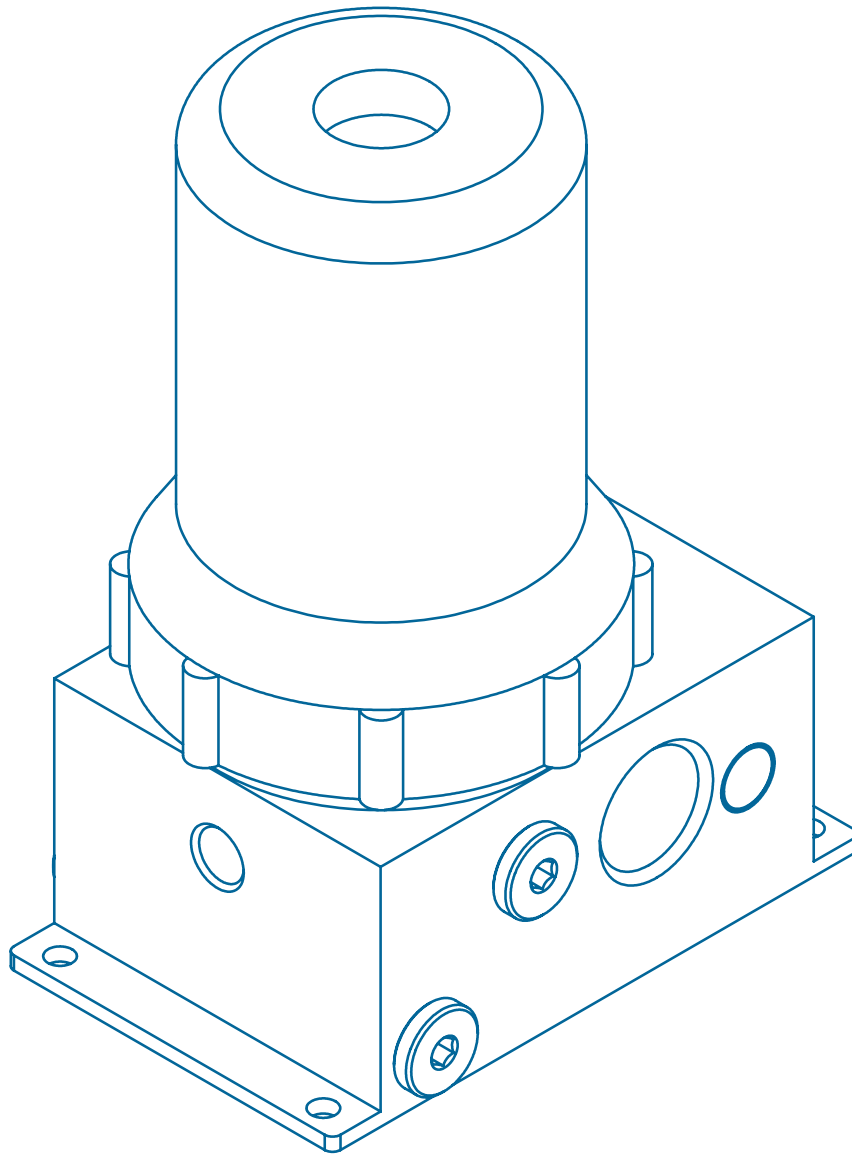
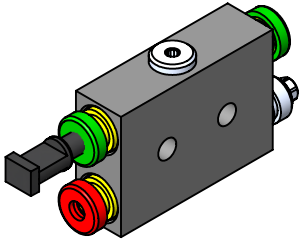


ER PUMPS

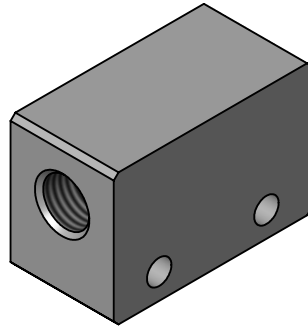
SECTION 10



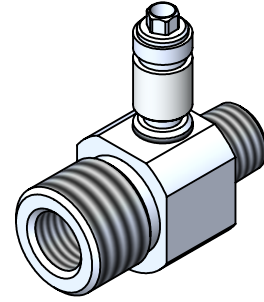
ER PUMPS



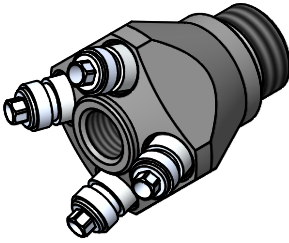
2010 Micro-Pump



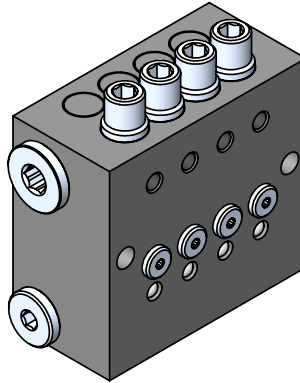
T18F Body



Inline

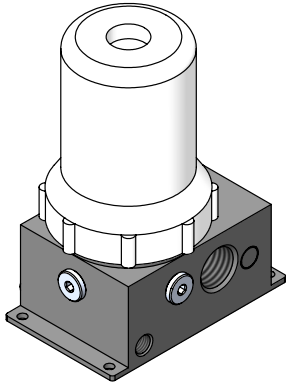


Inline, Multi-Venturi

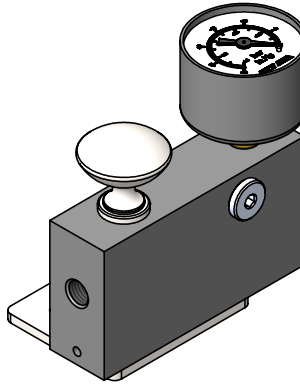


Vacuum Bar

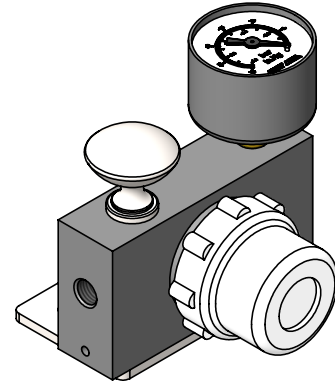
T12F Base



Integrated Filter



Manual Valve



Manual Valve with Integrated Filter

2010 Micro-Pump	3
T18F Body	4
Inline	5
Inline, Multi-Venturi	6
Vacuum Bar	7
Integrated Filter	8
Manual Valve	9
Manual Valve w/ Integrated Filter	10
T12F Base	8
DER: Dual ER Base	9-12
Surface Mount Micro-Pump	13
Performance	13-14

Dual ER Pump

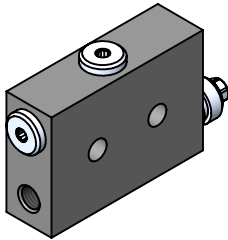
Surface Mount Micro-Pump

ER PUMPS: 2010 MICRO-PUMP

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

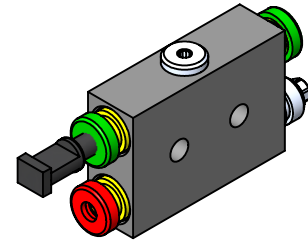
	Venturi	Body Style
ER2010-	05	-
	05	M4 4 mm Push-In Tube
	07	5F M5 Female
	09	
	10	
	08L	
	10L	

M5 FEMALE

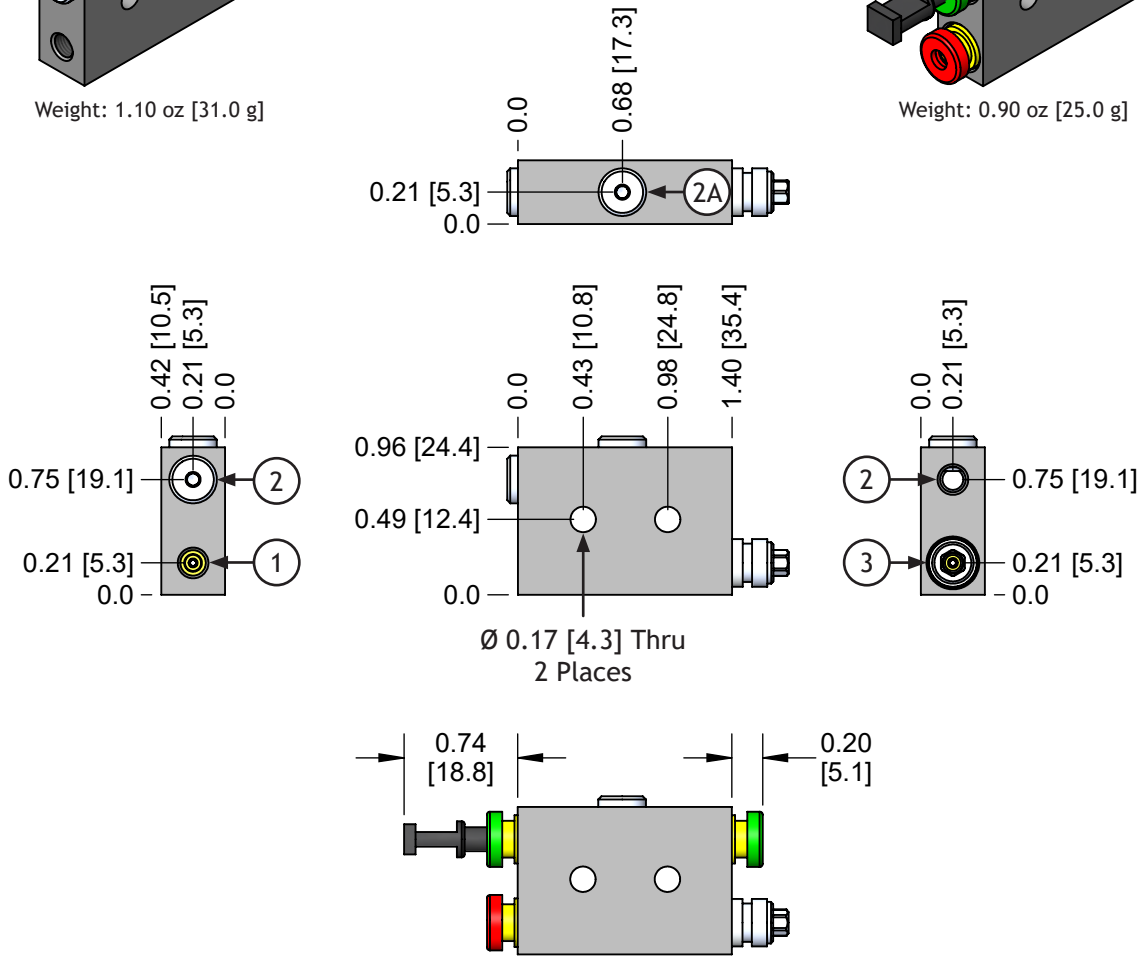


Weight: 1.10 oz [31.0 g]

