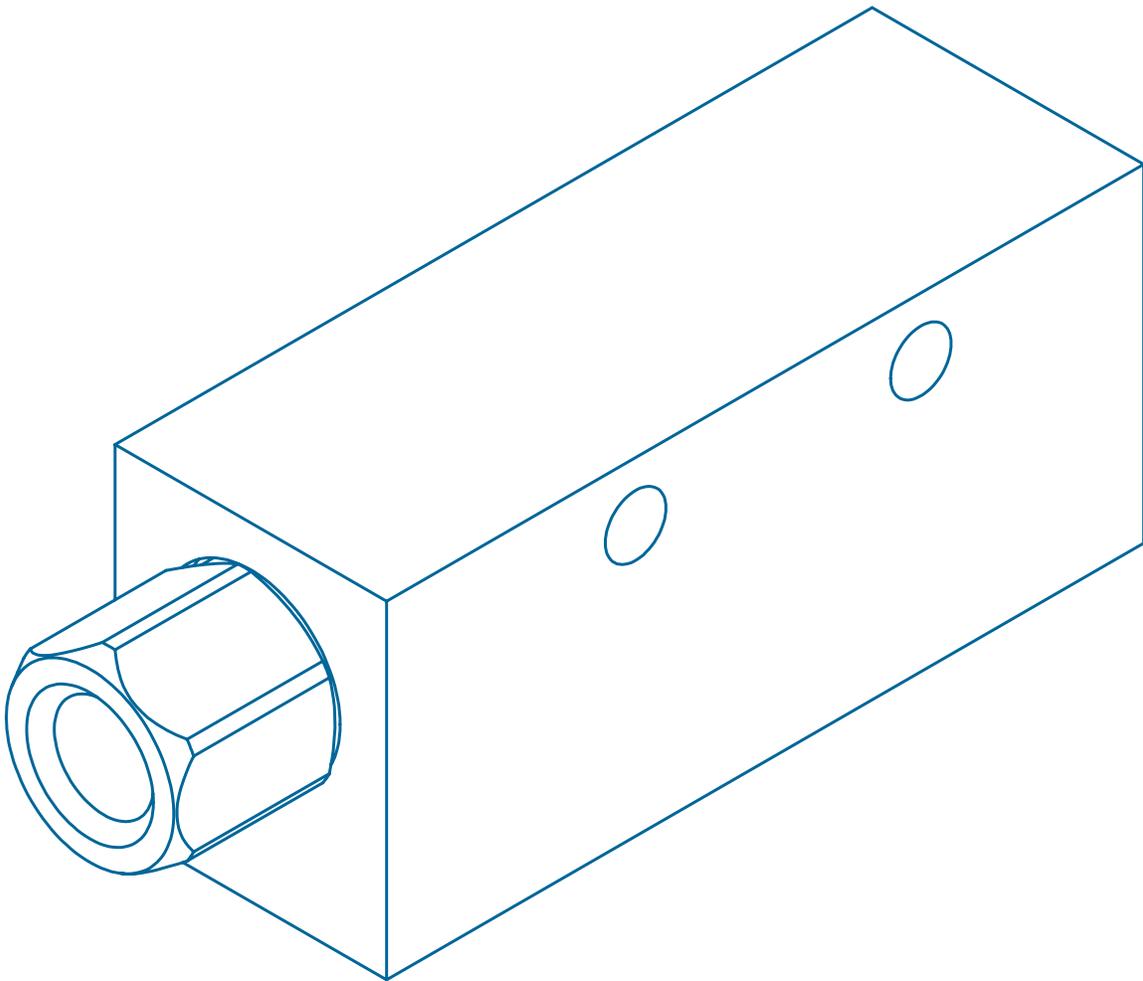
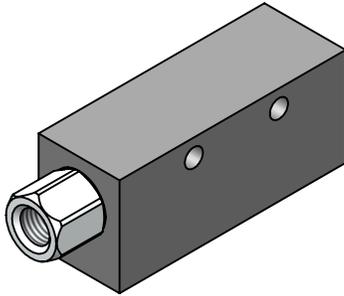


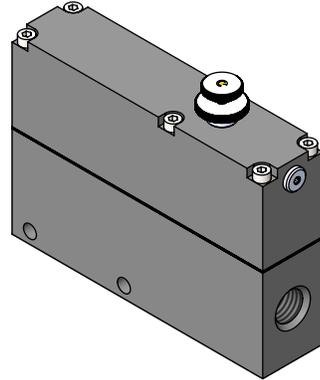
# Single-Stage Vacuum Pumps

## Section 14

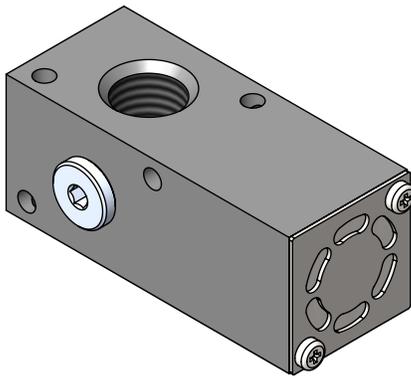




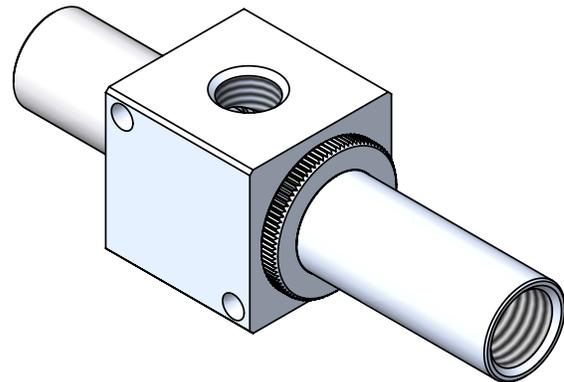
**EV Series**



**V Series**



**SM Series**



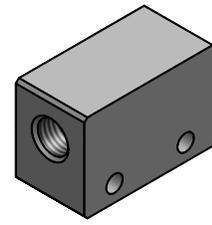
**Variable Displacement**

|                             |    |
|-----------------------------|----|
| EV Series                   | 3  |
| V Series                    | 8  |
| SM Series                   | 15 |
| Variable Displacement Pumps | 17 |

### EV Series Vacuum Pump

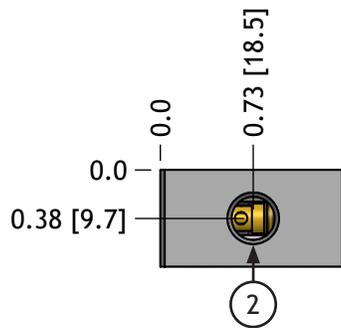
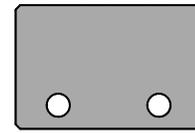
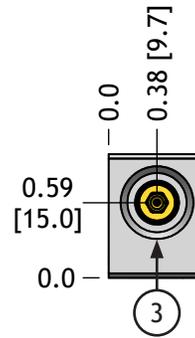
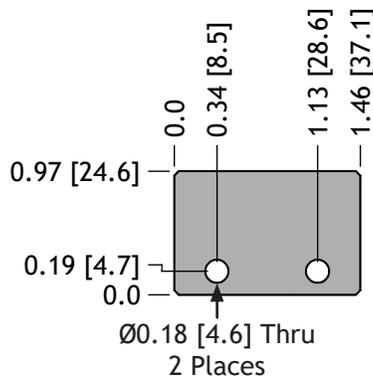
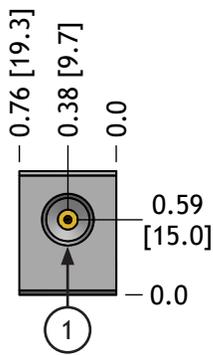
EV single-stage vacuum generators provide a compact, lightweight, low-cost vacuum source for pick & place and material handling applications. The simple two-piece design allows ingested debris to exit the exhaust port. The optional “ST” straight-through exhaust silencer is a no-clog design that will pass ingested debris to atmosphere.

A G 1/8 NPSF auxiliary vacuum port is included so a gauge or vacuum switch can be easily added to complete a system. Construction is aluminum with anodized pump body and electroless-nickel plated primary nozzle.

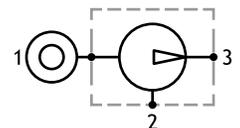


Weight: 1.56 oz [44.2 g]

| Silencer |        |
|----------|--------|
| EV05HS   |        |
| (Blank)  | None   |
| -ST      | STA14M |
| -AA      | AA14M  |



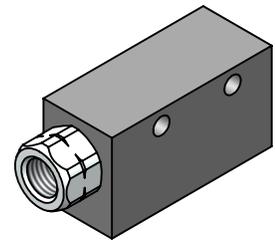
| Code | Function   | Ports      |
|------|------------|------------|
| 1    | Air-Supply | G 1/8 NPSF |
| 2    | Vacuum     | G 1/8 NPSF |
| 3    | Exhaust    | G 1/4      |



### EV Series Vacuum Pump

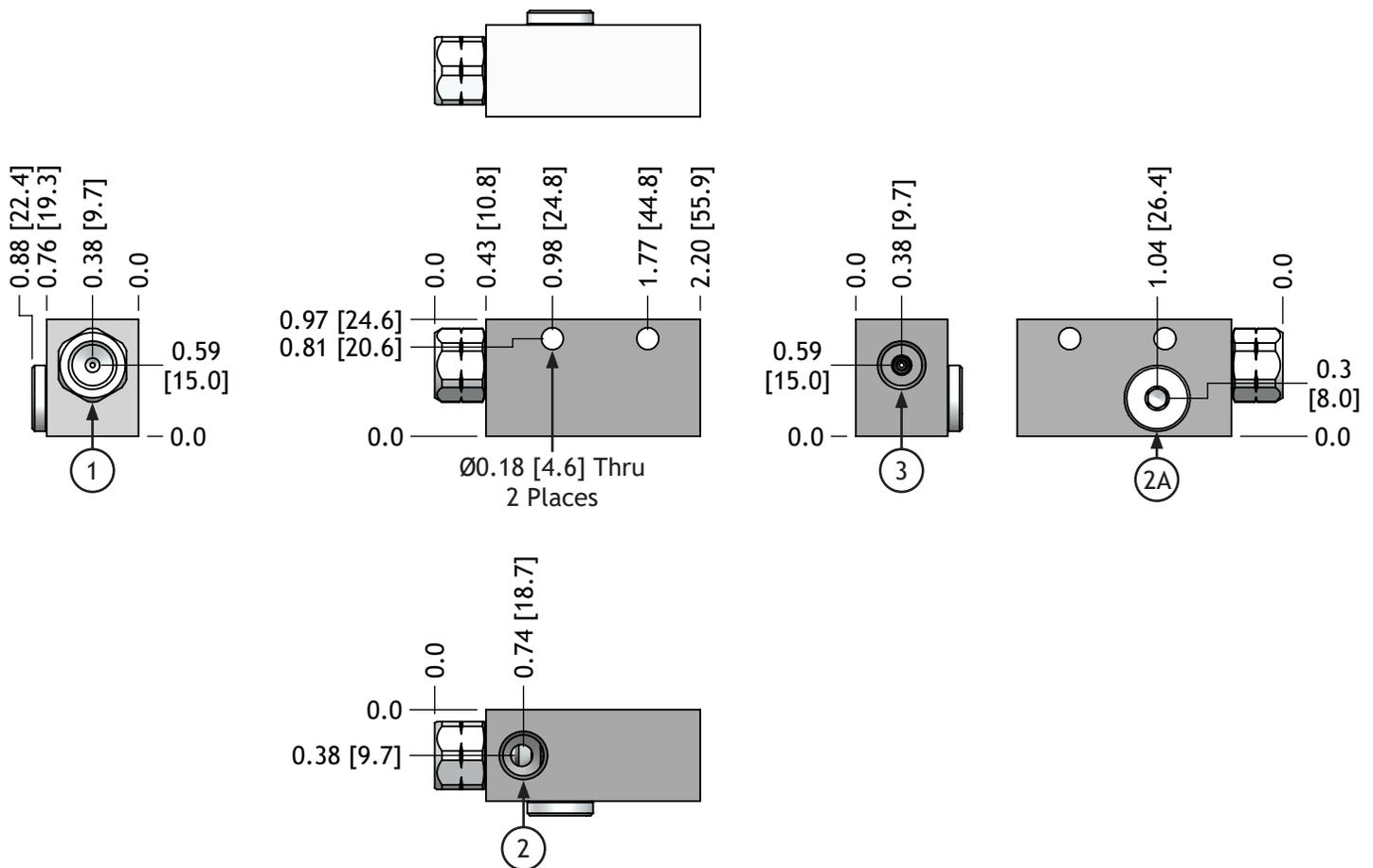
EV single-stage vacuum generators provide a compact, lightweight, low-cost vacuum source for pick & place and material handling applications. The simple two-piece design allows ingested debris to exit the exhaust port. The optional "ST" straight-through exhaust silencer is a no-clog design that will pass ingested debris to atmosphere.

