

From: [Jeschelnik Kristyn](#)
To: [Furukawa Robert](#)
Subject: FW: SM-3 Forensics Report
Date: Wednesday, January 26, 2022 1:30:51 PM
Attachments: [image001.png](#)
[image002.png](#)
[2 - Ops - Invoice 58in steel buoy foam w padeyes - Blue Ocean Tackle - 2019-03-05.pdf](#)
[image003.png](#)
[image004.png](#)

From: Stolzenberg Eric <[REDACTED]>
Sent: Monday, January 24, 2022 11:31 AM
To: Jeschelnik Kristyn <[REDACTED]>
Subject: RE: SM-3 Forensics Report

Invoice has 1.5 inch Grade 3 stud chain and anchor swivel.

Per Anchor Marine: Grade 3 1.5 inch anchor chain – 183,500 pound proof test, 262,000 break test. (note open link bouy chain is weaker – 131,000 lb break test)

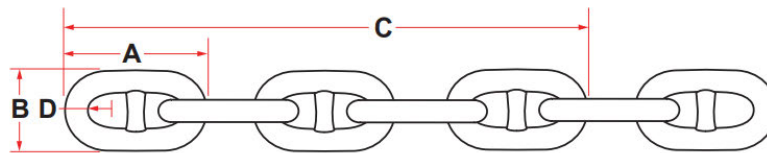
Per Anchor Marine: Grade 3 swivel has 102,000 pound proof test and 143,400 pound break test.

[*Section 2_Chains.pdf \(anchormarinehouston.com\)](#)

[*AMIS-012-Swivel-7878A.pdf \(anchormarinehouston.com\)](#)

