



**BW**  
 Brunton-Wolf  
 Wire Ropes FZCo.

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an **um** *usha martin* & **gw** *gustav wolf* company

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# BRUNTON WOLF

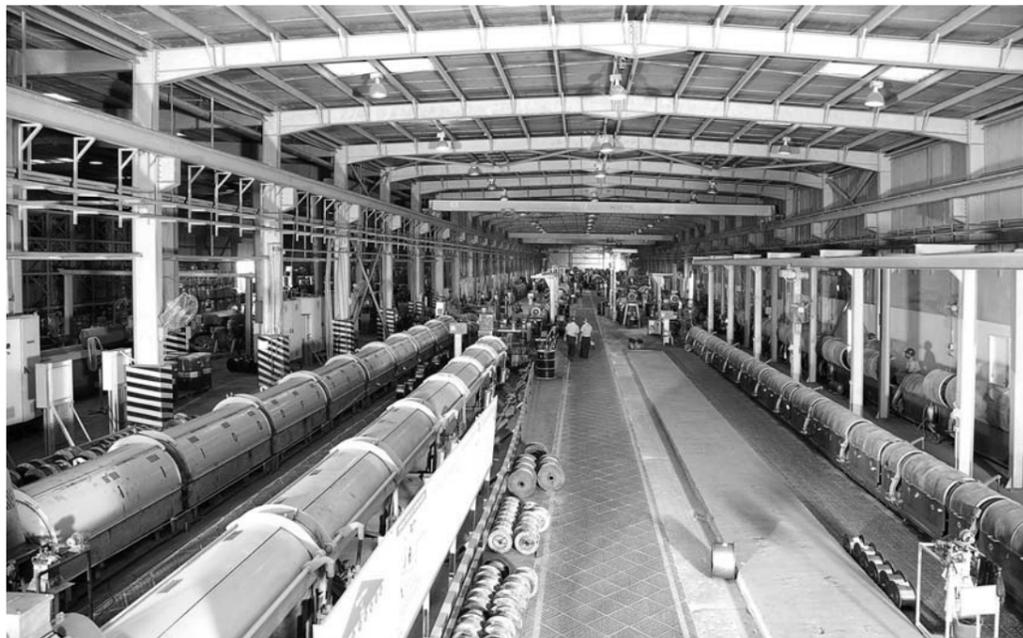
The Wire Rope specialist.

## CONTENTS

Quality Guarantee	6	<b>FISHING</b>	42
Infrastructure	8	619S	44
<b>CRANE</b>	10	626WS	46
Powerform® Compacted Rope	12	624 & 624S	48
Powerform® Selection	13	619S & 626WS	50
Bend Fatigue Testing	14	<b>ELEVATOR</b>	54
Guide To Application & Rope Duty	15	8X19S - NFC	56
Powerform® 35/35P	16	8X19 Class - Steel Core	57
Hyflex 35/35P	18	8X19 Class - Fibre Core	58
Powerform® 18	20	8x19 Class - Combination Core	59
Hyflex 18	22	Rope Behaviour of 1/2" $\phi$ 8X19S-NFC	60
Powerform® 6/6P	24	Safety Information	61
Powerform® 8/8P	26	Conversion Tables	61
Hyflex 8/8P	28	Key To Abbreviations	61
Powerform® 8PC	30		
Hyflex 4	32		
Hyflex 6x36	34		
Hyflex 6x19	36		
Hyflex 6x29Fi	38		



# COMPANY PROFILE



Brunton Wolf Wire Ropes FZCo., is a rope specialist, manufacturing steel wire ropes in Jebel Ali Free Zone, Dubai from the year 2003. It is a Joint Venture company having the equity participation of the billion dollar Rope & Speciality steel giant 'USHA MARTIN GROUP' & 'GUSTAV WOLF', the leading German producer of cord & speciality application ropes.

This company, backed by the 100 years plus group experience in evolving advanced rope designs, with elaborate manufacturing base globally possessing state-of-the-art machines, rich experience on negotiating the dynamic market forces, has today become a 'REAL SOLUTION PROVIDER' to the markets it serves. Brunton Wolf is proud to have the products sold continuously to more than 35 countries in Europe, North America, South America, North Asia, Australia, Africa and Middle East & South East Asia.

This plant, in Dubai, produces & supplies steel wire ropes for Oil & Gas, Crane, General Engineering, Fishing, Dredging, Mining, Elevator applications having a very wide diameter range between 3mm - 77mm. The capability of producing and selling new generation ropes like the compacted & plasticated ropes have helped

the consumers to get a complete solution from a single plant.

The elaborate testing facilities from raw material to final product gives the plant a qualitative edge over many competitors and thus, enjoys the confidence of many major oil giants, mining groups, elevator OEMs, big rigging companies. This plant is QMS certified and additionally has Lloyds & API (American Petroleum Institute) certifications. As a result Brunton Wolf has grown more than 300% in the last 10 years.

The extensive inventory planning clubbed with a sound logistics leverage due to its Geographical position & supported by a large efficient port like Jebel Ali, have helped Brunton Wolf's customers to get ropes faster at all parts of the world.

The group's R&D is continuously helping Brunton Wolf to offer new designs to the consumers, thereby, gaining a technological leadership.

In short, the backward integration model of the Usha Martin group in resonance with a quality excellence datum and aided by the experienced executive leadership, have made Brunton Wolf Wire Ropes FZCo., to be a name that spells enormous reliability to all sections of wire rope consumers all around the globe.

## Certification



Test house approved by Lloyd Register of Shipping



Licensed under API Spec 9A



Intertek

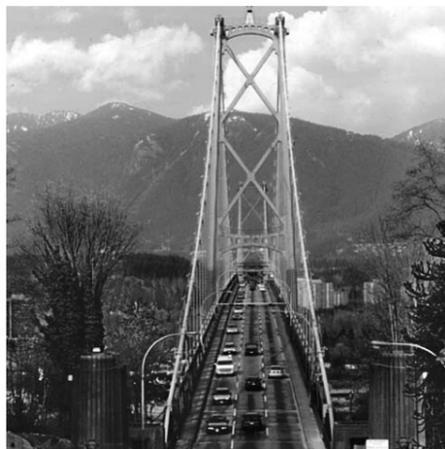


UKAS MANAGEMENT SYSTEMS



# WIRE ROPES

The "EDGE" over Competition



## Quality and Performance

The QUALITY POLICY is a statement relating to a broad spectrum of VALUE ADDED features, which together aim to ensure Quality, Reliability and Customer Delight. The following attributes give insight to the facts which precisely help you to identify what differentiates BRUNTON WOLF from its competitors.

## Engineering

Brunton Wolf's engineering expertise differentiates itself from the competition. BWWR products are manufactured with Raw Materials from USHA MARTIN and GUSTAV WOLF, world leaders in speciality wire & rope products, using state of art machinery. In house designed machinery and procedures for selecting and testing raw materials to allow for extra strength, extended fatigue performance and improved rotational resistance have resulted in BRUNTON WOLF being viewed as the STANDARD for the chosen industry, both Nationally and Internationally.

BWWR is proud to have its facility awarded certification for our Quality Assurance Program according to BS EN ISO 9001 Standards. The plant has also been approved for API 9A certification.

BWWR is one platform which has integrated Product & Process technology, manufacturing excellence and testing standards, application engineering & training know-how of the whole group.

## Commitment to Quality

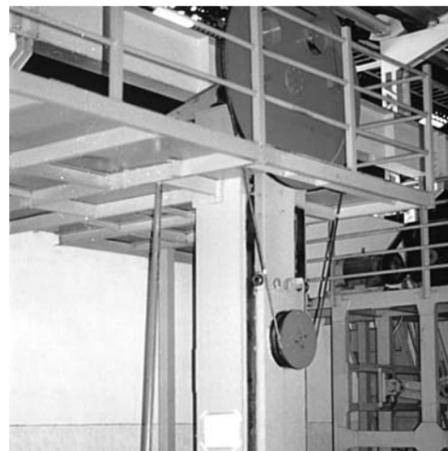
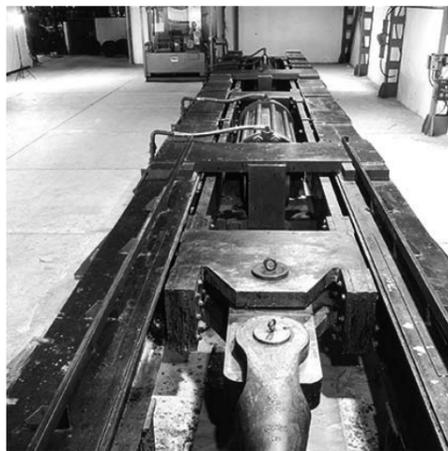
Brunton Wolf tests a sample from each production batch to destruction in order to designate each rope by the actual breaking force which is stated on the test certificates. This gives the user a confirmation that the rope has met or exceeded its specified minimum breaking force value. Many of our competitors mention the calculated minimum breaking force value which is not verified until used by the Valued Customer. BWWR has also the testing facilities for fatigue life, crush resistance and rotational characteristics for the products within our High Performance Range.

## Customer Service

Service at Brunton Wolf is second to none. BWWR believes that excellence is achieved not only by having the product available when you want it, but by also providing a knowledgeable team of field sales representatives, a fully trained and capable Customer Services Team dealing specifically with enquiries and orders. The expert rope engineers provide a complete solution to the valued end user, with their ability to interpret their special needs from design through to manufacture and application. Brunton Wolf realizes that our customers should be knowledgeable about the properties, installation, use, inspection and maintenance of our products. Thus, we provide formal product training through seminars and continuous interaction.



# QUALITY GUARANTEE



## **Guaranteed Raw Material Quality**

Good raw material input at the beginning of the rope making process combined with tight process control ensure consistently high quality in the finished rope. Usha Martin manufactures steel and rod to International standards and to even more exacting internal standards through its mini blast furnace - arc furnace - ladle furnace - vacuum degassing electromagnetic stirring - continuous casting route.

A close and unique co-operation between company owned ISO 9001 certified steel making, rod manufacturing and wire drawing facilities guarantee production feed materials which are "tailor made" to attain the required properties of ductility and tensile strength which are essential in the finished rope.

## **Guaranteed Breaking Force**

As well as operating a rigorous programme of testing throughout the production process Brunton Wolf confirm the minimum breaking force of each and every finished rope with an actual test to destruction.

The Test Certificate which is supplied with every rope will indicate a minimum guaranteed breaking force and the actual breaking force at which the test sample broke.

The Brunton Wolf testing facility is approved by Lloyds Register of Shipping.

## **Guaranteed Quality Systems**

Certification to ISO 9001 requires that Brunton Wolf document all work procedures, processes and related activities covering design, development, production, shipping and commercial activity.

ISO 9001 is a guarantee to our customer's that we will do exactly what we say we are going to do. Wire and Wire Ropes Division at Ranchi is the first and the only one in India to receive the prestigious award for excellence in TPM from Japanese Institute of Productivity Management (JIPM). Brunton Wolf is also having the API-9A monogram.

## **Guaranteed Bending Fatigue Characteristics**

Bending fatigue resistance is the ability of the wire rope to withstand repeated bending over a sheave under constant or fluctuating loads.

The ability to withstand bending fatigue will, along with other factors, determine the life of the rope and is therefore of interest to both the rope maker and the crane operator.



# INFRASTRUCTURE



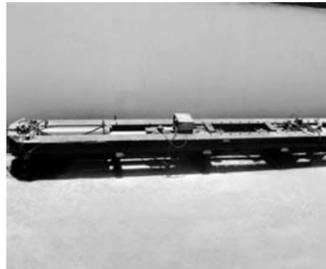
Wire Spooling & Long Stranding Machines (18 Bobbin, 25 Bobbin & 3 no. 36 Bobbin)



Seven Bobbin Skip Strander



6 x 60 Closer



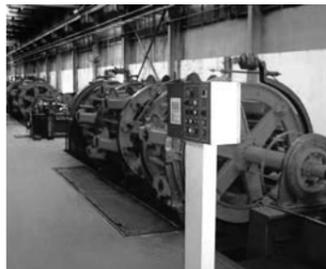
200 T capacity 25 M Tensile Testing Machine



8 Bobbin closer



600 T Press



6+12+18 Planetary Strander for non-rotational Crane Ropes



High Speed Wire Rewinders



Fatigue Testing Machine

Brunton Wolf Wire Ropes FZCo. has comprehensive manufacturing and testing facilities to make a wide range of wire ropes of various Constructions & Applications, starting from wire. At present it has large number of machines, some of them are listed below.

