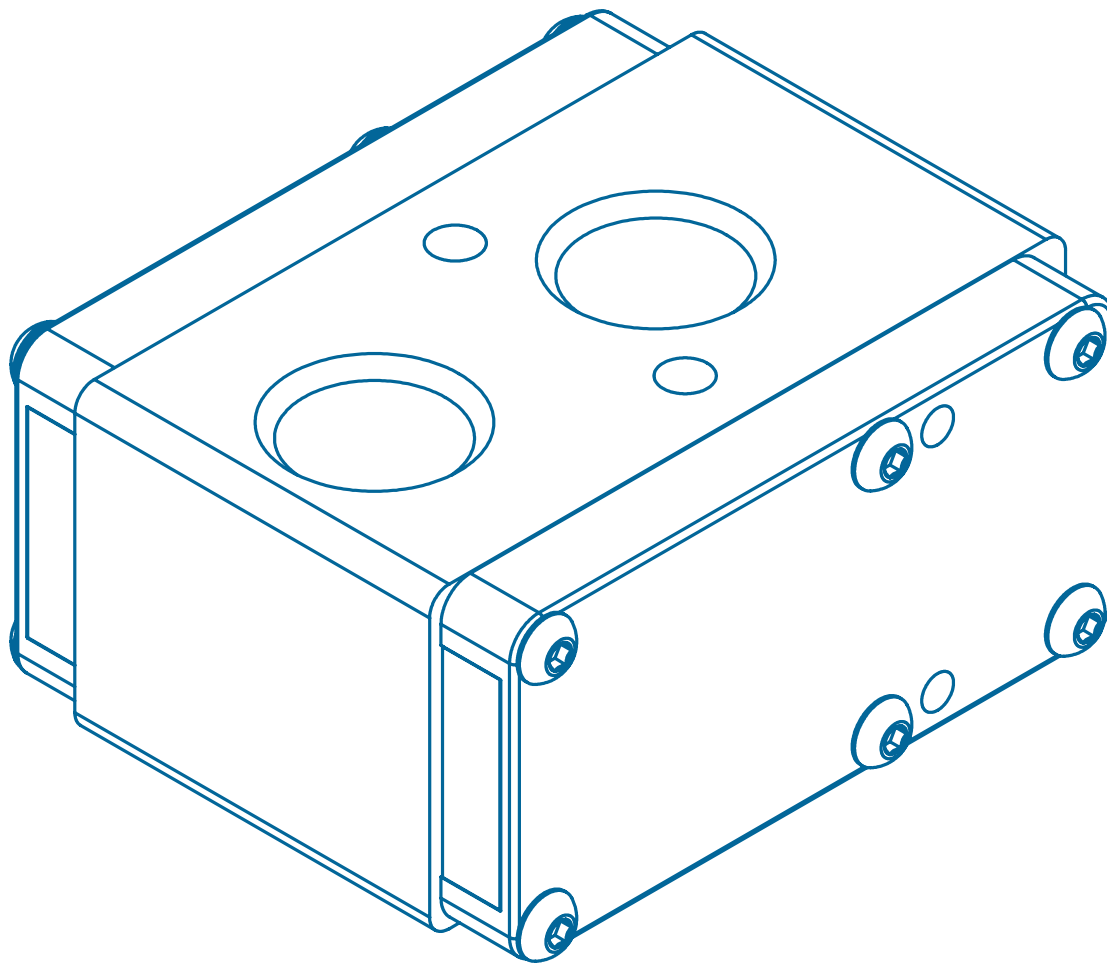
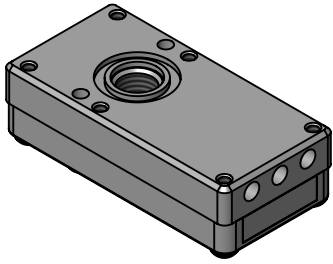


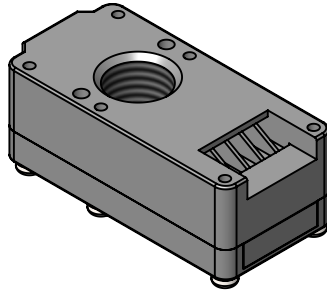
# SECTION 7

# CHIP PUMPS

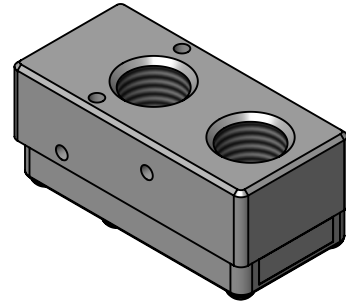




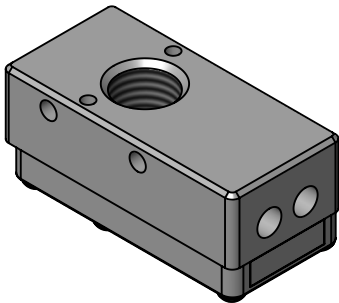
**AA Base**



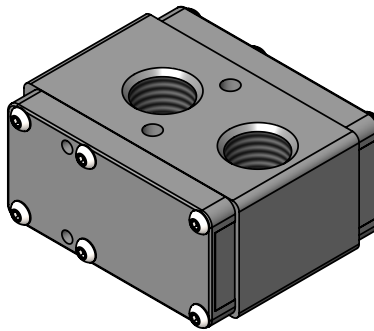
**A & B Base**



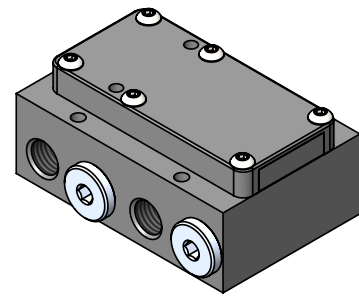
**C Base**



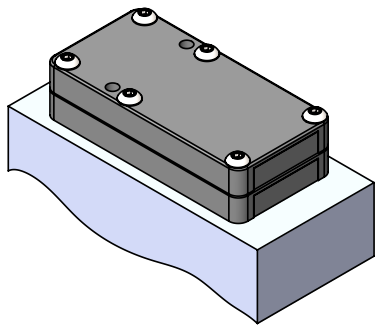
**D Base**



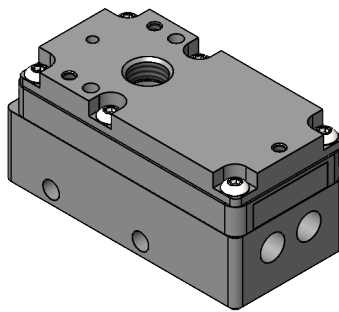
**G Base**



**M Base**



**Z & ZS Option**



**Options**

Information	3, 4
AA Base	5
A & B Base	6
C Base	7
D Base	8
G Base	9
M Base	10
Z & ZS Option	11
Options	12
Performance	13, 14

