Mixers and flowmakers

SMD, SMG and SFG

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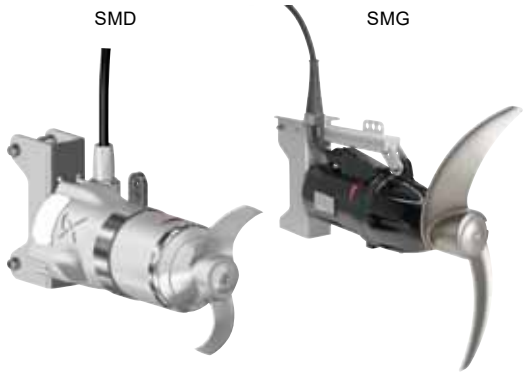
Table of contents

1. Introduction

General description

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

Mixers



TM06 5440 4615 - TM06 5441 4615

Fig. 1 SMD and SMG mixers

The Grundfos range of horizontal SMD and SMG mixers is 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

TM06 3409 0215 - TM06 5275 4215

Fig. 2 SFG flowmakers

The Grundfos range of horizontal SFG flowmakers is 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.)

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.

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.

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

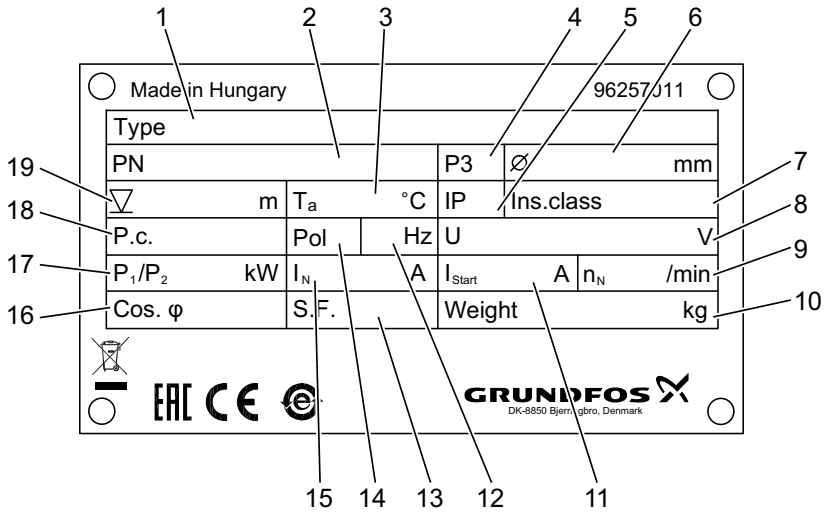
Type key

Code	Example	S	M	G.	75.	34.	264.		6.	1H.	
	Type range										
S	SMD, SMG, SFG										
	Version										
M	Mixer										
F	Flowmaker										
	Drive										
D	Direct driven										
G	Gear-driven										
	Motor output power P2										
	Code from type designation / 10 [hp]										
75	75 = 7.5 hp										
	Propeller diameter										
34	34 = 34 in										
	Application										
[ ]	Standard										
M	Mud, for higher density										
H	Heavy duty, (biogas plants)										
	Propeller speed [min^{-1}]										
264	264 RPM										
	Installation method										
[ ]	Standard										
T	2" thread connection for installation										
	Explosion protection										
[ ]	Non-explosion-proof										
	Frequency										
6	60 Hz										
	Voltage code										
0H	3 x 460 V, Star										
1H	3 x 460 V, Delta										
	Version code										
[ ]	First generation										
A	Second generation										
B	Third generation										
Z	**Custom-built products**										

Nameplate

The nameplate is fitted to the motor housing.

The details on the nameplate are required when ordering spare parts.



TM06 2588 4414

Fig. 3 Nameplate of SMD, SMG and SFG

Pos.	Description	Pos.	Description
1	Type designation	11	Weight
2	Production code	12	Starting current
3	Propeller diameter	13	Frequency
4	Liquid temperature range	14	Number of poles
5	Product number	15	Rated current
6	Enclosure class according to IEC	16	Power factor
7	Serial number	17	Motor power P1/P2
8	Insulation class	18	Model
9	Rated voltage	19	Maximum installation depth
10	Rated speed (propeller)		

Fix the additional nameplate supplied with the mixer or flowmaker in a visible position at the installation site.

3. Product description

Features

The below descriptions are related to the main components of the products. Product variants are available. See *Variants* on page 14.

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.

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 water-in-oil 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.

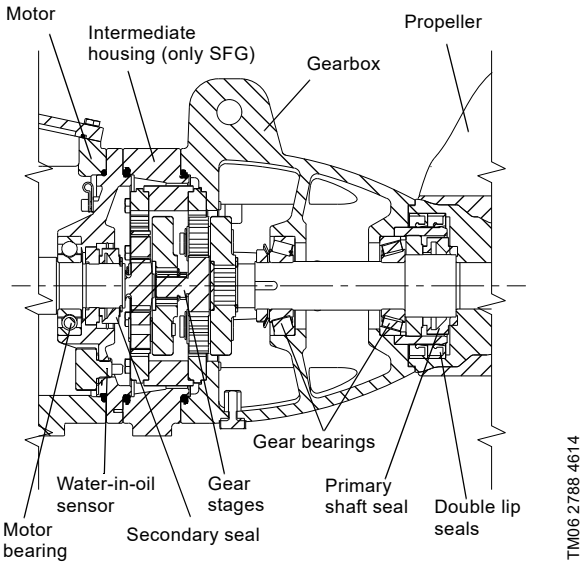


Fig. 4 Gearbox

Bearings

SMD

Motor: Single- or double-row ball bearing.

SMG and SFG

Motor: Single-row ball bearings.

Gear: Tapered roller bearings.

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*	Mechanical shaft seal, carbon/ ceramic

* 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 seal, located between the gearbox and motor, is a mechanical shaft seal.

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*	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	

* SiC: Silicon carbide.

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 (Baydur®) 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).

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	7G AWG 16 (1.5 mm^2)	0.56 (14.2)
	SEOOW 600V	7G 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 11 (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* on page 45.

Sensors

SMD

Three thermal switches (PTO), one in each phase, are built into the windings as standard.

For SMD a moisture switch is standard.

SMG and SFG

As standard, the mixers or flowmakers are supplied with the following sensors:

- three thermal switches (PTO) in SMG or thermistors (PTC) in SFG, one in each motor winding
- one leakage sensor incorporated in the gearbox.

For the water-in-oil sensor, use a Grundfos relay, See *Leakage sensor* on page 10.

Starting method

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.

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.

SFG

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

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 fig. 5. See also *Identification*, fig. 3, position 1 and *Type key* to determine the voltage and starting method of your mixer or flowmaker.

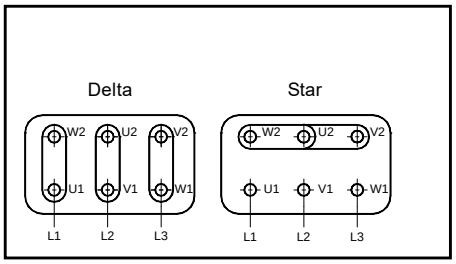


Fig. 5 Schematic drawing of delta and star connection

SMD

Marking		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	

* 10-wire cables.

7-wire cable

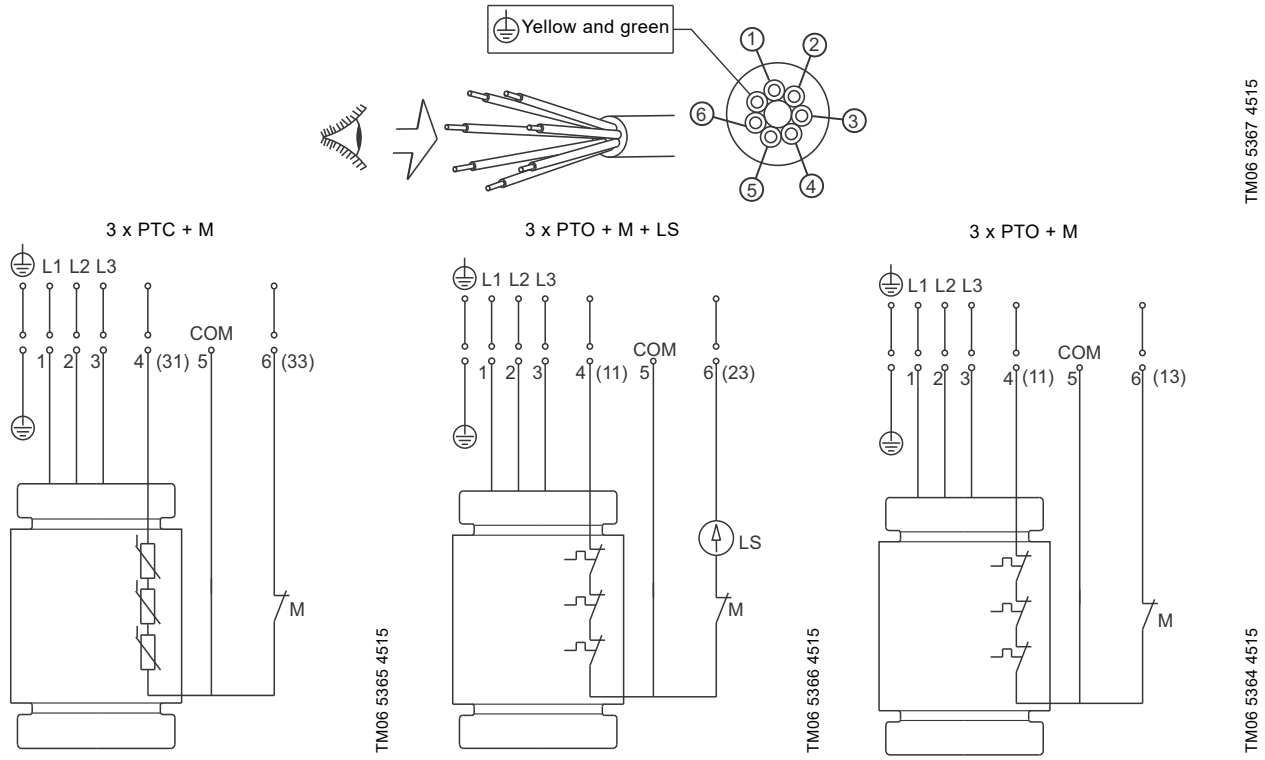


Fig. 6 Wiring diagrams for 7-wire cable

10-wire cable

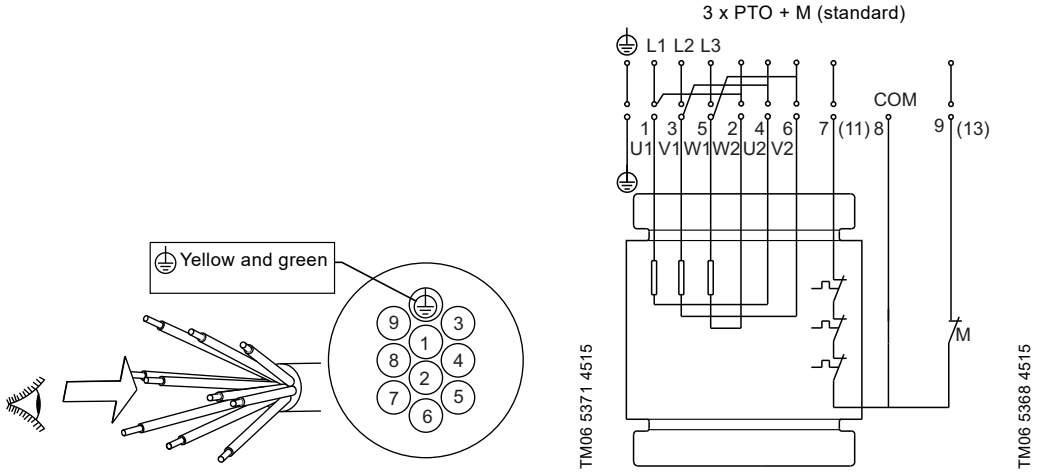


Fig. 7 Wiring diagrams for 10-wire cable

SMG and SFG

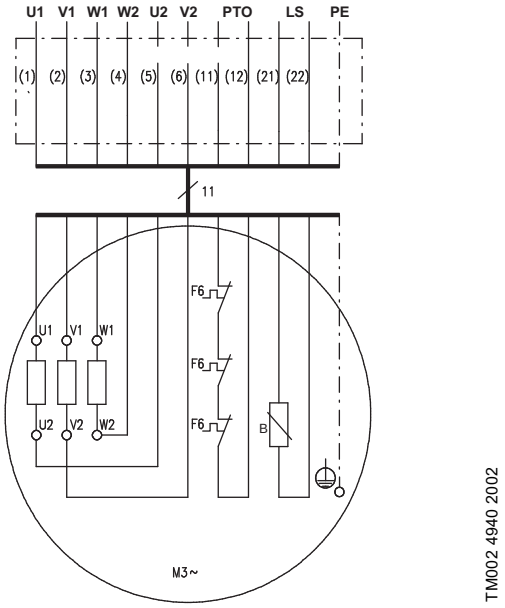


Fig. 8 Three thermal switches (PTO)

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). See *Leakage sensor* on page 10.

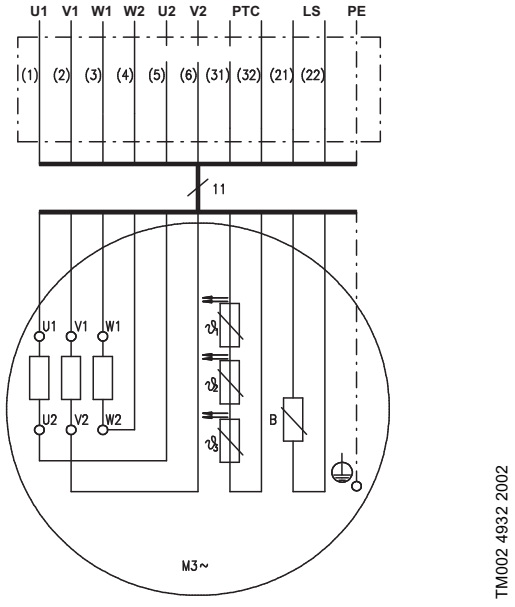


Fig. 9 Three thermistors (PTC sensors)

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). See *Leakage sensor* on page 10.

Moisture switch

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

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 sensor to a relay. The relay must be a Grundfos relay, supplied as an optional accessory. See *Accessories* on page 51.

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

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 %.

Sound pressure level

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

4. Selection of product

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.

Standard product

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

- mixer or flowmaker containing a motor, gearbox and complete propeller
- factory-fitted 33 and 50 ft (10 or 15 m) power supply cable (different product numbers for units with different cable lengths)
- paint:
  - SMD: uncoated stainless steel surface
  - SMDG and SFG: black, NCS 9000N, 450 µm thickness
- 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* on page 58.

Variants

If a longer cable or an explosion-proof version is required, it is no longer a standard mixer or flowmaker. A list of variants can be found in *Variants* on page 14.

Accessories

See *Accessories* on page 51 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.

Relay

A Grundfos leakage detector relay can be selected.

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

SMD mixers

3 x 460 V

Type designation*	Permissible motor voltage [V]	Product number	
		33 ft (10 m) cable	49 ft (15 m) cable
SMD.13.7.1775.T.6.0H	3 x 460 V Y	98996009	98996018
SMD.17.8.1765.T.6.0H	3 x 460 V Y	98996010	98996019
SMD.23.10.1750.T.6.0H	3 x 460 V Y	98996011	98996020
SMD.13.7.1775.6.0H	3 x 460 V Y	98996012	98996021
SMD.17.8.1765.6.0H	3 x 460 V Y	98996013	98996022
SMD.23.10.1750.6.0H	3 x 460 V Y	98996014	98996023
SMD.30.11.1182.6.1H	3 x 460 V D	98996015	98996024
SMD.38.13.1178.6.1H	3 x 460 V D	98996016	98996025
SMD.47.15.1170.6.1H	3 x 460 V D	98996017	98996026

* 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* on page 51. All the mixers and flowmakers need a bracket before installation is possible.

