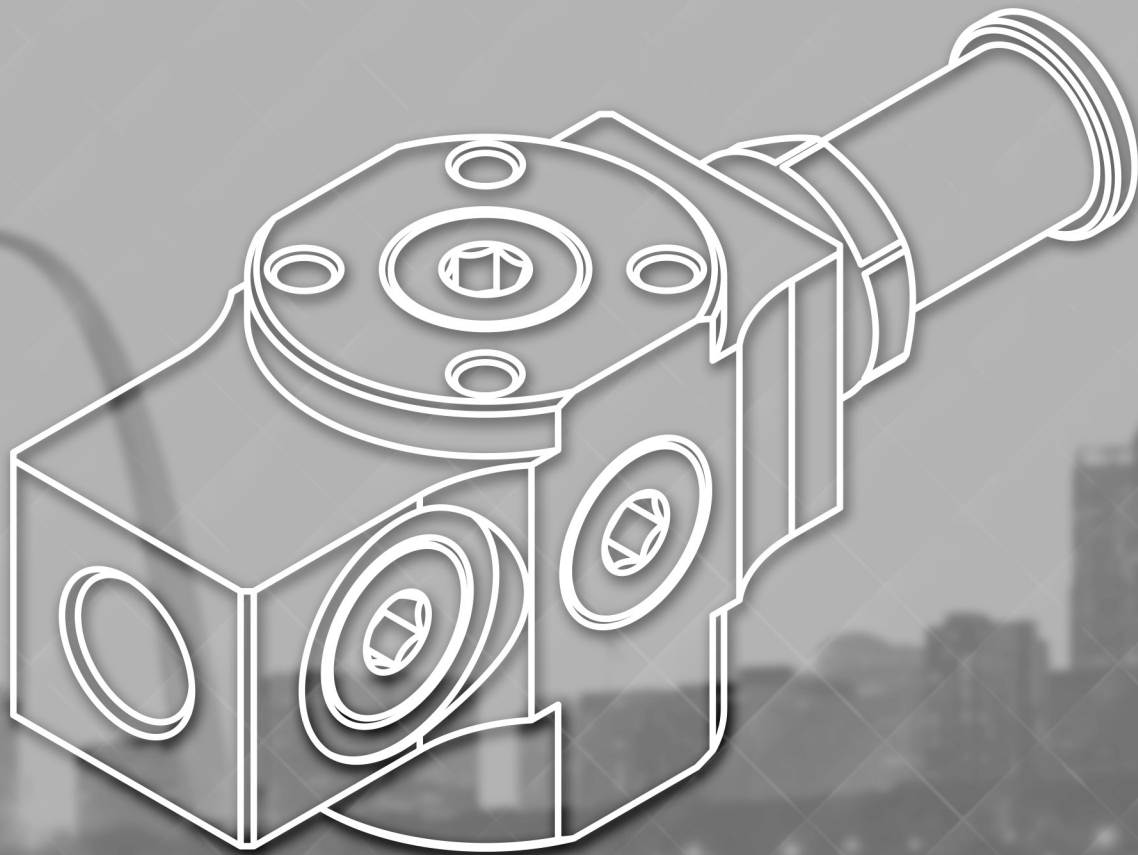


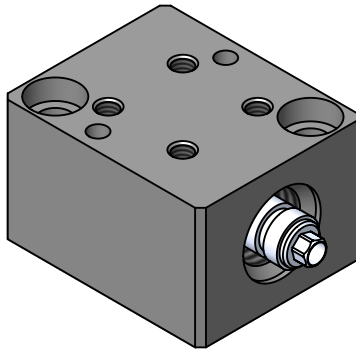
# SECTION 12

## VACUUM GRIPPERS

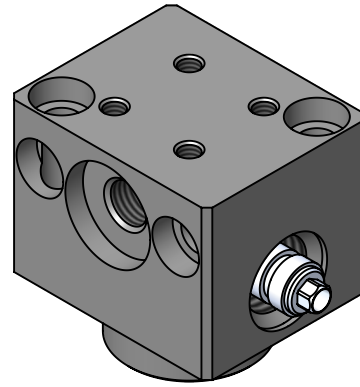


***EDCO USA***<sup>®</sup>

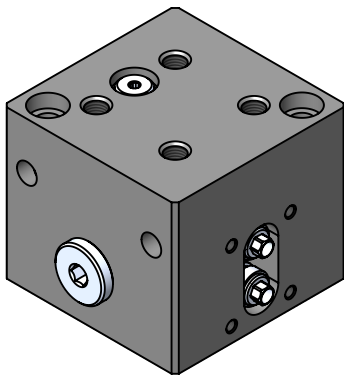
# VACUUM GRIPPERS



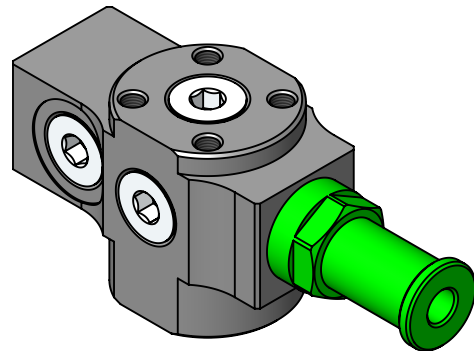
**VG18**



**VG38**

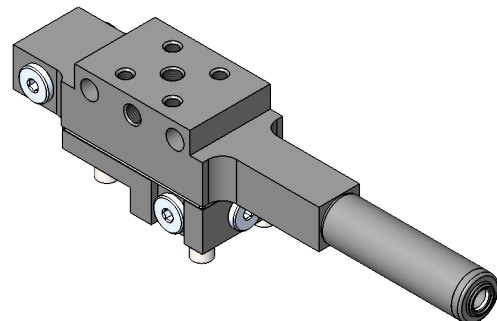


**DVG**



**VGP**

General Information	12:3 - 12:4
Selection Guide	12:4 - 12:5
VG18	12:6
VG38	12:7
VG Options	12:8
VG Mounts	12:9
DVG : Dual Vacuum Grippers	12:11
DVG Options	12:11- 12:13
DVG Mounts	12:12
VGP: Coaxial Venturi Vacuum Gripper Pumps	12:13
VGP Mounts	12:14
Cup Fitting Adapters	12:15
VG Performance	12:15 - 12:16
VG-G12: Vacuum Gripper w/ 1/2" Base	12:17
VG-G12 Mounts	12:18



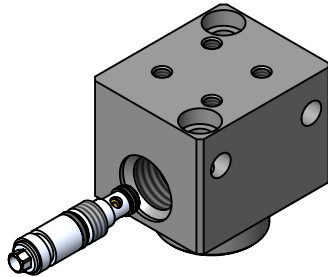
**VG-G12**

## VACUUM GRIPPERS

### EDCO ER L-SERIES COAXIAL VENTURI TECHNOLOGY

The ER L-series nozzles have been specifically tuned and optimized to provide the high-flow mid-range vacuum that a typical industrial system requires. This vacuum pump can efficiently handle a wide variety of both porous and non-porous applications at only 72 psi (5 bar) air supply.

Additional benefits of EDCO ER L-series venturis are rugged metal nozzles, no internal flap valves to foul and a large nozzle throat gap that allows ingested debris to pass through and out the exhaust. When coupled with the PP or LP purge options, debris too large to pass can be expelled between cycles.



## CENTRALIZED SYSTEMS

A centralized system has one “central” vacuum pump supplying all vacuum cups in the system so all cups operate at the same system vacuum level. This vacuum level is affected by the flow capacity of the vacuum pump and the aggregate system leakage. System internal volume is increased by the necessary vacuum hoses, manifolds and tubing in a centralized system. The increased volume results in a longer evacuation time for the system to attain a safe vacuum level.

Centralized vacuum pumps are necessarily oversized to provide enough extra vacuum flow capacity to overcome normal porosity and cup wear. However, in instances where there is gross leakage caused by non-sealing vacuum cups due to missing or damaged work pieces, pump capacity can't overcome the leakage and system vacuum level can be reduced to the point where it is unsafe or impossible to pick up the work pieces. Interdependence of all suction cups in a system is not desirable so EDCO has developed components such as Flow Sensor Valves and Dual-Flow valves to make centralized systems perform better by limiting the flow loss from non-sealing suction cups.

Part quick-release, or blow-off, is accomplished by injecting a blast of compressed air through an isolation check valve and into the centralized vacuum system somewhere prior to the suction cups. This pulse of air quickly dissipates system vacuum. Since flow follows the path of least resistance, most of the air can flow out of the pump exhaust instead of to the suction cups.

## OPERATING PRESSURE

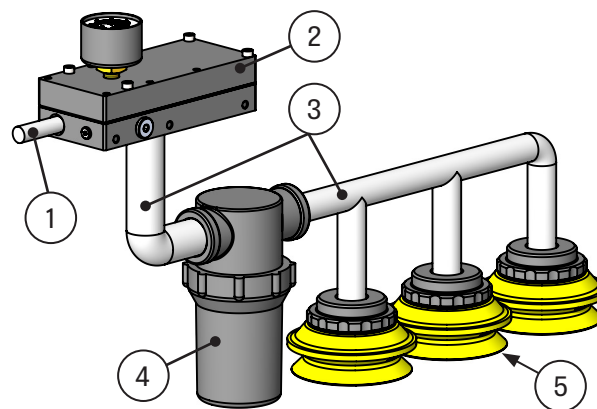
Operating a vacuum generator at a lower pressure will not result in reduced energy consumption. Energy usage of air-powered devices is measured by the volume flow rate of compressed air. Operating one machine device at 45 psi, for example, will not reduce the overall energy consumption of a manufacturing plant because of all the other machine devices that still require higher air pressures to function properly. The central compressed air system must be tuned to continuously provide at least the minimum air pressure required by any device in the plant.

