

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

2, 3 1/4, 4 3/4, 6 1/2, 8 1/2, 9 1/2, 13 1/2, 12, 17 & 25 Tonnes, G-2130-CT Shackles,, 30, 40,55, 85, 120, 150, 175, 200, 250 Tonnes, G-2140-CT Shackles

Issued to

**Crosby Group LLC - Lebus Manufacturing Division
Longview, TX, USA**

is found to comply with

DNVGL-OS-E101 – Drilling facilities, Edition January 2018**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.**

The TAC is used to replace TAC S-8378

Issued at **Houston** on **2020-10-13**This Certificate is valid until **2025-10-12**.for **DNV GL**DNV GL local station: **Houston, Approval CMC**Approval Engineer: **Bo Cui**

**Mark Miser
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: **262.1-007730-3**
Certificate No: **TAS00002F8**

Product description

G-2130-CT Shackles: 4 $\frac{3}{4}$, 6 $\frac{1}{2}$, 8 $\frac{1}{2}$, 9 $\frac{1}{2}$, 12, 13 $\frac{1}{2}$, 17 & 25 tonnes
G-2140-CT Shackles: 30, 40, 55, 85, 120, 150, 175, 200, 250 tonnes

Application/Limitation

G-2130-CT Shackles

P/N	Shackle Size [in]	WLL [t]	WLL [lbf]
1260568	3/4	4.75	10,470
1260577	7/8	6.5	14,330
1260586	1	8.5	18,740
1260595	1 1/8	9.5	20,940
1260604	1 1/4	12	26,460
1260613	1 3/8	13.5	29,760
1260622	1 1/2	17	37,480
1260633	1 3/4	25	55,120

Minimum Design Temperature: -20 °C (-4 °F)

G-2140-CT Shackles

P/N	Shackle Size [in]	WLL [t]	WLL [lbf]
1260801	1 1/2	30	66,140
1260812	1 3/4	40	88,180
1260823	2	55	121,250
1260834	2 1/2	85	187,390
1260843	3	120	264,550
1260852	3 1/2	150	330,690
1260861	4	175	385,810
1260870	4 3/4	200	440,920
1260889	5	250	551,150

Minimum Design Temperature: -20 °C (-4 °F)

Material:

Basic requirements in following table, materials shall be supplied with 3.1 material certificates (ISO-10474/EN-10204).

<u>Shackle</u>	<u>Component</u>	<u>Material</u>	<u>Min.yield Stress</u>	<u>Charpy</u>
G2130CT 0.75IN 4.75t	Pin	4340 Alloy Steel	64.7 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	61.8 ksi	31ft-lbf@-4°F
G2130CT 7/8IN 6.5t	Pin	4340 Alloy Steel	68.5 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	66.5 ksi	31ft-lbf@-4°F
G2130CT 1 IN 8.5t	Pin	4340 Alloy Steel	77.6 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	57.4 ksi	31ft-lbf@-4°F
G2130CT 1 1/8IN 9.5t	Pin	4340 Alloy Steel	73.68 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	61.4 ksi	31ft-lbf@-4°F
G2130CT 1 1/4IN 12t	Pin	4340 Alloy Steel	72.2 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	68.5 ksi	31ft-lbf@-4°F
G2130CT 1 3/8IN 13.5t	Pin	4340 Alloy Steel	78.3 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	65.7 ksi	31ft-lbf@-4°F

Job Id: **262.1-007730-3**
Certificate No: **TAS00002F8**

<u>Shackle</u>	<u>Component</u>	<u>Material</u>	<u>Min.yield Stress</u>	<u>Charpy</u>
G2130CT 1.5in 17t	Pin	4340 Alloy Steel	73.3 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	68.4 ksi	31ft-lbf@-4°F
G2130CT 1.75IN 25t	Pin	4340 Alloy Steel	65.4 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	56.4 ksi	31ft-lbf@-4°F
G2140CT 1.50IN 30t	Pin	4340 Alloy Steel	129.4 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	92.4 ksi	31ft-lbf@-4°F
G2140CT 1.75IN 40t	Pin	4340 Alloy Steel	104.6 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	90.2 ksi	31ft-lbf@-4°F
G2140CT 2.00IN 55t	Pin	4340 Alloy Steel	114.5 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	104.8 ksi	31ft-lbf@-4°F
G2140CT 2.50IN 85t	Pin	4340 Alloy Steel	131.2 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	91.8 ksi	31ft-lbf@-4°F
G2140CT 3.00IN 120t	Pin	4340 Alloy Steel	135 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	77.7 ksi	31ft-lbf@-4°F
G2140CT 3.5 IN 150t	Pin	4340 Alloy Steel	116 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	59.2 ksi	31ft-lbf@-4°F
G2140CT 4.00 IN 175t	Pin	4340 Alloy Steel	91 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	74.6 ksi	31ft-lbf@-4°F
G2140CT 4.75 IN 200t	Pin	4340 Alloy Steel	95 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	46.6 ksi	31ft-lbf@-4°F
G2140CT 5 IN 250t	Pin	4340 Alloy Steel	127 ksi	31ft-lbf@-4°F
	Bow	1035 Carbon Steel	35.7 ksi	31ft-lbf@-4°F

Testing:

To obtain a DNV GL Product Certificate, each item shall be load tested in presence of DNV GL according to Table 14-2 (ST-0378).

Type Approval documentation

Tests carried out

Prototype test is not required for Type Approval Certificate renewals.
TAC assessment was completed on 2020-10-13, reference to A0804752

Marking of product

For traceability to this Type Approval Certificate the products are as a minimum to be marked as follows:

1. Serial Number
2. Manufacturer's name and trademark
3. Working Load Limit

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE