VORTEC

Blow Off Solutions

Air Amplifiers • Air Jets • Air Nozzles • Air Knives • Spray Nozzles

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VORTEC Air Nozzles

Drastically 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/thrust levels ranging from 3 – 72 oz-force
- Air stream sizes at nozzle ranging from 3/16” to 1”

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
- OSHA compliance programs
- Ejection parts or cut-outs from dies and molds

VORTEC Air Nozzles

Drastically Reduce Compressed Air Consumption

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.

Nozzles

Model No.	Description	Thrust (Power) Oz at 12"	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	8 (226) to 26 (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(120055).
9401 Blow Gun	Blow Gun with adjustable output model 1200 nozzle, 1/4" NPT(F) inlet	3 to 21	8 (226) to 26 (736)	Thumb lever operated blowgun with model 1200 adjustable output "Durablast" nozzle.
1201 Nozzle	1/4" OD, copper tubing	6	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	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	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	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	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	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	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	120 (3396)	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 Size

Model No.	At Nozzle		12" From Nozzle	
1200, 1200 SS	5/8"	16 mm	3-1/2"	89 mm
1201, 1202, 1201F-12	3/16"	5 mm	3-1/4"	82 mm
1203, 1204, 1205, 1206	1/4"	6 mm	3-1/4"	82 mm
1220	1"	25.4 mm	5"	127mm

VORTEC Air Flow Amplifiers

Amplify Compressed Air Volumes Up To 60 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 and up to 60 fold in unducted 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 2300 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
- 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, casting, food products, etc.
- Weigh sort pharmaceuticals and other light materials

VORTEC Air Flow Amplifiers

Amplify Compressed Air Volumes Up To 60 Fold

Standard Air Flow Amplifiers

MODEL 902

MODEL 903

MODEL 904

SPECIFICATIONS

Model No.	Amplification	Air Consumption SCFM	Air Consumption SLPM	Ducted Output SCFM	Ducted Output SLPM	Throat Diameter inch	Throat Diameter mm	Suction End Throat Diameter inch	Suction End Throat Diameter mm	Output End Throat Diameter inch	Output End Throat Diameter mm	Compressed Air Inlet NPT(F)
902	12:1	17	482	204	5773	0.79	20	1.75	44	1.25	32	1/4" - 18
903	19:1	25	708	475	13443	1.6	40	2.75	70	2.00	51	3/8" - 18
904	20:1	71	2012	1420	40186	3	76	5.00	127	4.00	102	1/2" - 14

Air flows are at the standard factory setting and at 100psig (6.9 bar) inlet pressure.
Flows are adjustable via shim substitution.

Adjustable Stainless Steel Air Flow Amplifiers

MODEL 901XSS

MODEL 902XSS

MODEL 903XSS

SPECIFICATIONS

Model No.	Amplification	Air Consumption SCFM	Air Consumption SLPM	Ducted Output SCFM	Ducted Output SLPM	Throat Diameter inch	Throat Diameter mm	Suction End Throat Diameter inch	Suction End Throat Diameter mm	Output End Throat Diameter inch	Output End Throat Diameter mm	Compressed Air Inlet NPT(F)
901XSS	5:1	9	255	45	1358	0.39	10	1.00	25	0.79	20	1/8" - 27
902XSS	12:1	17	482	204	5773	0.79	20	1.50	38	1.19	30	1/4" - 18
903XSS	19:1	25	708	475	13443	1.57	40	2.50	64	1.97	50	3/8" - 18

All 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".

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 Jets meet OSHA specification 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. Contact Vortec for details

Benefits

- Convey small parts without motors or pumps
- 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

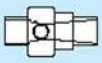
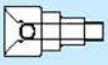
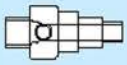
Air Jet Applications:

- 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

VORTEC Air Jets

Amplify Compressed Air Volumes Up To 4 Times

Amplification 4:1

Model No.	Description	Thrust (Power) Oz at 12"	Air Consumption SCFM (SPLM)
909A Jet 	Air Jet, Easily adjustable output	2 to 17	5-21 (142-594)
901A Jet 	Air Jet	6	8 (226)
901BA Jet 	Air Jet, for conveying applications, 3/4" (19 mm) diameter suction and discharge	6	8 (226)
901DA Jet 	Air Jet, high thrust-forced outpu	14	17 (481)
901HA 	Air Jet, high thrust, 3/4" (19 mm) diamter suction connection	14	17 (481)

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

909A Jet

901A Jet

901BA Jet

901DA Jet

901HA

Airstream Size

Model No.	At Jet	12" from Jet
909A	3/8" (10 mm)	3" (76 mm)
901A	5/8" (16 mm)	3-1/2" (89 mm)
901BA	5/8" (16 mm)	3-1/4" (83 mm)
901DA	3/8" (10 mm)	3" (76 mm)
901HA	3/8" (10 mm)	3" (76 mm)

