

**AIR KNIFE SYSTEMS**

## PRODUCT OVERVIEW



*Stainless Steel Air Knife*



*Aluminum Air Knife*



*Nozzle Air Knife*



*Food Grade Air Knife*



*Accessories*

**REPUBLIC AIR KNIFE SYSTEMS** are engineered, manufactured and tested to provide 99.9% of liquid, dust, and debris removal from products prior to labeling, ink jet laser coating, packaging, or other secondary operations using a high velocity, high impact air stream.

Air knives are available in extruded aluminum or stainless steel with lengths from 2" to 196" with an adjustable gap for better air stream control. We offer nozzle knives for direct drying, air wipes to match your extrusion profile and wire, and food grade air knives which are USDA and NSF compliant. In house engineering expertise allows us to provide a heat source for your high temperature applications or cold air systems to cool the parts. Custom air knife designs are available to meet your exact needs.

The breadth of our equipment allows us to engineer and manufacture the additional components needed to complete your system; including the Republic Centrifugal Blower, butterfly valves to provide the appropriate pressure and air stream as needed, air knife brackets, elbows, Y-branches, and manifolds.

### **Advantages**

- *Low energy consumption*
- *Dry, clean, oil-free air stream*
- *Filtered blower inlet to prevent particle contamination*
- *Safe, low pressure*
- *Increased production speeds and output for a quick payback*
- *Reduced sound levels when compared to compressed air nozzle or round tube design*

### **Available Options**

- *Aluminum or stainless steel construction*
- *Special inlets available including top, side, dual, and extended*
- *Custom designs available*
- *USDA and NSF compliant food grade designs available*
- *Continuous air slot across the entire length with adjustable gap sizes*

# Applications

## Drying

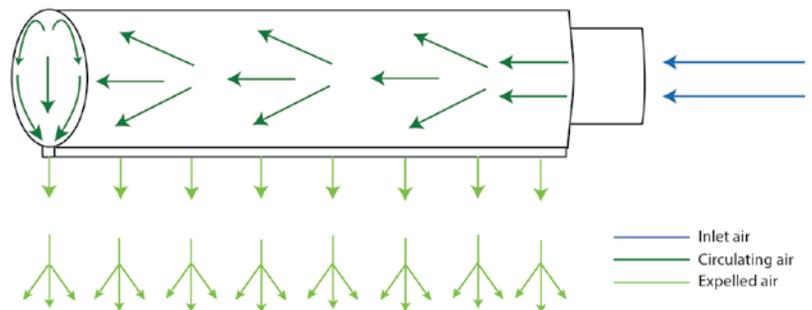
- Bottles & cans
- Food products
- Packaging
- Fruits & vegetables
- Meat, fish, and poultry
- Textiles & carpeting
- Wire & cable
- Metal
- Tile
- Wood
- Flooring
- Coiled steel
- Hanging parts
- Extrusions, hose, plastics, and film
- Batteries
- Medicine vials
- Stampings, forgings, machined parts

## Belt Cleaning

- Debris removal
- Sawdust removal
- Confectionery removal
- Food topping removal
- Liquid blow-off

## Other

- Coating control of food and confectionery topping
- Reduce static
- Remove unwanted liquid
- Keep items from slipping through conveyor belt gaps
- Prevent hot air loss
- Prevent cold air loss
- Coating control of primers, glue, adhesives and inks
- Crumb removal
- Pan cleaning



An air knife is a pressurized air plenum with a uniform continuous gap which pressurized air exits in a laminar flow pattern. The exiting air velocity creates an impact air velocity directly onto the surface of the product to shear away moisture or particulates without mechanical contact. This impact air velocity can range from a gentle breeze to greater than 40,000 feet per minute.

## Republic Blowers



*Centrifugal Blowers*

**REPUBLIC CENTRIFUGAL BLOWERS** are robust, durable, efficient, and easy to maintain. The centrifugal series can handle up to 4000 cfm of air at pressures up to 170" H<sub>2</sub>O, and every blower is 100% operationally tested. Designed to provide a highly effective stream of air, the centrifugal series is perfect for air knife applications. The high flow is controlled by the air knife gap. The permanently grease-packed ceramic hybrid ball bearings require no maintenance, while the bearing assembly itself is easy to access. The blower head provides a 360° rotatable outlet discharge for versatility. The mounting plate contains a belt tensioner arm that self adjusts to maintain the proper belt tension and wrap around the blower pulley. Unlike compressed air systems, this series is safe to run at low pressure, for energy savings, and for increased production speeds. Republic Centrifugal Blowers are CE certified and made in the USA.



