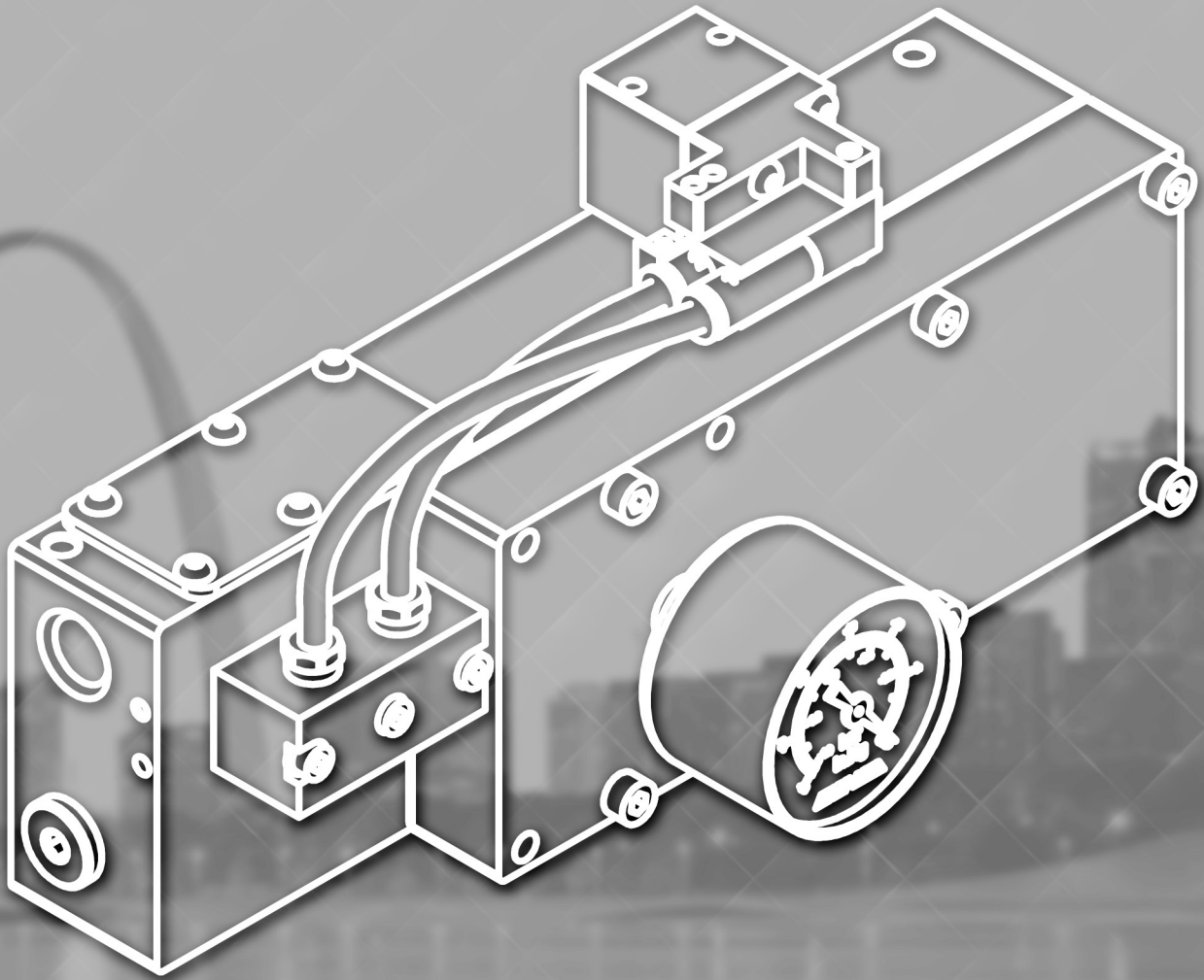


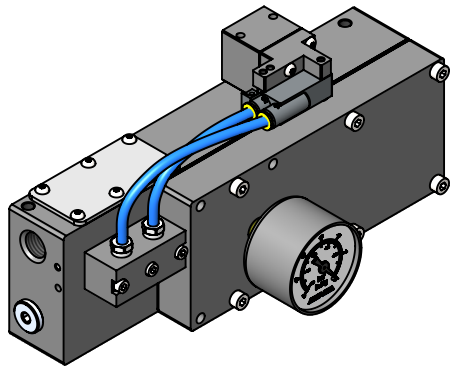
SECTION 9

CLASSIC PUMPS

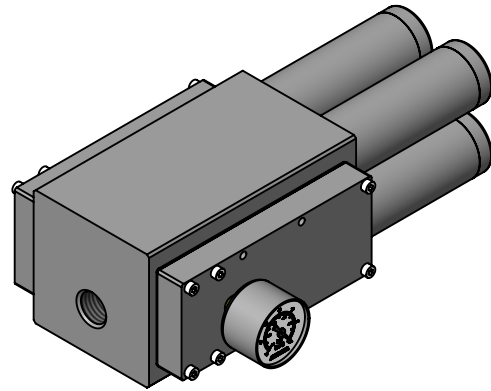


EDCO USA[®]

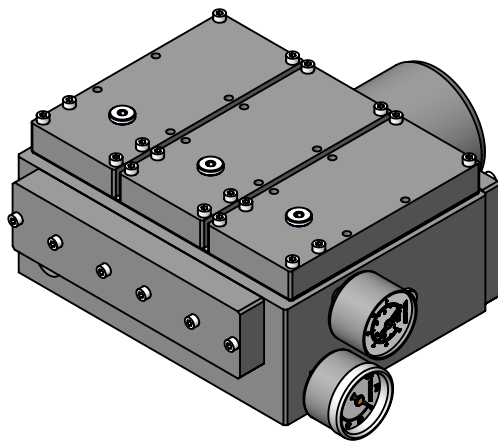
CLASSIC PUMPS



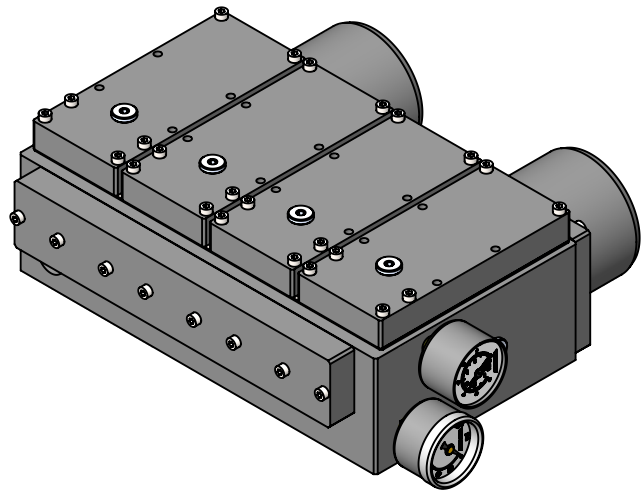
CLASSIC PUMPS



DUAL BASE CLASSIC PUMPS



TRIPLE BASE CLASSIC PUMPS



QUAD BASE CLASSIC PUMPS

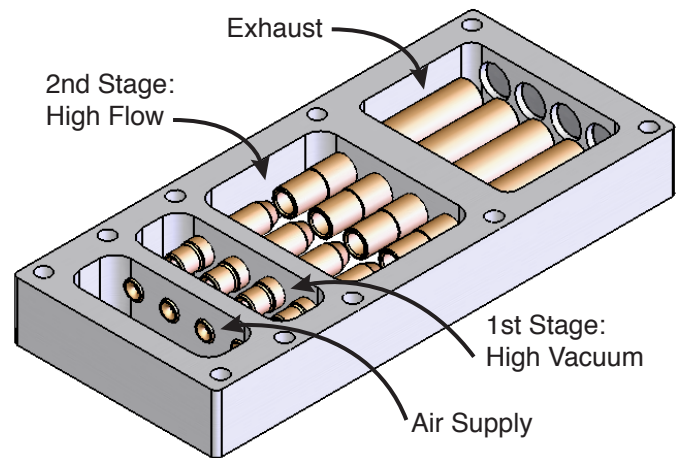
General Information	9:3
Classic Pumps: How To Order	9:4
Classic Pumps	9:5 - 9:18
Mini-Classic Pumps	9:19 - 9:20
Multi Base Classic Pump: How To Order	9:21
Dual Base Classic Pumps	9:22 - 9:23
Triple Base Classic Pumps	9:24 - 9:28
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Triple & Quad Base Options	9:34 - 9:35
Performance	9:36 - 9:42

CLASSIC PUMPS

MULTI-STAGE PUMPS - PRINCIPLES OF OPERATION

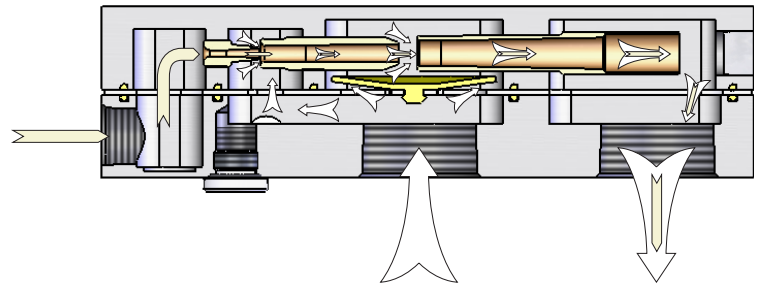
MULTI-EJECTOR

Larger capacity vacuum pumps are created by placing identical nozzle sets in a parallel configuration, either in the same body or in a stacking module. Additional vacuum flow capacity is attained but maximum vacuum level is not affected since that is determined by the nozzle series. This method provides a specific repeatable increment of capacity increase that is very handy when sizing a pump for an application since the basic shape of the performance curve doesn't change. Vacuum flow and air consumption is increased in proportion to the number of nozzle sets, and system evacuation time is decreased proportionately.



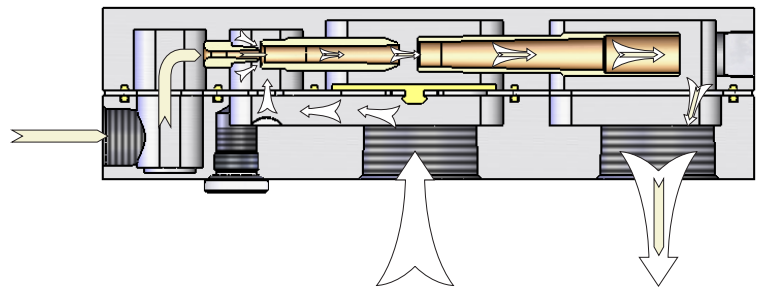
HIGH-FLOW MODE

An air supply to the pump is turned on and high-pressure air flows thru the first nozzle, generating a vacuum flow when it passes into the second nozzle. As air is evacuated from the system, induced air flows into the vacuum port and is drawn into the first stage ejector (gap between first and second nozzles) and combines with the compressed air flow from the first nozzle before passing into the second stage ejector (gap between second and third nozzle). The powerful combined airflow induces a high vacuum flow rate thru the second stage ejector until the increasing vacuum level causes the flap check valve to close. The valve closing point is dependent on nozzle series (A, E, L, M, ML, or X) and the operating air pressure. For example at 87 psi the flap valve will close at 11" Hg for an ML-series pump and at 18" Hg for an E-series pump. This closing is evident by the change in slope of the performance curve.



HIGH-VACUUM MODE

After the flap valve closes, induced air continues to be drawn into the first stage ejector and the vacuum level will increase to the maximum level allowed by the nozzle series. At this point the second stage is isolated and is not contributing to evacuation of the system. Some of our competitors offer three and four stage vacuum pumps but these provide very little benefit for industrial systems since a third stage will shut down at 3" Hg and a fourth stage will shut down at 1.5" Hg. EDCO nozzles are optimized to give extra vacuum flow at higher vacuum levels to more-than make up for lower flows from zero to 3" Hg. EDCO evacuation times to 12" Hg or higher will be equal or better than our competition.



CLASSIC PUMPS

SERIES	CAPACITY	SEAL MATERIAL	PORTS	PUMP STYLE	OPTIONS
ML	100	N		2SB24D	PFC
A	25	E	(Blank) = NPTF	(Blank) = Basic Pump	NR = Non-Return Valve
E	50	N	G = G Threads	6010 = 1" Aligned Style Base	LV = No Flapper Valve
L	75	S		6034 = 3/4" Aligned Style Base	RT ³ = Timed Quick Release
M	100	V		2ES = Energy Saver	PFC = 3/4" Filter & Elements
ML	125	VH		2PS = Piloted Supply Valve	SP ³ = Side Mount
MLEN	150	See chart below for information.		2PSB = Piloted Supply & Blow-Off Valves	FP = Face Mount
X	175			2OS24D = Supply Valve, 24VDC 2.3W, Normally Open	CP = Classic Mount
	200			2OS110A = Supply Valve, 110VAC 50/60Hz, Normally Open	³ Specify side "A" or "B" when ordering these options.
	X SIZES			2OSB24D = Supply & Blow Valves, 24VDC 2.3W, Normally Open	
	40			2OSB110A = Supply & Blow Valves, 110VAC 50/60Hz, Normally Open	
	80			2S24D = Supply Valve, 24VDC 2.3W, Normally Closed	
	120			2S110A = Supply Valve, 110VAC 50/60Hz, Normally Closed	
	160			2SB24D = Supply & Blow Valves, 24VDC 2.3W, Normally Closed	
	200			2SB110A = Supply & Blow Valves, 110VAC 50/60Hz, Normally Closed	
	240			SM = Surface Mount w/ Top Gauge	
	280		SMS = Surface Mount w/ Side Gauge		
	320				

SERIES

CODE	DESCRIPTION	MAX VACUUM inHG [-kPa]	SUPPLY PRESSURE psi [bar]
A	Ultra-High Flow	27.00 [91.4]	87 [6]
E	Ultra-High Flow	26.70 [90.4]	87 [6]
L	High Flow	22.80 [77.2]	87 [6]
M	Low Pressure	27.10 [91.8]	49 [3.4]
ML	Multi-Characteristic	27.50 [93.1]	58 to 87 [4 to 6]
MLENT	ENT Plated ML	27.50 [93.1]	58 to 87 [4 to 6]
MLSS	316 Stainless Steel ML	27.50 [93.1]	58 to 87 [4 to 6]
X	High Vacuum	28.30 [95.8]	87 [6]

SEAL MATERIAL

CODE	ELASTOMER	WORKING TEMPERATURE	COLOR
E	Ethylene Propylene (EPDM)	-4°F to 230°F -20°C to 110°C	Black
N	Nitrile (Buna-N)	-4°F to 230°F -20°C to 110°C	Black
S	Silicone	-100°F to 400°F -70°C to 205°C	Orange
V ¹	Flourocarbon (Viton ¹)	40°F to 450°F 4°C to 230°C	Grey
VH ¹	Flourocarbon (Viton ¹)	40°F to 450°F 4°C to 230°C	Grey

¹For operating temperatures above 180°F (82.2°C). The pump will be assembled using high temperature sealant, metal end plugs, and will be supplied without exhaust silencer and vacuum gauge. Available for basic pumps only.

²Viton is a registered trademark of Du Pont Dow Elastomers.

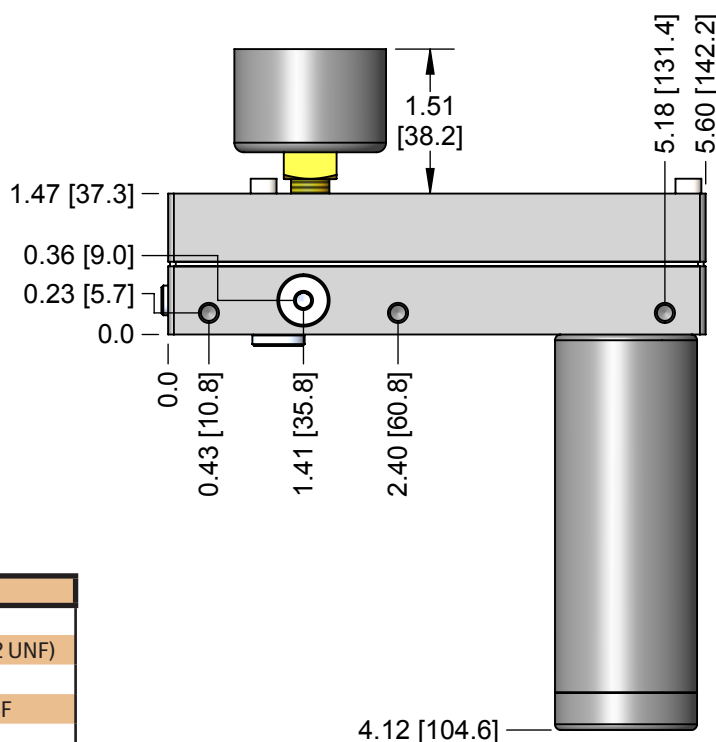
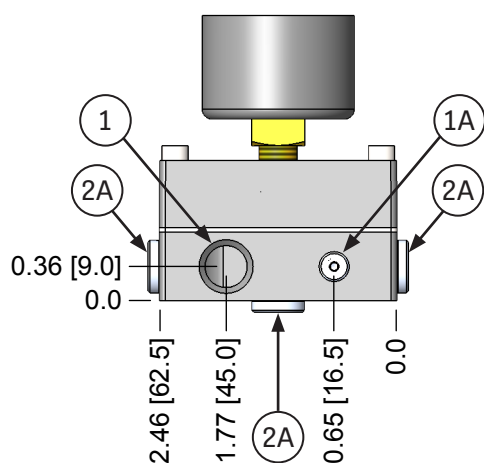
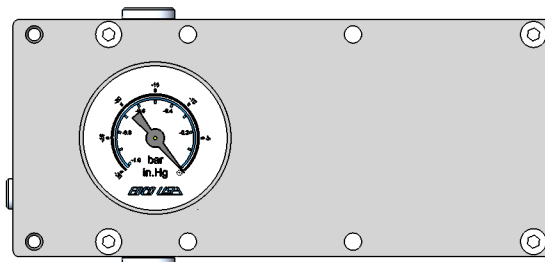
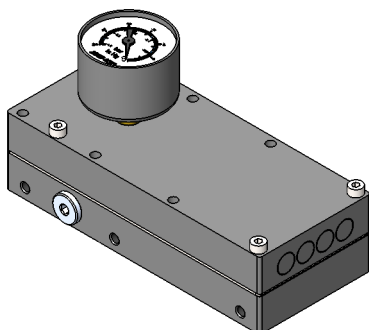
³Many pump styles and options can be combined. Call for more info.

CLASSIC PUMPS

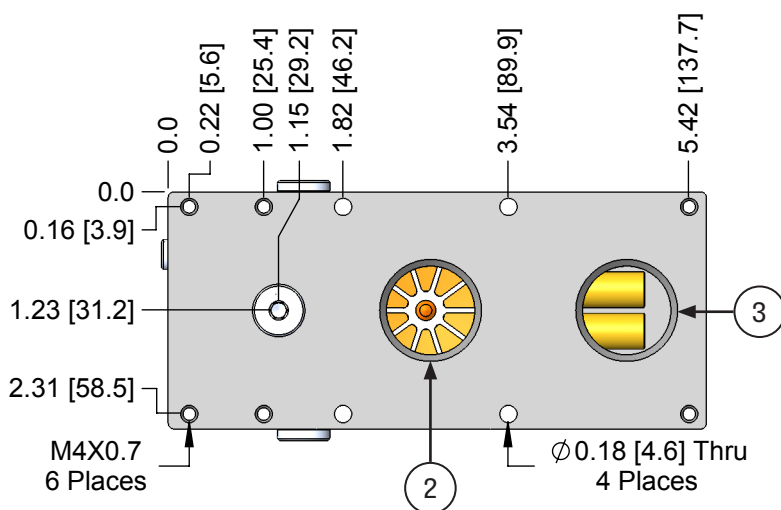
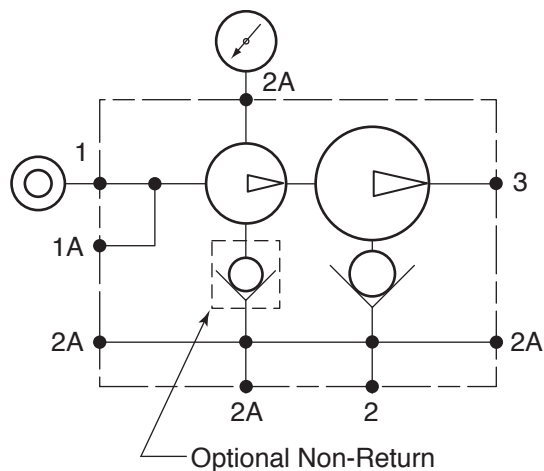
BASIC PUMP : 25 - 100 CAPACITY

The pump is controlled via air supply through the pump base inlet port. Vacuum gauge and silencer included.

