

PASSAVANT Surface Aerator MAMMUTROTOR®

700 / 1,000 Installations under Concrete or with Steel Bridge

Field of Application

The MAMMUTROTOR® is a horizontal shaft aerator used for oxygen transfer in the biological waste water treatment process. For the two standard diameters the following maximal lengths are available:

- Ø 0.7 m / 2.30 ft: up to 6.0 m / 19.68 ft length
- Ø 1.0 m / 3.28 ft: up to 9.0 m / 29.53 ft length

Suitable for plants with high and low volumetric loadings, but especially for low loaded plants when fitted with appropriate drives (optionally with frequency converters) the MAMMUTROTOR® produces adequate flow velocities, at low energy consumption and with a low oxygen input (necessary for simultaneous denitrification). The MAMMUTROTOR® can be used in either longitudinal circulation flow systems, race track/carrousel systems or annular tanks with horizontal flow pattern; if required a combination with submersible flow boosters is also possible. Maximum water depth should not exceed:

- Ø 0.7 m / 2.30 ft: in circular tanks approx. 2.2 m / 7.22 ft and other types of tanks approx. 2.6 m / 8.53 ft
- Ø 1.0 m / 3.28 ft: in circular tanks approx. 3.0 m / 9.84 ft and in other types of tanks approx. 4.0 m / 13.12 ft water depths up to 8.0 m / 26.25 ft are possible when operating in conjunction with flow boosters.

Function

By the rotating action, the required oxygen from the air is transferred into the mixed liquor together with the generation of circulation and flow velocity, necessary for settlement free operation. The number of MAMMUTROTOR® and their lengths are determined by the required oxygenation capacity and the tank volume.

Construction

The MAMMUTROTOR® mainly consists of the following components:

Drive

The drive unit of the Ø 1.0 m / 3.28 ft rotor consists of a two-stage bevel/spur gear reducer (manufactured by PASSAVANT) as well as a flange-mounted 3-phase motor (vertical arrangement) with a flexible coupling between motor and gear reducer. For a rotor of Ø 0.7 m / 2.30 ft, a two stage spur gear reducer (by PASSAVANT) including a V-belt drive and a 3-phase motor (design B3), mounted on a pivoting base plate, is used.

Rotor

The rotor consists of a tubular shaft with flanges, the aeration blades and two end discs serving as spray protection. The aeration blades are clamped onto the pipe shaft in an off-set screw pattern, ensuring a non-pulsating torque on the drive unit.

Coupling

The flexible coupling is shrunk onto the gear reducer output shaft and bolted to the rotor shaft flange. It absorbs the start-up shock and operational vibrations and compensates for possible misalignments.

End bearing

The end bearing has been designed as a loose bearing housed in a solid support with elastic supporting pad, compensating linear expansion and minor rotor misalignments. Special seals are provided to effectively prevent spray water from penetrating into end bearing and gearbox.

Concrete bridge

Generally, the MAMMUTROTOR® is installed below a sufficiently wide concrete bridge with the up and downstream side beams 10 cm / 3.94 in above water level. Thus, the aerosol development and escape are largely impeded and noise level reduced. Gearbox and end bearing are mounted on the concrete foundations by anchor

bolts; alternatively they can be fixed by means of special dowels or threaded spindles and nuts. The installation opening in the bridge should be covered with removable concrete slabs. Alternatively covers made of GRP segments can be used. It is, however, suggested to have light and easily removable covers for maintenance work in areas of couplings and end bearings.