SMG mixers

3 x 460 V

Type designation	Permissible motor voltage [V]	Product number			
		33 ft (10 m) cable 80/80	33 ft (10 m) cable 100/100	49 ft (15 m) cable 80/80	49 ft (15 m) cable 100/100
SMG.12.22.276.6.0H	3 x 460 Y	98788060		98788105	
SMG.16.25.275.6.0H	3 x 460 Y	98788061		98788106	
SMG.22.25.273.6.0H	3 x 460 Y	98788062		98788107	
SMG.27.28.264.6.1H	3 x 460 D	98788063		98788108	
SMG.34.28.263.6.1H	3 x 460 D	98788064		98788109	
SMG.44.28.315.6.1H	3 x 460 D	98788065		98788110	
SMG.55.28.314.6.1H	3 x 460D	98788066		98788111	
SMG.75.34.264.6.1H	3 x 460 D		98788067		98788112
SMG.95.34.263.6.1H	3 x 460 D		98788068		98788113
SMG.130.34.318.6.1H	3 x 460 D		98788069		98788114
SMG.160.34.317.6.1H	3 x 460 D		98788070		98788115
SMG.220.35.345.6.1H	3 x 460 D		98788071		98788116

SFG flowmakers

3 x 460 V

Type designation	Permissible motor voltage [V]	Product number			
		33 ft (10 m) cable 100/100	33 ft (10 m) cable 120/120	49 ft (15 m) cable 100/100	49 ft (15 m) cable 120/120
SFG.10.51.50.6.0H	3 x 460 Y	98788072		98788117	
SFG.14.51.57.6.0H	3 x 460 Y	98788073		98788118	
SFG.19.51.64.6.0H	3 x 460 Y	98788074		98788119	
SFG.23.51.68.6.1H	3 x 460 D	98788075		98788120	
SFG.30.51.74.6.1H	3 x 460 D	98788076		98788121	
SFG.39.51.82.6.1H	3 x 460 D	98788077		98788122	
SFG.44.51.85.6.1H	3 x 460 D	98788078		98788123	
SFG.48.51.88.6.1H	3 x 460 D	98788079		98788124	
SFG.10.71.32.6.0H	3 x 460 Y	98788080		98788125	
SFG.14.71.36.6.0H	3 x 460 Y	98788081		98788126	
SFG.19.71.41.6.0H	3 x 460 Y	98788082		98788127	
SFG.23.71.43.6.1H	3 x 460 D	98788083		98788128	
SFG.30.71.48.6.1H	3 x 460 D	98788084		98788129	
SFG.39.71.53.6.1H	3 x 460D	98788085		98788130	
SFG.47.71.53.6.1H	3 x 460 D	98788086		98788131	
SFG.55.71.54.6.1H	3 x 460 D	98788087		98788132	
SFG.10.91.26.6.0H	3 x 460 Y	98788088		98788133	
SFG.12.91.28.6.0H	3 x 460 Y	98788089		98788134	
SFG.16.91.31.6.0H	3 x 460 Y	98788090		98788135	
SFG.22.91.35.6.0H	3 x 460 Y	98788091		98788136	
SFG.26.91.37.6.1H	3 x 460 D	98788092		98788137	
SFG.30.91.39.6.1H	3 x 460 D	98788093		98788138	
SFG.34.91.39.6.1H	3 x 460 D	98788094		98788139	
SFG.43.91.42.6.1H	3 x 460 D	98788095		98788140	
SFG.55.91.46.6.1H	3 x 460 D	98788096		98788141	
SFG.30.102.29.6.1H	3 x 460 D		98788097		98788142
SFG.43.102.34.6.1H	3 x 460 D		98788098		98788143
SFG.48.102.35.6.1H	3 x 460 D		98788099		98788144
SFG.60.102.38.6.1H	3 x 460 D		98788100		98788145
SFG.67.102.35.6.1H	3 x 460 D		98788101		98788146
SFG.82.102.38.6.1H	3 x 460 D		98788102		98788147
SFG.98.102.40.6.1H	3 x 460 D		98788103		98788148
SFG.110.102.42.6.1H	3 x 460 D		98788104		98788149

6. Variants

Motor

Power supply cable	Standard cable, longer than 49 ft (15 m)	7G AWG 16 (1.5 mm^2)	SEOOW 600V	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	82 ft (25 m) 131 ft (40 m)		Contact Grundfos
		11 x AWG 16 (1.5 mm^2), ∅0.67" (17 mm)	S1BN8-F 11G1.5	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	82 ft (25 m) 115 ft (35 m) 164 ft (50 m)		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	82 ft (25 m) 115 ft (35 m) 164 ft (50 m)		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
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) 15 m 82 ft (25 m) 115 ft (35 m) 164 ft (50 m)	SMG SFG	Contact Grundfos
Sensors	Leakage switch				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 figs 10 to 16 refer to *Material specification* on page 18.

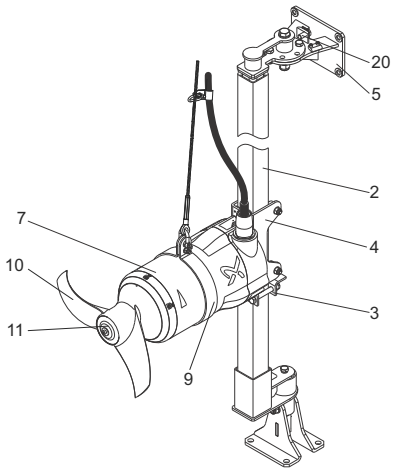


Fig. 10 SMD mixer

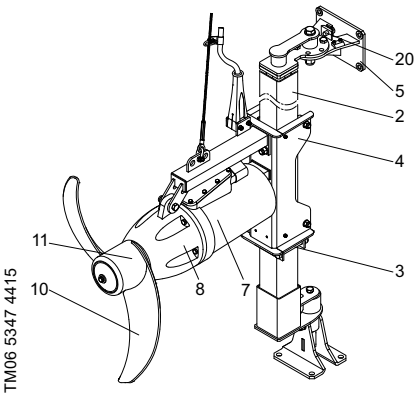


Fig. 11 SMG mixer

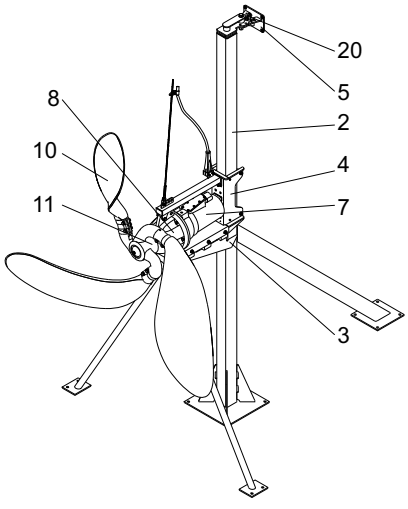


Fig. 12 SFG flowmaker

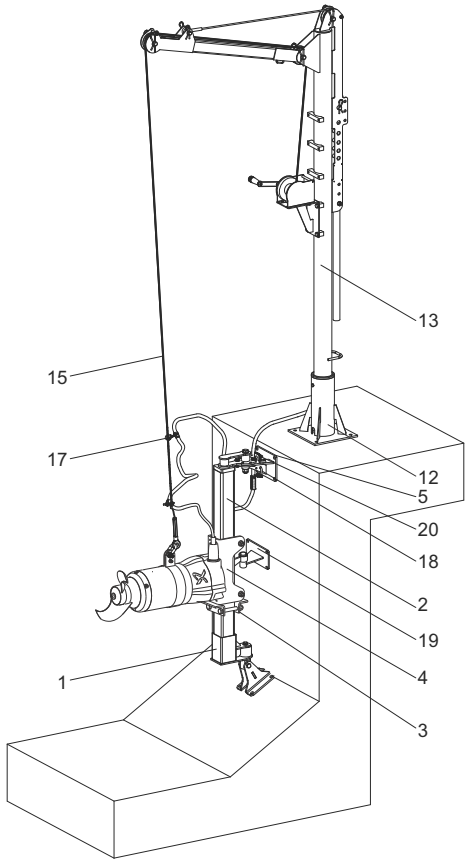


Fig. 13 SMD mixer installed on a column profile

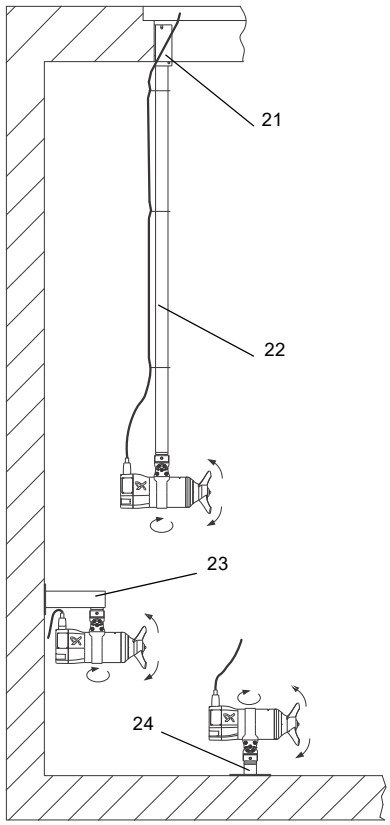


Fig. 14 SMD mixers (suspended, wall and floor mounting). See products with "T" in type description

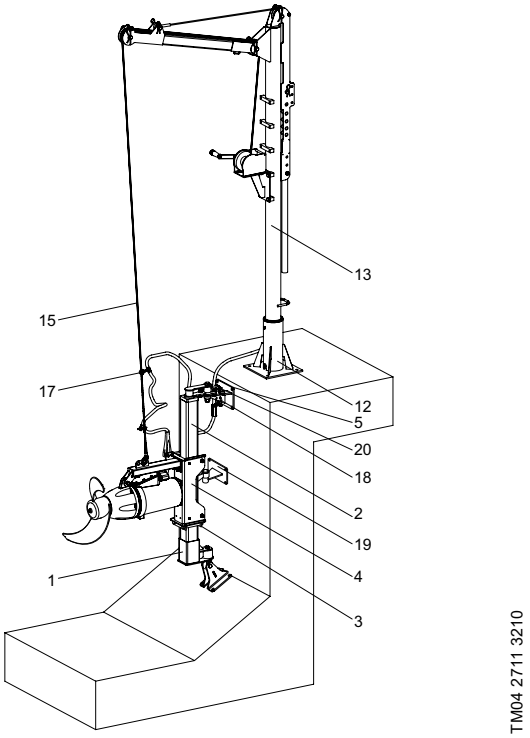


Fig. 15 Installation drawing, SMG mixer installed on a column profile

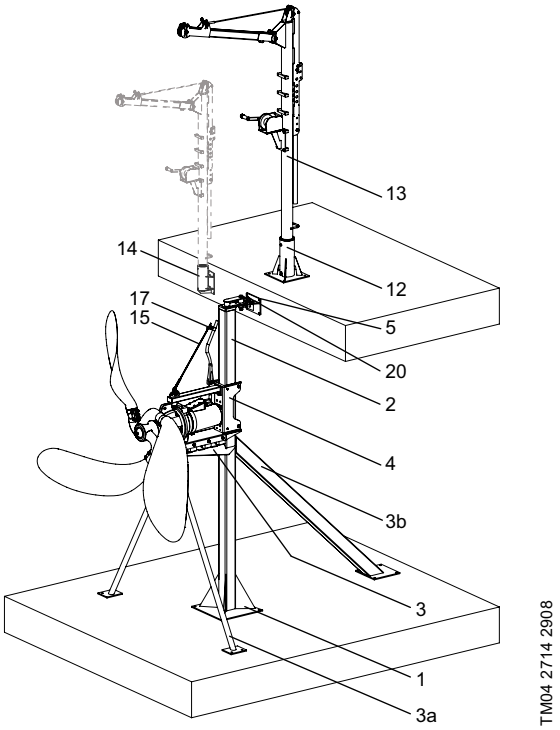


Fig. 16 Installation drawing, SFG flowmaker installed on a column profile

Material specification

Position numbers refer to figs 10 to 16.

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 (Baydur®) with a stainless-steel (1.4301) core			SFG.xx.51.xx
		Polyurethane resin (Baydur®) 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

Exploded views

SMD.13.xx to SMD.47.xx

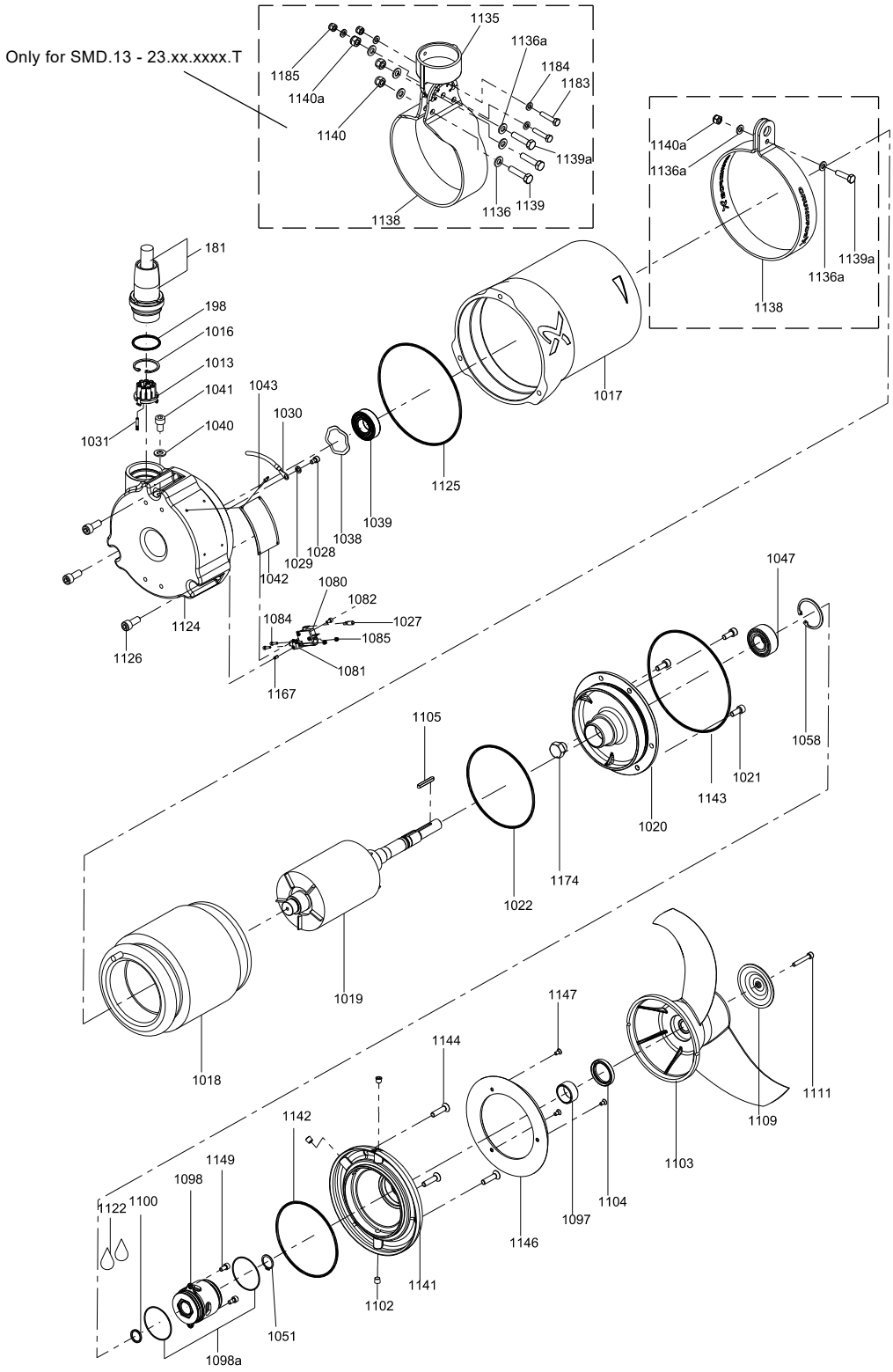


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Fig. 17 Exploded view, SMD.13.xx to SMD.47.xx

