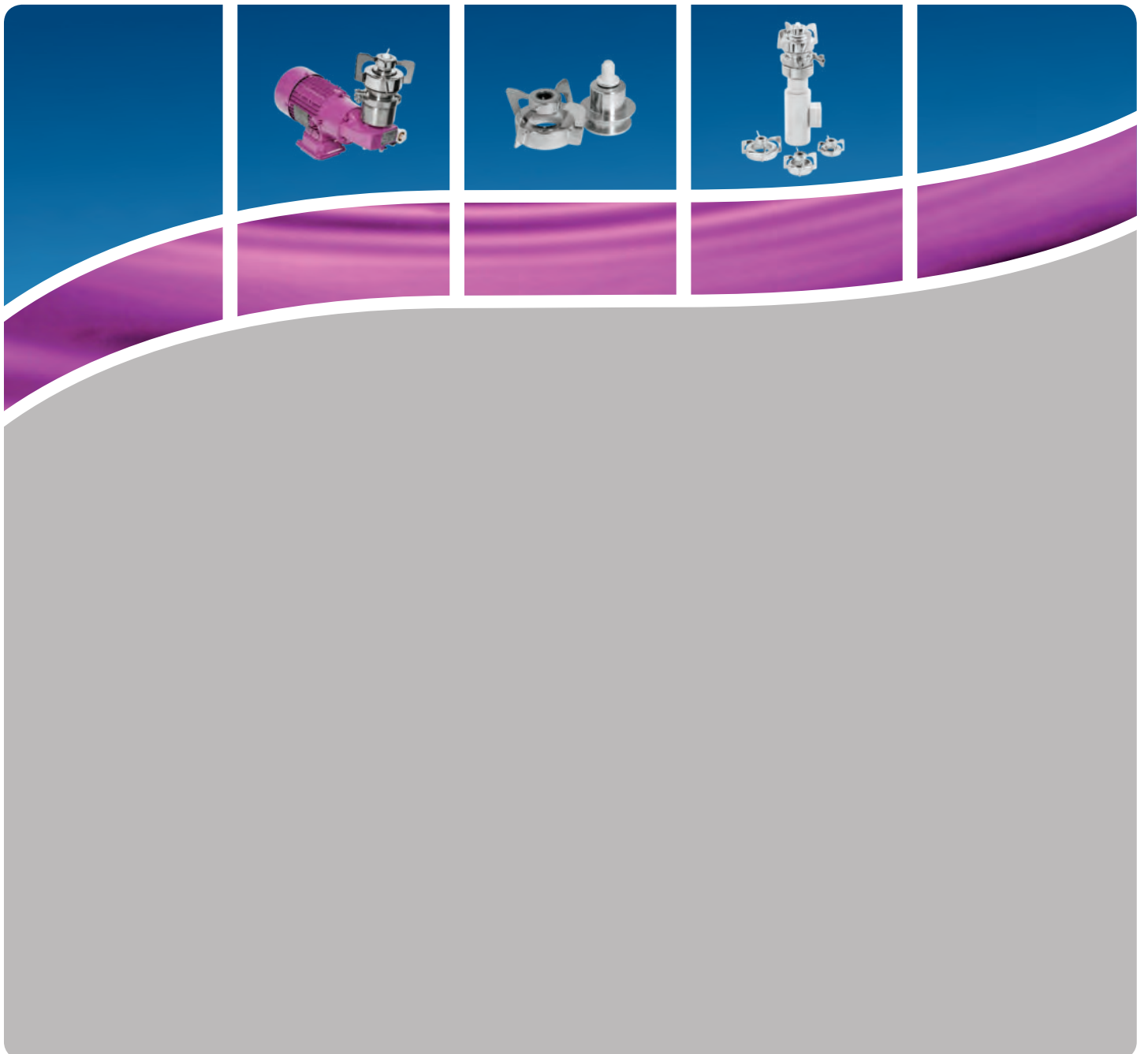


Mixer Technology



“The Perfect Mixture of Safety and Efficiency”

VPureMix®

Magnetic mixing technology

The VPureMix® magnetic mixers were specially designed for applications with the most stringent demands in terms of safety and sterility. A magnetic coupling eliminates the risks of conventional shaft penetration, such as leakage and contamination, and thus guarantees the highest level of product safety. The optional magnetic field sensor also contributes to increasing process reliability, since the speed and direction of rotation can be continuously monitored, recorded and adjusted.

Product safety through magnetic coupling

A magnetic coupling between the drive unit and the mixing head eliminates the need for shaft bushings and mechanical seals. The integrity of the tank is thus fully preserved and ensures a sterile process.

