

# Submerged agitator WEEDLESS-T

### Design

The submerged agitator system is basically composed of a submerged geared motor, a propeller set, a guide component as well as a guide sledge. The submerged geared motor is permanently attached to the guide sledge. The guide component is of the twin-type design and serves for submerging the agitator which is fixed in the specified position. The patented shock absorbing system minimizes the changing loads exerted on the agitator which are caused by external flow influences. Due to this, the lifetime of the drive is increased, and the detrimental effects caused by alternating loads on stainless steel are reduced. The guiding device is additionally fitted with supports, and, thus, the forces exerted are securely handled.

### Installation condition

Submerged agitators are mostly applied in structures permitting closed horizontal flow movement due to their geometrical shape. In addition to circular and annular-shaped basins, they also include trenches and circulation ditches. Since, as a rule, the basins where submerged agitators are used cannot be emptied, the installation has to be carried out in such a manner that the removal from the basin is possible from a safe place. Moreover, the arrangement depends on the basin's geometrical parameters and size. Stationary and mobile lifting devices can be supplied at request.

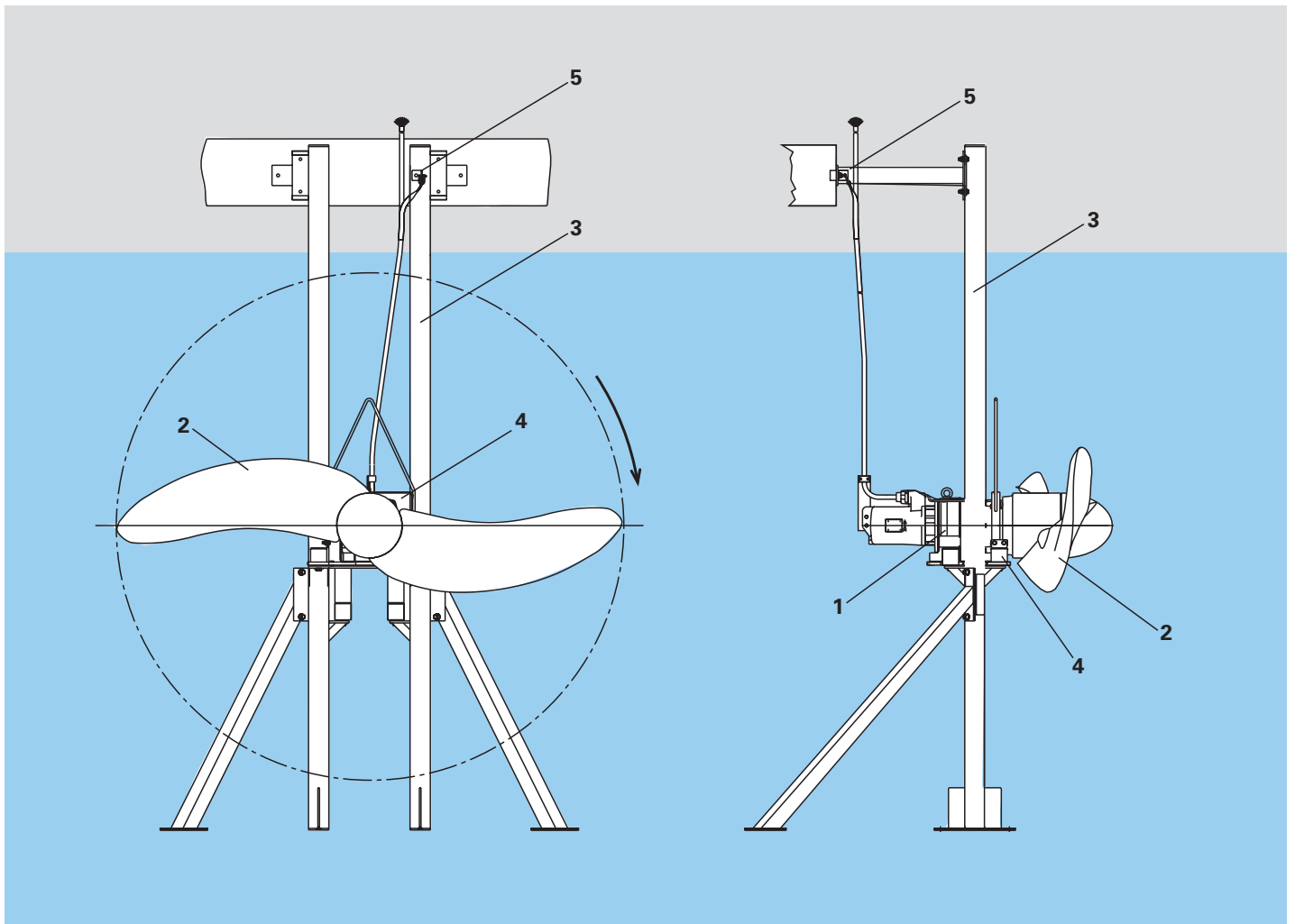
For ensuring complete flow efficiency, no disturbing internal components should be mounted, if possible, in the suction and pressure section of the agitator. With combined application with an aeration system a sufficient minimum distance ist to be also guaranteed to the aeration.

