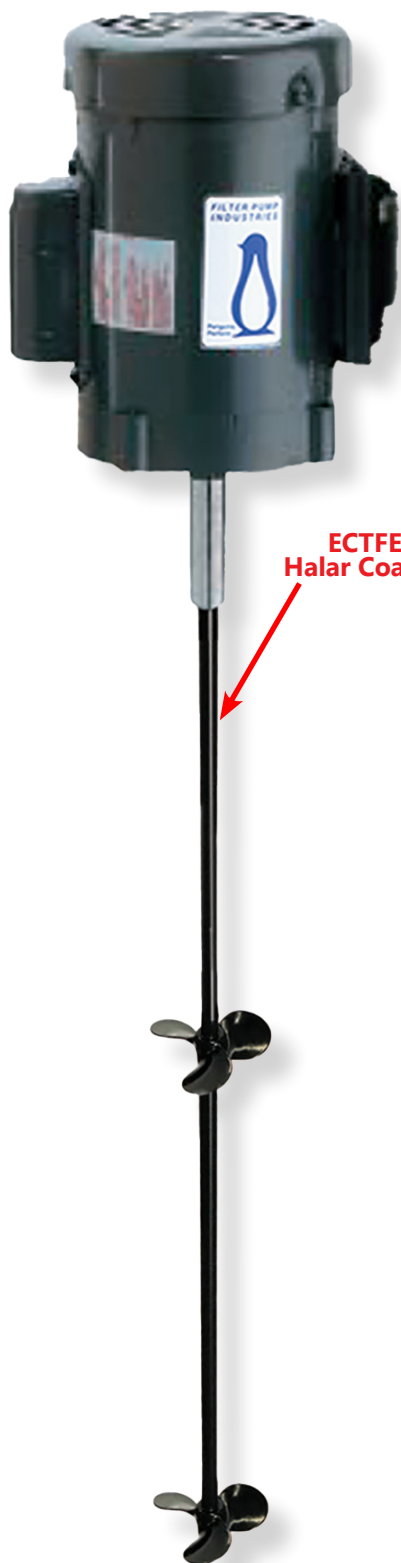




PM SERIES MIXERS

Features:

- 316SS shaft w/options ECTFE-coated propeller and shaft or polypropylene sleeved shafts
- 316SS / polypropylene propellers
- 4 mounting configurations
- Economical and efficient
- Polypropylene turbines drum use
- 304SS couplings
- Portable



ECTFE
Halar Coated



Filter Pump a Division of Finish Thompson Inc.

PM SERIES - PROPELLERS

The Penguin propeller provides a simultaneous circular motion and top-to-bottom turnover due to liquid deflection off the tank bottom and sides to maintain good sweeping action on the tank bottom and intimate contact of all particles.

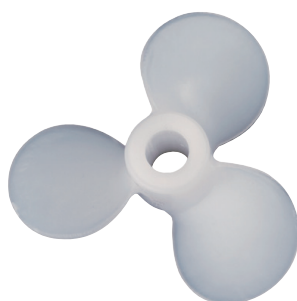
For every revolution of the propeller, a cylindrical column of liquid having a base diameter equal to the propeller pitch, is discharged parallel to the shaft.

The optimum location of the propeller is one propeller diameter off tank bottom.



Features:

- 316SS shaft w/options ECTFE-coated propeller and shaft or polypropylene sleeved shafts
- Propeller material: 316SS / polypropylene
- Polypropylene turbines
- Drum use



When two propellers are used, the bottom (or first) propeller should be mounted at least one times its diameter from the tank bottom. The second propeller should be mounted 1/3 of the shaft length upward from the bottom propeller, installed half way between the liquid level and the bottom propeller, or the more common location 1/2 way up the straight side of the vessel.

Use the following chart to determine if one or two propellers should be employed:

Tank /Type	Single Propeller	Double Propeller
Cylindrical/Conical	Height/Diameter < 1	Height/Diameter > 1
Square	Height/Side Dim < 1	Height/Side Dim > 1
Rectangular	Height/Longest Side Dimension < 1	Height/Longest Side Dimension > 1
55 Gallon (208 L) Drum	Turbine	N/A

PM SERIES - MOUNTS



Clamp Mount

- Mounts vertically by a clamp to the tank rim, 5° to 15° off the vertical in order to prevent vortexing
- Excellent for mixing dry powders, which tend to float in solution
- Primarily used with propellers

