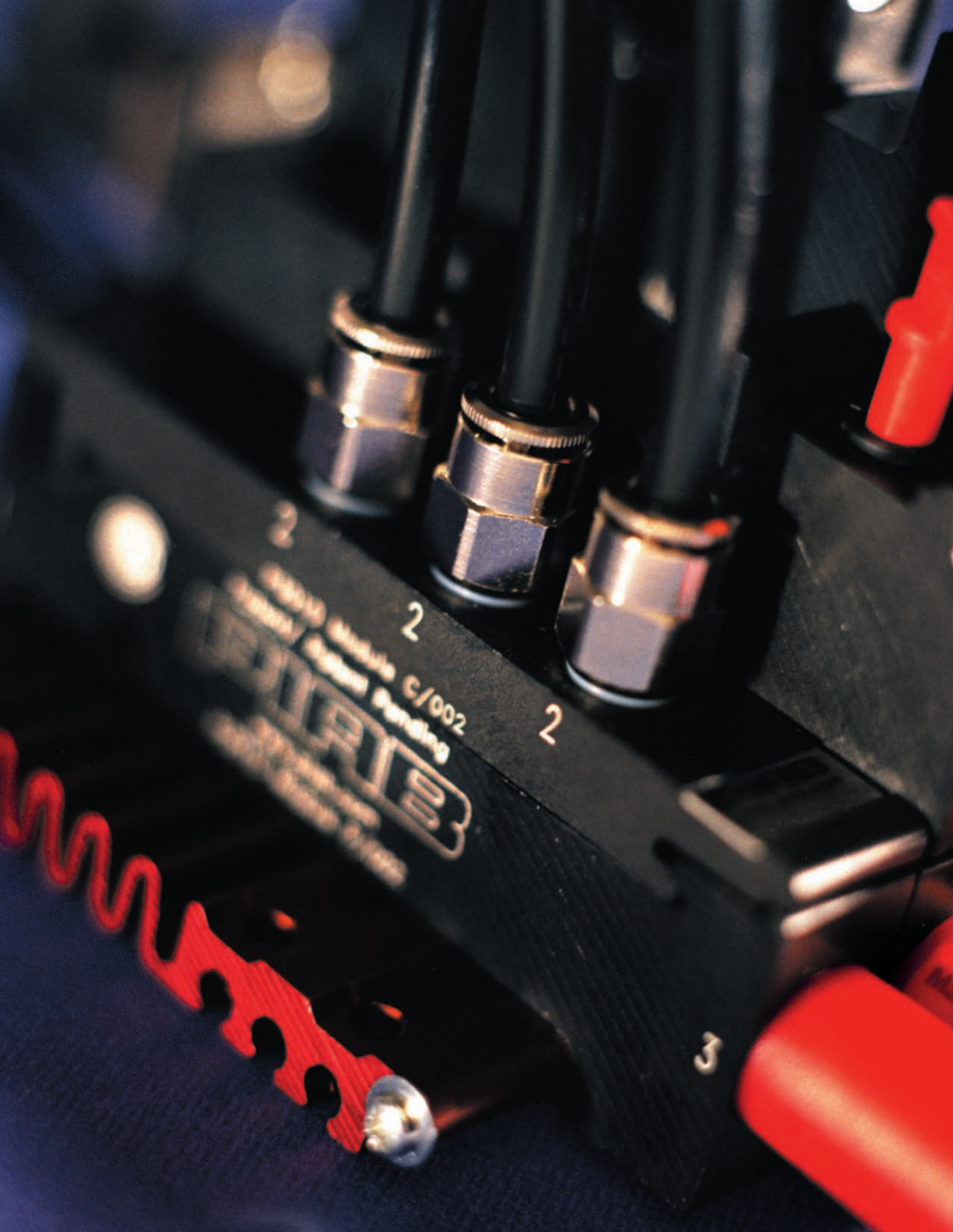
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Vacuum pumps

For over 50 years, PIAB has been developing a range of vacuum solutions that cover the widely varying needs of the market. We constantly strive to improve our products and adapt them to market needs by incorporating the latest technology. Therefore, our customers can rely on PIAB to provide the best possible solution. Regardless of whether an application is in the consumer goods, pharmaceutical, automotive, graphic, electronic, chemical to name a few industries, the best way to solve a vacuum-related pain is to use PIAB components.

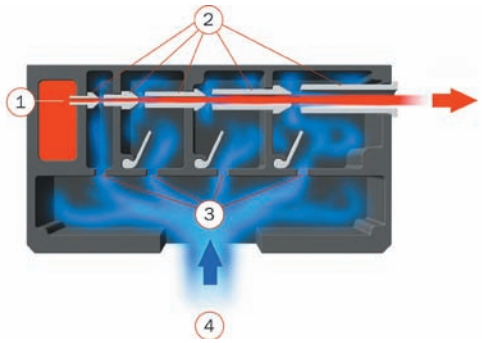
FUNCTIONAL DESCRIPTIONS

MULTI-STAGE EJECTOR

PIAB vacuum pumps are of the multi-stage ejector type – **a technology patented by PIAB in 1973.**
These vacuum pumps were developed to provide extra vacuum flow in combination with deep maximum vacuum levels while keeping energy consumption at a minimum.
PIAB pumps have no moving parts that vibrate or wear out – important features that contribute heavily to outstanding operational reliability and a pleasant, noise-free working environment.

PRINCIPLE OF PIAB VACUUM PUMPS

PIAB vacuum pumps are compressed air-driven vacuum pumps. The unique construction makes maximum use of the compressed air and therefore consumes less energy. Large vacuum flows and high levels of vacuum are characteristic of PIAB's vacuum pumps.
When compressed air (1) passes through the nozzles (2), air is pulled through with the stream of compressed air. "Suction" is thus created at the opening of each stage (3), resulting in low pressure, vacuum (4).



ADVANTAGES OF PIAB VACUUM PUMPS

- Reliability
- Low energy consumption
- Fast response
- High efficiency
- Require a minimum of service
- Small size and low weight
- Easy to install
- Low noise level
- No heat emission
- No vibrations

5-YEAR WARRANTY

COAX® TECHNOLOGY

PIAB's patent technology platform is an offshoot of the multistage technology.
COAX® ensures excellent performance at both low and high feed pressures – ideal for situations where compressed air lines deliver air at low or fluctuating pressures.
Pumps based on the COAX® technology **can operate within the range of 25 to 87 psi.**

Compressed-air zone

Vacuum zone

Just drill a hole in your machine, insert our vacuum cartridge, and you will have your own integrated vacuum solution.

PRINCIPLE OF THE COAX® TECHNOLOGY

Our latest technology is derived from the multi-stage ejector principle. Note that both a filter and check valves are integrated into the ejector section.
When compressed air (1) passes through the nozzles (2), air is pulled through with the stream of compressed air. "Suction" is thus created at the opening of each stage (3). Other PIAB designs incorporating COAX® technology include the Vacuum Gripper System, P2010, P3010, P6010, PMAT, Vacustat and the Adjustable Vacuum Palletizer
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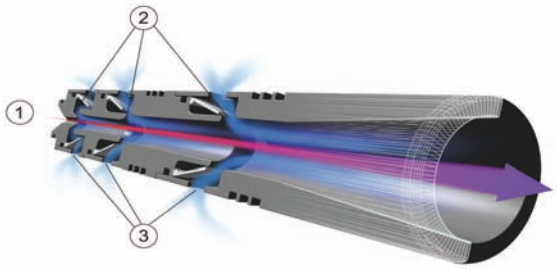


ADVANTAGES OF PIAB VACUUM PUMPS BASED ON COAX® TECHNOLOGY

- Low energy consumption
- Highly efficient
- High operational reliability
- Minimal maintenance
- Simple to install
- Low weight
- Flexible module-based design
- Easy to clean
- Outstanding performance at low and fluctuating feed pressures
- Generate no heat
- Low noise level

In order to support you with the best tools to design your own optimized, decentralized vacuum system and choose the right cartridge for your application, please visit our website www.coaxtechnology.com.

SELECTION GUIDE

WHICH PUMP SHOULD I SELECT?

PIAB vacuum pumps are divided into series having different characteristics: Bi, Pi, Si, L, M, X and H. When you know what these letters mean and the applications for which they were developed, it will be easier to select the right pump.

BI

The Bi Cartridge has been developed to operate at a relatively high vacuum level at very low feed pressure (26 psi). The Bi Cartridge is recommended when you want to ensure high safety of operation in pick-and-place applications, for example, in the electronic industry, where many vacuum units are distributed and where there is a risk of pressure drops. The Bi Cartridge can handle vacuum levels down to 24.9 -inHg.

P2010 Bi	
Recommended operating range	0–21 -inHg
Maximum vacuum level	24.9 -inHg
Feed pressure	16-32 psi

PI

Pi cartridges have been developed to achieve a high vacuum level at low feed pressures. They are ideal when pressures in compressed air lines fluctuate. Pi cartridges are recommended in situations such as handling sheet metal or glass or other non-porous products, where you need good vacuum flow and a high-level vacuum. Pi can deliver high vacuum levels down to 27 -inHg.

P3010 Pi	
Recommended operating range	0–27 -inHg
Maximum vacuum level	27 -inHg
Feed pressure	25-87 psi

P6010 Pi	
Recommended operating range	0–27 -inHg
Maximum vacuum level	27 -inHg
Feed pressure	32-58 psi

SI

Si cartridges are designed to provide extra vacuum flow. They are highly recommended for handling porous materials such as corrugated board and for high-volume evacuation in, for example, a fast-cycling system where it is necessary to compensate for leakage in order to maintain the vacuum level. Si cartridges can deliver moderate vacuum levels down to 22.2 -inHg.

P6010 Si	
Recommended operating range	0–21 -inHg
Maximum vacuum level	22.2 -inHg
Feed pressure	58-87 psi

L

PIAB L-pumps are designed and built to provide extra vacuum flow. They are highly recommended for handling porous materials such as cardboard and for high-volume evacuation in, for example, mixers or fast-cycling systems where it is necessary to compensate for leakage in order to maintain the vacuum

MINI L	
Recommended operating range	6-21-inHg
Maximum vacuum level	22.3 -inHg
Feed pressure	87 psi

CLASSIC L	
Recommended operating range	6-21 -inHg
Maximum vacuum level	22.3 -inHg
Feed pressure	87 psi

M

PIAB M-pumps have been developed to perform well even at low feed pressures. They are thus ideal when pressures in compressed air lines are low or fluctuating. M-pumps are recommended in situations where you need good flow and a high-level vacuum. This is the most frequently used type of pump. They are used in most industrial vacuum pump applications.

MINI M	
Recommended operating range	0–24 -inHg
Maximum vacuum level	24.1 -inHg
Feed pressure	55-87 psi

CLASSIC M	
Recommended operating range	0–27 -inHg
Maximum vacuum level	27.1 -inHg
Feed pressure	50-87 psi

X

PIAB X-pumps have been developed to provide excellent flow and deep vacuum. They are recommended in applications where a deep vacuum is required in, for example, high-speed feeders in packaging machines and different types of processes. Moreover, X-pumps can be driven by low feed pressures, a distinct advantage when pressures in compressed air lines are low or fluctuating.

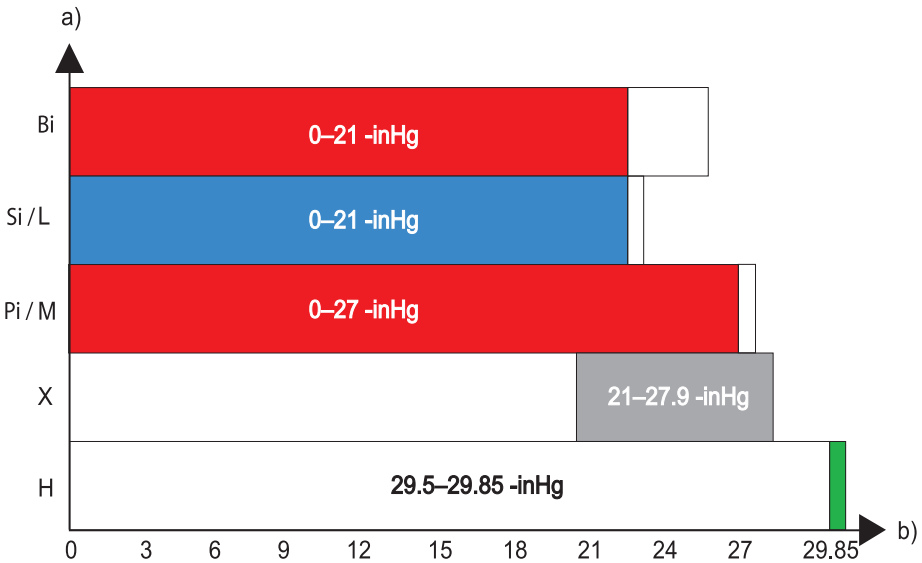
MINI X	
Recommended operating range	21-27.9 -inHg
Maximum vacuum level	27.9 -inHg
Feed pressure	58-87 psi

H

PIAB H-pumps provide very high vacuum, and they are recommended in applications with little or no leakage, such as in laboratory applications and in other processes requiring high vacuum levels.

CLASSIC H	
Recommended operating range	29.5-29.85 -inHg
Maximum vacuum level	29.85 -inHg
Feed pressure	87 psi

RECOMMENDED OPERATING RANGE



a) Pump type,
b) Vacuum level -inHg

VACUUM FLOW AT RECOMMENDED FEED PRESSURE

Pump series	Model/ Design	Max vacuum	Feed pressure	Vacuum flow (scfm) at different vacuum levels (-inHg)									
		-inHg	psi	0	3	6	9	12	15	18	21	24	27
Si	COAX Si02-2	22.2	87	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	–	–
Bi	COAX Bi03-2	24.9	26	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	–	–
Si	COAX Si08-2	22.2	87	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	–	–
Pi	COAX Pi12-2	27.0	45	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	-
Si	COAX Si08-3	22.2	87	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	–	–
Pi	COAX Pi12-3	27.0	45	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	–
Pi	COAX Pi12-3x2	27.0	45	5.93	2.54	1.86	1.14	0.81	0.59	0.42	0.25	0.13	-
L	MINI L7	22.2	87	1.53	1.04	0.61	0.53	0.42	0.34	0.21	0.14	–	–
L	MINI L14	22.2	87	3.11	2.20	1.21	0.95	0.83	0.68	0.51	0.28	–	–
L	MINI L28	22.2	87	5.40	3.54	2.22	1.89	1.57	1.17	0.76	0.36	–	–
L	MINI L56	22.2	87	10.8	7.42	4.24	3.60	2.97	2.33	1.72	0.91	–	–
M	MINI M5L	24.1	55	1.23	0.64	0.47	0.38	0.30	0.21	0.17	0.08	0.02	–
M	MINI M10L	24.1	55	2.33	1.21	0.83	0.74	0.64	0.44	0.25	0.13	0.04	–
M	MINI M20L	24.1	55	4.24	2.54	1.61	1.42	1.12	0.87	0.70	0.40	0.04	–
M	MINI M40L	24.1	55	8.48	4.66	2.97	2.54	2.12	1.50	0.91	0.40	0.11	–
X	MINI X5L	27.9	58	1.02	0.51	0.25	0.23	0.21	0.18	0.15	0.12	0.06	0.01
X	MINI X10L	27.9	58	1.61	0.74	0.51	0.44	0.34	0.28	0.21	0.15	0.08	0.02
X	MINI X20L	27.9	58	4.03	2.12	1.06	0.93	0.81	0.64	0.53	0.36	0.21	0.04
X	MINI X40L	27.9	58	6.78	3.18	2.12	1.91	1.48	1.27	1.06	0.85	0.36	0.08
L	CLASSIC L25	22.2	87	12.9	6.99	4.66	2.97	1.72	1.36	0.95	0.61	–	–
L	CLASSIC L50	22.2	87	23.1	12.1	8.05	5.30	2.97	2.33	1.70	1.02	–	–
L	CLASSIC L100	22.2	87	35.0	20.3	15.9	10.6	6.14	4.87	3.39	2.01	–	–
Si	COAX Si32-2	22.2	87	6.99	6.36	5.51	3.60	1.91	1.27	1.06	0.74	–	–
Si	COAX P6010 Si32-3x1	22.2	87	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	–	–
Si	COAX P6010 Si32-3x2	22.2	87	25.4	14.8	11.0	7.20	3.81	2.54	2.12	1.48	–	–
Si	COAX P6010 Si32-3x3	22.2	87	38.1	22.2	16.5	10.8	5.72	3.81	3.18	2.33	–	–
Si	COAX P6010 Si32-3x4	22.2	87	50.9	29.7	22.0	14.4	7.63	5.09	4.24	2.97	–	–
M	CLASSIC M25L	27.1	50	12.5	5.72	3.81	2.54	1.59	1.08	0.81	0.59	0.23	0.04
M	CLASSIC M50L	27.1	50	21.8	10.4	7.42	4.66	2.75	2.12	1.70	1.06	0.40	0.02
M	CLASSIC M100L	27.1	50	28.8	17.4	12.3	7.42	5.09	4.03	2.97	2.12	1.02	0.02
Pi	COAX Pi48-2	27.0	44	5.93	5.30	3.81	2.33	1.17	1.06	0.74	0.53	0.21	–
Pi	COAX P6010 Pi48-3x1	27.0	44	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	–
Pi	COAX P6010 Pi48-3x2	27.0	44	23.7	10.6	7.63	4.66	2.75	2.12	1.48	1.06	0.42	–
Pi	COAX P6010 Pi48-3x3	27.0	44	35.6	15.9	11.4	6.99	4.24	3.18	2.33	1.59	0.64	–
Pi	COAX P6010 Pi48-3x4	27.0	44	47.5	21.2	15.3	9.32	5.51	4.24	2.97	2.12	0.85	–
H	CLASSIC H40	29.5	87	5.93	4.45	3.18	1.91	0.85	0.64	0.42	0.30	0.21	0.20
H	CLASSIC H120	29.85	87	17.8	14.0	9.96	5.72	3.18	2.54	1.82	1.31	0.91	0.21
L	CLASSIC MP L150	22.2	87	61.4	34.3	25.4	15.9	8.05	5.72	3.60	1.61	–	–
L	CLASSIC MP L200	22.2	87	80.5	48.7	34.1	23.7	13.8	10.4	6.36	2.33	–	–
L	CLASSIC MP L300	22.2	87	97.5	63.6	48.3	31.1	19.1	15.0	11.0	6.57	–	–
L	CLASSIC MP L400	22.2	87	108	82.6	59.3	34.7	25.2	20.1	14.2	8.48	–	–
M	CLASSIC MP M150L	27.1	50	55.1	29.2	21.8	13.8	8.05	6.14	4.66	3.18	1.42	0.11
M	CLASSIC MP M200L	27.1	50	63.6	36.7	26.5	16.7	10.6	8.26	6.14	4.45	2.01	0.21
M	CLASSIC MP M300L	27.1	50	97.5	57.2	42.6	27.1	16.1	12.7	9.54	6.78	2.75	0.40
M	CLASSIC MP M400L	27.1	50	119	74.2	52.3	32.2	21.2	16.1	12.1	8.05	3.39	0.40
H	CLASSIC MP H240	29.85	87	35.6	26.7	18.9	10.6	6.14	4.87	3.81	2.54	1.82	0.40
H	CLASSIC MP H480	29.85	87	72.0	55.1	38.6	21.8	12.5	10.4	7.20	4.87	3.60	1.02
M	MAXI MLL200	27.1	87	102	57.2	38.4	20.1	10.2	6.99	5.09	2.33	1.02	0.02
M	MAXI MLL400	27.1	87	195	110	74.2	39.0	19.5	13.6	9.75	4.66	1.95	0.04
M	MAXI MLL800	27.1	87	373	210	142	74.2	37.3	26.1	18.6	8.90	3.81	0.08
M	MAXI MLL1200	27.1	87	540	303	206	108	55.1	37.9	27.1	12.9	5.51	0.11

EVACUATION TIME AT RECOMMENDED FEED PRESSURE

Pump series	Model/Design	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								
		psi	scfm	3	6	9	12	15	18	21	24	27
Si	COAX Si02-2	87	0.25	11.6	28.6	56.9	93.5	139	195	289	–	–
Bi	COAX Bi03-2	26	0.30	14.2	39.7	110	181	283	453	793	1445	–
Si	COAX Si08-2	87	0.93	3.97	8.78	15.6	25.5	39.7	59.5	87.8	–	–
Pi	COAX Pi12-2	45	1.00	4.81	9.06	16.4	31.2	51.0	76.5	113	181	-
Si	COAX Si08-3	87	0.93	2.83	7.08	13.6	22.7	36.8	56.7	82.2	–	–
Pi	COAX Pi12-3	45	2.00	2.27	6.52	13.9	28.3	48.2	73.7	110	178	–
Pi	COAX Pi12-3X2	45	1.00	1.13	3.40	7.08	14.2	24.1	36.8	56.7	90.7	-
L	MINI L7	87	1.04	2.63	8.78	20.4	34.3	51.3	73.1	108	–	–
L	MINI L14	87	2.08	1.81	4.82	10.2	16.7	24.9	36.3	52.4	–	–
L	MINI L28	87	4.17	1.33	3.12	5.67	9.07	13.0	19.5	31.4	–	–
L	MINI L56	87	8.48	0.65	1.50	2.83	4.53	6.52	9.35	14.2	–	–
M	MINI M5L	55	0.81	5.67	17.3	33.1	51.0	73.7	108	167	314	–
M	MINI M10L	55	1.61	3.68	8.78	16.1	25.5	36.8	56.7	90.7	201	–
M	MINI M20L	55	3.18	1.47	3.97	7.37	11.9	18.1	28.3	48.2	105	–
M	MINI M40L	55	6.36	0.85	2.10	3.68	5.95	9.07	14.2	26.9	45.3	–
X	MINI X5L	58	0.83	4.82	23.2	48.2	76.5	110	153	210	300	637
X	MINI X10L	58	1.67	3.12	13.3	26.6	42.5	62.3	87.8	122	187	397
X	MINI X20L	58	3.39	1.56	5.67	11.3	18.4	27.5	39.7	53.8	76.5	144
X	MINI X40L	58	6.57	1.08	3.40	6.23	9.35	13.6	19.3	34.0	62.3	90.7
L	CLASSIC L25	87	3.81	1.19	2.10	3.40	5.95	10.2	15.9	24.9	–	–
L	CLASSIC L50	87	7.42	0.42	0.93	1.70	3.12	5.38	8.22	12.7	–	–
L	CLASSIC L100	87	14.8	0.23	0.51	0.93	1.70	2.83	4.25	6.52	–	–
Si	COAX Si32-2	87	3.71	6.99	6.36	5.51	3.60	1.91	1.27	1.06	0.74	–
Si	P6010 Si32-3x1	87	3.71	0.57	1.42	2.83	5.10	9.35	15.0	22.7	–	–
Si	P6010 Si32-3x2	87	7.42	0.28	0.71	1.42	2.55	4.82	7.65	11.3	–	–
Si	P6010 Si32-3X3	87	11.1	0.20	0.48	0.93	1.70	3.12	5.10	7.65	–	–
Si	P6010 Si32-3X4	87	14.8	0.14	0.37	0.71	1.27	2.35	3.68	5.67	–	–
M	CLASSIC M25L	50	4.03	0.65	1.64	3.40	6.52	11.3	18.1	28.0	45.3	110
M	CLASSIC M50L	50	7.84	0.40	0.93	1.76	3.40	5.95	9.35	14.2	23.2	70.8
M	CLASSIC M100L	50	15.9	0.42	0.76	1.27	2.27	3.40	5.10	7.37	12.2	34.0
Pi	COAX Pi48-2	44	4.24	0.85	1.98	3.68	7.37	13.0	19.8	28.3	45.3	
Pi	P6010 Pi48-3x1	44	4.24	0.57	1.70	3.40	8.50	12.7	19.8	28.3	45.3	113
Pi	P6010 Pi48-3x2	44	8.48	0.28	0.85	1.70	3.68	6.52	9.92	14.2	22.7	56.7
Pi	P6010 Pi48-3x3	44	12.7	0.20	0.57	1.13	2.35	4.25	6.52	9.35	15.0	36.8
Pi	P6010 Pi48-3x4	44	17.0	0.14	0.42	0.85	1.78	3.12	5.10	7.08	11.3	28.3
H	CLASSIC H40	87	5.51	0.91	2.12	4.25	9.07	18.1	31.2	48.2	73.7	110
H	CLASSIC H120	87	16.1	0.51	0.93	1.70	3.12	5.10	7.65	11.9	17.6	36.8
L	CLASSIC MP L150	87	22.2	0.14	0.34	0.59	1.13	1.98	3.40	6.23	–	–
L	CLASSIC MP L200	87	29.7	0.11	0.25	0.45	0.85	1.42	1.98	3.68	–	–
L	CLASSIC MP L300	87	44.5	0.11	0.23	0.37	0.57	0.85	1.42	2.27	–	–
L	CLASSIC MP L400	87	59.3	0.11	0.20	0.31	0.57	0.85	1.13	1.70	–	–
M	CLASSIC MP M150L	50	23.9	0.20	0.40	0.71	1.42	2.12	3.12	4.82	7.93	21.5
M	CLASSIC MP M200L	50	32.0	0.14	0.31	0.59	1.13	1.70	2.55	3.68	5.95	15.3
M	CLASSIC MP M300L	50	47.9	0.11	0.25	0.42	0.85	1.13	1.70	2.55	3.97	10.2
M	CLASSIC MP M400L	50	63.6	0.08	0.17	0.31	0.57	0.85	1.42	1.98	3.12	8.22
H	CLASSIC MP H240	87	32.2	0.17	0.42	0.85	1.70	2.83	4.25	6.23	9.07	18.1
H	CLASSIC MP H480	87	63.6	0.11	0.23	0.45	0.85	1.42	2.27	3.12	4.53	9.35
M	MAXI MLL200	87	29.7	0.08	0.23	0.40	0.85	1.70	2.83	4.53	8.22	23.2
M	MAXI MLL400	87	59.3	0.04	0.11	0.20	0.42	0.85	1.42	2.27	4.25	11.6
M	MAXI MLL800	87	119	0.02	0.05	0.10	0.23	0.40	0.68	1.13	2.04	5.67
M	MAXI MLL1200	87	178	0.01	0.03	0.07	0.15	0.25	0.45	0.76	1.36	3.97

RECOMMENDED HOSE DIMENSIONS IN IN. (INTERNAL DIAMETER)

Pump design	Compressed air	Vacuum	Exhaust
P2010	> 0.10	> 0.10	> 0.31
P3010	> 0.16	> 0.31	> 0.39
VGS3010	> 0.16	> 0.31	> 0.39
P6010 Pi48-3X1	> 0.24	> 0.47	> 0.59
P6010 Si32-3X1	> 0.16	> 0.47	> 0.59
P6010 Pi48-3X2	> 0.31	> 0.59	> 0.75
P6010 Si32-3X2	> 0.16	> 0.59	> 0.75
P6010 Pi48-3X3	> 0.39	> 0.75	> 0.87
P6010 Si32-3X3	> 0.31	> 0.75	> 0.87
P6010 Pi48-3X4	> 0.39	> 0.87	> 0.98
P6010 Si32-3X4	> 0.31	> 0.87	> 0.98
M5L	> 0.08	> 0.24	> 0.31
M10L, L7	> 0.08	> 0.31	> 0.39
M20L, L14	> 0.16	> 0.39	> 0.47
M25L / L25 / L28	> 0.16	> 0.47	> 0.47
M40L	> 0.24	> 0.47	> 0.59
M50L / L50 / L56	> 0.24	> 0.59	> 0.59
M100L / L100	> 0.31	> 0.75	> 0.87
M150L / L150	> 0.31	> 0.98	> 1.26
MLL200 / L200 / M200L	> 0.39	> 1.26	> 1.57
M300L / L300	> 0.47	> 1.57	> 2.36
MLL400 / M400L / L400	> 0.47	> 1.57	> 2.36
MLL800	> 0.59	> 1.97	> 2.95
MLL1200	> 0.79	> 2.95	> 3.94
X5L	> 0.08	> 0.16	> 0.31
X10L	> 0.16	> 0.24	> 0.31
X20L	> 0.24	> 0.31	> 0.39
X40L	> 0.24	> 0.39	> 0.47
H40	> 0.24	> 0.39	> 0.47
H120	> 0.35	> 0.59	> 0.75
H240	> 0.39	> 0.75	> 1.26
H480	> 0.47	> 1.57	> 1.97

Applies to hoses up to 6.6 feet long.

IMPORTANT!

A very important part of the vacuum system is correctly dimensioned hoses and couplings. To obtain the highest possible performance from each vacuum pump, please consult the table above.

RESISTANCE OF VARIOUS MATERIALS

Resistance	PA	PPS	POM	ABS	PTFE	AL	NBR	EPDM	Viton® fluoroelastomers*)
Weather, ozone	—	+++	+	++	+++	++	+	+++	+++
Heat, aging	++	+++	++	+	+++	+++	++	++	+++
Oil, gasoline	++	+++	++	+	+++	+	+++	—	+++
Hydrolysis	—	+++	++	+	+++	+++	++	++	++
Acid and alkali	+	+++	+	—	+++	—	++	+++	++
Acetone	+++	+++	+++	—	+++	+++	—	+++	—
Ammonia	+	++	—	—	+++	++	+	+++	—
Amyl alcohol	+++	+++	+++	—	+++	++	++	+++	++
Benzene	+++	+++	+++	—	+++	++	—	—	+++
Butanol	—	+++	+++	+++	+++	++	++	++	+++
Cyclohexane	+++	+++	+++	—	+++	+++	++	—	+++
Ethanol	+++	+++	+++	++	+++	++	+	+++	+++
Ethyl acetate	+++	+++	+++	—	+++	++	—	++	—
Hexane	++	+++	+++	—	+++	+++	+++	—	+++
Carbon tetrachloride	—	+++	++	—	+++	—	—	—	+++
Chlorobenzene	—	+++	—	—	+++	+++	—	—	+++
Chloroform	+++	+++	+++	—	+++	+	—	—	+++
Methanol	++	+++	+++	—	+++	++	+++	+++	+
Methylene chloride	+	+++	++	—	+++	+	—	++	+++
Methyl ethyl ketone, MEK	+++	+++	+	—	+++	++	—	+++	—
NaOH	+++	+++	+	+	+++	—	++	+++	++
Propanol	—	+++	+++	++	+++	++	+++	+++	+++
Sulphuric acid	—	+++	—	++	+++	—	+	++	+++
Tetrahydrofuran	+++	+++	+++	—	+++	—	—	++	—
Tetrachlorethylene	+++	+++	+++	—	+++	—	—	—	+++
Toulene	+++	+++	+	—	+++	+++	—	—	+++
Trichlorethane	+	+++	+++	—	+++	—	—	—	+++
Trichlorethylene	+	+++	—	—	+++	—	—	—	+++
Xylene	+++	+++	+++	—	+++	++	—	—	+++
Acetic acid	—	+++	—	—	+++	+	+	+++	++

+++ Recommended
++ Good, minor chemical attack
+ Limited, moderate chemical attack, limited service
– Not recommended

*) Viton® is a registered trademark of DuPont Performance Elastomers.

MATERIALS

PA	Polyamide, Nylon® , for example
PPS	Composite, Polyphenylene sulphide, Ryton®
POM	Acetal plastic, Polyoxymethylene, Delrin® , and Hostaform® , for example
ABS	Thermoplastic
PTFE	Polytetrafluoroethylene, Teflon® , for example
AL	Aluminium
NBR	Nitrile
EPDM	Ethylene Propylene Diene Rubber
Viton®	Fluor rubber FPM (FKM)
CuZn	Brass
SS	Stainless Steel
PP	Thermoplastic (Polypropen/Polypropylene)

MODELS

P2010

P2010 uses the patented COAX® technology and is a small “inline” ejector that can be directly mounted between the compressed-air hose and the vacuum hose. The ejector works best at low feed pressures, has a very low weight and can be easily cleaned and exchanged whenever needed. The main area of usage is in ”pick-and-place” applications handling small components such as, for example, those of the electronics industry.

P3010

P3010 uses the patented COAX® technology, which makes it small, robust and easy to install. This vacuum pump consists of a cassette with integrated nozzles, non-return valves, silencers and filters for compressed air and vacuum. The P3010 vacuum pump series includes control and monitoring functions such as solenoid valves, vacuum switches and quick-release modules. The PIAB P3010 enables you to decide for yourself the functions you need, and you can eliminate all costly, needless refinements. The performance can therefore be upgraded in pace with your changing needs.

P3010 AVM™

The P3010 AVM™ is a compact and modular vacuum pump with integrated COAX® technology and Automatic Vacuum Management functionality. It has been developed for handling parts in applications with the highest demand on performance, availability, energy saving, flexibility and reliability. Highly automated systems with industrial robots and machines used for handling sheet metal, plastic parts and corrugated cardboard material are typical examples. The compact size and modular, in-line design simplify installation and maintenance. The integrated COAX® guarantees energy efficient and reliable vacuum performance even at really low feed pressures.

PMAT COAX®

The PMAT vacuum pumps are based on the Pi12-2 COAX® technology and intended to be used in decentralized vacuum systems. The Pi12-2 COAX® guarantees energy efficient and reliable vacuum performance even at very low feed pressures. The pumps are all equipped with a built-in check valve on a blow-off port for a reliable and efficient release of the handled object. The separate suction cup can be connected via a T-slot or a 3/8" thread. The mounting fits standard robot end-of-arm tooling found in the automotive industry (ball joint and lock-pin connections). A selection of models provide features such as low profile design, air saving function (Vacustat) and safety function (Vactrap™).

PMAT VACUSTAT

The Vacustat Pi12-2 COAX® is a pump unit with an integrated energy-saving device that means virtually no compressed air consumption in sealed and decentralized applications, such as sheet metal handling. It is available in lock pin, ball joint and apple core mounting in accordance with industry standards for end of arm tooling.

P6010

Based upon the patented COAX® technology, the PIAB P6010 provides up to 40% more flow than conventional vacuum pumps, while still reducing overall energy consumption. A durable, maintenance-free, design makes the P6010 ideally suited for automated material handling and other manufacturing processes in the automotive, robotic, graphics and packaging industries. The P6010 provides powerful, whisper-quiet, and non-heat generating suction at extremely low feed pressures. Additionally, the pump’s compact size makes it possible to mount closer to the point of suction, thus reducing compressed-air requirements and saving energy.

P6010 AVM™

P6010, based upon the patented COAX® technology, is available with an integrated control option for highly automated systems – the Automatic Vacuum Management (AVM™). This option can reduce air consumption by up to 90%, when compared to continuously operating systems. Featuring a vacuum sensing capability, the AVM™ instantly shuts off air consumption when the set vacuum level is reached. When the vacuum is no longer required after a completed work cycle, the product release time is reduced by a high capacity positive pressure blow-off function. The AVM™'s high capacity blow-off function makes it ideal for handling non-leaking parts, such as glass and sheet metal.

P6010 PCC

P6010, based upon the patented COAX® technology, is available with an integrated control option designed to fine-tune vacuum pump performance and lower energy consumption – the PIAB Cruise Control (PCC). Offering many advantages for leak-prone materials, such as paper, plastic bags and corrugated cardboard, PCC is ideally suited for automated material handling processes in the graphics and packaging industries. PIAB's PCC automatically maintains a pre-set level of vacuum to ensure that a consistent vacuum level, and therefore a secure grip, is provided at the suction point. This feature is reliable during fluctuations in vacuum pressure, caused by product variations or changes in cycle time.

MINI

These are small and lightweight vacuum pumps, MINI, with large capacity that can compensate for leakages. The MINI pumps are available with different characteristics, accessories and designs so that they can be adapted to different applications. The MINI pump can be mounted onto various types of bottom plates and, through this, be given numerous connection possibilities. They can also be fitted with valves and/or a vacuum sensor. By doing so, a complete system (Mini System) is created, and such a system can, when necessary, be dimensioned for larger flows. To the MINI vacuum pumps there are connection plates for different installation alternatives.

CLASSIC

PIAB CLASSIC vacuum pump series in various sizes and characteristics. Large capacity despite its small size and low weight. Suitable for a great number of applications as a separate vacuum source or as the base unit of a system with medium capacity requirements. Flexible and simple design that can be provided with an energy-saving system.

CLASSIC MP

A compact vacuum pump for large flows and deep vacuum levels, that is especially suitable when high productivity and secure function are required in mounting, packaging and automation processes. This vacuum pump is easy to control and very reliable. Because it is almost maintenance-free the operation stoppages are negligible. To improve the economy even more it can be provided with an energy saving system.

MAXI

Large vacuum pump for applications where large volumes need to be evacuated or to compensate for large leakage flows. Can also be used for vacuum conveying. May also be provided with an energy-saving system and central exhaust.

COAX® CARTRIDGE MICRO

Bi03-2

- Two-stage COAX® cartridge - MICRO - probably the world's smallest multistage vacuum ejector.
- Vacuum level to 24.9 -inHg at extremely low feed pressure.
- High operational reliability in case of fluctuating or low compressed-air pressure.
- The low weight makes it suitable to integrate close to the suction point in high speed pick-and-place applications of small objects.
- Suitable for handling sealed objects.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.05-0.08
Material		Al, NBR, PA, SS

VACUUM FLOW

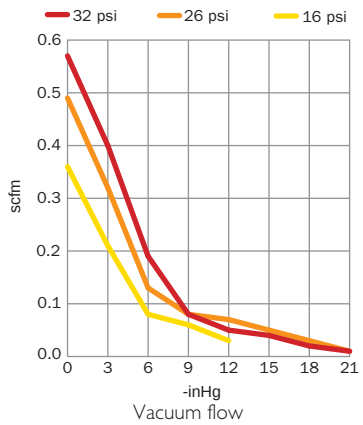
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
16	0.21	0.36	0.21	0.08	0.06	0.03	—	—	—	15.0
26	0.30	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	24.9
32	0.36	0.57	0.40	0.19	0.08	0.05	0.04	0.02	0.01	24.6

EVACUATION TIME

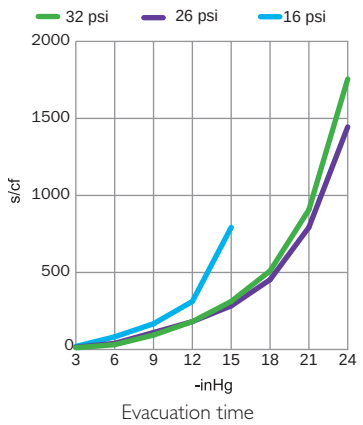
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
16	0.21	19.8	82.2	167	312	793	—	—	—	15.0
26	0.30	14.2	39.7	110	181	283	453	793	1445	24.9
32	0.36	11.3	31.2	93.5	181	312	510	907	1756	24.6

BLOW FLOW

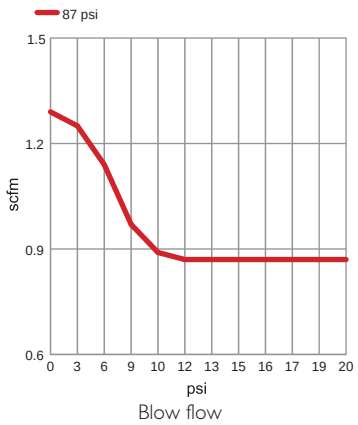
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	0.78	1.29	1.25	1.14	0.97	0.89	0.87	0.87	0.87	0.87	0.87	0.87	0.87	20



Vacuum flow



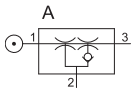
Evacuation time

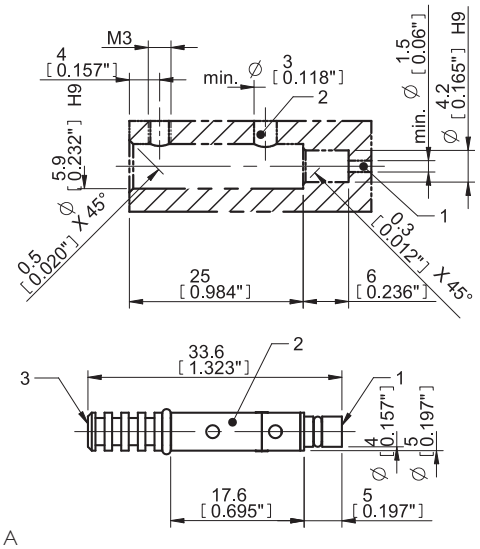


Blow flow

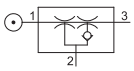
ORDERING INFORMATION

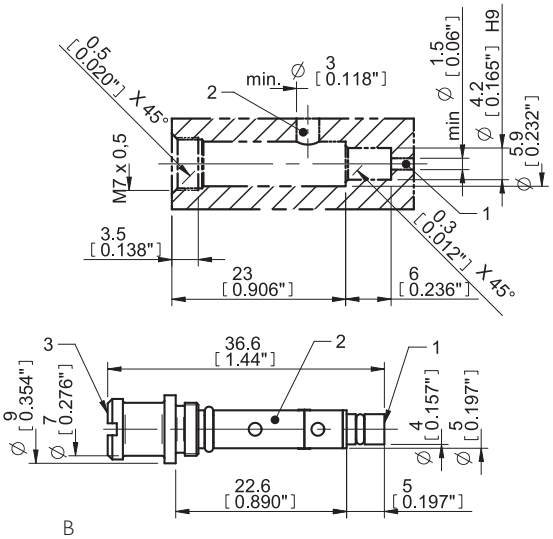
	Description	Part No.
A	COAX® cartridge MICRO Bi03-2	01.06.966
B	COAX® cartridge MICRO Bi03-2, holding cap	01.06.968





A





B

COAX® CARTRIDGE MICRO

Si02-2

- Two-stage COAX® cartridge - MICRO - probably the world's smallest multistage vacuum ejector.
- Large vacuum flow in relation to energy consumption.
- Good for handling porous materials or if surface leakage is present.
- The low weight makes it suitable to integrate close to the suction point in high speed pick-and-place applications of small objects.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.05-0.08
Material		Al, NBR, PA, SS

VACUUM FLOW

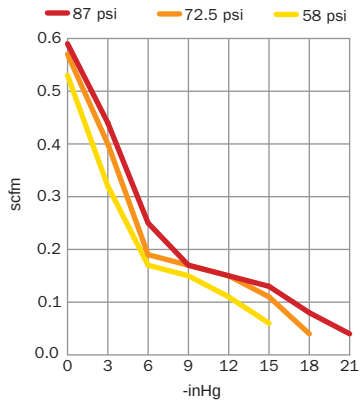
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	0.19	0.53	0.32	0.17	0.15	0.11	0.06	—	—	18.0
72.5	0.21	0.57	0.40	0.19	0.17	0.15	0.11	0.04	—	21.0
87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	22.2

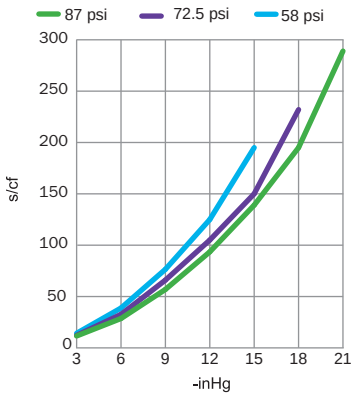
EVACUATION TIME

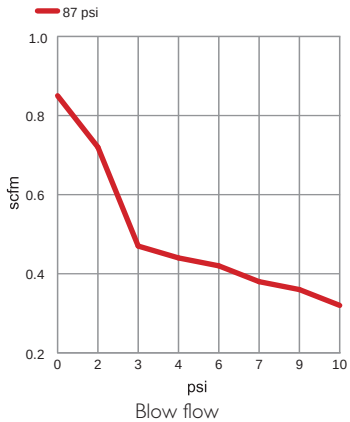
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	0.19	14.2	38.8	76.5	125	195	—	—	18.0
72.5	0.21	12.2	32.6	66.0	105	150	232	—	21.0
87	0.25	11.6	28.6	56.9	93.5	139	195	289	22.2

BLOW FLOW

Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)								Max pressure
psi	scfm	0	2	3	4	6	7	9	10	psi
87	0.25	0.85	0.72	0.47	0.44	0.42	0.38	0.36	0.32	10



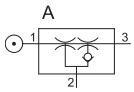


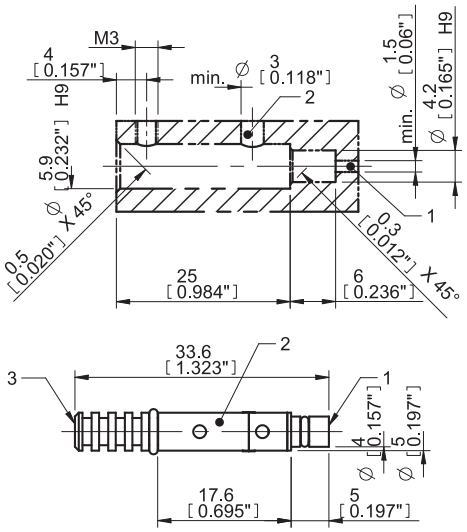


Blow flow

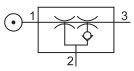
ORDERING INFORMATION

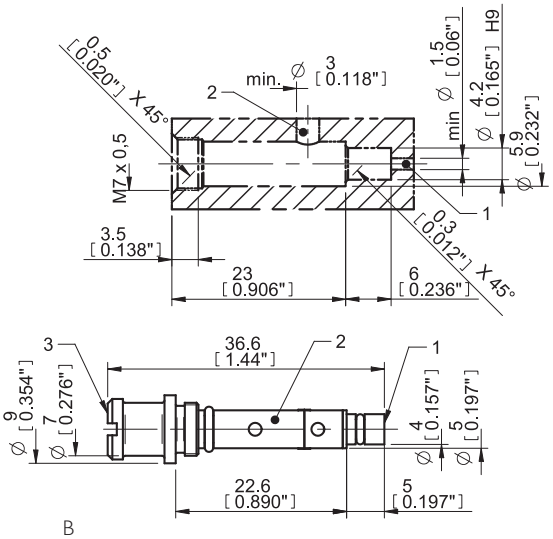
	Description	Part No.
A	COAX® cartridge MICRO Si02-2	01.13.591
B	COAX® cartridge MICRO Si02-2, holding cap	01.13.593





A





B

COAX® CARTRIDGE MINI

Pi12-2

- Two-stage COAX® cartridge - MINI - with small mounting dimensions.
- Vacuum level to 27 -inHg at low feed pressures.
- High operational reliability in case of fluctuating or low compressed-air pressure.
- Suitable for handling sealed objects.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.09-0.34
Material		Al, NBR, PA, SS

VACUUM FLOW

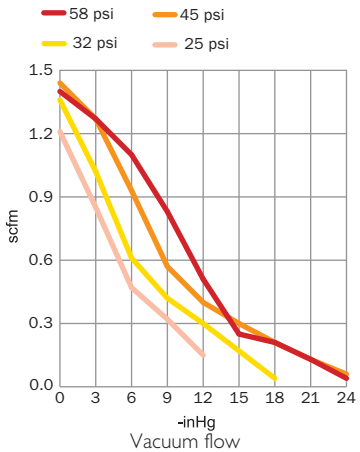
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	0.61	1.21	0.85	0.47	0.32	0.15	—	—	—	—	14.7
32	0.72	1.36	1.02	0.61	0.42	0.30	0.17	0.04	—	—	19.2
45	0.93	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	27.0
58	1.12	1.40	1.27	1.10	0.83	0.51	0.25	0.21	0.13	0.04	25.2

EVACUATION TIME

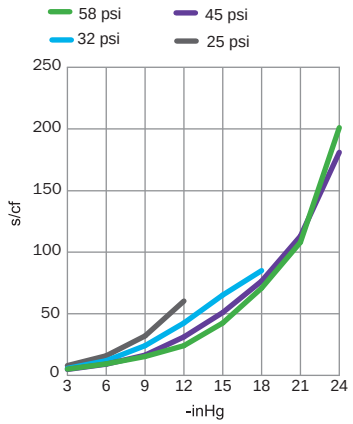
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
25	0.61	7.93	15.9	32.0	60.3	—	—	—	—	14.7
32	0.72	5.67	11.9	24.1	42.5	65.2	85.0	—	—	19.2
45	0.93	4.82	9.07	16.4	31.2	51.0	76.5	113	181	27.0
58	1.12	5.10	9.35	15.3	24.1	42.5	70.8	108	201	25.2

