

Flow Booster Type ABS SB 900

SULZER

60 Hz

The compact flow boosters type ABS SB have been designed for a wide range of applications. The units are suitable to achieve flow pattern in large tanks and open waters for mixing and stirring applications.

Construction

The flow booster type ABS SB is designed as a compact, water pressure-tight unit including propeller and integrally lockable coupling system. The flow boosters are available in the material version: **Cast iron (EC)**. Maximum allowable temperature of the medium for continuous operation is 40 °C (104 °F).

Motor:

Squirrel cage, 3-phase, 4-pole 60 Hz, insulation Class F (155 °C / 311 °F), max. submergence 20 m (66 ft).

Propeller:

Technically optimized, axially operating 3-blade propellers with very good self-cleaning effect for vibration-free operation. The propellers are designed to achieve high thrusts and therefore a high flow capacity in axial direction.

Solids deflection ring:

The patented solids deflection ring protects the mechanical seal from damage by ingress of solids or fibrous matter.

Bearings:

All bearings are lubricated-for-life and maintenance-free, with a calculated lifetime of more than 100,000 h

Gearbox:

Robust fatigue strength gearbox of high efficiency and very long operating life, oil lubricated.

Shaft sealing:

Motor side dual radial seal, medium side silicon carbide mechanical seal independent of direction of rotation. O-Rings / lip seals: NBR.

Seal monitoring:

DI-system with a sensor in the junction box.

Temperature monitoring:

TCS-Thermo-Control-System with bimetallic contacts as thermal sensors in every phase of the stator give a timely warning or switch off the motor automatically before the permissible temperature limit e.g. due to overloading, high temperature medium, or other problem sources, has been exceeded.

Cable:

10 m (33 ft) sewage resistant material.

Optional lengths:

15 m (49 ft), 20 m (66 ft), 25 m (83 ft), 30 m (98 ft)

Options:

Explosion-proof version, seals in viton, cable protection sleeve, PTC in the stator, double mechanical seal, insulation Class H.

Weight:

147 kg (324 lbs).



Materials

| Part | Cast iron version |
|------------------------------------|-------------------------------------|
| Motor housing | EN1563; EN-GJS-400-18 (GGG-40) |
| Motor shaft | 1.0060 (St 60-2) |
| Propeller shaft | 1.7225 fully encapsulated (42CrMo4) |
| Propeller shaft (Double mech.seal) | 1.4418 |
| Propeller | DIN 17 440; 1.4571 |
| Coupling bracket | DIN 17 445; 1.4408 (CF-8M) |
| Fasteners | 1.4401 (AISI 316) |

Material comparison: Europe / USA

| | |
|--------------------------------|-------------------------|
| EN1563; EN-GJS-400-18 (GGG-40) | ASTM A536, 60-40-18 |
| 1.0060 (St 60-2) | ASTM / AISI A276 Gr. 65 |
| DIN 17 440; 1.4571 | ASTM / AISI 316 Ti |
| DIN 17 445; 1.4408 (CF-8M) | ASTM / AISI CF-8M |
| 1.4401 (AISI 316) | ASTM / AISI 316 |

Motor data

| Motor | A 16/4 | A 35/4 |
|----------------------------|-----------|-----------|
| Rated power [kW / hp] | 1.6 / 2.1 | 3.5 / 4.7 |
| Rated current at 460 V [A] | 3.0 | 6.5 |
| Speed [min ⁻¹] | 96-107 | 124-139 |
| Motor efficiency [%] | 78.3 | 81.4 |
| Power factor | 0.87 | 0.83 |

Flow booster performance table

| Hydraulic No. | Propeller dia. in mm / in | Mixer power P _p in kW / hp | Motor kW / hp |
|---------------|---------------------------|---------------------------------------|---------------|
| 931 | 900 / 35 | 0.8 / 1.1 | 1.6 / 2.1 |
| 932 | 900 / 35 | 1.1 / 1.5 | 1.6 / 2.1 |
| 933 | 900 / 35 | 1.6 / 2.1 | 3.5 / 4.7 |
| 934 | 900 / 35 | 2.2 / 3.0 | 3.5 / 4.7 |

Optimizing special design

Sulzer has relied on the well-established special design for the propellers, giving a self-cleaning effect. An advanced special design was combined with propeller blades shaped for optimal flow properties. These properties make the propeller insensitive to turbulence or uneven flow.

