

To whom it may concern

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Company No. 09208322

**Date:** 2015-07-24  
**Our reference:** OEGGB350-2015-07-24  
**Your reference:**

### Crosby Master Link Type Approval

Type Approval S-8359 issued to The Crosby Group for A344 Master Links and A347 Master Link Assemblies was suspended 2015-07-03 due to alleged incorrect ratings of Master Link Assembly components. At no point were there any quality or performance related issues of the product.

DNV GL have carried out a detailed review of all records related to this certificate and it has been found that compliance with EN 1677-4 is met and a new certificate has therefore been issued.

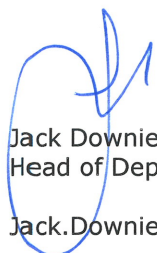
The following comments can be made from our review:

- Some sizes have been noted as being undersized according to the requirements of EN1677-4 Section 5.2 and this is now clearly identified as such on the new Type Approval Certificate.  
It has become common practice in the industry to manufacture such undersized links, from our detailed review we can confirm that this has been applied consistently and in all circumstances the test records show the correct required strength characteristics.  
DNV GL will initiate a discussion with industry bodies about whether the EN standard should be updated. We will also ensure that we consistently record any such undersized links on our TA certificates.
- The 22/17 A347 Master Link Assembly was identified by Crosby as being incorrectly reported with a WLL of 8 t. This has been corrected on the new certificate to 6.7 t, however we can confirm that all test data had been verified according to the original higher WLL.

DNV GL have issued Type Approval TAS000001V, which replaces S-8359.

No further action is required.

Sincerely  
for DNV GL UK Ltd.



Jack Downie  
Head of Department

[Jack.Downie@dnvgl.com](mailto:Jack.Downie@dnvgl.com)

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Lifting set for Offshore containers and Portable Offshore Units**

with type designation(s)

**Master Links Type A-344, Master Link Assemblies Type A-347**

Issued to

**Crosby Group LLC  
Tulsa OK, United States**

is found to comply with

**DNV 2.7-1 Offshore Containers (2013)**

**EN 12079-2 Offshore containers and associated lifting sets Part 2: Lifting sets Design,  
manufacture and marking**

**EN 1677-4 Components for slings - Safety - Part 4: Links, Grade 8**

**IMO/MSC Circular 860**

**Application :**

**See page 2**

This Certificate is valid until **2018-12-31**.

Issued at **Houston** on **2015-07-22**

for **DNV GL**

DNV GL local station: **Antwerp**

Approval Engineer: **Nick Prokopuk**

**Brandon D Caraway  
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: **262.1-010705-3**  
Certificate No: **TAS000001V**

## **Manufactured at**

Crosby Zimmermann  
Boulay, France  
DNV GL local office: Antwerp

## **Product description**

This certificate replaces S-8359.

Grade 8 Master Links type A344 and Master Link Assemblies type A347 for use with Lifting sets for Offshore Containers certified to DNV Standard for Certification No. 2.7-1 "Offshore Containers".

Detailed product information and range of certified products covered by this Type Approval are listed in Appendix 1 of this Type Approval Certificate.

## **Application/Limitation**

Tests to be carried out:


- Production testing: according to DNV Standard for Certification No. 2.7-1 and EN standard EN 1677-4 "Components for slings Safety - Part 4; Links, Grade 8" and Quality control procedure No. 4332, in agreement with the DNV GL surveyor.
- Material to be impact tested by Charpy impact method according to DNV 2.7-1 Offshore Containers, Chapter 8.4.

For application of links the minimum working load limit (WLL) shall be decided according to the strength requirements for lifting sets on offshore containers as given in DNV 2.7-1 Offshore Containers, Chapter 8.

The manufacturer shall issue product certificates according to Sec. 8.5 in DNV 2.7-1, using the certificate form . This certificate form is only to be used for links certified according to this Type Approval.

DNV GL has accepted some components with internal dimension smaller than table 2 in EN 1677-4. These dimensions are marked in the table of components in Appendix 1.

## **Type Approval documentation**



Job Id: **262.1-010705-3**  
Certificate No: **TAS000001V**

### **Tests carried out**

Type Testing was performed in accordance with Standard for Certification No. 2.7-1 and EN 1677-4 "Components for slings Safety - Part 4; Links, Grade 8".

