

Super Air Amplifier™

Powerful, efficient and quiet air mover for blowoff, cooling, and ventilation.



What Is The Super Air Amplifier?

EXAIR's Super Air Amplifier has a patented* design that uses a special shim to maintain critical position of the component parts. As a result, a precise amount of compressed air is released at exact intervals toward the center of the Super Air Amplifier. These jets of air create a constant, high velocity outlet flow across the entire cross-sectional area. Additional free air is pulled through the unit, resulting in higher amplification ratios. The balanced outlet airflow minimizes wind shear to produce sound levels that are typically three times quieter than other air movers.

Super Air Amplifiers are supplied with a .003" (0.08mm) slotted air gap which is ideal for most applications. Flow and force can be increased by replacing the shim with a thicker .006" (0.15mm) or .009" (0.23mm) shim. Model 120028 is supplied with a .009" (0.23mm) air gap. A .015" (0.39mm) shim is available for Model 120028.

Super Air Amplifier Performance at 80 PSIG (5.5 BAR)

MODEL	Air Consumption		Amplification RATIO	Air Volume at Outlet		Air Volume at 6" (152mm)		Sound Level dBA
	SCFM	SLPM		SCFM	SLPM	SCFM	SLPM	
120020	6.1	173	12	73	2,066	219	6,198	69
120021	8.1	229	18	146	4,132	436	12,339	72
120022	15.5	439	22	341	9,650	1,023	28,951	72
120024	29.2	826	25	730	20,659	2,190	61,977	73
120028	120	3,396	25	3,000	84,900	9,000	254,700	88

Model 120028 tested with .009" (0.23mm) shim. All other models tested with .003" (0.08mm) shim.



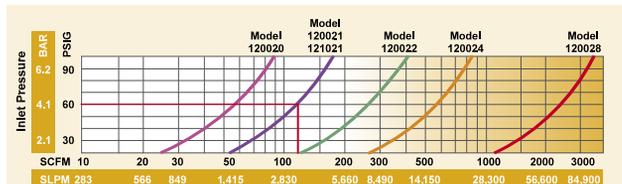
Model 120022 2" (51mm) Super Air Amplifiers and Model 1122 2" Flat Super Air Nozzles blow off transmissions after they are machined.



(2) Model 120022 2" (51mm) Super Air Amplifiers dry small parts as they move down along a parts conveyor.



(5) Model 120022 2" (51mm) Super Air Amplifiers cool truck pistons.



Total Output Flow with .003" (0.08mm) thick shim installed. Excludes downstream entrainment. Model 120028 tested with a .009" (0.23mm) shim.

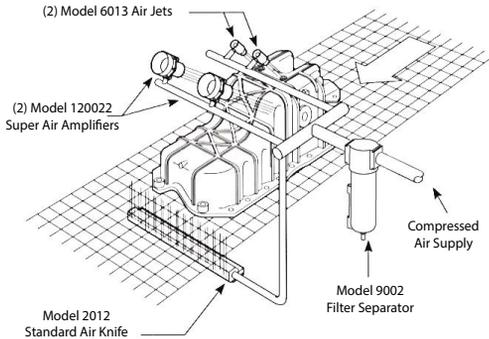
How To Determine Super Air Amplifier Total Output Flow And Air Consumption

- Total Air flow:** From the performance curves (above), determine total output flow for any Super Air Amplifier at any pressure.
- Example:** A Model 120021 at 60 PSIG (4.1 BAR) supply air pressure has a total output flow of 120 SCFM (3,398 SLPM).
- Air Consumption:** Divide the total output flow by the amplification ratio (shown in the chart) to determine air consumption for any Super Air Amplifier at any pressure.

In the example above, the Model 120021 at 60 PSIG (4.1 BAR) supply air pressure has a total output flow of 120 SCFM (3,398 SLPM). Dividing this total output flow by its amplification ratio of 18 gives an air consumption of 6.7 SCFM (189 SLPM).

*Patent #5402938

Blowoff On A Transmission Pan



The Problem: A newly designed transmission pan presented a myriad of cleaning problems for the die-caster. Because the configuration included channels and blind holes as well as smooth surfaces, a “shaped” air pattern was required for proper cleaning. No single blowoff product would fit the need. An assortment of open copper tubes and drilled pipes was considered, but was rejected as too noisy and expensive

to operate. A blower was not an option due to the high purchase price, expensive maintenance costs and frequent downtime.