SMG.12.xx to SMG.55.xx

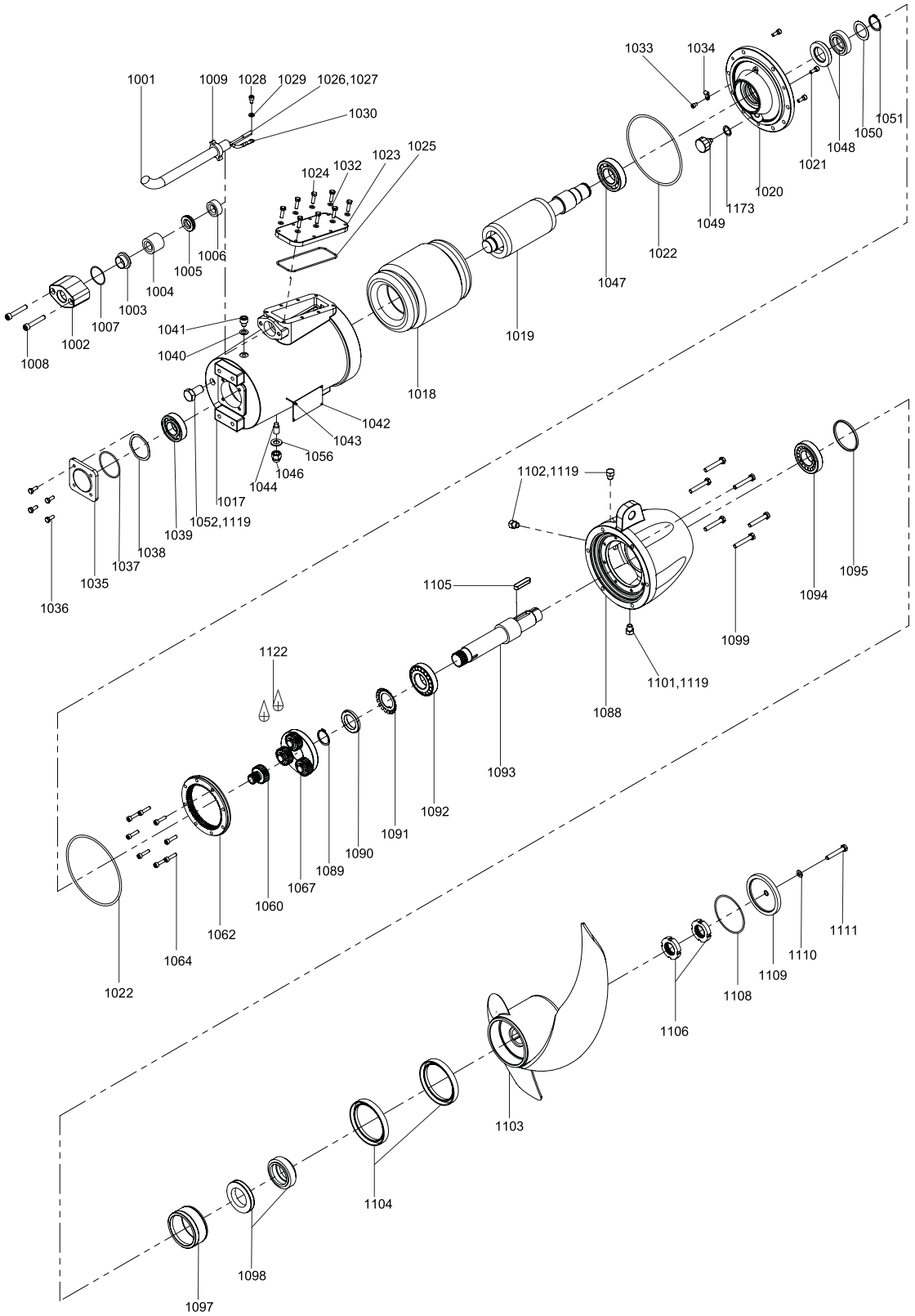

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Fig. 18 Exploded view, SMG.12.xx to SMG.55.xx

SMG.75.xx to SMG.160.xx

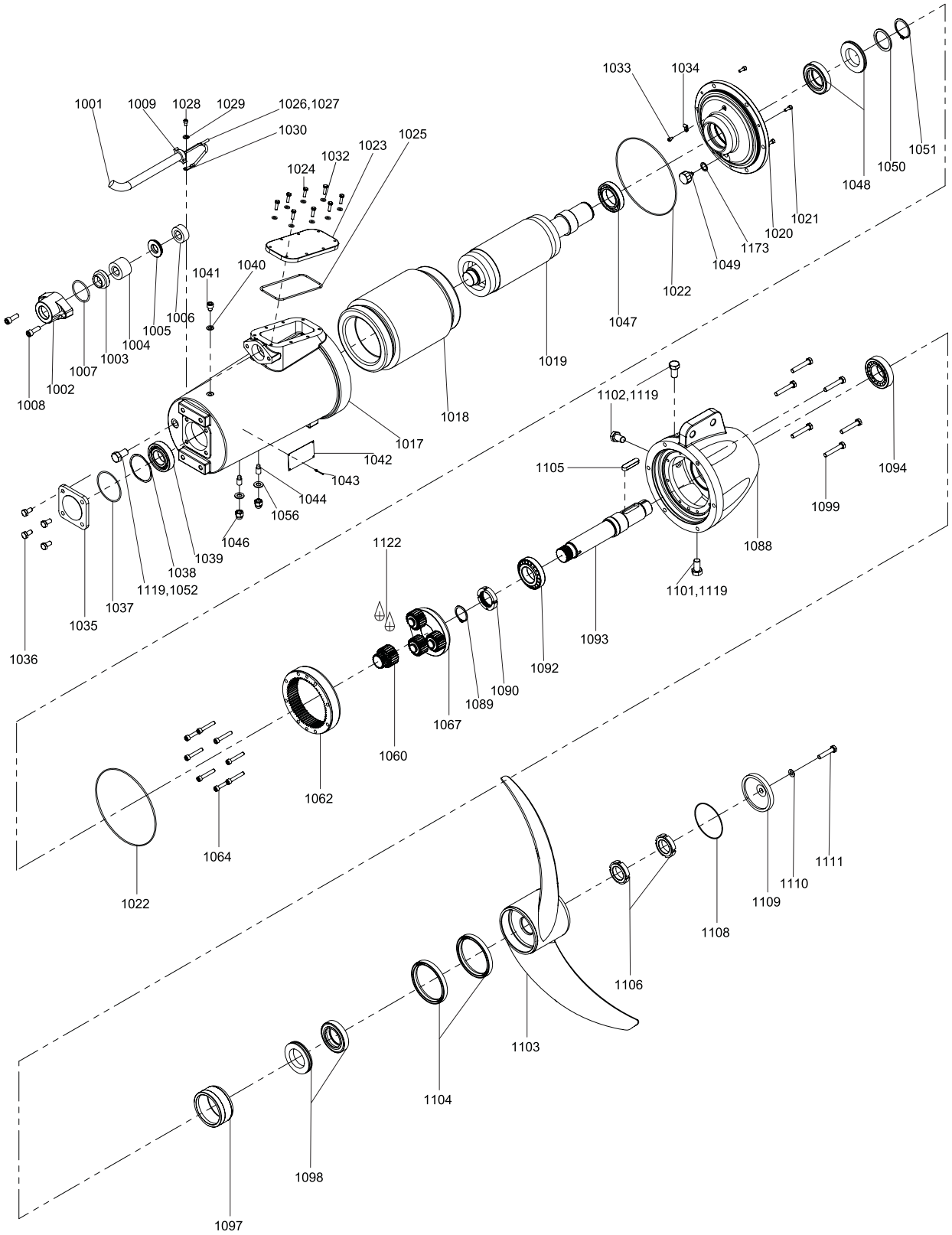

Fig. 19 Exploded view, SMG.75.xx to SMG.160.xx

SMG.220.xx

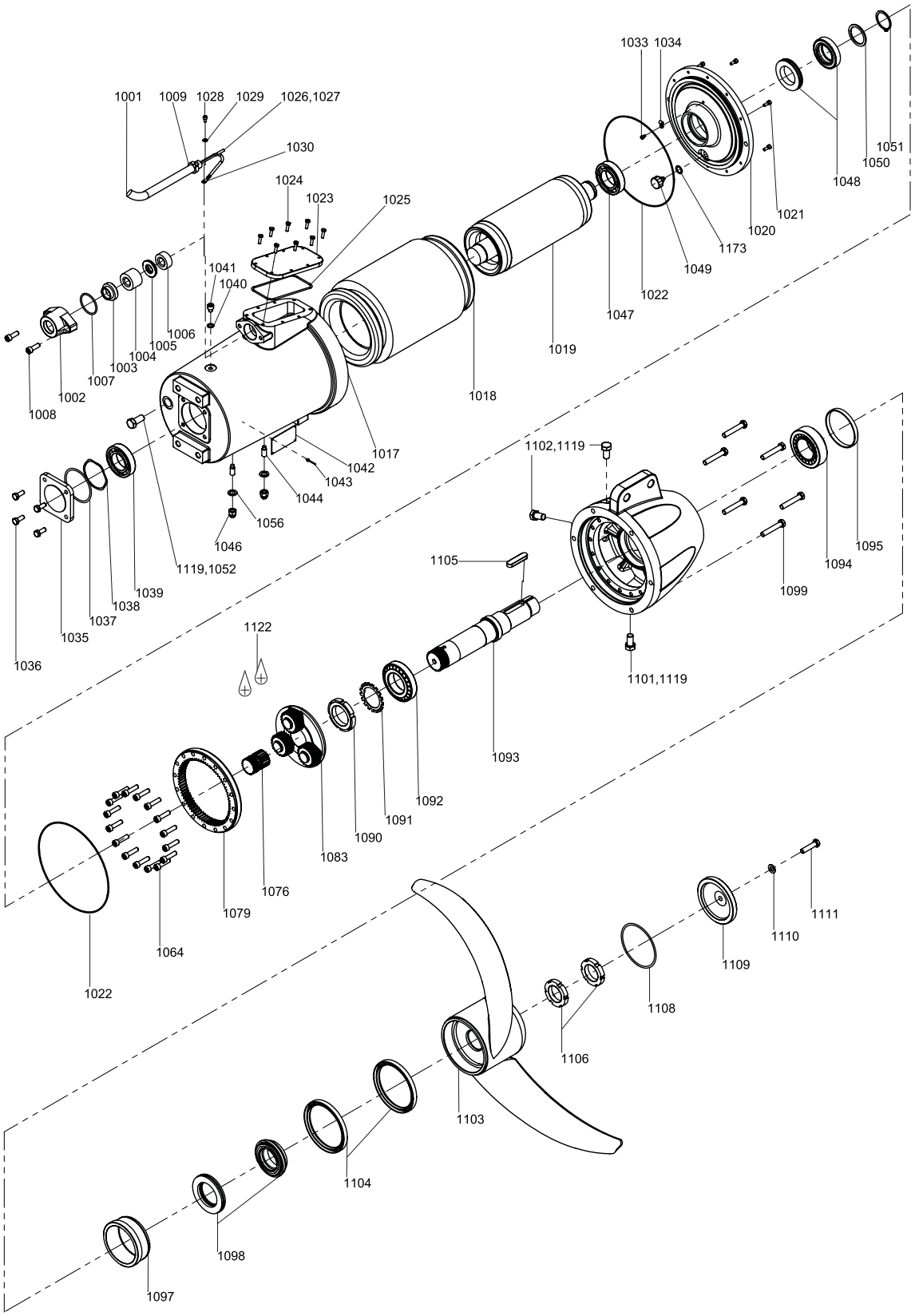

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Fig. 20 Exploded view, SMG.220.xx

SFG.xx.51.xx

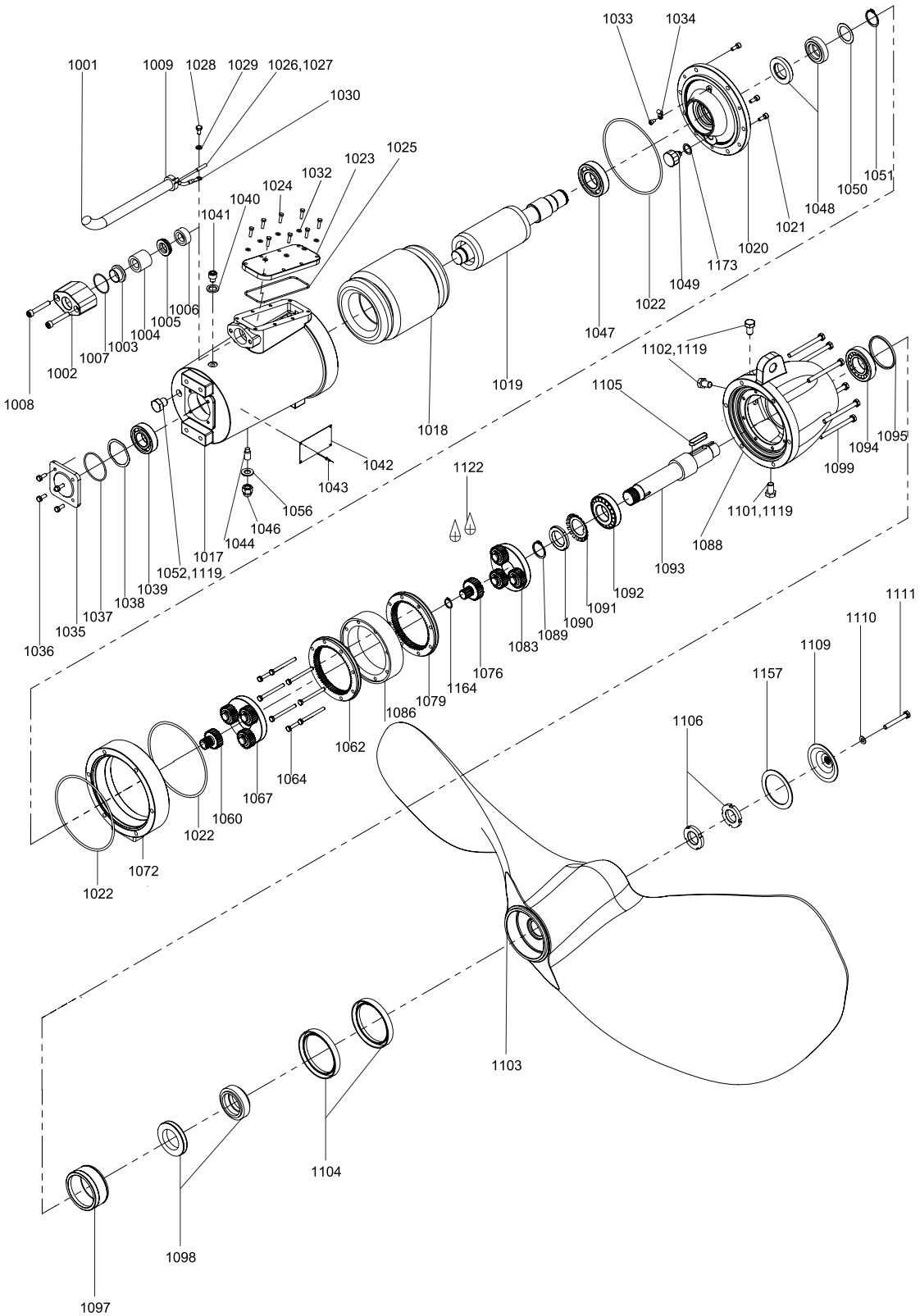

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Fig. 21 Exploded view, SFG.xx.51.xx

