



# MH 双曲面搅拌机

## MH hyperboloid mixer



### 适用范围 Applications

双曲面搅拌机广泛运用在环保、化工、能源、轻工等行业需要对固、液、气搅拌混合的场合，尤其适用在污水处理工艺中的混凝池、调节池、厌氧池、硝化和反硝化池。MH双曲面搅拌机有干式和湿式两种安装方式，干式安装特别适宜在高温、高浓度、有腐蚀的液体环境下工作。

Hyperboloid mixers are widely applied in environmental protection, chemistry, energy and light industry where the solid, liquid and gas are interflowing, especially in the sewage treatment process of coagulative precipitation tank, equalization pond, anaerobic pond, nitrating pond, and denitrifying pond. If the mixer is dry type installation, it's especial suit for the environment with high temperature, high concentration and corrosive liquid.

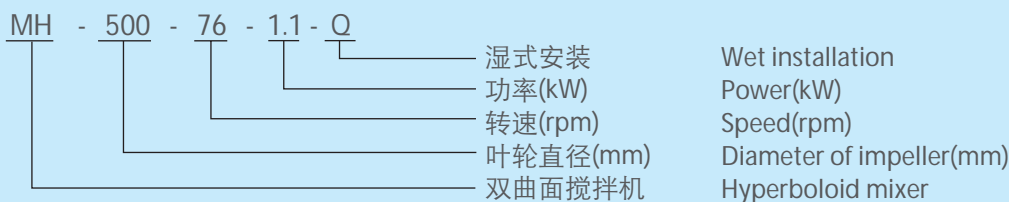
### 特点 Features

- 与传统的桨叶搅拌相比，具有混合均匀、效率高、能耗低、无死角的特点。
- 结构简单便于安装维护。
- 对于各种水处理工艺中水体搅拌、化学药剂的混合搅拌效果更为突出。
- 大比表面积叶轮，配备功率小，节能。
- In comparison with traditional blade-paddle mixer, MH has the feature of mixing equality, high efficiency, low energy consumption and no 'dead zones'.
- Simple structure and easy for installation and maintenance.
- Used especially for the water treatment such as mixing of waste water and chemical agents.
- Big surface area impeller, equipped with small power, saving energy.

### 使用条件 Conditions of usage

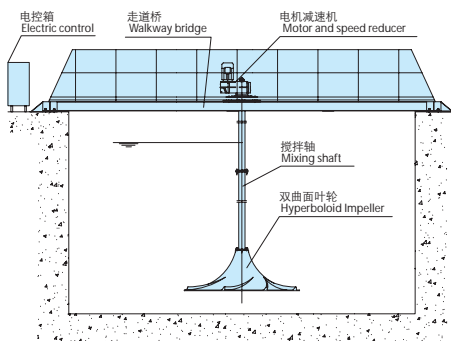
- 最高介质温度:  $\leq 40^{\circ}\text{C}$  (潜水式)
- 介质密度一般不超过  $1200\text{kg}/\text{m}^3$ 。
- 安装深度: 湿式安装一般不超过10米; 干式安装一般不超过5米。
- The highest temperature of the medium shall not exceed  $40^{\circ}\text{C}$  (submersible type installation).
- The density of the medium shall not exceed  $1200\text{kg}/\text{m}^3$ .
- The installation depth of submersible type installation should not exceed 10m, and the depth of dry type installation should not exceed 5m.

