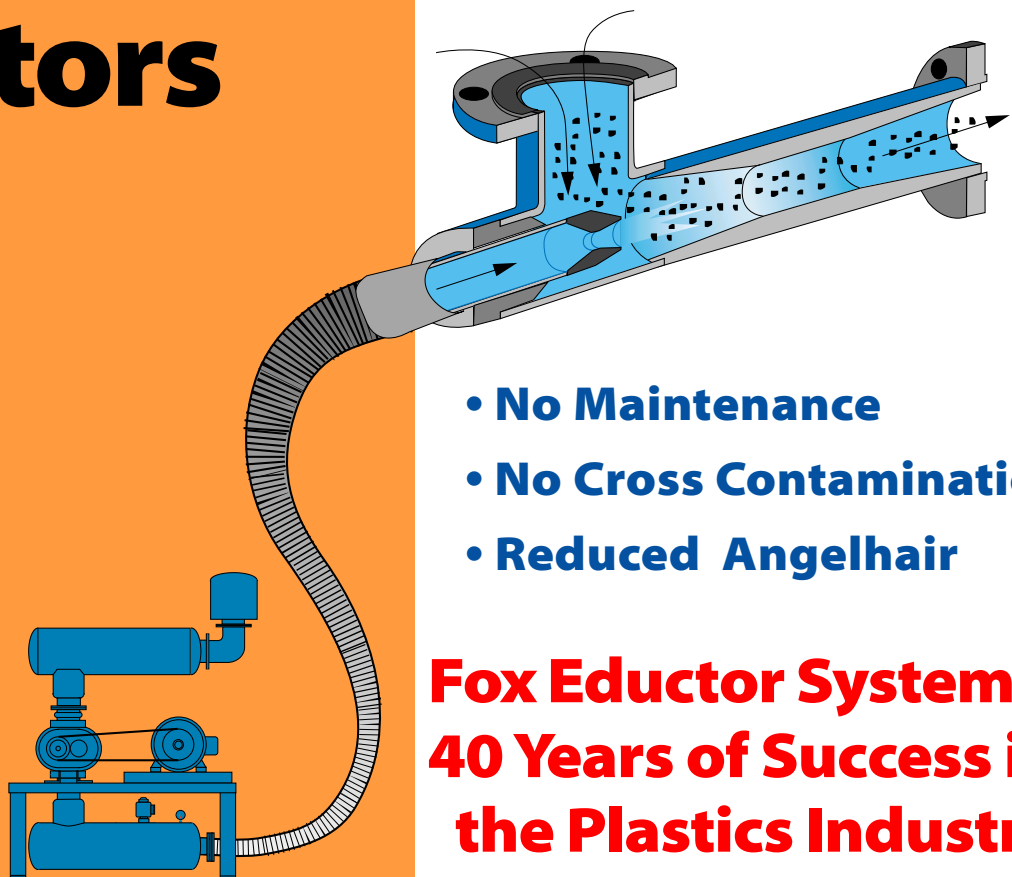


Convey Plastic Pellets, Regrind, and Flakes with No Moving Parts

with

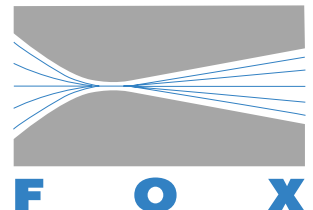
Fox Venturi Eductors



- No Maintenance
- No Cross Contamination
- Reduced Angelhair

**Fox Eductor Systems:
40 Years of Success in
the Plastics Industry**

**Fox Venturi Eductors
Dover, NJ USA
973.328.1011 fax.3651
email: info@foxvalve.com
www.foxvalve.com**



Bulletin 336A

Since 1963, Fox Eductors have Conveyed:

- Glass-filled pellets
- Mica-filled Pellets
- Color Concentrates
- Rubberized Pellets
- Regrind
- Ground Film

Fox Venturi Eductors have been used by hundreds of compounders and plastic processors. Fox has developed highly specialized eductor designs and conveying systems specifically for the plastics industry to keep their extruders and production up and running.

