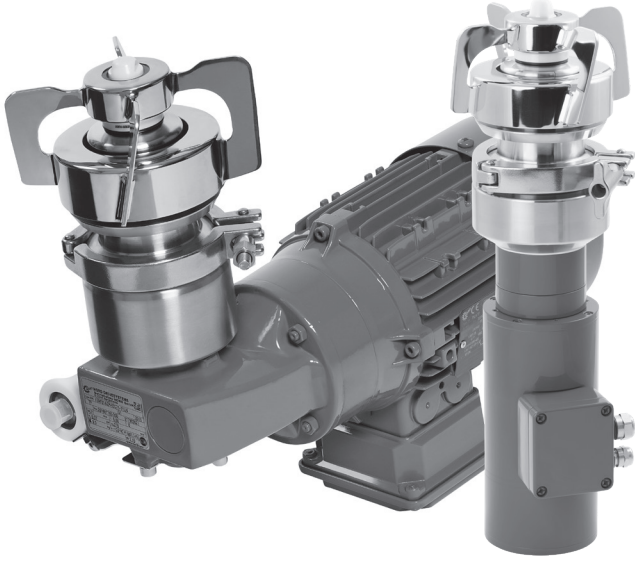


## Product Description VPureMix® Low Shear Magnetic Coupled Mixer

### VPureMix® Low Shear Magnetic Coupled Mixers for demanding and high-quality Processes



The VPureMix® low shear magnetic coupled 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.

The mixing head of the VPureMix® magnetic coupled mixer is characterized by its open design, which allows for an optimal product flow and simplifies the cleaning and sterilization processes. The mixing head is mounted on high-performance ceramic made of zirconium dioxide (ZrO<sub>2</sub>) and silicon carbide (SiC), which eliminates vibrations, and also ensures extremely low shear forces and smooth, short-term dry running.

## Applications

### Pharmaceutical and biotechnological applications:



- API and vaccine production
- Reserve and media production
- Plasma fractionation
- Bioreactors
- Process tanks in upstream and downstream areas
- Storage tanks
- and much more.

### Food & beverage applications:



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

## Product Description VPureMix® Low Shear Magnetic Coupled Mixer

### Model Overview VPureMix® Standard

Type	VPureMix® LS30	VPureMix® LS50	VPureMix® LS100	VPureMix® LS250	VPureMix® L500	VPureMix® LS1000	VPureMix® LS2000	VPureMix® LS5000	VPureMix® LS10000	VPureMix® LS20000	VPureMix® LS30000
Mixing volume* [L]	3 - 35	35 - 70	70 - 200	150 - 500	500-700	700 - 1100	1100 - 2300	2300 - 6000	6000 - 13000	13000 - 22000	22000 - 31000
Voltage [V]	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400	230/400
Nominal frequency [Hz]	50	50	50	50	50	50	50	50	50	50	50
Speed range**/** [rpm]	50 - 490	50 - 490	50 - 490	50 - 490	50 - 490	50 - 490	50 - 490	50 - 490	50 - 450	35 - 350	50 - 300
Motor power[kW]	0.12	0.12	0.12	0.25	0.37	0.55	0.75	1.5	2.2	2.2	4
Motor ratio	5	5	5	5	5	5	5	5	5	7,5	8,19
Mixing head diameter [mm]	82	96	120	132	142	160	184	190	225	273	330
Standard materials in contact with product	1.4435 (316L)										
Special materials in contact with product	optional available in: 1.4539 (904L); 1.4529 (6Mo); 2.4602 (Alloy 22)										
Axis extension 75 mm	available as option for all sizes										
Magnetic field sensor	available as option for all sizes										
Atex version	available					available					
ATEX + CCC Ex**** version	available					available					
Hygienic design - Smooth geared motors	available on request										

\* Mixing volume with dynamic viscosity of 1 mPas and density of 1,000 kg/m<sup>3</sup>

\*\* Speed control in the mentioned speed range only possible by means of frequency converter. Frequency range about 9-90 Hz

\*\*\* The speed ranges shown apply to VPureMix magnetic coupled mixers as standard. Speed ranges may differ for VPureMix magnetic coupled mixers for hazardous areas.

