SMD, SMG and SFG mixers and flowmakers

ANSI, 60 Hz

SMD, SMG, SFG North America
Data booklet
Other languages
http://net.grundfos.com/qr/i/99233754

GRUNDFOS

SMD, SMG and SFG mixers and flowmakers

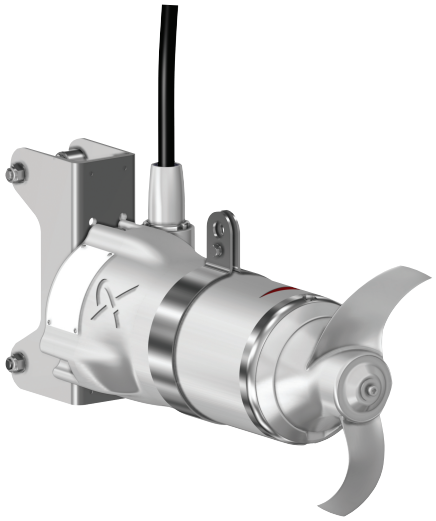
Table of contents

1. Introduction

1.1 General description

This data booklet deals with Grundfos mixers, type SMD and SMG, and flowmakers, type SFG.

Mixers



TM065440

SMD mixer

TM065441

SMG mixer

The Grundfos range of horizontal SMD and SMG mixers are designed for mixing, i.e. homogenization and suspension, of liquids of low to medium viscosity.

The range of mixers consists of SMD mixers with direct drive and SMG mixers with planetary gear drive.

Mixers are fitted with motors of 1.2 to 22 hp (0.9 to 16.0 kW.)

Flowmakers

TM065275

TM063409

SFG flowmakers

The Grundfos range of horizontal SFG flowmakers are designed for flowmaking, i.e. keeping the liquid moving, in liquids of low to medium viscosity. The flowmakers are suitable for use in large volumes.

SFG flowmakers have planetary gear drives.

Flowmakers are fitted with motors of 1.0 to 11 hp (0.7 to 8.0 kW.)

1.2 Applications

The mixers and flowmakers are designed for mixing and flowmaking in the applications mentioned below.

Sewage treatment plants

- Pumping stations (stormwater tanks)
- tanks for biological treatment of activated sludge
- tanks for primary wastewater treatment
- tanks for secondary wastewater treatment
- tanks for digested sludge treatment
- sludge storage tanks
- sludge-thickening tanks
- homogenization tanks
- tanks for digesting processes
- tanks for degassing and lime storage.

Industry

- Pulp and paper industry
- paint and dyestuff industry
- chemical industry
- other industries working with homogenization processes.

Agriculture

- Slurry tanks
- biogas plants.

Please contact Grundfos for further information on other applications, such as the mixing of viscous liquids or mixing in explosive environments.

1.3 Constructional features

SMD

- Linear smooth design, preventing solids from sticking
- integrated overload and thermal protection
- plug-in power cable
- double mechanical cartridge shaft seal
- outer parts made of stainless steel
- self cleaning stainless steel propeller.

SMG and SFG

- Strong axial gear in slim design for high hydro-dynamic efficiency
- integrated overload and thermal protection
- integrated leak sensor
- cast-iron housing with epoxy protection
- self-cleaning high-efficiency propeller.

1.4 Operating mode

- Continuous operation when fully submerged
- intermittent operation with maximum 20 starts per hour (SMG and SFG) and maximum 20 starts per hour (SMD).

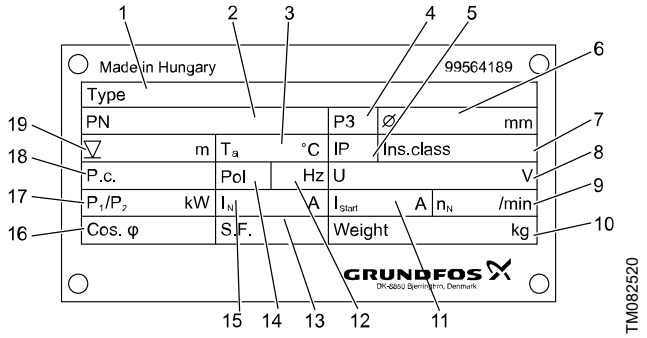
2. Identification

2.1 Type key

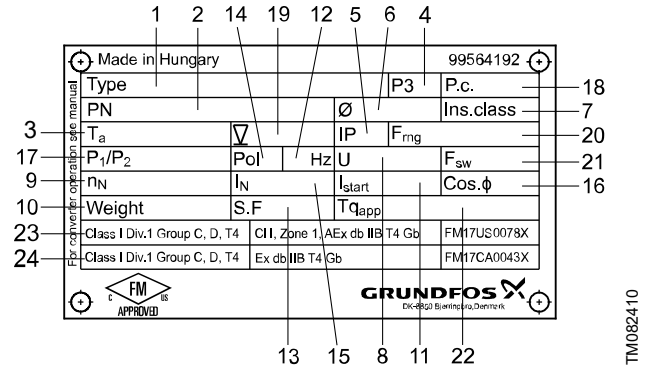
Example: SMG.75.34.264.6.1H

Code	Explanation	Designation
S	SMD, SMG, SFG	Type range
M	Mixer	Version
F	Flowmaker	
G	Gear-driven	Drive
D	Direct-driven	
75	Code from type designation / 10 7.5 hp	Motor output power P2
34	34 in	Propeller diameter [in]
[ ]	Standard	Application
M	Mud, for high density	
H	Heavy duty, biogas plants	
264	264 rpm	Propeller speed [RPM]
[ ]	Standard	Installation method
T	2" thread connection	
[ ]	Non-explosion proof	Explosion protection
Ex	Explosion-proof	
6	60 Hz	Frequency [Hz]
0H	3 x 460 V, Y	Supply voltage
1H	3 x 460 V, D	
[ ]	First generation	Generation
A	Second generation	
B	Third generation	
Z	Custom-built product	Customization

2.2 Nameplate



Nameplate of SMD, SMG and SFG



FM nameplate of SMD mixers

Pos.	Description
1	Type designation
2	Product number and serial number
3	Liquid temperature range
4	Production site
5	Enclosure class according to IEC
6	Propeller diameter
7	Insulation class
8	Rated voltage
9	Rated speed (propeller)
10	Weight
11	Starting current
12	Frequency
13	Service factor
14	Number of poles
15	Rated current
16	Power factor
17	Motor power P1/P2
18	Production code
19	Maximum installation depth
20	Frequency range [1]
21	Switching frequency [1]
22	Torque application [1]
23	Ex markings and Ex certification number FM US
24	Ex markings and Ex certification number FM CA

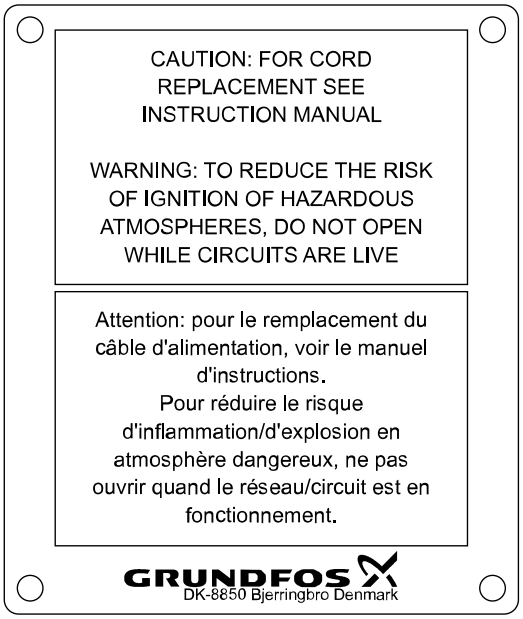
[1] If a frequency converter is used.

Fix the extra nameplate that is supplied with the product at the installation site or production location, so the data can be checked when necessary. Make sure that the nameplate is visible.

2.3 FM warning plate with restrictions

FM Caution: For cord replacement, see instruction manual.

FM Warning: To reduce the risk of ignition of hazardous atmospheres, do not open while circuits are live.



FM warning plate

2.4 Approvals (cFMus)

The SMD mixers have been approved by FM, and the explosion-proof versions hold FM Certificate of Conformity, numbers FM17US0078X and FM17CA0043X.

2.5 Approval standards

The SMD mixers have been approved by FM according to:

Canadian standards

CSA-C22.2: No. 1, No. 0.4, No. 100, and No. 145, CAN/CSAC22.2: No. 60079-0, No. 60079-1, and No. 60529.

United States standards

FM 3600, FM 3615, FM 3650, ANSI/ISA 60079-0, ANSI/UL 60079-1, and ANSI/IEC 60529.

Explanation of FM approval classification

The SMD mixers have the following explosion-protection classification for the US market:

- Class I, Division 1, Groups C and D, T4, Ta = +5°C to +40°C, IP68
- Class I, Zone 1, AEx db IIB T4 Gb Ta = +5°C to +40°C, IP68

The SMD mixers have the following explosion-protection classification for the Canadian market:

- Class I, Division 1, Groups C and D, T4, Ta = +5°C to +40°C, IP68
- Ex db IIB T4 Gb Ta = +5°C to +40°C, IP68

Code	Description
Class I	Explosive atmosphere caused by gas or vapors.
Division 1	Area classification: flammable material present intermittently.
Zone 1	Area classification: flammable material present intermittently.
Groups C and D	Gas groups, ethylene and propane.
AEx	Explosion protected based on American National Standard.
Ex	Explosion protected.
db	Type of protection: flameproof.
IIB	Gas groups: ethylene and propane.
T4	Maximum surface temperature is 275 °F (135 °C).
Gb	Equipment protection level: gas atmosphere, high level of protection.
Ta	Ambient temperature.
IP68	Enclosure class according to IEC 60529.

3. Product description

3.1 Features

The below descriptions are related to the main components of the products. Product variants are available. See Variants.

Related information

6. Variants

3.1.1 Motor

The SMD, SMG and SFG motor is an integrated 4- or 6-pole squirrel-cage induction motor. The incorporated electromagnetic components, such as stator windings and rotor, are compliant with the IE3 efficiency level of IEC 60034-30.

The rotor is supported by two single-row ball bearings.

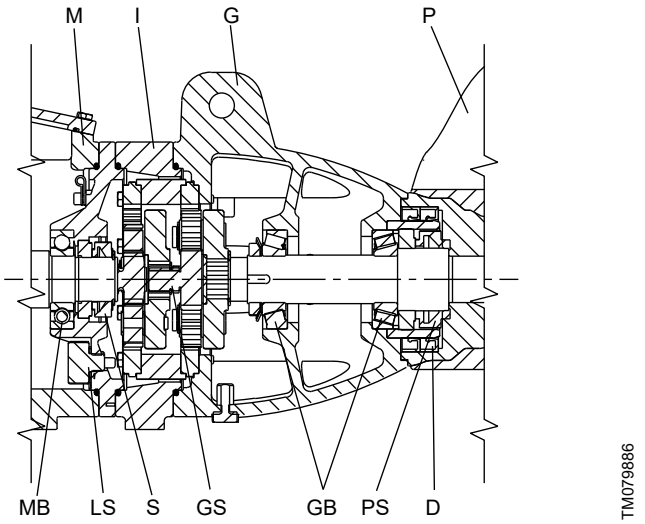
3.1.2 Gearbox

SMG and SFG

A planetary gearbox is positioned between the motor and the propeller. Mixers (SMG) have one gear stage, flowmakers (SFG) have two gear stages. The gearbox shaft is supported by two separated tapered roller bearings. This construction ensures that no axial or radial forces from the propeller can load neither the gear wheels nor the motor bearings.

The gearbox is oil-filled, and the gear wheels are hardened to ensure long life. The gearbox housing has an integrated leakage sensor which can be connected to an external relay to give an alarm or to cut out the motor in case of water ingress.

See the installation and operating instructions for information on oil type, oil quality and oil change intervals.



Gearbox

Pos.	Description
M	Motor
I	Intermediate housing (only SFG)
P	Propeller
G	Gearbox
MB	Motor bearing
LS	Leakage sensor
S	Secondary seal
GS	Gear stages
GB	Gear bearings
PS	Primary shaft seal
D	Double lip seals

3.1.3 Bearings

SMD

Motor: Single- or double-row ball bearing.

SMG and SFG

Motor: Single-row ball bearings.

Gear: Tapered roller bearings.

3.1.4 Sealing system

To prevent ingress of the surrounding liquid, the mixers and flowmakers have a multistage sealing system.

SMD

For SMD direct drive products, the sealing system consists of labyrinth with an integrated scraper system to remove solids from the propeller cap. The inner sealing is a mechanical cartridge shaft seal, where the primary seal is SiC/SiC and the secondary seal is carbon/ceramics. The pre-sealing of the cartridge lip seal is combined with a wear ring.

Mixer	Sealing against ingress of surrounding liquid	Sealing between shaft seal housing and motor
SMD up to 4.7 hp (3.5 kW)	A lip seal, Mechanical lip shaft seal, SiC/SiC [2]	Mechanical shaft seal, carbon/ceramic

2) SiC: Silicon carbide.

SMG and SFG

For SMG, SFG geared products, the first seal is placed behind of the propeller and encapsulates the inside of the gearbox including shaft completely. This primary seal consists of a labyrinth seal, two lip seals of FKM running on a low-wear ceramic layer and a mechanical shaft seal.

A secondary mechanical shaft seal is located between the gearbox and the motor.

Mixer/flowmaker	Sealing against ingress of surrounding liquid	Sealing between gearbox and motor
SMG up to 5.5 hp (4.0 kW) SFG.xx.51	Two lip seals and a mechanical shaft seal, SiC/SiC [3]	Mechanical shaft seal, carbon/Alox
SMG larger than 5.5 hp (4.0 kW) SFG.xx.71/91/102	Two lip seals and a mechanical shaft seal, tungsten carbide/tungsten carbide	

3) SiC: Silicon carbide.

3.1.5 Propeller

All propellers have two or three twisted, flow-directed and raked blades to achieve a self-cleaning effect. All blades are formed in moulds to achieve a streamlined shape for a high hydrodynamic efficiency.

SMD

The SMD propellers are made of stainless steel, and the fully profiled blades are cast in one piece.

SMG

The SMG propellers are made of stainless steel, and the 3D-formed blades are welded to the hub.

SFG

The SFG propellers are made of polyurethane resin and have profiled blades. For gentle treatment of activated sludge, the SFG propellers have a tip speed which is lower than 20 ft/s (6 m/s).

3.1.6 Cable and cable entry

SMD

The cable is connected by means of a stainless steel plug with a union nut. The nut and O-rings provide sealing against liquid penetration. The plug is filled with a polyamide material cast into the plug around the conductors of the cable, to prevent moisture from penetrating into the motor via the cable core.

SMG and SFG

The watertight cable entry prevents moisture ingress down to a depth of 66 ft (20 m). The cable entry is sealed by a double set of elastomeric rubber rings with a clamping ring.

Standard cables

The factory-fitted cable has six power wires.

	Standard cable types	Dimensions	Outer diameter [in (mm)]
SMD	SEOOW 600V	7x AWG 16 (1.5 mm^2)	0.56 (14.2)
	SEOOW 600V	7x AWG 14 (2.5 mm^2) + 3 x AWG 16 (1.5 mm^2)	0.82 (20.7)
SMG SFG	S1BN8-F 11G1.5	11 x AWG 16 (1.5 mm^2)	0.67 (17)
	S1BN8-F 11G2.5	11 x AWG 14 (2.5 mm^2)	0.83 (21)
	TPE/TPE 7G4 + 4 x 1.5	7 x AWG 12 (4 mm^2) + 4 x AWG 16 (1.5 mm^2)	0.83 (21)

The cable type required for each product appears from the tables in Technical data.

Related information

3.4 Moisture switch

3.5 Leakage sensor

10. Technical data

3.1.7 Sensors

Sensor overview

Product	Execution / power	MS	LS	PTC	PTO
SMD	1.3 - 2.3 hp (1.0 - 1.7 kW)	●	-	o	●
	3.0 - 4.7 hp (2.2 - 3.5 kW)	●	o	o	●
SMG	Standard	o	●	o	●
SFG	Standard	o	●	●	o

● Standard
o Optional
- Not available
MS: Moisture switch
LS: Leakage sensor
PTC: Thermistors
PTO: Thermal switches

Related information

3.4 Moisture switch
3.5 Leakage sensor
6. Variants

3.2 Starting method

3.2.1 SMD

Continuous operation

Direct start is possible throughout the entire power range.

Intermittent operation

For motors of 3 hp (2.2 kW) and up, we recommend that you use a soft starter or frequency converter.

3.2.2 SMG

Continuous operation

You can start motors up to 2.2 hp (1.6 kW) via direct starting. We recommend a soft starter or frequency converter for motors of 2.7 hp (2.0 kW) and up.

Intermittent operation

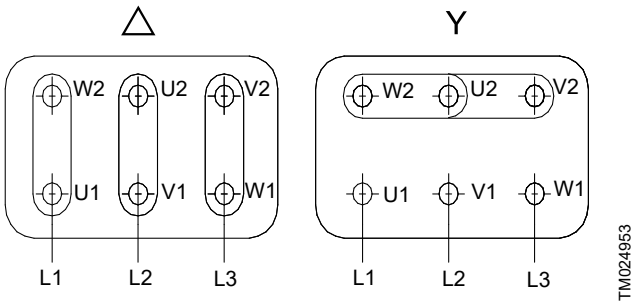
We recommend a soft starter or frequency converter throughout the entire power range.

3.2.3 SFG

Flowmakers must be started via a soft starter or frequency converter.

3.3 Wiring diagrams

For voltage and starting method 1H, wire the motor using the delta connection. For voltage and starting method 0H, wire the motor using the star connection method. Connection methods are shown in the figure below. See also Nameplate and Type key to determine the voltage and starting method of your mixer or flowmaker.



Schematic drawing of delta and star connection

Pos.	Description
Δ	Delta
Y	Star

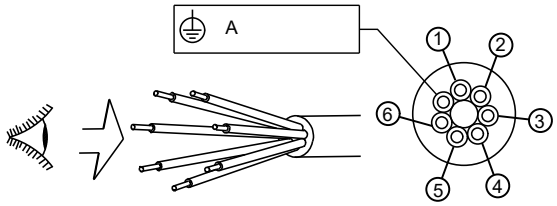
Related information

2.1 Type key
2.2 Nameplate

3.3.1 SMD

Marking 7-wire / 10-wire		Switch or sensor			Max. load	Connection
Wire 4 / 7	Wire 6 / 9	Thermal switch	Moisture switch (M)	Leakage sensor (LS)		Relay
11	12	PTO	No	No	2.5 A (250 V)	-
31	32	PTC	No	No	2.5 V	Thermistor
11	13	PTO	Yes	No	2.5 A (250 V)	-
31	33	PTC	Yes	No	2.5 V	Thermistor
11	23	PTO	Yes	Yes	12 V - 11 mA	

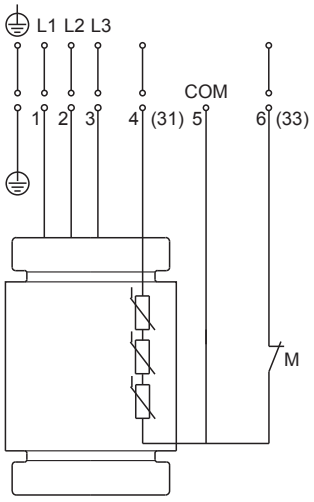
7-wire cable



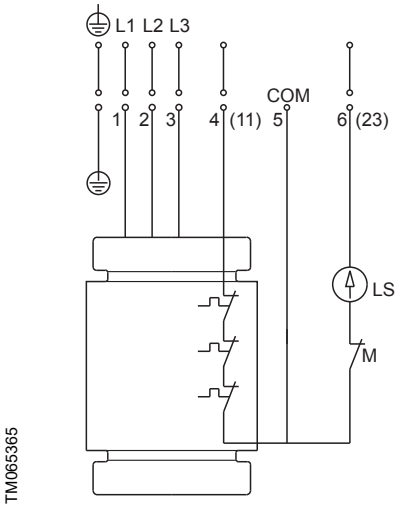
TM065367

Pos.	Description
A	Yellow and green

Wiring diagrams for 7-wire cable

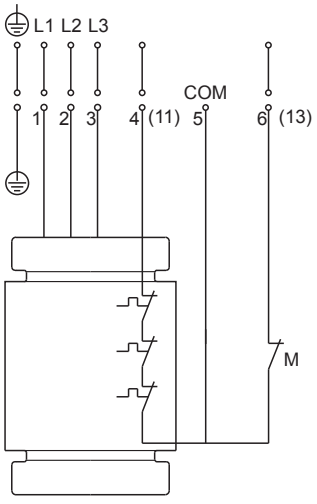


3 x PTC + M



TM065365

3 x PTO + M + LS

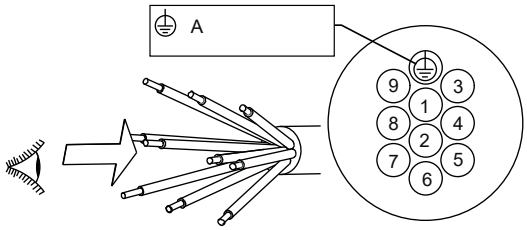


TM065366

TM065364

3 x PTO + M

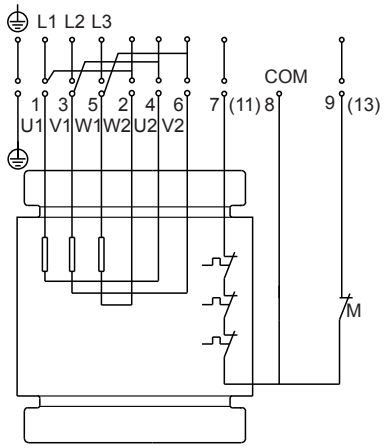
10-wire cable



TM065371

Pos.	Description
A	Yellow and green

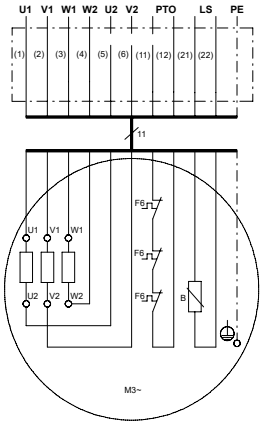
Wiring diagram for 10-wire cable



TM065368

3 x PTO + M (standard)

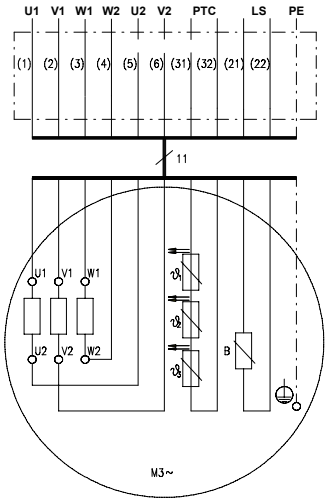
3.3.2 SMG and SFG



TM024940

Three thermal switches (PTO)

Terminals	Description
1, 2, 3, 4, 5, 6	Ends of the three stator windings (U1, U2, V1, V2, W1, W2)
11, 12	Thermal switches (F6)
21, 22	Leakage sensor in gearbox (B).



TM024932

Three thermistors (PTC sensors)

Terminals	Description
1, 2, 3, 4, 5, 6	Ends of the three stator windings (U1, U2, V1, V2, W1, W2)
31, 32	PTC sensors according to DIN 44081 (ϑ1, ϑ2, ϑ3)
21, 22	Leakage sensor in gearbox (B).

Related information

3.4 Moisture switch

3.5 Leakage sensor

3.4 Moisture switch

A moisture switch is available for SMD mixers. The moisture switch monitors the cable compartment in the non-drive end of the motor housing. If the moisture appears, the switch will be triggered and cause the power to SMD to be cut out.

3.5 Leakage sensor

For SMD 3.0 hp (2.2 kW) and up, the leakage sensor is optional. For SMG and SFG the leakage sensor is standard.

The gearbox and shaft seal housing is monitored for ingress of water by means of a leakage sensor incorporated in the gearbox or shaft seal housing. Via an external relay, the sensor triggers an alarm signal and/or switches off the motor.

We recommend that you connect the leakage sensor to a relay. The relay must be a Grundfos relay, supplied as an optional accessory. See Accessories.

Note: As the leakage sensor is an electronic component, do not test it with an ohmmeter or another measuring instrument.

Related information

11.1 Accessories

3.6 Characteristics of mixed or moved liquids

pH value	4-10
Liquid temperature	41-104 °F (5-40 °C)
Maximum density	66 lb/ft^3 (1060 kg/m^3)
Maximum dynamic viscosity	500 cSt (mPa·s)
Chloride content	Stainless steel 304 (DIN 1.4301): ≤ 200 ppm (mg/l)
Chloride content	Stainless steel 316 (DIN 1.4404): ≤ 1000 ppm (mg/l)

Mixers are suitable for applications involving sludge with a typical dry solids content (DS) as stated in the table below. Mixers are also suitable for a wide range of other applications involving similar liquids such as slurry and paper pulp.

Activated sludge	0.5 % DS
Selector zones	0.5 % DS
Anoxic zones	0.5 % DS
Bivalent zones	0.5 % DS
Anaerobic zones	0.5 % DS
Primary sludge	≤ 3 % DS
Secondary sludge	≤ 6 % DS
Digested sludge	≤ 8 % DS
Collection tank without screen	≤ 2 % DS
Collection tank with sand	≤ 2 % DS

Flowmakers are suitable for activated sludge with a typical dry solids content of 0.5 to 1.0 % and for other liquids with a dry solids content of maximum 1.5 %.

3.7 Sound pressure level

The sound pressure level of the mixer or flowmaker is lower than 70 dB(A).

4. Selection of product

4.1 Ordering a mixer or flowmaker

You only need to select a few product numbers to complete your order:

- mixer or flowmaker
- custom-built variants (option)
- accessories for mechanical installation
- adapters that are available as accessories
- electrical accessories and leak detector relay.

4.1.1 Standard product

This is an example of what you get when you order a standard mixer or flowmaker:

- SMG and SFG: mixer or flowmaker containing a motor, gearbox and complete propeller
- SMD: mixer containing a motor and complete propeller
- factory-fitted 49 ft (15 m) power supply cable (different product numbers for units with different cable lengths)
- paint:
  - SMD: uncoated stainless steel surface
  - SMG and SFG: black, NCS 9000N, paint grade according to ISO 12944-2: 2017, durability: high, corrosivity category: Im2
- Thermal protection:
  - SMD and SMG: three thermal switches (PTO), one in each motor winding
  - SFG: three thermistors (PTC), one in each motor winding.
- SMG and SFG: one leakage sensor incorporated in the gearbox
- SMD: the moisture switch is incorporated in the motor housing.

