

# EXAIR®

MANUFACTURING INTELLIGENT COMPRESSED AIR® PRODUCTS SINCE 1983



COAT



COOL



CONSERVE



CLEAN



CONVEY

# 35 CATALOG

**NEW**

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The digital home of Intelligent Compressed Air® products for industry



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**Delivery:** EX WORKS (EXAIR, 11510 Goldcoast Dr., Cincinnati, Ohio 45249, USA.)  
All cataloged products are shipped from stock, via U.P.S. within 24 hours after receipt of order. Priority shipment is available upon request.

**Ordering:** Call 1-800-903-9247 or +1-513-671-3322 Worldwide 7:00 a.m. to 4:00 p.m. ET (Mon. - Fri.)  
Fax toll free 1-866-329-3924 or Worldwide +1-513-671-3363  
E-mail: orders@exair.com Secure website: www.exair.com

**Remit to address (payments only):** EXAIR Location 00766, Cincinnati, Ohio 45264-0766

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



**Warranty:**

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5 Year "Built To Last" Warranty against defects in workmanship and materials on all compressed air products\*. Defective products must be returned freight prepaid for repair or replacement at our option. This warranty applies under conditions of normal use, but does not apply to defects that result from intentional damage, negligence, unreasonable use, wear or exposure.

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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.



EXAIR has partnered with Energy Star, a voluntary program of the U.S. Department of Energy and the Environmental Protection Agency. Energy Star offers energy efficient solutions to help save money while protecting the environment for future generations. EXAIR has implemented improved energy management practices and technologies throughout our facility, including energy efficient lighting, HVAC systems, and electronic thermostats. EXAIR's participation in this program underscores our commitment to conserving energy.

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, #D903,817, #10,779,698 and #9156045, and others may be U.S. Patent Pending.

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# Cold Gun Aircoolant System

An **INTELLIGENT COMPRESSED AIR** Product

## Cold Gun Aircoolant System™



Replace messy mist systems - improve dry machining with clean, cold air!

### What Is The Cold Gun Aircoolant System?



SCAN & WATCH the video!  
<https://exair.co/04-cgv>

A new solution to an old problem. Heat build up on dry machining operations reduces tool life and machining rates. The Cold Gun Aircoolant System produces a stream of **clean, cold air at 50°F (28°C) below supply air temperature. Operation is quiet and there are no moving parts to wear out.** It will remove heat to prolong tool life and increase productivity on machining operations when liquid coolants cannot be used.

The Cold Gun is also an alternative to expensive mist systems. It eliminates the costs associated with the purchase and disposal of cutting fluids and worker related health problems from breathing airborne coolants or slipping on wet floors.

**EXAIR's Cold Gun is non-adjustable to prevent freeze-up during use. Cold airflow and temperature drop are factory set to optimize the gun's cooling capability.**

### Applications

- Tool sharpening
- Drill and cutter grinding
- Routing
- Plunge and form grinding
- Milling
- Surface grinding
- Drilling
- Tire grinding
- Band sawing
- Plastic machining
- Laser cutting
- Chill rolls
- Setting hot melt adhesives

### Advantages

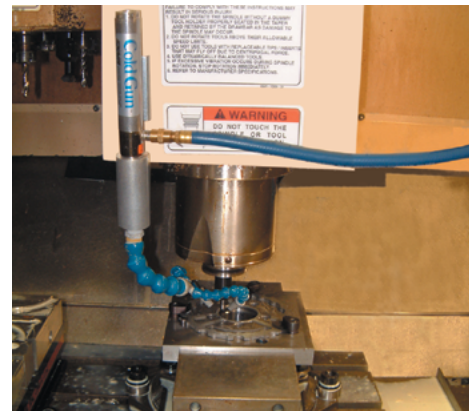
- Improves production rates
- Prevents burning
- Extends tool life - reduces breakage
- Improves tolerance control
- Prevents smearing of metal or plastics
- Finished part is dry
- Eliminates wheel loading
- Low cost
- Compact, lightweight, portable
- No moving parts - maintenance free
- Quiet
- No coolant cost
- No electricity



The Model 5215 Cold Gun keeps the part cool to the touch and prevents discoloration.



