





Super Air Knife[™]

Quiet, hard-hitting curtain of air for blowoff, cleaning, drying and cooling.

-  Surprisingly Quiet! - Only 69 dBA!
-  Reduced Air Consumption!
-  Uniform Airflow!
-  Amplification of 40:1!



See page 2 for complete details.



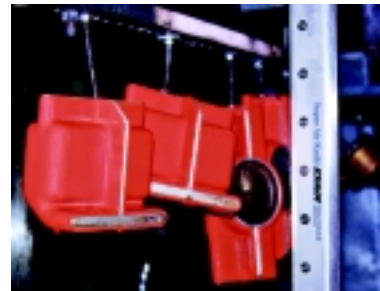
Blowoff



Dry



Cool



What Is The Super Air Knife?

EXAIR's Super Air Knife is a new generation of air knife that dramatically reduces compressed air usage and noise when compared to other blowoffs. The Super Air Knife offers a more efficient way to clean, dry or cool parts, webs or conveyors. It delivers a uniform sheet of laminar airflow across the entire length with hard-hitting force.

Noisy blowoffs become a whisper when replaced with the compact Super Air Knife. Even at high pressures of 80 PSIG (5.5 BAR), the sound level is surprisingly quiet at 69 dBA for most applications! Amplification ratios (entrained air to compressed air) of 40:1 are produced. Meets OSHA maximum dead-ended pressure and noise requirements.

Applications

- Part drying after wash
- Sheet cleaning in strip mills
- Conveyor cleaning
- Part or component cooling
- Web drying or cleaning
- Environmental separation
- Pre-paint blowoff
- Bag opening/fill operations
- Scrap removal on converting operations

Advantages

- Quiet - 69 dBA for most applications
- Minimal air consumption
- 40:1 air amplification
- Uniform airflow across entire length
- Variable force and flow
- No moving parts - maintenance free
- Easy mounting - compressed air inlets on each end and bottom
- Compact, rugged, easy to install
- Recessed hardware for easy mounting
- Stock lengths to 48" (122cm) in aluminum and stainless steel (ss - for temperatures up to 800°F, food processing or corrosive environments)
- 316 stainless steel available on special order
- Special lengths available
- Unlimited system lengths of uninterrupted airflow available

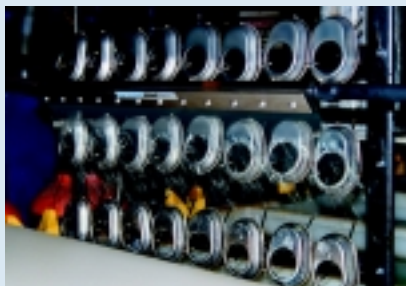
Super Air Knife

Dry

The laminar airflow of the Super Air Knife is perfect for removing moisture prior to packaging, painting, labeling, bar coding and assembly. Common applications include drying parts, rolled steel, circuit boards, webs, bottles, cans and more. Velocity is easily adjusted from a "blast" to a "breeze" with a pressure regulator.



Bottles exiting a washer are blown dry by (2) Model 110012 12" (30cm) Super Air Knives prior to labeling.



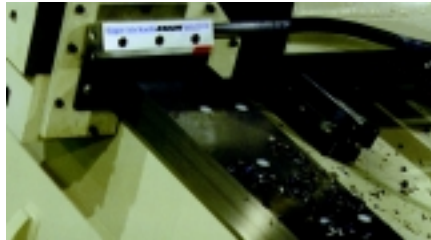
A Model 110024SS 24" (61cm) Stainless Steel Super Air Knife dries bolt covers exiting an electro-polishing tank.



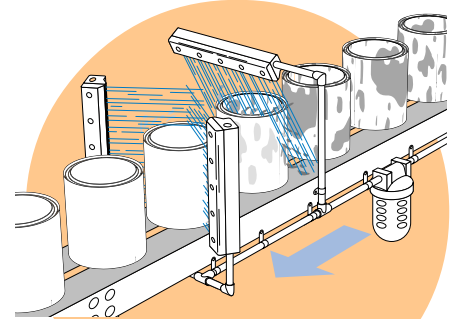
A Model 110012SS 12" (30cm) Stainless Steel Super Air Knife dries vegetables prior to packing.

Blowoff

The Super Air Knife is ideal for blowing off chips, dirt or water from parts, webs or conveyors. It delivers a uniform sheet of air that has the same force across the entire length. There are no interruptions or "dead spots" which mean all surfaces are dried or cleaned. The Super Air Knife is available in aluminum or stainless steel for corrosive, and high temperature applications.



A Model 110006 6" (15cm) Super Air Knife blows away the abrasive chips that could score the ways of a 5-axis vertical machining center.



(3) Model 110012 12" Super Air Knives blow excess honing oil off machined engine sleeves.

Cool

Great volumes of airflow can be generated in very tight spaces due to the compact size of the Super Air Knife. Flow and force are easily controlled with a pressure regulator, allowing fast or gradual cooling. Shims can be installed if additional hard-hitting velocity is required.



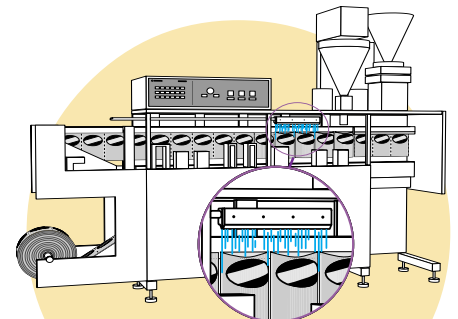
A Model 110018 18" (46cm) Super Air Knife cools molten plastic following dip molding.



High volume airflow from a Model 110006 6" (15cm) Super Air Knife keeps linear induction motors on an indoor roller coaster from overheating.