Customized gear motors

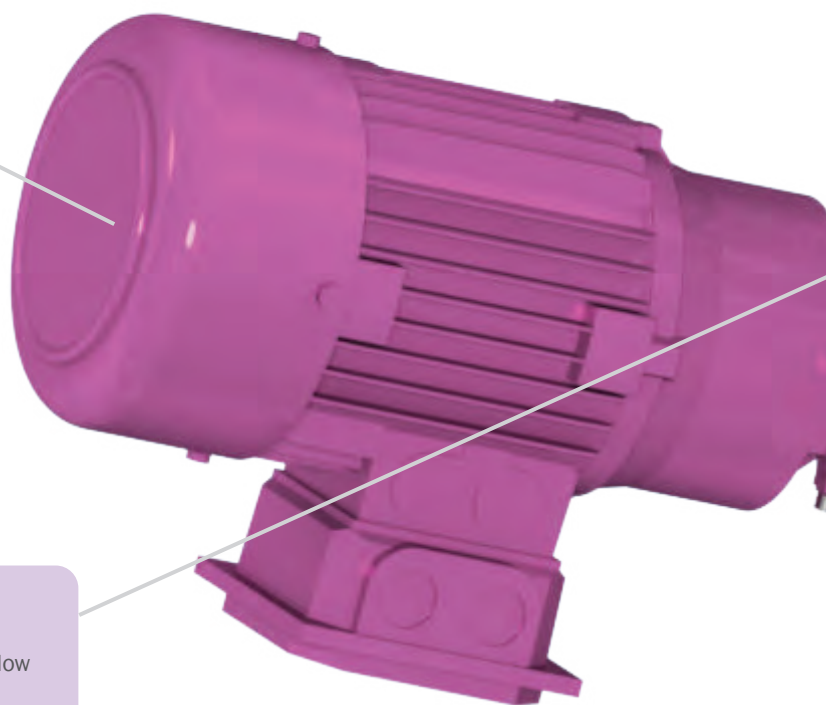
The VPureMix® is available with gear motors that have international certifications or declarations of conformity, such as CE; CCC; EAC; ISI; UA; UL and CSA, as well as explosion-proof ATEX and CCC Ex motors, gear motors with special painting, smooth motors, motors with forced cooling fans and incremental encoders etc.



From 2026 exclusively in signal white.
Signal violet is being phased out.

Adaptable design

The VPureMix® is available in two axis lengths to allow work in insulated tanks.



VPureMix® Standard

Special alloys for corrosive applications

If increased corrosion resistance of the stainless steel components in contact with the product is required, the VPureMix® is also available in the special alloys 1.4539 (904L), 2.4602 (Alloy 22) and 1.4529 (6Mo) in addition to the standard material 1.4435 (AISI 316L).

Smart bracket

The VPureMix® drive unit can be rotated by 360°. This enables customer-specific design and use in every production facility.