- No Maintenance
- Quick, Easy Color Changes
- Reduce Streamers & Angelhair
- 1-1/2" - 8" Lines
- Stainless, Clean-in-Place, and Ceramic-Lined

Conveying Pellets, Chips, and Regrind with Fox Venturi Eductors

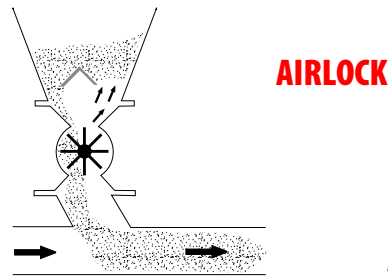


Fig. 1

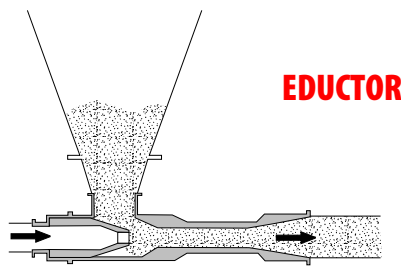


Fig. 2

WHAT ARE FOX VENTURI EDUCTORS?

Fox eductors are precision machined-from-bar venturies that typically use air at 3 - 14 psig to pneumatically convey plastic pellets, flakes, and regrind with no moving parts. Because they have no moving parts, they can operate maintenance free: we know of many Fox eductors that have been in service ten years or more without maintenance. Their rugged, elegant, simple design makes them ideal for conveying abrasive filled pellets, soft pellets, or where quick cleanouts to prevent cross contamination are critical.

FORTY YEARS LATER - WHY DO COMPOUNDERS STILL PREFER FOX CONVEYING SYSTEMS?

RELIABILITY - With no moving parts, Fox eductor systems deliver the 24/7 reliability that plants need — and that rotary airlocks cannot deliver.

REDUCED ANGELHAIR, STREAMERS, AND FINES - Fox eductor systems have carefully controlled conveying velocities, reducing or eliminating streamers, angelhair, and fines.

EASY TO CLEAN - When cross contamination is a critical concern, cleaning rotary airlocks between batches won't accommodate fast turn-arounds.

MULTIPLE DESTINATIONS - Are you conveying to more than one silo, bin, or screener? Do you really want to locate a vacuum receiver atop each destination?

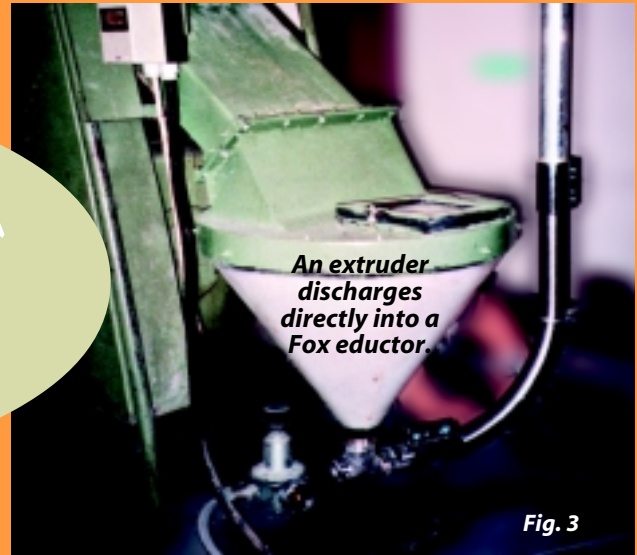
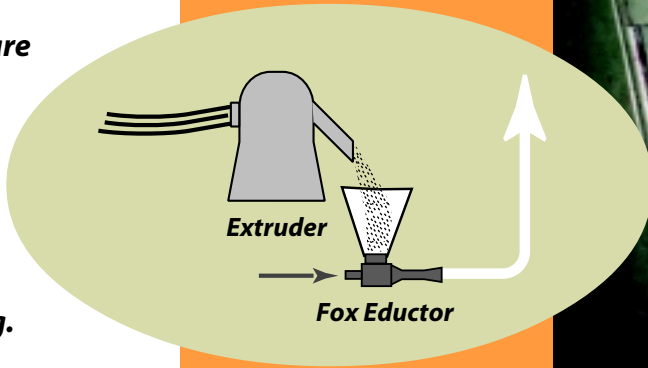
SAFETY - Does your plant management put a high priority on safety, but just installs airlocks anyway?

Where are Fox Eductors Being Used in Plastic Processing?

Fox eductors have been used by compounders since 1966 in a broad variety of applications. Here are just four examples.

