



atlantic blowers



AIRKNIFE DRYING SYSTEMS & COMPONENTS



# Atlantic Blowers

## The Leader in Airknife Manufacturing, Component & Engineering Solutions

Atlantic Blowers is a leading manufacturer of high quality blower driven airknives serving a global market. Founded in 2000, Atlantic Blowers has grown to be a leading supplier to many leading OEM's in the North American and European markets offering high quality value added components. Whether you use a regenerative, centrifugal, or multi-stage fan or P-D Blower the staff at Atlantic Blowers will assist you to find the best solution for all of your airknife needs.

Atlantic Blowers offers custom designed airknives for a wide host of reasons. Whether it is placement of inlets, inlets with elbows, or inlets with sanitary fittings for ease of removal for cleaning, we work with each customer to offer the best solution. Working with Midwest values, we strive to offer a high quality product at a competitive price.

Atlantic Blowers manufactures AirStrike, a complete line of airknife accessories which include:

- Stainless Steel Airknives 2", 3", and 4" profile
- Stainless Steel Airknife Support Brackets
- Stainless Steel Manifolds
- Stainless Steel Y Dividers
- Stainless Steel Valves
- Stainless Steel Blower Stands
- Stainless Steel and UHMW Nozzles

# Accessories & Components

To assist with the airknife installation a complete line of products are available. Cone manifolds with standard inlets of 2", 3", and 4" and outlets of 2", 3", and 4". Custom manifolds are available per customer's request and drawings. Also offered are Y dividers in a 2", 3", and 4" configuration. All of our Y's are manufactured of 304 SS. We also offer a Y with a 4" inlet and 2-3" outlets. Airknife brackets are a key component to ensure proper placement of airknives for achieving the customer's desired results. The AirStrike airknife brackets are manufactured with high quality 304 SS components and are offered in sets. For custom mounting we offer the individual components which the customer can then modify to best meet their needs.

The newest product addition has been the UHMW nozzles which were designed for use in the food industry and are now being incorporated into many other industrial applications which include: drying of pop tops, wire and cable drying, and use with inkjet coders for product marketing. To assist with blower placement we also offer blower stands in three sizes: 12" x 12", 18" x 18", and 24" x 24" with a standard height of 48". Shorter stands are also available to meet the customer's specifications. These stands are offered in stainless steel or carbon steel with powder coat paint. Industry applications include:

- Cans and Bottles
- Hanging Parts/Wheels
- Flat Sprockets on a Conveyor
- Regenerative Blower Stands
- Meat and Cheese
- Web Materials (Flat Stock or Exploded Metal)
- Plastic Profile Drawing

## Airknife and Nozzle Support Brackets

- Provides vertical, horizontal, & angular adjustments
- Stainless steel construction



## Y Branch

- 316 stainless steel construction
- 2", 3", 4" & 6" inlet/outlet
- 4" inlet with (2) 3" outlets available in aluminum construction



## Hose and Clamps

- High strength EPDM rubber with stainless steel hose clamps and 316 stainless steel hose clamps



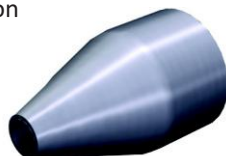
## Manifolds

- 304 stainless steel with 4" inlets and 3, 4, 5, or 6 - 3" outlets
- Special configurations available in 316 stainless steel or painted steel



## Nozzle

- 316 stainless steel construction
- Internal design maintains high velocity air stream
- Hose connections: 2" & 3"



