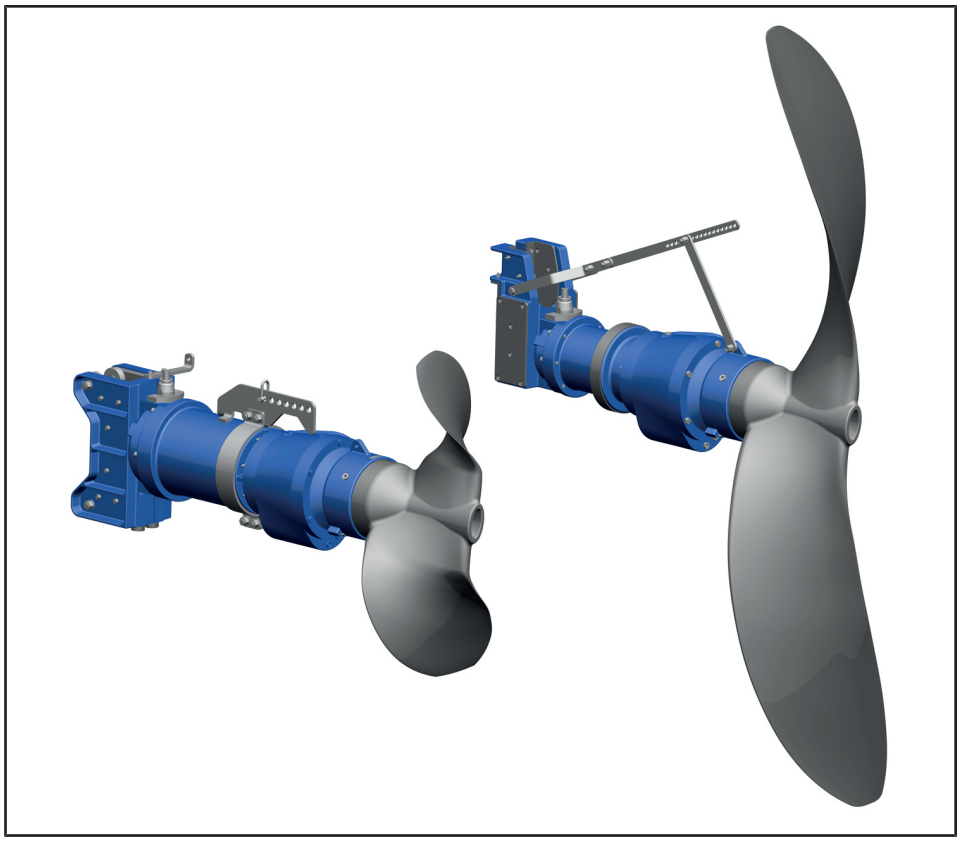
Submersible Mixer

Amaprop

50 Hz

Type Series Booklet



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Type Series Booklet Amaprop

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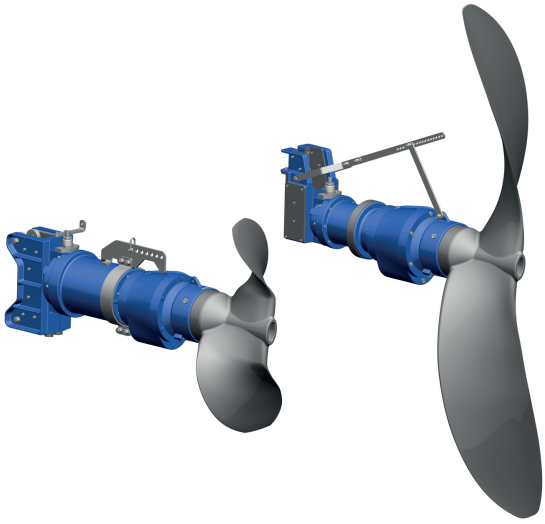
Submersible Mixers

Amaprop



Main applications

Environmental engineering, particularly for handling municipal and industrial waste water and sludges. Circulating, keeping in suspension and inducing flow:

- In nitrification tanks and denitrification tanks
- In activated sludge tanks
- In biological phosphate elimination tanks
- In flocculation tanks
- In sludge storage tanks

Operating data

Operating properties

Characteristic		Value	
		Amaprop 1000	Amaprop 1200 - 2500
Nominal diameter of axial propeller	D [mm]	1000	1200 - 2500
Power	P [kW]	10 - 20	0,85 - 7,5
Installation depth	H [m]	≤ 12[1)]	
Fluid temperature	T [°C]	≤ 40	≤ 40

Design details

Design

- Fully floodable submersible mixer
- Horizontal installation

Axial propeller

- Self-cleaning ECB propeller

Drive

- Three-phase asynchronous squirrel-cage motor
- Motors integrated in explosion-proof submersible mixers are supplied in Ex db IIB Gb type of protection.

Shaft seal

- Two bi-directional mechanical seals in tandem arrangement, with liquid reservoir
- Additional leakage chamber between the seat ring holder and the gear unit

Bearings

- Grease-packed rolling element bearings sealed for life in motor
- Oil-lubricated rolling element bearings in gear unit

1 Larger installation depths on request

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Designation

Example: Amaprop V 042 2500 / 5 4 UPG IE3

Designation key

Code	Description	
Amaprop	Type series	
V	Axial propeller material	
	V	Composite material
42	Nominal speed of the axial propeller [rpm]	
2500	Size / nominal diameter of the axial propeller [mm]:	
	1000, 1200, 1400, 1600, 1800, 1801, 2000, 2200, 2500	
5	Motor size	
	11, 15, 22	Amaprop 1000
	1, 2, 3, 4, 5, 7	Amaprop 1200 to 2500
4	Number of motor poles	
UP	Motor variant	
	UP	Non-explosion-proof, for fluid temperatures of up to 40 °C
	YP	Explosion-proof Ⓔx II2G Ex db h IIB T4 Gb, for fluid temperatures of up to 40 °C
G	Casing material	
	G	Grey cast iron
IE3	Motor efficiency classification[2)]	
	[3)]	No efficiency classification
	IE3	Premium Efficiency

Materials

Overview of available materials

Part No.	Description	G	
		Amaprop 1000	Amaprop 1200 - 2500
811	Motor housing	EN-GJL-250	
812	Motor housing cover	EN-GJL-250	
870	Gear housing	EN-GJL-250	
476	Mating ring carrier	EN-GJL-250	
23-9	Axial propeller	Glass fibre reinforced epoxy resin	
433.01	Mechanical seal	SiC/carbon	
433.02		SiC/SiC	
-	Propeller shaft	1.4122	
-	Elastomers	FPM	
-	Bolts/screws	A4	
-	Guide bracket	EN-GJL-250, plastic-lined	EN-GJS-400-15, plastic-lined

Glass fibre reinforced epoxy resin

The high-performance composite material consists of glass fibre reinforced epoxy resin, a metal hub insert and a protective gel coating which is resistant to abrasion and chemicals.

Comparison of materials

EN	ASTM
EN-GJS-400-15	A 536 Class 60–40–18
EN-GJL-250	A 48 Class 40 B
1.4122	Similar to A 276 Type 440
FPM	FKM

2 IEC 60034-30 standard not binding for submersible mixers. Efficiencies calculated/determined according to the measurement method specified in IEC 60034-2. The marking is used for submersible mixers that achieve efficiency levels similar to those of standardised motors acc. to the IEC 60034-30 standard.

3 Blank

Coating and preservation

Primer and top coat

Surface treatment:	Blasted to SA 2 $^1/_2$ in acc. with DIN EN ISO 12944
Primer:	Two-component epoxy resin zinc dust or zinc phosphate (synthetic resin basis), min. film thickness = 50 µm
Intermediate coat:[4)]	Two-component high-solid epoxy resin finish (RAL 5002), min. film thickness = 100 µm
Top coat:	Two-component high-solid epoxy resin finish (RAL 5002), min. film thickness = 100 µm

Special coating

Available on request (extra charge and a longer delivery period apply).

Product benefits

- Absolutely break-proof due to propeller blades made of glass fibre reinforced epoxy resin with metal hub insert and protective gel coating.
- Double safety by two bi-directional mechanical seals with oil reservoir filled with environmentally friendly oil
- Perfectly protected by absolutely water-tight cable gland protecting the motor against moisture
- Motor monitored by temperature sensors to prevent it from overheating
- Stability and even longer service life of AmaRoc accessories made of the innovative NoriRoc material
- Leakage chamber between oil chamber and gear unit for high reliability
- Easy to install

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per chemicals Regulation (EC) No 1907/2006 (REACH), see https://www.ksb.com/ksb-en/About-KSB/Corporate-responsibility/reach/ .

Acceptance tests and warranty

- Functional test
  Every submersible mixer is subjected to a functional test to KSB standard ZN 56525.
- Quality is assured by means of an audited and certified quality assurance system to DIN EN ISO 9001.
- Special acceptance tests are available on request.

Warranty information

Our warranty is based on and exclusively applies to your specifications as documented in the data sheet of the submersible mixer, and covers the relevant physical properties. Any warranty claims beyond the aforementioned aspects, as well as any claims resulting from an excessive solids content in the plant, the formation of floating blankets as well as failure to produce a specific gas yield, shall be excluded. The correct positioning of the submersible mixers is crucial for the overall function of the equipment. KSB's warranty obligations shall not cover any damage that may occur as a result of incorrect mixer positioning, i. e. installing the mixer in a position not expressly approved by KSB. In addition, low-flow areas (flow separation) resulting from the tank geometry shall not be covered by our warranty. Furthermore, we shall not assume any liability if our submersible mixers are used in patented processes and/or in case of protected rights of third parties.

Unauthorised modifications, the mixer's use for fluids and operating conditions not specified in the purchase order, as well as the use of non-KSB installation parts without KSB's prior consent will result in the forfeiture of any and all claims for damages. The same applies to consequential damage (e.g. resultant process downtime).

Selection information

- The fluid properties specified in the data sheet of the submersible mixer provide the basis for selection and positioning of the equipment.
- Good mixing results and safe and reliable operation of the submersible mixers essentially depend on the position of the mixers in the tank and relative to each other. It is therefore imperative to position the submersible mixers as shown in KSB's general arrangement drawing. KSB shall not be held responsible for any damage resulting from mixer positions not expressly approved by KSB.
- The minimum and maximum submergence indicated in the data sheet of the submersible mixer must be complied with. The axial propeller must not be operated outside the fluid. Air-entraining vortices must be avoided. Always use level control equipment which trips the submersible mixer if the fill level drops below the minimum operating level.
- For servicing the submersible mixers, access openings and appropriate means of removal must be provided, so that the mixers can be lifted out of the filled tank at any time. For this purpose, the minimum dimensions for removing the submersible mixers as specified in the type series booklet must be observed.
- For higher fill levels, the guide rails of the Amaprop 1000 installation accessories must be secured against vibrations by means of a middle support fitted on site.
- In order to prevent any mechanical damage caused by the propeller, cable supports must be used for routing the power cable properly, i.e. without excessive slack.

Information about operation on a frequency inverter

- All submersible mixers from KSB are suitable for operation on a frequency inverter.
- The permissible control range is 25 Hz to 50 Hz.
- In addition to any capacity reserves required for hydraulic reasons, a motor power reserve of 5 % must be provided when mixers are operated on frequency inverters.

4 Optional

Minimum level of fluid handled

The submersible mixer is operational when the fluid level is not lower than dimension W_T. This minimum level of the fluid handled must also be ensured during automatic operation.

