BLOW OFF SOLUTIONS

VORTEC

AIR NOZZLES • AIR FLOW AMPLIFIERS

AIR JETS • AIR KNIVES

Vortec Air Nozzles

Dramatically Reduce Compressed Air Consumption

Vortec engineered blow off nozzles significantly reduce compressed air consumption and noise, compared to open nozzle jets. Using proven amplification technology, Vortec nozzles entrain and accelerate free surrounding air, resulting in air flow volume up to 25 times more than the volume of compressed air, giving 25 times the blow off capacity at a significantly reduced energy usage and lower operating cost. Vortec nozzles also reduce noise levels by as much as 60%.

Vortec nozzles are available in a full range of designs, materials of construction, sizes and force/thrust levels compatible with most installations; capable of replacing open copper tubes, flex-line, drilled pipe and other nozzles that are not designed to save air. Worker safety standards are met as well, as Vortec safety air nozzles are compliant with OSHA 1910.242(b) dead-end pressure regulations.

Features

- Meet OSHA noise guidelines; reduce noise compared to open copper tubes or drilled pipe
- Meet OSHA 1910.242(b) dead-end pressure guidelines
- Power and thrust levels ranging from 3 to 72 oz/force (85 to 2,041 g-force)
- Air stream diameters at nozzle ranging from 3/16” to 1” (5 to 25.4 mm)

Benefits

- Up to 25 times more blow off power
- Reduce operating costs by up to 80%
- Reduce noise levels by as much as 60%
- Reach tight spaces with effective blow off
- Blow off multiple or changing locations with flexible nozzles
- Save time with better blow off capability

Air Nozzle Applications

- Blow off cleaning
- Cooling
- Parts drying
- Air-assist in moving or orienting position of parts or product
- Replacing open copper tubes and pipes for blow-off
- Energy conservation programs for blow off operations
- OSHA compliance programs for compressed air nozzles
- Ejection parts or cut-outs from dies and molds

Vortec Nozzles are an excellent replacement for open copper tubes, flex-line and other nozzles not designed to save air. A full range of styles, with designs compatible to most applications, is available. All nozzles provide conical air flow pattern.

Model No.	Description	Thrust: oz at 12" (g at 305mm)	Air Consumption SCFM (SLPM)	Features
1200 Nozzle **1200 SS Nozzle** 	Adjustable output flow and thrust, 1/8" NPT(M) inlet "Durablast" Nozzle	3 to 21 (85 to 205)	8 to 26 (226 to 736)	Threaded connection is ideal for installing on blow guns and manifolds. Adjustable micrometer dial sets airflow and thrust Available in aluminum (1200) or stainless steel (1200 SS).
9401 Blow Gun 	Blow Gun with adjustable output model 1200 nozzle, 1/4" NPT(F) inlet	3 to 21 (85 to 205)	8 to 26 (226 to 736)	Thumb lever operated blowgun with model 1200 adjustable output "Durablast" nozzle.
1201 Nozzle 	1/4" OD, copper tubing	6 (170)	9 (255)	Compact size. Permanently mounted on copper tubing which can be bent, flared, used with compression fittings or soldered.
1201F-12 	3/8" OD, flexible rubber hose, 1/8" NPT(M) inlet	6 (170)	9 (255)	Compact size. Permanently mounted on flexible hose. Holds position under full line pressure. Ideal for areas with limited space.
1202 Nozzle 	1/4" OD, copper tubing, high thrust	20 (596)	23 (651)	Compact size. Permanently mounted on copper tubing which can be bent, flared, used with compression fittings or soldered.
1203 Nozzle 	3/8" OD, copper tubing	9 (255)	13 (368)	Permanently mounted on copper tubing which can be bent, flared, used with compression fittings or soldered.
1204 Nozzle 	1/2" OD,flexible rubber hose, 1/8" NPT(M) inlet	9 (255)	13 (368)	Permanently mounted on flexible hose. Holds position under full line pressure. Ideal for areas with limited space. Efficient replacement for flex-line used for blowoff.
1205 Nozzle 	3/8" OD, copper tubing, high thrust	28 (794)	31 (877)	Permanently mounted on copper tubing which can be bent, flared, used with compression fittings or soldered.
1206 Nozzle 	11/16" OD, high thrust, flexible rubber hose, 1/4" NPT(M) inlet	28 (794)	31 (877)	Permanently mounted on flexible hose. Holds position under full line pressure. Ideal for areas with limited space. Efficient replacement for flex-line used for blowoff.
1220 Nozzle 	3/4" NPT(M) inlet, maximum thrust	72 (2,041)	120 (3,396)	Threaded connection. Ideal for maximum thrust applications such as large surface blowoff. Perfect for paving, roofing and construction uses.

