar	914 mbar	999 mbar
HVP-100		0.00	0.2	0.4	0.7	1.1	1.4	1.9	2.6	3.5	4.8	9.9
HVP-200		0.00	0.1	0.1	0.2	0.4	0.5	0.7	1.0	1.6	2.4	4.4
HVP-300		0.00	0.0	0.1	0.1	0.2	0.3	0.4	0.6	0.8	1.4	3.5

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.

The J-Series Venturi Vacuum Pumps utilize a fixed venturi design. J-Series pumps employ a cylindrical design for ease of installation and mounting into in-line pneumatic plumbing. J-Series pumps offer a complete range of venturi vacuum performance.



JS40UM Series - Ultraminiature Fixed Venturi Vacuum Pump

Ultra-Small - The JS-40UM (Ultra-Mini) cylindrical venturi vacuum pump is the smallest complete venturi vacuum pump that Vaccon offers. Incredibly compact and powerful – it measures the size of your finger tip and generates up to 27”Hg [914mbar]. Lightweight, quiet and cool operating, JS-40UM pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response.

See Page **162**



Min J-Series Fixed Venturi Vacuum Pumps

Compact Design - The J Series “M” (Mini) version cylindrical venturi vacuum pumps feature a high power-to-size ratio, measuring only 3” L x 3/4” OD. Choose from 11 models that can generate up to 28”Hg [948mbar] and 3.5 SCFM [99LPM] of vacuum flow. Lightweight, quiet and cool operating, J Series pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response.

See Page **166**



Mid Sized J-100/150/200/250 Series Fixed Venturi Vacuum Pumps

Increased Level of Performance - The J-100 and J-150 models offer the same performance as their sister pumps, the J-100M and J-150M on page 165, but with larger ports. The J-200 and 250’s offer higher vacuum flows for rapid evacuation of large vessels and to overcome leakage to sustain high vacuum levels while handling porous materials.

See Page **170**



Max Sized J-300 Series Fixed Venturi Vacuum Pumps

Max Performance - The J-300 Series cylindrical venturi vacuum pumps offer higher vacuum flows for rapid evacuation of large vessels and to overcome leakage to sustain high vacuum levels while handling porous materials.

See Page **176**



Max Sized J-350 Series Fixed Venturi Vacuum Pumps

Max Performance - The J-350 Series cylindrical venturi vacuum pumps offer higher vacuum flows for rapid evacuation of large vessels and to overcome leakage to sustain high vacuum levels while handling porous materials.

See Page **180**

Cylindrical Pumps

Ultra-Mini Cylindrical Venturi Vacuum Pumps

Ultra-Mini J Series: JS-40UM



JS-40UM generates 27" Hg and weighs less than 1 oz



Ultra-mini pump for drip control in dispensing applications

Standard Pump:

The JS-40UM (Ultra-Mini) cylindrical venturi vacuum pump is the smallest complete venturi vacuum pump that Vaccon offers. Incredibly compact and powerful – it measures the size of your finger tip and generates up to 27" Hg [914mbar]. Lightweight, quiet and cool operating, JS-40UM pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response.

The single-stage design allows ingested contaminants to flow through the pump without clogging ensuring continuous operation. Constructed of a single material, with no seals or moving parts, J Series pumps are virtually indestructible. They can be manufactured in a variety of materials, making them ideal for use in adverse operating conditions.

J Series pumps provide a constant vacuum flow, rather than a fluctuating flow typically associated with diaphragm pumps. They operate with an instantaneous response in pulsed applications or on a continuous basis.

Ideal Applications:

- Gas sampling and analysis
- Leak testing
- Portion/ drip control (suck-back) for dispensing liquids
- Liquid transfer
- Pick and place for small, non porous parts
- Small vessel evacuation
- Used as vacuum source for vacuum pencil kit (see page 277)

Features/Benefits

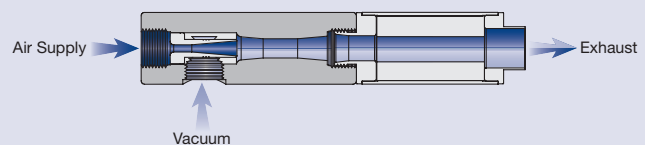
- High performance - powerful vacuum up to 27" Hg [914mbar]
- Lightweight – less than 1 oz. [28.3g]
- Compact – 1.25" x .56" OD [31.75mm x 14.22 mm OD]
- Input pressure from 5 PSI [0.34BAR]
- Fast response – Mounts in-line, and installs close to vacuum point – no delay due to long plumbing lines
- Efficient – Minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – No electricity needed
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Optional Silencer: VCF2-1032M
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional
- G port threads for metric machines – an "I" prefix designates products with metric threads
- For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin™, Teflon™, PVC.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser.



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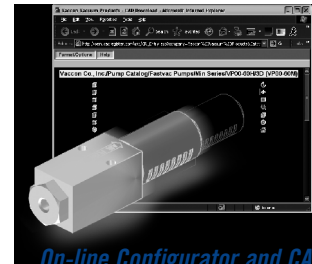
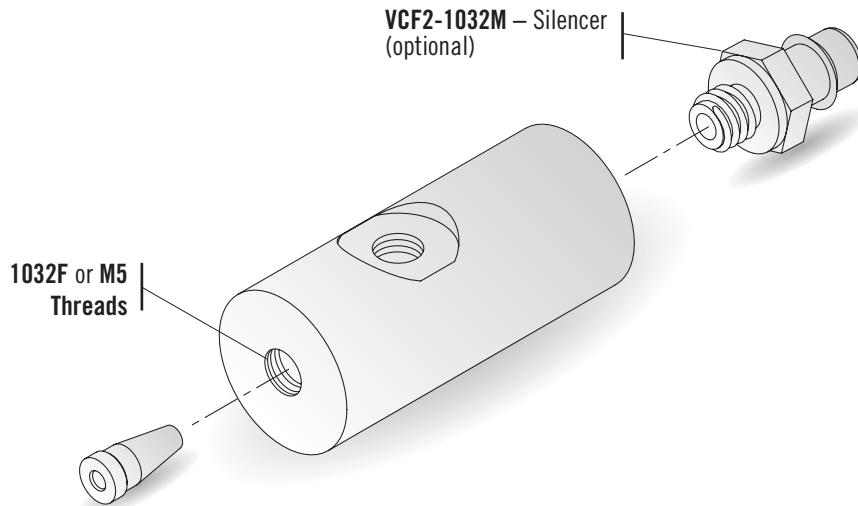
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

JS-40UM (Ultra Mini) Vacuum Pump – Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

JS-40UM - 60 - VCF2 - 303

P/N	Imp. Thread	Max. Vac.
JS-40UM	1032F	27"Hg [914mbar]

P/N	Metric Thread	Max. Vac.
I-JS-40UM	M5	27"Hg [914mbar]

P/N	Operating Pressure
60	80 PSI [5.5 BAR] (Standard)
	60 PSI [4.0 BAR]

For complete Performance Data, see page 167.

P/N	Material
	Anodized Aluminum (Standard)
303	303 Stainless Steel
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
TEF	PTFE
PK	PEEK
DEL	Acetal

P/N	Silencer*
	No Silencer (Standard)
VCF2	VCF2-1032M (Straight-through)

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

JS-40UM Pump Standard Specifications:

Pump Material: Anodized Aluminum Standard (Silencer material – Brass)
Medium: Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature: -100°F~400°F [-73°~204°C] (without silencer)
Operating Pressure: 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

JS-40UM Pump Operating & Installation Requirements:

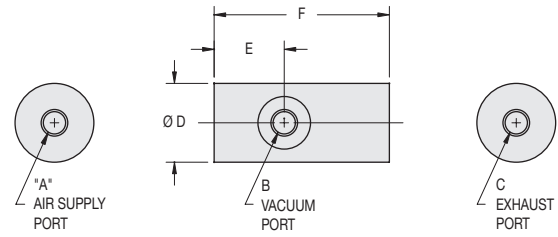
Supply and Vacuum Lines: Min. 5/32" [4mm], 1/4" O.D. [6mm] tube preferred for supply lines exceeding 3' [1M]
Vacuum Line Filtration: Not required

J-Series Cylindrical Venturi Pumps

Standard Pump: JS-40UM



Standard JS-40UM without silencer.



Specifications:

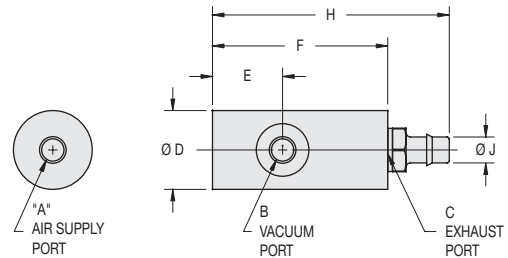
Weight 0.3 oz [8.5g]
 Noise Level 58 dB

Model #	Imperial Dimensions (in.)					
	A	B	C	D	E	F
JS-40UM	10-32F	10-32F	10-32F	0.56	0.50	1.25
Model #	Metric Dimensions (mm)					
	A	B	C	D	E	F
I-JS-40UM	M5	M5	M5	14.3	12.7	31.8

JS-40UM: Optional Silencer: VCF2-1032M



JS-40UM-VCF2



Specifications:

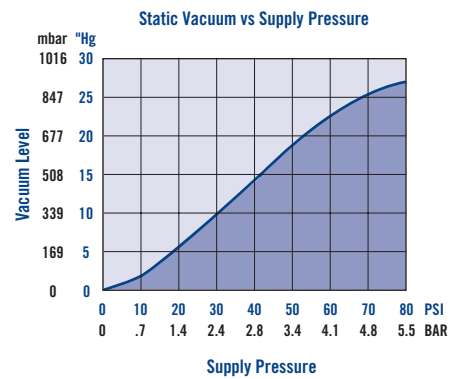
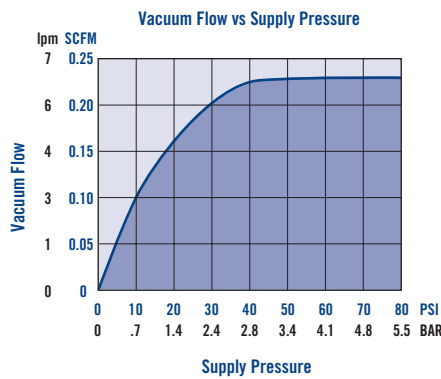
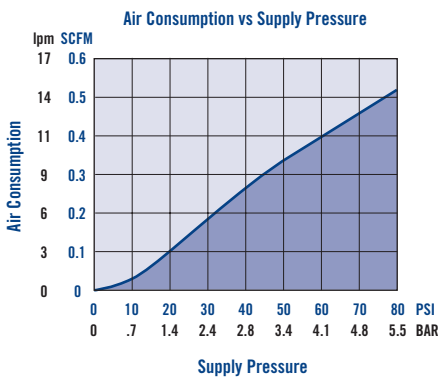
Weight 0.4 oz [9.6g]
 Noise Level 54 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
JS-40UM-VCF2	10-32F	10-32F	10-32F	0.56	0.50	1.25	1.69	0.19
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-JS-40UM-VCF2	M5	M5	M5	14.3	12.7	31.8	42.9	4.7

Performance Data – JS-40UM Imperial and Metric

Model #	Air Consumption (SCFM) @ 80 PSI	Imperial - Vacuum Flow (SCFM) vs Vacuum Level ("Hg) @ 80 PSI									
		0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	27"Hg
JS-40UM	0.52	0.23	0.20	0.17	0.15	0.13	0.10	0.08	0.05	0.03	0.00
		Imperial - Evacuation Time (Seconds) Based on 1 cu. ft. Volume ("Hg)									
		0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	27"Hg
		0.00	24.80	54.40	89.50	130.30	178.30	240.40	334.50	516.70	1028.00

Model #	Air Consumption L/min	Metric - Vacuum Flow (L/min) vs Vacuum Level (mbar)									
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	813mbar	914mbar
I-JS-40UM	14.7	6.5	5.7	4.8	4.2	3.7	2.8	2.3	1.4	0.8	0.0
		Metric - Evacuation Time (Seconds) Based on 1 liter Volume (mbar)									
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	813mbar	914mbar
		0.0	0.9	1.9	3.2	4.6	6.3	8.5	11.8	18.2	36.3

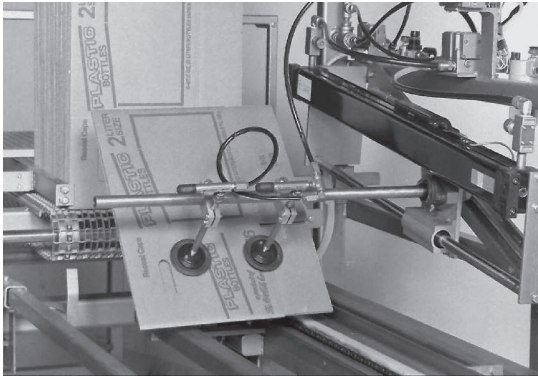


Note 1: Standard operating pressure for Vaccon pumps is 80 PSI. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI, 50PSI etc. The values shown on the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume i.e. a 2 cu. ft volume will take twice as long to evacuate as a 1 cu. ft. volume.

Cylindrical Venturi Vacuum Pumps

Min J Series: "M"(min) Version



JD-100M – carton erecting application



JS-150M-ST4

Standard Pump:

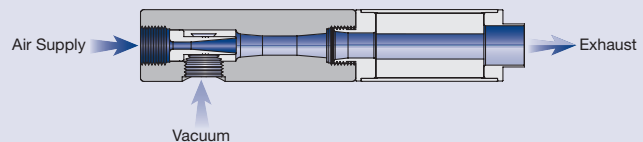
The J Series "M" (Mini) version cylindrical venturi vacuum pumps feature a high power-to-size ratio, measuring only 3" L x 3/4" OD. Choose from 11 models that can generate up to 28"Hg [948mbar] and 3.5 SCFM [99LPM] of vacuum flow. Lightweight, quiet and cool operating, J Series pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response.

The single-stage design allows ingested contaminants to flow through the pump without clogging ensuring continuous operation. Constructed of a single material, with no seals or moving parts, J Series pumps are virtually indestructible. They can be manufactured in a variety of materials, making them ideal for use in adverse operating conditions.

J Series pumps provide a constant vacuum flow, rather than a fluctuating flow typically associated with diaphragm pumps. They operate with an instantaneous response in pulsed applications or on a continuous basis.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser.



Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Carton erecting
- Pick and place where one pump powers each cup
- Vessel evacuation
- Medical/pharmaceutical applications
- Food processing applications
- High temperature applications
- Caustic applications

Features/Benefits

- High Performance - powerful vacuum up to 28"Hg [948mbar]
- Durable – rugged aluminum body construction
- Fast response – mounts in-line, and installs close to vacuum point – no delay due to long plumbing lines
- Efficient – minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – no electricity needed
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Performance Level Designation:

"JF" 0-10"Hg, [0 to 339mbar] for low vacuum / high flow applications

"JD" 0-20"Hg, [0 to 677mbar] for medium vacuum / high flow applications

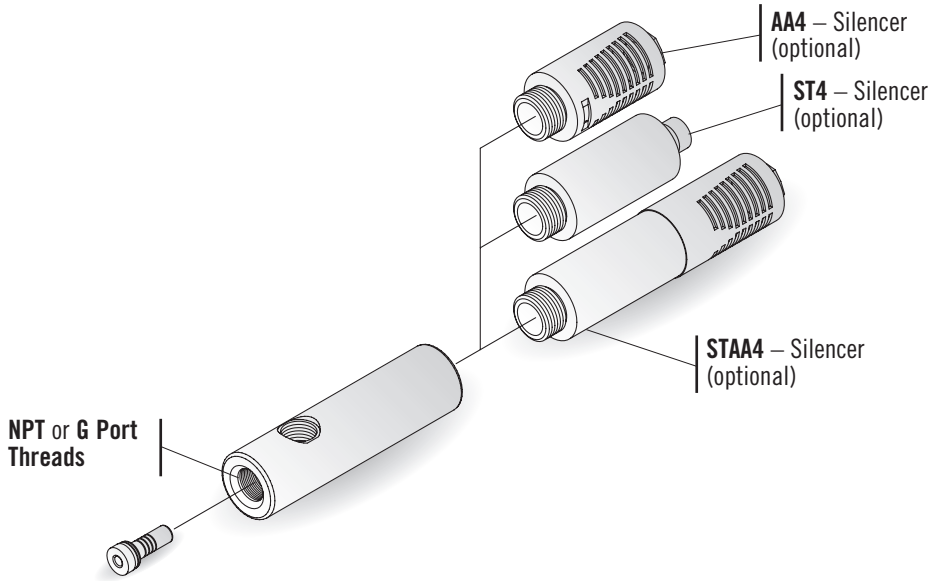
"JS" 0-28"Hg, [0 to 948mbar] for high vacuum / standard flow applications

Pump Options:

- Silencers: AA4-closed end silencer, ST4 - straight-through silencer won't clog, STAA4 silencers for ultra quiet operation.
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air supply 80 PSI [5.5BAR] standard, 60 PSI [4.0 BAR] optional
- For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin,™ Teflon,™ PVC.

J Series “M” Version Vacuum Pump – Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

P/N	Imp. Thread	Max. Vac.
JF	NPT	10"Hg [339mbar]
JD	NPT	20"Hg [677mbar]
JS	NPT	28"Hg [948mbar]

P/N	Metric Thread	Max. Vac.
I-JF	G Port	10"Hg [339mbar]
I-JD	G Port	20"Hg [677mbar]
I-JS	G Port	28"Hg [948mbar]

P/N	Max. Flow Level
-60M	Not available in JF Models
-90M	
-100M	
-150M	

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Standard)
60	60 PSI [4.0 BAR]



P/N	Material
	Anodized Aluminum (Standard)
303	303 Stainless Steel
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
TEF	PTFE
PK	PEEK
DEL	Acetal

P/N	Silencer*
	No Silencer (Standard)
AA4	AA4 - Closed-End
ST4	ST4 - Straight-Through
STAA4	STAA4 - Hybrid

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

For complete Performance Data, see page 189.

J Series “M” Version Pump Standard Specifications:

- Pump Material:** Anodized Aluminum Standard (for silencer material - see page 264)
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -100°F~400°F [-73°~204°C] (without silencer)
- Operating Pressure:** 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

J Series “M” Version Pump Operating and Installation Requirements:

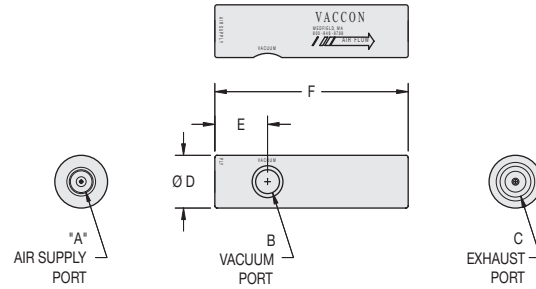
- Venturi size:** 60M and 90M 100M and 150M
- Supply Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line:** 1/4" O.D. [6mm] tube recommended 3/8" O.D. [10mm] tube recommended
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF-125LPM – See page 278 Typically filters are not required, if desired Vaccon recommends – VF-250F – See page 278

J-Series Cylindrical Venturi Pumps

Standard Pumps: J (F, D, S) – (60, 90, 100, 150) M



JS-100M



Specifications:

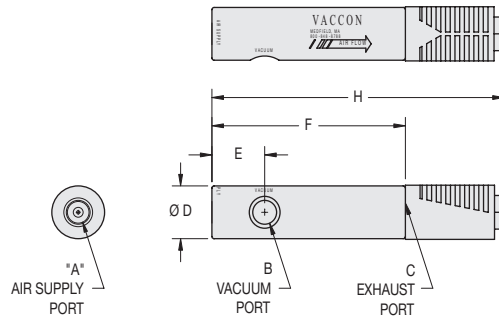
Weight 1.7 oz [48.2g]
Noise Level Vaccon highly recommends the use of silencers on all vacuum pumps unless the exhaust is being plumbed away.

Model #	Imperial Dimensions (in.)					
	A	B	C	D	E	F
J (F, D, S) – (60-150) M	1/8 NPT F	1/8 NPT F	1/4 NPT F	0.75	0.72	2.75
Model #	Metric Dimensions (mm)					
	A	B	C	D	E	F
I-J (F, D, S) – (60-150) M	G 1/8	G 1/8	G 1/4	19.1	19.1	69.9

J (F, D, S) – (60, 90, 100, 150) M Pump – Optional Silencer: AA4



JS-90M-AA4



Specifications:

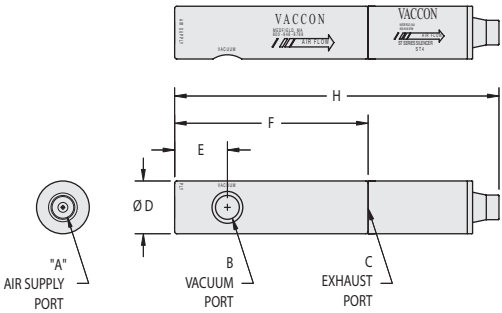
Weight 1.9 oz [53.9g]
Noise Level 64 dB

Model #	Imperial Dimensions (in.)						
	A	B	C	D	E	F	H
J (F, D, S) – (60-150) M-AA4	1/8 NPT F	1/8 NPT F	1/4 NPT F	0.75	0.75	2.75	4.55
Model #	Metric Dimensions (mm)						
	A	B	C	D	E	F	H
I-J (F, D, S) – (60-150) M-AA4	G 1/8	G 1/8	G 1/4	19.1	19.1	69.9	115.6

J (F, D, S) – (60, 90, 100, 150) M Pump – Optional Silencer: ST4



JD-60M-ST4



Specifications:

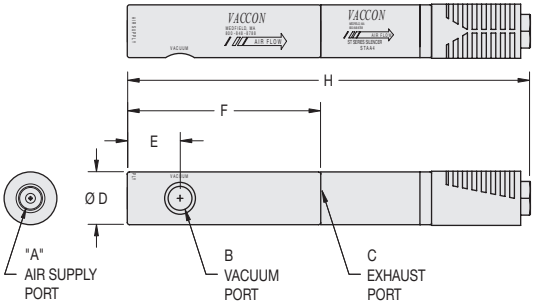
Weight 1.9 oz [53.9g]
 Noise Level 66 dB

Model #	Imperial Dimensions (in.)						
	A	B	C	D	E	F	H
J (F, D, S) – (60-150) M-ST4	1/8 NPT F	1/8 NPT F	1/4 NPT F	0.75	0.75	2.75	4.61
Model #	Metric Dimensions (mm)						
	A	B	C	D	E	F	H
I-J (F, D, S) – (60-150) M-ST4	G 1/8	G 1/8	G 1/4	19.1	19.1	69.9	117.1

J (F, D, S) – (60, 90, 100, 150) M Pump – Optional Silencer: STAA4



JS-150M-STAA4



Specifications:

Weight 2.1 oz [59.5g]
 Noise Level 58 dB

Model #	Imperial Dimensions (in.)						
	A	B	C	D	E	F	H
J (F, D, S) – (60-150) M-STAA4	1/8 NPT F	1/8 NPT F	1/4 NPT F	0.75	0.75	2.75	5.73
Model #	Metric Dimensions (mm)						
	A	B	C	D	E	F	H
I-J (F, D, S) – (60-150) M-STAA4	G 1/8	G 1/8	G 1/4	19.1	19.1	69.9	145.5

Cylindrical Venturi Vacuum Pumps

Mid J Series



JS-200-ST6A used extensively in vent-less molding applications i.e. rubber tire mold evacuation

Standard Pump:

The J-100 and J-150 models offer the same performance as their sister pumps, the J-100M and J-150M on page 168, but with larger ports.

The J-200 and 250's offer higher vacuum flows for rapid evacuation of large vessels and to overcome leakage to sustain high vacuum levels while handling porous materials.

Choose from 6 models that can generate up to 28"Hg [948mbar], and 10 SCFM [283LPM] of vacuum flow.

Lightweight, quiet and cool operating, J Series pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response. The single-stage design allows ingested contaminants to flow through the pump without clogging ensuring continuous operation. Constructed of a single material, with no seals or moving parts, J Series pumps are virtually indestructible. They can be manufactured in a variety of materials, making them ideal for use in adverse operating conditions.

J Series pumps provide a constant vacuum flow, rather than a fluctuating flow typically associated with diaphragm pumps. They operate with an instantaneous response in pulsed applications or on a continuous basis.

Performance Level Designation:

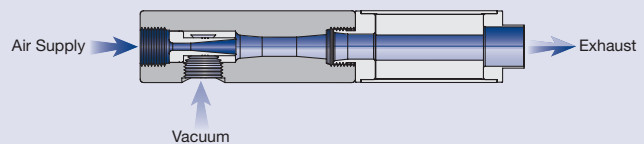
"JF" 0-10"Hg, [0 to 339mbar] for low vacuum / high flow applications

"JD" 0-20"Hg, [0 to 677mbar] for medium vacuum / high flow applications

"JS" 0-28"Hg, [0 to 948mbar] for high vacuum / standard flow applications

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser.



Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Pick and place medium to large size objects
- End-of-Arm Tooling / Robotics
- Vessel evacuation – molds/tanks/bottles/drums
- Packaging - bag/box/carton folding and handling
- Vacuum clamping/holding – fixtures, veneers
- Vacuum filling/bottling operations
- Food processing applications
- High temperature applications
- Caustic applications

Features/Benefits

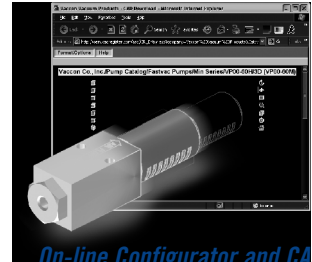
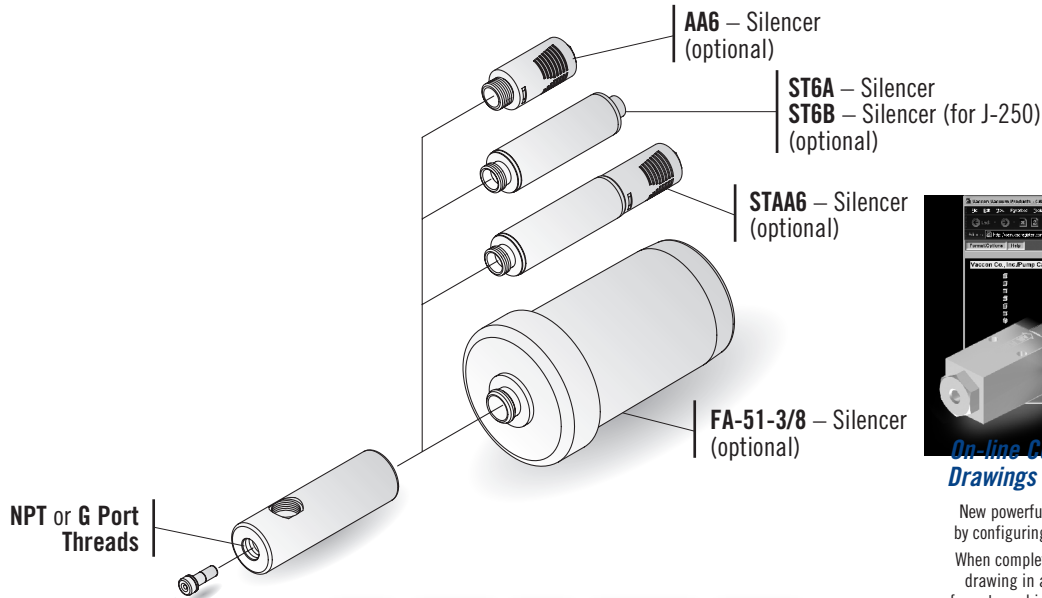
- High performance - powerful vacuum up to 28"Hg [948mbar]
- Durable – rugged aluminum body construction
- Compact & lightweight – easily fits in confined spaces
- Fast response – Mounts in-line, and installs close to vacuum point – no delay due to long plumbing lines
- Efficient – Minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – No electricity needed
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Pump Options:

- Silencers: AA6-closed end silencer, ST6A - straight-through silencer won't clog, STAA6 silencers for ultra quiet operation and FA-51-3/8 for high-flow applications
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air requirements (80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional).
- For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin,™ Teflon,™ PVC.

J (F, D, S)-(100, 150, 200, 250) Series – Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

P/N	Imp. Thread	Max. Vac.
JF	NPT	10"Hg [339mbar]
JD	NPT	20"Hg [677mbar]
JS	NPT	28"Hg [948mbar]

P/N	Metric Thread	Max. Vac.
I-JF	G Port	10"Hg [339mbar]
I-JD	G Port	20"Hg [677mbar]
I-JS	G Port	28"Hg [948mbar]

P/N	Max. Flow Level
-100	
-150	
-200	
-250	

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Standard)
60	60 PSI [4.0 BAR]



P/N	Material
	Anodized Aluminum (Standard)
303	303 Stainless Steel
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
TEF	PTFE
PK	PEEK
DEL	Acetal

P/N	Silencer*
	No Silencer (Standard)
AA6	AA6 – Closed-End
ST6A	ST6A – Straight-Through
ST6B	ST6B – Straight-Through (for J-250 Series)
STAA6	STAA6 – Hybrid
FA-51-3/8	FA-51-3/8 – High Flow

For complete Performance Data, see page 189.

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

J Series 100-250 Cylindrical Vacuum Pump Standard Specifications:

- Pump Material:** Anodized Aluminum Standard (for silencer material - see page 264 - 269.)
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -100°F~400°F [-73°~204°C] (without silencer)
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

J Series 100-250 Cylindrical Vacuum Pump Operating and Installation Requirements:

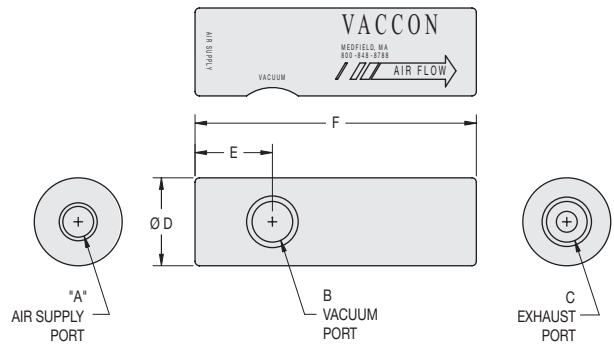
- Supply Line:** Minimum recommended – 3/8" O.D. [10mm] Preferred – 1/2" [12mm] OD tubing – for J250's
- Vacuum Line:** Minimum recommended – 3/8" O.D. [10mm] Preferred – 1/2" [12mm] OD tubing – for J250's
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF375F. See page 278.

J-Series Cylindrical Venturi Pumps

Standard Pump: J (F, D, S) – (100, 150, 200, 250)



JD-100



Specifications:

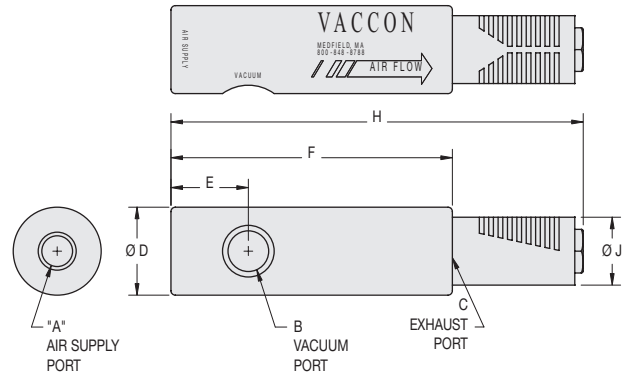
- Weight:** 6.9 oz [195.6g]
- Noise Level:** Vaccon highly recommends the use of silencers on all vacuum pumps unless the exhaust is being plumbed away.

Model #	Imperial Dimensions (in.)					
	A	B	C	D	E	F
J (F, D, S) – (100-250)	1/4 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	4.00
Model #	Metric Dimensions (mm)					
	A	B	C	D	E	F
I- J (F, D, S) – (100-250)	G 1/4	G 3/8	G 3/8	31.8	27.9	101.6

J (F, D, S) – (100, 150, 200) Pump – Optional Silencer: AA6



JS-200-AA6 (AA6 silencer not recommended on J-250 pumps)



Specifications:

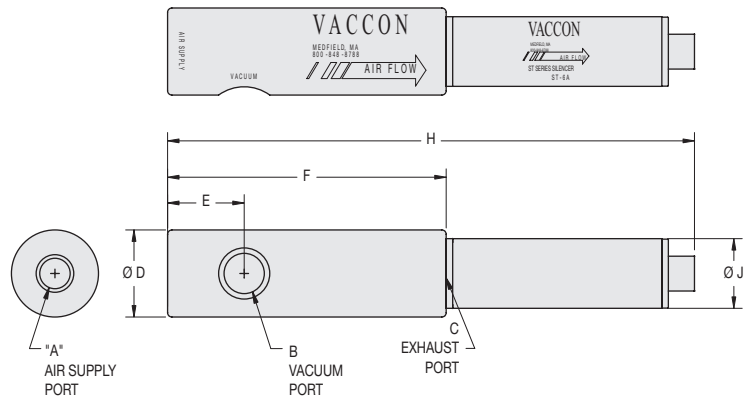
- Weight:** 7.2 oz [204.1g]
- Noise Level:** 70 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – (100, 150, 200) - AA6	1/4 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	4.00	5.86	1.00
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I- J (F, D, S) – (100, 150, 200) - AA6	G 1/4	G 3/8	G 3/8	31.8	27.9	101.6	148.8	25.4

J (F, D, S) – (100, 150, 200, 250) Pump – Optional Silencer: ST6A



JF-150-ST6A



Specifications:

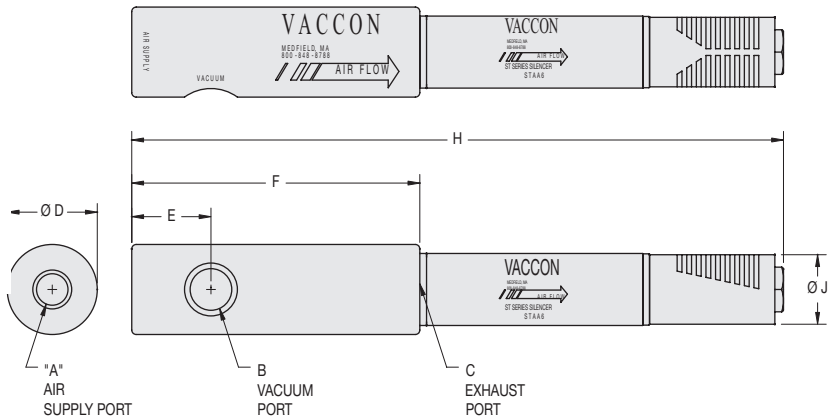
Weight: 8.6 oz [243.8g]
Noise Level: 72 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – (100-250) - ST6A	1/4 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	4.00	7.57	1.00
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-J (F, D, S) – (100-250) - ST6A	G 1/4	G 3/8	G 3/8	31.8	27.9	101.6	192.2	25.4

J (F, D, S) – (100, 150, 200) Pump – Optional Silencer: STAA6



JS-200-STAA6 (STAA6 silencer not recommended on J-250 pumps)



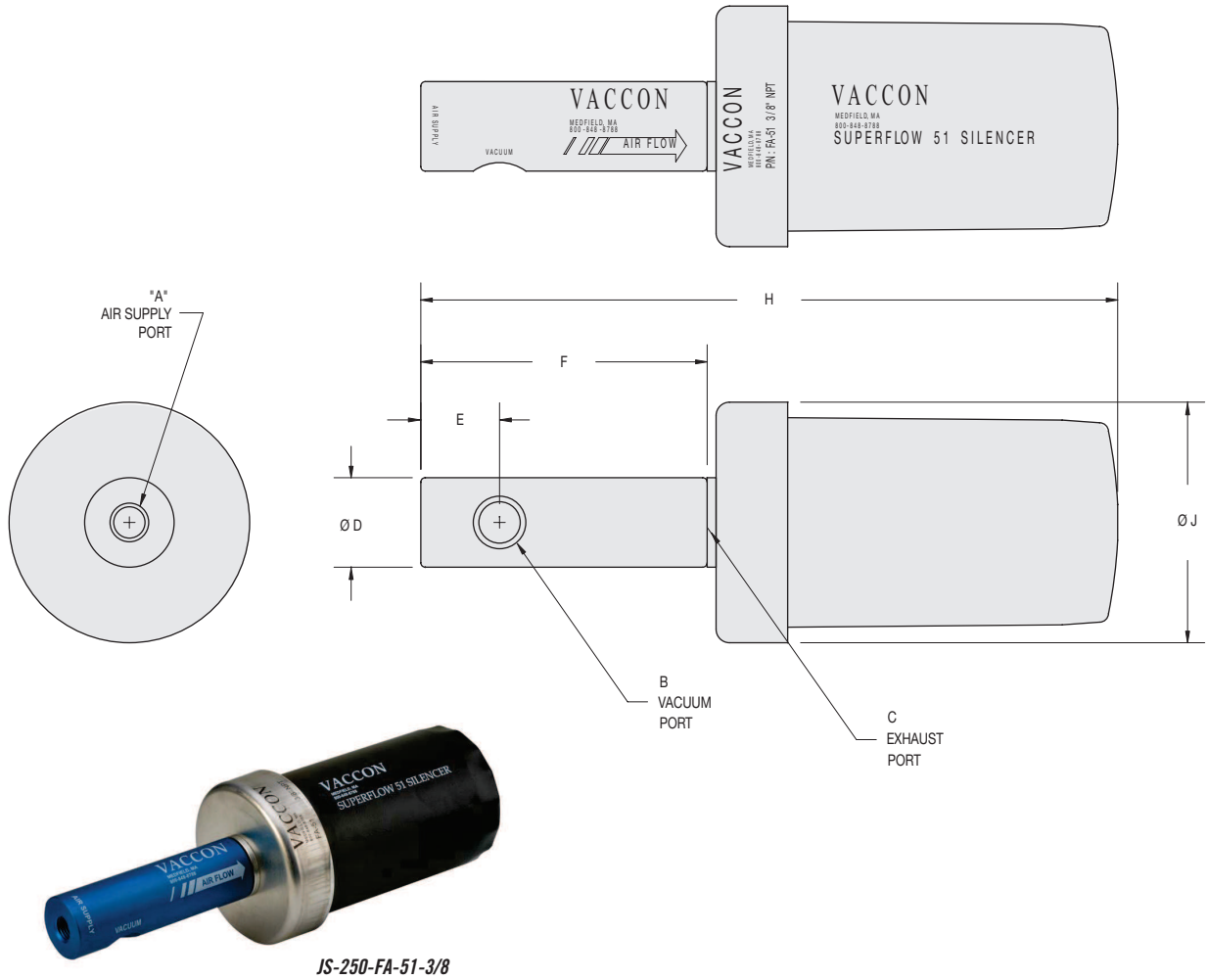
Specifications:

Weight: 8.7 oz [246.6g]
Noise Level: 66 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – (100, 150, 200) - STAA6	1/4 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	4.00	9.05	1.00
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-J (F, D, S) – (100, 150, 200) - STAA6	G 1/4	G 3/8	G 3/8	31.8	27.9	101.6	229.9	25.4

J-Series Cylindrical Venturi Pumps

J (F, D, S) – (100, 150, 200, 250) Pump – Optional Silencer: FA-51-3/8



Specifications:

Weight: 1 lb. 4 oz [567g]
 Noise Level: 72 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – (100-250) - FA-51 3/8	1/4 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	4.00	9.74	3.36
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-J (F, D, S) – (100-250) - FA-51 3/8	G 1/4	G 3/8	G 3/8	31.8	27.9	101.6	247.3	85.3

Note: RF-51 - Silencer replacement element available – see page 269.



Cylindrical Venturi Vacuum Pumps

Max J Series



Standard Pump:

The J-300 & 350 Series cylindrical venturi vacuum pumps offer higher vacuum flows for rapid evacuation of large vessels and to overcome leakage to sustain high vacuum levels while handling porous materials. Choose from 3 models that can generate up to 28" Hg [948mbar] and 28 SCFM [793LPM] of vacuum flow.

These high vacuum flow pumps are ideal for providing vacuum to large cups or a group of cups. When handling non-porous items like sheet metal, the J300 & 350 pumps provide rapid evacuation to reach vacuum quickly for very high-speed handling. When handling porous materials these pumps will overcome leakage and maintain a strong grip.

Lightweight, quiet and cool operating, J Series pumps are ideal for confined spaces, where they can be mounted in-line near the point of use for rapid response. The single-stage design allows ingested contaminants to flow through the pump without clogging ensuring continuous operation. Constructed of a single material, with no seals or moving parts, J Series pumps are virtually indestructible. They can be manufactured in a variety of materials, making them ideal for use in adverse operating conditions

J Series pumps provide a constant vacuum flow, rather than a fluctuating flow typically associated with diaphragm pumps. They operate with an instantaneous response in pulsed applications or on a continuous basis.

Ideal Applications:

- Pick and place of large objects
- End-of-Arm Tooling / Robotics
- Vessel evacuation – molds/tanks/bottles/drums
- Packaging – bag/box/carton folding/handling
- Vacuum clamping/holding – fixtures, veneers
- Vacuum filling/bottling operations
- Food processing applications
- High temperature applications
- Caustic applications

Features/Benefits

- High performance – powerful vacuum up to 28" Hg [948mbar]
- Durable – rugged aluminum body construction
- Fast response – Mounts in-line, and installs close to vacuum point
- Efficient – Minimal air consumption, provides instantaneous vacuum as needed
- Safe operation – No electricity needed
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Performance Level Designation:

"JF" 0-10" Hg, [0 to 339mbar] for low vacuum / high flow applications

"JD" 0-20" Hg, [0 to 677mbar] for medium vacuum / high flow applications

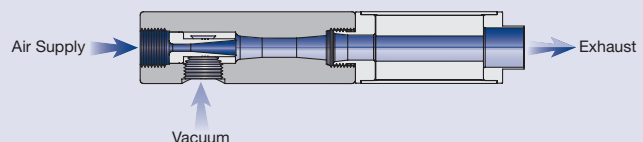
"JS" 0-28" Hg, [0 to 948mbar] for high vacuum / standard flow applications

Pump Options:

- Silencers: ST6B & ST8B – straight-through silencer won't clog, and FA-51-3/8 & FA-51-1/2 for high flow applications
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures to meet machine and factory air requirements (80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional).
- For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin,™ Teflon,™ PVC.

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser.



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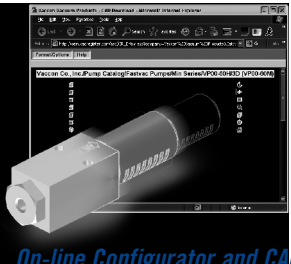
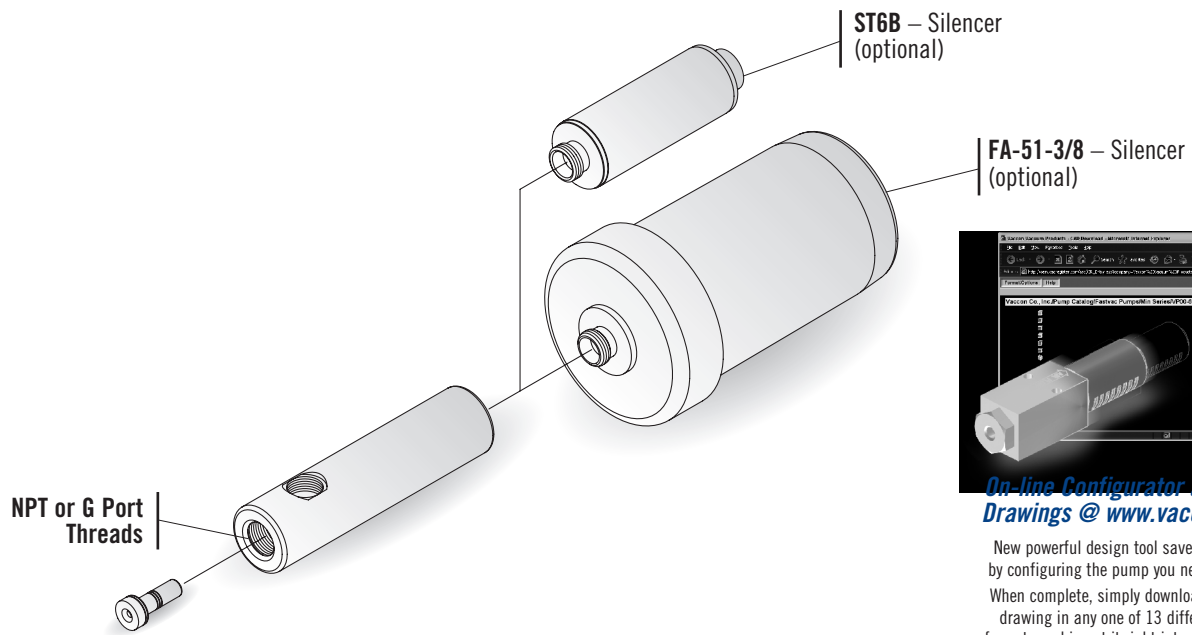
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

J (F, D, S)-300 Series – Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

JS-300 - 60 - ST6B

P/N	Imp. Thread	Max. Vac.
JF-300	NPT	10"Hg [339mbar]
JD-300	NPT	20"Hg [677mbar]
JS-300	NPT	28"Hg [948mbar]

P/N	Metric Thread	Max. Vac.
I-JF-300	G Port	10"Hg [339mbar]
I-JD-300	G Port	20"Hg [677mbar]
I-JS-300	G Port	28"Hg [948mbar]

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Standard)
60	60 PSI [4.0 BAR]

P/N	Material
	Anodized Aluminum (Standard)
303	303 Stainless Steel
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
TEF	PTFE
PK	PEEK
DEL	Acetal

P/N	Silencer*
	No Silencer (Standard)
ST6B	ST6B – Straight-Through
FA-51-3/8	FA-51-3/8 High Flow

For complete Performance Data, see page 189.

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

J 300 Cylindrical Vacuum Pump Standard Specifications:

- Pump Material:** Anodized Aluminum Standard (For silencer material - See page 266 - 269.)
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -100°F~400°F [-73°~204°C] (without silencer)
- Operating Pressure:** 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

J 300 Cylindrical Vacuum Pump Operating and Installation Requirements:

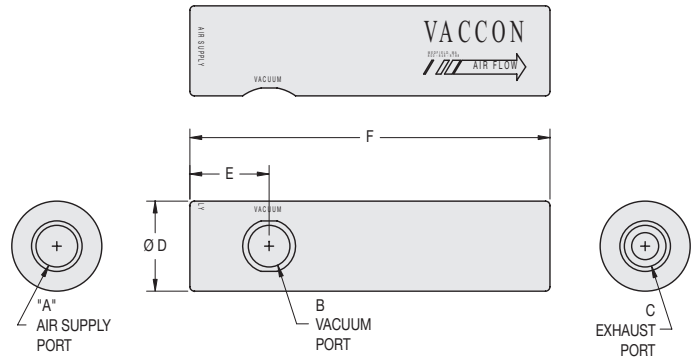
- Supply Line:** Minimum recommended – 1/2" O.D. [12mm] Preferred OD tubing
- Vacuum Line:** Minimum recommended – 1/2" O.D. [12mm] Preferred – 3/4" [19mm] OD for vacuum lines exceeding 3' [1M]
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF500F. See page 278.

J-Series Cylindrical Venturi Pumps

Standard Pump: J (F, D, S) – 300



JD-300



Specifications:

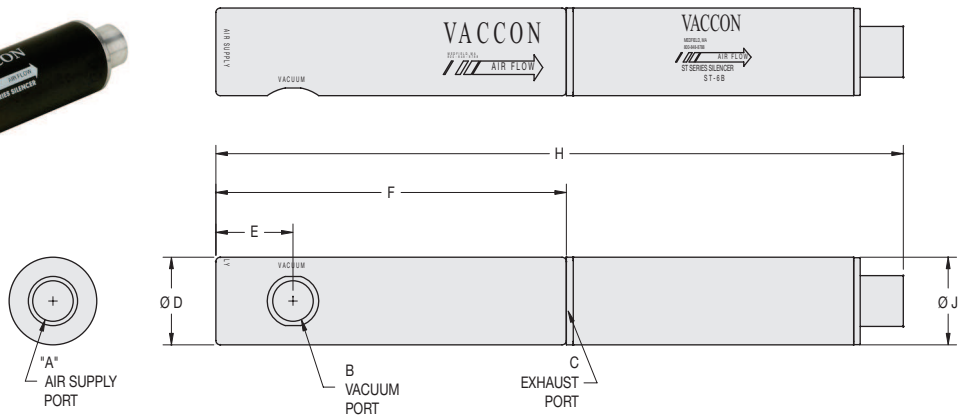
Weight: 8.5 oz [241g]
Noise Level: Vaccon highly recommends the use of silencers on all vacuum pumps unless the exhaust is being plumbed away.

Model #	Imperial Dimensions (in.)					
	A	B	C	D	E	F
J (F, D, S) – 300	3/8 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	5.00
Model #	Metric Dimensions (mm)					
	A	B	C	D	E	F
I-J (F, D, S) – 300	G 3/8	G 3/8	G 3/8	31.8	27.9	127.0

J (F, D, S) – 300 Pump – Optional Silencer: ST6B



JS-300-ST6B

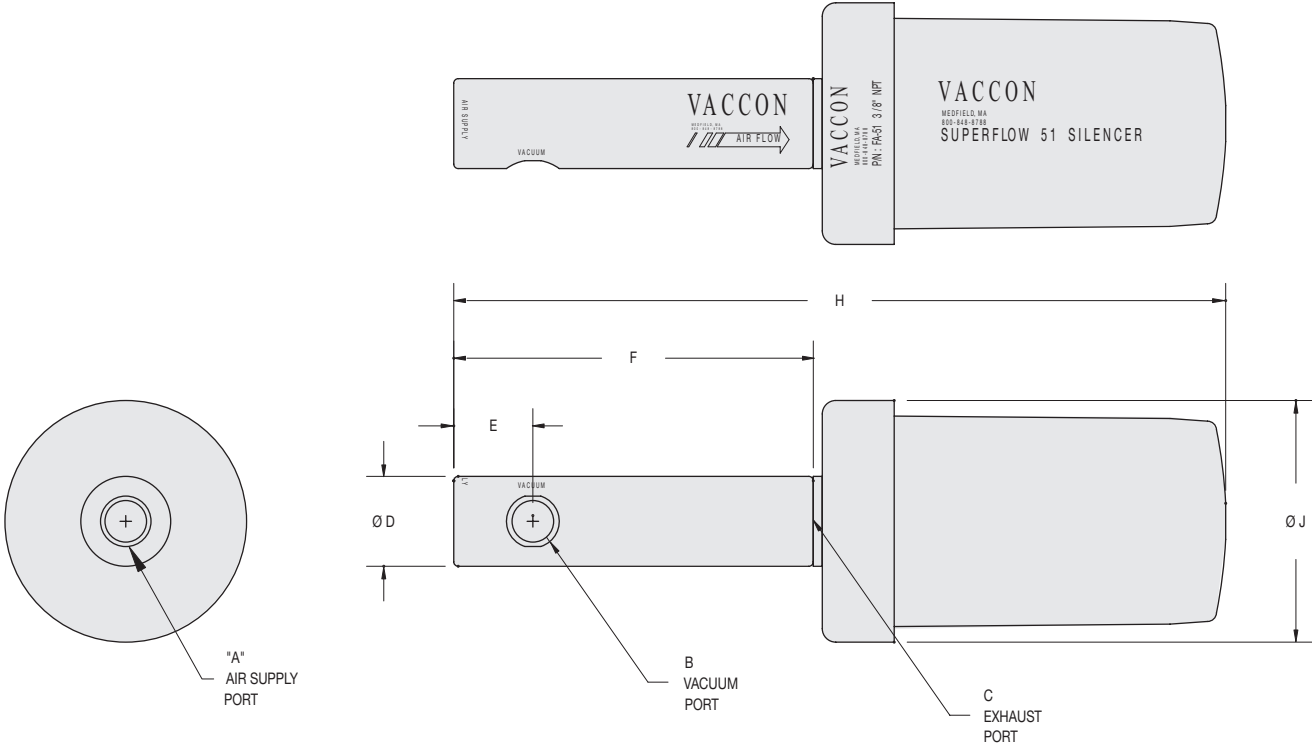


Specifications:

Weight: 12 oz [340g]
Noise Level: 72 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – 300 - ST6B	3/8 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	5.00	9.81	1.25
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-J (F, D, S) – 300 - ST6B	G 3/8	G 3/8	G 3/8	31.8	27.9	127.0	249.2	31.8

J (F, D, S) – 300 Pump – Optional Silencer: FA-51-3/8



ID-300-FA-51-3/8

Specifications:

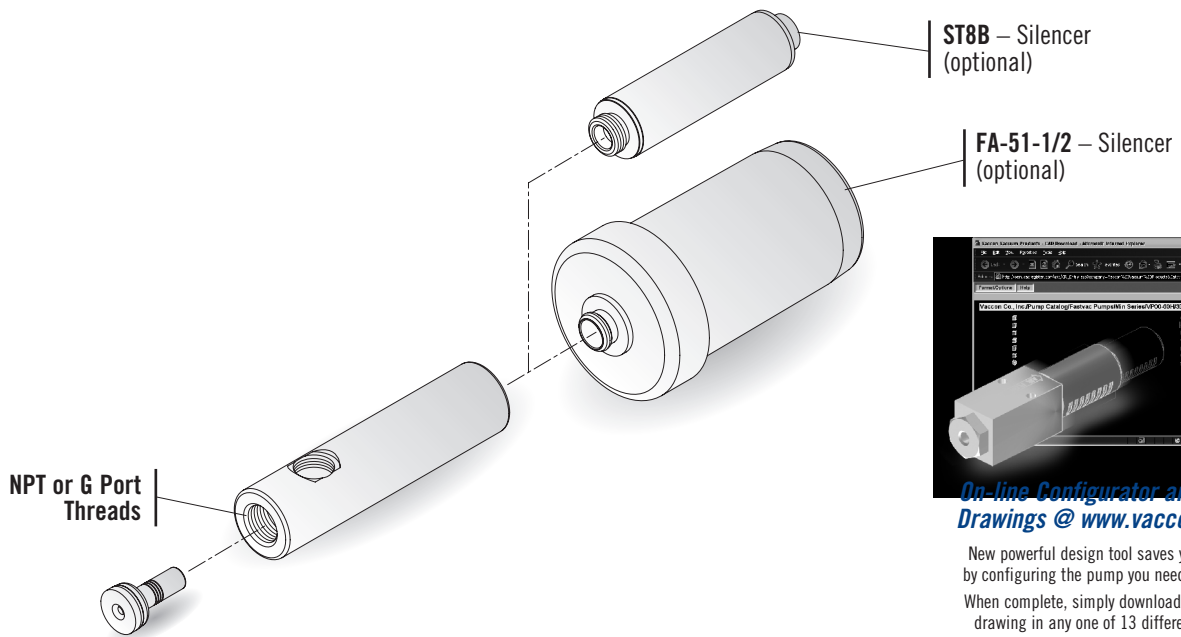
Weight 1 lb. 5 oz [598g]
 Noise Level 72 dB

Model #	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	J
J (F, D, S) – 300 - FA-51-3/8	3/8 NPT F	3/8 NPT F	3/8 NPT F	1.25	1.10	5.00	10.74	3.36
Model #	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	J
I-J (F, D, S) – 300 - FA-51-3/8	G 3/8	G 3/8	G 3/8	31.8	27.9	127.0	272.7	85.3

J-Series Cylindrical Venturi Pumps

J (F, D, S)-350 Series – Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

P/N	Imp. Thread	Max. Vac.
JF-350	NPT	10"Hg [339mbar]
JD-350	NPT	20"Hg [677mbar]
JS-350	NPT	28"Hg [948mbar]

P/N	Metric Thread	Max. Vac.
I-JF-350	G Port	10"Hg [339mbar]
I-JD-350	G Port	20"Hg [677mbar]
I-JS-350	G Port	28"Hg [948mbar]

P/N	Operating Pressure
	80 PSI [5.5 BAR] (Standard)
60	60 PSI [4.0 BAR]

For complete Performance Data, see page 189.



P/N	Material
	Anodized Aluminum (Standard)
303	303 Stainless Steel
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
TEF	PTFE
PK	PEEK
DEL	Acetal

P/N	Silencer*
	No Silencer (Standard)
ST8B	ST8B - Straight-through
FA-51-1/2	FA-51-1/2 High Flow

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

J 350 Cylindrical Vacuum Pump Standard Specifications:

- Pump Material:** Anodized Aluminum Standard (For silencer material - see page 266 - 269.)
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -100°F~400°F [-73°~204°C] (without silencer)
- Operating Pressure:** 80 PSI [5.5 BAR] standard or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

J 350 Cylindrical Vacuum Pump Operating and Installation Requirements:

- Supply Line:** Minimum recommended – 1/2" O.D. [12mm] Preferred OD tubing
- Vacuum Line:** Minimum recommended – 1/2" O.D. [12mm] Preferred – 3/4" [19mm] OD for vacuum lines exceeding 3' [1M]
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF500F. See page 278.

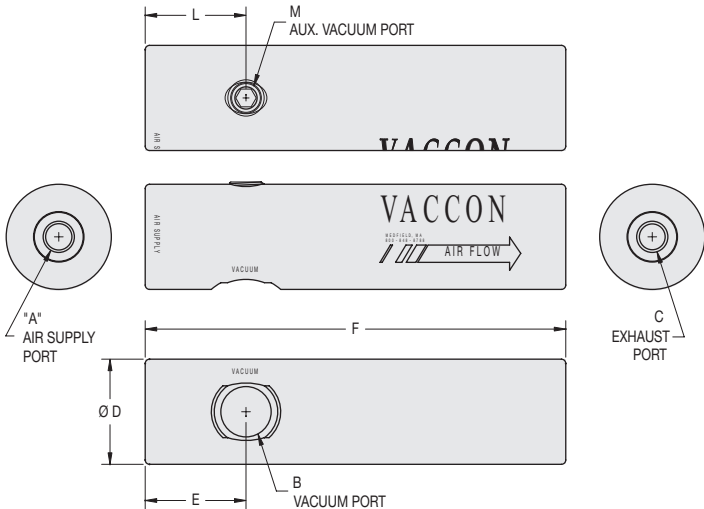
Standard Pump: J (F, D, S) – 350



JS-350

Specifications:

Weight 15 oz [425g]
Noise Level Vaccon highly recommends the use of silencers on all vacuum pumps unless the exhaust is being plumbed away.



Model #	Imperial Dimensions (in.)										
	A	B	C	D	E	F	H	J	K	L	M
J (F, D, S) – 350	1/2 NPT F	1/2 NPT F	1/2 NPT F	1.50	1.44	6.00	–	–	–	1.44	1/4 NPT F
Model #	Metric Dimensions (mm)										
	A	B	C	D	E	F	H	J	K	L	M
I-J (F, D, S) – 350	G 1/2	G 1/2	G 1/2	38.1	36.5	152.4	–	–	–	36.6	G 1/4

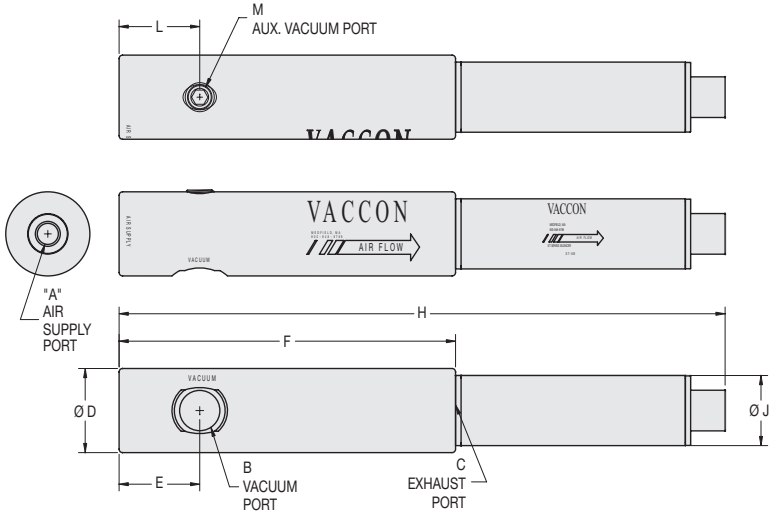
J (F, D, S) – 350 Pump – Optional Silencer: ST8B



JS-350-ST8B

Specifications:

Weight 1 lb 2 oz [510g]
Noise Level 76 dB

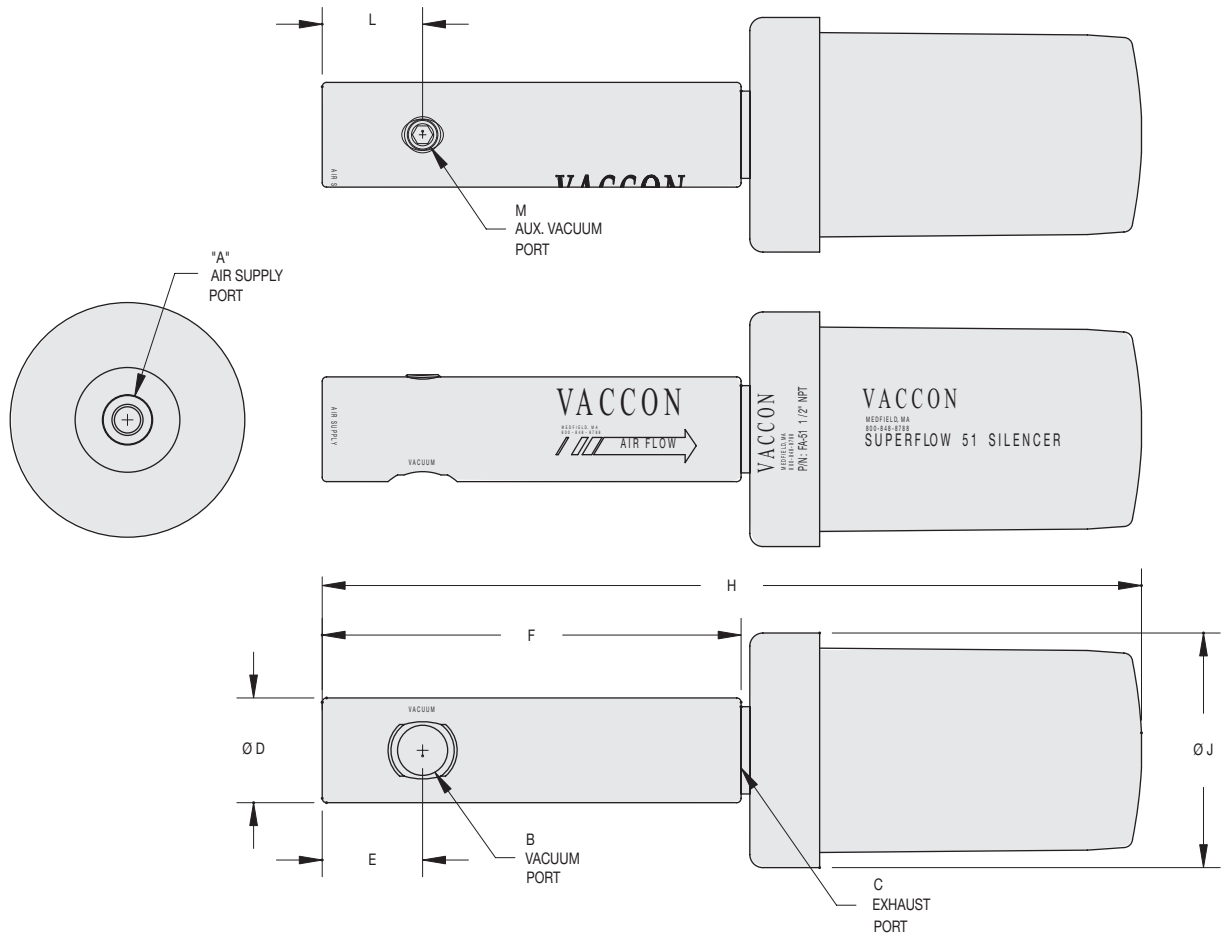


Model #	Imperial Dimensions (in.)										
	A	B	C	D	E	F	H	J	K	L	M
J (F, D, S) – 350-ST8B	1/2 NPT F	1/2 NPT F	1/2 NPT F	1.50	1.44	6.00	10.81	1.25	–	1.44	1/4 NPT F
Model #	Metric Dimensions (mm)										
	A	B	C	D	E	F	H	J	K	L	M
I-J (F, D, S) – 350-ST8B	G 1/2	G 1/2	G 1/2	38.1	36.5	152.4	274.6	31.8	–	36.5	G 1/4



J-Series Cylindrical Venturi Pumps

J (F, D, S) – 350 Pump – Optional Silencer: FA-51-3/8



JD-350-FA-51-1/2

Specifications:

Weight 1 lb 11 oz [765g]
 Noise Level 74 db

Model #	Imperial Dimensions (in.)										
	A	B	C	D	E	F	H	J	K	L	M
J (F, D, S) – 350 - FA-51-1/2	1/2 NPT F	1/2 NPT F	1/2 NPT F	1.50	1.44	6.00	11.74	3.36	–	1.44	1/4 NPT F
Model #	Metric Dimensions (mm)										
	A	B	C	D	E	F	H	J	K	L	M
I-J (F, D, S) – 350 - FA-51-1/2	G 1/2	G 1/2	G 1/2	38.1	36.5	152.4	298.1	85.3	–	36.5	G 1/4

J-Series – Performance Data

JF Series Pumps

F-Series Mini Venturis – Low Vacuum Applications	184
F-Series Venturis – Low Vacuum Applications	185

JD Series Pumps

D-Series Mini Venturis – Medium Vacuum Applications	186
D-Series Venturis – Medium Vacuum Applications	187

JS Series Pumps

S-Series Mini Venturis – Max Vacuum Applications	188
S-Series Venturis – Max Vacuum Applications	189

When comparing Vaccon venturi vacuum pumps to our competitors...

Compare vacuum flows in the working range (9 "Hg - 27 "Hg) where work is actually accomplished. Comparing vacuum flow at 0 "Hg is like comparing the output of a compressor at 0 PSI. High flow at 0 "Hg is meaningless...no work is done at 0 "Hg.

Consider the analogy of an air compressor to a vacuum pump...

Suppose a compressor dealer claims a compressor generates 100,000 CFM at 0 PSI (exaggeration) but only 1 CFM at 80 PSI... Is the 0 PSI flow rate meaningful? The same holds true for a vacuum pump flow rating at 0 "Hg.

1st - Compare Max. Vacuum Level, 2nd - Compare Air Consumption (Operating Pressure is not important), 3rd - Compare Vacuum Flow in the working range

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level ("Hg)										
		0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	27"Hg	28"Hg
JS-200	7.80	5.40	4.70	3.85	3.30	3.00	2.60	2.10	1.60	1.20	0.60	0.00



Performance Data for JF Series Pumps

F-Series Venturis – Low Vacuum Applications

F is for “Low” vacuum levels up to 10”Hg [339mbar] for handling delicate parts, thin walled materials and for process control applications.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
JF-90M	0.50	1.30	1.10	0.70	0.20	0.00
JF-100M	1.40	2.10	1.60	1.10	0.50	0.00
JF-100						
JF-150M	1.80	3.50	2.50	1.90	0.70	0.00
JF-150						

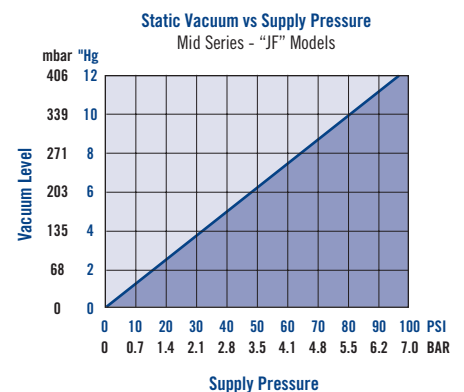
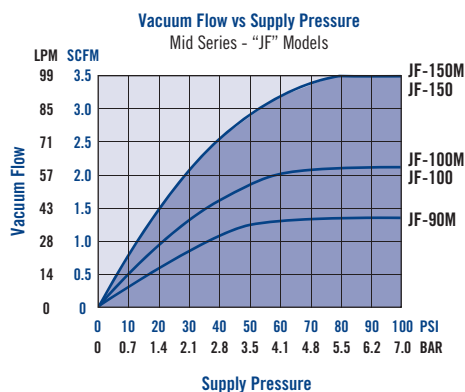
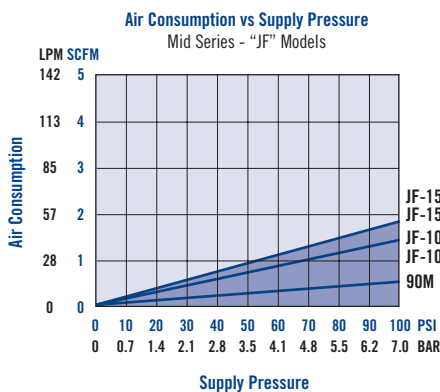
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
JF-90M		0.00	3.26	7.93	18.65	39.63
JF-100M		0.00	2.33	4.66	10.88	24.09
JF-100						
JF-150M		0.00	2.05	4.62	11.80	22.80
JF-150						

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0mbar	102mbar	203mbar	305mbar	339mbar
JF-90M	14.2	36.8	31.1	19.8	5.7	0.0
JF-100M	39.6	59.5	45.3	31.1	14.2	0.0
JF-100						
JF-150M	51.0	99.1	70.8	53.8	19.8	0.0
JF-150						

Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar				
		0mbar	102mbar	203mbar	305mbar	339mbar
JF-90M		0.0	0.1	0.3	0.7	1.4
JF-100M		0.0	0.1	0.2	0.4	0.9
JF-100						
JF-150M		0.0	0.1	0.2	0.4	0.8
JF-150						

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for JF Series Pumps

F-Series Venturis – Low Vacuum Applications

F is for “Low” vacuum levels up to 10”Hg [339mbar] for handling delicate parts, thin walled materials and for process control applications.

