

Technical information



Vertical agitator WEEDLESS-V WEEDLESS-S

Design

The vertical agitator basically consists of the geared motor, agitator shaft, propeller set as well as a motor plate. The geared motor is permanently attached to the motor plate. The motor plate serves as an adapter for fastening to basins, gangways or consoles. Due to its design type, there are no submerged components to be serviced.

WEEDLESS-S for changing water levels

In case of fluctuating water levels we suggest the floating vertical agitator WEEDLESS-S for efficient mixing and circulating.



Installation Condition

Vertical agitators are mainly applied for mixing and circulating purposes in basin structures of square or rectangular layout.

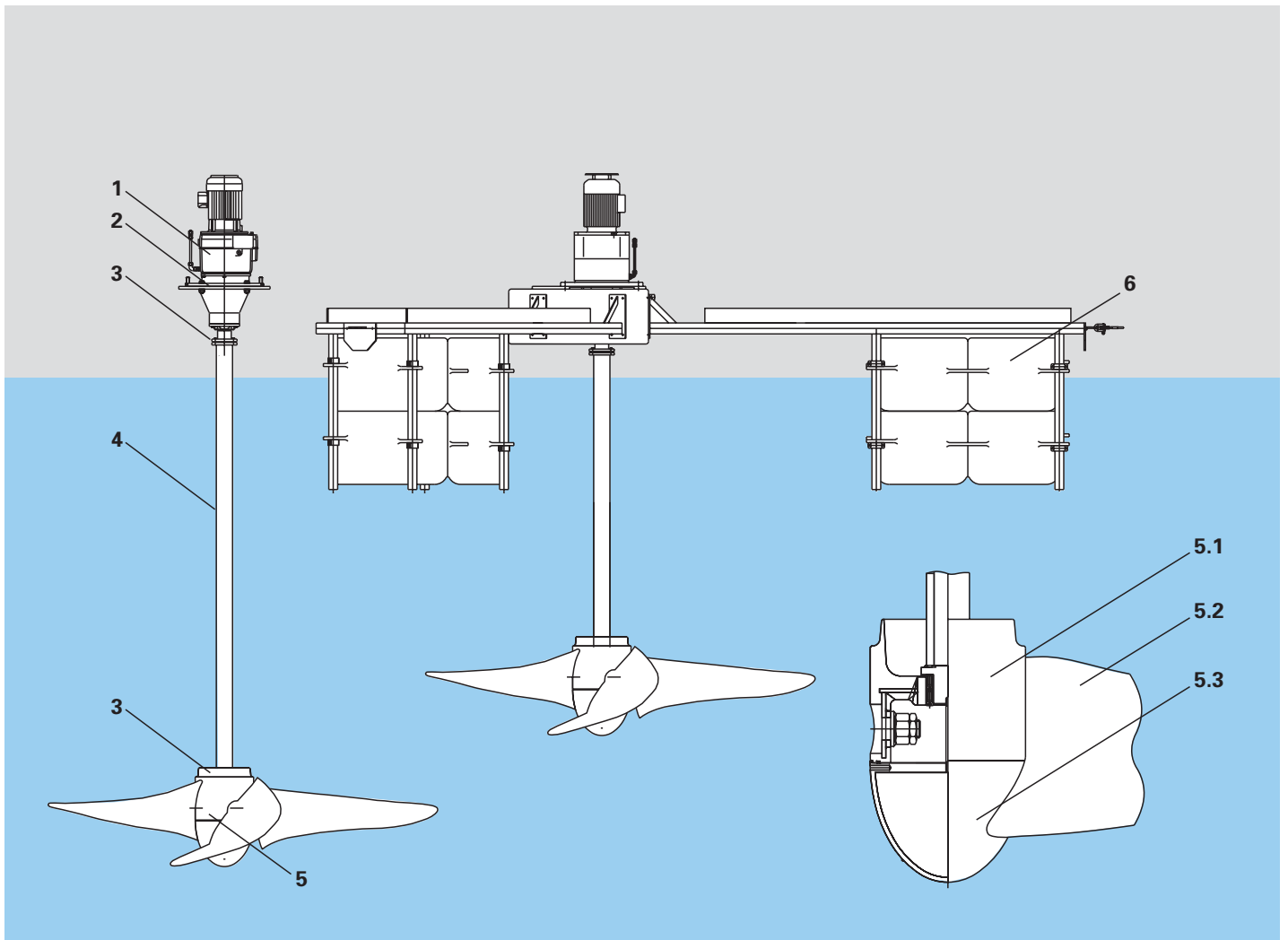
For new installations, there are various installation versions available, enabling the vertical agitator to be placed in such a way that the complete removal is also possible with stationary or mobile lifting devices.