SERIES		WEIGHT
A, E, L, M, ML	X	lb [g]
25	40	1.63 [739]
50	80	1.63 [739]
75	120	1.63 [739]
100	180	1.63 [739]



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
1A	Alternate - Signal	M5X0.8 (10-32 UNF)	M5X0.8 (10-32 UNF)
2	Vacuum	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4

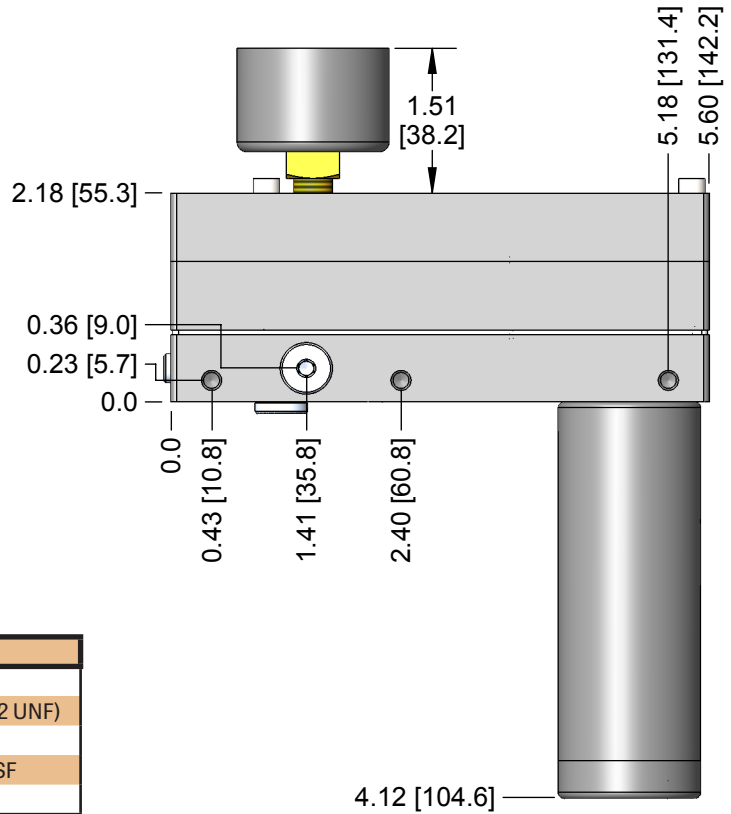
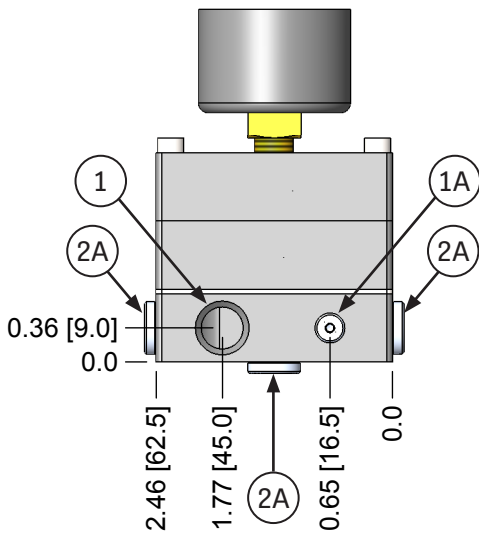
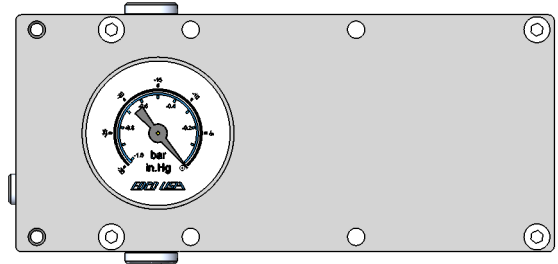
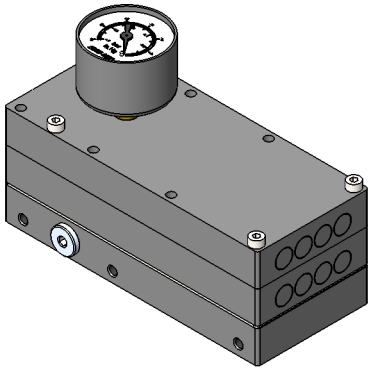


CLASSIC PUMPS

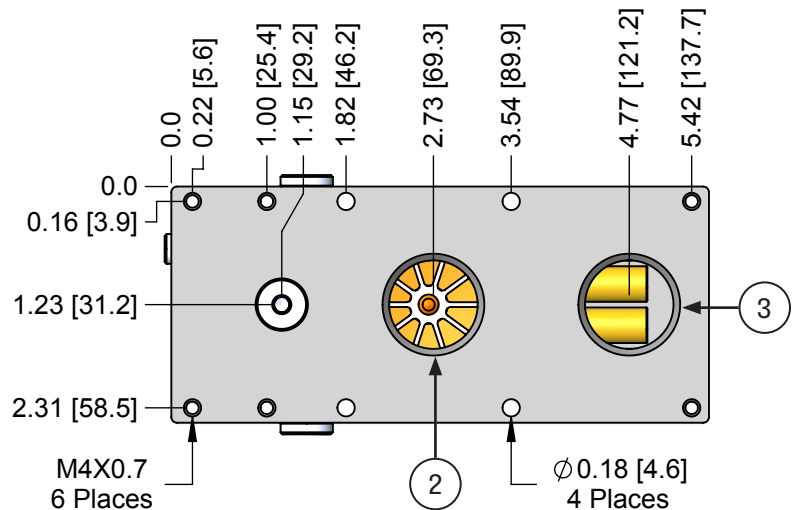
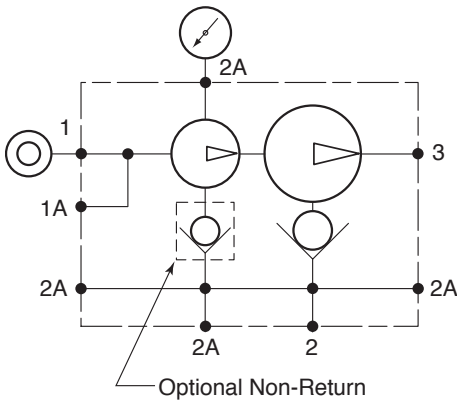
BASIC PUMP : 125 - 200 CAPACITY

The pump is controlled via air supply through the pump base inlet port. Vacuum gauge and silencer included.

SERIES		WEIGHT
A, E, L, M, ML	X	lb [g]
125	200	2.21 [1002]
150	240	2.21 [1002]
175	280	2.21 [1002]
200	320	2.21 [1002]



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
1A	Alternate - Signal	M5X0.8 (10-32 UNF)	M5X0.8 (10-32 UNF)
2	Vacuum	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4

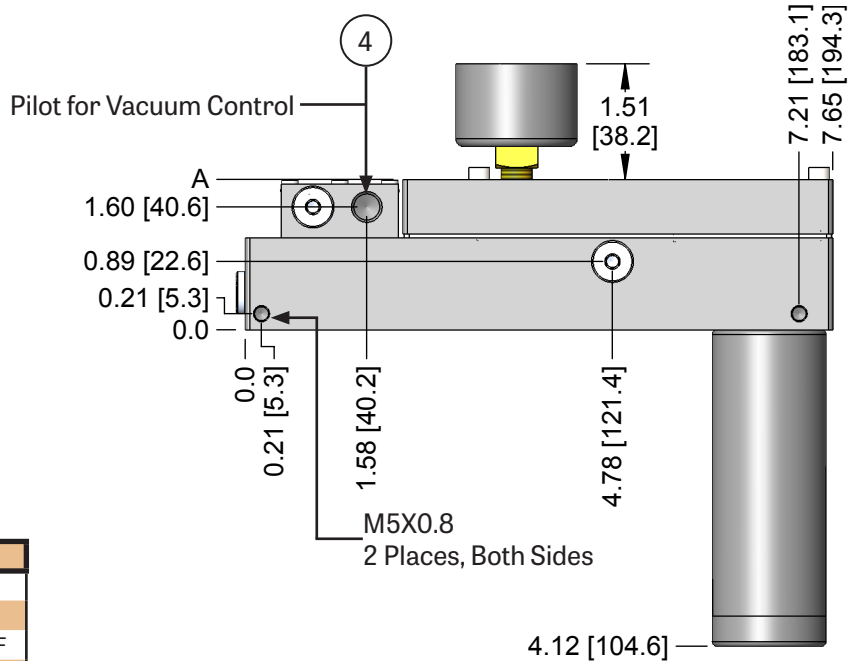
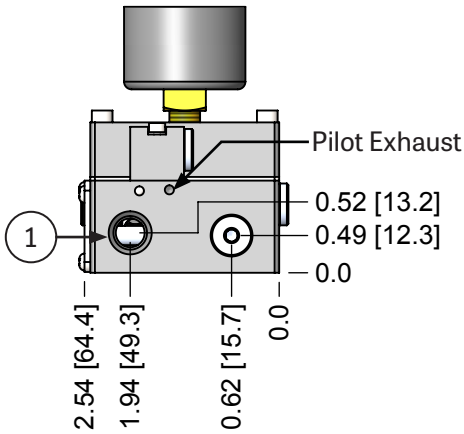
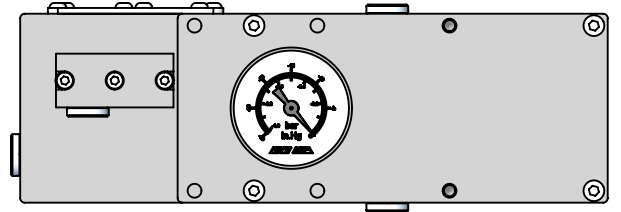
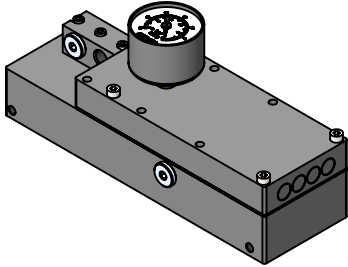


CLASSIC PUMPS

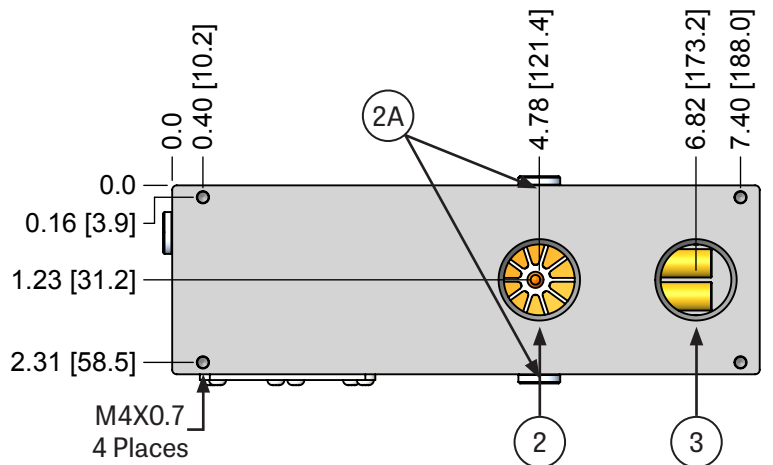
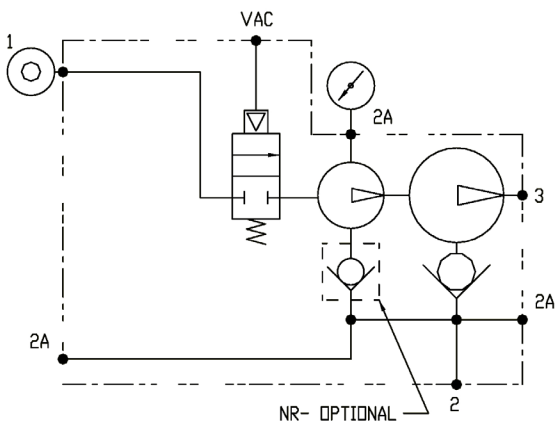
2PS : PILOTED SUPPLY

The pump base contains an integral pilot operated 3-way air valve that controls vacuum on/off via a pneumatic pilot signal. When the pilot signal is present the vacuum pump turns on. When the pilot signal is exhausted, the pump turns off. Available in any nozzle series (A, E, L, M, ML or X). See chart for available capacities.

SERIES		WEIGHT lb [g]	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.81 [1275]	1.96 [49.8]
50	80	2.81 [1275]	1.96 [49.8]
75	120	2.81 [1275]	1.96 [49.8]
100	160	2.81 [1275]	1.96 [49.8]
125	200	3.41 [1547]	2.67 [67.8]
150	240	3.41 [1547]	2.67 [67.8]
175	280	3.41 [1547]	2.67 [67.8]
200	320	3.41 [1547]	2.67 [67.8]



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4 G
2	Vacuum - Main	3/4 NPTF	G 3/4 G
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4 G
4	Pilot Signal - Air Control	G 1/8 NPSF	G 1/8 NPSF

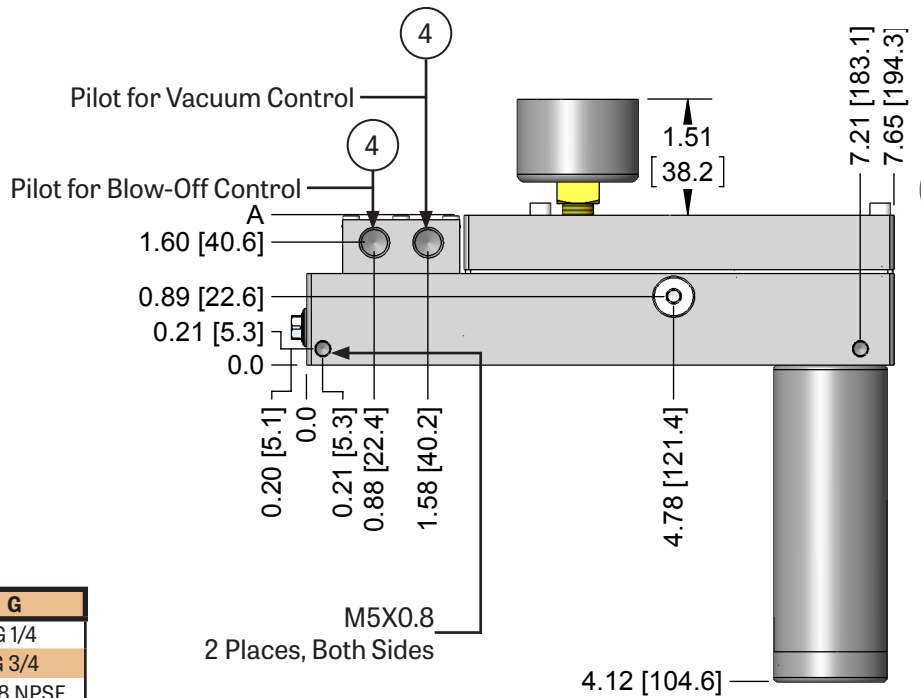
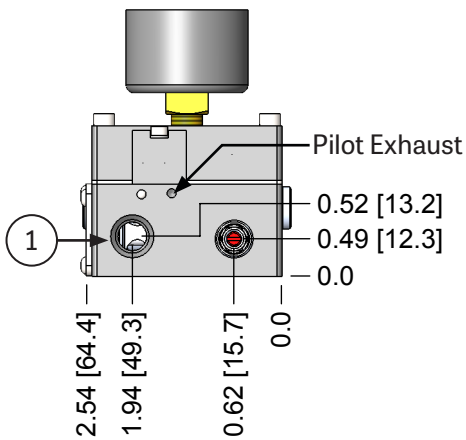
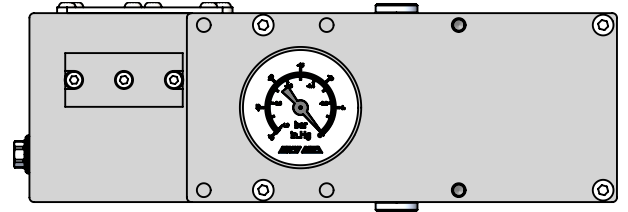
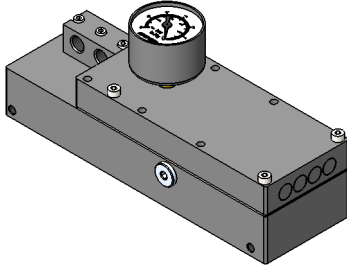


CLASSIC PUMPS

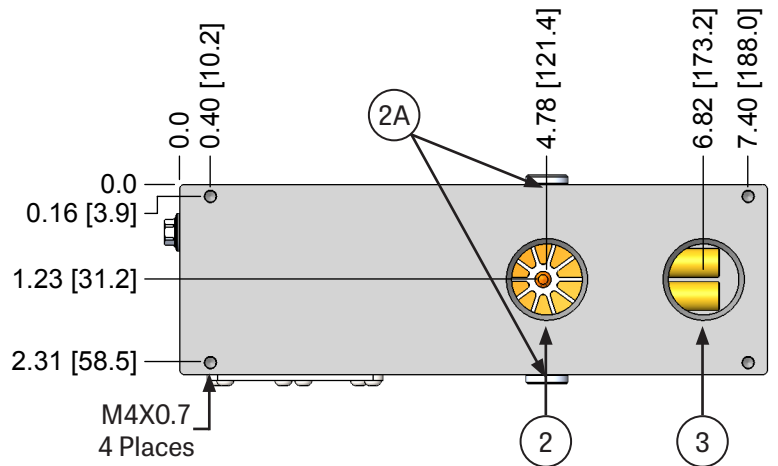
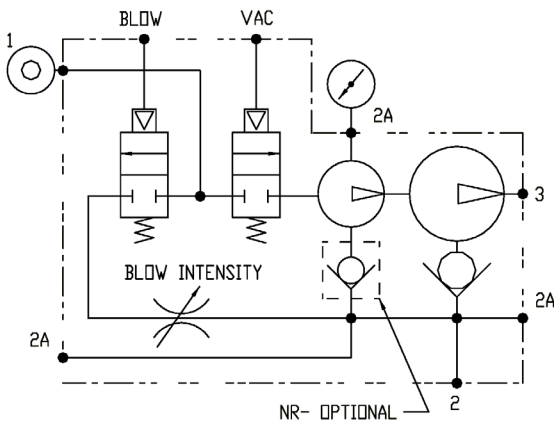
2PSB : PILOTED SUPPLY & BLOW-OFF

The pump base contains two pilot operated 3-way air valves that provide full pump control via two externally supplied pneumatic pilot signals. With a constant air supply to the pump base, one pilot signal controls vacuum pump on/off and the second pilot signal controls blow-off air to dissipate vacuum for faster system cycle time. Available in any nozzle series (A, E, L, M, ML or X). See chart for available capacities.

Series		WEIGHT lb [g]	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.81 [1275]	1.96 [49.8]
50	80	2.81 [1275]	1.96 [49.8]
75	120	2.81 [1275]	1.96 [49.8]
100	160	2.81 [1275]	1.96 [49.8]
125	200	3.41 [1547]	2.67 [67.8]
150	240	3.41 [1547]	2.67 [67.8]
175	280	3.41 [1547]	2.67 [67.8]
200	320	3.41 [1547]	2.67 [67.8]



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4
4	Pilot Signal	G 1/8 NPSF	G 1/8 NPSF



CLASSIC PUMPS

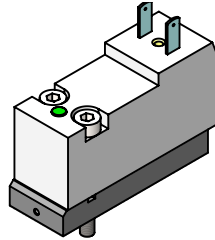
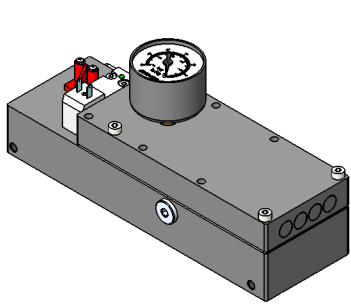
2S24D / 2S110A : SOLENOID CONTROLLED SUPPLY

The pump base contains an integral pilot operated 3-way air valve that controls vacuum on/off via a solenoid pilot valve. When the solenoid valve is energized the vacuum pump turns on. When the solenoid valve is de-energized, the pump turns off. Available in any nozzle series (A, E, L, M, ML or X). See chart for available capacities.

2S24D - 24 V DC, 2.3 W solenoid control valve.

2S110A - 120 V AC, 60 Hz, (110 V AC, 50 Hz) 2.3 W solenoid control valve.