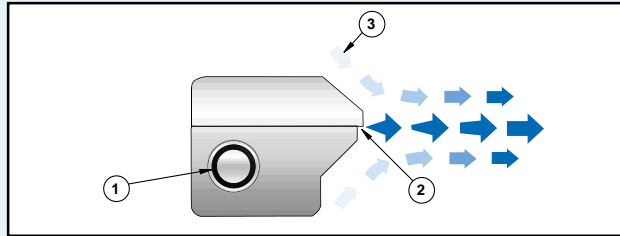
Open, Float, Separate

The uniform airflow exits the Super Air Knife in a perfectly straight line (does not deflect). It is ideal for opening bags and pouches, floating webs, and keeping environments separate.



A Model 110006 6" (15cm) Super Air Knife opens pouches on a form-fill-seal-bagger.

How The Super Air Knife Works



Compressed air flows through an inlet (1) into the plenum chamber of the Super Air Knife. The flow is directed to a precise, slotted orifice. As the primary airflow exits the thin slotted nozzle (2),

it follows a flat surface that directs the airflow in a perfectly straight line. This creates a uniform sheet of air across the entire length of the Super Air Knife. Velocity loss is minimized and force is

maximized as the room air (3) is entrained into the primary airstream at a ratio of 40:1. The result is a well defined sheet of laminar airflow with hard-hitting force and minimal wind shear.

Smart Use Of Compressed Air

Almost every industrial facility has at least one compressor that is used for hundreds of different tools, equipment and operations. While most applications for compressed air present no real problems, some do. Improper use can translate into unnecessary energy costs, high noise levels and dangerous exposure of personnel to high pressure air.

Reduce Energy Costs

The best way to cut energy costs is through proper maintenance and use of the compressed air system. Leaks and dirty filters require maintenance on a regular basis. Energy savings can also be realized when replacing outdated motors and controls with high efficiency models that often pay for themselves in a short period of time. The most important factor to dramatically boost efficiency is proper use. **The Super Air Knife uses only 1/3 of the compressed air of typical blowoffs** used in cleaning, cooling and drying operations and can be instantly cycled on and off.

Reduce Noise Levels

High noise level is a common problem for many plants. Compressed air noise often exceeds OSHA (Occupational Safety and Health Administration) noise level exposure requirements, resulting in hearing loss to those working in close proximity. The sound level of the Super Air Knife is quiet at under 70 dBA, even at high pressures of 80 PSIG (5.5 BAR). Using the Super Air Knife, it is possible to obtain hard-hitting force without the high noise.

OSHA Maximum Allowable Noise Exposure

Hours per day (constant noise)	8	7	4	3	2	1	0.5
Sound level dBA	90	91	95	97	100	105	110

OSHA Standard 29 CFR - 1910.95 (a)

Eliminate Harmful Dead Ended Pressures

Air can be dangerous when the outlet pressure of a hole, hose or copper tube is higher than 30 PSIG (2 BAR). In the event the opening is blocked by a hand or other body part, air may enter the bloodstream through the skin, resulting in serious or fatal injury. The Super Air Knife has been engineered for safety and cannot be dead ended. It is safe to operate at higher pressures.

Replacement For Expensive, Noisy Blowers

Energy conscious plants might think a blower to be a better choice due to its slightly lower electrical consumption compared to a compressor. In reality, a blower is an expensive capital expenditure that requires frequent downtime and costly maintenance of bearings, belts and filters. Here are some important facts:

- Blower bearings wear out quickly due to the motor that must turn at 17-20,000 RPM in order to generate effective airflows.
- Poorly designed seals that allow dirt and moisture infiltration along with environments above 125°F (52°C) decrease bearing life.
- **Typical bearing replacement is at least once a year at a cost near \$1000.**
- Many bearings can not be replaced in the field, resulting in downtime to send the assembly back to the manufacturer.

Blowers take up a lot of space and often produce sound levels that exceed OSHA noise level exposure requirements. Air volume and velocity are often difficult to control since mechanical adjustments are required.

Super Air Knife

Compare These Blowoffs

There are a variety of ways to blow the water from the bottles shown in the photo, but which method is best? The following comparison of drilled pipe, flat air nozzles, a blower and the Super Air Knife proves that EXAIR has the best choice for your blowoff, cooling or drying application.

Our goal for each of the blowoff choices was to use the least amount of air possible to get the job done (lowest energy and noise level). Compressed air pressure required for each was 60 PSIG (4.1 BAR) which provided adequate velocity to blow the water off. The table at the bottom of the page summarizes the overall performance. Since your actual part may have an odd configuration, holes or sharp edges, we took sound level measurements in free air (no impinging surface).



(2) Model 110012 12" (30cm) Super Air Knives blow water off bottles prior to labeling.

Drilled Pipe

This common blowoff is very inexpensive and easy to make. For this test, we used (2) drilled pipes, each with (25) 1/16" (1.6mm) diameter holes on 1/2" (13mm) centers. As shown in the test results below, the drilled pipe performed poorly. The initial cost of the drilled pipe is overshadowed by its high energy use. The holes are easily blocked and the noise level is excessive - both of which violate OSHA requirements. Velocity across the entire length was very inconsistent with spikes of air and numerous dead spots.

Flat Air Nozzles

As shown below, this inexpensive air nozzle was the worst performer. It is available in plastic, aluminum and stainless steel from several manufacturers. The flat air nozzle provides some entrainment, but suffers from many of the same problems as the drilled pipe. Operating cost and noise level are both high. Some manufacturers offer flat air nozzles where the holes can be blocked - an OSHA violation. Velocity was inconsistent with spikes of air.

Blower Air Knife

The blower proved to be an expensive, noisy option. As noted below, the purchase price is high. Operating cost was considerably lower than the drilled pipe and flat air nozzle, but was comparable to EXAIR's Super Air Knife. The large blower with its two 3" (8cm) diameter hoses requires significant mounting space compared to the others. Noise level was high at 90 dBA. There was no option for cycling it on and off to conserve energy like the other blowoffs. Costly bearing and filter maintenance along with downtime were also negative factors.

EXAIR Super Air Knife

The Super Air Knife did an exceptional job of removing the moisture on one pass due to the uniformity of the laminar airflow. The sound level was extremely low. For this application, energy use was slightly higher than the blower but can be less than the blower if cycling on and off is possible. Safe operation is not an issue since the Super Air Knife cannot be dead-ended. Maintenance costs are low since there are no moving parts to wear out.