In order that the flow efficiency can be fully accomplished, there should be no internal components fitted within the suction and pressure areas if possible. If the agitator is operated together with a compressed-air aeration, no aeration components should be used within the circulation radius.

If the agitators are not used in permanent operation due to process reasons, soft start or FU operation is necessary.

General specifications

Driving power	0.55 up to 7.5 kW
Volumetric capacity	up to 8 m ³ /s
Turning circle diameter	1.50 m to 2.50 m
Agitator shaft diameter	Ø 70 mm up to Ø 112 mm
Agitator shaft length	min. 1.20 m
Mounting depth	up to 10.00 m
Number of blades	2 or 3
Blade adjustment	30° up to 45°
Weight	max. 400 kg
Reaction force	max. 6.0 kN



Construction

1 Geared motor

The geared motor is intended for permanent operation and features a reinforced bearing in the drive section. The drive motor is fitted with thermistors.

2 Motor plate

The motor plate is adapted to local conditions. It is thus possible to make use of available gangways and consoles for the installation.

3 Coupling units

The coupling units serve the power transmission between geared motor and propeller set.

4 Agitator shaft

The diameter and length of the agitator shaft are individually adapted both to the installed capacity and the water depth. In case of water depths of < 6.00 m, the delivery direction is mainly upwards; as for water depths of > 6.00 m, the delivery is reversed to the downward direction. A removable

annular spring is used for fastening to the drive shaft of the geared motor. The propeller set is fixed in the same way.

5 Propeller set

The propeller set comes in 2-blade and 3-blade versions. The blades are attached by means of a hub mounted on the drive shaft with detachable clamping sets. The setting angle of the blades is adjustable between 30° and 45° in 5° steps. The blades and the hub are connected in a form-fitting manner.

