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NEW VARI-BLAST Safety Air Guns..... pg. 99

NEW Sanitary Flange Line Vac™ pg. 152

NEW GET4 Static Eliminators..... pg. 108

31
CATALOG



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- EXAIR's **Air Nozzle Blowoff Guide** to see the details on our enormous selection of sizes, materials and performance options



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Terms and Conditions	4
Efficiency Lab	5
Standards Compliance	208



6 EXAIR Optimization

Minimize compressed air use and detect wasteful leaks

6 Steps to Optimization	6
Electronic Flow Control	7
Digital Flowmeter with wireless capability	10
Digital Flowmeter	12
Digital Sound Level Meter	15
Ultrasonic Leak Detector	16

18



Air Knives

Blowoff, clean, dry and cool with less noise and air consumption

Super Air Knife	18
Compare Blowoffs	21
Explanation of Materials	24
Universal Air Knife Mounting System	27
Plumbing Kits	27
Standard Air Knife	31
Full-Flow Air Knife	34

36



Air Wipes

Blowoff, dry, clean and cool pipe, cable, extruded shapes and hose

Super Air Wipes	36
Standard Air Wipes	40

42



Air Amplifiers

Vent, exhaust, cool, dry and clean - with no moving parts

Super Air Amplifiers	44
Adjustable Air Amplifiers	48

50



Air Nozzles and Jets

Reduce noise levels and air costs on blowoff operations

Air Nozzles	50
Air Nozzle Comparison Chart	52
Super Air Nozzles	53
Flat Super Air Nozzles	55
Back Blow Air Nozzles	57
Safety Air Nozzles	58
Air Jets	59
High Force Air Nozzles	61
High Force Air Nozzle Comparison Chart	61
High Force Flat Super Air Nozzles	61
High Force Super Air Nozzles	61
Super Air Nozzle Clusters	65
Stay Set Hoses	65
Swivel Fittings	66
Blowoff Systems	67

68



Atomizing Nozzles

All stainless steel construction for durability and corrosion resistance

1/8 NPT Atomizing Nozzles	68
Internal Mix Narrow Angle Round Atomizing Nozzles	69
Internal Mix Wide Angle Round Atomizing Nozzles	70
Internal Mix Flat Fan Atomizing Nozzles	71
External Mix Narrow Angle Flat Fan Atomizing Nozzles	72
Siphon Fed Round Atomizing Nozzles	73
Siphon Fed Flat Fan Atomizing Nozzles	74
1/4 NPT Atomizing Nozzles	75
Internal Mix Narrow Angle Round Atomizing Nozzles	75
Internal Mix Wide Angle Round Atomizing Nozzles	76
Internal Mix Flat Fan Atomizing Nozzles	77
Internal Mix Deflected Flat Fan Atomizing Nozzles	78
Internal Mix 360° Hollow Circular Atomizing Nozzles	78
External Mix Round Atomizing Nozzles	79
External Mix Narrow Angle Flat Fan Atomizing Nozzles	80
External Mix Wide Angle Flat Fan Atomizing Nozzles	81

Atomizing Nozzles continued

Siphon Fed Round Atomizing Nozzles	82
Siphon Fed Flat Fan Atomizing Nozzles	83
1/2 NPT Atomizing Nozzles	84
Internal Mix Narrow Angle Round Atomizing Nozzles	84
Internal Mix Wide Angle Round Atomizing Nozzles	85
Internal Mix Flat Fan Atomizing Nozzles	86
Internal Mix 360° Hollow Circular Atomizing Nozzles	87
External Mix Narrow Angle Flat Fan Atomizing Nozzles	88
Siphon Fed Round Atomizing Nozzles	89

90



No Drip Atomizing Nozzles

Eliminate drips to conserve valuable liquids and improve product finishes.

1/8 NPT No Drip Atomizing Nozzles	90
No Drip Internal Mix Narrow Angle Round Atomizing Nozzles	91
No Drip Internal Mix Wide Angle Round Atomizing Nozzles	91
No Drip Internal Mix Flat Fan Atomizing Nozzles	92
No Drip External Mix Flat Fan Atomizing Nozzles	93
No Drip Siphon Fed Round Atomizing Nozzles	94
No Drip Siphon Fed Flat Fan Atomizing Nozzles	94
1/4 NPT No Drip Atomizing Nozzles	91
No Drip Internal Mix Narrow Angle Round Atomizing Nozzles	91
No Drip Internal Mix Wide Angle Round Atomizing Nozzles	91
No Drip Internal Mix Flat Fan Atomizing Nozzles	92
No Drip Internal Mix Deflected Flat Fan Atomizing Nozzles	92
No Drip Internal Mix 360° Hollow Circular Atomizing Nozzles	92
No Drip External Mix Round Atomizing Nozzles	93
No Drip External Mix Narrow Angle Flat Fan Atomizing Nozzle	93
No Drip External Mix Wide Angle Flat Fan Atomizing Nozzle	93
No Drip Siphon Fed Round Atomizing Nozzles	94
No Drip Siphon Fed Flat Fan Atomizing Nozzles	94
1/2 NPT No Drip Atomizing Nozzles	91
No Drip Internal Mix Narrow Angle Round Atomizing Nozzles	91
No Drip Internal Mix Wide Angle Round Atomizing Nozzles	91
No Drip Internal Mix Flat Fan Atomizing Nozzles	92
No Drip External Mix Narrow Angle Flat Fan Atomizing Nozzles	93
No Drip External Mix Wide Angle Flat Fan Atomizing Nozzles	92
No Drip Siphon Fed Round Atomizing Nozzles	94
No Drip Siphon Fed Flat Fan Atomizing Nozzles	94
Droplet Size/Spray Angle Information	95

96



Safety Air Guns

Safety air guns use engineered air nozzles for high performance

Chip Shields	97
Precision Safety Air Guns	98
VariBlast Compact Safety Air Guns	99
Soft Grip Safety Air Guns	101
Heavy Duty Safety Air Guns	104
Back Blow Safety Air Guns	105
Super Blast Safety Air Guns	106

141



Air Operated Conveyors

Convey parts, materials and waste - with no moving parts

Line Vac	141
Threaded Line Vac	147
Heavy Duty Line Vac	150
Sanitary Flange Line Vac	152
Light Duty Line Vac	154

186



Cool Gun Aircoolant Systems

Cool machining operations with clean, cold air

190



Cabinet Cooler[®] Systems

Cool and purge NEMA 12, 4 and 4X electrical control panels

How it Works	191
Selecting the Right Model	191
Special Duty Cabinet Coolers	192
Calculating Heat Load	194
Cabinet Cooler Sizing Guide	195
NEMA 12 Models	197
NEMA 4 Models	198
NEMA 4X Models	199
Cabinet Cooler System Accessories	200

108



Static Eliminators

Eliminate static electricity, dust and shock hazard

Gen4 Super Ion Air Knife	110
Static Meter	112
Gen4 Standard Ion Air Knife	116
Gen4 Ionizing Bars	118
Gen4 Super Ion Air Wipes	120
Gen4 Ion Air Cannon	122
Gen4 Ion Air Gun	124
Gen4 Ion Air Jet/Gen4 Stay Set Ion Air Jet	126
Gen4 Ionizing Point	128
Gen4 Power Supplies	129

156



Industrial Housekeeping

Reliable vacuums for chip removal, liquid transfer and cleaning

Reversible Drum Vac	156
High Lift Reversible Drum Vac	158
Chip Trapper	160
High Lift Chip Trapper	162
Chip Vac	164
Heavy Duty Dry Vac	166
Heavy Duty HEPA Vac	168
Vac-u-Gun	170
Deep Hole Vac-u-Gun	172

174



Vortex Tubes & Spot Cooling

Cold air for industrial spot cooling problems

Vortex Tubes	174
Adjustable Spot Cooler	182
Mini Cooler	185

130



E-Vac[®] Vacuum Generators

Vacuums for lifting, clamping, mounting and placement

How to Build an E-Vac System	131
In-Line	132
Adjustable	135
Vacuum Cups	137

201



Accessories

Mufflers, filters, regulators, valves, swivel fittings and more

Filters	201
Regulators	202
Silencing Mufflers	203
Valves, Swivels, Thermostats	205
Magnetic Bases, Stay Sets, Hoses	206
Air Hoses	206
Fittings	207
Receiver Tank	207



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E-mail: orders@exair.com
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Technical Assistance: Please call our Application Engineering Department, 1-800-90-EXAIR (1-800-903-9247), or e-mail at techhelp@exair.com.



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Intelligent Compressed Air® products are identified throughout this catalog that can help your plant save tens of thousands of dollars over the course of a single year. *The Best Practices for Compressed Air Systems* manual published by the Compressed

Air Challenge® recommends products like the Super Air Knife®, Super Air Amplifier®, and the family of Super Air Nozzles® for energy conservation. Many of the products shown offer unique ways to solve common industrial problems using compressed air. Compressed Air Challenge is a registered trademark of Compressed Air Challenge, Inc.



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EXAIR products are subject to ongoing development. Specifications are subject to change without notice.

Some products in this catalog are covered by U.S. Patent #5402938, #8153001, #8268179, and #9156045, and others may be U.S. Patent Pending.

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EXAIR®

EFFICIENCYLAB★



EXAIR's Intelligent Compressed Air® products vs Your current installation

EXAIR's FREE Efficiency Lab service determines how much air and dollar savings you will achieve by installing one of our Intelligent Compressed Air products.

How does the Efficiency Lab work?

Our Efficiency Lab service begins with receiving a sample of the product(s) you currently use for your application. One of our qualified Application Engineers will use calibrated testing equipment to compare the performance of your existing product(s) to an EXAIR engineered solution. These tests will determine air consumption, noise levels and force. The test results will then be published in a comprehensive report, which includes a cost savings analysis, and be provided to you. For most applications, EXAIR products can help you improve application efficiency AND typically pay for themselves in a matter of weeks.

How can I get a product tested for free?

To participate in our FREE Efficiency Lab please contact one of our Application Engineers and get the details about sending us your product(s).

You may reach an Application Engineer by phone at (800) 903-9247 or (513) 671-3322. You can send an email to lab@exair.com or visit our website and take advantage of our live help at www.exair.com.

Unable to send your product to EXAIR's Efficiency Lab?

If it is not possible to send us your product, we have a one page Product Efficiency Survey on our website (www.exair.com/labdoc.htm) where you can provide us the details about a current inefficient compressed air application. Fill in the information and click submit. You will hear from one of our Application Engineers within 3 business days.

Okay, so what is the fine print?

This service is available to all customers in the U.S. and Canada only. Some restrictions may apply.

What about confidentiality?

Yes, EXAIR will keep the results of our Efficiency Lab test and report confidential unless given permission to share that information with others.

Products must be shipped to EXAIR freight prepaid. EXAIR will pay the return shipping via UPS ground.

E-Vac[®] Vacuum Generators

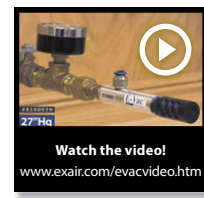
Vacuums for lifting, clamping, mounting and placement!

What Is The E-Vac?

EXAIR's compressed air powered E-Vac single stage vacuum generators are the low cost way to create a vacuum for:

- Pick and place
- Clamping
- Lifting
- Chucking
- Alignment
- Surface mounting
- Vacuum forming

E-Vac compressed air powered vacuum pumps provide instantaneous response and are most commonly used for pick and place operations. They are available in a variety of sizes and flows for a wide range of applications.



Why The E-Vac?

The E-Vac vacuum generators have been engineered for high efficiency to minimize air consumption. These single stage, all aluminum units provide consistent, steady vacuum, unlike mechanical vacuum pumps. Dust and small particulates easily pass through the vacuum generator and they have no moving parts, making them maintenance free.

EXAIR's E-Vac Vacuum Generator is available in 2 styles:

In-Line E-Vac Vacuum Generator

These single stage, cylindrical units are compact and easy to mount at the point of use. They can be held in place by threading them directly onto a compressed air line or with the use of a mounting clip. There are 7 models available for use with porous materials, like cardboard, with vacuum levels up to 21" Hg (71 kPa) and vacuum flows up to 18.5 SCFM (524 SLPM). There are 7 models available for use with non-porous materials such as glass, with vacuum levels up to 27" Hg (91 kPa) with vacuum flows up to 15.8 SCFM (447 SLPM).



In-Line E-Vac

Adjustable E-Vac Vacuum Generator

This series of vacuum generators permits easy adjustment by simply loosening the locknut and turning the exhaust to increase or decrease the level of vacuum and vacuum flow. This style is also an excellent choice where large particulate may be present and passed through the vacuum system. There are 4 models with adjustable vacuum up to 25" Hg (85 kPa) and vacuum flow up to 81 SCFM (2,294 SLPM).



