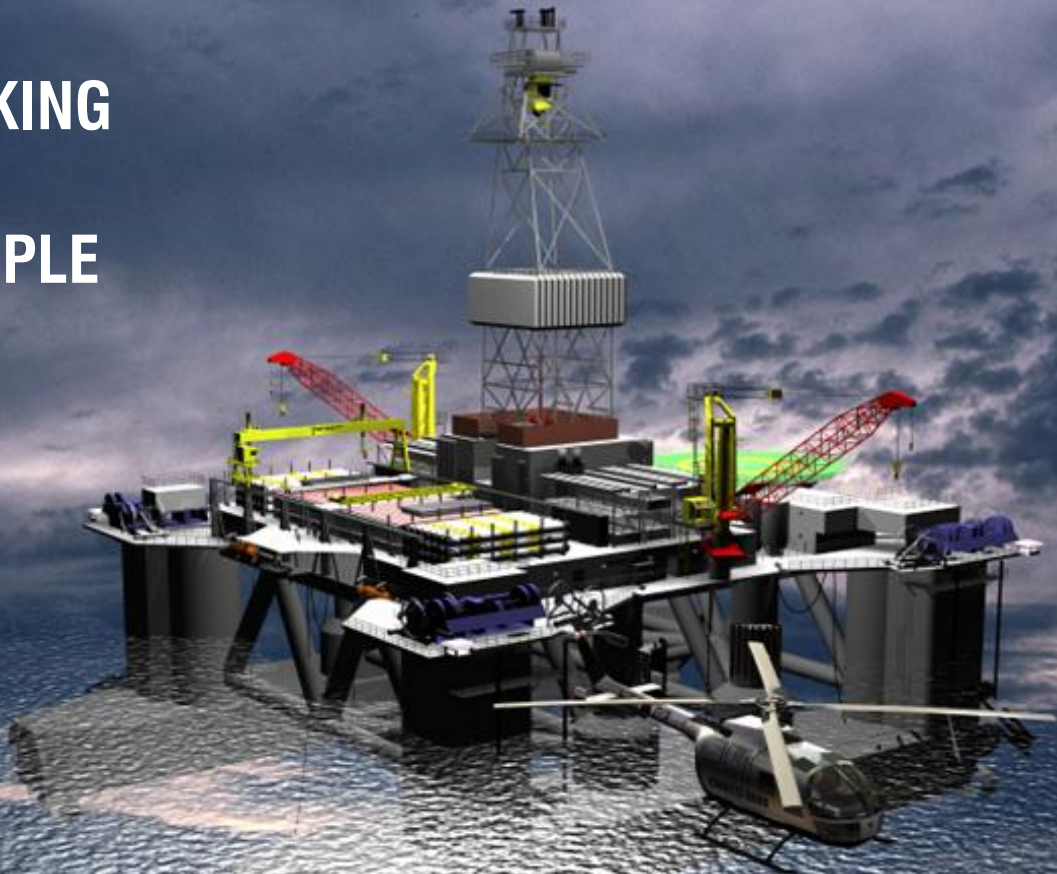


WINCHES

EQUIPMENT & SYSTEMS

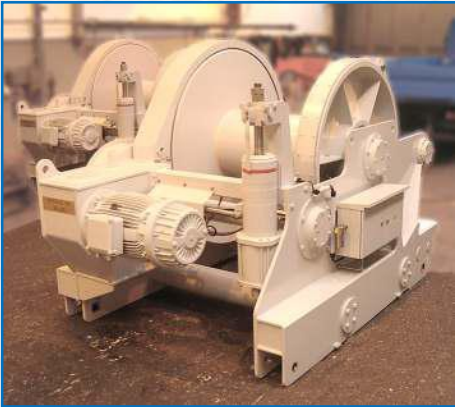
MAKING
IT
SIMPLE



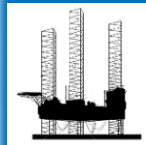
Keppel

**Offshore Technology
Development**

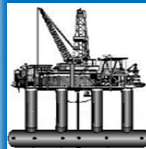
OUR WINCHES



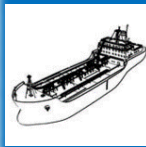
OTD offers three main categories of mooring winch solutions for the offshore industry:



Standardized or tailor-made mooring winches and fairleads for jack-up drilling rigs



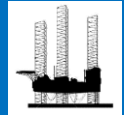
Tailor-made anchor mooring winches and fairleads for semi-submersible drilling rigs



Other types of winches, including AHTW and mooring systems for FPSO, etc.

