LIFTING & MARINE SERVICES LIMITED

Lifting & Marine Services Ltd
1 The Gardens, Chapel Lane,
Church Broughton, DE65 5BB, UK

Tel: +44 (0) 1283 584848
+44 (0) 7837 406334
E-mail: andy@liftingandmarine.com
sales@liftingandmarine.com

"...the only port of call you'll ever need..."

Deck Machinery

for Marine & Industrial Applications

A range of high specification deck machinery including
mooring winches, windlass anchor winches & capstans.
Includes details of control systems and arrangement diagrams

Corporate Brochure 2013

www.liftingandmarine.com

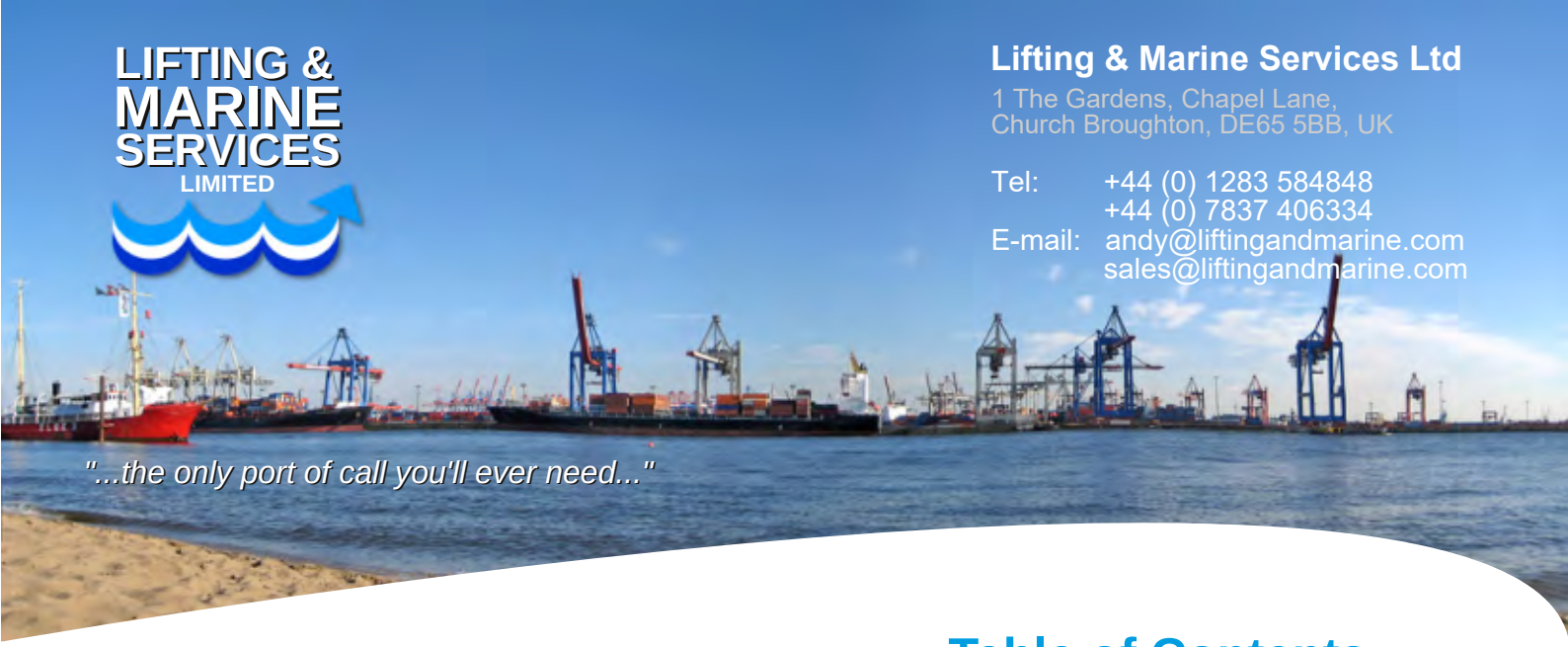

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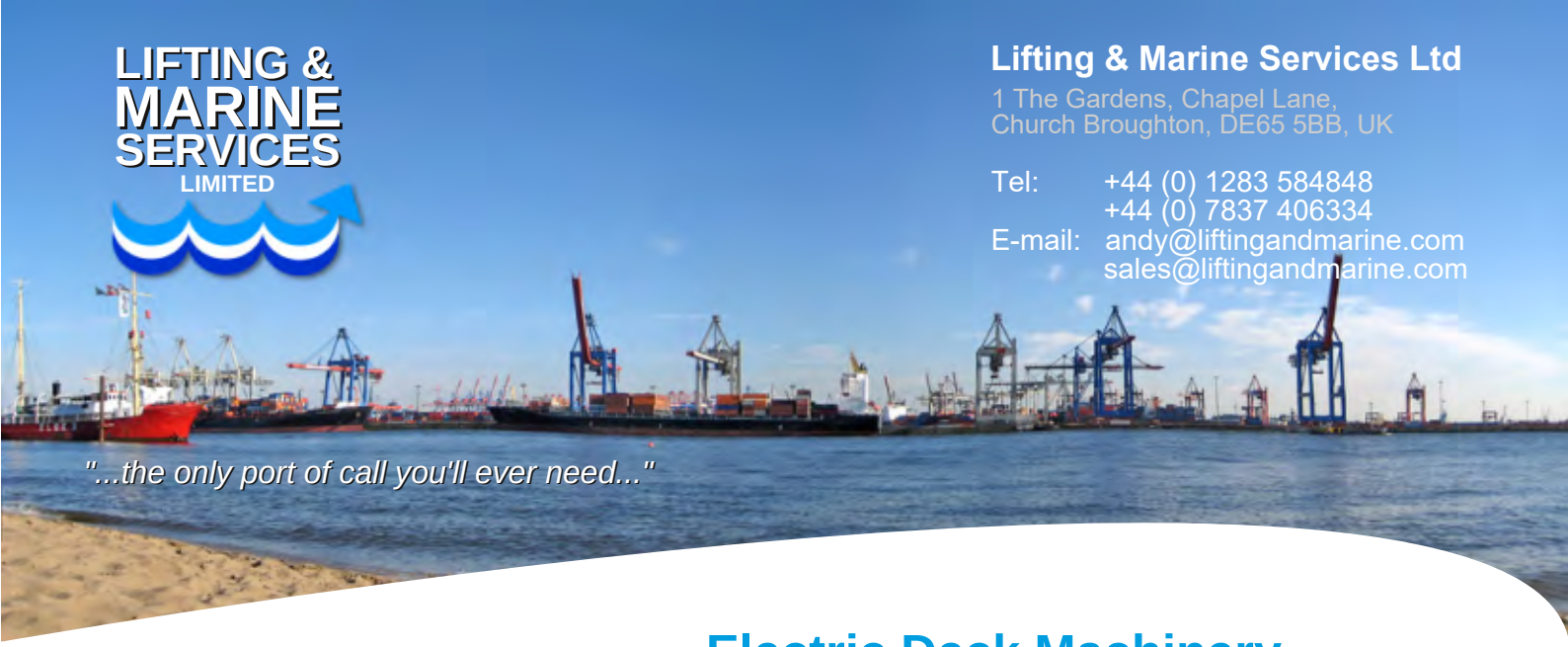
Table of Contents



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Electric Deck Machinery

Company Introduction:

"As a Marine Equipment Supplier of 25 years standing, Lifting & Marine Services Limited has the experience and diverse product range to cater for all your marine equipment needs"

Lifting & Marine Services Limited is one of the world's leading suppliers of marine equipment. Based in the UK, we supply high quality products on a global basis for industries such as shipping, offshore and shipbuilding.