Smooth surfaces

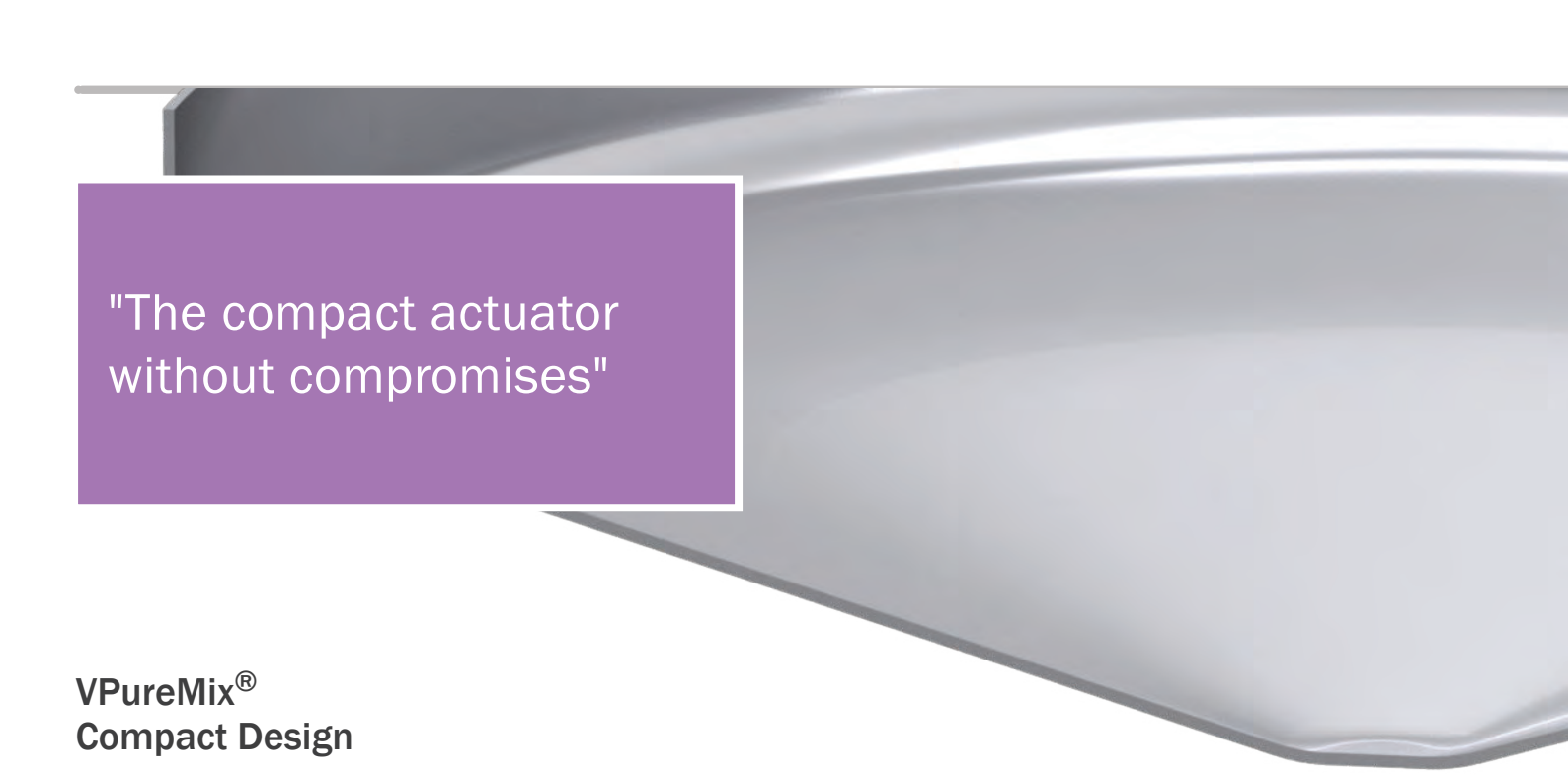
No protruding bolts or screws on the transmission or the tank fixtures. The resulting smooth surfaces are easy to clean.

Process reliability through sensors

The speed and direction of rotation of the mixing head can be permanently recorded and monitored in real time using the optional magnetic field sensor. Three LEDs on the converter unit's sensor indicate the status of the sensor directly on site.



VPureMix® Standard



"The compact actuator
without compromises"

VPureMix® Compact Design

The VPureMix® Compact Design complements the AWH product portfolio with a compact and efficient solution in the field of floor-mounted magnetic agitators. It combines user-friendly design with innovative technology and ensures reliable, efficient and low-maintenance mixing processes.

Simple attachment and quick maintenance

The actuator unit of the VPureMix® Compact Design is quickly and securely attached to the container plate using a clamp. This makes installation and maintenance work particularly easy and time-saving.

Optimum cleanroom suitability

The hygienically designed and fully enclosed actuator unit of the VPureMix® Compact Design does not require a fan. An ideal solution for cleanrooms in which an undisturbed laminar air flow must be possible.

DC geared motors in compact design

The VPureMix® Compact Design in sizes LS30 to LS250 is available with DC geared motors that are characterized by their compact and slim design.

VPureMix® Compact Design



Process reliability thanks to retrofittable magnetic field sensor

The VPureMix® Compact Design can be optionally equipped with a magnetic field sensor for speed monitoring using the magnetic field sensor set. As every VPureMix Compact Design is already equipped with a connection point for the magnetic field sensor, installation can be carried out by the customer as required.

Compact actuator unit for universal container compatibility

The slim actuator unit of the VPureMix® Compact Design fits under all containers, regardless of whether they are fitted with a double jacket or insulation. Axle extensions are a thing of the past.

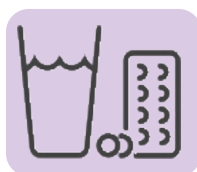
VPureMix® Compact Design

“For demanding & high quality Processes”

VPureMix® magnetic mixers are the first processes with the highest standards of sterility and safety.

Pharmaceutical & biotechnological applications

- API production
- Vaccine production
- Reserve and media production
- Plasma fractionation
- Bio-reactors for bacteria and cell cultures
- Process tanks in upstream and downstream
- Storage tanks
- And much more.



Food & beverage applications

- Dairy products
- Breweries
- Soft drink and fruit juice production
- And much more.



VPureMix®

"Mixing head design and high-performance ceramic bearings make the difference"



The mixing head design is the result of CFD analyses and impresses with its open design, which enables optimal product flow and makes cleaning processes simple. The mixing head is mounted on high-performance ceramic made of zirconium dioxide (ZrO_2) and silicon carbide (SSiC), which eliminates vibrations, and also ensures extremely low shear forces and smooth dry running.