- High Speed Wire Rewinders
- 37 Bobbin Stranding Machines
- 25, 19 & 18 Bobbin Stranding Machines
- Series of 6 & 7 Bobbin Stranding Machines
- High Speed Skip Strander
- 8 & 6 Bobbin Closing Machines
- Wet Drawing Machines
- 37 Bobbin Planetary Closing Machine for Crane Rope
- 50T Planetary Closing Machine
- 'State of the Art' 25 Mtrs long 200 T Tensile Testing Machine
- Wire Tensile Testing Machine
- Fatigue Testing Machine for Elevator Rope
- Rigging shop with 'Hydraulic Presses', Automatic cut to length machine & Rigging Towers



# CRANE ROPES



The global success of Brunton Wolf Powerform® compacted crane rope and Hyflex non compacted crane rope is based on an uncompromising commitment to quality and product development which has been driven by a dynamic and technically demanding marketplace.

State of the art ISO 9001 certified manufacturing facilities and tight process control from steel making to rod manufacture and through to finished wire rope ensure consistently high quality in the finished crane rope.

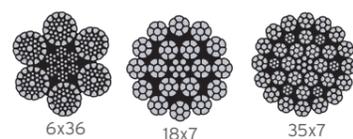
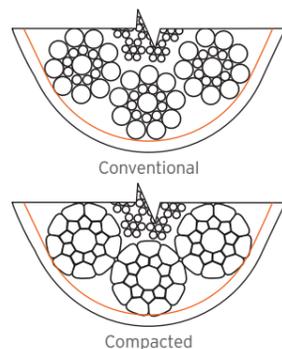
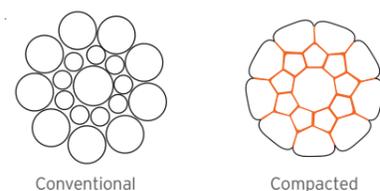
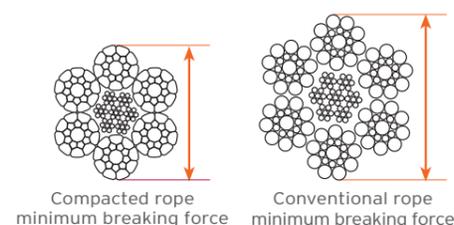
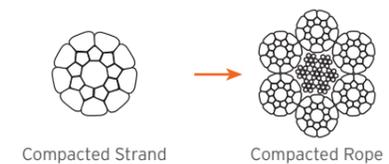
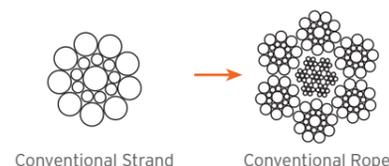
All Brunton Wolf crane ropes are supported by an expanding global distribution network which can offer expert advice to both crane manufacturers and operators.

Brunton Wolf manufactures crane ropes for all applications like mobile cranes, quay cranes, gantry cranes, mobile harbour cranes, tower cranes, EOT cranes, crawler cranes, wheel

mounted cranes, jib crane, truck mounted crane etc. We have annual contracts with many companies for supply of crane ropes. Our Powerform®, Hyflex and plasticated ropes are being used in cranes made by Liebherr, Tadano, Grove, Manitowac, Kobelco, Gottwald, Terex, Potain, Anupam etc. giving very good performances all over the world. Our crane rope demand has increased by 200 percent in the last 5 years due to the high performances obtained by the customers. The Group's R&D, in Italy, is already in the process of developing new designs for high performance ropes and would launch them on successful completion of joint reviews with different Original Equipment Manufacturers.



# POWERFORM<sup>®</sup> COMPACTED ROPE



A Powerform<sup>®</sup> compacted rope is a steel wire rope which has been manufactured using individually compacted strands. During the compaction process the outside diameter of the strand is reduced and steel moves into the empty voids between the wires within the strand.

The forming process also produces a very smooth exterior strand surface.

The resultant rope has a very high steel fill factor and consequently a relatively high minimum breaking force for any given diameter when compared with a conventional rope.

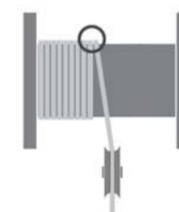
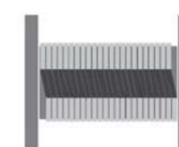
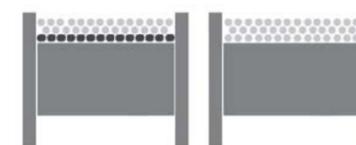
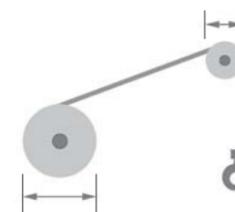
The compacted strand has very favourable internal contact conditions when compared with the point contact of round wires within a normal strand.

Exterior contact conditions are equally favourable. The smooth surface of the compacted rope offers a wider bearing surface to the sheave or drum groove.

Inter strand contact and contact between adjacent laps of rope on the winch drum is also improved.

Brunton Wolf compacted ropes are referred to as "Powerform<sup>®</sup>" and are available in a number of constructions.

# POWERFORM<sup>®</sup> SELECTION



## Optimised crane design

The high breaking load to size relationship can allow crane manufacturers to optimise the design of crane components such as the winch drum and sheaves whilst still complying with international crane design standards.

## Long life

Laboratory fatigue testing indicates that it is possible to achieve up to two times normal rope life when comparing a Powerform<sup>®</sup> rope with a conventional rope of equivalent construction.

## Greater resistance to crushing in multi-layer coiling situations

Powerform<sup>®</sup> ropes are recommended for all multi-layer coiling situations where crushing on lower layers is inevitable. The more solid cross section of the Powerform<sup>®</sup> rope offers much greater resistance to this type of damage.

## More effective resistance to crushing at crossover points

Because of the higher steel fill factor Powerform<sup>®</sup> ropes offer much better resistance to crushing damage at crossover points on the winch drum.

## Greater resistance to "Interference" at the drum

Abrasive wear between adjacent laps of rope which is normally most severe where the rope moves on and off the drum can be minimised by using a Powerform<sup>®</sup> rope.

## Reduced wear on sheaves

The smooth exterior of the Powerform<sup>®</sup> rope can lead to reduced abrasive wear on both the sheave and rope.



# BEND FATIGUE TESTING

Resistance to bend fatigue is a key factor in determining the service life of wire rope and is therefore of great interest to both the rope manufacturer and the crane operator. Extensive comparative bend fatigue testing is carried out at Brunton Wolf in order to continuously develop and improve crane rope products.

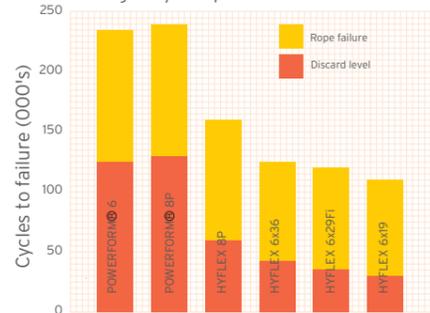
Fatigue testing involves cycling a length of rope through a sheave at a constant tension. The number of operating cycles is recorded at a point where the rope is rejectable under recommended discard levels specified under ISO 4309. The test

continues until the rope under test is unable to sustain the load any longer and again the number of cycles is recorded.

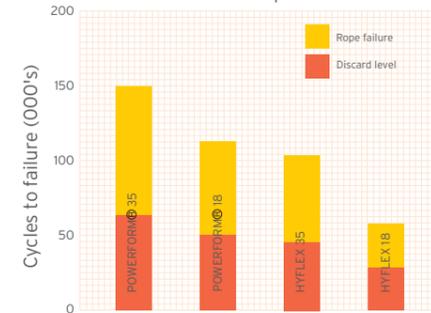
Based on results obtained from an ongoing bend fatigue testing programme the following charts give an indication of the likely comparative performance which can be obtained

from various rope constructions. The lower charts show the importance of lubrication in-service and the relative improvement in performance as sheave diameter (D:d ratio) increases.

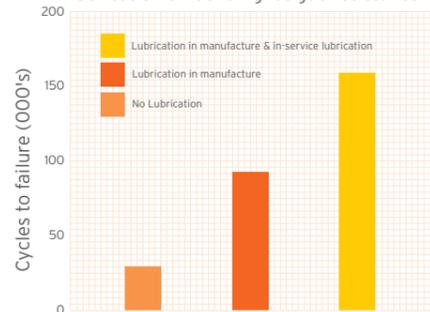
Comparative bending fatigue resistance of single layer ropes



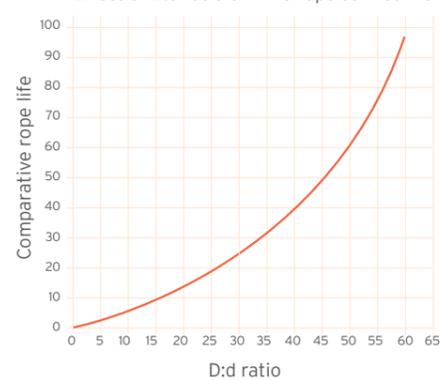
Comparative bending fatigue resistance of rotation resistant ropes



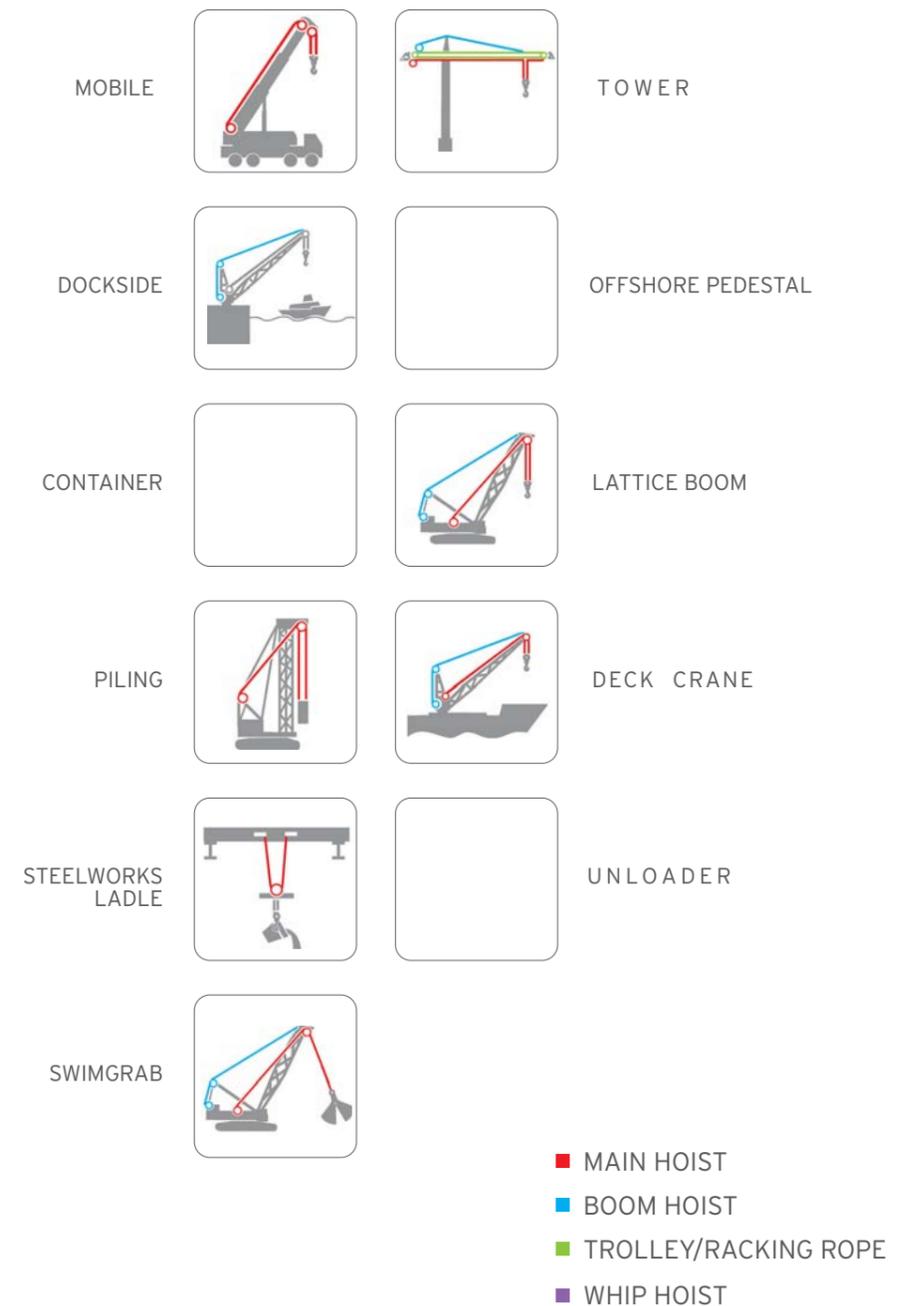
Effect of manufacturing lubricant and in-service lubrication on bending fatigue resistance



Effect of D:d ratio on wire rope service life



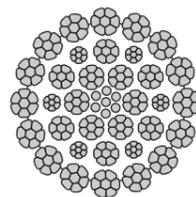
# GUIDE TO APPLICATION & ROPE DUTY



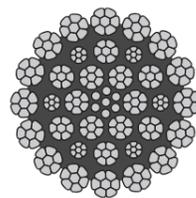
# POWERFORM® 35/35P



- Powerform® 35/35P has the highest strength of all low rotation hoist ropes.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.
- Maximum resistance to rotation.
- Suitable for use on single part and multi-part hoist reeving systems.
- High fatigue life resulting from the unique compaction process.
- Increased resistance to crushing. Recommended for multi-layer spooling operations.
- Increased abrasion resistance resulting from the unique compaction process.
- Optional plastic impregnation. (P) signifies full plastic impregnation of the Steel Core.
- Fully lubricated in manufacturing.
- Langs lay construction offers maximum resistance to wear.



Powerform® 35



Powerform® 35P

Standard Characteristics Powerform® 35/35P		
Construction	10mm-40mm	35xK7(16xK7:6xK7+6xK7-6xK7-1x7) 28xK7(16xK7: 4xK7+4xK7-4xK7)
	42mm-60mm	35xK19S(16xK19S:6xK19S+6xK19S-6xK19S-1x19S)
Compacted	Yes	No
	◆	
Tensile Grade N/mm <sup>2</sup>	1960	2160
	◆	◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	◆
Average Fill Factor (%)	74.5	
Turn value at 20% of breaking force degrees/rope lay	0.2	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.0 - 7.0 x NRD	
Discard Criteria	Refer to ISO 4309:1990	

## Typical Applications

MOBILE



MAIN HOIST

TOWER



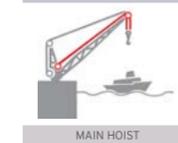
MAIN HOIST

LATTICE BOOM



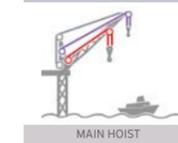
MAIN HOIST

DOCKSIDE



MAIN HOIST

OFFSHORE PEDESTAL



MAIN HOIST  
WHIP HOIST

MAIN HOIST ■  
WHIP HOIST ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
			kN	tonnes	kN	tonnes
13	1/2	81.1	148	15.1	160	16.3
14		85.0	155	15.8	167	17.0
16	5/8	129	233	23.8	252	25.7
18		163	300	30.6	321	32.7
19	3/4	182	331	33.7	358	36.0
20		201	372	37.9	399	40.7
21		222	402	41.0	434	44.2
22		243	444	45.3	484	49.3
	7/8	249	453	46.2	490	49.9
24		290	531	54.1	572	58.3
	1	325	591	60.2	640	65.2
26		340	621	63.3	661	67.4
28		394	720	73.4	788	80.3
	1-1/8	411	748	76.2	810	82.6
30		453	827	84.3	904	92.2
32	1-1/4	515	944	96.2	1035	106.0
35	1-3/8	616	1125	115.0	1216	124.0
36		652	1185	121.0	1286	131.0
38	1-1/2	726	1326	135.0	1437	146.0
40		805	1477	151.0	1588	162.0
42		887	1485	151.0		
44		974	1618	165.0		
	1-3/4	994	1646	168.0		
46		1064	1765	180.0		
48		1159	1935	197.0		
50		1258	2078	212.0		
	2	1298	2150	219.0		
52		1360	2256	230.0		

\* Mass per unit length of POWERFORM 35P increases by approx. 3%

Note: • POWERFORM 35P is available on special request and prior confirmation.

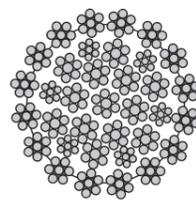
• Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



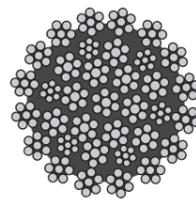
# HYFLEX 35/35P



- Hyflex 35 is a high strength flexible hoist rope.
- Maximum resistance to rotation verified by testing on the in-house torque/turn machine.
- Suitable for use on single part and multi-part hoist reeving systems.
- Langs lay construction offers maximum resistance to wear.
- A sample of rope from each production batch is tested to destruction in order to confirm
- compliance with catalogue breaking force values.
- Optional plastic impregnation (P) signifies full plastic impregnation of the steel core.
- Fully lubricated in manufacturing.



Hyflex 35



Hyflex 35P

Standard Characteristics Hyflex 35		
Construction	35x7(16x7:6x7+6x7-6x7-1x7)	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1960	2160
	◆	◆
Finish	Bright	Galvanised
		◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	◆
Average Fill Factor (%)	63.5	
Turn value at 20% of breaking force degrees/rope lay	0.2	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.0 x NRD	
Discard Criteria	Refer to ISO 4309:1990	

## Typical Applications

MOBILE



MAIN HOIST

TOWER



MAIN HOIST

OFFSHORE PEDESTAL



MAIN HOIST

WHIP HOIST

MAIN HOIST ■  
WHIP HOIST ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
10		44.8	76	7.7	86.5	8.8
11		54.2	91	9.3	104.0	10.6
12		64.5	107	10.9	125.0	12.7
	1/2	72.0	123	12.5	137.0	14.0
13		76.0	128	13.0	146.0	14.9
14		88.0	148	15.1	168.0	17.1
16	5/8	115.0	194	19.8	221.0	22.5
18		145.0	242	24.7	277.0	28.2
19	3/4	162.0	277	28.2	312.0	31.8
20		179.0	301	30.7	337.0	34.4
21		198.0	335	34.1	370.0	37.7
22		217.0	370	37.7	412.0	42.0
	7/8	221.0	376	38.3	418.0	42.6
24		258.0	441	45.0	498.0	50.8
	1	289.0	491	50.1	546.0	55.7
26		303.0	517	52.7	581.0	59.2
28		351.0	599	61.1	681.0	69.4
	1-1/8	366.0	621	63.3	704.0	71.8
30		403.0	679	69.2	775.0	79.0
32	1-1/4	459.0	769	78.4	865.0	88.2
35	1-3/8	549.0	945	96.3	1044.0	106.0
36		581.0	983	100.0	1085.0	111.0
38	1-1/2	647.0	1078	110.0	1205.0	123.0
40		717.0	1202	123.0	1335.0	136.0
42		790.0	1227	125.0		
44		867.0	1347	137.0		
	1-3/4	885.0	1375	140.0		
46		948.0	1472	150.0		
48		1032.0	1603	163.0		
50		1120.0	1740	177.0		
	2	1156.0	1796	183.0		
52		1211.0	1881	192.0		

\* Mass per unit length of HYFLEX 35P increases by approx. 3%

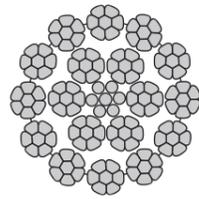
- Note:
- HYFLEX 35P is available on special request and prior confirmation.
  - Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



# POWERFORM® 18



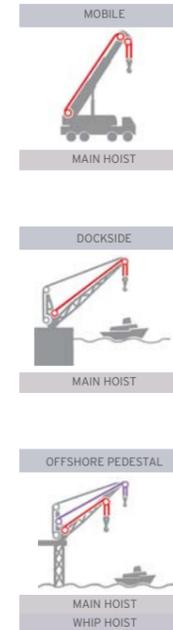
- Powerform® 18 is a high strength rotation resistant hoist rope.
- A sample of rope from each production batch is tested to destruction in order to confirm
- compliance with catalogue breaking force values.
- Good resistance to rotation verified by testing on the in-house torque/turn machine.
- Suitable for use on single part and multi-part hoist reeving systems.
- High fatigue life resulting from the unique compaction process.
- Increased resistance to crushing. Recommended for multi-layer spooling operations.
- Increased abrasion resistance resulting from the unique compaction process.
- Fully lubricated in manufacturing.



Powerform® 18

Standard Characteristics Powerform® 18			
Construction	6mm-19mm	18xK7(12xK7:6xK7-1x7)	
	20mm-32mm	18xK19S(12xK19S:6xK19S-1x19S)	
Compacted	Yes	No	
	◆		
Tensile Grade N/mm <sup>2</sup>	1960	2160	
	◆		
Finish	Bright	Galvanised	
	◆	◆	
Lay Direction	Right Hand	Left Hand	
	◆	◆	
Lay Type	Ordinary	Langs	
	◆	◆	
Average Fill Factor (%)	66.3		
Turn value at 20% of breaking force degrees/rope lay	4		
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.0 - 6.5 x NRD		
Discard Criteria	Refer to ISO 4309:1990		

## Typical Applications



MAIN HOIST ■  
WHIP HOIST ■

Note : For higher lifting heights consideration should be given to using a 35x7 construction with improved rotational characteristics.

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
6		17.5	29.4	3.0		
7		23.8	38.0	3.9		
8		31.0	51.8	5.3		
9		39.3	64.6	6.6		
10		48.5	80.8	8.2		
11		58.7	101.0	10.3	111	11.3
12		69.8	116.0	11.8	127	12.9
	1/2	78.2	135.0	13.8	148	15.1
13		82.0	141.0	14.4	155	15.8
14		95.1	160.0	16.3	177	18.0
15		109.0	182.0	18.6	201	20.5
16	5/8	124.0	209.0	21.3	232	23.6
17		140.0	237.0	24.2	262	26.7
18		157.0	266.0	27.1	295	30.1
	3/4	175.0	291.0	29.7	322	32.8
20		194.0	320.0	32.6	359	36.6
22		235.0	379.0	38.6	424	43.2
	7/8	240.0	387.0	39.4	433	44.1
24		279.0	462.0	47.1	523	53.3
	1	313.0	517.0	52.7	585	59.6
26		328.0	542.0	55.2	613	62.5
28		380.0	632.0	64.4	710	72.4
30		437.0	721.0	73.5	809	82.5
32	1-1/4	497.0	820.0	83.6	920	93.8

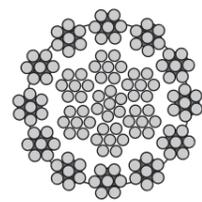
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



# HYFLEX 18



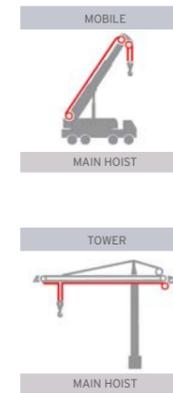
- Hyflex 18 is a high quality rotation resistant hoist rope.
- Good resistance to rotation verified by testing on the in-house torque/turn machine.
- Consistent performance.
- Fully lubricated in manufacturing.
- Also available in fibre core construction.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.



