

The *Turbo*Mix™ Offers a Lightweight

BETE *Turbo*Mix™ eductors offer an effective and economical way to circulate and mix liquids in closed or open tanks. The *Turbo*Mix™ has no moving parts, is inherently clog resistant and requires minimal maintenance.

The *Turbo*Mix™ design. There are two basic elements to the *Turbo*Mix™: a discharge orifice and a carefully shaped venturi section.

How the *Turbo*Mix™ works. The *Turbo*Mix™ is submerged inside the tank. Motive liquid is pumped under pressure through the discharge orifice. The jet of motive liquid enters the venturi section, entraining additional liquid from the tank and moving it through the venturi. A discharge plume of combined motive and entrained liquid exits the venturi and continues the mixing and agitating action for a substantial distance. The operation of the *Turbo*Mix™ creates a multiplying effect on fluid flow. Depending of the model and the operating pressure, the volume of liquid discharged from the *Turbo*Mix™ will be 4 - 5 times greater than the volume of motive fluid pumped. This highly efficient operation reduces energy use and saves you money.

The BETE *Turbo*Mix™ will reduce settling of suspended solids, improve circulation, maintain uniform liquid characteristics, mix chemicals, or move solids along the bottom of a tank. The *Turbo*Mix™ offers a light weight, inexpensive alternative to mechanical mixing methods.

Applications. The *Turbo*Mix™ may be employed effectively in tanks used for plating, phosphating, sludge, paint, anodizing, agricultural fertilizers and chemicals, pulp, slurries, electrocoating and pretreatment.

*Turbo*Mix™ nozzles are commonly used in open tank heating applications. Heating is accomplished by introducing steam into the an open tank through the submerged TurboMix. Some common applica-

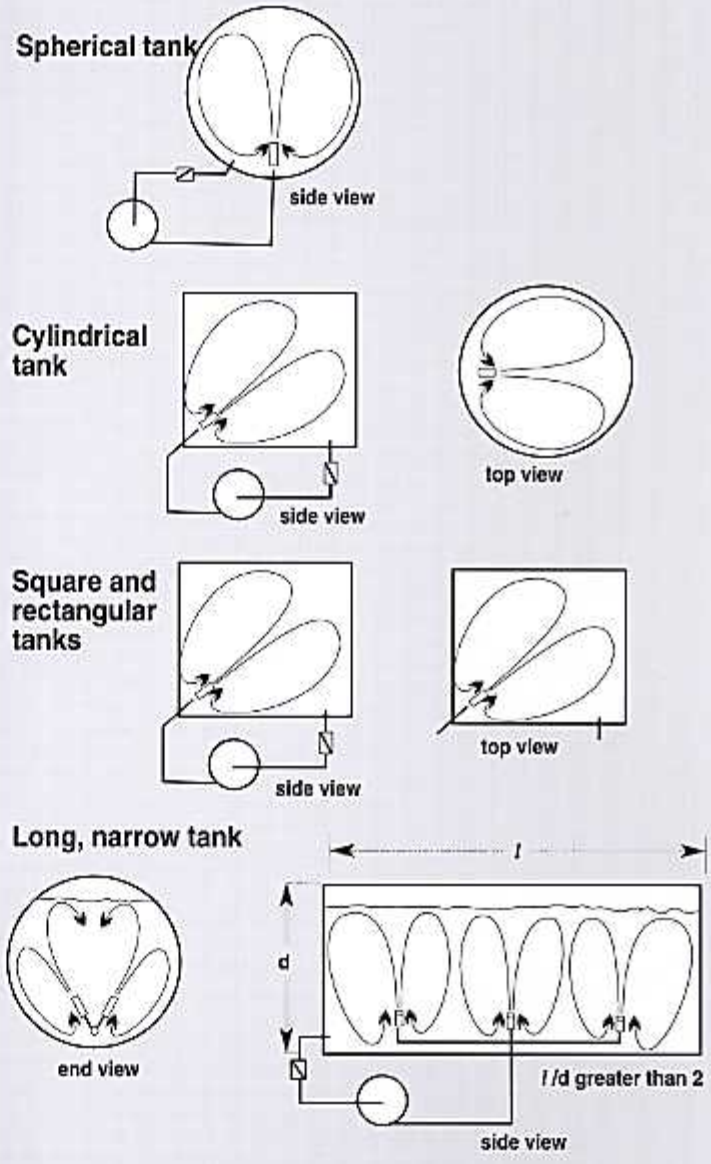
Inexpensive Alternative to Mechanical Mixing Methods

tions for open tank heating are cooking grain, cooking mash, cooking starch, heating, as well as circulating and mixing.

Discharge plume. The plume is cone shaped, diverging from the *Turbo*Mix™ at an angle of approximately 11°. To determine the approximate length of the discharge plume, multiply the pressure drop across the *Turbo*Mix™ in PSI (kPa/23) times 1 foot (1 meter). Reduce this estimate by 50% when sweeping solids across a tank bottom.