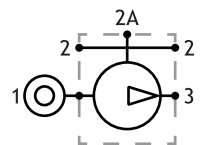
4 MM PUSH-IN TUBE



Weight: 0.90 oz [25.0 g]



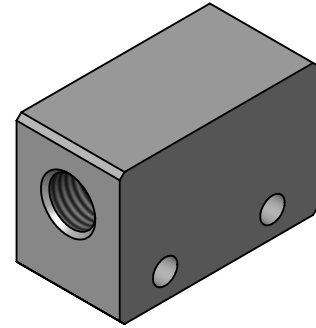
Code	Function	-M4	-5F
1	Air-Supply	4 mm Tube	M5 Female
2	Vacuum	4 mm Tube	M5 Female
2A	Vacuum - Alternate		M5 Female
3	Exhaust		-



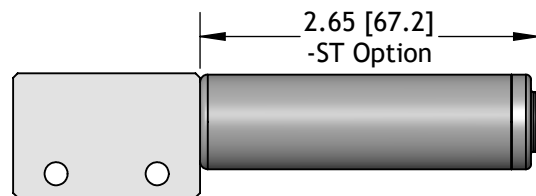
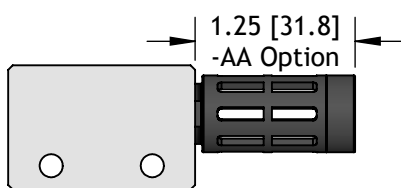
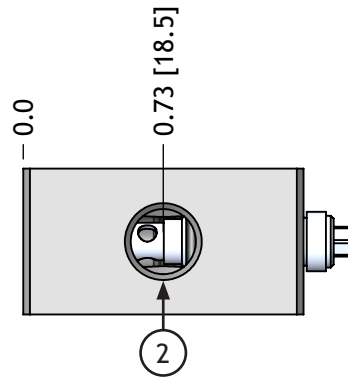
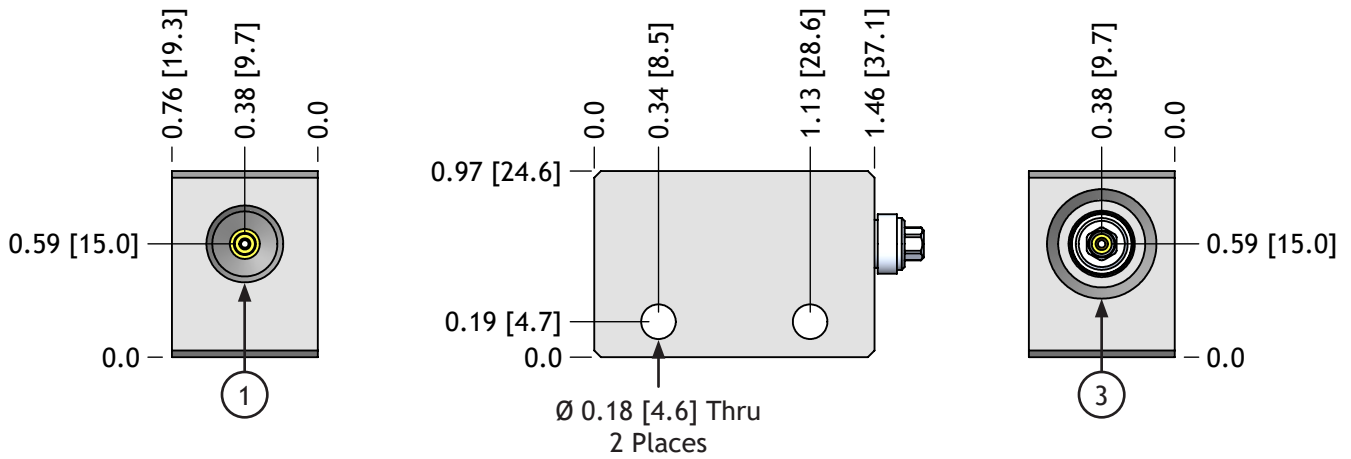
ER PUMPS: T18F BODY

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 one-piece, anodized aluminum, 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 with a G1/4 exhaust port.

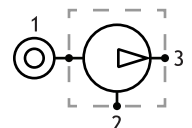
Venturi		Silencer	
ER	10L	-T18F	
	05	(Blank)	None
	07	-AA	AA14M
	09	-ST	STA14M
	10		
	08L		
	10L		



Weight: 1.44 oz [40.8 g]



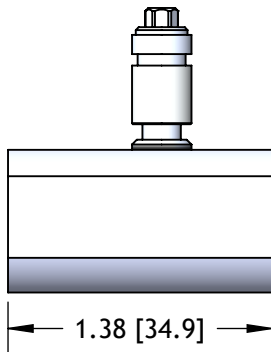
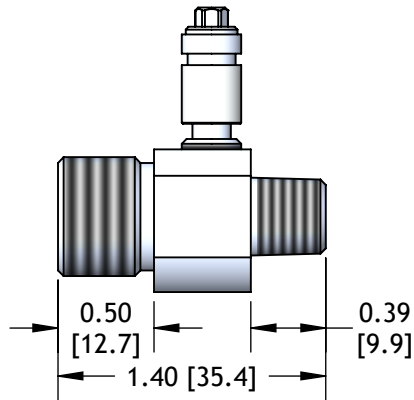
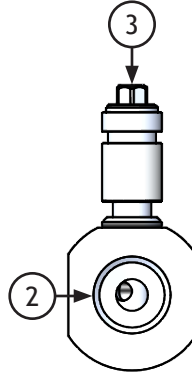
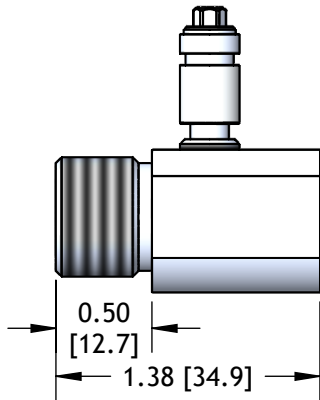
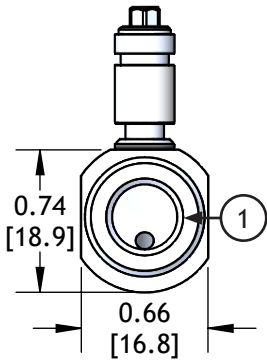
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
3	Exhaust	G 1/4



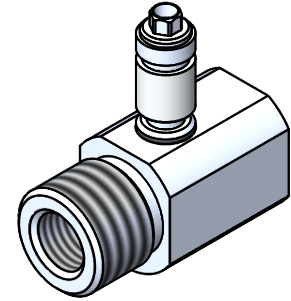
ER PUMPS: INLINE PUMPS

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. We offer three body styles that allow you to choose the vacuum and air-supply threads that best suit your application.

	Venturi		Body Style
ER	10L	-	
	05	-18F	G 1/8 NPSF Female Vacuum
	07	-18M	G 1/8 NPSF Male Vacuum
	09	-G14F18F	G 1/4 Female Air-Supply
	10		
	08L		
	10L		

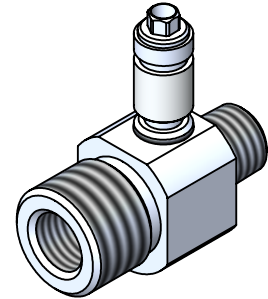


G 1/8 NPSF FEMALE



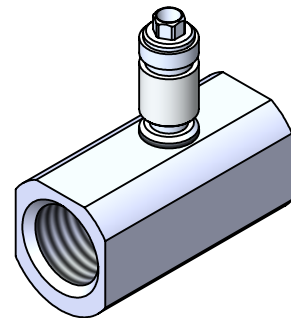
Weight: 0.76 oz [21.6 g]

G 1/8 NPSF MALE



Weight: 0.62 oz [17.7 g]

G 1/4 NPSF FEMALE

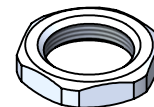


Weight: 0.80 oz [22.6 g]

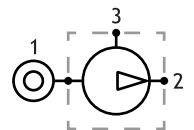
Venturi Series	Air Consumption @ 72 psi [5 bar]	Venturi Diameter	IP Series Replacement
ER05	0.51 SCFM [14.4 NL/m]	0.5 mm	-
ER07	0.66 SCFM [18.7 NL/m]	0.7 mm	IP6M-5
ER09	1.40 SCFM [39.6 NL/m]	0.9 mm	IP6M-10
ER10	1.80 SCFM [51.0 NL/m]	1.0 mm	-
ER08L	1.20 SCFM [34.0 NL/m]	0.8 mm	-
ER10L	1.90 SCFM [53.8 NL/m]	1.0 mm	-

Code	Function	-18F	-18M	-G14F18F
1	Air-Supply	G 1/8 NPSF Female / M16X1.0 Male		G 1/4 Female
2	Vacuum	G 1/8 NPSF Female	G 1/8 NPSF Male	G 1/8 NPSF Female
3	Exhaust	-		

JN-M16X1.0



Jam nut for use with -18F inline pumps.

