LANKHORST

SYNTHETIC ROPE SOLUTIONS

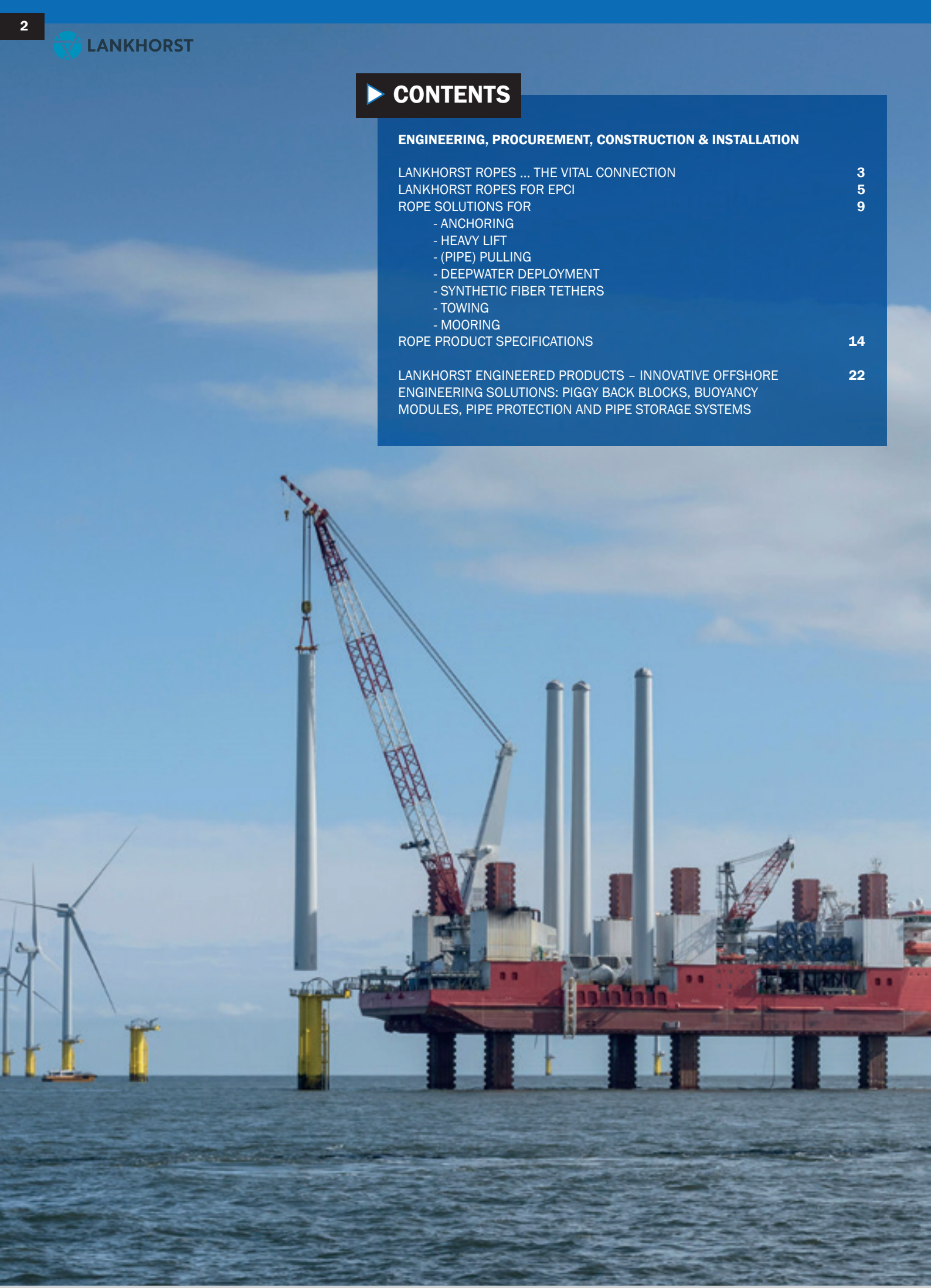
MA MARITIME

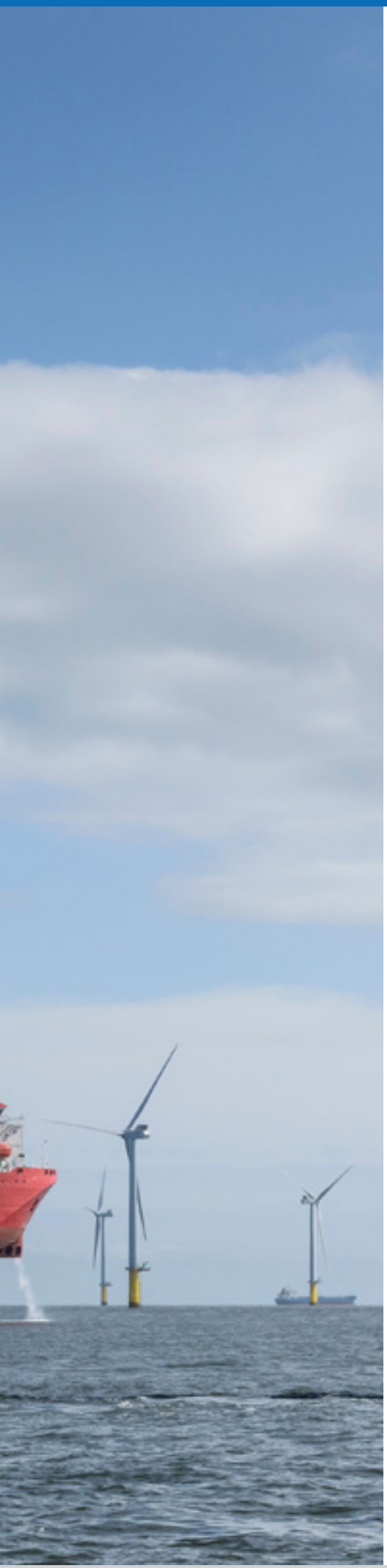
EPCI CONTRACTORS.

WIRECO
A World Ahead

CONTENTS

ENGINEERING, PROCUREMENT, CONSTRUCTION & INSTALLATION





LANKHORST ROPES... THE VITAL CONNECTION

Lankhorst Ropes is a world leading supplier of synthetic fiber 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 WorldGroup.

Founded in 1803, Lankhorst Ropes has over 215 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 lifting 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. All our 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. 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, snap back protection and lower weight in their ropes, making them easier and safer to use.

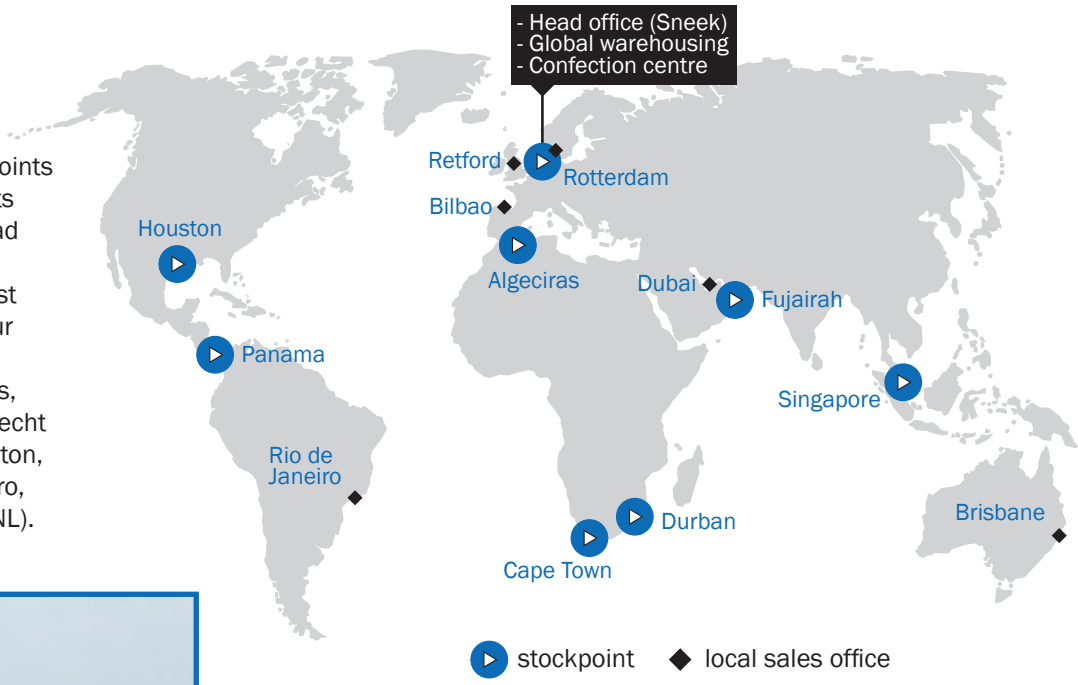
INNOVATION AND HIGH PERFORMANCE

Lankhorst Ropes has a reputation for excellence in product innovation. Multi-award winning rope innovations, for example, the TIPTO® WINCHLINE anti-snap back feature received the 'Innovation in Ship Operations' award from SEATRADE in 2013, have led the industry in rope handing 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 and local sales offices includes Algeciras, Bilbao, Brisbane, Cape Town, Dordrecht (NL), Dubai, Durban, Fujairah, Houston, Panama, Retford (UK), Rio de Janeiro, Rotterdam, Singapore and Sneek (NL).