901A and 901BA

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (inches of H2O)	Dead-end Pressure (inches of H2O)
40	3.4	22	44
60	5.0	36	76
80	6.5	52	108
100	8.0	65	141

901BA and 901HA

Pressure (psig)	Air Consumption (scfm)	Dead-end Vacuum (inches of H2O)	Dead-end Pressure (inches of H2O)
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 (inches of H2O)	Dead-end Pressure (inches of H2O)
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 (inches of H2O)	Dead-end Pressure (inches of H2O)
40	9.3	94	185
60	13.1	117	298
80	16.4	162	441
100	21.0	190	586

VORTEC Air Knives and Ionizing Air Knives

High velocity, laminar sheet of air

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

- **Efficiently blow off water and debris from wide surfaces**
- **Provide high speed drying or cooling**
- **Kill static, with an added static neutralizing bar on the Ionizing Air Knife**

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.

Ionizing Air Knives add a static neutralizing bar, to discharge static to clean surfaces of dust, shavings and debris more effectively. The static neutralizing bar generates positive and negative charged ions that are carried to the target in a uniform sheet of amplified air. Ionizing Air Knives kill the static build up that can attract dust and contaminants that ruin a painted or coated surface; and stop static discharges which can damage electronic equipment and shock personnel.

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
- 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 (3" not available in Ionizing)
- 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

VORTEC Air Knives

High velocity, laminar sheet of air

Air Knife Models: OAL - Overall Length

EFFECTIVE LENGTH	ALUMINUM MODEL	LENGTH (mm)	IONIZING MODEL	LENGTH (mm)
3"	921-3	3 11/32" (85)	-	– –
6"	921-6	6 11/32" (161)	981-6	7" (178)
12"	921-12	12 11/32" (313)	981-12	13" (330)
18"	921-18	18 11/32" (466)	981-18	19" (483)
24"	921-24	24 11/32" (618)	981-24	25" (635)

Cool, Clean, Dry or Neutralize Static While Reducing Air Consumption and Noise

Power Supply Units:
A power supply unit is required to operate Ionizing Air Knives. Based on the number of ionizing bars needed, choose from two or four cable models.
Both models are rated at:
115V, 50/60Hz input; 7.0kV output.

Air Knife Performance Specifications

PRESSURE PSIG	AIR CONSUMPTION (SCFM) 3"	6"	12"	18"	24" (AIR KNIFE LENGTH)	VELOCITY AT DISTANCE FROM OUTLET (FT./MIN.) 2"	6"	12"	THRUST* PER IN. (OZ.)
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.)

STANDARD AIR KNIFE

Air Knife Performance Specifications (METRIC)

PRESSURE BAR	AIR CONSUMPTION (SCFM) 7.6CM	15CM	31CM	46CM	61CM (AIR KNIFE LENGTH)	VELOCITY AT DISTANCE FROM OUTLET (M / S) 5CM	15CM	31CM	THRUST* PER CM. (G)
2.1	162	323	642	965	1285	64	26	19	14
2.8	204	408	815	1223	1630	73	36	23	19
3.5	246	492	985	1477	1970	82	43	29	25
4.1	284	569	1138	1707	2275	86	50	34	31
4.8	325	651	1302	1953	2604	90	54	39	38
5.5	368	736	1472	2207	2943	94	62	43	44
6.2	404	807	1613	2420	3226	99	67	47	49
6.9	450	900	1800	2700	3600	103	72	51	55

* At 30 cm. from Air Knife outlet.

IONIZING AIR KNIFE

VORTEC Spray Nozzles

Provides Ultra-Fine, Controlled Spray

Vortec Spray Nozzles provide ultra-fine droplet-sized sprays for evaporative cooling, atomization, humidification and wetting. Superior to conventional hydraulic and piezoelectric nozzles, Spray Nozzles produce spray patterns that can be widely diffused or directed. The liquid stream is entrained by high velocity compressed air to create a range of micron-level spray droplets, resulting in greater surface coverage than conventional nozzles.

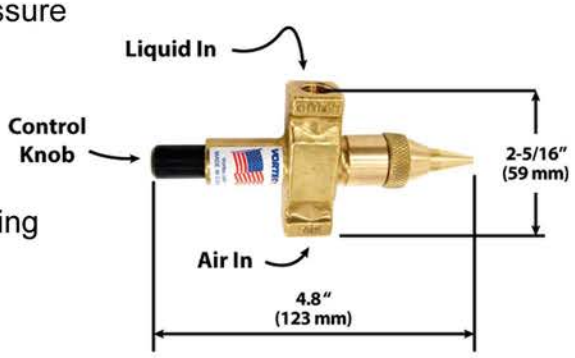
With this more efficient use of the liquid, Spray Nozzles accelerate air-liquid interaction to give more effective cooling, humidifying, wetting and dust control.

