

## STANDARD AIR BLADE™ AIR KNIFE

Blowoff, clean, cool and dry with a strong curtain of amplified airflow.

### WHAT ARE THEY - REASONS TO USE

Standard Air Blade™ Air Knife Blowoff System from Nex Flow™ is easy to mount and maintain, reducing both compressed air consumption and noise levels.

The Standard Air Blade™ Air Knife Blowoff System produces a “Laminar” flow of air along its length using the “Coanda” effect which “entrains” a large volume of air from the surrounding area along with the small amount of compressed air from the Air Blade™ Air knife to produce an output flow up to 30 times.

System payback on compressed air savings can be as soon as a few weeks in some applications.

It is less costly than the highly efficient and quiet Silent Air Blade™ Air Knife but produces a higher noise level. Still, it is popular for more heavy duty installations due to its greater bulk. In addition, it is excellent for some applications when mounted flush to a flat surface to create an extended air barrier along that surface.

### STANDARD AIR BLADE™ OR SILENT X-STREAM™ AIR KNIFE:

A Nex Flow™ applications engineer can best advise. Normally the X-Stream™ version is most efficient although the Standard would be lowest initial cost.

**NOTE:** Plastic shims can wear out quickly in Air Knives if the air is not clean. Nex Flow™ uses only stainless steel shims.



A Model 10018 Standard Air Blade™ Air Knife is used to blow scrap pieces and dirt from cellular phone parts after machining.

### STANDARD AIR BLADE™ AIR KNIFE FEATURES:

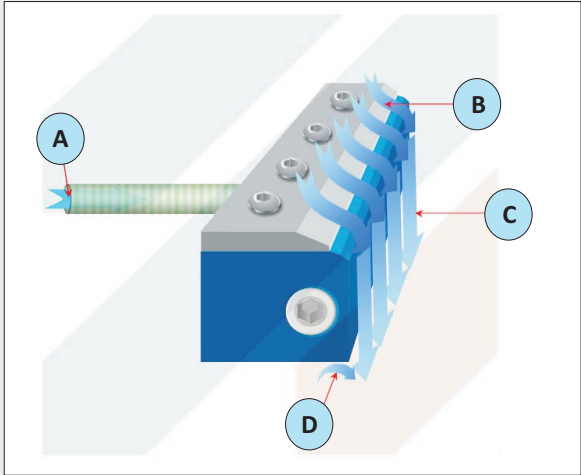
- ▶ No moving parts - anodized aluminum or stainless steel
- ▶ Compact design, simple, lightweight and portable
- ▶ Rugged design
- ▶ Full flow - air across entire length of Air Knife
- ▶ Air inlets at ends and back
- ▶ Driven by air not electricity
- ▶ Replaces drilled pipe and open jets or nozzles used for blowoff, cleaning, drying and cooling
- ▶ High airflow amplification
- ▶ Instant on-off, no electricity or explosion hazard

### STANDARD AIR BLADE™ AIR KNIFE BENEFITS:

- ▶ Longer life in difficult environments than competitive models
- ▶ Lower compressed air consumption than drilled pipe or rows of open jets and nozzles.
- ▶ Can be placed end to end for continuous airflow.
- ▶ Maintenance free with output easily controlled, safe to use.

### STANDARD AIR BLADE™ AIR KNIFE - HOW IT WORKS:

**Standard Air Blade™ Air Knife** - Compressed air enters the Air Knife at the rear (or end) ports at (A). Air is entrained at point (B) by the compressed air stream that leaves the Air Knife from a small gap. The entrained air follows the “Coanda” profile along the front face (C) that directs the air flow in a perfect straight line at 90 degrees to create a uniform sheet of air along the entire length of the Air Blade™ Air Knife. As the air leaves the Air Knife at point (D) the amplified air stream maximizes velocity and force is maximized as a well-defined sheet of laminar flow with minimal wind shear for reduced energy use in blowoff and cooling.

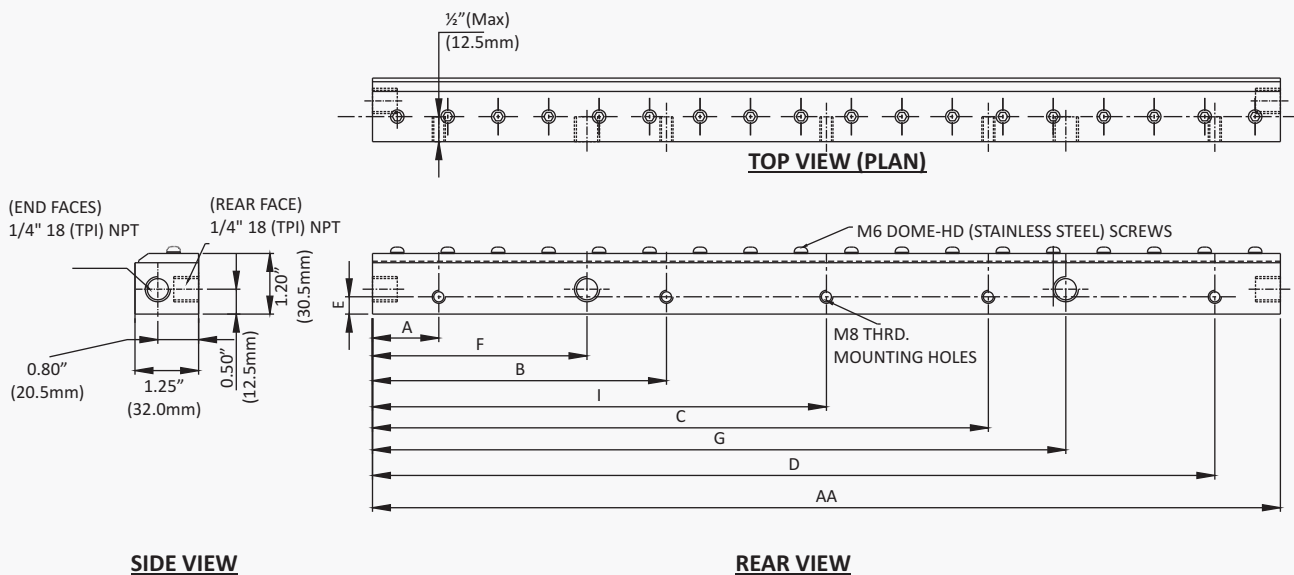


Standard Air Blade™ Air Knife is available in eight standard lengths in anodized aluminum and in seven lengths in stainless steel: 3" (76 mm), 6" (150 mm), 8" (203.2 mm) (not available in stainless), 12" (300 mm), 18" (457 mm), 24" (609.5 mm), 30" (761 mm), 36" (914 mm)