## Chip Pumps

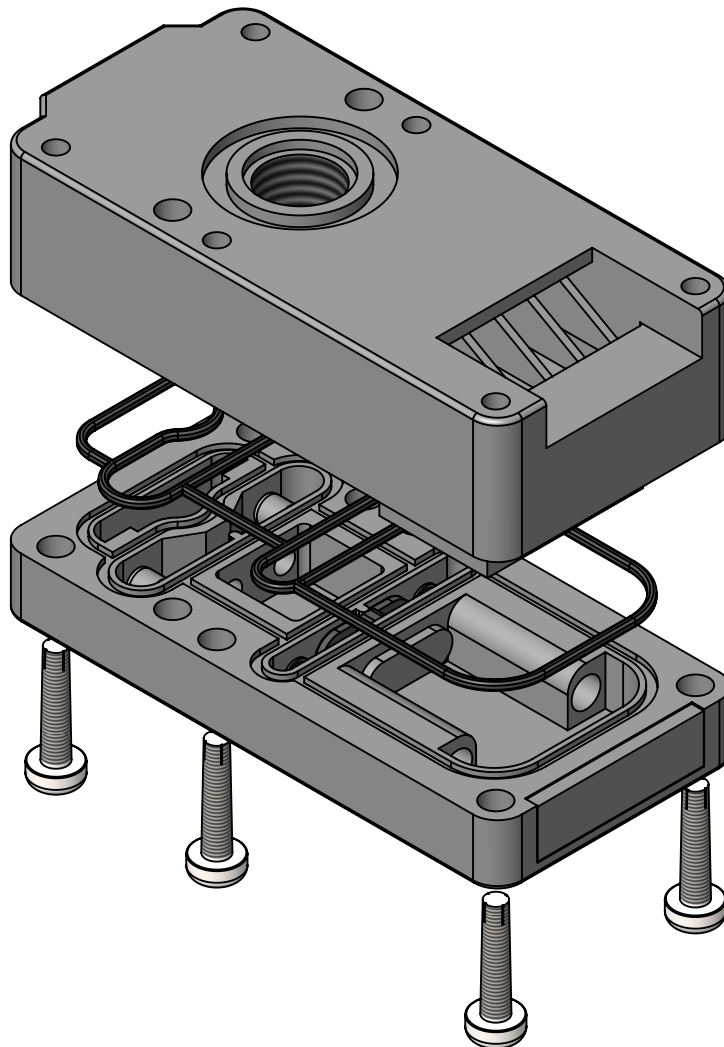
EDCO Vacuum Chip Pumps were named after electronic circuit chips whose small size and versatility have made modern products more efficient, compact, and affordable. Our low-cost Chip Pumps will do the same thing for your vacuum systems.

Chip Pumps provide the performance you expect from a multi-stage, multi-ejector, air-powered vacuum pump. To increase pump capacity, we simply add another pump module to the assembly stack. Our standard seal and valve elastomer is Nitrile, but we also offer Viton<sup>1</sup> and EPDM seal materials at a reasonable price. To make our systems easier to design and install, we offer non-return valves and direct mounted electronic sensors. We are always open to suggestions, so contact us if you need an accessory that you don't see in our catalog.

EDCO Chip Pumps are offered with seven standard base configurations and a "Z" option for no base at all. This allows a designer complete freedom to integrate a Chip Pump module into a proprietary assembly. However, it is more common to select an EDCO Vacuum Pump having one of the eleven standard bases that best suits your application needs. EDCO USA will design and manufacture custom bases and pump assemblies for OEMs that have special needs which are not satisfied by our standard products. Fill out the Application Worksheet in the resources available on our website.

We have selected 40% glass-filled Polyphenylene Sulphide (PPS, Ryton) for its extremely high strength, light weight, and chemical resistance. The pump bodies and ejectors are all made of PPS to eliminate chemical compatibility problems caused when different materials are used for parts within the same vacuum pump. A and B bases are also PPS for the same reason. All other bases are made of anodized aluminum for applications requiring maximum ruggedness or a larger capacity vacuum pump. All fasteners used are 303/304 series stainless steel.

<sup>1</sup>Viton is a registered trademark of DuPont Dow.



## Chip Pumps

### Venturi Selection

Code	Air Pressure		Max Vacuum inHg [-kPa]
	psi	bar	
4M	60	4	25.50 [86.4]
5L	72	5	22.80 [77.2]
6E	87	6	25.50 [86.4]
6M	87	6	22.50 [86.4]

### Seal Material

Code	Description
N	Nitrile
E	EPDM
V	Viton <sup>1</sup>

<sup>1</sup>Viton is a registered trademark of DuPont Dow.

### Material Chemical Compatibility

Medium	Material				
	PPS	Aluminum	Nitrile	EPDM	Viton <sup>1</sup>
Weather, Ozone	E	G	L	E	E
Heat, Aging	E	E	G	G	E
Oil, Petrol	E	L	E	U	E
Hydrolysis	E	E	G	G	G
Acid, Alkali	E	U	G	E	G
Acetone	E	E	U	E	U
Ammonia	G	G	L	E	U
Amyl Alcohol	E	G	G	E	G
Benzene	E	G	U	U	E
Butanol	E	G	G	G	E
Cyclohexane	E	E	G	U	E
Ethanol	E	G	L	E	E
Ethyl Acetate	E	G	U	G	U
Hexane	E	E	E	U	E
Carbone Tetrachloride	E	U	U	U	E
Chlora Benzene	E	E	U	U	E
Chloroform	E	L	U	U	E
Methanol	E	G	E	E	L
Methylene Chloride	E	L	U	G	E
Methyl Ethyl Ketone	E	G	U	E	U
NaOH	E	U	G	E	G
Propanol	E	G	E	E	E
Sulphuric Acid	E	U	L	G	E
Tetrahydrofuran	E	U	U	G	U
Tetrachlorethelene	E	U	U	U	E
Toulene	E	E	U	U	E
Trichlorethane	E	U	U	U	E
Trichlorethylene	E	U	U	U	E
Xylene	E	G	U	U	E
Acetic Acid	E	L	E	E	G

E = Excellent | G = Good | L = Limited | U = Unsuided

<sup>1</sup>Viton is a registered trademark of DuPont Dow.

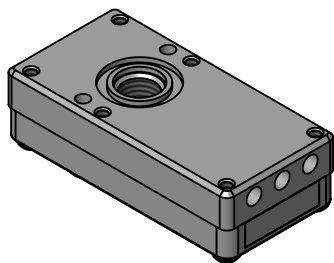
# Chip Pumps - "AA" Base

PPS Pump Module w/ Aluminum Base

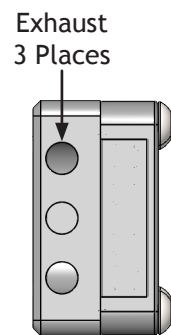
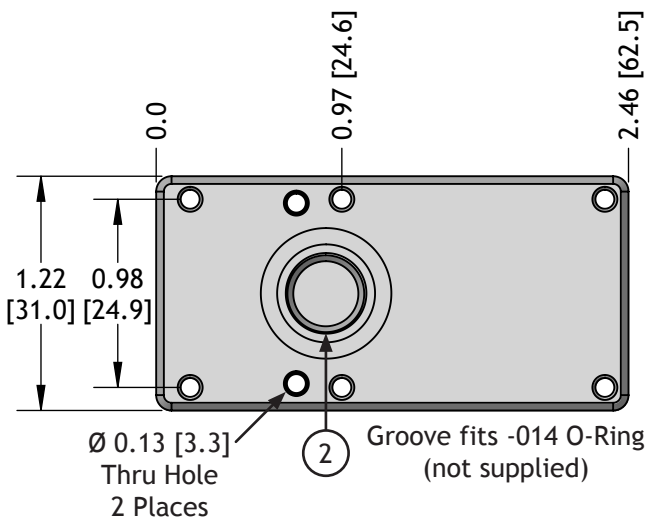
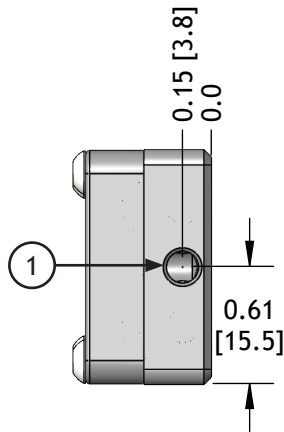
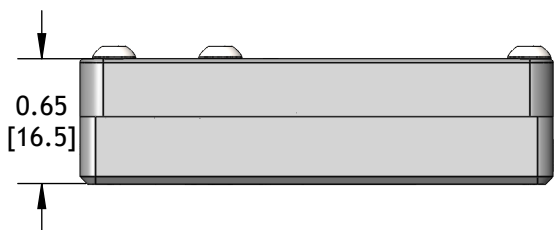
Series	Capacity	Seal Material	Non-Return Option		Options	
<b>C</b>	<b>6M</b>	<b>10</b>	<b>N</b>		<b>-AA</b>	
4M	M Series	E	EPDM	(Blank)	None	(Blank) None
6M	10	N	Nitrile	R	Non-Return	-PA5F Port Adapter, M5X0.8 -PA18F Port Adapter, G 1/8 NPSF
5L	E & L Series	V	Viton <sup>1</sup>			-RC18A Release Check Valve -RC18A-040 Release Check Valve
6E	14					-PFC <sup>2</sup> Pump w/ Filter Combo -VA3 VA-3 Sensor, NPN, 3-Pin -VN3 VN-3 Sensor, NPN, 3-Pin -VN4 VN-4 Sensor, NPN, 4-Pin -VP3 VP-3 Sensor, PNP, 3-Pin -VP4 VP-4 Sensor, PNP, 4-Pin

<sup>1</sup>Viton is a registered trademark of DuPont Dow.

