MARINE & OFFSHORE CRANES

AMCO VEBA MARINE HYVA GROUP

CUSTOMER SATISFACTION THE CORE OF OUR DNA

BUILT FOR MARINE ENVIRONMENT

AMCO VEBA MARINE is the dedicated marine crane brand of **Hyva Group**. It is recognized worldwide as a leader in the production foldable marine cranes.
We design, manufacture and support the most extensive range of f telescopic and articulated cranes expressly created for marine environments and destined for onshore, shipboard and offshore installations.
Founded in 1980, **AMCO VEBA MARINE** is based in Poviglio, Italy, in Reggio Emilia province, **AMCO VEBA MARINE** fully invested in the key success elements of Hyva Group including the quality and innovative nature of the company's solutions and the excellence of its customer support.

LEAN
MANUFACTURING

WORLDWIDE
PRESENCE

FAST DELIVERY
TIMES

OUR CORE VALUES

CUSTOMER EXCELLENCE
Hyva doesn't simply sell products; we sell a continued customer experience that sets us apart as the first choice for our partners. We add value to our customers' businesses by listening to their needs and prioritizing innovative solutions.

TRUST & RESPECT
Trust and respect are the cornerstones of our relationships with partners and employees around the world. Our ongoing partnerships inspire trust and respect through open communication, authenticity and valuing diverse opinions.

INTEGRITY
We are real, consistent, transparent and fair. Whether launching new initiatives or supporting proven strategies, our people take ownership and accountability for everything they do, following through on our promises without sacrificing quality.

PASSION
At the root of everything we do is our passion to move boundaries and make a positive difference through our work.
We are dedicated, enthusiastic and proud of our energy and passion to connect communities worldwide.

INNOVATIVE & ENTREPRENEURIAL SPIRIT
From our first steps to moving boundaries worldwide, experience and expertise is fueled by the innovation and entrepreneurial spirit we were founded upon and which makes us a global leader today.

SOCIAL RESPONSIBILITY
We are committed to responsible manufacturing, adhering to global safety practices and building lasting partnerships in the communities we serve, within Amco Veba and anywhere our products are used.

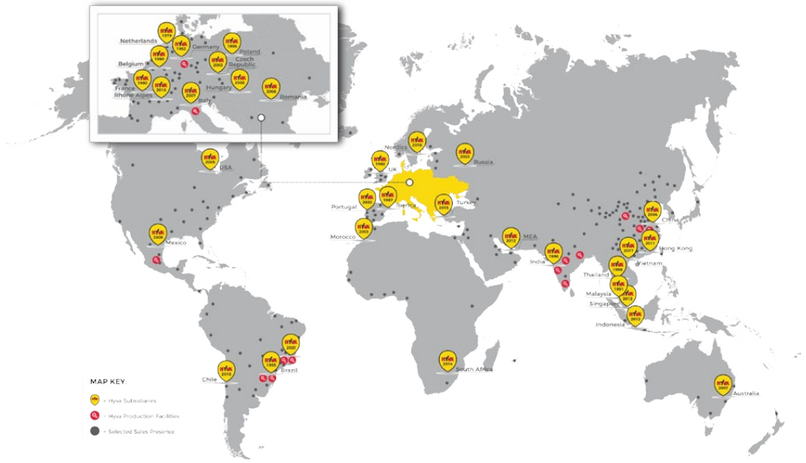
BEING PART OF HYVA A WORLDWIDE SOLUTIONS PROVIDER

WE MOVE YOUR WORLD

Service quality is a fundamental part of **Hyva's** business philosophy.
With operations in more than 110 countries, more than 30 subsidiaries, 14 production plants and over 3.500 employees worldwide, the company operates one of most extensive customer support networks in the industry. It has earned **Hyva** an international reputation for excellence in customer care.

Our entrepreneurial culture and commitment to innovation and quality has established **AMCO VEBA MARINE** as a well-known and respected brand around the world.

Personnel safety and respect for the environment are primary concerns for **AMCO VEBA MARINE**.
To this end, significant investments have been made in facilities and equipment to foster environmental sustainability.



MARINE PLANT IN ITALY

CREATORS OF INNOVATIVE SOLUTIONS

RESEARCH & DEVELOPMENT IS OUR FORCE

Our in-house R&D team develops breakthrough, mechanically and electrically integrated cranes that change the way companies do business.