Note: In Grundfos Product Center you can find product data by entering the product number, e.g. 98788080. See Grundfos Product Center.

Related information

12. Grundfos Product Center

4.1.2 Variants

If a longer cable, an additional sensor or switch is required, it is no longer a standard mixer or flowmaker. A list of variants can be found in Variants.

Related information

6. Variants

4.1.3 Accessories

See Accessories for selection of the correct accessories.

Note: When a suitable motor bracket is ordered together with the mixer or flowmaker, it will be fitted from factory. All the other accessories are not fitted from factory.

Related information

11.1 Accessories

4.1.4 Relay

A Grundfos leakage detector relay can be selected.

4.2 Selecting a mixer or flowmaker

When selecting mixers and flowmakers, you must consider many different parameters. In order to ensure the optimum selection, please contact Grundfos.

For advanced applications, we recommend that you carry out CFD (Computational Fluid Dynamics) simulations. Please contact Grundfos.

5. Product range

5.1 SMD mixers

3 x 460 V

Type designation [4]	Permissible motor voltage [V]	Product number
		49 ft (15 m) cable
SMD.13.7.1775.T.6.0H	3 × 460 Y	98996018
SMD.17.8.1765.T.6.0H	3 × 460 Y	98996019
SMD.23.10.1750.T.6.0H	3 × 460 Y	98996020
SMD.13.7.1775.6.0H	3 × 460 Y	98996021
SMD.17.8.1765.6.0H	3 × 460 Y	98996022
SMD.23.10.1750.6.0H	3 × 460 Y	98996023
SMD.30.11.1182.6.1H	3 × 460 D	98996024
SMD.38.13.1178.6.1H	3 × 460 D	98996025
SMD.47.15.1170.6.1H	3 × 460 D	98996026
SMD.13.7.1775.T.Ex.6.0H	3 × 460 Y	99428388
SMD.17.8.1765.T.Ex.6.0H	3 × 460 Y	99428389
SMD.23.10.1750.T.Ex.6.0H	3 × 460 Y	99428390
SMD.13.7.1775.Ex.6.0H	3 × 460 Y	99428391
SMD.17.8.1765.Ex.6.0H	3 × 460 Y	99428392
SMD.23.10.1750.Ex.6.0H	3 × 460 Y	99428393
SMD.30.11.1182.Ex.6.1H	3 × 460 D	99428394
SMD.38.13.1178.Ex.6.1H	3 × 460 D	99428395
SMD.47.15.1170.Ex.6.1H	3 × 460 D	99428396

4) SMD mixers, T-variants are delivered with 2" thread connection for connecting to more accessories. All other variants need additional accessories for installation. See Accessories. All the mixers and flowmakers need a bracket before installation is possible.

Related information

11.1 Accessories

5.2 SMG mixers

3 x 460 V

Type designation	Permissible motor voltage [V]	Product number	
		49 ft (15 m) cable 80 × 80 column profile	49 ft (15 m) cable 100 × 100 column profile
SMG.12.22.276.6.0H	3 × 460 Y	98788105	
SMG.16.25.275.6.0H	3 × 460 Y	98788106	
SMG.22.25.273.6.0H	3 × 460 Y	98788107	
SMG.27.28.264.6.1H	3 × 460 D	98788108	
SMG.34.28.263.6.1H	3 × 460 D	98788109	
SMG.44.28.315.6.1H	3 × 460 D	98788110	
SMG.55.28.314.6.1H	3 × 460 D	98788111	
SMG.75.34.264.6.1H	3 × 460 D		98788112
SMG.95.34.263.6.1H	3 × 460 D		98788113

Type designation	Permissible motor voltage [V]	Product number	
		49 ft (15 m) cable 80 × 80 column profile	49 ft (15 m) cable 100 × 100 column profile
SMG.130.34.318.6.1H	3 × 460 D		98788114
SMG.160.34.317.6.1H	3 × 460 D		98788115
SMG.220.35.345.6.1H	3 × 460 D		98788116

5.3 SFG flowmakers

3 x 460 V

Type designation	Permissible motor voltage [V]	Product number	
		49 ft (15 m) cable 100 × 100 column profile	49 ft (15 m) cable 120 × 120 column profile
SFG.10.51.50.6.0H	3 × 460 Y	98788117	
SFG.14.51.57.6.0H	3 × 460 Y	98788118	
SFG.19.51.64.6.0H	3 × 460 Y	98788119	
SFG.23.51.68.6.1H	3 × 460 D	98788120	
SFG.30.51.74.6.1H	3 × 460 D	98788121	
SFG.39.51.82.6.1H	3 × 460 D	98788122	
SFG.44.51.85.6.1H	3 × 460 D	98788123	
SFG.48.51.88.6.1H	3 × 460 D	98788124	
SFG.10.71.32.6.0H	3 × 460 Y	98788125	
SFG.14.71.36.6.0H	3 × 460 Y	98788126	
SFG.19.71.41.6.0H	3 × 460 Y	98788127	
SFG.23.71.43.6.1H	3 × 460 D	98788128	
SFG.30.71.48.6.1H	3 × 460 D	98788129	
SFG.39.71.53.6.1H	3 × 460 D	98788130	
SFG.47.71.53.6.1H	3 × 460 D	98788131	
SFG.55.71.54.6.1H	3 × 460 D	98788132	
SFG.10.91.26.6.0H	3 × 460 Y	98788133	
SFG.12.91.28.6.0H	3 × 460 Y	98788134	
SFG.16.91.31.6.0H	3 × 460 Y	98788135	
SFG.22.91.35.6.0H	3 × 460 Y	98788136	
SFG.26.91.37.6.1H	3 × 460 D	98788137	
SFG.30.91.39.6.1H	3 × 460 D	98788138	
SFG.34.91.39.6.1H	3 × 460 D	98788139	
SFG.43.91.42.6.1H	3 × 460 D	98788140	
SFG.55.91.46.6.1H	3 × 460 D	98788141	
SFG.30.102.29.6.1H	3 × 460 D		98788142
SFG.43.102.34.6.1H	3 × 460 D		98788143
SFG.48.102.35.6.1H	3 × 460 D		98788144
SFG.60.102.38.6.1H	3 × 460 D		98788145
SFG.67.102.35.6.1H	3 × 460 D		98788146
SFG.82.102.38.6.1H	3 × 460 D		98788147
SFG.98.102.40.6.1H	3 × 460 D		98788148
SFG.110.102.42.6.1H	3 × 460 D		98788149

6. Variants

Motor						
Power supply cable	Standard cable	7G AWG 16 (1.5 mm^2)	SEOOW 600V	33 ft (10 m) 82 ft (25 m) 131 ft (40 m)	SMD	Contact Grundfos
		7G AWG 14 (2.5 mm^2) + 3 x AWG16 (1.5 mm^2)	SEOOW 600V	33 ft (10 m) 82 ft (25 m) 131 ft (40 m)	SMD	Contact Grundfos
		11 x AWG 16 (1.5 mm^2), ∅0.67" (17 mm)	S1BN8-F 11G1.5	33 ft (10 m) 82 ft (25 m) 115 ft (35 m) 164 ft (50 m)	SMG SFG	Contact Grundfos
		11 x AWG 14 (2.5 mm^2), ∅0.83" (21 mm)	S1BN8-F 11G2.5	33 ft (10 m) 82 ft (25 m) 115 ft (35 m) 164 ft (50 m)	SMG SFG	Contact Grundfos
		7 x AWG 11 (4 mm^2) + 4 x AWG 16 (1.5 mm^2), ∅0.83" (21 mm)	TPE/TPE 7G4 + 4 x 1.5	33 ft (10 m) 82 ft (25 m) 115 ft (35 m) 164 ft (50 m)	SMG SFG	Contact Grundfos
Screened power supply cable	Screened cable, complete	4G AWG 14 (2.5 mm^2) + 3 x AWG 16 (1.5 mm^2)	SEOOW 600V, shielded	33 ft (10 m) 50 ft (15 m) 82 ft (25 m) 131 ft (40 m)	SMD	Contact Grundfos
	Screened cable, complete, (cast in the cable entry)	7 x AWG 11 (4 mm^2) + 4 x AWG 17 (1 mm^2), ∅0.89" (22.5 mm)	S1BC4N8-F 7G4 + 4 x 1	33 ft (10 m) 50 ft (15 m) 82 ft (25 m) 115 ft (35 m)	SMG SFG	Contact Grundfos

Motor						
Biogas cable, complete, (cast in the cable entry)	Power supply cable Lapp Ölflex FD Robust	7 x AWG 11 (4 mm^2) + 4 x AWG 16 (1.5 mm^2), ∅0.83" (21 mm)	TPE/TPE 7G4 + 4 x 1.5	33 ft (10 m) 50 ft 15 m 82 ft (25 m) 115 ft (35 m) 164 ft (50 m)	SMG SFG	Contact Grundfos
Sensors	Leakage sensor				SMD 3.0 - 4.7 hp (2.2 - 3.5 kW)	
Thermal protection	Mixers (standard with PTO)		PTO or PTC, optional		SMD SMG	
	Flowmakers (standard with PTC)				SFG	
Insulation class	Insulation class H				SMD 1.3 - 2.3 hp (1.0 - 1.7 kW)	

Coating				
Product coating	Motor/gear housing	Protection layer (different colors)		Contact Grundfos
Propeller coating	Epoxy or stainless-steel propellers	Protection layer (different colors)	300 micron epoxy	

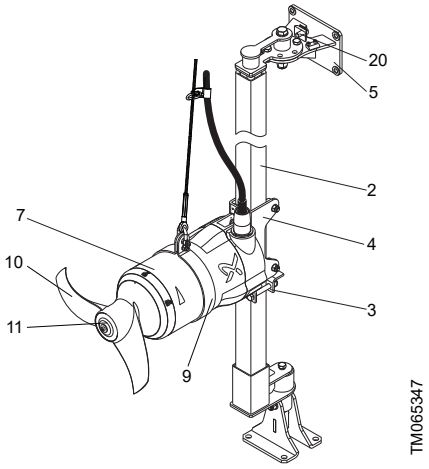
Tests				
Dry-testing motor certificate	Electrical and tightness			Contact Grundfos
Production certificate	Certificate of compliance with EN 10204 2.1			Contact Grundfos
Factory test certificate	Inspection and test certificate EN 10204 2.2			Contact Grundfos

Material				
SMG propellers		Stainless steel	AISI 316	

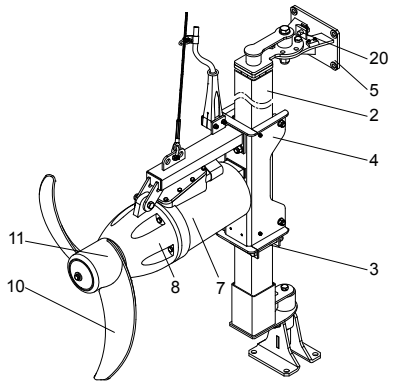
Others				
For special package	Batch packaging, hard/soft box, etc.			Contact Grundfos
For special nameplate				Contact Grundfos
Heavy-duty SMG mixers for special applications				Contact Grundfos
Special brackets for refurbishment 50/50 (60/60) 70/70 (80/80) 100/100				Contact Grundfos
Sacrificial anodes, different anode material available, corrosion-protected				Contact Grundfos

7. Construction

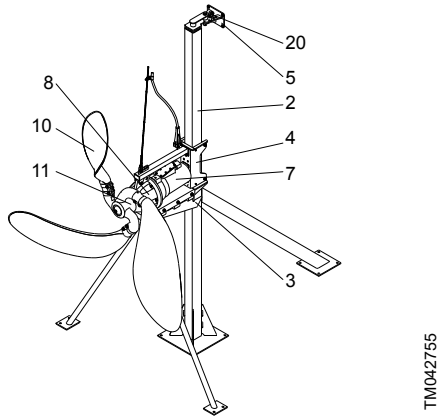
The position numbers in the following figures refer to Material specifications.



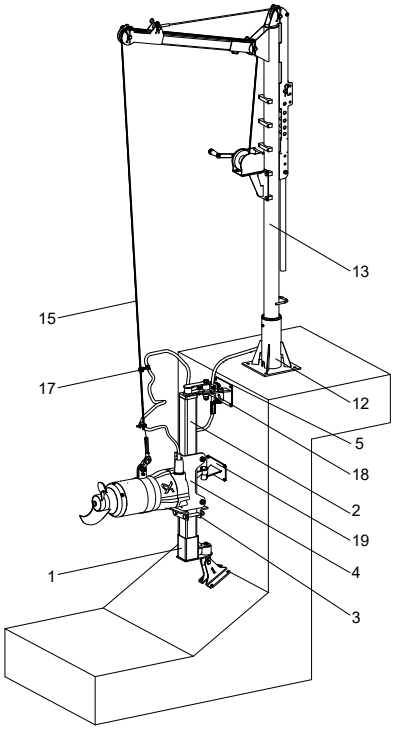
SMD mixer



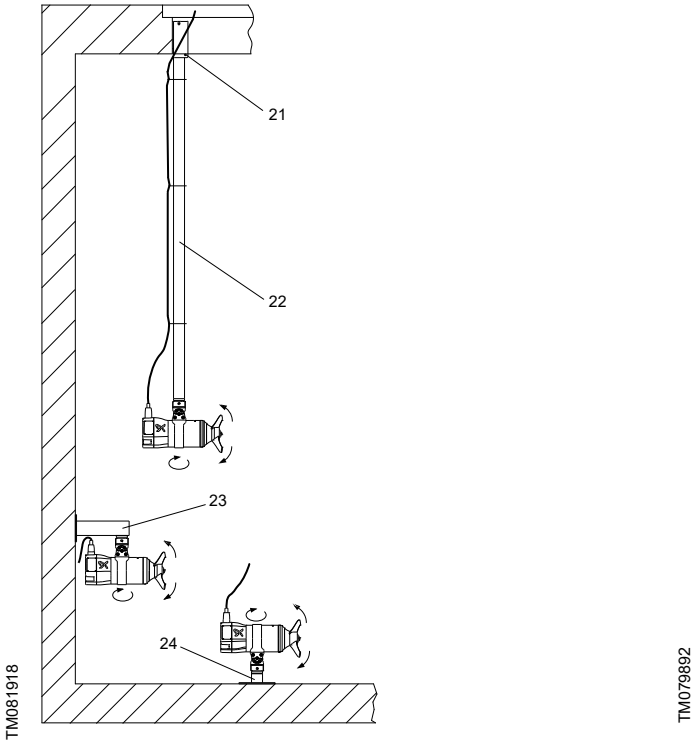
SMG mixer



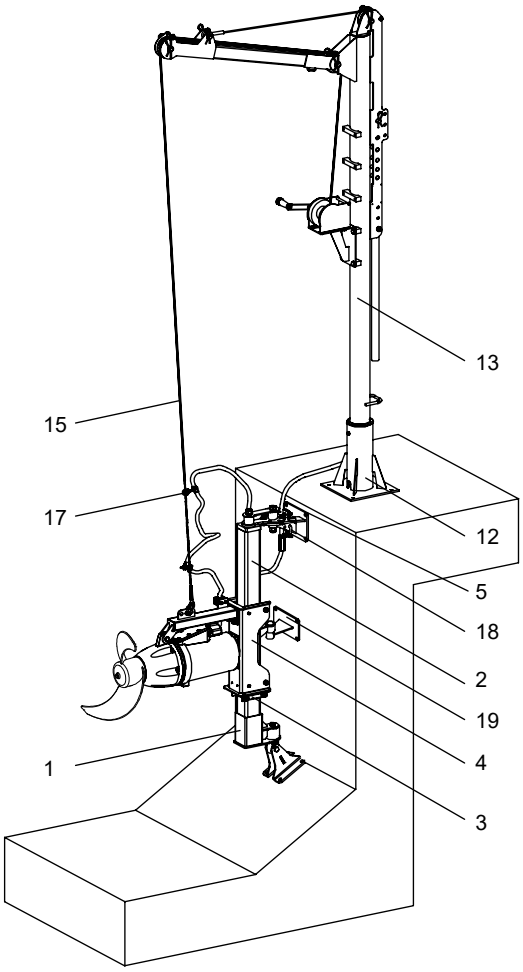
SFG flowmaker



SMD mixer installed on a column profile

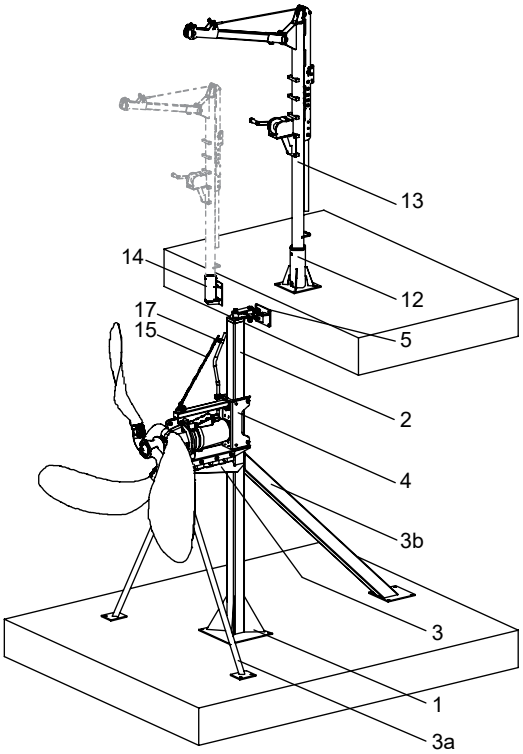


SMD mixers (suspended, wall and floor mounting). See products with "T" in type description



Installation drawing, SMG mixer installed on a column profile

TM081916



TM081917

Installation drawing, SFG flowmaker installed on a column profile

Related information

7.1 Material specification

7.1 Material specification

Position numbers refer to figs in Construction.

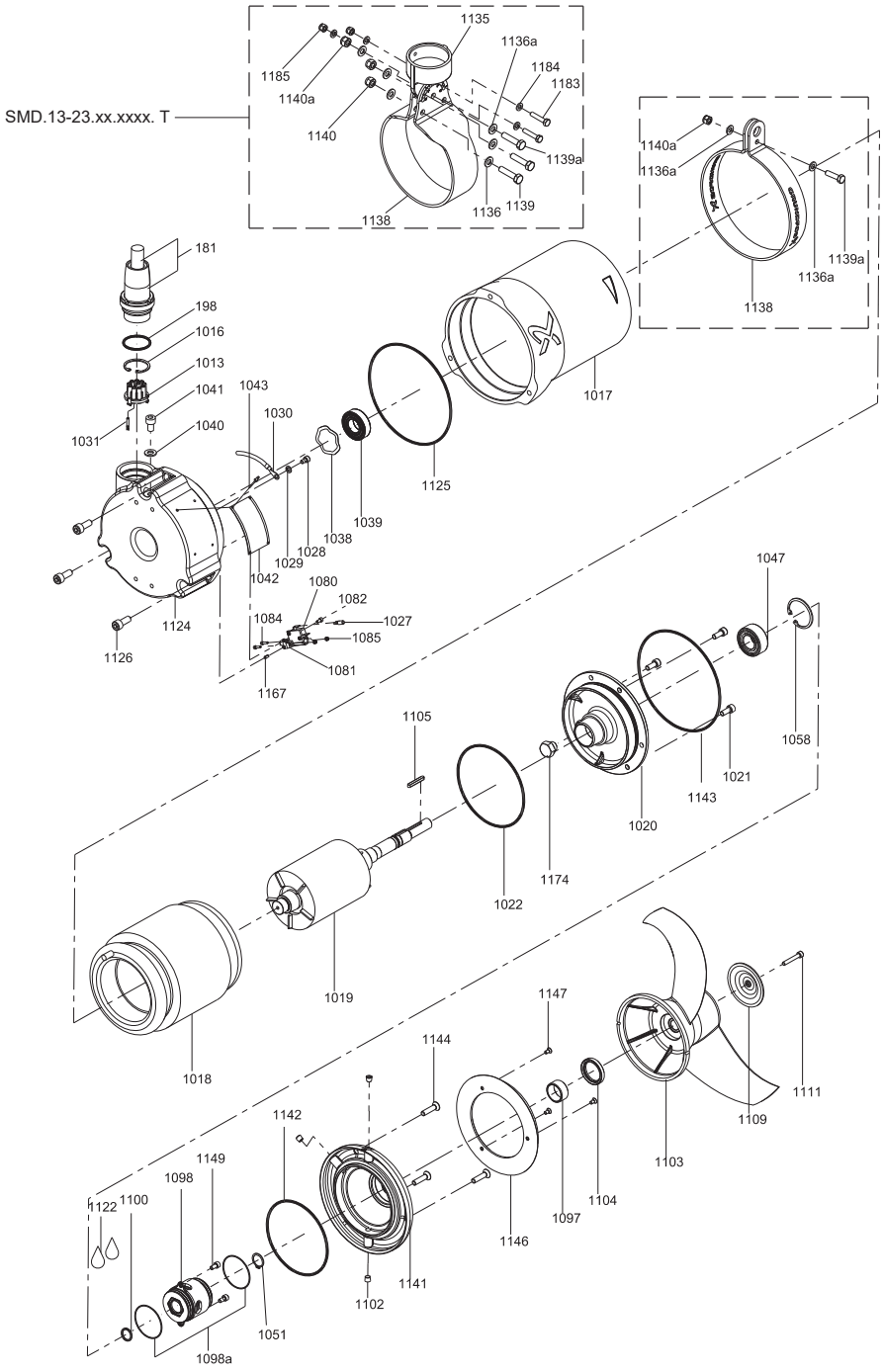
Pos.	Component	Material	DIN/ EN standard	AISI/ ASTM	Mixer/flowmaker
1	Bottom fixation bracket/plate	Stainless steel	1.4301 1.4404	304 316 L	All types
2	Column profile				
3	Depth blocker				
3a	Front support leg	Stainless steel	1.4301 1.4404	304 316 L	SFG
3b	Back support leg				
4	Motor bracket	Stainless steel	1.4301 1.4404	304 316 L	All types
5	Top fixation bracket including safety wire	Stainless steel	1.4301 1.4404	304 316 L	All types
7	Motor housing	Cast iron, grade 25 (EN-GJL-250)	EN-JL1040	A48 Cl 35B	SMG and SFG
		Stainless steel, cast	1.4408	316	SMD
8	Gear housing	Cast iron, grade 25 (EN-GJL-250)	EN-JL1040	A48 Cl 35B	SMG and SFG
9	Lifting belt	Stainless steel	1.4404	316 L	SMD
10	Propeller	Stainless steel, propeller blades and hub cast in one piece	1.4408	316	SMD
		Stainless steel	1.4301	304	SMG
		Polyurethane resin with a stainless-steel (1.4301) core			SFG.xx.51.xx
		Polyurethane resin with cast-iron (EN-GJS-400-15) reinforcement	EN-JS1030	A536-80 Grade 60-40-18	SFG.xx.71.xx SFG.xx.91.xx SFG.xx.102.xx
11	Hub	Stainless steel, propeller blades and hub cast in one piece	1.4408	316	SMD
		Stainless steel	1.4301	304	SMG SFG.xx.51.xx
		Cast iron (EN-GJS-400-15)	EN-JS1030	A536-80 Grade 60-40-18	SFG.xx.71.xx SFG.xx.91.xx SFG.xx.102.xx
12	Crane foot		1.4301	304	All types
			1.4404	316 L	
			Galvanized steel		
13	Crane with winch		1.4301	304	All types
			1.4404	316 L	
			Galvanized steel		
14	Crane foot for vertical installation		1.4301	304	All types
			1.4404	316 L	
			Galvanized steel		
15	Lifting wire including wire clamp		1.4404	316 L	All types
17	Cable clamp		1.4404	316 L	All types
18	Cable sock including shackle	Polypropylene / Stainless steel		- / 316 L	All types
19	Intermediate fixation bracket		1.4301 1.4404	304	All types
20	Wire clamp, included in pos. 15, lifting wire		1.4301 1.4404	316 L	All types
21	Fixation bracket for suspended mounting	Stainless steel	1.4404	316 L	SMD
22	Tube for suspended mounting	Stainless steel	1.4404	316 L	SMD
23	Fixation bracket for wall mounting, 2"	Stainless steel	1.4404	316 L	SMD
24	Fixation base for floor mounting	Stainless steel	1.4404	316 L	SMD

