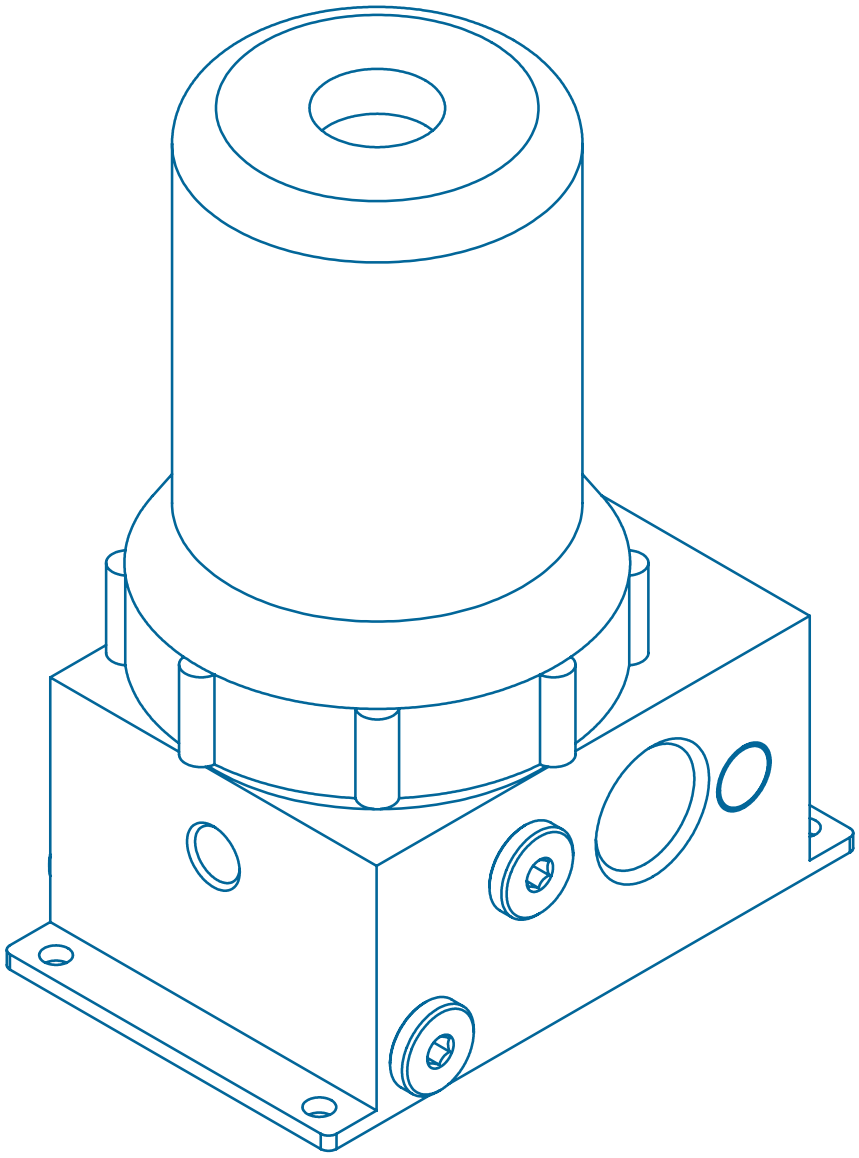
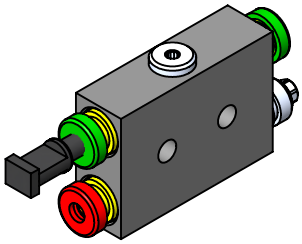
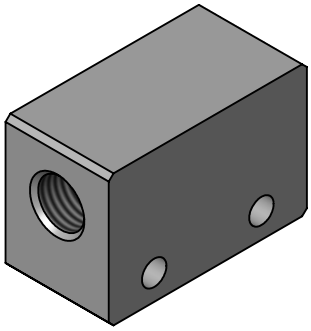
ER Series Vacuum Pumps

Section 10

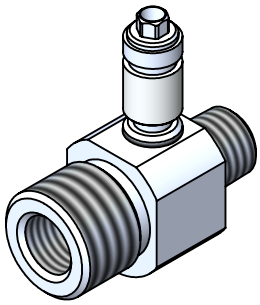




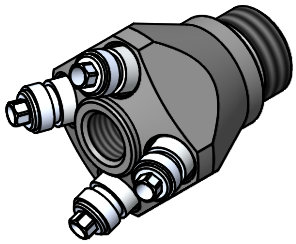
2010 Micro-Pump



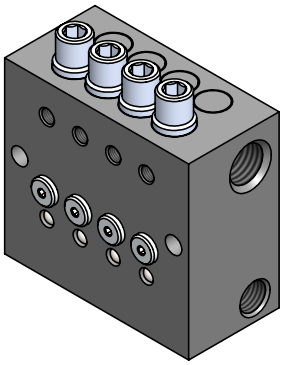
T18F Body



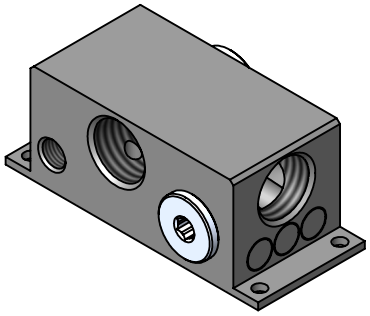
Inline



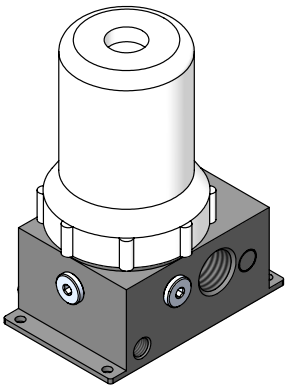
Inline, Multi-Venturi



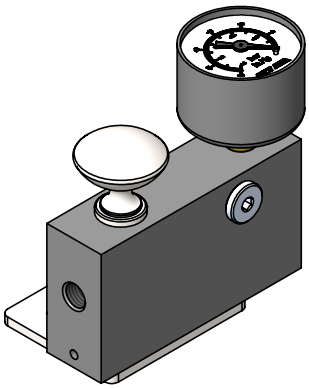
Vacuum Bar



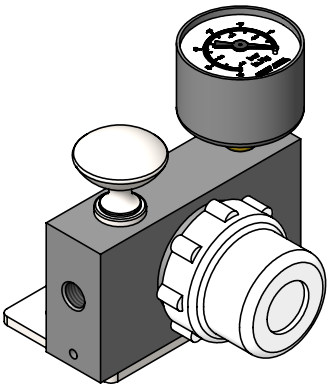
T12F Base



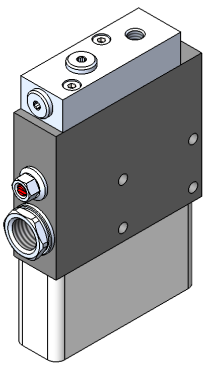
Integrated Filter



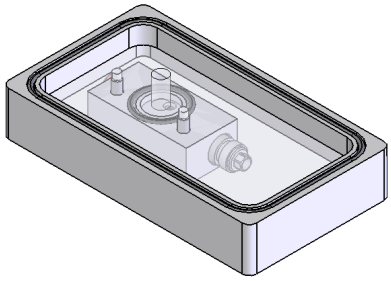
Manual Valve



Manual Valve with Integrated Filter



Dual ER Pump



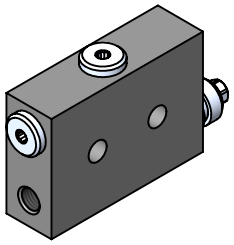
Surface Mount Micro-Pump

2010 Series ER Micro Pumps

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.

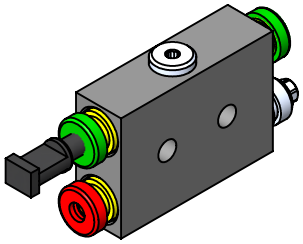
	Venturi		Body Style	
ER2010-	05	-		
	05		M4	4 mm Push-In Tube
	07		5F	M5 Female
	09			
	10			
	08L			
	10L			

