

Solids Conveying
Educators Introduction

FAQ/Most Common
Questions

Convey Foods

Convey Plastics

Convey Cement

Convey Abrasives:
Ceramic-Lined
Educators

Power/Incinerator
Applications

Convey Fragile
Products Without
Damage

Additive Injection,
Spices, Act'v'd Carbon,
Sorbents

Venting Blowback
from Airlocks

50 Case Studies
To View Or
Download

Conveying Food Products with Fox Educators



Since 1963, Fox Venturi Educators have been installed to pneumatically convey bulk solids with no moving parts. Approval by the USDA in 1987 enabled Fox sanitary educators to become extensively used throughout the food and dairy industries.

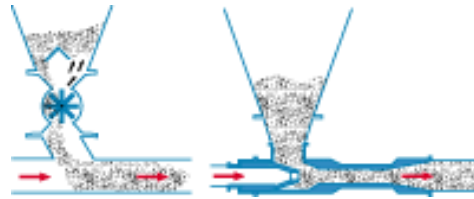
Fox Sanitary Educators perform identically to standard (industrial) Fox educators but are designed specifically for use in CIP (Clean-In-Place) systems in the food industry. To facilitate easy cleaning and inspection of internals, for avoiding both bacterial contamination and product cross-contamination, Fox food-grade, USDA-approved educators include these key features:

- Highly polished internals, with polished and ground welds.
- No cracks, threads, corners, or 'dead spaces.'
- Tri-Clamp (or other sanitary) end connections.
- No tools required for disassembly.

What food products have been conveyed with Fox Educators?

Apple Bits
Beans
Bread Crumbs
Cake Mix
Cinnamon
Cocoa Powder
Corn Snacks
Dextrose
Flour
Gelatin
Lactose
Maltrin
Milk Powders
Oat Fibers
Peanuts
Raisins
Starch
Sugar, Salt, &
Spices
Tea Powder
Vitamins
Walnut Shells
Wheat Germ
Whey

For more detailed info, [download Bulletin 350](#).



An Alternative to Sanitary Airlocks:

Airlocks are frequently selected for use in food processing systems even though they may not be the most appropriate choice. Consider these advantages of eductors:

- **Cost** - Food-grade airlocks typically cost 3 - 5 times the price of sanitary eductors.
- **Housekeeping** - Airlocks feeding positive systems inevitably produce blowback which creates dust, pest, and housekeeping problems. Blowback doesn't exist with eductors.
- **Maintenance** - Fox eductors require no maintenance. There are no seals to replace, no bearings to fail, no spares to stock.
- **Metal Contamination/Safety** - This is not a concern with eductors. There is no scraping or metal-to-metal contact. There is no safety hazard.

For more information on conveying food products with eductors

Request our eight-page, full-color brochure Fox Bulletin 350 - Fox Venturi Eductors in the Food Industry.

Many of our Case Studies illustrate important advantages of conveying food products with Fox eductors:

- Snack Foods, Convey without degradation [Case Study #63](#)
- Whole Coffee Beans, Convey from bulk bags [Case Study #56](#)
- Puffed rice, Convey without degradation [Case Study #55](#)
- Whole malt, Convey from bag dump [Case Study #51](#)
- Cereal/grain dust, Reclaim from dust collectors [Case Study #50](#)
- Packaging reclaim [Case Study #42](#)
- Sugar, Convey from bulk bags; [Case Study #39](#)
- Whole peanuts, Convey without degradation [Case Study #37](#)
- Milk powder, Convey from spray dryer [Case Study #63](#)
- Food additives, Convey from feeder [Case Study #25](#)
- Salt, Convey from feeder [Case Study #24](#)
- Minor Ingredients, Convey from feeder [Case Study #17](#)



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Fox Venturi Eductors / Fox Valve

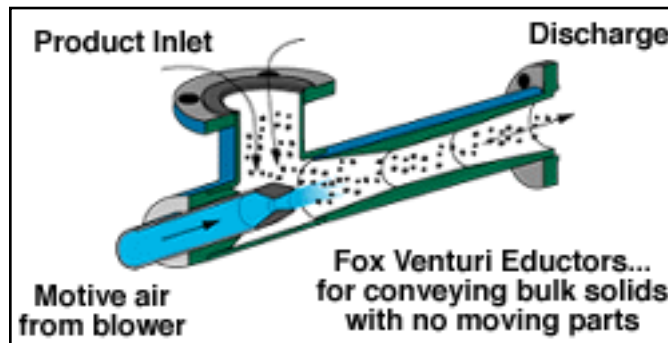
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Fox Solids Conveying Eductors

Fox Valve is the leading global supplier of venturi eductors and venturi transport systems for pneumatic conveying of powders, pellets, and bulk solids. They enable the use of low pressure air (below 14 psig or 1 bar) to be used to move powders, pellets, and bulk solids with no moving parts. Fox has sold venturi eductors continuously since our first sale, in 1963, of a stainless eductor for use in transporting plastic pellets with air at 4 psig.



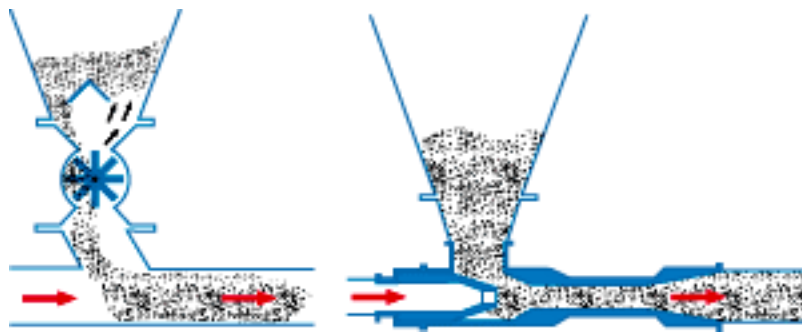
- No Maintenance
- No Blow-Back
- Minimal Product Degradation

Fox Venturi Eductors - What are they?

Fox Venturi Eductors convert the output of a blower into suction that can be used to entrain and feed powders, pellets, and bulk solids into a pneumatic conveying system. Because they have no moving parts, they can operate almost entirely maintenance-free.

The eductor acts to compress the air/solids mixture to a pressure adequate to overcome losses in the downstream convey line. The eductor has three connections:

- Motive Air
- Suction or Product Inlet
- Discharge



How are they used in pneumatic conveying systems?

Fox Venturi Eductors are used to feed bulk solids, such as powders, pellets, flakes, and particulates, into positive, dilute-phase conveying systems. They are commonly used in place of rotary valves where airlocks simply cannot perform adequately.

For detailed information on eductors - [Download Bulletin 301](#) or request that we mail you a full color, hard copy of Bulletin 301.

Why are eductors used in pneumatic conveying systems?

- **Fox Venturi Eductors have No Moving Parts** - allowing for maintenance-free feeding of bulk solids. In applications involving fine, abrasive, or irregularly-shaped products, this is an enormous advantage. Replacement of existing rotary airlocks with venturi eductors makes for simpler, more reliable conveying systems. Designing with eductors from the beginning ensures the most reliable product feeding available.
- **No Blowback** - All rotary airlocks have blowback. If the product conveyed is fine or abrasive, blowback can cause extreme wear problems. Even with free-flowing products, blowback can be a problem, causing bridging and housekeeping problems, or even an explosion hazard. When installed beneath baghouses, screw conveyors, or dust collectors, airlocks can be a major source of fugitive dust emissions, which are eliminated after a retrofit to Fox eductors.
- **No mechanical shearing** - Eductors minimize the shearing, smearing or degradation of product common with rotary airlocks. And, of course, safety is simply not a concern with Fox eductors.

How are they designed? How are they tested? Are they guaranteed to work?

Fox's eductor designs have been exhaustively tested with different materials, line lengths, motive air flows and pressures - yielding the most complete set of performance data ever accumulated. This data has been transformed into computer algorithms which allow our engineers to rapidly and precisely predict eductor performance with almost any product in your system. Moreover, we have over thirty years of hands-on industrial experience and feedback to draw upon. This enables Fox to performance guarantee every quotation and every eductor

that leaves our factory. New or challenging materials can be tested, if necessary, in our in-house conveying test rig. Interested parties are always welcome to visit and witness tests.



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