Specifications are at 100 psig (6.9 bar) except 1220 nozzle is at 40 psig (2.7 bar).

Airstream Diameter	1200, 1200 SS		1201, 1202, 1201F-12		1203, 1204, 1205, 1206		1220	
At Nozzle	5/8"	16 mm	3/16"	5 mm	1/4"	6 mm	1"	25.4 mm
12" From Nozzle	3 1/2"	89 mm	3 1/4"	82 mm	3 1/4"	82 mm	5"	127 mm

Vortec Air Flow Amplifiers

Amplify Compressed Air Volumes up to 20 Fold

Air Flow Amplifiers deliver a large airflow for conveying, drying, cooling or ventilation. These high flow, bladeless blowers have no moving parts so they are inherently safe. They amplify compressed air volumes by 5–20 fold in ducted applications. They are especially useful for removing metal chips and scrap, ventilating fumes or smoke, and conveying small parts, pellets, powders and dust.

As a vacuum or blow-off device, air amplifiers are more compact and less expensive than variable-speed blowers and fans, provide instant on/off performance, and operate at low noise levels to meet OSHA requirements. Air Flow Amplifiers are easily mounted and can be used in both ducted and unducted applications. They are available in several sizes, both aluminum and stainless steel and deliver flow rates from 32 to 2,300 SCFM.

Features

- Amplify compressed air volumes by 5–20 fold in ducted applications; and up to 60 fold in unducted applications
- Adjustable airflow and output
- Quiet — meets OSHA noise requirements
- Easily mounted, ducted and moved
- No electrical requirements at target
- Instant on/off performance
- Easily adapts for smoke and fume control, vacuum or blow off
- Available in stainless steel and aluminum

Benefits

- Increase production rates by removing smoke, dust and debris
- Improve quality through better weigh sorting of under-filled or underweight capsules and parts
- Reduce compressed air usage vs open nozzles
- Lower cost as compared to fans or blowers
- Increase application mobility, compared to large fans and blowers
- Improved safety and eliminate shock hazards, with no moving parts, electricity or motors

Air Amplifier Applications

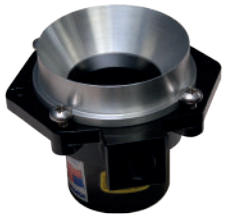
- Convey or Blow lightweight materials such as:
  - Grain
  - Plastic Pellets
  - Sawdust
  - Powders
  - Capsules
  - Metal chips
  - Paper trim
  - Cloth trim
  - Dust
  - Small parts
  - Plastic parts
  - Scrap
- Ventilate and exhaust welding fumes, soldering and machine smoke, auto exhaust, tank fumes and other gases
- Cool, clean or dry molded parts, castings, food products, etc.
- Weigh-sort pharmaceuticals and other light materials

Aluminum
Air Flow Amplifiers

Air flows are at the standard factory setting and at 100 psig (6.9 bar) inlet pressure.

Flows are adjustable via shim substitution.