M5 Female

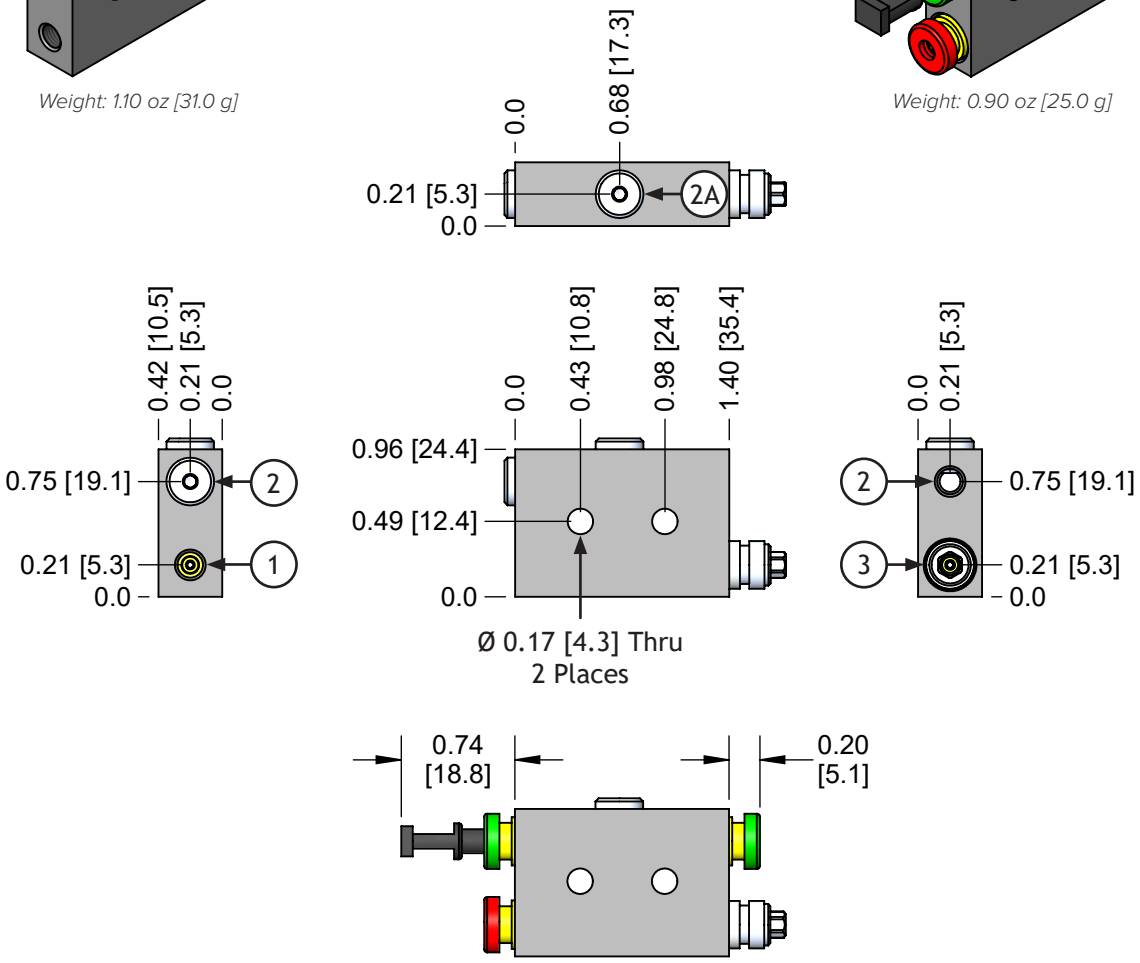


Weight: 1.10 oz [31.0 g]

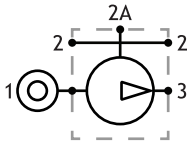
4mm Push-In Tube



Weight: 0.90 oz [25.0 g]

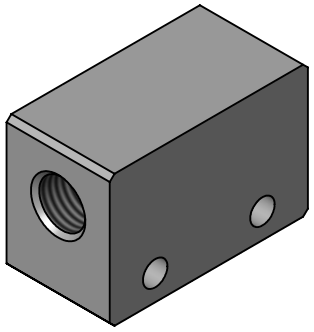


Code	Function	-M4	-5F
1	Air-Supply	4 mm Tube	M5 Female
2	Vacuum	4 mm Tube	M5 Female
2A	Vacuum - Alternate	M5 Female	
3	Exhaust	-	



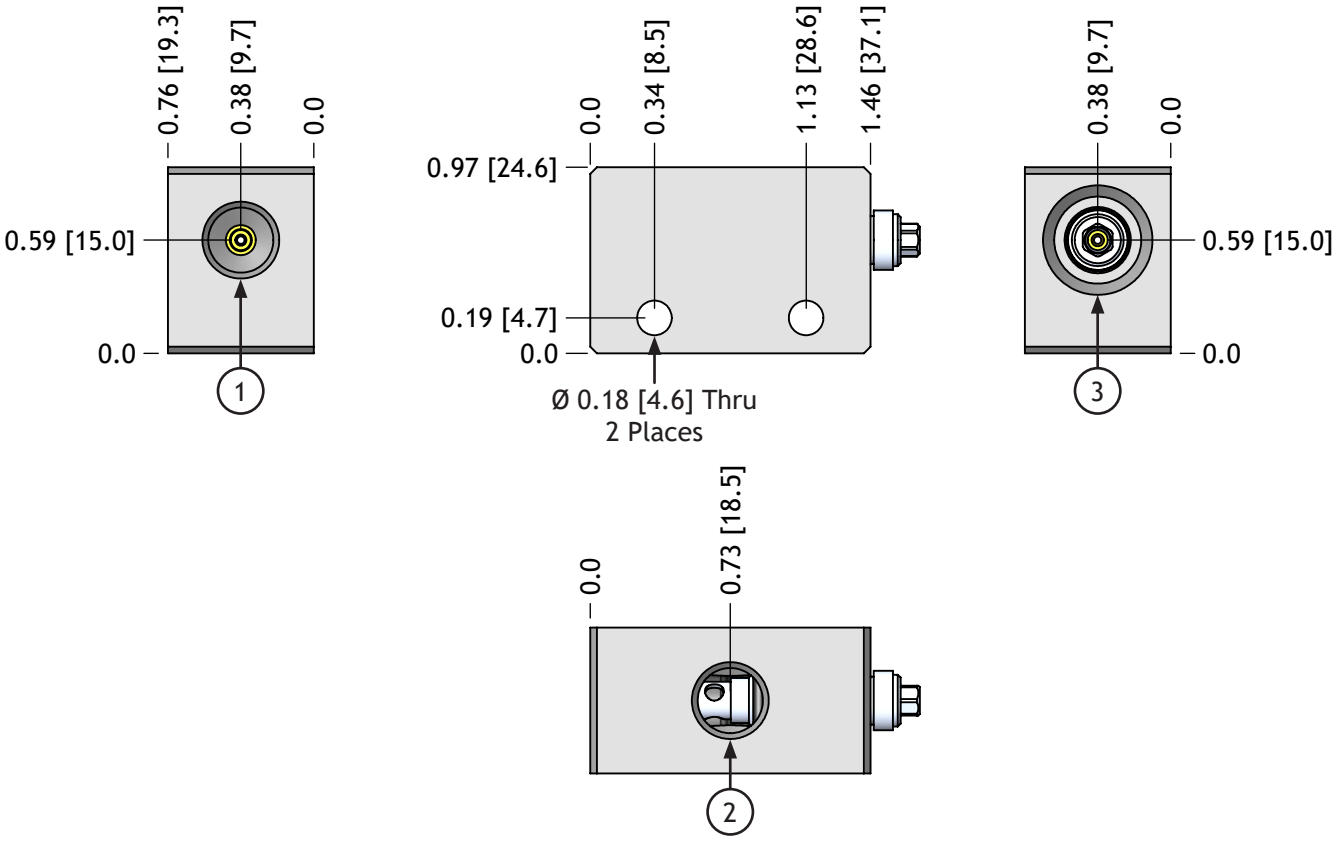
T18F Body ER Pumps

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.

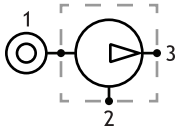


Weight: 1.44 oz [40.8 g]

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



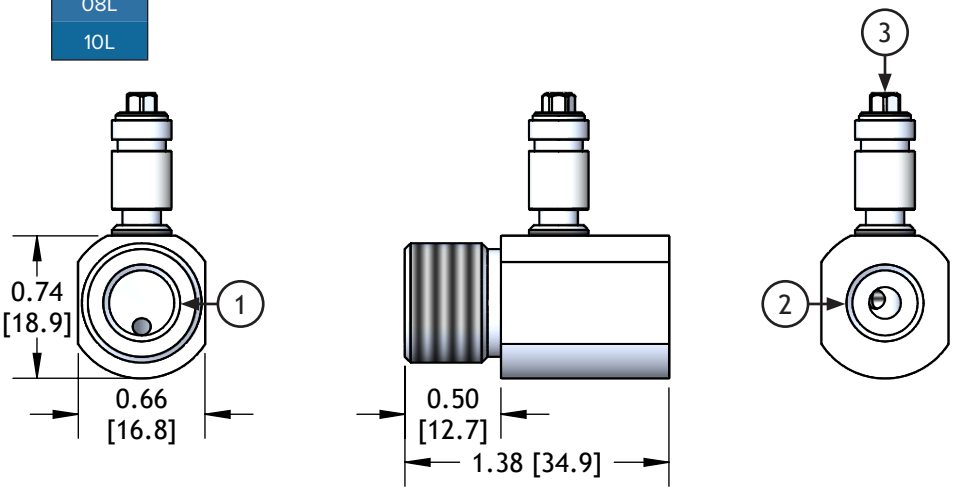
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
3	Exhaust	G 1/4

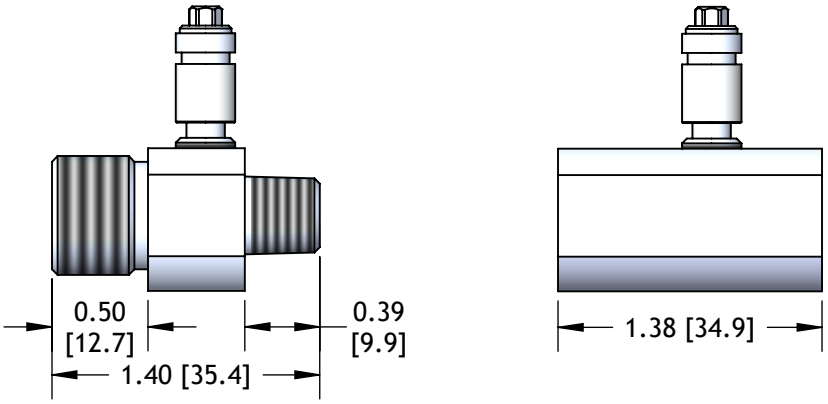


Inline ER Pumps

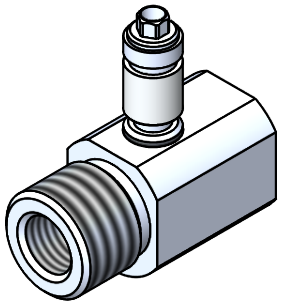
Compact, high-performance inline pumps can be conveniently located near the point of vacuum usage. Ideal for small systems or one pump-per-suction-cup applications. We offer three body styles that allow you to choose the vacuum and air-supply threads that best suit your application.