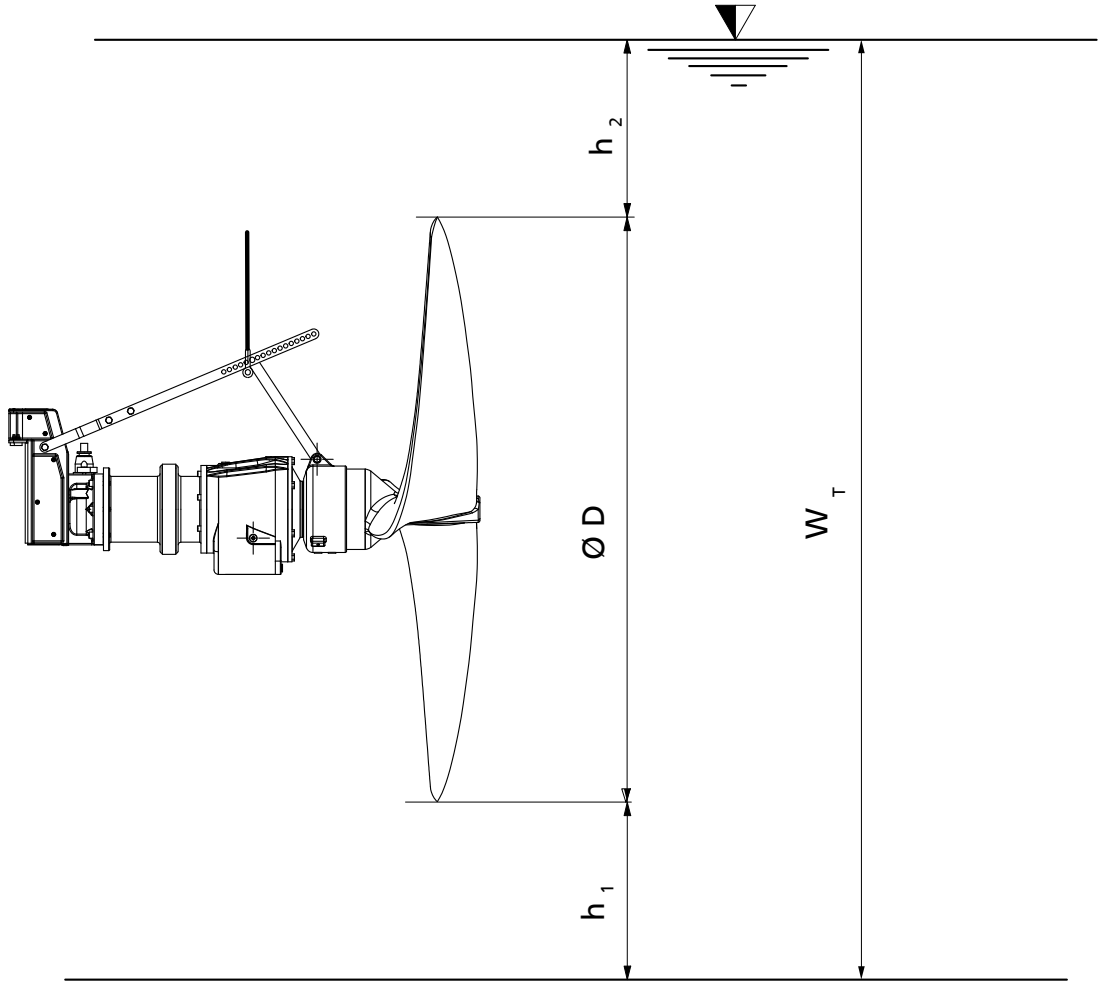

Fig. 1: Minimum level of fluid handled

During submersible mixer operation, the distance between the propeller tip and the fluid surface must not be less than h_2. Any distance smaller than h_2 must be approved by KSB in writing.
Please note that, even with a submergence of h_2, air-entraining vortices may still form, depending on the flow behaviour of the fluid handled. Rough running of the submersible mixer resulting from the formation of air-entraining vortices is not covered by our warranty.

Minimum level of fluid handled

Size	h_1	h_2
	[m]	[m]
1000	0,2	0,75
1200 to 2500	0,2	1

Overview of product features / selection tables

Standard variants and special variants

Standard variants (⇨ Page 9) and special variants

Special variants (optional)	Comments
Mechanical seal with covered springs	Available for all sizes
Power cable > 20 m	Available for all sizes
Leakage sensor in leakage chamber of mechanical seal	Available for all sizes of the UP version
Analysing device for leakage sensor, thermistor motor protection relay for monitoring the winding	Available for all sizes
Special voltages 500 V and 690 V	Available for all sizes
Two-component epoxy resin coating, 250 µm	Available for all sizes
Additional operating manuals	Standard: 1 operating manual per pump set
Customer-specific installation drawing	Available for all sizes
Flow measurements	Available for all sizes
Flow simulation	Available for all sizes
Installation consultancy	Available for all sizes

For any versions not documented in this type series booklet or special versions please always contact KSB for technical details, prices and delivery periods.

Examples:

- Other voltages (except 400 V, 500 V and 690 V)
- Special coatings
- Combinations with special motor/special propeller/special gear unit (e.g. for higher-viscosity fluids)
- Special installation parts
- Special cables
- Tank

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Technical data

Technical data of material variant G

Feature	Material variant	
	Amaprop 1000	Amaprop 1200 ... 2500
Explosion protection		
Version UR	✗	-
Version YR	Ⓔx II2G Ex db h IIB T4 Gb	-
Version UP	-	✗
Version YP	-	Ⓔx II2G Ex db h IIB T4 Gb
Motor		
Starting method	DOL or star-delta (up to 4 kW: DOL only)	
Voltage and frequency	400 V[5)] 50 Hz, suitable for operation on a frequency inverter	
Cooling	Cooled by surrounding fluid	
Immersion depth	Up to 12 m[6)]	
Power cable		
Length	10 m[7)]	
Cable entry	Totally watertight	
Type	Rubber-sheathed cable S1BN8-F	
Bearings		
Motor	Grease-packed rolling element bearings sealed for life	
Gear unit	Oil-lubricated rolling element bearings	
Gear unit	Spur gear	
Sealing elements		
Elastomers	Viton (fluorocarbon rubber FKM)	
Shaft seal	Bellows-type mechanical seal[8)]	
Monitoring equipment		
Winding temperature	PTC thermistor	
Motor leakage	Leakage monitor inside the motor	
Mechanical seal leakage	Optional: only for the UP version – leakage sensor in the leakage chamber	
Coating	Two-component epoxy resin coating	
Permissible fluid temperature	40 °C	
Acceptance inspections/tests	To ISO 9001[9)]	
Installation		
Stationary	Installation depth up to 12 m[10)]	

5 Optional: 500 V and 690 V on request
6 Larger immersion depths on request
7 Optional: 15 m, 20 m, > 20 m on request
8 Optional: mechanical seal with covered spring
9 Optional: with test report 10204-2.2
10 Larger installation depths on request

Performance data (400 V, 50 Hz), material variant G

Designation	Propeller speed n_2 [rpm]	Motor rating P_N [kW]	Gear unit size	[kg][11)]
Amaprop V 1000				
166-1000/11 4 UPG / YPG	166	11	SP 190 X	328
175-1000/15 4 UPG / YPG	174	15	SP 190 X	350
184-1000/15 4 UPG / YPG	181	15	SP 190 X	350
185-1000/22 4 UPG / YPG	186	20	SP 190 X	350
192-1000/15 4 UPG / YPG	192	15	SP 190 X	350
208-1000/22 4 UPG / YPG	210	20	SP 190 X	350
Amaprop V 1200				
53-1200/1 4 UPG / YPG	53	0,85	SP 189	171
61-1200/1 4 UPG / YPG	61	1,3	SP 189	171
68-1200/2 4 UPG / YPG	68	1,5	SP 189	173
74-1200/3 4 UPG / YPG	74	2,2	SP 190	199
81-1200/3 4 UPG / YPG	81	3	SP 190	199
88-1200/4 4 UPG / YPG	91	4	SP 190	234
96-1200/4 4 UPG / YPG	96	4	SP 190	205
102-1200/5 4 UPG / YPG	102	5,5	SP 190	248
109-1200/7 4 UPG / YPG	114	7,5	SP 190	248
Amaprop V 1400				
49-1400/1 4 UPG / YPG	49	0,85	SP 189	172
54-1400/1 4 UPG / YPG	54	1,30	SP 189	172
61-1400/3 4 UPG / YPG	61	2,2	SP 190 X	200
66-1400/3 4 UPG / YPG	66	3	SP 190	200
74-1400/3 4 UPG / YPG	74	3	SP 190	200
82-1400/4 4 UPG / YPG	82	4	SP 190	206
88-1400/5 4 UPG / YPG	88	5,5	SP 190	249
96-1400/7 4 UPG / YPG	96	7,5	SP 190	249
Amaprop V 1600				
33-1600/1 4 UPG / YPG	33	0,85	SP 189	173
40-1600/1 4 UPG / YPG	40	0,85	SP 189	173
47-1600/1 4 UPG / YPG	47	1,30	SP 189	173
55-1600/3 4 UPG / YPG	55	2,2	SP 190 X	201
58-1600/3 4 UPG / YPG	58	2,2	SP 190 X	201
62-1600/3 4 UPG / YPG	62	3	SP 190 X	201
66-1600/3 4 UPG / YPG	66	3	SP 190	201
77-1600/5 4 UPG / YPG	77	5,5	SP 190	250
81-1600/5 4 UPG / YPG	81	5,5	SP 190	250
88-1600/7 4 UPG / YPG	88	7,5	SP 190	250
Amaprop V 1800				
33-1800/1 4 UPG / YPG	33	0,85	SP 189	175
40-1800/1 4 UPG / YPG	40	0,85	SP 189	175
43-1800/1 4 UPG / YPG	43	1,3	SP 189	175
45-1800/1 4 UPG / YPG	45	1,3	SP 189	175
50-1800/3 4 UPG / YPG	50	2,2	SP 190 X	204
54-1800/3 4 UPG / YPG	54	2,2	SP 190 X	204
57-1800/3 4 UPG / YPG	57	3	SP 190 X	204
62-1800/4 4 UPG / YPG	62	4	SP 190 X	210
68-1800/4 4 UPG / YPG	68	4	SP 190 X	210
76-1800/7 4 UPG / YPG	76	7,5	SP 190	251
82-1800/7 4 UPG / YPG	82	7,5	SP 190	251
Amaprop V 1801				
42-1801/1 4 UPG / YPG	42	1,3	SP 189	175
45-1801/1 4 UPG / YPG	45	1,3	SP 189	175
50-1801/3 4 UPG / YPG	50	2,2	SP 190 X	204
54-1801/3 4 UPG / YPG	54	3	SP 190 X	204
57-1801/3 4 UPG / YPG	57	3	SP 190 X	204
68-1801/4 4 UPG / YPG	68	4	SP 190 X	210
72-1801/5 4 UPG / YPG	73	5,5	SP 190	251
76-1801/7 4 UPG / YPG	76	7,5	SP 190	251

