CRANE ROPES

ushamartin.com

usha martin

Usha Martin Wire Ropes & Speciality Products Division is an integral part of the globally acclaimed Usha Martin Group, active in High Carbon, Alloy & Speciality Steel, Telecom Cables & Software, Oil Drilling Services and Worldwide distribution of its products.

The global success of Usha Martin 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 9001:2008 certified manufacturing facilities and tight process control from steelmaking to rod manufacture and through to finished wire rope ensure consistently high quality in the finished crane rope.

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

The wire ropes shown in this catalogue are "standard products". Usha Martin has the capability to design and manufacture according to individual customer requirements.

Test house approved by Lloyd Register of Shipping

Licenced under API Spec 9A

Test house approved by American bureau of Shipping

ISO 9001

CONTENTS

QUALITY GUARANTEE

Guaranteed Raw Material Quality

Good raw material input at the beginning of the ropemaking process combined with tight process control ensure consistently high quality in the finished rope. Usha Martin manufacture 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 9001:2008 certified steelmaking, 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 Usha Martin 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 Usha Martin testing facility is approved by Lloyds Register of Shipping and The American Bureau of Shipping.

Guaranteed Quality Systems

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

ISO 9001 is our customer's guarantee 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).

Guaranteed Bending Fatigue Characteristics

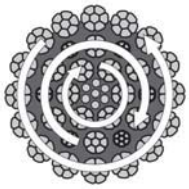
Bending fatigue resistance is the ability of the wire rope to withstand repeated bending over a sheave under constant or fluctuating loads.

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 ropemaker and the crane operator.

Usha Martin operate an ongoing fatigue testing programme which is designed to give comparative fatigue performance for various rope constructions and to provide information relative to product improvement and development. More information on fatigue testing is available on page 6.

Guaranteed Rotational Characteristics



Each wire rope construction will have an inherent torque characteristic where both ends of the rope are secured and an applied force will generate torque at the fixing points. Each wire rope construction will have an inherent turn characteristic where one end of the rope is free to rotate and an applied force will cause the free end of the rope to turn.

With correct rope selection these characteristics should not cause a problem in service provided the rope has been correctly "balanced" in design and manufacture.

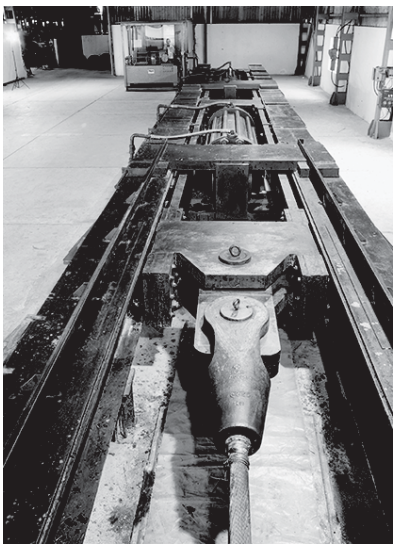
Usha Martin operate their own Torque/Turn testing machine which is used to confirm that all rotation resistant wire ropes possess the required rotational characteristics.

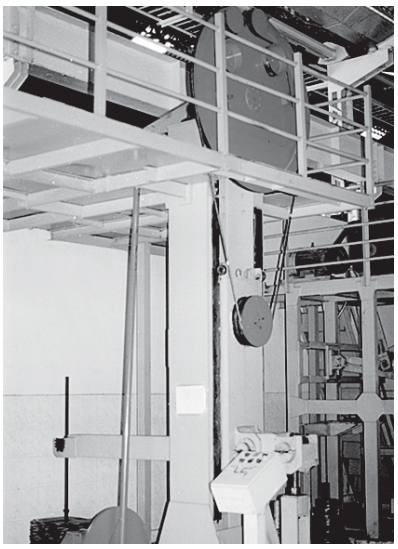
Guaranteed Performance and Consistency

A simple way to guarantee performance and consistency is to make sure that you are using an Usha Martin rope.

Many wire ropes available today may look similar to Usha Martin products but offer considerably less in terms of overall quality, performance, reliability and consistency. In order to protect our customers we have adopted a policy of identifying each rope with an internal marker tape.

Are you buying the "Real Thing"?





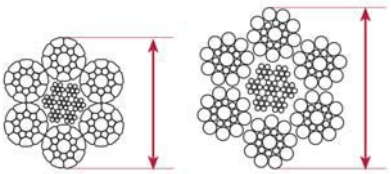
Unique Identification tag

POWERFORM® COMPACTED ROPE

Conventional Strand | Conventional Rope | Compacted Strand | Compacted Rope

A Powerform® 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.

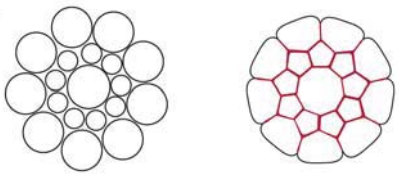
Compacted rope minimum breaking force



Conventional rope minimum breaking force

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.

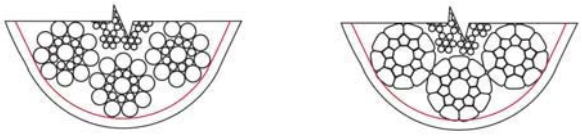
Conventional



Compacted

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

Conventional



Compacted

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.

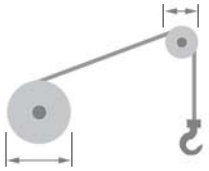
6x36 | 18x7 | 35x7

Usha Martin compacted ropes are referred to as "Powerform®" and are available in a number of constructions.

POWERFORM® SELECTION

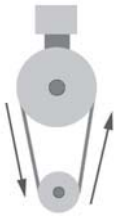
Optimised crane design

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.



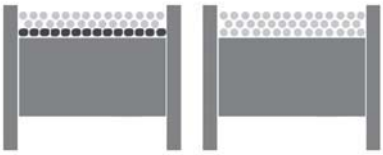
Long life

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



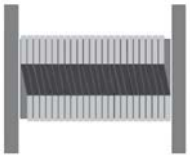
Greater resistance to crushing in multi-layer coiling situations

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



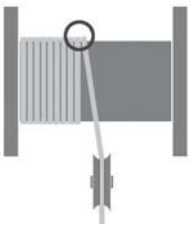
More effective resistance to crushing at crossover points

Because of the higher steel fill factor Powerform® 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® rope.



Reduced wear on sheaves

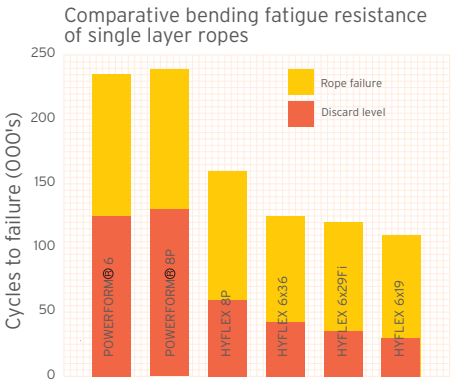
The smooth exterior of the Powerform® rope can lead to reduced abrasive wear on both the sheave and rope.

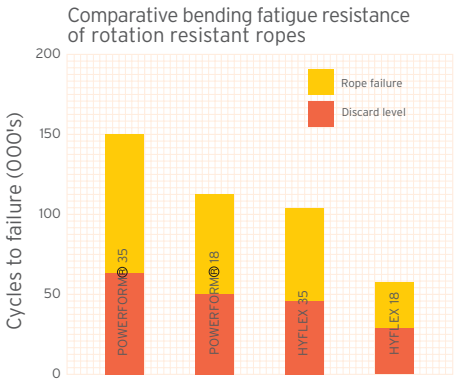
BEND FATIGUE TESTING

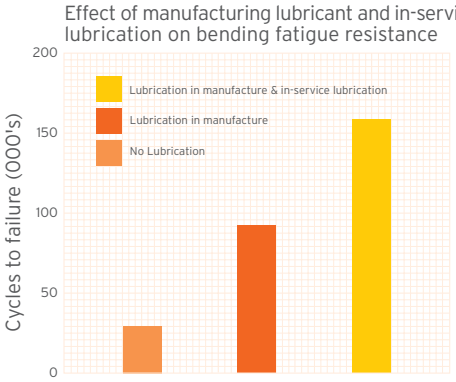
Resistance to bend fatigue is a key factor in determining the service life of wire rope and is therefore of great interest to both the rope manufacturer and the crane operator. Extensive comparative bend fatigue testing is carried out at Usha Martin in order to continuously develop and improve crane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

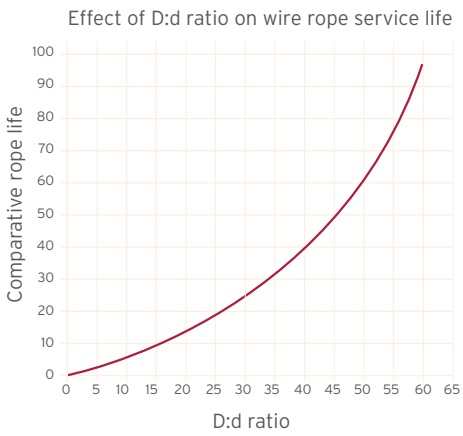
Fatigue testing involves cycling a length of rope through a sheave at a constant tension. The number of operating cycles is recorded at a point where the rope is rejectable under recommended discard levels specified under ISO 4309. The test continues until the rope under test is unable to sustain the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



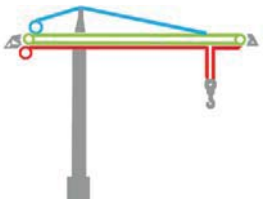




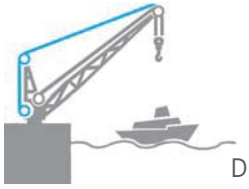


GUIDE TO APPLICATION & ROPE DUTY

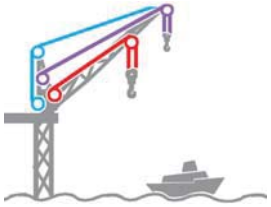
MOBILE



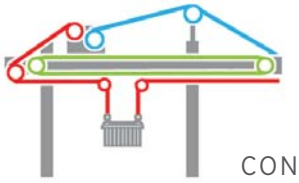
TOWER



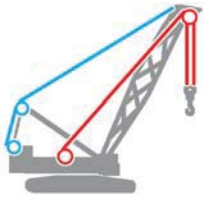
DOCKSIDE



OFFSHORE PEDESTAL

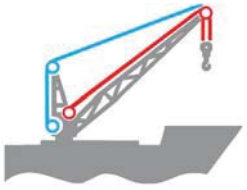


CONTAINER



LATTICE BOOM

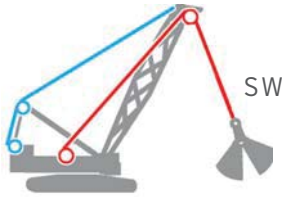
PILING



DECK CRANE

STEELWORKS LADLE

UNLOADER

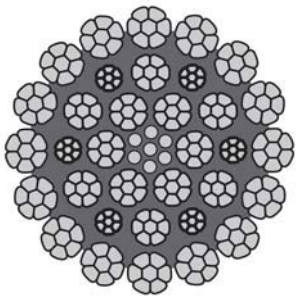


SWIMGRAB

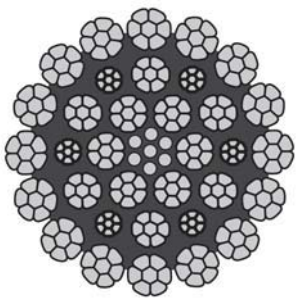
- MAIN HOIST
- BOOM HOIST
- TROLLEY/RACKING ROPE
- WHIP HOIST

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.



Powerform® 35



Powerform® 35P

Standard Characteristics Powerform® 35/35P			
Construction	10mm-40mm	35xK7(16xK7:6xK7+6xK7-6xK7-1x7)	
	42mm-60mm	35xK19S(16xK19S:6xK19S+6xK19S-6xK19S-1x19S)	
Compacted		Yes	No
		◆	
Tensile Grade N/mm2		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 x NRD	
Discard Criteria		Refer to ISO 4309:1990	

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			kN	tonnes	kN	tonnes
	1/2	81.1	148	15.1	160	16.3
13		85.0	155	15.8	167	17.0
14		98.6	180	18.3	192	19.6
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.
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.

Typical Applications

MOBILE

MAIN HOIST

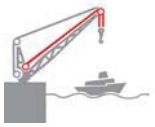
TOWER

MAIN HOIST

LATTICE BOOM

MAIN HOIST

DOCKSIDE



MAIN HOIST

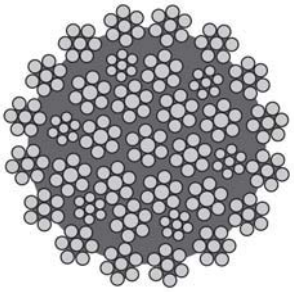
OFFSHORE PEDESTAL

MAIN HOIST
WHIP HOIST

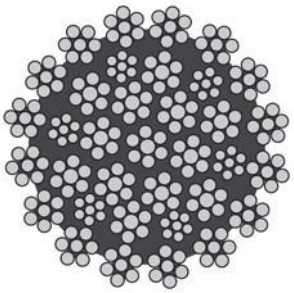
MAIN HOIST ■
WHIP HOIST ■

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^2	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	

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX.* MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			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.

Typical Applications

MOBILE

MAIN HOIST

TOWER

MAIN HOIST

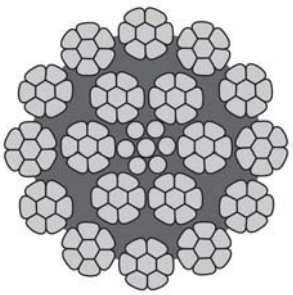
OFFSHORE PEDESTAL

MAIN HOIST
WHIP HOIST

MAIN HOIST ■
WHIP HOIST ■

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/mm²		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)		6.25 x NRD	
Discard Criteria		Refer to ISO 4309:1990	

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			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

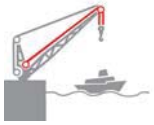
Note: Rope Sizes and Breaking Force not shown in the standard table, may be available on request and prior confirmation.

Typical Applications

MOBILE

MAIN HOIST

DOCKSIDE



MAIN HOIST

OFFSHORE PEDESTAL

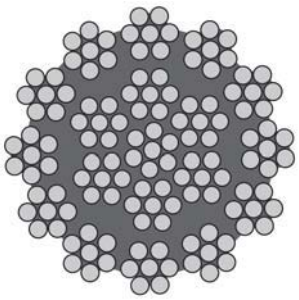
MAIN HOIST
WHIP HOIST

MAIN HOIST ■
WHIP HOIST ■

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

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.



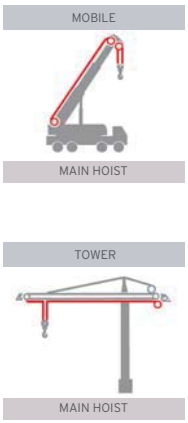
Hyflex 18

Standard Characteristics Hyflex 18		
Construction	18x7(12x7:6x7-1x7)	
Compacted	Yes	No
		◆
Tensile Grade N/mm²	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	

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			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.

Typical Applications

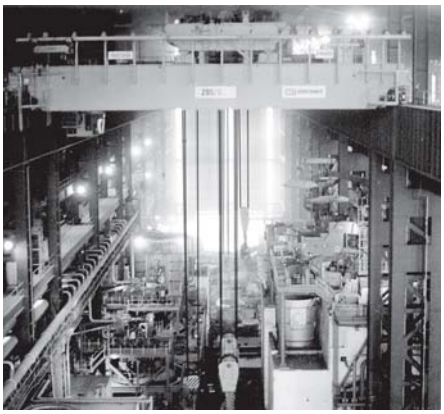


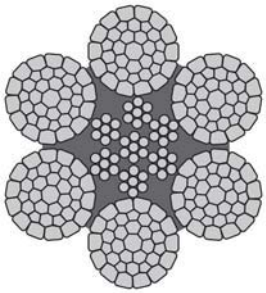
MAIN HOIST ■

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

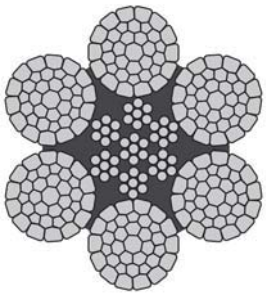
POWERFORM®6/6P

- 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+7-7-1)-CWR 6xK41SW(16+8+8-8-1)-CWR	
Compacted	Yes	No
	◆	
Tensile Grade N/mm²	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.		

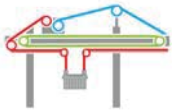
NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1770 N/mm²		1960 N/mm²	
			kN	tonnes	kN	tonnes
10		46.4	69.5	7.1	85.7	8.7
11		56.1	83.8	8.5	98.6	10.1
12		66.8	100.0	10.2	114.0	11.6
	1/2	74.8	113.0	11.5	140.0	14.3
13		78.4	118.0	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 ia available only for 16 mm and above on special request and prior confirmation.

Typical Applications

CONTAINER

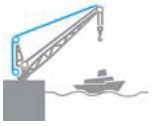


MAIN HOIST
BOOM HOIST
TROLLEY

LATTICE BOOM

MAIN HOIST *
BOOM HOIST

DOCKSIDE



BOOM HOIST

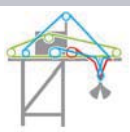
STEELWORKS LADLE

MAIN HOIST

OFFSHORE PEDESTAL

BOOM HOIST

UNLOADER



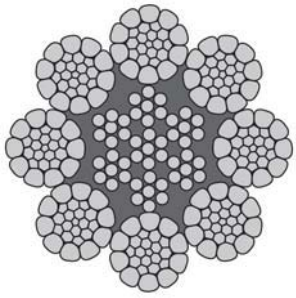
MAIN HOIST
BOOM HOIST
RACKING

BOOM HOIST
MAIN HOIST
RACKING/ TROLLEY

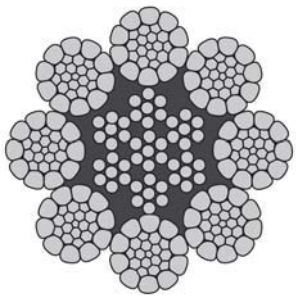
* For higher lifting heights a rotation resistant rope should be selected.

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/mm²	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.		

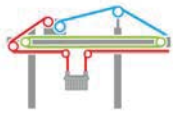
NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			kN	tonnes	kN	tonnes
10		46.0	87.8	9.0	94	9.6
11		55.7	106.0	10.8	114	11.6
12		66.2	126.0	12.8	135	13.8
	1/2	74.2	142.0	14.5	152	15.5
13		77.7	148.0	15.1	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.

Typical Applications

CONTAINER

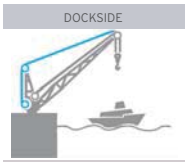


MAIN HOIST
BOOM HOIST
TROLLEY

LATTICE BOOM

BOOM HOIST

DOCKSIDE



BOOM HOIST

OFFSHORE PEDESTAL

BOOM HOIST

UNLOADER

MAIN HOIST
BOOM HOIST
RACKING

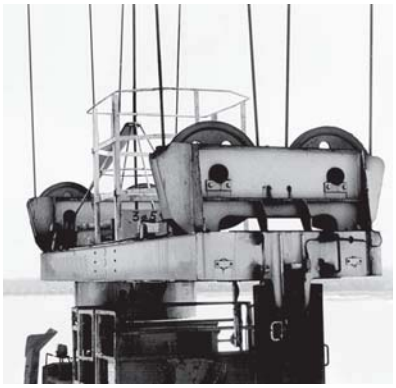
SWIMGRAB

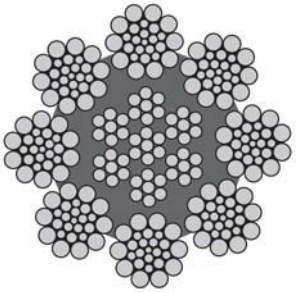
BOOM HOIST

BOOM HOIST
MAIN HOIST
RACKING/ TROLLEY

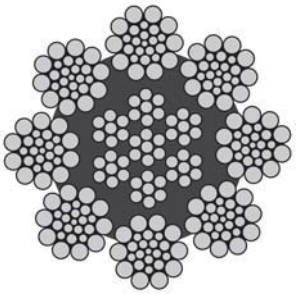
HYFLEX 8/8P

- 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.





Hyflex 8



Hyflex 8P

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^2	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)	6.5 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.

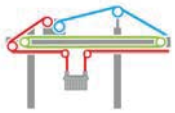
NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm2		2160 N/mm2	
			kN	tonnes	kN	tonnes
10		43.5	72.9	7.4	81.4	8.3
11		52.6	86.1	8.8	96.5	9.8
12		62.6	105	10.7	117.0	11.9
	1/2	70.2	123	12.5	131.0	13.4
13		73.5	124	12.6	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 ia available for rope diameter 16 mm and above on special request and prior confirmation.

Typical Applications

CONTAINER



MAIN HOIST
BOOM HOIST
TROLLEY

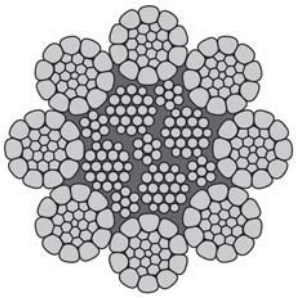
SWIMGRAB

MAIN HOIST

BOOM HOIST
MAIN HOIST
TROLLEY

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/mm²		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.

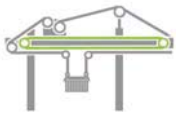
Powerform® 8PC should not be used in any reeving system where the fleet angle exceeds 1.5 degrees.

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1960 N/mm²		2160 N/mm²	
			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.

Typical Applications

CONTAINER

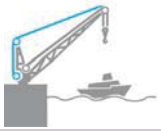


TROLLEY

LATTICE

BOOM HOIST

DOCKSIDE



BOOM HOIST

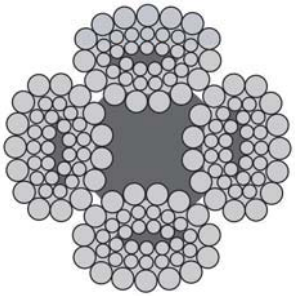
OFFSHORE PEDESTAL

BOOM HOIST

BOOM HOIST ■
TROLLEY ■

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.



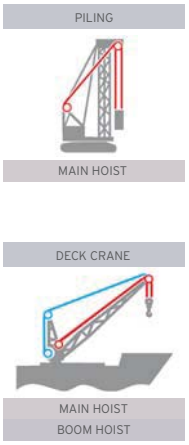
Hyflex 4

Standard Characteristics Hyflex 4		
Construction	4x39(15-15/9-CFS)-CFS	
Compacted	Yes	No
		◆
Tensile Grade N/mm^2	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.		

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1770 N/mm²		1960 N/mm²	
			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.

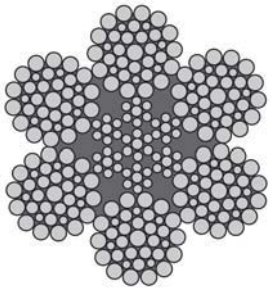
Typical Applications



BOOM HOIST
MAIN HOIST

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/mm² tensile steel as standard.



Hyflex 6x36

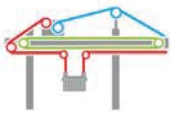
Standard Characteristics Hyflex 6X36		
Construction	6X36(14-7+7-7-1)-CWR 6x41(16-8+8-8-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm²	1770	1960
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	60.9	
Turn value at 20% of breaking 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.		

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1770 N/mm²		1960 N/mm²	
			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.

Typical Applications

CONTAINER



MAIN HOIST
BOOM HOIST
TROLLEY

LATTICE BOOM

MAIN HOIST *

STEELWORKS LADLE

MAIN HOIST

UNLOADER

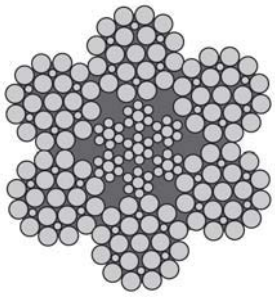
MAIN HOIST
BOOM HOIST
RACKING

BOOM HOIST
MAIN HOIST
RACKING/ TROLLEY

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

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.



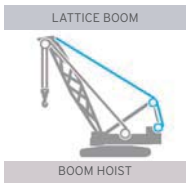
Hyflex 6x19

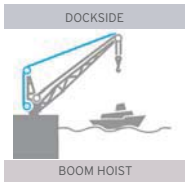
Standard Characteristics Hyflex 6X19		
Construction	6x19S(9-9-1)-CWR 6x19W(6+6-6-1)-CWR 6x25F(12-6F-6-1)-CWR 6x26SW(10-5+5-5-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm²	1770	1960
		◆
Finish	Bright	Galvanised
	◆	◆
Lay Direction	Right Hand	Left Hand
	◆	◆
Lay Type	Ordinary	Langs
	◆	
Average Fill Factor (%)	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.		

NOM. ROPE DIA. mm	NOM. ROPE DIA. in	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED & UNGALVANISED ROPE GRADE			
			1770 N/mm²		1960 N/mm²	
			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.

Typical Applications

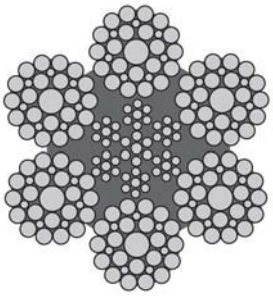




BOOM HOIST ■

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.



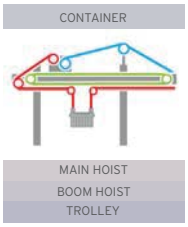
Hyflex 6X29Fi

Standard Characteristics Hyflex 6X29Fi		
Construction	6X29F(14-7F-7-1)-CWR	
Compacted	Yes	No
		◆
Tensile Grade N/mm^2	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.		

NOM. ROPE DIA. mm	APPROX. MASS kg/100m	MINIMUM BREAKING FORCE GALVANISED AND UNGALVANISED	
		1620 N/mm2	1770 N/mm2
		GRADE A	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.

Typical Applications



BOOM HOIST
MAIN HOIST
TROLLEY

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 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^2	= 0,10197 kp/mm^2	= 145,04 p.s.i.	= 10 bar
Cross Section	1 mm^2	= 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
P/PI	Full Plastic Impregnation of the Steel Core
S	Seale Construction
W	Warrington Construction
SW	Seale Warrington Construction
CWS	Wire Strand Core
CWR	Wire Rope Core
CFS	Core man made fibre (Poly)
CWRP	Core Strand closed parallel with outer strands of rope

Corporate Office

USHA MARTIN LIMITED
2A, Shakespeare Sarani, 'Mangal Kalash', Kolkata – 700071
Phone: +91 33 3980 0300, Fax: +91 33 2282 9029/ 3980 0500
Email: feedback@ushamartin.com
CIN: L31400WB1986PLC091621

Domestic Offices

East Regional Office

USHA MARTIN LIMITED
2A, Shakespeare Sarani
'Mangal Kalash'
Kolkata – 700071
Phone: +91 33 3980 0300/ 0458
Fax: +91 33 2282 9029/ 3980 0500
Email: marketing-east@ushamartin.com

South Regional Office

USHA MARTIN LIMITED
Plot No. L9 (1), Phase-II
Sipcot Industrial Park, Sriperumbudur
Kancheepuram - 602105
Chennai, Tamilnadu
Phone: +91 44 3717 5100 (24 Lines)
Fax: +91 44 3717 5200
Email: marketing-south@ushamartin.com

North Regional Office

USHA MARTIN LIMITED
701, 'Surya Kiran'
19, Kasturba Gandhi Marg
New Delhi – 100 001
Phone: +91 11 2331 5156 / 5157 / 5158
2371 1232 / 2371 5220
Fax: +91 11 2332 0723 / 5586
Email: marketing-north@ushamartin.com

West Regional Office

USHA MARTIN LIMITED
168, CST Road,
Agarwal Industrial Estate
Kalina, Santa Cruz (E)
Mumbai – 400 098
Phone: +91 22 3064 5400
Fax: +91 22 2652 6774
Email: marketing-west@ushamartin.com

Overseas Offices

USHA MARTIN UK LIMITED

Tasman House, Mariner Court
Clydebank, Glasgow, UK G81 2NR, UK
Tel: + 44 (0)141 951 8801
Fax: + 44 (0) 141 951 8802
Email: marketing-uk@ushamartin.com

EUROPEAN MANAGEMENT & MARINE CORP.

Howe Moss Place, Kirkhill Industrial Estate
Dyce, Aberdeen AB 21 OGS, Scotland, U.K
Ph: +44 1224 77 5151
Fax: +44 1224 775252
Email: info@emmcorp.com

BRUNTON SHAW UK

(A Division of Usha Martin UK Limited)
Sandy Lane, Workshop, S80 3ES, UK
Tel: + 44 1909 537 600
Fax: + 44 1909 500 199
Email: info@brunton-shaw.co.uk

DE RUITER STAALKABEL B.V.

Ringerstraat 7, 3164 BA, Sliedrecht
Holland
Tel: + 31 (0)184 49 9999
Fax: +31 (0) 184 41 8351
Email: sales@drstk.nl

USHA MARTIN AMERICAS, INC

701 Plastics Avenue, Houston
Texas 77020, USA
Ph: +1 713 676 1800
Fax: +1 713 676 1166
Email: marketing-us@ushamartin.com

USHA MARTIN AUSTRALIA PTY LTD

Unit 2/ 468-470, Victoria Street
St.Wetherill Park, NSW 2164, Australia
Ph: +61 296 094971
Fax: +61 297 566516
Email: marketing-australia@ushamartin.com

USHA MARTIN SINGAPORE PTE LIMITED

91 Tuas Bay Drive, Usha Martin Building,
Singapore – 637307
Ph: +65 6265 7756
Fax: +65 6265 7226
Email: marketing-singapore@ushamartin.com

USHA MARTIN VIETNAM CO. LTD

823 Huynh Tan Phat, Hamlet 6
Phu Xuan Commune Nha Be District
Ho Chi Minh City, S.R Vietnam
Tel: +84 8 3781 8196
Fax: +84 8 3781 8171
HP: +84 903702469
Email : marketing-vietnam@ushamartin.com

PT. USHA MARTIN INDONESIA

Konica Building 3A Fl
Jl. Gunung Sahari Raya 78
Jakarta 10610 - Indonesia
Ph: +62 21 42870794
Fax: +62 21 42870795
Email: marketing-indonesia@ushamartin.com

BRUNTON WOLF WIRE ROPES FZCO

P.O. Box. 17491, M00301
Jebel Ali Free Zone, Dubai, U.A.E
Tel: + 971 04 8838151
Fax: + 971 04 8838152
Email: marketing-bsme@ushamartin.com

USHA SIAM STEEL INDUSTRIES PUBLIC CO. LTD

209 K-Tower-B, 22nd Floor, Unit 3/1
Sukhumvit 21 Road (Asok)
Bangkok - 101110, Thailand
Te l: +662 261 7361 to 64
Fax: +662 640 8227
Email: marketing-thailand@ushamartin.com

USHA MARTIN EUROPE B.V.

Leerlooierstraat 3
2984 BK Ridderkerk
Holland
Phone: +31 (0)180 74 50 99
Mobile: +31 (0)635 11 29 31
E-mail: d.gelton@ushamartineurope.com

USHA MARTIN CHINA CO. LTD.

No. 122, East FuTe No. 1 Rd. Wai Gao Qiao Free Trade Zone,
Shanghai, P.R. China (Shanghi) Pilot Free Trade Zone,
Postal Code: 200131
Tel: +86 21 6858 8699
Fax: +86 21 6858 8711
Email: yhw@umchina.com.cn