Air Knives

Blowoff Comparison

	PSIG	BAR	SCFM	SLPM	Horsepower Required	Sound Level dBA	Purchase Price	Annual Electrical Cost*	Approx. Annual Maintenance Cost
Drilled Pipe	60	4.1	174	4,924	35	91	\$50	\$4,508	\$920
Flat Air Nozzles	60	4.1	257	7,273	51	102	\$168	\$6,569	\$1,450
Blower Air Knife	N/A	N/A	N/A	N/A	10	88	\$5,500	\$1,288	\$1,500
Super Air Knife	60	4.1	55	1,557	11	69	\$380	\$1,417	\$300

* Based on national average electricity cost of 8.3 cents per kWh. Annual cost reflects 40 hours per week, 52 weeks per year.

Super Air Knife Performance with .002" (.05mm) thick shim installed

12" (30cm) Super Air Knife tested

Pressure Supply		Air Consumption per Inch (25mm)		Velocity at 6" (15cm) from target		Sound Level @ 3' (91cm)	Force per Inch (2.5cm) @ 6" (15cm) from target	
PSIG	BAR	SCFM	SLPM	FPM	M/S	dBa	OUNCES	GRAMS
20	1.4	1.1	31	5000	25.4	57	0.6	17
40	2.8	1.7	48	7000	35.6	61	1.1	31
60	4.1	2.3	65	9600	48.8	65	1.8	51
80	5.5	2.9	82	11,800	57.9	69	2.5	71
100	6.9	3.5	99	13,500	66	72	3.2	91

Holes Drilled In Pipe

Pressure Supply		Air Consumption 1/16" (1.59mm) dia. hole		Air Consumption 3/32" (2.38mm) dia. hole		Air Consumption 1/8" (3.18mm) dia. hole		Air Consumption 3/16" (4.76mm) dia. hole		Air Consumption 1/4" (6.35mm) dia. hole	
PSIG	BAR	SCFM	SLPM	SCFM	SLPM	SCFM	SLPM	SCFM	SLPM	SCFM	SLPM
20	1.4	1.4	40	3.5	99	6.4	181	14.5	410	25	710
40	2.8	2.2	62	5.4	153	10.2	289	22.9	648	40	1132
60	4.1	3.0	85	7.4	209	14	396	31	877	54	1528
80	5.5	3.8	108	9.4	266	17.5	495	39.5	1118	69	1953
100	6.9	4.6	130	11.5	326	21.5	609	47.5	1344	84	2363

How To Calculate Air Savings:

The chart at the top of the page shows the air consumption of a Super Air Knife **per inch of length** (25mm) at various pressures. Comparable data is given for holes drilled in pipe.

To Determine Air Consumption for the Drilled Pipe

- Determine the size of existing holes and supply pressure. From the chart, find air consumption per hole.
- Multiply air consumption per hole times the number of holes to obtain total air consumption.

To Determine Air Consumption for the Super Air Knife

- From the chart, find the air consumption per inch (25mm) at supply pressure and multiply by number of inches required.

Example:

- Existing blowoff is 18" long pipe with 1/16" diameter holes on 1/2" spacing (37 holes), 80 PSIG supply. Air consumption from chart is 3.8 SCFM per hole. Total air consumption is $37 \times 3.8 = 140.6$ SCFM (3996 SLPM).
- Use 18" (46cm) Super Air Knife with standard .002" gap and 80 PSIG supply. Air consumption from chart is 2.9 SCFM per inch. Total air consumption is $18 \times 2.9 = 52.2$ SCFM (1476 SLPM).
- Compressed air saved = 140.6 SCFM - 52.2 SCFM = 88.4 SCFM (2520 SLPM).
- Most large plants know their air cost. If you don't know your actual cost/1000 SCF, a reasonable average to use is \$.25 per 1000 SCF (28,329 SL).
- Dollars saved per hour = SCFM saved x 60 minutes x cost/1000 SCF = $88.4 \times 60 \times .25/1000$
 = \$1.33/hour
 = \$53.20 per 40 hour week
 = \$2,766.40 per year savings

Super Air Knife Specifications

The Super Air Knife is available in standard lengths of 3", 6", 12", 18", 24", 30", 36", 42" and 48" (8, 15, 30, 46, 61, 76, 91, 107 and 122cm) in aluminum and stainless steel. **Special lengths and unlimited system lengths are available.** Any number of Super Air Knives may be installed across a given area.

Filtration: The use of clean air is essential. Kits include an automatic drain filter with a 5 micron filter element that is sized properly for flow.

Materials of Construction: The Super Air Knife is available in either aluminum or stainless steel. 316 stainless steel is available on special order.

Mounting: The Super Air Knife can be supported by the compressed air pipe. Tapped holes (1/4-20) on the bottom are also provided.

Regulation: A pressure regulator on the compressed air supply provides infinite control of flow, force and air consumption. Kits include a pressure regulator that is sized properly for flow.

Shim Sets: The compressed air exhausts through a gap which is set with a shim positioned between the cap and the body of the Super Air Knife. Force and flow through the Super Air Knife may be easily increased by adding shims to open the gap. Kits include a shim set (three additional shims).