11 Weight incl. guide bracket

Designation	Propeller speed n_2 [rpm]	Motor rating P_N [kW]	Gear unit size	[kg][11]
Amaprop V 2000				
28-2000/1 4 UPG / YPG	28	1,3	SP 189	188
31-2000/2 4 UPG / YPG	31	1,5	SP 189	190
35-2000/3 4 UPG / YPG	35	2,2	SP 190 X	216
38-2000/3 4 UPG / YPG	38	3	SP 190 X	216
41-2000/4 4 UPG / YPG	41	4	SP 190 X	222
46-2000/5 4 UPG / YPG	46	5,5	SP 190 X	263
49-2000/7 4 UPG / YPG	49	7,5	SP 190 X	263
53-2000/7 4 UPG / YPG	53	7,5	SP 190 X	263
Amaprop V 2200				
24-2200/1 4 UPG / YPG	24	0,85	SP 189	190
28-2200/2 4 UPG / YPG	28	1,5	SP 189	192
32-2200/3 4 UPG / YPG	32	2,2	SP 190 X	218
35-2200/3 4 UPG / YPG	35	3	SP 190 X	218
39-2200/4 4 UPG / YPG	39	4	SP 190 X	224
43-2200/5 4 UPG / YPG	43	5,5	SP 190 X	266
46-2200/5 4 UPG / YPG	46	5,5	SP 190 X	266
50-2200/7 4 UPG / YPG	50	7,5	SP 190 X	266
Amaprop V 2500				
22-2500/1 4 UPG / YPG	22	1,3	SP 189	192
24-2500/1 4 UPG / YPG	24	1,3	SP 189	192
28-2500/3 4 UPG / YPG	28	2,2	SP 190 X	252
30-2500/3 4 UPG / YPG	32	2,2	SP 190 X	252
32-2500/3 4 UPG / YPG	32	3	SP 190 X	220
35-2500/4 4 UPG / YPG	35	4	SP 190 X	226
40-2500/5 4 UPG / YPG	40	5,5	SP 190 X	269
42-2500/5 4 UPG / YPG	42	5,5	SP 190 X	269
46-2500/7 4 UPG / YPG	46	7,5	SP 190 X	269

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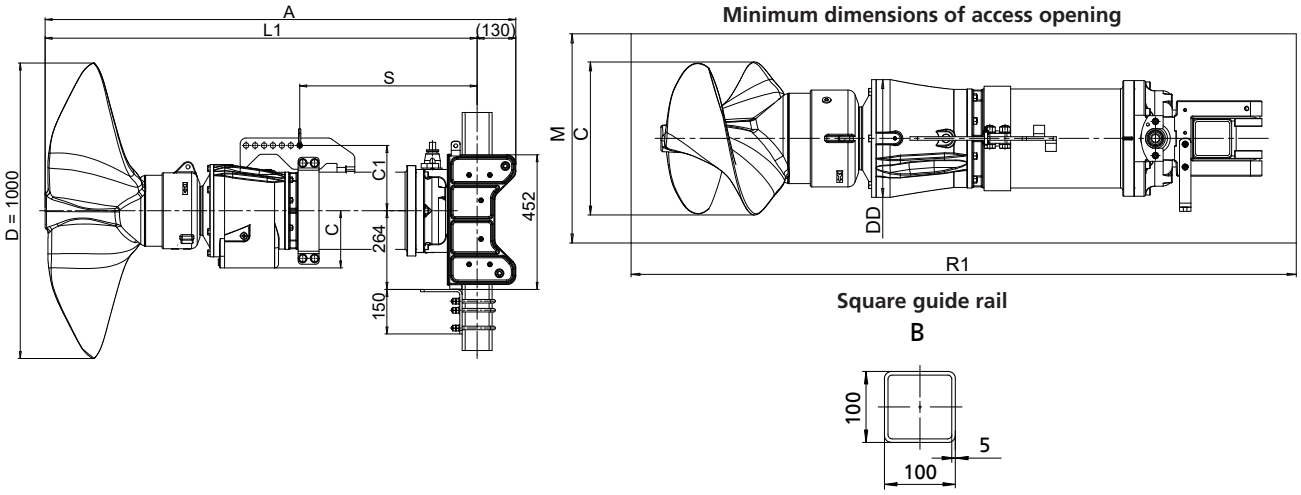
Dimensions

Amaprop 1000

Dimensions [mm]



Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
166-1000/11 4 UPG / YPG	1530	192	Approx. 219	310	442	1400	550	1750	Approx. 546
175-1000/15 4 UPG / YPG	1580	192	Approx. 219	310	442	1450	550	1800	Approx. 596
184-1000/15 4 UPG / YPG	1580	192	Approx. 219	310	442	1450	550	1800	Approx. 596
185-1000/22 4 UPG / YPG	1580	192	Approx. 219	310	442	1450	550	1800	Approx. 596
192-1000/15 4 UPG / YPG	1580	192	Approx. 219	310	442	1450	550	1800	Approx. 596
208-1000/22 4 UPG / YPG	1580	192	Approx. 219	310	442	1450	550	1800	Approx. 596

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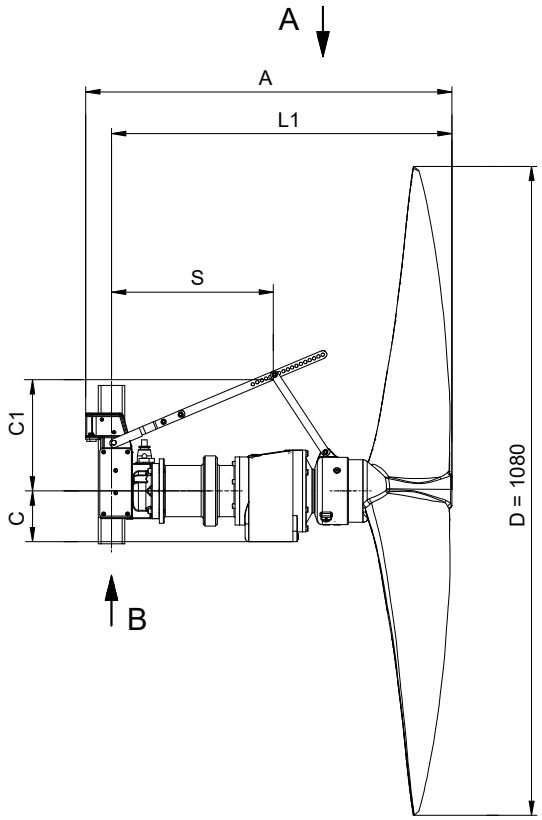
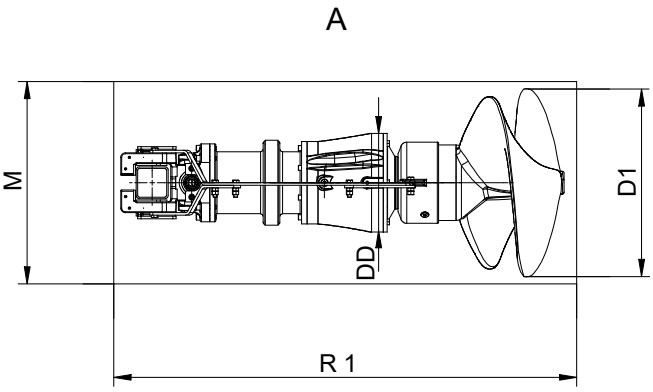
Amaprop 1200

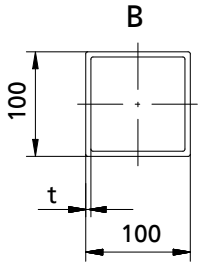
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
53-1200/1 4 UPG / YPG	1220	159	Approx. 464	258	325	1120	425	1320	Approx. 605
61-1200/1 4 UPG / YPG	1220	159	Approx. 464	258	325	1120	425	1320	Approx. 605
68-1200/2 4 UPG / YPG	1220	159	Approx. 464	258	325	1120	425	1320	Approx. 605
74-1200/3 4 UPG / YPG	1315	192	Approx. 417	310	325	1215	425	1415	Approx. 625
81-1200/3 4 UPG / YPG	1315	192	Approx. 417	310	325	1215	425	1415	Approx. 625
88-1200/4 4 UPG / YPG	1315	192	Approx. 417	310	325	1215	425	1415	Approx. 625
96-1200/4 4 UPG / YPG	1315	192	Approx. 417	310	325	1215	425	1415	Approx. 625
102-1200/5 4 UPG / YPG	1390	192	Approx. 407	310	325	1290	425	1490	Approx. 640
109-1200/7 4 UPG / YPG	1390	192	Approx. 407	310	325	1290	425	1490	Approx. 640

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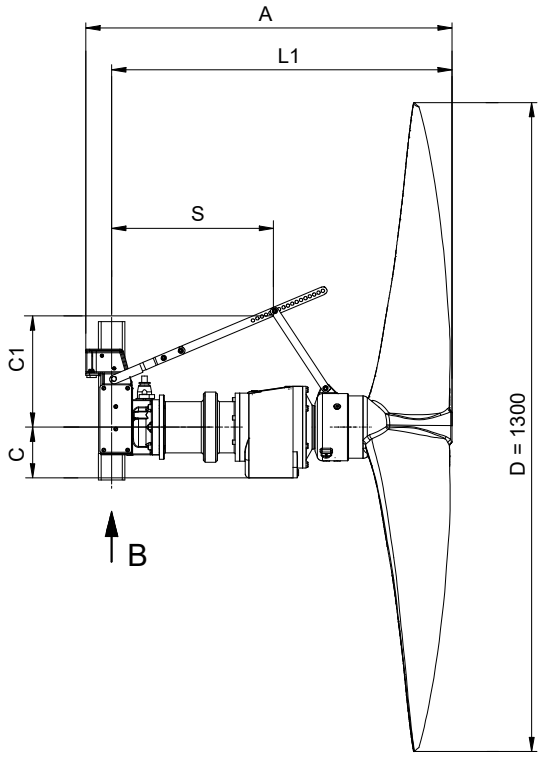
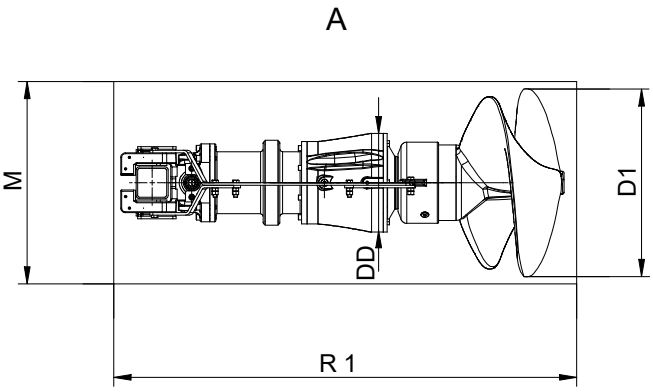
Amaprop 1400

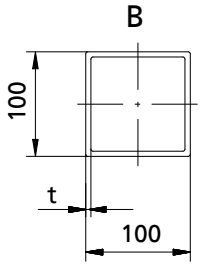
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
49-1400/1 4 UPG / YPG	1220	158,5	Approx. 464	258	355	1120	455	1320	Approx. 605
54-1400/1 4 UPG / YPG	1220	158,5	Approx. 464	258	355	1120	455	1320	Approx. 605
61-1400/3 4 UPG / YPG	1315	192	Approx. 417	310	355	1215	455	1415	Approx. 625
66-1400/3 4 UPG / YPG	1315	192	Approx. 417	310	355	1215	455	1415	Approx. 625
74-1400/3 4 UPG / YPG	1315	192	Approx. 417	310	355	1215	455	1415	Approx. 625
82-1400/4 4 UPG / YPG	1315	192	Approx. 417	310	355	1215	455	1415	Approx. 625
88-1400/5 4 UPG / YPG	1390	192	Approx. 407	310	355	1290	455	1490	Approx. 640
96-1400/7 4 UPG / YPG	1390	192	Approx. 407	310	355	1290	455	1490	Approx. 640

