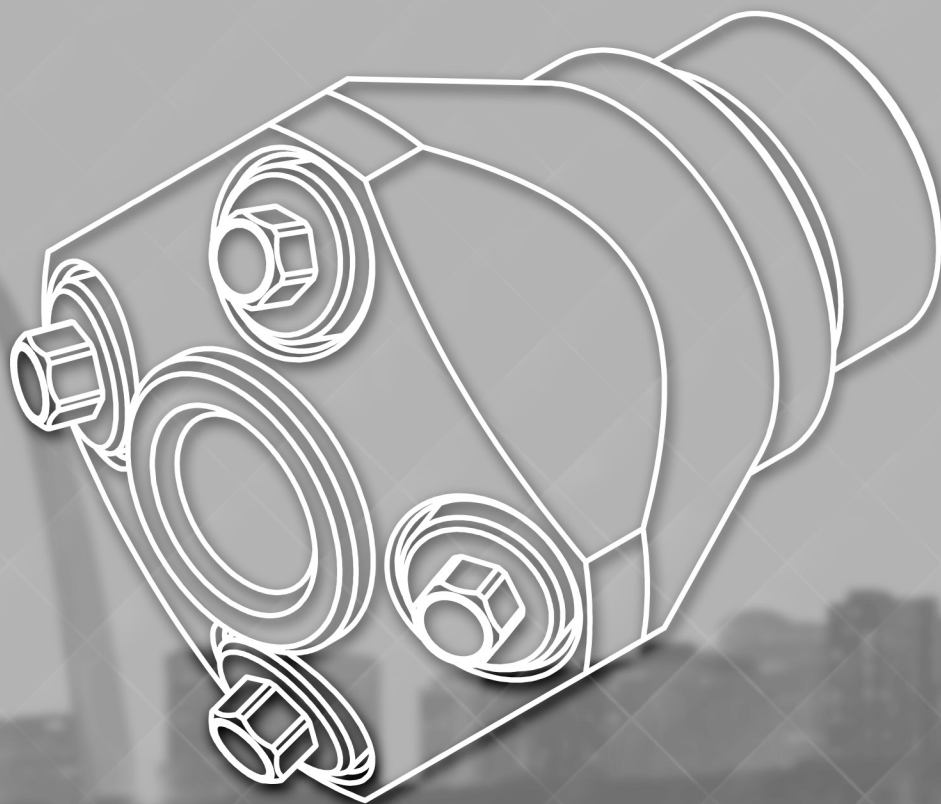
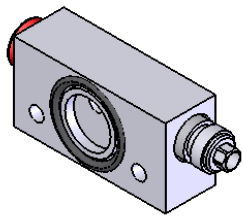


SECTION I I I ER PUMPS

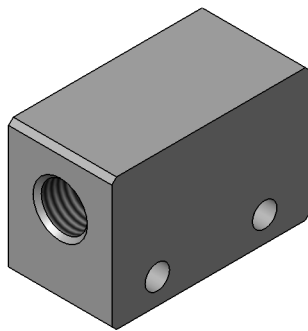


EDCO USA[®]

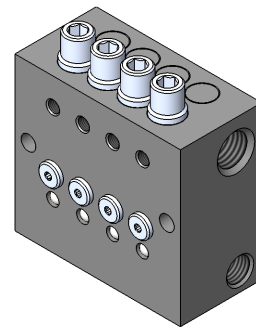
ER SERIES PUMPS



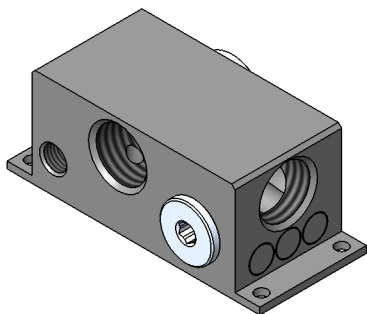
SURFACE MOUNT MICRO PUMP



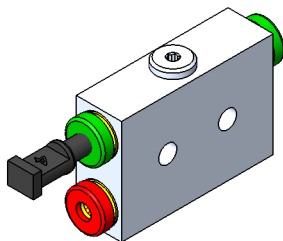
T18F BODY



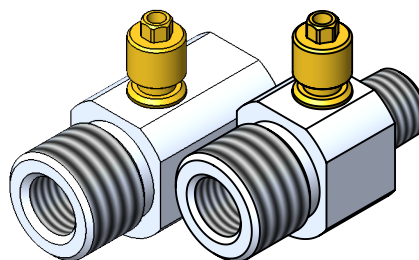
VACUUM BAR



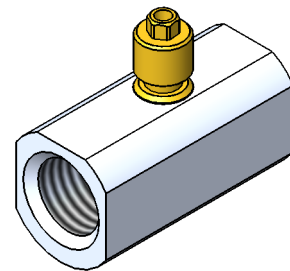
T-BASE



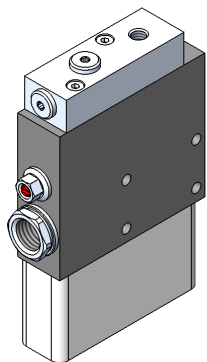
ER2010



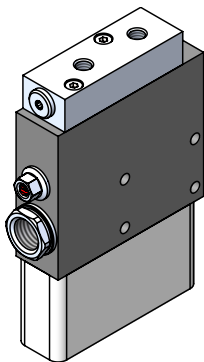
18F / 18M



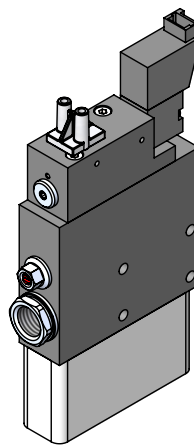
G14F18F



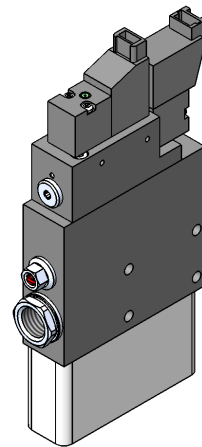
DER18-PS



DER18-PSB



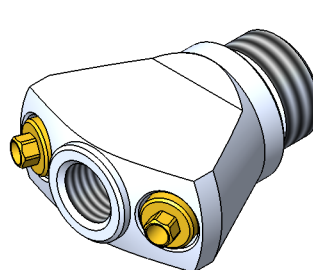
DER18-S24D



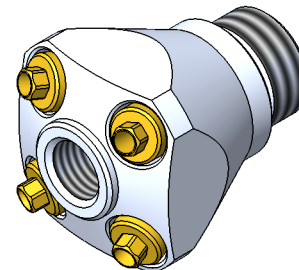
DER18-SB24D

11

ER2010 Body	11:3
T18F Body	11:4
18F / 18M Inline Pump	11:5
G14F18F Inline Pump	11:5
X2-18F Inline Pump	11:6
X4-18F Inline Pump	11:6
Vacuum Bar	11:7
Chip Pump Style T-Base	11:8
DER : Dual Base Pumps	11:9 - 11:12
Surface Mount Micro Pump	11:13
Performance	11:13 - 11:14



X2-18F



X4-18F

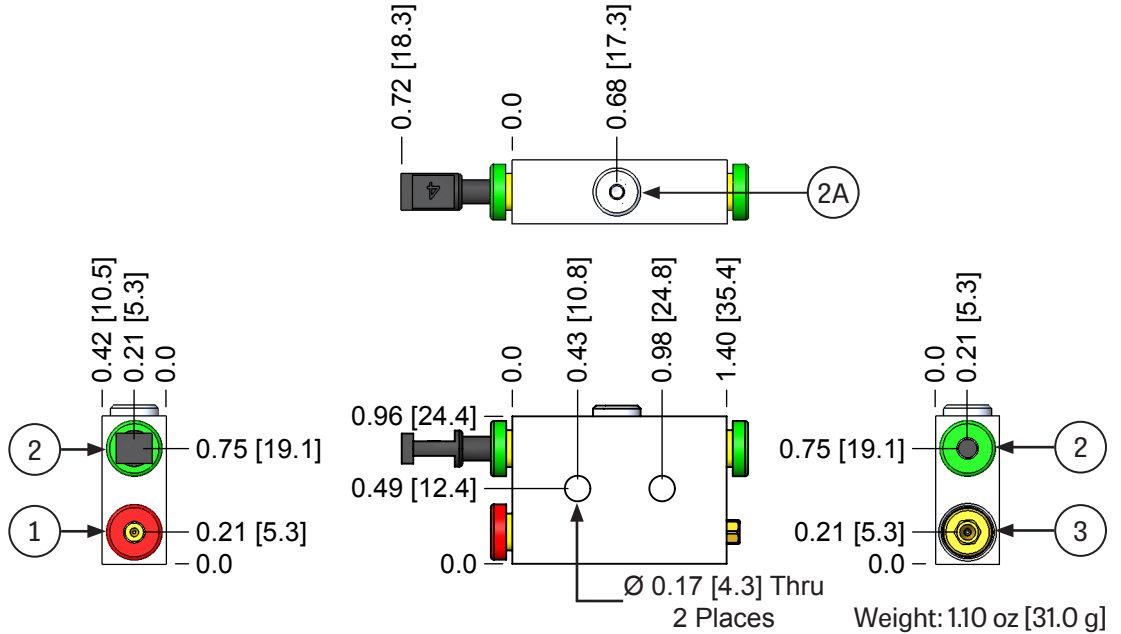
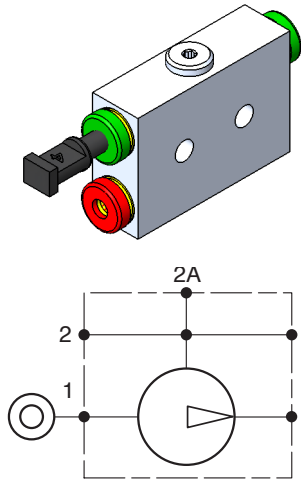
ER SERIES PUMPS

ER2010 MICRO PUMP : M4

The ER2010 micro-pump has an anodized aluminum body available in two styles. The M4 style micro-pump has 4mm (5/32) push-in tube connectors for the air supply, two vacuum ports and a third M5 x 0.8 (10-32) threaded vacuum port.