2OS24D / 2OS110A - Normally Open



NO Option Adapter Plate
Weight: 0.02 lb (9.1g)
Thickness: 0.23 [5.7]

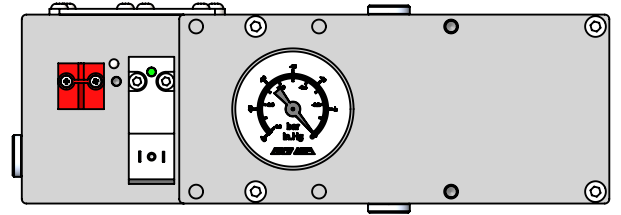
Order DIN T-9 Molded Cords Separately:

923-2M01 = Std. 2M

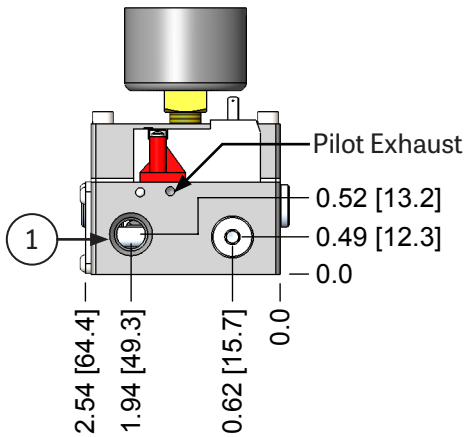
923-2M31 = L.E.D. 0-50V, 2M

923-2M81 = L.E.D. 70-250V, 2M

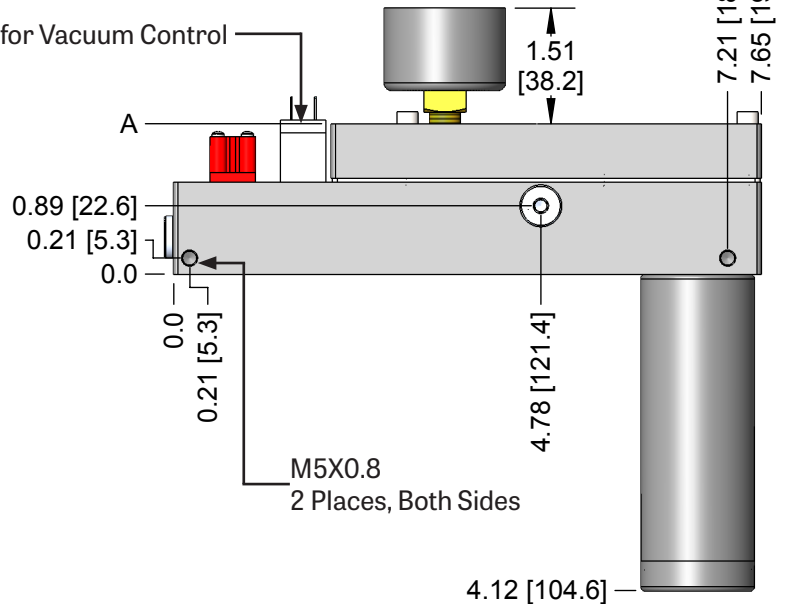
SERIES		WEIGHT lb [g]	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.87 [1301]	1.96 [49.8]
50	80	2.87 [1301]	1.96 [49.8]
75	120	2.87 [1301]	1.96 [49.8]
100	160	2.87 [1301]	1.96 [49.8]
125	200	3.47 [1574]	2.67 [67.8]
150	240	3.47 [1574]	2.67 [67.8]
175	280	3.47 [1574]	2.67 [67.8]
200	320	3.47 [1574]	2.67 [67.8]



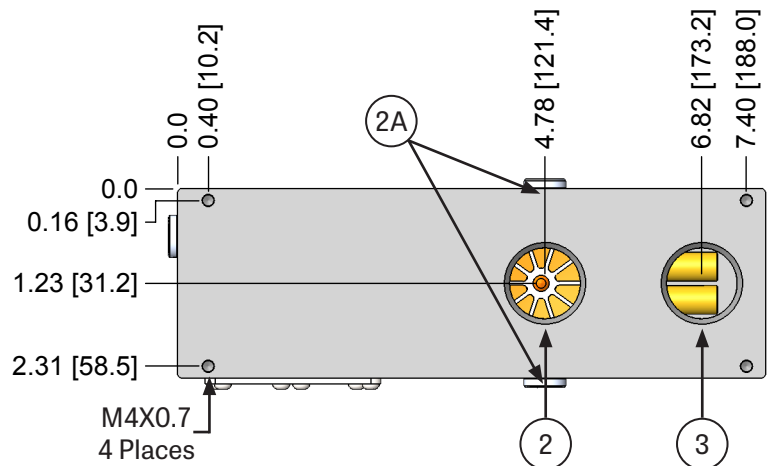
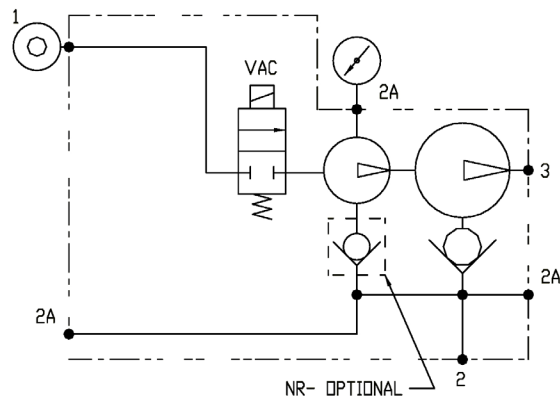
9



Solenoid for Vacuum Control



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4



CLASSIC PUMPS

2SB24D & 2SB110A : SOLENOID CONTROLLED SUPPLY & BLOW-OFF

The pump base contains two pilot operated 3-way air valves that provide full pump control via two solenoid pilot valves. With a constant air supply to the pump base, one solenoid valve controls vacuum pump on/off and the second solenoid valve controls blow-off air to dissipate vacuum for faster system cycle time. Available in any nozzle series (A, E, L, M, ML or X). See chart for available capacities.

2SB24D - 24 V DC, 2.3 W solenoid control valve.

2SB110A - 120 V AC, 60 Hz, (110 V AC, 50 Hz) 2.3 W solenoid control valve.

2OSB24D / 2OSB110A - Normally Open

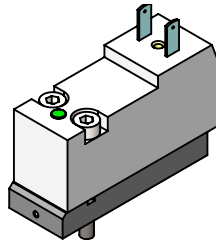
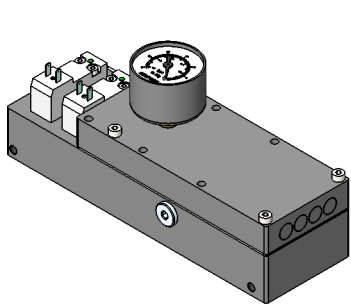
Order DIN T-9 Molded Cords Separately:

923-2M01 = Std. 2M

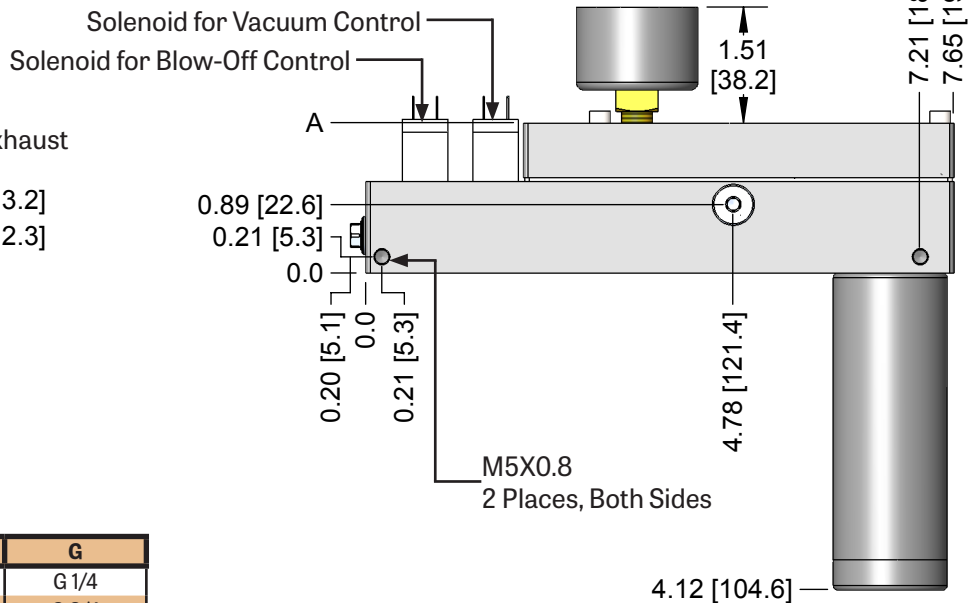
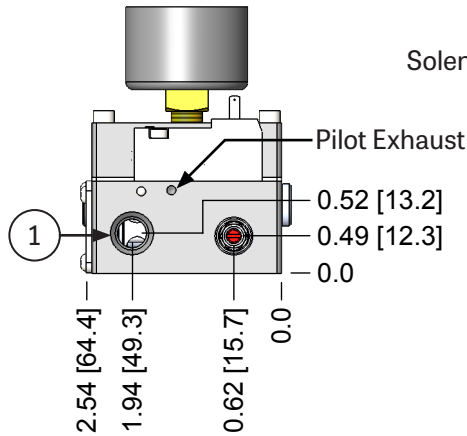
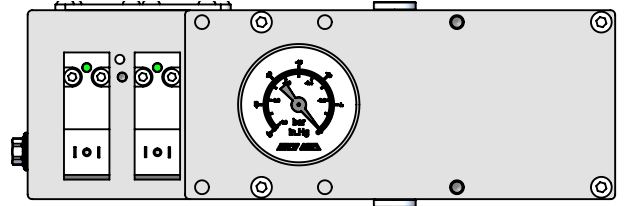
923-2M31 = L.E.D. 0-50V, 2M

923-2M81 = L.E.D. 70-250V, 2M

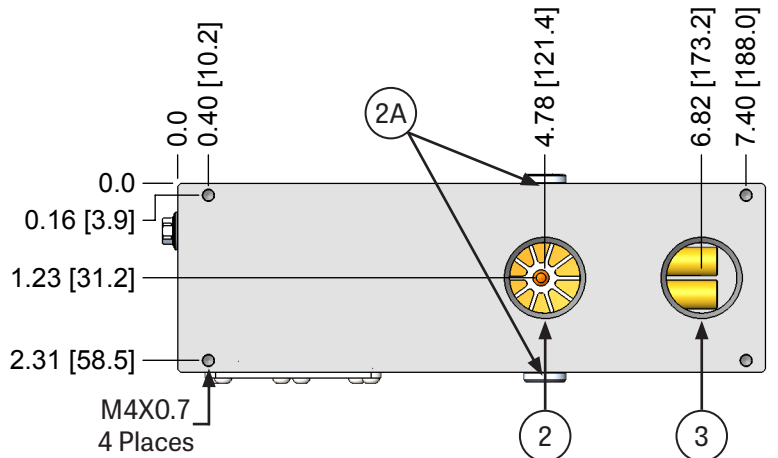
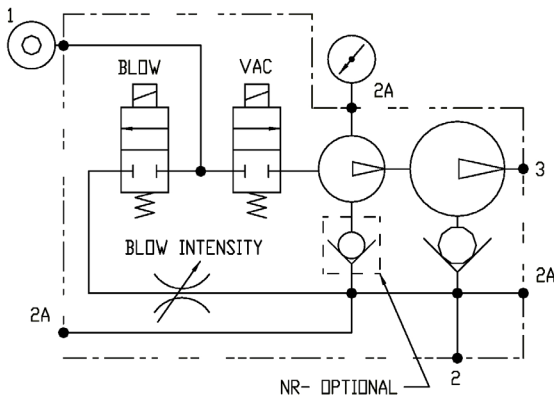
SERIES		WEIGHT lb [g]	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.94 [1334]	1.96 [49.8]
50	80	2.94 [1334]	1.96 [49.8]
75	120	2.94 [1334]	1.96 [49.8]
100	160	2.94 [1334]	1.96 [49.8]
125	200	3.54 [1606]	2.67 [67.8]
150	240	3.54 [1606]	2.67 [67.8]
175	280	3.54 [1606]	2.67 [67.8]
200	320	3.54 [1606]	2.67 [67.8]



NO Option Adapter Plate
Weight: 0.02 lb (9.1g)
Thickness: 0.23 [5.7]



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4

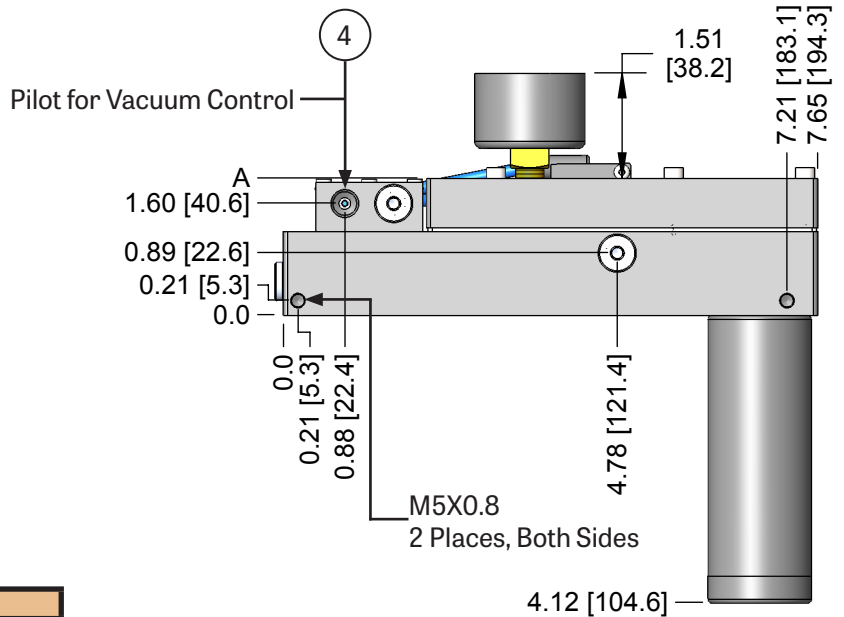
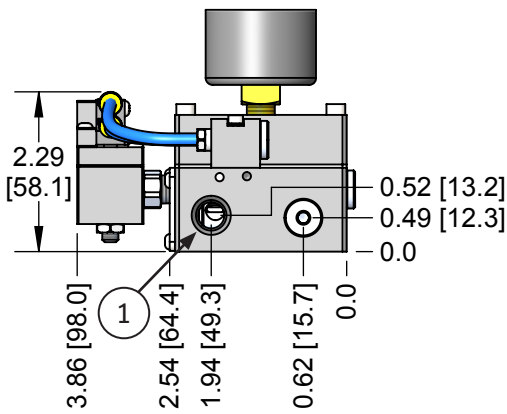
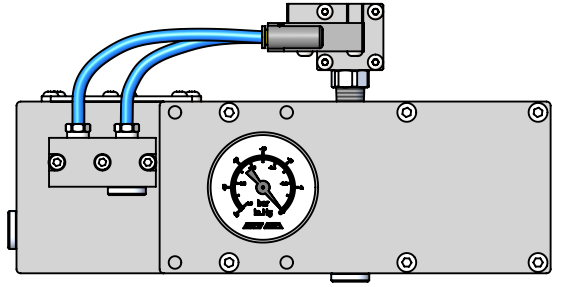
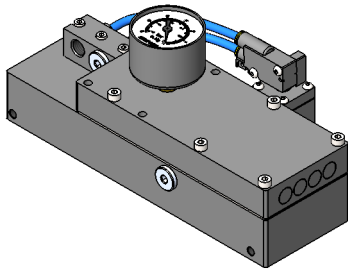


CLASSIC PUMPS

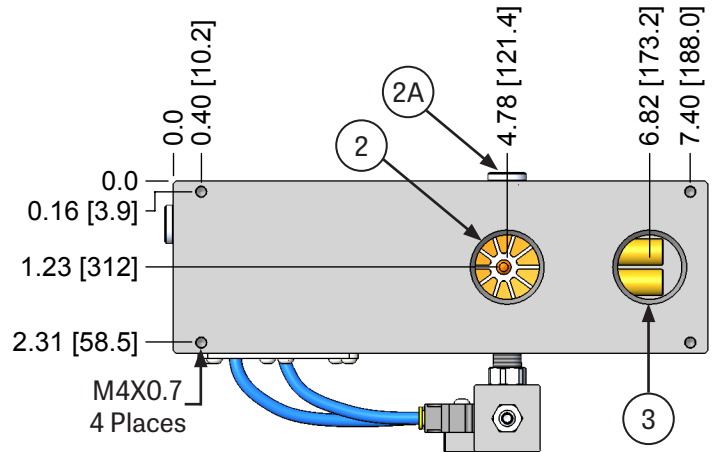
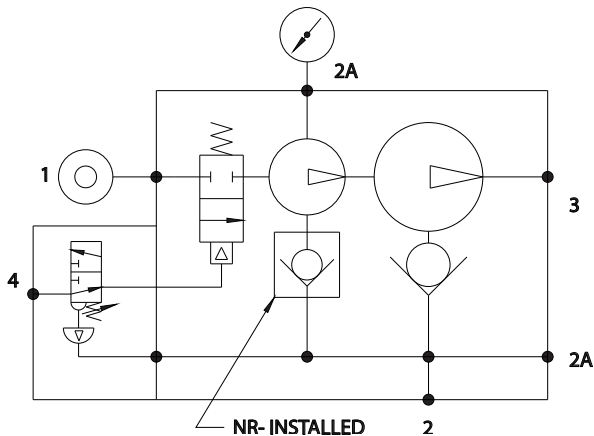
2ES : PNEUMATIC ENERGY SAVER

The pump includes a non-return valve and an air piloted supply valve controlled via an adjustable pneumatic vacuum sensor. The vacuum sensor cycles the pump off when a preset vacuum level is achieved, and cycles the pump on when the vacuum level decreases from the preset level. A regulated air supply is connected to port 1 (Air Supply- Main), and the pump is controlled by a positive pilot signal to port 4 (Pilot Signal- Air Control). The energy saver control will operate only when the pilot signal is present. Best suited for non-porous or volume tank applications. Because of the non-return valve, a quick release valve (RC18A) or some other means should be provided for dissipating the vacuum.

SERIES		WEIGHT	"A"
A, E, L, M, ML	X	lb [g]	in [mm]
25	40	2.71 [1229]	1.96 [49.8]
50	80	2.71 [1229]	1.96 [49.8]
75	120	2.71 [1229]	1.96 [49.8]
100	160	2.71 [1229]	1.96 [49.8]
125	200	3.34 [1501]	2.67 [67.8]
150	240	3.34 [1501]	2.67 [67.8]
175	280	3.34 [1501]	2.67 [67.8]
200	320	3.34 [1501]	2.67 [67.8]

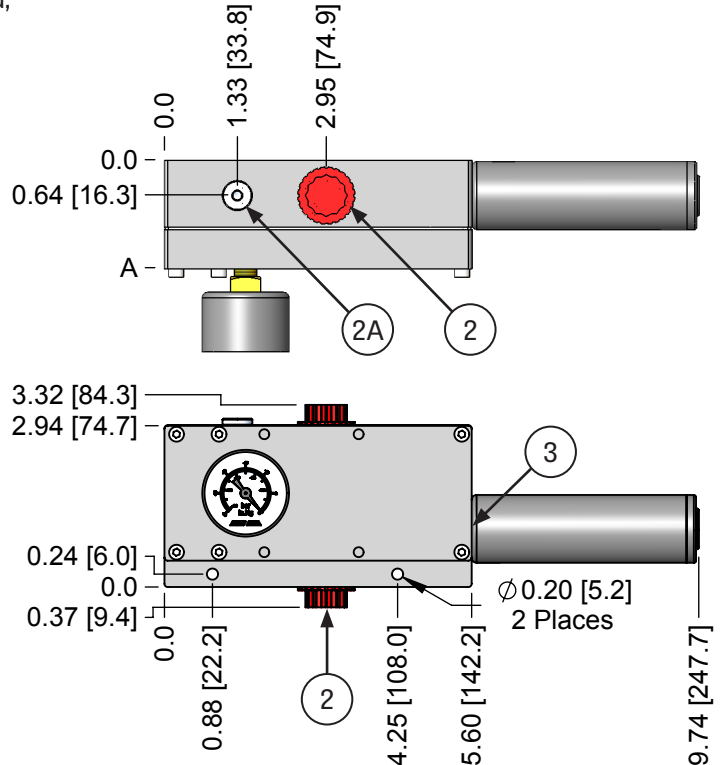
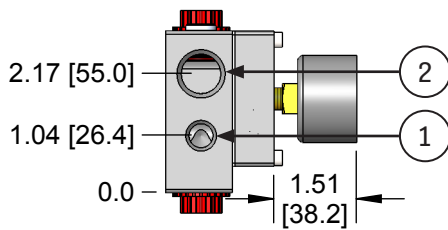
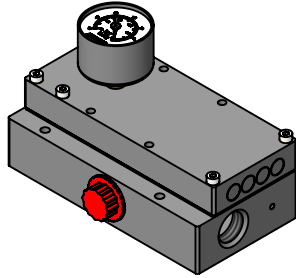


CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4
4	Pilot Signal - Air Control	G 1/8 NPSF	G 1/8 NPSF



CLASSIC PUMPS SM : SURFACE MOUNT

The SM (Surface Mount) option features a pump base with 1/2 NPTF (G1/2 on “-G”) vacuum ports at three locations and a flat backside for panel mounting. One to three vacuum lines can be run directly from the pump base and any unused vacuum ports are simply plugged, which make this pump configuration ideal for robotic end-effectors.