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



### General specifications

<b>Driving power</b>	1.1 to 5.5 kW
<b>Volumetric capacity</b>	up to 7 m <sup>3</sup> /s
<b>Turning circle diameter</b>	1.50 m to 2.50 m
<b>Installation depth</b>	2.50 m up to 10.00 m
<b>Number of blades</b>	2 or 3
<b>Blade adjustment</b>	30° bis 45°
<b>Weight</b>	max. 300 kg
<b>Reaction force</b>	max. 3.5 kN
<b>Tightness monitoring</b>	Conductivity
<b>Guide unit</b>	Twin guide



### 1 The submersible gear box motor

The submersible gear box motor is intended for permanent operation and is equipped with a slide ring seal in the drive section. In addition, tightness is monitored by a pre-chamber filled with biologically decomposing oil and by means of a conductivity measuring device. The drive motor comes complete with thermistors.

### 2 The propeller unit

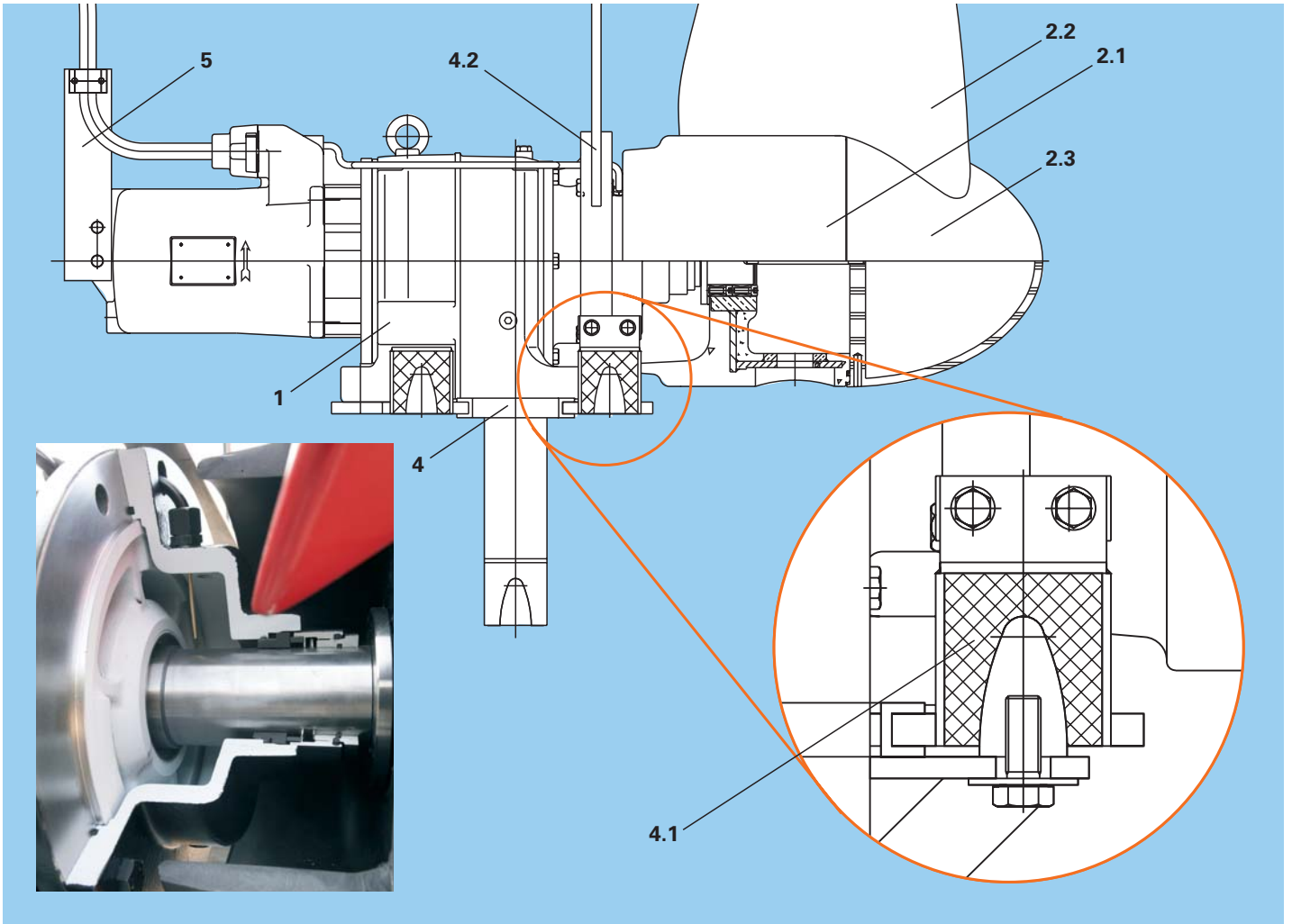
The propeller unit is supplied in the 2-blade and 3-blade version. The blades are attached by means of a fixture component mounted with detachable clamping sets on the drive shaft of the gear. The setting angle of the blades is adjustable between 30° and 45°. The blades and the fixture component are connected in a form-fitting manner.