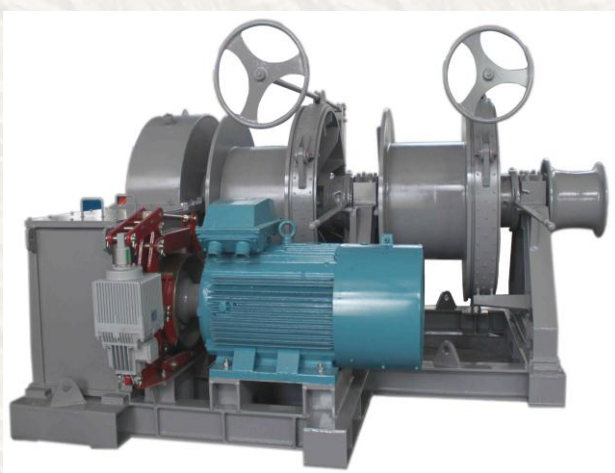
All our winches are designed and built according to five core elements:

- ✓ **SAFETY**
- ✓ **RELIABILITY**
- ✓ **EASY HANDLING**
- ✓ **LOW MAINTENANCE**
- ✓ **ENVIRONMENTALLY FRIENDLY**



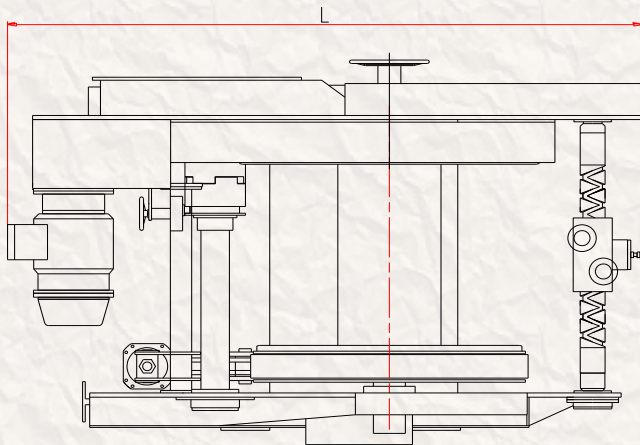
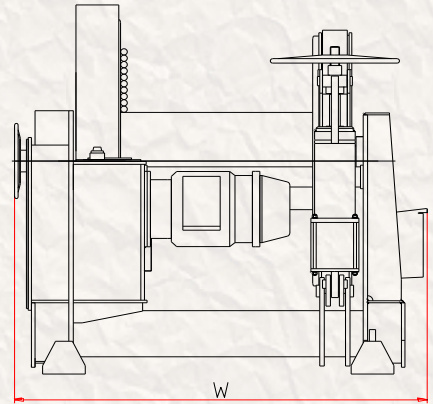
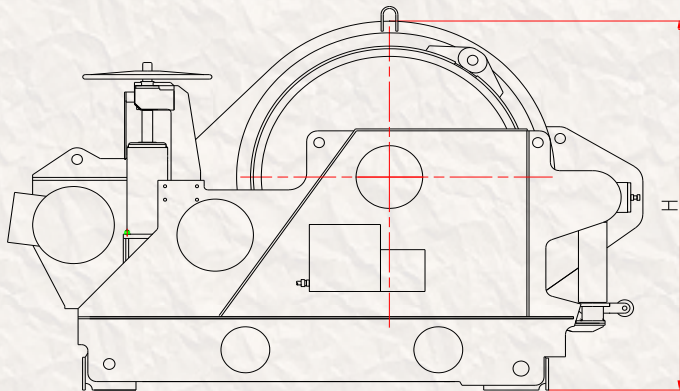
Features