## Butterfly Valve

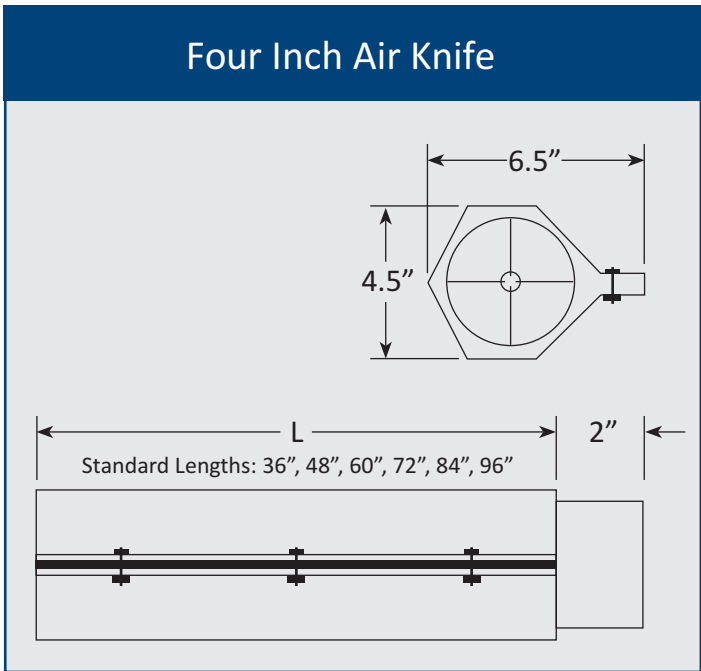
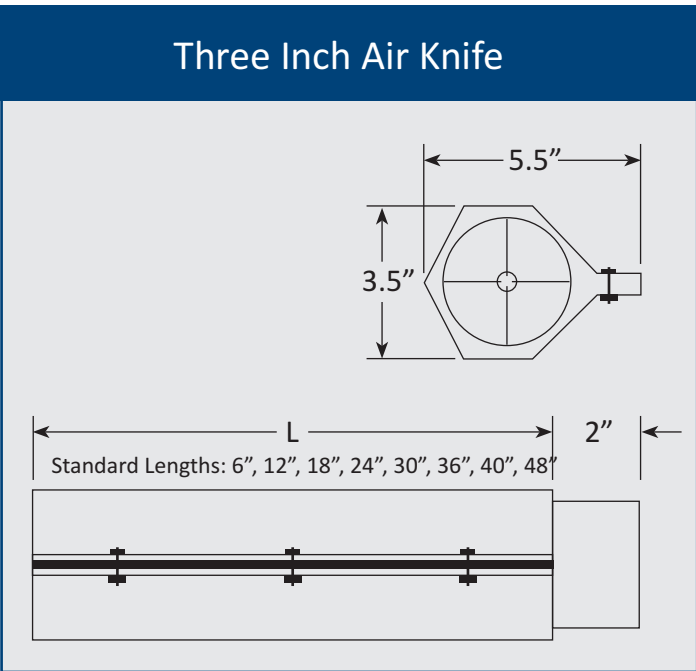
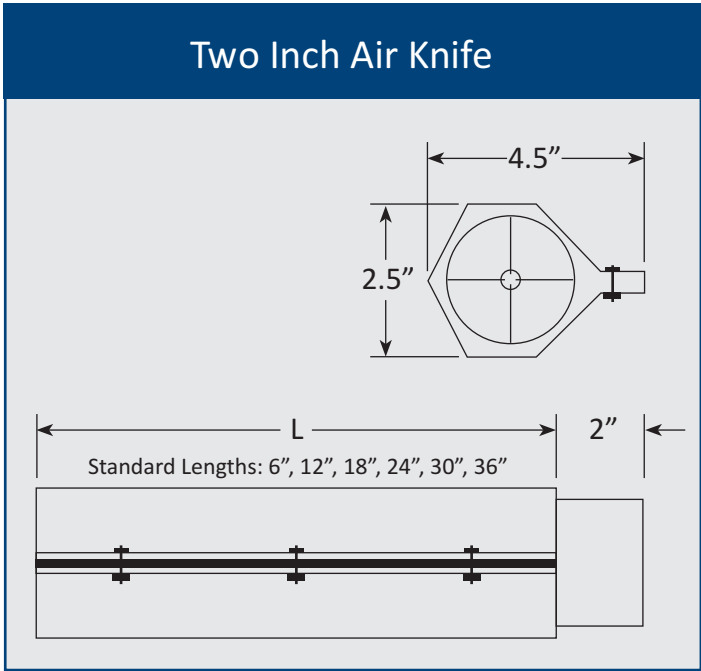
- Anodized aluminum construction
- Adjustable locking hand lever
- Also available in stainless steel
- Sizes: 3" & 4"



# Airknife Sizing

The first task at hand when choosing a drying system is to determine how dry you want your product and how to measure the drying systems performance. Once that has been determined you can begin sizing an airknife drying system. To engineer a system you must first establish how many airknives and total length are required to solve the task at hand. As the gap requirements will vary from product to product you will need to evaluate your application. The best drying is achieved with the airknives placed within 1" of the product. As you move the airknives farther from the product you will need to open the gap to allow for more mass airflow. Once you have the total length and the gap required, use the airknife performance chart on page 7 to determine the size of blower required to meet your needs.

When sizing a drying system you should allow some extra blower performance to allow for variables that may arise in the design of the system such as altitude and dirty air filters.



# Airknife installation Guidelines

## 1. Confirm correct rotation of motor.

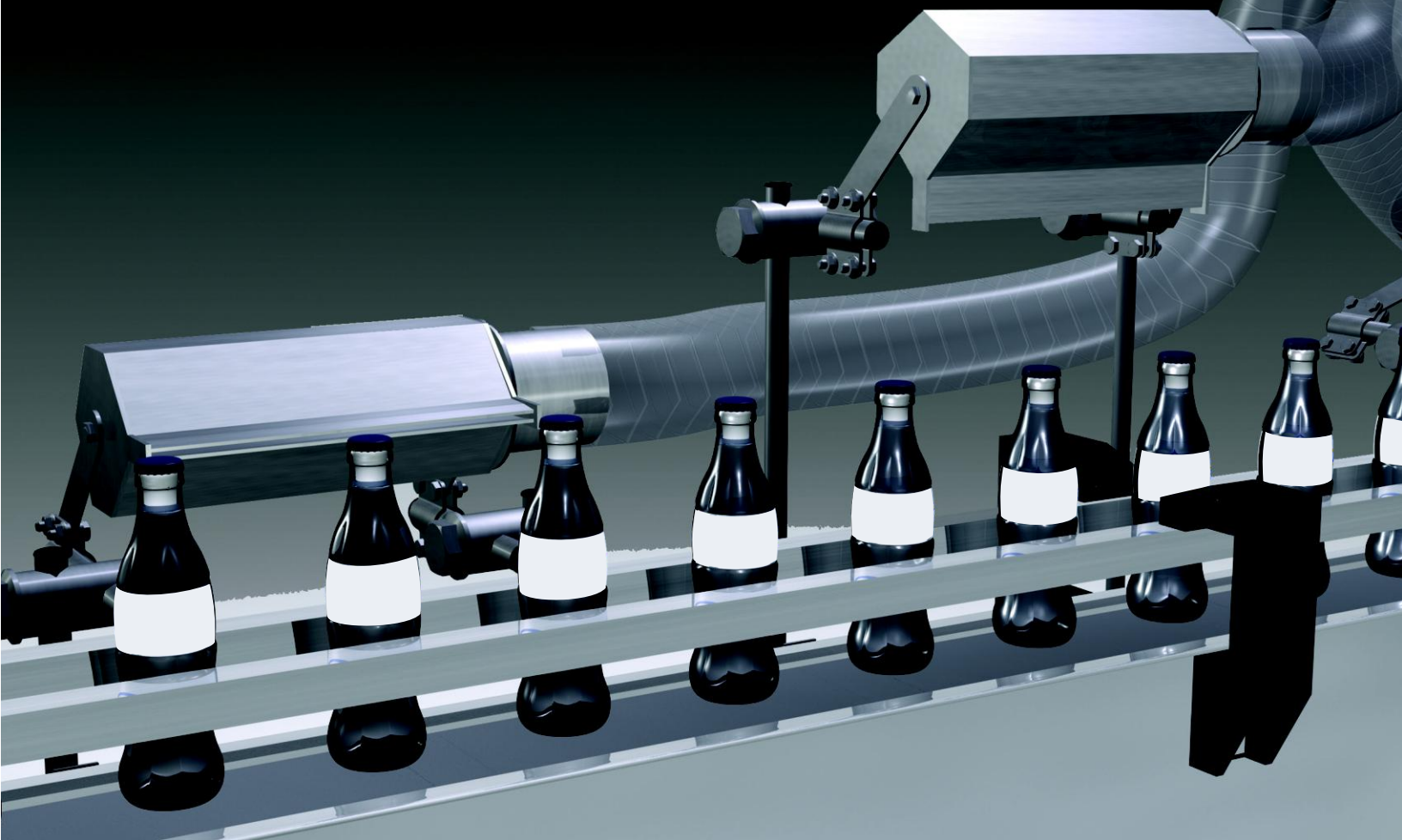
Check inlet filter and replace if necessary.