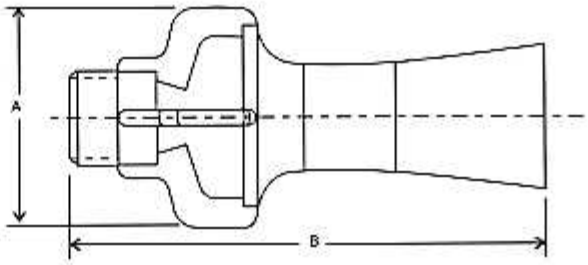
Positioning the *Turbo*Mix™. To agitate liquids or liquids with suspended solids, position the *Turbo*Mix™ at the bottom of one side of the tank and direct the plume upward toward the opposite side of the tank, aiming at the highest likely liquid level. To sweep solids along the tank bottom, direct the *Turbo*Mix™ plume downward at a 10° - 20° angle, using a sufficient number of units to completely cover the bottom surface. For some applications it useful to direct the plume toward the pump inlet. BETE swivel joints may be used to aim the *Turbo*Mix™ more accurately. See figure 1 for *Turbo*Mix™ placement suggestions for various tank types.

Materials. The *Turbo*Mix™ is available in a wide variety of materials to suit any application. For excellent corrosion resistance, light weight and low cost, choose glass-filled polypropylene. Where metal alloy material is required, choose from bronze, cast iron and 316 stainless steel. Other materials are also available. The approximate temperature limits of various materials are: glass-filled polypropylene 170°F (77°C), bronze 755°F (402°C), cast iron 450°F (232°C) and 316 stainless steel 800°F (427°C).



Plan and elevation views of spherical, cylindrical and square tanks

Figure 1

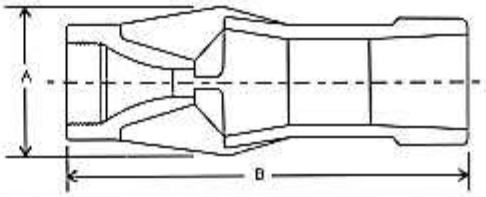


TurboMix™ In Molded Plastic

NPT or BSP Connection Size	*TurboMix™* Number	K Factor		LITERS PER MINUTE @ bar* 0.7 bar	1 bar	1.5 bar	2 bar	2.5 bar	3 bar	3.5 bar	Dimensions (mm.) A	B
3/8 Male	TM73	33.2	Motive	27.8	33.2	40.7	47	52.5	57.6	62.2	54	114
			Discharge	139	166	204	235	263	288	311		
1/2 Male	TM120	54.3	Motive	45.4	54.3	66.5	76.7	85.8	94	101	64	140
			Discharge	227	272	333	384	429	470	508		
3/4 Male	TM137	62.4	Motive	52.2	62.4	76.4	88.2	98.6	108	117	73	162
			Discharge	261	312	382	441	493	540	585		
1 Male	TM240	109	Motive	90.8	108	133	153	172	188	203	89	191
			Discharge	454	543	665	768	858	940	1015		
1 1/2 Male	TM340	155	Motive	130	155	190	219	245	269	290	114	248
			Discharge	649	775	950	1095	1225	1345	1450		

Motive Flow Rate (l/min) = K √bar

Standard Material: Glass-Filled Polypropylene. * bar = supply pressure at the TurboMix™ minus the pressure in the tank



TurboMix™ in Metal

NPT or BSP Connection Size	*TurboMix™* Number	K Factor		LITERS PER MINUTE @ bar* 0.7 bar	1.5 bar	2 bar	2.5 bar	3 bar	5 bar	7 bar	Dimensions (mm.) A	B
3/8 Male	TM70	31.9	Motive	26.7	31.9	39.1	45.1	55.3	71.4	84.4	44	114
			Discharge	107	128	156	180	221	286	339		
1/2 Male	TM110	50.1	Motive	41.9	50.1	61.3	70.8	87	112	132	51	127
			Discharge	168	200	245	283	348	448	528		
3/4 Male	TM150	68.4	Motive	57.2	68.4	83.7	96.7	118	153	181	57	152
			Discharge	229	274	335	387	472	612	724		
1 Male	TM230	105	Motive	87.7	105	128	148	182	234	277	70	165
			Discharge	351	419	514	593	728	936	1109		
1 1/2 Female	TM320	146	Motive	122	146	179	206	253	326	386	76	184
			Discharge	488	584	716	824	1010	1300	1540		
2 Female	TM620	282	Motive	236	282	345	399	489	631	746	108	286
			Discharge	944	1130	1380	1600	1960	2520	2990		
3 Female	TM1500	684	Motive	572	684	837	967	1180	1530	1810	165	492
			Discharge	2290	2740	3350	3870	4740	6120	7240		
4 150# Flange	TM2510	1130	Motive	950	1130	1390	1610	1970	2540	3000	213	864
			Discharge	3800	4540	5560	6420	7870	10200	12000		
6 150# Flange	TM6010	2720	Motive	2270	2720	3330	3840	4710	6080	7190	321	1321
			Discharge	9100	10900	13300	15400	18800	24300	28800		
8 150# Flange	TM10050	4550	Motive	3800	4550	5570	6430	7870	10200	12000	416	1727
			Discharge	15200	18200	22300	25700	31500	40700	48100		

Motive Flow Rate (l/min) = K √bar

Standard Material: (3/8" - 3") Bronze, Cast Iron, 316 Stainless Steel; (4" - 8") Carbon Steel, 316 Stainless Steel. * bar = supply pressure at the TurboMix™ minus the pressure in the tank

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