To make direct comparisons possible, air consumption at different operating pressures must be converted to a “standard” or “naturalized” volume at standardized atmospheric conditions. For example, either 1.0 SCFM (28.3 NI/m) at 87 psi (6 bar) or 1.36 SCFM (38.5 NI/m) at 60 psi (4 bar) are equivalent to 6.9 SCFM (195 NI/m) at standard atmospheric conditions and are thus equivalent compressor loads.

Compressed air systems are designed with receivers (storage tanks) that are charged with high pressure air to serve as accumulators that can supply air flow in addition to what the compressor can produce for short periods of time. During extreme peak demands, the stored high pressure air may be drawn down, or depleted, causing the delivered system pressure to dip below optimum pressure. For this reason industrial machines are commonly designed to operate at only 80 psi, but some plants with marginal air systems may require machines to operate at only 60 psi. Systems that are optimized to operate at reduced air pressure should include air regulators set to deliver the proper minimum design pressure otherwise air consumption (energy costs) will be increased substantially whenever the system air pressure is higher.

12

## CENTRAL VACUUM SYSTEM



1) Compressed Air Line, 2) Vacuum Generator, 3) Vacuum Line, 4) Vacuum Filter, 5) Vacuum Cup

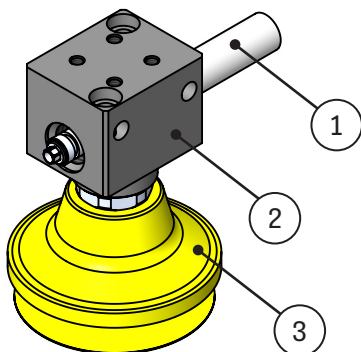
## VACUUM GRIPPERS DISCRETE SYSTEMS

A discrete system is made up of several mini-system units. Each unit consists of a small vacuum pump coupled to a single suction cup so that each unit operates independently of the others. Leakage at a non-sealing cup can only affect the vacuum level of that single cup so any leakage problems are automatically isolated. This gives the overall system the best possible chance to operate reliably even with a reduced number of active cups.

An EDCO Vacuum Gripper integrates a vacuum pump and suction cup into one compact unit to eliminate all excess system volume so that evacuation time is minimized.

A discrete system may be split into several zones that are each controlled by separate air supply valves to allow operation of one, several, or all zones as the application requirements change. All discrete units in a zone are simultaneously turned on or off via the compressed air supply - however, each mini-system unit still operates independently on the vacuum side.

Part quick-release is accomplished by blocking the pump exhaust with an air piloted piston which causes the pump air supply to flow directly into the vacuum cup because there is no other possible flow path. This positive pressure reverse flow not only provides a very fast part release but also provides a cleaning action to purge any debris that was ingested into the suction cup.



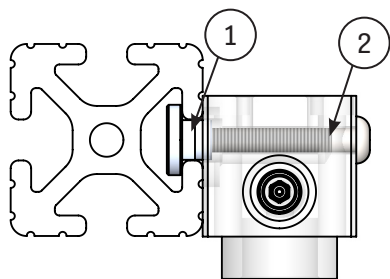
- 1) Compressed Air Line
- 2) Vacuum Generator
- 3) Vacuum Cup

## RUGGED SHEAR KEY MOUNT

Two-point mount with shear keys eliminates the possibility of the pumps shifting out of position during operation. Work loads are efficiently and directly transferred to the mounting profile so that mounting screws carry only tensile loads.

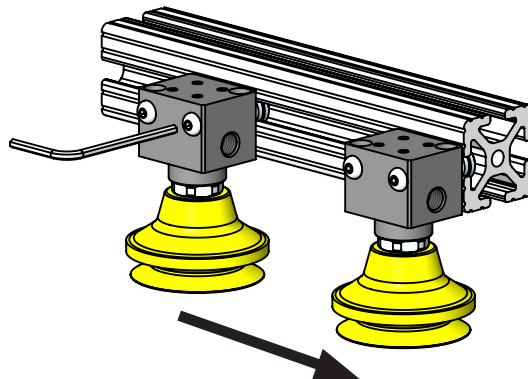
- 1.) T-Nut - RS-5
- 2.) M5 Screw

NOT INCLUDED  
See page 12:10



## SIMPLE INSTALLATION & FLEXIBLE POSITIONING

Vacuum Grippers mount easily to extrusion profiles having 5/16" (8mm) T-slots so they can be easily repositioned to accommodate changing handling conditions. The two-point mount provides security and rigidity.



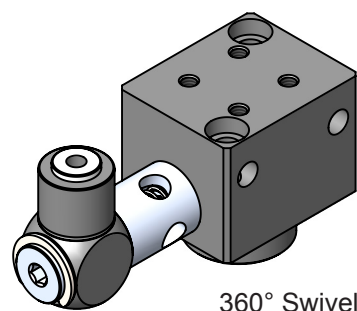
Loosen two screws, and slide the vacuum gripper to the desired location.

## POSITIVE PRESSURE PURGE (PP)

Air pressure supplied to the venturi is diverted to the vacuum port by blocking the venturi exhaust with a piston operated by a pilot pressure signal. Push-in tube connector swivel accepts 5/32 (4MM) tubing. Tool separation movement must begin immediately (no dwell) when purge signal is initiated to prevent excessive positive pressure inside suction cups due to forces pressing the tool onto the work surface. Do not use PP option with vacuum switches due to the limited over-pressure capability of switches.

## LIMITED PRESSURE PURGE (LP)

Similar to Positive Purge except includes an orifice in the purge piston. Purge air flow is not as robust as with the PP option, but air pressure is limited inside the suction cups.



## VACUUM GRIPPERS

VACUUM PORT	VENTURI	PURGE <sup>1</sup>	SWIVEL MOUNT <sup>2</sup>	SENSOR PORT	SILENCER OPTION <sup>4</sup>	CUP SELECTION
<b>38</b>	<b>10L</b>	<b>PP</b>	<b>A</b>	<b>A5F</b>	<b>ST</b>	<b>B50N</b>
38 = 3/8 NPSF	05	(Blank) = None	(Blank) = None	(Blank) = None	(Blank) = None	(Blank) = None
18 = G1/8 NPSF	07	LP = Limited Pressure	A = Apple Core	A5F	ST = STA14M	See information below.
	09	PP = Positive Pressure	B = Ball Swivel	B5F <sup>3</sup>	<sup>4</sup> Not available with purge.	
	10	<sup>1</sup> Only available with 08L & 10L venturi.	<sup>2</sup> Only available with VG38.	<sup>3</sup> Not available with swivel on VG38.		
	08L					
	10L					

## DUAL VENTURI VACUUM GRIPPERS

VENTURI	OPTIONS	SWIVEL MOUNT	SILENCER OPTION	CUP SELECTION
<b>10L</b>	<b>PP</b>	<b>A</b>	<b>ST</b>	<b>B50N</b>
05	(Blank) = None	(Blank) = None	(Blank) = None	(Blank) = None
07	EA = Exhaust Adapter	A = Apple Core	ST <sup>2</sup> = STB38M	See information below.
09	LP <sup>1</sup> = Limited Pressure	B = Ball Swivel	<sup>2</sup> Only available with exhaust adapter.	
10	PP <sup>1</sup> = Positive Pressure			
08L	<sup>1</sup> Only available with 08L & 10L venturi.			
10L				

## VACUUM GRIPPER PUMPS

VENTURI	OPTIONS	MOUNT	MOUNT POSITION
<b>10L</b>	<b>PP</b>	<b>M8X27</b>	<b>TE</b>
08L	(Blank) = Basic	(Blank) = Basic	(Blank) = Not Used
10L	LP <sup>1</sup> = Limited Pressure	M6X22	T = Top
10	PP <sup>1</sup> = Positive Pressure	M8X16	L = Left
09	<sup>1</sup> Only available on 08L & 10L Venturi	M8X27	R = Right
07			TE = Top Extrude
05			LE = Left Extrude
			RE = Right Extrude

## VACUUM CUP SELECTION

Choose vacuum cup style, size, and rubber material from section 2 of this catalog and add this information as a suffix to the VG pump model number. For example: VG38-10LPP pump and XP-B50N cup are selected. So, the complete Vacuum Gripper model number would be VG38-10LPP-B50N. For simplified ordering, several Vacuum Gripper model numbers are tabulated, but other combinations are readily available at standard prices. Contact your local EDCO USA distributor or call EDCO for assistance.

VG18 style pumps should only be used with 10 to 50mm cups due to the availability of fittings required to adapt to the G1/8 NPSF vacuum port.

VG38 style pumps should only be used with 40 to 150mm cups due to the availability of fittings required to adapt to the G 3/8 Vacuum Port.

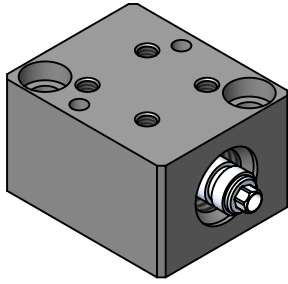
ER-10L PERFORMANCE (NON-POROUS SYSTEMS)											
Cup <sup>1</sup>	B30	B40	B50	B75	B110	BF80	BF100	F75	F110	FC75	FC100
Volume: in <sup>3</sup> [cc]	0.61 [10]	0.9 [14.7]	2.0 [32.8]	6.7 [110]	19.0 [311]	1.8 [29.5]	4.9 [80.3]	1.2 [19.7]	4.3 [70.5]	2.3 [37.6]	4.9 [80.3]
Evacuation Time <sup>2</sup> : sec	0.013	0.02	0.04	0.15	0.42	0.04	0.11	0.03	0.1	0.05	0.11
Force @ 15 inHG: lb [N]	4.1 [18.2]	7.3 [32.5]	12.1 [53.8]	30.8 [137]	64.1 [285]	35.0 [156]	65.0 [289]	37.5 [167]	78.3 [348]	29.1 [129]	53.3 [237]

<sup>1</sup>Values apply to all cup materials.