ER2010-	VENTURI SIZE	-M4
	05	
	07	
	09	
	10	
	08L	
	10L	

CODE	FUNCTION	PORT
1	Air Supply	4 mm (5/32) Tube
2	Vacuum - Main	4 mm (5/32) Tube
2A	Vacuum - Alternate	M5X0.8 (10-32 UNF)
3	Exhaust	-



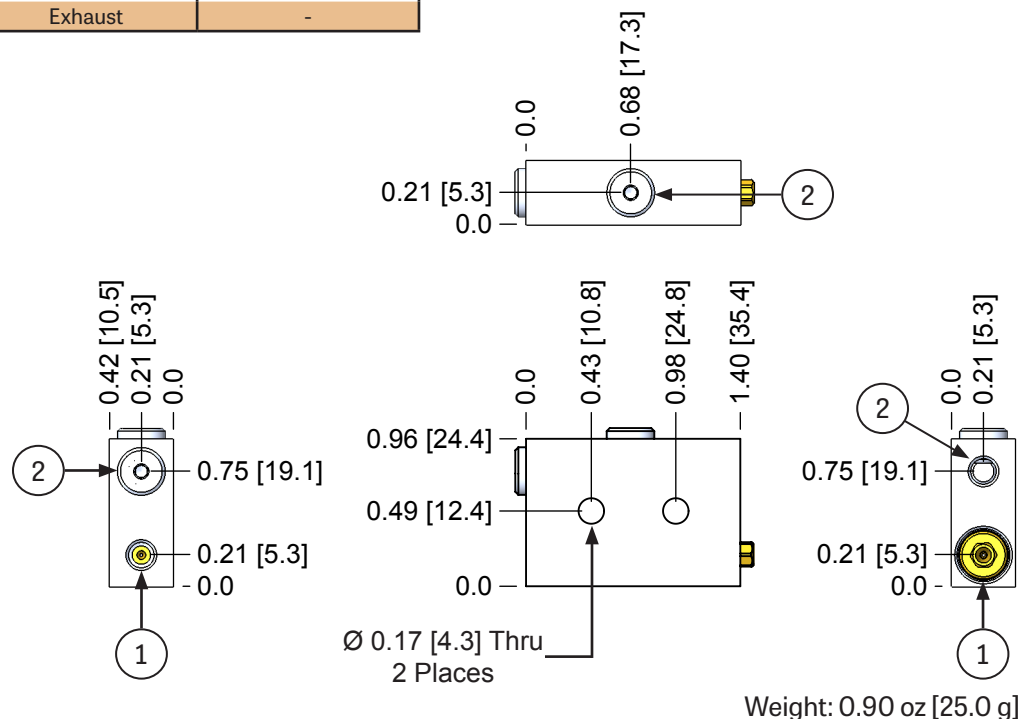
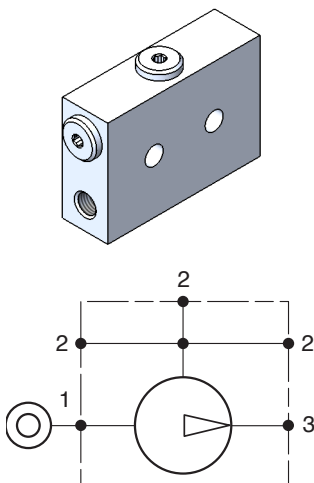
ER2010 MICRO PUMP : 5F

The ER2010 micro-pump has an anodized aluminum body available in two styles. The 5F style micro-pump has M5 x 0.8 (10-32) threaded ports for the air supply and three vacuum ports.

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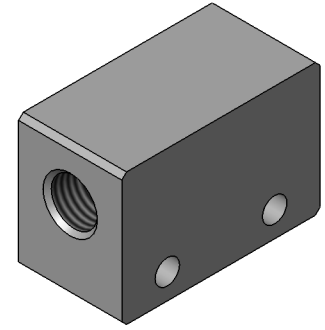
ER2010-	VENTURI SIZE	-5F
	05	
	07	
	09	
	10	
	08L	
	10L	

CODE	FUNCTION	PORT
1	Air Supply	M5X0.8 (10-32 UNF)
2	Vacuum - Main	M5X0.8 (10-32 UNF)
2A	Vacuum - Alternate	M5X0.8 (10-32 UNF)
3	Exhaust	-

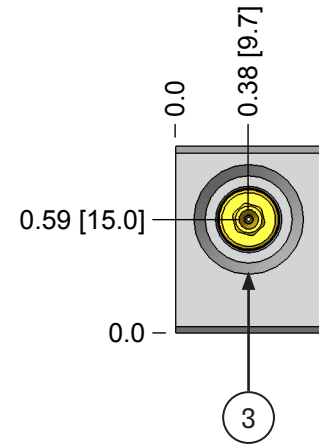
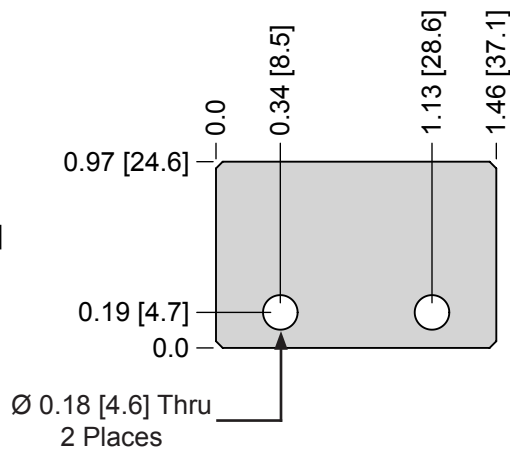
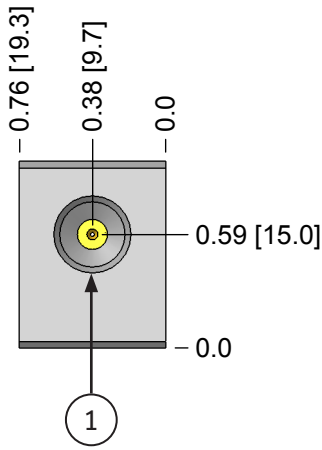
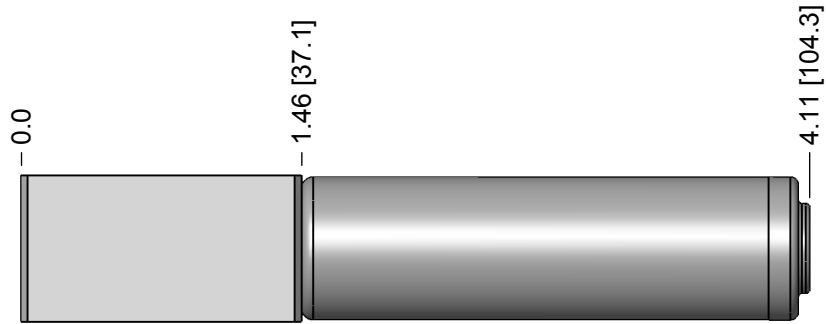


ER SERIES PUMPS T18F BASE

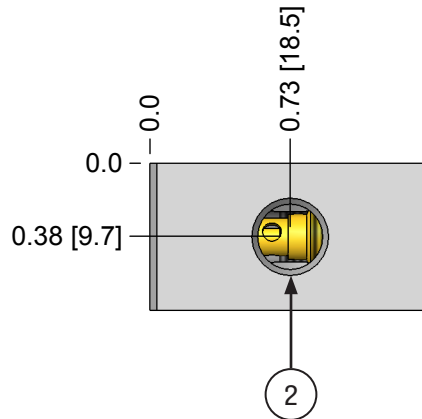
The T18F base places high performance ER pumps in a compact traditional tee-style body with through holes for mounting and a threaded exhaust port for an optional silencer. The tee-style body is ideal for small systems or one-pump-per-suction-cup applications. The T18F base has G1/8 NPSF air supply and vacuum ports, G1/4 BSPP exhaust port. One-piece anodized aluminum body.