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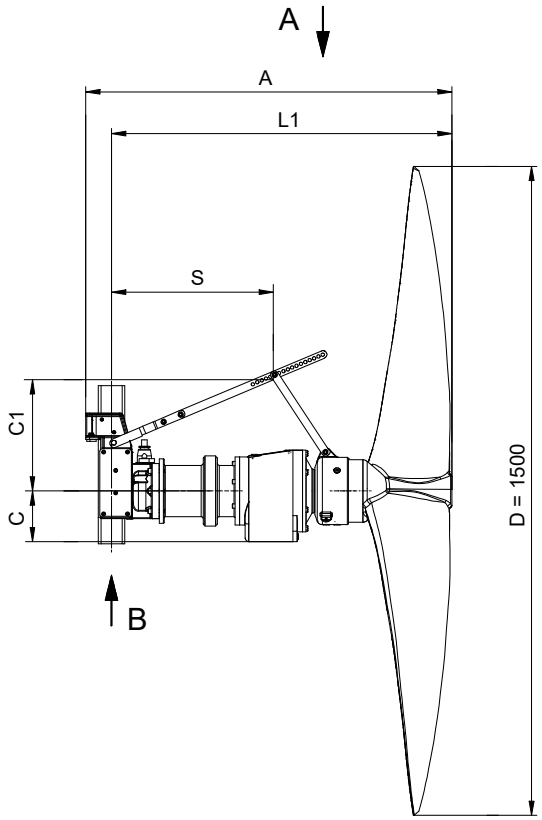
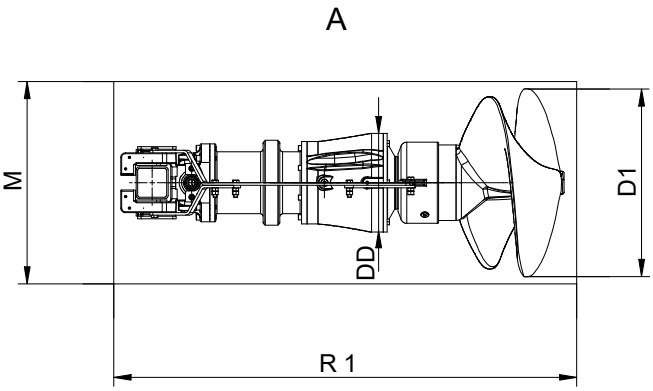
Amaprop 1600

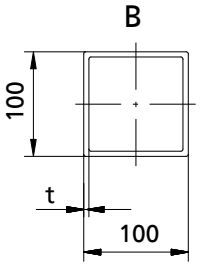
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
33-1600/1 4 UPG / YPG	1220	158,5	Approx. 464	258	385	1120	485	1320	Approx. 605
40-1600/1 4 UPG / YPG	1220	158,5	Approx. 464	258	385	1120	485	1320	Approx. 605
47-1600/1 4 UPG / YPG	1220	158,5	Approx. 464	258	385	1120	485	1320	Approx. 605
55-1600/3 4 UPG / YPG	1315	192	Approx. 417	310	385	1215	485	1415	Approx. 625
58-1600/3 4 UPG / YPG	1315	192	Approx. 417	310	385	1215	485	1415	Approx. 625
62-1600/3 4 UPG / YPG	1315	192	Approx. 417	310	385	1215	485	1415	Approx. 625
66-1600/3 4 UPG / YPG	1315	192	Approx. 417	310	385	1215	485	1415	Approx. 625
77-1600/5 4 UPG / YPG	1390	192	Approx. 407	310	385	1290	485	1490	Approx. 640
81-1600/5 4 UPG / YPG	1390	192	Approx. 407	310	385	1290	485	1490	Approx. 640
88-1600/7 4 UPG / YPG	1390	192	Approx. 407	310	385	1290	485	1490	Approx. 640

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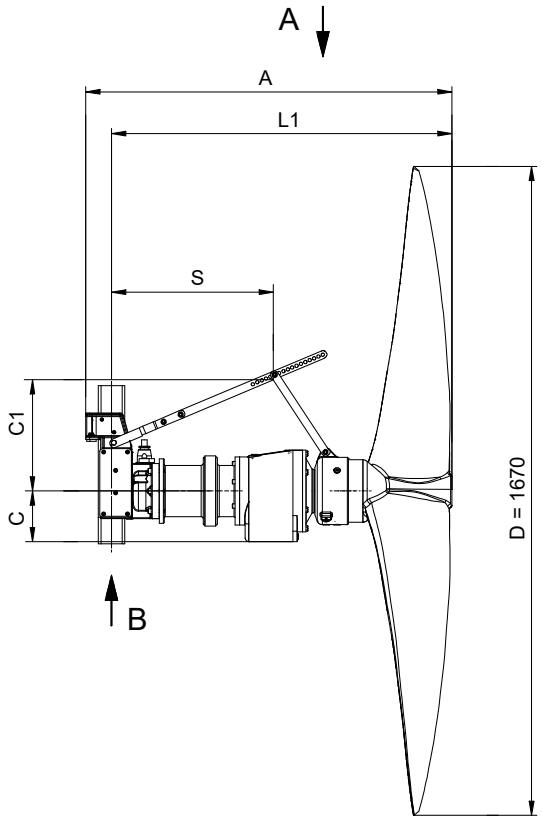
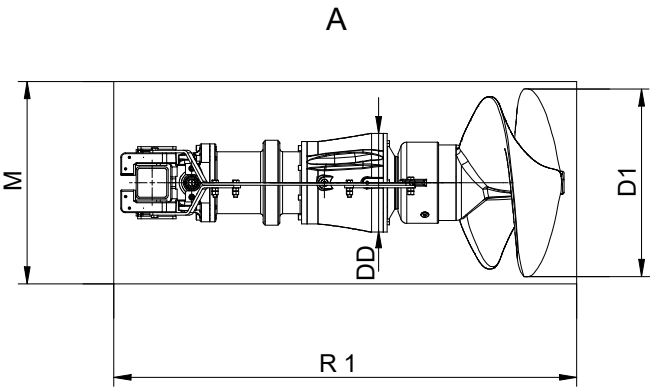
Amaprop 1800

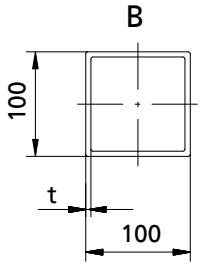
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
33-1800/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
40-1800/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
43-1800/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
45-1800/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
50-1800/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
54-1800/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
57-1800/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
62-1800/4 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
68-1800/4 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
76-1800/7 4 UPG / YPG	1390	192	Approx. 407	310	405	1290	505	1490	Approx. 640
82-1800/7 4 UPG / YPG	1390	192	Approx. 407	310	405	1290	505	1490	Approx. 640

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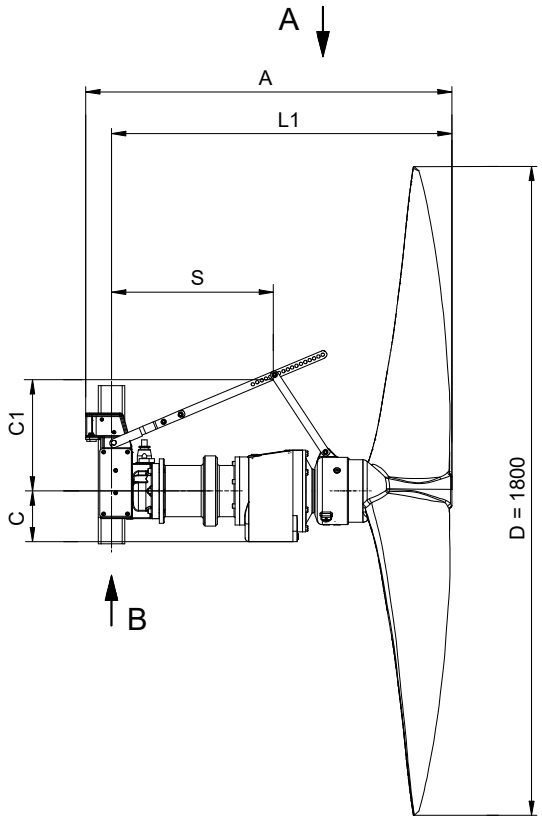
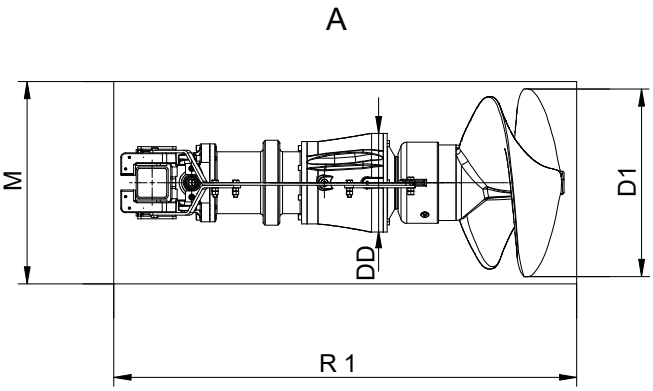
Amaprop 1801

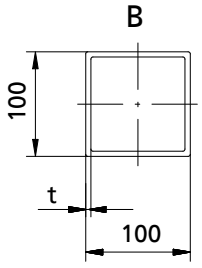
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
42-1801/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
45-1801/1 4 UPG / YPG	1220	158,5	Approx. 464	258	405	1120	505	1320	Approx. 605
50-1801/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
54-1801/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
57-1801/3 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
68-1801/4 4 UPG / YPG	1315	192	Approx. 417	310	405	1215	505	1415	Approx. 625
72-1801/5 4 UPG / YPG	1390	192	Approx. 407	310	405	1290	505	1490	Approx. 640
76-1801/7 4 UPG / YPG	1390	192	Approx. 407	310	405	1290	505	1490	Approx. 640

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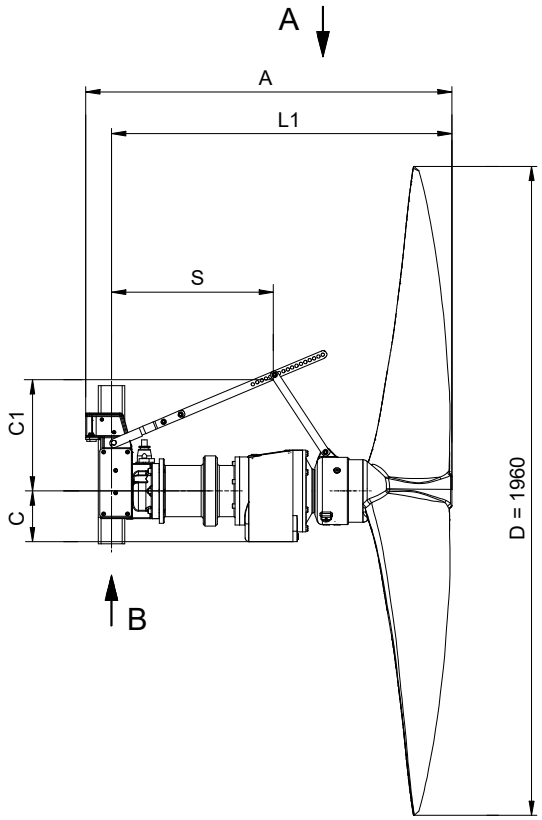
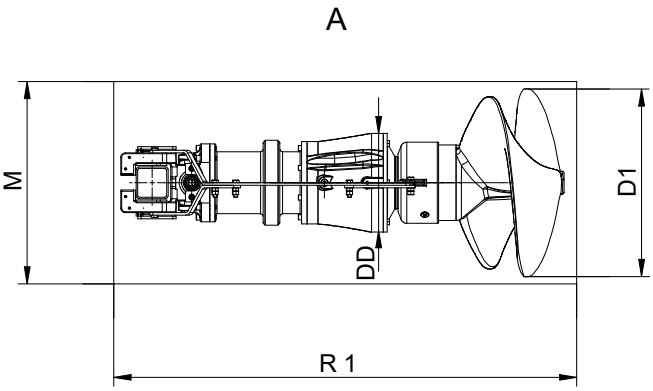
Amaprop 2000