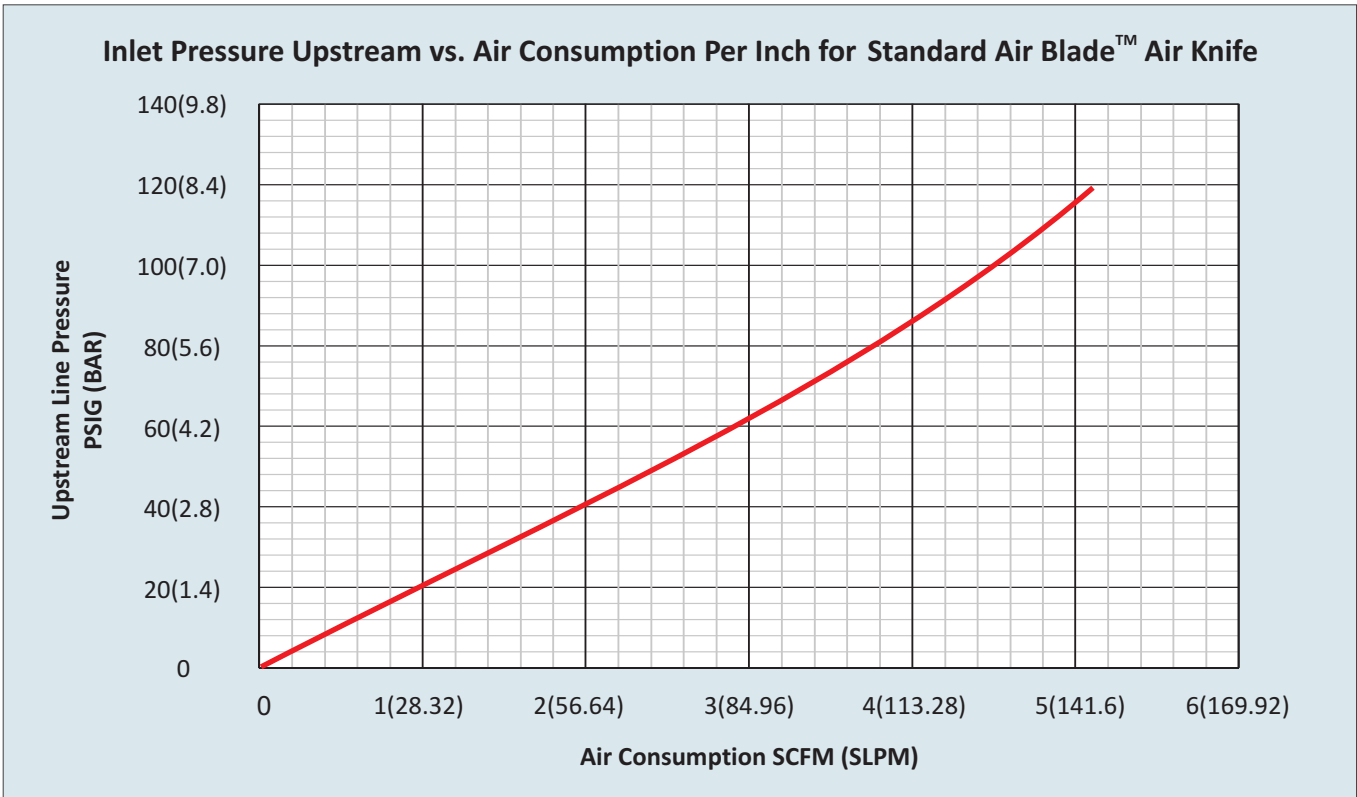
PART NO. (Aluminum & Stainless Steel)	AA Inches (mm)	A Inches (mm)	B Inches (mm)	C Inches (mm)	D Inches (mm)	E Inches (mm)	F Inches (mm)	G Inches (mm)	H Inches (mm)	Number of Rear Inlet (Side Inlets)
Model 10003 Aluminum	3"(76.2)	.625"(15.9)	N/A	N/A	2.375"(60.3)	0.344"(8.7)	1.50"(38.1)	N/A	N/A	1(2)
Model 10003S Stainless	3"(76.2)	.625"(15.9)	N/A	N/A	2.375"(60.3)	0.344"(8.7)	1.50"(38.1)	N/A	N/A	1(2)
Model 10006 Aluminum	6"(152)	1"(25.4)	N/A	N/A	5.0"(12.7)	0.344"(8.7)	3.0"(76.2)	N/A	N/A	1(2)
Model 10006S Stainless	6"(152)	1"(25.4)	N/A	N/A	5.0"(127)	0.344"(8.7)	3.0"(76.2)	N/A	N/A	1(2)
Model 10008 Aluminum	8"(203.2)	1.187"(30)	2.37"(60.2)	5.63"(143)	6.813"(162)	0.344"(8.7)	4.0"(101.6)	N/A	N/A	1(2)
Model 10008S Stainless	8"(203.2)	1.187"(30)	2.37"(60.2)	5.63"(143)	6.813"(162)	0.344"(8.7)	4.0"(101.6)	N/A	N/A	1(2)
Model 10012 Aluminum	12"(305)	1"(25.4)	3.1"(78.7)	8.9"(127)	11.0"(279)	0.344"(8.7)	6.0"(152)	N/S	N/S	1(2)
Model 10012S Stainless	12"(305)	1"(25.4)	3.1"(78.7)	8.9"(127)	11.0"(279)	0.344"(8.7)	6.0"(152)	N/A	N/A	1(2)
Model 10018 Aluminum	18"(457)	1.3"(33.4)	5.8"(148)	12.2"(310)	16.7"(424)	0.344"(8.7)	4.25"(108)	13.75"(349)	N/A	2(2)
Model 10018S Stainless	18"(457)	1.3"(33.4)	5.8"(148)	12.2"(310)	16.7"(424)	0.344"(8.7)	4.25"(108)	13.75"(349)	N/A	2(2)
Model 10024 Aluminum	24"(610)	1.3"(33.4)	4.2"(107)	19.8"(503)	22.7"(577)	0.344"(8.7)	7.3"(183)	16.7"(424)	12.0"(304.8)	2(2)
Model 10024S Stainless	24"(610)	1.3"(33.4)	4.2"(107)	19.8"(503)	22.7"(577)	0.344"(8.7)	7.3"(183)	16.7"(424)	12.0"(304.8)	2(2)
Model 10030 Aluminum	30"(761)	1.13"(28.7)	10.92"(277)	19.08"(485)	28.87"(733)	0.344"(8.7)	7.66"(195)	22.34"(567)	N/A	2(2)
Model 10030S Stainless	30"(761)	1.13"(28.7)	10.92"(277)	19.08"(485)	28.87"(733)	0.344"(8.7)	7.66"(195)	22.34"(567)	N/A	2(2)
Model 10036 Aluminum	36"(914)	1.09"(27.7)	10.75"(273)	18.75"(28.4)	34.92"(887)	0.344"(8.7)	7.53"(191)	28.47"(723)	18.8"(478)	2(2)
Model 10036S Stainless	36"(914)	1.09"(27.7)	10.75"(273)	18.75"(28.4)	34.92"(997)	0.344"(8.7)	7.53"(191)	28.47"(723)	18.8"(478)	2(2)