A G 1/8 NPSF auxiliary vacuum port is included so a gauge or vacuum switch can be easily added to complete a system. Construction is aluminum with anodized pump body and electroless-nickel plated primary nozzle.

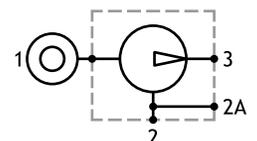


Weight: 1.98 oz [56.0 g]

|        |         | Silencer |
|--------|---------|----------|
| EV10HS | (Blank) | None     |
|        | -ST     | STA18M   |
|        | -AA     | AA18M    |



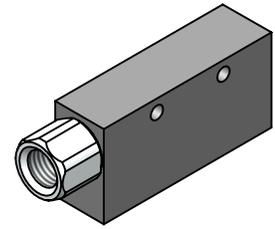
| Code | Function           | Ports      |
|------|--------------------|------------|
| 1    | Air-Supply         | G 1/8 NPSF |
| 2    | Vacuum             | G 1/8 NPSF |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |
| 3    | Exhaust            | G 1/8 NPSF |



### EV Series Vacuum Pump

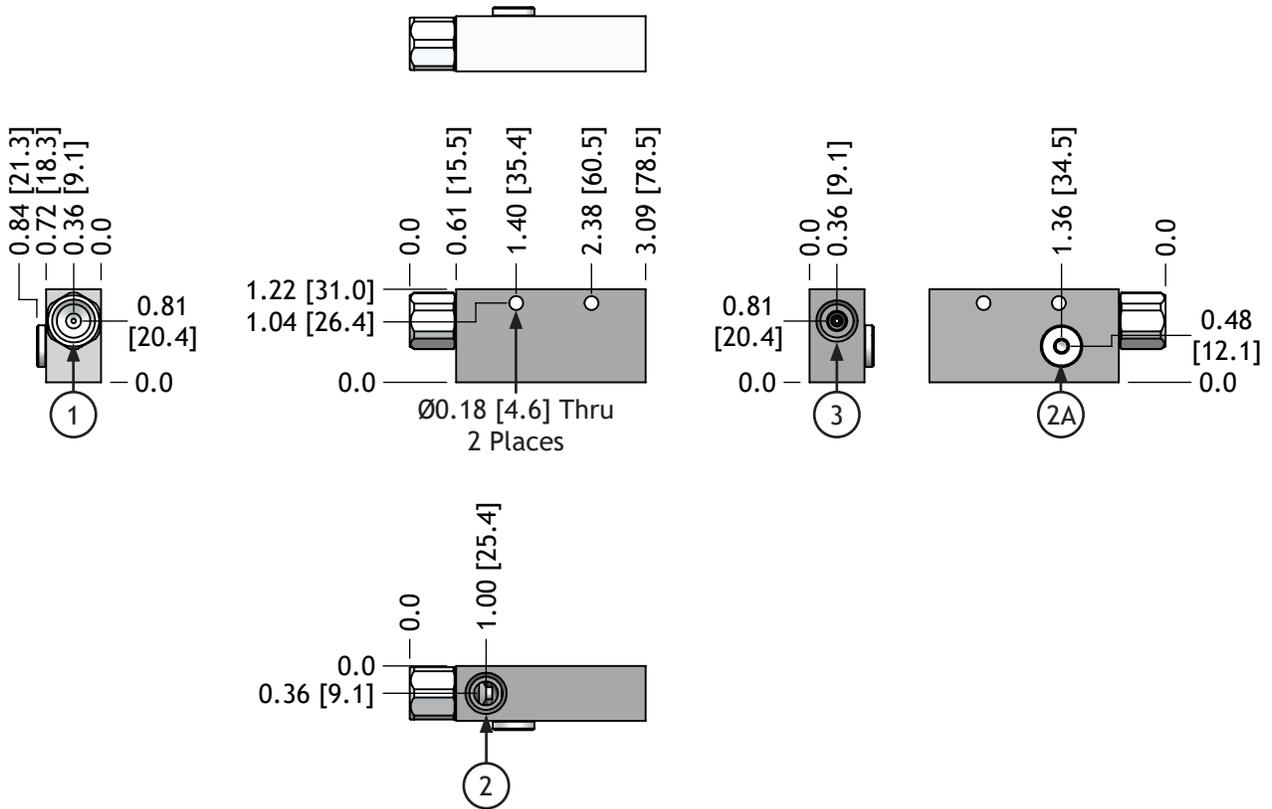
EV single-stage vacuum generators provide a compact, lightweight, low-cost vacuum source for pick & place and material handling applications. The simple two-piece design allows ingested debris to exit the exhaust port. The optional “ST” straight-through exhaust silencer is a no-clog design that will pass ingested debris to atmosphere.

A G 1/8 NPSF auxiliary vacuum port is included so a gauge or vacuum switch can be easily added to complete a system. Construction is aluminum with anodized pump body and electroless-nickel plated primary nozzle.

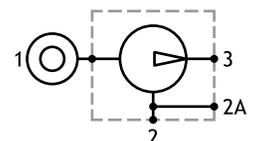


Weight: 3.27 oz [92.8 g]

|               | Threads |             | Silencer |        |
|---------------|---------|-------------|----------|--------|
| <b>EV15HS</b> | (Blank) | NPT Threads | (Blank)  | None   |
|               | -G      | G Threads   | -ST      | STA14M |
|               |         |             | -AA      | AA14M  |



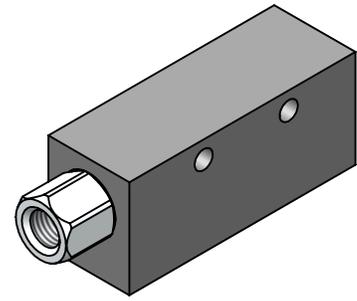
| Code | Function           | NPT        | G     |
|------|--------------------|------------|-------|
| 1    | Air-Supply         | 1/4 NPTF   | G 1/4 |
| 2    | Vacuum             | 1/4 NPTF   | G 1/4 |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |       |
| 3    | Exhaust            | 1/4 NPTF   | G 1/4 |



### EV Series Vacuum Pump

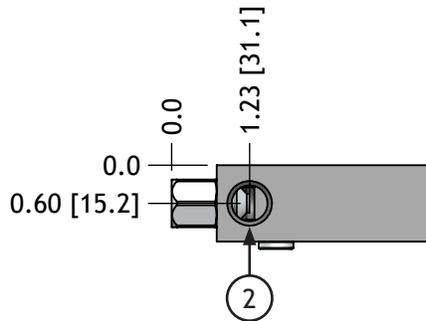
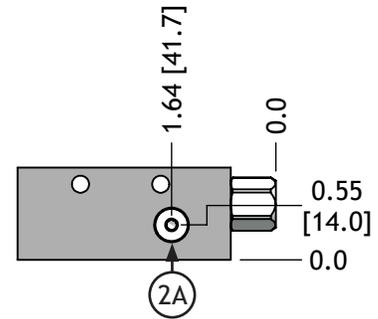
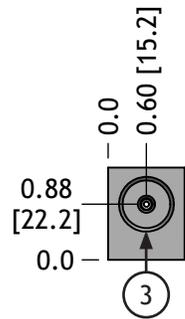
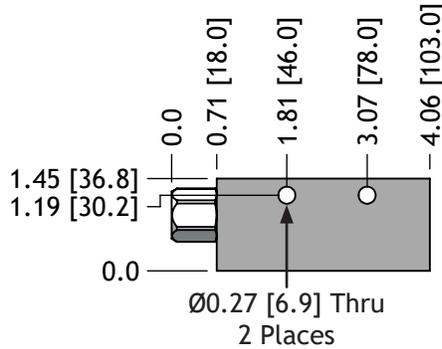
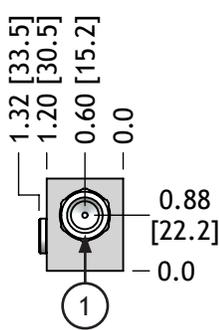
EV single-stage vacuum generators provide a compact, lightweight, low-cost vacuum source for pick & place and material handling applications. The simple two-piece design allows ingested debris to exit the exhaust port. The optional “ST” straight-through exhaust silencer is a no-clog design that will pass ingested debris to atmosphere.

A G 1/8 NPSF auxiliary vacuum port is included so a gauge or vacuum switch can be easily added to complete a system. Construction is aluminum with anodized pump body and electroless-nickel plated primary nozzle.

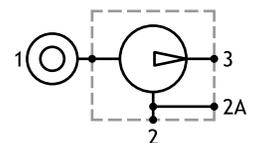


Weight: 8.45 oz [239.6 g]