Hyflex 18

Standard Characteristics Hyflex 18		
Construction	18x7(12x7:6x7-1x7)	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1960	2160
	◆	◆
Finish	Bright	Galvanised
		◆
Lay Direction	Right Hand	Left Hand
	◆	
Lay Type	Ordinary	Langs
		◆
Average Fill Factor (%)	61.5	
Turn value at 20% of breaking force degrees/rope lay	5	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.25 x NRD	
Discard Criteria	Refer to ISO 4309:1990	

## Typical Applications



MAIN HOIST ■

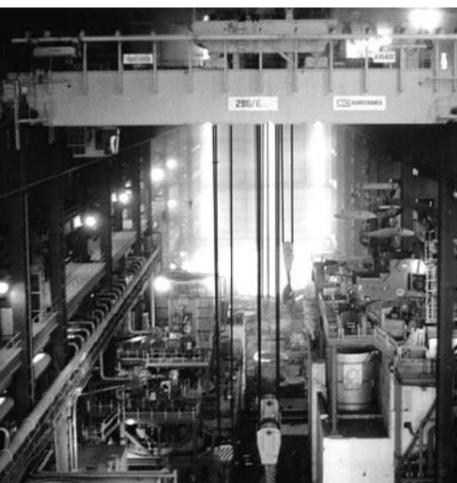
Note : For higher lifting heights, consideration should be given to using a 35x7 construction with improved rotational characteristics.

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
6		14.6	25.0	2.5	27.0	2.8
7		19.9	34.0	3.5	36.7	3.7
8		26.0	45.0	4.6	48.6	5.0
9		32.9	56.5	5.8	61.0	6.2
10		40.6	70.0	7.1	75.6	7.7
11		49.1	84.0	8.6	90.7	9.2
12		58.5	101	10.3	109	11.1
	1/2	65.5	113	11.5	121	12.3
13		68.6	118	12.0	127	12.9
14		79.6	137	14.0	148	15.1
15		91.4	157	16.0	169	17.2
16	5/8	104	180	18.3	194	19.8
17		117	203	20.7	219	22.3
18		132	226	23.0	244	24.9
	3/4	147	253	25.8	273	27.8
20		162	279	28.4	301	30.7
22		197	339	34.6	366	37.3
	7/8	201	346	35.3	374	38.1

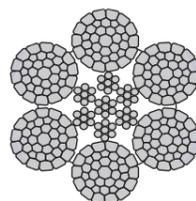
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



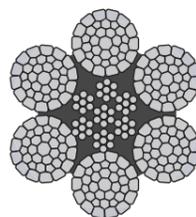
# POWERFORM® 6/6P



- Powerform® 6 is a high strength rugged six strand rope ideal for situations where longer service life is required.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.
- Powerform® 6 can be substituted for any six strand construction to improve service life and reduce total cost.
- High fatigue life resulting from the unique compaction process.
- Maximum resistance to crushing. Recommended for multi-layer spooling operations.
- Increased abrasion resistance resulting from the unique compaction process.
- Fully lubricated in manufacturing.
- Optional plastic impregnation (P) signifies full plastic impregnation of the steel core.



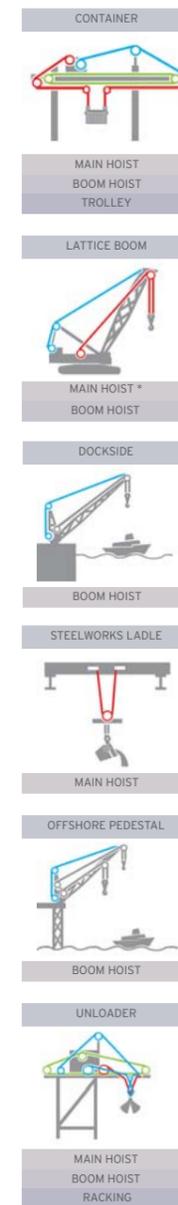
Powerform® 6



Powerform® 6P

Standard Characteristics Powerform® 6/6P		
Construction	6xK36SW(14-7+7-1)-CWR 6xK41SW(16+8+8-8-1)-CWR	
Compacted	Yes	No
Tensile Grade N/mm <sup>2</sup>	1770	1960
Finish	Bright	Galvanised
Lay Direction	Right Hand	Left Hand
Lay Type	Ordinary	Langs
Average Fill Factor (%)	67.5	
Turn value at 20% of breaking force degrees/rope lay	58	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Powerform® 6/6P in Langs lay must only be used in applications where both ends are secured and are unable to rotate.		

## Typical Applications



BOOM HOIST ■  
MAIN HOIST ■  
RACKING/  
TROLLEY ■

\* For higher lifting heights a rotation resistant rope should be selected.

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1770 N/mm <sup>2</sup>		1960 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
10		46.4	69.5	7.1	85.7	8.7
11		56.1	83.8	8.5	98.6	10.1
12		66.8	100.0	10.2	114.0	11.6
	1/2	74.8	113.0	11.5	140.0	14.3
13		78.4	118.0	12.0	147.0	15.0
14		90.9	137.0	14.0	170.0	17.3
15		104.0	157.0	16.0	195.0	19.9
16	5/8	119.0	178.0	18.1	218.0	22.2
17		134.0	201.0	20.5	246.0	25.1
18		150.0	225.0	22.9	276.0	28.1
19	3/4	168.0	251.0	25.6	304.0	31.0
20		186.0	278.0	28.3	335.0	34.1
22		225.0	336.0	34.3	400.0	40.8
	7/8	229.0	343.0	35.0	408.0	41.6
24		267.0	400.0	40.8	489.0	49.8
	1	299.0	449.0	45.8	552.0	56.3
26		314.0	470.0	47.9	578.0	58.9
28		364.0	545.0	55.6	657.0	67.0
30		418.0	626.0	63.8	757.0	77.2
32	1-1/4	475.0	712.0	72.6	846.0	86.2
34		518.0	804.0	82.0	916.0	93.4
36		581.0	901.0	91.8	1065.0	109.0
38	1-1/2	647.0	1004.0	102.0	1165.0	119.0
40		717.0	1112.0	113.0	1295.0	132.0
42		790.0	1226.0	125.0	1425.0	145.0
44		867.0	1246.0	127.0	1505.0	153.0
46		948.0	1362.0	139.0	1665.0	170.0
48		1032.0	1483.0	151.0	1885.0	192.0
50		1120.0	1609.0	164.0	1975.0	201.0
52		1211.0	1741.0	177.0	2135.0	218.0
54		1306.0	1877.0	191.0	2325.0	237.0
56		1405.0	2019.0	206.0	2475.0	252.0
58		1507.0	2166.0	221.0	2650.0	270.0
60		1613.0	2317.0	236.0	2810.0	286.0

\* Mass per unit length of POWERFORM 6P increases by approx. 3%

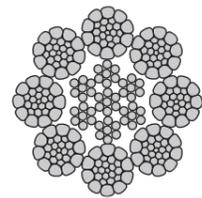
- Note:
- Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.
  - POWERFORM 6P is available only for 16 mm and above on special request and prior confirmation.



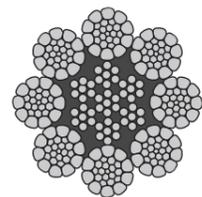
# POWERFORM® 8/8P



- Powerform® 8P is a high strength eight strand rope with plastic impregnated core ideal for situations where longer service life is required.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.
- High fatigue life resulting from the unique compaction process.
- Maximum resistance to crushing. Recommended for multi-layer spooling operations.
- Increased abrasion resistance resulting from the unique compaction process.
- Greater surface contact area resulting from the eight strand construction and compacted finish give longer rope life and reduced sheave wear.
- Fully lubricated in manufacturing.
- Optional plastic impregnation of the steel core. (P) signifies full plastic impregnation of the steel core.



Powerform® 8



Powerform® 8P

Standard Characteristics Powerform® 8/8P		
Construction	8xK26SW(10-5+5-5-1)-CWR 8xK36SW(14-7+7+7-1)-CWR	
Compacted	Yes	No
	◆	
Tensile Grade N/mm <sup>2</sup>	1960	2160
	◆	
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	65.5	
Turn value at 20% of breaking force degrees/rope lay	94	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Powerform 8/8P® in Langs lay must only be used in applications where both ends are secured and are unable to rotate.		

## Typical Applications



- BOOM HOIST ■
- MAIN HOIST ■
- RACKING/  
TROLLEY ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
10		46.0	87.8	9.0	94	9.6
11		55.7	106.0	10.8	114	11.6
12		66.2	126.0	12.8	135	13.8
	1/2	74.2	142.0	14.5	152	15.5
13		77.7	148.0	15.1	159	16.2
14		90.2	172.0	17.5	184	18.8
15		104.0	198.0	20.2	211	21.5
16	5/8	118.0	225.0	22.9	241	24.6
17		133.0	254.0	25.9	272	27.7
18		149.0	284.0	29.0	304	31.0
19	3/4	166.0	317.0	32.3	339	34.6
20		184.0	351.0	35.8	376	38.3
22		223.0	425.0	43.3	455	46.4
	7/8	227.0	434.0	44.2	464	47.3
24		265.0	506.0	51.6	541	55.1
	1	297.0	567.0	57.8	606	61.8
26		318.0	594.0	60.6	635	64.7
28		368.0	688.0	70.1	737	75.1
	1-1/8	384.0	717.0	73.1	767	78.2
30		423.0	790.0	80.5	846	86.2
32	1-1/4	481.0	899.0	91.6	960	97.9
34		543.0	1013.0	103.0	1083	110.0
36		609.0	1138.0	116.0	1218	124.0
38	1-1/2	679.0	1268.0	129.0	1357	138.0
40		752.0	1405.0	143.0	1503	153.0
42		847.0	1535.0	156.0	1651	168.0
44		929.0	1700.0	173.0	1819	185.0
	1-3/4	948.0	1735.0	177.0	1856	189.0
46		1016.0	1858.0	189.0	1985	202.0
48		1106.0	2023.0	206.0	2162	220.0
50		1200.0	2200.0	224.0	2349	239.0
	2	1239.0	2266.0	231.0	2425	247.0
52		1298.0	2374.0	242.0	2541	259.0

\* Mass per unit length of POWERFORM 8P increases by 3%

- Note:
- Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.
  - POWERFORM 8P is available for rope diameter 16 mm and above on special request and prior confirmation.

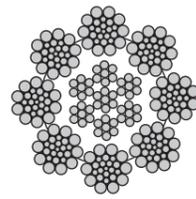


# HYFLEX 8/8P

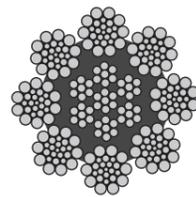


- Hyflex 8P is a flexible high strength eight strand steel wire rope with plastic impregnated core.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.
- Good bending fatigue life.
- Greater surface contact area resulting from the eight strand construction.
- Fully lubricated in manufacturing.
- Optional plastic impregnation of the steel core. (P) signifies full plastic impregnation of the steel core.

Standard Characteristics Hyflex 8/8P		
Construction	8x26SW(10-5+5-5-1)-CWR 8x36SW(14-7+7-7-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1960	2160
	◆	
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	59.8	
Turn value at 20% of breaking force degrees/rope lay	87	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.25 - 6.75 X NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Hyflex 8/8P in Langs lay must only be used in applications where both ends are secured and are unable to rotate.		