Bracket Mount

- This mounts mixer on rails across an open tank or on the tank cover with the shaft dead vertical and off-center to prevent vortexing
- Used primarily with propellers in baffled tanks



Thread Mount Buttress by 2" (5 cm) NPT

- This mount is equipped with a 2" (5 cm) MNPT PVC nipple that threads directly into the 2" (5 cm) FNPT bung hole of a 55 gallon (208 L) drum
- Used primarily with a turbine
- The turbines built in fins act like baffles to prevent vortexing
- Optional 2" (5 cm) BSP adapter

Flange Mount

- A PVC flange is used for mounting the mixer directly onto the tank cover with the shaft dead vertical and off-center to prevent vortexing
- Primarily used with propellers in baffled tanks



PM SERIES

PENGUIN MIXER SIZING CHART

RPM	PROP QUANTITY DIAMETER Inch(cm)	STANDARD MOTOR HP	VISCOSITY-CPS									
			1 CPS		500 CPS		1000 CPS		1500 CPS		2000 CPS	
			PUMPING RATE, GPM (lpm)	MINIMUM HP REQUIRED	PUMPING RATE, GPM (lpm)	MINIMUM HP REQUIRED	PUMPING RATE, GPM (lpm)	MINIMUM HP REQUIRED	PUMPING RATE, GPM (lpm)	MINIMUM HP REQUIRED	PUMPING RATE, GPM (lpm)	MINIMUM HP REQUIRED
1500	1-3" (7.62cm)	0.05(1/20)	88 (333.12)	0.02	55 (208.20)	0.03	47 (177.91)	0.03	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
	2-3" (7.62cm)	0.083(1/12)	150 (567.81)	0.04	95 (359.61)	0.06	81 (306.62)	0.06	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX
1725	1-3" (7.62cm)	0.05(1/20)	101 (382.37)	0.04	64 (242.27)	0.04	55 (208.20)	0.05	51 (193.06)	0.05	XXXXXXXXXX	XXXXXXXXXX
	2-3" (7.62cm)	0.083(1/12)	169 (639.74)	0.08	110 (416.40)	0.08	93 (352.04)	0.1	87 (329.33)	0.1	XXXXXXXXXX	XXXXXXXXXX
	1-3.5" (8.89)	0.25(1/4)	160 (605.67)	0.08	112 (423.97)	0.09	94 (355.83)	0.09	86 (325.55)	0.1	82 (310.40)	0.1
	2-3.5" (8.89)		270 (1022.06)	0.16	180 (681.37)	0.18	165 (624.59)	0.18	146 (552.67)	0.2	138 (522.39)	0.2
	1-4" (10.16)		240 (908.50)	0.16	181 (685.16)	0.17	151 (571.60)	0.17	137 (518.60)	0.18	130 (492.10)	0.19
	2-4" (10.16)	0.50(1/2)	400 (1514.16)	0.32	304 (1150.77)	0.34	252 (953.92)	0.34	228 (863.07)	0.36	216 (817.65)	0.38
	1-4.5" (11.43)	0.33(1/3)	350 (11.35)	0.28	280 (1059.92)	0.29	235 (889.57)	0.3	210 (794.94)	0.31	200 (757.08)	0.32
	2-4.5" (11.43)	0.75(3/4)	575 (2176.61)	0.56	450 (1703.44)	0.58	400 (1514.16)	0.6	350 (1324.89)	0.62	325 (1230.26)	0.64
	1-5" (12.7)	0.50(1/2)	475 (1798.07)	0.48	400 (1514.16)	0.49	325 (1230.26)	0.51	300 (1135.62)	0.51	275 (1040.99)	0.52
	2-5" (12.7)	1.0(1)	784 (2967.76)	0.96	675 (2555.15)	0.98	575 (2176.61)	1.02	500 (1892.71)	1.02	475 (1798.07)	1.04

HIGHLIGHTED SQUARES IN CHART ABOVE USE SERVICE FACTOR AMPS--CONSIDER USING THE NEXT LARGER MOTOR HP.

Compare pump performance using a pump performance curve pumping water. The pumping rate of a mixer is calculated and not measured, but it does provide a simple means for comparisons. One needs something to compare, and this is one simple way to do so. One needs to know the pumping rate of a given impeller type at various diameters.