BLOW FLOW

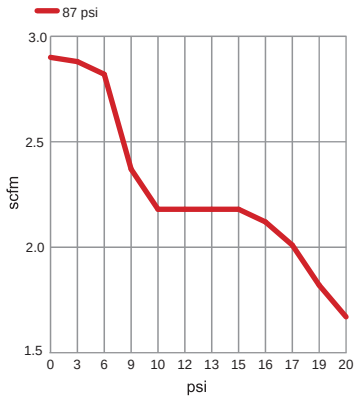
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	1.59	2.90	2.88	2.82	2.37	2.18	2.18	2.18	2.18	2.12	2.01	1.82	1.67	20



Vacuum flow



Evacuation time

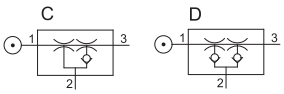


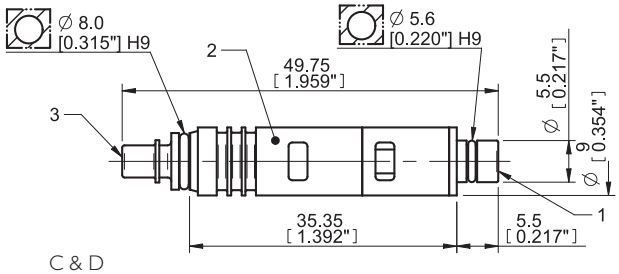
Blow flow

COAX® CARTRIDGE MINI

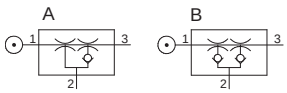
ORDERING INFORMATION

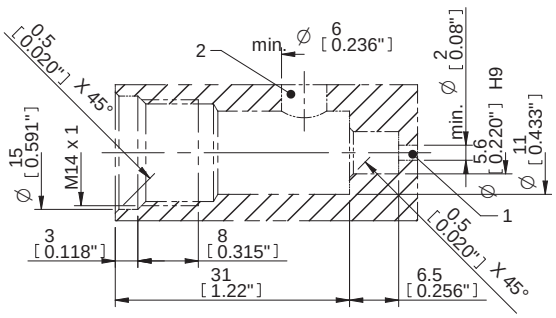
	Description	Part No.
C	COAX® cartridge MINI Pi12-2	01.06.922
A	COAX® cartridge MINI Pi12-2, holding cap	01.06.924
D	COAX® cartridge MINI Pi12-2, extra non-return valve	01.06.963
B	COAX® cartridge MINI Pi12-2, holding cap, extra non-return valve	01.06.964

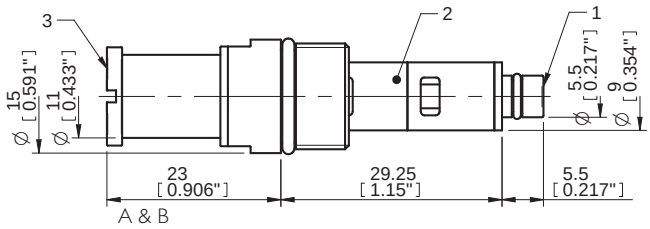




C & D







A & B

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977

COAX® CARTRIDGE MINI

Si08-2

- Two-stage COAX® cartridge - MINI - with small mounting dimensions.
- Large vacuum flow in relation to energy consumption.
- Good for handling porous materials or if surface leakage is present.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.10-0.35
Material		Al, NBR, PA, SS

VACUUM FLOW

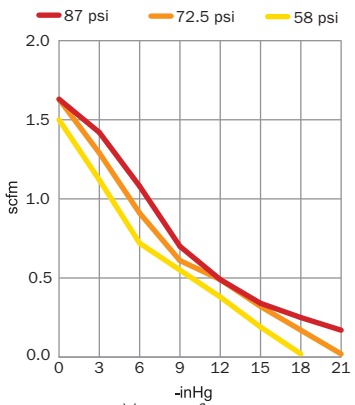
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	0.66	1.50	1.12	0.72	0.55	0.38	0.19	0.02	—	18.0
72.5	0.81	1.63	1.29	0.91	0.61	0.49	0.32	0.17	0.02	21.0
87	0.93	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	22.2

EVACUATION TIME

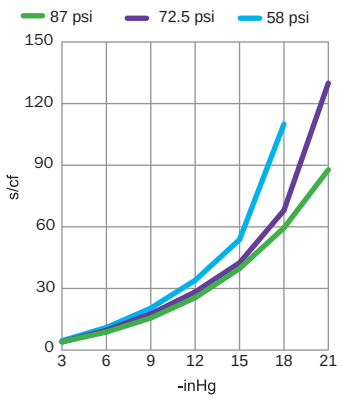
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	0.66	4.53	11.0	20.4	34.0	53.8	110	—	18.0
72.5	0.81	3.97	9.63	17.6	28.3	42.5	68.0	130	21.0
87	0.93	3.97	8.78	15.6	25.5	39.7	59.5	87.8	22.2

BLOW FLOW

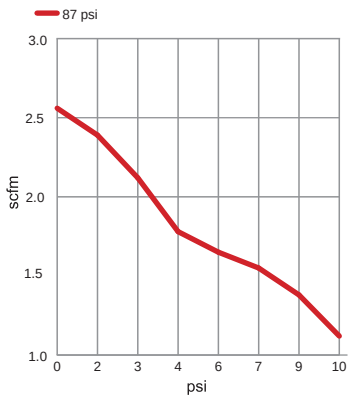
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)								Max pressure
psi	scfm	0	2	3	4	6	7	9	10	psi
87	0.93	2.56	2.39	2.12	1.78	1.65	1.55	1.38	1.12	10



Vacuum flow



Evacuation time

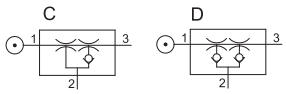


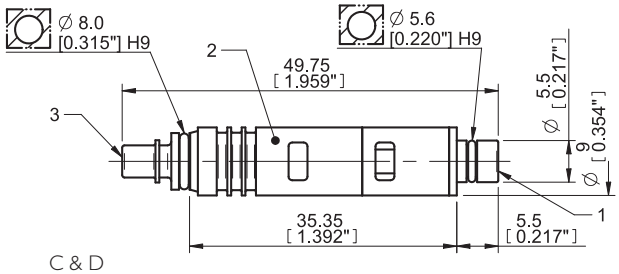
Blow flow

COAX® CARTRIDGE MINI

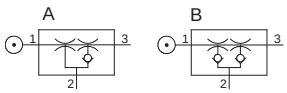
ORDERING INFORMATION

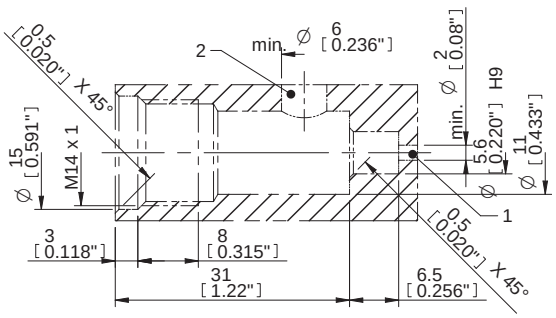
	Description	Part No.
C	COAX® cartridge MINI Si08-2	01.13.583
A	COAX® cartridge MINI Si08-2, holding cap	01.13.585
D	COAX® cartridge MINI Si08-2, extra non-return valve	01.13.587
B	COAX® cartridge MINI Si08-2, holding cap, extra non-return valve	01.13.589

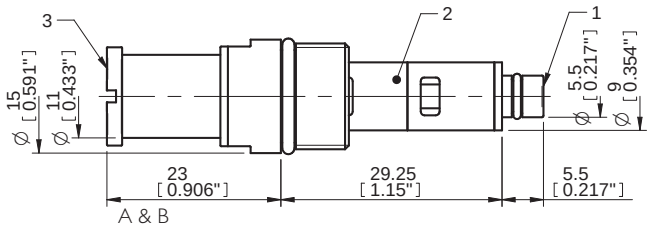




C & D







A & B

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977

COAX® CARTRIDGE MINI

Pi12-3

- Three-stage COAX® cartridge - MINI - with high initial vacuum flow.
- Vacuum level to 27 -inHg at low feed pressure.
- High system reliability in case of fluctuating or low feed pressure.
- Suitable for handling sealed objects with high pick-up speed.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.17-0.44
Material		Al, NBR, PA, SS

VACUUM FLOW

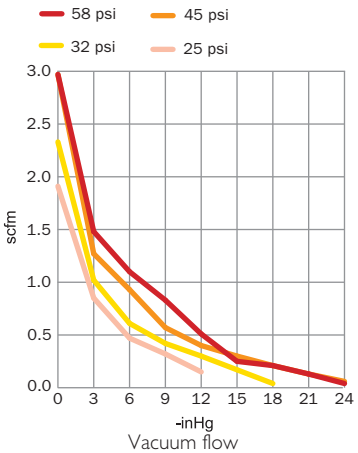
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	0.61	1.91	0.85	0.47	0.32	0.15	—	—	—	—	14.7
32	0.72	2.33	1.02	0.61	0.42	0.30	0.17	0.04	—	—	19.2
45	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	27.0
58	1.12	2.97	1.48	1.10	0.83	0.51	0.25	0.21	0.13	0.04	25.2

EVACUATION TIME

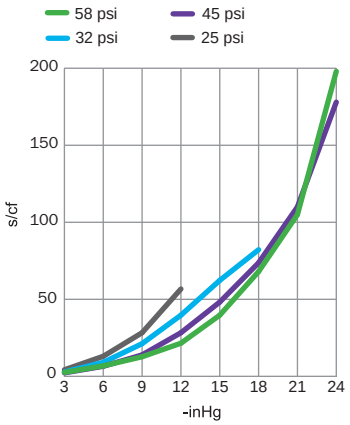
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
25	0.61	4.25	13.0	28.3	56.7	—	—	—	—	14.7
32	0.72	2.83	9.07	21.2	39.7	62.3	82.2	—	—	19.2
45	0.93	2.27	6.52	13.9	28.3	48.2	73.7	110	178	27.0
58	1.12	2.55	6.80	12.7	21.5	39.7	68.0	105	198	25.2

BLOW FLOW

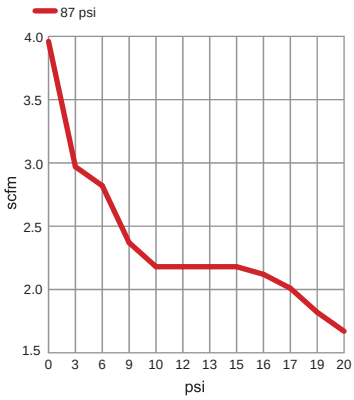
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	1.59	3.96	2.97	2.82	2.37	2.18	2.18	2.18	2.18	2.12	2.01	1.82	1.67	20



Vacuum flow



Evacuation time



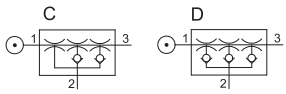
Blow flow

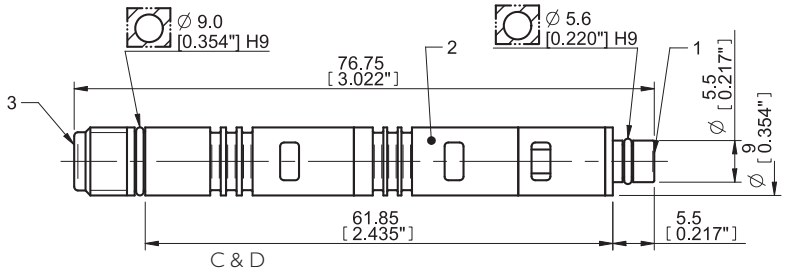
Specifications subject to change without notice.

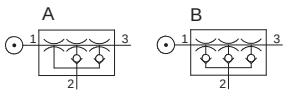
COAX® CARTRIDGE MINI

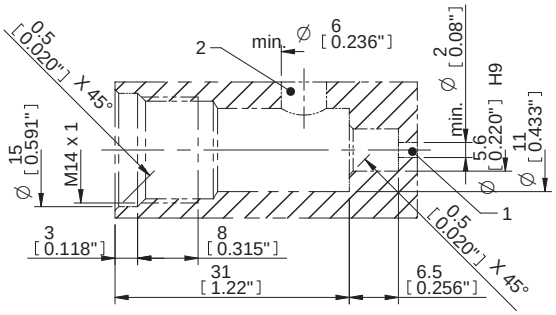
ORDERING INFORMATION

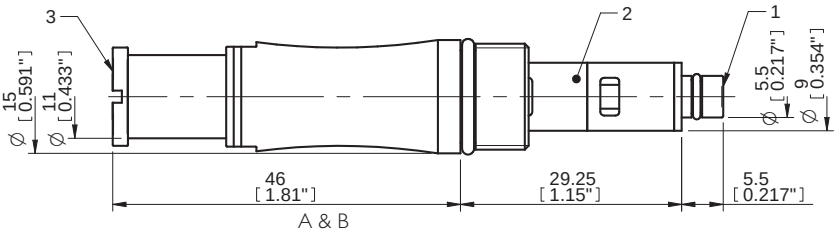
	Description	Part No.
C	COAX® cartridge MINI Pi12-3	01.06.895
A	COAX® cartridge MINI Pi12-3, holding cap	01.06.923
D	COAX® cartridge MINI Pi12-3, extra non-return valve	01.06.956
B	COAX® cartridge MINI Pi12-3, holding cap, extra non-return valve	01.06.957











ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977
Exhaust adapter	01.06.344

COAX® CARTRIDGE MINI

Si08-3

- Three-stage COAX® cartridge - MINI - with extra high initial vacuum flow.
- Large vacuum flow in relation to energy consumption.
- Good for handling porous materials or if surface leakage is present. Rrecommended for high speed applications.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.17-0.45
Material		Al, NBR, PA, SS

VACUUM FLOW

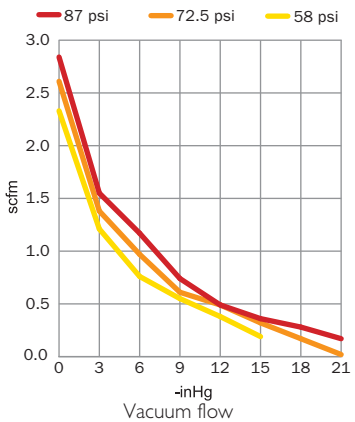
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	0.66	2.33	1.21	0.76	0.55	0.38	0.19	—	—	18.0
72.5	0.81	2.61	1.38	0.97	0.61	0.49	0.32	0.17	0.02	21.0
87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	22.2

EVACUATION TIME

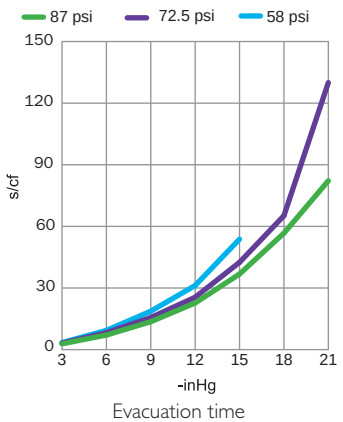
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	0.66	3.40	9.35	18.7	31.2	53.8	—	—	18.0
72.5	0.81	3.12	8.22	15.6	25.5	42.5	65.2	130	21.0
87	0.93	2.83	7.08	13.6	22.7	36.8	56.7	82.2	22.2

BLOW FLOW

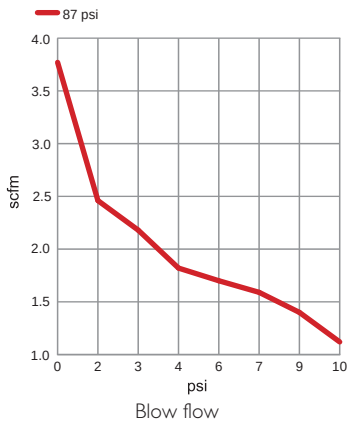
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)								Max pressure
psi	scfm	0	2	3	4	6	7	9	10	psi
87	0.93	3.77	2.46	2.18	1.82	1.70	1.59	1.40	1.12	10



Vacuum flow



Evacuation time

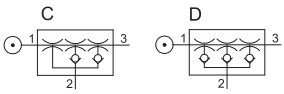


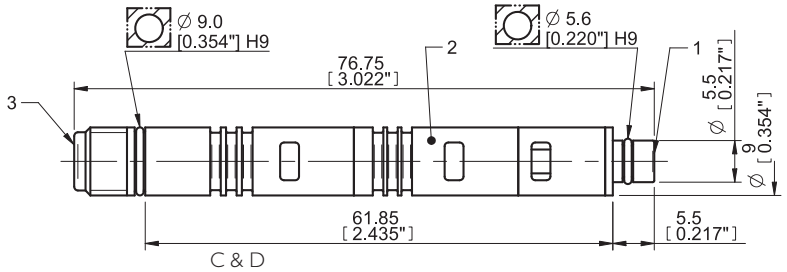
Blow flow

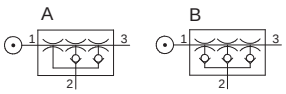
COAX® CARTRIDGE MINI

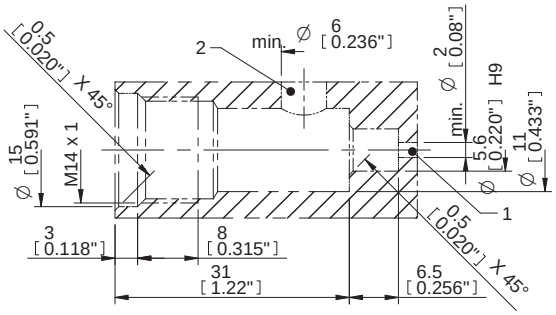
ORDERING INFORMATION

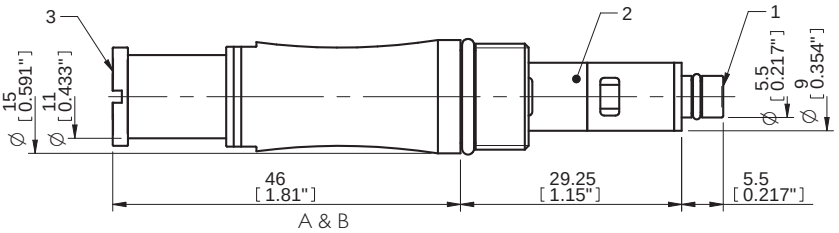
	Description	Part No.
C	COAX® cartridge MINI Si08-3	01.13.214
A	COAX® cartridge MINI Si08-3, holding cap	01.13.572
D	COAX® cartridge MINI Si08-3, extra non-return valve	01.13.575
B	COAX® cartridge MINI Si08-3, holding cap, extra non-return valve	01.13.577











ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977
Exhaust adapter	01.06.344

COAX® CARTRIDGE MINI

Pi12-3 FS

- Three-stage COAX® cartridge - MINI - with high initial vacuum flow.
- Includes a flow-through silencer and a built-in vacuum filter for harsh environments.
- Vacuum level to 27 -inHg at low feed pressure.
- High system reliability in case of fluctuating or low feed pressure.
- Suitable for handling sealed objects with high pick-up speed.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.40
Material		NBR, PA, PP, SS

VACUUM FLOW

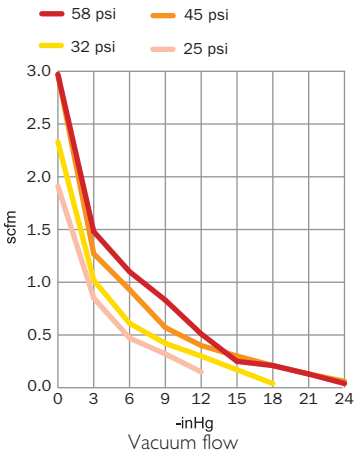
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	0.61	1.91	0.85	0.47	0.32	0.15	—	—	—	—	14.7
32	0.72	2.33	1.02	0.61	0.42	0.30	0.17	0.04	—	—	19.2
45	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	27.0
58	1.12	2.97	1.48	1.10	0.83	0.51	0.25	0.21	0.13	0.04	25.2

EVACUATION TIME

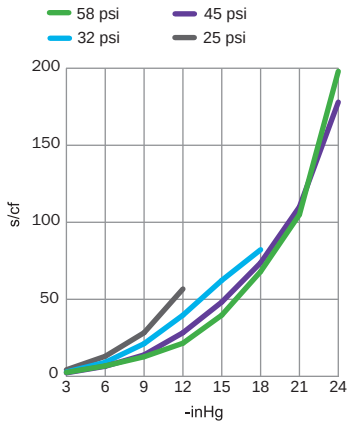
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
25	0.61	4.25	13.0	28.3	56.7	—	—	—	—	14.7
32	0.72	2.83	9.07	21.2	39.7	62.3	82.2	—	—	19.2
45	0.93	2.27	6.52	13.9	28.3	48.2	73.7	110	178	27.0
58	1.12	2.55	6.80	12.7	21.5	39.7	68.0	105	198	25.2

BLOW FLOW

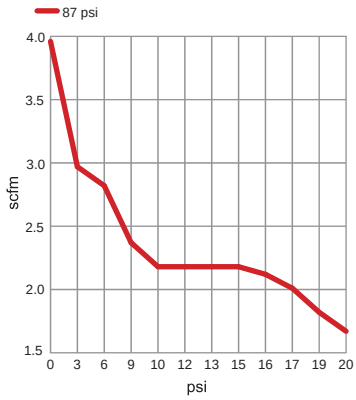
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	1.59	3.96	2.97	2.82	2.37	2.18	2.18	2.18	2.18	2.12	2.01	1.82	1.67	20



Vacuum flow



Evacuation time



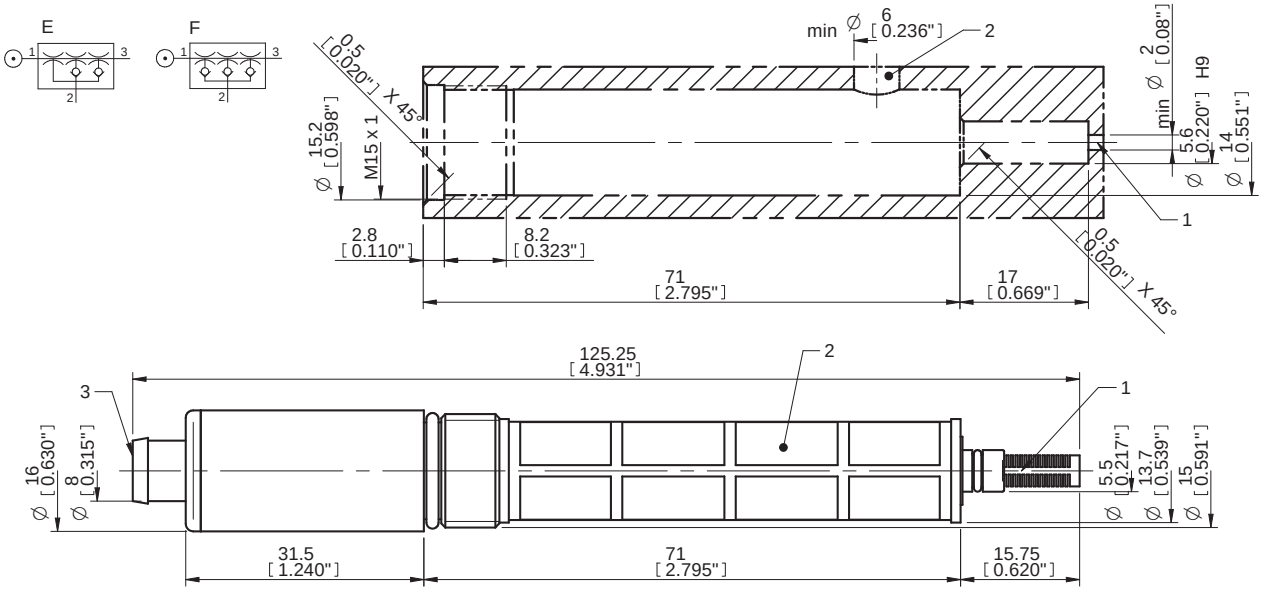
Blow flow

Specifications subject to change without notice.

COAX® CARTRIDGE MINI

ORDERING INFORMATION

	Description	Part No.
E	COAX® cartridge MINI Pi12-3, holding cap with silencer, vacuum filter	01.04.265
F	COAX® cartridge MINI Pi12-3, extra non-return valve, holding cap with silencer, vacuum filter	01.06.676



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977
Exhaust adapter	01.06.344

COAX® CARTRIDGE MINI

Si08-3 FS

- Three-stage COAX® cartridge - MINI - with extra high initial vacuum flow.
- Includes a flow-through silencer and a built-in vacuum filter for harsh environments.
- Large vacuum flow in relation to energy consumption.
- Good for handling porous materials or if leakage is present. Recommended for high speed applications.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.40
Material		NBR, PA, PP, SS

VACUUM FLOW

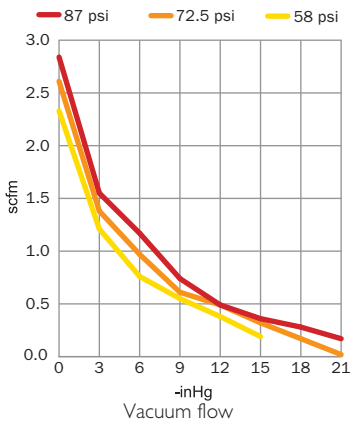
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	0.66	2.33	1.21	0.76	0.55	0.38	0.19	—	—	18.0
72.5	0.81	2.61	1.38	0.97	0.61	0.49	0.32	0.17	0.02	21.0
87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	22.2

EVACUATION TIME

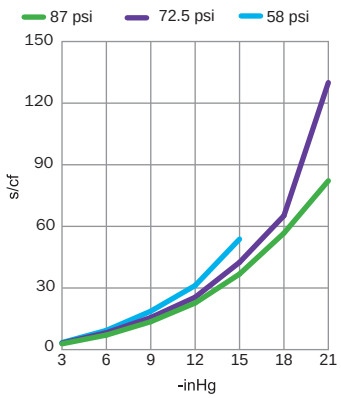
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	0.66	3.40	9.35	18.7	31.2	53.8	—	—	18.0
72.5	0.81	3.12	8.22	15.6	25.5	42.5	65.2	130	21.0
87	0.93	2.83	7.08	13.6	22.7	36.8	56.7	82.2	22.2

BLOW FLOW

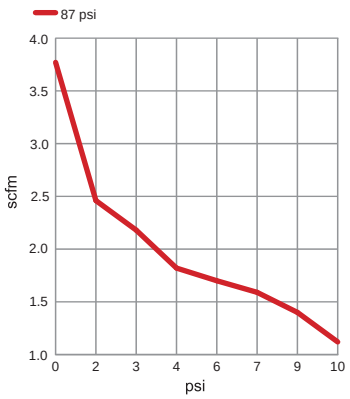
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)								Max pressure
psi	scfm	0	2	3	4	6	7	9	10	psi
87	0.93	3.77	2.46	2.18	1.82	1.70	1.59	1.40	1.12	10



Vacuum flow



Evacuation time

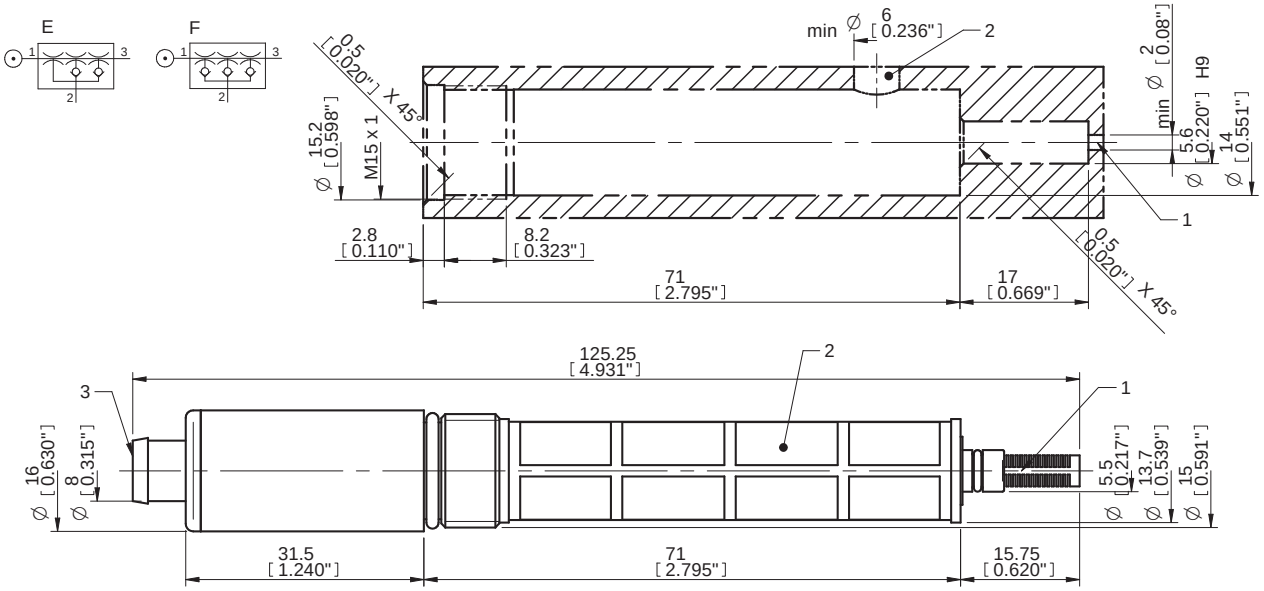


Blow flow

COAX® CARTRIDGE MINI

ORDERING INFORMATION

	Description	Part No.
E	COAX® cartridge MINI Si08-3, holding cap silencer, vacuum filter	01.13.579
F	COAX® cartridge MINI Si08-3, extra non-return valve, holding cap silencer, vacuum filter	01.13.581



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MINI	01.11.977
Exhaust adapter	01.06.344

COAX® CARTRIDGE MIDI

Pi48-2

- Two-stage COAX® cartridge - MIDI - with small mounting dimension for limited spaces.
- Vacuum level to 27 -inHg at low feed pressure.
- High system reliability in case of fluctuating or low feed pressure.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.65-1.93
Material		Al, NBR, PA, SS

VACUUM FLOW

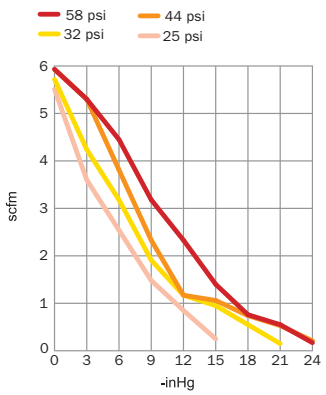
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	2.90	5.51	3.60	2.54	1.48	0.85	0.25	—	—	—	16.5
32	3.43	5.72	4.24	3.18	1.91	1.17	0.95	0.55	0.15	—	21.9
44	4.24	5.93	5.30	3.81	2.33	1.17	1.06	0.74	0.53	0.21	27.0
58	5.38	5.93	5.30	4.45	3.18	2.33	1.40	0.76	0.55	0.17	25.8

EVACUATION TIME

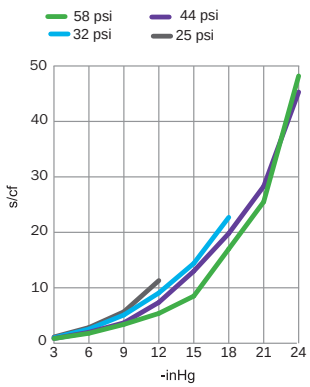
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
25	2.90	1.13	2.83	5.67	11.3	—	—	—	—	—	16.5
32	3.43	0.99	2.55	5.10	9.07	14.4	22.7	—	—	—	21.9
44	4.24	0.85	1.98	3.68	7.37	13.0	19.8	28.3	45.3	113	27.0
58	5.38	0.85	1.80	3.40	5.38	8.50	17.0	25.5	48.2	127	25.8

BLOW FLOW

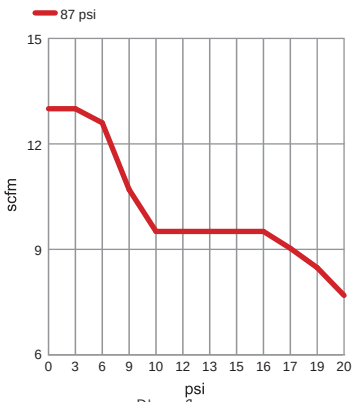
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	7.42	13.0	13.0	12.6	10.7	9.51	9.51	9.51	9.51	9.51	9.03	8.48	7.69	20



Vacuum flow



Evacuation time

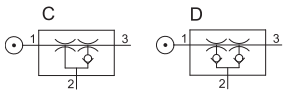


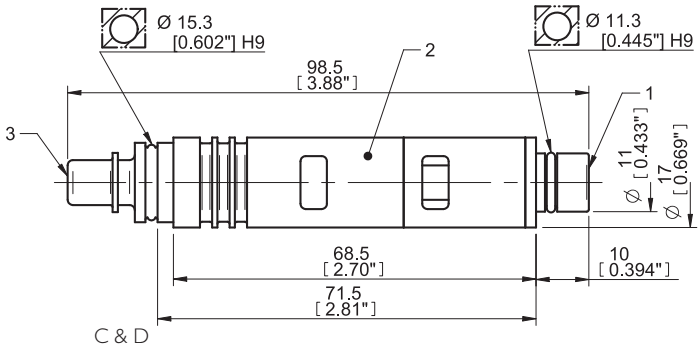
Blow flow

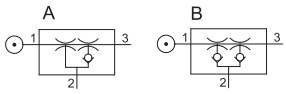
COAX® CARTRIDGE MIDI

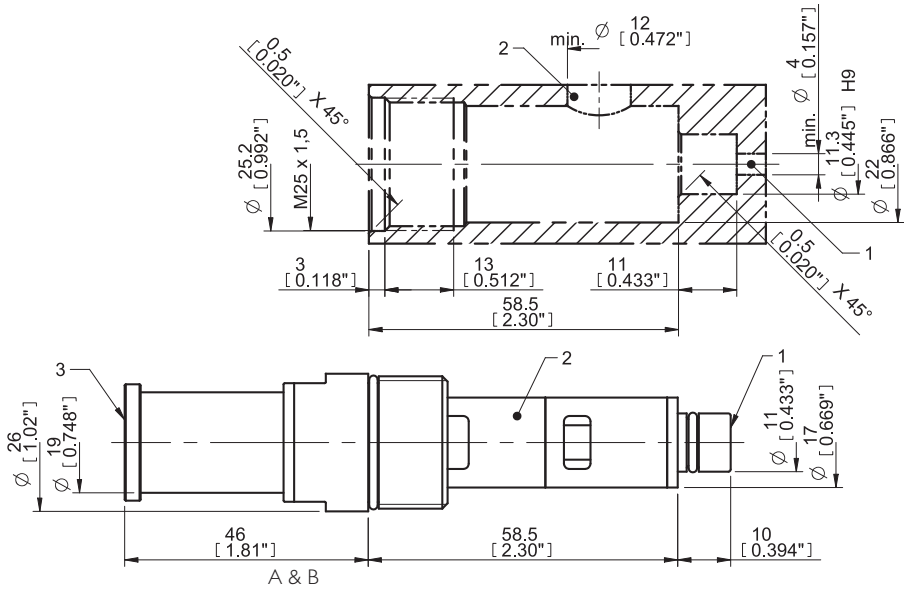
ORDERING INFORMATION

	Description	Part No.
C	COAX® cartridge MIDI Pi48-2	01.07.125
A	COAX® cartridge MIDI Pi48-2, holding cap	01.07.127
D	COAX® cartridge MIDI Pi48-2, extra non-return valve	01.07.710
B	COAX® cartridge MIDI Pi48-2, holding cap, extra non-return valve	01.07.712









ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MIDI	01.11.976

COAX® CARTRIDGE MIDI

Si32-2

- Two-stage COAX® cartridge - MIDI - with small mounting dimension for limited spaces.
- Large vacuum flow in relation to energy consumption.
- Suitable for high-volume evacuation when handling porous materials or if surface leakage is present.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.65-1.93
Material		Al, NBR, PA, SS

VACUUM FLOW

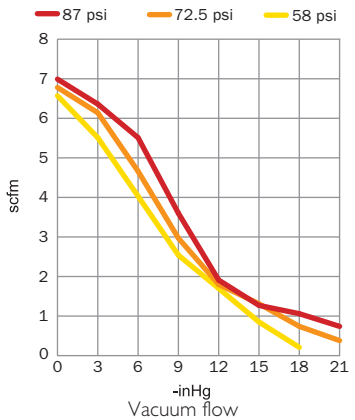
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	2.65	6.57	5.51	4.03	2.54	1.70	0.85	0.21	—	18.0
72.5	3.18	6.78	6.14	4.66	2.97	1.80	1.31	0.74	0.38	21.0
87	3.71	6.99	6.36	5.51	3.60	1.91	1.27	1.06	0.74	22.2

EVACUATION TIME

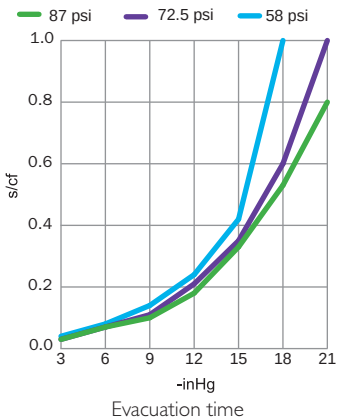
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	2.65	0.040	0.080	0.14	0.24	0.42	1.0	—	18.0
72.5	3.18	0.030	0.070	0.11	0.21	0.35	0.60	1.0	21.0
87	3.71	0.030	0.070	0.10	0.18	0.33	0.53	0.80	22.2

BLOW FLOW

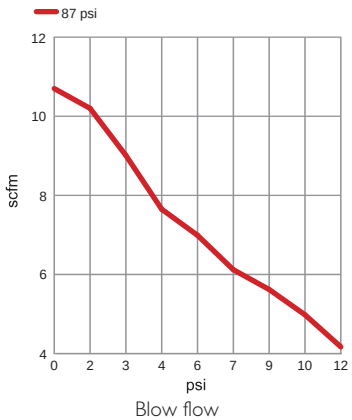
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)									Max pressure
psi	scfm	0	2	3	4	6	7	9	10	12	psi
87	3.71	10.7	10.2	9.01	7.65	6.99	6.12	5.62	4.98	4.17	12



Vacuum flow



Evacuation time

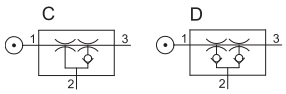


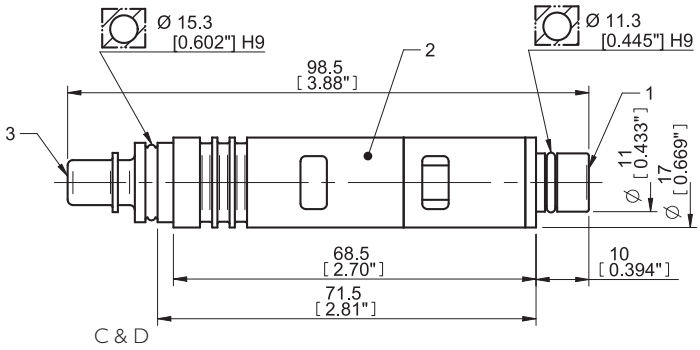
Blow flow

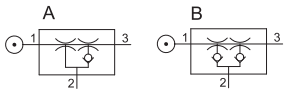
COAX® CARTRIDGE MIDI

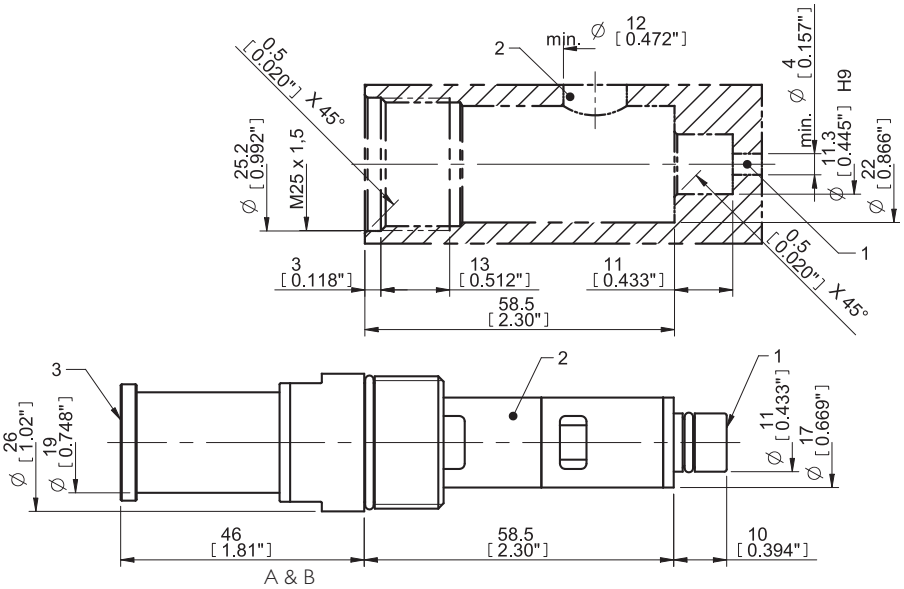
ORDERING INFORMATION

	Description	Part No.
C	COAX® cartridge MIDI Si32-2	01.07.124
A	COAX® cartridge MIDI Si32-2, holding cap	01.07.126
D	COAX® cartridge MIDI Si32-2, extra non-return valve	01.07.709
B	COAX® cartridge MIDI Si32-2, holding cap, extra non-return valve	01.07.711









ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MIDI	01.11.976

COAX® CARTRIDGE MIDI

Pi48-3

- Three-stage COAX® cartridge - MIDI - with high initial vacuum flow.
- Vacuum level to 27 -inHg at low feed pressure.
- High system reliability in case of fluctuating or low feed pressure.
- Suitable for fast evacuation of large volumes in sealed systems.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	1.07-2.35
Material		Al, NBR, PA, SS

VACUUM FLOW

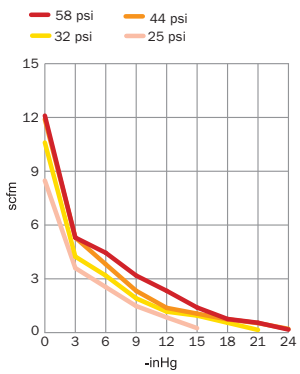
Feed pressure	Air consumption	Vacuum flow (scfm, at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	2.90	8.48	3.60	2.54	1.48	0.85	0.25	—	—	—	16.5
32	3.43	10.6	4.24	3.18	1.91	1.17	0.95	0.55	0.15	—	21.9
44	4.24	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	27.0
58	5.38	12.1	5.30	4.45	3.18	2.33	1.40	0.76	0.55	0.17	25.8

EVACUATION TIME

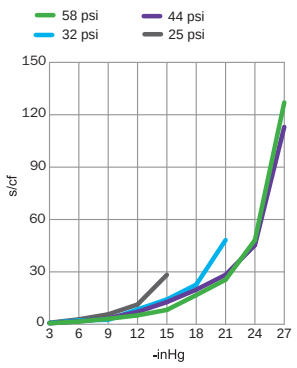
Feed pressure	Air consumption	Evacuation time (s/l) to reach different vacuum levels (-kPa)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
25	2.90	0.85	2.83	5.67	11.3	28.3	—	—	—	—	16.5
32	3.43	0.71	2.27	4.82	8.50	14.2	22.7	48.2	—	—	21.9
44	4.24	0.57	1.70	3.40	7.08	12.7	19.8	28.3	45.3	113	27.0
58	5.38	0.57	1.56	3.12	5.10	8.22	16.7	25.5	48.2	127	25.8

BLOW FLOW

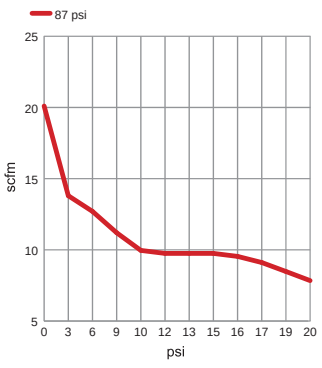
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
87	7.52	20.1	13.8	12.7	11.2	9.96	9.75	9.75	9.75	9.54	9.11	8.48	7.84	20



Vacuum flow



Evacuation time



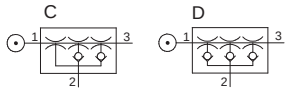
Blow flow

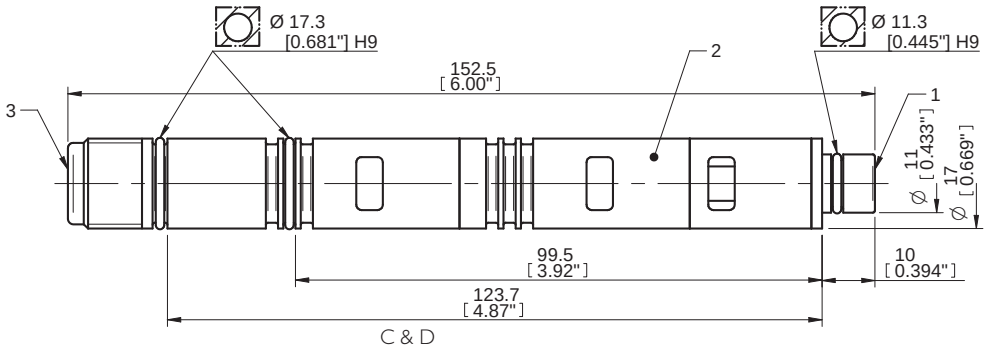
Specifications subject to change without notice.

