BOTTOM ENTRY AGITATOR

Professional Mixing Technologies

High-Performance Mixing for Demanding Industrial Applications

The Bottom Entry Agitator is a high-performance and reliable mixing solution engineered for demanding industrial processes. Designed for efficient homogenizing, emulsifying, and dissolving—especially in viscous and dense mixtures—it ensures consistent product quality and optimal process control. Its bottom-mounted configuration maximizes energy transfer, eliminates dead zones, and delivers uniform mixing throughout the entire tank volume. With a compact design, robust construction, and advanced sealing technology, it guarantees long service life with minimal maintenance. This unit provides maximum efficiency, operational stability, and superior performance across a wide range of industries.

Mounting Type	Flange or Tri-Clamp Connection
Impeller	HWM Series
Sealing	Magnetic coupling (zero leakage), mechanical seal or lip seal options ensuring reliable and leak-free operation
Shaft Diameter	Customizable according to application requirements
Motor Power	0.25 - 22 kW
Shaft Material	Stainless Steel 316L (Other materials available on request)
Capacity	10 L - 30 m³
Operating Temperature	-10°C to +150°C
Shut-off Device	Allows maintenance and seal replacement without tank drainage (optional)
Industries	Chemical, Food & Beverage, Cosmetics, Pharmaceutical, Water & Wastewater Treatment
Applications	homogenization, emulsification, polymerization, dispersion, bioreactors, pharmaceuticals, viscous fluids, sterile processing
Advantages	VFD Compatibility, Low Operating Costs, Easy Maintenance, Hygienic Design, Process Optimization, Reliable Performance

Bottom-Entry Mixers: Efficient & Thorough

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Optimized High-Shear Mixing & Rapid Dispersion Performance

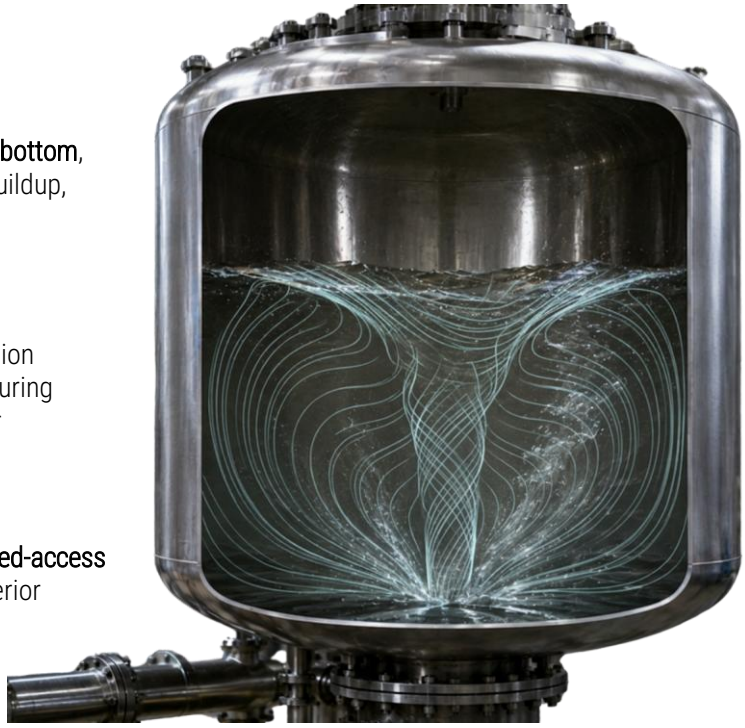
Bottom Entry Agitators are specifically engineered for **high-shear mixing, efficient emulsification, and rapid particle dispersion** in demanding industrial environments. The bottom-mounted impeller creates powerful axial and radial flow patterns, ensuring uniform distribution of solids and liquids. This configuration significantly enhances **mass transfer and homogenization efficiency**, especially in low to medium-viscosity systems. By generating controlled turbulence at the tank base, it minimizes agglomeration and accelerates process time. The result is improved product consistency, shorter batch cycles, and higher overall process reliability.