VENTURI SIZE		-T18F-	SILENCER	
ER	05			(Blank) = None
	05		ST = STA14M	
	07			
	09			
	10			
	08L			
	10L			



CODE	FUNCTION	PORT
1	Air Supply	G1/8 NPSF
2	Vacuum	G1/8 NPSF
3	Exhaust	G1/4

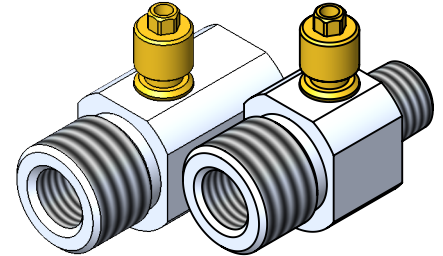


ER SERIES PUMPS

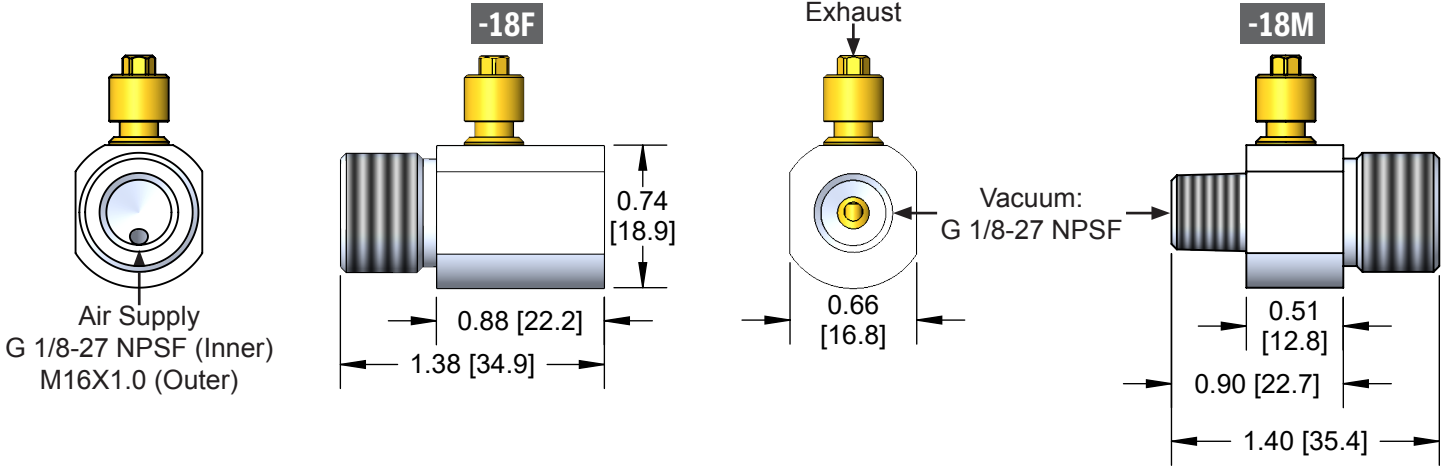
INLINE PUMPS : G1/8 NPSF AIR SUPPLY

Compact, high-performance inline pumps can be conveniently located near the point of vacuum usage. Ideal for small systems or one pump-per-suction-cup applications. G 1/8 NPSF air supply and vacuum ports, one-piece anodized aluminum body.

VENTURI SIZE	BODY
ER 05	18F
05	18F = 1/8 NPSF Female
07	18M = 1/8 NPS Male
09	
10	
08L	
10L	



Weight: 0.90 oz [27.0 g]



ER VENTURI	AIR CONSUMPTION AT 72 psi [5 bar]	EQUIVALENT VENTURI DIAMETER	IP Series PUMP REPLACEMENT
05	0.51 SCFM [14.4 NI/m]	0.5 mm	-
07	0.66 SCFM [18.7 NI/m]	0.7 mm	IP6M-5
09	1.4 SCFM [39.6 NI/m]	0.9 mm	IP6M-10
10	1.8 SCFM [51 NI/m]	1.0 mm	-
08L	1.2 SCFM [34 NI/m]	0.8 mm	-
10L	1.9 SCFM [53.8 NI/m]	1.0 mm	-

JN-M16X1.0



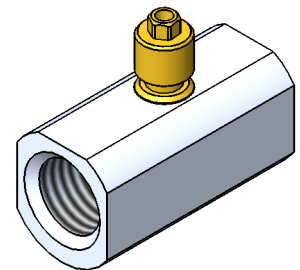
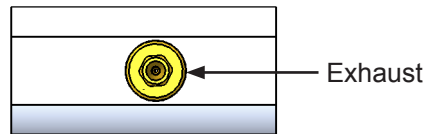
For use with -18F inline pumps.

11

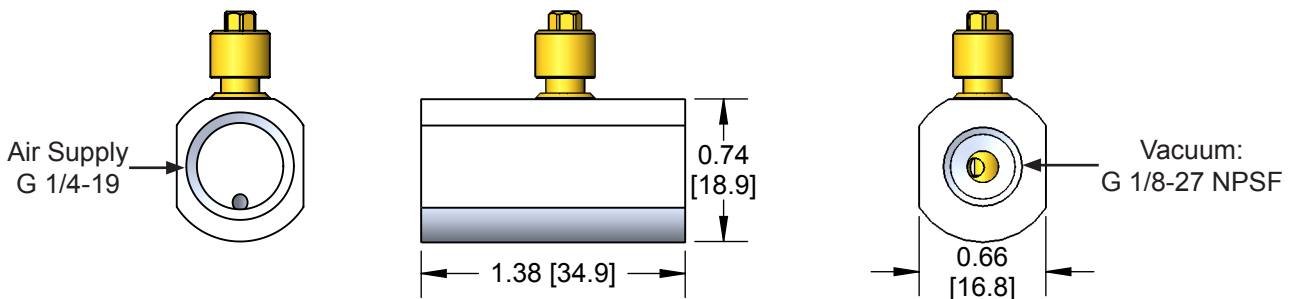
INLINE PUMPS : G1/4 AIR SUPPLY

Inline pumps with same features and performance as the -18F body, but with a larger G 1/4 BSPP air supply port. Vacuum port is G 1/8 NPSF.

VENTURI SIZE	BODY
ER 05	-G14F18F
05	
07	
09	
10	
08L	
10L	



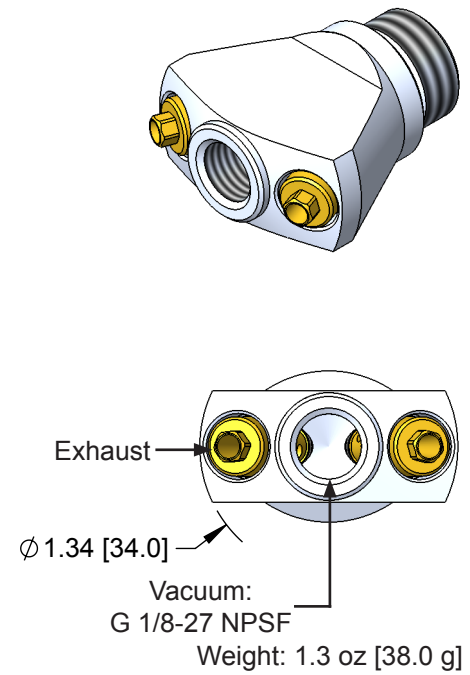
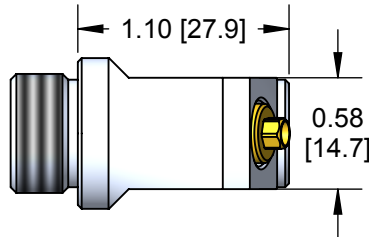
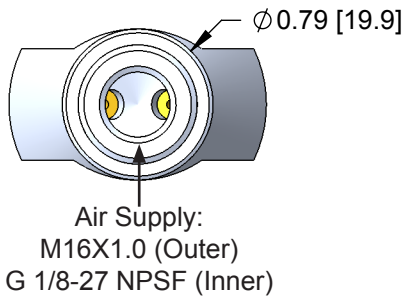
Weight: 0.98 oz [28.0 g]



ER SERIES PUMPS INLINE PUMPS : DOUBLE VENTURI

Inline pumps with two venturis in parallel for additional flow capacity and G1/8 NPSF air supply.

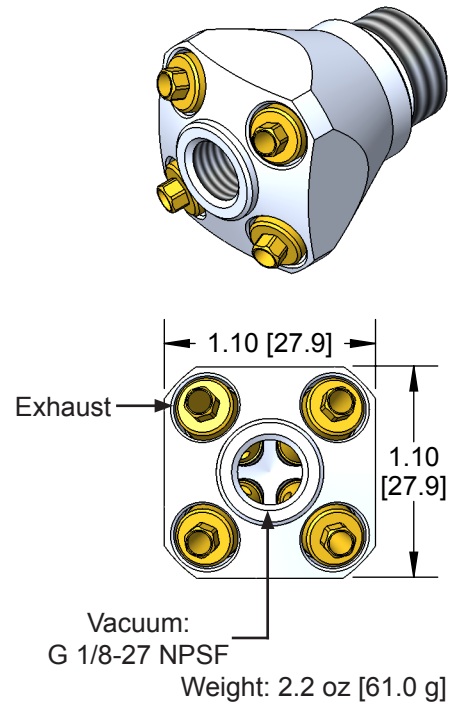
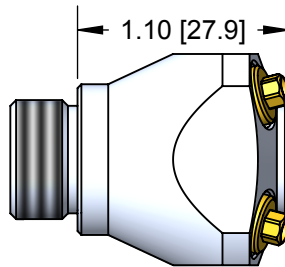
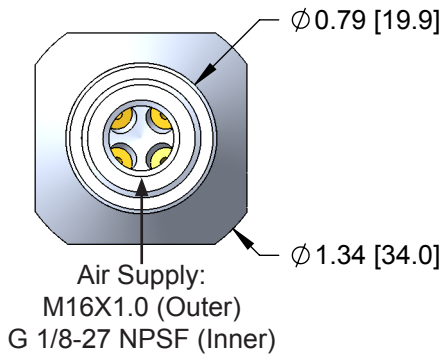
VENTURI SIZE	
ER	09 X2-18F
	09
	10
	08L
	10L



INLINE PUMPS : QUADRUPLE VENTURI

Inline pumps with four venturis in parallel for additional flow capacity and G1/8 NPSF air supply.