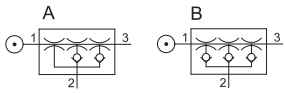
COAX® CARTRIDGE MIDI

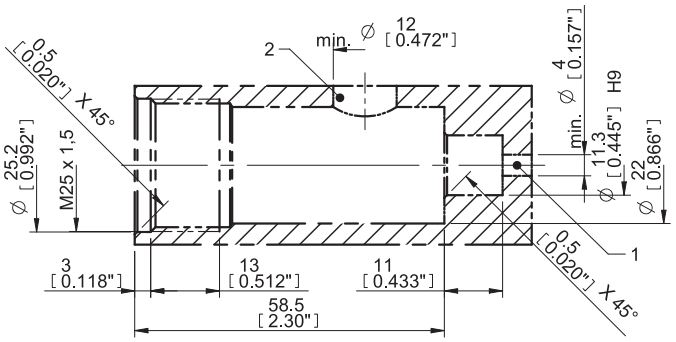
ORDERING INFORMATION

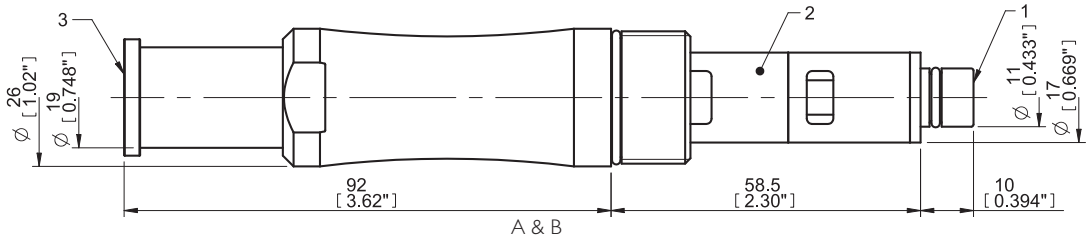
	Description	Part No.
C	COAX® cartridge MIDI Pi48-3	01.06.639
A	COAX® cartridge MIDI Pi48-3, holding cap	01.07.129
D	COAX® cartridge MIDI Pi48-3, extra non-return valve	01.07.714
B	COAX® cartridge MIDI Pi48-3, holding cap, extra non-return valve	01.07.716











ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MIDI	01.11.976

COAX® CARTRIDGE MIDI

Si32-3

- Three-stage COAX® cartridge - MIDI - with extra high initial vacuum flow.
- Large vacuum flow in relation to energy consumption.
- Suitable for fast evacuation of large volumes when handling porous materials or if surface leakage is present.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	1.04-2.33
Material		Al, NBR, PA, SS

VACUUM FLOW

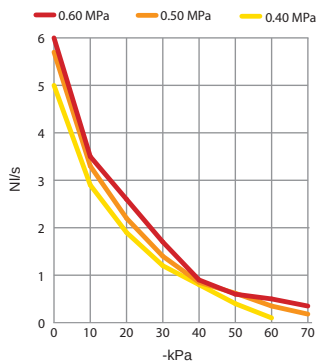
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	2.65	10.6	6.14	4.03	2.54	1.70	0.85	0.21	—	18.0
72.5	3.18	12.1	6.99	4.66	2.97	1.80	1.31	0.74	0.38	21.0
87	3.71	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	22.2

EVACUATION TIME

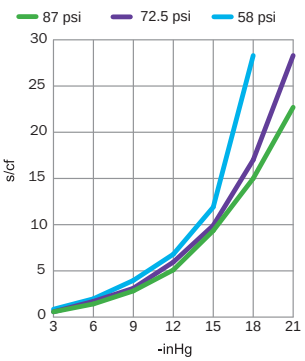
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	2.65	0.85	1.98	3.97	6.80	11.9	28.3	—	18.0
72.5	3.18	0.57	1.70	3.12	5.95	9.92	17.0	28.3	21.0
87	3.71	0.57	1.42	2.83	5.10	9.35	15.0	22.7	22.2

BLOW FLOW

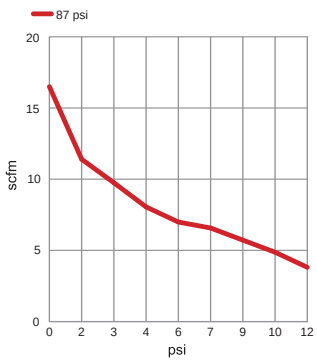
Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)									Max pressure
psi	scfm	0	2	3	4	6	7	9	10	12	psi
87	3.71	16.5	11.4	9.75	8.05	6.99	6.57	5.72	4.87	3.81	12



Vacuum flow



Evacuation time



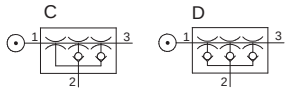
Blow flow

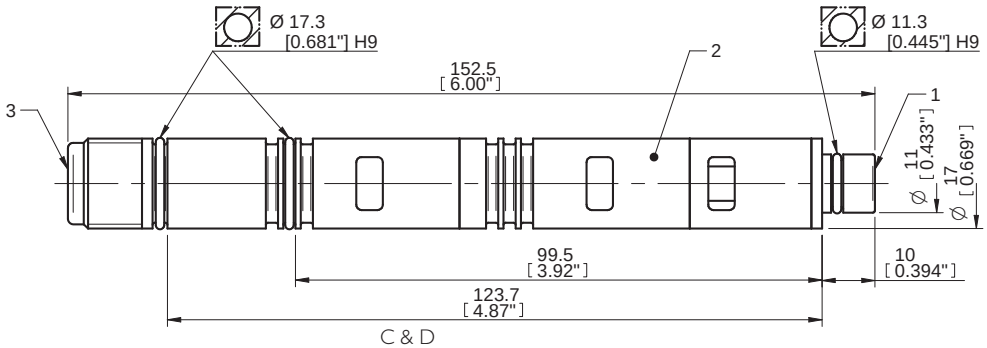
Specifications subject to change without notice.

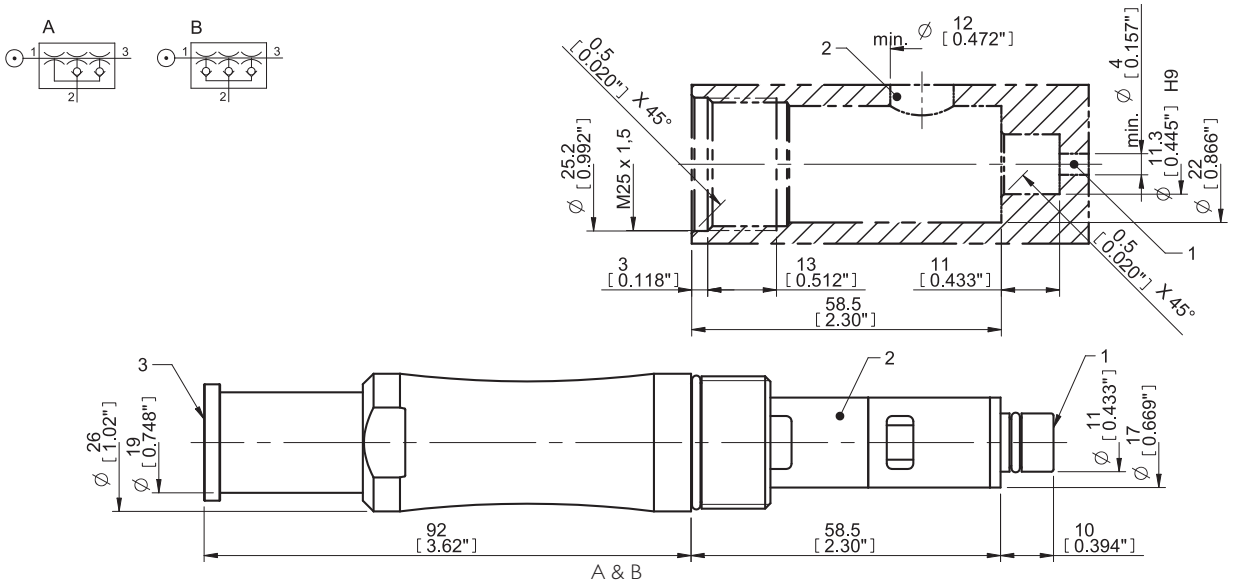
COAX® CARTRIDGE MIDI

ORDERING INFORMATION

	Description	Part No.
C	COAX® cartridge MIDI Si32-3	01.07.053
A	COAX® cartridge MIDI Si32-3, holding cap	01.07.128
D	COAX® cartridge MIDI Si32-3, extra non-return valve	01.07.713
B	COAX® cartridge MIDI Si32-3, holding cap, extra non-return valve	01.07.715







ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer COAX® MIDI	01.11.976

COAX® PROBE MINI

Pi12-2 PROBE

- Patented COAX® technology
- Multiple functions
- Easy to integrate
- Fast installation
- Inline design

TECHNICAL DATA

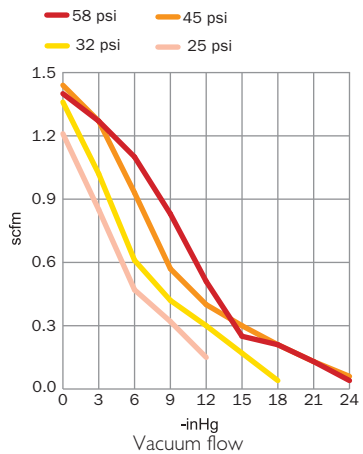
Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.42-0.59
Material		Al, NBR, PA, SS, CuZn, POM

VACUUM FLOW

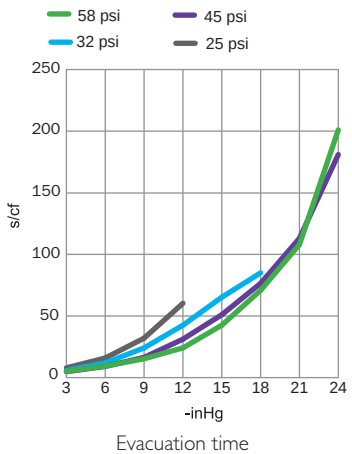
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	-inHg
25	0.61	1.21	0.85	0.47	0.32	0.15	—	—	—	—	14.7
32	0.72	1.36	1.02	0.61	0.42	0.30	0.17	0.04	—	—	19.2
45	0.93	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	27.0
58	1.12	1.40	1.27	1.10	0.83	0.51	0.25	0.21	0.13	0.04	25.2

EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
25	0.61	7.93	15.9	32.0	60.3	—	—	—	—	14.7
32	0.72	5.67	11.9	24.1	42.5	65.2	85.0	—	—	19.2
45	0.93	4.82	9.07	16.4	31.2	51.0	76.5	113	181	27.0
58	1.12	5.10	9.35	15.3	24.1	42.5	70.8	108	201	25.2



Vacuum flow

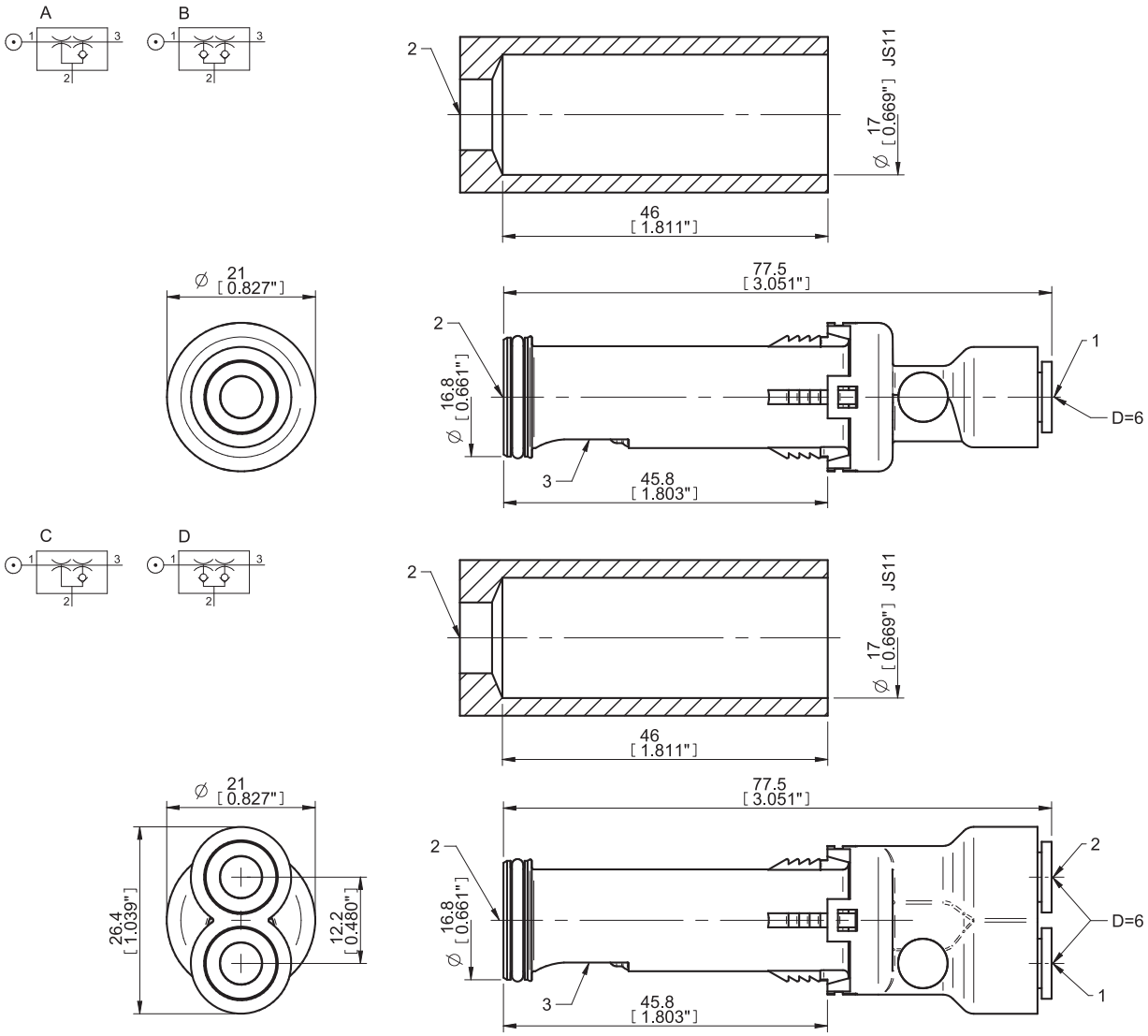


Evacuation time

COAX® PROBE MINI

ORDERING INFORMATION

	Description	Part No.
A	COAX® probe MINI Pi12-2 6 mm	01.14.122
B	COAX® probe MINI Pi12-2 6 mm, extra non-return valve	01.14.123
C	COAX® probe MINI Pi12-2 2x6 mm	01.14.124
D	COAX® probe MINI Pi12-2 2x6 mm, extra non-return valve	01.14.125



COAX® PROBE MINI

Si08-2 PROBE

- Patented COAX® technology
- Multiple functions
- Easy to integrate
- Fast installation
- Inline design

TECHNICAL DATA

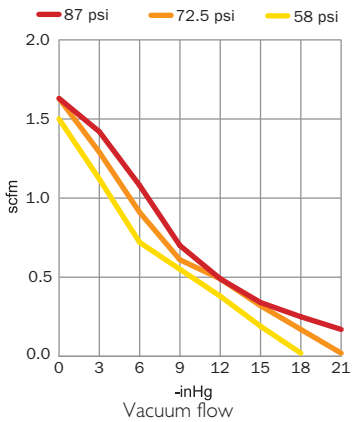
Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-176
Weight	oz	0.42-0.59
Material		Al, NBR, PA, SS, CuZn, POM

VACUUM FLOW

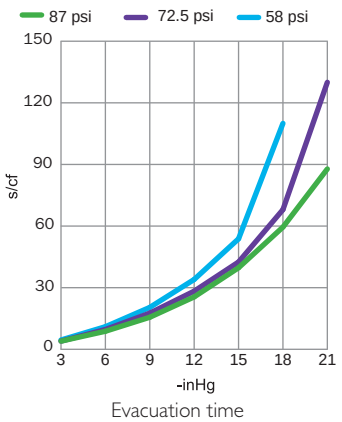
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
58	0.66	1.50	1.12	0.72	0.55	0.38	0.19	0.02	—	18.0
72.5	0.81	1.63	1.29	0.91	0.61	0.49	0.32	0.17	0.02	21.0
87	0.93	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	22.2

EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
psi	scfm	3	6	9	12	15	18	21	-inHg
58	0.66	4.53	11.0	20.4	34.0	53.8	110	—	18.0
72.5	0.81	3.97	9.63	17.6	28.3	42.5	68.0	130	21.0
87	0.93	3.97	8.78	15.6	25.5	39.7	59.5	87.8	22.2



Vacuum flow

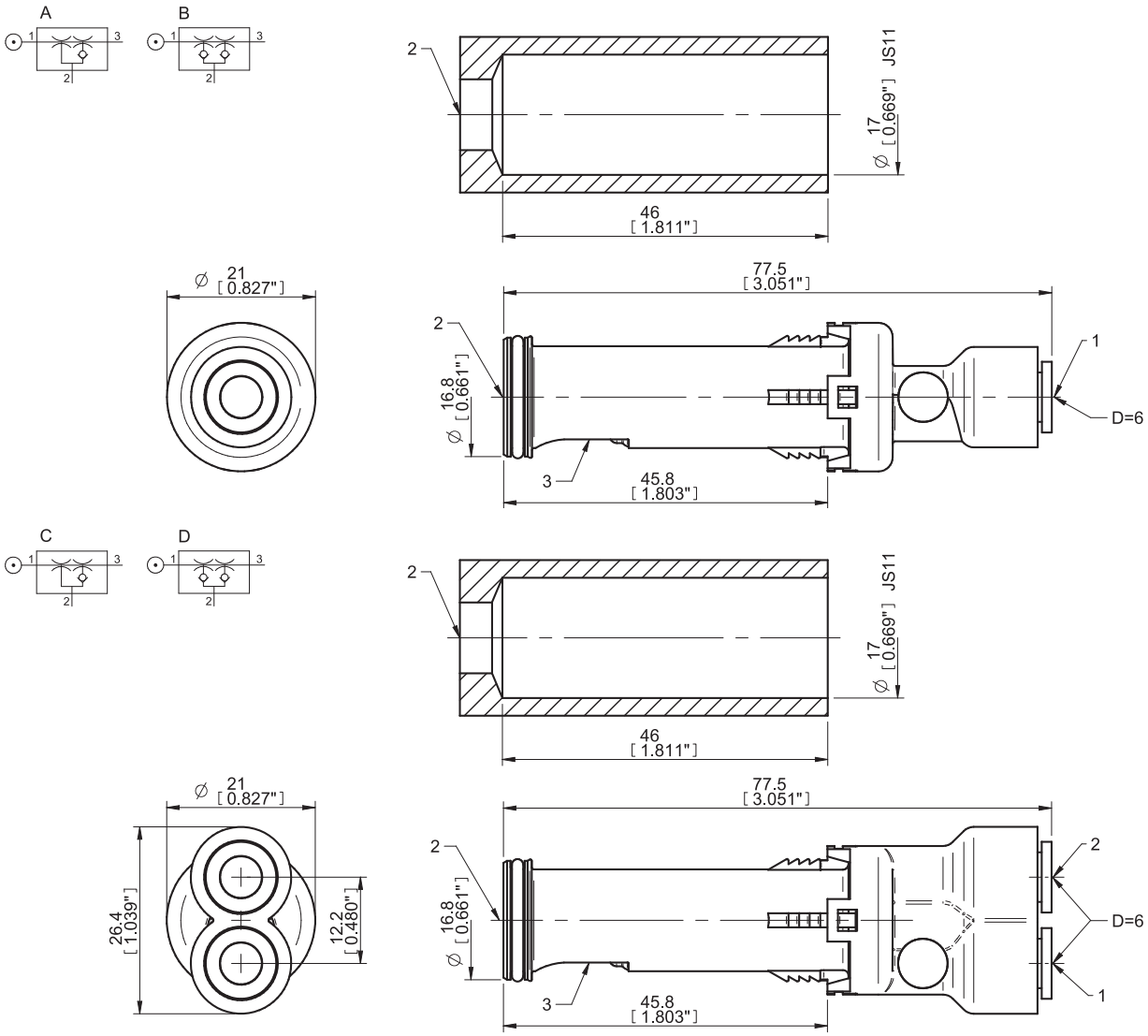


Evacuation time

COAX® PROBE MINI

ORDERING INFORMATION

	Description	Part No.
A	COAX® probe MINI Si08-2 6 mm	01.14.126
B	COAX® probe MINI Si08-2 6 mm, extra non-return valve	01.14.127
C	COAX® probe MINI Si08-2 2x6 mm	01.14.128
D	COAX® probe MINI Si08-2 2x6 mm, extra non-return valve	01.14.129



P2010 Bi03-2

- Patented COAX® technology
- Low operating feed pressure
- Low weight
- Miniature size
- Inline design
- Short cycle times
- DIN-rail mounting
- Quick and easy mounting

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	26
Feed pressure, max.	psi	101.5
Noise level	dBA	61–64
Temperature range	°F	14-122
Material		PA, NBR, Al, SS, POM, CuZn

TECHNICAL DATA, SPECIFIC

Description	Unit	Value	
		01.07.996	01.10.348
Weight	oz	0.54	0.63

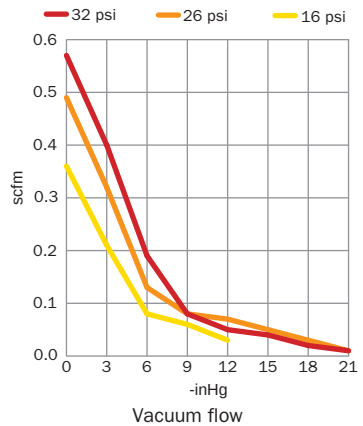
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	-inHg
16	0.21	0.36	0.21	0.08	0.06	0.03	—	—	—	15.0
26	0.30	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	24.9
32	0.36	0.57	0.40	0.19	0.08	0.05	0.04	0.02	0.01	24.6

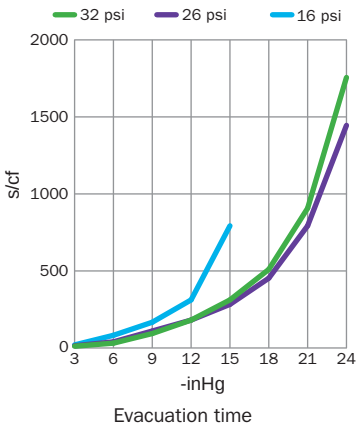
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	-inHg
16	0.21	19.8	82.2	167	312	793	—	—	—	15.0
26	0.30	14.2	39.7	110	181	283	453	793	1445	24.9
32	0.36	11.3	31.2	93.5	181	312	510	907	1756	24.6

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



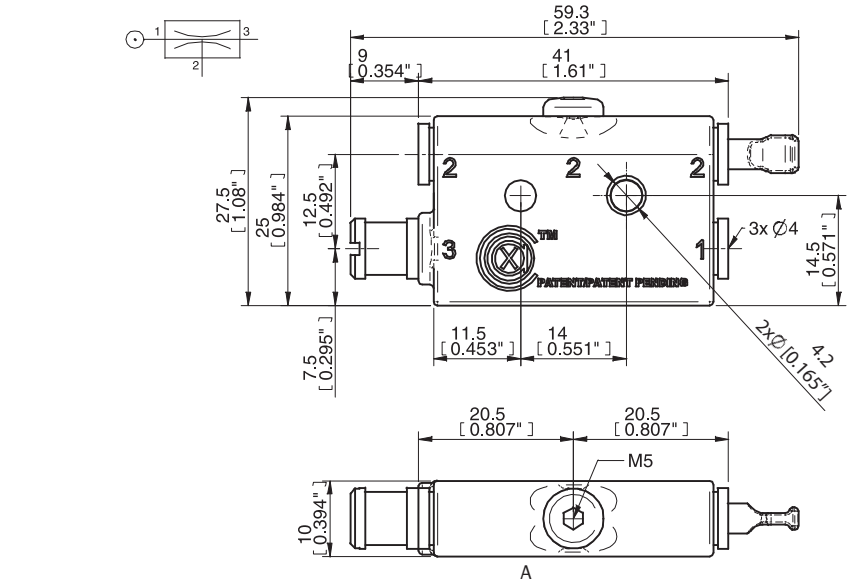
Vacuum flow



Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump P2010	01.07.996
B	Vacuum pump P2010, DIN	01.10.348



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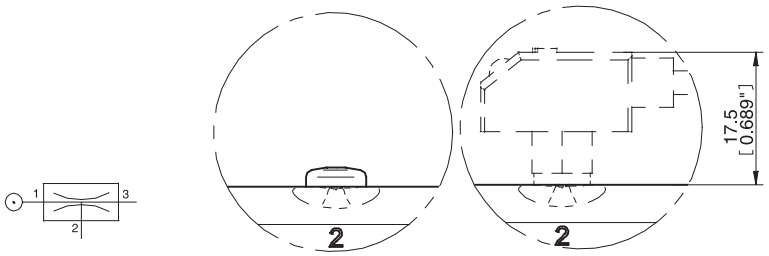
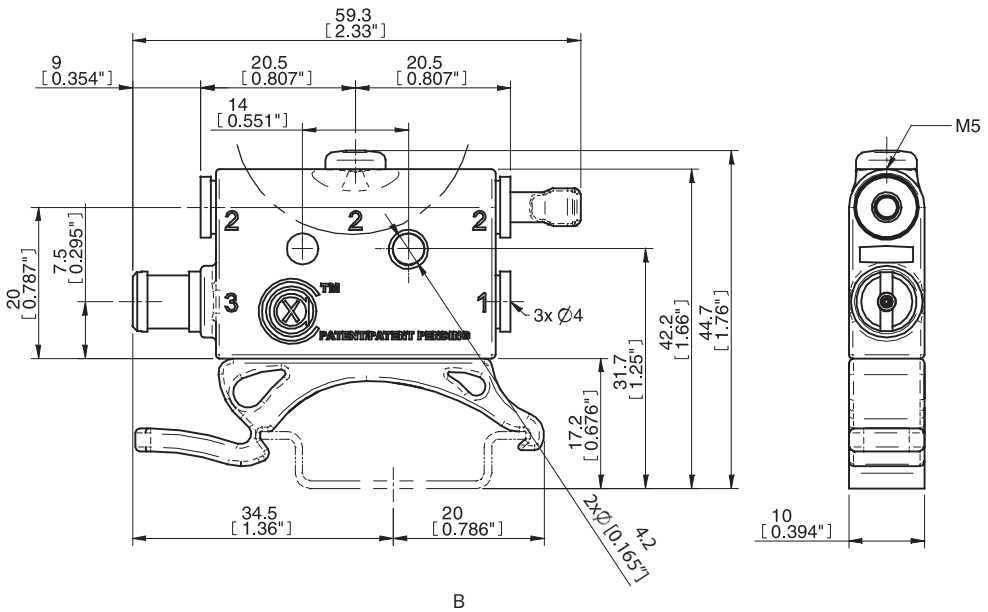


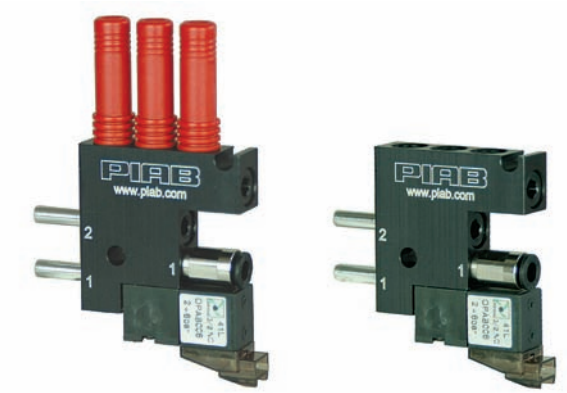


B

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
DIN rail 35 mm P2010	01.10.145

QUICK-RELEASE P2010



- Flexible, Automatic Quick-Release volume
- Electrical/Pneumatic
- Low weight
- Miniature size
- Inline design
- Short cycle times
- Quick and easy mounting

The user is advised to increase the feed pressure by 7.25 psi to attain correct feed pressure in the pump.

TECHNICAL DATA

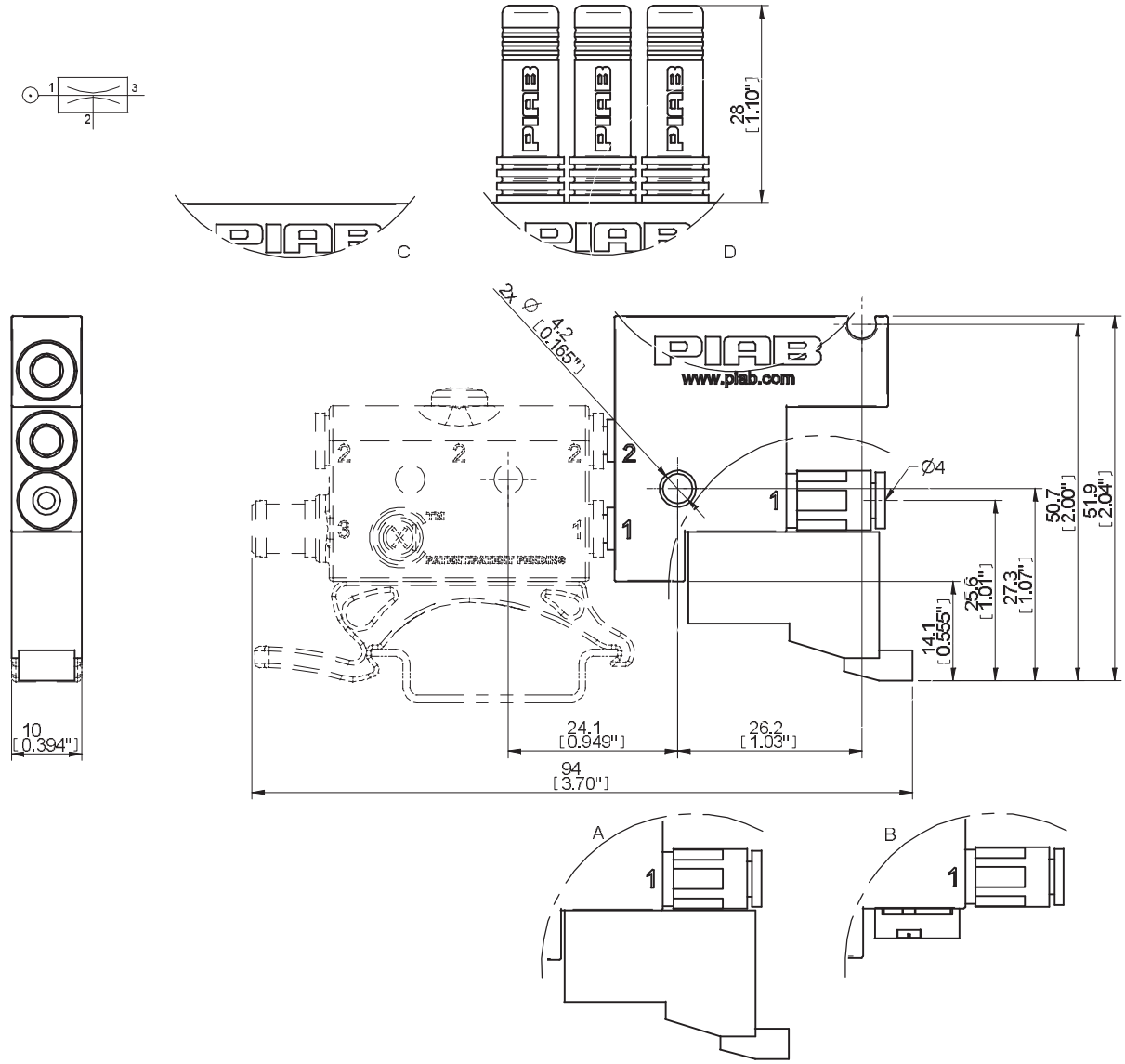
Description	Unit	Value
Feed pressure, optimum	psi	26
Feed pressure, max.	psi	101.5
Working temperature	°F	23-122
Material		PA, NBR, Al, SS, POM, CuZn, PE

TECHNICAL DATA, SPECIFIC

Description	Unit	Value			
		01.10.350	01.10.351	01.10.352	01.10.353
Weight	oz	0.95	1.02	1.76	1.83
Volume, Quick-Release	in^3	0.05	0.14	0.05	0.14
Voltage	V DC			24 (-5%+10%)	24 (-5%+10%)
Response time	ms			8–10	8–10
Display				LED	LED
Power	W			1.3	1.3

ORDERING INFORMATION

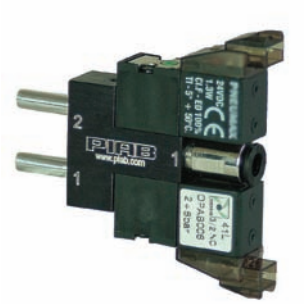
	Description	Part No.
B, C	Quick-Release 0 pneumatic, P2010	01.10.350
B, D	Quick-Release 3 pneumatic, P2010	01.10.351
A, C	Quick-Release 0 electric, P2010	01.10.352
A, D	Quick-Release 3 electric, P2010	01.10.353



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Cable to solenoid valve 6.5 ft, 1 pc.	01.10.157
Plug M8x1 complete	01.10.155
Quick-Release tank P2010 cpl.	01.10.156

BLOW-OFF P2010



- Control amount and duration of blow-off
- Short cycle times
- Low weight
- Miniature size
- Inline design
- Quick and easy mounting

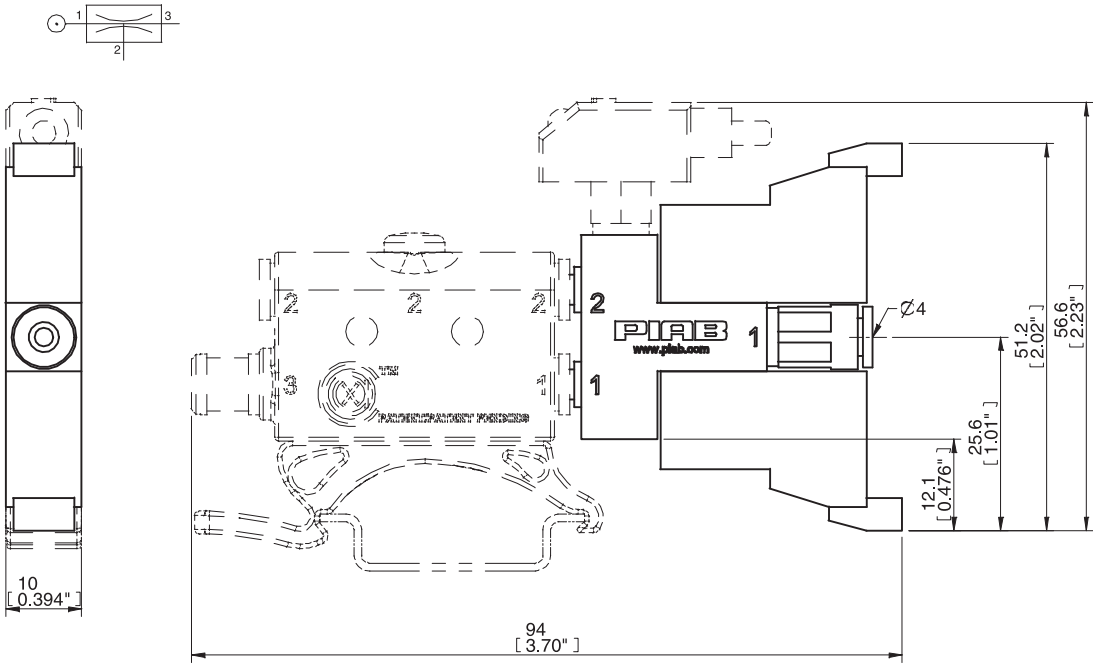
The user is advised to increase the feed pressure by 7.25 psi to attain correct feed pressure in the pump.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	26
Feed pressure, max.	psi	101.5
Temperature range	°F	23-122
Weight	oz	2.22
Material		PA, NBR, Al, SS, PE, CuZn
Voltage	V DC	24 (-5%+10%)
Response time	ms	8–10
Display		LED x 2
Power	W	1.3

ORDERING INFORMATION

Description	Part No.
Blow-off unit P2010	01.10.349



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Cable Solenoid valve 6.5 ft, 1 pc.	01.10.157

VACUUM SWITCH, ADJUSTABLE FOR P2010

- 1 output NO
- Cable 5.0 ft
- Range from pressure to vacuum

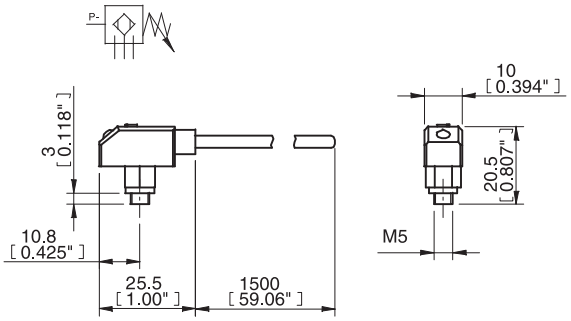
TECHNICAL DATA

Description	Unit	Value
Pressure, max.	psi	87
Vacuum/pressure range	-inHg/psi	-30-89
Material		PC, SS, PSC,CuZn, PA
Temperature range	°F	14-140
Weight	oz	0.21
Connection vacuum		M5
Hysteresis		±2% F.S.
Voltage supply	VDC	10.8–30
Safety classification		IP40
Humidity	%RH	35–85
Response time, approx.	ms	1
Accuracy, at 25°C		±3% F.S.
Current consumption, max	mA	20
High-voltage resistance	V DC	500
Insulation at 500 VDC	MOhm	100
Vibration resistance, 1.5 mm, XYZ, 2 h	Hz	10–55
Display		LED
Current output, max	mA	80

Note: Normally closed, opens at set value from -30 inHg to 89 psi.

ORDERING INFORMATION

Description	Part No.
Vacuum switch PNP M5	01.10.358
Vacuum switch NPN M5	01.10.359



PUSH N' PLAY*

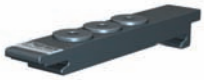
CREATE YOUR OWN P3010!

The P3010 Series enables you to decide for yourself the functions you need. The performance can therefore be upgraded or modified in pace with your changing needs.

The **double connection module** allows you to connect up to four P3010 units (two double stacks) for increased speed. The manifold provides a single connection for compressed air and vacuum as well as two additional vacuum connections for more control functions.

The **Quick-release module** speeds up the release of a part or restoring the system to atmospheric pressure. For higher capacity, an extra tank that offers additional volume can be fitted to the quick release module.

Connection modules are available in several versions, with 3 or 6 connections.



Pump speed can be doubled by adding an **extra pump module.**

Various **vacuum switches** are available for more reliable operation and accurate control of the process - miniaturized design, analog and static outputs and an LED display are some of the standard alternatives.

Pump module

Solenoid valve for controlling the pump and saving energy.

The **mounting rail** is available in several versions. Up to four pumps can be docked to a single rail.

Common feed manifold provides a single air connection when using mutiple pump modules.

*) Most accessories have "push-in" connections making for easy assembly.

EXPLANATION OF P3010 SERIES VACUUM PUMP PART NUMBER

1. Pump Module	Part Number for Individual Module	Code for Complete P3010 Series Pump
Pi12-3 with push-in 6mm air inlet	01.04.656	AA
Pi12-3 with NPSF 1/8" air inlet	01.04.657	AB
2x Pi12-3 with push-in 6mm air inlet	01.04.667	AC
2x Pi12-3 with NPSF 1/8" air inlet	01.04.668	AD
Pi12-3 with push-in 6mm air inlet/non-return valve	01.06.183	BA
Pi12-3 with NPSF 1/8" air inlet/non-return valve	01.06.677	BB
2x Pi12-3 with push-in 6mm air inlet/non-return valve	01.06.213	BC

2. Function Module	Part Number for Individual Module	Code for Complete P3010 Series Pump
Connection module, vacuum 6xNPSF 1/8"	01.04.270	01
Connection module, vacuum 3xNPSF 1/8"	01.04.269	02
Connection module, conn G 3/8" or push-in 12 mm and 2 x 1/8" NPSF	01.06.169	03*
Quick-release module, vacuum inlet push-in 10mm + 6mm	01.04.351	04
Quick-release module, vacuum inlet push-in 8mm + 6mm & quick-release tank 30 cm3	01.04.669	05
Quick-release module, vacuum inlet push-in 8mm + 6mm & quick-release tank 60 cm3	01.04.670	06
Quick-release module, vacuum inlet push-in 10mm + 6mm & quick-release tank 30 cm3	01.04.671	07
Quick-release module, vacuum inlet push-in 10mm + 6mm & quick-release tank 60 cm3	01.04.672	08
Quick-release module, vacuum inlet NPSF 1/4"+ push-in 6mm	01.06.288	09
Quick-release module, vacuum inlet NPSF 1/4"+ push-in 6mm & quick-release tank 30 cm3	01.06.341	10
Quick-release module, vacuum inlet NPSF 1/4"+ push-in 6mm & quick-release tank 60 cm3	01.06.342	11
Quick-release module, vacuum inlet push-in 8mm + 6mm	01.04.271	12

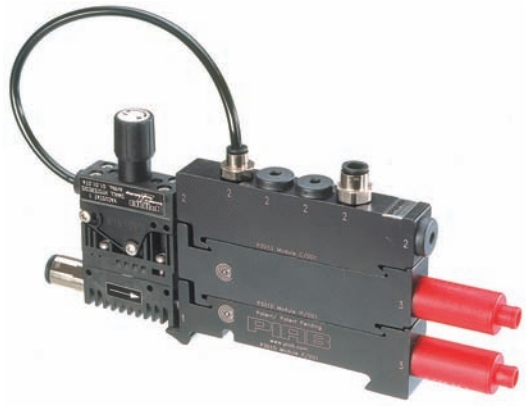
** When ordering this function module, you need to order 2x of the Pump Module.*

3. Valve Module	Part Number for Individual Module	Code for Complete P3010 Series Pump
None		XX
Solenoid DS23, 3-way with 6mm stem includes DIN connector and push-in 6mm fitting 24V DC	01.04.274	AA
Vacustat 6mm stem and push-in 6mm fitting	01.04.701	AC

4. Vacuum Switch Module	Part Number for Individual Module	Code for Complete P3010 Series Pump
None		00
PNP NO adj. electronic with 6mm push-in fitting MM8	01.07.729	01
NPN NO adj. electronic with 6mm push-in fitting MM8	01.07.730	02
PNP NO adj. electronic with 6mm push-in fitting LM8	01.07.731	05
PNP NO adj. electronic/LED with 6mm push-in fitting DM8	01.07.732	09
NPN NO adj. electronic/LED with 6mm push-in fitting DM8	01.07.733	10
Inductive universal with 6mm push-in fitting	01.04.350	11
VS4015 PNP/NPN NO/NC preset at 9 -inHg with 6mm push-in fitting	01.10.245	18
VS4015 PNP/NPN NO/NC preset at 15 -inHg with 6mm push-in fitting	01.10.246	19
VS4015 PNP/NPN NO/NC preset at 21 -inHg with 6mm push-in fitting	01.10.247	20
VS4016 PNP/NPN NO/NC preset at 9 -inHg with G1/8" thread	01.10.248	21
VS4016 PNP/NPN NO/NC preset at 15 -inHg with G1/8" thread	01.10.249	22
VS4016 PNP/NPN NO/NC preset at 21 -inHg with G1/8" thread	01.10.250	23

For operation, every P3010 Series Vacuum Pump must consist of a pump module and a function module.

P3010 Pi12-3X2 WITH ENERGY-SAVING SYSTEM



- Patented COAX® technology
- Low operating feed pressure
- Fast cycle times
- Inline design
- Modular functions available

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	45
Feed pressure, max.	psi	101.5
Noise level	dBA	66–68
Temperature range	°F	14-122
Weight	oz	10.6
Material		PP, PA, NBR, Al, SS
Hysteresis	-inHg	<2.07
Lifespan	cycles	>10,000,000

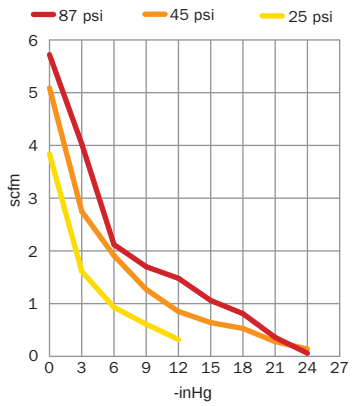
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	6.78	4.24	2.12	1.74	1.53	1.19	0.72	0.21	0.04	–	24.9
45	1.99	5.93	2.54	1.86	1.14	0.81	0.59	0.42	0.25	0.13	–	27.0
25	1.27	3.81	1.70	0.93	0.64	0.30	–	–	–	–	–	14.7

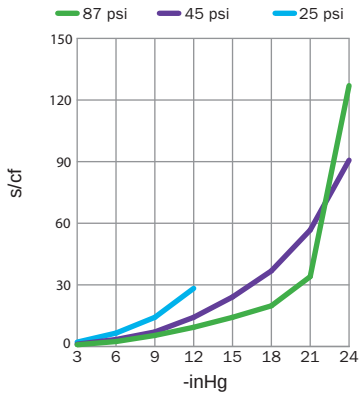
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	0.85	2.41	5.38	9.35	14.2	19.8	34.0	127	–	24.9
45	1.99	1.13	3.40	7.08	14.2	24.1	36.8	56.7	90.7	-	27.0
25	1.27	2.12	6.52	14.2	28.3	–	–	–	–	–	14.7

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



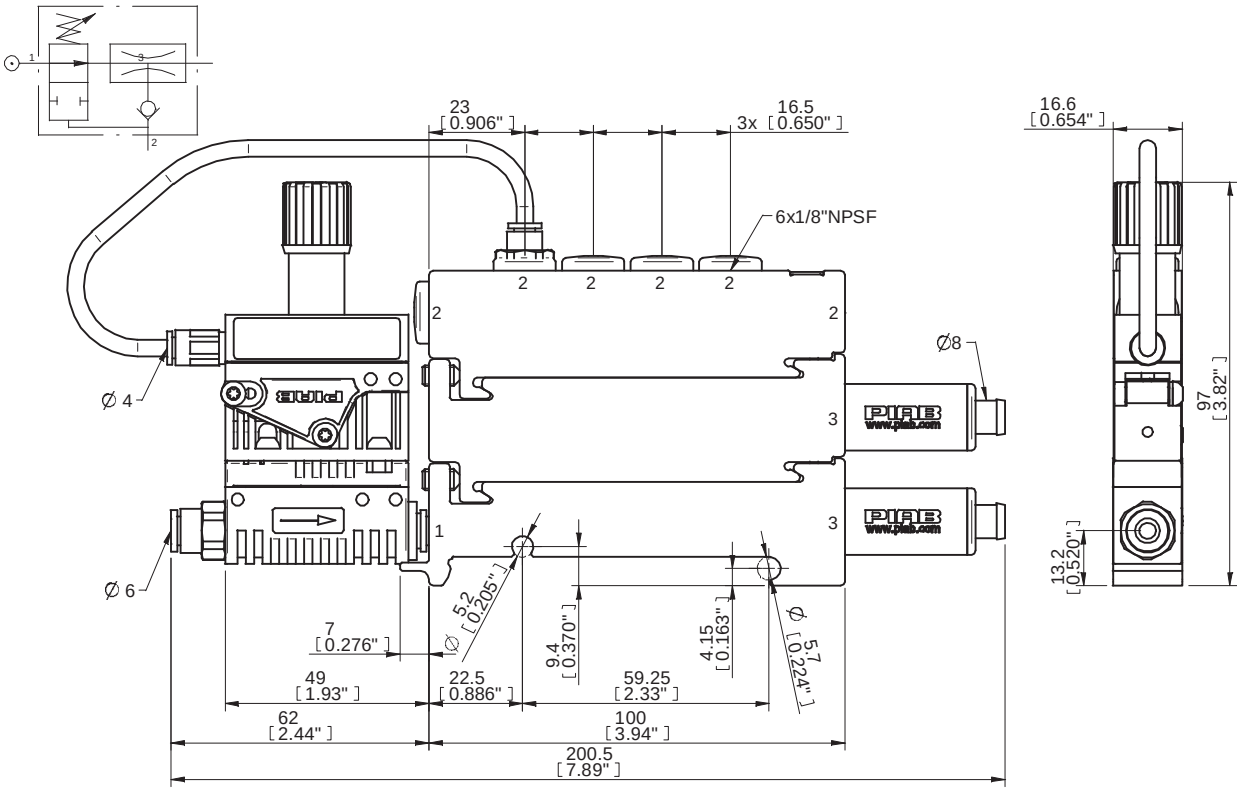
Vacuum flow



Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump P3010 Pi12-3x2, conn. 4x1/8" NPSF, ES	P3010.AC.01.AC.00



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Sealing kit P3010, NBR	01.04.201

The sealing kit includes flap valves, compressed air filter and vacuum filter.

