

Pioneering for You

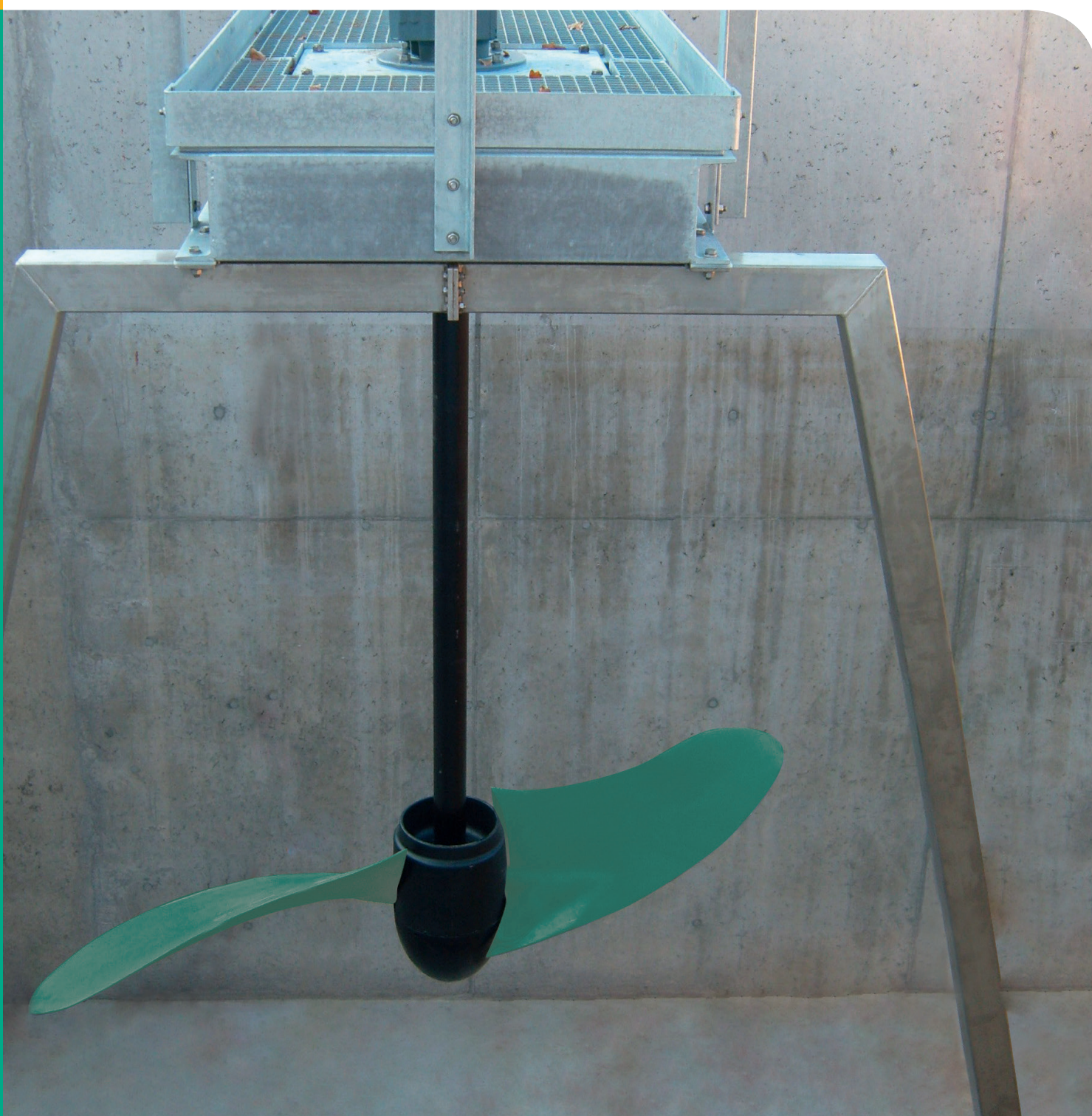
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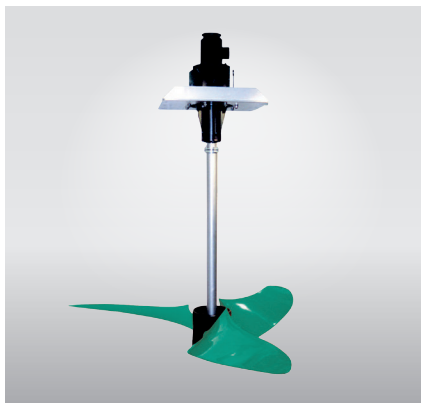
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A WILO BRAND