Related information

7. Construction

7.2 Exploded views

7.2.1 SMD.13.xx to SMD.47.xx

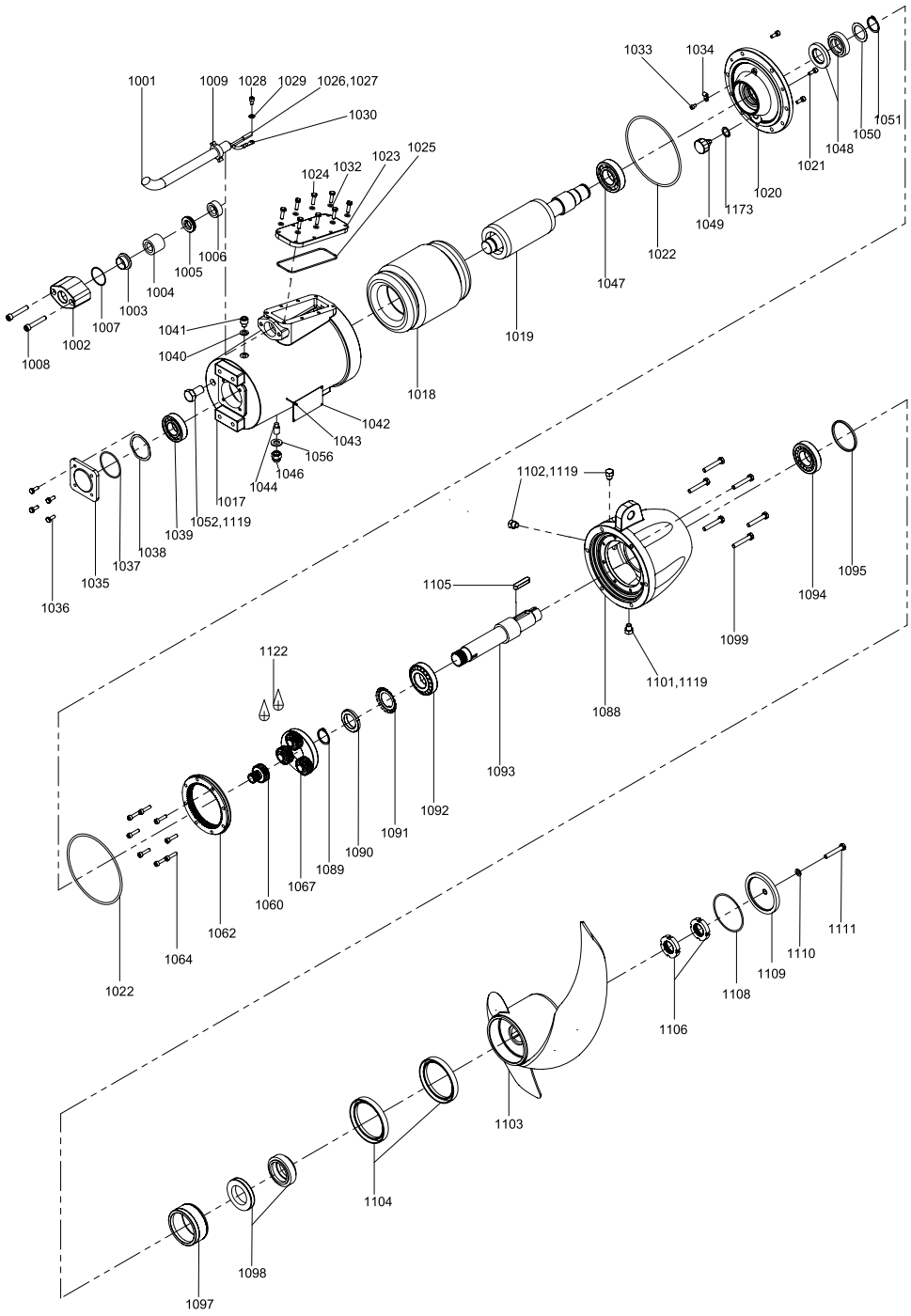


Exploded view, SMD.13.xx to SMD.47.xx

Related information

7.3 Position numbers and material specification

7.2.2 SMG.12.xx to SMG.55.xx



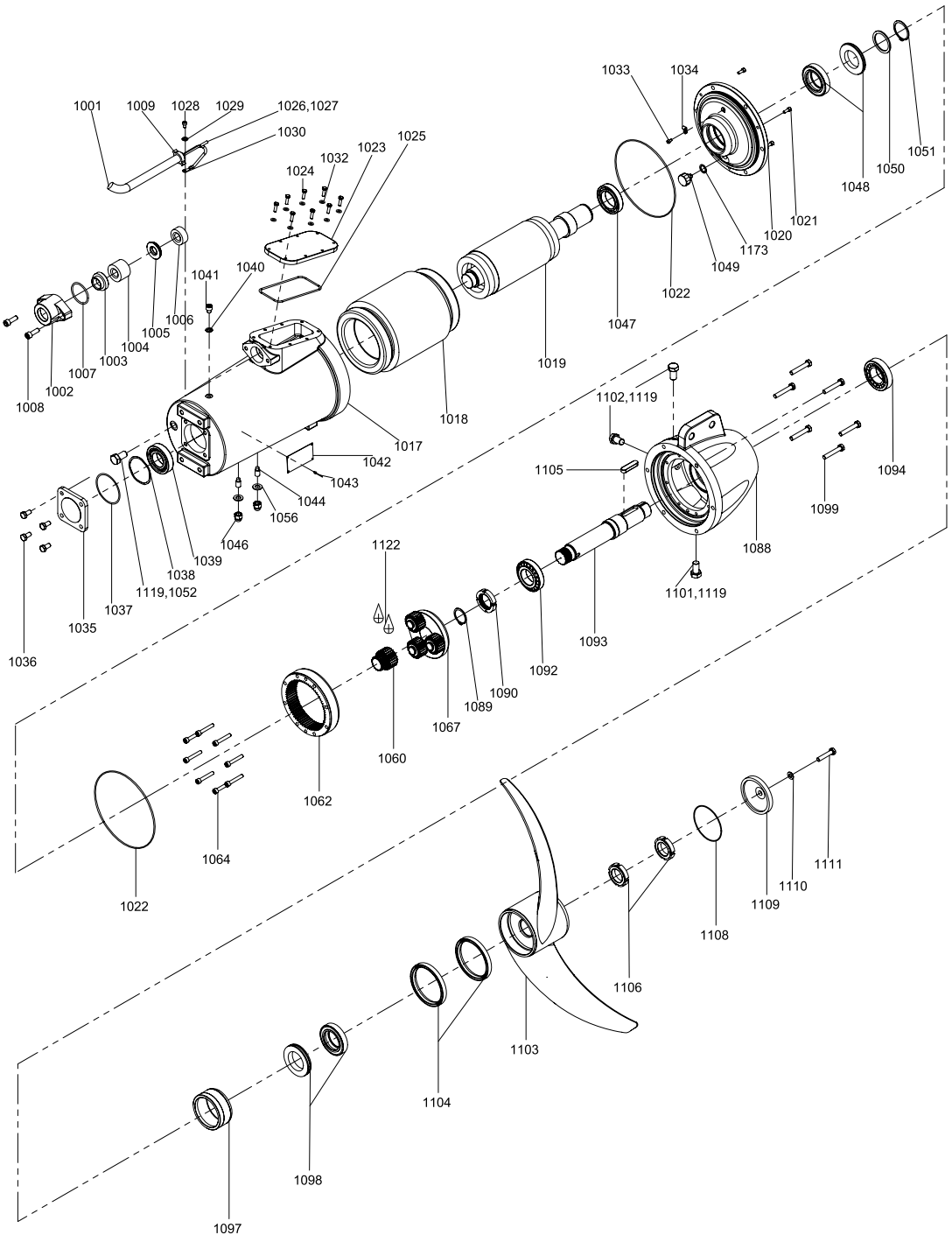
TM062486

Exploded view, SMG.12.xx to SMG.55.xx

Related information

7.3 Position numbers and material specification

7.2.3 SMG.75.xx to SMG.160.xx

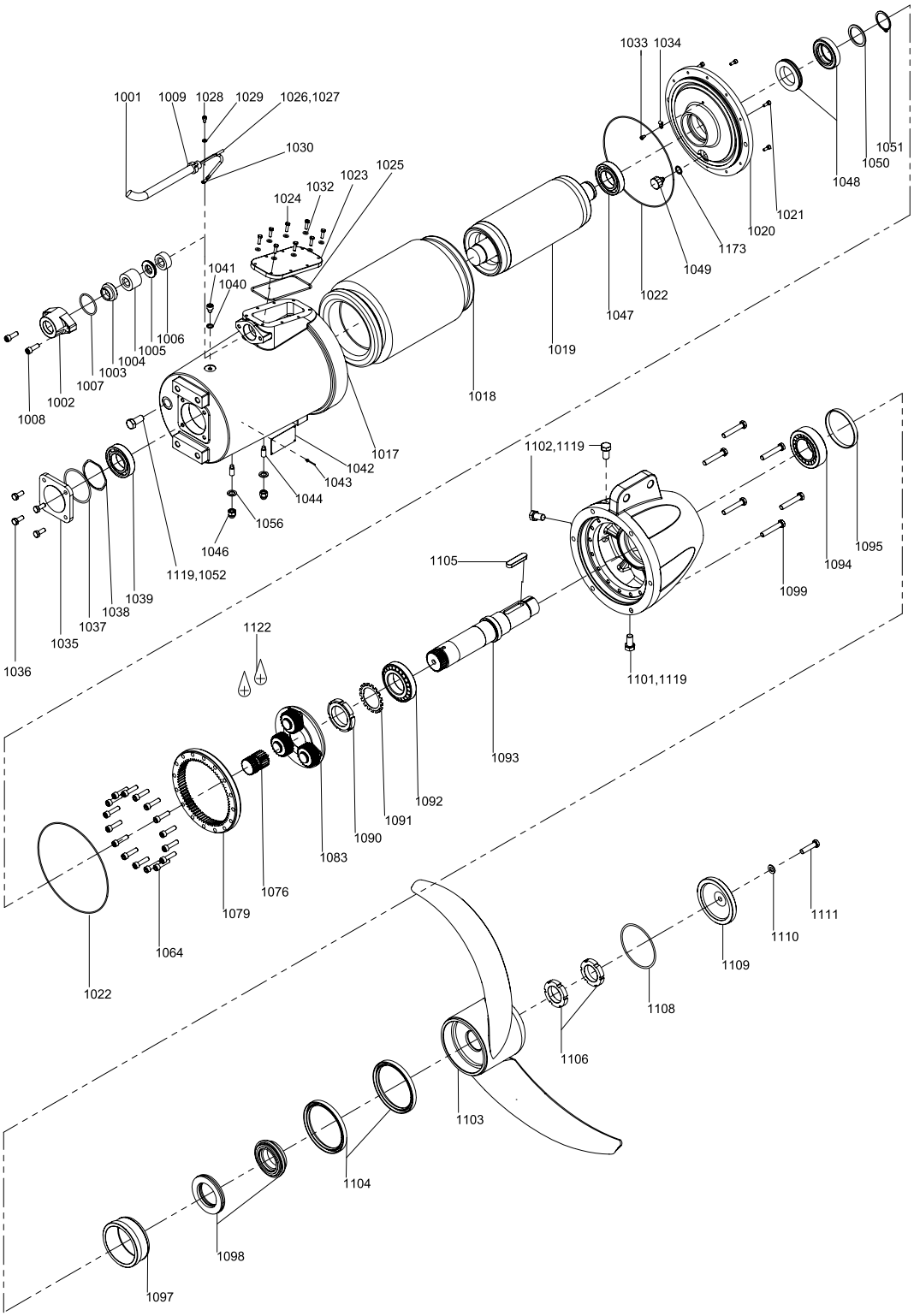


Exploded view, SMG.75.xx to SMG.160.xx

Related information

7.3 Position numbers and material specification

7.2.4 SMG.220.xx



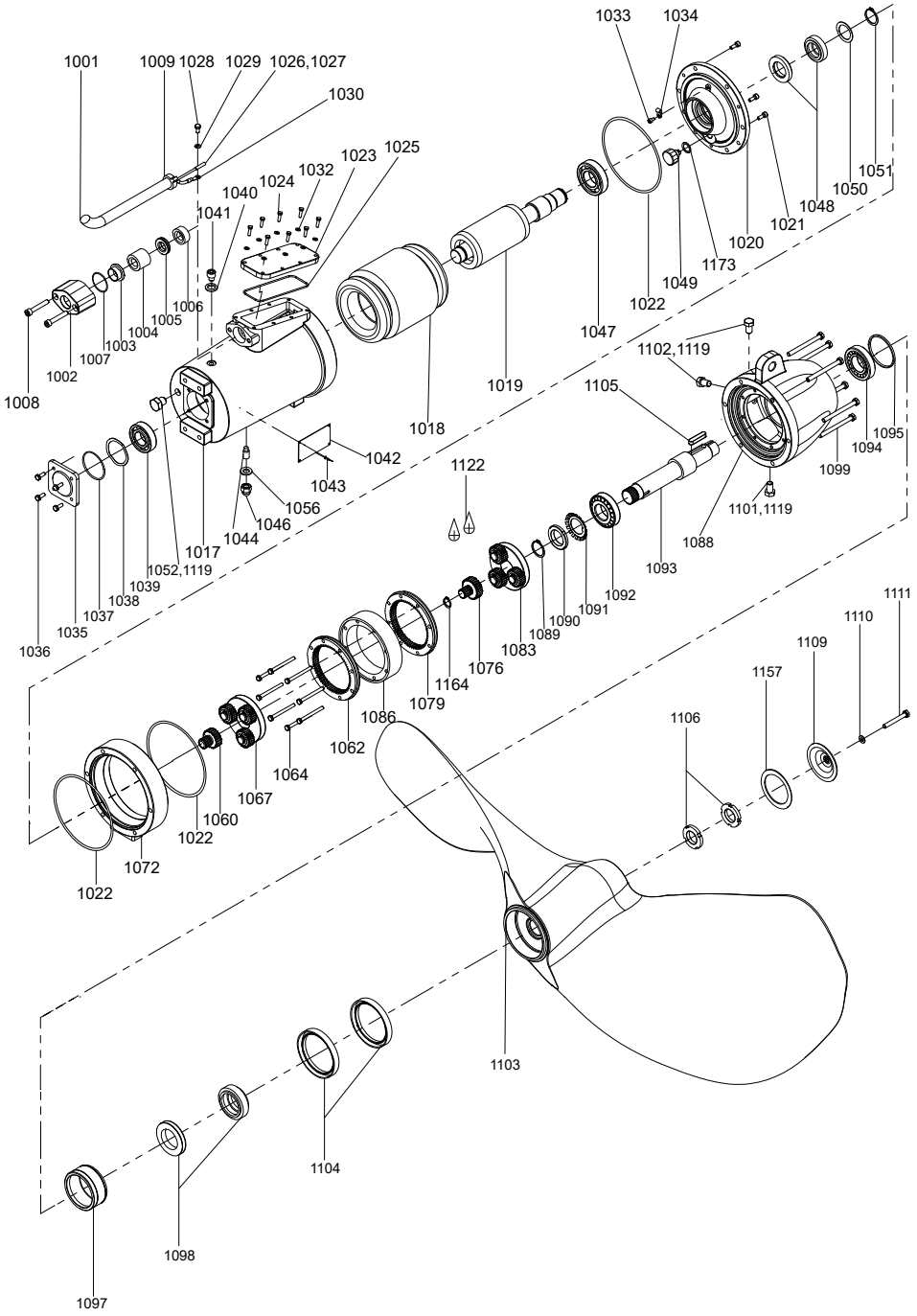
TM063063

Exploded view, SMG.220.xx

Related information

7.3 Position numbers and material specification

7.2.5 SFG.xx.51.xx



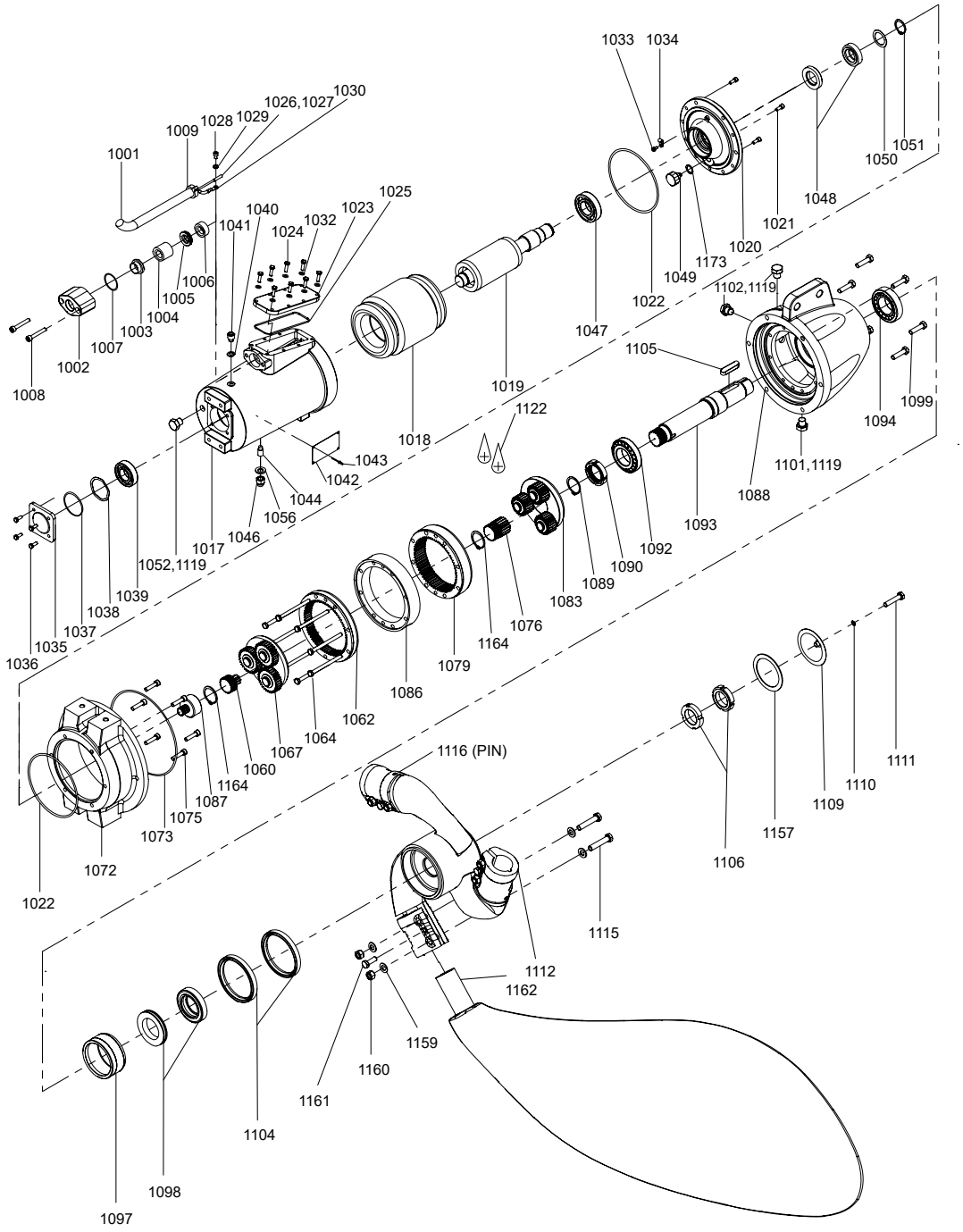
TM062483

Exploded view, SFG.xx.51.xx

Related information

7.3 Position numbers and material specification

7.2.6 SFG.xx.71.xx and SFG.xx.91.xx



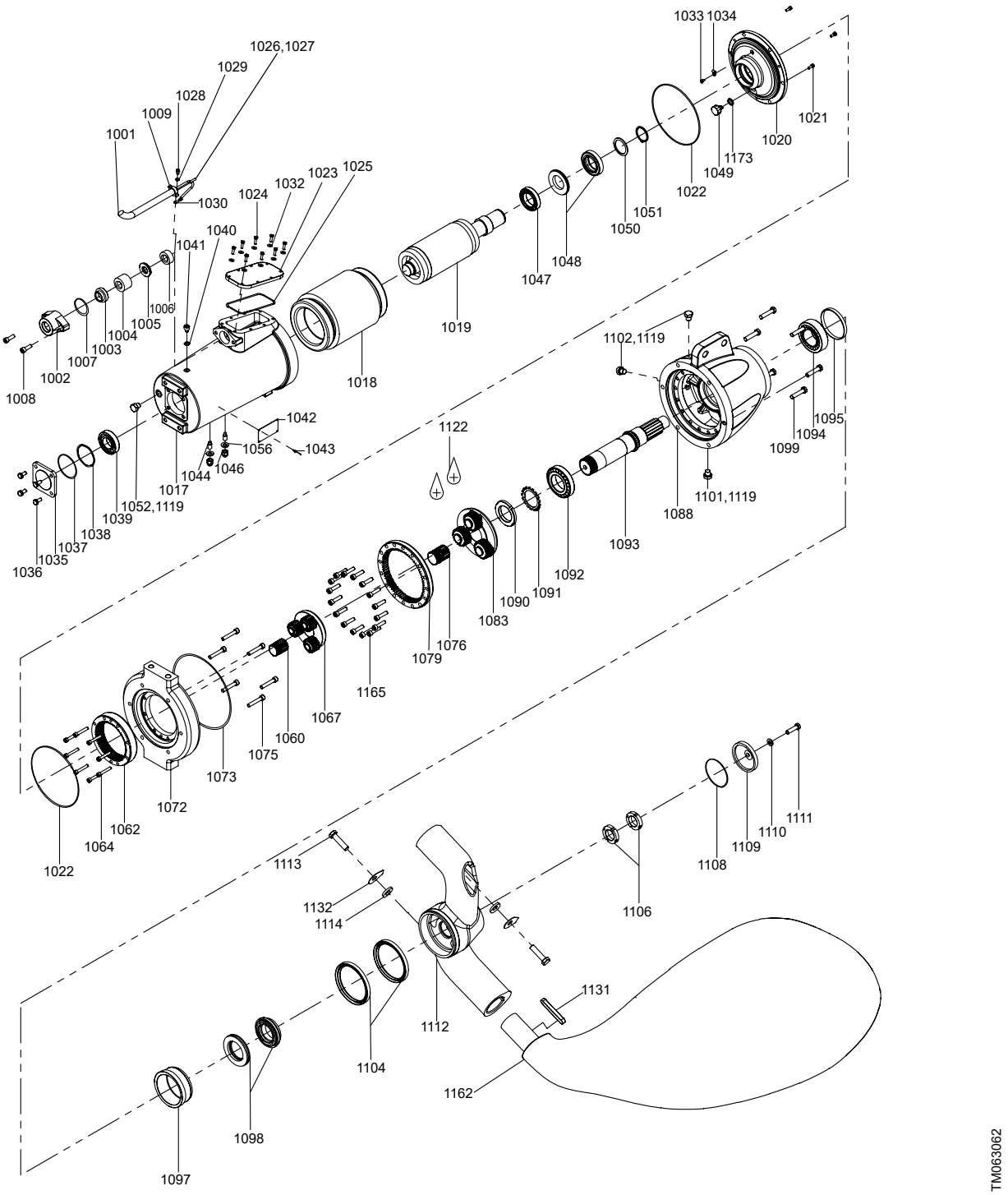
TM062485

Exploded view, SFG.xx.71.xx and SFG.xx.91.xx

Related information

7.3 Position numbers and material specification

7.2.7 SFG.xx.102.xx



TM063062

Exploded view, SFG.xx.102.xx

Related information

7.3 Position numbers and material specification

7.3 Position numbers and material specification

The position numbers in the following table refer to the figures in Exploded views.

Pos.	Component	Material
181	Cable with female plug connector	-
198	O-ring	NBR
1002	Cable flange	ASTM 48 class 35B/316L (EN-GJL250/DIN 1.4404)
1003	Cable guide	DIN 1.5-40
1004	Cable seal, large	Elastomer (70 Shore hardness)
1005	Thrust washer	DIN 1.5-40
1006	Cable seal, small	Elastomer (70 Shore hardness)
1007	O-ring	NBR
1008	Screw	316 (DIN 1.5-40/DIN 1.4401)
1009	Cable relief	Zinc-plated steel
1013	Male plug connector	PTE
1016	Circlip	304 (DIN 1.4301)
1017	Motor housing	ASTM 48 class 35B/316L (EN-GJL250/DIN 1.4404)
1018	Stator	Treated sheet metal/copper
1019	Rotor with shaft	Treated sheet metal/aluminium
1020	Motor flange	ASTM 48 class 35B (EN-GJL250/GK-AlSi11Mg
1021	Screw	Zinc-plated steel
1022	O-ring	NBR
1023	Terminal box cover	ASTM 48 class 35B (EN-GJL250)
1024	Screw	DIN 1.5-40
1025	O-ring	NBR
1026	Cable joint	Tin-plated copper, PA-insulated
1027	Cable joint	Tin-plated copper, PA-insulated
1028	Screw	Zinc-plated steel/DIN 1.4401
1029	Lock washer	Zinc-plated spring steel/316 (DIN 1.4401)
1030	Cable shoe	Tin-plated copper
1031	Connector pin	Tin-plated copper
1032	Washer	
1033	Screw	Zinc-plated steel
1034	Cable clamp	
1035	Bearing cover	ASTM 48 class 35B (EN-GJL250)
1036	Screw	DIN 1.5-40
1037	O-ring	NBR
1038	Compensation disc	DIN 1.0605
1039	Ball bearing	
1040	U-washer	Copper
1041	Screw	DIN 1.5-40
1042	Nameplate	DIN 1.5-40
1043	Rivet	DIN 1.5-40 (INOX/INOX)
1044	Set screw	Plain steel 45H / DIN 1.4401
1045	Spring washer	Zinc-plated spring steel
1046	Nut	DIN 1.5-40/316 (DIN 1.4401)
1047	Ball bearing	
1048	Mechanical shaft seal	Carbon/Alox/NBR
1049	Water-in-oil sensor	Brass/epoxy resin
1050	Shim	Bright steel
1051	Circlip	Spring steel (DIN 1.7222)
1052	Plug	Brass (DIN 2.0220)
1053	Connection for protective earthing	Nickel-plated brass
1056	Seal washer	Copper
1058	Circlip	304 (DIN 1.4301)
1060	Sun wheel	34CrMo4V (DIN 1.7220)
1062	Ring gear	34CrMo4V (DIN 1.7220)
1064	Screw	Zinc-plated steel
1065	Roller	Roller bearing steel
1066	Washer	Ck45N/34CrMo4V
1067	Planet gear, complete	Ck45N (DIN 1.1191)
1068	Planet pin	Ck45N (DIN 1.1191)
1069	Cover	Ck45N (DIN 1.1191)
1071	O-ring	NBR
1072	Housing	ASTM 48 class 35B (EN-GJL250)
1073	O-ring	NBR
1075	Screw	Zinc-plated steel
1076	Sun wheel	34CrMo4V (DIN 1.7220)
1079	Ring gear	34CrMo4V (DIN 1.7220)
1080	Moisture switch	
1081	Bracket, moisture switch	304 (DIN 1.4301)
1082	Screw	304 (DIN 1.4301)
1083	Planet carrier	Ck45N (DIN 1.1191)
1084	Screw	304 (DIN 1.4301)
1085	Lock nut	304 (DIN 1.4401)
1086	Distance piece	34CrMo4V (DIN 1.7220)
1087	Gear coupling	20MnCr5/18NiCrMo5
1088	Gear housing	ASTM 48 class 35B (EN-GJL250)
1089	Circlip	Spring steel (DIN 1.7222)
1090	Slotted nut	Bright steel
1091	Lock washer	Bright steel
1092	Tapered roller bearing	
1093	Gear shaft	16CrNi4 (DIN 1.5713)
1094	Tapered roller bearing	
1095	Intermediate ring	DIN 1.0570 (ASTM A572)
1097	Wear ring	DIN 1.5-40
1098	Mechanical shaft seal	Tungsten carbide/SIC-SIC
1098a	O-ring	NBR
1099	Screw	DIN 1.5-40
1100	O-ring	NBR
1101	Drain plug with magnet	ASTM B36 / B36M Brass (DIN 2.0220)
1102	Plug	ASTM B36 / B36M Brass (DIN 2.0220)
1103	Propeller	DIN 1.5-40/316 L (DIN 1.4404)/CF8M (1.4408/PU)

Pos.	Component	Material
1104	Lip seal	FKM/NBR
1105	Fit-in key	Ck45/1.4401
1106	Slotted nut	Bright steel
1108	O-ring	NBR
1109	Hub cover	ASTM 48 class 35B (EN-GJL250)/316 L (DIN 1.4404/POM)
1111	Countersunk screw	DIN 1.5-40/316 (DIN 1.4401)
1112	Hub	ASTM A536 60-40-18 (EN-GJS-400-15)
1113	Screw	DIN 1.5-40
1114	Washer	DIN 1.5-40
1115	Screw	316L (A4-80(DIN 1.4404))
1116	Grooved pin	Bright steel
1117	Nut	316 (DIN 1.4401)
1118	Lock washer	316 (DIN 1.4401)
1119	PTFE tape	PTFE
1120	Screw-sealing paste	
1121	Sealing paste, Loctite MR 5923	
1122	Gear oil	ISO VG 68/220
1124	End cover	CF8M (DIN 1.4408)
1125	O-ring	NBR
1126	Screw	DIN 1.4404
1131	Fit-in key	Ck45
1132	Blinds	DIN 1.5-40
1133	Screw	316 (DIN 1.4401)
1135	Mounting device	1.4408
1136	Washer	316 (DIN 1.4401)
1138	Clamping ring	316 (DIN 1.4401)
1139	Screw	316 (DIN 1.4401)
1140	Lock nut	316 (DIN 1.4401)
1141	Sealing flange	CF8M (DIN 1.4408)
1142	O-ring	NBR
1143	O-ring	NBR
1144	Countersunk screw	316 (DIN 1.4401)
1146	Wear ring	CF8M (DIN 1.4408)
1147	Countersunk screw	316 (DIN 1.4401)
1149	Screw	316 (DIN 1.4401)
1157	Gasket	NBR 70
1158	Nut	Zinc-plated steel
1159	Washer	316 (DIN 1.4401)
1160	Nut	316 (DIN 1.4401)
1161	Screw	316 (DIN 1.4401)
1162	Propeller blade	Polyurethane resin/EN-GJS-400-15
1164	Circlip	Spring steel (DIN 1.7222)
1165	Screw	Zinc-plated steel
1167	Spring pin	304 (DIN 1.4301)
1173	Seal washer	Copper
1174	Plug	ASTM B36 / B36M Brass (DIN 2.0220)
1183	Hexagon head screw	316 (DIN 1.4401)
1184	Washer	316 (DIN 1.4401)
1185	Locknut	316 (DIN 1.4401)

Related information

7.2 Exploded views

8. Positioning

8.1 Introduction

Correct positioning of mixers and flowmakers in the tanks of a wastewater treatment plant is extremely important to ensure high operational efficiency of the treatment process, the best possible equipment performance and long equipment life. The quality of even the best mixer or flowmaker can easily be thwarted by wrong positioning. The positioning rules described in this section do not cover all installation possibilities. If you have questions regarding the positioning of mixers or flowmakers at a specific site, please contact Grundfos.