	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			



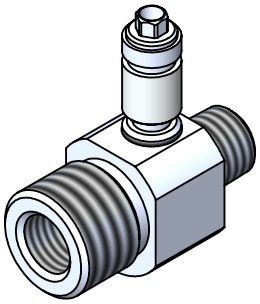


G 1/8 NPSF Female



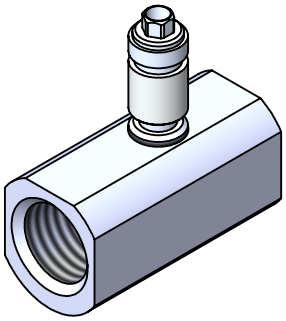
Weight: 0.76 oz [21.6 g]

G 1/8 NPSF Male



Weight: 0.62 oz [17.7 g]

G 1/4 NPSF Female

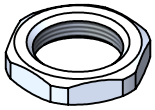


Weight: 0.80 oz [22.6 g]

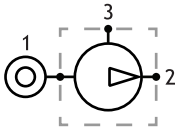
Venturi Series	Air Consumption @ 72 psi [5 bar]	Venturi Diameter	IP Series Replacement
ER05	0.51 SCFM [14.4 Nl/m]	0.5 mm	-
ER07	0.66 SCFM [18.7 Nl/m]	0.7 mm	IP6M-5
ER09	1.40 SCFM [39.6 Nl/m]	0.9 mm	IP6M-10
ER10	1.80 SCFM [51.0 Nl/m]	1.0 mm	-
ER08L	1.20 SCFM [34.0 Nl/m]	0.8 mm	-
ER10L	1.90 SCFM [53.8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

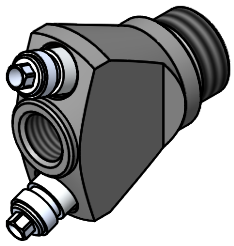


Multi-Venturi Inline ER Pumps

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.

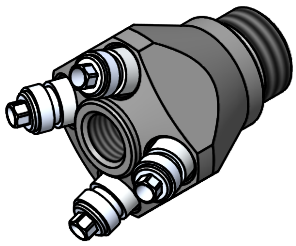
	Venturi	Number of Venturis		
ER	10L	X2		-18F
	09	X2	Double Venturi	
	10	X4	Quadruple Venturi	
	08L			
	10L			

Double Venturi

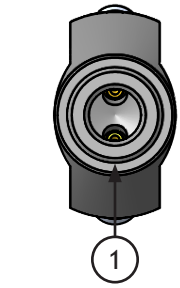


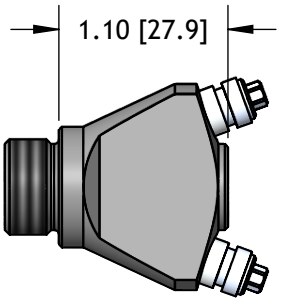
Weight: 0.98 oz [27.7 g]

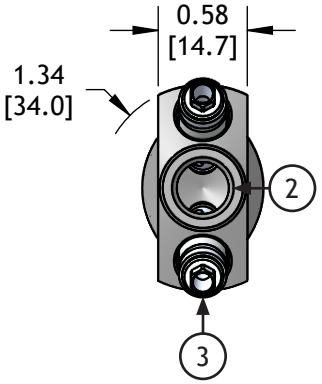
Quadruple Venturi

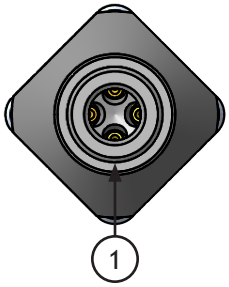


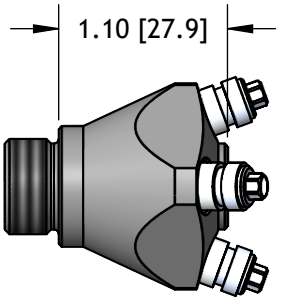
Weight: 1.38 oz [39.2 g]

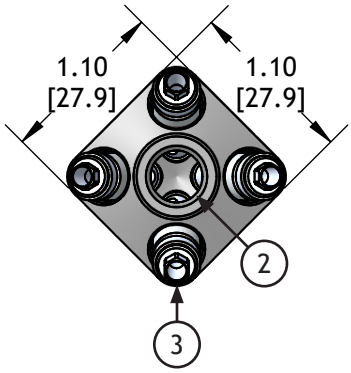










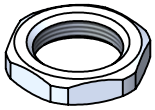


Venturi Series	Air Consumption @ 72 psi [5 bar]	Venturi Diameter	IP Series Replacement
ER09X2	2.80 SCFM [79.0 Nl/m]	1.2 mm	IP6M-20
ER10X2[1]	3.80 SCFM [108.0 Nl/m]	1.4 mm	-
ER08LX2[1]	2.40 SCFM [68.0 Nl/m]	1.1 mm	IP6M-20
ER10LX2[1]	3.60 SCFM [102.0 Nl/m]	1.4 mm	-
ER09X4	5.60 SCFM [158.0 Nl/m]	1.8 mm	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	-

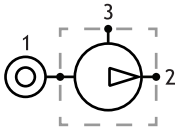
[1]May require -18F fitting plus 1/8" nipple for clearance to mount the cup.

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

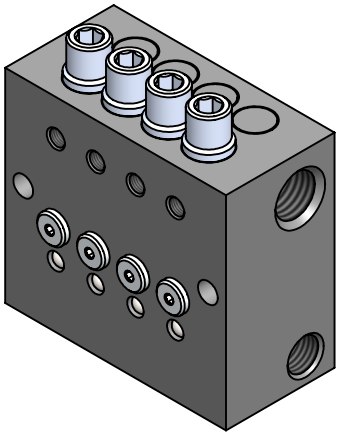


Jam nut for use with -18F inline pumps.



ER Series Vacuum Bars

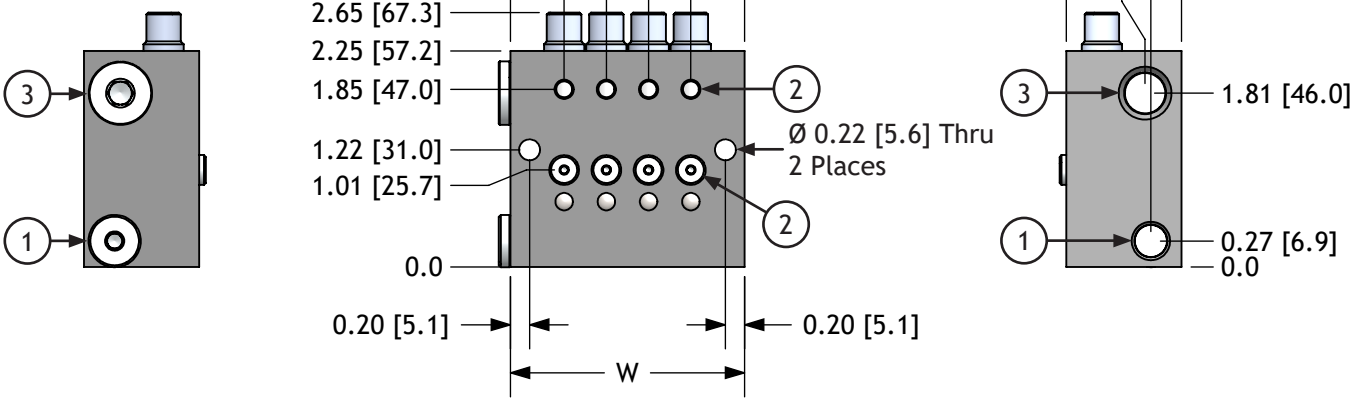
Vacuum bars eliminate the clutter and plumbing complexity of small vacuum systems by incorporating multiple vacuum pumps that have common air supply and common exhaust ports within the bar manifold. Vacuum lines can be routed from the pumps directly to individual suction cups.



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.

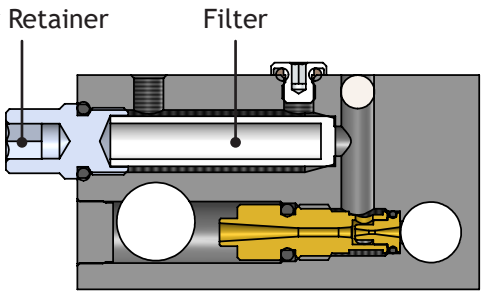
	Stations		Series
VB	2	-ER	10
	1		05
	2		07
	3		09
	4		10
	5		08L
	6		10L
	7		
	8		



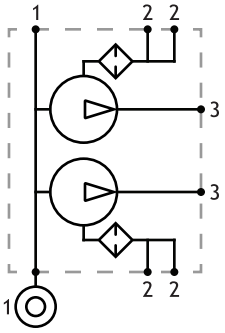
Stations	W in [mm]	Weight lbs [g]
2	1.56 [39.6]	0.36 [162.0]
4	2.44 [62.0]	0.56 [255.0]
6	3.32 [84.2]	0.77 [349.0]
8	4.20 [106.7]	0.97 [442.0]

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



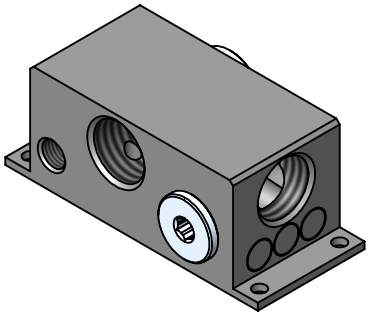
Replacement Filter: RE7X32



T12F Base ER Pumps

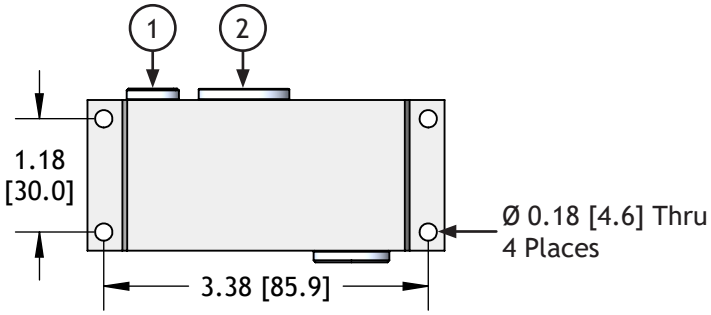
A T-base allows either one, two, or three ER venturis to be internally connected in parallel to obtain a greater combined vacuum flow rate. For total vacuum flow, read the vacuum flow rate at the desired vacuum level from the ER performance graph then multiply by the number of venturis installed in the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

