

EKATO SERVICE provides a broad range of services: „Service on site“, installation and start-up, including instruction and training of the plant operators as well as troubleshooting and availability around the clock. Furthermore EKATO offers the required expertise for plant optimization and preventive maintenance.

EKATO服务, 提供多方面的服务: 现场服务, 安装和开车, 包括对装置操作人员的培训和指导以及故障维修和24小时服务。此外, EKATO还提供装置优化的技术支持和预防性维护。



Find your local contact worldwide: 全球各地的联系方式
<http://www.ekato.com/en/ekato-group/contact/contacts-worldwide/>

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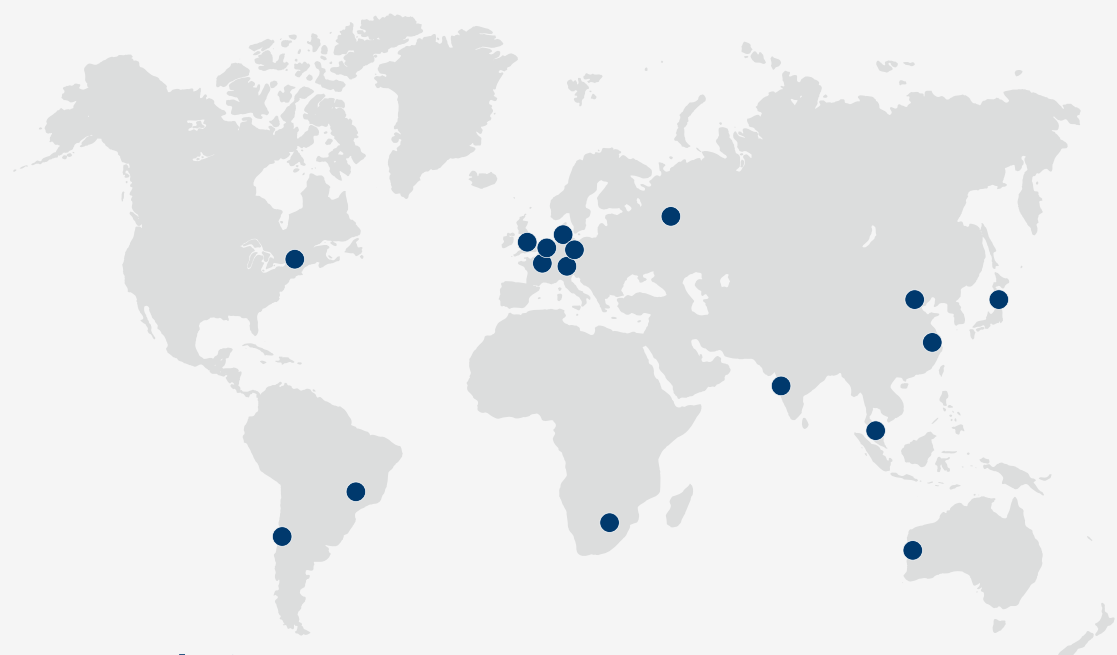


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- More than 85 Years of Experience
85年以上的经验
- Highly Developed and Proven Equipment
深度开发和经长期使用验证的设备
- State of the Art Design
当代最先进的设计
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最高的设备和工艺的可用性



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EKATO

EKATO AGITATORS FOR STORAGE TANKS

EKATO Side Entry Agitators for Storage Tanks EKATO 储罐用侧进式搅拌机

Reliable solutions for the oil and petrochemical industry
用于油品和石油化工行业可靠的解决方案



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Advanced Process Solutions 先进的工艺解决方案

EKATO, the world market leader in mixing technology

In the past 8 decades EKATO has developed to become the world market leader in mixing technology and today offers optimized mixing technologies for the process-oriented industries. EKATO has been family-owned since its founding in 1933 and maintains a worldwide presence with subsidiaries in Europe, Asia, Australia, South America, South Africa and the USA as well as a network of trading partners. The core competence is the development and manufacture of engineered and customized industrial agitators including seals and seal supply systems as well as process plants.