Model: DDE-80T-FC-S-R

Electric Driven, Frequency Control, Double Drum with Spooling Device

Introduction to Electric Deck Machinery :

Our Winching Systems:

- All winches available with electric or hydraulic drive
- Winches can be supplied pre-assembled on a base or with fitting accessories, for example, a bolt / bracket connection
- Reduces the assembly time dramatically
- Later service or replacement will be much easier

Model: DE-20T-38X300M-FC-S-A

Combined Anchor / Mooring Winches:

- Designed for anchor chain dia. from 16mm to 122mm
- Manual or remote in automatic system with frequency inverter and electronic load sensing in mooring operation
- Compact design with integrated cable lifter, deck-space saving and quick installation
- Fully sealed gearbox with gearwheels which are oil bathed with virtually no requirement for maintenance
- Control stand with plug and socket cable for quick connection. IP56 for marine purpose

Model: WDE-36T-36X500-FC

Pull Load of 36 Tons

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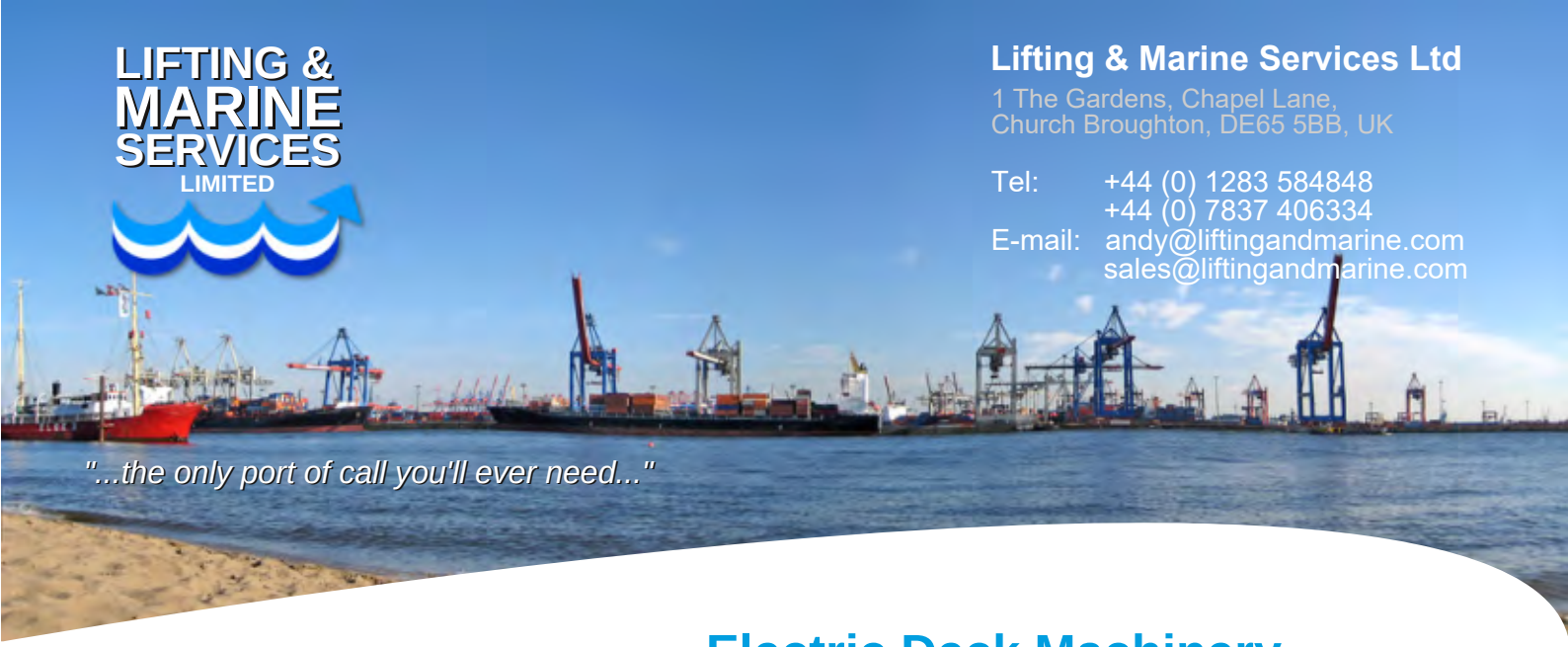

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Electric Deck Machinery

Control & Cabling System

Remote Control & Local Control

- With PLC and remote setting by network
- Touch screen monitor and joystick control
- Plug & socket cabling system for quick installation & mobilisation

Local Control with Joystick

Remote Control for Winch

Electric Cabinet
- with Frequency Inverter & PLC Control

Cable Connection
- by Plug and Socket
- quick connection

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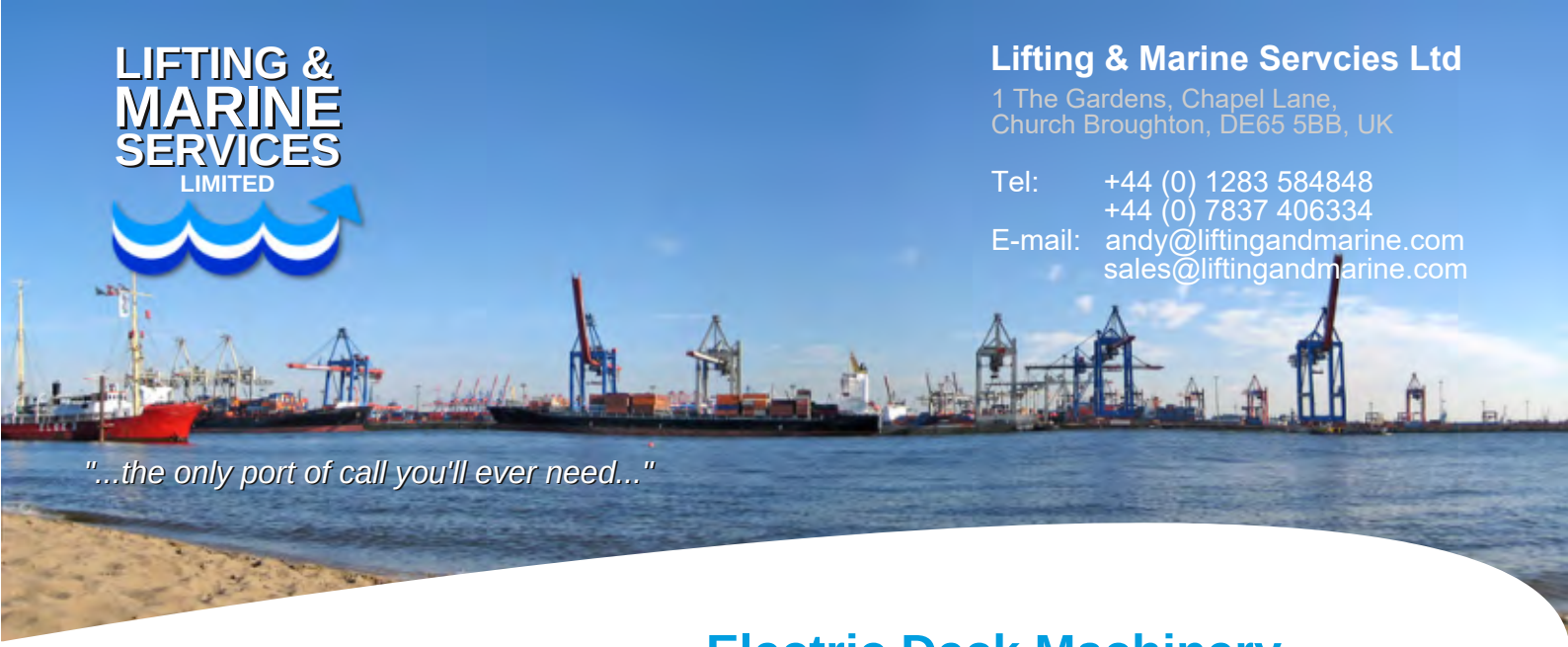


"...the only port of call you'll ever need..."

Electric Deck Machinery

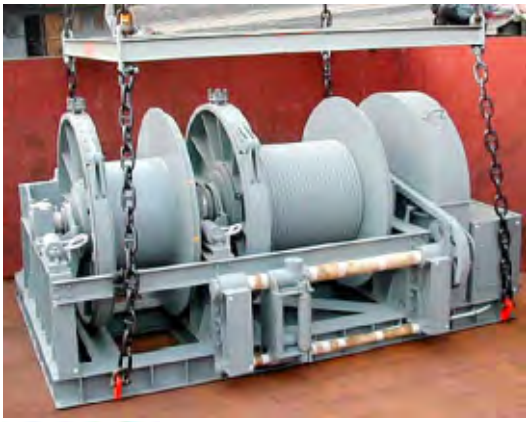
Example Photography

Our range of anchoring and mooring winches is compact and easy to install by modular design, providing reliable high quality systems to customers worldwide.

We have the capability to meet customer demands regarding performance and cost-effectiveness.

Model: DE-20T
- with Load Tensioner

Hydraulic Towing Winch & Windlass
Model: CWD-92



Model: DDE-80T-FC-S-R

Model: DE-36T-36X500M-FC
- Pull Load 36 Tons
- with Frequency Control

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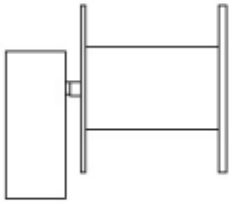
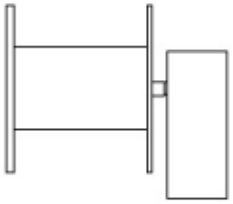
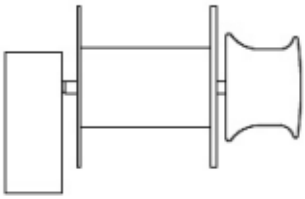
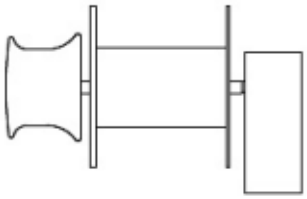
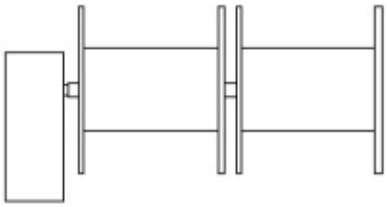
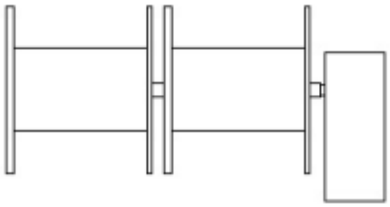
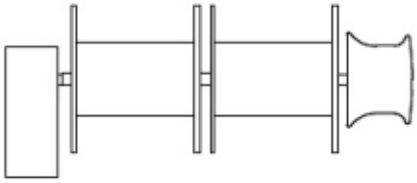
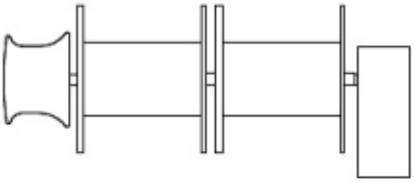
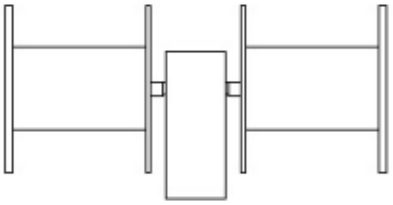
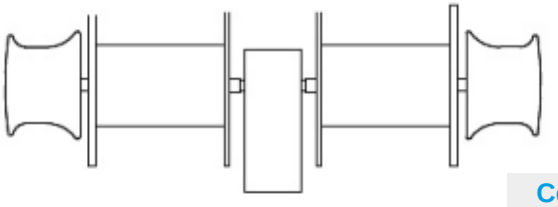
Winch & Windlass - Arrangement

For Winch

Winch Model	Left Hand Model	Right Hand Model
DH / DE		
WDH / WDE		
DDH / DDE		
WDDH / WDDE		
DHD / DED	 Central Model	
WDHDW / WDEDW	 Central Model	

Symbol	H	E	D	G	W
Standard for	Hydraulic Driving System	Electric Driving System	Drum	Gypsy	Warping Head

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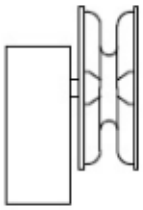
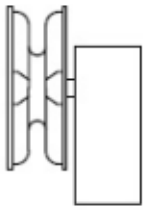
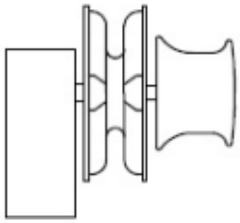
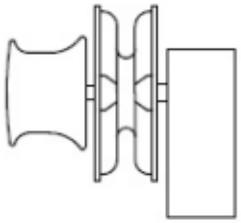
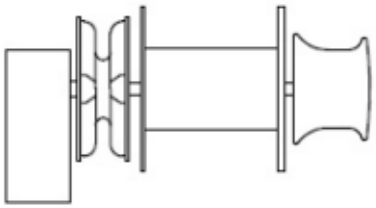
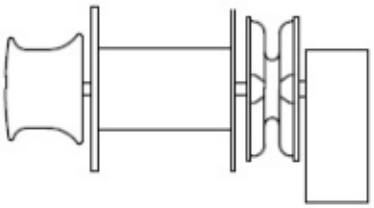
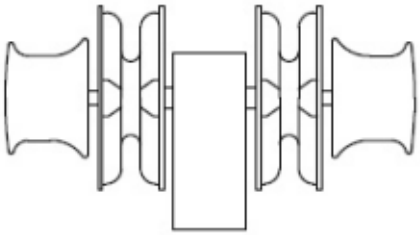
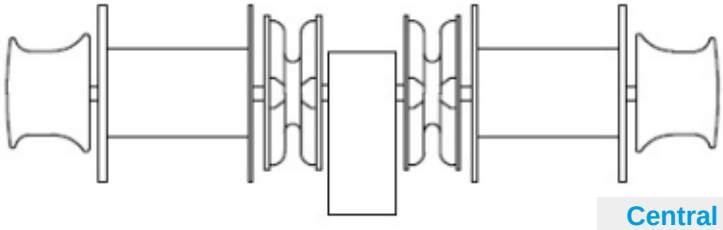
Winch & Windlass - Arrangement

For Windlass

Winch Model	Left Hand Model	Right Hand Model
GH / GE		
WGH / WGE		
WDGH / WDGE		
WGHGW / WGEGW	 Central Model	
WDGHGDW / WDGEGDW	 Central Model	

Symbol	H	E	D	G	W
Standard for	Hydraulic Driving System	Electric Driving System	Drum	Gypsy	Warping Head

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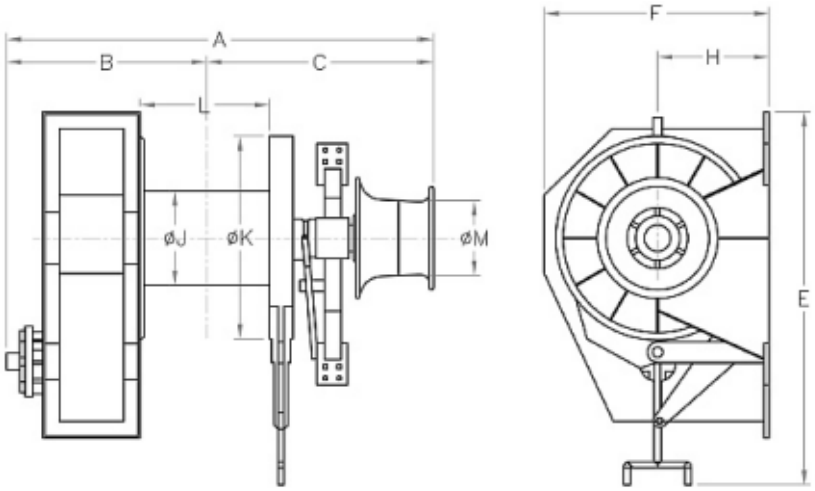
Mooring Winch

Mooring Winch - Single Drum (Hydraulic Drive)

Product Code: WDH - A

Model	Hawser Drum (at 1st layer) Pull Load (kN)	Holding Load (kN)	Nominal Speed (M/min)	Light-Line Speed (M/min)	Hawser Dia. (mm)	Drum Dia. (mm)	Hydraulic Motor Type	Required Power (kW)
WDH-A-050	50	150	15	30	55	400	GM1	22
WDH-A-100	100	260	15	30	65	400	GM2	50
WDH-A-125	125	350	15	30	70	450	GM2	62
WDH-A-160	160	470	15	30	70	450	GM2	75
WDH-A-200	200	590	15	30	76	450	GM3	94
WDH-A-250	250	730	15	30	80	450	GM4	110

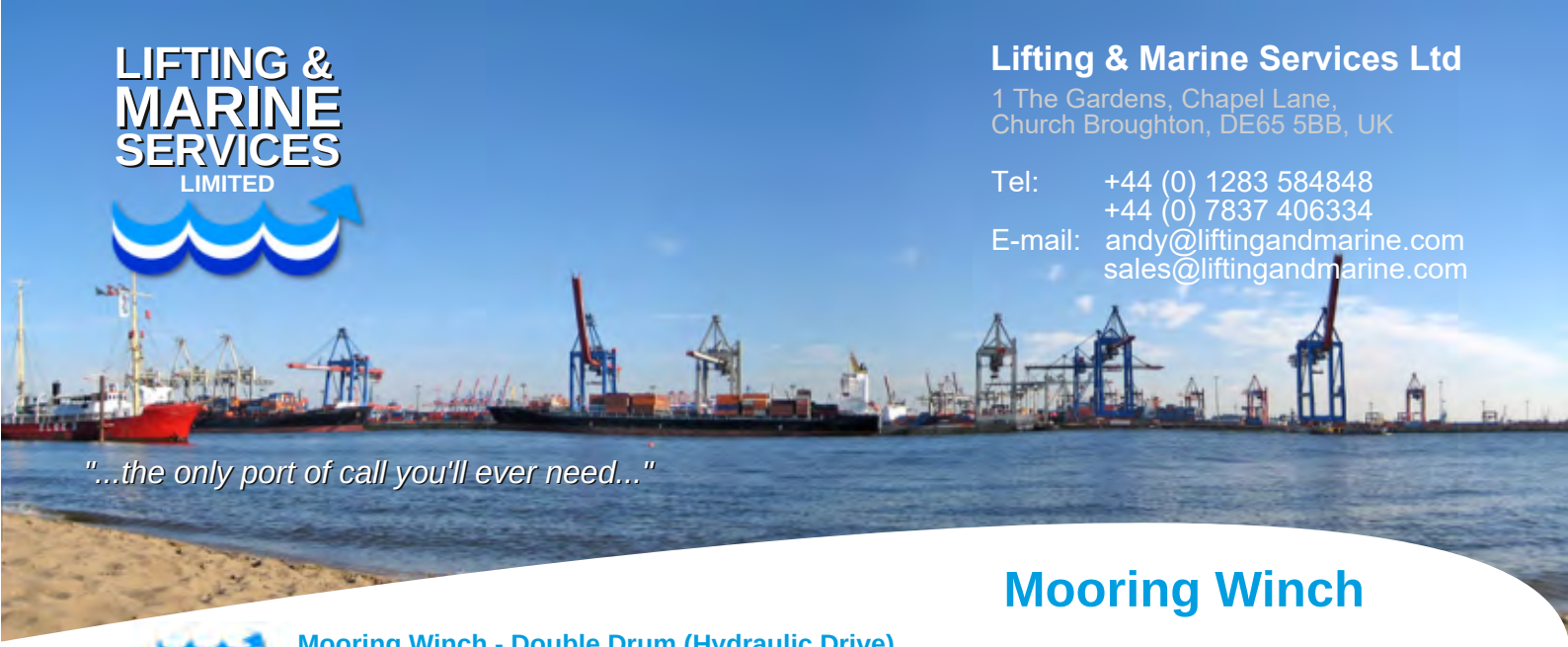
* Hawser storage: 220m



Model	Outside Dimensions (mm) A	B	C	E	F	H	J	K	L	M
WDH-A-050	2600	1400	980	1560	1420	620	400	1200	800	400
WDH-A-100	2650	1550	1100	1800	1600	750	400	1360	880	400
WDH-A-125	2785	1650	1135	1850	1600	760	450	1560	880	400
WDH-A-160	3010	1800	1210	1900	1700	760	450	1560	880	450
WDH-A-200	3155	1900	1255	2200	1800	800	450	1660	920	450
WDH-A-250	3285	2000	1285	2300	1950	900	450	1730	920	450

Remarks:

1. Compact design minimise space required for installation
2. Simple design along with integrated and sealed for ease of inspection and maintenance
3. Total enclosed gear type and local control
4. Hydraulic Brake, Clutch on request
5. Remote control or Auto-Tension is available on request
6. Electric driven with frequency inverter on request



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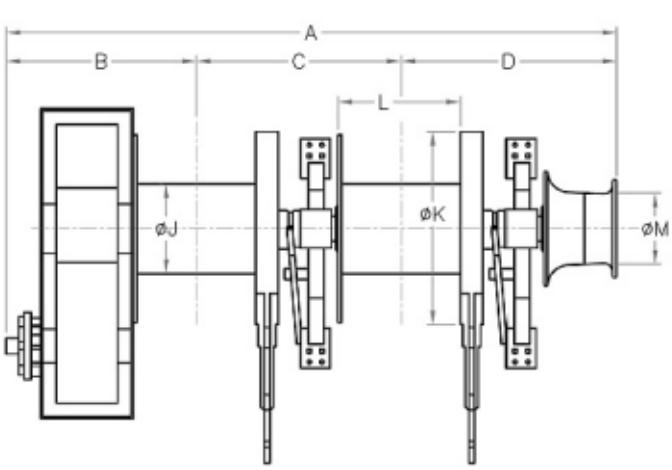
Mooring Winch

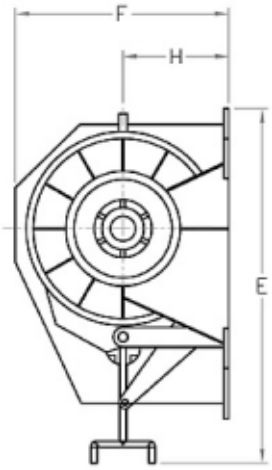
Mooring Winch - Double Drum (Hydraulic Drive)

Product Code: WDDH - A

Model	Hawser Drum (at 1st layer) Pull Load (kN)	Holding Load (kN)	Nominal Speed (M/min)	Light-Line Speed (M/min)	Hawser Dia. (mm)	Drum Dia. (mm)	Hydraulic Motor Type	Required Power (kW)
WDDH-A-050	50	150	15	30	55	400	GM1	22
WDDH-A-100	100	260	15	30	65	400	GM2	50
WDDH-A-125	125	350	15	30	70	450	GM2	62
WDDH-A-160	160	470	15	30	70	450	GM2	75
WDDH-A-200	200	590	15	30	76	450	GM3	94
WDDH-A-250	250	730	15	30	80	450	GM4	110

* Hawser storage: 220m





Model	Outside Dimensions (mm) A	B	C	D	E	F	H	J	K	L	M
WDDH-A-050	3800	1400	1200	980	1560	1420	620	400	1200	800	400
WDDH-A-100	4010	1550	1360	1100	1800	1600	750	400	1360	880	400
WDDH-A-125	4220	1650	1435	1135	1850	1600	760	450	1560	880	400
WDDH-A-160	4520	1800	1510	1210	1900	1700	760	450	1560	880	450
WDDH-A-200	4740	1900	1585	1255	2200	1800	800	450	1660	920	450
WDDH-A-250	4920	2000	1635	1285	2300	1950	900	450	1730	920	450

Remarks:

1. Compact design minimise space required for installation
2. Simple design along with integrated and sealed for ease of inspection and maintenance
3. Total enclosed gear type and local control
4. Hydraulic Brake, Clutch on request
5. Remote control or Auto-Tension is available on request
6. Electric driven with frequency inverter on request

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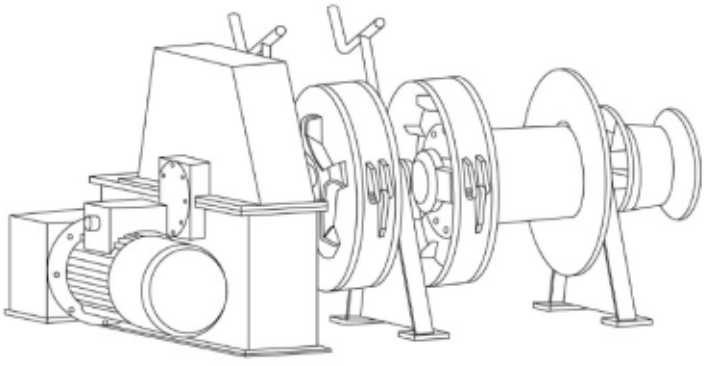
Windlass

Windlass - Electric Drive - Frequency Control Drive)

Product Code: WDGE

Chain Wheel				Mooring Drum								
				Rated Load				Drum Size		Rope Size		
Chain Dia. (mm)	Load (kN)	Speed (m/min)	Brake Capacity (kN) (mm)	Load (kN)	Speed (m/min)	Light Load Speed (m/min)	Brake Capacity (kN) (mm)	Hawser Dia. x L (mm)	Wire Dia. x L (mm)	Hawser (mm) x (m)	Wire (mm) x (m)	Electric Motor (kW)
16	11		68	15			45					
17.5	13	14	81	15	15	45	45	ϕ300x400	ϕ300x400	ϕ32x150	ϕ18x200	5.5
19	16		95	20			60					
20.5	18		110									
22	21	14	126	25	15	45	75	ϕ300x450	ϕ300x450	ϕ36x150	ϕ20x200	7.5
24	25		150									
26	29	1	175									
28	34	14	202	40	15	45	120	ϕ350x450	ϕ350x450	ϕ45x150	ϕ22x200	11
30	39		232									
32	44		263									15
34	50	14	295	50	15	45	150	ϕ400x500	ϕ400x500	ϕ50x150	ϕ25x200	15
36	56		330									18.5
38	62		366									
40	68	13	404	74	15	45	220	ϕ600x700	ϕ600x700	ϕ65x200	ϕ32x200	22
42	84		442									
44	83		486	74			220			ϕ65x200		
46	90	12	527	100	15	45	260	ϕ600x750	ϕ600x750	ϕ70x200	ϕ32x200	30
48	110		572									
50	119	1	882									37
52	129	10	950		15	45		ϕ600x750	ϕ600x750	ϕ75x200	ϕ34x200	45
54	139		1022									45



Type: WDGE

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Windlass

Windlass - Electric Drive - Frequency Control Drive)

Product Code: WDEG

Chain Wheel						Mooring Drum						
				Rated Load				Drum Size		Rope Size		
Chain Dia. (mm)	Load (kN)	Speed (m/min)	Brake Capacity (kN) (mm)	Load (kN)	Speed (m/min)	Light Load Speed (m/min)	Brake Capacity (kN) (mm)	Hawser Dia. x L (mm)	Wire Dia. x L (mm)	Hawser (mm) x (m)	Wire (mm) x (m)	Electric Motor (kW)
56	149		1094	100	15		260	ϕ450x900	ϕ500x650	ϕ70x200	ϕ32x200	
58	160	9	1170	125		45	350	ϕ450x1050	ϕ600x650	ϕ75x220	ϕ34x200	45
60	171		1247	150			470					
62	183		1323	100			260	ϕ450x900	ϕ500x650	ϕ70x200	ϕ32x200	
64	195	9	1409	125	15	45	350	ϕ450x1050	ϕ600x650	ϕ75x220	ϕ34x200	45
66	207		1485	150			470					
68	220	1	1575	100			260	ϕ450x900	ϕ500x650	ϕ70x200	ϕ32x200	
70	233	9	1661	125	15	45	350	ϕ450x1050	ϕ600x650	ϕ75x220	ϕ34x200	55
73	253		1796	160			470					
76	275		1935	125			350	ϕ450x1050	ϕ600x650	ϕ75x220	ϕ34x200	55
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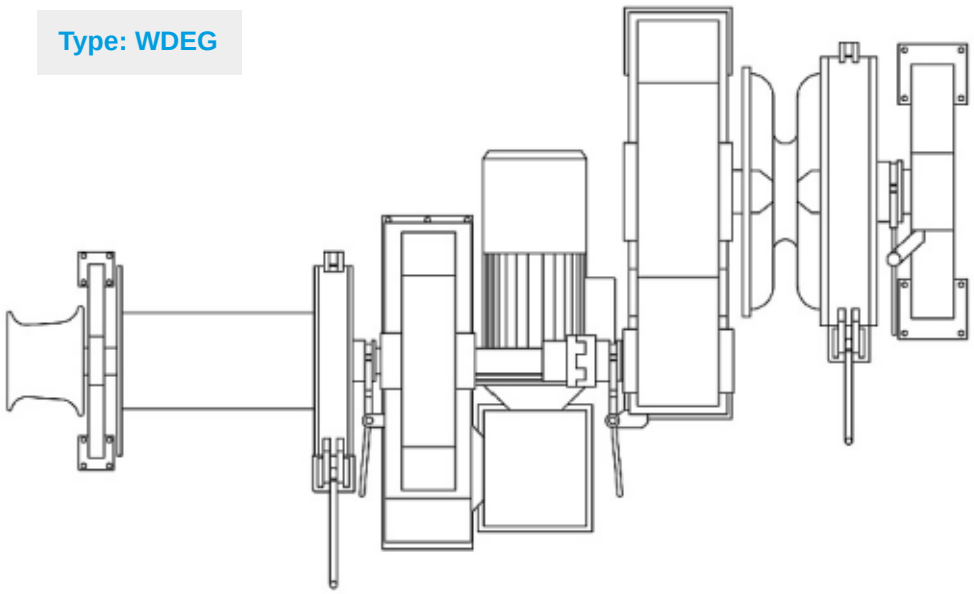
Type: WDEG



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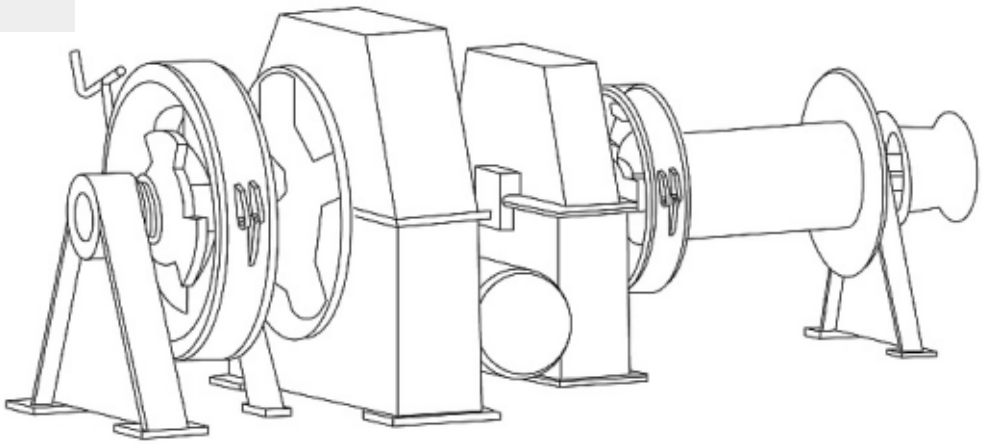
Windlass

Windlass - Electric Drive - Frequency Control Drive)

Product Code: WDEG

Chain Wheel							Mooring Drum				
				Rated Load				Drum Size		Rope Size		
Chain Dia. (mm)	Load (kN)	Speed (m/min)	Brake Capacity (kN) (mm)	Load (kN)	Speed (m/min)	Light Load Speed (m/min)	Brake Capacity (kN) (mm)	Hawser Dia. x L (mm)	Wire Dia. x L (mm)	Hawser (mm) x (m)	Wire (mm) x (m)	Electric Motor (kW)
84	336	9	2322	160	15	45	470	ϕ450x1050	ϕ600x650	ϕ75x2200	ϕ340x200	75
87	360		2475	200			590		ϕ650x650		ϕ40x200	
90	385		2628	160			470	ϕ450x1050	ϕ600x650	ϕ75x2200	ϕ34x200	
92	402	9	2736	200	15	45	590		ϕ650x650		ϕ40x200	75
95	429		2898	250			730	ϕ500x1100		ϕ80x220		
97	447		3011	160			470	ϕ450x1050	ϕ600x650	ϕ75x220	ϕ34x200	
100	475	9	3177	200	15	45	590		ϕ650x650		ϕ40x200	90
102	495		3294	250			730	ϕ500x1100		ϕ80x220		
105	524	9	3465	200	15	45	590	ϕ450x1050	ϕ650x650	ϕ75x220	ϕ40x200	110
107	544		3582	250			730	ϕ500x1100		ϕ80x220		
111	586	9	3816	200	15	45	590	ϕ450x1050	ϕ650x650	ϕ75x220	ϕ40x200	110
				250			730	ϕ500x1100		ϕ80x220		
114	618		4001	320	12		880	ϕ550x1150	ϕ710x650	ϕ85x250	ϕ44x250	
117	651	9	4185	200	15	45	590	ϕ450x1050	ϕ650x650	ϕ75x220	ϕ40x200	132
				250			730	ϕ500x1100				
120	707		4496	320	12		880	ϕ5500x1150	ϕ710x650	ϕ85x250	ϕ44x250	

Type: WDEG



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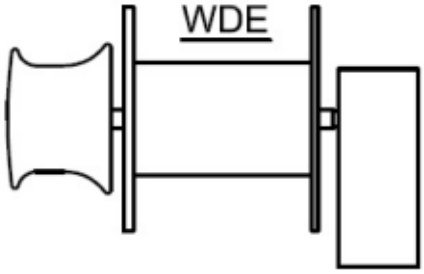
Winch & Windlass Arrangement

For Winch

WDE - 20T - 32X500M - FC - A

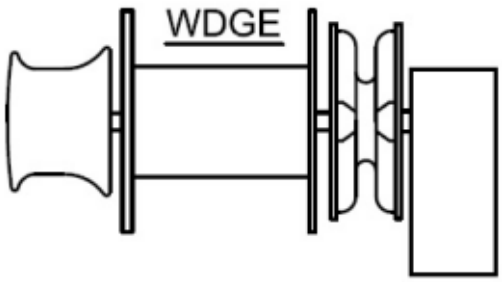
- **WDE** — Configuration:
  - W: Warping Head
  - D: Drum
  - G: Gypsy Wheel
  - H: Hydraulic Driven
  - E: Electric Driven
- **20T** — Pull Capacity: 20 Tons
- **32X500M** — Drum Capacity: Line Diameter 32mm x Length 500M
- **FC** — Option / Special Requirement:
  - FC: Frequency Inverter Control
  - S: Spooling Device
  - M: Manual Control
  - R: Remote Control
- **A** — Version: A, B, C, D.....



For Windlass

WDGE - 52C - 15T - FC - A

- **WDGE** — Configuration:
  - W: Warping Head
  - D: Drum
  - G: Gypsy Wheel
  - H: Hydraulic Driven
  - E: Electric Driven
- **52C** — Anchor Chain:
  - Size: 52mm
  - B: Grade 2
  - C: Grade 3
- **15T** — Pull Capacity: 15 Tons
- **FC** — Option / Special Requirement:
  - FC: Frequency Inverter Control
  - M: Manual Control
  - R: Remote Control
- **A** — Version: A, B, C, D.....



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Inverter Drive Winch System

Features of the Inverter Drive Winch System

Economised Energy

The Inverter Drive System is very efficient and reduces electricity load. It is not necessary to increase the capacity of electricity because the capacity of electricity is decided by system over load (15%, 1 minute)

Low Noise & Frequency

The system benefits from smooth control and quiet operation, especially when compared with hydraulic operated systems.

Free Maintenance

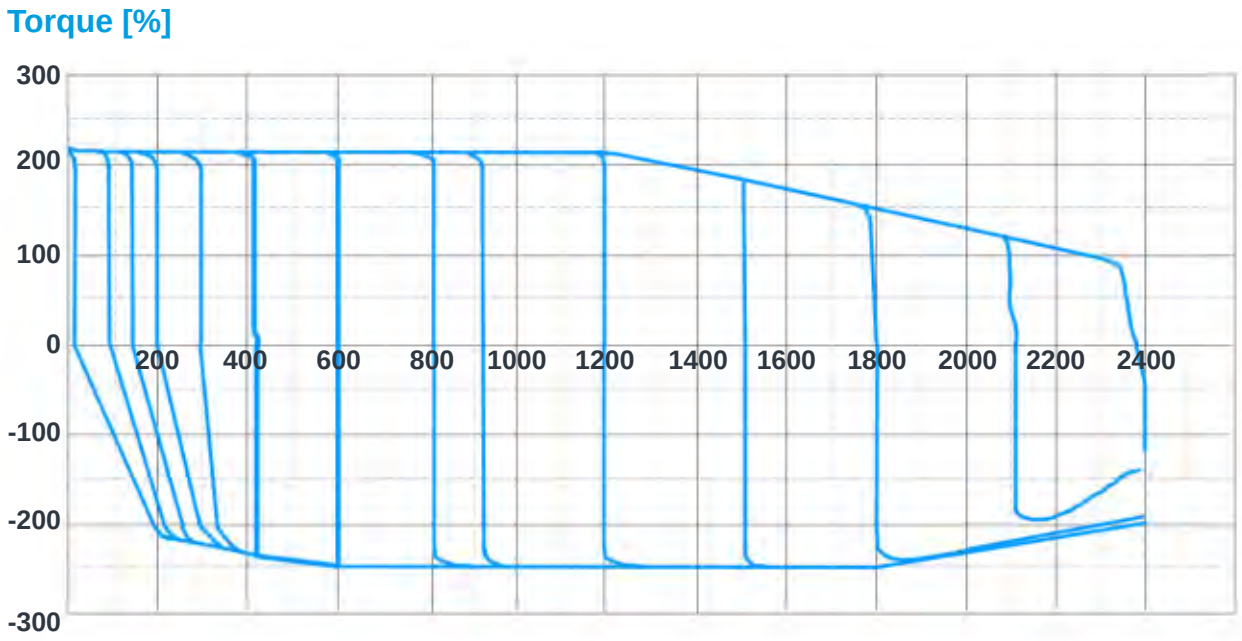
Unlike a hydraulic system, there is no need for routine maintenance or servce - the simple structure and utilisation of a strong and reliable squirrel cage type electric motor means that maintenance and sevvice costs are minimal.

No Environmental Pollution

As it is an electric based system, there is no risk of environmental pollution unlike a hydraulic system which can leak oil.

Smooth & Wide Speed Control

It is possible to control the system from 0.5Hz to maximum. By vector control with PG Sensor, torque from 100% (continuance) to 150% (short time) can show at 0 r/min. It is possbile to wind morring lines smoothly and work at wharf easily using the speed control.



Example of Torque Characteristics

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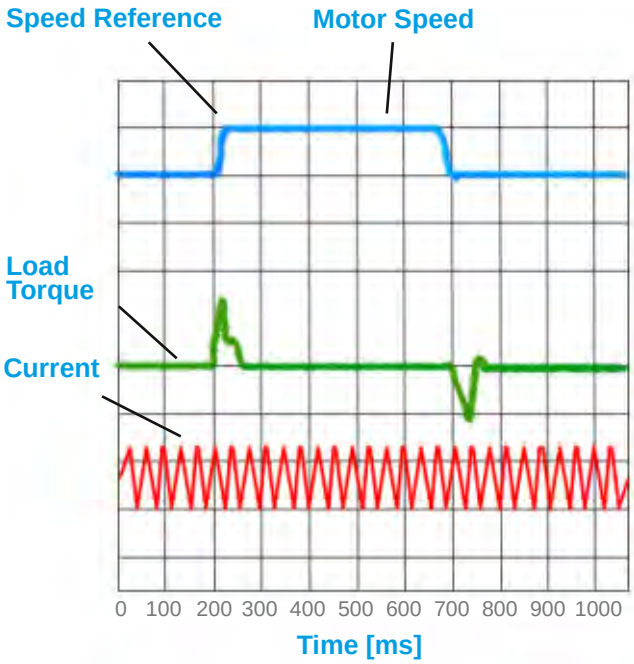
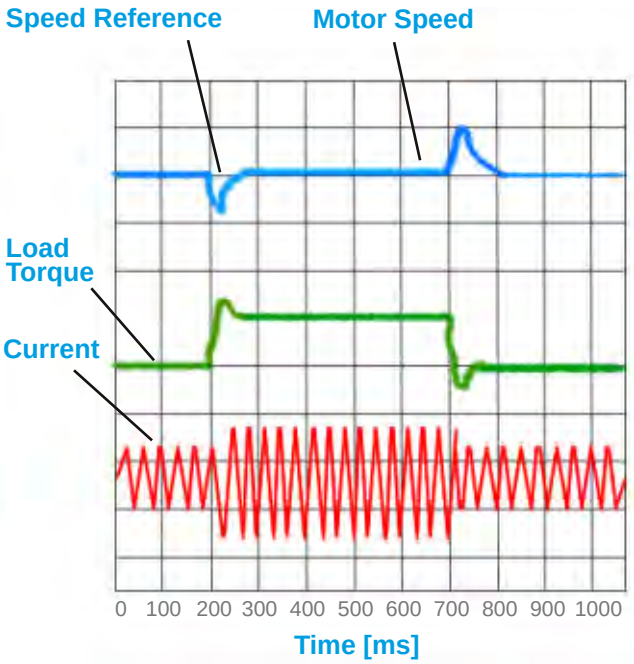
Inverter Drive Winch System

Features of the Inverter Drive Winch System (...continued...)

Adjustable Torque Settings

Restriction and protection of starting torque acceleration - deceleration torque over torque. In a stalling situation, it is possible to control the rope tension at zero speed and prevent over load. Significantly increasing the starting torque of the motor will produce more than 200% torque even at extremely low speeds (≤ 0.5 Hz)





Reduction of Expenditure on Cable Work Settings

It is possbile to change the cable to a smaller size because the electric current that deternines the cable size is extremely low compared with other drive systems

Easy Installation & Reduced Start-Up Cost

Centralised Control of Inverter by PLC & Comms System

A number of invertors can be controlled easily by means of linkage to a communication system. The system can be a PC, programmable controller or higher order network based.

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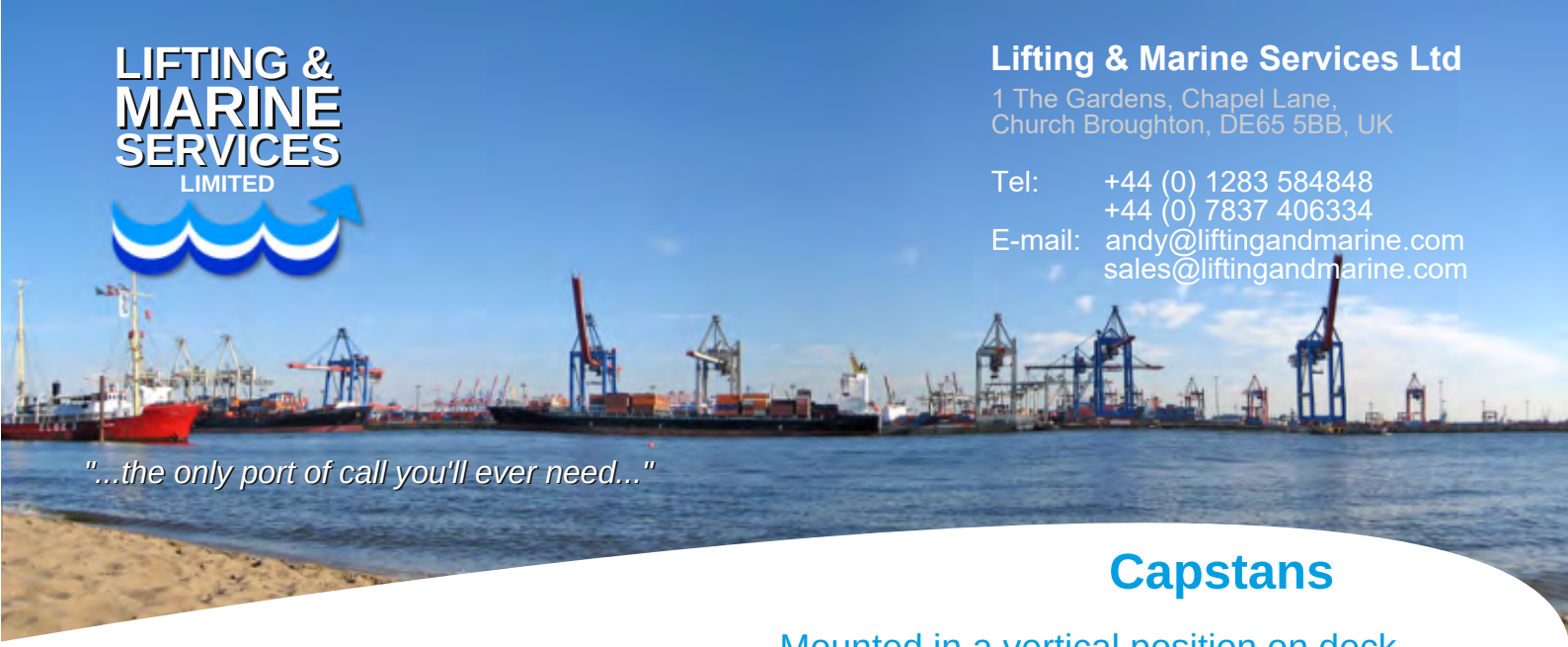


Capstans

Mounted in a vertical position on deck

A capstan is mounted in a vertical position on deck. The warping head is driven by an electric or hydraulic motor. The torque-transmitting gear is housed in the warping head and the motor is located below deck. The necessary capacity results from the nominal rope pull and the related rope speed.

Upon special request, the motor can be completely housed in the warping head.

Capstan Product Specification

Pull Load (Ton)	Warping Head Dia. D (mm)	Line Speed (M/min)	Line Size Dia. (mm)		Dimensions (mm)			Power (kW)	
			Wire Rope	Hawser Synthetic Rope	H	A	B	Hydraulic Driven	Electric Driven
1	250	18	14	30	250	320	370	5.5	4
2	300	15	16	36	300	400	450	7.5	5.5
3	350	12	20	42	360	440	480	11	7.5
5	410	12	25	50	430	530	622	15	11
8	530	10	32	65	445	670	800	22	15
10/12	630	10	38	78	530	800	950	30	22
15	720	8	44	90	640	944	1120	37	30
20/25	810	8	50	100	730	1060	1310	55	37

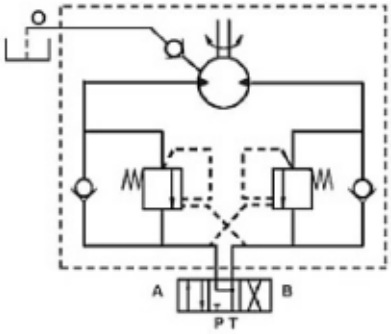
Hydraulic Driven (CH)

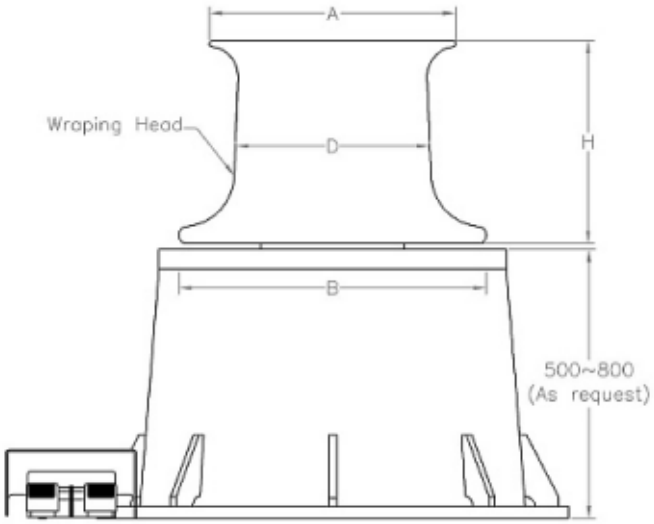
1. Hydraulic Motor with Counter Balance Valve
2. Planetary Gear Box
3. Control: Foot pedal, Joystick or Remote
4. Bi-Direction with Emergency Stop
5. Option: Variable Speed
6. Hydraulic Power Unit (on request)

Remark:

Warping Head ISO-3482
Base Height approx. 500 - 800mm (as request)

Hydraulic Schematic Drawing





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Capstans

Arrangement Diagram

Arrangement

CE - 3T - 12M - M - A

- **CE** — Power:
  - CE: Electric Driven
  - CH: Hydraulic Driven
  - CP: Pneumatic Driven
  - H: Hydraulic Driven
  - CH-L: Deck mounted or dockside
- **3T** — Pull Capacity: 3 Tons
- **12M** — Speed: 12 M/Min
- **M** — Option / Special Requirement:
  - FC: Frequency Control
  - M: Manual Control
  - R: Remote Control
- **A** — Version: A, B, C, D.....

Model No: CP-5TX10M

Model No: CE-L-10TX25M-M

Electric Driven (CE, CE-L)

1. Electric Magnetic Disc Brake - Failsafe
2. Electric Motor: IP56 or Ex
3. Planetary Gear Box
4. Control Panel: Foot Pedal, Joystick or Remote
5. Bi-Direction with Emergency Stop
5. Option: Variable Speed by Frequency Invertor Control

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