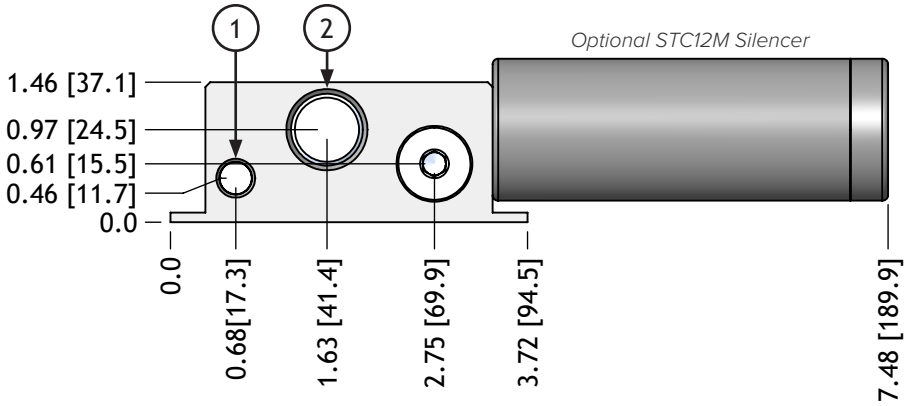
The ER series T-base offers greater vacuum flow in the same foot print as the Chip Pump T-base.

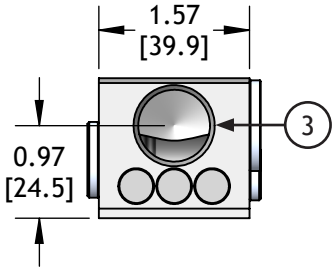


Weight: 9.25 oz [262.3 g]

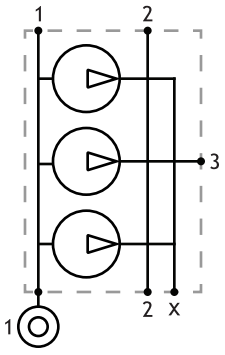
	Venturi	Number of Venturis			Silencer	
ER	10L	X3		-T12F		
	05	X2	Double Venturi		(Blank)	None
	07	X3	Triple Venturi		-AA	AA12M
	09				-ST	STC12M
	10					
	08L					
	10L					





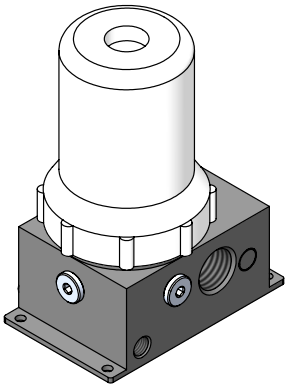


Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/2 NPSF
3	Exhaust	G 1/2 NPSF



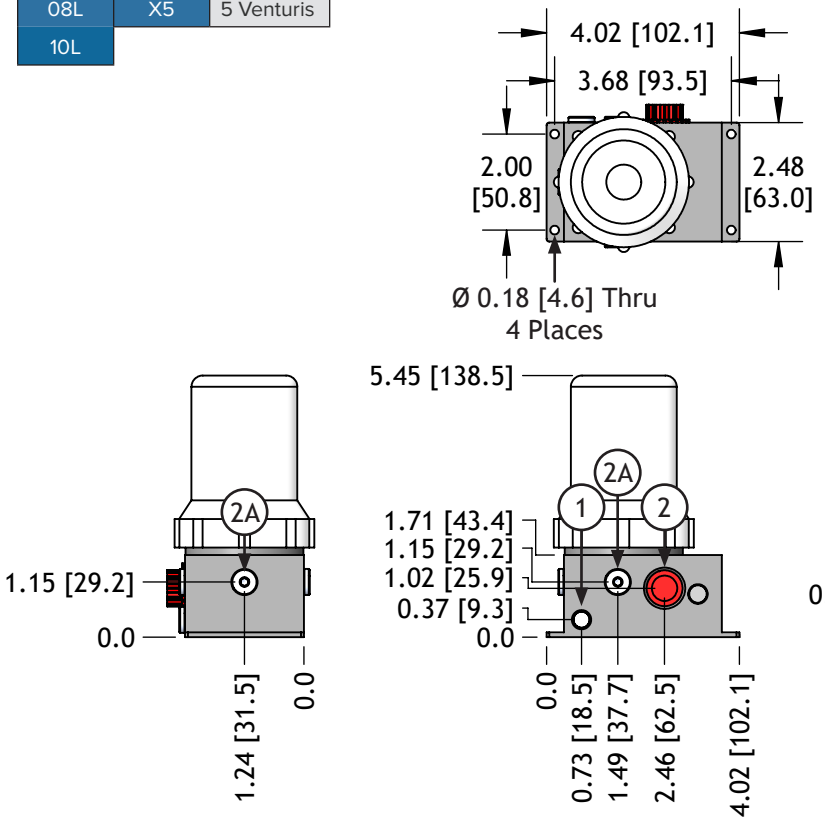
T12F Base ER Pumps w/ Integrated Filter

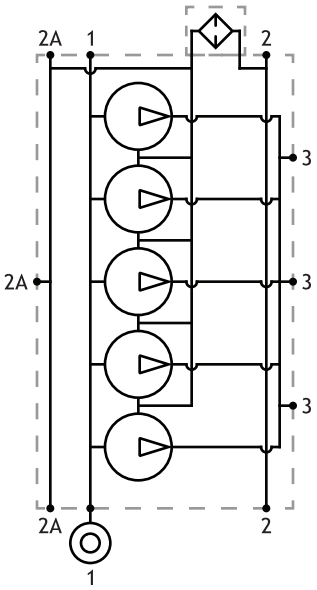
Similar to the 12F t-base, our ER Pump with Integrated Filter allows one to five ER venturis to be internally connected in parallel to obtain a greater combined vacuum flow rate. This pump incorporates the bowl, gasket, and filter element of our t-style filters directly into the pump base eliminating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



Weight: 24.25 oz [687.6 g]

	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					



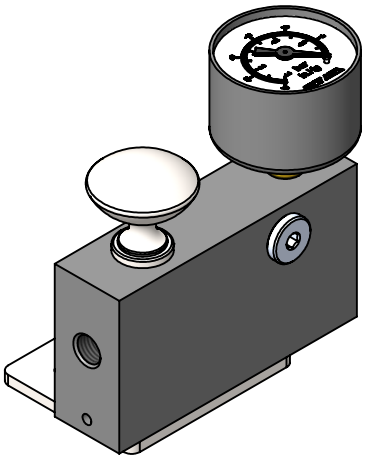


Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/2 NPSF
2A	Vacuum, Alternate	G 1/8 NPSF
3	Exhaust	G 1/4

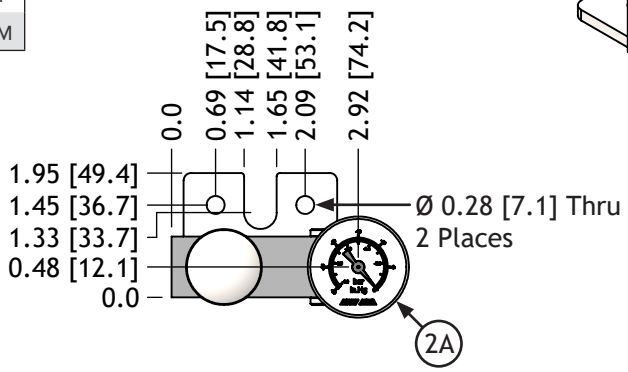
Manual Valve ER Pumps

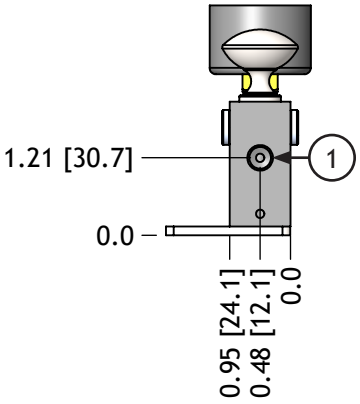
EDCO Vacuum pumps with manual valve (MV) option provide a compact compressed-air powered control unit for vacuum workholding fixtures. An easily-readable 1-1/2" vacuum gauge displays depth of vacuum within the system so a technician can determine whether an adequate vacuum level has been achieved based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

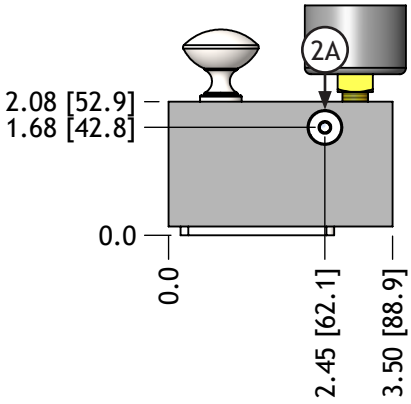
	Series		Silencer Option	
ER	10L	-MV		
	05		(Blank)	None
	07		-AA	AA14M
	09		-ST	STA14M
	10			
	08L			
	10L			

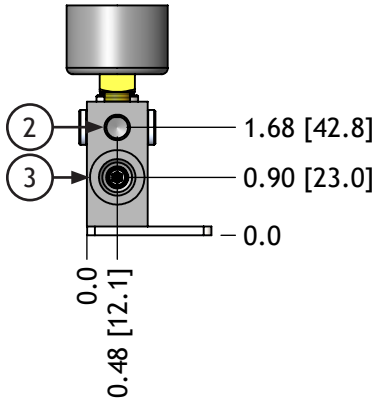


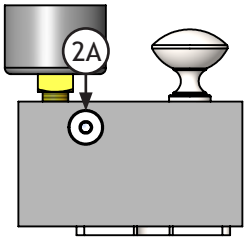
Weight: 13.94 oz [395.1 g]