Adjustable E-Vac

Applications

- Pick and place parts and equipment
- Bag/package opening
- Label placement
- Vacuum forming
- Mold evacuation
- Vacuum filling
- Leak testing
- Evacuate containers
- Clamping and chucking
- Paper alignment and feed in printing equipment
- Vacuum packaging
- Surface mounting
- Vacuum press for wood veneers and laminates
- Carton forming
- Robotic tooling
- Vacuum liquids for testing

Advantages

- Compact, portable
- Single stage design eliminates fluctuations in vacuum
- Quiet
- Instantaneous vacuum
- Easy to mount at point of use
- Lightweight, rugged
- No moving parts – no maintenance
- 18 models
- Fast response – increases cycle time
- Durable 6061 aluminum construction
- Safe operation - no electricity

How to Build An E-Vac System:

1. Select the E-Vac type.

- A. Determine if the part to be lifted is porous or non-porous (page 132 and 133).
- B. Select a style - In-Line Low Vacuum, In-Line High Vacuum, or Adjustable (pages 132, 133 and 135).

The E-Vac type determines max. vacuum available for lifting the part and vacuum cup selection.

Porous	low vacuum generators max. vacuum = 21" Hg (71 kPa)
Non-porous	high vacuum generators max. vacuum = 27" Hg (91 kPa)
Adjustable E-Vac	vacuum generators max. vacuum = 25" Hg (85 kPa)

Need Help Selecting the Correct E-Vac?

Our Application Engineers can assist you in determining the correct model E-Vac and vacuum cups (if required). Call 1-800-903-9247 or visit www.exair.com/appassist.htm

2. Determine the weight of the part.

3. Multiply the weight by the vacuum cup safety factor (see page 137) for the total vacuum cup capacity needed.

4. Determine the number of vacuum cups needed by considering the following:

- A. How many cups are needed to distribute the weight for stable lifting and placement?
- B. What is the weight that each vacuum cup can lift based on maximum vacuum available (E-Vac type)?
- C. Select vacuum cups from chart on page 137 based on max. vacuum available (E-Vac type) and holding weight/cup.

5. To choose an E-Vac model number, consider the entire vacuum system from the E-Vac to the part.

- A. Number of vacuum cups per E-Vac.
- B. Length and size of vacuum tubing.
- C. Vacuum cup size and type.

- The volume of air to evacuate from your vacuum system and the vacuum flow of the E-Vac you've selected (pages 132, 133 and 136) will determine the time it takes from E-Vac activation to vacuum cup holding the part. As the vacuum level in the system increases, the volume of evacuating air decreases.
- A lower volume of air in the vacuum system and/or a higher capacity (SCFM/SLPM) E-Vac will give faster pick-up times.
- An exact pick-up time cannot be calculated.
- If the E-Vac vacuum generator doesn't meet your needs, return it for a different model, with no restocking charge (U.S. and Canada only).

Here is an example using the steps outlined above:

A sheet of material measures 3' x 3' (.91m x .91m) and weighs 25 lbs (11.3kg). Each sheet is in a stack and will be placed on a conveyor.

If it is porous like wood and positioned vertically:

1. Choose a porous, low vacuum In-Line E-Vac. The maximum vacuum is 21" Hg (71 kPa).
2. The weight is 25 lbs (11.3kg).
3. Since the part is picked-up and hung on an overhead conveyor vertically, the safety factor is 4. The vacuum cup capacity needed is $4 \times 25 = 100$ lbs (45.4kg).
4. Four vacuum cups will be used for stability when lifting the sheet. Each cup will need at least a 25 lb (11.3kg) capacity. In the table on page 123, at 21" Hg (71 kPa), the Model 900755 Vacuum Cup will hold up to 25.3 lbs (11.5kg).
5. There are 4 small round vacuum cups that are positioned close to one another. The vacuum system has a small to medium volume and pick-up and release time is not critical. To reduce the sound level, use the straight through muffler.

Order: (1) Model 800008M In-Line E-Vac
(4) Model 900755 Vacuum Cups
See Page 139 for other accessories.

If it is non-porous like glass and positioned horizontally:

1. Choose a non-porous, high vacuum In-Line E-Vac. The maximum vacuum is 27" Hg (91 kPa).
2. The weight is 25 lbs (11.3kg).
3. Since the part is picked-up and placed on a belt conveyor horizontally, the safety factor is 2. The vacuum cup capacity needed is $2 \times 25 = 50$ lbs (22.7kg).
4. Four vacuum cups will be used for stability when lifting the sheet. Each cup will need at least a 12.5 lb (5.7kg) capacity. In the table on page 123, at 27" Hg (91 kPa), the Model 900754 Vacuum Cup will hold up to 20.8 lbs (9.4kg).
5. There are 4 small round vacuum cups that are positioned close to one another. The vacuum system has a small to medium volume and pick-up and release time is not critical. To reduce the sound level, use the straight through muffler.

Order: (1) Model 810006M In-Line E-Vac
(4) Model 900754 Vacuum Cups
See Page 139 for other accessories.

The Model 840008M Adjustable E-Vac can be substituted for picking up the wood or the glass since the vacuum level and vacuum flow is easily adjusted to suit the porous or non-porous application. The Adjustable E-Vac is especially useful for loads that vary.

E-Vac® Vacuum Generators

Low Vacuum Generators For Porous Applications

Low vacuum units up to 21" Hg (71 kPa) with vacuum flows up to 18.5 SCFM (524 SLPM) are typically used for porous materials such as cardboard and delicate materials. The low level vacuum prevents any warping, marring, dimpling or disfiguring of the surface due to excessive vacuum. This style generates more vacuum flow to overcome porosity and leakage. There are 7 In-Line models that vary by flow and vacuum level.

Choose the E-Vac by the SCFM (SLPM) flow that best suits the performance needed for your application (see *Performance Table below*).

E-Vac Kits give you the ability to experiment with an assortment of vacuum cups. Kits include a muffler, an assortment of (4) pairs of vacuum cups (closely matched to the performance of that E-Vac), (2) straight, (2) elbow and (1) tee vacuum fittings, 10' (3m) of vacuum tubing and a mounting clip.

E-Vac Deluxe Kits include the same items as the standard kit with the addition of an automatic drain filter separator for the compressed air supply and pressure regulator (with coupler).



In-Line E-Vac Vacuum Generators for porous applications.



Create your own vacuum system!
In-Line E-Vac with Straight Through Muffler, push-in connectors, vacuum tubing and a round vacuum cup (shown).

