DNV·GL

Certificate No:
TAS00000TS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gangway

with type designation(s)
Offshore Gangway type TAB 3M

Issued to
SMST Designers & Constructors B.V.
Drachten, Netherlands

is found to comply with
DNV GL standard DNVGL-ST-0358 – Certification of offshore gangways for personnel transfer

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2022-03-12**.

Issued at **Høvik** on **2017-03-13**

DNV GL local station: **Rotterdam, MOU-Offshore Installations**

for **DNV GL**

Approval Engineer: **Iselinn Vindstad**

Aldo Matteucci
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.

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

Product description

Product: 21m telescopic gangway
Product Name: TAB 3-M Gangway

Application/Limitation

Categorization: TYPE 2 Offshore gangway with motion compensating system.

Operational				
Configuration		supported at both ends	supported at one end (cantilever)	deployment / retrieval
Live Load (LL)		150 kg	150kg	-
Maximum operational length*		20 m		
Minimum operational length*		13 m		
Wind speed (at gangway location)		20 m/s		
Gangway Operating angle		+20° / -15°	+20° / -15°	NA
Vessel accelerations**	Vertical	±3,5m/s^2		
	Longitudinal	±3,5m/s^2		
	Transverse	±3,5m/s^2		

Parked / Transit / Survival		
Configuration		Bridge supported in boom rest
Safe Working Load (Live Load)		-
Maximum Length*		14 m
Wind speed (at gangway location)		63 m/s
Gangway Operating angle		-
		gangway parked in any direction
Vessel accelerations (maximum values)**	Vertical	±10m/s^2
	Longitudinal	± 5m/s^2
	Transverse	± 5m/s^2

Design temperature -20°C

Self-Weight:
Pedestal: 2.8 tonnes
Baseframe (incl. cylinders): 2.3 tonnes
Main bridge: 4.3 tonnes
Flatrack (not incl. HPU): 3.8 tonnes
Flatrack (incl. HPU): 8.8 tonnes

*) measured from the center of the pedestal to the outmost part of the gangway tip
**) relative to the vessel axis

The operational limitations defined above have been provided by SMST, data and procedures adopted for estimating which have not formed part of this review. It is the end user's responsibility to ensure that these are never exceeded during service.

It has been confirmed by the designer that the flow of people will be continuously monitored and regulated throughout the period in which the gangway is in operational / working condition, thus preventing the load on the gangway to exceed the above defined LL at any given time.

The electrical and hydraulic system drawings and documents have been evaluated and found to comply with the applicable parts of the following:

- DNVGL-ST-0358 - Certification of Offshore gangways for personnel transfer December 2015.
- DNVGL-RU-SHIP-Pt4Ch8 Electrical installations July 2016.

For offshore gangways with motion compensating systems a Product Certification of equipment associated with essential and important control and monitoring systems is required.
Reference is made to DNVGL-ST-0358 Section 2.

The control and monitoring system is covered by Type approval certificate TAA000011G.

The Type Approval is not covering the following components:
- Slewing ring
- Hydraulic cylinders
- Transmission gears and brakes for telescoping
- Slewing gear

For certification requirements for components see DNVGL-ST-0358 Section 2.

Type Approval documentation

Drawing number	***Rev***	***Title***	***Status***
1611500-B-35-100	A	Wheel Ø120 - assembly	For Information
1611500-B-35-104	A	Wheel Ø120 - covering	For Information
1611500-B-35-105	A	Wheel Ø120 - parts	For Information
1611500-B-35-109	A	Wheel Ø120 - partlist	For Information
1611500-B-37-114	A	Slewbearing - studbolt	For Information
1611500-B-37-115	A	Slewbearing - nut	For Information
1611530-B-00-215	A	TAB 3-M assembly - parts2	Type Approved
1611530-B-00-219	A	TAB 3-M assembly - partlist	For Information
1611530-B-00-310	A	Bridge assembly - assembly	For Information
1611530-B-00-319	A	Bridge assembly - partlist	For Information
1320530-B-01-210	B	Main bridge 3-M main steel - detailed design	Type Approved
1320530-B-01-410	B	Telescopic bridge main steel - detailed design	Type Approved
1611530-B-12-120	B	Main bridge primary steel - assembly	For Information
1611530-B-12-124	C	Main bridge primary steel - parts1	Type Approved
1611530-B-12-129	B	Main bridge primary steel - partlist	For Information
1611530-B-12-311	A	Main bridge main steel - welding1	Type Approved
1611530-B-12-314	A	Main bridge main steel - parts1	Type Approved
1611530-B-12-315	A	Main bridge main steel - parts2	Type Approved
1611530-B-12-316	A	Main bridge main steel - parts3	Type Approved
1611530-B-12-319	A	Main bridge main steel - partlist	For Information