Cold air eliminates heat cracking of the carbide tool during sharpening.

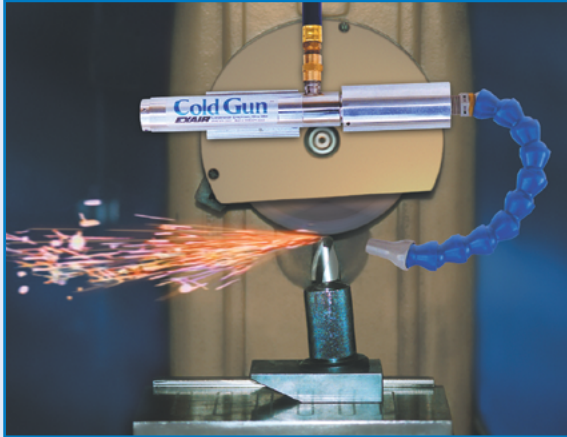


The Model 5315 Cold Gun cools a two flute 3/8" carbide cutter on a CNC, increasing tool life by 50%.



# Cold Gun Aircoolant System

## Applications



Model 5215 Cold Gun System

### Tool Grinding

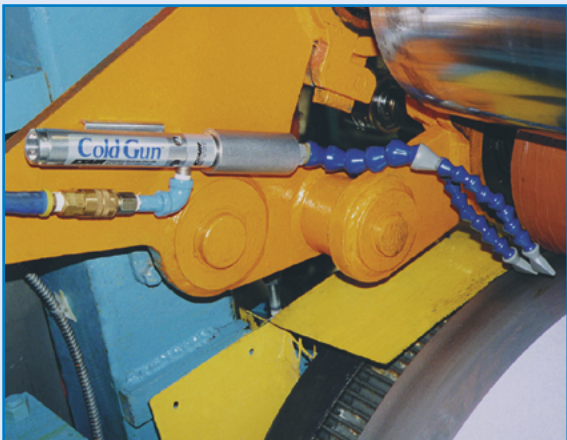
Cold air eliminates heat cracking of carbide and tool edge burning during grinding and sharpening operations. Increased tool life between regrinds is the result.



Model 5215 Cold Gun System

### Milling & Drilling

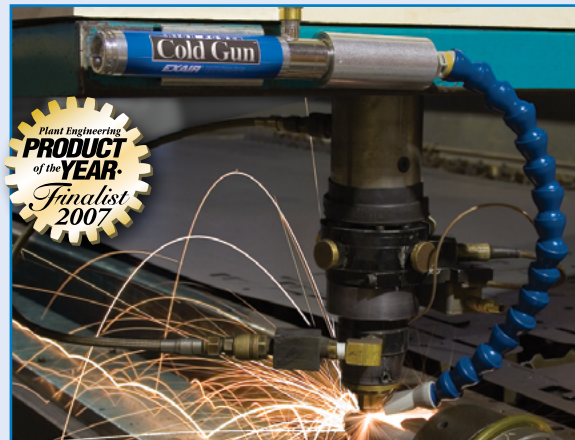
Fly cutters up to 460mm in diameter have been cooled with the Cold Gun. Dissipating heat with cold air extends tool life, increases speeds and feeds, and improves finishes.



Model 5315 Cold Gun System

### Chill Roll

Cooling a roll with 20°F (-7°C) air keeps the material on the surface from bunching up, jamming or tearing. The metal surface transfers the cold temperature to the product.



