COMPRESSED AIR PRODUCTS

WINDJET AIR NOZZLES: OVERVIEW

Air nozzles convert a low-pressure volume of compressed air into a targeted high-velocity concentrated air stream, flat fan or curtain of high-impact air. Ideal for use in many applications, WindJet air nozzles come in a variety of types, capacities, sizes and materials.

WindJet nozzles are widely used for moving materials and cleaning, drying and cooling parts. The high impact provided by these nozzles ensures effective drying and blow-off even for round or oddly shaped products.

The benefits WindJet air nozzles provide:

- A significant reduction in compressed air consumption compared to open pipes. (See Figure 1.)
- Up to 60% reduction in perceived noise level, depending on the initial air pressure. At 100 psig (7 bar), for example, an open pipe would produce a noise level of 98 dBa while an air nozzle would produce 85 dBa, a reduction of 13 dBa and a perceived noise reduction of 60% (See Figure 2.)
- Improved safety. The design of WindJet air nozzles prevents dead-ending should the nozzle accidentally be placed against a flat surface
- The targeted air stream delivered by the nozzles can improve the effectiveness and efficiency of drying and blow-off. More complete drying, even in cracks and crevices is commonly achieved

FIGURE 1.

AIR CONSUMPTION: OPEN PIPE VS. AIR NOZZLES

Open Pipe		Equivalent Impact Using Flat Fan or Round Spray Pattern Air Nozzles	Air Consumption Reduction %	Annual Air Cost Savings* (USD)
Size in. (mm)	Air Consumption SCFM (Nlpm)			
5/32 (4)	19 (538)	1	25%	$593
1/4 (6)	41 (1161)	2	28%	$1,432
5/16 (8)	94 (2662)	4	33%	$3,872
1/2 (12)	177 (5012)	7	35%	$7,731
5/8 (16)	309 (8750)	12	36%	$13,833

*Data is based on AA727 and AA707 WindJet air nozzles. Assumes a 16 hour work day, 5 days a week and an operating cost of $0.50 per 1000 cubic feet of air.

FIGURE 2.

NOISE COMPARISON: OPEN PIPE VS. AIR NOZZLES

Air Pressure psig (bar)	Noise Level		Noise Reduction	Perceived Noise Reduction
	5/32" (4 mm) open pipe at a distance of 5 ft. (1.5 m)	Flat Fan or Round Spray Pattern Air Nozzles		
15 (1)	70 dBa	63 dBa	7 dBa	38%
30 (2)	80 dBa	70 dBa	10 dBa	50%
60 (4)	88 dBa	76 dBa	12 dBa	56%
70 (5)	92 dBa	80 dBa	12 dBa	56%
100 (7)	98 dBa	85 dBa	13 dBa	60%

Note: Data is based on AA727 and AA707 WindJet air nozzles.

WINDJET LOW FLOW AIR KNIVES: OVERVIEW

When space is limited and the process cannot tolerate any increase in temperature, WindJet low flow air knives that use compressed air are an excellent option.

This style air knife delivers a high velocity, uniform air flow across the entire length of the knife. Drying and blow-off are fast and efficient and minimal air is used. Compared to a 3" (8 cm) pipe with three drilled holes, a 3" (8 cm) WindJet low flow air knife will use approximately 92% less air.

Another appealing attribute of low flow air knives is the noise level. Noise is under 70 dBa in many applications – lower than many compressed air options.

Designed for small areas, low flow air knives are typically mounted close to the target. Maximum knife length (or combined length of all knives) is limited to less than 2' (61 cm). Applications that only require one or two air knives can experience significant operating cost reductions by using WindJet low flow models.