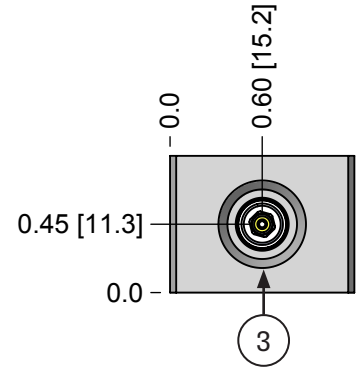
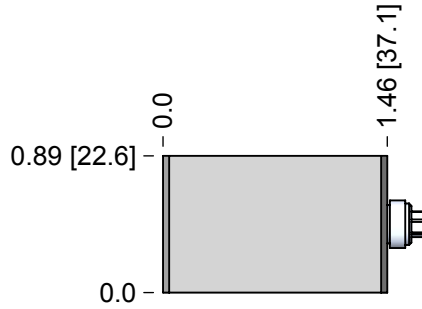
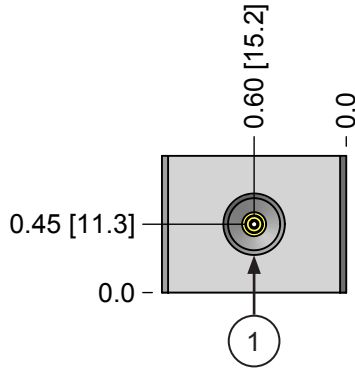
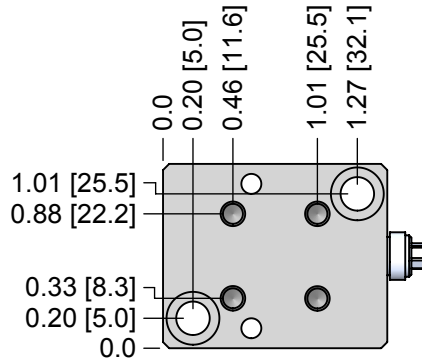
<sup>2</sup>Evacuating to 15 inHG (50.8 -kPa) at 72 psi (5 bar)

All performance data presented is a representation of production pumps but is not a guarantee due to variations in local barometric pressure and of mass produced components.

# VACUUM GRIPPERS VG18

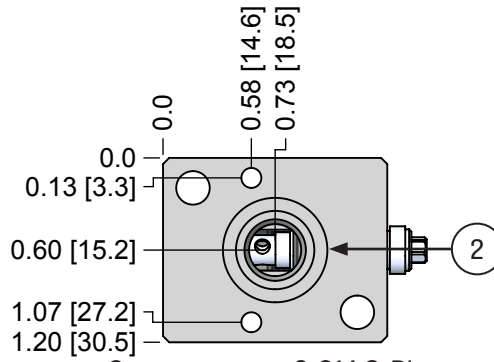


Weight: 0.12 lbs [54.4 g]

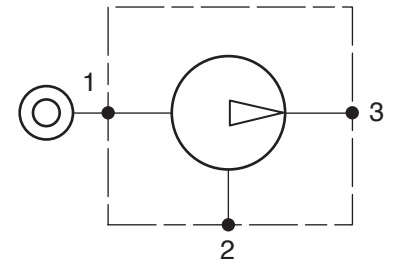


CODE	FUNCTION	CONNECTION
1	Air Supply	G 1/8 NPSF
1A	Pilot Signal - Purge	4 mm (5/32) Tube
2	Vacuum	G 1/8 NPSF
3	Exhaust!	G 1/4

\*Only available without purge option.

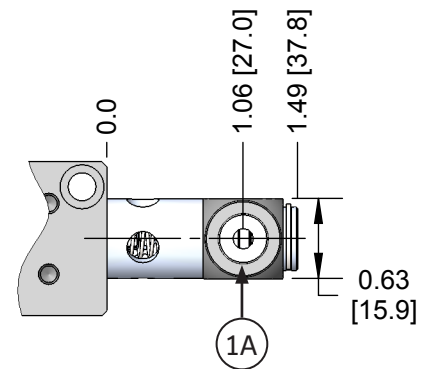
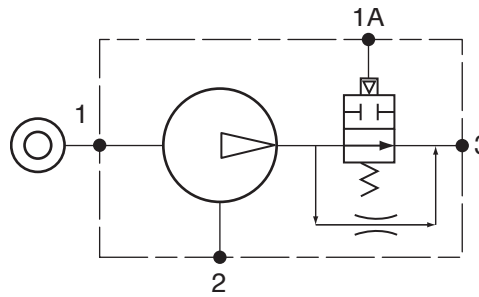


Groove accepts 2-014 O-Ring  
(o-ring not included)

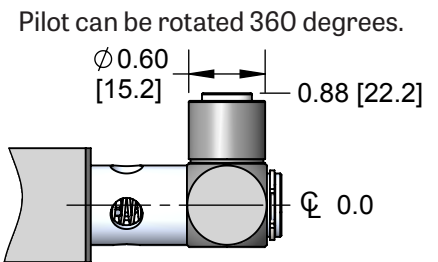
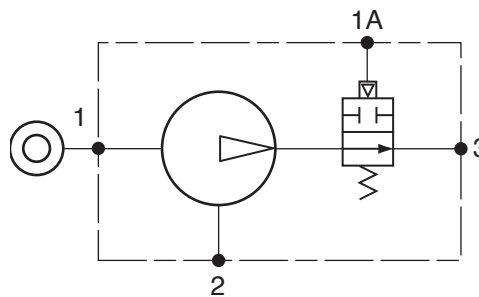


## VG18 : PP & LP PURGE OPTION

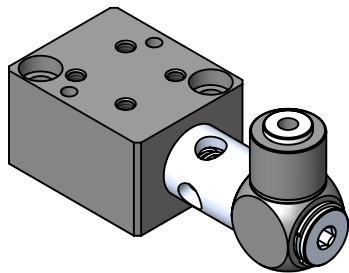
### LP : LIMITED PRESSURE



### PP : POSITIVE PRESSURE

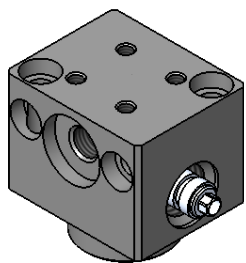


Pilot can be rotated 360 degrees.

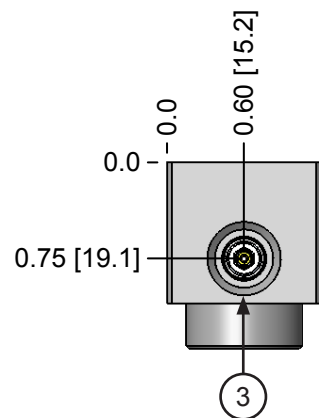
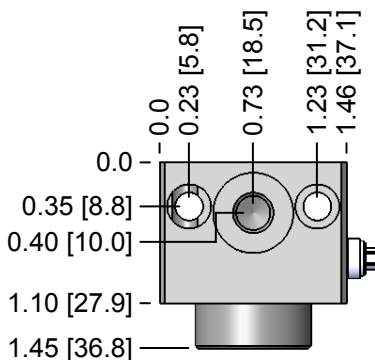
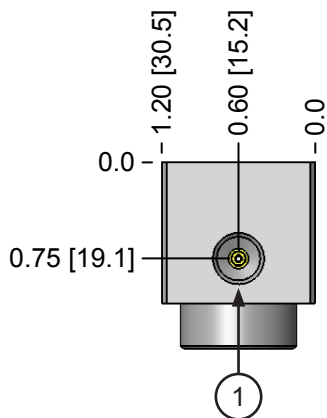
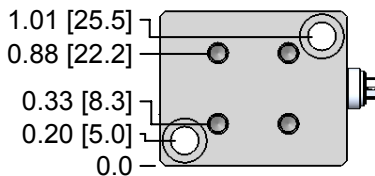


Weight: 0.17 lbs [78.9 g]

# VACUUM GRIPPERS VG38 : BASIC

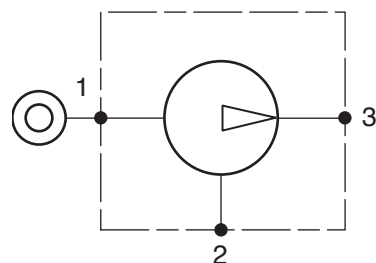
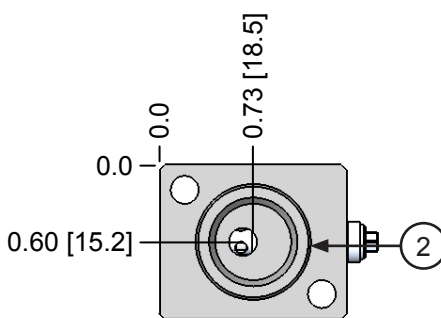


Weight: 0.14 lbs [63.5 g]



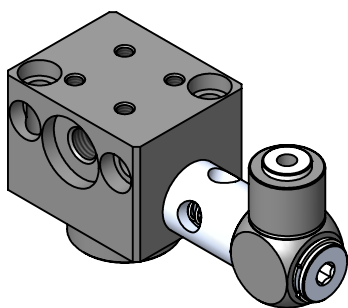
CODE	FUNCTION	CONNECTION
1	Air Supply	G 1/8 NPSF
1A	Pilot Signal - Purge	4 mm (5/32) Tube
2	Vacuum	3/8 NPSF
3	Exhaust <sup>1</sup>	G 1/4

<sup>1</sup>Only available without purge option.