1611530-B-12-321	A	Side beam left - welding1	Type Approved
1611530-B-12-324	A	Side beam left - parts1	Type Approved
1611530-B-12-329	A	Side beam left - partlist	For Information
1611530-B-12-331	A	Side beam right - welding1	Type Approved
1611530-B-12-334	A	Side beam right - parts1	Type Approved
1611530-B-12-339	A	Side beam right - partlist	For Information
1611530-B-12-341	A	Boxed section left - welding1	Type Approved
1611530-B-12-343	A	Boxed section left - machining	Type Approved
1611530-B-12-344	A	Boxed section left - parts1	Type Approved
1611530-B-12-349	A	Boxed section left - partlist	For Information
1611530-B-12-351	A	Boxed section right - welding1	Type Approved
1611530-B-12-353	A	Boxed section right - machining	Type Approved
1611530-B-12-354	A	Boxed section right - parts1	Type Approved
1611530-B-12-359	A	Boxed section right - partlist	For Information
1611530-B-12-361	A	Beam weldment top - welding1	Type Approved
1611530-B-12-364	A	Beam weldment top - parts1	Type Approved
1611530-B-12-369	A	Beam weldment top - partlist	For Information
1611530-B-12-371	A	Beam weldment botom - welding1	Type Approved
1611530-B-12-374	A	Beam weldment botom - parts1	Type Approved
1611530-B-12-379	A	Beam weldment botom - partlist	For Information
1611530-B-12-381	A	T-drive frame weldment - welding1	Type Approved
1611530-B-12-383	A	T-drive frame weldment - machining	Type Approved
1611530-B-12-384	A	T-drive frame weldment - parts1	Type Approved
1611530-B-12-389	A	T-drive frame weldment - partlist	For Information
1611530-B-12-391	A	Bottom wheel weldment 1 - welding1	Type Approved
1611530-B-12-393	B	Bottom wheel weldment 1 - machining	Type Approved
1611530-B-12-394	A	Bottom wheel weldment 1 - parts1	Type Approved
1611530-B-12-399	A	Bottom wheel weldment 1 - partlist	For Information
1611530-B-12-401	A	Bottom wheel weldment 2 - welding	Type Approved
1611530-B-12-403	A	Bottom wheel weldment 2 - machining	Type Approved
1611530-B-12-404	A	Bottom wheel weldment 2 - parts1	Type Approved
1611530-B-12-409	A	Bottom wheel weldment 2 - partlist	For Information
1611530-B-12-411	A	Buffer mount - welding1	For Information
1611530-B-12-414	A	Buffer mount - parts1	For Information
1611530-B-12-419	A	Buffer mount - partlist	For Information
1611530-B-12-421	A	Bogie frame - welding1	Type Approved
1611530-B-12-423	B	Bogie frame - machining	Type Approved
1611530-B-12-424	A	Bogie frame - parts1	Type Approved
1611530-B-12-429	A	Bogie frame - partlist	For Information
1611530-B-12-431	A	T-drive weldment 1 - welding1	Type Approved