**AIR BLADE™ AIR KNIFE**

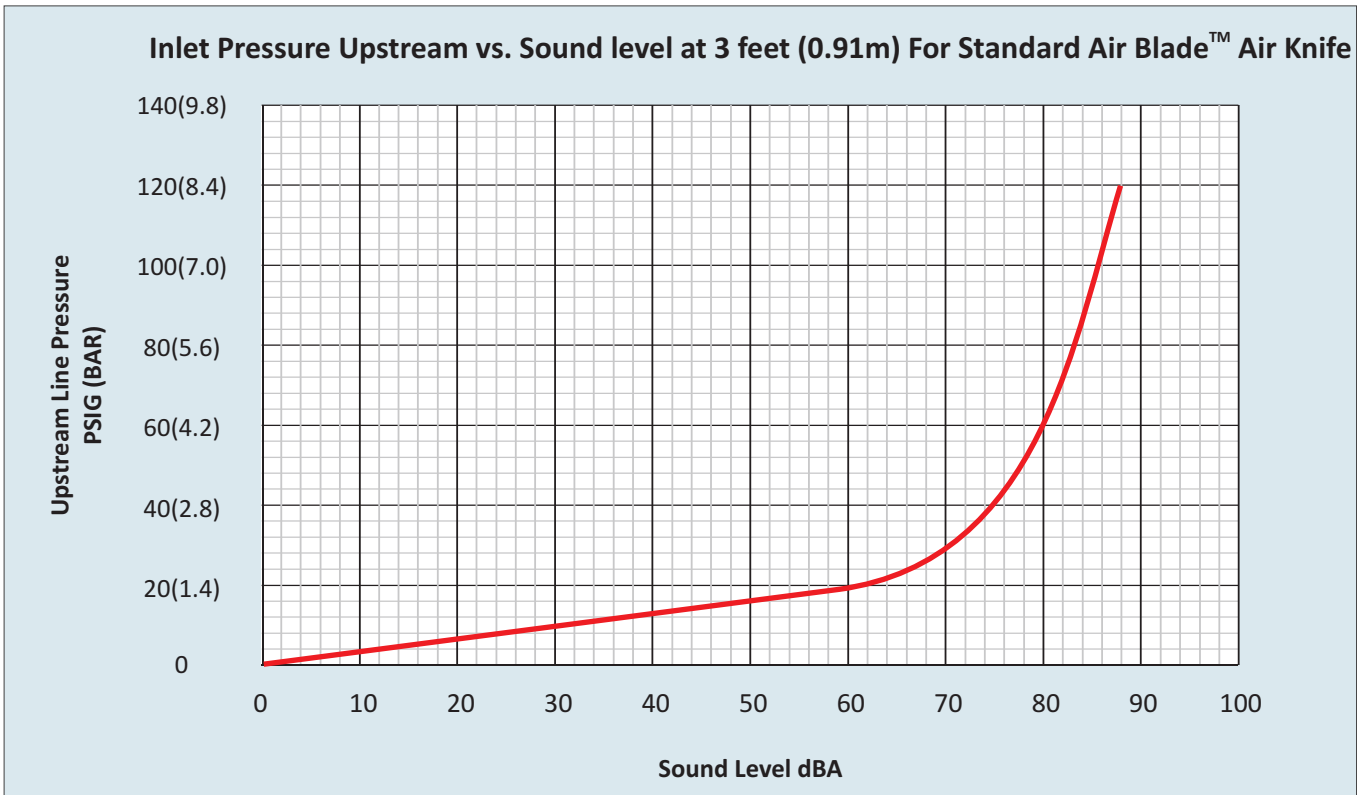
**STANDARD AIR BLADE™ AIR KNIFE**



(\* BSP Threads or Adaptors can be supplied depending on country location)