**2. Install blower in close proximity to the airknives.** Note: due to pressure drops and line lengths some blowers can be located farther from the point of use. If blower is located in a wash-down area it is best to install the unit on a raised stand and not use high pressure water on the filter or bearing areas.

**3. Airknives should be located within 1" of product for best performance.** If this is not possible due to the design of the product you may need to open the airknife gaps to allow for more air flow to ensure proper drying of products. If adjusting airknife gaps make sure to monitor current draw of the motor. With the many types of blowers and fans available you need to know the power curve to prevent excessive amp draw. Fan curves will require more amps for more air flow, as other blowers will react the opposite thus requiring less amps for more airflow.

## 4. When drying a product it is best to dry from the top down.

If pop tops are on the product you may need a higher mass flow of air to blast the water from under the top and also out of the valleys. On bottle caps you may need airknives or nozzles to deliver air right under the cap line. This location is very critical on many applications where a steel cap is used as you are trying to prevent rusting from occurring at this point should there be a flaw in the coatings. This process will get you ready to address the sides. When drying from the side of a product where a conveyor utilizes side guide rails the rails may need to be cut to allow for the air to pass efficiently around the product being dried. Note: cutting rails could cause denting of product in the case of light gauge metals (beverage cans & similar). If cuts are made, round or angle the corners to reduce the chance of denting. Another option is to locate the airknives high and discharge at a more downward angle to allow the air to flow around the product. This method does not produce as good of result as cutting the rails.



# Airknife Configuration

Material: Stainless Steel (SS)

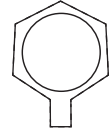
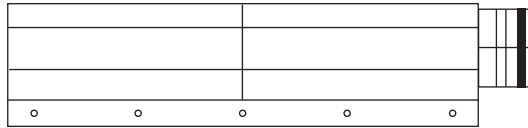
Inlet OD:

2"  3"  4"

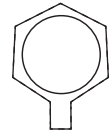
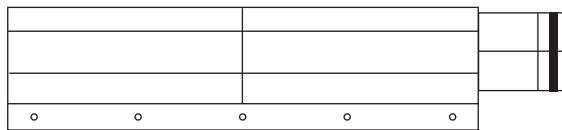
Default Gap: 0.060"

(Gap can be adjusted from 0.020" - 0.125")

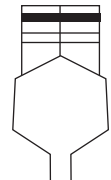
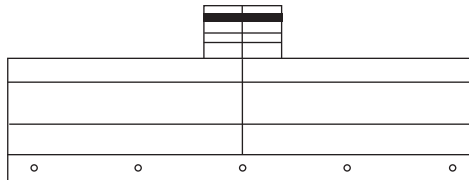
Std Inlet



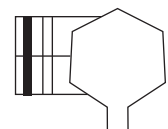
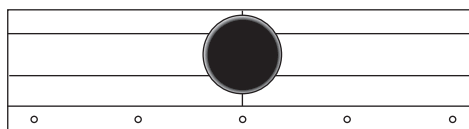
Std Ext Inlet



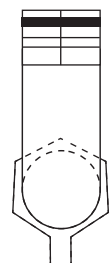
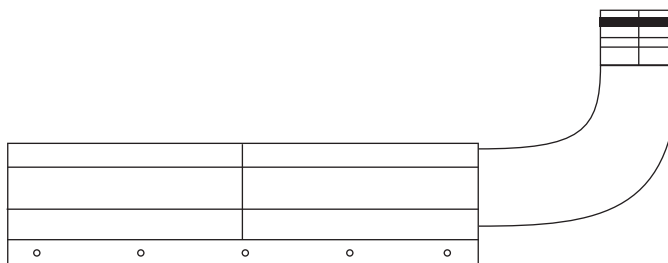
Top Mid Inlet



