EDUCTOR NOZZLE

Approx. flow rate	Model No.	Inlet Thread size (BSP)	Orifice Dia.	Dimension			Inlet Liquid Pressure							
				D	d	L	0.5	1	1.5	2	2.5	3	3.5	4
			(mm)	(mm)	(mm)	(mm)	bar	bar	bar	bar	bar	bar	bar	bar
Inlet Flow Rate "A" (l/ min)	**MED.201.00 .11**	1"	12	102	71	215	54	96	100	107	122	134	146	156
Entraine Liquid "B" (l/ min)	**MED.201.00 .11**	1"	12				217	384	390	428	489	534	585	625
Circulation Rate "A"+"B"(l/ min)	**MED.201.00 .11**	1"	12				342	480	490	536	611	668	731	781
Effective Flow Field (meters)	**MED.201.00 .11**	1"	12				1,9	3,1	4,2	5,3	6,4	7,5	8,8	12,2

Inlet Conn. NPT or BSPT(M)	Approx Flow Rate Performance	Inlet Liquid Pressure								
		10 psi	15 psi	20 psi	25 psi	30 psi	35 psi	40 psi	50 psi	70 psi
1/4	Inlet Flow Rate (gpm) "A"	3.5	4.3	5.0	5.5	6.1	6.6	7.0	7.8	7.8
3/8		9	11	12.5	14	16	17	18	20	24
3/4		13.5	17	19	21	23	25	27	30	36
1-1/2		33	40	47	53	58	63	66	75	89
1/4	Entrained Liquid (gpm) "B"	15.1	15.1	17.8	19.6	22	24	26	29	29
3/8		36	44	50	56	64	68	72	80	96
3/4		54	68	76	84	92	100	108	120	141
1-1/2		132	160	188	212	232	252	264	300	366
1/4	Circulation Rate (gpm) "A" + "B"	16.2	19.4	22.8	25.1	28.1	30.6	33	36.8	36.8
3/8		45	55	62.5	70	80	85	90	100	120
3/4		67.5	85	95	105	115	125	135	150	177
1-1/2		165	200	235	265	290	315	330	375	455
1/4	Effective Flow Field (feet)	3	5	7	8.5	10	12	14	17	17
3/8		4	6	8	10	12	14	16	22	28
3/4		5	8	11	14	17	20	24	33	50
1-1/2		7.5	1.2	16	20	24	29	34	46	57

Inlet Conn. NPT or BSPT(M)	Approx Flow Rate Performance	Inlet Liquid Pressure								
		.5 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	4 bar	5 bar
1/4	Inlet Flow Rate (l/min) "A"	11.3	16.0	19.5	23	25	28	30	32	7.8
3/8		29	42	51	59	65	70	77	82	91
3/4		43	64	74	85	97	106	116	124	136
1-1/2		106	151	184	215	243	259	288	308	337
1/4	Entrained Liquid (l/min) "B"	42	59	72	84	93	102	110	118	29
3/8		116	168	204	236	260	280	308	328	363
3/4		172	256	296	340	388	424	464	496	534
1-1/2		424	604	736	860	972	1036	1152	1232	1348
1/4	Circulation Rate (l/min) "A" + "B"	53.3	75	91.5	107	118	130	140	150	36.8
3/8		145	210	255	295	325	350	385	410	454
3/4		215	320	370	425	485	530	580	620	670
1-1/2		530	755	920	1075	1215	1295	1440	1540	1685
1/4	Effective Flow Field (meters)	.91	1.5	2.1	2.6	3.00	3.7	4.3	5,2	17
3/8		1.2	1.8	2.4	3	3,7	4.3	4.9	6,7	9,1
3/4		1.5	2.4	3.4	4.3	5.2	6.1	7.3	10.1	15.6
1-1/2		2.3	3.7	4.9	6.1	7.3	8.8	10.4	14.0	17,8

Engineering Considerations

Tank Turnover

The capacity and number of tank mixing eductors is determined by the turnover rate.
The turnover rate is defined as the number of times the entite liquid contents of tank is completely circulated through the eductors per hour. Please note that the turnover rate will vary according the characteristics of the application. For example:

Most plating and rinsing tanks require 3 to 20 turnovers per hour.
Other plating tanks may require more than 30 turnovers per hour.