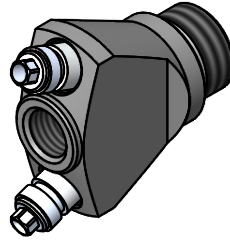


ER PUMPS: INLINE PUMPS, MULTI-VENTURI

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.

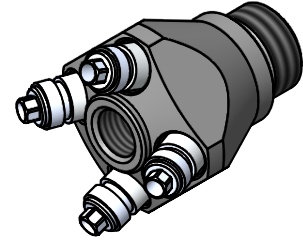
	Venturi	Number of Venturis	
ER	10L	X2	-18F
	09	X2	Double Venturi
	10	X4	Quadruple Venturi
	08L		
	10L		

DOUBLE VENTURI

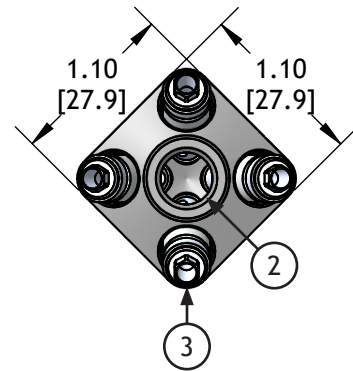
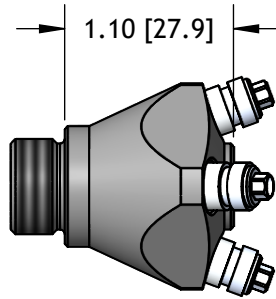
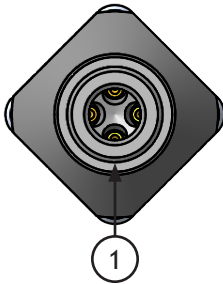
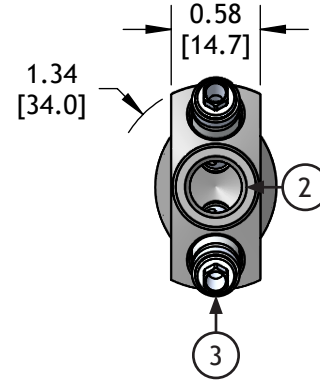
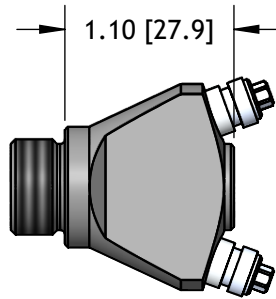


Weight: 0.98 oz [27.7 g]

QUADRUPLE VENTURI



Weight: 1.38 oz [39.2 g]

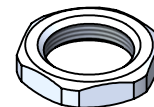


Venturi Series	Air Consumption @ 72 psi [5 bar]	Venturi Diameter	IP Series Replacement
ER09X2	2.80 SCFM [79.0 NL/m]	1.2 mm	IP6M-20
ER10X2 ¹	3.80 SCFM [108.0 NL/m]	1.4 mm	-
ER08LX2 ¹	2.40 SCFM [68.0 NL/m]	1.1 mm	IP6M-20
ER10LX2 ¹	3.60 SCFM [102.0 NL/m]	1.4 mm	-
ER09X4	5.60 SCFM [158.0 NL/m]	1.8 mm	IP6M-30
ER10X4 ¹	7.20 SCFM [362.0 NL/m]	2.0 mm	-
ER08LX4 ¹	4.80 SCFM [136.0 NL/m]	1.6 mm	-
ER10LX4 ¹	7.60 SCFM [215.0 NL/m]	2.0 mm	-

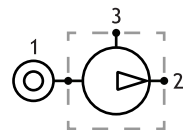
¹May require -18F fitting plus 1/8" nipple for clearance to mount the cup.

Code	Function	Port
1	Air-Supply	G 1/8 NPSF Female / M16X1.0 Male
2	Vacuum	G 1/8 NPSF Female
3	Exhaust	-

JN-M16X1.0



Jam nut for use with -18F inline pumps.

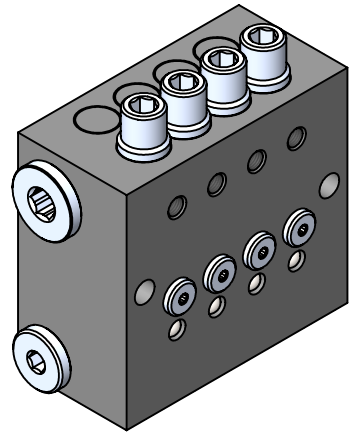


ER PUMPS: VACUUM BAR

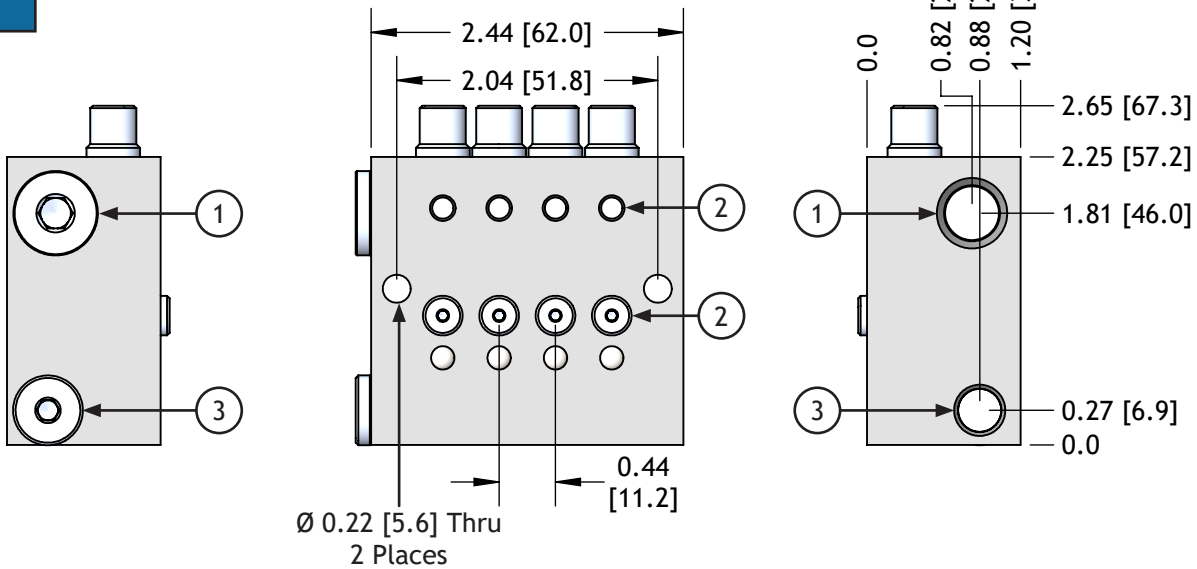
Vacuum bars eliminate the clutter and plumbing complexity of small vacuum systems by incorporating multiple vacuum pumps that have common air supply and common exhaust ports within the bar manifold. Vacuum lines can be routed from the pumps directly to individual suction cups.

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.



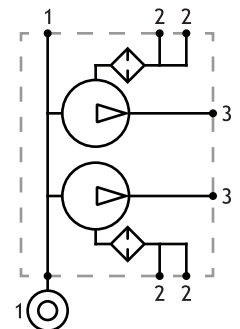
Stations	Series
VB	2 -ER 10
1	05
2	07
3	09
4	10
5	08L
6	10L
7	
8	



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	4.20 [106.7]	0.97 [442.0]

Refer to ER performance graph. Use the X1 values.

Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	M5X0.8 (10-32 UNF)
3	Exhaust	G 1/4