Super Air Knife

Super Air Knife Performance with .003" (.08mm) thick shim installed

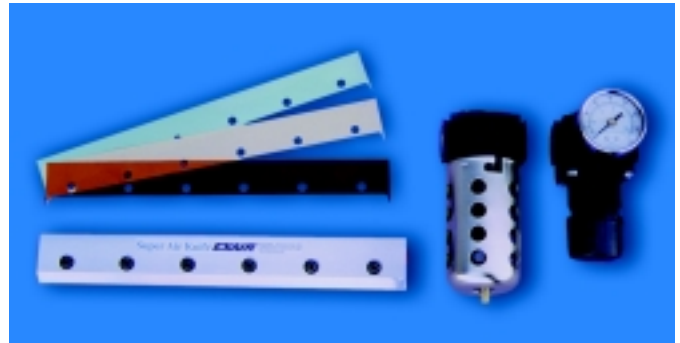
12" (30cm) Super Air Knife tested

Pressure Supply		Air Consumption per Inch (25mm)		Velocity at 6" (15cm) from target		Sound Level @ 3' (91cm)	Force per Inch (2.5cm) @ 6" (15cm) from target	
PSIG	BAR	SCFM	SLPM	FPM	M/S	dBA	OUNCES	GRAMS
20	1.4	1.6	45	6200	31.5	63	1.0	28
40	2.8	2.5	71	8800	44.7	68	1.7	48
60	4.1	3.4	96	11,200	56.9	72	2.6	74
80	5.5	4.3	122	13,200	67.1	75	3.5	99
100	6.9	5.2	147	15,600	79.2	78	4.8	136

Changing Performance By Adding Shims

The Super Air Knife is shipped with a .002" (.05mm) thick shim installed which works best for most applications. There are, however, some situations that require more force and flow.

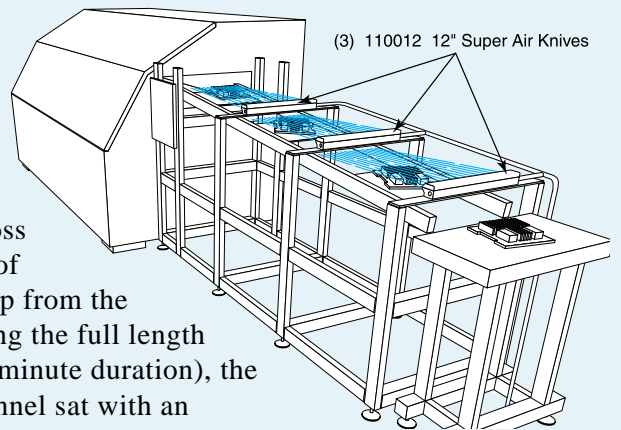
The chart at the top of the previous page shows the performance of the Super Air Knife with the standard .002" (.05mm) shim installed. The chart above compares the same 12" (30cm) Super Air Knife with a .003" (.08mm) thick shim installed. The larger gap opening offers higher velocity, harder hitting force, with slightly higher air consumption and noise.



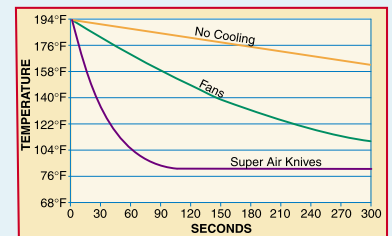
Kits include a Super Air Knife, shim set, filter separator and pressure regulator.

Super Air Knife Replaces Fan Cooling

The Problem: A manufacturer of automotive electronics had a problem cooling computers as they exited a wave solder machine. In order to be handled and tested, the computers had to first be cooled to 81°F (27°C). Initially, they had tried banks of 6" (15cm) diameter axial fans across the 8' (2.5m) length of the cooling conveyor. It consisted of 16 fans blowing down from the top and 16 fans blowing up from the bottom at 7" (18cm) away from the surface. After travelling the full length of the conveyor with the fans running at full force (a five minute duration), the computers were still 108°F (42°C). Quality Control personnel sat with an unacceptable backlog of computers waiting to be tested.

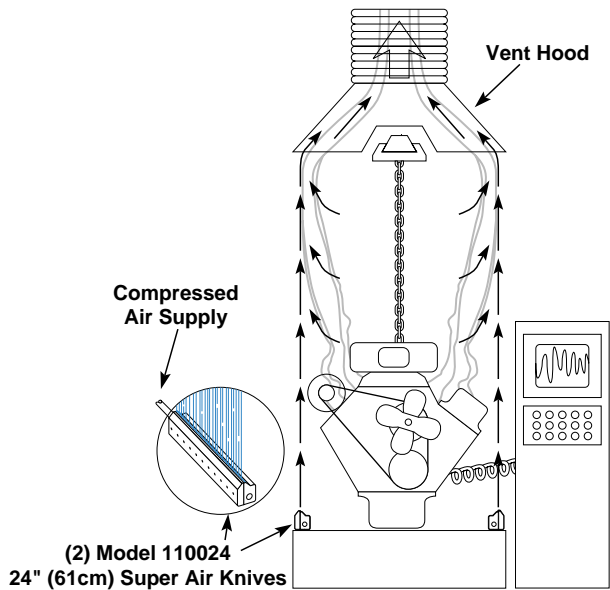


The Solution: The company removed the top and bottom fan banks and replaced them with (3) Model 110012 12" Super Air Knives that were evenly spaced across the cooling section. Each Super Air Knife was angled so the computer and heat sink received the constant rush of airflow. **With the conveyor at the same speed (1.6 FPM), and Super Air Knives at only 40 PSIG, the computers were cooled to 81°F (27°C) in 90 seconds!**



Comment: The laminar airflow of the Super Air Knives was the key to success in this application. Fan cooling could only provide random spikes of air at moderate velocities. **The uniform sheet of air from the Super Air Knife quietly swept the heat away within the first 2' (61cm) of the conveyor.** Low air consumption and the compact size of the Super Air Knife was an added bonus.

Smoke Containment During Engine Test



The Problem: The last step in an engine assembly process is "burn-in" on a test stand. Each engine is connected to a dynamometer and run for a period of one to five minutes. Residual machining oil on the

head produced smoke during the test, and the vent hood at the top of the stand had insufficient capacity to contain it.

The Solution: A Model 110024 24" (61cm) Super Air Knife was mounted on both sides of the test stand. The sheet or "wall" of air produced by the Super Air Knife, captured, contained and diluted the smoke while directing it towards the vent hood. The environmental problem was solved without obstructing the technician's observation of, or access to the stand.