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

### Model Overview VPureMix® Compact Design

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

\* Mixing volume at dynamic viscosity of 1 mPas and density of 1,000 kg/m<sup>3</sup>

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

# Technical Data VPureMix® Low Shear Magnetic Coupled Mixer

## Technical Parameters

<b>Mixing head with female bearing:</b>	Mixing head:	Shape: Impeller Number of mixing blades: 4 Material: 1.4435 (AISI 316L), delta ferrite content ≤ 1% Optional special alloys: 1.4539 (904L/ UNS N08904); 1.4529 (6Mo/ UNS N08367); 2.4602 (Alloy 22/ UNS N 06022) Surface 1.4435; 1.4539; 1.4529 polished and electro-polished. Ra ≤ 0.38 µm Surface 2.4602: polished Ra ≤ 0.38 µm
	Female bearing:	Material: Silicon carbide SiC Surface: Ra ≤ 0.5 µm
	Working temperature:	0 °C/32 °F to 150 °C/302 °F
<b>Male bearing with gasket:</b>	Male bearing:	Material: Zirconium dioxide ZrO <sub>2</sub> (Mg-PSZ), base 1.4435 Surface: Ra ≤ 0.5 µm Working temperature: 0 °C/32 °F to 150 °C/302 °F
	Gasket:	Shape: O-ring Material: EPDM Optional materials: FKM, FFKM, VMQ
<b>Tank plate</b>	Material:	1.4435 (AISI 316L), delta ferrite content ≤ 1%
	Optional special alloys:	1.4539 (904L/ UNS N08904); 1.4529 (6Mo/ UNS N08367); 2.4602 (Alloy 22/ UNS N 06022)
	Surface:	Ra ≤ 0.4 µm
	Design pressure:	-1 bar/-14 psi to 7 bar/ 101.5 psi
	Design temperature:	-80 °C/176 °F to 200 °C/392 °F
<b>DC-Drive unit - VPureMix® Compact Design:</b>		
	Brushless DC motor with planetary gearbox and integrated control electronics for speed control via the analog setpoint input 0-10V	
Protection type:	IP67	
Nominal voltage:	24 VDC	
Thermal motor protection:	Thermal sensor on electronics, switches off at 105 °C/221 °F	
Gear grease:	Klüber Synth UH1 14-151, certification ISO 21469 NSF H1	
Paint:	RAL 9003 signal white	
<b>AC- Drive unit - standard version IE3</b>		
	Gear motor for frequency converter operation: Worm gear IEC motor (LS30 to LS20000) Helical bevel geared motor (LS30000)	
Efficiency class:	IE3	
Protection type:	IP66	
Voltage:	230/400 V AC - 50 Hz	
Frequency:	50 Hz	
Thermal motor protection:	PTC thermistor, 3x155 °C	
Oil class:	CLP HC H1 680	
Paint:	RAL 4008 signal violet	
Labeling:	CE; CCC/ CEL	

# Technical Data VPureMix® Low Shear Magnetic Coupled Mixer

## Technical Parameters





### AC-Drive unit - option: Universal motor Premium/ CUS

Gear motor for frequency inverter operation: Worm gear IEC motor (LS30 to LS20000)  
Helical bevel geared motor (LS30000)

Motor type:	CUS
Efficiency class:	Premium Efficiency according to EISAct
Protection type:	IP66
Voltage:	230/ 400 V AC - 50 Hz and 265/460 V AC - 60 Hz
Thermal motor protection:	PTC thermistor, 3x155 °C
Oil class:	CLP HC H1 680
Paint:	RAL 4008 signal violet
Labeling:	CE, CCC/ CEL, EAC, ISI, UA, UKCA, UL, CSA





### AC-Drive unit - option: ATEX:

Gear motor for frequency inverter operation: Worm gear IEC motor (LS30 to LS20000)

ATEX marking gear unit:	  II 2G Ex de IIC T4
ATEX marking motor:	  II 2G Ex db eb IIC T4 Gb
Efficiency class:	IE2 (LS30 until LS100) and IE3 (LS250 to LS20000)
Protection type:	IP66
Voltage:	230/ 400 V AC - 50 Hz
Thermal motor protection:	PTC thermistor, 3x155 °C
Oil class:	CLP HC H1 680
Painting:	RAL 4008 signal violet
Labeling:	CE

### AC-Drive unit - option: ATEX + CCC Ex:

Gear motor for frequency inverter operation: Worm gear IEC motor (LS250 to LS20000)