PARTNER AND PROBLEM SOLVER

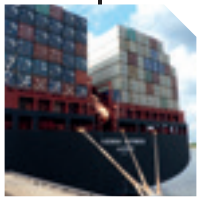
Lankhorst Ropes develops, manufactures and supplies a broad range of ropes directly from stock. Besides fast supply of standard items and rope configurations, Lankhorst Ropes has a dedicated confectioning centre to meet the needs of different market segment demands for specialized and tailor made solutions.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

SUSTAINABLE AND ENVIRONMENTALLY FRIENDLY

Lankhorst Ropes is committed to sustainability in its products and operations, conserving energy and natural resources wherever possible. We introduced the maritime rope industry's first recycling scheme for retired ropes, for use in moulded public furniture, poles and planks, for example. It is an integral part of our sustainability policy and helps many of our partners enhance their environmental policies.

MARITIME

- CR Cranes & OEM
- MI Mining
- EP Engineered products
- WI Wire
- OG Oil & Gas
- YA Yarns
- FI Fishing


DRY CARGO


WET CARGO

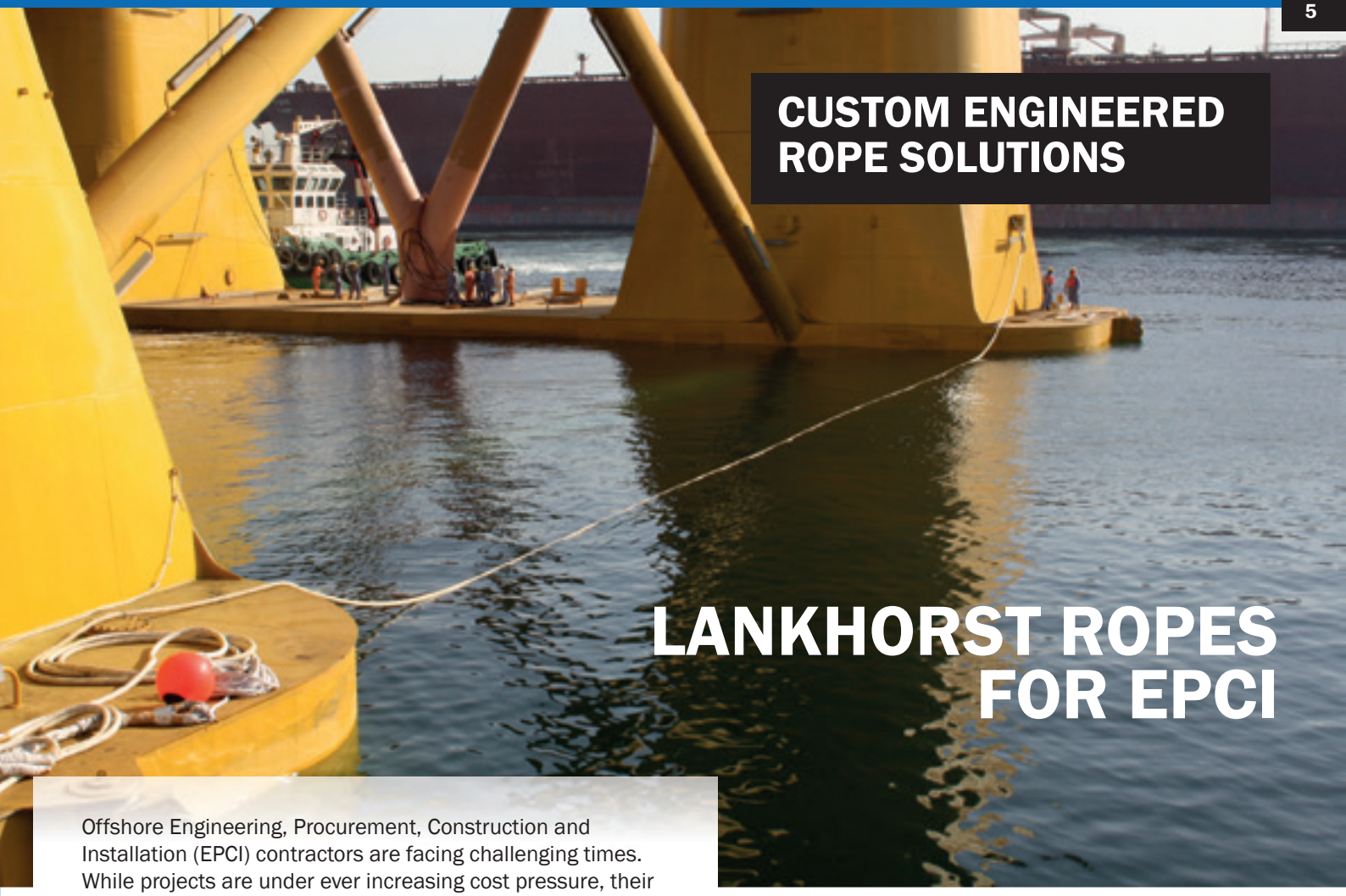

TUG & TOWING


CRUISE


DREDGING


INLAND SHIPPING


EPCI



CUSTOM ENGINEERED ROPE SOLUTIONS

LANKHORST ROPES FOR EPCI

Offshore Engineering, Procurement, Construction and Installation (EPCI) contractors are facing challenging times. While projects are under ever increasing cost pressure, their complexity and risks remain the same. Lankhorst Ropes offers EPCI contractors the experience, rope engineering and manufacturing capability and testing and technical resources to handle the most demanding project safely and cost effectively.

Lankhorst Ropes has unparalleled experience in offshore projects. First in the extremes of the North Sea, and then the deep waters of the Gulf of Mexico, Asia, West Africa and Australia. In the Middle East, the concentrated, complex network of production islands and pipelines presents opportunities for both optimisation and the inevitable decommissioning of end-of-life fields and pipelines. Lankhorst Ropes is able to provide the ropes and slings needed when mobilising EPCI capital assets to complete the job efficiently.

For EPCI contractors, Lankhorst Ropes is able to:

- De-risk the offshore project, providing project specific lifting, pipe pulling or mooring ropes;
- Offer expert and knowledgeable input for Front End Engineering and Design (FEED) studies, and throughout the project;
- Bring a global manufacturing capability - no rope project is too large for Lankhorst;
- Draw on world leading R&D and test resources to develop innovative rope engineering solutions to meet project requirements;
- Deliver integrated, global, supply ensuring ropes are available when and where needed.

Global industries need global suppliers who are able to adapt to changing project environments. Lankhorst Ropes brings this experience and more to develop the leanest, yet most effective solution to ensure the job is “right the first time, every time.”

STEP 1 ROPE SELECTION

Making the correct rope selection is vital. The cost effectiveness and safety of offshore installation operations are in part, depending on selecting the correct rope. Lankhorst takes a holistic approach to rope selection when meeting project requirements.

Analysis of the task to be executed: we will join go through all details of the project to determine how we can connect cost effectively and safely. starting from the winch, hook or bollard, and calculated winch capacity, to analysis of D/d ratios and e.g. the expected elongation.

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

- Elongation
- Rope flexibility
- Anti-twist
- Stiffness
- Break load
- Chafe resistance
- Floatation
- Service life expectations
- Environmental conditions
- International standards.

STEP 2 ASSESSING THE WORKING ENVIRONMENT

A Lankhorst Ropes engineer can provide on-site support with a pre-inspection of your asset and make an overview of refurbishment jobs to be done for successful operation later.