### 型号说明 Type description



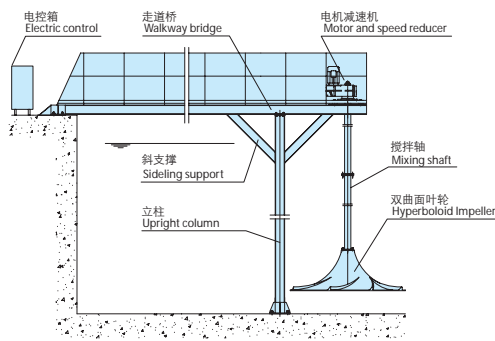
## 结构简图

MH双曲面搅拌机由传动部件、叶轮、底座及吊装系统组成。

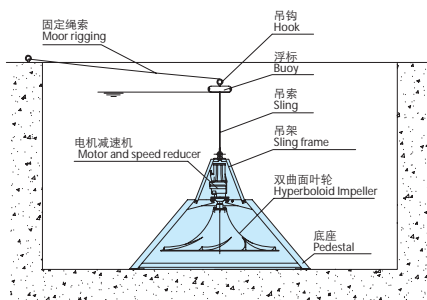


## Construction

The MH hyperboloid mixer is composed of transmission part, impeller, base and hoisting system .



干式安装 Dry installation



湿式安装 Wet installation

## 工作特性

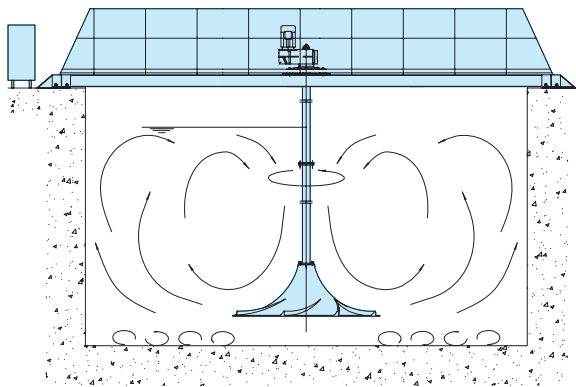
MH双曲面搅拌机可以创建大容积流量的搅拌，并能以较小的动力获得大面积循环、柔和的水流。独特的叶轮结构设计，最大限度地将流体特性与机械运动完美结合。双曲面叶轮的曲面是方程为 $xy=b$ 曲线沿 $y$ 轴旋转而构成的曲面体；为了迎合水体流动，设计从叶轮的中心进水，这一方面减少了进水紊流，另一方面保证了液体对叶轮表面的压力均匀，从而保证整机在运动状态下的平衡。在渐开双弧面上均布有八条导流叶片，借助液体自重压力作补充进水获得的势能与叶轮旋转时产生的离心力形成动能，液体在重力加速度的条件下沿叶轮圆周方向作切线运动，在池壁的反射作用下，形成自下而上的循环水流。故可获得在轴向( $y$ )和径向( $x$ )方向的交叉水流。正是由于双曲面搅拌机叶轮的结构特性和接近池底安装的特点，决定了它在工作中可获得理想的搅拌效果，能有效的消除搅拌死角。(见下图)

## Operating features

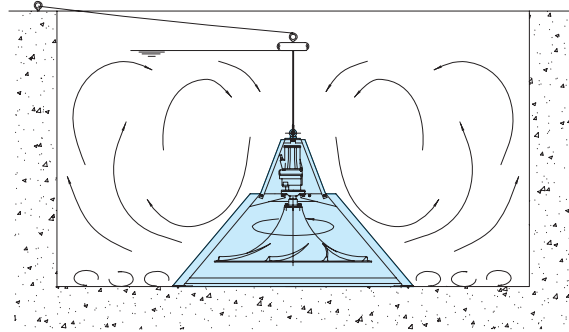
The MH hyperboloid mixer can hold a large capacity flow, and can get a big area circulating and gradual water flow. The unique impeller design perfectly combines the fluid features and mechanical movement to the maximum degree. The curved surface of hyperboloid impeller is shaped by the curve of formula  $xy=b$  rotating around  $y$  axis, in order to cater to the water flowing, the impeller is designed to feed water from the center, on one hand, the turbulent flow is reduced, on the other hand, the pressure of the liquid on the impeller surface is equal and even, therefore the machine will be balanceable in the movement status. Eight guide vanes are equally distributed on the involute dual cambered surface. The kinetic energy is created with help of the potential energy from the supplementary water fed by the deadweight pressure of the fluid and the centrifugal force by the impeller rotating, the fluid will move along the tangent of the impeller circumference under the condition of acceleration of gravity, with reflection of the pond wall, a circulating water flow is formed from bottom to top, therefore the cross-water flow is formed in the direction of axial  $Y$  and radial  $X$ . The structure features and special installation mode (in the bottom of the pond) of the hyperboloid mixer impeller decide the ideal mixing effectiveness, and effectively avoids mixing dead spots. Please see the following drawings.