Series documentation – version 12/2016

WEEDLEES-V/-S/-F

Low-speed vertical mixer





WEEDLESS-V/-S/-F

Design

Low-speed vertical mixer with gear motor in mixer version

Type key

For example: WEEDLESS-V 110.2.250.20.xyz WEEDLESS vertical mixer

WEEDLESS Vertical mixer

V Version:
V = permanently installed to converter bridge or basin wall
S = with float for floating installation in the basin
F = for use in digestion tanks

110 /100 = rated power P_2

2 Number of blades

250 Nominal diameter of propeller in cm

20 Propeller speed in rpm

x Optional equipment:
A = special voltage/special frequency
B = PTC thermistor sensor
C = winding thermostats
D = anti-condensation heater
E = moisture- and acid-resistant winding
F = explosion protection
G = integrated frequency converter up to 4.0 kW

y Material of motor plate
1 = 1.4571
2 = 1.4301
3 = steel coated
4 = special material

z Material of mixer shaft
1 = 1.4571
2 = 1.4301
3 = steel S 355 coated
4 = special material

Special features/product advantages

- The Weedless-S vertical mixer is particularly suitable for basins with alternating water levels
- Optimum agitation in basin with square or rectangular floor plan
- Flexible installation with new installations of hoist for expansion
- Suitable for continuous duty
- Suitable for conversion and retrofitting in the case of existing systems

Application

Energy-optimised agitation and circulation of sewage in wastewater treatment plants

Technical data

- Drive power: 0.37...7.50 kW
- Max. circulation capacity: 7.5 m³/s
- Diameter of propeller: 1.50 m...2.50 m
- Diameter of mixer shaft: $\varnothing$ 70... $\varnothing$ 112 mm
- Min. shaft length: 1.20 m
- Max. installation depth: 10.00 m
- Angle adjustment of the propeller blades: 30°...45°
- Weight: approx. 230...700 kg
- Max. reaction force: 6000 N
- Oil filling of gear: ISO VG CLPE, biodegradable, water-polluting class 1

Description/construction

The vertical mixer consists of the gear motor, the mixer shaft, the propeller and the motor plate. The gear motor is permanently connected to the motor plate. The motor plate serves as an adapter for attachment to basins, platforms or mounting brackets. Due to the design, no maintenance points are located below the water level.

Drive unit

The drive unit consists of the gear motor and the motor plate and is designed for continuous duty. The drive unit is fitted with reinforced bearings in the output region. The drive unit can also be complemented with different accessories and options.

The drive units are configured with a rated power of 0.75 kW and upwards as standard in the motor efficiency class IE3 (in accordance with IEC 60034-30); up to 3.0 kW is also optional in IE4.

Motor plate

The motor plate is adapted to local conditions, so installation is possible on existing platforms and mounting brackets.

Coupling units

The coupling units on the mixer shaft are used for power transmission from the drive unit to the propeller and are fitted with detachable clamping elements.

Mixer shaft

The mixer shaft is customised in diameter and length to the installed capacity and water depth.