In-Line E-Vac Low Vacuum Generators For Porous Applications	Model 1.5 SCFM 43 SLPM	Model 2.1 SCFM 60 SLPM	Model 3.1 SCFM 88 SLPM	Model 5.4 SCFM 153 SLPM	Model 8.4 SCFM 238 SLPM	Model 12.6 SCFM 357 SLPM	Model 16.8 SCFM 476 SLPM
In-Line E-Vac Only	800001	800002	800003	800005	800008	800013	800017
In-Line E-Vac with Straight Through Muffler	800001M	800002M	800003M	800005M	800008M	800013M	800017M
In-Line E-Vac Kit with Straight Through Muffler	801001M	801002M	801003M	801005M	801008M	801013M	801017M
In-Line E-Vac Deluxe Kit with Straight Through Muffler	802001M	802002M	802003M	802005M	802008M	802013M	802017M

Note: Replace 'M' with 'H' for Standard Muffler

In-Line E-Vac Model	Air Consumption SCFM @ 80 PSIG SLPM @ 5.5 BAR		Sound Level in dBA			Vacuum Flow (SCFM/SLPM) vs. Vacuum Level ("Hg/ kPa)																	
			No Muffler	Standard Muffler	Straight Through Muffler	0	3/10	6/20	9/31	12/41	15/51	18/61	21/71	Max Vac									
			800001	1.5	42.5	80	72	60	1.52	43.0	1.41	39.9	1.25	35.4	1.10	31.1	0.95	26.9	0.85	24.1	0.56	15.9	0.00
800002	2.1	59.5	80	72	63	2.22	62.9	2.05	58.0	1.91	54.1	1.77	50.1	1.45	41.1	0.95	26.9	0.56	15.9	0.00	0.0	21	71
800003	3.1	87.8	89	74	70	3.75	106.2	3.52	99.7	3.15	89.2	2.75	77.9	2.15	60.9	1.20	34.0	0.56	15.9	0.00	0.0	21	71
800005	5.4	152.9	92	83	66	5.59	158.3	5.23	148.1	4.51	127.7	3.75	106.2	3.34	94.6	2.51	71.1	1.25	35.4	0.00	0.0	21	71
800008	8.4	237.9	97	88	74	7.70	218.0	6.95	196.8	6.30	178.4	5.30	150.1	4.23	119.8	3.15	89.2	1.31	37.1	0.00	0.0	21	71
800013	12.6	356.8	99	91	78	15.50	438.9	14.50	410.6	13.15	372.4	11.35	321.4	8.70	246.3	4.03	114.1	0.00	0.0	0.00	0.0	18	61
800017	16.8	475.7	101	91	81	18.50	523.8	17.20	487.0	14.70	416.2	12.40	351.1	9.80	277.5	5.00	141.6	0.00	0.0	0.00	0.0	18	61

High Vacuum Generators For Non-Porous Applications

High vacuum units up to 27" Hg (91 kPa) with vacuum flows up to 15.8 SCFM (447 SLPM) are typically used for non-porous materials such as glass, steel sheet, and plastic. There are 7 In-Line models that vary by flow and vacuum level.

Choose the E-Vac by the SCFM (SLPM) flow that best suits the performance needed for your application (see *Performance Table below*).

E-Vac Kits give you the ability to experiment with an assortment of vacuum cups. Kits include a muffler, an assortment of (4) pairs of vacuum cups (closely matched to the performance of that E-Vac), (2) straight, (2) elbow and (1) tee vacuum fittings, 10' (3m) of vacuum tubing and a mounting clip.

E-Vac Deluxe Kits include the same items as the standard kit with the addition of an automatic drain filter separator for the compressed air supply and pressure regulator (with coupler).

EXAIR E-Vacs are available in other materials upon request. Contact an application engineer for an alternate material quote.



In-Line E-Vac Vacuum Generators for non-porous applications.



The In-Line E-Vac with Standard Muffler (shown above) is also available with your choice of accessories that can be found on page 139.

In-Line E-Vac High-Vacuum Generators For Non-Porous Applications	Model 2.3 SCFM 65 SLPM	Model 3.3 SCFM 93 SLPM	Model 6.2 SCFM 176 SLPM	Model 8.4 SCFM 238 SLPM	Model 13.2 SCFM 374 SLPM	Model 23.1 SCFM 654 SLPM	Model 30.8 SCFM 872 SLPM
In-Line E-Vac Only	810002	810003	810006	810008	810013	810023	810031
In-Line E-Vac with Straight Through Muffler	810002M	810003M	810006M	810008M	810013M	810023M	810031M
In-Line E-Vac Kit with Straight Through Muffler	811002M	811003M	811006M	811008M	811013M	811023M	811031M
In-Line E-Vac Deluxe Kit with Straight Through Muffler	812002M	812003M	812006M	812008M	812013M	812023M	812031M

Note: Replace 'M' with 'H' for Standard Muffler

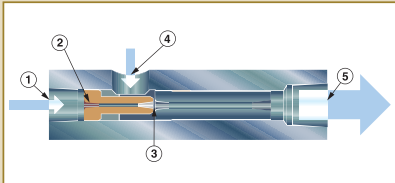
In-Line E-Vac High Vacuum Generator Performance (Non-Porous)																											
In-Line E-Vac Model	Air Consumption SCFM @ 80 PSIG SLPM @ 5.5 BAR		Sound Level in dBA			Vacuum Flow (SCFM/SLPM) vs. Vacuum Level ("Hg/ kPa)																					
						No Muffler	Standard Muffler	Straight Through Muffler	0	3/10	6/20	9/31	12/41	15/51	18/61	21/71	24/81	27/91	Max Vac								
			810002	2.3	65.1	86	81	70	1.22	34.5	1.16	33.0	1.00	28.3	0.90	25.5	0.87	24.6	0.74	21.0	0.56	16.0	0.46	13.0	0.20	5.7	0.00
810003	3.3	93.4	87	82	73	1.73	49.0	1.59	45.0	1.48	41.9	1.24	35.1	1.09	30.9	1.02	28.9	0.78	22.1	0.67	19.0	0.49	13.9	0.00	0.0	27	91
810006	6.2	175.6	91	82	77	2.75	78.0	2.65	75.0	2.26	64.0	2.05	58.0	1.87	53.0	1.59	45.0	1.13	32.0	0.92	26.0	0.77	21.7	0.00	0.0	27	91
810008	8.4	237.9	97	90	78	4.40	124.6	4.10	116.1	3.75	106.2	3.15	89.2	2.75	77.9	2.39	67.7	1.75	49.6	1.27	36.0	0.99	28.0	0.00	0.0	27	91
810013	13.2	373.8	100	92	83	6.85	194.0	6.50	184.1	5.81	164.5	4.89	138.5	4.12	116.7	3.51	99.4	2.61	73.9	1.92	54.4	1.31	37.1	0.00	0.0	27	91
810023	23.1	654.1	102	92	84	11.95	338.4	11.80	334.1	10.45	295.9	9.02	255.4	8.10	229.4	6.52	184.6	5.44	128.6	3.65	103.4	2.67	75.6	0.00	0.0	27	91
810031	30.8	872.1	105	92	87	15.75	446.0	15.25	431.8	12.67	358.8	11.12	314.9	10.25	290.2	7.97	225.7	5.98	169.3	5.04	142.7	3.41	96.6	0.00	0.0	27	91

E-Vac® Vacuum Generators

In-Line E-Vacs

EXAIR manufactures two versions of the In-Line E-Vac— Low Vacuum and High Vacuum. The application will dictate which type of vacuum is most suitable. The dimensions and performance for each model are shown.