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)				
		0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
JF-200	2.80	6.00	5.80	4.30	1.70	0.00
JF-250	4.80	9.50	7.90	5.70	2.20	0.00
JF-300	7.80	20.00	14.00	9.50	3.50	0.00
JF-350	12.50	28.00	18.00	12.30	4.50	0.00

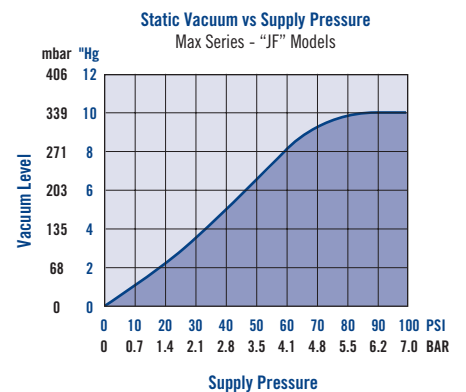
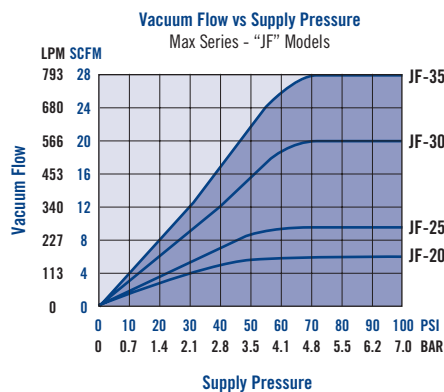
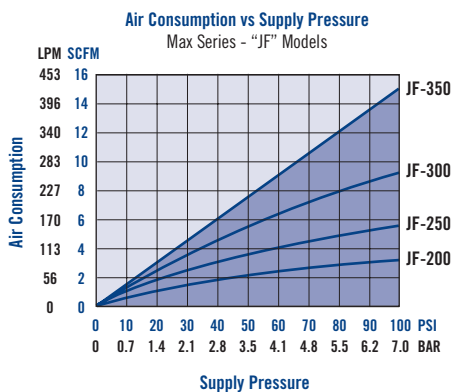
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg				
	0”Hg	3”Hg	6”Hg	9”Hg	10”Hg
JF-200	0.00	0.77	2.05	4.62	13.34
JF-250	0.00	0.52	1.28	3.08	7.95
JF-300	0.00	0.26	0.77	1.80	4.10
JF-350	0.00	0.00	0.52	1.28	2.82

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)				
		0mbar	102mbar	203mbar	305mbar	339mbar
JF-200	79.3	169.9	164.2	121.8	48.1	0.0
JF-250	135.9	269.0	223.7	161.4	62.3	0.0
JF-300	220.9	566.3	396.4	269.0	99.1	0.0
JF-350	354.0	792.9	509.7	348.3	127.4	0.0

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar				
	0mbar	102mbar	203mbar	305mbar	339mbar
JF-200	0.0	0.0	0.1	0.2	0.5
JF-250	0.0	0.0	0.0	0.1	0.3
JF-300	0.0	0.0	0.0	0.1	0.1
JF-350	0.0	0.0	0.0	0.0	0.1

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for JD Series Pumps

D-Series Venturis – Medium Vacuum Applications

D is for “Medium” vacuum levels up to 20”Hg [667mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
JD-60M	0.50	0.50	0.40	0.30	0.22	0.15	0.08	0.03	0.00
JD-90M	1.40	1.40	1.25	1.20	1.05	0.85	0.65	0.25	0.00
JD-100M	1.80	2.10	2.00	1.85	1.75	1.60	1.25	0.80	0.00
JD-100									
JD-150M	2.80	3.50	3.20	2.95	2.75	2.50	1.80	0.95	0.00
JD-150									

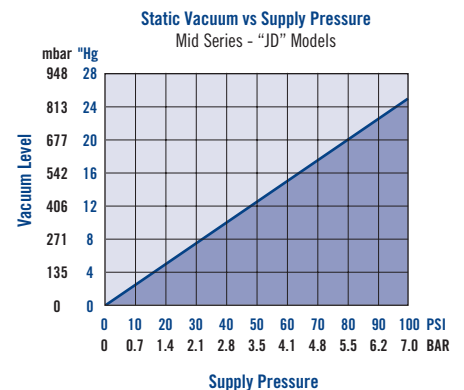
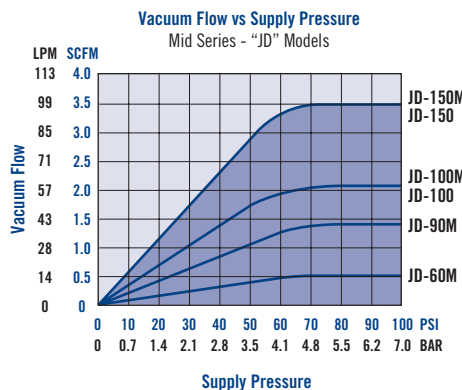
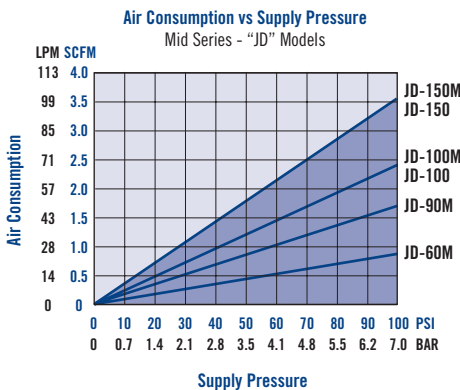
Model #	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg								
	0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg	
JD-60M	0.00	12.50	25.10	43.90	68.60	99.30	153.70	227.00	
JD-90M	0.00	3.75	7.20	12.40	19.10	29.90	52.00	104.00	
JD-100M	0.00	2.65	5.80	9.90	16.20	22.90	36.20	56.60	
JD-100									
JD-150M	0.00	1.35	3.20	5.20	7.70	11.80	23.40	52.00	
JD-150									

Model #	Air Consumption LPM	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	677mbar
JD-60M	14.2	14.2	11.3	8.5	6.2	4.2	2.3	0.8	0.0
JD-90M	39.6	39.6	35.4	34.0	29.7	24.1	18.4	7.1	0.0
JD-100M	51.0	59.5	56.6	52.4	49.6	45.3	35.4	22.7	0.0
JD-100									
JD-150M	79.3	99.1	90.6	83.5	77.9	70.8	51.0	26.9	0.0
JD-150									

Model #	Evacuation Time in Seconds based on 1 Liter Volume/mbar								
	0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	677mbar	
JD-60M	0.0	0.4	0.9	1.6	2.4	3.5	5.4	8.0	
JD-90M	0.0	0.1	0.3	0.4	0.7	1.1	1.8	3.7	
JD-100M	0.0	0.1	0.2	0.3	0.6	0.8	1.3	2.0	
JD-100									
JD-150M	0.0	0.0	0.1	0.2	0.3	0.4	0.8	1.8	
JD-150									

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for JD Series Pumps

D-Series Venturis – Medium Vacuum Applications

D is for “Medium” vacuum levels up to 20”Hg [667mbar] for applications involving porous materials (cardboard, wood, masonry, baked goods, textiles)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
JD-200	4.80	6.00	5.30	4.90	4.00	3.50	2.50	1.10	0.00
JD-250	7.80	9.50	9.20	8.30	7.00	4.70	3.40	2.20	0.00
JD-300	12.50	20.00	19.00	16.30	13.80	8.10	5.50	3.30	0.00
JD-350	22.00	28.00	24.00	19.40	16.80	14.50	11.20	4.80	0.00

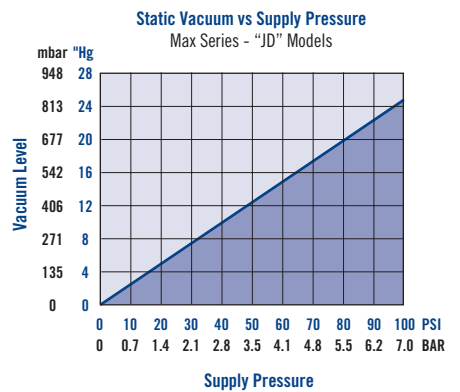
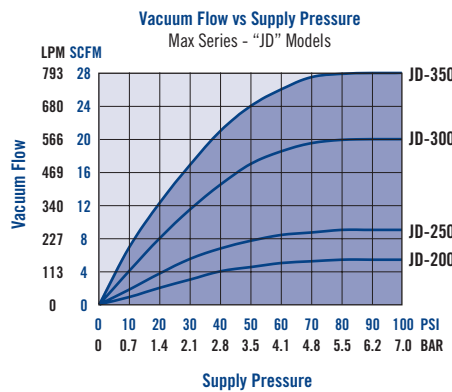
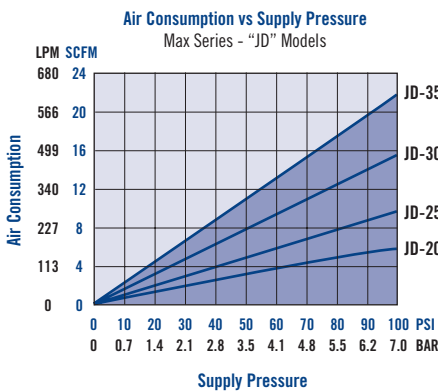
Model #	Air Consumption SCFM	Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg							
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	20”Hg
JD-200	4.80	0.00	0.75	1.90	3.20	5.30	8.70	17.10	42.60
JD-250	7.80	0.00	0.45	1.10	2.40	3.80	6.00	9.70	15.40
JD-300	12.50	0.00	0.00	0.00	1.10	1.80	2.70	4.60	8.70
JD-350	22.00	0.00	0.00	0.00	1.00	1.50	2.10	4.30	8.40

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)							
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	677mbar
JD-200	135.9	169.9	150.1	138.8	113.3	99.1	70.8	31.1	0.0
JD-250	220.9	269.0	260.5	235.0	198.2	133.1	96.3	62.3	0.0
JD-300	354.0	566.3	538.0	461.6	390.8	229.4	155.7	93.4	0.0
JD-350	623.0	792.9	679.6	549.3	475.7	410.6	317.1	135.9	0.0

Model #	Air Consumption L/min	Evacuation Time in Seconds based on 1 Liter Volume/mbar							
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	677mbar
JD-200	135.9	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.5
JD-250	220.9	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5
JD-300	354.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3
JD-350	623.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for JS Series Pumps

S-Series Venturis – High Vacuum Applications

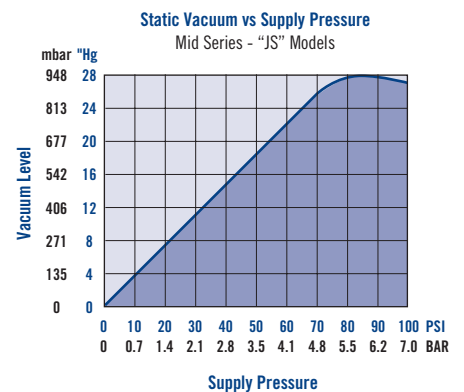
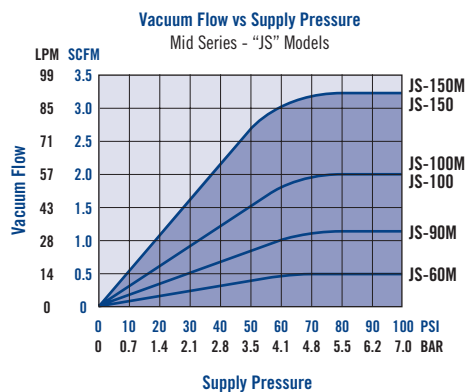
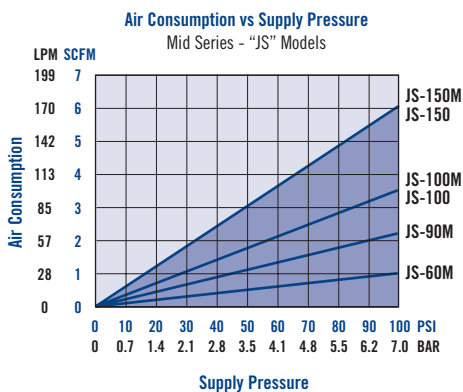
S is for “High” vacuum levels up to 28”Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27 Hg	28”Hg
JS-60M	0.80	0.50	0.38	0.32	0.30	0.27	0.23	0.20	0.13	0.05	0.02	0.00
JS-90M	1.80	1.20	1.00	0.95	0.90	0.85	0.75	0.70	0.52	0.47	0.20	0.00
JS-100M	2.80	2.00	1.85	1.75	1.57	1.40	1.25	1.05	0.84	0.70	0.35	0.00
JS-100												
JS-150M	4.80	3.20	2.80	2.50	2.30	2.00	1.60	1.40	1.20	0.80	0.50	0.00
JS-150												
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
JS-60M		0.00	15.00	29.80	50.60	74.50	102.80	135.90	183.20	245.90	410.20	790.80
JS-90M		0.00	6.50	12.30	18.90	32.50	47.00	65.40	92.20	130.00	222.20	281.30
JS-100M		0.00	2.70	6.50	11.20	17.50	25.80	38.40	55.20	79.20	166.70	251.80
JS-100												
JS-150M		0.00	2.30	3.80	6.50	10.20	14.20	21.30	44.90	55.00	81.00	125.00
JS-150												

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	813mbar	914mbar	948mbar
JS-60M	22.7	14.2	10.8	9.1	8.5	7.6	6.5	5.7	3.7	1.4	0.6	0.0
JS-90M	51.0	34.0	28.3	26.9	25.5	24.1	21.2	19.8	14.7	13.3	5.7	0.0
JS-100M	79.3	56.6	52.4	49.6	44.5	39.6	35.4	29.7	23.8	19.8	9.9	0.0
JS-100												
JS-150M	135.9	90.6	79.3	70.8	65.1	56.6	45.3	39.6	34.0	22.7	14.2	0.0
JS-150												
Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	813mbar	914mbar	948mbar
JS-60M		0.0	0.5	1.1	1.8	2.6	3.6	4.8	6.5	8.7	14.5	27.9
JS-90M		0.0	0.2	0.4	0.7	1.1	1.7	2.3	3.3	4.6	7.8	9.9
JS-100M		0.0	0.1	0.2	0.4	0.6	0.9	1.4	1.9	2.8	5.9	8.9
JS-100												
JS-150M		0.0	0.1	0.1	0.2	0.4	0.5	0.8	1.6	1.9	2.9	4.4
JS-150												

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Performance Data for JS Series Pumps

S-Series Venturis – High Vacuum Applications

S is for “High” vacuum levels up to 28”Hg [948mbar] for applications involving non-porous materials (steel, plastic, glass, etc.)

Model #	Air Consumption SCFM	Imperial – Vacuum Flow (SCFM) vs. Vacuum Level (“Hg)										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
JS-200	7.80	5.40	4.70	3.85	3.30	3.00	2.60	2.10	1.60	1.20	0.60	0.00
JS-250	12.50	9.00	8.50	7.85	7.00	6.50	5.30	3.90	2.50	1.80	0.90	0.00
JS-300	22.00	20.00	17.00	14.00	12.70	12.00	10.00	7.40	4.90	2.70	1.30	0.00
JS-350	28.00	28.00	22.00	18.70	15.90	14.50	11.80	8.10	5.70	4.50	2.25	0.00

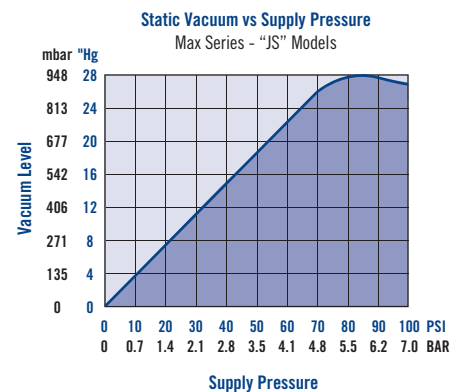
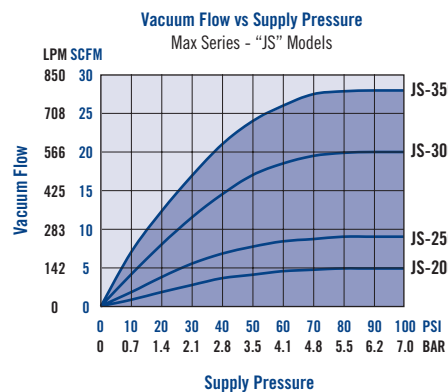
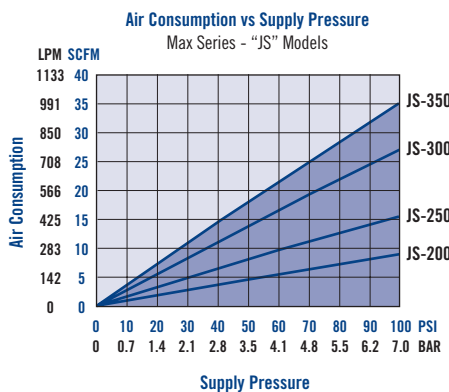
Model #		Evacuation Time in Seconds based on 1 Cubic Foot Volume/”Hg										
		0”Hg	3”Hg	6”Hg	9”Hg	12”Hg	15”Hg	18”Hg	21”Hg	24”Hg	27”Hg	28”Hg
JS-200		0.00	1.20	2.10	3.40	5.20	7.70	11.50	20.00	33.50	62.60	98.10
JS-250		0.00	0.75	1.30	2.20	3.50	5.60	9.10	17.40	30.10	56.00	76.00
JS-300		0.00	0.00	0.80	1.20	2.00	2.80	3.90	5.90	11.10	32.70	60.00
JS-350		0.00	0.00	0.00	1.20	1.90	2.30	3.40	5.30	8.80	26.00	44.00

Model #	Air Consumption L/min	Metric – Vacuum Flow (L/min) vs. Vacuum Level (mbar)										
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	814mbar	914mbar	948mbar
JS-200	220.9	152.9	133.1	109.0	93.4	85.0	73.6	59.5	45.3	34.0	17.0	0.0
JS-250	354.0	254.9	240.7	222.3	198.2	184.1	150.1	110.4	70.8	51.0	25.5	0.0
JS-300	623.0	566.3	481.4	396.4	359.6	339.8	238.2	209.5	138.8	76.5	36.8	0.0
JS-350	792.9	792.9	623.0	529.5	450.2	410.6	334.1	229.4	161.4	127.4	63.7	0.0

Model #		Evacuation Time in Seconds based on 1 Liter Volume/mbar										
		0mbar	102mbar	203mbar	305mbar	406mbar	508mbar	609mbar	711mbar	814mbar	914mbar	948mbar
JS-200		0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.7	1.2	2.2	3.5
JS-250		0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.6	1.1	2.0	2.7
JS-300		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	1.2	2.1
JS-350		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.9	1.6

Note 1: Standard operating pressure for Vaccon pumps is 80 PSI [5.5BAR]. Pumps can be factory modified to run at other operating pressures i.e. 60 PSI [4 BAR] etc. The values shown in the performance chart will remain the same for all operating pressures.

Note 2: Evacuation speed is linear with volume, a 2 cu. ft. volume will take twice as long to evacuate as a one cu. ft. volume.



Custom Venturi Vacuum Pumps – J Series

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with specific features, or special materials, Vaccon has the solution.



All the pumps shown offer the exact same performance but were made to fit a specific application or machine footprint.



Custom Materials Available: Brass, Stainless Steel, PVC, Peek, PTFE-(Teflon™), Acetal-(Delrin™). Consult factory.



Stainless steel pumps used for filling IV bags with de-ionized water, or corrosive materials.



Custom designed JS-60M-316 stainless steel with butt weld connection for evacuating argon gas for the semiconductor industry.

When size, shape, material and performance matter, it's Vaccon Vacuum Pumps.

Unlike standard venturi vacuum pumps where the vacuum port is 90° from the supply port, Vaccon's air-powered VPI-90H inline venturi vacuum pumps feature an air-supply port and vacuum port on the same axis to consolidate space.



VPI Series – Inline Pump

VPI-90H pumps vertically mount to robotic arms to create single or densely populated arrays of pump/cup combinations to accommodate and lift products of any size, shape, or weight.

See Page

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Inline Pumps

Inline Venturi Vacuum Pump

VPI-90H Pump



VPI-90H densely populated robotic arm with vacuum cups for material handling applications



VPI-90H

Standard Pump:

Unlike standard venturi vacuum pumps where the vacuum port is 90° from the supply port, Vaccon's air-powered VPI-90H inline venturi vacuum pumps feature an air-supply port and vacuum port on the same axis to consolidate space.

VPI-90H pumps vertically mount to robotic arms to create single or densely populated arrays of pump/cup combinations to accommodate and lift products of any size, shape, or weight.

Internal threads on the vacuum port enable vacuum cups to connect directly to the pump while the external threads attach directly to the end of arm tool. VPI-90H's feature an additional vacuum port for a vacuum switch/sensor to ensure accurate part detection or for a connection to an externally supplied blow-off.

Ideal Applications:

- Pick and place
- Bottling
- Packaging
- Palletizing
- Robotic/End-of-Arm tooling

Features/Benefits:

- High performance – powerful vacuum up to 28" Hg [948mbar]
- Push-to-connect air supply fitting
- Allows multi-populated boards – dense formations
- Fast response – installs close to vacuum point
- Efficient – minimal air consumption
- Easy to install – compact & lightweight, simple mounting, saves plumbing
- Safe operation – no electricity needed at the pump
- Reliable, trouble-free operation
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Performance Level Designations:

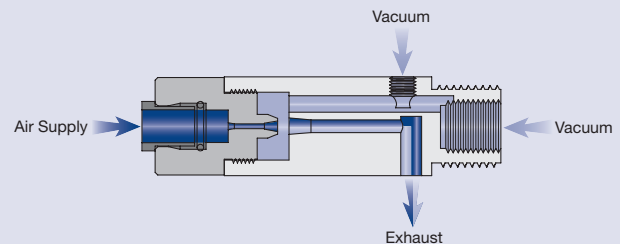
"H" 0-28"Hg, [0 to 948mbar] for high vacuum/standard flow applications

Pump Options:

- Choice of operating pressures to meet machine and factory air requirements (80 PSI [5.5 BAR] standard, 60 PSI [4.0 BAR] optional).
- Auxiliary port for optional vacuum sensor or switch with quick disconnect
- Auxiliary port for optional externally supplied blow-off
- Optional jam nut for ease of mounting

Principles of Operation:

Vacuum is produced by forcing compressed air through a limiting orifice (nozzle). As the air exits the orifice it expands, increasing in velocity to supersonic speed before entering the venturi section (diffuser). This creates a vacuum at the vacuum inlet port located between the nozzle and diffuser. Combined, the nozzle and diffuser create a venturi vacuum cartridge.



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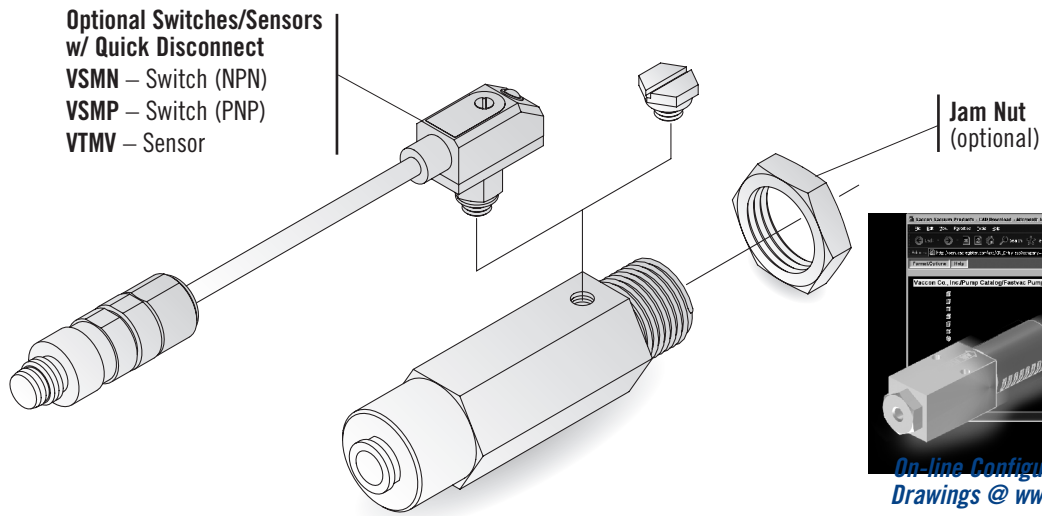
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VPI-90H Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VPI-90H - 60 - JN - VSMP

P/N	Thread	Max Vac Level
VPI-90H	NPT	28"Hg [948mbar]

P/N	Operating Pressure
60	80 PSI [5.5 BAR] (Standard) 60 PSI [4.0 BAR]

P/N	Jam Nut
JN	None (Standard) Jam Nut

P/N	Switch/Sensor
	None (Standard)
VSMN	Switch – NPN
VSMP	Switch – PNP
VTMV	Sensor 1-5vDC Output

For complete Performance Data, see page 149 – Equivalent to a VP10-90H.

VPI-90H Inline Pump Standard Specifications:

- Pump Material:** Anodized Aluminum Buna-N O-ring, Nylon
- Medium:** Filtered (50 Micron) un-lubricated, non-corrosive dry gases
- Operating Temperature:** -30°~250° F [-34°~121°C]
- Operating Pressure:** 80 PSI [5.5 BAR] or 60 PSI [4.0 BAR] – Consult Factory for other operating pressures

VPI-90H Inline Pump Operating and Installation Requirements:

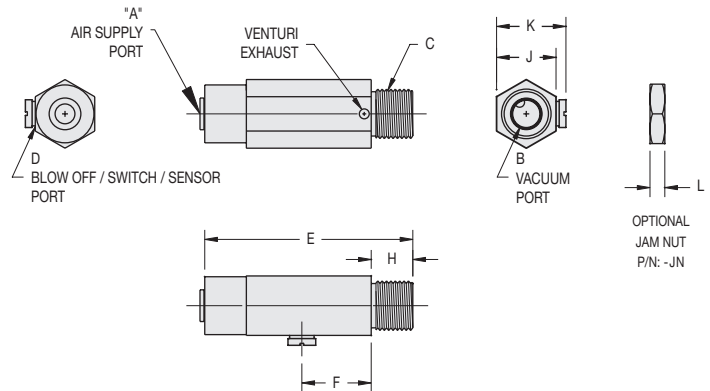
- Supply Line:** Preferred 1/4" OD tubing [6mm]
- Control Valve:** 3-way/2 position (faster part release) – minimum orifice - 0.125" [3mm]
- Vacuum Line:** Preferred 1/4" OD tubing [6mm]
- Vacuum Line Filtration:** Typically filters are not required, if desired Vaccon recommends – VF125LPM. See page 278.
- Mounting:** 5/8-18 male thread (optional jam nut – P/N: -JN)

Inline Venturi Vacuum Pump

Standard Pump: VPI-90H Inline Venturi Vacuum Pump



VPI-90H



Specifications:

Segment Weight: 1.7 oz [48g]
 Noise Level: 76 dB

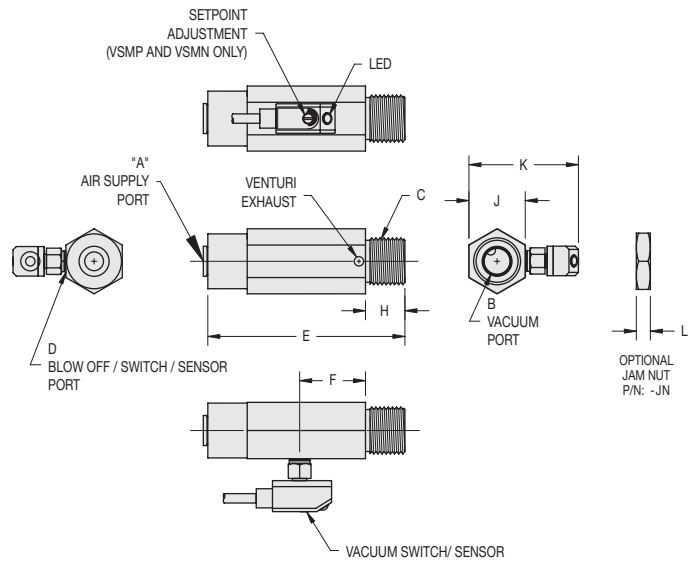
Model #	Imperial Dimensions (in.)									
VPI-90H	A	B	C	D	E	F	H	J	K	L
	1/4 PTC	1/8 NPT F	5/8-18 UNF	M5	2.63	0.88	0.53	0.75	0.88	0.19

Consult factory for metric availability.

VPI-90H with Optional Sensor/Switch (VSMN, VSMP, VTMV)



VPI-90H with VSMN vacuum switch.



Specifications:

Segment Weight: 2.7 oz [76.5g]
 Noise Level: 76 dB

Model #	Imperial Dimensions (in.)									
VPI-90H (VSMN, VSMP, VTMV)	A	B	C	D	E	F	H	J	K	L
	1/4 PTC	1/8 NPT F	5/8-18 UNF	M5	2.63	0.88	0.53	0.75	1.46	0.19

Consult factory for metric availability.

The VDF & FDF Series are unique Vaccon innovations that place the vacuum port and exhaust path inline making a straight-through venturi vacuum pump. These compact pumps offer high flow rates up to 120 SCFM [3400 LPM] and high vacuum levels up to 25”Hg [847mbar]. Developed for extremely dirty and dusty environments such as foundries, refractory and bagging operations, VDF & FDF pumps don't clog, lose suction or require a vacuum filter.



VDF Series

The VDF Series is a unique Vaccon innovation that places the vacuum port and exhaust path inline making a straight-through venturi vacuum pump. These compact pumps offer high flow rates up to 120 SCFM [3400 LPM] and high vacuum levels up to 25”Hg [847mbar].

Developed for extremely dirty and dusty environments such as foundries, refractory and bagging operations, VDF pumps don't clog, lose suction or require a vacuum filter.

See Page **196**

Dirt Tolerant Pumps

Adjustable, Dirt Tolerant Venturi Vacuum Pumps

VDF Series



Standard Pump:

The VDF Series is a unique Vaccon innovation that places the vacuum port and exhaust path inline making a straight-through venturi vacuum pump. These compact pumps offer high flow rates up to 120 SCFM [3400 LPM] and high vacuum levels up to 25" Hg [847mbar].

Developed for extremely dirty and dusty environments such as foundries, refractory and bagging operations, VDF pumps don't clog, lose suction or require a vacuum filter.

VDF pumps are field-adjustable allowing you to regulate the vacuum flow and vacuum level to meet your application requirements. This maximizes energy efficiency by consuming only the compressed air necessary to do the job. A pressure regulator is not required as the pump can be tuned to operate at any pressure above 50 PSI [3.5 BAR].

Pump Options:

- ST Silencers – straight through silencers won't clog
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Choice of operating pressures: operates at any pressure above 50 PSI [3.5 BAR]
- For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin,™ Teflon,™ PVC.

Ideal Applications

Ideal for dirty, dusty environments; the VDF holds porous materials securely:

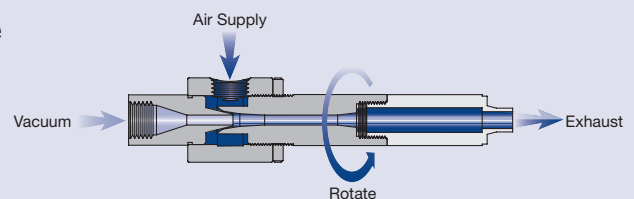
- Pick and place
- Vacuum filling – Liquids and powders
- Vacuum packaging – Coated materials
- Bag/box opening
- Material handling

Features/Benefits

- Adjustable vacuum level or flow rate:
 - ~ Powerful vacuum up to 25" Hg [847mbar]
 - ~ High flow rates up to 120 SCFM [3398 lpm]
- Energy efficient – customer controlled – high performance to air consumption ratio
- Safe Operation:
 - ~ No electricity needed at the pump
 - ~ No heat generated
- Reliable, trouble-free operation
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

Principles of Operation:

Changing the annular gap between the venturi nozzle and the diffuser varies the performance of the VDF pump. Rotating the diffuser section counter clockwise enlarges the opening, allowing more compressed air to flow through the pump and thereby increasing both the vacuum flow and the vacuum level. Likewise, rotating the diffuser section clockwise reduces the opening, allowing less compressed air to flow through the pump and thereby decreasing both the vacuum flow and the vacuum level. The result is a variable vacuum pump—adjustable to meet your exact application requirements.



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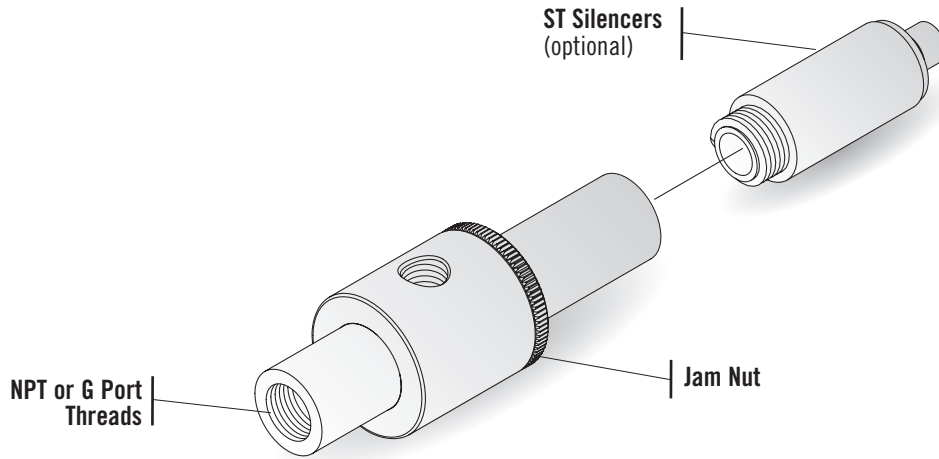
Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

VDF Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

VDF 250 - ST4A2				
P/N	Imperial Thread	Silencer*	P/N	Material
VDF 100	NPT	ST4	303	Anodized Aluminum (Standard)
VDF 150	NPT	ST4	304	304 Stainless Steel
VDF 200	NPT	ST4	316	316 Stainless Steel
VDF 250	NPT	ST4A2	316L	316 Low Carbon Stainless
VDF 375	NPT	ST8B	PVC	PVC
VDF 500	NPT	ST12C	TEF	PTFE
VDF 750	NPT	ST16C	PK	PEEK
P/N	Metric Thread	Silencer*	DEL	Delrin
I-VDF 100	G Port	ST4		
I-VDF 150	G Port	ST4		
I-VDF 200	G Port	ST4		
I-VDF 250	G Port	ST4A2		
I-VDF 375	G Port	ST8B		
I-VDF 500	G Port	ST12C		
I-VDF 750	G Port	ST16C		

*Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

For complete Performance Data, see page 205.

VDF Series Vacuum Pump Standard Specifications:

Body Material:	Anodized Aluminum Standard (for silencer material - See page 264)
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases
Operating Temperature:	-100° ~ 400° F [-73° ~ 204°C]
Operating Pressure:	Above 50 PSI

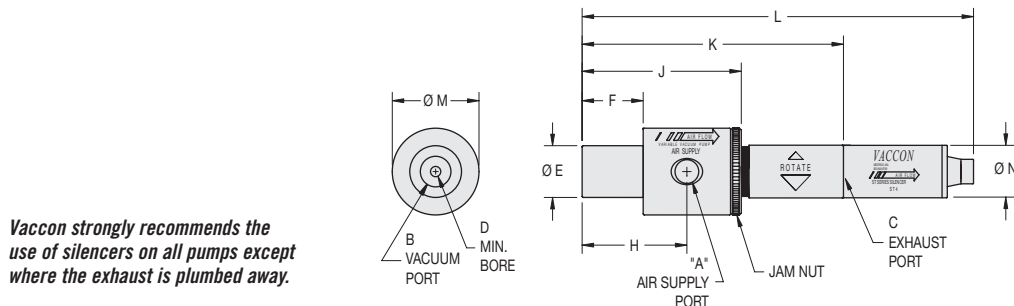
VDF Series Vacuum Pump Installation Requirements:

Model #:	VDF 100, 150, 200, 250	VDF 375	VDF 500	VDF 750
Air Supply Line - Tubing†	3/8" [10mm]	1/2" [12mm]	1/2" [12mm]	5/8" [16mm]
Vacuum Line - Tubing†	3/8" [10mm]	5/8" [16mm]	3/4" [19mm] ID Hose	1.0" [5mm] ID Hose

†Tubing size is based on 0.062 wall - polyethylene & polyurethane.

Dirt Tolerant Pumps

Standard Pump: VDF Series (100, 150, 200, 250, 375, 500, 750) with Optional ST Silencers



Vaccon strongly recommends the use of silencers on all pumps except where the exhaust is plumbed away.

VDF Series – Imperial Dimensions (in.)													
Model #	A	B	C	D	E	F	H	J	K	L	M	N	Weight
VDF 100	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.13	0.74	0.87	1.50	2.27	3.73		1.24		3.7 oz
VDF 100-ST4	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.13	0.74	0.87	1.50	2.27	3.73	5.60	1.24	0.75	4.3 oz
VDF 150	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.15	0.74	0.87	1.50	2.27	3.73		1.24		3.7 oz
VDF 150-ST4	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.15	0.74	0.87	1.50	2.27	3.73	5.60	1.24	0.75	4.3 oz
VDF 200	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.19	0.74	0.87	1.50	2.27	3.73		1.24		3.7 oz
VDF 200-ST4	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.19	0.74	0.87	1.50	2.27	3.73	5.60	1.24	0.75	4.3 oz
VDF 250	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.27	0.74	0.87	1.50	2.27	3.73		1.24		3.6 oz
VDF 250-ST4A2	1/8 NPT F	1/4 NPT F	1/4 NPT F	0.27	0.74	0.87	1.50	2.27	3.73	6.29	1.24	1.00	5.0 oz
VDF 375	3/8 NPT F	1/2 NPT F	1/2 NPT F	0.38	0.99	1.50	2.37	3.45	6.04		1.74		9.7 oz
VDF 375-ST8B	3/8 NPT F	1/2 NPT F	1/2 NPT F	0.38	0.99	1.50	2.37	3.45	6.04	10.84	1.74	1.25	12.7 oz
VDF 500	3/8 NPT F	1/2 NPT F	3/4 NPT F	0.50	1.24	1.50	2.50	3.70	6.06		1.97		14.3 oz
VDF 500-ST12C	3/8 NPT F	1/2 NPT F	3/4 NPT F	0.50	1.24	1.50	2.50	3.70	6.06	13.00	1.97	2.00	1 lb 6 oz
VDF 750	1/2 NPT F	3/4 NPT F	1 NPT F	0.75	1.49	1.50	2.50	3.70	6.95		2.22		1 lb 3 oz
VDF 750-ST16C	1/2 NPT F	3/4 NPT F	1 NPT F	0.75	1.49	1.50	2.50	3.70	6.95	13.88	2.22	2.00	1 lb 11 oz
VDF Series – Metric Dimensions (mm.)													
Model #	A	B	C	D	E	F	H	J	K	L	M	N	Weight
I-VDF 100	G 1/8	G 1/4	G 1/4	3.2	18.8	22.1	38.1	57.7	94.7		31.5		105 g
I-VDF 100-ST4	G 1/8	G 1/4	G 1/4	3.2	18.8	22.1	38.1	57.7	94.7	142.2	31.5	19.1	122 g
I-VDF 150	G 1/8	G 1/4	G 1/4	3.7	18.8	22.1	38.1	57.7	94.7		31.5		105 g
I-VDF 150-ST4	G 1/8	G 1/4	G 1/4	3.7	18.8	22.1	38.1	57.7	94.7	142.2	31.5	19.1	122 g
I-VDF 200	G 1/8	G 1/4	G 1/4	4.8	18.8	22.1	38.1	57.7	94.7		31.5		105 g
I-VDF 200-ST4	G 1/8	G 1/4	G 1/4	4.8	18.8	22.1	38.1	57.7	94.7	142.2	31.5	19.1	122 g
I-VDF 250	G 1/8	G 1/4	G 1/4	6.7	18.8	22.1	38.1	57.7	94.7		31.5		102 g
I-VDF 250-ST4A2	G 1/8	G 1/4	G 1/4	6.7	18.8	22.1	38.1	57.7	94.7	159.8	31.5	25.4	142 g
I-VDF 375	G 3/8	G 1/2	G 1/2	9.5	25.1	38.1	60.2	87.6	153.4		44.2		275 g
I-VDF 375-ST8B	G 3/8	G 1/2	G 1/2	9.5	25.1	38.1	60.2	87.6	153.4	275.3	44.2	31.8	360 g
I-VDF 500	G 3/8	G 1/2	G 3/4	12.7	31.5	38.1	63.5	94.0	153.9		50.0		405 g
I-VDF 500-ST12C	G 3/8	G 1/2	G 3/4	12.7	31.5	38.1	63.5	94.0	153.9	330.2	50.0	50.8	618 g
I-VDF 750	G 1/2	G 3/4	G 1	19.1	37.8	38.1	63.5	94.0	176.5		56.4		544 g
I-VDF 750-ST16C	G 1/2	G 3/4	G 1	19.1	37.8	38.1	63.5	94.0	176.5	352.6	56.4	50.8	763 g

VDF Series Performance Chart

Model #	Imperial - Vacuum Flow (SCFM) vs Vacuum Level ("Hg) with VDF set at 25"Hg									
	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	25"Hg
VDF 100	2.00	1.80	1.60	1.40	1.30	1.20	1.10	0.75	0.25	0.00
VDF 150	3.20	2.80	2.50	2.20	1.80	1.60	1.30	0.90	0.40	0.00
VDF 200	6.00	5.60	5.00	4.20	3.60	3.00	2.60	1.80	0.90	0.00
VDF 250	10.00	9.20	8.30	7.50	6.60	5.80	5.20	3.80	1.30	0.00
VDF 375	30.00	27.00	25.00	23.00	21.00	18.00	16.00	11.00	3.00	0.00
VDF 500	60.00	52.00	45.00	41.00	38.00	35.00	28.00	19.00	5.00	0.00
VDF 750	120.00	99.00	83.00	74.00	62.00	51.00	46.00	34.00	9.00	0.00

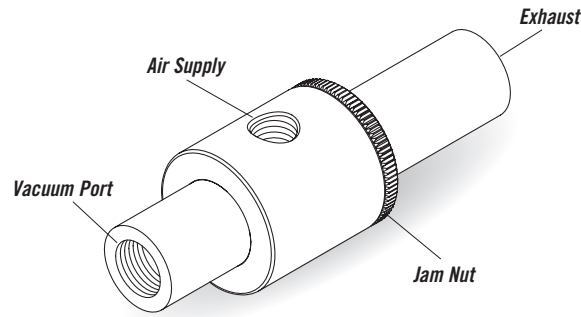
Model #	Imperial - Evacuation Time (seconds) based on 1 cu. ft. volume with VDF set at 25"Hg									
	0"Hg	3"Hg	6"Hg	9"Hg	12"Hg	15"Hg	18"Hg	21"Hg	24"Hg	25"Hg
VDF 100	0.00	3.34	7.95	13.60	20.53	28.48	38.74	53.88	84.15	104.94
VDF 150	0.00	2.57	5.90	10.00	15.39	22.06	31.05	46.18	75.69	97.50
VDF 200	0.00	1.03	2.57	4.11	6.41	9.49	13.34	19.50	31.05	38.23
VDF 250	0.00	0.51	1.03	1.80	2.82	4.11	5.90	9.75	17.19	21.55
VDF 375	0.00	0.00	0.51	1.03	1.28	2.05	3.08	4.87	8.47	12.83
VDF 500	0.00	0.00	0.21	0.48	0.73	1.08	1.54	2.73	4.45	6.92
VDF 750	0.00	0.00	0.00	0.00	0.12	0.38	0.70	1.09	3.07	5.38

Model #	Metric - Vacuum Flow (LPM) vs Vacuum Level (mbar) with VDF set at 846 mbar									
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	846 mbar
I-VDF 100	56.6	51.0	45.3	39.6	36.8	34.0	31.2	21.2	7.1	0.00
I-VDF 150	90.6	79.3	70.8	62.3	51.0	45.3	36.8	25.5	11.3	0.00
I-VDF 200	169.9	158.6	141.6	118.9	102.0	85.0	73.6	51.0	25.5	0.00
I-VDF 250	283.2	260.5	235.1	212.4	186.9	164.3	147.3	107.6	36.8	0.00
I-VDF 375	849.6	764.6	708.0	651.4	594.7	509.8	453.1	311.5	85.0	0.00
I-VDF 500	1699.2	1472.6	1274.4	1161.1	1076.2	991.2	793.0	538.1	141.6	0.00
I-VDF 750	3398.4	2803.7	2350.6	2095.7	1755.8	1444.3	1302.7	962.9	254.9	0.00

Model #	Metric - Evacuation Time (seconds) based on 1 liter volume with VDF set at 846 mbar									
	0 mbar	102 mbar	203 mbar	305 mbar	406 mbar	508 mbar	609 mbar	711 mbar	813 mbar	846 mbar
I-VDF 100	0.00	0.1	0.3	0.5	0.7	1.0	1.4	1.9	3.0	3.7
I-VDF 150	0.00	0.1	0.2	0.4	0.5	0.8	1.1	1.6	2.7	3.4
I-VDF 200	0.00	0.0	0.1	0.1	0.2	0.3	0.5	0.7	1.1	1.3
I-VDF 250	0.00	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.6	0.8
I-VDF 375	0.00	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5
I-VDF 500	0.00	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2
I-VDF 750	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2

Note: Evacuation speed is linear with volume i.e. a 2 cu. ft. volume will take twice as long as a 1 cu ft volume to evacuate.

VDF Series Operating Instructions



VDF Operating Instructions:

1. Loosen jam nut by rotating counter-clockwise.
2. Rotate exhaust body clockwise until closed, jam nut should be loose on exhaust body.
3. Attach air line to air supply port and vacuum line to vacuum port or connect cup to port. See chart on page 197 for minimum recommended line sizes.
4. Turn on compressed air.
5. Rotate exhaust body counter-clockwise to the desired vacuum level using rotation chart on page 201. Charts are based on 80 and 60 PSI to provide a starting point. Pumps will achieve maximum vacuum levels at any pressure above 50 PSI (pressure regulator is not required).
6. After achieving desired vacuum level, tighten jam nut by rotating clockwise.

* **Note 1:** Maximum vacuum flow is achieved at 15"Hg.

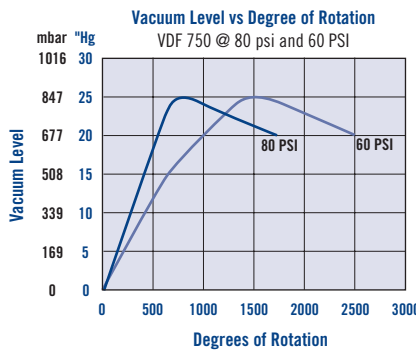
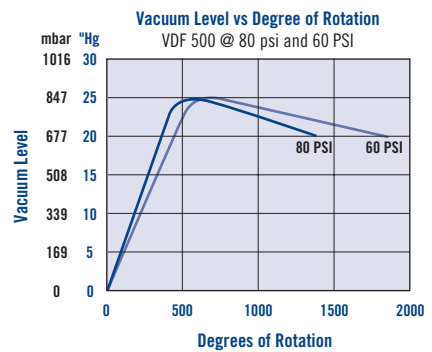
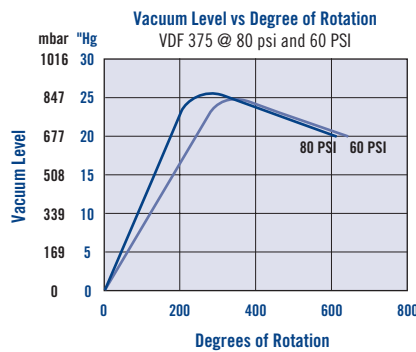
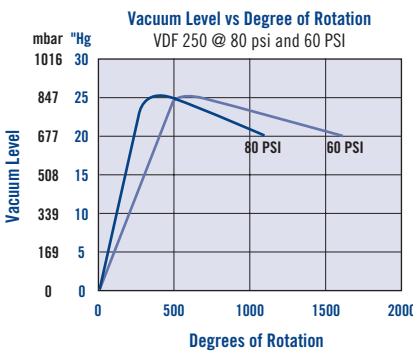
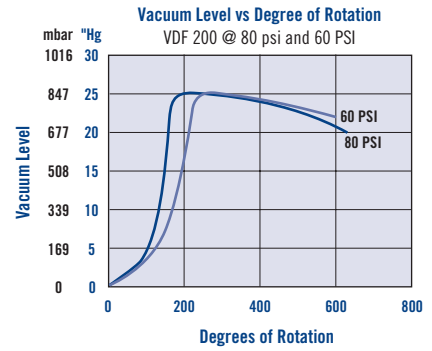
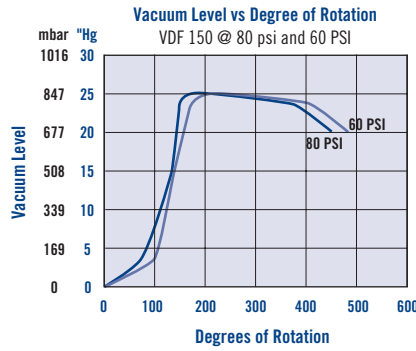
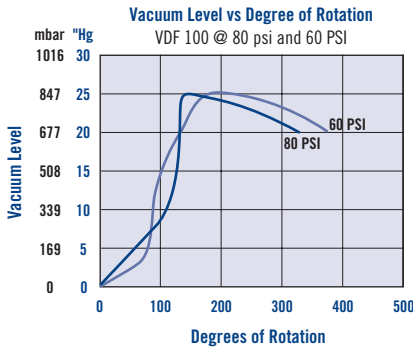
Note 2: Further rotation will increase the vacuum level, while the flow remains constant.

Note 3: VDF 375 and larger, it may be necessary to turn compressed air off while making adjustments to relieve pressure on threads and make rotating easier.

Model #	Max Vacuum Flow SCFM*	Air Consumption SCFM**
VDF 100	2.00	1.30
VDF 150	3.20	2.40
VDF 200	6.00	4.70
VDF 250	10.00	8.30
VDF 375	30.00	17.00
VDF 500	60.00	28.00
VDF 750	120.00	44.00

** These values are achieved when pumps are set to 15"Hg

Vacuum Level vs. Degree of Rotation

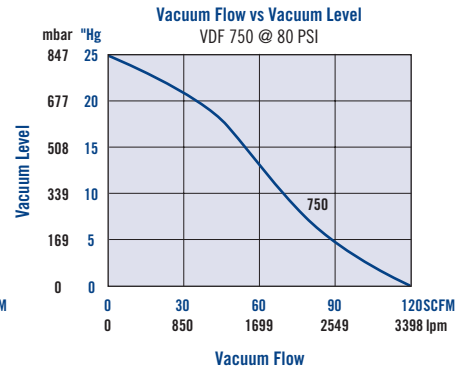
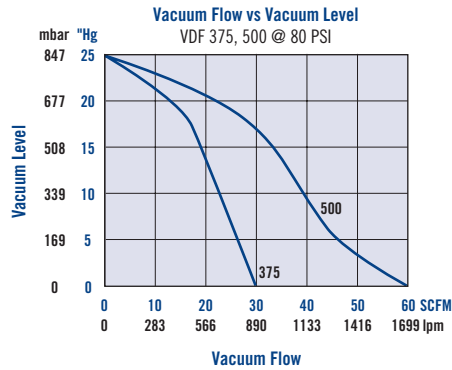
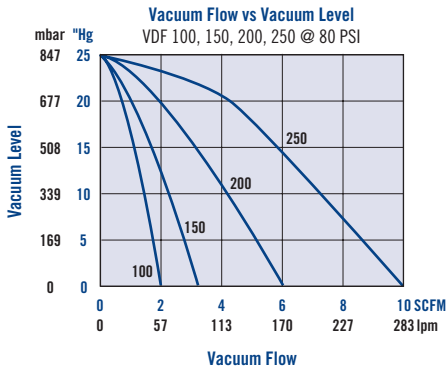


Rotational Chart

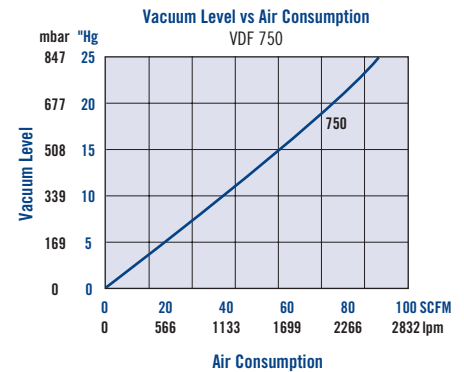
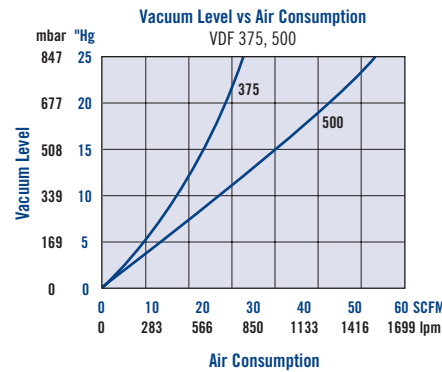
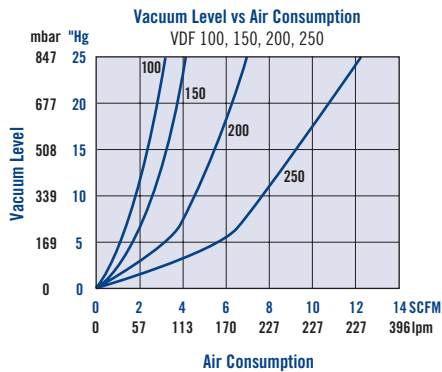
Model #	Degrees of Rotation vs. Vacuum Level "Hg @ 80 PSI										Degrees of Rotation vs. Vacuum Level "Hg @ 60 PSI									
	0"	3"	6"	9"	12"	15"	18"	21"	24"	25"	0"	3"	6"	9"	12"	15"	18"	21"	24"	25"
VDF 100	0	30	60	100	115	120	125	130	134	135	0	60	70	80	90	110	120	140	160	170
VDF 150	0	80	90	105	120	135	145	150	160	165	0	90	100	110	120	130	145	165	19-0	195
VDF 200	0	90	105	120	150	160	170	175	185	190	0	100	135	165	175	185	200	215	235	240
VDF 250	0	100	140	180	195	210	250	275	340	355	0	145	180	205	260	320	370	440	510	530
VDF 375	0	60	90	100	125	155	180	195	220	230	0	65	90	115	165	190	210	255	290	300
VDF 500	0	80	130	170	200	260	340	390	460	490	0	100	170	190	260	360	420	480	560	600
VDF 750	0	95	170	260	350	450	540	630	710	730	0	145	260	350	475	610	730	1080	1370	1440

Note: All degrees of rotation are approximate. For example: At 80 PSI, a VDF 200 to be set at 21"Hg would be rotated approximately 175° from the closed position.

VDF Series – Vacuum Flow vs. Vacuum Level



VDF Series – Vacuum Level vs. Air Consumption



Note: The graphs were generated by pre-setting the pumps to their maximum vacuum level.

VDF Series – Noise Levels at 80psi

Model #	Silencer Options				
	Silencer #	With Silencer		Without Silencer	
		Open Flow	Sealed Vacuum	Open Flow	Sealed Vacuum
VDF 100	ST4	70db	68db	88db	76db
VDF 150	ST4	74db	68db	88db	90db
VDF 200	ST4	78db	80db	86db	100db
VDF 200	ST4A	76db	80db	86db	100db
VDF 250	ST4A	82db	80db	90db	100db
VDF 250	ST4A2	84db	82db	90db	100db
VDF 375	ST8B	88db	82db	102db	104db
VDF 500	ST12C	82db	78db	96db	100db
VDF 750	ST16C	98db	88db	112db	108db

Custom VDF Series

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

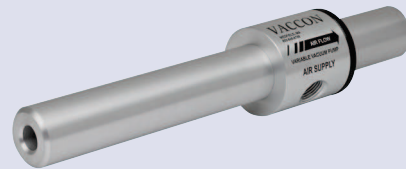
When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with precise tolerances, or special materials, Vaccon has the solution.



Specialty Materials:

For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin™, Teflon™, PVC.



VDF 500-61:

Used as a hand held vacuum pump to allow an operator to wind continuous flowing filament onto drive pulleys and the shipping spool. The high flow and high vacuum creates the necessary tension on the filament strand to maintain filament production line speed. The added length on the vacuum side makes it easier for the operator to wind the filament through the drive pulley system.

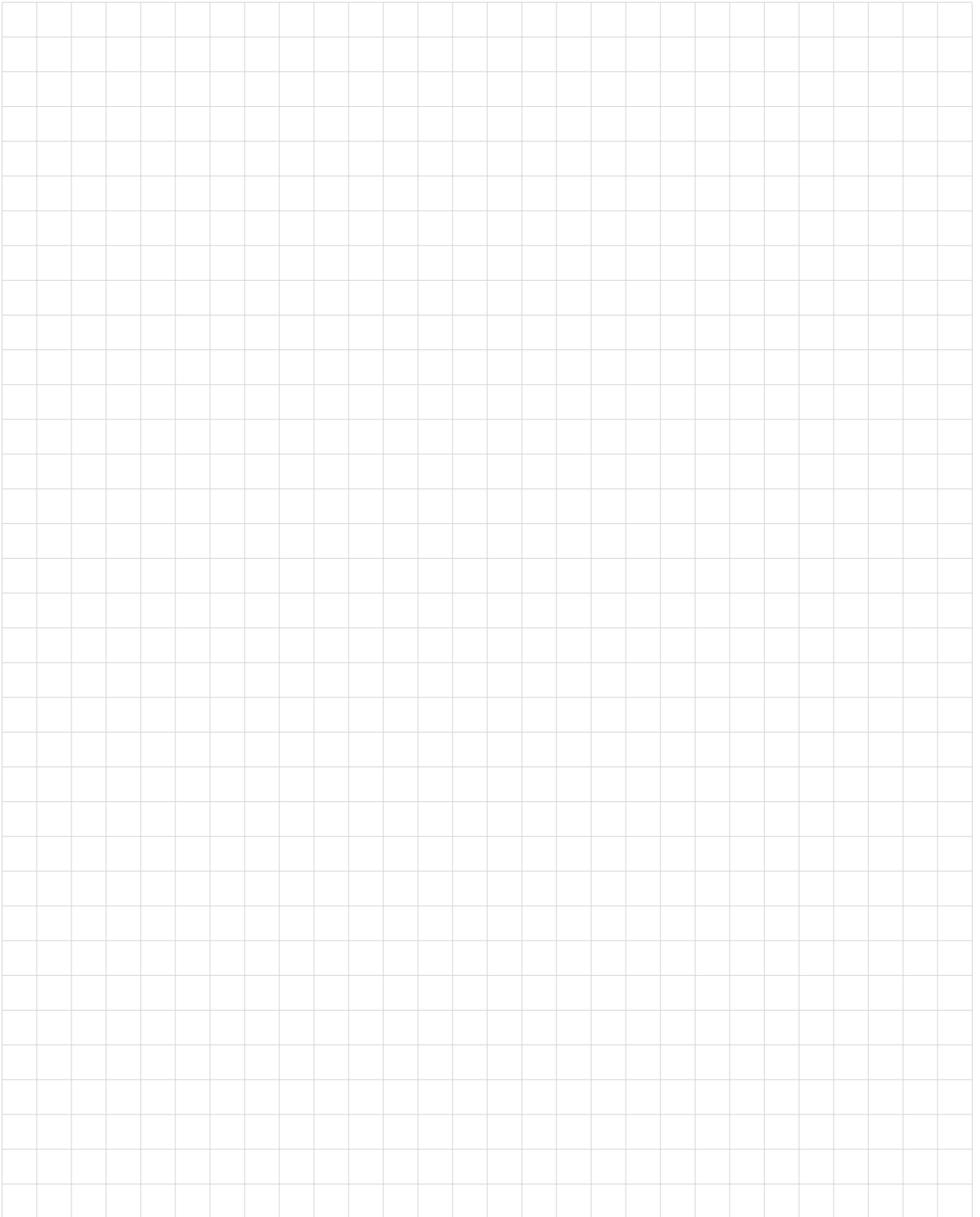


VDF 750P:

A standard pump that was made without inlet or exhaust threads and comes complete with a bolt circle for easy installation into the head of industrial vacuum cleaners or other enclosures.

The adjustable feature allows each manufacturer to determine the maximum vacuum level for their equipment to ensure that the container does not implode.

When size, shape, material and performance matter, it's Vaccon Vacuum Pumps.



The CDF Series air amplifiers generate high output flow using a small volume of compressed air. This efficient use of air makes CDF air amplifiers a cost-effective alternative to electric blowers or raw compressed air.

Blower: High Output Flow

The CDF Series air amplifiers generate high output flow using a small volume of compressed air. This efficient use of air makes CDF air amplifiers a cost-effective alternative to electric blowers or raw compressed air.

Material Handling: High Vacuum Flow

CDF Series air amplifiers generate high vacuum flow, overcoming leaks inherent in handling porous objects such as foam or fabric. With or without a vacuum cup, CDF air amplifiers will safely transfer irregular shaped items.

See Page **206**



Air Amplifiers/Blowers

Adjustable Air Amplifiers/ Blowers

CDF Series

Air Amplifier - Blower: *High Output Flow*

The CDF Series air amplifiers generate high output flow using a small volume of compressed air. This efficient use of air makes CDF air amplifiers a cost-effective alternative to electric blowers or raw compressed air.



CDF 500H dries bottles, cans or other containers after filling or washing



CDF 750H removes fumes, air, smoke or mist from cabinets, storage lockers or other enclosures.

Air Amplifier - Material Handling: *High Vacuum Flow*

CDF Series air amplifiers generate high vacuum flow, overcoming leaks inherent in handling porous objects such as foam or fabric. With or without a vacuum cup, CDF air amplifiers will safely transfer irregular shaped items. For more on material handling, see next page.



Overcomes leaks from wrinkled or flexible materials



Handle irregular surfaces, foam and other porous materials

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Inflation & Deflation
- Pick and place of porous materials
- Drying
- Cooling
- Air bearing
- Fume evacuation
- Material handling of irregular/flexible surfaces
- Bag or pouch opening

Features and Benefits:

- Field adjustable for individual applications
- High performance – 40:1 amplification ratio
- Holds porous materials securely
- Easy to install – compact & lightweight
- Efficient – Instant response, minimal energy required
- Safe operation
 - ~ No electricity needed at the pump
 - ~ No heat generated
 - ~ Control output pressure, no bursting
- Reliable, durable, trouble-free operation
 - ~ Ideal for adverse operating conditions
 - ~ No moving parts to wear
 - ~ Straight-through design, non-clogging
 - ~ No downtime

Standard Adjustable Air Amplifiers:

To meet a wide range of applications, air velocity and air flow are field adjustable to compensate for the pressure level supplied. CDF air amplifiers can achieve amplification ratios as high as 40:1 (output to input)

The CDF air amplifier's straight-through design allows dirt and debris to pass through without clogging providing maintenance-free operation.

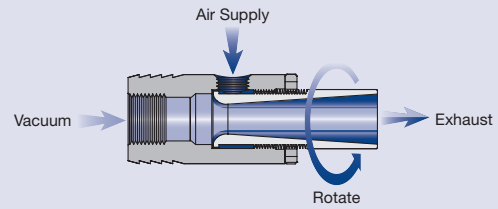
Vaccon air amplifiers are energy efficient; unlike regenerative blowers that must run continuously. Incorporating a solenoid valve for instant on/off control; CDF's are only on when air is needed.

Air Amplifier Options:

- 10 Standard models (bores from 1/8" [3mm] to 2" [50mm])
- EPT – Exhaust Port Threads – factory installed – for ease of mounting and fixed plumbing systems
- ST Silencers – straight through silencers won't clog
- G Port or metric threads – products with an "I" prefix designates metric threads
- Variable operating pressures: for maximum performance, Vaccon recommends pressures above 50 PSI [3.5 BAR]
- For chemical compatibility, heat and environmental requirements, food and medical applications, custom materials are available: stainless steel, Delrin®, Teflon®, PVC, and more. Consult factory.

Principles of Operation:

CDF pumps operate on the “Coanda Effect” where a small volume of compressed air is converted into a large flow of ambient air. Compressed air is emitted from an annular gap and passes over a curved surface into the throat of the unit. As the air passes over this curved surface, similar to an airfoil, a low pressure area is created inducing ambient air to flow into the throat with the compressed air.



Adjustable Air Amplifier - Material Handling

Vaccon Air Amplifiers easily and safely handle porous objects that many consider too challenging to handle with vacuum. Applications include automating sheet feeders, assembly and palletizers, conveyor transfer and packaging of such products as:

- Egg crate sheets of foam or felt
- Circuit boards
- IV bags
- Freshly baked cakes or pastries
- Perforated metal
- Frozen foods
- Fan scrolls

Producing low vacuum and high flow, CDF's handle crumbly, delicate products like birthday cakes with a soft touch and without leaving an impression on the surface.

Silencers are not required when using the output flow for cooling, drying, or fume extraction, however they are highly recommended for material handling applications.

Two installation options; simply connect to the vacuum port via the internal NPT threads or slip a hose over the barbs featured on the O.D. You can use CDF Air Amplifiers with and without a vacuum cup.



Handle felt mats with the use of the UH Series rigid cup



Remove cakes from a conveyor and place in box without damage

CDF Series Air Amplifiers Standard Specifications:

Body Material:	Anodized Aluminum Standard (for silencer material - see page 266)	
Medium:	Filtered (50 Micron) un-lubricated, non-corrosive dry gases	
Operating Temperature:	-100° ~ 400° F [-73° ~ 204°C] without silencer	
Operating Pressure:	Variable – For maximum performance Vaccon recommends 50 PSI [3.5 BAR] and above	

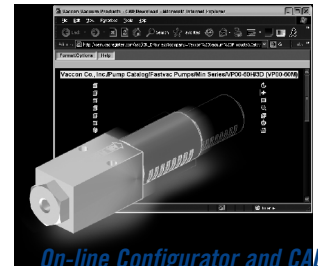
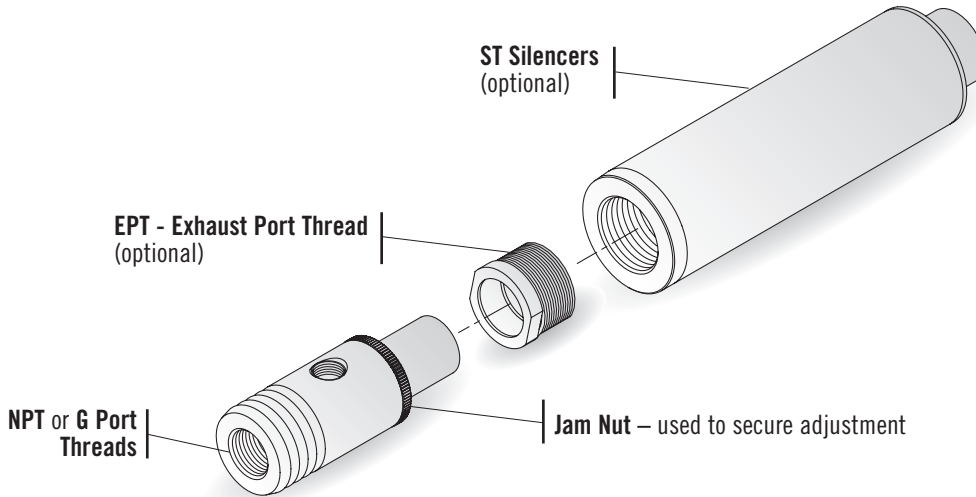
CDF Series Air Amplifiers Operating and Installation Requirements:

Model:	CDF 100, 200, 200H, 375H	CDF 500H, 750H 1000H, 1500H, 2000H
Supply Line:	1/4" I.D. [4mm] tube recommended	3/8" I.D. [10mm] tube recommended
Control Valve:	Minimum orifice 0.125"	Minimum orifice 0.250"

Adjustable Air Amplifiers/Blower

CDF Series Configurations and Options:

Please configure your Air Amplifier from the options listed below.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

	CDF 500 H	EPT100	ST16FC
P/N	Vacuum & Air Supply Imperial Port Threads	All Exhaust Port Threads are NPT**	Silencer***
CDF 100	NPT	EPT25	ST4AX
CDF 200	NPT	EPT25	ST4AX
CDF 200H	NPT	EPT25	ST4AX
CDF 375H	NPT	EPT38	ST6BX
CDF 500H	NPT	EPT100	ST16FC
CDF 750H	NPT	EPT107	ST16FC
CDF 1000H	NPT	EPT125	ST24FC
CDF 1500H	NPT	EPT200	N/A
CDF 1500H	NPT	Not required	ST2020
CDF 2000H	NPT	N/A	N/A
P/N	Vacuum & Air Supply Metric Port Threads	All Exhaust Port Threads are NPT**	Silencer***
I-CDF 100	G Port	EPT25	ST4AX
I-CDF 200	G Port	EPT25	ST4AX
I-CDF 200H	G Port	EPT25	ST4AX
I-CDF 375H	G Port	EPT38	ST6BX
I-CDF 500H	G Port	EPT100	ST16FC
I-CDF 750H	G Port	EPT107	ST16FC
I-CDF 1000H	G Port	EPT125	ST24FC
I-CDF 1500H	G Port	EPT200	N/A
I-CDF 1500H	G Port	Not required	ST2020
I-CDF 2000H	G Port	N/A	N/A

Note 1: **EPT (Exhaust Port Thread) must be factory installed.

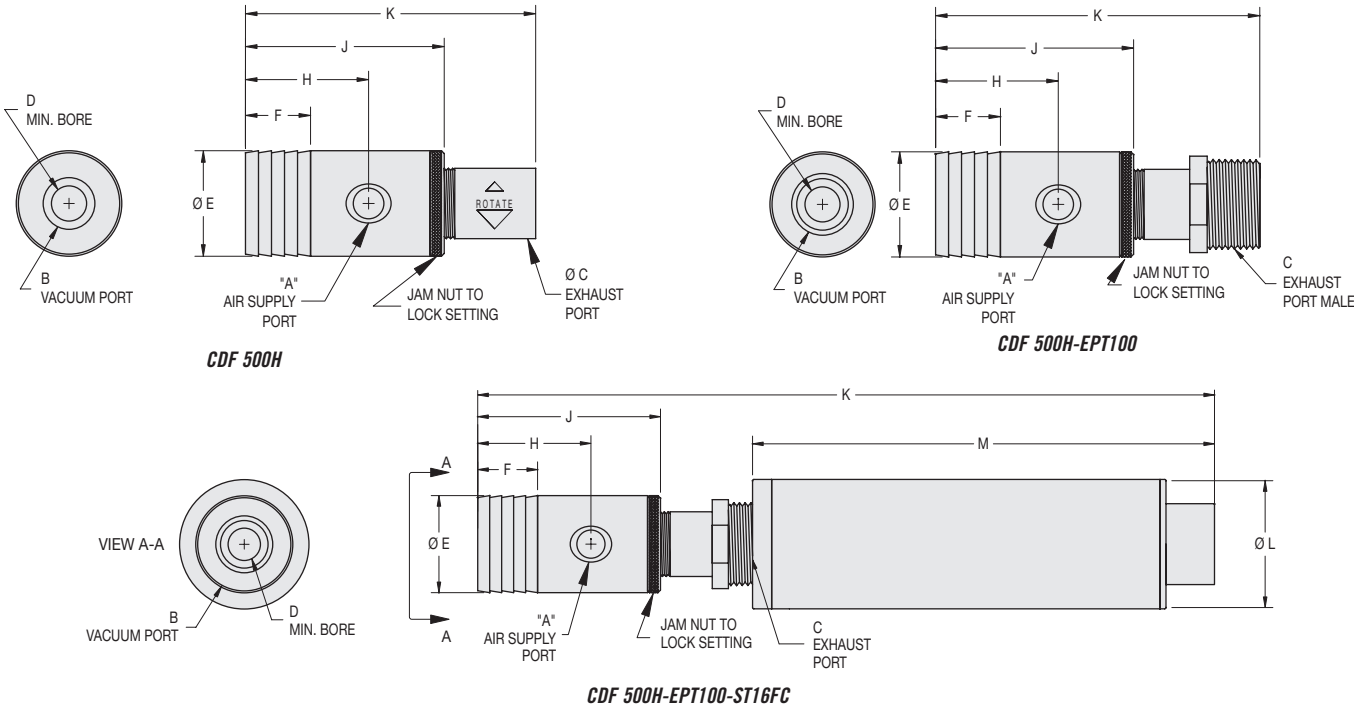
Note 2: ***EPT required to attach silencer.

For complete Performance Data, see page 211.