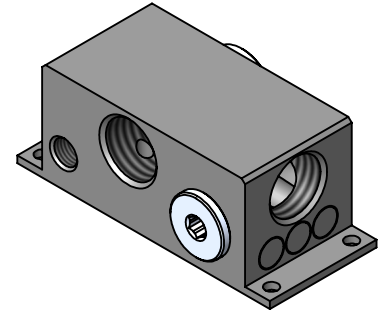


ER PUMPS: 12F T-BASE

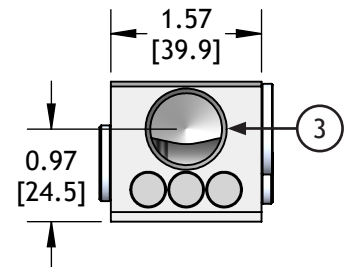
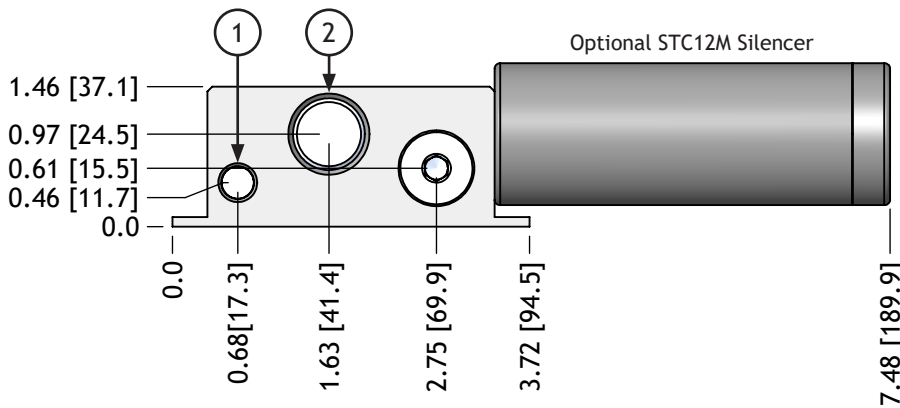
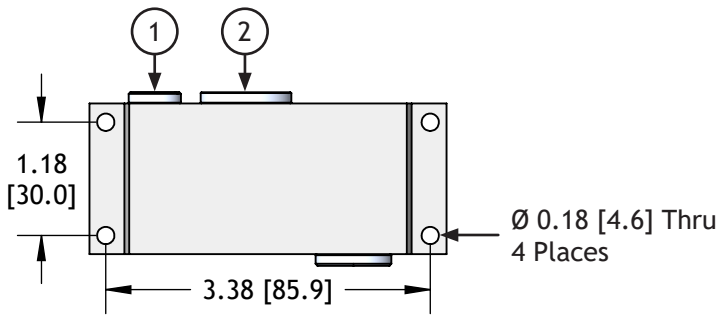
A T-base allows either one, two, or three ER venturis to be internally connected in parallel to obtain a greater combined vacuum flow rate. For total vacuum flow, read the vacuum flow rate at the desired vacuum level from the ER performance graph then multiply by the number of venturis installed in the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

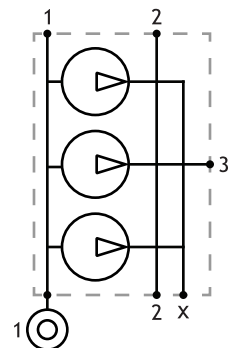
Venturi	Number of Venturis	Silencer
ER 10L	X3	-T12F
05	X2 Double Venturi	(Blank) None
07	X3 Triple Venturi	-AA AA12M
09		-ST STC12M
10		
08L		
10L		



Weight: 9.25 oz [262.3 g]



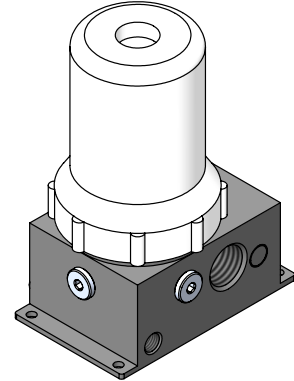
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/2 NPSF
3	Exhaust	G 1/2 NPSF



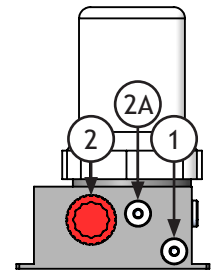
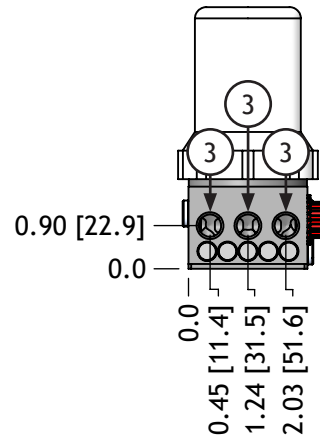
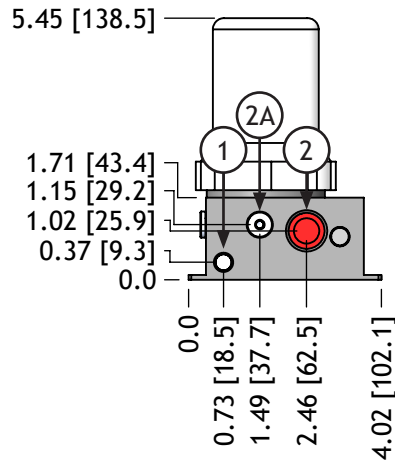
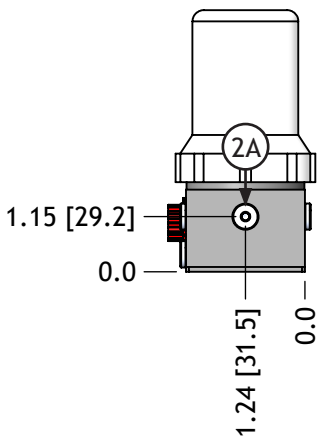
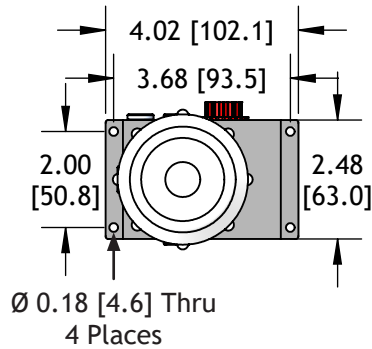
ER PUMPS: 12F T-BASE W/ INTEGRATED FILTER

Similar to the 12F t-base, our ER Pump with Integrated Filter allows one to five ER venturis to be internally connected in parallel to obtain a greater combined vacuum flow rate. This pump incorporates the bowl, gasket, and filter element of our t-style filters directly into the pump base eliminating the necessity of incorporating an external filter into the vacuum system.

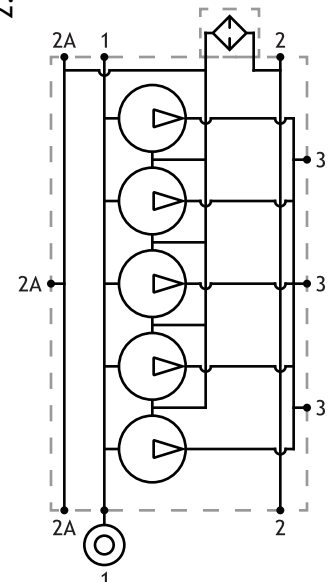
Series	Number of Venturis		Silencer Option
ER	10L	X5	-T12FIF
05	X1	1 Venturis	(Blank) None
07	X2	2 Venturis	-AA AA14M (3)
09	X3	3 Venturis	-ST STA14M (3)
10	X4	4 Venturis	
08L	X5	5 Venturis	
10L			



Weight: 24.25 oz [687.6 g]



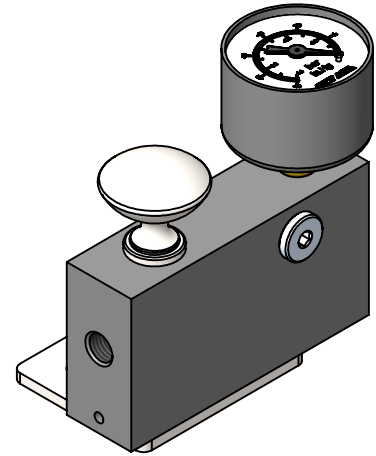
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/2 NPSF
2A	Vacuum, Alternate	G 1/8 NPSF
3	Exhaust	G 1/4



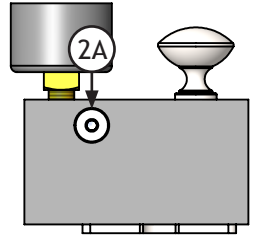
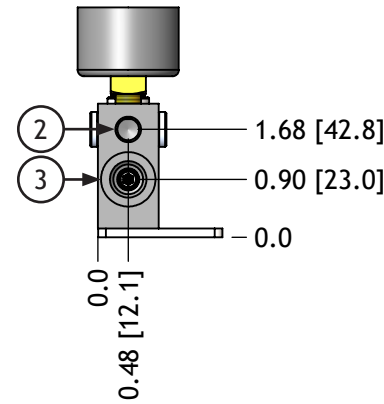
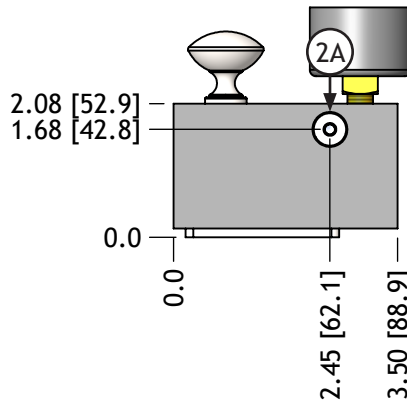
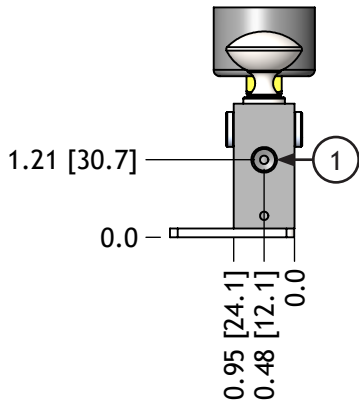
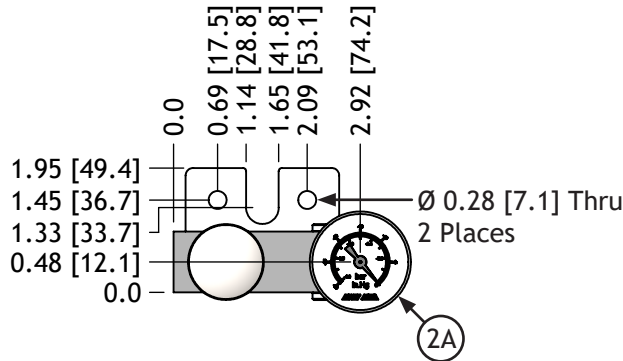
ER PUMPS: PUMP W/ MANUAL VALVE

EDCO Vacuum pumps with manual valve (MV) option provide a compact compressed-air powered control unit for vacuum workholding fixtures. An easily-readable 1-1/2" vacuum gauge displays depth of vacuum within the system so a technician can determine whether an adequate vacuum level has been achieved based on experience.