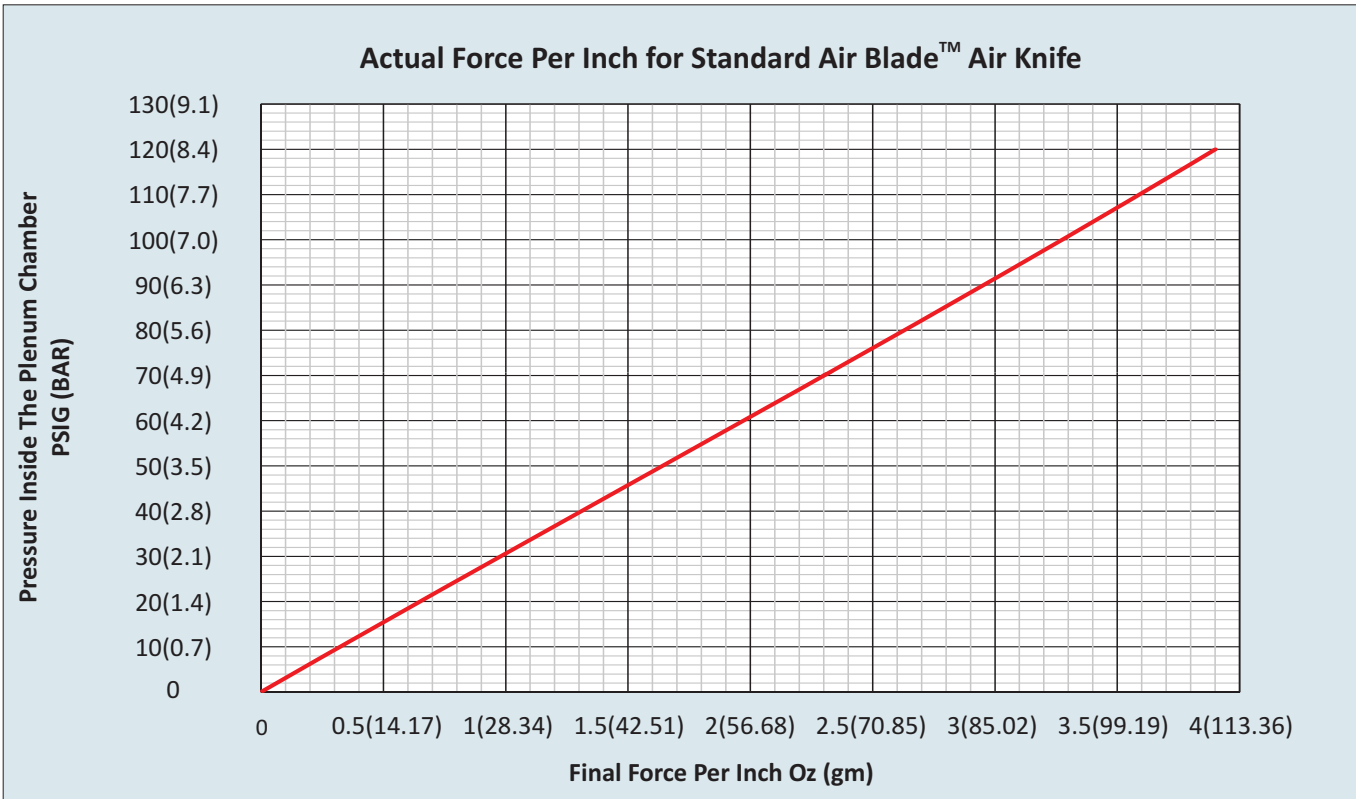


**NOTE:** Tests were performed using a 12" Model 10012 Standard Air Blade™ Air Knife



**NOTE:** Tests were performed using a 12" Model 10012 Standard Air Blade™ Air Knife





**NOTE:** Force per inch of Air Knife was based on tests done with a 12" Standard Air Blade™ Air Knife with a .002" (.050 mm) gap. Force was measured at a target 6" from the Air Knife.

Actual results may vary due to tolerance variations.  
 Estimate 30% more force with a .004" (.100 mm) gap.

**Force per Inch Explanation** - The pressure is measured at the chamber inside the Standard Air Blade™ Air Knife and not upstream. The force per inch is from tests using a Standard Air Blade™ Air Knife with the graph extrapolated for higher end pressures. Figures will vary with the length of the Air Knife. The longer the air knife, the less the chamber pressure will be and the force per inch will also decrease. This is because of the limited size and volume of the chamber and also because of the limited air inlet holes.

Estimated chamber pressure inside the Standard Air Blade™ Air Knife as a percentage of upstream line pressure can be reasonably estimated as follows. Size of air lines, upstream pressure, and piping configurations can cause a great variation in actual force produced and actual pressure formed in the chamber of the Air Knife. However, for general engineering applications the multiplication factors as shown in the graph "Multiplication Factors to Obtain Plenum Pressure for Standard Air Blade™ Air Knife" can be used to estimate the plenum pressure. Then you can obtain the force per inch from the Actual Force per inch graph.

- ▶ In general, the force per inch will be greater for shorter length Standard Air Blade™ Air Knives.
- ▶ If a particular application requires a greater force, it may be more useful to have several smaller length Air Knives than one larger one.

**EXAMPLE:**

Two (2) 12" Standard Air Blade™ Air Knives with a line pressure of 80 psig can be estimated to have a chamber pressure of 0.9 times the line pressure or  $0.9 \times 80 = 72$  psig.

The force per inch from the Force graph at 72 psig is about 2.2 Oz per inch for a total of  $2.4 \times 24 = 57.6$  Oz force

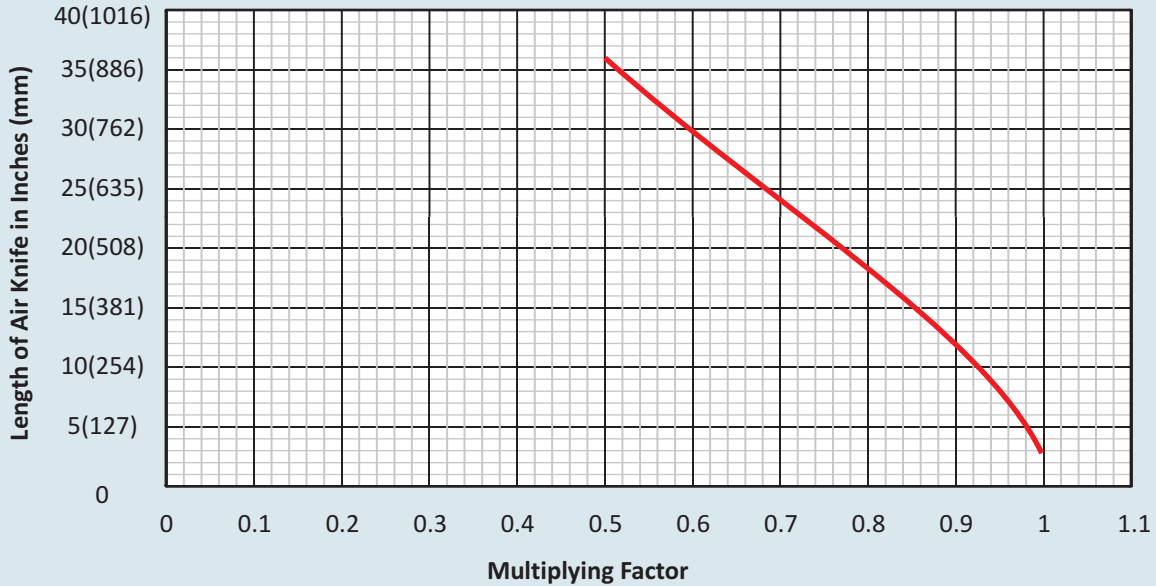
One (1) 24" Standard Air Blade™ Air Knife with a line pressure of 80 psig can be estimated to have a chamber pressure of 0.70 times the line pressure of  $0.7 \times 80 = 56$  psig.