EXTRUDERS

Fox eductors are installed directly at the output of the pelletizer on hundreds of extruders, providing maintenance-free conveying.

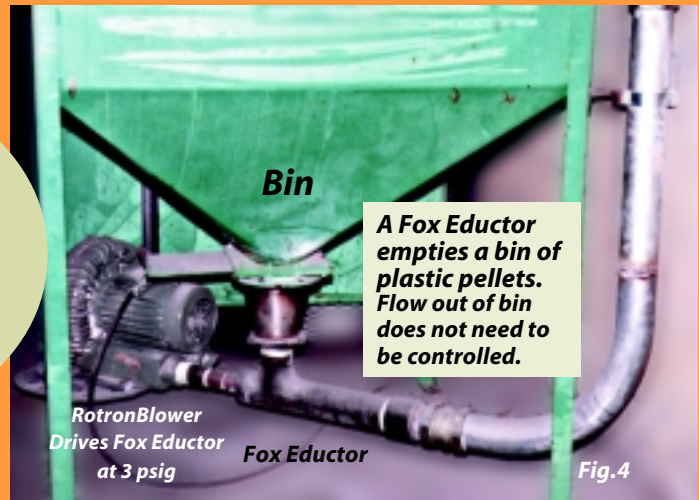
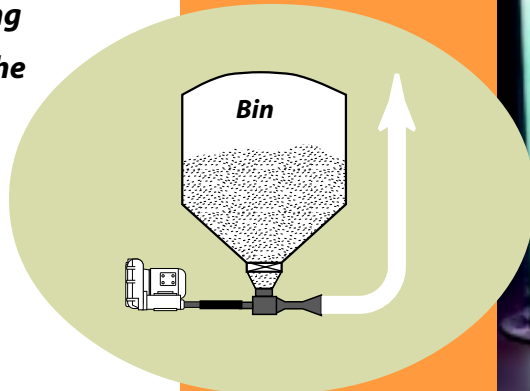


An extruder discharges directly into a Fox eductor.

Fig. 3

EMPTYING BINS

With no moving parts, Fox eductors are the ideal way to move pellets, regrind, and chips from bins, bulk bags, silos, etc. Metering or control of rate is usually not required.

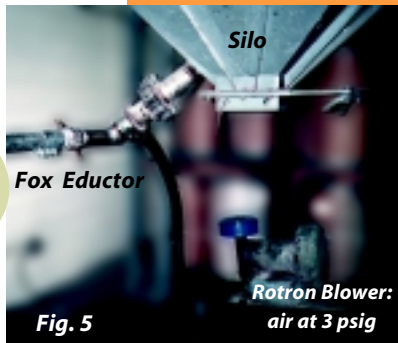
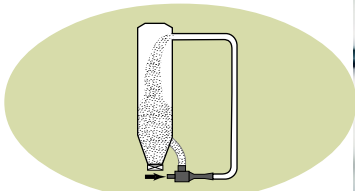


A Fox Eductor empties a bin of plastic pellets. Flow out of bin does not need to be controlled.

RotronBlower Drives Fox Eductor at 3 psig

Fig. 4

SILo BLENDING



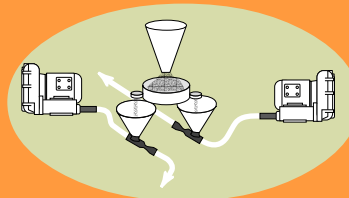
Fox Eductor

Rotron Blower: air at 3 psig

Fig. 5

Venturi eductors can be fed by a full head of material, as shown in the attached photo. Driven by a small Rotron blower, they can recirculate 1000- 8000 lbs/hr of pellets or regrind, as specified, to provide a moderate level of homogeneity in the silo. The eductor and blower in this photo have been in service for about eight years with no maintenance.

SCREENERS



Rotron Blower

Fig. 6

Replacing the buckets of 'overs' and 'unders' that surround screeners with Fox eductors is now common. This both eliminates labor and ensures that good material is automatically reclaimed back to process, automating reclaim of what might otherwise be a major waste stream.

Fox Eductor Conveying Systems... for Handling Plastic Pellets, Regrind, Chips, and Flakes

COMPOUNDERS: WHY USE FOX EDUCTOR SYSTEMS?

They're simple. No moving parts. No shearing of pellets. Easy to clean. Reduced degradation – angelhair, streamers, fines. Compared to airlocks, one less motor to install and maintain. No bearings or seals to replace. Safety.

