

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Lifting Gear**

with type designation(s)

**Saturn 20, Centaur 40/50, Mercury 50, Taurus 60/65/70, Mars 90/100, Titan 130/250,
Generators, Compressors, Mechanical Drives, and Electric Motors**

Issued to

**Solar Turbines Incorporated
San Diego, CA, USA**

is found to comply with

DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed
by DNV GL.**Issued at **Houston** on **2019-03-08**This Certificate is valid until **2024-03-07**.for **DNV GL**DNV GL local station: **Long Beach**Approval Engineer: **Ronald Quiballo**

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Christian Nilsen
Head of Section - CMC Approval

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.



Product description

Package lift kits, consisting of spreader bars and lifting sets, for use onshore and offshore, intended for handling of gas turbine packages, generator sets, compressor sets, electric motor drives and main individual components with and without export crate

Application/Limitation

- This Design Assessment is a verification of the design towards to the listed Standard.
- The Design Assessment itself does not reflect that the manufactured product is certified.
- The Design Assessment does not waive unit product or manufacturing certification.

Safe Working Load, SWL:

Drawing No. 1067553 Rev. D – Spreader Bar – 53 Ton

<u>Sling angles with respect to horizontal</u>	<u>SWL</u>
60° / 60° (Symmetrical)	53 short tons
60° / 65° (Non-symmetrical)	52 short tons
60° / 70° (Non-symmetrical)	47 short tons

Drawing No. 1067554 Rev. G – Spreader Bar – 117 Ton

<u>Sling angles with respect to horizontal</u>	<u>SWL</u>
60° / 60° (Symmetrical)	117 short tons
60° / 65° (Non-symmetrical)	111 short tons
60° / 70° (Non-symmetrical)	88 short tons

Drawing No. 1085663-3G851 Rev. - – Spreader Bar – 170 Ton

<u>Sling angles with respect to horizontal</u>	<u>SWL</u>
67° / 67° (Symmetrical)	170 short tons

Drawing No. 111504 Rev. A – Spreader Bar – 85 Ton

<u>Sling angles with respect to horizontal</u>	<u>SWL</u>
60° / 69° (Symmetrical)	85 short tons

- Design dynamic coefficient $\psi=1.33$
- The package lift kits are categorized as "Lifting Gear" for an "Offshore crane"
- The design of the package lift kits are approved for minimum design temperatures of 32° F (0 °C) or -40° F (-40 °C), depending upon classification
- The capacity of the different lifting sets consisting of shackles and slings as stated in the different "Engineering Reports" are reviewed and found acceptable
- This document replaces type approval certificate S-8486, issued 2015-01-07

Type Approval documentation

Tests carried out

Lifting beam subjected to DNV GL's certification is to be tested according to DNVGL-ST-0378 "Standard for Offshore and Platform Lifting Appliances", May 2016.

Marking of product

For traceability the following marking is to be carried out on each product:

- Serial No. / Identification No.
- Product Certificate No. (Reference to Type Approval number is preferable)



Job Id: **262.1-030267-1**
Certificate No: **TAS00001V7**

- Additional marking at the manufacture's discretion.
- DNV GL Project No. A0610293

END OF CERTIFICATE