Comment: The use of the Super Air Knife for containment and separation is becoming increasingly common. The advantage, as illustrated here, is the ability of the Super Air Knife to create a screen or barrier with no obstruction. Other typical applications in this mode are:

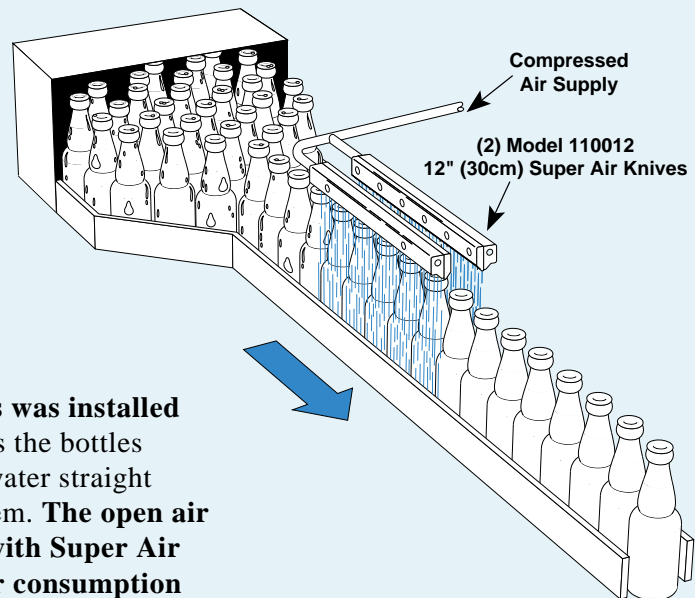
- Retaining heat in curing and drying ovens
- Protecting workers from coolant splatter
- Isolating industrial camera lenses from airborne contaminants.

Blowoff On A Bottling Line

The Problem: Bottles emerging from a pasteurizer are conveyed to a labeling station. Water carryover from the bottles created a slip hazard and housekeeping problem. In addition, open air jets drying the bottles upstream of the labeler consumed over 150 SCFM of compressed air. Noise levels were in excess of 90 dBA.

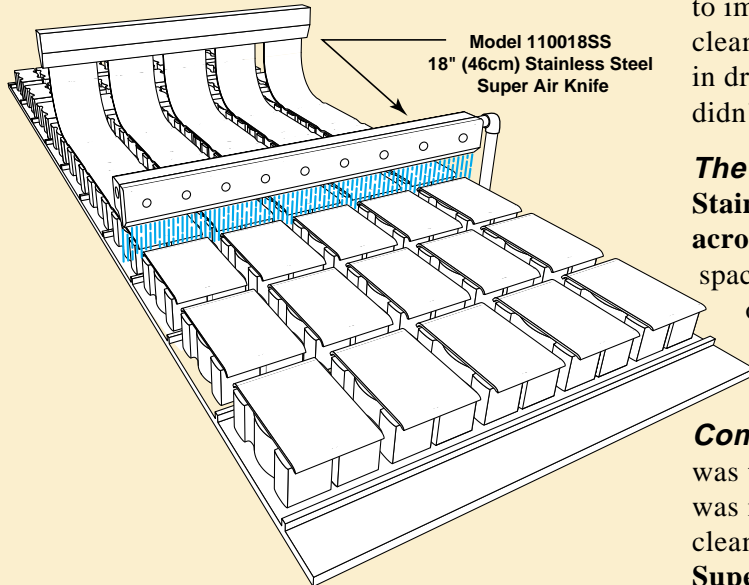
The Solution: An "air gauntlet" consisting of (2) Model 110012 12" (30cm) Super Air Knives was installed immediately downstream of the pasteurizer. As the bottles passed through, the Super Air Knives swept the water straight down, into a tub, eliminating the carryover problem. The open air jets at the labeling station were also replaced with Super Air Knives, reducing noise levels to 70 dBA and air consumption by over 50%.

Comment: The ability of the Super Air Knife to sweep the bottles with a continuous, laminar sheet of air was the key to success in this application. The safety issue was completely eliminated by having the defined airstream direct the rinse water into the tub instead of the floor. As an added bonus, this company saved so much air that they were able to shut down an auxiliary compressor. Payback on the replacement of the wasteful open air jets was measured in weeks, not months or years.



Super Air Knife

Bakery Creates Clean Break In Icing



The Problem: A bakery had a problem applying the icing to their snack cakes. As the baked sponge cakes moved down the conveyor, a continuous ribbon of icing was applied to the individual cakes.

Trying to make a clean break in the icing was next to impossible. Mechanical blades required constant cleaning. Compressed air through a series of holes in drilled pipe used too much air, was noisy and didn't make a clean break in the icing.

The Solution: A Model 110018SS 18" (46cm) Stainless Steel Super Air Knife was installed across the conveyor. A photo eye used to detect the space between the cakes turned the compressed air on at the precise moment to apply uniform airflow and velocity against the ribbon of icing, creating a nice, clean break.

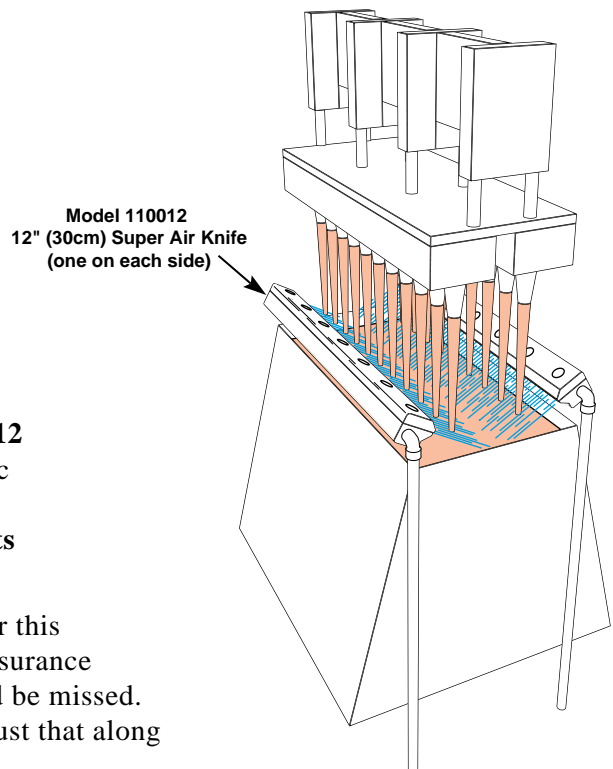
Comment: The Stainless Steel Super Air Knife was the best choice for this application. Since there was no contact with the icing, no additional cleaning was required. **The laminar flow of the Super Air Knife has uniform velocity across the entire length and broke the ribbon of icing evenly.** This would never have been possible with the spikes of air from a drilled pipe, nozzles or a blower.

