

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Watertight Door**with type designation(s)
W52 - W108 Doors wheel & handle

Issued to

**Fabryka Sprzetu Okretowego MEBLOMOR S.A.
CZARNKOW, Poland**is found to comply with
DNV GL rules for classification – Ships**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2017-03-08**This Certificate is valid until **2022-03-07**.DNV GL local station: **Gdansk CMC**Approval Engineer: **Alessandro Russo**for **DNV GL****Arild Rogne
Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

Watertight doors of hinged type.

Number of toggles on the door:

Model 3X2: 10 toggles
Model 3VIII1: 8 toggles
Model 2VIII2: 8 toggles
Model 2VI1: 6 toggles

W52 DOORS WHEEL & HANDLE

Door blade thickness: 8 mm

Stiffeners: 60 x 8 mm

Edge Stiffeners: 70 x 8 mm

Material: Steel Min. 355 MPa yield strength for door plate and stiffeners

Max. Stiffener spacing and toggle distance: according to drawings

Optional porthole: made of hardened glass of 19 mm thickness.

The maximum design pressure that the door withstands from either sides, is given on drawing number N19/34.145 rev. B and reported in the table below:

Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
1	2VI1	600	1400	65
2	2VI1	650	1400	60
3	2VI1	700	1400	55
4	2VI1	750	1400	52
5	2VI1	800	1400	47
6	2VIII2	850	1400	42
7	2VIII2	900	1400	37
8	2VIII2	950	1400	33
9	2VIII2	1000	1400	30
10	2VI1	600	1450	72
11	2VI1	650	1450	58
12	2VI1	700	1450	48
13	2VI1	750	1450	39
14	2VI1	800	1450	33
15	2VIII2	850	1450	42
16	2VIII2	900	1450	37
17	2VIII2	950	1450	33
18	2VIII2	1000	1450	30
19	2VI1	600	1500	72
20	2VI1	650	1500	58

Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
21	2VI1	700	1500	48
22	2VI1	750	1500	39
23	2VI1	800	1500	33
24	2VIII2	850	1500	40
25	2VIII2	900	1500	35
26	2VIII2	950	1500	32
27	2VIII2	1000	1500	29
28	2VI1	600	1550	72
29	2VI1	650	1550	58
30	2VI1	700	1550	48
31	2VI1	750	1550	39
32	2VI1	800	1550	33
33	2VIII2	850	1550	38
34	2VIII2	900	1550	34
35	2VIII2	950	1550	30
36	2VIII2	1000	1550	27
37	2VI1	600	1600	72
38	2VI1	650	1600	58
39	2VI1	700	1600	48
40	2VI1	750	1600	39
41	2VI1	800	1600	33
42	2VIII2	850	1600	36
43	2VIII2	900	1600	32
44	2VIII2	950	1600	29
45	2VIII2	1000	1600	26
46	3VIII1	600	1650	79
47	3VIII1	650	1650	67
48	3VIII1	700	1650	58
49	3VIII1	750	1650	50
50	3VIII1	800	1650	44
51	3X2	850	1650	39
52	3X2	900	1650	35
53	3X2	950	1650	31
54	3X2	1000	1650	28
55	3VIII1	600	1700	79
56	3VIII1	650	1700	67
57	3VIII1	700	1700	58
58	3VIII1	750	1700	50

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Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
59	3VIII1	800	1700	44
60	3X2	850	1700	39
61	3X2	900	1700	35
62	3X2	950	1700	31
63	3X2	1000	1700	28
64	3VIII1	600	1750	79
65	3VIII1	650	1750	67
66	3VIII1	700	1750	58
67	3VIII1	750	1750	50
68	3VIII1	800	1750	44
69	3X2	850	1750	39
70	3X2	900	1750	35
71	3X2	950	1750	31
72	3X2	1000	1750	28
73	3VIII1	600	1800	79
74	3VIII1	650	1800	67
75	3VIII1	700	1800	58
76	3VIII1	750	1800	50
77	3VIII1	800	1800	44
78	3X2	850	1800	39
79	3X2	900	1800	35
80	3X2	950	1800	31
81	3X2	1000	1800	28
82	3VIII1	600	1850	79
83	3VIII1	650	1850	67
84	3VIII1	700	1850	58
85	3VIII1	750	1850	50
86	3VIII1	800	1850	44
87	3X2	850	1850	39
88	3X2	900	1850	35
89	3X2	950	1850	31
90	3X2	1000	1850	28
91	3VIII1	600	1900	79
92	3VIII1	650	1900	67
93	3VIII1	700	1900	58
94	3VIII1	750	1900	50
95	3VIII1	800	1900	44
96	3X2	850	1900	39

Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
97	3X2	900	1900	35
98	3X2	950	1900	31
99	3X2	1000	1900	28
100	3VIII1	600	1950	79
101	3VIII1	650	1950	67
102	3VIII1	700	1950	58
103	3VIII1	750	1950	50
104	3VIII1	800	1950	44
105	3X2	850	1950	39
106	3X2	900	1950	35
107	3X2	950	1950	31
108	3X2	1000	1950	28
109	3VIII1	600	2000	79
110	3VIII1	650	2000	67
111	3VIII1	700	2000	58
112	3VIII1	750	2000	50
113	3VIII1	800	2000	44
114	3X2	850	2000	39
115	3X2	900	2000	35
116	3X2	950	2000	31
117	3X2	1000	2000	28

W108 DOORS WHEEL & HANDLE

Door blade thickness: 8 mm
 Stiffeners: 60 x 40 x 6 mm
 Edge Stiffeners: 80 x 10 mm
 Material: Steel Min. 355 MPa yield strength for door plate and stiffeners
 Max. Stiffener spacing and toggle distance: according to drawings
 Optional porthole: made of hardened glass of 19 mm thickness.

The maximum design pressure that the door withstands from either sides, is given on drawing number N19/34.145 rev. B and reported in the table below:

Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
1	2VI1	600	1400	114
2	2VI1	650	1400	105
3	2VI1	700	1400	98

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Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
4	2VI1	750	1400	91
5	2VI1	800	1400	85
6	2VIII2	850	1400	80
7	2VIII2	900	1400	76
8	2VIII2	950	1400	70
9	2VIII2	1000	1400	63
10	2VI1	600	1450	126
11	2VI1	650	1450	102
12	2VI1	700	1450	84
13	2VI1	750	1450	69
14	2VI1	800	1450	58
15	2VIII2	850	1450	87
16	2VIII2	900	1450	78
17	2VIII2	950	1450	70
18	2VIII2	1000	1450	63
19	2VI1	600	1500	126
20	2VI1	650	1500	102
21	2VI1	700	1500	84
22	2VI1	750	1500	69
23	2VI1	800	1500	58
24	2VIII2	850	1500	83
25	2VIII2	900	1500	74
26	2VIII2	950	1500	66
27	2VIII2	1000	1500	60
28	2VI1	600	1550	126
29	2VI1	650	1550	102
30	2VI1	700	1550	84
31	2VI1	750	1550	69
32	2VI1	800	1550	58
33	2VIII2	850	1550	79
34	2VIII2	900	1550	70
35	2VIII2	950	1550	63
36	2VIII2	1000	1550	57
37	2VI1	600	1600	126
38	2VI1	650	1600	102
39	2VI1	700	1600	84
40	2VI1	750	1600	69
41	2VI1	800	1600	58

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Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
42	2VIII2	850	1600	75
43	2VIII2	900	1600	65
44	2VIII2	950	1600	60
45	2VIII2	1000	1600	54
46	3VIII1	600	1650	164
47	3VIII1	650	1650	140
48	3VIII1	700	1650	120
49	3VIII1	750	1650	105
50	3VIII1	800	1650	92
51	3X2	850	1650	82
52	3X2	900	1650	73
53	3X2	950	1650	65
54	3X2	1000	1650	59
55	3VIII1	600	1700	164
56	3VIII1	650	1700	140
57	3VIII1	700	1700	120
58	3VIII1	750	1700	105
59	3VIII1	800	1700	92
60	3X2	850	1700	82
61	3X2	900	1700	73
62	3X2	950	1700	65
63	3X2	1000	1700	59
64	3VIII1	600	1750	164
65	3VIII1	650	1750	140
66	3VIII1	700	1750	120
67	3VIII1	750	1750	105
68	3VIII1	800	1750	92
69	3X2	850	1750	82
70	3X2	900	1750	73
71	3X2	950	1750	65
72	3X2	1000	1750	59
73	3VIII1	600	1800	164
74	3VIII1	650	1800	140
75	3VIII1	700	1800	120
76	3VIII1	750	1800	105
77	3VIII1	800	1800	92
78	3X2	850	1800	82
79	3X2	900	1800	73