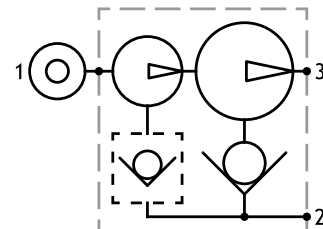
<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).



Weight: 2.36 oz [66.8 g]



Code	Function	Ports
1	Air Supply	M5X0.8 (10-32 UNF)
2	Vacuum	G 1/8 NPSF



# Chip Pumps - "A" & "B" Bases

## PPS Pump Module & Base

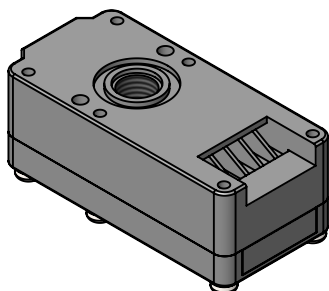
Series	Capacity	Seal	Non-Return Option		Base		Options		Threads		
<b>C</b>	<b>5L</b>	<b>14</b>	<b>V</b>		<b>-A</b>						
4M	M Series	E	EPDM	(Blank)	None	-A	A Base	(Blank)	None	(Blank)	NPSF
6M	10	N	Nitrile	R	Non-Return	-B	B Base	-PA5F	Port Adapter, M5X0.8	-G <sup>3</sup>	G Threads
5L	20	V	Viton <sup>1</sup>					-PA18F	Port Adapter, G 1/8 NPSF		
6E	E & L Series							-RC18A	Release Check Valve		
	14							-RC 18A-040	Release Check Valve		
	28							-PFC <sup>2</sup>	Pump w/ Filter Combo		
								-VA3	VA-3 Sensor, NPN, 3-Pin		
								-VN3	VN-3 Sensor, NPN, 3-Pin		
								-VN4	VN-4 Sensor, NPN, 4-Pin		
								-VP3	VP-3 Sensor, PNP, 3-Pin		
								-VP4	VP-4 Sensor, PNP, 4-Pin		

<sup>1</sup>Viton is a registered trademark of DuPont Dow.

<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).

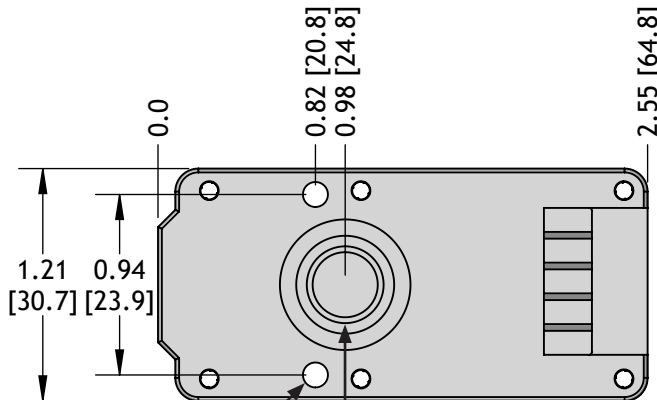
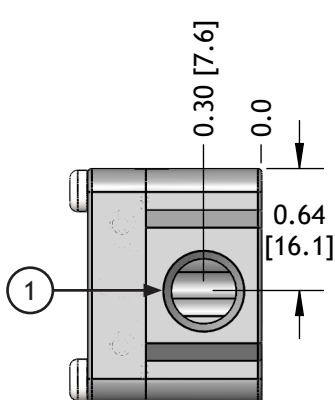
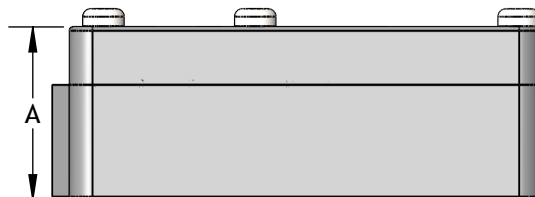
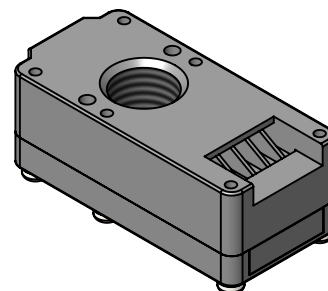
<sup>3</sup>Only available on B Base.

### A Base

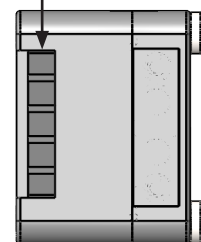


Groove fits -014 O-Ring  
(not supplied)

### B Base

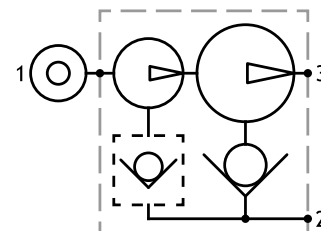


Exhaust



Capacity	A	A - Weight	B - Weight
M	E & L	in [mm]	oz [g]
14	10	0.90 [22.9]	3.00 [85.0]
28	20	1.20 [30.5]	3.85 [109.1]

Code	Function	A	B - NPSF	B - G
1	Air Supply		G 1/8 NPSF	
2	Vacuum	G 1/8 NPSF	3/8 NPSF	G 3/8