1611530-B-12-433	A	T-drive weldment 1 - machining	Type Approved
1611530-B-12-434	A	T-drive weldment 1 - parts1	Type Approved
1611530-B-12-439	A	T-drive weldment 1 - partlist	For Information
1611530-B-12-441	A	T-drive weldment 2 - welding1	Type Approved
1611530-B-12-443	A	T-drive weldment 2 - machining	Type Approved
1611530-B-12-444	A	T-drive weldment 2 - parts1	Type Approved
1611530-B-12-449	A	T-drive weldment 2 . partlist	For Information
1611530-B-12-451	A	Wheel frame - welding1	Type Approved
1611530-B-12-453	B	Wheel frame - machining	Type Approved
1611530-B-12-454	A	Wheel frame - parts1	Type Approved
1611530-B-12-459	A	Wheel frame - partlist	For Information
1611530-B-12-460	B	Wheel frame - assembly	For Information
1611530-B-12-464	B	Wheel frame - parts	Type Approved
1611530-B-12-469	B	Wheel frame - partlist	For Information
1611530-B-12-470	B	bogie - assembly	For Information
1611530-B-12-474	C	bogie - parts1	Type Approved
1611530-B-12-479	B	Bogie - partlist	For Information
1611530-B-12-480	A	Buffer mount - assembly	For Information
1611530-B-12-489	A	Buffer mount - partlist	For Information
1611530-B-12-491	A	Buffer arm 1 left - welding1	For Information
1611530-B-12-494	A	Buffer arm 1 left - - parts1	For Information
1611530-B-12-499	A	Buffer arm 1 left - partlist	For Information
1611530-B-12-501	A	Buffer arm 2 - welding1	For Information
1611530-B-12-503	A	Buffer arm 2 - machining	For Information
1611530-B-12-504	A	Buffer arm 2 - parts1	For Information
1611530-B-12-509	A	Buffer arm 2 - partlist	For Information
1611530-B-12-510	A	T-drive assembly 1 - assembly	For Information
1611530-B-12-514	A	T-drive assembly 1 - parts	Type Approved
1611530-B-12-519	B	T-drive assembly 1 - partlist	For Information
1611530-B-12-520	A	T-drive assembly 2 - assembly	For Information
1611530-B-12-524	A	T-drive assembly 2 - parts	Type Approved
1611530-B-12-529	B	T-drive assembly 2 - partlist	For Information
1611530-B-12-541	A	Buffer arm1 right - welding1	For Information
1611530-B-12-544	A	Buffer arm1 right - parts1	For Information
1611530-B-12-549	A	Buffer arm1 right - partlist	For Information
1611530-B-14-110	A	Telescopic bridge assembly - assembly	For Information
1611530-B-14-114	A	Telescopic bridge assembly - parts1	For Information
1611530-B-14-119	A	Telescopic bridge assembly - partlist	For Information
1611530-B-14-311	A	Telescopic bridge main steel - welding1	Type Approved
1611530-B-14-314	A	Telescopic bridge main steel - parts1	Type Approved

1611530-B-14-315	A	Telescopic bridge main steel - parts2	Type Approved
1611530-B-14-319	A	Telescopic bridge main steel - partlist	For Information
1611530-B-14-321	A	Telescopic bridge main steel 2 - welding1	For Information
1611530-B-14-323	A	Telescopic bridge main steel 2 - machining	Type Approved
1611530-B-14-324	A	Telescopic bridge main steel 2 - parts1	Type Approved
1611530-B-14-329	A	Telescopic bridge main steel 2 - partlist	For Information
1611530-B-00-210	A	TAB 3-M assemble - assembly	For Information
1611530-B-00-214	A	TAB 3-M assemble - parts1	Type Approved
1320500-B-90-12	A	440VAC Signle line diagram - basic design	Type Approved
1320500-C-05A	A	Functional description	For Information
1320530-B-80-10	C	Telescopic access bridge - hydraulic diagram	Type Approved
1320530-B-80-19	B	TAB - hydr. diagram - partlist	For Information
1320580-B-80-10	C	HPU - hydraulic diagram	Type Approved
1320580-B-80-19	C	HPU - hydr. diagram - partlist	For Information
1611500-A-07	B	Material specification	For Information
1611500-B-81-30	A	Left main luffing cylinder assembly	For Information
1611500-B-81-30	A	Partlist, left main luffing cylinder assembly	For Information
1611500-B-81-31	A	Right main luffing cylinder assembly	For Information
1611500-B-81-31	A	Partlist, right main luffing cylinder assembly	For Information
1320500-B-90-75	A	Cable configuration mru cabinet, assembly	Type Approved
1320500-B-B1-171	A	Bridge main bearing, basic design	For Information
1611500-B-B3-91	A	Pinion, basic design	Type Approved
1320500-B-B8-110	D	main luffing cylinder, basic design	For Information
1320500-B-B8-120	B	dynamic luffing cylinder, basic design	For Information
1320500-B-B8-210	A	Hydraulic swivel, basic design	For Information
1320500-C-01-01	A	Slewbearing specification	For Information
1320500-C-01-02	C	Slewdrive specification	For Information
1320500-C-01-03B	B	Telescopic drive specification	For Information
1320500-C-03A	A	Functional specification TAB-M	For Information
1320500-C-07-02A	A	Basics of Design	For Information
1320530-C-07-00A	A	Structural report	For Information
1320530-C-07-11B	B	Load case matrix	For Information
1320530-C-07-32A	A	Slewdrive sheet TAB3-M	For Information
1320530-C-83-10	B	Detailed hydraulic description	For Information
1611550-B-17-301	A	Tip main steel - welding	Type Approved
1611550-B-17-304	A	Tip main steel - parts	Type Approved
1611550-B-17-309	A	Tip main steel - part list	For Information
1611550-B-17-311	A	Tip main steel Mark 1 - welding	Type Approved
1611550-B-17-313	A	Tip main steel Mark 1 - machining	Type Approved
1611550-B-17-314	A	Tip main steel Mark 1 - parts	Type Approved