When positioning mixers and flowmakers, observe the rules concerning minimum rear and sidewall clearance, and minimum distance from the tank bottom and other obstacles. Otherwise, the mixer, flowmaker or other equipment may be damaged.

8.2 Positioning mixers in general

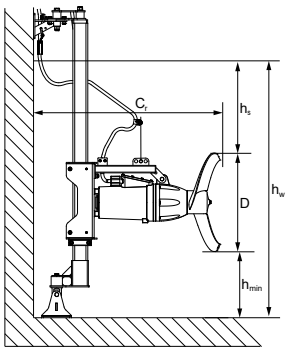
Figure Principle sketch of positioning of mixers shows the general positioning of mixers.

Explanation of variables:

- h_{min}: minimum distance between tank bottom and propeller tip
- h_s: minimum distance between propeller tip and water surface
- h_w: water depth
- D: propeller diameter
- C_r: minimum clearance between propeller tip and rear wall.

Make sure to fulfil the following requirements:

h_{min}	≥	0.5 x D
h_s	≥	1.0 x D (SMG)
	≥	1.5 x D (SMD)
h_w	≥	2.5 x D (SMG)
	≥	3.0 x D (SMD)
C_r	≥	1.4 x D



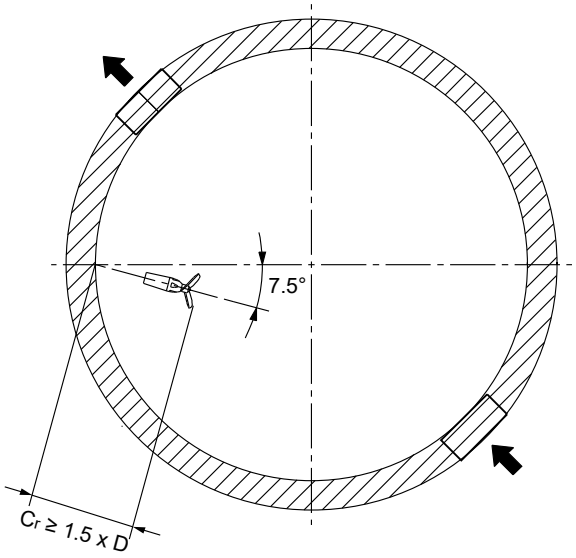
TM079887

Principle sketch of positioning of mixers

8.2.1 Positioning of one mixer in a circular tank

The positioning rules shown in figs Mixing of liquid to prevent solids from settling and Vortex circulation of liquid also apply to flowmakers.

The mixer must be positioned as shown in fig. Mixing of liquid to prevent solids from settling. This is done to ensure full effect and to create velocities that are distributed as evenly as possible. Settling is thus prevented as solids are mixed with the liquid.

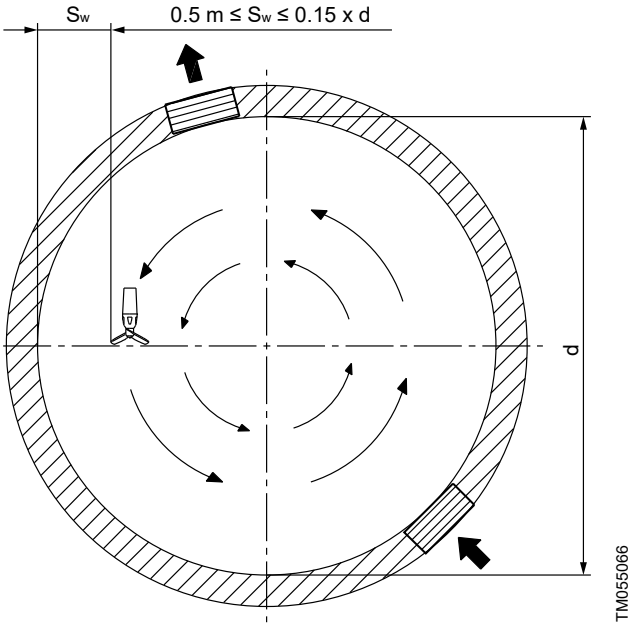


TM055065

Mixing of liquid to prevent solids from settling

If liquid circulation is required, the mixer must be positioned as shown in fig. Vortex circulation of liquid.

Be aware that possible vortex formation at the centre of the tank may cause central bottom settling.



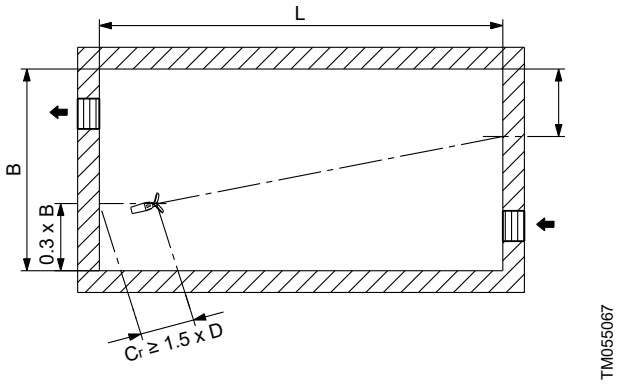
Vortex circulation of liquid

8.2.2 Positioning of one mixer in a rectangular tank

The positioning of a mixer in a rectangular tank depends on the ratio between the length (L) and width (B) of the tank ("tank ratio"). This will ensure full effect and create velocities that are distributed as evenly as possible. Settling is thus prevented as solids are mixed with the liquid.

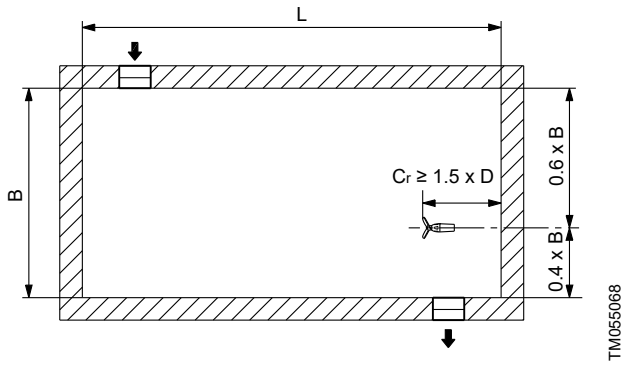
The positioning rules shown in figs Positioning of one mixer if the ratio is 1.5 < L/B ≤ 2.5 and Positioning of one mixer if the ratio is 1 < L/B ≤ 2 also apply to flowmakers.

If the tank ratio is 1.5 < L/B ≤ 2.5, the mixer must be positioned as shown in fig. Positioning of one mixer if the ratio is 1.5 < L/B ≤ 2.5.



Positioning of one mixer if the ratio is 1.5 < L/B ≤ 2.5

If the tank ratio is 1 < L/B ≤ 2, the mixer must be positioned as shown in fig. Positioning of one mixer if the ratio is 1 < L/B ≤ 2.



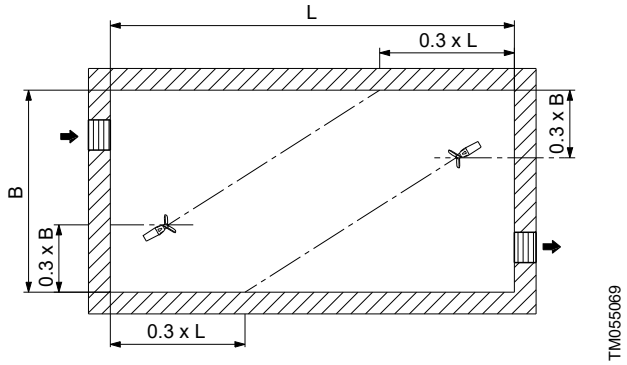
Positioning of one mixer if the ratio is 1 < L/B ≤ 2

8.2.3 Positioning of two mixers in a rectangular tank

Use this method if two mixers are required in an installation.

The positioning rules shown in fig. Positioning of two mixers if tank ratio is 1.5 < L/B ≤ 2.5 also apply to flowmakers.

If the tank ratio is 1.5 < L/B ≤ 2.5, the mixers must be positioned as shown in fig. Positioning of two mixers if tank ratio is 1.5 < L/B ≤ 2.5.

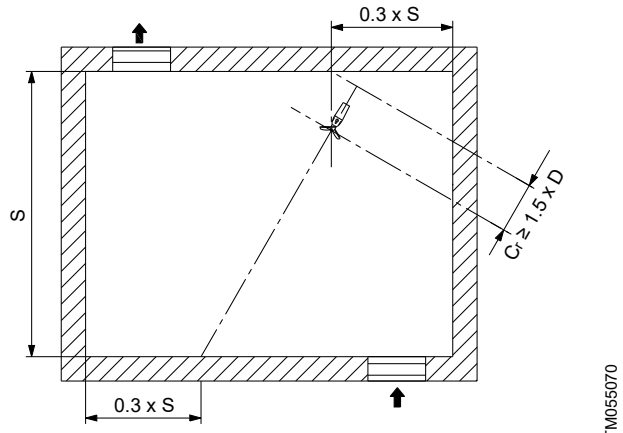


Positioning of two mixers if tank ratio is 1.5 < L/B ≤ 2.5

8.2.4 Positioning of one mixer in a square tank

In square tanks all four sides (S) have the same length.

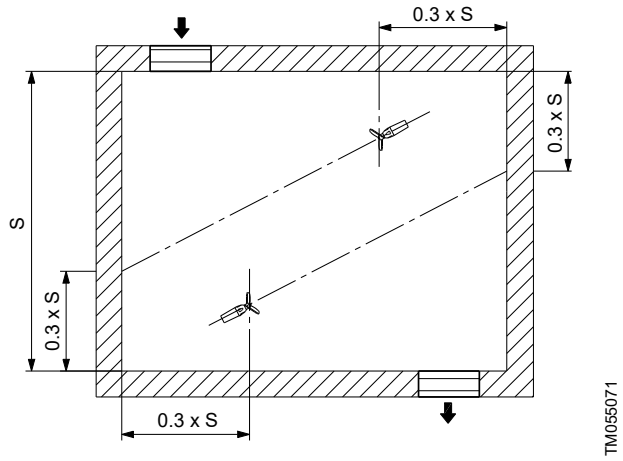
In square tanks, the mixer must be positioned as shown in fig. Positioning of one mixer in a square tank.



Positioning of one mixer in a square tank

8.2.5 Positioning of two mixers in a square tank

In square tanks, the mixers must be positioned as shown in fig. Positioning of two mixers in a square tank.



Positioning of two mixers in a square tank

8.2.6 Positioning of one mixer in a deep tank

30-30 ° adapter

30-30 ° adapters are available for the SMG mixers and are used to angle the mixer upwards or downwards from -30 to +30 ° in steps of 5 ° for SMG.

Definition of "deep tank"

Circular tank:

- $h_w \geq d$ (tank diameter)

Square tank:

- $h_w \geq S$ (tank side size)

Rectangular tank:

- $h_w \geq L$ (tank length)

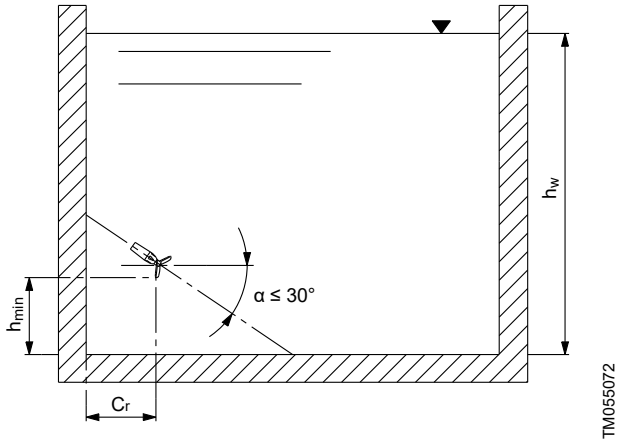
Positioning of one mixer in a deep tank

Mixer pointing downwards (fig. Mixer pointing downwards)

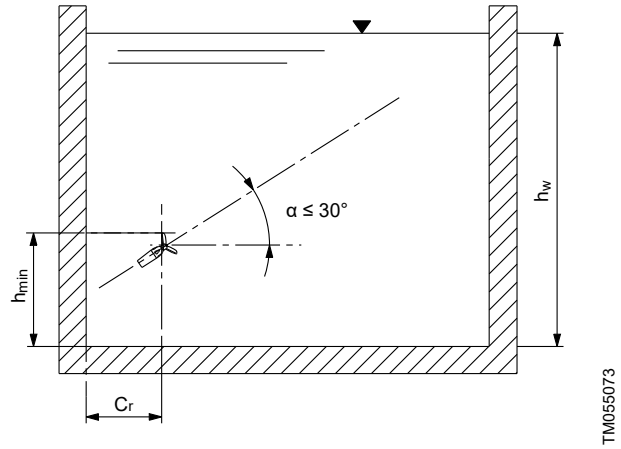
- $0.2 \times h_w \leq h_{min} \leq 0.3 \times h_w$

Mixer pointing upwards (fig. Mixer pointing upwards)

- $0.3 \times h_w \leq h_{min} \leq 0.5 \times h_w$



Mixer pointing downwards



Mixer pointing upwards

8.3 Positioning flowmakers in general

Figure Principle sketch of positioning of flowmakers shows the general positioning of flowmakers.

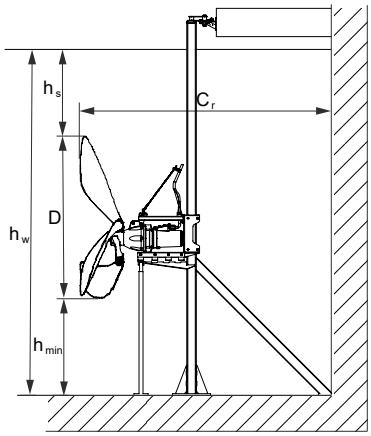
Explanation of variables

- h_{min}: minimum distance between tank bottom and propeller tip.
- h_s: minimum distance between propeller tip and water surface.
- h_w: water depth.
- D: propeller diameter.
- C_r: minimum clearance between propeller tip and rear wall.

Make sure to fulfil the following requirements:

- $h_{min} \geq 1.6$ ft (0.5 m)
- $h_s \geq 0.75 \times D$
- $h_w \geq 1.6$ ft (0.5 m) + $1.75 \times D$
- $C_r \geq 2 \times D$.

Flowmakers normally have to be mounted on a bridge or platform to obtain the required distance to the wall, C_r.



TM078836

Principle sketch of positioning of flowmakers

For positioning of flowmakers in circular, rectangular and square tanks, see the positioning requirements on mixers.

Related information

8.2.1 Positioning of one mixer in a circular tank
8.2.2 Positioning of one mixer in a rectangular tank
8.2.3 Positioning of two mixers in a rectangular tank
8.2.4 Positioning of one mixer in a square tank
8.2.5 Positioning of two mixers in a square tank

8.3.1 Positioning of two or more flowmakers in parallel in a channel

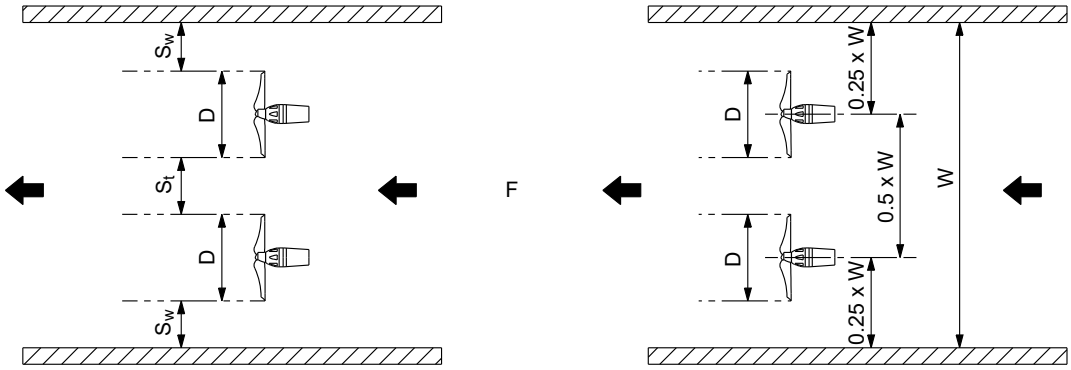
Positioning must be carried out according to fig. Positioning of two or more flowmakers in parallel in a channel.

Explanation of variables:

- S_w: minimum distance between propeller tip and channel wall
- S_t: minimum distance between contiguous propeller tips.

The following requirements must be met:

- $S_w \geq 1.6$ ft (0.5 m)
- $S_t \geq 0.5 \times D$.



Positioning of two or more flowmakers in parallel in a channel

8.3.2 Positioning of flowmakers in aerated and non-aerated racetrack tanks

For racetrack tanks with channels with or without diffusers, the requirements shown in fig. Principle sketch of positioning of flowmakers in a racetrack tank must be met when installing flowmakers. This is essential to avoid damage to the flowmakers and installation equipment caused by uneven velocities, turbulence and backflow. The flowmakers must be installed with sufficient distance from bends and obstacles in the tank.

The positioning requirements described for racetrack tanks also apply to serpentine tanks.

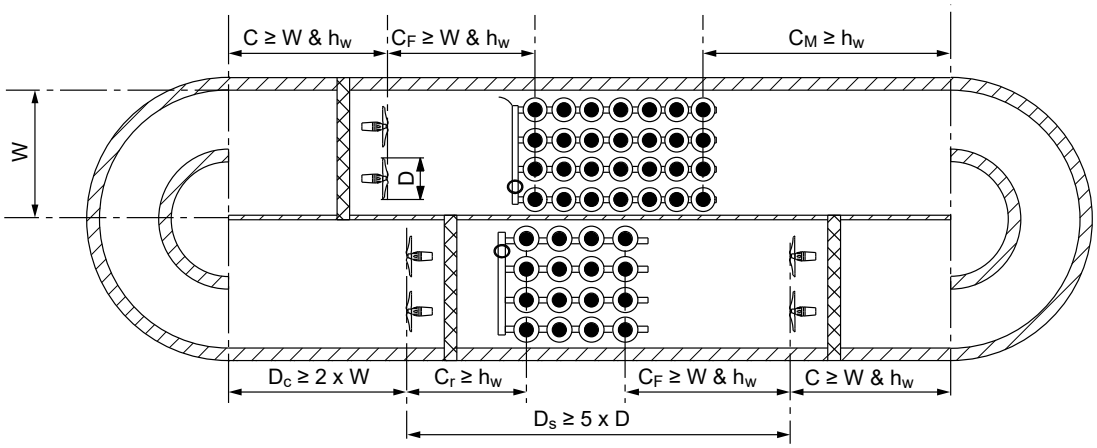
The requirements below take the flow direction into account:

- clearance requirement (C) between flowmakers and the end of the bend: $C \geq W$ or h_w (W is channel width and h_w is water depth, the larger to be used)
- clearance (C_F) between flowmakers and the first row of diffusers: $C_F \geq W$ or h_w (the larger to be used)
- minimum applicable distance (C_M) between the last row of diffusers and the beginning of the following bend: $C_M \geq h_w$
- clearance requirement (C_r) between flowmakers and the last row of diffusers, if any: $C_r \geq h_w$.

Explanation of variables:

- D: propeller diameter
- D_s: minimum front clearance between propeller tip and the next propeller tip if there are no other obstacles between the propellers
- D_c: minimum clearance between propeller and bend
- h_w: channel depth.

D	propeller diameter
D_s	minimum front clearance between propeller tip and the next propeller tip if there are no other obstacles between the propellers
D_c	minimum clearance between propeller and bend
h_w	channel depth



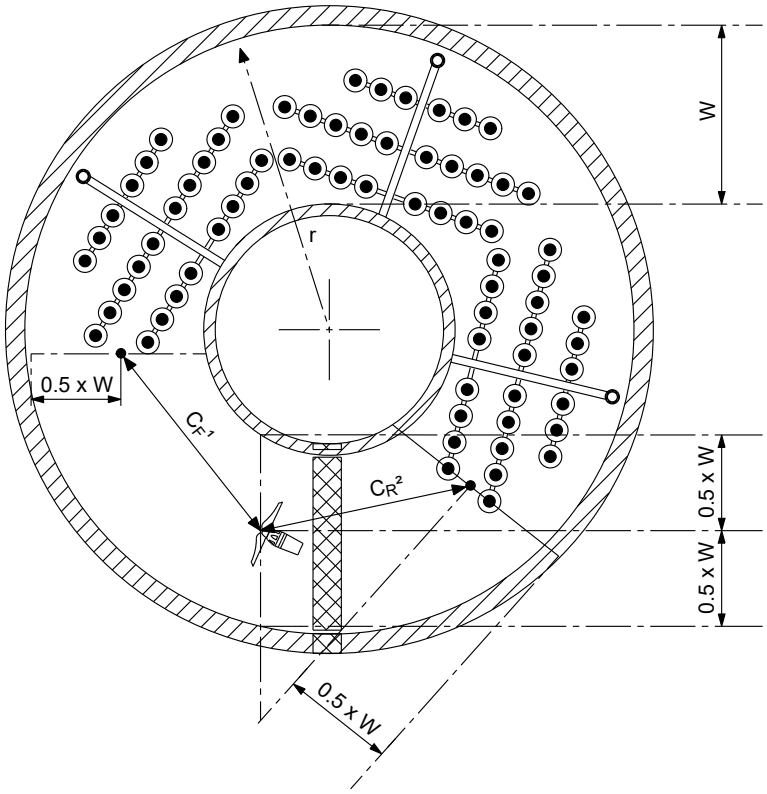
Principle sketch of positioning of flowmakers in a racetrack tank

8.3.3 Positioning of flowmakers in aerated and non-aerated ring-channel tanks

In a ring-channel tank with or without diffusers, the requirements shown in figs One flowmaker in a ring-channel tank and Two flowmakers in a ring-channel tank must be met when installing flowmakers. The channel width and ring curvature must be taken into account when positioning the flowmaker to obtain satisfactory development of the flow and minimise velocity losses due to impact with the channel walls.

The requirements below take the flow direction into account:

- Clearance (C_F) of the propeller closest to the first row of diffusers, measured as shown in fig. One flowmaker in a ring-channel tank: $C_F \geq W$ or h_w (W is channel width and h_w is water depth, the larger to be used.)
- Clearance requirement (C_R) from the propeller closest to the last row of diffusers: $C_R \geq h_w$.
- If only one flowmaker is to be installed (fig. One flowmaker in a ring-channel tank), it must be installed at the centre of the tank width (0.5 x W). The centre line must be inclined towards the centre of the tank at an angle of between 7.5 ° and 22.5 °.



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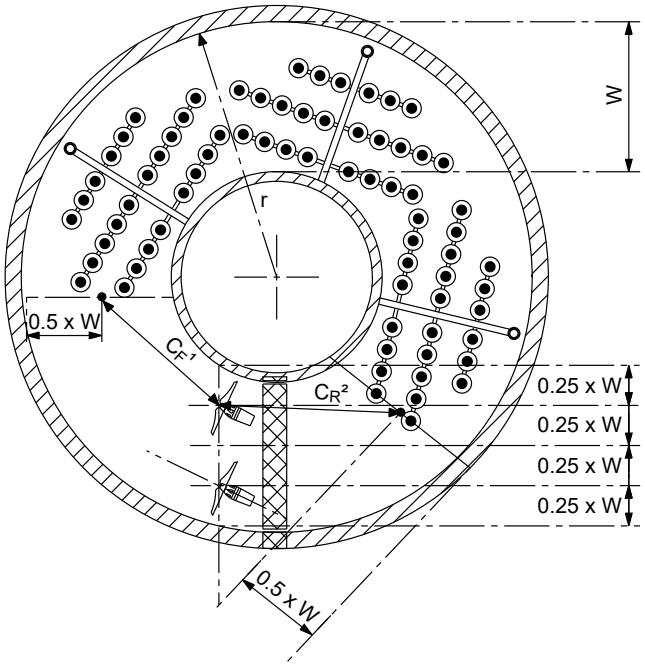
One flowmaker in a ring-channel tank

C_F1: $C_F \geq W$ and h_W

C_R2: $C_R \geq h_W$

- If two flowmakers are to be installed (fig. Two flowmakers in a ring-channel tank), the tank width must be divided in two, and each flowmaker must be installed at the center of each half of the width (0.25 x W). The center line must be inclined towards the center of the tank at an angle of between 7.5 ° and 22.5 °.



