LANKHORST

THE VITAL CONNECTION

MA MARITIME

PORTFOLIO.

WIRECO
A World Ahead

CONTENTS

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LANKHORST ROPES... THE VITAL CONNECTION

Lankhorst Ropes is a world leading supplier of synthetic fibre and steel wire ropes for the maritime and offshore industries. As a Royal Lankhorst Euronete Group company, Lankhorst Ropes is also part of the world's largest steel wire manufacturer, WireCo.

Founded in 1803, Lankhorst Ropes has over 200 years' experience in the manufacture and supply of high performance ropes for mooring and towing applications.

Our core business is the development and production of high performance, synthetic and steel wire ropes for mooring and anchor systems, as well as towing and crane hoisting and luffing applications. We are committed to setting the standard for maritime ropes through our leading rope brands - TIPTO® 'Strong & Durable' family, EURO 'Strong & Stretch' family and LANKO® 'Strong & Light' family, which provide an optimal combination of breaking strength, life-time safety and ease of handling. Most ropes are produced in accordance with OCIMF recommendations and ISO standards.

As a supplier of steel wire ropes, Lankhorst Ropes has direct access to WireCo's large steel wire manufacturing resource and leading wire rope brands, like Casar. Our design team has many years' experience in applications using both synthetic and steel ropes. Lankhorst offers a one-stop shop for synthetic and steel wire ropes to shipping and offshore companies globally; and we are the key player for new build ships' initial rope supply.

RELIABILITY AND SAFETY

Lankhorst Ropes is fully certified according to ISO 9001:2015. Quality is central to our business ethos, ensuring you benefit from the highest quality products and services. Our factories for both steel wire and fibre ropes are approved by many IACS members, such as Lloyds, DNV/GL, BV and ABS. In addition, Lankhorst Ropes incorporates features like higher visibility, traceability and lower weight in their ropes, making them easier and safer to use.

INNOVATION AND HIGH PERFORMANCE

Lankhorst Ropes has a reputation for excellence in product innovation. Lankhorst Ropes has developed several multi-award winning rope innovations, which have led the industry in rope handling and safety. Lankhorst Ropes is leader in providing extraordinary solutions in terms of breaking strength, service life and ease of rope handling.

LANKHORST

SERVICE AND DELIVERY

Lankhorst Ropes maintains stock points at strategic locations and main ports worldwide. Thanks to our widespread network and global presence, you are ensured continuity of supply, fast service and short delivery times. Our global network of stock points, local sales offices and factories includes Bilbao, Brisbane, Dordrecht (NL), Dubai, Fujairah, Houston, Maia (PT), Philadelphia, Rio de Janeiro, Rotterdam, Singapore and Sneek (NL).

PARTNER AND PROBLEM SOLVER

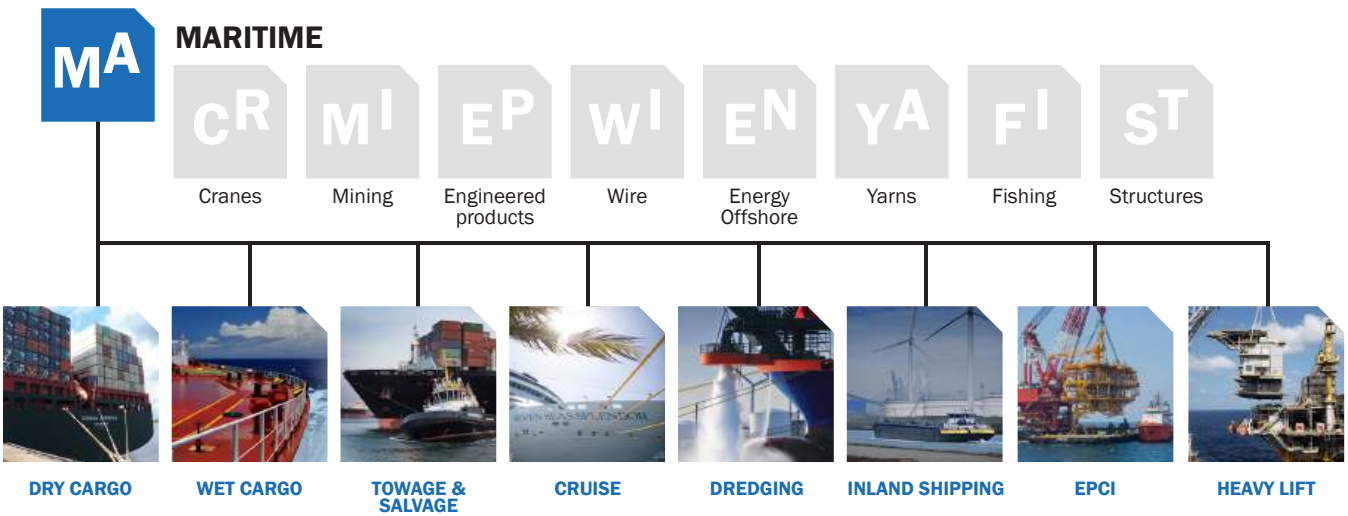
Lankhorst Ropes develops, manufactures and supplies a broad range of ropes directly from stock. Besides fast supply of standard items and rope configurations, Lankhorst Ropes has a dedicated confectioning centre to meet the needs of different market segment demands for specialized and tailor made solutions. In close consultation with our clients, we can bring nearly any desired product to market.

ENVIRONMENTAL, SOCIAL AND GOVERNMENTAL POLICY

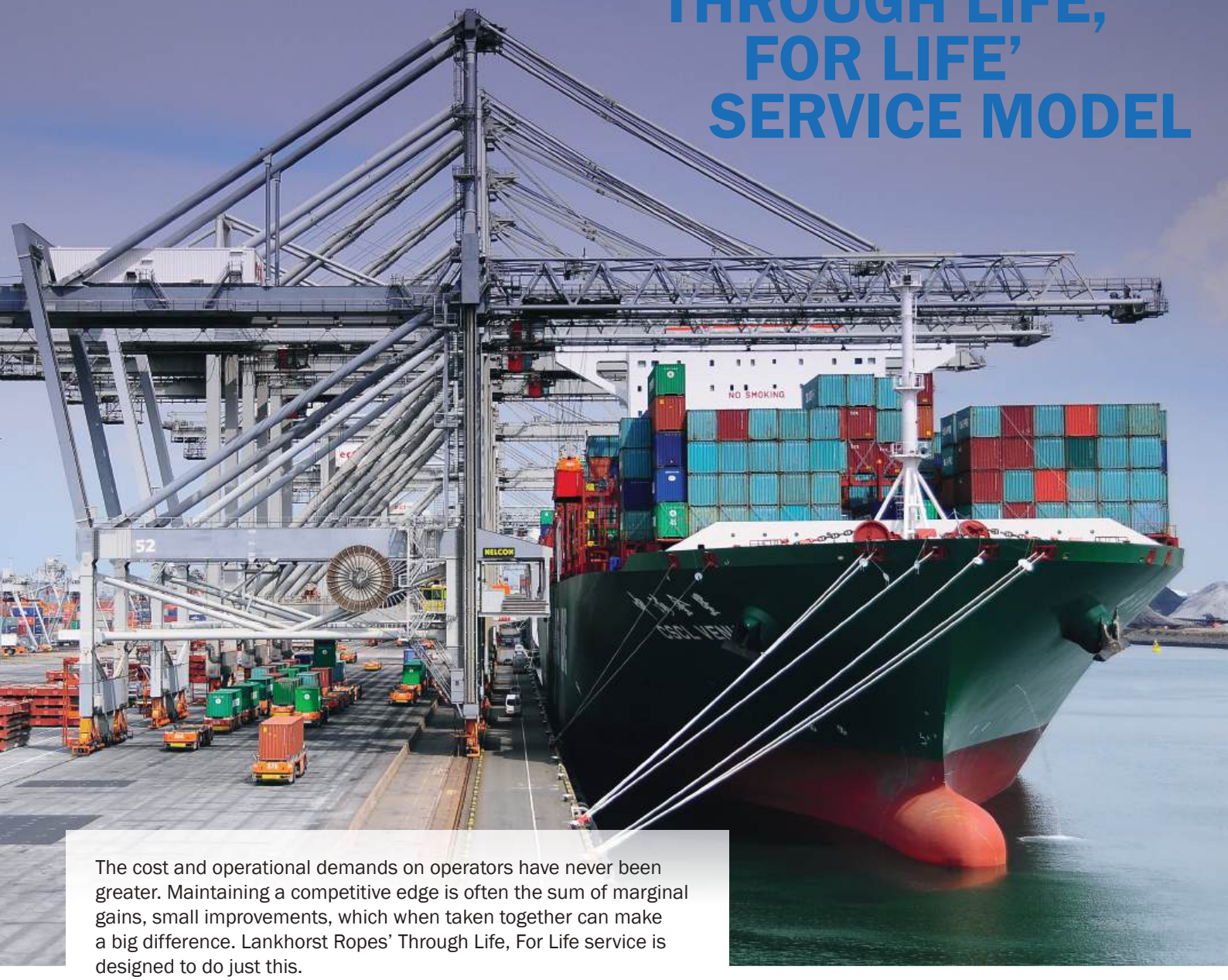
While the growing recognition among governments and corporations of the potential effects of climate change certainly informs our thinking on sustainability, we're proud that it has taken hold as a grass-roots movement at our company. We, as an organization, must make a commitment to leave the world a better place than we found it. Sustainability thus became a foundational commitment for us which led us to take near-term steps to formalize existing sustainability efforts and begin to lay the foundation for a comprehensive sustainability program.

For example in synthetics, scrap rope and yarn is recycled in our facility in Maia, Portugal for use in new products. Not only does this make financial sense by reducing disposal and raw material costs, but it also creates circularity in the manufacturing process that reduces waste and enables a degree of self-sufficiency. At Lankhorst Engineered Products business goes even further to give used plastics new life through Lankhorst Recycling, a product line sourced primarily with recycled materials. Based in Sneek, The Netherlands, Engineered Products has been recognized throughout Europe for its leadership in repurposing discarded polyethylene and polypropylene goods for use in construction, agriculture, recreation, and landscaping.

In our Environmental, Social, and Governance (ESG) journey tremendous work is already taking place in the areas of recycling, responsible sourcing, community engagement, and in our support of sustainable industries. Please find out more about our activities in our ESG report on our website.



‘THROUGH LIFE, FOR LIFE’ SERVICE MODEL



The cost and operational demands on operators have never been greater. Maintaining a competitive edge is often the sum of marginal gains, small improvements, which when taken together can make a big difference. Lankhorst Ropes’ Through Life, For Life service is designed to do just this.

Lankhorst Ropes: Through Life, For Life gives operators a cost-effective portfolio of rope service life support and sustainability benefits unmatched in the industry.

From rope selection to management through predictive service-life rope testing and training, Lankhorst provides complete ‘through life’ rope service – we want you to experience the benefit of working with our ropes in terms of longer rope service-life, easier handling and safe operation.

And then we go further. commitment to green manufacture combined with a longer lasting rope service-life, and ultimately rope recycling, translates into levels of sustainability that make a significant contribution to your environmental policies. Looked at in this way, life enhancing, sustainability is built-in with Lankhorst Ropes: Through Life, For Life; and it makes good business sense too!

STEP 1 ROPE SELECTION

Making the correct rope selection is vital. The cost-effectiveness and safety of shipping operations are dependent on selecting the correct rope. Lankhorst takes a holistic approach to prevent early failure of the rope:

- Review of ships route and mooring conditions

We will jointly go through all details of the trading route (if known) including type of mooring, expected swell conditions, possible currents and risks of surging.

- Review rope route

We will jointly go through all details of the rope route starting from the winch, and calculated winch capacity, to analysis of D/d ratios.

Rope selection criteria
Based on the holistic analyses, Lankhorst will recommend a rope to meet the desired properties for:

- Elongation
- Rope flexibility/stiffness
- Twist impact
- Break load
- Chafing gear
- Safety risks
- Buoyancy
- Service life expectations
- Environmental conditions
- International standards.

STEP 2 ROPE INSTALLATION AND CREW TRAINING

Lankhorst Ropes is committed to equipping crew with the knowledge and skills needed to ensure safe use of fibre ropes and maximum service life. Specifically, we provide:

- Training on rope handling
- Splicing instructions
- Installation on new (shipyard) or existing (ports) vessels
- Hardware inspection including all on-vessel equipment.

STEP 3 INSPECTION / MAINTENANCE ADVICE / TRAINING

Regular inspection is important in ensuring maximum rope service life. In addition to the crew training on rope handling and inspection, Lankhorst Ropes will make periodic visits to the vessel to undertake:

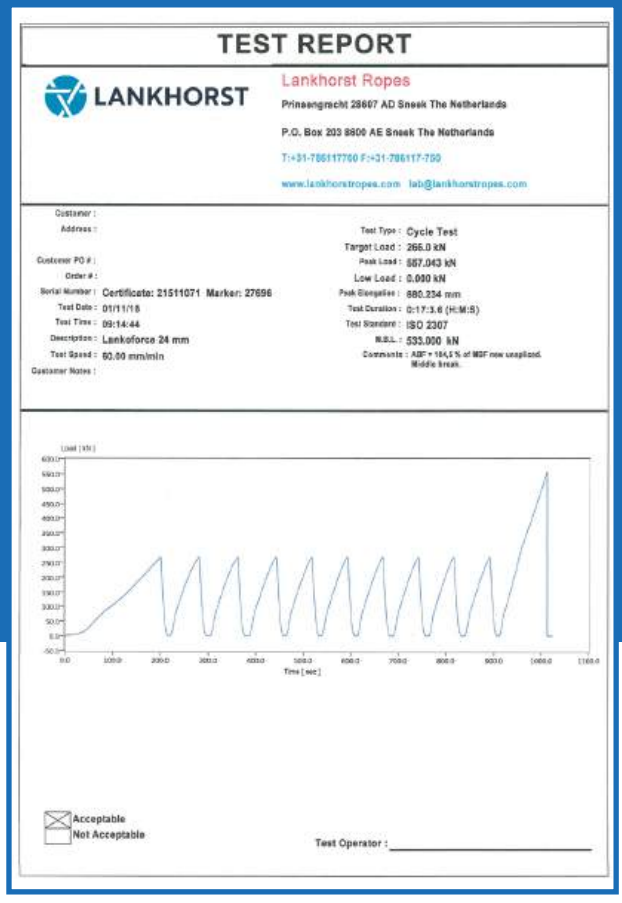
- Hardware condition inspection
- Rope inspection
- Update crew training
- Provide inspection reports.

STEP 4 RESIDUAL STRENGTH TESTING

Lankhorst Ropes provides a continuous residual strength testing program to assist in determining the best moment to change the rope end-to-end in order to ensure the most economical service life and to optimise safety on board. We believe this should be based on mooring hours, i.e. the number of hours a line has been in use mooring the vessel. This can be quantified by the vessel's crew and reported back to the manufacturer. Other factors which should be taken into consideration during the review are the environmental conditions at the ports and terminals where the vessel will be moored.

Visual inspection
The rope-sample is visually inspected. Photos are taken for the final residual strength test report before pulling the sample to destruction.

Test report
Each sample will get its own test certificate as illustrated.


TEST REPORT

LANKHORST

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T:+31-706117750 F:+31-706117-750
www.lankhorstropes.com lab@lankhorstropes.com

Customer :
Address :
Customer PO # :
Order # :
Serial Number : Certificate: 21511071 Marker: 27696
Test Date : 01/11/16
Test Time : 09:14:44
Description : Lankoforce 24 mm
Test Speed : 50.00 mm/min
Customer Notes :

Test Type : Cycle Test
Target Load : 266.0 kN
Peak Load : 667.043 kN
Low Load : 0.000 kN
Peak Elongation : 880.234 mm
Test Duration : 0:17:3.6 (H:M:S)
Test Standard : ISO 2307
M.B.L. : 533.000 kN
Comments : ABF + 18,5 % of MDF new unspliced. Middle break.

Load [kN]
Time [sec]

Acceptable
Not Acceptable

Test Operator : _____

Developing safe retirement criteria
By a continuous process of analysis and testing, it is possible to determine the most economical and safest points for ending rope usage and ultimately rope retirement.