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

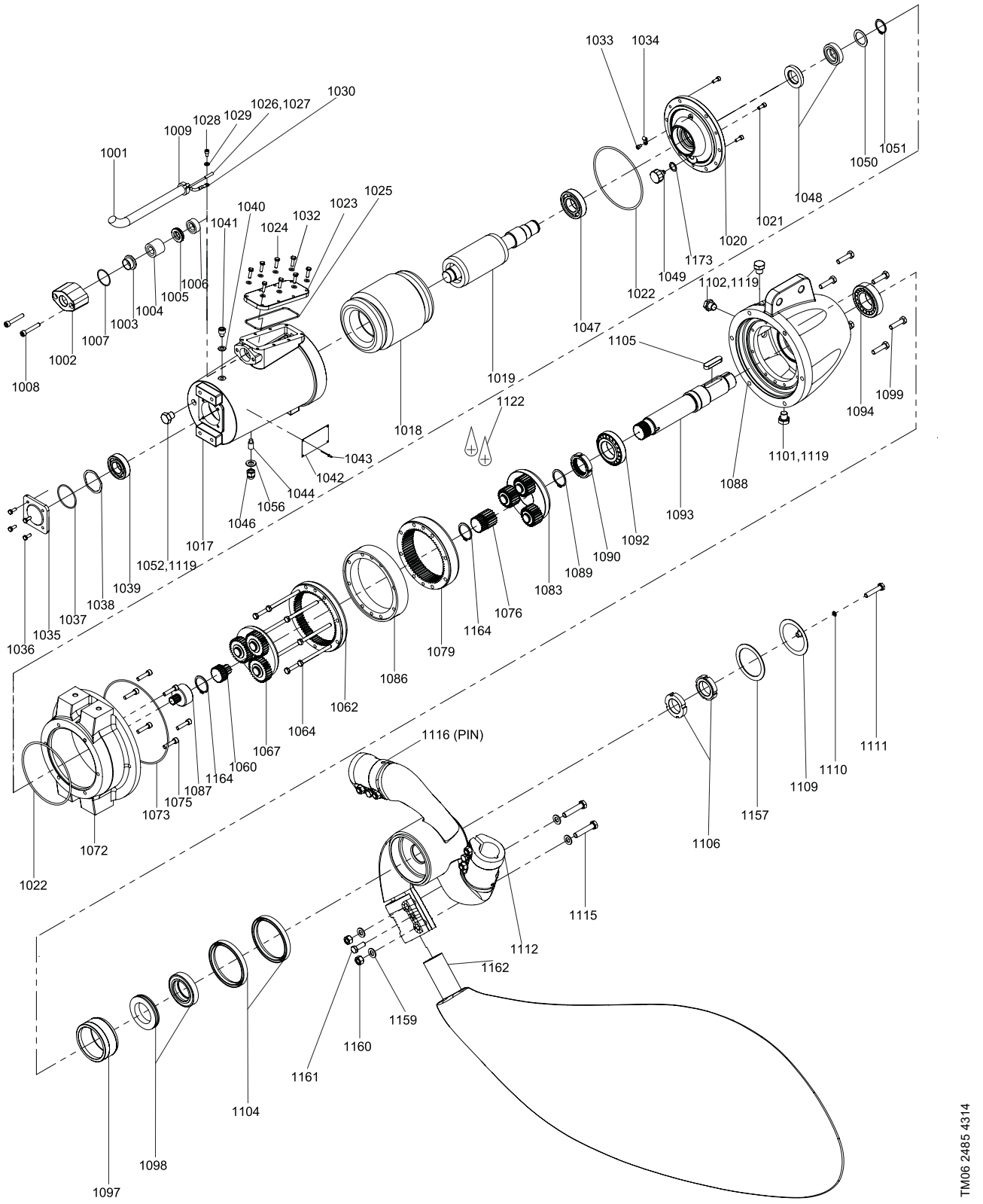

Fig. 22 Exploded view, SFG.xx.71.xx and SFG.xx.91.xx

SFG.xx.102.xx

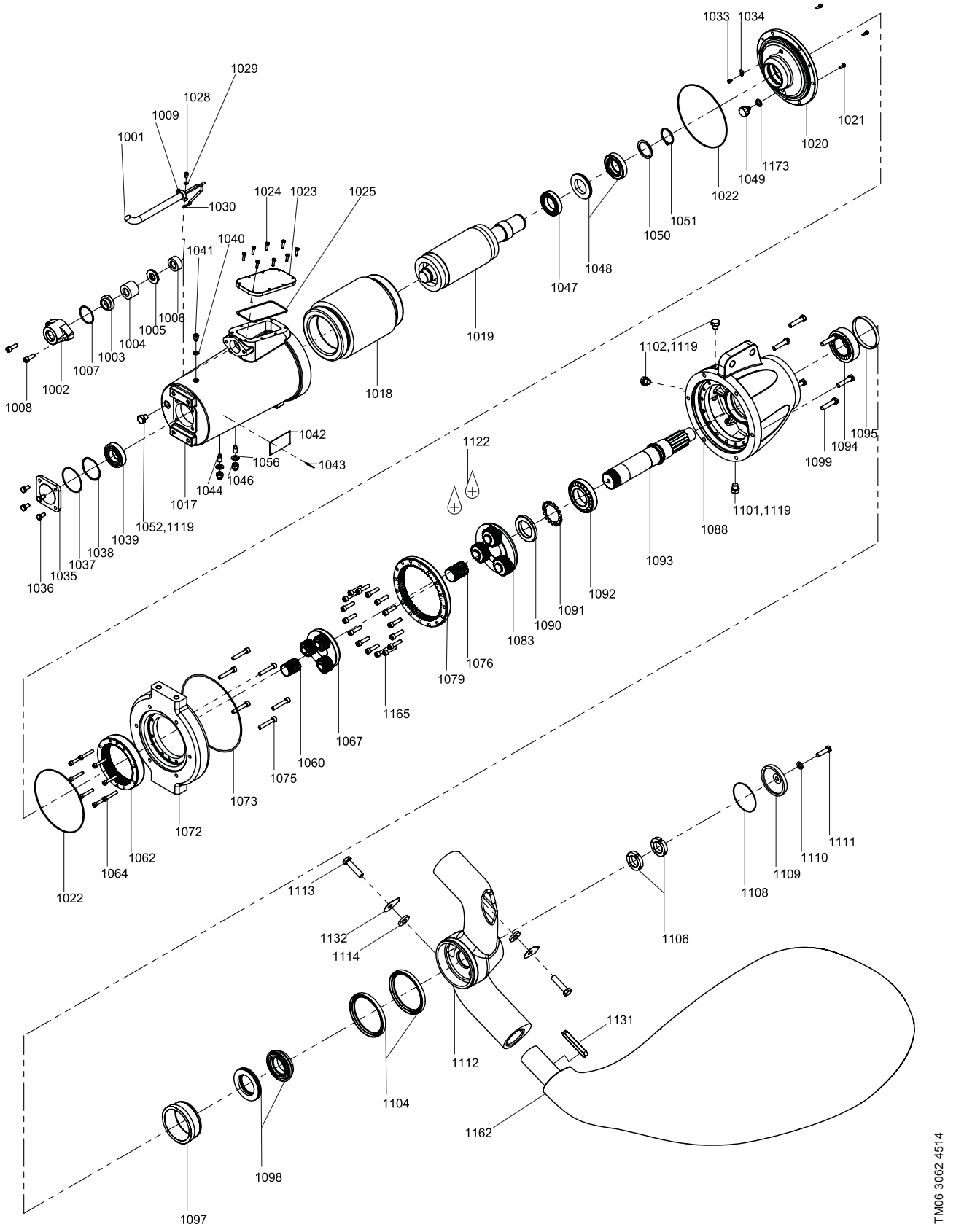

Fig. 23 Exploded view, SFG.xx.102.xx

Position numbers and material specification

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
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	Zinc-plated steel/316 (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

Pos.	Component	Material
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)
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

Pos.	Component	Material
1117	Nut	316 (DIN 1.4401)
1118	Lock washer	316 (DIN 1.4401)
1119	PTFE tape	PTFE
1120	Screw-sealing paste	
1121	Sealing paste, Curil K2	
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	Baydur®/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)

8. Positioning

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, the rules concerning minimum rear clearance and minimum distance from the tank bottom have to be adhered to as the mixer, flowmaker or other equipment may otherwise be damaged.

Mixers

Positioning in general

Figure 24 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

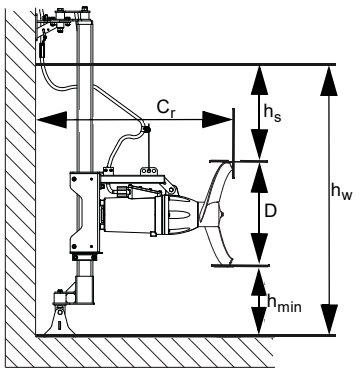

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Fig. 24 Principle sketch of positioning of mixers

Examples

Positioning of one mixer in a circular tank

The positioning rules shown in figs 25 and 26 also apply to flowmakers.

The mixer must be positioned as shown in fig. 25. 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.

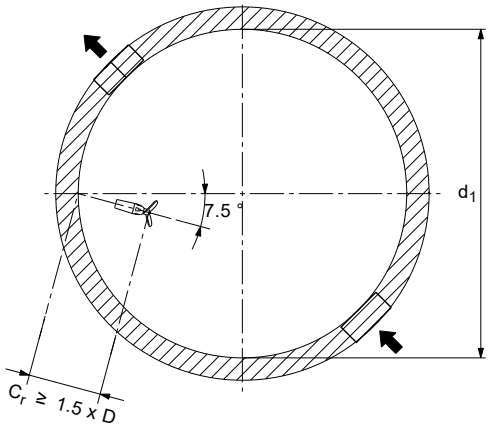

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Fig. 25 Mixing of liquid to prevent solids from settling

If liquid circulation is required, the mixer must be positioned as shown in fig. 26.

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

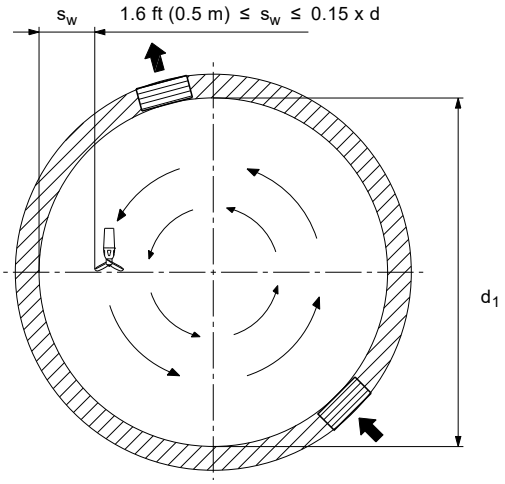

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Fig. 26 Vortex circulation of liquid

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 27 and 28 also apply to flowmakers.

If the tank ratio is 1.5 < L/B ≤ 2.5, the mixer must be positioned as shown in fig. 27.

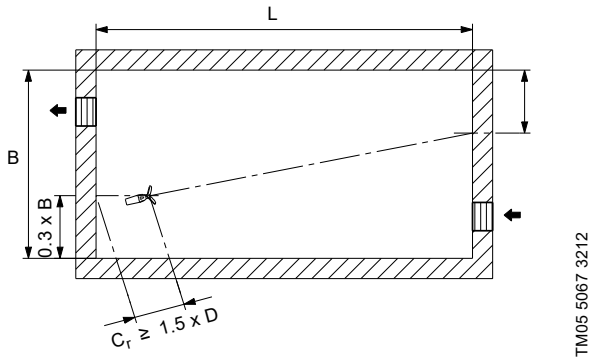

Fig. 27 Positioning of one mixer if the ratio is 1.5 < L/B ≤ 2.5

If the tank ratio is 1 < L/B ≤ 2, the mixer must be positioned as shown in fig. 28.

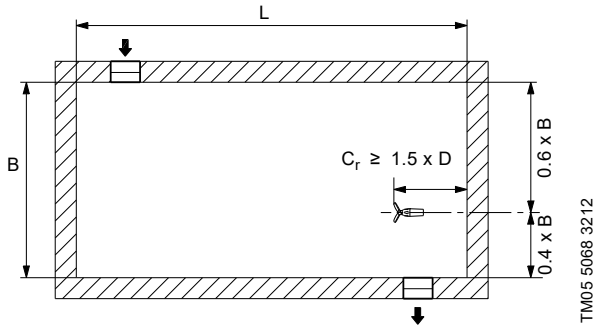

Fig. 28 Positioning of one mixer if the ratio is 1 < L/B ≤ 2

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. 29 also apply to flowmakers.

If the tank ratio is 1.5 < L/B ≤ 2.5, the mixers must be positioned as shown in fig. 29.

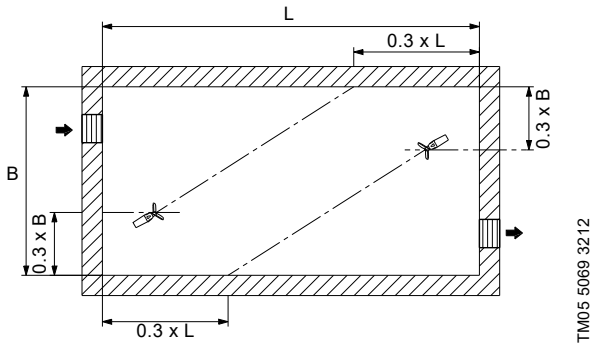

Fig. 29 Positioning of two mixers if tank ratio is 1.5 < L/B ≤ 2.5

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. 30.

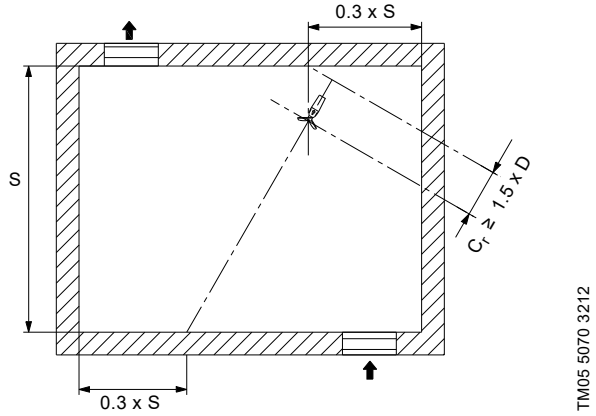

Fig. 30 Positioning of one mixer in a square tank

Positioning of two mixers in a square tank

In square tanks, the mixers must be positioned as shown in fig. 31.

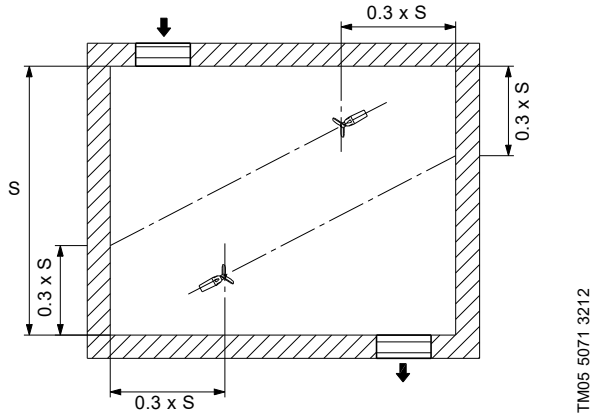

Fig. 31 Positioning of two mixers in a square tank

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. 32)

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

Mixer pointing upwards (fig. 33)

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

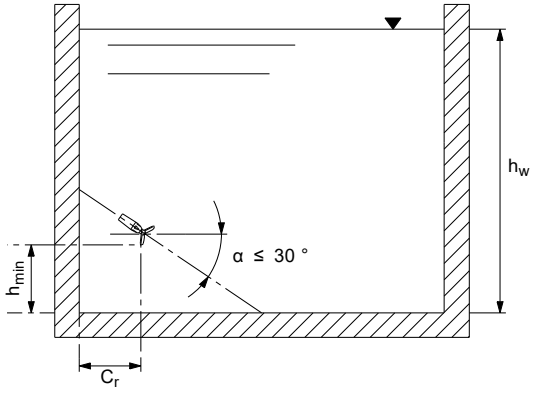

Fig. 32 Mixer pointing downwards

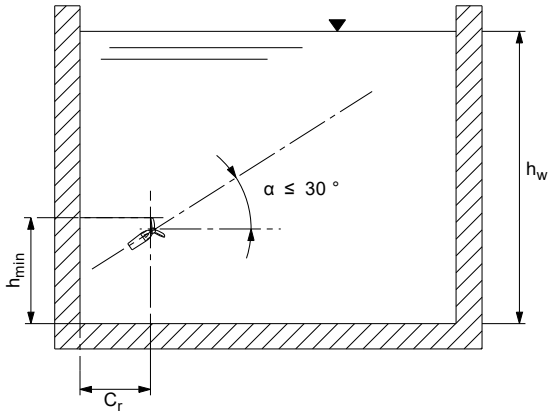

Fig. 33 Mixer pointing upwards

Flowmakers

Positioning in general

Figure 34 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.

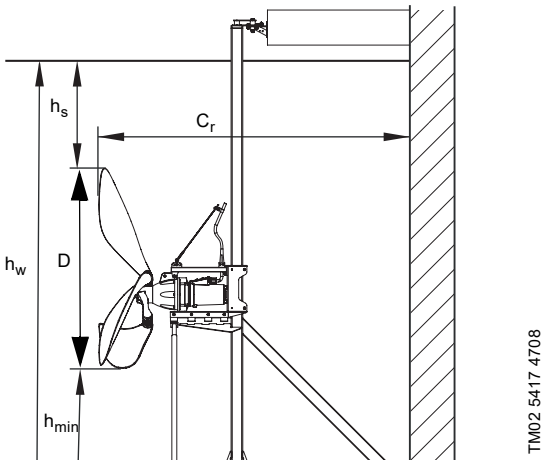

Fig. 34 Principle sketch of positioning of flowmakers

For positioning of flowmakers in circular, rectangular and square tanks, see positioning requirements for mixers on pages 28 to 30.