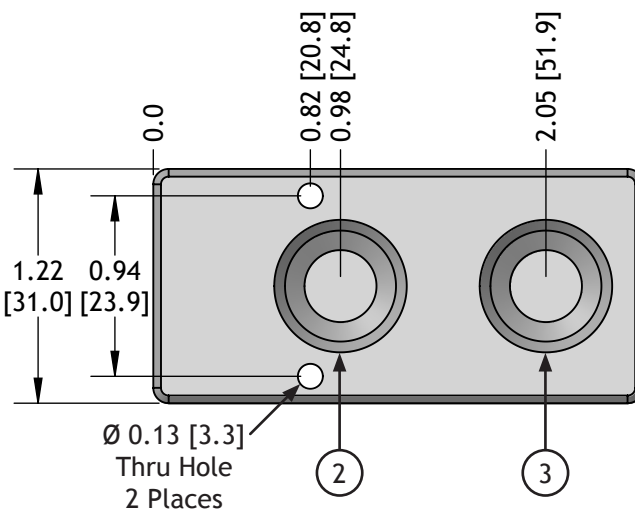
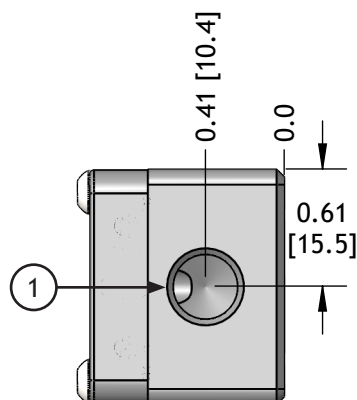
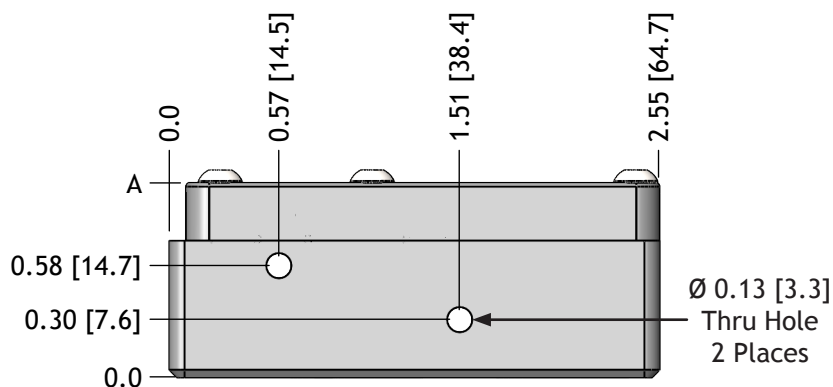
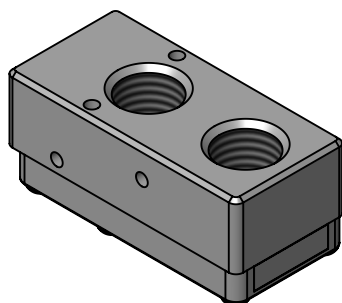
# Chip Pumps - "C" Base

PPS Pump Module w/ Aluminum Base

Series	Capacity	Seal	Non-Return Option		Silencer		Options		
<b>C</b>	<b>6E</b>	<b>14</b>	<b>E</b>	<b>R</b>	<b>-C</b>				
4M	M Series	E	EPDM	(Blank)	None	(Blank)	None	(Blank)	None
6M	10	N	Nitrile	R	Non-Return	-ST	STB38M	-PA5F	Port Adapter, M5X0.8
5L	20	V	Viton <sup>1</sup>					-PA18F	Port Adapter, G 1/8 NPSF
6E	30							-RC18A	Release Check Valve
	40							-RC18A-040	Release Check Valve
	E & L Series							-PFC <sup>2</sup>	Pump w/ Filter Combo
	14							-VA3	VA-3 Sensor, NPN, 3-Pin
	28							-VN3	VN-3 Sensor, NPN, 3-Pin
	42							-VN4	VN-4 Sensor, NPN, 4-Pin
	56							-VP3	VP-3 Sensor, PNP, 3-Pin
								-VP4	VP-4 Sensor, PNP, 4-Pin

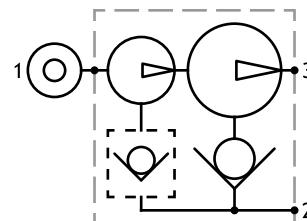
<sup>1</sup>Viton is a registered trademark of DuPont Dow.

<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).



Capacity		A in [mm]	Weight oz [g]
M	E & L		
10	14	1.01 [25.7]	3.73 [105.8]
20	28	1.31 [33.3]	4.58 [130.0]
30	42	1.61 [40.9]	5.44 [154.1]
40	56	1.91 [48.5]	6.29 [178.2]

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



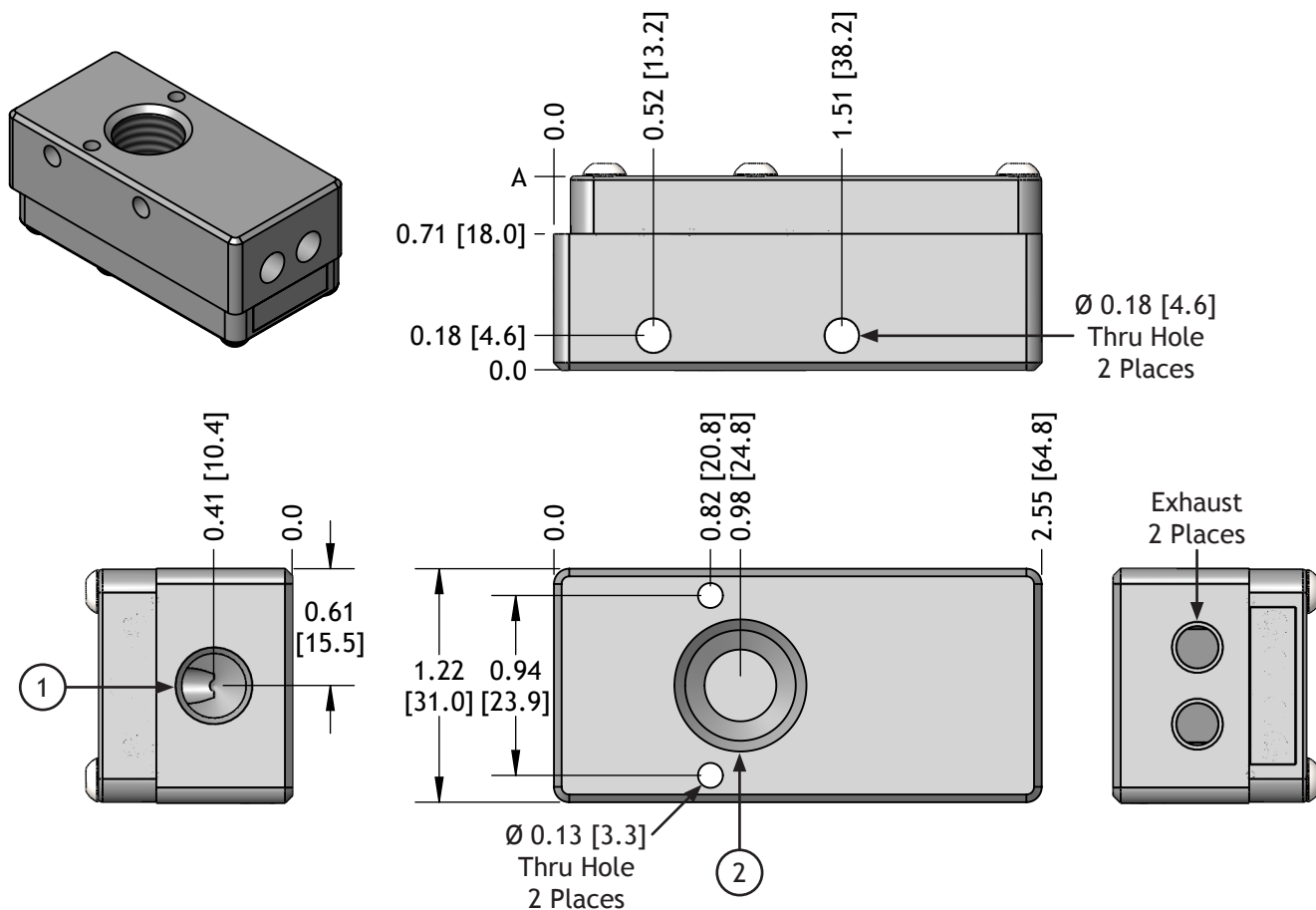
# Chip Pumps - "D" Base

PPS Pump Module w/ Aluminum Base

Series	Capacity	Seal	Non-Return Option		Options		Threads		
<b>C</b>	<b>5L</b>	<b>14</b>	<b>N</b>		<b>-D</b>		<b>-G</b>		
4M	M Series	E	EPDM	(Blank)	None	(Blank)	None	(Blank)	NPSF
6M	10	N	Nitrile	R	Non-Return	-PA5F	Port Adapter, M5X0.8	-G	G Threads
5L	20	V	Viton <sup>1</sup>			-PA18F	Port Adapter, G 1/8 NPSF		
6E	30					-RC18A	Release Check Valve		
	E & L Series					-RC18A-040	Release Check Valve		
	14					-PFC <sup>2</sup>	Pump w/ Filter Combo		
	28					-VA3	VA-3 Sensor, NPN, 3-Pin		
	42					-VN3	VN-3 Sensor, NPN, 3-Pin		
						-VN4	VN-4 Sensor, NPN, 4-Pin		
						-VP3	VP-3 Sensor, PNP, 3-Pin		
						-VP4	VP-4 Sensor, PNP, 4-Pin		

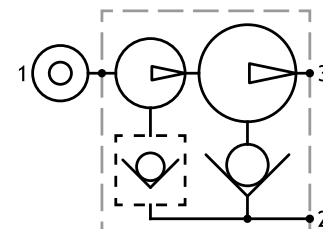
<sup>1</sup>Viton is a registered trademark of DuPont Dow.