P/N	Material
	Anodized Aluminum (Std)
303	303 Stainless Steel*
304	304 Stainless Steel
316	316 Stainless Steel
316L	316 Low Carbon Stainless
PVC	PVC
DEL	Delrin - Acetel

*CDF 750 and larger not available in 303 stainless steel

Standard Pump Dimensions: CDF Series (CDF 500H shown is representative sample of all CDF's)



Model #	CDF Series – Imperial Dimensions (in.)											Weight
	A	B	C	D	E	F	H	J	K	L	M	
CDF 100	1/8 NPT F	—	0.56	0.14	1.25	—	0.44	1.13	2.00	—	—	3.2 oz
CDF 100-EPT25	1/8 NPT F	—	1/4 NPT	0.14	1.25	—	0.44	1.13	2.10	—	—	3.2 oz
CDF 100-EPT25-ST4AX	1/8 NPT F	—	1/4 NPT	0.14	1.25	—	0.44	1.13	5.40	1.00	3.57	3.7 oz
CDF 200	1/8 NPT F	—	0.56	0.25	1.25	—	0.44	1.13	2.00	—	—	2.1 oz
CDF 200-EPT25	1/8 NPT F	—	1/4 NPT	0.25	1.25	—	0.44	1.13	2.10	—	—	2.1 oz
CDF 200-EPT25-ST4AX	1/8 NPT F	—	1/4 NPT	0.25	1.25	—	0.44	1.13	5.40	1.00	3.57	3.7 oz
CDF 200H	1/8 NPT F	3/8 NPT F	0.56	0.25	1.25	0.76	1.21	1.87	2.85	—	—	3.1 oz
CDF 200H-EPT25	1/8 NPT F	3/8 NPT F	1/4 NPT	0.25	1.25	0.76	1.21	1.87	2.85	—	—	3.1 oz
CDF 200H-EPT25-ST4AX	1/8 NPT F	3/8 NPT F	1/4 NPT	0.25	1.25	0.76	1.21	1.87	6.15	1.00	3.57	5.2 oz
CDF 375H	1/8 NPT F	3/8 NPT F	0.69	0.38	1.25	0.76	1.21	1.87	2.85	—	—	3.1 oz
CDF 375H-EPT38	1/8 NPT F	3/8 NPT F	3/8 NPT	0.38	1.25	0.76	1.21	1.87	2.85	—	—	3.1 oz
CDF 375H-EPT38-ST6BX	1/8 NPT F	3/8 NPT F	3/8 NPT	0.38	1.25	0.76	1.21	1.87	7.43	1.25	4.80	6.3 oz
CDF 500H	1/4 NPT F	1/2 NPT F	0.99	0.50	1.49	0.93	1.75	2.83	4.13	—	—	6.3 oz
CDF 500H-EPT100	1/4 NPT F	1/2 NPT F	1 NPT	0.50	1.49	0.93	1.75	2.83	4.63	—	—	7.3 oz
CDF 500H-EPT100-ST16FC	1/4 NPT F	1/2 NPT F	1 NPT	0.50	1.49	0.93	1.75	2.83	11.39	2.00	7.12	14.9 oz
CDF 750H	1/4 NPT F	1 NPT F	1.23	0.75	1.97	0.93	1.75	2.83	4.13	—	—	10.1 oz
CDF 750H-EPT107	1/4 NPT F	1 NPT F	1 NPT	0.75	1.97	0.93	1.75	2.83	5.02	—	—	10.9 oz
CDF 750H-EPT107-ST16FC	1/4 NPT F	1 NPT F	1 NPT	0.75	1.97	0.93	1.75	2.83	11.70	2.00	7.12	1 lb 2 oz
CDF 1000H	1/4 NPT F	1 1/4 NPT F	1.48	1.00	2.22	0.93	1.75	2.83	4.13	—	—	11.5 oz
CDF 1000H-EPT125	1/4 NPT F	1 1/4 NPT F	1 1/2 NPT	1.00	2.22	0.93	1.75	2.83	4.64	—	—	13.2 oz
CDF 1000H-EPT125-ST24F	1/4 NPT F	1 1/4 NPT F	1 1/2 NPT	1.00	2.22	0.93	1.75	2.83	12.00	2.00	7.85	1 lb 5 oz
CDF 1500H	3/8 NPT F	2 NPT F	1.99	1.50	2.72	0.93	1.75	2.83	4.13	—	—	13.3 oz
CDF 1500H-EPT200	3/8 NPT F	2 NPT F	2 NPT	1.50	2.72	0.93	1.75	2.83	4.76	—	—	1 lb
CDF 1500H-ST2020	3/8 NPT F	2 NPT F	Slip fit	1.50	2.72	0.93	1.75	2.83	17.00	3.46	13.62	1 lb 8 oz
CDF 2000H	3/8 NPT F	2 1/2 NPT F	2.49	2.00	3.22	0.93	1.75	2.83	4.13	—	—	1 lb 0.5 oz

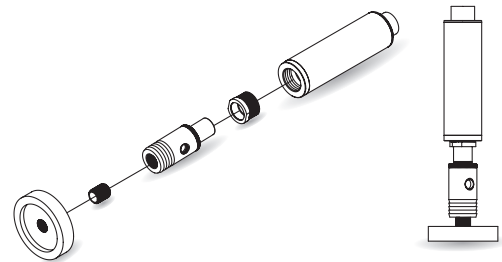
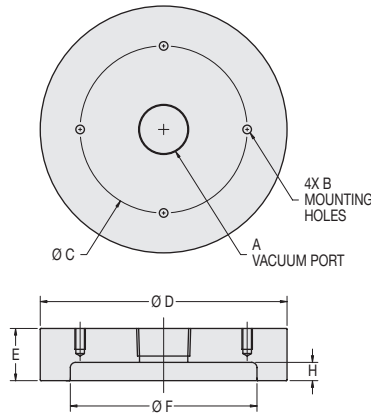
Adjustable Air Amplifiers/Blower

Model #	CDF Series – Metric (mm.)											
	A	B	C	D	E	F	H	J	K	L	M	Weight
I-CDF 100	G 1/8	–	14.2	3.6	31.8	–	11.2	28.7	50.8	–	–	91 grams
I-CDF 100-EPT25	G 1/8	–	1/4 NPT	3.6	31.8	–	11.2	28.7	53.3	–	–	91 grams
I-CDF 100-EPT25-ST4AX	G 1/8	–	1/4 NPT	3.6	31.8	–	11.2	28.7	137.2	25.4	90.7	105 grams
I-CDF 200	G 1/8	–	14.2	6.4	31.8	–	11.2	28.7	50.8	–	–	60 grams
I-CDF 200-EPT25	G 1/8	–	1/4 NPT	6.4	31.8	–	11.2	28.7	53.3	–	–	60 grams
I-CDF 200-EPT25-ST4AX	G 1/8	–	1/4 NPT	6.4	31.8	–	11.2	28.7	137.2	25.4	90.7	105 grams
I-CDF 200H	G 1/8	G 3/8	14.2	6.4	31.8	19.3	30.7	47.5	72.4	–	–	88 grams
I-CDF 200H-EPT25	G 1/8	G 3/8	1/4 NPT	6.4	31.8	19.3	30.7	47.5	72.4	–	–	88 grams
I-CDF 200H-EPT25-ST4AX	G 1/8	G 3/8	1/4 NPT	6.4	31.8	19.3	30.7	47.5	156.2	25.4	90.7	147 grams
I-CDF 375H	G 1/8	G 3/8	17.5	9.5	31.8	19.3	30.7	47.5	72.4	–	–	88 grams
I-CDF 375H-EPT38	G 1/8	G 3/8	3/8 NPT	9.5	31.8	19.3	30.7	47.5	72.4	–	–	88 grams
I-CDF 375H-EPT38-ST6BX	G 1/8	G 3/8	3/8 NPT	9.5	31.8	19.3	30.7	47.5	188.7	31.8	121.9	179 grams
I-CDF 500H	G 1/4	G 1/2	25.1	12.7	37.8	23.6	44.5	71.9	104.9	–	–	179 grams
I-CDF 500H-EPT100	G 1/4	G 1/2	1 NPT	12.7	37.8	23.6	44.5	71.9	117.6	–	–	207 grams
I-CDF 500H-EPT100-ST16FC	G 1/4	G 1/2	1 NPT	12.7	37.8	23.6	44.5	71.9	289.3	50.8	180.8	422 grams
I-CDF 750H	G 1/4	G 1	31.2	19.1	50.0	23.6	44.5	71.9	104.9	–	–	286 grams
I-CDF 750H-EPT107	G 1/4	G 1	1 NPT	19.1	50.0	23.6	44.5	71.9	127.5	–	–	309 grams
I-CDF 750H-EPT107-ST16FC	G 1/4	G 1	1 NPT	19.1	50.0	23.6	44.5	71.9	297.2	50.8	180.8	519 grams
I-CDF 1000H	G 1/4	G 1 1/4	37.6	25.4	56.4	23.6	44.5	71.9	104.9	–	–	326 grams
I-CDF 1000H-EPT125	G 1/4	G 1 1/4	1 1/2 NPT	25.4	56.4	23.6	44.5	71.9	117.9	–	–	374 grams
I-CDF 1000H-EPT125-ST24F	G 1/4	G 1 1/4	1 1/2 NPT	25.4	56.4	23.6	44.5	71.9	304.8	50.8	199.4	595 grams
I-CDF 1500H	G 3/8	G 2	50.5	38.1	69.1	23.6	44.5	71.9	104.9	–	–	377 grams
I-CDF 1500H-EPT200	G 3/8	G 2	G2	38.1	69.1	23.6	44.5	71.9	120.9	–	–	454 grams
I-CDF 1500H-ST2020	G 3/8	G 2	Slip fit	38.1	69.1	23.6	44.5	71.9	431.8	87.9	345.9	692 grams
I-CDF 2000H	G 3/8	G 2 1/2	63.2	50.8	81.8	23.6	44.5	71.9	104.9	–	–	468 grams

UH Series Cups: Material Handling Applications



Material: UHMW



CDF Assembly with UH Cup and attachment

UH Series Cups	Imperial Dimensions (in.)							
	A	B	C	D	E	F	H	Weight
VC-UH6-16	1 NPT	1/4-20 x .50 deep	4.00	5.91	1.25	4.47	0.44	14.8 oz
VC-UH6-16-TL	1 NPT	1/4-20 x .50 deep	4.00	5.91	1.25	5.60	0.44	12.2 oz
	Metric Dimensions (mm)							
	A	B	C	D	E	F	H	Weight
I-VC-UH6-16	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	113.5	11.2	420 grams
I- VC-UH6-16-TL	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	142.2	11.2	346 grams

CDF Series Performance Data & Graphs for Ducted Flow

CDF Performance Data – Imperial			
Model #	Maximum Vacuum Level – “Hg H10236815097 I-CDF 1500H102 70798495I-CDF 2000H34934511044	Maximum Vacuum Flow – SCFM	Maximum Exhaust Output – SCFM
CDF 100	15	4	6
CDF 200	9	12	16
CDF 200H	9	12	16
CDF 375H	8	28	36
CDF 500H	7	55	70
CDF 750H	5	110	140
CDF 1000H	3	130	180
CDF 1500H	3	250	300
CDF 2000H	1	330	390

CDF Performance Data – Metric			
Model #	Maximum Vacuum Level – mbar	Maximum Vacuum Flow – lpm	Maximum Exhaust Output – lpm
I-CDF 100	508	113	170
I-CDF 200	305	340	453
I-CDF 200H	305	340	453
I-CDF 375H	271	793	1019
I-CDF 500H	237	1557	1982
I-CDF 750H	169	3115	3964
I-CDF 1000			

Consult individual performance data charts for air consumption values at desired operation position.

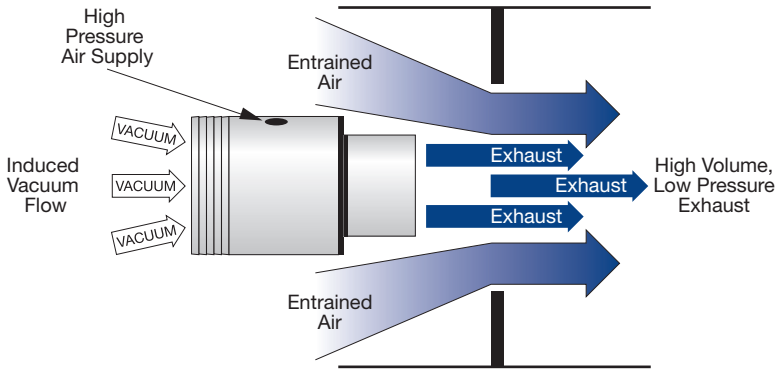
Unducted Flow vs Ducted Flow

Unducted Flow

The amplification ratio of the CDF Series is greatly increased when the output from the amplifier is open to the atmosphere allowing the high speed air flow exiting the amplifier to entrain surrounding air to create a greater flow with amplification ratios up to 40:1. Total output flow is the combination of entrained air, induced air and compressed air.

Ducted Flow

When the exhaust side of the amplifier has a duct attached to it, it cannot draw air in from its surroundings. Therefore, amplification is only created by the internal vacuum created at the suction port. Total output flow is the combination of induced flow and compressed air.

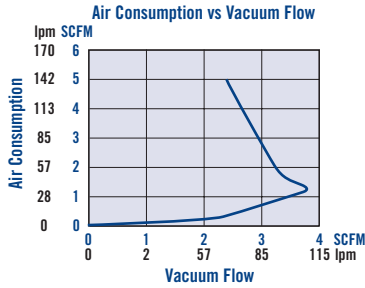


Inline Venturi Vacuum Pump

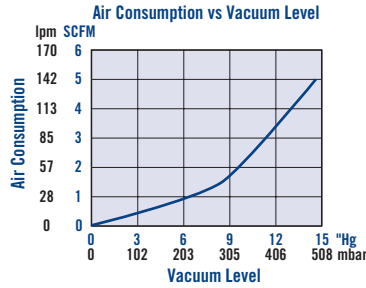
CDF 100 Series



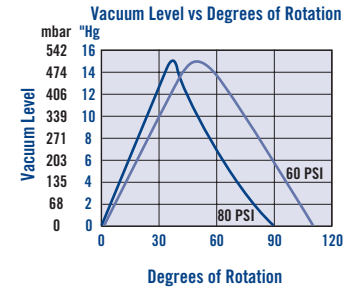
CDF 100



CDF 100-EPT25



CDF 100-EPT25-ST4AX



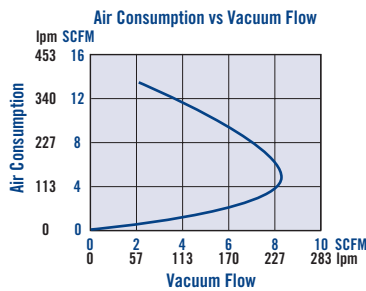
CDF 200 & 200H Series



CDF 200



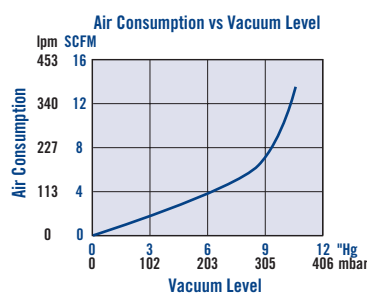
CDF 200H



CDF 200-EPT25



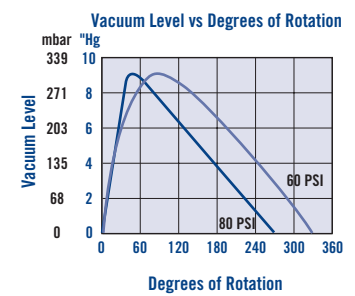
CDF 200H-EPT25



CDF 200-EPT25-ST4AX



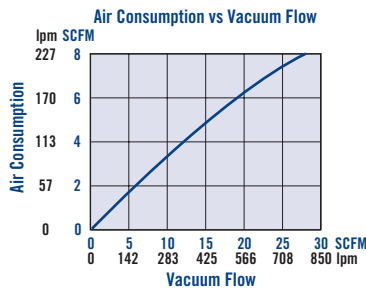
CDF 200H-EPT25-ST4AX



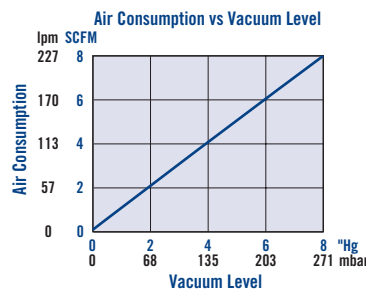
CDF 375H Series



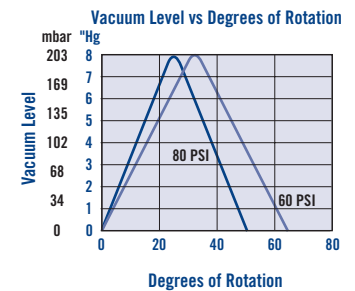
CDF 375H



CDF 375H-EPT38



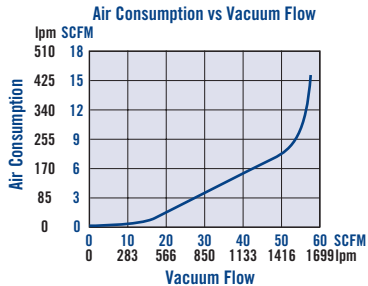
CDF 375H-EPT38-ST6BX



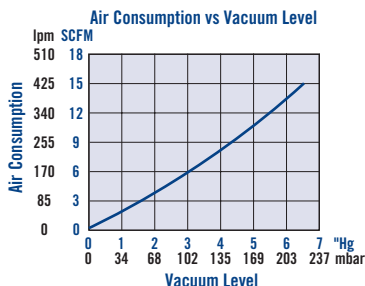
CDF 500H Series



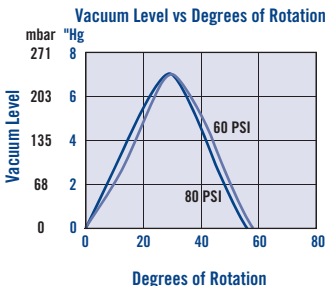
CDF 500H



CDF 500H-EPT100



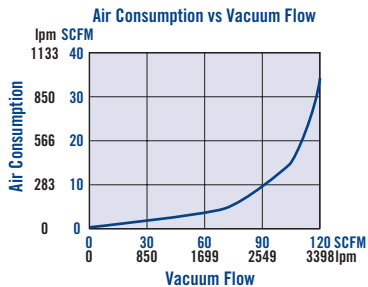
CDF 500H-EPT100-ST16FC



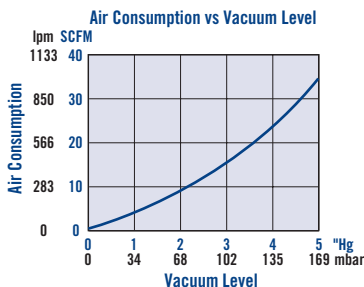
CDF 750H Series



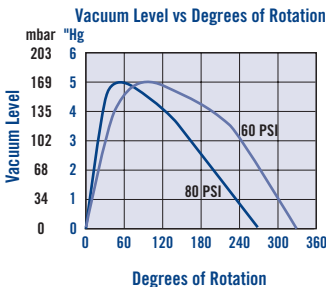
CDF 750H



CDF 750H-EPT107



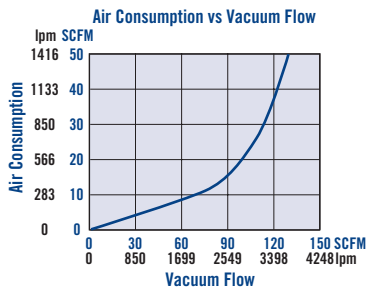
CDF 750H-EPT107-ST16FC



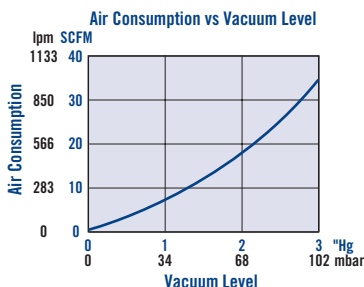
CDF 1000H Series



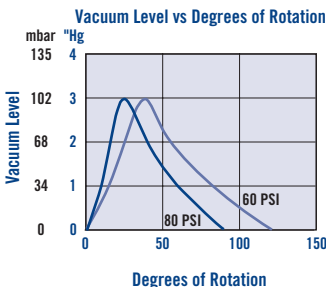
CDF 1000H



CDF 1000H-EPT125



CDF 1000H-EPT125-ST24FC

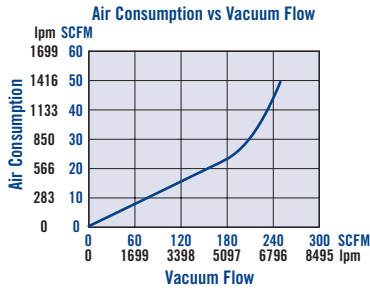


Inline Venturi Vacuum Pump

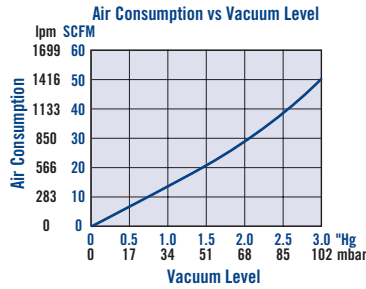
CDF 1500H Series



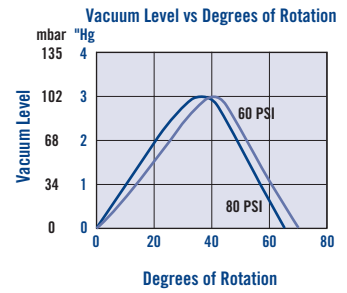
CDF 1500H



CDF 1500H-EPT200



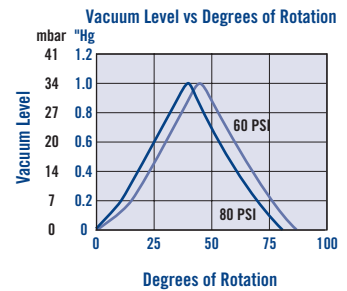
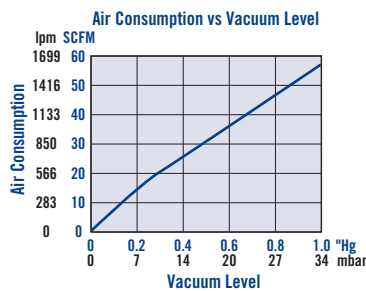
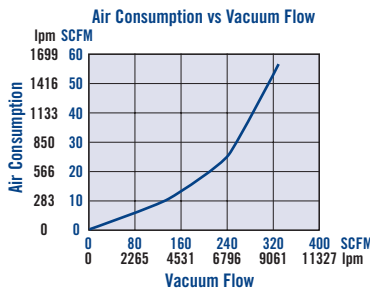
CDF 1500H-ST2020



CDF 2000H Series



CDF 2000H



CDF Series – Noise Levels at 80psi

Model #	Silencer Options				
	Silencer #	With Silencer		Without Silencer	
		Open Flow	Sealed Vacuum	Open Flow	Sealed Vacuum
CDF 100 - EPT25	ST4AX	76db	74db	88db	88db
CDF 200 - EPT25	ST4AX	86db	78db	98db	94db
CDF 200H - EPT25	ST4AX	86db	78db	98db	94db
CDF 375H - EPT38	ST46BX	74db	70db	78db	84db
CDF 500H - EPT100	ST16FC	72db	78db	84db	96db
CDF 750H - EPT107	ST16FC	78db	80db	86db	96db
CDF 1000H - EPT125	ST24F	80db	82db	86db	96db
CDF 1500H	ST2020	80db	82db	86db	96db
CDF 2000H	N/A	N/A	N/A	88db	94db

Custom Air Amplifiers – CDF Series

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with specific features, or special materials, Vaccon has the solution.

Specialty Materials:

303, 304, 316 and 316L Stainless steel, PVC, PTFE, Acetal, PEEK and more. For chemical compatibility requirements, high temperature, food, medical and caustic applications, custom materials are available including stainless steel, PEEK, Delrin,™ Teflon,™ PVC.



PVC for chemical resistance.



Stainless Steel for high temperatures or caustic materials.



CDF-750-PM:
Panel mount thread for easy mounting and installation.



Custom Products:
Custom CDF with O-rings (not shown) is part of a sub-assembly incorporated into another piece of equipment for compact design. No external plumbing required.

Custom products for Inflation/Deflation Applications:

Inherent design features in the CDF Series air amplifiers prevents over inflation (bursting), making them the ideal solution for safe inflation and deflation operations.



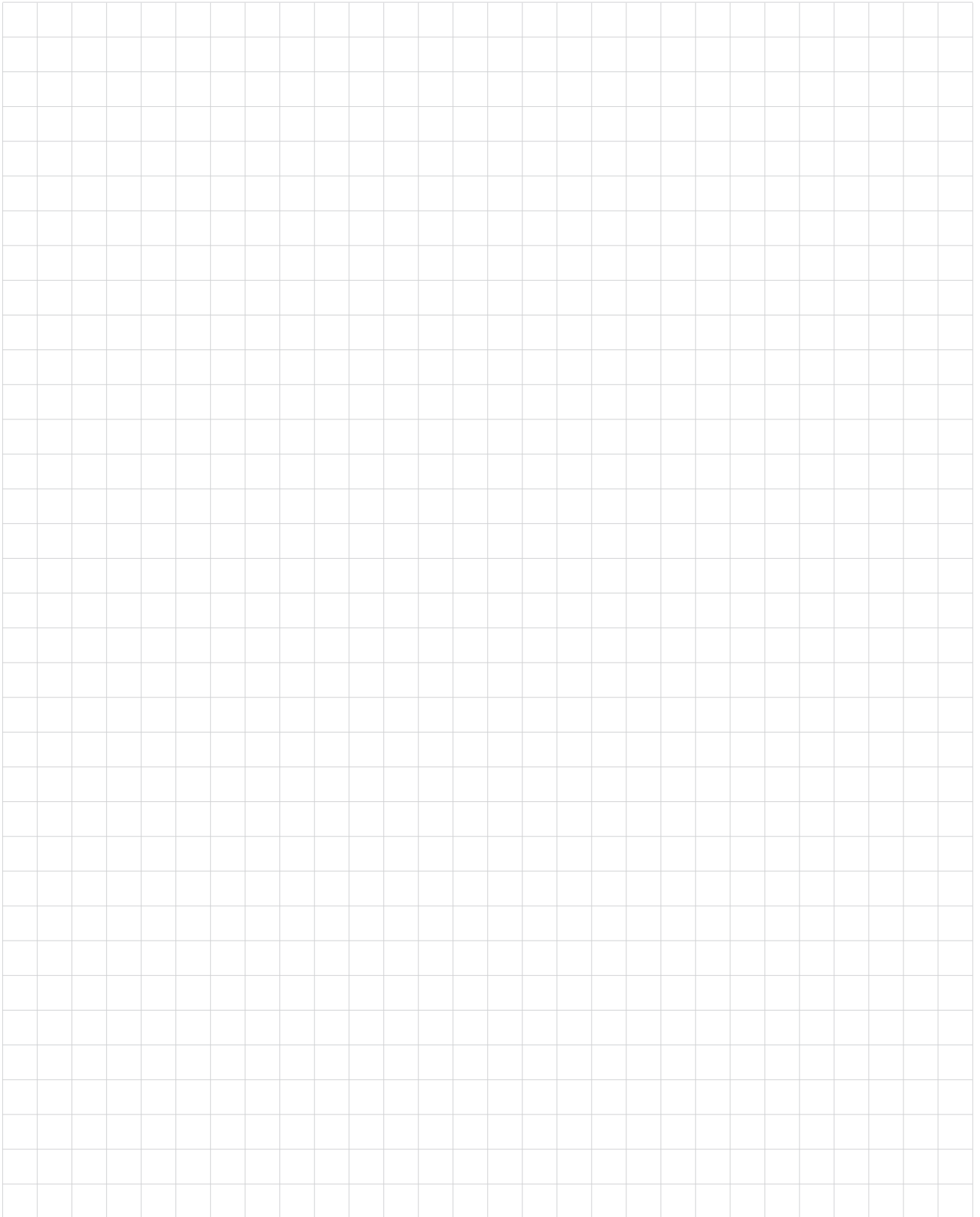
Custom CDF air amplifier for safe, rapid inflation and deflation of inflatables for the Coast Guard operations



Custom CDF inflates and deflates dunnage bags to protect loads during shipment.

When size, shape, material and performance matter, it's Vaccon Vacuum Pumps.

Inline Venturi Vaccum Pump



The DF Series of high flow material conveying vacuum pumps provide a simple, reliable and cost effective method of in-line transfer of bulk materials, complex shapes, individual objects, selvedge.



DF Series - Material Conveying Pumps

The DF pump's unique capability to create instantaneous vacuum flow and high air velocity, combined with its straight-through, smooth bore design allows material to pass directly through the pump at high speeds without interference or clogging.

Simply regulate the input pressure to adjust and control the transfer speed. For maximum efficiency, the compact design allows close placement to the work area. DF Series material conveying pumps are made of anodized aluminum and available in 17 standard models with inside diameters from 1/8" [6mm] to 4" [100mm].

See Page **218**

Material Conveying

Material Conveying Vacuum Pumps

DF Series



The DF Series of high flow material conveying vacuum pumps provide a simple, reliable and cost effective method of in-line transfer of bulk materials, complex shapes, individual objects, selvage.

The DF pump's unique capability to create instantaneous vacuum flow and high air velocity, combined with its straight-through, smooth bore design allows material to pass directly through the pump at high speeds without interference or clogging.

Simply regulate the input pressure to adjust and control the transfer speed. For maximum efficiency, the compact design allows close placement to the work area.

DF Series material conveying pumps are made of anodized aluminum and available in 17 standard models with inside diameters from 1/8" [6mm] to 4" [100mm].

Applications:



Bulk Materials:

- Granulated Plastics
- Seasonings
- Dry Powders
- Ball Bearings
- Paper Strips
- Wood Chips
- Molded Items
- Game Pieces
- Food Products
- Pharmaceutical Products
- Chip Removal in Machining Operations
- Caustic or Hazardous Materials



Individual Objects:

- Pens And Pen Caps
- Bottle Caps
- Pills, Tablets
- Electronic Components
- Springs
- Packaged Products
- Spark Plugs
- Needles
- Screwdrivers
- Bearings
- Engine Valves
- Golf Balls



Trim, Selvage and Fiber Collection:

- Transfer Selvage from Trimming Operations
- Wind, Unwind, Manage Continuous Strips
- Waste Removal for Manual and Automatic Operations
- Drying
- Assists Central Collection Systems

Vaccon Fun Fact: Our first product developed was a vacuum conveying product, thus our name **VAC**uum **CON**veying

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Features/Benefits

- Application versatility
- Efficient – instant on and off, low operating costs
- Fast response – installs close to vacuum point
- Easy to install – simply connect tubing to the vacuum and exhaust ports, and supply compressed air
- Safe operation – no electricity needed at the pump
- Reliable – trouble-free operation:
 - ~ Straight-through design, non-clogging
 - ~ No moving parts to wear or clog
 - ~ No flap valves to stick open
 - ~ No maintenance
 - ~ No downtime

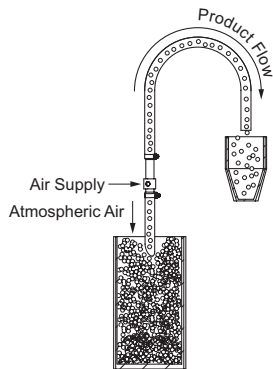
Pump Options:

- Internal and external threaded exhaust and/or vacuum ports
- G port threads for metric machines – an "I" prefix designates products with metric threads
- Teflon™ or hardcoat anodizing
- For chemical compatibility, heat and environmental requirements, food and medical applications, custom materials, special coatings and modified threads are available.

General Application Information

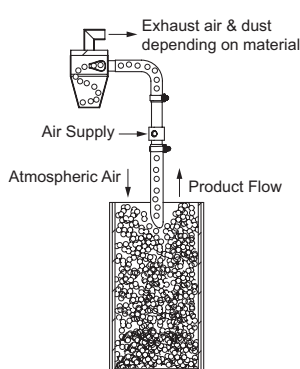
Sizing the correct DF material transfer pump is based on the material density, particle size, transfer rate required (kg/min), elevation and length of transfer line. For application assistance, please contact Vaccon Technical Support. In many cases, customers send product to Vaccon to test at our in-house test facility. Ask about our 30-Day Test & Evaluation policy.

Transferring Bulk Materials:



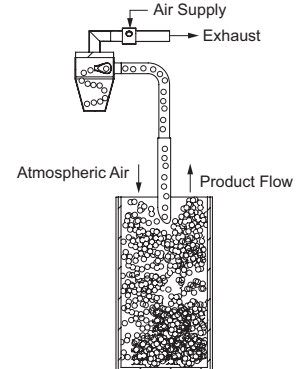
Basic Hopper

Place pump about 1/3 the overall distance from the suction. Allow the compressed air powering the pump to assist in pushing the material to the collection hopper.



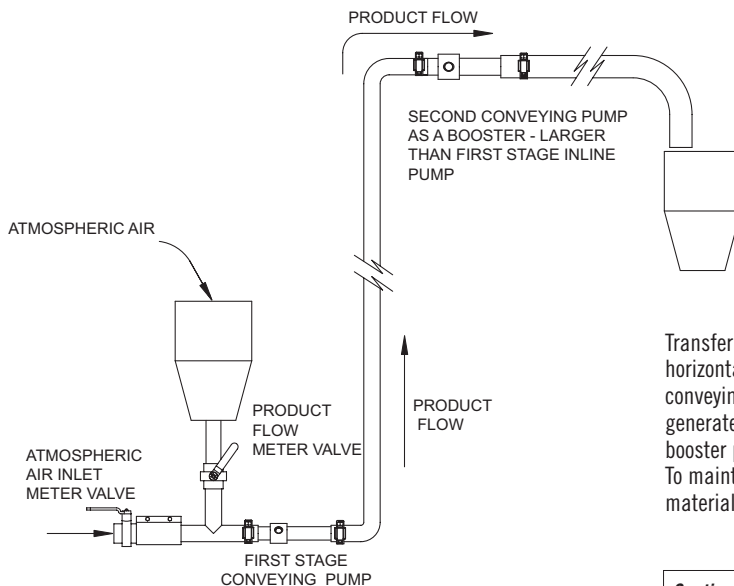
Hopper Inlet

Induced atmospheric air, compressed air and the material being transferred enter the collection hopper, where the material falls by gravity. The air vents out the top of the hopper. To capture lighter-than-air materials, connect a filter or dust collector to the hopper outlet.



Hopper Outlet

The DF pump creates a vacuum in the collection hopper causing the material to flow up the conveyor tube into the collection hopper. Compressed air doesn't mix with the material, helping to prevent a cloud from forming when transferring fine, light powders. Material entering the hopper falls to the bottom faster due to the vacuum in the collection hopper. To reduce noise, add an optional silencer to the DF pump exhaust.



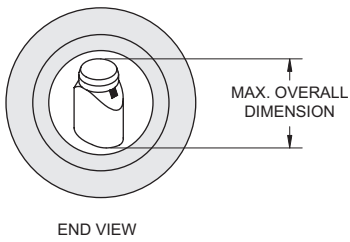
Hopper to Hopper Butterfly Extended Distance

Transferring bulk and individual items vertically and horizontally over long distances may require a second conveying pump as a booster pump. To accept the flow generated by the first pump and to add power, add a booster pump that is larger than the first-stage pump. To maintain the proper balance between air intake and material intake use a valve to meter both.

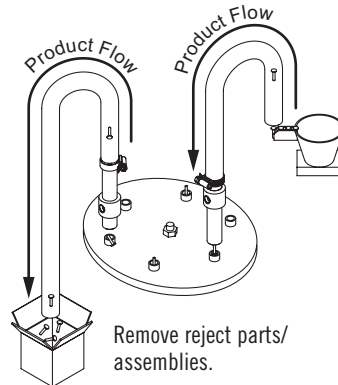
Caution: When conveying materials through plastic transfer lines, you must ground the transfer line to dissipate the static charge that develops from the friction of the air and material flowing over the transfer line surface.

Material Conveying Pumps

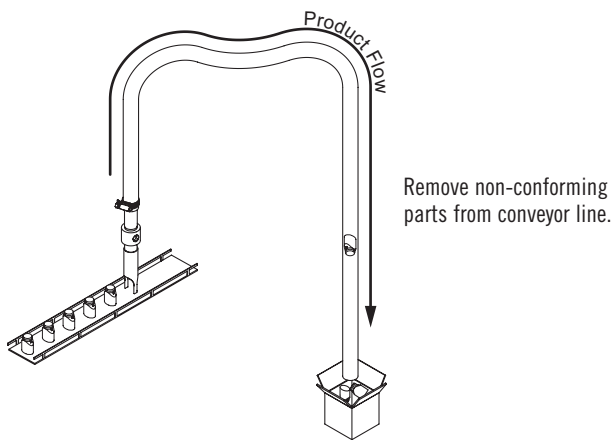
Transferring Complex Shapes & Individual Objects:



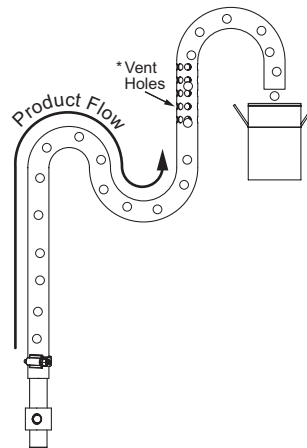
To size a DF pump for transferring individual items, choose the pump with an inside diameter just slightly larger than the largest dimension of the object.



Load parts for assembly from a vibratory bowl feeder.



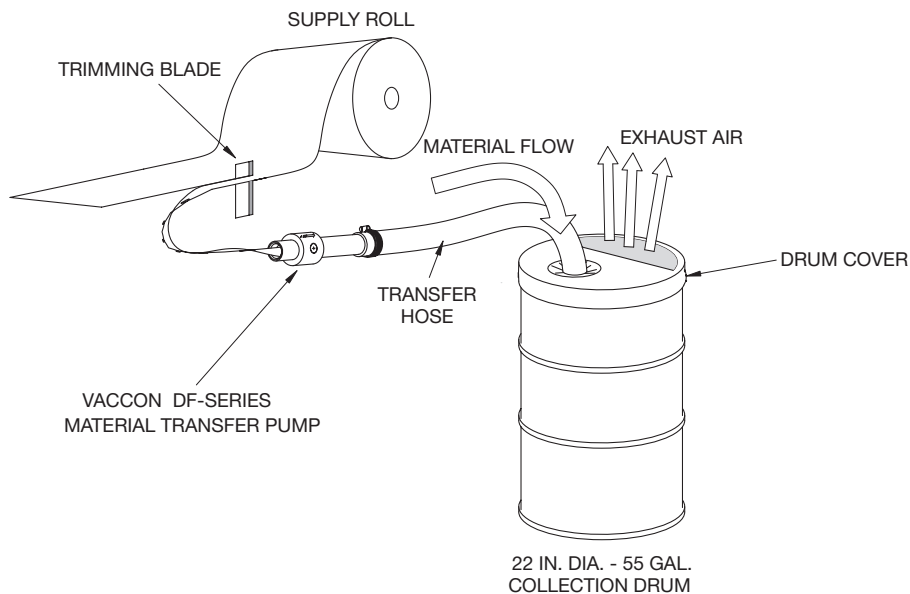
Remove non-conforming parts from conveyor line.



Design Tip: To prevent damage or to match the assembly speed, decrease the transfer speed by introducing a vertical bend into the tube, allowing gravity to work against the direction of travel.

* To reduce transfer speed further, add holes in the tube to allow the air to vent.

Trim, Selvedge and Fiber Collection:

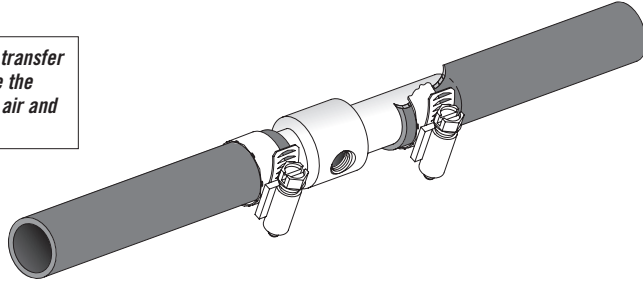


Installation Options:

For simple applications, place the DF pump in the transfer line, slip the transfer hose over the outside diameter of the pump and secured in place with a hose clamp.

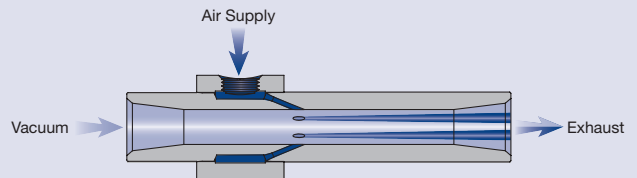
When this type of installation is not desired or appropriate for the application, Vaccon offers the option of adding threads to the O.D. and the I.D. Please see page 222 for optional vacuum & exhaust port threads.

Caution: When conveying materials through plastic transfer lines, you must ground the transfer line to dissipate the static charge that develops from the friction of the air and material flowing over the transfer line surface.



Principles of Operation:

Compressed air is fed into an exterior annular ring that has a number of orifices leading into the main tube of a transducer. As the compressed air exits from the orifices, its velocity increases to supersonic speed. The air forced into the center of the tube rotates with a twisting motion similar to a worm screw. This cyclonic flow creates a powerful vacuum capable of drawing materials into and through the transducer. As a vacuum source, the DF Series are capable of rapid evacuation of a large volume of air to a low vacuum level.



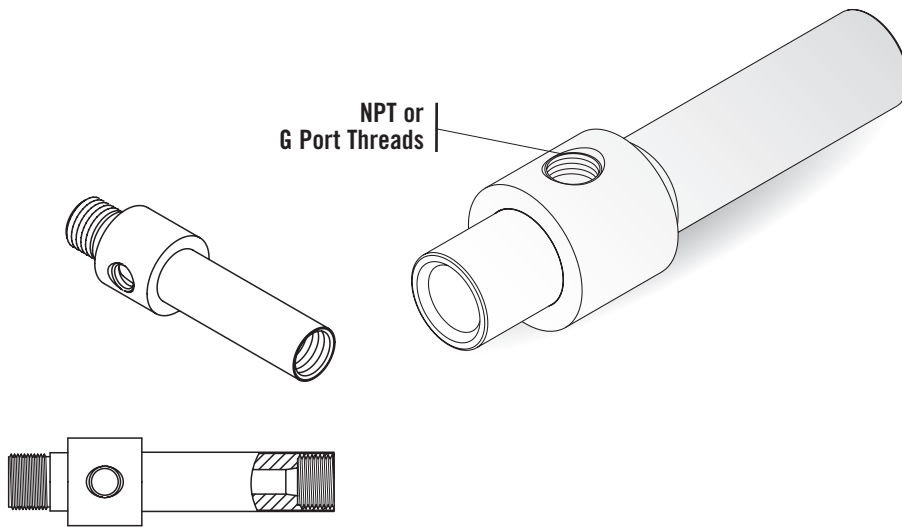
DF Series Material Conveying Pumps Standard Specifications:

Body Material:	Anodized Aluminum Standard
Medium:	Filtered (50 Micron) unlubricated, non-corrosive, dry gases
Operating Temperature:	-100°~ 400° F [-73°~204°C]
Operating Pressure:	Input pressure of 40 PSI or less is sufficient to move most bulk materials and individual objects
Supply Pressure:	Regulate the supply pressure to develop the necessary transfer speed for your application

Material Conveying Pumps

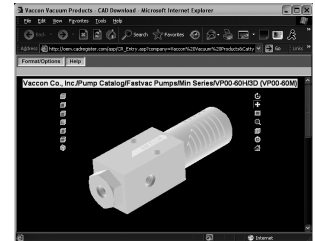
DF Series Configurations and Options:

All Vaccon pumps offer a variety of options and accessories to meet your specific requirements. Please configure your pump from the options listed below.



Optional Threaded Ports:

Optional internal or external threaded vacuum and/or exhaust ports.



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

DF 5-6 - TV50/TE50 - 304

Standard (Non-Threaded) DF Series				Optional Threaded Ends			
P/N NPT	P/N G Port	Recommended		Internal Vacuum Port	Internal Exhaust Port	External Vacuum Port	External Exhaust Port
		Air Supply Line	Transfer Hose				
DF 1-3	I-DF 1-3	1/4	3/4" I.D.	TV25	TE25	MTV38	MTE38
DF 2-3	I-DF 2-3	1/4	3/4" I.D.	TV25	TE25	MTV38	MTE38
DF 3-3	I-DF 3-3	1/4	3/4" I.D.	TV25	TE25	MTV38	MTE38
DF 3-6	I-DF 3-6	3/8	3/4" I.D.	TV25	TE25	MTV38	MTE38
DF 5-3	I-DF 5-3	3/8	1" I.D.	TV50	TE50	MTV50	MTE50
DF 5-6	I-DF 5-6	3/8	1" I.D.	TV50	TE50	MTV50	MTE50
DF 7-3	I-DF 7-3	1/2	1 1/4" I.D.	TV75	TE75	MTV75	MTE75
DF 7-6	I-DF 7-6	1/2	1 1/4" I.D.	TV75	TE75	MTV75	MTE75
DF 10-3	I-DF 10-3	1/2	1 1/2" I.D.	TV100	TE100	MTV100	MTE100
DF 10-6	I-DF 10-6	1/2	1 1/2" I.D.	TV100	TE100	MTV100	MTE100
DF 12-3	I-DF 12-3	1/2	1 3/4" I.D.	N/A	N/A	N/A	N/A
DF 12-6	I-DF 12-6	1/2	1 3/4" I.D.	N/A	N/A	N/A	N/A
DF 15-3	I-DF 15-3	1/2	2" I.D.	TV150	TE150	MTV150	MTE150
DF 15-6	I-DF 15-6	1/2	2" I.D.	TV150	TE150	MTV150	MTE150
DF 20-3	I-DF 20-3	1/2	2 1/2" I.D.	TV200	TE200	MTV200	MTE200
DF 20-6	I-DF 20-6	1/2	2 1/2" I.D.	TV200	TE200	MTV200	MTE200
DF 30-6	I-DF 30-6	3/4	3 1/2" I.D.	N/A	N/A	N/A	N/A
DF 40-12	I-DF 40-12	3/4	5" I.D.	N/A	N/A	N/A	N/A

P/N	Material
	Anodized Aluminum (Std.)
303*	Stainless Steel
304	Stainless Steel
316	Stainless Steel
316L	Low Carbon Stainless
PVC	PVC
PEEK	PEEK
TEF	Teflon®
DEL	Delrin®

*303 Stainless Steel only available for DF 1-3, 2-3, 3-3, and 3-6. Not available in larger size pumps.

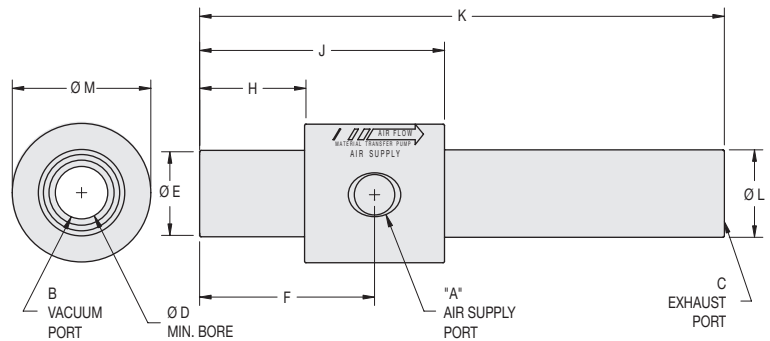
For complete Performance Data, see page 224.

Please note: Male and female threads can be ordered on different ends of the same pump. i.e. DF 5-6-TV50/MTE50

Please note: Custom materials are not stock items. Consult factory for availability.

Please note: Special anodizing available. i.e. Teflon™ hardcoat, hard anodize, etc. Consult factory.

Standard Material Conveying Pump: DF Series (DF 7-6 shown is representative sample of all DF's)



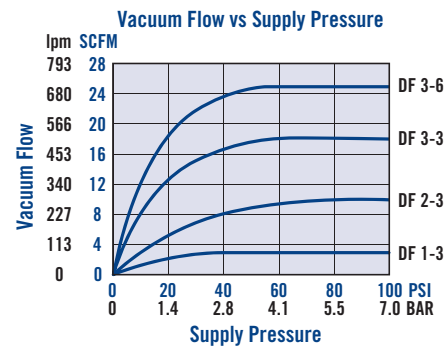
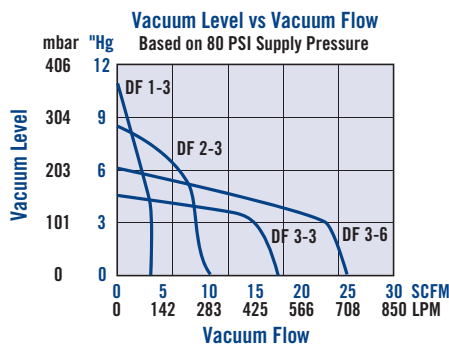
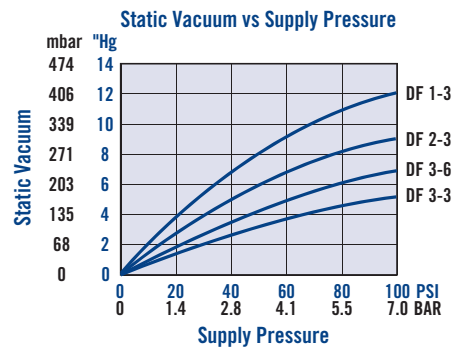
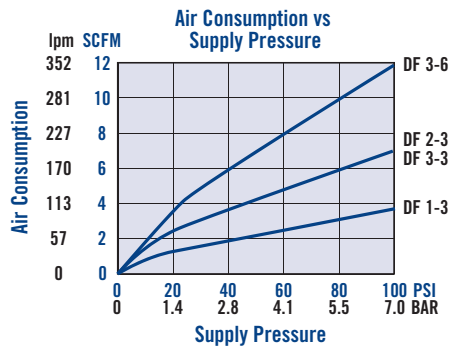
Model #	DF Series – Imperial Dimensions (in.)													
	A	B Optional Male Vacuum Thread	C Optional Male Exhaust Thread	B Optional Female Vacuum Thread	C Optional Female Exhaust Thread	D Minimum Bore	E	F	H	J	K	L	M	Weight
DF 1-3	1/8 NPT F	3/8" NPT	3/8" NPT	1/4" NPT	1/4" NPT	0.15	0.73	1.25	0.75	1.75	3.50	0.74	1.24	3.4 oz
DF 2-3	1/8 NPT F	3/8" NPT	3/8" NPT	1/4" NPT	1/4" NPT	0.25	0.73	1.25	0.75	1.75	3.50	0.74	1.24	3.2 oz
DF 3-3, 3-6	1/8 NPT F	3/8" NPT	3/8" NPT	1/4" NPT	1/4" NPT	0.38	0.73	1.25	0.75	1.75	3.50	0.74	1.24	2.8 oz
DF 5-3, 5-6	1/4 NPT F	1/2" NPT	1/2" NPT	1/2" NPT	1/2" NPT	0.50	0.99	1.62	1.00	2.25	5.50	1.00	1.48	6.2 oz
DF 7-3, 7-6	3/8 NPT F	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	0.75	1.24	2.50	1.50	3.50	7.50	1.25	1.98	13.4 oz
DF 10-3, 10-6	3/8 NPT F	1" NPT	1" NPT	1" NPT	1" NPT	1.00	1.46	2.50	1.50	3.50	7.50	1.48	2.23	1 lb 5 oz
DF 12-3, 12-6	3/8 NPT F	*	*	*	*	1.25	1.71	2.50	1.50	3.50	7.50	1.73	2.47	1 lb 3 oz
DF 15-3, 15-6	3/8 NPT F	1 1/4" NPT	1 1/4" NPT	1 1/4" NPT	1 1/4" NPT	1.50	1.96	2.50	1.50	3.50	7.50	1.98	2.73	1 lb 5 oz
DF 20-3, 20-6	3/8 NPT F	2" NPT	2" NPT	2" NPT	2" NPT	2.00	2.46	2.50	1.50	3.50	7.50	2.48	3.23	1 lb 9 oz
DF 30-6	1/2 NPT F	N/A	N/A	N/A	N/A	3.00	3.46	2.50	1.50	3.50	8.50	3.48	4.47	3 lbs 6 oz
DF 40-12	3/4 NPT F	N/A	N/A	N/A	N/A	4.00	4.89	3.25	2.00	4.50	9.50	4.95	5.58	6 lbs 11 oz

Model #	DF Series – Metric Dimensions (mm.)													
	A	B Optional Male Vacuum Thread	C Optional Male Exhaust Thread	B Optional Female Vacuum Thread	C Optional Female Exhaust Thread	D Minimum Bore	E	F	H	J	K	L	M	Weight
I-DF 1-3	G 1/8	G 3/8	G 3/8	G 1/4	G 1/4	3.8	18.4	31.8	19.1	44.5	88.9	18.8	31.5	96g
I-DF 2-3	G 1/8	G 3/8	G 3/8	G 1/4	G 1/4	6.4	18.4	31.8	19.1	44.5	88.9	18.8	31.5	91g
I-DF 3-3, 3-6	G 1/8	G 3/8	G 3/8	G 1/4	G 1/4	9.7	18.4	31.8	19.1	44.5	88.9	18.8	31.5	79g
I-DF 5-3, 5-6	G 1/4	G 1/2	G 1/2	G 1/2	G 1/2	12.7	25.0	41.1	25.4	57.2	139.7	25.4	37.6	176g
I-DF 7-3, 7-6	G 3/8	G 3/4	G 3/4	G 3/4	G 3/4	19.1	31.4	63.5	38.1	88.9	190.5	31.8	50.3	380g
I-DF 10-3, 10-6	G 3/8	G 1	G 1	G 1	G 1	25.4	37.1	63.5	38.1	88.9	190.5	37.6	56.6	468g
I-DF 12-3, 12-6	G 3/8	*	*	*	*	31.8	43.4	63.5	38.1	88.9	190.5	43.9	62.7	541g
I-DF 15-3, 15-6	G 3/8	G 1 1/4	G 1 1/4	G 1 1/4	G 1 1/4	38.1	49.8	63.5	38.1	88.9	190.5	50.3	69.3	607g
I-DF 20-3, 20-6	G 3/8	G 2	G 2	G 2	G 2	50.8	62.5	63.5	38.1	88.9	190.5	63.0	82.0	777g
I-DF 30-6	G 1/2	N/A	N/A	N/A	N/A	76.2	87.9	63.5	38.1	88.9	215.9	88.4	113.5	1.4kgs
I-DF 40-12	G 3/4	N/A	N/A	N/A	N/A	101.6	124.2	82.6	50.8	114.3	241.3	125.7	148.6	3kgs

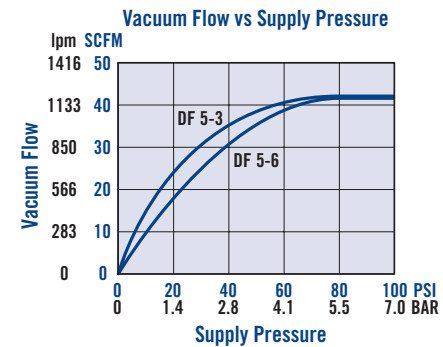
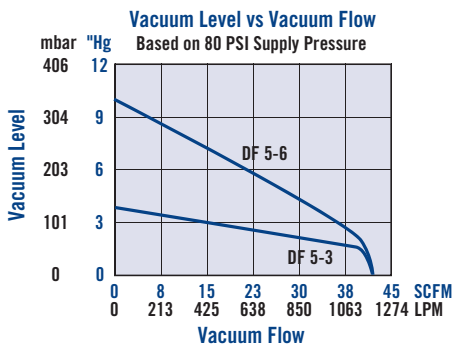
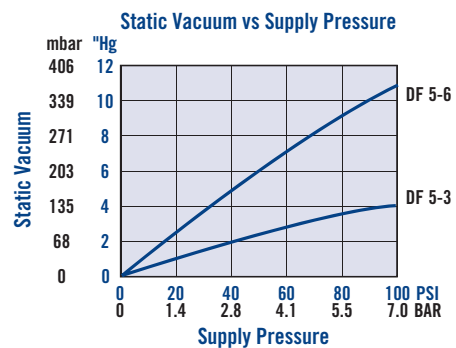
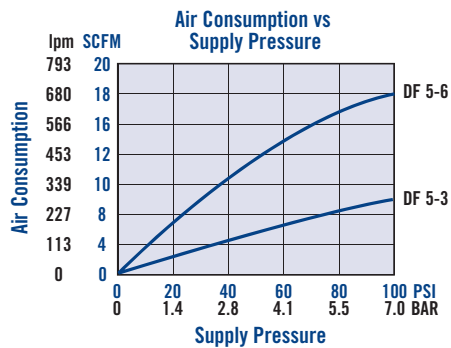
*Note: Consult Factory.

DF Material Conveying Pumps – Performance Graphs

DF 1-3, DF 2-3, DF 3-3, DF 3-6

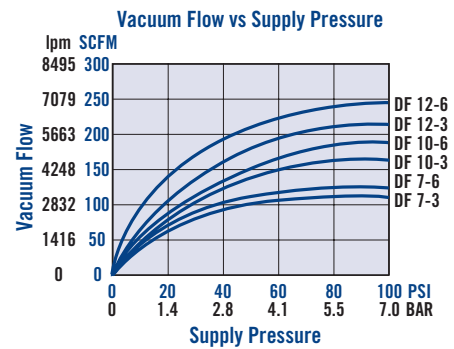
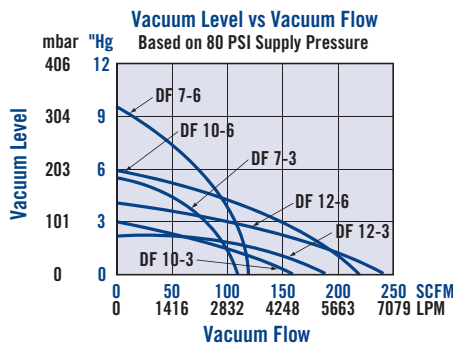
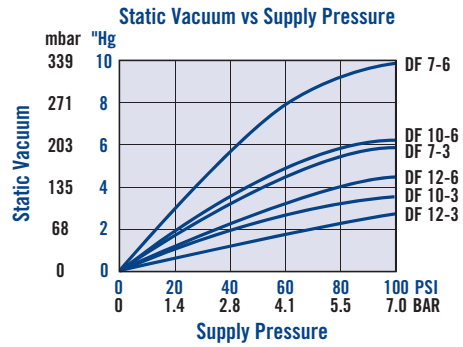
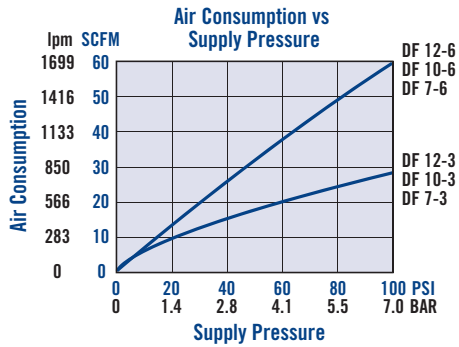


DF 5-3, DF 5-6

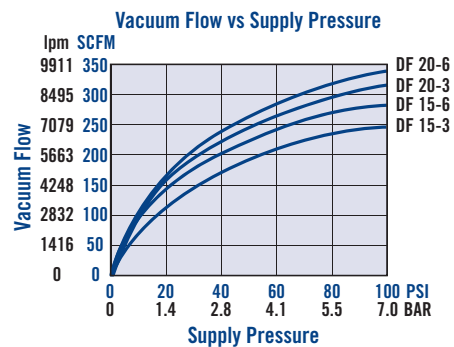
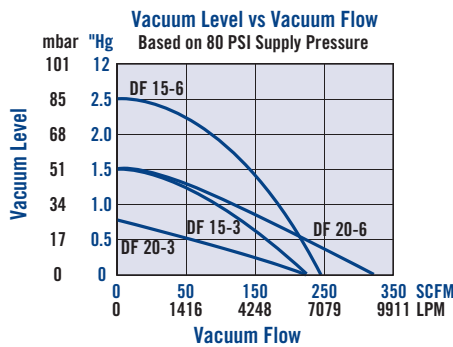
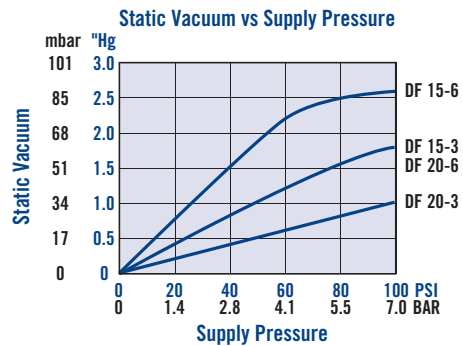
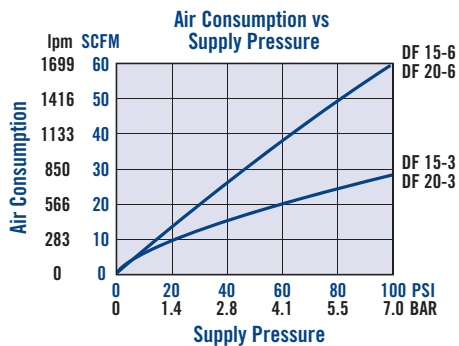


Operating Note: Above 40 PSI, the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

DF 7-3, DF 7-6, DF 10-3, DF 10-6, DF 12-3, DF 12-6



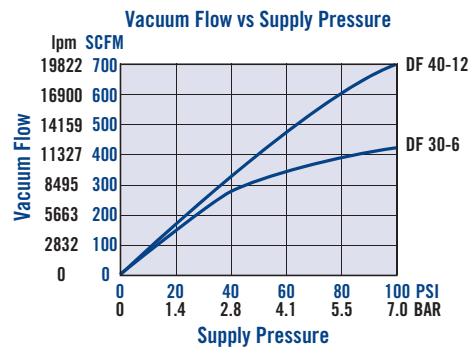
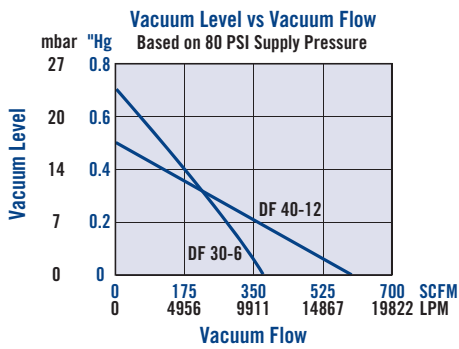
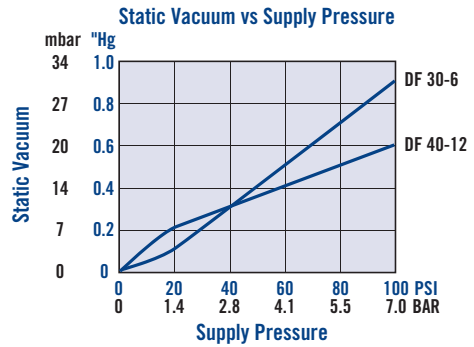
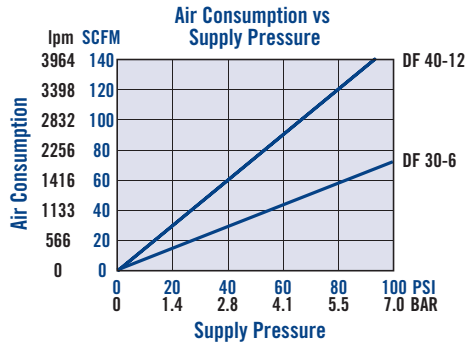
DF 15-3, DF 15-6, DF 20-3, DF 20-6



Operating Note: Above 40 PSI, the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

Material Conveying Pumps

DF 30-6, DF 40-12



Operating Note: Above 40 PSI, the increased energy consumed through rising air consumption is converted into increased vacuum level while vacuum flow stays constant. It is the vacuum flow that provides the motive force for the materials to be transferred. Higher vacuum levels are useful when lifting high molecular weight bulk materials and heavy individual objects long distances vertically.

Custom Material Conveying Pumps – DF Series

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with specific features, or special materials, Vaccon has the solution.

Vaccon customizes more DF pumps than any other product line.

Custom Materials:



When transferring highly abrasive, caustic or food grade materials, Vaccon offers the DF Series material conveying pumps in several grades of stainless steel – 303, 304, 316, 316L, Delrin®, Teflon®, PVC, PEEK, as well as hardcoat and Teflon® coated anodizing.

Custom Shapes and Sizes:



Custom stainless steel DF with integral Tri-clover® clamp for food industry.

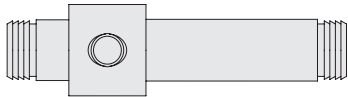
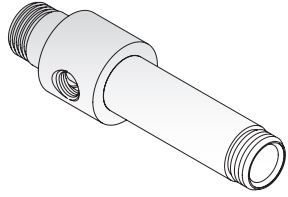
Custom End Configurations/Connections:



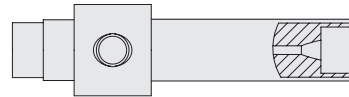
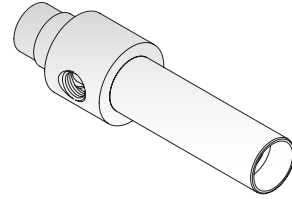
When size, shape, material and performance matter, it's Vaccon Vacuum Pumps.

Material Conveying Pumps

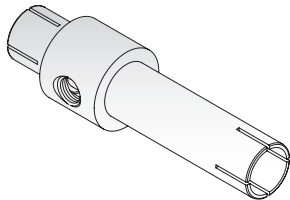
DF Custom End Connections



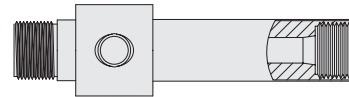
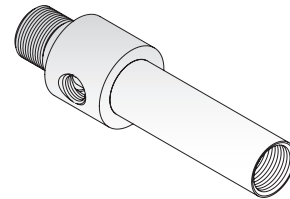
*Barbs grip securely on flexible tubing,
no clamps required*



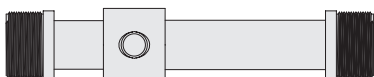
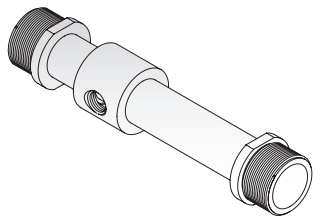
*Combined turned OD with counter bored
ID to match customer design*



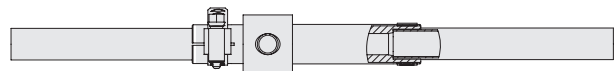
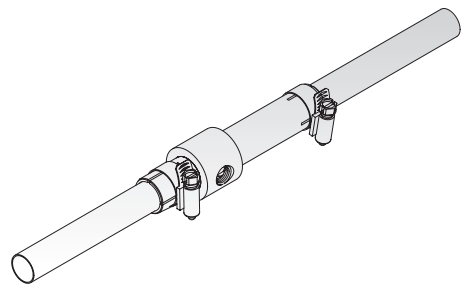
*Slotted: Counter bored to match
transfer tube for smooth transition*



*Optional OD and ID threads.
See tables on Page 231*

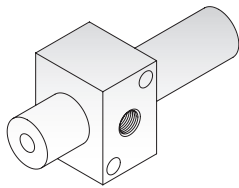


*Threaded Adapter:
Oversized threads available*

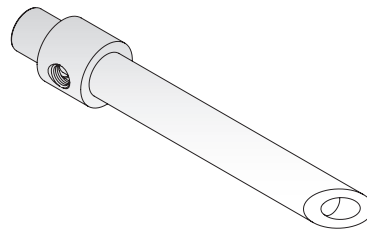


*Slotted with screw clamp for
clamping OD of transfer tube*

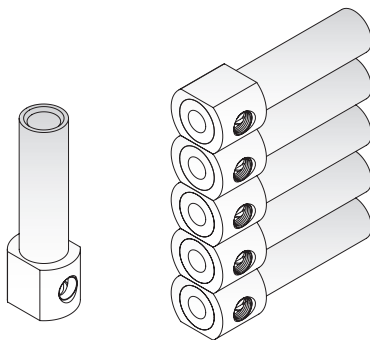
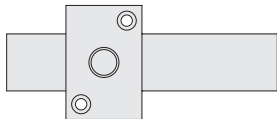
DF Pumps – Custom Shaped



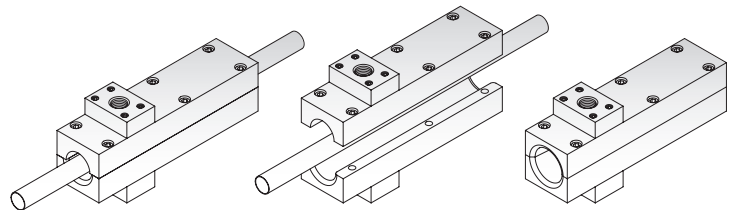
Square collar aids in mounting



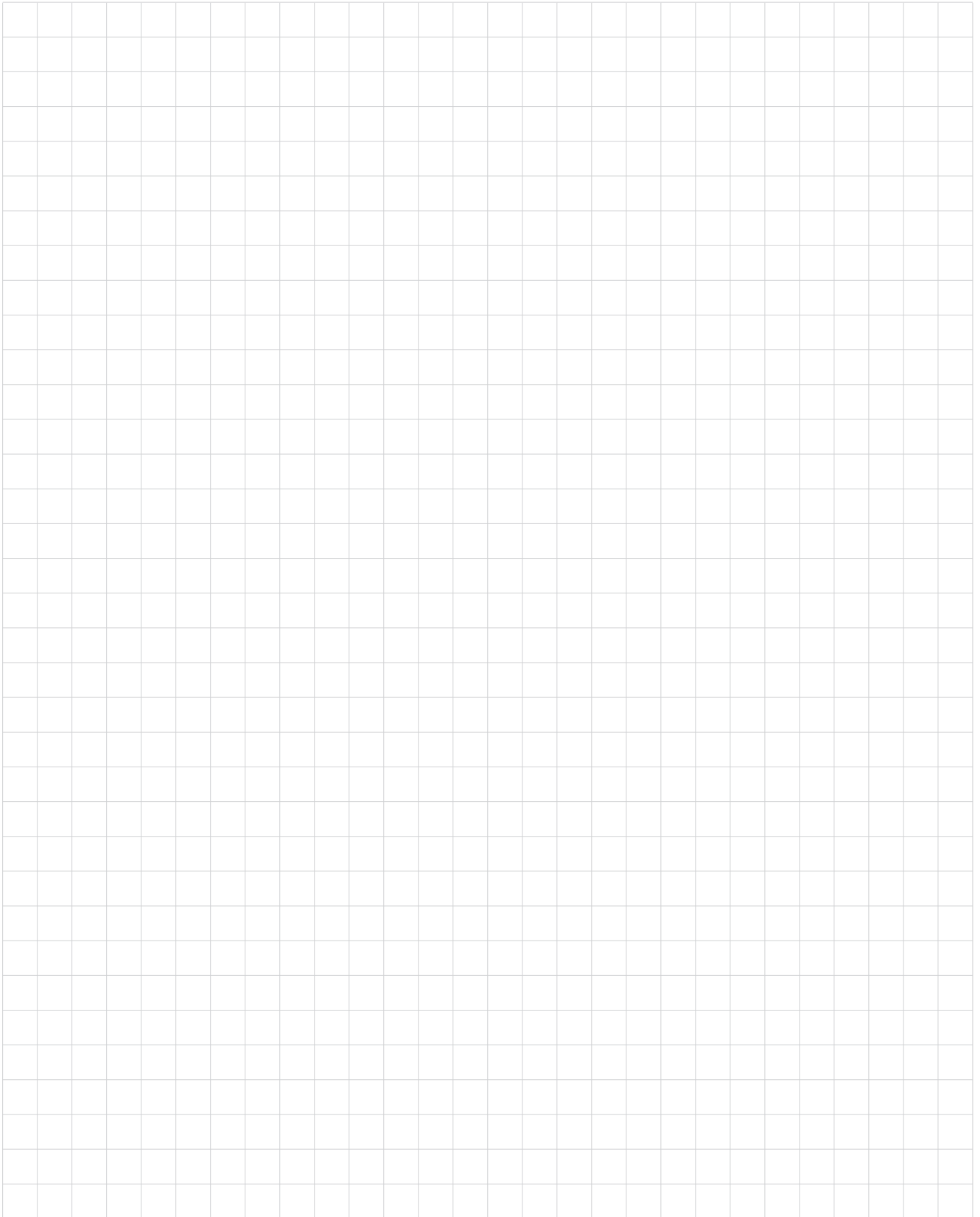
Extended length with angle for stuffing stuffed animals



DF notched multi-pump – close centers designed for picking and placing compression springs

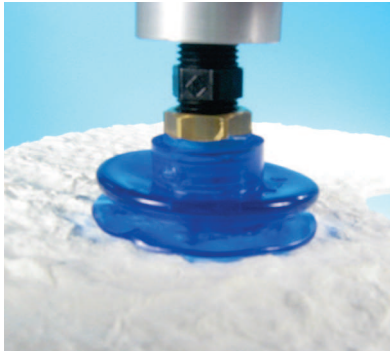


DFR – split design surrounds continuous fibers, wires, tubing etc., for drying and cooling



Vaccon offers a wide range of suction cup styles and sizes. Fittings in multiple styles are also available individually or as a cup assembly. Cups are available in various durometers, colors and materials.

As is true in most vacuum applications, there is more than one correct answer. In order to successfully find the best cups and pumps for a specific task, it is helpful to review our Suction Cup Selection Guide in our catalog, or click on the icon to view it on-line.



Suction Cups

With our in-house photo studio, we can email digital photo's and/ or short videos of the product in action with the properly selected suction cup and pump.

Depending on your application, sizing a suction cup and pump may require some trial and error that's why Vaccon offers a 30 Day Test & Evaluation program.

If you don't have the time or resources to test products yourself, we recommend that you send us a sample of the product and we will size the cup and/ or pump for you.

See Page **232**



Suction Cup Fittings

Designed with large thru bores, Vaccon fittings connect to suction cups, vacuum pumps and spring levelers ensuring unrestricted vacuum flow for safe material handling operations.

For plumbing flexibility, Vaccon offers 9 different fitting groups with various thread sizes in both imperial and metric.

See Page **254**



Vacuum Pencil Kt

Utilizing a miniature Vaccon venturi vacuum pump as its vacuum source, the vacuum pencil kit includes a vacuum pump, vacuum pencil and a variety of interchangeable ultra-mini cups and probes.

See Page..... **261**

Vacuum Cups & Fittings

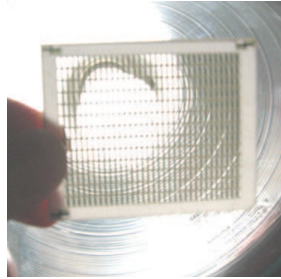
Vacuum Cups

The photographs below were taken at Vaccon's in-house test facility using customer supplied samples. With our in-house photo studio, we can email digital photo's and/or short videos of the product in action with the properly selected vacuum cup and pump.