TM055077

Two flowmakers in a ring-channel tank

C_F[1]: $C_F \geq W$ and h_W

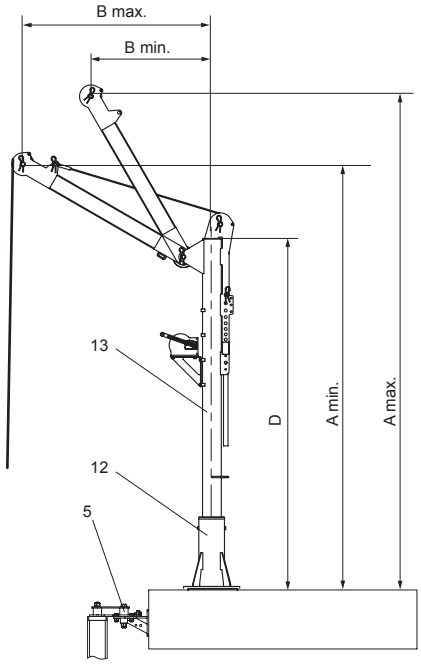
C_R[2]: $C_R \geq h_W$

9. Installation

9.1 Crane

In order to select the right size of crane for a specific mixer or flowmaker, see Selection guide for accessories. The crane can easily be lifted off the crane foot (pos. 12) if it needs to be used at another mixer or flowmaker installation.

The position numbers in the below drawing refer to the List of accessories.



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Crane

Crane type	A min. [in (mm)]	A max. [in (mm)]	B min. [in (mm)]	B max. [in (mm)]	D [in (mm)]
S	88.8 (2255)	114.6 (2911)	15.9 (405)	39.6 (1005)	83.9 (2130)
M	111.7 (2838)	138.6 (3521)	25.7 (654)	58.0 (1474)	90.0 (2286)
L	111.7 (2838)	138.6 (3521)	25.7 (654)	58.0 (1474)	89.7 (2280)

Crane type	S	M	L
Wire	∅5/32" (4 mm)	∅1/4" (6 mm)	∅9/32" (7 mm)
Type of winch	6 AF	8 AF	12 AF
Maximum load [lb (kg)]	220 (100)	550 (250)	1100 (500)
Total weight [lb (kg)]	77 (35)	135 (61.2)	169 (76.5)

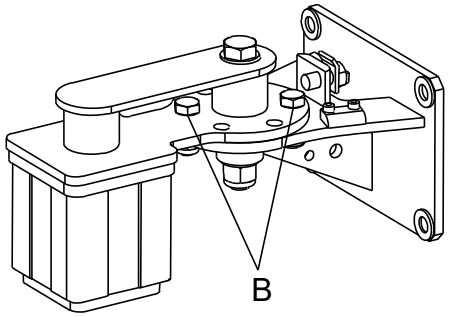
Related information

9.3 Installation drawings

11.2 Selection guide for accessories

9.2 Top fixation bracket

It is possible to adjust the angle of the top fixation bracket in steps of 7.5 ° by means of the two screws (pos. B).



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Top fixation bracket

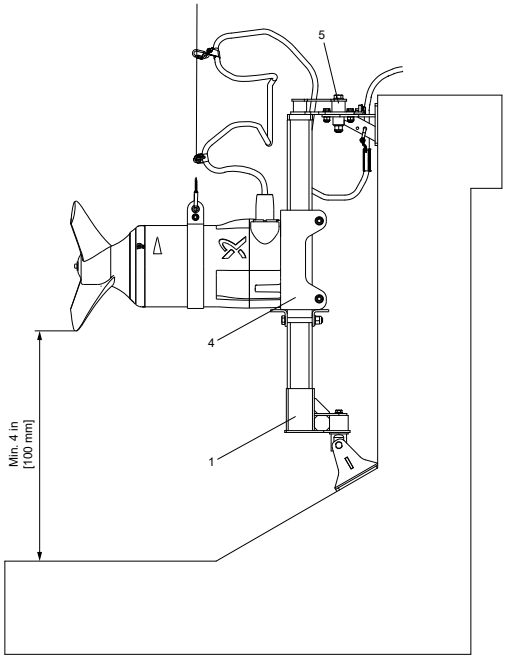
9.3 Installation drawings

SMD

The SMD mixers are suitable for the following installation methods:

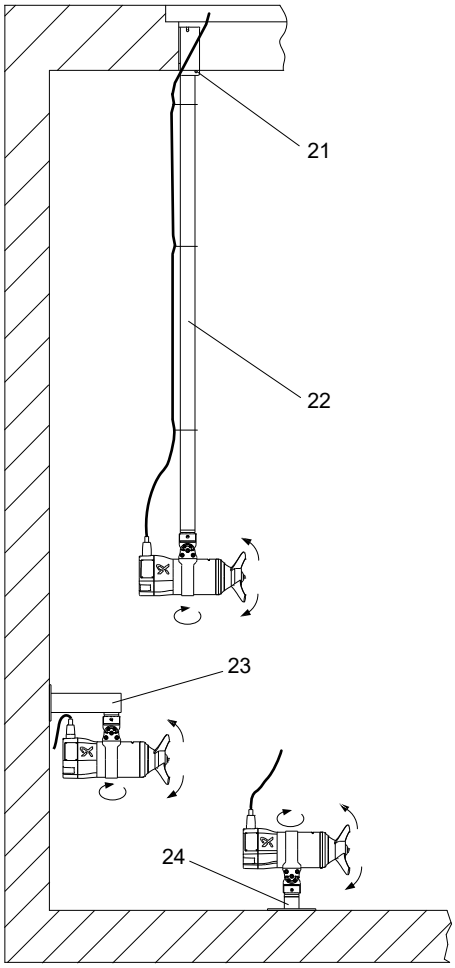
- column profile mounting
- suspended mounting
- wall mounting
- floor mounting.

The position numbers refer to the List of accessories.



TM082708

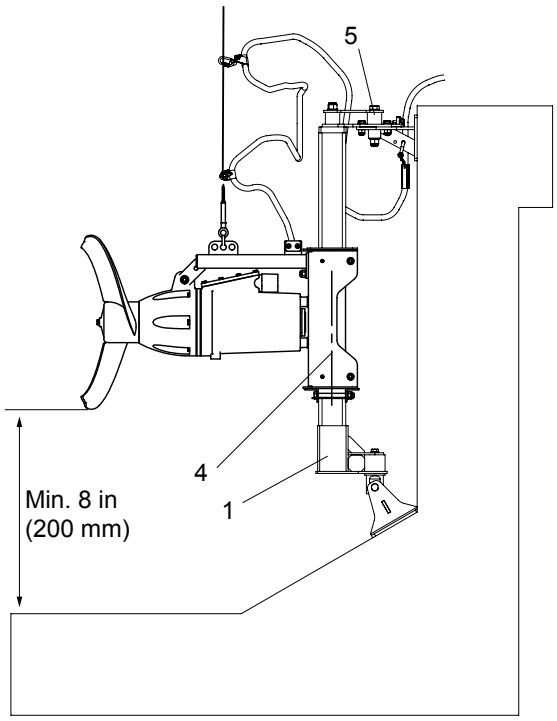
Column profile mounting



TM079892

Suspended mounting, wall mounting and floor mounting

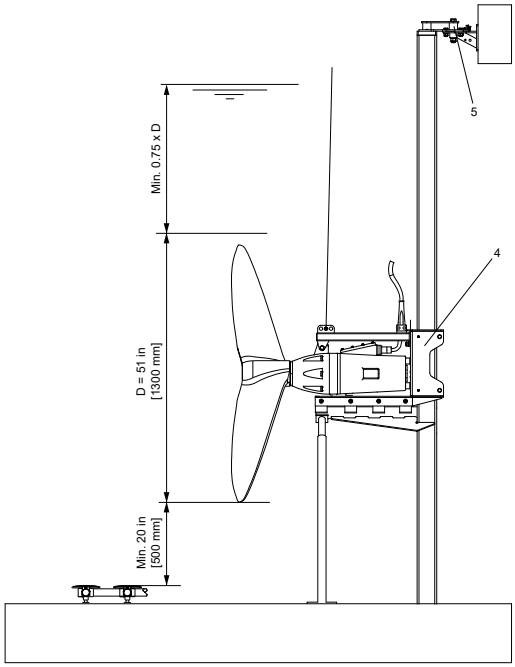
SMG



TM050424

Installation of SMG mixers

SFG



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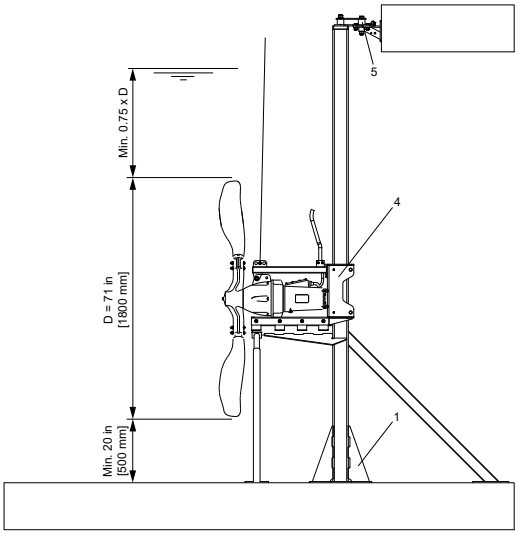
SFG.xx.51.xx



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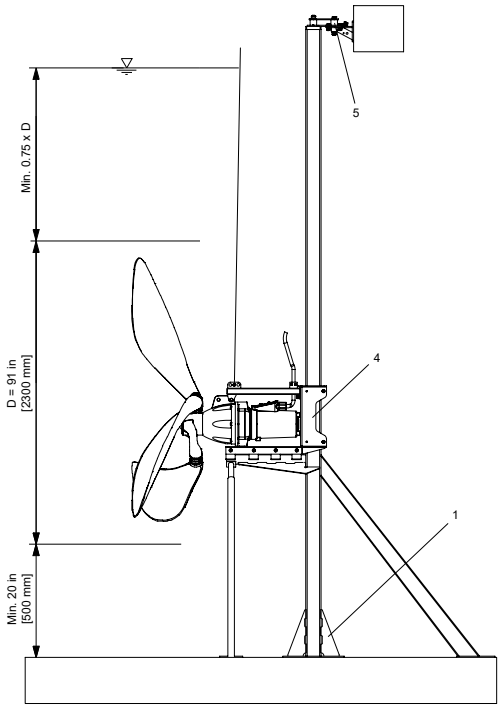

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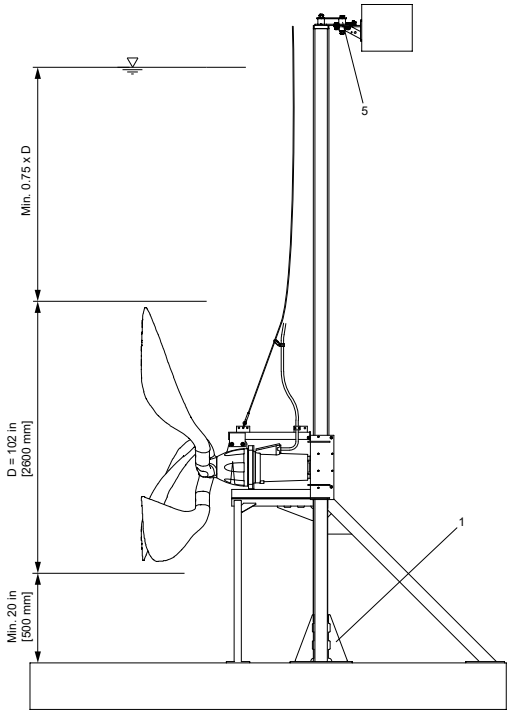
SFG.xx.91.xx



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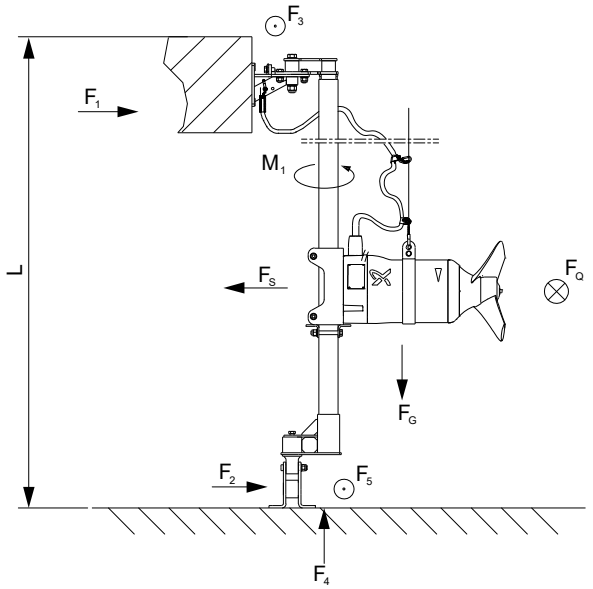
SFG.xx.102.xx

Related information

11.1 Accessories

9.4 Mechanical loads

9.4.1 SMD



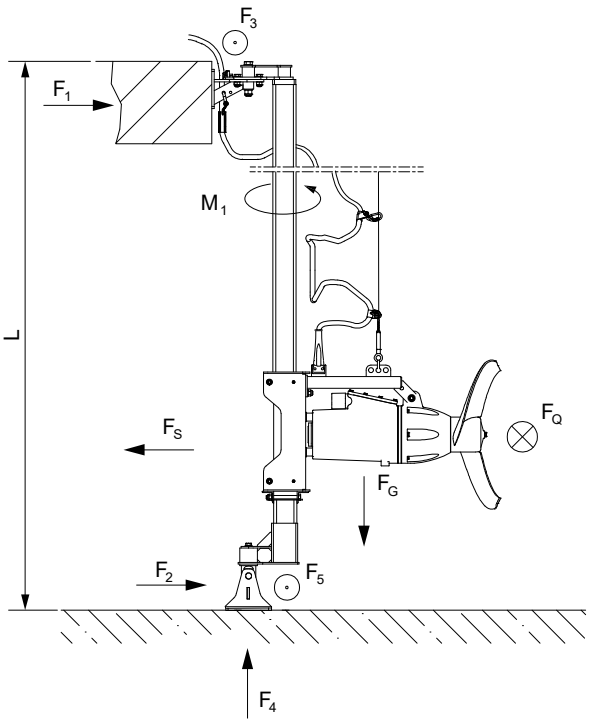
Mechanical load of mixers

Symbol	Description
L	Total height
F_S	Thrust of the propeller
F_Q	Lateral force
F_G	Gravitational force
F1 ... F5	Reactive force of the installation
M_1	Torque on the column profile

Mixer	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]	M_1 [lbf (Nm)]
SMD.13.7.1775.	13 (4)	35 (160)	8 (40)	83 (373)	-7 (-32)	43 (192)	0.5 (2)	132 (588)	8 (38)	17 (24)
	20 (6)				-5 (-23)	41 (183)	0.2 (1)	156 (696)	8 (39)	
	26 (8)				-4 (-19)	40 (179)	0.2 (1)	180 (804)	8 (39)	
	33 (10)				-3 (-16)	39 (176)	0.2 (1)	204 (911)	8 (39)	
SMD.17.8.1765.	13 (4)	53 (240)	13 (60)	83 (373)	-5 (-26)	59 (266)	0.7 (3)	132 (588)	12 (57)	26 (36)
	20 (6)				-4 (-19)	58 (259)	0.5 (2)	156 (696)	13 (58)	
	26 (8)				-3 (-16)	57 (256)	0.5 (2)	180 (804)	13 (58)	
	33 (10)				-3 (-14)	57 (254)	0.2 (1)	204 (911)	13 (59)	
SMD.23.10.1750.	13 (4)	76 (340)	19 (85)	83 (373)	-4 (-18)	80 (358)	1.0 (5)	132 (588)	17 (80)	38 (52)
	20 (6)				-3 (-14)	79 (354)	0.9 (4)	156 (696)	18 (81)	
	26 (8)				-2 (-12)	79 (352)	0.7 (3)	180 (804)	18 (82)	
	33 (10)				-2 (-11)	78 (351)	0.5 (2)	204 (911)	18 (83)	
SMD.30.11.1182.	13 (4)	103 (460)	25 (115)	147 (657)	-7 (-33)	110 (493)	2 (8)	196 (873)	24 (107)	57 (78)
	20 (6)				-5 (-24)	108 (484)	1 (6)	220 (980)	24 (109)	
	26 (8)				-4 (-19)	107 (479)	0.9 (4)	244 (1088)	24 (111)	
	33 (10)				-3 (-17)	107 (477)	0.7 (3)	268 (1196)	25 (112)	

Mixer	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]	M_1 [lbf (Nm)]
SMD.38.13.1178.	13 (4)	137 (610)	34 (153)	147 (657)	-3 (-17)	140 (627)	3 (12)	196 (873)	31 (140)	75 (103)
	20 (6)				-3 (-14)	140 (624)	2 (8)	220 (980)	32 (144)	
	26 (8)				-2 (-12)	139 (622)	1 (6)	244 (1088)	32 (146)	
	33 (10)				-2 (-11)	139 (621)	1 (5)	268 (1196)	33 (148)	
SMD.47.15.1170.	13 (4)	179 (800)	44 (200)	147 (657)	2 (8)	178 (792)	4 (19)	196 (873)	40 (182)	99 (135)
	20 (6)				0.7 (3)	179 (797)	3 (12)	220 (980)	42 (188)	
	26 (8)				0.2 (1)	179 (799)	2 (9)	244 (1088)	42 (191)	
	33 (10)				-0.2 (-1)	180 (801)	2 (7)	268 (1196)	43 (193)	

9.4.2 SMG



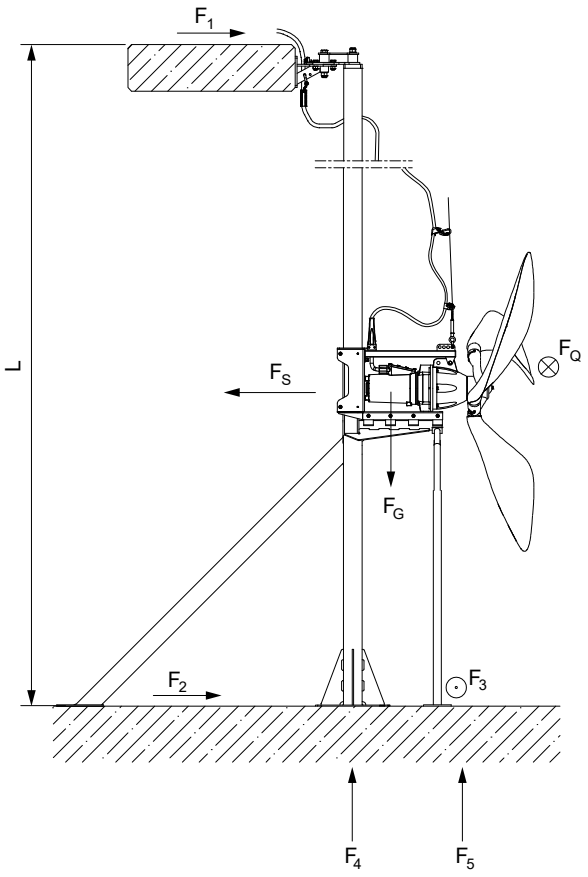
Mechanical load of mixers

Symbol	Description
L	Total height
F_S	Thrust of the propeller
F_Q	Lateral force
F_G	Gravitational force
F1 ... F5	Reactive force of the installation
M_1	Torque on the column profile

Mixer	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]	M_1 [lbf (Nm)]
SMG.12.22.276.	13 (4)	80 (360)	20 (90)	174 (775)	-10 (-46)	91 (406)	3 (12)	240 (1070)	17 (78)	59 (81)
	20 (6)				-7 (-34)	88 (394)	2 (8)	273 (1218)	18 (82)	
	26 (8)				-6 (-27)	87 (387)	1 (6)	307 (1366)	18 (84)	
	33 (10)				-5 (-24)	86 (384)	1 (5)	340 (1514)	19 (85)	
SMG.16.25.275.	13 (4)	116 (520)	29 (130)	174 (775)	-3 (-15)	118 (525)	5 (20)	240 (1070)	24 (107)	86 (117)
	20 (6)				-2 (-13)	117 (523)	3 (13)	273 (1218)	25 (114)	
	26 (8)				-2 (-12)	117 (522)	2 (10)	307 (1366)	26 (117)	
	33 (10)				-2 (-11)	117 (521)	2 (8)	340 (1514)	26 (119)	
SMG.22.25.273.	13 (4)	150 (670)	37 (168)	174 (775)	1 (8)	145 (647)	6 (26)	240 (1070)	31 (138)	110 (150)
	20 (6)				-0.5 (2)	146 (653)	4 (17)	273 (1218)	33 (147)	
	26 (8)				-0.2 (-1)	147 (656)	3 (13)	307 (1366)	33 (151)	
	33 (10)				-0.5 (-2)	147 (657)	2 (10)	340 (1514)	34 (153)	

Mixer	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]	M_1 [lbf (Nm)]
SMG.27.28.264.	13 (4)	196 (870)	49 (218)	190 (844)	11 (49)	181 (806)	9 (38)	256 (1139)	40 (176)	146 (198)
	20 (6)				7 (30)	185 (825)	6 (25)	289 (1287)	42 (188)	
	26 (8)				4 (20)	188 (835)	4 (19)	323 (1435)	44 (195)	
	33 (10)				3 (14)	189 (841)	3 (15)	356 (1582)	45 (199)	
SMG.34.28.263.	13 (4)	229 (1020)	57 (255)	190 (844)	17 (75)	208 (925)	10 (44)	256 (1139)	46 (206)	170 (231)
	20 (6)				11 (47)	214 (953)	7 (30)	289 (1287)	49 (220)	
	26 (8)				7 (33)	217 (967)	5 (22)	323 (1435)	51 (228)	
	33 (10)				5 (24)	219 (976)	4 (18)	356 (1582)	52 (232)	
SMG.44.28.315.	13 (4)	279 (1240)	70 (310)	190 (844)	25 (112)	247 (1098)	12 (54)	256 (1139)	56 (249)	207 (280)
	20 (6)				16 (72)	256 (1138)	8 (36)	289 (1287)	60 (267)	
	26 (8)				11 (51)	261 (1159)	6 (27)	323 (1435)	62 (276)	
	33 (10)				9 (39)	263 (1171)	5 (21)	356 (1582)	63 (281)	
SMG.55.28.314.	13 (4)	326 (1450)	82 (363)	190 (844)	33 (147)	284 (1263)	14 (63)	256 (1139)	65 (290)	240 (326)
	20 (6)				21 (95)	296 (1315)	9 (42)	289 (1287)	70 (311)	
	26 (8)				16 (69)	301 (1341)	7 (31)	323 (1435)	72 (321)	
	33 (10)				12 (53)	305 (1357)	6 (25)	356 (1582)	74 (327)	
SMG.75.34.264.	13 (4)	429 (1910)	107 (478)	384 (1707)	34 (153)	390 (1737)	23 (102)	468 (2081)	83 (371)	413 (560)
	20 (6)				22 (98)	403 (1792)	15 (68)	510 (2268)	91 (405)	
	26 (8)				15 (66)	410 (1824)	11 (51)	602 (2680)	95 (422)	
	33 (10)				11 (50)	414 (1840)	9 (41)	657 (2923)	97 (432)	
SMG.95.34.263.	13 (4)	508 (2260)	127 (565)	384 (1707)	51 (226)	451 (2004)	27 (120)	468 (2081)	98 (438)	488 (661)
	20 (6)				33 (146)	469 (2084)	18 (80)	510 (2268)	107 (478)	
	26 (8)				23 (103)	478 (2127)	13 (60)	602 (2680)	112 (498)	
	33 (10)				18 (79)	484 (2151)	11 (48)	657 (2923)	115 (510)	
SMG.130.34.318.	13 (4)	623 (2770)	156 (693)	419 (1864)	70 (313)	546 (2427)	33 (147)	503 (2238)	121 (538)	599 (812)
	20 (6)				46 (205)	570 (2535)	22 (98)	545 (2425)	132 (587)	
	26 (8)				33 (146)	583 (2594)	17 (74)	638 (2837)	137 (611)	
	33 (10)				26 (114)	590 (2626)	13 (59)	692 (3080)	141 (626)	
SMG.160.34.317.	13 (4)	737 (3280)	184 (820)	419 (1864)	94 (419)	632 (2811)	39 (174)	503 (2238)	143 (634)	706 (957)
	20 (6)				62 (275)	664 (2955)	26 (116)	545 (2425)	156 (692)	
	26 (8)				45 (199)	681 (3031)	20 (87)	638 (2837)	162 (721)	
	33 (10)				35 (156)	691 (3074)	16 (69)	692 (3080)	166 (738)	
SMG.220.35.345.	13 (4)	906 (4030)	227 (1008)	618 (2747)	107 (475)	792 (3525)	51 (225)	727 (3233)	174 (775)	911 (1235)
	20 (6)				70 (311)	829 (3689)	34 (150)	782 (3477)	191 (850)	
	26 (8)				51 (225)	849 (3775)	25 (113)	889 (3954)	200 (888)	
	33 (10)				40 (176)	860 (3824)	20 (90)	957 (4256)	205 (910)	

9.4.3 Flowmakers



TM062775

Mechanical loads of flowmakers

Symbol	Description
L	Total height
F_S	Thrust of the propeller
F_Q	Lateral force
F_G	Gravitational force
F1 ... F5	Reactive force of the installation

Flowmaker	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]
SFG.10.51.50.	13 (4)	149 (665)	37 (166)	249 (1109)	48 (212)	102 (453)	37 (166)	257 (1143)	102 (453)
	20 (6)				32 (141)	118 (524)		312 (1386)	
	26 (8)				24 (106)	126 (559)		366 (1629)	
	33 (10)				19 (85)	130 (580)		421 (1872)	
SFG.14.51.57.	13 (4)	198 (880)	49 (220)	249 (1109)	70 (312)	128 (568)	49 (220)	224 (996)	135 (599)
	20 (6)				47 (208)	151 (672)		279 (1240)	
	26 (8)				35 (156)	163 (724)		333 (1483)	
	33 (10)				28 (125)	170 (755)		388 (1726)	
SFG.19.51.64.	13 (4)	250 (1110)	62 (278)	249 (1109)	94 (420)	155 (690)	62 (278)	189 (840)	170 (755)
	20 (6)				63 (280)	187 (830)		243 (1083)	
	26 (8)				47 (210)	202 (900)		298 (1326)	
	33 (10)				38 (168)	212 (942)		353 (1570)	