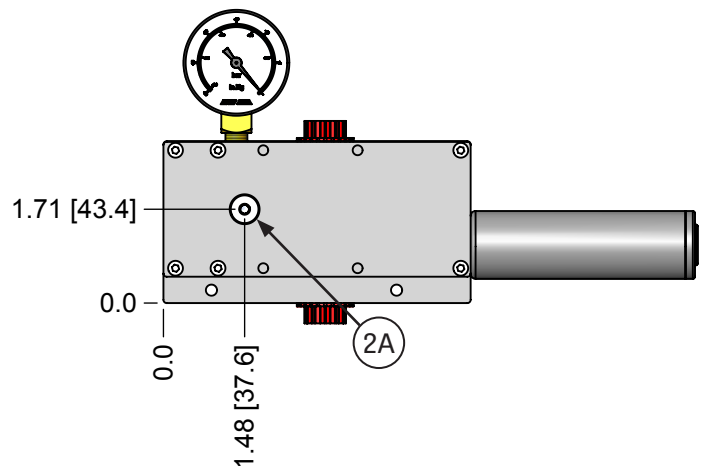
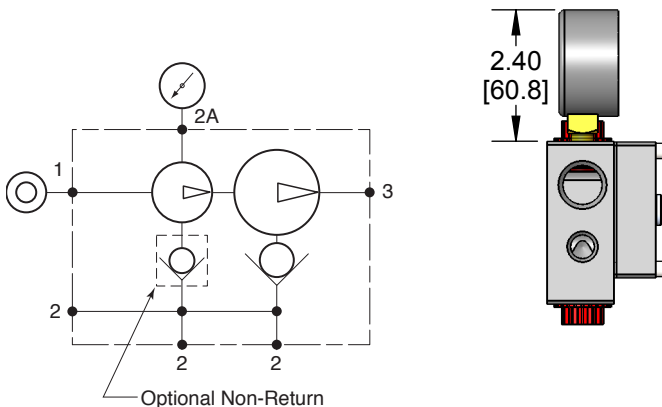


SERIES A, E, L, M, ML	X	WEIGHT lb [g]	“A” in [mm]
25	40	2.27 [1030]	1.97 [50.0]
50	80	2.27 [1030]	1.97 [50.0]
75	120	2.27 [1030]	1.97 [50.0]
100	160	2.27 [1030]	1.97 [50.0]
125	200	3.05 [1383]	2.68 [68.1]
150	240	3.05 [1383]	2.68 [68.1]
175	280	3.05 [1383]	2.68 [68.1]
200	320	3.05 [1383]	2.68 [68.1]

CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
1A	Alternate - Air Signal	M5X0.8 (10-32)	M5X0.8 (10-32)
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	1/2 NPTF	G 1/2

SMS : SURFACE MOUNT W/ SIDE GAUGE

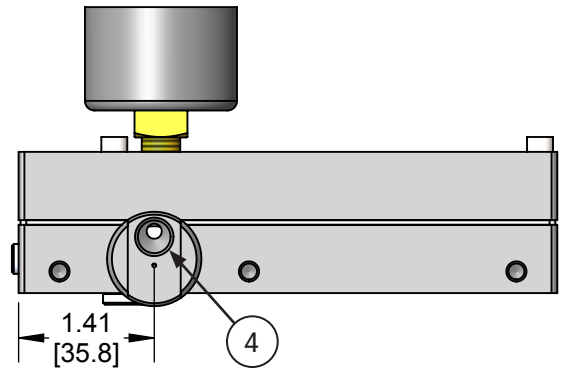
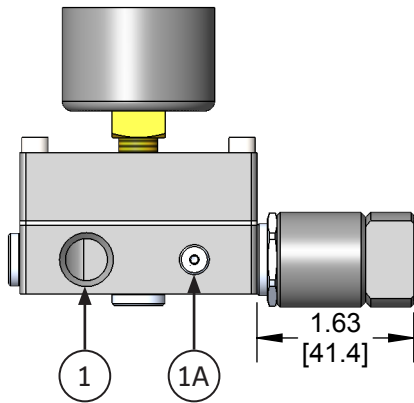
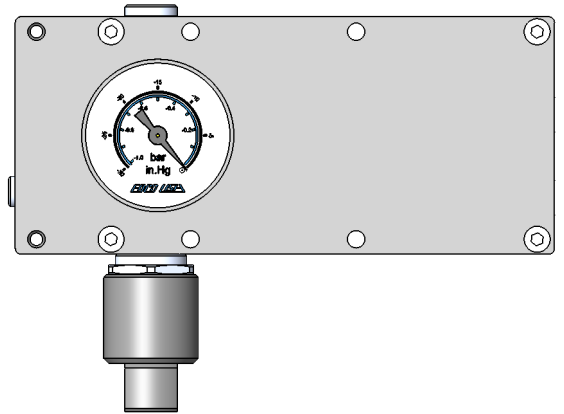
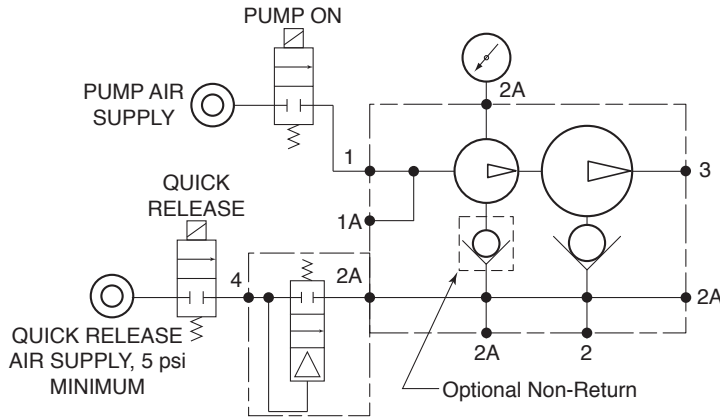
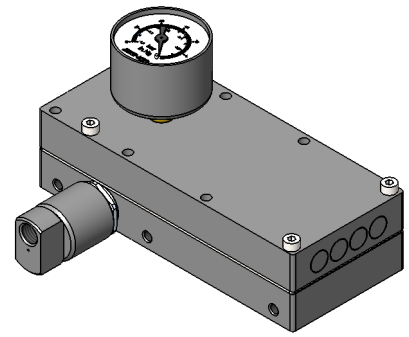
The SMS (Surface Mount Side gauge) option features the same pump base as the SM option with a side mounted vacuum gauge (VG20-LM) for direct interchangeability with brand “V-C” including the mounting holes and end ports. Refer to the EDCO USA website for a complete “V-C” to EDCO USA interchange list. EDCO USA pump valves have 4.3 times the area of “V-C” valves for improved efficiency and performance with any of our six nozzle series (A, E, L, M, ML, or X).



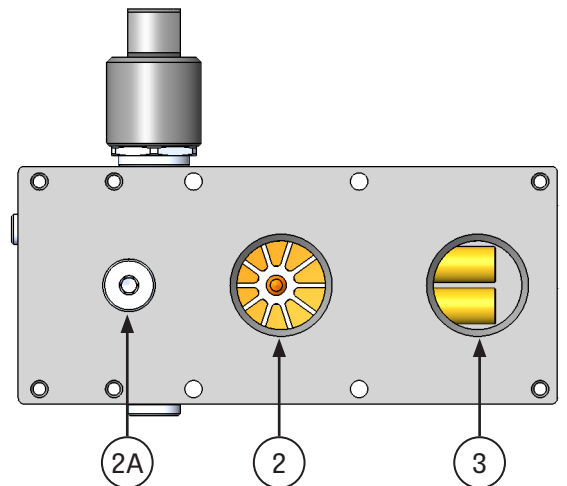
CLASSIC PUMPS RELEASE CHECK VALVE

The quick release check valve is used to admit a burst of compressed air into the vacuum pump base to quickly release a work piece and to momentarily reverse flow through the vacuum filter elements to provide a cleaning action. One 3-position exhaust center 4-way valve, or two separate air valves can be used to alternately supply compressed air to the vacuum pump and RC release check.

NOTE: This page is for information purposes only. Order pump and Release Check Valve separately. RC18A can be found on page 4:7. For full pump dimensions, see page 9:5.



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
1A	Alternate - Air Signal	M5X0.8 (10-32)	M5X0.8 (10-32)
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4
4	Air Supply - Quick Release	G 1/8 NPSF	G 1/8 NPSF



CLASSIC PUMPS

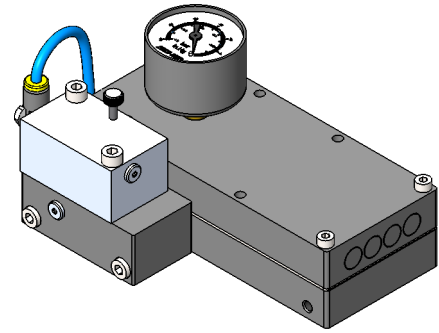
RT : TIME QUICK RELEASE

Automatically admits an adjustable 0 to 5 second burst of compressed air into the vacuum pump base to quickly release a work piece whenever the pump air supply is turned off. A 60 to 100 psi (4.14 - 6.89 bar) maintained air supply to port 4 (Air Supply- Quick Release) is required.

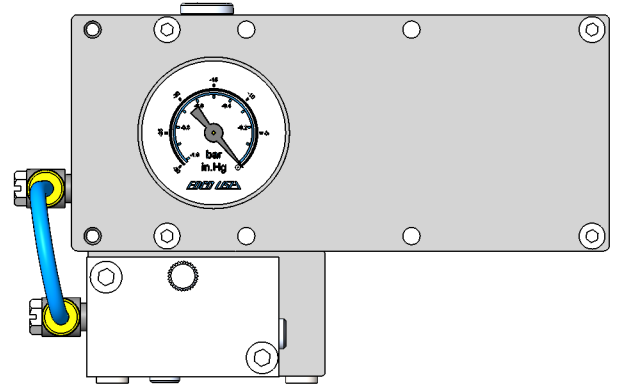
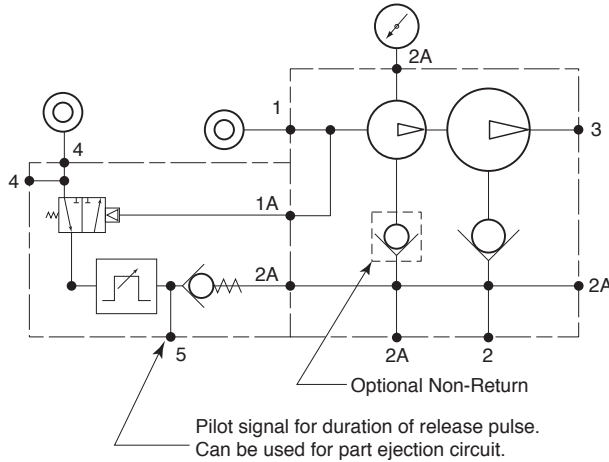
Option suffix **-RTA** — RT option mounted on A-side.

Option suffix **-RTB** — RT option mounted on B-side.

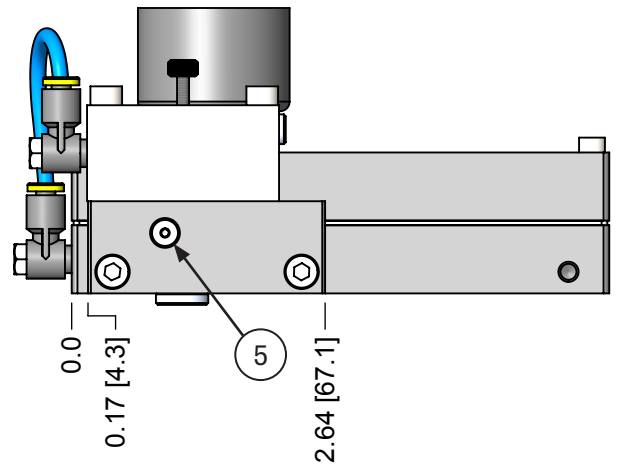
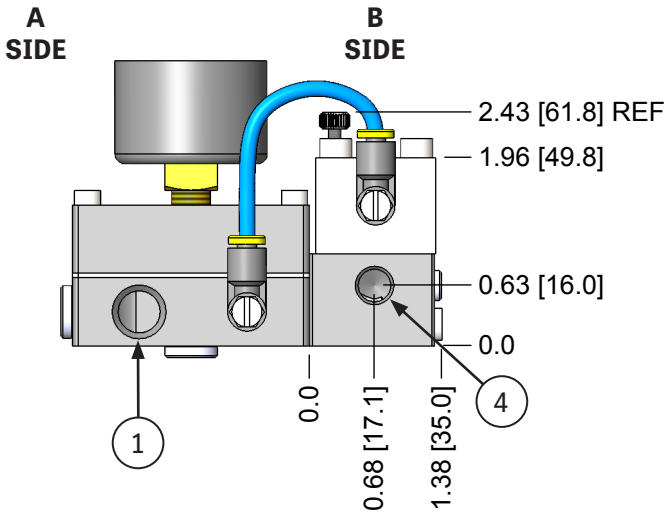
For full pump dimensions, see page 9:5.



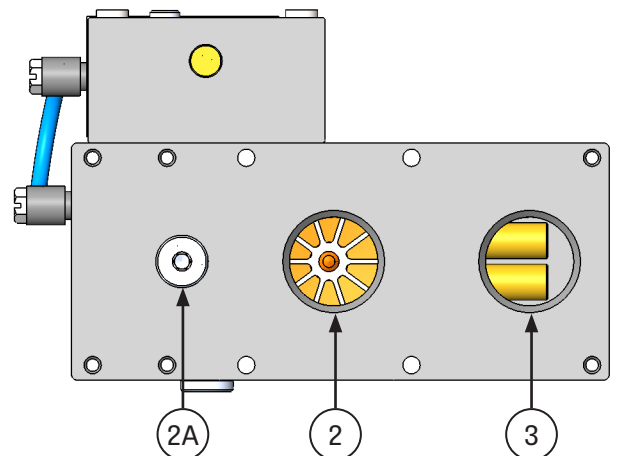
Weight: 0.57 lbs [259.0 g]



9



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
1A	Alternate - Air Signal	M5X0.8 (10-32)	M5X0.8 (10-32)
2	Vacuum - Main	3/4 NPTF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4
4	Air Supply - Quick Release	G 1/8 NPSF	G 1/8 NPSF
5	Timed Pulse Output	M5X0.8 (10-32)	M5X0.8 (10-32)



CLASSIC PUMPS

BASIC CLASSIC PUMP MOUNTING BRACKETS

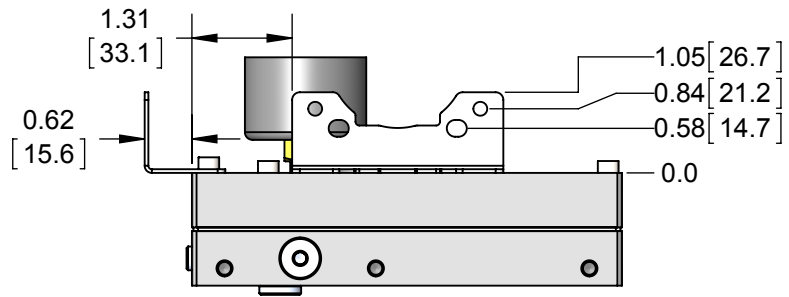
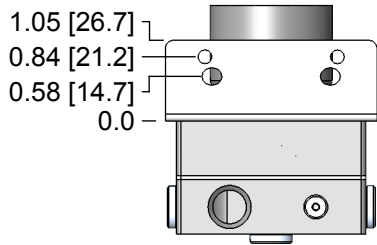
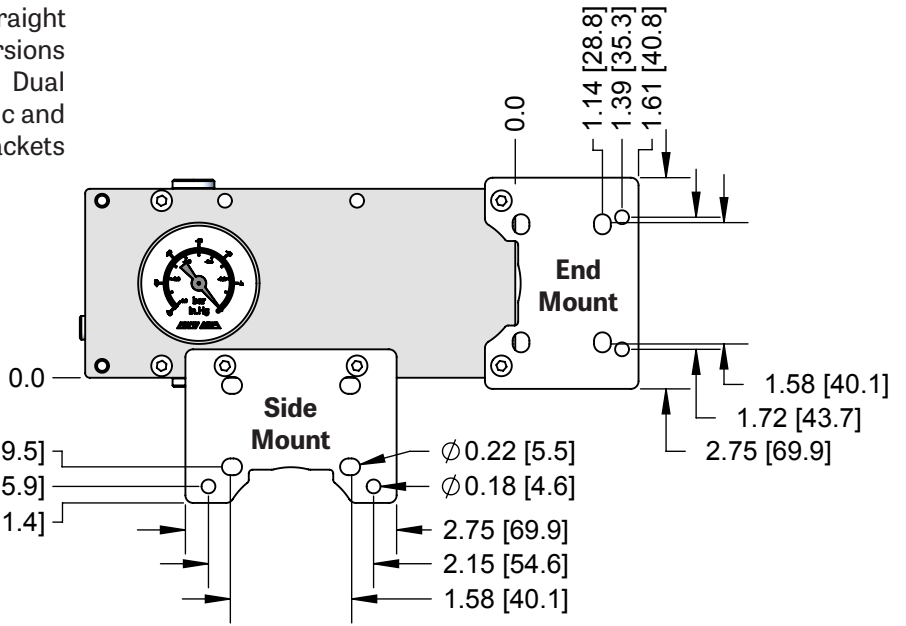
The stainless steel mounting brackets attach at the side or end of any basic Classic vacuum pump. Straight (ML-BKT-180) and Right Angle (ML-BKT-90) versions are available for many mounting possibilities. Dual hole patterns provide attachment to both metric and inch structural framing extrusion T-slots. Brackets and fastener kits must be ordered separately.

ML-BKT-180

1 Straight Mounting Bracket

ML-BKT-90

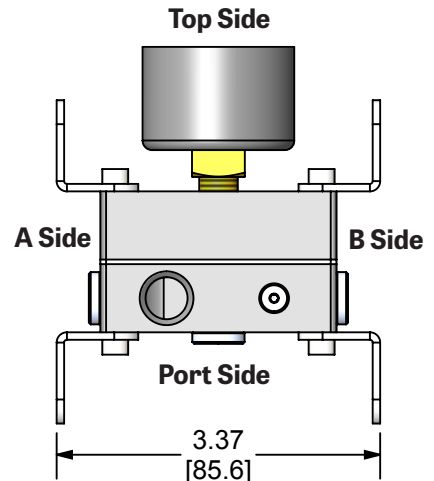
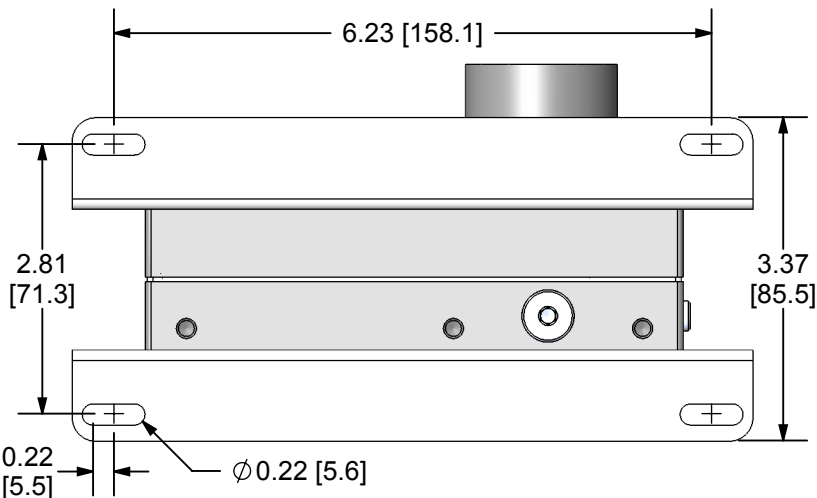
1 Right Angle Mounting Bracket



KIT	CAPACITY	CONTENTS
ML-M4-E1	25-100 (X40-X160)	M4X10 (2) & M4X30 (2)
ML-M4-E2	125-200 (X200-X320)	M4X10 (2) & M4X50 (2)
ML-M4-S1	25-100 (X40-X160)	M4X50 (2) & M4 Nut (2)
ML-M4-S2	125-200 (X200-X320)	M4X70 (2) & M4 Nut (2)

BASIC CLASSIC PUMP DIRECT INTERCHANGE MOUNTS

CP : CLASSIC MOUNT



CLASSIC PUMPS

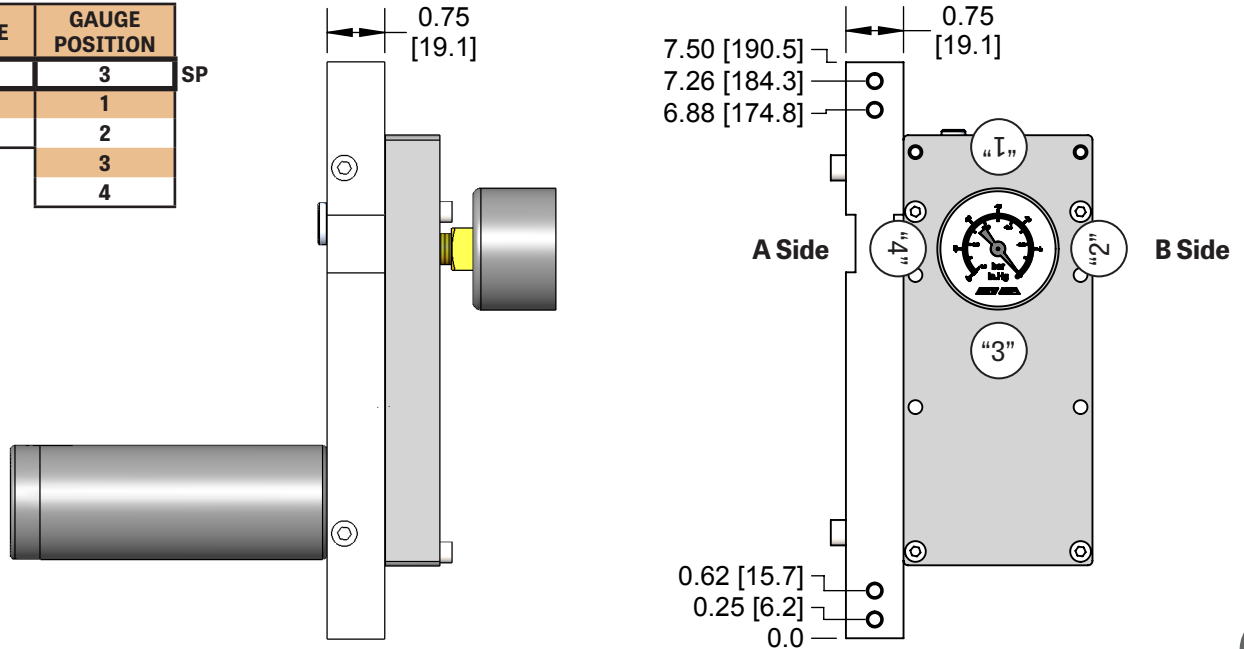
SP : SIDE MOUNT

The **SP** Option directly interchanges with the brand "P" MLD series mounting dimensions.