Features

- Produce controlled, ultra-fine droplet sizes
- Removable nozzle tips for easy cleaning and replacement
- Interchangeable nozzle tips give flexibility for fogging, atomizing and humidifying
- Can be used with a wide viscosity range of 1 – 1100 cPs
- Deliver a wide range of liquid flow rates (6 – 30 gallons per hour)
- Require no electrical connection at the nozzle
- Allow low pressure liquid supply (2 – 20 psig)
- Use only 12 scfm of compressed air
- Liquid entrainment using compressed air minimizes clogging

Benefits

- More efficient use of liquid as it is entrained by the compressed air
- Consistent, effective cooling of surfaces reduces heat distortion of parts
- Eliminates damage to wood and other water sensitive surfaces due to low humidity
- Provides even coverage when applying coatings, rust inhibitors, lubricants, preservatives, etc. to parts, wood, rubber, plastic, food, and more
- Reduces noise levels
- Speeds testing for humidity effects due to varying humidity levels
- High pressure liquid flows are not required
- Precise. adjustable flow rates minimize usage of expensive coatings, preservatives, rust inhibitors, etc.
- Produce finer drops than with hydraulic nozzles
- Droplet size and production is not dependent on liquid pressure
- Air and liquid mix externally to minimize clogging



Air Knife Applications:

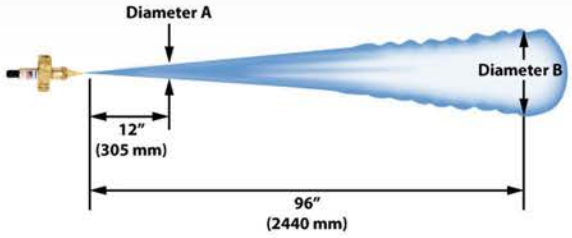
- Evaporative Cooling
- Mist Cooling
- Moisturization
- Dust Suppression
- Static Neutralization
- Pressure Spray Cleaning
- Humidification
- Sanitizing or Deodorizing
- Wetting
- Lubrication
- Atomizing
- Spray Applications

VORTEC Spray Nozzles

Provides Ultra-Fine, Controlled Spray

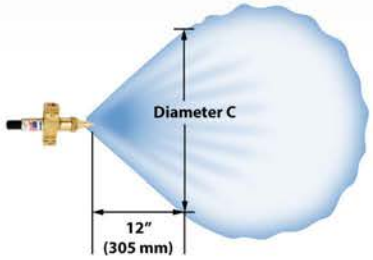
Model 1703 Features

- Fogging nozzle that produces 20 – 60 micron droplets
- Fogging mist covers a 30 inche swath at 8 feet from nozzle
- Handles liquids with viscosities up to 1100 cP



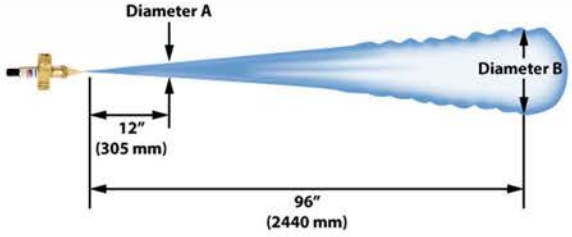
Model 1707 Features

- Humidifying nozzle that produces 20 - 200 micron droplets
- Wide humidifying mist extends over 6 feet at only 12 inches from the nozzle
- Handles liquids with viscosities up to 100 cP



Model 1713 Features

- Atomizing nozzle that produces 60 - 200 micron droplets
- Mist covers a 30 inches swath at 8 feet from nozzle
- Handles liquids with viscosities up to 1100 cP



Model No.	Pattern Dia.		Water Flow Rate (GPM)				
			0.1	0.2	0.3	0.4	0.5
Fogging and Atomizing	A	in.	5	5	5	5	5
		mm	127	127	127	127	127
	B	in.	30	30	30	30	30
		mm	762	762	762	762	762
			0.10	0.15	0.20	0.25	
Humidifying	C	in.	80	48	44	30	
		mm	2030	1218	1117	761	

90 PSIG air, 15 PSIG water
Sprayvectors have 1/4" NPT(F) Compressed Air/Liquid Ports

Model No. Nozzle	Model No. *System	Spray Pattern	Droplet Size	Suggested Applications
1703	1723	Fogging	20-60 microns	Moisturizing, coating, evaporative, cooling, dust suppression
1707	1727	Humidifying	20-200 microns	Mist coating, humidifying, moisturizing, evaporative cooling, spray drying
1713	1733	Atomizing	60-200 microns	Washing, applying lubrication

* All systems include a filter and liquid strainer