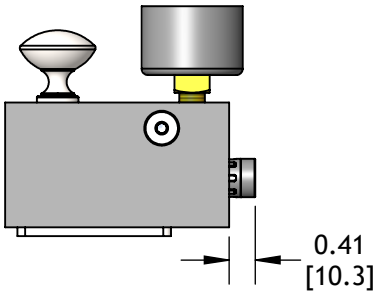






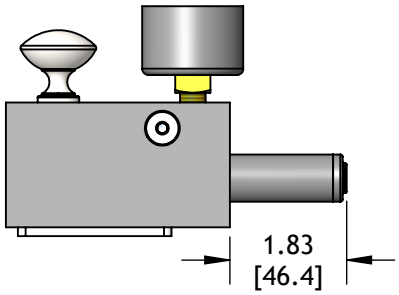


Optional AA Silencer



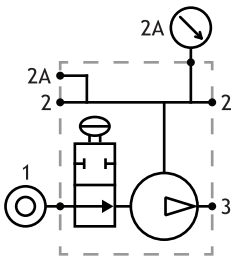
Additional Weight: 0.11 oz [3.1 g]

Optional ST Silencer



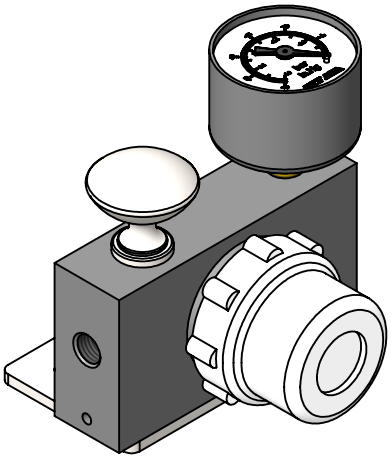
Additional Weight: 0.56 oz [15.8 g]

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



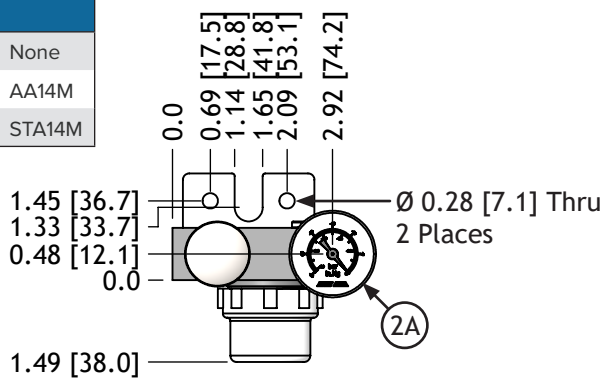
Manual Valve ER Pumps w/ Integrated Filter

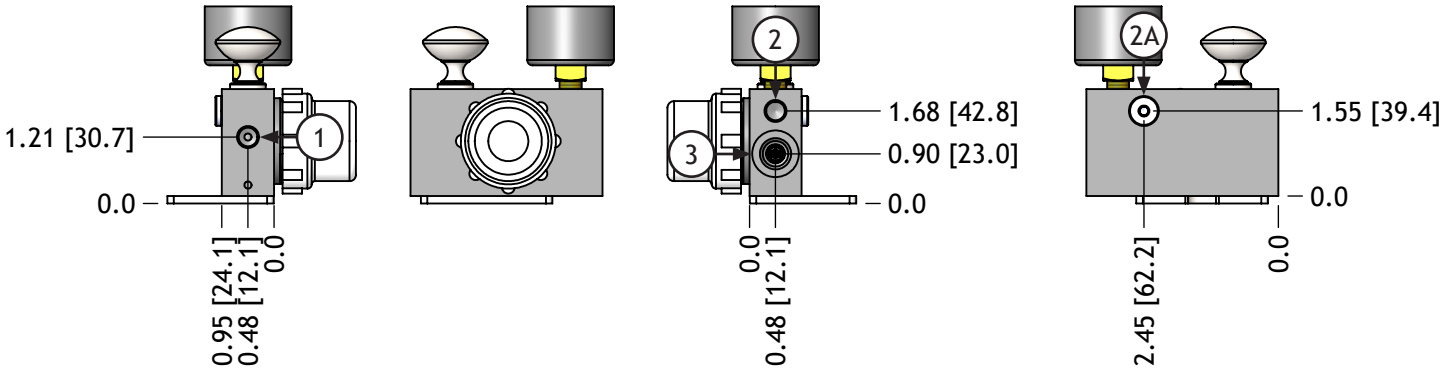
EDCO Vacuum pumps with manual valve (MV) option provide a compact compressed-air powered control unit for vacuum workholding fixtures. An easily-readable 1-1/2" vacuum gauge displays depth of vacuum within the system so a technician can determine whether an adequate vacuum level has been achieved based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



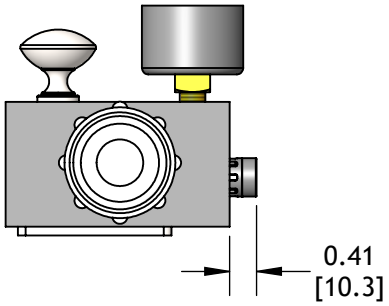
Weight: 15.89 oz [450.5 g]

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



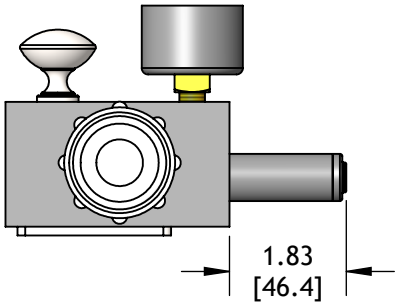


Optional AA Silencer



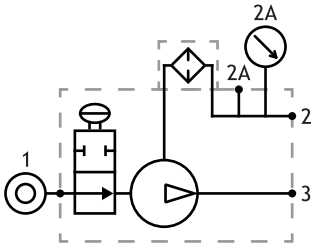
Additional Weight: 0.11 oz [3.1 g]

Optional ST Silencer



Additional Weight: 0.56 oz [15.8 g]

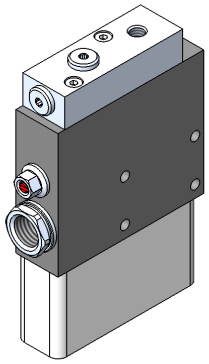
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
2A	Vacuum, Alternate	G 1/8 NPSF
3	Exhaust	G 1/4



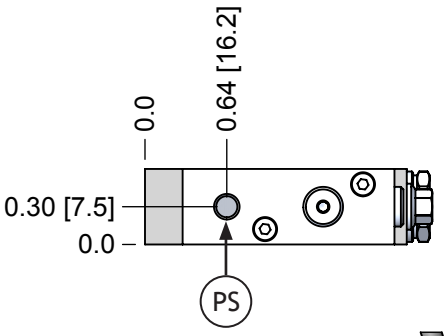
Dual ER Pumps w/ Pilot Controlled Air-Supply

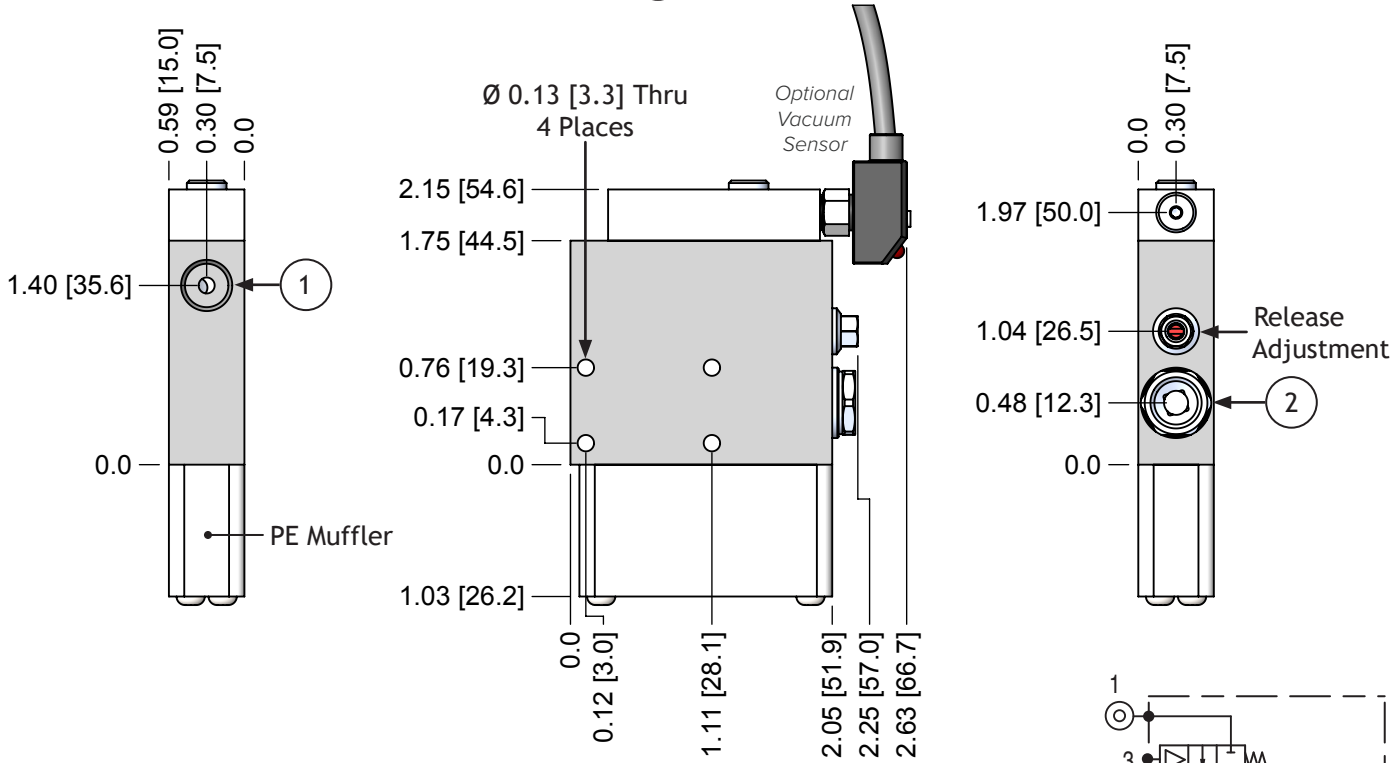
Miniature DER series vacuum pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are availalable with single or dual coaxial ejectors to match pump performance 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 porour materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