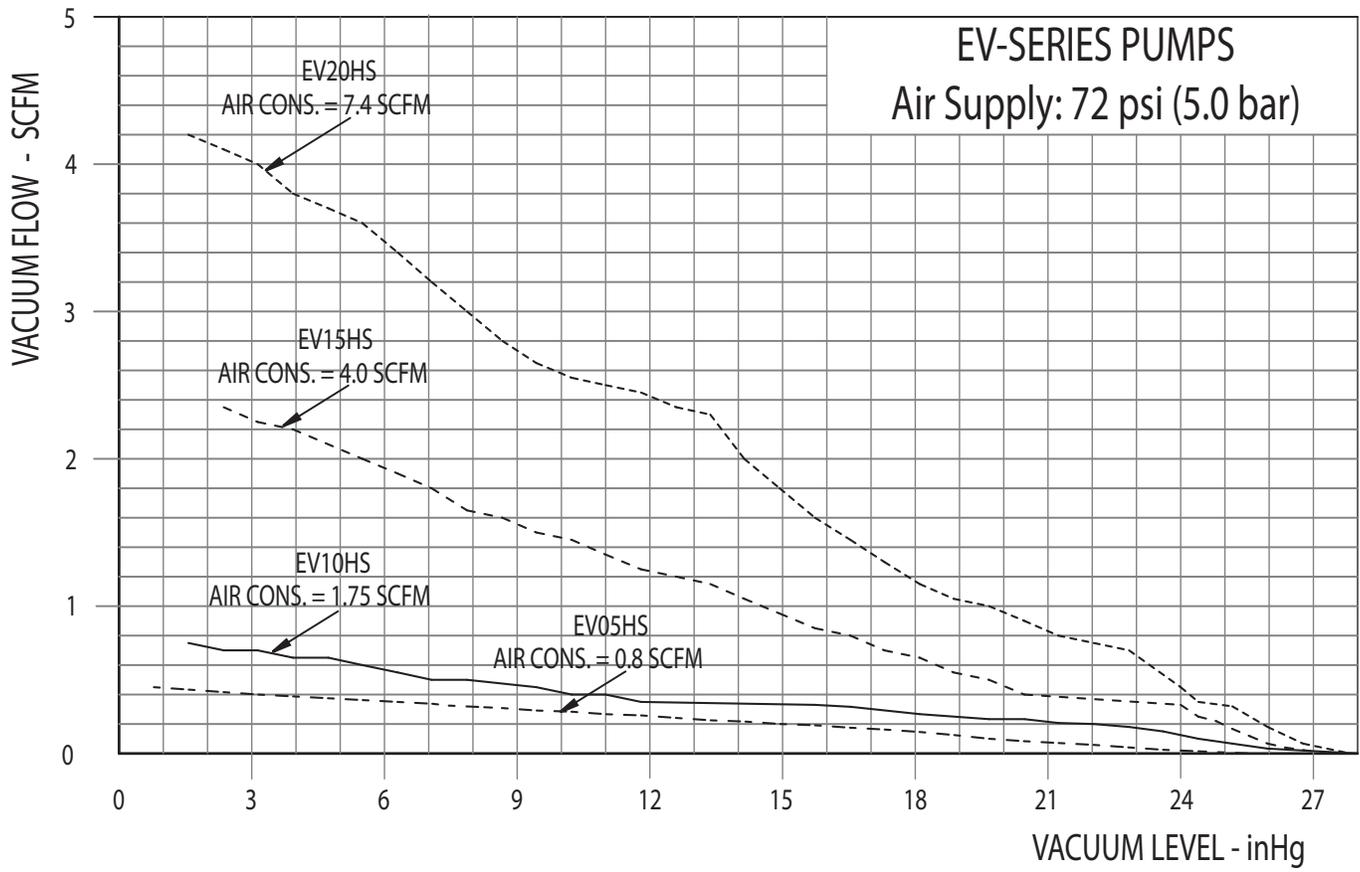
|        | Threads |             | Silencer |        |
|--------|---------|-------------|----------|--------|
| EV20HS | (Blank) | NPT Threads | (Blank)  | None   |
|        | -G      | G Threads   | -ST      | STC12M |
|        |         |             | -AA      | AA12M  |



| Code | Function           | NPT        | G     |
|------|--------------------|------------|-------|
| 1    | Air-Supply         | 1/4 NPTF   | G 1/4 |
| 2    | Vacuum             | 3/8 NPTF   | G 3/8 |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |       |
| 3    | Exhaust            | G 1/2 NPSF |       |



EV Series Performance



Vacuum Flow - SCFM

| Model  | Air-Supply PSI | Air Cons SCFM | Max Vac inHg | SCFM at Vacuum Level |        |        |         |         |         |         |         |
|--------|----------------|---------------|--------------|----------------------|--------|--------|---------|---------|---------|---------|---------|
|        |                |               |              | 3 inHg               | 6 inHg | 9 inHg | 12 inHg | 15 inHg | 18 inHg | 21 inHg | 24 inHg |
| EV05HS | 72             | 0.4           | 26.7         | 0.25                 | 0.22   | 0.20   | 0.15    | 0.12    | 0.7     | 0.03    | 0.01    |
| EV10HS | 72             | 1.8           | 28           | 0.70                 | 0.57   | 0.46   | 0.35    | 0.33    | 0.27    | 0.22    | 0.13    |
| EV15HS | 72             | 4.0           | 27.3         | 2.27                 | 1.94   | 1.56   | 1.24    | 0.94    | 0.66    | 0.39    | 0.33    |
| EV20HS | 72             | 7.4           | 27.8         | 4.01                 | 3.48   | 2.74   | 2.42    | 1.78    | 1.17    | 0.83    | 0.45    |

SCFM X 28.32 = nl / m

Evacuation Time - sec / 100 in<sup>3</sup>

| Model  | Air-Supply PSI | Air Cons SCFM | Max Vac inHg | SCFM at Vacuum Level |        |        |         |         |         |         |         |
|--------|----------------|---------------|--------------|----------------------|--------|--------|---------|---------|---------|---------|---------|
|        |                |               |              | 3 inHg               | 6 inHg | 9 inHg | 12 inHg | 15 inHg | 18 inHg | 21 inHg | 24 inHg |
| EV05HS | 72             | 0.4           | 26.7         | 1                    | 2.5    | 4.5    | 7.5     | 12.5    | 20      | 35      | -       |
| EV10HS | 72             | 1.8           | 28           | 0.36                 | 0.44   | 1.6    | 2.8     | 4.6     | 7.6     | 12.6    | 23.6    |
| EV15HS | 72             | 4.0           | 27.3         | 0.11                 | 0.27   | 0.5    | 0.86    | 1.4     | 2.3     | 4.1     | 7.8     |
| EV20HS | 72             | 7.4           | 27.8         | 0.06                 | 0.15   | 0.3    | 0.5     | 0.8     | 1.3     | 2.2     | 4.2     |

sec / 100 in<sup>3</sup> X 0.61 = sec / l

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.

## V Series Vacuum Pumps

V-Series vacuum pumps are available in 24 models with anodized aluminum bodies plus 12 cartridge models for integration into custom vacuum manifold systems.

EDCO Single-Stage Pumps provide the instantaneous response common to air operated devices in addition to being compact, light, and cost-effective. Rugged, all-metal construction will provide years of trouble-free service.

Our no-clog, flow-through design is perfectly suited for packaging and other applications involving paper fibers or other debris that can be ingested into the vacuum system. Our optional straight-through silencer passes the exhaust directly to atmosphere after absorbing high-frequency noise from the air stream. Many of our competitors use closed-end plastic exhaust mufflers where the exhaust is passed

### Principles of Operation

To generate vacuum, compressed air is supplied to the inlet of a shaped primary nozzle to concentrate the air stream so that it increases in velocity as it passes through the nozzle throat. As velocity increases, pressure decreases until it is below atmospheric pressure (vacuum) and the high-velocity air stream is passed into a second nozzle that is spaced away from the end of the primary nozzle. The gap between the two nozzles occurs within a chamber with a threaded port for connecting to a system requiring a vacuum source. As evacuated air flows into the vacuum port, it is drawn into a second nozzle where it is mixed with air from the primary nozzle and combined flow is exhausted to atmosphere after passing through a silencer where expansion continues and noise is absorbed by an acoustic media.

To stop the vacuum, the compressed air supply is removed and vented by a 3-way supply valve. When air flow stops, vacuum is no longer generated and ambient air flows into the exhaust and into the vacuum line to dissipate the residual vacuum thereby releasing work pieces from vacuum cups or other vacuum holders in the system.

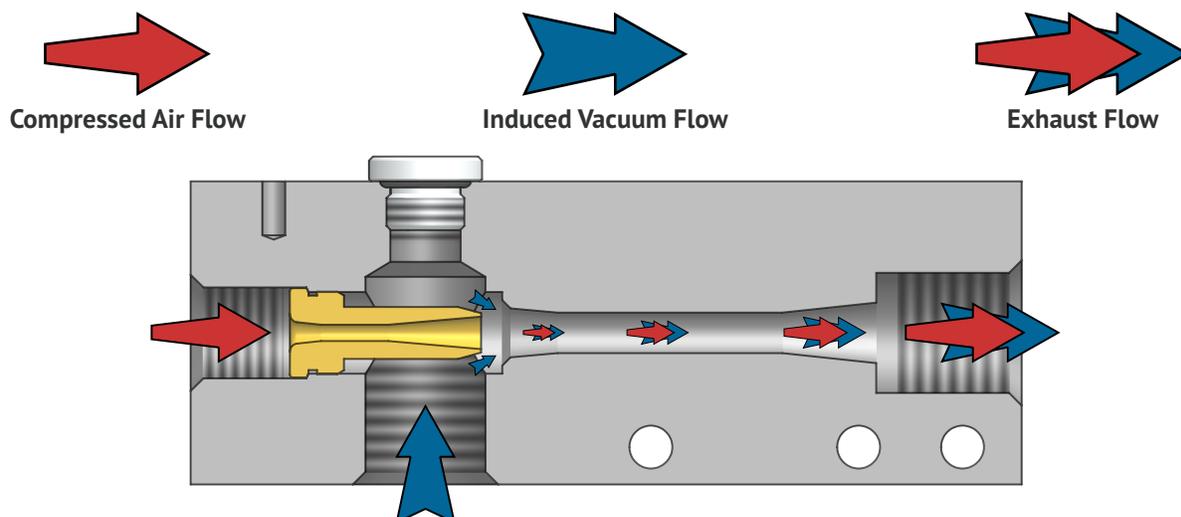
through a filter media that will accumulate debris, eventually causing a loss of pump performance. In systems where conditions are very dirty, such as woodworking, a vacuum filter should be used to remove dust and debris so they will not be dispersed in the exhaust and breathed by workers.

As always, to obtain maximum benefits of EDCO compressed air powered vacuum pumps, they should be mounted close to the point of vacuum usage to minimize line losses, reduce vacuum system volume, and minimize system evacuation time.

For ease of mounting, V-Series Pump bodies feature square or rectangular cross-sections and include mounting holes. This results in a much simpler installation with a better appearance than with cylindrical body vacuum pumps.

Geometry of the primary and secondary nozzles determines the shape of the pump performance curve and the depth of vacuum that can be achieved. Nozzles are optimized for operation at specific pressure but can be used at other supply pressures to suit an application. When operating at some non-optimum air pressure, a rapid popping noise may be heard in the exhaust which is caused when air velocity achieves unstable, supersonic / subsonic velocity and can be eliminated by slightly increasing or decreasing the air supply pressure.

There are many terms for these devices included generator, ejector, and venturi. They are commonly called vacuum pumps in the industry, so that is the term we use. No matter what the name is, they are very useful for providing fast, reliable, compact, low-cost vacuum sources for all manners of application.

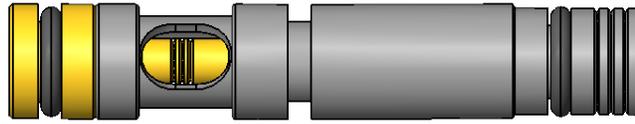


### V Series Venturi Cartridges

V10 and V20 Series Nozzle Sets can be ordered on their own for use in your custom applications.