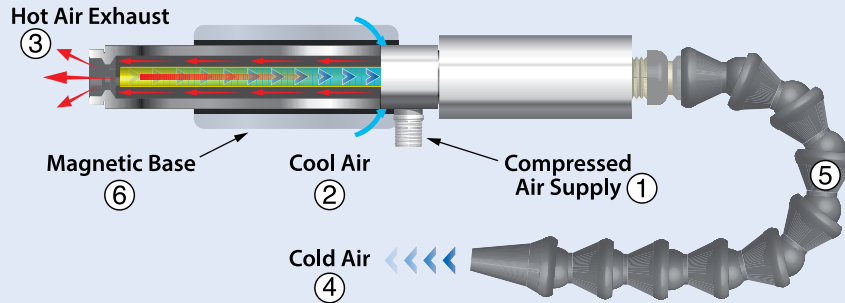
Model 5230 High Power Cold Gun System

### Laser Cutting

Cold air cools a laser cut part so it can be handled seconds later. The High Power Cold Gun has twice the cooling capacity of the standard Cold Gun, cooling the part in less time.

# Cold Gun Aircoolant System

## How The Cold Gun Works

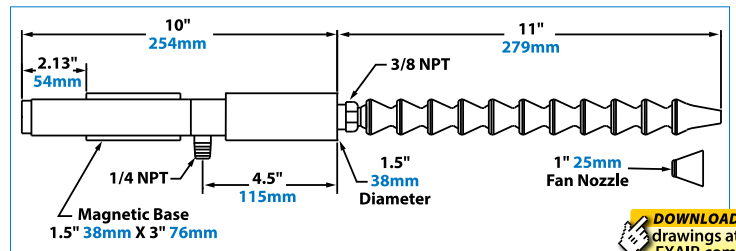


The standard Cold Gun and High Power Cold Gun incorporate a vortex tube to convert an ordinary supply of **compressed air** (1) into two low pressure streams, one hot and one cold. (For complete information on vortex tube operation, see page 200 of this catalog.) Secondary air is drawn in (2). The Cold Gun's hot airstream is muffled and discharged through the **hot air exhaust** (3). The **cold air** (4) is muffled and discharged through the **flexible hose** (5), which directs it to the point of use. Easy mounting and portability are provided through the use of an attached **magnetic base** (6).

## Specifications

Model #	Pressure Supply		Air Consumption		Sound Level
	PSIG	BAR	SCFM	SLPM	dBA
Cold Gun 5215, 5315	100	6.9	15	425	70
High Power Cold Gun 5230, 5330	100	6.9	30	850	82

## Cold Gun Dimensions



DOWNLOAD drawings at EXAIR.com

## Controlling the Cold Air

The EXAIR Cold Gun gives **instant cold air** when filtered compressed air is supplied to it. Cycling on and off is a good way to save air. **For on and off control**, use a Model 9012 Manual Shutoff Valve. To turn the Cold Gun on with the machine, a solenoid valve may be used and wired through the machine control switch. This method is ideal for hand grinders and drill sharpeners.

## The Compressed Air Supply

The Cold Gun is designed to use full line pressure of 80-100 PSIG (5.5-6.9 BAR). Temperature drop and flow are reduced when lower input pressures are applied. The use of clean, filtered air is essential to the operation of the Cold Gun. A filter separator that removes moisture, dirt and other particulates from the compressed air is included with each Cold Gun System. An optional Oil Removal Filter is also available. (See page 231 for details.)

## Need More Cooling?

EXAIR's High Power Cold Gun Aircoolant System™ produces twice the airflow of the standard Cold Gun, doubling the cooling capability. It produces cold air at 50°F (28°C) below the supply air temperature so the air is as cold as possible without freezing up. Two systems are available: the Model 5230 High Power Cold Gun with Single Point Hose Kit and Model 5330 High Power Cold Gun with Dual Point Hose Kit.

## Selecting The Right Model

Cold Gun Aircoolant Systems are available with either a Single Point or Dual Point Hose Kit.