Benefits of low flow air knives include:

- Efficient – minimal air use
- High velocity, uniform air flow
- Low noise level
- Low profile for ease of mounting

AIR CONSUMPTION: OPEN PIPE VS. LOW FLOW AIR KNIVES

Open Pipe/Drilled Holes in Pipe*			Equivalent Impact Using Low-Flow Air Knives	Air Consumption Reduction %	Annual Air Cost Savings** (USD)
Quantity	Size in. (mm)	Air Consumption scfm (Nl/min)			
3	5/32 (4)	57 (1614)	1 (57070-3)	92%	$6,544
6	5/32 (4)	114 (3228)	1 (57070-6)		$13,090
12	5/32 (4)	228 (6456)	1 (57070-12)		$26,178
18	5/32 (4)	342 (9684)	1 (57070-18)		$39,268
6	1/4 (6)	246 (6966)	1 (57070-6)	89%	$27,324
12	1/4 (6)	492 (13932)	1 (57070-12)		$54,648

WINDJET AIR AMPLIFIERS: OVERVIEW

A WindJet variable air amplifier is another option when using compressed air. Air amplifiers produce a constant, high velocity air stream for very targeted drying and blow-off applications. Efficiency is maximized because additional free air is pulled through the unit along with the compressed air.

Variable air amplifiers typically provide coverage in the ¾ to 4" (19.1 to 101.6 mm) range at a distance of 6" (152.4 mm). Commonly used for spot drying, blow-off and exhaust operations, WindJet variable air amplifiers are ideally suited to robotic applications as well.

Benefits of using WindJet variable air amplifiers include:

- Extremely efficient use of compressed air – up to 90% less than open pipes and 60% less than air nozzles
- Delivers higher volumes of air and operates at higher pressures than air nozzles for fast drying and blow-off
- Low noise

AIR CONSUMPTION: OPEN PIPE VS. AIR AMPLIFIERS

Open Pipe		Equivalent Capacity Using Air Amplifiers	Air Consumption Reduction %	Annual Air Cost Savings** (USD)
Size in. (mm)	Air Consumption SCFM (Nlpm)			
5/32 (4)	19 (538)	1 (57080-075)	78%	$1,851
1/4 (6)	41 (1161)	1 (57080-075)	86%	$4,398
5/16 (8)	94 (2662)	1 (57080-125)	87%	$10,206
3/8 (10)	118 (3341)	1 (57080-125)	89%	$13,106
1/2 (12)	177 (5012)	1 (57080-200)	89%	$19,660
5/8 (16)	309 (8750)	1 (57080-400)	90%	$34,708

* Spaced at 1" intervals.
** Based on a sixteen-hour, five-day work week, with operating cost of $0.50 USD per 1000 cubic feet of air.

AA727 WINDJET NOZZLES

- Generate efficient, controlled flat fan air pattern for a uniform spray distribution
- Designed to maintain spray pattern integrity
- Available in materials that withstand high temperatures
- Recessed orifices protect against external damage and offer air escape should the nozzles accidentally be placed against a flat surface
- Low noise levels
- Can be mounted side-by-side for air curtain applications

AA727 WindJet Nozzles

AA707 WINDJET NOZZLES

- Produce tightly directed round spray pattern
- Low noise levels
- Color-coded aluminum caps for easy identification of flow rates
- Recessed orifices

AA707 WindJet Nozzles

Y767 COMPACT WINDJET NOZZLES

- Short profile – less than half the height of the AA727
- When installing multiple nozzles on a header, a uniform impact air stream is provided without lowering pressure
- Low noise levels

Y767 Compact WindJet Nozzle

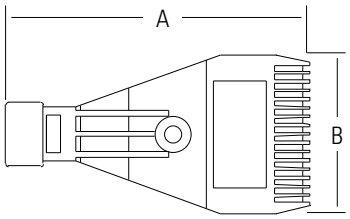
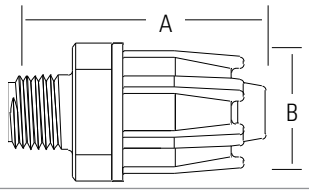
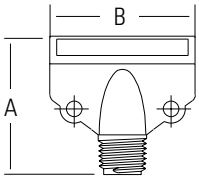
QUICK REFERENCE GUIDE