Cleaning tanks require at least 10 turnovers per hour. Heavily soiled tanks require up to 20 turnovers per hour.

Critical cleaning tanks require turnover rates of more than 20 turnovers per hour. To find the required flow per minute, multiply the appropriate turnover rate by the tank volume, then divide by 60. By using the performance chart, find the eductor that has best effective flow field for your tank configuration.

Once the eductor size has been found, the number of eductors can be determined by dividing the circulataion rate of this eductor at the given pressure into the required flow per minute.

Tank Mixing Eductor Configurations

In larger tanks, eductors positioned around the tank provide more affective mixing than one centrally located eductor. Also, little agitation occurs below the level of the eductor. Eductors should be positioned as close as possible to the bottom of the tank for maximum liquid turnover. Here are a few examples of typical eductor configurations.

Nozzle Application:

Mixing

Cylindrical Tanks

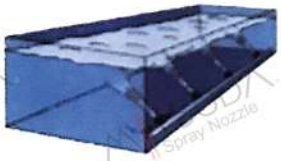
Spherical Tanks

Elongated Tanks

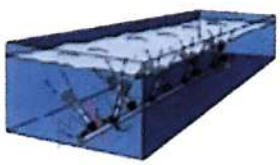
Directional Sweeping

Electrocoat Tanks

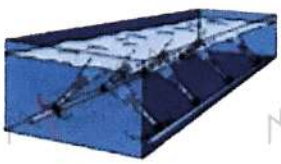
Tank Agitation



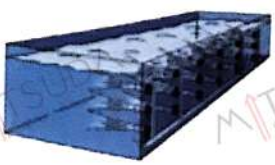
Rectangular and Square Tanks



Streatified Layers Tanks



Parts Cleaning Tanks



Rack Plating Tanks

Compact desing simplifies mounting; saving time and money

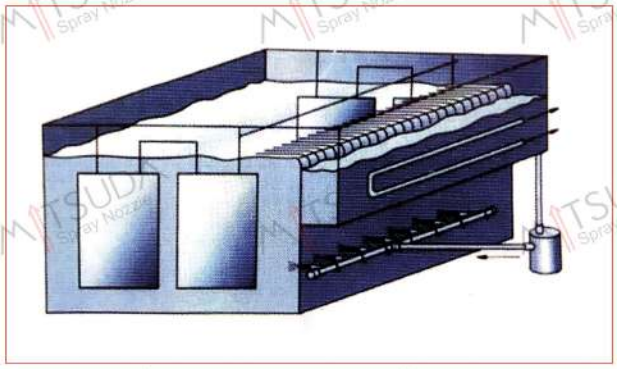
The Model MED.201.00 Tank Mixing Eductor also features a very compact desing, its compact size prevents the eductor from interfering with plating racks and other in tank equipment. Plus, its in-tank mountaing capability eliminates the need for intricate above tank mounting structures.

To learn more about the Model MED.201.00 Tank Mixing Eductor...

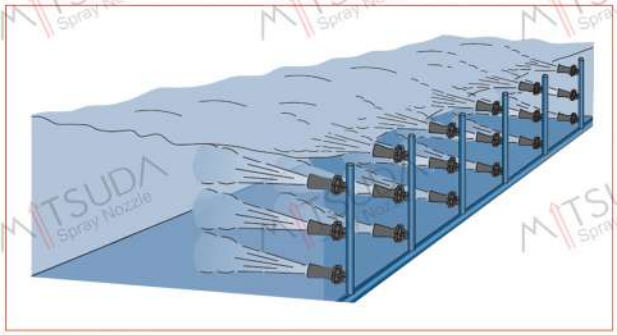
Additional enformation is available on the Model MED.201.00 Tank Mixing Eductor. Contact with us to learn more or visit our web site at www.mitsuda.com.tr.