The force per inch from the Force graph at 56 psig is  $1.8 \times 24 = 43$  Oz force.

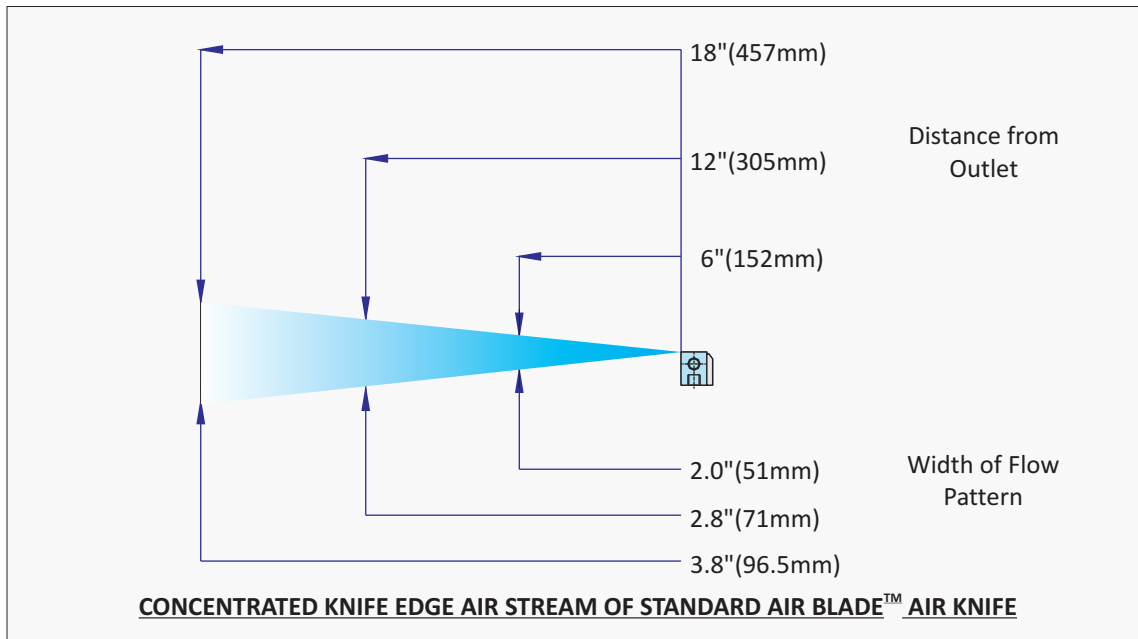
**In most applications the single 24" Air Knife will work but in applications where force is critical, it can make sense to use several smaller Air Knives instead.**



**Multiplication Factors to Obtain Plenum Pressure for Standard Air Blade™ Air Knife**



**NOTE:** These multipliers are based on having a large compressed air supply with air lines in the 1" range and with the location of use mid-plant. If the location is near the end of a long airline run, if there is a heavy use load and if air lines are small the multiplier can be reduced as much as 50%