Model	Connection	Connection Size (in.)	Materials	Max. Operating Temperature
AA727	M	1/4	Polyphenylene sulfide (RY) Aluminum (AL)	**At 100 psi (7 bar)** 180°F (82°C) 450°F (230°C)
AA727	M or F	1/4	ABS plastic	**At 100 psi (7 bar)** 170°F (77°C)
AA727	M	1/4	Stainless steel (SS)	**At 150 psi (10.3 bar)** 500°F (260°C)
AA707	M	1/4	Polyphenylene sulfide (RY) PVDF (KY) Aluminum (AL) Stainless steel (SS) ABS plastic	**At 125 psi (8.6 bar)** 400°F (204°C) 220°F (104°C) 450°F (230°C) 450°F (230°C) 180°F (82°C)
Y767	M	1/4	ABS plastic	**At 100 psi (7 bar)** 180°F (82°C)

PERFORMANCE DATA

Inlet Conn. (in.)	Model	Capacity Size	Cap Color (Aluminum Only)	Capacity – scfm (Nlpm)			
				10 psi (.7 bar)	30 psi (2 bar)	60 psi (4 bar)	90 psi (6 bar)
1/4 (M, F)	AA727 AA727-F	11	—	5.0 (142)	8.9 (246)	14.4 (396)	19.8 (549)
		15	—	6.8 (193)	12.8 (357)	21.3 (586)	29.6 (816)
		23	—	9.9 (280)	18.4 (510)	30.9 (852)	43.4 (1198)
1/4 (M)	AA707	11	green	5.2 (147)	9.6 (266)	16.0 (442)	22.3 (612)
		15	yellow	6.4 (181)	12.4 (345)	21.0 (578)	29.4 (810)
		23	red	10.4 (294)	19.2 (530)	32.3 (889)	45.0 (1237)
1/4 (M)	Y767	15	—	6.8 (193)	12.8 (357)	21.3 (586)	29.6 (816)

DIMENSIONS AND WEIGHTS

	Model	A in. (mm)	B in. (mm)	Net Weight oz. (kg.)
	AA727 (M)	3-9/16 (91)	2 (51)	4.1 (.12)
	AA727-F (F)	3-9/16 (91)	2 (51)	0.7 (.02)
	AA707 (M)	1-7/8 (48)	1 (25)	1.6 (.05)
	Y767 (M)	1-5/8 (43)	1-11/16 (41)	.25 (.01)

Based on largest/heaviest version of each type.

Material Code
None = ABS plastic
AL = Aluminum
RY = Polyphenylene sulfide
SS = Stainless steel
KY = PVDF (AA707 only)

ORDERING INFORMATION

WINDJET AIR NOZZLES

Nozzle Type	–	Inlet Connection	–	Material	–	Capacity Size

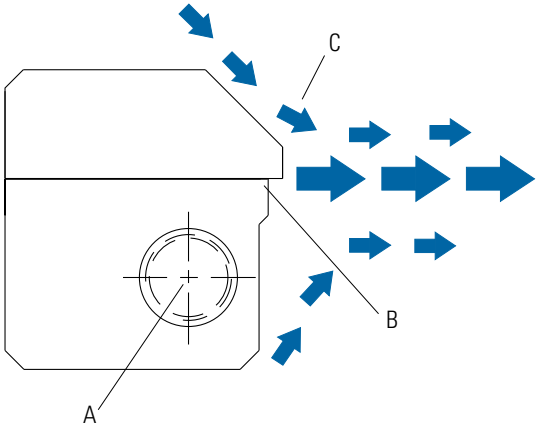
Example: **AA707** – **1/4** – **SS** – **11**

BSPT connections require the addition of a "B". Example: AAB707.