Sid Mid Inlet



Elbow Inlet



P/N: \_\_\_\_\_

Sales Order #: \_\_\_\_\_

Customer Signature: \_\_\_\_\_

Description: \_\_\_\_\_

Work Order #: \_\_\_\_\_

Date: \_\_\_\_\_

## Volumetric Flow Rate for Nozzles

Nozzle Outlet	.5" Outlet	.75" Outlet	1" Outlet
Pressure	Flow (CFM)	Flow (CFM)	Flow (CFM)
40" H2O	31.25	67.86	120.06
50" H2O	33.67	75.69	134.85
60" H2O	36.83	82.65	147.03
70" H2O	40.00	89.61	159.21

Pressure in H <sub>2</sub> O	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.060	0.070	0.080	0.090	0.100
5	0.60	0.90	1.20	1.50	1.80	2.11	2.41	2.71	3.01	3.61	4.21	4.81	5.41	6.02
10	0.85	1.28	1.70	2.13	2.55	2.98	3.40	3.83	4.43	5.10	5.96	6.81	7.66	8.51
15	1.04	1.56	2.08	2.60	3.13	3.65	4.17	4.69	5.23	6.25	7.29	8.34	9.38	10.42
20	1.20	1.80	2.41	3.01	3.61	4.21	4.81	5.41	6.02	7.22	8.42	9.62	10.83	12.03
25	1.35	2.02	2.69	3.36	4.04	4.71	5.38	6.05	7.25	8.07	9.42	10.76	12.11	13.45
30	1.47	2.21	2.95	3.68	4.42	5.16	5.89	6.63	7.44	8.84	10.31	11.79	13.26	14.74
35	1.59	2.39	3.18	3.98	4.77	5.57	6.37	7.16	8.06	9.55	11.14	12.73	14.32	15.92
40	1.70	2.55	3.40	4.25	5.10	5.96	6.81	7.66	8.53	10.21	11.91	13.61	15.31	17.01
45	1.80	2.71	3.61	4.51	5.41	6.32	7.22	8.12	9.03	10.83	12.63	14.44	16.24	18.05
50	1.90	2.85	3.80	4.76	5.71	6.66	7.61	8.56	9.45	11.41	13.32	15.22	17.12	19.02
55	2.00	2.99	3.99	4.99	5.99	6.98	7.98	8.98	10.01	11.97	13.97	15.96	17.96	19.95
60	2.08	3.13	4.17	5.21	6.25	7.29	8.34	9.38	10.43	12.50	14.59	16.67	18.75	20.84
65	2.17	3.25	4.34	5.42	6.51	7.59	8.68	9.76	10.87	13.01	15.18	17.35	19.52	21.69
70	2.25	3.38	4.50	5.63	6.75	7.88	9.00	10.13	11.27	13.50	15.76	16.01	20.26	22.51
75	2.33	3.49	4.66	5.82	6.99	8.15	9.32	10.48	11.60	13.98	16.31	18.64	20.97	23.30
80	2.41	3.61	4.81	6.02	7.22	8.42	9.62	10.83	13.23	14.44	16.84	19.25	21.66	24.06
85	2.48	3.72	4.96	6.20	7.44	8.68	9.92	11.16	12.45	14.88	17.36	19.84	22.32	24.80
90	2.55	3.83	5.10	6.38	7.66	8.93	10.21	11.48	12.87	15.31	17.87	20.42	22.97	25.52
95	2.62	3.93	5.24	6.56	7.87	9.18	10.49	11.80	13.13	15.73	18.35	20.98	23.60	26.22
100	2.69	4.04	5.38	6.73	8.07	9.42	10.76	12.11	13.45	16.14	18.83	21.42	24.21	26.90



## Air-Pincher Drying System

The Atlantic Blowers, Air-Pincher™ airwipe is designed for drying wire, cable and profile extrusions. To ensure accurate inspection, testing and printing of the product upon the exiting of a cooling solution you must employ a drying system. It is also essential that all moisture be removed prior to packaging to avoid growth of mold on the product.