EKATO, 混合技术全球市场领导者

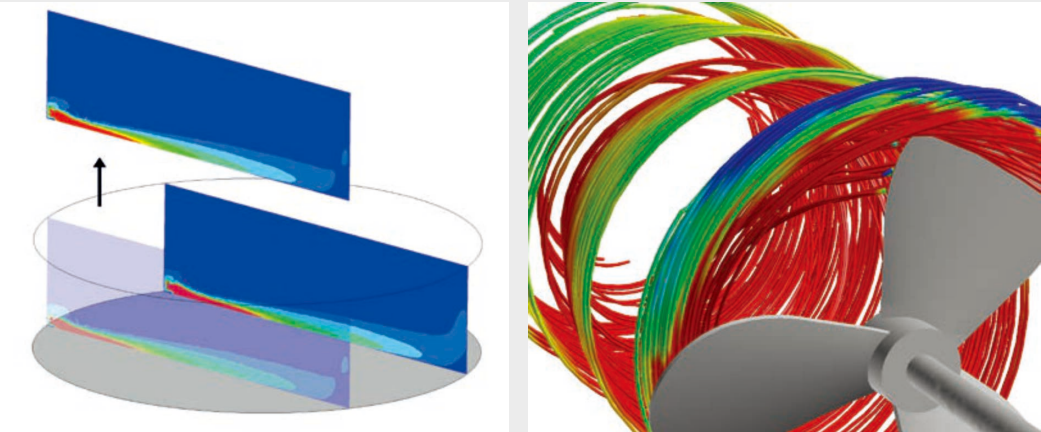
在过去的80多年中，EKATO已发展成为混合技术全球市场领导者，今天，为面向过程的工业提供优化的搅拌技术。EKATO自1933年成立开始是一家家族所有公司，现在在全球的欧洲、亚洲、澳洲、南美洲、北美洲和美国有分支机构和贸易合作伙伴。
EKATO的核心竞争力是开发和制造工程化定制的工业搅拌机，包括密封和密封液系统以及整套的工艺装置。

CFD Computational Fluid Dynamics by EKATO

Computational Fluid Dynamics (CFD) visualizes the flow behaviour inside a tank under real conditions. A CFD simulation allows to investigate a three-dimensional flow to define the optimum number and orientation of agitators to be installed in a tank.

EKATO 进行 CFD 计算流体动力学研究

计算流体动力学 (CFD) 可视化展示真实条件下液体流动的情况，CFD模拟允许对3D流动进行研究以确定最佳的参数和搅拌机安装于容器上的方位。



EKATO in oil storage tanks

EKATO FLUID side entry agitators are state of the art in design and technology. Reliability, easy maintenance and an economical operation are the main benefits which rely on our experience and know-how in side entry technology.

EKATO 在储油罐行业

EKATO FLUID 侧进式搅拌机采用最现代的设计和技术。高可靠性、易维护和运行经济是主要的优点，这些优点来自于我们原有的侧进式搅拌机技术和经验。

Side entry agitators for oil storage tanks fulfill the following main duties: 储油罐搅拌机实现如下任务：

Crude oil - BS&W control / 原油 - BS&W 控制：

The mixer generated jet flow lifts the BS&W to prevent the tank bottom from local accumulation and build-up. To reach all areas of the tank bottom properly, swivel angle type agitators are used which can be horizontally varied to max. 30 degrees - on both sides of the tank center line. To keep the tank outlet free from deposit build-up the agitators should be installed in a cluster opposite to the tank outlet.

搅拌机产生射流将BS&W冲离底部以防止在底部沉淀堆积。为了达到整个容器底部不堆积，采用搅拌轴可转角的搅拌机，这种搅拌机的轴可在水平方向上在中心线的二侧最大转动30度。为了在容器的出口处不出现物料堆积，应在出口对面位置布置安装搅拌机。

Blending, maintaining product uniformity, heat transfer / 混合、保持物料均匀、传热：

Under consideration that there are no solids in the tanks, side entry agitators with fixed angle arrangement are used for blending, maintaining product uniformity and heat transfer.

针对储罐中不含固体物料的情况，采用搅拌轴方向固定的设计，搅拌机用于对物料混合、保持物料均匀和传热。



Agitator components / 搅拌机部件

1 Drive / 驱动

EKATO FLUID side entry agitators are driven by gear or belt. E-motors, following latest IEC or NEMA standards, are applied. Gearboxes of heavy duty design are designed to absorb all occurring loads at specified operating conditions. Toothed-belt drives of antistatic type are fitted with protection covers.

