DNV·GL

Certificate No:
TAS00002GD

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Watertight Door

with type designation(s)
Watertight hinged steel door type WR100/WR30

Issued to
Libra-Plast A/S
HAREID, Norway

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 **2020-08-06**
This Certificate is valid until **2025-08-05**.
DNV GL local station: **Norway Newbuilding**

for **DNV GL**

Approval Engineer: **Xiaolu Wu**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

All doors are to have 5 horizontal stiffeners on the door blade of type 50x8 or 80x8 as given in the table below.

Handle operated

Door	Door Size	Plate Thickness	Toggles + Hinges	Horizontal Stiffeners	Edge Stiffeners	Max Pressure [kPa]
No.	WxH [mm]			HxT [mm]	HxT [mm]	
1	600 x 1200	5	8+3	50 x 8	50 x 8	**45**
2	600 x 1400	5	8+3	50 x 8	50 x 8	**45**
3	750 x 1400	5	8+3	50 x 8	50 x 8	**45**
4	850 x 1400	5	8+3	50 x 8	50 x 8	**45**
5	910 x 1400	5	8+3	50 x 8	50 x 8	**45**
6	600 x 1600	5	8+3	50 x 8	50 x 8	**45**
7	750 x 1600	5	8+3	50 x 8	50 x 8	**45**
8	850 x 1600	5	8+3	50 x 8	50 x 8	**45**
9	910 x 1600	5	8+3	50 x 8	50 x 8	**45**
10	600 x 1800	5	8+4	50 x 8	50 x 8	**45**
11	750 x 1800	5	8+4	50 x 8	50 x 8	**45**
12	850 x 1800	5	8+4	80 x 8	80 x 8	**45**
13	910 x 1800	5	8+4	80 x 8	80 x 8	**45**
14	600 x 1900	5	8+4	80 x 8	80 x 8	**45**
15	750 x 1900	5	8+4	80 x 8	80 x 8	**45**
16	850 x 1900	5	8+4	80 x 8	80 x 8	**45**
17	910 x 1900	5	8+4	80 x 8	80 x 8	**45**
18	600 x 2000	5	8+4	80 x 8	80 x 8	**45**
19	750 x 2000	5	8+4	80 x 8	80 x 8	**45**
20	850 x 2000	5	8+4	80 x 8	80 x 8	**45**
21	910 x 2000	5	8+4	80 x 8	80 x 8	**45**
22	580 x 1360	5	6+3	50 x 8	50 x 8	**45**
23	660 x 1460	5	6+3	50 x 8	50 x 8	**45**
24	810 x 1460	5	6+3	50 x 8	50 x 8	**45**
25	660 x 1660	5	8+3	50 x 8	50 x 8	**45**
26	810 x 1660	5	8+3	50 x 8	50 x 8	**45**
27	660 x 1860	5	8+4	50 x 8	50 x 8	**45**
28	810 x 1860	5	8+4	80 x 8	80 x 8	**45**

Product description

All doors are to have 5 horizontal stiffeners on the door blade of type 80x8 as given in the table below.