Steel bridge

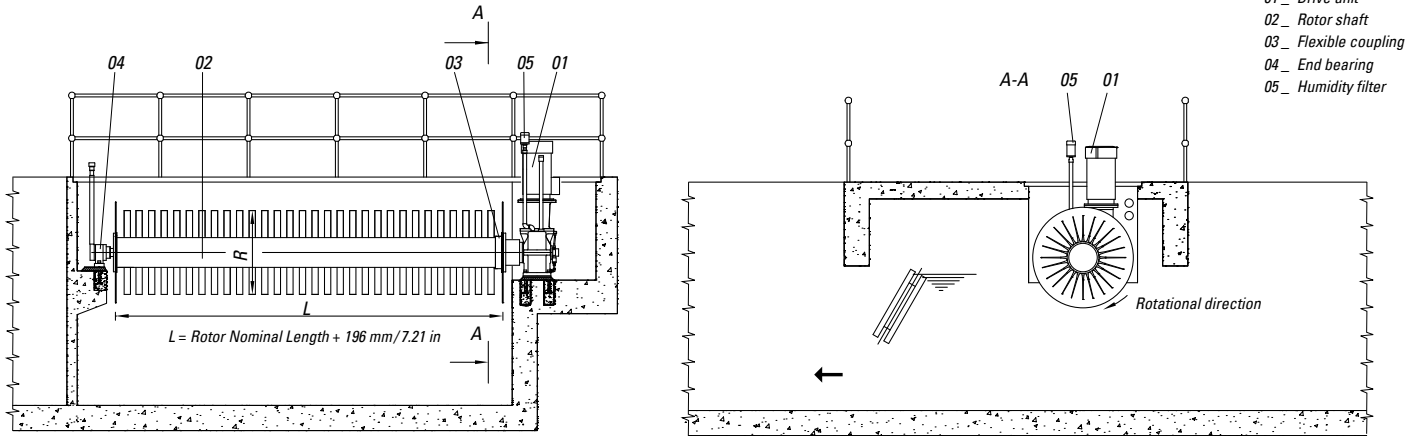
Rotors with Ø 0.7 m / 2.30 ft and with Ø 1.0 m / 3.28 ft can be delivered with a steel bridge. The bridge is made of sectional steel with hot dip galvanized grating covers and railing spans the channel width of the activated tank and is fixed on the walls of tank by means of anchor bolts. The complete MAMMUTROTOR® is mounted in the bridge assembly. Gear reducer and end bearing are mounted on steel brackets within the bridge construction. Spray protection covers (made from stainless steel) protect the bridge as well as the drive unit and end bearing against the spray water.

Accessories (additional price)

- Aerosol protection for up- / downstream side
- Additional frost protection covers; alternatively heatable frost protection hoods for coupling and bearing (for Ø 0.7 m / 2.30 ft)
- Noise protection hood covering gear reducer
- Safety bars for accident prevention – upstream of rotors
- Damping plates for suppression of surging
- Overflow weirs to control immersion depth (O₂-input) with manual or electrical drive
- Dissolved oxygen meter a. control systems

