

SPXFLOW

MagMixer MBE

HIGH POWER MIXER FOR LIFE SCIENCE



About Lightnin

A World Leader in Industrial Mixing since 1923, Lightnin has over 90 years of unrivaled experience in industrial mixing technology, process knowledge, and technological innovation. Lightnin enjoys a global reputation for durable, long-lasting mixers, agitators, aerators, and flocculators for fluid process systems. We offer a full spectrum of impeller designs for diverse applications. In addition, we offer a worldwide service network, mixer repair, gearbox repair, and replacement parts programs. Look to Lightnin for knowledge, technology, and service excellence.

About SPX FLOW

Based in Charlotte, North Carolina, SPX FLOW is a leading global supplier of highly engineered flow components, process equipment and turn-key systems, along with the related aftermarket parts and services, into the food and beverage, power and energy and industrial end markets. SPX FLOW has more than \$2 billion in annual revenues and approximately 8,000 employees with operations in over 35 countries and sales in over 150 countries around the world. To learn more about SPX FLOW, please visit our website at www.spxflow.com

A Standard for Cleanability, Durability and Performance - MagMixer MBE

MAGMIXER MBE

The big advantage of Lightnin's magnetic agitator is the complete separation of the interior of the tank from the outside. In contrast to conventional agitators, there is no shaft penetrating the tank and therefore no mechanical seal. This eliminates the risks of leaks and microbial contamination and the need for special maintenance that are associated with conventional agitators. We have developed our magnetic agitators with special emphasis on optimizing their cleanability, which is essential for sterile processes. Independent testing, e.g. EHEDG, confirm that these agitators can be qualified for such applications.



Bottom-mounted magnetic agitators are state of the art for low-viscosity liquids in pharmaceutical and biotechnology production. The compact design, low maintenance and high reliability guarantee trouble-free production. Using a bottom-mounted agitator also frees up space on the tank lid for sensors, valves and sight glasses.



Typical Applications

Magnetic Impellers

MBE: OPEN DESIGN & OPTIMAL FLOW THROUGH ROTOR

Open design with excellent cleaning: hub and magnetic rotor are connected only by the impeller blades.

The ceramic bearings are oversized (in diameter and height), product-lubricated and consist of outer (silicon carbide) and inner (zirconium oxide) bearing. This results in exceptional stability, good emergency running properties and particle generation below detectable levels.

Ease of maintenance - ceramic bearing parts can be replaced by users on site; no spare rotor needed.

A very large gap between the rotor and the containment shell maximizes flow through the gap and minimizes shear stress.

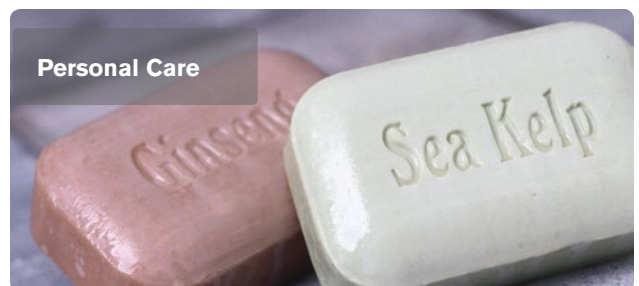
CFD-engineered mixing: fluid is drawn from above and pumped radially. Perfect for mixing solid powders into liquids; rapid breakdown of temperature and concentration gradients, ensures good heating and cooling.

MBE: MAGNETIC IMPELLERS

New and stronger magnetic materials enable us to reach a higher transferable torque for the same geometry of the drive and rotor. Lightnin offers a wide range of drive sizes with operating torques from 30 Ncm to 300 Nm (2.65lbf.in to 2655lbf.in) to suit a wide range of applications.

Lightnin MBE magnetic impellers ensure that the optimal formulation of the product is achieved throughout the whole volume. When the product is being transferred out of the vessel, the homogeneity of the mixed product is maintained reliably down to the last drop.

The open design enables easy cleaning (CIP) and sterilization (SIP). Lightnin experts will help you select the best impeller variant for your process, the best drive unit and the most suitable installation option (welded or Plug In containment shell).



SPX FLOW provides advanced Lightnin mixing solutions for additional applications including Vaccine Production, Manufacturing of active ingredients, Solutions for Injection and Infusion and many more.