EKATO FLUID 侧进式搅拌机采用齿轮箱或皮带传动。使用最新标准的 IEC 或 NEMA 电机。齿轮箱使用重载设计以吸收特定工况下出现的各种载荷。防静电的齿形皮带配防护罩。

2 Mechanical seal / 机械密封

Single or double-acting EKATO seal of cartridge design including seal supply system in line with API 682, modified for agitators. 使用单端面或双端面EKATO整装设计的机械密封，包括符合API 682标准为搅拌机改进设计的密封液系统。

3 Mounting flange / 安装法兰

Mounting flange connecting dimensions as per ASME B16.47 or ASME B16.5. / 安装法兰的连接尺寸按 ASME B16.47 或 ASME B16.5。

4 Swivel device / 旋转装置

Swivel angle +/- 30° manual or automatic adjustment / actuation protection cover. 转动角度 +/- 30°，手动或自动调节 / 转动防护罩。

5 Agitator shaft / 搅拌机轴

Solid agitator shaft in one-piece design. / 一段式设计的搅拌机轴。

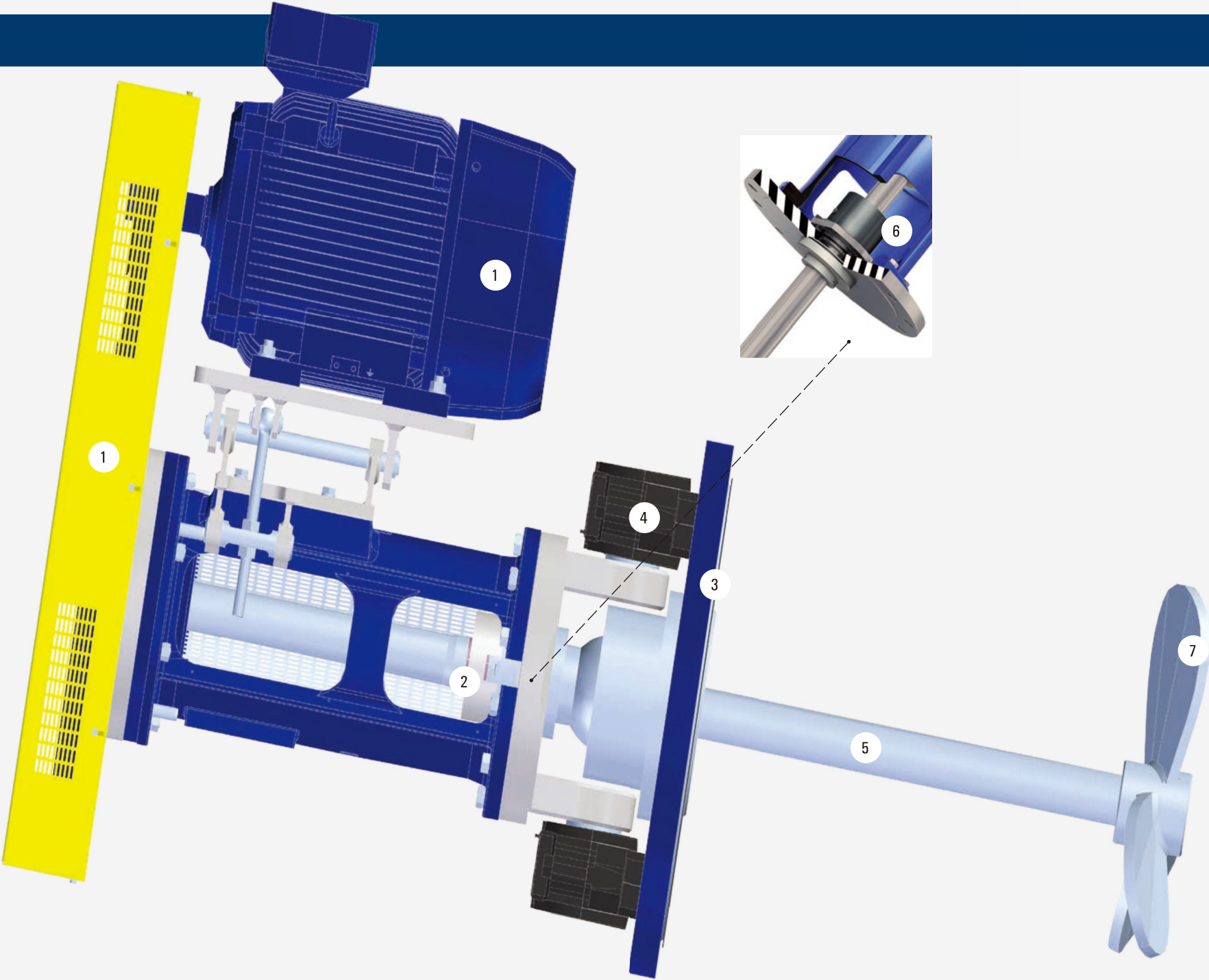
6 Shut-off device / 关闭装置

Shut-off for maintenance on mechanical seal while tank is full, with positive locking device (clamping flange). 关闭装置用于满罐情况下对机械密封的维修，带可靠的锁紧装置(夹紧法兰)。