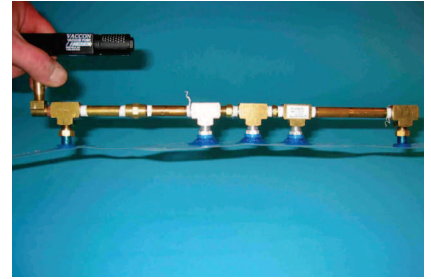
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If you don't have the time or resources to test products yourself, we recommend that you send us a sample of the product and we will size the cup and/or pump for you.

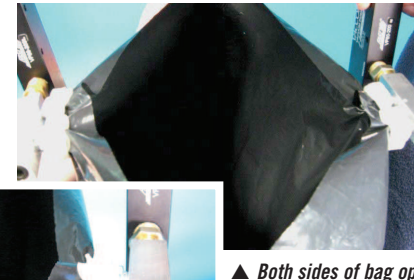
Remember, we are experts in vacuum applications and engineering, only amateurs in photography. ☺



Left: CDF acts as a vacuum cup – its high flow will draw ceramic plate up one at a time. Right: Light behind the plate shines through to show the open weave – minimal surface area.

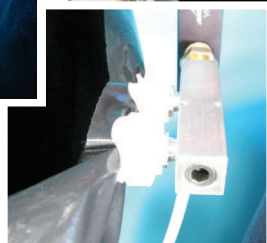


Received customer samples at 8 am, emailed photo of VP10 pump with flat cleated cups handling pliable plastic strips by 9 am – packaging application.



▲ Bag Opening Sequence:
Two VP80 pumps w/multi-bellows cups. Bag closed.

▲ Both sides of bag open



◀ Close up of bag being opened (left).

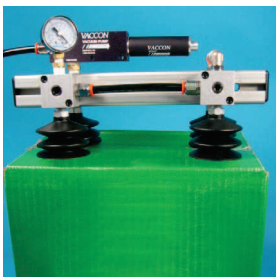


VP80 pump with bellow cup – pick and place application for plastic bag of blood test tubes.

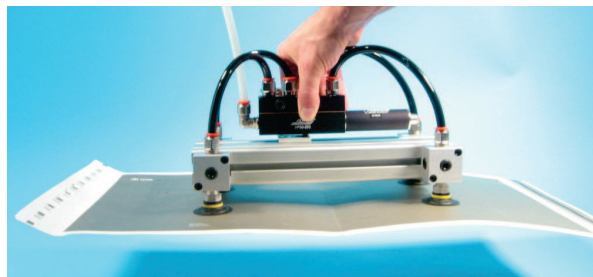


VDF pumps with flat cleated cups handle 42 lb graphite spacer for nuclear industry.

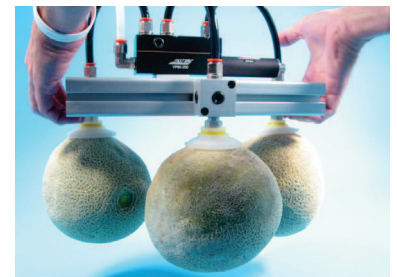
Photos below include our New End-of-Arm Tooling Products:



VP80 pump with manifold blocks & multi-bellows cups – palletizing application.



VP80 multi-port pump with manifold blocks & flat cleated cups – pick and place for paper folder folding application.



VP80 Multi-port pump with manifold blocks and bellows cups – pick and place melons for fruit packing application.

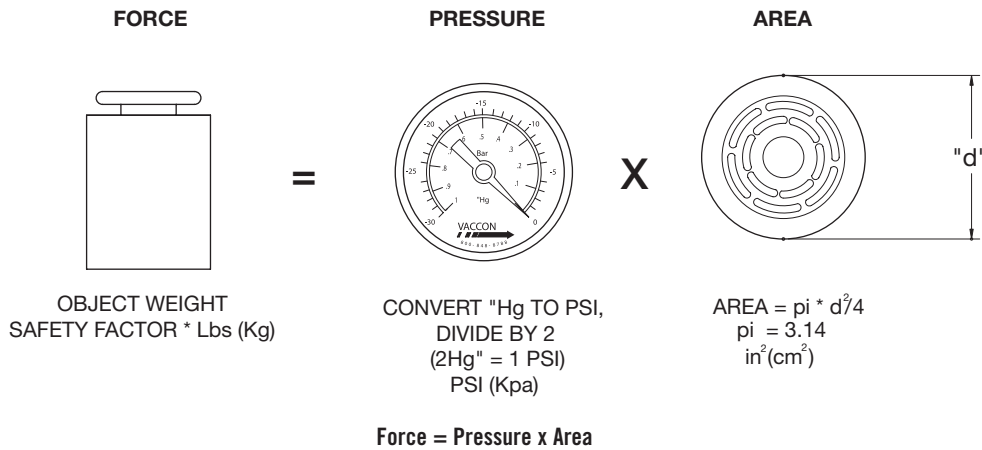
Vacuum Cup Selection Guide

As is true in most vacuum applications, there is more than one correct answer. In order to successfully find the best cup(s) and pumps for a specific task, it is helpful to review the guidelines below.

Vacuum Cup Sizing

Choose the cup size, quantity, material and style based on the size of the object being handled, its weight, orientation, surface temperature, conditions and space available to mount the cups.

I. Determine the cup size by using the "Vacuum Cup Holding Force Calculation:"



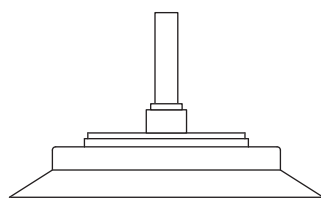
F = the weight of the objects in lbs(kg) multiplied by the safety factor, see below.

P = the expected vacuum level in PSI (Kpa) (2Hg" = 1 PSI)

A = the area of the vacuum cup measured by in²[cm²]

Safety Factors:

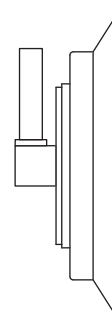
Always include safety factors when calculating lifting capabilities.



Safety Factor=2

Horizontal Lift = 2

Safety factor of 2 is recommended when cup face is in horizontal position.



Safety Factor=4

Vertical Lift = 4

Safety factor of 4 is recommended when cup face is in a vertical position.

Vacuum Cups & Fittings

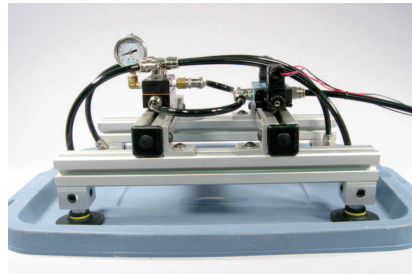
II. Determine Type of Material to be handled: Non-Porous, Porous, Flexible/Non-Porous

Materials being handled in pick and place applications can be grouped into 3 categories – non-porous, porous and flexible. It is important to determine what type of material you are working with in order to determine the cup type, and the fitting choices. Vaccon offers a variety of cup styles – including bellows, multi-bellows, round, oval, flat (with and without cleats), cups with removable fittings and cups with permanent fittings.

Non-Porous Materials: steel, glass, laminated chipboard, rigid plastic, semiconductors, etc.



VP20 pump with bellows cup picks up diamond tread plates – stacking application.



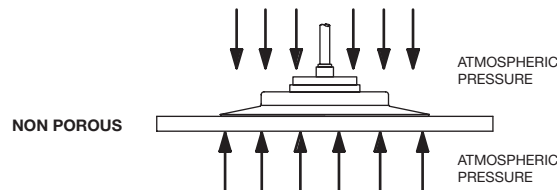
Vaccon EOAT with Multi-port pumps, manifold blocks and flat cleated cups – pick and place plastic lids for packaging application.



VP10 with bellows cups – pick and place deodorant packages for packing application.

Handling non-porous materials is the easiest application for choosing a vacuum cup and vacuum pump because there is no vacuum flow (leakage). The cup seals to the surface of the object enabling the pump to reach its maximum vacuum level.

Typically, flat cleated cups are used for non-porous applications because the rigid, low profile design resists peeling away. In horizontal applications, where there is a large array of cups, bellows cups may be an option as they offer the pliability needed to ensure that all cups make contact with the object(s) being handled.



Example: Holding Force Calculation for Non-Porous Materials

Application: lift a 100 lb steel plate, 1/8" thick, measuring 4' x 4' from a horizontal stack and place into a press

Vaccon recommends an "H" series pump when handling non-porous materials. All "H" series pumps generate 14PSI [28"Hg].

$$F = P * A$$

Force = 200 lbs (weight x safety factor/horizontal lift or 100 lbs x 2)

Pressure = 14 PSI (convert 28"Hg to PSI by dividing by 2)

If $F (200\text{lbs}) = P (14\text{PSI}) * A$ (Solve for **A**)

$A = 200/14$ which is 14.3 in^2 . – "**A**" represents the total area of the cup or all the cups combined to lift this load horizontally

Determine the Number of Cups Needed to Determine the Diameter of each Cup

Whereas the metal is only 1/8" thick, it will tend to droop. Vaccon recommends using 2 rows of 3 cups each for a total of 6 cups.

Therefore, 14.3 in^2 divided by 6 cups = 2.38 in^2 is the area per cup

Solve for the diameter (**d**) using the equation: $A = \pi * d^2 / 4$

$$d^2 = 4 * 2.38 / \pi \text{ or } d^2 = 3.03 \text{ in}^2$$

$$d = \text{sq. root of } 3.03 \text{ or } 1.74 \text{ in}$$

Solution: Choose a flat cup with cleats with a diameter of 1.75" or greater. With plenty of space on the steel plate to position cups, choosing a larger cup will add to the holding force and take into account any acceleration or deceleration loads during transfer.

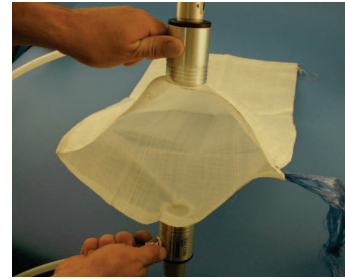
Porous Materials: corrugated, woven materials, or objects with extremely rough or uneven surfaces



VDF pump w/flat cleated cup – picks up plywood with knots– palletizing application.

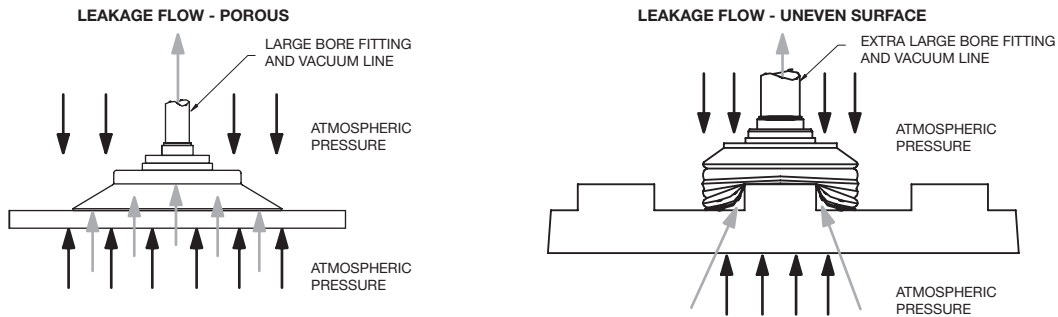


VP80 pump with manifold blocks and bellows cups picks up corrugated board for packaging application.



Two CDF pumps handle cheesecloth fabric bag – bag opening and closing application.

When handling porous materials, it is important that the flow path between the object and the vacuum pump is as large as necessary to allow the pump to draw away the air that leaks through the surface or from gaps between the cup and the surface. Pay close attention to the bore size of the fitting in the cup, as well as the size of the vacuum lines. To confirm vacuum lines are sized properly, see page 3 or the Operating and Installation Instructions section for each pump.



When calculating the holding force for porous materials, the vacuum level that will be achieved is not normally known because the leak rate of the material is unknown. To move forward and determine the diameter of the vacuum cups, assume that system will reach a vacuum level of 8PSI [16”Hg].

Vaccon recommends the “M” series vacuum pumps to maximize flow and minimize compressed air usage when handling porous materials. To ensure that the vacuum level of 8PSI [16”Hg] is achieved, contact Vaccon Tech Support for a pump recommendation.

Example: Holding Force Calculation for Porous Materials or Uneven Surfaces

Application: lift a 100 lb corrugated box with vacuum cups in the horizontal plane. Remember the safety factor and the equation $F = P * A$

200lbs = 8 PSI x **A** - Solve for **A** – the total vacuum cup(s) area.

$A = 200/8 = 25 \text{ in}^2$ of combined cup area. Assume the number of cups used will be 4.

Determine the Number of Cups Needed to Determine the Diameter of each Cup

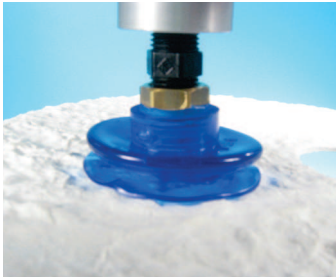
Divide the total area by the number of cups (25/4) – area of each cup is 6.25 in²

Solve for the diameter (**d**) using the equation: $A = \pi * d^2/4$, $6.25 = 3.14 (d^2)/4$
 $d = \text{square root of } 6.25 * 4/3.14 = 2.82$

Solution: Choose a flat cup with cleats or bellows cups with a diameter of 3” or greater.
 In this situation, Vaccon recommends a VP80-250M vacuum pump.

Vacuum Cups & Fittings

Flexible Materials: plastic films, baked goods, IV bags, paper bags – things that wrinkle



Close up of a CDF 200 and VC 32C1-F cup picking up a donut textured surface



CDF 500H-75 and VC 129 oval bellows cup picking up 1000ml of saline solution in plastic bag



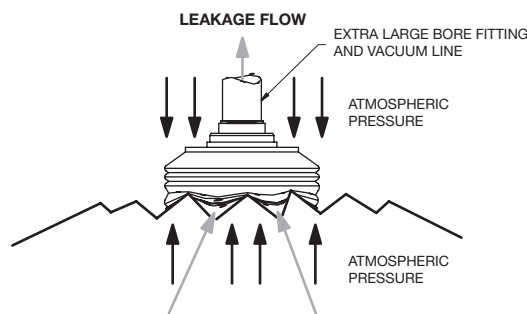
CDF 750 and VCUH cup picking up single layer cake

When handling flexible packaging materials, it is critical that the cup fitting and the vacuum line have a very large bore. Flexible materials wrinkle, causing large leak paths. The cup and the vacuum pump must be sized to accommodate that leak rate. The bore of the fitting must be close to a 1:2 ratio to the diameter of the cup.

Typically, handling flexible materials does not involve heavy weights. Calculating cup holding force is not required.

Choose a cup with a very thin flexible lip to ensure the cup conforms to the wrinkled material. Multi-bellows cups work well in these applications because of their flexibility.

The interaction between the vacuum cup and the flexible material is critical. Because the leakage flow rates are so high, it is necessary to use our CDF Series of high flow (air amplifier) vacuum pumps. With so many variables affecting performance, Vaccon strongly suggests that a sample of the material be sent to our in-house test facility for a pump and cup recommendation.



Vacuum Cup Material Specifications:

Cups are available in various durometers, colors and materials. If you do not see what you are looking for, please consult factory. Below is a general description of the various materials available and their characteristics.

Material	Working Temperature	Wear Resistance	Oil resistance	Durometer	Application
*Vinyl	+32°F to +125°F [0°C to +52°C]	Excellent	Fair	A20-A75 Range	general purpose material for most applications
Oil Resistant Vinyl	+32°F to +125°F [0°C to +52°C]	Good	Excellent	A40-A60 Range	excellent for oil resistant applications
Polyurethane	+32°F to +150°F [0°C to +66°C]	Good	Good	A20-A70 Range	good for chemical resistance and glass handling
Chloroprene	-40°F to +230°F [-40°C to +110°C]	Excellent	Good	A50-A60 Range	general purpose material with good oil resistance and low temperature performance
Nitrile	+32°F to +194°F [0°C to +90°C]	Good	Good	A50-A60 Range	general purpose material with good oil and abrasion resistance
Silicone-Grey	-50°F to +392°F [-46°C to +200°C]	Good	Good	A30-A60 Range	good for applications involving high temperatures, food or non-marking situations
Silicone-Translucent	-92°F to +392°F [-69°C to +200°C]	Good	Good	A30-A60 Range	good for applications involving high temperatures, food or non-marking situations

*Standard durometer for vinyl cups is A50 ±5 points — may vary with color. Other Materials Available - please consult factory: FDA Vinyl, Anti-Static Vinyl, FDA Silicone.

Vacuum Cup Terms and Definitions:

- Bellows:** The fold or collapsible area that allows the cup to compress like an accordion
 - Convolution:** The folded area of a bellows cup that makes up 1 external "V"
 - Cleats:** Bottom protrusions used for maintaining a larger vacuum area
 - Durometer:** Method by which the hardness of a material is gauged
 - Insert/Fitting:** Metal piece bonded or inserted into the material to allow fastening by threads or bolts
 - Vacuum Cup:** Cup that requires the use of an external vacuum source to adhere to a surface
 - Vacuum Level:** The magnitude of suction created by a vacuum pump typically measured in inches of mercury "Hg or [mbar]
 - Vacuum Flow:** The volume of free air induced by the vacuum pump per unit of time, typically measured in SCFM
 - Porosity:** Ability of air to pass through a material
- Standard Atmospheric Pressure Measured at Sea Level:** 1 ATM = 14.7 psi = 29.92"Hg = 760 mmHg = 1 Bar

Facts to Remember:

- 50 mmHg = 1 PSI
- 1mmHg = 1 torr (vacuum)
- 1"Hg = 25.4 mmHg
- 2"Hg = 1 PSI
- 29.92"Hg = 100 Kpa
- 14.7 PSI = 100 Kpa
- 14.7 PSI = 29.92"Hg
- 14.7 PSI = 760 mmHg

Conversion Chart – Vacuum vs. Pressure				
% Vacuum	"Hg	mmHg	bar	PSI
10	3	76.92	-0.1	-1.47
20	6	153.85	-0.2	-2.94
30	9	230.77	-0.3	-4.41
40	12	307.69	-0.4	-5.88
50	15	384.62	-0.5	-7.35
60	18	461.54	-0.6	-8.82
70	21	538.46	-0.7	-10.29
80	24	615.38	-0.8	-11.76
90	27	692.31	-0.9	-13.23
100	30	769.23	-1.0	-14.70

Single Bellows Cups: 1 Convolution

VC Style



VCC Style

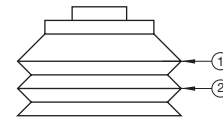


VCR Style



Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

Bellows Styles:
 Style D-1 = One Convolution
 Style D-2 = Two Convolutions
This bellows has a total of 2 convolutions



Part Number		Convolutions	A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †	
VC B5		1	in.	0.18	0.03	0.50	0.45	0.12	0.06	No	V	GS or P	0	1	4
			mm	4.6	20	12.7	11.4	3.0	1.5				0		
VCC-B-020-*		1	in.	0.20	0.03	0.45	0.35	0.28	0.16	No	N or S	-	0	2	5
			mm	5.1	20	11.4	8.9	7.1	4.1				0		
VC B6		1	in.	0.25	0.05	0.45	0.39	0.14	0.06	No	V	GS or P	0	1	4
			mm	6.4	31	11.4	9.9	3.6	1.5				0		
VC B10-5		1	in.	0.41	0.13	0.65	0.48	0.31	0.16	No	V	GS or P	0.02	2	1
			mm	10.4	85	16.5	12.2	7.9	4.1				0.6		
VCC-B-043-*		1	in.	0.43	0.15	0.66	0.48	0.41	0.19	Yes	N or S	-	0.03	7	6
			mm	10.9	94	16.8	12.2	10.4	4.8				0.9		
VCR-B10P-*		1	in.	0.43	0.15	0.67	0.46	0.36	0.15	No	C or S	-	0.03	3	1
			mm	10.9	94	17.0	11.7	9.1	3.8				0.9		
VC B3		1	in.	0.51	0.20	0.56	0.28	0.31	0.15	No	V	GS or P	0.02	2	4
			mm	13.0	132	14.2	7.1	7.9	3.8				0.6		

(Continued on next page)

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number.

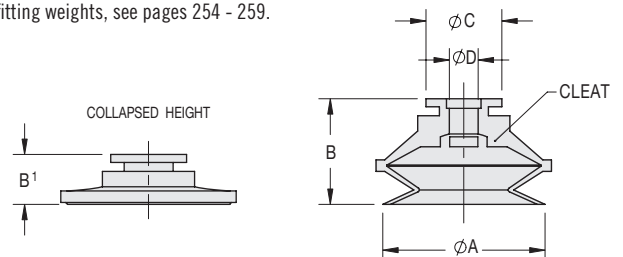
I.E. **VCC-B-020-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Single Bellows Cups: 1 Convolution

VC Style



VCC Style

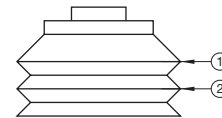


VCR Style



Bellows cups have a pliable outer rim that will conform to curved or uneven surfaces while the bellows sections compensate for inconsistent stack heights. Under vacuum the accordion-style bellows cup will collapse on contact. The collapsing action simulates a short cylinder stroke lifting the product for a short distance, possibly saving the need for a separate lifting mechanism.

Bellows Styles:
 Style D-1 = One Convolution
 Style D-2 = Two Convolutions
 This bellows has a total of 2 convolutions



Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VCC-B-051-*		1	in.	0.51	0.20	0.63	0.45	0.41	0.16	Yes	N or S	-	0.05	7	6
			mm	13.0	132	16.0	11.4	10.4	4.1				1		
VC B15		1	in.	0.61	0.29	0.81	0.57	0.36	0.14	No	V	GS or P	0.05	3	1
			mm	15.5	189	20.6	14.5	9.1	3.6				1		
VCC-B-063-*		1	in.	0.63	0.31	0.75	0.48	0.41	0.19	Yes	N or S	-	0.05	7	6
			mm	16.00	201	19.1	12.2	10.4	4.8				1		
VCR-B15P-*		1	in.	0.65	0.33	0.77	0.50	0.36	0.15	No	C or S	-	0.05	3	1
			mm	16.5	214	19.6	12.7	9.1	3.8				1		
VCC-B-075-*		1	in.	0.72	0.41	0.61	0.40	0.41	0.16	Yes	N or S	-	0.07	7	6
			mm	18.3	263	15.5	10.2	10.4	4.1				2		
VC B2		1	in.	0.75	0.44	0.71	0.43	0.51	0.26	No	V	GS or P	0.07	NF	4
			mm	19.1	285	18.0	10.9	13.0	6.6				2		
VC B20		1	in.	0.80	0.50	0.78	0.63	0.38	0.16	No	V	GS or P	0.07	3	4
			mm	20.3	324	19.8	16.0	9.7	4.1				2		
VCR-B20P-*		1	in.	0.85	0.57	0.79	0.38	0.56	0.22	Yes	C or S	-	0.10	4	2
			mm	21.6	366	20.1	9.7	14.2	5.6				3		
VC B20P		1	in.	0.87	0.59	0.73	0.40	0.57	0.19	Yes	V	GS or P	0.07	4	2
			mm	22.1	384	18.5	10.2	14.5	4.8				2		
VCC-B-087-*		1	in.	0.87	0.59	0.75	0.45	0.39	0.19	Yes	N or S	-	0.07	7	6
			mm	22.1	384	19.1	11.4	9.9	4.8				2		
VCC-B-094-*		1	in.	0.94	0.69	0.91	0.50	0.39	0.15	Yes	N or S	-	0.11	7	6
			mm	23.9	448	23.1	12.7	9.9	3.8				3		
VC 124		1	in.	1.02	0.82	1.45	0.97	0.64	0.34	No	V	GS or P	0.18	NF	4
			mm	25.9	527	36.8	24.6	16.3	8.6				5		

Single Bellows Cups: 1 Convolution

Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VC B1		1	in.	1.20	1.13	1.23	0.84	0.54	-	No	V	GS or P	0.42	1/8 NPTF	9
			mm	30.5	730	31.2	21.3	13.7	-				12		
VCR-B30P-*		1	in.	1.31	1.35	1.02	0.60	0.75	0.22	No	C or S	-	0.28	5	2
			mm	33.3	870	25.9	15.2	19.1	5.6				8		
VC B30P		1	in.	1.32	1.37	1.00	0.58	0.56	0.19	Yes	V	GS or P	0.21	4	2
			mm	33.5	883	25.4	14.7	14.2	4.8				6		
VCC-B-130-*		1	in.	1.32	1.37	1.08	0.65	0.71	0.31	Yes	N or S	-	0.25	8	6
			mm	33.5	883	27.4	16.5	18.0	7.9				7		
VCR-B40P-*		1	in.	1.69	2.24	1.10	0.64	0.79	0.30	Yes	C or S	-	0.42	5	2
			mm	42.9	1447	27.9	16.3	20.1	7.6				12		
VC B40P		1	in.	1.69	2.24	1.10	0.52	0.79	0.25	Yes	V	-	0.42	5	2
			mm	42.9	1447	27.9	13.2	19.1	7.1				12		
VCC-B-169-*		1	in.	1.69	2.24	1.10	0.70	0.71	0.31	Yes	N or S	-	0.39	8	6
			mm	42.9	1447	27.9	17.8	18.0	7.9				11		
VC 32C		1	in.	2.00	3.14	1.61	0.85	0.73	0.38	Yes	V	GS or P	0.67	NF	4
			mm	50.8	2027	40.9	21.6	18.5	9.7				19		
VC 32C-1		1	in.	2.00	3.14	1.59	0.85	0.75	0.50	Yes	V	GS or P	0.53	NF	4
			mm	50.8	2027	40.4	21.6	19.1	12.7				15		
VC 32C1-F		1	in.	2.00	3.14	1.50	0.85	1.00	-	Yes	V	GS or P	1.13	1/4 NPTF	9
			mm	50.8	2027	38.1	21.6	25.4	-				32		
VCC-B-209-*		1	in.	2.07	3.37	1.34	0.85	0.71	0.31	Yes	N or S	-	0.78	8	6
			mm	52.6	2171	34.0	21.6	18.0	7.9				22		
VC B50P		1	in.	2.10	3.46	1.38	0.75	1.04	0.41	Yes	V	GS or P	0.78	6	2
			mm	53.3	2235	35.1	19.1	26.4	10.4				22		
VCR-B50P-*		1	in.	2.10	3.46	1.43	0.75	1.04	0.41	Yes	C or S	-	0.88	6	2
			mm	53.3	2235	36.3	19.1	26.4	10.4				25		
VC 32B		1	in.	2.78	6.07	1.82	0.79	1.00	-	Yes	V	GS or P	1.66	1/4 NPTF	9
			mm	70.6	3916	46.2	20.1	25.4	-				47		
VCC-B-307-*		1	in.	3.07	7.40	1.80	1.25	0.98	0.47	Yes	N or S	-	2.15	9	6
			mm	78.0	4776	45.7	31.8	24.9	11.9				61		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number.

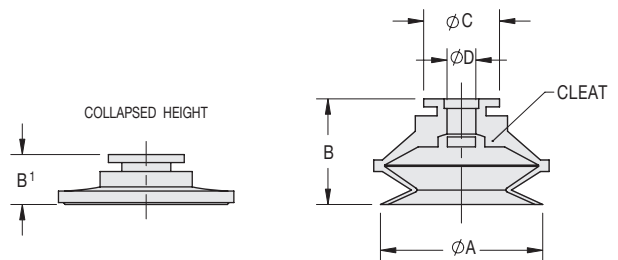
I.E. **VCC-B-020-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.












† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Multi-Bellows Cups: 2, 3, 4 Convolutions

Part Number		Convolutions		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VC 33A2		2	in.	1.25	1.23	1.43	0.87	0.68	-	No	V	GS or P	0.60	1/4 NPTF	9
			mm	31.8	792	36.3	22.1	17.3	-				17		
VCC-B-126-*		2	in.	1.28	1.29	1.48	0.90	0.73	0.31	No	N or S	-	0.35	8	8
			mm	32.5	830	37.6	22.9	18.5	7.9				10		
VC 33A		3	in.	1.42	1.58	2.08	1.14	0.68	-	No	V	GS or P	0.71	1/4 NPTF	9
			mm	36.1	1022	52.8	29.0	17.3	-				20		
VCR-BL40P-*		4	in.	1.58	1.96	1.60	0.65	0.79	0.25	No	C or S	-	0.42	5	3
			mm	40.1	1265	40.6	16.5	20.1	6.4				12		
VCC-B-165-*		2	in.	1.65	2.14	1.81	0.98	0.70	0.31	No	N or S	-	0.63	8	8
			mm	41.9	1379	46.0	24.9	17.8	7.9				18		
VCR-BL50P-*		4	in.	1.98	3.08	2.04	0.90	1.07	0.41	No	C or S	-	0.85	6	3
			mm	50.3	1986	51.8	22.9	27.2	10.4				24		
VC 32D		2	in.	2.00	3.14	1.65	0.75	0.75	-	No	V	GS or P	1.02	1/4 NPTF	9
			mm	50.8	2027	41.9	19.1	19.1	-				29		
VCC-B-244-*		2	in.	2.44	4.68	2.17	0.81	0.70	0.31	No	N or S	-	1.34	8	8
			mm	62.0	3017	55.1	20.6	17.8	7.9				38		
VC 130		4	in.	3.31	8.60	2.75	1.14	2.42	-	Yes	V	GS or P	4.76	3/4 NPTF	10
			mm	84.1	5551	69.9	29.0	61.5	-				135		
VCC-B-346-*		2	in.	3.46	9.40	3.44	1.81	0.97	0.47	Yes	N or S	-	5.86	9	8
			mm	87.9	6066	87.4	46.0	24.6	11.9				166		
VC 104-4.5		2	in.	4.50	15.90	2.50	1.50	3.50	-	Yes	V	GS or P	7.4	3/8 NPTF	9
			mm	114.3	10261	63.5	38.1	88.9	-				209		

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCC-B-021-N** (for Nitrile material).

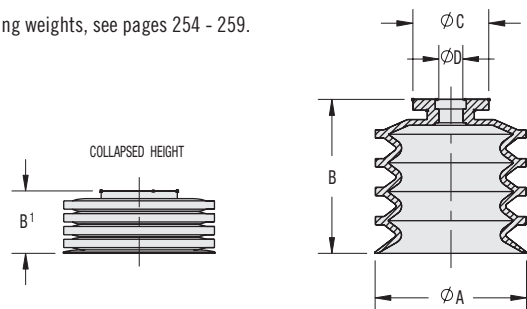
See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Flat Cups: with or without Cleats

VC Style



VCC Style



VCR Style



Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads.

Flat cups with cleats are strong with a rigid, low profile that will lift heavy loads. The low profile allows heavy loads to be lifted vertically without the cup “peeling” away from the product surface or deforming the object being lifted. These cups perform well when gripping smooth, flat, heavy objects such as steel, glass (television picture tubes) and coated corrugated.

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VCC-F-020-*		in.	0.20	0.03	0.36	0.35	0.32	0.16	No	N or S	-	0	7	9
		mm	5.1	20	9.1	8.9	8.1	4.1				0		
VC 1		in.	0.22	0.04	0.21	0.19	0.22	0.06	No	V	GS or P	0	NF	3
		mm	5.6	25	5.3	4.8	5.6	1.5				0		
VC 165A		in.	0.37	0.11	0.25	0.22	0.37	0.21	No	V	GS or P	0	NF	4
		mm	9.4	69	6.4	5.6	9.4	5.3				0		
VCC-F-039-*		in.	0.39	0.12	0.43	0.39	0.37	0.20	No	N or S	-	0	7	9
		mm	9.9	77	10.9	9.9	9.4	5.1				0		
VC 25		in.	0.59	0.27	0.53	0.53	0.46	0.25	No	V	GS or P	0.04	NF	4
		mm	15.0	176	13.5	13.5	11.7	6.4				1		
VCC-F-059-*		in.	0.59	0.27	0.44	0.36	0.36	0.20	No	N or S	-	0.04	7	10
		mm	15.0	176	11.2	9.1	9.1	5.1				1		
VCR-F15P-*		in.	0.66	0.34	0.47	0.42	0.36	0.15	Yes	C or S	-	0.04	3	1
		mm	16.8	221	11.9	10.7	9.1	3.8				1		
VCC-F-079-*		in.	0.79	0.49	0.45	0.35	0.33	0.20	No	N or S	-	0.04	7	10
		mm	20.1	316	11.4	8.9	8.4	5.1				1		
VCR-F20P-*		in.	0.87	0.59	0.32	0.27	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	22.1	384	8.1	6.9	14.5	5.3				2		
VCC-F-100-*		in.	1.00	0.79	0.50	0.35	0.38	0.20	No	N or S	-	0.07	7	10
		mm	25.4	507	12.7	8.9	9.7	5.1				2		
VC 36 B		in.	1.02	0.82	0.34	0.25	0.56	0.24	Yes	V	GS or P	0.04	NF	3
		mm	25.9	527	8.6	6.4	14.2	6.1				1		
VC 10		in.	1.04	0.85	0.90	0.70	0.62	-	No	V	GS or P	0.32	1/8 NPTF	5
		mm	26.4	548	22.9	17.8	15.7	-				9		
VCR-F25P-*		in.	1.10	0.95	0.36	0.33	0.57	0.21	Yes	C or S	-	0.07	4	2
		mm	27.9	613	9.1	8.4	14.5	5.3				2		
VC 11		in.	1.19	1.11	0.88	0.75	0.75	-	No	V	GS or P	0.49	1/4 NPTF	5
		mm	30.2	718	22.4	19.1	19.1	-				14		

Flat Cups: with or without Cleats

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type †
VCC-F-120-*		in.	1.20	1.13	0.74	0.63	0.62	0.31	Yes	N or S	-	0.14	8	11
		mm	30.5	730	18.8	16.0	15.7	7.9				4		
VCR-F30P-*		in.	1.27	1.27	0.39	0.35	0.57	0.20	Yes	C or S	-	0.11	4	2
		mm	32.3	817	9.9	8.9	14.5	5.1				3		
VC 2EA		in.	1.34	1.41	0.90	0.83	0.62	-	Yes	V	GS or P	0.21	1/8 NPTM	5
		mm	34.0	910	22.9	21.1	15.7	-				6		
VC 12		in.	1.40	1.54	0.82	0.75	0.75	-	No	V	GS or P	0.56	1/4 NPTF	5
		mm	35.6	993	20.8	19.1	19.1	-				16		
VCC-F-142-*		in.	1.42	1.58	0.79	0.63	0.62	0.31	Yes	N or S	-	0.21	8	11
		mm	36.1	1022	20.1	16.0	15.7	7.9				6		
VC 37A		in.	1.51	1.79	1.19	0.92	0.89	-	No	V	GS or P	0.67	1/4 NPTF	5
		mm	38.4	1115	30.2	23.4	22.6	-				19		
VC 8		in.	1.51	1.79	0.56	0.43	0.55	0.23	No	V	GS or P	0.21	NF	4
		mm	38.4	1155	14.2	10.9	14.0	5.8				6		
VCC-F-160-*		in.	1.60	2.01	0.79	0.64	0.63	0.31	Yes	N or S	-	0.21	8	11
		mm	40.6	1297	20.1	16.3	16.0	7.9				6		
VCR-F40P-*		in.	1.65	2.14	0.48	0.39	0.76	0.26	Yes	C or S	-	0.21	5	2
		mm	41.9	1379	12.2	9.9	19.3	6.6				6		
VC 168		in.	2.00	3.14	1.02	0.68	1.10	-	No	V	GS or P	0.99	1/4 NPTF	5
		mm	50.8	2027	25.9	17.3	27.9	-				28		
VC 59		in.	2.00	3.14	1.00	0.82	1.53	-	Yes	V	GS or P	2.08	1/4 NPTF	5
		mm	50.8	2027	25.4	20.8	38.9	-				59		
VCC-F-205-*		in.	2.05	3.30	0.85	0.67	0.70	0.31	Yes	N or S	-	0.42	8	11
		mm	52.1	2129	21.6	17.0	17.8	7.9				12		
VCR-F50P-*		in.	2.10	3.46	0.69	0.62	1.04	0.43	Yes	C or S	-	0.46	6	2
		mm	53.3	2235	17.5	15.7	26.4	10.9				13		
VCC-F-236-*		in.	2.36	4.37	0.87	0.67	0.70	0.31	Yes	N or S	-	0.56	8	11
		mm	59.9	2822	22.1	17.0	17.8	7.9				16		
VC 49		in.	2.44	4.68	2.20	1.99	1.04	-	Yes	V	GS or P	1.52	1/4 NPTF	5
		mm	62.0	3017	55.9	50.5	26.4	-				43		

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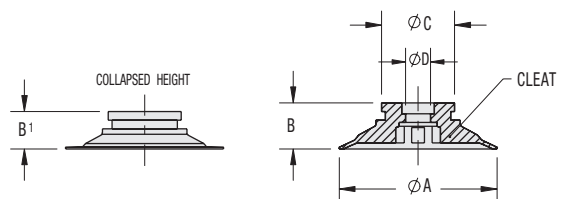
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCC-F-374-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Flat Cups: with or without Cleats

VC Style



VCC Style



VCR Style



Flat cups without cleats are flexible and work well in applications that do not require lifting heavy loads.

Flat cups with cleats are strong with a rigid, low profile that will lift heavy loads. The low profile allows heavy loads to be lifted vertically without the cup “peeling” away from the product surface or deforming the object being lifted. These cups perform well when gripping smooth, flat, heavy objects such as steel, glass (television picture tubes) and coated corrugated.

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Optional Material	Weight oz [g]	Fitting Group	Cup Type [†]
VC 106		in.	2.50	4.91	1.18	0.80	1.09	-	No	V	GS or P	1.02	1/4 NPTF	5
	mm	63.5	3167	30.0	20.3	27.7	-	29						
VCC-F-295-*		in.	2.95	6.83	1.20	1.08	0.92	0.47	Yes	N or S	-	1.20	9	11
	mm	74.9	4409	30.5	27.4	23.4	11.9	34						
VC 30		in.	3.06	7.35	1.45	1.10	1.15	-	No	V	GS or P	2.61	1/4 NPTF	5
	mm	77.7	4744	36.8	27.9	29.2	-	74						
VC 27A		in.	3.25	8.30	1.20	0.95	2.23	-	Yes	V	GS or P	3.28	1/4 NPTF	6
	mm	82.6	5352	30.5	24.1	56.6	-	93						
VCC-F-374-*		in.	3.74	10.99	1.47	1.08	0.97	0.47	Yes	N or S	-	1.83	9	11
	mm	95.0	7087	37.3	27.4	24.6	11.9	52						
VC 27		in.	4.25	14.19	1.30	0.85	2.73	-	Yes	V	GS or P	4.03	1/4 NPTF	6
	mm	108.0	9152	33.0	21.6	69.3	-	122						
VC 63		in.	4.75	17.72	1.25	0.90	1.67	-	Yes	V	GS or P	4.09	3/8 NPTF	6
	mm	120.7	11432	31.8	22.9	42.4	-	116						
VC 34		in.	6.25	30.68	1.37	0.85	5.00	-	Yes	V	GS or P	16.0	3/8 NPTF	6
	mm	158.8	19793	34.8	21.6	127.0	-	454						

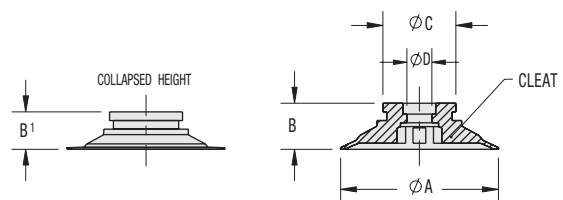
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCC-F-374-N** (for Nitrile material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers. NF indicates no fitting is required.

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The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see page 259.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
N - Nitrile	Black	+32°F to +194°F (0°C to +90°C)
GS - Silicone	Gray	-50°F to +392°F (-46°C to +200°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Universal Cups

Universal Cups

Universal cups can handle flat or slightly curved surfaces.



Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Weight oz [g]	Fitting Group	Cup Type [†]
VCR-U4P-*		in.	0.20	0.03	0.27	0.26	0.18	0.07	No	C or S	0	1	1
		mm	5.1	20	6.9	6.6	4.6	1.8			0.1		
VCR-U6P-*		in.	0.28	0.06	0.27	0.26	0.20	0.08	No	C or S	0	1	1
		mm	7.1	40	6.9	6.6	5.1	2.0			0.1		
VCR-U8P-*		in.	0.37	0.11	0.27	0.24	0.20	0.08	No	C or S	0	1	1
		mm	9.4	69	6.9	6.1	5.1	2.0			0.1		
VCR-U10P-*		in.	0.44	0.15	0.43	0.40	0.35	0.15	No	C or S	0.02	3	1
		mm	11.2	98	10.9	10.2	8.9	3.8			0.7		
VCR-U15P-*		in.	0.65	0.33	0.45	0.37	0.35	0.15	No	C or S	0.03	3	1
		mm	16.5	214	11.4	9.4	8.9	3.8			0.8		
VCR-U20P-*		in.	0.85	0.57	0.33	0.21	0.57	0.21	No	C or S	0.04	4	2
		mm	21.6	366	8.4	5.3	14.5	5.3			0		
VCR-U30P-*		in.	1.25	1.23	0.38	0.21	0.57	0.21	No	C or S	0.07	4	2
		mm	31.8	792	9.7	5.3	14.5	5.3			2		
VCR-U40P-*		in.	1.65	2.14	0.53	0.33	0.77	0.25	No	C or S	0.21	5	2
		mm	41.9	1379	13.5	8.4	19.6	6.4			6		
VCR-U50P-*		in.	2.05	3.30	0.72	0.45	1.06	0.44	No	C or S	0.39	6	2
		mm	52.1	2129	18.3	11.4	26.9	11.2			11		

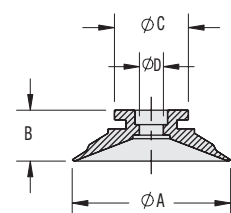
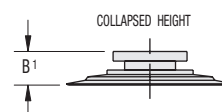
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCR-U4P-S** (for Silicone material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers.

† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



VC Style



Like cleated cups, oval cups have heavy load capabilities due to their rigid design and large vacuum work area. Oval cups have the largest lifting force because they provide the most surface area for a given footprint.

Part Number			A-1	A-2	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D	E	F	H	Cleats	Standard Material	Optional Material	Weight oz [g]	Cup Type [†]
VC 89		in.	1.14	2.78	5.85	1.13	0.95	0.57	1.39	1/4 NPTF	-	-	No	V	GS or P	1	1
	mm	29.0	70.6	3774	28.7	2.41	14.5	35.3	27								
VC 83		in.	1.56	4.09	3.16	1.30	1.20	0.78	2.05	1/4 NPTF	-	-	No	V	GS or P	3.2	1
	mm	39.6	103.9	2039	33.0	30.5	19.8	51.9	91								
VC 183 2X4		in.	2.00	4.00	7.14	1.00	0.70	1.00	2.00	1/4 NPTF	-	-	Yes	V	GS or P	2.7	1
	mm	50.8	101.6	4606	25.4	17.8	25.4	50.8	76								
VC 183 2X6		in.	2.00	6.00	11.14	0.98	0.75	1.00	4.00	1/4 NPTF	-	-	Yes	V	GS or P	4.7	1
	mm	50.8	152.4	7187	24.9	19.1	25.4	101.6	134								
VC 90 2X10		in.	2.00	10.00	19.14	0.82	0.55	1.00	6.50	1/4 NPTF	-	-	No	V	GS or P	4.9	1
	mm	50.8	254.0	12348	20.8	14.0	25.4	165.1	44.5							139	
VC90 3X8		in.	3.00	8.00	22.06	1.10	0.75	1.50	5.00	3/8 NPTF	-	-	Yes	V	GS or P	11	1
	mm	76.2	203.2	14232	27.8	19.1	38.1	127.0	38.1							312	
VC 90 3X10		in.	3.00	10.00	28.06	1.10	0.73	1.50	7.00	3/8 NPTF	-	-	Yes	V	GS or P	14	1
	mm	76.2	254.0	18103	27.8	18.5	38.1	177.8	38.1							397	
VC 32 3.5X5.0		in.	3.50	5.00	11.87	1.82	1.02	1.75	2.50	3/8 NPTF	-	-	Yes	V	GS or P	6.7	1
	mm	88.9	127.0	7658	46.2	25.9	44.5	63.5	190								
VC 129		in.	3.25	7.87	23.30	1.83	0.80	1.63	3.94	1/2 NPTF	-	-	Yes	V	GS or P	13.2	1
	mm	82.6	199.9	150.32	46.5	20.3	41.3	100.0	373								
VC 90 6X10		in.	6.00	10.00	58.06	1.19	0.73	2.00	6.00	6	Consult Factory	-	Yes	V	GS or P	24	1
	mm	152.4	254.0	37458	30.2	18.5	50.8	152.4	50.8							152.4	

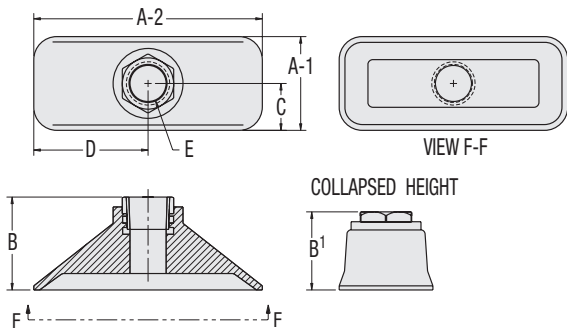
* **How to Order:** All part numbers ending with a dash require customer to specify material type to complete part number. I.E. **VC-89-GS** (for Grey Silicone material).
See Chart below for material specifications.

† Cup Type number very useful when navigating the Vaccon website for CAD drawings.

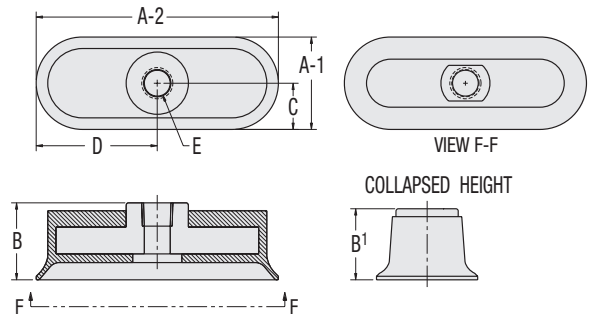
The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF.

Material	Color	Temperature Range
V - Vinyl	Blue	+32°F to +125°F (0°C to +52°C)
P - Polyurethane	Green	+32°F to +150°F (0°C to +66°C)
GS - Grey Silicone	Grey	-50°F to +392°F (-46°C to +200°C)

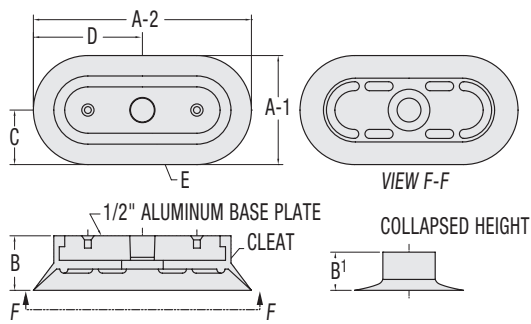
Oval Cups



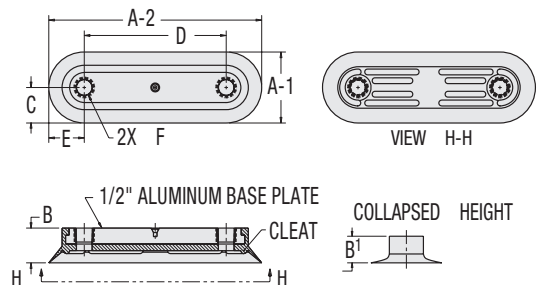
VC 89



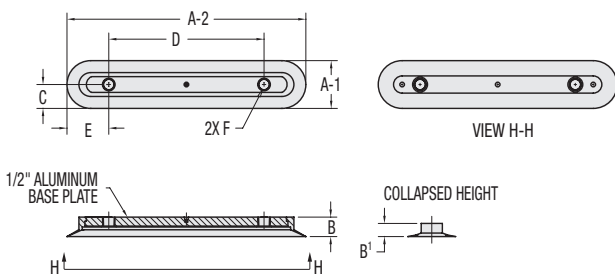
VC 83



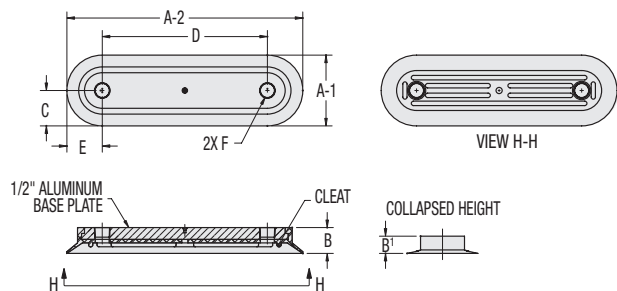
VC 183 2 x 4



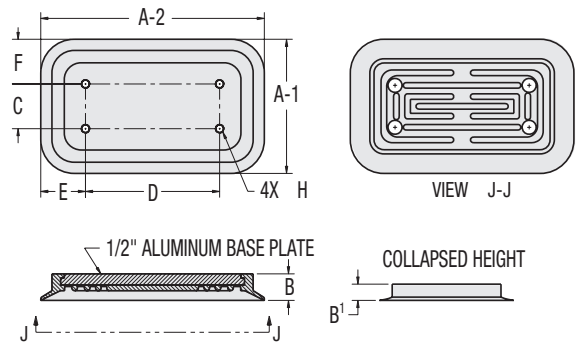
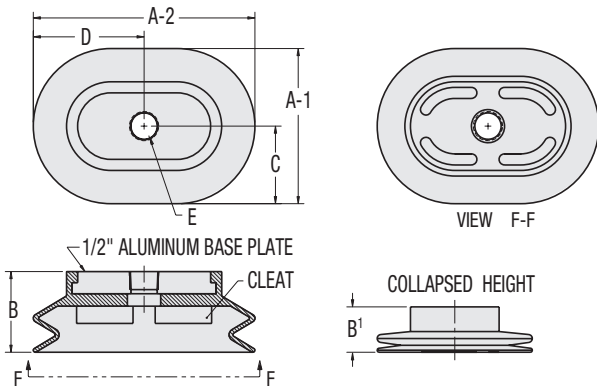
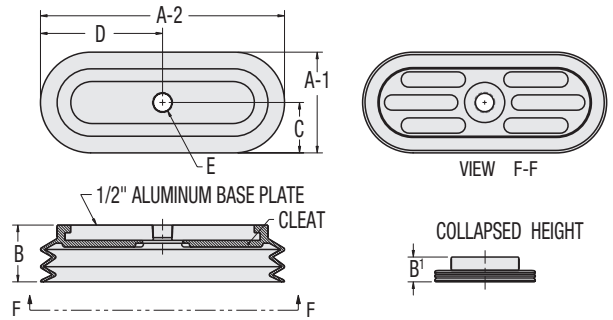
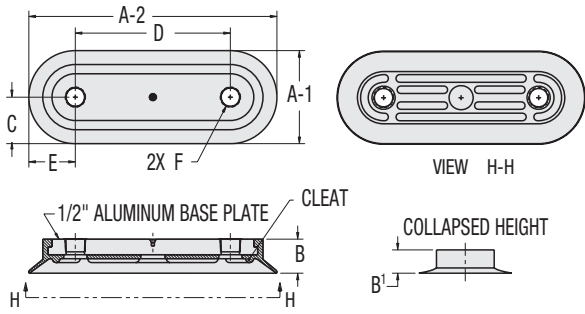
VC 183 2 x 6



VC 90 2 x 10



VC 90 3 x 10



Deep Cups

VCR Style



Deep cups are used for curved and irregular surfaces, not for flat surfaces. They can lift products over corners and edges. Excellent for handling golf balls etc.

Part Number			A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	B ¹ - Collapsed Height	C	D - Thru Hole	Cleats	Standard Material	Weight oz [g]	Fitting Group	Cup Type †
VCR-D15P-*		in.	0.64	0.32	0.65	0.45	0.35	0.15	No	C or S	0	3	1
		mm	16.3	208	16.5	11.4	8.9	3.8			1		
VCR-D20P-*		in.	0.86	0.58	0.51	0.45	0.57	0.20	No	C or S	0	4	2
		mm	21.8	375	13.0	11.4	14.5	5.1			2		
VCR-D30P-*		in.	1.25	1.23	0.77	0.45	0.57	0.20	No	C or S	0.14	4	2
		mm	31.8	792	19.6	11.4	14.5	5.1			4		
VCR-D50P-*		in.	2.09	3.43	1.25	0.90	1.06	0.43	No	C or S	0.53	6	2
		mm	53.1	2213	31.8	22.9	26.9	10.9			15		

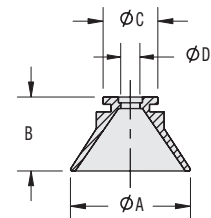
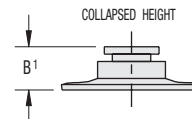
* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VCR-D15P-S** (for Silicone material). See Chart below for material specifications.

Fittings: To order fittings, please reference the fitting groups section for the appropriate part numbers.

† Cup Type number is very useful when navigating the Vaccon website for CAD drawings.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF. For fitting weights, see pages 254 - 259.

Material	Color	Temperature Range
C - Chloroprene	Black	-40°F to +230°F (-40°C to +110°C)
S - Silicone	Translucent	-92°F to +392°F (-69°C to +200°C)



Ultra Miniature Cups

Ultra-Miniature cups are ideal for use in picking up extremely small parts such as computer chips, wafers and electronics components. In high temperature materials, Ultra-miniature cups may be used in laboratory and food processing environments.

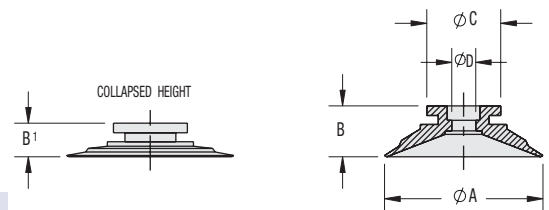


Part Number		A - O.D.	Approx. Area sq. in. [sq.mm]	B - Height	C	D	E	Cleats	Standard Material	Optional Material	Weight oz [g]	Probe	
VC-VI 093-*		in.	0.09	0.01	0.16	0.08	0.03	0.02	No	B	R	0	S050-5 S050-10 A050-5 A050-10
		mm	2.4	4	4.1	2.0	0.76	0.5				0	
VC-VI 125-*		in.	0.13	0.01	0.18	0.10	0.03	0.04	No	B	ESD or R	0	
		mm	3.2	8	4.6	2.5	0.76	0.9				0	
VC-VI 250-*		in.	0.25	0.05	0.20	0.10	0.06	0.04	No	B	ESD or R	0	
		mm	6.4	32	5.1	2.5	1.5	0.9				0	
VC-VI 375-*		in.	0.38	0.11	0.25	0.13	0.06	0.04	No	B	ESD or R	0	
		mm	9.5	71	6.4	3.3	1.5	0.9				0.1	
VC-VI 500-*		in.	0.50	0.20	0.30	0.16	0.06	0.04	No	B	ESD or R	0	
		mm	12.7	127	7.6	4.1	1.5	0.9				0.1	
VC-VI 625-*		in.	0.63	0.31	0.31	0.16	0.06	0.04	No	B	ESD or R	0.01	
		mm	15.9	198	7.9	4.1	1.5	0.9				0.3	
VC-VI 750-*		in.	0.75	0.44	0.32	0.16	0.06	0.04	No	B	ESD or R	0.02	
		mm	19.1	285	8.1	4.1	1.5	0.9				0.5	

* **How to Order:** All part numbers ending with a dash require customer to specify a material type to complete part number. I.E. **VC-VI 093-B** (for Buna-N material). See Chart below for material specifications.

How to Order Probes: Specify part number from probe chart. See page 260.

The weight of the cups shown is without fittings unless the fitting is standard ie: 1/4 NPTF.



Material	Color	Temperature Range
B - Buna-N static dissipative (ESD-safe) non-marking	Black	-5°F to +250°F (-15°C to +121°C)
ESD - Hi-Temp conductive (ESD-safe) silicone	Black	-65°F to +445°F (-55°C to +230°C)
R - Hi-Temp (non-ESD-safe) silicone	Red	-65°F to +480°F (-55°C to +250°C)

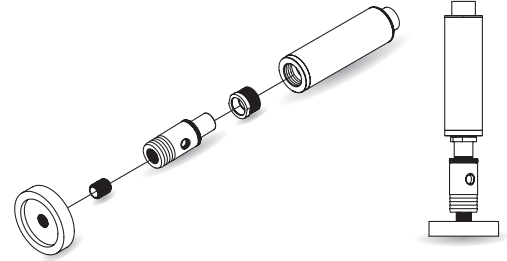
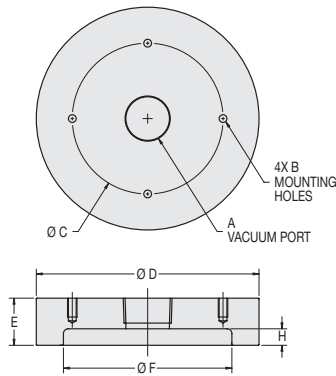
UH Rigid & Specialty Cups

UH Rigid Cups

Ideal for porous material handling applications.



Material: UHMW



CDF Assembly with UH Cup and attachment

UH Series Cup	Imperial Dimensions (in.)							Weight
	A	B	C	D	E	F	H	
VC-UH6-16	1" NPT	1/4-20 x .50 deep	4.00	5.91	1.25	4.47	0.44	14.8 oz
VC-UH6-16-TL	1" NPT	1/4-20 x .50 deep	4.00	5.91	1.25	5.60	0.44	12.2 oz
	Metric Dimensions (mm)							Weight
	A	B	C	D	E	F	H	
I-VC-UH6-16	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	113.5	11.2	420 grams
I-VC-UH6-16-TL	G 1	M6 X 1.0 x 12mm deep	101.6	150.1	31.8	142.2	11.2	346 grams

Specialty Cups

Consult factory for available styles, materials, and sizes.



Vaccon Cups by Part Number

Part Number	Page #	Part Number	Page #	Part Number	Page #
VC 1.....	243	VC B2.....	239	VCR-B15P.....	239
VC 10.....	243	VC B20.....	239	VCR-B20P.....	239
VC 104-4.5.....	242	VC B20P.....	239	VCR-B30P.....	240
VC 106.....	245	VC B3.....	238	VCR-B40P.....	240
VC 11.....	243	VC B30P.....	240	VCR-B50P.....	240
VC 12.....	244	VC B40P.....	240	VCR-BL20P.....	241
VC 124.....	239	VC B5.....	238	VCR-BL30P.....	241
VC 129.....	247	VC B50P.....	240	VCR-BL40P.....	242
VC 130.....	242	VC B6.....	238	VCR-BL50P.....	242
VC 165A.....	243	VC UH.....	252	VCR-D15P.....	250
VC 168.....	244	VCC-B-020.....	238	VCR-D20P.....	250
VC 183 2X4.....	247	VCC-B-021.....	241	VCR-D30P.....	250
VC 183 2X6.....	247	VCC-B-028.....	241	VCR-D50P.....	250
VC 25.....	243	VCC-B-035.....	241	VCR-F15P.....	243
VC 27.....	245	VCC-B-043.....	238	VCR-F20P.....	243
VC 27A.....	245	VCC-B-051.....	239	VCR-F25P.....	243
VC 2EA.....	244	VCC-B-055.....	241	VCR-F30P.....	244
VC 30.....	245	VCC-B-063.....	239	VCR-F40P.....	244
VC 32 3.5 x 5.0.....	247	VCC-B-069.....	241	VCR-F50P.....	244
VC 32B.....	240	VCC-B-075.....	239	VCR-U10P.....	246
VC 32C.....	240	VCC-B-079.....	241	VCR-U15P.....	246
VC 32C1.....	240	VCC-B-087.....	239	VCR-U20P.....	246
VC 32C1F.....	240	VCC-B-094.....	239	VCR-U30P.....	241
VC 32D.....	242	VCC-B-098.....	241	VCR-U40P.....	246
VC 33A.....	242	VCC-B-126.....	242	VCR-U4P.....	246
VC 33A2.....	242	VCC-B-130.....	240	VCR-U50P.....	246
VC 33A3.....	241	VCC-B-165.....	242	VCR-U6P.....	246
VC 33A5.....	241	VCC-B-169.....	240	VCR-U8P.....	246
VC 34.....	245	VCC-B-209.....	240	VC-VI 093.....	251
VC 36 B.....	243	VCC-B-244.....	242	VC-VI 125.....	251
VC 37A.....	244	VCC-B-307.....	240	VC-VI 250.....	251
VC 49.....	244	VCC-B-346.....	242	VC-VI 375.....	251
VC 59.....	244	VCC-F-020.....	243	VC-VI 500.....	251
VC 63.....	245	VCC-F-039.....	243	VC-VI 625.....	251
VC 8.....	244	VCC-F-059.....	243	VC-VI 750.....	251
VC 83.....	247	VCC-F-079.....	243		
VC 89.....	247	VCC-F-100.....	243		
VC 90 2X10.....	247	VCC-F-120.....	244		
VC 90 3X10.....	247	VCC-F-142.....	244		
VC 90 3X8.....	247	VCC-F-160.....	244		
VC 90 6X10.....	247	VCC-F-205.....	244		
VC B1.....	240	VCC-F-236.....	244		
VC B10-2.....	241	VCC-F-295.....	245		
VC B10.5.....	238	VCC-F-374.....	245		
VC B15.....	239	VCR-B10P.....	238		

Vacuum Cup Fittings



Fixed Extension Bracket with vacuum fitting and cup assembly. Inset: Vacuum fitting and vacuum cup.

Ideal Applications:

- Automation assembly fixtures
- Robotic end effectors
- End-of-Arm Tooling devices

Designed with large thru bores, Vaccon fittings connect to vacuum cups, vacuum pumps and spring levelers ensuring unrestricted vacuum flow for safe material handling operations.

For plumbing flexibility, Vaccon offers 9 different fitting groups with various thread sizes.

Standard Fittings:

- Clear chromate coated aluminum or brass
- NPT, G, M5 and 10-32 threads
- Male and female threads

How to Specify:

Size the cup first based on application requirements. Then choose the fitting size. Please note Vaccon's Cup Section includes recommended fitting groups for each cup.

For fitting only: order by model # i.e. VCF4-18F

For cup and fitting: order cup part number first and then the numbered extension of the fitting i.e. **VCR-B20P-C-4-14M** (**note:** remove the VCF from fitting number)

Fitting Groups 1, 2, 3



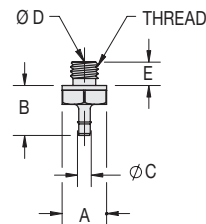
VCF1-1032M



VCF2-1032M



VCF3-1032M



VCF1-1032M



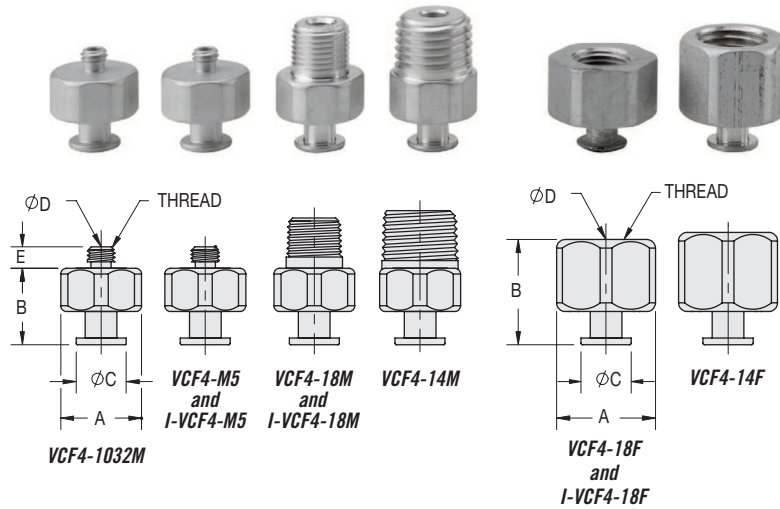
VCF2-1032M



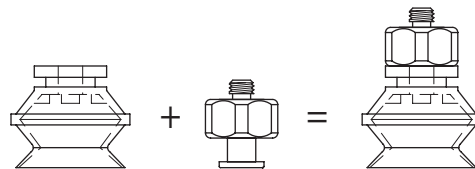
VCF3-1032M

Model #	Thread Size	Dimensions					Weight	Material	
		A (Hex)	B	C	D (Thru Hole Dia.)	E			
VCF1-1032M	10-32 MALE	in.	0.31	0.35	0.10	0.05	0.16	0.07 oz	Brass
		mm	7.9	8.9	2.5	1.4	4.1	2 g	
VCF2-1032M	10-32 MALE	in.	0.31	0.44	0.24	0.09	0.16	0.1 oz	Brass
		mm	7.9	11.2	6.1	2.2	4.1	2.8 g	
VCF3-1032M	10-32 MALE	in.	0.31	0.39	0.24	0.09	0.16	0.1 oz	Brass
		mm	7.9	9.9	6.1	2.4	4.1	2.8 g	

Fitting Group 4



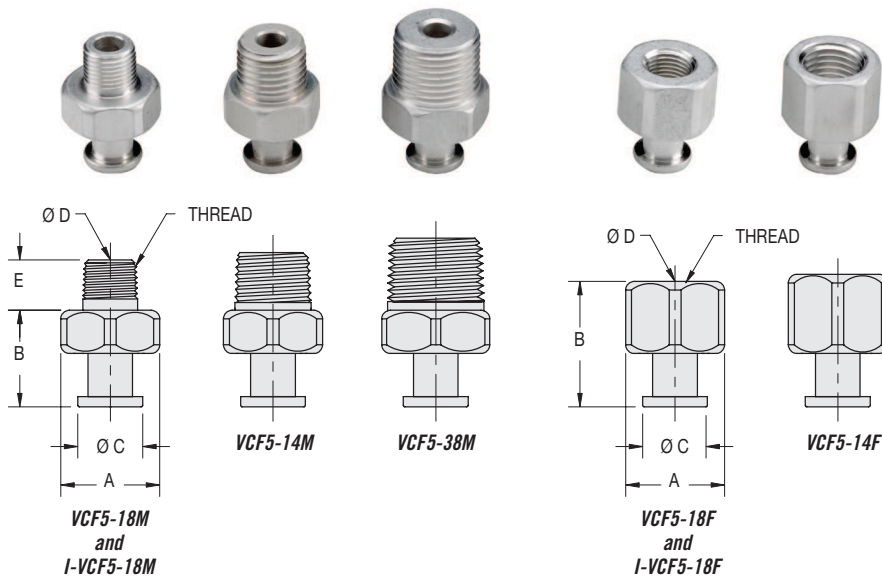
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF4-1032M	10-32 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
VCF4-M5	M5 X 0.8 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
VCF4-18M	1/8 NPT Male	in	0.56	0.53	0.35	0.17	0.35	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	8.9	5.7g	
VCF4-14M	1/4 NPT Male	in	0.56	0.53	0.35	0.17	0.40	0.3 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	10.2	8.5 g	
VCF4-18F	1/8 NPT Female	in	0.69	0.73	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	17.4	18.5	8.8	4.4	N/A	8.5 g	
VCF4-14F	1/4 NPT Female	in	0.69	0.78	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	17.4	19.8	8.8	4.4	N/A	8.5 g	
I-VCF4-M5	M5 X 0.8 Male	in	0.56	0.53	0.35	0.09	0.15	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	2.4	3.8	5.7 g	
I-VCF4-18M	G1/8 Male	in	0.56	0.53	0.35	0.17	0.35	0.2 oz	Aluminum
		mm	14.3	13.5	8.8	4.4	8.9	5.7 g	
I-VCF4-18F	1/8 NPT Female	in	17.4	0.73	0.35	0.17	N/A	0.3 oz	Aluminum
		mm	0.56	18.5	8.8	4.4	N/A	8.5 g	



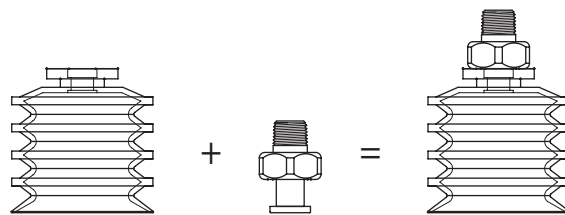
Example: Cup with Fitting

Vacuum Cups & Fittings

Fitting Group 5

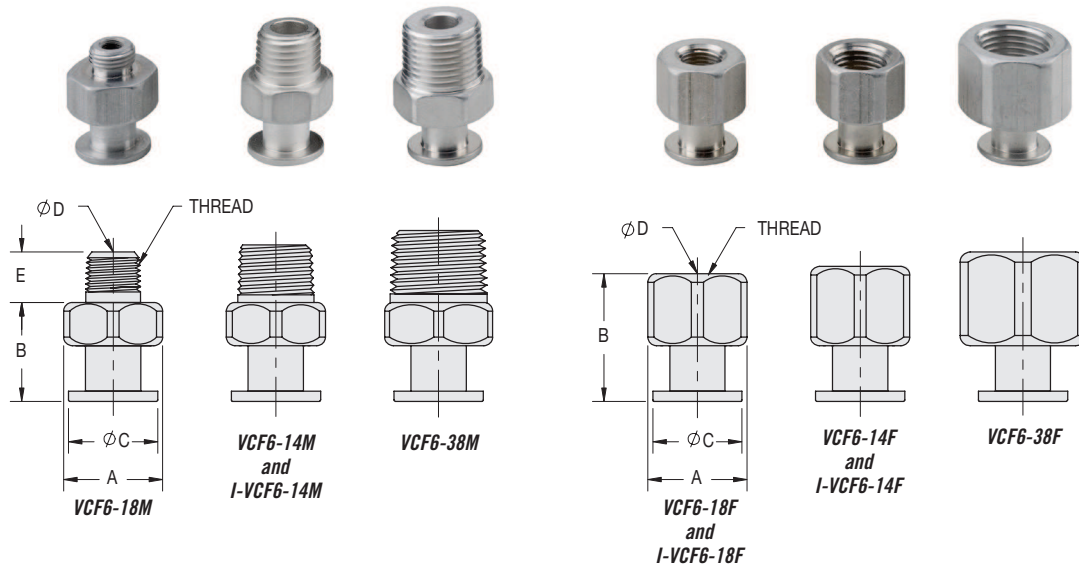


Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF5-18M	1/8 NPT Male	in	0.69	0.67	0.45	0.22	0.35	0.3 oz	Aluminum
		mm	17.4	17.0	11.4	5.6	8.9	8.5 g	
VCF5-14M	1/4 NPT Male	in	0.69	0.67	0.45	0.22	0.40	0.3 oz	Aluminum
		mm	17.4	17.0	11.4	5.6	10.2	8.5 g	
VCF5-38M	3/8 NPT Male	in	0.75	0.67	0.45	0.22	0.50	0.4 oz	Aluminum
		mm	19.1	17.0	11.4	5.6	12.7	11 g	
VCF5-18F	1/8 NPT Female	in	0.69	0.87	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	N/A	8.5 g	
VCF5-14F	1/4 NPT Female	in	0.69	0.92	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	23.4	11.4	5.6	N/A	8.5 g	
I-VCF5-18M	1/8 NPT Male	in	0.69	0.87	0.45	0.22	0.35	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	8.9	8.5 g	
I-VCF5-18F	1/8 NPT Female	in	0.69	0.87	0.45	0.22	N/A	0.3 oz	Aluminum
		mm	17.4	22.1	11.4	5.6	N/A	8.5 g	

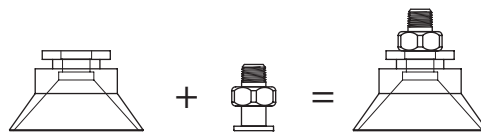


Example: Cup with Fitting

Fitting Group 6



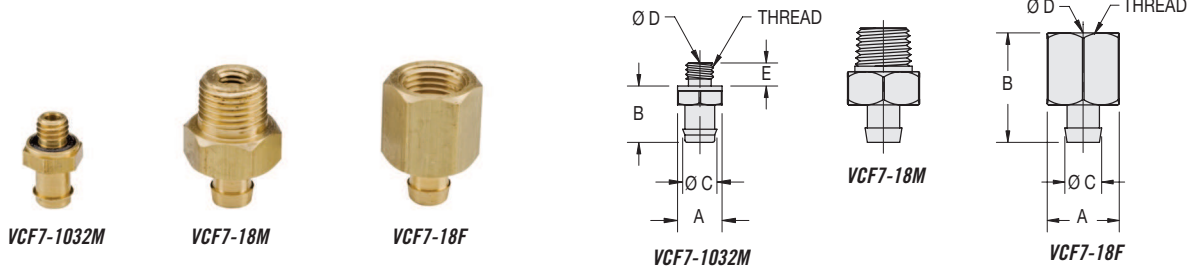
Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF6-18M	1/8 NPT Male	in	0.69	0.69	0.62	0.28	0.35	0.4 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	8.9	11 g	
VCF6-14M	1/4 NPT Male	in	0.69	0.69	0.62	0.28	0.40	0.3 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	10.2	8.5 g	
VCF6-38M	3/8 NPT Male	in	0.75	0.69	0.62	0.28	0.50	0.5 oz	Aluminum
		mm	19.1	17.4	15.7	7.1	12.7	14 g	
VCF6-18F	1/8 NPT Female	in	0.69	0.89	0.62	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	22.5	15.7	7.1	N/A	8.5 g	
VCF6-14F	1/4 NPT Female	in	0.69	0.94	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	17.4	23.7	15.7	7.1	N/A	11 g	
VCF6-38F	3/8 NPT Female	in	0.88	1.04	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	22.2	26.3	15.7	7.1	N/A	11 g	
I-VCF6-14M	G 1/4 Male	in	0.69	0.69	0.62	0.28	0.40	0.3 oz	Aluminum
		mm	17.4	17.4	15.7	7.1	10.2	8.5 g	
I-VCF6-14F	G 1/4 Female	in	0.69	0.94	0.62	0.28	N/A	0.4 oz	Aluminum
		mm	17.4	23.7	15.7	7.1	N/A	11 g	
I-VCF6-18F	G 1/8 Female	in	0.69	0.89	0.62	0.28	N/A	0.3 oz	Aluminum
		mm	17.4	22.5	15.7	7.1	N/A	8.5 g	



Example: Cup with Fitting

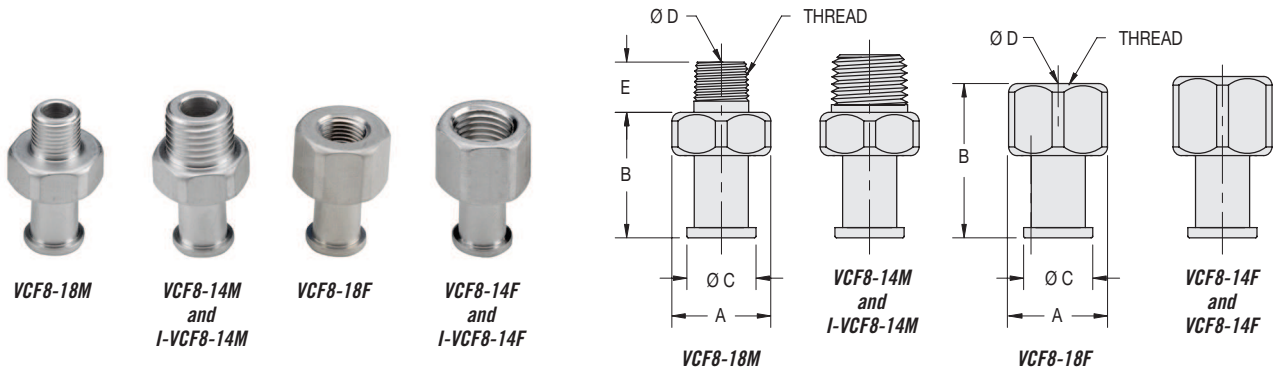
Vacuum Cups & Fittings

Fitting Group 7



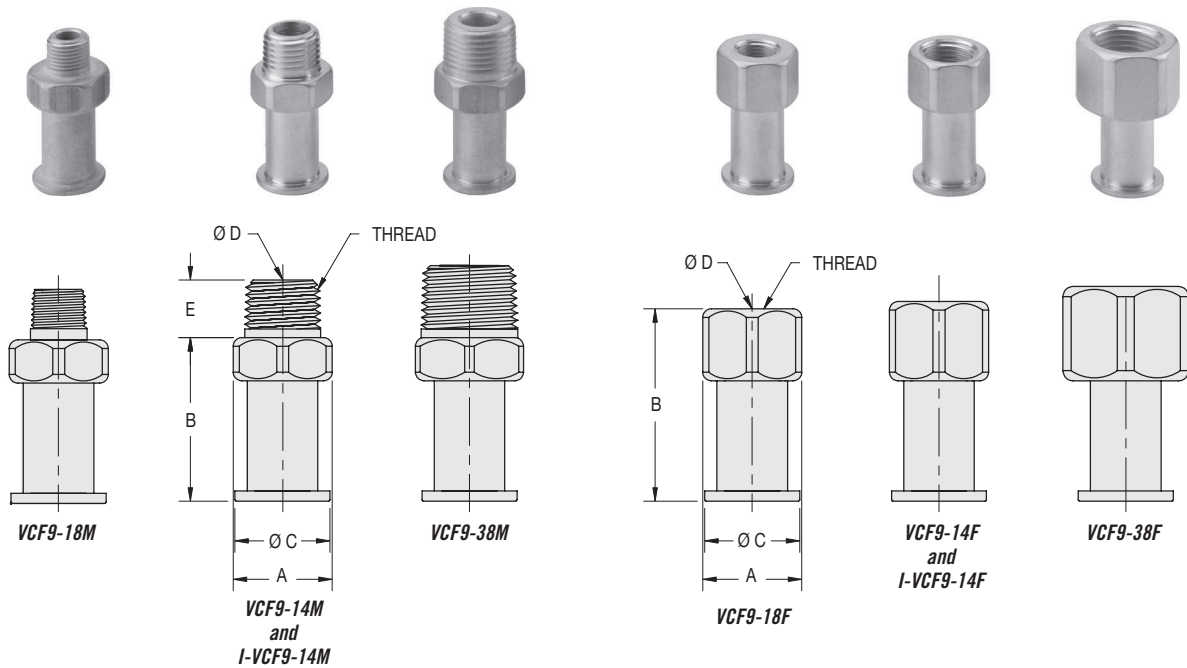
Model #	Thread Size	Dimensions					Weight	Material
		A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF7-1032M	10-32 Male	in	0.31	0.39	0.24	0.09	0.16	Brass
		mm	7.9	9.9	6.1	2.4	4.1	
VCF7-18M	1/8 NPT Male	in	0.50	0.49	0.26	0.16	0.30	Brass
		mm	12.7	12.4	6.5	4.1	7.6	
VCF7-18F	1/8 NPT Female	in	0.50	0.76	0.26	0.16	N/A	Brass
		mm	12.7	19.3	6.5	4.1	N/A	

Fitting Group 8

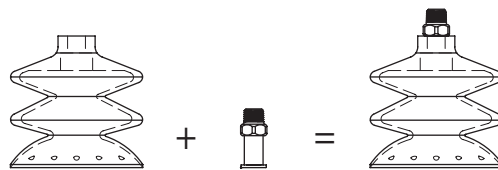


Model #	Thread Size	Dimensions					Weight	Material
		A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF8-18M	1/8 NPT Male	in	0.69	0.87	0.48	0.28	0.35	Aluminum
		mm	17.4	22.1	12.2	7.1	8.9	
VCF8-14M	1/4 NPT Male	in	0.69	0.87	0.48	0.28	0.40	Aluminum
		mm	17.4	22.1	12.2	7.1	10.2	
VCF8-18F	1/8 NPT Female	in	0.69	1.07	0.48	0.28	N/A	Aluminum
		mm	17.4	27.2	12.2	7.1	N/A	
VCF8-14F	1/4 NPT Female	in	0.69	1.12	0.48	0.28	N/A	Aluminum
		mm	17.4	28.4	12.2	7.1	N/A	
I-VCF8-14M	G 1/4 Male	in	0.69	0.87	0.48	0.28	0.40	Aluminum
		mm	17.4	22.1	12.2	7.1	10.2	
I-VCF8-14F	G 1/4 Female	in	0.69	1.12	0.48	0.28	N/A	Aluminum
		mm	17.4	28.4	12.2	7.1	N/A	

Fitting Group 9



Model #	Thread Size		Dimensions					Weight	Material
			A (Hex)	B	C	D (Thru Hole Dia.)	E		
VCF9-18M	1/8 NPT Male	in	0.69	1.14	0.66	0.22	0.35	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	5.6	8.9	11 g	
VCF9-14M	1/4 NPT Male	in	0.69	1.14	0.66	0.34	0.40	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	8.6	10.2	11 g	
VCF9-38M	3/8 NPT Male	in	0.75	1.14	0.66	0.34	0.50	0.6 oz	Aluminum
		mm	19.1	28.8	16.8	8.6	12.7	17 g	
VCF9-18F	1/8 NPT Female	in	0.69	1.34	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	33.9	16.8	8.6	N/A	11 g	
VCF9-14F	1/4 NPT Female	in	0.69	1.39	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	35.2	16.8	8.6	N/A	11 g	
VCF9-38F	3/8 NPT Female	in	0.75	1.49	0.66	0.34	N/A	0.5 oz	Aluminum
		mm	19.1	37.8	16.8	8.6	N/A	14 g	
I-VCF9-14M	G 1/4 Male	in	0.69	1.14	0.66	0.34	0.40	0.4 oz	Aluminum
		mm	17.4	28.8	16.8	8.6	10.2	11 g	
I-VCF9-14F	G 1/4 Female	in	0.69	1.39	0.66	0.34	N/A	0.4 oz	Aluminum
		mm	17.4	35.2	16.8	8.6	N/A	11 g	



Example: Cup with Fitting

Probes

For Ultra Miniature Vacuum Cups and Vacuum Pencil Kits

Ideal Applications:

- Electronics
- Pick and place small components
- High temperature
- Medical



Straight or angled probes

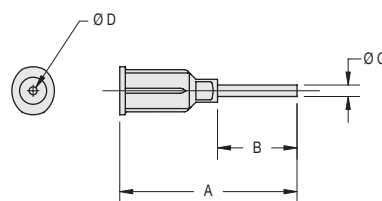
Vaccon probes attach directly to Vaccon's vacuum pencil and ultra-miniature cups for simple, manual placement of small parts.

See ultra-miniature cups on page 267.

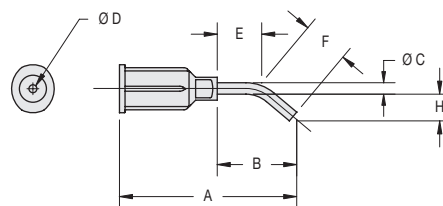
Standard Probe:

- Material: anodized aluminum
- Straight or angled
- Push on/slip fit connection to ultra-mini cups and pencils

Probes sold individually or as part of a Vaccon Vacuum Pencil Kit: **VH-8-KIT** See page 277.



Straight Probes – "S"



Angled Probe – "A"

Model #		Description	Dimensions							Weight
			A	B	C	D	E	F	H	
S050-5	in.	Straight Probe 1/2" Length	1.12 [28.4]	0.50 [12.7]	0.05	0.03	N/A	N/A	N/A	0.02 oz 0.7 g
	mm				1.3	0.8				
S075-5	in.				0.072	0.05				
	mm				1.8	1.3				
S050-10	in.	Straight Probe 1" Length	1.62 [41.1]	1.00 [25.4]	0.050	0.03	N/A	N/A	N/A	0.03 oz 0.8 g
	mm				1.3	0.8				
S075-10	in.				0.072	0.05				
	mm				1.8	1.3				
A050-5	in.	Angled Probe 1/2" Length	1.12 [28.4]	0.50 [12.7]	0.05	0.03	0.26	0.31	0.19	0.02 oz 0.7 g
	mm				1.3	0.8	6.6	8.0	4.8	
A075-5	in.				0.072	0.05	0.28	0.29	0.17	
	mm				1.8	1.3	7.1	7.3	4.3	
A050-10	in.	Angled Probe 1" Length	1.62 [41.1]	1.00 [25.4]	0.050	0.03	0.76	0.31	0.19	0.03 oz 0.8 g
	mm				1.3	0.8	19.3	8.0	4.8	
A075-10	in.				0.072	0.05	0.78	0.29	0.17	
	mm				1.8	1.3	19.8	7.3	4.3	

How to Specify:

Probe only: Order by model # i.e. **A050-5**

Manual Pick and Place of Small Components

Vacuum Pencil Kit: VH-8-KIT



Compressed air required to power ultra-mini vacuum pump/probe/cup assembly.

Ideal Applications:

- Electronics
- Glass handling
- High temperature
- Medical
- Miniature assembly operations

Benefits/Features:

- Lightweight – comfortable to handle
- Quiet – positive work environment
- Easy to assemble – no tools required
- Flexible – quick change of cups and probes for different applications

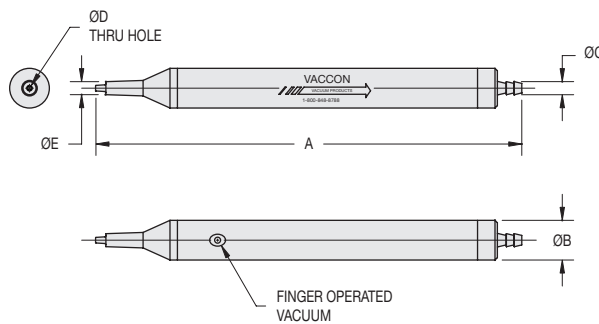
Utilizing a miniature Vaccon venturi vacuum pump as its vacuum source, the vacuum pencil kit includes a vacuum pump, vacuum pencil and a variety of interchangeable ultra-mini cups and probes.

Vaccon's Vacuum Pencil easily adapts to handling different objects by simply changing the vacuum cup and probe. Lightweight and compact, the vacuum pencil kit is ideal for bench top work.

VH-8-KIT: Kit includes:

- 4 straight probes, 4 angled probes
- 7 Ultra-mini cups – variety of materials and sizes (anti-static for handling electronics, silicone for high temperatures – see page 267)
- 1 VH3020-8 vacuum pencil
- 1 JS-40UM vacuum pump w/inlet, exhaust and vacuum fittings – generates up to 27"Hg
- Coiled polyurethane vacuum tubing

Vacuum Pencil



Model #	Dimensions						Weight
		A	B	C	D	E	
VH3020-8	in.	5.87	0.50	0.17	0.02	0.16	0.6 oz
	mm	149.1	12.7	4.2	0.6	4.2	17 g

How to Specify:

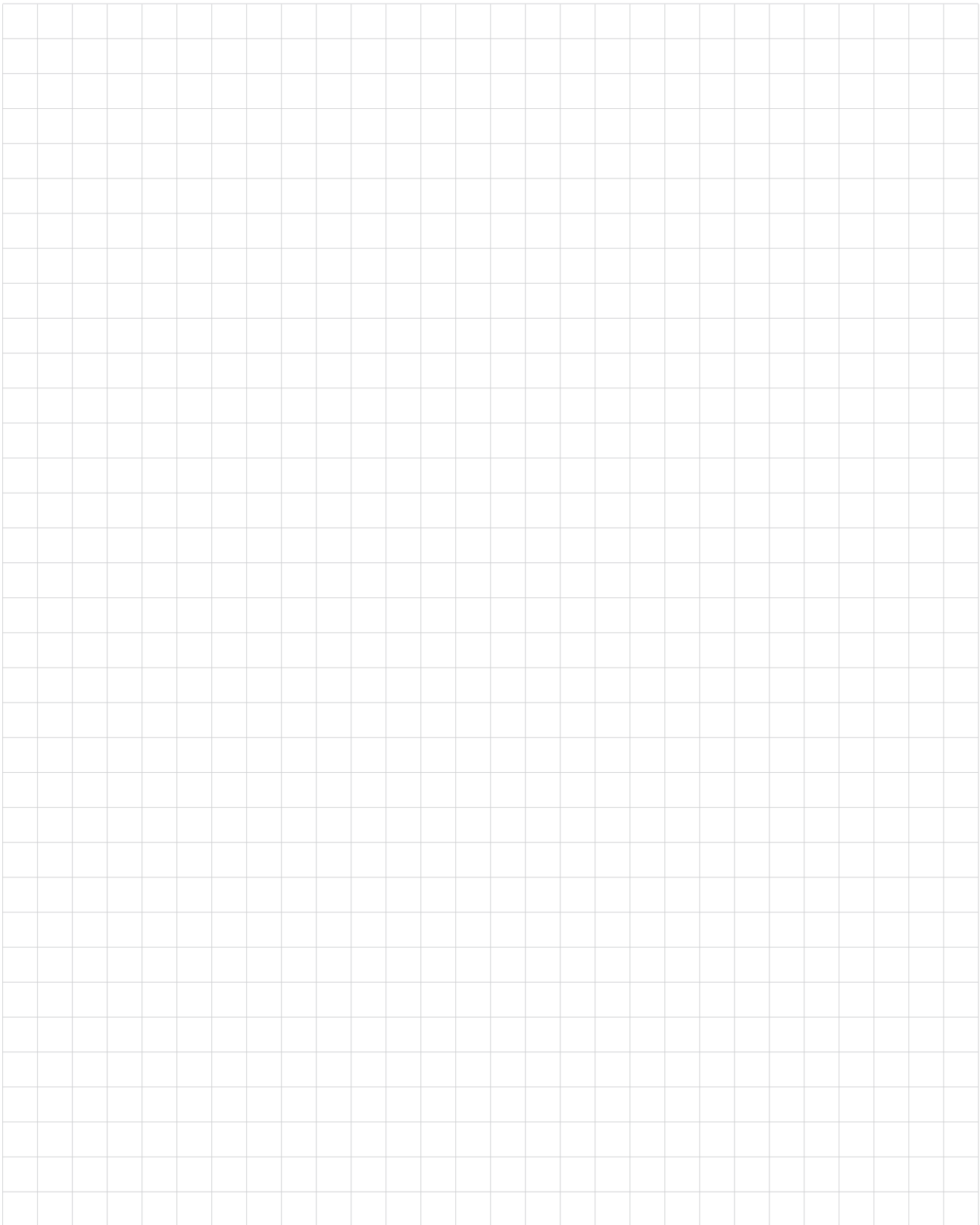
Vacuum Pencil only: VH3020-8

Vacuum Pencil Kit: VH-8-KIT

Ultra-Mini cups only: See page 251

Probes only: See page 260







Silencers

Vaccon silencers have excellent noise reducing characteristics with minimal resistance to air flow. AA Series silencers are one third smaller than comparable products, providing considerable space savings. The large surface of the felt element resists contamination far more than other materials such as sintered bronze, steel mesh or porous polyethylene. ST Series silencers provides air flow efficiency with its straight-thru design. The STAA Series combines the best of both worlds. The FA-51 Series is designed specifically for high flow performance and ultra quiet operation.

See Page **264**



Vacuum Check Valves

Designed with large thru bores, Vaccon fittings connect to vacuum cups, vacuum pumps and spring levelers ensuring unrestricted vacuum flow for safe material handling operations.

For plumbing flexibility, Vaccon offers 9 different fitting groups with various thread sizes in both imperial and metric.

See Page **271**



Gauges

Vaccon vacuum gauges are used in almost every area of automation including applications in pneumatics, process control, packaging, printing, medical, food and pharmaceutical. These gauges can be used with Vaccon vacuum pumps and other pneumatic devices for measurement of air or water and other media that have no effect on bronze. Vaccon gauges are a high quality gauge designed to measure and indicate vacuum in pneumatic control systems. Our standard dials are dual scale in "Hg and kPA or PSI and BAR.

See Page **274**



In-Line Filter

Added protection for extreme conditions! Compact in-line filters for adverse conditions provide added protection of 10 micron filtration and have a 150 psi pressure rating. Filters are constructed from rugged injection molded nylon and plastic. Vaccon offers eight different design configurations for maximum placement versatility and easy installation.

See Page **278**

AA Series Silencers



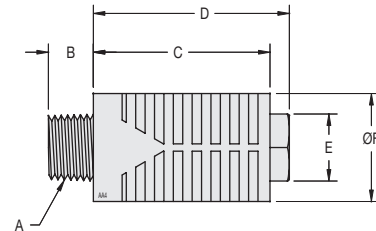
AA Series silencers have excellent noise reducing characteristics with minimal resistance to air flow. AA Series silencers are one third smaller than comparable products, providing considerable space savings. The large surface of the felt element resists contamination far more than other materials such as sintered bronze, steel mesh or porous polyethylene.

Features:

- Compact
- Lightweight
- Durable
- 4 Thread sizes 1/8, 1/4, 3/8, 1/2
- Closed-end silencer

Benefits:

- Maximize performance – silences pneumatic equipment without back pressure.
- Increase productivity and operator safety – reduces irritating noise, improves working environment
- Closed-end silencer – contaminants can't escape
 - ~ maintains clean environment
 - ~ reduces maintenance costs
 - ~ increases equipment life



Model #		Dimensions						Weight	Construction				Noise Level				
		A*	B	C	D	E	F		Body	Baffle	Screen	Element					
AA2	in.	1/8	0.23	0.97	1.08	0.39	0.61	0.1 oz	Nylon	Nylon	Nylon	Felt	58dB				
	mm.		5.8	24.6	27.4	9.91	15.5	3 g									
AA4	in.	1/4	0.32	1.26	1.39	0.47	0.77	0.2 oz									
	mm.		8.1	32.0	35.3	11.94	19.6	6 g									
AA6	in.	3/8	0.41	1.74	1.86	0.62	0.96	0.4 oz									
	mm.												[10.4]	[44.2]	[47.2]	[15.75]	[24.4]
AA8	in.	1/2	0.41	1.74	1.86	0.62	0.96	0.4 oz					Nylon	Nylon	Nylon	Felt	70dB
	mm.																[10.4]

*Fits NPT, BSPP and BSPT threads.

AA Series Silencers Operating Specifications:

Max. Operating Pressure: Not to exceed 150 PSI

Noise level: Measured 4.5 ft on the diagonal from the silencer while attached to a Vaccon pump. Noise levels will vary on Vaccon and non-Vaccon products.

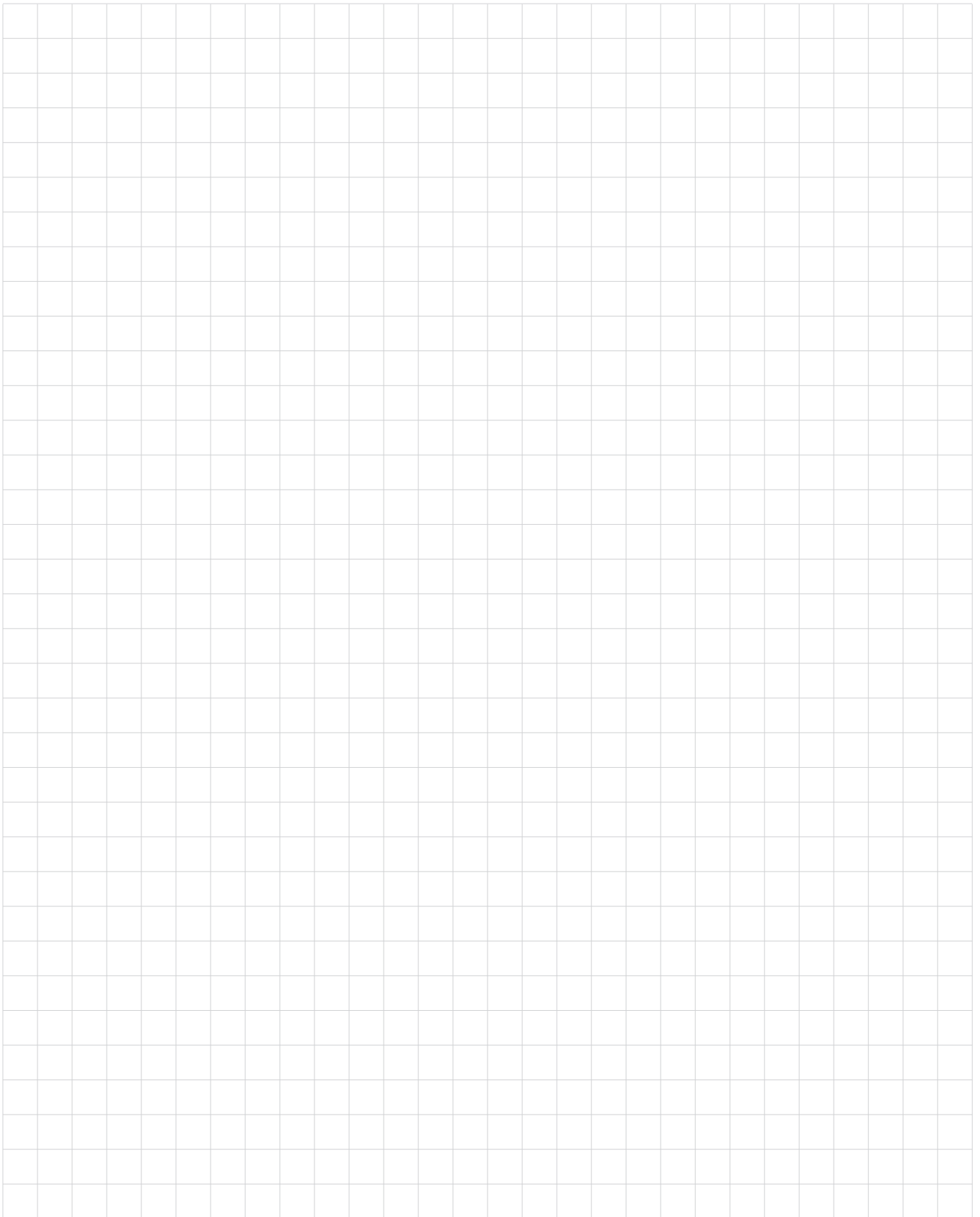
Note 1: Vaccon strongly recommends the use of silencers on all vacuum pumps.

Note 2: Vaccon silencers are used on all types of pneumatic devices such as air-operated vacuum pumps, air motors, valves, cylinders and more.

How to Specify:

- **For Silencer only:** Order by Model #.
- **Vaccon pump/silencer combinations:** Vaccon pumps include a silencer(s) that has been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-Vaccon pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.





ST Series Silencers



ST Silencers - male and female threads

VDF 250-ST4A-2

Features:

- Straight-through design
- Felt liner provides low frequency sound
- Male and female connections
- 18 models

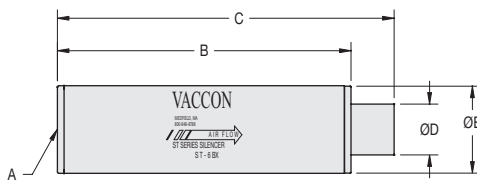
Benefits:

- Reliable – straight through design – non-clogging
- Maximizes performance – silences pneumatic equipment without back pressure
- Increase productivity and operator safety – reduces irritating noise, improves working environment
- Increase savings – reduces maintenance costs, increases equipment life

The ST Series Silencers are designed with a straight through flow path that eliminates clogging by allowing the contaminants to pass directly through the silencer. Each silencer is tuned in proportion to its exhaust flow to minimize noise.

As air passes through the silencer, the dense felt element absorbs the noise, thus reducing high pitch exhaust noise to a gentle, low frequency sound. Even in the most adverse conditions, contaminants pass through the silencer making the ST Series ideal for silencing vacuum pumps that are continuously ingesting dirt and debris.

ST Series Silencers: Female Threads



ST Series - female threads

Model #	Dimensions						Weight	Construction		Noise Level
	A	B	C	D	E	Body		Element		
ST4AX	in.	1/4"	3.19	3.56	0.50 [12.7]	1.00 [25.4]	1.8 oz 51 g	Anodized Aluminum	Felt	75dB
	mm.	NPT F	81.0	90.4						
ST6BX	in.	3/8"	4.19	4.82	0.72 [18.3]	1.25 [38.1]	3.4 oz 96 g			77dB
	mm.	NPT F	106.4	122.4						
ST16FC	in.	1"	6.39	7.14	1.25 [31.8]	2.00 [50.8]	7.6 oz 215 g	80dB		
	mm.	NPT F	162.3	181.4						
ST24FC	in.	1 1/2"	7.10	7.85	1.25 [31.8]	2.00 [50.8]	7.9 oz 224. g	82dB		
	mm.	NPT F	180.3	199.4						

ST Series Silencers Specifications:

Max. Operating Pressure: Not to exceed 150 psig

Noise level: Measured 4.5 ft on the diagonal from the silencer while attached to a Vaccon pump. Noise levels will vary on Vaccon and non-Vaccon products.

Note 1: Vaccon strongly recommends the use of silencers on all vacuum pumps.

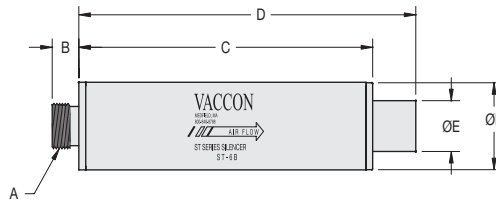
Note 2: Vaccon silencers are used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

Note 3: ST Silencers may be used on all Vaccon vacuum pumps.

How to Specify:

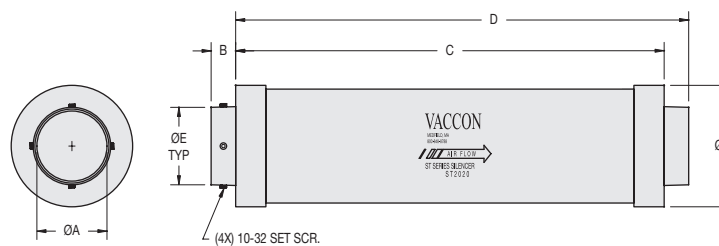
- **For Silencer only:** Order by Model #.
- **Vaccon pump/silencer combinations:** Vaccon pumps include a silencer(s) that has been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-Vaccon pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.

ST Series Silencers: Male Threads



Model #	Dimensions							Weight	Construction		Noise Level
		A	B	C	D	E	F		Body	Element	
ST2	in.	1/8"	0.30	0.63	1.00	0.20	0.63	0.2 oz	Acetal	N/A	68dB
	mm.	NPS M		16.0	25.4	5.1	16.0	6 g			
ST4	in.	1/4"	7.6	1.49	1.86	0.35	0.75	0.6 oz	Acetal	N/A	68dB
	mm.			NPS M	37.8	47.2	8.9	19.1			
ST4A	in.	1/4"	0.37	3.19	3.56	0.50	1.00	1.8 oz	Anodized Aluminum	Felt	70dB
	mm.			NPS M	81.0			90.4			
ST4A-2	in.	1/4"	9.4	2.18	2.56	[12.7]	25.4	1.4 oz	Anodized Aluminum	Felt	72dB
	mm.			NPS M	55.4			65.0			
ST6A	in.	3/8"	0.38	3.19	3.56	0.72	1.25	1.8 oz	Anodized Aluminum	Felt	72dB
	mm.			NPS M	81.0			90.4			
ST6B	in.	3/8"	9.7	4.19	4.82	0.72	1.25	3.1 oz	Anodized Aluminum	Felt	74dB
	mm.			NPS M	106.4			122.4			
ST8A	in.	1/2"	0.50	3.19	3.56	1.25	2.00	1.8 oz	Anodized Aluminum	Felt	74dB
	mm.			NPS M	81.0			90.4			
ST8B	in.	1/2"	9.7	4.19	4.82	0.72	1.25	3.1 oz	Anodized Aluminum	Felt	76dB
	mm.			NPS M	106.4			122.4			
ST12C	in.	3/4"	12.7	6.18	6.93	1.25	2.00	7.8 oz	Anodized Aluminum	Felt	80dB
	mm.			NPS M	[157.0]			[176.0]			
ST16C	in.	1"	12.7	6.18	6.93	1.25	2.00	7.7 oz	Anodized Aluminum	Felt	80dB
	mm.			NPS M	[157.0]			[176.0]			

Note: All NPS threads fit G Port threads



Model #	Dimensions							Weight	Construction		Noise Level
		A	B	C	D	E	F		Body	Element	
ST2020	in.	Ø 1.99	0.70	12.23	12.93	2.21	3.46	11 oz	PVC	Foam	82dB
	mm.							311 g			
ST2020-5	in.	Ø 1.24	17.8	310.6	328.4	56.1	87.9	13.3 oz	PVC	Foam	82dB
	mm.							377 g			
ST2020-7	in.	Ø 1.49	17.8	310.6	328.4	56.1	87.9	12.7 oz	PVC	Foam	82dB
	mm.							360 g			

STAA Series Silencers



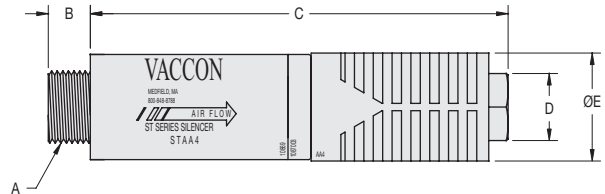
Features:

- Compact
- Lightweight
- Durable
- Ultra quiet operation
- 2 Thread sizes 1/4, 3/8 NPT

Benefits:

- Maximize performance – silences pneumatic equipment without back pressure.
- Increase productivity and operator safety – reduces irritating noise, improves working environment
- Maintain clean environment – reduces maintenance costs, increases equipment life

A hybrid silencer that offers increased noise reduction by combining an ST silencer with an AA silencer. The (closed-end) AA silencer is attached to the end of a modified ST silencer, thus removing the flow through feature of the standard ST Series silencers.



Model #		Dimensions						Weight	Construction				Noise Level
		A	B	C	D	E	F		Body	Baffle	Screen	Element	
STAA4	in.	1/4 NPSM	0.30	2.84	2.98	0.47	0.77	0.7 oz	Acetal/ Nylon	Felt/ Nylon	Nylon	Felt	58dB
	mm.		7.6	72.1	75.7	11.9	19.6						
STAA6	in.	3/8 NPSM	0.38	4.93	5.05	0.62	1.00	1.8 oz	Aluminum/ Nylon	Felt/ Nylon	Nylon	Felt	64dB
	mm.		9.7	125.2	128.3	15.7	25.4						

STAA Series Silencers Specifications:

Max. Operating Pressure: Not to exceed 150 PSI
Noise level: Measured 4.5 ft on the diagonal from the silencer while attached to a Vaccon pump. Noise levels will vary on Vaccon and non-Vaccon products.
Note 1: Vaccon strongly recommends the use of silencers on all vacuum pumps.
Note 2: Vaccon silencers are used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

How to Specify:

- **For Silencer only:** Order by Model #.
- **Vaccon pump/silencer combinations:** Vaccon pumps include a silencer(s) that has been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-Vaccon pneumatic devices:** The thread size on the exhaust port of the pneumatic device determines the size of the silencer.
- Equipment and applications may vary. Consult factory for proper silencer selection.

FA-51 Series Silencers



RF-51 – replacement element for all FA-51 silencers



JS-350-FA-51-1/2

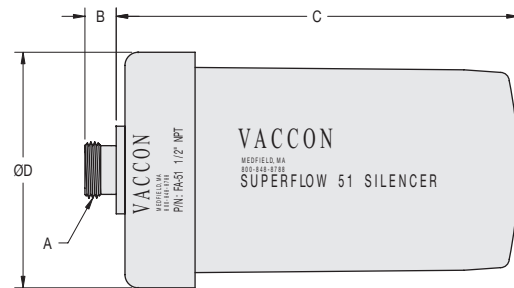
Features:

- Closed end
- 3 Thread sizes 1/4, 3/8, 1/2
- Replacement elements available

Benefits:

- Safe – closed end high flows won't cause potentially dangerous projectiles
- Durable – more area inside to absorb sound and debris
- Economical – lasts longer, lower cost, replacement elements available
- Reliable – no back pressure on high flow applications
- Maintain clean environment – reduces maintenance costs, increases equipment life

The FA-51 Series silencers offer remarkable noise reduction for high volume exhaust applications without causing back pressure. These silencers are ideal for quieting large air valves that must exhaust quickly to maintain high cycle rates. Vaccon uses the FA-51 silencers on all high flow venturi vacuum pumps where even a small amount of back pressure would decrease performance.



Model #	Dimensions					Weight	Construction				Noise Level
		A	B	C	D		Body	Baffle	Screen	Element	
FA-51-1/4	in.	1/4	0.30	5.74	3.36	12.7 oz	Steel	Foam	Steel	Paper	72dB
	mm.	NPS M	7.6								
FA-51-3/8	in.	3/8	0.44	[145.8]	[85.3]	[357 g]					
	mm.	NPS M	11.2								
FA-51-1/2	in.	1/2	0.44								
	mm.	NPS M	11.2								
RF-51	in.	N/A	N/A	4.76	3.03	6.2 oz					
	mm.			120.9	77.0	176 g					

FA-51 Series Silencers Operating Specifications:

Max. Operating Pressure: Not to exceed 150 PSI

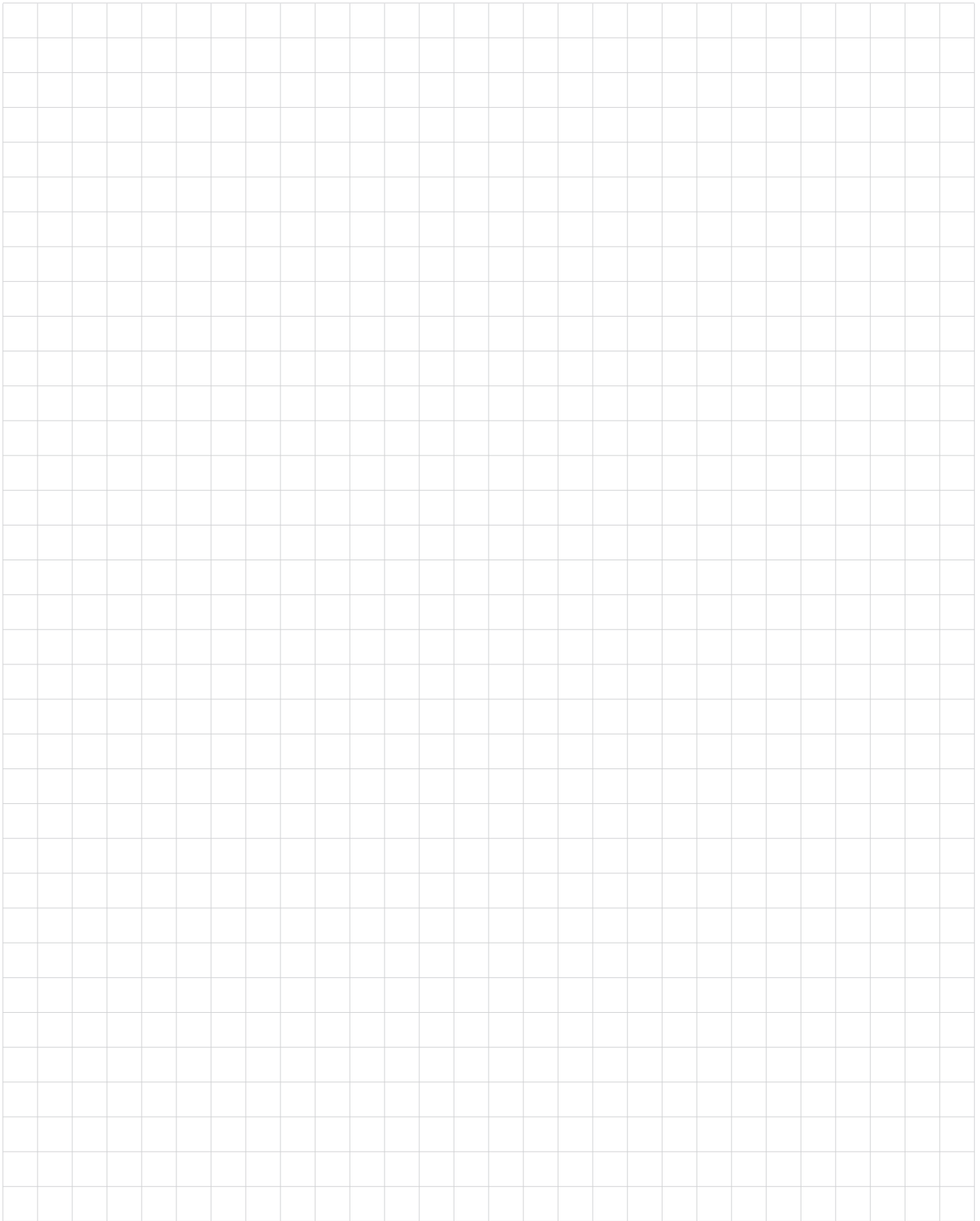
Noise level: Measured 4.5 ft on the diagonal from the silencer while attached to a Vaccon pump. Noise levels will vary on Vaccon and non-Vaccon products.

Note 1: Vaccon strongly recommends the use of silencers on all vacuum pumps.

Note 2: Vaccon silencers are used on all types of pneumatic devices i.e. air-operated vacuum pumps, air motors, valves, cylinders and more.

How to Specify:

- **For Silencer only:** Order by Model #.
- **Vaccon pump/silencer combinations:** Vaccon pumps include a silencer(s) that has been sized to ensure maximum pump performance. See specific pump for silencer options.
- **Non-Vaccon pneumatic devices:** The thread size (1/4, 3/8, 1/2) on the exhaust port of the pneumatic device determines the size of the silencer i.e. FA-51-1/4
- **P/N: RF-51 - Replacement Element:** Fits all FA-51 models
- Equipment and applications may vary. Consult factory for proper silencer selection.



Vacuum Check Valves

For vacuum applications requiring high flow and low cracking pressure



Ideal Applications:

- Clamping and vacuum chucking
- Pick and place of heavy loads
- Hold vacuum while molds cool
- Vessel evacuation
- Lifting systems
- Material handling applications

Features/Benefits:

- Productive – high flow capacity for rapid evacuation
- Safe – minimum flow restriction ensures holding force
- Energy efficient – extremely low cracking pressure <1”Hg [34mbar] reaches vacuum level quickly
- Compact & lightweight – easily mounts to Vaccon or non-Vaccon vacuum products

Options:

- Additional sensor/switch port for positive pressure release
- 3 Body sizes
- 5 Thread sizes – 1/8” to 3/4” NPT

Vaccon vacuum check valves seal and hold vacuum for safe, energy efficient operations for clamping, pick and place and vessel evacuation applications. Vaccon vacuum check valves are designed specifically for vacuum applications. They offer high flow capacity with minimal flow restriction and feature extremely low cracking pressures of less than 1”Hg. The large unrestricted flow path ensures high flow at low vacuum levels. The low cracking pressure allows the vacuum system to reach its maximum vacuum level before the check valve seals off the system.

With their high flow capacity and low cracking pressure, Vaccon vacuum check valves offer rapid evacuation which increases process or production speed and reduces cycle times for more efficient operations.

In contrast, most spring-loaded check valves marketed today are designed for high pressure systems and have high cracking pressures. When used in vacuum applications, spring-loaded check valves severely restrict vacuum flow, hindering the performance of the vacuum pump by slowing down evacuation speed and wasting energy

Vaccon vacuum check valves are made of durable anodized aluminum with an internal flexible valve sealing mechanism.

Vaccon Vacuum Check Valves may be used with non-Vaccon vacuum products.

Model #	Cracking Pressure	Maximum Vacuum Flow w/ Zero Flow Restriction	Body Material	Valve Material	Operating Temperature	Proper Check Valve/Pump Combination (matched by flow and port size)
VCV-75-18	4.3” H ₂ O [10.7 mbar]	4.0 SCFM [113 lpm]	Anodized Aluminum	EPDM	-20°F to +220°F [-29°C to +105°C]	HVP-100
VCV-75-14						J Series pumps 60 through 150
						VP Series pumps 60 through 150
						HVP-200
						VDF 100 and 150
						VP Series pumps 60 through 150
VCV-100-14	1.6” H ₂ O [4.0 mbar]	20.0 SCFM [566 lpm]	Anodized Aluminum	Silicone	-50°F to +392°F [-46°C to +200°C]	HVP-300
VCV-100-38						VDF 200 and 250
VCV-100-12						J Series - 200 and 250
						VP80 Series - 200 and 250
						For use with non-Vaccon products
VCV-125-38	2.7” H ₂ O [6.7 mbar]	30.0 SCFM [849 lpm]	Anodized Aluminum	EPDM	-20°F to +220°F [-29°C to +105°C]	J Series - 200 and 250
VCV-125-12						VP80 Series - 200 and 250
						VDF-375
						J Series 350
						VP Series 300 and 350

Vacuum Accessories



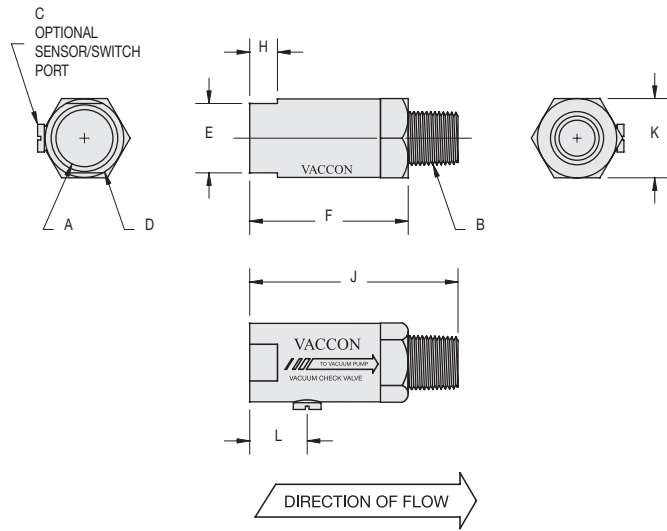
VCV-75 Series



VCV-100 Series



VCV-125 Series

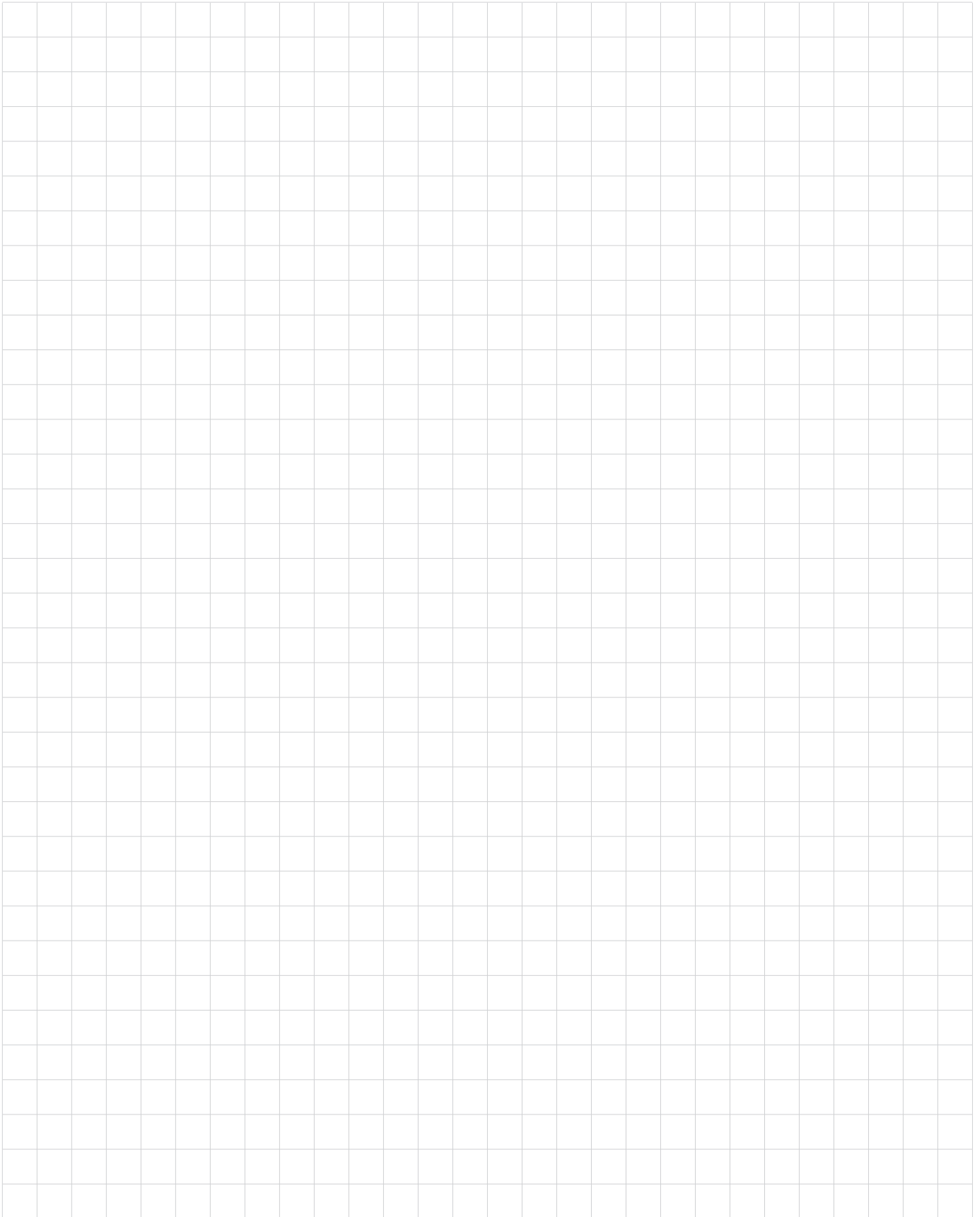


Model #	Dimensions																					
		A	B	C	D	E	F	H	J	K	L	Weight										
VCV-75-18	in	1/4 NPT F	1/8 NPT M	10-32	0.74 [18.8]	0.63 [15.9]	1.50 [38.1]	0.25 [6.4]	1.83	0.75 [19.1]	0.59 [14.9]	0.7 oz										
	mm								46.5			20 g										
VCV-75-14	in	1/4 NPT F	1/4 NPT M						10-32	0.74 [18.8]	0.63 [15.9]	1.50 [38.1]	0.25 [6.4]	1.90	0.75 [19.1]	0.59 [14.9]	0.8 oz					
	mm													48.3			23 g					
VCV-100-14	in	1/2 NPT F	1/4 NPT M											10-32	0.99 [25.1]	0.88 [22.2]	2.00 [50.8]	0.35 [8.9]	2.40	1.00 [25.4]	0.73 [18.4]	1.5 oz
	mm																		61.0			43 g
VCV-100-38	in	1/2 NPT F	3/8 NPT M	10-32	0.99 [25.1]	0.88 [22.2]	2.00 [50.8]	0.35 [8.9]											2.44	1.00 [25.4]	0.73 [18.4]	1.4 oz
	mm																		62.0			40 g
VCV-100-12	in	1/2 NPT F	1/2 NPT M						10-32	0.99 [25.1]	0.88 [22.2]	2.00 [50.8]	0.35 [8.9]						2.78	1.00 [25.4]	0.73 [18.4]	1.5 oz
	mm																		70.6			43 g
VCV-125-38	in	3/4 NPT F	3/8 NPT M											10-32	1.24 [31.5]	1.13 [28.6]	2.00 [50.8]	0.35 [8.9]	2.44	1.25 [31.8]	0.73 [18.4]	2.5 oz
	mm																		62.0			71 g
VCV-125-12	in	3/4 NPT F	1/2 NPT M	10-32	1.24 [31.5]	1.13 [28.6]	2.00 [50.8]	0.35 [8.9]											2.78	1.25 [31.8]	0.73 [18.4]	2.1 oz
	mm																		70.6			60 g

How to Specify:

Order check valve by part number i.e. VCV-125-12.

For metric availability, please consult factory.



Vacuum Gauges



Features/Benefits:

- Accurate monitoring – easy visual confirmation for operator, ensures consistent performance
- Effective diagnostic tool – debug and troubleshoot systems
- Economical – low cost, long life

Options:

- Dry or glycerin filled
- 3 mounting positions: bottom mount, center back mount or panel mount
- 2 dial sizes
- Materials available: Black ABS or Steel

Vaccon vacuum gauges are used in almost every area of automation including applications in pneumatics, process control, packaging, printing, medical, food and pharmaceutical.

Glycerin filled gauges extend gauge life and increase readability by dampening pulsing and vibration. All glycerin filled gauges feature a stainless steel case and bezel.

All gauges are protected with a limiting orifice to limit pressure shock. Standard dial faces have a dual scale in "Hg and Bar.

Model #	Type	Dial Size	Dual Scale Dial Range	Case	Bezel	Crystal	Bourdon Tube	Movement and Connection	Shock Protection	Accuracy				
Lower Mount														
VG-150	Dry	1.50"	0 to 30"Hg [0 to -1 bar]	Black ABS	None	Snap-on polycarbonate	Phosphor Bronze	Brass	0.5mm restrictor orifice	ASME B 40.1 Grade B (±3-2-3% of span)				
VG-150-GF	Glycerin filled			Stainless Steel	Stainless Steel	Polycarbonate								
VG-200-SS	Dry	2.00"		Stainless Steel	Stainless Steel	Polycarbonate								
VG-200-SS-GF	Glycerin filled			Stainless Steel	Stainless Steel	Polycarbonate								
Center Back Mount														
VG-150-CBM	Dry	1.50"	0 to 30"Hg [0 to -1 bar]	Black ABS	None	Snap-on polycarbonate					Phosphor Bronze	Brass	0.5mm restrictor orifice	ASME B 40.1 Grade B (±3-2-3% of span)
Panel Mount														
VG-150-PM	Dry	1.50"	0 to 30"Hg [0 to -1 bar]	Stainless Steel	Stainless Steel	Polycarbonate								
VG-150-PMG	Glycerin filled													
VG-200-PM	Dry						2.00"							

For material availability, please consult factory.

Standard Vacuum Gauge: Bottom Mount



VG-150



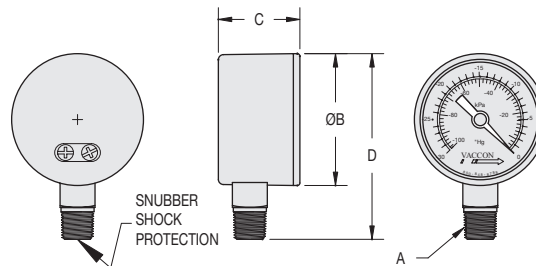
VG-150-GF



VG-200-SS-GF



VG-200-SS

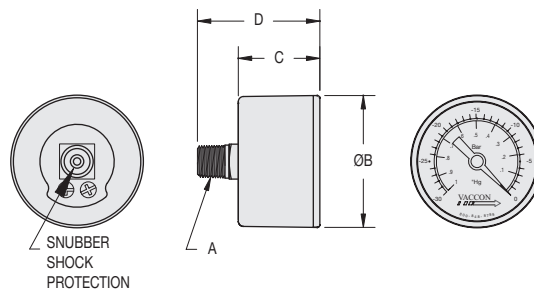


Model #	Type		A Port Connection	B - Face Dia.	C	D	Weight
VG-150	Dry	in	1/8" NPT	1.62	1.00	2.28	1.5 oz
		mm		41.1	25.4	57.9	43 g
VG-150-GF	Glycerin filled	in	1/8" NPT	1.85	1.00	2.42	2.7 oz
		mm		47.0	25.4	61.5	77 g
VG-200-SS	Dry	in	1/4" NPT	2.09	1.05	2.81	3.1 oz
		mm		53.1	26.7	71.4	88 g
VG-200-SS-GF	Glycerin filled	in	1/4" NPT	2.32	1.03	3.10	4.8 oz
		mm		58.9	26.2	78.7	136 g

Vacuum Gauge: Center Back Mount



VG-150-CBM



Model #	Type		A Port Connection	B - Face Dia.	C	D	Weight
VG-150-CBM	Dry	in.	1/8" NPT	1.62	1.00	1.50	1.6 oz
		mm		41.1	25.4	38.1	45 g

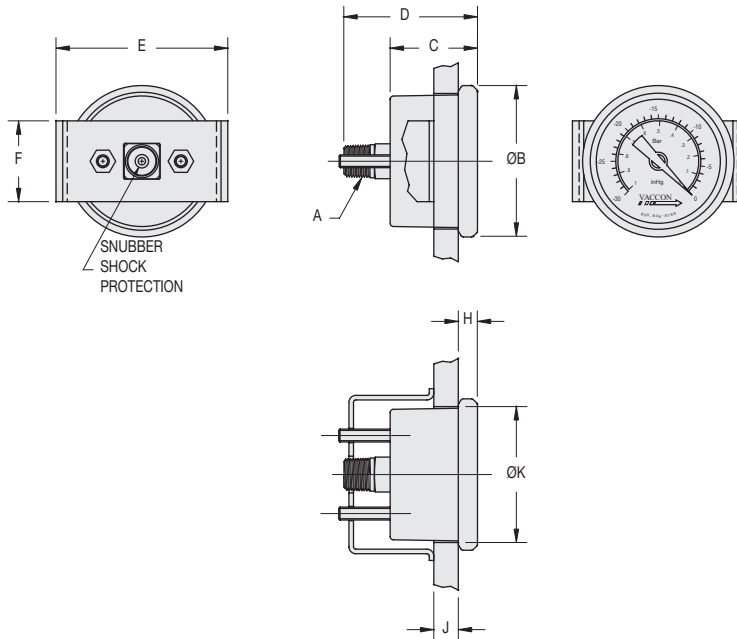
Vacuum Gauge: Panel Mount



VG-150-PM/VG-200-PM



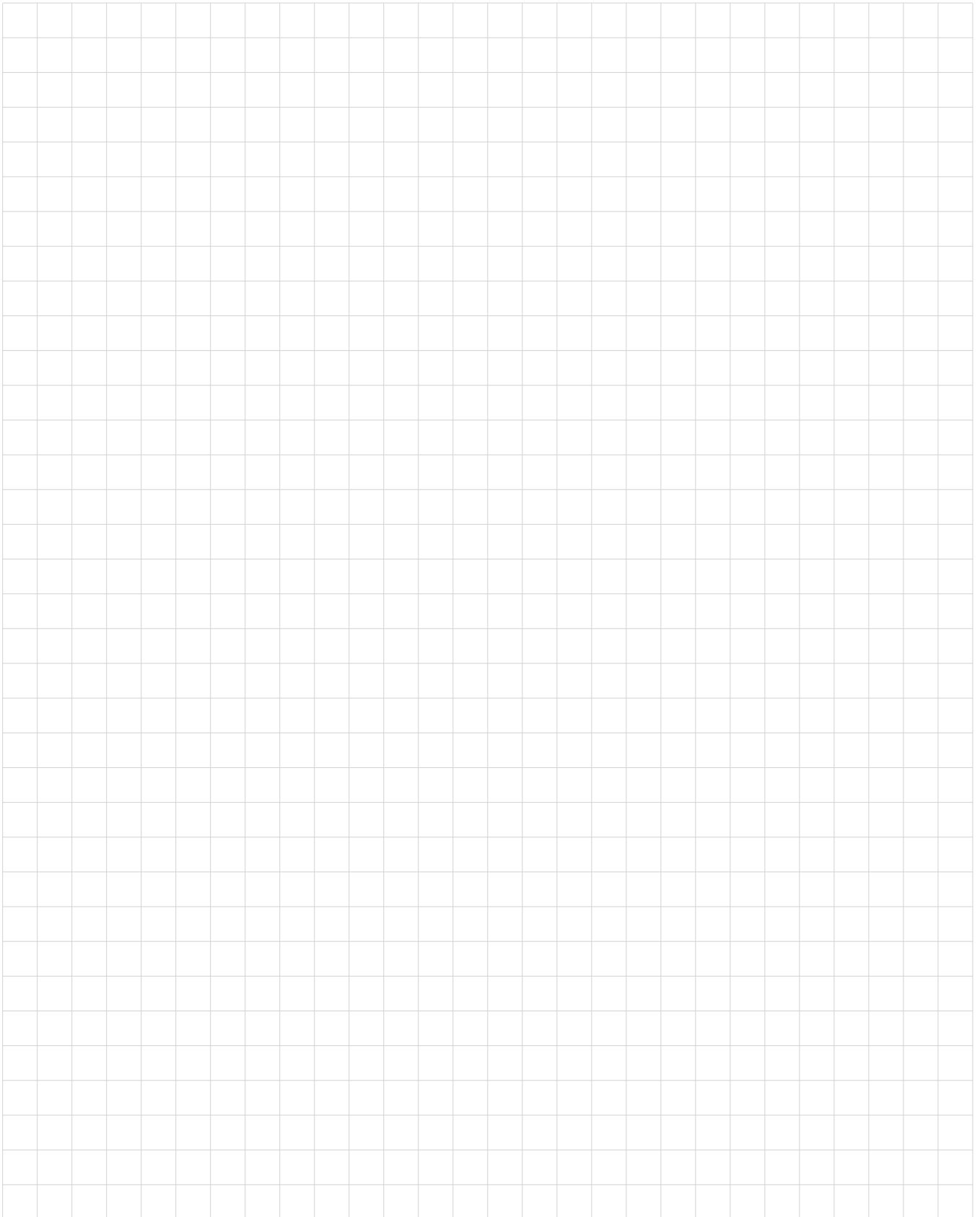
VG-150-PMG



Model #	Type		A Port Connection	B - Face Dia.	C	D	E	F	H	J - Max. Panel Thickness	K - Panel Cutout +/- .03	Weight
VG-150-PM	Dry	in.	1/8" NPT	1.85	1.07	1.64	2.11	0.99	0.24	0.30	1.67	3.3 oz
		mm		47.0	27.2	41.7	53.6	25.1	6.1	7.6	42.3	94 g
VG-150-PMG	Glycerin filled	in.	1/8" NPT	1.85	1.07	1.90	2.38	1.02	0.24	0.80	1.67	3.6 oz
		mm		47.0	27.2	48.3	60.5	25.9	6.1	20.3	42.3	102 g
VG-200-PM	Dry	in.	1/4" NPT	2.32	1.03	1.60	2.81	0.99	0.20	0.10	2.07	4.7 oz
		mm		58.9	26.2	40.6	71.4	25.1	5.1	2.5	52.6	133 g

How to Specify:

Gauges should be ordered by model number as a separate line item as they are individually packaged for protection during shipping.



In-Line Vacuum Filters



In-Line Vacuum Filters

Add Vaccon's compact in-line vacuum filters to vacuum lines or air-supply lines to trap dirt and debris from entering the process, or to the exhaust port to capture airborne contaminants.

Vaccon's pleated-element design offers a filter with significantly longer life and much higher flow capacity than non-pleated, porous plastic designs. The large surface area increases filter life while reducing maintenance costs.

Ideal for use in dirty, dusty applications:

- Material handling equipment
- Printing
- Paper and pulp
- Wood chips
- Powder and plastic dust

The durable injection molded nylon and polycarbonate construction of the VF models and the metal construction of the VFC-1500F handle the most challenging environments. The 10-micron paper filters are rated for full vacuum to 150 PSI [10BAR] pressure.

You can use Vaccon inline-filters in conjunction with any manufacturer's vacuum pumps.

Please Note: Under normal conditions, Vaccon's unique single-stage pumps do not require filters for maximum operating efficiency.



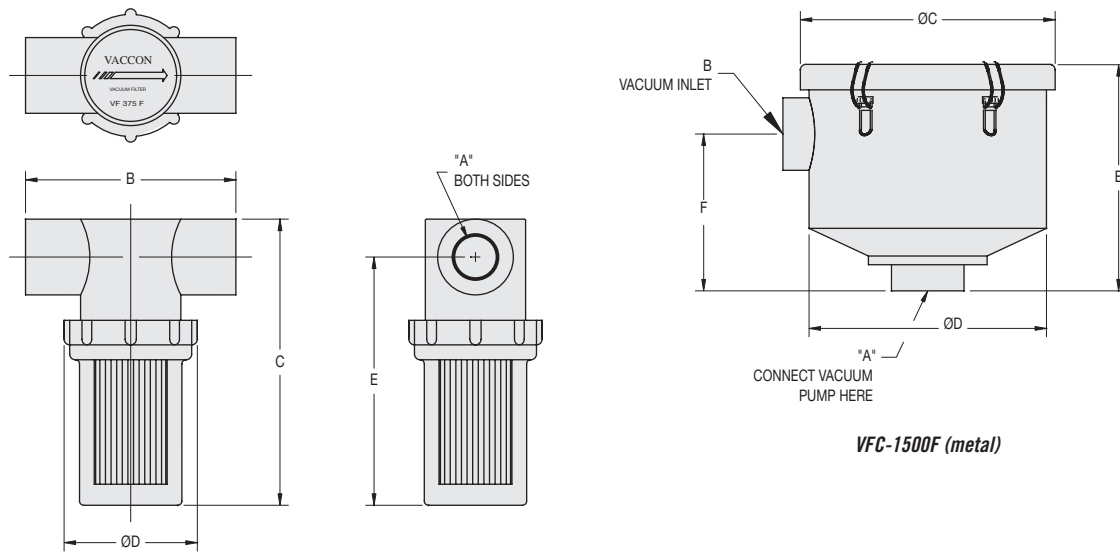
VFC-1500F vacuum filter with replacement element

Features/Benefits:

- High flow – no restrictions, maximum operating efficiency
- 10 Micron filtration – protects pumps and equipment from dirt and dust
- 10 Models and sizes – fit most manufacture's vacuum pumps and models
- Easy to install and service – without removing from production line
- Economical – pleated element's large surface area provides longer filter life. Low-cost replacement elements available.
- Reliable, durable and worry-free operation – protects pumps, valves, and equipment from dirty, dusty environments
 - ~ Long Life
 - ~ Longer service time
 - ~ Less maintenance
 - ~ Low operating costs

Filter Options:

- Low (short) and tall (long) profiles
- Male and female NPT connections
- Plastic or metal filters



VF models (nylon/clear polycarbonate)

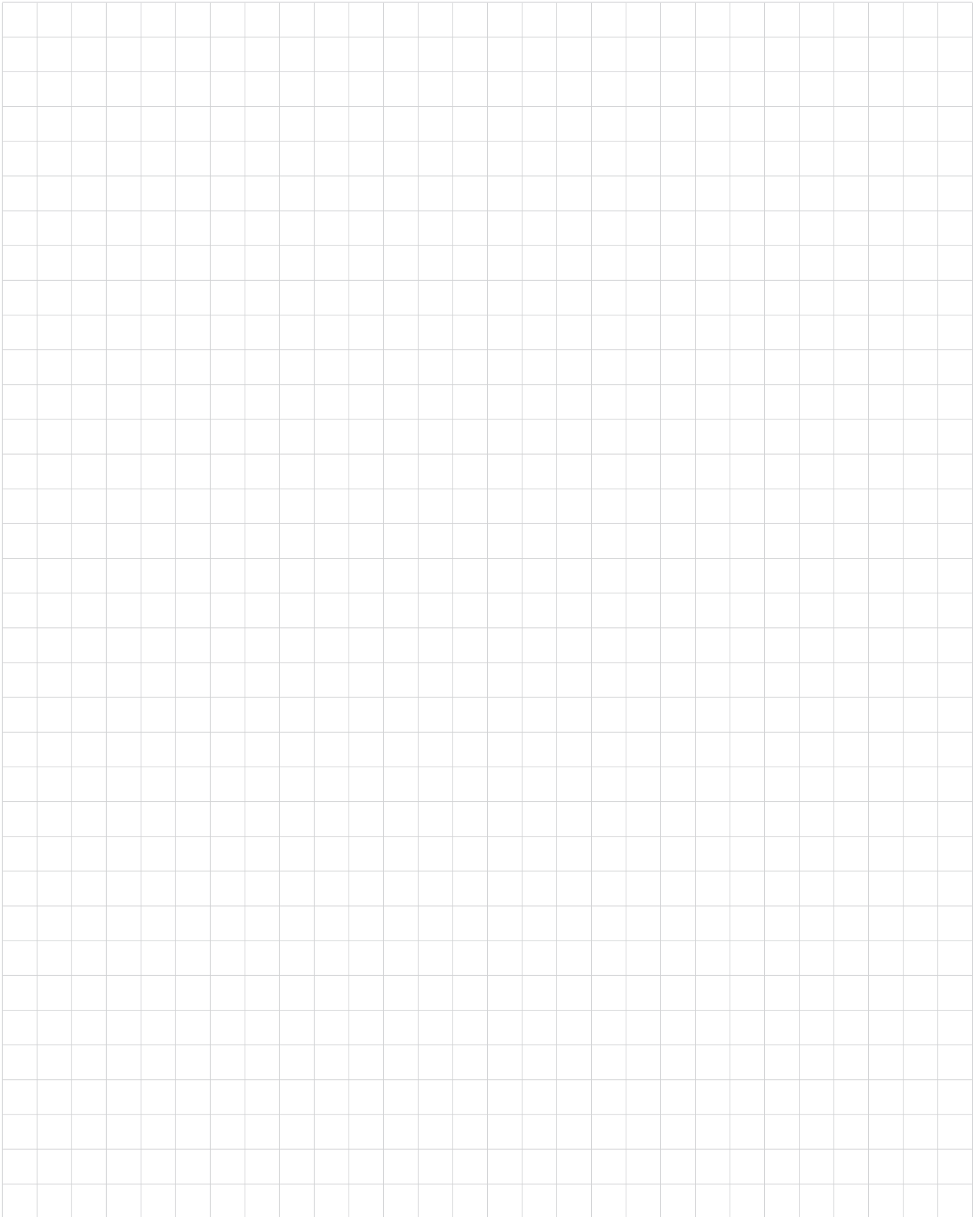
VFC-1500F (metal)

Model Number		Dimensions					Weight	Housing	Replacement Elements
		A	B	C	D	E			
VF125LPM	in	1/8" NPT M	3.04	2.38	1.90	1.97	1.9 oz	nylon & clear polycarbonate	RE1 - 3 Pack
	mm								
VF250LPM	in	1/4" NPT M	3.04	2.38	1.90	1.97	2.0 oz		
	mm								
VF250LPF	in	1/4" NPT F	3.00	2.37	1.90	1.97	2.0 oz		
	mm								
VF375LPM	in	3/8" NPT M	3.04	2.38	1.90	1.97	2.0 oz		
	mm								
VF250F	in	1/4" NPT F	3.00	3.77	1.90	3.38	2.0 oz		
	mm								
VF375F	in	3/8" NPT F	3.00	4.08	1.90	3.54	2.0 oz		
	mm								
VF500F	in	1/2" NPT F	3.58	5.06	2.93	4.46	5.6 oz		
	mm								
VF750F	in	3/4" NPT F	3.58	5.06	2.93	4.46	5.6 oz		
	mm								
VF1000F	in	1" NPT F	4.94	6.50	4.10	5.59	7.8 oz		
	mm							125.5	165.1
VF1500F	in	1 1/2" NPT F	5.08	8.06	4.10	6.94	7.8 oz		
	mm							129.0	204.7
VFC-1500F	in.	1 1/2" NPT F	1 1/2" NPT F	7.31	6.81	6.50	4lb 5oz	metal	RE-848 - 1 Pack
	mm								

How to Specify:

When ordering specify model number: **VF1500F**.

Consider size of tubing, fittings and pump. Consult factory for assistance.



Pneumatic Vacuum Switches

Vaccon's Pneumatic Vacuum Switch provides a repeatable pneumatic output signal when reaching the user-defined vacuum set-point level and is appropriate for use in all vacuum systems.

VSP Series Vacuum Switch



See Page **298**

Adjustable Mechanical Vacuum Switches

These switches are ideal for use in automated systems to generate a low current electrical signal for input to a PLC or other logic controller. They are normally open, diaphragm operated and utilize low stress deflecting contacts instead of sliding or pivoting parts resulting in high reliability and long life. Both models feature a vernier adjustment screw permitting accurate vacuum actuation settings.

VS Series Vacuum Switch



See Page **300**

SX Series Vacuum Switch



See Page **300**

VSW5A Series Vacuum Switch



See Page **304**

Electronic Switches & Sensors

Vaccon's miniature electronic switching and sensing devices interface with electrical control circuits providing precision control for feedback mechanisms or system monitoring. These switches and sensors are ideal for use in part present detection, pick and place, material handling, End-of-Arm Tooling/ Robotic assembly, leak testing, and monitoring.