PASSAVANT Surface Aerator MAMMUTROTOR®

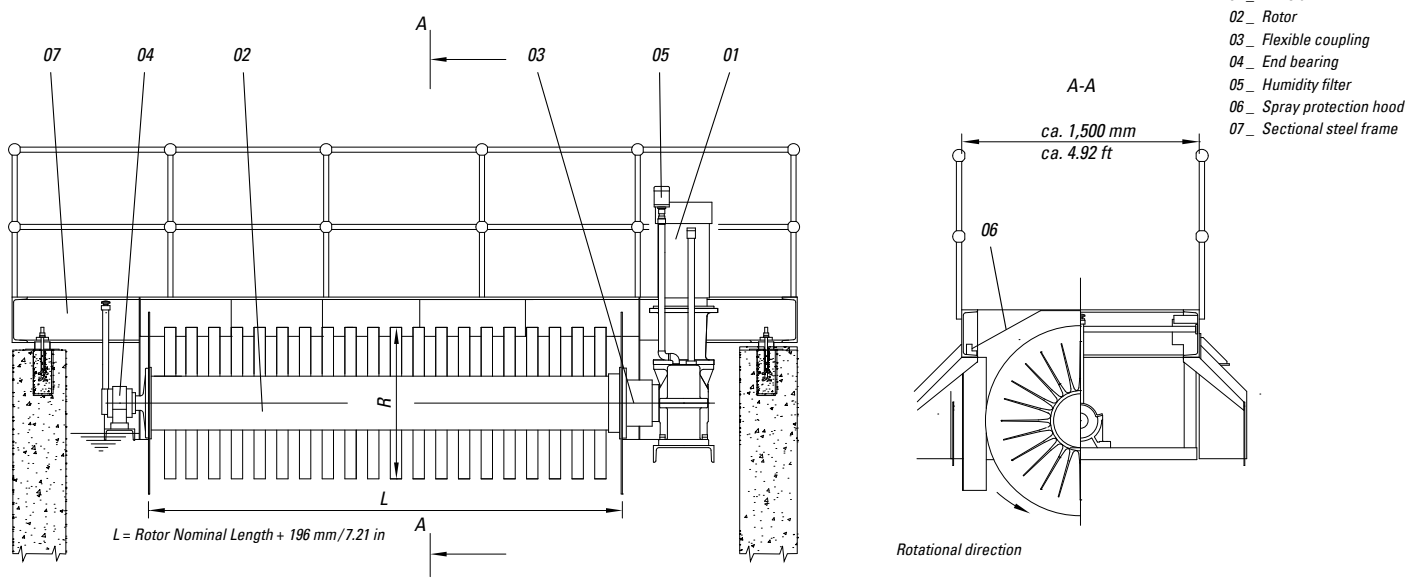
Ø 1,000 mm / 3.28 ft – Concrete Bridge



Rotor Diameter [mm]/[ft] (R)	Nom. Rotor Length [mm]/[ft] (L)	Rotor Speed* [min ⁻¹]	Motor Capacity [kW]/[hp]	Motor speed [min ⁻¹]	Max. Immersion Depth [mm]/[in]
1,000 / 3.28	3,000 / 9.84	72	15 / 20.11	1,500	300 / 11.81
1,000 / 3.28	4,500 / 14.76	72	22 / 29.50	1,500	300 / 11.81
1,000 / 3.28	6,000 / 19.69	72	30 / 40.21	1,500	300 / 11.81
1,000 / 3.28	7,500 / 24.61	72	37 / 49.60	1,500	300 / 11.81
1,000 / 3.28	9,000 / 29.53	72	45 / 60.32	1,500	300 / 11.81

*optional use with frequency converters or 2-speed motors

Ø 1,000 mm / 3.28 ft – Steel Bridge



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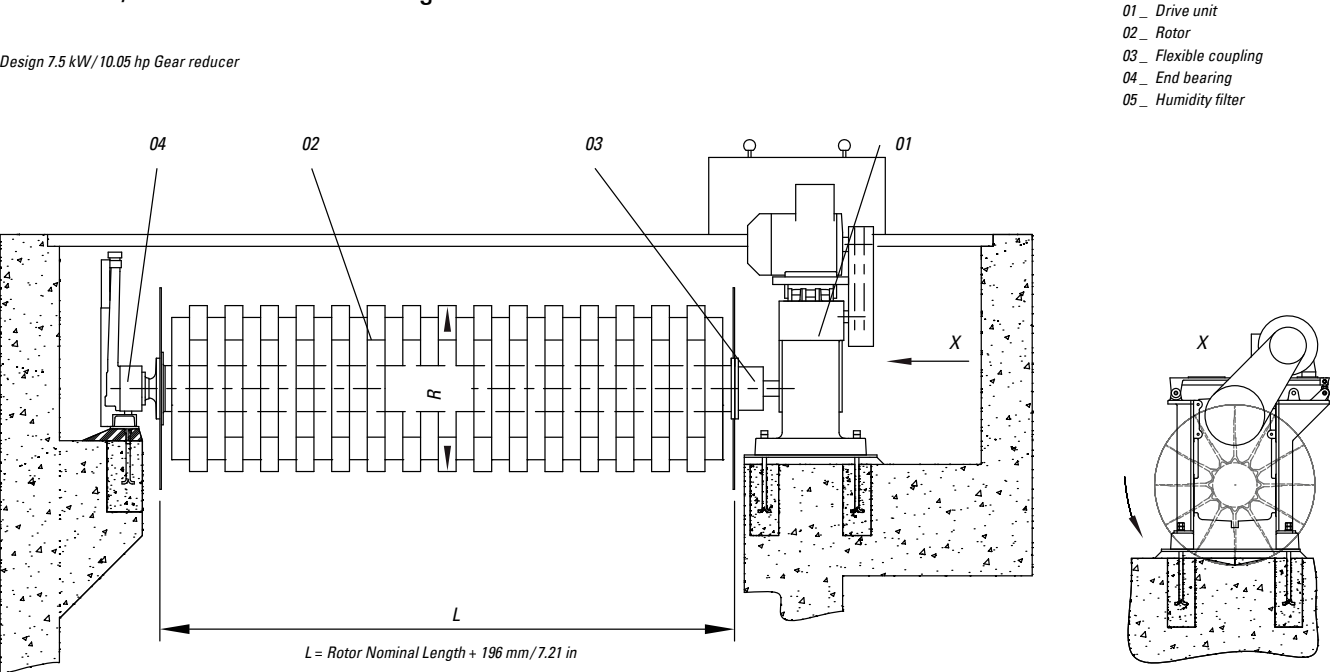