THROUGH LIFE, FOR LIFE

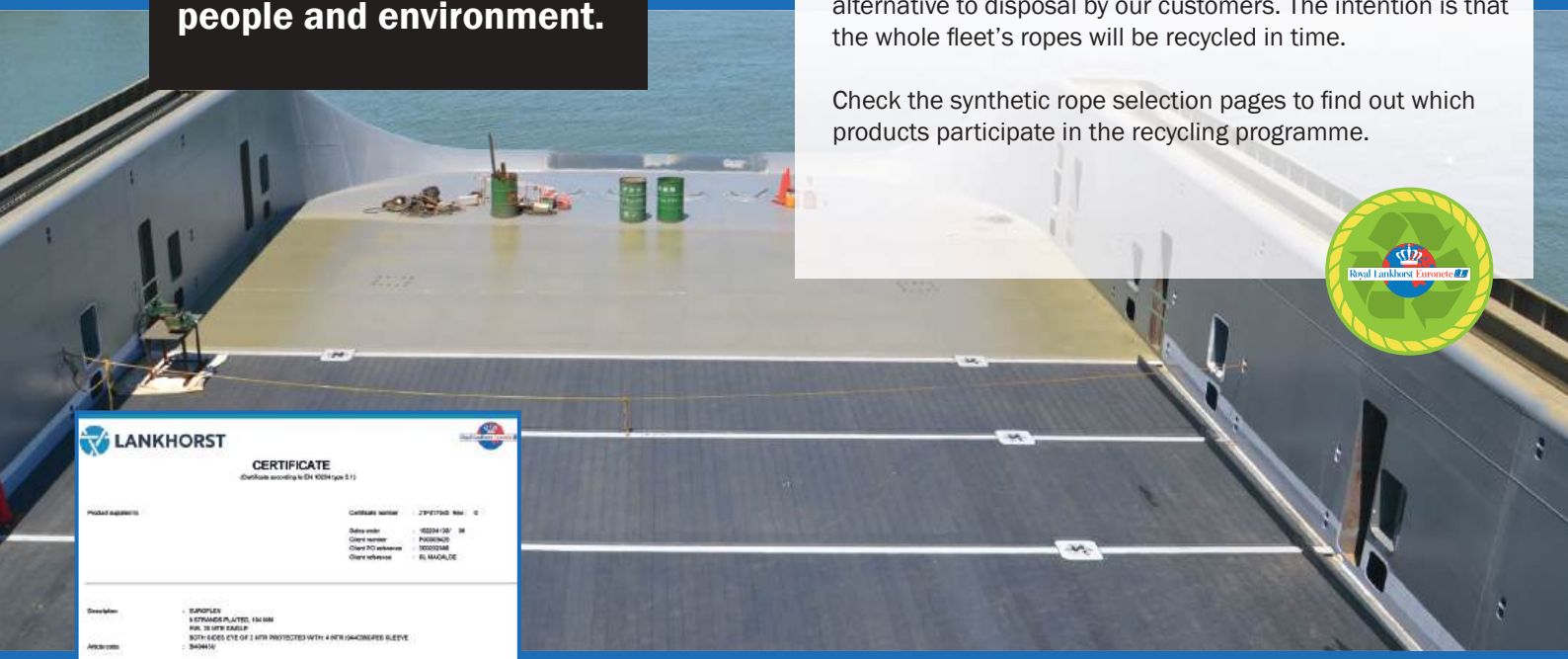
Minimalising risk and increasing safety for people and environment.

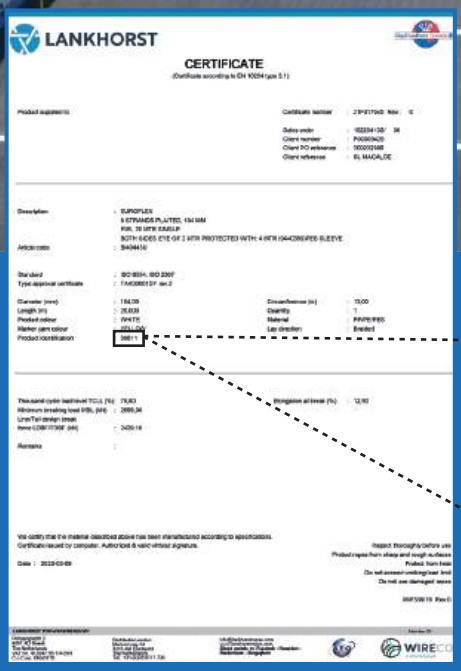
STEP 5 RECYCLING OF ROPES

The rope testing and recycling programmes can be combined. Ropes which are returned for testing and deemed unusable, can be used for recycling into other polymer products. The image below shows an offshore vessel with KLP® Deck Covers made by Lankhorst Engineered Products.

The recycling programme is an exclusive programme. It is not meant for ad hoc single rope returning for recycling as an alternative to disposal by our customers. The intention is that the whole fleet's ropes will be recycled in time.

Check the synthetic rope selection pages to find out which products participate in the recycling programme.




LANKHORST
CERTIFICATE

ROPE TRACEABILITY

Record keeping is essential for the safe use of mooring and towing ropes. Lankhorst high performance ropes carry a unique Product Identification Code (PIC). This PIC code is printed on a tape inside the rope and on the protective barrier in the eye. It corresponds with the factory certificate number for each rope, providing an effective way of managing rope use and maintenance.

24/7 ONLINE ACCESS TO ROPE CERTIFICATES

Lankhorst Ropes offer 24/7 online access to fibre rope and steel wire rope certificates, regardless of the time zone. It provides as standard a manufacturer's certificate for each individual mooring line, connecting shackle and tail. Certificates may be mislaid during filing or transportation but can be required immediately to trace and identify ropes. By having direct access to rope certificates, Lankhorst customers are able to instantaneously check all of their ropes' details including construction, diameter, length, minimum breaking load and end termination. Please contact your accountmanager at Lankhorst Ropes for activation.

Furthermore, Lankhorst Ropes has a DNV GL type approval for the manufacture of synthetic ropes used for mooring and towing. Check the synthetic rope selection pages to find out for which product a DNV F497 'Certificate of Test and Examination of Fibre Ropes' may be ordered.

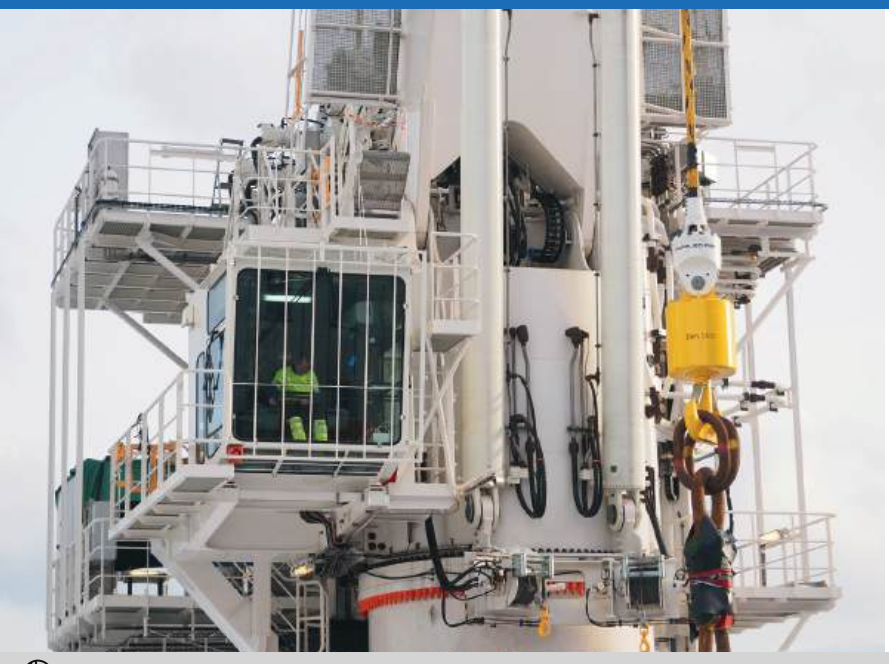
HIGH PERFORMANCE ROPES

Do you have an operation scheduled and don't know which rope to use? Please consult our sales team and we will find a rope to suit your application.

LANKO®GRIP
LANKO®GRIP rope has been developed for mooring and towing lines where higher hardware friction is required. This rope is slightly larger in diameter compared to 100% HMPE 12 strand ropes. In cases where figures of eight need to be made around bollards or a sufficient number of turns on a winch/warp head/capstan is not possible, LANKO®GRIP rope solves the problem. Due to a higher coefficient of friction, the number of turns can be reduced from the recommended 10 to 5. The high melting point and abrasion resistance also give the LANKO®GRIP rope optimal protection against external abrasion.

LANKO®PULL
LANKO®PULL is specially designed to replace conventional steel wire rope anchor lines. The rope's high axial and radial stiffness properties make it the ideal rope for anchor-winches in multi-layer spooling. LANKO®PULL is constructed using an innovative braided rope design which, in combination with a rigged core and outer jacket, provides an extremely form-stable rope with excellent spooling properties.

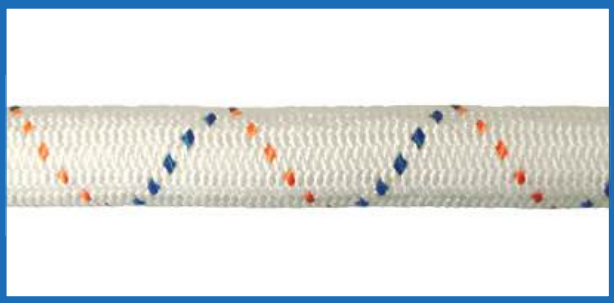
LANKO®WINCH
LANKO®WINCH is a 12 strand braided rope with optimal balance between load bearing capacity and bending performance. It is constructed using a novel rope design, providing increased lateral stiffness for better performance when bending over sheaves or/and winch spooling. The rope also features a proprietary coating technology that increases rope service life through improved bending performance and abrasion resistance. LANKO®WINCH is a lightweight and torque free solution for winches.



LANKO®DEEP
LANKO®DEEP AHC is the first rope designed specifically for deepwater deployment systems. It has an optimal balance of load bearing capacity and bending flexibility. At the same time, safe use is assured by many service life enhancing features. LANKO®DEEP AHC is constructed using an innovative rope design: 12x3 - 12 strand braided where each strand is a 3 strand rope. This design gives a minimal number of cross-over points and therefore significantly reduces internal abrasion. In addition, the rope is coated with a proprietary coating technology for further robustness and bending service life improvements. LANKO®DEEP AHC is based on a special Dyneema® fiber grade that helps reduce the tension required when bedding in the rope, as well as, reducing internal heating and abrasion.

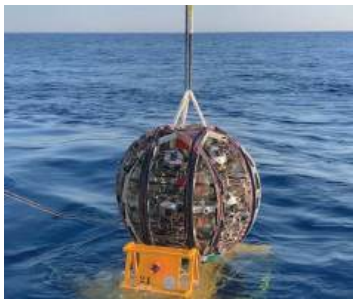
LANKO®TECH

Lankhorst high tenacity Technora® aramid fiber ropes have been engineered for applications where low weight, high strength, high temperature and good abrasion resistance are important. These ropes are manufactured in a 12 strand braided construction with an outer jacket of polyester. Typical applications where LANKO®TECH should be considered are high temperature resistance applications, winch lines, lifting/lowering winch lines, mooring lines and towed arrays. Terminations available include hand splices, potted and spike terminations.



LANKO®SCIENCE

LANKO®SCIENCE was created for the long term deep sea mooring of a telescope which holds 700m lines of light sensors in place at 3500m water depth. The rope meets the following requirements for mooring this system: a mooring minimum breaking load, a functional diameter, high stiffness and minimum construction elongation. LANKO®SCIENCE has a robust HDPE braided core with a Dyneema® DM20 jacket which bears the load and provides the stiffness needed for the precise positioning of the sensor array. To minimize deformation during installation, the rope was thermally stabilised under tension and covered with a protective black coating.



LANKO®DURE

LANKO®DURE rope has been developed for a range of maritime applications including mooring and towing. Utilising advanced fibre coating technology, it combines the high strength of HMPE with the external abrasion protection provided by polyester. By optimising the best characteristics of both fibres, LANKO®DURE offers outstanding performance under both static and dynamic working conditions, proving its suitability as a multipurpose maritime rope. Features are soft and flexible, high abrasion resistance, excellent grip performance and high coefficient of friction.

ROPE SELECTION

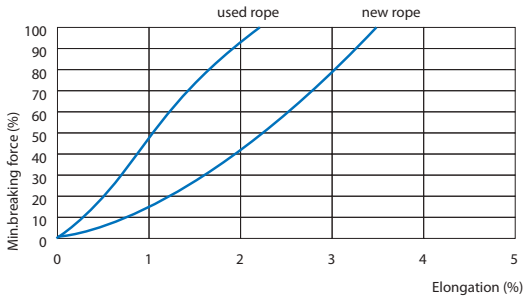
SYNTHETIC ROPES

LANKO®FORCE

12 strand braided rope, made of Dyneema® yarns.

LANKO®FORCE is an excellent alternative for heavy and lumbersome steel wire ropes in situations requiring manual handling of the rope. It is stronger than conventional steel wire rope, yet the corresponding weight is 7 times lower. The improved handling characteristics are especially suitable for towing and mooring applications. Another important benefit of LANKO®FORCE is that the rope is floating. Moreover, when replacing fibre rope, the reduction in rope diameter can lead to substantial savings in the weight and size of the mooring winches, for example, when incorporated in the design of a new build vessel the cost saving is substantial. Available in 12 x 1 construction (up to 86mm) and 12 x 3 construction (from 88mm). In a 12 x 3 construction each strand is a 3 strand rope.

ELONGATION:



TYPE APPROVED PRODUCTS DNV 14 – 80 mm

TESTED IN COMPLIANCE WITH OCIMF MEG4 20–48 mm

OPTIONAL:
Lanko®force, made of bio-based Dyneema®, is produced in the most CO2 neutral and sustainable way. It delivers the same performance as Lankhorst's traditional ropes made of Dyneema®, but with the added benefit of significantly increasing the sustainability of maritime mooring and towing ropes for vessel operators. Bio-based Dyneema® will carry the International Sustainability & Carbon Certification's globally recognized ISCC Plus sustainability standard. ISCC is a globally applicable sustainability certification system and covers all sustainable feedstocks, including renewables.

SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	very good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 x 1 strand braided up to 86mm 12 x 3 strand braided from 88mm
TCLL VALUE	81,95% (with 100% residual strength)
COLOUR	yellow
WATER ABSORPTION	0%
ELONGATION	See graph for illustration purposes