Design Features & Functions of Bottom-Mounted Magnetic Agitators

BEARINGS

- Zirconium oxide inner bearing: less risk of breakage, resistant to damage by sudden settling of the rotor
- Silicon carbide outer bearing: with channels in the face side for better lubrication of the bottom contact surface and enhanced cleaning (CIP)
- Run-dry capability with the rotor type MBE: Magnetic lifting of the impeller reduces the load on the bearing surface so that the agitator can be kept running while the vessel is emptied (mixing down to the last drop)

LOWERING DEVICE

Agitators size from MBE200 and upwards are supplied with a special lowering mechanism that withdraws the drive magnet out of the containment shell.

BENEFITS OF THE RETRACTABLE DRIVE MAGNET

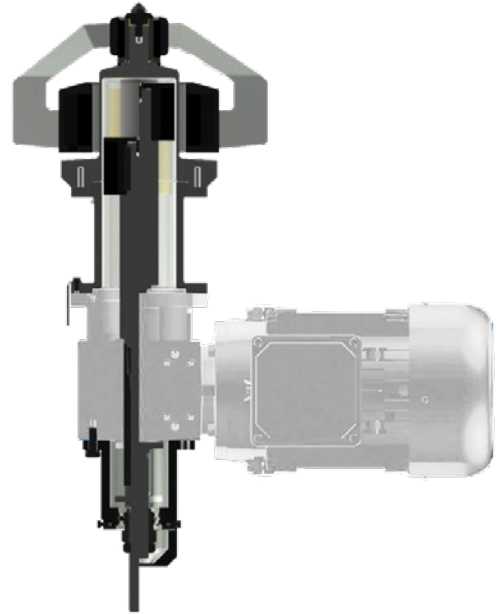
Controlled removal and safe insertion of the impeller due to withdrawal of the drive magnet. The drive unit remains in position while the magnetic drive rotor is lowered out of the containment shell. Avoids damage to the ceramic bearings. Improved safety: The device protects against the crushing hazard involved in placing the agitator head on the bearing, and thus meets the demand of the EC Machinery Directive for designed protection against injury.

REMOVABLE CONTAINMENT SHELL (PLUG-IN)

As an alternative to a version with a flange for welding into the vessel, the agitator can be supplied with a removable containment shell. This can facilitate maintenance. This practical Plug In solution is becoming more popular and makes it easier to switch from shaft-driven agitators with mechanical seals to magnetic agitators.

ELECTROPOLISHING OF STAINLESS STEEL SURFACES

As well as mechanical polishing to two levels, we also electropolish as standard so that we can meet the growing demand for the highest possible surface quality.



Reliable and easy to maintain

EXTRA LARGE PLUG IN FLANGE

The Plug In flange is also available with a large-diameter flange which allows the whole agitator head to be extracted from the vessel through the bottom opening.



IMPELLER SPEED MONITORING

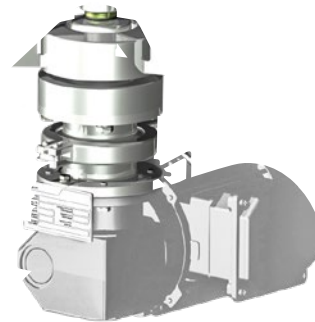
Sometimes a problem inside the tank or an operating error can lead to forces on the agitator head that exceed the maximum transmissible torque, so that the magnetic coupling decouples. In this situation the agitator head stops turning although the drive is still running. To monitor this issue, we offer an optional contact-free rpm sensor for the agitator head.

For safety reasons, the speed sensor is included as standard in agitators for use in ATEX Zone 0 (directive 2014/34/EU)



ATTACHMENT OF THE DRIVE SHELL BY TRICLAMP

Attaching the drive with a TriClamp fitting enables it to be removed quickly without tools, eg: when using the agitator with an autoclavable tank. As another alternative, bayonet fittings are also possible.



EXTRACTOR TOOL

An optional tool for the removable containment shell (Plug In). The tool enables the containment shell to be removed from the tank easily and gently.