5.1 Hub

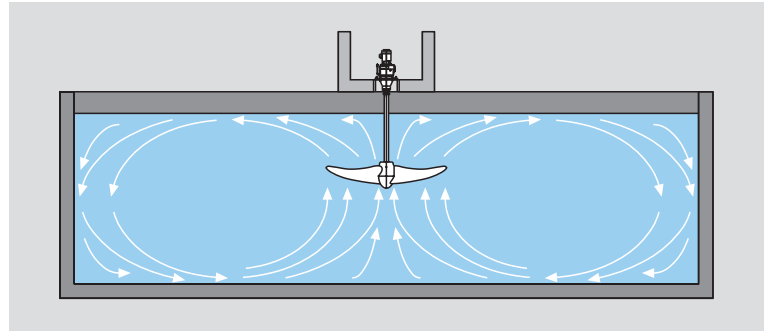
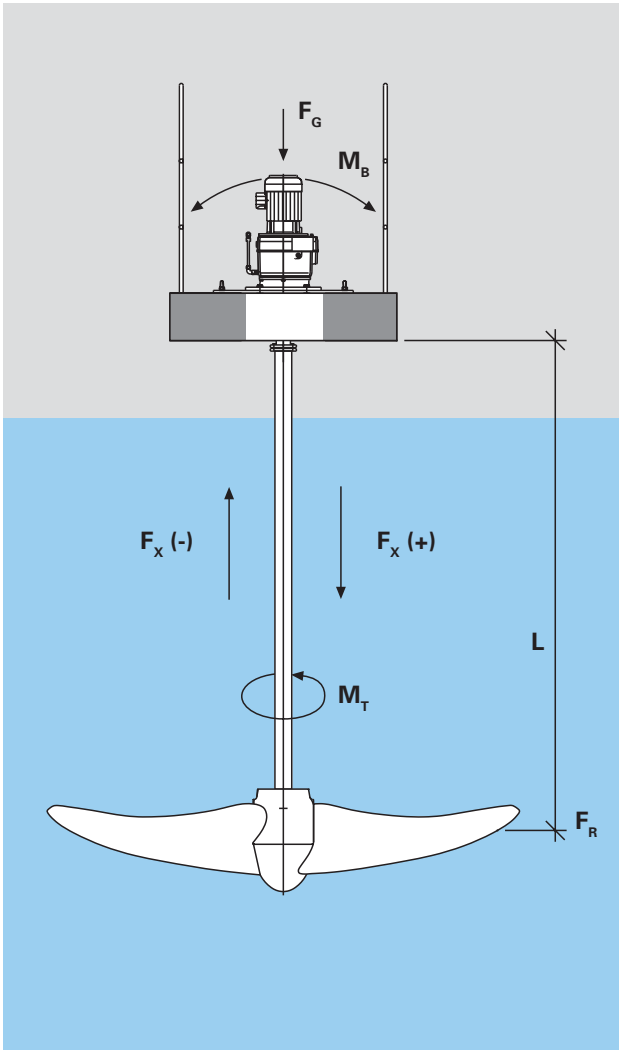
5.2 Propeller blade

5.3 Flow cover

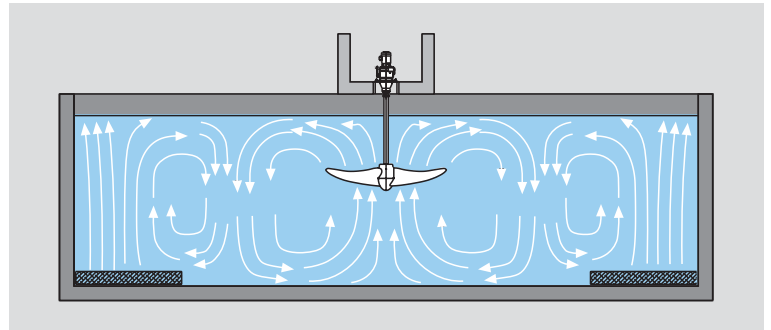
6 Float for WEEDLESS-S

The float is needed for the admission of the agitator. It consists of three floating chambers which are adapted as a function of the mixing capacity.

F_G = Total weight (kg) M_T = Torque (Nm)
 M_B = Bending moment (Nm) F_R = Overhung load (N)
 F_x = Axially load (N) L = Agitator shaft length (m)



Circulation



Circulation and aeration

Material and corrosion protection

Drive unit	GG20 ①
Drive shaft/Gear	42 Cr Mo 4V
Motor plate	1.4301 or 1.4571 resp. Steel galvanized
Agitator shaft	1.4301 or 1.4571 resp. Steel 52 3-coated
Hub	Polyurethane/1.4571
Propeller blade	Polyurethane/1.4571
Flow cover	Polyurethane
Oil filling	ISO VG CLP 320

① **Corrosion protection**

Pre-treatment: Sandblasting SA 2 1/2
Priming: 30 μm zinc powder
Finish-coating: 80 μm 2K-lacquer epoxy resin