The propeller design guarantees an optimum effectiveness not only at specifically chosen performance levels, but throughout the power and diameter range. Due to the new manufacturing method of large propellers, which allows the propeller production in one piece, an optimum stress pattern in the propeller and the best possible precision is achieved. This allows vibration-free operation.

New coupling system

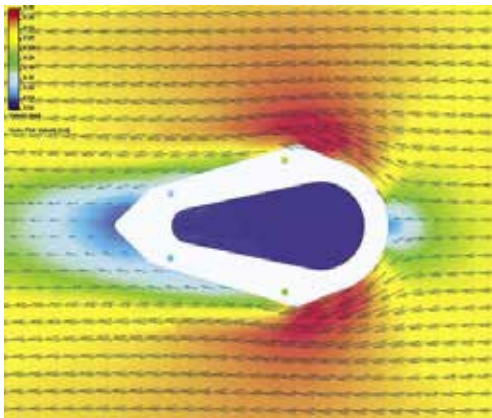
The patented ABS coupling system for submersible mixers is a major technical innovation in the development of easy disconnection systems. Liquid flow, regardless of being laminar or turbulent, causes vibrations which effects submersible mixers especially with large propellers. In addition to impulse forces and any intrinsic vibrations of the units themselves, these forces must be absorbed by the coupling device so that quick disconnection systems can function in a secure and reliable manner.

A vibration-free attachment is a major requirement for reliable running and long operating life of the mixers and installation system. Amply designed three dimensional support of the coupling element ensure its reliable seating. With the new flow booster type ABS SB an innovative product assuring trouble-free operation is offered.

Innovative concrete base

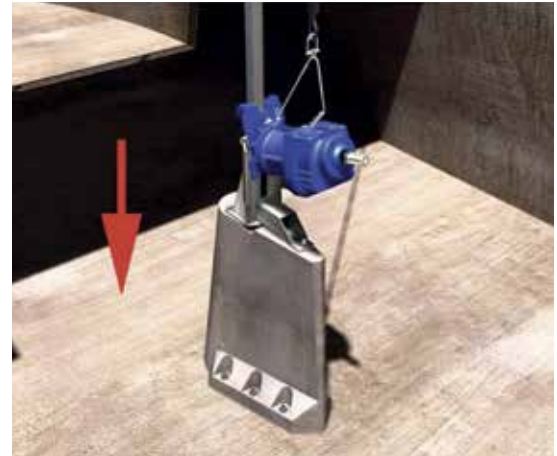
The ABS concrete base finally establishes the necessary vibration absorbing connection between machine and built structures. This invention has an abundance of advantages that make the flow booster a really comprehensive solution:

- The flow favouring drop shape avoids turbulence and therefore improves the efficiency of the propeller.
- The mass and the material characteristics suppress all damaging vibrations.
- Corrosion resistance and a fluent connection with the tank floor ensure the highest level of security and long operation life.

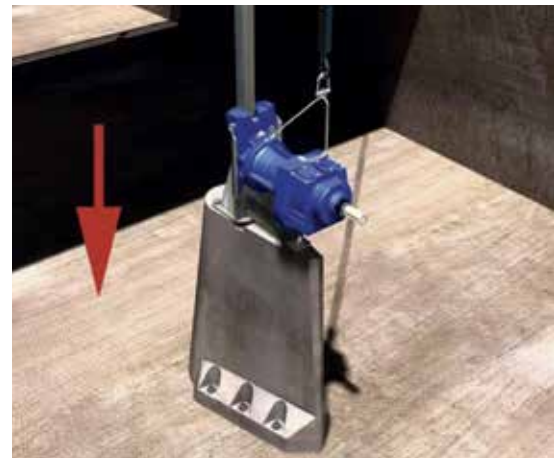


Computational fluid dynamics

Functioning



Lowering



Coupling



Locking (inside view)