Technical Specifications

WETTED MATERIALS

Male Bearing	Standard	ZrO2
	Optional	SSiC
		TC-6N
Female Bearing	Standard	SSiC
	Optional	TC-6N
		TC-NB
Material	Standard	316L (1.4435)
	Optional	904L (1.4539)
		AL-6XN (1.4529)
		Hastelloy-C22
O-Rings	Standard	EPDM
	Optional	FEP
		Silicone
		Viton
Standards	Compliant	FDA, USP Class VI
		AD 2000-W2, ASME 2.2
		BPE 2016
		Non animal origin polishing compounds used
Certificates	Standard	2.2 & 3.1 Mat. Certificates
	Optional	3.2 Mat. Certificates
Surface Finish	Standard	20Ra (<0.5µm)
	Optional	Min. <8Ra (<0.2µm)
Other	Standard	Max. Viscosity: 500cp
	Standard	Max. Temp.: 284°F (140°C)
	Standard	Dry Running for 15 minutes at reduced speed
	Standard	pH range: 1-14
	Optional	Impeller removal tool

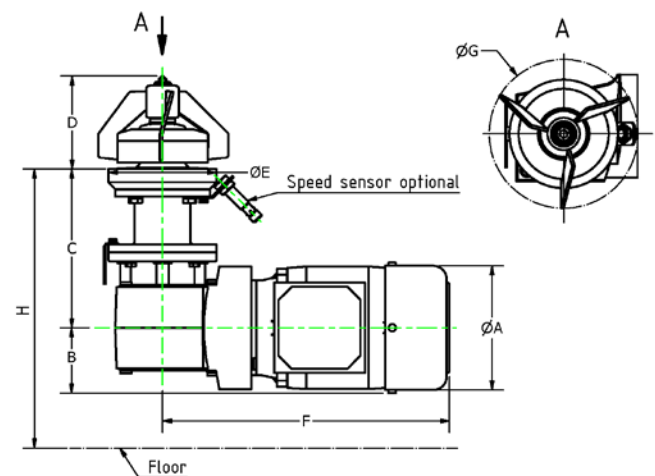
TANK PLATE / FLANGE

Type	Standard	Welded Flange
	Optional	Plug In Flange
		Special Sized Welded Flange
Accessories	Optional	Special Sized Plug In Flange
		Removal Tool for Plug In Flange
Material	Standard	316L (1.4435)
	Optional	904L (1.4539)
		AL-6XN (1.4529)
		Hastelloy-C22
Pressure Rating	Standard	10 BarG
Other		Delivery of Tank plate ahead of unit

MOUNTING OPTIONS

Welded in Tank Plate - Tank plate welded to vessel by customer, Mixer bolts to plate, impeller sits on tank plate bearing post

Plug in Tank Plate - Modified tank plate welded to vessel by customer, Mixer with coupling and bearing inserts into tank plate, Impeller sits on bearing



DRIVE UNITS

Paint	Standard	FDA compliant White Epoxy RAL9003
	Optional	FDA compliant other colors
Protection Class I	Standard	IP55
	Optional	IP65
		IP66
Protection Class II	Standard	IP67
	Optional	IE2 (up to 0.55kW/0.75Hp)
Other Drive Options		IE3 (0.75kW/1.0Hp and above)
		ATEX Category 2, Stainless Steel
		Tri-Clamp connection

MAGMIXER MBE

SPX FLOW Size	Impeller Diameter (mm/in)	Motor Power (kW/ Hp)	Motor Type	Min. Speed (rpm)	Max Speed (rpm)	Gear Ratio	GAP* (mm/in.)	Max Mixing Volume @ 1mPas (L/G)
MBE 12D	80/3.15	0.09/0.121	Dir	170	1000	N/A	2.0/0.08	140/7
MBE 25D	105/4.13	0.18/0.241	Dir	170	950	N/A	3.3/0.13	350/92
MBE 25	130/5.12	0.18/0.241	WG	110	550	7:1	3.3/0.13	500/132
MBE 50	165/6.49	0.37/0.496	WG	110	520	7:1	3.5/0.14	1,200/317
MBE 75	190/7.48	0.55/0.738	WG	85	460	7:1	4.5/0.18	2,500/660
MBE 100	250/9.84	0.75/1.006	WG	85	340	10:1	7.0/0.28	14,500/3,830
MBE 200	300/11.81	1.50/2.012	WG	85	300	4.83:1	7.0/0.28	28,000/7,397
MBE 300	350/13.78	2.20/2.95	WG	85	285	6:1	7.0/0.28	31,000/8,189
MBE 550	400/15.74	4.00/5.364	WG	85	270	5:1	7.0/0.28	25,000/6,604
MBE 750	450/17.72	5.50/7.376	BG	85	270	6.39:1	7.0/0.28	40,000/10,567
MBE 1000	500/19.69	7.50/10.06	BG	85	236	6.39:1	7.0/0.28	60,000/15,850