Positioning of two or more flowmakers in parallel in a channel

Positioning must be carried out according to fig. 35.

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 ≥ 1.6 ft (0.5 m)
- S_t ≥ 0.5 x D.

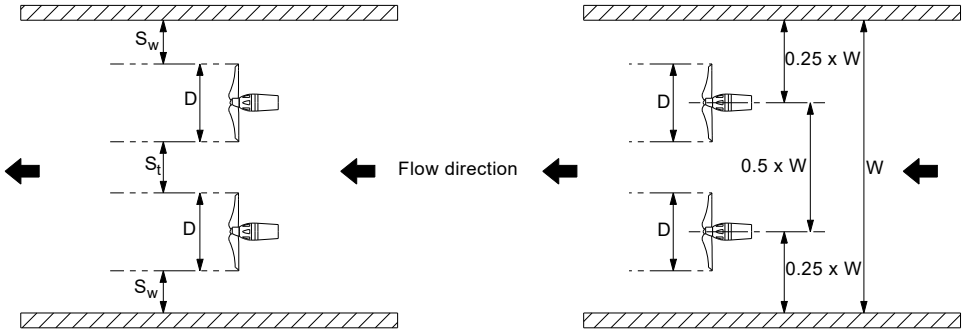

Fig. 35 Positioning of two or more flowmakers in parallel in a channel

Positioning of flowmakers in aerated and non-aerated racetrack tanks

For racetrack tanks with channels with or without diffusers, the requirements shown in fig. 36 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 ≥ 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 ≥ 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 ≥ h_w
- clearance requirement (C_r) between flowmakers and the last row of diffusers, if any: C_r ≥ 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.

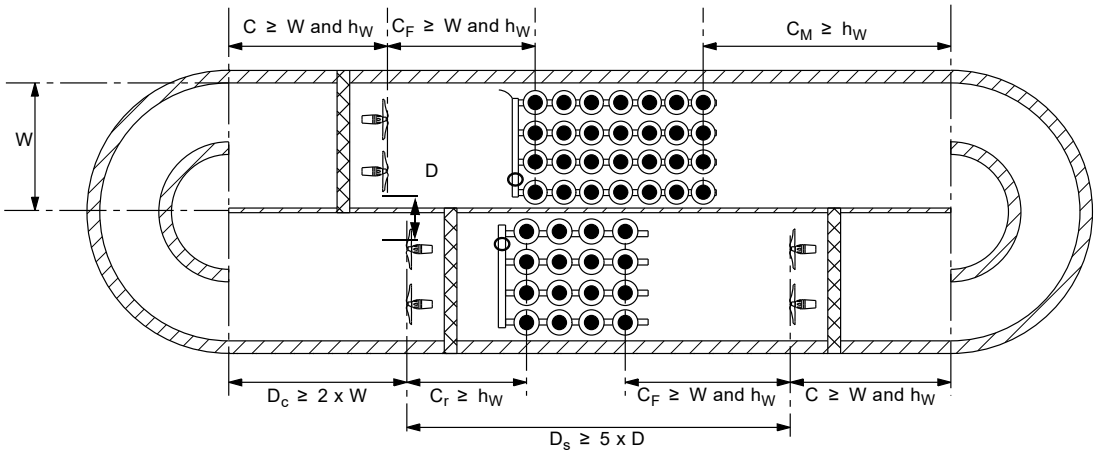

Fig. 36 Principle sketch of positioning of flowmakers in a racetrack tank

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 37 and 38 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. 37: $C_F \geq W$ 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. 37), 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 °.

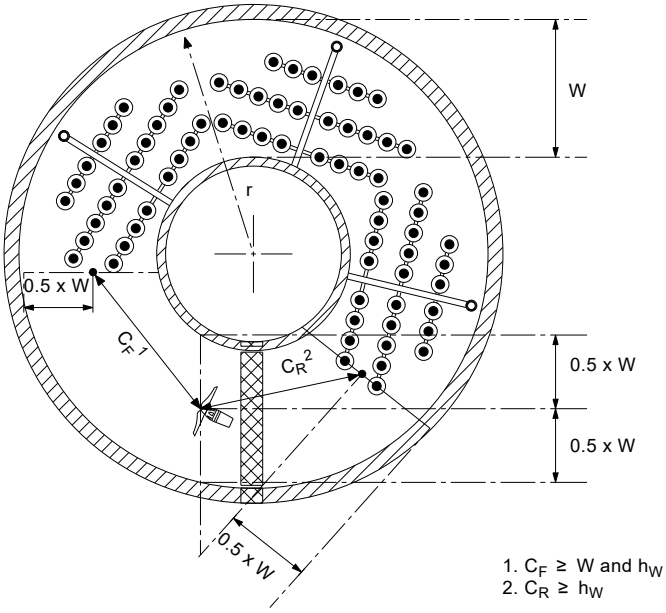

Fig. 37 One flowmaker in a ring-channel tank

- If two flowmakers are to be installed (fig. 38), 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 °.

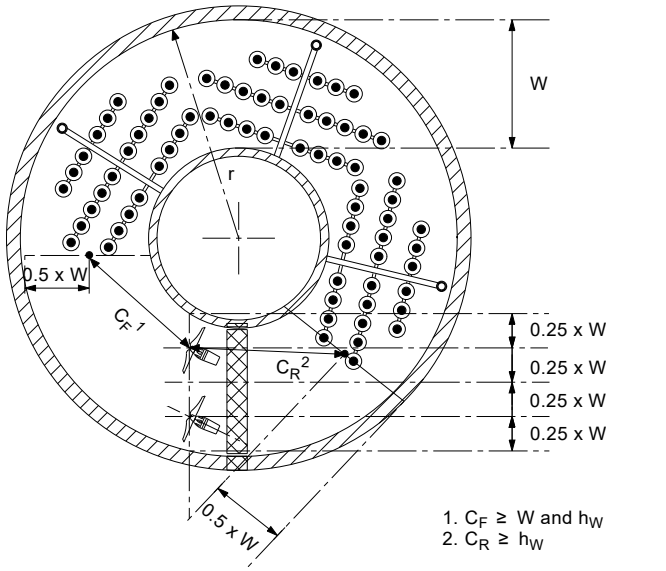

Fig. 38 Two flowmakers in a ring-channel tank

9. Installation

Crane

In order to select the right size of crane for a specific mixer or flowmaker, see *Selection guide for accessories* on page 52. The crane can easily be lifted off the crane foot (pos. 12) if it needs to be used at another mixer or flowmaker installation.

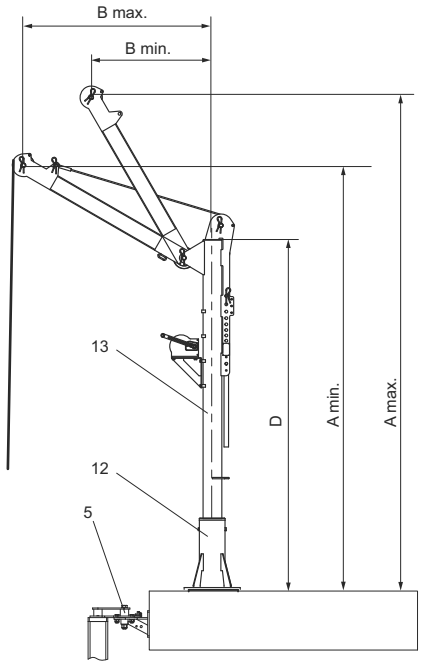

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Fig. 39 Crane

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)

The position numbers in the following table refer to figs 39 and 44.

Pos.	Description
1	Bottom fixation bracket
4	Motor bracket
5	Top fixation bracket
12	Crane foot
13	Crane with winch

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).

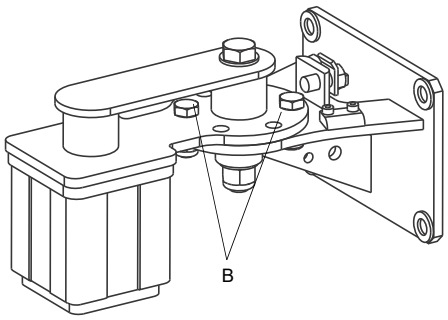

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Fig. 40 Top fixation bracket

Installation drawings

SMD

The SMD mixers are suitable for the following installation methods:

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

See figs 41 and 42.

For various type of installation accessories, see *Accessories*, page 51.

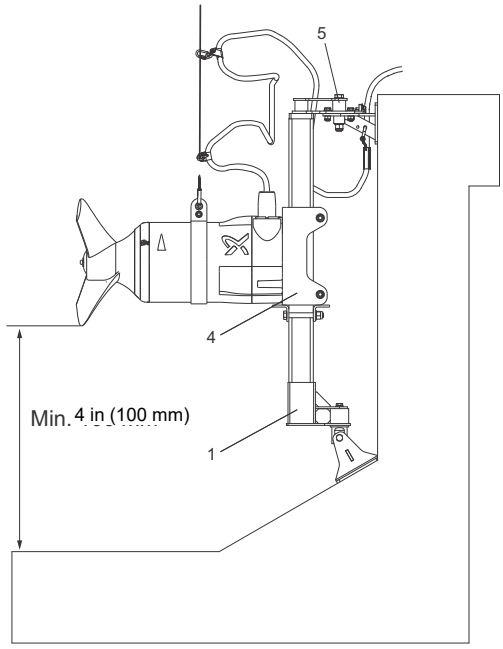


Fig. 41 Column profile mounting

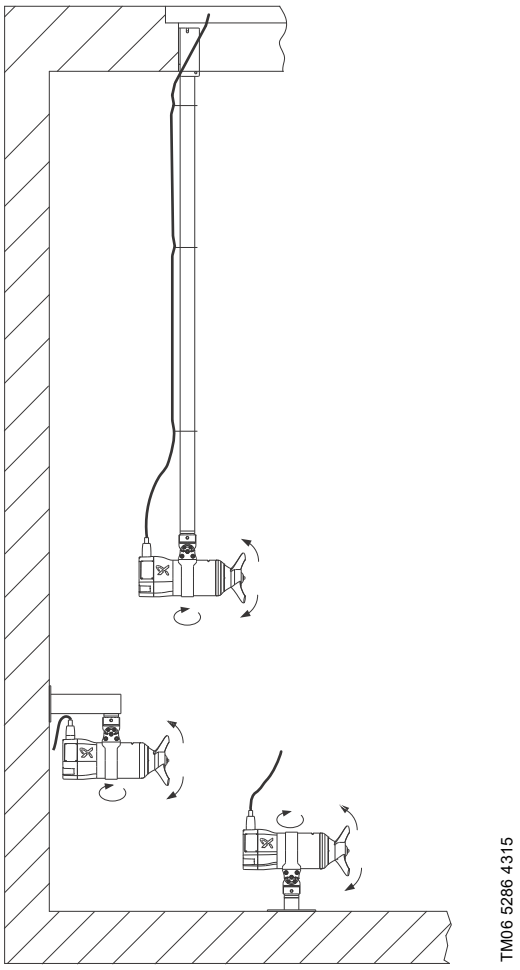


Fig. 42 Suspended mounting, wall mounting and floor mounting

SMG

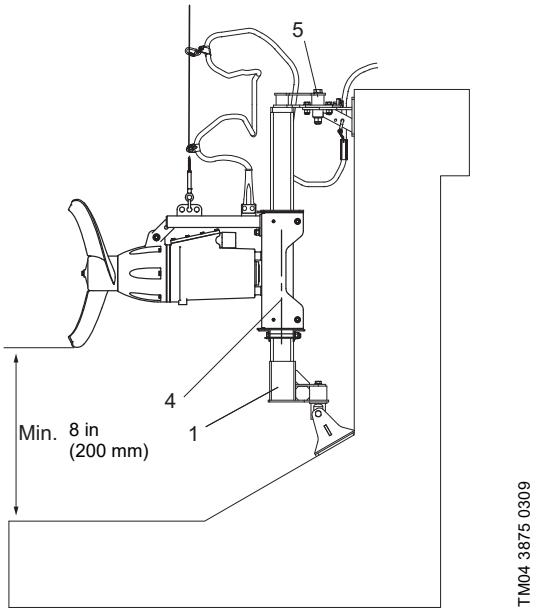
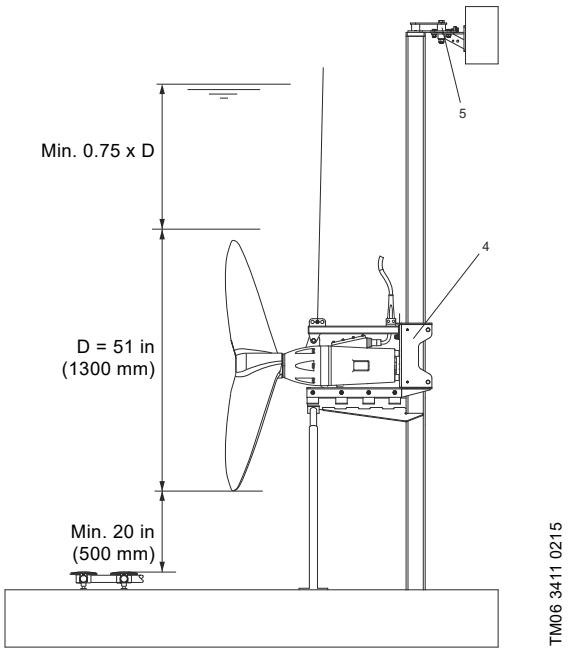


Fig. 43 Installation of SMG mixers

SFG

SFG.xx.51.xx



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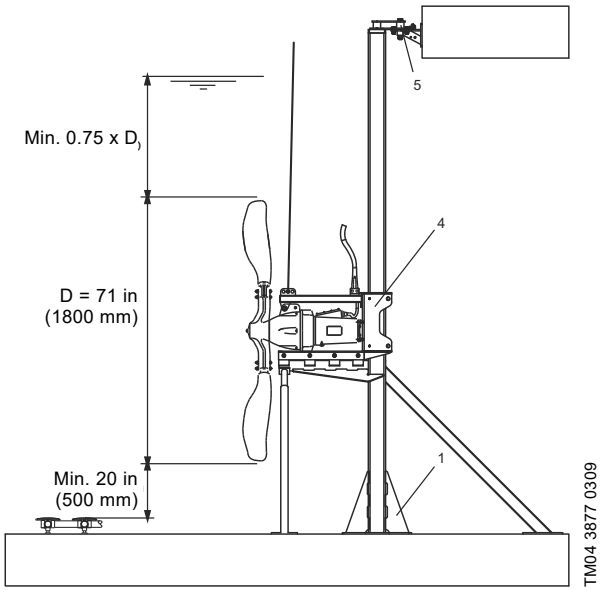

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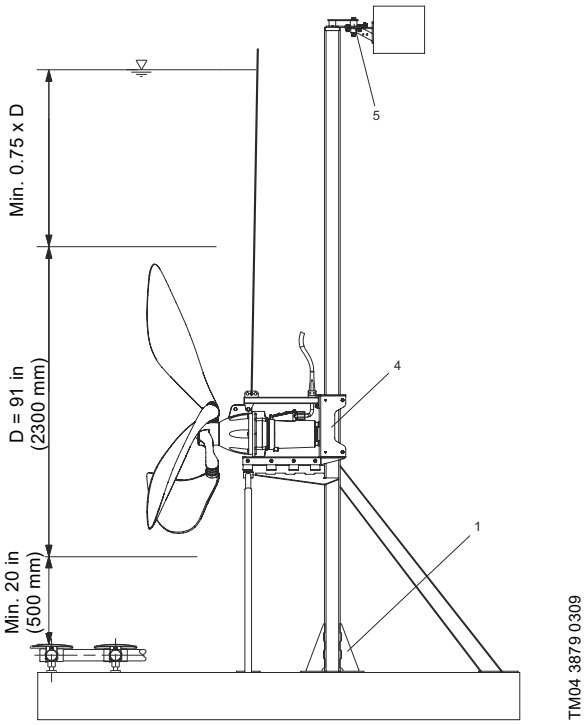