Studies were able to confirm the temporary dry-running capability of the high-performance ceramic bearing over several hours of operation at adjusted speeds. The reason for this is the robustness and wear resistance of the high-performance ceramics. These properties also guarantee particle-free processes. A particle test in accordance with USP<788> PARTICULATE MATTER IN INJECTIONS, which was carried out via an independent research institute, could not detect any particle abrasion between the two bearing components.

Furthermore, zirconium dioxide and silicon carbide convince with their biocompatibility, which was certified according to USP Plastic Class VI test and cytotoxicity test according to ISO 10993-5.

This means:

- Gentle & efficient product mixing, even of the smallest volumes
- Risk-free & complete tank emptying even when the mixing process is running
- Minimal product residue
- Optimum in-place cleanability (CIP) & in-place sterilizability (SIP) save valuable resources such as water and cleaning agent and reduces plant downtimes

“Easy, residue-free Cleaning”

Riboflavin test - proof of the easy cleaning of the VPureMix® with a TANKO® S40 spray head

A VPureMix® LS5000 along with a TANKO® S40 were installed in a 2000 L tank to verify its easy cleaning capability. Before the two minutes cleaning step with 80 liters of tap water (20 °C, 0.8 bar) using TANKO® S40, VPureMix® and TANKO® were sprayed with riboflavin solution (Fig. A,B).

The test focused on components that are commonly considered difficult to clean, such as the inside of the mixing head with female bearing, male bearing with O-ring, the tank plate and downpipe of the TANKO® (Fig. A,B). During the test, the VPureMix® LS5000 ran at a speed of 50 rpm to achieve complete wetting.

Cleaning the VPureMix® LS5000 with TANKO® S40 delivered excellent cleaning results on critical surfaces (see Fig. A and C). VPureMix® magnetic mixers are easy to clean - without dismantling or opening the tank.

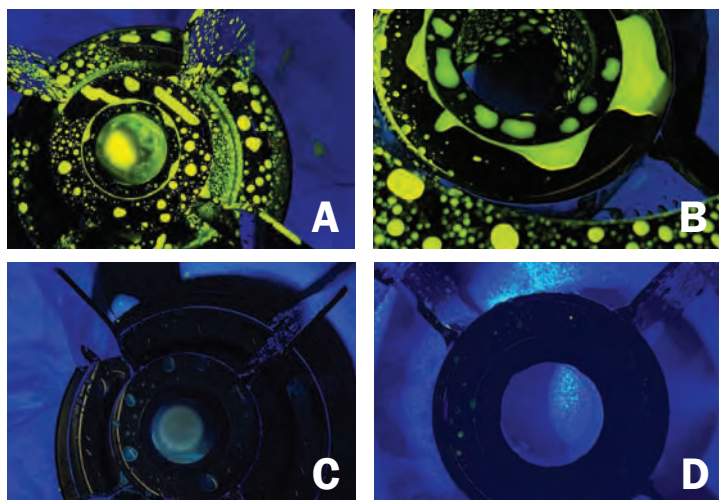
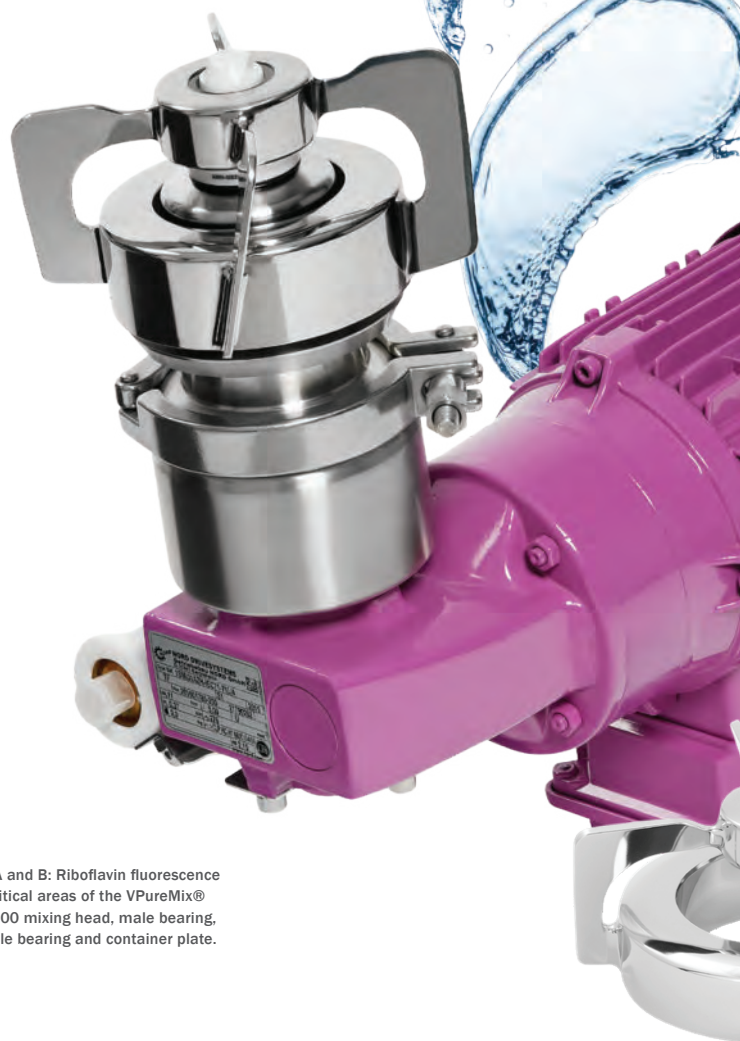