## 流态图 Fluid figure



干式安装 Dry installation



湿式安装 Wet installation

## 性能参数 Performance parameters

型式 Model	叶轮直径(mm) Impeller diameter	转速(r/min) Speed		功率(kW) Power		服务范围(m) Service area	重量(kg) Weight
		标准 Standard	范围 Range	标准 Standard	范围 Range		干式安装/湿式安装 Dry installation/Wet installation
MH	500	76	40~250	1.1	0.75~1.5	1~3	320/300
	1000	55	30~80	1.5	1.1~2.2	2~5	480/710
	1500	38	30~60	2.2	1.5~3	3~6	510/850
	2000	33	20~42	3	2.2~3	6~14	560/1050
	2500	27	20~40	5.5	3~5.5	10~18	640/1150
	2800	24	20~30	7.5	4~7.5	12~22	860/1180

备注: 1.标准值适用于污泥干质浓度 $\leq 0.8\sim 0.9\%$ 的市政污水。

2.根据介质及池型, 在表所示范围调整选用功率及转速。

Notes: 1. The standard figure is suit for the common municipal wastewater with 0.8~0.9% dry sludge concentration.

2. According to the medium and pond form, the mixer's power and speed could be adjusted in the range of the chart.

## 选型参考

双曲面搅拌机的选型与现场的池型、介质参数及安装方式有关。

双曲面搅拌机的选型主要是依据每台搅拌机的有效服务面积来确定, 并按照池的长宽比不超过二倍的原则, 将长方形池划分为相等的工作单元, 以此确定搅拌机的数量。

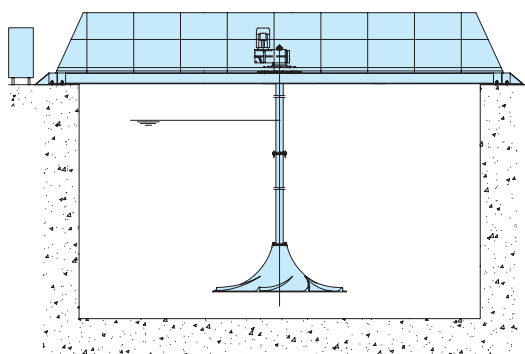
## Type selection reference

The type selection of hyperboloid mixer is related to the pond, medium parameters and installation mode.

The type selection of hyperboloid mixer is basically confirmed according to the effective service area of each hyperboloid mixer, and according to the principle that the ratio of length to width not over 2 to 1, the rectangle pond will be equally divided into working cells, so as to confirm the mixers' quantity.