WATER
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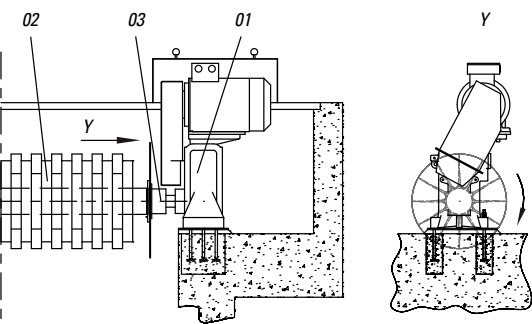
PASSAVANT Surface Aerator MAMMUTROTOR®

Ø 700 mm / 2.30 ft – Concrete Bridge

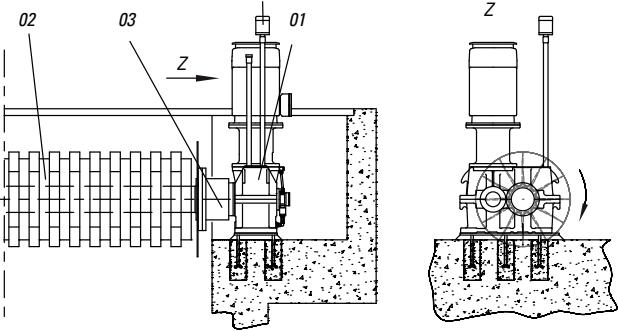
Design 7.5 kW / 10.05 hp Gear reducer



Design 15 kW / 20.11 hp Gear reducer



Design 30 kW / 40.21 hp Gear reducer



Rotor Diameter [mm]/[ft] (R)	Nom. Rotor Length [mm]/[ft] (L)	Rotor Speed* [min ⁻¹]	Gear Nominal Size [kW]/[hp]	Motor Capacity** [kW]/[hp]	Motor speed [min ⁻¹]	Max. Immersion Depth [mm]/[in]
700 / 2.30	1,000 / 3.28	85	7.5 / 10.05	2.2 / 2.95	1,500	240 / 9.45
700 / 2.30	1,500 / 4.92	85	7.5 / 10.05	3.0 / 4.02	1,500	240 / 9.45
700 / 2.30	2,000 / 6.56	85	7.5 / 10.05	4.0 / 5.36*	1,500	240 / 9.45
700 / 2.30	2,500 / 8.20	85	7.5 / 10.05	5.5 / 7.37	1,500	240 / 9.45
700 / 2.30	3,000 / 9.84	85	7.5 (15) / 10.05 (20.11) **	7.5 / 10.05	1,500	240 / 9.45
700 / 2.30	4,000 / 13.12	85	15 / 20.11	11 / 14.75	1,500	240 / 9.45
700 / 2.30	6,000 / 19.69	85	15 (30) / 20.11 (40.21) **	15 / 20.11	1,500	240 / 9.45

