

**POTVRDA O TIPNOM ODOBRENJU SUSTAVA ZA OBRADU  
BALASTNIH VODA**  
*TYPE APPROVAL CERTIFICATE OF BALLAST WATER MANAGEMENT SYSTEM*



**REPUBLIKA HRVATSKA**

**REPUBLIC OF CROATIA**

Izdana u ime Vlade REPUBLIKE HRVATSKE od HRVATSKOG REGISTRA BRODOVA

*Issued under the authority of the Government of the REPUBLIC OF CROATIA by the CROATIAN REGISTER OF SHIPPING*

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Potvrđuje se da je ovaj sustav za obradu balastnih voda pregledan i ispitan u skladu sa zahtjevima specifikacija sadržanih u Kodeksu za odobrenje sustava za obradu balastnih voda (Rezolucija MEPC.300(72)). Ova Potvrda vrijedi samo za ovaj sustav za obradu balastnih voda.

*This is to certify that the ballast water management system listed below has been examined and tested in accordance with the requirements of the specifications contained in the Code for Approval of Ballast Water Management Systems (Resolution MEPC.300(72)). This certificate is valid only for the ballast water management system referred to below.*

**Naziv sustava za obradu balastnih voda:** **PUREBALLAST 3.2**

*Name of ballast water management system:*

**Sustav za obradu balastnih voda proizveden od:** ALFA LAVAL TUMBA AB  
*Ballast water management system manufactured by:* Hans Stahles Väg 7  
SE-147 80 TUMBA  
SWEDEN

**Oznaka tipa i modela, uključujući:**

*Under type and model designation and incorporating:*

PureBallast 3.2 (veličina 250-3000), PureBallast 3.2 EX (veličina 250-3000),  
PureBallast 3.2 Compact (veličina 85-300), PureBallast 3.2 Compact Flex (veličina 85-1000)  
– sustav za obradu balastnih voda koji koristi filtraciju i UV zračenje.  
*PureBallast 3.2 (model range 250-3000), PureBallast 3.2 EX (model range 250-3000),  
PureBallast 3.2 Compact (model range 85-300), PureBallast 3.2 Compact Flex (model range 85-1000)  
– ballast water management system using filtration and UV treatment.*

Vidi Tablicu 1 - Popis odobrenih BWMS

*See Table 1 - List of certified BWMS*

**Prema nacrtu opreme/sklopnom nacrtu br.:** P&ID 9034854 Rev.3

*To equipment / assembly drawing No.:*

P&ID 9034855 Rev.3

P&ID 9034857 Rev.3

P&ID 9034859 Rev.1

P&ID 9034860 Rev.1

P&ID 9034862 Rev.1

P&ID 9034865 Rev.0

P&ID 9034866 Rev.0

P&ID 9034867 Rev.1

**datum -**

*date*

**Ostala oprema proizvedena od-:**

*Other equipment manufactured by-:*

**Filter**

Proizvođač/Manufacturer: Filtrex S.r.l.

Tip/Type: ACB-serija/series

Kapacitet/Capacity: 85 do/to 3000 m<sup>3</sup>/h

Veličina mrežice/Mesh size: 20 µm

Proračunski tlak/Design pressure: 10 bar

Najveća radna temperatura/Maximum working temperature: 55°C

**UV-reaktor/UV-reactor module**

Proizvođač/Manufacturer: ALFA LAVAL

Veličina/Size: 170; 300; 600; 1000; 1500  
300Ex; 600Ex; 1000Ex; 1500Ex

Najveći potvrđeni protok/Maximum certified flow: 170 m<sup>3</sup>/h; 300 m<sup>3</sup>/h; 600 m<sup>3</sup>/h; 1000 m<sup>3</sup>/h; 1500 m<sup>3</sup>/h

Proračunski tlak/Design pressure: 6 bar; 9 bar; 10 bar - ovisno o veličini/ depending on size

Prema nacrtu opreme/sklopnom nacrtu br.: —

To equipment / assembly drawing No.:

datum - .....

date

Nazivni kapacitet obrade: 85 - 3000 m<sup>3</sup>/h  
Treatment rated capacity:

**Ova Potvrda o tipnom odobrenju izdana je na osnovu odobrenja od norveških pomorskih vlasti, Potvrda br.: TAP000018Z, Rev.2.**

*This Type Approval Certificate is issued based on approval by Norwegian Maritime Authority, Certificate No.: TAP000018Z, Rev.2.*

**Kopija ove Potvrde o tipnom odobrenju mora se nalaziti na brodu opremljenom ovim sustavom za obradu balastnih voda, za pregled na brodu. Ako je Potvrda o tipnom odobrenju izdana na osnovu odobrenja od druge Uprave, potrebno je navesti tu Potvrdu o tipnom odobrenju.**

*A copy of this Type Approval Certificate shall be carried onboard a ship fitted with this ballast water management system, for inspection onboard the ship. If the Type Approval Certificate is issued based on approval by another Administration, reference to that Type Approval Certificate shall be made.*