Eliminating Dip Molding Rejects

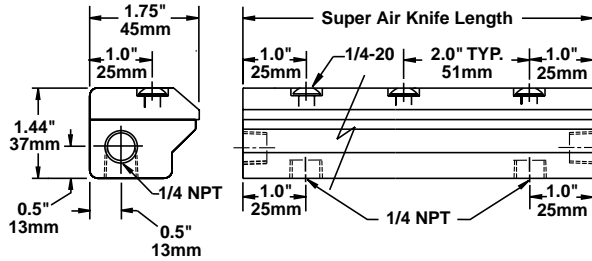
The Problem: The dip molding process is used to make anything from the colorful boots around gas pump handles to the grips for pliers and other hand tools. One molder had a high reject problem with many of their parts. As the die was lifted from the molten plastic, excess would run down the part and harden - just like candle wax. The smooth surface was ruined drastically reducing production.

The Solution: The company installed (2) Model 110012 12" (30cm) Super Air Knives to wipe the excess plastic from the part and blow it back down into the tank. **The product surface was completely smooth and all rejects were eliminated.**

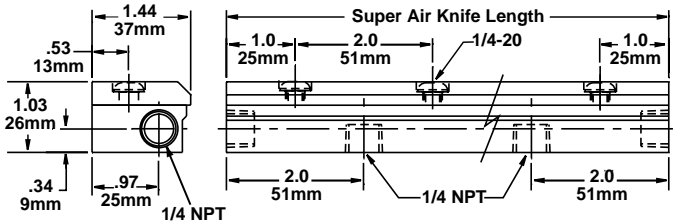
Comment: The Super Air Knife was the best choice for this application. In this case, the manufacturer needed the assurance that the airstream would be uniform so no surface would be missed. The balanced, laminar flow of the Super Air Knife did just that along with minimizing the air consumption and noise level.



Aluminum Super Air Knife Dimensions



Stainless Steel Super Air Knife Dimensions



Super Air Knife Systems

Aluminum Super Air Knife Only

Model #	Description
110003	3" (8cm)
110006	6" (15cm)
110012	12" (30cm)
110018	18" (46cm)
110024	24" (61cm)
110030	30" (76cm)
110036	36" (91cm)
110042	42" (107cm)
110048	48" (122cm)

Aluminum Super Air Knife Kits

Kits include an Aluminum Super Air Knife, shim set, filter separator and pressure regulator.

Model #	Description
110203	3" (8cm)
110206	6" (15cm)
110212	12" (30cm)
110218	18" (46cm)
110224	24" (61cm)
110230	30" (76cm)
110236	36" (91cm)
110242	42" (107cm)
110248	48" (122cm)

Aluminum Super Air Knife Shim Set

Shim Sets include (1) each of a .001" (.03mm), .003" (.08mm) and .004" (.10mm) thick plastic shim.

Model #	Description
110303	3" (8cm)
110306	6" (15cm)
110312	12" (30cm)
110318	18" (46cm)
110324	24" (61cm)
110330	30" (76cm)
110336	36" (91cm)
110342	42" (107cm)
110348	48" (122cm)

Stainless Steel Super Air Knife

Model #	Description
110003SS	3" (8cm)
110006SS	6" (15cm)
110012SS	12" (30cm)
110018SS	18" (46cm)
110024SS	24" (61cm)
110030SS	30" (76cm)
110036SS	36" (91cm)
110042SS	42" (107cm)
110048SS	48" (122cm)

Stainless Steel Super Air Knife Kits

Kits include a Stainless Steel Super Air Knife, shim set, filter separator and pressure regulator.

Model #	Description
110203SS	3" (8cm)
110206SS	6" (15cm)
110212SS	12" (30cm)
110218SS	18" (46cm)
110224SS	24" (61cm)
110230SS	30" (76cm)
110236SS	36" (91cm)
110242SS	42" (107cm)
110248SS	48" (122cm)

Stainless Steel Air Knife Shim Sets

Shim Sets include (3) .002" (.05mm) thick stainless steel shims.

Model #	Description
110303SS	3" (8cm)
110306SS	6" (15cm)
110312SS	12" (30cm)
110318SS	18" (46cm)
110324SS	24" (61cm)
110330SS	30" (76cm)
110336SS	36" (91cm)
110342SS	42" (107cm)
110348SS	48" (122cm)

Accessories

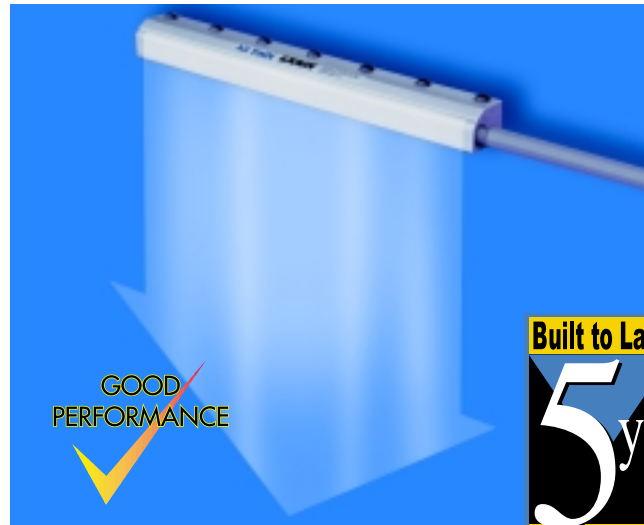
Model #	Description
9001	Auto Drain Filter Separator, 3/8 NPT, 65 SCFM (1841 SLPM)
9032	Auto Drain Filter Separator, 1/2 NPT, 90 SCFM (2548 SLPM)
9002	Auto Drain Filter Separator, 3/4 NPT, 220 SCFM (6230 SLPM)
9005	Oil Removal Filter, 3/8 NPT, 15-37 SCFM (425-1048 SLPM)
9006	Oil Removal Filter, 3/4 NPT, 50-150 SCFM (1415-4248 SLPM)
9008	Pressure Regulator, 1/4 NPT, 50 SCFM (1416 SLPM)
9033	Pressure Regulator, 1/2 NPT, 100 SCFM (2832 SLPM)
9009	Pressure Regulator, 3/4 NPT, 220 SCFM (6230 SLPM)
9020	Solenoid Valve, 120V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
9034	Solenoid Valve, 120V, 50/60Hz, 1/2 NPT, 100 SCFM (2832 SLPM)
9036	Solenoid Valve, 120V, 50/60Hz, 3/4 NPT, 200 SCFM (5664 SLPM)