WINDJET LOW FLOW AIR KNIVES

- Ideal for applications using 1 or 2 air knives
- Provide a uniform air flow across the entire length of the knife
- Deliver a high velocity, constant air stream for fast drying and blow-off
- Reduce energy use
- No temperature increase
- Use minimal air
- Maintenance-free; no moving parts
- Lower noise levels, 69 dBa for most applications
- Easy to install and maintain
- Compact and designed for small areas
- 316 stainless steel available for sanitary applications
- Available shim sets to adjust air force and flow. Shim set includes automatic drain filter with a 40 micron filter element sized properly for flow

WindJet Low Flow Air Knives



WindJet Low Flow Air Knives produce a high velocity, constant air stream for optimal performance of your drying and blow-off process. Compressed air flows through an inlet (A) where it is directed to the orifice. The primary air flow exits the thin slotted nozzle orifice across the length of the knife (B) creating a uniform sheet of air. For added force, secondary air is entrained along the edge of the knife (C). The end result is a highly uniform, constant air stream with hard-hitting force.

QUICK REFERENCE GUIDE

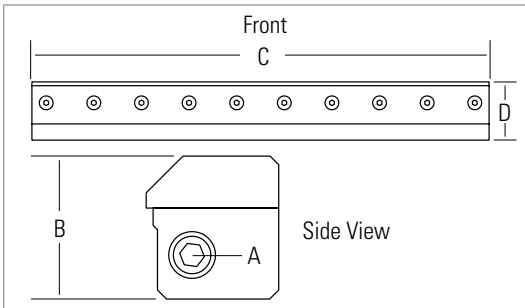
Air Knife Standard Lengths in. (cm)	Connection Size (in.)	Shims in. (mm)	Materials	Max. Operating Temperature
3, 6, 12, 18 and 24 (8, 15, 30, 46, and 61)	1/4	**Standard Installed** .002 (.05) **Available In Extra Kit** .001 (.03) .003 (.08) .004 (.10)	Aluminum (AL) with Plastic (PETP) shim 316 stainless steel (316SS) with 316SS shim	**At 200 psi (13.8 bar)** 140°F (60°C) 200°F (93°C)

PERFORMANCE DATA

Supply Pressure psi (bar)	Air Consumption per Inch (25 mm) – scfm (Nlpm)	Velocity @ 6" (150 mm) from orifice – fpm (m/s)	Impact per Inch (25 mm) @ 6" (150 mm) from target – oz. (g.)
20 (1.4)	0.9 (26)	5300 (26.9)	0.5 (15)
40 (2.8)	1.6 (45)	7000 (35.6)	1.1 (31)
60 (4.1)	2.3 (65)	9800 (48.8)	1.9 (53)
80 (5.5)	3.0 (85)	12500 (63.5)	2.6 (75)
100 (6.9)	3.7 (105)	14200 (72.1)	3.4 (95)

WindJet Low Flow Air Knife with .002" thick shim installed.

DIMENSIONS



Shim Sizes in. (mm)	A in.	B in. (mm)	C in. (mm)	D in. (mm)
.001 (.03) .002 (.05) .003 (.08) .004 (.10)	1/4 NPT or BSPT	1.65 (42)	3 (76)	1.53 (39)
		1.65 (42)	6 (152)	1.53 (39)
		1.65 (42)	12 (305)	1.53 (39)
		1.65 (42)	18 (457)	1.53 (39)
		1.65 (42)	24 (610)	1.53 (39)

ORDERING INFORMATION

WINDJET LOW FLOW AIR KNIFE

Part No.	–	Knife Length	–	Material

Example: **57070** – **12** – **316SS**

BSPT connections require the addition of a "B". Example: B57070.

WINDJET LOW FLOW AIR KNIFE KIT

Part No.	–	Knife Length	–	Material

Example: **57060** – **12** – **316SS**

Includes an air knife, shim set, filter, pressure regulator and pressure gauge.

SHIM SET

Part No.	–	Knife Length	–	Material

Example: **57075** – **12** – **PETP**

Includes one each of .001" (.03 mm), .003" (.08 mm) and .004" (.10 mm) thick shims.

Material Code
AL = Aluminum
316SS = 316 stainless steel
PETP = Plastic

Length Code
3 = 3" (8 cm)
6 = 6" (15 cm)
12 = 12" (30 cm)
18 = 18" (46 cm)
24 = 24" (61 cm)