nominal diameter	weight		minimum breaking force ISO2307			spliced /LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
construction 12 x 1							
6	2,3	1,5	7.868	35	3,6	32	3,2
8	3,9	2,6	13.938	62	6,3	56	5,7
10	5,9	4,0	22.031	98	10	88	9,0
12	9,3	6,2	30.799	137	14	123	12,6
14	10,7	7,2	41.365	184	18,8	166	16,9
16	14,0	9,4	54.853	244	24,9	220	22,4
18	18,0	12,1	68.117	303	30,9	273	27,8
20	21,5	14,4	84.079	374	38,1	337	34,3
22	28,0	18,8	101.164	450	45,9	405	41,3
24	33,5	22,5	119.823	533	54,3	480	48,9
26	38,5	25,9	137.583	612	62,4	551	56,1
28	43,5	29,2	157.591	701	71,5	631	64,3
30	51,5	34,6	177.374	789	80,4	710	72,4
32	59,0	39,6	199.405	887	90,4	798	81,4
34	65,0	43,7	222.786	991	101	892	90,9
36	71,0	47,7	241.894	1.076	109,7	968	98,7
38	80,0	53,8	267.747	1.191	121,4	1.072	109,3
40	88,5	59,5	295.399	1.314	133,9	1.183	120,6
42	98,0	65,9	319.229	1.420	144,8	1.278	130,3
43	103,0	69,2	334.965	1.490	151,9	1.341	136,7
44	109,0	73,2	350.477	1.559	158,9	1.403	143,0
45	114,0	76,6	366.439	1.630	166,2	1.467	149,5
46	117,0	78,6	391.392	1.741	177,5	1.567	159,7
48	126,0	84,7	416.571	1.853	188,9	1.668	170,0
50	137,0	92,1	449.618	2.000	203,9	1.800	183,5
52	149,0	100,1	485.587	2.160	220,2	1.944	198,2
54	162,0	108,9	515.037	2.291	233,5	2.062	210,2
56	176,0	118,3	559.774	2.490	253,8	2.241	228,4
60	202,0	135,7	633.961	2.820	287,5	2.538	258,7
62	213,0	143,1	656.667	2.921	297,8	2.629	268,0
64	230,0	154,6	721.637	3.210	327,2	2.889	294,5
68	259,0	174,0	811.560	3.610	368	3.249	331,2
72	290,0	194,9	901.484	4.010	408,8	3.609	367,9
74	304,0	204,3	944.422	4.201	428,2	3.781	385,4
76	320,0	215,0	989.384	4.401	448,6	3.961	403,8
80	358,0	240,6	1.013.888	4.510	459,7	4.059	413,8
82	373,0	250,6	1.068.067	4.751	484,3	4.276	435,9
84	391,0	262,7	1.113.029	4.951	504,7	4.456	454,2
86	410,0	275,5	1.158.215	5.152	525,2	4.637	472,7
construction 12 x 3							
88	430,0	288,9	1.321.652	5.320	542,3	4.788	488,1
92	469,0	315,2	1.456.312	5.879	599,3	5.291	539,4
96	510,0	342,7	1.591.197	6.478	660,3	5.830	594,3
100	557,0	374,3	1.725.858	7.078	721,5	6.370	649,4
104	600,0	403,2	1.860.518	7.677	782,6	6.909	704,3
108	650,0	436,8	1.995.179	8.276	843,6	7.448	759,3
112	695,0	467,0	2.147.150	8.875	904,7	7.988	814,2
116	747,0	502,0	2.197.282	9.551	973,6	8.596	876,2
118	772,0	518,8	2.313.059	9.774	996,3	8.797	896,7
120	798,0	536,2	2.322.726	10.289	1.048,8	9.260	943,9
124	856,0	575,2	2.582.155	10.332	1.053,2	9.299	947,9
128	910,0	611,5	2.741.545	11.486	1.170,8	10.337	1.053,8
132	972,0	653,2	2.869.910	12.195	1.243,1	10.976	1.118,8
136	1.030,0	692,1	3.025.029	12.766	1.301,3	11.489	1.171,2
140	1.092,0	733,8	3.098.541	13.456	1.371,7	12.110	1.234,5
142	1.123,0	754,6	3.205.775	13.783	1.405	12.405	1.264,5
144	1.150,0	772,8	3.247.814	14.260	1.453,6	12.834	1.308,3
146	1.186,0	797,0	3.320.877	14.447	1.472,7	13.002	1.325,4
148	1.218,0	818,5	3.393.715	14.772	1.505,8	13.295	1.355,2
150	1.251,0	840,6	3.446.770	15.096	1.538,8	13.586	1.385,0
152	1.278,0	858,8	3.551.081	15.332	1.562,9	13.799	1.406,6
154	1.317,0	885,0	3.625.044	15.796	1.610,2	14.216	1.449,2
156	1.351,0	907,8	3.699.006	16.125	1.643,7	14.513	1.479,4
158	1.385,0	930,7	3.760.828	16.454	1.677,3	14.809	1.509,5
160	1.416,0	951,5	3.848.054	16.729	1.705,3	15.056	1.534,8
162	1.456,0	978,4	3.929.435	17.117	1.744,9	15.405	1.570,4
164	1.492,0	1.002,6	4.010.816	17.479	1.781,8	15.731	1.603,6
166	1.528,0	1.026,8	4.086.576	17.841	1.818,7	16.057	1.636,8
168	1.561,0	1.048,9	4.086.576	18.178	1.853	16.360	1.667,7

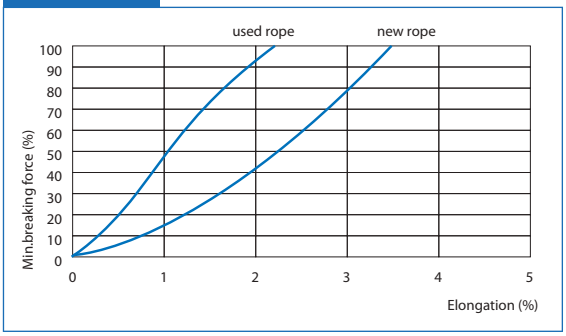
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

LANKHORST

LANKO®FORCE WITH DEFENDER® JACKET

LANKO®FORCE with DEFENDER® jacket is a 12 strand Dyneema® core rope covered with a with a braided jacket. It is an easy to handle, lightweight rope enabling quick mooring and towing connections. The Defender® jacket is woven in such a way that it provides maximum protection against heavy abrasion when using damaged and rusted fairleads and bollards. This is a significant benefit in preventing mooring / towing line damage, when the condition of these items is not known in advance. Moreover, by using the LANKO®FORCE with DEFENDER® jacket as a pennant, the overall total cost of rope ownership is reduced and safety increased.

ELONGATION:



nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
34	116,5	78,3	261.902	1.165	118,8	1.049	106,9
40	144,0	96,8	295.399	1.314	133,9	1.183	120,6
44	168,0	112,9	350.477	1.559	158,9	1.403	143,0
48	185,0	124,3	416.571	1.853	188,9	1.668	170,0
52	208,0	139,8	485.587	2.160	220,2	1.944	198,2
56	236,0	158,6	559.774	2.490	253,8	2.241	228,4
60	275,0	184,8	633.961	2.820	287,5	2.538	258,7
64	320,0	215,0	721.637	3.210	327,2	2.889	294,5
68	341,0	229,1	811.560	3.610	368,0	3.249	331,2
72	378,0	254,0	901.484	4.010	408,8	3.609	367,9

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength in the rope/wire itself, without splices or any other form of termination that can be formed with or without the use of accessories/fittings.

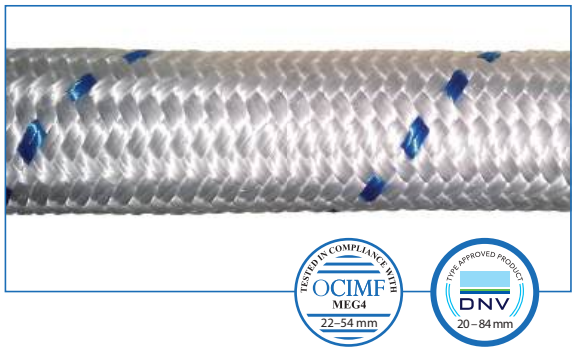
A3 splice

In case of the unique A3 splice, the splice and the eye have been fully integrated. The A3 splice handling advantages include:

- No doubling of the rope in the splice area, therefore no doubling of the splice weight
- No stiffness due to the splicing, the rope maintains its natural flexibility
- Neater spooling on the storage drum of the winch if the line has an eye at both ends

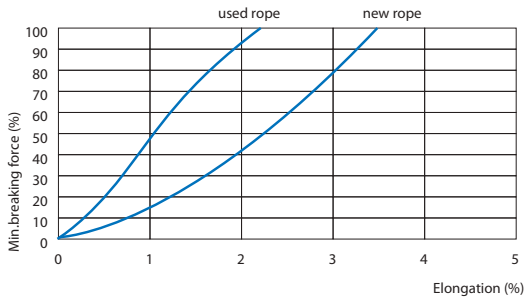
SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	very good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 x 1 strand braided
TCLL VALUE	81,95% (with 100% residual strength)
COLOUR	yellow
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes
A3 SPLICE	optional

LANKO®FORCE WITH HMPE JACKET



LANKO®FORCE with braided HMPE jacket is produced for applications where heat build-up and heavy abrasion is expected. The HMPE jacket is a durable jacket with excellent abrasion / heat resistance, as well as floating properties. Applications: mooring, towing, salvage and lifting.

ELONGATION:



nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
20	23,7	15,9	60.024	267	27,2	240	24,5
22	28,6	19,2	74.637	332	33,8	299	30,5
24	32,4	21,8	91.947	409	41,7	368	37,5
26	39,8	26,7	110.606	492	50,2	443	45,1
28	46,0	30,9	131.064	583	59,4	525	53,5
30	52,6	35,3	150.622	670	68,3	603	61,5
32	61,1	41,1	172.428	767	78,2	690	70,4
34	69,6	46,8	194.010	863	88,0	777	79,2
36	77,6	52,1	218.065	970	98,9	873	89,0
38	85,2	57,3	243.693	1.084	110,5	976	99,4
40	91,1	61,2	264.600	1.177	120,0	1.059	108,0
42	94,0	63,2	292.926	1.303	132,8	1.173	119,5
44	116,0	77,9	347.105	1.544	157,4	1.390	141,7
46	128,0	86,0	372.958	1.659	169,1	1.493	152,2
48	138,0	92,7	400.609	1.782	181,7	1.604	163,5
50	142,0	95,4	417.245	1.856	189,2	1.670	170,3
52	157,0	105,5	481.316	2.141	218,2	1.927	196,4
54	172,0	115,6	494.580	2.200	224,3	1.980	201,8
56	187,0	125,7	513.239	2.283	232,7	2.055	209,4
58	205,0	137,8	553.255	2.461	250,9	2.215	225,8
60	210,0	141,1	592.371	2.635	268,6	2.372	241,7
62	224,0	150,5	624.969	2.780	283,4	2.502	255,0
64	246,0	165,3	670.605	2.983	304,1	2.685	273,7
66	258,0	173,4	730.629	3.250	331,3	2.925	298,2
68	273,0	183,4	788.630	3.508	357,6	3.157	321,8
70	289,0	194,2	836.964	3.723	379,5	3.351	341,6
72	305,0	205,0	885.297	3.938	401,4	3.544	361,3
74	321,0	215,7	914.972	4.070	414,9	3.663	373,4
76	334,0	224,4	946.221	4.209	429,1	3.788	386,1
78	353,0	237,2	962.182	4.280	436,3	3.852	392,7
80	369,0	248,0	1.002.648	4.460	454,6	4.014	409,2
82	390,0	262,1	1.052.106	4.680	477,1	4.212	429,4
84	408,0	274,2	1.113.254	4.952	504,8	4.457	454,3

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

A3 splice
In case of the unique A3 splice, the splice and the eye have been fully integrated. The A3 splice handling advantages include:

- No doubling of the rope in the splice area, therefore no doubling of the splice weight
- No stiffness due to the splicing, the rope maintains its natural flexibility
- Neater spooling on the storage drum of the winch if the line has an eye at both ends

SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 x 1 strand braided up to 84 mm (3 5/16 inch)
COLOUR	white with blue marker yarn
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes
A3 SPLICE	optional

LANKHORST

LANKO®FORCE WITH POLYESTER JACKET

LANKO®FORCE with POLYESTER jacket is produced for applications where heat build-up and heavy abrasion is expected. The polyester jacket is a durable with excellent abrasion / heat resistance, but with non-floating properties. Applications: mooring, towing, salvage and lifting.

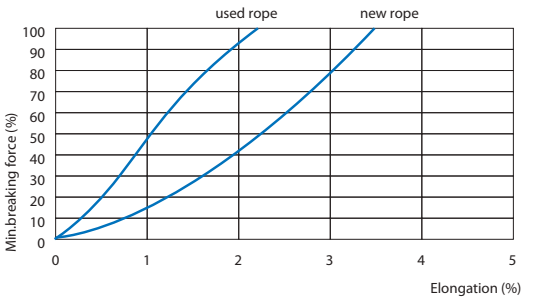
A3 splice

In case of the unique A3 splice, the splice and the eye have been fully integrated. The A3 splice handling advantages include:

- No doubling of the rope in the splice area, therefore no doubling of the splice weight
- No stiffness due to the splicing, the rope maintains its natural flexibility
- Neater spooling on the storage drum of the winch if the line has an eye at both ends

SPECIFIC GRAVITY	1,06
UV-RESISTANCE	excellent
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 strand with jacket
COLOUR	white with double blue marker yarns
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes
A3 SPLICE	optional

ELONGATION:



nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
20	26,1	17,5	60.024	267	27,2	240	24,5
22	31,0	20,8	74.637	332	33,8	299	30,5
24	35,0	23,5	91.947	409	41,7	368	37,5
26	42,6	28,6	110.606	492	50,2	443	45,1
28	49,0	32,9	131.064	583	59,4	525	53,5
30	55,8	37,5	150.622	670	68,3	603	61,5
32	64,5	43,3	172.428	767	78,2	690	70,4
34	73,2	49,2	194.010	863	88,0	777	79,2
36	81,4	54,7	218.065	970	98,9	873	89,0
38	89,2	59,9	243.693	1.084	110,5	976	99,4
40	97,0	65,2	264.600	1.177	120,0	1.059	108,0
42	104,0	69,9	292.926	1.303	132,8	1.173	119,5
44	122,0	82,0	347.105	1.544	157,4	1.390	141,7
48	139,0	93,4	400.609	1.782	181,7	1.604	163,5
52	164,0	110,2	481.316	2.141	218,2	1.927	196,4
56	195,0	131,0	513.239	2.283	232,7	2.055	209,4
60	221,0	148,5	592.371	2.635	268,6	2.372	241,7
64	248,0	166,6	670.605	2.983	304,1	2.685	273,7
68	286,0	192,2	788.630	3.508	357,6	3.157	321,8
72	319,0	214,4	885.297	3.938	401,4	3.544	361,3

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

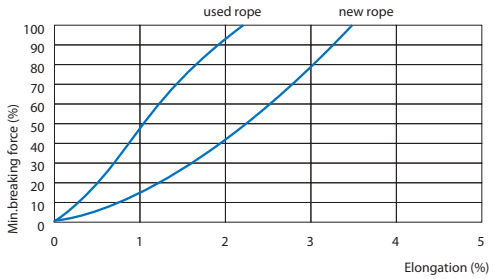
image: courtesy of Craneship Ltd

www.lankhorstropes.com

LANKO®EIGHT

LANKO®EIGHT is a rope made from LANKO®FORCE and TIPTO®, and consists of 8x1 strands. Each strand is made of Dyneema®. The Dyneema® strand is overbraided with a TIPTO® jacket. The jacket gives protection against abrasion and UV, and is flexible in handling and can be spliced being an 8 strand rope (easy for taking samples for a periodic testing). Next to that you will have the friction on the bollards which you need. Plus the crew can splice and repair on board.

ELONGATION:



SPECIFIC GRAVITY	0,97 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 140 °C
CONSTRUCTION	8 strand jacketed and braided
COLOUR	yellow with blue marker yarn
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes

nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
SK78							
30	54,1	36,4	88.800	395	40,3	356	36,2
32	59,4	39,9	102.288	455	46,4	410	41,7
34	65,6	44,1	118.699	528	53,8	475	48,4
36	71,7	48,2	136.684	608	62,0	547	55,8
38	78,9	53,0	154.444	687	70,0	618	63,0
40	86,6	58,2	174.002	774	78,9	697	71,0
44	101,0	67,9	211.545	941	95,9	847	86,3
48	118,0	79,3	255.158	1.135	115,7	1.022	104,1
52	137,0	92,1	304.391	1.354	138,0	1.219	124,2
56	157,0	105,5	352.725	1.569	159,9	1.412	143,9
60	180,0	121,0	412.974	1.837	187,3	1.653	168,5
64	198,0	133,1	454.114	2.020	205,9	1.818	185,3
68	238,0	159,9	545.611	2.427	247,4	2.184	222,7
72	255,0	171,4	590.798	2.628	267,9	2.365	241,1
80	331,0	222,4	680.721	3.028	308,7	2.725	277,8
82	349,0	234,5	724.559	3.223	328,5	2.901	295,7
88	386,0	259,4	812.459	3.614	368,4	3.253	331,6
92	405,0	272,1	862.817	3.838	391,2	3.454	352,1
96	459,0	308,4	985.787	4.385	447,0	3.947	402,3
SK99							
30	54,1	36,4	105.660	470	47,9	423	43,1
32	59,0	39,6	121.846	542	55,2	488	49,7
34	65,6	44,1	141.405	629	64,1	566	57,7
36	71,7	48,2	162.762	724	73,8	652	66,4
38	78,9	53,0	184.118	819	83,5	737	75,1
40	86,6	58,2	207.049	921	93,9	829	84,5
44	101,0	67,9	252.011	1.121	114,3	1.009	102,8
48	118,0	79,3	303.492	1.350	137,6	1.215	123,9
52	137,0	92,1	362.392	1.612	164,3	1.451	147,9
56	157,0	105,5	419.943	1.868	190,4	1.681	171,4
60	180,0	121,0	491.657	2.187	222,9	1.968	200,6
64	198,0	133,1	540.665	2.405	245,2	2.165	220,6
68	238,0	159,9	649.698	2.890	294,6	2.601	265,1
72	255,0	171,4	703.427	3.129	319,0	2.816	287,1
80	331,0	222,4	810.436	3.605	367,5	3.245	330,7
82	349,0	234,5	862.592	3.837	391,1	3.453	352,0
88	386,0	259,4	967.128	4.302	438,5	3.872	394,7
92	405,0	272,1	1.027.377	4.570	465,9	4.113	419,3
96	459,0	308,4	1.173.278	5.219	532,0	4.697	478,8