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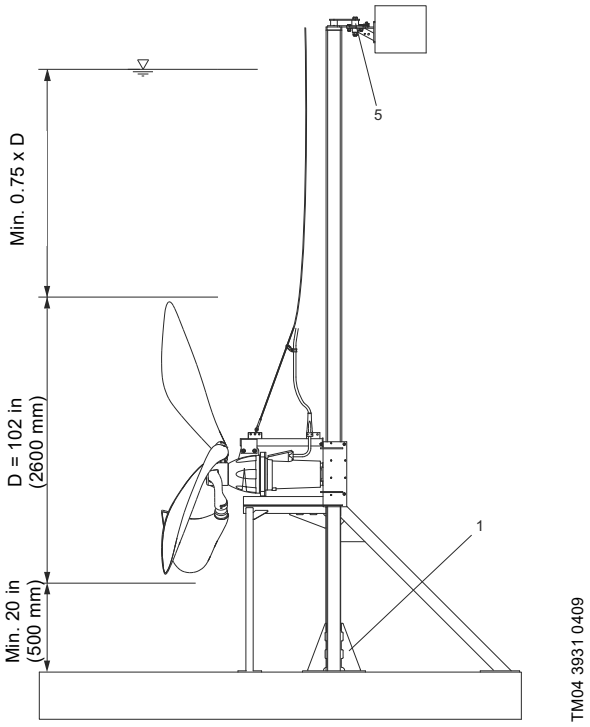


Fig. 44 Installation of flowmakers

Mechanical loads

SMD

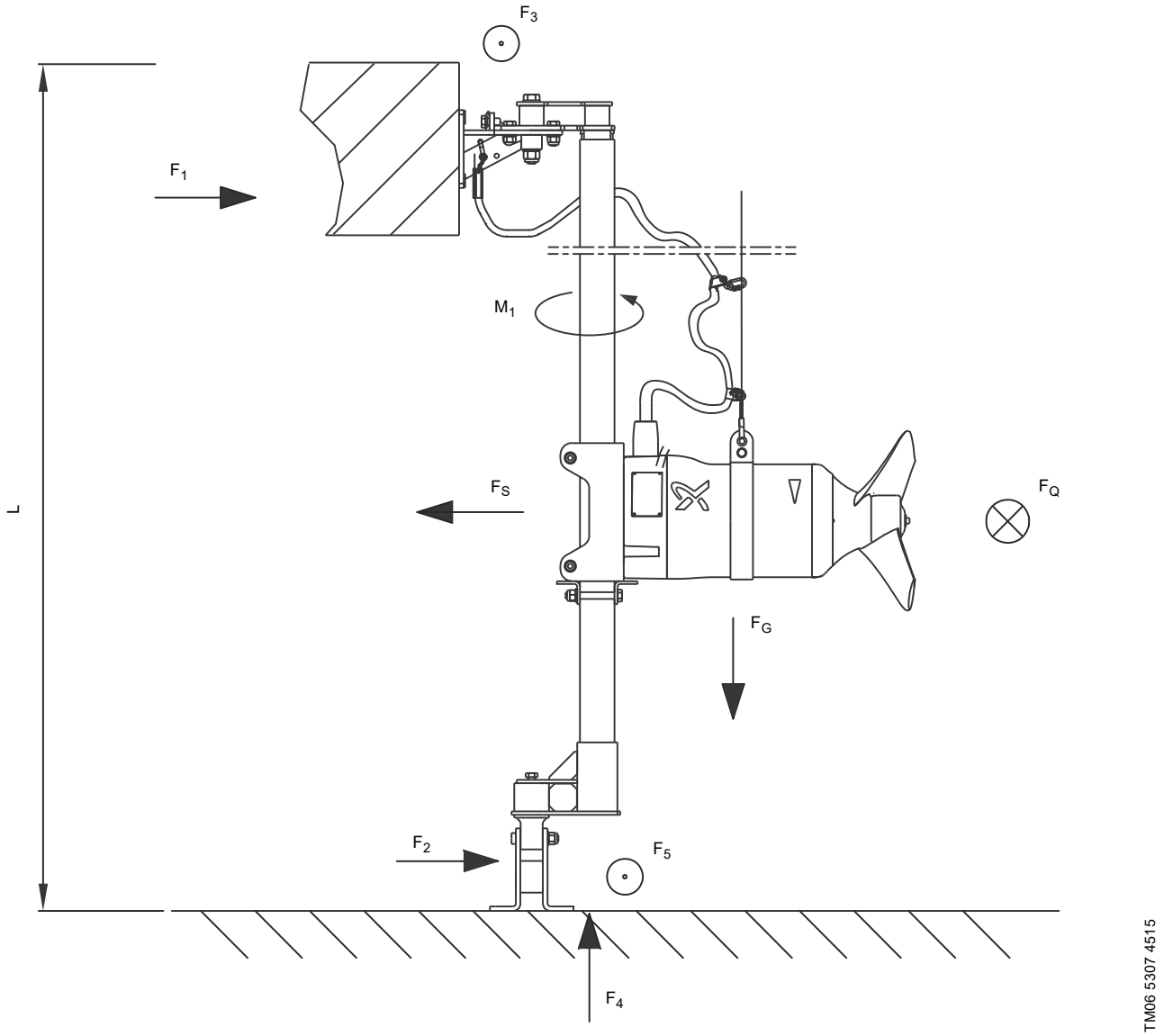


Fig. 45 Mechanical load of mixers

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)	
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)	

SMG

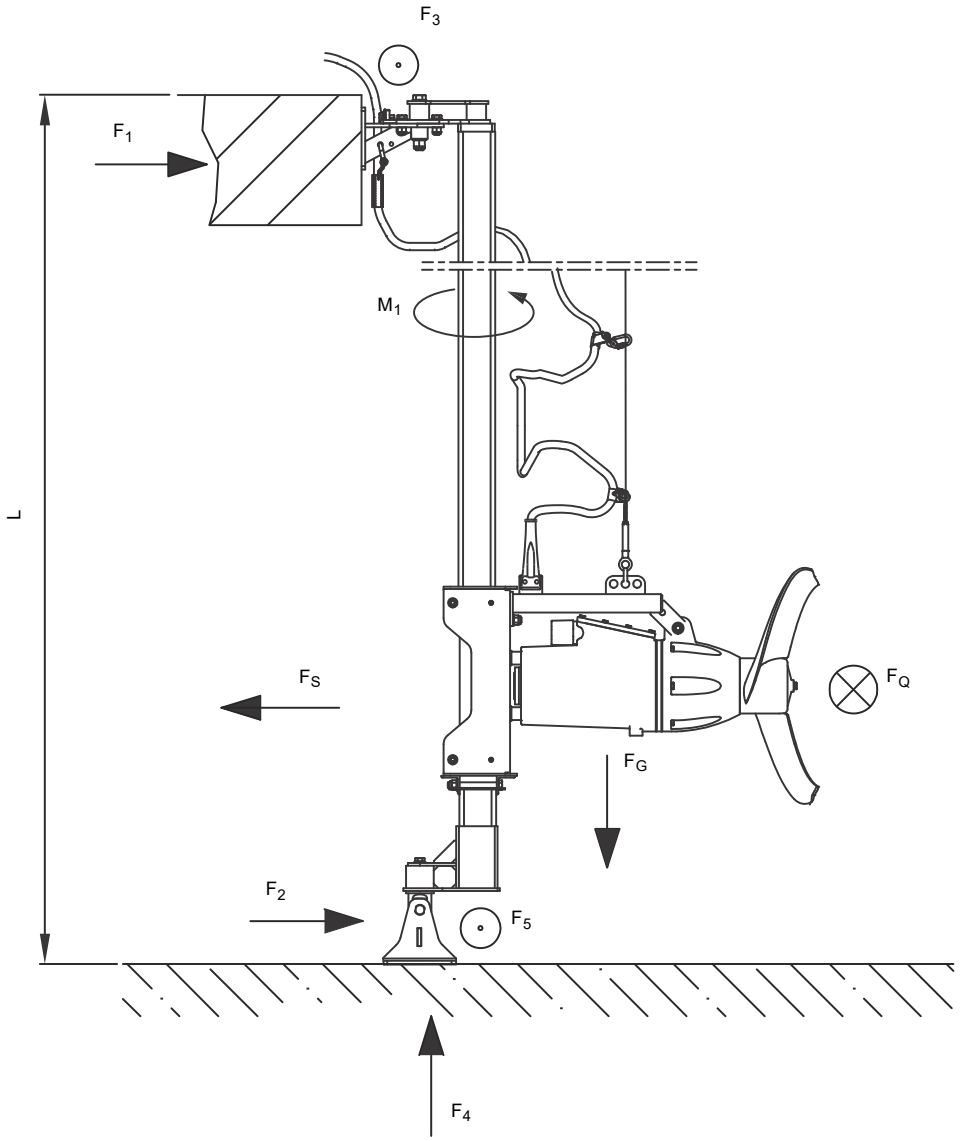


Fig. 46 Mechanical load of mixers

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)	
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)	

Flowmakers

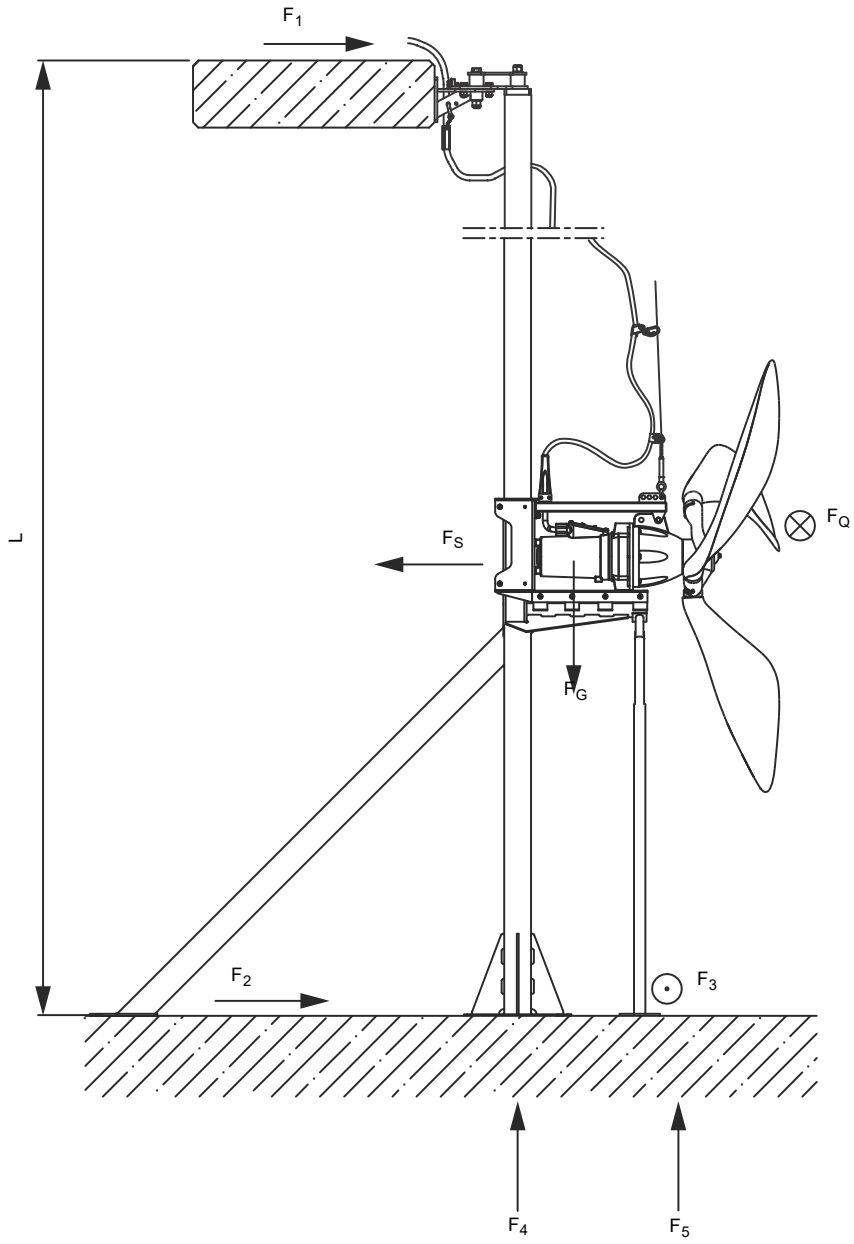


Fig. 47 Mechanical loads of flowmakers

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

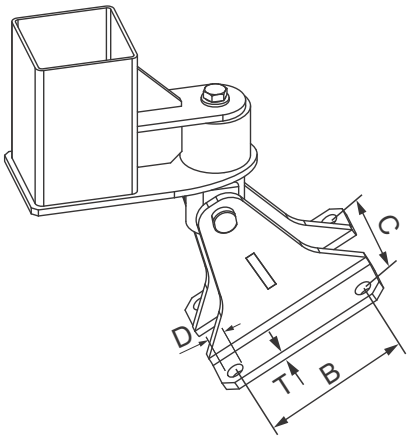
Flowmaker	L [ft (m)]	F_S [lb_f (N)]	F_Q [lb_f (N)]	F_G [lb_f (N)]	F_1 [lb_f (N)]	F_2 [lb_f (N)]	F_3 [lb_f (N)]	F_4 [lb_f (N)]	F_5 [lb_f (N)]
SFG.10.51.50.	13 (4)	149 (665)	37 (166)	249 (1109)	48 (212)	102 (453)	37 (166)	257 (1143)	102 (453)
	20 (6)				32 (141)	118 (524)		312 (1386)	
	26 (8)				24 (106)	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)	
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)	
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)	

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.10.91.26.	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)	
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)	

Dimensions of accessories

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

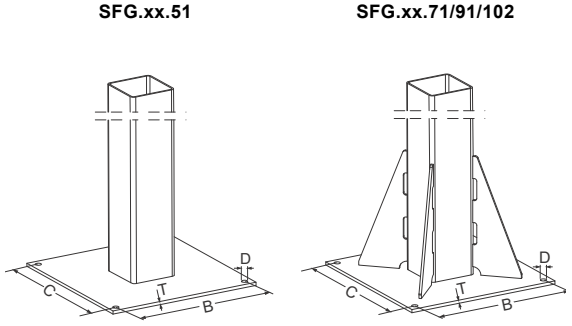
For further information on accessories, see *Accessories* on page 51.