Dir - Electric motor, with 3 PTC, VFD ready, 3ph, 230/400V, 50/60Hz, IP55, ISO F, Ambient temp. 0°C to 40°C

WG - Worm gear electric motor, with 3 PTC, VFD ready, Lubricant compliant with FDA & USDA H1, 3ph, 230/400V, 50/60Hz, IP55, ISO F, Ambient temp. 0°C to 40°C

BG - Bevel gear electric motor, with 3 PTC, VFD ready, Lubricant compliant with FDA & USDA H1, 3ph, 230/400V, 50/60Hz, IP55, ISO F, Ambient temp. 0°C to 40°C

*Gap between containment shell and magnetic motor for cleanability & reduced shear forces

DRIVE UNITS

BEARINGS

Female bearing SiC (Silicon Carbide)
Male bearing ZrO₂ (Zirconium Oxide)
Options available

AGITATOR IMPELLER

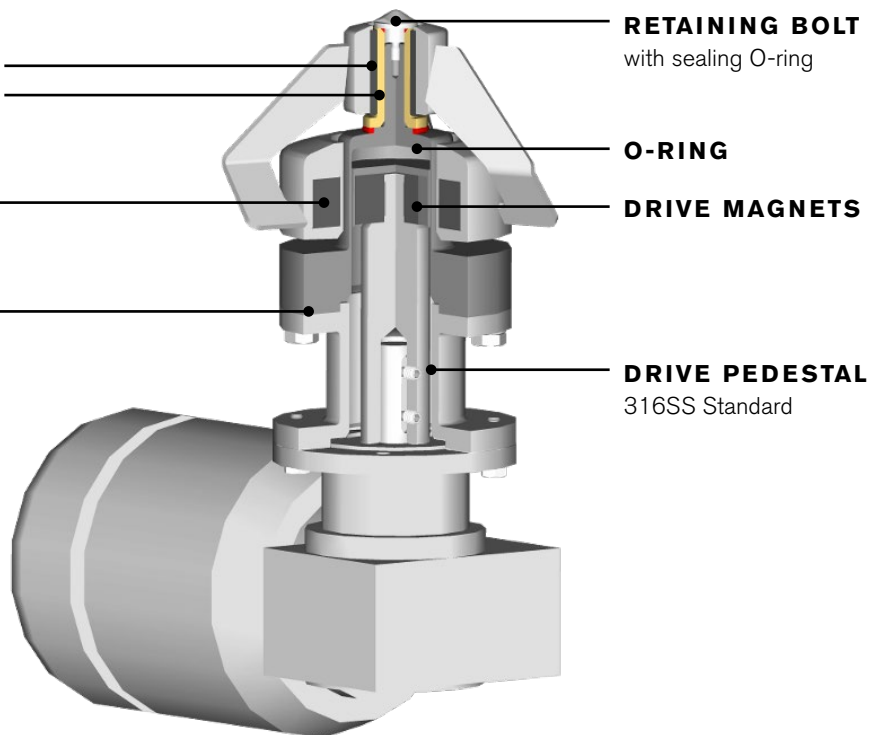
with integrated NeFeB magnets

WELD PLATE

Welds to vessel wall
(Removable Plug In option available)

GEARED MOTOR

White FDA Compliant Epoxy Paint
IP55, IE3 Motor - Voltage to suit
ATEX option available
IP65, IP66, IP67 available
Stainless Steel drive option available



RETAINING BOLT
with sealing O-ring

O-RING

DRIVE MAGNETS

DRIVE PEDESTAL
316SS Standard

SPXFLOW

Global Locations

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