ATEX marking gear unit:	  II 2G Ex de IIC T4
	  II 2G Ex db eb IIC T4 Gb
Efficiency class:	IE3 (LS250 bis LS20000)
Protection type:	IP65
Voltage:	230/ 400 V AC - 50 Hz
Thermal motor protection:	PTC thermistor, 3x155 °C
Oil class:	CLP HC H1 680
Painting:	RAL 4008 signal violet
Labeling:	CE, CCC/ CEL

# Technical Data VPureMix® Low Shear Magnetic Coupled Mixer



## Technical Parameters

### Drive unit - on request: Hygienic design - smooth surface motor

Surface-finished, hygienic and corrosion-resistant gear motor for frequency inverter operation.

Special features:	Smooth surface (Sealed Surface Conversion) Closed housing - no cooling fins and no fan
Efficiency class:	IE3 or higher
Protection type:	IP66 (IP69K (ISO 20653))
Labeling:	CE and others on request

### Magnetic field sensor

Function:	Speed and direction of rotation query
ATEX marking	  II 3 G Ex nA IIC T4 Gc II 3 D Ex tc IIIC T100 °C Dc
Protection type:	IP67
Voltage:	10...30 V DC
Electrical connection:	Connector, M12x1 CE, CCC

### Magnetic inductive proximity sensor for VPureMix® Compact Design

Function:	Speed query
Initial function:	DC two-wire, NAMUR according to EN 60947-5-6
Voltage:	nom. 8.2 VDC
Approved in acc. with:	KEMA 02 ATEX 1090X
Marking:	EX II 1 G Ex ia IIC T6 Ga/II 1 D Ex ia IIIC T135 °C Da
Electrical connection:	Connector, M12x1
Protection type:	IP67

### Available certificates and measurement reports for components in contact with the product:

Inspection certificate according to DIN EN 10204-3.1 and restamping certificate  
Male bearing and female bearing: Biocompatibility according to USP Class VI  
O-Ring-Elastomere: FDA, USP Class VI, 3-A Sanitary Standard  
Measurement protocols for delta ferrite content  
Measurement protocols for surface roughness  
Dye penetration testing of welds (PT)  
Visual inspection of weld seams (VT)  
and others on request

# Technical Data VPureMix® Low Shear Magnetic Coupled Mixer

## Selection Guide

VPureMix Low Shear magnetic coupled mixers can be used in low and medium viscosity mixing processes with a maximum dynamic viscosity of 1 to 800 cP. Depending on the dynamic viscosity, VPureMix Low Shear magnetic mixers can mix volumes from 3 to 22000 L in the ATEX range and 31000 L in the standard range.

To ensure an optimal mixing process, a ratio between filling height (H) and vessel diameter (D) of  $H/D = 1$  to 2 is recommended.

### Note on H/D ratio:

The vessel geometry, especially the vessel inner diameter and the resulting filling height, influences the formation of vortices (vortex) in the mixing medium.

In some mixing processes, such as dissolving processes of powders or hydrophobic solids, the formation of vortices 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 formation of vortices, yet good mixing.