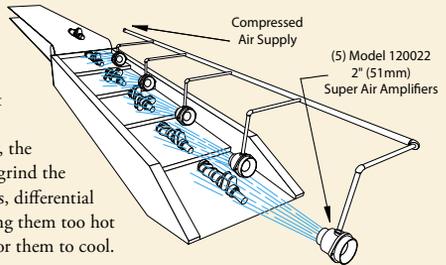
The Solution: With help from our Application Engineers, the company created a cleaning system incorporating a variety of EXAIR blowoff products. (2) **Model 6013 High Velocity Air Jets**, with their confined airstream, cleared the blind holes, while (2) **Model 120022 2" (51mm) Super Air Amplifiers** cleaned the channels. A **Model 2012 12" (305mm) Standard Air Knife** was positioned to blow out the casting’s underside.

Comment: There’s no doubt that the casting could have been cleaned just as well by hooking up a bunch of open copper tubes and throwing a ton of air at it. But, at what cost? EXAIR makes a variety of blowoff products because parts come in a variety of shapes and sizes. **And, our products operate at a fraction of the air consumption and noise levels associated with open air jets.** When you need to clean, cool, or dry with air, and you’d like to minimize dollars and decibels, EXAIR can help.

Air Amplifiers

Super Air Amplifier Cools Iron Castings

The Problem: A foundry that produces iron castings for the automotive industry had a problem with certain hot parts that slowed their production. After pouring, the castings gradually cool by traveling along a 200 foot long conveyor. At the end, a shake-out conveyor breaks the sand mold so the casting can be removed. Normally, the operator could pick up the part with special gloves and grind the rough edges. However, some castings such as crankshafts, differential housings, and shift parts retained too much heat, making them too hot to handle. The operator had to wait up to ten minutes for them to cool.

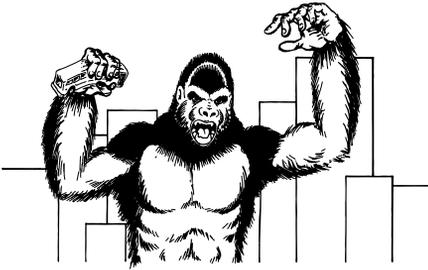


The Solution: They installed (5) **Model 120022 2" (51mm) Super Air Amplifiers** over the shake-out conveyor. The high output airflow from each Super Air Amplifier rapidly cooled the parts without shocking them (no cracks or imperfections from cooling too rapidly). **When the part reached the end of the conveyor, the operator could proceed immediately.** The backlog was completely eliminated.

Editor’s Comment: This manufacturer had almost given up on finding a cooling solution since the fans and blowers that were tried in the past showed little improvement. Our Super Air Amplifier dramatically reduced the cooling time. As a result, they installed them on their second line. The low cost Super Air Amplifiers are compact, portable and have no moving parts to wear out (which is ideal in a dusty foundry). **And, the patented design assures the highest output air volumes possible with the lowest air consumption.**

Super Air Amplifiers

Roaring Banana Breath



The Problem: A company that designs major attractions for theme parks created a huge gorilla to startle the patrons. The animators wanted the oversized ape to appear as “life-like” as possible. To accomplish this, they used a series of motors and cylinders to make the movement of the eyes, hands, arms and torso appear realistic. They also installed a large speaker system to play an audio sample of a loud roar that matched his mammoth size. The finishing touch was to find a way to create a powerful blast of air that smelled like bananas each time the big ape’s mouth opened. Attempts using an electrically powered blower

proved unsuccessful due to the noise and the inability to obtain an “instant on” blast of air.

The Solution: They installed a tank of banana extract in his tummy and connected it to his mouth with a **Model 120028 8" (203mm) Super Air Amplifier**. As the spectators moved into position, a sensor activated the electronics, setting “Old Banana Breath” (name given by the designers) into motion. With a swift movement toward the crowd, his mouth opens and the **Super Air Amplifier provides an instantaneous blast of high velocity air (filled with banana fumes) at them.**

Comment: Why did the engineers select the Super Air Amplifier? First, simplicity. There are no moving parts to wear out or require maintenance. It uses only filtered compressed air as the power source. Second is the big instantaneous blast of high volume, high velocity airflow that couldn’t be obtained using a blower or air nozzles. When it comes to special effects, Super Air Amplifiers are the way to go. When you watch the movies or visit the theme parks and see fast moving fog, smoke effects, or objects flying through the air, chances are a Super Air Amplifier is being used.

Cleaning Brake Rotors

The Problem: An automotive machine shop that manufactures brake rotors was having problems with chip build-up inside the part. They tried compressed air tubing flattened on their ends with little success. This resulted in high compressed air usage, high sound levels, and danger to their employees.

The Solution: A **Model 120021 1-1/4" (32mm) Super Air Amplifier** was substituted for the tubing. It provided a larger pattern of air, used less compressed air, the sound level was substantially lower, and it couldn’t be dead ended.

Comment: Bent tubing or drilled pipe are inexpensive and easy to make. However, the initial cost is overshadowed by its high energy use; holes can be blocked and noise level is excessive – both of which are OSHA violations. EXAIR’s Super Air Amplifiers are compact and dependable since there are no parts to wear out. Our patented design moves the most airflow possible while using the smallest amount of compressed air. The lower sound level was another bonus!