Handling hot pellets? Soft pellets? Rubberized pellets? If your pellets have unusual conveying characteristics, we can run them in our test lab to understand their behavior before we size your system.

REPROCESSORS: WHY USE FOX EDUCTOR SYSTEMS?

Fox eductors have been used with plastic regrind, chips, and flakes for 30 years. There are no rotors to lock up, clearances to worry about, seals and bearings to replace. Fox eductors have replaced hundreds of airlocks that have failed to provide reliable conveying of regrind.

PLASTIC CONVEYING SYSTEMS

Let Fox integrate the components you need into a complete plastic transport system:-

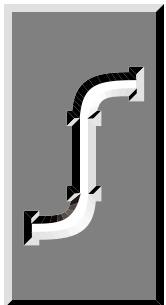
BLOWERS

Fox provides hundreds of blowers each year with our conveying systems. Most applications beneath extruders can use relatively small, inexpensive Rotron blowers, producing air at between 3 - 6 psig from a small, quiet blower about the size of a basketball. Larger convey rates or longer distances will use a pd blower package.

SPECIAL PIPING AND JOINTS FOR ELIMINATING ANGELHAIR

Fox can provide as much, or as little, of the required convey line as you require. With most pellets, standard wide-radius elbows are all that is needed. However, any other type of sweep elbow can be specified and included in a Fox system.

Many of our customers prefer Fox eductors because they eliminate a primary source of steamers and angelhair in conveying systems—the airlock. However, misalignment of pipe sections in the convey line is another prime source of streamers, and must be carefully addressed. Fox can provide a variety of pipe fittings – from inexpensive clamps to more highly



4

engineered couplings, to address this problem. Spiral groove and shot-peened piping is also available.

DIVERTER AND SLIDE GATE VALVES

If your convey system has more than one destination, a diverter valve is required, and can be provided.

VENTURI EDUCTORS

When handling non abrasive pellets, two major types of eductors can be considered:

- Standard eductors—when cross-contamination is not a paramount consideration.
- Clean-in-Place eductors—(see Fig. 8) when cross-contamination is a concern.

Standard Fox eductors are machined-from-bar and available, from stock, in carbon steel and 304 or 316 stainless, in sizes ranging from 1½" to 10". Internal finishes are high. With unfilled pellets, stainless eductors have been known to remain in service for ten years without showing any signs of wear.

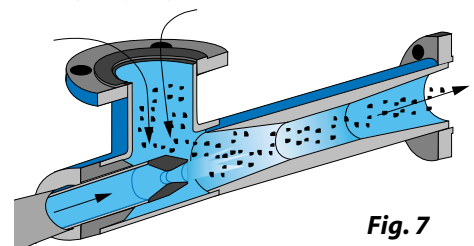


Fig. 7

Where Cross-Contamination is Critical

CLEAN-IN-PLACE EDUCTORS FOR

- FREQUENT COLOR CHANGES/ RAPID TURNAROUNDS
- COLOR CONCENTRATES

With batches of sometimes just a few hours of production time, the ability to rapidly clean-out conveying systems with confidence of no cross-contamination is vital to product quality and profitability. Rotary valves, flexible screw conveyors, and other mechanical transport devices are simply not suitable where Clean-In-Place is required. For such applications, Fox Clean-In-Place (CIP) eductors are called for. Originally developed for the dairy industry, these eductors have all the features needed to eliminate cross-contamination, as described below. They are maintained in stock at Fox in line sizes from 1-1/2" to 6".

SAFETY:

Is preventing worker injury considered very important at your plant - but your pellet conveying designers just select airlocks anyway?

LOW CLEARANCE HEIGHT/LARGE OPENING

Some equipment, like pelletizers or screeners may have large outlets close to the ground where a separate transition cannot be used. When handling plastic regrind, large particle sizes but relatively low convey rates may make feeding of material into a 3", 4", or 6" opening of an eductor a bridging concern. In these cases, Enlarged Suction Port Eductors are used to minimize the chance of bridging above the eductor inlet.

For applications with low clearance heights, Fox Enlarged Suction Port eductors are used.