Wheel Alt.1

Door	Door Size	Plate Thickness	Toggles + Hinges	Horizontal Stiffeners	Edge Stiffeners	Max Pressure [kPa]
No.	WxH [mm]			HxT [mm]	HxT [mm]	
1	600 x 1200	5	8+3	80 x 8	80 x 8	**170**
2	600 x 1400	5	8+3	80 x 8	80 x 8	**145**
3	750 x 1400	5	8+3	80 x 8	80 x 8	**115**
4	850 x 1400	5	8+3	80 x 8	80 x 8	**100**
5	910 x 1400	5	8+3	80 x 8	80 x 8	**95**
6	600 x 1600	5	10+3	80 x 8	80 x 8	**142**
7	750 x 1600	5	10+3	80 x 8	80 x 8	**127**
8	850 x 1600	5	10+3	80 x 8	80 x 8	**114**
9	910 x 1600	5	10+3	80 x 8	80 x 8	**100**
10	600 x 1800	5	10+4	80 x 8	80 x 8	**118**
11	750 x 1800	5	10+4	80 x 8	80 x 8	**103**
12	850 x 1800	5	10+4	80 x 8	80 x 8	**97**
13	910 x 1800	5	10+4	80 x 8	80 x 8	**88**
14	600 x 1900	5	10+4	80 x 8	80 x 8	**109**
15	750 x 1900	5	10+4	80 x 8	80 x 8	**94**
16	850 x 1900	5	10+4	80 x 8	80 x 8	**88**
17	910 x 1900	5	10+4	80 x 8	80 x 8	**83**
18	600 x 2000	5	10+4	80 x 8	80 x 8	**101**
19	750 x 2000	5	10+4	80 x 8	80 x 8	**87**
20	850 x 2000	5	10+4	80 x 8	80 x 8	**81**
21	910 x 2000	5	10+4	80 x 8	80 x 8	**78**
22	580 x 1360	5	8+3	80 x 8	80 x 8	**155**
23	660 x 1460	5	8+3	80 x 8	80 x 8	**125**
24	810 x 1460	5	8+3	80 x 8	80 x 8	**100**
25	660 x 1660	5	10+3	80 x 8	80 x 8	**127**
26	810 x 1660	5	10+3	80 x 8	80 x 8	**115**
27	660 x 1860	5	10+4	80 x 8	80 x 8	**105**
28	810 x 1860	5	10+4	80 x 8	80 x 8	**94**

Product description

All doors are to have 5 horizontal stiffeners on the door blade of type 65x65x7 as given in the table below.

Wheel Alt.2

Door	Door Size	Plate Thickness	Toggles + Hinges	Horizontal Stiffeners	Edge Stiffeners	Max Pressure [kPa]
No.	WxH [mm]			HxWxT [mm]	HxT [mm]	
1	600 x 1200	6	8+3	65x65 x 7	80 x 8	**170**
2	600 x 1400	6	8+3	65x65 x 7	80 x 8	**145**
3	750 x 1400	6	8+3	65x65 x 7	80 x 8	**115**
4	850 x 1400	6	8+3	65x65 x 7	80 x 8	**100**
5	910 x 1400	6	8+3	65x65 x 7	80 x 8	**95**
6	600 x 1600	6	10+3	65x65 x 7	80 x 8	**160**
7	750 x 1600	6	10+3	65x65 x 7	80 x 8	**130**
8	850 x 1600	6	10+3	65x65 x 7	80 x 8	**110**
9	910 x 1600	6	10+3	65x65 x 7	80 x 8	**100**
10	600 x 1800	6	10+4	65x65 x 7	80 x 8	**140**
11	750 x 1800	6	10+4	65x65 x 7	80 x 8	**110**
12	850 x 1800	6	10+4	65x65 x 7	80 x 8	**100**
13	910 x 1800	6	10+4	65x65 x 7	80 x 8	**90**
14	600 x 1900	6	10+4	65x65 x 7	80 x 8	**130**
15	750 x 1900	6	10+4	65x65 x 7	80 x 8	**105**
16	850 x 1900	6	10+4	65x65 x 7	80 x 8	**95**
17	910 x 1900	6	10+4	65x65 x 7	80 x 8	**85**
18	600 x 2000	6	10+4	65x65 x 7	80 x 8	**125**
19	750 x 2000	6	10+4	65x65 x 7	80 x 8	**100**
20	850 x 2000	6	10+4	65x65 x 7	80 x 8	**90**
21	910 x 2000	6	10+4	65x65 x 7	80 x 8	**80**
22	580 x 1360	6	8+3	65x65 x 7	80 x 8	**155**
23	660 x 1460	6	8+3	65x65 x 7	80 x 8	**125**
24	810 x 1460	6	8+3	65x65 x 7	80 x 8	**100**
25	660 x 1660	6	10+3	65x65 x 7	80 x 8	**140**
26	810 x 1660	6	10+3	65x65 x 7	80 x 8	**110**
27	660 x 1860	6	10+4	65x65 x 7	80 x 8	**125**
28	810 x 1860	6	10+4	65x65 x 7	80 x 8	**100**

Product description

All doors are to have 6 horizontal stiffeners on the door blade of type 80x8 as given in the table below.