STEP 3 ROPE INSTALLATION AND CREW TRAINING

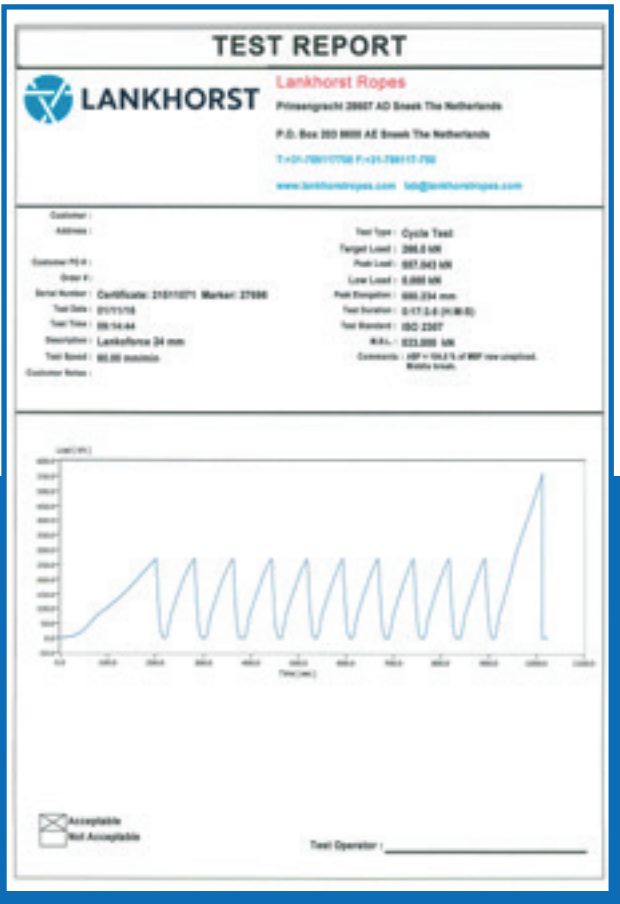
Lankhorst Ropes is committed to equipping crew with the knowledge and skills needed to ensure safe use of fibre ropes and maximum service life. Specifically, we provide:

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

STEP 4 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 can make periodic visits to the vessel in port to undertake:

- Hardware inspection.
- Full length rope inspection.
- Update crew training.
- Produce an inspection report.


TEST REPORT

LANKHORST

Lankhorst Ropes

STEP 5 RESIDUAL STRENGTH TESTING

Lankhorst Ropes can provide a continuous residual strength testing program in order to assist in determining the best moment to change the rope end-to-end in order to ensure the best economical life time and to optimize safety on board. We believe this should be based on the actual utilization. This way you will have objective feedback on the rope's actual strength status.

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.

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.

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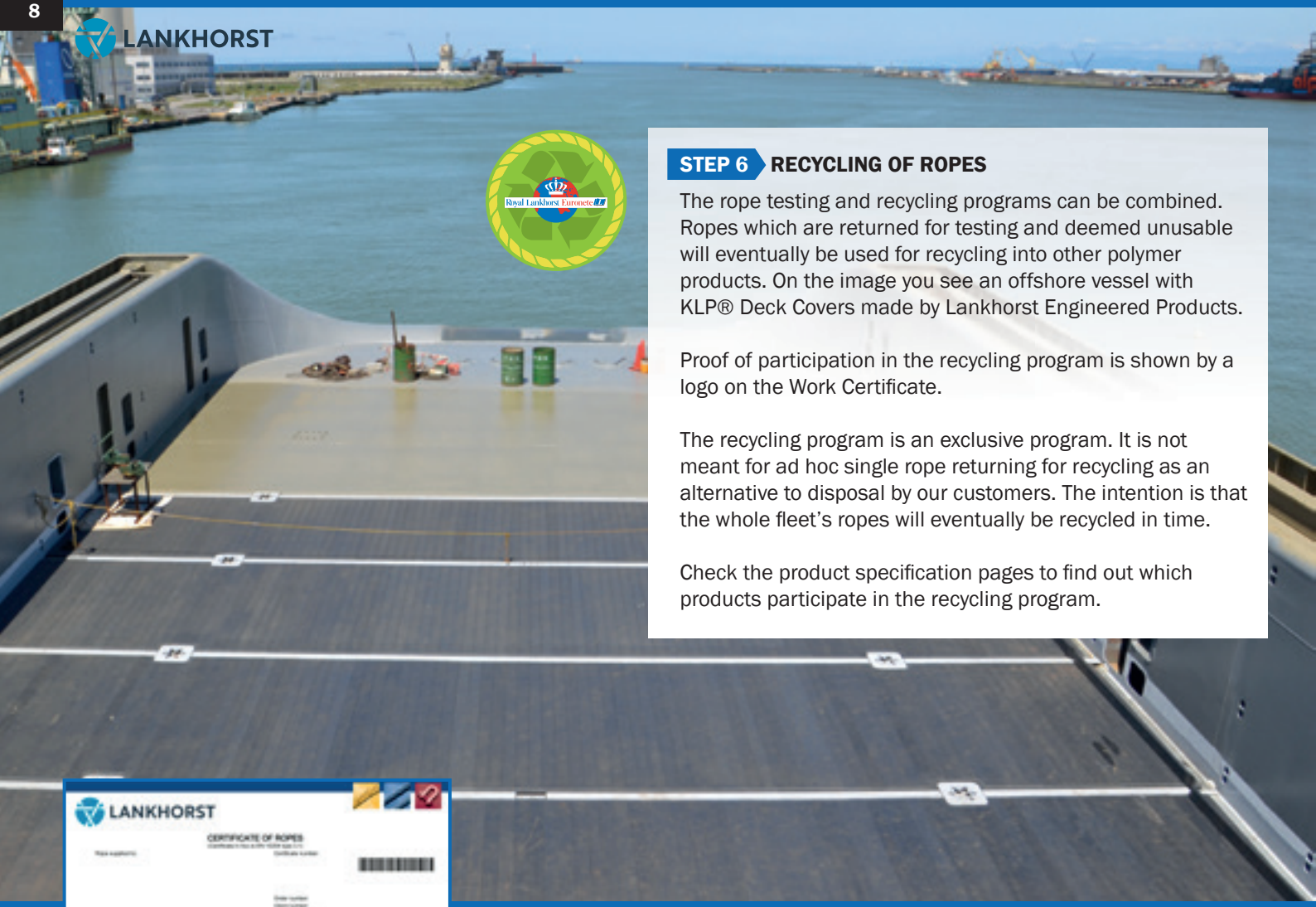


STEP 6 RECYCLING OF ROPES

The rope testing and recycling programs can be combined. Ropes which are returned for testing and deemed unusable will eventually be used for recycling into other polymer products. On the image you see an offshore vessel with KLP® Deck Covers made by Lankhorst Engineered Products.

Proof of participation in the recycling program is shown by a logo on the Work Certificate.

The recycling program is an exclusive program. 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 eventually be recycled in time.

Check the product specification pages to find out which products participate in the recycling program.

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 ACCESS TO ROPE CERTIFICATES

Lankhorst Ropes is able to offer 24/7 access to fibre rope and steel wire rope certificates, regardless of the time zone.

Certificates may be mislaid during filing or transportation but can be required immediately to trace and identify ropes. By providing direct access to rope certificates, Lankhorst customers will be able to instantaneously check all of their ropes' details including construction, diameter, length, minimum breaking load and end termination.

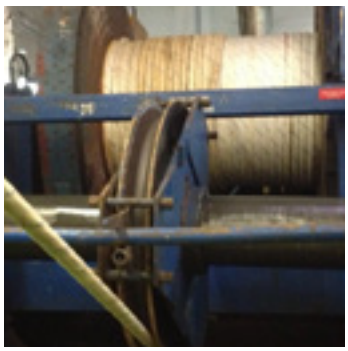
ROPE SOLUTIONS

ANCHORING

Synthetic anchor ropes are used to avoid damage to subsea infrastructures, such as pipelines, or the subsea marine environment. Instead of using wire ropes where floating buoys need to be attached to keep the wire free from the ocean floor, this synthetic rope is naturally buoyant. This floating property avoids damaging subsea structures, and is project time and cost saving as no floating buoys are needed.

LANKO®FORCE with DYNEEMA® jacket, including a sand filter
TIPTO®WINCHLINE
LANKO®EIGHT

Additional features:
- Anti-twist feature.
- Night time visibility.
  enhancement feature.
- Sand filter.



HEAVY LIFT

Heavy lift is an area of growing importance in the offshore industry. Assembly of oil rigs and production platforms, as well as renewable energy wind farms and wave devices, rely on the ability to safely lift large components weighing 1,000t – 5,000t. Although steel wire ropes are commonly used for heavy lift, synthetic fiber ropes are able to match the strength of wire rope, yet are much lighter. Moreover fiber ropes allow contractors to utilize more capacity of the crane, as well as providing important handling benefits over traditional steel wire rope.

LANKO®FORCE
LANKO®FORCE with DYNEEMA® jacket
LANKO®FORCE with POLYESTER jacket
GAMA98® with DYNEEMA®

(PIPE) PULLING

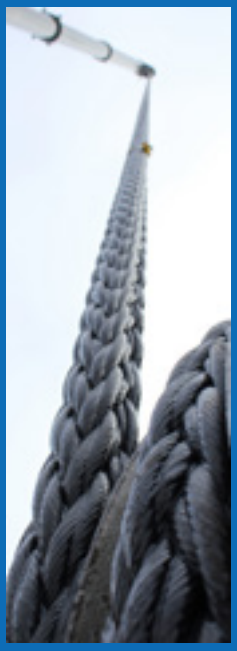
Several rope constructions can act as pennants for pulls with linear winches. The synthetic rope does not enter the winch, but is connected to the wire rope on the winch drum. Synthetic rope is 1/7th the weight of steel wire and offers tremendous logistics benefits. The synthetic (floating) ropes can be deployed by a small boat, given the fact that they float on water. A Lankhorst engineer can be present on-site to perform splicing jobs, supervision and assistance if needed. In the pre-pulling phase a detailed design can be made. As the pull starts and ends, the forces experienced by the rope will change. Optimizing the rope design will reduce costs even more. Last, but not least, as the ropes float, there is no need to connect floatation bodies to keep them above the ocean floor.