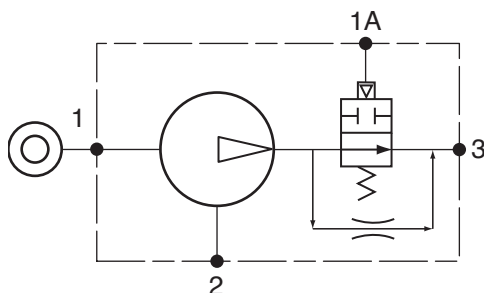
12

## VG38 : PP & LP PURGE OPTION

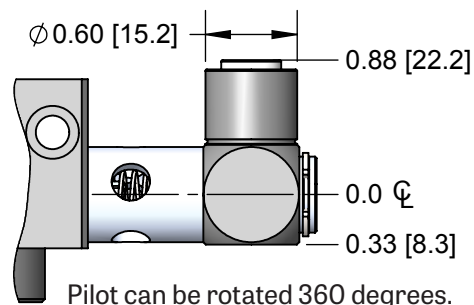
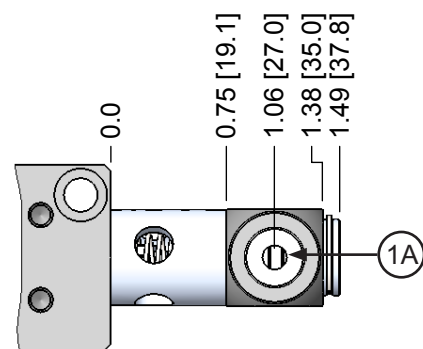
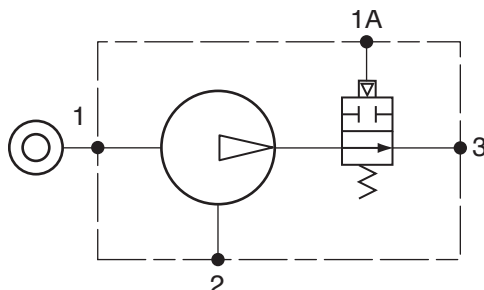


Weight: 0.19 lbs [88.0 g]

### LP : LIMITED PRESSURE

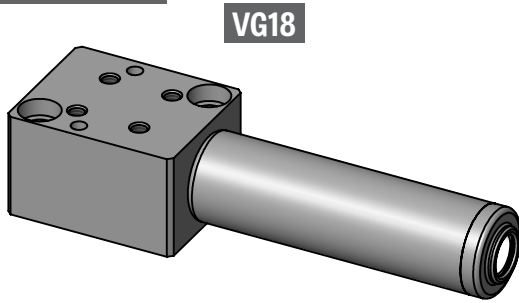


### PP : POSITIVE PRESSURE

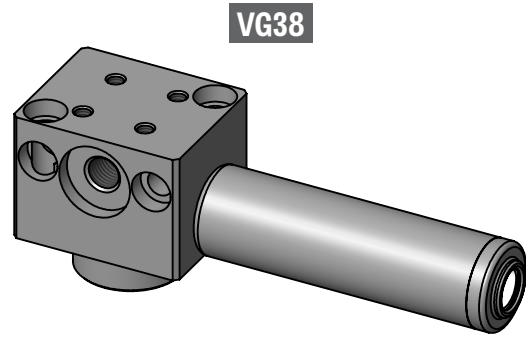


Pilot can be rotated 360 degrees.

## VACUUM GRIPPERS ST : SILENCER OPTION



VG18



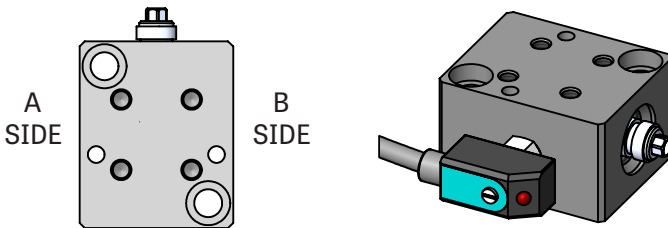
VG38

## SENSOR PORT OPTION

**A5F** = M5 Port on side "A".

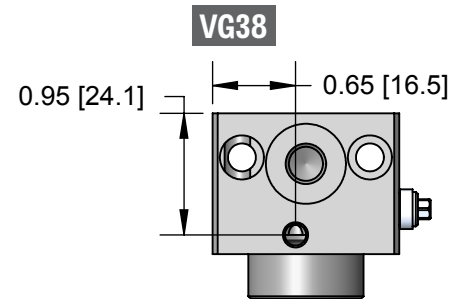
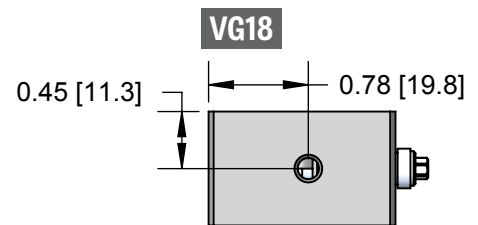
**B5F** = M5 Port on side "B".

<sup>1</sup>B5F is not available with a swivel mount on the VG38 pump.

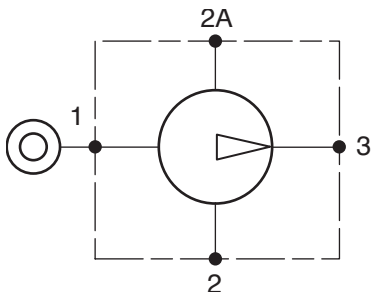


CODE	FUNCTION	VG18	VG38
1	Air Supply	G 1/8 NPSF	G 1/8 NPSF
1A	Pilot Signal - Purge	4 mm (5/32) Tube	4 mm (5/32) Tube
2	Vacuum - Main	G 1/8 NPSF	3/8 NPSF
2A	Vacuum - Alternate	M5X0.8 (10-32 UNF)	M5X0.8 (10-32 UNF)
3	Exhaust <sup>1</sup>	G 1/4	G 1/4

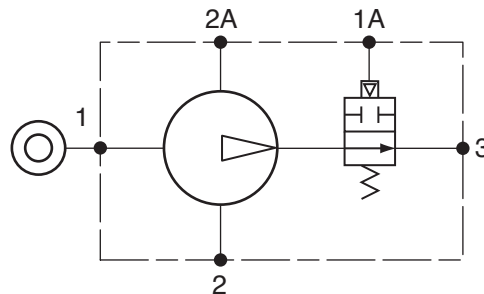
<sup>1</sup>Only available without purge option.



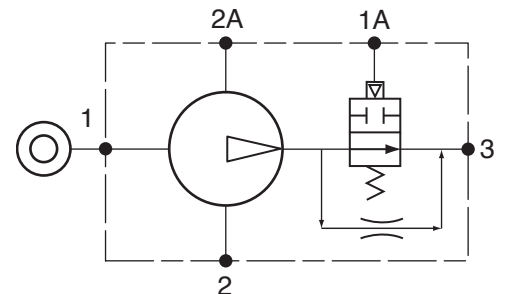
## BASIC VACUUM GRIPPER



## PP : POSITIVE PRESSURE PURGE



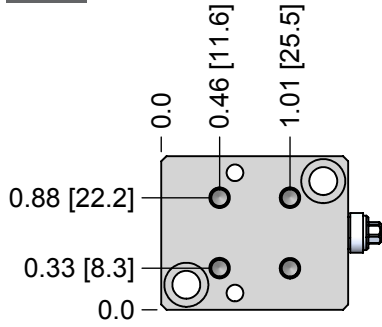
## LP : LIMITED PRESSURE PURGE



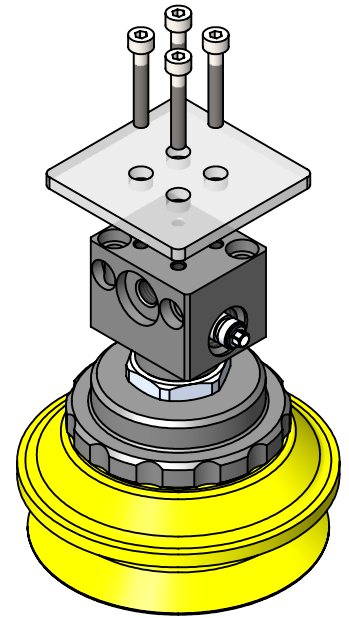
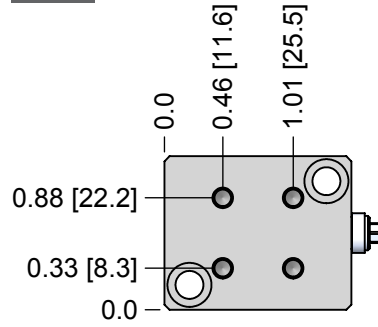


**VACUUM GRIPPERS  
STANDARD M4 PLATE MOUNT**

**VG18**

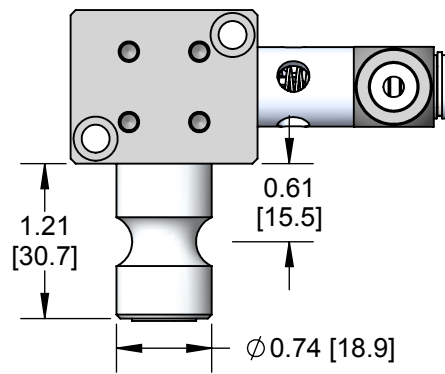
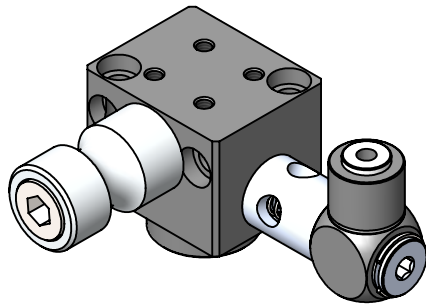


**VG38**



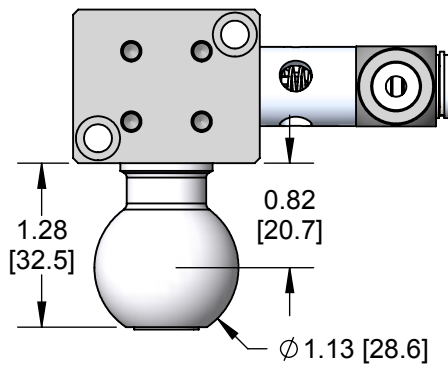
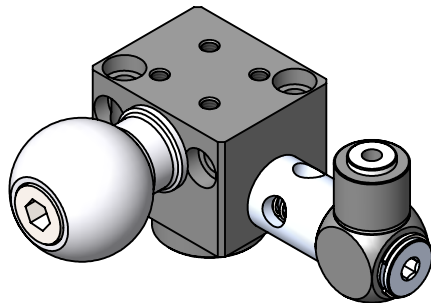
**VG38 SWIVEL MOUNTS**