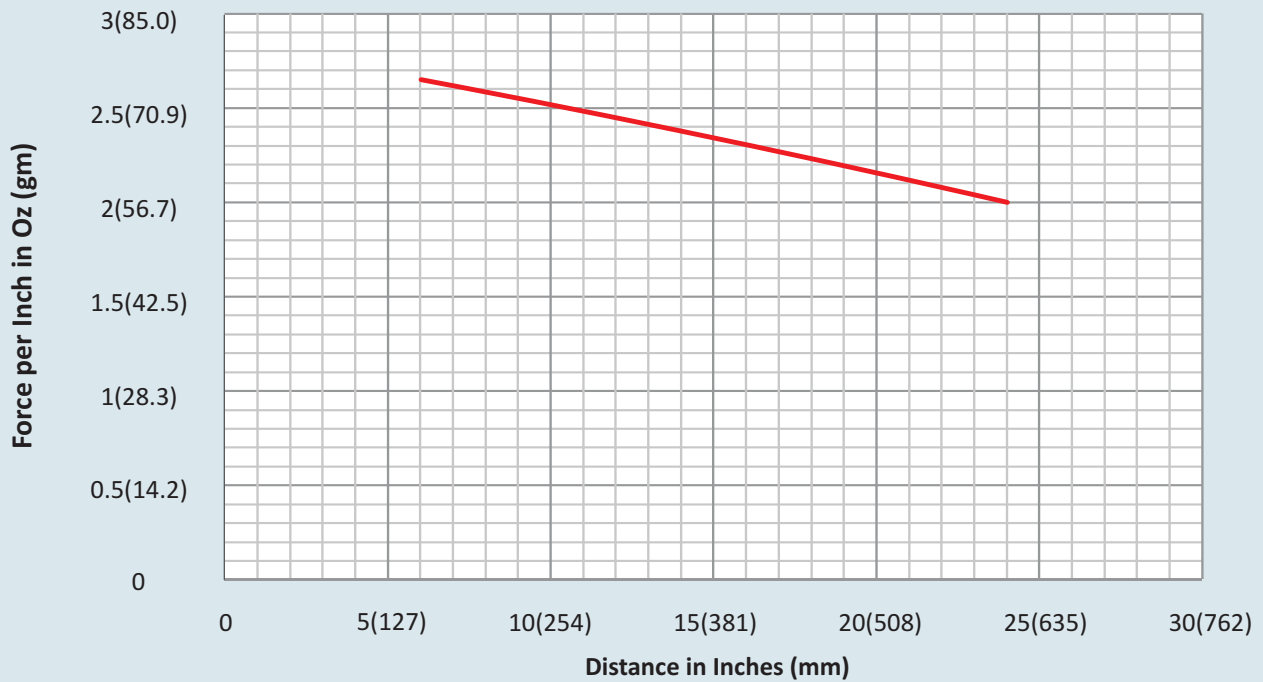


**NOTE:**

The performance of the X-Stream™ Air Blade™ Air Knife and the Standard Air Blade™ Air Knife will be relatively the same given "same" internal chamber conditions. However, due to design the X-Stream™ Air Blade™ will use about 15% "LESS" compressed air. This generally means less air line pressure drop and "higher" chamber pressures in an X-Stream™ Air Blade™ given the same application and therefore superior performance (as well as lower noise levels). The Standard Air Blade™ Air Knife however is lower cost has applications suited to its unique design.

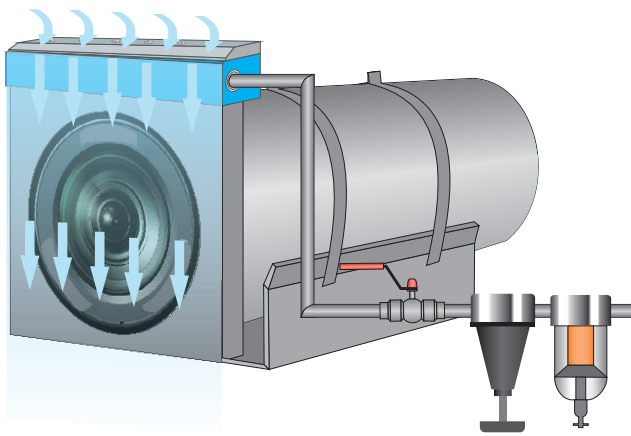


**Force per Inch at Various Distance from Target at 80 PSIG Plenum Pressure for Standard Air Blade™ Air Knife**

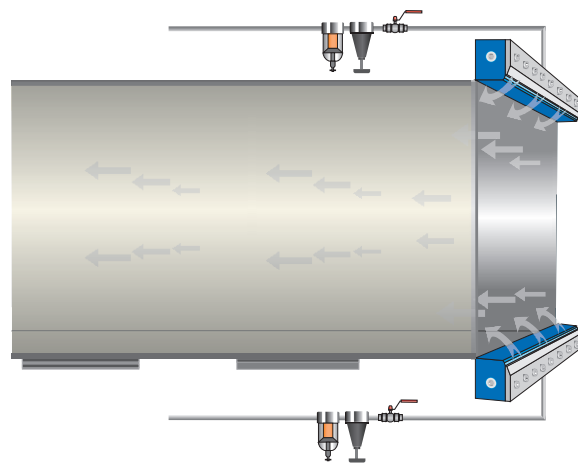


**NOTE:** Tests were performed using a 12" Model 10012 Standard Air Blade™ Air Knife

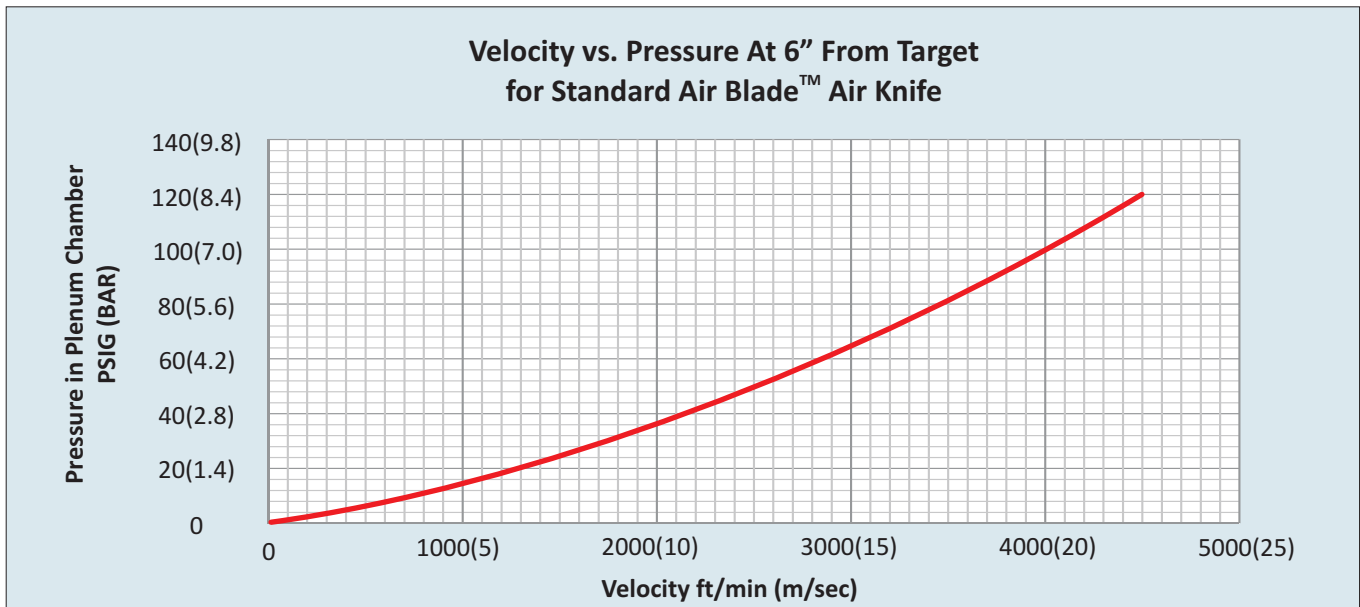
A Model 10003 3" Standard Air Blade™ Air Knife is mounted such that the surface of the Air Knife is flush with the surface of a camera lens. The air flows along the surface of the Air Knife and continues along the lens due to a boundary layer effect that provides a laminar "barrier" to the dirty environmental air, keeping the lens clean and dry.