Fig. A and B: Riboflavin fluorescence on critical areas of the VPureMix® LS5000 mixing head, male bearing, female bearing and container plate.

Fig. C and D: Fluorescence image after cleaning the critical areas of the VPureMix® LS5000 mixing head, male bearing, female bearing and container plate using TANKO® S40.



Cleaning

“Perfect Mixing Result!”

By generating an axial flow towards the mixing head of the VPureMix® and radial flow towards the vessel wall, effective and optimum mixing of low to medium viscosity fluids with a dynamic viscosity of 1 to 800 mPa*s can be achieved. This also provides the best possible compensation for differences in temperature, concentration, density and pH. The low-shear mixing head gently and efficiently mixes shear-sensitive media from the pharmaceutical, biotech and food industries without damaging them.

It can be used for small or laboratory processes with a working volume of 3 liters up to large-scale processes with a working volume of 31,000 liters, depending on the viscosity.



Mixing Process

"Corrosion resistance due to special alloys"

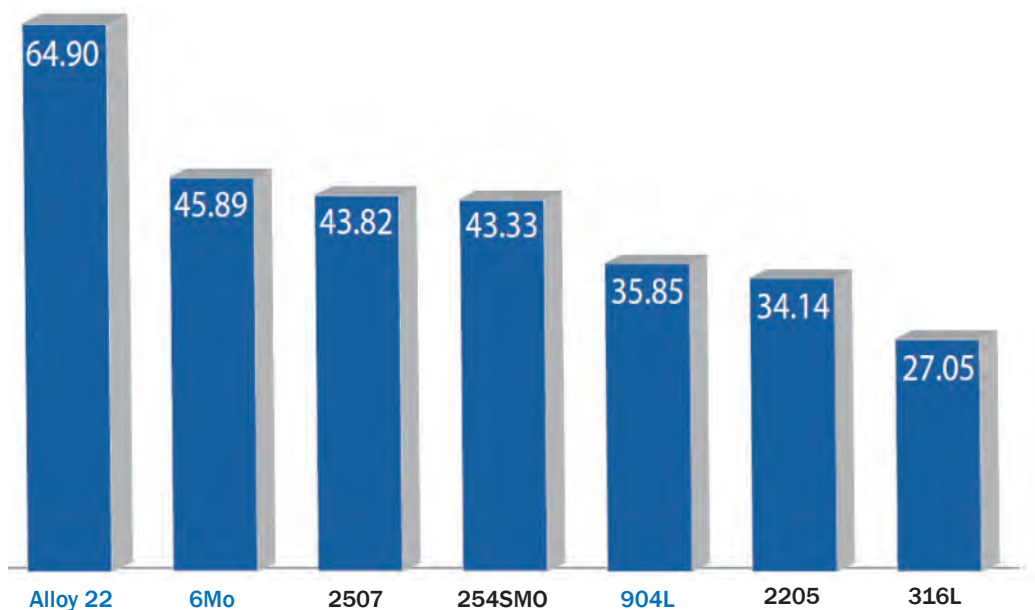
Stainless steel special alloys for the product-wetted components of the VPureMix® magnetic mixer.

Stainless steel components in the materials 1.4404 and 1.4435 (316L) are often the first choice when it comes to use in pharmaceutical, biotechnological and food processes. High concentrations and temperatures, as well as long contact times of corrosive chemicals, such as chlorides, sulfuric acid and organic acids, in these processes can reduce the corrosion resistance of components and significantly shorten service life. Shorter maintenance cycles, more frequent downtimes and recurring investment costs are the result.

Stainless steel special alloys can offer exceptional corrosion resistance to most aggressive and corrosive process media. Process reliability, especially in hygienic and high-purity stirring processes in the pharmaceutical, biotech and food industries, can be significantly increased by the right choice of materials. The investment often pays off quickly.