VTMV Series

Ultra-Miniature Vacuum Sensor



See Page **306**

VSMN/P Series

Ultra-Miniature Vacuum Switch



See Page **310**

VXXN/P Series

Miniature Vacuum Switch



See Page **282**

VDXN/P Series

Vacuum Switch/Sensor with Digital Display



See Page **286**

VDMC/N, P, V Series

Vacuum Switch/Sensor with 3-Color Setpoint Digital Display



See Page **290**

VDSN/P Series

Vacuum Switch/Sensor with Digital Display



See Page **294**

Cordsets

For Electronic Vacuum Switches & Sensors



See Page **314**

COMPARISON CHART FOR ELECTRONIC SWITCH/ SENSORS

Model #	Display Type	Setpoint Mechanism	Hysteresis Adjustment	# and Type of Outputs	Operating Range	Quick Disconnect
VTMV	N/A	N/A	N/A	1 1-5VDC	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-3 on 152.4mm lead
VSMN	LED	Trimmer	NONE	1 NPN	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-3 on 152.4mm lead
VSMP	LED	Trimmer	NONE	1 PNP	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-3 on 152.4mm lead
VXXN	LED	Trimmer	YES	1 NPN	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-3 on 2M lead
VXXP	LED	Trimmer	YES	1 PNP	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-3 on 2M lead
VDXN	3 Digit Digital	Programmable	YES	2 NPN	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDXP	3 Digit Digital	Programmable	YES	2 PNP	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDMC	3-color/ 3-section Digital	Programmable	YES	1 NPN & 1 1-5VDC	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDMN	3-color/ 3-section Digital	Programmable	YES	2 NPN	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDMP	3-color/ 3-section Digital	Programmable	YES	2 PNP	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDMV	3-color/ 3-section Digital	Programmable	YES	1 PNP & 1 1-5VDC	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M8-4 on 2M lead
VDSN	3-1/2 Digit Digital	Programmable	YES	2 NPN & 1 1-5VDC	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M12-5 on 2M lead
VDSP	3-1/2 Digit Digital	Programmable	YES	2 PNP & 1 1-5VDC	0 ~ 29.9"Hg (0 ~ -101.3kPa)	M12-5 on 2M lead

Electronic Vacuum Switch

Miniature, adjustable set-point and hysteresis,
M8, 3-pin Quick Disconnect

VXX Series – 1 Switched Output



Vaccon's miniature electronic vacuum switches monitor vacuum levels in systems and provide a switched output. The VXX Series has both adjustable set-point and hysteresis and an LED indicator and can be mounted directly onto a wide variety of Vaccon pumps. Complete with M8, 3-pin connector.

2 Models Available:

VXXN (NPN)
VXXP (PNP)

Accessory Options:

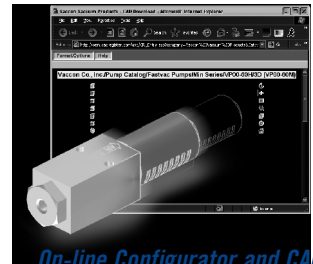
- Cordset with M8,3-pin female connector with 5M lead wire

Ideal Applications:

- Part present detection
- Pick and place
- End of arm tooling
- Material handling
- Process control
- Robotic assembly
- Manifold mount

Features/Benefits

- 1 switched output
- Reliable LED visual confirmation – operator convenience
- Field-adjustable set-point for the full vacuum range
- Independent hysteresis adjustment – to meet application requirements
- Vacuum port – Available with 1/8" NPT M - 1032 female, or G 1/8M - M5 female fitting
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail
- Compact – placed at point of use for accurate reading and quick response time
- Lightweight - ideal for end of arm tooling, robotic end effectors and manifold systems
- Mountable to both Vaccon and non-Vaccon vacuum pumps
- RoHS compliant



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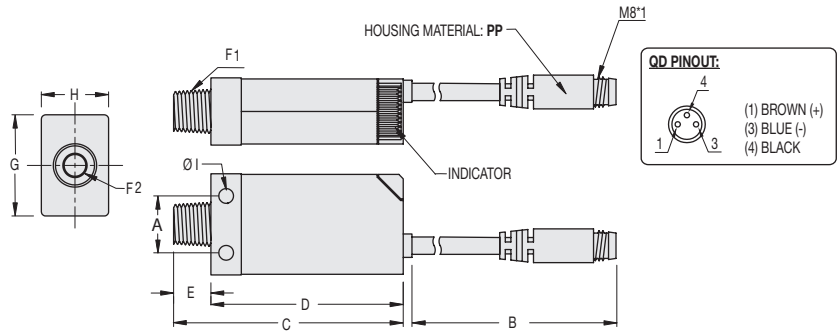
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VXX Series Switch



VXX Series Switch/Sensor

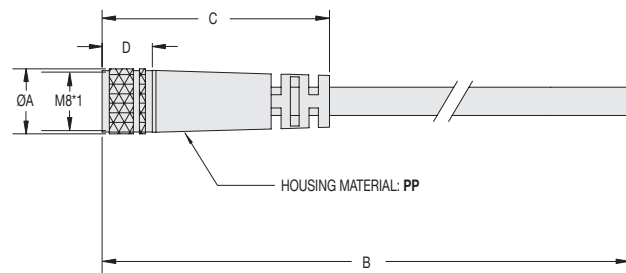


Model #	Dimensions											Weight (with male connection)
		A	B	C	D	E	F1	F2	G	H	I	
VXX- (N) (P)	in.	0.52	6.0	2.09	1.75	0.33	1/8 NPT	M5	0.93	0.61	0.13	2.29 oz.
I-VXX- (N) (P)	mm	13.1	152.4	53.0	44.5	8.5	G1/8	M5	23.5	15.5	3.4	65 g

Cordset with M8, 3-Pin Female Connector with 5M Lead Wire

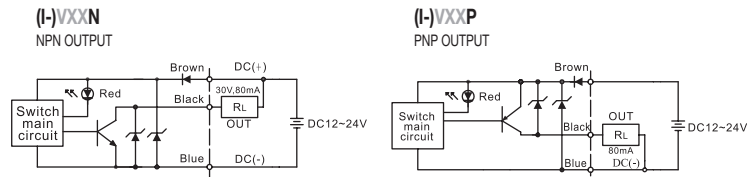


Cordset



Model #	Dimensions					Weight
		A	B	C	D	
QDS-8-3F	in.	0.35	16.4 ft.	1.26	0.28	4.9 oz
	mm	9	5M	32	7	140g

Wiring Schematic for VXX-Series

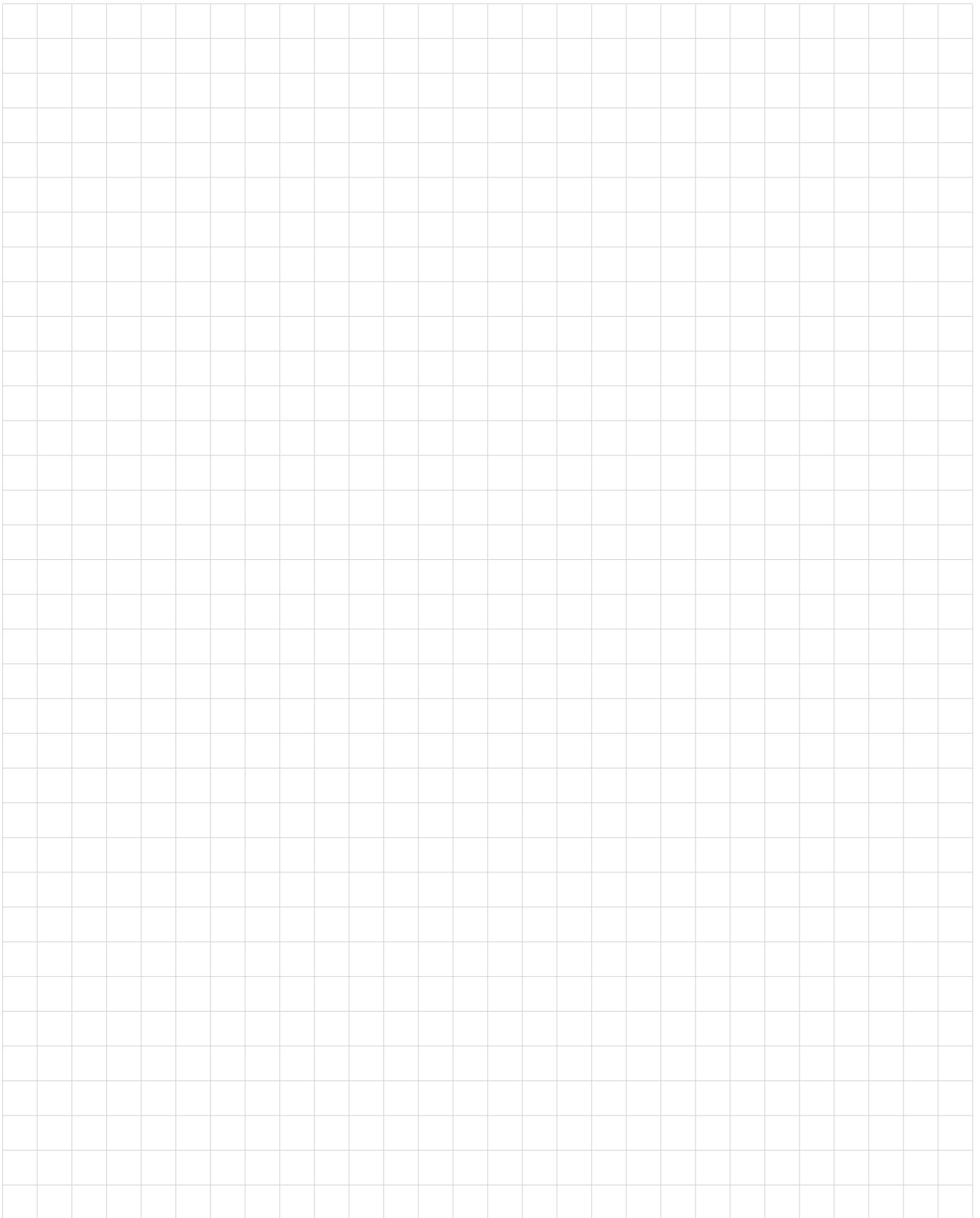


Output Specifications:

	(I-)VXXN	(I-)VXXP
Output Method:	NPN Open Collection 30V 80mA	PNP Open Collection 80mA
Hysteresis:	1~10% of Setting Pressure (Adjustable)	
Setting Point:	1 Point	
Operation Indicating Lamp:	Light at ON (Red)	

VXX (N, P) Series Specifications:

		(I-)VXXN (N, P)
Setting Pressure Range:		-101 ~ 0 kPa (-29.9" ~ 0 "Hg)
Withstand Pressure:		300 kPa (43.5 PSI)
Fluid:		Air, Non-Corrosive /Non-flammable Gas
Power Supply Voltage:		12 to 24VDC \pm 10%, Ripple (P-P) 10% or less
Current Consumption:		1 output: NPN & PNP: 21mA max.
Repeatability (Switch Output):		$\leq \pm 1\%$ F.S.
Response Time:		5ms or less
Environment	Enclosure	IP 40
	Amb. temp range	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)
	Amb. humidity range	Operation/Storage: 35 ~ 85% RH (no condensation)
	Withstand Voltage	1000VAC in 1-min (between case and lead wire)
	Insulation resistance	50Mohm min. (at 500VDC between case and lead wire)
	Vibration	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z
	Shock	980m/s ² (100G), 3 times each in direction of X, Y, and Z
Temperature Characteristic:		$\pm 3\%$ F.S. (standard: 25°C)
Port Size:		1/8" NPT, G 1/8, M5
Weight:		Approx. *50g (with male connector)



Electronic Vacuum Switch with Digital Display

VDX Series – 2 Switched Outputs



The VDX Series compact all-in-one output device and digital gauge reduces the number of components in your system. With 2 switched outputs it's possible to monitor the high and low limits for vacuum control. In pick and place and robotic material handling applications, use the first switch for part present so that the robot or tooling can move, and the second switch to signal the working vacuum level has been achieved. The VDX Series can be directly mounted to a wide variety of Vaccon pumps. Complete with M8, 4-pin connector.

2 Models Available:

- VDXN (NPN)
- VDXP (PNP)

Accessory Options:

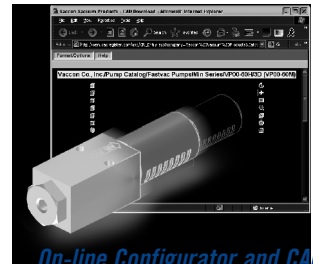
- Cordset with M8, 4-pin female connector with 5M lead wire

Ideal Applications:

- Robotic control
- Pick and place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing

Features/Benefits

- Fully Programmable – simple push button calibration – no tools required
- 2 switched outputs
- Convenient – standard with M8, 4-pin Quick Disconnect with 6" Pigtail
- Vacuum port – Available with 1/8" NPT M - 1032 female, or G 1/8M - M5 female fitting
- Full 3 digit display – red LED
- Globally accepted display scales: "Hg, mmHg, PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP65 IEC standards
- RoHS compliant



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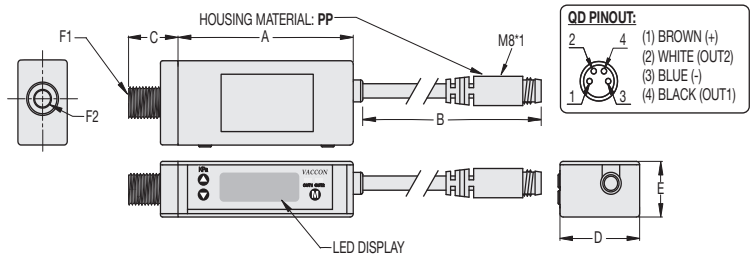
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VDX Series Switch/Sensor



VDX Series Switch/Sensor

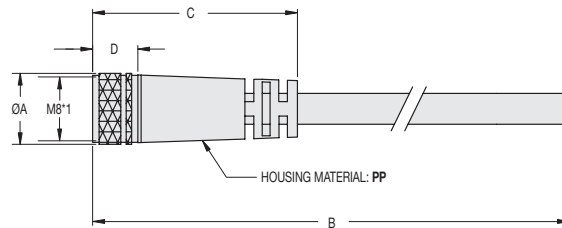


Model #	Dimensions								Weight (with male connection)
		A	B	C	D	E	F1	F2	
VDX (N) (P)	in.	2.17	6.0	0.49	0.98	0.65	1/8 NPT	10-32	1.76 oz.
I-VDX (N) (P)	mm	55.0	152.4	12.5	25.0	16.5	G 1/8	M5	50 g

Cordset with M8, 4-Pin Female Connector with 5M Lead Wire

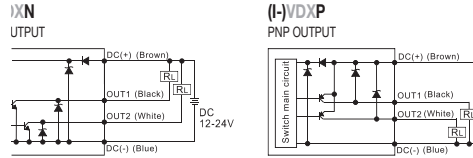


Cordset



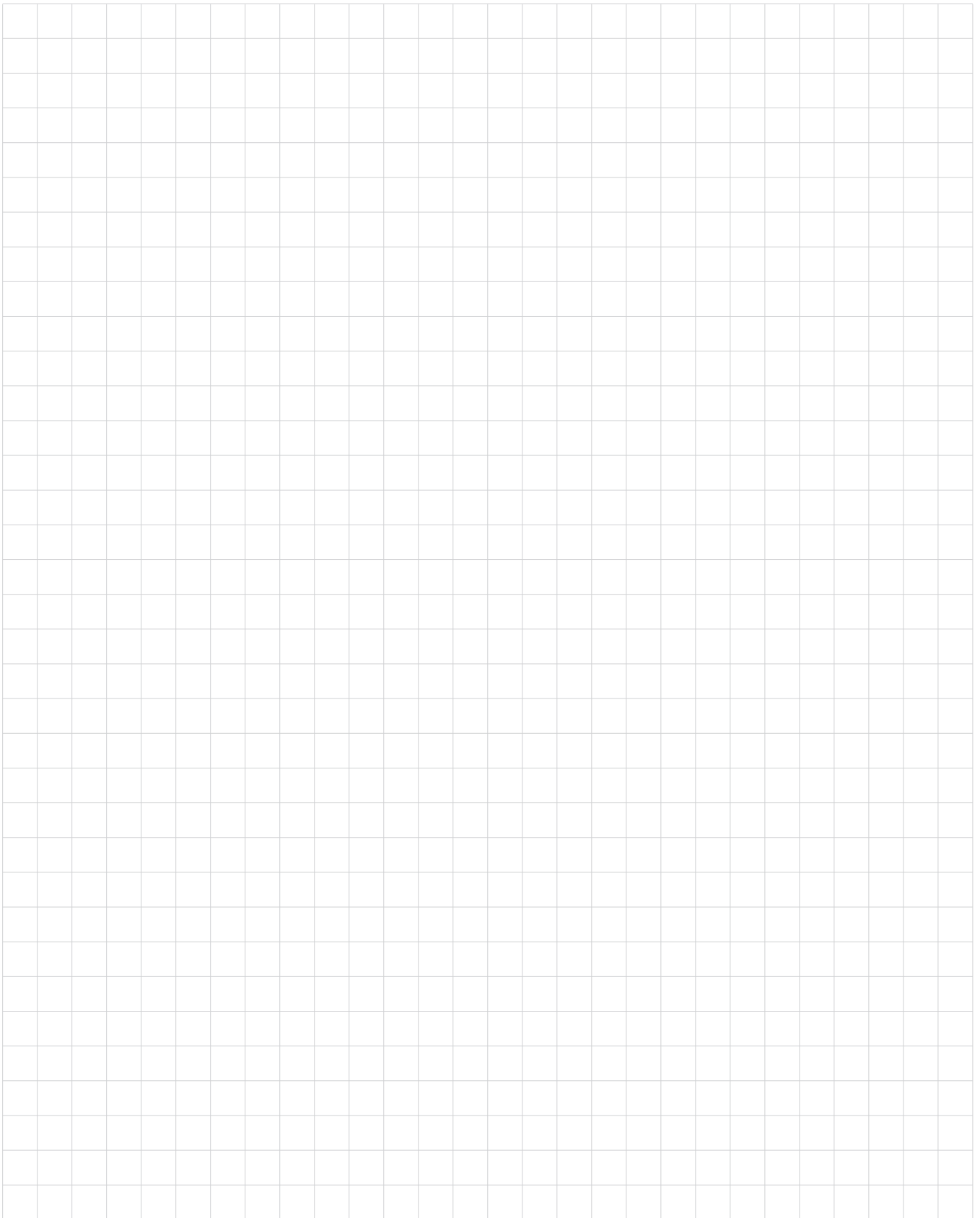
Model #	Dimensions				
		A	B	C	D
QDS-8-4F	in.	0.35	16.4 ft.	1.26	0.28
	mm	9	5M	32	7

Wiring Schematic for VDX-Series



VDX Series Specifications:

		(I-)VDXN	(I-)VDXP
Rated Pressure Range:		-101.3 ~ 0.0 kPa (-29.9 ~ 0"Hg)	
Setting Pressure Range:		-101.3 ~ 10.0 kPa (-29.9"Hg ~ 1.45 PSI)	
Withstand Pressure:		300 kPa (43.5 PSI)	
Fluid:		Air, Non-Corrosive Gases, Incombustible Gases	
Set Pressure Resolution	kPa	0.1	
	MPa	—	
	kgf/cm ²	0.001	
	bar	0.001	
	psi	0.01	
	InHg	0.1	
	mmHg	1	
Power Supply Voltage:		12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
Current Consumption:		≤ 55mA	
Switch Output:		2 NPN open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: ≤1V (load current 80mA)	2 PNP open collector Max. load current: 80mA Max. supply voltage: 24VDC Residual voltage: ≤1V (load current 80mA)
Repeatability (Switch Output):		≤ ±0.2% F.S. ±1 digit	
Hysteresis: Hysteresis Mode		Adjustable	
Window Comparator Mode		Fixed (3 digits)	
Response Time:		≤2.5ms (chattering-proof function: 24ms, 192ms, and 768ms selections)	
Output Short Circuit Protection:		Yes	
7 Segment LCD Display:		3 digit LED 7 segment display (Sampling rate: 5 times/1 sec.)	
Indicator Accuracy:		≤±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)	
Switch On Indicator:		Green LED (OUT 1) Red LED (OUT 2)	
Environment	Enclosure	IP 40	
	Amb. temp range	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)	
	Amb. humidity range	Operation/Storage: 35 ~ 85% RH (no condensation)	
	Withstand Voltage	1000VAC in 1-min (between case and lead wire)	
	Insulation resistance	50Mohm min. (at 500VDC between case and lead wire)	
	Vibration	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z	
	Shock	980m/s ² (100G), 3 times each in direction of X, Y, and Z	
Temperature Characteristic:		≤ ±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C	
Port Size:		1/8" NPT, G 1/8, M5	
Lead Wire:		Oil Resistance cable (0.15mm ²)	
Weight:		Approx. *50g (with male connector)	



Electronic Vacuum Switch and Sensor with 3 Color, 3 Section Display

VDM Series – 2 Switched Outputs *or* 1 Switched + 1 Analog output.
Multi-color display that changes color when set-point is reached.



The VDM Series compact all-in-one output device and digital gauge reduces the number of components in your system. Because the VDM Series offers a choice of 2 switched outputs or one switched output and one analog output it's possible to monitor the high and low limits for vacuum control and system conditions. The analog output allows software control over the entire vacuum and pressure range with the ability to track system vacuum/pressure changes in real time. In pick and place and robotic material handling applications use the first switch for part present so that the robot or tooling can move, and the second switch to signal the working vacuum level has been achieved.

The optional analog output allows software control over the entire vacuum range with the ability to track system vacuum changes in real time. The switches are highly flexible due to selectable output functions such as switching point hysteresis and window comparator.

The VDM Series offers a multi-colored, multi-section display that provides a visual indication of system vacuum as well as the set-points. The set-point display changes color from red to green when set-point #1 is reached. If two set-points are used, each can be displayed by toggling back and forth using a single push button. The display also indicates when either set-point is reached and an output is activated. Complete with M8, 4-pin connector.

Ideal Applications:

- Robotic control
- Pick and place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing

Features/Benefits:

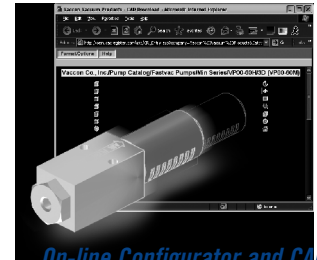
- 2 switched outputs or 1 switched output and 1 analog output (1-5VDC)
- 3 color, 3 section display
- Set-point displayed in sub-section – color changes when reached
- Fully Programmable – simple push button calibration – no tools required
- Vacuum port – Available with 1/8" NPT M - 1032 female, or G 1/8M - M5 female fitting
- Standard with M8, 4-pin Quick Disconnect on 6" Pigtail
- Key lock indicator
- Operating range includes both vacuum and pressure
- Full 3 digit display – LED
- Globally accepted display scales: "Hg, mmHg, PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP 40 IEC standards
- RoHS compliant

4 Models Available:

- VDMP (2 PNP)
- VDMN (2 NPN)
- VDMC (1 NPN and 1 1-5V)
- VDMV (1 PNP and 1 1-5V)

Accessory Options:

- Mounting Bracket Kits – Rear and bottom mount kit, Panel Mount Kit
- Cordset with M8, 4-pin female connector with 5M lead wire

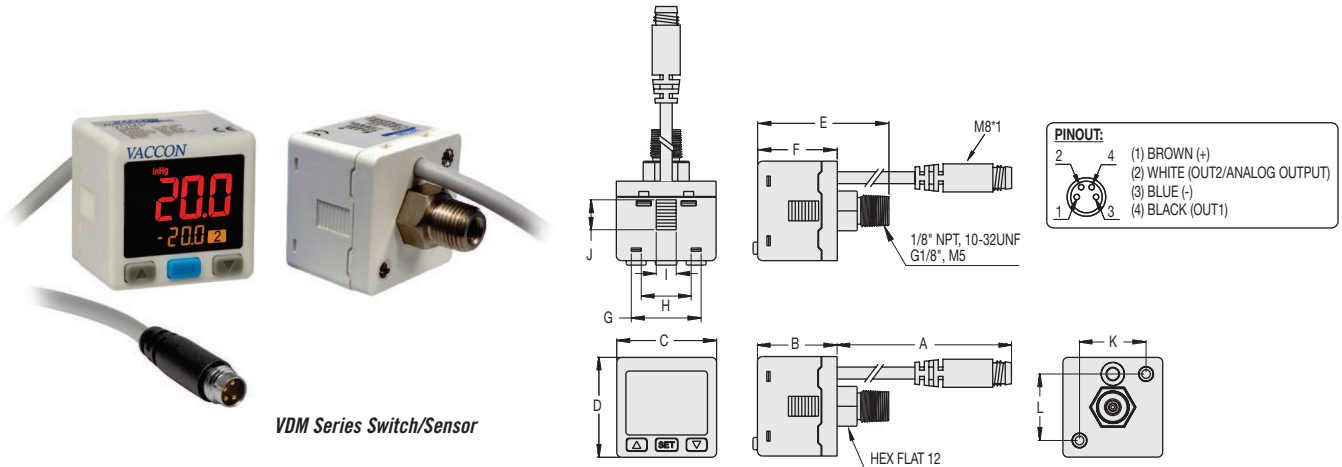


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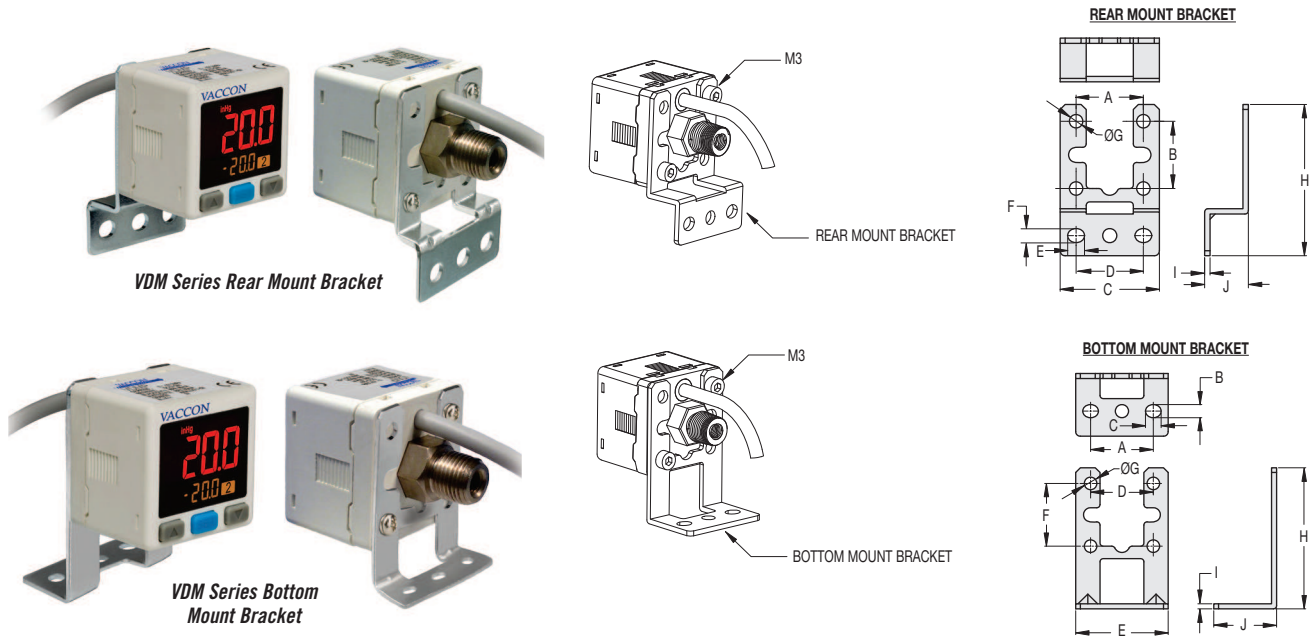
VDM Series Switch/ Sensor



VDM Series Switch/Sensor

Model #	Dimensions													Weight
		A	B	C	D	E	F	G	H	I	J	K	L	
VDM (N) (P) (C) (V)	in.	6.0	0.94	1.18	1.18	1.55	0.94	0.83	0.59	0.24	0.35	0.79	0.79	3.4 oz
I-VDM (N) (P) (C) (V)	mm	152.4	23.9	30	30	39.4	12.9	21	15	6	9	20	20	95 g

Optional Mounting Brackets: Rear & Bottom Mount Brackets – MB-VDM



VDM Series Rear Mount Bracket

VDM Series Bottom Mount Bracket

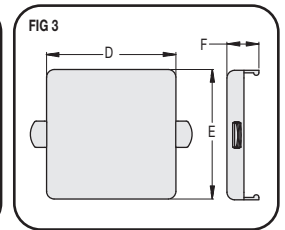
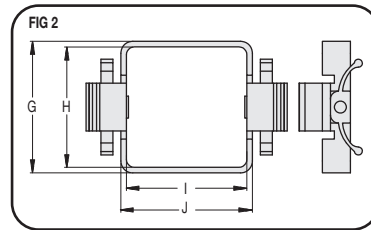
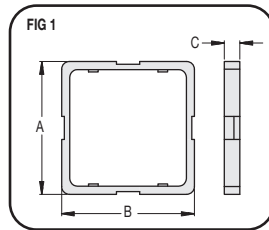
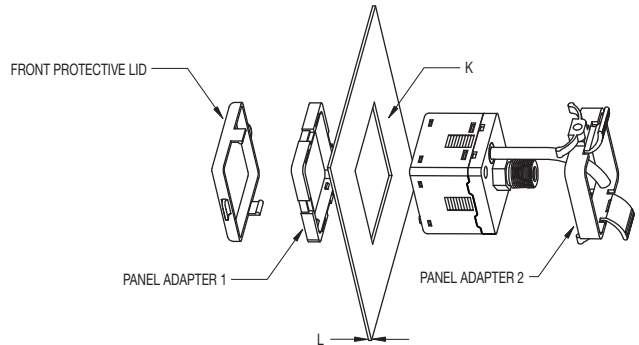
Model #	Dimensions							
		A	B	C	D	E	F	G
MB-VDM Rear Mount Bracket	in.	1.46	0.51	0.51	0.17	0.20	0.78	0.24
	mm	37.1	12.9	13.0	4.2	5.1	20.0	6.1

Model #	Dimensions				
		A	B	C	E
MB-VDM Bottom Mount Bracket	in.	0.20	0.98	0.17	1.79
	mm	5.0	25.0	4.2	45.5

Optional Mounting Brackets: Panel Mount Bracket – PMC-VDM



VDM Series Panel Mount Bracket

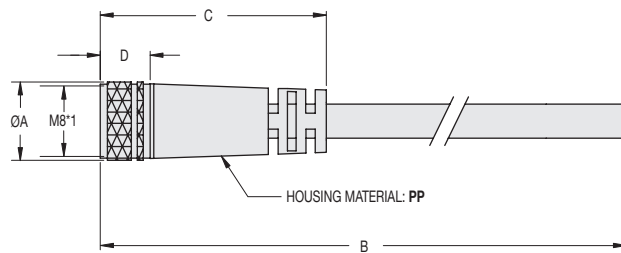


Model #	Dimensions												
		A	B	C	D	E	F	G	H	I	J	K	L
PMC-VDM Panel Mount w/Cover	in.	1.35	1.35	0.16	1.35	1.35	0.33	1.30	1.19	1.19	1.3	1.22 X 1.2 ± 0.02	t ≤ 0.18
	mm	34.4	34.4	4.0	34.4	34.4	8.5	33.0	30.2	30.2	33	31 X 31 ± 0.4	t ≤ 4.5

Cordset with M8 Female Connector with 5M Lead Wire

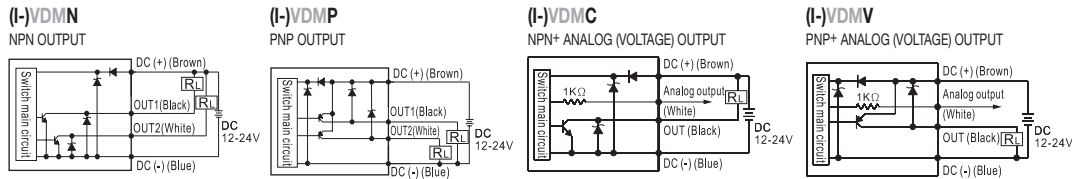


Cordset



Model #	Dimensions				
		A	B	C	D
QDS-8-4F	in.	0.35	16.4 ft.	1.26	0.28
	mm	9	5M	32	7

Wiring Schematic for VDM Series



VDM Series Specifications:

		(I-)VDMN	(I-)VDMP	(I-)VDMC	(I-)VDMV
Rated Pressure Range:		-101.3 ~ 0.0 kPa (-29.9 ~ 0"Hg)			
Setting Pressure Range:		-101.3 ~ 10.0 kPa (-29.9"Hg ~ 1.45 PSI)			
Withstand Pressure:		300 kPa (43.5 PSI)			
Fluid:		Air, Non-Corrosive Gases, Incombustible Gases			
Set Pressure Resolution	kPa	0.1			
	MPa	—			
	kgf/cm ²	0.001			
	bar	0.001			
	psi	0.01			
	InHg	0.1			
	mmHg	1			
Power Supply Voltage:		12 to 24VDC ± 10%, Ripple (P-P) 10% or less			
Current Consumption:		≤ 40mA (With no load)			
Switch Output:		2 NPN open collector Max. load current: 125mA Max. supply voltage: 30VDC Residual voltage: ≤1.5V (load current 125mA)	2 PNP open collector Max. load current: 125mA Max. supply voltage: 24VDC Residual voltage: ≤1.5V (load current 125mA)	1 NPN open collector Max. load current: 125mA Max. supply voltage: 30VDC Residual voltage: ≤1.5V (load current 125mA)	1 PNP open collector Max. load current: 125mA Max. supply voltage: 30VDC Residual voltage: ≤1.5V (load current 125mA)
Repeatability (Switch Output):		≤ ±0.2% F.S. ±1 digit			
Hysteresis: Hysteresis Mode Window Comparator Mode		Adjustable			
Response Time:		≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms, and 1500ms selectable)			
Output Short Circuit Protection:		Yes			
7 Segment LCD Display:		Two Color (Red/Green) main & unit display, Orange sub-display (Sampling rate: 5 times/1sec.)			
Indicator Accuracy		≤ ±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)			
Switch On Indicator:		Orange 1 & 2 Indicator			
Analog Output (Voltage Output):		N/A		Output Voltage: 1 to 5V ≤ ±2.5% F.S. (within rated pressure range) Linearity: ≤ ±1% F.S. Output impedance: about 1kΩ	
Environment	Enclosure	IP 40			
	Amb. temp range	Operation: 0~50°C, Storage: -10 ~ 60°C (no condensation or freezing)			
	Amb. humidity range	Operation/Storage: 35 ~ 85% RH (no condensation)			
	Withstand Voltage	1000VAC in 1-min (between case and lead wire)			
	Insulation resistance	50Mohm min. (at 500VDC between case and lead wire)			
	Vibration	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z			
	Shock	100m/s ² (10G), 3 times each in direction of X, Y, and Z			
Temperature Characteristic:		≤ ±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C			
Port Size:		F1: 1/8" BSPT, M5; F2: 1/8" NPT, 10-32UNF; F3: G1/8", M5			
Lead Wire:		Oil Resistance cable (0.15M)			
Weight:		Approx. *95g (with male connector)			

Electronic Vacuum Switch and Sensor with Digital Display

VDS Series – 2 Switched Outputs and 1 Analog Output 2 Vacuum Ports



The VDS Series compact all-in-one output device and digital gauge reduces the number of components in your system. With 2 switched outputs and one analog output it's possible to monitor the high and low limits for vacuum control and system conditions. In pick and place and robotic material handling applications, use the first switch for part present so that the robot or tooling can move, and the second switch to signal the working vacuum level has been achieved.

The analog output allows software control over the entire vacuum and pressure range with the ability to track system vacuum/pressure changes in real time. The switches are highly flexible due to selectable output functions such as switching point hysteresis and window comparator. Complete with M12, 5-pin connector.

2 Models Available:

- VDSN (2 NPN and 1 Analog)
- VDSP (2 PNP and 1 Analog)

Accessory Options:

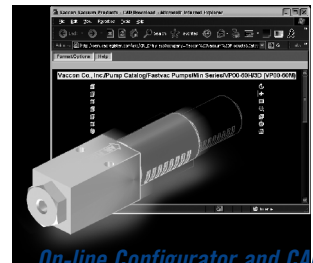
- Mounting Bracket Kits – Rear and bottom mount kit, Panel Mount Kit
- Cordset with M12, 5-pin female connector with 5M lead wire

Ideal Applications:

- Robotic control
- Pick and place
- Part present detection
- Material handling
- Monitoring vacuum
- Leak testing

Features/Benefits

- 2 switched outputs and 1 1-5 VDC Analog output
- Full 3 digit display – red LED
- Fully Programmable – simple push button calibration – no tools required
- 2 ports – back and bottom for easy plumbing and design flexibility, 1/8" NPT or G 1/8M
- Choice of switched output types – PNP or NPN
- Globally accepted display scales: "Hg, mmHg, PSI, bar, mbar, gf/cm sq, kgf/cm sq, kPa
- Dust and drip proof enclosure to IP65 IEC standards
- Standard with M12, 5-pin Quick Disconnect with 6" Pigtail
- RoHS compliant



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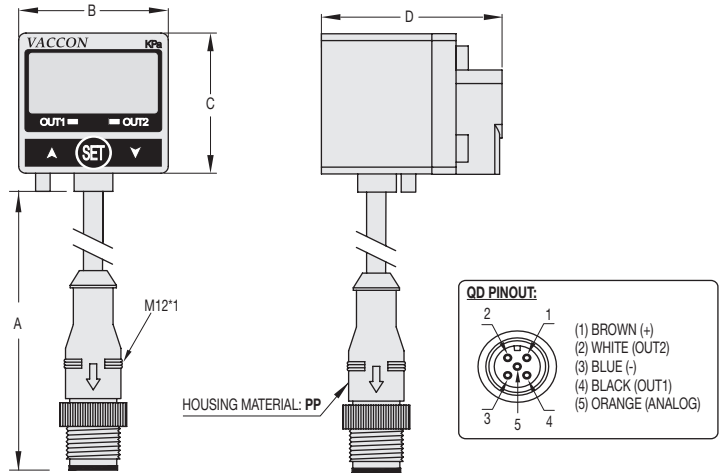
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VDS Series Switch/Sensor



VDS Series Switch/Sensor

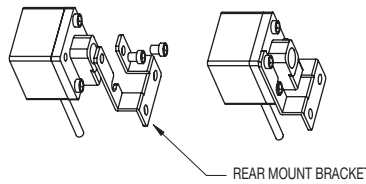


Model #	Dimensions					Weight
		A	B	C	D	
VDS (N) (P)	in.	6.0	1.22	1.22	1.44	3.4 oz
I-VDS (N) (P)	mm	152.4	31.0	31.0	36.5	95 g

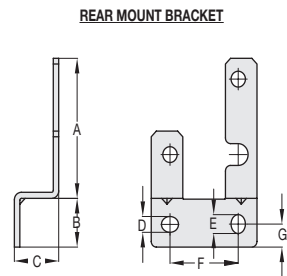
Optional Mounting Brackets: Rear & Bottom Mount Brackets – MB



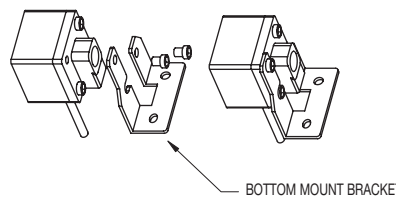
VDS Series Rear Mount Bracket



REAR MOUNT BRACKET

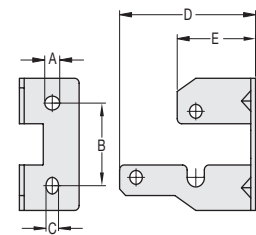


VDS Series Bottom Mount Bracket



BOTTOM MOUNT BRACKET

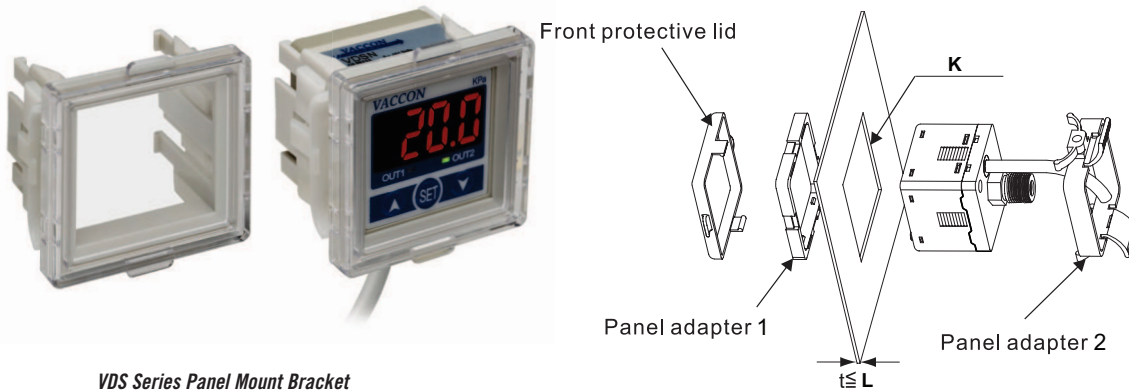
BOTTOM MOUNT BRACKET



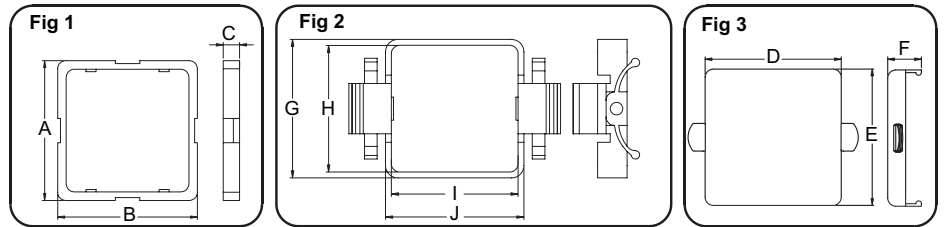
Model #	Dimensions							
		A	B	C	D	E	F	G
MB Rear Mount Bracket	in.	1.46	0.51	0.51	0.17	0.20	0.78	0.24
	mm	37.1	12.9	13.0	4.2	5.1	20.0	6.1

Model #	Dimensions				
		A	B	C	E
MB Bottom Mount Bracket	in.	0.20	0.98	0.17	1.79
	mm	5.0	25.0	4.2	45.5

Optional Mounting Brackets: Panel Mount Bracket – PMC



VDS Series Panel Mount Bracket

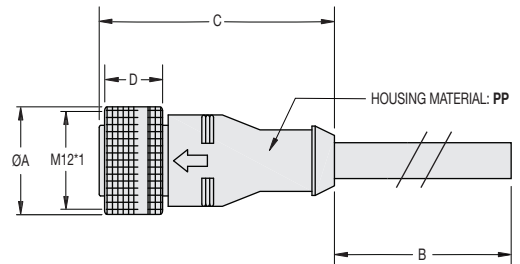
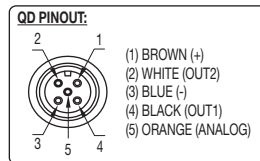


Model #	Dimensions										
		A	B	C	D	E	F	G	H	I	J
PMC Panel Mount w/Cover	in.	1.58	1.58	0.18	1.40	1.67	1.67	0.28	1.87	1.42 X 1.42 ± 0.01	t ≤ 0.18
	mm	40.0	40.0	4.5	35.5	42.4	42.4	7.0	47.4	36 X 36 ± .03	t ≤ 4.5

Cordset with M12, 5-Pin Female Connector with 5M Lead Wire



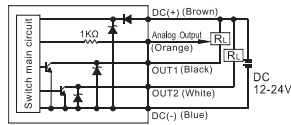
Cordset/Connector/Lead Wire



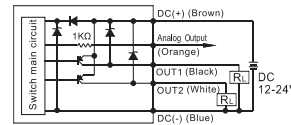
Model #	Dimensions				
		A	B	C	D
QDS-12-5F	in.	0.35	16.4 ft.	1.26	0.28
	mm	9	5M	32	7

Wiring Schematic for VDS-Series

(I-)VDSN
NPN OUTPUT



(I-)VDSP
PNP OUTPUT



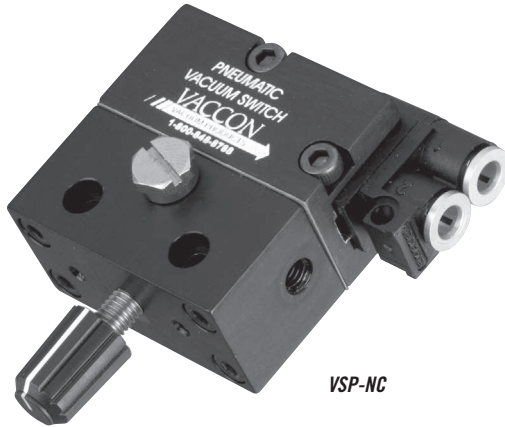
VDS Series Specifications:

		(I-)VDSN	(I-)VDSP
Rated Pressure Range:		-101.3 ~ 0.0 kPa (-29.9 ~ 0" Hg)	
Setting Pressure Range:		-101.3 ~ 10.0 kPa (-29.9" Hg ~ 1.45 PSI)	
Withstand Pressure:		300 kPa (43.5 PSI)	
Fluid:		Air, Non-Corrosive Gases, Incombustible Gases	
Set Pressure resolution	kPa	0.1	
	MPa	—	
	kgf/cm ²	0.001	
	bar	0.001	
	psi	0.01	
	InHg	0.1	
	mmHg	1	
	mmH ₂ O	0.1	
Power Supply Voltage:		12 to 24VDC ± 10%, Ripple (P-P) 10% or less	
Current Consumption:		≤ 55mA	
Switch Output:		2 NPN open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: ≤ 1V (load current 80mA)	2 PNP open collector Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: ≤ 1.5V (load current 80mA)
Repeatability (Switch Output):		≤ ±0.2% F.S. ±1 digit	
Hysteresis: Hysteresis Mode		Adjustable	
Window Comparator Mode		Fixed (3 digits)	
Response Time:		≤ 2.5ms (chattering-proof function: 25ms, 100ms, 250ms, 500ms, 1000ms, and 1500ms selectable)	
Output Short Circuit Protection:		Yes	
7 Segment LCD Display:		3 1/2 digit LED display (Sampling rate: 5 times/1 sec.)	
Indicator Accuracy:		≤ ±2% F.S. ±1 digit (ambient temperature: 25 ± 3°C)	
Switch On Indicator:		Green LED (OUT 1) Red LED (OUT 2)	
Analog Output (Voltage Output):		Output Voltage: 1 to 5V ≤ ± 2.5% F.S. (within pressure range) Linearity: ≤ ± 1% F.S.	
Environment	Enclosure	IP 65	
	Amb. temp range	Operation: 0~50°C, Storage: -20 ~ 60°C (no condensation or freezing)	
	Amb. humidity range	Operation/Storage: 35 ~ 85% RH (no condensation)	
	Withstand Voltage	1000VAC in 1-min (between case and lead wire)	
	Insulation resistance	50Mohm min. (at 500VDC between case and lead wire)	
	Vibration	Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y, and Z	
	Shock	980m/s ² (100G), 3 times each in direction of X, Y, and Z	
Temperature Characteristic:		≤ ±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C	
Port Size:		1/8" NPT, G1/8"	
Lead Wire:		Oil Resistance cable (0.15M)	
Weight:		Approx. *95g (with male connector)	

Pneumatic Vacuum Switch

Converts a vacuum signal into a pneumatic signal

VSP Series



VSP-NC

Vaccon's Pneumatic Vacuum Switch provides a repeatable pneumatic output signal when reaching the user-defined vacuum set-point level and is appropriate for use in all vacuum systems.

The output signal is a voluminous 2.5 SCFM at 100 PSI, with a response time of 64 ms at 90 PSI. This high flow and fast response makes the switch ideal for high-speed pneumatic circuits with lengthy plumbing lines and for continuously monitored vacuum applications such as vacuum clamping (chucking), vacuum forming, vessel evacuation, and pick and place.

As an integral component of the Air Saver Pumps, this switch supplies the pneumatic pilot signal that closes the main valve when the preset vacuum level is reached, minimizing compressed air consumption.

The pneumatic vacuum switch is constructed of an all-aluminum body ensuring sturdy installation and durable plumbing connections that last after repeated use.

Instant push-to-connect fittings connect the air supply quickly and easily, saving assembly time and eliminating the need for additional fittings. Three 10-32 vacuum ports allow for design and plumbing flexibility, while ensuring safe, neat, and space-saving fixtures.

The adjustment knob is smooth turning for fine adjustment. If you prefer a slotted adjustment mechanism, simply remove the knob to expose the slot.

Ideal Applications:

- Clamping and vacuum chucking
- Pick and place of heavy loads
- Hold vacuum while molds cool
- Vessel evacuation
- Lifting systems
- Handling applications
- Vacuum forming

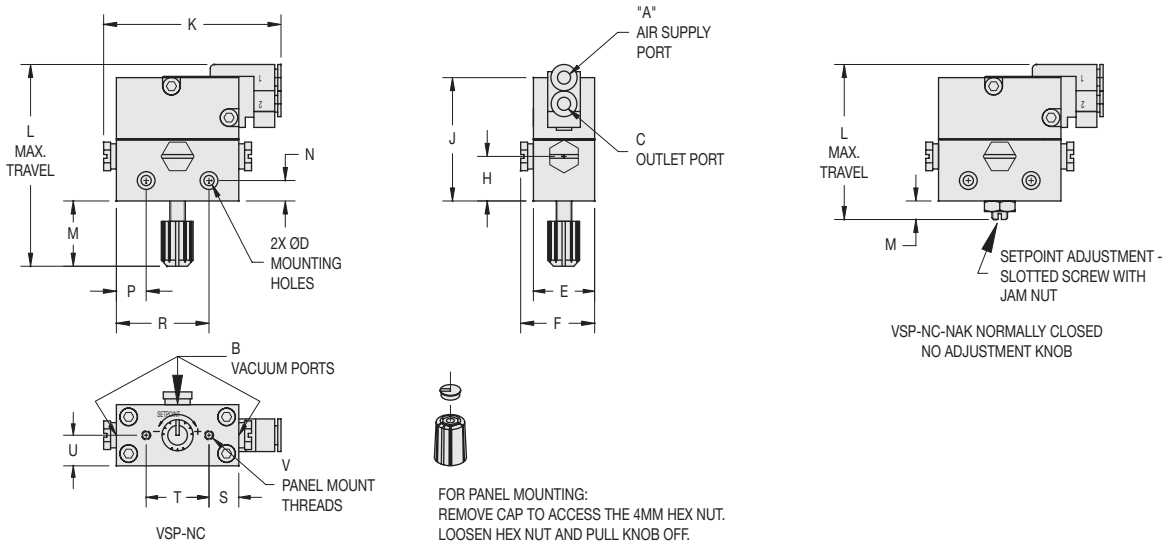
Features/Benefits:

- Normally closed
- Lightweight 2.6 oz [74g]
- Intrinsically safe – no electricity required
- Adjustable operating range from 0 to 25" Hg [0 to 847 mbar]
- Rugged and durable – all aluminum construction
- 3 Sensing ports for design flexibility – operates in any position
- Economical – saves energy – minimizes compressed air consumption
- Reliable and repeatable – diaphragm operated – long life
- Easily installed and plumbed

Options:

- Adjustment knob or slotted screw adjustment
- 2 Mounting options: panel or flat mount

Pneumatic Vacuum Switch



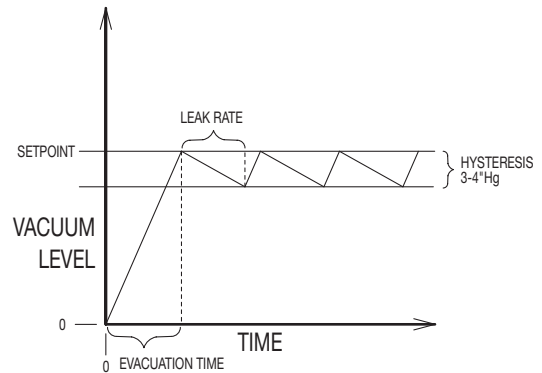
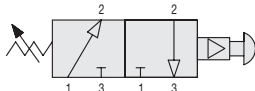
Model #	Dimensions																			Weight
	A	B	C	D	E	F	H	J	K	L	M	N	P	R	S	T	U	V		
VSP-NC	in.									2.47	0.78									
	mm	5/32*	10-32	5/32*	0.12	0.75	0.91	0.55	1.51	2.17	62.7	19.8	0.25	0.36	1.13	0.36	0.77	0.40	4-40	2.6 oz
VSP-NC-NAK	in.	PTC		PTC	[3.0]	[19.1]	[23.1]	[14.0]	[38.4]	[55.1]	1.68	0.22	[6.4]	[9.1]	[28.7]	[9.1]	[19.6]	[9.5]	[N/A]	[74 g]
	mm										42.7	5.6								

*PTC—Push-to-Connect—accepts 5/32 [4mm] tubing

Switch Operation:

The pneumatic switch is a diaphragm-actuated air valve. At vacuum levels below the switch set point, the diaphragm depresses the valve plunger, closing the valve. When the vacuum level reaches the set point, the diaphragm releases the plunger, opening the valve, and allowing air to flow from port 1 to port 2. To change the set point, turn either the adjustment knob or slotted screw.

ANSI Symbol:



How to Specify:

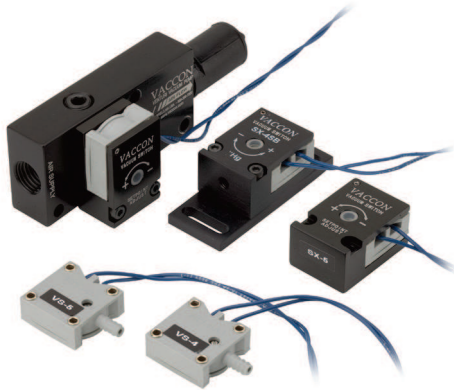
Normally Closed: P/N: **VSP-NC**
 To order with slotted screw adjustment use P/N: **VSP-NC-NAK**

Pneumatic Vacuum Switch Specifications:

- Rated Vacuum Range:** 0" to 25" Hg [0 to 847 mbar]
- Hysteresis:** 3" to 4" Hg [102 mbar to -135 mbar]
- Port Sizes:** Vacuum – 10-32 Female
- Valve Type:** Plunger operated – air assisted servo controlled element
- Operating Pressure:** 20-115 PSI
- Flow Rate:** 2.5 SCFM @ 100 PSI
- Cv Rating:** 0.06
- Response Time:** 64 ms
- Ambient Temp:** 14°F to 140°F [-10C to 60C]
- Mechanical Life:** 10 million operations

Adjustable Mechanical Vacuum Switch

VS-4 & 5 Series, SX-4 & 5 Series, SX-4 & 5SB Series



Ideal Applications:

- Robotic applications
- Assembly applications
- Control applications
- Monitoring applications

Features/Benefits:

- Accurate and reliable repeatability – utilizes low stress deflecting contacts
- Compact and lightweight – operates in any position
- Economical – diaphragm operated – long life
- Easy to install – 12" flying leads, 24 AWG

Vacuum Switches:

Vaccon vacuum switches are ideal in automated systems to generate a low current electrical signal for input to a PLC or other logic controllers. The adjustable switches are normally open, diaphragm operated, and contain low-stress deflecting contacts instead of sliding or pivoting parts for high reliability and long life.

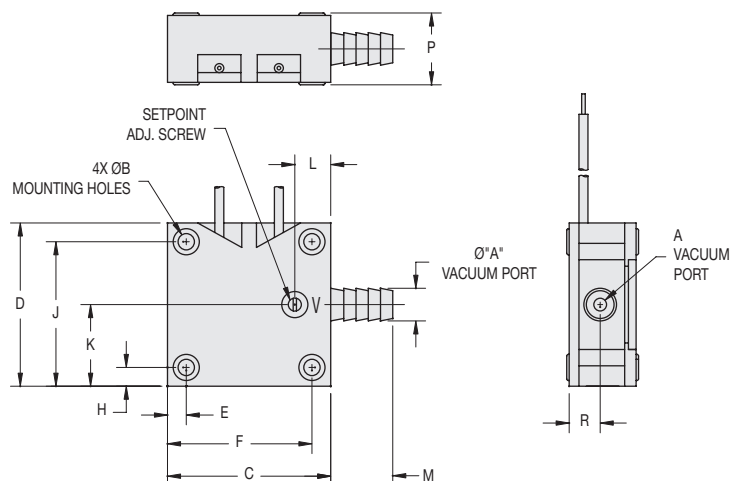
Switch Options:

- Housings for ease of mounting on vacuum pumps
- Sub base for ease of installation on non-Vaccon vacuum pumps
- 2 vacuum level ranges: VS-4, SX-4, SX-4SB - 2"-14"Hg [68-474mbar] and VS-5, SX-5, SX-5SB - 7.4"-29.7"Hg [251mbar - 1 Bar]

Adjustable Mechanical Vacuum Switch: VS-4 & VS-5



VS-5 shown

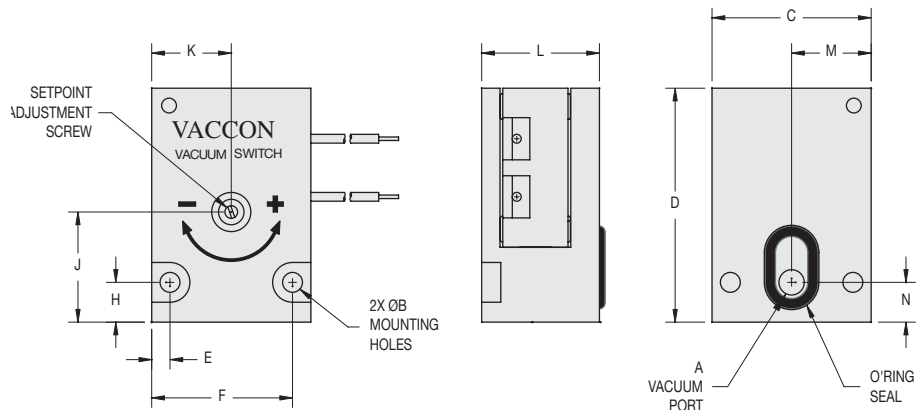


Model #	Dimensions																Weight	Lead Length
		A	B	C	D	E	F	H	J	K	L	M	N	P	R	S		
VS-4 or VS-5	in.	0.22	0.10	1.00	1.00	0.12	0.77	0.12	0.77	0.50	0.22	0.38	N/A	0.44	0.20	0.50	0.5 oz	12
	mm	0.22	2.5	25.4	25.4	3.0	19.6	3.0	19.6	12.7	5.6	9.7	N/A	11.2	5.1	12.7	14 g	305

Adjustable Mechanical Vacuum Switch: SX-4 & SX-5 (Switch with housing)

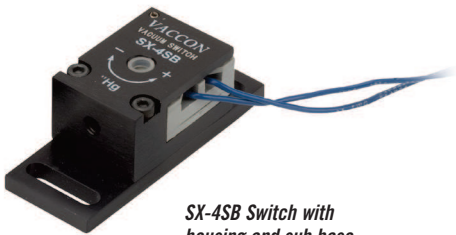


SX-5 Switch with housing

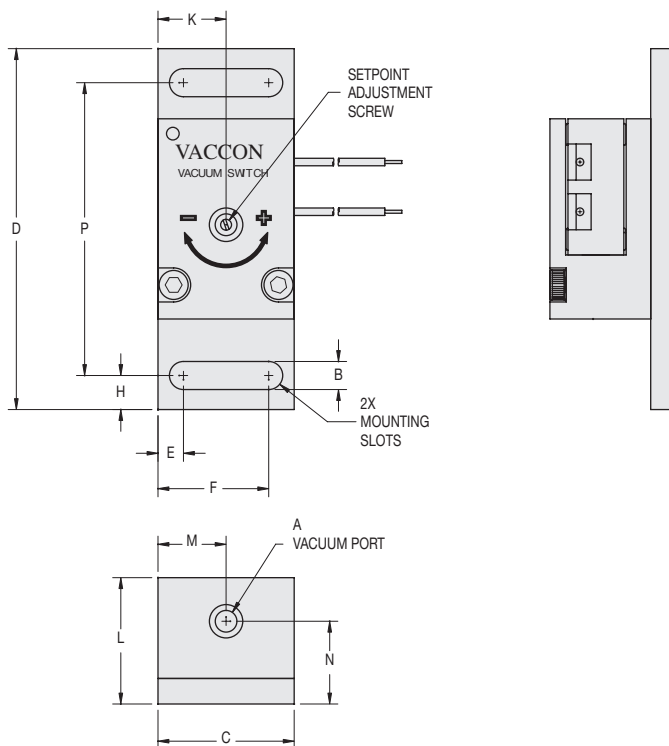


Model #	Dimensions													Weight	Lead Length
		A	B	C	D	E	F	H	J	K	L	M	N		
SX-4 or SX-5	in.	10-32 F	0.13	1.00	1.47	0.12	0.89	0.25	0.69	0.50	0.74	0.50	0.25	1.5 oz	12
	mm	10-32 F	3.3	25.4	37.3	3.0	22.6	6.4	17.5	12.7	18.8	12.7	6.4	43 g	305

Adjustable Mechanical Vacuum Switch: SX-4SB & SX-5SB (Switch with housing and sub base)

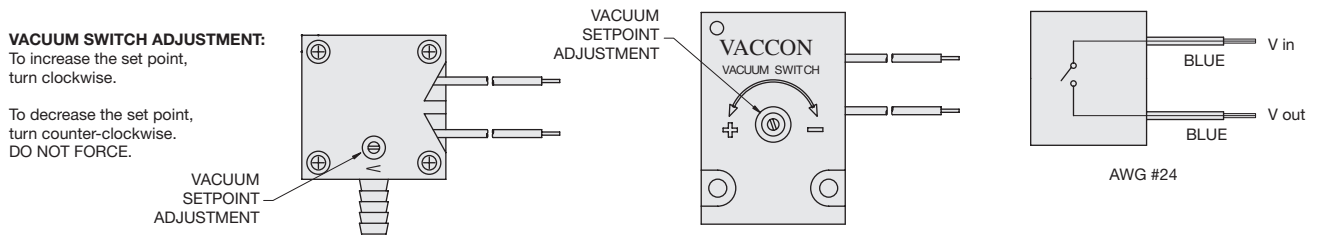


SX-4SB Switch with housing and sub base



Model #	Dimensions													Weight	Lead Length	
		A	B	C	D	E	F	H	J	K	L	M	N			P
SX4-SB or SX5-SB	in.	10-32 F	0.21	1.00	2.65	0.19	0.81	0.25	1.36	0.50	0.93	0.50	0.61	2.15	2.1 oz	12
	mm	10-32 F	5.3	25.4	67.3	4.8	20.6	6.4	34.5	12.7	23.6	12.7	15.5	54.6	60 g	305

Wiring Schematic for VS-4, VS-5, SX-4, SX-5, SX-4SB, SX-5SB



Important Notice For All VS-4, VS-5, SX-4, SX-5, SX-4SB, SX-5SB

1. The electrical current flows from one terminal through the rivet to the contact blade and from the other terminal through the rivet to the adjustment blade.
2. The adjustment screw is in contact with the diaphragm and is part of the electrical circuit.
3. To avoid potential shock, use an insulated screwdriver when making adjustments.

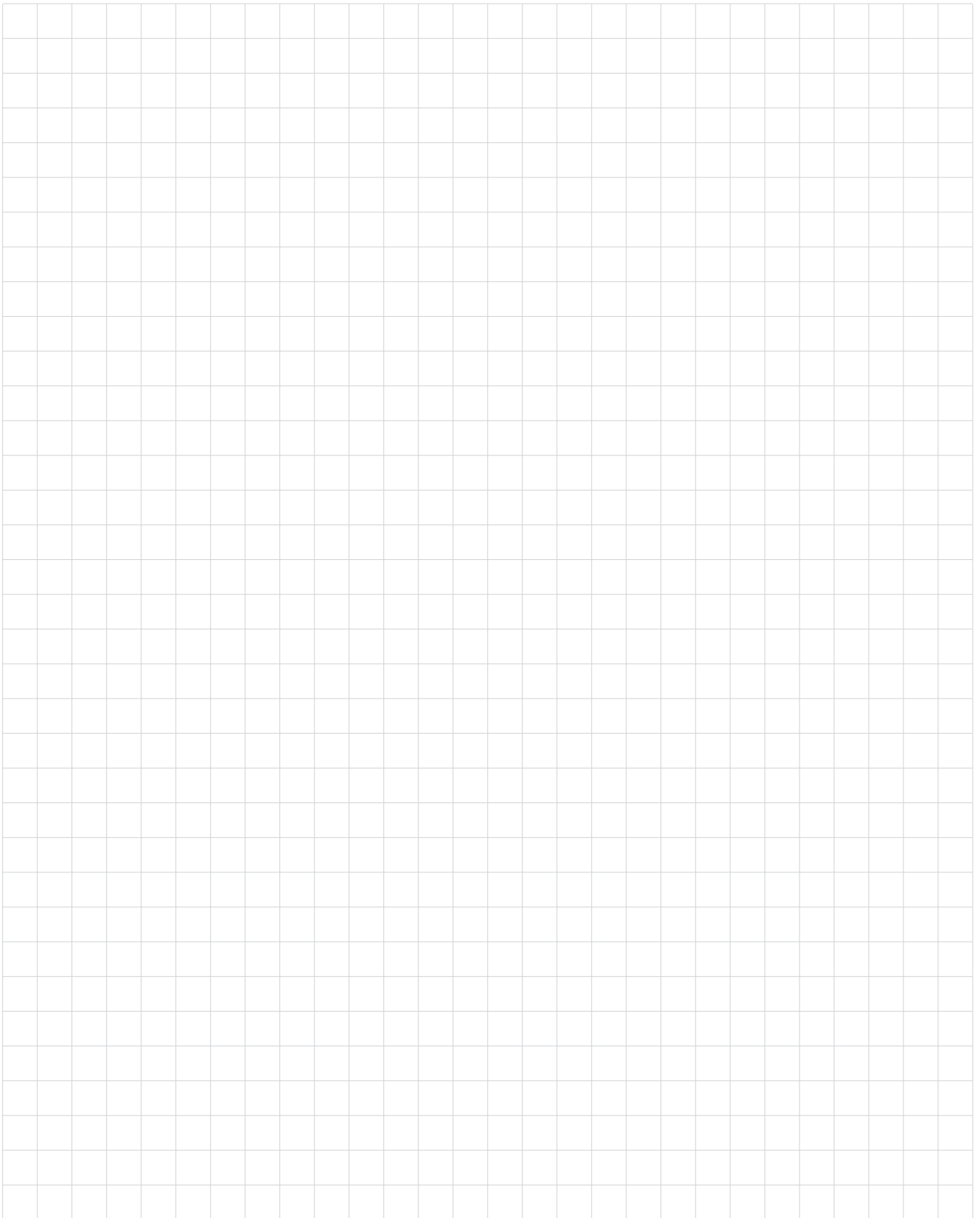
VS-4, VS-5, SX-4, SX-5, SX-4SB, SX-5SB Specifications:

Specifications	VS-4	VS-5	SX-4, SX-4SB	SX-5, SX-5SB
Rated Vacuum Range:	2" to 14.8" Hg [-68 to -500 mbar]	7.4" to 30" Hg [-250 to -1015 mbar]	2" to 14.8" Hg [-68 to -500 mbar]	7.4" to 30" Hg [-250 to -1015 mbar]
Proof Pressure:	N/A			
Burst Pressure:	25 PSI [1.7 bar]			
Media:	Non-Corrosive, Dry Gases			
Switch Type:	Differential Pressure, Mechanical Diaphragm			
Sensing/Switching Material:	Gold Plated, Phosphor Bronze			
Output:	SPST - NO			
Electrical Connection:	2 Wire - 24 AWG 1' [0.3M]			
Hysteresis:	0.5% Full Scale			
Max. Switch Voltage Load:	24 VDC/500 VAC			
Max. Switched Current Load:	20mA			
Display:	NONE			
Switch Indication:	NONE			
IP Protection:	NONE			
Operating Temperature:	-40°F to 250°F [-40°C to 120°C]			
Operating Humidity:	35 to 85% RH (No Condensation)			
Mechanical Life:	100,000,000 Cycles			
Construction:	GF Polyester/Polyurethane	GF Polyester/Polyurethane/Anodized Aluminum		
Fitting/Connection:	3/16" Barb	10-32 Female, Face Seal mount		
Weight:	0.5 oz [14g]	SX-4 & 5 – 1.5 oz [43g], SX-4 & 5SB – 2 oz [57g]		
Safety and Environmental Compliance:	RoHS			

How to Specify:

For switch only: Order by model number, i.e. **SX-5**

For factory-installed switch on Vaccon pump: Order Vaccon pump number and switch number, i.e., **VP20-150M-SX-4**.



Adjustable Mechanical Vacuum Switch

Compact, sealed vacuum switch for automation and process control applications

VSW5A Series



VSW5A – High amperage line voltage 120vAC

Ideal Applications:

- Hazardous applications
- Wash down applications
- Dust-laden air environment

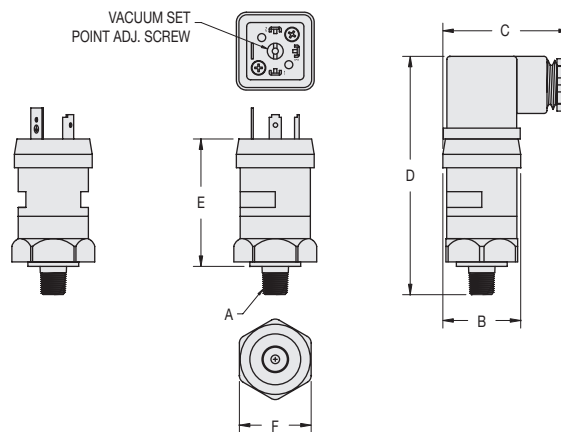
Features/Benefits

- High amperage line voltage 120vAC
- Vacuum range 5" to 30" Hg [-170 to 1015mbar]
- Durable – Nema 6 Enclosure (IP67) protection for extremely dirty environments
- Flexible – field adjustable between vacuum ranges
- Easy to install – common electrical connection DIN 43650A
- Safe – UL and CSA Approved
- Versatile – can be wired for normally open or normally closed

Vacuum Switches:

Vaccon's VSW5A is a high-current capacity switch capable of switching line voltage loads from 5 Amps to 125 VAC. The sealed vacuum switch is field adjustable from 5 to 28" Hg [169 to 948 mbar]. The vacuum level adjustment screw is easily accessed below the DIN connector. Wiring can be either normally open or normally closed.

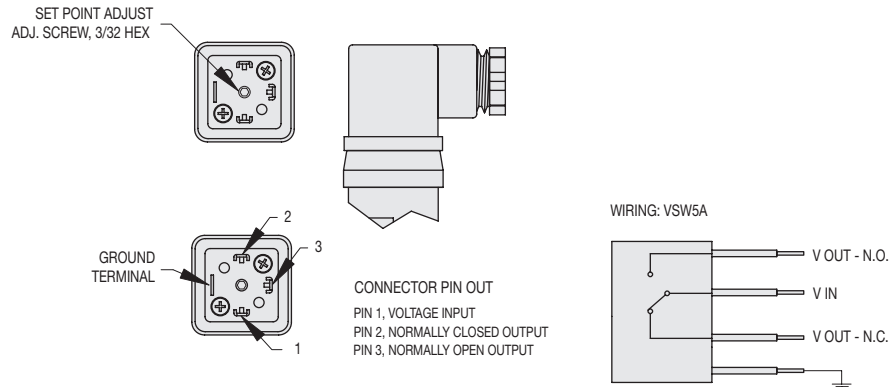
Adjustable Mechanical Vacuum Switch: VSW5A



Model #	Dimensions							Weight
		A	B	C	D	E	F	
VSW5A	in.	1/8 NPT M	1.22	1.98	3.74	2.00	1.13	4.1 oz
	mm	1/8 NPT M	31.0	50.3	95.0	50.8	28.7	116 g

Please Note: VSW5A replaces VSW5A-1 and VSW5A-2

Wiring Schematic for VSW5A: Set Point Adjustment



1. Remove center screw and DIN adaptor.
2. Place a 3/32" allen wrench into center hole.
3. Adjust counter-clockwise to increase set point, clockwise to decrease set point.
4. When desired setting is met, remove allen wrench and replace DIN adaptor and tighten screw.