**The Single Point Hose Kit** (included with the Model 5215 Cold Gun and Model 5230 High Power Cold Gun) is recommended for applications where a concentrated airflow is needed such as drilling and grinding operations.

**The Dual Point Hose Kit** (included with the Model 5315 Cold Gun and Model 5330 High Power Cold Gun) is recommended for applications where the heat is generated over a larger surface area such as band sawing, milling, chill rolls and hot melt adhesives.

A Cold Gun System with the Model 5901 Single Point Hose Kit can be easily converted to a "dual point" system with the purchase of the Model 5902 Dual Point Hose Kit.

# Cold Gun Aircoolant System

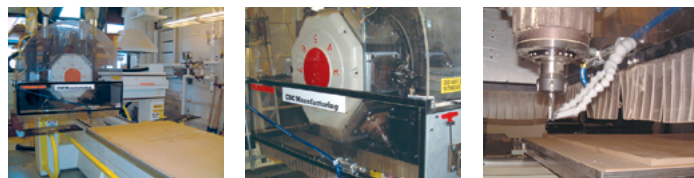
## Purdue University Study Confirms Benefits Of The EXAIR Cold Gun

Tooling costs a lot of money to replace. That's only part of the problem. As the tools wear out, you can expect:

- Slowed production and downtime to change out the tooling
- Poor tolerances and decreased dimensional accuracy due to increased temperature
- Increased cutting force is required (generates more heat and uses more electricity)

If you could just make the tooling last longer, you'd not only cut the tool cost but could increase profits by reducing scrapped parts and downtime.

A long term study on the effect of refrigerated air on tool wear in wood machining was conducted at the Forestry Products Department of Purdue University by Ms. Judith Gisp. The project was under the direction of Dr. Rado Gazo (department professor) and Harold Stewart



Purdue's CNC router turns (22) 4'x8' sheets into sawdust.

EXAIR's Cold Gun is mounted under the protective guard.

Cold air from EXAIR's Model 5315 Cold Gun System keeps the tooling cool.

(professor at North Carolina State University with 35 years in wood machining research). Wood is brutal on tooling. In metalworking, most of the heat goes away with the machined chip. Wood is an excellent insulator and doesn't conduct the heat away, which keeps it all there at the tool. Temperatures can exceed 1472°F (800°C)!

The extensive tests at Purdue were conducted in a 70°F climate controlled room. They tested (4) 1/2" (12.7mm) two-flute cutters on a CNC router at 16,000 rpm. (22) sheets of 3/4" thick MDF (medium density fiberboard) were fed one at a time, cutting away 1/4" (6mm) depth of cut on each pass. Power consumption of the CNC was recorded (current draw increases as the tool starts to dull). When finished, the surface of the tools was examined using a scanning electron microscope. Machining with the Cold Gun's 20°F air reduced tool wear by over 21% compared to the results with no cooling.

For complete details of the Purdue study, visit our web site at [www.exair.com/purdue.htm](http://www.exair.com/purdue.htm).

### How Much Can You Save?

- A 1/2" two flute router bit for wood is approximately \$67.
- The 21% reduction in tool wear when using a Cold Gun is  $\$67 \times 0.21 = \mathbf{\$14.07 \text{ savings per bit}}$ .
- If you use (1) router bit per working day, the savings is  $\$14.07 \times 5 \text{ working days} = \mathbf{\$70.35 \text{ per week} / \$3,658 \text{ per year}}$  For One Bit!

## Cold Gun Aircoolant Systems



### Model 5215 Cold Gun System (one cold outlet)

includes Cold Gun, Single Point Hose Kit, 3/8" (10mm) Cone Nozzle, 1-1/4" (32mm) Fan Nozzle, Manual Drain Filter Separator.



### Model 5315 Cold Gun System (two cold outlets)

includes Cold Gun, Dual Point Hose Kit, (2) 1/4" (6mm) Cone Nozzles, (2) 1" (25mm) Fan Nozzles, Manual Drain Filter Separator.