### 3 The guide unit

The guide unit is of welded design. Shear connectors are used for attaching it to bottom. The same applies to the additional support at the bottom as well as in the upper area. During the installation, the supports are screwed to the guide unit.

### 4 The sliding carriage

The sliding carriage has been designed in such a way that direct contact with stainless steel is avoided during lowering and lifting of the unit. The integrated catch hook can be used both for stationary and mobile lifting tackle.



## Materials and corrosion protection

<b>Drive unit</b>	GGG190HB ①
<b>Drive shaft gear</b>	1.4122
<b>Sliding ring seal</b>	SiC/SiC
<b>Seal pre-chamber/gearbox</b>	2x high-pressure seal WDR (PTFE/NBR)
<b>Seal of drive/motor</b>	WDR
<b>Hub</b>	Polyurethane/1.4571
<b>Propeller blades</b>	Polyurethane/1.4571
<b>Flow cone</b>	Polyurethane
<b>Twin guide</b>	1.4301 or 1.4571
<b>Supports</b>	1.4301 or 1.4571
<b>Sliding carriage</b>	1.4571
<b>Oil filling pre-chamber</b>	ISO VG CLP E 220
<b>Oil filling gearbox</b>	ISO VG CLP 320

## Machinery components

- 1** Submersible gear box motor
- 2** Propeller unit
- 2.1** Hub
- 2.2** Propeller blade
- 2.3** Flow cover
- 3** Guide unit
- 4** Sliding carriage
- 4.1** Shock absorber system
- 4.2** Catch device
- 5** Strain relief cable