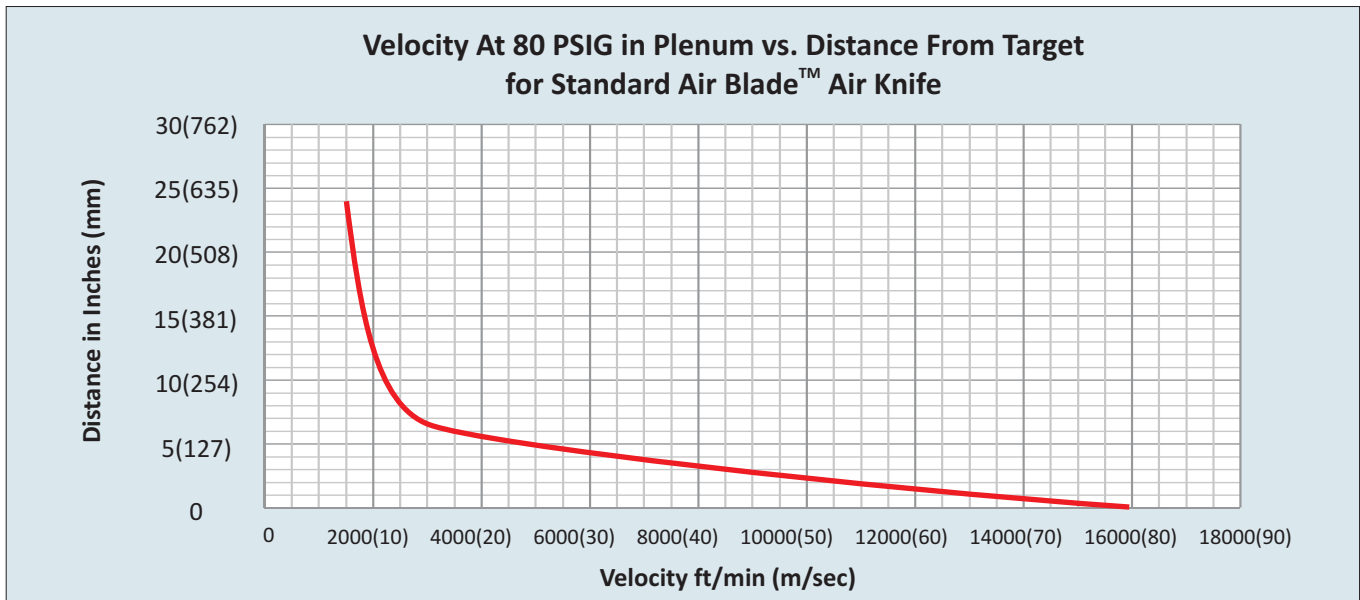
Two Model 10012 Standard Air Blade™ Air Knives are installed on a duct (One on top, One on bottom) to draw in waste fumes & exhaust. The air leaving the Air Knives hug the inside wall creating an excellent vacuum inside the duct.



**AIR BLADE™ AIR KNIFE**



**NOTE:** Tests were performed using a 12" Model 10012 Standard Air Blade™ Air Knife



**NOTE:** Tests were performed using a 12" Model 10012 Standard Air Blade™ Air Knife

Velocity is important in that it can determine the cooling effect and to some extent is related to the blowoff force. Velocity will vary significantly depending on the temperature of the ambient air the hotter the air, the greater the velocity (and the greater the amplification of air flow) so velocity figures at best are an approximation. As air is entrained, the flow increases and as the flow increases the velocity must come down.

The velocity at the exit of the Standard Air Blade™ Air Knife is obviously the highest but the figure is of no real value as once the surrounding air is entrained, the velocity drops dramatically. (Be very wary of extremely high velocity claims downstream of any Air Knife). The figures we provide can be verified with a velocity meter. There will be variations in measurement due to air pressure, and atmospheric conditions. The velocity is, among these other things dependent on the chamber pressure. That pressure in turn depends upon pipe size, pressure drops in the system, distance from the compressor station to the use point, and many other factors. (See previous pages referring to force approximations and multipliers to estimate chamber pressure).



**CALCULATING AIR SAVINGS**

The chart below shows the air consumption at different pressures of various hole sizes compare to the air consumption per inch of an Standard Air Blade™ Air Knife. To obtain the air consumption of drilled holes in pipe determine the size of the holes and multiply the air loss by the number of holes over the length.

The air usage of the X-Stream™ Air Blade™ Air Knife is per inch - just multiply the figure from the chart by the length of the Air Blade™ Air Knife.