### **Marking of product**

Marking should be according to DNV 2.7-1 Offshore Containers, Chapter 8 and EN 1677-4 "Components for slings Safety - Part 4; Links, Grade 8" and Crosby QC procedure 4332.

### **Periodical assessment**

For retention of the Type Approval, a DNV GL surveyor shall perform a survey every 6 months and before the expiry date of this certificate to verify that the type approval is complied with.

END OF CERTIFICATE

## Appendix 1

Product description and details

### Welded master links type 344

Type	Dia. [mm]	Size designation	WLL [t]	MPF [kN]	MBF [kN]
344	12	12 x 60 x 120	1.6	39	78
344	13	13 x 60 x 120	2.5	61	123
344	17	17 x 90 x 160	4.1	101	201
344	19	19 x 90 x 160	6.7	164	329
344	20	20 x 80 x 150 *	6.7	164	329
344	22	22 x 90 x 170 *	8.5	208	417
344	22	22 x 100 x 180	8.5	208	417
344	22	22 x 145 x 275	6.3	155	309
344	25	25 x 115 x 210	11.5	282	564
344	25	25 x 100 x 190 *	11.5	282	564
344	25	25 x 145 x 275	8.9	218	437
344	28	28 x 110 x 210 *	12.9	316	633
344	28	28 x 145 x 275	13.0	319	638
344	31	31 x 145 x 275	17.0	417	834
344	32	32 x 140 x 270	17.0	417	834
344	36	36 x 155 x 285	24.0	589	1177
344	38	38 x 140 x 270	31.5	773	1545
344	40	40 x 160 x 300	28.1	689	1378
344	45	45 x 140 x 250 *	32.0	785	1570
344	45	45 x 170 x 320	38.3	939	1879
344	45	45 x 180 x 340	38.3	939	1879
344	50	50 x 200 x 380	45.0	1104	2207
344	51	51 x 215 x 390	45.0	1104	2207
344	57	57 x 203 x 406	65.3	1601	3203

\*) This size has smaller dimensions than table 2 in EN 1677-4.

**Welded Master link assemblies type 347**

<b>Type</b>	<b>Dia. [mm]</b>	<b>Size designation [mm]</b>	<b>WLL [t]</b>	<b>MPF [kN]</b>	<b>MBF [kN]</b>
347	13/12	13 x 60 x 120 / 12 x 45 x 85	2.40	59	118
347	17/13	17 x 90 x 160 / 13 x 60 x 120	4.10	101	201
347	19/13	19 x 90 x 160 / 13 x 60 x 120	4.25	104	208
347	22/16	22 x 145 x 275 / 16 x 60 x 120 *	5.80	142	284
347	22/17	22 x 100 x 180 / 17 x 90 x 160	6.70	164	329
347	22/20	22 x 90 x 170 * / 20 x 80 x 150	8.50	208	417
347	25/19	25 x 145 x 275 / 19 x 90 x 160	8.90	218	437
347	25/20	25 x 100 x 190 * / 20 x 80 x 150 *	10.7	262	525
347	28/22	28 x 110 x 210 / 22 x 90 x 170 *	12.9	316	633
347	28/22	28 x 145 x 275 / 22 x 100 x 180 *	14.5	356	711
347	31/25	31 x 145 x 275 / 25 x 115 x 210	17.0	417	834
347	32/25	32 x 140 x 270 / 25 x 100 x 190 *	17.0	417	834
347	36/28	36 x 145 x 275 / 28 x 100 x 190 *	23.6	579	1158
347	38/32	38 x 140 x 270 / 32 x 140 x 270 *	28.1	689	1378
347	40/31	40 x 160 x 300 / 31 x 145 x 275	28.1	689	1378
347	45/36	45 x 180 x 340 / 36 x 155 x 285	38.3	939	1879
347	45/38	45 x 170 x 320 / 38 x 140 x 270	38.3	939	1879
347	50/38	50 x 200 x 380 / 38 x 140 x 270 *	45.0	1104	2207
347	51/45	51 x 190 x 350 / 45 x 180 x 340	45.0	1104	2207
347	57/50	57 x 203 x 406 / 50 x 200 x 380	67.0	1643	3286

\*) This size has smaller dimensions than table 2 in EN 1677-4.

END OF APPENDIX 1