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

LANKHORST

LANKO®LINE

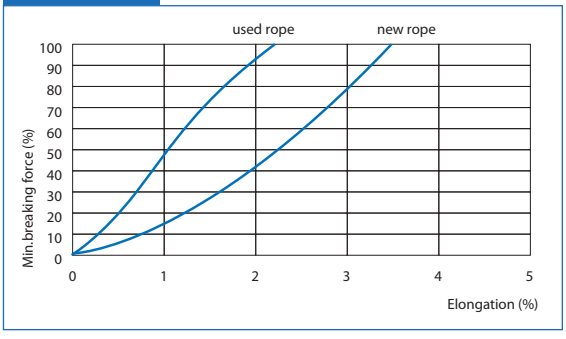
This 12 strand braided HMPE rope is combining the long term experiences of two major global leading companies in yarn manufacturing and rope making. The multi-filament fibres yarns are manufactured by Avient Protective Materials (previous DSM) and the rope is made by Lankhorst Ropes. A high quality general purpose HMPE alternative with the well-known European Lankhorst Ropes quality and reliability. LANKO®LINE offers the best combination for ship owners and users who are looking for reliability, affordable quality and performance. The LANKO®LINE can fulfill that requirement and does ease the mind because Avient Protective Materials (previous DSM) and Lankhorst Ropes are controlling the different manufacturing processes. LANKO®LINE is floating, has a bright orange coating and a good UV, abrasion and chemical resistance.

nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
6	2,3	1,5	7.644	34	3,5	31	3,1
8	3,9	2,6	13.264	59	6,0	53	5,4
10	5,9	4,0	21.132	94	9,6	85	8,6
12	8,7	5,8	29.675	132	13,5	119	12,1
14	10,2	6,9	39.791	177	18,0	159	16,2
16	14,1	9,5	52.830	235	24,0	212	21,6
18	17,4	11,7	65.644	292	29,8	263	26,8
20	20,6	13,8	81.156	361	36,8	325	33,1
22	26,1	17,5	97.567	434	44,2	391	39,8
24	30,9	20,8	115.552	514	52,4	463	47,2
26	37,0	24,9	132.637	590	60,1	531	54,1
28	43,2	29,0	151.971	676	68,9	608	62,0
30	48,4	32,5	171.080	761	77,6	685	69,8
32	55,3	37,2	192.436	856	87,3	770	78,5
34	62,2	41,8	214.917	956	97,5	860	87,7
36	68,0	45,7	233.801	1.040	106,0	936	95,4
38	76,0	51,1	258.530	1.150	117,2	1.035	105,5
40	85,1	57,2	283.259	1.260	128,4	1.134	115,6
42	94,0	63,2	307.988	1.370	139,7	1.233	125,7
44	104,0	69,9	337.213	1.500	152,9	1.350	137,6
48	124,0	83,3	402.408	1.790	182,5	1.611	164,2
52	153,0	102,8	467.603	2.080	212,0	1.872	190,8
56	170,0	114,2	539.541	2.400	244,6	2.160	220,2
60	200,0	134,4	611.480	2.720	277,3	2.448	249,5
64	228,0	153,2	696.908	3.100	316,0	2.790	284,4
68	254,0	170,7	782.335	3.480	354,7	3.132	319,3
72	285,0	191,5	870.010	3.870	394,5	3.483	355,0

Other diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

ELONGATION:



SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	good
ABRASION RESISTANCE	good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 strand braided
TCLL VALUE	81,95% (with 100% residual strength)
COLOUR	orange
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes

LANKO®LINE WITH HMPE JACKET

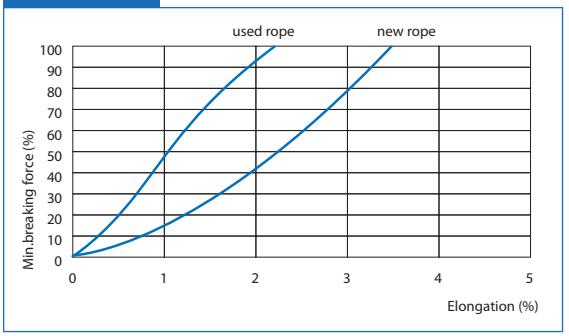
This 12 strand braided HMPE rope combines the many years' experience of two world leading companies in yarn manufacture and rope making. The multi-filaments are manufactured by Avient Protective Materials (previous DSM) and the rope made by Lankhorst Ropes. Together, their knowledge and expertise created a high degree of synergy, resulting in this reliable and affordable quality HMPE rope. The LANKO®LINE is type approved, certified and tested as per the Appendix B of the OCIMF MEG4.

LANKO®LINE offers the best all round performance for ship owners and users who are looking for high quality ropes for mooring, towing, salvaging, and anchor mooring. The rope is floating and has a white braided HMPE jacket. The jacket provides an increased form stability, which can be an advantage in multi-layer operations. In addition, the jacket protects the rope as much as possible against external abrasion and the impact of UV. Applications: mooring, towing, salvaging and anchor mooring.

nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
20	23,7	15,9	58.001	258	26,3	232	23,7
22	28,6	19,2	71.939	320	32,6	288	29,4
24	32,4	21,8	88.800	395	40,3	356	36,2
26	39,8	26,7	106.784	475	48,4	428	43,6
28	46,0	30,9	126.567	563	57,4	507	51,7
30	52,6	35,3	145.451	647	66,0	582	59,4
32	61,1	41,1	166.359	740	75,4	666	67,9
34	67,0	45,0	187.266	833	84,9	750	76,4
36	77,6	52,1	210.421	936	95,4	842	85,9
38	85,2	57,3	235.150	1.046	106,6	941	96,0
40	91,1	61,2	255.383	1.136	115,8	1.022	104,2
42	98,0	65,9	282.585	1.257	128,1	1.131	115,3
44	116,0	77,9	334.965	1.490	151,9	1.341	136,7
48	138,0	92,7	386.671	1.720	175,3	1.548	157,8
52	157,0	105,5	462.207	2.056	209,6	1.850	188,6
54	163	109,5	477.269	2.123	216,4	1.911	194,8
56	187	125,7	495.254	2.203	224,6	1.983	202,1
60	210,0	141,1	571.689	2.543	259,2	2.289	233,3
62	224,0	150,5	603.162	2.683	273,5	2.415	246,1
64	246,0	165,3	647.225	2.879	293,5	2.591	264,1
68	273,0	183,4	760.978	3.385	345,1	3.047	310,6
72	305,0	205,0	854.274	3.800	387,4	3.420	348,6
80	369,0	248,0	967.578	4.304	438,7	3.874	394,9
84	408,0	274,2	1.074.362	4.779	487,2	4.301	438,4

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

ELONGATION:



SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	good
ABRASION RESISTANCE	good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 strand braided
COLOUR	white
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes

LANKHORST

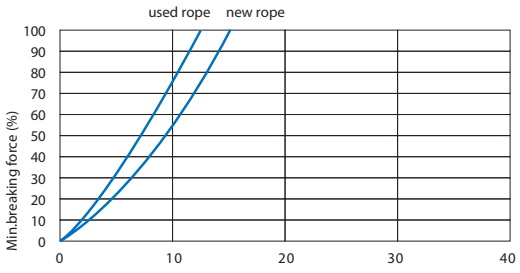
EUROFLEX®

Continuing industry demand for mooring and towing ropes with higher strength AND smaller diameters, has led to the development of EUROFLEX®. Its excellent handling properties, softness and flexibility, combined with high energy absorption capability and abrasion resistance, make the EUROFLEX® one of the best ropes available today for mooring and towing for both shipping and offshore operations.

nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
40	102,0	68,5	97.117	432	44,0	389	39,6
44	124,0	83,3	116.451	518	52,8	466	47,5
48	148,0	99,5	137.583	612	62,4	551	56,1
52	173,0	116,3	160.514	714	72,8	643	65,5
56	201,0	135,1	185.018	823	83,9	741	75,5
60	231,0	155,2	211.545	941	95,9	847	86,3
64	263,0	176,7	238.522	1.061	108,2	955	97,3
68	296,0	198,9	269.096	1.197	122,0	1.077	109,8
72	332,0	223,1	299.895	1.334	136,0	1.201	122,4
76	370,0	248,6	332.942	1.481	151,0	1.333	135,9
80	411,0	276,2	365.989	1.628	166,0	1.465	149,4
82	431,0	289,6	382.400	1.701	173,0	1.531	156,0
84	452,0	303,7	401.284	1.785	182,0	1.607	164,0
86	474,0	318,5	420.168	1.869	191,0	1.682	171,0
88	497,0	334,0	441.525	1.964	200,2	1.768	180,2
96	590,0	396,5	521.781	2.321	236,6	2.089	212,9
104	689,0	463,0	606.759	2.699	275,1	2.429	247,6
112	803,0	539,6	701.179	3.119	317,9	2.807	286,1
120	923,0	620,2	797.847	3.549	361,8	3.194	325,6
128	1.050,0	705,6	904.181	4.022	410,0	3.620	369,0
136	1.187,0	797,6	1.015.012	4.515	460,2	4.064	414,2
144	1.334,0	896,4	1.133.037	5.040	513,8	4.536	462,4

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

ELONGATION:



SPECIFIC GRAVITY	1,14
UV-RESISTANCE	good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 165°C/ 265°C
CONSTRUCTION	8 strand braided
TCLL VALUE	78,8%
COLOUR	white with yellow marker yarn
WATER ABSORPTION	<0,5%
ELONGATION	see graph for illustration purposes

EUROFLEX® MOORING TAIL

Mooring tails absorb shock/energy within the mooring system. The EUROFLEX® MOORING TAILS surpass nylon tails in quality. Moreover, the rope does not lose a large portion of its dry MBF when wet. As the EUROFLEX® MOORING TAILS' strength is higher than that of nylon, a smaller diameter of rope can be used, providing better handling. Made of polyester and polyolefin composite yarns, the standard length is 11 m (Effective Working Length). For those circumstances where more stretch is required, the EUROFLEX® MOORING TAILS are also available in 22 m EWL. Both versions are fitted with two protected and spliced eyes of 2 m and 1 m respectively.

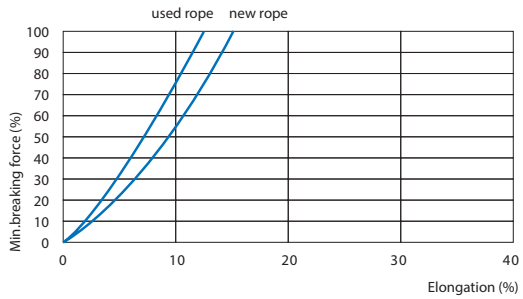
OCIMF MEG4 guidelines recommend mooring tails with a TDBF of 125 - 130% related to the ship design MBL. EUROFLEX® MOORING TAILS have equal breaking strength under wet and dry conditions.

SPECIFIC GRAVITY	1,14
UV-RESISTANCE	good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 165°C/ 265°C
CONSTRUCTION	8 strand braided
TCLL VALUE	78,8%
COLOUR	white with yellow marker yarn
WATER ABSORPTION	<0,5%
ELONGATION	see graph for illustration purposes

nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/ tail	lb/ tail	lbs	kN	t(metric)	kN	t(metric)
EWL: 11m							
48	23,7	15,9	137.583	612	62,4	551	56,1
56	34,2	23,0	185.018	823	83,9	741	75,5
60	39,3	26,4	211.545	941	95,9	847	86,3
62	42,0	28,2	224.809	1.000	101,9	900	91,7
64	44,7	30,0	238.522	1.061	108,2	955	97,3
68	50,3	33,8	269.096	1.197	122,0	1.077	109,8
72	56,4	37,9	299.895	1.334	136,0	1.201	122,4
76	66,6	44,8	332.942	1.481	151,0	1.333	135,9
80	70,4	47,3	365.989	1.628	166,0	1.465	149,4
82	73,2	49,2	382.400	1.701	173,4	1.531	156,1
83	75,0	50,4	391.617	1.742	177,6	1.568	159,8
84	81,4	54,7	401.284	1.785	182,0	1.607	163,8
88	89,5	60,1	441.525	1.964	200,2	1.768	180,2
96	106,2	71,4	521.781	2.321	236,6	2.089	212,9
EWL: 22m							
60	64,7	43,5	211.545	941	95,9	847	86,3
72	93,0	62,5	299.895	1.334	136,0	1.201	122,4
80	119,2	80,1	365.989	1.628	166,0	1.465	149,4
88	144,1	96,8	441.525	1.964	200,2	1.768	180,2
96	171,1	115,0	521.781	2.321	236,6	2.089	212,9

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Tail Design Breaking Force (TDBF) in spliced wet condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

ELONGATION:



LANKHORST

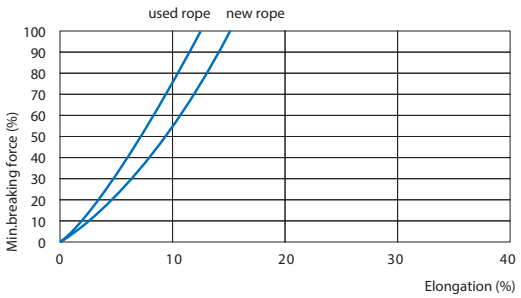
EUROFLEX® 3 STRAND

EUROFLEX® 3-strand, although comparable to nylon in strength, offers some essential advantages. As the material is not influenced by either water or UV radiation, the rope remains flexible, and keeps its softness to the touch. The rope does not lose strength when becoming wet.

nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
8	4,0	2,7	2.900	13	1,3	12	1,2
10	6,0	4,0	4.676	21	2,1	19	1,9
12	8,5	5,7	6.902	31	3,1	28	2,8
14	11,5	7,7	8.813	39	4,0	35	3,6
16	15,0	10,1	10.588	47	4,8	42	4,3
18	19,0	12,8	12.837	57	5,8	51	5,2
20	23,0	15,5	16.321	73	7,4	65	6,7
22	28,0	18,8	18.951	84	8,6	76	7,7
24	33,5	22,5	22.481	100	10,2	90	9,2
26	39,0	26,2	26.303	117	11,9	105	10,7
28	46,0	30,9	29.675	132	13,5	119	12,1
30	52,0	34,9	33.721	150	15,3	135	13,8
32	59,5	40,0	37.768	168	17,1	151	15,4
34	67,5	45,4	41.365	184	18,8	166	16,9
36	75,0	50,4	44.962	200	20,4	180	18,3

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:

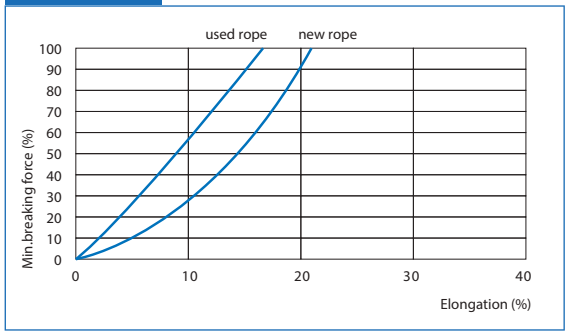


SPECIFIC GRAVITY	1,14
UV-RESISTANCE	good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	165°C / 265°C
CONSTRUCTION	3 strand
COLOUR	white with yellow marker yarn (< 18mm)
WATER ABSORPTION	< 0,5%
ELONGATION	see graph for illustration purposes

EUROFLOAT®PREMIUM

Using our latest in-house extrusion technology, Lankhorst has developed EUROFLOAT®PREMIUM rope to meet the requirements of today's modern tanker fleet. This floating high performance rope is constructed from high strength polyolefin and polyester yarns. It is manufactured to the latest EN and ISO standards, and complies with OCIMF recommendations. The rope's floating characteristic makes it a safe rope to work with, while its high TCLL value ensures excellent fatigue resistance.