AWH offers VPureMix® magnetic mixers in three of the special stainless steel alloys most in demand on the market:

- 1.4529 / 6Mo / UNS N08367
- 1.4539 / 904L / UNS N08904
- 2.4602 / Alloy 22 / UNS N06022



PREN - Index (Pitting Resistance Equivalent Number)

as a measure of the corrosion resistance of stainless steels.

The higher the PREN number, the more corrosion resistant the stainless steel ($PREN = Cr + 3.3 Mo + 16N$).

"Special Alloy - a plus in process reliability"

Alloy Chemical Composition

Typ	UNS	Grade	similar EN- (European) Grade	C (max)	N	Cr	Ni	Mo	Cu	Typical trade names
Austenitic	S31603	316L	1.4435	0.03	0.1	17.0-19.0	12.5-15.0	2.5-3.5	-	
Duplex	S32205	2205	1.4462	0.03	0.14-0.20	22.0-23.0	4.5-6.5	2.5-3.5	-	
Superaustenitic	N08904	904L	1.4539	0.02	-	19.0-23.0	23.9-28.0	4.0-5.0	1.0-2.0	MaxCore 904L URANUS B6
Superduplex	S32750	2507	1.4410	0.03	0.24-0.32	24.0-26.0	6.0-8.0	3.0-5.0	0.5	
Superaustenitic	S31254	SM0254	1.4547	0.02	0.18-0.22	19.5-20.5	17.5-18.5	6.0-6.5	0.5-1.0	
Superaustenitic	N08367	6Mo	1.4529	0.03	0.18-0.25	20.0-22.0	23.5-25.5	6.0-7.0	0.75	MaxCore 6Mo Ultra6XN® AL-6XN®
Superaustenitic	N08926	6Mo	1.4529	0.02	0.15-0.25	19.0-21.0	24.0-26.0	6.0-7.0	0.5-1.5	Ultra6XN® AL-6XN®
Nickel Base	N10276	Alloy C276	2.4819	0.01	-	16	57	16	0.5	Hastelloy C276®
Nickel Base	N06022	Alloy 22	2.4602	0.01	-	22	56	13	0.5	MaxCore Alloy22 Hastelloy C22®



Special Alloy

Model overview VPureMix® Standard with AC actuator units

Model	VPureMix® LS30	VPureMix® LS50	VPureMix® LS100	VPureMix® LS250
Mixing Volume* [L]	3 - 35	35 - 70	70 - 200	150 - 350
Voltage [V]	230/400			
Nominal Frequency [Hz]	50			
Speed at Nominal Frequency of 50 Hz [/min]	267			283
Rotational Speed Range**/** [rpm]	50 - 490			
Motor Power [kW]	0.12			0.25
Motor Transmission Ratio	5.0			
Diameter Mixing Head [mm]	82	96	120	132
Standard Material product-touched [Mixing Head + Tank Plate]				
Special Alloys product-touched [Mixing Head + Tank Plate]				
Axis Extension 75 mm				
Magnetic Field Sensor				
ATEX Version				
ATEX + CCC Ex**** Version				
Hygienic Version - Smooth Gear Motors				

* Mixing volume at dynamic viscosity of 1 mPa*s and density of 1000 kg/m³

** Execution of rotational speed operation in mentioned rotational speed range with frequency inverter. Frequency range approx. 9 to 90 Hz.

*** Shown rotational speed ranges are valid for VPureMix Magnetic Coupled Mixers Standard. Speed ranges may differ for VPureMix magnetic mixers for the Ex area.

**** CCC Ex certification of electrical components gear motor and magnetic field sensor.



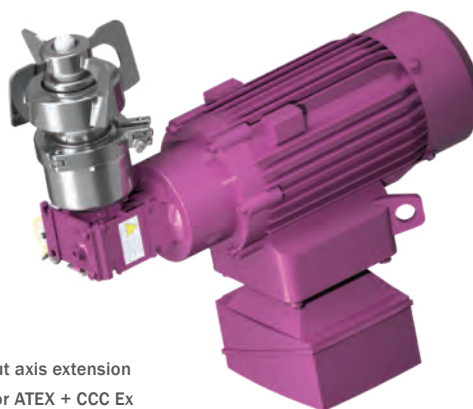
VPureMix® LS500 with axis extension
and magnetic field sensor

VPureMix® Standard Models

Model overview VPureMix® Standard with AC actuator units

VPureMix® LS500	VPureMix® LS1000	VPureMix® LS2000	VPureMix® LS5000	VPureMix® LS10000	VPureMix® LS20000	VPureMix® LS30000
200 - 700	700 - 1100	1100 - 2300	2300 - 6000	6000 - 13000	13000 - 22000	22000 - 31000
230/400						
50						
281	284	283		293	195	176
50 - 490				50 - 450	50 - 350	50 - 300
0.37	0.55	0.75	1.5	2.2	2.2	4.0
5.0					7.5	8.19
142	160	184	190	225	273	330
1.4435 (316L)						
Optionally available in: 1.4539 (904L); 1.4529 (6Mo); 2.4602 (Alloy 22)						
Optionally available						
Optionally available						
Optionally available for VPureMix® LS30 to LS20000						
Optionally available for VPureMix® LS250 to LS20000						
Available on request						

Note: Additional options, such as VPureMix® magnetic mixers with geared motors with external fans and incremental encoders for speeds below 50 rpm or more corrosion-resistant finishes are available on request.



VPureMix® LS500 without axis extension
and magnetic field sensor ATEX + CCC Ex

VPureMix® Standard Models

Model overview VPureMix® Compact Design with DC actuator units

Model	VPureMix® LS30, CD	VPureMix® LS50, CD	VPureMix® LS100, CD	VPureMix® LS250, CD
Mixing Volume* [L]	3 - 35	35 - 70	70 - 200	150 - 350
Speed Range** [rpm]	50 - 490			
Nominal Motor Power [W]	128		242	
Nominal Motor Voltage [V DC]	24			
Nominal Motor Current [A]	7.1		13.4	
Gear Ratio [i]	6.75			
Mixing Head Diameter [mm]	82	96	120	132
Standard Material product-touched [Mixing Head + Tank Plate]	1.4435 (316L)			
Special Alloys product-touched [Mixing Head + Tank Plate]	Optionally available in: 1.4539 (904L); 1.4529 (6Mo); 2.4602 (Alloy 22)			
Magnetic Field Sensor Set	Optionally available as an accessory / can also be retrofitted			

* Mixing volume at dynamic viscosity of 1 mPa*s and density of 1000 kg/m³

** Speed control via the voltage (speed proportional to voltage)



VPureMix® Compact Design LS30
with magnetic field sensor



VPureMix® Compact Design LS50
without magnetic field sensor

VPureMix® Compact Models

Model overview VPureMix® Compact Design with DC actuator units



VPureMix® Compact Design LS100
without magnetic field sensor



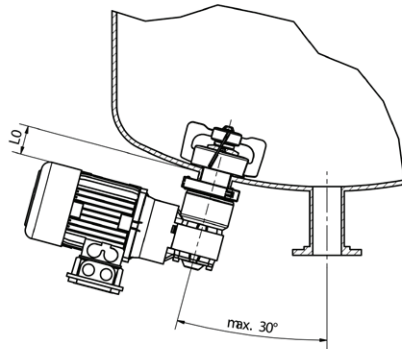
VPureMix® Compact Design LS250
with magnetic field sensor

VPureMix® Compact Models

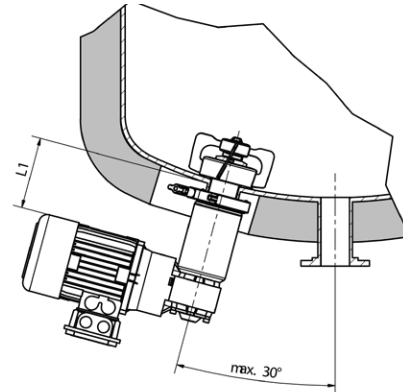
VPureMix® Standard Equipment Options

VPureMix® axis extension

The entire VPureMix® product portfolio is optionally available with an axis-extended drive unit of 75 mm for insulated tank bottoms.



VPureMix® model without axis extension (L0)

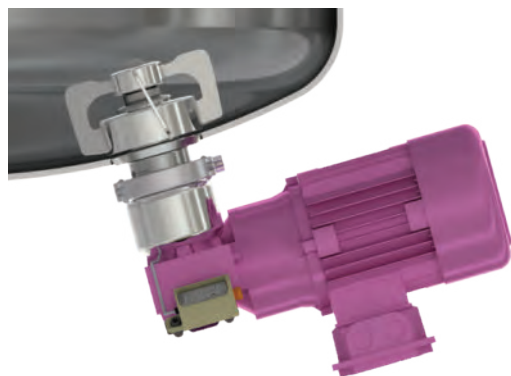


VPureMix® model with axis extension (L1)

Note: The VPureMix® magnetic mixers installed off-center on the tank bottom. The maximum installation angle is 30° to the vertical axis in dished bottom tanks and 30° to the horizontal axis in tapered tank bottoms.

VPureMix® magnetic field sensor

The entire VPureMix® standard model range can optionally be equipped with a magnetic field sensor for speed and direction of rotation monitoring.