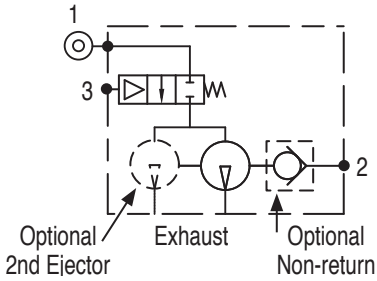
	Series	Number of Ejectors		Option		Sensor Options	
DER18-	10L			-PS			
	05	X1	Single Ejector	(Blank)	None	(Blank)	None
	07	X2	Dual Ejector	-NR	Non-Return	-VA3	Analog, 3 Wire
	09					-VN3	NPN, 3 Wire
	10					-VN4	NPN, 4 Wire
	08L					-VP3	PNP, 3 Wire
	10L					-VP4	PNP, 4 Wire



Weight: 4.10 oz. [117.0 g]





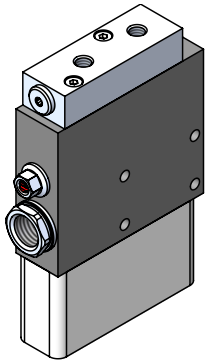


Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
PS	Pilot - Air-Supply	M5x0.8 (10-32 UNF)

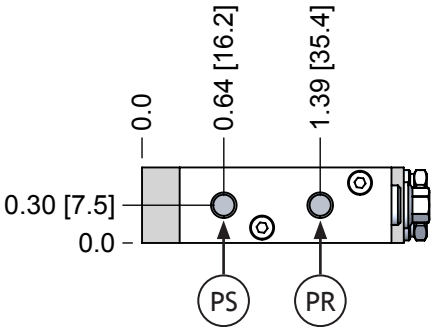
Dual ER Pumps w/ Pilot Controlled Air-Supply & Release

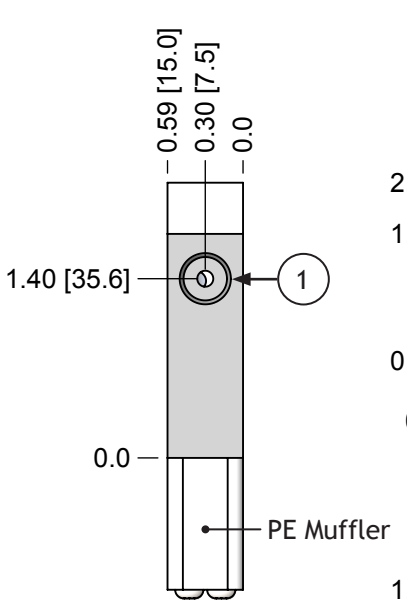
Miniature DER series vacuum pumps provide full control features in a compact package. These lightweight pumps can be mounted near the point of vacuum usage to eliminate long vacuum lines and improve system response. DER pumps are availalable with single or dual coaxial ejectors to match pump performance 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 porour materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

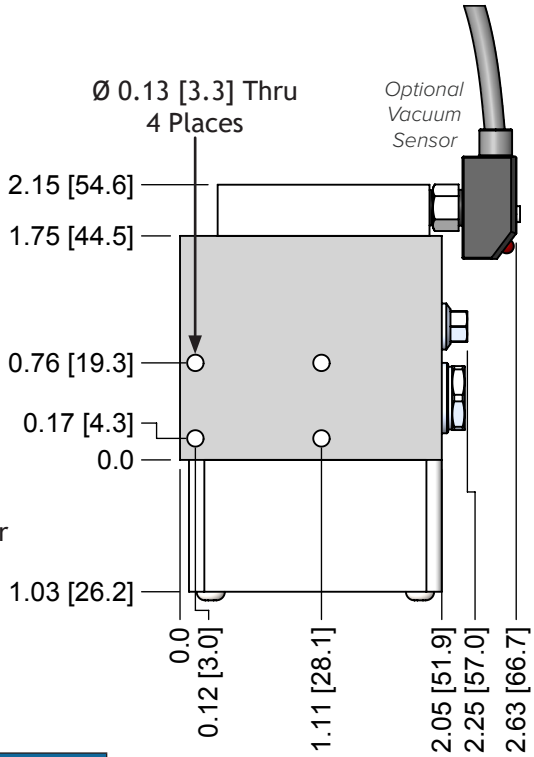
	Series	Number of Ejectors			Option		Sensor Options	
DER18-	10L			-PSB				
	05	X1	Single Ejector		(Blank)	None	(Blank)	None
	07	X2	Dual Ejector		-NR	Non-Return	-VA3	Analog, 3 Wire
	09						-VN3	NPN, 3 Wire
	10						-VN4	NPN, 4 Wire
	08L						-VP3	PNP, 3 Wire
	10L						-VP4	PNP, 4 Wire

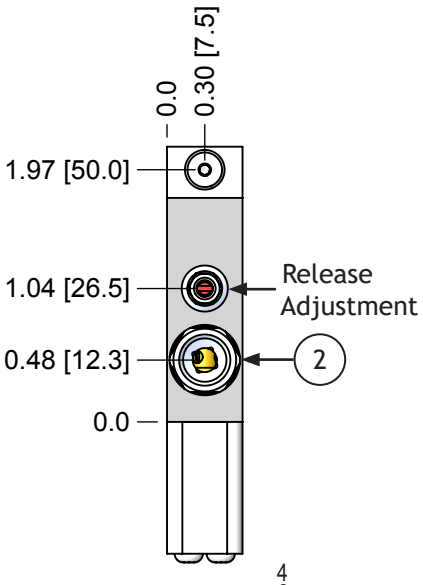


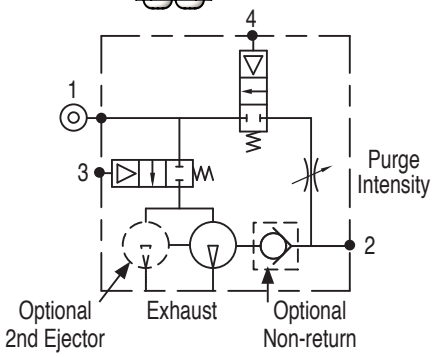
Weight: 4.10 oz [117.0 g]











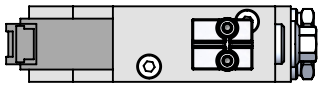
Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF
PS	Pilot - Air-Supply	M5x0.8 (10-32 UNF)
PR	Pilot - Blow-Off	M5x0.8 (10-32 UNF)

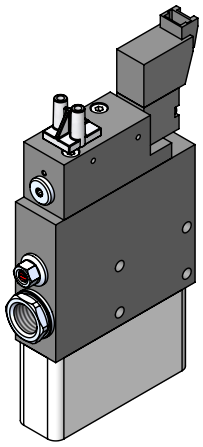
Dual ER Pumps w/ Solenoid Controlled Air-Supply

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 availalable 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 porour materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

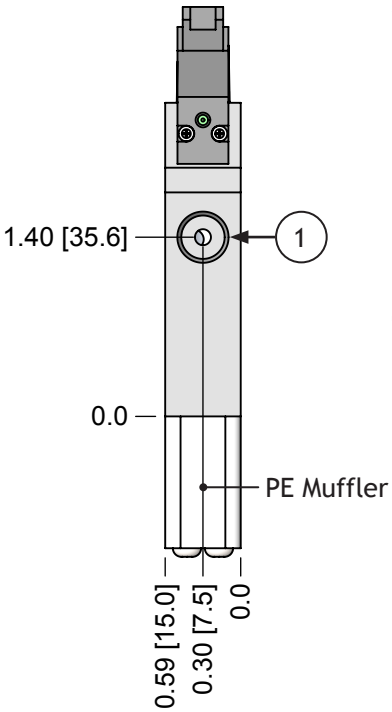
Order SV10-QD-1M solenoid cables separately.