Specify Gauge & Mounting Position:

To mount on the A-side with the gauge readable at position "3", add suffix **-A3SP** to the pump model code.

PUMP MODEL	SIDE	GAUGE POSITION	
ML50N	A	3	SP
Select a Basic Classic Pump	A	1	
	B	2	
		3	
		4	



FP : FACE MOUNT

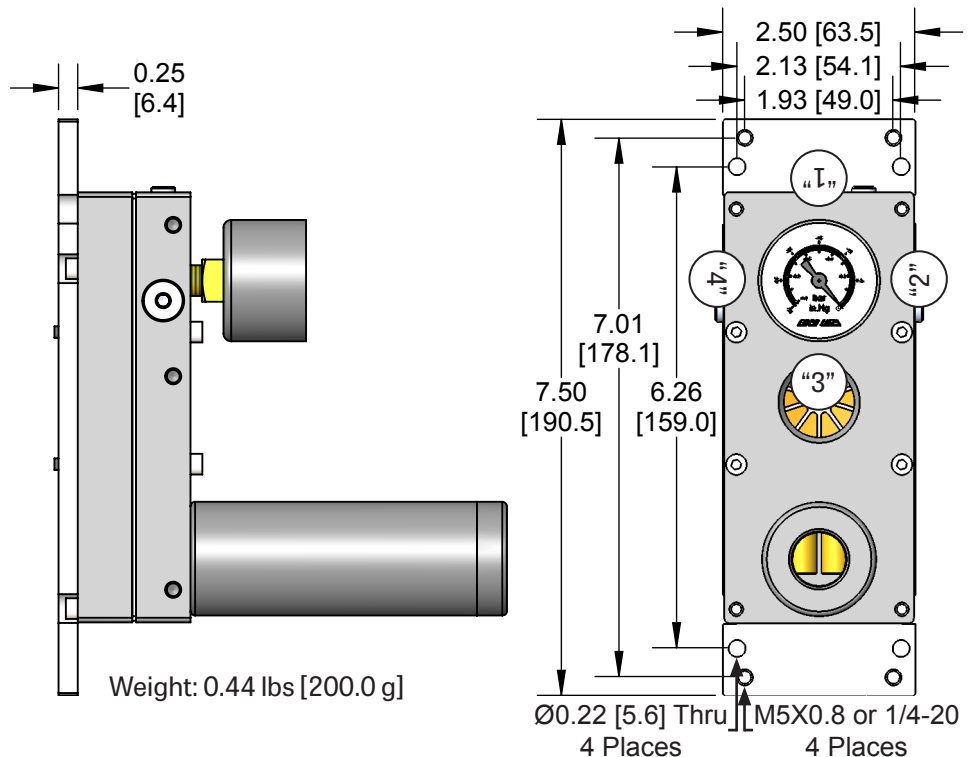
The **FP** Option directly interchanges with the brand "P" MLD series mounting dimensions.

Specify Gauge & Mounting Position:

To mount gauge readable at position "3" with M5X0.8 threads, add suffix **-3FP** to the pump model code.

To mount gauge readable at position "3" with 1/4-20 UNC threads, add suffix **-3FP-14** to the pump model code.

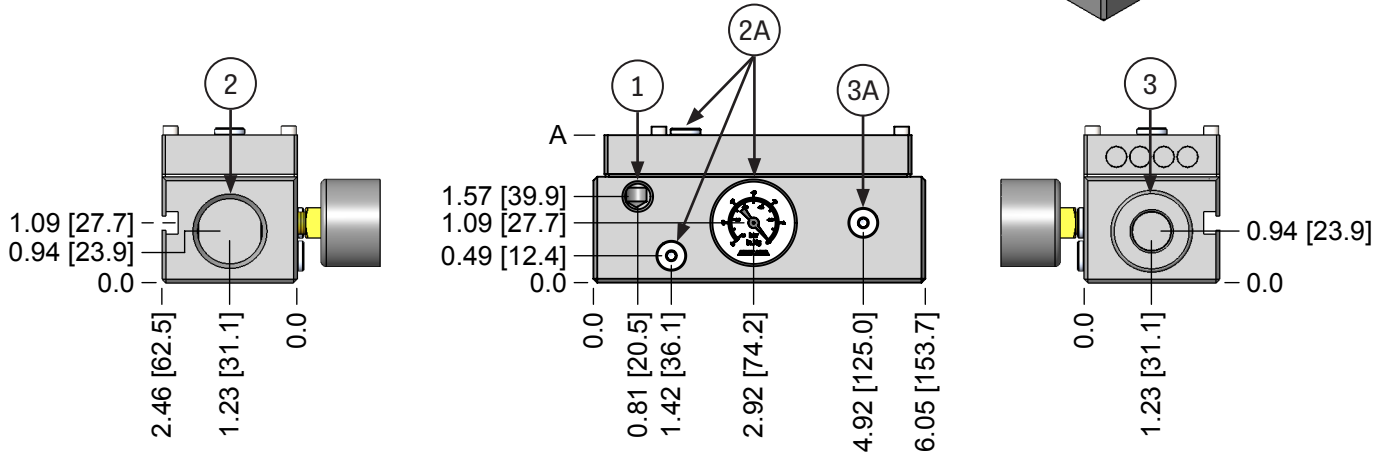
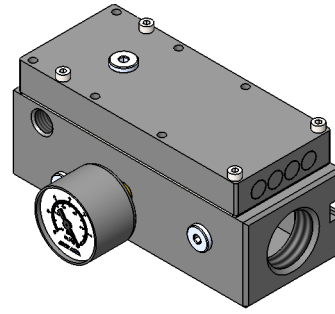
PUMP MODEL	GAUGE POSITION	THREADS
ML50N	3	FP
Select a Basic Classic Pump	1	FP = M5X0.8
	2	FP-14 = 1/4-20 UNC
	3	
	4	



CLASSIC PUMPS

6010 BASE : 1" PORTS W/ COAXIAL EJECTORS

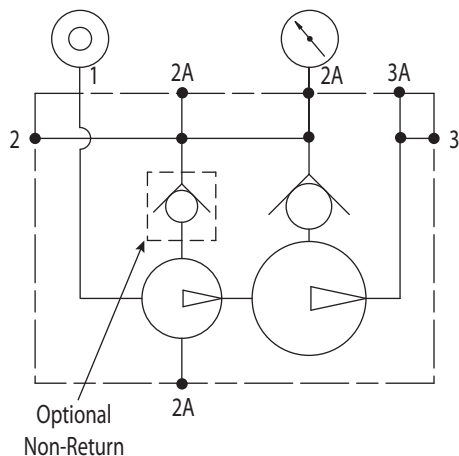
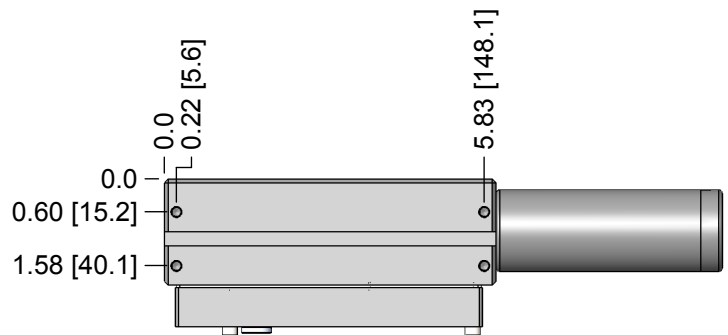
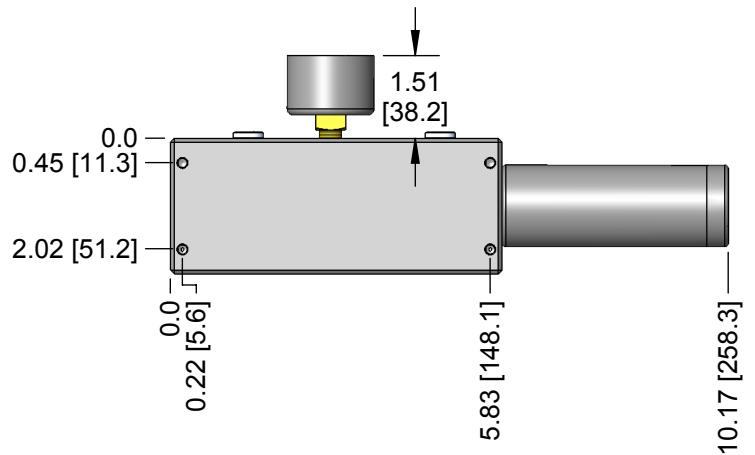
1" Vacuum and Exhaust ports at opposite ends of the base.
 The pump is controlled via air supply through the inlet port.
 Vacuum gauge, silencer, and full-length T-slot are included.



9

CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	1 NPSF	G 1
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPSF	G 3/4
3A	Exhaust - Alternate	G 1/8 NPSF	G 1/8 NPSF

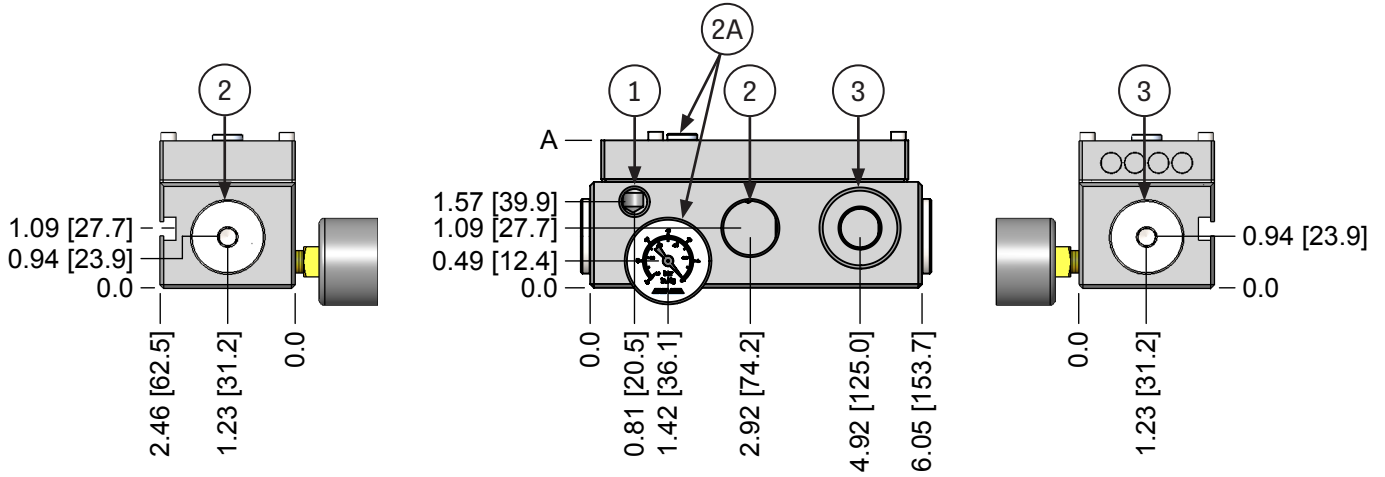
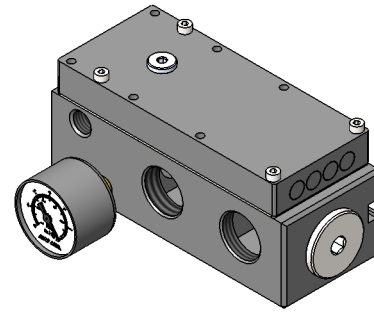
SERIES		WEIGHT lb (g)	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.43 [110.2]	2.69 [68.3]
50	80	2.43 [110.2]	2.69 [68.3]
75	120	2.43 [110.2]	2.69 [68.3]
100	160	2.43 [110.2]	2.69 [68.3]
125	200	3.02 [1370]	3.40 [86.4]
150	240	3.02 [1370]	3.40 [86.4]
175	280	3.02 [1370]	3.40 [86.4]
200	320	3.02 [1370]	3.40 [86.4]



CLASSIC PUMPS

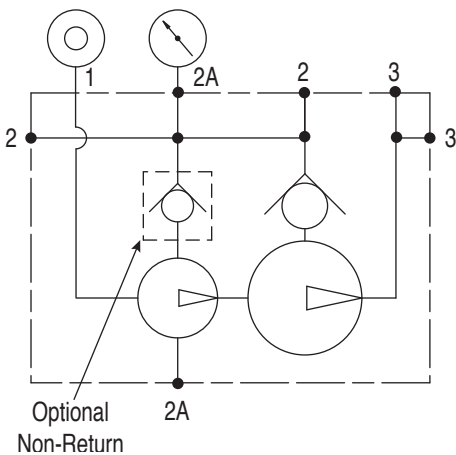
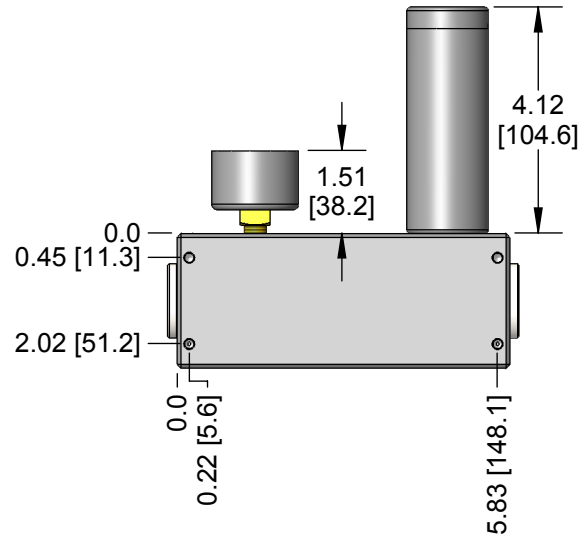
6034 BASE : 3/4" PORTS W/ COAXIAL EJECTORS & SIDE PORTS

3/4" Vacuum and Exhaust ports at opposite ends of the base plus on one side. The pump is controlled via air supply through the inlet port. Vacuum gauge, silencer and full-length T-slot are included.



CODE	FUNCTION	NPT	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	3/4 NPSF	G 3/4
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPSF	G 3/4

SERIES		WEIGHT lb [g]	"A" in [mm]
A, E, L, M, ML	X		
25	40	2.58 [1170]	2.69 [68.3]
50	80	2.58 [1170]	2.69 [68.3]
75	120	2.58 [1170]	2.69 [68.3]
100	160	2.58 [1170]	2.69 [68.3]
125	200	3.17 [1438]	3.40 [86.4]
150	240	3.17 [1438]	3.40 [86.4]
175	280	3.17 [1438]	3.40 [86.4]
200	320	3.17 [1438]	3.40 [86.4]

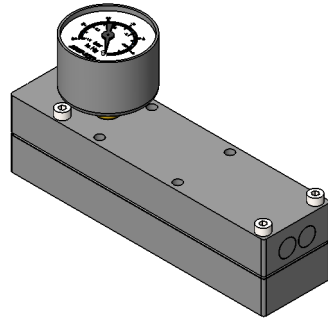


CLASSIC PUMPS

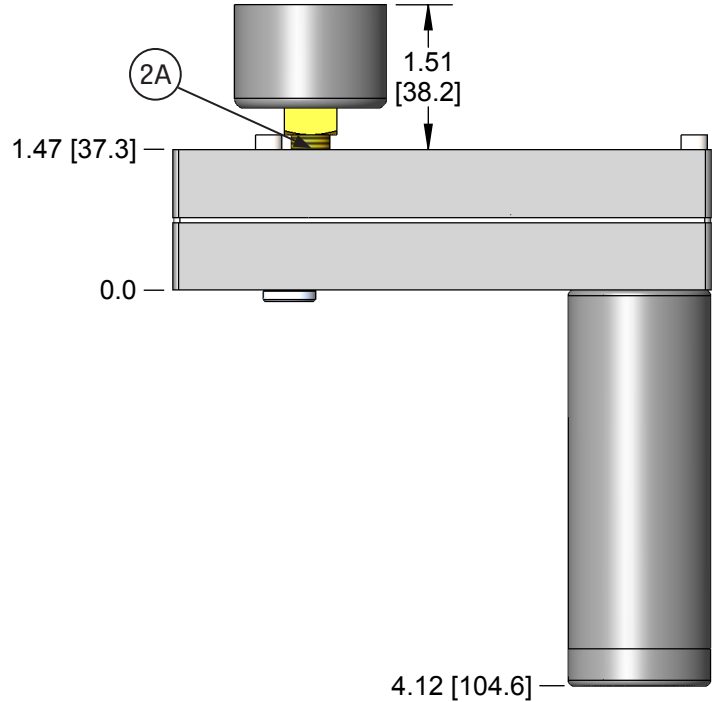
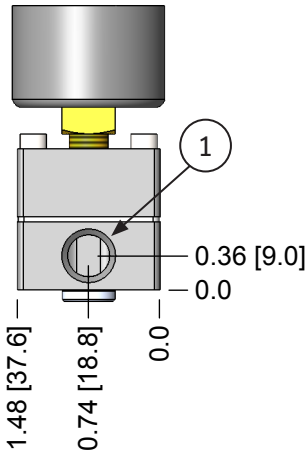
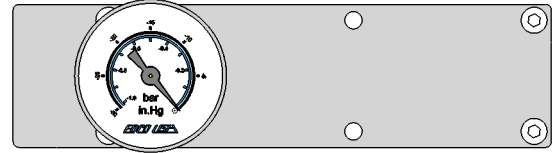
MINI-CLASSIC PUMPS W/ 1/2" PORTS

PUMP SERIES	SIZE	SEAL MATERIAL	PORTS
ML	50	N	G
A	25	N = Nitrile	(Blank) = NPTF
E	50	V = Viton	G = G Threads
L	X SIZES		
M	40		
ML	80		
X			

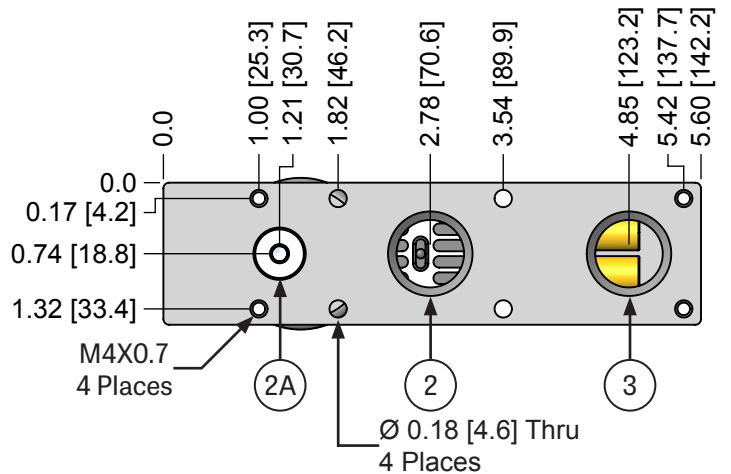
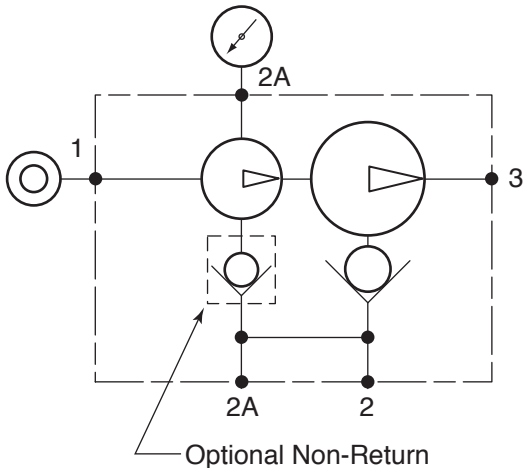
-12