ELONGATION:



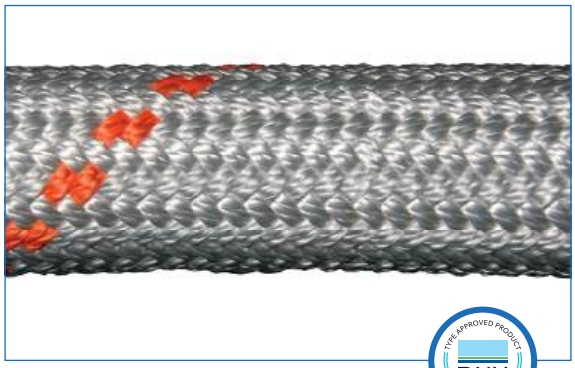
nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
32	53,0	35,6	46.535	207	21,1	186	19,0
36	67,0	45,0	58.226	259	26,4	233	23,8
40	85,0	57,1	72.838	324	33,0	292	29,7
44	99,0	66,5	84.753	377	38,4	339	34,6
48	120,0	80,6	102.513	456	46,5	410	41,8
52	141,0	94,7	120.048	534	54,4	481	49,0
56	162,0	108,9	137.808	613	62,5	552	56,2
60	188,0	126,3	157.591	701	71,5	631	64,3
64	216,0	145,1	179.622	799	81,4	719	73,3
68	245,0	164,6	202.328	900	91,7	810	82,6
72	275,0	184,8	224.809	1.000	101,9	900	91,7
76	305,0	205,0	246.840	1.098	111,9	988	100,7
80	339,0	227,8	270.895	1.205	122,8	1.085	110,6
88	411,0	276,2	330.469	1.470	149,8	1.323	134,9
96	490,0	329,3	390.043	1.735	176,9	1.562	159,2

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 165°C/ 260°C
CONSTRUCTION	8 strand braided
TCLL VALUE	74,18%
COLOUR	off white with double green marker yarns
WATER ABSORPTION	0,1%
ELONGATION	see graph for illustration purposes

LANKHORST

STRONGLINE™



nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
32	76,5	51,4	88.125	392	40,0	353	36,0
36	95,0	63,8	109.932	489	49,8	440	44,9
40	131,0	88,0	133.087	592	60,3	533	54,3
44	147,0	98,8	159.390	709	72,3	638	65,0
48	175,0	117,6	187.266	833	84,9	750	76,4
52	189,0	127,0	217.390	967	98,6	870	88,7
56	227,0	152,5	248.639	1.106	112,7	995	101,5
60	256,0	172,0	282.360	1.256	128,0	1.130	115,2
64	284,0	190,8	317.205	1.411	143,8	1.270	129,4
68	307,0	206,3	354.748	1.578	160,9	1.420	144,8
72	367,0	246,6	392.067	1.744	177,8	1.570	160,0
76	390,0	262,1	432.083	1.922	195,9	1.730	176,3
80	417,0	280,2	472.099	2.100	214,1	1.890	192,7
88	493,0	331,3	562.022	2.500	254,8	2.250	229,4
92	528,0	354,8	611.930	2.722	277,5	2.450	249,7
96	560,0	376,3	656.892	2.922	297,9	2.630	268,1
100	630,0	423,3	711.970	3.167	322,8	2.850	290,6
104	662,0	444,8	771.769	3.433	349,9	3.090	315,0
112	788,0	529,5	911.825	4.056	413,5	3.650	372,1

other diameters on request

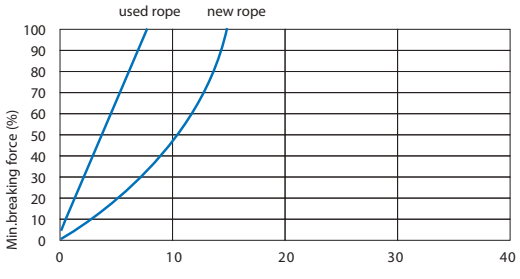
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

STRONGLINE™ has a rope construction comprising a parallel core with a braided protective cover. The parallel core produces a far higher strength rope than might be expected for a rope of this diameter and material. The protective cover ensures a long service life due to its excellent resistance against abrasion. Regular maintenance can significantly lengthen the rope service life. It does not require the use of mooring tails. STRONGLINE™ can be recycled. The main applications of STRONGLINE™ are towing and mooring.

When STRONGLINE™ is installed on a towing winch, twists in the rope during installation can reduce the service life of the rope once put to work. To prevent twisting, it is crucial to use a turning table for unwinding from a coil. To facilitate the installation and avoiding induced twisting, a longitudinal marking has been added to the STRONGLINE™ during manufacture. Please make sure the longitudinal marking line is always on the same position while winding up the STRONGLINE™ on your towing winch.

SPECIFIC GRAVITY	1,38
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 265°C
CONSTRUCTION	parallel cores with jacket
TCLL VALUE	64,9%
COLOUR	white with orange marker yarn
WATER ABSORPTION	< 1%
ELONGATION	see graph for illustration purposes
A3 SPLICE	standard

ELONGATION:



A3 splice

In case of the unique A3 splice, the splice and the eye have been fully integrated. The A3 splice handling advantages include:

- No doubling of the rope in the splice area, therefore no doubling of the splice weight
- No stiffness due to the splicing, the rope maintains its natural flexibility
- Neater spooling on the storage drum of the winch if the line has an eye at both ends

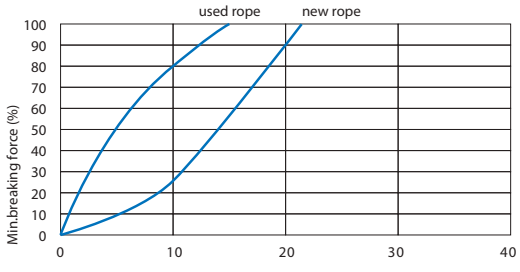
TIPTO®EIGHT

A high-performance mooring rope, TIPTO®EIGHT's strength, abrasion resistance and energy absorption ensure a long service life and low cost of ownership. The rope's small diameter and low weight make handling easier on board. As TIPTO®EIGHT is a floating rope, the risk of getting the rope caught in the ship and tug propeller is minimal, thus avoiding costly downtime.

nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
40	75,6	50,8	60.474	269	27,4	242	24,7
44	92,4	62,1	72.164	321	32,7	289	29,4
48	109,0	73,2	84.978	378	38,5	340	34,7
52	128,0	86,0	99.141	441	45,0	397	40,5
56	149,0	100,1	114.203	508	51,8	457	46,6
60	171,0	114,9	129.940	578	58,9	520	53,0
64	194,0	130,4	146.351	651	66,4	586	59,7
68	220,0	147,8	164.335	731	74,5	658	67,1
72	246,0	165,3	182.994	814	83,0	733	74,7
80	305,0	205,0	223.010	992	101,1	893	91,0
88	369,0	248,0	265.275	1.180	120,3	1.062	108,3
96	438,0	294,3	314.732	1.400	142,7	1.260	128,4
104	515,0	346,1	364.190	1.620	165,1	1.458	148,6
112	596,0	400,5	420.393	1.870	190,6	1.683	171,6
120	686,0	461,0	478.843	2.130	217,1	1.917	195,4
128	779,0	523,5	541.789	2.410	245,7	2.169	221,1
136	880,0	591,3	609.232	2.710	276,2	2.439	248,6
144	987,0	663,2	681.171	3.030	308,9	2.727	278,0

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

ELONGATION:



SPECIFIC GRAVITY	0,93 (floating)
UV-RESISTANCE	very good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 140°C
CONSTRUCTION	8 strand braided
COLOUR	yellow with orange marker yarn
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes

LANKHORST

TIPTO®TWELVE

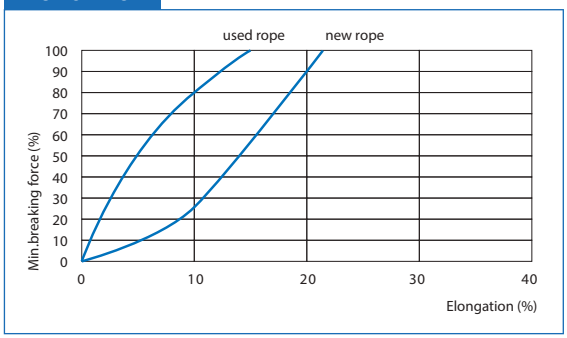
nominal diameter	weight		minimum breaking force ISO2307			spliced/LDBF (OCIMF MEG4)*	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
16	12,1	8,1	10.791	48	4,9	43	4,4
20	18,9	12,7	16.411	73	7,4	66	6,7
24	27,3	18,3	23.155	103	10,5	93	9,4
28*	37,3	25,1	30.799	137	14,0	123	12,6
32*	53,0	35,6	39.791	177	18,0	159	16,2
36*	66,0	44,4	49.908	222	22,6	200	20,4
40*	75,6	50,8	60.474	269	27,4	242	24,7
44*	92,4	62,1	72.164	321	32,7	289	29,4
48*	109,0	73,2	84.978	378	38,5	340	34,7

* available in several standard lengths
other diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.
*The figures in red refer to the Line Design Breaking Force (LDBF) in spliced dry condition and products are manufactured, tested and documented according to OCIMF guideline MEG4 Appendix B.

TIPTO®TWELVE, available in 16 mm to 96 mm diameter, is the successor of the well-known TIPTO®EIGHT. The construction is different, yet the material remains the same. The 12 strand braided construction makes the rope rounder, more stable, more compact and with a smoother surface. This increases abrasion resistance and, as a result, the service life of the rope. TIPTO®TWELVE can be used for mooring, using either bollards and/or winches. All TIPTO®TWELVE coils are supplied with a quality label, stating “Original product of Lankhorst Ropes”. TIPTO®TWELVE ropes in the range from 32 mm up to 48 mm diameter have been upgraded with an extra marker yarn. The rope size can now easily (and above all) without mistake be identified.

ELONGATION:



SPECIFIC GRAVITY	0,93 (floating)
UV-RESISTANCE	very good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 140 °C
CONSTRUCTION	12 strand braided
TCLL VALUE	75,41%
COLOUR	yellow with orange marker yarn
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes

Green = 32 mm
Brown = 36 mm
Black = 40 mm
Blue = 44 mm
White = 48 mm

TIPTO®WINCHLINE

A dedicated floating winch line specially designed for use onto mooring winches. The load-bearing 8-strand core combines good strength and a very high abrasion resistance for a longer service life time. The non-loadbearing tightly braided jacket will provide excellent protection of the core against wear, UV and also provide superior spooling behavior. The bright coloring pattern will offer high visibility. The mooring efficiency of the vessel is enhanced by the ease of handling of the rope due to its low weight and ability to float. TIPTO®WINCHLINE does not lose its strength when wet.

SPECIFIC GRAVITY	0,93 (floating)
UV-RESISTANCE	very good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 140°C
CONSTRUCTION	8 strand with jacket
TCLL VALUE	74,86%
COLOUR	yellow with orange marker yarn
WATER ABSORPTION	0%
ELONGATION	see graph for illustration purposes
A3 SPLICE	standard

nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
36	74,0	49,7	55.753	248	25,3	223	22,8
42	98,0	65,9	76.435	340	34,7	306	31,2
46	115,0	77,3	95.544	425	43,3	383	39,0
48	125,0	84,0	106.110	472	48,1	425	43,3
50	133,0	89,4	115.102	512	52,2	461	47,0
54	150,0	100,8	134.436	598	61,0	538	54,9
56	160,0	107,5	143.878	640	65,2	576	58,7
58	167,0	112,2	153.320	682	69,5	614	62,6
60	184,0	123,6	164.110	730	74,4	657	67,0
62	190,0	127,7	175.351	780	79,5	702	71,6
64	203,0	136,4	191.088	850	86,6	765	78,0
68	221,0	148,5	209.972	934	95,2	841	85,7
70	240,0	161,3	222.561	990	100,9	891	90,8
74	256,0	172,0	247.290	1.100	112,1	990	100,9
80	355,0	238,5	285.507	1.270	129,5	1.143	116,5
82	380,0	255,3	303.492	1.350	137,6	1.215	123,9
84	395,0	265,4	319.229	1.420	144,8	1.278	130,3

other diameters on request

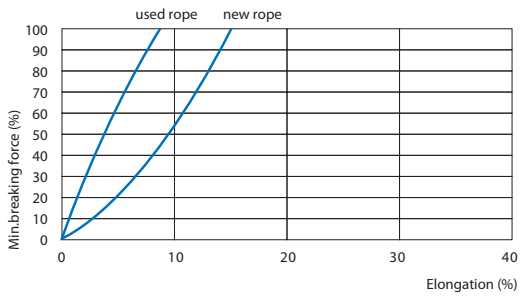
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

A3 splice

In case of the unique A3 splice, the splice and the eye have been fully integrated. The A3 splice handling advantages include:

- No doubling of the rope in the splice area, therefore no doubling of the splice weight
- No stiffness due to the splicing, the rope maintains its natural flexibility
- Neater spooling on the storage drum of the winch if the line has an eye at both ends

ELONGATION:



LANKHORST

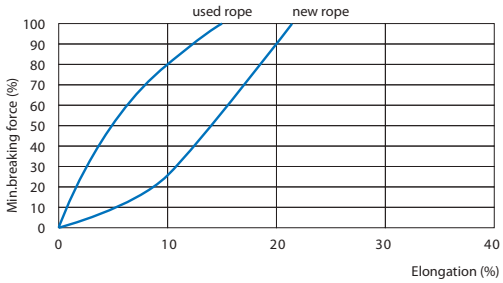
TIPTO®THREE

3 strand rope, made of the well known TIPTO® yarn, giving the rope added strength and lifetime.

nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
20	19,0	12,8	14.815	66	6,7	59	6,0
24	27,4	18,4	20.930	93	9,5	84	8,5

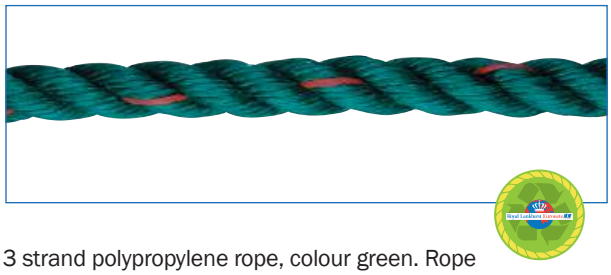
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:



SPECIFIC GRAVITY	0,93 (floating)
UV-RESISTANCE	very good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 135 °C
CONSTRUCTION	3 strand
COLOUR	yellow with orange marker yarn
WATER ABSORPTION	0,1%
ELONGATION	see graph for illustration purposes

GRIPOGREEN®



3 strand polypropylene rope, colour green. Rope made following EN and ISO standards, for all purposes.

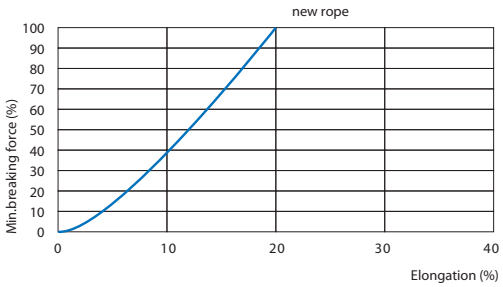
SPECIFIC GRAVITY	0,91 (floating)
UV-RESISTANCE	good
ABRASION RESISTANCE	reasonable
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 165 °C
CONSTRUCTION	3 strand
COLOUR	6 - 16 mm: salmon 18 - 40 mm: green with orange marker yarn
WATER ABSORPTION	0,1%
ELONGATION	see graph for illustration purposes

nominal diameter	weight		minimum breaking force ISO2307			spliced	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
6*	1,5	1,0	1.326	6	0,6	5	0,5
8*	2,7	1,8	2.338	10	1,1	9	1,0
10*	4,0	2,7	3.440	15	1,6	14	1,4
12*	5,7	3,8	4.878	22	2,2	20	2,0
14*	9,0	6,0	6.722	30	3,0	27	2,7
16*	11,5	7,7	8.318	37	3,8	33	3,4
18	14,8	9,9	10.611	47	4,8	42	4,3
20	18,0	12,1	12.792	57	5,8	51	5,2
22	21,8	14,6	15.467	69	7,0	62	6,3
24	26,0	17,5	17.917	80	8,1	72	7,3
28	35,5	23,9	23.605	105	10,7	95	9,6
32	46,0	30,9	29.675	132	13,5	119	12,1
36	58,5	39,3	37.318	166	16,9	149	15,2
40	72,0	48,4	45.187	201	20,5	181	18,4

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

* colour of rope is salmon

ELONGATION:



REPAIR SET

FOR JACKETED SYNTHETIC ROPES

contents of the repair set

10m of Dyneema® yarns, 2mm
25m of Tipto®lon seizing rope
1 x sewing needle, 20cm
1 x roll cloth tape, 50mm
4m of DC20 Dyneema® cloth
1 x small knife

LANKHORST

PROTECTION SLEEVES

If the rope is affected by rough surfaces or sharp edges, it can be easily damaged. Also in case of high abrasion resistance, high cut-resistance and high chemical resistance protection of the rope is needed. Lankhorst Ropes provide innovative high performance protection solutions to prevent loss of strength and maximize the life of the fibre rope. Please consult our sales departments for the optimal sleeve to use in your application.