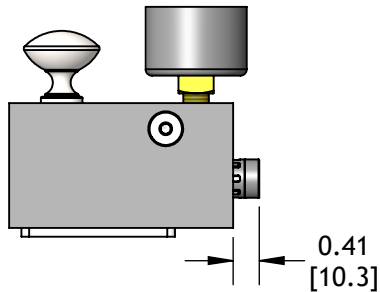
Series	Silencer Option	
ER 10L	-MV	
05	(Blank)	None
07	-AA	AA14M
09	-ST	STA14M
10		
08L		
10L		



Weight: 13.94 oz [395.1 g]

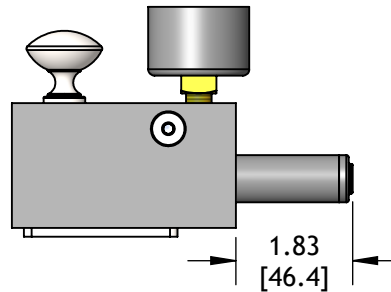


Optional AA Silencer



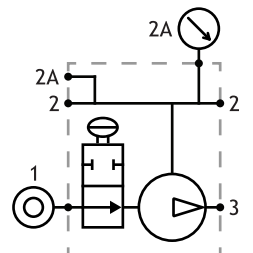
Additional Weight: 0.11 oz [3.1 g]

Optional ST Silencer



Additional Weight: 0.56 oz [15.8 g]

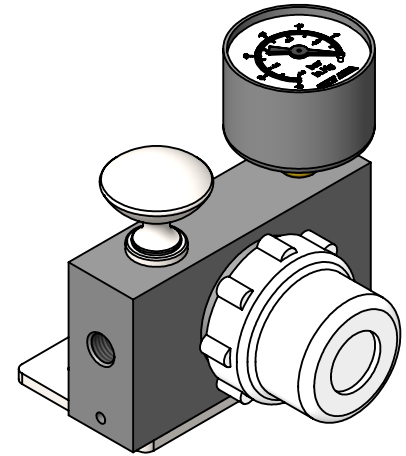
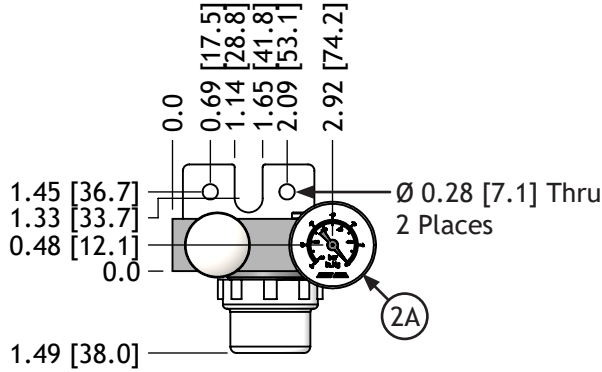
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
2A	Vacuum, Alternate	G 1/8 NPSF
3	Exhaust	G 1/4



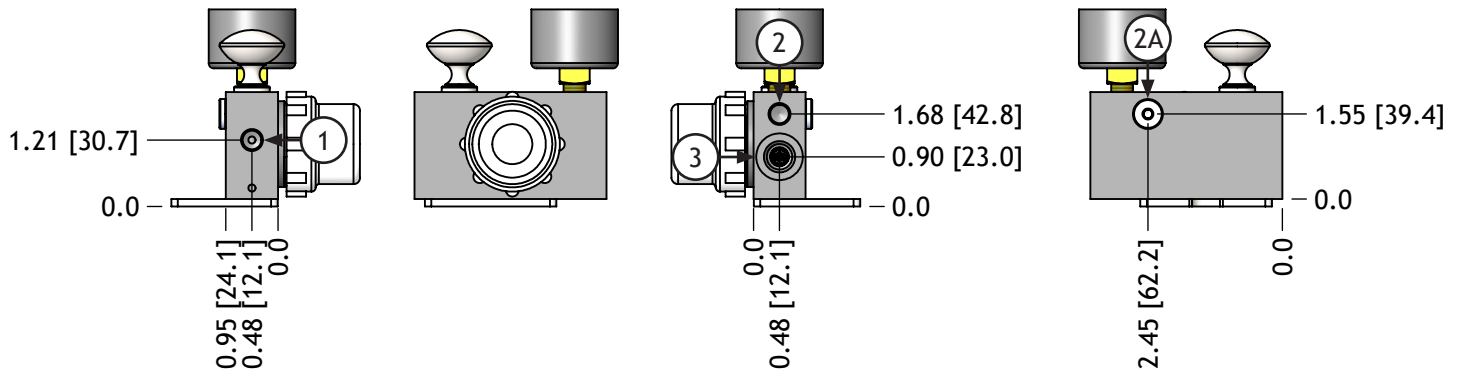
ER PUMPS: PUMP W/ MANUAL VALVE & INTEGRATED FILTER

EDCO Vacuum pumps with manual valve (MV) option provide a compact compressed-air powered control unit for vacuum workholding fixtures. An easily-readable 1-1/2" vacuum gauge displays depth of vacuum within the system so a technician can determine whether an adequate vacuum level has been achieved based on experience. This pump incorporates the bowl, gasket, and filter element of our t-style filters directly into the pump base eliminating the necessity of incorporating an external filter into the vacuum system.

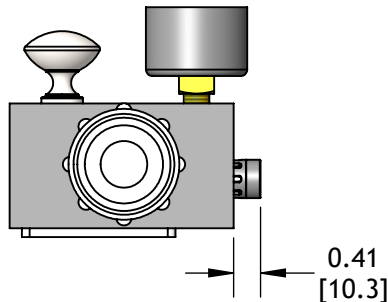
Series	Silencer Option	
ER 10L	-MV-IF	
05	(Blank)	None
07	-AA	AA14M
09	-ST	STA14M
10		
08L		
10L		



Weight: 15.89 oz [450.5 g]

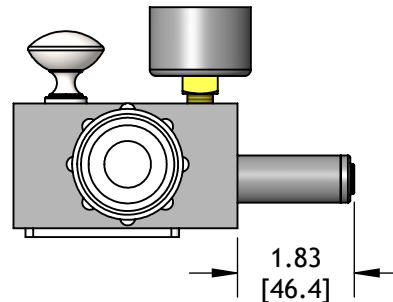


Optional AA Silencer



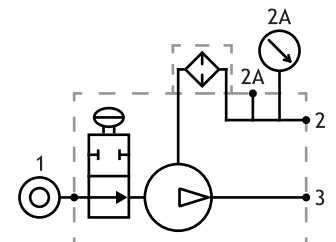
Additional Weight: 0.11 oz [3.1 g]

Optional ST Silencer



Additional Weight: 0.56 oz [15.8 g]

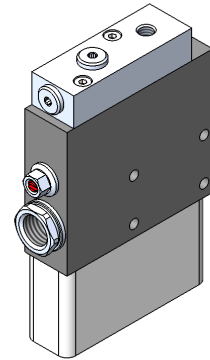
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
2A	Vacuum, Alternate	G 1/8 NPSF
3	Exhaust	G 1/4



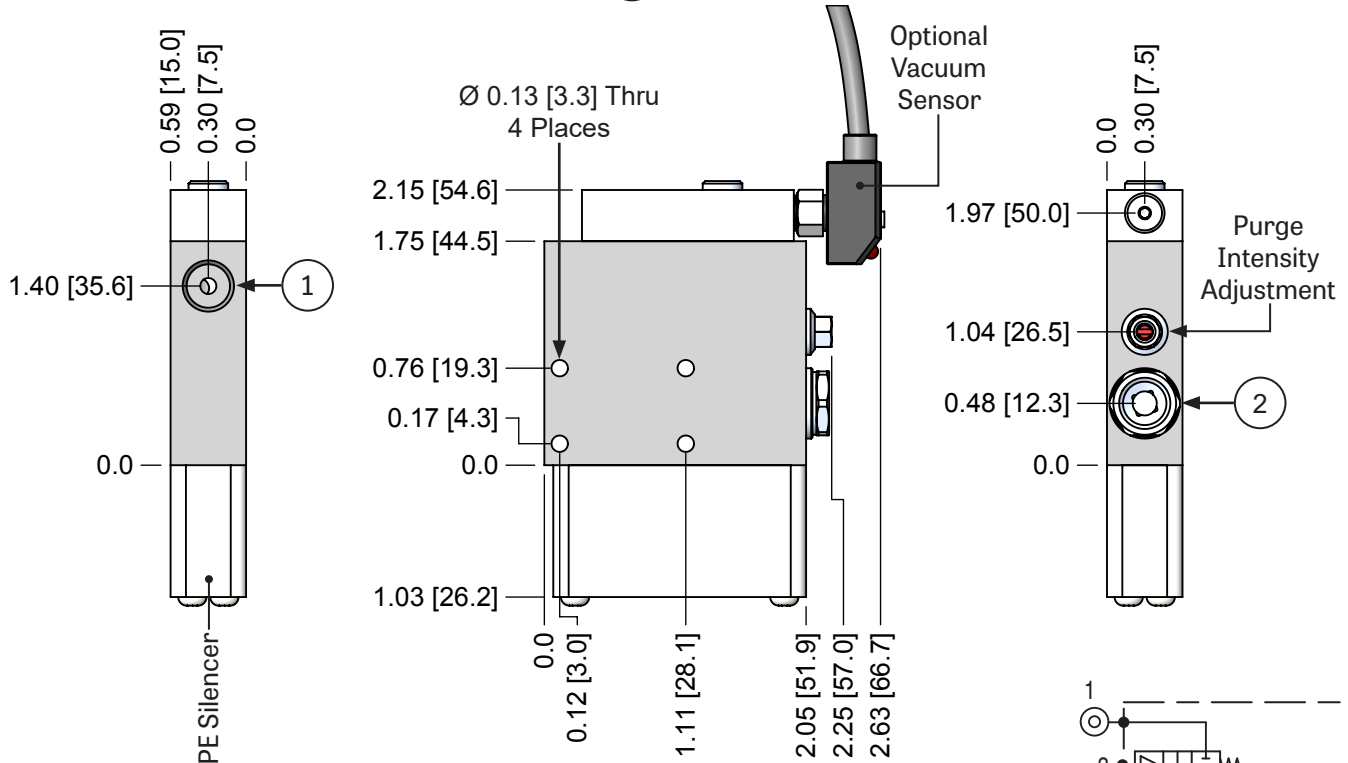
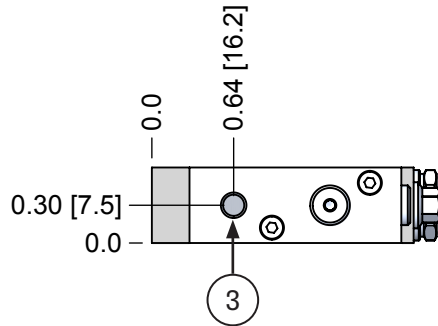
ER PUMPS: DER PUMP W/ PILOT CONTROLLED AIR-SUPPLY

