

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting Frame**with type designation(s)
TubeLock TTRS

Issued to

Global Gravity ApS
Esbjerg N, Syddanmark, Denmarkis found to comply with
DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances**Application :****TubeLock system of SWL 6000 kg****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2018-08-28**for **DNV GL**This Certificate is valid until **2022-05-21**.DNV GL local station: **Esbjerg**Approval Engineer: **Zrinka Cizmek**

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.



Job Id: **262.1-013933-3**
 Certificate No: **TAS000011T**
 Revision No: **1**

Product description

TubeLock® is a Tubular Transport Running System (TTRS) designed for safe handling of drill pipes, casing and tubulars normally called OCTG (Oilfield Casing and Tubular Goods)

An entire TubeLock® package consists of minimum:

- 6 x TubeLock® aluminium profiles
- 6 x Boths M20
- 6 x Lifting sceptres
- 2 x Slings including shackles

Safe working load (SWL) : 6000kg
 Design dynamic factor: 1.33
 Design temperature (T.d): -20 degrees C
 Pitch/Roll/Heave restriction: 12.5 deg /20 deg / 0.2g
 Minimum sling angle from horizontal: 60°
 Tube size: From 2 3/8" to 14"

The system is valid for tube sizes 2 3/8" and 14", as listed below in the table:

Tube size OD	Tube size OD (mm)	Max tool size OD	Tool OD (mm)	Tube OD - Tube OD	No. of tubes in a layer	Weight per pipes	Position of bolt
2 3/8	60,33	3	76,2	15,88	12	500,00	4 - 5
2 7/8	73,03	3 1/2	88,9	15,88	10	600,00	3 - 4
3 1/2	88,90	5 1/2	139,7	50,80	7	857,14	2 - 3
4	101,60	6	152,4	50,80	6	1000,00	2 - 3
4 1/2	114,30	6 5/8	168,275	53,98	6	1000,00	2 - 3
5	127,00	7 1/4	184,15	57,15	5	1200,00	2 - 3
5 1/2	139,70	7 1/2	190,5	50,80	5	1200,00	2 - 3
5 3/4	146,05	7 1/2	190,5	44,45	5	1200,00	2 - 3
6	152,40	7 1/2	190,5	38,10	5	1200,00	2 - 3
6 5/8	168,28	8 1/2	215,9	47,63	4	1500,00	1 - 2
7	177,80	8 1/2	215,9	38,10	4	1500,00	1 - 2
7 1/4	184,15	8 1/2	215,9	31,75	4	1500,00	1 - 2
7 5/8	193,68	8 1/2	215,9	22,23	4	1500,00	1 - 2
7 3/4	196,85	9	228,6	31,75	4	1500,00	1 - 2
8	203,20	9	228,6	25,40	4	1500,00	1 - 2
8	204,79	9 3/4	247,65	42,86	4	1500,00	1 - 2
8 1/8	206,38	9 3/4	247,65	41,28	4	1500,00	1 - 2
8 5/8	219,08	10	254	34,93	4	1500,00	1 - 2
9	228,60	10 1/2	266,7	38,10	4	1500,00	1 - 2
9 3/8	238,13	10 1/2	266,7	28,58	4	1500,00	1 - 2
9 5/8	244,48	10 3/4	273,05	28,58	4	1500,00	1 - 2
9 3/4	247,65	10 3/4	273,05	25,40	3	2000,00	1 - 2
9 7/8	250,83	10 7/8	276,225	25,40	3	2000,00	1 - 2
10	254,00	11	279,4	25,40	3	2000,00	1 - 2
10 1/4	260,35	11 1/4	285,75	25,40	3	2000,00	1 - 2
10 3/4	273,05	12	304,8	31,75	3	2000,00	1 - 2
11 3/4	298,45	13	330,2	31,75	3	2000,00	1 - 2

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11 7/8	301,63	13	330,2	28,58	3	2000,00	1 - 2
12	304,80	13 1/4	336,55	31,75	3	2000,00	1 - 2
12 3/4	323,85	14	355,6	31,75	3	2000,00	1 - 2
13 3/8	339,73	15	381	41,28	3	2000,00	1 - 2
14	355,6	15	381	31,75	3	2000,00	1 - 2

Operation configurations:

- Tube size from 2 3/8" to 14"
- Maximum height of a system is 1200 mm measured from bottom of the lower profile to the upper side of the top tubing.
- 4 sets of profiles in the longitude of a package are required. 3 sets of profiles in longitude of a package can be used if the load of the lifting components is the same as for 4 sets and there is no risk of tube buckling and causing overloading of profiles.
- Placement of tubes and profiles must be carried out symmetrical.
- Minimum sling angle from horizontal: 60°
- The profile length is between 950 - 1208mm (Measured from CL lifting pole to CL lifting pole)
- TubeLock® TTRS can be used with empty spaces with the condition that there are always pipes in the two outer positions and the maximum total SWL is 6T.


Application/Limitation

1. Materials as stated in the above documentation are to be delivered with material certificates complying with DNVGL-ST-0378 "Standard for offshore and platform lifting appliances", Section 3.
2. All welding is to be performed by approved welders in accordance with approved procedures.
3. Extent of non-destructive testing of welds is to comply with DNVGL-ST-0378 "Standard for offshore and platform lifting appliances", Section 3, [3.11.11], and shall be carried out to the attending surveyor's entire satisfaction.
4. The various components transferring load- like wire rope, sockets, shackles, etc. are to be manufactured according to recognised standards or codes and are to be delivered with relevant certificates for material and testing.

Type Approval documentation

Drawing No.	Rev.	Title	Status
104565-EMS-RA-0001	C	Calculation documentation - Final	For information
105354-EMS-RA-00007	A	Calculation documentation - Addendum 01	For information
T-0001-0000-GG-X-0005	B	Packages for empty spaces	For information
T-0001-0000-GG-X-0006	B	Transportation of short pipes	For information
T-0001-0000-GG-X-0004	A	Package dimensions	Type approved
T-0001-0000-GG-X-0003	A	Sling and profile placement	Type approved
T-0001-0000-GG-X-0002	A	Lifting pole	Type approved
T-0001-0000-GG-X-0001	A	H-profile	Type approved
LP-000A-0000-GG-P-0001	A	Product LP-A	Type approved
AD-0658-1200-GG-P-0001	0	Model 1200 - 6 5/8" H-profile	Type approved

Tests carried out



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No specific type test is found necessary to require in connection with the Type Approval, but each unit subject to DNVGL-ST-0378 "Standard for offshore and platform lifting appliances", Section 14.

Marking of product

Marking of each product is to be in accordance with DNVGL-ST-0378 "Standard for offshore and platform lifting appliances", Section 14.

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform periodical assessment after two years (+/-90days) 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.