<b>Model</b>	<b>Nazivni kapacitet obrade</b> <i>Treatment rated capacity (m<sup>3</sup>/h)</i>	<b>Filter model</b> <i>FILTRIX</i>	<b>Veličina UV-reaktora/</b> <i>UV-reactor size</i>
85	85	ACB-906-100	1x 170
85 HP	85	ACB-906-100	1x 170
135	135	ACB-910-150	1x 170
150 HP	150	ACB-935-200	1x 300
170	170	ACB-915-150	1x 170
250	250	ACB-935-200	1x 300
250 HP	250	ACB-935-200	1x 600
300	300	ACB-945-200	1x 300
300 HP	300	ACB-945-200	1x 600
500	500	ACB-955-250	1x 600
500 HP	500	ACB-955-250	1x 1000
600	600	ACB-985-300	1x 600
600 HP	600	ACB-985-300	2x 600
750	750	ACB-985-300	1x 1000
750 HP	750	ACB-985-300	1x 1500
1000	1000	ACB-999-350	1x 1000
1000 HP	1000	ACB-999-350	2x 1000
1200	1200	ACB-9100-400	2x 600
1500	1500	ACB-9100-400	1x 1500
1500 HP	1500	ACB-9100-400	2x 1500
2000	2000	ACB-9120-500	2x 1000
2000 HP	2000	ACB-9120-500	4x 1000
3000	3000	ACB-9200-600	2x 1500
3000 HP	3000	ACB-9200-600	4x 1500

**Granični radni uvjeti su opisani u ovom dokumentu (temperatura/salinitet):**  
*Limiting operating conditions imposed are described in this document (temperature/salinity):*

### Intenzitet UV zračenja/ UV intensity

<b>Veličina UV-reaktora</b> <i>UV-reactor size</i> <i>[m<sup>3</sup>/h]</i>	<b>Donja granica intenziteta UV zračenja u morskoj i bočatoj vodi</b> <i>UV intensity lower limit in marine and brackish water<sup>1</sup></i>	<b>Donja granica intenziteta UV zračenja u slatkoj vodi pri punom protoku (TRC)</b> <i>UV intensity lower limit in fresh water at full flow (TRC)<sup>2</sup></i>	<b>Donja granica intenziteta UV zračenja u slatkoj vodi pri pola protoka</b> <i>UV intensity lower limit in fresh water at half flow<sup>3</sup></i>
170	210 W/m <sup>2</sup>	480 W/m <sup>2</sup>	410 W/m <sup>2</sup>
300	210 W/m <sup>2</sup>	480 W/m <sup>2</sup>	410 W/m <sup>2</sup>
600	210 W/m <sup>2</sup>	480 W/m <sup>2</sup>	410 W/m <sup>2</sup>
1000	252 W/m <sup>2</sup>	576 W/m <sup>2</sup>	492 W/m <sup>2</sup>
1500	252 W/m <sup>2</sup>	576 W/m <sup>2</sup>	492 W/m <sup>2</sup>

<sup>1)</sup> Intenzitet UV zračenja ispod donje granice, koji odgovara UV transmitanciji od približno 42% za te sustave, znači da balastna voda nije obrađena u skladu s ovom potvrdom.

*UV intensity below lower limit, corresponding to an UV transmission of approximately 42%, implies that the ballast water is not treated in accordance with this certificate.*

<sup>2)</sup> Intenzitet UV zračenja odgovara UV transmitanciji od približno 54%.

*UV intensity corresponding to an UV transmission of approximately 54%.*

<sup>3)</sup> Sustav uključuje kontrolu protoka u slatkoj vodi sa smanjenjem do 50% u odnosu na nazivni protok. Intenzitet UV zračenja ispod donje granice, koji odgovara UV transmitanciji od približno 49% za te sustave, znači da balastna voda nije obrađena u skladu s ovom Potvrdom.

*The system includes flow reduction control in fresh water with a reduction of up to 50% of rated flow. UV intensity below lower limit, corresponding to an UV transmission of approximately 49%, implies that the ballast water is not treated in accordance with this certificate.*

#### Ostala ograničenja uključuju slijedeće:

*Other restrictions imposed include the following:*

Temperatura i salinitet balastne vode nisu ograničenje za rad sustava za obradu balastnih voda.

*Temperature and salinity of the ballast water are not a limiting condition for the ballast water management system.*

Vrijeme zadržavanja/*Hold time:* nije potrebno/*not required*

#### Ova oprema je projektirana za rad u slijedećim uvjetima:\*

*This equipment has been designed for operation in the following conditions:\**

Najveći radni tlak/*Maximum working pressure:* 6 bar ili/or 9 bar ili/or 10 bar - ovisno o veličini/*depending on size*

Temperatura okoline/*Ambient temperature:* 0°C do/to 55°C

Mjesto pečata  
*Official stamp*

Potpis  
*Signed*

Uprava  
*Administration of*

Izdana  
*Issued this*

Valjana do  
*Valid until this*

.....  
Marinko Popović, dipl.ing.

.....  
Republika Hrvatska

.....  
Republic of Croatia

.....  
8. dana studenog 2019.

.....  
8<sup>th</sup> day of November 2019

.....  
8. dana studenog 2023.

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8<sup>th</sup> day of November 2023

\* Unesi projektna ograničenja sustava  
*Insert system design limitations*