1611550-B-17-319	A	Tip main steel Mark 1 - part list	For Information
1611550-B-17-321	A	Tip main steel Mark 2 - welding	Type Approved
1611550-B-17-323	A	Tip main steel Mark 2 - machining	Type Approved
1611550-B-17-324	A	Tip main steel Mark 2 - parts	Type Approved
1611550-B-17-329	A	Tip main steel Mark 2 - part list	For Information
1611550-B-17-331	A	Tip main steel Mark 3 - welding	Type Approved
1611550-B-17-333	A	Tip main steel Mark 3 - machining	Type Approved
1611550-B-17-334	A	Tip main steel Mark 3 - parts	Type Approved
1611550-B-17-339	A	Tip main steel Mark 3 - part list	For Information
1611550-B-17-341	A	Tip main steel Mark 4 - welding	Type Approved
1611550-B-17-343	A	Tip main steel Mark 4 - machining	Type Approved
1611550-B-17-344	A	Tip main steel Mark 4 - parts	Type Approved
1611550-B-17-349	A	Tip main steel Mark 4 - part list	For Information
1320580-C-83-10A	A	Detailed hydraulic description HPU	For Information
1320530-C-07-01	A	Fatigue assessment 3M-TAB	For Information
1320500-S-01	E	Software Life Cycle	For Information
1611500-B-90-10		Electrical,Power..Cabinet	Type Approved
1320500-B-90-30	D	Layout Operator Interface (WAB)	For Information
1320580-C-05-01	C	Functional description - Hydraulic Power Unit	For Information
1611530-B-00-11	A	General arrangement tab 3-m config 1, parts - 2	For Information
1611530-B-00-11	A	General arrangement tab 3-m config 1, assembly	For Information
1611530-B-00-11	A	General arrangement tab 3-m config 1, partlist	For Information
1611550-B-17-35	A	tip main steel - link, welding	Type Approved
1611550-B-17-35	A	tip main steel - link, machining	Type Approved
1611550-B-17-35	A	tip main steel, link	Type Approved
		Gear tooth stress_TelecopicDrive_AccDNVGL_CG_0036	For Information
		Gear tooth stress_TelescopicDrive	For Information
		Shaft calculation WHEEL BOGIE SMALL	For Information
		Shaft calculation WHEEL LATERAL	For Information
		Shaft calculation WHEEL VERTICAL BRIDGE	For Information
		Shaft calculation WHEEL VERTICAL FRAME	For Information
1320500-C-08B	B	Safety Diagram	Type Approved
1320500-B-78-110	A	FAT Arrangement	For Information
1611500-E-01-01A	A	Factory Acceptance Test	Type Approved
1320500-C-96-02A4 IO List		1320500-C-96-02A4 IO List (3)	For Information
1320530-C-07-33A	A	TAB 3-M Telescopic Drive Calculations	For Information
General SMST-D-03 NDT PLAN	B	Nondestructive test plan (NDT)	Type Approved

Tests carried out

The gangway is to be tested in accordance with DNVGL-ST-0358 Section 7 in precense of a DNVGL Surveyor.

Marking of product

The gangway is to be marked in accordance with DNVGL-ST-0358 Section 7.4.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every second year and before expiry date of this certificate in order to verify that the conditions of the type approval are complied with.

End of certificate