<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).



Capacity		A	Weight
M	E & L	in [mm]	oz [g]
10	14	1.01 [25.7]	3.58 [101.6]
20	28	1.31 [33.3]	4.44 [125.7]
30	42	1.61 [40.9]	5.29 [149.9]

Code	Function	NPSF	G
1	Air Supply	G 1/8 NPSF	
2	Vacuum	3/8 NPSF	G 3/8





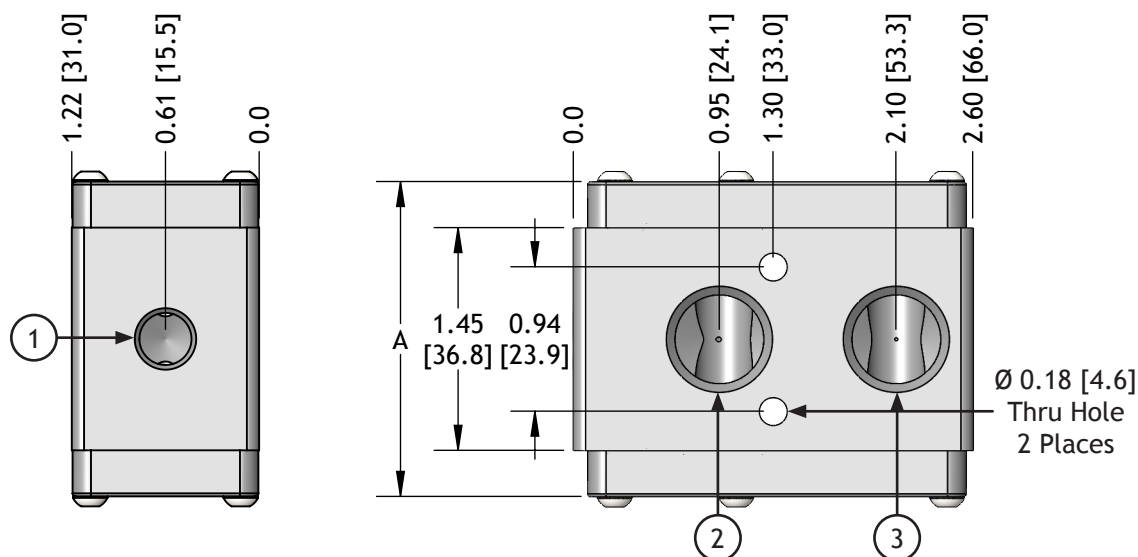
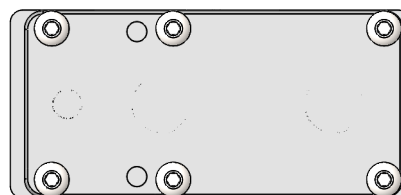
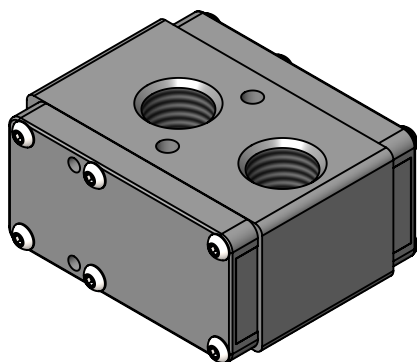
# Chip Pumps - "G" Base

PPS Pump Module w/ Aluminum Base

Series	Capacity	Seal	Non-Return Option		Silencer		Options	
<b>C</b>	<b>4M</b>	<b>20</b>	<b>N</b>		<b>-G</b>			
4M	M Series	E	EPDM	(Blank)	None	(Blank)	None	
6M	20	N	Nitrile	R	Non-Return	-ST	STB38M	-PA5F Port Adapter, M5X0.8
5L	30	V	Viton <sup>1</sup>					-PA18F Port Adapter, G 1/8 NPSF
6E	40							-RC18A Release Check Valve
	50							-RC18A-040 Release Check Valve
	60							-PFC <sup>2</sup> Pump w/ Filter Combo
	E & L Series							
	28							-VA3 VA-3 Sensor, NPN, 3-Pin
	42							-VN3 VN-3 Sensor, NPN, 3-Pin
	56							-VN4 VN-4 Sensor, NPN, 4-Pin
	70							-VP3 VP-3 Sensor, PNP, 3-Pin
	84							-VP4 VP-4 Sensor, PNP, 4-Pin

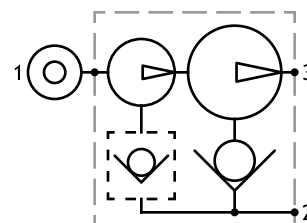
<sup>1</sup>Viton is a registered trademark of DuPont Dow.

<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).



Capacity		A	Weight
M	E & L	in [mm]	oz [g]
20	28	1.82 [46.2]	8.06 [228.4]
30	42	2.12 [53.8]	8.91 [252.5]
40	56	2.42 [61.5]	9.76 [276.6]
50	70	2.72 [69.1]	10.61 [300.7]
60	84	3.02 [76.7]	11.46 [324.8]

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



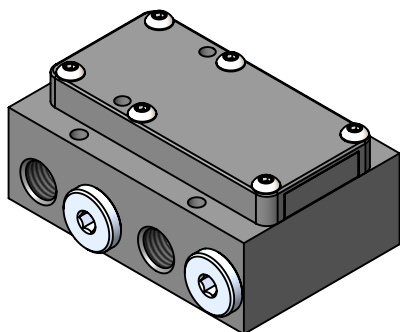
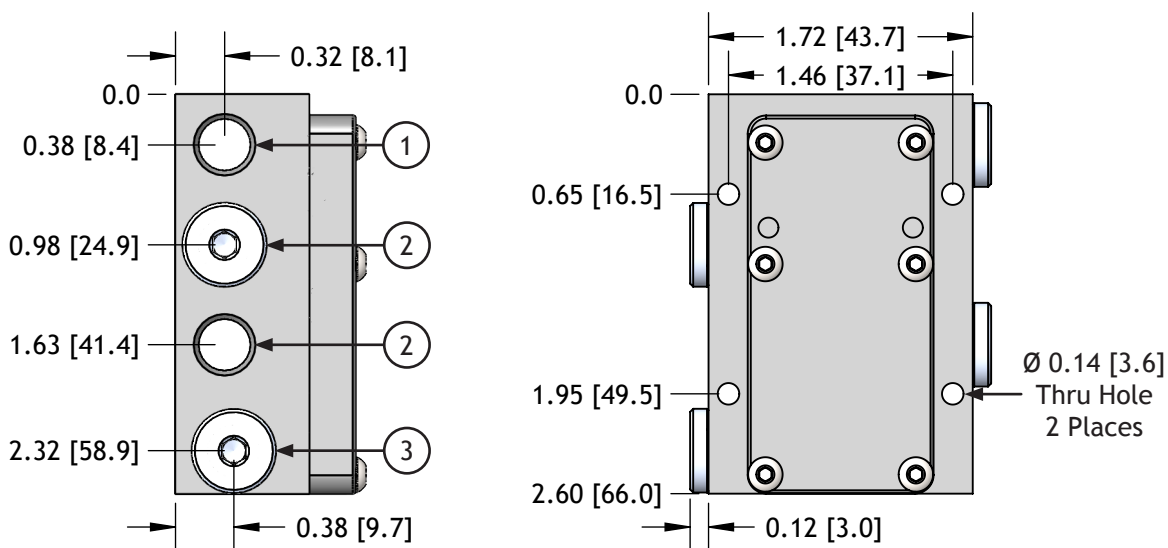
# Chip Pumps - "M" Base