MODEL 902



MODEL 903

MODEL 904

Amplification	12:1		19:1		20:1	
Air Consumption	17 scfm	482 slpm	25 scfm	708 slpm	71 scfm	2,012 slpm
Ducted Output	204 scfm	5,773 slpm	475 scfm	13,443 slpm	1,420 scfm	40,186 slpm
Throat Diameter	0.79”	20 mm	1.6”	40 mm	3”	76 mm
Suction End Throat Diameter	1.75”	44 mm	2.75”	70 mm	5.00”	127 mm
Output End Throat Diameter	1.25”	32 mm	2.00”	51 mm	4.00”	102 mm
Compressed Air Inlet NPT(F)	1/4” - 18		3/8” - 18		1/2” - 14	

Adjustable Stainless Steel
Air Flow Amplifiers

Air flows are at the standard factory setting and at 100 psig (6.9 bar) inlet pressure.

Flows are adjustable via rotation of the output end “barrel”.

MODEL 901XSS

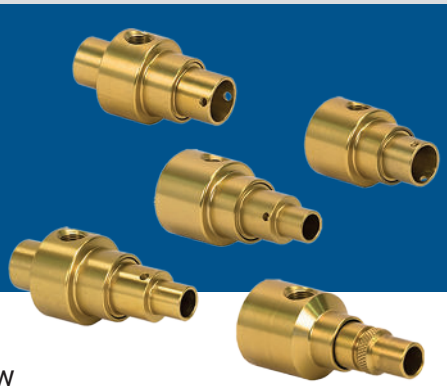
MODEL 902XSS

MODEL 903XSS

Amplification	5:1		12:1		19:1	
Air Consumption	9 scfm	255 slpm	17 scfm	482 slpm	25 scfm	708 slpm
Ducted Output	45 scfm	1,358 slpm	204 scfm	5,773 slpm	475 scfm	13,443 slpm
Throat Diameter	0.39”	10 mm	0.79”	20 mm	1.57”	40 mm
Suction End Throat Diameter	1.00”	25 mm	1.50”	38 mm	2.50”	64 mm
Output End Throat Diameter	0.79”	20 mm	1.19”	30 mm	1.97”	50 mm
Compressed Air Inlet NPT(F)	1/8” - 27		1/4” - 18		3/8” - 18	

Vortec Air Jets

Amplify Compressed Air Volumes up to 4 Times



Jets are round-throated air flow amplifiers: one end provides a strong airflow while the other creates suction as free air is entrained. As the free air is entrained, jets amplify air volume up to 4 times more than the compressed air supplied, resulting in less compressed air usage to deliver the same or greater thrust performance.

Jets are designed to reduce compressed air consumption and noise drastically as compared to open jets, copper tubes, and iron or steel pipes without an engineered nozzle. Perfect for all types of blow off, conveying, cooling, and drying applications, jets are available in a variety of high and low thrust models. Since they output a more concentrated, targeted volume of air than nozzles, they are ideal for water, solvents or light oil stripping applications. Additionally, because they deliver a precise air flow, jets are ideal for parts movement and ejection, with a focused air flow targeted directly on the parts being moved or ejected. Vortec Air Jets meet OSHA specifications for noise and dead-end pressure.

Features

- Wide range of designs and force/thrust levels
- Several suction and outlet options
- Adjustable jets enable varying power/thrust levels for each application
- Power/thrust levels ranging from 2–17 oz-force
- Air stream sizes at nozzle ranging from 3/16” to 1”
- Low noise levels, ranging from 65 to 80 dBA
- Output thrust can be varied on all 901 units by changing or adding an internal shim. Larger shims give more blow off force.

Benefits

- Convey small parts without motors or pumps
  - No spark hazard
- Save time with better blow off capability
- Up to 4 times blow off power compared to compressed air alone
- Reduce operating costs due to compressed air usage by up to 75%
- Reduce noise levels by up to 70% compared to non-amplifying jets

Air Jet Applications

- Weigh sorting
- Parts drying
- Waste or trim removal
- Vacuum generation
- Blow off cleaning
- Cooling
- Conveying small parts or materials
- Ejection of parts or cut-outs
- Fume extraction

The compressed air inlet size for all models is 1/8" - 27 female NPT. All Air Jets are anodized aluminum and can be shimmed (except Model 909A) to vary the output thrust, suction and air consumption. Thrust and air consumption specifications are at 100 psig (6.9 bar). Amplification is 4:1.