- ✓ Single or Double Drum
- ✓ Electrical Drive
- ✓ Direct on Line (DOL) or Variable Frequency drive (VFD)
- ✓ Single Speed or 2-Speed Motor
- ✓ Integrated Modular Gear Box
- ✓ Fail-safe Motor Brake
- ✓ Pneumatic Fail-safe Band Brake with Manual Emergency Release
- ✓ Auto Clutch with Manual Override
- ✓ Load and Rope Length Display
- ✓ Controlled from Local Control Console
- ✓ Optional Remote Control
- ✓ Cost Effective



MOORING WINCH FOR JACK UP RIGS

Mooring Winch



Model	Pull X Speed (MT X m/min)	Brake Holding Capacity (MT)	Wire Rope Spooling Length and Diameter Capacity (m X mm)	Winch Dimensions L X W X H (mm X mm X mm)	Weight (MT)	Motor Power (kW)
OTD-MW025	25 X 5.8	60	775 x Ø38	3580 X 2320 X 2200	9.5	27
OTD-MW030	30 X 5.8	60	775 x Ø38	3580 X 2350 X 2300	10.2	32
OTD-MW040	40 X 5.8	100	915 x Ø38	3950 X 2320 X 2300	14	45
OTD-MW060	60 X 5.5	180	1000 x Ø51	4350 X 3465 X 2705	23.5	65
OTD-MW085	85 X 3.7	220	1050 x Ø58	3545 X 4420 X 3370	29	64
OTD-MW180	180 X 10	395	1300 x Ø76	5730 X 4690 X 4430	60	350

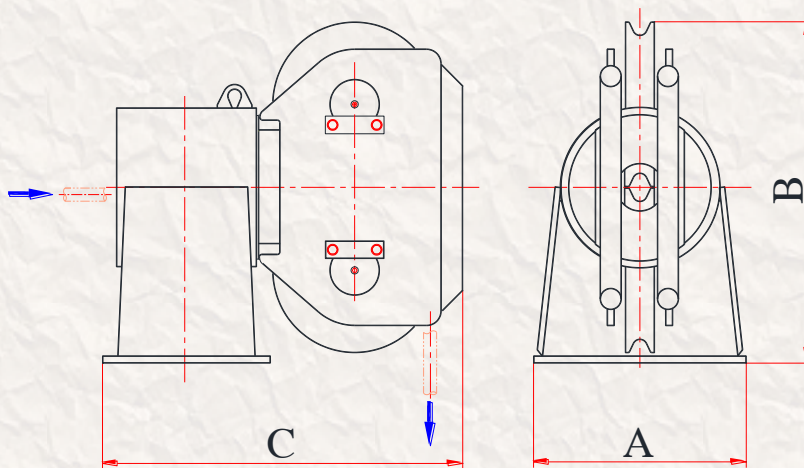
MOORING WINCH FOR JACK UP RIGS

Swivel Head Fairlead



Features

- ✓ Heavy duty steel rollers suitable for wire rope or synthetic fibre rope
- ✓ Designed for wire rope breaking strength
- ✓ Options for bolted or welded mount

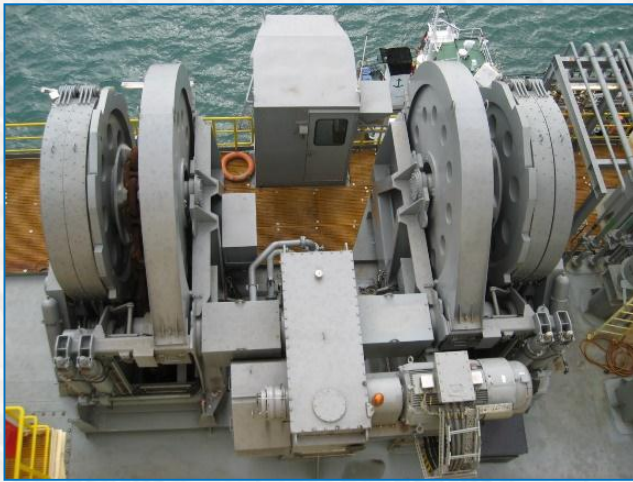


Model	Rope Diameter (mm)	Rope MBL* (Ton)	A (mm)	B (mm)	C (mm)
OTD- FL38	38	92	1000	960	1100
OTD-FL42	42	113	1100	1080	1240
OTD- FL48	48	147	1200	1205	1385
OTD- FL54	54	187	1300	1320	1630
OTD- FL58	58	216	1400	1440	1800