P3010 Pi12-3X1 PUMP MODULES

- Patented COAX® technology
- Low operating feed pressure
- Fast cycle times
- Inline design
- Modular functions available

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	45
Feed pressure, max.	psi	101.5
Noise level	dBA	66–68
Temperature range	°F	14-122
Material		PP, PA, Al, SS, NBR

TECHNICAL DATA, SPECIFIC

Description	Unit	Value			
		01.04.657	01.04.656	01.06.183	01.04.658
Weight	oz	2.61	2.22	2.22	2.75

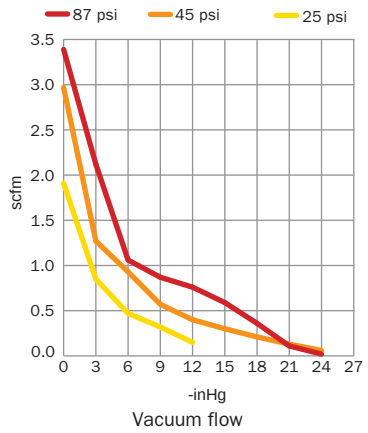
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	1.67	3.39	2.12	1.06	0.87	0.76	0.59	0.36	0.11	0.02	–	24.9
45	1.00	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	–	27.0
25	0.64	1.91	0.85	0.47	0.32	0.15	–	–	–	–	–	14.7

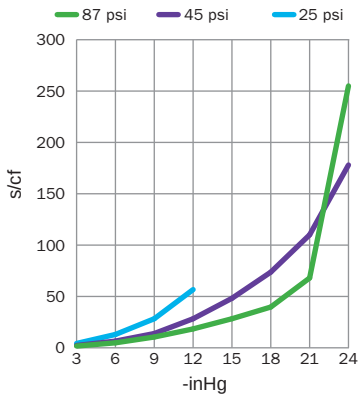
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	24	-inHg
87	1.67	1.70	4.82	10.5	18.4	28.3	39.7	68.0	255	–	24.9
45	1.00	2.27	6.52	13.9	28.3	48.2	73.7	110	178	–	27.0
25	0.64	4.25	13.0	28.3	56.7	–	–	–	–	–	14.7

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



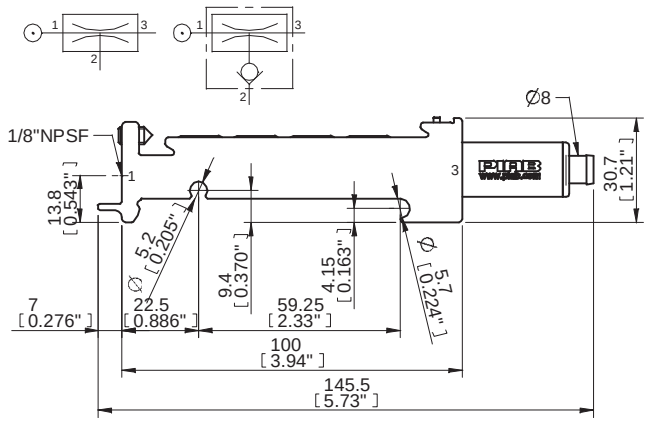
Vacuum flow



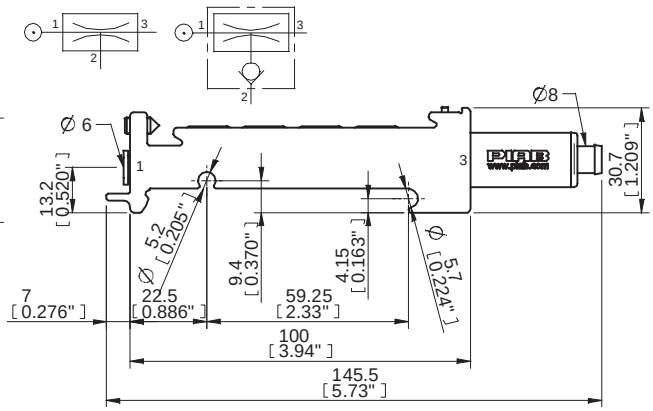
Evacuation time

ORDERING INFORMATION

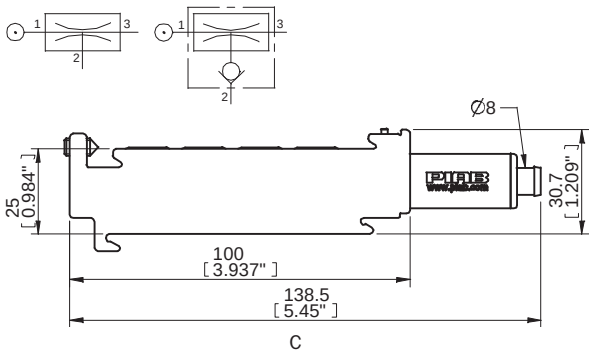
	Description	Part No.	Code No.
A	Vacuum pump module P3010 Pi12-3, conn. compressed air 1/8" NPSF	01.04.657	AB
A	Vacuum pump module P3010 Pi12-3, conn. Compressed air 1/8"NPSF, non-return valve	01.06.677	BB
B	Vacuum pump module P3010 Pi12-3, conn. compressed air push-in Ø6 mm	01.04.656	AA
B	Vacuum pump module P3010 Pi12-3, conn. compressed air push-in Ø6 mm, non-return valve	01.06.183	BA
C	Vacuum pump module P3010 Pi12-3, extra	01.04.658	-
C	Vacuum pump module P3010 Pi12-3, extra, non-return valve	01.06.210	



A



B



C

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Sealing kit P3010, NBR	01.04.201

The sealing kit includes flap valves, compressed air filter and vacuum filter.

P3010 Pi12-3X2 PUMP MODULES

- Patented COAX® technology
- Low operating feed pressure
- Fast cycle times
- Inline design
- Modular functions available

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	45
Feed pressure, max.	psi	101.5
Air Consumption	scfm	1.27-3.39
Noise level	dBA	66–68
Temperature range	°F	14-122
Weight	oz	4.80
Material		PA, NBR, Al, SS

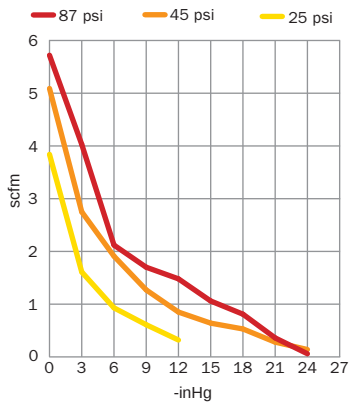
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	6.78	4.24	2.12	1.74	1.53	1.19	0.72	0.21	0.04	–	24.9
45	1.99	5.93	2.54	1.86	1.14	0.81	0.59	0.42	0.25	0.13	–	27.0
25	1.27	3.81	1.70	0.93	0.64	0.30	–	–	–	–	–	14.7

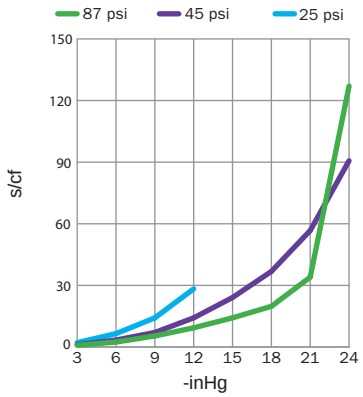
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	0.85	2.41	5.38	9.35	14.2	19.8	34.0	127	–	24.9
45	1.99	1.13	3.40	7.08	14.2	24.1	36.8	56.7	90.7	-	27.0
25	1.27	2.12	6.52	14.2	28.3	–	–	–	–	–	14.7

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



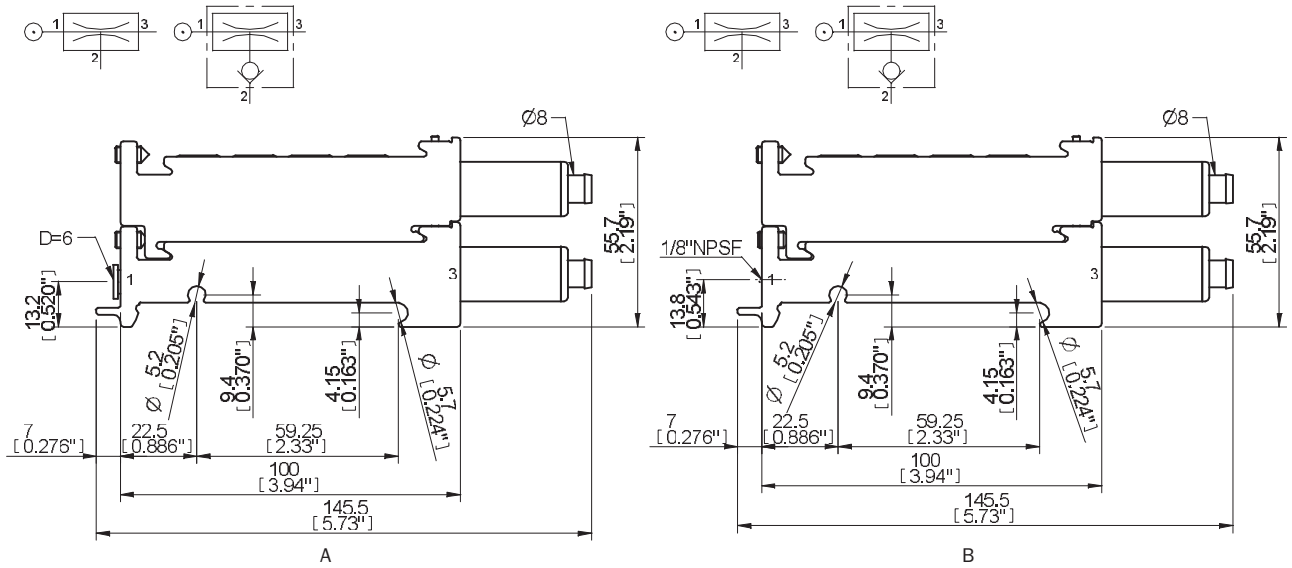
Vacuum flow



Evacuation time

ORDERING INFORMATION

	Description	Part No.	Code No.
A	Vacuum pump module P3010 Pi12-3x2, conn. compressed air push-in Ø6 mm	01.04.667	AC
B	Vacuum pump module P3010 Pi12-3x2, conn. compressed air 1/8" NPSF	01.04.668	AD



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Sealing kit P3010, NBR	01.04.201

The sealing kit includes flap valves, compressed air filter and vacuum filter.

P3010 QUICK-RELEASE MODULES

- Patented COAX® technology
- Low operating feed pressure
- Fast cycle times
- Inline design
- Modular functions available

TECHNICAL DATA

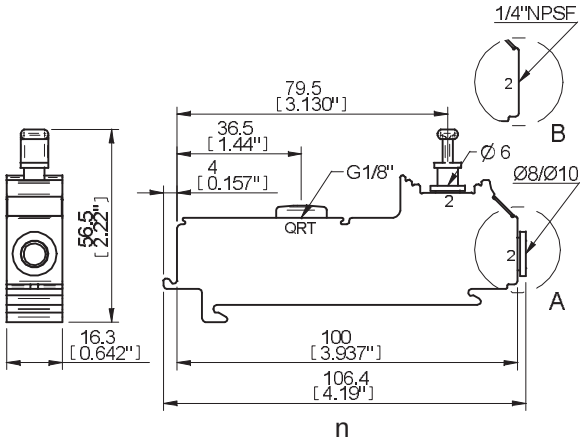
Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-122
Material		Al, SS,PPS, NBR, PA

TECHNICAL DATA, SPECIFIC

Description	Unit	Value		
		01.04.271/01.04.351/01.06.288	01.04.272	01.04.273
Quick-release volume	in^3	0.18	1.83	3.66
Weight	oz	4.27	2.54	4.16

ORDERING INFORMATION

	Description	Part No.	Code No.
A	Quick-Release module P3010, conn. push-in 10 and 6 mm	01.04.351	04
A	Quick-Release module P3010, vacuum connections push-in 8 and 6 mm	01.04.271	12
B	Quick-Release module P3010, conn. 1/4"NPSF and 6 mm	01.06.288	09
C	Quick-Release tank module P3010, 30 cm^3	01.04.272	-
D	Quick-Release tank module P3010, 60 cm^3	01.04.273	-
E	Quick-Release module P3010, conn. push-in 8 and 6 mm & Quick-Release tank module P3010, 30 cm^3	01.04.669	05
F	Quick-Release module P3010, conn. push-in 8 and 6 mm & Quick-Release tank module P3010, 60 cm^3	01.04.670	06
E	Quick-Release module P3010, conn. push-in 10 and 6 mm & Quick-Release tank module P3010, 30 cm^3	01.04.671	07
F	Quick-Release module P3010, conn. push-in 10 and 6 mm & Quick-Release tank module P3010, 60 cm^3	01.04.672	08
G	Quick-Release module P3010, conn. 1/4"NPSF and 6 mm & Quick-Release tank module P3010, 30 cm^3	01.06.341	10
H	Quick-Release module P3010, conn. 1/4"NPSF and 6 mm & Quick-Release tank module P3010, 60 cm^3	01.06.342	11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36.5
[1.44"]
4
[0.157"]
G1/8"
Ø 6
Ø8/Ø10
QRT
B
A
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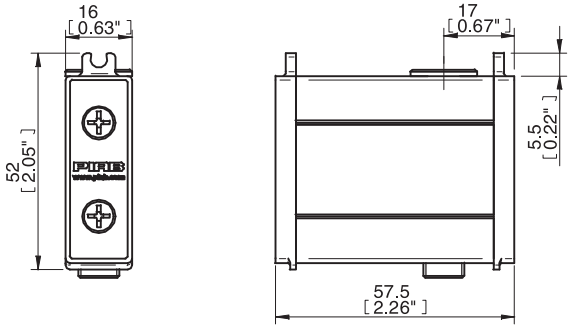
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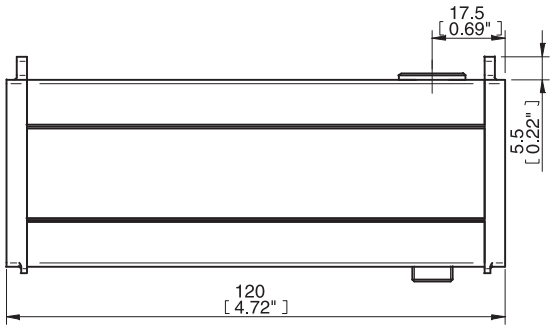
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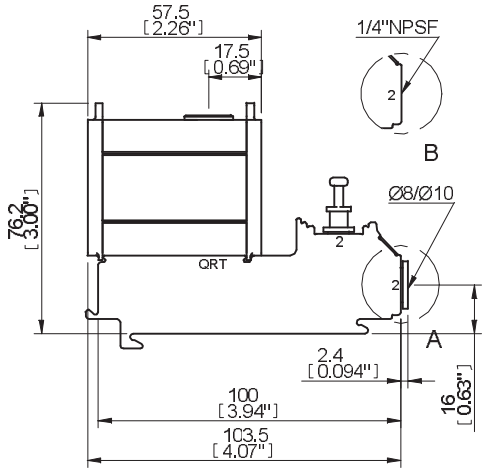
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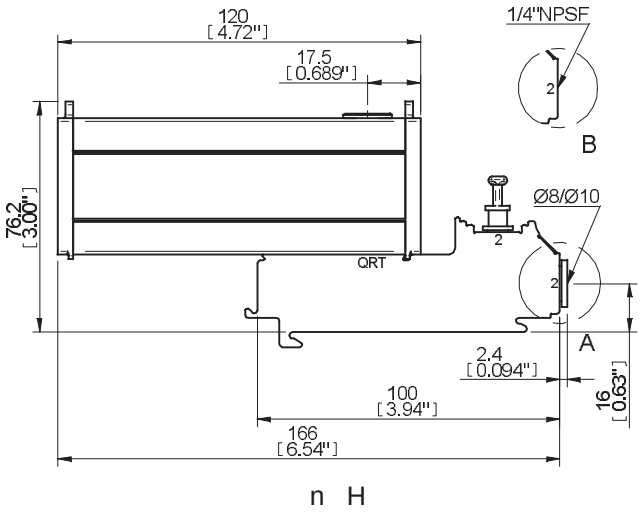
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QRT
A
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100
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166
[6.54"]
n H

P3010 CONNECTION MODULES

- Patented COAX® technology
- Inline design
- Modular functions available

TECHNICAL DATA

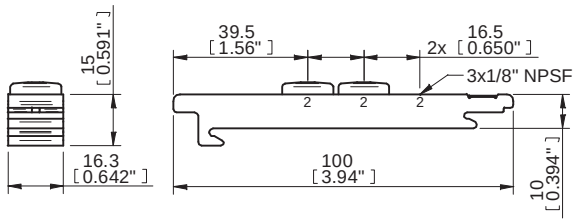
Description	Unit	Value
Temperature range	°F	-4-176
Material		Al, PPS, NBR, CuZn

TECHNICAL DATA, SPECIFIC

Description	Unit	Value		
		01.04.269	01.04.270	01.06.169
Weight	oz	1.76	3.53	6.70

ORDERING INFORMATION

	Description	Part No.	Code No.
A	Connection module P3010, vacuum 3 x 1/8"NPSF	01.04.269	02
B	Connection module P3010, vacuum 6 x 1/8"NPSF	01.04.270	01
C	Connection module P3010, conn. G3/8" or push-in 12 mm and 2 x 1/8"NPSF	01.06.169	03



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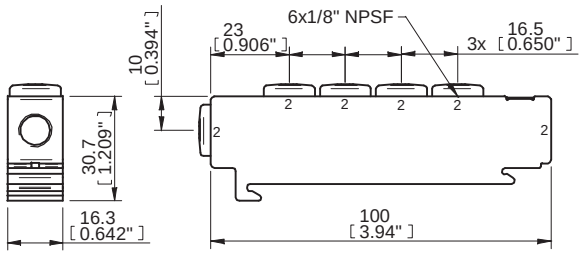

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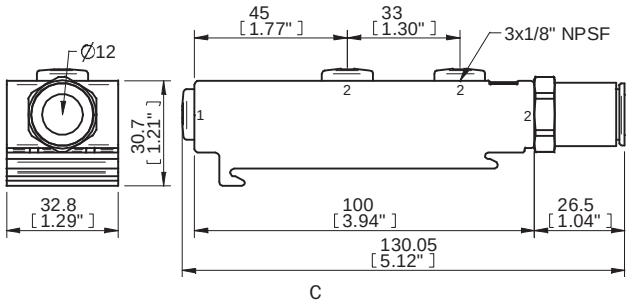


C

SOLENOID VALVE DS 23 FOR CONTROL ON/OFF

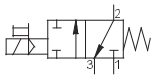
- 3/2 Valve
- Body with 3 M5 ports, port 1 and 2 in-line
- Nominal diameter of 2.3 mm
- Suitable for compressed air, filtration 40µ
- 2.5 W solenoid
- Manual override
- Fits vacuum pump P3010

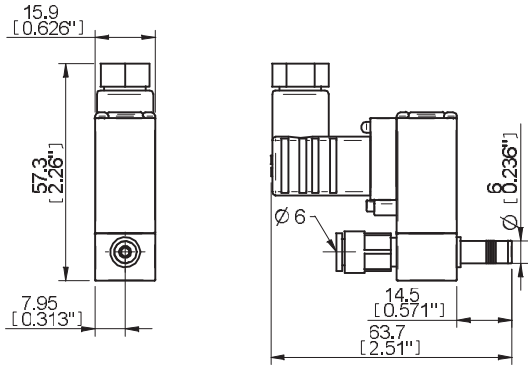
TECHNICAL DATA

Description	Unit	Value
Feed pressure, maximum	psi	101.5
Feed pressure	psi	29-87
Material		Ni, Al, SS, POM, CuZn, NBR
Working temperature	°F	-0.4-122
Weight	oz	3.53
Connection compressed air		D=6
Connection exhaust		D=6
Supply voltage	VDC	24
Safety classification, DIN (c) socket		IP65
Display		LED
Flow, nominal	cf/s	0.05
kv		1.2
Frequency	Hz	>160
Lifespan, mechanical	cycles	100,000,000
Power consumption	W	2.5
Load time rating	%	100
Electrical connection		DIN (c) socket

ORDERING INFORMATION

Description	Part No.	Code No.
Solenoid valve DS 23 for control ON/OFF	01.04.274	AA





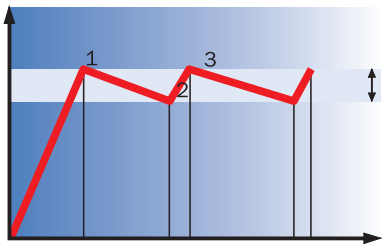
VACUSTAT, 2/2 NO

- The Vacustat is a vacuum-controlled 2/2 NO valve with adjustable vacuum level for switching.
- Minimizes consumption of compressed air by controlling the incoming air flow to a vacuum pump.
- The vacuum pump must be fitted with a non-return valve.
- The Vacustat is recommended for vacuum pumps in sealed systems.
- Fits PIAB vacuum pump size P3010.

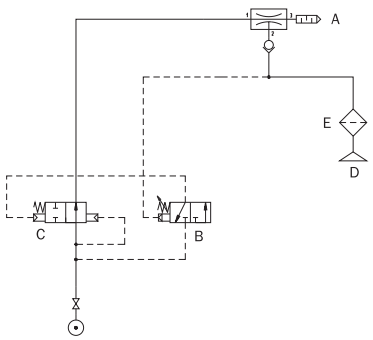
TECHNICAL DATA

Description	Unit	Value
Feed pressure	psi	58-101.5
Material		PA, Al, SS, NBR, PUR, TPU, POM, CuZn
Temperature range	°F	32-140
Weight	oz	3.17
Connection vacuum		2 x M5
Connection compressed air		2 x 1/8" NPSF
Signal range	-inHg	4.5-29.2
Function		2/2 NO
Hysteresis	-inHg	2.40
Flow, nominal	scfm	18.2
kv		7.8
Life span, mechanical	cycles	>10,000,000
Diameter, nominal	mm	3.7

A vacuum-controlled valve shuts off the flow of compressed air to the pump when the pre-set vacuum level is reached (1). The vacuum level is set by a knob. Because of minor leakage in a vacuum system the vacuum level drops, and after a while the start-up level of the valve is reached (2). Then the pump will start and work until the shut-off level is reached again (3), etc.

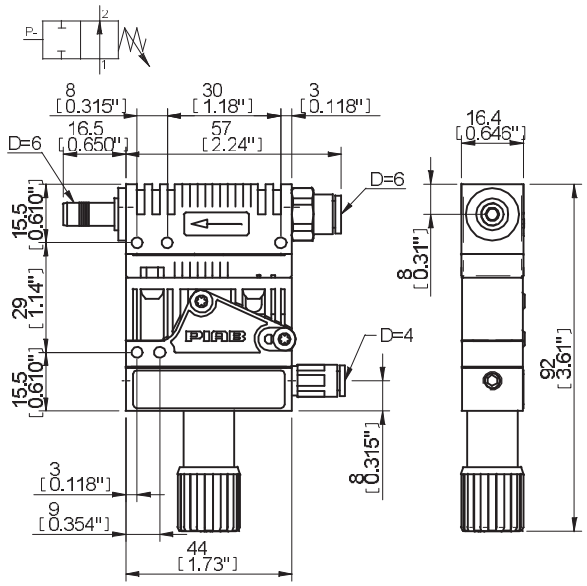


A = Vacuum pump with non-return valve
B = Vacuum switch
C = Feed valve
D = Suction cup
E = Vacuum filter



ORDERING INFORMATION

Description	Part No.	Code No.
Vacustat 2 with large hysteresis	01.04.701	AC



VACUUM SWITCH, ADJUSTABLE WITH ANALOG OUTPUT

- 1 output NO and 1 analog output
- 6 ft cable included, female connector
- Fits vacuum pump P3010

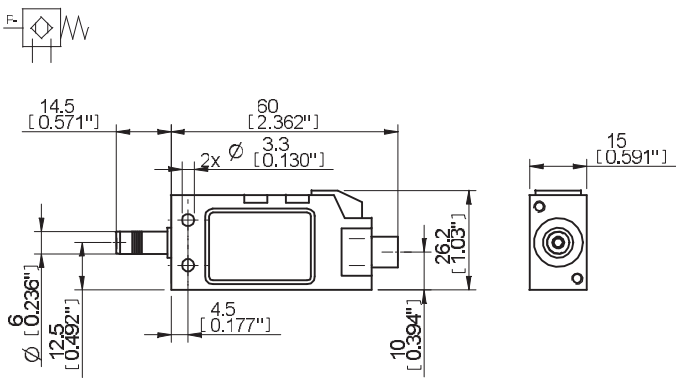
TECHNICAL DATA

Description	Unit	Value
Feed pressure, max	psi	29
Vacuum range	-inHg	0-30
Material		PC, POM, NBR, SS
Temperature range	°F	-4-158
Weight	oz	1.76
Connection vacuum		D=6/M5
Function		NO, NPN/PNP
Hysteresis	%	1–15
Supply voltage	VDC	10.8–30
Voltage output	VDC	1-5
Safety classification		IP40
Analog output, max. (load resistance min. 5kΩ	mA	1
Humidity	% RH	35–85
Response time	ms	2
Accuracy at 77°F		±3% F.S.
Current consumption, max	mA	17
High-voltage resistant	VAC	500
Insulation at 500 VDC	MOhm	100
Vibration resistance, 1,5 mm, XYZ, 2 h	Hz	10–500
Electric connection		M8 4 pin male
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

ORDERING INFORMATION

Description	Part No.	P3010 Code No.
Vacuum switch, adjustable, PNP NO MM8	01.07.729	01
Vacuum switch, adjustable, NPN NO MM8	01.07.730	02



VACUUM SWITCH, ADJUSTABLE WITH 1 OUTPUT

- 1 output NO
- M8 3-pin male connector
- 6 ft cable included, female connection
- Fits vacuum pump P3010

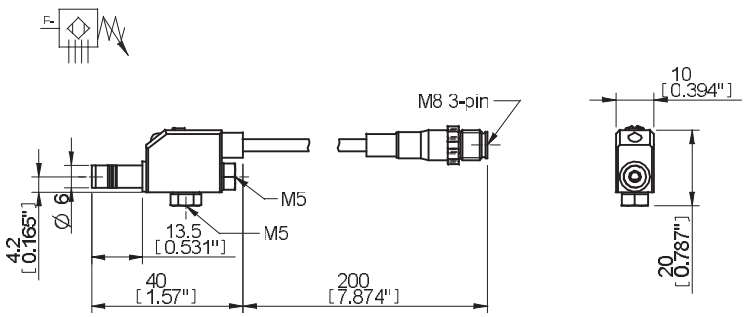
TECHNICAL DATA

Description	Unit	Value
Pressure, max.	psi	29
Vacuum range	-inHg	0–30
Material		PC, Al
Temperature range	°F	14-140
Weight	oz	0.21
Connection vacuum		D=6/M5
Hysteresis		±2% F.S.
Voltage supply	VDC	10.8–30
Safety classification		IP40
Humidity	%RH	35–85
Response time, approx.	ms	1
Accuracy, at 77°F		±3% F.S.
Current consumption, max	mA	20
High-voltage resistance	VDC	500
Insulation at 500 VDC	MOhm	100
Vibration resistance, 1.5 mm, XYZ, 2 h	Hz	10–55
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

ORDERING INFORMATION

Description	Part No.	P3010 Code No.
Vacuum switch, adjustable, PNP NO LM8	01.07.731	05



VACUUM SWITCH, ADJUSTABLE WITH LED-DISPLAY

- 2 outputs, NO
- M8 4-pin male connector
- LED - display
- Fits vacuum pump P3010

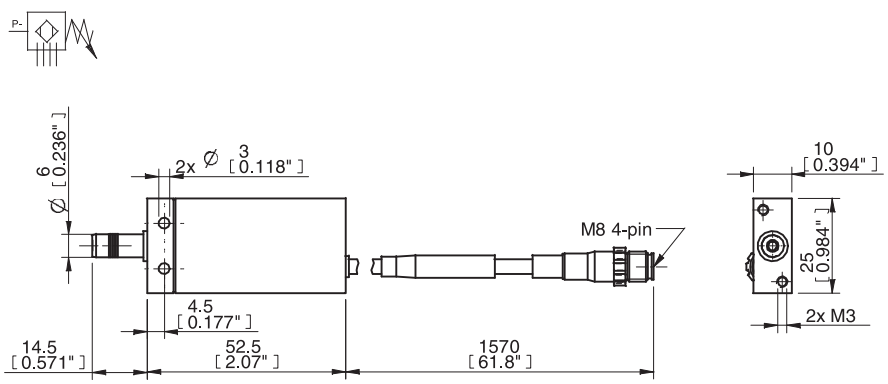
TECHNICAL DATA

Description	Unit	Value
Feed pressure, max	psi	29
Vacuum range	-inHg	0-30
Material		PC, POM, NBR, Al
Temperature range	°F	14-140
Weight	oz	1.83
Connection vacuum		D=6/M5
Function		NO, NPN/PNP
Hysteresis	-inHg	0.60
Voltage supply	VDC	12–24
Dielectric strength, 1 min	VAC	500
Safety classification		IP40
Humidity	%RH	35–85
Response time	ms	2
Accuracy at 77°F		±3% F.S
Current consumption, maximum	mA	35
Insulation resistance, at 500 VDC	MO/MW	100
Display		2-digits LED
Current output, max	mA	80

Non-lubricated air, non-corrosive gases, compatible with Polycarbonate and Polyacetal.

ORDERING INFORMATION

Description	Part No.	P3010 Code No.
Vacuum switch, adjustable, PNP NO DM8	01.07.732	09
Vacuum switch, adjustable, NPN NO DM8	01.07.733	10



VACUUM SWITCH, ADJUSTABLE WITH KNOB

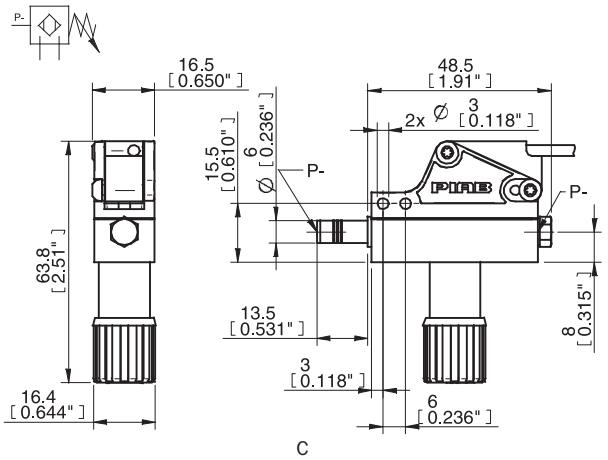
- The adjustable vacuum switch is actuated at a set vacuum level and set by a knob.
- Converts a vacuum signal to an electric signal.
- Vacuum-actuated membrane linked to a proximity-inductive universal switch.
- The output functions PNP NO, PNP NC, NPN NO and NPN NC are available in the vacuum switch.
- The switch must be connected in series with the load.
- Fits vacuum pump P3010.

TECHNICAL DATA

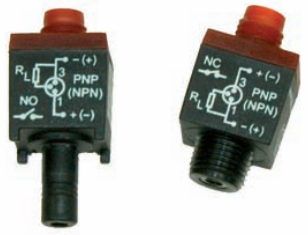
Description	Unit	Value
Material		PA, SS, NBR, POM, Al, PBTP, PVC, CuZn
Temperature range	°F	-13–176
Signal range	-inHg	3.0-28.0
Hysteresis	-inHg	0.60
Weight	oz	2.50
Connection vacuum		D=6/M5
Function		NO/NC/PNP/NPN
Cable		2 x 0.14 mm² x 6.56 ft
Voltage supply	V DC	24 (4–36)
Safety classification		IP67
Current output, max	mA	200
Voltage drop, max	V	4.6

ORDERING INFORMATION

Description	Part No.	P3010 Code No.
Vacuum switch, inductive universal, adjustable with knob Ø6	01.04.350	11



MINI VACUUM SWITCH, PRE-SET



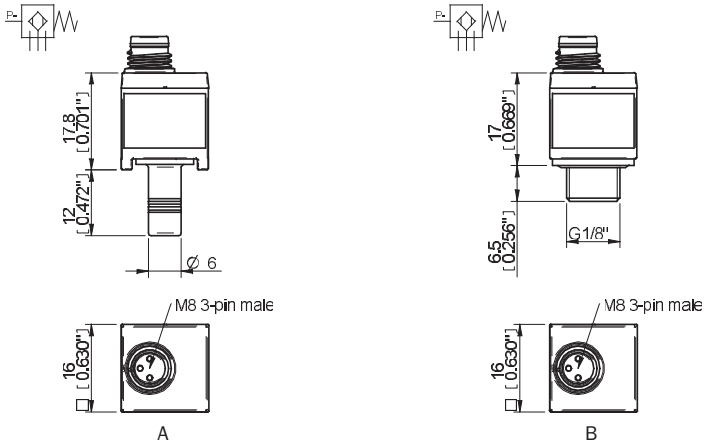
- Electromechanical vacuum switch with digital output
- Very low weight and small format
- Preferably installed near the suction cup
- PNP NO/NC or NPN NO/NC output depending on type of connection
- Preset switching points at 9.0, 15.0 or 21.0 -inHg
- Vacuum connection with push-in connector with D=6 or G1/8” male thread
- Built-in red LED that indicates status
- M8 3-pin electric connection plug
- Fits vacuum pump P3010.

TECHNICAL DATA

Description	Unit	Value
Pressure, max	psi	29
Material		PA, TPU, SS, CuZn(Au)
Temperature range	F°	-13-185
Weight	oz	0.18
Signal range	-inHg	9.0, 15.0 or 21.0 +1.5/-0.30
Function		PNP NO/NC, NPN NO/NC
Hysteresis	-inHg	1.78 ± 0.30
Voltage	VDC	24 (12-30)
Safety classification		IP40
Current max	mA	100 inductive/400 resistive
Voltage drop, max (100mA/24V inductive load)	VDC	0.055
Response time	ms	4
Display		Red LED
Electric connection		M8 3-pin male

ORDERING INFORMATION

	Description	Part No.	P3010 Code No.
A	Vacuum switch VS4015, 9 -inHg, D=6 mm	01.10.245	18
A	Vacuum switch VS4015, 15 -inHg, D=6 mm	01.10.246	19
A	Vacuum switch VS4015, 21 -inHg, D=6 mm	01.10.247	20
B	Vacuum switch VS4016, 9 -inHg, G1/8"	01.10.248	21
B	Vacuum switch VS4016, 15 -inHg, G1/8"	01.10.249	22
B	Vacuum switch VS4016, 21 -inHg, G1/8"	01.10.250	23



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Cable M8 3-pin female L=2m	01.08.141

Please note that the cable is not included with the vacuum switch. Please order the cable separately.

P3010 MOUNTING RAIL

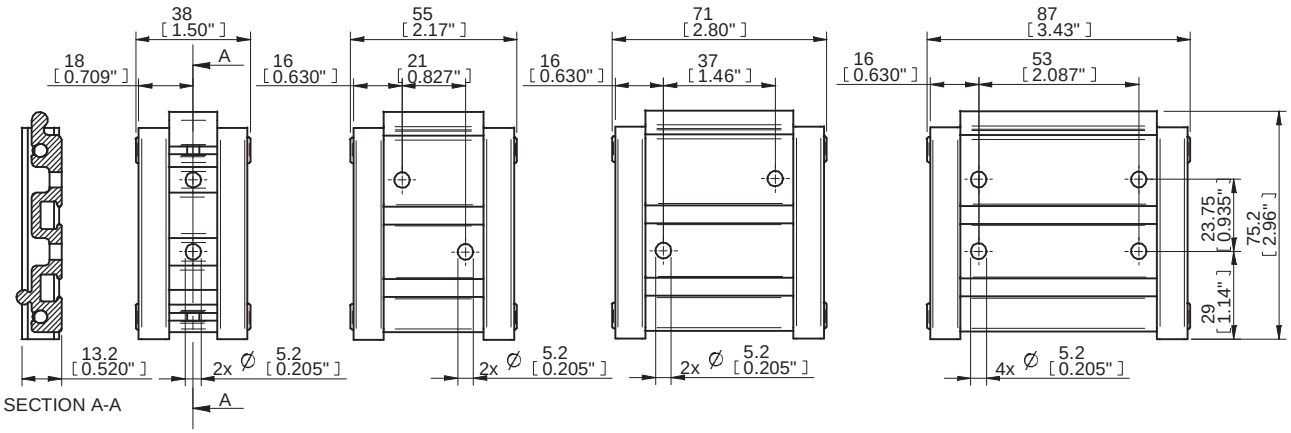
- Rigid and easy to mount
- For dynamic loads

TECHNICAL DATA

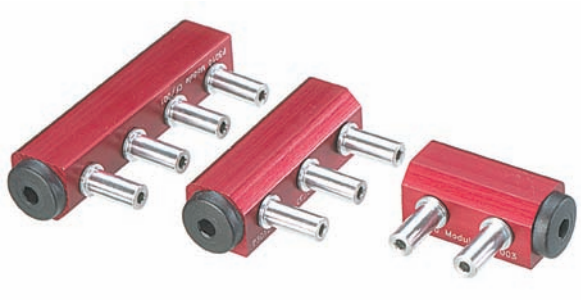
Description	Unit	Value
Temperature range	°F	14-122
Weight	oz	2.12– 4.23
Material		Al, SS

ORDERING INFORMATION

Description	Part No.
Mounting rail P3010, one pump module	01.06.167
Mounting rail P3010, 2 pump modules	01.06.162
Mounting rail P3010, 3 pump modules	01.06.168
Mounting rail P3010, 4 pump modules	01.06.160



P3010 COMMON-FEED ADAPTERS



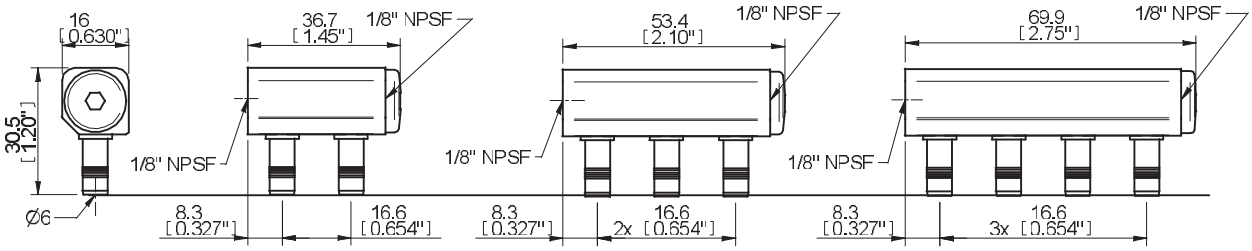
- One compressed air connection required to feed air to several pumps.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Temperature range	°F	14-122
Weight	oz	0.71–1.41
Material		Al, PPS

ORDERING INFORMATION

Description	Part No.
Common-feed adapter P3010, 2 pump modules	01.06.157
Common-feed adapter P3010, 3 pump modules	01.06.158
Common-feed adapter P3010, 4 pump modules	01.06.159



P3010 EXHAUST ADAPTER

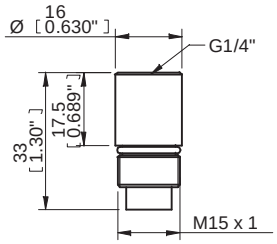
- Connection of exhaust air.
- For clean environment.
- Used when a tube/hose is connected for removing the exhaust.

TECHNICAL DATA

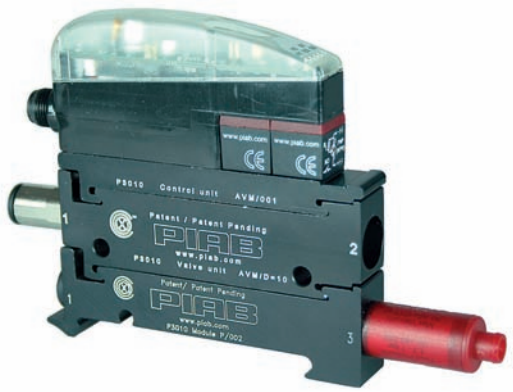
Description	Unit	Value
Temperature range	°F	14-122
Weight	oz	0.28
Connection, exhaust		G1/4" / Ø16 mm
Material		Al

ORDERING INFORMATION

Description	Part No.
Exhaust adapter	01.06.344



P3010 Pi12-3X1 AVM™



- Patented COAX® technology
- An M12 8-pin electrical interface makes installation easy.
- Two vacuum switches with signal output.
- Valves for vacuum on/off and blow-off.
- Blow-off adjustment valve for flow-rate control.
- Automatic energy-saving function – can be switched off for leaking applications.
- PNP or NPN selectable.
- Reversed polarity protection.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Noise level	dBA	66–68
Material		PA, NBR, Al, SS, PMMA, ABS
Temperature range	°F	32-122
Weight	oz	8.82
Voltage	VDC	24 (22-30)
Current consumption	mA	110
Ripple, max.(on power supply)	V_P	1 V_{RMS}, 50–60 Hz
Flow, blow-off	scfm	0–15.9
Current, max. output load	mA	100
Hysteresis	-inHg	1.50 ±0.30
Safety classification		IP65
Display		LED indicators

TECHNICAL DATA, SPECIFIC

Description	Unit	Value					
		01.10.307	01.10.308	01.10.309	01.10.313	01.10.314	01.10.315
Function, on/off		NO	NO	NO	NC	NC	NC
Signal range	-inHg	9.0/15.0	9.0/21.0	15.0/21.0	9.0/15.0	9.0/21.0	15.0/21.0

VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	1.67	3.39	2.12	1.06	0.87	0.76	0.59	0.36	0.11	0.02	–	24.9
45	1.00	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	–	27.0
25	0.64	1.91	0.85	0.47	0.32	0.15	–	–	–	–	–	14.7

EVACUATION TIME

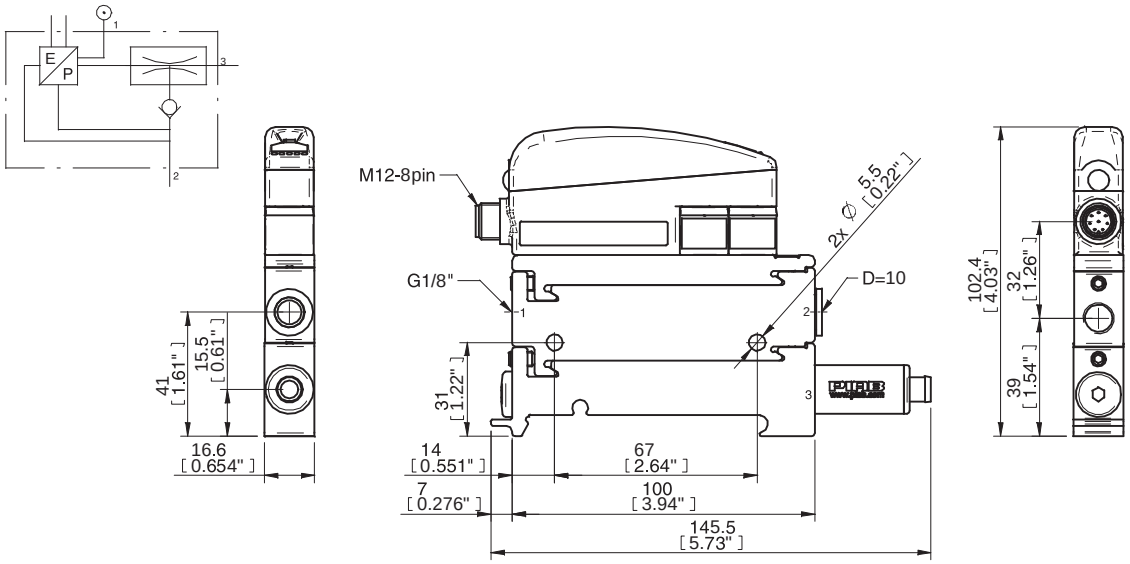
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	24	-inHg
87	1.67	1.70	4.82	10.5	18.4	28.3	39.7	68.0	255	–	24.9
45	1.00	2.27	6.52	13.9	28.3	48.2	73.7	110	178	–	27.0
25	0.64	4.25	13.0	28.3	56.7	–	–	–	–	–	14.7

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.

ORDERING INFORMATION

Description	Part No.
P3010 AVM™ Pi12-3 NO 9.0/15.0	01.10.307
P3010 AVM™ Pi12-3 NO 9.0/21.0	01.10.308
P3010 AVM™ Pi12-3 NO 15.0/21.0	01.10.309
P3010 AVM™ Pi12-3 NC 9.0/15.0	01.10.313
P3010 AVM™ Pi12-3 NC 9.0/21.0	01.10.314
P3010 AVM™ Pi12-3 NC 15.0/21.0	01.10.315

NO = Normally open valve for vacuum on/off, NC = Normally closed valve for vacuum on/off

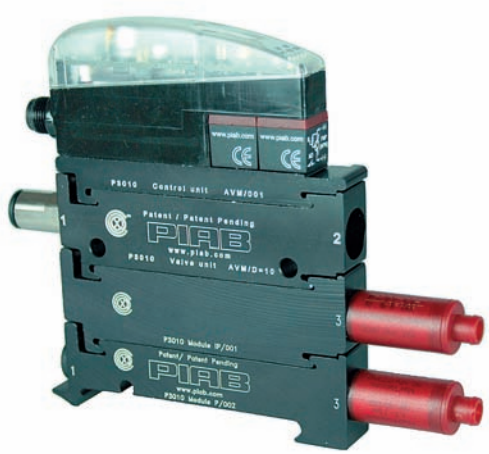


ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Cable 6.5 ft 0.25 x 7 PUR with electrical connector M12 8-pin	01.10.238
Cable Y splitter M12-8 pin / 2xM12-4 pin	01.09.100

Cable Y splitter used to separate input and output signals to/from P3010 AVM™ for a PLC/Controller with separate sides for inputs and outputs or for connection to a fieldbus node with individual M12 inputs and outputs. The Y splitter also allows use of a M12-4 pin cable assembly.

P3010 Pi12-3X2 AVM™



- Patented COAX® technology
- An M12 8-pin electrical interface makes installation easy.
- Two vacuum switches with signal output.
- Valves for vacuum on/off and blow-off.
- Blow-off adjustment valve for flow-rate control.
- Automatic energy-saving function – can be switched off for leaking applications.
- PNP or NPN selectable.
- Reversed polarity protection.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Noise level	dBA	66–68
Material		PA, NBR, Al, SS, PMMA, ABS
Temperature range	°F	32-122
Weight	oz	11.6
Voltage	VDC	24 (22-30)
Current consumption	mA	110
Ripple, max.	V_p	1 V_{RMS}, 50–60 Hz
Flow, blow-off	scfm	0-15.9
Current, max. output load	mA	100
Hysteresis	-inHg	1.5 ±0.30
Safety classification		IP65
Display		LED indicators

TECHNICAL DATA, SPECIFIC

Description	Unit	Value					
		01.10.310	01.10.311	01.10.312	01.10.316	01.10.317	01.10.318
Function, on/off		NO	NO	NO	NC	NC	NC
Signal range	-inHg	9.0/15.0	9.0/21.0	15.0/21.0	9.0/15.0	9.0/21.0	15.0/21.0

VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	6.78	4.24	2.12	1.74	1.53	1.19	0.72	0.21	0.04	–	24.9
45	1.99	5.93	2.54	1.86	1.14	0.81	0.59	0.42	0.25	0.13	–	27.0
25	1.27	3.81	1.70	0.93	0.64	0.30	–	–	–	–	–	14.7

EVACUATION TIME

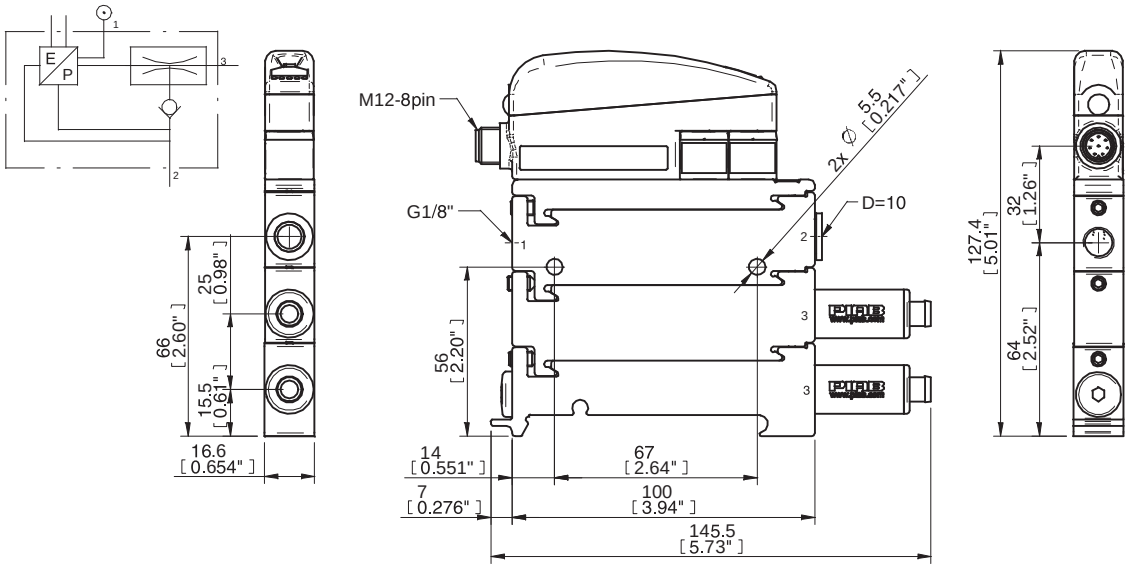
Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	3.39	0.85	2.41	5.38	9.35	14.2	19.8	34.0	127	–	24.9
45	1.99	1.13	3.40	7.08	14.2	24.1	36.8	56.7	90.7	-	27.0
25	1.27	2.12	6.52	14.2	28.3	–	–	–	–	–	14.7

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.