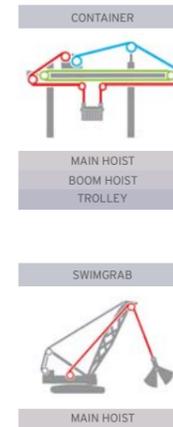


Hyflex 8



Hyflex 8P

## Typical Applications



BOOM HOIST ■  
MAIN HOIST ■  
TROLLEY ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
10		43.5	72.9	7.4	81.4	8.3
11		52.6	86.1	8.8	96.5	9.8
12		62.6	105	10.7	117.0	11.9
	1/2	70.2	123	12.5	131.0	13.4
13		73.5	124	12.6	138.0	14.1
14		85.3	143	14.6	160.0	16.3
15		97.9	164	16.7	183.0	18.7
16	5/8	111.0	187	19.1	208.0	21.2
17		126.0	211	21.5	239.0	24.4
18		141.0	239	24.4	267.0	27.2
19	3/4	157.0	269	27.4	300.0	30.6
20		174.0	295	30.1	331.0	33.7
22		211.0	356	36.3	400.0	40.8
	7/8	215.0	360	36.7	402.0	41.0
24		251.0	423	43.1	475.0	48.4
	1	281.0	470	47.9	525.0	53.5
26		297.0	500	51.0	562.0	57.3
28		345.0	572	58.3	642.0	65.4
	1-1/8	359.0	596	60.8	665.0	67.8
30		396.0	656	66.9	733.0	74.7
32	1-1/4	451.0	747	76.1	836.0	85.2
34		509.0	843	85.9	945.0	96.3
36		570.0	935	95.3	1053.0	107.0
38	1-1/2	635.0	1043	106.0	1172.0	119.0
40		704.0	1162	118.0	1313.0	134.0
42		785.0	1305	133.0	1462.0	149.0
44		862.0	1412	144.0	1577.0	161.0
	1-3/4	879.0	1441	147.0	1613.0	164.0
46		942.0	1543	157.0	1731.0	176.0
48		1025.0	1680	171.0	1885.0	192.0
50		1113.0	1833	187.0	2065.0	210.0
	2	1148.0	1882	192.0	2101.0	214.0
52		1203.0	1972	201.0	2202.0	224.0

\* Mass per unit length of HYFLEX 8P increases by approx. 3%

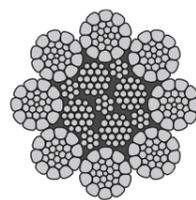
- Note:
- Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.
  - HYFLEX 8P is available for rope diameter 16 mm and above on special request and prior confirmation.



# POWERFORM® 8PC



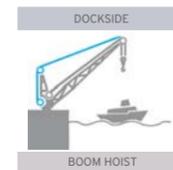
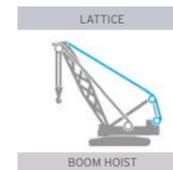
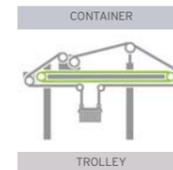
- Powerform® 8PC is a high strength parallel closed steel wire rope.
- High fatigue life resulting from the unique compaction process and the parallel closed construction.
- Maximum resistance to crushing. Recommended for multi-layer spooling operations.
- Increased abrasion resistance resulting from the unique compaction process.
- Greater surface contact area resulting from the eight strand construction and compacted finish give longer rope life and reduced sheave wear.
- Fully lubricated in manufacturing.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.



Powerform® 8PC

Standard Characteristics Powerform® 8PC		
Construction	5mm-9mm	8xK7-CWRP(F4x7-4x7-1x7)
	10mm-50mm	8xK26SW-CWRP (F4x7-4x19W-1x7)
Compacted	Yes	No
	◆	
Tensile Grade N/mm <sup>2</sup>	1960	2160
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	70.5	
Turn value at 20% of breaking force degrees/rope lay	64	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Powerform® 8PC must only be used in applications where both ends of the rope are secured and unable to rotate.		
Powerform® 8PC should not be used in any reeving system where the fleet angle exceeds 1.5 degrees.		

## Typical Applications



BOOM HOIST ■  
TROLLEY ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1960 N/mm <sup>2</sup>		2160 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
8		31.7	60.5	6.2	66.5	6.8
9		40.1	76.6	7.8	84.2	8.6
10		49.5	94.7	9.7	103.0	10.5
11		59.9	112.0	11.4	121.0	12.3
12		71.3	138.0	14.1	150.0	15.3
	1/2	79.8	152.0	15.5	164.0	16.7
13		83.7	159.0	16.2	172.0	17.5
14		97.0	181.0	18.5	197.0	20.1
15		111.0	213.0	21.7	232.0	23.6
16	5/8	127.0	239.0	24.4	260.0	26.5
17		143.0	269.0	27.4	292.0	29.8
18		160.0	300.0	30.6	326.0	33.2
19	3/4	179.0	341.0	34.8	371.0	37.8
20		198.0	375.0	38.2	408.0	41.6
22		240.0	448.0	45.7	487.0	49.6
	7/8	245.0	457.0	46.6	497.0	50.7
24		285.0	527.0	53.7	574.0	58.5
	1	319.0	592.0	60.3	646.0	65.9
26		335.0	620.0	63.2	677.0	69.0
28		388.0	735.0	74.9	801.0	81.7

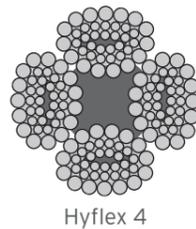
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



# HYFLEX 4



- Rugged 4 strand steel wire rope.
- Good rotation resistance.
- Recommended for severe applications.
- Fully lubricated in manufacturing.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.



Hyflex 4

Standard Characteristics Hyflex 4		
Construction	4x39(15-15/9-CFS)-CFS	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1770	1960
		◆
Finish	Bright	Galvanised
	◆	
Lay Direction	Right Hand	Left Hand
	◆	
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	50.8	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Hyflex 4 in Langs lay must only be used in applications where both ends are secured and are unable to rotate.		

## Typical Applications



BOOM HOIST ■  
MAIN HOIST ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1770 N/mm <sup>2</sup>		1960 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
10		44.8	64.0	6.5	69.4	7.1
12		65.4	92.3	9.4	99.9	10.2
14		88.8	125.5	12.8	136.5	13.9
16	5/8	117.0	164.5	16.8	177.4	18.1
18		149.0	207.5	21.2	224.5	22.9
19	3/4	167.0	231.5	23.6	250.5	25.5
20		183.0	256.5	26.2	277.5	28.3
22		214.0	310.0	31.6	336.0	34.3
	7/8	218.0	317.0	32.3	343.0	35.0
24		253.0	369.0	37.6	400.0	40.8
25		275.0	399.0	40.7	432.0	44.1
	1	284.0	413.0	42.1	448.0	45.7
26		298.0	433.0	44.2	469.0	47.8
28		346.0	502.0	51.2	544.0	55.5
30		398.0	576.0	58.7	624.0	63.6
32	1 1/4	456.0	656.0	66.9	689.0	70.3
34		512.0	740.0	75.5	802.0	81.8
36		574.0	830.0	84.6	898.0	91.6
38	1 1/2	640.0	924.0	94.2	1002.0	102.0
40		709.0	1002.0	102.0	1082.0	110.0
42		782.0	1102.0	112.0	1192.0	122.0
44		859.0	1212.0	124.0	1312.0	134.0
45		898.0	1272.0	130.0	1372.0	140.0

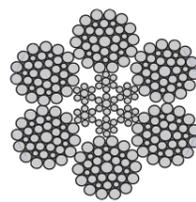
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



# HYFLEX 6X36



- High quality flexible 6x36 class crane rope.
- Consistent performance.
- Fully lubricated in manufacturing.
- Independent wire rope core.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.
- Supplied in high strength 1960N/mm<sup>2</sup> tensile steel as standard.



Hyflex 6x36

Standard Characteristics Hyflex 6X36		
Construction	6X36(14-7+7-1)-CWR 6x41(16-8+8-8-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1770	1960
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	60.9	
Turn value at 20% of breaking force degrees/rope lay	56	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Hyflex 6x36 in Langs lay must only be used in applications where both ends are unable to rotate.		

## Typical Applications

CONTAINER

MAIN HOIST  
BOOM HOIST  
TROLLEY

LATTICE BOOM



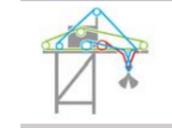
MAIN HOIST \*

STEELWORKS LADLE



MAIN HOIST

UNLOADER



MAIN HOIST  
BOOM HOIST  
RACKING

BOOM HOIST ■  
MAIN HOIST ■  
RACKING/  
TROLLEY ■

\* For higher lifting heights a rotation resistant rope should be selected.

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			ROPE GRADE			
			1770 N/mm <sup>2</sup>		1960 N/mm <sup>2</sup>	
			kN	tonnes	kN	tonnes
8		26.1	40.3	4.1	44.7	4.6
9		33.2	51.0	5.2	56.5	5.8
10		40.8	63.0	6.4	69.8	7.1
11		49.4	76.2	7.8	84.4	8.6
12		58.8	90.7	9.2	101.0	10.3
	1/2	66.0	102.0	10.4	113.0	11.5
13		69.2	107.0	10.9	118.0	12.0
14		80.2	124.0	12.6	137.0	14.0
16	5/8	104.0	161.0	16.4	179.0	18.3
18		132.0	204.0	20.8	226.0	23.0
20		163.0	252.0	25.7	279.0	28.4
22		197.0	305.0	31.1	338.0	34.5
	7/8	201.0	311.0	31.7	345.0	35.2
24	15/16	235.0	363.0	37.0	402.0	41.0
	1	263.0	407.0	41.5	450.0	45.9
26		276.0	426.0	43.4	472.0	48.1
28		320.0	494.0	50.4	547.0	55.8
32	1.1/4	418.0	645.0	65.8	715.0	72.9
36		531.0	817.0	83.3	904.0	92.2
40		655.0	1010.0	103.0	1120.0	114.0
44		793.0	1220.0	124.0	1350.0	138.0
48	1.7/8	943.0	1450.0	148.0	1610.0	164.0
52		1111.0	1700.0	173.0	1890.0	193.0
56		1281.0	1980.0	202.0	2190.0	223.0
60	2.3/8	1471.0	2270.0	231.0	2510.0	256.0

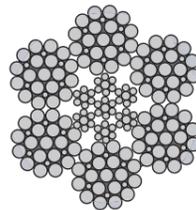
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.  
Fibre core ropes can be produced against specific request.



# HYFLEX 6X19



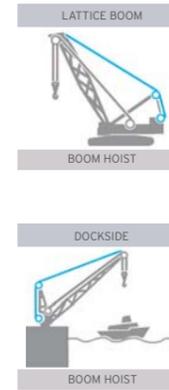
- High quality flexible 6x19 class crane rope.
- Good resistance to abrasion.
- Consistent performance.
- Fully lubricated in manufacturing.
- Independent wire rope core.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.



Hyflex 6x19

Standard Characteristics Hyflex 6X19		
Construction	6x19S(9-9-1)-CWR 6x19W(6+6-6-1)-CWR 6x25F(12-6F-6-1)-CWR 6x26SW(10-5+5-5-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1770	1960
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	59.6	
Turn value at 20% of breaking force degrees/rope lay	42	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Warning : Hyflex 6x19 in Langs lay must only be used in applications where both ends are unable to rotate.		

## Typical Applications



BOOM HOIST ■

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE			
			GALVANISED & UNGALVANISED			
			1770 N/mm <sup>2</sup>		1960 N/mm <sup>2</sup>	
		kN	tonnes	kN	tonnes	
6		14.3	22.7	2.3	25.1	2.6
7		19.5	30.9	3.1	34.2	3.5
8		25.5	40.3	4.1	44.7	4.6
9		32.2	51.0	5.2	56.5	5.8
10		39.8	63.0	6.4	69.8	7.1
11		48.2	76.2	7.8	84.4	8.6
12		57.3	90.7	9.3	101.0	10.3
	1/2	64.2	102.0	10.4	113.0	11.5
13		67.3	107.0	10.9	118.0	12.0
14		78.0	124.0	12.6	137.0	14.0
16	5/8	102.0	161.0	16.4	179.0	18.3
18		129.0	204.0	20.8	226.0	23.0
20		159.0	252.0	25.7	279.0	28.4
22		193.0	305.0	31.1	338.0	34.5
	7/8	197.0	311.0	31.7	345.0	35.2
24	15/16	229.0	363.0	37.0	402.0	41.0
	1	257.0	407.0	41.5	450.0	45.9
26		269.0	426.0	43.4	472.0	48.1
28		312.0	494.0	50.4	547.0	55.8
32	1.1/4	408.0	645.0	65.8	715.0	72.9
36		516.0	817.0	83.3	904.0	92.2
40		637.0	1010.0	103.0	1120.0	114.0
44		771.0	1220.0	124.0	1350.0	138.0
48	1.7/8	917.0	1450.0	148.0	1610.0	164.0
52		1076.0	1700.0	173.0	1890.0	193.0
56		1248.0	1980.0	202.0	2190.0	223.0
60		1433.0	2270.0	231.0	2510.0	256.0

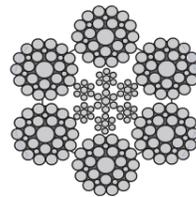
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.  
Fibre core ropes can be produced against specific request.