*Based on 6x36 IWRC

MOORING & ANCHOR WINCH FOR SEMI-SUBMERSIBLE RIGS

Rope Anchor Winch



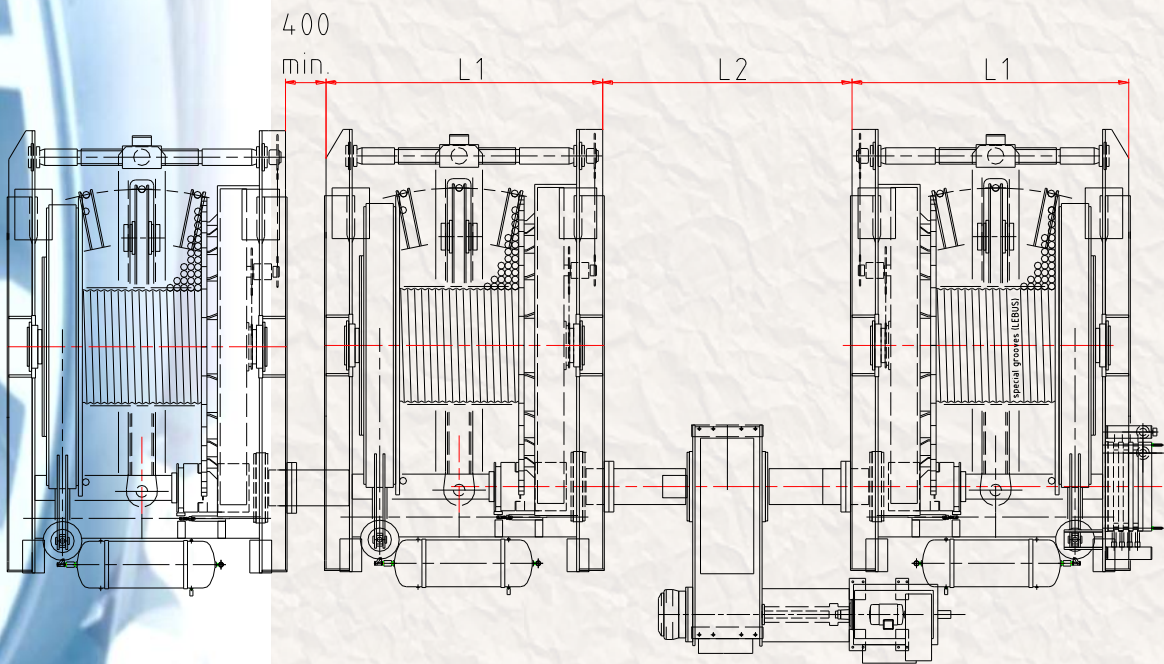
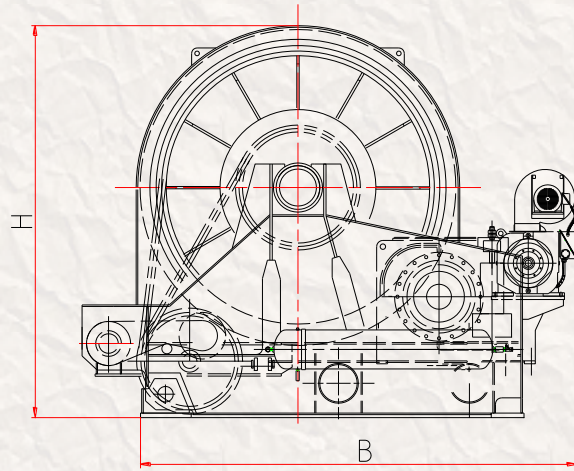
Features

- ✓ Compact and Robust Welding Structure
- ✓ Freewheeling by Water-cooled Drag Brake
- ✓ Fail-safe Motor Brake
- ✓ Fail-safe Pneumatic or Hydraulic Band Brake
- ✓ Shaft Coupling for Future Extension
- ✓ Suitable for 8-, 12- or 16-points Mooring Applications
- ✓ Load and Rope Length Display
- ✓ Central Remote and Local Control



MOORING & ANCHOR WINCH FOR SEMI-SUBMERSIBLE RIGS

Rope Anchor Winch



Model	L1 (mm)	L2 (mm)	B (mm)	H (mm)
OTD-AW63	4110	1870	4670	4120
OTD-AW76	4140	1880	4920	4450
OTD-AW89	4240	1900	5595	5030
OTD-AW102	4460	2000	6005	5350

The data provided is for illustration purposes only.