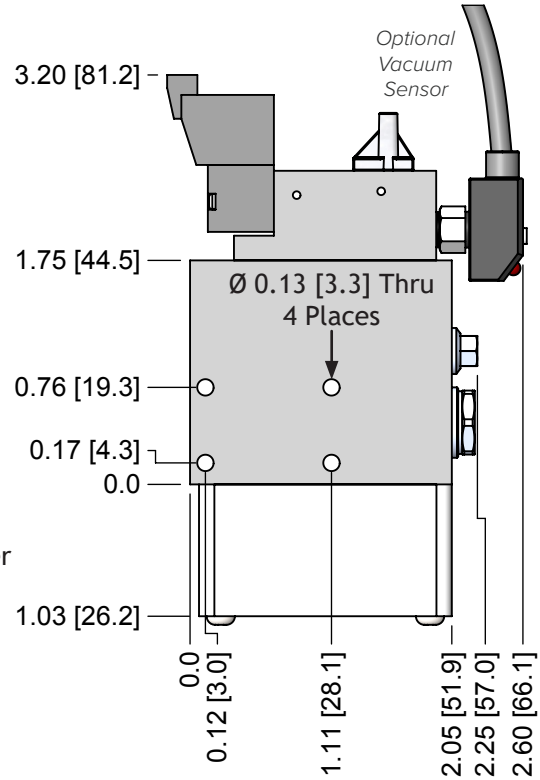
	Series	Number of Ejectors		Option		Sensor Options	
DER18-	10L			-S24D			
	05	X1	Single Ejector	(Blank)	None	(Blank)	None
	07	X2	Dual Ejector	-NR	Non-Return	-VA3	Analog, 3 Wire
	09					-VN3	NPN, 3 Wire
	10					-VN4	NPN, 4 Wire
	08L					-VP3	PNP, 3 Wire
	10L					-VP4	PNP, 4 Wire

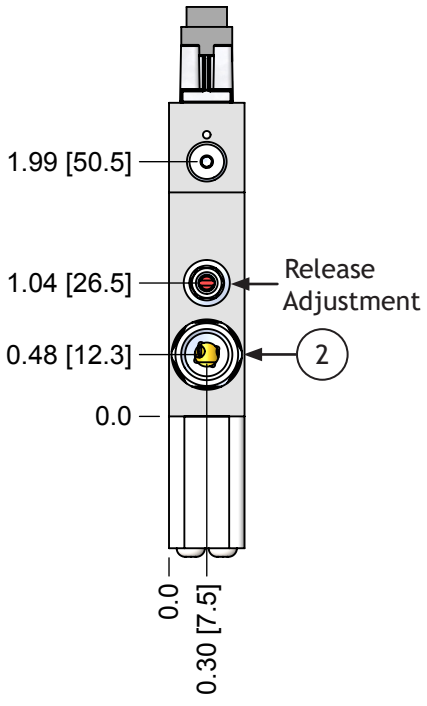




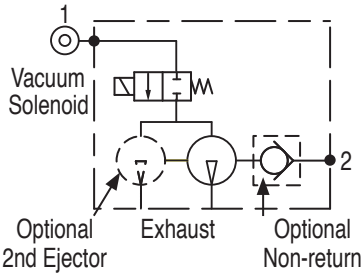
Weight: 4.80 oz [134.0 g]







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

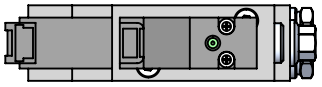


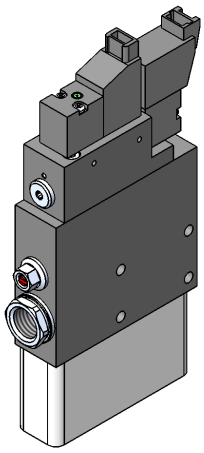
Dual ER Pumps w/ Solenoid Controlled Air-Supply & Release

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 availalable 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 porour materials at mid-range vacuum levels. An optional non-return valve is available for use in sealed, non-porous systems.

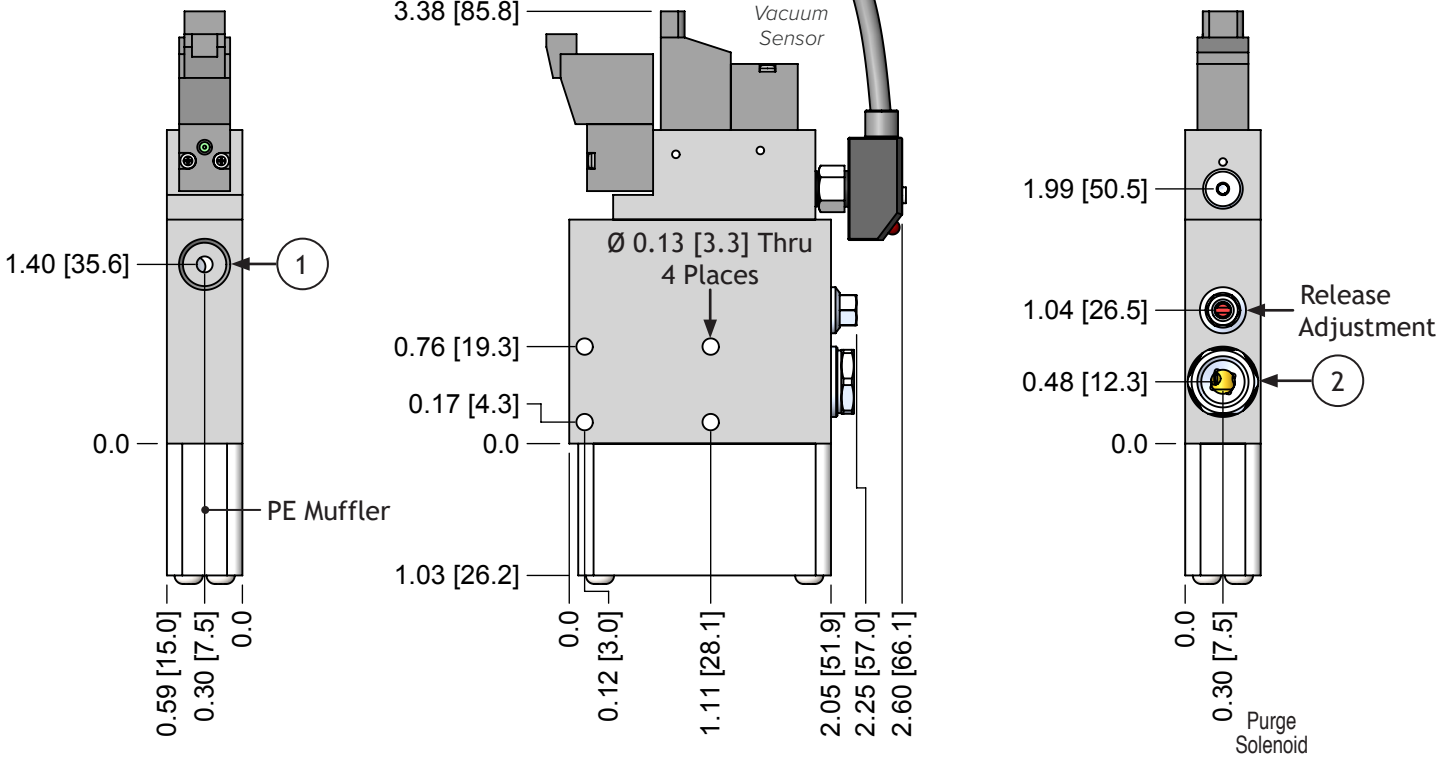
Order SV10-QD-1M solenoid cables separately.

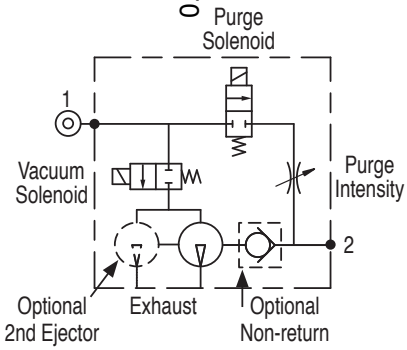
	Series	Number of Ejectors		Option		Sensor Options	
DER18-	10L		-SB24D				
	05	X1	Single Ejector	(Blank)	None	(Blank)	None
	07	X2	Dual Ejector	-NR	Non-Return	-VA3	Analog, 3 Wire
	09					-VN3	NPN, 3 Wire
	10					-VN4	NPN, 4 Wire
	08L					-VP3	PNP, 3 Wire
	10L					-VP4	PNP, 4 Wire





Weight: 5.10 oz [146.0 g]



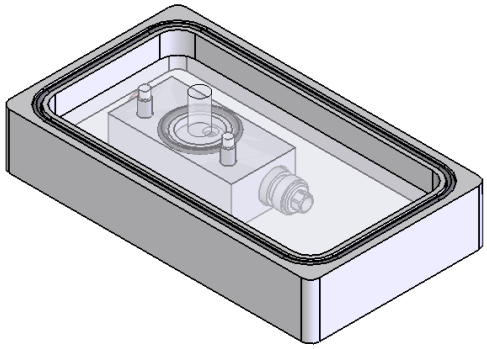


Code	Function	Port
1	Air-Supply	G 1/8 NPSF
2	Vacuum	G 1/8 NPSF

Surface Mount Micro Pump

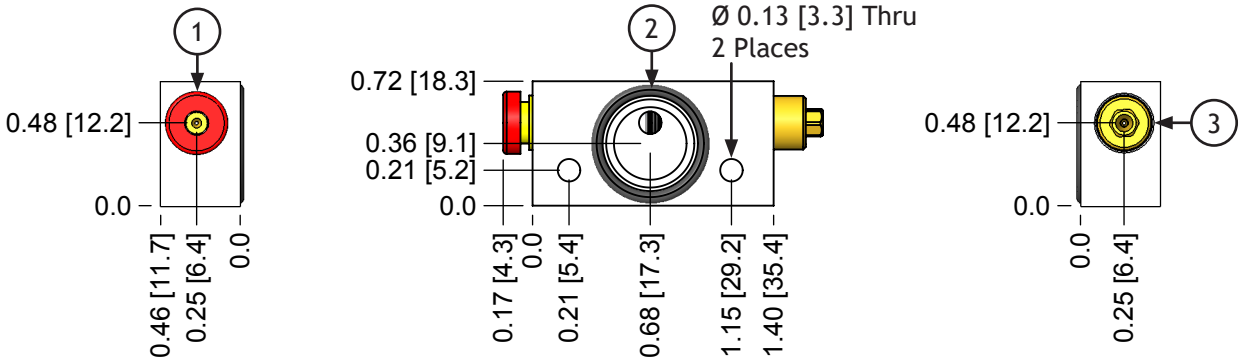
Simply add a vacuum passage and two tapped holes to any flat surface to integrate our micro-vacuum pump into a machine component. An integral push-in 4mm (5/32") tube fitting air supply and an atmospheric exhaust will almost eliminate assembly labor.