LANKO®EIGHT	**LANKO®FORCE with DYNEEMA® jacket**
LANKO®FORCE	**GAMA98® with DYNEEMA®**

DEEPWATER DEPLOYMENT

LANKO®DEEP has been designed from the outset for deepwater lowering and recovery projects. The synthetic fibre rope offers significant operational and environmental benefits compared with steel wire ropes. Operationally, LANKO®DEEP allows engineers to lift and deploy the maximum load without the need to factor in the self-weight of steel wire. For example, when lowering 1,000 meter below the surface, half the capacity of the crane is taken up by the hoisting wire. Using LANKO®DEEP, the reduced total crane weight makes it even possible to install the crane on a smaller ship, offering significant savings through lower vessel day rates.

LANKO®DEEP rope is fully torque balanced and acts like a non-rotating hoisting wire rope, as well as, providing the stiffness expected. Based on Dyneema® DM20 XBO synthetic filament, LANKO®DEEP is optimized for cyclic bending, with a proprietary rope coating technology and DNV 303 certification, for deepwater deployments. The rope comprises 12 stranded braids where each strand is a three-strand rope. This construction, combined with the DM20's XBO coating, helps reduce the tension required to bed-in the rope, as well as reducing internal heating and abrasion. In addition, the LANKO®DEEP can be easily inspected and is even repairable. LANKO®DEEP can be used on existing winches as a replacement for steel wire rope.



LANKO®DEEP

SYNTHETIC FIBER TETHERS

Synthetic fiber tethers have a proven track in demanding offshore applications such as riser and umbilical tethers, and mooring mid-water arches. The use of synthetic fiber tethers such as LANKO®FORCE and GAMA98® with Dyneema® has significant performance advantages over chain and steel wire tethers. In addition to being lighter and with almost neutral buoyancy, synthetic fiber tethers offer:

· reduced cost of buoyancy elements.
· no corrosion.
· no fatigue issues.
· easy system installation.

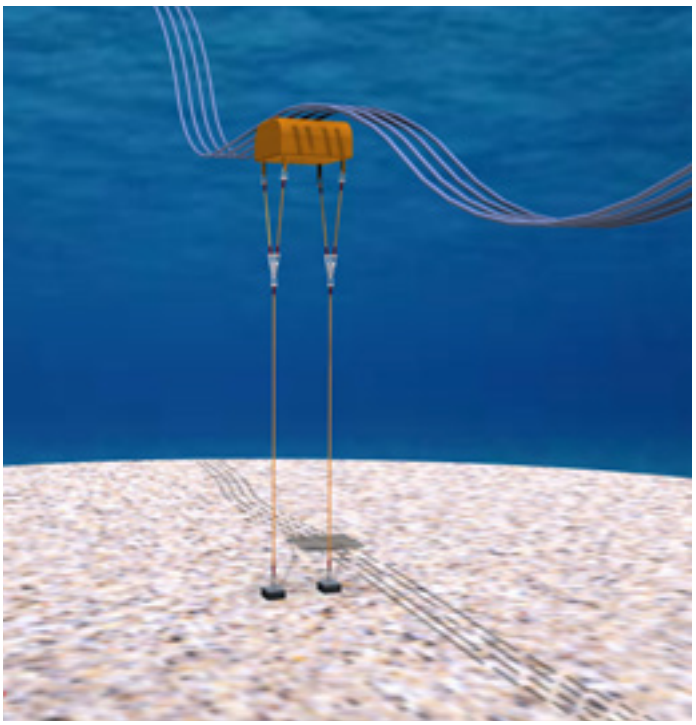
The ropes LANKO®FORCE and GAMA98® with Dyneema® have the same (or lower) size of the conventional steel wire rope and the corresponding weight is 7 times lower. In water, it has a negligible weight. The stiffness is similar to steel wire.

Filter elements are included between jacket and sub-rope cores. They are effective in filtering out particles greater than 5 microns whilst allowing free flooding of the rope.

Under constant loading, LANKO®FORCE and GAMA98® with Dyneema® rope can show an irreversible deformation that will depend on the time, load and temperature. For 25 years and with normal water temperatures, the irreversible elongation (creep) is null.

LANKO®FORCE with POLYESTER jacket
LANKO®FORCE with DYNEEMA® jacket
GAMA98® with DYNEEMA®

The fatigue life of synthetic ropes is typically quoted as being at least 80 decades superior to steel wire ropes. Lankhorst is able to provide these slings under class certification and part of various committees involving EPCI contracts around the world to set the standards.



TOWING

Safety is paramount in the tug and towing industry. Lankhorst Ropes is committed to providing the equipment needed to ensure the safety of crews and tugs. We offer a range of proven equipment reducing your cost per tow without jeopardizing on-board safety. This can be realized by using STRONGLINE™, LANKO®FORCE, EUROFLEX®, LANKO®EIGHT, optionally protected by special high performance protective sleeves. For example Lankhorst Rope's Defender® which offers high abrasion resistance for hawser, towing lines or pennants, preserving a good working condition of the ropes.

Lankhorst's high strength STRONGLINE™ rope offers high abrasion resistance and easy handling through its parallel core and braided protective cover design. As well as ensuring long service life, the cover provides protection to crew from snap back. STRONGLINE™'s black longitudinal marker helps to indicate twisting which may shorten the service life of the rope.

EUROFLEX® STRETCHERS
STRONGLINE™
LANKO®FORCE
LANKO®FORCE with DEFENDER® JACKET
LANKO®FORCE with DYNEEMA® JACKET
LANKO®EIGHT
TIPTO®WINCHLINE

MOORING

Optimizing mooring operations is an important factor in achieving efficient loading and unloading – reducing unnecessary and costly delays and additional port charges. Furthermore, a high standard of mooring rope management is essential for the safety of a vessel's crew and the vessel itself. It is also essential to avoid mixing mooring ropes, this will lead inevitably to snapback, endangering crew and port personnel. Did you know that 95% of all accidents on board of ships are related to ropes and wire ropes? 60% of these accidents occur during mooring ! (source: P&I Club London).

Spending time on rope selection will pay dividends in terms of longer service life and increased safety. Weight, stretch, flexibility, abrasion and UV resistance, they all impact the rope's integrity. The minimum breaking force (MBF) is one of the leading factors when making the right rope selection. Besides safety, a proper selection also saves you money over time. The cost of replacement and all expenses that are related to replacement (logistics, scrapping, crew handling) is often forgotten. A proper strategic rope selection saves time and money. Lankhorst Ropes has consistently taken a lead in enabling effective rope management from rope selection to online access to certificates and ultimately rope recycling.

EUROFLEX®
EUROFLOAT® PREMIUM
TIPTO®EIGHT

LANKHORST

ROPE PRODUCT SPECIFICATIONS

EUROFLEX®

Continued 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 elasticity, 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.

article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
152.428	64	2 5/8	263	177	1.010	102,99	227.057
152.426	68	2 11/16	296	199	1.140	116,25	256.282
152.424	72	2 13/16	332	223	1.270	129,50	285.507
152.425	76	3	370	249	1.410	143,78	316.981
152.431	80	3 3/16	411	276	1.550	158,05	348.454
152.432	88	3 7/16	497	334	1.870	190,68	420.393
152.422	96	3 3/4	590	396	2.210	225,35	496.828
152.434	104	4 1/8	689	463	2.570	262,06	577.759
152.435	112	4 7/16	803	540	2.970	302,85	667.683
152.436	120	4 3/4	923	620	3.380	344,66	759.854
152.437	128	5 1/16	1.050	706	3.830	390,55	861.018
152.438	136	5 3/8	1.187	798	4.300	438,47	966.678
152.439	144	5 2/3	1.334	896	4.800	489,46	1.079.083

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

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 plaited

TCLL VALUE	79,6%
COLOUR	white
MARKER YARN	yellow
WATER ABSORPTION	<0,5%
ELONGATION	12,5% at 50% of MBF

Made of:
47% polyolefin
53% polyester

STRETCHERS

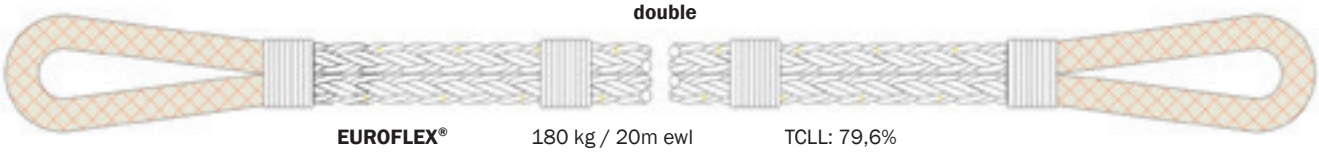
EUROFLEX® stretchers are mainly used in combination with low stretching materials as steel wire rope (6x36WS+IWRC) and LANKO®FORCE. EUROFLEX® stretchers are very well resistant against heat built-up due to the 50% A-grade polyester (high melting point) that is used on the outside end of each yarn. EUROFLEX® stretchers need to absorb heavy shock loads that can occur during towing operations. They are superior in terms of tension-tension fatigue, due to the extremely high TCLL value of 79,6%! This makes EUROFLEX® the best solution for your high-performance stretcher.

single

EUROFLEX®	99,4 kg / 20m	TCLL: 79,6%
ø 88mm	MBF: 1.870 kN	Elongation: 12,5%

Single legged stretchers provide elongation in the towing system. Stretch that is required for some harbor conditions with high swell and strong currents.

