Industry Standard Eductor

BEX® Spraying, Mixing, and Application Specialists

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Typical Layouts for Tank Mixing Eductors

Mixing

Cylindrical Tanks

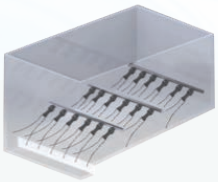
Spherical Tanks

Elongated Tanks

Rectangular and Square Tanks

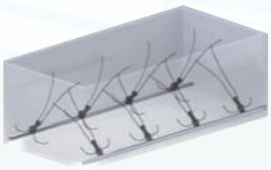
Stratified Layers Tanks

Directional Sweeping

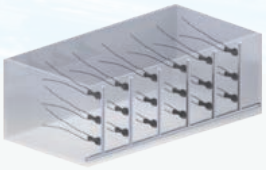


Electrocoat Tanks

Tank Agitation



Parts Cleaning Tank



Rack Plating Tank

Keeping Solids in Suspension

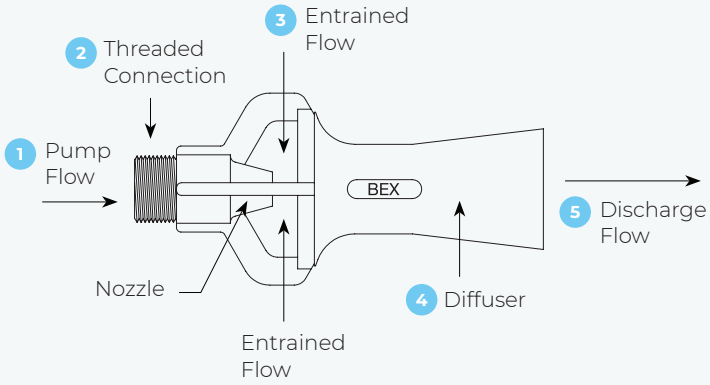
What is an Eductor?

Tank mixing eductors are used to keep the contents of a tank mixed. They're typically connected to a recirculating pump, submersed in the contents of the tank.

- Eductors can also be used to sweep debris or sludge toward an intake filter, suspending solids and adjusting pH levels.
- BEX eductors use a unique venturi design which enables smaller pumps to circulate large volumes of tank solution. The eductor will circulate 4 to 5 gallons of solution for each gallon pumped, resulting in quiet, efficient mixing.
- Eductors can also be used to heat the contents of a tank by injecting steam.
- They are available in both NPT and BSPT versions, larger models with female threads.
- Eductors are available in Polypropylene, PVDF, 316SS, Alloy 20, Cast Iron and some models PVC.

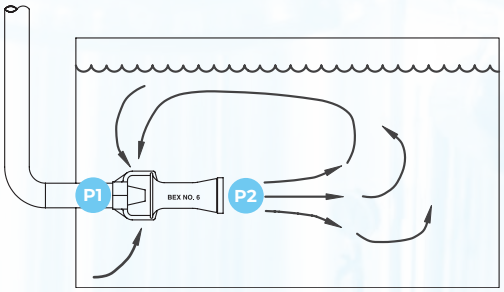
Parts diagram

1. Inlet
2. Threaded Connection (NPT or BSPT)
3. Entrained Flow
4. Diffuser
5. Discharge



Sparging

Using BEX Eductors as steam spargers



Applications:
BEX Steam Spargers heat water and other liquids quickly and efficiently by direct injection of steam. They are designed for tank immersion and eliminate water hammer noise.

Selecting the right Eductor:

1. Calculate the required steam flow rate from the following equation:

$$F(kg/hr) = \Delta T(C°) x W(kg)/Time(hrs) \times 555.56$$

2. Knowing the steam flow rate and the steam pressure available at the sparger, choose the sparger(s) from the table below. Using several small spargers may be advisable to using one large sparger.
3. To help eliminate steam hammer, ensure that the absolute pressure at the eductor entrance (P1) is at least twice the absolute pressure inside the tank at eductor depth (P2).

Model #	Max. Free Passage (mm)	Steam Capacities (kg/hr) at Various Pressures (bar)							
		1.5 bar	2 bar	3 bar	4 bar	5 bar	6 bar	8 bar	10 bar
T0M	7.32	62	64	68	72	76	79	87	95
T2M	9.8	97	100	106	112	118	124	136	148
T3M	12.2	161	166	176	186	196	206	226	245
T4M	15.5	270	278	295	312	328	345	378	411
T5	19.8	410	422	448	473	498	574	574	625
T6	30.2	903	931	987	1043	1099	1266	1266	1377

Note:
1 Imperial gallon of water = 10.00 lbs.
1 cubic foot of water = 62.40lbs.
1 U.S. gallon water = 8.33 lbs.
1 litre of water = 2.20 lbs.