# HYFLEX 6X29Fi



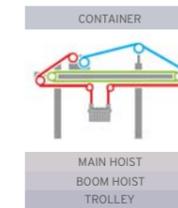
- High quality flexible crane rope.
- Consistent performance.
- Fully Lubricated in manufacturing.
- Independent wire rope core.
- A sample of rope from each production batch is tested to destruction in order to confirm compliance with catalogue breaking force values.



Hyflex 6X29Fi

Standard Characteristics Hyflex 6X29Fi		
Construction	6X29F(14-7F-7-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm <sup>2</sup>	1620	1770
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	61.2	
Turn value at 20% of breaking force degrees/rope lay	52	
Nominal rope lay length (NRD = Nominal Rope Diameter)	6.5 x NRD	
Discard Criteria	Refer to ISO 4309:1990	
Standard	JIS G. 3525	
Warning : Hyflex 6x29Fi in Langs lay must only be used in applications where both ends are unable to rotate.		

## Typical Applications



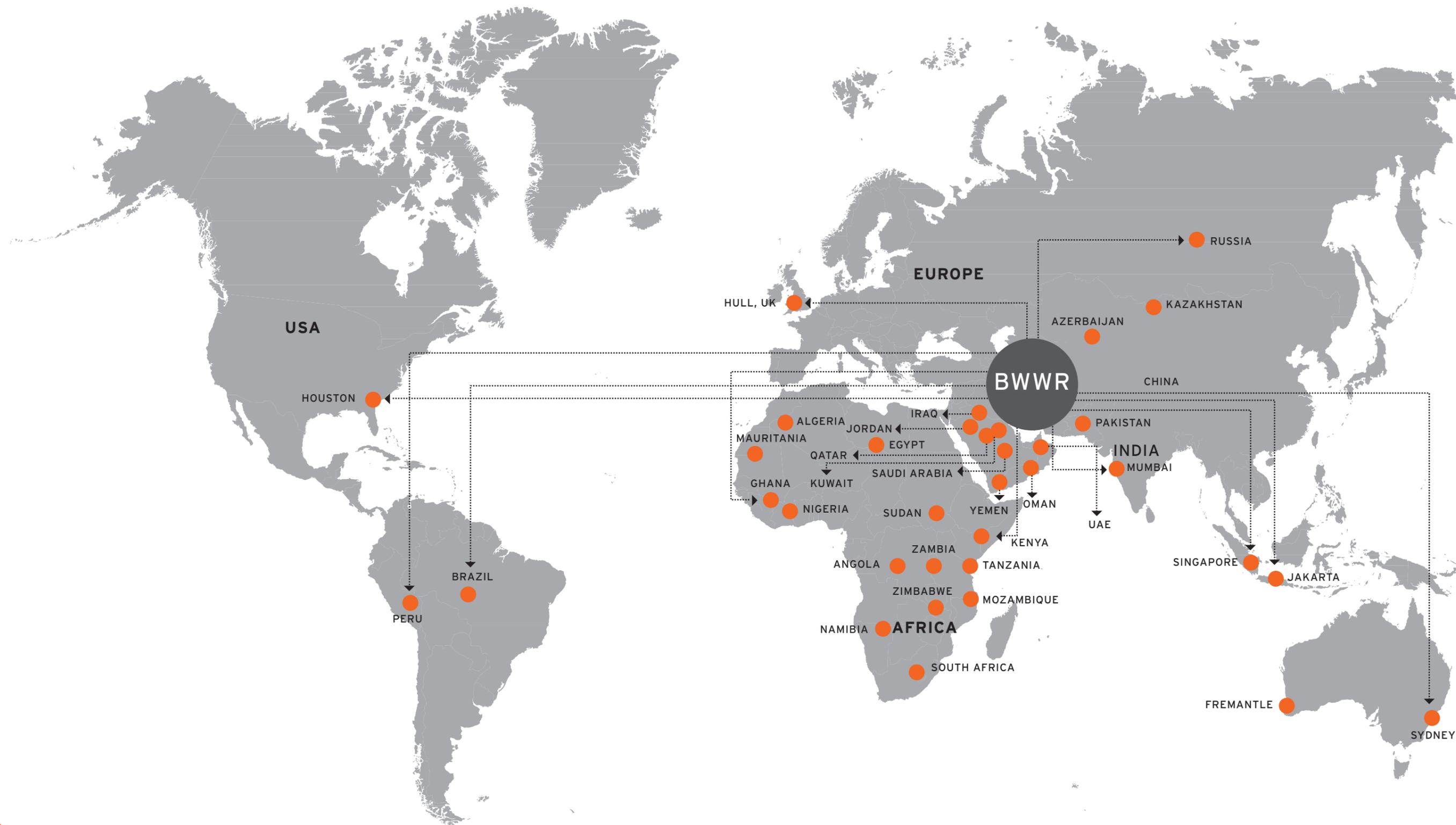
- BOOM HOIST ■
- MAIN HOIST ■
- TROLLEY ■

NOM. ROPE DIA. mm	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE	
		GALVANISED & UNGALVANISED	
		1620 N/mm <sup>2</sup> GRADE A	1770 N/mm <sup>2</sup> GRADE B
		kN	kN
10	44	63.6	67.7
11.2	55.2	79.8	84.9
12.5	68.8	99.4	106.0
14	86.3	125.0	133.0
16	113.0	163.0	173.0
18	143.0	206.0	219.0
20	176.0	254.0	271.0
22.4	221.0	319.0	340.0
25	275.0	398.0	423.0
28	345.0	499.0	531.0
30	396.0	573.0	609.0
31.5	437.0	631.0	672.0
33.5	494.0	714.0	760.0
35.5	555.0	802.0	853.0
37.5	619.0	895.0	952.0
40	704.0	1020.0	1080.0
42.5	795.0	1150.0	1220.0
45	891.0	1290.0	1370.0
47.5	993.0	1440.0	1530.0
50	1100.0	1590.0	1690.0
53	1240.0	1790.0	1900.0
56	1380.0	2000.0	2120.0
60	1580.0	2290.0	2440.0

Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.



# CUSTOMER SPREAD



# FISHING ROPES

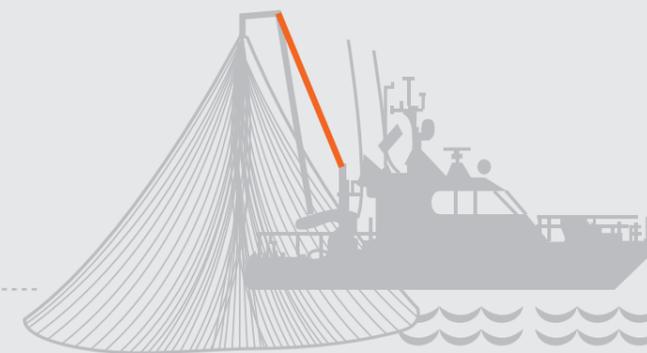


The global success of Brunton Wolf Ropes is based on an uncompromising commitment to quality and product development which has been driven by a dynamic and technically demanding marketplace.

State of the art ISO 9001 certified manufacturing facilities and tight process control from steel making to rod manufacture and through to finished wire rope ensures consistently high quality in the finished Fishing Rope.

Brunton Wolf manufactures fishing ropes in different constructions for trawlers and small fishing boats. It not only manufactures fishing ropes having a wide diameter range but also has different options with respect to constructions, galvanization and cores. Brunton Wolf also

manufactures the new generation compacted fishing ropes that have higher breaking loads and give better performances. The group also produces plastic valley filled fishing ropes that are in high demand at various fishing harbours in the world. Another success story in fishing ropes has been the launch of combination fishing ropes. This superior design has attracted many fishing companies to use this rope and save cost and also get longer life. We also have the capability of manufacturing fishing ropes with steel cores and ropes with equivalent to galvanized coating for deep sea trawling and long voyages. Further, this group manufactures fishing ropes with plastic impregnated core and fully plasticated fishing ropes.

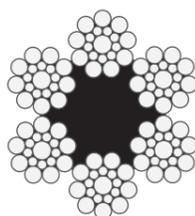


# 619S

Typical Construction  
6x19S(9-9-1) - CFS  
Drawn Galvanized, Right Hand or Left Hand Ordinary Lay



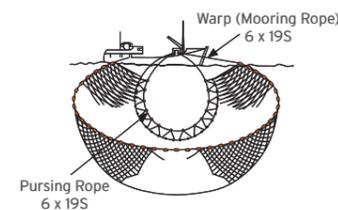
- Specifically produced for ultimate wear & abrasion resistance.
- Superior quality galvanization for extra life.
- Petroleum based lubricant for superior corrosion resistance - Luberite.
- Unique Identification Tag symbolises usage of original Brunton Wolf product.
- Customised coloured strand in case of customer requirements.
- Polypropylene core for flexibility wherever required.
- Steel core for increased strength and prevention of crushing on the winch drum.
- Sample from each production batch is tested in order to conform completely with customer specifications.



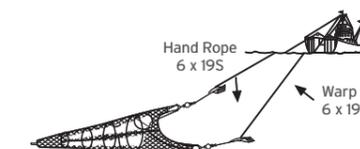
619S

## TYPICAL APPLICATIONS

SURFACE TRAWL



BOTTOM TRAWL



## FISHING ROPES



NOM. ROPE DIA. mm	APPROX. MASS kg/100m		MINIMUM BREAKING FORCE											
			GALVANISED AND UNGALVANISED											
			ROPE GRADE											
			1570 N/mm <sup>2</sup>				1770 N/mm <sup>2</sup>				1960 N/mm <sup>2</sup>			
		kN		TONNES		kN		TONNES		kN		TONNES		
FC	CWR	FC	CWR	FC	CWR	FC	CWR	FC	CWR	FC	CWR	FC	CWR	
12	53.5	59.0	75.0	81.0	7.65	8.26	84.5	91	8.61	9.3	93.0	101	9.48	10.3
13	62.8	69.2	88.0	95	9.0	9.7	99	107	10.11	10.9	110	118	11.21	12.1
14	73	80.3	102	110	10.4	11.2	115	124	11.72	12.6	127	137	12.95	14.0
16	95.5	105	133	144	13.6	14.7	150	162	15.31	16.5	166	179	16.92	18.2
18	121	133	168	181	17.2	18.5	190	205	19.38	20.9	210	227	21.41	23.1
19	134	148	187	202	19.1	20.6	211	228	21.51	23.2	234	253	23.85	25.8
20	149	164	208	225	21.2	22.9	234	253	23.83	25.8	259	280	26.40	28.6
22	180	198	251	271	25.6	27.6	283	306	28.84	31.2	314	339	32.01	34.5
24	215	236	299	323	30.5	32.9	337	364	34.32	37.1	374	403	38.12	41.1
26	252	277	351	379	35.7	38.6	396	428	40.37	43.6	438	474	44.65	48.3
28	292	321	407	440	41.4	44.9	459	496	46.82	50.6	508	549	51.78	56.0
30	335	369	467	505	47.6	51.5	527	559	53.74	57.0	583	619	59.45	63.1
32	381	420	532	575	54.2	58.6	600	648	61.16	66.1	664	717	67.69	73.1

- Ropes of different constructions and specifications can be installed based on individual customer requirement and past experience.
- Brunton Wolf can supply higher than usual galvanization requirements as per specific customers' requirements.