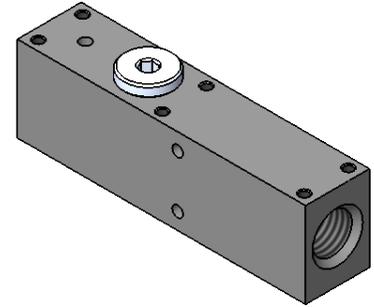
Contact EDCO USA for cavity detail drawing.

| Nozzle Set | Series |
|------------|--------|
| V- 60      | H      |
| 60         | H      |
| 90         | H-60   |
| 100        | M      |
| 150        | M-60   |

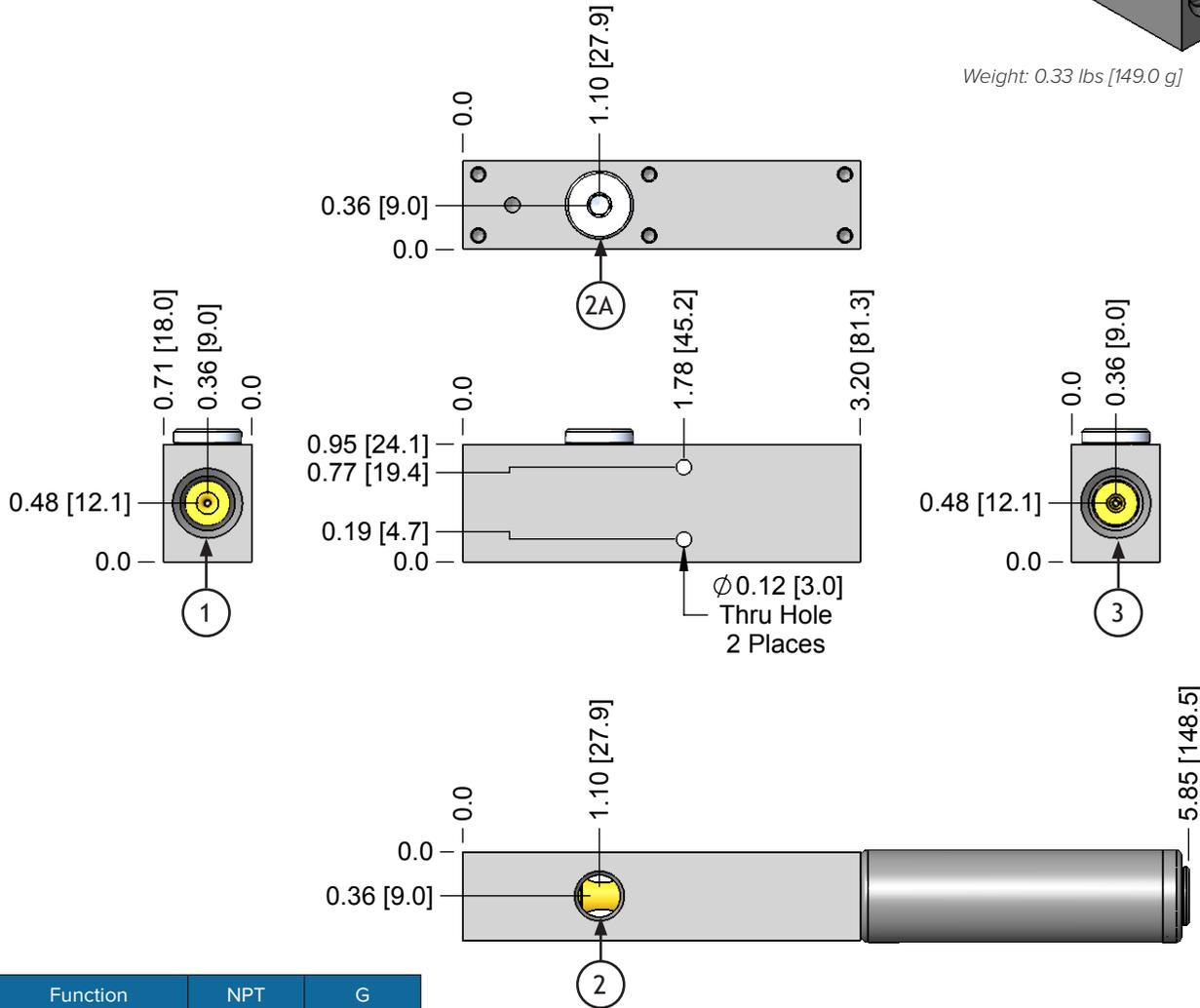


### V10 Vacuum Pumps

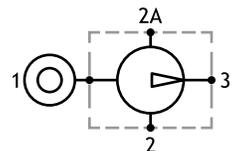
| Blow-Off Options |          | Nozzle Set | Series | Threads |           | Silencer |        |
|------------------|----------|------------|--------|---------|-----------|----------|--------|
| V10              |          | 60         | H      | (Blank) | NPT       | (Blank)  | None   |
| (Blank)          | None     | 60         | H      | (Blank) | NPT       | (Blank)  | None   |
| -X               | Blow-Off | 90         | H-60   | -G      | G Threads | -ST      | STA14M |
|                  |          | 100        | M      |         |           |          |        |
|                  |          | 150        | M-60   |         |           |          |        |



Weight: 0.33 lbs [149.0 g]

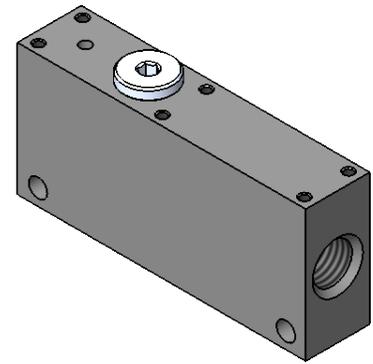


| Code | Function           | NPT        | G     |
|------|--------------------|------------|-------|
| 1    | Air-Supply         | 1/4 NPTF   | G 1/4 |
| 2    | Vacuum             | G 1/8 NPSF |       |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |       |
| 3    | Exhaust            | 1/4 NPTF   | G 1/4 |

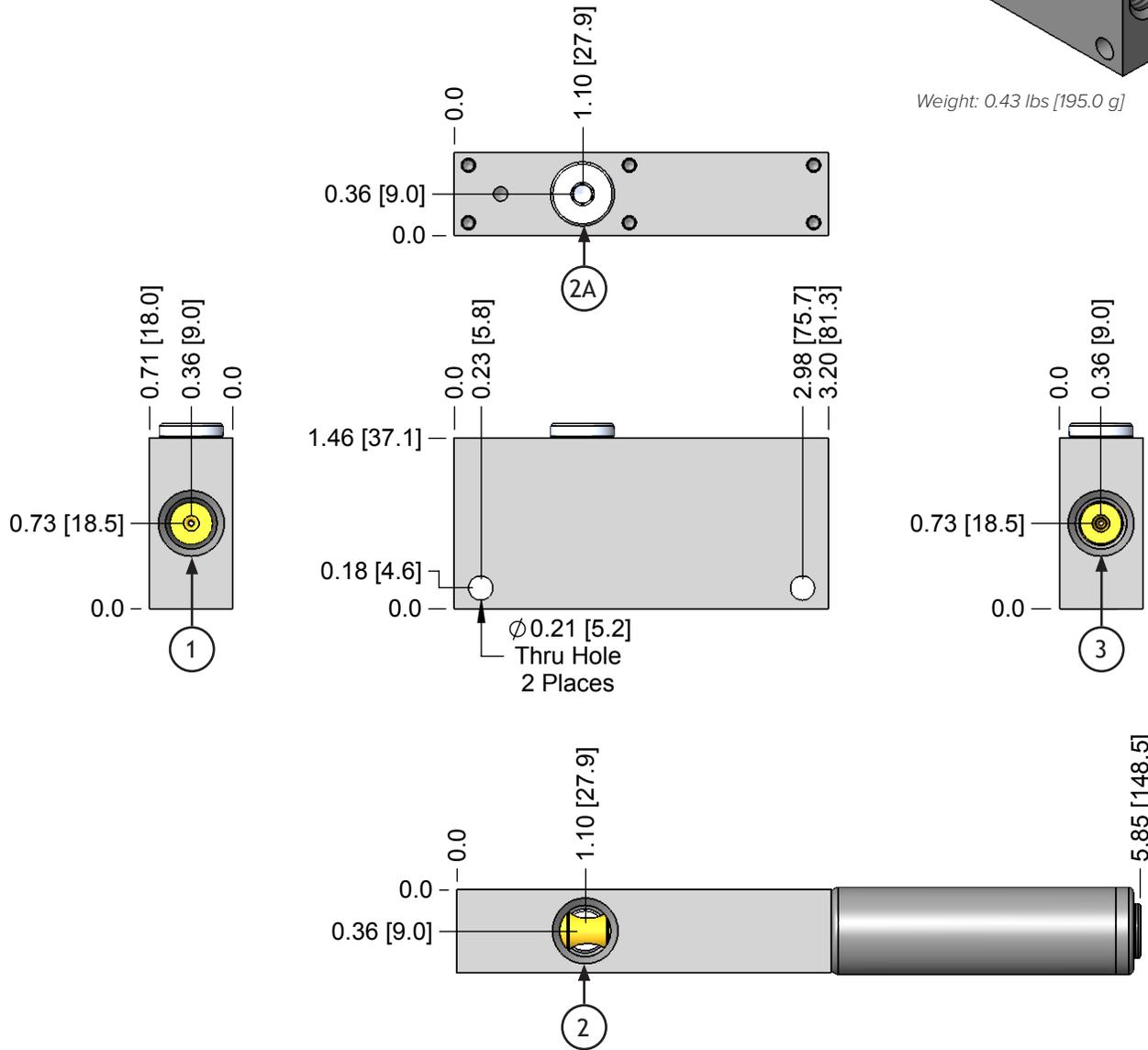


### V20 Vacuum Pumps

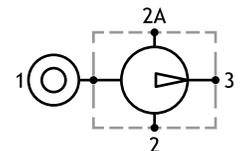
| Blow-Off Options |          | Nozzle Set | Series | Threads |           | Silencer |        |
|------------------|----------|------------|--------|---------|-----------|----------|--------|
| V20              |          | 60         | H      |         |           |          |        |
| (Blank)          | None     | 60         | H      | (Blank) | NPT       | (Blank)  | None   |
| -X               | Blow-Off | 90         | H-60   | -G      | G Threads | -ST      | STA14M |
|                  |          | 100        | M      |         |           |          |        |
|                  |          | 150        | M-60   |         |           |          |        |



Weight: 0.43 lbs [195.0 g]



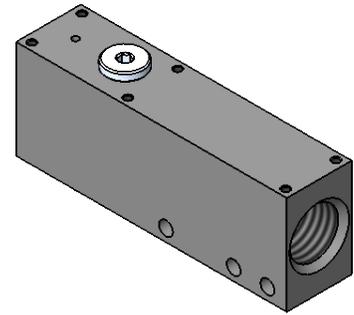
| Code | Function           | NPT        | G     |
|------|--------------------|------------|-------|
| 1    | Air-Supply         | 1/4 NPTF   | G 1/4 |
| 2    | Vacuum             | 1/4 NPTF   | G 1/4 |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |       |
| 3    | Exhaust            | 1/4 NPTF   | G 1/4 |