The most cost effective way to dry this type of product is with the use of a regenerative blower and an Air-Pincher™ airwipe system. This system will not tax your plant air compressor system and has a lower operating cost than the use of plant air. The Air-Pincher™ is designed to install over the product being dried without have to thread or break the product. You simply lower the Air-Pincher™ in place and secure it to its stand. Depending on line speed additional Air-Pincher's may be added to ensure proper drying. The Air-Pinches utilizes high grade stainless steel and UHMW plastics.

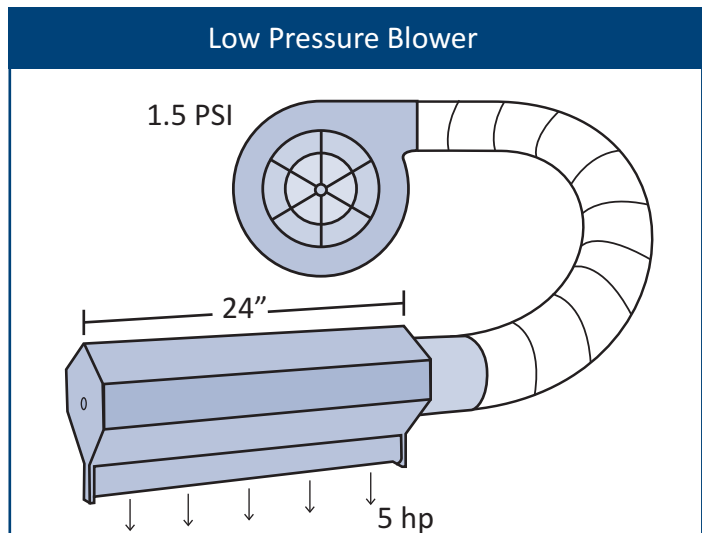
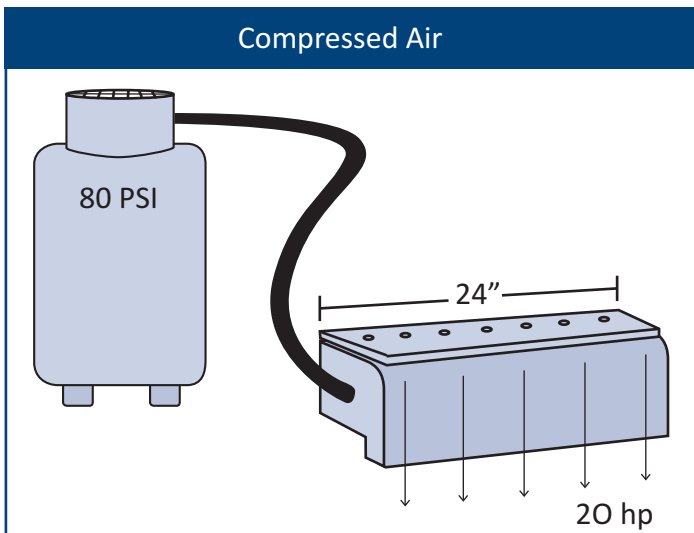


# Flow of Compressed Air Through Orifice @ 100 PSIG

Fraction	1/32	1/16	1/8	1/4	3/8	1/2	5/8	3/4	7/8	1	1-1/4	1-1/2	2
Area in <sup>2</sup>	0.0008	0.0031	0.0123	0.0491	0.1104	0.1963	0.3068	0.4418	0.6013	0.7854	1.2272	1.7671	3.1416
PSIG	Orifice Flow in SCFM Based on Ambient Conditions of 14.7 PSIA and 68 °F												
25	0.56	2.25	9.0	36.0	81.0	144	225	324	441	576	900	1296	2305
35	0.70	2.82	11.3	45.1	101.4	180	282	406	552	721	1127	1623	2885
40	0.78	3.10	12.4	49.6	111.6	198	310	447	608	794	1240	1786	3175
45	0.85	3.38	13.5	54.1	121.8	217	338	487	663	866	1354	1949	3466
50	0.92	3.67	14.7	58.7	132.0	235	367	528	719	939	1467	2113	3756
55	0.99	3.95	15.8	63.2	142.2	253	395	569	774	1011	1580	2276	4046
60	1.06	4.23	16.9	67.8	152.4	271	423	610	830	1084	1694	2439	4336
65	1.13	4.52	18.1	72.3	162.6	289	452	651	886	1157	1807	2602	4626
70	1.20	4.80	19.2	76.8	172.9	307	480	692	941	1229	1921	2766	4917
75	1.27	5.08	20.3	81.4	183.1	325	508	732	997	1302	2034	2929	5207
80	1.34	5.37	21.5	85.9	193.3	344	537	773	1052	1374	2147	3092	5497
85	1.41	5.65	22.6	90.4	203.5	362	565	814	1108	1447	2261	3255	5787
90	1.48	5.94	23.7	95.0	213.7	380	594	855	1163	1519	2374	3419	6078
95	1.55	6.22	24.9	99.5	223.9	398	622	895	1219	1592	2487	3582	6368
100	1.63	6.50	26.0	104.0	234.1	416	650	936	1274	1665	2601	3745	6658