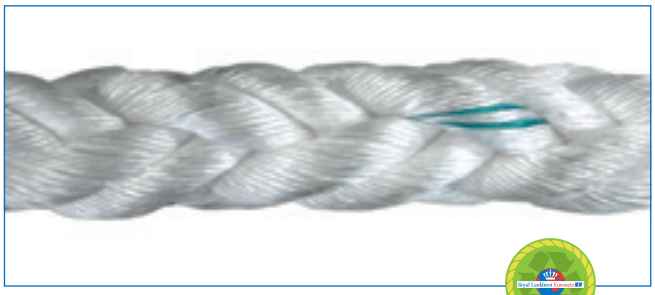
double



EUROFLEX®	180 kg / 20m ewl	TCLL: 79,6%
ø 96mm	MBF: 3.757 kN (double)	Elongation: 12,5%

Double legged stretcher provide elongation in the towing system. Double legged stretchers are required for application with extremely high break load requirements.

EUROFLOAT®PREMIUM



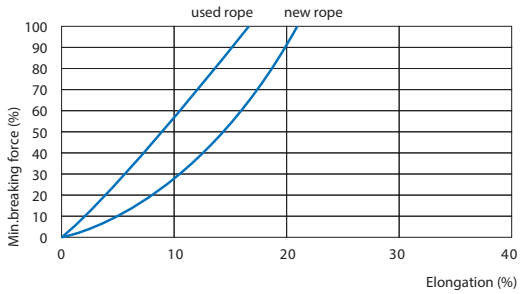
SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	good
ABRASION RESISTANCE	very good
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 165°C/ 260°C
CONSTRUCTION	8 strand plaited
TCLL VALUE	75,1%
COLOUR	off white
MARKER YARN	two green markers
WATER ABSORPTION	0,1%
ELONGATION	15% at 50% of MBF

article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
152.636	36	1 1/2	67	45	259	26,41	58.226
152.640	40	1 5/8	85	57	324	33,04	72.838
152.644	44	1 3/4	99	67	377	38,44	84.753
152.648	48	1 7/8	120	80	456	46,50	102.513
152.652	52	2 1/16	141	95	534	54,45	120.048
152.656	56	2 1/4	162	109	613	62,51	137.808

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

Using our latest in-house extrusion technology has made it possible to offer you the newly designed EUROFLOAT® PREMIUM rope which is fully in-line with the requirements of the modern fleet of today. This floating high performance rope is constructed from high strength polypropylene and polyester yarns. Due to its flexibility these ropes can be used on the mooring bit's in a figure 8 configuration as well as on the winch.

ELONGATION:



Made of:
84% polyolefin
16% polyester

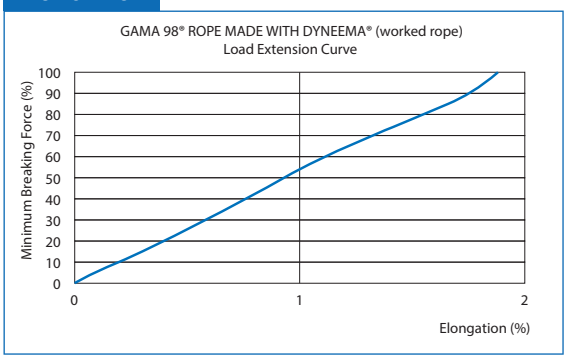
GAMA98® WITH DYNEEMA®

nominal diameter mm	nominal diameter inch	weight kg/100m	weight lb/100ft	minimum breaking force kN	minimum breaking force t (metric)	minimum breaking force lbs
106	4 3/16	570	390	5.936	600	1.334.413
116	4 9/16	659	440	6.926	700	1.556.965
123	4 13/16	747	500	7.915	800	1.779.292
130	5 1/8	819	550	8.905	900	2.001.844
137	5 3/8	970	650	9.894	1000	2.224.171
153	6	1.200	810	12.368	1250	2.780.326
168	6 1/2	1.440	970	14.842	1500	3.336.482
194	7 3/4	1.900	1.280	19.789	2000	4.448.567

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

GAMA 98® WITH DYNEEMA® is manufactured from high efficiency sub-ropes cores (strength member) laid parallel within an outer braided jacket (non-strength member). The sub-cores are high efficiency eight strands braided Dyneema® ropes. The external jacket is a 32-carrier twill polyester braid. This construction is torque balanced and is one of the strongest rope constructions currently available. The breaking load is the same whether the rope is wet or dry and considerably higher than nylon or polyester size for size. The characteristics of high strength, low weight, make this rope easy to handle with consequent reduction in operational costs. The polyester jacket confers to the rope an excellent resistance to abrasion.

ELONGATION:



SPECIFIC GRAVITY	variable	TCLL VALUE	100%
UV-RESISTANCE	excellent	COLOUR	white
ABRASION RESISTANCE	excellent	MARKER YARN	red and green
CHEMICAL RESISTANCE	good	WATER ABSORPTION	none
MELTING POINT	approx. 140°C/ 260°C	ELONGATION	very low
CONSTRUCTION	parallel strand rope		

LANKO®DEEP

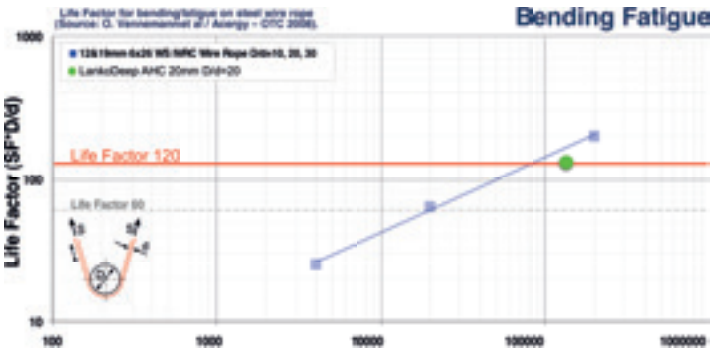
SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 strand plaited
TCLL VALUE	100%
COLOUR	dark grey
WATER ABSORPTION	0%
ELONGATION	100%

nominal diameter mm	nominal diameter inch	weight kg/100 m	weight lb/100ft	minimum breaking force kN	minimum breaking force t (metric)	minimum breaking force lbs
48	1 7/8	153	103	1.455	148	327.096
52	2 1/16	179	121	1.694	172	380.826
56	2 1/4	208	140	1.956	199	439.726
60	2 3/8	238	161	2.218	226	498.626
64	2 5/8	271	183	2.518	256	566.068
68	2 11/16	306	206	2.649	270	595.518
72	2 13/16	343	231	2.921	297	656.666
76	3	382	257	3.334	340	749.512
80	3 3/16	424	285	3.543	361	796.497
88	3 7/16	513	345	4.173	425	938.127
96	3 3/4	610	411	4.890	498	1.099.315
104	4 1/8	716	482	5.337	544	1.199.805
112	4 7/16	831	559	6.130	625	1.378.078
120	4 3/4	953	641	6.962	710	1.565.119
128	5 1/16	1.085	729	7.825	798	1.759.129
136	5 3/8	1.225	823	8.713	888	1.958.759
144	5 2/3	1.373	923	9.733	992	2.188.065
152	6	1.530	1.028	10.906	1.112	2.451.765
160	6 3/10	1.695	1.139	11.839	1.207	2.661.512
168	6 1/2	1.869	1.256	12.930	1.318	2.906.779

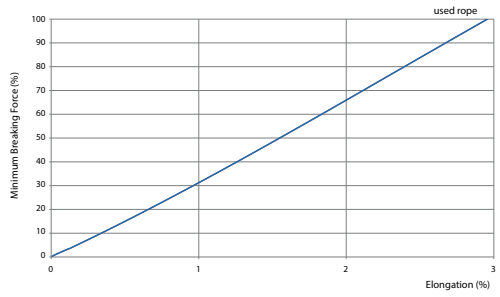
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

LANKODEEP® AHC is a 12 strand braided rope where each strand is a 3 strand rope, resulting in a 12x3 patented construction, with dark grey color. Raw material is Dyneema® fully optimized for Cyclic Bending Over Sheave (CBOS) fatigue.