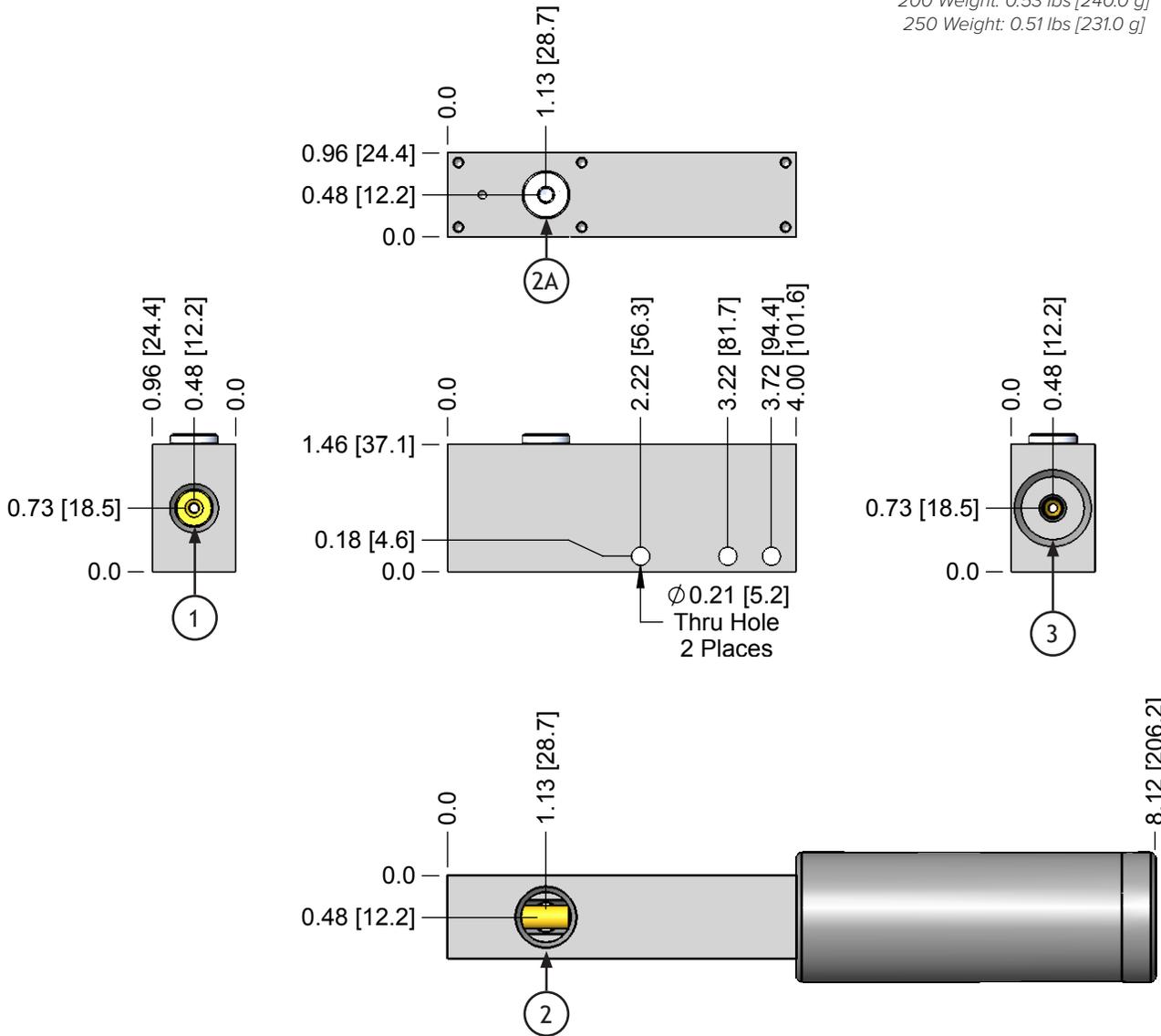
### V80 Vacuum Pumps

| Blow-Off Options |          | Nozzle Set | Series | Threads |           | Silencer <sup>1</sup> |             |
|------------------|----------|------------|--------|---------|-----------|-----------------------|-------------|
| V80              |          | 200        | H      |         |           |                       |             |
| (Blank)          | None     | 200        | H      | (Blank) | NPT       | (Blank)               | None        |
| -X               | Blow-Off | 250        | H-60   | -G      | G Threads | -ST                   | ST Silencer |
|                  |          |            | M      |         |           |                       |             |
|                  |          |            | M-60   |         |           |                       |             |

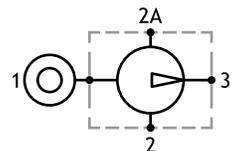
<sup>1</sup>Pumps with 200 Nozzle Sets use STB38M Silencers.  
<sup>1</sup>Pumps with 250 Nozzle Sets use STC12M Silencers.



200 Weight: 0.53 lbs [240.0 g]  
 250 Weight: 0.51 lbs [231.0 g]

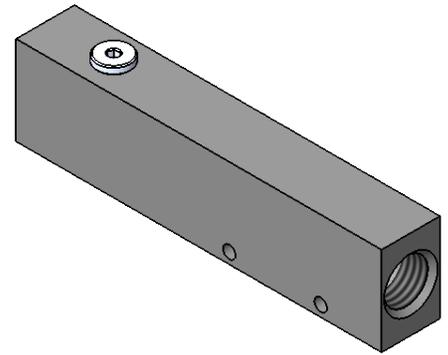


| Code | Function           | 200 - NPT  | 200 - G | 250 - NPT | 250 - G |
|------|--------------------|------------|---------|-----------|---------|
| 1    | Air-Supply         | 1/4 NPTF   | G 1/4   | 1/4 NPTF  | G 1/4   |
| 2    | Vacuum             | 3/8 NPTF   | G 3/8   | 3/8 NPTF  | G 3/8   |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |         |           |         |
| 3    | Exhaust            | 3/8 NPTF   | G 3/8   | 1/2 NPTF  | G 1/2   |



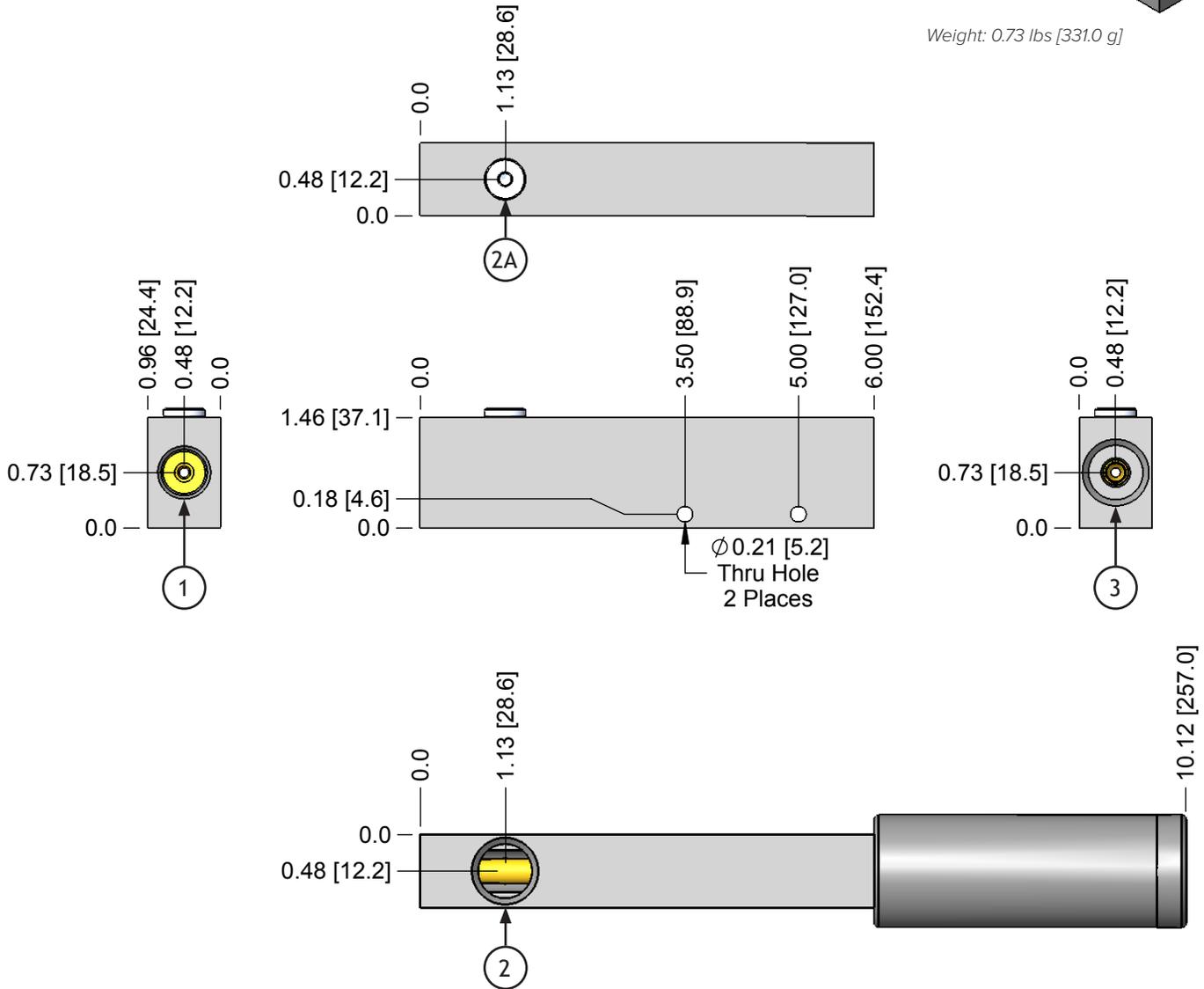
### V90 Vacuum Pumps

| Blow-Off Options |          | Nozzle Set | Series | Threads |           | Silencer <sup>1</sup> |             |
|------------------|----------|------------|--------|---------|-----------|-----------------------|-------------|
| V90              |          | 300        | H      | (Blank) | NPT       | (Blank)               | None        |
| (Blank)          | None     | 300        | H      | (Blank) | NPT       | (Blank)               | None        |
| -X               | Blow-Off | 350        | H-60   | -G      | G Threads | -ST                   | ST Silencer |
|                  |          |            | M      |         |           |                       |             |
|                  |          |            | M-60   |         |           |                       |             |

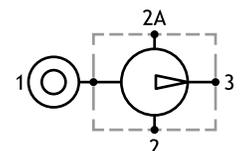


Weight: 0.73 lbs [331.0 g]

<sup>1</sup>Pumps with 300 Nozzle Sets use STC12M Silencers.  
<sup>1</sup>Pumps with 350 Nozzle Sets use STC12M-6 Silencers.



| Code | Function           | NPT        | G     |
|------|--------------------|------------|-------|
| 1    | Air-Supply         | 3/8 NPTF   | G 3/8 |
| 2    | Vacuum             | 1/2 NPTF   | G 1/2 |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |       |
| 3    | Exhaust            | 1/2 NPTF   | G 1/2 |



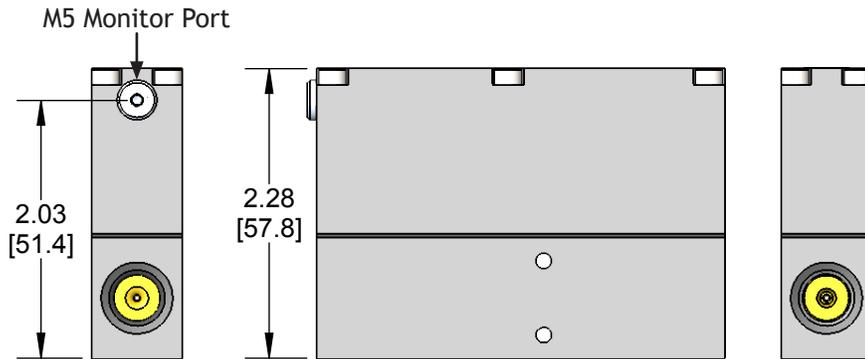
## VX: V Series Vacuum Pumps w/ Automatic Blow-Off

Same performance as a standard V-series but with automatic quick-release blow-off module. Air supply to the pump fills a volume chamber via an integral quick exhaust valve.

When the pump air supply is turned off and pressure drops about 5 psi (0,3 bar), the quick exhaust valve shifts and passes the stored volume directly into the pump vacuum port to quickly dissipate system vacuum for a faster cycle time.