ORDERING INFORMATION

Description	Part No.
P3010 AVM™ Pi12-3 x 2 NO 9.0/15.0	01.10.310
P3010 AVM™ Pi12-3 x 2 NO 9.0/21.0	01.10.311
P3010 AVM™ Pi12-3 x 2 NO 15.0/21.0	01.10.312
P3010 AVM™ Pi12-3 x 2 NC 9.0/15.0	01.10.316
P3010 AVM™ Pi12-3 x 2 NC 9.0/21.0	01.10.317
P3010 AVM™ Pi12-3 x 2 NC 15.0/21.0	01.10.318

NO = Normally open valve for vacuum on/off, NC = Normally closed valve for vacuum on/off

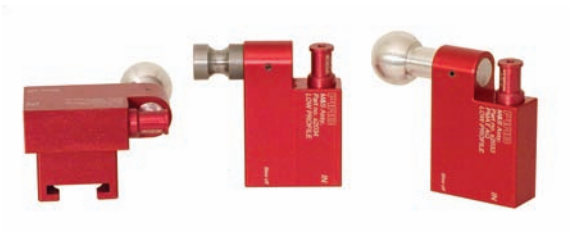


ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Cable 6.5 ft 0.25 x 7 PUR with electrical connector M12 8-pin	01.10.238
Cable Y splitter M12-8 pin / 2xM12-4 pin	01.09.100

Cable Y splitter used to separate input and output signals to/from P3010 AVM™ for a PLC/Controller with separate sides for inputs and outputs or for connection to a fieldbus node with individual M12 inputs and outputs. The Y splitter also allows use of a M12-4 pin cable assembly.

PMAT COAX®



- Patented COAX® technology.
- Reliable even at low operating feed pressure.
- Equipped with a built-in blow-off valve to provide quick release of the object.
- Low height
- Mounting possibilities with lock pin, ball joint or T-slot (suction cup) in accordance with industry standards for end-of-arm tooling.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Feed pressure, min., breakaway blow-off	psi	36.25
Feed pressure, optimum COAX®	psi	45
Air consumption, 45 psi	scfm	1.00
Vacuum, 45 psi	-inHg	27.0
Noise level, with load	dBA	65
Noise level, without load	dBA	74
Material		PA, AL, Steel, Ceramic, NBR
Temperature range	°F	14-122
Vacuum flow, max.	scfm	1.44

TECHNICAL DATA, SPECIFIC

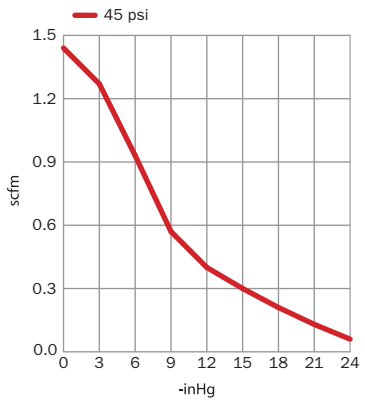
Description	Unit	Value		
		2027	2026	2091
Weight	oz	7.55	8.64	10.3
Connection, mounting		Ball joint	Lock pin 0.75 in	Ball joint
Connection, suction cup		3/8" NPT	3/8" NPT	T-slot

VACUUM FLOW

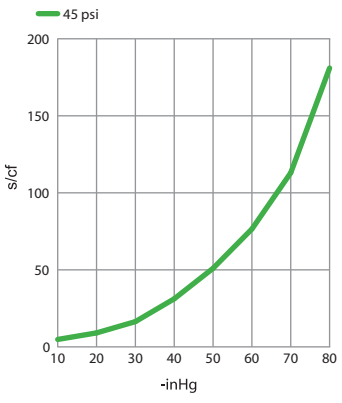
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	27.0

EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	4.82	9.07	16.4	31.2	51.0	76.5	113	181	—	27.0



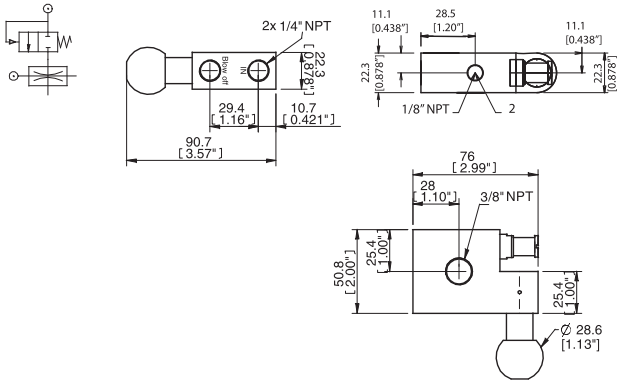
Vacuum flow



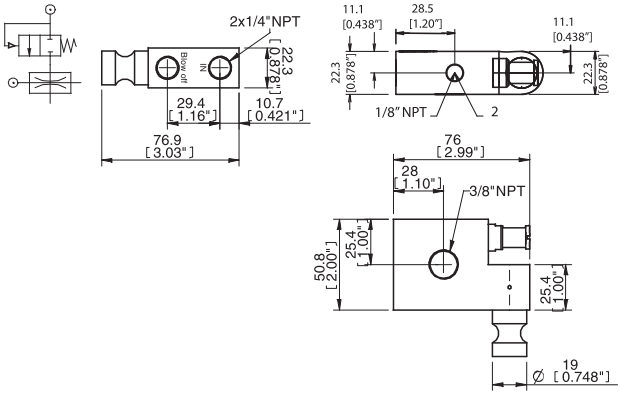
Evacuation time

ORDERING INFORMATION

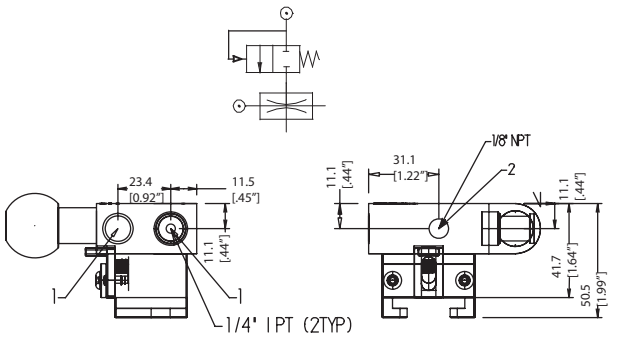
	Description	Part No.
A	PMAT COAX® Pi12-2, low profile, ball joint	2027
B	PMAT COAX® Pi12-2, low profile, lock pin 19 mm	2026
C	PMAT COAX® Pi12-2, low profile, T-slot, ball joint	2091

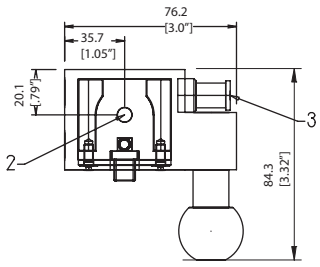


A



B





C

VACUSTAT COAX®

- Patented COAX® technology.
- Vacuum unit for a decentralized system.
- Integrated energy-saving device, the Vacustat, results in virtually no compressed air consumption during operartion in sealed applications, such as sheet metal handling.
- The air-saving function is activated at a fixed setting of 20 -inHg.
- Equipped with a built-in blow-off check valve to provide quick release of the object with compressed air supplied from the outside.
- Available in lock pin, ball joint or apple core mounting in accordance with industry standards for end-of-arm tooling.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	45
Feed pressure, maximum	psi	101.5
Feed pressure, min. breakaway blow-off	psi	36.25
Noise level	dBA	66-68
Temperature range	°F	14-122
Material		PP, PA, AL, SS, Steel, Ceramic, Brass, NBR
Vacuum flow, max.	scfm	1.44

TECHNICAL DATA, SPECIFIC

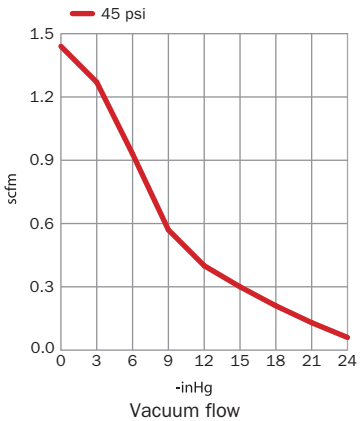
Description	Unit	Value		
		2052	2051	2054
Height (A)	in	3.00	3.56	3.03
Weight	oz	11.4	10.6	11.7

VACUUM FLOW

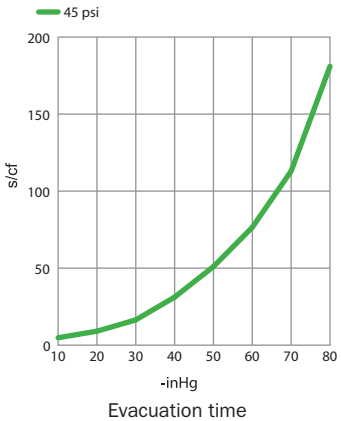
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	27.0

EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	4.82	9.07	16.4	31.2	51.0	76.5	113	181	—	27.0



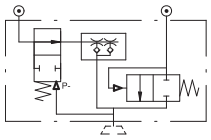
Vacuum flow

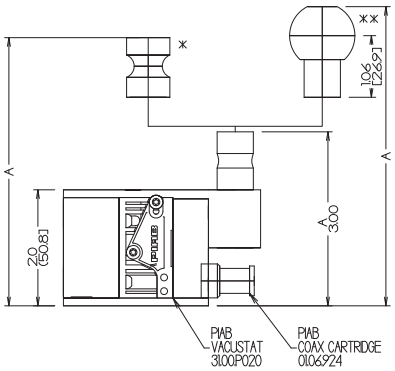


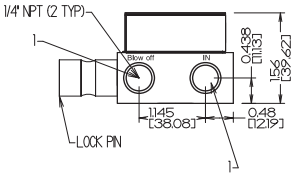
Evacuation time

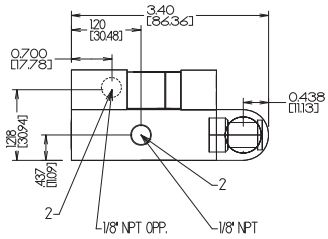
ORDERING INFORMATION

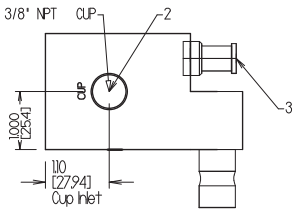
Description	Part No.
Lock pin mounting	2052
Ball joint mounting	2051
Apple core mounting	2054











*Apple Core **Ball Joint

For more info about VACUSTAT, see separate data sheet in ACCESSORIES chapter.

VACTRAP™ WITH COAX® CARTRIDGE

VACUUM PUMP WITH INTEGRATED VACUUM SAFETY VALVE

- "COAX® patented technology" means faster response and lower energy consumption.
- Reliable even at low operating feed pressure.
- Check valve that "traps" the vacuum pressure in vacuum systems for an indefinite period of time in sealed applications, such as when handling sheet metal or glass with suction cups.
- The object can be handled with an extremely high degree of safety even if the supply of compressed air should be cut off, if a pump failure should occur or if the emergency stop should be activated, thus preventing the object from being dropped.
- Equipped with a built-in blow-off check valve to provide quick release of the object with compressed air supplied from the outside.

TECHNICAL DATA

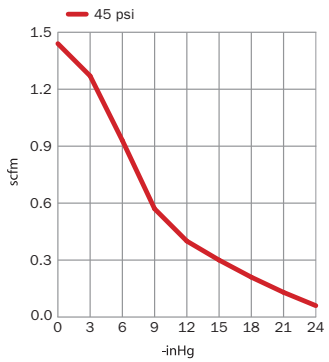
Description	Unit	Value
Feed pressure, max.	psi	101.5
Feed pressure, min., breakaway blow-off	psi	36.25
Feed pressure, optimum COAX®	psi	45
Air consumption, 45 psi	scfm	1.00
Vacuum, 45 psi	-inHg	27.0
Noise level, with load	dBA	65
Noise level, without load	dBA	74
Weight	oz	10.4
Material		PP, PA, AL, Steel, Ceramic, Brass, NBR
Temperature range	°F	14-122
Vacuum flow, max.	scfm	1.44

VACUUM FLOW

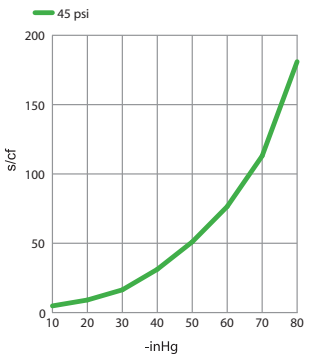
Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	27.0

EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
45	1.00	4.82	9.07	16.4	31.2	51.0	76.5	113	181	—	27.0



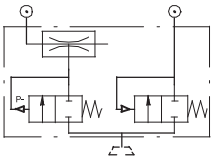
Vacuum flow

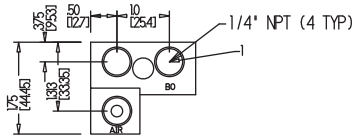


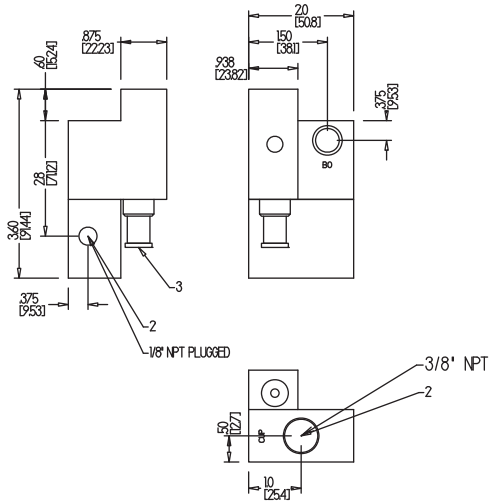
Evacuation time

ORDERING INFORMATION

Description	Part No.
Vactrap™ VT1-AS COAX® Pi12-2	1041







P6010 Pi48-3

- Patented COAX® technology
- Substantially lower air-consumption as compared to conventional ejectors
- Modular design
- Low feed pressure that ensures high reliability even in case of pressure drops
- Short evacuation time
- "Classic" mounting style option available
- Supplied with a vacuum gauge, flow-through silencerand optional vacuum filter

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max	psi	101.5
Noise level	dBA	65-70 (Classic style = 50-65)
Temperature range	°F	14-176
Weight	lb	3.74-3.96
Material		Al, PA, NBR, SS, TPE

VACUUM FLOW

COAX® Cartridge	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels										Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
Pi48-3x1	32	3.43	10.6	4.24	3.18	1.91	1.17	0.95	0.55	0.15	—	—	21.6
Pi48-3x1	44	4.24	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	—	27.0
Pi48-3x1	58	5.38	12.1	5.30	4.45	3.18	2.33	1.40	0.76	0.55	0.17	—	25.4
Pi48-3x2	32	6.87	21.2	8.48	6.36	3.81	2.33	1.91	1.10	0.30	—	—	21.6
Pi48-3x2	44	8.48	23.7	10.6	7.63	4.66	2.75	2.12	1.48	1.06	0.42	—	27.0
Pi48-3x2	58	10.8	24.2	10.6	8.90	6.36	4.66	2.75	1.48	1.10	0.34	—	25.4
Pi48-3x3*	32	10.3	31.8	12.7	9.54	5.72	3.60	2.97	1.65	0.44	—	—	21.6
Pi48-3x3*	44	12.7	35.6	15.9	11.4	6.99	4.24	3.18	2.33	1.59	0.64	—	27.0
Pi48-3x3*	58	16.1	36.2	15.9	13.3	9.54	6.99	4.24	2.33	1.65	0.51	—	25.4
Pi48-3x4*	32	13.7	42.4	17.0	12.7	7.63	4.66	3.81	2.12	0.59	—	—	21.6
Pi48-3x4*	44	17.0	47.5	21.2	15.3	9.32	5.51	4.24	2.97	2.12	0.85	—	27.0
Pi48-3x4*	58	21.5	48.3	21.2	17.8	12.7	9.32	5.51	2.97	2.12	0.68	—	25.4

EVACUATION TIME

COAX® Cartridge	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
Pi48-3x1	32	3.43	0.71	2.27	4.82	8.50	14.2	22.7	48.2	—	—	21.6
Pi48-3x1	44	4.24	0.57	1.70	3.40	8.50	12.7	19.8	28.3	45.3	113	27.0
Pi48-3x1	58	5.38	0.57	1.56	3.12	5.10	8.22	16.7	25.5	48.2	127	25.4
Pi48-3x2	32	6.87	0.37	1.13	2.41	4.25	7.08	11.3	24.1	—	—	21.6
Pi48-3x2	44	8.48	0.28	0.85	1.70	3.68	6.52	9.92	14.2	22.7	56.7	27.0
Pi48-3x2	58	10.8	0.28	0.79	1.56	2.55	4.25	8.50	12.7	24.1	65.2	25.4
Pi48-3x3*	32	10.3	0.23	0.76	1.61	2.83	4.82	7.65	16.1	—	—	21.6
Pi48-3x3*	44	12.7	0.20	0.57	1.13	2.35	4.25	6.52	9.35	15.0	36.8	27.0
Pi48-3x3*	58	16.1	0.20	0.51	1.05	1.70	2.75	5.67	8.50	16.1	42.5	25.4
Pi48-3x4*	32	13.7	0.17	0.57	1.22	2.12	3.68	5.67	12.2	—	—	21.6
Pi48-3x4*	44	17.0	0.14	0.42	0.85	1.78	3.12	5.10	7.08	11.3	28.3	27.0
Pi48-3x4*	58	21.5	0.14	0.40	0.79	1.27	2.07	4.25	6.52	12.2	31.2	25.4

** Vacuum performance is reduced by 20-30% when using the 3/4" NPSF "Classic" style cover plate (code LK) between 0-9 -inHg.* *See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.*

BLOW FLOW

COAX® Cartridge	Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
	psi	scfm	0	3	6	9	10	12	13	15	16	17	19	20	psi
Pi48-3x1	87	7.52	20.1	13.8	12.7	11.2	9.96	9.75	9.75	9.75	9.54	9.11	8.48	7.84	20
Pi48-3x2	87	15.0	40.3	27.5	25.4	22.5	19.9	19.5	19.5	19.5	19.1	18.2	17.0	15.7	20
Pi48-3x3	87	22.6	61.4	41.3	38.1	33.7	29.9	29.2	29.2	29.2	28.6	27.3	25.4	23.5	20
Pi48-3x4	87	30.1	80.5	55.1	50.9	44.9	39.8	39.0	39.0	39.0	38.1	36.4	33.9	31.4	20

ORDERING INFORMATION

	1. COAX® Cartridge Module	P6010 Code
a	COAX® Cartridge Pi48-3 x1	AJ
b	COAX® Cartridge Pi48-3 x1 with non-return valve	AN
a	COAX® Cartridge Pi48-3 x2	AK
b	COAX® Cartridge Pi48-3 x2 with non-return valve	AO
a	COAX® Cartridge Pi48-3 x3	AL
b	COAX® Cartridge Pi48-3 x3 with non-return valve	AP
a	COAX® Cartridge Pi48-3 x4	AM
b	COAX® Cartridge Pi48-3 x4 with non-return valve	AQ

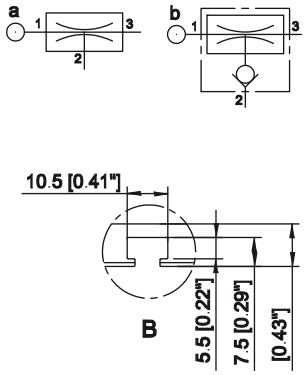
2. Mounting and cover plate	P6010 Code
Mounting T-slot	01

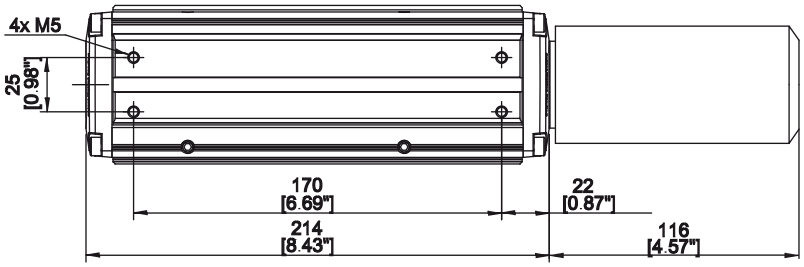
3. Function and cover plate	P6010 Code
Cover plates Standard style NPSF threads (No function)	LJ
Cover plates Classic style NPSF threads (No function)	LK

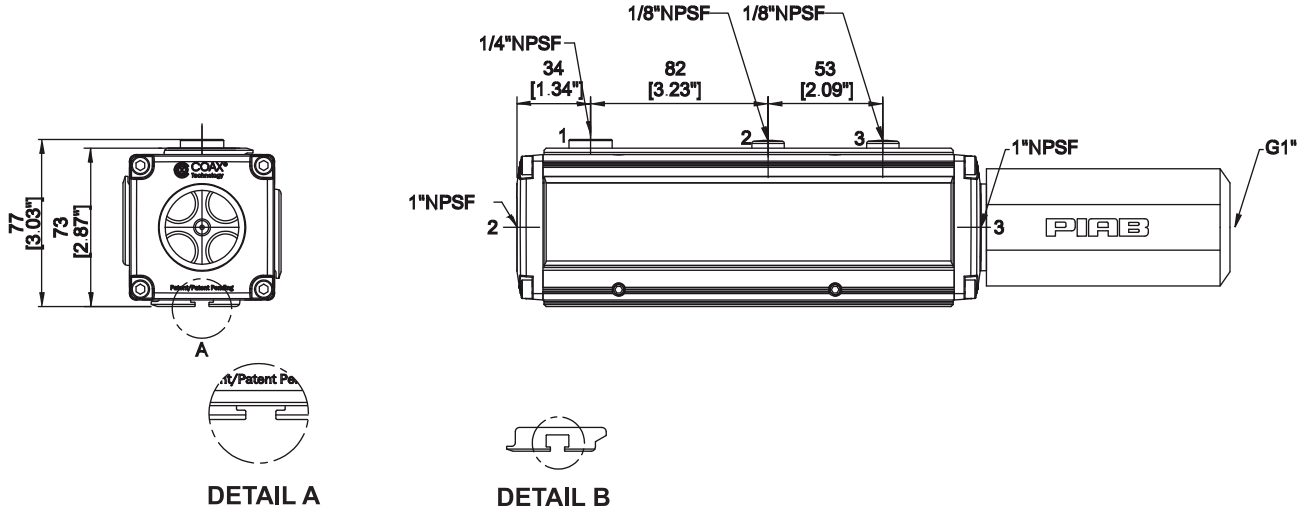
4. Connections for vacuum and exhaust	P6010 Code
2 x 1" NPSF with silencer 1" Standard style	56
2 x 3/4" NPSF with silencer 3/4" Classic style	58

5. Vacuum filter	P6010 Code
None	XX
Vacuum filter, 1" NPT (Standard size)	FA
Vacuum filter, 3/4" NPT (Classic size)	FB

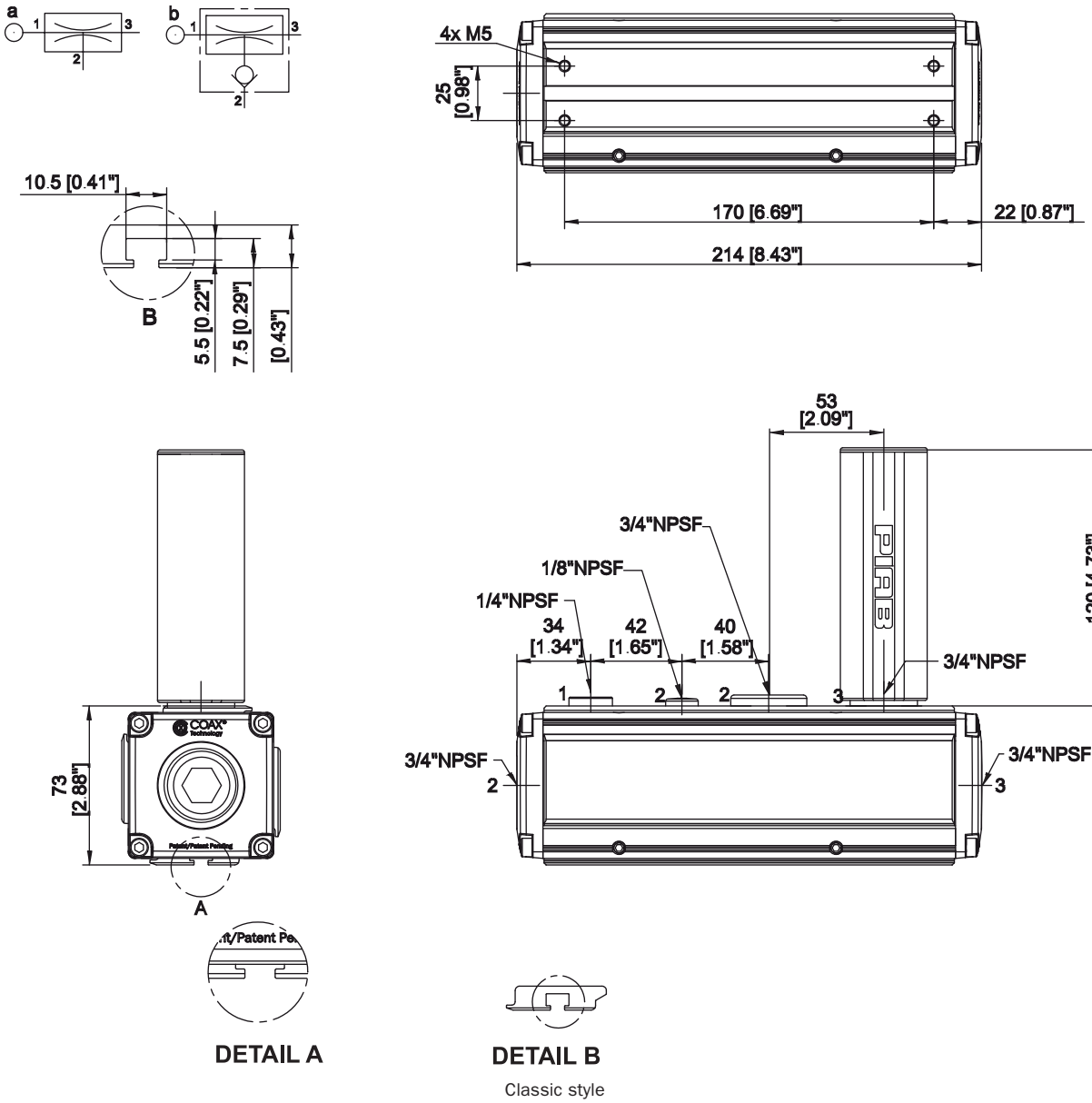
Example	Ordering number
P6010, Pi48-3 x1, mounting T-slot, cover plates (Standard-no function), 2 x1" NPSF with silencer 1" & vacuum filter 1"	P6010.AJ.01.LJ.56.FA
P6010, Pi48-3 x1, mounting T-slot, cover plates (Classic-no function), 2 x3/4" NPSF with silencer 3/4" & vacuum filter 3/4"	P6010.AJ.01.LK.58.FB







Standard style



Classic style

ORDERING INFORMATION, ACCESSORIES

Description	PartNo
Silencer G3/4"	32.16.002
Silencer 1" NPSF	01.13.003
Manometer 250 kPa	01.12.533
Manometer 1 Mpa	01.12.532
Gauge 30-inHg/100-kPa with teflon	01.12.531
Vacuum filter, 3/4" NPT	PPSF.75-X35
Vacuum filter 1" NPT	PPSF1.0-X50
Seal kit P6010, NBR seals	01.12.495

P6010 Si32-3

- Patented COAX® technology
- Substantially lower air-consumption as compared to conventional ejectors
- Modular design
- High flow - suitable for handling of porous objects and in case of leakage
- Short evacuation time
- "Classic" mounting style option available
- Supplied with a vacuum gauge, flow-through silencer and optional vacuum filter

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max	psi	101.5
Noise level	dBA	65-70 (Classic style = 50-65)
Temperature range	°F	14-176
Weight	lb	3.74-3.96
Material		Al, PA, NBR, SS, TPE

VACUUM FLOW

COAX® Cartridge	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels										Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
Si32-3x1	58	2.65	10.6	6.14	4.03	2.54	1.70	0.85	0.21	—	—	—	18.0
Si32-3x1	72.5	3.18	12.1	6.99	4.66	2.97	1.80	1.31	0.74	0.38	—	—	21.0
Si32-3x1	87	3.71	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	—	—	22.2
Si32-3x2	58	5.30	21.2	12.3	8.05	5.09	3.39	1.70	0.42	—	—	—	18.0
Si32-3x2	72.5	6.36	24.2	14.0	9.32	5.93	3.60	2.54	1.48	0.76	—	—	21.0
Si32-3x2	87	7.42	25.4	14.8	11.0	7.20	3.81	2.54	2.12	1.48	—	—	22.2
Si32-3x3*	58	7.95	31.8	18.4	12.1	7.63	5.09	2.54	0.64	—	—	—	18.0
Si32-3x3*	72.5	9.54	36.2	21.0	14.0	8.90	5.51	3.81	2.33	1.14	—	—	21.0
Si32-3x3*	87	11.1	38.1	22.2	16.5	10.8	5.72	3.81	3.18	2.33	—	—	22.2
Si32-3x4*	58	10.6	42.4	24.6	16.1	10.2	6.78	3.39	0.85	—	—	—	18.0
Si32-3x4*	72.5	12.7	48.3	28.0	18.6	11.9	7.20	5.09	2.97	1.53	—	—	21.0
Si32-3x4*	87	14.8	50.9	29.7	22.0	14.4	7.63	5.09	4.24	2.97	—	—	22.2

EVACUATION TIME

COAX® Cartridge	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
Si32-3x1	58	2.65	0.85	1.98	3.97	6.80	11.9	28.3	—	—	—	18.0
Si32-3x1	72.5	3.18	0.57	1.70	3.12	5.95	9.90	17.0	28.3	—	—	21.0
Si32-3x1	87	3.71	0.57	1.42	2.83	5.10	9.35	15.0	22.7	—	—	22.2
Si32-3x2	58	5.30	0.42	0.99	1.98	3.40	5.95	14.2	—	—	—	18.0
Si32-3x2	72.5	6.36	0.28	0.85	1.56	3.12	5.10	8.50	14.2	—	—	21.0
Si32-3x2	87	7.42	0.28	0.71	1.42	2.55	4.82	7.65	11.3	—	—	22.2
Si32-3x3*	58	7.95	0.28	0.65	1.33	2.27	3.97	9.35	—	—	—	18.0
Si32-3x3*	72.5	9.54	0.20	0.57	1.05	1.98	3.40	5.67	9.35	—	—	21.0
Si32-3x3*	87	11.1	0.20	0.48	0.93	1.70	3.12	5.10	7.65	—	—	22.2
Si32-3x4*	58	10.6	0.23	0.51	0.99	1.70	3.12	7.08	—	—	—	18.0
Si32-3x4*	72.5	12.7	0.14	0.42	0.79	1.50	2.49	4.25	7.08	—	—	21.0
Si32-3x4*	87	14.8	0.14	0.37	0.71	1.27	2.35	3.68	5.67	—	—	22.2

** Vacuum performance is reduced by 20-30% when using the 3/4" NPSF "Classic" style cover plate (code LK) between 0-9 -inHg.* *See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.*

BLOW FLOW

COAX® Cartridge	Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)									Max pressure
	psi	scfm	0	2	3	4	6	7	9	10	12	psi
Si32-3x1	87	3.71	16.5	11.4	9.75	8.05	6.99	6.57	5.72	4.87	3.81	12
Si32-3x2	87	7.42	32.8	22.9	19.5	16.1	14.0	13.1	11.4	9.75	7.63	12
Si32-3x3	87	11.1	49.4	34.3	29.2	24.2	21.0	19.7	17.2	14.6	11.4	12
Si32-3x4	87	14.8	65.7	45.8	39.0	32.2	28.0	26.3	22.9	19.5	15.3	12

ORDERING INFORMATION

	1. COAX® Cartridge Module	P6010 Code
a	COAX® Cartridge Si32-3 x1	AB
b	COAX® Cartridge Si32-3 x1	AF
a	COAX® Cartridge Si32-3 x2	AC
b	COAX® Cartridge Si32-3 x2	AG
a	COAX® Cartridge Si32-3 x3	AD
b	COAX® Cartridge Si32-3 x3	AH
a	COAX® Cartridge Si32-3 x4	AE
b	COAX® Cartridge Si32-3 x4	AI

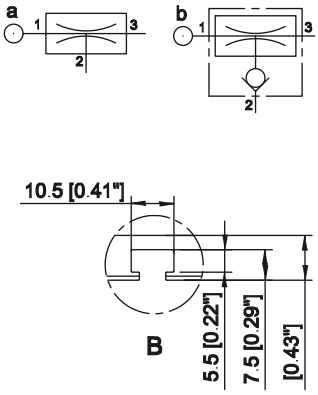
2. Mounting and cover plate	P6010 Code
Mounting T-slot	01

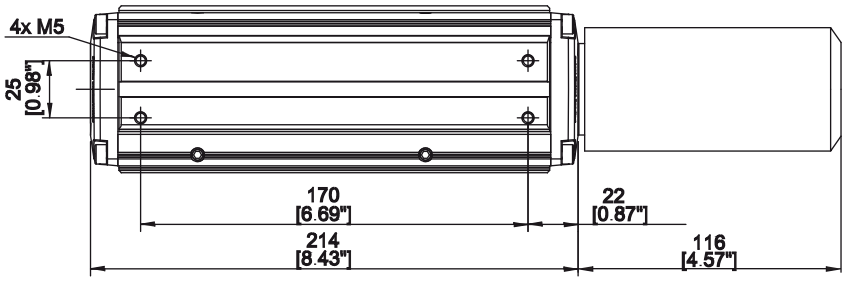
3. Function and cover plate	P6010 Code
Cover plates Standard style NPSF threads (No function)	LJ
Cover plates Classic style NPSF threads (No function)	LK

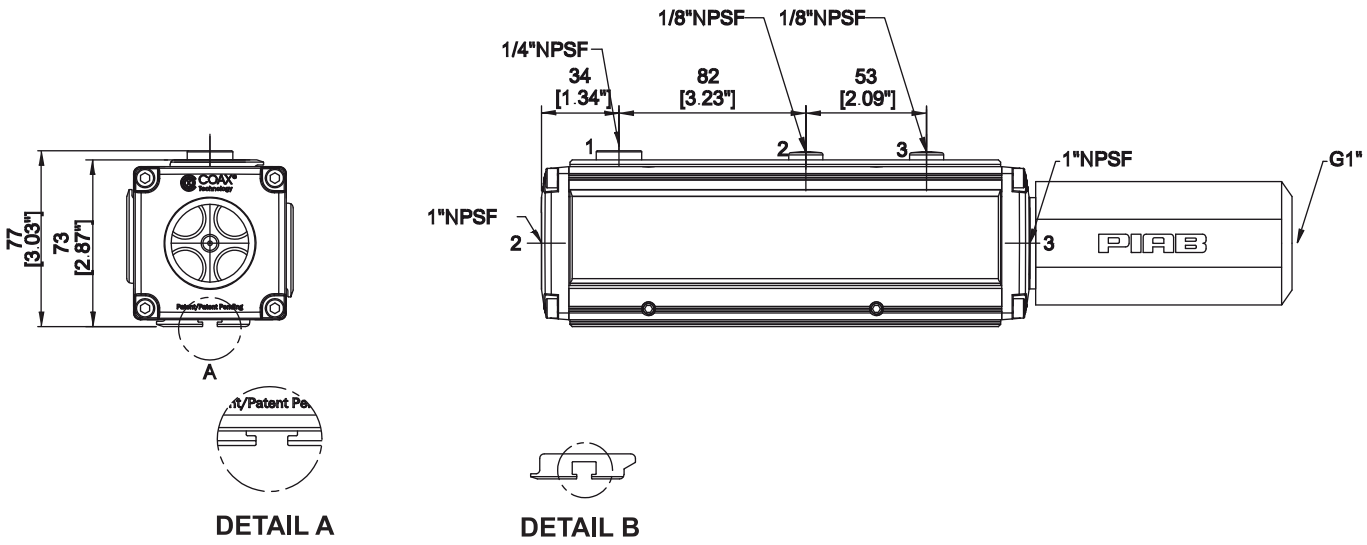
4. Connections for vacuum and exhaust	P6010 Code
2 x 1" NPSF with silencer 1" Standard style	56
2 x 3/4" NPSF with silencer 3/4" Classic style	58

5. Vacuum filter	P6010 Code
None	XX
Vacuum filter, 1" NPT (Standard size)	FA
Vacuum filter, 3/4" NPT (Classic size)	FB

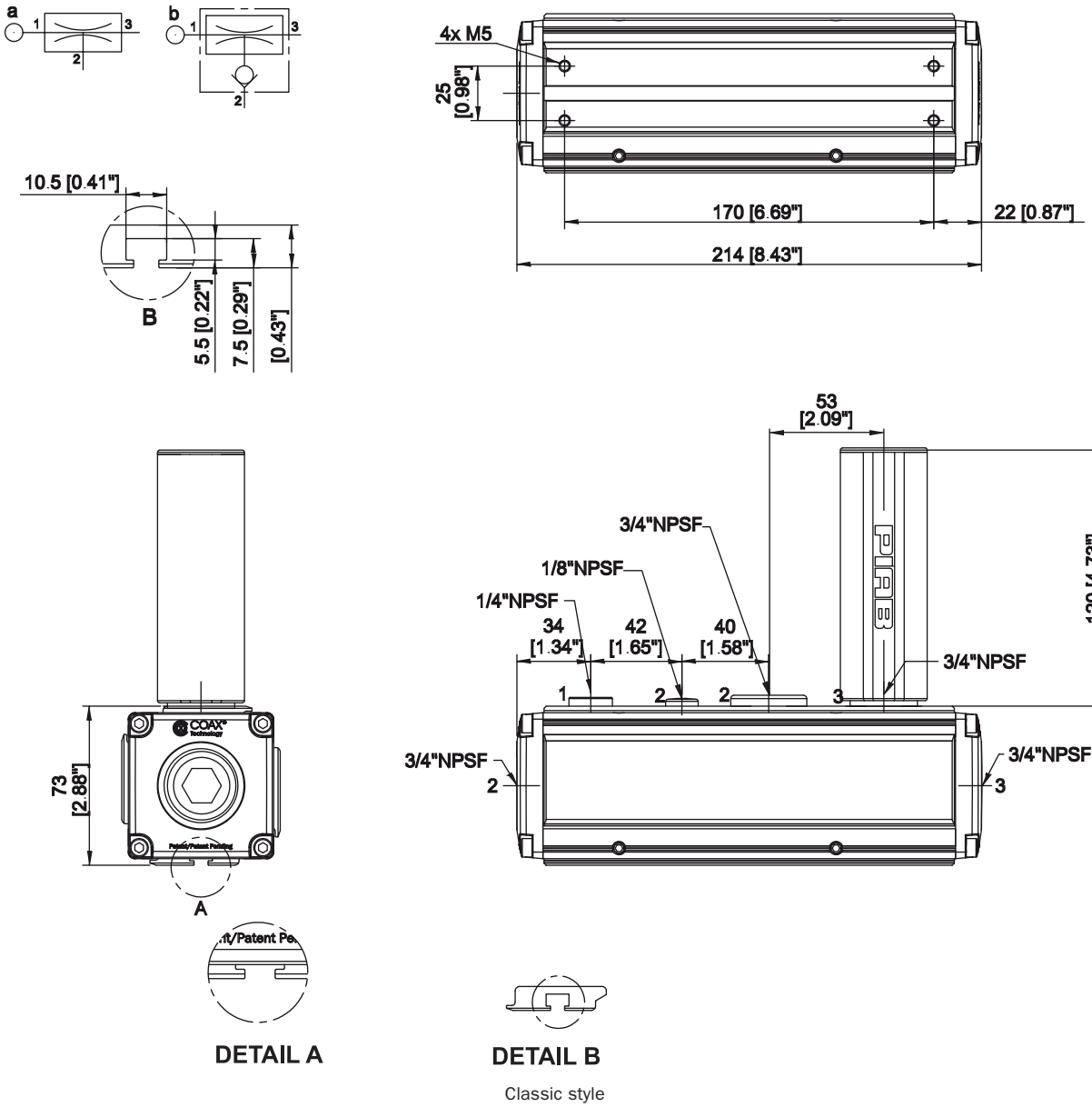
Example	Ordering number
P6010, Si32-3 x1, mounting T-slot, cover plates (Standard-no function), 2 x 1" NPSF with silencer 1" & vacuum filter 1"	P6010.AB.01.LJ.56.FA
P6010, Si32-3 x1, mounting T-slot, cover plates (Classic-no function), 2 x 3/4" NPSF with silencer 3/4" & vacuum filter 3/4"	P6010.AB.01.LK.58.FB







Standard style



Classic style

ORDERING INFORMATION, ACCESSORIES

Description	PartNo
Silencer G3/4"	32.16.002
Silencer 1" NPSF	01.13.003
Manometer 250 kPa	01.12.533
Manometer 1 Mpa	01.12.532
Gauge 30-inHg/100-kPa with teflon	01.12.531
Vacuum filter, 3/4" NPT	PPSF.75-X35
Vacuum filter 1" NPT	PPSF1.0-X50
Seal kit P6010, NBR seals	01.12.495

P6010 PCC

- Patented COAX® technology with Pi48-3 or Si32-3 vacuum cartridges
- Programmable for constant vacuum level or blow-pressure level in the system
- Quick adjustment
- Easy to install in control systems
- Low power consumption, 24 VDC/120 mA
- Integrated analog vacuum sensor
- Supplied with a vacuum gauge, flow-through silencer and optional vacuum filter

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Noise level	dBA	50-70
Temperature range	°F	37-122
Weight	lb	4.62-4.84
Material		Al, PA, NBR, SS, AISI302
Voltage, supply	VDC	24 (21.6–26.4)
Current consumption	mA	<120
Voltage signal, input/output	VDC	0–10
Scale factor signal in, vacuum	-inHg	0-27
Safety classification		IP65

The design of the PCC requires that the inlet pressure is 14.5 psi higher than the outlet pressure.

PERFORMANCE TABLES

Depending upon choice of COAX® Cartridge, applicable performance data of the P6010 PCC can be found in the tables for vacuum flow and evacuation time for models P6010 Pi48-3x1 to x4 as well as for Si32-3x1 to x4.

ORDERING INFORMATION

1. COAX® Cartridge Module	P6010 Code
COAX® Cartridge Module Si32-3x 1	AB
COAX® Cartridge Module Si32-3x 2	AC
COAX® Cartridge Module Si32-3x 3	AD
COAX® Cartridge Module Si32-3x 4	AE
COAX® Cartridge Module Pi48-3x 1	AJ
COAX® Cartridge Module Pi48-3x 2	AK
COAX® Cartridge Module Pi48-3x 3	AL
COAX® Cartridge Module Pi48-3x 4	AM

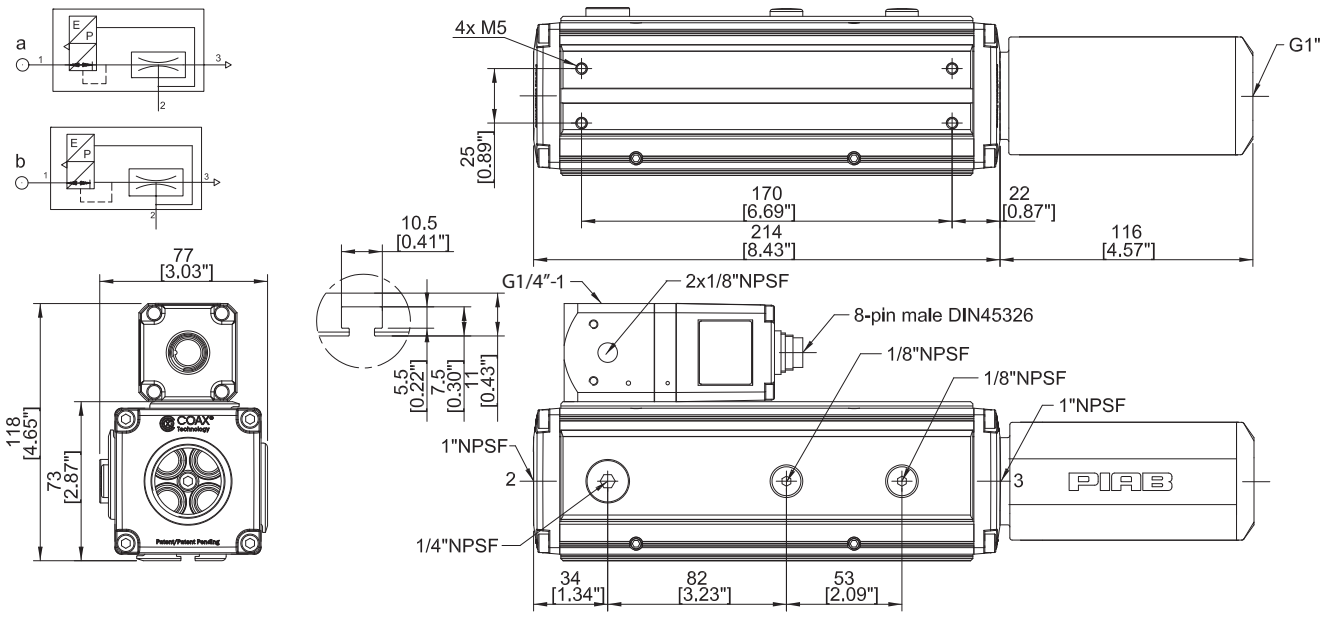
2. Mounting and cover plate	P6010 Code
Mounting T-slot	01

3. Function and cover plate	P6010 Code
Cover plate NPSF threads Function PCC	LT

4. Connections for vacuum and exhaust	P6010 Code
2x 1" NPSF with silencer 1"	56

5. Vacuum filter	P6010 Code
None	XX
Vacuum filter, 1" NPT	FA

Example	Ordering number
P6010, Si32-3x2, mounting T-slot, PCC function plate with NPSF threads, 2x 1" NPSF with silencer 1" & vacuum filter 1"	P6010.AC.01.LT.56.FA



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer 1" NPSF	01.13.003
3m, M16 8-pin, angled 90°	01.12.395
Cable, L=3m, M16 8-pin, straight	01.12.393
Manometer 1 Mpa	01.12.532
Gauge 30-inHg/100-kPa with teflon	01.12.531
Vacuum filter 1" NPT	PPSF1.0-X50
Seal kit P6010, NBR seals	01.12.495

P6010 AVM™

- Patented COAX® technology with Pi48-3 or Si32-3 vacuum cartridges
- Suitable for vacuum systems using numerous large suction cups
- Valves for ON/OFF of vacuum and for blow-off
- Adjustment valve for controlling the blow-off flow
- Two vacuum switches with signal output
- Automatic energy-saving function - can be switched off in applications where leakage is present
- One single M12 8-pin electric connection that facilitates installation
- PNP or NPN output selectable
- Supplied with a vacuum gauge, flow-through silencer and optional vacuum filter

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	psi	101.5
Noise level	dBA	50-70
Material		Al, PA, NBR, SS, PMMA, ABS, TPE
Temperature range	°F	32-122
Weight	lb	4.40-4.62
Voltage	VDC	24 (22–30)
Ripple, max.	V_P	$1V_{rms}$
Current consumption	mA	110
Flow, blow-off	scfm	0-15.9
Safety classification		IP65
Current, max. output load	mA	100
Hysteresis	-inHg	1.50±0.30
Display		LED indicators

TECHNICAL DATA, SPECIFIC

Description	Unit	Value					
		LL	LM	LN	LO	LP	LQ
Function, on/off		NO	NO	NO	NC	NC	NC
Signal range	-inHg	9.0/15.0	9.0/21.0	15.0/21.0	9.0/15.0	9.0/21.0	15.0/21.0

PERFORMANCE TABLES

Depending upon choice of COAX® Cartridge, applicable performance data of the P6010 PCC can be found in the tables for vacuum flow and evacuation time for models P6010 Pi48-3x1 to x4 as well as for Si32-3x1 to x4.