How The In-Line E-Vac Works

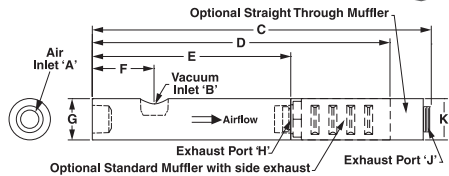


Compressed air flows through the inlet (1), then through a single directed nozzle (2). As the airstream exhausts, it expands and increases in velocity prior to passing through the venturi (3). A vacuum inlet tangential to the primary airflow (4) is located at the suction point between the orifice and the venturi. The airflow that is drawn through the vacuum inlet mixes with the primary airstream, then exhausts on the opposite end (5).



The In-Line E-Vac (porous version) is used to lift the plywood lid of a crate in a receiving department.

In-Line E-Vac Dimensions



Need Help Selecting the Correct E-Vac?

Not sure how much vacuum is required for your application? Our Application Engineers can assist you in determining the correct model E-Vac and vacuum cups (if required). Call 1-800-903-9247 or visit www.exair.com/appassist.htm

In-Line Vacuum Generator Dimensions

Model	Air Inlet A	Vacuum Inlet B		C	D	E	F	G	H	J	K
800001, 800002, 800003, 810002, 810003, 810006	1/8 NPT	1/8 NPT	in mm	N/A N/A	N/A N/A	3.00 76	0.88 22	0.75 19	1/4 NPT	N/A N/A	N/A N/A
800001H, 800002H, 800003H, 810002H, 810003H, 810006H	1/8 NPT	1/8 NPT	in mm	N/A N/A	5.00 127	3.00 76	0.88 22	0.75 19	1/4 NPT	N/A N/A	0.81 21
800001M, 800002M, 800003M, 810002M, 810003M, 810006M	1/8 NPT	1/8 NPT	in mm	5.25 133	N/A N/A	3.00 76	0.88 22	0.75 19	1/4 NPT	1/4 NPS 1/4 NPS	0.75 19
800005, 800008, 810008, 810013	1/4 NPT	3/8 NPT	in mm	N/A N/A	N/A N/A	4.50 114	1.50 38	1.00 25	3/8 NPT	N/A N/A	N/A N/A
800005H, 800008H, 810008H, 810013H	1/4 NPT	3/8 NPT	in mm	N/A N/A	7.50 191	4.50 114	1.50 38	1.00 25	3/8 NPT	N/A N/A	1.25 32
800005M, 800008M, 810008M, 810013M	1/4 NPT	3/8 NPT	in mm	7.75 197	N/A N/A	4.50 114	1.50 38	1.00 25	3/8 NPT	3/8 NPS 3/8 NPS	1.00 25
800013, 800017, 810023, 810031	1/2 NPT	1/2 NPT	in mm	N/A N/A	N/A N/A	6.00 152	1.88 48	1.25 32	1/2 NPT	N/A N/A	N/A N/A
800013H, 800017H, 810023H, 810031H	1/2 NPT	1/2 NPT	in mm	N/A N/A	9.00 229	6.00 152	1.88 48	1.25 32	1/2 NPT	N/A N/A	1.25 32
800013M, 800017M, 810023M, 810031M	1/2 NPT	1/2 NPT	in mm	10.25 260	N/A N/A	6.00 152	1.88 48	1.25 32	1/2 NPT	1/2 NPS 1/2 NPS	1.25 32

Adjustable E-Vac® Vacuum Generators

A simple turn can increase or decrease vacuum and flow!

What Is The Adjustable E-Vac?

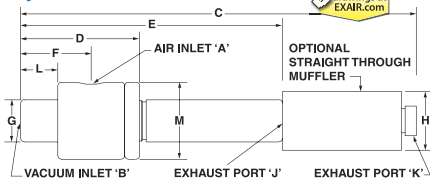
EXAIR's Adjustable E-Vac is a series of low cost, compressed air powered vacuum generators where the vacuum and flow rates can be easily adjusted to suit the application requirements. These vacuum pumps are ideal for a wide variety of pick and place, box opening, clamping, lifting, chucking, and surface mounting applications. They are maintenance free and have no moving parts to wear out.

Why The Adjustable E-Vac?

Engineered for high efficiency, the Adjustable E-Vac minimizes compressed air use by allowing it to be tuned to the application. With a simple turn of the unit, the vacuum and flow levels can be changed to overcome porosity and increase or decrease the lifting power. The straight-through, single stage aluminum construction requires no vacuum filter and simply passes contaminants from dirty environments through the unit so there is no clogging or loss of suction.

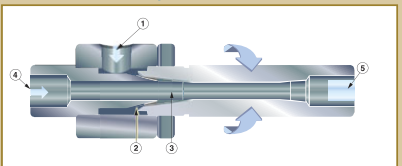
Adjustable E-Vac is available in 4 sizes that have adjustable vacuum rates up to 25" Hg (85 kPa) and flow rates up to 81 SCFM (2,294 SLPM). Kit configurations that include vacuum cups, fittings, tubing and a mounting clip are available.

Adjustable E-Vac Dimensions



The vacuum level of the Adjustable E-Vac can quickly be changed from lifting lightweight pavers to heavy cement blocks.

How The Adjustable E-Vac Works



Compressed air flows through the inlet (1), then through an adjustable annular nozzle (2). As the airstream enters the vacuum flow, it expands and increases in velocity (3). A vacuum flow is induced, creating suction (4). The airflow that is drawn through the vacuum inlet mixes with the primary airstream, then exhausts on the opposite end (5).