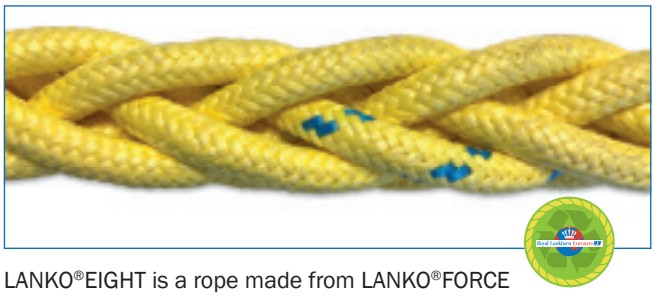
Cyclic Bending Over Sheaves (CBOS)



ELONGATION:

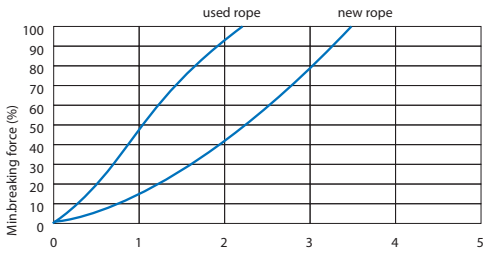


LANKO®EIGHT



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	12 strand with cover in each strand
TCLL VALUE	100%
COLOUR	yellow
MARKER YARN	blue
WATER ABSORPTION	0%
ELONGATION	2% at 50% of MBF

SK78

article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
093.730	30	1 1/4	54,1	36	395	40,3	88.846
093.732	32	1 5/16	59,4	40	455	46,4	102.294
093.734	34	1 3/8	65,6	44	528	53,8	118.609
093.736	36	1 1/2	71,7	48	608	62	136.686
093.738	38	1 9/16	78,9	53	687	70,1	154.544
093.740	40	1 5/8	86,6	58	774	78,9	173.945
093.744	44	1 3/4	101	68	941	96	211.644
093.748	48	1 7/8	118	80	1.135	115,7	255.075
093.752	52	2 1/16	137	92	1.354	138,1	304.458
093.756	56	2 1/4	157	105	1.569	160	352.739
093.760	60	2 3/8	180	121	1.837	187,3	412.925
093.764	64	2 5/8	198	133	2.020	206	454.152
093.768	68	2 11/16	238	160	2.427	247,5	545.643
093.772	72	2 13/16	255	171	2.628	268	590.838
093.780	80	3 3/16	331	222	3.028	308,8	680.787
093.782	82	3 4/16	349	235	3.223	328,7	724.659
093.788	88	3 7/16	386	260	3.614	368,5	812.402
093.792	92	3 5/8	405	272	3.838	391,4	862.888
093.796	96	3 3/4	459	309	4.385	447,1	985.686

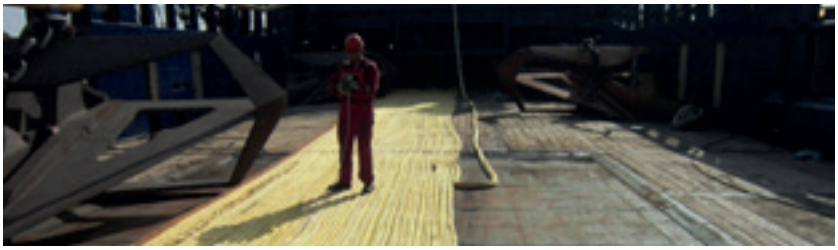
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

SK99

article number	nominal diameter mm	inch	Weight kg/100m	lb/100ft	Minimum Breaking Force kN	t (metric)	lbs
093.930	30	1 1/4	54,1	36	470	47,9	105.601
093.932	32	1 5/16	59,4	40	542	55,3	121.915
093.934	34	1 3/8	65,6	44	629	64,1	141.316
093.936	36	1 1/2	71,7	48	724	73,8	162.701
093.938	38	1 9/16	78,9	53	819	83,5	184.086
093.940	40	1 5/8	86,6	58	921	93,9	207.014
093.944	44	1 3/4	101	68	1.121	114,3	251.988
093.948	48	1 7/8	118	80	1.350	137,7	303.576
093.952	52	2 1/16	137	92	1.612	164,4	362.440
093.956	56	2 1/4	157	105	1.868	190,5	419.980
093.960	60	2 3/8	180	121	2.187	223	491.630
093.964	64	2 5/8	198	133	2.405	245,2	540.573
093.968	68	2 11/16	238	160	2.890	294,7	649.702
093.972	72	2 13/16	255	171	3.129	319,1	703.494
093.980	80	3 3/16	331	222	3.605	367,6	810.418
093.982	82	3 4/16	349	235	3.837	391,3	862.668
093.988	88	3 7/16	386	260	4.302	438,7	967.167
093.992	92	3 5/8	405	272	4.570	466	1.027.353
093.996	96	3 3/4	459	309	5.219	532,2	1.173.299

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

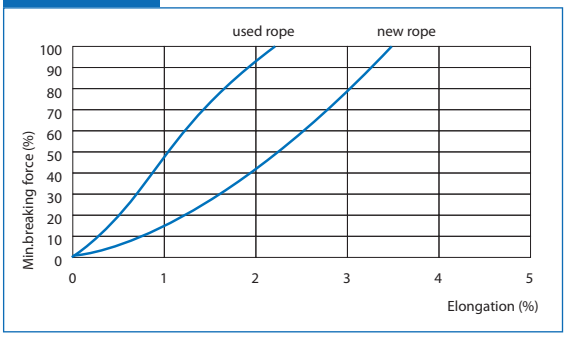
LANKO®FORCE

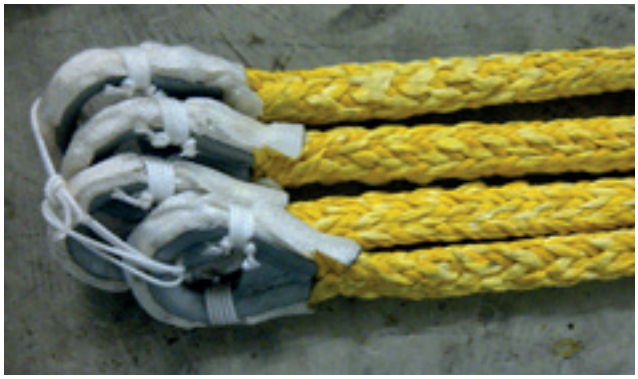


12 strand braided rope, made of DYNEEMA® yarns. LANKO®FORCE is an excellent alternative fo' heavy and lumbersome steel wire ropes in situations requiring manual handling of the rope. It is stronger than conventional steel wire rope, yet the corresponding weight is 7 times lower. The improved handling 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.

SPECIFIC GRAVITY	0,98 (floating)
UV-RESISTANCE	excellent
ABRASION RESISTANCE	excellent
CHEMICAL RESISTANCE	good
MELTING POINT	approx. 147 °C
CONSTRUCTION	12 strand plaited
TCLL VALUE	100%
COLOUR	yellow
WATER ABSORPTION	0%
ELONGATION	2,2% at 50% of MBF
QUICK BURY SPLICE	

ELONGATION:





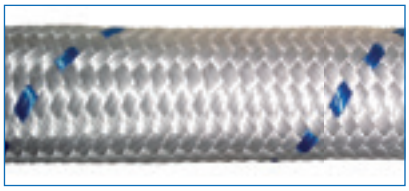
article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
092.006	6	1/4	2,3	1,5	35	3,57	7.870
092.008	8	5/16	3,9	3	62	6,32	13.942
092.010	10	3/8	5,9	4	98	10,00	22.037
092.012	12	1/2	9,3	6	137	13,97	30.807
092.014	14	9/16	10,7	7,2	184	18,77	41.376
092.016	16	5/8	14,0	9	244	24,89	54.869
092.018	18	11/16	18	12	303	30,91	68.136
092.020	20	13/16	21,5	14	374	38,15	84.102
092.022	22	7/8	28	19	450	45,90	101.192
092.024	24	1	33,5	23	533	54,37	119.856
092.026	26	1 1/16	38,5	26	612	62,42	137.621
092.028	28	1 1/8	43,5	29	701	71,50	157.635
092.030	30	1 1/4	51,5	35	789	80,48	177.423
092.032	32	1 5/16	59	40	887	90,47	199.461
092.034	34	1 3/8	64	43	991	101,08	222.847
092.036	36	1 1/2	72	48	1.076	109,75	241.961
092.038	38	1 9/16	80	54	1.191	121,48	267.822
092.040	40	1 5/8	89	60	1.314	134,03	295.481
092.044	44	1 3/4	107	72	1.559	159,02	350.574
092.046	46	1 13/16	117	79	1.741	177,48	391.276
092.048	48	1 7/8	128	86	1.854	189,01	416.686
092.050	50	2	138	93	2.161	220,32	485.722
092.052	52	2 1/16	150	101	2.191	223,38	492.468
092.054	54	2 1/8	162	109	2.291	233,58	514.955
092.056	56	2 1/4	174	117	2.491	253,98	559.929
092.060	60	2 3/8	200	134	2.821	287,64	634.137
092.062	62	2 7/16	213	143	2.921	297,84	656.624
092.064	64	2 5/8	227	153	3.211	327,42	721.837
092.068	68	2 11/16	258	173	3.611	368,22	811.785
092.072	72	2 13/16	288	194	4.011	409,02	901.734
092.074	74	2 15/16	304	204	4.201	428,40	944.459
092.076	76	3	320	215	4.401	448,80	989.433
092.080	80	3 3/16	355	239	4.511	460,02	1.014.169
092.082	82	3 1/4	373	251	4.751	484,50	1.068.138
097.084	84	3 5/16	391	263	4.951	504,90	1.113.113
092.086	86	3 3/8	410	276	5.152	525,30	1.158.087
092.088	88	3 7/16	430	289	5.320	542,50	1.196.006
092.092	92	3 5/8	469	315	5.879	599,50	1.321.670
092.096	96	3 3/4	510	343	6.478	660,60	1.456.372
092.100	100	3 15/16	557	374	7.078	721,70	1.591.074
092.104	104	4 1/8	600	403	7.677	782,80	1.725.777
092.108	108	4 1/4	650	437	8.276	843,90	1.860.479
092.112	112	4 7/16	695	467	8.875	905,00	1.995.181
092.116	116	4 9/16	747	502	9.551	973,90	2.147.079
092.118	118	4 5/8	772	519	9.774	996,70	2.197.345
092.120	120	4 3/4	798	536	10.289	1.049,20	2.313.087
097.124	124	4 7/8	856	575	10.832	1.104,50	2.435.003
092.128	128	5 1/16	910	611	11.466	1.169,20	2.577.642
097.132	132	5 3/16	972	653	12.195	1.243,50	2.741.445
092.136	136	5 3/8	1.030	692	12.766	1.301,70	2.869.754
097.140	140	5 1/2	1.092	734	13.456	1.372,10	3.024.959
097.142	142	5 5/8	1.123	755	13.783	1.405,50	3.098.593
092.144	144	5 2/3	1.150	773	14.260	1.454,10	3.205.738
097.146	146	5 3/4	1.186	797	14.447	1.473,20	3.247.846
097.148	148	5 13/16	1.218	818	14.772	1.506,30	3.320.819
097.150	150	5 15/16	1.251	841	15.096	1.539,30	3.393.572
097.152	152	6	1.278	859	15.332	1.563,40	3.446.703
097.154	154	6 1/16	1.317	885	15.796	1.610,70	3.550.981
097.156	156	6 1/8	1.351	908	16.125	1.644,30	3.625.057
097.158	158	6 1/4	1.385	931	16.454	1.677,80	3.698.911
097.160	160	6 3/10	1.416	952	16.729	1.705,90	3.760.861
097.162	162	6 3/8	1.456	978	17.117	1.745,40	3.847.944
097.164	164	6 7/16	1.492	1.003	17.479	1.782,30	3.929.294
097.166	166	6 9/16	1.528	1.027	17.841	1.819,20	4.010.645
097.168	168	6 1/2	1.561	1.049	18.178	1.853,60	4.086.484

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

LANKHORST

LANKO®FORCE WITH DYNEEMA® JACKET

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



FEATURES:

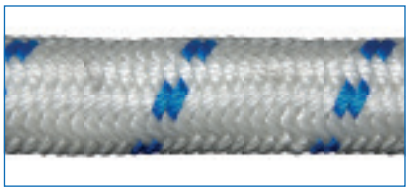
- light weight.
- excellent abrasion resistance.
- excellent UV-resistance.
- floating.

article number	nominal diameter mm	nominal diameter inch	weight kg/100m	weight lb/100ft	minimum breaking Force kN	minimum breaking Force t (metric)	minimum breaking Force lbs
092.540	40	1 5/8	91,1	61,5	1.177	120,02	264.602
092.542	42	1 11/16	97,8	66	1.303	132,87	292.928
093.166	44	1 3/4	116	78,3	1.544	157,44	347.107
093.168	48	1 7/8	138	93,1	1.782	181,71	400.612
092.552	52	2 1/16	157	106	2.141	218,32	481.319
092.556	56	2 1/4	184	124	2.283	232,80	513.242
092.560	60	2 3/8	210	142	2.635	268,69	592.375
092.562	62	2 7/16	224	151	2.780	283,48	624.972
092.365	64	2 5/8	238	167	2.983	304,18	670.609

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

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



FEATURES:

- light weight.
- very good abrasion resistance.
- excellent UV-resistance.

article number	nominal diameter mm	nominal diameter inch	weight kg/100m	weight lb/100ft	minimum breaking force kN	minimum breaking force t (metric)	minimum breaking force lbs
092.340	40	1 5/8	97	65	1.177	120,02	264.600
092.343	42	1 11/16	104	70	1.303	132,87	292.926
092.344	44	1 3/4	122	82	1.544	157,44	347.105
092.348	48	1 7/8	139	93	1.782	181,71	400.610
092.352	52	2 1/16	164	110	2.141	218,32	481.316
092.356	56	2 1/4	195	131	2.283	232,80	513.239
092.360	60	2 3/8	221	149	2.635	268,69	592.372
092.364	64	2 5/8	248	167	2.983	304,18	670.605

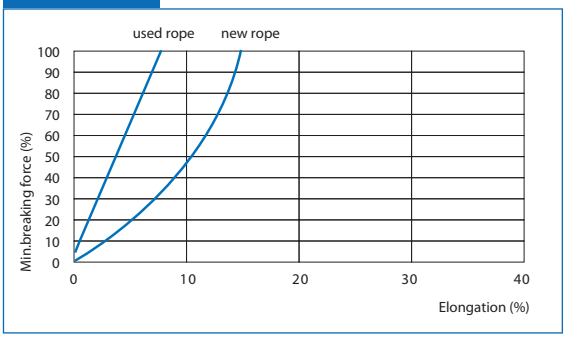
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope/wire itself, without splices or any other form of termination that can be formed with or without the use of accessories/fittings.

STRONGLINE™

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. 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.

ELONGATION:

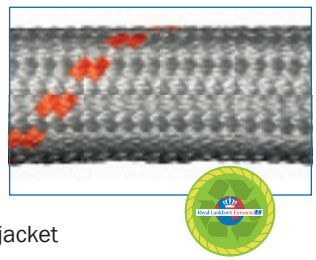


article number	nominal diameter mm	nominal diameter inch	weight kg/100m	weight lb/100ft	minimum breaking force kN	minimum breaking force t (metric)	minimum breaking force lbs
081.056	56	2 1/4	227	152	995	101,46	223.685
081.060	60	2 3/8	256	172	1.130	115,23	254.034
081.064	64	2 5/8	284	190	1.270	129,50	285.507
081.068	68	2 11/16	307	206	1.420	144,80	319.229
081.072	72	2 13/16	367	246	1.570	160,09	352.950
081.076	76	3	390	261	1.730	176,41	388.920
081.080	80	3 3/16	417	280	1.890	192,72	424.889
081.088	88	3 7/16	493	330	2.250	229,43	505.820
081.092	92	3 5/8	528	354	2.450	249,83	550.782
081.096	96	3 3/4	560	375	2.630	268,18	591.248

Other diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

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	70%
COLOUR	white
MARKER YARN	orange
WATER ABSORPTION	< 1%
ELONGATION	7,5%
A3 SPLICE	



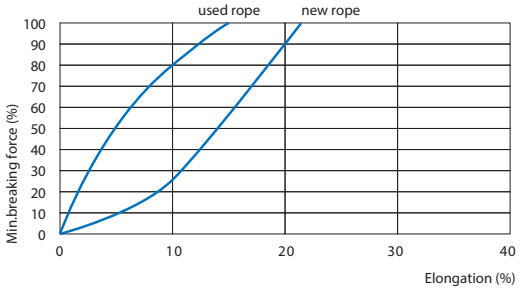
TIPTO®EIGHT

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.