ORDERING INFORMATION

1. COAX® Cartridge Module	P6010 Code
COAX® Cartridge Module Si32-3x1 with non-return valve	AF
COAX® Cartridge Module Si32-3x2 with non-return valve	AG
COAX® Cartridge Module Si32-3x3 with non-return valve	AH
COAX® Cartridge Module Si32-3x4 with non-return valve	AI
COAX® Cartridge Module Pi48-3x1 with non-return valve	AN
COAX® Cartridge Module Pi48-3x2 with non-return valve	AO
COAX® Cartridge Module Pi48-3x3 with non-return valve	AP
COAX® Cartridge Module Pi48-3x4 with non-return valve	AQ

2. Mounting and cover plate	P6010 Code
Mounting T-slot	01

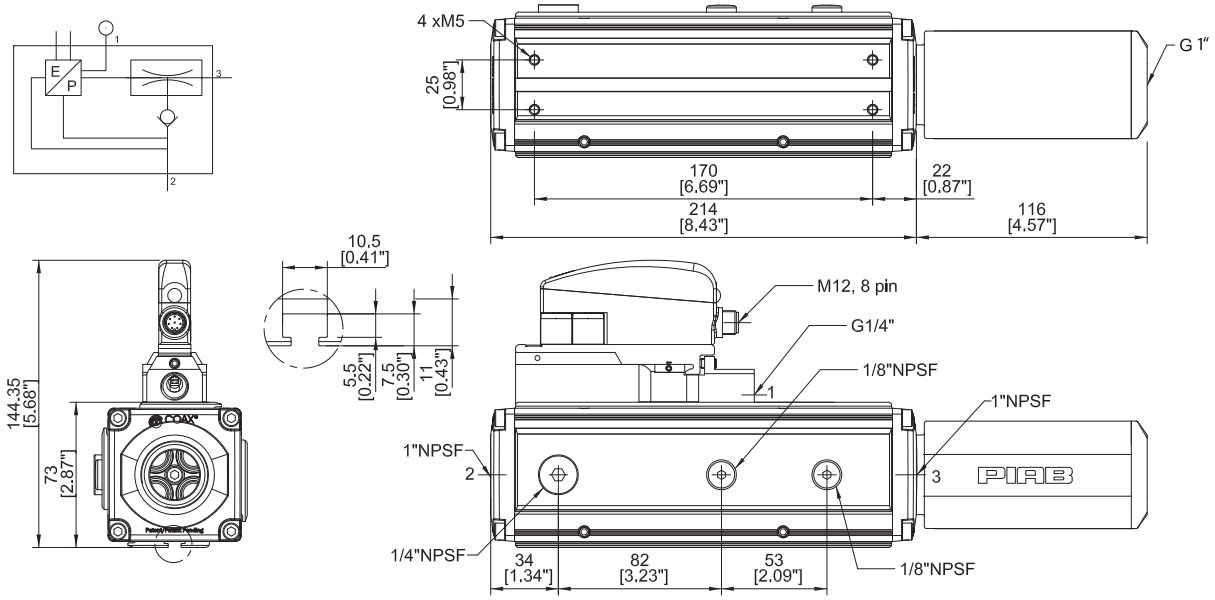
3. Function and cover plate	P6010 Code
Cover Plate NPSF threads Function AVM NO 9.0/15.0	LL
Cover Plate NPSF threads Function AVM NO 9.0/21.0	LM
Cover Plate NPSF threads Function AVM NO 15.0/21.0	LN
Cover Plate NPSF threads Function AVM NC 9.0/15.0	LO
Cover Plate NPSF threads Function AVM NC 9.0/21.0	LP
Cover Plate NPSF threads Function AVM NC 15.0/21.0	LQ

NO = Normally open valve for vacuum on/off, NC = Normally closed valve for vacuum on/off

4. Connections for vacuum and exhaust	P6010 Code
2x 1" NPSF with silencer 1"	56

5. Vacuum filter	P6010 Code
None	XX
Vacuum filter, 1" NPT	FA

Example	Ordering number
P6010, Si32-3 x2, Mounting T-slot, Function AVM NO 9.0/21.0 NPSF threads, 1"NPSF with silencer & 1" vacuum filter	P6010.AG.01.LM.56.FA



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Silencer 1" NPSF	01.13.003
Manometer 1 Mpa	01.12.532
Gauge 30-inHg/100-kPa with teflon	01.12.531
Cable 6.5 ft 0.25 x 7 PUR with electrical connector M12 8-pin	01.10.238
Vacuum filter 1" NPT	PPSF1.0-X50
Seal kit P6010, NBR seals	01.12.495

L7

- Large vacuum flows
- Small size and low weight
- Good for handling porous materials or if leakage is present
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps for connection plate A & B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps for connection plate C).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4–176
Weight	oz	1.16 (A), 2.19 (B2), 1.69 (C), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

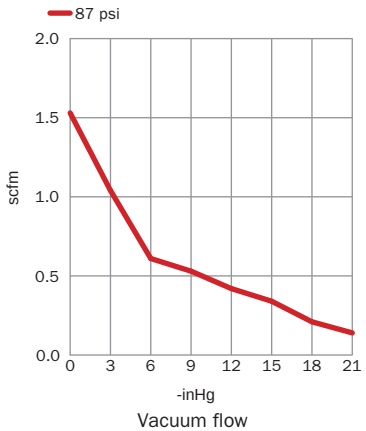
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	1.04	1.53	1.04	0.61	0.53	0.42	0.34	0.21	0.14	–	–	22.3

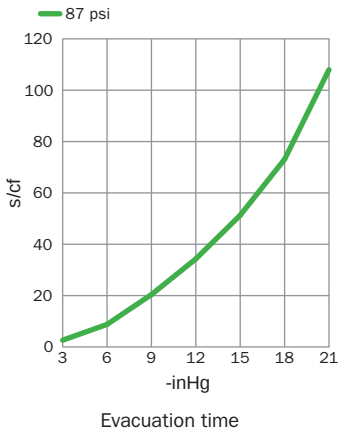
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	1.04	2.63	8.78	20.4	34.3	51.3	73.1	108	–	–	22.3

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

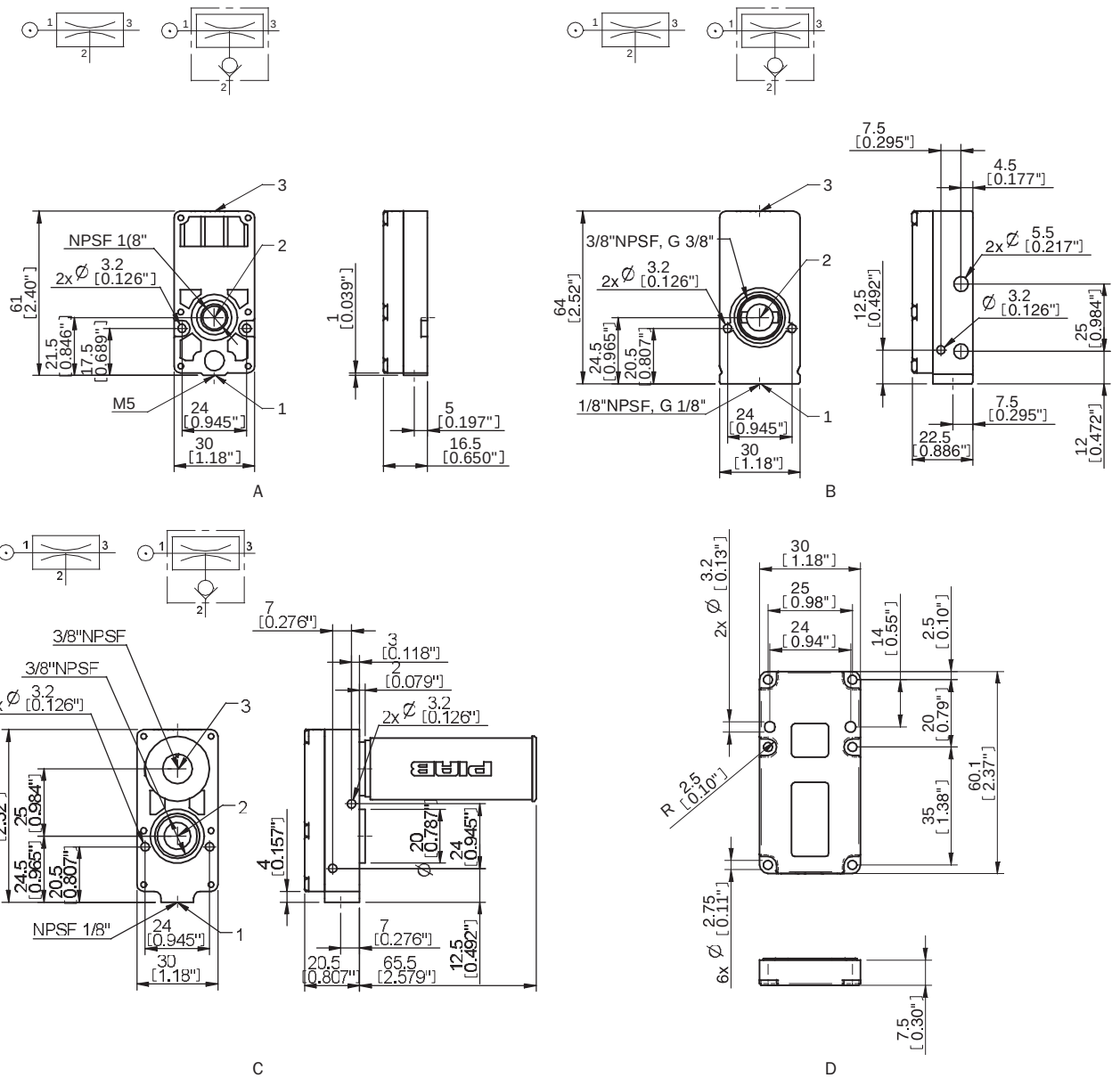


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI L7, conn. A, NBR seals	L7A6-AN
A	Vacuum pump MINI L7, conn. A, NBR seals, non-return valve	L7A6-ANA
B	Vacuum pump MINI L7, conn. B2, NBR seals	L7A6-B2N
B	Vacuum pump MINI L7, conn. B2, NBR seals, non-return valve	L7A6-B2NA
C	Vacuum pump MINI L7, conn. C, NBR seals	L7A6-CN
C	Vacuum pump MINI L7, conn. C, NBR seals, non-return valve	L7A6-CNA
D	Vacuum pump MINI L7, conn. Z, NBR seals	L7A6-ZN
D	Vacuum pump MINI L7, conn. Z NBR seals, non-return valve	L7A6-ZNA

Viton® or EPDM seals optional (i.e. Part No. L7A6-AV or L7A6-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

L14

- Large vacuum flows
- Small size and low weight
- Good for handling porous materials or if leakage is present
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps with connection plate B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps with connection plate C & T).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4–176
Weight	oz	2.19 (B2), 1.69 (C), 8.10 (T), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

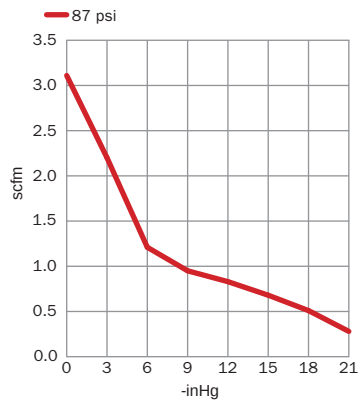
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	2.08	3.11	2.20	1.21	0.95	0.83	0.68	0.51	0.28	–	–	22.3

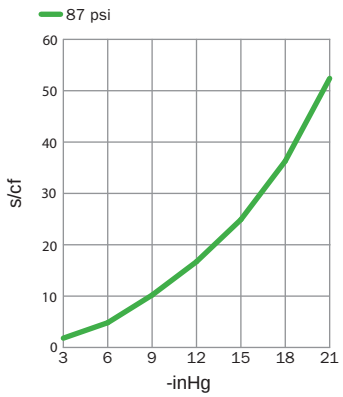
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	2.08	1.81	4.82	10.2	16.7	24.9	36.3	52.4	–	–	22.3

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

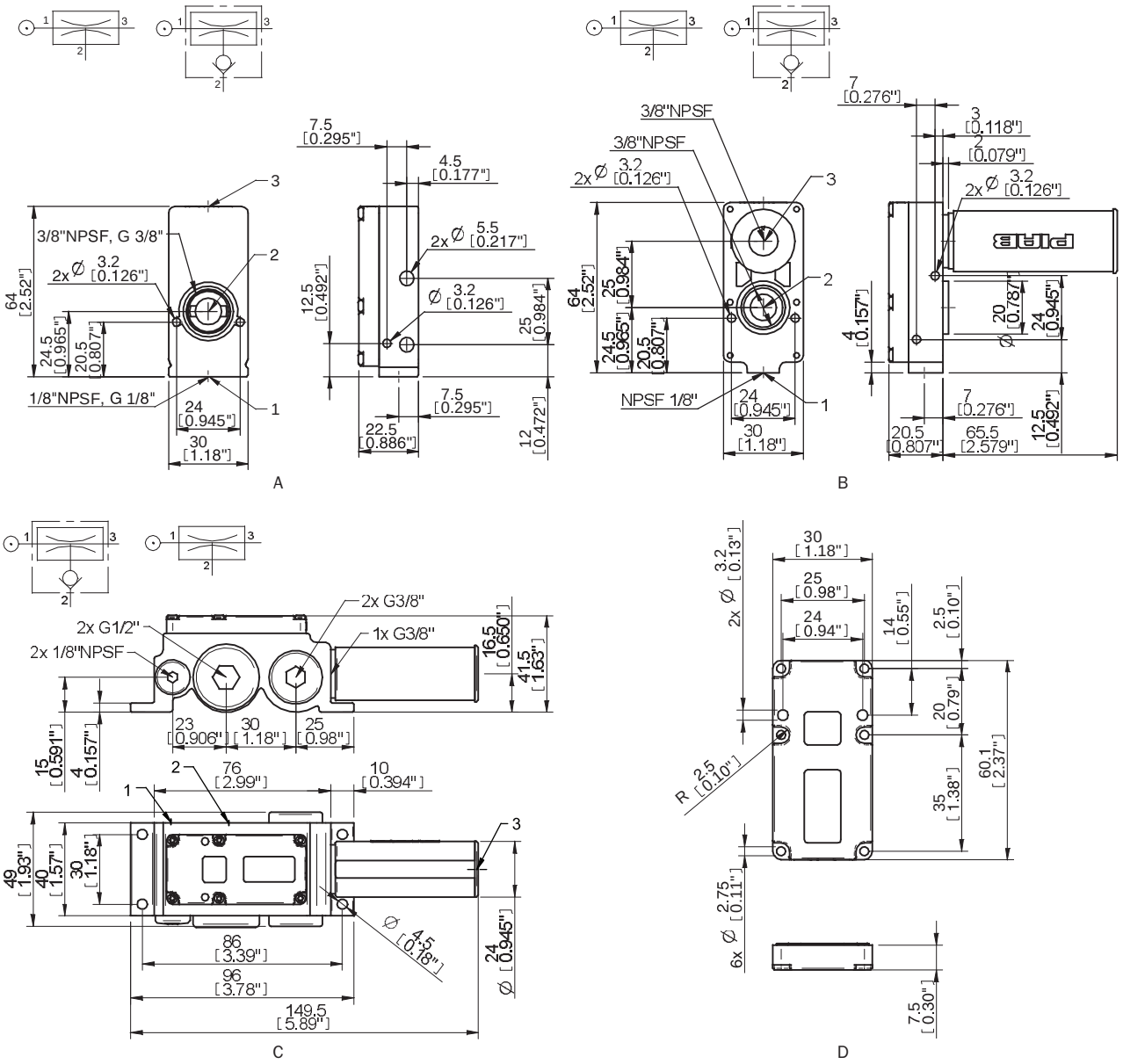


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI L14, conn. B2, NBR seals	L14A6-B2N
A	Vacuum pump MINI L14, conn. B2, NBR seals, non-return valve	L14A6-B2NA
B	Vacuum pump MINI L14, conn. C, NBR seals	L14A6-CN
B	Vacuum pump MINI L14, conn. C, NBR seals, non-return valve	L14A6-CNA
C	Vacuum pump MINI L14, conn. T, NBR seals	L14F6-TN
C	Vacuum pump MINI L14, conn. T, NBR seals, non-return valve	L14F6-TNA
D	Vacuum pump MINI L14, conn. Z, NBR seals	L14A6-ZN
D	Vacuum pump MINI L14, conn. Z, NBR seals, non-return valve	L14A6-ZNA

Viton® or EPDM seals optional (i.e. Part No. L14A6-B2V or L14A6-B2E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

L28

- Large vacuum flows
- Small size and low weight
- Good for handling porous materials or if leakage is present
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps with connection plate B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps with connection plate C & T).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4–176
Weight	oz	2.68 (B2), 2.12 (C), 8.40 (T)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

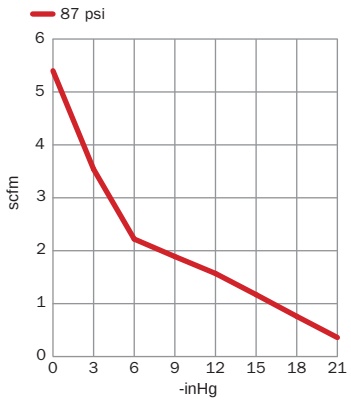
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	4.17	5.40	3.54	2.22	1.89	1.57	1.17	0.76	0.36	–	–	22.3

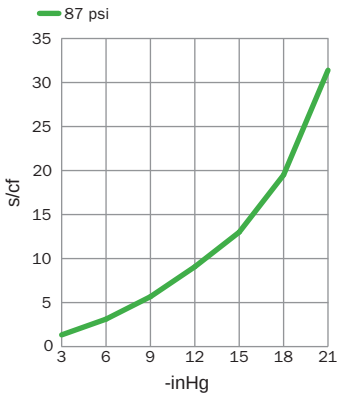
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	4.17	1.33	3.12	5.67	9.07	13.0	19.5	31.4	–	–	22.3

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

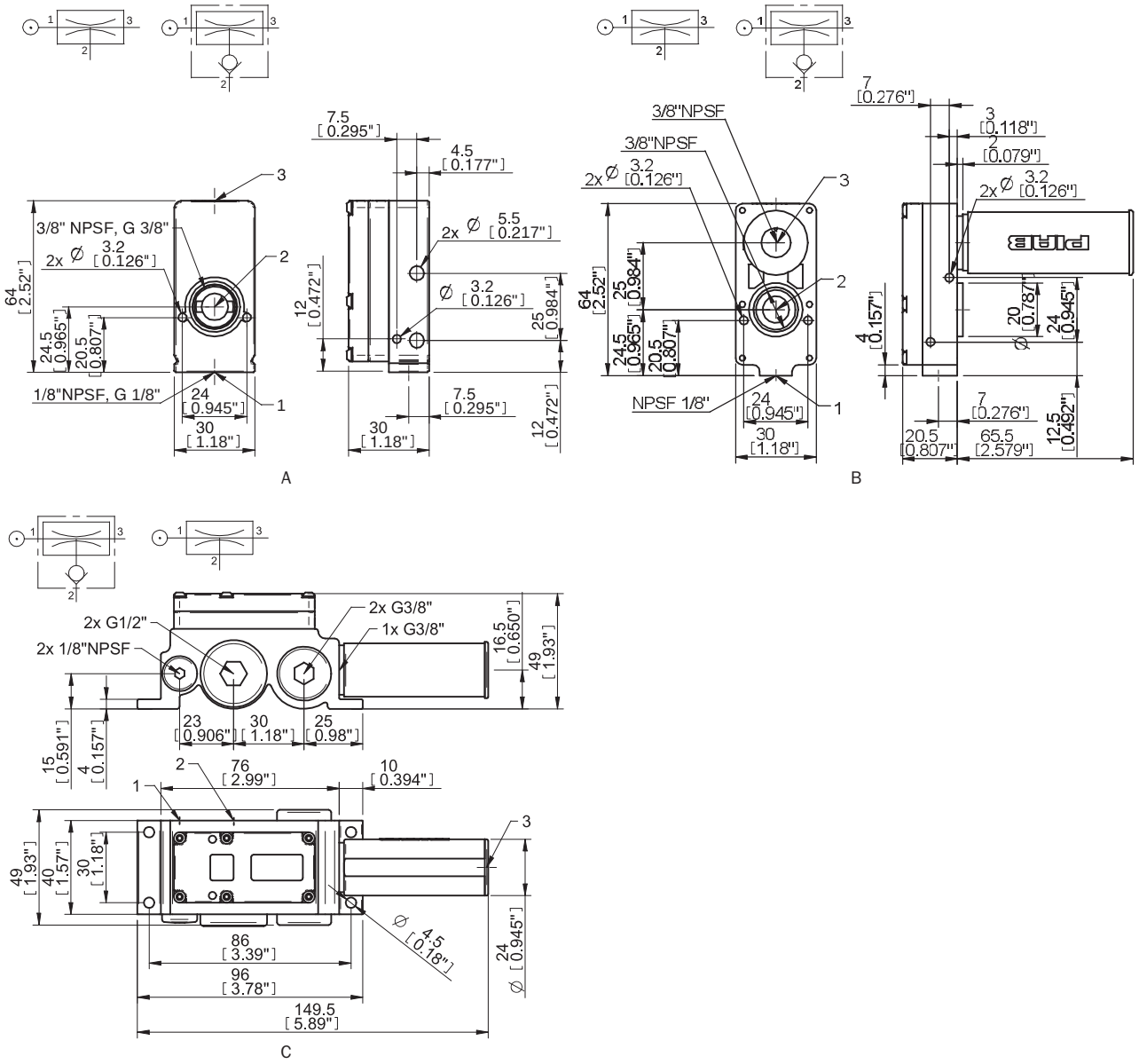


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI L28, conn. B2, NBR seals	L28A6-B2N
A	Vacuum pump MINI L28, conn. B2, NBR seals, non-return valve	L28A6-B2NA
B	Vacuum pump MINI L28, conn. C, NBR seals	L28A6-CN
B	Vacuum pump MINI L28, conn. C, NBR seals, non-return valve	L28A6-CNA
C	Vacuum pump MINI L28, conn. T, NBR seals	L28F6-TN
C	Vacuum pump MINI L28, conn. T, NBR seals, non-return valve	L28F6-TNA

Viton® or EPDM seals optional (i.e. Part No. L28A6-B2E or L28A6-B2V)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

L56

- Large vacuum flows
- Small size and low weight
- Good for handling porous materials or if leakage is present
- Nitrile (NBR) seals standard

Supplied with two flow-through silencers.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4–176
Weight	oz	14.9
Material		Al, PA, POM, ABS, SS, NBR (Viton, EPDM)

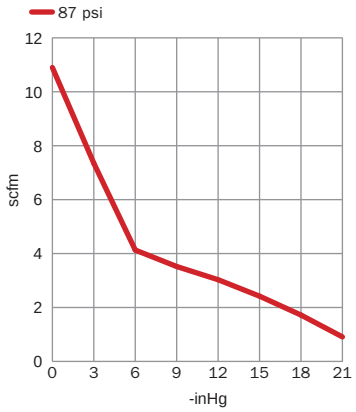
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	8.48	10.8	7.42	4.24	3.60	2.97	2.33	1.72	0.91	–	–	22.3

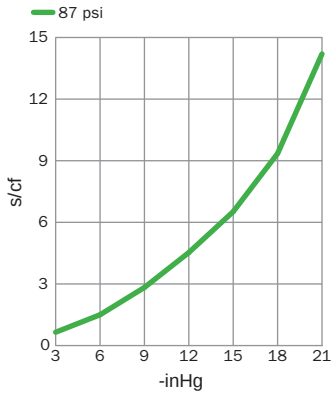
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	8.48	0.65	1.50	2.83	4.53	6.52	9.35	14.2	–	–	22.3

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

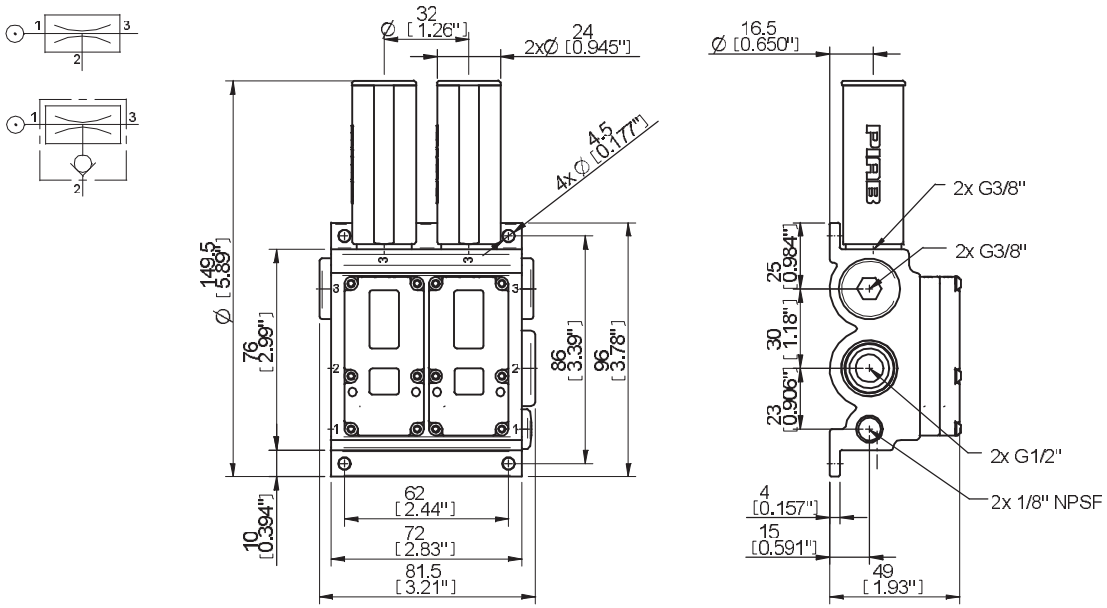


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump MINI L56, conn. K, NBR seals	L56F6-KN
Vacuum pump MINI L56, conn. K, NBR seals, non-return valve	L56F6-KNA

Viton® or EPDM seals optional (i.e. Part No. L56F6-KV or L56F6-KE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 30–60, NBR seals	01.00.491
Seal kit MINI 30–60, Viton® seals	01.00.491V
Seal kit MINI 30–60, EPDM seals	01.00.491E

Seal kits include flap valves, gaskets and compressed air filters.

M5L

- Medium vacuum levels to 24.1 -inHg
- Small size and low weight
- Operates at 55 psi
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps for connection plate A & B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps for connection plate C).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	55
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4–176
Weight	oz	1.16 (A), 2.19 (B2), 1.69 (C), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

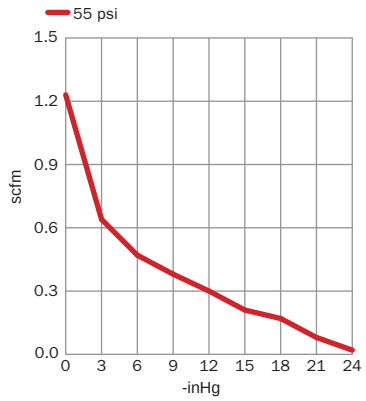
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
55	0.81	1.23	0.64	0.47	0.38	0.30	0.21	0.17	0.08	0.02	–	24.1

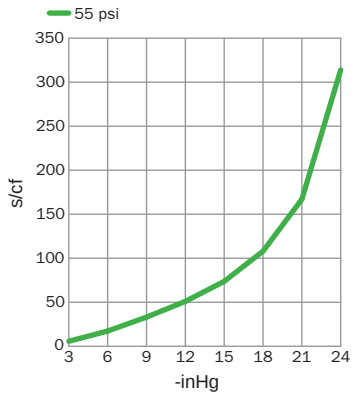
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
55	0.81	5.67	17.3	33.1	51.0	73.7	108	167	314	–	24.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

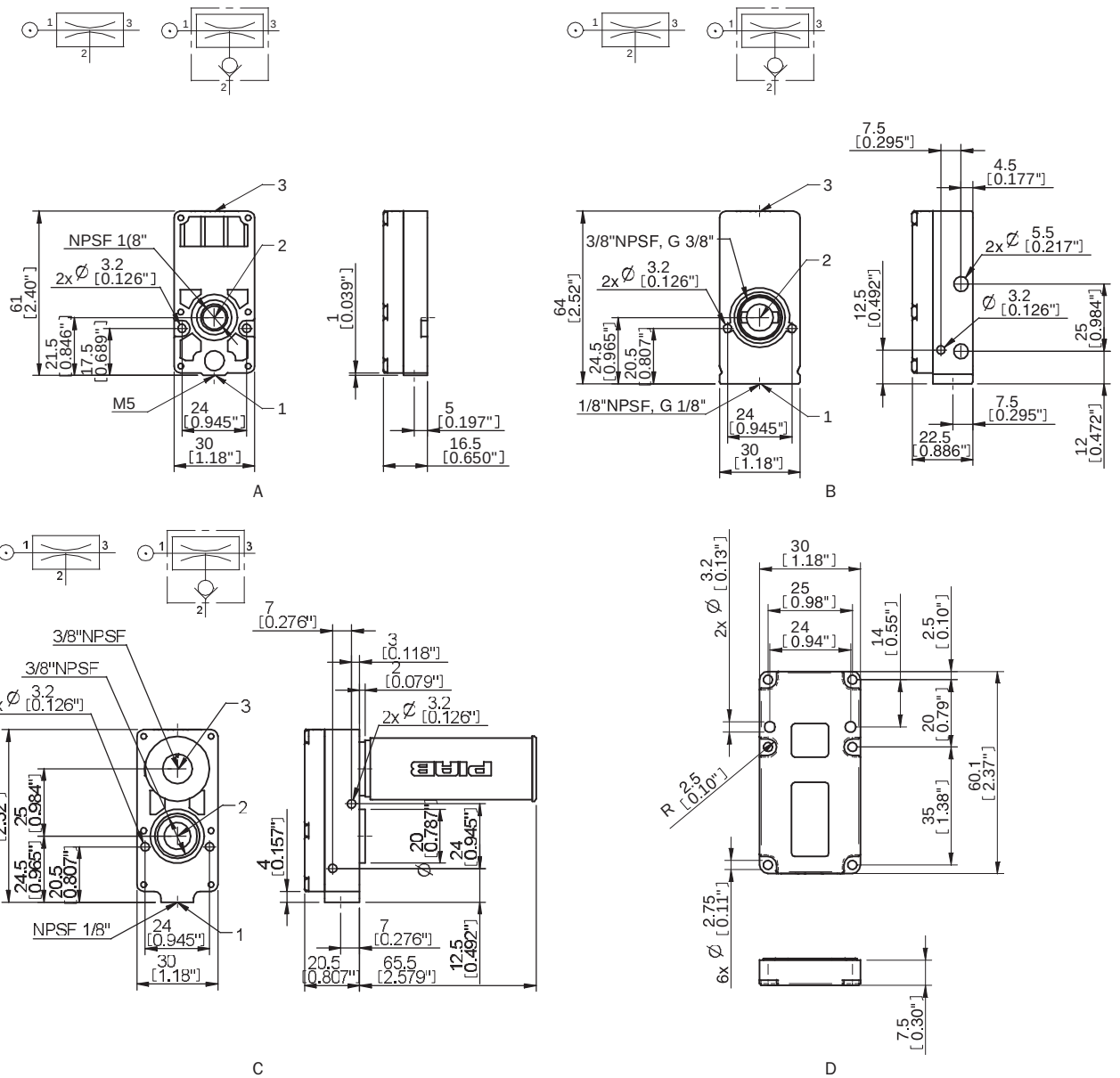


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI M5L, conn. A, NBR seals	M5A5-AN
A	Vacuum pump MINI M5L, conn. A, NBR seals, non-return valve	M5A5-ANA
B	Vacuum pump MINI M5L, conn. B2, NBR seals	M5A5-B2N
B	Vacuum pump MINI M5L, conn. B2, NBR seals, non-return valve	M5A5-B2NA
C	Vacuum pump MINI M5L, conn. C, NBR seals	M5A5-CN
C	Vacuum pump MINI M5L, conn. C, NBR seals, non-return valve	M5A5-CNA
D	Vacuum pump MINI M5L, conn. Z, NBR seals	M5A5-ZN
D	Vacuum pump MINI M5L, conn. Z, NBR seals, non-return valve	M5Z5-ZNA

Viton® or EPDM seals optional (i.e. Part No. M5A5-AV or M5A5-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

M10L

- Medium vacuum levels to 24.1 -inHg
- Small size and low weight
- Operates at 55 psi
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps for connection plate A & B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps for connection plate C).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	55
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4-176
Weight	oz	1.16 (A), 2.19 (B2), 1.69 (C), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

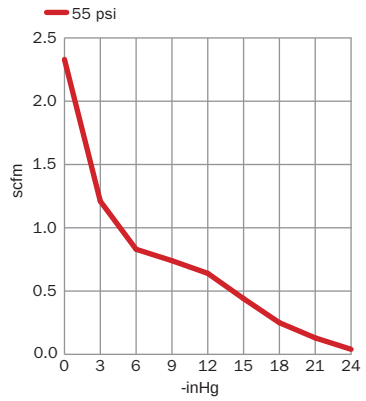
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
55	1.61	2.33	1.21	0.83	0.74	0.64	0.44	0.25	0.13	0.04	–	24.1

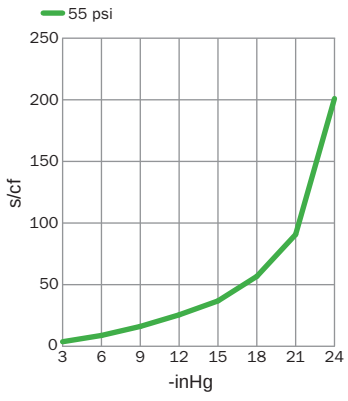
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
55	1.61	3.68	8.78	16.1	25.5	36.8	56.7	90.7	201	–	24.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

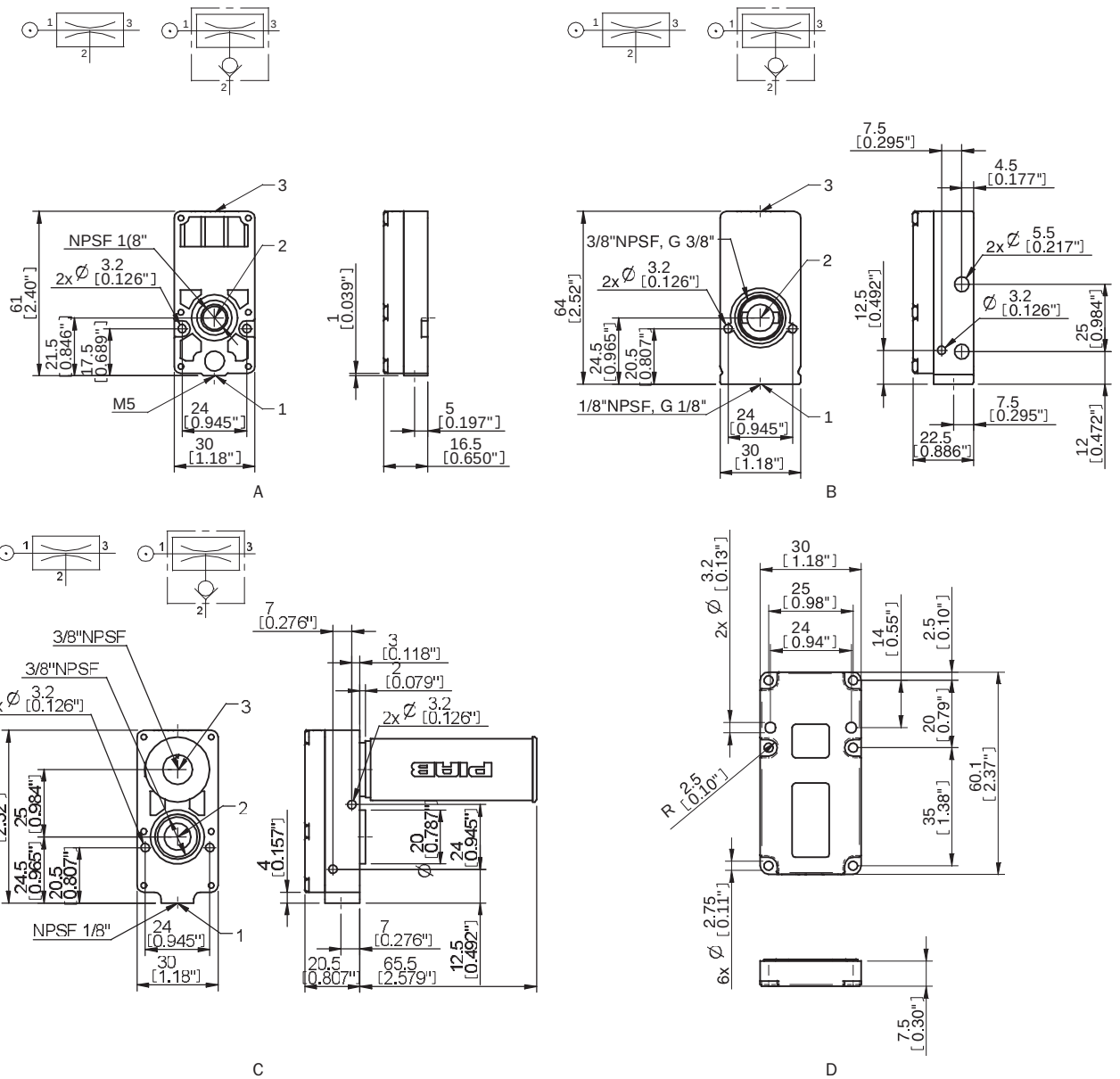


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI M10L, conn. A, NBR seals	M10A5-AN
A	Vacuum pump MINI M10L, conn. A, NBR seals, non-return valve	M10A5-ANA
B	Vacuum pump MINI M10L, conn. B2, NBR seals	M10A5-B2N
B	Vacuum pump MINI M10L, conn. B2, NBR seals, non-return valve	M10A5-B2NA
C	Vacuum pump MINI M10L, conn. C, NBR seals	M10A5-CN
C	Vacuum pump MINI M10L, conn. C, NBR seals, non-return valve	M10A5-CNA
D	Vacuum pump MINI M10L, conn. Z, NBR seals	M10A5-ZN
D	Vacuum pump MINI M10L, conn. Z, NBR seals, non-return valve	M10A5-ZNA

Viton® or EPDM seals optional (i.e. Part No. M10A5-AV or M10A5-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

M20L

- Medium vacuum levels to 24.1 -inHg
- Small size and low weight
- Operates at 55 psi
- Nitrile (NBR) seals standard

Supplied with push-in hose connector for compressed air (for pumps with connection plate B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps with connection plate C & T).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	55
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4-176
Weight	oz	2.68 (B2), 2.12 (C), 8.40 (T)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

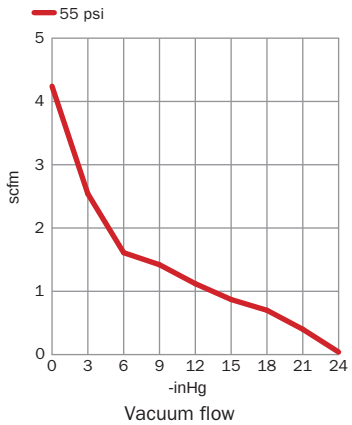
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
55	3.18	4.24	2.54	1.61	1.42	1.12	0.87	0.70	0.40	0.04	–	24.1

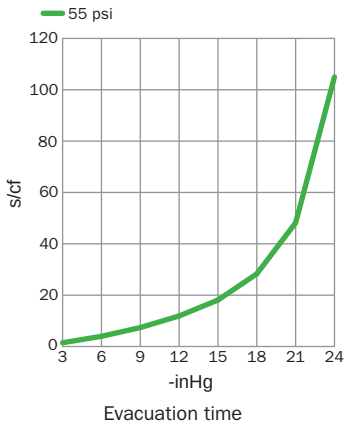
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
55	3.18	1.47	3.97	7.37	11.9	18.1	28.3	48.2	105	–	24.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

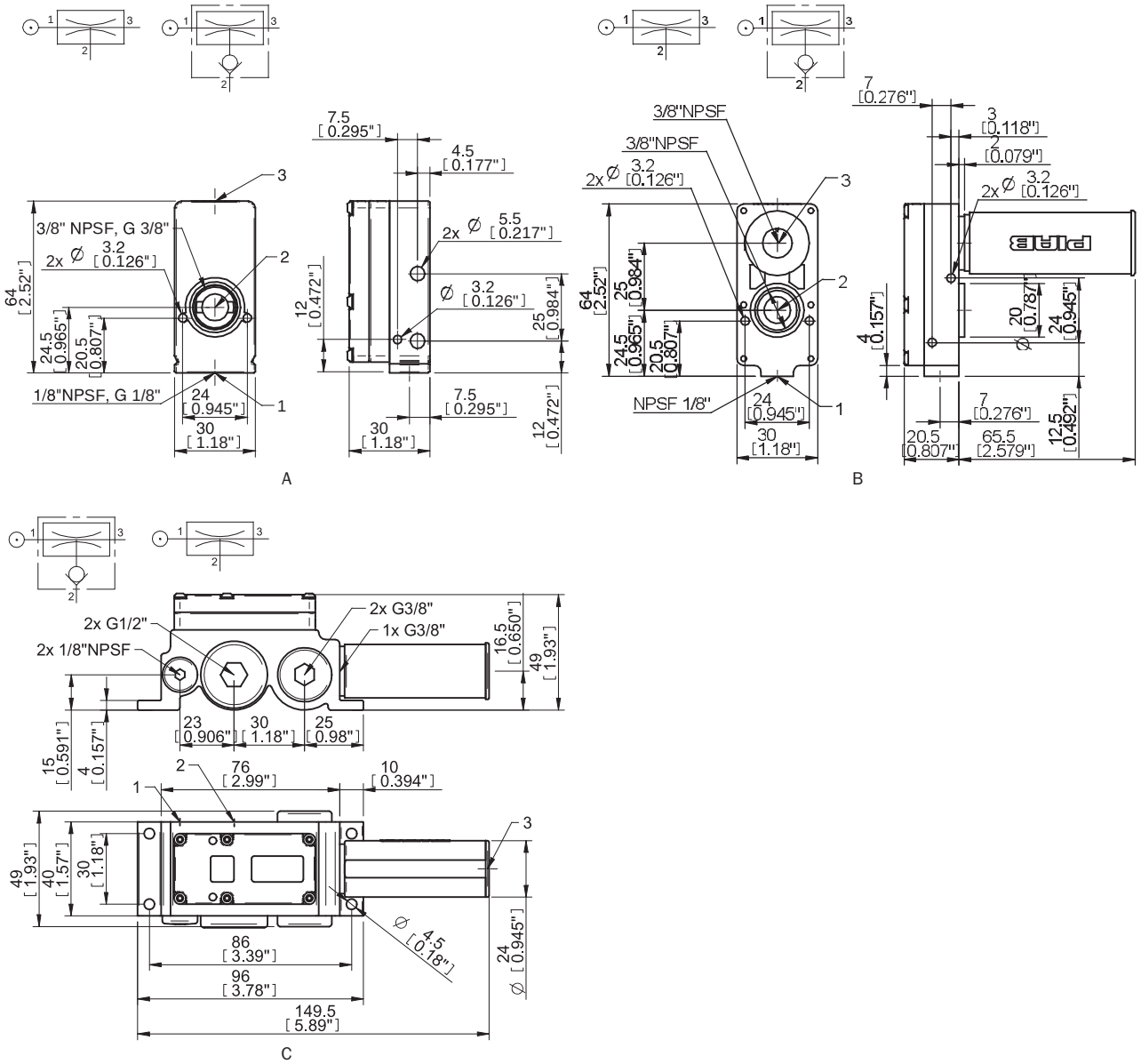


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI M20L, conn. B2, NBR seals	M20A5-B2N
A	Vacuum pump MINI M20L, conn. B2, NBR seals, non-return valve	M20A5-B2NA
B	Vacuum pump MINI M20L, conn. C, NBR seals	M20A5-CN
B	Vacuum pump MINI M20L, conn. C, NBR seals, non-return valve	M20A5-CNA
C	Vacuum pump MINI M20L, conn. B, NBR sealings	M20A5-BN
C	Vacuum pump MINI M20L, conn. B, NBR sealings, non-return valve	M20A5-BNA

Viton® or EPDM seals optional (i.e. Part No. M20A5-B2V or M20A5-B2E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

M40L

- Medium vacuum levels to 24.1 -inHg
- Small size and low weight
- Operates at 55 psi
- Nitrile (NBR) seals standard

Supplied with two flow-through silencers.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	55
Feed pressure, max.	psi	101.5
Noise level	dBA	57–68
Temperature range	°F	-4-176
Weight	oz	14.9
Material		Al, PA, POM, NBR (Viton/EPDM), ABS, SS

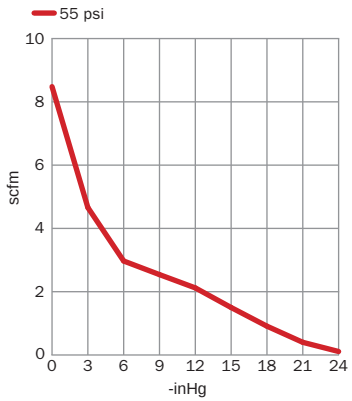
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
55	6.36	8.48	4.66	2.97	2.54	2.12	1.50	0.91	0.40	0.11	–	24.1

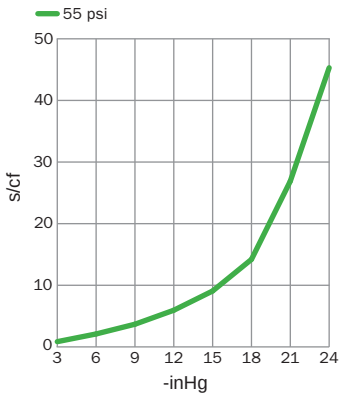
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
55	6.36	0.85	2.10	3.68	5.95	9.07	14.2	26.9	45.3	–	24.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

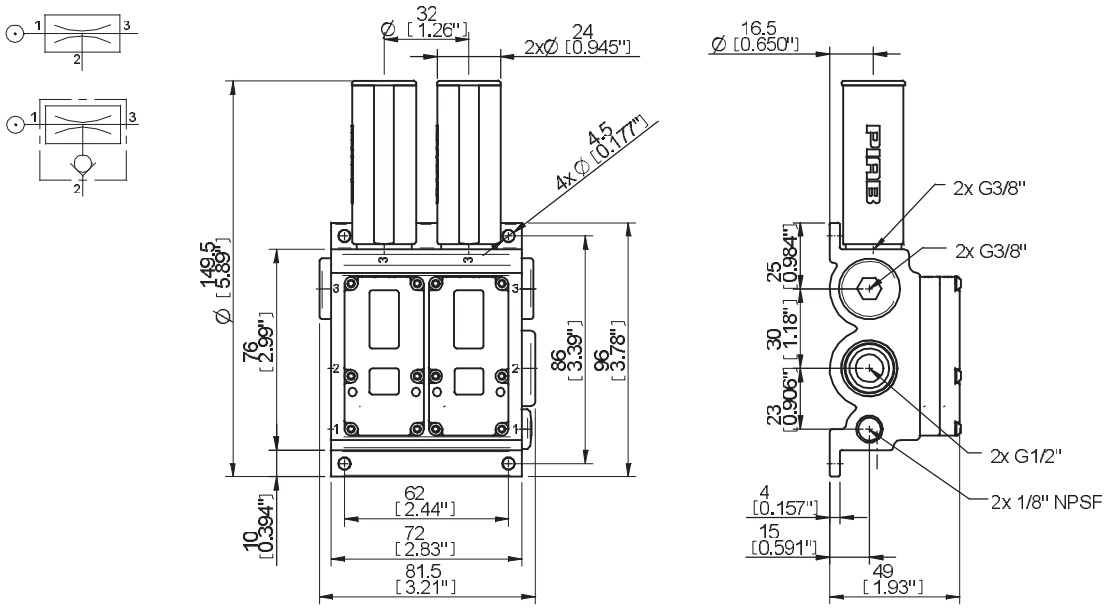


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump MINI M40L, conn. K, NBR seals	M40F5-KN
Vacuum pump MINI M40L, conn. K, NBR seals, non-return valve	M40F5-KNA

Viton® or EPDM optional (i.e. Part No. M40F5-KV or M40F5-KE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 30–60, NBR seals	01.00.491
Seal kit MINI 30–60, Viton® seals	01.00.491V
Seal kit MINI 30–60, EPDM seals	01.00.491E

Seal kits include flap valves, gaskets and compressed air filters.