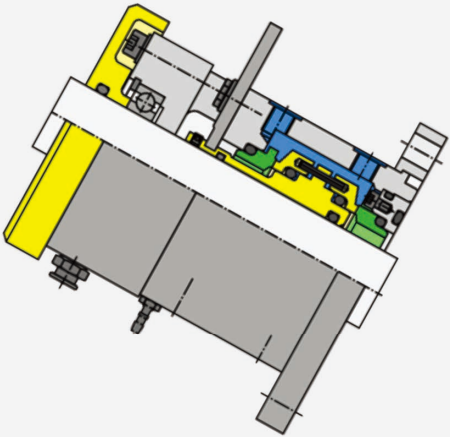
7 Propeller / 桨叶

EKATO propeller in one-piece design (no bolted blades), statically balanced acc. to ISO 1940. EKATO 一体式设计的桨叶(不用螺栓固定桨叶叶片)，按 ISO 1940 标准做静平衡。

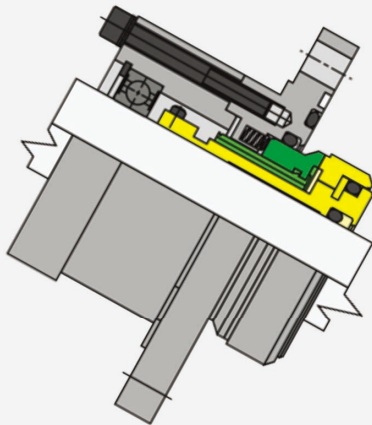
Advanced Process Solutions 先进的工艺解决方案



Double-acting mechanical seal type ESD 34N
双端面机械密封 ESD 34N



Single-acting mechanical seal type ESD 142F
单端面机械密封 ESD 142F



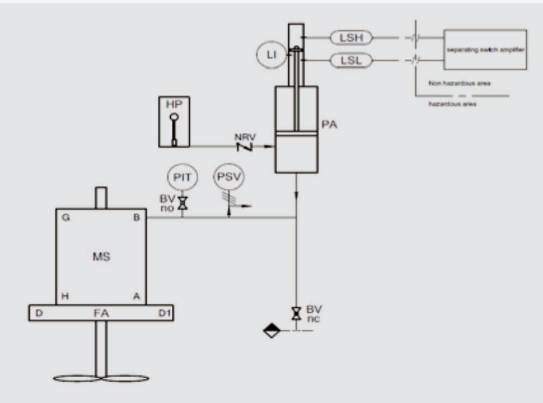
API plan 53 B / API 方案53B

Used for liquid-lubricated double-acting pressurized seals: the external seal liquid will be pressurized by a spring-operated pressure reservoir supplying clean seal oil to the seal chamber. The seal liquid pressure is maintained at a pressure higher than the tank pressure generated by the liquid level.

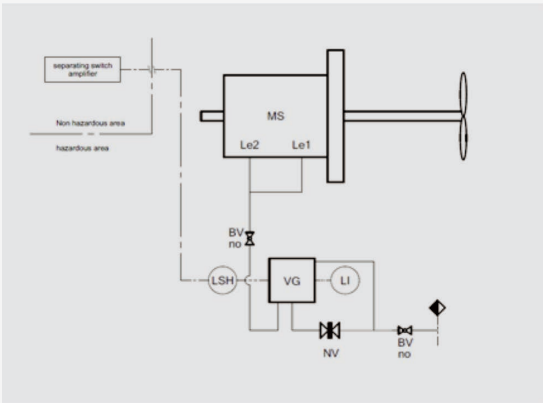
用于液体润滑的双端面带压力机械密封：外部的密封液经由弹簧机构操作的压力小罐加压向密封腔内供给。密封液的压力维持在比储罐内的压力稍高的值。

API plan 65 A / API 方案65A

Seal leakage control system: a seal failure will be detected by an excessive flow rate into the leakage collection system. / 密封泄漏控制系统：通过检测流入密封液收集容器的流量来监测机械密封是否损坏。



API plan 53 B (modified by EKATO)
API 方案53B (EKATO 作修改)



