Certificate no.:
TAS000044N

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Bow Shackles

with type designation(s)
D.line, D.line Plus, D.line Star

issued to
pewag austria GmbH
Graz, Steiermark, **Austria**

is found to comply with
DNV standard DNV-ST-0377 – Standard for shipboard lifting appliances
DNV standard DNV-ST-0378 – Offshore and platform lifting appliances

Application:

Products approved by this certificate are accepted for DNV product certification.

Issued at **Hamburg** on **2023-12-12**
This Certificate is valid until **2028-12-11**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Heiko Herrmann**

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.

Product description

Alloyed Anchor Bow Shackles

Type No.	Type Category	Type Designation	Load Range SWL/WLL	Dimensions acc. to Annex 1
1	D.line	P285	85t - 1500t	Table 5
2	D.line Star	P685	85t - 600t	Table 5
3	D.line Plus	P485	120t - 175t	Table 6

Table 1

Application/Limitation

Safe Working Load/Working Load Limit, Test- and Minimum Break Loads:

Detailed Type	Load Limit SWL/WLL [t]	Test Load L_{Pstat} [t]	Break Load MBL [t]
P285/685 WLL 85t	85	127.5	425
P285/685 WLL 120t	120	166.4	600
P285/685 WLL 150t	150	203	750
P285/685 WLL 200t	200	265	1000
P285/685 WLL 250t	250	325	1250
P285/685 WLL 300t	300	386	1500
P285/685 WLL 400t	400	508	2000
P285/685 WLL 500t	500	630	2500
P285/685 WLL 600t	600	752	3000

Table 2

Detailed Type	Load Limit SWL/WLL [t]	Test Load L_{Pstat} [t]	Break Load MBL [t]
P285 WLL 700t	700	874	3500
P285 WLL 800t	800	996	4000
P285 WLL 1000t	1000	1240	5000
P285 WLL 1250t	1250	1545	6250
P285 WLL 1500t	1500	1850	7500
P485 WLL 120t	120	166.4	600
P485 WLL 150t	150	203.0	750
P485 WLL 175t	175	233.5	875

Table 2 continued

Load cycles: Fatigue is not in scope of this approval; load cycles are limited to 20.000.

Material: Basic requirements in following table, alternatively equivalent steel grades in accordance with EN ISO 683-2:09-2018 Part 2 ‘Alloy steels for quenching and tempering’ might be used.
Extended delivery conditions listed in Annex 2, Table 7.i.
Materials shall be supplied with 3.1 material certificates (ISO-10474/EN-10204).

Type No.	Design Temperature	Material Selection	Impact strength at Design Temp.
1	-20°C	42CrMo4+QT (1.7225), 42CrMoS4+QT (1.7227), 34CrNiMo6+QT (1.6582)	27J
2	-40°C	34CrNiMo6+QT (1.6582), 30CrNiMo8+QT (1.6580)	42J
3	-20°C	42CrMo4+QT (1.7225), 42CrMoS4+QT (1.7224), 34CrNiMo6+QT (1.6580), 30CrNiMo8+QT (1.6580)	27J

Table 3

Testing: To obtain a DNV Product Certificate, each item shall be load tested in presence of DNV according to Table 7-4 (ST-0377) respectively Table 14-2 (ST-0378).

Type Approval documentation

Tests carried out

Prototype test report with numbers 2000-19-[404, 405, 407, 409-418, 441],
witnessed by DNV GL, dated 2019-07-23 and 2019-07-24.

Marking of product

Each shackle shall be marked with at least manufacturer's name or trademark and nominal load (SWL/WLL) in tonnes. Serial number/batch code, year of construction and reference to a type approval shall be traceable via the 3.1 manufacturer certificate.

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.
To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com