The Problem:

Model 120021 1-1/4" (32mm) Super Air Amplifier blows off parts and lowers sound levels.

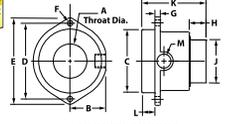


The Solution:

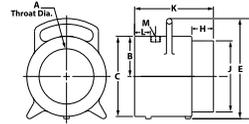
Super Air Amplifier Dimensions

Super Air Amplifier Dimensions													
MODEL #		A	B	C	D	E	F	G	H	J	K	L	M
120020	in	0.45	0.75	0.98	1.77	2.28	0.20	0.18	0.53	0.73	2.50	0.59	1/8
	mm	11	19	25	45	58	5	5	13	19	64	15	NPT
120021	in	0.84	0.94	1.50	2.40	3.03	0.27	0.21	0.75	1.22	2.88	0.59	1/4
	mm	21	24	38	61	77	7	5	19	31	73	15	NPT
120022	in	1.64	1.69	2.95	3.58	4.14	0.27	0.25	0.75	2	3	0.62	3/8
	mm	42	43	75	91	105	7	6	19	51	76	16	NPT
120024	in	3.02	2.81	4.91	6.89	8.42	0.55	0.55	1.75	3.97	4.75	0.94	1/2
	mm	77	71	125	175	214	14	14	44	101	121	24	NPT
120028	in	6.20	4.50	9	---	11.25	---	---	2.44	8	8.94	2.38	3/4
	mm	157	114	229	---	286	---	---	62	203	227	60	NPT

DOWNLOAD drawings at EXAIR.com



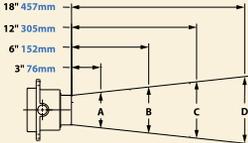
Model 120020-120024



Model 120028

Air Amplifiers

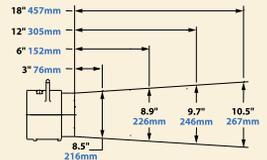
Airflow Pattern



MODEL #	A	B	C	D	
120020	in	1.25	2.2	4.1	6
	mm	32	56	104	152
120021	in	2	2.9	4.7	6.5
	mm	51	74	119	165
120022	in	2.75	3.55	5.15	6.75
	mm	70	90	131	171
120024	in	4.5	5.3	6.9	8.5
	mm	114	135	175	216

Airflow Pattern

Model 120028



Super Air Amplifier Models

Super Air Amplifier Only

Super Air Amplifier Kits - include a Super Air Amplifier, shim set, filter separator and pressure regulator (with coupler).

Deluxe Super Air Amplifier Kits - include a Super Air Amplifier, EFC, shim set, filter separator and pressure regulator (with coupler).

Super Air Amplifier Shim Sets - include (1) .006" (0.15mm) and (1) .009" (0.23mm) stainless steel shims (except 8" which include (1) .015" (0.39mm) stainless steel shim).

Outlet Diameter	Super Air Amplifier Only Model	Super Air Amplifier Kit Model	Deluxe Super Air Amplifier Kit Model	High Temperature Air Amplifier Only Model	High Temperature Air Amplifier Kit Model	Super Air Amplifier Shim Set Model
3/4" (19mm)	120020	120220	120220DX	N/A	N/A	120320
1-1/4" (32mm)	120021	120221	120221DX	121021	121221	120321
	120022	120222	120222DX	N/A	N/A	120322
4" (102mm)	120024	120224	120224DX	N/A	N/A	120324
8" (203mm)	120028	120228	120228DX	N/A	N/A	120328



Kits include a Super Air Amplifier, shim set, filter separator and pressure regulator (with coupler).



Order EXAIR's EFC™ electronic flow control to minimize compressed air use. See page 7 for details.



Accessories

Model #	Description
9001	Auto Drain Filter Separator, 3/8 NPT, 65 SCFM (1,841 SLPM)
9032	Auto Drain Filter Separator, 1/2 NPT, 90 SCFM (2,549 SLPM)
9002	Auto Drain Filter Separator, 3/4 NPT, 220 SCFM (6,230 SLPM)
9005	Oil Removal Filter, 3/8 NPT, 15-37 SCFM (425-1,048 SLPM)
9006	Oil Removal Filter, 3/4 NPT, 50-150 SCFM (1,416-4,248 SLPM)
9008	Pressure Regulator with Gauge, 1/4 NPT, 50 SCFM (1,416 SLPM)
9033	Pressure Regulator with Gauge, 1/2 NPT, 100 SCFM (2,832 SLPM)
9009	Pressure Regulator with Gauge, 3/4 NPT, 220 SCFM (6,230 SLPM)

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