SHAFT/COUPLING/PROPELLER TYPE

The Penguin 316SS mixers shafts are designed for efficient and trouble free operation based on properly engineered mechanical designs. All Penguin mixers operate below the first critical speed zone, the ratio of the operating speed to the critical speed. Penguin 304SS sleeved couplings and socket head set screws are employed on all Penguin mixer shafts.

The shaft length is from the base of the pump. Be sure to include the thickness of the base in determining length of shaft for your setup.

Specifications are shown in the following:

Shaft/ Coupling Specification Chart:

MODEL	HP	PROPELLER	SHAFT LENGTH	COUPLING BORE
PM-1/20	1/20	3" (7.62cm)	1/2"(1.27cm) X 28"(71.12cm)	5/16"(0.79cm) X 1/2"(1.27cm)
PM-1/12	1/12	3" (7.62cm)	1/2" (1.27cm) X 28"(71.12cm)	3/8"(0.95cm) X 1/2"(1.27cm)
PM-1/4	1/4	3" (7.62cm) OR 4" (10.16cm)	1/2" (1.27cm) X 34"(86.36cm)	5/8" (1.59cm) X 1/2"(1.27cm)
PM-1/3	1/3	3" (7.62cm) OR 4" (10.16cm)	1/2" (1.27cm) X 36"(91.44cm)	5/8" (1.59cm) X 1/2"(1.27cm)
PM-1/2	1/2	4" (10.16cm) OR 5" (12.7cm)	5/8"(1.59cm) X 36" (91.44cm)	5/8" (1.59cm) X 5/8" (1.59cm)
PM-3/4	3/4	5" (12.7cm)	5/8" (1.59cm) X 44"(111.76cm)	5/8" (1.59cm) X 5/8" (1.59cm)
PM-1	1	5" (12.7cm)	5/8" (1.59cm) X 48"(122cm)	5/8" (1.59cm) X 5/8" (1.59cm)

PM SERIES

VISCOSITY

An increase in viscosity will also increase the power absorption. Use the Viscosity Specification Chart for proper horsepower and propeller size. For viscosities over 500 centipoise, consult the factory. Turnover will be approximately 15-20 minutes for PM-1 mixers for tank volumes up to 1000 gallons.

FLOW

Flow (Q) is proportional to the speed (N) and cube of the propeller diameter (D): $Q=ND^3$. For efficient mixing, the recommended tank turnover time is approximately 1 tank turn per minute. The following Flow Specification Chart shows the flow rate for each size propeller (316SS/polypropylene) and single turbine.

HORSEPOWER

The Horsepower Specification Chart is based on a specific gravity of 1.0. For a specific gravity higher than 1.0, multiply the ratio of gravities directly by the minimum required horsepower. For example: If using a 1/3 hp mixer for liquid with a specific gravity of 1.5, the horsepower required would be $1/3 \times 1.5 = .495$. Thus, a 1/2 hp would be the proper motor.

HP	RPM	Volts	Hertz	Phase	Amps
1/20	1500	115	60	Single	1.5
1/12	1725/1425	115	50/60	Single	1.5
1/4	1725	115/230	60	Single	5/2.5
1/3	1725	115/230	60	Single	6.8/3.4
1/3	1725	230/460	60	Three	1.4/.7
1/2	1725	115/230	60	Single	7.4/3.9-3.7
1/2	1725	230/460	60	Three	2.0/1.0
3/4	1725	115/230	60	Single	10/5
3/4	1725	230/460	60	Three	2.7-2.44/1.22
1	1725	115/230	60	Single	12.5/6.3
1	1725	230/460	60	Three	3/1.5

MOTOR

The standard motor supplied on Penguin mixers is TEFC. All motors are shipped unwired. For single phase motors, a cord and plug can be ordered as an option. Other available options include: special voltage, 50Hz, lower RPM, explosion proof motors in 1/3 hp, 1/2 hp, and 1 hp, and air motors.

NOMENCLATURE

PM	1/2	P	C	EXP
Penguin Mixers	Horsepower	Mixer Material & Type / Coupling & Shaft Material P = Polypropylene propeller/poly S = 316SS propeller/316SS V = Polypropylene turbine/poly	Mount C = Clamp B = Bracket F = Flange T = Thread	Options ODM = Open Drip Motor EXP = Explosion Proof Motor D = Dual Propellers PS = Polypropylene Sleeved Shaft CP = Cord and Plug A = Air Motor BSP=Buttress Adapter
	1/20			
	1/12			
	1/4			
	1/3			
	1/2			
	3/4			
	1			



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