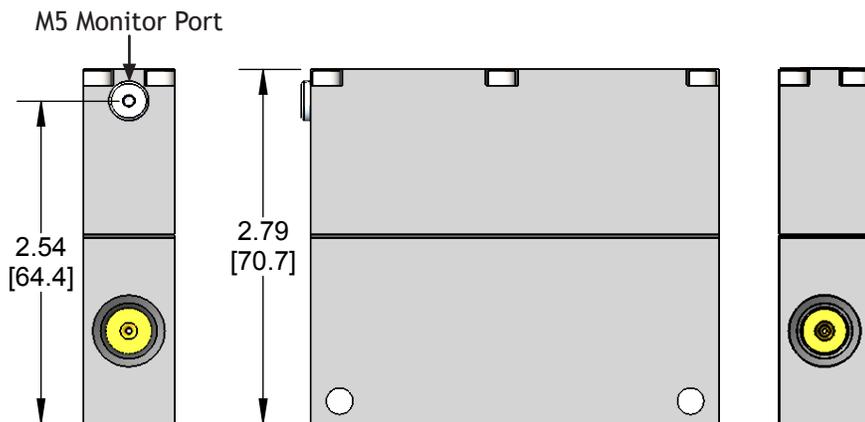
### V10X

Storage Volume: 1.0 in<sup>3</sup> [16.4 ml]  
Weight: 0.33 lbs [149.0 g]



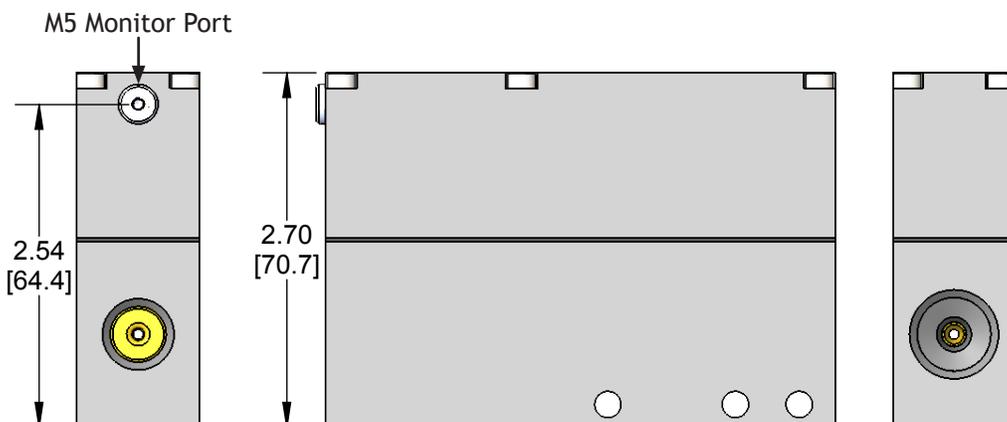
### V20X

Storage Volume: 1.0 in<sup>3</sup> [16.4 ml]  
Weight: 0.43 lbs [195.0 g]



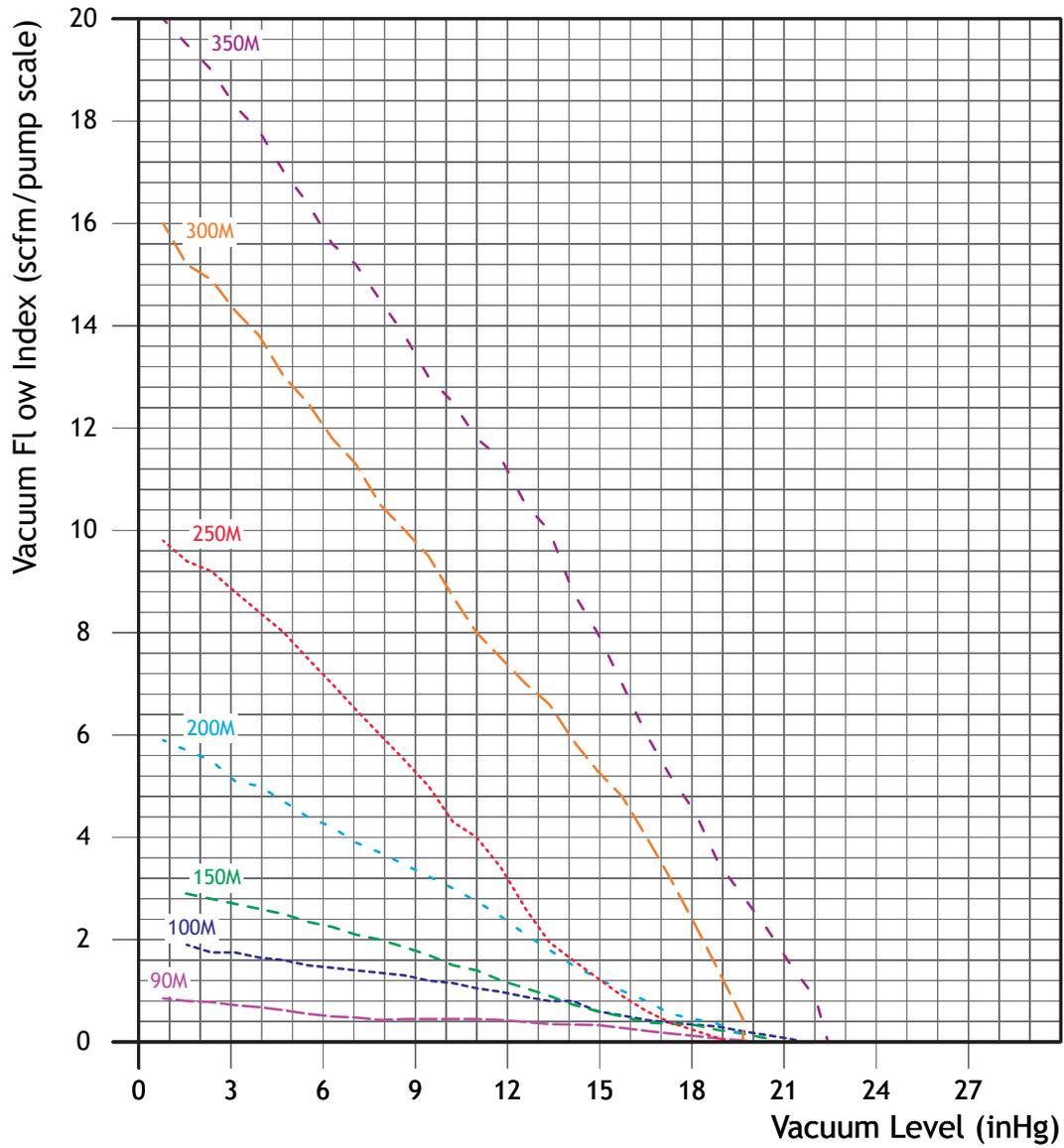
### V80X

Storage Volume: 2.8 in<sup>3</sup> (45 ml)  
Weight: 0.71 lbs [322.0 g]



### V Series Performance - M Series

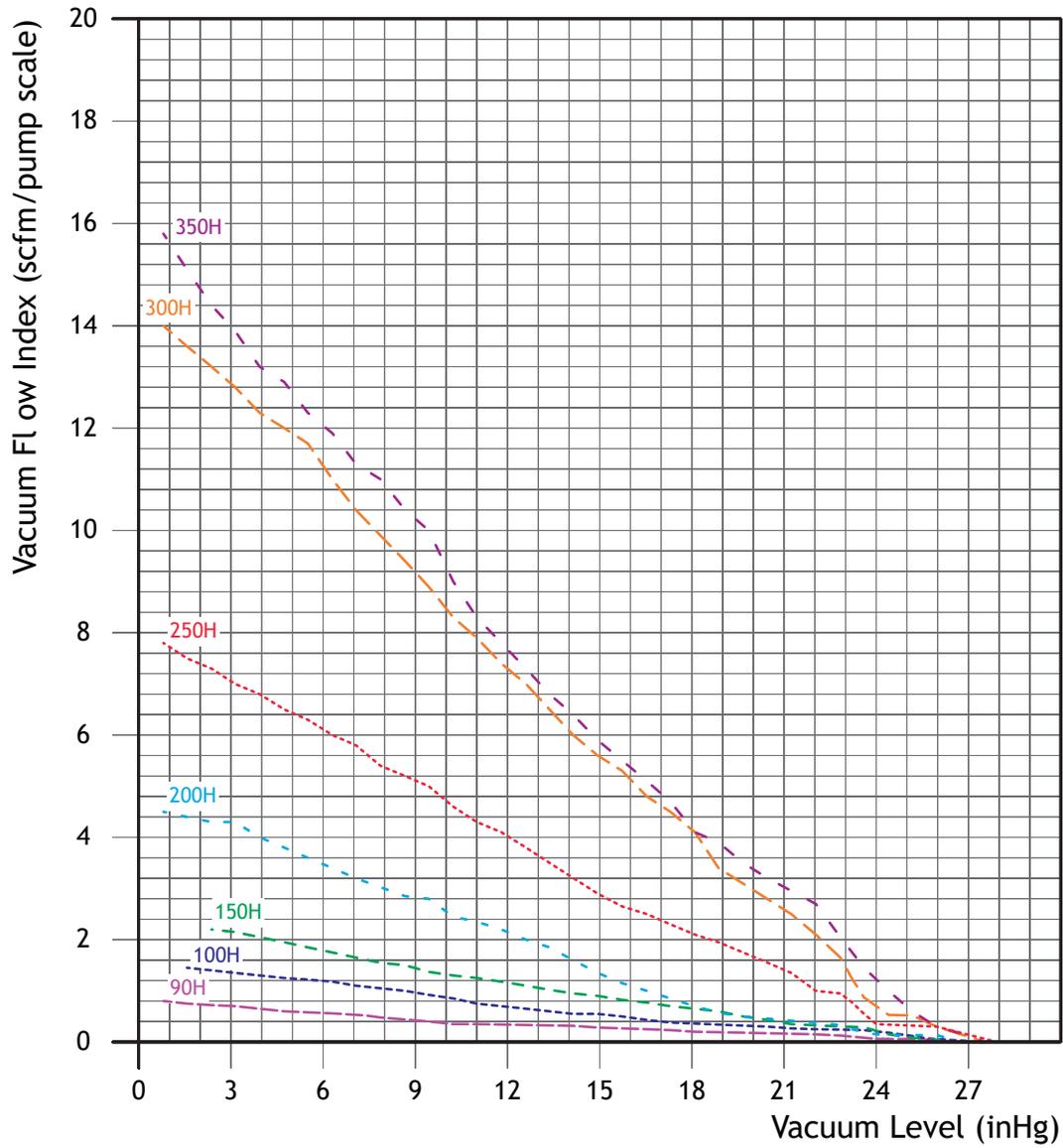
- High Flow
- 20 inHg Maximum Vacuum



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.

### V Series Performance - H Series

- High Vacuum
- 28 inHg Maximum Vacuum



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.