### ① **Corrosion protection:**

<i>Pre-treatment:</i>	<i>Sandblasting SA 2 1/2</i>
<i>Priming:</i>	<i>60 µm 1K zinc powder</i>
<i>Interim coating</i>	<i>80 µm 2K Deripox</i>
<i>Finish-coating</i>	<i>60 µm 2K lacquer epoxy resin RAL 5021</i>

## WEEDLESS-T standard supply programme

GVA Specification – Agitator										
Ser. No.	GVA- Type designation	Nominal power	Number of propellers	Propeller diametre	Speed	Pumping capacity (in clean water)		Oil quantity Geared motor		Weight Geared motor
		P <sub>2</sub>	–	D	n <sub>2</sub>	min. (30°)	max. (45°)	VK	G	G <sub>G</sub>
		kW	Stk.	cm	min <sup>-1</sup>	m <sup>3</sup> /s	m <sup>3</sup> /s	l	l	kg
1	WT 110 . 2 . 250 . 24 . xx ①	1.1	2	250	24	2.80	3.80	1.20	2.80	93
2	WT 150 . 2 . 250 . 27 . xx	1.5	2	250	27	3.30	4.40	1.20	2.80	93
3	WT 220 . 2 . 250 . 33 . xx	2.2	2	250	33	3.90	5.10	1.20	2.80	93
4	WT 330 . 2 . 250 . 38 . xx	3.3	2	250	38	4.40	5.90	1.20	2.80	93
5	WT 440 . 2 . 250 . 42 . xx	4.4	2	250	42	4.80	6.50	1.20	2.80	93
6	WT 440 . 3 . 250 . 37 . xx	4.4	3	250	37	4.70	6.40	1.20	2.80	93
7	WT 550 . 2 . 250 . 46 . xx	5.5	2	250	46	5.20	6.90	1.20	3.80	138
8	WT 550 . 3 . 250 . 41 . xx	5.5	3	250	41	5.10	6.80	1.20	3.80	138

## WEEDLESS-T motor characteristic values

GVA Specification – Drive motor										
Ser. No.	GVA- Type designation	Nominal power	Size	Voltage	Frequency	Nominal speed	Nominal current	Start-up current	Power factor	Weight
		P <sub>2</sub>	–	U	f	n <sub>1</sub>	I <sub>N</sub>	I <sub>A</sub>	cos φ	G <sub>M</sub>
		kW	–	V	Hz	min <sup>-1</sup>	A	A	–	kg
1	WT 110 . 2 . 250 . 24 . xx ①	1.1	90L-4	400	50	1,400	2.90	14.00	0.77	35
2	WT 150 . 2 . 250 . 27 . xx	1.5	90L-4	400	50	1,410	3.80	18.00	0.78	35
3	WT 220 . 2 . 250 . 33 . xx	2.2	90L-4	400	50	1,380	5.50	24.00	0.80	35
4	WT 330 . 2 . 250 . 38 . xx	3.3	112M-4	400	50	1,430	7.59	35.20	0.83	65
5	WT 440 . 2 . 250 . 42 . xx	4.4	112M-4	400	50	1,430	10.12	49.50	0.83	65
6	WT 440 . 3 . 250 . 37 . xx	4.4	112M-4	400	50	1,430	10.12	49.50	0.83	65
7	WT 550 . 2 . 250 . 46 . xx	5.5	112M-4	400	50	1,420	12.70	62.00	0.81	65
8	WT 550 . 3 . 250 . 41 . xx	5.5	112M-4	400	50	1,420	12.70	62.00	0.81	65

### Capacity data at 400 V / 50 Hz permanently submerged, max. 40 °C

Voltage:	380–420 V / 50 Hz	Monitoring / motorprotection:	3 x WT 160
Thermal class:	F	Electric cable; length	12 m OZOFLEX (Plus)
Type of protection:	IP 68		07RNB

#### ① Equipment options:

0 = none

B = PTC

A = special voltage/Frequency

C = evaluation instrument for tightness monitoring

440–460 V/60Hz

D = cable length > 12 m