*Regenerative Blowers*

**REPUBLIC REGENERATIVE BLOWERS** are available in single stage (one impeller), double stage (two impeller), or triple stage (three impeller) configurations. The impeller is directly connected to the motor shaft providing powerful force without undue friction. The bearings are outside the compression chamber, ensuring maximum operational reliability under high differential pressure.

Republic offers pressure kits for the regenerative blowers which can be used for air knife applications. The pressure kit includes the blower with integral motor, inlet filter, relief valve, and all the piping. The kit is assembled for a drop-in solution. A check valve is available and optional for the pressure kit.

Republic's Regenerative Blower Pressure Kits are capable of air flow from 50 cfm to 776 cfm, and pressure capacity from 47" H<sub>2</sub>O to 307" H<sub>2</sub>O and are assembled in the USA.

# Air Knife System Components



## Air Knives

- Stainless steel or clear anodized aluminum construction
- 2", 3", & 4" inlet sizes
- Gaps incrementally adjustable from zero to 0.250
- Custom sizes and inlets available
- Teardrop shape provides maximum velocity and efficiency
- Externally clamped design for precise air streams
- Dual air knife with two gaps to provide a second pass of air quickly



## Nozzle Air Knives

- Stainless steel construction
- Ideal for applications more than 6 inches away
- 2", 3", & 4" inlets available



## Air Knife/Nozzle Brackets

- Stainless steel construction
- Provide vertical, horizontal, and angular adjustments
- Knobs for easy adjustments



## Custom Air Knives

- Stainless steel or clear anodized aluminum construction



## Air Nozzles

- Stainless steel construction
- Multiple outlet diameters
- Internal design maintains high velocity air stream
- 2" & 3" hose connections



## Y Branches

- Stainless steel construction
- 2", 3", 4", 5", & 6" connections
- Inlet/outlet size combinations can be customized



## Hose & Clamps (EPDM Sleeves)

- High strength BUNA rubber with two stainless steel hose clamps



## Elbows

- Stainless steel construction
- 2", 3", 4", 5", & 6" piping applications
- Available in 45° & 90° bends



## Air Wipes

- Stainless steel construction
- For extrusion profiles & wire

# Blower Components



## Inlet Filters

- 10 micron standard—special 3-5 micron filters available
- Stainless or painted steel housing construction
- Filter change gauges standard on stainless steel models
- Filter media paper or polyester (*washable/reusable*)



## VFD/s Motor Starters/ Soft Starters

- Optimizes power efficiency
- Turn-key solution
- Increases motor life by reducing wear
- Start/stop button or more advanced PLC options available
- Phone app with alerts available



## Motor/Blower Stands

- Available in stainless or painted steel construction
- 12", 16", 24", & 42" standard heights
- Custom heights available
- Includes leveling pads



## Manifolds

- Stainless steel or crosslinked polyethylene



## Butterfly Valves

- Anodized aluminum or stainless steel construction
- Adjustable locking hand lever



## Reducers/Enlargers

- Stainless steel construction



## Discharge Silencers

- Aluminum with polyurethane epoxy paint finish or stainless steel construction



## Blower Enclosures

- Available in stainless steel or painted steel construction
- Acoustical foam lined for noise reduction
- Dual doors with lift-off hinges for ease of maintenance
- Low profile to fit under existing conveyors or equipment
- High profile for minimal footprint
- Filter change gauge on front door for ease of maintenance
- Includes leveling pads



## Additional Options



### All-In-Ones

- Complete drying system including centrifugal blower, motor, stainless steel air knives, and plumbing
- Provides overspray containment
- Recaptures liquid
- Lowers noise levels
- Easy set-up
- Quick change over using the Republic Lateral Slides™



### Static/Dust Elimination Bars

- Ideal for static & dust elimination applications
- Mounts directly to all sizes of air knives

### Inline Air Heaters & Chillers

- Ideal for applications needing heated or cooled air
- Mounts directly in air stream
- Includes power supply for turn-key solution



### Overspray Enclosures

- 4", 8", 12", & 24" width conveyors
- Drop-in solution with adjustable legs
- Overspray containment
- Recaptures liquid
- Lowers noise levels
- Hydraulic hinged doors for easy access



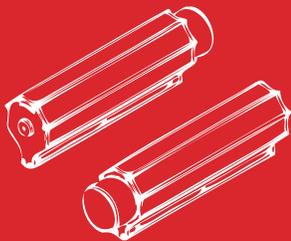
### HEPA Filters

- Stainless steel electro-polished, welded canister
- Horizontal or vertical mounting
- Designed for maximum air flow loss through filter media





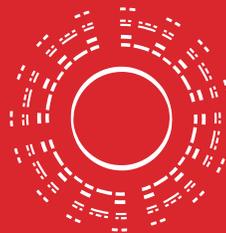
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CENTRIFUGAL BLOWERS



REGENERATIVE BLOWERS



VACUUM PUMPS



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