

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Portable Offshore Units

with type designation(s)
90k to 121k Spool Assembly

Issued to

Spooltech, LLC.
Houston, TX, USA

is found to comply with

DNV standard DNV-ST-E273 – 2.7-3 Portable offshore units, April 2016 (Amended May 2022)

Application :

Spool:

Max. gross mass	55,000 kg	121,250 lbs
Max. payload	49,897 kg	110,000 lbs
Max. sling leg angle	2 °	

Cradle:

Max. gross mass	834 kg	1,840 lbs
Max. payload	0 kg	0 lbs
Max. sling leg angle	30 °	

Issued at **Houston** on **2023-08-28**

This Certificate is valid until **2028-08-27**.

DNV local unit: **Houston Offshore Services**

for **DNV**

Approval Engineer: **Simon Ouyang**

Simon Ouyang
Principal Engineer

Mohsen Shavandi
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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.





Job Id: 262.1-027805-3
Certificate No: TAS00003YM

Holder of certificate

Spooltech LLC

Manufactured By

Spooltech LLC

Responsibility

Spooltech LLC takes full responsibility that both the design and production are in compliance with the Rules, Standards and / or Regulations listed on page 1.

Product description

Spool

POU Type	:	DNV 2.7-3 Type C R30		
Maximum Gross Weight	:	55,000 kg	121,250	lbs
Max. Tare*	:	5,103 kg	11,250	lbs
POU External Dimensions (L X W X H)	:	See Appendix 1 mm	See Appendix 1	inch

Cradle

POU Type	:	DNV 2.7-3 Type B R30		
Max. Tare*	:	834 kg	1,840	lbs

*) Tare mass is to be confirmed by weighing. The sum of Tare and Payload shall never exceed the maximum gross weight stated on the front page of this certificate.

Application/Limitation

Spool

Max. Hs Offshore Lift	:	3.0 m		
Min. Design Temperature	:	-20 / 0 °C	-4 / 32	°F
Max. Sling Angle w/ Vertical	:	2 °		
Shackle WLL	:	35 t	38.58	tons
Min. Shackle Pin Diameter	:	58 mm	2.30	inch

Cradle

Max. Hs Offshore Lift	:	3.0 m		
Min. Design Temperature	:	-20 / 0 °C	-4 / 32	°F
Max. Sling Angle w/ Vertical	:	30 °		
Shackle WLL	:	8.5 t	9.37	tons
Min. Shackle Pin Diameter	:	29 mm	1.15	inch

Spreader Bar

Max. Spool Rating	:	58,000 kg	127,868	lbs
Max. Sling Angle (upper legs) from Vertical	:	30 °		
Max. Sling Angle (lower legs) from Vertical	:	2 °		

Lifting of these units shall be carried out as planned operations. Specific lifting procedures should be prepared. The procedure shall include all relevant information required to ensure safe handling of the unit (see Section 1.2.2 Ref. /1/)

DNV surveyor to witness important production and test events and issue no. MOP 201, "Certificate for Portable Offshore Unit" for each unit.

Production strength tests to be carried out according to DNV-ST-E273 and after agreement with DNV Surveyor.

The certificates are only valid when the units are fitted with certified lifting set.

This assembly shall be lifted and transported offshore vertically, using the dedicated spreader in drawing 96-58MT-SB-00 Rev 0.

This unit is approved with two design temperatures of 0°C and -20 °C. The unit shall be marked with words to the effect "Only to be used in temperate climates" when design temperature of 0 °C is selected.



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Type Approval documentation

Type Approval documentation (Cont'd)

194-140-96-000-1	194 x 140 x 96 Spool General Arrangement
194-140-96-000-2	Flange Fabrication Details
194-140-96-000-4	Drum Fabrication Details
194-140-96-000-5	Internal Braces Fabrication Details
194-140-96-000-6	
194-140-96-000-7	Ramp Fabrication Details
194-96-CR-A00	194" O.D. x 96" W Spool (0 °C) Cradle Fabrication Details
194-96-CR-A20	194" O.D. x 96" W Spool (-20 °C) Cradle Fabrication Details
96-55T-LIFT-00	55 MT x 96"W Spool General Arrangement
28x40-35T-EYE-01	

Materials

For Design Temperature = -20 °C

Component	Material	Min Yield Strength	Avg. Charpy Value
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For Design Temperature = 0 °C

Component	Material	Min Yield Strength	Avg. Charpy Value
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Note: Normalized, killed, fine grain steel shall be applied so that it is exempt from Charpy impact testing for minimum operating temperatures of 0°C or higher for the thickness $t \leq 25$ mm.

Tests carried out

Prototype 192-96-96 STM-0221-4979 (for Spool), 192-96-96 STM-0221-4979CR (for Cradle) and 192-96-96 STM-0221-4979SP (for Spreader Bar) tested according to Standard for Certification DNV-ST-E273, April 2016.

Production testing to be carried out per DNVGL-ST-E273 Section 5.2.3.

Marking of product

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

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.

Note:

1. This Type Approval Certificate with number TAS00003YM, Rev. 0 has superseded the previous TAC certificate with number TAS00001M3, Rev. 3.
2. DNV has conducted the Type Approval renewal assessment at Spooltech LLC's Facility located at 9325 Hwy. 6 North - Houston, TX 77095. DNV type approval assessment report was released on 2023-07-24.

END OF CERTIFICATE

Appendix 1

Spool configurations manufactured by Spooltech LLC, covered by this Type Approval Certificate:

<u>Flange OD (in)</u>	<u>Core (in)</u>		<u>Width (in, overall)</u>		<u>Number of Spokes</u>	<u>MGW (MT)</u>	
	<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>		<u>Min</u>	<u>Max</u>
164	80	96	80	96	16	40.9	55.0
180	84	130	96	120	16	40.9	55.0
184	95	130	96	120	16	40.9	55.0
186	95	130	96	120	16	40.9	55.0
190	95	130	96	120	16	40.9	55.0
192	95	130	96	120	16	40.9	55.0
194	95	140	96	120	16	40.9	55.0
202	95	130	96	120	16	40.9	55.0



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