Flowmaker	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]
SFG.23.51.68.	13 (4)	283 (1260)	71 (315)	260 (1158)	109 (485)	174 (775)	71 (315)	177 (787)	193 (858)
	20 (6)				73 (323)	211 (937)		232 (1030)	
	26 (8)				55 (243)	229 (1017)		286 (1273)	
	33 (10)				44 (194)	240 (1066)		341 (1517)	
SFG.30.51.74.	13 (4)	335 (1490)	84 (373)	260 (1158)	133 (592)	202 (898)	84 (373)	142 (630)	228 (1014)
	20 (6)				89 (395)	246 (1095)		196 (873)	
	26 (8)				67 (296)	268 (1194)		251 (1117)	
	33 (10)				53 (237)	282 (1253)		306 (1360)	
SFG.39.51.82.	13 (4)	405 (1800)	101 (450)	260 (1158)	166 (737)	239 (1063)	101 (450)	94 (419)	275 (1225)
	20 (6)				110 (491)	294 (1309)		149 (662)	
	26 (8)				83 (368)	322 (1432)		204 (906)	
	33 (10)				66 (295)	338 (1505)		258 (1149)	
SFG.44.51.85.	13 (4)	441 (1960)	110 (490)	260 (1158)	183 (812)	258 (1148)	110 (490)	70 (310)	300 (1334)
	20 (6)				122 (541)	319 (1419)		125 (554)	
	26 (8)				91 (406)	349 (1554)		179 (797)	
	33 (10)				73 (325)	368 (1635)		234 (1040)	
SFG.48.51.88.	13 (4)	477 (2120)	119 (530)	260 (1158)	199 (886)	277 (1234)	119 (530)	45 (201)	324 (1443)
	20 (6)				133 (591)	344 (1529)		100 (445)	
	26 (8)				100 (443)	377 (1677)		155 (688)	
	33 (10)				80 (354)	397 (1766)		209 (931)	
SFG.10.71.32.	13 (4)	169 (750)	42 (188)	430 (1913)	30 (132)	139 (618)	42 (188)	407 (1809)	133 (590)
	20 (6)				20 (88)	149 (662)		462 (2053)	
	26 (8)				15 (66)	154 (684)		516 (2296)	
	33 (10)				12 (53)	157 (697)		571 (2539)	
SFG.14.71.36.	13 (4)	216 (960)	54 (240)	430 (1913)	55 (245)	161 (715)	54 (240)	370 (1644)	170 (756)
	20 (6)				37 (163)	179 (797)		424 (1887)	
	26 (8)				27 (122)	188 (838)		479 (2131)	
	33 (10)				22 (98)	194 (862)		534 (2374)	
SFG.19.71.41.	13 (4)	270 (1200)	67 (300)	430 (1913)	84 (374)	186 (826)	67 (300)	327 (1455)	212 (944)
	20 (6)				56 (250)	214 (950)		382 (1698)	
	26 (8)				42 (187)	228 (1013)		437 (1942)	
	33 (10)				34 (150)	236 (1050)		491 (2185)	
SFG.23.71.43.	13 (4)	297 (1320)	74 (330)	441 (1962)	97 (432)	200 (888)	74 (330)	317 (1410)	234 (1039)
	20 (6)				65 (288)	232 (1032)		372 (1653)	
	26 (8)				49 (216)	248 (1104)		426 (1896)	
	33 (10)				39 (173)	258 (1147)		481 (2140)	
SFG.30.71.48.	13 (4)	375 (1670)	94 (418)	441 (1962)	140 (621)	236 (1049)	94 (418)	255 (1134)	295 (1314)
	20 (6)				93 (414)	282 (1256)		310 (1378)	
	26 (8)				70 (310)	306 (1360)		364 (1621)	
	33 (10)				56 (248)	320 (1422)		419 (1864)	
SFG.39.71.53.	13 (4)	454 (2020)	114 (505)	441 (1962)	182 (809)	272 (1211)	114 (505)	193 (859)	357 (1590)
	20 (6)				121 (540)	333 (1480)		248 (1102)	
	26 (8)				91 (405)	363 (1615)		302 (1345)	
	33 (10)				73 (324)	381 (1696)		357 (1589)	
SFG.47.71.53.	13 (4)	526 (2340)	132 (585)	492 (2188)	214 (950)	312 (1390)	132 (585)	187 (833)	414 (1842)
	20 (6)				142 (633)	384 (1707)		242 (1076)	
	26 (8)				107 (475)	419 (1865)		297 (1319)	
	33 (10)				85 (380)	441 (1960)		351 (1562)	

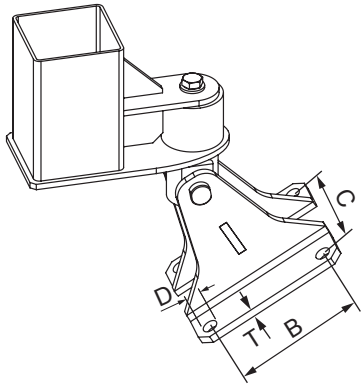
Flowmaker	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]
SFG.55.71.54.	13 (4)	555 (2470)	139 (618)	492 (2188)	229 (1020)	326 (1450)	139 (618)	164 (730)	437 (1944)
	20 (6)				153 (680)	402 (1790)		219 (974)	
	26 (8)				115 (510)	441 (1960)		274 (1217)	
	33 (10)				92 (408)	464 (2062)		328 (1460)	
SFG.10.91.26.	13 (4)	232 (1030)	58 (258)	441 (1962)	80 (357)	151 (673)	58 (258)	341 (1519)	209 (930)
	20 (6)				54 (238)	178 (792)		396 (1762)	
	26 (8)				40 (179)	191 (851)		451 (2005)	
	33 (10)				32 (143)	199 (887)		506 (2249)	
SFG.12.91.28.	13 (4)	272 (1210)	68 (303)	441 (1962)	105 (469)	167 (741)	68 (303)	305 (1356)	245 (1092)
	20 (6)				70 (312)	202 (898)		360 (1600)	
	26 (8)				53 (234)	219 (976)		414 (1843)	
	33 (10)				42 (187)	230 (1023)		469 (2086)	
SFG.16.91.31.	13 (4)	330 (1470)	83 (368)	441 (1962)	141 (629)	189 (841)	83 (368)	252 (1121)	298 (1327)
	20 (6)				94 (420)	236 (1050)		307 (1365)	
	26 (8)				71 (315)	260 (1155)		361 (1608)	
	33 (10)				57 (252)	274 (1218)		416 (1851)	
SFG.22.91.35.	13 (4)	414 (1840)	103 (460)	441 (1962)	193 (858)	221 (982)	103 (460)	177 (787)	373 (1661)
	20 (6)				129 (572)	285 (1268)		232 (1031)	
	26 (8)				96 (429)	317 (1411)		286 (1274)	
	33 (10)				77 (343)	337 (1497)		341 (1517)	
SFG.26.91.37.	13 (4)	459 (2040)	115 (510)	452 (2011)	219 (975)	239 (1065)	115 (510)	147 (656)	414 (1842)
	20 (6)				146 (650)	312 (1390)		202 (899)	
	26 (8)				109 (487)	349 (1553)		257 (1143)	
	33 (10)				88 (390)	371 (1650)		312 (1386)	
SFG.30.91.39.	13 (4)	517 (2300)	129 (575)	452 (2011)	255 (1136)	262 (1164)	129 (575)	95 (421)	467 (2076)
	20 (6)				170 (757)	347 (1543)		149 (665)	
	26 (8)				128 (568)	389 (1732)		204 (908)	
	33 (10)				102 (454)	415 (1846)		259 (1151)	
SFG.34.91.39.	13 (4)	551 (2450)	138 (613)	507 (2256)	268 (1194)	282 (1256)	138 (613)	119 (531)	497 (2212)
	20 (6)				179 (796)	372 (1654)		174 (774)	
	26 (8)				134 (597)	417 (1853)		229 (1018)	
	33 (10)				107 (477)	444 (1973)		283 (1261)	
SFG.43.91.42.	13 (4)	647 (2880)	162 (720)	507 (2256)	328 (1459)	319 (1421)	162 (720)	32 (143)	585 (2600)
	20 (6)				219 (973)	429 (1907)		87 (386)	
	26 (8)				164 (730)	483 (2150)		141 (629)	
	33 (10)				131 (584)	516 (2296)		196 (873)	
SFG.55.91.46.	13 (4)	782 (3480)	196 (870)	507 (2256)	412 (1831)	371 (1649)	196 (870)	-90 (-399)	706 (3142)
	20 (6)				274 (1220)	508 (2260)		-35 (-156)	
	26 (8)				206 (915)	577 (2565)		20 (88)	
	33 (10)				165 (732)	618 (2748)		74 (331)	
SFG.30.102.29.	20 (6)	569 (2530)	142 (633)	794 (3532)	177 (786)	392 (1744)	142 (633)	488 (2170)	553 (2460)
	26 (8)				132 (589)	436 (1941)		570 (2536)	
	33 (10)				106 (471)	463 (2059)		652 (2902)	
SFG.43.102.34.	20 (6)	760 (3380)	190 (845)	794 (3532)	177 (786)	392 (1744)	142 (633)	488 (2170)	739 (3286)
	26 (8)				199 (884)	561 (2496)		384 (1710)	
	33 (10)				159 (707)	601 (2673)		467 (2076)	
SFG.48.102.35.	20 (6)	816 (3630)	204 (908)	794 (3532)	291 (1294)	525 (2336)	204 (908)	248 (1101)	793 (3529)
	26 (8)				218 (970)	598 (2660)		330 (1467)	
	33 (10)				174 (776)	642 (2854)		412 (1833)	

Flowmaker	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]
SFG.60.102.38.	20 (6)	960 (4270)	240 (1068)	794 (3532)	357 (1589)	603 (2681)	240 (1068)	108 (479)	933 (4151)
	26 (8)				268 (1192)	692 (3078)		190 (845)	
	33 (10)				214 (954)	745 (3316)		272 (1211)	
SFG.67.102.35.	20 (6)	1043 (4640)	261 (1160)	915 (4071)	383 (1702)	660 (2938)	261 (1160)	148 (658)	1014 (4511)
	26 (8)				287 (1276)	756 (3364)		230 (1024)	
	33 (10)				230 (1021)	814 (3619)		313 (1391)	
SFG.82.102.38.	20 (6)	1227 (5460)	307 (1365)	915 (4071)	471 (2096)	756 (3364)	307 (1365)	-48 (-215)	1210 (5384)
	26 (8)				353 (1572)	874 (3888)		34 (151)	
	33 (10)				283 (1258)	945 (4202)		116 (518)	
SFG.98.102.40.	20 (6)	1383 (6150)	346 (1538)	915 (4071)	544 (2419)	839 (3731)	346 (1538)	-201 (-895)	1363 (6065)
	26 (8)				408 (1814)	975 (4336)		-119 (-529)	
	33 (10)				326 (1452)	1056 (4698)		-37 (-163)	
SFG.110.102.42.	20 (6)	1484 (6600)	371 (1650)	915 (4071)	591 (2630)	892 (3970)	371 (1650)	-301 (-1339)	1463 (6508)
	26 (8)				444 (1973)	1040 (4627)		-219 (-973)	
	33 (10)				355 (1578)	1129 (5022)		-136 (-607)	

9.5 Dimensions of accessories

These dimensions are related to the installation accessories of mixers and flowmakers.

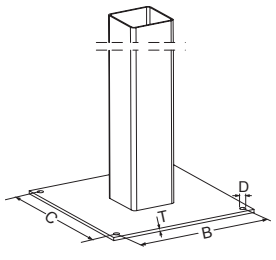
For further information on accessories, see Accessories.



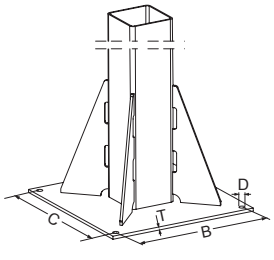
TM043897

Bottom fixation bracket

Column profile	B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
2.5" X 2.5" (60 x 60 mm^2)	5.11 (130)	4.53 (115)	0.59 (15)	0.31 (8)
3" X 3" (80 x 80 mm^2)				
4" X 4" (100 x 100 mm^2)				



TM043928

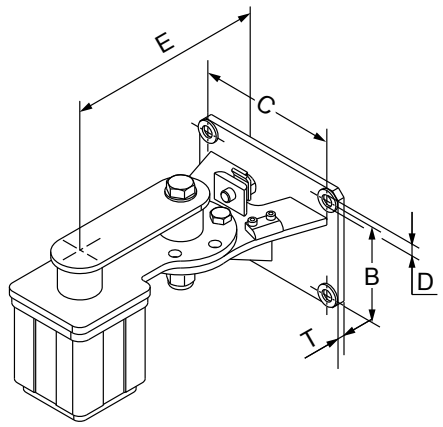


TM043898

SFG.xx.51 *SFG.xx.71/91/102*

Bottom fixation plate

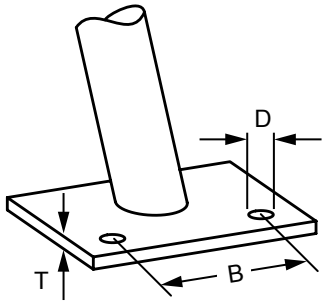
Flowmaker type	B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
SFG.xx.51	8.27 (210)	8.27 (210)	0.59 (15)	0.31 (8)
SFG.xx.71/91/102	14.2 (360)	14.2 (360)	0.59 (15)	0.31 (8)



TM043899

Top fixation bracket

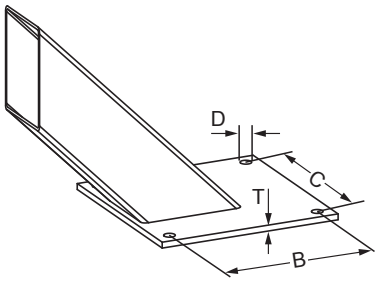
Column profile	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	T [in (mm)]
2.5" X 2.5" (60 x 60 mm^2)	4.33 (110)	6.30 (160)	0.59 (15)	9.45 (240)	0.31 (8)
3" X 3" (80 x 80 mm^2)				9.84 (250)	
4" X 4" (100 x 100 mm^2)				10.3 (261)	
5" X 5" (120 x 120 mm^2)				10.3 (261)	



TM043900

Foot for front support leg

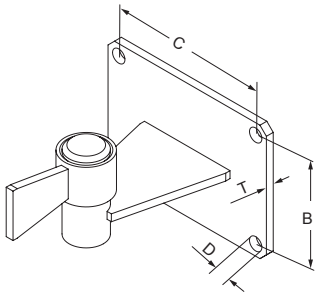
Flowmaker type	B [in (mm)]	D [in (mm)]	T [in (mm)]
SFG.xx.51	3.94 (100)	0.59 (15)	0.31 (8)
SFG.xx.71-91			
SFG.xx.102			



TM043901

Foot for back support leg

Flowmaker type	B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
SFG.xx.71-91	8.27 (210)	8.27 (210)	0.59 (15)	0.31 (8)
SFG.xx.102				



TM043903

Intermediate fixation bracket

B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
4.33 (110)	6.30 (160)	0.59 (15)	0.31 (8)

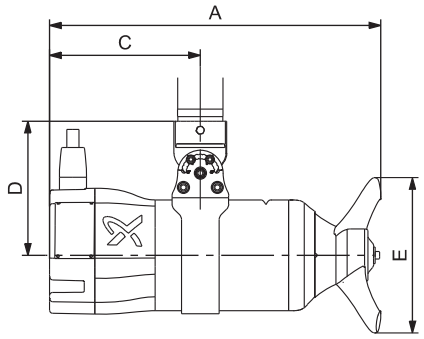
Related information

11.1 Accessories

10. Technical data

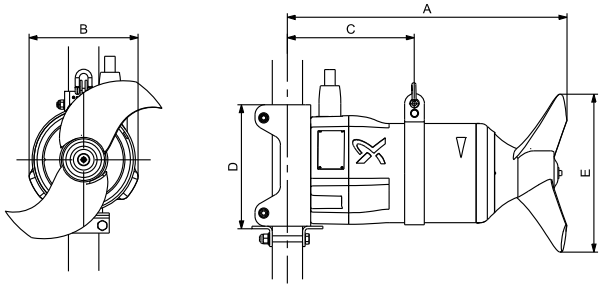
10.1 SMD, 3 x 460 V

10.1.1 Dimensions



TM065319

SMD version T



TM065320

SMD with motor bracket

Type	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight [5] [lb (kg)]
SMD.13.7.1775.T.(Ex)	17.3 (440)	7.09 (180)	7.68 (195)	7.09 (180)	7.09 (180)	84 (38)
SMD.17.8.1765.T.(Ex)					8.27 (210)	
SMD.23.10.1750.T.(Ex)					9.84 (250)	
SMD.13.7.1775.(Ex)	19.3 (490)[6]	7.09 (180)	8.86 (225)	9.45 (240)	7.09 (180)	89 (40)
SMD.17.8.1765.(Ex)					8.27 (210)	
SMD.23.10.1750.(Ex)					9.84 (250)	
SMD.30.11.1182.(Ex)	21.7 (550)[6]	9.06 (230)	9.45 (240)	9.45 (240)	11.4 (290)	155 (70)
SMD.38.13.1178.(Ex)					12.6 (320)	
SMD.47.15.1170.(Ex)					14.6 (370)	

5) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

6) With 60 × 60 column profile

10.1.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/s (m/s)]
SMD.13.7.1775.(T).(Ex)	1775	35.9 (160)	0.160	IP68	66 (20)	SEOOW 7G AWG16	713 (162)	5.81 (1.77)
SMD.17.8.1765.(T).(Ex)	1765	54.0 (240)	0.178				1021 (232)	6.10 (1.86)
SMD.23.10.1750.(T).(Ex)	1750	76.4 (340)	0.189				1449 (329)	6.10 (1.86)
SMD.30.11.1182.(Ex)	1182	103 (460)	0.196			SEOOW 7G AWG14 + 3xAWG16	1955 (444)	6.14 (1.87)
SMD.38.13.1178.(Ex)	1178	137 (610)	0.210				2483 (564)	6.40 (1.95)
SMD.47.15.1170.(Ex)	1170	180 (800)	0.211				3289 (747)	6.33 (1.93)

10.1.3 Electrical data

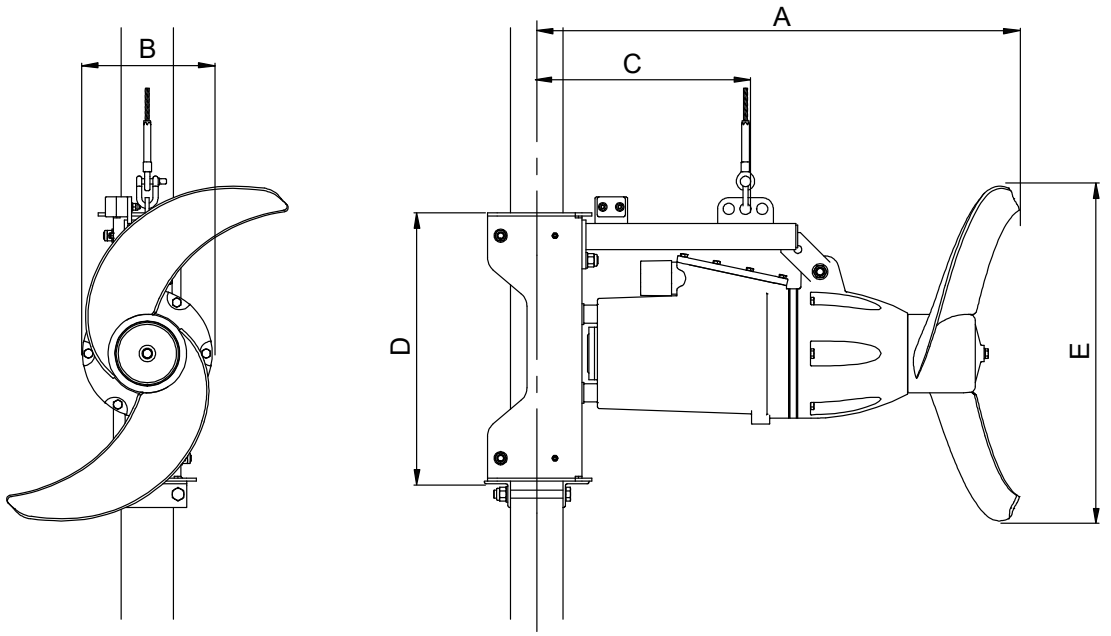
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SMD.13.7.1775.(T).(Ex)	1.5 (1.15)	1.34 (1.00)	1.3 (1.0)	4	4.0 (5.4)	3 x 460	Y	2.6	24	0.65
SMD.17.8.1765.(T).(Ex)	2.0 (1.5)	1.81 (1.35)	1.7 (1.3)		5.2 (7.1)			2.9	24	0.73
SMD.23.10.1750.(T).(Ex)	2.7 (2.0)	2.41 (1.80)	2.3 (1.7)		6.9 (9.3)			3.4	24	0.80
SMD.30.11.1182.(Ex)	3.5 (2.6)	3.15 (2.35)	3.0 (2.2)	6	13.2 (17.9)		D	5.5	38	0.63
SMD.38.13.1178.(Ex)	4.4 (3.2)	3.89 (2.90)	3.8 (2.8)		16.9 (22.9)			6.2	38	0.69
SMD.47.15.1170.(Ex)	5.5 (4.1)	5.09 (3.80)	4.7 (3.5)		21.3 (28.9)			7.3	38	0.74

10.1.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 250 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	Up to 4 %

10.2 SMG, 3 x 460 V

10.2.1 Dimensions



TM024944

Type	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight [7] [lb (kg)]
SMG.12.22.276.	30.7 (780)	7.87 (200)	12.6 (320)	16.1 (410)	21.7 (550)	179 (81)
SMG.16.25.275.	31.1 (790)	7.87 (200)	12.6 (320)	16.1 (410)	24.8 (630)	
SMG.22.25.273.						
SMG.27.28.264.	31.5 (800)	7.87 (200)	12.6 (320)	16.1 (410)	28.0 (710)	194 (88)
SMG.34.28.263.						
SMG.44.28.315.						
SMG.55.28.314.						
SMG.75.34.264.	41.3 (1050)	10.2 (260)	16.9 (430)	18.1 (460)	33.9 (860)	390 (177)
SMG.95.34.263.						
SMG.130.34.318.						425 (193)
SMG.160.34.317.						
SMG.220.35.345.	43.3 (1100)	12.4 (315)	18.1 (460)	18.1 (460)	35.4 (900)	624 (283)

7) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m).

10.2.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/s (m/s)]
SMG.12.22.276.	276	80.9 (360)	0.367	IP68	66 (20)	S1BN8-F 11G1.5	3275 (744)	2.85 (0.87)
SMG.16.25.275.	275	117 (520)	0.409				4512 (1025)	2.98 (0.91)
SMG.22.25.273.	273	151 (670)	0.394				5120 (1163)	3.41 (1.04)
SMG.27.28.264.	264	196 (870)	0.429				6577 (1494)	3.44 (1.05)
SMG.34.28.263.	263	229 (1020)	0.415				7123 (1618)	3.71 (1.13)
SMG.44.28.315.	315	279 (1240)	0.368				7854 (1784)	4.10 (1.25)
SMG.55.28.314.	314	326 (1450)	0.351				8493 (1929)	4.42 (1.35)
SMG.75.34.264.	264	429 (1910)	0.362			S1BN8-F 11G2.5	11804 (2681)	4.19 (1.28)
SMG.95.34.263.	263	508 (2260)	0.336				12843 (2917)	4.56 (1.39)
SMG.130.34.318.	318	623 (2770)	0.308				14216 (3229)	5.05 (1.54)
SMG.160.34.317.	317	737 (3280)	0.286				15471 (3514)	5.51 (1.68)
SMG.220.35.345.	345	906 (4030)	0.261			TPE/TPE 7G4 + 4x1.5	17946 (4076)	5.83 (1.78)

10.2.3 Electrical data

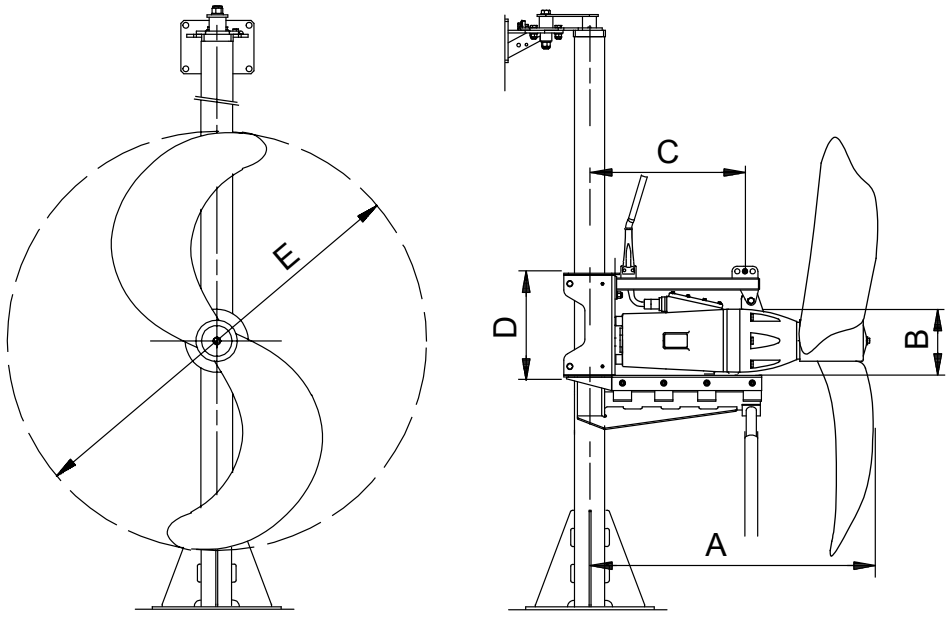
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SMG.12.22.276.	1.4 (1.1)	1.31 (0.98)	1.2 (0.9)	6	5.3 (7.3)	3 x 460	Y	2.6	22	0.57
SMG.16.25.275.	1.9 (1.4)	1.70 (1.27)	1.6 (1.2)		7.1 (9.7)			2.9	22	0.66
SMG.22.25.273.	2.6 (1.9)	2.27 (1.70)	2.2 (1.6)		9.6 (13.1)			3.5	22	0.73
SMG.27.28.264.	3.1 (2.3)	2.72 (2.03)	2.7 (2.0)	4	7.8 (10.7)		D	4.2	44	0.73
SMG.34.28.263.	3.8 (2.8)	3.29 (2.46)	3.4 (2.5)		9.9 (13.5)			4.7	44	0.79
SMG.44.28.315.	5.0 (3.7)	4.51 (3.37)	4.4 (3.3)		13.2 (17.9)			5.9	44	0.84
SMG.55.28.314.	6.3 (4.6)	5.53 (4.13)	5.5 (4.0)		16 (21.8)			7.1	44	0.85
SMG.75.34.264.	8.3 (6.2)	7.08 (5.28)	7.5 (5.6)		22.2 (30.1)			12.0	105	0.70
SMG.95.34.263.	10.5 (7.8)	9.02 (6.73)	9.5 (7.0)		27.8 (37.7)			13.5	105	0.75
SMG.130.34.318.	14.2 (10.3)	12.06 (9.00)	13.0 (9.7)		37.6 (51.0)			18.0	158	0.74
SMG.160.34.317.	17.4 (13.1)	15.36 (11.46)	16.0 (12.0)		47.7 (64.7)			22.0	158	0.79
SMG.220.35.345.	23.8 (17.3)	20.70 (15.44)	22.0 (16.4)		63.2 (85.8)			30.0	211	0.75

10.2.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 500 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	Up to 8 %

10.3 SFG.xx.51.xx, 3 x 460 V

10.3.1 Dimensions



TM026346

Type	Propeller version	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight [8)] [lb (kg)]
SFG.10.51.50.	2-blade	35.4 (900)	7.87 (200)	13.9 (353)	15.7 (400)	51.2 (1300)	254 (115)
SFG.14.51.57.							
SFG.19.51.64.							
SFG.23.51.68.							265 (120)
SFG.30.51.74.							
SFG.39.51.82.							
SFG.44.51.85.							
SFG.48.51.88.							

8) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

10.3.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/s (m/s)]
SFG.10.51.50.	49.5	149 (665)	0.887	IP68	66 (20)	S1BN8-F 11G1.5	10531 (2392)	1.64 (0.5)
SFG.14.51.57.	57.1	197 (880)	0.800				12112 (2751)	1.9 (0.58)
SFG.19.51.64.	63.9	249 (1110)	0.730				13604 (3090)	2.13 (0.65)
SFG.23.51.68.	68.2	283 (1260)	0.700				14494 (3292)	2.26 (0.69)
SFG.30.51.74.	74.1	334 (1490)	0.654				15762 (3580)	2.46 (0.75)
SFG.39.51.82.	81.6	404 (1800)	0.596				17325 (3935)	2.69 (0.82)
SFG.44.51.85.	85.2	440 (1960)	0.570				18078 (4106)	2.82 (0.86)
SFG.48.51.88.	88.1	476 (2120)	0.551				18800 (4270)	2.91 (0.89)

10.3.3 Electrical data

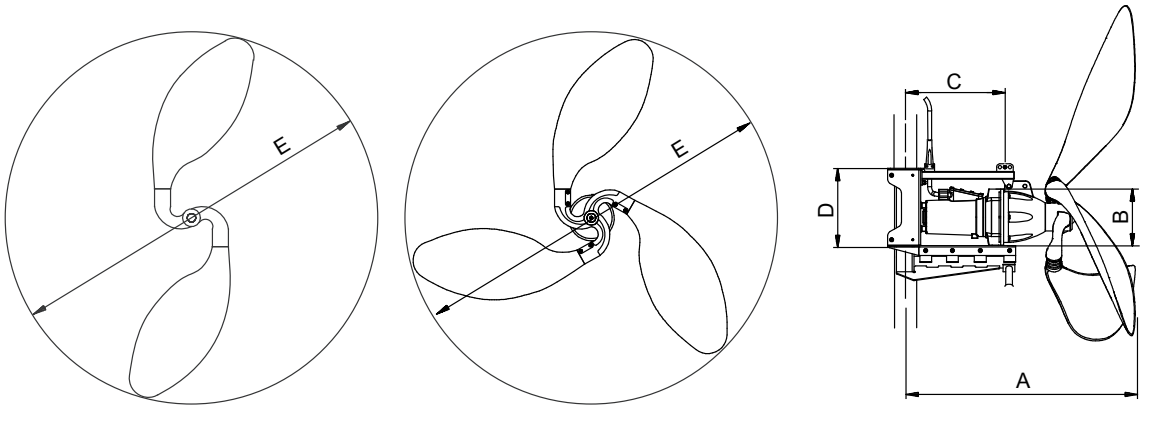
Type	P1 [hp (kW)w]		P2 [kW]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.51.50.	1.2 (0.85)	1.00 (0.75)	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.14.51.57.	1.7 (1.2)	1.47 (1.10)	1.4 (1.0)		5.9 (8.1)			2.7	22	0.61
SFG.19.51.64.	2.2 (1.7)	2.03 (1.52)	1.9 (1.4)		8.4 (11.4)			3.2	22	0.70
SFG.23.51.68.	2.6 (1.9)	2.41 (1.80)	2.3 (1.7)	4	6.7 (9.1)		D	3.9	44	0.67
SFG.30.51.74.	3.4 (2.5)	3.05 (2.28)	3.0 (2.2)		8.7 (11.8)			4.4	44	0.75
SFG.39.51.82.	4.4 (3.3)	4.04 (3.02)	3.9 (2.9)		11.5 (15.7)			5.2	44	0.82
SFG.44.51.85.	5.0 (3.7)	4.61 (3.44)	4.4 (3.3)		13.2 (17.9)			5.9	44	0.84
SFG.48.51.88.	5.4 (4.1)	5.16 (3.85)	4.8 (3.6)		14.4 (19.6)			6.4	44	0.84

10.3.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 500 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	1.5 %

10.4 SFG.xx.71.xx, 3 x 460 V

10.4.1 Dimensions



TM026345

Type	Propeller version	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Net weight [9] [kg]
SFG.10.71.32.	2-blade	47.2 (1200)	11.9 (302)	22.4 (570)	15.7 (400)	70.9 (1800)	434 (197)
SFG.14.71.36.							
SFG.19.71.41.							
SFG.23.71.43.							445 (202)
SFG.30.71.48.							
SFG.39.71.53.							
SFG.47.71.53.	3-blade						496 (225)
SFG.55.71.54.							

9) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

10.4.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/S (m/s)]
SFG.10.71.32.	32.0	168 (750)	0.987	IP68	66 (20)	S1BN8-F 11G1.5	15484 (3517)	1.24 (0.38)
SFG.14.71.36.	36.3	215 (960)	0.906				17519 (3979)	1.41 (0.43)
SFG.19.71.41.	40.6	269 (1200)	0.822				19584 (4448)	1.6 (0.49)
SFG.23.71.43.	42.6	296 (1320)	0.795				20539 (4665)	1.67 (0.51)
SFG.30.71.48.	47.8	375 (1670)	0.726				23106 (5248)	1.87 (0.57)
SFG.39.71.53.	52.7	454 (2020)	0.660				25409 (5771)	2.06 (0.63)
SFG.47.71.53.	52.5	526 (2340)	0.638				27350 (6212)	2.23 (0.68)
SFG.55.71.54.	53.9	555 (2470)	0.621				28099 (6382)	2.29 (0.70)

10.4.3 Electrical data

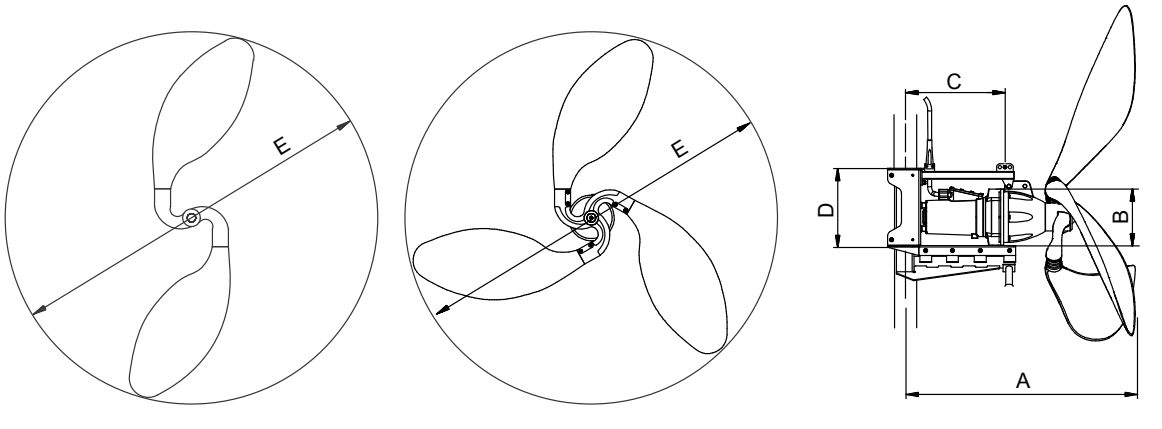
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.71.32.	1.2 (0.85)	1.01 (0.76)	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.14.71.36.	1.7 (1.2)	1.42 (1.06)	1.4 (1.0)		5.9 (8.1)			2.7	22	0.61
SFG.19.71.41.	2.2 (1.7)	1.95 (1.46)	1.9 (1.4)		8.4 (11.4)			3.2	22	0.70
SFG.23.71.43.	2.6 (1.9)	2.22 (1.66)	2.3 (1.7)	4	6.7 (9.1)		D	3.9	44	0.67
SFG.30.71.48.	3.4 (2.5)	3.08 (2.30)	3.0 (2.2)		8.7 (11.8)			4.4	44	0.75
SFG.39.71.53.	4.4 (3.3)	4.10 (3.06)	3.9 (2.9)		11.5 (15.7)			5.2	44	0.82
SFG.47.71.53.	5.3 (4.0)	4.92 (3.67)	4.7 (3.5)		14 (19.0)			6.2	44	0.84
SFG.55.71.54.	6.3 (4.6)	5.33 (3.98)	5.5 (4.0)		16 (21.8)			7.1	44	0.85

10.4.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 500 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	1.5 %

10.5 SFG.xx.91.xx, 3 x 460 V

10.5.1 Dimensions



TM026345

Type	Propeller version	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight [10] [lb (kg)]
SFG.10.91.26.	2-blade	47.2 (1200)	11.9 (302)	22.4 (570)	15.7 (400)	90.6 (2300)	445 (202)
SFG.12.91.28.							
SFG.16.91.31.							
SFG.22.91.35.							
SFG.26.91.37.							456 (207)
SFG.30.91.39.							
SFG.34.91.39.	3-blade						511 (232)
SFG.43.91.42.							
SFG.55.91.46.							

10) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

10.5.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/s (m/s)]
SFG.10.91.26.	26.1	231 (1030)	1.338	IP68	66 (20)	S1BN8-F 11G1.5	23185 (5266)	1.14 (0.35)
SFG.12.91.28.	28.3	272 (1210)	1.274				25131 (5708)	1.24 (0.38)
SFG.16.91.31.	31.2	330 (1470)	1.176				27698 (6291)	1.37 (0.42)
SFG.22.91.35.	34.8	413 (1840)	1.064				30987 (7038)	1.54 (0.47)
SFG.26.91.37.	36.7	458 (2040)	1.036				32629 (7411)	1.64 (0.5)
SFG.30.91.39.	39.0	517 (2300)	0.983				34646 (7869)	1.73 (0.53)
SFG.34.91.39.	38.9	550 (2450)	0.953				35760 (8122)	1.77 (0.54)
SFG.43.91.42.	42.2	647 (2880)	0.883				38771 (8806)	1.93 (0.59)
SFG.55.91.46.	46.4	782 (3480)	0.796				42615 (9679)	2.13 (0.65)

10.5.3 Electrical data

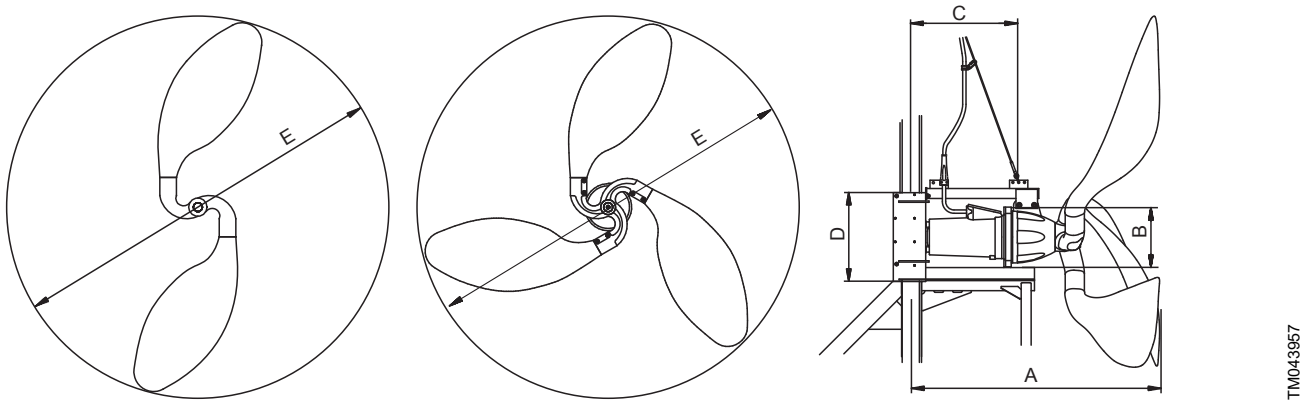
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.91.26.	1.2 (0.85)	0.77	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.12.91.28.	1.4 (1.1)	0.95	1.2 (0.9)		5.3 (7.3)			2.6	22	0.57
SFG.16.91.31.	1.9 (1.4)	1.25	1.6 (1.2)		7.1 (9.7)			2.9	22	0.66
SFG.22.91.35.	2.6 (1.9)	1.73	2.2 (1.6)		9.6 (13.1)			3.5	22	0.73
SFG.26.91.37.	3.0 (2.2)	1.97	2.6 (1.9)	4	7.5 (10.2)		D	4.1	44	0.71
SFG.30.91.39.	3.4 (2.5)	2.34	3.0 (2.2)		8.7 (11.8)			4.4	44	0.75
SFG.34.91.39.	3.8 (2.8)	2.57	3.4 (2.)5		9.9 (13.5)			4.7	44	0.79
SFG.43.91.42.	4.9 (3.6)	3.26	4.3 (3.2)		12.7 (17.3)			5.7	44	0.83
SFG.55.91.46.	6.3 (4.6)	4.37	5.5 (4.0)		16 (21.8)			7.1	44	0.85

10.5.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 500 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	1.5 %

10.6 SFG.xx.102.xx, 3 x 460 V

10.6.1 Dimensions



TM043957

Type	Propeller version	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Net weight [11] [kg]
SFG.30.102.29.	2-blade	59.1 (1500)	14.2 (360)	25.6 (650)	23.0 (585)	102.4 (2600)	800 (363)
SFG.43.102.34.							
SFG.48.102.35.							
SFG.60.102.38.							
SFG.67.102.35.	3-blade			26.8 (680)		102.4 (2600)	922 (418)
SFG.82.102.38.							
SFG.98.102.40.							
SFG.110.102.42.							

11) With motor bracket and 49 ft (15 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

10.6.2 Physical data

Type	Speed [RPM]	Axial thrust [lb_f (N)]	Thrust-to-power ratio	Enclosure class	Maximum installation depth [ft (m)]	Cable type	Flow rate [GPM (m^3/h)]	Mean flow velocity [ft/s (m/s)]
SFG.30.102.29.	29.4	568 (2530)	1.068	IP68	66 (20)	S1BN8-F 11G2.5	41078 (9330)	1.6 (0.49)
SFG.43.102.34.	34.0	759 (3380)	0.974				47480 (10784)	1.83 (0.56)
SFG.48.102.35.	35.3	816 (3630)	0.948				49202 (11175)	1.9 (0.58)
SFG.60.102.38.	38.2	959 (4270)	0.886				53362 (12120)	2.06 (0.63)
SFG.67.102.35.	35.2	1043 (4640)	0.899				56911 (12926)	2.13 (0.65)
SFG.82.102.38.	38.1	1227 (5460)	0.840				61737 (14022)	2.29 (0.7)
SFG.98.102.40.	40.5	1382 (6150)	0.795				65523 (14882)	2.42 (0.74)
SFG.110.102.42.	41.9	1483 (6600)	0.768				67879 (15417)	2.52 (0.77)

10.6.3 Electrical data

Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.30.102.29.	3.5 (2.6)	3.17 (2.37)	3.0 (2.2)	6	13 (17.7)	3 x 460	D	8.5	81	0.43
SFG.43.102.34.	5.0 (3.7)	4.65 (3.47)	4.3 (3.2)		19 (25.8)			9.0	81	0.55
SFG.48.102.35.	5.5 (4.1)	5.13 (3.83)	4.8 (3.6)		21.3 (29)			9.4	81	0.59
SFG.60.102.38.	6.8 (5.0)	6.46 (4.82)	6.0 (4.4)		26.2 (35.6)			10.4	81	0.65
SFG.67.102.35.	7.6 (5.7)	6.91 (5.16)	6.7 (5.0)		29.8 (40.5)			11.0	128	0.68
SFG.82.102.38.	9.3 (6.8)	8.71 (6.50)	8.2 (6.0)		35.9 (48.8)			12.5	128	0.73
SFG.98.102.40.	11 (8.1)	10.37 (7.74)	9.8 (7.2)		43.3 (58.8)			14.0	128	0.77
SFG.110.102.42.	12.4 (9.0)	11.51 (8.59)	11.0 (8.0)		48.3 (65.6)			15.0	128	0.79

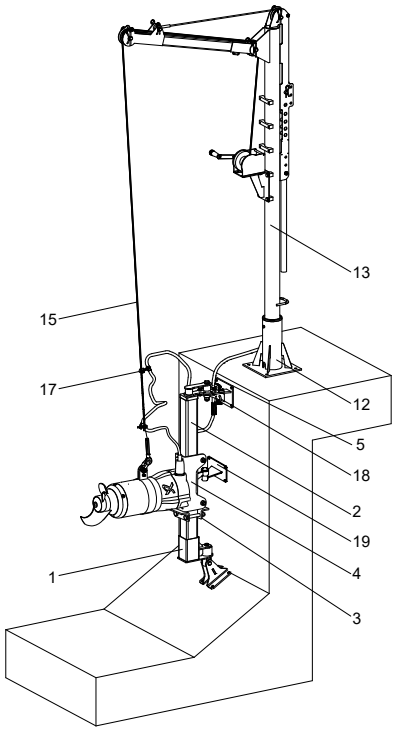
10.6.4 Liquid data

Liquid temperature	pH value	Maximum dynamic viscosity	Maximum density	Maximum dry solids content
41-104 °F (5-40 °C)	4-10	≤ 500 cSt (mPa·s)	66 lb/ft^3 (1060 kg/m^3)	1.5 %

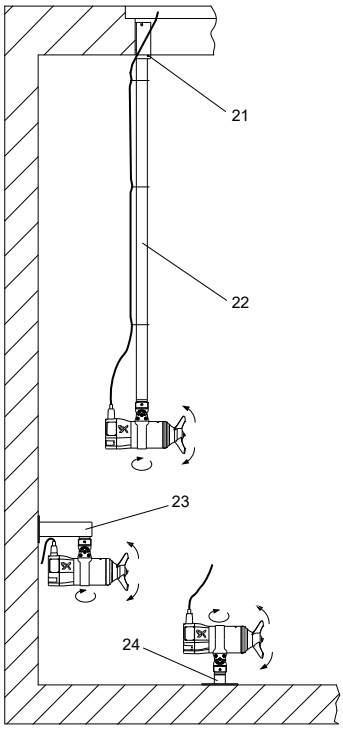
11. Accessories

11.1 Accessories

Grundfos offers the following equipment for installation, inspection and service of mixers and flowmakers.
The position numbers in figs SMD installation to SFG installation refer to the list of accessories below.



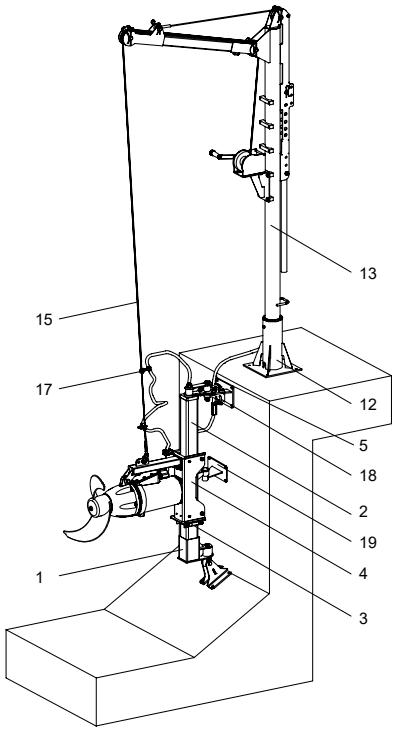
SMD installation



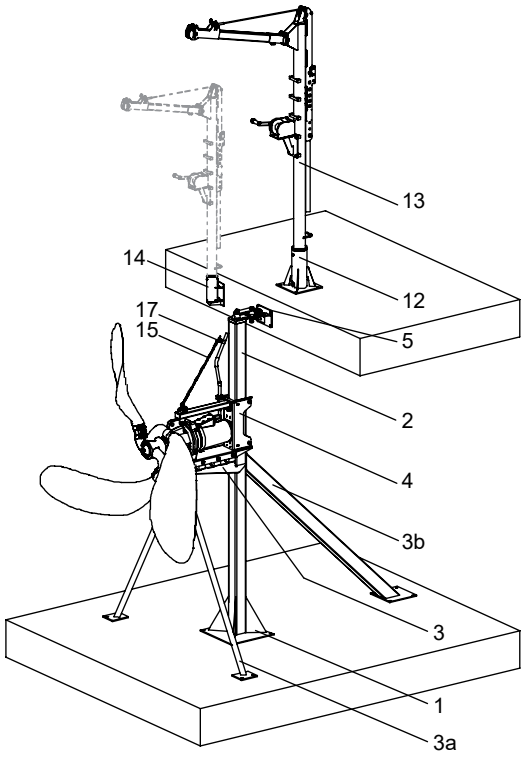
TM081918

TM079892

SMD - Suspended, wall and floor mounting. See products with "T" in type description



SMG installation



SFG installation

Related information

11.3 List of accessories

11.2 Selection guide for accessories

Type designation	Column profile			Support legs [12]		Crane type	Wire	Cable clamp
	< 20 ft (6 m)	< 33 ft (10 m) [13]	> 33 ft (10 m)	Front	Back			
SMD.13 - SMD.23	2.5" x 2.5" x 0.12" (60 x 60 x 3)		Contact Grundfos		No	S 220 lb (100 kg)	∅0.16" (4 mm)	∅0.59" (15 mm)
SMD.30 - SMD.47	2.5" x 2.5" x 0.12" (60 x 60 x 3)				No	S 220 lb (100 kg)	∅0.16" (4 mm)	∅0.67" (17 mm)
SMG.12 - SMG.55	3" x 3" x 0.12" (80 x 80 x 3)				No	S 220 lb (100 kg)	∅0.16" (4 mm)	∅0.67" (17 mm)
SMG.75 - SMG.160	4" x 4" x 0.12" (100 x 100 x 3)	4" x 4" x 0.16" (100 x 100 x 4)			No	M 550 lb (250 kg)	∅0.24" (6 mm)	∅0.79" (20 mm)
SMG.220	4" x 4" x 0.16" (100 x 100 x 4)	4" x 4" x 0.20" (100 x 100 x 5)			No	L 1100 lb (500 kg)	∅0.28" (7 mm)	∅0.79" (20 mm)
SFG.xx.51	4" x 4" x 0.16" (100 x 100 x 4)			Yes	No	M 550 lb (250 kg)	∅0.24" (6 mm)	∅0.67" (17 mm)
SFG.xx.71	4" x 4" x 0.16" (100 x 100 x 4)			Yes	> 20 ft (6 m)	M 550 lb (250 kg)	∅0.24" (6 mm)	∅0.67" (17 mm)
SFG.xx.91	4" x 4" x 0.16" (100 x 100 x 4)			Yes	> 20 ft (6 m)	M 550 lb (250 kg)	∅0.24" (6 mm)	∅0.67" (17 mm)
SFG.xx.102	5" x 5" x 0.20" (120 x 120 x 5)			Yes	Yes	L1100 lb (500 kg)	∅0.28" (7 mm)	∅0.79" (20 mm)

12) Additional legs are required, depending on the tank depth.

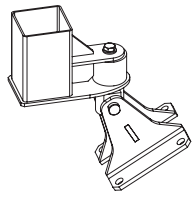
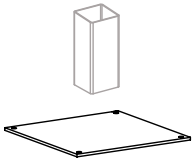
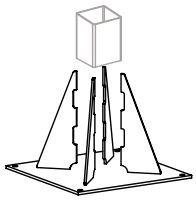
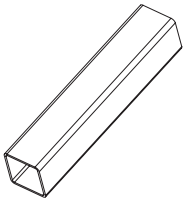
13) If the installation height is greater than 20 ft (6 m), use either a bigger size column profile or an intermediate fixation bracket (only SMG). If this is not possible, please contact Grundfos for help.

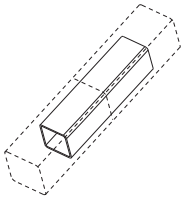
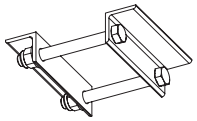
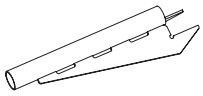
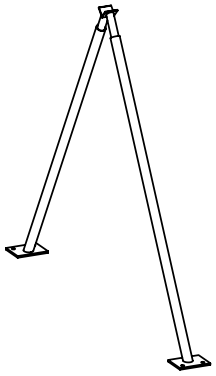
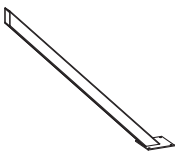
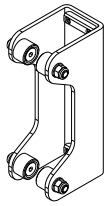
Column profiles adhere to EN 10219-2 standard.

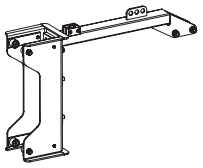
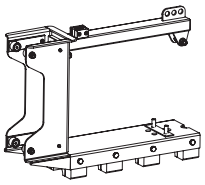
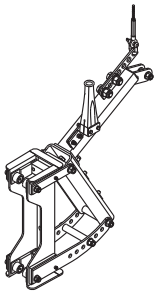
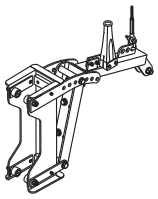
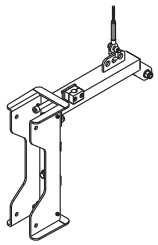
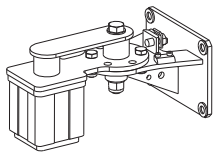
When shortening a column profile, the perpendicularity tolerance of the cutting edge is 0.4 mm.