MOORING & ANCHOR WINCH FOR SEMI-SUBMERSIBLE RIGS

Rope Anchor Winch



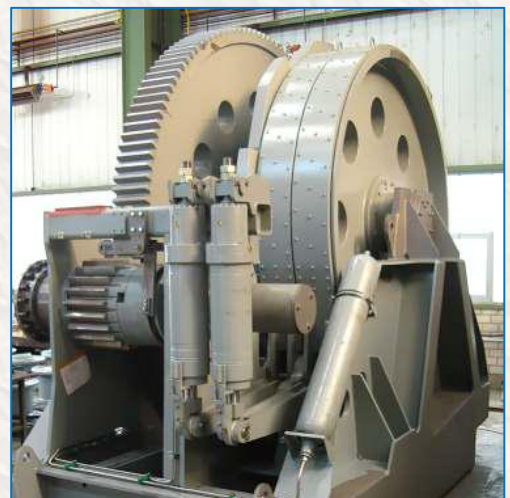
Model	Rope Dia. (mm)	Nom. Pull 1 st Step (MT X m/min)	Nom. Pull 2 nd Step (MT X m/min)	Stall Pull (MT)	Rope Length (m)	Layers	Power (kW)	Brake Holding Force (MT)	Dynamic Pay-out Capacity (MT X m/min)
OTD-AW63	64	70 x 30	105 x 20	77/116	1500	13	415	338	67 x 100
OTD-AW76	76	97 x 30	145 x 20	107/160	1500	13	570	477	100 x 100
OTD-AW89	89	137 x 30	205 x 20	150/226	1500	12	810	670	100 x 100
OTD-AW102	102	177 x 30	265 x 20	195/292	1500	10	1050	860	100 x 100

The data provided is for reference only.



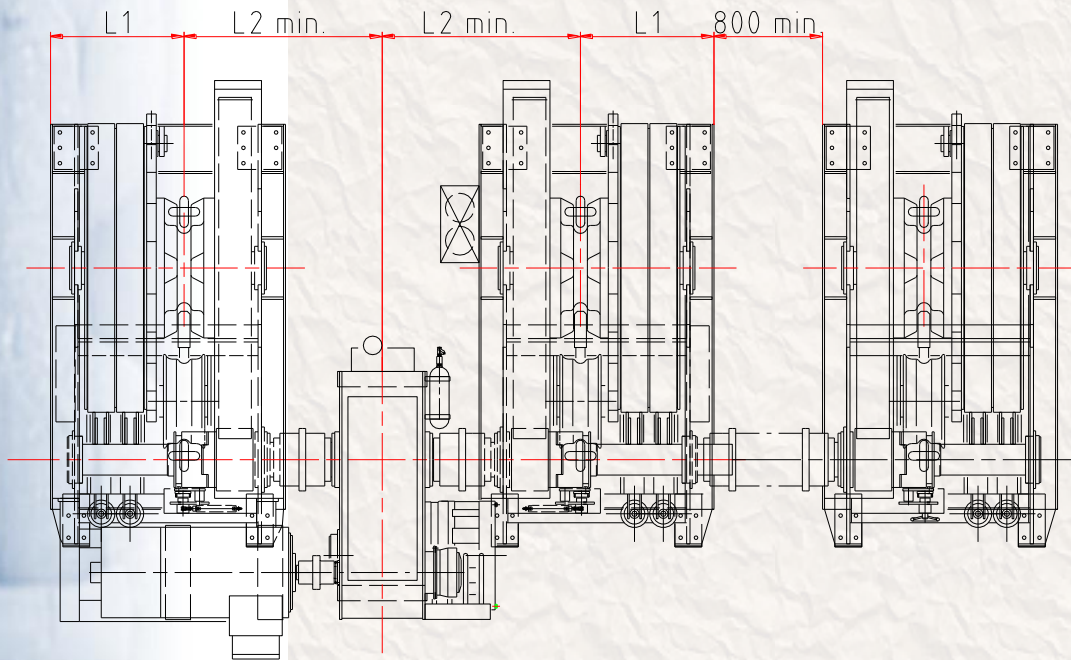
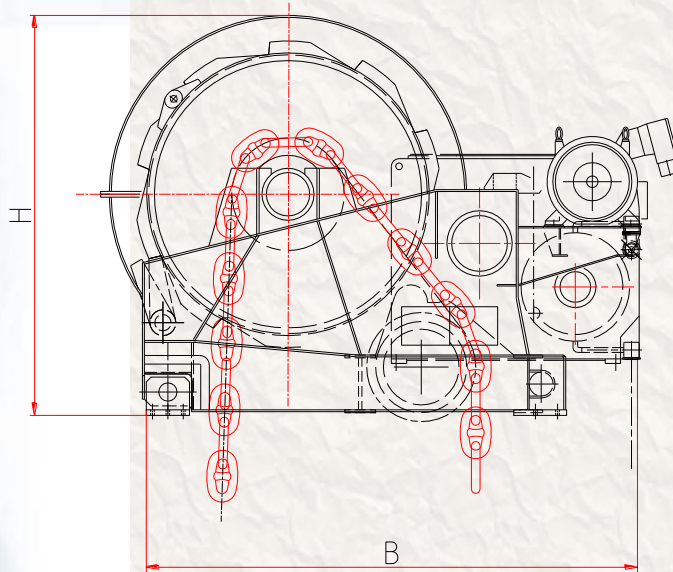
The main components of the winches:

- **Reduction Gear**
Fully enclosed gearbox with gears, supported by roller bearings, running in an oil bath, splash lubricated
- **Water-Cooled Dynamic Brake**
Spring applied and pneumatically activated, for free wheeling operation during deployment of anchors
- **Gear Brake**
Pneumatically or hydraulically operated, of fail-safe design
- **Gear Shifting**
Remote controlled, for operation of winches in low and high gear, with neutral position
- **Spline Clutch**
Remote controlled, for engaging and disengaging of the selected drum or cable lifter with the winch system
- **Sling Band Brake**
Pneumatically or hydraulically operated, fail-safe design, with non-asbestos woven lining



MOORING & ANCHOR WINCH FOR SEMI-SUBMERSIBLE RIGS

Chain Anchor Winch



Model	Chain Dia. (mm)	Nom pull 1 st step (Ton x M/Min)	Nom pull 2 nd step (Ton x M/Min)	Stall pull (Ton)	Power (Kw)	Brake Holding Force (Ton)	L1 (mm)	L2 (mm)	B (mm)	H (mm)
OTD-AW76	76	98 x 18	200 x 9	215	350	610	1230	1900	4660	3850
OTD-AW89	89	135 x 18	270 x 9	297	480	820	1390	2065	5130	4160
OTD-AW102	102	168 x 18	340 x 9	370	600	1040	1550	2230	5610	4300

The data provided is for reference only.



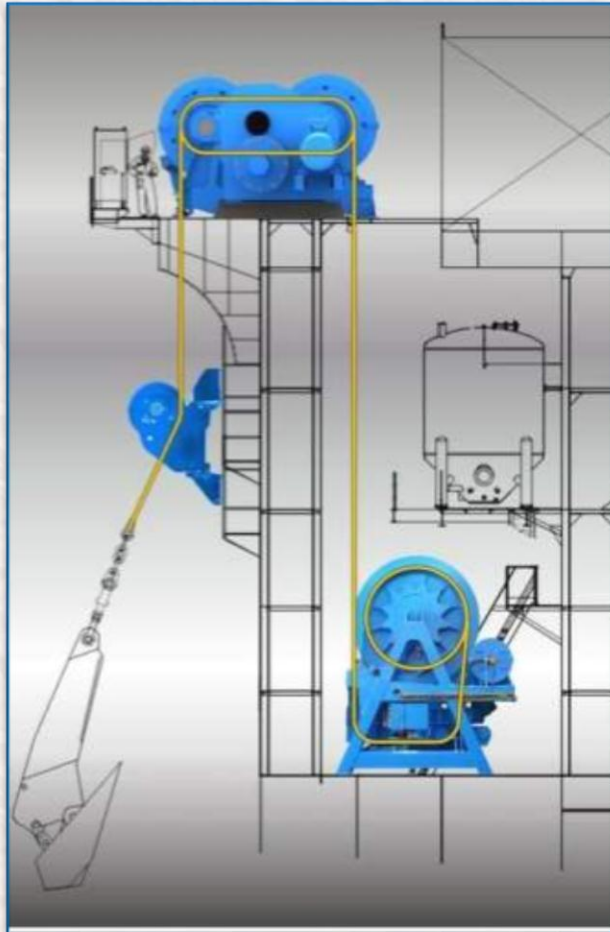
The windlass of the Chain Anchor Mooring Winch is equipped with:

- **Main Gear Wheel**
Grease lubricated and protected by means of a sheet metal cover
- **Cable Lifter**
With 5 snugs, suitable to accommodate the kenter shackle, in high grade cast material, supported by roller bearings
- **Chain Stripper**
To prevent the chain from getting stuck in the cable lifter
- **Sheave (Optional)**
To ensure a proper guiding of the chain down to the fairlead
- **Ratchet Wheel (Optional)**
With manually activated pawl for fixing the cable lifter for maintenance purpose





Traction Winches



Traction Winches incorporate two drums to provide tension/ traction and a third drum with low wire tension for storage. A single rope layer is operated on the traction drums.

Features

- ✓ Constant Pulling over the Entire Rope Length
- ✓ High Storage Capacity
- ✓ Rope Life Extension by Avoiding Knifing at Lower Layers
- ✓ High Capacity up to 600 Ton Holding
- ✓ Fail-safe Motor and Band Brake
- ✓ VFD with Stepless Speed Control
- ✓ Local and Central Remote Control

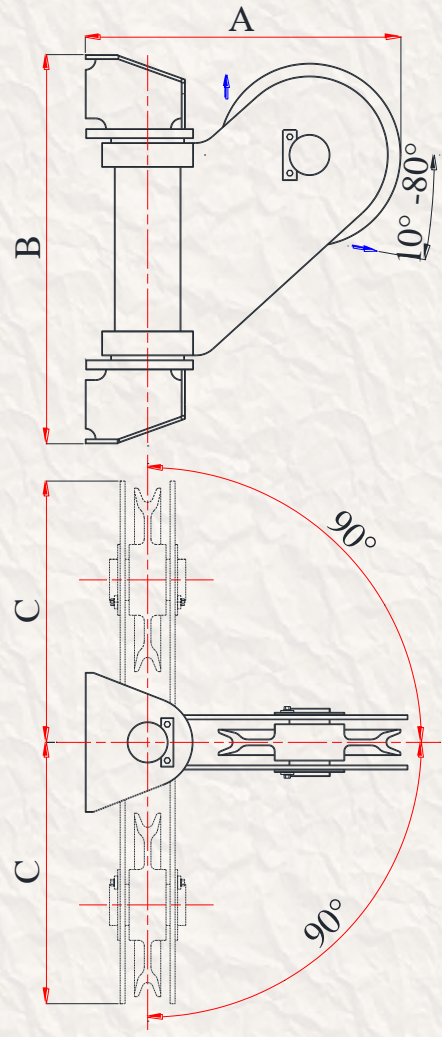


Specifications

Nominal pull:	2,000 kN
Stalling pull:	2,400 kN
Speed:	
Low Speed:	0-10 m/min at 2000 kN
High Speed:	10-20 m/min at 2000-1000 kN
Storage winch capacity:	1340m x Ø83mm

MOORING & ANCHOR WINCH FOR SEMI-SUBMERSIBLE RIGS

Fairlead



Features

- ✓ Suitable for Steel Rope, Chain, or Combined Chain and Steel Rope
- ✓ Robust Steel Welded Construction in accordance with Wire Rope MBL at Specified Wrap Angle
- ✓ Up to 4" Wire Rope or 3.5" K5 Chain Diameter

Model	Rope Diameter (mm)	Rope MBL* (Ton)	A (mm)	B (mm)	C (mm)
UFL63	63.5	259	1770	2430	1390
UFL76	76.2	373	2130	2920	1670
UFL89	88.9	508	2475	3410	1945
UFL101	101.6	664	2845	3890	2225