**A : APPLE CORE MOUNT**



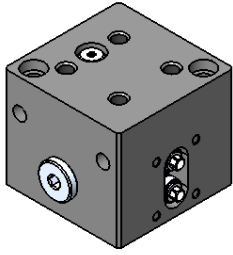
12

**B : BALL SWIVEL MOUNT**

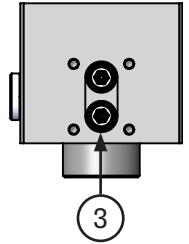
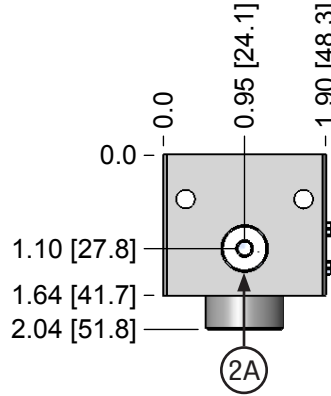
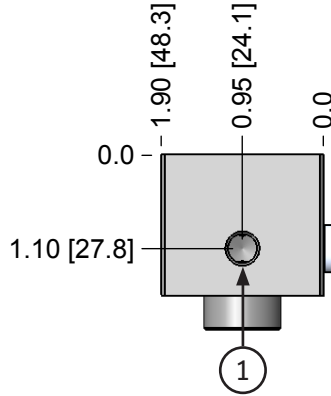
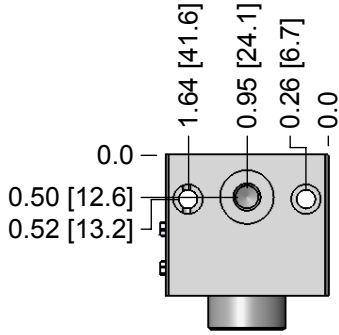
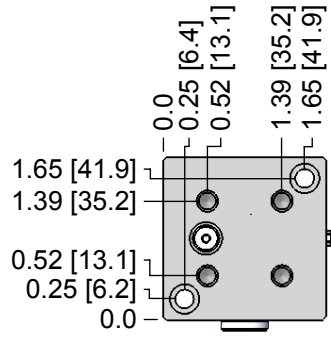
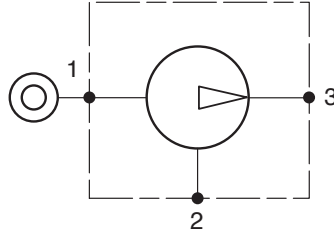


# VACUUM GRIPPERS

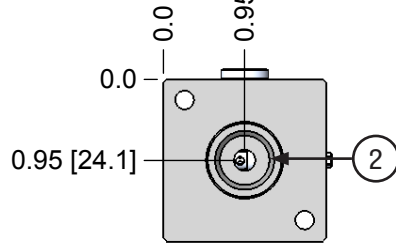
## DVG38: DUAL VENTURI VACUUM GRIPPERS



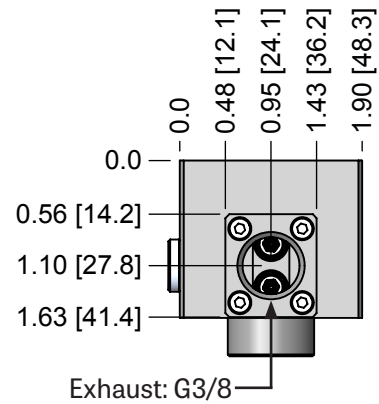
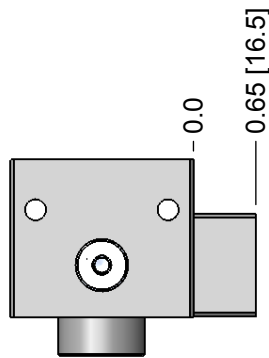
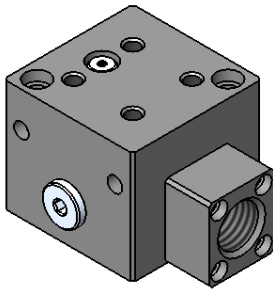
Weight: 0.20 lbs [90.7 g]



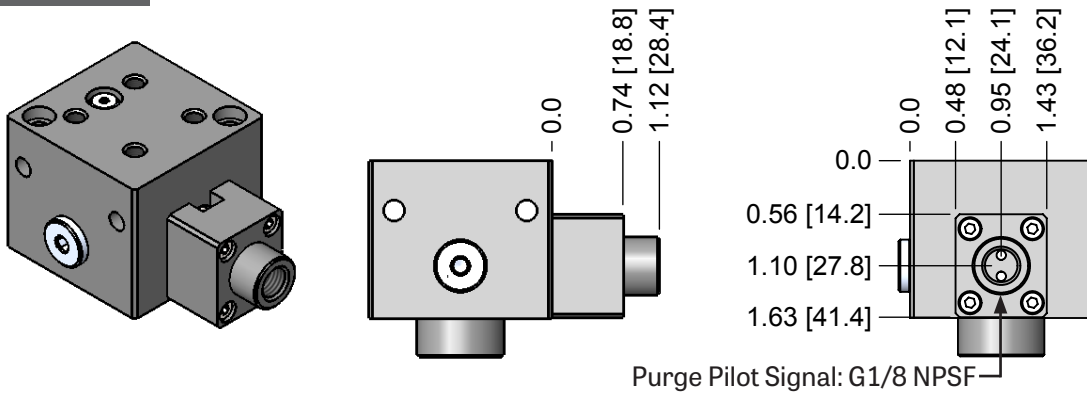
CODE	FUNCTION	CONNECTION
1	Air Supply	G 1/8 NPSF
2	Vacuum - Main	3/8 NPSF
2A	Vacuum - Alternate	G 1/8 NPSF



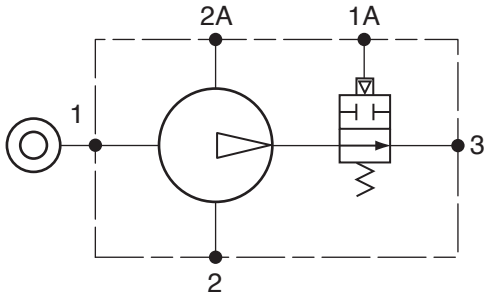
## EA : EXHAUST ADAPTER



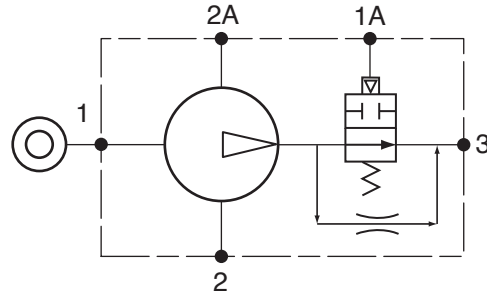
**VACUUM GRIPPERS**  
**PP & LP : PURGE OPTION**



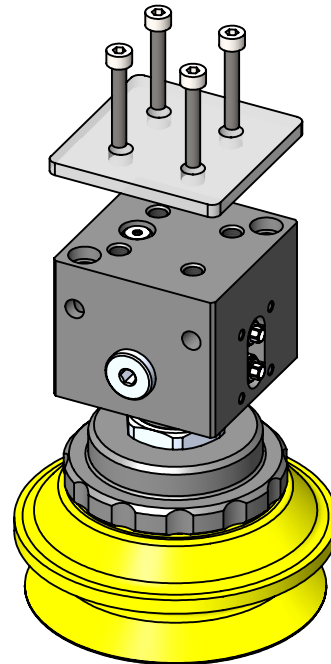
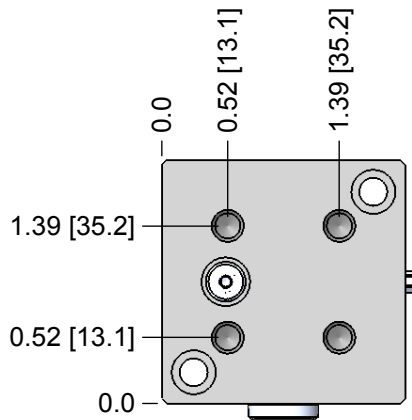
**PP : POSITIVE PRESSURE PURGE**



**LP : LIMITED PRESSURE PURGE**

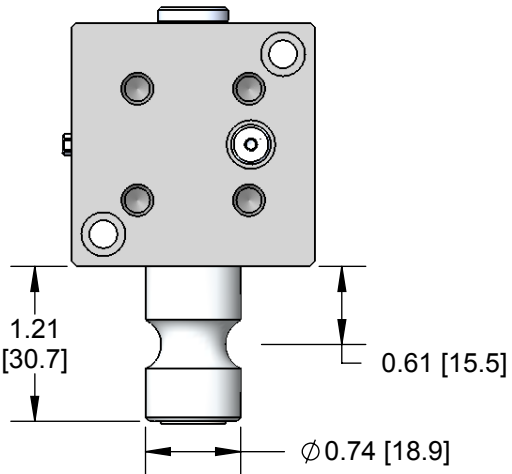
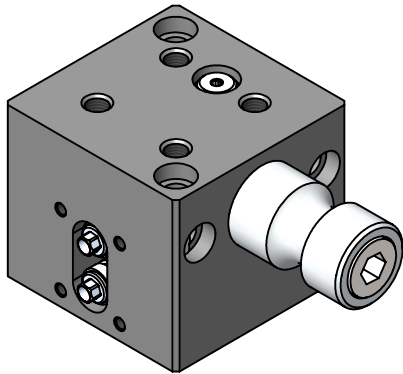