GVA standard programme WEEDLESS-V / WEEDLESS-S

GVA Specification – Agitator											
Ser. No.	GVA-Type designation WV = WEEDLESS-V WS = WEEDLESS-S			Nominal power	Number of propellers	Propeller diameter	Speed	Pumping capacity (in clean water)		Oil quantity Geared motor	Weight Geared motor
								min. (30°)	max. (45°)		
								P ₂	–		
			kW	Pc.	cm	min ⁻¹	m ³ /s	m ³ /s	l	kg	
1	WV		55 . 2 . 250 . 12 . xxx ①②③	0.55	2	250	12	1.70	2.10	7.4	75
2	WV		75 . 2 . 250 . 14 . xxx	0.75	2	250	14	2.10	2.50	7.4	75
3	WV		110 . 2 . 250 . 19 . xxx	1.1	2	250	19	2.60	3.00	7.4	75
4	WV		150 . 2 . 250 . 24 . xxx	1.5	2	250	24	2.90	3.80	7.4	75
5		WS	150 . 3 . 250 . 19 . xxx	1.5	3	250	19	3.00	3.90	7.4	75
6	WV		220 . 2 . 250 . 29 . xxx	2.2	2	250	29	3.30	4.50	7.4	75
7		WS	220 . 3 . 250 . 24 . xxx	2.2	3	250	24	3.40	4.60	7.4	75
8	WV		300 . 2 . 250 . 34 . xxx	3.0	2	250	34	4.20	5.50	7.4	75
9		WS	300 . 3 . 250 . 29 . xxx	3.0	3	250	29	4.30	5.60	7.4	75
10	WV		400 . 2 . 250 . 41 . xxx	4.0	2	250	41	4.70	6.30	12.1	128
11	WV	WS	400 . 3 . 250 . 38 . xxx	4.0	3	250	38	5.00	6.40	12.1	128
12	WV	WS	550 . 3 . 250 . 41 . xxx	5.5	3	250	41	5.50	6.80	12.1	128
13	WV	WS	750 . 3 . 250 . 44 . xxx	7.5	3	250	44	5.70	7.20	12.1	128

Motor characteristic values – Drive motor																					
Ser. No.	GVA-Type designation WV = WEEDLESS-V WS = WEEDLESS-S			Nominal power	Size	Voltage	Frequency	Nominal speed	Nominal current	Start-up current	Power factor	Weight									
													P ₂	–	U	f	n ₁	I _N	I _A	cos φ	G _M
													kW	–	V	Hz	min ⁻¹	A	A	–	kg
1	WV		55 . 2 . 250 . 12 . xxx ①②③	0.55	80A	400	50	1,400	1.6	6.4	0.70	9.0									
2	WV		75 . 2 . 250 . 14 . xxx	0.75	80B	400	50	1,400	2.0	9.0	0.70	9.0									
3	WV		110 . 2 . 250 . 19 . xxx	1.1	90S	400	50	1,410	3.1	13.9	0.65	14.5									
4/5	WV	WS	150 . 2 . / 3 . 250 . 24 . / 19 . xxx	1.5	90L	400	50	1,420	3.7	19.5	0.71	14.5									
6/7	WV	WS	220 . 2 . / 3 . 250 . 29 . / 24 . xxx	2.2	100A	400	50	1,420	5.1	28.1	0.78	19.0									
8/9	WV	WS	300 . 2 . / 3 . 250 . 34 . / 29 . xxx	3.0	100B	400	50	1,420	6.7	40.2	0.80	19.0									
10/11	WV	WS	400 . 2 . / 3 . 250 . 41 . / 38 . xxx	4.0	112M	400	50	1,420	8.7	50.1	0.80	27.0									
12	WV	WS	550 . 3 . 250 . 41 . xxx	5.5	132S	400	50	1,445	11.7	76.1	0.80	38.0									
13	WV	WS	750 . 3 . 250 . 44 . xxx	7.5	132M	400	50	1,450	15.1	113.3	0.83	46.0									

Voltage: 400 V/50 Hz Thermal class: F Degree of protection: IP 55 with protection cover

① **Equipment options**

- A = Different voltages and frequencies
- B = Temperature sensors
- C = Winding protection contacts
- D = Anti condensation heating

② **Material motor mounting plate**

- 1 = 1.4571
- 2 = 1.4301
- 3 = Steel galvanized
- 4 = Steel coated
- 5 = Special material

③ **Material shaft**

- 1 = 1.4571
- 2 = 1.4301
- 3 = Steel coated
- 4 = Special material