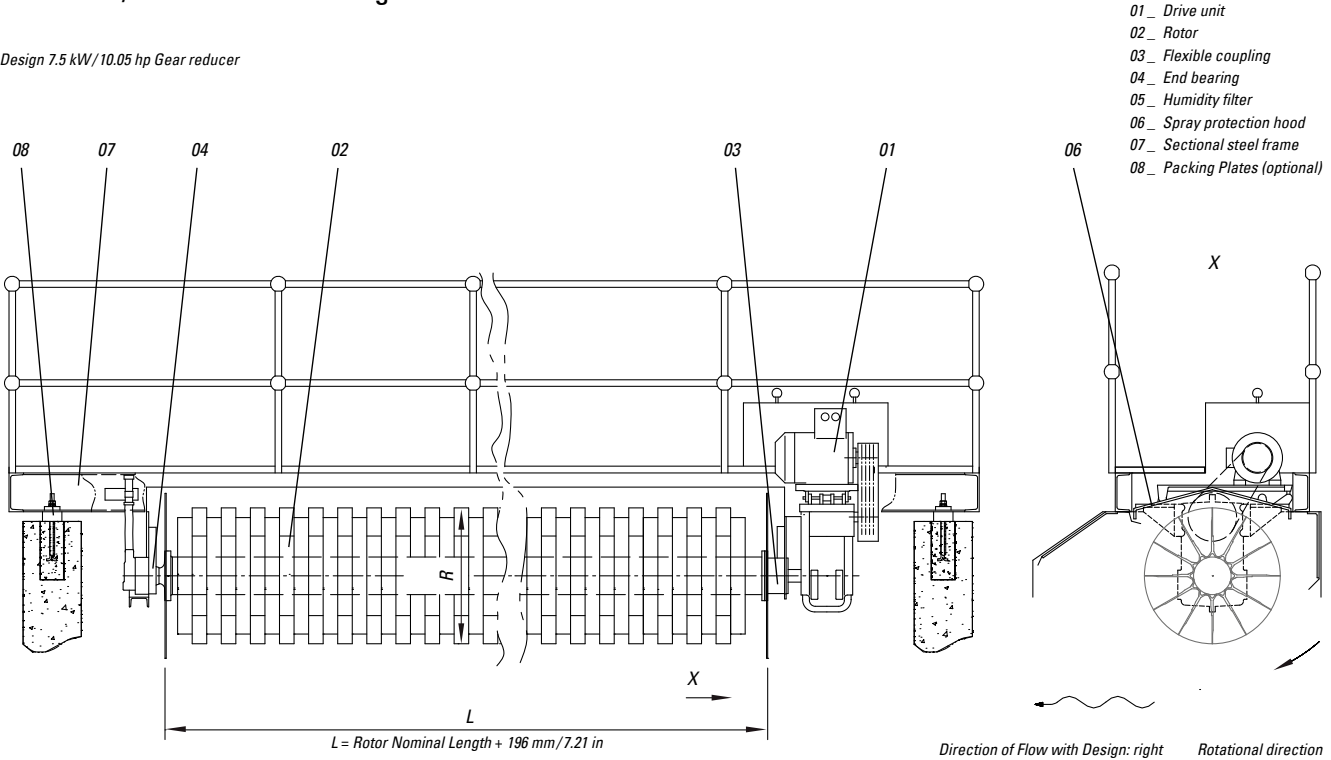
*optional use with frequency converters or 2-speed motors

**guiding values depending on tank design and operating conditions (e.g. use with or without guide baffle)

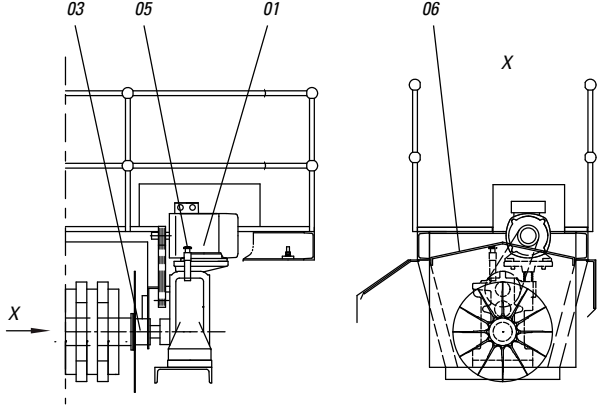
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