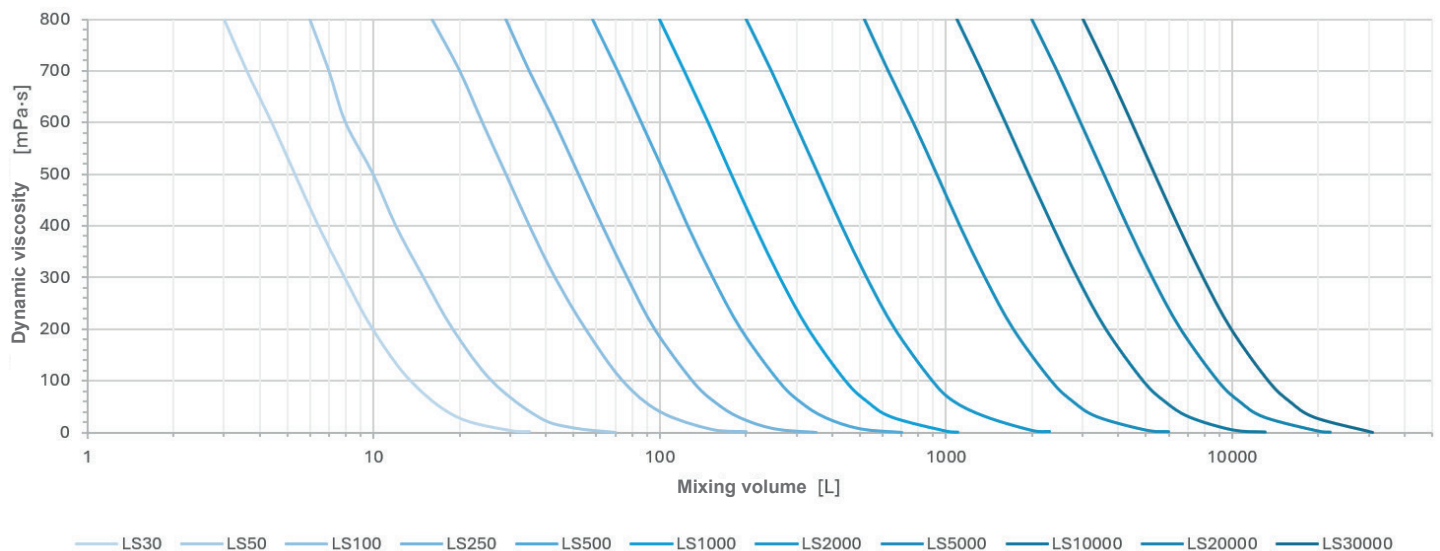
$H/D > 1 < 2$ : Formation of vortices, optimum mixing

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



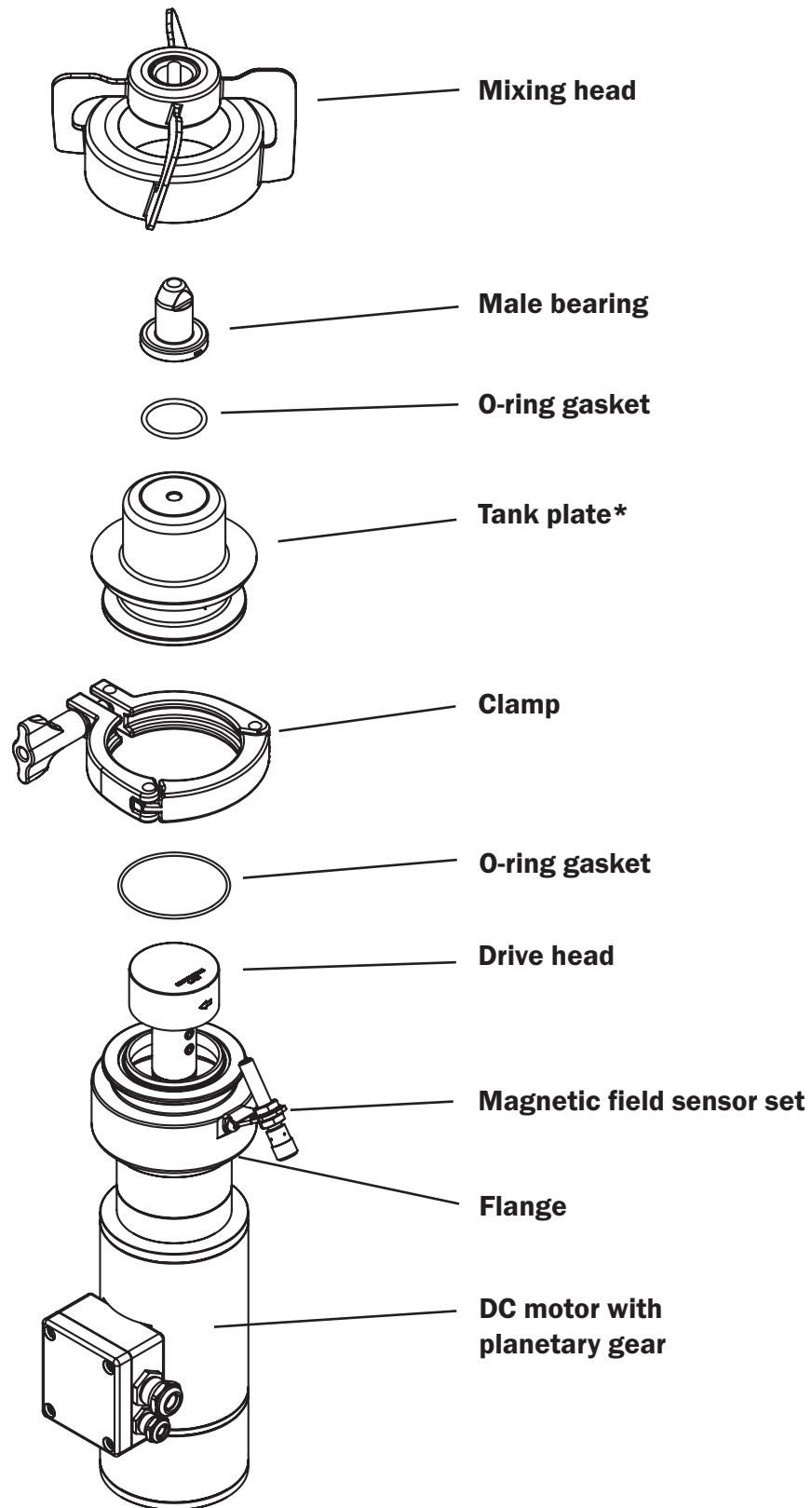
As a selection guide, use the dynamic viscosity mixing volume diagram and the VPureMix® Configurator on [www.awh.eu](http://www.awh.eu).