article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
111.693	40	1 5/8	75,6	51	269	27,43	60.474
111.721	44	1 3/4	92,4	62	321	32,73	72.164
111.695	48	1 7/8	109	73	378	38,54	84.978
111.737	52	2 1/16	128	86	441	44,97	99.141
111.697	56	2 1/4	149	100	508	51,80	114.203
111.698	60	2 3/8	171	115	578	58,94	129.940
111.699	64	2 5/8	194	130	651	66,38	146.351
111.700	68	2 11/16	220	148	731	74,54	164.335
111.701	72	2 13/16	246	165	814	83,00	182.994
111.703	80	3 3/16	305	205	992	101,15	223.010
111.735	88	3 7/16	369	248	1.180	120,32	265.275
111.705	96	3 3/4	438	294	1.400	142,76	314.733
111.741	104	4 1/8	515	346	1.620	165,19	364.190
111.743	112	4 7/16	596	400	1.870	190,68	420.393
111.691	120	4 3/4	686	461	2.130	217,20	478.843
111.744	128	5 1/16	779	523	2.410	245,75	541.790
111.746	136	5 3/8	880	591	2.710	276,34	609.232
111.739	144	5 2/3	987	663	3.030	308,97	681.171

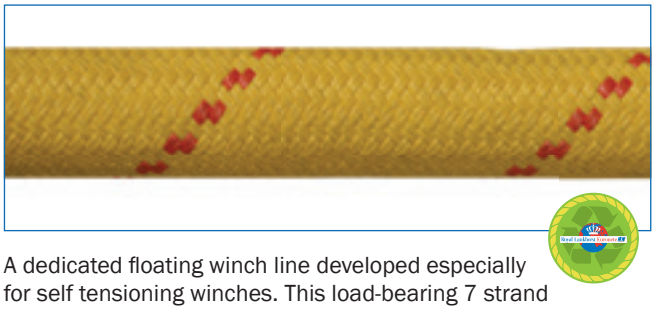
Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. The MBF refers to the breaking strength in the rope / wire itself, without splices or any other form of termination that can be formed with or without the use of accessories / fittings.

ELONGATION:



SPECIFIC GRAVITY	0,93 (floating)	TCLL VALUE	70,7%
UV-RESISTANCE	very good	COLOUR	yellow
ABRASION RESISTANCE	very good	MARKER YARN	orange
CHEMICAL RESISTANCE	good	WATER ABSORPTION	0%
MELTING POINT	approx. 140°C	ELONGATION	14%
CONSTRUCTION	8 strand plaited		

TIPTO®WINCHLINE



A dedicated floating winch line developed especially for self tensioning winches. This load-bearing 7 strand core combines high strength and relatively low elongation. The non-load-bearing braided jacket provides protection of the core for longer service life, and increases crew-safety by minimizing the risk of snap-back. 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.

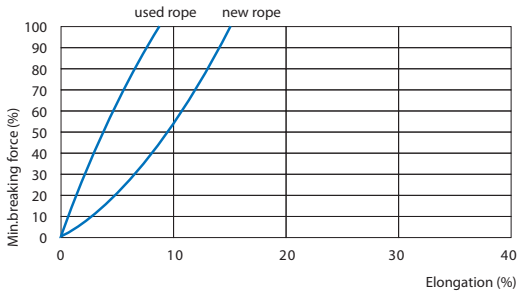
article number	nominal diameter mm	inch	weight kg/100m	lb/100ft	minimum breaking force kN	t (metric)	lbs
111.952	36	1 1/2	74	50	248	25,29	55.753
111.953	42	1 11/16	98	66	340	34,67	76.435
111.934	46	1 13/16	115	77	425	43,34	95.544
111.956	48	1 7/8	125	84	472	48,13	106.110
111.935	50	2	133	89	512	52,21	115.102
111.936	54	2 1/8	150	101	598	60,98	134.436
111.896	56	2 1/4	160	108	640	65,26	143.878
111.937	58	2 5/16	167	112	682	69,54	153.320
111.967	60	2 3/8	184	124	730	74,44	164.111
111.966	62	2 7/16	190	128	780	79,54	175.351
111.938	64	2 5/8	203	136	850	86,67	191.088
111.939	68	2 11/16	221	149	934	95,24	209.972
111.970	70	2 3/4	240	161	990	100,95	222.561
111.940	74	2 15/16	256	172	1.100	112,17	247.290
111.941	80	3 3/16	355	239	1.270	129,50	285.507
111.942	82	3 1/4	380	255	1.350	137,66	303.492
111.898	84	3 5/16	395	265	1.420	144,80	319.229

Larger diameters on request

Diameter, weight and MBF (as well as other mechanical and physical properties) are determined according ISO 2307:2010. 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.

SPECIFIC GRAVITY	0,93 (floating)	TCLL VALUE	70,7%
UV-RESISTANCE	very good	COLOUR	yellow
ABRASION RESISTANCE	very good	MARKER YARN	orange
CHEMICAL RESISTANCE	good	WATER ABSORPTION	0%
MELTING POINT	approx. 140°C	ELONGATION	8,5%
CONSTRUCTION	7 strand + jacket	A3 SPLICE	

ELONGATION:



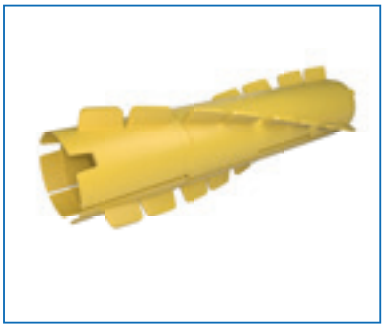
LANKHORST ENGINEERED PRODUCTS
INNOVATIVE OFFSHORE ENGINEERING SOLUTIONS

Lankhorst Engineered Products is a leading manufacturer and supplier of high performance mouldings for offshore exploration, production and field development. Superior technical innovations in the application of advanced polyolefin, epoxy and polyurethane polymer and moulding technologies lie at the heart of their success. With the unique thick-walled plastic production technology, they can supply high-performance innovatively engineered products to meet the demands of the offshore industry.

From piggy back blocks and clamps for laying pipelines and vortex-induced vibration suppression riser protection, through to bend restrictors and buoyancy aids, Lankhorst Engineered Products' precision engineered components deliver outstanding performance in the most demanding subsea environments.

PRODUCTS

VIV SOLUTIONS



Lankhorst VIV Strakes
The VIV oscillations of submerged pipes are known to increase drag and lead to structural fatigue. One proven means of suppressing this vibration is the use of strakes, which modify the flow along the pipe, tripping the production of Karman vortices. Lankhorst tri-shell VIV suppression strakes have been designed with ease and speed of installation in mind to minimize the expense of offshore installation time.

Lankhorst VIV Fairings
As an alternative to VIV strakes, VIV fairings are typically recognized for their teardrop shaped body and rigid collars and are designed under a license acquired from Shell Global Solutions. The typical Lankhorst fairing will deliver a suppression efficiency that is well beyond the generally required 90% whilst at the same time also reducing the drag. Lankhorst fairings are available in a wide range of sizes to fit anything from small OD umbilicals to large OD drilling risers.

Lankhorst Engineered Products is the market leader in VIV suppression.

LANKHORST PIGGYBACK BLOCKS

Lankhorst's Piggyback Blocks are designed to be a high-impact resistant support for the secondary pipelines, and can be manufactured with a range of different materials, sizes and configurations depending on the requirements of the client.

DRILLING RISER PROTECTION & STORAGE

Lankhorst Riser Fins & Riser Shims
Lankhorst's patented riser fin protection system is designed to protect the bare riser joint and its auxiliary lines from any form of impact, and guide the riser through the riser tower. One set consists of five to eight riser fins that are made from a high impact resistant neutral buoyant thermoplastic material. The fins duplicate the O.D. of buoyant joints, when present, to allow easier handling on the riser handling equipment.
This support ring system enables drilling risers to be stacked horizontally up to 14 levels high. The rings are made from a high compression resistant plastic material, and duplicate the O.D. of the installed Riser Fins and any buoyant joints.

Lankhorst Guiding Cones
Guiding cones can be used to assist in the positioning and placement of the riser joints when stored vertically in the riser bay.

LANKHORST BUOYANCY SOLUTIONS

Buoyancy modules are used to ensure that dynamic risers, cables and umbilicals are held in the correct configuration when submerged.
Lankhorst produces a number of different buoyancy solutions, including:

- Distributed buoyancy.
- Buckling mitigation buoyancy.
- Mooring line buoyancy.
- Installation buoyancy.
- Rope floats in partnership with Lankhorst Ropes.

PIPELINE PROTECTION

Lankhorst UraGUARD
In harsh offshore environments subsea umbilicals, flexible flowlines, risers or fibre optic cables are often subjected to large impacts or high levels of abrasion due to rocky seabeds, pipeline/cable crossings etc. UraGUARD is an alternative to concrete mattressing or rock dumping. It consists of cylindrical half shells moulded from high impact resistant polyurethane (PU) or polyethylene (PE) material, and is available in a wide range of inside diameters, lengths and wall thicknesses.

Lankhorst Boltless Bend Restrictors
A bend restrictor assembly is mounted around the cable and attached to the structure so that bending of the cable will be prevented beyond the designed locking radius of the bend restrictor, thus preventing the cable from overbending. The Lankhorst Boltless Bend Restrictor does not require bolting along the string, because of its unique interlocking system and can be easily installed much faster than any other bend restrictor, saving a lot of offshore installation time.

For more information contact:
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