PPS Pump Module w/ Aluminum Base

Series	Capacity	Seal	Non-Return Option		Silencer		Options	
<b>C</b>	<b>4M</b>	<b>20</b>	<b>N</b>		<b>-M</b>			
	4M	M Series	E	EPDM	(Blank)	None	(Blank)	None
	6M	10	N	Nitrile	R	Non-Return	-ST	STA18M
	5L	20	V	Viton <sup>1</sup>			-PA5F	Port Adapter, M5X0.8
	6E	E & L Series					-PA18F	Port Adapter, G 1/8 NPSF
		14					-RC18A	Release Check Valve
		28					-RC18A-040	Release Check Valve
							-PFC <sup>2</sup>	Pump w/ Filter Combo
							-VA3	VA-3 Sensor, NPN, 3-Pin
							-VN3	VN-3 Sensor, NPN, 3-Pin
							-VN4	VN-4 Sensor, NPN, 4-Pin
							-VP3	VP-3 Sensor, PNP, 3-Pin
							-VP4	VP-4 Sensor, PNP, 4-Pin

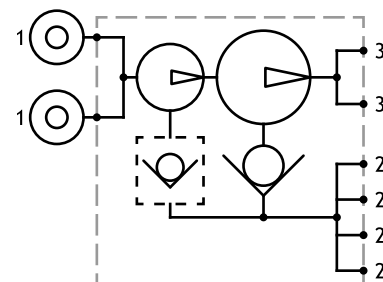
<sup>1</sup>Viton is a registered trademark of DuPont Dow.

<sup>2</sup>Includes a t-style vacuum filter and replacement filter elements (qty 3).



Capacity		A	Weight
M	E & L	in [mm]	oz [g]
10	14	1.17 [29.7]	6.09 [172.7]
20	28	1.47 [37.3]	6.94 [196.9]

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

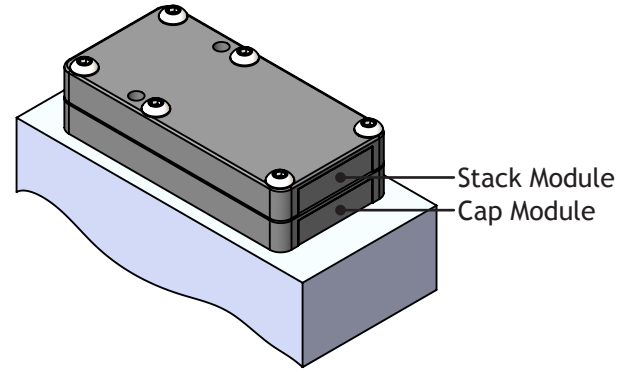
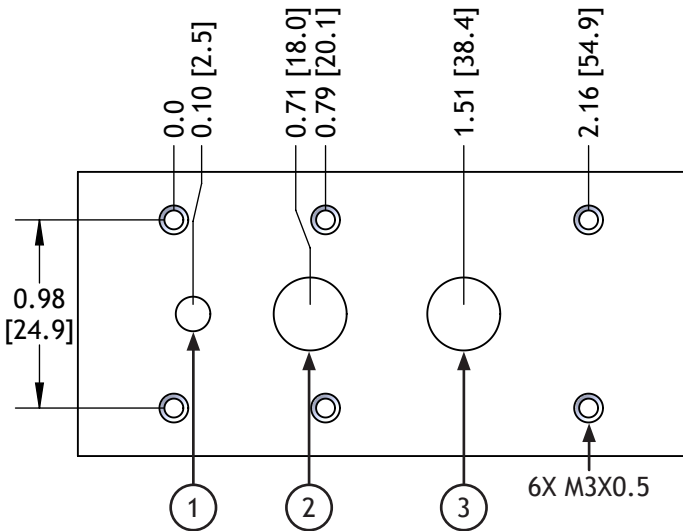


# Chip Pumps - "Z" Base

PPS pump module ready for integration into your custom design.

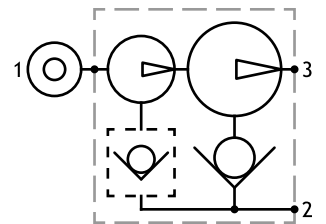
Series	Capacity	Seal	Non-Return Option		Module Type		
<b>C</b>	<b>5L</b>	<b>14</b>	<b>E</b>	<b>R</b>	<b>-Z</b>		
4M	M Series	E	EPDM	(Blank)	None	-Z	Cap
6M	10	N	Nitrile	R	Non-Return	-ZS	Stack
5L	E & L Series	V	Viton <sup>1</sup>				
6E	14						

<sup>1</sup>Viton is a registered trademark of DuPont Dow.



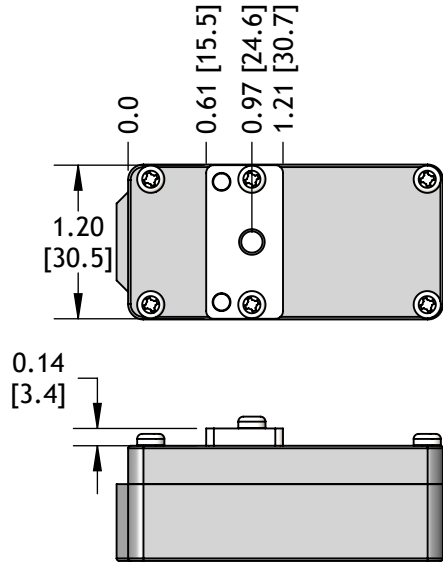
Weight: 0.86 oz [24.3 g]

Code	Function	Hole Ø in [mm]
1	Air Supply	0.18 [4.6]
2	Vacuum	0.38 [9.7]
3	Exhaust	0.38 [9.7]

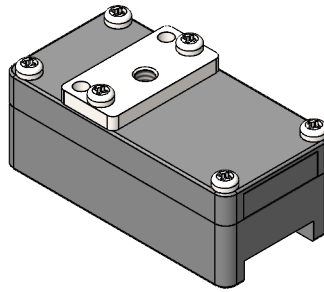


### Chip Pumps - M5 Port Options (-PA5F)

An additional vacuum port allows for vacuum monitoring.

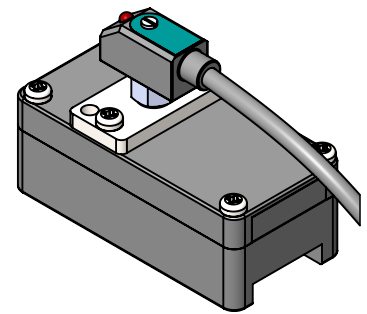


-PA5F



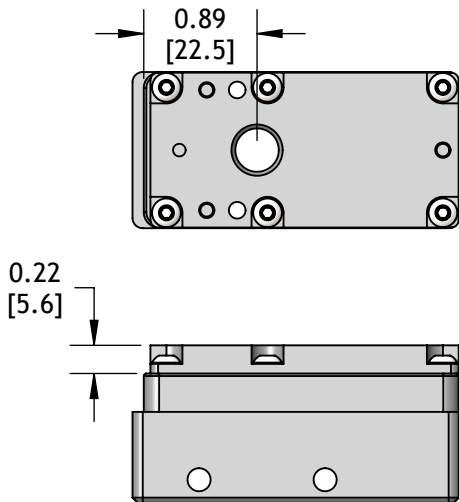
Additional Weight: 0.38 oz [10.7 g]

-VN3, -VN4, -VP3, -VP4

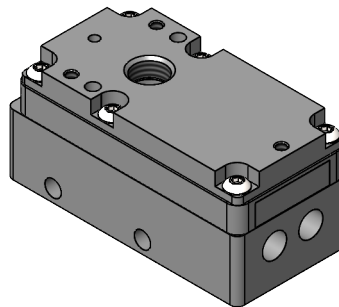


### Chip Pumps - G 1/8 NPSF Port Options (-PA18F)

An additional vacuum port allows for mounting a vacuum switch or release check valve directly to the pump.