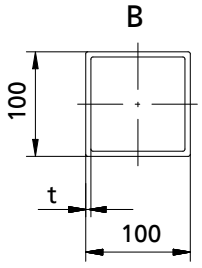
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
28-2000/1 4 UPG / YPG	1335	158,5	Approx. 464	258	510	1235	610	1435	Approx. 605
31-2000/2 4 UPG / YPG	1335	158,5	Approx. 464	258	510	1235	610	1435	Approx. 605
35-2000/3 4 UPG / YPG	1430	192	Approx. 417	310	510	1330	610	1530	Approx. 625
38-2000/3 4 UPG / YPG	1430	192	Approx. 417	310	510	1330	610	1530	Approx. 625
41-2000/4 4 UPG / YPG	1430	192	Approx. 417	310	510	1330	610	1530	Approx. 625
46-2000/5 4 UPG / YPG	1505	192	Approx. 407	310	510	1405	610	1605	Approx. 640
49-2000/7 4 UPG / YPG	1505	192	Approx. 407	310	510	1405	610	1605	Approx. 640
53-2000/7 4 UPG / YPG	1505	192	Approx. 407	310	510	1405	610	1605	Approx. 640

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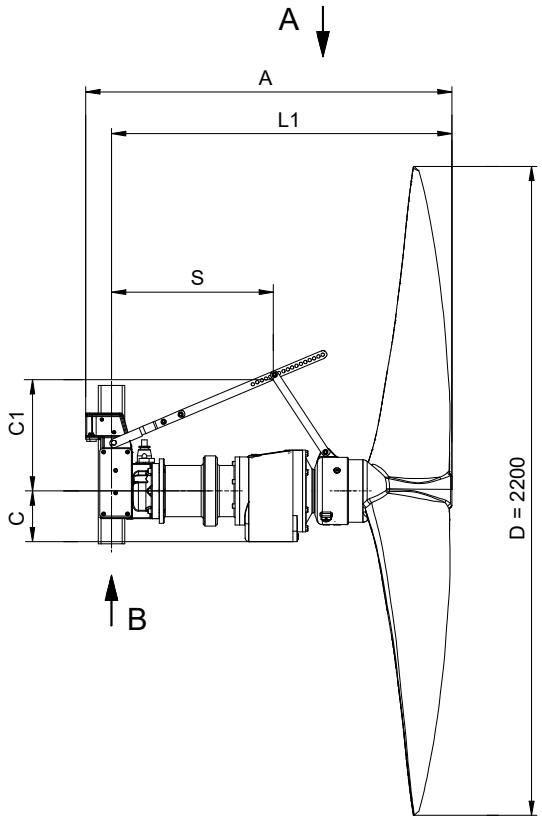
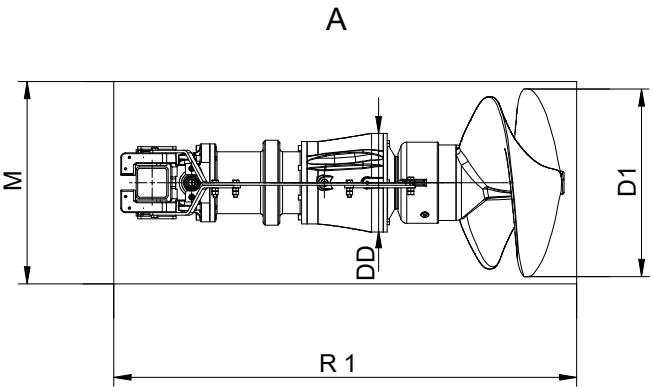
Amaprop 2200

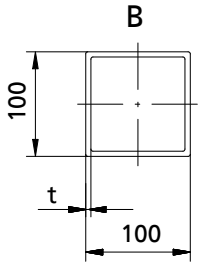
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	D	L1	M	S
24-2200/1 4 UPG / YPG	1335	158,5	Approx. 464	258	535	635	1235	1435	Approx. 605
28-2200/2 4 UPG / YPG	1335	158,5	Approx. 464	258	535	635	1235	1435	Approx. 605
32-2200/3 4 UPG / YPG	1430	192	Approx. 417	310	535	635	1330	1530	Approx. 625
35-2200/3 4 UPG / YPG	1430	192	Approx. 417	310	535	635	1330	1530	Approx. 625
39-2200/4 4 UPG / YPG	1430	192	Approx. 417	310	535	635	1330	1530	Approx. 625
43-2200/5 4 UPG / YPG	1505	192	Approx. 407	310	535	635	1405	1605	Approx. 640
46-2200/5 4 UPG / YPG	1505	192	Approx. 407	310	535	635	1405	1605	Approx. 640
50-2200/7 4 UPG / YPG	1505	192	Approx. 407	310	535	635	1405	1605	Approx. 640

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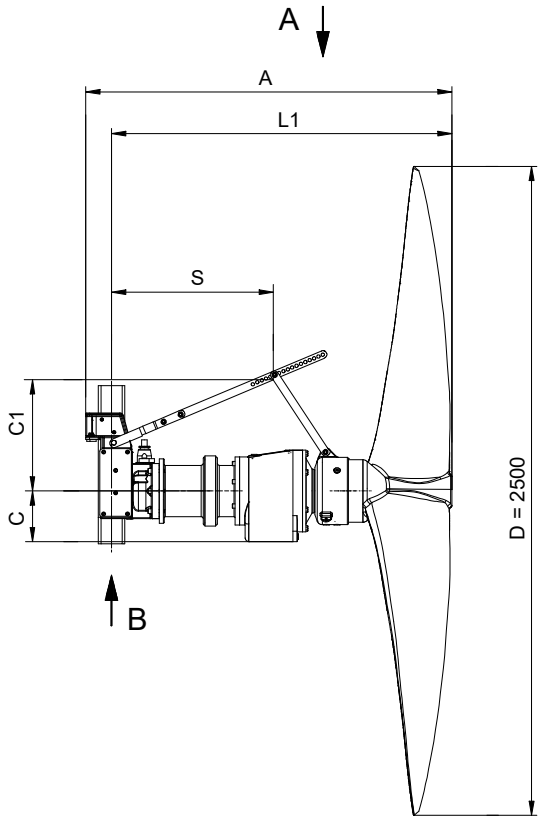
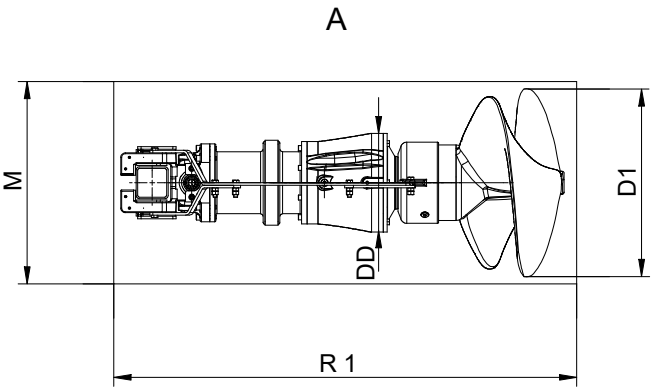
Amaprop 2500

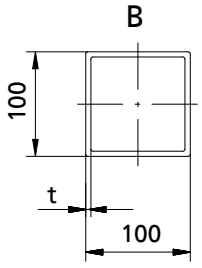
Dimensions [mm]



Minimum dimensions of access opening



Square guide rail



t = 3 or 5 mm

Dimensions [mm]

Designation	A	C	C1	DD	D1	L1	M	R1	S
22-2500/1 4 UPG / YPG	1335	158,5	Approx. 464	258	560	1235	660	1435	Approx. 605
24-2500/1 4 UPG / YPG	1335	158,5	Approx. 464	258	560	1235	660	1435	Approx. 605
28-2500/3 4 UPG / YPG	1430	192	Approx. 417	310	560	1330	660	1530	Approx. 625
30-2500/3 4 UPG / YPG	1430	192	Approx. 417	310	560	1330	660	1530	Approx. 625
32-2500/3 4 UPG / YPG	1430	192	Approx. 417	310	560	1330	660	1530	Approx. 625
35-2500/4 4 UPG / YPG	1430	192	Approx. 417	310	560	1330	660	1530	Approx. 625
40-2500/5 4 UPG / YPG	1505	192	Approx. 407	310	560	1405	660	1605	Approx. 640
42-2500/5 4 UPG / YPG	1505	192	Approx. 407	310	560	1405	660	1605	Approx. 640
46-2500/7 4 UPG / YPG	1505	192	Approx. 407	310	560	1405	660	1605	Approx. 640

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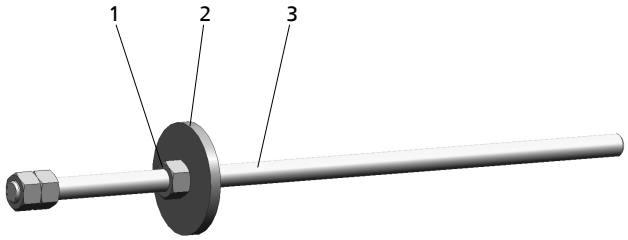
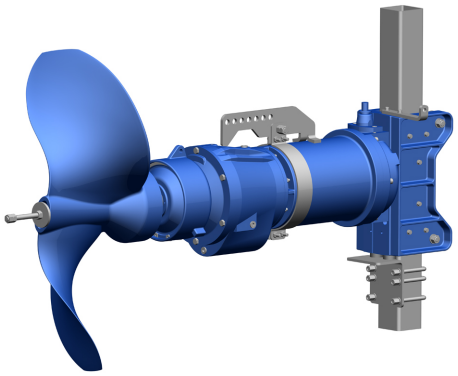
Accessories

Propeller fitting tool



Propeller fitting tool



Propeller with propeller fitting tool

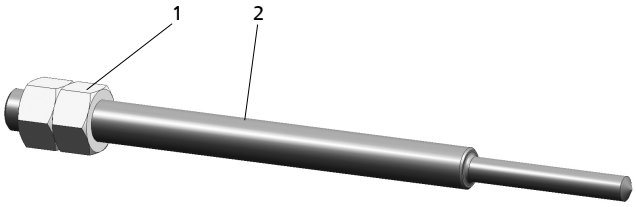
1	Nut
2	Disc
3	Fully threaded stud

The propeller fitting tool facilitates fitting the propeller on the submersible mixer shaft. The fully threaded stud (3) is screwed into the shaft, and the propeller and the disc (2) are placed on the shaft. The nut (1) is tightened up to the stop, pulling the propeller onto the shaft.

