Eductor Tank Mixers
E900 Series

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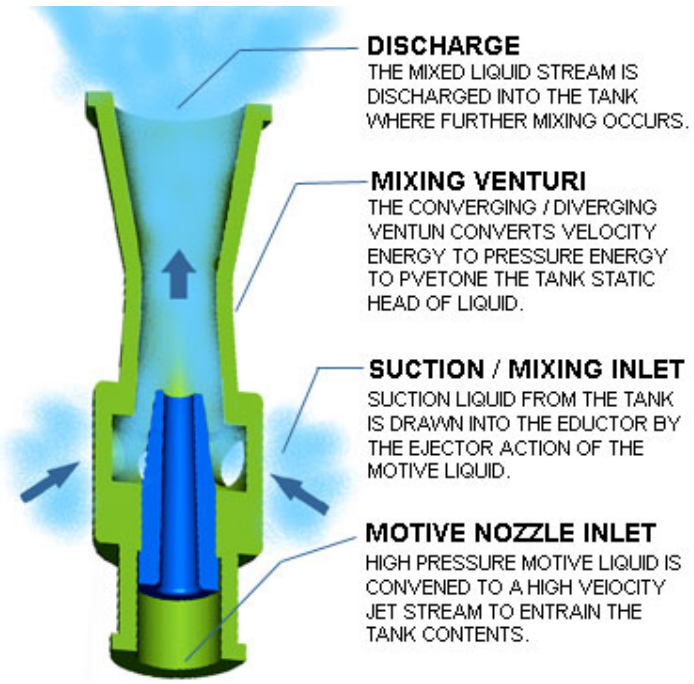
A form of Eductor is used to mix liquids or to agitate liquids in tanks, pits etc. These tank mixing eductors are static mixtures often used to mix/blend different liquids together in a tank. As a rule, eductor mixers can be used in all application where the liquid to be mixed can be delivered by a centrifugal pump.

The tank mixers are also employed for other important applications such as,

- Dissolving powder/solids in liquids.
- Tank liquid mixing & heating using steam.
- Mixing solids in liquid.
- Aerating the tank liquid.
- Keep solid particles in liquid suspension.
- Dispersing gas in to liquid.
- Mixing of liquids in neutralization basin.

Very effective tank mixing combined with least maintenance enables the designers to select tank mix eductors to replace mechanical agitator system and devices.



PRINCIPLE OF OPERATION

When liquid stored in the tank is pumped at a higher pressure through the eductor nozzle, the pressure energy is converted in to high velocity energy. The high velocity liquid discharge through the eductor nozzle imparts its momentum to the surrounding liquid in the tank. Thereby entraining the tank liquid through the suction openings of the eductors.

The motive liquid and entrained tank liquid as a mixed stream passes through the venturi, where intense mixing action takes place. The divergent tail portion of the venturi help is converting the velocity energy in to pressure energy, there by providing pressure to liquid stream to over come the static head of the liquid stored in the tank. The liquid mixture emerging out of tank mixer spreads out is conical form and entrains more liquid form its surroundings. The eductor mixing action establishes a circulating flow pattern in tank liquid. Application of these tank mixers eductor is limited by viscosity of liquid.

PERFORMANCE & MIXING TIME

If one or several tank mixer eductors are contently arranged, a three dimensional flow pal tern can be produced in the tank. which mixes the while of the tank liquid homogenously. Liquid suction ratio range of 1motive: 2 to 3 suction liquid at a maximum pressure drop of 1.5kg/cm^2 at eductor inlet.

The mixing time for these tank mixers can be calculated using

- Tank liquid volume to be mixed - Vm^3
- Number of tank mixers employed - n
- Liquid flow delivered to each tank mixer - m^3/hr

Use the formula.

a). $t_{mix} = 18x(v)/(n \times Q_m)$ minutes

b). Total flow delivered by tank mixer (motive + suction) = QT/QM QM =mixed flow
= QT/(QN x 3.5) QN = motive flow Refer standard flow in table.

FLEXIBILITY IN MOTIVE FLUID

Tank mixing eductors can also use

- Air
- Gases
- Steam

as motive fluids for variety of mixing, aerating, chemically reacting and heating & diluting applications.

ADVANTAGES

- Simple & reliable conslrution.
- No morning parts
- Longer service life
- least maintenatine
- very low (or) hardly any wear & dear.

CONSTRUCTION & MOC

Eductors consists of a nozzle and venture usually made out of a single piece. The tank mix eductors can be supplied in the following MOCs

- Steel
- Stainless steel
- Monel
- Hastealloy
- Titanium
- PVC
- PP
- Teflon
- Fibre glass etc.

End Connection: Threaded to BSP (M) or flanged to ANSI A16.5, 150#

INSTALLATION OF TANK MIXER

- Eductor mixers should be mounted at possible maximum depth in the tank in order to get satisfactory operation & mixing even at low liquid levels in the tank.
- To avoid foaming, a liquid level of 1 mtr (minimum) above the mixer is to be maintained.

MODEL & DIMENSIONS

Model	Motive Inlet mm NB	Discharge mm	Height mm	End Connection
TME – 06	6	20	80	Threaded/M
TME – 09	9	40	120	Threaded/M
TME – 20	20	60	165	Threaded/M
TME – 40	40	80	220	Flanged to 150# ASA/ Threaded (F)
TME – 50	50	115	300	Flanged to 150# ASA
TME – 80	80	160	350	Flanged to 150# ASA

Higher capacity Eductors are supplied against specific requirement.

PERFORMANCE DATA & CR OF TME-40 MODEL

Eductor Pressure Drop ΔP $kg.cm^2$	Motive water flow QM	Suction flow range
0.75	$7m^3/hr$	25-30
1.5	$10m^3/hr$	32.5-39
2.25	$13m^3/hr$	8.75-45
3.5	$16m^3/hr$	40-48
4.25	$18m^3/hr$	45-54
5.0	$19m^3/hr$	48-57
5.75	$22m^3/hr$	55-66
6.5	$23m^3/hr$	58-69
7.25	$24m^3/hr$	60-72

ΔP - Eductor inlet pressure - static head of liquid above eductor

TANK MIXER EDUCTOR MODEL

Eductor Model	TME-06	TME-09	TME-20	TME-40	TME-50	TME-80	TME-100	TME-150	TME-200
capacity Ratio	0.125	0.25	0.50	1.0	2.0	4.0	7.0	16	28