VENTURI SIZE	
ER	09 X4-18F
	09
	10
	08L
	10L



ER VENTURI	AIR CONSUMPTION AT 72 psi [5 bar]	EQUIVALENT VENTURI DIAMETER	IP Series PUMP REPLACEMENT
09X2	2.8 SCFM [79 NI/m]	1.2 mm	IP6M-20
10X2 ¹	3.8 SCFM [108 NI/m]	1.4 mm	-
08LX2 ¹	2.4 SCFM [68 NI/m]	1.1 mm	IP6M-20
10LX2 ¹	3.6 SCFM [102 NI/m]	1.4 mm	-
09X4	5.6 SCFM [158 NI/m]	1.8 mm	IP6M-30
10X4 ¹	7.2 SCFM [362 NI/m]	2.0 mm	-
08LX4 ¹	4.8 SCFM [136 NI/m]	1.6 mm	-
10LX4 ¹	7.6 SCFM [215 NI/m]	2.0 mm	-

JN-M16X1.0



For use with -18F inline pumps.

¹May require -18F fitting plus 1/8" nipple for clearance to mount the cup.

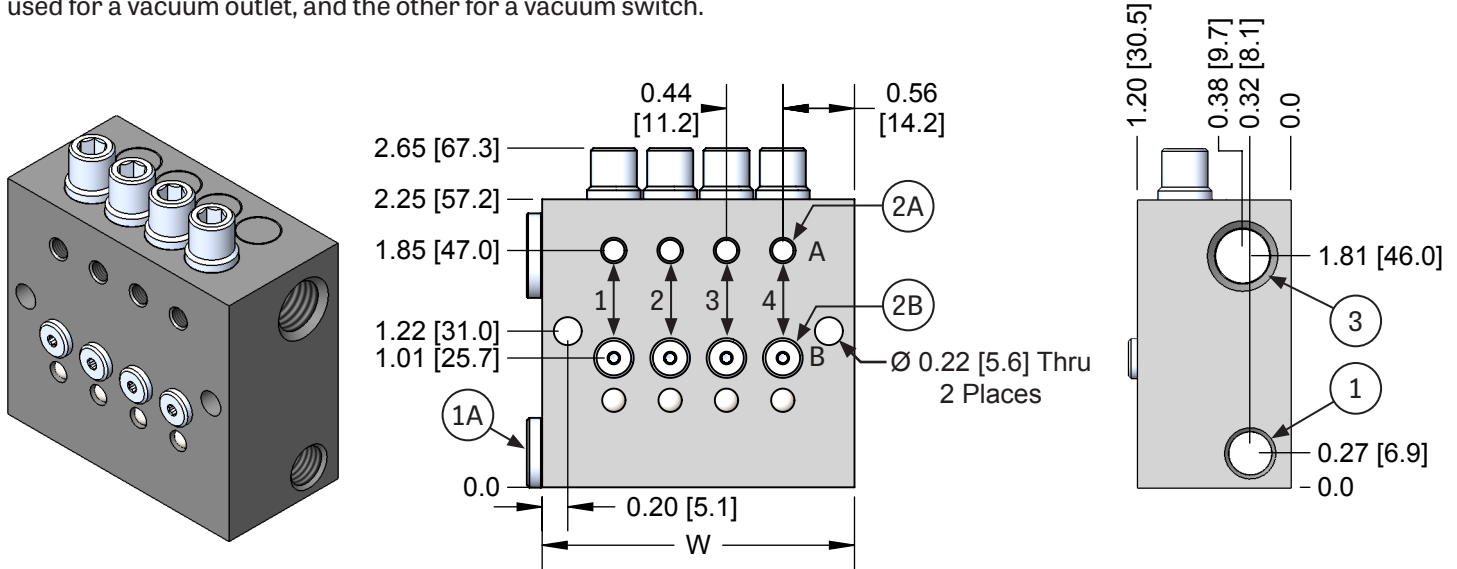
ER SERIES PUMPS VACUUM BAR PUMP

The Vacuum Bar eliminates the clutter and plumbing complexity of small vacuum systems by incorporating multiple vacuum pumps that have common air supply and common exhaust ports within the bar manifold. Vacuum lines can be routed from the pumps directly to individual suction cups.

Even though all of the vacuum pumps are operated by one air supply, the pump vacuum ports are independent of one another so it doesn't matter if some vacuum lines are open to atmosphere due to missing work pieces. Vacuum loss in one line doesn't affect performance of the other vacuum pumps.

Integral polyethylene filter elements are easily serviced by removing a knurled retainer. The filters protect two ports per vacuum pump so either port can be used for a vacuum outlet, and the other for a vacuum switch.

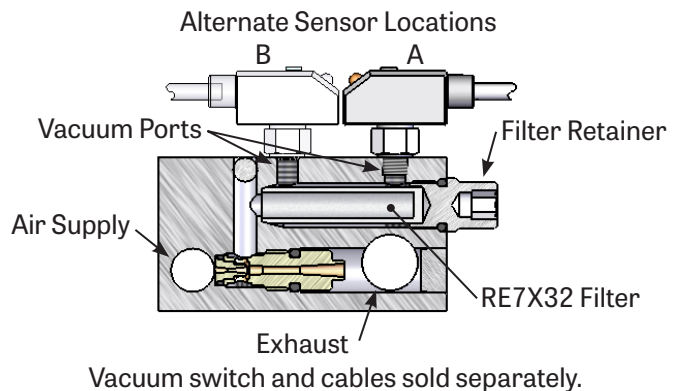
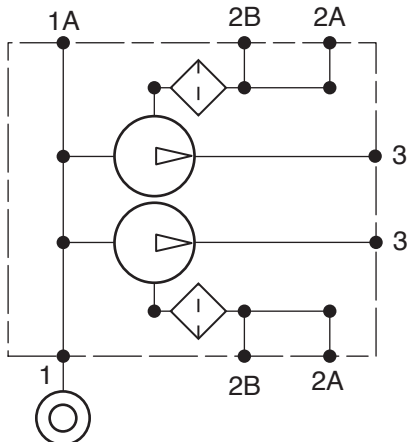
NUMBER OF STATIONS		VENTURI SIZE	
VB	4	-ER	05
	1		05
	2		07
	3		09
	4		10
	5		08L
	6		10L
	7		
	8		



11

CODE	FUNCTION	PORTS
1	Air Supply - Main	G 1/8 NPSF
1A	Air Supply - Alternate	G 1/8 NPSF
2A	Vacuum - Position A	M5X0.8 (10-32 UNF)
2B	Vacuum - Position B	M5X0.8 (10-32 UNF)
3	Exhaust	G 1/4

NUMBER OF STATIONS	W in [mm]	WEIGHT lbs [g]
2	1.56 [39.6]	0.36 [162.0]
4	2.44 [62.0]	0.56 [255.0]
6	3.32 [84.2]	0.77 [349.0]
8	4.2 [106.7]	0.97 [442.0]

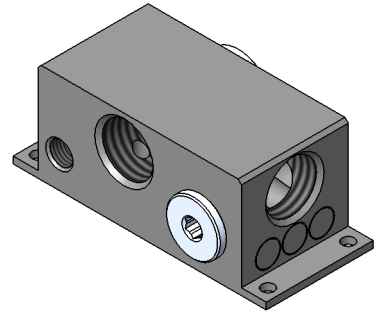


Refer to ER performance graph on page 10:14. Use the X1 values.