X5L

- Extra vacuum level to 27.9 -inHg
- Small size and low weight
- Use in tightly sealed or non-porous applications

Supplied with push-in hose connector for compressed air (for pumps for connection plate A & B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps for connection plate C).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	58
Feed pressure, max.	psi	101.5
Noise level	dBA	62–66
Temperature range	°F	-4-176
Weight	oz	1.16 (A), 2.19 (B2), 1.69 (C), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

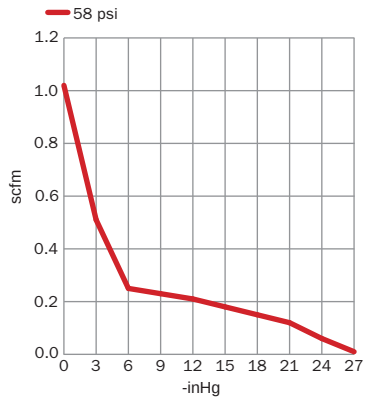
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
58	0.83	1.02	0.51	0.25	0.23	0.21	0.18	0.15	0.12	0.06	0.01	27.9

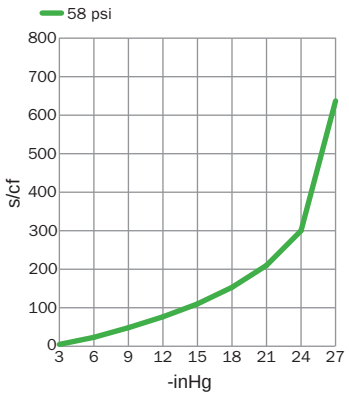
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
58	0.83	4.82	23.2	48.2	76.5	110	153	210	300	637	27.9

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

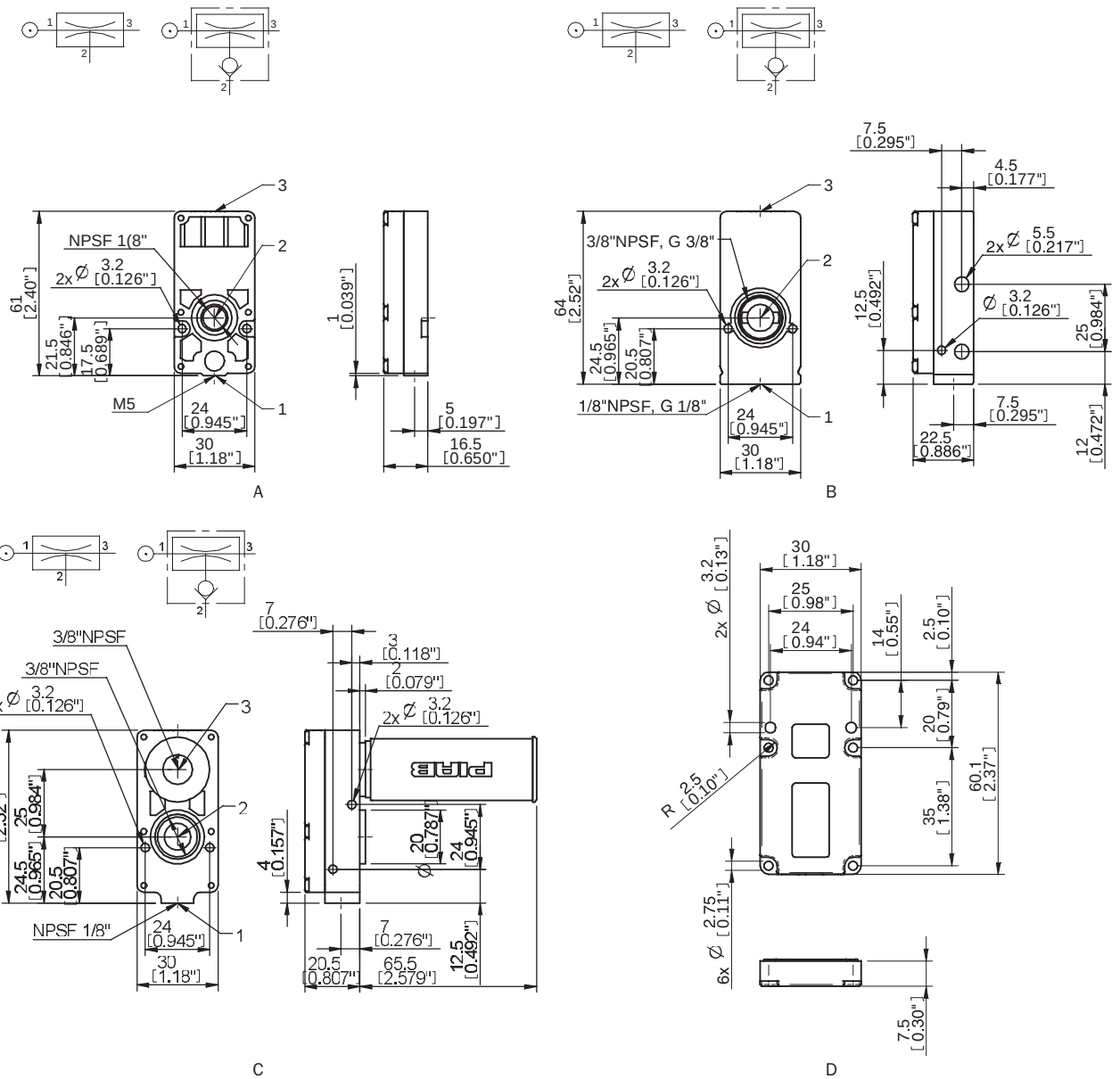


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI X5L, conn. A, NBR seals	X5A5-AN
A	Vacuum pump MINI X5L, conn. A, NBR seals, non-return valve	X5A5-ANA
B	Vacuum pump MINI X5L, conn. B2, NBR seals	X5A5-B2N
B	Vacuum pump MINI X5L, conn. B2, NBR seals, non-return valve	X5A5-B2NA
C	Vacuum pump MINI X5L, conn. C, NBR seals	X5A5-CN
C	Vacuum pump MINI X5L, conn. C, NBR seals, non-return valve	X5A5-CNA
D	Vacuum pump MINI X5L, conn. Z, NBR seals	X5A5-ZN
D	Vacuum pump MINI X5L, conn. Z, NBR seals, non-return valve	X5A5-ZNA

Viton® or EPDM seals optional (i.e. Part No. X5A5-AV or X5A5-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

X10L

- Extra vacuum level to 27.9 -inHg
- Small size and low weight
- Use in tightly sealed or non-porous applications

Supplied with push-in hose connector for compressed air (for pumps for connection plate A & B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps for connection plate C).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	58
Feed pressure, max.	psi	101.5
Noise level	dBA	62–66
Temperature range	°F	-4-176
Weight	oz	1.16 (A), 2.19 (B2), 1.69 (C), 0.46 (Z)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

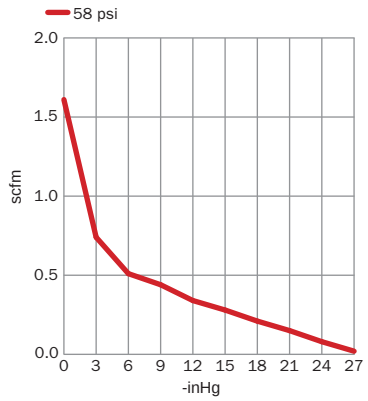
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
58	1.67	1.61	0.74	0.51	0.44	0.34	0.28	0.21	0.15	0.08	0.02	27.9

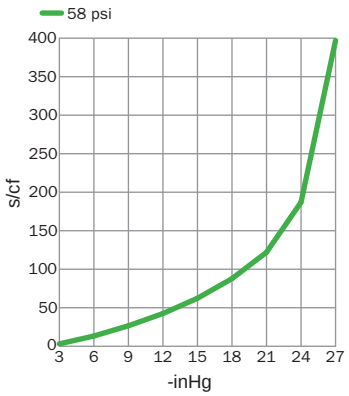
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
58	1.67	3.12	13.3	26.6	42.5	62.3	87.8	122	187	397	27.9

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

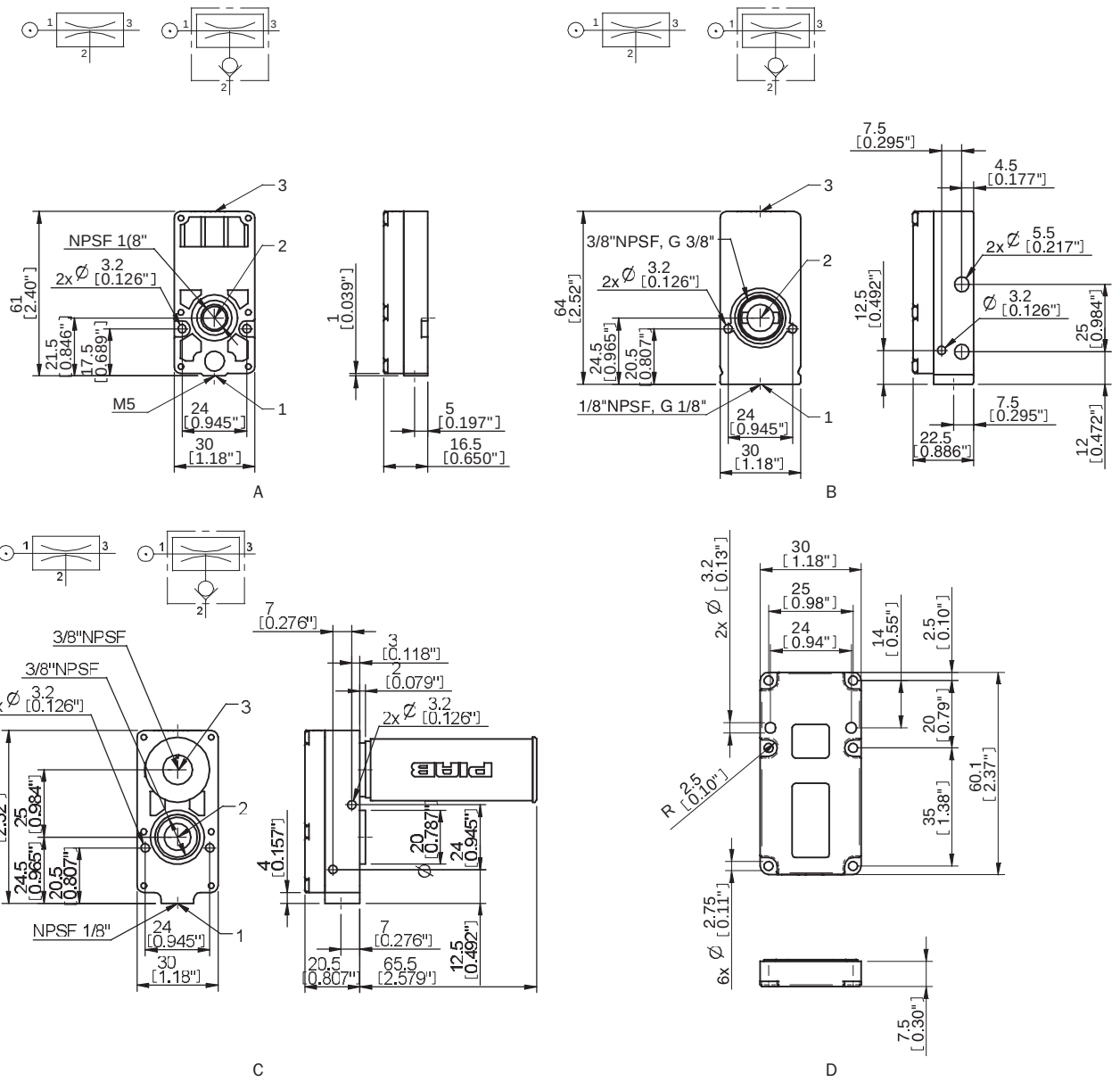


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI X10L, conn. A, NBR seals	X10A5-AN
A	Vacuum pump MINI X10L, conn. A, NBR seals, non-return valve	X10A5-ANA
B	Vacuum pump MINI X10L, conn. B2, NBR seals	X10A5-B2N
B	Vacuum pump MINI X10L, conn. B2, NBR seals, non-return valve	X10A5-B2NA
C	Vacuum pump MINI X10L, conn. C, NBR seals	X10A5-CN
C	Vacuum pump MINI X10L, conn. C, NBR seals, non-return valve	X10A5-CNA
D	Vacuum pump MINI X10L, conn. Z, NBR seals	X10A5-ZN
D	Vacuum pump MINI X10L, conn. Z, NBR seals, non-return valve	X10A5-ZNA

Viton® or EPDM seals optional (i.e. X5A5-AV or X5A5-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

X20L

- Extra vacuum level to 27.9 -inHg
- Small size and low weight
- Use in tightly sealed or non-porous applications

Supplied with push-in hose connector for compressed air (for pumps with connection plate B2). Supplied with push-in hose connector for compressed air and external flow-through silencer (for pumps with connection plate C & T).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	58
Feed pressure, max.	psi	101.5
Noise level	dBA	62–66
Temperature range	°F	-4-176
Weight	oz	2.68 (B2), 2.12 (C), 8.40 (T)
Material		PA, POM, SS, NBR (Viton/EPDM), Al (B2 only), ABS (C only)

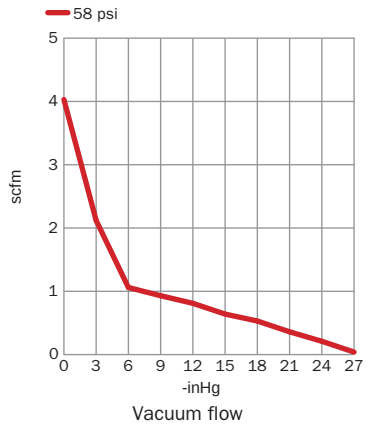
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
58	3.39	4.03	2.12	1.06	0.93	0.81	0.64	0.53	0.36	0.21	0.04	27.9

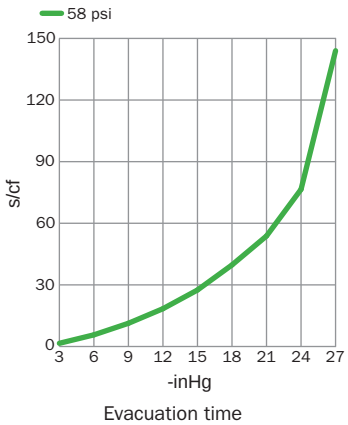
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
58	3.39	1.56	5.67	11.3	18.4	27.5	39.7	53.8	76.5	144	27.9

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

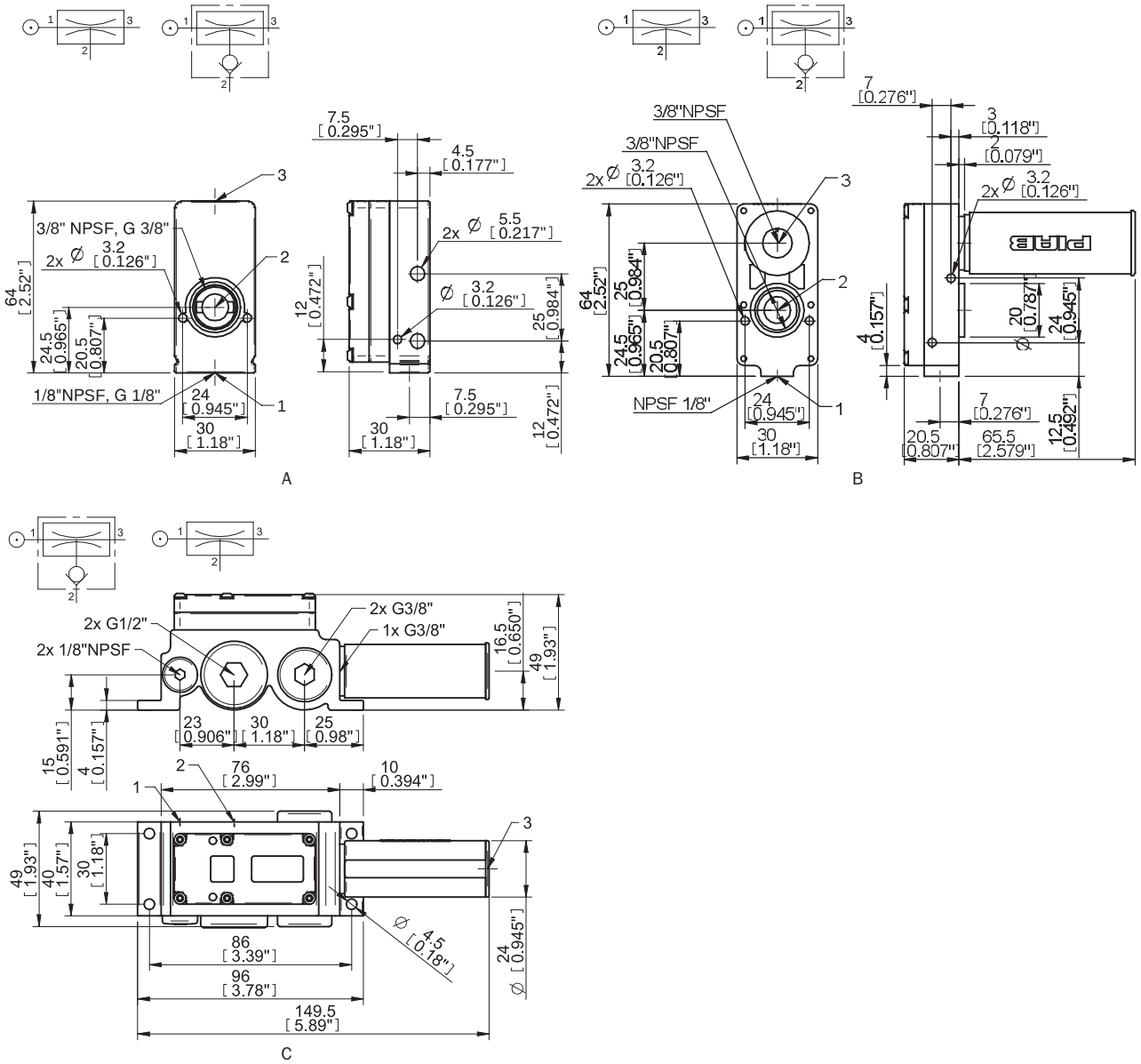


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MINI X20L, conn. B2, NBR seals	X20A5-B2N
A	Vacuum pump MINI X20L, conn. B2, NBR seals, non-return valve	X20A5-B2NA
B	Vacuum pump MINI X20L, conn. C, NBR seals	X20A5-CN
B	Vacuum pump MINI X20L, conn. C, NBR seals, non-return valve	X20A5-CNA
C	Vacuum pump MINI X20L, conn. T, NBR seals	X20F5-TN
C	Vacuum pump MINI X20L, conn. T, NBR seals, non-return valve	X20F5-TNA

Viton® or EPDM seals optional (i.e. Part No. X20A5-AV or X20A5-AE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 5–28, NBR	32.01.097
Seal kit MINI 5–28, Viton®	32.01.097V
Seal kit MINI 5–28, EPDM	32.01.097E

Seal kits include flap valves, gaskets and compressed-air filters.

X40L

- Extra vacuum level to 27.9 -inHg
- Small size and low weight
- Use in tightly sealed or non-porous applications

Supplied with two flow-through silencers.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	58
Feed pressure, max.	psi	101.5
Noise level	dBA	60–70
Temperature range	°F	-4-176
Weight	oz	14.9
Material		Al, PA, POM, NBR (Viton/EPDM), SS, ABS

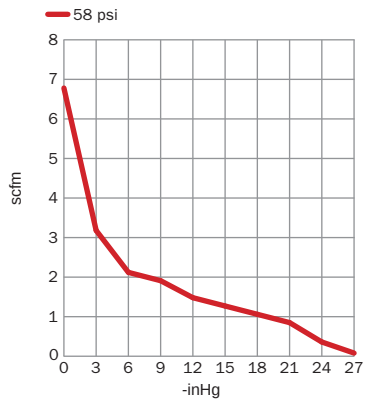
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
58	6.57	6.78	3.18	2.12	1.91	1.48	1.27	1.06	0.85	0.36	0.08	27.9

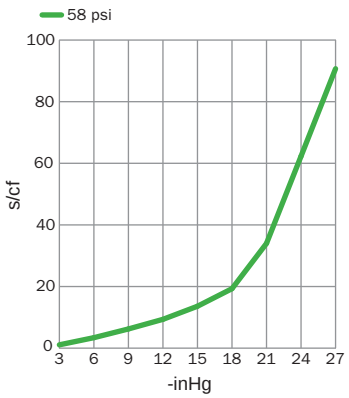
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
58	6.57	1.08	3.40	6.23	9.35	13.6	19.3	34.0	62.3	90.7	27.9

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

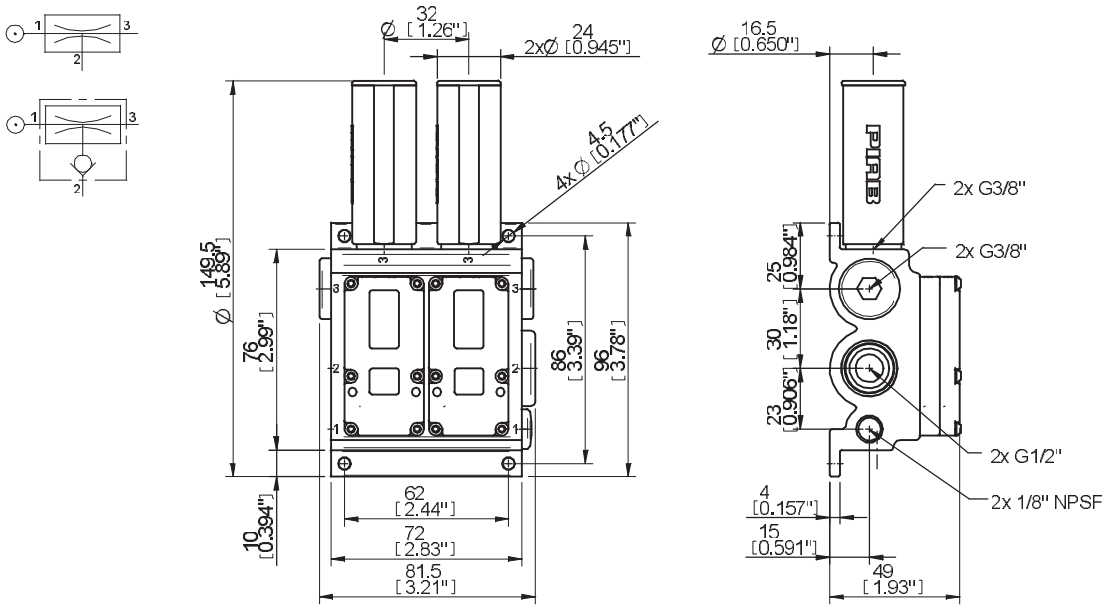


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump MINI X40L, conn. K, NBR sealings	X40F5-KN
Vacuum pump MINI X40L, conn. K, NBR sealings, non-return valve	X40F5-KNA

Viton® or EPDM seals optional (X40F5-KV or X40F5-KE)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MINI 30–60, NBR seals	01.00.491
Seal kit MINI 30–60, Viton® seals	01.00.491V
Seal kit MINI 30–60, EPDM seals	01.00.491E

Seal kits include flap valves, gaskets and compressed air filters.

L SERIES

- Large vacuum flows
- Fast evacuation time
- Good for handling porous materials or if leakage is present
- Energy-Saving (ES) available

Supplied with a push-in connector for compressed air, flow-through silencer, vacuum gauge and mounting brackets (see Accessories).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	60–65
Temperature range	°F	-4-176
Weight	lb	L25, L50-1.49, 1.65 (ES); L100-1.98, 2.34 (ES)
Material		Al, PPS, SS, PA, NBR (Viton/EPDM)

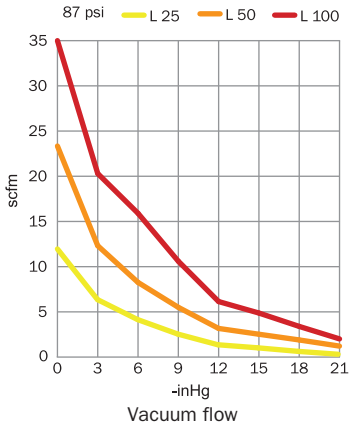
VACUUM FLOW

Model	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	-inHg
L25	87	3.81	12.9	6.99	4.66	2.97	1.72	1.36	0.95	0.61	22.3
L50	87	7.42	23.1	12.1	8.05	5.30	2.97	2.33	1.70	1.02	22.3
L100	87	14.8	35.0	20.3	15.9	10.6	6.14	4.87	3.39	2.01	22.3

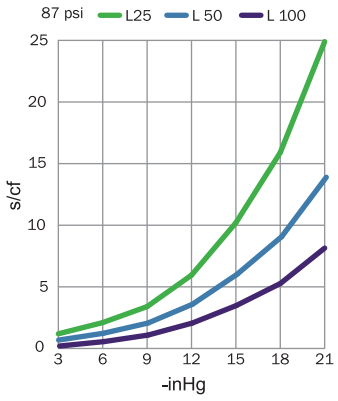
EVACUATION TIME

Model	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum
	psi	scfm	3	6	9	12	15	18	21	-inHg
L25	87	3.81	1.19	2.10	3.40	5.95	10.2	15.9	24.9	22.3
L50	87	7.42	0.42	0.93	1.70	3.12	5.38	8.22	12.7	22.3
L100	87	14.8	0.23	0.51	0.93	1.70	2.83	4.25	6.52	22.3

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

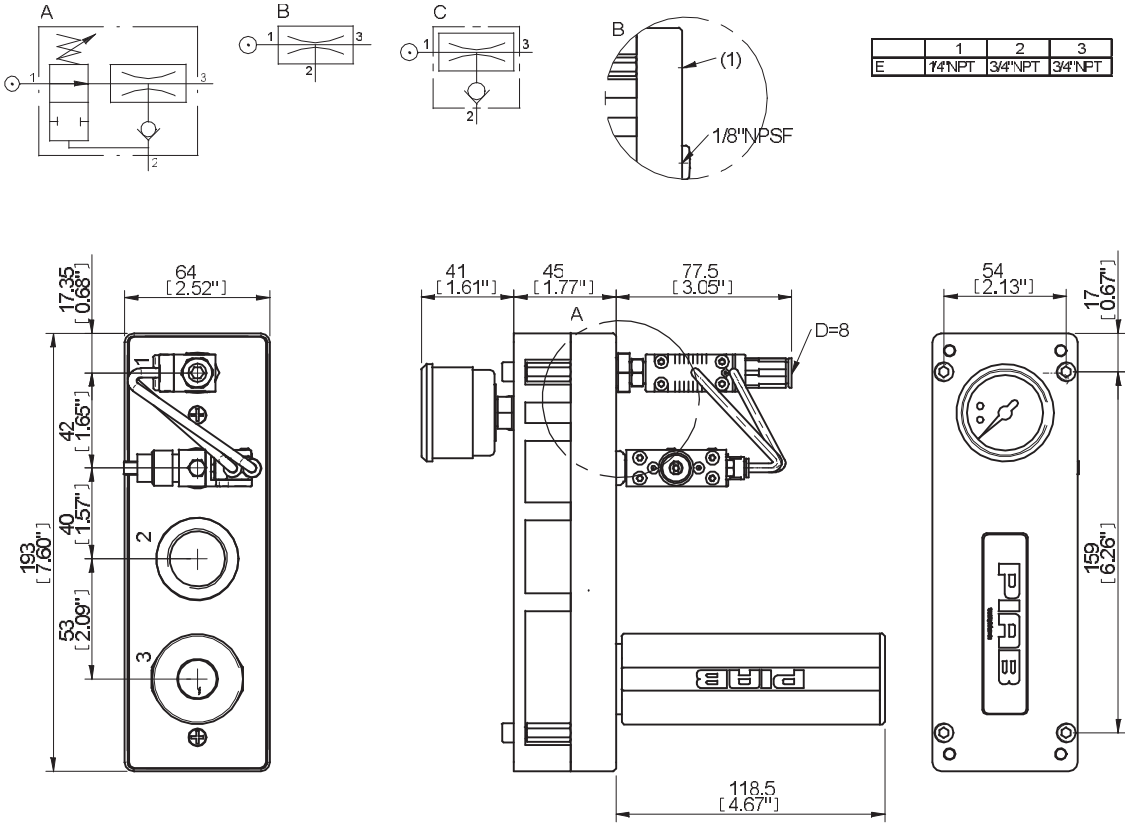


Evacuation time

ORDERING INFORMATION

	Description	Part No.
B	Vacuum pump CLASSIC L25, conn. E, NBR seals	L25B6-EN
C	Vacuum pump CLASSIC L25, conn. E, NBR seals, non-return valve	L25B6-ENA
A	Vacuum pump CLASSIC L25, conn. E, NBR seals, ES (Energy-Saving)	L25B6-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCL25B6-EN
B	Vacuum pump CLASSIC L50, conn. E, NBR seals	L50B6-EN
C	Vacuum pump CLASSIC L50, conn. E, NBR seals, non-return valve	L50B6-ENA
A	Vacuum pump CLASSIC L50, conn. E, NBR seals, ES (Energy-Saving)	L50B6-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCL50B6-EN
B	Vacuum pump CLASSIC L100, conn. E, NBR seals	L100B6-EN
C	Vacuum pump CLASSIC L100, conn. E, NBR seals, non-return valve	L100B6-ENA
A	Vacuum pump CLASSIC L100, conn. E, NBR seals, ES (Energy-Saving)	L100B6-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCL100B6-EN

Viton® or EPDM seals optional (i.e. Part No. L25B6-EV or L25B6-EE)



Y=45 [1.77"] L25, L50 Y=65 [2.56"] L100

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC, NBR	32.01.069
Seal kit CLASSIC, Viton®	32.01.069V
Seal kit CLASSIC, EPDM	32.01.069E
Vacuum filter, 3/4" NPT	PPSF.75-X35

Seal kits include flap valves, gaskets and compressed-air filters.

M SERIES

- Medium vacuum levels to 27.1 -inHg
- Operates at 50 psi
- Good for handling porous materials or if leakage is present
- Energy-Saving (ES) available

Supplied with a push-in connector for compressed air, flow-through silencer, vacuum gauge and mounting brackets (see Accessories).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	50
Feed pressure, max.	psi	101.5
Noise level	dBA	60–65
Temperature range	°F	-4-176
Weight	lb	M25L, M50L-1.49, 1.65 (ES); M100L-1.98, 2.34 (ES)
Material		Al, PPS, SS, PA, NBR (Viton/EPDM)

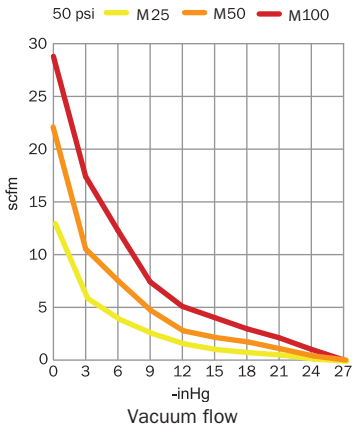
VACUUM FLOW

Model	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
M25L	50	4.03	12.5	5.72	3.81	2.54	1.59	1.08	0.81	0.59	0.23	0.04	27.1
M50L	50	7.84	21.8	10.4	7.42	4.66	2.75	2.12	1.70	1.06	0.40	0.02	27.1
M100L	50	15.9	28.8	17.4	12.3	7.42	5.09	4.03	2.97	2.12	1.02	0.02	27.1

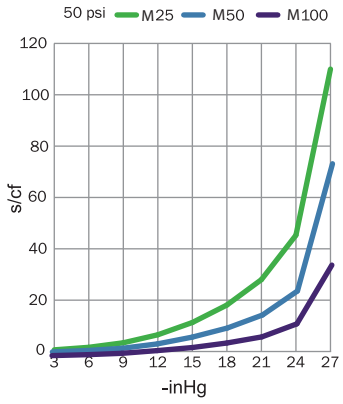
EVACUATION TIME

Model	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
M25L	50	4.03	0.65	1.64	3.40	6.52	11.3	18.1	28.0	45.3	110	27.1
M50L	50	7.84	0.40	0.93	1.76	3.40	5.95	9.35	14.2	23.2	70.8	27.1
M100L	50	15.9	0.42	0.76	1.27	2.27	3.40	5.10	7.37	12.2	34.0	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

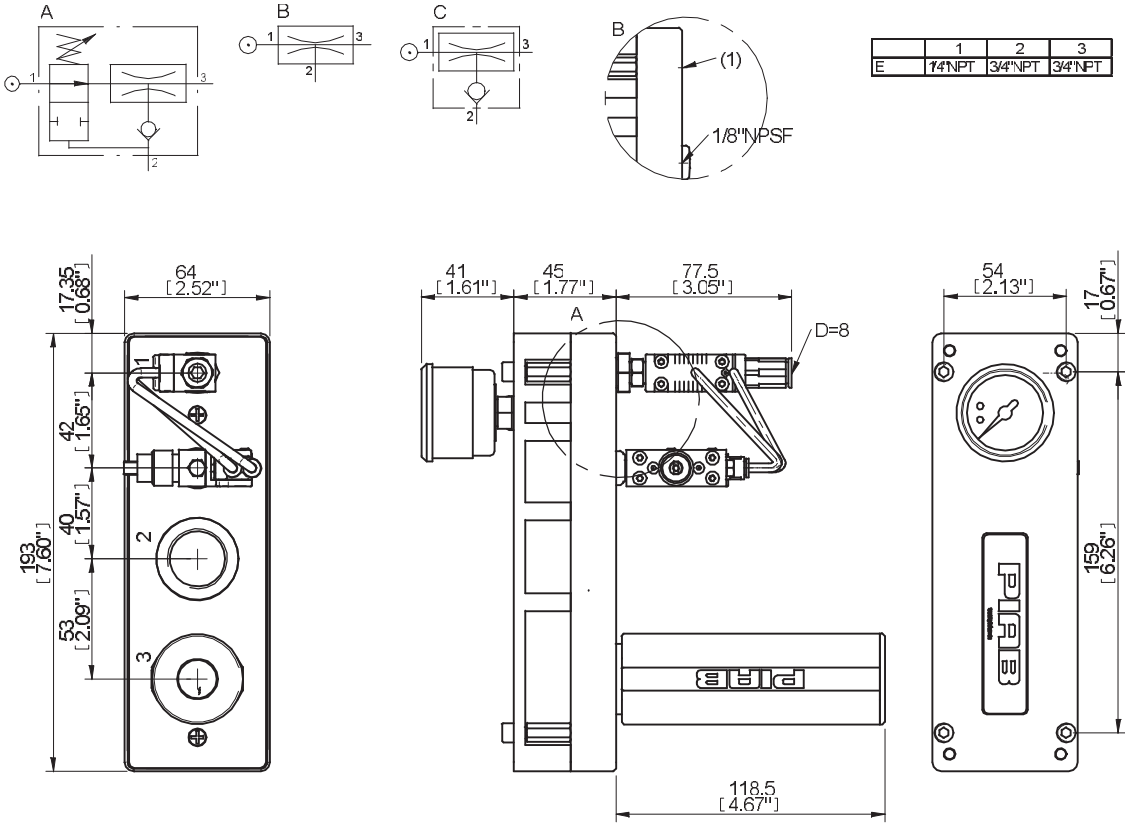


Evacuation time

ORDERING INFORMATION

	Description	Part No.
B	Vacuum pump CLASSIC M25L, conn. E, NBR seals	M25B5-EN
C	Vacuum pump CLASSIC M25L, conn. E, NBR seals, non-return valve	M25B5-ENA
A	Vacuum pump CLASSIC M25L, conn. E, NBR seals, ES (Energy-Saving)	M25B5-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCM25B5-EN
B	Vacuum pump CLASSIC M50L, conn. E, NBR seals	M50B5-EN
C	Vacuum pump CLASSIC M50L, conn. E, NBR seals, non-return valve	M50B5-ENA
A	Vacuum pump CLASSIC M50L, conn. E, NBR seals, ES (Energy-Saving)	M50B5-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCM50B5-EN
B	Vacuum pump CLASSIC M100L, conn. E, NBR seals	M100B5-EN
C	Vacuum pump CLASSIC M100L, conn. E, NBR seals, non-return valve	M100B5-ENA
A	Vacuum pump CLASSIC M100L, conn. E, NBR seals, ES (Energy-Saving)	M100B5-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCM100B5-EN

Viton® or EPDM seals optional (i.e. Part No. M25B5-EV or M25B5-EE)



Y=45 [1.77"] M25L, M50L Y=65 [2.56"] M100L

DIMENSIONS

Size	Y mm [in]
25, 50	45 [1.77]
100	65 [2.56]

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC, NBR	32.01.069
Seal kit CLASSIC, Viton®	32.01.069V
Seal kit CLASSIC, EPDM	32.01.069E
Vacuum filter, 3/4" NPT	PPSF.75-X35

Seal kits include flap valves, gaskets and compressed-air filters.

H SERIES

- Higher vacuum levels to 29.85 -inHg
- Use with practically zero leakage present and non-porous applications

Supplied with a push-in connector for compressed air, flow-through silencer, vacuum gauge and mounting brackets (see Accessories).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	60–65
Temperature range	°F	-4-176
Weight	lb	H40-1.49; H120-1.98
Material		Al, PPS, SS, NBR (Viton/EPDM)

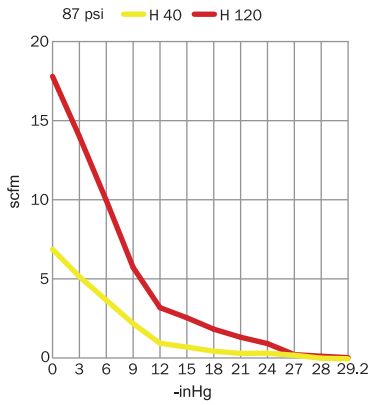
VACUUM FLOW

Model	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)												Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	28	29.2	-inHg
H40	87	5.51	5.93	4.45	3.18	1.91	0.85	0.64	0.42	0.30	0.21	0.20	0.04	0.01	29.5
H120	87	16.1	17.8	14.0	9.96	5.72	3.18	2.54	1.82	1.31	0.91	0.21	0.11	0.02	29.85

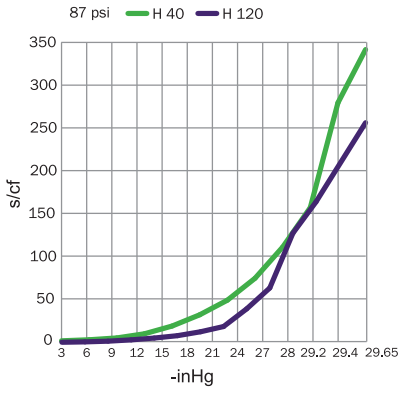
EVACUATION TIME

Model	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)												Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	28	29.2	29.4	29.65	-inHg
H40	87	5.51	0.91	2.12	4.25	9.07	18.1	31.2	48.2	73.7	110	156	278	340	-	29.5
H120	87	16.1	0.51	0.93	1.70	3.12	5.10	7.65	11.9	17.6	36.8	59.5	119	153	235	29.85

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

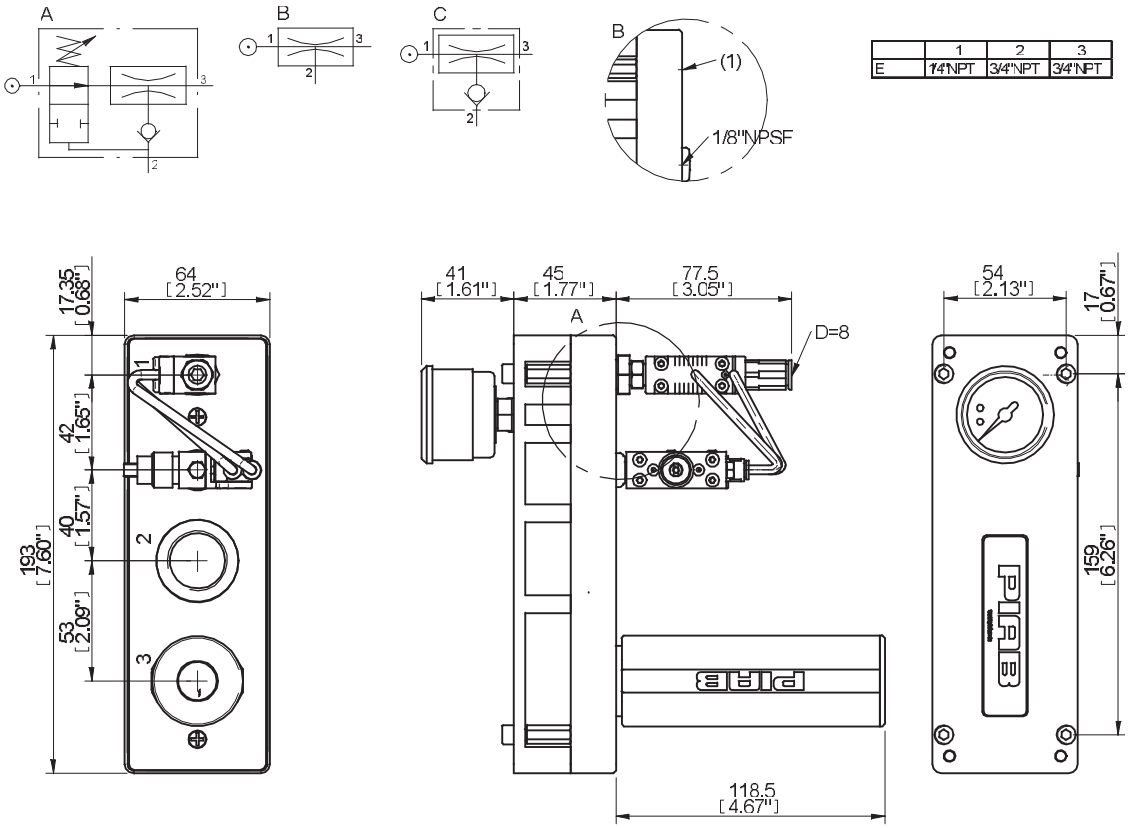


Evacuation time

ORDERING INFORMATION

	Description	Part No.
B	Vacuum pump CLASSIC H40, conn. E, NBR seals	H40B6-EN
C	Vacuum pump CLASSIC H40, conn. E, NBR seals, non-return valve	H40B6-ENA
A	Vacuum pump CLASSIC H40, conn. E, NBR seals, ES (Energy-Saving)	H40B6-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCH40B6-EN
B	Vacuum pump CLASSIC H120, conn. E, NBR seals	H120B6-EN
C	Vacuum pump CLASSIC H120, conn. E, NBR seals, non-return valve	H120B6-ENA
A	Vacuum pump CLASSIC H120, conn. E, NBR seals, ES (Energy-Saving)	H120B6-ENAF
	Classic Pump/Vacuum Filter Combination (with FREE 3-pack filter elements)	PPFCH120B6-EN

Viton® or EPDM seals optional (i.,e. Part No. H40B6-EV or H40B6-EE)



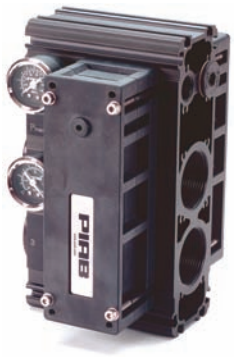
Y=45 [1.77"] L25, L50 Y=65 [2.56"] L100

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC, NBR	32.01.069
Seal kit CLASSIC, Viton®	32.01.069V
Seal kit CLASSIC, EPDM	32.01.069E
Vacuum filter, 3/4" NPT	PPSF.75-X35

Seal kits include flap valves, gaskets and compressed-air filters.

L SERIES



- Large amounts of vacuum flow
- Compact size and weight compared to conventional mechanical pump
- Fast evacuation time
- Good for handling porous materials or if leakage is present

Supplied with vacuum gauge, manometer, flow-through silencer & mounting brackets.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level, with silencer	dBA	64–78
Temperature range	°F	-4-176
Weight	lb	L150, L200-10.1; L300, L400-15.2
Material		Al, PPS, SS, NBR (Viton/EPDM)

VACUUM FLOW

Model	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
L150	87	22.2	61.4	34.3	25.4	15.9	8.05	5.72	3.60	1.61			22.3
L200	87	29.7	80.5	48.7	34.1	23.7	13.8	10.4	6.36	2.33			22.3
L300	87	44.5	97.5	63.6	48.3	31.1	19.1	15.0	11.0	6.57			22.3
L400	87	59.3	108	82.6	59.3	34.7	25.2	20.1	14.2	8.48			22.3

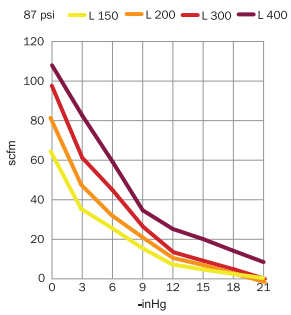
EVACUATION TIME

Model	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
L150	87	22.2	0.14	0.34	0.59	1.13	1.98	3.40	6.23			22.3
L200	87	29.7	0.11	0.25	0.45	0.85	1.42	1.98	3.68			22.3
L300	87	44.5	0.11	0.23	0.37	0.57	0.85	1.42	2.27			22.3
L400	87	59.3	0.11	0.20	0.31	0.57	0.85	1.13	1.70			22.3

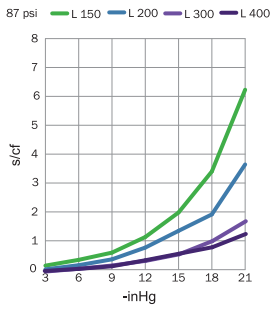
BLOW FLOW

Model	Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)								Max pressure
	psi	scfm	0	2	3	4	6	7	9	10	psi
L150	87	22.2	84.8	59.3	52.3	43.9	39.0	36.7	33.5	29.5	10
L200	87	29.7	110	76.1	67.6	56.8	51.9	48.9	44.7	39.2	10
L300	87	44.5	141	111	97.7	83.1	77.8	73.5	67.2	58.7	10
L400	87	59.3	168	146	128	110	104	97.9	89.4	78.4	10

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

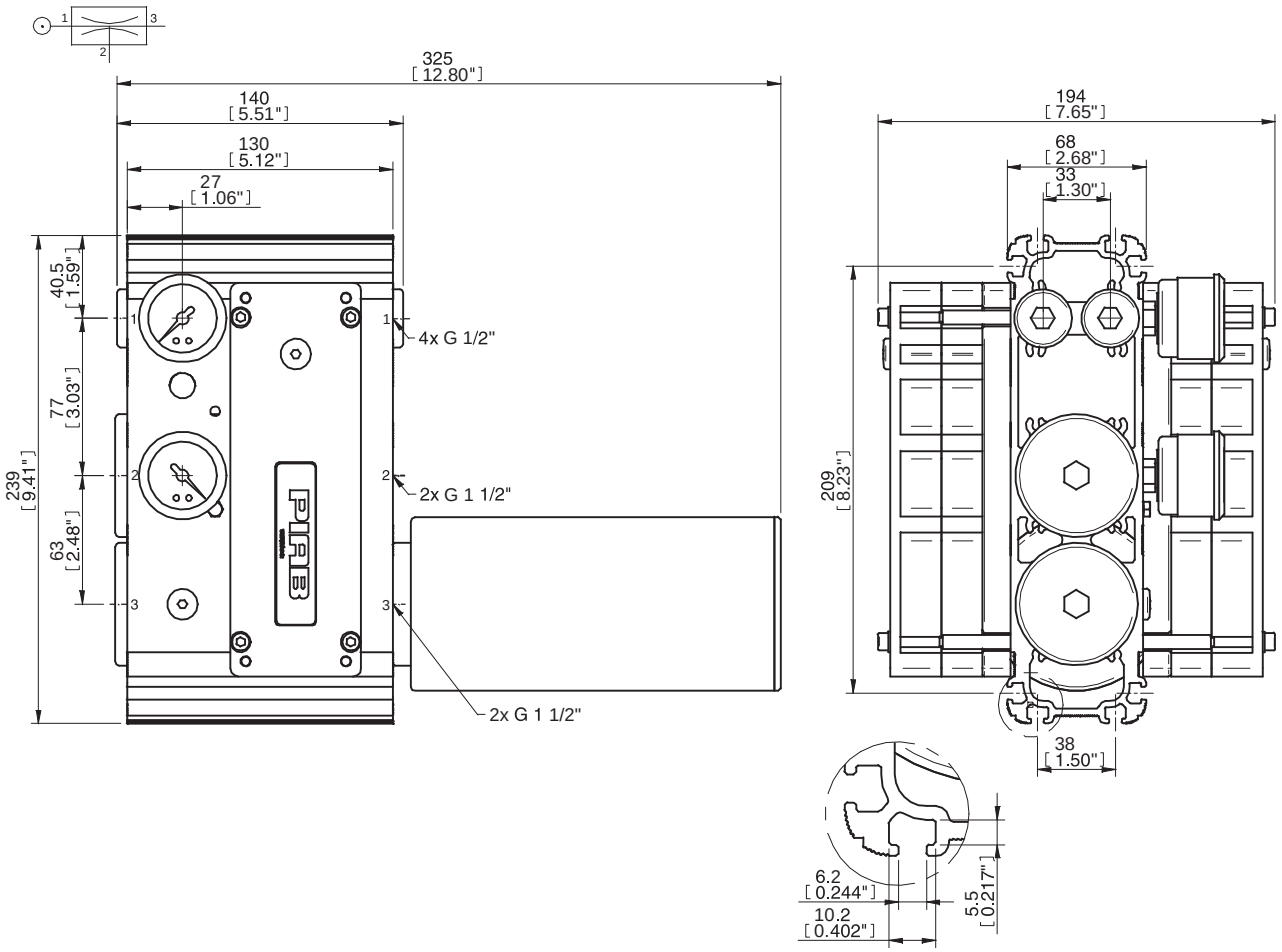


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump CLASSIC MP L150, conn. V, NBR seals	L150B6-VN
Vacuum pump CLASSIC MP L150, conn. V, NBR seals, ES (Energy-Saving)	L150B6-VNAF
Vacuum pump CLASSIC MP L200, conn. V, NBR seals	L200B6-VN
Vacuum pump CLASSIC MP L200, conn. V, NBR seals, ES (Energy-Saving)	L200B6-VNAF
Vacuum pump CLASSIC MP L300, conn. V, NBR seals	L300B6-VN
Vacuum pump CLASSIC MP L300, conn. V, NBR seals, ES (Energy-Saving)	L300B6-VNAF
Vacuum pump CLASSIC MP L400, conn. V, NBR seals	L400B6-VN
Vacuum pump CLASSIC MP L400, conn. V, NBR seals, ES (Energy-Saving)	L400B6-VNAF

Viton® or EPDM seals optional (i.e. Part No. L150B6-VV or L150B6-VE)



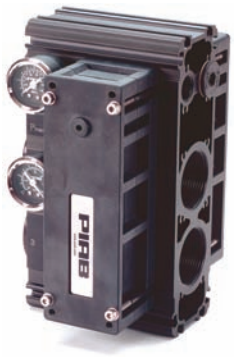
L150, L200-X=325 [12.8"]; Y=140 [5.51"]; Z=130 [5.12"] L300, L400-X=395 [15.6"]; Y=210 [8.27"]; Z=200 [7.87"]

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC MP, NBR	01.04.634
Seal kit CLASSIC MP, Viton® seals	01.04.832
Seal kit CLASSIC MP, EPDM seals	01.04.831

Kits include flap valves, gaskets, compressed-air filters and O-rings. 2 kits needed for CLASSIC MP 300-480.