### Model 5230 High Power Cold Gun System (one cold outlet)

includes High Power Cold Gun, Single Point Hose Kit, 3/8" (10mm) Cone Nozzle, 1-1/4" (32mm) Fan Nozzle, Automatic Drain Filter Separator.



### Model 5330 High Power Cold Gun System (two cold outlets)

includes High Power Cold Gun, Dual Point Hose Kit, (2) 1/4" (6mm) Cone Nozzles, (2) 1" (25mm) Fan Nozzles, Automatic Drain Filter Separator.

A Dual Point Hose Kit is recommended when heat is generated over a larger surface area.

### Accessories and Components

Model #	Description	Model #	Description
5015	Cold Gun Only	9005	Oil Removal Filter, 3/8 NPT, 15-37 SCFM (425-1,048 SLPM)
5030	High Power Cold Gun Only	9012	Manual Shutoff Valve, 1/4 NPT
5901	Single Point Hose Kit (Included with 5215 and 5230)	9020	Solenoid Valve, 120V, 50/60Hz, 1/4 NPT, 40 SCFM (1,133 SLPM)
5902	Dual Point Hose Kit (Included with 5315 and 5330)	9021	Solenoid Valve, 200-240V, 50/60Hz, 1/4 NPT, 40 SCFM (1,133 SLPM)
9003	Manual Drain Filter Separator, 1/4 NPT, 27 SCFM (765 SLPM)	9031	NEMA 4/4X Solenoid Valve, 24VDC, 1/4 NPT, 40 SCFM (1,133 SLPM)
9004	Automatic Drain Filter Separator, 1/4 NPT, 43 SCFM (1,359 SLPM)		

# 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.



# Best Practices for Using **EXAIR**<sup>®</sup> Intelligent Compressed Air™ Products



In order to achieve the best performance of your EXAIR Intelligent Compressed Air Product, a steady flow of compressed air must be supplied at the optimal pressure. Compressor output pressure, air flow rate, piping ID (inner diameter), the smoothness of the inside of the pipe, and connector type all contribute to the performance.

## Air Compressor Capability

Especially for manufacturing uses, it is important to consider both the air pressure and air flow being produced by the air compressor providing the supply for all tooling. It is possible for an air compressor to produce sufficient supply pressure for an EXAIR product while not having adequate air flow to use the product for very long!

## Air Pressure

The optimal operating pressure for most EXAIR products is 80 PSIG, with the exception of Vortex Tube based products, which are rated at 100 PSIG. Operating EXAIR products at air pressures less than 80 PSIG may lead to lower performance, but EXAIR encourages operating any blowoff product at as low a pressure as possible to achieve your desired result. A simple pressure regulator can lower your pressure and save energy. As a general rule near the 100 PSIG level, lowering air pressure by 2 PSIG will save 1% of energy used by an air compressor. Operating the product at pressures greater than 80 PSIG may produce slightly higher performance, but will require more energy to produce only a small gain.

## Connectors and Fittings

Make sure that connectors and fittings do not restrict compressed air flow in any manner. Quick connectors can be especially problematic in this area. Because of their construction, quick connections that are rated at the same size as the incoming pipe or hose may actually have a much smaller inner diameter than that associated pipe or hose. This will significantly restrict the amount of air that is being supplied to the tool, starving it of the air flow it needs for best performance. In some cases, if the fitting is too small, the tool may not work at all!

In most cases we do not recommend any of the fittings numbered 1-5. Our minimum recommendation is represented in numbers 6-9

1	2	3	4	5	6	7	8	9
1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT	1/8" tube x 1/4 NPT
1/8" I.D.	13/64" I.D.	1/4" I.D.	1/4" I.D.	1/4" I.D.	9/32" I.D.	9/32" I.D.	9/32" I.D.	11/32" I.D.