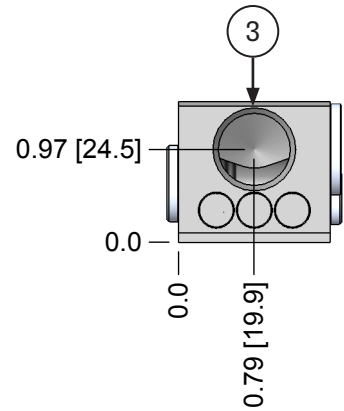
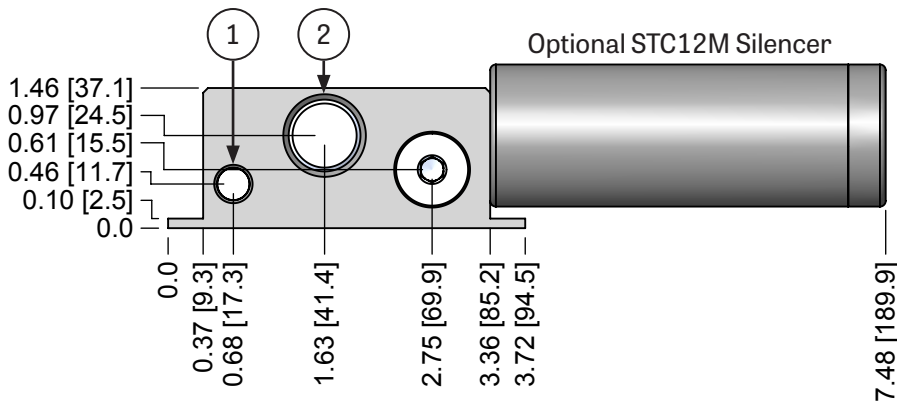
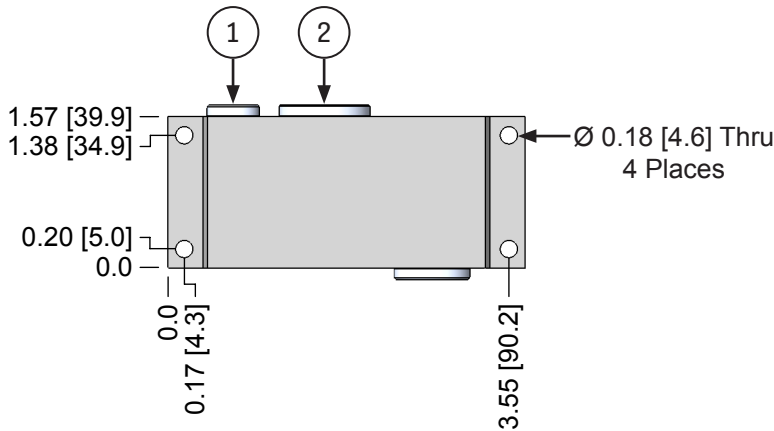
ER SERIES PUMPS 12F T-BASE

A T-base allows either one, two, or three ER venturis to be internally connected in parallel to obtain a greater combined vacuum flow rate. For total vacuum flow, read the vacuum flow rate at the desired vacuum level from the ER performance graph then multiply by the number of venturis installed in the T-Base. Normally, only the larger ER venturis would be selected for this pump.

The ER series T-base offers greater vacuum flow in the same foot print as the Chip Pump T-base.



ER	NUMBER OF STATIONS	NUMBER OF VENTURIS	-T12F-	SILENCER
	05	X3		ST
05	X2 = 2 Venturis	(Blank) = None		
07	X3 = 3 Venturis	ST = STC12M		
09				
10				
08L				
10L				



SILENCER OPTION	WEIGHT oz [g]
(Blank)	9.60 [271.0]
ST	10.70 [303.0]

CODE	FUNCTION	PORTS
1	Air Supply	G 1/8 NPSF
2	Vacuum	G 1/2 NPSF
3	Exhaust	G 1/2 NPSF

ER SERIES PUMPS

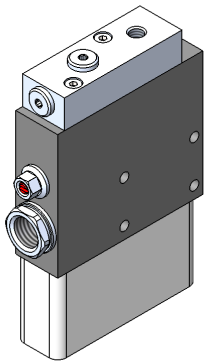
DUAL BASE PUMP : PILOTED SUPPLY

Miniature DER series pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with either one or two coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via integral flow control valve so blow intensity can be fine-tuned for delicate, lightweight parts. Includes

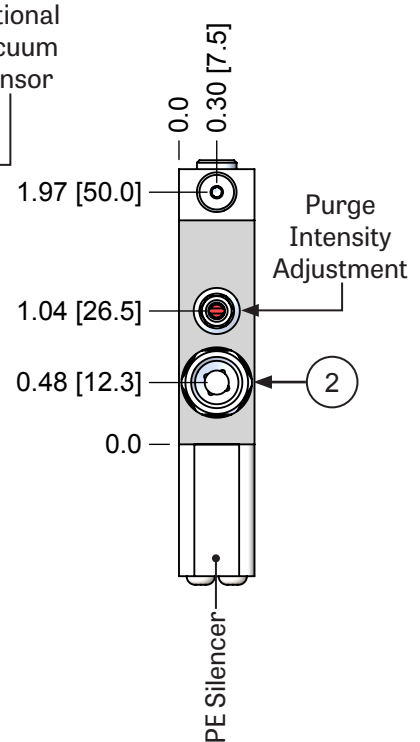
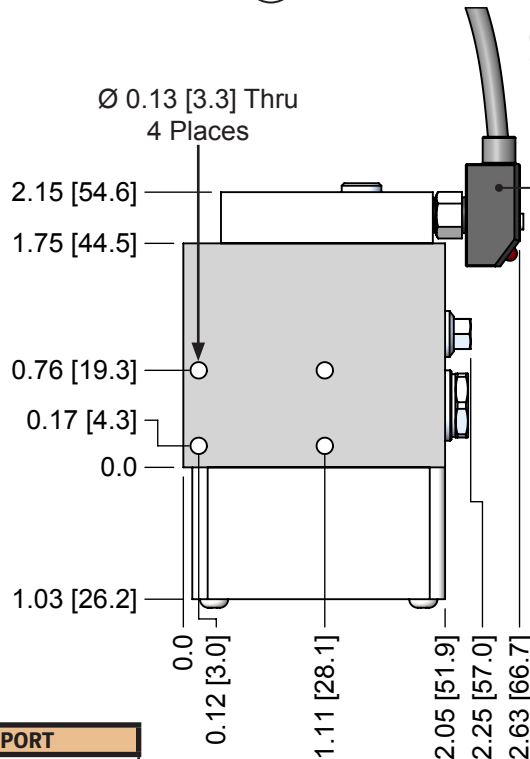
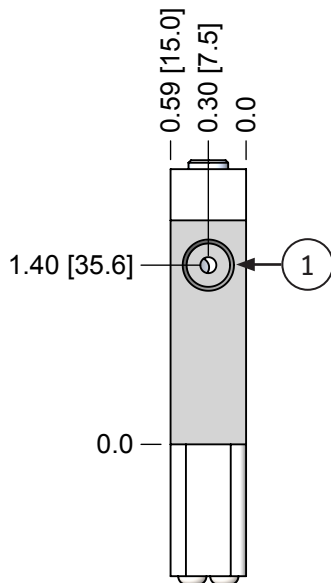
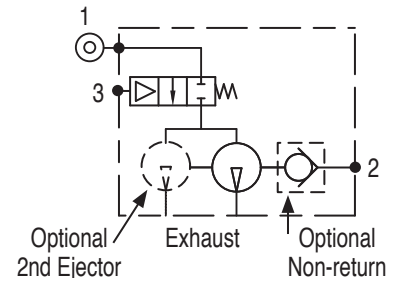
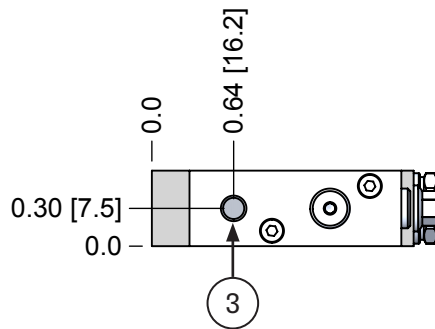
1/8 vacuum port to take advantage of the high vacuum flow produced by coaxial ejectors that are designed to handle porous materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

Select from numerous standard options to configure a DER pump to suit your specific application requirements.

EJECTOR SIZE	NUMBER OF EJECTORS	OPTIONS	VACUUM SENSOR
DER18-10L	X1	(Blank) = None	VP4
05	X1 = 1 Ejector	NR = Non-Return	(Blank) = None
07	X2 = 2 Ejectors		VA3 = Analog, 3 Wire
09			VN3 = NPN, 3 Wire
10			VP3 = PNP, 3 Wire
08L			VN4 = NPN, 4 Wire
10L			VP4 = PNP, 4 Wire



Weight: 4.10 oz. [117.0 g]



CODE	FUNCTION	PORT
1	Air Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
3	Pilot - Vacuum	M5X0.8 (10-32 UNF)

ER SERIES PUMPS

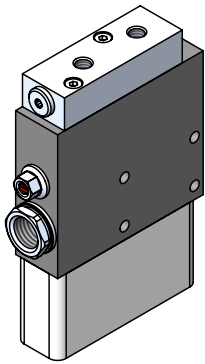
DUAL BASE PUMP : PILOTED SUPPLY & BLOW-OFF

Miniature DER series pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with either one or two coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via integral flow control valve so blow intensity can be fine-tuned for delicate, lightweight parts. Includes