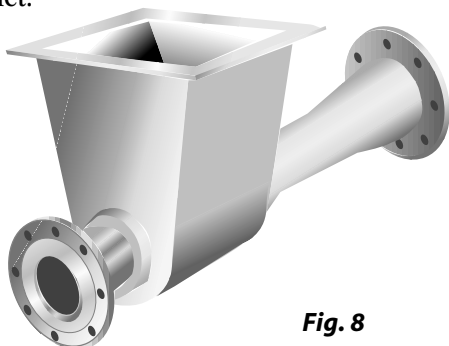
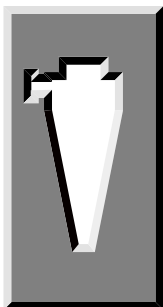


Fig. 8

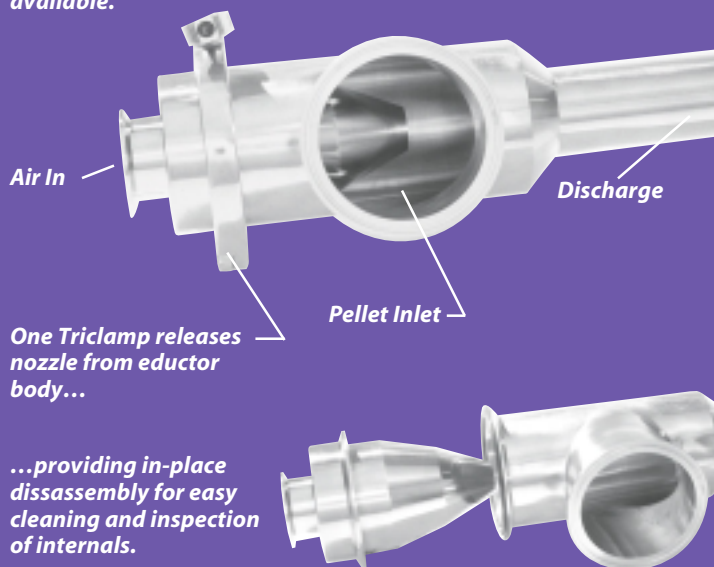
CYCLONES

Fox can supply whatever cyclone receiver is required. If cross-contamination is not a major concern, then a simple aluminum, steel or stainless cyclone will suffice. However, if frequent clean-outs are necessary, a fully disassembleable, polished-and-ground cyclone can be provided.



Standard ends are Triclamp. Victaulic or other quick disassembly end connections are also available.

All internal welds are polished and ground. All finishes 32 rms or higher. No scratches, grooves or dead spots where product can accumulate or hide.



One Triclamp releases nozzle from eductor body...

...providing in-place disassembly for easy cleaning and inspection of internals.

Fig. 9

Fox Venturi Eductors for Conveying Abrasive, Filled Pellets

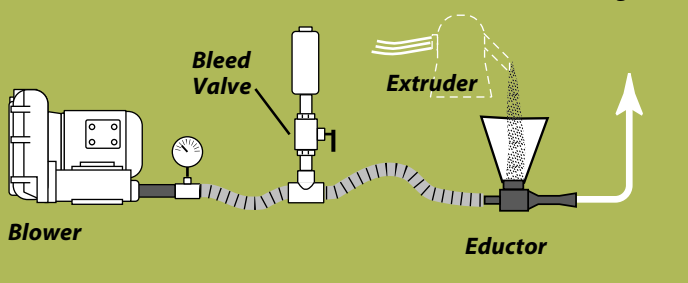
Fox ceramic lined eductors are used in dozens of compounding plants conveying abrasive filled pellets. They have become a standard industry solution for conveying abrasive pellets in applications where other equipment, such as airlocks, flexible screw conveyors, and vacuum systems cannot survive.

BLOWERS

Blowers used with filled, abrasive pellets are identical to those described on Page 4. However, because these pellets can create wear problems, the conveying velocity in the pipeline and bends must be controlled carefully. In these applications, Fox supplies an air-bleed system between the blower and eductor. This very effective yet inexpensive accessory enables transport velocity to be controlled or minimized by operators.

FOX BLEED VALVE ASSEMBLY

Fig. 10



Excess convey air released through muffler, to reduce transport velocity to minimum required for reliable pellet transport with reduced bend wear.