Vacuum Generators

Adjustable Vacuum Generator Dimensions

Model	Air Inlet A	Vacuum Inlet B		C	D	E	F	G	H	L	M	Exhaust Port J	Exhaust Port K
840008	1/8 NPT	1/4 NPT	in	N/A	2.00	4.38	1.19	0.72	N/A	0.63	1.31	1/4 NPT	N/A
			mm	N/A	51	111	30	18	N/A	16	33		
840008M	1/8 NPT	1/4 NPT	in	6.63	2.00	4.38	1.19	0.72	0.75	0.63	1.31	1/4 NPT	1/4 NPS
			mm	168	51	111	30	18	19	16	33		
840015	3/8 NPT	1/2 NPT	in	N/A	2.38	5.44	1.31	0.97	N/A	0.63	1.56	1/2 NPT	N/A
			mm	N/A	60	138	33	25	N/A	16	40		
840015M	3/8 NPT	1/2 NPT	in	9.69	2.38	5.44	1.31	0.97	1.25	0.63	1.56	1/2 NPT	1/2 NPS
			mm	246	60	138	33	25	32	16	40		
840030	3/8 NPT	1/2 NPT	in	N/A	2.50	6.19	1.44	1.22	N/A	0.75	1.94	3/4 NPT	N/A
			mm	N/A	64	157	37	31	N/A	19	49		
840030M	3/8 NPT	1/2 NPT	in	13.63	2.50	6.19	1.44	1.22	2.00	0.75	1.94	3/4 NPT	3/4 NPS
			mm	346	64	157	37	31	51	19	49		
840060	1/2 NPT	3/4 NPT	in	N/A	2.75	6.50	1.56	1.47	N/A	0.75	2.19	1 NPT	N/A
			mm	N/A	70	165	40	37	N/A	19	56		
840060M	1/2 NPT	3/4 NPT	in	13.94	2.75	6.50	1.56	1.47	2.00	0.75	2.19	1 NPT	1 NPS
			mm	354	70	165	40	37	51	19	56		

Choosing A Suitable Vacuum Cup

Round Cups are best suited to smooth, flat surfaces. They will grip and release quickly. These cups hold their shape with extended use and grip well to vertical surfaces. Round cups with cleats are better at lifting heavy loads. Cups without cleats can be used for light lifting.



Oval Cups provide the most vacuum due to the larger surface area. They provide more vacuum power than round cups and are suited to lifting heavy loads. They are designed to handle flat rigid sheet materials like wood, glass, cardboard boxes and composites.



Bellows Cups are best suited to textured, uneven surfaces. The folds, called convolutions, provide a collapsible area that allows the cup to quickly compress when it touches the flat surface. The attach and release time is greater due to the significant volume of the cup.



Vacuum Cup Safety Factor

A **safety factor of 2** is recommended when the vacuum cup is positioned horizontally.

A **safety factor of 4** is recommended when the vacuum cup is positioned vertically.

Some companies or local codes may require a specific safety factor.

Using The Tables Below

Determine the weight of the part to be lifted. Multiply it by the safety factor of (2) when the cup will be positioned horizontally, or by (4) when positioned vertically.

Using the table below, look through the numbers highlighted in orange for the weight capacity per vacuum cup. Use enough vacuum cups to distribute the weight evenly for stable lifting and placement. The model number(s) for the vacuum cup(s) that can handle that weight are directly above (in that column) and are highlighted in blue . Details for each vacuum cup can be found on page 138.

To the left of the vacuum cup weight you've selected (in that same row) is the vacuum level highlighted in green that is needed. Performance data for the In-Line E-Vacs designed for specific vacuum levels can be found on pages 132-133. For loads that vary, Adjustable E-Vacs are the best choice (performance shown on page 136).

Weight in lbs that a vacuum cup can hold at a given vacuum

Vacuum Cup Models	900762 900766	900752 900767	900763	900764	900753 900768	900754 900769	900765	900755 900770	900756 900758	900757 900771	900759	900760	900761
Area of cup in ²	0.4	0.8	1.0	1.5	1.8	3.1	4.4	4.9	8.3		14.2	19.6	28.3
Vacuum "Hg	5	0.5	1.0	1.2	1.8	2.2	3.9	5.3	6.0	10.2	17.4	24.1	34.7
	10	1.0	1.9	2.5	3.7	4.3	7.7	10.7	12.1	20.4	34.8	48.2	69.4
	15	1.5	2.9	3.7	5.5	6.5	11.6	16.0	18.1	30.6	52.3	72.3	104.2
	20	2.1	3.9	4.9	7.4	8.7	15.4	21.4	24.1	40.7	69.7	96.4	138.9
	21	2.2	4.1	5.2	7.8	9.1	16.2	22.4	25.3	42.8	73.2	101.3	145.8
	27	2.8	5.2	6.6	10.0	11.7	20.8	28.9	32.6	55.0	94.1	130.2	187.5

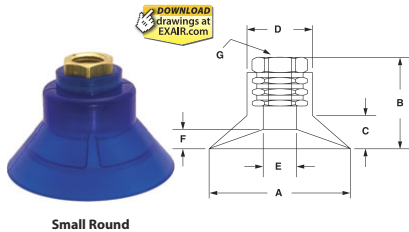
Weight in kilograms that a vacuum cup can hold at a given vacuum

Vacuum Cup Models	900762 900766	900752 900767	900763	900764	900753 900768	900754 900769	900765	900755 900770	900756 900758	900757 900771	900759	900760	900761
Area of cup cm ²	3	5	6	10	11	20	28	32	54		92	127	182
Vacuum kPa	17	0.2	0.4	0.6	0.8	1.0	1.7	2.4	2.7	4.6	7.9	10.9	15.7
	34	0.5	0.9	1.1	1.7	2.0	3.5	4.8	5.5	9.2	15.8	21.9	31.5
	51	0.7	1.3	1.7	2.5	3.0	5.2	7.3	8.2	13.9	23.7	32.8	47.2
	68	0.9	1.7	2.2	3.4	3.9	7.0	9.7	10.9	18.5	31.6	43.7	63.0
	71	1.0	1.8	2.3	3.5	4.1	7.3	10.2	11.5	19.4	33.2	45.9	66.1
	91	1.3	2.4	3.0	4.5	5.3	9.4	13.1	14.8	25.0	42.7	59.1	85.0

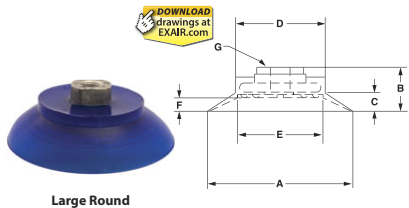
E-Vac® Vacuum Generators

Vacuum Cup Dimensions

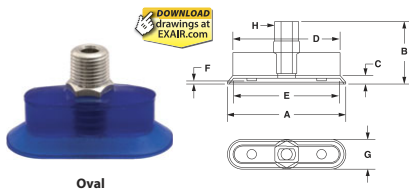
EXAIR vacuum cups are vinyl. They are ideal for general purpose applications and provide excellent resistance to wear. The Durometer rating (used to indicate the flexibility and stiffness of the cup) is A50. Temperature range is 32° to 125°F (0° to 52°C).