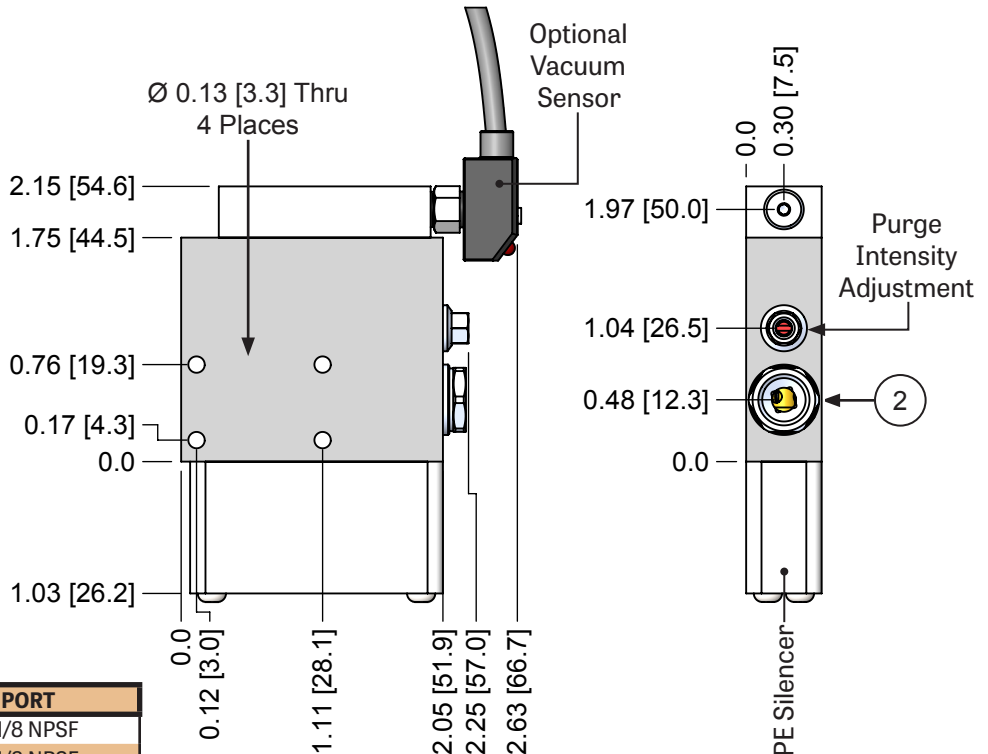
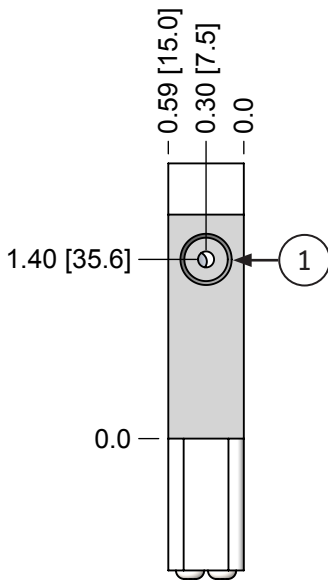
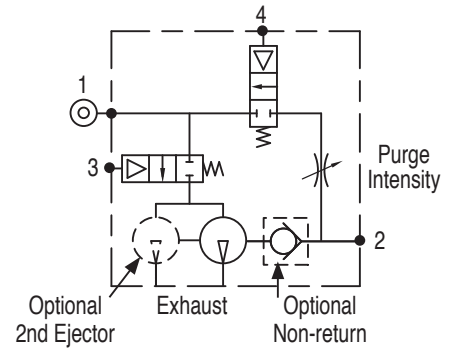
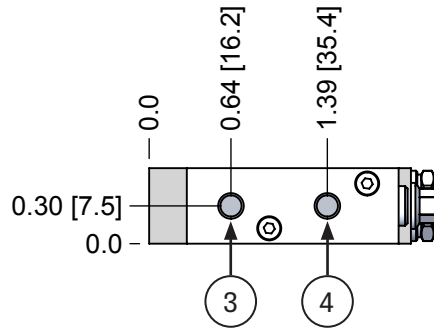
1/8 vacuum port to take advantage of the high vacuum flow produced by coaxial ejectors that are designed to handle porous materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

Select from numerous standard options to configure a DER pump to suit your specific application requirements.

EJECTOR SIZE		NUMBER OF EJECTORS		OPTIONS		VACUUM SENSOR	
DER18-	10L	X1		-PSB-		VP4	
	05	X1 = 1 Ejector			(Blank) = None	(Blank) = None	
	07	X2 = 2 Ejectors			NR = Non-Return	VA3 = Analog, 3 Wire	
	09					VN3 = NPN, 3 Wire	
	10					VP3 = PNP, 3 Wire	
	08L					VN4 = NPN, 4 Wire	
	10L					VP4 = PNP, 4 Wire	



Weight: 4.10 oz [117.0 g]



CODE	FUNCTION	PORT
1	Air Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
3	Pilot - Vacuum	M5X0.8 (10-32 UNF)
4	Pilot - Blow-Off	M5X0.8 (10-32 UNF)

ER SERIES PUMPS

DUAL BASE PUMP : SOLENOID SUPPLY

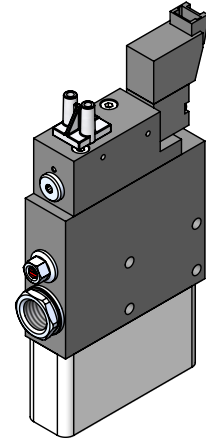
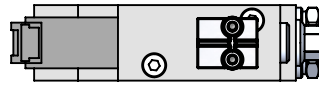
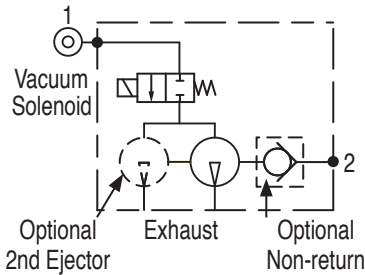
Miniature DER series pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with either one or two coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via integral flow control valve so blow intensity can be fine-tuned for delicate, lightweight parts. Includes 1/8 vacuum port to take advantage of the high vacuum flow

produced by coaxial ejectors that are designed to handle porous materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

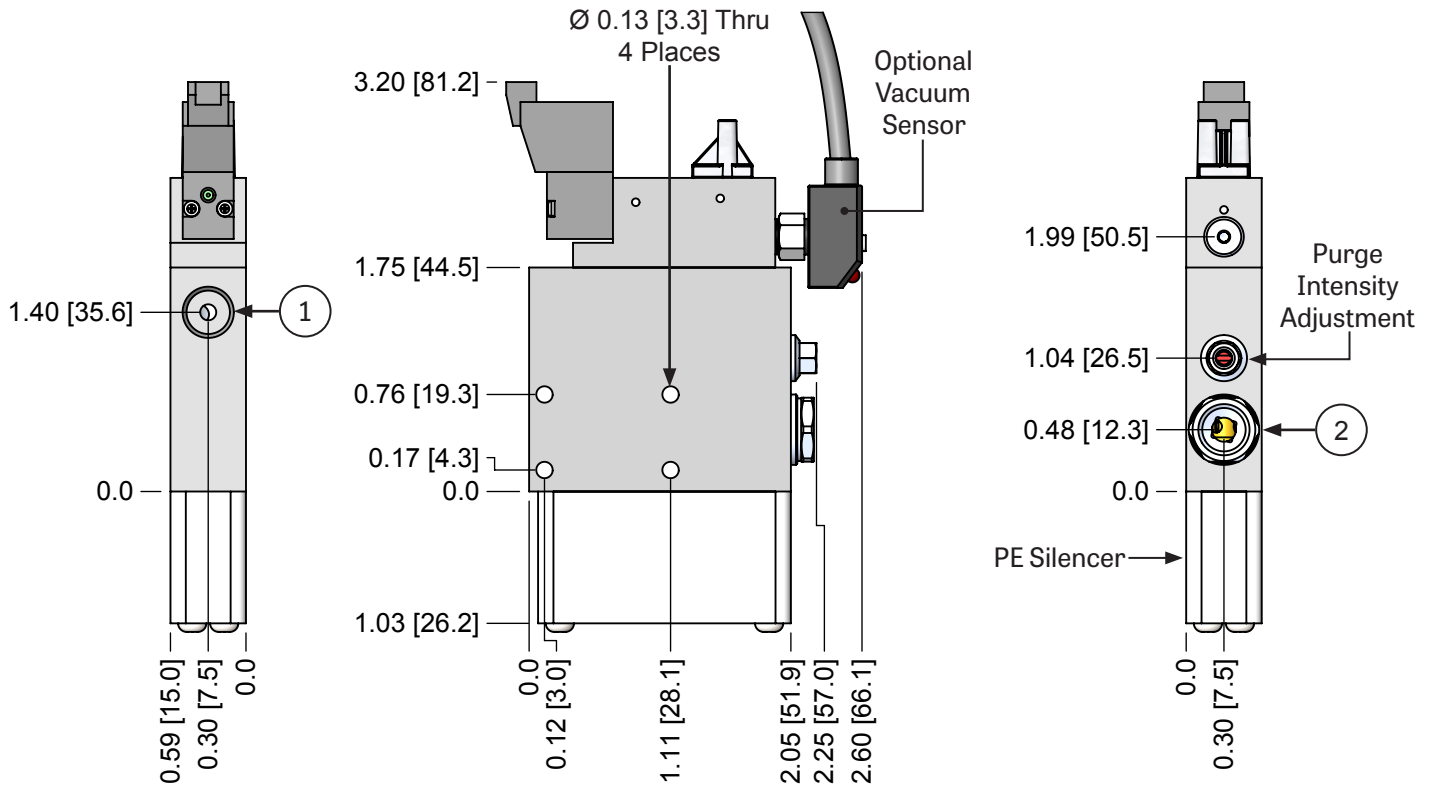
Select from numerous standard options to configure a DER pump to suit your specific application requirements.