**EXAMPLE:**

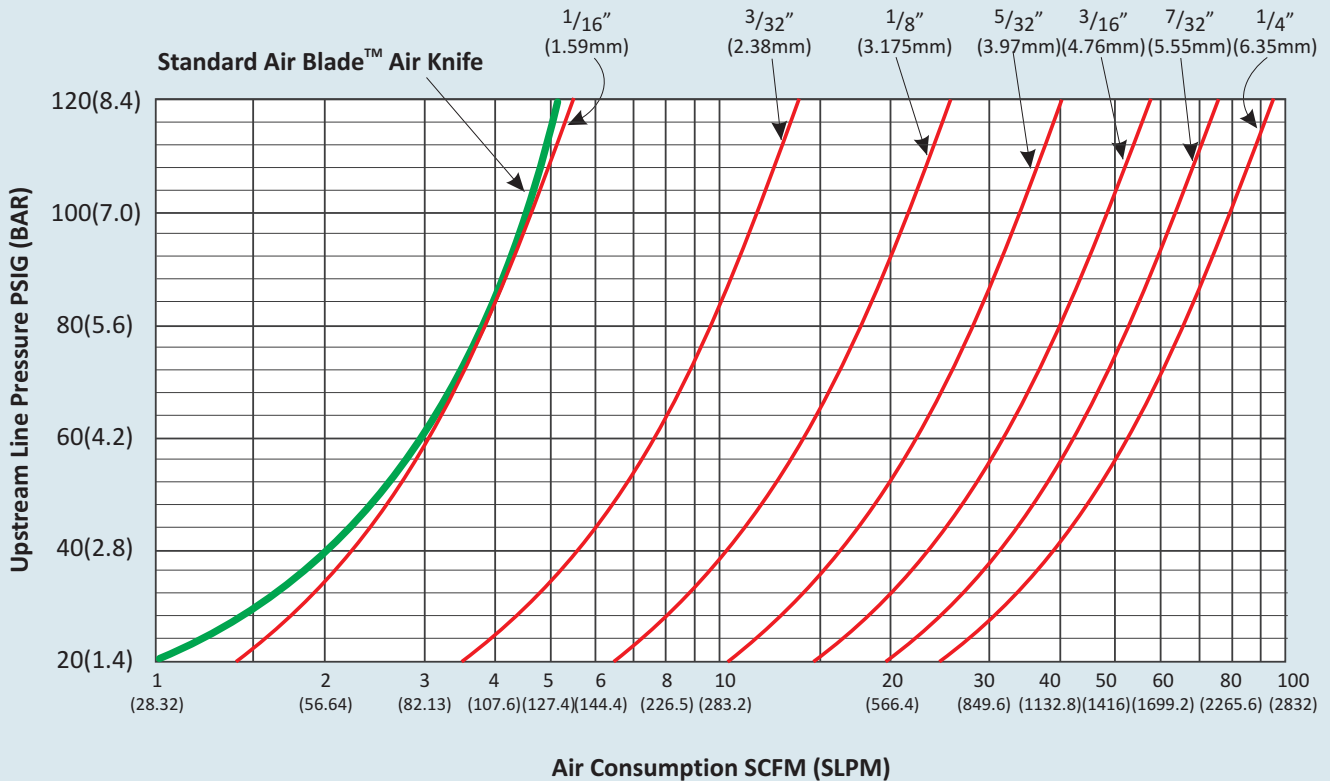
Assume an existing blowoff of a 24" long pipe with 3/32" holes spaced 3/4" inches apart for a total of 32 holes. At 80 PSIG from the graph each hole consumes about 9.4 SCFM for a total of 32 X 9.4 = 300.8 SCFM

At 80 PSIG a 24" Standard™ Air Blade™ Air Knife consumes 24 X 3.8 SCFM/inch = 91.2 SCFM

Compressed air saved is 300.8 - 91.2 = 209.6 SCFM

Using actual air costs if known (or assuming a reasonable cost of \$.30 US per 1000 cubic feet) the dollars saved is 209.6 X 60 X 0.30/1000 = \$3.77/hr or assuming an 2000 hour working year = \$7450.00 SAVED PER YEAR

**Diameter of hole in pipe in Inches (mm) and air consumption per Inch (25.4mm) of Air Knife.**



**AIR BLADE™ AIR KNIFE**





**Aluminum Standard Air Blade™ Air Knife**

PART NO.	DESCRIPTION
10003	3" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10006	6" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10008	8" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10012	12" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10018	18" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10024	24" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10030	30" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
10036	36" Aluminum Standard Full-Flow Air Blade™ Air Knife Only
11003	3" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11006	6" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11008	8" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11012	12" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11018	18" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11024	24" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11030	30" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
11036	36" Aluminum Standard Full-Flow Air Blade™ Air Knife plus Filter with Auto Drain
12003	3" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. With gauge
12006	6" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. With gauge
12008	8" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. with gauge
12012	12" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. With gauge
12018	18" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. with gauge
12024	24" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. with gauge
12030	30" Aluminum Standard Full-Flow Air Blade™ Air Knife + Filter with Auto Drain + Reg. with gauge
12036	36" Aluminum Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge

**Extra Stainless Steel Shims Standard Air Blade™ Air Knife (.002" or .050 mm Thick)**

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
10103S	3" Stainless Steel Shim	10118S	18" Stainless Steel Shim
10106S	6" Stainless Steel Shim	10124S	24" Stainless Steel Shim
10108S	8" Stainless Steel Shim	10130S	30" Stainless Steel Shim
10112S	12" Stainless Steel Shim	10136S	36" Stainless Steel Shim

**NOTE:** Plastic shims can wear out quickly in Air Knives if the air is not clean. Nex Flow™ uses ONLY stainless steel shims.



**Stainless Steel Standard Air Blade™ Air Knife**

PART NO.	DESCRIPTION
10003S	3" Stainless Steel Standard Full-Flow Air Blade™ Only
10006S	6" Stainless Steel Standard Full-Flow Air Blade™ Only
10012S	12" Stainless Steel Standard Full-Flow Air Blade™ Only
10018S	18" Stainless Steel Standard Full-Flow Air Blade™ Only
10024S	24" Stainless Steel Standard Full-Flow Air Blade™ Only
10030S	30" Stainless Steel Standard Full-Flow Air Blade™ Only
10036S	36" Stainless Steel Standard Full-Flow Air Blade™ Only
11003S	3" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11006S	6" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11012S	12" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11018S	18" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11024S	24" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11030S	30" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
11036S	36" Stainless Steel Standard Full-Flow Air Blade™ plus Filter with Auto Drain
12003S	3" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge
12006S	6" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator
12012S	12" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge
12018S	18" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge
12024S	24" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge
12030S	30" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge
12036S	36" Stainless Steel Standard Full-Flow Air Blade™ + Filter with Auto Drain + Regulator with gauge

**Extra Stainless Steel Shims for Standard Air Blade™ Air Knife (.002" or .050 mm Thick)**

PART NO.	DESCRIPTION
10103S	3" Stainless Steel Shim
10106S	6" Stainless Steel Shim
10112S	12" Stainless Steel Shim
10118S	18" Stainless Steel Shim

PART NO.	DESCRIPTION
10124S	24" Stainless Steel Shim
10130S	30" Stainless Steel Shim
10136S	36" Stainless Steel Shim

**NOTE:** Plastic shims can wear out quickly in Air Knives if the air is not clean. Nex Flow™ uses ONLY stainless steel shims.