PIPING AND ELBOWS

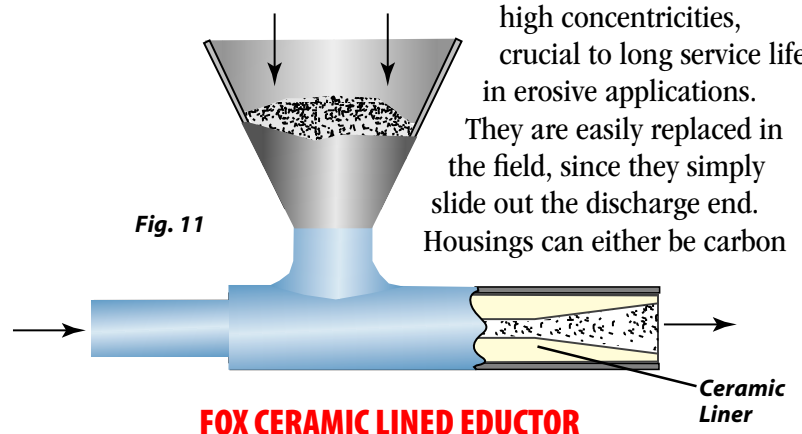
We've learned that our customers know what type of elbow they are most comfortable using in their plant. Some swear by replaceable ceramic-backed elbows, others by blind Tees, others by commercially available bends. We'll provide whatever bends have proven useful in your plant as an integral part of a Fox conveying system. Most importantly, we understand the ΔP associated with each different kind of bend, and can adjust blower requirements accordingly.

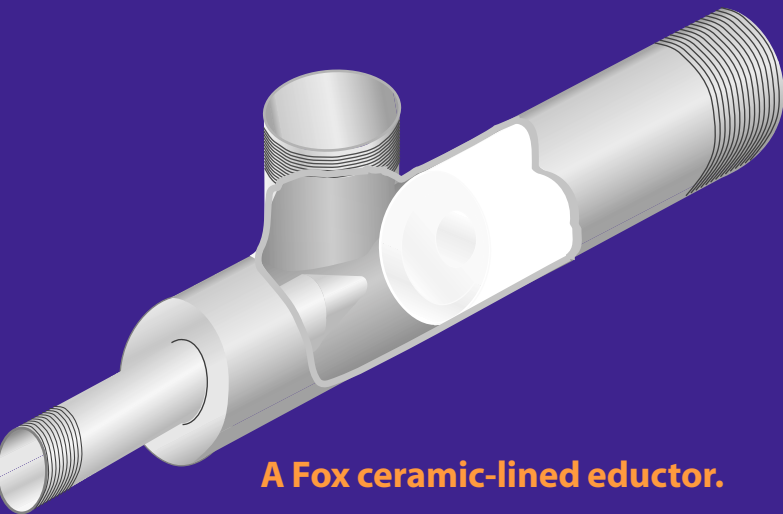
EDUCTORS

Standard ceramic-lined eductors are used for handling abrasive pellets when the need for rapid disassembly and cleaning is not paramount. Clean-in Place ceramic-lined eductors are used when cross-contamination is critical. Fox ceramic liners are lapped after firing to maintain

high concentricities, crucial to long service life in erosive applications. They are easily replaced in the field, since they simply slide out the discharge end. Housings can either be carbon

Fig. 11

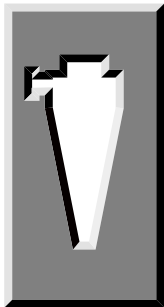




A Fox ceramic-lined eductor.

steel or stainless. Ceramic lined eductors are available from stock in line sizes from 1½"–6".

CYCLONES



With glass-filled pellets, traditional cyclones, no matter how they are coated (ceramic, Stellite, etc.) simply don't survive. However, Fox cyclones with replaceable impact plugs can take it – eliminating tangential wear within the cyclone. The consumable plugs of special plastic, which bear the impact of the conveyed materials, are

easily replaced. The polished, stainless cyclone can be either a welded assembly or have a flange (with quick take-apart knobs, of course) for complete disassembly and cleanout. Some pellet carryover can be expected.



Fig. 12

Where Cross-Contamination is Critical

When handling abrasive pellets in an industry where lot sizes can be small, clean-outs frequent, and the tolerance for cross-contamination zero, Fox's clean-in-place, CIP Eductors have performed extremely well at dozens of compounders for over twenty years.