VSW5A Specifications:

Rated Vacuum Range:	5" to 30" Hg [-170 to -1015 mbar]
Proof Pressure:	45 PSI [3.1 bar]
Burst Pressure:	350 PSI [24 bar]
Media:	Non-Corrosive, Dry Gases
Switch Type:	Nitrile Diaphragm
Sensing/Switching Material:	N/A
Output:	SPDT
Electrical Connection:	DIN 43650A
Hysteresis:	3" to 4" Hg [-102 mbar to -135 mbar]
Repeatability:	+/- 2% Full Scale
Max. Switched Voltage Load:	12/24 VDC, 125/250 VAC
Max. Switched Current Load:	5A for 12/24 VDC and 125 VAC, 3A - for 250 VAC
Display:	NONE
Switch Indication:	NONE
IP Protection:	IP65
Operating Temperature:	-20°F to 180°F [-28°C to 82°C]
Operating Humidity:	35 to 85% RH (No Condensation)
Mechanical Life:	100,000,000 Cycles
Construction:	Brass Housing, Nitrate Diaphragm
Fitting/Connection:	1/8" NPT Male
Weight:	4.0 oz. [113g]
Safety and Environmental Compliance:	UL, CSA, VDE and UR

How to Specify:

Order by part number: **VSW5A** (replaces VSW5A-1 and VSW5A-2)

Electronic Vacuum Sensor

Ultra-miniature, precision control

VTMV Series

VTMV



Vaccon's ultra-mini electronic vacuum sensors provide continuous voltage output (1-5v) proportional to the system vacuum level. Connected to a feedback interface such as a digital display or PLC, the VTMV is a cost effective, reliable sensor that maintains application consistency. Sensors can be mounted directly to Vaccon's Mini, Mid and MP Series pumps.

How to Specify:

- Sensor: VTMV

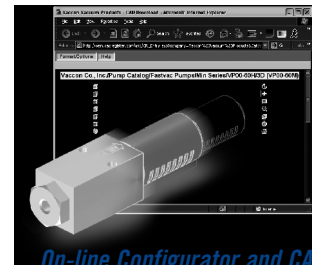
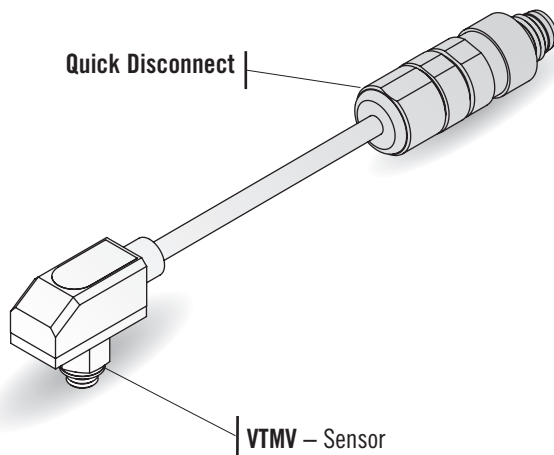
Ideal Applications:

- Part present detection
- End-of-Arm Tooling/Robotic assembly
- Material handling
- Monitoring vacuum vessels
- Statistical process control

Features/Benefits

- Compact – placed at point of use for accurate reading and quick response time
- Lightweight – ideal for End-of-Arm Tooling, robotic end effectors
- Low power consumption
- Mountable to both Vaccon or non-Vaccon M5 vacuum port
- Swivel fitting – operates in any position
- RoHS compliant and meets EMC standards
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail

VTMV Sensor Configurations and Options:

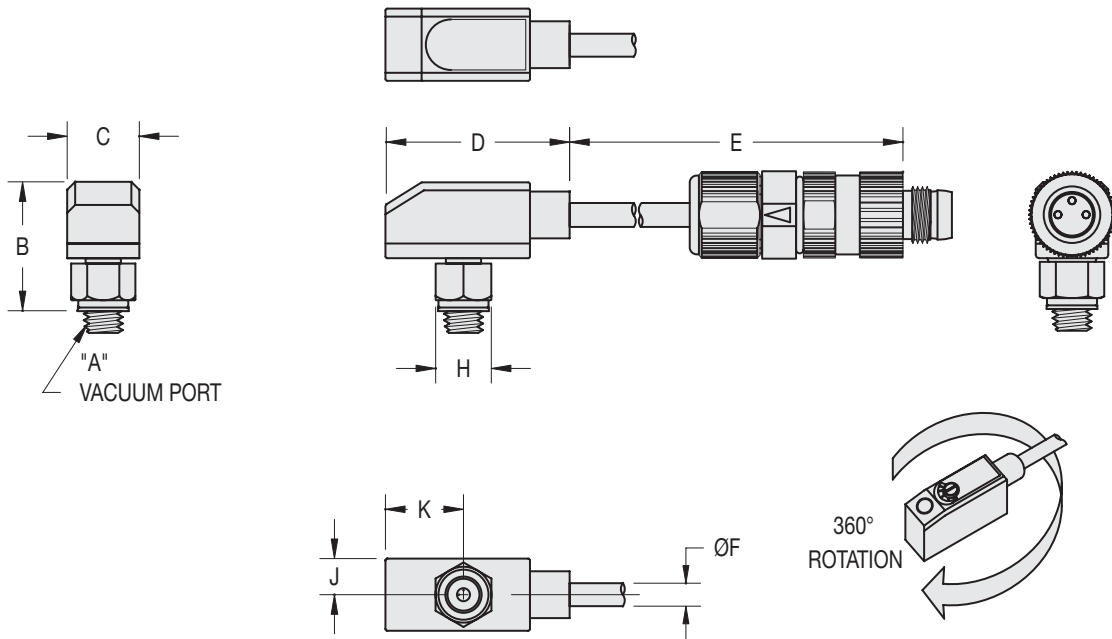


On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

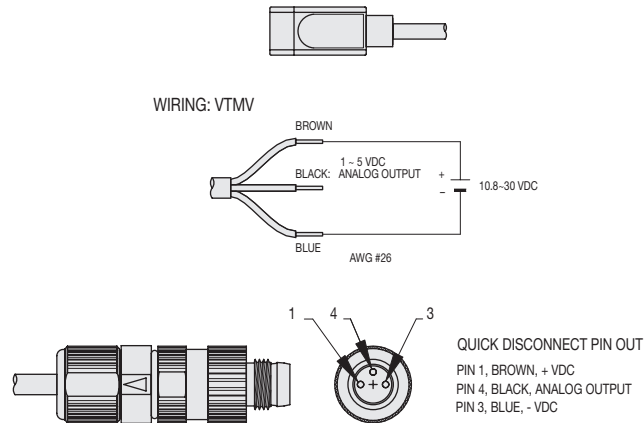
Sensor with Quick Disconnect: VTMV



VTMV

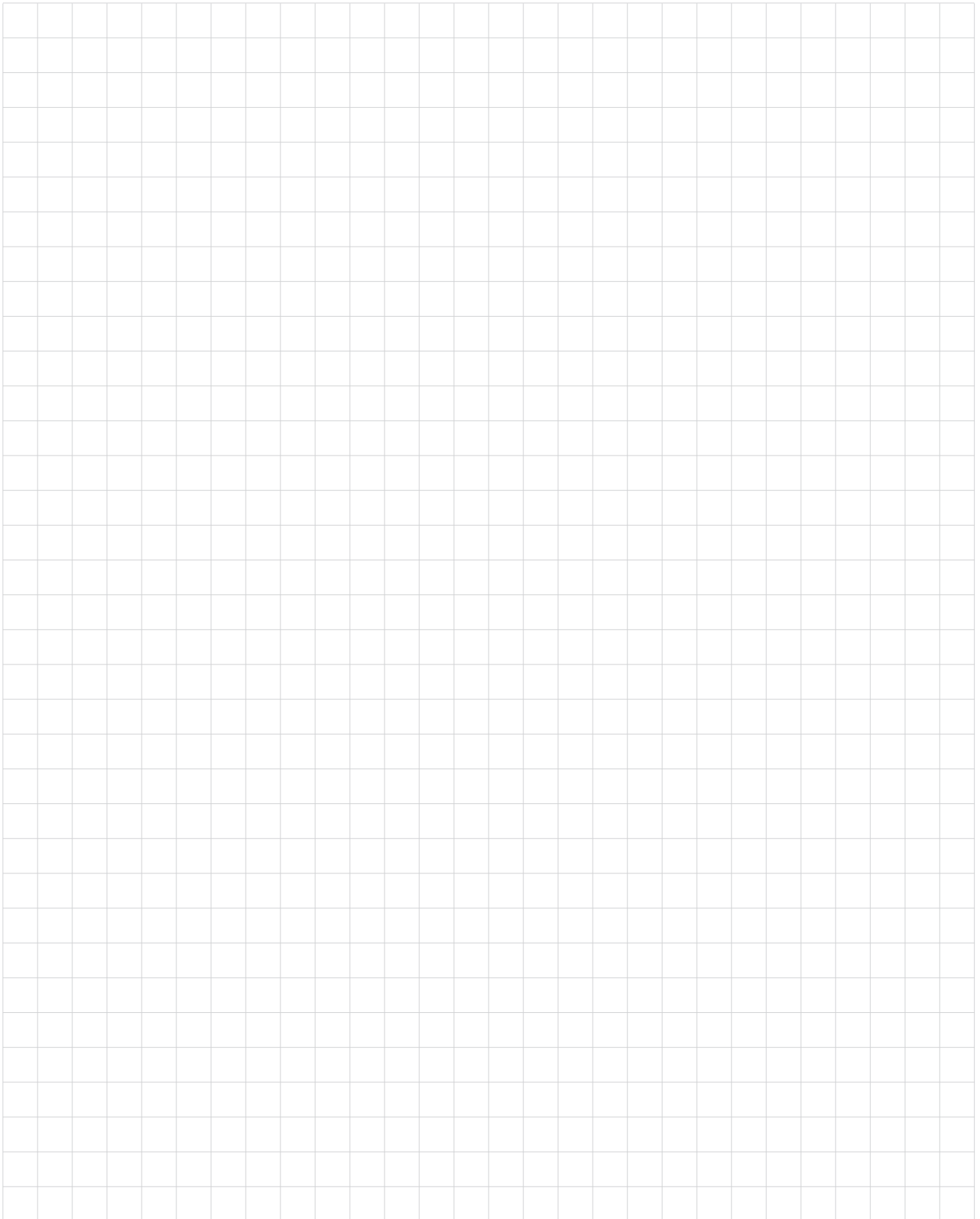
Model #	Dimensions										Weight
		A	B	C	D	E	F	H	J	K	
VTMV	in.	M5	0.71	0.39	1.01	6.0	0.13	0.30	0.20	0.43	1.6 oz
	mm	M5	18.0	9.9	25.7	152.4	3.3	7.6	5.1	10.9	45 g

Wiring Schematic for VTMV



VTMV Electronic Vacuum Sensor Specifications:

Rated Vacuum Range:	0" to 30" Hg [0 mbar to -1015 mbar]
Burst Pressure:	29 PSI [2 bar]
Media:	Non-Corrosive, Dry Gases
Supply Voltage:	10.8 to 30 VDC
Current Consumption:	20 mA Max.
Sensing/Switching Material:	Single Crystal Silicon
Output:	1 to 5 VDC
Electrical Connection:	3 Wire - 26 AWG - 5' [1.5M], Optional 3 pin, M8 Quick Disconnect
Response Time:	Approximately 1 ms
Circuit Protection:	NONE
Linearity:	+/- 0.5% Full Scale
Thermal Error:	+/- 2% Full Scale/121°F [50°C]
Thermal Compensation:	32°F to 121°F [0°C to 50°C]
Display:	None
IP Protection:	IP00
Operating Temperature:	15°F to 140°F [-10°C to 60°C]
Operating Humidity:	35 to 85% RH (No Condensation)
Construction:	Glass filed ABS/Aluminum/Buna
Fitting/Connection:	M5x.8 - 360° swivel male fitting
Weight:	1 oz [28.3g]
Safety and Environmental Compliance:	CE, RoHS



Electronic Vacuum Switches

Ultra-miniature, precision control

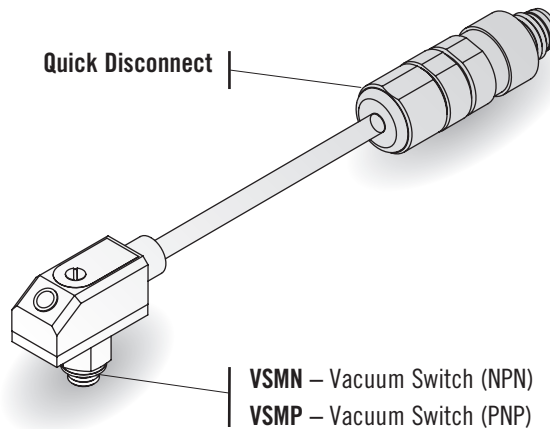
VSM(N or P) Series



Above: VSMP switch on VP00-60H

Vaccon's miniature electronic vacuum switches provide a switched output for part present detection and can be easily mounted to Vaccon's Mini, Mid and MP Series pumps.

VSM(N or P) Switch Configurations and Options:



How to Specify:

Part Number	Switch
VSMN	Switch - NPN
VSMP	Switch - PNP

Ideal Applications:

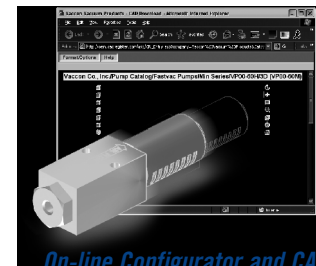
- Part present detection
- End-of-Arm Tooling/Robotic assembly
- Material handling
- Pick and place
- Manifold mount

Features/Benefits

- Compact – placed at point of use for accurate reading and quick response time
- Lightweight – ideal for End-of-Arm Tooling, robotic end effectors
- Precision Control – offers field-adjustable set-point for the full vacuum range
- Reliable LED for visual confirmation – easy set-up
- Standard with M8, 3-pin Quick Disconnect on 6" Pigtail
- Swivel fitting – operates in any position
- Mountable to both Vaccon or any non-Vaccon M5 vacuum port
- Low power consumption
- RoHS compliant and meets EMC standards

Switch Options:

- Choice of output – NPN, PNP

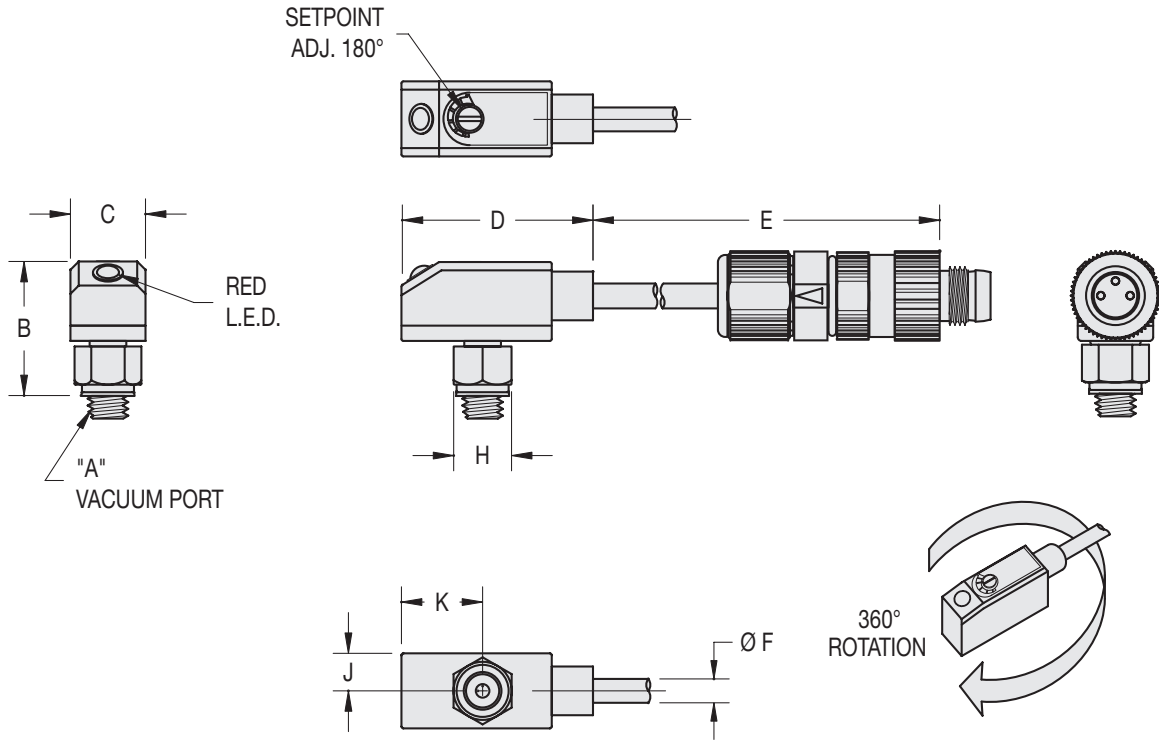


On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

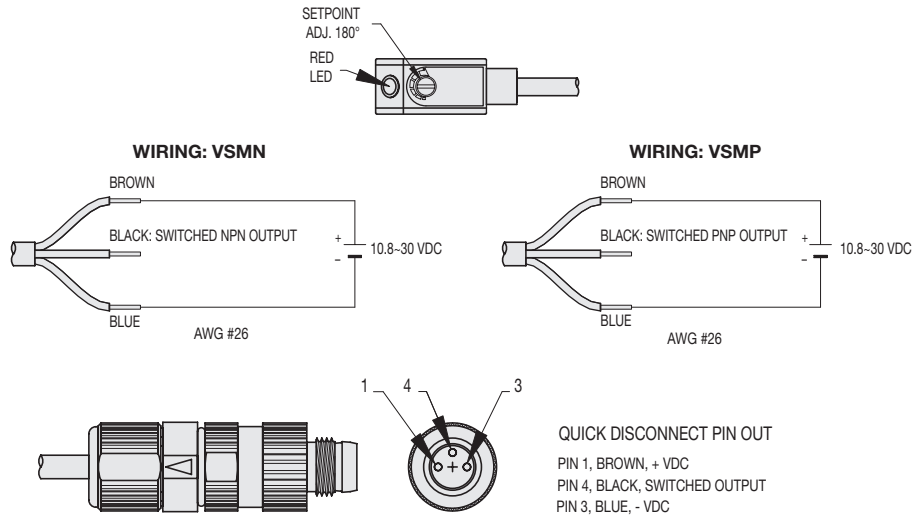
Switch with Quick Disconnect: VSM (N or P)



VSM (N or P)

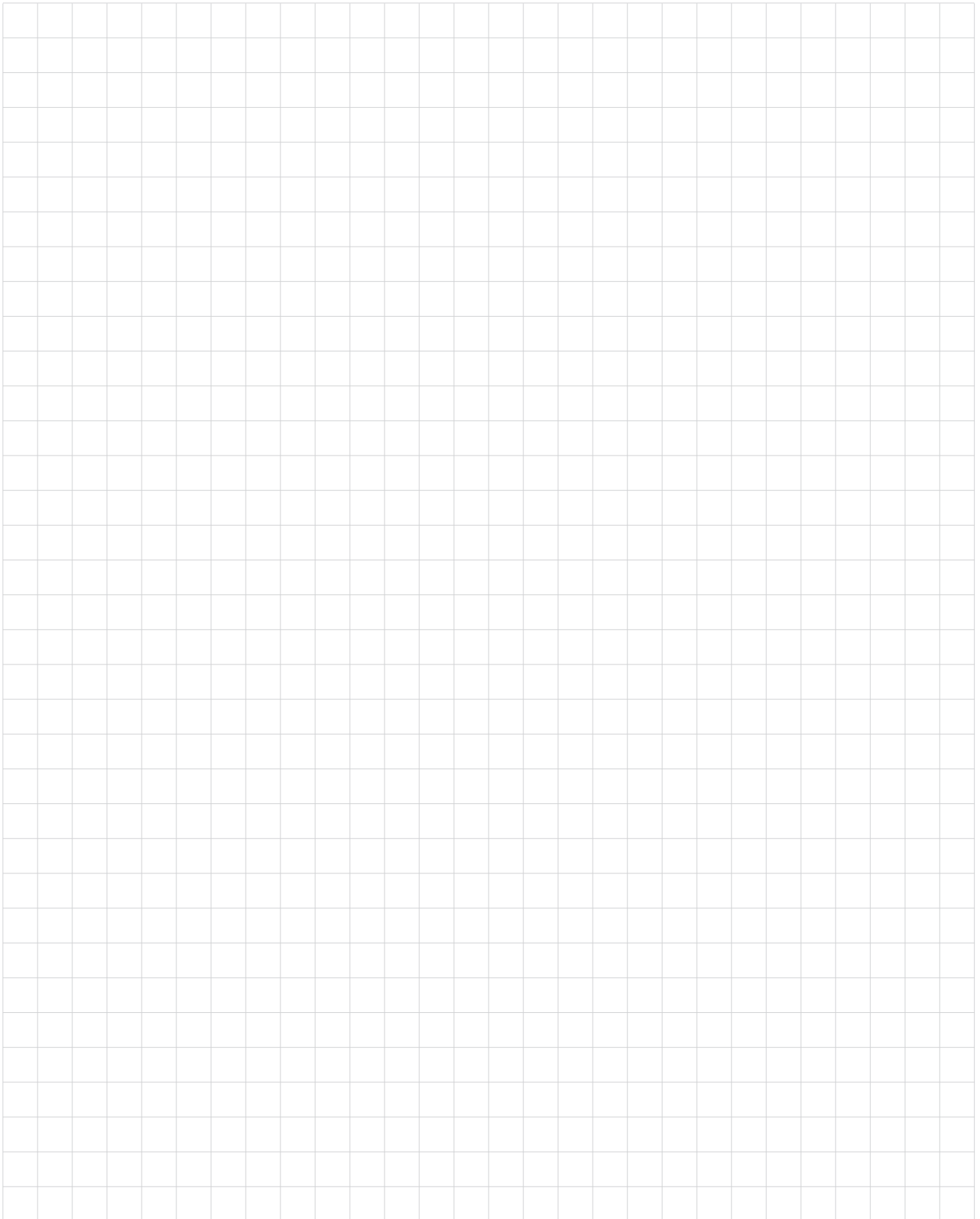
Model #	Dimensions										Weight
		A	B	C	D	E	F	H	J	K	
VSM (N, P)	in.	M5	0.71	0.39	1.01	6.0	0.13	0.30	0.20	0.43	1.6 oz
	mm	M5	18.0	9.9	25.7	152.4	3.3	7.6	5.1	10.9	45 g

Wiring Schematic for VSM (N or P)



VSM (N or P) Electronic Vacuum Switch Specifications:

	VSMN	VSM P
Rated Vacuum Range:	0" to 30" Hg [-0 to -1015 mbar]	
Burst Pressure:	29 PSI [2 bar]	
Media:	Non-Corrosive, Dry Gases	
Supply Voltage:	10.8 to 30 VDC	
Current Consumption:	20 mA Max.	
Sensing/Switching Material:	Single Crystal Silicon	
Output:	Switched - NPN	Switched - PNP
Electrical Connection:	3 Wire - 26 AWG - 5' (1.5m), Optional 3 pin, M8 Quick Disconnect	
Hysteresis:	2% Full Scale Max	
Repeatability:	+/- 0.3% Full Scale	
Response Time:	1 ms Max.	
Circuit Protection:	NONE	
Max. Switch Voltage Load:	30 VDC	
Max. Switched Current Load:	80mA	
Linearity:	+/- 0.5% Full Scale	
Thermal Error:	+/- 2% Full Scale/121°F (50°C)	
Thermal Compensation:	32°F to 121°F (0°C to 50°C)	
Display:	Single Red LED	
Switch Indication:	Red LED ON (Switched Output ON)	
IP Protection:	IP00	
Operating Temperature:	15°F to 140°F (-10°C to 60°C)	
Operating Humidity:	35 to 85% RH (No Condensation)	
Construction:	Glass filed ABS/Aluminum/Buna	
Fitting/Connection:	M5x.8 - 360° swivel male fitting	
Weight:	1 oz (28.3g)	
Safety and Environmental Compliance:	CE, RoHS	



Cordsets

For Electronic Vacuum Switches & Sensors

QDS Series



Female cordset

Depending on your wiring needs, Vaccon offers female cordsets for complete wiring systems for quick, easy and safe connection to system controllers, PLC's, and other electronic extension connectors.

Quick Disconnect Options:

- 3-Pin, 4-Pin, or 5-Pin Cordsets
- M8 and M12 Threads

Ideal Applications:

- Robotic devices
- Automated assembly devices
- Heavy-duty industrial environments

Features/Benefits:

- IP 67
- Factory installed or field-attachable
- Threaded couplings for harsh environments
- Quick replacement & easy field conversion
- Easy disconnect for system maintenance
- RoHS compliant

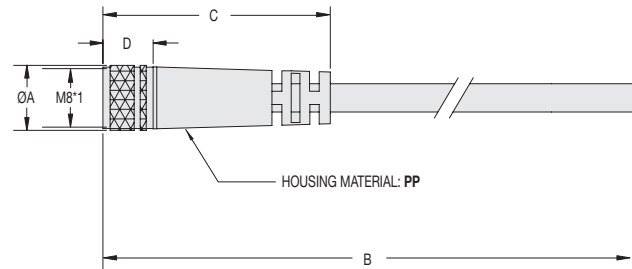
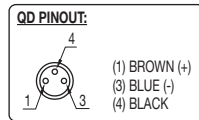
Molded Single End Cordsets				
Model #	Pin Connection	Thread Size	IP Rating	Vaccon Sensor/Switch
QDS-8-3F	3-Pin Female	M8	IP 67	VTMV, VSMN, VSMP, VXXN, VXXP
QDS-8-4F	4-Pin Female	M8	IP 67	VDXN, VDXP, VDMN, VDMP, VDMC, VDMV
QDS-12-5F	5-Pin Female	M12	IP 67	VDSN, VDSP

Note: Standard cordset length is 5 meters. Other lengths available. Consult factory.

M8 Single-Ended Cordset – 3-Pin Female



QDS-8-3F

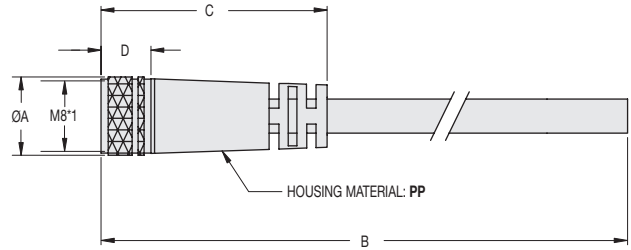
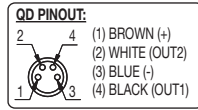


Model #	Dimensions					Weight
		A	B	C	D	
QDS-8-3F	in.	0.35	16.4 ft	1.26	0.28	4.9 oz
	mm	9	5M	32	7	140 g

Specifications:

- Cable:** Grey, PVC cable jacket
- Conductors:** 3x #24 AWG [3 x 0.22 mm]
- Outside Diameter:** 0.177" [4.5mm]
- Electrical:** 60V AC/DC
- Amperage:** 3A
- Environmental:** IP 67
- Ambient Operating Temp:** -48° to 176°F [-20° to 80°C]
- Cord Length:** 5 meters – Consult factory for other lengths.

M8 Single-Ended Cordset – 4-Pin Female

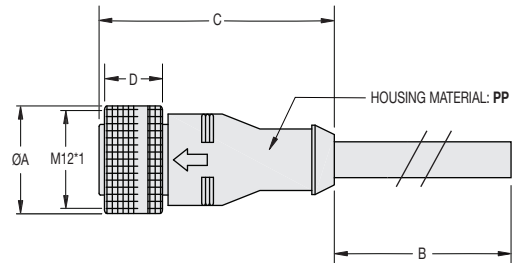
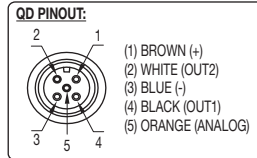


Model #	Dimensions					Weight
		A	B	C	D	
QDS-8-4F	in.	0.35	16.4 ft	1.26	0.28	4.9 oz
	mm	9	5M	32	7	140 g

Specifications:

- Cable:** Grey, PVC cable jacket
- Conductors:** 4x #24 AWG [4 x 0.22 mm]
- Outside Diameter:** 0.177" [4.5mm]
- Electrical:** 60V AC/DC
- Amperage:** 3A
- Environmental:** IP 67
- Ambient Operating Temp:** -48° to 176°F [-20° to 80°C]
- Cord Length:** 5 meters – Consult factory for other lengths.

M12 Single-Ended Cordset – 5-Pin Female

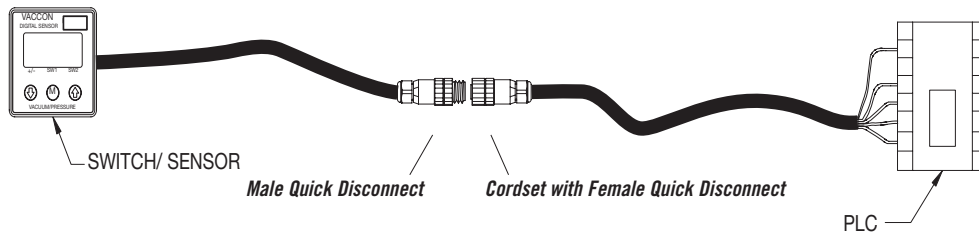


Model #	Dimensions					Weight
		A	B	C	D	
QDS-12-5F	in.	0.35	16.4 ft.	1.26	0.28	4.2 oz
	mm	9	5M	32	7	119 g

Specifications:

- Cable:** Grey, PVC cable jacket
- Conductors:** 5 x #25 AWG [5 x .34 mm]
- Outside Diameter:** 0.197" [5 mm]
- Electrical:** 60V AC/DC
- Amperage:** 4A
- Environmental:** IP 67
- Ambient Operating Temp:** -48° to 167°F [-20° to 80°C]
- Cord Length:** 5 meters – Consult factory for other lengths.

Example of Typical Wiring Configuration

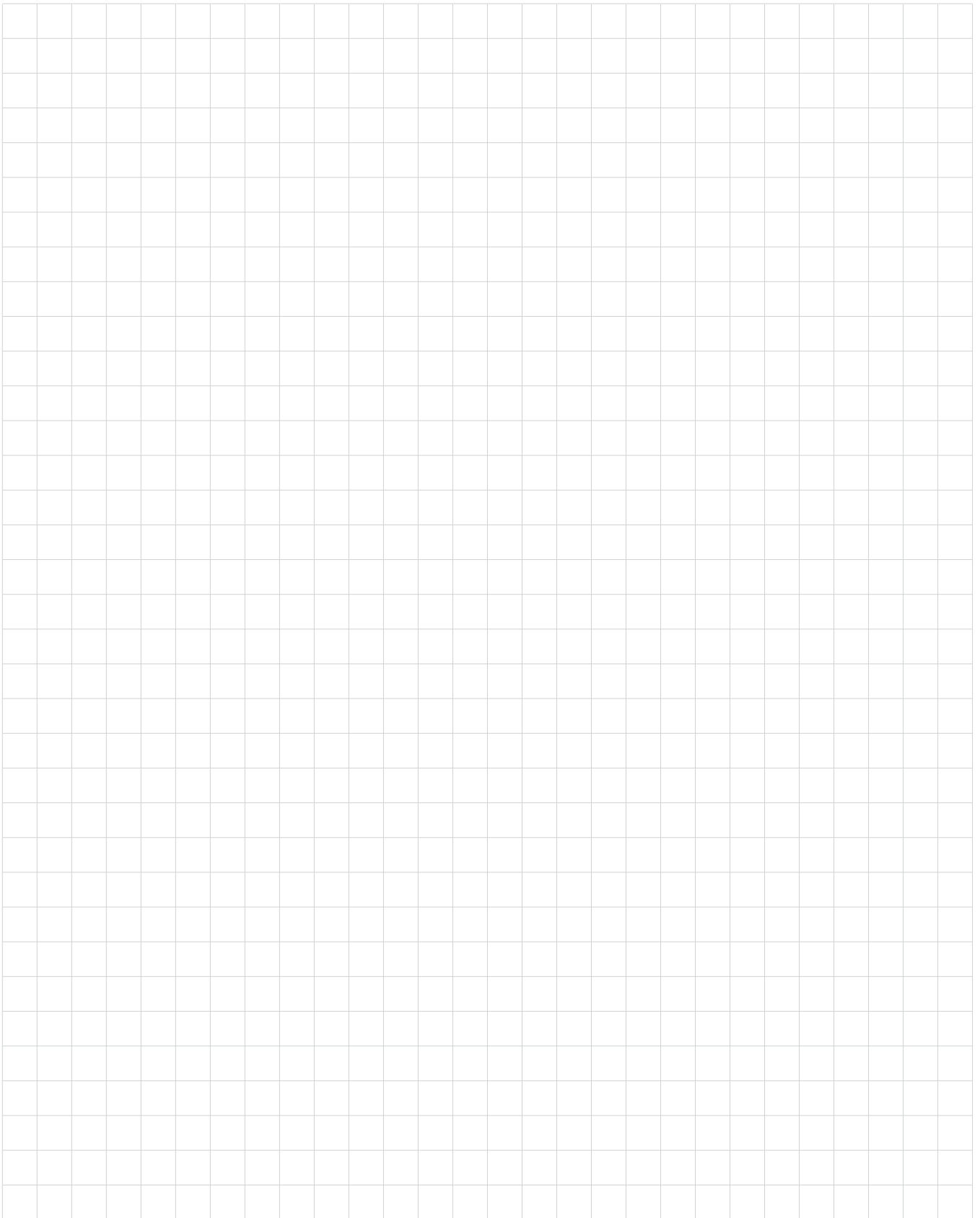


Typically, the wiring from your PLC or system controller will have a female connection. Vaccon's VSM, VTMV, VXX, VDX, VDS, and VDM Series switches and sensors come equipped with a male connection allowing quick and easy installation to compatible connectors. Or, if you prefer, you can replace the entire wiring system from the PLC or system controller with a Vaccon female quick disconnect cordset.

How to Specify:

Switch/Sensor with quick disconnect – part number: **VDSN**

Quick Disconnect Cordset – part number: **QDS-12-5F** (female only)



Vaccon End-of-Arm Tooling

Vaccon's new, modular End-of-Arm Tooling components offer everything you need to create a complete "wrist-down" EOAT for your material handling operations. The VEOAT innovative component design is modular, lightweight, compact, and easy-to-connect. Using VEOAT, you can integrate vacuum pumps, suction cups, spring levelers, fittings, and manifolds using simple erector-set connectivity in minimum design time.



Spring Levelers/ Level Compensators – VSL Series (1, 2, 3)

When handling sensitive objects such as fruit, Vaccon Spring Levelers feature a soft touch allowing compliance for end-of-arm tools to ensure that all cups make contact. This is especially important when handling large objects such as sheets of plywood that may be warped and the tool has multiple vacuum cups that must make contact.

See Page **326**



Light Duty Spring Leveler Mounting Brackets – SLBS Series/ SLBF Series

Designed for flexible manufacturing operations, SLBF and SLBS Series mounting brackets attach to the top, sides or bottom of 1" [25mm] and 1.5" [40mm] extrusions.

See Page **330**



Heavy Duty Spring Levelers/ Level Compensators – SLB40 (2, 3)

Recommended for applications which require lifting heavy loads without deflection, Vaccon Heavy Duty Spring Levelers include a rigid mounting bracket for a strong, solid connection to 1.5" [40mm] extrusions.

See Page **334**



Adjustable, Fixed Extension Shaft & Mounting Brackets – FEB40 (2, 3)

Adjustable, Fixed Extension Shaft & Bracket is a rigid, non-moving rod that mounts to the top, sides or bottom of 1.5" [40mm] extrusions. Once the shaft is adjusted to meet a specific height requirement, the bracket is clamped into a fixed position.

See Page **338**



Vacuum Cup Swivel Joint – CSJ3 Series 3

Handling curved surfaces is easy with Vaccon's new Vacuum Cup Swivel Joint. The CSJ3 swivel joints attach to a spring leveler and vacuum cup providing a full 40° angular movement. To control the degree of swivel, simply tighten the collar nut located on top of the swivel joint to restrict movement.

See Page **342**



Universal Mounting Brackets – Standard, Adjustable, Angled

Universal Mounting Brackets are simple, lightweight connectors that attach Vaccon vacuum pumps, vacuum cups, spring levelers and manifold blocks to 1" or 1.5" extrusions.

See Page **346**



Vacuum Cup Mount/ Manifold Block

Simplify your End-of-Arm tooling devices using our new dual purpose MB Series - Vacuum Cup Mount/ Manifold Block. Whether you are mounting vacuum cups to extrusions and/ or distributing vacuum to multiple locations, the MB Series streamlines your design with one multi-functional component.

See Page **352**



Push-to-Connect Fittings

Push-to-Connect (PTC) fittings are a robotic, End-of-Arm tooling component that connects all Vaccon vacuum pumps, cups, and spring levelers to each other or tubing.

See Page **356**

Vaccon End-of-Arm Tooling

All VEOAT products are compatible with 1" [25mm] and 1.5" [40mm] extrusions



Vaccon designed, assembled, tested and shipped this new EOAT tool for a Kuka Robot in one day.

Vaccon's new, modular End-of-Arm Tooling components offer everything you need to create a complete "wrist-down" EOAT for your material handling operations.

The VEOAT innovative component design is modular, lightweight, compact, and easy-to-connect. Using VEOAT, you can integrate vacuum pumps, suction cups, spring levelers, fittings, and manifolds using simple erector-set connectivity in minimum design time.

VEOAT Components or Complete VEOAT Solutions

You can order VEOAT products separately and build your own tooling, or purchase a complete pre-built VEOAT solution—fully configured, plumbed, and tested. VEOAT solutions ship assembled using one robot-to-VEOAT connection for easy, out-of-the-box installation.

Vaccon Designed, Built, and Tested

Vaccon engineers have years of material handling experience, in every industry from soap to electronics. We have a proven record of identifying customer needs, developing and testing End-of-Arm tools, and delivering projects on time and within budget. Take advantage of our extensive vacuum knowledge to select the proper vacuum pump/cup combination and design your tool. Vaccon will build your tool and test it using your product at our in-house Tech Center, usually within the same day.

Ideal Applications:

- Automotive
- Packaging
- Palletizing
- Runners from molds
- Conveying systems
- Fruit packing
- Mold removal – Picking parts
- Work holding device
- Stamping press transfer
- Packaged food & bakery
- Medical

Features/Benefits:

- T-Slot fraction or metric compatible components – Attaches to customer supplied framework
- Minimal design time – pre-designed modular components, streamlined systems
- Easy set-up and fast installation – order out of the box complete or assemble on site
- Lightweight components – faster speeds with less stress on robot for longer life cycle
- Cost effective – integrates with existing plant equipment for quick tool changes, minimal downtime
- Flexible manufacturing/automation – optional accessories and adjustability
- Increased efficiency – large selection of venturi pumps to maximize productivity
- Built-in sensors – part-present signal and vacuum level



Picking and placing packaged rolls, CDF 375H-ST6BX EOAT handles flexible, uneven objects.



Multi-port pump EOAT with multiple manifold blocks and cups for food packaging operation.



VP80-200H-MP and VP20-100H EOAT handle melons in fruit packing plant.

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Modular Venturi Vacuum Pumps



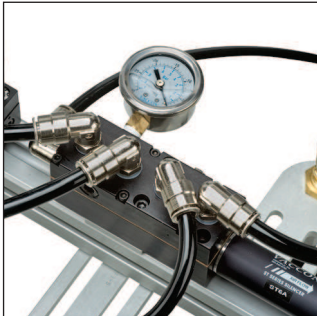
Modular Venturi Vacuum Pumps



Modular Venturi Vacuum Pumps with Pneumatic Blow-off



Modular Venturi Vacuum Pumps Solenoid Operated with Pneumatic Blow-off



Multi-port Venturi Vacuum Pumps



Max Series Modular Venturi Pumps



Venturi Vacuum Pumps with "Apple Core" style mount & clamp

Suction Cups



Bellow Cups



Oval Cups



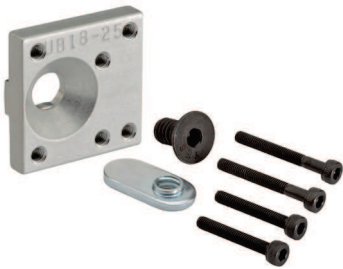
Flat Cups



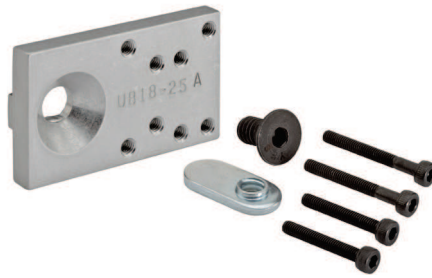
Deep Cups

Vaccon End-of-Arm Tooling

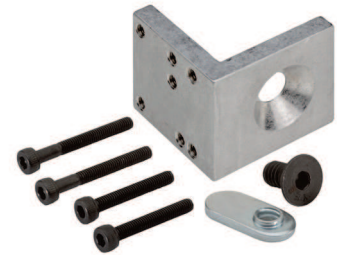
Mounting Brackets for 1" [25mm] Extrusion fits 1/4" [6.5mm] T-slot



Universal Bracket (Fixed) with optional mounting hardware



Universal Bracket (Adjustable) with optional mounting hardware



Angled Universal Bracket with optional mounting hardware

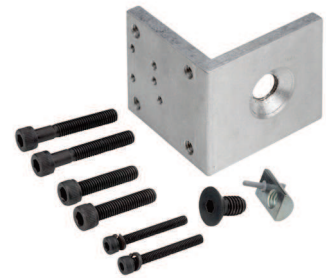
Mounting Brackets for 1.5" [40mm] Extrusion fits 5/16" [10mm] T-slot



Universal Bracket (Fixed) with optional mounting hardware



Universal Bracket (Adjustable) with optional mounting hardware



Angled Universal Bracket with optional mounting hardware

Vacuum Cup Mount/Manifold



MB18-25
For 1" Extrusion Only

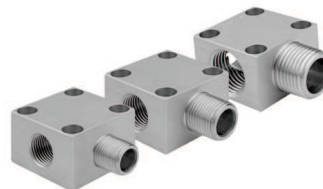


MB14-40

All Female Ports



Male Face Mount MBF14-40 Series



Male Bottom Mount MBB14-40 Series

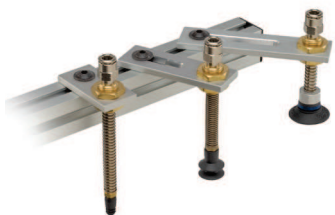


Male Bottom Mount with Oval Cup

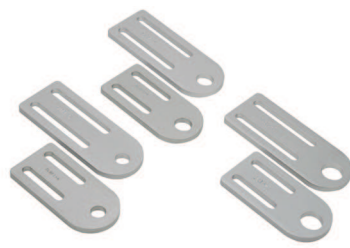
Light Duty Spring Leveler Brackets



Spring leveler brackets and hardware for 1" [25mm] extrusions



Fits VSL1 & 2 Spring Levelers



Spring Leveler Brackets for 1.5" [40mm] extrusions (hardware not shown)



Fits VSL1, 2 & 3 Spring Levelers

Spring Levelers/Level Compensators and Swivel Joint



Spring Levelers VSL1, 2, & 3 Series



Heavy Duty Spring Levelers SLB40-2, 3 Series



Adjustable, Fixed Extension Shaft and Bracket – FEB40-2,3 Series



Vacuum Cup Swivel Joint CSJ3 Series Shown with Bellows cup

Push-to-Connect Fittings for Vacuum Pumps and Spring Levelers



Male Straight Fittings



Female Straight Fittings



Male Elbow Fittings



Female Elbow Fittings

End-of-Arm Tooling Design Guide



Call Vaccon First!

We will save you time and money.

Here's why.

Robots and robotic tooling help you increase productivity, improve product quality, and reduce costs. The right End-of-Arm Tools (EOAT) can improve both the flexibility and cost effectiveness by working with and complementing the robot. Vaccon designs vacuum tooling using modular components that are compact, lightweight, durable, and easy to assemble. This creates flexible, streamlined End of Arm Tooling that works in harmony with the robot.

As experts in vacuum equipment design for manufacturing automation applications, Vaccon helps customers find solutions for their material handling problems by creating new tools, re-designing existing tools or re-building systems. Take advantage of our years of engineering expertise to quickly design, build, and re-tool your robotic EOAT to ensure safe part handling, extend the life of the robot, increase production, and reduce costs.

Work in reverse, design “the tool” first before selecting the robot.

Focus on key aspects of the part to be handled (i.e. weight, porosity, travel distance, desired speed, etc.)

For new applications, we highly recommend that you design the EOAT before selecting the robot. Knowing the load (the combined weight of the part and the EOAT) helps you to choose the optimum robot for the job.

For re-tooling applications when the robot is already in place, carefully consider the load limits of the robot.

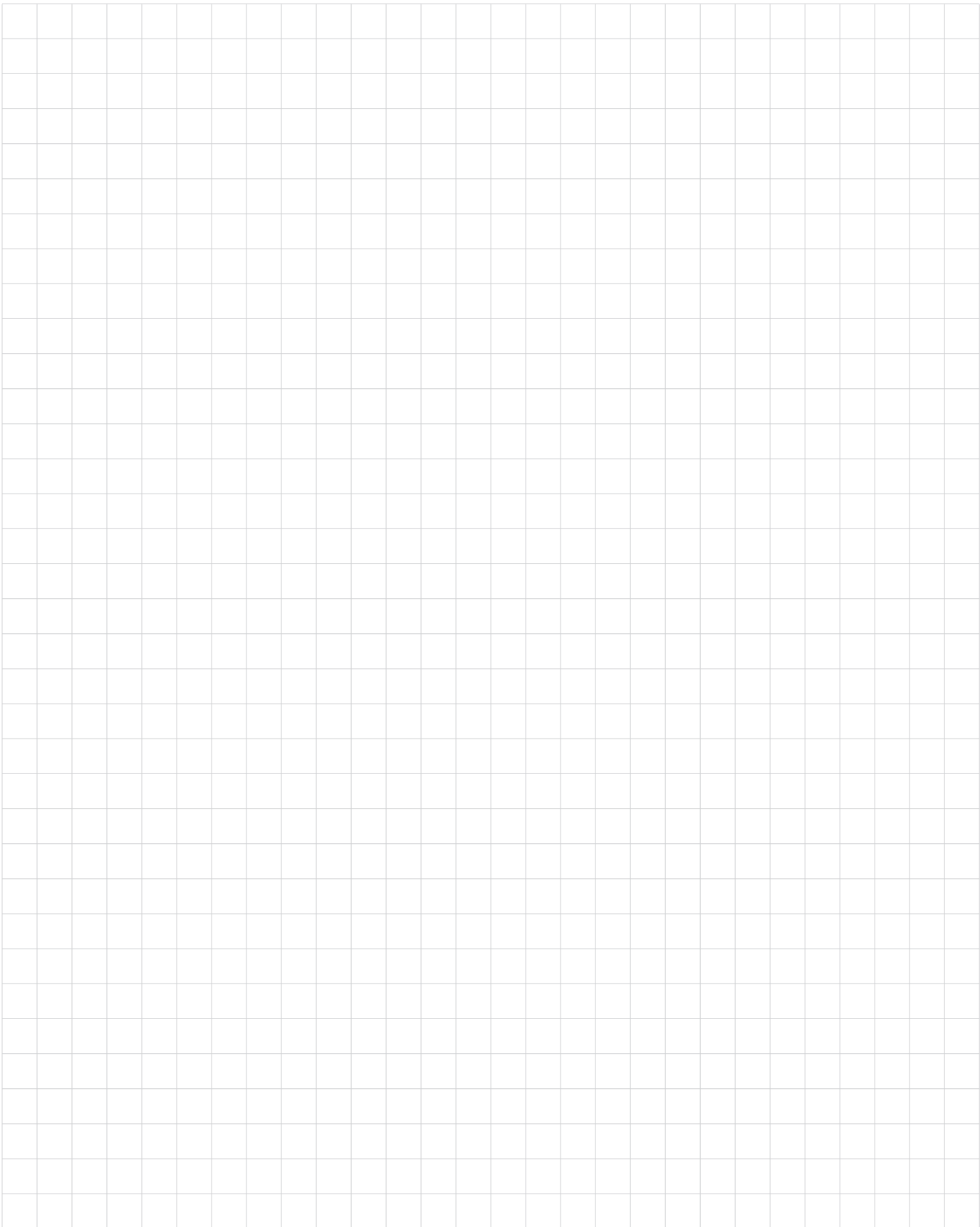
Optimum EOAT Design Sequence:

1. Identify the part weight, size, material porosity and surface area for cup placement on the part.
2. Select cups and/or levelers based on accepted Safety Factors (see page 233)
3. Select the vacuum pump(s) based on performance and porosity (see page 234)
4. Select the Vaccon EOAT components required for your application.
5. Assemble the EOAT *or*
6. Vaccon will design, assemble, test and ship the completed EOAT to you.

Vaccon EOAT Application Engineering Support

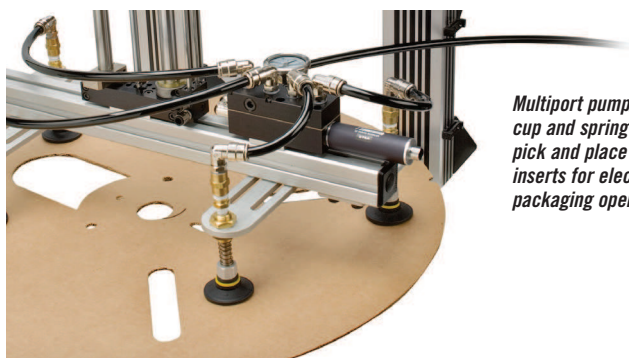
Our dedicated application engineers are ready to help you to select the right components or to design, assemble, and test the EOAT. Vaccon customer support provides:

- Experts in vacuum technology
- Experts in manufacturing
- Experts in automation applications
- Experts in pneumatic design
- Free 2D & 3D drawings of all components or build your own using Vaccon's website or CD.

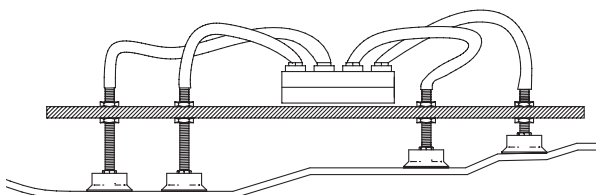


Spring Levelers/ Level Compensators

VSL Series (1, 2, 3)



Multiport pump/vacuum cup and spring levelers pick and place cardboard inserts for electronic packaging operation.



Spring levelers handle uneven surfaces or odd shaped objects



Spring Leveler Mounting Bracket with VSL1 Series Spring Levelers

Ideal Applications:

- Automotive automation
- Material handling
- Robotic assembly
- Pick and place
- Sheet feeding
- Removing parts from molds

Benefits/Features:

- Smooth operation – reduces shock to an object that is being lifted
- Lightweight – reduces stress to robotic end effectors
- High flow – maximize performance and holding force for porous objects
- Flexible mounting options for robotic end effectors/End-of-Arm Tooling
- Reduces machine indexing when picking up material from a stack

When handling sensitive objects such as fruit, Vaccon Spring Levelers feature a soft touch allowing compliance for end-of-arm tools to ensure that all cups make contact. This is especially important when handling large objects such as sheets of plywood that may be warped and the tool has multiple suction cups that must make contact.

For design flexibility, Vaccon offers a large range of sizes and travel lengths 0.2" [5mm] to 3.6" [91mm] to accommodate the necessary over-driving by the lifting mechanism to bring all cups in contact.

Vaccon's Spring Leveler design surpasses the competition. We offer large thru-bores that allow higher vacuum flow to overcome leakage and for rapid evacuation to ensure safe handling operations.

The Series 3 Levelers have high performance bearings that prevent binding from side loading, provide a smooth operation over long strokes and prolong leveler life.

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Standard Spring Levelers:

- 3 Series
- 12 models
- Nickel plated steel shafts, stainless steel springs and brass mounting nuts

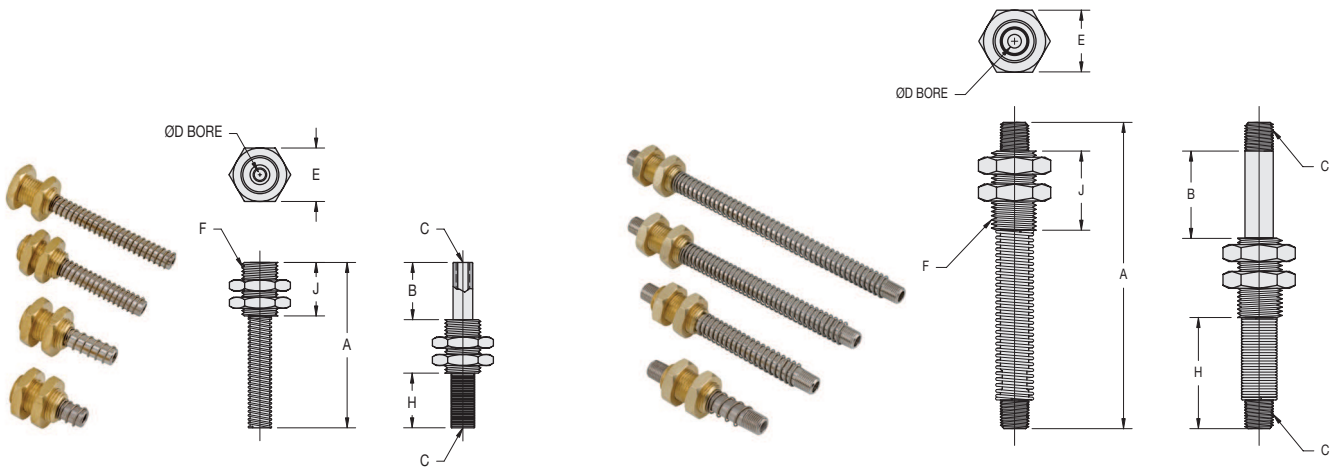
Spring Leveler Options:

- Mounting brackets compatible with 1/4" [6.5mm] T-slot or 5/16" [10mm] T-slot extrusions
- Suction cups and vacuum fittings
- Custom materials (FDA approved) and sizes available – consult factory

How to Specify:

1. When ordering spring levelers check the "B" dimension for travel range.
2. Please order spring levelers and fittings as separate line items based on part number i.e. **VSL1-20**.
3. If you would like parts factory assembled, please specify on order "factory assembled."

Spring Levelers Groups 1, 2, & 3 – VSL1, VSL2 & VSL3



Spring Leveler Group 1

Spring Leveler Groups 2 & 3

Dimensions																	
Model #		A	B-Travel	C	D	E	F-Thread	H	J	Thickness	Weight						
VSL1-20	in.	1.14	0.20	10-32-F	0.15 [19.0]	0.75 [19.0]	1/2-20 UNF	0.19	0.75 [19.1]	0.43 [10.9]	1.7 oz						
	mm	29.0	5.1					4.8			48 g						
VSL1-40	in.	1.54	0.40					0.39			1.8 oz						
	mm	39.1	10.2					9.9			51 g						
VSL1-80	in.	2.32	0.80					0.77			1.9 oz						
	mm	58.9	20.3					19.6			54 g						
VSL1-120	in.	3.11	1.20					1.16			2.1 oz						
	mm	79.0	30.5					29.5			60 g						
VSL2-40	in.	2.70	0.40					1/8" NPTM			0.24 [28.0]	0.88 [22.2]	5/8-18 UNF	0.80	1.10 [27.9]	0.72 [18.3]	2.6 oz
	mm	68.6	10.1											20.3			74 g
VSL2-120	in.	4.27	1.20											1.57			3.2 oz
	mm	108.5	30.5											39.9			91 g
VSL2-200	in.	5.83	2.00	2.33	4.0 oz												
	mm	148.1	50.8	59.2	113 g												
VSL2-280	in.	7.41	2.80	3.11	4.6 oz												
	mm	188.2	71.1	79.0	130 g												
VSL3-120	in.	4.27	1.20	1/4" NPTM	0.31 [7.9]	1.13 [28.6]	7/8-14 UNF		1.17	1.50 [38.1]				1.02 [25.9]			5.9 oz
	mm	108.5	30.5						29.7								117 g
VSL3-200	in.	5.83	2.00						1.93								7.3 oz
	mm	148.1	50.8						49.0								207 g
VSL3-280	in.	7.41	2.80					2.71	8.7 oz								
	mm	188.2	71.1					68.8	247 g								
VSL3-360	in.	9.00	3.60					3.50	10.1 oz								
	mm	228.6	91.4					88.9	286 g								

Custom Vacuum Spring Levelers - VSL Series

Ideal for OEM engineers and designers

Creative Engineering • Precision Manufacturing • Extensive Application Experience

When off the shelf doesn't work, Vaccon's engineering expertise and manufacturing capabilities can provide custom solutions to your specifications.

Whether it's as simple as modifying a standard product, or more complex requiring new products with precise tolerances, or special materials, Vaccon has the solution.



VP1X-100H vacuum pump with pneumatic blow-off with stainless steel spring leveler.



Our custom made 303 stainless steel spring leveler, vacuum cup and pump assembly attaches to swivel arm (not shown) for carton erecting application in food industry.

When size, shape, material and performance matter, it's Vaccon Vacuum Pumps.



Light Duty Spring Leveler Mounting Brackets

SLBS Series – Mounting brackets for 1" [25mm] extrusions

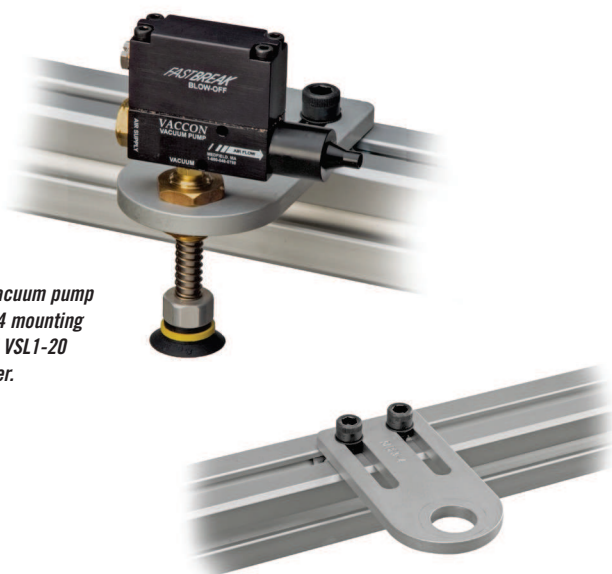
SLBF Series – Mounting brackets for 1.5" [40mm] extrusions

Ideal Applications:

- End-of-arm-Tooling
- Robotic assembly
- Electronics
- Pick and place
- Injection Molding – parts removal

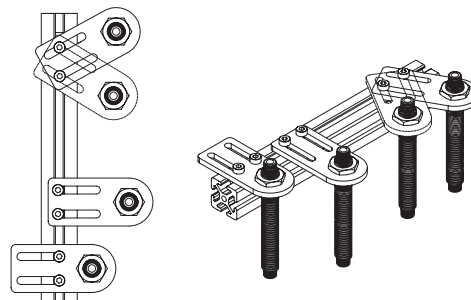
Features/Benefits

- Simple to assemble, modular End-of-Arm Tooling component
- Lightweight – Reduces stress to robotic end effector
- Flexible mounting – Top, sides or bottom of extrusions
- Easily adjusted and repositioned in seconds



VPOX-60H vacuum pump with SLBF1-4 mounting bracket and VSL1-20 spring leveler.

Quick change brackets for flexible mounting positions



Flexible mounting positions

Designed for flexible manufacturing operations, SLBF and SLBS Series mounting brackets attach to the top, sides or bottom of 1" [25mm] and 1.5" [40mm] extrusions.

Easily mounted and adjusted, the Light Duty Spring Leveler Brackets readily rotate, slide or pivot for accurate part alignment. If the part size or process should change, you can re-position the brackets in a matter of seconds.

Using your extrusions or ours, SLBF and SLBS Series mounting brackets connect to our VSL Series Spring Levelers (see page 326) and a variety of our venturi vacuum pumps to create a simple, off-the-shelf End-of-Arm device.

Standard Spring Leveler Brackets:

- **3 Series:** Fits VSL1, 2, 3 spring levelers
- **4 Sizes:** 2", 3", 4" and 5" lengths
- Anodized aluminum

Spring Leveler Bracket Options:

- Spring levelers, suction cups and vacuum fittings
- Swivel attachment – Available for Series 3 only
- Mounting hardware: 1/4" [6.5mm] T-slot compatible or 5/16" [10mm] T-slot compatible

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

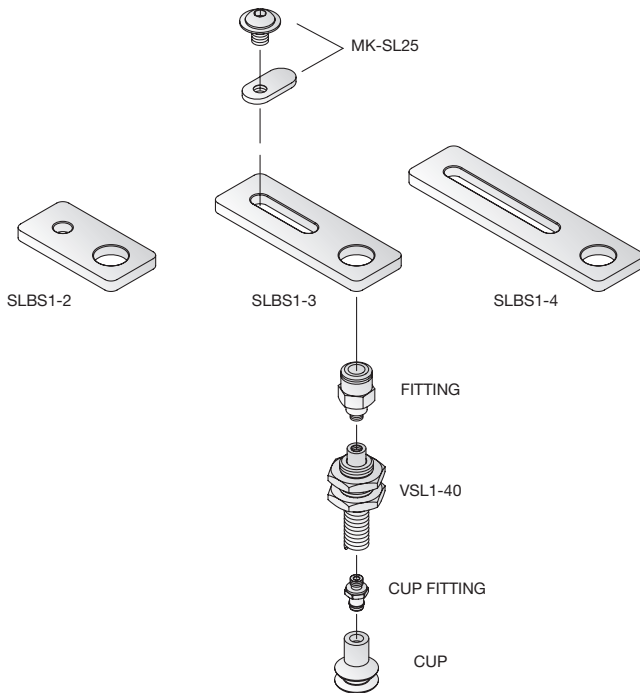
To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Light Duty Spring Leveler Mounting Bracket Assemblies: (Vaccon supplied or customer supplied extrusions)

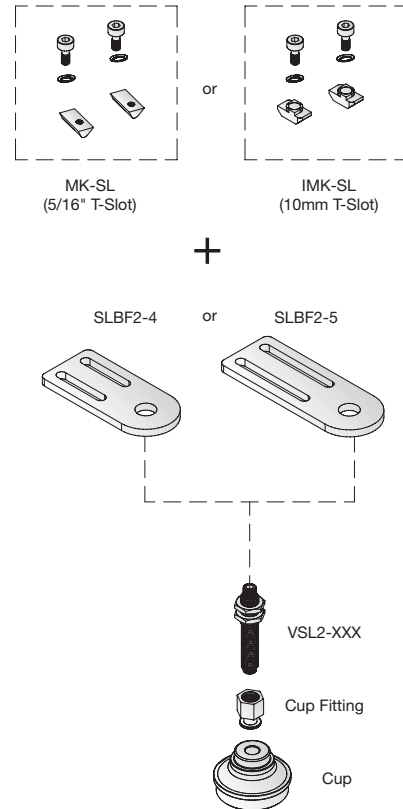
SLBS Series

1" [25mm] extrusion,
1/4" [6.5mm] T-slot compatible



SLBF Series

1.5" [40mm] extrusion,
5/16" [10mm] T-slot compatible



Bracket Model Number	Size	For use with Vaccon Spring Levelers
SLBS1-2	2"	VSL1-(20, 40, 80, 120)
SLBS1-3	3"	VSL1-(20, 40, 80, 120)
SLBS1-4	4"	VSL1-(20, 40, 80, 120)
SLBF1-4	4"	VSL1-(20, 40, 80, 120)
SLBF1-5	5"	VSL1-(20, 40, 80, 120)
SLBS2-2	2"	VSL2-(40, 120, 200, 280)
SLBS2-3	3"	VSL2-(40, 120, 200, 280)
SLBS2-4	4"	VSL2-(40, 120, 200, 280)
SLBF2-4	4"	VSL2-(40, 120, 200, 280)
SLBF2-5	5"	VSL2-(40, 120, 200, 280)
SLBF3-4	4"	VSL3-(120, 200, 280, 360)
SLBF3-5	5"	VSL3-(120, 200, 280, 360)
MK-SL25	N/A	Mounting hardware – 1/4" T-slot
MK-SL	N/A	Mounting hardware – 5/16 T-slot
IMK-SL	N/A	Mounting hardware – 10mm T-slot

How to Specify:

Helpful hints:

1. Choose cup size/style based on part size & weight.
2. Choose spring leveler based on stroke length and bore size.
3. Choose bracket based on reach requirement 2", 3", 4" or 5".
4. Choose cup fitting based on thread size that matches spring leveler thread size (10-32F, 1/8" NPTM, 1/4" NPTM).

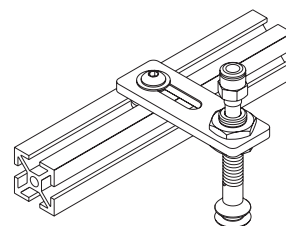
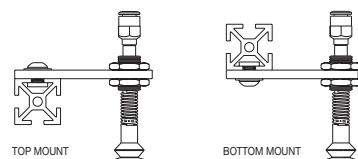
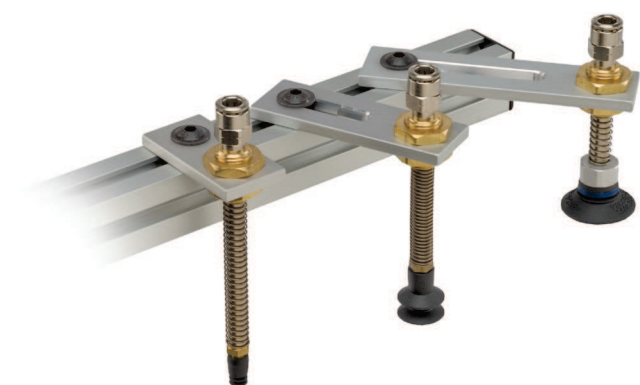
Please order Spring Level Brackets as separate line item based on part number i.e. SLBF1-4

Please order Spring Levelers as separate line item based on part number i.e. VSL1-20.

Please order Mounting Hardware as separate line item based on part number i.e. MK-SL

If you would like parts factory assembled, please specify on order "factory assembled."

Light Duty Spring Leveler Brackets – Series SLBS Series



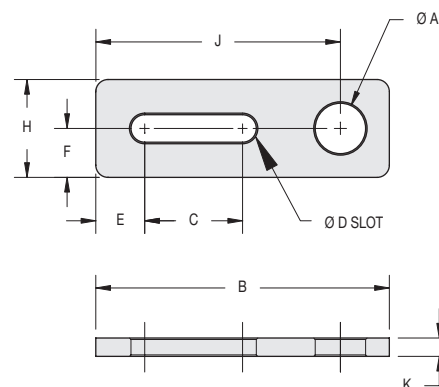
Flexible mounting positions



SLBS1- (2, 3, 4)
with hardware



SLBS2- (2, 3, 4)
with hardware

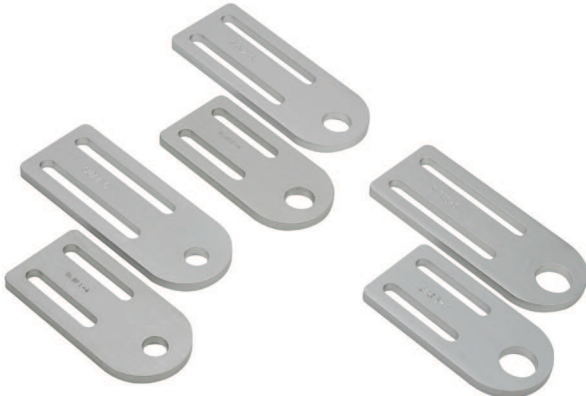


Model #		Dimensions									Weight						
		A-Dia	B	C	D	E	F	H	J	K							
SLBS1-2	in.	0.51 [13.0]	2.00	0.28	0.28 [7.1]	0.50 [12.7]	0.50 [12.7]	1.00 [25.4]	1.50	0.19 [4.8]	0.5 oz						
	mm		50.8	7.1					38.1		14.2 g						
SLBS1-3	in.		3.00	2.00					2.50		0.8 oz						
	mm		76.2	50.8					63.5		22.7 g						
SLBS1-4	in.		4.00	3.00					3.50		0.9 oz						
	mm		101.6	76.2					88.9		25.5 g						
SLBS2-2	in.		0.64 [16.3]	2.00					0.28		0.28 [7.1]	0.50 [12.7]	0.50 [12.7]	1.00 [25.4]	1.50	0.19 [4.8]	0.5 oz
	mm			50.8					7.1						38.1		14.2 g
SLBS2-3	in.	3.00		1.30	2.50	0.8 oz											
	mm	76.2		50.8	63.5	22.7 g											
SLBS2-4	in.	4.00		3.00	3.50	0.9 oz											
	mm	101.6		76.2	88.9	25.5 g											

Light Duty Spring Leveler Brackets – Series SLBF Series

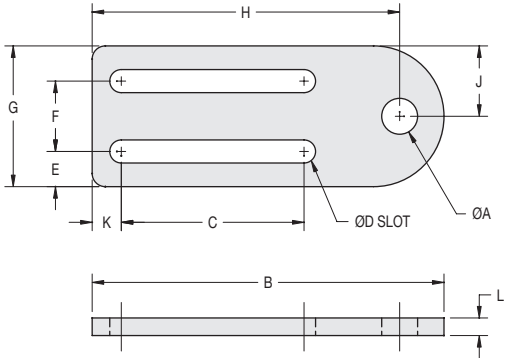


SLBF2- (4, 5)



SLBF1- (4, 5)

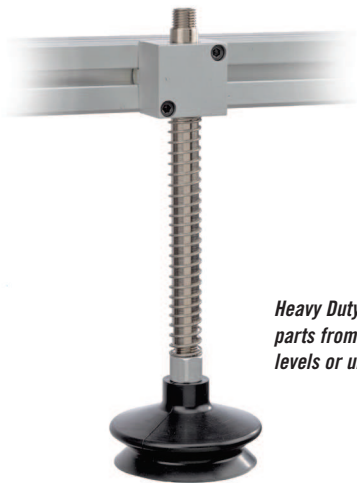
SLBF3- (4, 5)



Dimensions												
Model #		A-Dia	B	C	D	E	F	H	J	K	L	Weight
SLBF1-4	in.	0.51	4.00	1.60	0.33	0.50	1.00	3.37	1.00	0.41	0.25	2.8 oz
	mm	13.0	101.6	40.6				85.6				79.4 g
SLBF1-5	in.	0.51	5.00	2.60				4.37				2.9 oz
	mm	13.0	127.0	66.0				111.0				82.2 g
SLBF2-4	in.	0.64	4.00	1.60				3.37				2.8 oz
	mm	16.3	101.6	40.6				85.6				79.4 g
SLBF2-5	in.	0.64	5.00	2.60				4.37				2.8 oz
	mm	16.3	127.0	66.0				111.0				79.4 g
SLBF3-4	in.	0.89	4.00	1.60				3.37				2.3 oz
	mm	22.6	101.6	40.6				85.6				65.2 g
SLBF3-5	in.	0.89	5.00	2.60				4.37				2.8 oz
	mm	22.6	127.0	66.0				111.0				79.4 g

Heavy Duty Spring Levelers/ Level Compensators

SLB40 (2, 3) - Mounting brackets compatible with 1.5" [40mm] extrusions, 5/16" [10mm] T-slot



Heavy Duty Spring Levelers lift parts from different horizontal levels or uneven surfaces.

When handling sensitive objects such as fruit, Vaccon Spring Levelers feature a soft touch allowing compliance for end-of-arm tools to ensure that all cups make contact. This is especially important when handling large objects such as sheets of plywood that may be warped and the tool has multiple suction cups that must make contact.

Vaccon's Spring Leveler design surpasses the competition. We offer large thru-bores that allow higher vacuum flow to overcome leakage and for rapid evacuation to ensure safe handling operations

For design flexibility, Vaccon offers a large range of sizes and travel lengths 0.2" [5mm] to 3.6" [91mm] to accommodate the necessary over-driving by the lifting mechanism to bring all cups in contact.

Recommended for applications which require lifting heavy loads without deflection, Vaccon Heavy Duty Spring Levelers include a rigid mounting bracket for a strong, solid connection to 1.5" [40mm] extrusions.