Order SV10-QD-1M solenoid cables separately.

EJECTOR SIZE		NUMBER OF EJECTORS	-S24D-	OPTIONS	VACUUM SENSOR
DER18-	10L	X1			(Blank) = None
	05	X1 = 1 Ejector		NR = Non-Return	(Blank) = None
	07	X2 = 2 Ejectors			VA3 = Analog, 3 Wire
	09				VN3 = NPN, 3 Wire
	10				VP3 = PNP, 3 Wire
	08L				VN4 = NPN, 4 Wire
	10L				VP4 = PNP, 4 Wire



Weight: 4.80 oz [134.0 g]



CODE	FUNCTION	PORT
1	Air Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF

ER SERIES PUMPS

DUAL BASE PUMP : SOLENOID SUPPLY & BLOW-OFF

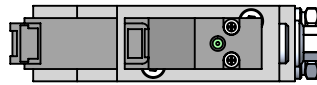
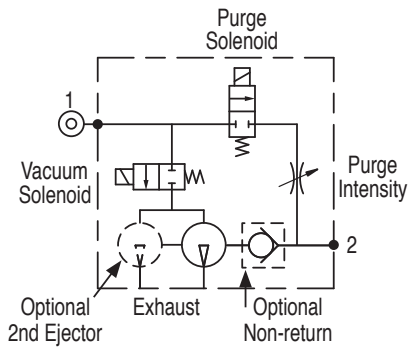
Miniature DER series pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with either one or two coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via integral flow control valve so blow intensity can be fine-tuned for delicate, lightweight parts. Includes 1/8 vacuum port to take advantage of the high vacuum flow

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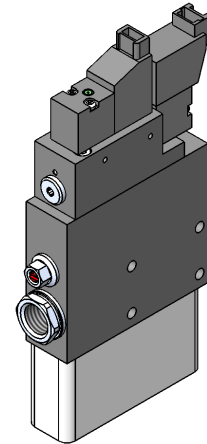
Select from numerous standard options to configure a DER pump to suit your specific application requirements.

Order SV10-QD-1M solenoid cables separately.

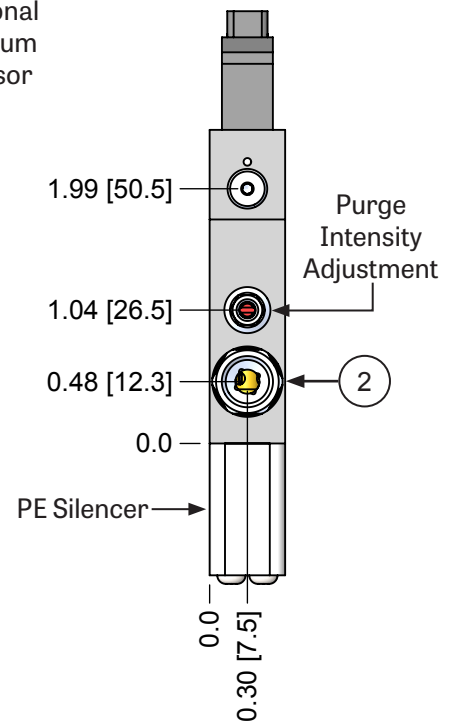
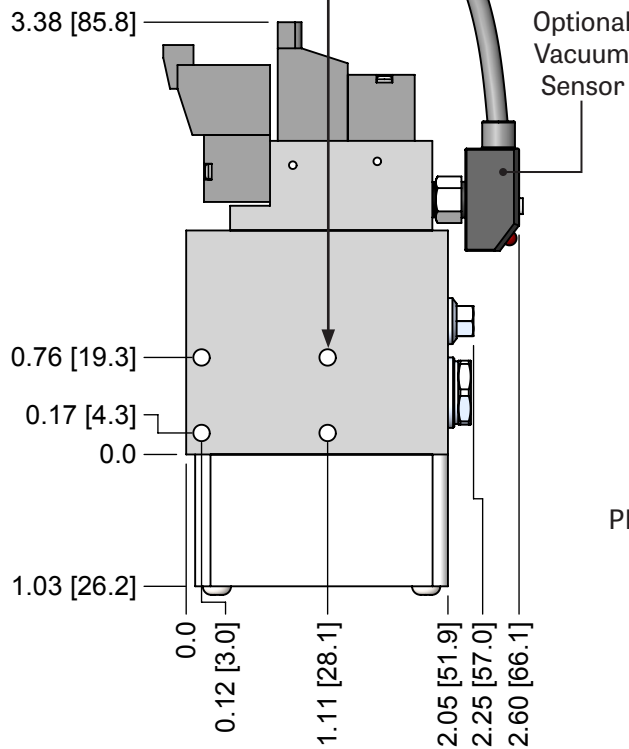
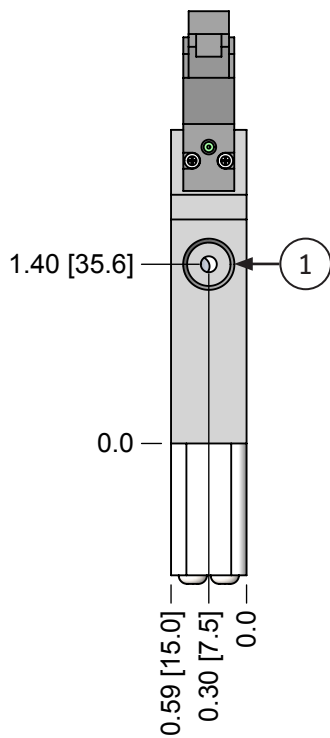
DER18-	EJECTOR SIZE	NUMBER OF EJECTORS	-SB24D-	OPTIONS	VACUUM SENSOR
	10L	X1			(Blank) = None
05	X1 = 1 Ejector		NR = Non-Return	(Blank) = None	VA3 = Analog, 3 Wire
07	X2 = 2 Ejectors			VN3 = NPN, 3 Wire	VP3 = PNP, 3 Wire
09				VN4 = NPN, 4 Wire	VP4 = PNP, 4 Wire
10					
08L					
10L					



Ø 0.13 [3.3] Thru 4 Places



Weight: 5.10 oz [146.0 g]



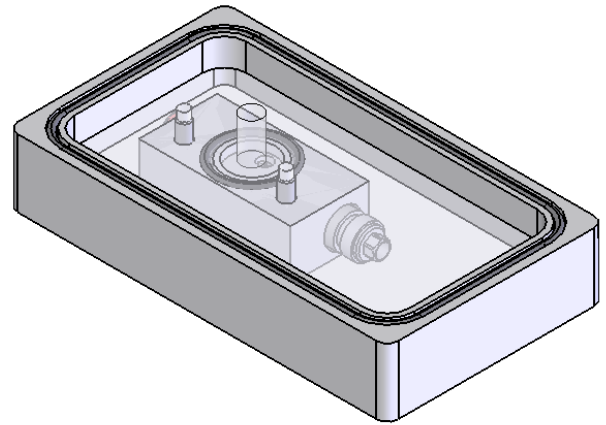
CODE	FUNCTION	PORT
1	Air Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF

ER SERIES PUMPS

SM PUMP : SURFACE MOUNT MICRO-PUMP

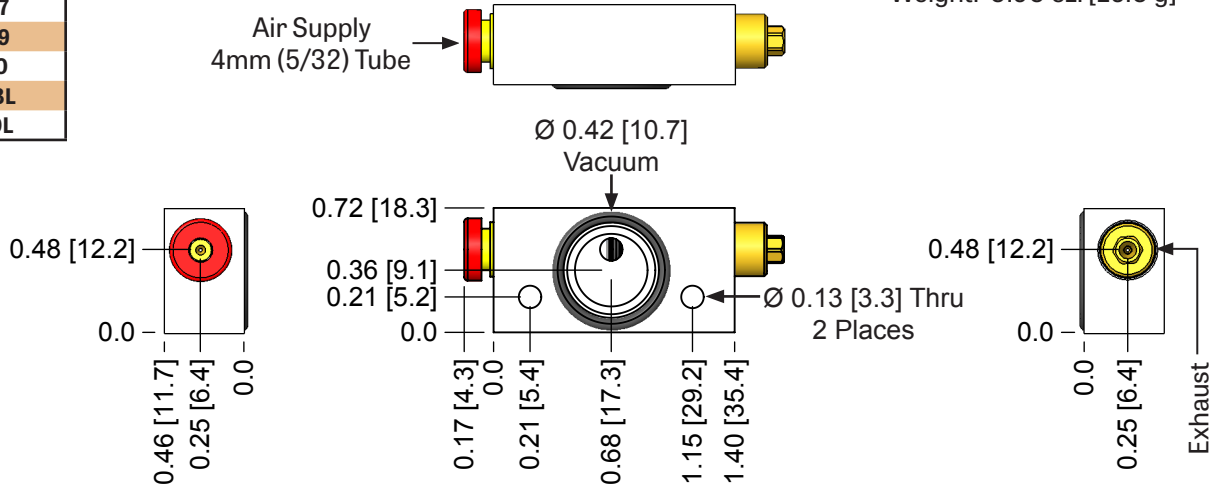
Simply add a vacuum passage and two tapped holes to any flat surface to integrate our micro-vacuum pump into a machine component. An integral push-in 4mm (5/32") tube fitting air supply and an atmospheric exhaust will almost eliminate assembly labor.