Versatile Industrial Applications Across Sensitive Processes

The Bottom Entry Agitator is widely used in **cosmetic production, dairy processing, pharmaceutical suspensions, biotechnology reactors, and CIP systems**. Its hygienic design makes it ideal for applications requiring strict sanitary standards and contamination control. In bioreactors and pharmaceutical vessels, the bottom-entry configuration ensures precise mixing without compromising sterile boundaries. For dairy and cosmetic emulsions, it guarantees stable texture and uniform composition. The design also supports seamless integration with **Clean-In-Place (CIP) systems**, reducing downtime and improving operational efficiency.

Why Choose Bottom Entry Agitator?

- **Intense Bottom-Zone Mixing Power**
  Delivers **high-energy mixing directly at the tank bottom**, effectively eliminating dead zones, sediment buildup, and unmixed layers to ensure uniform product consistency.
- **Maximum Yield & Material Utilization**
  Strategic bottom positioning enhances circulation patterns, improving solids suspension and ensuring complete utilization of raw materials for higher production efficiency.
- **Ideal for Closed & Pressurized Systems**
  Perfectly suited for **closed, pressurized, or limited-access vessels**, offering compact installation and superior mechanical stability compared to top-mounted alternatives.
- **Magnetic Drive Compatibility**
  Fully compatible with **magnetic drive systems**, enabling leak-free, seal-less operation ideal for sterile, vacuum, and hazardous processing environments.
- **Enhanced Safety & Reduced Maintenance**
  Provides improved process safety, minimizes mechanical wear, reduces maintenance frequency, and ensures long-term operational reliability in demanding industrial applications.



Advanced Sealing for Bottom Entry Agitators

Advanced Sealing Systems for Bottom Entry Agitators

Sealing performance is one of the most critical design factors in Bottom Entry Agitator systems, directly affecting process safety, sterility, pressure resistance, and maintenance cost. Depending on process conditions such as pressure, temperature, sterility requirements, and product sensitivity, different sealing technologies are used worldwide in industrial applications.

Mechanical Seal Systems (With Mechanical Seal)

For processes requiring closed operation, pressure containment, or controlled environments, mechanical seals are widely used in bottom entry agitators. These seals prevent leakage between the rotating shaft and stationary housing.

Common Types Used in Industry:

- **Single Mechanical Seal** – Suitable for moderate pressure and non-hazardous fluids.
- **Double Mechanical Seal** – Used for high-pressure, toxic, or sterile applications; includes barrier fluid for extra protection.
- **Cartridge Mechanical Seal** – Pre-assembled unit for easier installation and maintenance.
- **Dry-Running Seal** – Designed for processes where lubrication is limited.

Advantages:

- Suitable for pressurized vessels
- Handles vacuum conditions
- Reliable for medium to high viscosity fluids
- Cost-effective compared to magnetic drive systems

Seal-Less System – Magnetic Drive Unit

For highly sensitive, sterile, or hazardous processes, **Magnetic Drive Bottom Entry Agitators** eliminate the need for mechanical seals entirely.
In this system, torque is transmitted through magnetic coupling, meaning there is **no direct shaft penetration through the vessel wall**, ensuring complete containment.

Key Characteristics:

- Fully hermetic sealing
- Zero leakage risk
- Ideal for sterile and GMP environments
- Suitable for vacuum and high-purity processes
- Minimal maintenance requirement

Typical Applications:

- Pharmaceutical reactors
- biotech fermenters
- high-purity chemical processing
- hazardous material handling

Without Mechanical Seal (Atmospheric / Open Tank Configuration)

In open tanks or atmospheric operations, where pressure containment is not required, simplified sealing configurations are used.