**STANDARD M4 PLATE MOUNT**

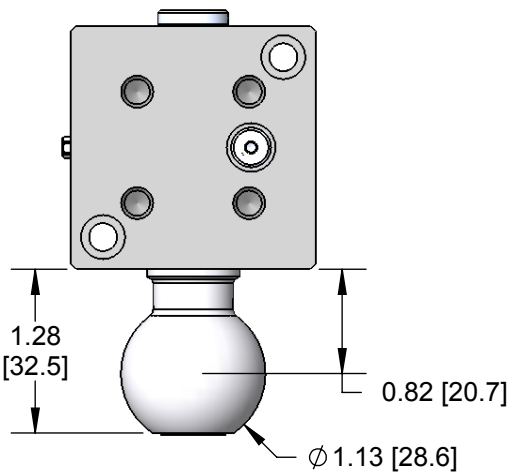
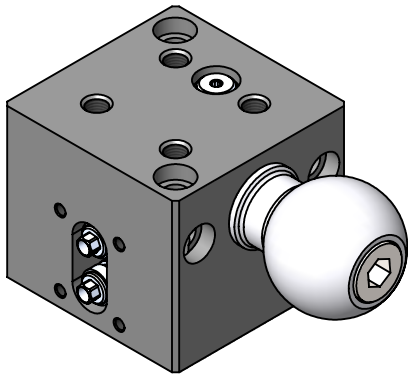


**VACUUM GRIPPERS  
DVG38 SWIVEL MOUNT**

**A : APPLE CORE MOUNT**



**B : BALL SWIVEL MOUNT**

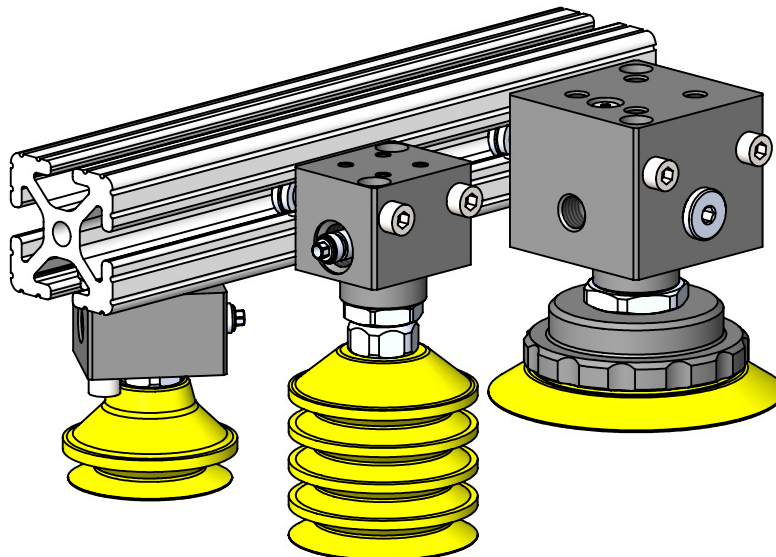


**VACUUM GRIPPER T-NUT KITS**

EDCO Vacuum Gripper T-Nut kits include two RS-5 T-Nuts and the appropriate M5 screws for your pump model.

PUMP MODEL	-TKIT
VG18	
VG18	
VG38	
DVG38	

-TKIT



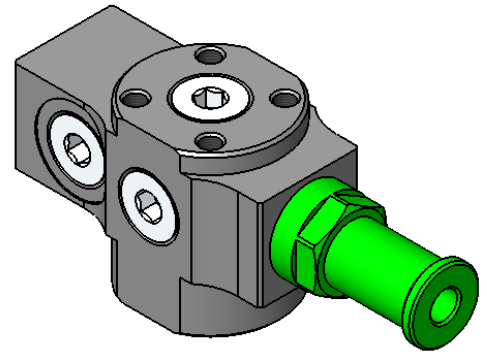
# VACUUM GRIPPERS

## VGP : COAXIAL VENTURI VACUUM GRIPPER PUMPS

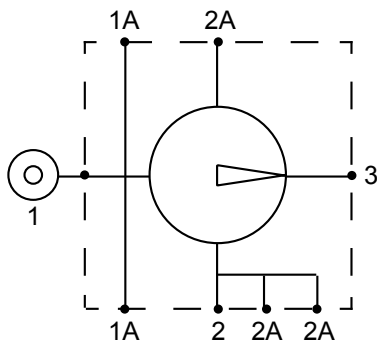
EDCO VGP pump are a direct interchange with brand "P" but provide improved vacuum flow (10L) and better reliability because there are no flap valves or filter screens to collect ingested debris.

Exhaust extension may be removed to add LP or PP purge options for faster part release or for a true reverse-flow cleaning mode to blow out ingested debris.

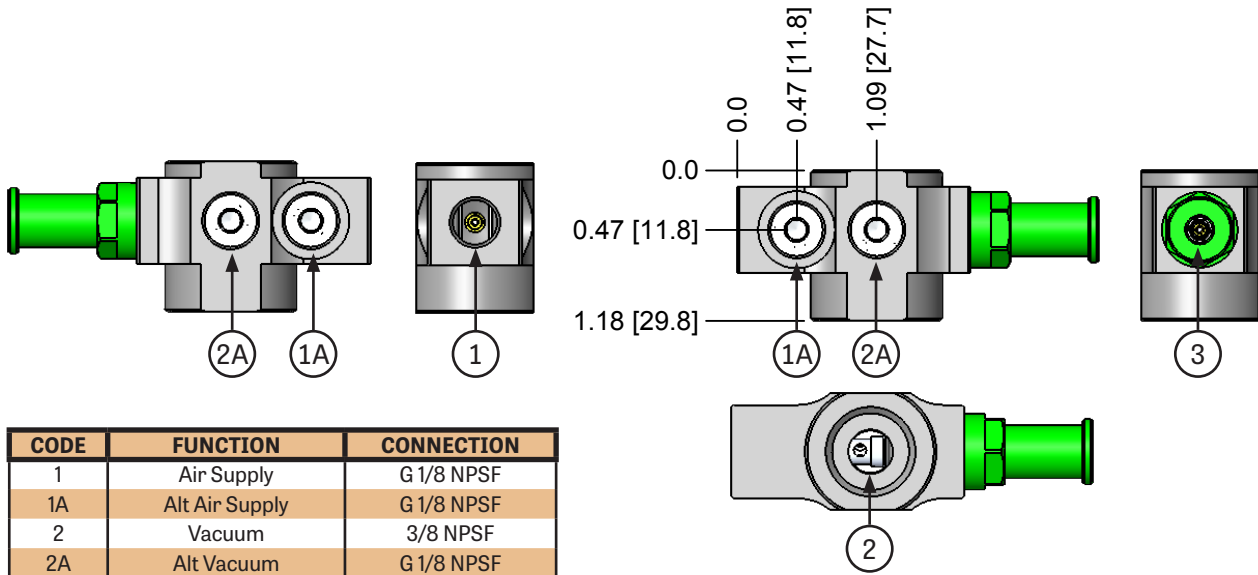
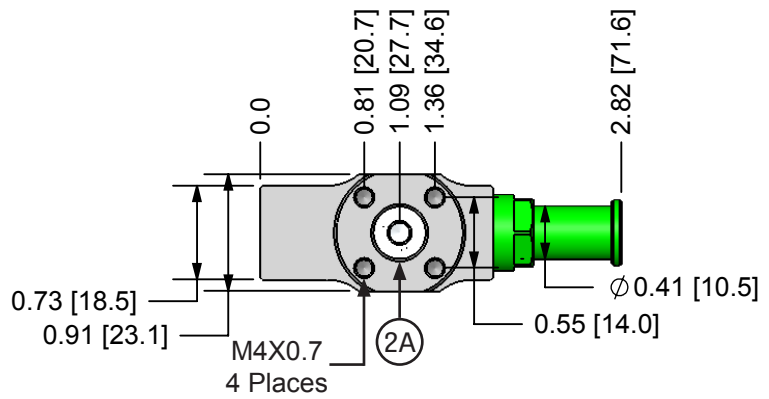
M6 or M8 stud mounting hardware may be installed in A-Side, B-Side, or Top locations.



VENTURI	OPTIONS	MOUNT	MOUNT POSITION
VGP38-	PP	M8X27	TE
10L	(Blank) = Basic	(Blank) = Basic	(Blank) = Not Used
08L	LP <sup>1</sup> = Limited Pressure	M6X22	T = Top
10L	PP <sup>1</sup> = Positive Pressure	M8X16	L = Left
10	<sup>1</sup> Only available on 08L & 10L Venturi	M8X27	R = Right
09			TE = Top Extrude
07			LE = Left Extrude
05			RE = Right Extrude

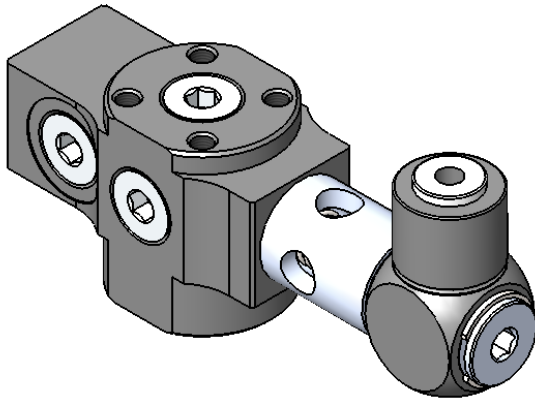


Weight: 0.12 lbs [54.4 g]