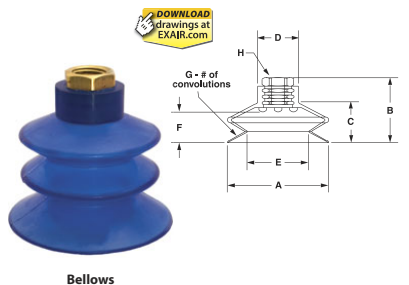
Vacuum Cups - Small Round									
Model		A	B	C	D	E	F	G	Cleats
900752	in	1.00	1.12	0.25	0.81	0.45	0.17	1/4 FNPT	No
	mm	25	28	6	21	11	4		
900753	in	1.50	0.90	0.28	1.25	1.06	0.12	1/4 FNPT	Yes
	mm	38	23	7	32	27	3		
900754	in	2.00	1.00	0.25	1.56	1.31	0.18	1/4 FNPT	Yes
	mm	51	25	6	40	33	5		
900755	in	2.50	1.80	0.72	1.35	0.95	0.62	1/4 FNPT	Yes
	mm	64	46	18	34	24	16		
900756	in	3.50	1.10	0.56	0.98	0.51	0.37	1/4 FNPT	No
	mm	89	28	14	25	13	9		



Vacuum Cups - Large Round									
Model		A	B	C	D	E	F	G	Cleats
900757	in	3.25	1.15	0.50	2.23	1.87	0.37	3/8 FNPT	Yes
	mm	83	29	13	57	47	9		
900758	in	3.25	1.15	0.50	2.23	1.87	0.37	1/4 FNPT	Yes
	mm	83	29	13	57	47	9		
900759	in	4.25	1.18	0.50	2.75	2.43	0.37	3/8 FNPT	Yes
	mm	108	30	13	70	62	9		
900760	in	5.00	1.75	1.12	3.25	2.65	0.62	3/8 FNPT	Yes
	mm	127	44	28	83	67	16		
900761	in	6.00	1.31	0.50	4.75	4.90	0.12	1/2 FNPT	Yes
	mm	152	33	13	121	124	3		



Vacuum Cups - Oval										
Model		A	B	C	D	E	F	G	H	Cleats
900762	in	1.00	1.06	0.12	0.81	0.76	0.09	0.50	1/8 MNPT	No
	mm	25	27	3	21	19	2	13		
900763	in	2.00	1.06	0.12	1.81	1.76	0.09	0.50	1/8 MNPT	No
	mm	51	27	3	46	45	2	13		
900764	in	1.73	1.03	0.21	1.35	1.21	0.09	0.87	1/8 MNPT	Yes
	mm	44	26	5	34	31	2	22		
900765	in	2.96	0.93	0.19	0.92	2.34	0.20	1.47	1/8 FNPT	No
	mm	75	24	5	23	59	5	37		



Vacuum Cups - Bellows										
Model		A	B	C	D	E	F	G	H	Cleats
900766	in	0.73	1.43	0.75	0.67	0.45	0.79	3	1/4 FNPT	No
	mm	19	36	19	17	11	20			
900767	in	1.00	1.48	0.85	0.56	0.44	0.85	4	1/8 FNPT	No
	mm	25	38	22	14	11	22			
900768	in	1.50	1.12	0.71	1.06	1.00	0.31	1	1/4 FNPT	Yes
	mm	38	28	18	27	25	8			
900769	in	2.00	1.54	0.89	1.00	1.17	0.68	1	1/4 FNPT	Yes
	mm	51	39	23	25	30	17			
900770	in	2.50	2.40	1.75	1.00	1.12	1.80	2	1/4 FNPT	No
	mm	64	61	44	25	28	46			
900771	in	3.25	3.00	2.20	1.00	1.53	2.00	2	3/8 FNPT	No
	mm	83	76	56	25	39	51			

MNPT = NPT Male
FNPT = NPT Female

Increased Energy And Vacuum Efficiency

Energy and vacuum efficiency are not limited to the Adjustable E-Vac vacuum generators. All E-Vac styles and models can offer significant improvements when looking to reduce the amount of compressed air used for a specific vacuum application. Once the appropriate amount of vacuum and flow for the application are determined, it is important to select the appropriate model that will deliver the best performance while using the least amount of compressed air that it takes to do the job.

Many companies have a centralized vacuum system where the vacuum is generated at a location that is far away from the point of use. The long runs of piping through the plant produce line loss and it is often difficult to obtain that perfect balance of vacuum and flow required for the application. The compact In-line E-Vac vacuum generators eliminate this problem since they can be mounted at the point where the vacuum source is needed. EXAIR's Application Engineers can help you to select the E-Vac vacuum generator and vacuum cups that provide the right amount of lifting capability while minimizing the amount of compressed air usage.

Other Applications For E-Vac

E-Vacs are used in many other “non-lifting” applications. They are commonly used for vessel evacuation, clamping, chucking, and other work holding applications. Many types of automated equipment use vacuum to evacuate, grip, hold, align and insert parts. These vacuums can be used for surface mounting, vacuum packaging, bag opening, label placement, carton forming and container evacuation.

Another popular application is using the E-Vac for liquid sampling. This process can easily be accomplished using an E-Vac vacuum generator attached to a liquid holding tube. When the tube is dipped into a vat, tank or container, the compressed air is turned on so it draws a specific volume of liquid up into the tube. When the compressed air is turned off, the liquid flows from the tube and can be dispensed into a container or machine to be analyzed.

Accessories Needed To Build Your Vacuum System

EXAIR offers a variety of mufflers, tubing, check valves, and fittings shown on page 140 that make it easy to build a vacuum system best suited to your vacuum application.

When using E-Vac vacuum generators, it is important to use a source of clean, dry compressed air that will keep them operating at their peak performance. Automatic drain filter separators to keep the compressed air free of contaminants and moisture can be found on page 201. Oil removal filters that remove oil particulates that are common to many compressed air systems are also shown. Pressure regulators, shutoff valves, compressed air hose, and solenoid valves (to electrically turn the compressed air on and off) can be found on pages 202 through 205.

• Mufflers

Optional silencing mufflers are available that permit maximum exhaust of the E-Vac unit so cycle speed is not reduced. The Standard Muffler (for use with In-Line E-Vacs only) has a closed end and is suitable for applications that are free of dust and debris. The Straight Through Muffler is recommended where particulates are present since it will not accumulate debris that can erode performance. Straight Through Mufflers offer the best sound level reduction (up to 26 dBA). Sound levels are shown on pages 132, 133 and 136.

• Fittings and Tubing

The vacuum port of the E-Vac has an NPT thread (a vacuum cup can be threaded directly into it). For vacuum cups that are remotely located, push-in connector fittings (most have global threads for use with NPT and BSP), or hose barb fittings can be installed on the E-Vac and the vacuum cup. Polyurethane vacuum tubing is available (10', 20', 30', 40' and 50' lengths) to connect them. For best performance, the length of the tubing should be minimized to achieve the best attach and release times.