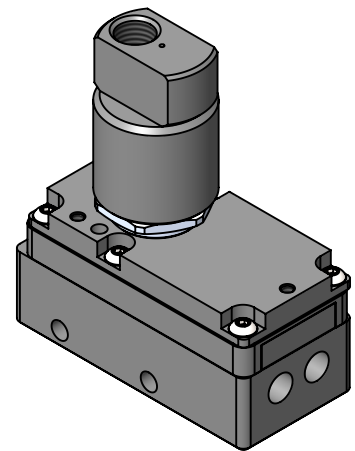


-PA18F



Additional Weight: 0.88 oz [25.0 g]

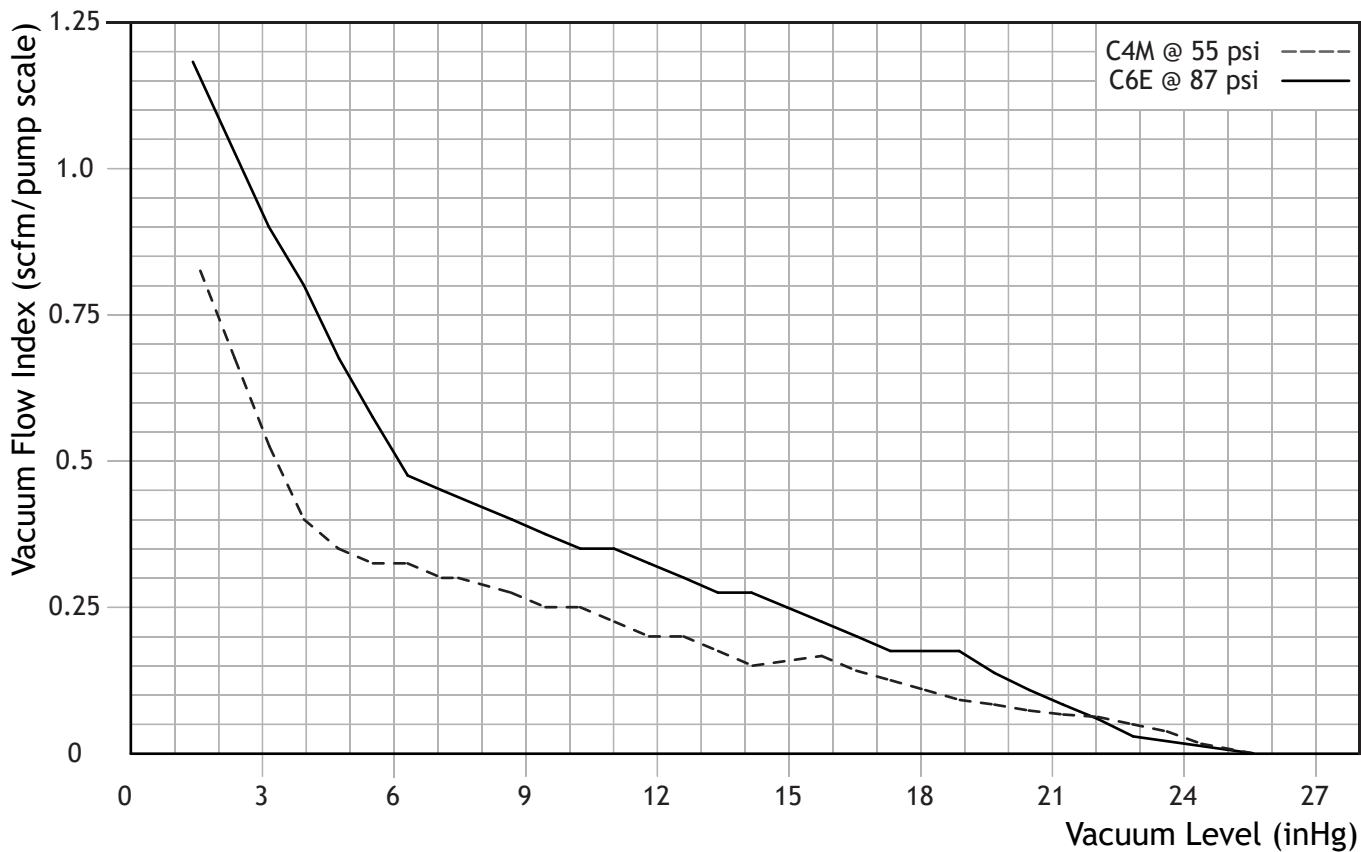
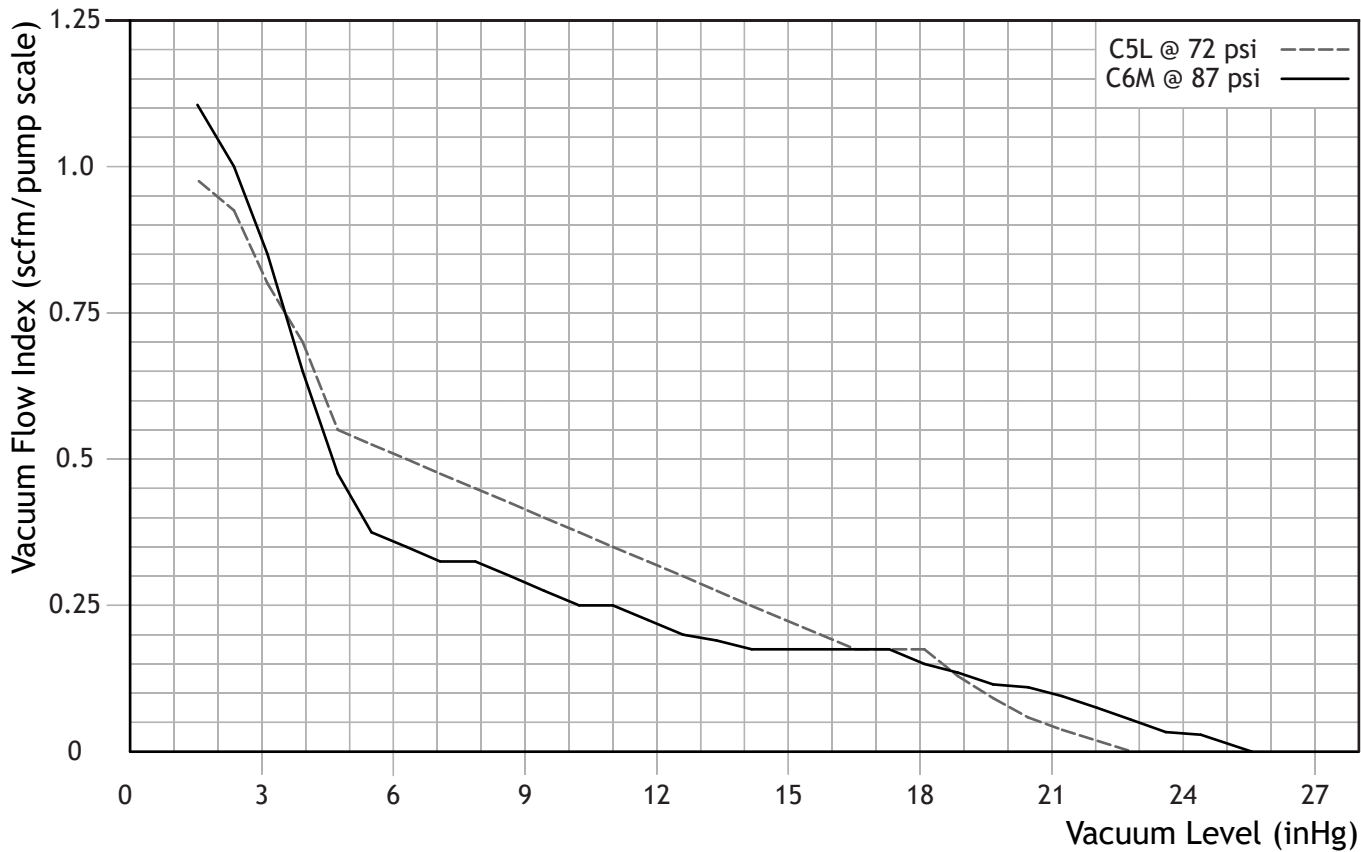
-RC18A, -RC18A-040