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Door #	Model #	Door Size		Max Pressure
		Width [mm]	Height [mm]	P [kPa]
80	3X2	950	1800	65
81	3X2	1000	1800	59
82	3VIII1	600	1850	164
83	3VIII1	650	1850	140
84	3VIII1	700	1850	120
85	3VIII1	750	1850	105
86	3VIII1	800	1850	92
87	3X2	850	1850	82
88	3X2	900	1850	73
89	3X2	950	1850	65
90	3X2	1000	1850	59
91	3VIII1	600	1900	164
92	3VIII1	650	1900	140
93	3VIII1	700	1900	120
94	3VIII1	750	1900	105
95	3VIII1	800	1900	92
96	3X2	850	1900	82
97	3X2	900	1900	73
98	3X2	950	1900	65
99	3X2	1000	1900	59
100	3VIII1	600	1950	164
101	3VIII1	650	1950	140
102	3VIII1	700	1950	120
103	3VIII1	750	1950	105
104	3VIII1	800	1950	92
105	3X2	850	1950	82
106	3X2	900	1950	73
107	3X2	950	1950	65
108	3X2	1000	1950	59
109	3VIII1	600	2000	164
110	3VIII1	650	2000	140
111	3VIII1	700	2000	120
112	3VIII1	750	2000	105
113	3VIII1	800	2000	92
114	3X2	850	2000	82
115	3X2	900	2000	73
116	3X2	950	2000	65
117	3X2	1000	2000	59

Application/Limitation

The doors have been Type Approved with respect to watertightness only.

The watertight doors are found to comply with DNV GL Rules for Ships, DNVGL-RU-SHIP-Pt3Ch12 January 2017 Sec.3 "4. Watertight doors and hatches" for maximum design pressures as specified above.

The design pressure at the location where the doors are to be fitted shall be equal or less than the pressure specified, for the relevant model, in the tables above.

Dimensions of the light opening of the doors can be smaller than shown on the drawings, provided that scantlings and distance between the cleats and the spacing of the stiffeners are maintained.

The Type Approval does not cover the supporting structure of the doors, which is subject to design approval.

Interface showing door frame and bulkhead shall be submitted for case-by-case approval and particular consideration shall be given if located in highly stressed areas or in areas critical to fatigue from global hull loads.

Each door shall be hydrostatically tested, according to, DNVGL-RU-SHIP-Pt3Ch12 (January 2017) Sec.1 "2.3 Testing" before installation on board, in the presence of a DNV GL surveyor.

The complete installation shall be function and leak tested according to DNVGL-RU-SHIP-Pt2Ch4 Sec.8 (January 2017).

The watertight doors described in this certificate are of hinged type, and may not be used where water tight sliding doors are required.

Port holes may not be fitted in watertight doors that are located below the freeboard deck.

Operation, control and alarms of the doors shall be according to relevant vessel requirements.

Optional porthole to be according DNVGL-RU-SHIP-Pt3Ch12 (January 2017) Sec.6 1.1.4

Type Approval documentation

Drawing N19/34.145 (5 sheet) rev.B, dated 2017-02-06 Watertight door with central locking

Tests carried out

Test reports dated 2012- 05-24 and 2012-06-20, witnessed by DNV Gdansk.

Marking of product

- Manufacturer's name or brand
- DNVGL Type Approval Certificate No. TAS00000XM
- Type designation & model number.
- Max allowable design pressure as specified above



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Periodical assessment

DNV GL' surveyor has the permission to perform Certification Retention Survey at any time during the validity period of this certificate.

Periodical assessment shall be done bi-yearly with a time window of +/- 3 months.