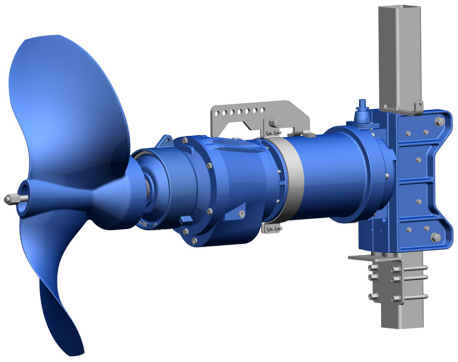
Accessory: propeller fitting tool

Description	Amaprop									Material	Mat. No.	[kg]
	1000	1200	1400	1600	1800	1801	2000	2200	2500			
Propeller fitting tool	✗	✗	✗	✗	✗	✗	✗	✗	✗	A4-70	01428379	1,22

Forcing screw



Forcing screw



Propeller with forcing screw

1	Nut
2	Fully threaded stud

The forcing screw facilitates dismantling and pulling the propeller off the submersible mixer shaft. The hexagon socket head cap screw with washer is removed and the fully threaded stud (2) is screwed into the propeller's forcing thread up to the stop using the nut (1), pulling the propeller smoothly off the shaft.

Accessory: propeller forcing screw

Description	Amaprop									Material	Mat. No.	[kg]
	1000	1200	1400	1600	1800	1801	2000	2200	2500			
Forcing screw	-	✗	✗	✗	✗	✗	-	-	-	A4-70	11306648	0,77
Forcing screw	✗	-	-	-	-	-	✗	✗	✗	A4-70	11306649	1,05

Cable holder / carabine hook

Cable support

The cable support is used for supporting the power cable at the lifting rope or tank edge (one included in standard scope of supply; additional or spare cable supports available).

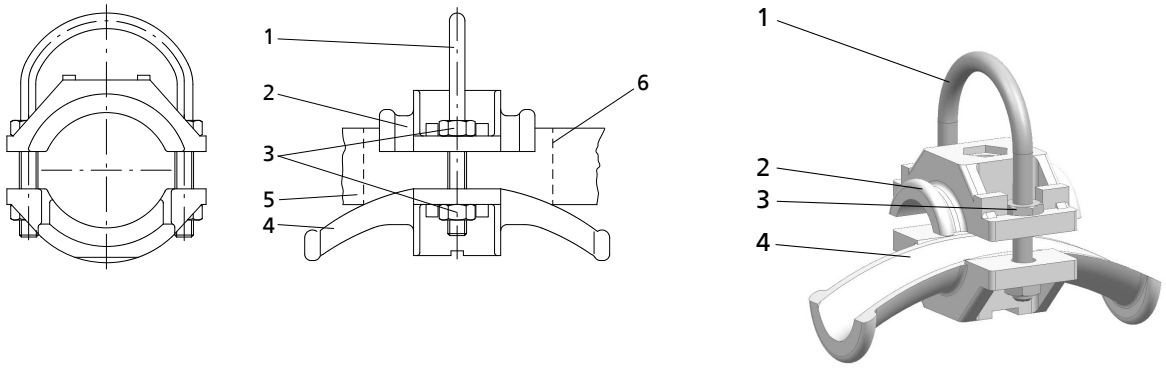


Illustration of cable support

1	Bail
2	Moulded part made of polypropylene
3	Hexagon nut made of A4
4	Moulded part made of polypropylene
5	Power cable with defined diameter[12)]
6	Rubber pad

For power cable diameters ≤ 10 or 17 mm respectively a rubber pad is inserted to make sure the cable is clamped properly.

Carabine hook

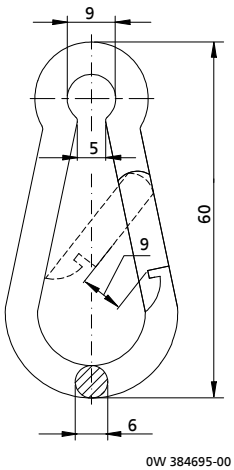


Fig. 2: Carabine hook dimensions [mm]

Overview of cable supports/carabine hooks

Description	Suitable for									Material	Mat. No.	[kg]
	1 4	2 4	3 4	4 4	5 4	7 4	11 4	16 4	23 4			
Cable support, incl. carabine hooks	✗[13)]	✗[13)]	✗[13)]	-	-	-	-	-	-	Cable support: plastic / A4, carabine hook: A4	19555522	0,06
Cable support, incl. carabine hooks	-	-	-	✗[14)]	✗[14)]	✗[14)]	✗[14)]	✗[14)]	✗[14)]	Cable support: plastic / A4, carabine hook: A4	19555523	0,09

Lifting equipment

- See type series booklet "KSB Lifting Equipment" 1596.5

Protection module for water and waste water products

- See type series booklet "Amacontrol III" 2301.5

12 Refer to the power cable data given in the motor catalogue.
13 Diameter of power cable Ø = 10 - 16 mm
14 Diameter of power cable: Ø = 17 - 25 mm

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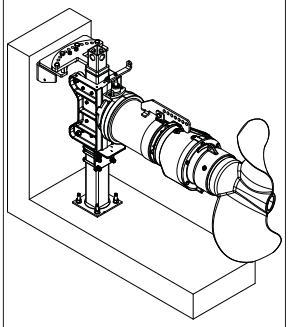
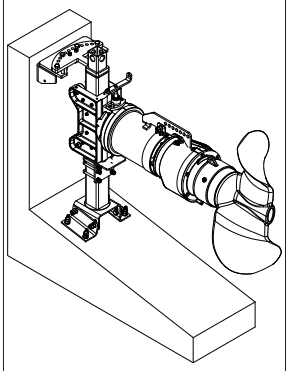
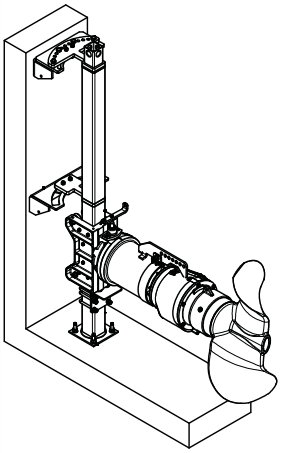
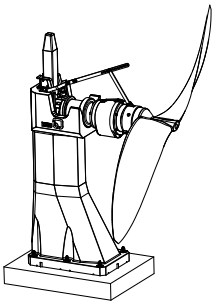
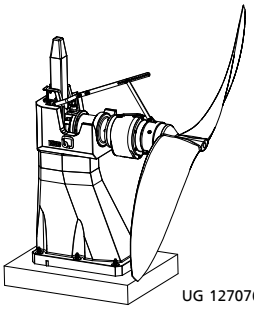
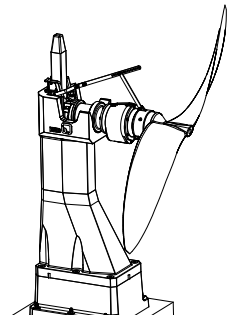
Installation parts

Overview of installation parts

Overview of installation parts for Amaprop 1000 and Amaprop 1200 to 2500

Accessories	Installation example		
Amaprop 1000			
Accessories set 22	Mounting on tank wall and horizontal tank floor (0° - 0.5°) (⇨ Page 24) 	Mounting on tank wall and sloping tank floor (0.5° - 10°) (⇨ Page 25) 	Middle support for guide rail 100 x 100 x 5, for large installation depths (⇨ Page 26) 
Amaprop 1200 to 2500			
AmaRoc accessories	**Shaft centreline height = 1450 mm** 		
AmaRoc special accessories[15]	**Shaft centreline height = 1100 mm** (Amaprop 1200 to 1801 only)  UG 1270769		**Shaft centreline height = 1800 mm**  UG 1270793

15 On request

Accessories 22 - Amaprop 1000

For mounting at the top of the tank wall and on a horizontal tank floor (0° - 0.5°), level-adjustable and with horizontal swivelling option.

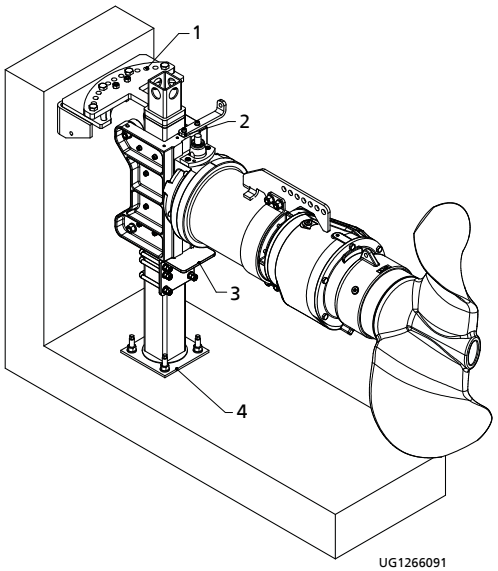


Fig. 3: Installation example: Amaprop 1000 mounted on tank wall and horizontal tank floor

1	Upper holder
2	Guide rail
3	Retaining bracket
4	Lower holder

Accessories 22 - Mounting on tank wall and horizontal tank floor

Description	Material	Mat. No.	[kg]
Upper holder for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4301	01313458	23,23
Upper holder for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4571	01313459	23,23
Guide rail	(⇨ Page 29)		
Retaining bracket for guide rail 100 x 100 x 5 mm	1.4301	01129810	3,5
Retaining bracket for guide rail 100 x 100 x 5 mm	1.4571	19202370	3,5
Lower holder for guide rail 100 x 100 x 5 mm, incl. 4 chemical anchors	1.4301	01118892	5,68
Lower holder for guide rail 100 x 100 x 5 mm, incl. 4 chemical anchors	1.4571	01118903	5,68

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For mounting on tank wall and sloping tank floor (0.5° - 10°), level-adjustable and with horizontal swivelling option

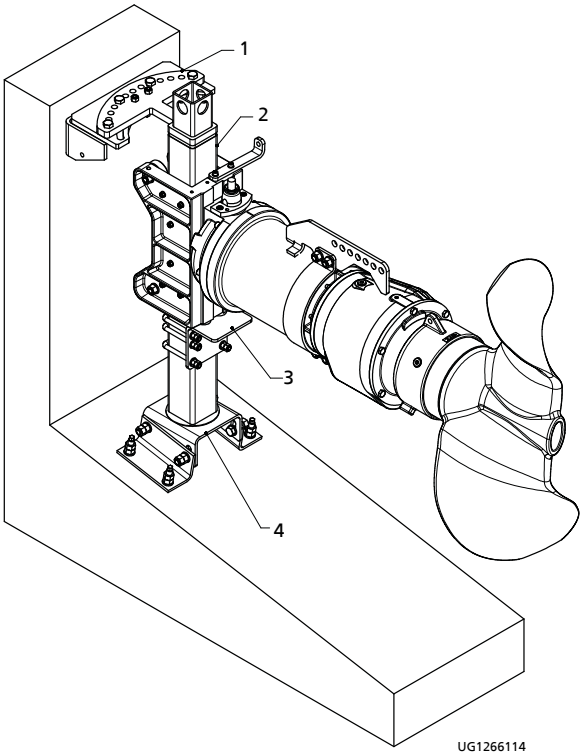

Fig. 4: Installation example: Amaprop 1000 mounted on sloping tank floor

1	Upper holder
2	Guide rail
3	Retaining bracket
4	Lower holder

Accessories 22 - Mounting on tank wall and sloping tank floor

Description	Material	Mat. No.	[kg]
Upper holder for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4301	01313458	23,23
Upper holder for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4571	01313459	23,23
Guide rail	(⇨ Page 29)		
Retaining bracket for guide rail 100 x 100 x 5 mm	1.4301	01129810	3,5
Retaining bracket for guide rail 100 x 100 x 5 mm	1.4571	19202370	3,5
Lower holder for guide rail 100 x 100 x 5 mm, incl. 4 chemical anchors	1.4301	01118906	11,92
Lower holder for guide rail 100 x 100 x 5 mm, incl. 4 chemical anchors	1.4571	01118907	11,92