Weight: 1.25 lb [0.57 kg]



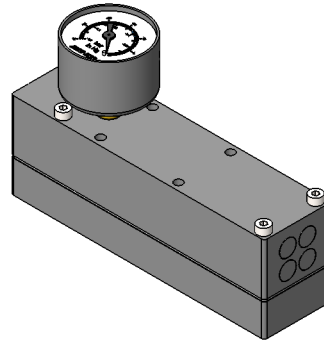
CODE	FUNCTION	NPTF	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	1/2 NPTF	G 1/2
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	1/2 NPTF	G 1/2



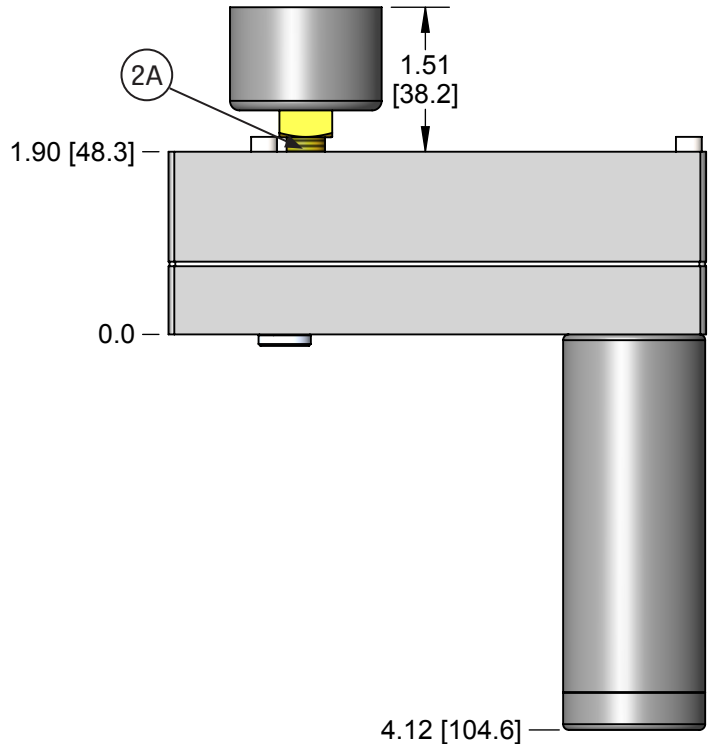
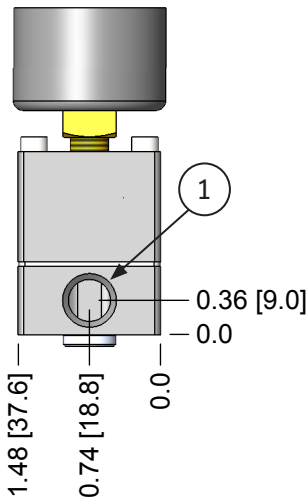
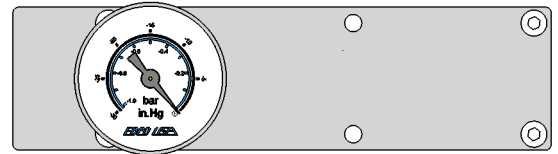
CLASSIC PUMPS

MINI-CLASSIC PUMPS W/ 1/2" PORTS

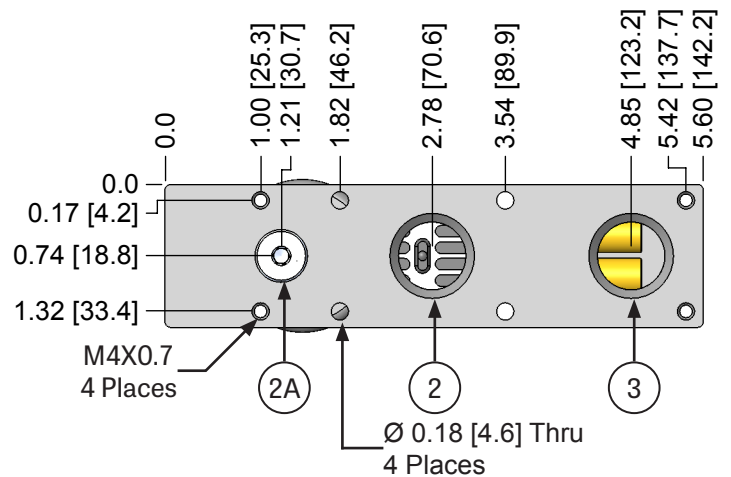
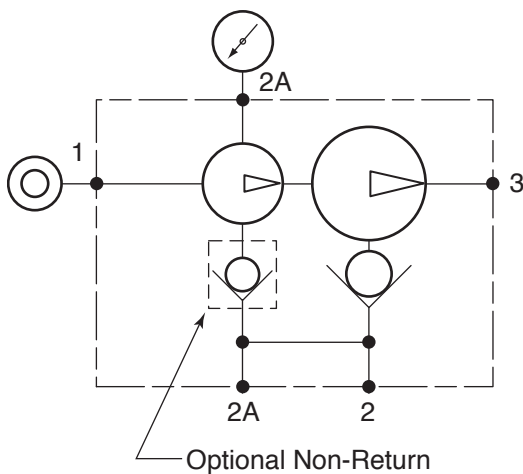
PUMP SERIES	SIZE	SEAL MATERIAL	BASE
ML	100	N	-12 (Blank) = NPTF G = G Threads
A	75	N = Nitrile	
E	100	V = Viton	
L	X SIZES		
M	120		
ML	160		
X			



Weight: 1.52 lb [0.69 kg]



CODE	FUNCTION	NPTF	G
1	Air Supply	1/4 NPTF	G 1/4
2	Vacuum - Main	1/2 NPTF	G 1/2
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	1/2 NPTF	G 1/2

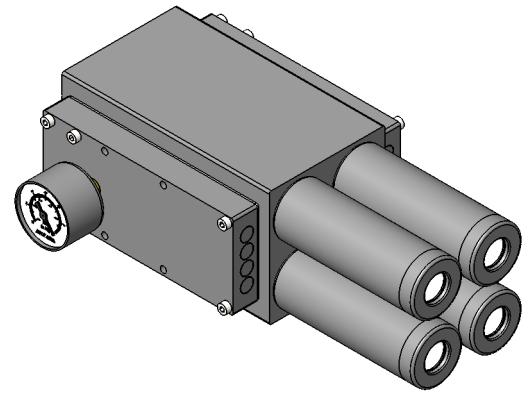


CLASSIC PUMPS DUAL BASE PUMPS

Dual-base pumps incorporate our "classic" pump modules in a very compact and cost-effective package. As always, our modular pump design allows field expansion of capacity, is fully repairable, and is available in all five nozzle series.

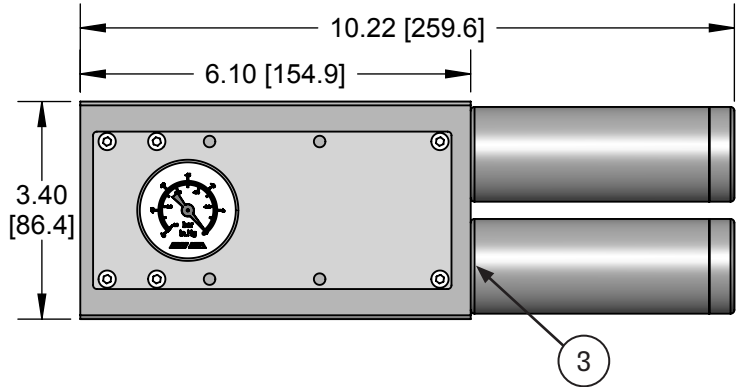
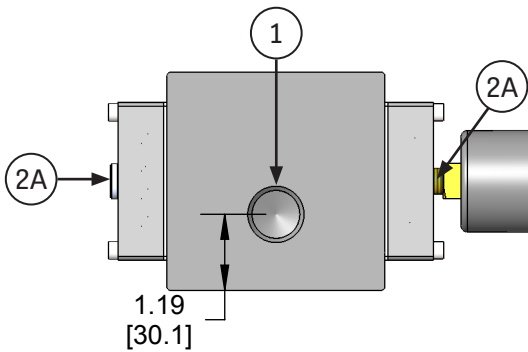
Both NPTF and BSPP bases are available. Refer to pump model code.

Specifications & performance data on pages 9:30 – 9:36.



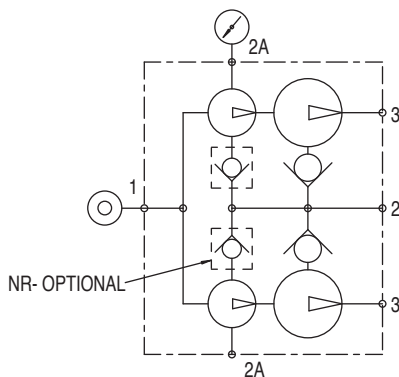
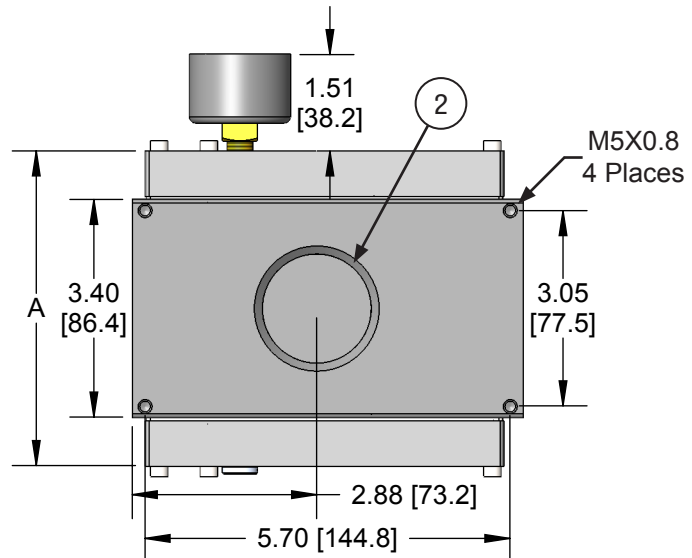
Size 200 (X320) Weight = 6.93 lbs [3.2 kg]
Add 0.37 lbs. [0.16 kg] per pump module.

SERIES	SIZE	SEAL MATERIAL	PORTS	NON RETURN
D ML	200	N		NR
A	200	E	(Blank) = NPTF	(Blank) = No
E	300	N	G = G Threads	NR = Yes
L	400	S		
M	X Sizes	V ¹		
ML	320	VH ²		
MLEN	480			
X	640			



CODE	FUNCTION	NPT	G
1	Air Supply	G 1/2 NPSF	G 1/2 NPSF
2	Vacuum - Main	G 1-1/2 NPTF	G 1-1/2 NPTF
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	G 3/4 NPSF	G 3/4 NPSF

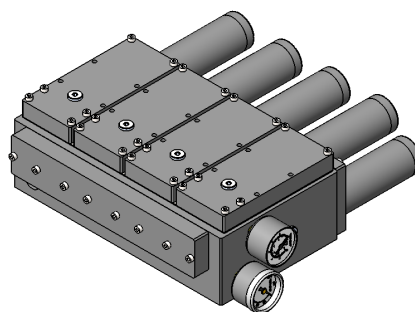
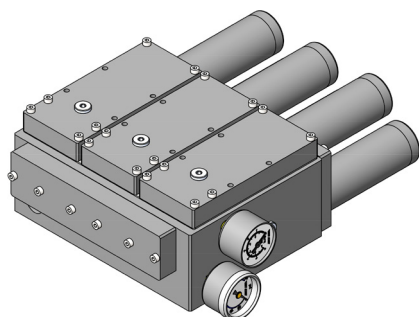
SERIES		WEIGHT	A DIMENSION
A, E, L, M, ML	X	lb [kg]	in [mm]
200	320	6.75 [3.1]	4.97 [126.2]
300	480	7.28 [3.3]	5.68 [144.3]
400	640	7.81 [3.5]	6.39 [162.3]



CLASSIC PUMPS

TRIPLE & QUAD BASE PUMPS

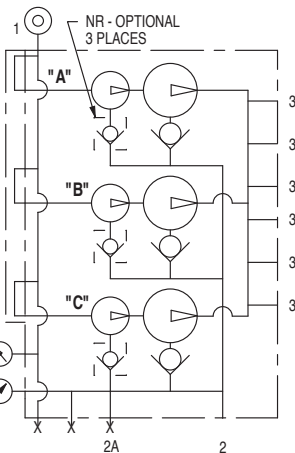
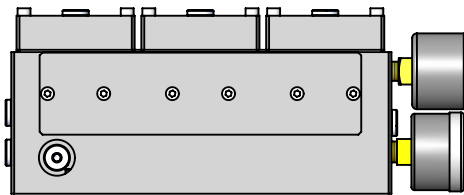
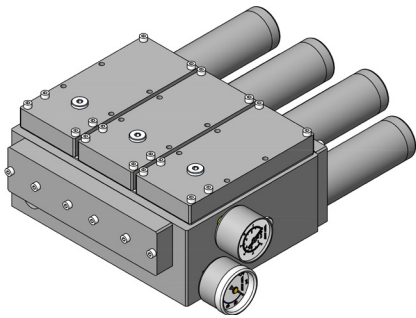
BASE	SERIES	SIZE	SEAL MATERIAL	PORTS	OPTIONS
T	ML	200	N		NR
T = Triple Base	A	Triple	E	(Blank) = NPTF	(Blank) = Basic
Q = Quad Base	E	200	N	G = G Threads	CE = Collected Exhaust
	L	300	S		NR = Non-Return Valve
	M	400	V¹		
	ML	500	VH²		
	MLEN	600			
	X	700			
		800			
		900			
		Quad			
		400			
		800			
		900			
		1000			
		1100			
		1200			
		X Triple			
		320			
		480			
		640			
		800			
		1120			
		1280			
		1440			
		X Quad			
		640			
		1280			
		1440			
		1600			
		1760			
		1920			



CLASSIC PUMPS TRIPLE BASE PUMP

Basic pump assembly has an air supply bypass plate for control via on/off air supply to the pump base inlet port. Includes air pressure gauge and vacuum gauge.

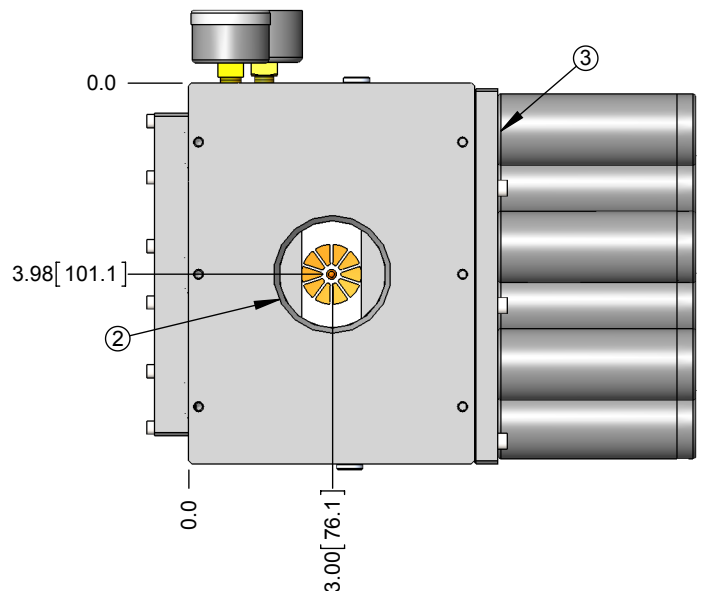
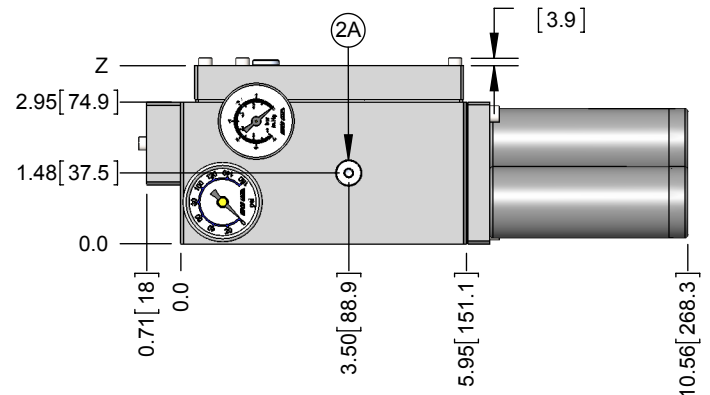
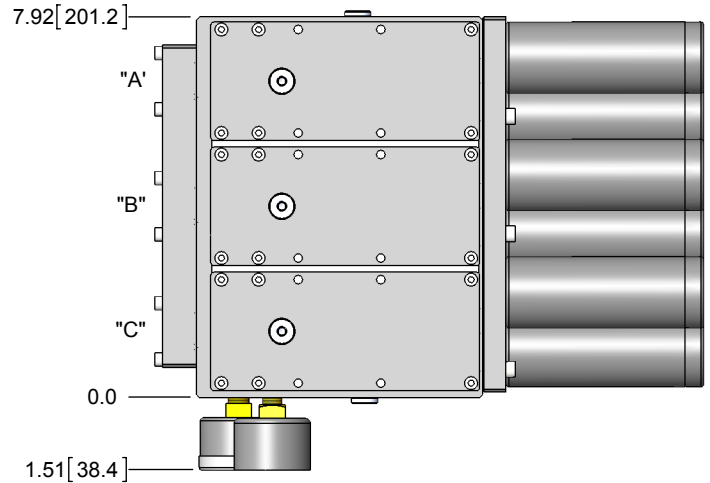
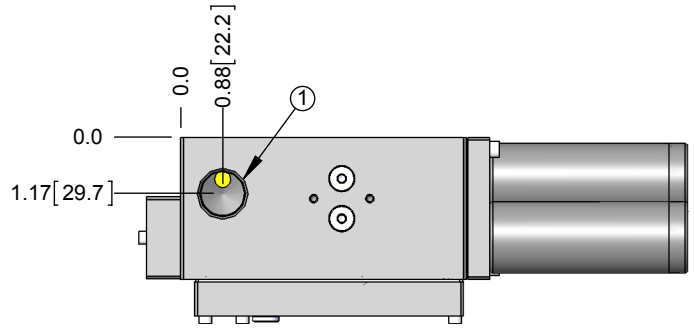
NR = Non-Return Valve is installed between the base and the primary ejector cavity and is used to prevent cross flow between two vacuum pumps connected to the same system. A quick release option should always be considered whenever the NR option is specified since the vacuum can no longer dissipate through the ejector nozzle. Do not use NR to trap vacuum in a system where the pumps are off and load holding safety is involved.



PUMP SIZE	Z DIMENSION in [mm]
200 - 300	3.03 [76.9]
400 - 600	4.42 [112.3]
700 - 900	5.13 [130.3]

CODE	FUNCTION	NPTF	G
1	Air Supply	3/4 NPTF	G 3/4
2	Vacuum - Main	2 NPTF	G 2
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4

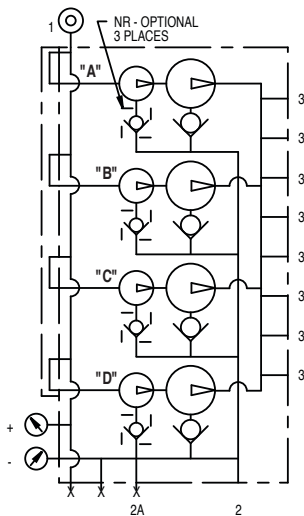
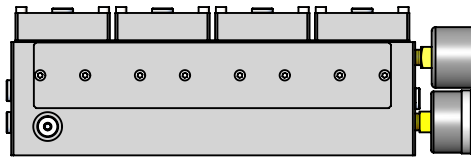
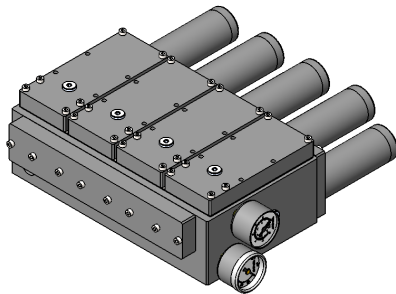
Size 300 (X480) Weight = 13.9 lbs [6.3 kg]
For Larger sizes: Add 0.37 lbs [0.16 kg] per pump module.



CLASSIC PUMPS QUAD BASE PUMP

Basic Pump assembly has an air supply bypass plate for control via on/off air supply to the pump base inlet port. Includes air pressure gauge and vacuum gauge.