Propeller

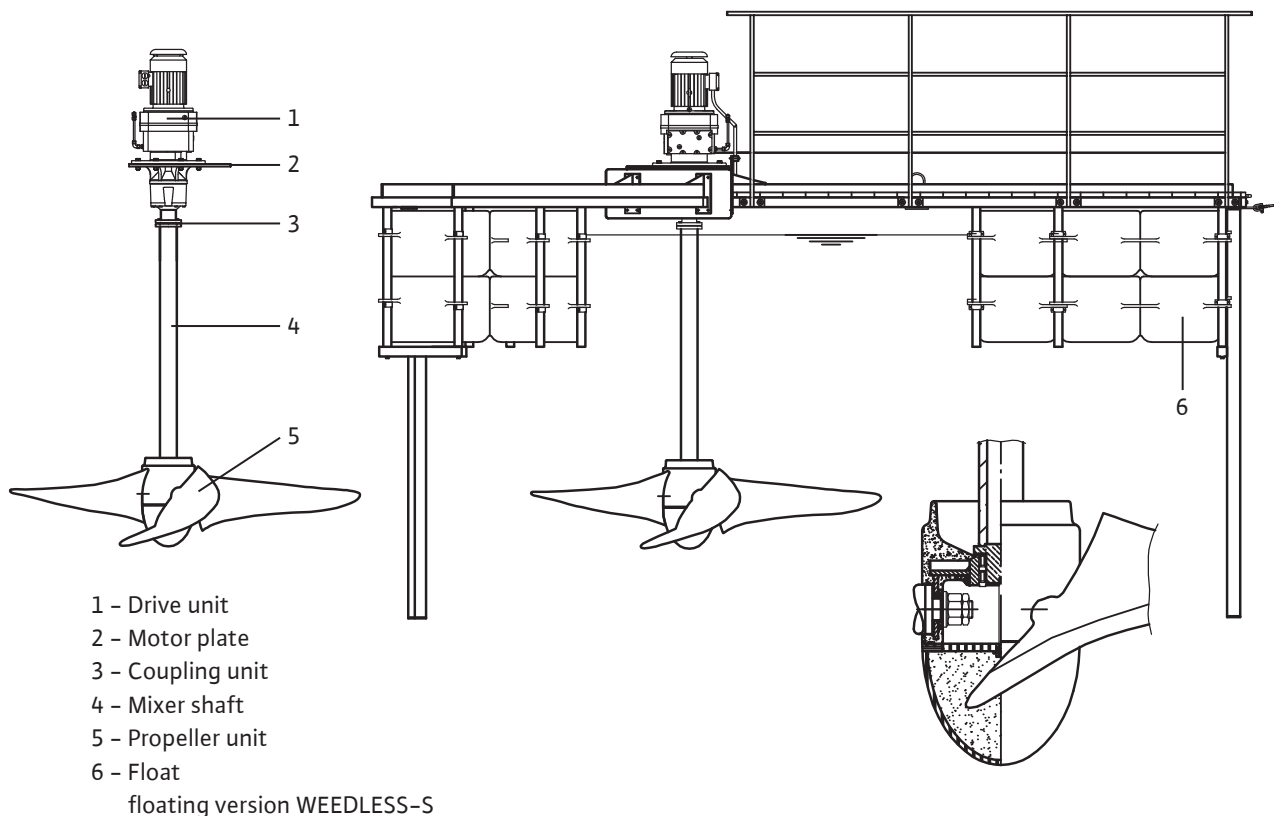
The propeller is available in 2-blade or 3-blade versions. The blades are attached using a hub mounted on the mixer shaft with detachable clamping sets. The angle of attack of the blades can be variably adjusted in 5° increments from 30° to 45°. Blades and hubs are connected in a form-fitting manner.

WEEDLESS-S: floating version with float.

The float is needed for the floating version to hold the mixer. It consists of three floats and is adjusted to the mixer output.