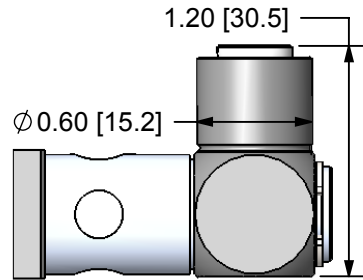
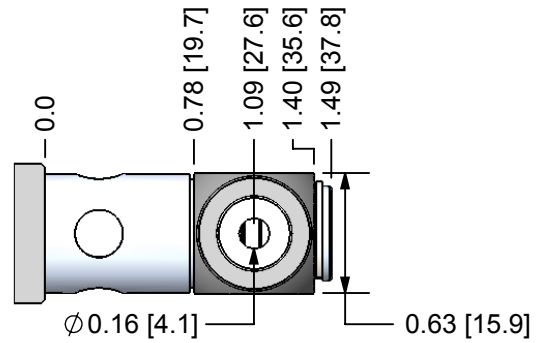


CODE	FUNCTION	CONNECTION
1	Air Supply	G 1/8 NPSF
1A	Alt Air Supply	G 1/8 NPSF
2	Vacuum	3/8 NPSF
2A	Alt Vacuum	G 1/8 NPSF
3	Exhaust	-

# VACUUM GRIPPERS PP & LP : PURGE OPTION



Weight: 0.15 lbs [68.0 g]

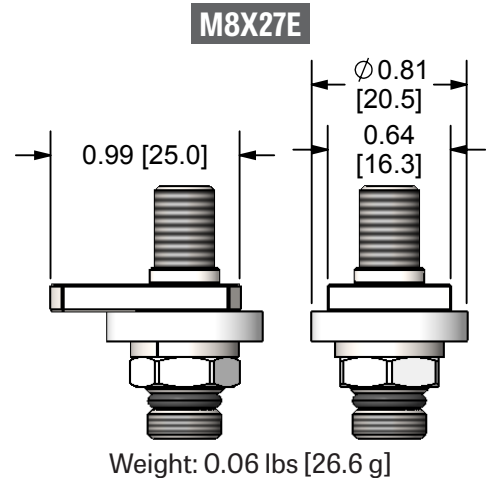
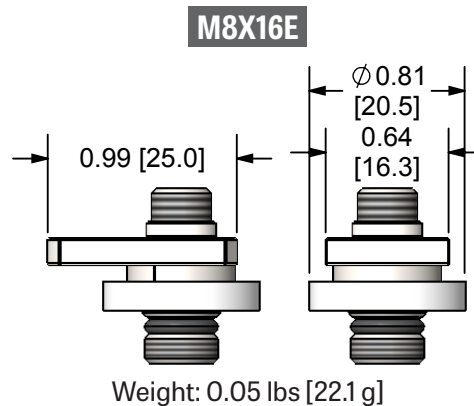
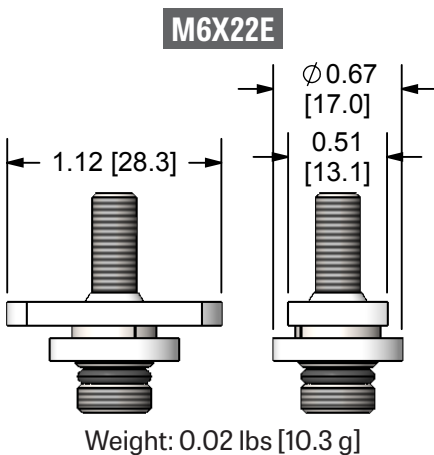
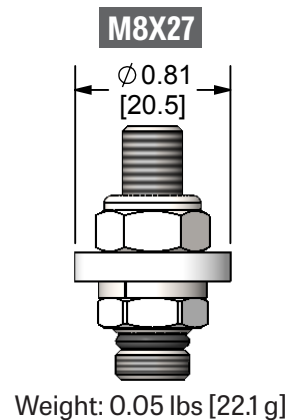
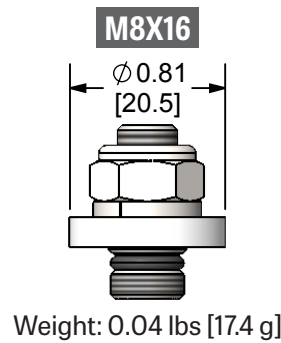
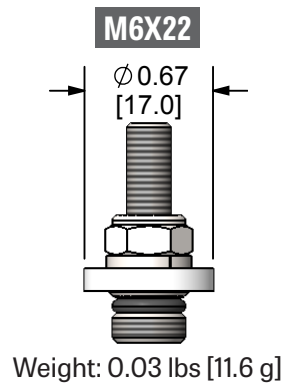
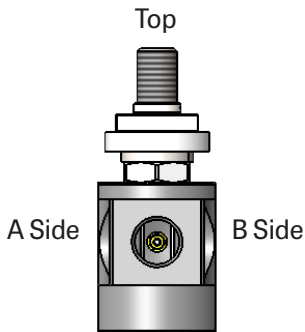
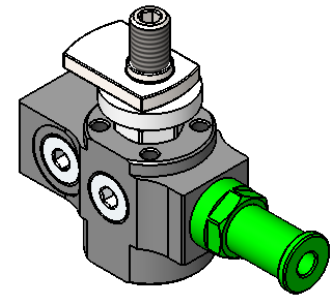


Pilot can be rotated 360°.

## MOUNT OPTIONS

We offer M6 threads by 22 MM length, and M8 threads by 16 and 27 MM lengths. The extrusion mounts come with a T-Nut for mounting to an extrusion.

The mounting kits are made to fit into any of the three alternate vacuum ports designated by the Top, A-Side, and B-Side positions.



# VACUUM GRIPPERS CUP FITTING ADAPTERS

**38MX12M**



Weight: 0.03 lbs [15.4 g]

**38MX38M**



Weight: 0.02 lbs [9.1 g]

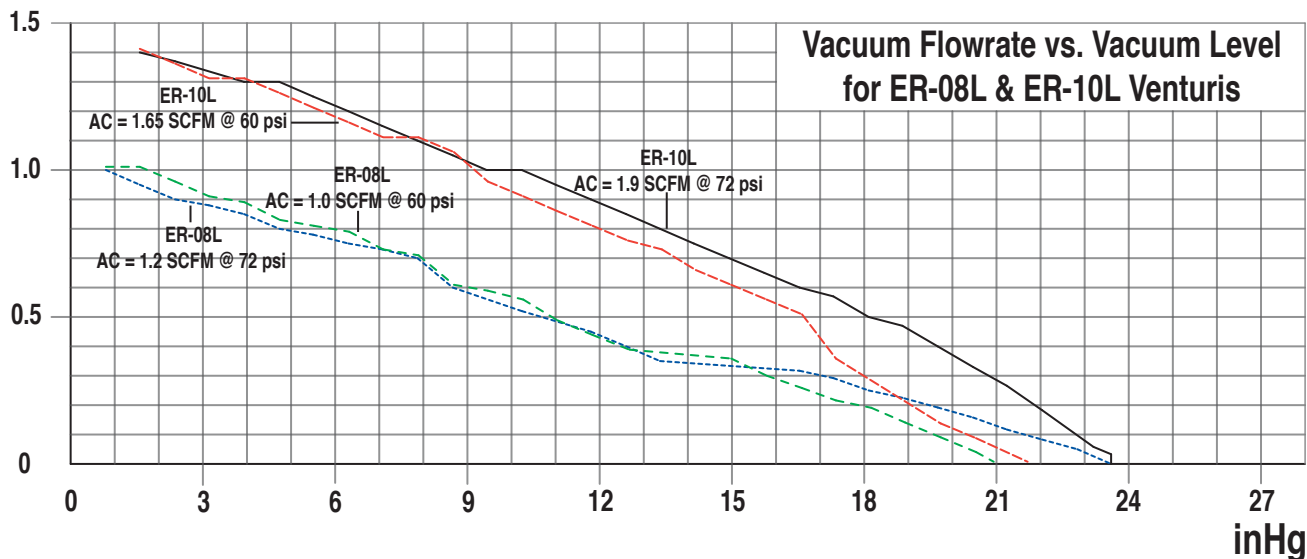
**38MX18M**



Weight: 0.02 lbs [7.7 g]

## PERFORMANCE

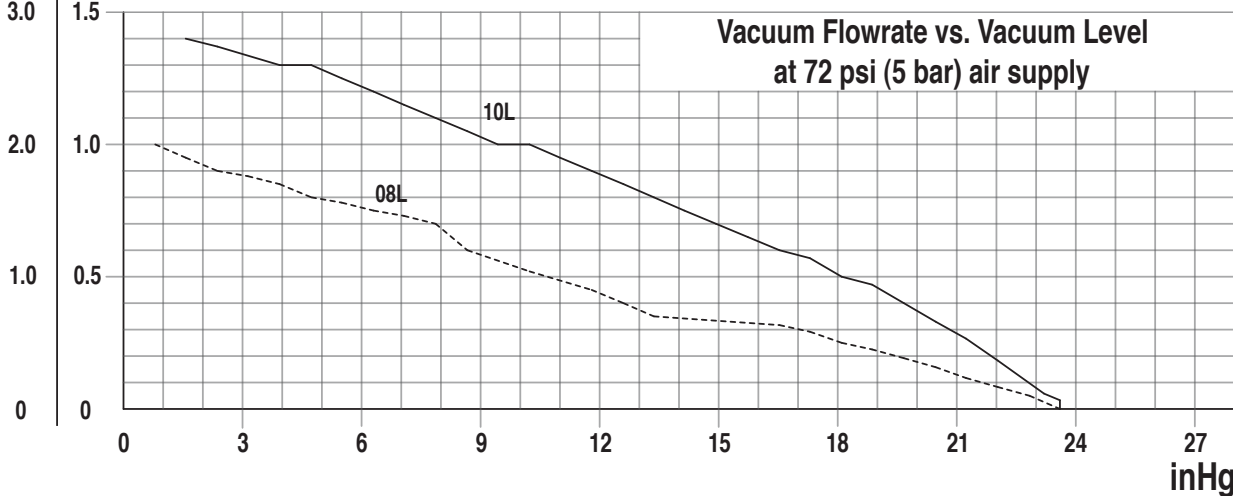
### SCFM



For information regarding the performance of our ER-10, ER-09, ER-07, and ER-05 venturis please see the ER series pumps in this catalog.