STANDARD PES SLEEVE

TIPTO®WEB VELCRO SLEEVE

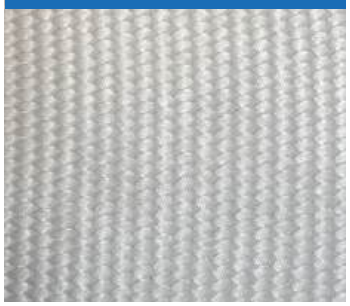
EUROWEB VELCRO SLEEVE

PES DEFENDER® SLEEVE

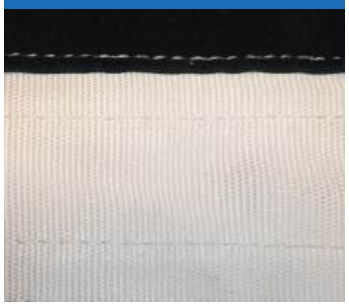
HMPE DEFENDER® SLEEVE

DEFENDER® SLEEVE

HMPE SLEEVE



HMPE VELCRO SLEEVE



ENHANCED EYE PROTECTION

The standard polyester hose eye protection suffers a lot from abrasion. For that reason Lankhorst has replaced the standard polyester protection with a polyester Defender® protection. This is a braided sleeve that can be easily adjusted to the circumferential size of the rope and offers a high abrasion resistance. The polyester Defender® protection is standard on our jacketed ropes.

CONNECTION GEAR

LANKO®NECT

The Lanko®nect is a synthetic fibre rope connection for the main tow line that replaces a conventional cow hitch, shackle or similar hardware, providing tug operators with a quicker and safer connection during towing.

A typical tow line configuration comprises a main towing line with a forerunner, and perhaps a stretcher, as well as a cow hitch or connector hardware. Labourious and time consuming to make up, there is also a risk of a break in the costly main line and forerunner from overpulling. The Lanko®nect enables a new approach to tow line assembly by removing the need for a cow hitch knot or hardware. It also allows tug operators to set a calculated breaking force for the tow line configuration.

With the Lanko®nect there is a minimal chance of damage to other components such as the towing bit and winch on board the tug boat or ship bollard and, of course, the other lines in the towing configuration. By allowing a variable calculated breaking force to be set for the tow line – the Lanko®nect can be either the strongest connection or a calculated weak link in a towing configuration.

THEORETICAL BREAKING FORCE

LANKO®NECT

description	theoretical breaking force		
	kN	t (metric)	lbs
2-loops 22mm	1.026	104,6	230.575
3-loops 22mm	1.539	156,9	345.863
2-loops 24mm	1.215	123,9	273.050
3-loops 24mm	1.822	185,7	409.462
2-loops 26mm	1.395	142,2	313.501
3-loops 26mm	2.093	213,4	470.364
2-loops 28mm	1.598	162,9	359.122
3-loops 28mm	2.397	244,3	538.683
2-loops 30mm	1.799	183,4	404.293
3-loops 30mm	2.698	275,0	606.327
2-loops 32mm	2.022	206,1	454.408
3-loops 32mm	3.034	309,3	681.837
2-loops 34mm	2.259	230,3	507.670
3-loops 34mm	3.389	345,5	761.617
2-loops 36mm	2.453	250,1	551.268
3-loops 36mm	3.680	375,1	827.014

Tolerance on theoretical breaking force is +/- 10%, based on D/d ratio 3.5:1.

Larger diameters on request

Lanko®nect benefits:

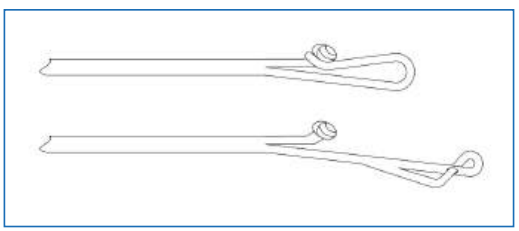
- quick and easy (dis)connection
- variable calculated breaking force
- cost savings
- connection to a wide range of synthetic ropes
- smoother line movement and easier handling because of the small knot

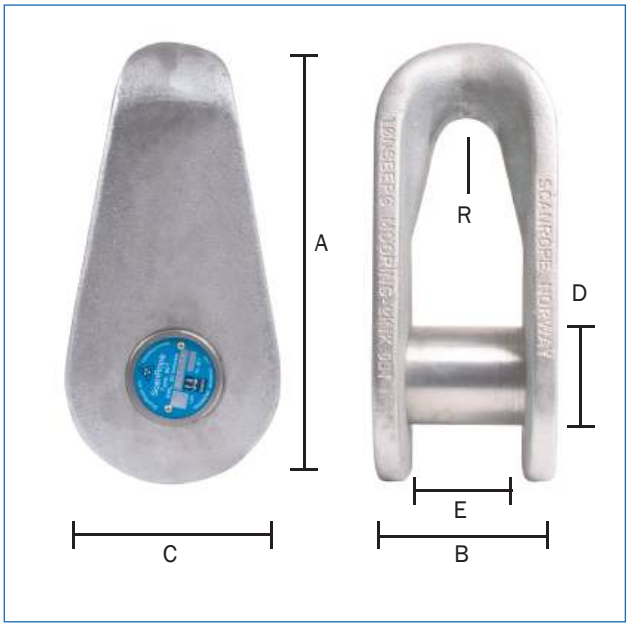
LANKO®LOOP

The Lanko®loop is a custom made synthetic fiber rope eye that can be repeatedly opened and closed as needed. It uses a simple knot and eye connection to easily and quickly complete the connection between, for instance, the main tow line and pennant or the main mooring line and stretcher.

Simple and Strong Connection
Ease of handling and the ability to connect lines safely and quickly are vital in many towing situations, especially in adverse weather conditions. Lanko®loop is an all-in-one connection, no additional gear is needed. Simplifying the connection to a single openable eye ensures a safer operation without compromising on the strength of the complete line configuration.

The Lanko®loop can replace a conventional cow hitch, shackle or other hardware. Its simplicity allows many different mooring and towing configurations, as well as innovative approaches to mooring. The Lanko®loop eye splice is made from HMPE (High Modulus Polyethylene) twelve-strand rope and can be connected to a wide range of synthetic ropes. Please consult Lankhorst Ropes to check the possible use of Lanko®loop in your specific application.





TØNSBERG MOORING LINKS

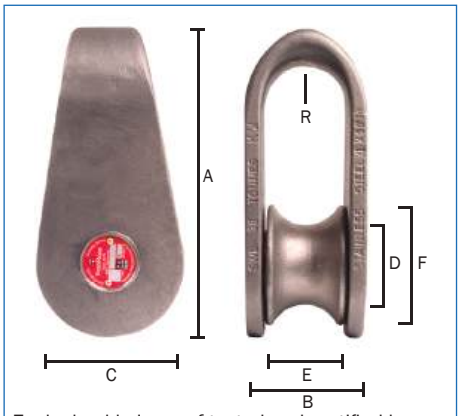
Galvanised steel mooring link of compact design typically utilized as connection between wire rope and fibre tail. Available in five sizes: 90 T, 120 T, 180 T, 250 T and 300 T

link	tail	dimensions - mm						breaking load	proof load / safe working load	weight
	mm	A	B	C	D	E	R	in tonnes	in tonnes	kg
90 T	56-68	285	115	136	65	75	22	90	30	11,2
120 T	72-80	324	142	150	75	90	28	120	40	16,9
180 T	88-112	350	184	160	85	120	30	180	60	25
250 T	88-112	363	196	174	85	120	35	250	83,3	29,1
300 T		447	216	190	110	146	36	300	100	52

MANDAL FAIRLEAD SHACKLES

Stainless steel mooring shackle with sleek shape designed to pass through fairleads. Available in two sizes 90 M and 120 M.

shackle	tail	dimensions - mm							breaking load - t	proof load - t	weight kg
	mm	A	B	C	D	E	F	R			
90 M	56-64	255	97	120	65	67	100	34	90	30	7,8
120 M	68-80	300	121	130	82	90	128	34	120	40	13,3



Each shackle is proof tested and certified by DNV. DNV type approval certificate No. S-4719.

LANKHORST

STEEL WIRE ROPES

HOISTING WIRE

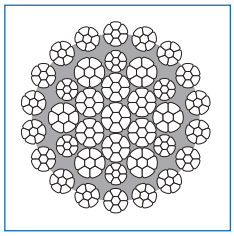
LANKO®PACK

nominal diameter	weight		minimum breaking force IS02408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
10	48,0	32,3	21.784	97	9,9	87	8,9
12	68,0	45,7	30.866	137	14,0	124	12,6
13	82,0	55,1	37.251	166	17	149	15,2
14	95,0	63,8	43.276	193	20	173	17,7
15	109,0	73,2	49.593	221	22,5	199	20,2
16	125,0	84,0	56.517	251	25,6	226	23,1
18	157,0	105,5	71.422	318	32,4	286	29,1
19	176,0	118,3	80.009	356	36,3	320	32,7
20	194,0	130,4	88.350	393	40,1	354	36,1
22	234,0	157,2	106.717	475	48,4	427	43,6
24	279,0	187,5	127.557	567	57,8	511	52,1
25	304,0	204,3	138.617	617	62,9	555	56,6
26	327,0	219,7	148.621	666	67,4	595	60,7
28	380,0	255,3	173.305	771	78,6	694	70,7
30	439,0	295,0	199.810	889	91	800	81,5
32	498,0	334,6	226.562	1.008	102,7	907	92,5
34	559,0	375,6	254.708	1.133	115,5	1.020	103,9
36	631,0	424,0	288.385	1.283	130,8	1.155	117,7
38	701,0	471,1	318.869	1.418	144,6	1.277	130,1
40	774,0	520,1	352.725	1.569	159,9	1.412	143,9

larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

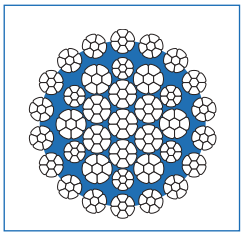
ROTATION RESISTANT



Compacted multi strand, non-rotating, hoisting wire rope. The construction ensures great flexibility, making this wire rope suitable for use on “European” types of cranes. The galvanization and internal/external lubrication provide protection against the environment. Our controlled production process and material selection, ensure the LANKO®PACK wire rope the highest quality level available today. The compacting gives this wire rope added breaking strength for those circumstances where it is needed. This wire rope can be used in combination with a swivel.

Optional

LANKO®LIFT COMPACTED



Multi strand, non-rotating, hoisting wire rope. During the LANKO®LIFT COMPACTED production process, the core is covered by an especially designed HDPE extruded cover. This special feature gives the wire rope stability, and avoids point-to-point contact between wires of the outer and inner strands, as well as preventing corrosion and wear of the core. When the high breaking strength is taken into account, this hoisting wire rope offers exceptional quality. This wire rope can be used in combination with a swivel.

nominal diameter	weight		minimum breaking force ISO2408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
16	124,5	83,7	53.819	239	24,4	215	22,0
18	156,2	105,0	68.005	303	30,8	272	27,8
19	175,7	118,1	76.188	339	34,5	305	31,1
20	193,0	129,7	84.123	374	38,1	337	34,3
22	234,2	157,4	101.614	452	46,1	407	41,5
24	279,0	187,5	121.464	540	55,1	486	49,6
25	304,3	204,5	131.985	587	59,8	528	53,9
26	327,0	219,7	142.574	634	64,6	571	58,2
28	380,2	255,5	165.010	734	74,8	661	67,3
30	439,1	295,1	190.256	846	86,3	762	77,6
32	497,7	334,4	215.727	960	97,8	864	88,0
34	558,6	375,4	242.636	1.079	110,0	971	99,0
36	631,4	424,3	274.604	1.222	124,5	1.099	112,1
38	701,4	471,3	304.032	1.352	137,9	1.217	124,1
40	774,4	520,4	336.089	1.495	152,4	1.346	137,2
42	851,9	572,5	369.856	1.645	167,7	1.481	150,9
44	940,0	631,7	408.837	1.819	185,4	1.637	166,8
46	1.037,4	697,1	448.651	1.996	203,4	1.796	183,1
48	1.132,0	760,7	491.050	2.184	222,7	1.966	200,4
50	1.204,2	809,2	524.187	2.332	237,7	2.099	213,9
52	1.322,6	888,7	572.993	2.549	259,8	2.294	233,8
54	1.412,8	949,4	613.998	2.731	278,4	2.458	250,6

other diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

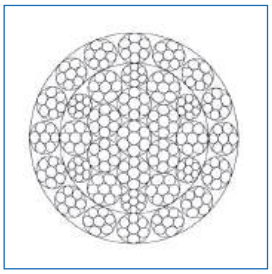
Galva-nized | Greased | 1960 N/mm² | RHLL | Compact | Plastic Coated Core | Swivel

Optional

RHRL | LHLL | LHRL

LANKO®FLEX

Multi strand, non-rotating, hoisting wire rope. The construction ensures great flexibility to make this wire rope suitable for use on “European” type of cranes. The galvanization and internal/external lubrication provide protection against the environment. Our controlled production process and the material selection give the LANKO®FLEX wire rope the highest quality level available today. This wire rope can used in combination with a swivel.



Galva-nized | Greased | RHLL | 1960 N/mm² | Swivel

Optional

RHRL | LHRL | LHLL

nominal diameter	weight		minimum breaking force ISO2408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
8	27,0	18,7	10.858	50,1	4,9	43	4,4
10*	42,0	28,2	17.130	76,2	7,8	69	7,0
12	61,0	41,0	23.470	104,4	11	94	9,6
13	75,6	50,8	27.427	122	12	110	11,2
14	85,9	57,7	33.272	148	15,1	133	13,6
15	98,5	66,2	38.218	170	17,3	153	15,6
16	111,0	74,6	43.388	193	19,7	174	17,7
18	143,0	96,1	54.853	244	24,9	220	22,4
19	157,0	105,5	61.148	272	27,7	245	25,0
20	174,0	116,9	67.892	302	30,8	272	27,7
22	213,0	143,1	82.055	365	37,2	329	33,5
24	254,0	170,7	97.792	435	44,3	392	39,9
26	299,0	200,9	114.653	510	52,0	459	46,8
28	343,0	230,5	133.087	592	60,3	533	54,3
30	394,0	264,8	152.645	679	69	611	62,3
32	445,0	299,0	173.777	773	78,8	696	70,9
34	505,0	339,3	196.033	872	88,9	785	80,0
36	573,0	385,0	219.863	978	99,7	880	89,7
38	634,0	426,0	245.042	1.090	111,1	981	100,0
40	696,0	467,7	272.019	1.210	123,3	1.089	111,0

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

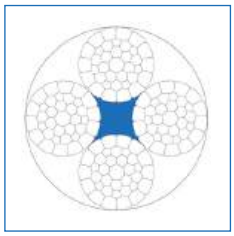
* tensile strength: 2060 N/mm2

www.lankhorstropes.com

LANKHORST

LANKO®FOUR COMPACTED

Some ship cranes are designed for a higher pay load; the LANKO®FOUR COMPACTED wire rope has a higher MBF to accommodate this and to maintain the required safety factors. Both LANKO®FOUR versions have a thick outer wire making the wire robust and impact resistant in the often harsh conditions of loading and discharging. This wire rope may not be used in combination with a swivel.