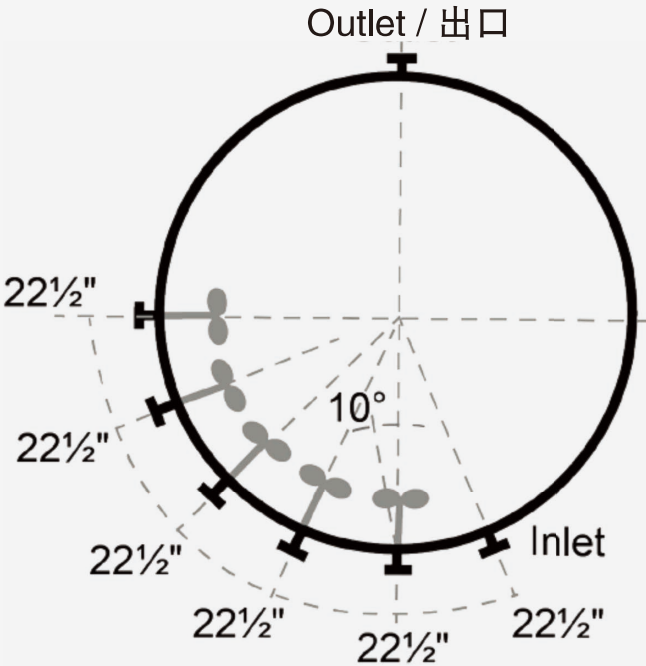
API plan 65 A (modified by EKATO)
API 方案65A (EKATO 作修改)

Agitator arrangement / 搅拌机布置

The proper agitator arrangement at the tank shell is the most critical parameter for a trouble-free tank operation. Jet stream length and pumping capacity determine the required number of agitators per tank. EKATO FLUID side entry agitators are designed for installation and removal from the tank in fully assembled condition.

在储罐壁上正确地布置搅拌机的位置是确保无故障运行最重要的参数，喷射液流的长度和泵液量决定了每个罐所需搅拌机的数量。EKATO FLUID 侧进式搅拌机设计成可以在储罐上整体拆装。

TANK OPENING / MAX. IMPELLER DIAMETER						
储罐上开孔 / 最大桨叶直径						
Manhole / nozzle 入孔 / 管口 size 尺寸	Free opening 开孔 (mm)	Nozzle length (mm) as per API 650 / 管口长度(mm)按API650 Dimensions for shell nozzles / 储罐壁管口尺寸				
		200	225	250	275	300
		Max. impeller diameter (mm) / 最大桨叶直径(mm)				
ASME 18" / 150	430	510				
ASME 20" / 150	480	600				560
ASME 24" / 150	580	770	730			
ASME 32" / 150	780	805				



FIXED ANGLE AGITATOR / 固定角度搅拌机

Gear driven agitator / 齿轮箱传动搅拌机

Shaft diameter / 轴径	mm	45	65
Nominal speed * / 额定速度 *	min-1	365 to 411	315 to 360
Impeller diameter / 桨叶直径	mm	to suit process conditions 由工艺要求确定	
Length / 长度			
Shaft length / 轴长	mm	800	1000
Lantern / drive height 机架/驱动部分高度	mm	1000	1200

Belt driven agitator / 皮带传动搅拌机

Shaft diameter / 轴径	mm	65	85
Nominal speed * / 额定速度 *	min-1	410	410
Impeller diameter / 桨叶直径	mm	to suit process conditions 由工艺要求确定	
Length / 长度			
Shaft length / 轴长	mm	1000	1000
Lantern / drive height 机架/驱动部分高度	mm	750	800

Dimensions approx. only. Certified drawing after order placement.
尺寸为近似值， 合同后提供核准图

* Based on 50 Hz motors / * 按50Hz电机

SWIVEL ANGLE AGITATOR / 可调角度搅拌机

Gear driven agitator / 齿轮箱传动搅拌机

Shaft diameter / 轴径	mm	45	65
Nominal speed * / 额定速度 *		365 to 411	315 to 360
Impeller diameter / 桨叶直径	mm	to suit process conditions 由工艺要求确定	
Length / 长度			
Shaft length / 轴长	mm	800	1000
Lantern / drive height 机架/驱动部分高度	mm	800	1000

Belt driven agitator / 皮带传动搅拌机

Shaft diameter / 轴径	mm	65	85
Nominal speed * / 额定速度 *		410	410
Impeller diameter / 桨叶直径	mm	to suit process conditions 由工艺要求确定	
Length / 长度			
Shaft length / 轴长	mm	1000	1000
Lantern / drive height 机架/驱动部分高度	mm	1050	1100

Dimensions approx. only. Certified drawing after order placement.
尺寸为近似值，合同后提供核准图

* Based on 50 Hz motors / * 按50Hz电机