Model No.	Thrust: oz at 12" (g at 305mm)	Air Consumption SCFM (SLPM)	Airstream Diameter	
			At Jet	12" from Jet
909A Air Jet, easily adjustable output	2 to 17 (57 to 482)	5 to 21 (142 to 594)	3/8" (10 mm)	3" (76 mm)
901A Air Jet	6 (170)	8 (226)	5/8" (16 mm)	3 1/2" (89 mm)
901BA Air Jet, for conveying applications, 3/4" (19 mm) diameter suction and discharge	6 (170)	8 (226)	5/8" (16 mm)	3 1/4" (83 mm)
901DA Air Jet, high-thrust	14 (397)	17 (481)	3/8" (10 mm)	3" (76 mm)
901HA Air Jet, high thrust, 3/4" (19 mm) diameter suction connection	14 (397)	17 (481)	3/8" (10 mm)	3" (76 mm)

901A and 901BA

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (in H_2O)	Dead-end Pressure (in H_2O)
40	3.4	22	44
60	5.0	36	75
80	6.5	52	108
100	8.0	65	141

901DA and 901HA

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (in H_2O)	Dead-end Pressure (in H_2O)
40	7.9	65	123
60	11.1	103	197
80	14.3	142	249
100	17.0	169	228

909A Set at "2"

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (in H_2O)	Dead-end Pressure (in H_2O)
40	2.6	13	13
60	3.1	36	66
80	4.1	47	94
100	5.3	57	129

909A Set at "10"

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (in H_2O)	Dead-end Pressure (in H_2O)
40	9.3	94	185
60	13.1	117	298
80	16.4	162	441
100	21.0	190	586

Vortec Air Knives

High velocity, laminar sheet of air

Air Knives deliver a flat sheet or curtain of amplified air designed to:

- Efficiently blow off water and debris from wide surfaces
- Provide high speed drying or cooling

Air Knives are air amplifiers, using a small amount of filtered compressed air to deliver a powerful, high velocity, laminar sheet of air over wide areas such as moving webs, film, sheets, strips, auto bodies, and other large assemblies and objects. Vortec's patented design produces increased thrust and velocity, reduced noise, and excellent uniformity.

Features

- More uniform blow off of large surfaces than nozzles or jets
- Dries surfaces quickly and thoroughly
- Costs significantly less than fans or blowers
- Inherently safe, with no electricity or rotating equipment
- Reduced compressed air usage, versus open nozzles or pipes
- Easily controlled output via a pressure regulator
- Quiet - meets OSHA requirements
- No electrical connections at the target site
- Easily mounted and moved
- Give a cleaner surface for painting or coating

Benefits

- 25 times air amplification over compressed air input
- High performance, patented design gives high thrust
- Interchangeable shims enable air flow to be adjusted for the specific application
- Air Knives are available in lengths of 3, 6, 12, 18 and 24 inches
- Single compressed air inlet up to 12 inch length; two inlets on longer models
- Instant on/off
- No moving parts; no maintenance
- Quiet - meets OSHA noise specifications

Air Knife Applications

- Blow off of wood, laminates, metal sheets, moving webs, sheets, autobodies, and large objects
- Surface cooling of metal, electronics, etc.
- Shrink wrapping
- Food processing
- Cooling molded parts and castings
- Weigh sorting of pharmaceuticals and other lightweight items
- Drying printing inks
- Creating air curtains
- Containment of fumes

Air Knife Models	921-3	921-6	921-12	921-18	921-24
Effective Length	3”	6”	12”	18”	24”
Overall Length	3 11/32” (85 mm)	6 11/32” (161 mm)	12 11/32” (313 mm)	18 11/32” (466 mm)	24 11/32” (618 mm)