The VPureMix® Configurator enables you to calculate the right magnetic coupled mixer for your project by entering the mixing volume, the dynamic viscosity of the mixing medium and the intensity of the stirring process. Our software will not only help you to identify the appropriate magnetic coupled mixer, but also to optimize the tank diameter.



## Configuration Examples VPureMix®

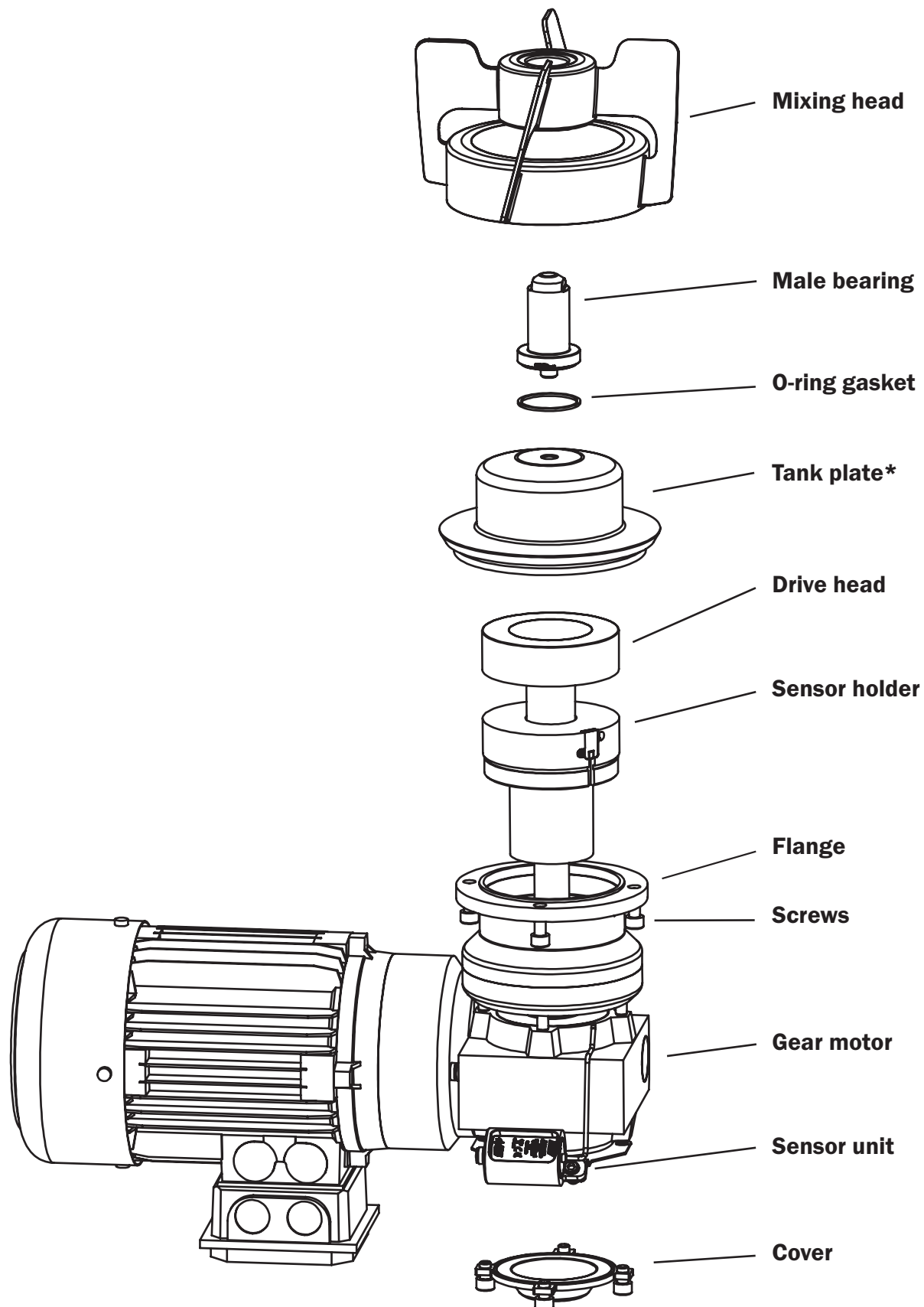
### VPureMix® LS250 Compact Design (CD), with optional Magnetic Field Sensor