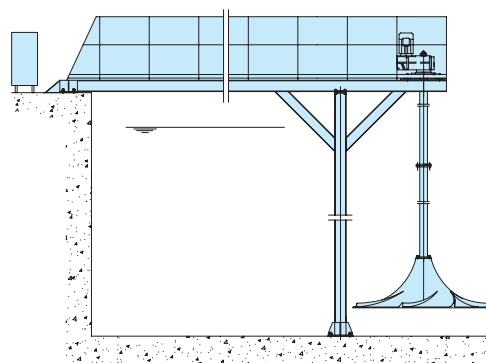
## 安装方式 Installation mode

### 1. 干式安装



全桥 Whole bridge

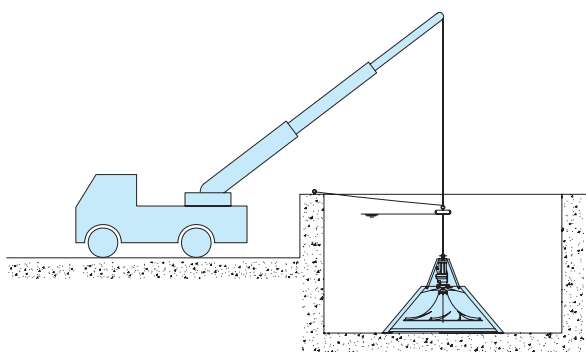
### 1. Dry installation



半桥 Half bridge

### 2. 湿式安装

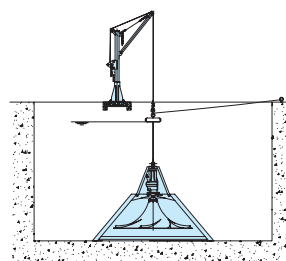
图一是通过长臂吊车直接将搅拌机吊入指定位置。  
图二是通过池边设定的走道桥利用手动卷扬吊装。



图一 Drawing 1

### 2. Wet installation

In drawing 1, mixing is lifted to the pointed position directly by a long-arm truck crane.  
In drawing 2, Mixing is lifted by hand with the use of a winch and the walking bridge which fixed on the pond.



图二 Drawing 2

以上两种方式均是直接吊装，靠设备自重定位。

The two methods above are both directly hoisted, and positioned by deadweight of the equipment.

如蒙洽询请指示下列各项：  
For further details, please fulfill the chart below.

客户：Customer \_\_\_\_\_ 承办人员：Undertaker \_\_\_\_\_  
 工程名称：Name of project \_\_\_\_\_ 工程地点：Address of project \_\_\_\_\_  
 电话：Telephone \_\_\_\_\_ 传真：Fax \_\_\_\_\_

基本参数 Basic parameter	* 安装位置 Locations	<input type="checkbox"/> 调节池 Buffer tanks	<input type="checkbox"/> 厌氧池 Anaerobic reactors	<input type="checkbox"/> 反硝化池 Denitrification reactors	<input type="checkbox"/> 混凝池 Flocculation reactors		
		<input type="checkbox"/> 污泥池 Sludge tanks	<input type="checkbox"/> 交替生物池 Alternating biological reactors	<input type="checkbox"/> 消毒池 Disinfection reactors	<input type="checkbox"/> 其它 Others		
	* 池型(m) Pond form	矩形池 Rectangular pond			圆形池 Circular pond		其它 Others
		长 Length	宽 Width	深 Depth	直径 Diameter	深 Depth	
	* 有效水深(m) Available depth						
* 介质参数 Medium parameter	名称 Name				密度 Density		
	主要成分 Constituents				pH值 pH		
	温度(°C) Temperature				粘度 Viscosity		
	含固率 Solid containing rate				其它 Others		
工艺参数 Technique parameter	* 安装方式 Installation mode	<input type="checkbox"/> 干式安装(标准型) Dry installation (standard)		<input type="checkbox"/> 湿式安装 Wet installation		<input type="checkbox"/> 其它 Others	
	* 池底最低流速(m/s) The minimum flow speed at the bottom						
	其它工艺要求 Other request						
材质要求 Material	* 叶轮 Impeller	<input type="checkbox"/> 玻璃钢(标准型) FRP (standard)		<input type="checkbox"/> 不锈钢 stainless steel			
	* 传动轴 Mixing shaft	<input type="checkbox"/> 碳钢防腐(标准型) Carbon steel with antisepsis (standard)		<input type="checkbox"/> 不锈钢 Stainless steel		<input type="checkbox"/> 碳钢外包玻璃钢 Carbon steel covered with FRP	
其它要求 Other requests							

备注：1.以上资料请尽可能完整填写。  
 2.项目前加注“\*”者，请务必填写。  
 Notes: 1.Please fill in the parameter lists as complete as possible.  
 2.The item with ‘\*’ must be filled.