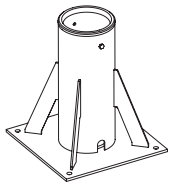
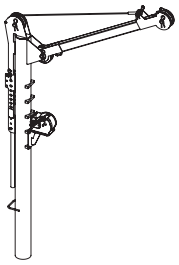
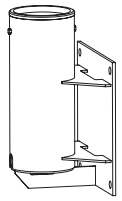
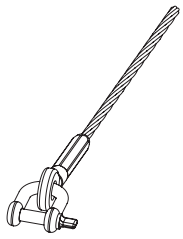
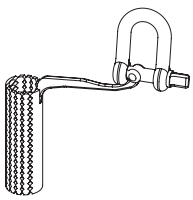
11.3 List of accessories

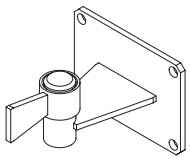
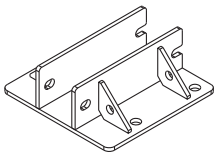
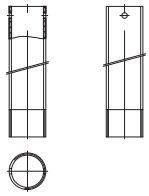
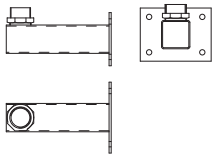
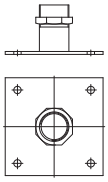
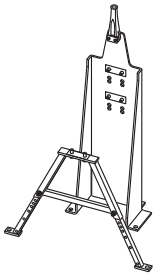
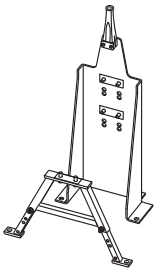
Position numbers refer to figs SMD installation to SFG installation.

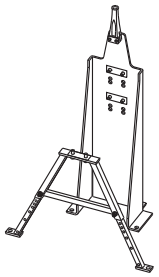
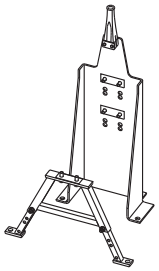
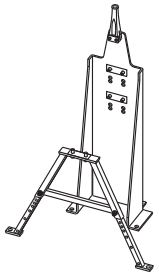
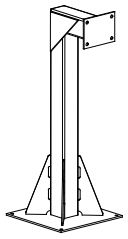
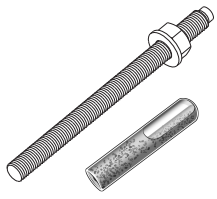
Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM043896	1	Bottom fixation bracket, complete	2.5" x 2.5" (60 x 60 mm) column profile. SMD	1.4301/304	95037099
				1.4404/316 L	95037100
			3" x 3" (80 x 80 mm) column profile. SMG	1.4301/304	95037101
				1.4404/316 L	95037102
			4" x 4" (100 x 100 mm) column profile. SMG	1.4301/304	95037103
				1.4404/316 L	95037104
 TM043954	1	Bottom fixation plate, complete	SFG.xx.51	1.4301/304	96489415
				1.4404/316 L	96489416
 TM042717	1	Bottom fixation plate, complete	SFG.xx.71/91/102	1.4301/304	96489411
				1.4404/316 L	96489414
 TM044005	2	Column profile 20 ft (6 m)	2.5" x 2.5" x 0.12" (60 x 60 x 3 mm)	1.4301/304	Contact Grundfos
				1.4404/316 L	
			3" x 3" x 0.12" (80 x 80 x 3 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.12" (100 x 100 x 3 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.16" (100 x 100 x 4 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.20" (100 x 100 x 5 mm)	1.4301/304	
				1.4404/316 L	
		Column profile, SFG.xx.102 20 ft (6 m)	5" x 5" x 0.20" (120 x 120 x 5 mm)	1.4301/304	
				1.4404/316 L	

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM049473	2	Connecting piece for column profile Required for column profile longer than 15 ft (4.5 m).	2.5" x 2.5" x 0.12" (60 x 60 x 3 mm)	1.4301/304	Contact Grundfos
				1.4404/316 L	
			3" x 3" x 0.12" (80 x 80 x 3 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.12" (100 x 100 x 3 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.16" (100 x 100 x 4 mm)	1.4301/304	
				1.4404/316 L	
			4" x 4" x 0.20" (100 x 100 x 5 mm)	1.4301/304	
				1.4404/316 L	
			5" x 5" x 0.20" (120 x 120 x 5 mm)	1.4301/304	
				1.4404/316 L	
 TM044010	3	Depth blocker for clamping	2.5" x 2.5" (60 x 60 mm) column profile. SMD.	1.4301/304	95037105
				1.4404/316 L	95037106
			3" x 3" (80 x 80 mm) column profile. SMG.	1.4301/304	95037107
				1.4404/316 L	95037108
			4" x 4" (100 x 100 mm) column profile. SMG.	1.4301/304	95037109
				1.4404/316 L	95037110
 TM044009	3	Depth blocker	SFG.xx.51/71/91	1.4301/304	95037044
				1.4404/316 L	95037045
			SFG.xx.102	1.4301/304	95036467
				1.4404/316 L	95036468
 TM043644	3a	Two front support legs	SFG.xx.51	1.4301/304	96115262
				1.4404/316 L	96115263
			SFG.xx.71-91	1.4301/304	96115264
				1.4404/316 L	96115265
			SFG.xx.102	1.4301/304	95036469
				1.4404/316 L	95036470
 TM043643	3b	Back support leg	SFG.xx.71/91	1.4301/304	95036089
				1.4404/316	95036090
			SFG.xx.102	1.4301/304	95036471
				1.4404/316 L	95036472
 TM065346	4	Motor bracket slide [14)]	SMD.12-47	1.4404/316L	95040078

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM044012	4	Motor bracket [14)]	3" x 3" (80 x 80 mm) column profile. SMG.12-55.	1.4301/304	95037071
				1.4404/316 L	95037072
			4" x 4" (100 x 100 mm) column profile. SMG.12-55.	1.4301/304	95037471
				1.4404/316 L	95037472
			4" x 4" (100 x 100 mm) column profile. SMG.75-160.	1.4301/304	95037073
				1.4404/316 L	95037074
			4" x 4" (100 x 100 mm) column profile. SMG.220.	1.4301/304	95037075
				1.4404/316 L	95037076
 TM044011	4	Motor bracket [14)]	4" x 4" (100 x 100 mm) column profile. SFG.xx.51.	1.4301/304	95037077
				1.4404/316 L	95037078
			4" x 4" (100 x 100 mm) column profile. SFG.xx.71/97.	1.4301/304	95037079
				1.4404/316 L	95037080
			5" x 5" (120 x 120 mm) column profile. SFG.xx.102.	1.4301/304	95036347
				1.4404/316 L	95036424
 TM055099	4	Angle-adjustable motor bracket for ± 30 ° in steps of 5 ° [14)]	2" x 2" (50 x 50 mm) column profile. SMG.12-55.	1.4301/304	95038905
				1.4404/316 L	95038910
			3" x 3" (80 x 80 mm) column profile. SMG.12-55.	1.4301/304	95038350
				1.4404/316 L	95038360
			4" x 4" (100 x 100 mm) column profile. SMG.75-160.	1.4301/304	95038370
				1.4404/316 L	95038380
			4" x 4" (100 x 100 mm) column profile. SMG.220.	1.4301/304	95038390
				1.4404/316 L	95038399
 TM055098			4" x 4" (100 x 100 mm) column profile. SMG.12-55.	1.4301/304	95038940
				1.4404/316 L	95038945
 TM055096	4	Motor bracket adapter [14)]	2" x 2" (50 x 50 mm) column profile. SMG.12-55.	1.4301/304	95038219
				1.4404/316 L	95038220
			2.5" x 2.5" (60 x 60 mm) column profile. SMG.12-55.	1.4301/304	95038317
				1.4404/316 L	95038319
			2.8" x 2.8" (70 x 70 mm) column profile. SMG.12-55.	1.4301/304	95038280
				1.4404/316 L	95038321
 TM043881	5	Top fixation bracket, complete, including safety wire	2.5" x 2.5" (60 x 60 mm) column profile	1.4301/304	95037090
				1.4404/316 L	95037091
			3" x 3" (80 x 80 mm) column profile	1.4301/304	95037092
				1.4404/316 L	95037093
			4" x 4" (100 x 100 mm) column profile	1.4301/304	95037094
				1.4404/316 L	95037095
			5" x 5" (120 x 120 mm) column profile	1.4301/304	96845665
				1.4404/316 L	95037150

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM044000	12	Crane foot	220 lb (100 kg) crane	1.4301/304	95036937
				1.4404/316 L	95037665
				Galvanised steel	95036948
			550 and 1100 lb (250 and 500 kg) cranes	1.4301/304	95036908
				1.4404/316 L	95037685
				Galvanised steel	95036894
 TM043999	13	Crane with winch	S 220 lb (100 kg)	1.4301/304	95036845
				1.4404/316 L	95037640
				Galvanised steel	95036930
			M 550 lb (250 kg)	1.4301/304	95036900
				1.4404/316 L	95037670
				Galvanised steel	95036874
			L 1100 lb (500 kg)	1.4301/304	95036950
				1.4404/316 L	95037700
				Galvanised steel	95036975
 TM044001	14	Crane foot for vertical installation	550 and 1100 lb (250 and 500 kg) cranes	1.4301/304	95036980
				1.4404/316 L	95037710
				Galvanised steel	95037000
 TM044002	15	Lifting wire ∅0.16" (4 mm), easy mounting, including ∅0.31" (8 mm) shackle and wire clamp	33 ft (10 m) (for up to 16 ft (5 m) installation depth)	1.4404/316 L	Contact Grundfos
			50 ft (15 m) (for up to 33 ft (10 m) installation depth)	1.4404/316 L	
		Lifting wire ∅0.24" (6 mm), easy mounting, including ∅0.31" (8 mm) shackle and wire clamp	33 ft (10 m) (for up to 16 ft (5 m) installation depth)	1.4404/316 L	
			50 ft (15 m) (for up to 33 ft (10 m) installation depth)	1.4404/316 L	
		Lifting wire ∅0.28" (7 mm), easy mounting, including ∅0.39" (10 mm) shackle and wire clamp	33 ft (10 m) (for up to 16 ft (5 m) installation depth)	1.4404/316 L	
			50 ft (15 m) (for up to 33 ft (10 m) installation depth)	1.4404/316 L	
 TM044003	17	Cable clamp	∅0.39" (10 mm)	1.4404/316 L	96565202
			∅0.59"(15 mm)	1.4404/316 L	95040076
			∅0.67" (17 mm)	1.4404/316 L	96494352
			∅0.79" (20 mm)	1.4404/316 L	96494354
 TM043998	18	Cable sock, including shackle ∅0.39" (10 mm)		Synthetic material, 1.4404/316 L	95037141

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
				1.4301/304	95037148
 TM044004	19	Intermediate fixation bracket, complete	All profile sizes longer than 15 ft (4.5 m)	1.4404/316 L	95037149
 TM065590	21	Fixation bracket for suspended mounting	SMD.13 - 23.xx.T	1.4404/316L	95040132
 TM043665	22	Tube for suspended mounting, 2" thread, length 10 ft (3 m)	SMD.13 - 23.xx.T	1.4404/316L	Contact Grundfos
 TM043666	23	Fixation bracket for wall mounting, 2"	SMD.13 - 23.xx.T	1.4404/316L	96115291
 TM043667	24	Fixation plate for floor mounting	SMD.13 - 23.xx.T	1.4404/316L	96115292
				1.4301/304	95039067
 TM055103		Motor bracket for bottom fixation, 10" (250 mm) space from propeller tip to bottom	SMG.12 - 55. Max. propeller size ∅28" (710 mm)	1.4404/316 L	95039068
				1.4301/304	95039085
 TM055102		Motor bracket for bottom fixation, 2" (50 mm) space from propeller tip to bottom	SMG.75 - 160 Max. propeller size ∅34" (860 mm)	1.4404/316 L	95039086

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
	TM055103	Motor bracket for bottom fixation, 10" (250 mm) space from propeller tip to bottom	SMG.75-160. Max. propeller size ∅34" (860 mm)	1.4301/304	95039089
				1.4404/316 L	95039090
	TM055102	Motor bracket for bottom fixation, 2" (50 mm) space from propeller tip to bottom	SMG.220 Max. propeller size ∅35" (900 mm)	1.4301/304	95039107
				1.4404/316 L	95039108
	TM055103	Motor bracket for bottom fixation, 10" (250 mm) space from propeller tip to bottom	SMG.220 Max. propeller size ∅35" (900 mm)	1.4301/304	95039111
				1.4404/316 L	95039112
	TM049385	Support for top fixation		1.4301/304	95037404
				1.4404/316 L	95039149
	TM065361	Chemical anchor, M12 x 160 (1 anchor, 1 nut, 1 washer, 1 spring washer, 1 glue cartridge)		316	95036113
		Chemical anchor, M16 x 190 (1 anchor, 1 nut, 1 washer, 1 spring washer, 1 glue cartridge)		316	95037179

14) Contact Grundfos to order standard brackets for mixers and flowmakers assembled from the factory.

Related information

11.1 Accessories

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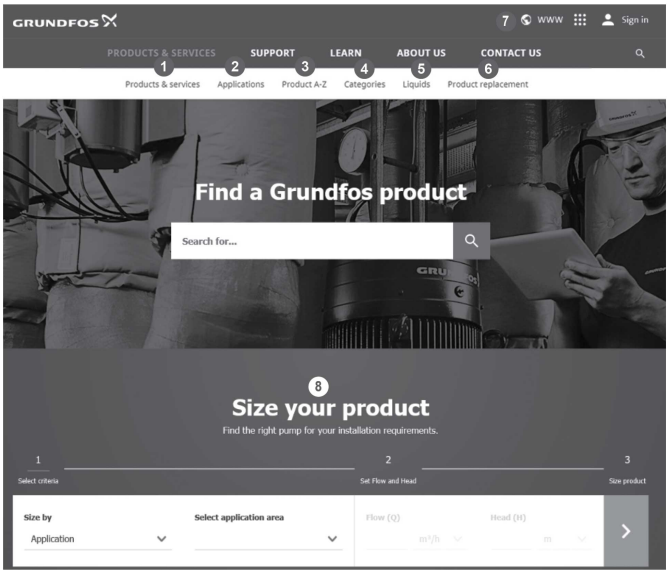

TM072383-1_GRAY

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Argentina
Bombas GRUNDFOS de Argentina S.A.
Ruta Panamericana km. 37.500industin
1619 - Garín Pcia. de B.A.
Tel.: +54-3327 414 444
Fax: +54-3327 45 3190

Australia
GRUNDFOS Pumps Pty. Ltd.
P.O. Box 2040
Regency Park
South Australia 5942
Tel.: +61-8-8461-4611
Fax: +61-8-8340-0155

Austria
GRUNDFOS Pumpen Vertrieb Ges.m.b.H.
Grundfosstraße 2
A-5082 Grödig/Salzburg
Tel.: +43-6246-883-0
Fax: +43-6246-883-30

Belgium
N.V. GRUNDFOS Bellux S.A.
Boomsesteenweg 81-83
B-2630 Aartselaar
Tel.: +32-3-870 7300
Fax: +32-3-870 7301

Bosnia and Herzegovina
GRUNDFOS Sarajevo
Zmaja od Bosne 7-7A
BiH-71000 Sarajevo
Tel.: +387 33 592 480
Fax: +387 33 590 465
www.ba.grundfos.com
E-mail: grundfos@bih.net.ba

Brazil
BOMBAS GRUNDFOS DO BRASIL
Av. Humberto de Alencar Castelo Branco, 630
CEP 09850 - 300
São Bernardo do Campo - SP
Tel.: +55-11 4393 5533
Fax: +55-11 4343 5015

Bulgaria
Grundfos Bulgaria EOOD
Slatina District
Iztochna Tangenta street no. 100
BG - 1592 Sofia
Tel.: +359 2 49 22 200
Fax: +359 2 49 22 201
E-mail: bulgaria@grundfos.bg

Canada
GRUNDFOS Canada inc.
2941 Brighton Road
Oakville, Ontario
L6H 6C9
Tel.: +1-905 829 9533
Fax: +1-905 829 9512

China
GRUNDFOS Pumps (Shanghai) Co. Ltd.
10F The Hub, No. 33 Suhong Road
Minhang District
Shanghai 201106 PRC
Tel.: +86 21 612 252 22
Fax: +86 21 612 253 33

Columbia
GRUNDFOS Colombia S.A.S.
Km 1.5 vía Siberia-Cota Conj. Potrero Chico,
Parque Empresarial Arcos de Cota Bod. 1A.
Cota, Cundinamarca
Tel.: +57(1)-2913444
Fax: +57(1)-8764586

Croatia
GRUNDFOS CROATIA d.o.o.
Buzinski prilaz 38, Buzin
HR-10010 Zagreb
Tel.: +385 1 6595 400
Fax: +385 1 6595 499
www.hr.grundfos.com

Czech Republic
GRUNDFOS Sales Czechia and Slovakia s.r.o.
Čajkovského 21
779 00 Olomouc
Tel.: +420-585-716 111

Denmark
GRUNDFOS DK A/S
Martin Bachs Vej 3
DK-8850 Bjerringbro
Tel.: +45-87 50 50 50
Fax: +45-87 50 51 51
E-mail: info_GDK@grundfos.com
www.grundfos.com/DK

Estonia
GRUNDFOS Pumps Eesti OÜ
Peterburi tee 92G
11415 Tallinn
Tel.: + 372 606 1690
Fax: + 372 606 1691

Finland
OY GRUNDFOS Pumput AB
Trukkikuja 1
FI-01360 Vantaa
Tel.: +358-(0) 207 889 500

France
Pompes GRUNDFOS Distribution S.A.
Parc d'Activités de Chesnes
57, rue de Malacombe
F-38290 St. Quentin Fallavier (Lyon)
Tel.: +33-4 74 82 15 15
Fax: +33-4 74 94 10 51

Germany
GRUNDFOS GMBH
Schlüterstr. 33
40699 Erkrath
Tel.: +49-(0) 211 929 69-0
Fax: +49-(0) 211 929 69-3799
E-mail: infoservice@grundfos.de
Service in Deutschland:
kundendienst@grundfos.de

Greece
GRUNDFOS Hellas A.E.B.E.
20th km. Athinon-Markopoulou Av.
P.O. Box 71
GR-19002 Peania
Tel.: +0030-210-66 83 400
Fax: +0030-210-66 46 273

Hong Kong
GRUNDFOS Pumps (Hong Kong) Ltd.
Unit 1, Ground floor, Siu Wai industrial Centre
29-33 Wing Hong Street & 68 King Lam Street, Cheung Sha Wan
Kowloon
Tel.: +852-27861706 / 27861741
Fax: +852-27858664

Hungary
GRUNDFOS Hungária Kft.
Tópark u. 8
H-2045 Törökbálint
Tel.: +36-23 511 110
Fax: +36-23 511 111

India
GRUNDFOS Pumps india Private Limited
118 Old Mahabalipuram Road
Thoraipakkam
Chennai 600 097
Tel.: +91-44 2496 6800

Indonesia
PT GRUNDFOS Pompa
Graha intirub Lt. 2 & 3
Jln. Cililitan Besar No.454. Makasar,
Jakarta Timur
ID-Jakarta 13650
Tel.: +62 21-469-51900
Fax: +62 21-460 6910 / 460 6901

Ireland
GRUNDFOS (Ireland) Ltd.
Unit A, Merrywell Business Park
Ballymount Road Lower
Dublin 12
Tel.: +353-1-4089 800
Fax: +353-1-4089 830

Italy
GRUNDFOS Pompe Italia S.r.l.
Via Gran Sasso 4
I-20060 Truccazzano (Milano)
Tel.: +39-02-95838112
Fax: +39-02-95309290 / 95838461

Japan
GRUNDFOS Pumps K.K.
1-2-3, Shin-Miyakoda, Kita-ku
Hamamatsu
431-2103 Japan
Tel.: +81 53 428 4760
Fax: +81 53 428 5005

Kazakhstan
Grundfos Kazakhstan LLP
7' Kyz-Zhibek Str., Kok-Tobe micr.
KZ-050020 Almaty Kazakhstan
Tel.: +7 (727) 227-98-55/56

Korea
GRUNDFOS Pumps Korea Ltd.
6th Floor, Aju Building 679-5
Yeoksam-dong, Kangnam-ku, 135-916
Seoul, Korea
Tel.: +82-2-5317 600
Fax: +82-2-5633 725

Latvia
SIA GRUNDFOS Pumps Latvia
Deglava biznesa centrs
Augusta Deglava ielā 60
LV-1035, Rīga,
Tel.: + 371 714 9640, 7 149 641
Fax: + 371 914 9646

Lithuania
GRUNDFOS Pumps UAB
Smolensko g. 6
LT-03201 Vilnius
Tel.: + 370 52 395 430
Fax: + 370 52 395 431

Malaysia
GRUNDFOS Pumps Sdn. Bhd.
7 Jalan Peguam U1/25
Glenmarie industrial Park
40150 Shah Alam, Selangor
Tel.: +60-3-5569 2922
Fax: +60-3-5569 2866

Mexico
Bombas GRUNDFOS de México
S.A. de C.V.
Boulevard TLC No. 15
Parque industrial Stiva Aeropuerto
Apodaca, N.L. 66600
Tel.: +52-81-8144 4000
Fax: +52-81-8144 4010

Netherlands
GRUNDFOS Netherlands
Veluwezoom 35
1326 AE Almere
Postbus 22015
1302 CA ALMERE
Tel.: +31-88-478 6336
Fax: +31-88-478 6332
E-mail: info_gnl@grundfos.com

New Zealand
GRUNDFOS Pumps NZ Ltd.
17 Beatrice Tinsley Crescent
North Harbour Industrial Estate
Albany, Auckland
Tel.: +64-9-415 3240
Fax: +64-9-415 3250

Norway
GRUNDFOS Pumper A/S
Strømsveien 344
Postboks 235, Leirdal
N-1011 Oslo
Tel.: +47-22 90 47 00
Fax: +47-22 32 21 50

Poland
GRUNDFOS Pompy Sp. z o.o.
ul. Klonowa 23
Baranowo k. Poznania
PL-62-081 Przeźmierowo
Tel.: (+48-61) 650 13 00
Fax: (+48-61) 650 13 50

Portugal
Bombas GRUNDFOS Portugal, S.A.
Rua Calvet de Magalhães, 241
Apartado 1079
P-2770-153 Paço de Arcos
Tel.: +351-21-440 76 00
Fax: +351-21-440 76 90

Romania
GRUNDFOS Pompe România SRL
S-PARK BUSINESS CENTER, Clădirea A2, etaj 2
Str. Tipografilor, Nr. 11-15, Sector 1, Cod 013714
Bucuresti, Romania
Tel.: 004 021 2004 100
E-mail: romania@grundfos.ro

Serbia
Grundfos Srbija d.o.o.
Omladinskih brigada 90b
11070 Novi Beograd
Tel.: +381 11 2258 740
Fax: +381 11 2281 769
www.rs.grundfos.com

Singapore
GRUNDFOS (Singapore) Pte. Ltd.
25 Jalan Tukang
Singapore 619264
Tel.: +65-6681 9688
Faxax: +65-6681 9689

Slovakia
GRUNDFOS s.r.o.
Prievozská 4D 821 09 BRATISLAVA
Tel.: +421 2 5020 1426
sk.grundfos.com

Slovenia
GRUNDFOS LJUBLJANA, d.o.o.
Leskoškova 9e, 1122 Ljubljana
Tel.: +386 (0) 1 568 06 10
Fax: +386 (0)1 568 06 19
E-mail: tehnika-si@grundfos.com

South Africa
GRUNDFOS (PTY) LTD
16 Lascelles Drive, Meadowbrook Estate
1609 Germiston, Johannesburg
Tel.: (+27) 10 248 6000
Fax: (+27) 10 248 6002
E-mail: lgradidge@grundfos.com

Spain
Bombas GRUNDFOS España S.A.
Camino de la Fuentecilla, s/n
E-28110 Algete (Madrid)
Tel.: +34-91-848 8800
Fax: +34-91-628 0465

Sweden
GRUNDFOS AB
Box 333 (Lunnagårdsgatan 6)
431 24 Mölndal
Tel.: +46 31 332 23 000
Fax: +46 31 331 94 60

Switzerland
GRUNDFOS Pumpen AG
Bruggacherstrasse 10
CH-8117 Fällanden/ZH
Tel.: +41-44-806 8111
Fax: +41-44-806 8115

Taiwan
GRUNDFOS Pumps (Taiwan) Ltd.
7 Floor, 219 Min-Chuan Road
Taichung, Taiwan, R.O.C.
Tel.: +886-4-2305 0868
Fax: +886-4-2305 0878

Thailand
GRUNDFOS (Thailand) Ltd.
92 Chaloem Phrakiat Rama 9 Road
Dokmai, Pravej, Bangkok 10250
Tel.: +66-2-725 8999
Fax: +66-2-725 8998

Turkey
GRUNDFOS POMPA San. ve Tic. Ltd. Sti.
Gebze Organize Sanayi Bölgesi
Ihsan dede Caddesi
2. yol 200. Sokak No. 204
41490 Gebze/ Kocaeli
Tel.: +90 - 262-679 7979
Fax: +90 - 262-679 7905
E-mail: satis@grundfos.com

Ukraine
ТОВ "ГРУНДФОС УКРАЇНА"
Бізнес Центр Європа
Столичне шосе, 103
м. Київ, 03131, Україна
Tel.: (+38 044) 237 04 00
Fax: (+38 044) 237 04 01
E-mail: ukraine@grundfos.com

United Arab Emirates
GRUNDFOS Gulf Distribution
P.O. Box 16768
Jebel Ali Free Zone, Dubai
Tel.: +971 4 8815 166
Fax: +971 4 8815 136

United Kingdom
GRUNDFOS Pumps Ltd.
Grovebury Road
Leighton Buzzard/Beds. LU7 4TL
Tel.: +44-1525-850000
Fax: +44-1525-850011

U.S.A.
Global Headquarters for WU
856 Koomey Road
Brookshire, Texas 77423 USA
Phone: +1-630-236-5500

Uzbekistan
Grundfos Tashkent, Uzbekistan
The Representative Office of Grundfos
Kazakhstan in Uzbekistan
38a, Oybek street, Tashkent
Tel.: (+998) 71 150 3290 / 71 150 3291
Fax: (+998) 71 150 3292

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ECM: 1377436

GRUNDFOS Holding A/S
Poul Due Jensens Vej 7
DK-8850 Bjerringbro
Tel: +45 87 50 14 00
www.grundfos.com

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