• Check Valve

A vacuum check valve is available to hold the vacuum in case of compressed air loss. E-Vac vacuum generators that are used without a check valve will release the load if there is a significant drop in compressed air pressure or the supply of compressed air is lost.

E-Vac® Vacuum Generators

Vacuum Generators



Mufflers

Standard

Model	Description	Thread
900800	Standard Muffler	1/4 MNPT
900801	Standard Muffler	3/8 MNPT
900802	Standard Muffler	1/2 MNPT

Straight Through

Model	Description	Thread
890001	Straight Through	1/4 MNPS
890002	Straight Through	3/8 MNPS
890003	Straight Through	1/2 MNPS
890004	Straight Through	3/4 MNPS
890005	Straight Through	1 MNPS

Check Valves

Model	Description	Thread
900804	Check Valve	1/4 FNPT
900805	Check Valve	3/8 FNPT
900806	Check Valve	1/2 FNPT

E-Vac Accessories

Push-In Connector

Model	Description
900773	1/4 Tube x 1/8 FNPT
900774	1/4 Tube x 1/8 Male Global Thread
900775	1/4 Tube x 1/4 Male Global Thread
900776	1/4 Tube x 3/8 Male Global Thread
900777	3/8 Tube x 1/8 Male Global Thread
900778	3/8 Tube x 1/4 Male Global Thread
900779	3/8 Tube x 3/8 Male Global Thread
900780	3/8 Tube x 1/2 Male Global Thread

Push-In Swivel Elbow Connector

Model	Description
900781	1/4 Tube x 1/8 Male Global Thread
900782	1/4 Tube x 1/4 Male Global Thread
900783	1/4 Tube x 3/8 Male Global Thread
900784	3/8 Tube x 1/8 Male Global Thread
900785	3/8 Tube x 1/4 Male Global Thread
900786	3/8 Tube x 3/8 Male Global Thread
900787	3/8 Tube x 1/2 Male Global Thread

Push-In Swivel Branch Tee Connector

Model	Description
900788	1/4 Tube x 1/8 Male Global Thread
900789	1/4 Tube x 1/4 Male Global Thread
900790	3/8 Tube x 1/4 Male Global Thread
900791	3/8 Tube x 3/8 Male Global Thread

MNPT = NPT Male
FNPT = NPT Female



E-Vac Accessories - continued

Push-In Bulkhead Connector

Model	Description
900792	Female Union - 1/4 Tube x 1/4 Tube
900793	Female Union - 3/8 Tube x 3/8 Tube
900809	Female Union - 1/4 Tube x 1/4 NPT
900810	Female Union - 3/8 Tube x 1/4 NPT

Vacuum Tubing

Tubing lengths are 10', 20', 30', 40', and 50'. Select the tubing model number (diameter) and indicate the length with a dash. Example: A Model 900795-20 is 1/4" tubing x 20' long.

Model	Description
900795-	1/4" O.D. Polyurethane Tubing
900796-	3/8" O.D. Polyurethane Tubing

Mounting Clip

Model	Description
900798	Mounting Clip with Strap

Hose Barbs

Model	Description
900969	1/4 MNPT x 1/4 Hose Barb
900970	1/4 MNPT x 3/8 Hose Barb
900971	1/4 MNPT x 1/2 Hose Barb
900972	1/2 MNPT x 1/4 Hose Barb
900973	1/2 MNPT x 3/8 Hose Barb
900974	1/2 MNPT x 1/2 Hose Barb
900975	1/2 MNPT x 3/4 Hose Barb
900976	3/4 MNPT x 3/8 Hose Barb
900977	3/4 MNPT x 1/2 Hose Barb
900978	3/4 MNPT x 3/4 Hose Barb
900979	3/4 MNPT x 1 Hose Barb
900980	1 MNPT x 3/4 Hose Barb
900981	1 MNPT x 1 Hose Barb

Hose

Hose lengths are 10', 20', 30', 40', and 50'. Select the hose model number (diameter) and indicate the length with a dash. Example: A Model 900796-20 is 1/4" hose x 20' long.

Model	Description
901845-	1/4" I.D. Hose
900689-	3/8" I.D. Hose
900690-	1/2" I.D. Hose
900063-	3/4" I.D. Hose
900064-	1" I.D. Hose

Vacuum Gauge

Model	Description	Thread
900811	Vacuum Gauge (-30" Hg/-1 BAR/-100 kPa-0)	1/8 MNPT

MNPT = NPT Male
FNPT = NPT Female

EXAIR® Standards Compliance

As the leader in standards compliance, EXAIR's products come with more than engineered performance, peak efficiency, the best technical knowledge and unmatched customer service...

EXAIR is dedicated to providing products that have been manufactured to meet the strict requirements of the following standards. These standards provide confidence that you are receiving reliable, high quality products which will perform as stated within the performance charts provided.

Our products meet or exceed the strict safety standards of OSHA and the European Union to ensure the safety of your personnel. Many of these standards will allow your products a smoother transaction when selling your products into international markets.

OSHA and CE Compliance: EXAIR compressed air products comply with OSHA's Safety Requirements (29 CFR 1910.242(b)), the EU General Product Safety Directive (2001/95/EC) and meet the noise limitation requirements (29 CFR-1910.95(a)), of the EU Machinery Directive (2006/42/EC). EXAIR's Electronic Flow Control and Electronic Temperature Control meet the low voltage standards of the EU Low Voltage Directive (2006/95/EC). Some EXAIR products display the CE mark where there are applicable directives. All sound level measurements are taken at 3 feet from product.



RoHS: Electrical portions of EXAIR's Static Eliminators, EFC, ETC, Digital Flowmeter solenoid valves, and thermostats comply with the RoHS (Restriction of Hazardous Substances) Directive 2011/65/EU, including the amendment outlined in the European Commission decision L 214/65.



Conflict Mineral Free: Look for this symbol to designate conflict mineral free products throughout our catalog. EXAIR supports Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. We are committed to compliance with the conflict minerals rule in order to curb the illicit trade of tin, tantalum, tungsten and gold in the DRC region. EXAIR is using the CMRT 4.20 template to document our supply chain and commitment to conflict free products.



Reach: Per Regulation (EC) No 1907/2006 Title I, Article 3, paragraph 3, the European Union has recently enacted legislation to register chemicals and substances imported into the EU to ensure a high level of protection of human health and the environment.



Per Title II, Article 7, paragraph 1, articles (products) must be registered when a substance is intended to be released under normal or reasonably foreseeable conditions of use and it is present in those articles in quantities totaling over 1 metric ton per producer or importer per year. Registration of EXAIR products is not required since they do not contain substances that are intentionally released.