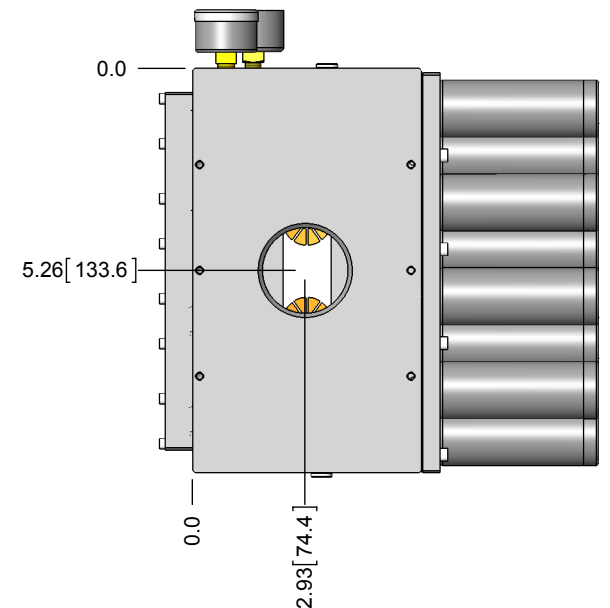
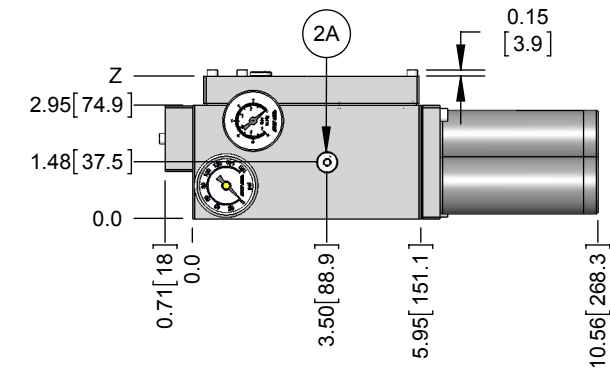
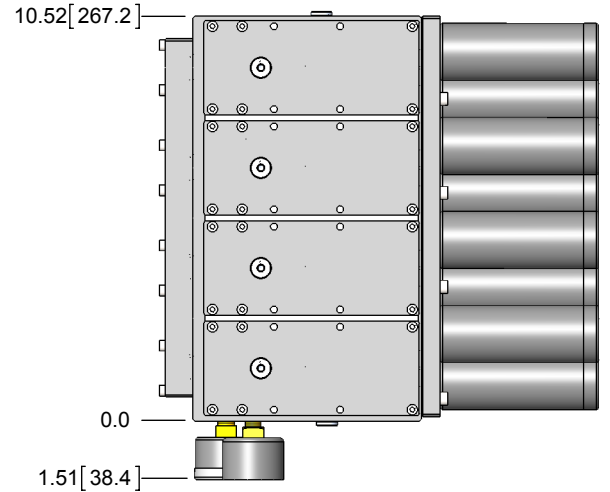
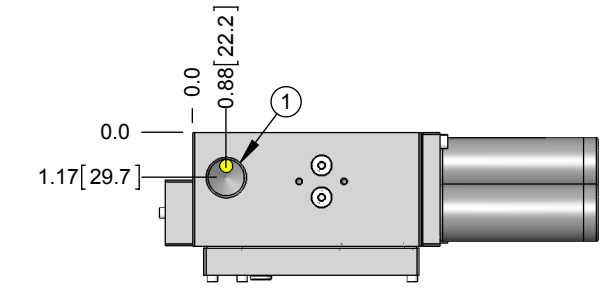
NR = Non-Return Valve is installed between the base and the primary ejector cavity and is used to prevent cross flow between two vacuum pumps connected to the same system or to allow NR equipped pump stations to be cycled on/off (PV). A quick release option should always be considered whenever the NR option is specified since the vacuum can no longer dissipate through the ejector nozzle. Do not use NR to trap vacuum in a system where the pumps are off and load holding safety is involved.



PUMP SIZE	Z DIMENSION in [mm]
400	0.76 [19.3]
500 - 800	1.47 [37.3]
900 - 1200	2.18 [55.3]

CODE	FUNCTION	NPTF	G
1	Air Supply	3/4 NPTF	G 3/4
2	Vacuum - Main	2 NPTF	G 2
2A	Vacuum - Alternate	G 1/8 NPSF	G 1/8 NPSF
3	Exhaust	3/4 NPTF	G 3/4

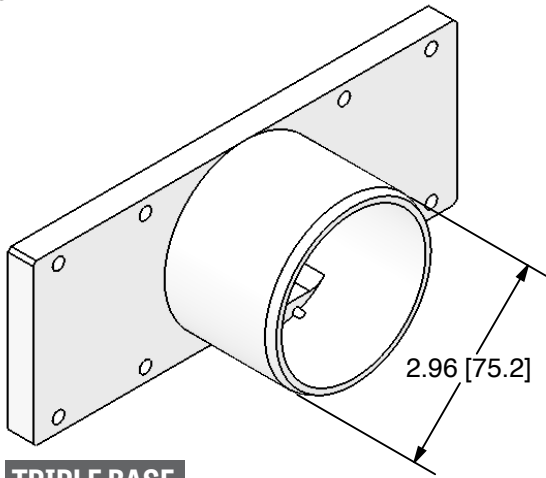
Size 400 (X640) Weight = 18.4 lbs [8.3 kg]
For Larger sizes: Add 0.37 lbs. [0.16 kg] per pump module.



CLASSIC PUMPS
TRIPLE & QUAD BASE PUMP OPTIONS

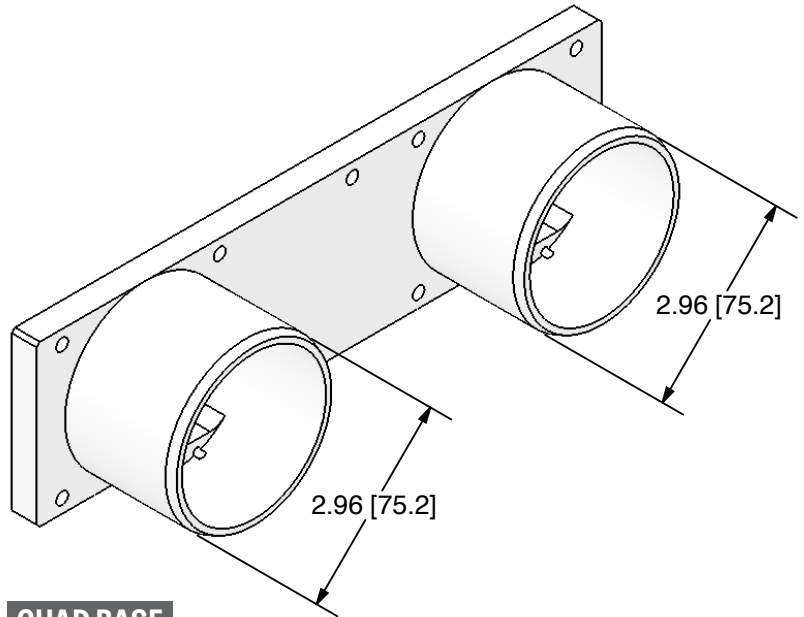
CE : CAPTURE EXHAUST

To specify, add suffix "CE" to pump model code.
Use with 3" (75MM) I.D. hose.



TRIPLE BASE

Weight: 1.00 lbs [0.4 kg]



QUAD BASE

Weight: 1.30 lbs [0.6 kg]

CLASSIC PUMPS

HOW TO USE PERFORMANCE GRAPHS

VACUUM FLOW-RATE

When pump size, operating pressure, and desired vacuum level are known:

1. From the performance graph, read the flow index at the intersection of the performance curve with selected vacuum level line.
2. Multiply flow index by pump scale to get SCFM flow rate at selected vacuum level.

Example:

ML75 Pump @ 72 psi Air Pressure

What is the vacuum flow rate at 6 inHG?

3. At intersection of 6 inHG and 72 psi, flow index = 4.1
4. Pump Scale = 3 for size 75 pumps.
5. Vacuum Flow = $4.1 \times 3 = 12.3$ SCFM

AIR CONSUMPTION

When pump size and operating pressure are known:

1. From the lower chart, read the consumption index next to the air supply pressure.
2. Multiply air consumption by pump scale to get SCFM air consumption.

Example:

ML75 Pump @ 72 psi Air Pressure

3. Consumption index = 3.5 at 72 psi
4. Pump Scale = 3 for size 75 pumps.
5. Vacuum Flow = $3.5 \times 3 = 10.5$ SCFM

SELECT A PUMP

When vacuum flow rate at a particular level is known:

1. From the performance graph, read the flow index at the intersection of the performance curve with selected vacuum level line.
2. Divide required flow rate by the flow index to obtain a minimum pump scale.
3. Refer to the pump scale chart to select the next larger pump size. This is the smallest pump that will produce the required flow rate at the desired vacuum level.

Example:

System requires 3.3 SCFM at 15 inHG with 60 psi pump operating pressure.

4. At intersection of 15 inHG and 60 psi, flow index = 1.0
5. Minimum Pump Scale = $3.3 / 1 = 3.3$
6. From the Pump Scale chart, the next larger pump scale is 4, which is a size 100 pump that will flow 4 SCFM at 15 inHG for 21% extra capacity. Depending on system variables such as porosity, a larger factor of safety may be desirable.

SYSTEM EVACUATION TIME

1. Calculate the total system volume in cubic inches by adding together the internal volumes of all system components.
2. From the chart, find the evacuation time index for the require system vacuum level at the desired pump operating pressure.
3. Multiply the time index by pump scale X 1000 to obtain system evacuation time in seconds.

Example:

For a system volume of 120 in³, a vacuum level of 15 inHG, and ML50 pump at 72 psi:

4. From charts, Pump Scale = 2, Evacuation Time Index = 6.6
5. Time = $120 \times 6.6 / 2 \times 1000 = 0.4$ seconds

PUMP SPECIFICATIONS

General:

Maximum air supply pressure - 100 psi

Weight - See individual pump pages.

Sound Pressure Level -

- ML = 60 - 65 dBA
- TML & QML = 70 - 75 dBA

Material:

Structural parts:

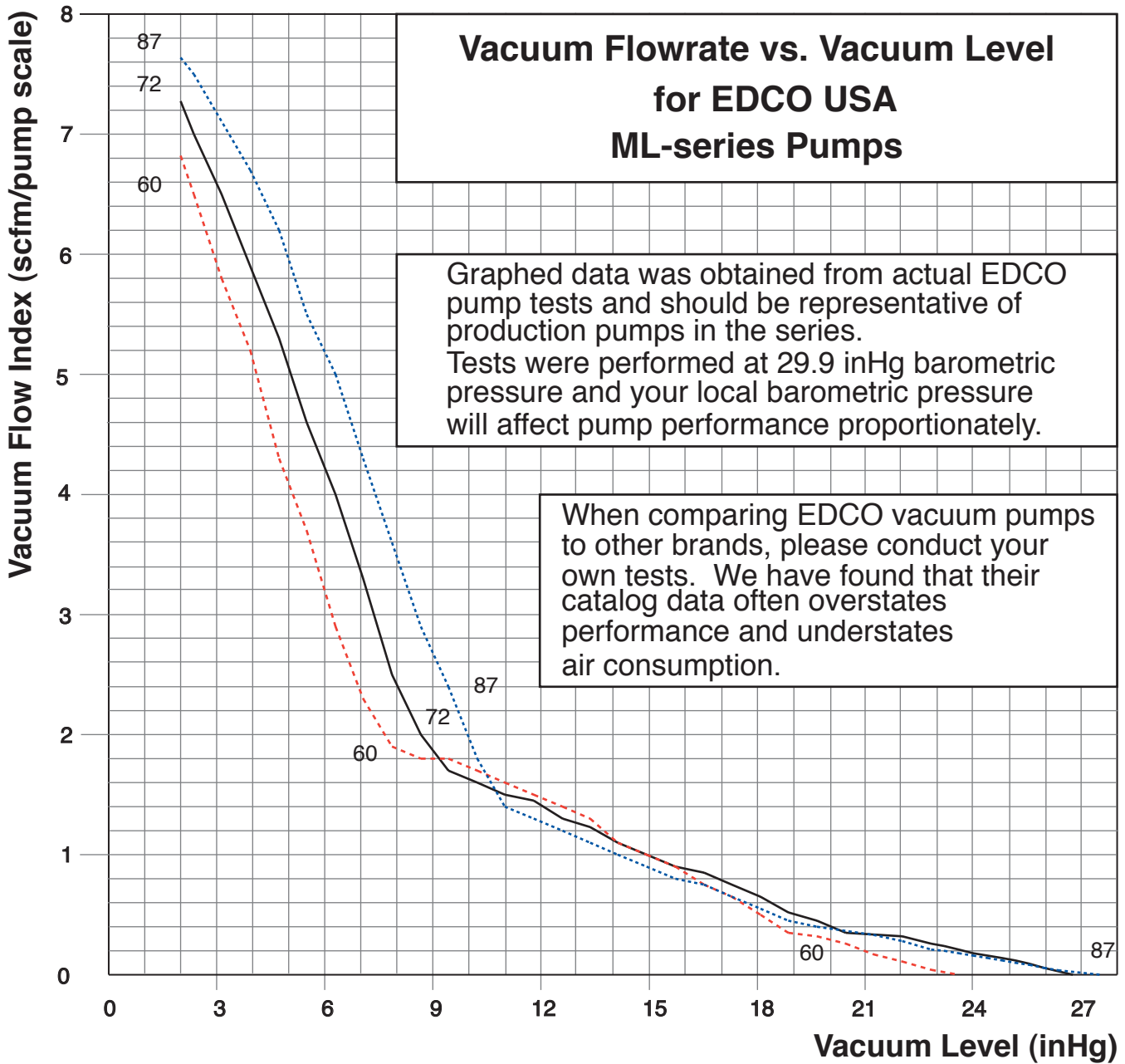
- 6061 Anodized Aluminum
- Stainless Steel Fasteners

Valve Plates - Type 304 Stainless Steel

Ejectors - CA360 Brass Nozzles, Delrin Plugs

Silencers - PVC, Urethane

**CLASSIC PUMPS
PERFORMANCE**



ML	25	50	75	100	125	150	175	200	300	400	500	600	700	800	900	1000	1100	1200
Scale	1	2	3	4	5	6	7	8	12	16	20	24	28	32	36	40	44	48

SCFM X 28.32 = nl / m

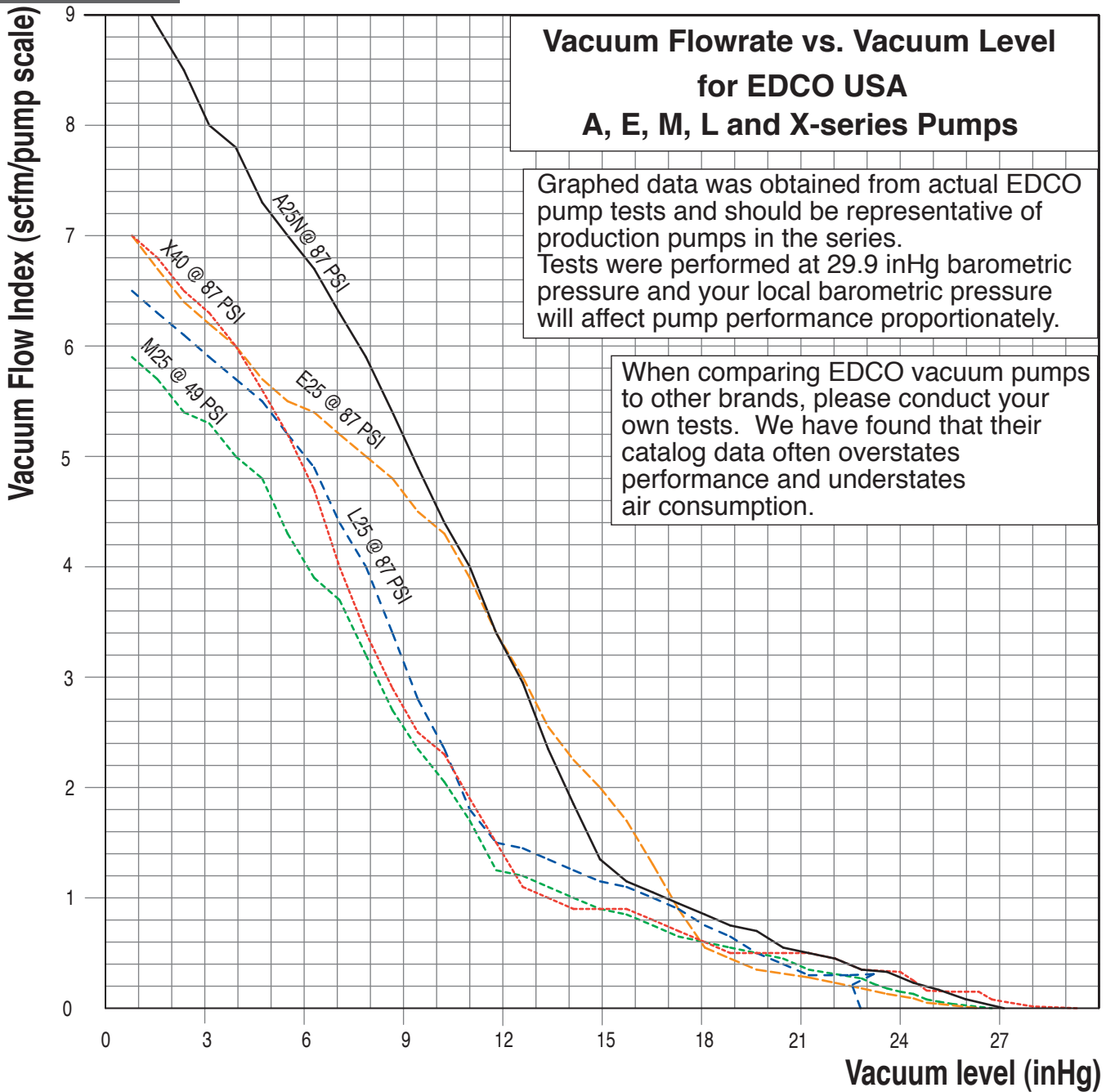
EVACUATION TIME - SEC / 100 CU IN

AIR SUPPLY PSI	CONSUMPTION INDEX SCFM	MAX VACUUM inHG	SECONDS TO EVACUATE 100 in ³ TO VACUUM LEVEL									
			3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG	
87	4.0	27.5	0.35	0.87	1.7	3.3	5.9	10.2	18.4	35.8	64	
72	3.5	26.8	0.36	0.93	1.9	3.8	6.6	11.4	20.2	39.5	70	
60	3.0	23.6	0.39	1.1	2.9	4.3	7.5	12.9	29.3	-	-	

sec / 100 cu in 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.

**CLASSIC PUMPS
PERFORMANCE**



A, E, L, M X	25 40	50 80	75 120	100 160	125 200	150 240	175 280	200 320	300 480	400 640	500 800	600 960	700 1120	800 1280	900 1440	1000 1600	1100 1760	1200 1820
Scale	1	2	3	4	5	6	7	8	12	16	20	24	28	32	36	40	44	48

SCFM X 28.32 = nl / m

EVACUATION TIME - SEC / 100 CU IN

PUMP Series	AIR SUPPLY PSI	CONSUMPTION INDEX SCFM	MAX VACUUM inHG	SECONDS TO EVACUATE 100 in ³ TO VACUUM LEVEL								
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG
A	87	6.8	27.1	0.31	0.75	1.4	2.5	4.3	7.4	13.2	25.6	45
E	87	6.8	26.7	0.4	0.99	1.8	3.0	5.09	8.7	15.6	30.6	56
L	87	4.0	22.8	0.44	1.04	1.9	3.6	6.34	10.8	19.3	-	-
M	49	4.3	27.1	0.48	1.18	2.3	4.2	7.36	12.7	22.5	43.7	77
X	87	5.4	28.3	0.4	1.0	2.0	3.6	6.4	11.1	19.6	38	67

sec / 100 cu in 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.