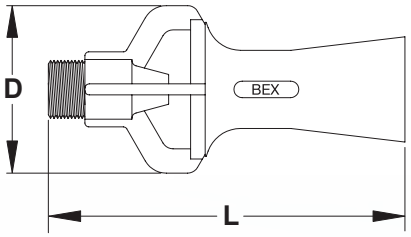
TMP Plastic Eductors

Eductor Circulation Ratio of supply to discharge is 1:5

The capacity table provides the flow of water through the eductor orifice. To determine total discharge, multiply this value by five (5).

Molded Plastic Models

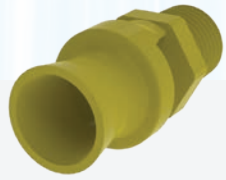
Eductor Molded Plastic



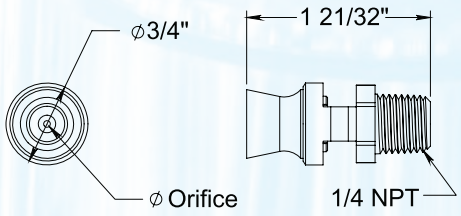
Model #	Pipe Size	Dim. L	Dim. D
T00MP	¼ Male	79mm	38mm
T0MP	⅜ Male	114mm	54mm
T2MP	¾ Male	162mm	76mm
T3MP	1 Male	216mm	95mm
T4MP	1 ½ Male	251mm	117mm

Model #	Max. Free Passage (mm)	Nozzle Flow (L/min) at Various Pressures (bar)							
		0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar
T00MP	4.78	12	14	18	20	23	25	27	29
T0MP	7.32	29	34	42	48	54	59	64	68
T2MP	9.80	51	62	75	87	97	107	115	123
T3MP	12.2	80	96	117	135	151	166	179	191
T4MP	15.5	126	150	184	213	238	261	281	301

Mini Plastic Models



Mini Eductor



Model #	Max. Free Passage (mm)	Color	Nozzle Flow (L/min) at Various Pressures (bar)							
			0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	4 bar	Ent Ratio
TMMP6	0.059	Red	1.18	1.4	1.7	2	2.2	2.41	2.77	4.7
TMMP11	0.079	Green	2.1	2.5	3.1	3.6	4	4.34	5.02	3.7
TMMP18	0.098	Blue	3.43	4.1	5	5.8	6.5	7.11	8.2	2.2
TMMP26	0.118	Yellow	4.96	5.9	7.3	8.4	9.4	10.3	11.9	1.6

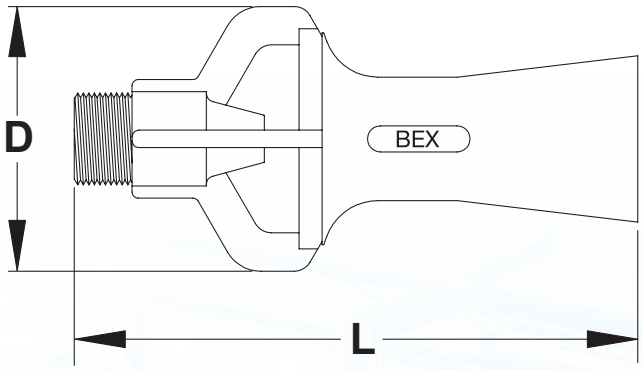
Cast Eductors

316SS Cast Eductor

Cast Iron Eductor

Eductors are found in many different industries.

Health & Beauty (Chemical processing), Oil & Gas (Petroleum processing), water & sewage treatment (aerating), fisheries (aerating), electrocoating (mixing), Galvanizing (dip tank agitation), paint production (blending), Cooling towers (debris sweeping), even amusement parks (decorative fountains).



Model #	Pipe Size	Dim. L	Dim. D
T0M	⅜" Male	114mm	45mm
T2M	¾" Male	172mm	60mm
T22M	¾" Male	172mm	60mm
T3M	1" Male	194mm	73mm
T4M	1 ½" Male	241mm	95mm
T5	2" Female	311mm	124mm
T6	3" Female	435mm	191mm

Model #	Max. Free Passage (mm)	Nozzle Flow (L/min) at Various Pressures (bar)							
		0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar
T0M	7.32	29	34	42	48	54	59	64	68
T2M	9.8	51	62	75	87	97	107	115	123
T22M	10.7	62	74	90	104	117	128	138	148
T3M	12.2	80	96	117	135	151	166	179	191
T4M	15.5	126	150	184	213	238	261	281	301
T5	19.8	210	251	307	355	396	434	469	501
T6	30.2	480	574	703	812	908	995	1074	1149

Sizing

Eductor sizing calculations are based on the number of turns required to achieve the desired mixing or agitation in a tank. A turn is defined as a volume equal to the tank volume passing through the ***discharge*** of the eductor.