Miniature DER series vacuum 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 single or dual coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via an integral flow control valve so blow-off intensity can be fine-tuned for delicate, lightweight parts. Using 1/8 inch vacuum ports allows for taking advantage of 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.

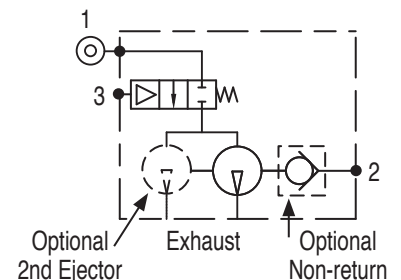
Series	Number of Ejectors	Option	Sensor Options
DER18-	10L	-PS	
05	X1 Single Ejector	(Blank) None	(Blank) None
07	X2 Dual Ejector	-NR Non-Return	-VA3 Analog, 3 Wire
09			-VN3 NPN, 3 Wire
10			-VN4 NPN, 4 Wire
08L			-VP3 PNP, 3 Wire
10L			-VP4 PNP, 4 Wire



Weight: 4.10 oz. [117.0 g]



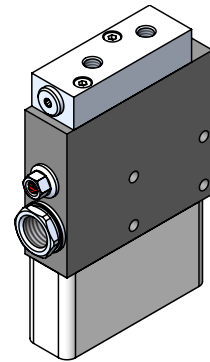
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
3	Pilot - Air-Supply	M5X0.8 (10-32 UNF)



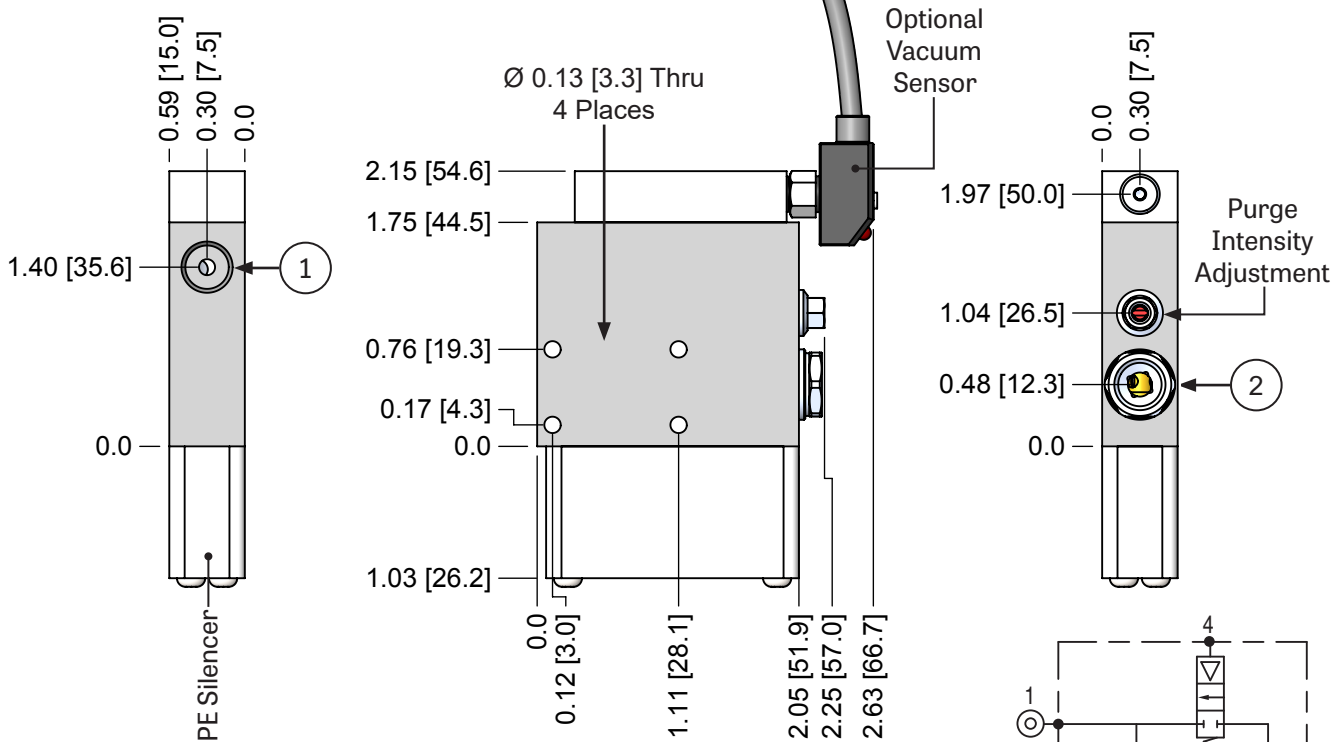
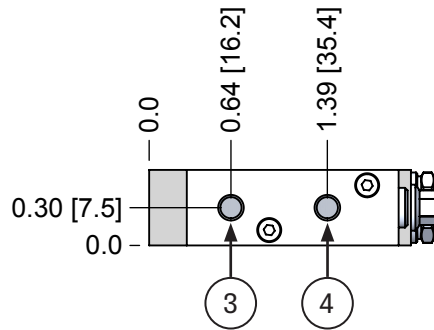
ER PUMPS: DER PUMP W/ PILOT CONTROLLED AIR-SUPPLY & BLOW-OFF

Miniature DER series vacuum 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 single or dual coaxial ejectors to match pump performance to system requirements. Quick-release air is controlled via an integral flow control valve so blow-off intensity can be fine-tuned for delicate, lightweight parts. Using 1/8 inch vacuum ports allows for taking advantage of 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.

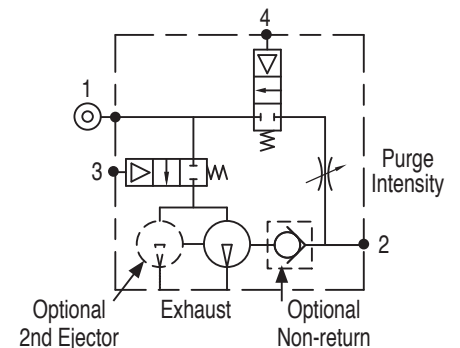
Series	Number of Ejectors	Option	Sensor Options
DER18-	10L	-PSB	
05	X1 Single Ejector	(Blank) None	(Blank) None
07	X2 Dual Ejector	-NR Non-Return	-VA3 Analog, 3 Wire
09			-VN3 NPN, 3 Wire
10			-VN4 NPN, 4 Wire
08L			-VP3 PNP, 3 Wire
10L			-VP4 PNP, 4 Wire



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 - Air-Supply	M5X0.8 (10-32 UNF)
4	Pilot - Blow-Off	M5X0.8 (10-32 UNF)

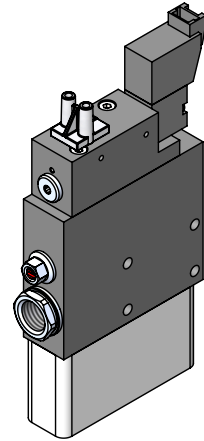
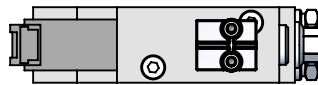