Expanded line includes more material choices and inlet connection sizes

The Model MED.201.00 Tank Mixing Eductor is constructed for excellent durability, corrosion resistance, and chemical resistance. For general use applications, like cleaning, coating, mixing, and rinsing, the eductor is available in glass-reinforced polyproplene or cast 316 stainless steel. The polypropylene version features a 1/4 '',3/8",3/4" or 1-1/2" NPT or BSPT (M) inlet connection and has a *maxsimum operating temperature of 200 F (93 C) at 50 psi (3.5 bar). Inlet connection sizes for the stainless steel steel model include 3/8", and 1-1/2" NPT or BSPT (M).
New to the line is a KYNAR" (PVDF) version of the Model MED.201.00 Tank Mixing Eductor. The KYNAR eductor was designed expressly for improved solution circulation and agitation in plating applications for circuit board manufacturing . In this application, the eductors aid in the process of cathode film removal. With the eductors mounted on a series of headers at the side of the plating tank, circulation between the plating racks and across the circuit board surface increases-allowing for improved plating. It is available with a 1/4" NPT or BSPT (M) inlet connection and has a '' maximum operating temperature of 220° F (104°C) at 50 psi (3.5 bar).



Eductors used in paint electro-deposition line manufacturing.



Typical Applications

- Anodizing
- Cleaning
- Electrocoating
- Mixing
- Paiting Booths
- Phosphating
- Plating
- Rinsing
- Sludge removal
- Stripping

*Maximum temperature is based on water Maximum operating temperature may be affected by tank chemicals or processes. Contact with MITSUDA team for additional information.

Tank Mixing Eductors...a cost-effective method for optimizing liquid tank performance

MITSUDA's Model MED.201.00 Tank Mixing Eductor, when combined with a centrifugal pump, improves liquid circulation and agitation in closed or open recirculating process tanks. The eductor contains no moving parts to wear out or maintain. It provides a homogeneous fluid mix between the bottom and top of the tank without the use of costly and and inefficient air agitation. Not only it is a cost- effective way for achieving optimum liquid tank performance, it also allows smaller pumps to circulate larger volumes of tank solution for possible energy savings.

Eductor's large flow opening and ''flow through" Chamber minimize clogging for maximum liquid circulation

Several distinct operating principles are key to the Model MED.201.00 Tank Mixing Eductor's in tank -performance. First of all, liquid under pressure is pumped into the eductor through its large flow opening that helps minimize clogging. As the liquid exits the eductor at high velocity, it draws surrounding solution through eductor's ''flow-through" chamber that's designed to eliminate internal material build up. Then, this additional liquid flow mixes with the pumped solution and multiplies its volume. This means that the eductor can pull in or ''entrains" up to 4 additional gallons (15,1 liters) of surruonding solution for every 1 gallon (3.8 liters) pumped through the eductor.

Because of this multiplying effect, smaller pumps can be used to circulate large volumes of liquid. Since smaller pumps are less expensive to purchase and they use less energy to operate, singnificant cost savings can be realized.

Additional eductor benefist: reduced maintenance, improved products quality

The eductor prevents particulate from setting on the tank bottom.
By keeping the particulate in suspension, filtration system clogging in prevented. This translates to a cleaner tank and reduced maintenance time. Products quality is also maintained or improved since the eductor's high circulation.

Model MED.201.00 Tank Mixing Eductor Specifications Dimensions & Weights

Model No.	Inlet Conn. NPT or BSPT(M)	Orice Dia.	Lenght	Dia.	Net Weight	
					K Y	P	SS
MED.201.00.01.PP	1/4	3/16" (5mm)	3" (76mm)	1-1/4" (32mm)	.51 oz (.01kg)	.51 oz (.01kg)	—
MED.201.00.03.PP	3/8	5/16" (5mm)	4-1/16" (103mm)	1-11/16" (52mm)	—	1 oz (.03kg)	9.9 oz (.28kg)
MED.201.00.05.PP	3/4	3/8" (5mm)	6-3/8" (162mm)	3" (76mm)	—	2.8 oz. (.08kg)	24.5 oz (.69kg)
MED.201.00.09.PP	1-1/2	9/16" (5mm)	10" (254mm)	4-1/2" (114mm)	—	10.2 oz. (.29kg)	73.5 oz (2.1kg)

Material

Material	Material Code	Eductor Model No. MED.201.00-			
		1/4	3/8	3/4	1.1/2
KYNAR	KY	•			
Polyproplene	PP	•	•	•	•
Cast 316 Stainless Stell	SS		•	•	•

Ordering Info

TANK MIXING EDUCTOR (WITH NPT CONNECTION)

MED.201.00	- 3 / 8	PP
Model No.	Inlet Conn.	Material Code

TANK MIXING EDUCTOR (WITH BSPT CONNECTION)

MED.201.00	- 3 / 8	SS
Model No.	Inlet Conn.	Material Code

Accessories