Wheel Alt.3

Door	Door Size	Plate Thickness	Toggles + Hinges	Horizontal Stiffeners	Edge Stiffeners	Max Pressure [kPa]
No.	WxH [mm]			HxT [mm]	HxT [mm]	
1	600 x 1200	5	8+3	80 x 8	80 x 8	**170**
2	600 x 1400	5	8+3	80 x 8	80 x 8	**145**
3	750 x 1400	5	8+3	80 x 8	80 x 8	**115**
4	850 x 1400	5	8+3	80 x 8	80 x 8	**100**
5	910 x 1400	5	8+3	80 x 8	80 x 8	**95**
6	600 x 1600	5	10+3	80 x 8	80 x 8	**160**
7	750 x 1600	5	10+3	80 x 8	80 x 8	**130**
8	850 x 1600	5	10+3	80 x 8	80 x 8	**110**
9	910 x 1600	5	10+3	80 x 8	80 x 8	**100**
10	600 x 1800	5	10+4	80 x 8	80 x 8	**140**
11	750 x 1800	5	10+4	80 x 8	80 x 8	**110**
12	850 x 1800	5	10+4	80 x 8	80 x 8	**100**
13	910 x 1800	5	10+4	80 x 8	80 x 8	**90**
14	600 x 1900	5	10+4	80 x 8	80 x 8	**130**
15	750 x 1900	5	10+4	80 x 8	80 x 8	**105**
16	850 x 1900	5	10+4	80 x 8	80 x 8	**95**
17	910 x 1900	5	10+4	80 x 8	80 x 8	**85**
18	600 x 2000	5	10+4	80 x 8	80 x 8	**125**
19	750 x 2000	5	10+4	80 x 8	80 x 8	**100**
20	850 x 2000	5	10+4	80 x 8	80 x 8	**90**
21	910 x 2000	5	10+4	80 x 8	80 x 8	**80**
22	580 x 1360	5	8+3	80 x 8	80 x 8	**155**
23	660 x 1460	5	8+3	80 x 8	80 x 8	**125**
24	810 x 1460	5	8+3	80 x 8	80 x 8	**100**
25	660 x 1660	5	10+3	80 x 8	80 x 8	**140**
26	810 x 1660	5	10+3	80 x 8	80 x 8	**110**
27	660 x 1860	5	10+4	80 x 8	80 x 8	**125**
28	810 x 1860	5	10+4	80 x 8	80 x 8	**100**

Product description

All doors are to have 6 horizontal stiffeners on the door blade of type 65x65x7 as given in the table below.