ER PUMPS: DER PUMP W/ SOLENOID CONTROLLED AIR-SUPPLY

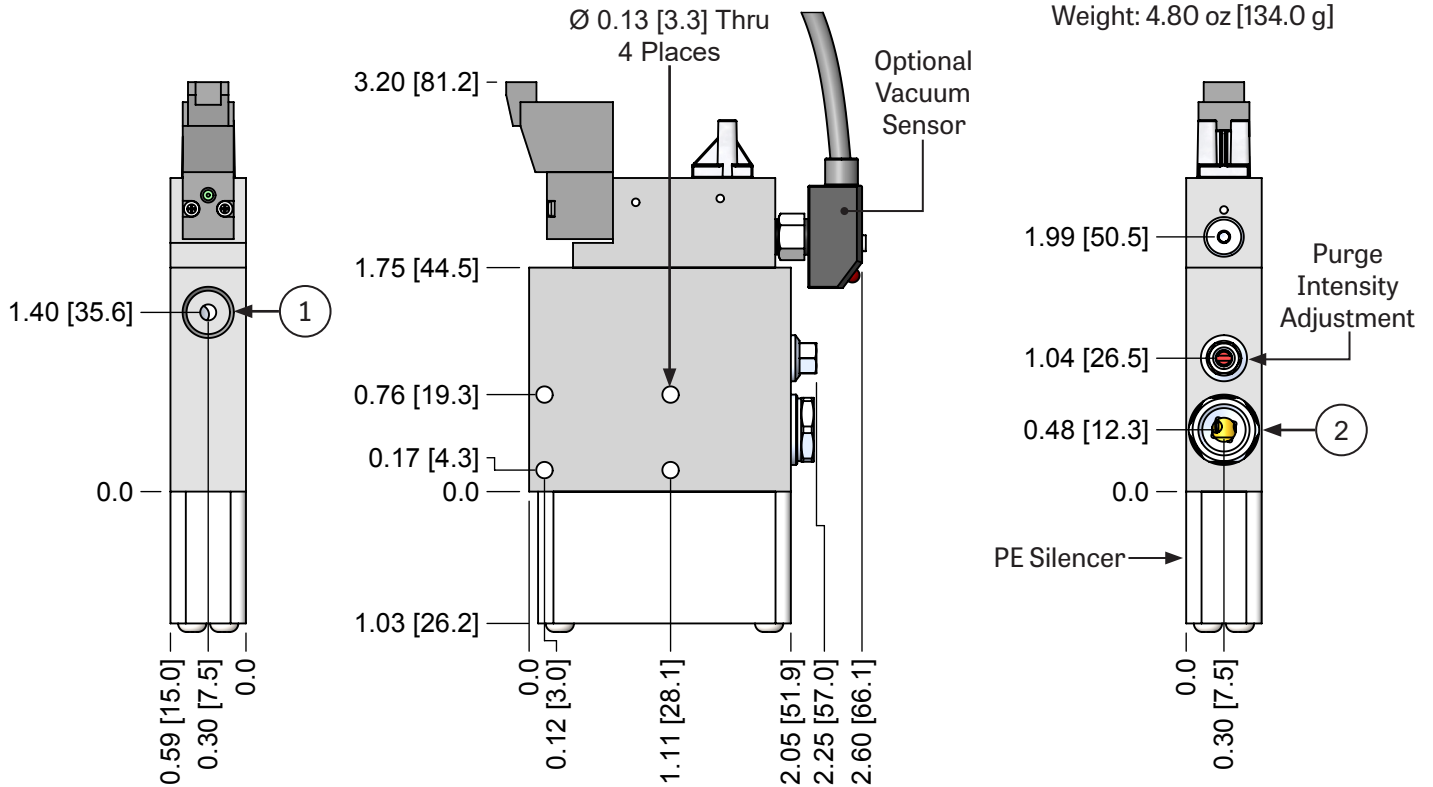
Miniature DER series vacuum pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with single or dual coaxial ejectors to match pump performance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

Order SV10-QD-1M solenoid cables separately.

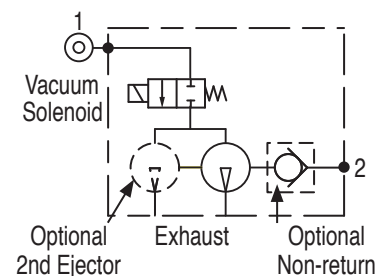
Series	Number of Ejectors		Option		Sensor Options	
DER18-	10L	-S24D	(Blank)	None	(Blank)	None
05	X1	Single Ejector	-NR	Non-Return	-VA3	Analog, 3 Wire
07	X2	Dual Ejector			-VN3	NPN, 3 Wire
09					-VN4	NPN, 4 Wire
10					-VP3	PNP, 3 Wire
08L					-VP4	PNP, 4 Wire
10L						



Weight: 4.80 oz [134.0 g]



Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF

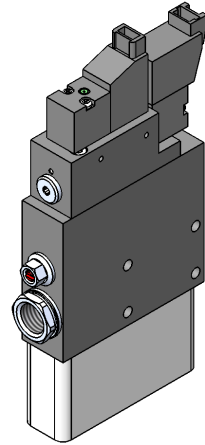


ER PUMPS: DER PUMP W/ SOLENOID CONTROLLED AIR-SUPPLY & BLOW-OFF

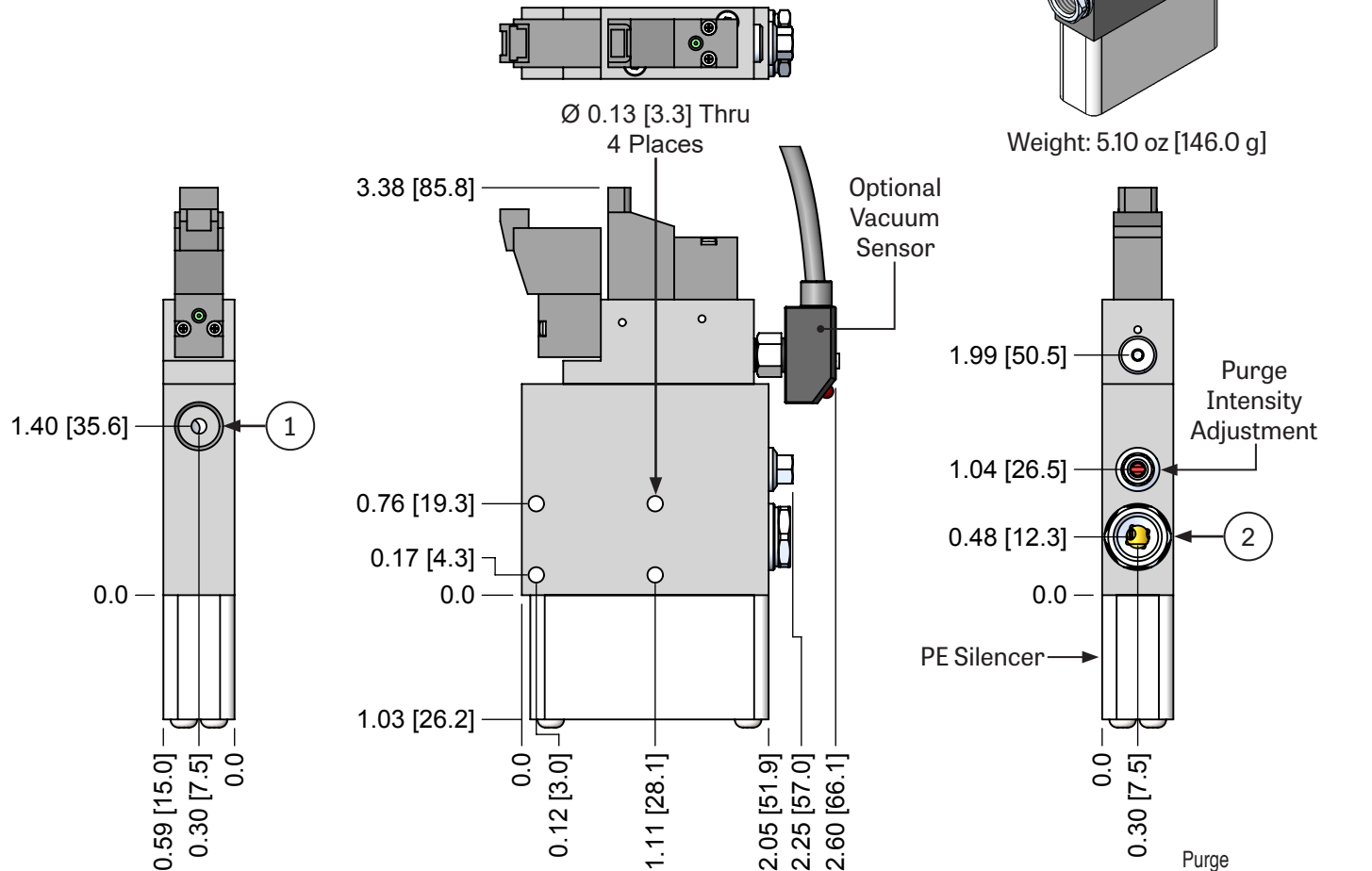
Miniature DER series vacuum pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are available with single or dual coaxial ejectors to match pump performance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

Order SV10-QD-1M solenoid cables separately.