Key features, as described in the illustration below include:

- Heavy wall 304 ss construction, with ceramic venturi liner.
- All welds polished and ground, no grooves, cracks, corners
- Suction inlet built to exactly match pelletizer or other process outlet – no transitions needed. No lips or grooves to trap pellets.
- Quick clamp/ferrules as required.
- Two bolts release nozzle assembly for complete access to eductor internals

Fox's Enlarged Suction Port Eductors Designed for Use by Plastic Compounders

Square or rectangular inlet flange is custom-fabricated to exactly match your pelletizer or process outlet.

Replaceable ceramic liner slides out here.

Air at only 3–6 psig is needed for distances up to 100 ft.

Victaulic ends or any other quick-clamp connections are available for easy disassembly and cleaning.

Nozzle assembly is quickly removed by disengaging just two bolts.

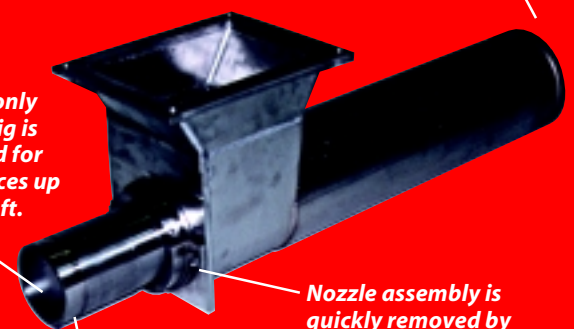
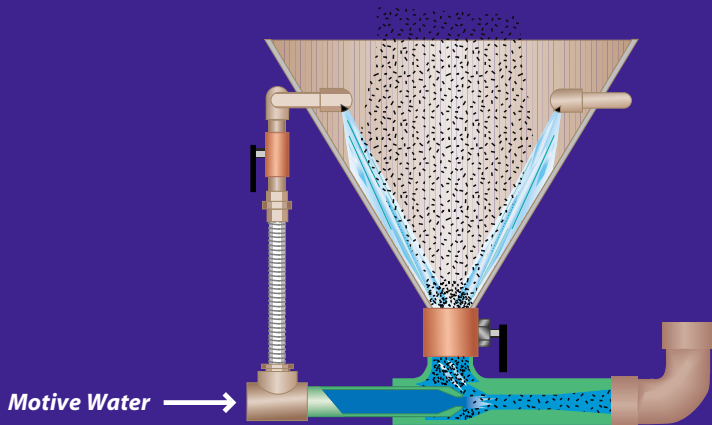


Fig. 13

Conveying Wet Pellets with Water... Fox Slurry Eductors



When wet-cutting strands, it is often preferable to convey pellets from the pelletizer using water, rather than air. Fox slurry eductors have been used for this application for twenty years, and can include any of the design features discussed elsewhere in this literature...

WHAT OTHER EQUIPMENT CAN FOX PROVIDE WITH A SYSTEM:

In addition to the basic building blocks of a pneumatic conveying system (blower, eductor, piping, and receiver) Fox often supplies other specialized equipment to ensure that conveyed pellets, chips, or flakes conform to your requirements. These have included:

- Air dryers and filters
- Skid-mounted packages with blower motor controls, etc.
- Hoppers—including features such as hinged lids, grates/screens
- Air coolers and pre-heaters

To receive a performance-guaranteed quote on your pellet conveying application, simply request a Fox Data Sheet. Complete and return to Fox Valve, and a quote will be sent in 1–2 working days.

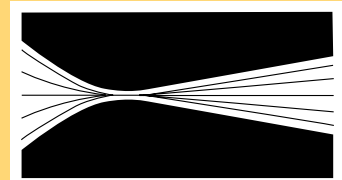
To Receive a Quotation:

Request and complete our Application Data Sheet.

Additional Technical Literature

The following Brochures are available upon request:

- DataBase of 2600+ Existing Installations
- Published Case Study: 10 Years of Conveying w/o Maintenance
- Case Study: Eductors Minimize Pellet Degradation, Mtce...
- 301 — Solids Conveying Venturi Eductors/General Intro
- 302 — Fox Blower/Eductor Conveying Systems
- 106 — Liquid Slurry Eductors for Mixing Solids with Liquids
- 201 — Steam Jet Ejectors and Vacuum Systems
- 280 — Air Jet Ejectors
- 052 — Fox Venturi Products - General Catalog (8 pages)



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