TM04 3897 0309

Fig. 48 Bottom fixation bracket

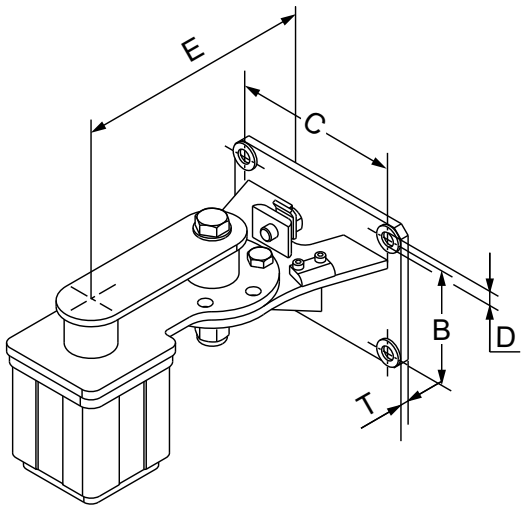
Column profile	B [in (mm)]	C [in (mm)]	D [in (mm])	T [in (mm)]
2.5" X 2.5" (60 x 60 mm^2)	5.11 (130)	4.53 (115)	0.59 (15)	0.31 (8)
3" X 3" (80 x 80 mm^2)				
4" X 4" (100 x 100 mm^2)				



TM04 3928 0409 - TM04 3898 0309

Fig. 49 Bottom fixation plate

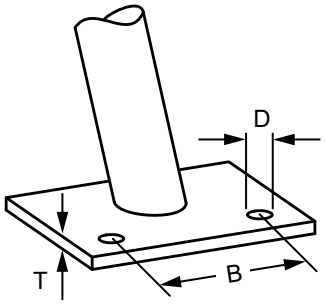
Flowmaker type	B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
SFG.xx.51	8.27 (210)	8.27 (210)	0.59 (15)	0.31 (8)
SFG.xx.71/91/102	14.2 (360)	14.2 (360)	0.59 (15)	0.31 (8)



TM04 3899 0309

Fig. 50 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)	



TM04 3900 0309

Fig. 51 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			

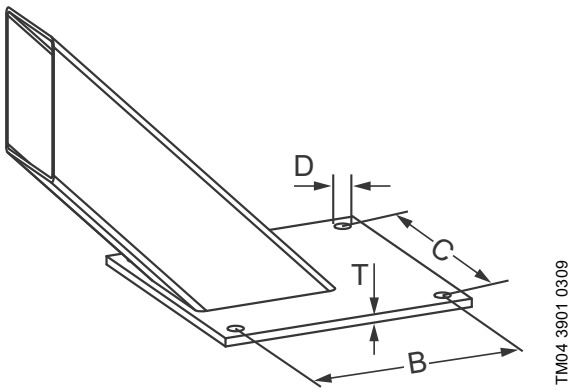


Fig. 52 Foot for back support leg

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				

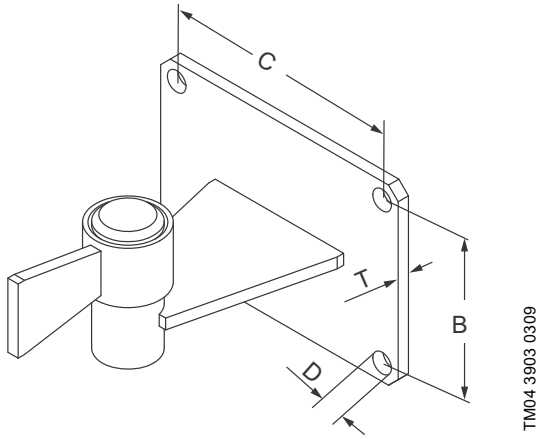


Fig. 53 Intermediate fixation bracket

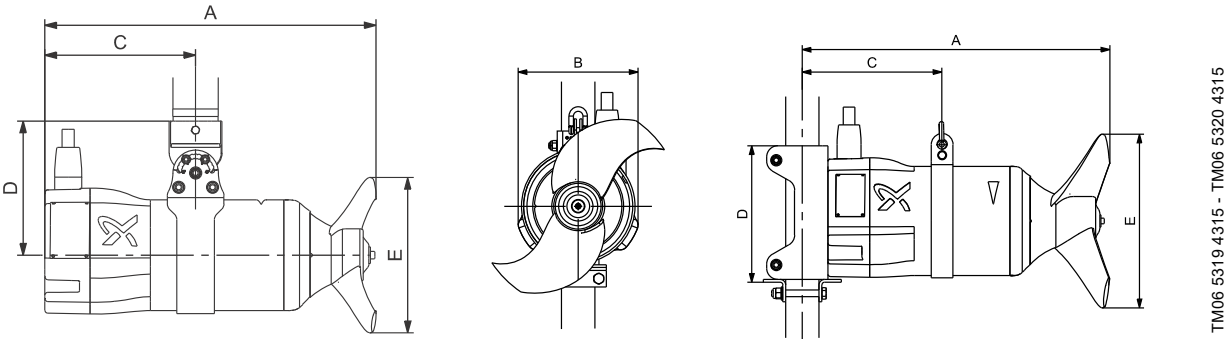
B [in (mm)]	C [in (mm)]	D [in (mm)]	T [in (mm)]
4.33 (110)	6.30 (160)	0.59 (15)	0.31 (8)

10. Technical data

SMD, 3 x 460 V

Dimensions

SMD - version T



TM06 5319 4315 - TM06 5320 4315

Type	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight* [lb (kg)]
SMD.13.7.1775.T.	17.3 (440)	7.09 (180)	7.68 (195)	7.09 (180)	7.09 (180)	79 (36)
SMD.17.8.1765.T.					8.27 (210)	
SMD.23.10.1750.T.					9.84 (250)	
SMD.13.7.1775.	19.3 (490)	7.09 (180)	8.86 (225)	9.45 (240)	7.09 (180)	84 (38)
SMD.17.8.1765.					8.27 (210)	
SMD.23.10.1750.					9.84 (250)	
SMD.30.11.1182.	21.7 (550)	9.06 (230)	9.45 (240)	9.45 (240)	11.4 (290)	148 (67)
SMD.38.13.1178.					12.6 (320)	
SMD.47.15.1170.					14.6 (370)	

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

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)	1775	35.9 (160)	0.160	IP68	66 (20)	SEOOW 7G AWG16	713 (162)	5.81 (1.77)
SMD.17.8.1765.(T)	1765	54.0 (240)	0.178				1021 (232)	6.10 (1.86)
SMD.23.10.1750.(T)	1750	76.4 (340)	0.189				1449 (329)	6.10 (1.86)
SMD.30.11.1182.	1182	103 (460)	0.196			SEOOW 7G AWG14 + 3xAWG16	1955 (444)	6.14 (1.87)
SMD.38.13.1178.	1178	137 (610)	0.210				2483 (564)	6.40 (1.95)
SMD.47.15.1170.	1170	180 (800)	0.211				3289 (747)	6.33 (1.93)

Electrical data

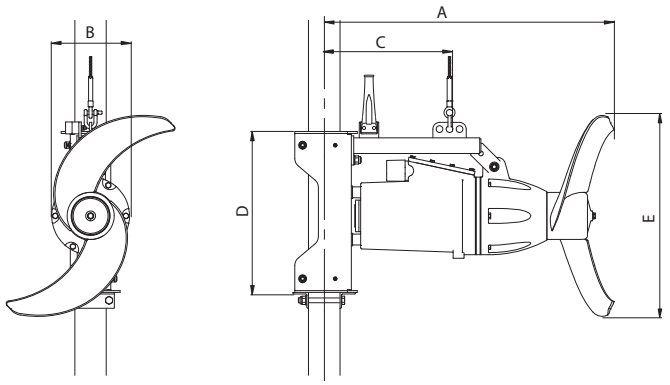
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SMD.13.7.1775.(T)	1.5 (1.15)	1.34 (1.00)	1.3 (1.0)	4	4.0 (5.4)	3 x 460	Y	2.6	24	0.65
SMD.17.8.1765.(T)	2.0 (1.5)	1.81 (1.35)	1.7 (1.3)		5.2 (7.1)			2.9	24	0.73
SMD.23.10.1750.(T)	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.	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.	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.	5.5 (4.1)	5.09 (3.80)	4.7 (3.5)		21.3 (28.9)			7.3	38	0.74

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 %

SMG, 3 x 460 V

Dimensions



TM02 4944 3210

Type	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight* [lb (kg)]
SMG.12.22.276.	30.7 (780)	7.87 (200)	12.6 (320)	16.1 (410)	21.7 (550)	174 (79)
SMG.16.25.275.	31.1 (790)	7.87 (200)	12.6 (320)	16.1 (410)	24.8 (630)	174 (79)
SMG.22.25.273.						
SMG.27.28.264.	31.5 (800)	7.87 (200)	12.6 (320)	16.1 (410)	28.0 (710)	190 (86)
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)	384 (174)
SMG.95.34.263.						
SMG.130.34.318.						419 (190)
SMG.160.34.317.						
SMG.220.35.345.	43.3 (1100)	12.4 (315)	18.1 (460)	18.1 (460)	35.4 (900)	617 (280)

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m).

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			H07RN-F 7G4+4x1	17946 (4076)	5.83 (1.78)

Electrical data

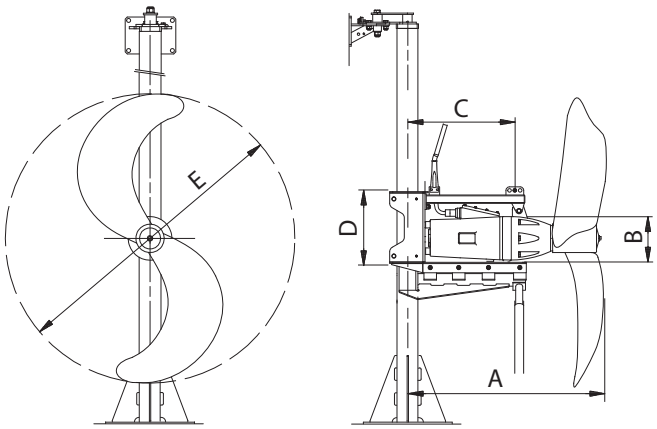
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SMG.12.22.276.	1.4 (1.1)	1.31 (0.98)	1.2 (0.9)	6	5.3 (7.3)	3 x 460	Y	2.6	22	0.57
SMG.16.25.275.	1.9 (1.4)	1.70 (1.27)	1.6 (1.2)		7.1 (9.7)			2.9	22	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

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 %

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

Dimensions



TM02 6346 3408

Type	Propeller version	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight* [lb (kg)]
SFG.10.51.50.	2-blade	35.4 (900)	7.87 (200)	13.9 (353)	15.7 (400)	51.2 (1300)	249 (113)
SFG.14.51.57.							
SFG.19.51.64.							
SFG.23.51.68.							260 (118)
SFG.30.51.74.							
SFG.39.51.82.							
SFG.44.51.85.							
SFG.48.51.88.							

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

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)

Electrical data

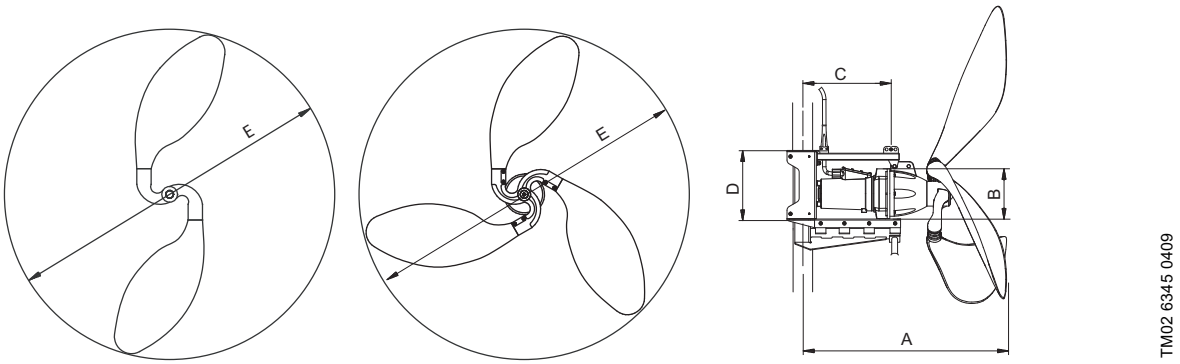
Type	P1 [hp (kW)w]		P2 [kW]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.51.50.	1.2 (0.85)	1.00 (0.75)	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.14.51.57.	1.7 (1.2)	1.47 (1.10)	1.4 (1.0)		5.9 (8.1)			2.7	22	0.61
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

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 %

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

Dimensions



TM02 6345 0409

Type	Propeller version	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Net weight* [kg]
SFG.10.71.32.	2-blade	47.2 (1200)	11.9 (302)	22.4 (570)	15.7 (400)	70.9 (1800)	430 (195)
SFG.14.71.36.							
SFG.19.71.41.							
SFG.23.71.43.							441 (200)
SFG.30.71.48.							
SFG.39.71.53.							
SFG.47.71.53.	3-blade						492 (223)
SFG.55.71.54.							

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

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)

Electrical data

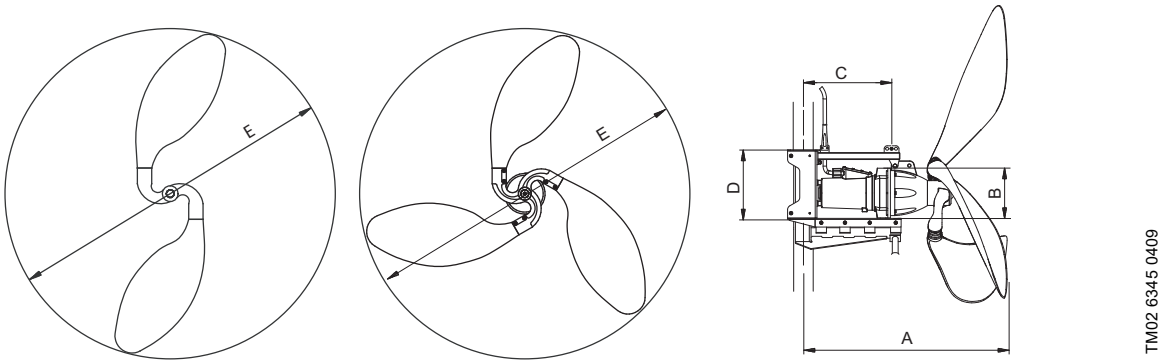
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.71.32.	1.2 (0.85)	1.01 (0.76)	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.14.71.36.	1.7 (1.2)	1.42 (1.06)	1.4 (1.0)		5.9 (8.1)			2.7	22	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

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 %

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

Dimensions



TM02 6345 0409

Type	Propeller version	A [in (mm)]	B [in (mm)]	C [in (mm)]	D [in (mm)]	E [in (mm)]	Net weight* [lb (kg)]
SFG.10.91.26.	2-blade	47.2 (1200)	11.9 (302)	22.4 (570)	15.7 (400)	90.6 (2300)	441 (200)
SFG.12.91.28.							
SFG.16.91.31.							
SFG.22.91.35.							
SFG.26.91.37.							452 (205)
SFG.30.91.39.							
SFG.34.91.39.	3-blade						507 (230)
SFG.43.91.42.							
SFG.55.91.46.							

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

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)

Electrical data

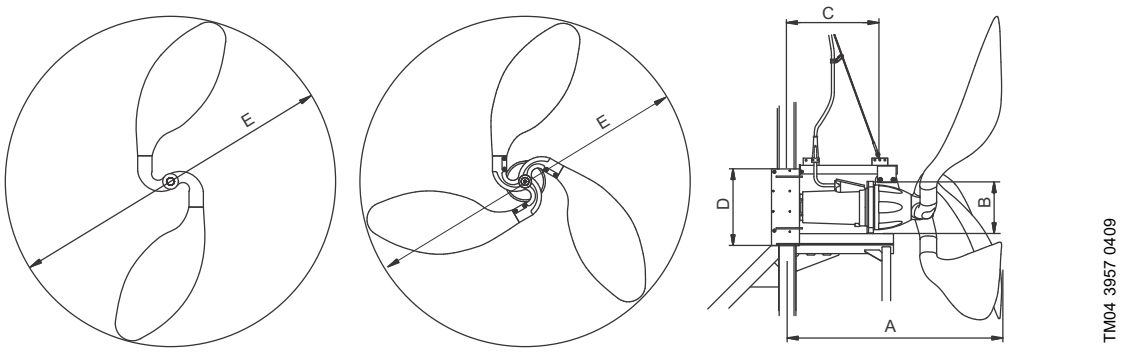
Type	P1 [hp (kW)]		P2 [hp (kW)]	Number of poles	Motor torque [lbf (Nm)]	Voltage [V]	Operating mode	I_N [A]	I_{start} [A]	Cos φ 1/1
	Nominal	Actual								
SFG.10.91.26.	1.2 (0.85)	0.77	1.0 (0.7)	6	4.1 (5.6)	3 x 460	Y	2.4	22	0.49
SFG.12.91.28.	1.4 (1.1)	0.95	1.2 (0.9)		5.3 (7.3)			2.6	22	0.57
SFG.16.91.31.	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

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 %

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

Dimensions



Type	Propeller version	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Net weight* [kg]
SFG.30.102.29.	2-blade	59.1 (1500)	14.2 (360)	25.6 (650)	23.0 (585)	102.4 (2600)	794 (360)
SFG.43.102.34.							
SFG.48.102.35.							
SFG.60.102.38.							
SFG.67.102.35.	3-blade			26.8 (680)		102.4 (2600)	915 (415)
SFG.82.102.38.							
SFG.98.102.40.							
SFG.110.102.42.							

* With motor bracket and 33 ft (10 m) cable. Weight of cable: 0.34 lb/ft (0.5 kg/m.)