M SERIES



- Medium vacuum levels to 27.1 -inHg
- Compact size and weight compared to conventional mechanical pump
- Operates as low as 50 psi
- Good for applications where little or no leakage is present

Supplied with vacuum gauge, manometer, flow-through silencer & mounting brackets.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	50
Feed pressure, max.	psi	101.5
Noise level, with silencer	dBA	64–78
Temperature range	°F	-4-176
Weight	lb	M150, M200-10.1; M300, M400-15.2
Material		Al, PPS, SS, NBR (Viton/EPDM)

VACUUM FLOW

Model	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
M150L	50	23.9	55.1	29.2	21.8	13.8	8.05	6.14	4.66	3.18	1.42	0.11	27.1
M200L	50	32.0	63.6	36.7	26.5	16.7	10.6	8.26	6.14	4.45	2.01	0.21	27.1
M300L	50	47.9	97.5	57.2	42.6	27.1	16.1	12.7	9.54	6.78	2.75	0.40	27.1
M400L	50	63.6	119	74.2	52.3	32.2	21.2	16.1	12.1	8.05	3.39	0.40	27.1

EVACUATION TIME

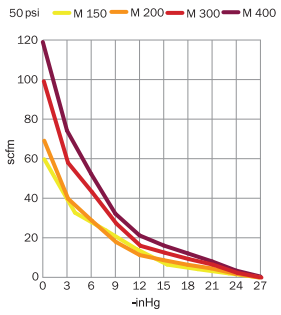
Model	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
M150L	50	23.9	0.20	0.40	0.71	1.42	2.12	3.12	4.82	7.93	21.5	27.1
M200L	50	32.0	0.14	0.31	0.59	1.13	1.70	2.55	3.68	5.95	15.3	27.1
M300L	50	47.9	0.11	0.25	0.42	0.85	1.13	1.70	2.55	3.97	10.2	27.1
M400L	50	63.6	0.08	0.17	0.31	0.57	0.85	1.42	1.98	3.12	8.22	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.

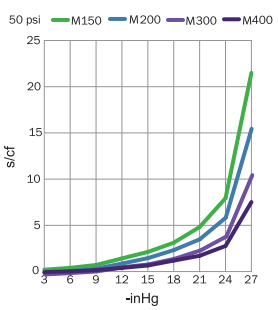
BLOW FLOW

Model	Feed pressure	Air consumption	Blow flow (scfm) at different pressure levels (psi)												Max pressure
	psi	scfm	0	2	3	4	6	7	9	10	12	13	15	16	psi
M150L	50	22.2	101	78.0	70.3	68.9	63.4	57.2	51.7	51.7	51.7	50.9	47.7	43.9	16
M200L	50	29.7	120	99.0	93.0	90.1	82.2	76.3	69.1	69.1	69.1	67.8	63.6	58.5	16
M300L	50	44.5	165	143	138	133	124	114	103	103	103	102	95.4	87.7	16
M400L	50	59.3	208	184	182	175	162	153	138	138	138	136	127	117	16

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

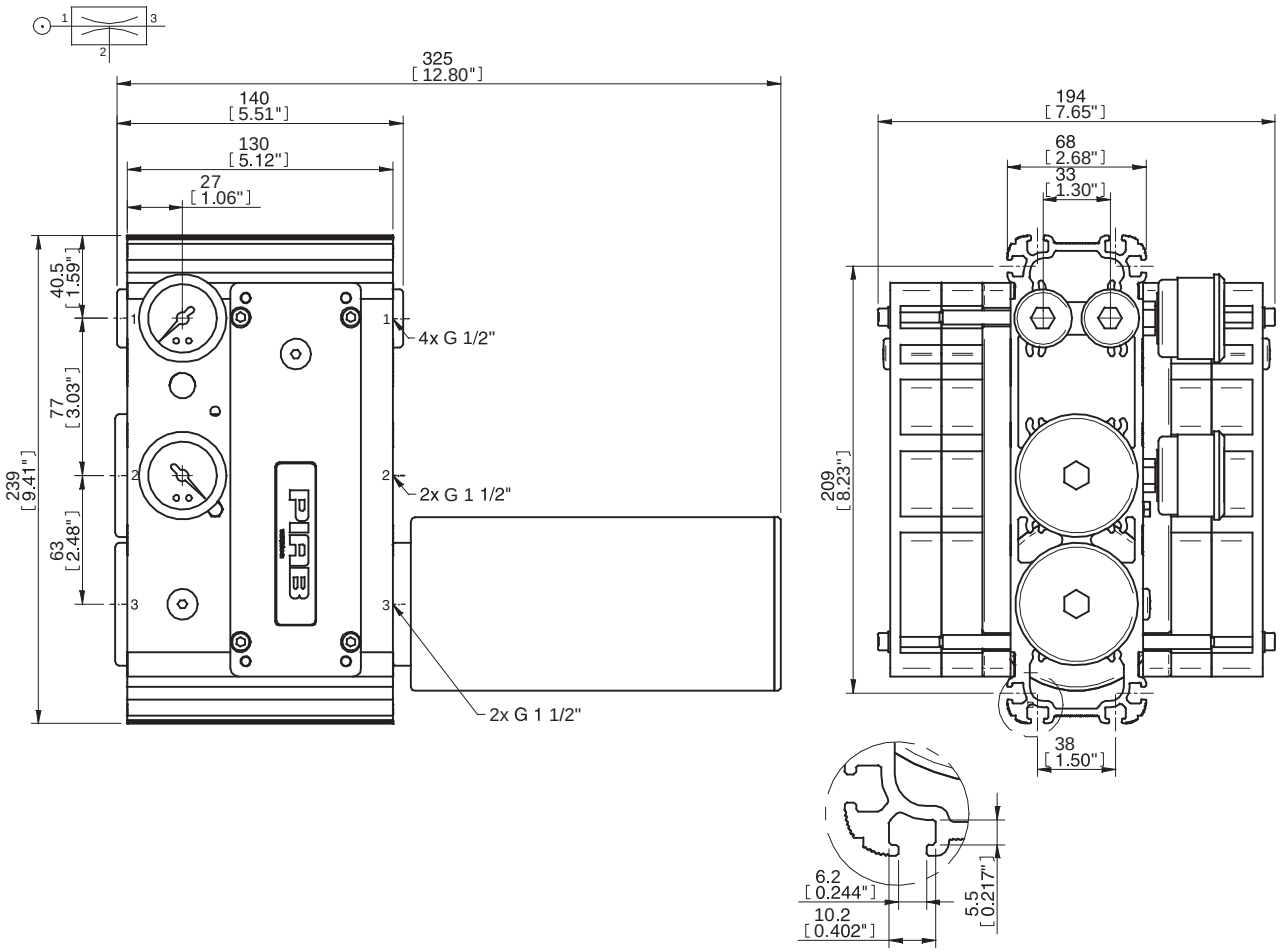


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump CLASSIC MP M150L, conn. V, NBR seals	M150B5-VN
Vacuum pump CLASSIC MP M150L, conn. V, NBR seals, ES (Energy-Saving)	M150B5-VNAF
Vacuum pump CLASSIC MP M200L, conn. V, NBR seals	M200B5-VN
Vacuum pump CLASSIC MP M200L, conn. V, NBR seals, ES (Energy-Saving)	M200B5-VNAF
Vacuum pump CLASSIC MP M300L, conn. V, NBR seals	M300B5-VN
Vacuum pump CLASSIC MP M300L, conn. V, NBR seals, ES (Energy-Saving)	M300B5-VNAF
Vacuum pump CLASSIC MP M400L, conn. V, NBR seals	M400B5-VN
Vacuum pump CLASSIC MP M400L, conn. V, NBR seals, ES (Energy-Saving)	M400B5-VNAF

Viton® or EPDM seals optional (i.e. Part No. M150B5-VV or M150B5-VE)



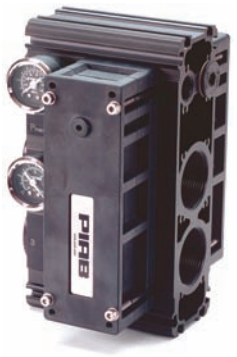
M150, M200-X=325 [12.8"]; Y=140 [5.51"]; Z=130 [5.12"] M300, M400-X=395 [15.6"]; Y=210 [8.27"]; Z=200 [7.87"]

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC MP, NBR	01.04.634
Seal kit CLASSIC MP, Viton® seals	01.04.832
Seal kit CLASSIC MP, EPDM seals	01.04.831

Kits include flap valves, gaskets, compressed-air filters and O-rings. 2 kits needed for CLASSIC MP 300-480.

H SERIES



- Higher vacuum levels to 29.85 -inHg
- Use with practically zero leakage present and non-porous applications
- Compact size and weight compared to conventional mechanical pump

Supplied with vacuum gauge, manometer, flow-through silencer & mounting brackets.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level, with silencer	dBA	64–78
Temperature range	°F	-4-176
Weight	lb	H240-10.1; H480-15.2
Material		Al, PPS, SS, NBR (Viton/EPDM)

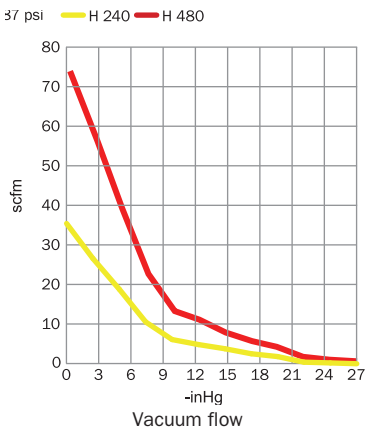
VACUUM FLOW

Model	Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)												Max vacuum
	psi	scfm	0	3	6	9	12	15	18	21	24	27	28	29.2	-inHg
H240	87	32.2	35.6	26.7	18.9	10.6	6.14	4.87	3.81	2.54	1.82	0.40	0.21	0.04	29.85
H480	87	63.6	72.0	55.1	38.6	21.8	12.5	10.4	7.20	4.87	3.60	1.02	0.40	0.11	29.85

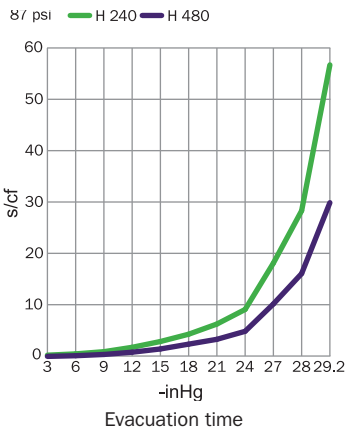
EVACUATION TIME

Model	Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)											Max vacuum
	psi	scfm	3	6	9	12	15	18	21	24	27	28	29.2	-inHg
H240	87	32.2	0.17	0.42	0.85	1.70	2.83	4.25	6.23	9.07	18.1	28.3	56.7	29.85
H480	87	63.6	0.11	0.23	0.45	0.85	1.42	2.27	3.12	4.53	9.35	14.7	27.2	29.85

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

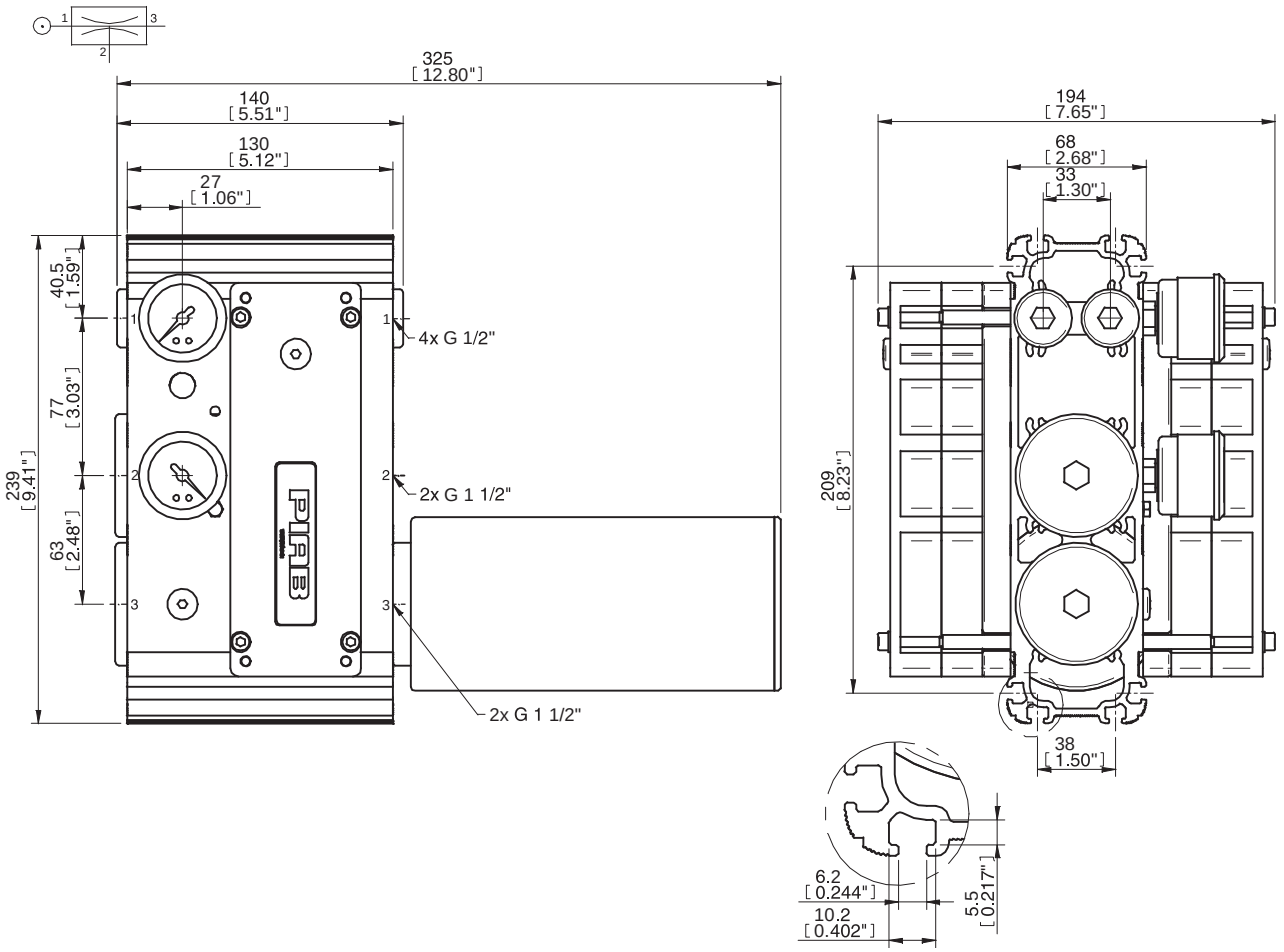


Evacuation time

ORDERING INFORMATION

Description	Part No.
Vacuum pump CLASSIC MP H240, conn. V, NBR seals	H240B6-VN
Vacuum pump CLASSIC MP H240, conn. V, NBR seals, ES (Energy-Saving)	H240B6-VNAF
Vacuum pump CLASSIC MP H480, conn. V, NBR seals	H480B6-VN
Vacuum pump CLASSIC MP H480, conn. V, NBR seals, ES (Energy-Saving)	H480B6-VNAF

Viton® or EPDM seals optional (i.e. H240B6-VV or H240B6-VE)



H240-X=325 [12.8"]; Y=140 [5.51"]; Z=130 [5.12"] H480-X=395 [15.6"]; Y=210 [8.27"]; Z=200 [7.87"]

ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit CLASSIC MP, NBR	01.04.634
Seal kit CLASSIC MP, Viton® seals	01.04.832
Seal kit CLASSIC MP, EPDM seals	01.04.831

Kits include flap valves, gaskets, compressed-air filters and O-rings. 2 kits needed for CLASSIC MP 300-480.

MLL200

- Largest compressed air driven pump on the market
- Energy-saving (ES) available

Supplied with built-in silencer, on-off valve and vacuum gauge. It is possible to control the on/off valve remotely with a pneumatic valve.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	72–76
Temperature range	°F	-4-176
Weight	lb	10.8, 11.7 (ES)
Material		Al, PPS, SS, NBR (Viton/EPDM)

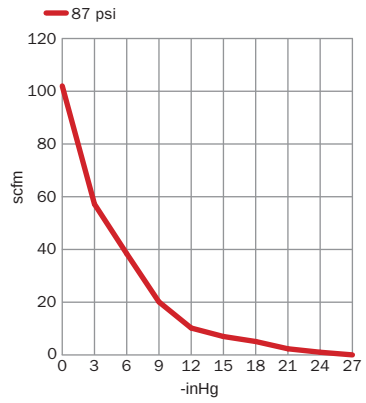
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	29.7	102	57.2	38.4	20.1	10.2	6.99	5.09	2.33	1.02	0.02	27.1

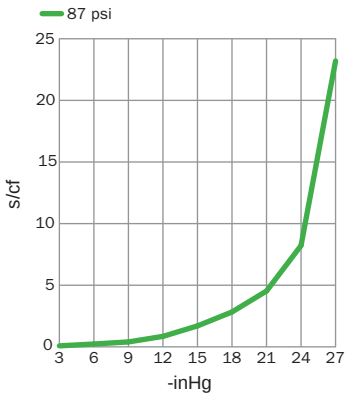
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	29.7	0.08	0.23	0.40	0.85	1.70	2.83	4.53	8.22	23.2	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

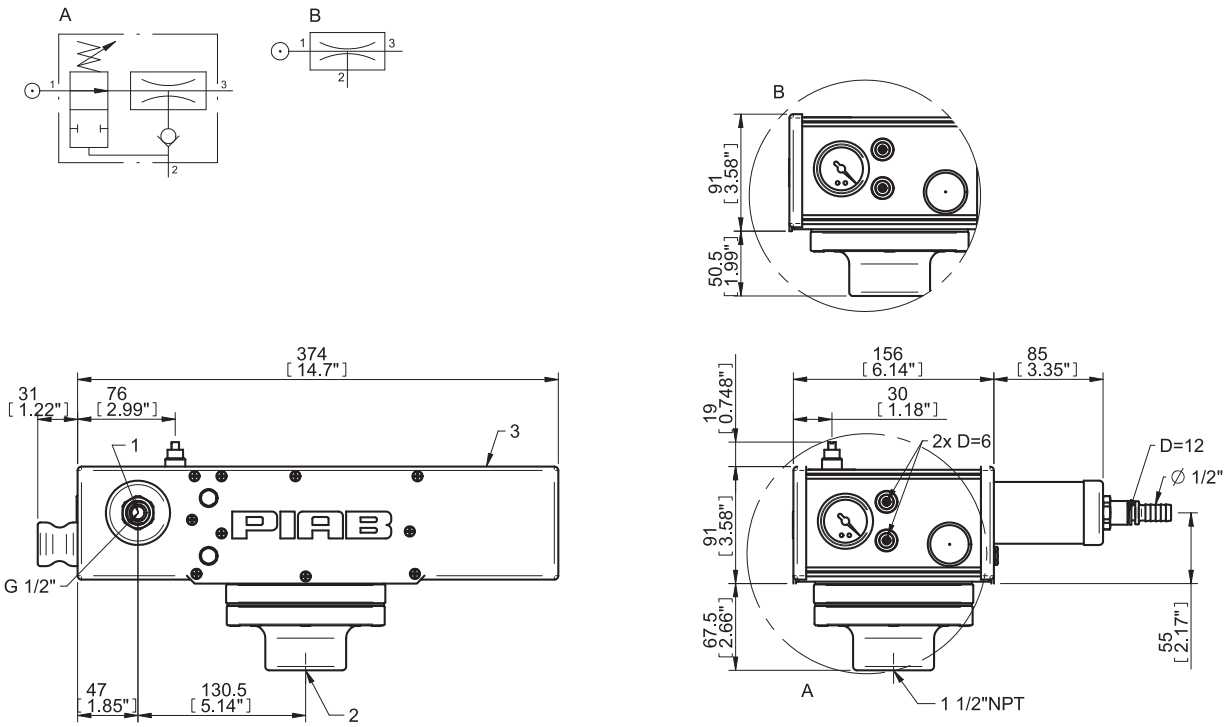


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MAXI MLL200, NBR seals, ES	01.00.741U
B	Vacuum pump MAXI MLL200, NBR seals	31.01.056U

Viton® or EPDM seals optional (i.e. Part No. 31.01.056V or 31.01.056E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MAXI MLL200–400, NBR	31.01.091
Seal kit MAXI MLL200–400, Viton®	31.01.091V
Seal kit MAXI MLL200–400, EPDM	31.01.091E

Kits include flap valves, gaskets & compressed air filter.

MLL400

- Largest compressed air driven pump on the market
- Energy-saving (ES) available

Supplied with built-in silencer, on-off valve and vacuum gauge. It is possible to control the on/off valve remotely with a pneumatic valve.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	72–76
Temperature range	°F	-4-176
Weight	lb	11.0, 11.9 (ES)
Material		Al, PPS, SS, NBR (Viton/EPDM)

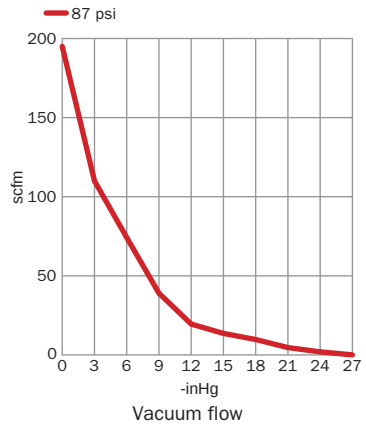
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	59.3	195	110	74.2	39.0	19.5	13.6	9.75	4.66	1.95	0.04	27.1

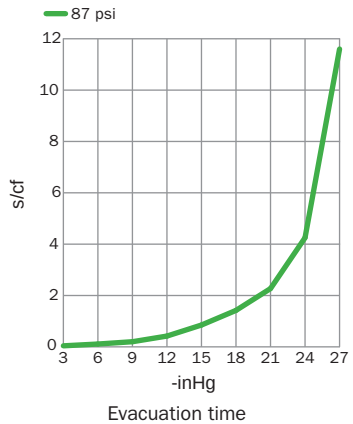
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	59.3	0.04	0.11	0.20	0.42	0.85	1.42	2.27	4.25	11.6	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

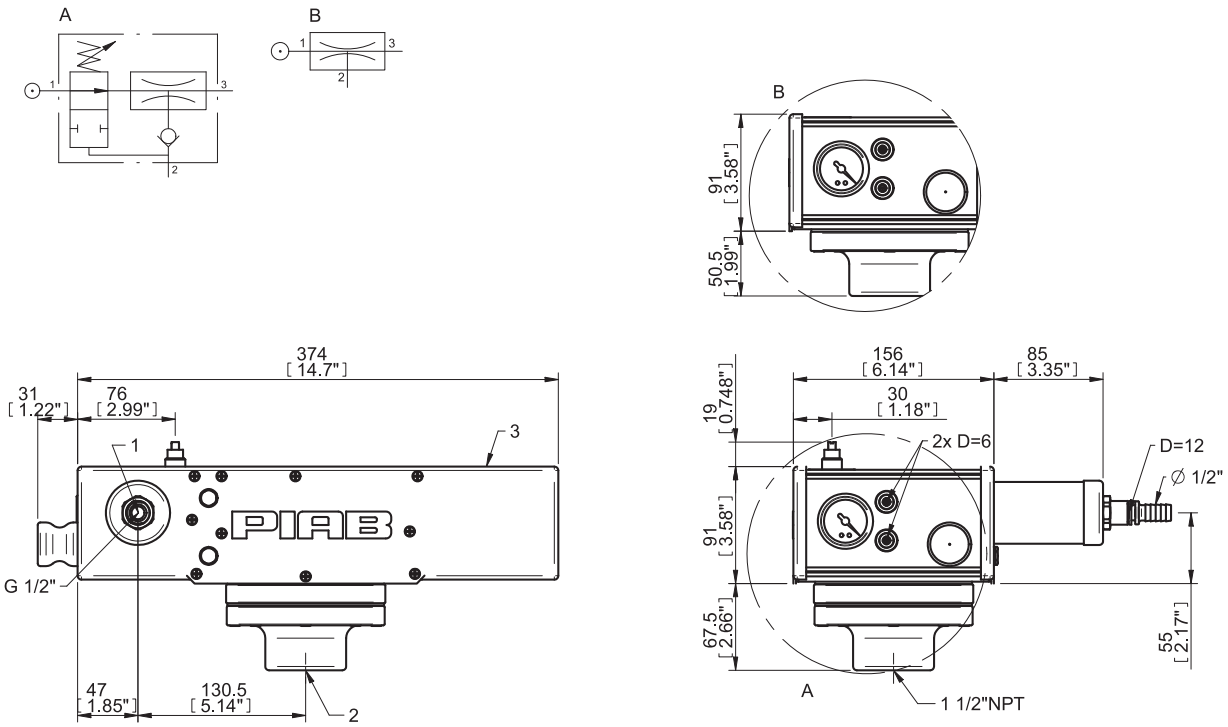


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MAXI MLL400, NBR seals, ES	01.00.742U
B	Vacuum pump MAXI MLL400, NBR seals	31.01.057U

Viton® or EPDM seals optional (i.e. Part No. 31.01.057V or 31.01.057E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MAXI MLL200–400, NBR	31.01.091
Seal kit MAXI MLL200–400, Viton®	31.01.091V
Seal kit MAXI MLL200–400, EPDM	31.01.091E

Kits include flap valves, gaskets & compressed air filter.

MLL800

- Largest compressed air driven pump on the market
- Energy-saving (ES) available

Supplied with built-in silencer, on-off valve, vacuum gauge and manometer. It is possible to control the on/off valve remotely with a pneumatic valve.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	72–76
Temperature range	°F	-4-176
Weight	lb	16.9, 18.5 (ES)
Material		Al, PPS, SS, NBR (Viton/EPDM)

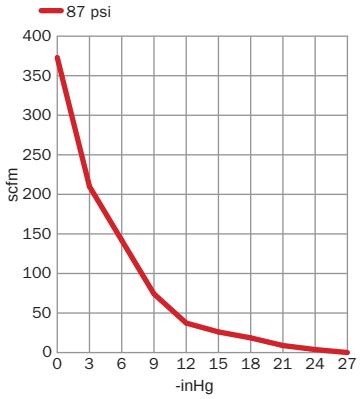
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	119	373	210	142	74.2	37.3	26.1	18.6	8.90	3.81	0.08	27.1

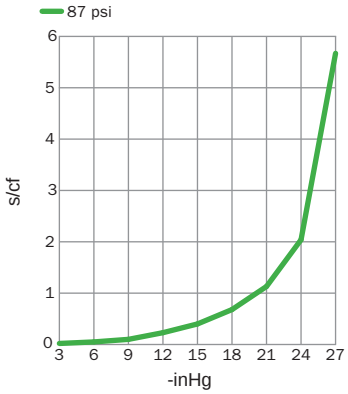
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	119	0.02	0.05	0.10	0.23	0.40	0.68	1.13	2.04	5.67	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

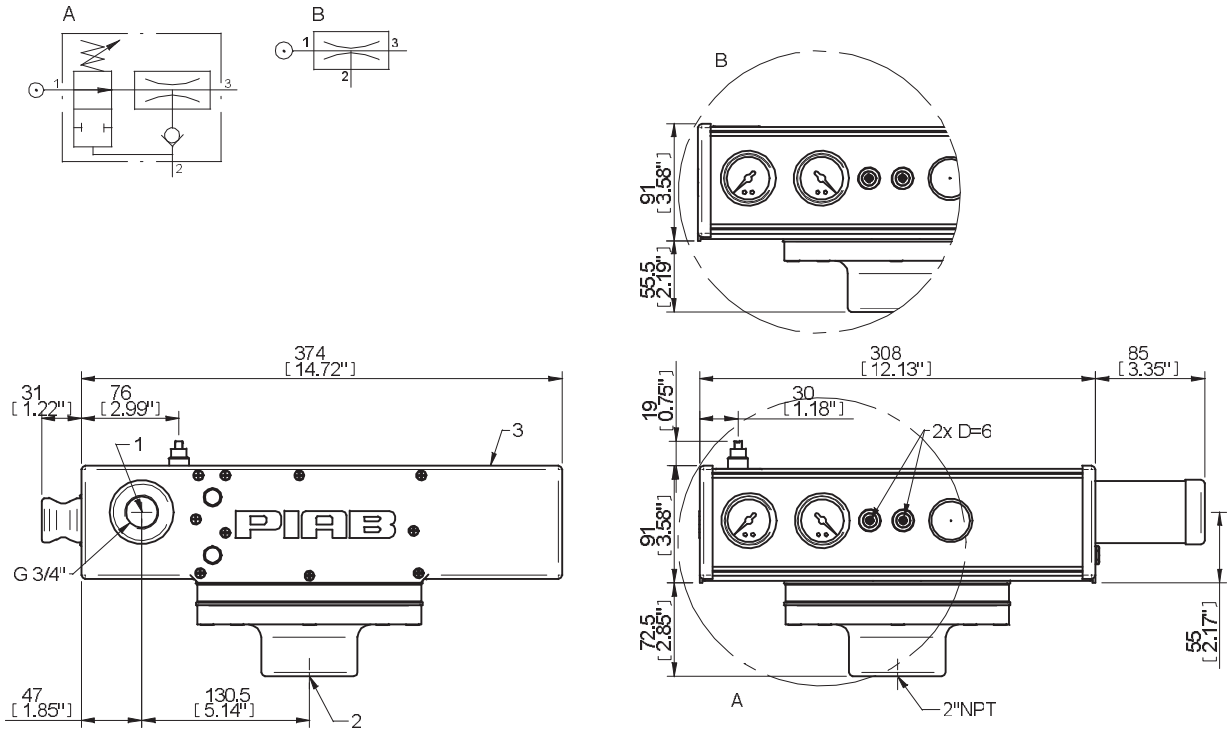


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MAXI MLL800, NBR seals, ES	01.00.743U
B	Vacuum pump MAXI MLL800, NBR seals	31.01.058U

Viton® or EPDM seals optional (i.e. Part No. 31.01.058V or 31.01.058E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MAXI MLL800, NBR seals	31.01.092
Seal kit MAXI MLL800, Viton seals	31.01.092V
Seal kit MAXI MLL800, EPDM seals	31.01.092E

Kits include flap valves, gaskets & compressed air filter.

MLL1200

- Largest compressed air driven pump on the market
- Energy-saving (ES) available

Supplied with built-in silencer, on-off valve, vacuum gauge and manometer. It is possible to control the on/off valve remotely with a pneumatic valve.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, optimum	psi	87
Feed pressure, max.	psi	101.5
Noise level	dBA	72–76
Temperature range	°F	-4-176
Weight	lb	19.8, 21.8 (ES)
Material		Al, PPS, SS, NBR (Viton/EPDM)

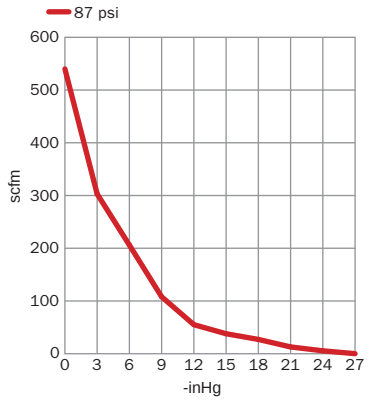
VACUUM FLOW

Feed pressure	Air consumption	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum
psi	scfm	0	3	6	9	12	15	18	21	24	27	-inHg
87	178	540	303	206	108	55.1	37.9	27.1	12.9	5.51	0.11	27.1

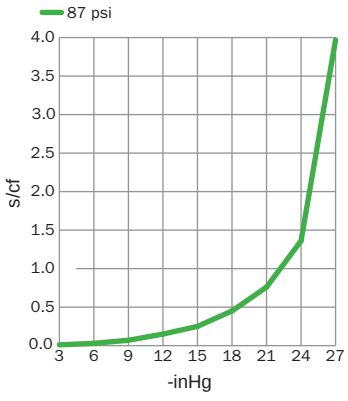
EVACUATION TIME

Feed pressure	Air consumption	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum
psi	scfm	3	6	9	12	15	18	21	24	27	-inHg
87	178	0.01	0.03	0.07	0.15	0.25	0.45	0.76	1.36	3.97	27.1

See page 28 for recommended hose dimensions for compressed air, vacuum & exhaust connections.



Vacuum flow

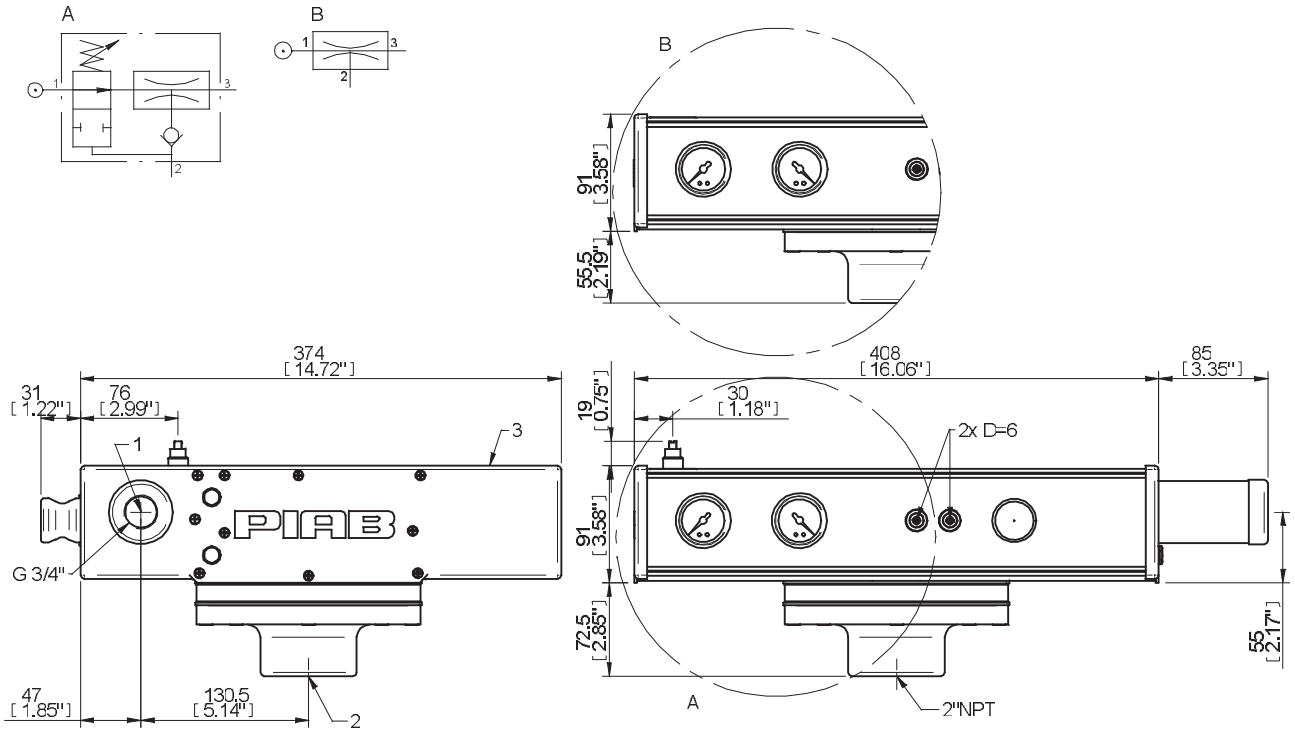


Evacuation time

ORDERING INFORMATION

	Description	Part No.
A	Vacuum pump MAXI MLL1200, NBR seals, ES	01.00.744U
B	Vacuum pump MAXI MLL1200, NBR seals	31.01.059U

Viton® or EPDM seals optional (i.e. Part No. 31.01.059V or 31.01.059E)



ORDERING INFORMATION, ACCESSORIES

Description	Part No.
Seal kit MAXI MLL1200, NBR seals	31.01.099
Seal kit MAXI MLL1200, Viton seals	31.01.099V
Seal kit MAXI MLL1200, EPDM seals	31.01.099E

Kits include flap valves, gaskets & compressed air filter.

CENTRAL EXHAUST

- Central exhaust is used when an external silencer is desired or if a tube/hose is to be connected for removing the exhaust.
- Suitable for vacuum pumps MAXI.

TECHNICAL DATA

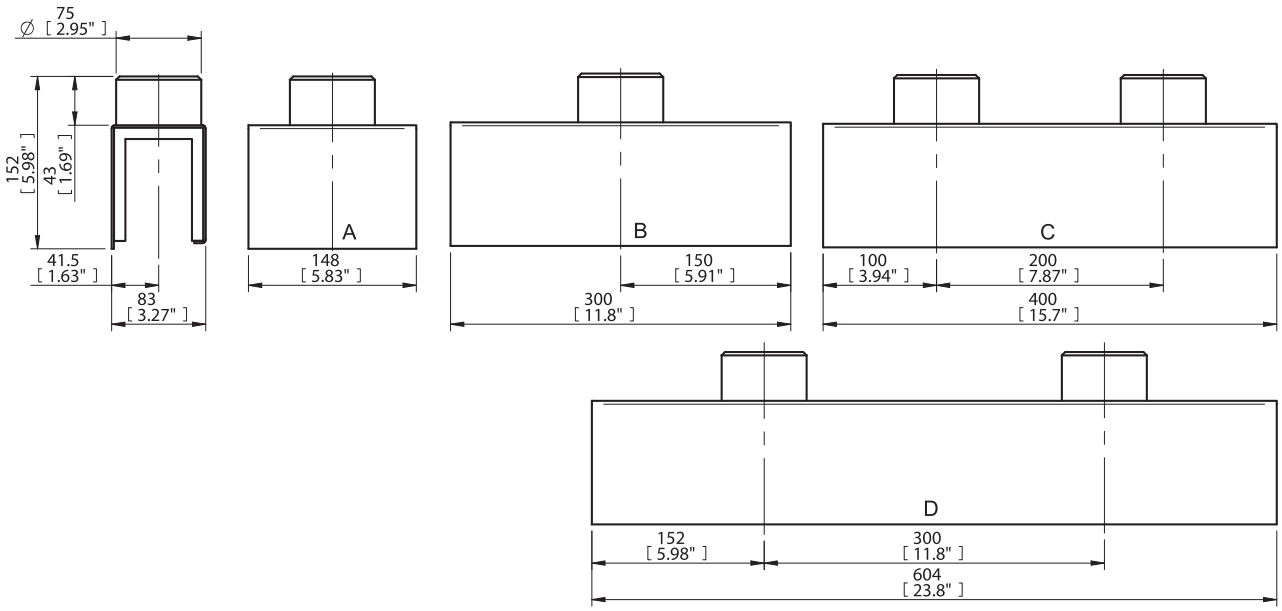
Description	Value
Material	Al, NBR, PE

TECHNICAL DATA, SPECIFIC

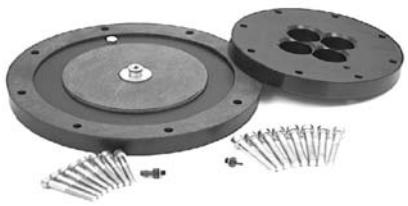
Description	Unit	Value		
		31.16.017	31.16.018	31.16.054
Weight	lb	1.08	1.98	3.79

ORDERING INFORMATION

Description	Part No.
Central exhaust MLL100–400	31.16.017
Central exhaust MLL600–800	31.16.018
Central exhaust MLL1200	31.16.054



NON-RETURN VALVE



- Suitable for vacuum pumps MAXI.
- To be used together with energy-saving system.

TECHNICAL DATA

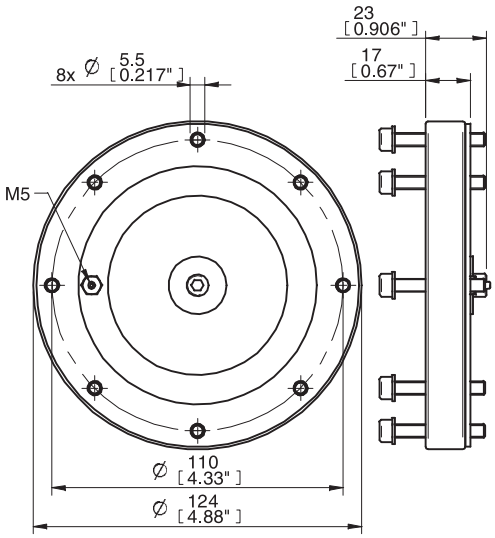
Description	Value
Material	Al, NBR, Cr, SS, CuZn, PA

TECHNICAL DATA, SPECIFIC

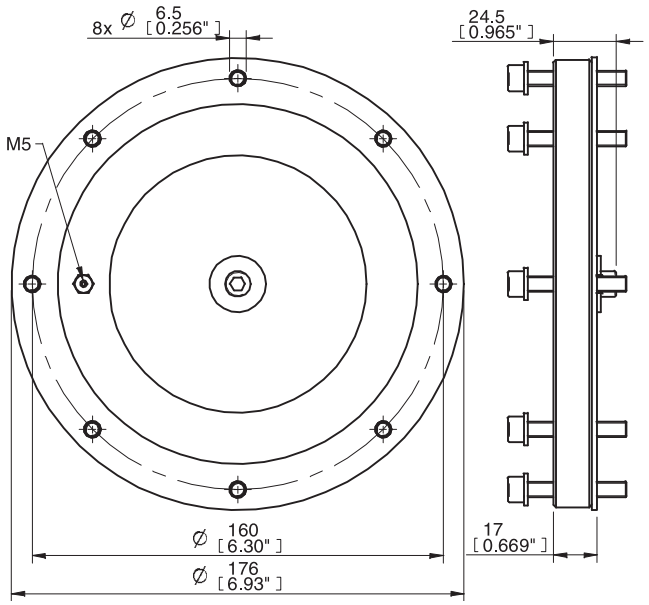
Description	Unit	Value	
		31.16.007	31.16.008
Weight	lb	1.08	2.14

ORDERING INFORMATION

	Description	Part No.
A	Non-return valve MLL200–600	31.16.007
B	Non-return valve MLL800–1200	31.16.008

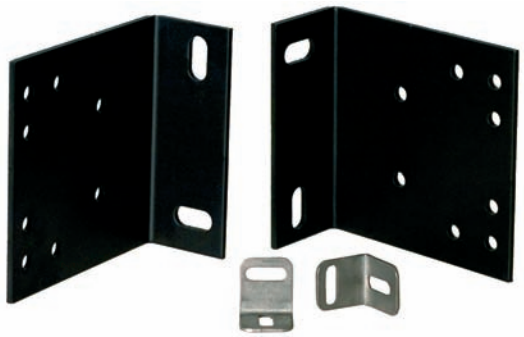


A



B

MOUNTING BRACKETS



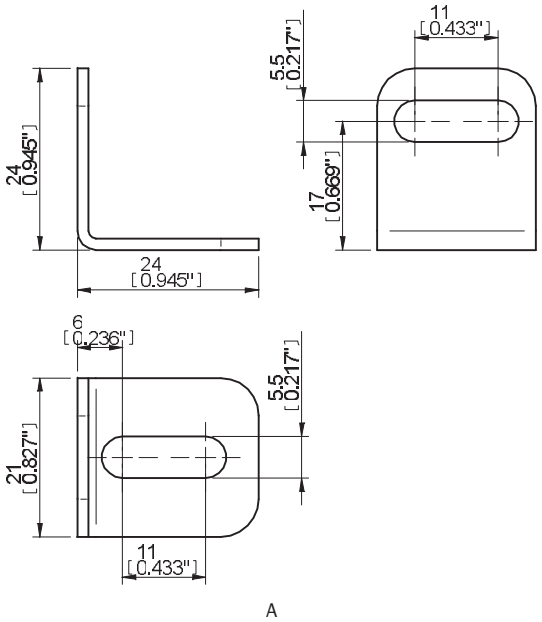
- Corrosion-resistant material
- Included as a set (2 pieces) with each vacuum pump.
- Suitable for vacuum pumps CLASSIC & CLASSIC MP

TECHNICAL DATA

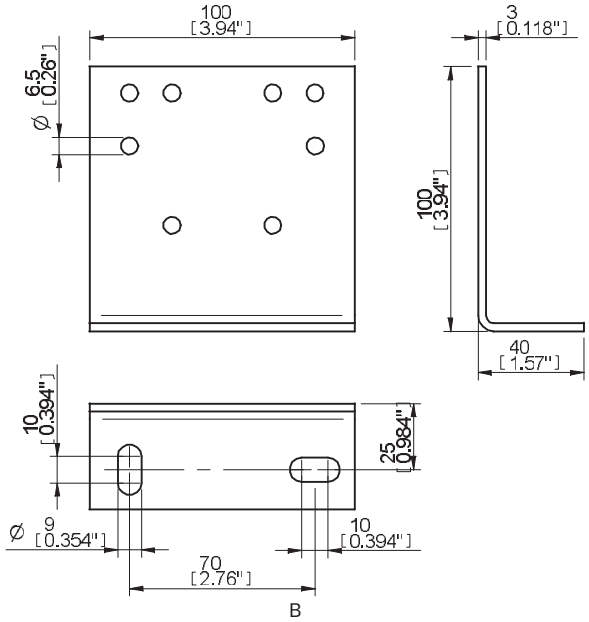
Description	Unit	Value	
		01.00.505	01.03.599
Weight	oz	0.60	7.41
Material		SS 2333	Al SS4120-14

ORDERING INFORMATION

	Description	Part No.
A	Mounting brackets CLASSIC	01.00.505
B	Mounting brackets CLASSIC MP	01.03.599



A



B