TYPE APPROVAL CERTIFICATE

DNV·GL
Certificate No:
TAS00002MH

This is to certify:

That the M721XL Shipping Cradle

with type designation(s)
Winch Drum Shipping Cradle

Issued to
Forum U.S. Inc., dba Dynacon
Bryan, TX, USA

is found to comply with
DNV GL standard DNVGL-ST-E273 "2.7-3 Portable offshore units", December 2016

Application :

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

Maximum gross weight (MGW)	**:**	**50 Tonne**	**110,231 lbs**
Max. payload	**:**	**46 Tonne**	**101,412 lbs**
Maximum tare weight	**:**	**4 Tonne**	**8,819 lbs**
Max. sling leg angle from Vertical	**:**	**30°**	

Issued at **Houston** on **2020-08-11**

for **DNV GL**

This Certificate is valid until **2025-08-10**
DNV GL local station: **Approval Centre, Houston**

Approval Engineer: **Simon Ouyang**

Simon Ouyang
Senior Engineer

Mohsen Shavandi
Principal Engineer

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.

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Job Id: **262.1-034182-1**
Certificate No: **TAS00002MH**

Product description

Type of PO Unit	:	Type A	
Operational Class	:	R30	
POU External Dimensions (L X W X H)	:	4,140 x 3,405 x 1,930 mm	163 x 134 x 76 inch

Application/Limitation

Max Hs Offshore Lift	:	3.0 m	
Min. Design Temperature		-20 °C	-4 °F
Shackle WLL	:	25 t	
Min. Shackle Pin Diameter	:	51 mm	2.04 inch

Type Approval documentation

This approval is based on DVR-262.1-034182-1 Rev. 1 issued 2020-08-10.

Doc. No.	Rev.	Title
M721XL-1007-90	C	Weldment Drawing, Winch Drum, Storage Cradle
M721XL-1007-91	A	Drawing for Tubing Pieces, Winch Drum, Storage Cradle
M721XL-1007-92	A	Drawing for Lift Eye, Winch Drum, Storage Cradle
M721XL-1007-94	A	Drawing for Plate Pieces, Winch Drum, Storage Cradle
M721XL-1007-95	A	Drawing for DNV Tag and Sticker Plate, Winch Drum, Storage Cradle
DYN-1007-20	C	Mounting Eye "6" Tube and Larger

Materials

Components	Material [1]	Minimum Yield Strength	Minimum Average Charpy*
Hollow Sections	ASTM A500 "ROPS"	317 MPa (46,000 psi)	• 32J @ -10°C for 6 < t ≤ 12mm [23.6ft-lb @ 14°F for 1/4 < t ≤ 1/2 inch] • 32J @ -20°C for 12 < t ≤ 25 mm [23.6 ft-lb @ -4°F for 1/2 < t ≤ 1 inch] • 32J @ -40°C for 25 < t ≤ 50 mm [23.6 ft-lb @ -40°F for 1 < t ≤ 2 inch]
Padeye	ASTM A-131 Gr. EH-36	352 MPa (51,000 psi)	
Plate	ASTM A516 Gr. 70	262 MPa (38,000 psi)	• 35.5 J @ -40°C for 25 < t ≤ 50 mm [26.2 ft-lb @ -40°F for 1 < t ≤ 2 inch]
			• 27J @ -10°C for 6 < t ≤ 12mm [20 ft-lb @ 14°F for 1/4 < t ≤ 1/2 inch] • 27J @ -20°C for 12 < t ≤ 25 mm [20 ft-lb @ -4°F for 1/2 < t ≤ 1 inch] • 27J @ -40°C for 25 < t ≤ 50 mm [20 ft-lb @ -40°F for 1 < t ≤ 2 inch]

Tests carried out

On a one-time basis, the 2-Point prototype lifting test was performed for shipping cradle (S/N: 14330101SC) to substitute the 4-point lifting test per Dynacon's lifting test report (Doc No. 1433 SC Pull Test Rev. B issued on 04-Jun-2020).

Marking of product

Marking is to be carried out in accordance with DNVGL-ST-E273 Section 6.

Other conditions/comments

1. The winch drum is not included in this Type Approval.
2. The material certificates shall be verified by DNV GL surveyor for compliance with Charpy requirements in Section C of this report.
3. Production testing shall be performed and witnessed in accordance with DNVGL-ST-E273 Section 5.4.

Periodical assessment

Periodical assessment to be carried out at intervals not exceeding 12 months and after substantial repair or alteration according to Standard for Certification DNVGL-ST-E273, April 2016.

END OF CERTIFICATE