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)

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

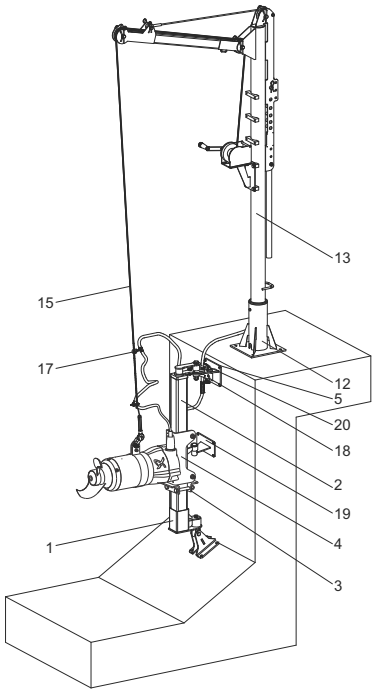
Liquid data

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

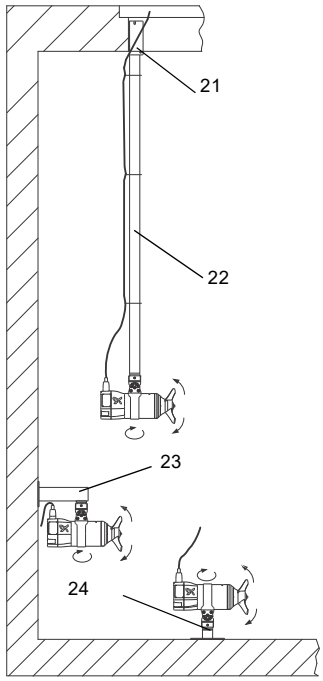
Accessories

Grundfos offers the following equipment for installation, inspection and service of mixers and flowmakers.
The position numbers in figs 54 to 57 refer to the list of accessories below.



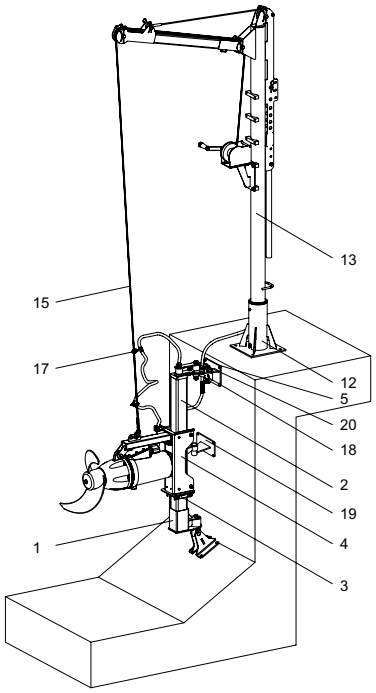
TM06 5288 4315

Fig. 54 SMD installation



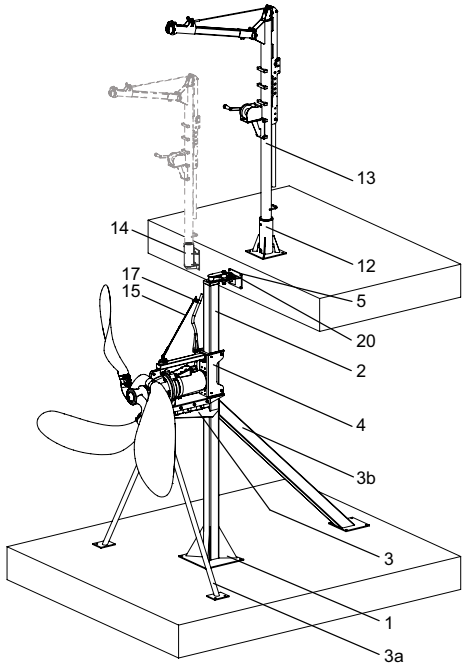
TM06 5286 4315

Fig. 55 SMD - Suspended, wall and floor mounting. See products with "T" in type description



TM04 2711 2908

Fig. 56 SMG installation



TM04 2714 2908

Fig. 57 SFG installation

Selection guide for accessories

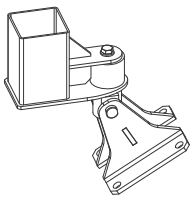
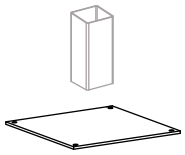
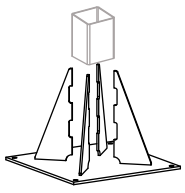
Type designation	Column profile			Support legs[2]		Crane type	Wire	Cable clamp
	< 20 ft (6 m)	< 33 ft (10 m)[1]	> 33 ft (10 m)	Front	Back			
SMD.13 - SMD.23	2.5" x 2.5" x 0.12" (60 x 60 x 3)				No	S 220 lb (100 kg)	∅0.16" (4 mm)	∅0.59" (15 mm)
SMD.30 - SMD.47	2.5" x 2.5" x 0.12" (60 x 60 x 3)				No	S 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)	Contact Grundfos		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)

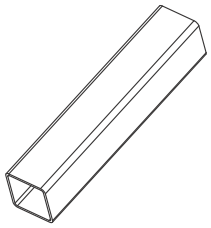
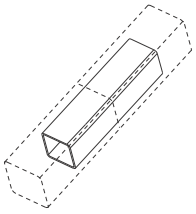
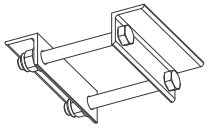
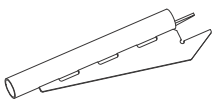
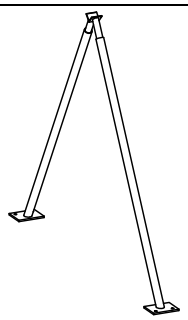
1) If the installation height is greater than 20 ft (6 m), use either a bigger size column profile or an intermediate fixation bracket (only SMG). If this is not possible, please contact Grundfos for help.

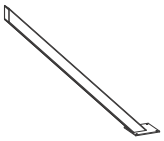
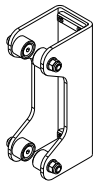
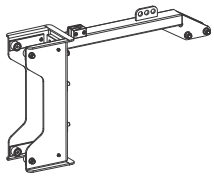
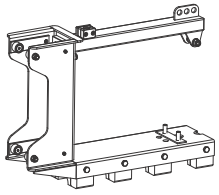
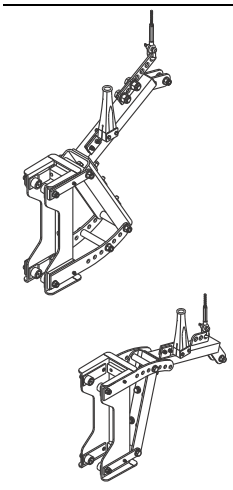
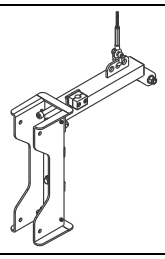
2) Additional legs are required, depending on the tank depth.

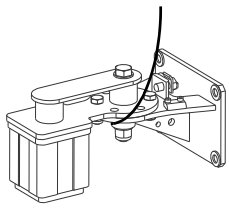
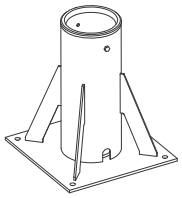
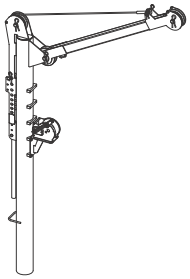
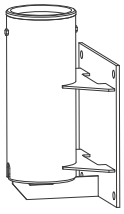
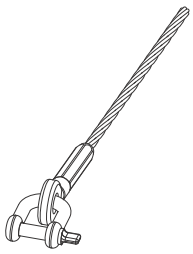
List of accessories

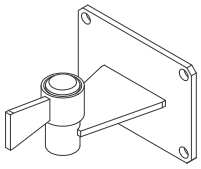
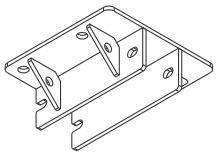
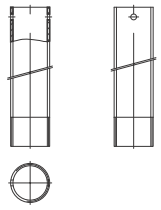
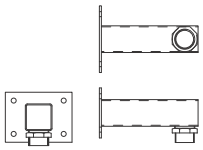
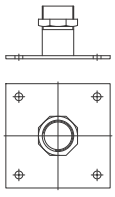
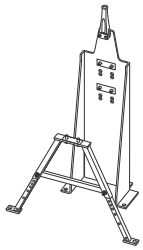
Position numbers refer to figs 54 to 57.

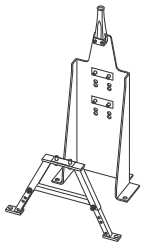
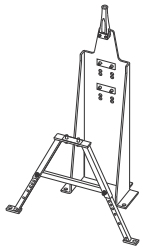
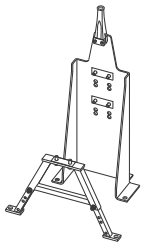
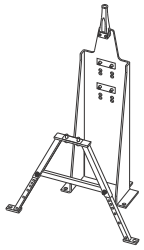
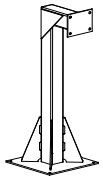
Accessory		Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
	TM04 3896 0309	1	Bottom fixation bracket, complete	2.5" x 2.5" (60 x 60 mm) column profile. SMD	1.4301/304	95037099
					1.4404/316 L	95037100
				3" x 3" (80 x 80 mm) column profile. SMG	1.4301/304	95037101
					1.4404/316 L	95037102
				4" x 4" (100 x 100 mm) column profile. SMG	1.4301/304	95037103
					1.4404/316 L	95037104
	TM04 3954 0409	1	Bottom fixation plate, complete	SFG.xx.51	1.4301/304	96489415
					1.4404/316 L	96489416
	TM04 2717 2908	1	Bottom fixation plate, complete	SFG.xx.71/91/102	1.4301/304	96489411
					1.4404/316 L	96489414

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM04 4005 0509	**2**	Column profile	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	5" x 5" x 0.20" (120 x 120 x 5 mm)*	1.4301/304	
				1.4404/316 L	
	*	When ordering, please state the desired length.			
 TM04 9473 4310	**2**	Connecting piece for column profile**	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	
	**	Required for column profile longer than 15 ft (4.5 m).			
 TM04 4010 0509	**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
 TM04 4009 0509	**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
 TM04 3644 4708	**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

Accessory		Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
	TM04 3643 1708	**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
	TM06 5346 4415	**4**	Motor bracket slide	SMD.12-47	1.4404/316L	95040078
	TM04 4012 0509	**4**	Motor bracket	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
	TM04 1011 0509	**4**	Motor bracket	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
	TM05 5096 3212 - TM05 5099 3212	**4**	Angle-adjustable motor bracket for ± 30 ° in steps of 5 °	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
				4" x 4" (100 x 100 mm) column profile. SMG.12-55.	1.4301/304	95038940
					1.4404/316 L	95038945
	TM05 5096 3212	**4**	Motor bracket adapter	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

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM04 3881 0309	**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
 TM04 4000 0509	**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
 TM04 3999 0509	**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
 TM04 4001 0509	**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
 TM04 4002 0509	**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	

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
 TM04 4003 0509	**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
 TM04 3998 0509	**18**	Cable sock, including shackle ∅0.39" (10 mm)		Synthetic material, 1.4404/316 L	95037141
 TM04 4004 0509	**19**	Intermediate fixation bracket, complete	All profile sizes longer than 15 ft (4.5 m)	1.4301/304	95037148
				1.4404/316 L	95037149
 TM06 5590 5015	**21**	Fixation bracket for suspended mounting	SMD.13 - 23.xx.T	1.4404/316L	95040132
 TM04 3665 4808	**22**	Tube for suspended mounting, 2" thread, length 10 ft (3 m)	SMD.13 - 23.xx.T	1.4404/316L	Contact Grundfos
 TM04 3666 4808	**23**	Fixation bracket for wall mounting, 2"	SMD.13 - 23.xx.T	1.4404/316L	96115291
 TM04 3667 4808	**24**	Fixation plate for floor mounting	SMD.13 - 23.xx.T	1.4404/316L	96115292
 TM05 5103 3212		Motor bracket for bottom fixation, 10" (250 mm) space from propeller tip to bottom	SMG.12 - 55. Max. propeller size ∅28" (710 mm)	1.4301/304	95039067
				1.4404/316 L	95039068

Accessory	Pos.	Description	Dimensions and product range	Material DIN/AISI	Product number
	TM05 5102 3212	Motor bracket for bottom fixation, 2" (50 mm) space from propeller tip to bottom	SMG.75 - 160 Max. propeller size ∅34" (860 mm)	1.4301/304	95039085
				1.4404/316 L	95039086
	TM05 5103 3212	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
	TM05 5102 3212	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
	TM05 5103 3212	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
	TM04 9385 4010	Support for top fixation		1.4301/304	95037404
				1.4404/316 L	95039149

12. Grundfos Product Center

Online search and sizing tool to help you make the right choice.
http://product-selection.grundfos.com

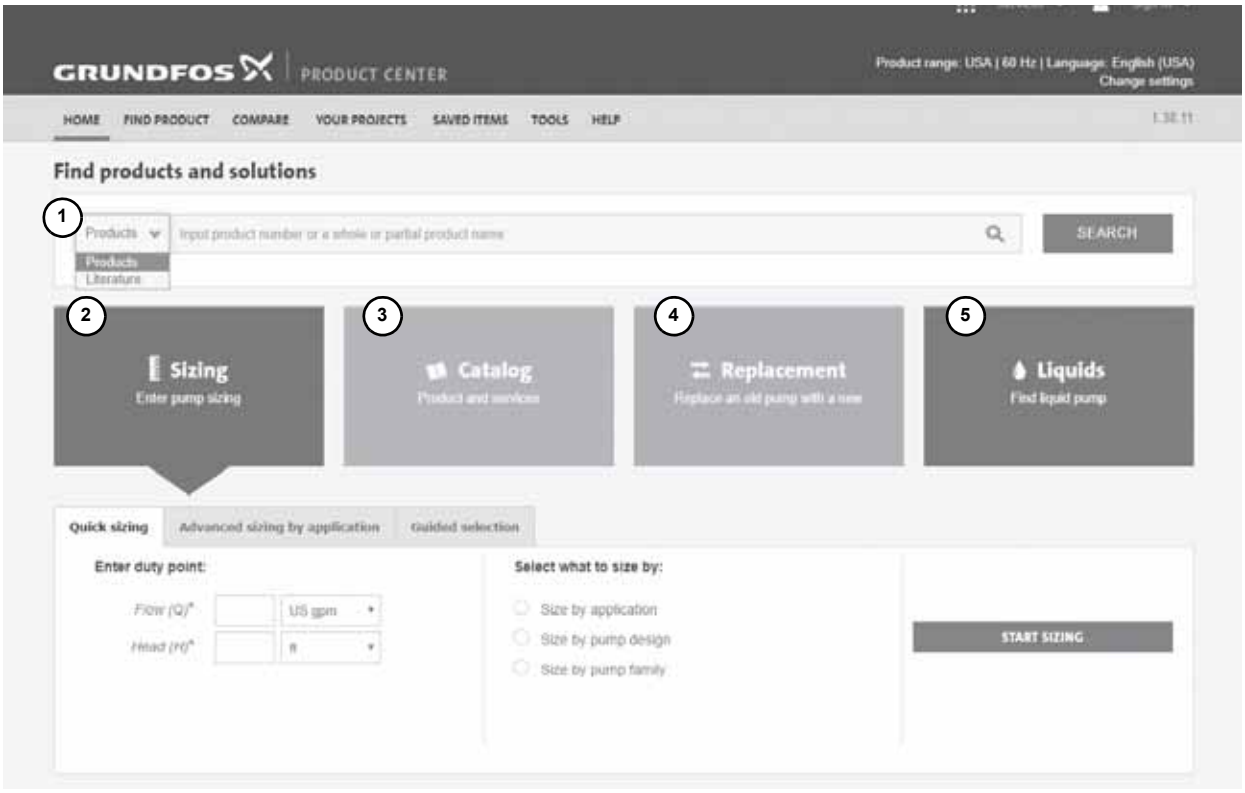
All the information you need in one place

Performance curves, technical specifications, pictures, dimensional drawings, motor curves, wiring diagrams, spare parts, service kits, 3D drawings, documents, system parts. The Product Center displays any recent and saved items - including complete projects - right on the main page.

Downloads

On the product pages, you can download installation and operating instructions, data booklets, service instructions, etc. in PDF format.

TM07 2384



TM07 2383

Pos.	Description
1	This drop-down menu enables you to set the search function to "Products" or "Literature".
2	**SIZING** enables you to size a pump based on entered data and selection choices.
3	**CATALOGUE** gives you access to the Grundfos product catalogue.
4	**REPLACEMENT** enables you to find a replacement product. Search results will include information on • the lowest purchase price • the lowest energy consumption • the lowest total life cycle cost.
5	**LIQUIDS** enables you to find pumps designed for aggressive, flammable or other special liquids.

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