\* The tank plate shown is not included with the VPureMix® magnetic coupled mixer in compact design.

## Configuration Examples VPureMix®

### VPureMix® LS5000 without Axis Extension, with Sensor Unit



\* The tank plate shown is not included with the VPureMix® magnetic coupled mixer.

## Accessories

### Type VPureMix® Low Shear Magnetic Coupled Mixer Standard Version

Recommended accessories	Article-No.	LS30	LS50	LS100	LS250	LS500	LS1000	LS2000	LS5000	LS10000	LS20000	LS30000
Assembly Tool 12mm-0,8m	961 LT0012 AO 4C00	•	•	•								
Assembly Tool 12mm-1,6m	961 LT0012 AO 5C00	•	•	•								
Assembly Tool 20mm-0,8m	961 LT0020 AO 4C00				•	•	•	•				
Assembly Tool 20mm-1,6m	961 LT0020 AO 5C00				•	•	•	•				
Assembly Tool 30mm - 0,8m	961 LT0030 AO 4C00								•	•	•	
Assembly Tool 30mm - 1,6m	961 LT0030 AO 5C00								•	•	•	
Gauge Tool for Tank Plate LS30	961 TP1P 01 M000	•										
Gauge Tool for Tank Plate LS50	961 TP2P 01 M000		•									
Gauge Tool for Tank Plate LS100	961 TP3P 01 M000			•								
Gauge Tool for Tank Plate LS250	961 TPCP 01 M000				•							
Gauge Tool for Tank Plate LS500	961 TP4P 01 M000					•						
Gauge Tool for Tank Plate LS1000	961 TP5P 01 M000						•					
Gauge Tool for Tank Plate LS2000	961 TP6P 01 M000							•				
Gauge Tool for Tank Plate LS5000	961 TP7P 01 M000								•			
Gauge Tool for Tank Plate LS10000	961 TP8P 01 M000									•		
Gauge Tool for Tank Plate LS20000	961 TP9P 01 M000										•	
Gauge Tool for Tank Plate LS30000	961 TPTP 01 M000											•

### Type VPureMix® Low Shear Magnetic Coupled Mixer Compact Design (CD)

Recommended accessories	Article-No.	LS30	LS50	LS100	LS250
Magnetic Field Sensor Set	961 MFOA 01 E43X	•	•	•	•
Assembly Tool 12mm-0,8m	961 LT00 12AO 4C00	•	•	•	
Assembly Tool 12mm-1,6m	961 LT00 12AO 5C00	•	•	•	
Assembly Tool 20mm-0,8m	961 LT00 20AO 4C00				•
Assembly Tool 20mm-1,6m	961 LT00 20AO 5C00				•
Gauge Tool for Tank Plate LS30	961 TP1P 01 M000	•			
Gauge Tool for Tank Plate LS50	961 TP2P 01 M000		•		
Gauge Tool for Tank Plate LS100	961 TP3P 01 M000			•	
Gauge Tool for Tank Plate LS250	961 TPCP 01 M000				•