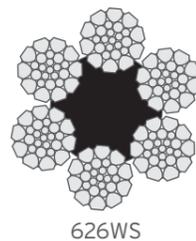


# 626WS

Typical Construction  
6 x 26WS (10-5+5-5-1) COMPACTED

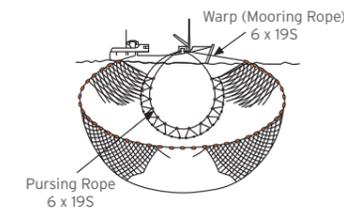


- Specifically produced for ultimate wear resistance
- Superior quality galvanization for extra life
- Petroleum based lubricant for superior corrosion resistance
- Unique Identification Tag symbolises usage of original Usha Martin product
- Customised coloured strand in case of customer requirements
- Polypropylene core for flexibility wherever required
- Steel core for increased strength
- Greater resistance to crushing at crossover points
- Greater resistance to interference at the drum
- Sample from each production batch is tested in order to conform completely with customer specifications
- Increased abrasion resistance resulting from the unique compaction process
- High fatigue life due to compaction

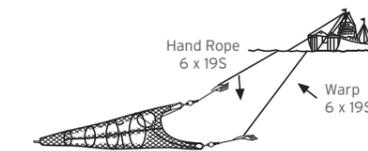


## TYPICAL APPLICATIONS

SURFACE TRAWL



BOTTOM TRAWL



## FISHING ROPES



NOM. ROPE DIA	APPROX. MASS Kg./100m		MINIMUM BREAKING FORCE	
	POLY CORE	CWR	POLY CORE kN	CWR kN
14.0	82	92	128.0	141.0
16.0	106	119	167.0	184.0
18.0	136	152	212.0	234.0
20.0	167	186	261.0	290.0
22.0	203	226	316.0	352.0
24.0	241	268	376.0	416.0
26.0	283	316	442.0	495.0
28.0	331	367	512.0	563.0
30.0	380	423	588.0	657.0

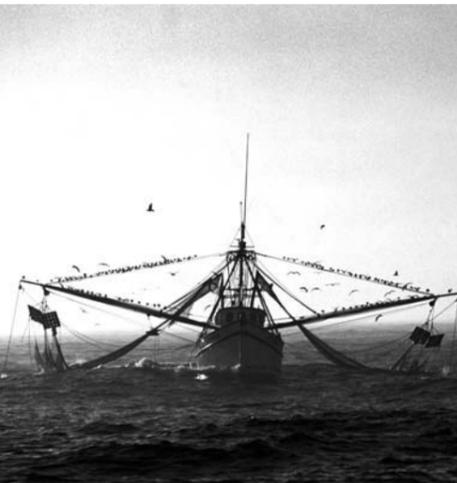
Dual Tensile - outer wires: 1570 N/mm<sup>2</sup>  
inner wires: 2160 N/mm<sup>2</sup>

All intermediate sizes are also available and all the above ropes are galvanised only

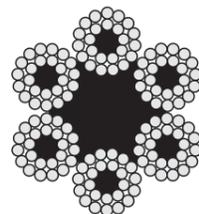


# 624 & 624S

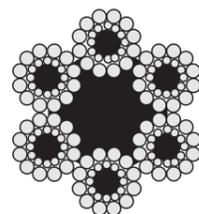
Typical Construction  
6 x 24 (15/9-FC) & 6 x 24S (12-12-FC)



- Specifically produced for ultimate wear & abrasion resistance.
- Superior quality galvanization for extra life.
- Petroleum based lubricant for superior corrosion resistance - Luberite.
- Unique Identification Tag symbolises usage of original Brunton Wolf product.
- Customised coloured strand in case of customer requirements.
- Polypropylene core for flexibility wherever required.
- Steel core for increased strength and prevention of crushing on the winch drum.
- Sample from each production batch is tested in order to conform completely with customer specifications.



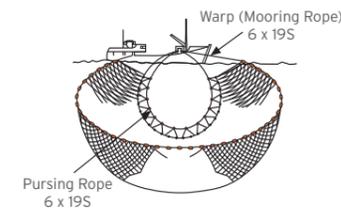
6 x 24 (15/9-FC)



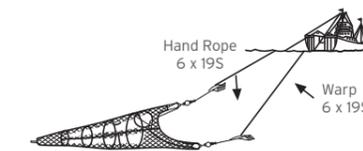
6 x 24S (12-12-FC)

## TYPICAL APPLICATIONS

SURFACE TRAWL



BOTTOM TRAWL



## FISHING ROPES



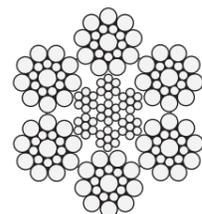
NOM. ROPE DIA	APPROX. MASS Kg./100m	MINIMUM BREAKING FORCE		
		1420 N/mm <sup>2</sup>	1570 N/mm <sup>2</sup>	1770 N/mm <sup>2</sup>
mm	FIBRE CORE	kN	kN	kN
8.00	19.7	25.4	28.1	31.7
9.00	24.9	32.2	35.6	40.1
10.00	30.8	39.8	44	49.6
11.00	37.3	48.1	53.2	60
12.00	44.4	57.3	63.3	71.4
13.00	52.1	67.2	74.3	83.8
14.00	60.4	77.9	86.2	97.1
16.00	78.8	102	113	126.9
18.00	99.8	129	142	160.6
19.00	111	144	159	178.9
20.00	123	159	176	198.2
22.00	149	192	213	239.9
24.00	177	229	253	285.5
26.00	208	269	297	335
28.00	241	312	345	388.6
32.00	315	407	450	507.5

Note: All intermediate sizes are also available and all the above ropes are galvanised only



# 619S

Typical Construction  
6x19S(1-9-9) - IWRC

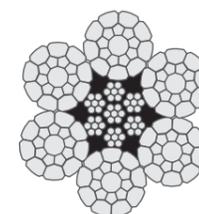


6x19S(1-9-9)

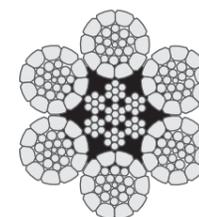
NOM. ROPE DIA	APPROX. MASS	MINIMUM BREAKING FORCE	
		kN	Tonnes
mm	Kg./m		
14	0.80	110	11.2
16	1.05	144	14.7
18	1.33	182	18.6
20	1.64	224	22.9
22	1.98	270	27.6
24	2.37	323	32.9
26	2.77	379	38.7
28	3.21	439	44.8
30	3.70	506	51.6
32	4.20	573	58.5

# 619S & 626WS

Typical Construction  
6xK19S (1-9-9) IWRC & 6xK26WS (1-5-5+5-10) IWRC  
COMPACTED STRAND PLASTIC COATED IWRC



6xK19S (1-9-9) IWRC

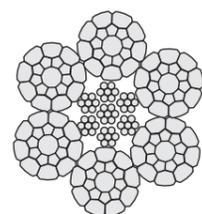


6xK26WS (1-5-5+5-10) IWRC

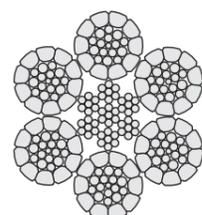
NOM. ROPE DIA	APPROX. MASS	MINIMUM BREAKING FORCE	
		kN	Tonnes
mm	Kg./m		
14	0.88	139	14.1
16	1.15	182	18.5
18	1.48	233	23.7
20	1.82	288	29.4
22	2.21	349	35.6
24	2.64	417	42.5
26	3.00	450	45.9
28	3.33	528	53.8
30	3.81	604	61.5
32	4.39	695	70.8
36	5.30	847	86.4

# 619S & 626WS

Typical Construction  
6xK19S (1-9-9) IWRC & 6xK26WS (1-5-5+5-10) IWRC  
COMPACTED



6xK19S (1-9-9) IWRC

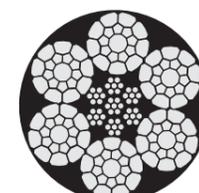


6xK26WS (1-5-5+5-10)

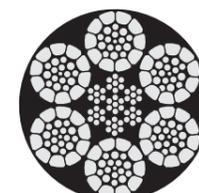
NOM. ROPE DIA	APPROX. MASS	MINIMUM BREAKING FORCE	
		kN	Tonnes
mm	Kg./m		
14	0.88	139	14.1
16	1.15	182	18.5
18	1.48	233	23.7
20	1.82	288	29.4
22	2.21	349	35.6
24	2.64	417	42.5
26	3.00	450	45.9
28	3.33	528	53.8
30	3.81	604	61.5
32	4.39	695	70.8
36	5.30	847	86.4

# 619S & 626WS

Typical Construction  
6xK19S (1-9-9) IWRC & 6xK26WS (1-5-5+5-10) IWRC  
COMPACTED - FULLY PLASTIC COATED



6xK19S (1-9-9) IWRC



6xK26WS (1-5-5+5-10) IWRC

NOM. ROPE DIA	APPROX. MASS	MINIMUM BREAKING FORCE	
		kN	Tonnes
mm	Kg./m		
24	2.77	417	42.5
26	3.15	450	45.9
28	3.49	528	53.8
30	4.00	604	61.5
32	4.60	695	70.8
36	5.60	847	86.4



# SOME OF THE CUSTOMERS THAT THIS GROUP SERVES...





# ELEVATOR ROPES



No other application of steel wire ropes demands such close manufacturing tolerances and such high quality in materials as the elevator industry. No other industry demands such high safety factors.

Brunton Wolf is always striving to improve on these standards and offer a complete range of elevator/lift ropes. These ropes are designed to satisfy most OEM specifications and are available for main suspension, governor and compensating duties.

We not only act as suppliers but also work closely with our customers in their endeavour to deliver the highest quality standards, better durability and longer service life.

Fatigue tests and on load tests on our ropes have demonstrated that they are far superior than the comparative industry standards.

We operate a Quality System in accordance with ISO 9001 and have complete control of manufacturing process from wire to the finished rope.

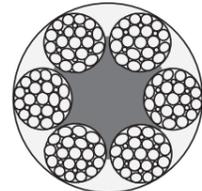
Today, the group is actively working with Original Equipment Manufacturers like Otis, Schindler, Kone, Thyssen Krupp, Mitsubishi, Fujitec for a wide range of elevator models that each one of them manufactures. In addition to having contracts with them in many countries, our elevator ropes are very popular with big elevator service companies throughout the world. Our capacity to cater to them with all types of ropes in various constructions and cores has made this whole group a very popular choice for the OEMs and the service companies. Furthermore, this group takes pride to have the widest logistics infrastructure in the form of stocking points of its own and that of the dealer networks in the world. We are also equipped with the experience of having the customers served with cut to length elevator ropes for distribution to the different sites.



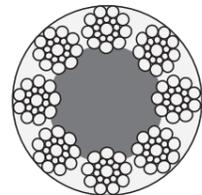
# 8X19S - NFC

Typical Construction  
8X19S(9-9-1) - NFC

## GOVERNOR ROPES



6x19 Classification + Fibre core (NFC)



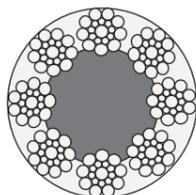
8x19 S+ Fibre core (NFC)

NOMINAL ROPE DIAMETER		APPROX. WEIGHT/MASS		MINIMUM BREAKING LOAD/FORCE 1770 N/mm <sup>2</sup>	
inch	mm	lbs/100ft	kg/100m	1000 lbs	kN
1/4	6	8.4	12.5	4.4	19.6
	7	12.1	18.0	6.6	29.5
5/16	8	14.9	22.1	7.8	34.8
	10	23.7	35.2	12.2	54.4
15/32	12	33.5	49.8	17.6	78.3

NOMINAL ROPE DIAMETER		APPROX. WEIGHT/MASS		MINIMUM BREAKING LOAD/FORCE 1770 N/mm <sup>2</sup>	
inch	mm	lbs/100ft	kg/100m	1000 lbs	kN
5/16	8	14.9	22.2	6.3	28.1
3/8	9.5	20.8	31.0	8.9	39.8
7/16	11	28.2	42.0	12.0	53.2
1/2	12.7	37.6	56.0	16.1	71.5

## HOIST & COMPENSATING ROPES

F819S-FE TRAC



8x19 Classification + Fibre core (NFC)

NOMINAL ROPE DIAMETER		APPROX. WEIGHT/MASS		MINIMUM BREAKING LOAD/FORCE FOR 1180 / 1770 N/mm <sup>2</sup>	
inch	mm	lbs/100ft	kg/100m	1000 lbs	kN
1/4	6.4	9.0	13.4	3.6	16.1
5/16	8.0	14.0	20.8	5.6	25.0
3/8	9.5	20.0	29.8	8.2	36.5
7/16	11.1	28.0	41.7	11.0	49.0
1/2	12.7	36.0	53.6	14.5	64.6
9/16	14.3	46.0	68.4	18.5	82.4
5/8	16.0	57.0	84.8	23.0	102.4
3/4	19.1	82.0	122.0	32.0	142.4

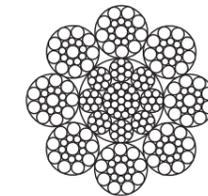
# 8X19 CLASS STEEL CORE

Typical Construction  
8 x 19S (9-9-1) + IWRC  
8 x 25F (12-6F-6-1) + IWRC  
8 x 19W (6+6-6-1) + IWRC

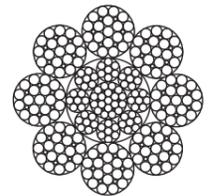
## Preferred Rope Construction

8-strand wire rope with

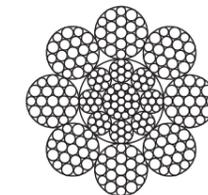
- Seale
- Filler or
- Warrington strand construction and a Steel Core (IWRC) at the centre
  - Very Good Bend Fatigue values
  - Very Good Elongation properties
  - Better Crushing resistance
  - Better Contact on drum and sheaves



8 x 19S (9-9-1) + IWRC



8 x 25F (12-6F-6-1) + IWRC



8 x 19W (6+6-6-1) + IWRC

Table as per ISO 4344

Nominal Rope Diameter	#Equiv. Nominal Rope Diameter	Approx. Mass	Minimum Breaking Force				
			Rope Grade				
			Dual Tensile			Single Tensile	
			*1180/1770	1370/1770	**1570/1770	1570	1770
mm	in.	kg/100m	kN	kN	kN	kN	kN
8	5/16	26.0	33.6	35.8	38.0	35.8	40.3
9		33.0	42.5	45.3	48.2	45.3	51.0
9.5	3/8	36.7	47.4	50.4	53.7	50.4	56.9
10		40.7	52.5	55.9	59.5	55.9	63.0
11	7/16	49.2	63.5	67.6	71.9	67.6	76.2
12		58.6	75.6	80.5	85.6	80.5	90.7
12.7	1/2	65.6	84.7	90.1	95.9	90.1	102
13		68.8	88.7	94.5	100	94.5	106
14		79.8	102	110	117	110	124
15		91.6	118	126	134	126	142
16	5/8	104	134	143	152	143	161
18		132	170	181	193	181	204
19	3/4	147	190	202	215	202	227
20		163	210	224	238	224	252
22	7/8	197	254	271	288	271	305

Note : Rope sizes and breaking force not shown in the table, may be available on request and prior confirmation.

# Equivalent Nominal Rope Diameter ('inch') is for reference only as the same has been superseded by metric units (mm)

\* 1180 / 1770 rope grade is equivalent to Traction steel grade, 1370/1770 may also be used

\*\* 1570 / 1770 rope grade is equivalent to EHS steel grade



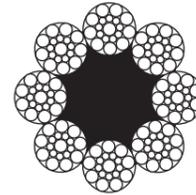
# 8X19 CLASS FIBRE CORE

Typical Construction  
 8 x 19S (9-9-1) + FC  
 8 x 25F (12-6F-6-1) + FC  
 8 x 19W (6+6-6-1) + FC

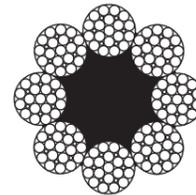
## Preferred Rope Construction

8-strand wire rope with

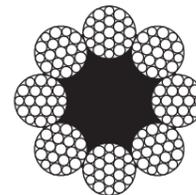
- Seale
- Filler or
- Warrington strand construction and a Fibre Core at the centre
  - Most frequently used worldwide
  - Good Bend Fatigue due to smaller wires
  - Good Elongation properties
  - Better Contact on drum and sheaves



8 x 19S (9-9-1) + FC



8 x 25F (12-6F-6-1) + FC



8 x 19W (6+6-6-1) + FC

Table as per ISO 4344

Nominal Rope Diameter	#Equiv. Nominal Rope Diameter	Approx. Mass	Minimum Breaking Force				
			Rope Grade				
			Dual Tensile			Single Tensile	
			*1180/1770	1370/1770	**1570/1770	1570	1770
mm	in.	kg/100m	kN	kN	kN	kN	kN
8	5/16	26.0	33.6	35.8	38.0	35.8	40.3
9		33.0	42.5	45.3	48.2	45.3	51.0
9.5	3/8	36.7	47.4	50.4	53.7	50.4	56.9
10		40.7	52.5	55.9	59.5	55.9	63.0
11	7/16	49.2	63.5	67.6	71.9	67.6	76.2
12		58.6	75.6	80.5	85.6	80.5	90.7
12.7	1/2	65.6	84.7	90.1	95.9	90.1	102
13		68.8	88.7	94.5	100	94.5	106
14		79.8	102	110	117	110	124
15		91.6	118	126	134	126	142
16	5/8	104	134	143	152	143	161
18		132	170	181	193	181	204
19	3/4	147	190	202	215	202	227
20		163	210	224	238	224	252
22	7/8	197	254	271	288	271	305

Note : Rope sizes and breaking force not shown in the table, may be available on request and prior confirmation.

# Equivalent Nominal Rope Diameter ('inch') is for reference only as the same has been superseded by metric units (mm)

\* 1180 / 1770 rope grade is equivalent to Traction steel grade, 1370/1770 may also be used

\*\* 1570 / 1770 rope grade is equivalent to EHS steel grade

# 8X19 CLASS COMBINATION CORE

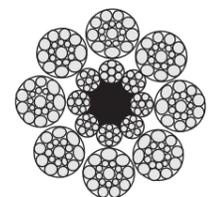
Typical Construction  
 8 x 19S (9-9-1) + IWRC

## Preferred Rope Construction

8-strand wire rope with

- Seale
- Filler or
- Warrington strand construction and a Steel Core (IWRC) at the centre
  - Very Good Bend Fatigue values
  - Very Good Elongation properties
  - Better Crushing resistance
  - Better Contact on drum and sheaves

NOM. ROPE DIA	APPROX. MASS Kg./100m	MINIMUM BREAKING FORCE (KN)
mm	STEEL CORE (CFN)	1570 or 1370 / 1770 N/mm <sup>2</sup>
6.5	16.10	24.70
8	24.00	36.20
9	30.70	46.00
10	38.50	57.60
11	46.60	69.90
12	55.10	82.70
13	65.60	98.20
14	75.30	113.60
16	98.40	147.40
18	123.00	184.40
20	153.00	230.00



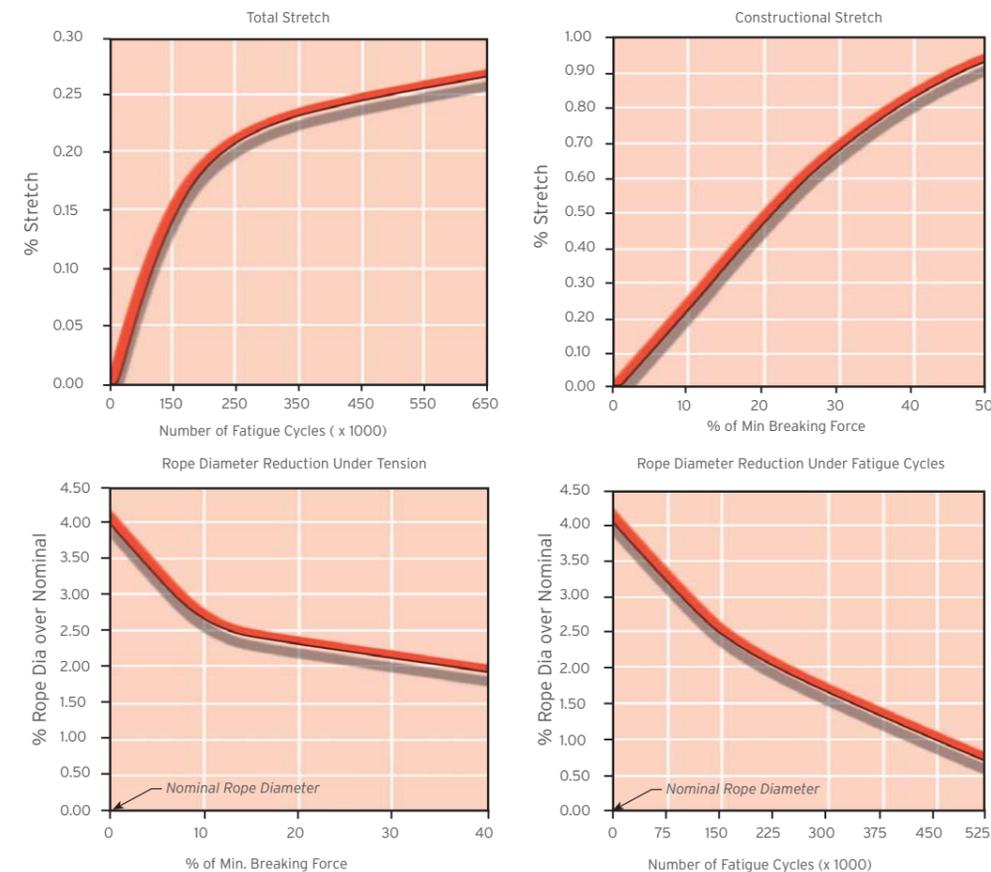
8 x 19S (9-9-1) + IWRC



# ROPE BEHAVIOUR OF 1/2" $\phi$ 8X19S-NFC

when submitted to bending fatigue & tension.

Typical values for Stretch and Diameter reduction



# SAFETY INFORMATION

- Wire rope will fail if worn out, shock loaded, overloaded, misused, damaged, improperly maintained or abused.
- Always inspect wire rope for wear, damage or abuse before use.
- Never use a wire rope which is worn out, damaged, corroded or abused.
- Never overload or shock load a wire rope.
- Use the correct design factor for the application.
- Inform yourself : Read and understand the machinery manufacturers handbook and guidance from the wire rope manufacturer.
- Refer to applicable directives, regulations, standards and codes concerning inspection, examination and rope removal criteria.

All statements, technical information and recommendations contained herein are believed to be reliable, but no guarantee is given as to their accuracy and/or completeness. The user must determine the suitability of the product for his own particular purpose, either alone or in combination with other products and shall assume all risk and liability in connection therewith.

Whilst every attempt has been made to ensure accuracy in the content of the tables, the information contained in this catalogue does not form any part of a contract.

## METRIC - IMPERIAL DIAMETER CONVERSION

in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.
5/32	3.97	1/2	12.7	15/16	23.8	1/2	38.1	2 1/2	63.5	4 1/4	108.0
3/16	4.76	9/16	14.3	1	25.4	1 5/16	41.3	2 3/4	69.9	4 1/2	114.3
7/32	5.56	5/8	15.9	1 1/16	27.0	1 3/4	44.5	3	76.2	4 3/4	120.7
1/4	6.35	11/16	17.5	1 1/8	28.6	1 7/8	47.6	3 1/4	82.6	5	127.0
5/16	7.94	3/4	19.0	1 3/16	30.2	2	50.8	3 1/2	88.9		
3/8	9.53	13/16	20.6	1 1/4	31.8	2 1/8	54.0	3 3/4	95.3		
7/16	11.1	7/8	22.2	1 3/8	34.9	2 1/4	57.2	4	101.6		

## CONVERSION TABLE

Length	1m	= 1000 mm	= 3,281ft	= 39,37 inch
Force	1kN	= 101,97kp	= 0,10197 t metric-f	= 224lbs-f
Tensile Strength	1N/mm <sup>2</sup>	= 0,10197 kp/mm <sup>2</sup>	= 145,04 p.s.i.	= 10 bar
Cross Section	1 mm <sup>2</sup>	= 0,00155 sq.inch		
Weight	1 metric t	= 1000 kg = 1,102 short t	= 0,9842 long t	= 2204,6 lbs
Weight per Length Unit	1 kg/m	= 0,672 lbs/ft		

## KEY TO ABBREVIATIONS

K	Compacted	CWS	Wire Strand Core
P/PI	Full Plastic Impregnation of the Steel Core	CWR	Wire Rope Core
S	Seale Construction	CFS	Core man made fibre (Poly)
W	Warrington Construction	CWRP	Core Strand closed parallel with outer strands of rope
SW	Seale Warrington Construction		