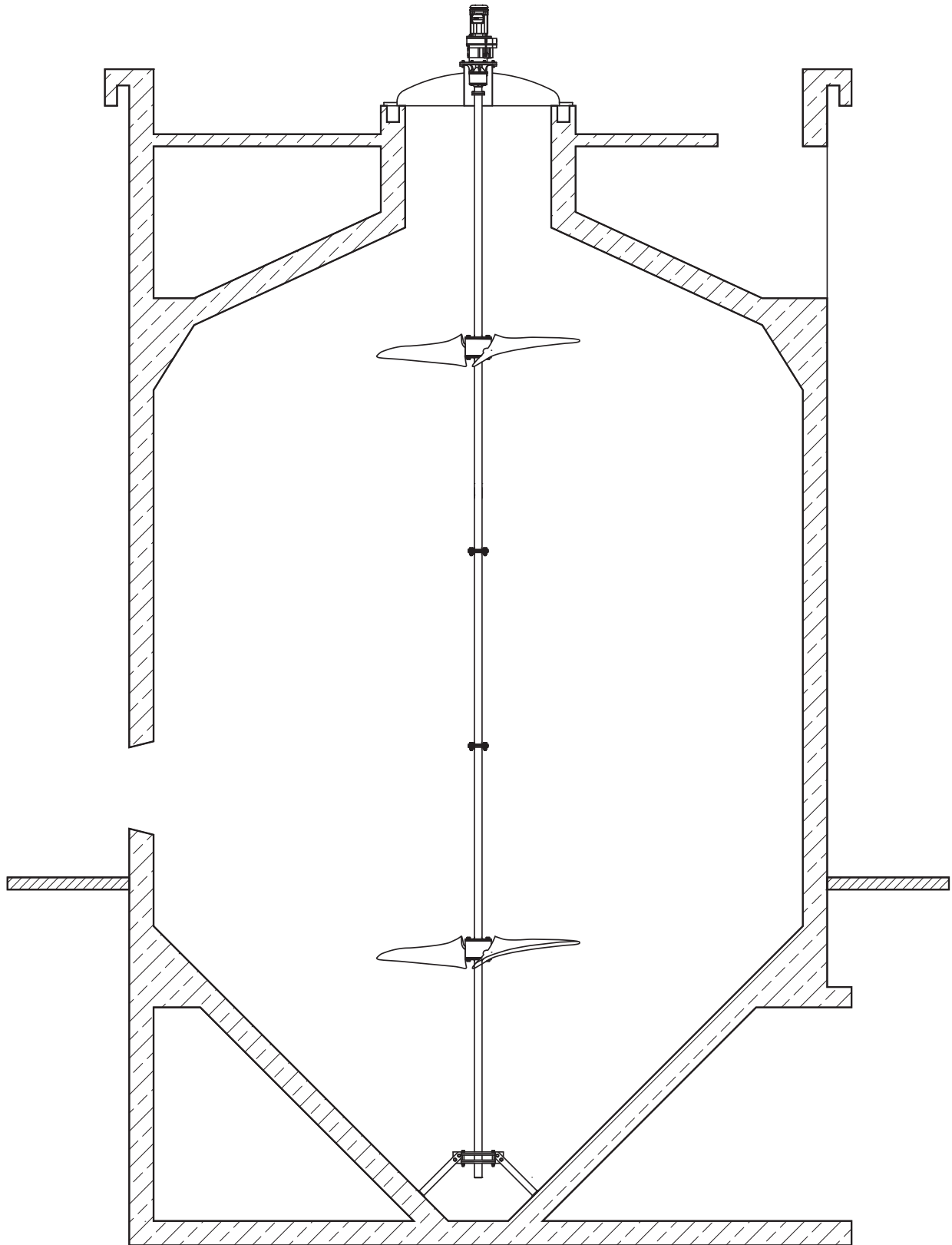
Dimension drawing

Vertical mixer WEEDLESS-V/-S/-F



Illustration

Digestion tank mixer



Materials

Standard materials

- Gear: EN-GJL-200
- Motor: Die-cast aluminium/EN-GJL- 200
- Rotary shaft seals: FKM
- Output shaft: C 45
- Motor plate: Steel hot-galvanised
- Mixer shaft: Steel S355, 3 x coated
- Hub: PUR/1.4571
- Propeller blades: PUR/1.4571
- Flow cap: PUR

Special materials

- Motor plate: 1.4301 or 1.4571
- Mixer shaft: 1.4301 or 1.4571

Standard corrosion protection for gear and motor

- Pre-treatment: sandblasted SA 2 ½
- Priming: 30 µm zinc dust
- Finishing coat: 130...250 µm 2K PUR paint, RAL 7031
- Special painting possible on request.

Options

The WEEDLESS-S version with float for floating application with fluctuating water levels.

Drive units with integrated frequency converter.

Configuration

There are various available installation options for new installations.

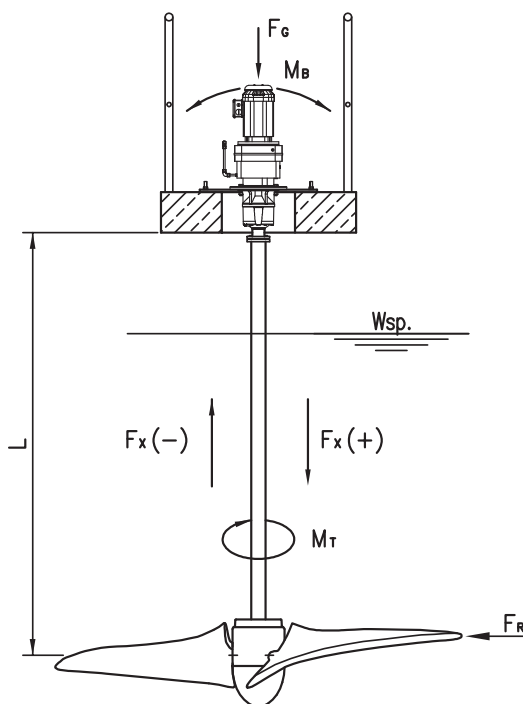
In order to make the most of the flow efficiency, no impeding installations should be envisaged in the suction and pressure area of the mixer where possible. If the mixer is operated together with compressed-air aeration, no aeration elements should operate in the region of rotation.

If the mixers are not employed in continuous duty due to the type of process, where applicable, a soft starter is required or operation with frequency converter would make sense. A flow direction in the direction of the water's surface (upwards) is preferred as standard. Where it makes sense for process engineering (e.g. short-circuit flow, increased water depth etc.), it is possible to reverse the flow direction in the direction of the bottom of the basin (downwards).