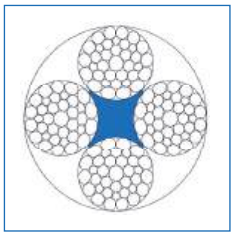


Galva-nized | Greased | 2060 N/mm² | RHRL | Compact | Fibre Core | No Swivel

nominal diameter	weight		minimum breaking force ISO2408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
30	395,0	265,4	176.925	787	80,2	708	72,2
32	439,0	295,0	201.204	895	91,2	806	82,1
34	499,0	335,3	228.181	1.015	103,5	914	93,1
36	551,0	370,3	254.708	1.133	115,5	1.020	103,9

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2408 and EN 12385-4. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

LANKO®FOUR



A 4 strand, non-rotating, hoisting wire rope for use on cranes, such as Fukushima and IHI. Galvanized and lubricated to provide long protection against inner abrasion and corrosion, LANKO®FOUR has proved its quality in the maritime industry for well over 20 years now and is now used by most major shipping companies worldwide. This wire rope may not be used in combination with a swivel.

nominal diameter	weight		minimum breaking force ISO2408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
12,6*	66,0	44,4	23.155	103	10,5	93	9,4
18	127,0	85,3	50.582	225	22,9	203	20,6
20	150,0	100,8	62.946	280	28,5	252	25,7
22	188,0	126,3	77.559	345	35,2	311	31,7
24	226,0	151,9	89.924	400	40,8	360	36,7
26	256,0	172,0	105.660	470	47,9	423	43,1
28	304,0	234,5	124.769	555	56,6	500	50,9
30**	349,0	266,8	142.754	635	64,7	572	58,3
32**	397,0	288,3	162.986	725	73,9	653	66,5
34**	429,0	334,0	180.971	805	82,1	725	73,9
36**	497,0	373,6	202.328	900	91,7	810	82,6
38**	556,0	373,6	227.057	1.010	103,0	909	92,7

larger diameters on request
* tensile strength: 1770 N/mm²
* * dual tensile strength: 1960 / 2160 N/mm³

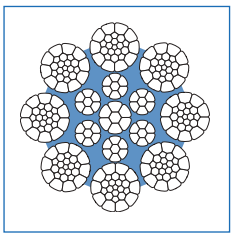
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2408 and EN 12385-4. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

Galva-nized | Greased | 1960 N/mm² | RHRL | Fibre Core | No Swivel

LUFFING WIRE

NON-ROTATION RESISTANT

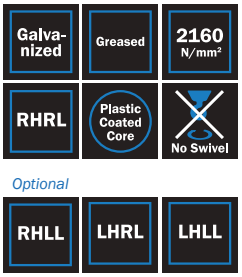
LANKO®TOP COMPACTED



nominal diameter	weight		minimum breaking force ISO2408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
12	64,9	43,6	29.900	133	13,6	120	12,2
13	76,9	51,7	35.070	156	15,9	140	14,3
14	90,3	60,7	42.039	187	19	168	17,2
15	102,6	68,9	48.109	214	22	193	19,6
16	116,0	77,9	54.404	242	24,7	218	22,2
18	149,4	100,4	69.016	307	31,3	276	28,2
19	164,1	110,3	76.885	342	34,9	308	31,4
20	183,6	123,4	85.203	379	38,6	341	34,8
22	221,5	148,8	103.187	459	46,8	413	42,1
24	263,5	177,1	124.994	556	56,7	500	51,0
26	310,6	208,7	147.250	655	66,8	590	60,1
28	357,1	240,0	168.157	748	76,2	673	68,6
30	411,6	276,6	194.235	864	88,1	778	79,3
32	467,2	313,9	217.615	968	98,7	871	88,8
34	529,4	355,7	245.267	1.091	111	982	100,1
36	584,2	392,6	273.592	1.217	124,1	1.095	111,7
38	657,9	442,1	299.445	1.332	135,8	1.199	122,2
40	729,8	490,4	332.492	1.479	150,8	1.331	135,7
42	797,8	536,1	362.617	1.613	164,4	1.452	148,0
44	900,1	604,8	409.152	1.820	185,5	1.638	167,0
46	978,0	657,2	443.998	1.975	201,3	1.778	181,2
48	1.061,0	713,0	484.463	2.155	219,7	1.940	197,7

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2408 and EN 12385-4. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

An 8 strand compacted luffing wire rope. During the LANKO®TOP COMPACTED production process, the core is covered by an especially designed HDPE extruded cover. This special feature gives the wire rope stability, and avoids point-to-point contact between wires of the outer and inner strands, as well as preventing corrosion and wear of the core. Compacting the wire rope provides greater strength, due to higher steel content, and better abrasion resistance, thanks to the larger contact area between wire rope and sheave. This wire rope may not be used in combination with a swivel.



Optional

Construction:

12 - 14 mm	8xK17
15 - 28 mm	8xK26
30 - 42 mm	8xK31
44 - 48 mm	8xK36

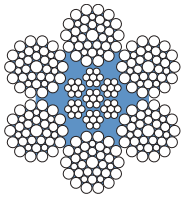
LANKHORST

GENERAL PURPOSE

NON-ROTATION RESISTANT

6X36WS + IWRC

Standard wire rope with higher breaking strength. Used for all kinds of purposes, i.e. luffing, mooring, towing, anchoring and coupling push barges. The independent wire rope core provides more strength and stability to the wire rope compared to a fibre core. Construction is according to ISO standard. This wire rope may not be used in combination with a swivel.



Galva-nized | Greased | 1960 N/mm² | RHRL | No Swivel

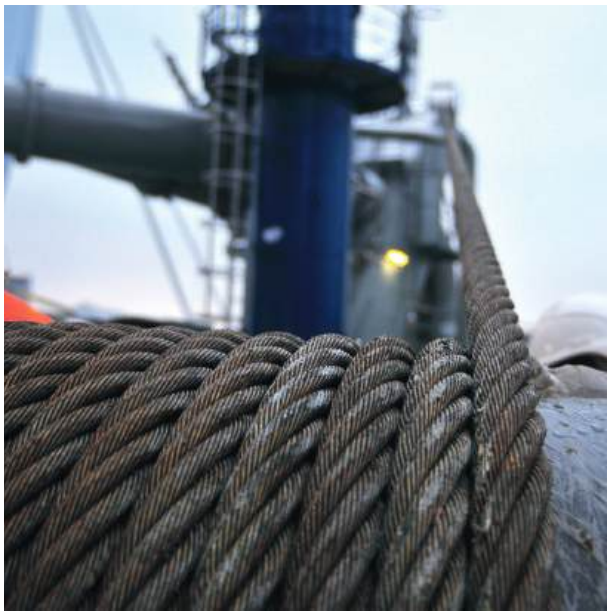
Optional

RHLL | LHRL | LHLL | Bio degradable lubricant | Compact

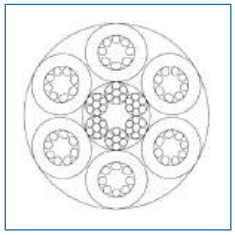
nominal diameter	weight		minimum breaking force IS02408			ferrule-secured	
mm	kg/100m	lb/100ft	lbs	kN	t(metric)	kN	t(metric)
8	26,2	17,6	10.049	44,7	4,6	40	4,1
9	33,1	22,2	12.702	56,5	5,8	51	5,2
10	40,9	27,5	15.692	69,8	7	63	6,4
11	49,5	33,3	18.974	84,4	9	76	7,7
12	58,9	39,6	22.481	100	10,2	90	9,2
13	69,1	46,4	26.527	118	12,0	106	10,8
14	80,2	53,9	30.799	137	14,0	123	12,6
15	92,1	61,9	35.295	157	16,0	141	14,4
16	105,0	70,6	40.241	179	18,2	161	16,4
18	133,0	89,4	50.807	226	23,0	203	20,7
19	148,0	99,5	56.652	252	25,7	227	23,1
20	164,0	110,2	62.722	279	28,4	251	25,6
22	198,0	133,1	75.985	338	34,5	304	31,0
24	236,0	158,6	90.373	402	41,0	362	36,9
26	276,0	185,5	106.110	472	48	425	43,3
28	321,0	215,7	122.970	547	55,8	492	50,2
30	368,0	247,3	141.180	628	64,0	565	57,6
32	419,0	281,6	160.738	715	72,9	644	65,6
34	472,0	317,2	181.421	807	82,3	726	74,0
36	530,0	356,1	203.227	904	92,2	814	82,9
38	590,0	396,5	226.607	1.008	102,8	907	92,5
40	654,0	439,5	251.786	1.120	114,2	1.008	102,8
42	721,0	484,5	276.515	1.230	125,4	1.107	112,8
44	792,0	532,2	303.492	1.350	137,6	1.215	123,9
46	866,0	581,9	332.717	1.480	150,9	1.332	135,8
48	942,0	633,0	361.942	1.610	164,1	1.449	147,7
50	1.020,0	685,4	391.167	1.740	177,4	1.566	159,6
51	1.060,0	712,3	409.152	1.820	185,5	1.638	167,0
52	1.110,0	745,9	424.889	1.890	192,7	1.701	173,4
54	1.190,0	799,6	458.610	2.035	207,4	1.832	186,7
56	1.280,0	860,1	492.331	2.190	223,2	1.971	200,9
58	1.380,0	927,3	528.301	2.350	240	2.115	215,6
60	1.470,0	987,8	564.270	2.510	255,9	2.259	230,3
62	1.570,0	1.055,0	602.488	2.680	273,2	2.412	245,9
64	1.680,0	1.128,9	642.953	2.860	291,5	2.574	262,4

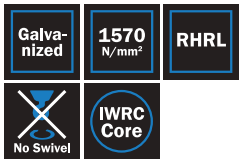
larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2408 and EN 12385-4. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.



TIPTOP® COMBI





nominal diameter	weight		minimum breaking force ISO2408		
mm	kg/100m	lb/100ft	lbs	kN	t(metric)
18	46,0	30,9	16.771	74,6	7,6
20	58,0	39,0	21.379	95,1	9,7
22	87,0	58,5	31.248	139	14,2
24*	104,0	69,9	44.512	203	20,7
28	133,0	89,4	47.659	212	21,6
30	154,0	103,5	55.078	245	25,0
32	178,0	119,6	64.295	286	29,2

Available in several standard lengths

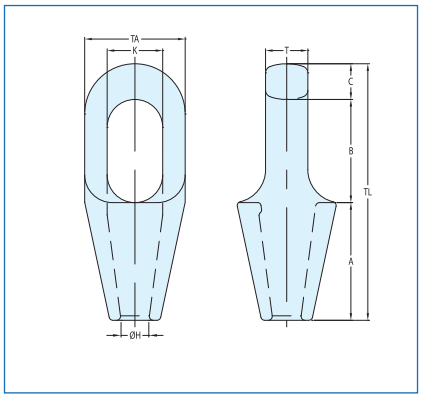
* tensile strength: 1960 N/mm²

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2408 and EN 12385-4. The MBF refers to the breaking strength of the rope without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

6 strand wire/fibre combination rope with independent steel core and white marking yarn. The galvanized strand wires are covered by blue polypropylene yarns. Mainly used as tanker mooring rope. This wire rope may not be used in combination with a swivel.

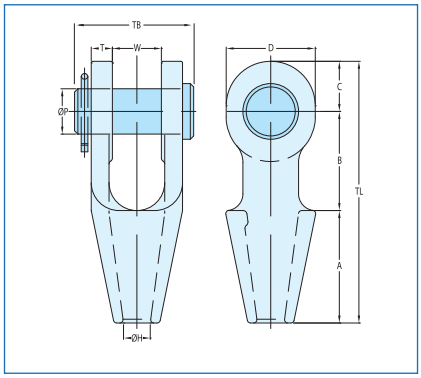
RELATED ACCESSORIES

CLOSED SPELTER SOCKETS



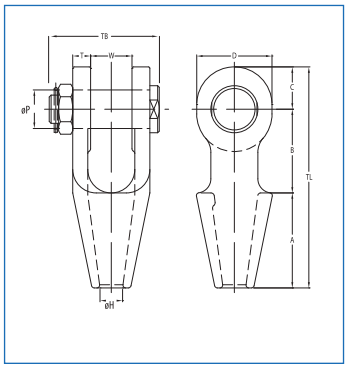
Model number	MBL t(metric)	for wire Ø mm	for wire Ø inch	dimensions (mm) bow (T)	dimensions (mm) inside width (K)
CSS 298	20	11-13	7/16 - 1/2	23	30
CSS 299	25	14-16	9/16 - 5/8	26	36
CSS 200	40	18-19	3/4	32	42
CSS 201	55	20-22	7/8	38	47
CSS 204	75	23-26	1	44	57
CSS 207	90	27-30	1 1/8	51	65
CSS 212	125	31-36	1 1/4 - 1 3/8	57	71
CSS 215	150	37-39	1 1/2	63	81
CSS 217	170	40-42	1 5/8	70	83
CSS 219	225	43-48	1 3/4 - 1 7/8	76	93
CSS 222	280	49-54	2 - 2 1/8	82	100

OPEN SPELTER SOCKET SWITH BOLT AND NUT



Model number	MBL t(metric)	for wire Ø mm	for wire Ø inch	dimensions (mm) ØP	dimensions (mm) inside width (W)
OSS 198 B	20	11-13	7/16 - 1/2	25	25
OSS 199 B	25	14-16	9/16 - 5/8	30	32
OSS 100 B	40	18-19	3/4	35	38
OSS 104 B	55	20-22	7/8	41	44
OSS 108 B	75	23-26	1	51	51
OSS 111 B	90	27-30	1 1/8	57	57
OSS 115 B	125	31-36	1 1/4 - 1 3/8	63	63
OSS 118 B	150	37-39	1 1/2	70	76
OSS 120 B	170	40-42	1 5/8	76	76
OSS 125 B	225	43-48	1 3/4 - 1 7/8	89	89
OSS 128 B	280	49-54	2 - 2 1/8	95	101

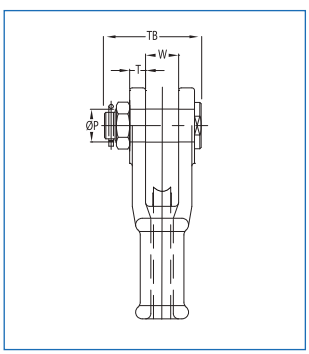
OPEN SPELTER SOCKETS ACCORDING TO JIS F-3432



Model number*	MBL t(metric)	for wire Ø mm	for wire Ø inch	dimensions (mm) ØP	dimensions (mm) inside width (W)
OSS 100-J20-B30	28	18-19	3/4	30	38
OSS 104-J22-B34	35	20-22,4	7/8	34	44
OSS 108-J24-B37	41	23-26	1	37	51
OSS 108-J25-B40	52	23-26	1	40	51
OSS 111-J28-B43	56	27-30	1 1/8	43	57
OSS 111-J30-B46	69	27-30	1 1/8	46	57
OSS 115-J32-B48	69	31-36	1 1/4 - 1 3/8	48	63
OSS 115-J34-B52	88	31-36	1 1/4 - 1 3/8	52	63
OSS 118-J36-B56	94	35,5-39	1 1/2	56	76

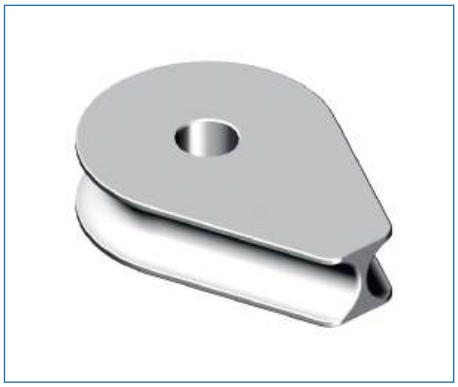
Dimensions as mentioned in table are in correspondence with JIS F-3432. Spelter sockets meet the performance requirements of the JIS.

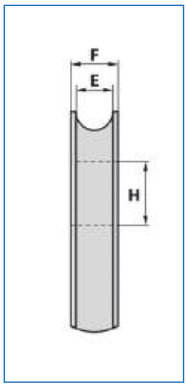
OPEN WEDGE SOCKETS WITH BOLT AND NUT



Model number	MBL t(metric)	for wire Ø mm	for wire Ø inch	dimensions (mm) ØP	dimensions (mm) inside width (W)
OWS 0.5 B	12	9-10	3/8	21	21
OWS 1 B	20	11-13	1/2	25	25
OWS 2 B	25	14-16	5/8	30	31
OWS 3 B	40	18-19	3/4	35	38
OWS 4 B	55	20-22	7/8	41	44
OWS 5 B	75	23-26	1	51	51
OWS 6 B	90	27-29	1 1/8	57	57
OWS 7 B	110	30-32	1 1/4	63	63

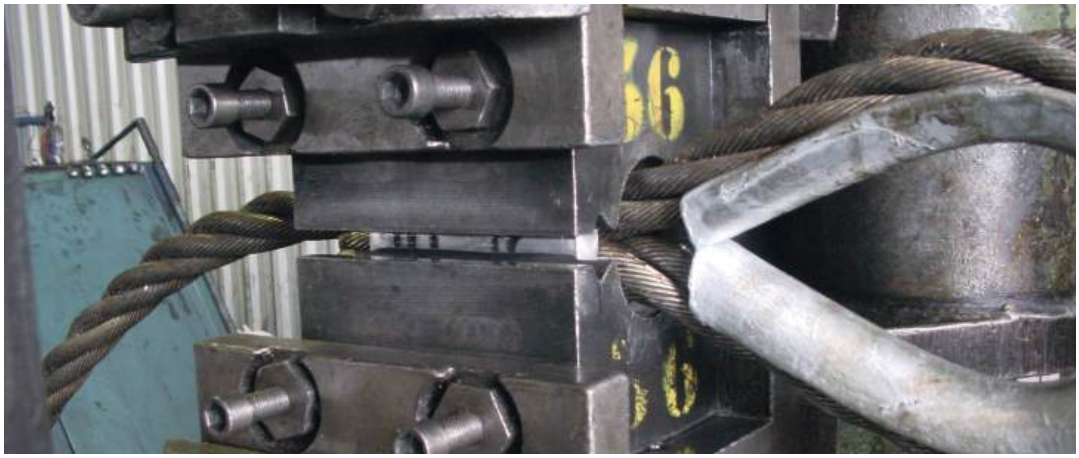
SOLID THIMBLES TYPE K5





length		for wire Ø	dimensions (mm)	
inch	mm	inch	thickness (F)	hole Ø (H)
2	7-8	9/32 - 5/16	15	14
2 1/2	9-10	11/32 - 3/8	18	18
3	11-12	7/16 -15/32	20	21
3 1/2	13-15	1/2 - 19/32	24	25
4	16-18	5/8 - 23/32	26	30 / 40
5	19-21	3/4 - 13/16	30	30 / 40 / 45
6	22-24	7/8 - 15/16	33	30 / 40 / 45 / 55
7	25-30	1 - 1 3/16	40	30 / 40 / 52 / 60
8	31-33	1 7/32 - 1 5/16	43	30 / 42 / 55 / 70
9	34-37	1 11/32 - 1 7/16	47	50 / 70 / 90 / 100
10	38-40	1 1/2 - 1 9/16	57	50 / 70 / 100
12	41-51	1 5/8 - 2	69	60 / 80 / 105
14	52-57	2 1/16 - 2 1/4	80	75 / 110
17	58-64	2 9/32 - 2 1/2	92	85 / 122
24	65-83	2 9/16 - 3 1/4	114	130

other sizes on request



SOLID THIMBLES
ACCORDING TO DIN 3091

for wire Ø		dimensions (mm)	
mm	inch	thickness	hole Ø (H)
8	5/16	15	17-20
10	3/8	17,5	21-25
12	1/2	20	24-30
14	9/16	23,5	29-35
16	5/8	26	32-40
18	3/4	28,5	35-45
20	13/16	31	40-50
22	7/8	33,5	43-55
24	1	36	46-60
26	1 1/16	39,5	49-65
28	1 1/8	42	52-70
32	1 5/16	47	58-80
36	1 1/2	53	65-90
40	1 5/8	58	71-100
44	1 11/16	63	76-110