Typical Options:

- Lip Seals
- Packing Seals
- Simple Bearing Housing with Splash Protection

These configurations are generally applied in:

- Water treatment tanks
- Mixing of non-hazardous fluids
- Low-pressure industrial processes

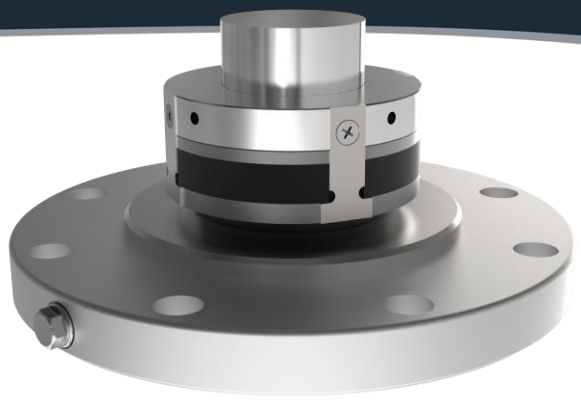
Benefits:

- Lower investment cost
- Simple maintenance
- Suitable for non-pressurized systems

Advanced Sealing for Bottom Entry Agitators

Sealing Solutions for Bottom-Entry Agitators

Reliable sealing is essential in bottom-entry agitators to prevent product leakage, protect the drive system, and maintain process integrity under demanding operating conditions. We offer a complete range of sealing solutions engineered to withstand continuous operation, varying pressure conditions, and challenging process media, ensuring reliable performance and compatibility with applications ranging from hygienic and sterile processing to high-pressure, abrasive, or hazardous environments.



Single-Acting Mechanical Seal

Summary of Sealing Technologies in Bottom Entry Agitators

Sealing Type	Leakage Risk	Pressure Capability	Maintenance Level	Suitable for Sterile Use
Single Mechanical Seal	Low	Medium	Medium	Limited
Double Mechanical Seal	Very Low	High	Medium-High	Yes
Magnetic Drive	Zero	High	Very Low	Excellent
Open / Atmospheric Seal	Moderate	Low	Low	No

Dry-Running Mechanical Seal

Double-Acting Mechanical Seal

Bottom Entry

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Applications

Heavy Liquids Mixing
Ideal for mixing dense, viscous liquids, suspensions, or slurries at the bottom of tanks.

Homogenization
Ensures even distribution of solids in liquid mixtures.

Suspension
Perfect for suspending solids in thick or sticky liquids.

Chemical and Pharmaceutical Processing
Used in reactions or processes requiring thorough mixing from the bottom of the tank.

Industries

- Chemical Processing
- Food and Beverage
- Pharmaceutical Industry
- Petroleum and Oil Refining
- Mining
- Pulp and Paper
- Energy Production
- Biofuel Production
- Water and Wastewater Treatment

Features

- Bottom entry design, compact and efficient installation
- Easy mechanical seal change for quick maintenance
- Automation compatibility for seamless system integration
- Modular body with customizable motor, gearbox, seal, and shaft
- Quiet, vibration-free operation, balanced according to ISO 1940 for reliability and stability

Advantages

- VFD compatibility
- Low operating costs
- Easy maintenance
- Hygienic design
- Process optimization
- Reliable performance

Efficient Bottom Mixing

- Mounted at the bottom of tanks for efficient mixing.
- Ideal for high-viscosity fluids, slurries, and settled materials.
- Typically requires lower power than top-entry agitators for the same duty.
- Suitable for pharmaceutical, food, and biotech industries.
- Excellent for aseptic and solid-settling applications.
- Easy maintenance and cleaning, especially in large-scale systems.