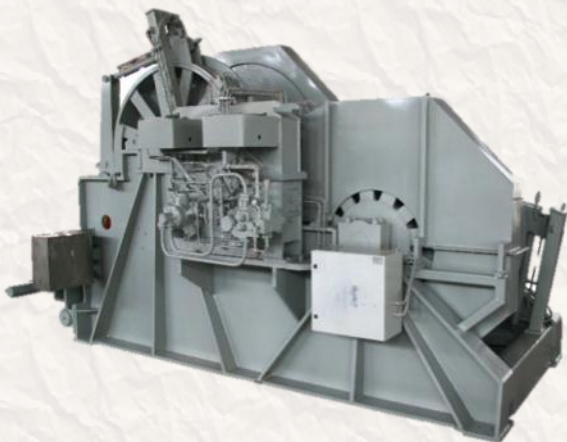
*Based on 6x36 IWRC



Anchor Handling Towing Winch includes a double drum to handle separate wire ropes for both Anchor Handling and Towing. A Remote Control Panel allows operation from the Wheelhouse.

Features

- ✓ Strongly Reinforced Winch Frame to withstand Wire Breaking Load
- ✓ Accurate shaft alignment and gear mesh
- ✓ Hydraulic Operated Fail-safe Clutch Assembly for each Drum
- ✓ Individual Band Brake for each Drum
- ✓ Maintenance Friendly with Pneumatic Gear Segment Lock
- ✓ Control Remotely with Remote Control Panel from the Wheelhouse



Specifications

For each Anchor Handling / Towing Drum,

Hoist Capacity (1 st Layer):	150MT X 0-7.5m/min
	90MT X 0-11.3m/min
	38MT X 0-28.5m/min
Lowering Capacity (1 st Layer):	0-28.5m/min
Stall Load (1 st Layer):	160MT

OTD WINCH TRACK RECORD

Since 2005, OTD has delivered hundreds of heavy duty winches for more than 50 jack-up and semi-submersible rigs. These are high specs winches customised according to our customers' requirements.

Year	Vessel Type	Vessel Name	Owner
2015	Jack-up	Maersk Integrator	MAERSK
2015	Jack-up	Cantarell II	ASTISOR S.A (Grupo R)
2015	Jack-up	UMW Naga 8	UMW Oil & Gas
2015	Jack-up	Cantarell I	ASTISOR S.A (Grupo R)
2015	Jack-up	Arab Drill 70	Arabian Drilling
2014	Jack-up	Maersk Interceptor	MAERSK
2014	Jack-up	Ensco 122	ENSCO
2013	Jack-up	ArabDrill 50	Arabian Drilling
2013	Jack-up	Transocean Siam Driller	Transocean Offshore Deepwater
2013	Jack-up	Hakuryu-11	JDC
2013	Jack-up	Laurus	Oro Negro
2013	Jack-up	AOD III	Seadrill
2013	Jack-up	Ensco 120	ENSCO
2013	Jack-up	Maersk Intrepid	MAERSK
2012	Jack-up	AOD I	Seadrill
2010	Jack-up	Rowan Viking	Prodjack AS
2010	Jack-up	Rowan Norway	Prodjack AS
2010	Jack-up	West Callisto	Seadrill
2009	Jack-up	Greatdrill Chitra	Greatship Global Energy Services
2008	Jack-up	Deep Driller 6	Deep Drilling Invest
2008	Jack-up	COSL Strike	COSL
2008	Jack-up	Discovery I	JINDAL
2008	Jack-up	Greatdrill Chetna	Greatship Global Energy Services
2007	Jack-up	Deep Driller 5	Deep Drilling Invest
2006	Jack-up	COSL Craft	COSL
2005	Jack-up	AL-HAIL	NDC
2009	Semi-submersible	Ensco 8501	ENSCO
2009	Semi-submersible	Development Driller III	Transocean Offshore Deepwater
2009	Semi-submersible	Maersk Developer	Maersk Contractors
2009	Semi-submersible	Maersk Discoverer	Maersk Contractors
2009	Semi-submersible	Gold Star	Queiroz Galvao
2008	Semi-submersible	Ensco 8500	ENSCO
2012	MPSEP	SEA FOX 5	Seafox
2011	SSDT	PVD 5	PV Drilling

OTD CLIENTELE



Keppel

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