Air Knife Performance Specifications

STANDARD

Pressure PSIG	Air Consumption (SCFM) Air knife length:					Air Velocity at Distance from Outlet (ft/min)			Thrust* per in. (oz)
	3”	6”	12”	18”	24”	2”	6”	12”	
30	6	11	23	34	45	12,500	5,100	3,700	1.2
40	7	14	29	43	58	14,400	7,100	4,600	1.7
50	9	17	35	52	70	16,200	8,400	5,800	2.3
60	10	20	40	60	80	17,000	9,900	6,700	2.8
70	12	23	46	69	92	17,800	10,600	7,600	3.4
80	13	26	52	78	104	18,600	12,200	8,400	3.9
90	14	29	57	86	114	19,400	13,200	9,200	4.4
100	16	32	64	95	127	20,200	14,200	10,000	4.9

*At 12” from Air Knife outlet (e.g. a 12” Air Knife at 50 PSIG will produce 2.3 x 12 = 27.6 oz of thrust)

METRIC

Pressure BAR	Air Consumption SLPM Air knife length:					Air Velocity at Distance from Outlet (m/s)			Thrust* per cm. (g)
	7.6 cm	15 cm	31 cm	46 cm	61 cm	5 cm	15 cm	31 cm	
2.1	162	323	642	965	1,285	64	26	19	14
2.8	204	408	815	1,223	1,630	73	36	23	19
3.5	246	492	985	1,477	1,970	82	43	29	25
4.1	284	569	1,138	1,707	2,275	86	50	34	31
4.8	325	651	1,302	1,953	2,604	90	54	39	38
5.5	368	736	1,472	2,207	2,943	94	62	43	44
6.2	404	807	1,613	2,420	3,226	99	67	47	49
6.9	450	900	1,800	2,700	3,600	103	72	51	55

*At 30 cm from Air Knife outlet (e.g. a 31 cm Air Knife at 3.5 bar will produce 25 x 31 = 775 g of thrust)

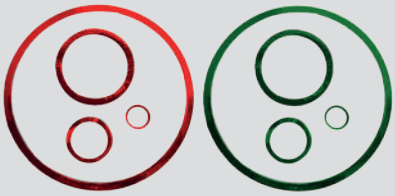
About Vortec

In 1961, Vortec became the first company to develop technology for converting the vortex tube phenomenon into practical, effective industrial cooling solutions. Since then, Vortec has continued to refine and expand vortex tube applications, as well as develop air amplification products for more efficient use of compressed air in cleaning and conveying applications.

With over 60 years of industry experience combined with the strong global foundation of ITW, Vortec is the preferred solution for compressed air applications around the world.

Blow Off Accessories

SHIMS



902-002
903-002
904-002

902-003
903-003
904-003

FILTERS

NPT Product #	701S-24A	701S-40A	701S-48	701S-54
BSP Product #	703S-24A	703S-40A	703S-48	703S-54
Max Airflow	25 scfm	150 scfm	25 scfm	70 scfm

PRESSURE REGULATORS

208R

208RX

Annual Blowoff Cost Calculation Guide

Use these formulas to determine and compare the annual operating cost of your current blow off method versus Vortec blow off products.

QUICK METHOD:

Assuming:

- 100 psig (6.9 bar) operating pressure
- $0.30 per 1000 SCF compressed air cost
- 250 work days/year

For other operating conditions, follow these calculations:

___ SCFM x 60 minutes = ___ SCFH
___ SCFM x ___ Hours of operation/Day = ___ SCF/Day
___ SCF/day x ___ Days of operation/Year = ___ SCF/Year
___ SCF/year x 1000 SCF = $___ Annual operating cost

Calculate operating cost/shift by multiplying air consumption (SCFM) by 36.

Example: **9 SCFM** (AIR CONSUMPTION) **X 36 = $324** (ANNUAL OPERATING COST)

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