## V Series Performance - All Series

### Vacuum Flow - SCFM

| Model | Air Cons<br>SCFM @ 80 PSI | Max Vac<br>inHg | SCFM at Vacuum Level |        |        |         |         |         |         |         |         |
|-------|---------------------------|-----------------|----------------------|--------|--------|---------|---------|---------|---------|---------|---------|
|       |                           |                 | 3 inHg               | 6 inHg | 9 inHg | 12 inHg | 15 inHg | 18 inHg | 21 inHg | 24 inHg | 27 inHg |
| 60H   | 0.8                       | 27              | 0.38                 | 0.32   | 0.3    | 0.27    | 0.23    | 0.2     | 0.13    | 0.05    | 0.02    |
| 90H   | 1.7                       | 26.7            | 0.7                  | 0.6    | 0.4    | 0.35    | 0.3     | 0.21    | 0.17    | 0.06    | 0       |
| 100H  | 2.5                       | 27.5            | 1.4                  | 1.2    | 1      | 0.7     | 0.55    | 0.36    | 0.28    | 0.21    | 0.02    |
| 150H  | 4.7                       | 26.7            | 2.1                  | 1.8    | 1.4    | 1.2     | 0.9     | 0.66    | 0.37    | 0.22    | 0       |
| 200H  | 7.9                       | 26.7            | 4.3                  | 3.5    | 2.8    | 2.1     | 1.3     | 0.72    | 0.43    | 0.15    | 0       |
| 250H  | 13.4                      | 27.5            | 7.1                  | 6.1    | 5.1    | 4       | 2.9     | 2.1     | 1.4     | 0.35    | 0.12    |
| 300H  | 20.0                      | 27.5            | 12.9                 | 11.3   | 9.2    | 7.3     | 5.6     | 4.1     | 2.6     | 0.7     | 0.1     |
| 350H  | 27.0                      | 27.5            | 14                   | 12     | 10.2   | 7.7     | 5.9     | 4.2     | 3       | 1.2     | 0.14    |
| 60M   | 0.5                       | 20              | 0.4                  | 0.3    | 0.22   | 0.15    | 0.08    | 0.03    | -       | -       | -       |
| 90M   | 1.8                       | 20.2            | 0.73                 | 0.52   | 0.45   | 0.42    | 0.33    | 0.12    | 0       | -       | -       |
| 100M  | 1.9                       | 21.6            | 1.8                  | 1.5    | 1.3    | 1       | 0.6     | 0.34    | 0.08    | -       | -       |
| 150M  | 2.9                       | 20.8            | 2.7                  | 2.3    | 1.8    | 1.1     | 0.6     | 0.34    | 0       | -       | -       |
| 200M  | 5.2                       | 20              | 5.1                  | 4.3    | 3.4    | 2.4     | 1.2     | 0.46    | 0       | -       | -       |
| 250M  | 8.6                       | 19.2            | 8.9                  | 7.2    | 5.3    | 3.2     | 1.2     | 0.24    | 0       | -       | -       |
| 300M  | 13.3                      | 19.6            | 14.4                 | 12     | 9.8    | 7.4     | 5.3     | 2.4     | 0       | -       | -       |
| 350M  | 20.4                      | 22.4            | 18.4                 | 15.9   | 13.5   | 11.2    | 7.9     | 4.6     | 1.7     | -       | -       |

$$SCFM \times 28.32 = nl / m$$

### Evacuation Time - sec / 1,000 in<sup>3</sup>

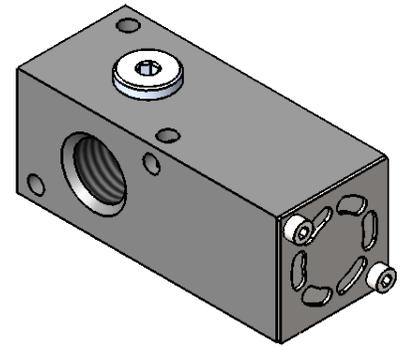
| Model | Air Cons<br>SCFM @ 80 PSI | Max Vac<br>inHg | SCFM at Vacuum Level |        |        |         |         |         |         |         |         |
|-------|---------------------------|-----------------|----------------------|--------|--------|---------|---------|---------|---------|---------|---------|
|       |                           |                 | 3 inHg               | 6 inHg | 9 inHg | 12 inHg | 15 inHg | 18 inHg | 21 inHg | 24 inHg | 27 inHg |
| 60H   | 0.8                       | 27              | 15                   | 30     | 51     | 75      | 103     | 136     | 183     | 246     | 410     |
| 90H   | 1.7                       | 26.7            | 3.5                  | 13     | 17     | 29      | 48      | 79      | 135     | 255     | -       |
| 100H  | 2.5                       | 27.5            | 1.9                  | 4.5    | 8.3    | 14      | 24      | 39      | 68      | 129     | 325     |
| 150H  | 4.7                       | 26.7            | 1.2                  | 2.9    | 5.4    | 9.3     | 15      | 25      | 43      | 82      | -       |
| 200H  | 7.9                       | 26.7            | 0.64                 | 1.5    | 2.9    | 4.6     | 8.1     | 13      | 24      | 46      | -       |
| 250H  | 13.4                      | 27.5            | 0.36                 | 0.87   | 1.6    | 2.7     | 4.5     | 7.3     | 13      | 24      | 62      |
| 300H  | 20.0                      | 27.5            | 0.2                  | 0.48   | 0.87   | 1.5     | 2.4     | 4       | 6.9     | 13      | 34      |
| 350H  | 27.0                      | 27.5            | 0.18                 | 0.44   | 0.81   | 1.2     | 2.3     | 3.7     | 6.4     | 12      | 31      |
| 60M   | 0.5                       | 20              | 12.5                 | 25.0   | 44     | 69      | 99      | 154     | -       | -       | -       |
| 90M   | 1.8                       | 20.2            | 3.4                  | 12     | 17     | 28      | 46      | 76      | -       | -       | -       |
| 100M  | 1.9                       | 21.6            | 1.7                  | 3.5    | 6.4    | 11      | 18      | 31      | 54      | -       | -       |
| 150M  | 2.9                       | 20.8            | 0.93                 | 2.3    | 4.2    | 7.3     | 13      | 22      | -       | -       | -       |
| 200M  | 5.2                       | 20              | 0.48                 | 1.2    | 2.2    | 3.8     | 6.4     | 12      | -       | -       | -       |
| 250M  | 8.6                       | 19.2            | 0.29                 | 0.69   | 1.3    | 2.3     | 4.1     | 7.2     | -       | -       | -       |
| 300M  | 13.3                      | 19.6            | 0.18                 | 0.43   | 0.81   | 1.4     | 2.3     | 3.8     | -       | -       | -       |
| 350M  | 20.4                      | 22.4            | 0.14                 | 0.34   | 0.64   | 1       | 1.7     | 2.8     | 4.9     | -       | -       |

$$sec / 1,000 in^3 \times 0.61 = sec / l$$

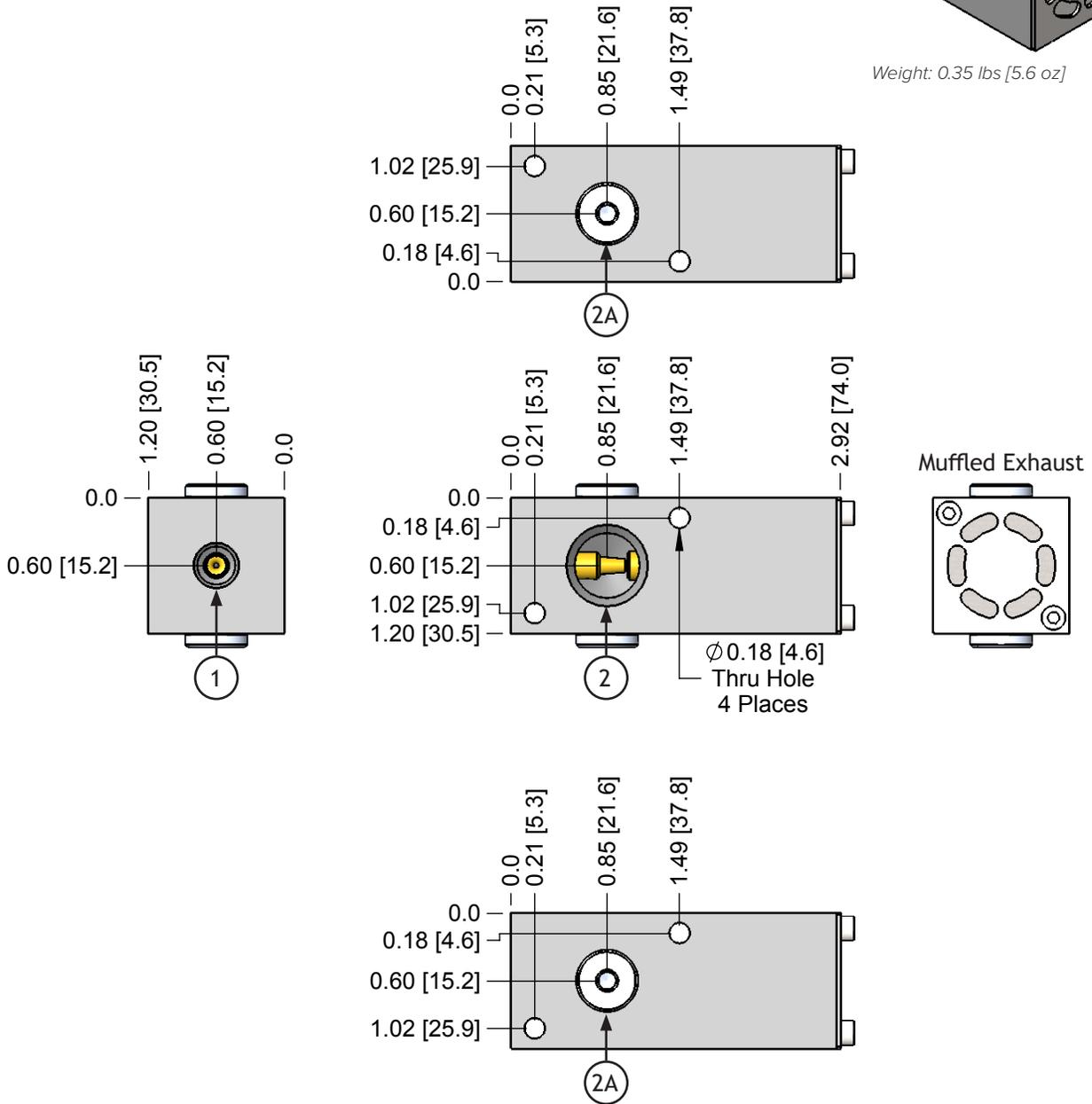
All performance data presented is a representation of production pumps but is not a guarantee due to variations in local barometric pressure and of mass produced components.

### SM24-38: Compact Vacuum Pump

The SM24-38 is a multi-characteristic pump with three operating pressures. It is compact, light-weight, economical, maintenance free, energy efficient, and quiet. Made of brass nozzles and an anodized aluminum body, the SM24-38 has a high flow rate with a maximum air supply of 100 psi. With its metal construction and stainless steel fasteners, the SM24-38 is also a very rugged pump.



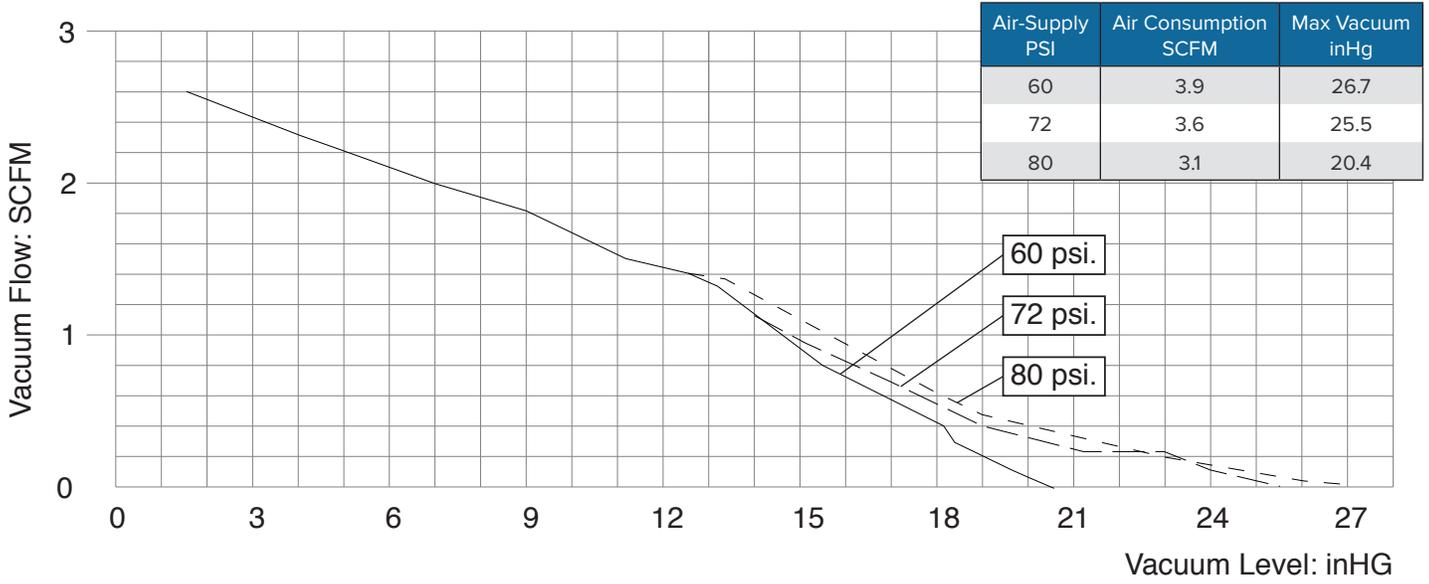
Weight: 0.35 lbs [5.6 oz]



| Code | Function           | Ports      |
|------|--------------------|------------|
| 1    | Air-Supply         | G 1/8 NPSF |
| 2    | Vacuum             | 3/8 NPS    |
| 2A   | Vacuum - Auxiliary | G 1/8 NPSF |