Nozzle Outlet	Air Flow (SCFM)
1/16"	4.6
3/32"	12.5
1/8"	22.0
5/32"	34.0
3/16"	48.0
7/32"	64.0
1/4"	79.0
1/2"	160.0





### Compressed Air Annual Cost

1-24" airknife with "standard" 0.002 slot operating @ 80 PSIG will consume: 3.4 SCFM / in

Total air consumption equals: 81.6 SCFM

81.6 SCFM = 20 hp compressor

1 hp will deliver approximately: 4 SCFM

Calculating operating cost at \$0.10 / kW

Convert hp to kW  
 $HP \times 0.7457 = kW$   
 $20 \text{ hp} \times 0.7457 = 14.91 \text{ kW}$   
 $14.91 \text{ kW} \times \$0.10 = \$1.49 / \text{hr} \times 24 \text{ hr}$   
 $= \$35.80 \text{ per day (Compressor only)}$

20 hp motor = 14,920 W

$$\frac{14,920 \times 8760 \text{ hours per year}}{1000}$$

= 130,700 kWh x \$0.10 / kWh

**= \$13,070 / year**

(Not including maintenance)

### Low Pressure Blower Annual Cost

Requirements for operating one 24" air knife with a 0.045" gap

System Pressure at 41.5" H2O

Discharge velocity at 26,700 SCFM

Energy cost for 5 hp

Calculating operating cost at \$0.10 / kW

Convert hp to kW  
 $hp \times 0.7457 = kW$   
 $5 \text{ hp} \times 0.7457 = 3.73 \text{ kW}$   
 $3.73 \text{ kW} \times \$0.10 = \$0.37 / \text{hr} \times 24 \text{ hr}$   
 $= \$8.95 \text{ per day}$

5 hp motor = 3730 W

$$\frac{3730 \times 8760 \text{ hours per year}}{1000}$$

= 32,674.80 kWh x \$0.10 / kWh

**= \$3,267.48 / year**

#### Maintenance & Repair Cost Considerations

Can the system be maintained by in-house personnel?

What is the cost of oil and disposal?

What is the cost of leaks?

- 50 hp compressor will generate 126,000 BTU's/HR
- 50 hp compressor requires 1.5HP refrigerated air dryer
- 65% of cost for compressed air is electrical
- 35% is for maintenance and repair
- Compressor cost 1.5 to 2.5 x the initial purchase price to operate for the first year.



# Atlantic Blowers

## Production Capabilities & Custom Engineering

Atlantic Blowers has been in business supplying airknives and accessories manufactured with two state of the art CNC Laser centers by Cincinnati. This top quality, high speed cutting center is the answer for many companies requiring highly precise, fast and economical cutting of metals, plastics and other flat sheet materials.

Our state-of-the-art laser cutting center offers these great advantages:

- Laser quality precision (+/- .001" tolerance)
- Fast turnaround
- Capable of cutting a variety of metals and flat materials
- CAD/CAM compatible

Along with manufacturing airknives and components we can also produce blower enclosures and small ductwork fittings. We also offer:

- 3 CNC press brakes - 120" max.
- Plasma cutting for metal up to 2" thickness
- Water jet cutting up to 4" thickness





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