The VPureMix® Compact Design model series can be optionally retrofitted with a magnetic field sensor set for speed monitoring. A suitable connection point is already available.



The contactless detection of the speed and direction of rotation of a mixing head through the tank wall can make a significant contribution to increasing process reliability, as production-related downtimes or malfunctions are detected and displayed in good time.

VPureMix® Equipment

VPureMix® ATEX

In addition to the standard VPureMix® magnetic mixers, AWH also offers VPureMix® ATEX magnetic mixers.

Using an ATEX-compliant magnetic field sensor and type-tested geared motor makes it possible to install VPureMix® ATEX magnetic mixers inside tanks with potentially explosive atmosphere according to Directive 2014/34/EU.

The following options are available here:

- VPureMix ATEX magnetic mixers with equipment category 2/3G for use in zone 1 inside the vessel and zone 2 outside the vessel:

CE Ex II 2/3G Ex h IIB T4 Gb/Gc

- VPureMix ATEX magnetic mixers without magnetic field sensor with equipment category 2G for use in zone 1 inside and outside the vessel:

CE Ex II 2G Ex h IIB T4 Gb



VPureMix® ATEX

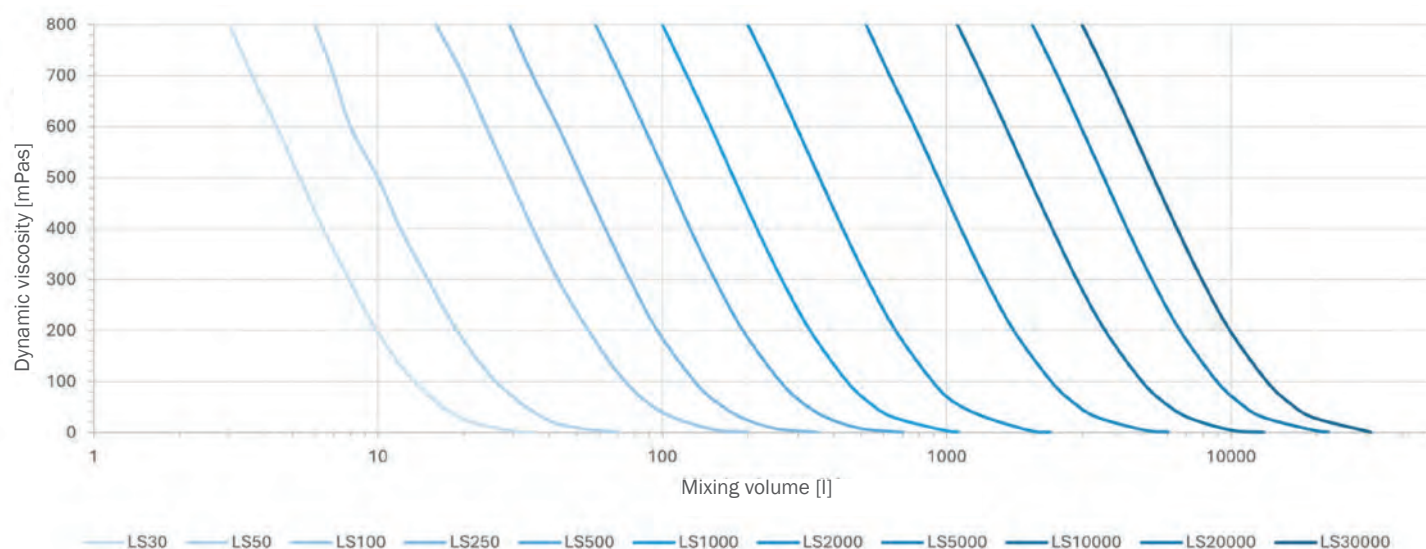
Selection Guide

Depending on the mixing volume of 3 to 31,000 liters, the VPureMix® series guarantees optimum mixing of low and medium viscous media with a dynamic viscosity of 1 to 800 mPa s.

To ensure an optimum mixing process, we recommend a ratio of 1:1 to 2:1 between fill level and tank diameter.



Selection Guide



Note: The selection guide provides data that are used only for rough orientation. You will receive binding data with a written request.

Note on the H/D ratio:

The vessel geometry, especially the vessel inner diameter and the resulting filling level, influences the vortex formation in the mixing medium.

In some mixing processes, such as dissolving processes of powders or hydrophobic solids, the vortex formation is essential. In foaming or gas-sensitive processes, on the other hand, vortex formation should be avoided.

Therefore, pay attention to the correct filling height to inner diameter ratio (H/D) for your process:

H/D < 1: No vortex formation, yet good mixing.

H/D > 1 < 2: Vortex formation, optimum mixing

H/D > 2: No vortex formation, formation of dead zones, poor mixing



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