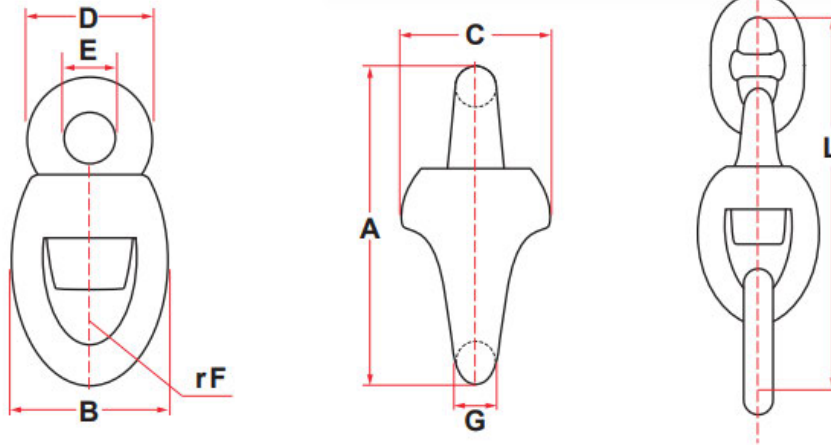
STUD LINK ANCHOR CHAIN

CHAINS



| CHAIN SIZE | | LINK LENGTH | LINK WIDTH | LENGTH OVER 5 LINKS | GRIP RADIUS | WEIGHT PER 15-FATHOM SHOT (APPROX.) | NO OF LINKS PER 15-FATHOM SHOT | GRADE 1 | | GRADE 2 | | GRADE 3 | |
|------------|------|-------------|------------|---------------------|-------------|-------------------------------------|--------------------------------|------------|------------|------------|------------|------------|------------|
| INCHES | MM | A | B | C | D | | | PROOF TEST | BREAK TEST | PROOF TEST | BREAK TEST | PROOF TEST | BREAK TEST |
| 1/2 | 13 | 3 | 1-13/16 | 13 | 21/64 | 225 | 535 | 10685 | 15275 | 15275 | 21930 | 21930 | 30555 |
| 5/8 | 16 | 3-3/4 | 2-1/4 | 13-3/4 | 3/8 | 365 | 432 | 16620 | 23745 | 23745 | 33220 | 33220 | 47465 |
| 11/16 | 17.5 | 4-1/8 | 2-7/16 | 15-1/8 | 7/16 | 415 | 391 | – | – | 28663 | 40353 | – | – |
| 3/4 | 19 | 4-1/2 | 2-5/8 | 16-1/2 | 1/2 | 480 | 357 | 23800 | 34000 | 34000 | 47600 | 47600 | 68000 |
| 13/16 | 20 | 4-7/8 | 2-7/8 | 17-7/8 | 17/32 | 570 | 329 | 27800 | 39800 | 39800 | 55700 | 55700 | 79500 |
| 7/8 | 22 | 5-1/4 | 3-1/8 | 19-1/4 | 37/64 | 660 | 305 | 32200 | 46000 | 46000 | 64400 | 64400 | 91800 |
| 15/16 | 24 | 5-5/8 | 3-5/16 | 20-5/8 | 5/8 | 760 | 285 | 36800 | 52600 | 52600 | 73700 | 73700 | 105000 |
| 1 | 25 | 6 | 3-9/16 | 22 | 21/32 | 860 | 267 | 41800 | 59700 | 59700 | 83600 | 83600 | 119500 |
| 1-1/16 | 27 | 6-3/8 | 3-3/4 | 23-3/8 | 11/16 | 970 | 251 | 47000 | 67200 | 67200 | 94100 | 94100 | 135000 |
| 1-1/8 | 28 | 6-3/4 | 4 | 24-3/4 | 25/32 | 1080 | 237 | 52600 | 75000 | 75000 | 105000 | 105000 | 150000 |
| 1-3/16 | 30 | 7-1/8 | 4-1/4 | 26-1/8 | 25/32 | 1220 | 225 | 58400 | 83400 | 83400 | 116500 | 116500 | 167000 |
| 1-1/4 | 32 | 7-1/2 | 4-1/2 | 27-1/2 | 25/32 | 1350 | 213 | 64500 | 92200 | 92200 | 129000 | 129000 | 184000 |
| 1-5/16 | 33 | 7-7/8 | 4-3/4 | 28-7/8 | 7/8 | 1490 | 203 | 70900 | 101500 | 101500 | 142000 | 142000 | 203000 |
| 1-3/8 | 34 | 8-1/4 | 4-15/16 | 30-1/4 | 7/8 | 1630 | 195 | 77500 | 111000 | 111000 | 155000 | 155000 | 222000 |
| 1-7/16 | 36 | 8-5/8 | 5-3/16 | 31-5/8 | 15/16 | 1780 | 187 | 84500 | 120500 | 120500 | 169000 | 169000 | 241000 |
| 1-1/2 | 38 | 9 | 5-3/8 | 33 | 63/64 | 1940 | 179 | 91700 | 131000 | 131000 | 183500 | 183500 | 262000 |
| 1-9/16 | 40 | 9-3/8 | 5-5/8 | 34-3/8 | 1-1/32 | 2090 | 171 | 99200 | 142000 | 142000 | 198500 | 198500 | 284000 |

SWIVEL ASSEMBLY



GRADE 3

| CHAIN SIZE | | A | B | C | D | E | F | G | L | WEIGHT (*) | | PROOF | BREAK |
|------------|-----------------|------|------|------|------|------|------|------|------|------------|-------|----------|----------|
| MM | INCHES | (MM) | (MM) | (MM) | (MM) | (MM) | (MM) | (MM) | (MM) | KG | LBS | TEST KGF | TEST KGF |
| 13-16 | 1/2 - 5/8 | 137 | 62 | 62 | 20 | 52 | 12 | 16 | 240 | 1.35 | 3 | 15100 | 21600 |
| 17-19 | 11/16 - 3/4 | 173 | 76 | 76 | 27 | 66 | 19 | 19 | 290 | 2.25 | 5 | 21600 | 30900 |
| 21-22 | 13/16 - 7/8 | 198 | 90 | 90 | 30 | 75 | 22 | 22 | 335 | 3.20 | 7 | 29300 | 41700 |
| 24-29 | 15/16 - 1-1/8 | 258 | 102 | 102 | 44 | 94 | 25 | 25 | 445 | 6.5 | 14 | 49200 | 70400 |
| 30-35 | 1-3/16 - 1-3/8 | 290 | 160 | 124 | 116 | 46 | 25 | 36 | 499 | 21.0 | 46.3 | 70700 | 101300 |
| 36-42 | 1-7/16 - 1-5/8 | 373 | 202 | 146 | 145 | 63 | 32 | 46 | 622 | 39.5 | 87.1 | 102000 | 143400 |
| 43-48 | 1-11/16 - 1-7/8 | 430 | 230 | 165 | 182 | 73 | 34 | 50 | 708 | 44.0 | 115.5 | 130000 | 185100 |

GENERAL INFORMATION DEFINITIONS

RATED LOAD VALUE

The maximum recommended load that should be exerted on the item. The following terms are also used for the term Rated Load: "SWL", "Safe Working Load", "Working Load", "Working Load Limit", and the "Resultant Safe Working Load." All rated load values, unless noted otherwise, are for in-line pull with respect to the centerline of the item.

PROOF LOAD

The average load to which an item may be subjected before visual deformation occurs or a load that is applied in the performance of a proof test.

PROOF TEST

A term designating a tensile test applied to the item for the sole purpose of detecting injurious defects in the material or manufacture.