Ideal Applications:

- End-of-Arm Tooling
- Press load and unload automotive automation
- Robotic assembly
- Pick and place
- Sheet feeding
- Stamping press transfer

Features/Benefits

- Easy to assemble, modular End-of-Arm Tooling components – Minimal design time required
- Durable – Rigid mounting design for heavy, high impact loads
- Smooth operation – Reduces shock to an object that is being lifted
- Lightweight – To maximize robot payload and increase robot speed
- High flow – Maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates End-of-Arm Tooling tool design

Standard Spring Levelers:

- **2 Series:** 1/8" and 1/4" NPT male thread
- **8 Models:** Travel lengths from 0.40" to 3.60" [10mm to 91mm]
- Nickel plated steel shafts, stainless steel springs, high performance bearings and aluminum body

Spring Leveler Options:

- Suction cups and vacuum fittings
- Swivel attachment – Available for Series 3 only

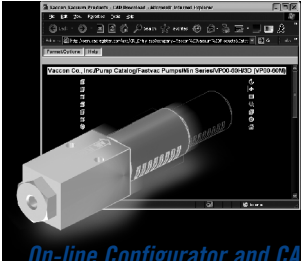
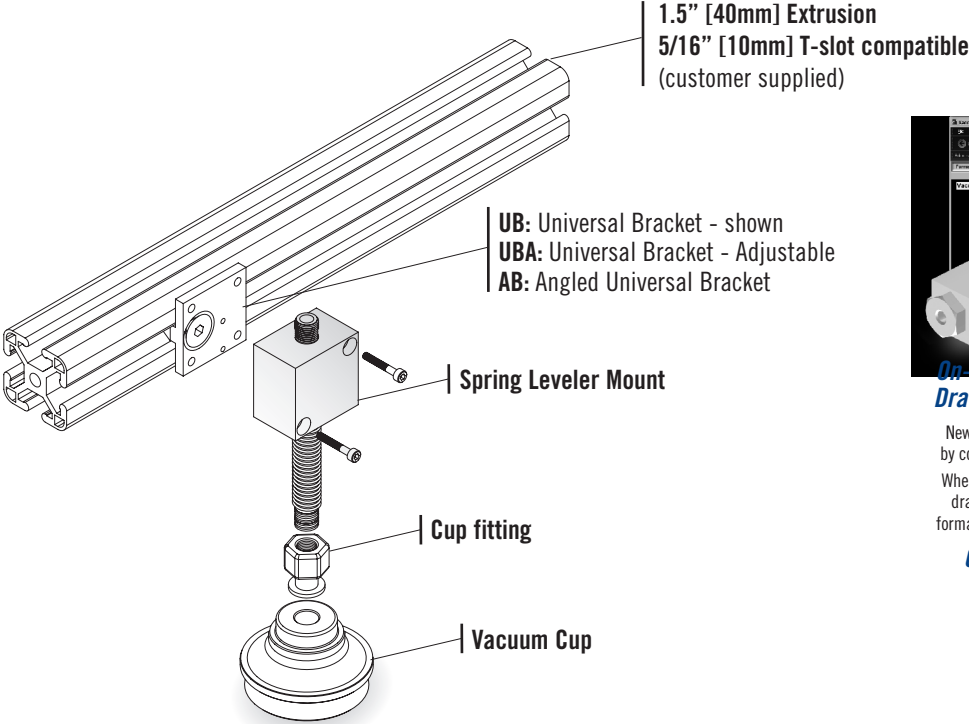
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For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Heavy Duty Spring Leveler Mounting Assembly



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

Part Number	Heavy Duty Spring Leveler Mounting Assembly
Series 2	
SLB40-2-40	0.40" travel, 1/8" NPT male thread
SLB40-2-120	1.20" travel, 1/8" NPT male thread
SLB40-2-200	2.00" travel, 1/8" NPT male thread
SLB40-2-280	2.80" travel, 1/8" NPT male thread

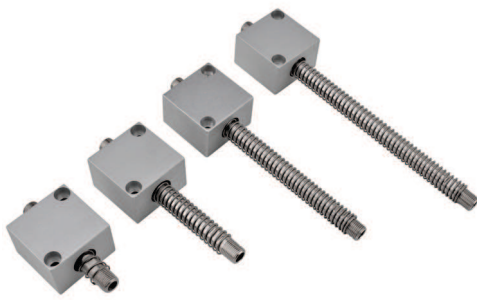
Series 3	
SLB40-3-120	1.20" travel, 1/4" NPT male thread
SLB40-3-200	2.00" travel, 1/4" NPT male thread
SLB40-3-280	2.80" travel, 1/4" NPT male thread
SLB40-3-360	3.60" travel, 1/4" NPT male thread

When ordering spring levelers check the "B" dimension for travel range. Please order spring levelers as separate line items based on part number i.e. **SLB40-2-40**

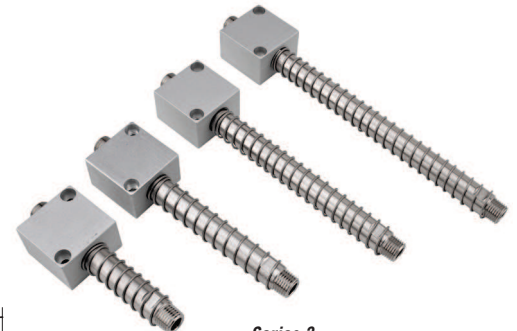
If you would like parts factory assembled, please specify on order "factory assembled."

To attach Heavy Duty Spring Levelers to extrusions, please see page 346 for Universal Bracket mounting options.

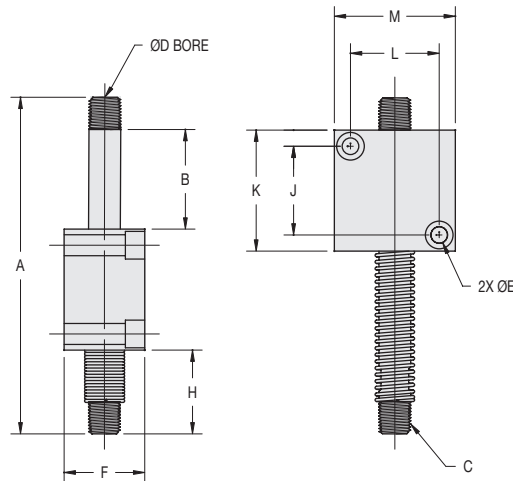
Heavy Duty Spring Levelers – Series SLB40-2, SLB40-3



Series 2
SLB40-2 (40, 120, 200, 280)



Series 3
SLB40-3 (120, 200, 280, 360)



Dimensions											
Model # Series 2		A	B-Travel	C	D	E	F	H	J, L	K, M	Weight
SLB40-2-40	in.	2.70	0.40	1/8" NPT Male	0.24 [6.1]	0.21 [5.2]	1.00 [25.4]	0.40	1.10 [27.9]	1.50 [38.1]	4.7 oz
	mm	68.6	10.2					10.2			133.2 g
SLB40-2-120	in.	4.27	1.20					1.17			4.7 oz
	mm	108.5	30.5					29.7			133.2 g
SLB40-2-200	in.	5.83	2.00					1.93			5.3 oz
	mm	148.1	50.8					49.0			150.3 g
SLB40-2-280	in.	7.41	2.80	2.71	5.9 oz						
	mm	188.2	71.1	68.8	167.3 g						

Dimensions											
Model # Series 3		A	B-Travel	C	D	E	F	H	J, L	K, M	Weight
SLB40-3-120	in.	4.27	1.20	1/4" NPT Male	0.31 [7.9]	0.21 [5.2]	1.00 [25.4]	1.17	1.10 [27.9]	1.50 [38.1]	6.9 oz
	mm	108.5	30.5					29.7			195.6 g
SLB40-3-200	in.	5.83	2.00					1.93			7.9 oz
	mm	148.1	50.8					49.0			224.0 g
SLB40-3-280	in.	7.41	2.80					2.71			9.9 oz
	mm	188.2	71.1					68.8			280.7 g
SLB40-3-360	in.	9.00	3.60	3.49	11 oz						
	mm	228.6	91.4	88.6	311.8 g						

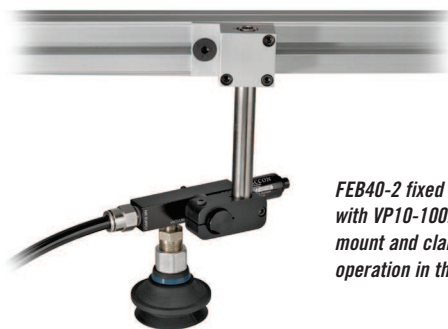


Adjustable, Fixed Extension Shaft & Mounting Brackets

FEB40 (2, 3) - Mounting brackets compatible with 1.5" [40mm] extrusions, 5/16" [10mm] T-slot



FEB40-3 with bellows vacuum cup.



FEB40-2 fixed extension shaft and bracket with VP10-100H-AC – apple core style mount and clamp for robotic assembly operation in the automotive industry.

Adjustable, Fixed Extension Shaft & Bracket is a rigid, non-moving rod that mounts to the top, sides or bottom of 1.5" [40mm] extrusions. Once the shaft is adjusted to meet a specific height requirement, the bracket is clamped into a fixed position.

Designed for flexible manufacturing operations, the FEB40 Series is easily repositioned by simply loosening 2 collar screws and sliding the shaft up or down to meet the new height requirements. For added adjustability, add an adjustable universal bracket to slide the FEB40 left or right.

Combined with Vaccon's apple core style pump, the FEB40 Series extension shaft and bracket becomes a swivel arm assembly that rotates and pivots into any orientation (3 axis positioning) and then locks into place.

Eliminate the Guesswork: Contact Us!

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For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Injection molding
- Pick and place of irregular shaped parts with large surface height differences

Features/Benefits

- Easy to assemble, modular End-of-Arm tool components – minimal design time required
- Fixed positioning for consistent indexing and part retention
- Rigid mounting design for heavy, high impact loads
- Smooth operation – reduces shock to an object that is being lifted
- Lightweight – to maximize robot payload and increase robot speed
- High flow – maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates End-of-Arm tool design

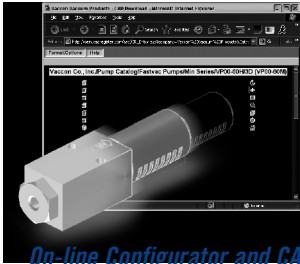
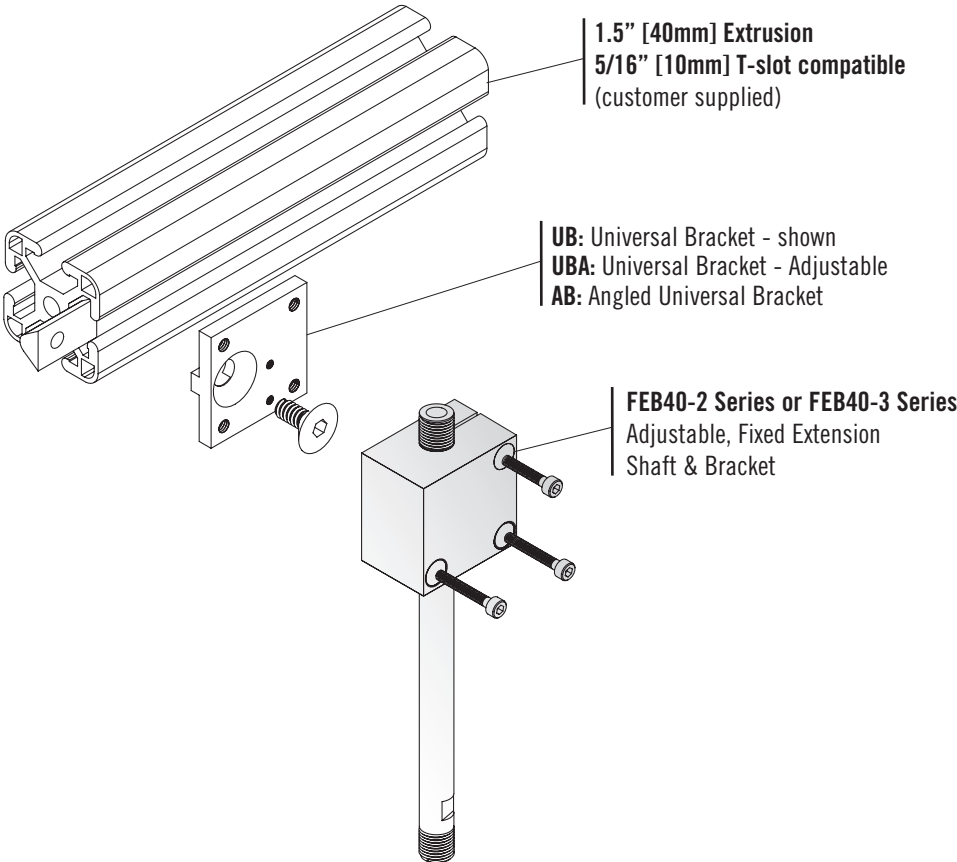
Standard Adjustable, Fixed Extension Shaft & Bracket:

- **2 Series:** 1/8" or 1/4" NPT male
- **8 Shaft Lengths:** 0.40" to 6.7" [10mm to 170mm]
- **Mounting:** Split collar design
- **Material:** Nickel plated steel shafts and aluminum body

Adjustable, Fixed Extension Shaft & Bracket Options:

- Wide variety of suction cups and vacuum fittings
- Apple Core attachment
- Universal brackets for easy attachments and adjustable positioning
- Vacuum Cup Swivel attachment – available for Series 3 only

Adjustable Fixed Length Extension Brackets: FEB40- (2, 3) – Configurations and Options:



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

Part Number	Adjustable, Fixed Extension Shaft & Brackets
Series 2	
FEB40-2-40	0.40" extension length, 1/8" NPT male thread
FEB40-2-120	1.97" extension length, 1/8" NPT male thread
FEB40-2-200	3.51" extension length, 1/8" NPT male thread
FEB40-2-280	5.11" extension length, 1/8" NPT male thread
Series 3	
FEB40-3-120	1.97" extension length, 1/4" NPT male thread
FEB40-3-200	3.51" extension length, 1/4" NPT male thread
FEB40-3-280	5.11" extension length, 1/4" NPT male thread
FEB40-3-360	6.70" extension length, 1/4" NPT male thread

To specify FEB40, choose part number based on extension length desired, thru bore diameter and thread size on each end of shaft.

Please order FEB40's as separate line items based on part number. i.e. FEB40-2-280.

Please order Universal brackets (UB, UBA or AB) as separate line items based on part numbers.

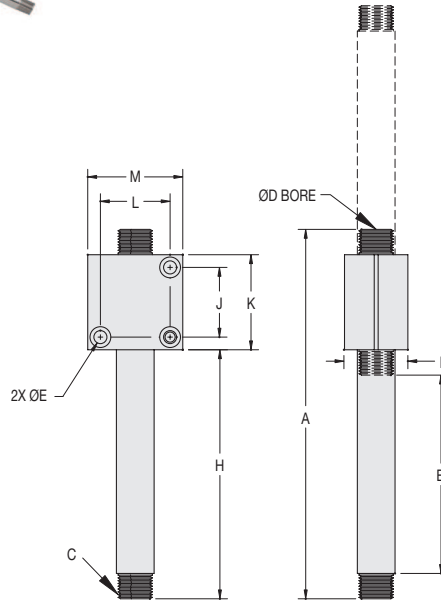
To attach Adjustable, Fixed Extension Shafts & Brackets to extrusions, please see page 346 for Universal Bracket mounting options.

Vaccon End-of-Arm Tooling

Adjustable – Fixed Length Extension Shafts & Brackets



Series 2
FEB40-2- (40, 120, 200, 280)



Series 3
FEB40-3-(120, 200, 280, 360)

Dimensions											
Model #		A	B	C	D	E	F	H	J, L	K, M	Weight
Series 2											
	FEB40-2-40	in.	2.70	0.40	1/8" NPT Male	0.24 [6.1]	0.21 [5.2]	1.00 [25.4]	0.80	1.10 [27.9]	1.50 [38.1]
	mm	68.6	10.2	20.3					133.2 g		
FEB40-2-120	in.	4.27	1.97	2.37					4.7 oz		
	mm	108.5	50.0	60.2					133.2 g		
FEB40-2-200	in.	5.83	3.51	3.91					5.3 oz		
	mm	148.1	89.2	99.3					150.3 g		
FEB40-2-280	in.	7.41	5.11	5.51					5.9 oz		
	mm	188.2	129.8	140.0					167.3 g		

Dimensions											
Model #		A	B	C	D	E	F	H	J, L	K, M	Weight
Series 3											
	FEB40-3-120	in.	4.27	1.97	1/4" NPT Male	0.31 [7.9]	0.21 [5.2]	1.00 [25.4]	2.37	1.10 [27.9]	1.50 [38.1]
	mm	108.5	50.0	60.2					195.6 g		
FEB40-3-200	in.	5.83	3.51	3.91					7.9 oz		
	mm	148.1	89.2	99.3					224.0 g		
FEB40-3-280	in.	7.41	5.11	5.51					9.9 oz		
	mm	188.2	129.8	140.0					280.7 g		
FEB40-3-360	in.	9.00	6.70	7.10					11 oz		
	mm	228.6	170.2	180.3					311.8 g		



Vacuum Cup Swivel Joint

CSJ3 Series 3 – Mounting brackets compatible with 1.5” [40mm] extrusions, 5/16” [10mm] T-slot



CSJ3-14 Vacuum Cup Swivel Joint with FEB40-3 Fixed Extension Shaft & Bracket and vacuum cup.



CSJ3-38

Handling curved surfaces is easy with Vaccon's new Vacuum Cup Swivel Joint. The CSJ3 swivel joints attach to a spring leveler and vacuum cup providing a full 40° angular movement. To control the degree of swivel, simply tighten the collar nut located on top of the swivel joint to restrict movement.

Developed in conjunction with Vaccon spring levelers, the CSJ3 swivel joint assemblies feature exceptionally large flow paths to safely handle porous objects. Depending on height and tooling requirements, Vacuum Cup Swivel Joints are interchangeable with the following Series 3 spring levelers:

VSL3 – Standard spring levelers

SLB40-3 – Heavy duty spring levelers

FEB40-3 – Fixed extension shafts & brackets

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For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Ideal Applications:

- Stamping operations (press load and unload)
- Palletizing
- Handling curved and angular objects

Features/Benefits:

- Durable – rugged all steel design
- Full 40° angular movement (20° in each direction)
- Smooth and secure operation – follows contour of object being lifted
- Lightweight – maximize robot payload and increase robot speed
- High flow – maximize performance and holding force for handling porous objects
- Flexible mounting options facilitates End-of-Arm Tooling tool design

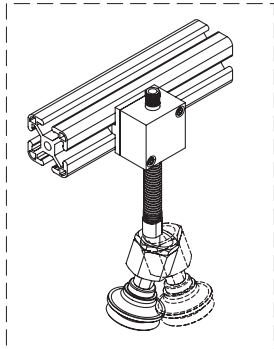
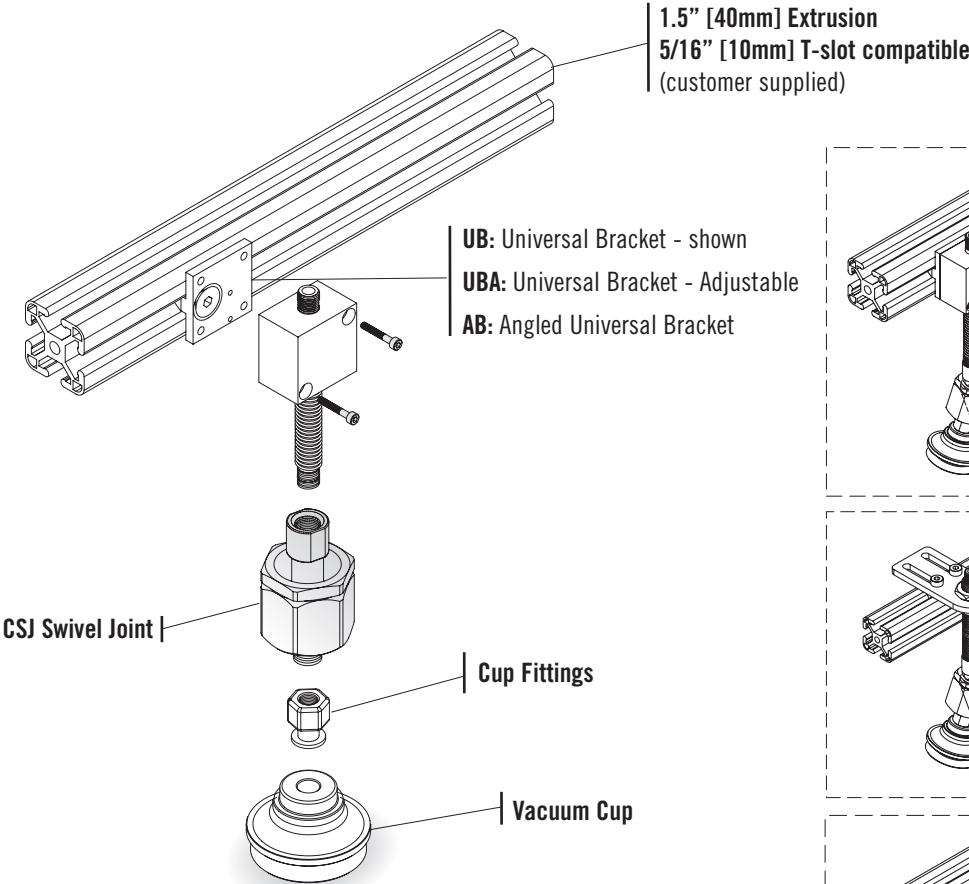
Standard Vacuum Cup Swivel Joint:

- 3 Sizes: 1/4", 3/8", 1/2" NPT male threads – mates to a wide variety of vacuum cup fittings
- 1/4" NPTF top port mates to all the 1/4" NPT Series 3 levelers
- Material: Nickel plated steel, Buna-N O-ring

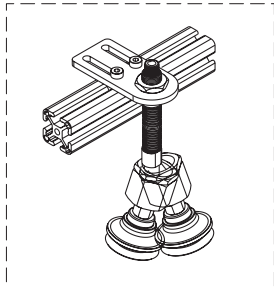
Vacuum Cup Swivel Joint Options:

- Variety of suction cups and vacuum fittings
- Custom designs and stainless steel construction available for food and wash-down applications. Consult factory.

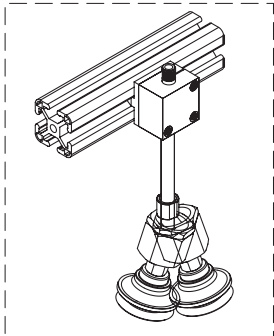
Vacuum Cup Swivel Joint: CSJ-3 Series:



SLB40-3 Series:
Heavy Duty
Spring Levelers



VSL3 Series:
Spring Levelers



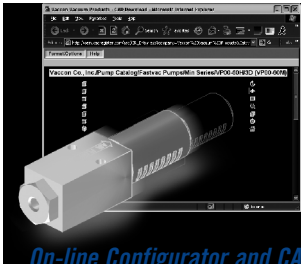
FEB40-3 Series:
Adjustable, Fixed
Extension Shaft
& Bracket

How to Specify:

Part Number	Vacuum Cup Swivel Joint
CSJ3-14	1/4" NPT – male thread
CSJ3-38	3/8" NPT – male thread
CSJ3-12	1/2" NPT – male thread

Choose the swivel joint with the same NPT thread as the vacuum cup fitting.

Order by part number i.e. CSJ3-38

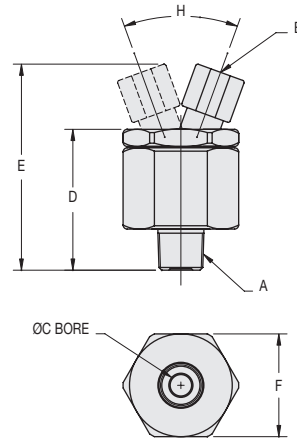
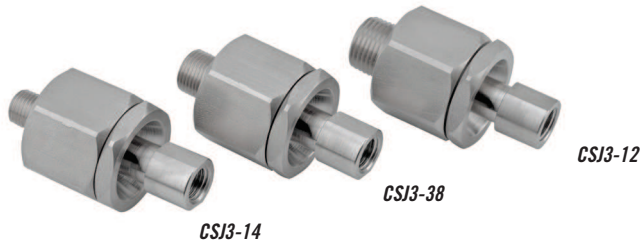


On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

Vacuum Cup Swivel Joint: Series 3 – CSJ-3



Dimensions									
Model #		A Thread	B Thread	C Thru Bore	D	E	F Hex	H Swivel Angle	Weight
CSJ3-14	in.	1/4" NPT	1/4" NPT	0.31 [7.9]	1.96	2.90	1.50 [38.1]	40°	11.7 oz
	mm				49.8	73.7			331.7 g
CSJ3-38	in.	3/8" NPT			2.06	3.00			12.7 oz
	mm				52.3	76.2			360 g
CSJ3-12	in.	1/2" NPT			2.06	3.00			12.7 oz
	mm				52.3	76.2			360 g



Universal Mounting Brackets – Standard, Adjustable, Angled

Compatible with 1" [25mm] and 1.5" [40mm] extrusions



Standard Universal Bracket attaches VP10-100H to extrusion for halogen bulb pick and place operation.



Universal Bracket(Adjustable) with Vacuum cup/Manifold block assembly. See page 356 for Vacuum cup/Manifold block.



Angled Bracket holds VP10-60M vacuum pump and cup, with exposed fastening screw for quick and easy adjustments.

Features/Benefits

- 3 Styles – standard, adjustable or angled with simple erector-set connectivity
- Anodized aluminum – lightweight – reduces stress, extends performance and life of robot
- Modular components add design flexibility – adaptable for all EOAT configurations
- Keyed profile for tight fit – non-rotating – strong holding force
- Mounting kit includes hardware to attach products to extrusions
- Angled brackets have optional adjustment knob, consult factory



UB, UBA, and AB brackets.

Universal Mounting Brackets are simple, lightweight connectors that attach Vaccon vacuum pumps, suction cups, spring levelers and manifold blocks to 1" or 1.5" extrusions.

Available in 3 models, standard, adjustable or angled, our Universal Brackets are keyed to fit securely in 1/4" [6.5mm] or 5/16" [10mm] T-slots, remain square and increase holding force.

Brackets are available with or without mounting hardware.

Standard Universal Bracket: (UB)

The standard UB is a fixed position bracket that is tamper resistant. Once the screw is tightened to the extrusion and a product is mounted to the bracket the fastening screw is now covered and inaccessible to adjust.

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-359-7200 or 800-848-8788 or email engineering@vaccon.com

Universal Bracket Adjustable: (UBA)

An elongated version of the standard bracket, the UBA features an exposed fastening screw that enables quick, easy bracket adjustments along the T-slot.

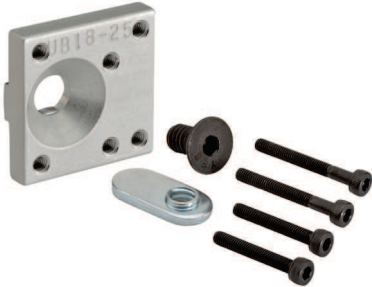
Angled Universal Bracket: (AB)

For operations that require frequent adjustments, the AB models are the easiest to re-position. One side of the bracket holds the vacuum pump, the other side of the bracket attaches to the extrusion enabling the bracket assembly to slide along the T-slot for unlimited adjustments. With the pump located on a 90° angle, the fastening screw is easily accessible at all times. Optional adjustment knobs are available for the AB models.

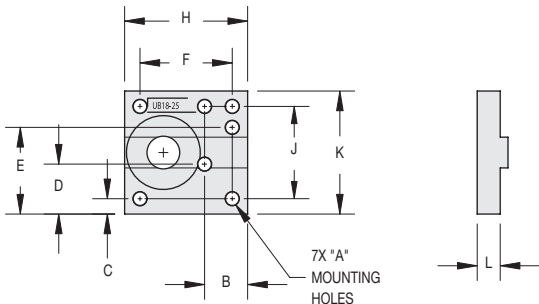
Universal Brackets and Mounting Kits for 1" Extrusions



Bracket only: UB18-25



Bracket & Mounting Kit: MK-UB18-25



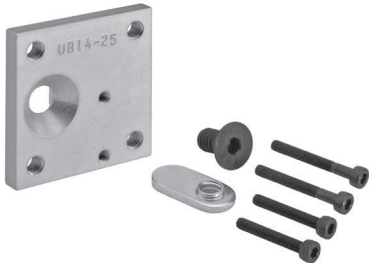
Bracket accepts: Vaccon VP00, VPOX, VP10 & VP1X Series pumps and MB18-25 manifold block.

Model #		Dimensions									Weight
		A- Mtg Holes	B- Mtg Holes	C	D	E	F, J	H, K	L		
UB18-25	Fits 1/4 T-Slot	in	M3 x 0.5	0.35	0.13	0.41	0.70	0.75	1.00	0.19	0.3 oz
	Fits 6.5mm T-Slot	mm		8.9	3.2	10.3	17.8	19.1	25.4	4.7	8.5 g

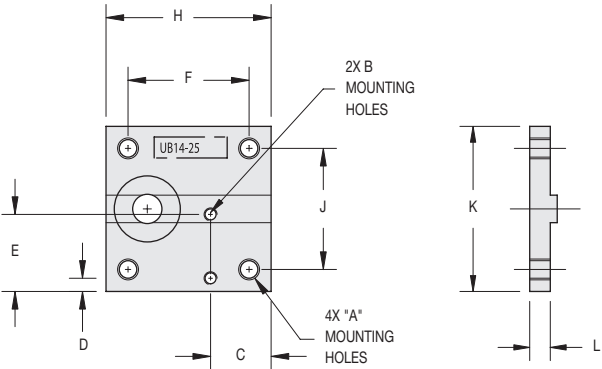
Note 1: Mounting kit includes all hardware to mount pumps and manifold block.
 Note 2: Depending on the pump being mounted, it may be necessary to rotate the bracket 180° from diagram shown.



Bracket only: UB14-25



Bracket & Mounting Kit: MK-UB14-25



Bracket accepts all Vaccon VP Series pumps except the VP00/VPOX Series. Fits All MB14 Series manifold blocks. (Allows larger pumps to be mounted to 1" extrusions).

Model #		Dimensions									Weight
		A- Mtg Holes	B- Mtg Holes	C	D	E	F, J	H, K	L		
UB14-25	Fits 1/4 T-Slot	in	10-32	M3 x 0.5	0.55	0.12	0.70	1.10	1.50	0.19	0.7 oz
	Fits 6.5mm T-Slot	mm			14.0	3.0	17.8	27.9	38.1	4.7	19.8 g

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

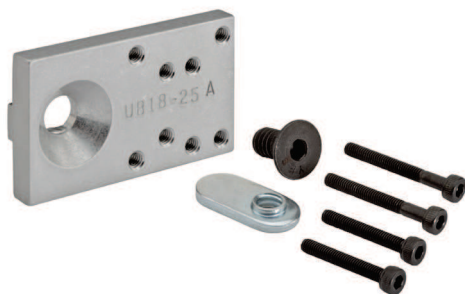
How to Specify:

Bracket only: See Model Numbers: i.e. UB18-25
 Bracket & Mounting Kit: Add "MK" for mounting kit in front of Model Number i.e. MKUB18-25

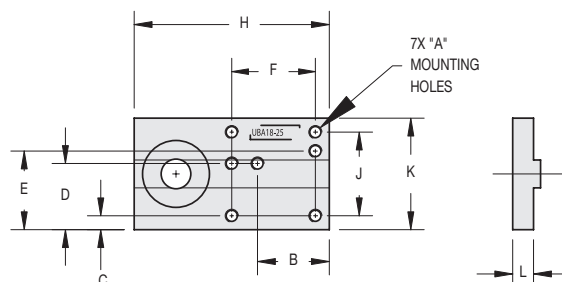
Universal Brackets (Adjustable) and Mounting Kits for 1" Extrusions



Bracket only: UBA18-25



Bracket & Mounting Kit: MK-UBA18-25



Bracket accepts: Vaccon VP00, VPOX, VP01, VP10 & VP1X Series pumps and MB18-25 manifold block.

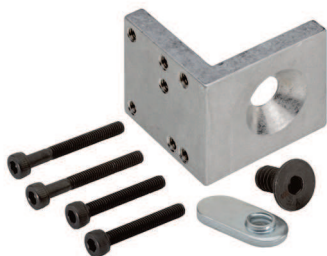
Model #		Dimensions										Weight
		A- Mtg Holes	B- Mtg Holes	C	D	E	F, J	H	K	L		
UBA18-25	Fits 1/4 T-Slot	in	M3 x 0.5	0.64	0.13	0.60	0.70	0.75	1.75	1.00	0.19	0.5 oz
	Fits 6.5mm T-Slot	mm		16.4	3.2	15.2	17.8	19.1	44.5	25.4	4.7	14.2 g

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

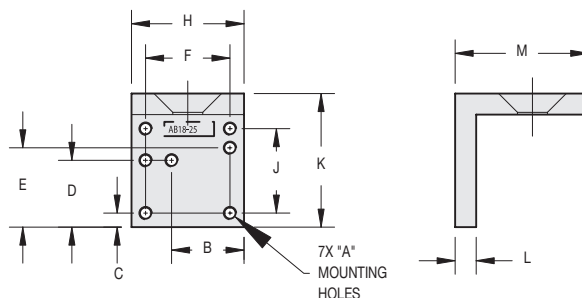
Angled Brackets and Mounting Kits for 1" Extrusions



Bracket only: AB18-25



Bracket & Mounting Kit: MK-AB18-25



Bracket accepts: Vaccon VP00, VPOX, VP01, VP10 & VP1X Series pumps and MB18-25 manifold block.

Model #		Dimensions										Weight
		A- Mtg Holes	B- Mtg Holes	C	D	E	F, J	H, K	L	M		
AB18-25	Fits 1/4 T-Slot	in	M3 x 0.5	0.64	0.13	0.60	0.70	0.75	1.00	0.19	1.19	0.6 oz
	Fits 6.5mm T-Slot	mm		16.4	3.2	15.2	17.8	19.1	25.4	4.7	30.1	17.0 g

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

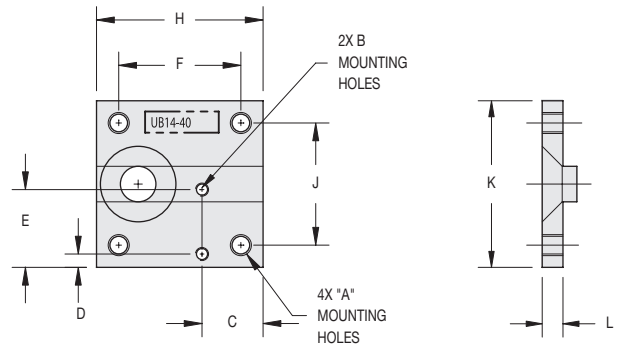
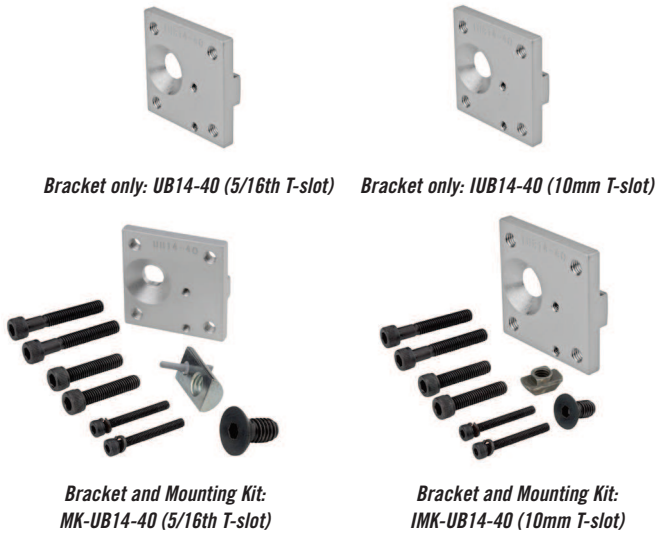
How to Specify:

Bracket only: See Model Numbers: i.e. AB18-25

Bracket & Mounting Kit: Add "MK" for mounting kit in front of Model Number i.e. MKAB18-25

Bracket & Mounting Kit with Adjustment Knob: ABKUB14-40

Universal Brackets and Mounting Kits for 1.5" Extrusions

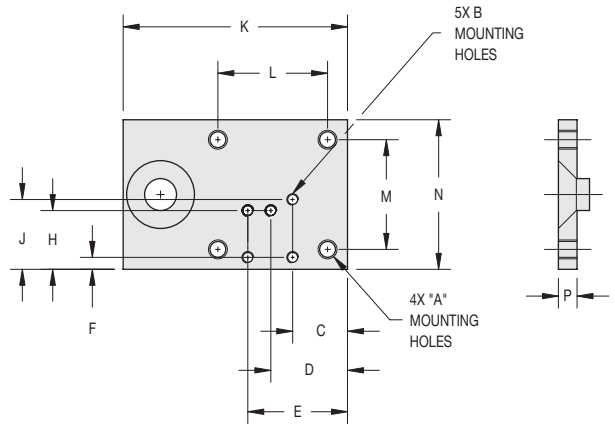
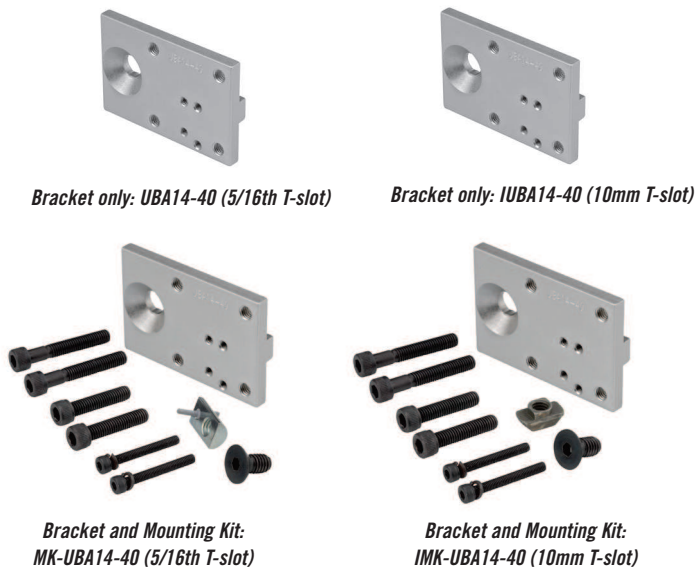


Accepts all VP10 Series pumps and above, and MB14 manifold blocks.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Model #			Dimensions								Weight
			A- Mtg Holes	B- Mtg Holes	C	D	E	F, J	H, K	L	
UB14-40	Fits 5/16 T-Slot	in	10-32	M3 x 0.5	0.55	0.12	0.70	1.10	1.50	0.19	0.7 oz
IUB14-40	Fits 10mm T-Slot	mm			14.0	3.0	17.8	27.90	38.10	4.70	19.8 g

Universal Brackets (Adjustable) and Mounting Kits for 1.5" Extrusions



Accepts all VP Series pumps and MB14 Cup Mounts.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Model #			Dimensions												Weight	
			A- Mtg Holes	B- Mtg Holes	C	D	E	F	H	J	K	L	M	N		P
UBA14-40	Fits 5/16 T-Slot	in	10-32	M3 x 0.5	0.55	0.77	1.00	0.12	0.59	0.70	2.25	1.10	1.10	1.50	0.19	1 oz
IUBA14-40	Fits 10mm T-Slot	mm			14.0	19.5	25.4	3.0	15.0	17.8	57.2	27.9	27.9	38.1	4.7	28.3 g

How to Specify:

Bracket only: See Model Numbers: i.e. UB14-40

Bracket & Mounting Kit: Add "MK" for mounting kit in front of Model Number i.e. MKUB14-40

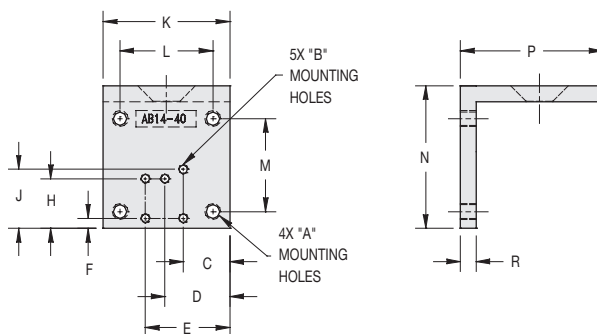
Angled Brackets and Mounting Kits for 1.5" Extrusions



Bracket only: AB14-40



Bracket & Mounting Kit: MK-AB14-40
Available with optional adjustment knob.
See Bracket Construction Sequence below



Accepts all VP Series pumps and MB14 Cup Mounts.

Note 1: Mounting kit includes all hardware to mount pumps and manifold block.

Model #			Dimensions														Weight
			A- Mtg Holes	B- Mtg Holes	C	D	E	F	H	J	K	L	M	N	P	R	
AB14-40	Fits 5/16 T-Slot	in	10-32	M3 x 0.5	0.55	0.77	1.00	0.12	0.59	0.70	1.50	1.10	1.50	1.69	1.69	0.19	1 oz
IAB14-40	Fits 10mm T-Slot	mm			14.0	19.5	25.4	3.0	15.0	17.8	38.1	27.9	38.1	42.8	42.8	4.7	28.3 g

How to Specify:

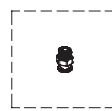
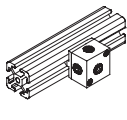
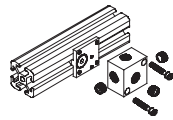
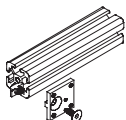
Bracket only: See Model Numbers: i.e. UB14-40

Bracket & Mounting Kit: Add "MK" for mounting kit in front of Model Number i.e. MKUB14-40

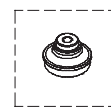
Bracket & Mounting Kit with Adjustment Knob: MK-ABK14-40 (angled brackets only)

Standard, Adjustable & Angled Bracket Construction Sequence:

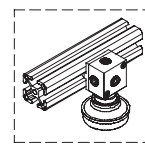
Standard Bracket



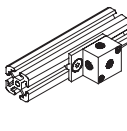
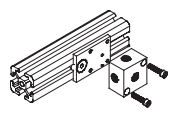
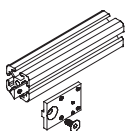
CUP FITTING



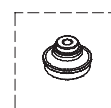
CUP



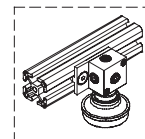
Adjustable Bracket



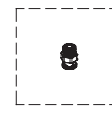
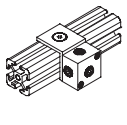
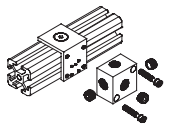
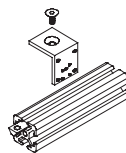
CUP FITTING



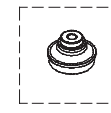
CUP



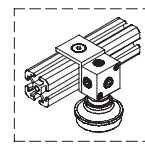
Angled Bracket



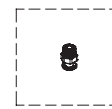
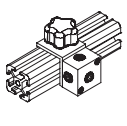
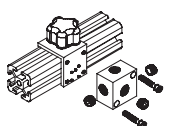
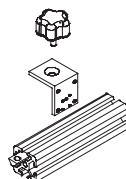
CUP FITTING



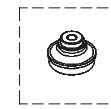
CUP



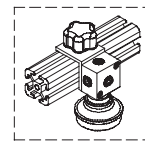
Angled Bracket w/Optional Adjustment Knob

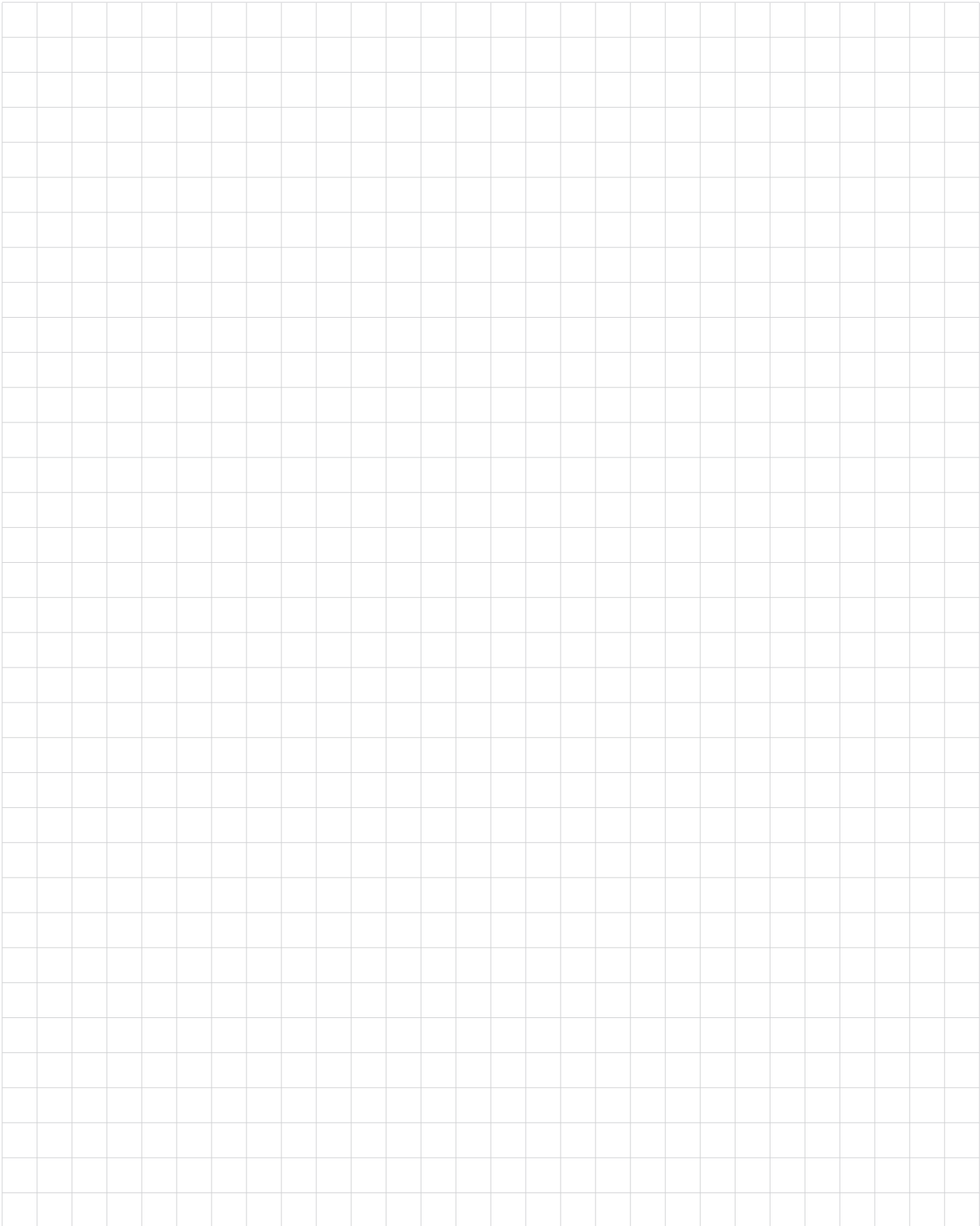


CUP FITTING



CUP





Vacuum Cup Mount/ Manifold Block

Combination Cup Mount and Manifold Block Compatible with 1" [25mm] and 1.5" [40mm] extrusions



VP80-200M distributes vacuum to four cup mount/manifold assemblies to pick up corrugated board.



MB14-40 Vacuum Cup Mount/Manifold Block

Simplify your End-of-Arm tooling devices using our new dual purpose MB Series - Vacuum Cup Mount/Manifold Block. Whether you are mounting suction cups to extrusions and/or distributing vacuum to multiple locations, the MB Series streamlines your design with one multi-functional component.

For design and plumbing flexibility, the MB Series features five vacuum ports and three mounting options that easily connect vacuum pumps and cups to 5/16" [10mm] or 1/4" [6.5mm] T-slot extrusions. Extra vacuum ports allow optional accessories to be directly mounted to the manifold block i.e. vacuum gauges or remotely plumbed such as vacuum switches, sensors or blow-off capabilities.

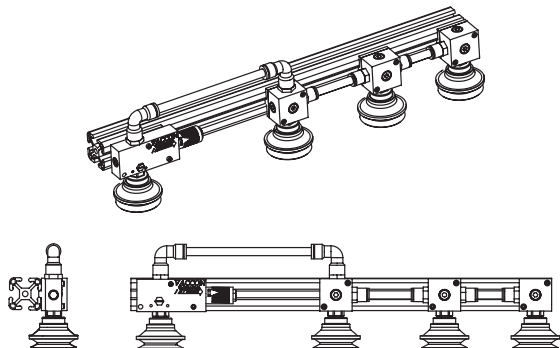
High vacuum flow is critical for handling porous objects. Vaccon offers up to 3/4" NPT ports to ensure high flow paths.

Options:

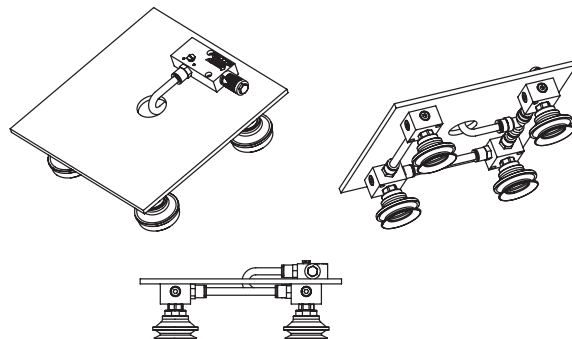
3 Mounting port options: standard, bottom or face mount

9 Models: 1/8" to 3/4" NPT

3 Universal brackets: fixed, adjustable or angled



The vacuum cup mount/manifold easily connects to the T-slot extrusion using a Universal Bracket (see Page 346).



For non T-slot applications, attach the vacuum cup mount/manifold to the underside of a flat tooling plate head.

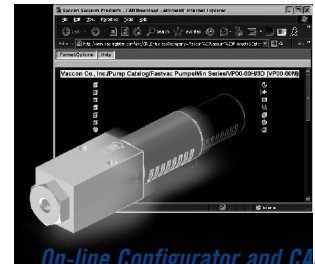
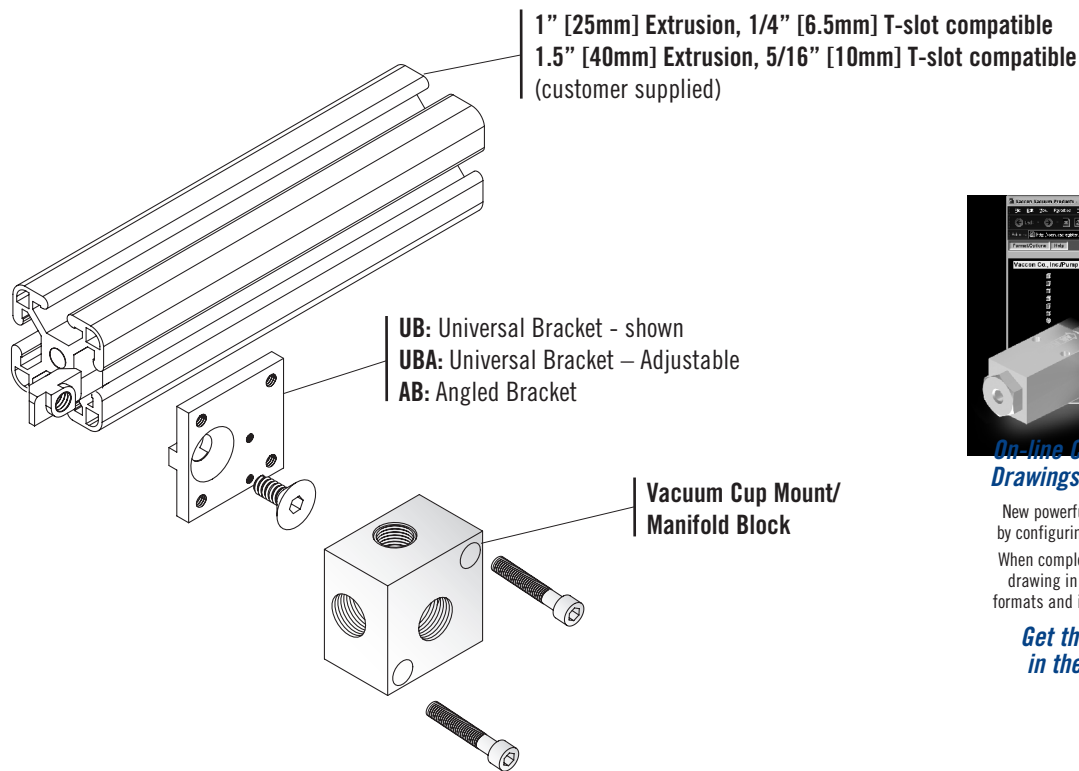
Ideal Applications:

- Robotic End Effectors/End-of-Arm Tooling
- Removing products from molds
- Sheet metal transfer
- Palletizing of work pieces
- Nesting fixtures
- Assembly fixtures
- Pick and place

Features/Benefits

- Direct mount for cups – maintains consistent height for all cups
- High performance – full vacuum flow out performs competition
- Easy to assemble, modular End-of-Arm Tooling components – minimal design time required
- Flexible design – 5 ports for easy plumbing, allows side entry vacuum, adaptable for all End-of-Arm Tooling configurations
- Square shape – easily mounts to any side of the extrusion, products stay square and flush
- Vacuum lines may be connected in series or home run plumbed to streamline the tooling fixture
- Anodized aluminum – lightweight, extends performance and life of robot, allows higher speeds
- Large thread sizes provides high flow rates for safe handling of porous objects

Vacuum Cup Mount/Manifold Configuration & Specifications:



On-line Configurator and CAD Drawings @ www.vaccon.com

New powerful design tool saves you time by configuring the pump you need on-line. When complete, simply download the CAD drawing in any one of 13 different CAD formats and insert it right into your design.

Get the pump you need, in the format you like!

How to Specify:

Part Number	Vacuum Cup Mount/Manifold Block
MB18-25	1/8" NPT – All Female Ports – recommended for 1" (25mm) extrusions
MB14-40	1/4" NPT – All Female Ports – recommended for 1.5" (40mm) extrusions
MBB14-40	1/4" NPT – Bottom Male Port – recommended for 1.5" (40mm) extrusions
MBB38-40	3/8" NPT – Bottom Male Port – recommended for 1.5" (40mm) extrusions
MBB12-40	1/2" NPT – Bottom Male Port – recommended for 1.5" (40mm) extrusions
MBF14-40	1/4" NPT – Face Male Port – recommended for 1.5" (40mm) extrusions
MBF38-40	3/8" NPT – Face Male Port – recommended for 1.5" (40mm) extrusions
MBF12-40	1/2" NPT – Face Male Port – recommended for 1.5" (40mm) extrusions
MBF34-40	3/4" NPT – Face Male Port – recommended for 1.5" (40mm) extrusions

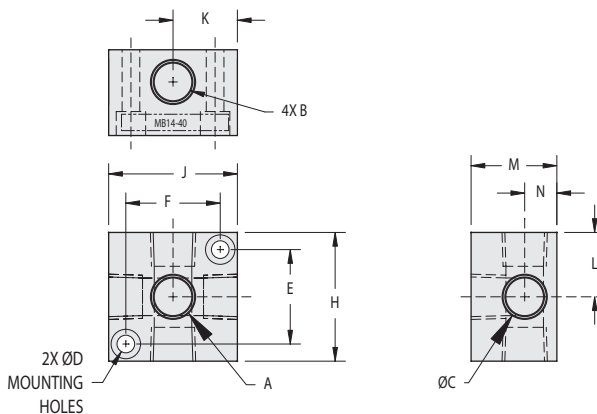
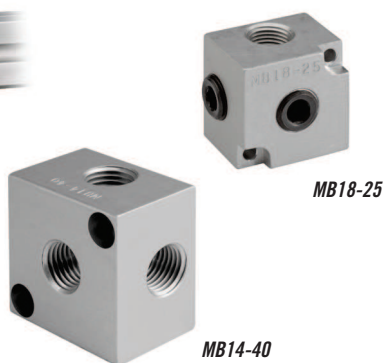
Please note: All vacuum cup mount/manifolds include 3 flush plugs to seal extra ports.

Please order Vacuum cup mount/manifolds as separate line items based on part number i.e. **MBB12-40**

If you would like parts factory assembled, please specify on order "**factory assembled.**"

To attach Vacuum Cup Mount/Manifold to extrusion, please see page 346 for Universal Bracket mounting options.

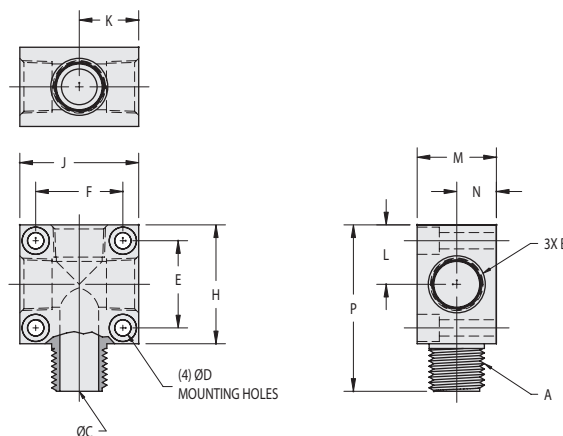
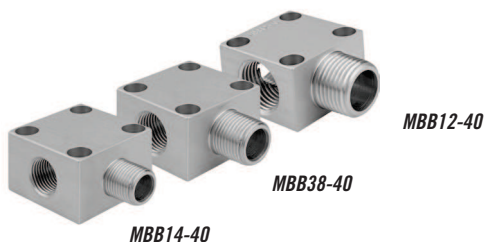
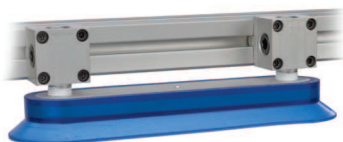
Vacuum Cup Mount/Manifold – All Female ports : MB 14-40, 18-25



Model #	Dimensions - Fits 1" [25mm] Extrusions											Weight
	A-Thread	B- Thread	C	D	E, F	H, J	K, L	M	N	P		
MB18-25	in	1/8" NPT	1/8" NPT	0.34	0.10	0.75	1.00	0.50	1.00	0.25	N/A	1.2 oz
	mm	G 1/8	G 1/8	8.6	3.3	19.1	25.4	12.7	25.4	6.4	N/A	34 g

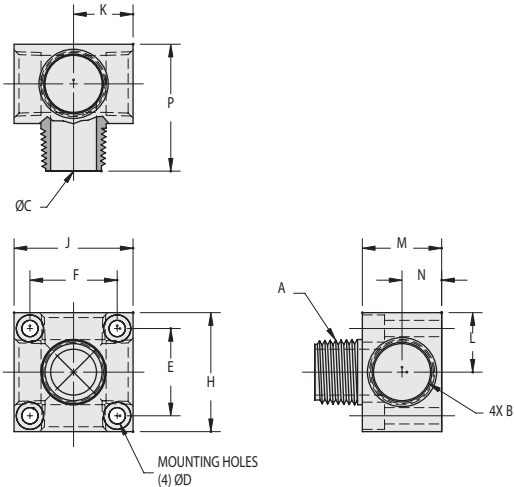
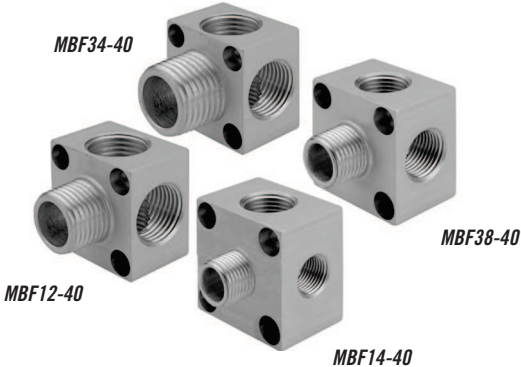
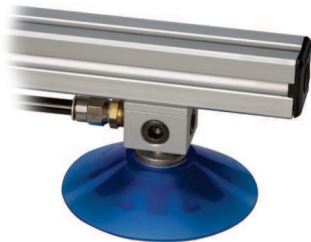
Model #	Dimensions - Fits 1.5" [40mm] Extrusions											Weight
	A-Thread	B- Thread	C	D	E, F	H, J	K, L	M	N	P		
MB14-40	in	1/4" NPT	1/4" NPT	0.44	0.21	1.10	1.50	0.50	1.00	0.38	N/A	2.6 oz
	mm	G 1/4	G 1/4	11.1	5.2	27.9	38.1	12.7	25.4	9.53	N/A	73.7 g

Vacuum Cup Mount/Manifold – Bottom Male ports : MBB (14, 38, 12) -40



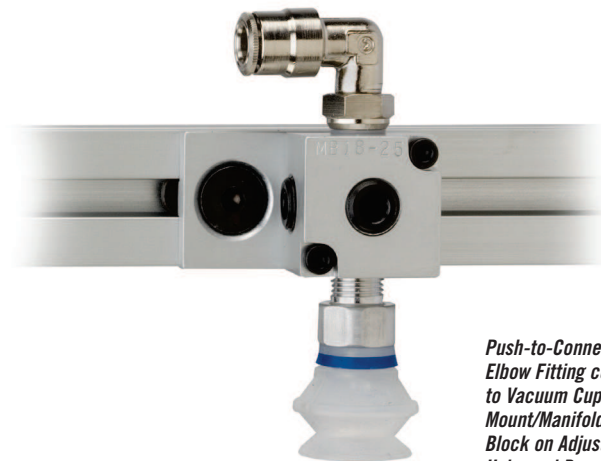
Model #	Dimensions - Fits 1.5" [40mm] Extrusions											Weight
	A-Thread	B- Thread	C	D	E, F	H, J	K, L	M	N	P		
MBB14-40	in	1/4" NPT	1/4" NPT	0.34	0.21	1.10	1.50	0.50	1.00	0.50	2.00	2.6 oz
	mm	G 1/4	G 1/4	8.6							50.8	73.7 g
MBB38-40	in	3/8" NPT	3/8" NPT	0.45	[5.2]	[27.9]	[38.1]	[12.7]	[25.4]	[12.7]	2.10	2.9 oz
	mm	G 3/8	G 3/8	11.4							53.3	82.2 g
MBB12-40	in	1/2" NPT	1/2" NPT	0.58	14.7						2.10	1.9 oz
	mm	G 1/2	G 1/2								53.3	53.9g

Vacuum Cup Mount/Manifold – Face Male Port : MBF (14, 38, 12, 34) -40



Model #	Dimensions - Fits 1.5" [40mm] Extrusions										Weight																			
		A-Thread	B- Thread	C	D	E, F	H, J	K, L	M	N		P																		
MBF14-40	in	1/4" NPT	1/4" NPT	0.34	0.21 [5.2]	1.10 [27.9]	1.50 [38.1]	0.50 [12.7]	1.00 [25.4]	0.50 [12.7]	1.50	2.6 oz																		
	mm	G 1/4	G 1/4	8.6							38.1	73.7 g																		
MBF38-40	in	3/8" NPT	3/8" NPT	0.45							0.21 [5.2]	1.10 [27.9]	1.50 [38.1]	0.50 [12.7]	1.00 [25.4]	0.50 [12.7]	1.50	2.7 oz												
	mm	G 3/8	G 3/8	11.4													38.1	76.5 g												
MBF12-40	in	1/2" NPT	1/2" NPT	0.58													0.21 [5.2]	1.10 [27.9]	1.50 [38.1]	0.50 [12.7]	1.00 [25.4]	0.50 [12.7]	1.60	1.7 oz						
	mm	G 1/2	G 1/2	14.7																			40.6	48.2g						
MBF34-40	in	3/4" NPT	3/4" NPT	0.75																			0.21 [5.2]	1.10 [27.9]	1.50 [38.1]	0.50 [12.7]	1.00 [25.4]	0.50 [12.7]	1.60	1.8 oz
	mm	G 3/4	G 3/4	19.1																									40.6	51.0 g

Push-to-Connect Fittings



Push-to-Connect Male Elbow Fitting connects to Vacuum Cup Mount/Manifold Block on Adjustable Universal Bracket

Features/Benefits

- Ready to use, easy to install
- Compact and lightweight
- Fast assembly, disassembly and reassembly – minimal downtime
- No tools required
- No flow restrictions – quick cycle time
- Elbow or elbow angle for tight spaces
- Durable – all metal, solid brass nickel-plated construction
- Tubing sizes: 1/8" to 1/2" OD
- Male or female NPT threads (1/8" to 1/2" NPT)

Push-to-Connect (PTC) fittings are a robotic, End-of-Arm tooling component that connects all Vaccon vacuum pumps, cups, and spring levelers to each other or tubing.

Vaccon provides complete End-of-Arm tooling devices that can be ordered pre-assembled and tested at the factory or shipped in component format for on-site assembly.

Specifications:

Fitting Material:	Brass, nickel plated, PTFE seal ring, Buna-N o-ring
Operating Pressure:	0-250 psi
Operating Temperature:	0° F to 160° F [-18° C to 71° C]
Vacuum rating:	29"Hg
Fluid:	Compressed air

Eliminate the Guesswork: Contact Us!

Vacuum technology isn't an exact science. To ensure proper product selection, Vaccon offers free application engineering assistance, a 30 Day Test & Evaluation Program or you can send sample products to our in-house test facility and we will test and size a pump for you.

To download a complete set of drawings in 13 different CAD formats, please visit our website at www.vaccon.com

For more information or technical assistance, please call 508-358-7200 or 800-848-8788 or email engineering@vaccon.com

PTC Fittings: Male Straight



Model #	Male Straight Fittings	
VSLF-02-32MS	Straight PTC fitting 1/8" OD x 10-32 NPT Male	Connect to VSL1 Spring Levers
VSLF-04-32MS	Straight PTC fitting 1/4" OD x 10-32 NPT Male	
VMPF-04-14MS	Straight PTC fitting 1/4" OD x 1/4" NPT Male	Connect to Vaccon vacuum pumps, and vacuum cup mount/manifold blocks
VMPF-04-38MS	Straight PTC fitting 1/4" OD x 3/8" NPT Male	
VMPF-06-14MS	Straight PTC fitting 3/8" OD x 1/4" NPT Male	
VMPF-06-38MS	Straight PTC fitting 3/8" OD x 3/8" NPT Male	
VMPF-06-12MS	Straight PTC fitting 3/8" OD x 1/2" NPT Male	
VMPF-08-38MS	Straight PTC fitting 1/2" OD x 3/8" NPT Male	
VMPF-08-12MS	Straight PTC fitting 1/2" OD x 1/2" NPT Male	

PTC Fittings: Male Elbow



Model #	Male Elbow Fittings	
VSLF-04-32ME	Elbow PTC fitting 1/4" OD x 10-32 Male	Connect to VSL1 Spring Levers
VMPF-04-18ME	Elbow PTC fitting 1/4" OD x 1/8" NPT Male	Connect to Vaccon vacuum pumps, spring levelers and vacuum cup mount/manifold blocks
VMPF-04-14ME	Elbow PTC fitting 1/4" OD x 1/4" NPT Male	
VMPF-06-14ME	Elbow PTC fitting 3/8" OD x 1/4" NPT Male	
VMPF-06-38ME	Elbow PTC fitting 3/8" OD x 3/8" NPT Male	
VMPF-06-12ME	Elbow PTC fitting 3/8" OD x 1/2" NPT Male	
VMPF-08-38ME	Elbow PTC fitting 1/2" OD x 3/8" NPT Male	
VMPF-08-12ME	Elbow PTC fitting 1/2" OD x 1/2" NPT Male	

PTC Fittings: Female Straight

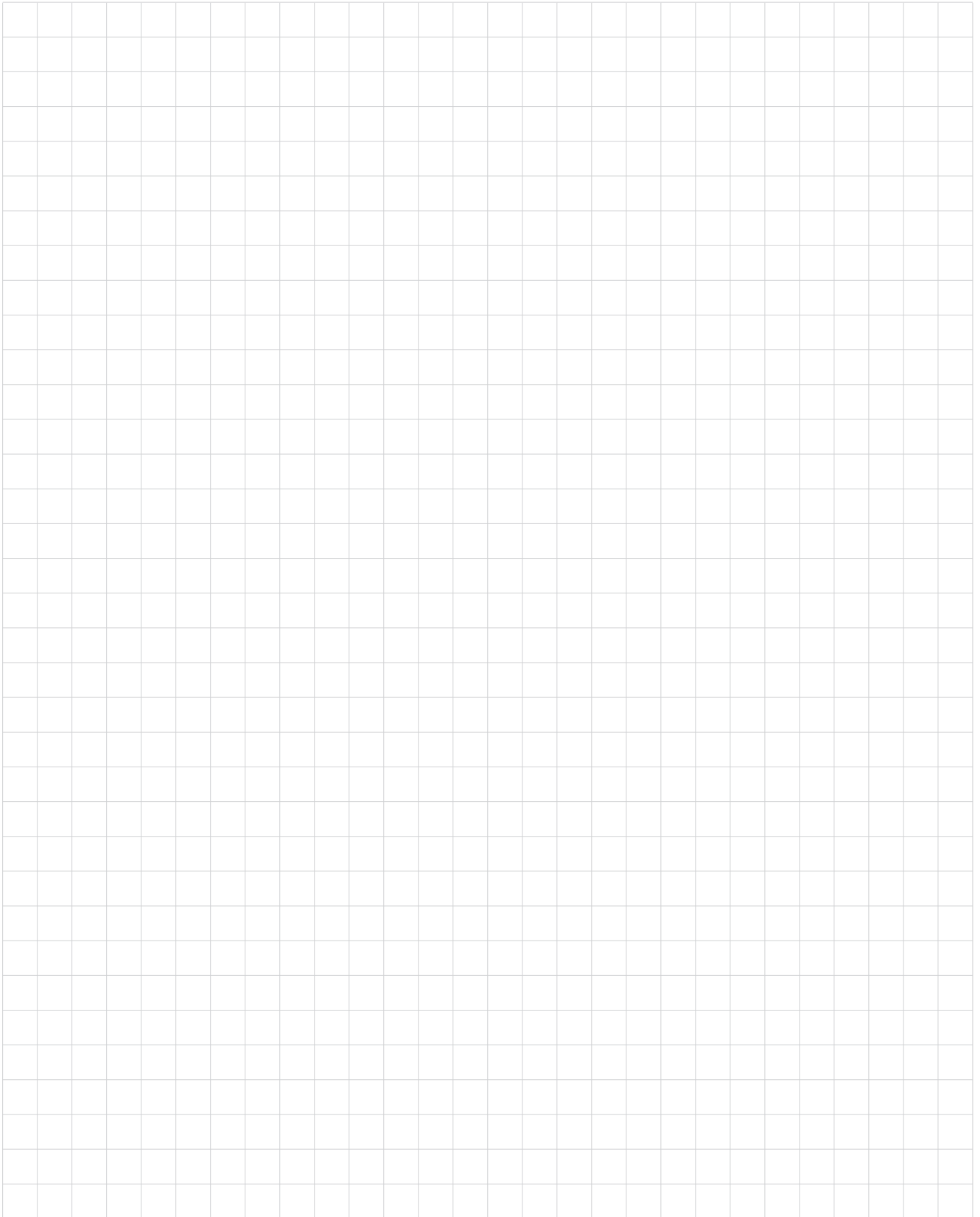


Model #	Female Straight Fittings	
VSLF-02-18FS	Straight PTC fitting 1/8" OD x 1/8" NPT Female	Connect to VSL2 Spring Levers
VSLF-04-18FS	Straight PTC fitting 1/4" OD x 1/8" NPT Female	
VSLF-06-18FS	Straight PTC fitting 3/8" OD x 1/8" NPT Female	
VSLF-04-14FS	Straight PTC fitting 1/4" OD x 1/4" NPT Female	Connect to VSL3 Spring Levers
VSLF-06-14FS	Straight PTC fitting 3/8" OD x 1/4" NPT Female	
VSLF-06-38FS	Straight PTC fitting 3/8" OD x 3/8" NPT Female	

PTC Fittings: Female Elbow



Model #	Female Elbow Fittings	
VSLF-04-18FE	Elbow PTC fitting 1/4" OD x 1/8" NPT Female	Connect to VSL2 Spring Levers
VSLF-04-14FE	Elbow PTC fitting 1/4" OD x 1/4" NPT Female	Connect to VSL3 Spring Levers
VSLF-06-14FE	Elbow PTC fitting 3/8" OD x 1/4" NPT Female	
VSLF-08-38FE	Elbow PTC fitting 1/2" OD x 3/8" NPT Female	



*Reliable in conditions that cause others to fail.
Vaccon pumps won't clog or lose suction.*

"Vaccon Pumps – Designed for Dirt"



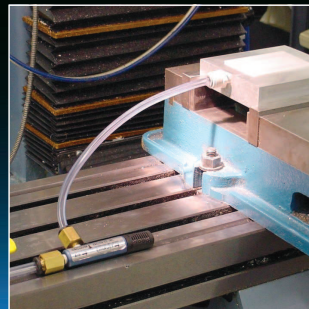
Robotic palletizing application:
worn wooden slip sheet handling



Foundry application: VDF pump
solves maintenance problem



Refractory application: VDF pump
pick and place operation



Vacuum chuck application: J-Series
– vacuum holding for machine shop

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RoHS Compliant

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