Wheel Alt.4

Door	Door Size	Plate Thickness	Toggles + Hinges	Horizontal Stiffeners	Edge Stiffeners	Max Pressure [kPa]
No.	WxH [mm]			HxWxT [mm]	HxT [mm]	
1	600 x 1200	6	8+3	65x65 x 7	80 x 8	**170**
2	600 x 1400	6	8+3	65x65 x 7	80 x 8	**145**
3	750 x 1400	6	8+3	65x65 x 7	80 x 8	**115**
4	850 x 1400	6	8+3	65x65 x 7	80 x 8	**100**
5	910 x 1400	6	8+3	65x65 x 7	80 x 8	**95**
6	600 x 1600	6	10+3	65x65 x 7	80 x 8	**160**
7	750 x 1600	6	10+3	65x65 x 7	80 x 8	**130**
8	850 x 1600	6	10+3	65x65 x 7	80 x 8	**110**
9	910 x 1600	6	10+3	65x65 x 7	80 x 8	**100**
10	600 x 1800	6	10+4	65x65 x 7	80 x 8	**140**
11	750 x 1800	6	10+4	65x65 x 7	80 x 8	**110**
12	850 x 1800	6	10+4	65x65 x 7	80 x 8	**100**
13	910 x 1800	6	10+4	65x65 x 7	80 x 8	**90**
14	600 x 1900	6	10+4	65x65 x 7	80 x 8	**130**
15	750 x 1900	6	10+4	65x65 x 7	80 x 8	**105**
16	850 x 1900	6	10+4	65x65 x 7	80 x 8	**95**
17	910 x 1900	6	10+4	65x65 x 7	80 x 8	**85**
18	600 x 2000	6	10+4	65x65 x 7	80 x 8	**125**
19	750 x 2000	6	10+4	65x65 x 7	80 x 8	**100**
20	850 x 2000	6	10+4	65x65 x 7	80 x 8	**90**
21	910 x 2000	6	10+4	65x65 x 7	80 x 8	**80**
22	580 x 1360	6	8+3	65x65 x 7	80 x 8	**155**
23	660 x 1460	6	8+3	65x65 x 7	80 x 8	**125**
24	810 x 1460	6	8+3	65x65 x 7	80 x 8	**100**
25	660 x 1660	6	10+3	65x65 x 7	80 x 8	**140**
26	810 x 1660	6	10+3	65x65 x 7	80 x 8	**110**
27	660 x 1860	6	10+4	65x65 x 7	80 x 8	**125**
28	810 x 1860	6	10+4	65x65 x 7	80 x 8	**100**

Application/Limitation

The doors have been Type Approved with respect to watertightness only, i.e. fire integrity has not been considered.

The watertight doors are found to comply with DNVGL-RU-SHIP July 2019 Pt.3 Ch.12 Sec.3 [4.3] and Sec. 6 for doors with installed window or side scuttle.

The design pressure at the location where the doors without window/side scuttle are to be fitted shall be equal or less than the pressure above.

The 650x450mm window, with 10mm toughened safety glass, is approved for a max design pressure of 42 kN/m².

The 550x350mm window, with 10mm toughened safety glass, is approved for a max design pressure of 60 kN/m².

The 250x250mm side scuttle, with 10mm toughened safety glass, is approved for a max design pressure of 170 kN/m².

For doors with window/side scuttle, the maximum pressure rating is to be taken as the lowest value of the applicable door and window/side scuttle design pressure based on the above values.

Window and side scuttle may not be fitted in watertight doors that are located below the freeboard deck.

The Type Approval does not cover the supporting structure of the doors, which is subject to approval. Interface showing door frame and bulkhead shall be submitted for case-by-case approval by yard/end user.

Particular consideration shall be given if located in highly stressed areas or in areas critical to fatigue from global hull loads.

Indication open/closed for the watertight door shall be fitted on the bridge.

Type Approval documentation

Drawings : T-1 -0167 Rev. D (3 pages).
Drawings : T-1 -0178 Rev. D (3 pages).

Tests carried out

Each door is to be tested for tightness through hydrostatic testing to design pressure at the manufacturer.

Prototype test report dated 2009-09-24, witnessed by DNV Ulsteinvik.
Prototype test report dated 2009-10-16, witnessed by DNV Ulsteinvik.

Marking of product

The product is to be marked with the following info:
- Manufacturer’s name or brand
- DNVGL Type Approval Certificate No. TAS00002GD
- The specific type designation:
  - WR 100/WR30, Handle operated
  - WR 100/WR30, Wheel Alt.1
  - WR 100/WR30, Wheel Alt.2

WR 100/WR30, Wheel Alt.3
WR 100/WR30, Wheel Alt.4
- Max allowable design pressure as specified above

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 will be required after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.