Example:

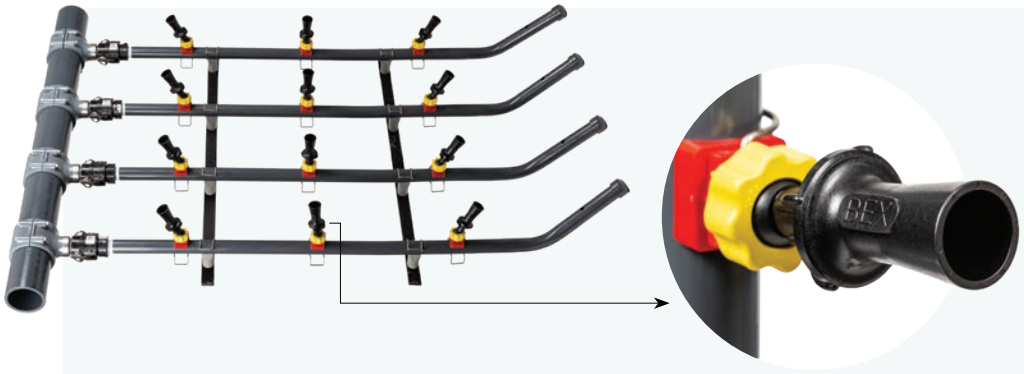
One 6000 liter tank with four eductors. To accomplish one turn, 6000 liters have to pass through the discharges once.

100 L/min. eductor x 60 min/hour x 4 eductors = 24000 L/hour Number of tank turnovers = 24000 L/hour ÷ 6000 L/turn = 4 turns/hour

Typical range of many applications is 10-30 turns per hour. BEX does not design tanks or specify suitable ranges for turnover requirement.

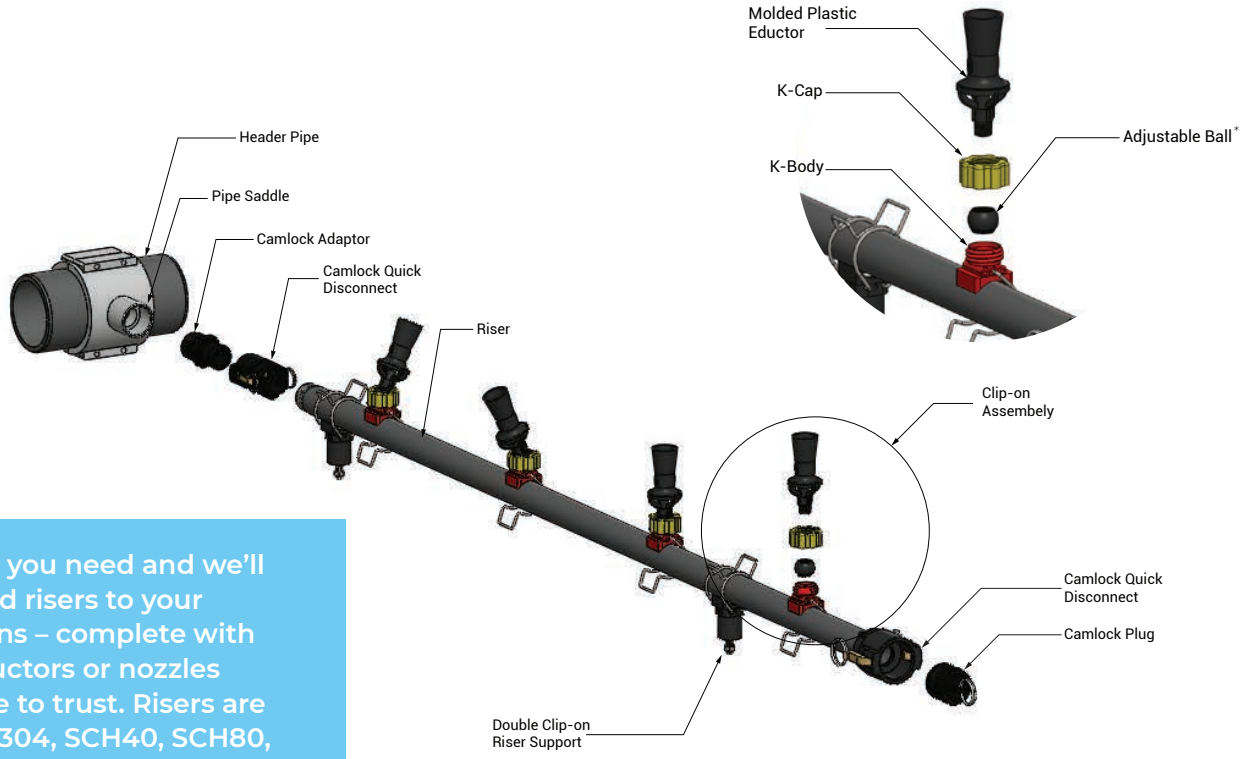
BEX Eductors

K-System Riser Assemblies



BEX designs and manufactures an entire range of eductors and spray nozzles to suit every application.

Visit our website, send an email, or call for a free catalog.



Tell us what you need and we'll custom build risers to your specifications – complete with the BEX eductors or nozzles you've come to trust. Risers are available in 304, SCH40, SCH80, PVC and CPVC pipe sizes 1", 1 ¼", 1 ½", 2". Choose from thousands of products in stock that are ready to deliver at www.BEX.com

*BEX adjustable balls are compatible with Molded Plastic Models T00MP, T0MP, and all Mini Plastic Models.

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