CLASSIC PUMPS PERFORMANCE

VACUUM FLOW - SCFM

MODEL	AIR SUPPLY PSI	AIR CONS. SCFM	MAX VACUUM inHG	SCFM AT VACUUM LEVEL (inHG)									
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG	27 inHG
E25	87	6.8	26.7	6.24	5.44	4.67	3.3	1.98	0.6	0.29	0.11	0.012	-
E50	87	13.6	26.7	12.5	10.9	9.34	6.6	3.96	1.2	0.58	0.22	0.024	-
E75	87	20.4	26.7	18.7	16.3	14.0	9.9	5.94	1.8	0.87	0.33	0.036	-
E100	87	27.2	26.7	25.0	21.8	18.7	13.2	7.92	2.4	1.16	0.44	0.048	-
E125	87	34.0	26.7	31.2	27.2	23.4	16.5	9.9	3.0	1.45	0.55	0.06	-
E150	87	40.8	26.7	37.4	32.6	28.0	19.8	11.9	3.6	1.74	0.66	0.072	-
E175	87	47.6	26.7	43.7	38.1	32.7	23.1	13.9	4.2	2.03	0.77	0.084	-
E200	87	54.4	26.7	49.9	43.5	37.4	26.4	15.8	4.8	2.32	0.88	0.096	-
E300	87	81.6	26.7	74.9	65.3	56.0	39.6	23.8	7.2	3.48	1.32	0.14	-
L25	87	4.0	22.8	5.57	4.63	3.15	1.8	1.37	1.06	0.74	-	-	-
L50	87	8.0	22.8	11.1	9.26	6.30	3.6	2.74	2.12	1.48	-	-	-
L75	87	12.0	22.8	16.7	13.9	9.45	5.4	4.11	3.18	2.22	-	-	-
L100	87	16.0	22.8	22.3	18.5	12.6	7.2	5.48	4.24	2.96	-	-	-
L125	87	20.0	22.8	27.9	23.2	15.8	9.0	6.85	5.3	3.7	-	-	-
L150	87	24.0	22.8	33.4	27.8	18.9	10.8	8.22	6.36	4.44	-	-	-
L175	87	28.0	22.8	39.0	32.4	22.0	12.6	9.59	7.42	5.18	-	-	-
L200	87	32.0	22.8	44.6	37.0	25.2	14.4	11.0	8.48	5.92	-	-	-
L300	87	48.0	22.8	66.8	55.6	37.8	21.6	16.4	12.7	8.88	-	-	-
M25	49	4.3	27.1	5.32	4.05	2.55	1.24	0.9	0.61	0.38	0.15	0.03	-
M50	49	8.6	27.1	10.6	8.1	5.1	2.48	1.8	1.22	0.76	0.3	0.06	-
M75	49	12.9	27.1	16.0	12.2	7.65	3.72	2.7	1.83	1.14	0.45	0.09	-
M100	49	17.2	27.1	21.3	16.2	10.2	4.96	3.6	2.44	1.52	0.6	0.12	-
M125	49	21.5	27.1	26.6	20.3	12.8	6.2	4.5	3.05	1.9	0.75	0.15	-
M150	49	25.8	27.1	31.9	24.3	15.3	7.44	5.4	3.66	2.28	0.9	0.18	-
M175	49	30.1	27.1	37.2	28.4	17.9	8.68	6.3	4.27	2.66	1.05	0.21	-
M200	49	34.4	27.1	42.6	32.4	20.4	9.92	7.2	4.88	3.04	1.2	0.24	-
M300	49	51.6	27.1	63.8	48.6	30.6	14.9	9.72	7.32	4.56	1.8	0.36	-
ML25	87	4.0	27.5	7.17	5.12	2.91	1.27	0.84	0.51	0.34	0.16	0.06	0.017
ML50	87	8.0	27.5	14.3	10.2	5.82	2.54	1.68	1.02	0.68	0.32	0.12	0.034
ML75	87	12.0	27.5	21.5	15.4	8.73	3.81	2.52	1.53	1.02	0.48	0.18	0.051
ML100	87	16.0	27.5	28.7	20.5	11.6	5.08	3.36	2.04	1.36	0.64	0.24	0.068
ML125	87	20.0	27.5	35.9	25.6	14.6	6.35	4.2	2.55	1.7	0.8	0.3	0.085
ML150	87	24.0	27.5	43.0	30.7	17.5	7.62	5.04	3.06	2.04	0.96	0.36	0.102
ML175	87	28.0	27.5	50.2	35.8	20.4	8.89	5.88	3.57	2.38	1.12	0.42	0.119
ML200	87	32.0	27.5	57.4	41.0	23.3	10.2	6.72	4.08	2.72	1.28	0.48	0.136
ML300	87	48.0	27.5	86.0	61.4	34.9	15.2	10.1	6.12	4.08	1.92	0.72	0.2
X40	87	5.4	28.3	6.33	4.89	2.73	1.4	0.9	0.61	0.5	0.33	0.15	0.067
X80	87	10.8	28.3	12.7	9.78	5.46	2.8	1.8	1.22	1.0	0.66	0.3	0.134
X120	87	16.2	28.3	19.0	14.7	8.19	4.2	2.7	1.83	1.5	0.99	0.45	0.201
X160	87	21.6	28.3	25.3	19.6	10.9	5.6	3.6	2.44	2.0	1.32	0.6	0.268
X200	87	27.0	28.3	31.7	24.5	13.7	7.0	4.5	3.05	2.5	1.65	0.75	0.335
X240	87	32.4	28.3	38.0	29.3	16.4	8.4	5.4	3.66	3.0	1.98	0.9	0.402
X280	87	37.8	28.3	44.3	34.2	19.1	9.8	6.3	4.27	3.5	2.31	1.05	0.469
X320	87	43.2	28.3	50.6	39.1	21.8	11.2	7.2	4.88	4.0	2.64	1.2	0.536
X480	87	64.8	28.3	76	58.7	32.8	16.8	10.8	7.32	6.0	3.96	1.8	0.8

SCFM X 28.32 = nl / m

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

CLASSIC PUMPS PERFORMANCE

EVACUATION TIME - SEC / 100 CU IN

MODEL	AIR SUPPLY PSI	AIR CONS. SCFM	MAX VACUUM inHG	SECONDS TO EVACUATE 1ft3 TO VACUUM LEVEL									
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG	27 inHG
E25	87	6.8	26.7	0.7	1.7	3.1	5.23	8.8	15.0	27.0	52.8	93.7	-
E50	87	13.6	26.7	0.35	0.85	1.55	2.62	4.4	7.5	13.5	26.4	46.9	-
E75	87	20.4	26.7	0.23	0.57	1.03	1.74	2.93	5.0	9.0	17.6	31.2	-
E100	87	27.2	26.7	0.18	0.43	0.79	1.31	2.2	3.75	6.75	13.2	23.4	-
E125	87	34.0	26.7	0.14	0.34	0.62	1.05	1.76	3.0	5.4	10.6	18.7	-
E150	87	40.8	26.7	0.12	0.28	0.52	0.87	1.47	2.5	4.5	8.8	15.6	-
E175	87	47.6	26.7	0.1	0.24	0.44	0.75	1.26	2.14	3.86	7.54	13.4	-
E200	87	54.4	26.7	0.088	0.21	0.39	0.65	1.1	1.88	3.38	6.6	11.7	-
E300	87	81.6	26.7	0.058	0.14	0.26	0.44	0.73	1.25	2.25	4.4	7.81	-
L25	87	4.0	22.8	0.8	1.9	3.7	6.6	12.3	19.0	33.2	-	-	-
L50	87	8.0	22.8	0.4	0.95	1.85	3.3	6.15	9.5	16.6	-	-	-
L75	87	12.0	22.8	0.27	0.63	1.23	2.2	4.1	6.3	11.1	-	-	-
L100	87	16.0	22.8	0.2	0.48	0.93	1.65	3.08	4.75	8.3	-	-	-
L125	87	20.0	22.8	0.16	0.38	0.74	1.32	2.46	3.8	6.64	-	-	-
L150	87	24.0	22.8	0.13	0.32	0.62	1.1	2.05	3.17	5.53	-	-	-
L175	87	28.0	22.8	0.11	0.27	0.53	0.94	1.76	2.71	4.74	-	-	-
L200	87	32.0	22.8	0.1	0.24	0.46	0.83	1.54	2.38	4.15	-	-	-
L300	87	48.0	22.8	0.07	0.16	0.31	0.55	1.03	1.58	2.77	-	-	-
M25	49	4.3	27.1	0.83	2.03	3.96	7.23	12.7	21.9	38.8	75.4	134	-
M50	49	8.6	27.1	0.42	1.02	1.98	3.62	6.35	11.0	19.4	37.7	67.0	-
M75	49	12.9	27.1	0.28	0.68	1.32	2.41	4.23	7.3	12.9	25.1	44.7	-
M100	49	17.2	27.1	0.21	0.51	0.99	1.81	3.18	5.48	9.7	18.9	33.5	-
M125	49	21.5	27.1	0.17	0.41	0.79	1.45	2.54	4.38	7.76	15.1	26.8	-
M150	49	25.8	27.1	0.14	0.34	0.66	1.21	2.12	3.65	6.47	12.7	22.3	-
M175	49	30.1	27.1	0.12	0.29	0.57	1.03	1.81	3.13	5.54	10.8	19.1	-
M200	49	34.4	27.1	0.1	0.25	0.5	0.9	1.59	2.74	4.85	9.43	16.8	-
M300	49	51.6	27.1	0.069	0.17	0.33	0.6	1.06	1.83	3.23	6.28	11.2	-
ML25	87	4.0	27.5	0.6	1.51	3.04	5.7	10.2	17.7	31.8	61.8	110	159
ML50	87	8.0	27.5	0.3	0.76	1.52	2.85	5.1	8.85	15.9	31.0	55.0	79.5
ML75	87	12.0	27.5	0.2	0.5	1.01	1.9	3.39	5.9	10.6	20.6	36.7	53.0
ML100	87	16.0	27.5	0.15	0.38	0.76	1.43	2.54	4.43	7.95	15.5	27.5	39.8
ML125	87	20.0	27.5	0.12	0.3	0.61	1.14	2.03	3.54	6.36	12.4	22.0	31.8
ML150	87	24.0	27.5	0.1	0.25	0.51	0.95	1.69	2.95	5.3	10.3	18.3	26.5
ML175	87	28.0	27.5	0.086	0.22	0.43	0.81	1.45	2.53	4.54	8.84	15.7	22.7
ML200	87	32.0	27.5	0.075	0.19	0.38	0.71	1.27	2.21	3.98	7.74	13.8	19.9
ML300	87	48.0	27.5	0.05	0.13	0.25	0.48	0.85	1.48	2.65	5.16	9.17	13.3
X40	87	5.4	28.3	0.69	1.71	3.38	6.21	11.0	19.1	33.9	65.6	116	167
X80	87	10.8	28.3	0.35	0.86	1.69	3.11	5.5	9.6	17.0	32.8	58.0	83.5
X120	87	16.2	28.3	0.23	0.57	1.13	2.07	3.67	6.37	11.3	21.9	38.7	55.7
X160	87	21.6	28.3	0.17	0.43	0.85	1.55	2.75	4.8	8.48	16.4	29.0	41.8
X200	87	27.0	28.3	0.14	0.34	0.68	1.24	2.2	3.8	6.78	13.4	23.2	33.4
X240	87	32.4	28.3	0.12	0.29	0.56	1.04	1.83	3.18	5.65	10.9	19.3	27.8
X280	87	37.8	28.3	0.1	0.24	0.48	0.89	1.57	2.73	4.84	9.37	16.6	23.9
X320	87	43.2	28.3	0.086	0.21	0.42	0.78	1.38	2.39	4.24	8.2	14.5	20.9
X480	87	64.8	28.3	0.058	0.14	0.28	0.52	0.92	1.59	2.83	5.47	9.6	13.9

sec / 100 cu in 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.

CLASSIC PUMPS PERFORMANCE

VACUUM FLOW - SCFM

MODEL	AIR SUPPLY PSI	AIR CONS. SCFM	MAX VACUUM inHG	SCFM AT VACUUM LEVEL (inHG)									
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG	27 inHG
E400	87	109	26.7	99.8	87	74.7	52.8	31.7	9.6	4.64	1.76	0.19	-
E500	87	136	26.7	125	109	93.4	66	39.6	12	5.8	2.2	0.24	-
E600	87	163	26.7	150	131	112	79.2	47.5	14.4	6.96	2.6	0.29	-
E700	87	190	26.7	175	152	131	92.4	55.4	16.8	8.12	3.08	0.34	-
E800	87	218	26.7	200	174	149	106	63.4	19.2	9.28	3.52	0.38	-
E900	87	245	26.7	225	196	168	119	71.3	21.6	10.4	3.96	0.43	-
E1000	87	272	26.7	250	218	187	132	79.2	24	11.6	4.4	0.48	-
E1100	87	299	26.7	275	240	205	145	87.1	26.4	12.8	4.84	0.53	-
E1200	87	326	26.7	300	262	224	158	95	28.8	13.9	5.3	0.58	-
L400	87	64	22.8	89.1	74.1	50.4	28.8	21.9	17	11.8	-	-	-
L500	87	80	22.8	111	92.6	63	36	27.4	21.2	14.8	-	-	-
L600	87	96	22.8	134	111	75.6	43.2	32.9	25.4	17.8	-	-	-
L700	87	112	22.8	156	130	88.2	50.4	38.4	29.7	20.7	-	-	-
L800	87	128	22.8	178	148	101	57.6	43.8	33.9	23.7	-	-	-
L900	87	144	22.8	201	167	113	64.8	49.3	38.2	26.6	-	-	-
L1000	87	160	22.8	223	185	126	72	54.8	42.4	29.6	-	-	-
L1100	87	176	22.8	245	204	139	79.2	60.3	46.6	32.6	-	-	-
L1200	87	192	22.8	267	222	151	86.4	65.8	50.9	35.5	-	-	-
M400	49	68.8	27.1	85.1	64.8	40.8	19.8	14.4	9.76	6.08	2.4	0.48	-
M500	49	86	27.1	106	81	51	24.8	18	12.2	7.6	3	0.6	-
M600	49	103	27.1	128	97.2	61.2	29.8	21.6	14.6	9.12	3.6	0.72	-
M700	49	120	27.1	149	113	71.4	34.7	25.2	17.1	10.6	4.2	0.84	-
M800	49	138	27.1	170	130	81.6	39.7	28.8	19.5	12.2	4.8	0.96	-
M900	49	155	27.1	192	146	91.8	44.6	32.4	22.0	13.7	5.4	1.08	-
M1000	49	172	27.1	213	162	102	49.6	36	24.4	15.2	6	1.2	-
M1100	49	189	27.1	234	178	112	54.6	39.6	26.8	16.7	6.6	1.32	-
M1200	49	206	27.1	255	194	122	59.5	43.2	29.3	18.2	7.2	1.44	-
ML400	87	64	27.5	114	81.9	46.6	20.3	13.4	8.16	5.44	2.56	0.96	0.27
ML500	87	80	27.5	143	102	58.2	25.4	16.8	10.2	6.8	3.2	1.2	0.34
ML600	87	96	27.5	172	123	69.8	30.5	20.2	12.2	8.2	3.84	1.44	0.41
ML700	87	112	27.5	201	143	81.5	35.6	23.5	14.3	9.5	4.48	1.68	0.48
ML800	87	128	27.5	229	164	93.1	40.6	26.9	16.3	10.9	5.12	1.92	0.54
ML900	87	144	27.5	258	184	105	45.72	30.2	18.4	12.2	5.76	2.16	0.61
ML1000	87	160	27.5	287	205	116	50.8	33.6	20.4	13.6	6.4	2.4	0.68
ML1100	87	176	27.5	315	225	128	55.9	37	22.4	15	7.04	2.64	0.75
ML1200	87	192	27.5	344	246	140	61	40.3	24.5	16.3	7.68	2.88	0.82
X640	87	86.4	28.3	101	78.2	43.7	22.4	14.4	9.76	8	5.3	2.4	1.07
X800	87	108	28.3	127	97.8	54.6	28	18	12.2	10	6.6	3.0	1.34
X960	87	130	28.3	152	117	65.5	33.6	21.6	14.6	12	7.92	3.6	1.61
X1120	87	151	28.3	177	137	76.4	39.2	25.2	17.1	14	9.24	4.2	1.88
X1280	87	173	28.3	203	156	87.4	44.8	28.8	19.5	16	10.6	4.8	2.14
X1440	87	194	28.3	228	176	98.3	50.4	32.4	22	18	11.9	5.4	2.41
X1600	87	216	28.3	253	196	109	56	36	24.4	20	13.2	6.0	2.68
X1760	87	238	28.3	279	215	120	61.6	39.6	26.8	22	14.5	6.6	2.95
X1920	87	259	28.3	304	235	131	67.2	43.2	29.3	24	15.8	7.2	3.22

SCFM X 28.32 = nl / m

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CLASSIC PUMPS PERFORMANCE

EVACUATION TIME - SEC / 100 CU IN

MODEL	AIR SUPPLY PSI	AIR CONS. SCFM	MAX VACUUM inHG	SECONDS TO EVACUATE 1 ft ³ TO VACUUM LEVEL									
				3 inHG	6 inHG	9 inHG	12 inHG	15 inHG	18 inHG	21 inHG	24 inHG	26 inHG	27 inHG
E400	87	109	26.7	0.044	0.11	0.19	0.33	0.55	0.94	1.69	3.3	5.86	-
E500	87	136	26.7	0.035	0.085	0.16	0.26	0.44	0.75	1.35	2.64	4.69	-
E600	87	163	26.7	0.029	0.071	0.13	0.22	0.37	0.63	1.13	2.2	3.9	-
E700	87	190	26.7	0.025	0.061	0.11	0.19	0.31	0.54	0.96	1.89	3.35	-
E800	87	218	26.7	0.022	0.053	0.097	0.16	0.28	0.47	0.84	1.65	2.93	-
E900	87	245	26.7	0.019	0.047	0.086	0.15	0.24	0.42	0.75	1.47	2.6	-
E1000	87	272	26.7	0.018	0.043	0.078	0.13	0.22	0.38	0.68	1.32	2.34	-
E1100	87	299	26.7	0.016	0.039	0.07	0.12	0.2	0.34	0.61	1.2	2.1	-
E1200	87	326	26.7	0.015	0.035	0.065	0.11	0.18	0.31	0.56	1.1	2.0	-
L400	87	64	22.8	0.05	0.12	0.23	0.41	0.77	1.19	2.08	-	-	-
L500	87	80	22.8	0.04	0.1	0.19	0.33	0.62	0.95	1.66	-	-	-
L600	87	96	22.8	0.03	0.08	0.15	0.28	0.51	0.79	1.38	-	-	-
L700	87	112	22.8	0.029	0.07	0.13	0.24	0.44	0.68	1.19	-	-	-
L800	87	128	22.8	0.025	0.06	0.12	0.21	0.38	0.59	1.04	-	-	-
L900	87	144	22.8	0.022	0.05	0.1	0.18	0.34	0.53	0.92	-	-	-
L1000	87	160	22.8	0.02	0.048	0.09	0.17	0.31	0.48	0.83	-	-	-
L1100	87	176	22.8	0.018	0.043	0.08	0.15	0.28	0.43	0.75	-	-	-
L1200	87	192	22.8	0.017	0.04	0.077	0.14	0.26	0.40	0.69	-	-	-
M400	49	68.8	27.1	0.052	0.13	0.25	0.45	0.79	1.37	2.43	4.71	8.38	-
M500	49	86	27.1	0.042	0.1	0.2	0.36	0.64	1.1	1.94	3.77	6.7	-
M600	49	103	27.1	0.035	0.085	0.17	0.3	0.53	0.91	1.62	3.14	5.58	-
M700	49	120	27.1	0.03	0.073	0.14	0.26	0.45	0.78	1.39	2.69	4.79	-
M800	49	138	27.1	0.026	0.063	0.12	0.23	0.39	0.68	1.21	2.35	4.19	-
M900	49	155	27.1	0.023	0.056	0.11	0.2	0.35	0.61	1.08	2.09	3.72	-
M1000	49	172	27.1	0.021	0.051	0.1	0.18	0.32	0.55	0.97	1.89	3.35	-
M1100	49	189	27.1	0.019	0.046	0.09	0.16	0.29	0.5	0.88	1.71	3.05	-
M1200	49	206	27.1	0.017	0.042	0.083	0.15	0.26	0.46	0.81	1.57	2.79	-
ML400	87	34	27.5	0.038	0.094	0.19	0.36	0.64	1.12	1.99	3.87	6.88	9.94
ML500	87	80	27.5	0.03	0.076	0.15	0.29	0.51	0.89	1.59	3.1	5.5	7.95
ML600	87	96	27.5	0.025	0.063	0.13	0.24	0.42	0.74	1.33	2.58	4.58	6.63
ML700	87	112	27.5	0.021	0.054	0.11	0.2	0.36	0.63	1.14	2.21	3.93	5.68
ML800	87	128	27.5	0.019	0.047	0.095	0.18	0.32	0.55	0.99	1.93	3.44	4.97
ML900	87	144	27.5	0.017	0.042	0.084	0.16	0.28	0.49	0.88	1.72	3.06	4.42
ML1000	87	160	27.5	0.015	0.038	0.076	0.14	0.26	0.44	0.8	1.55	2.75	3.98
ML1100	87	176	27.5	0.014	0.034	0.069	0.13	0.23	0.4	0.72	1.41	2.5	3.61
ML1200	87	192	27.5	0.013	0.031	0.063	0.12	0.21	0.37	0.66	1.3	2.29	3.31
X640	87	86.4	28.3	0.043	0.11	0.21	0.39	0.69	1.19	2.12	4.1	7.25	10.4
X800	87	108	28.3	0.035	0.086	0.17	0.31	0.55	0.96	1.7	3.28	5.8	8.35
X960	87	130	28.3	0.029	0.071	0.14	0.26	0.46	0.8	1.41	2.73	4.83	6.6
X1120	87	151	28.3	0.025	0.061	0.12	0.22	0.39	0.68	1.21	2.34	4.14	5.96
X1280	87	173	28.3	0.022	0.053	0.11	0.19	0.34	0.6	1.06	2.05	3.63	5.22
X1440	87	194	28.3	0.019	0.048	0.094	0.17	0.31	0.53	0.94	1.82	3.22	4.64
X1600	87	216	28.3	0.017	0.043	0.085	0.16	0.28	0.48	0.85	1.64	2.9	4.18
X1760	87	238	28.3	0.016	0.039	0.077	0.14	0.25	0.43	0.77	1.49	2.64	3.8
X1920	87	259	28.3	0.014	0.036	0.07	0.13	0.23	0.4	0.71	1.37	2.42	3.48

sec / 100 cu in X 0.61 = sec / l

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