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]

Series		
ER	10L	-SM
	05	
	07	
	09	
	10	
	08L	
	10L	



Code	Function	Port
1	Air-Supply	4 mm (5/32) Tube
2	Vacuum	Ø 0.42 in [10.7 mm]
3	Exhaust	-

Performance

Vacuum Flow - SCFM

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

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
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	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

Evacuation Time - sec / 100 in³

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

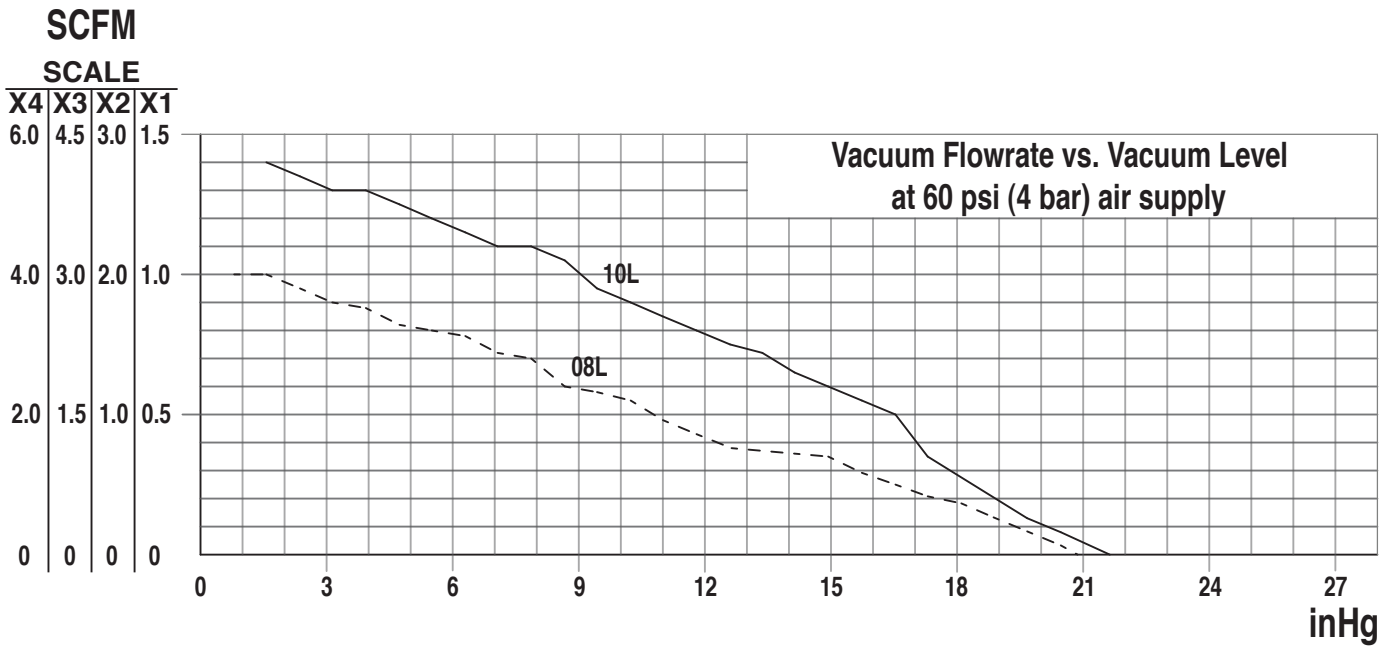
For example, an ER07X2 @ 15 inHg would evacuate 100 in³: 8.1 x 2 = 16.2 seconds

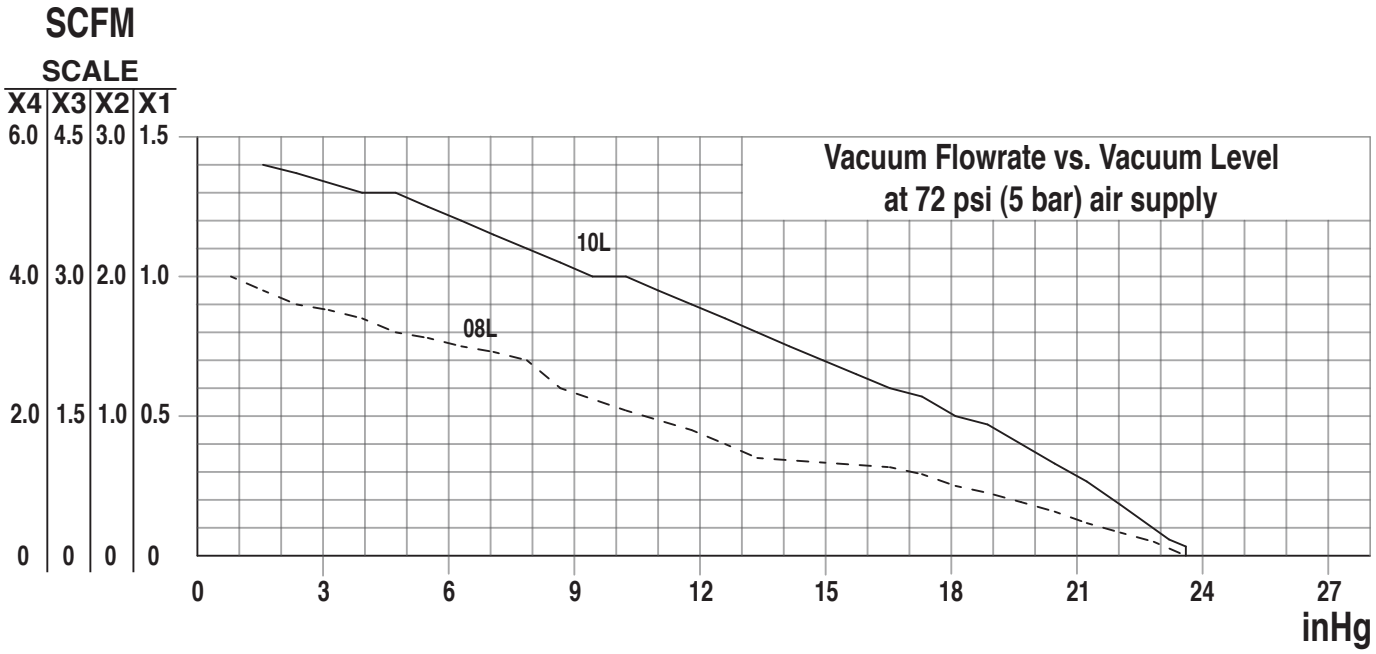
Model	Air Supply PSI	Air Consu SCFM	Max Vacuum inHg	SCFM at Vacuum Level							
				3 inHg	6 inHg	9 inHg	12 inHg	15 inHg	18 inHg	21 inHg	24 inHg
ER05	72	0.4	26.7	1.0	2.5	4.5	7.5	12.5	20.0	35.0	-
ER07	72	0.8	26.7	0.8	1.8	3.1	5.1	8.1	13.1	22.8	-
ER09	72	1.4	25.5	0.5	1.1	2.0	3.4	5.4	8.7	14.8	-
ER10	72	1.8	28.0	0.4	2.9	1.7	2.8	4.6	7.5	12.7	-
ER08L	72	1.2	23.6	0.3	0.7	1.3	2.2	3.7	6.1	10.5	-
ER10L	72	1.9	23.6	0.2	0.5	0.8	1.4	2.2	3.6	6.1	-
ER08L	60	1.0	20.4	0.3	0.7	1.3	2.1	3.6	6.1	11.0	-
ER10L	60	1.65	21.6	0.2	0.5	0.8	1.4	2.3	3.8	6.8	-

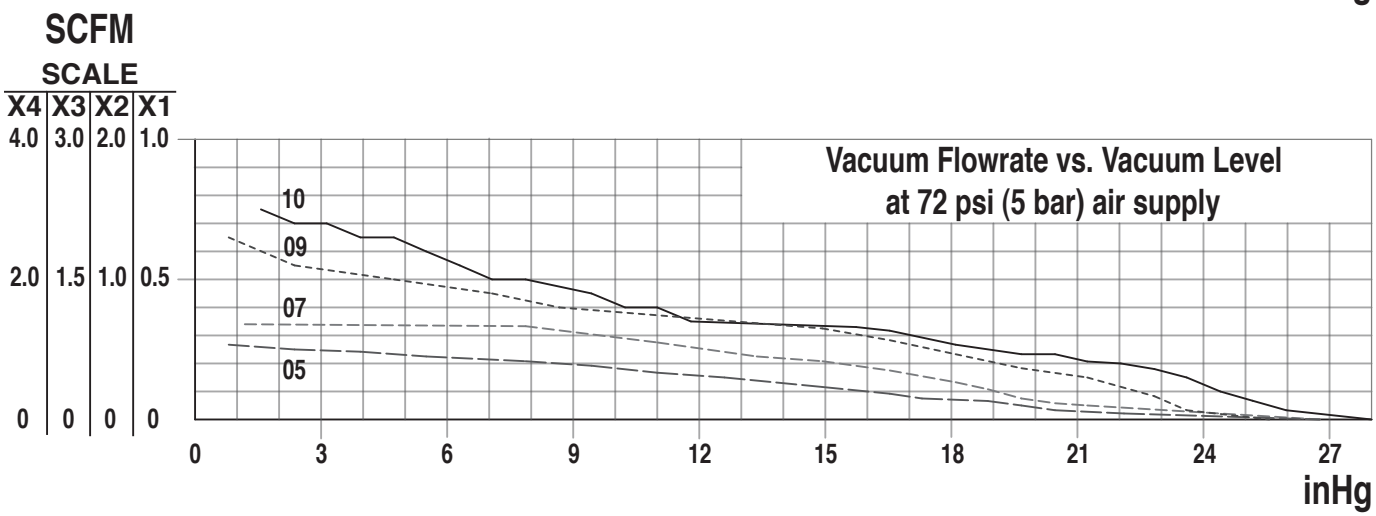
sec / 100 in³ X 0.61 = sec / l

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.

Performance







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.