Special length Super Air Knives and unlimited system lengths are available. Magnetic bases with Stay Set™ flexible hoses are also available for smaller Super Air Knives. Please contact our factory.

Standard Air Knife

Standard Air Knife™

Hard hitting curtain of air for web, sheet and part blowoff.



See page 2 for complete details.

What Is The Standard Air Knife?

A quiet, energy efficient way to clean, dry or cool parts, webs or conveyors. The Standard Air Knife utilizes the coanda effect (wall attachment of a high velocity fluid) to create air motion in its surroundings. Using a small amount of compressed air as a power source, the Standard Air Knife pulls in large volumes of surrounding air to produce a high flow, high velocity curtain of air for blowoff.

Why The Standard Air Knife?

Amplification ratios (entrained air to compressed air) of 30:1 are achieved with the Standard Air Knife, compared to 3:1 for drilled or slotted pipe. **Air savings of 40% to 90%** are possible when replacing these "homemade" blowoff devices. Pay-out is normally measured in weeks, not months or years.

The Standard Air Knife dramatically reduces "wind shear" by gradually introducing the entrained air to the ejected compressed air. **Noise level is typically cut in half.** The result is a high velocity, high volume sheet of air with reduced noise level and air consumption.



(3) Model 2012 12" (30cm) Standard Air Knives perform the drying cycle in this parts washer.

Applications

- Part drying after wash
- Sheet cleaning in strip mills
- Conveyor cleaning
- Web drying or cleaning
- Part or component cooling
- Environmental separation
- Pre-paint blowoff
- Bag opening/fill operations
- Scrap removal on converting operations

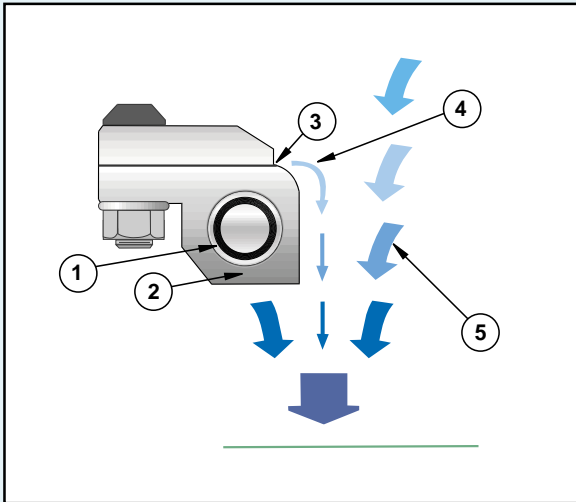
Advantages

- Up to 10 dBA noise reduction
- Reduced air consumption
- 30:1 air amplification
- Aluminum or stainless steel
- Compact, rugged, easy to install
- Stock lengths to 36" (91cm)
- Unlimited system lengths
- No moving parts
- Variable force and flow



A Model 2012 12" (30cm) Standard Air Knife opens mustard packets prior to fill.

How The Standard Air Knife Works



Compressed air flows through the inlet (1) into a plenum chamber (2). It is then throttled through a thin nozzle (3) extending the length of the Standard Air Knife. This primary airstream adheres to the coanda profile (4), which turns it 90° and directs the flow down the face of the unit. The primary stream immediately begins to entrain surrounding air (5), for amplification ratios of 30:1 at 6" (15cm).

Standard Air Knife Specifications

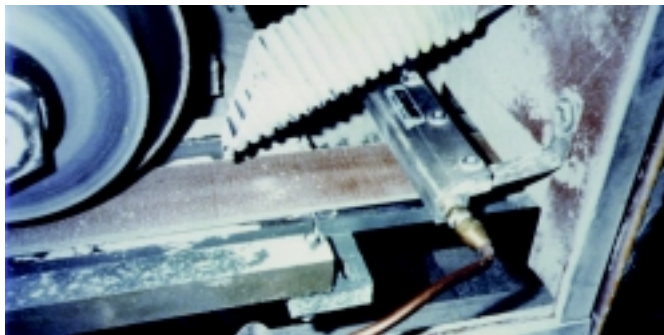
The Standard Air Knife is available in seven standard lengths of 3", 6", 12", 18", 24", 30" and 36" (8, 15, 30, 46, 61, 76 and 91cm). **Special lengths up to 36" (91cm) and unlimited system lengths are available.** Any number of Standard Air Knives may be installed across a given area.

Filtration: The use of clean air is essential. Kits include an automatic drain filter with a 5 micron filter element that is sized properly for flow.

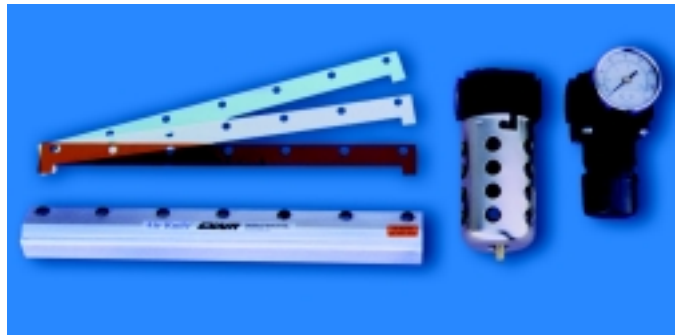
Materials of Construction: The Standard Air Knife is available in either aluminum or stainless steel construction.