### SM Series Performance

#### Vacuum Flow - SCFM

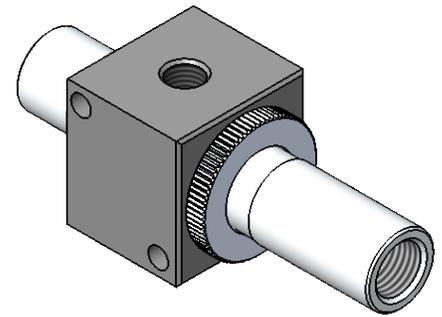


SCFM X 28.32 = nl / m

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.

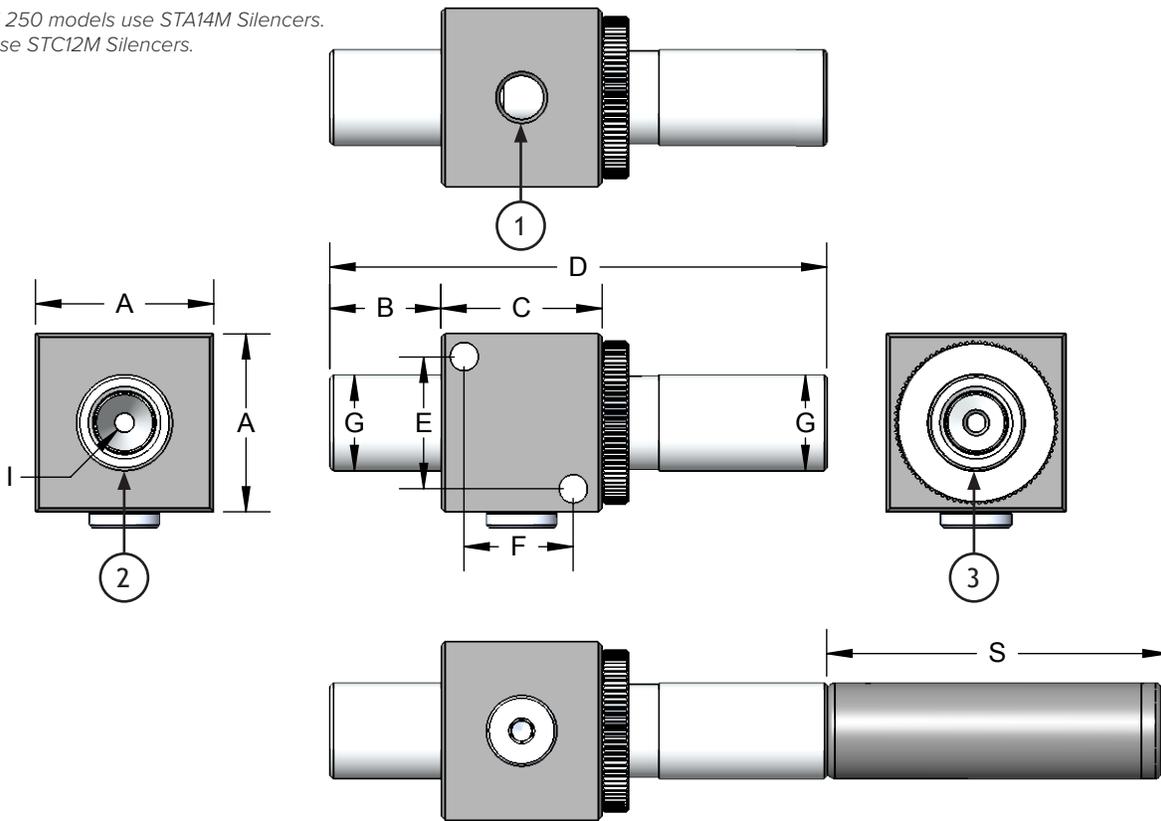
### Variable Displacement Pumps

VDS vacuum pumps can provide over 20" Hg (68 kPa) and their straight through non-clog design is ideal for very dusty and dirty applications such as bag filling or handling ceramics or masonry products. The square body and two mounting holes makes the VDS pump easy to attach to any flat surface. An ST Straight Thru silencer will not accumulate debris and will pass it out with the exhaust air. For less critical applications where cost is more of an issue, a conventional AA silencer may be used.



| Model   | Threads |             | Silencer <sup>1</sup> |             |
|---------|---------|-------------|-----------------------|-------------|
| VDS-150 | (Blank) | NPT Threads | (Blank)               | None        |
| 200     | -G      | G Threads   | -ST                   | ST Silencer |
| 250     |         |             |                       |             |
| 375     |         |             |                       |             |

<sup>1</sup>150, 200, and 250 models use STA14M Silencers.  
<sup>1</sup>375 models use STC12M Silencers.



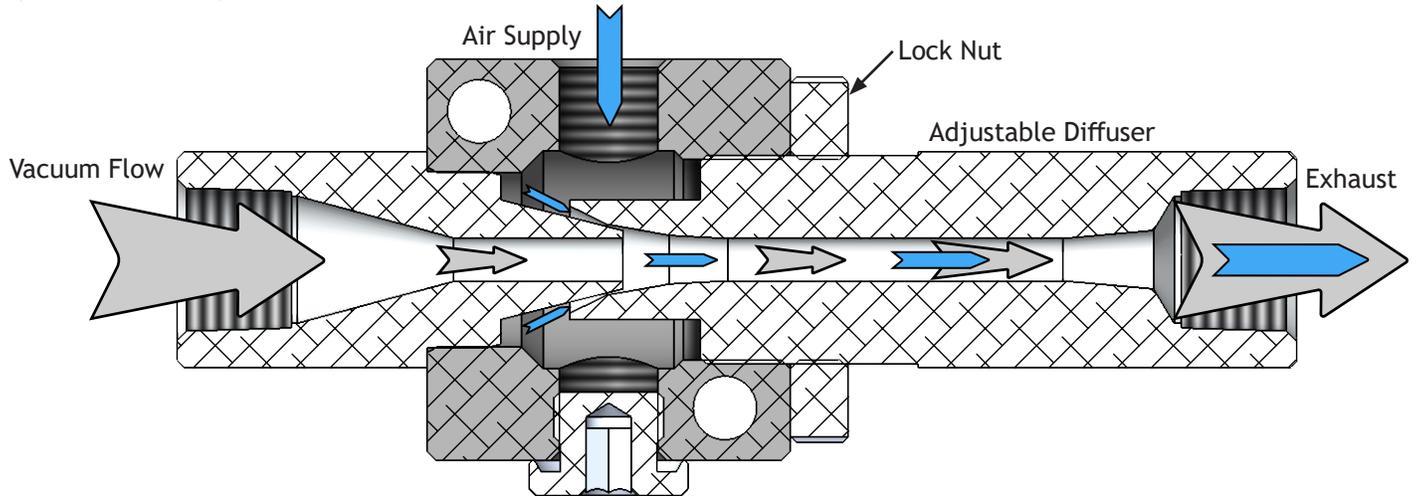
| MODEL   | 1 - Air-Supply | 2 - Vacuum  | 3 - Exhaust | A              | B              | C              | D               | E              | F              | G              | H             | I             | S               |
|---------|----------------|-------------|-------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|---------------|---------------|-----------------|
| VDS-150 | G 1/8 NPSF     | 1/4   G 1/4 | 1/4   G 1/4 | 1.38<br>[35.0] | 0.86<br>[21.8] | 1.25<br>[31.8] | 3.81<br>[96.7]  | 1.02<br>[25.9] | 0.84<br>[21.3] | 0.74<br>[18.8] | 0.22<br>[5.5] | 0.15<br>[3.8] | 2.65<br>[67.3]  |
| VDS-200 | G 1/8 NPSF     | 1/4   G 1/4 | 1/4   G 1/4 | 1.38<br>[35.0] | 0.86<br>[21.8] | 1.25<br>[31.8] | 3.81<br>[96.7]  | 1.02<br>[25.9] | 0.84<br>[21.3] | 0.74<br>[18.8] | 0.22<br>[5.5] | 0.2<br>[5.1]  | 2.65<br>[67.3]  |
| VDS-250 | G 1/8 NPSF     | 1/4   G 1/4 | 1/4   G 1/4 | 1.38<br>[35.0] | 0.86<br>[21.8] | 1.25<br>[31.8] | 3.81<br>[96.7]  | 1.02<br>[25.9] | 0.84<br>[21.3] | 0.74<br>[18.8] | 0.22<br>[5.5] | 0.25<br>[6.3] | 2.65<br>[67.3]  |
| VDS-375 | 3/8 NPSF       | G 1/2 NPSF  | G 1/2 NPSF  | 1.72<br>[43.7] | 1.5<br>[38.1]  | 1.75<br>[44.5] | 5.99<br>[152.0] | 1.32<br>[33.5] | 1.35<br>[34.3] | 0.98<br>[24.9] | 0.26<br>[6.6] | 0.38<br>[9.5] | 4.12<br>[104.6] |

## Variable Displacement Pumps

### Operation

Loosen the jam nut and turn the diffuser nozzle clockwise, by hand, until it contacts the inlet nozzle. With the work piece against the suction cup or holding fixture, supply regulated compressed air to the side air supply port and gradually rotate the diffuser nozzle to adjust the annular gap between the two nozzles until the desired vacuum level or vacuum flow is achieved. To minimize air consumption, use the lowest pressure air supply that will yield the desired results. Turning the diffuser too far open will suddenly cause a decrease in performance and this point will vary depending on the operating air pressure.

Ingested debris passes directly from end-to-end through the pump bore without any turns and without passing through the annular venturi created by the inlet and diffuser nozzles, so there is no opportunity for clogging as long as the pump bore is large enough to pass the largest debris particle. As the pump bore size is increased, it can also generate more vacuum flow to overcome porosity and leakage.



### Performance

| Model   | Max Vac Flow SCFM | Air Consumption vs Vacuum Level @ 80 PSI |         |         |         |         |
|---------|-------------------|--|---------|---------|---------|---------|
|         |                   | 5 inHg                                   | 10 inHg | 15 inHg | 20 inHg | 25 inHg |
| VDS-150 | 3.2               | 1.3                                      | 1.7     | 2.4     | 3.2     | 4.5     |
| VDS-200 | 6                 | 2.4                                      | 3.7     | 4.7     | 6       | 6.8     |
| VDS-250 | 10                | 4  | 6       | 8.3     | 9.7     | 12      |
| VDS-375 | 30                | 6.2                                      | 11.5    | 17      | 21      | 29      |

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