ULTIMATE LOAD

The average load at which the item being tested fails or no longer supports the load.

SHOCK LOAD

A resulting load from the rapid change of movement, such as impacting or jerking, of a static load. A Shock Load is generally significantly greater than the static load.

SAFETY FACTOR

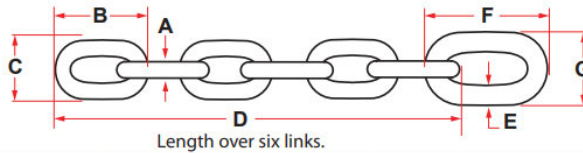
An industry term denoting theoretical reserve capability. Usually computed by dividing the catalog stated ultimate load by the catalog stated working load limit and generally expressed as a ratio, for example 5 to 1.

COMMERCIAL SURFACE QUALITY

The surface condition associated with the normal methods of production of raw material and machined surfaces. The surface condition of the products shown in this catalog. More refined surface qualities are considered as special.

All ratings given in tons refer to short tons of 2,000 lbs.

OPEN-LINK CHAIN COAST GUARD BUOY CHAIN



| COMMON LINKS | | | | END LINKS | | | LOADS | | WEIGHT PER 15-FATHOM SHOT (APPROX.) | |
|--------------------|----|---------------------|--------------------|-------------------------------|-----------------------|------------------|--------------------|------------|---|------------|
| WIRE DIAMETER A | | LINK LENGTH B | LINK WIDTH C | LENGTH OVER SIX LINKS D | WIRE DIAMETER E | LINK LENGTH F | LINK WIDTH G | PROOF TEST | | BREAK TEST |
| INCHES | MM | | | | | | | | | |
| 1/2 | 13 | 3 | 1-7/8 | 13 | 3/4 | 4-1/4 | 2-5/8 | 7500 | 15000 | 210 |
| 5/8 | 16 | 3-3/4 | 2-1/4 | 16-1/4 | 3/4 | 4-1/2 | 2-5/8 | 11500 | 23000 | 323 |
| 3/4 | 19 | 4-1/2 | 2-5/8 | 19-1/2 | 7/8 | 5-1/4 | 3-1/8 | 16000 | 32000 | 442 |
| 7/8 | 22 | 5-1/4 | 3-1/8 | 22-3/4 | 1-1/8 | 6-3/4 | 3-7/8 | 22000 | 40000 | 608 |
| 1 | 25 | 6 | 3-1/2 | 28 | 1-1/4 | 7-1/2 | 4-3/8 | 29000 | 58000 | 760 |
| 1-1/8 | 28 | 6-3/4 | 3-7/8 | 29-1/4 | 1-1/4 | 7-1/2 | 4-3/8 | 38500 | 77000 | 990 |
| 1-1/4 | 32 | 7-1/2 | 4-3/8 | 32-1/2 | 1-1/2 | 9 | 5-1/4 | 45500 | 91000 | 1245 |
| 1-1/2 | 38 | 9 | 5-1/4 | 39 | 1-7/8 | 11-1/4 | 6-1/2 | 65500 | 131000 | 1762 |
| 1-5/8 | 40 | 9-3/4 | 5-11/16 | 40-1/4 | 1-7/8 | 11-1/4 | 6-1/2 | 74500 | 149000 | 2040 |

From: Jeschelnik Kristyn <[REDACTED]>
Sent: Monday, January 24, 2022 10:08 AM
To: Stolzenberg Eric <[REDACTED]>
Subject: RE: SM-3 Forensics Report

Asking Jon if we have a good picture, but here's the invoice for the equipment.

From: Stolzenberg Eric <[REDACTED]>
Sent: Monday, January 24, 2022 10:00 AM
To: Jeschelnik Kristyn <[REDACTED]>
Subject: RE: SM-3 Forensics Report

- [CHAIN G 30 SC 1.00 1" MOORING CHAIN \(BY/FOOT\) \(hamiltonmarine.com\)](#)
- [Genovese General Purpose/Anchor Chain - G30 - Titan® Marine Products \(titanmarineproducts.com\)](#)

Grade 30 chain about 19,000 lb safe working load limit. And another says about a 21,000 lb working strength... but this assumes a grade 30 (low-grade) chain. There are many grades...

And then we have the shackle... do we have a picture of it with a number we can look up on the internet?

From: Jeschelnik Kristyn <[REDACTED]>
Sent: Monday, January 24, 2022 9:42 AM
To: Stolzenberg Eric <[REDACTED]>
Subject: SM-3 Forensics Report

Attached are the Simon Forensics report on the buoy failure and Don's analysis of the forensics report.