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Middle support

Middle support for guide rail 100 x 100 x 5 mm, for large installation depths

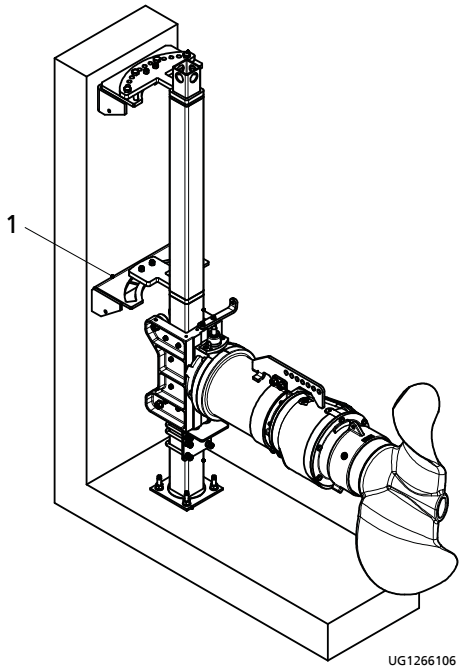

Fig. 5: Installation example: Amaprop 1000 mounted on tank edge and horizontal tank floor

1	Middle support

Amaprop 1000, required middle support; guide rail length 6 m

Size	T [°C]	Middle support required
J 166-1000/114URG/YRG	45	-
J 175-1000/164URG/YRG	45	-
J 184-1000/164URG/YRG	45	-
J 192-1000/164URG/YRG	45	-
J 185-1000/164URG/YRG	45	-
J 208-1000/234URG/YRG	45	✗
J 166-1000/164WRG/ZRG	60	-
J 174-1000/164WRG/ZRG	60	-
J 181-1000/234WRG/ZRG	60	-
J 184-1000/234WRG/ZRG	60	-
J 189-1000/234WRG/ZRG	60	-

Amaprop 1000, required middle support; guide rail length 8 m

Size	T [°C]	Middle support required
J 166-1000/114URG/YRG	45	-
J 175-1000/164URG/YRG	45	-
J 184-1000/164URG/YRG	45	✗
J 192-1000/164URG/YRG	45	✗
J 185-1000/164URG/YRG	45	✗
J 208-1000/234URG/YRG	45	✗
J 166-1000/164WRG/ZRG	60	-
J 174-1000/164WRG/ZRG	60	-
J 181-1000/234WRG/ZRG	60	✗
J 184-1000/234WRG/ZRG	60	✗
J 189-1000/234WRG/ZRG	60	✗

Standard accessories 22 - Middle support for guide rail 100 x 100 x 5 mm, for large installation depths

Description	Material	Mat. No.	[kg]
Middle support for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4301	01313462	19,26
Middle support for guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4571	01313463	19,26

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AmaRoc accessories for Amaprop 1200 … 2500

General assembly drawing showing individual components

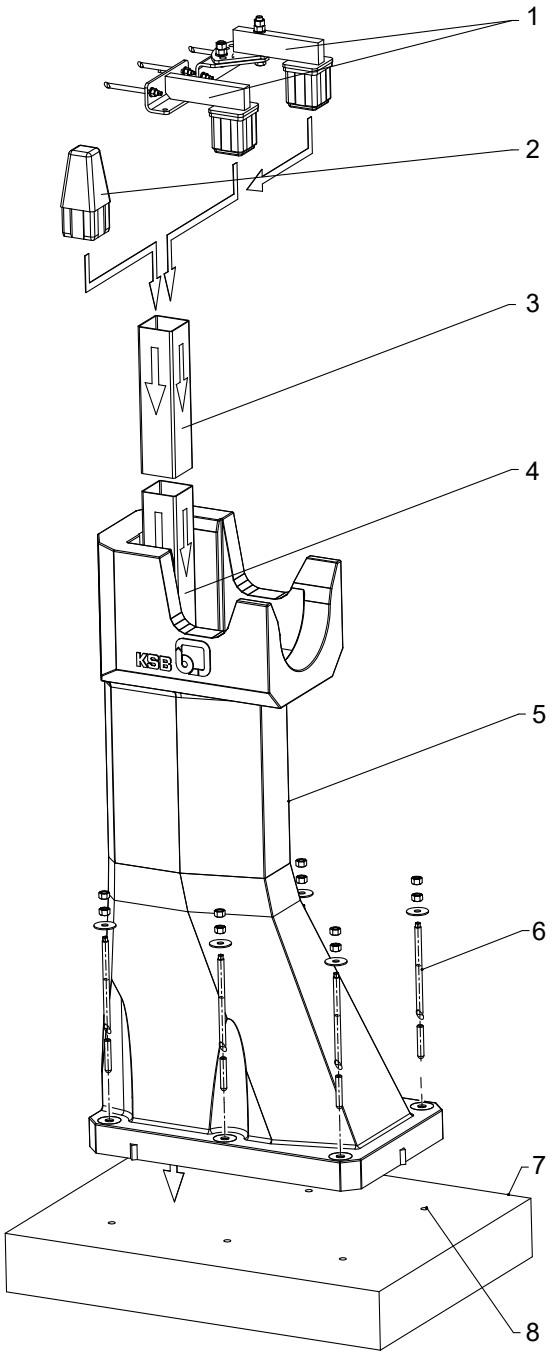

Fig. 6: General assembly drawing

1	Upper holder of square guide rail, set to 90° or with 45°, 60°, 75° swivelling options, for square guide rail lengths > 7 m
2	Insert sleeve made of polypropylene (PP), for square guide rail lengths < 7 m
3	Square guide rail extension, cross-section 100 mm x 100 mm x 3 mm or 100 mm x 100 mm x 5 mm (shown shortened)
4	Square guide rail, cross-section 100 mm x 100 mm x 3 mm or 100 mm x 100 mm x 5 mm (shown shortened)
5	Submersible mixer stand
6	Chemical anchors M16 x 250 mm with mortar cartridges
7	Concrete floor, at least 160 mm thick
8	Hole diameter 18 mm; hole depth 125 mm

Design details

Design

- Monolithic submersible mixer stand made of NoriRoc cast polymer concrete
- Integrally cast metal bushes (for fastening the stand to the tank floor) and flexible locating bushes (for holding the guide rail)

Fastening

- The submersible mixer stand is fastened on the tank floor with chemical anchors.

Guide rail

- Cross-section: 100 x 100 mm
- Wall thickness:
  - 3 mm (for guide rail lengths < 9 m)
  - 5 mm (for guide rail lengths ≥ 9 m)
- Material 1.4301 or 1.4571

Installation types

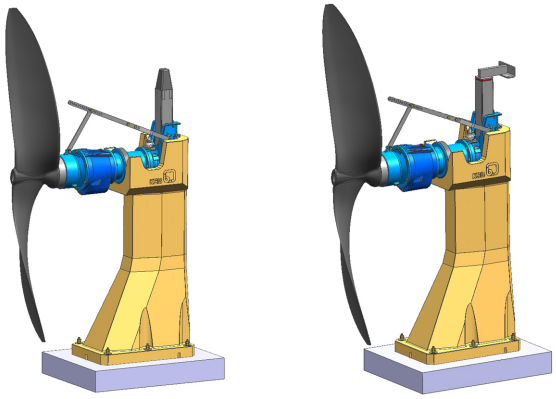

Fig. 7: Installation types

1. Free-standing, without upper holder (for square guide rails < 7 m)
2. With upper holder mounted on the tank wall or bridge (generally required for square guide rails ≥ 7 m, optional for square guide rails < 7 m)

AmaRoc

AmaRoc is designed for stationary installation on a horizontal tank floor, free-standing or with upper guide rail holder

AmaRoc standard accessories

Description	Description	Material	Material No.	[kg]
Submersible mixer stand	Shaft centreline height of submersible mixer 1450 mm above the tank floor, incl. 6 chemical anchors	NoriRoc	01185967	410
Upper holder 90°	Additional upper holder for supporting the top end of the guide rail 100 x 100 x 3, incl. 2 chemical anchors	1.4301	01189476	7,35
Upper holder 90°	Additional holder for supporting the top end of the guide rail 100 x 100 x 3 mm, incl. 2 chemical anchors	1.4571	01189497	7,35
Upper holder 45°/60°/75°	Additional upper holder for supporting the top end of the guide rail 100 x 100 x 3, incl. 2 chemical anchors	1.4301	01189498	8,15
Upper holder 45°/60°/75°	Additional holder for supporting the top end of the guide rail 100 x 100 x 3 mm, incl. 2 chemical anchors	1.4571	01189499	8,15
Upper holder 90°	Additional upper holder for supporting the top end of the guide rail 100 x 100 x 5, incl. 2 chemical anchors	1.4301	01108429	7,35
Upper holder 90°	Additional holder for supporting the top end of the guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4571	01108430	7,35
Upper holder 45°/60°/75°	Additional upper holder for supporting the top end of the guide rail 100 x 100 x 5, incl. 2 chemical anchors	1.4301	01108431	8,15
Upper holder 45°/60°/75°	Additional holder for supporting the top end of the guide rail 100 x 100 x 5 mm, incl. 2 chemical anchors	1.4571	01108432	8,15
Insert sleeve	Insert sleeve for guide rail 100 x 100 x 3; for inserting the guide bracket onto the guide rail (only for free-standing models without upper holder)	PP (polypropylene)	11306484	0,8
Guide rail	(⇨ Page 29)			

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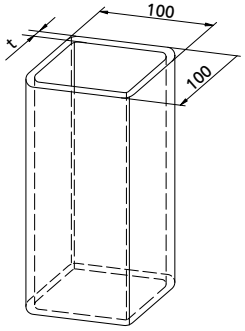
Guide rails

The guide rail length required depends on the water level. Guide rails are supplied in standard lengths of 3 m or 6 m. Free guide rail ends should not protrude more than 0.5 m from the water. If an optional guide rail holder is used to support the guide rail on the bridge, the guide rail length must be selected accordingly. The guide rails must be shortened at the site as required. For larger installation depths, the guide rails must be extended by adding guide rail extensions with a length of 3 m or 6 m. Welding and subsequent treatment must be performed at the site in accordance with the relevant regulations. To allow smooth lifting and lowering of the submersible mixers, the weld seam at the outside of the guide rail must be ground down to a max. projection of 0.5 mm.



t = 5 or 3 mm

UG 1145303

Square guide rail to DIN EN 10219-2

Overview of guide rails

Description	For size	Material	Material No.	Weight [kg]
Guide rail 100 x 100 x 3, length 3 m	Amaprop 1200 ... 1801	1.4301	11302882	27,9
Guide rail 100 x 100 x 3 mm	Amaprop 1200 ... 1801	1.4571	11302888	27,9
Guide rail 100 x 100 x 3, length 6 m	Amaprop 1200 ... 2500	1.4301	11302885	56
Guide rail 100 x 100 x 3 mm	Amaprop 1200 ... 2500	1.4571	11302891	56
Guide rail 100 x 100 x 5 mm	Amaprop 1000 ... 2500	1.4301	11304598	43,2
Guide rail 100 x 100 x 5 mm	Amaprop 1000 ... 2500	1.4571	11304599	43,2
Guide rail 100 x 100 x 5 mm	Amaprop 1000 ... 2500	1.4301	11304600	86,4
Guide rail 100 x 100 x 5 mm	Amaprop 1000 ... 2500	1.4571	11304601	86,4

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General assembly drawing with list of components

Amaprop V 1000

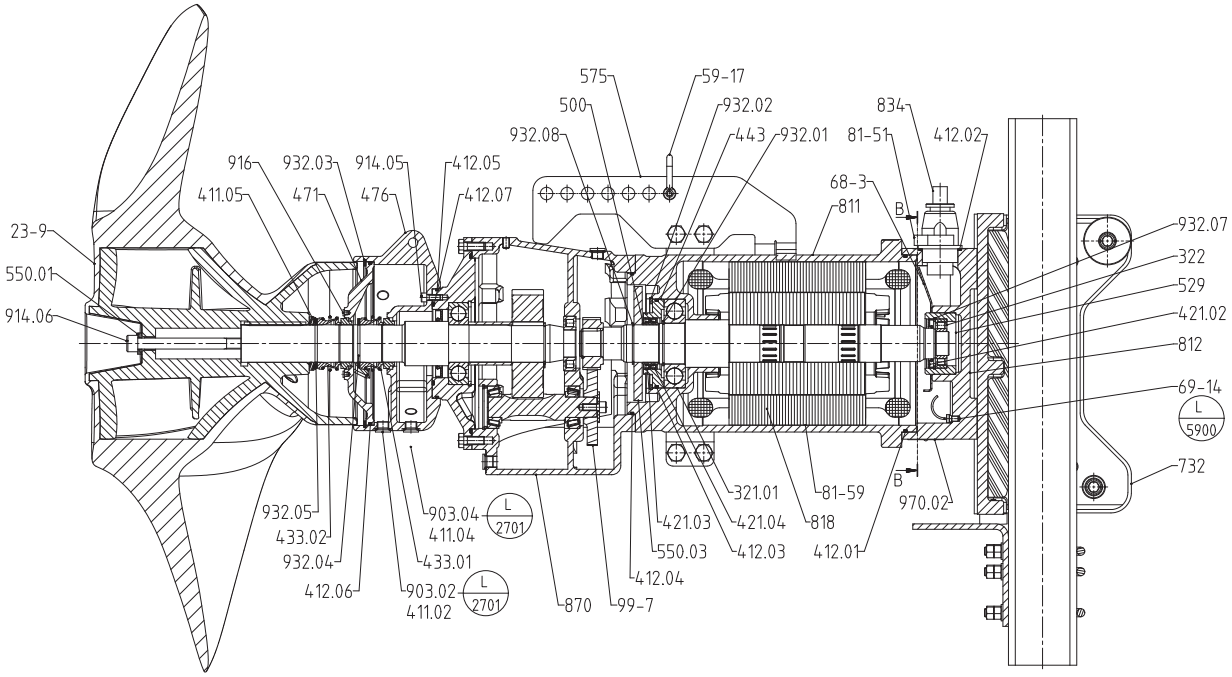

Fig. 8: General assembly drawing of Amaprop V 1000

Symbols key

Symbol	Description
L 2701	Always secure screwed connections marked with this symbol with **Loctite 2701**.
L 5900	Always secure screwed connections marked with this symbol with **Loctite 5900**.

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	68-3	Cover plate
321.01	Radial ball bearing	69-14	Leakage sensor
322	Radial roller bearing	732	Guide bracket
411.02/.04/.05	Joint ring	81-51	Clamping element
412.01/.02/.03/ .04/.05/.06/.07	O-ring	81-59	Stator
421.02/.03/.04	Lip seal	811	Motor housing
433.01	Mechanical seal (gear side)	812	Motor housing cover
433.02	Mechanical seal (propeller side)	818	Rotor
443	Seal insert	834	Cable gland
471	Seal cover	870	Gear unit
476	Mating ring carrier	903.02/.04	Screw plug
500	Ring	914.05/.06	Hexagon socket head cap screw
529	Bearing sleeve	916	Plug
550.01/.03	Disc	932.01/.02/.03/ .04/.05/.07/.08	Circlip
575	Supporting strap	970.02	Label/plate
59-17	Shackle	99-7	Installation kit

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Amaprop V 1200 - 2500

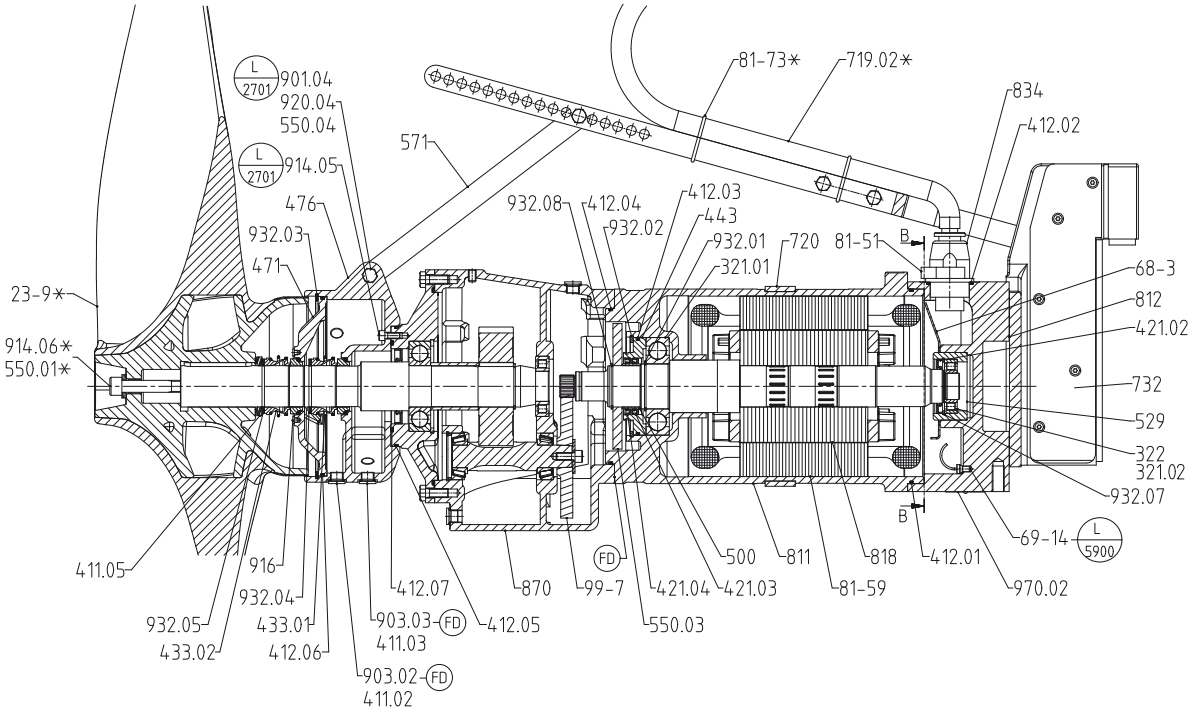

Fig. 9: General assembly drawing of Amaprop V 1200 - 2500

Symbols key

Symbol	Description
L 2701	Always secure screwed connections marked with this symbol with **Loctite 2701**.
L 5900	Always secure screwed connections marked with this symbol with **Loctite 5900**.
*	To be assembled on site

List of components

Part No.	Description	Part No.	Description
23-9	Axial propeller	719.02	Flexible tube
321.01/.02	Radial ball bearing	720	Fitting
322	Radial roller bearing	732	Guide bracket
411.02/.03/.05	Joint ring	81-51	Clamping element
412.01/.02/.03/ .04/.05/.06/.07	O-ring	81-59	Stator
421.02/.03/.04	Lip seal	81-73	Cable tie
433.01	Mechanical seal (gear side)	811	Motor housing
433.02	Mechanical seal (propeller side)	812	Motor housing cover
441	Shaft seal housing	818	Rotor
443	Seal insert	834	Cable gland
471	Seal cover	870	Gear unit
476	Mating ring carrier	901.03/.04	Hexagon head bolt
500	Ring	903.02/.03	Screw plug
540.04	Bush	914.05/.06	Hexagon socket head cap screw
550.01/.03/.04	Disc	920.04	Nut
571	Lifting bail	932.01/.02/.03/ .04/.05/.07/.08	Circlip
69-14	Leakage sensor	970.02	Label/plate

Enquiry sheet

To:
KSB SE & Co. KGaA
Turmstraße 92
06110 Halle/Saale (Germany)
Tel.: +49 345 4826-4879/4680
Fax: +49 345 4826-5107

From:

Company name	
Contact person	
Street/number	
Post/zip code, city	
Country	
Telephone number	
Fax number	
E-mail	

Project name

Mains frequency:

- ☐ 50 Hz
- ☐ 60 Hz

Mains voltage:

U [V]	

Fluid

Solids content:

[%]	

Temperature:

T [°F]	
T [°C]	

Density:

[lbs/inch]	
[kg/m³]	

Viscosity (at shear rate):

[cp.]	
[mPas]	

Loss on ignition:

[%]	

Sludge index:

[ml/g]	

Explosion protection:

- ☐ Yes
- ☐ No

Type of fluid:

- ☐ Activated sludge
- ☐ Municipal sewage sludge (primary/secondary)
- ☐ Digested sludge
- ☐ Raw waste water
- ☐ Other:

Flow behaviour:

- ☐ Newtonian (e.g. water)
- ☐ Pseudoplastic (e.g. thickened sewage sludge)
- ☐ Thixotropic (z. B. dispersion paint)
- ☐ Other:

Thickening method:

- ☐ Not thickened
- ☐ Static
- ☐ Mechanical by centrifuge / screening drum

Application of polymers:

- ☐ Yes
- ☐ No

Lowering device and AmaRoc

Material of guide rail:

- ☐ A 276 Type 316 Ti [1.4571]
- ☐ A 276 Type 304 (1.4301)

Lifting equipment (crane)

Material:

- ☐ Galvanised steel
- ☐ A 276 Type 304 (1.4301)

Aeration

Aeration method:

- ☐ None
- ☐ Pipe diffusers
- ☐ Disc diffusers
- ☐ Jet aerator
- ☐ Surface rotor
- ☐ Brush aerator

Air supply:

[scfm]	
[$m^3{}_N/h$]	

Aerated area:

[ft²]	
[m²]	

Number of aerated zones:

n [quantity]	

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Tank/reservoir

Material:

☐ Concrete
☐ Steel
☐ Stainless steel
☐ Plastic
☐ Steel, enamelled

Coating:

Design:

☐ Covered
☐ Open

Tank geometry:

☐ Round
☐ Ring channel
☐ Square
☐ Rectangular
☐ Tank with circulating flow:
With curved deflector plates:
☐ Yes ☐ No
☐ Tank with meandering flow:
With curved deflector plates:
☐ Yes ☐ No
☐ Other:

Dimensions

Length:

[ft]	
[m]	

Width:

[ft]	
[m]	

Diameter:

[ft]	
[m]	

Fill level:

[ft]	
[m]	

Tank depth:

[ft]	
[m]	

Other:

09/03/2021

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