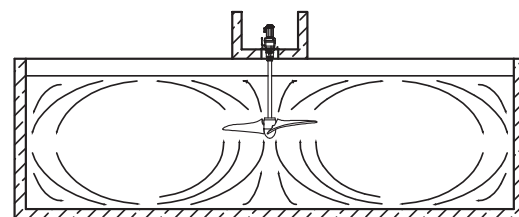
For optimum agitation in a basin with alternating water levels, it is recommended that floating WEEDLEES-S vertical mixers be used.

Dimension drawing

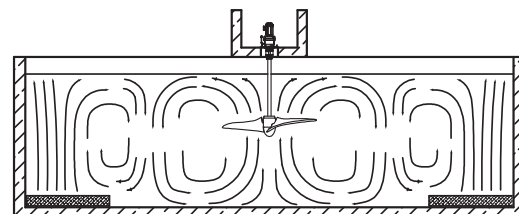
Vertical mixer WEEDLESS-V/-S/-F



- | | |
|-----------------------------|-------------------------------|
| F_G = total weight (kg) | M_T = torque (Nm) |
| M_B = bending moment (Nm) | F_R = radial load (N) |
| F_x = axial load (N) | L = output shaft length (m) |



Flow profile without aeration



Flow profile with aeration

Specification of WEEDLESS-V/-S mixer

Type designation	Rated power	Size	Number of propellers	Propeller diameter	Speed	Delivery rate (in pure water)		Quantity of oil in gear motor	Weight of gear
	P_2 kW		Unit	D cm	n_2 rpm	min. (30°) m^3/s	max. (45°) m^3/s	V l	G_G kg
37 . 2 . 250 . 08 . xxx	0.37	77	2	250	8	1.20	1.50	3.7	62
55 . 2 . 250 . 13 . xxx	0.55	77	2	250	13	1.80	2.20	3.7	62
75 . 2 . 250 . 15 . xxx	0.75	87	2	250	15	2.10	2.50	6.8	96
110 . 2 . 250 . 20 . xxx	1.10	87	2	250	20	2.60	3.30	6.8	96
150 . 2 . 250 . 24 . xxx	1.50	87	2	250	24	3.00	3.90	6.8	94
220 . 2 . 250 . 30 . xxx	2.20	87	2	250	30	3.60	4.70	6.8	94
300 . 2 . 250 . 35 . xxx	3.00	87	2	250	35	4.10	5.40	6.8	94
400 . 2 . 250 . 39 . xxx	4.00	97	2	250	39	4.50	6.00	14.0	163
400 . 3 . 250 . 34 . xxx	4.00	97	3	250	34	4.40	5.80	14.0	163
550 . 3 . 250 . 39 . xxx	5.50	97	3	250	39	5.00	6.60	14.0	165
750 . 3 . 250 . 44 . xxx	7.50	107	3	250	44	5.40	7.40	14.0	162

Motor characteristics of WEEDLESS-V/-S

Type designation	Rated power	Size	Efficiency class	Rated speed	Rated current	Starting current	Power factor	Motor weight
	P_2 kW		IE	n_1 rpm	I_N A	I_A A	$\cos \Phi$	G_M kg
37 . 2 . 250 . 08 . xxx	0.37	71S	1	1380	1.24	4.30	0.70	7.80
55 . 2 . 250 . 13 . xxx	0.55	71M	1	1380	1.62	5.80	0.72	9.10
75 . 2 . 250 . 15 . xxx	0.75	90M	3	1450	1.86	13.60	0.78	18.40
110 . 2 . 250 . 20 . xxx	1.10	90L	3	1440	2.50	17.00	0.79	21.50
150 . 2 . 250 . 24 . xxx	1.50	100M	3	1440	3.30	24.40	0.77	26.00
220 . 2 . 250 . 30 . xxx	2.20	100L	3	1440	4.85	37.30	0.82	29.00
300 . 2 . 250 . 35 . xxx	3.00	112M	3	1455	6.20	45.30	0.84	41.50
400 . 2 . 250 . 39 . xxx	4.00	132M	3	1465	8.00	71.20	0.84	60.00
400 . 3 . 250 . 34 . xxx	4.00	132M	3	1465	8.00	71.20	0.84	60.00
550 . 3 . 250 . 39 . xxx	5.50	132S	3	1475	11.40	100.30	0.84	63.00
750 . 3 . 250 . 44 . xxx	7.50	132M	3	1470	15.20	123.10	0.81	89.00

Voltage: 400 V/50 Hz, thermal class: F, protection class: IP55 with protective fan cover



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