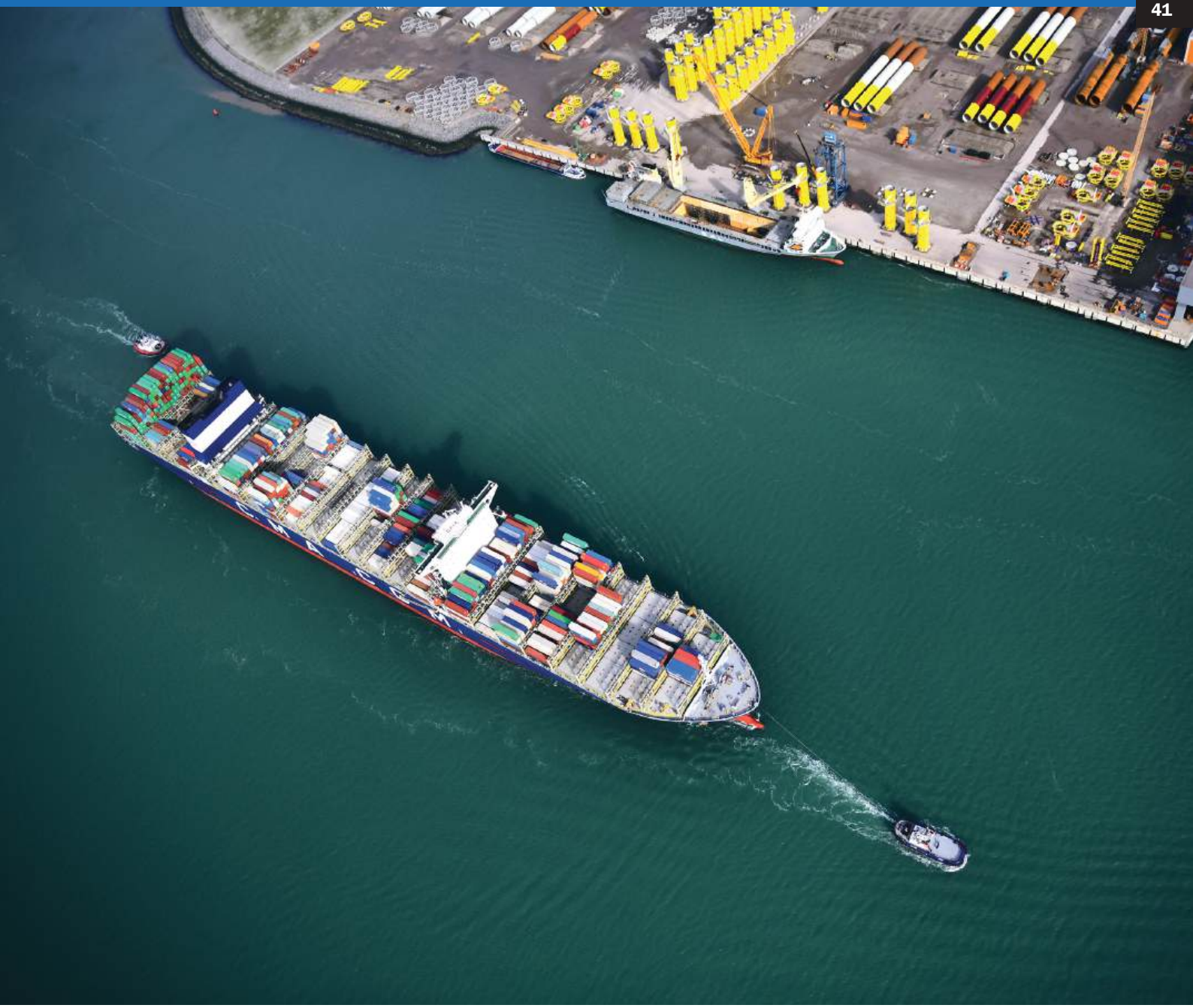
other sizes available on request

SOLID THIMBLES
ACCORDING TO JIS 2802

	for wire Ø	dimensions (mm)		size K5
no. size	inch	thickness	hole Ø (H)	inch
24	20	29	42	5
26	22,4	31	42	6
26	22,4	31	45	6
28	25	33	50	6
30	26	35	50	7
32	28	38	50	7
34	32	40	55	8
36	34	42	55	8
45	40	52	75	10

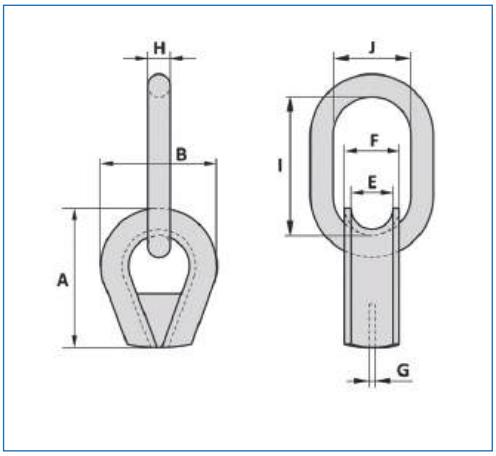
other sizes available on request

Dimensions as mentioned in table are in correspondence with JIS 2802. Solid thimbles meet the performance requirements of the JIS.



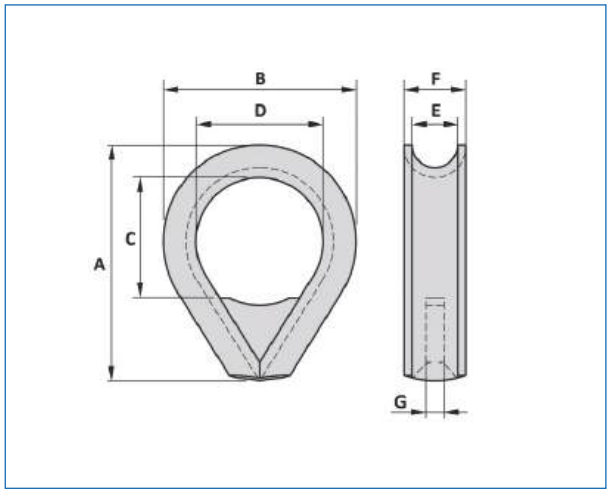
THIMBLE WITH LINK
TYPE K10

MBL link	A	E	H	H	I	J	Weight
ton	mm	mm	mm	mm	mm	mm	kg
104	385	100	45	45	340	180	35
144	385	100	51	51	350	190	39
188	385	100	57	57	400	200	46
232	385	100	63	63	430	220	54
188	470	115	57	57	400	200	56
232	470	115	63	63	430	220	64
336	470	115	72	72	460	250	77
420	470	115	80	80	450	250	88
232	560	135	63	63	430	220	78
336	560	135	72	72	460	250	91
420	560	135	80	80	450	250	102
336	560	155	72	72	460	250	93
420	560	155	80	80	450	250	104
524	560	155	90	90	460	300	125
420	600	180	80	80	450	250	116
524	600	180	90	90	460	300	137
628	600	180	100	100	500	300	161
524	620	205	90	90	460	300	148
628	620	205	100	100	500	300	172
1000	620	205	115	115	600	400	234



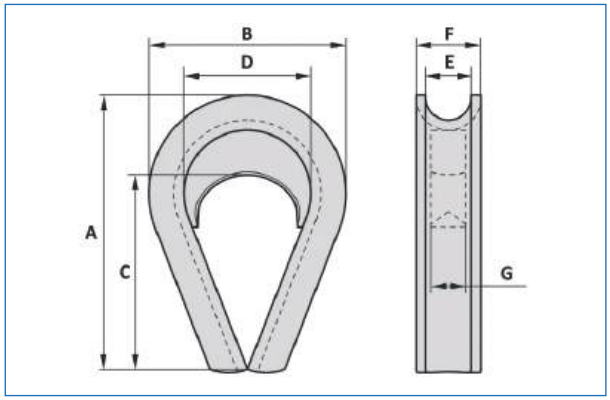
THIMBLE REINFORCED
TYPE K2-B

A inch	C mm	D mm	E mm	F mm	Weight kg
4	50	50	17	22	40
4 1/2	50	53	19	25	50
5	60	60	21	29	80
5 1/2	60	65	23	33	90
6	70	70	25	34	100
7	75	80	30	38	170
8	80	100	33	44	250
9	110	115	38	49	400
10	120	120	41	52	450
11	120	130	46	60	700
12	140	145	52	65	830
14	155	155	60	72	1250
17	200	190	70	84	1800
19	235	230	81	119	3050
22	240	255	92	130	4050
24	275	280	105	145	4950
26	295	285	120	155	5400

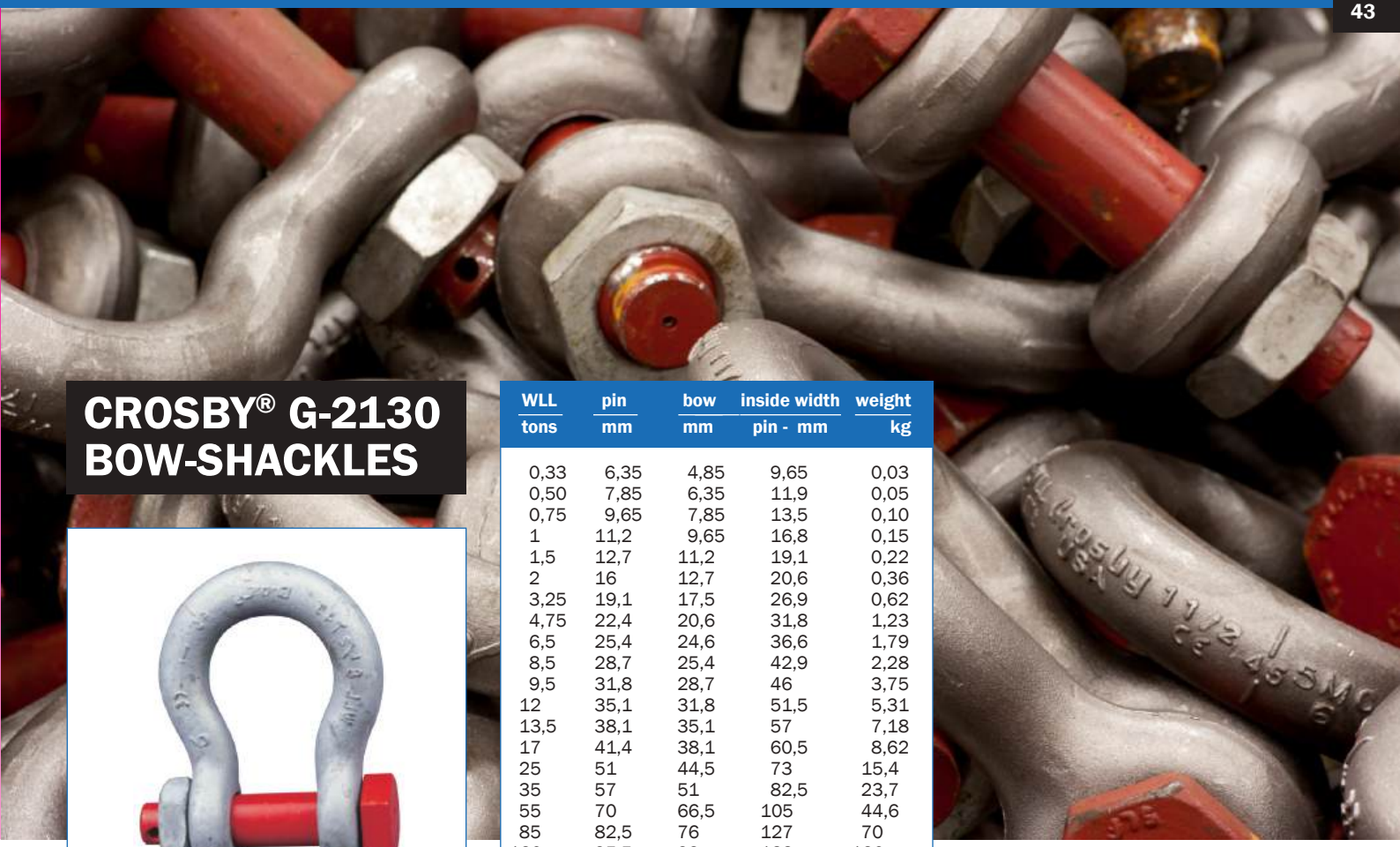


HIGH STRENGTH THIMBLES
TYPE K2-C

WLL ton	MBL ton	Rope mm	A inch	C mm	D mm	E mm	F mm	Weight kg
25	150	35 - 38	10	180	122	41	52	5.5
35	210	39 - 42	11	190	135	46	60	9.1
42,5	255	44 - 48	12	210	140	52	65	9.2
55	330	52 - 56	14	250	155	60	72	11
85	510	60 - 64	17	315	180	70	84	23
120	600	68 - 76	19	350	245	80	119	37
150	750	80 - 89	22	390	255	92	130	50
200	1000	92 - 102	24	440	280	105	145	65
250	1250	104 - 114	26	470	285	120	155	76



Suitable for HMPE rope and wire rope
Designed to fit shackle bow and shackle pin
Also available with retaining bands on request



CROSBY® G-2130 BOW-SHACKLES

WLL tons	pin mm	bow mm	inside width pin - mm	weight kg
0,33	6,35	4,85	9,65	0,03
0,50	7,85	6,35	11,9	0,05
0,75	9,65	7,85	13,5	0,10
1	11,2	9,65	16,8	0,15
1,5	12,7	11,2	19,1	0,22
2	16	12,7	20,6	0,36
3,25	19,1	17,5	26,9	0,62
4,75	22,4	20,6	31,8	1,23
6,5	25,4	24,6	36,6	1,79
8,5	28,7	25,4	42,9	2,28
9,5	31,8	28,7	46	3,75
12	35,1	31,8	51,5	5,31
13,5	38,1	35,1	57	7,18
17	41,4	38,1	60,5	8,62
25	51	44,5	73	15,4
35	57	51	82,5	23,7
55	70	66,5	105	44,6
85	82,5	76	127	70
120	95,5	92	133	120
150	108	104	140	153

TIPTOP® FENDERS

The TIPTOP® fender is produced in our own Lankhorst Recycling factory in Sneek and made from recyclable, high-quality plastic material. Due to this composition, the TIPTOP® fenders offer many advantages on board. They have been used with great success in the inland shipping for years. Furthermore, this product also contributes to a cleaner environment and fits perfectly with the sustainable living environment of today, because the TIPTOP® fender is made from recycled material, is not impregnated and is recyclable.

Advantages of TIPTOP® fender:
- optimal protection when mooring
- maximum damping
- shatterproof
- easy to handle
- longer lifespan
- no pinching of the rope
- special holes for the rope

NEW: special holes for the rope
On request of the inland shipping market, the so-called flaps have been replaced by holes through which the rope can be threaded to attach the fender. This adjustment ensures that the TIPTOP® fenders on board are easy to handle and the special holes prevent the rope from getting pinched and breaking. These holes are only applicable on the large models.

type	weight kg	dimension cm
small model	6	110 x 10 x 10
large model	17	140 x 15,5 x 15,5

THE VITAL CONNECTION

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