# Chip Pumps - Performance

C5I & C6E	7	14	28	42	58	70	84	98	112
Scale	1	2	4	6	8	10	12	14	16

C4M & C6M	5	10	20	30	40	50	60	70	80
Scale	1	2	4	6	8	10	12	14	16



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.

# Chip Pumps - Performance

## Vacuum Flow - SCFM

Model	Air Supply PSI	Air Consu SCFM	Max Vacuum inHg	SCFM at Vacuum Level							
				3 inHg	6 inHg	9 inHg	12 inHg	15 inHg	18 inHg	21 inHg	24 inHg
C5L14	72	2.0	23.6	1.6	1.0	0.83	0.64	0.45	0.35	0.09	-
C5L28	72	4.0	23.6	3.3	2.0	1.7	1.30	0.9	0.7	0.18	-
C5L42	72	6.0	23.6	4.9	3.1	2.5	1.9	1.4	1.1	0.27	-
C5L56	72	8.0	23.6	6.6	4.1	3.3	2.6	1.8	1.4	0.36	-
C5L70	72	10.0	23.6	8.2	5.1	4.2	3.2	2.3	1.8	0.45	-
C5L84	72	12.0	23.6	9.8	6.1	5.0	3.8	2.7	2.1	0.54	-
C6E14	87	2.3	25.6	1.8	1.0	0.78	0.64	0.5	0.35	0.18	0.03
C6E28	87	4.6	25.6	3.7	2.1	1.6	1.30	1.0	0.7	0.36	0.06
C6E42	87	6.9	25.6	5.5	3.1	2.3	1.9	1.5	1.1	0.54	0.09
C6E56	87	9.2	25.6	7.4	4.1	3.1	2.6	2.0	1.4	0.72	0.12
C6E70	87	11.5	25.6	9.2	5.2	3.9	3.2	2.5	1.8	0.9	0.15
C6E84	87	13.8	25.6	11.0	6.2	4.7	3.8	3.0	2.1	1.1	0.18
C4M10	55	1.6	25.5	1.1	0.65	0.53	0.40	0.32	0.22	0.14	0.05
C4M20	55	3.2	25.5	2.2	1.3	1.1	0.80	0.64	0.44	0.28	0.11
C4M30	55	4.8	25.5	3.3	2.0	1.6	1.2	1.0	0.66	0.42	0.33
C4M40	55	6.4	25.5	4.4	2.6	2.1	1.6	1.3	0.88	0.56	0.44
C4M50	55	8.0	25.5	5.5	3.3	2.7	2.0	1.6	1.1	0.70	0.27
C4M60	55	9.6	25.5	6.6	3.9	3.2	2.4	1.9	1.3	0.84	0.66
C6M10	87	1.6	25.5	1.8	0.72	0.44	0.35	0.31	0.2	0.2	0.06
C6M20	87	3.2	25.5	3.5	1.4	0.88	0.7	0.62	0.4	0.4	0.12
C6M30	87	4.8	25.5	5.2	2.2	1.3	1.0	0.93	0.6	0.6	0.18
C6M40	87	6.4	25.5	7.0	2.9	1.8	1.4	1.2	0.80	0.8	0.24
C6M50	87	8.0	25.5	8.8	3.6	2.2	1.8	1.6	1.0	1.0	0.3
C6M60	87	9.6	25.5	10.5	4.3	2.6	2.1	1.9	1.2	1.2	0.36

SCFM X 28.32 = nl / m

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

Model	Air Supply PSI	Air Consum SCFM	Max Vacuum inHg	SCFM at Vacuum Level							
				3 inHg	6 inHg	9 inHg	12 inHg	15 inHg	18 inHg	21 inHg	24 inHg
C5L14	72	2.0	23.6	0.14	0.39	0.77	1.4	2.3	3.9	6.8	-
C5L28	72	4.0	23.6	0.07	0.2	0.39	0.68	1.2	1.9	3.4	-
C5L42	72	6.0	23.6	0.05	0.13	0.26	0.45	0.76	1.3	2.3	-
C5L56	72	8.0	23.6	0.04	0.1	0.19	0.34	0.57	0.97	1.7	-
C5L70	72	10.0	23.6	0.03	0.08	0.15	0.27	0.46	0.77	1.4	-
C5L84	72	12.0	23.6	0.02	0.07	0.13	0.23	0.38	0.64	1.1	-
C6E14	87	2.3	25.6	0.13	0.34	0.71	1.3	2.2	3.6	6.3	7.1
C6E28	87	4.6	25.6	0.07	0.17	0.36	0.64	1.1	1.8	3.2	3.6
C6E42	87	6.9	25.6	0.04	0.11	0.24	0.42	0.72	1.2	2.1	2.4
C6E56	87	9.2	25.6	0.03	0.09	0.18	0.32	0.54	0.91	1.6	1.8
C6E70	87	11.5	25.6	0.03	0.07	0.14	0.25	0.43	0.73	1.3	1.4
C6E84	87	13.8	25.6	0.02	0.06	0.12	0.21	0.36	0.61	1.1	1.2
C4M10	55	1.6	25.5	0.16	0.50	1.0	1.9	3.2	5.4	9.3	18.2
C4M20	55	3.2	25.5	0.08	0.25	0.50	1.0	1.6	2.7	4.7	9.1
C4M30	55	4.8	25.5	0.05	0.17	0.33	0.63	1.1	1.8	3.1	6.1
C4M40	55	6.4	25.5	0.04	0.13	0.25	0.48	0.8	1.4	2.3	4.6
C4M50	55	8.0	25.5	0.03	0.1	0.2	0.38	0.64	1.1	1.9	3.6
C4M60	55	9.6	25.5	0.03	0.08	0.17	0.32	0.53	0.9	1.6	3.1
C6M10	87	1.6	25.5	0.12	0.37	0.79	1.5	2.5	4.3	7.5	14.5
C6M20	87	3.2	25.5	0.06	0.19	0.40	0.74	1.3	2.2	3.8	7.3
C6M30	87	4.8	25.5	0.04	0.17	0.26	0.49	0.83	1.4	2.5	4.8
C6M40	87	6.4	25.5	0.03	0.09	0.2	0.37	0.63	1.1	1.9	3.6
C6M50	87	8.0	25.5	0.02	0.07	0.16	0.3	0.5	0.86	1.5	2.9
C6M60	87	9.6	25.5	0.02	0.06	0.13	0.25	0.42	0.72	1.3	2.4

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.