Not Recommended

Recommended



# Best Practices for Using **EXAIR** Intelligent Compressed Air™ Products

continued

## Proper Air Pipe Sizing

In addition to all of the items above, it is also important to select the proper compressed air pipe size from the compressor to the point of use. Because the inside of a pipe is not perfectly smooth, the volume of air will become more restricted as it passes through a greater distance, thus reducing the available pressure at the point of use. To compensate for this loss, a larger diameter pipe is needed for a longer run. The table below shows the typical pressure loss in pounds per square inch for 100 feet of 1" Schedule 40 pipe. For lengths other than 100 feet, the pressure drop is proportional to the ratio of difference in lengths. For instance, the pressure drop in 50 feet of pipe will be approximately one-half the value on the table.

1" Schedule 40 Pipe - 1.049 actual I.D.								
Free Air (SCFM)	Line Pressure (PSIG)							
	40	50	60	70	80	90	100	110
50	1.66	1.33	1.11	0.95	0.83	0.75	0.66	0.60
60	2.33	1.86	1.55	1.33	1.16	1.03	0.93	0.85
70	3.09	2.47	2.06	1.77	1.55	1.37	1.24	1.12
80	3.96	3.17	2.64	2.26	1.98	1.76	1.58	1.44
90	4.92	3.94	3.28	2.81	2.46	2.19	1.97	1.79
100	5.98	4.79	3.99	3.42	2.99	2.66	2.39	2.18
125	9.04	7.23	6.03	5.17	4.52	4.02	3.62	3.29
150	-	10.13	8.44	7.24	6.33	5.63	5.07	4.61
175	-	-	-	9.63	8.42	7.49	6.74	6.13
200	-	-	-	-	10.78	9.59	8.63	7.84
225	-	-	-	-	-	-	10.73	9.75

## How to Calculate Compressed Air Consumption

**Method 1**

Air consumption is directly proportional to absolute inlet pressure

$$\frac{SCFM_2}{SCFM_1} = \frac{P_2 + 1 \text{ atmosphere}}{P_1 + 1 \text{ atmosphere}}$$

Example: A Model 3215 Vortex Tube consumes 15 SCFM at 100 PSIG (425 SLPM @ 6.9 BAR). To calculate the airflow with an inlet pressure of 80 PSIG (5.5 BAR), the calculation is as follows:

**English Units:**

$$SCFM_2 = \frac{15 \times \frac{80 \text{ PSIG} + 14.7}{100 \text{ PSIG} + 14.7}}{1}$$

**Metric Units:**

$$SLPM_2 = \frac{424.752 \times \frac{5.156 \text{ BAR} + 1.014}{6.895 \text{ BAR} + 1.014}}{1}$$

**Method 2**

Multiply the known flow by the ratio of the input pressures converted to absolute

**Step 1:** Calculate the ratio of absolute inlet pressures.

<p><b>English Units:</b></p> $\frac{80 \text{ PSIG} + 14.7}{100 \text{ PSIG} + 14.7} = 0.8256$	<p><b>Metric Units:</b></p> $\frac{5.516 \text{ BAR} + 1.014}{6.895 \text{ BAR} + 1.014} = 0.8256$
--	--

**Step 2:** Multiply known flow by the above ratio you just calculated.

<p><b>English Units:</b></p> $15 \text{ SCFM} \times 0.8256 = 12.384 \text{ SCFM}$	<p><b>Metric Units:</b></p> $424.752 \text{ SLPM} \times 0.8256 = 350.693 \text{ SLPM}$
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**Therefore**

Model 3215 consumes 15 SCFM @ 100 PSIG (425 SLPM @ 6.9 BAR) and will consume 12.4 SCFM @ 80 PSIG (351 SLPM @ 5.5 BAR).

Note: To convert SCFM to SLPM, multiply by the factor 28.3168

To convert PSIG to BAR multiply by the factor 0.0689

For more information on pipe sizing, pipe selection, conversion, and consumption, please visit our website at <https://exair.co/04-airdata> or scan this qr code provided.