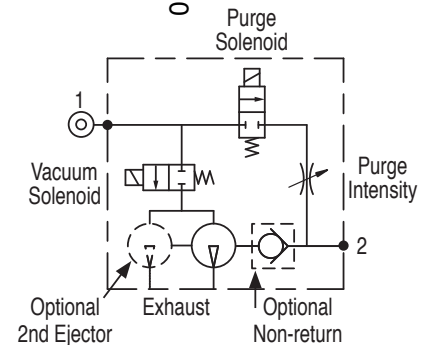
Series	Number of Ejectors		Option	Sensor Options	
DER18-	10L		-SB24D		
05	X1	Single Ejector	(Blank)	None	
07	X2	Dual Ejector	-NR	Non-Return	
09				-VA3	Analog, 3 Wire
10				-VN3	NPN, 3 Wire
08L				-VN4	NPN, 4 Wire
10L				-VP3	PNP, 3 Wire
				-VP4	PNP, 4 Wire



Weight: 5.10 oz [146.0 g]



Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF

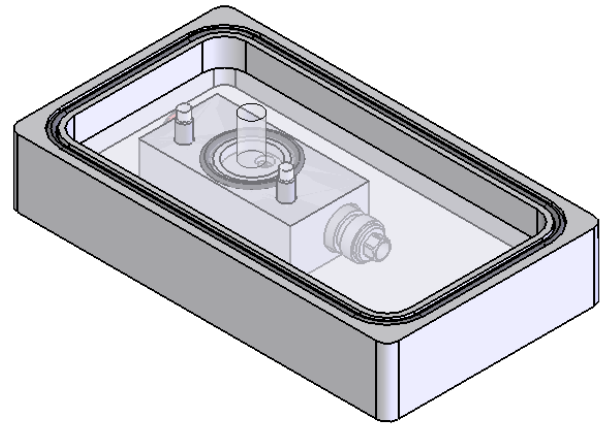


ER SERIES PUMPS

SM PUMP : SURFACE MOUNT MICRO-PUMP

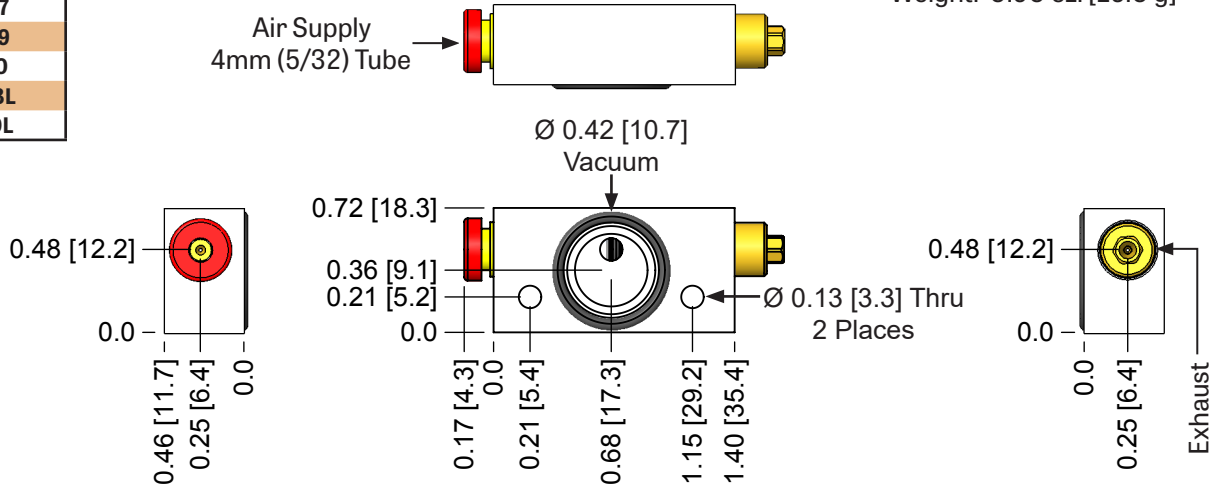
Simply add a vacuum passage and two tapped holes to any flat surface to integrate our micro-vacuum pump into a machine component. An integral push-in 4mm (5/32") tube fitting air supply and an atmospheric exhaust will almost eliminate assembly labor.

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

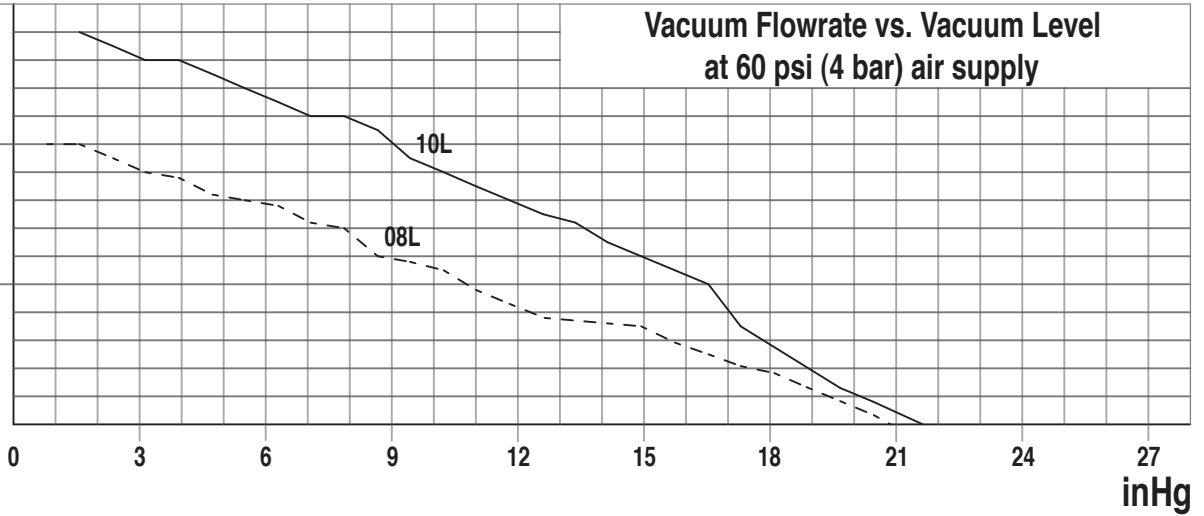
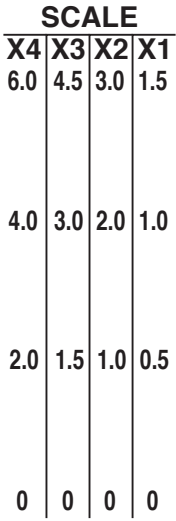
For X2, X3, & X4 evacuation time multiply the value in the table by 2, 3, or 4 respectively.

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

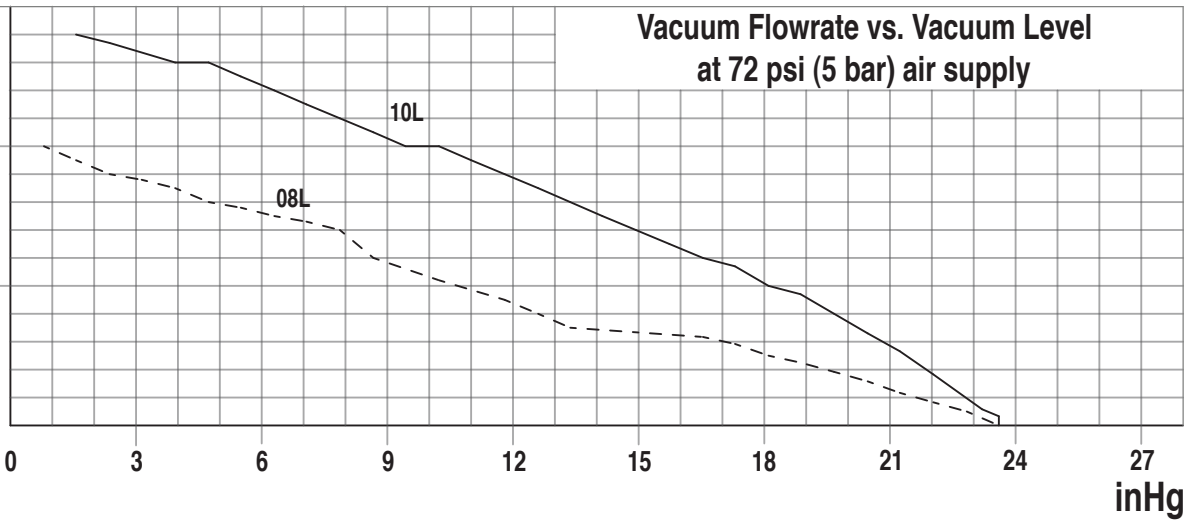
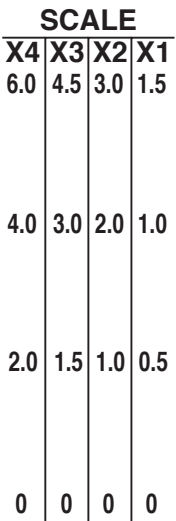
All performance data presented is a representation of production pumps but is not a guarantee due to variations in local barometric pressure and of mass produced components.

**ER SERIES PUMPS
PERFORMANCE**

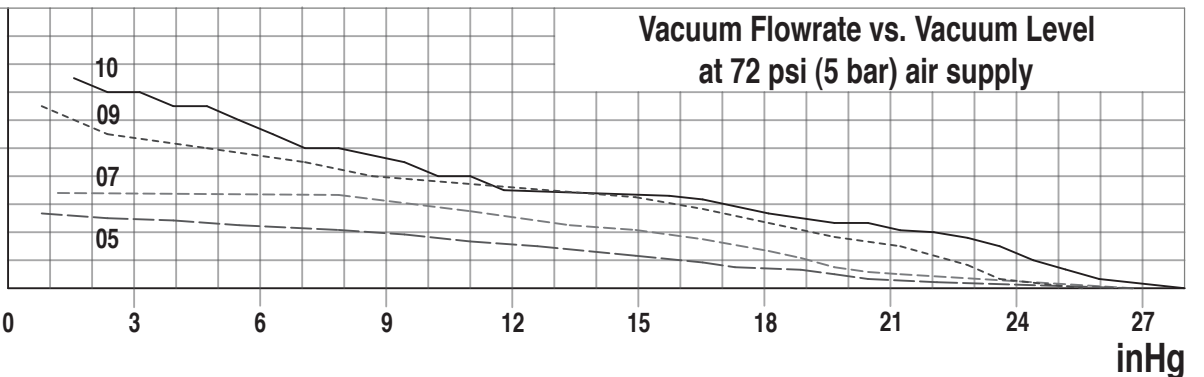
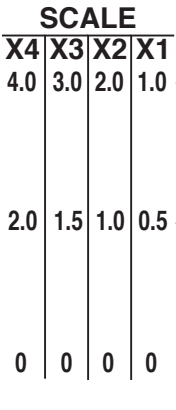
SCFM



SCFM



SCFM



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.