Regulation: A pressure regulator on the compressed air supply provides infinite control of flow, force, and air consumption. Kits include a pressure regulator that is sized properly for flow.

Shim Sets: A Standard Air Knife has a .002" (.05mm) gap setting. This gap is set with a shim positioned between the cap and body of the Standard Air Knife. Force and flow through the Standard Air Knife may be easily increased by adding shims to open the gap. Kits include a shim set (three additional shims).



A Model 2006 6" (15cm) Std. Air Knife blows powder loose from a belt so it can be vacuumed away.



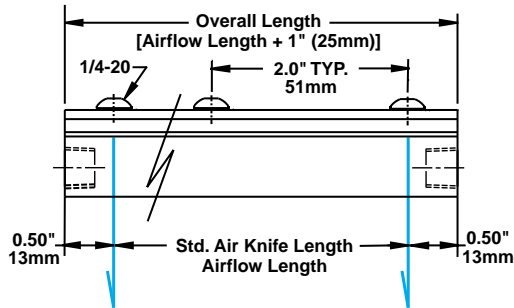
Kits include a Standard Air Knife, shim set, filter separator and pressure regulator.

Standard Air Knife Performance with .002" (.05mm) thick shim installed 12" (30cm) Standard Air Knife tested

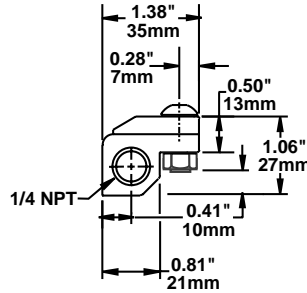
Pressure Supply		Air Consumption per Inch (25mm)		Velocity at 6" (15cm) from target		Sound Level @ 3' (91cm)	Force per Inch (2.5cm) @ 6" (15cm) from target	
PSIG	BAR	SCFM	SLPM	FPM	M/S	dBA	OUNCES	GRAMS
20	1.4	1.3	37	4000	20.3	69	0.45	13
40	2.8	2.0	57	5800	29.5	78	1.1	31
60	4.1	2.7	76	8500	43.2	84	2.0	57
80	5.5	3.4	96	11,000	55.9	87	2.7	77
100	6.9	4.1	116	13,000	66	90	3.3	94

Standard Air Knife

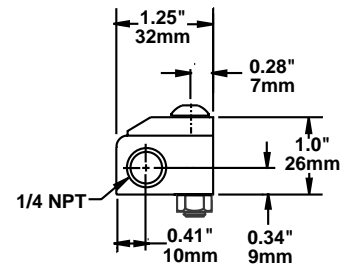
Standard Air Knife Dimensions



Front View



Side View (Aluminum)



Side View (Stainless Steel)

Standard Air Knife Systems

Aluminum Air Knife Only

Model #	Description
2003	3" (8cm)
2006	6" (15cm)
2012	12" (30cm)
2018	18" (46cm)
2024	24" (61cm)
2030	30" (76cm)
2036	36" (91cm)

Aluminum Air Knife Kits

Kits include an Aluminum Air Knife, shim set, filter separator and pressure regulator.

Model #	Description
2203	3" (8cm)
2206	6" (15cm)
2212	12" (30cm)
2218	18" (46cm)
2224	24" (61cm)
2230	30" (76cm)
2236	36" (91cm)

Aluminum Air Knife Shim Sets

Shim Sets include (1) each of a .001" (.03mm), .003" (.08mm) and .004" (.10mm) thick plastic shim.

Model #	Description
2303	3" (8cm)
2306	6" (15cm)
2312	12" (30cm)
2318	18" (46cm)
2324	24" (61cm)
2330	30" (76cm)
2336	36" (91cm)

Stainless Steel Air Knife Only

Model #	Description
2003SS	3" (8cm)
2006SS	6" (15cm)
2012SS	12" (30cm)
2018SS	18" (46cm)
2024SS	24" (61cm)
2030SS	30" (76cm)
2036SS	36" (91cm)

Stainless Steel Air Knife Kits

Kits include a Stainless Steel Air Knife, shim set, filter separator and pressure regulator.

Model #	Description
2203SS	3" (8cm)
2206SS	6" (15cm)
2212SS	12" (30cm)
2218SS	18" (46cm)
2224SS	24" (61cm)
2230SS	30" (76cm)
2236SS	36" (91cm)

Stainless Steel Air Knife Shim Sets

Shim Sets include (3) .002" (.05mm) thick stainless steel shims.

Model #	Description
2303SS	3" (8cm)
2306SS	6" (15cm)
2312SS	12" (30cm)
2318SS	18" (46cm)
2324SS	24" (61cm)
2330SS	30" (76cm)
2336SS	36" (91cm)

Accessories

Model #	Description
9001	Auto Drain Filter Separator, 3/8 NPT, 65 SCFM (1841 SLPM)
9032	Auto Drain Filter Separator, 1/2 NPT, 90 SCFM (2548 SLPM)
9002	Auto Drain Filter Separator, 3/4 NPT, 220 SCFM (6230 SLPM)
9005	Oil Removal Filter, 3/8 NPT, 15-37 SCFM (425-1048 SLPM)
9006	Oil Removal Filter, 3/4 NPT, 50-150 SCFM (1415-4248 SLPM)
9008	Pressure Regulator, 1/4 NPT, 50 SCFM (1416 SLPM)
9033	Pressure Regulator, 1/2 NPT, 100 SCFM (2832 SLPM)
9009	Pressure Regulator, 3/4 NPT, 220 SCFM (6230 SLPM)
9020	Solenoid Valve, 120V, 50/60Hz, 1/4 NPT, 40 SCFM (1133 SLPM)
9034	Solenoid Valve, 120V, 50/60Hz, 1/2 NPT, 100 SCFM, (2832 SLPM)
9036	Solenoid Valve, 120V, 50/60Hz, 3/4 NPT, 200 SCFM (5664 SLPM)

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