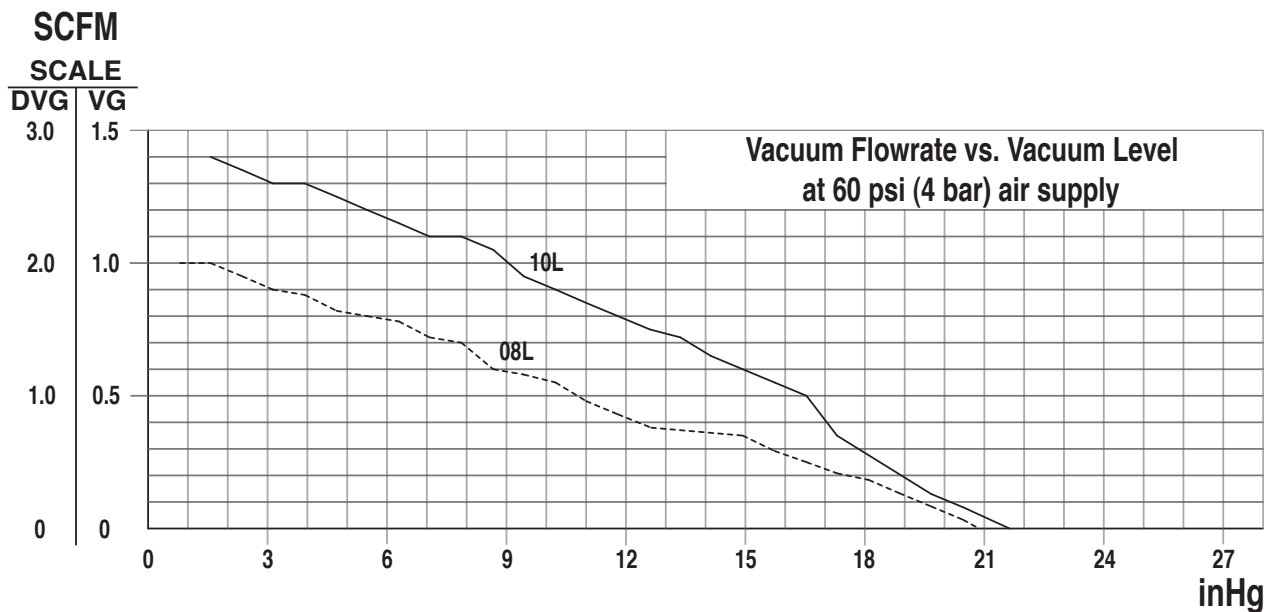
### SCFM

SCALE  
DVG VG  
3.0 1.5



All performance data presented is a representation of production pumps but is not a guarantee due to variations in local barometric pressure and of mass produced components.

# VACUUM GRIPPERS PERFORMANCE



## EVACUATION TIME

In a non-porous system, evacuation time for any vacuum cup is calculated by multiplying the internal cup volume by the time factor for the desired vacuum level from the Evacuation Time Calculation Table.

For Example: XP-B75 @ 15 inHG (50.8 kPa)  
 Volume    Time Factor  
 in<sup>3</sup>      sec/in<sup>3</sup>

Evacuation Time = 6.7 X 0.022 = 0.15 sec

VACUUM LEVEL: inHG (-kPa)	9 (30.5)	12 (40.6)	15 (50.8)	18 (61)	21 (71)
TIME FACTOR: sec/in <sup>3</sup>	0.008	0.014	0.022	0.022	0.061

All performance data presented is a representation of production pumps but is not a guarantee due to variations in local barometric pressure and of mass produced components.



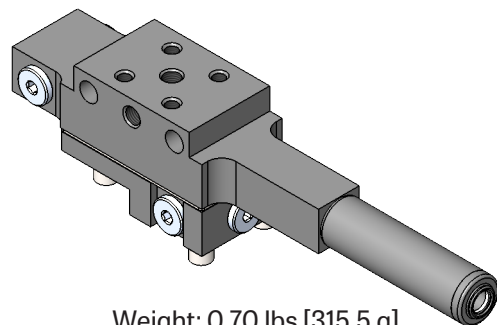
# VACUUM GRIPPERS

## VG-G12: 1/2" BASE

VG12 has the vacuum flow capacity required for larger diameter cups, especially when they are used on porous surfaces. Multi-stage nozzles have the same flow capacity as EDCO Classic pumps and provide quick evacuation times for bellows cups with large internal volumes.

Multiple 1/8" vacuum accessory ports allow adding vacuum sensors or an air-assisted quick release circuit.

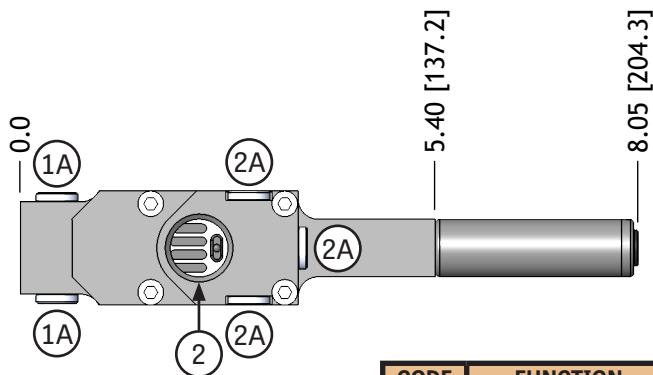
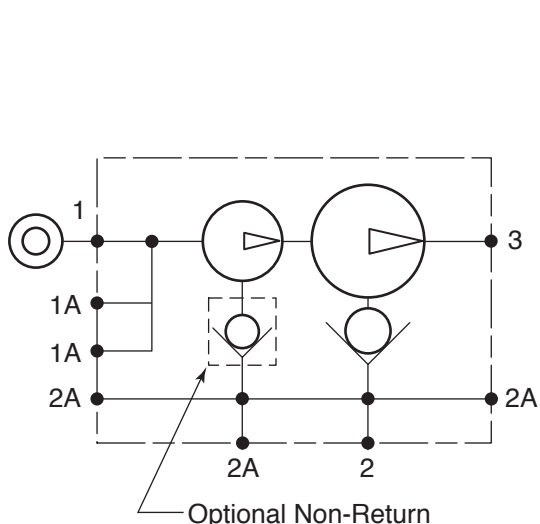
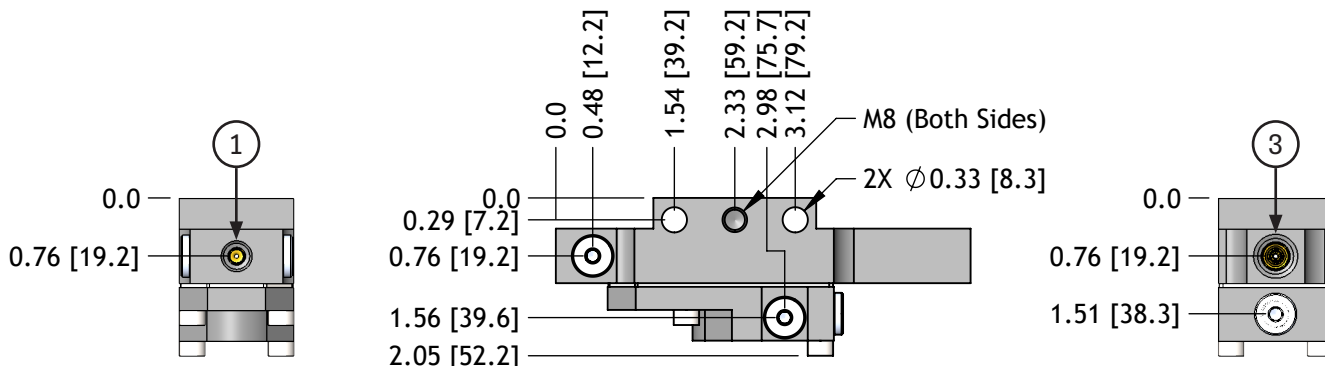
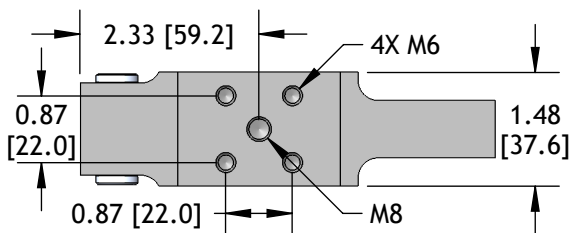
	NOZZLE SERIES	SEAL MATERIAL	OPTIONS
VG-G12-	A25	N	
	A25	N = Nitrile	(Blank) = None
	E25	V = Viton <sup>1</sup>	NR = Non-Return
	M25		
	ML25		
	X40		



Weight: 0.70 lbs [315.5 g]

<sup>1</sup>Viton is a registered trademark of Du Pont Dow Elastomers.

For performance data, see Classic Pump performance.



CODE	FUNCTION	CONNECTION
1	Air Supply	G 1/8 NPSF
1A	Alternate Air Supply	G 1/8 NPSF
2	Vacuum	G 1/2
2A	Alternate Vacuum	G 1/8 NPSF
3	Exhaust	G 1/4

## **VACUUM GRIPPERS VG-G12: MOUNT OPTIONS**

The pump body comes standard with through-holes for mounting to a vertical surface or to the side of an extrusion profile, or optional M8 or M12 stud mounts may be installed in the top or on either side of the pump body (Loctite is recommended).

Our versatile mounting bracket kit may be used to position the pump in 45-degree increments either alongside or underneath an extrusion profile to suit your application.

## **BRACKET MOUNTS**

## **STUD MOUNTS**