Applications of Bottom Entry Agitators

Food and Beverage Industry

- Mixing dairy products, syrups, sauces, and edible oils with complete tank turnover
- Preventing ingredient settling while maintaining product consistency
- Supporting hygienic CIP/SIP processes with bottom-mounted mixing systems

Pharmaceutical Industry

- Mixing sterile formulations under sanitary processing conditions
- Maintaining homogeneous suspensions in vaccine and biotechnology vessels
- Eliminating dead zones for complete batch utilization and easy cleaning

Chemical Industry

- Dissolving powders and additives into liquid chemicals efficiently
- Blending high-viscosity formulations with uniform circulation
- Providing complete tank drainage without product accumulation

Cosmetics and Personal Care

- Homogenizing creams, lotions, shampoos, and liquid soaps
- Maintaining stable emulsions during production and storage
- Ensuring smooth mixing of fragrances, pigments, and additives

Biotechnology Industry

- Gentle mixing of sensitive biological media and nutrient solutions
- Maintaining uniform temperature and concentration throughout the vessel
- Supporting aseptic processing with sanitary bottom-entry designs

Storage and Process Tanks

- Preventing sedimentation during long-term storage
- Maintaining product uniformity before filling or downstream processing
- Enhancing heat transfer efficiency through continuous bottom circulation

High Viscosity Applications

- Mixing resins, polymers, adhesives, and specialty chemicals
- Promoting efficient circulation where side-entry mixers are less effective
- Improving product consistency while minimizing energy consumption

Food and Beverage Industry

Pharmaceutical Industry

Chemical Industry

Biotechnology Industry

Mixing Type

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Homogenization
In the homogenization process, the goal is to uniformly combine materials with different properties. This process requires high stirring power to ensure that particles and liquids are thoroughly dispersed in each other. A **top entry agitator** is typically used for homogenizing liquids or dilute mixtures. Additionally, a **bottom entry agitator** is effective for mixtures that require better distribution at the bottom of the tank.

Homogenization

Powder/Bulk Material Mixture
In mixing powdery or bulky materials, a **side entry agitator** is a suitable choice because it can easily mix the powder uniformly across a wider surface from the side of the tank. Additionally, a **top entry agitator** is effective for creating rotational movement and dispersion in light powders or materials with low density.

Powder/Bulk Material Mixture

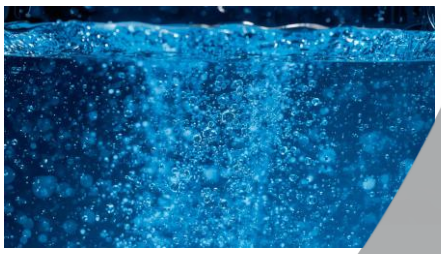
Solid-Liquid Suspension
To create a solid-liquid suspension, a **bottom entry agitator** is usually the best choice. This type of agitator generates a direct flow at the bottom of the tank, ensuring that solid particles remain effectively suspended in the liquid and preventing sedimentation. This choice is particularly suitable in industries such as pharmaceuticals and chemicals, where there is a need to keep particles suspended.

Solid-Liquid Suspension

Liquid-Liquid Dispersion
For dispersing liquids into each other (usually in the creation of emulsions), a **top entry agitator** performs the best. This type of agitator creates vertical and rotational flows, allowing the liquids to mix together and disperse particles uniformly. This is important for industries such as food and pharmaceuticals, which require stable emulsions.

Liquid-Liquid Dispersion

Gas-Liquid Dispersion
For gas dispersion in liquid (e.g., in the production of carbonated beverages or chemical reactions), a **bottom entry agitator** or **side entry agitator** is more suitable, as these types of agitators are capable of generating fine bubbles and uniformly distributing gas in the liquid. A **top entry agitator** can also be used in specific conditions to produce larger, less stable bubbles.



Gas-Liquid Dispersion

Bottom Entry Agitators Dimensions

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Suitable for use in tanks with bottom-mounted installation.
Designed to accommodate various flow characteristics and a wide range of viscosities while ensuring efficient bottom-to-top mixing.

Mechanimix offers bottom entry agitators designed for applications requiring efficient mixing, complete tank drainage, and reliable hygienic performance. Our solutions are tailored for industries such as pharmaceuticals, biotechnology, food and beverage, cosmetics, chemicals, and other sanitary processing applications. We deliver the most efficient solution based on tank geometry, process requirements, and operational conditions.