Select from five ER venturi sizes to match vacuum pump specifications to your application requirements and minimize compressed air consumption.



Weight: 0.90 oz. [25.0 g]

VENTURI SIZE	
ER	05 -SM
	05
	07
	09
	10
	08L
	10L



PERFORMANCE

VACUUM FLOW - SCFM

MODEL	AIR SUPPLY PSI	AIR CONS SCFM	MAX VACUUM inHG	SCFM AT VACUUM LEVEL							
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG
ER05	72	0.4	26.7	0.25	0.22	0.20	0.15	0.12	0.07	0.03	0.01
ER07	72	0.8	26.7	0.34	0.33	0.31	0.25	0.21	0.14	0.05	0.02
ER09	72	1.4	25.5	0.54	0.47	0.40	0.36	0.32	0.24	0.15	0.02
ER10	72	1.8	28	0.70	0.57	0.46	0.35	0.33	0.27	0.21	0.12
ER08L	72	1.2	23.6	0.88	0.76	0.58	0.44	0.33	0.26	0.13	-
ER10L	72	1.9	23.6	1.34	1.22	1.03	0.89	0.70	0.51	0.29	-
ER08L	60	1.0	20.4	0.91	0.79	0.59	0.42	0.35	0.19	-	-
ER10L	60	1.65	21.6	1.31	1.17	1.01	0.79	0.60	0.28	0.04	-

SCFM X 28.32 = nl / m

For X2, X3, & X4 flow rates multiply the value in the table by 2, 3, or 4 respectively.

For example, an ER09X3 @ 15 inHg would flow:
0.32 x 3 = 0.96 SCFM.

EVACUATION TIME - SEC / 100 IN³

MODEL	AIR SUPPLY PSI	AIR CONS SCFM	MAX VACUUM inHG	SECONDS TO VACUUM LEVEL							
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG
ER05	72	0.4	26.7	1	2.5	4.5	7.5	12.5	20	35	-
ER07	72	0.8	26.7	0.8	1.8	3.1	5.1	8.1	13.1	22.8	-
ER09	72	1.4	25.5	0.45	1.1	2	3.4	5.4	8.7	14.8	-
ER10	72	1.8	28	0.36	2.88	1.66	2.8	4.6	7.5	12.7	-
ER08L	72	1.2	23.6	0.28	0.69	1.28	2.2	3.7	6.1	10.5	-
ER10L	72	1.9	23.6	0.2	0.46	0.83	1.38	2.2	3.6	6.1	-
ER08L	60	1.0	20.4	0.28	0.68	1.26	2.1	3.6	6.1	11	-
ER10L	60	1.65	21.6	0.2	0.46	0.82	1.4	2.3	3.8	6.8	-

sec / 100 in³ X 0.61 = sec / l

For X2, X3, & X4 evacuation time multiply the value in the table by 2, 3, or 4 respectively.

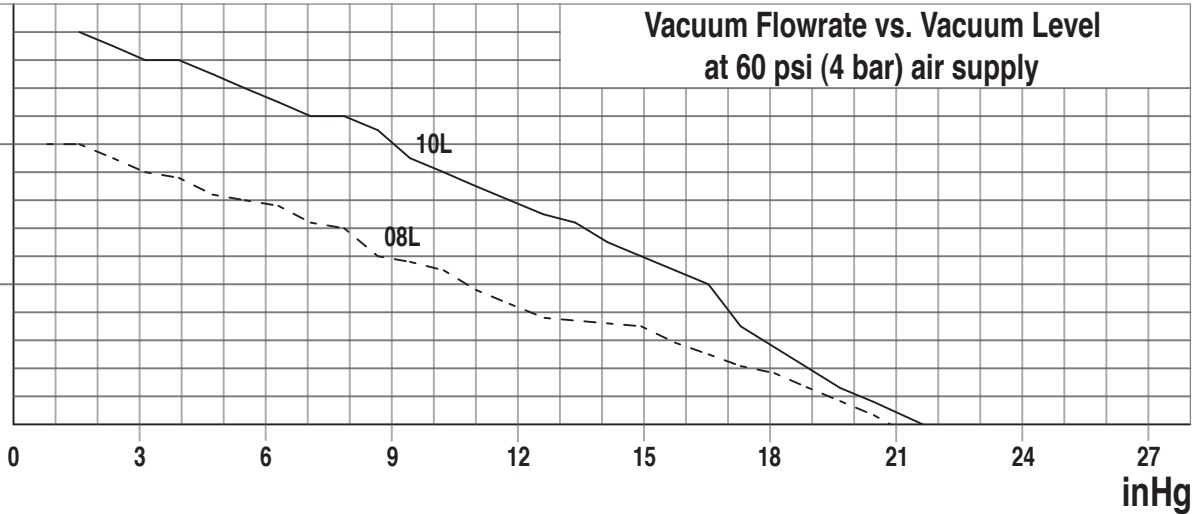
For example, an ER07X2 @ 15 inHg would evacuate 100 cu. in.:
8.1 x 2 = 16.2 seconds.

**ER SERIES PUMPS
PERFORMANCE**

SCFM

SCALE

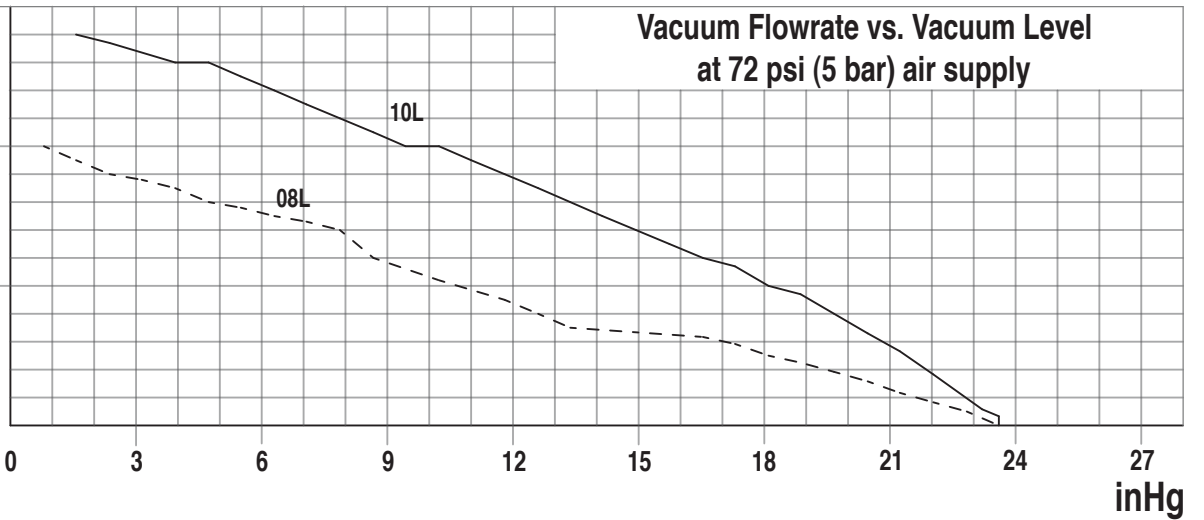
X4	X3	X2	X1
6.0	4.5	3.0	1.5
4.0	3.0	2.0	1.0
2.0	1.5	1.0	0.5
0	0	0	0



SCFM

SCALE

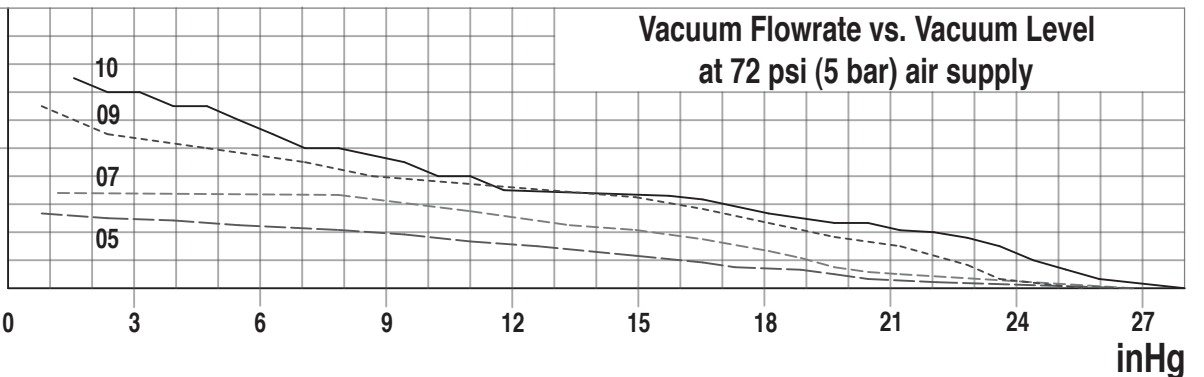
X4	X3	X2	X1
6.0	4.5	3.0	1.5
4.0	3.0	2.0	1.0
2.0	1.5	1.0	0.5
0	0	0	0



SCFM

SCALE

X4	X3	X2	X1
4.0	3.0	2.0	1.0
2.0	1.5	1.0	0.5
0	0	0	0



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.