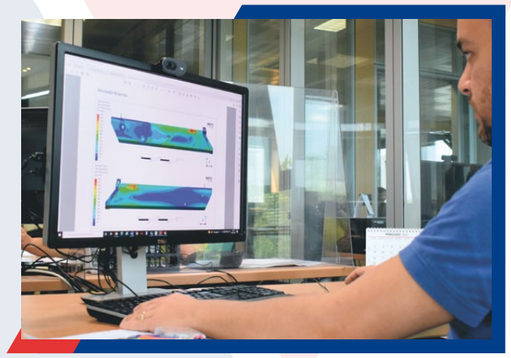
Every day, **AMCO VEBA MARINE** strives to exceed conventional limits and to deliver reliable and efficient solutions capable of supporting our customers' growth.

Our engineering group partners with customers to develop products that limit downtime, increase efficiency and reduce failure risk with a view to growing their businesses"

Collaboration with universities and research centers gives us the opportunity to work with brilliant young minds on new approaches to product development and improvement.

Each crane component is designed using state-of-the-art 3D CAD Systems and verified with ANSYS Software FEM technique (Finite Element Analysis) to verify structural integrity.

Our cranes are designed in accordance with European standards such as EN12999/EN13001. We also offer a wide range of products designed according to major International norms and marine Classification Society Regulations like ABS, BV, DNV, and GL.



FLEXIBLE APPROACH

LEADING **MARKET** TRENDS

CREATING SOLUTIONS FOR TOMMORROW

NEW PRODUCT DEVELOPMENT

Our concept to field approach assures that every solution is expertly designed with cutting-edge technology and extensive structural verification techniques to meet precise specifications, while prototypes are rigorously field-tested in real, day-to-day operating conditions to guarantee operational durability and effectiveness. Our commitment to your success extends beyond delivery through a series of comprehensive training and feedback programs that prepare your team to make the most of our purpose-built solutions.

3D DEVELOPMENT

Our research and development department uses a state-of-the-art 3D CAD system to model each individual component of the crane and assess adequate functional geometry for all movements.

FINITE ELEMENT METHOD (FEM)

Finite Element Method (FEM) facilitates the detailed analysis of the crane's structure as well as loading conditions and helps achieve strength-to-weight optimisation at the design stage.

PROTOTYPE PRODUCTION

All components are thoroughly assessed for compliance with design specifications before the prototype is assembled in a dedicated area. The entire process is documented so that it can be optimised for the production phase.

FIELD TESTS

Expert users test the crane in real, day-to-day operating conditions, directly communicating any feedback to our team for further enhancements. Cranes are only launched once the extensive field testing programme is complete.

TESTED IN ALL CONDITIONS

The prototype is fatigue-tested in different positions and working conditions for up to 600,000 loading cycles, simulating 10 years of regular use, while being computer-monitored to detect any operational inconsistencies.

EVOLUTE AND SUSTAINABLE MANUFACTURING

Hyva produces globally.
To serve customers most effectively we operate in 14 manufacturing plants around the world. Our plants in the Nederland, Germany, Italy, Brazil, India and China produce a wide array of products and employ a truly efficient distribution network.

AMCO VEBA MARINE cranes are produced at our Hyva Capital Equipment location in Northern Italy

We have made huge investments in all our production lines utilizing the most advanced equipment, assuring safety for our employees exceptional product reliability for our customers. Processes are guided by LEAN manufacturing management systems like KANBAN methodology and Kaizen.

AMCO VEBA MARINE is fully committed to a more sustainable world and it's ISO 14001:2015 certified.

Every employee pays the closest attention to even the smallest details to ensure that our customers benefit from our unrivaled dedication.

SHARING THE VALUE OF OUR WORK WITH YOU

Our team is fully dedicated to continuous improvement in the fields of quality, safety and the environment, across the entire value chain, from the smallest supplier to the end customer.

AMCO VEBA MARINE management systems are certified to ISO 9001:2015 and ISO 14001:2015 while our products are covered with international certifications.
The demonstrated superior quality is the result of more than 40 years of technical expertise, development and production to the highest quality standards in components and process.

Designed for on-and off-shore marine applications including general loading/ unloading operations, fishing, aquaculture, marine equipment supply, crew transfer vessels, emergency & rescue, energy, aquatic research and many more.

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

H.C.E SRL

Via A. Einstein 4, 42028 Poviglio - RE, Italy

has been approved by Lloyd's Register to the following standards:

ISO 14001:2015

Approval number(s): ISO 14001 – 0029011

The scope of this approval is applicable to:
Design, Manufacture and Service of hydraulic powered loader cranes for trucks and for trucks and marine applications. Manufacture and Service of hoist/loader and roller crane.

Daniel Oliva Marcilio de Sousa
Area Operations Manager – South Europe
Issued by: Lloyd's Register Quality Assurance Italy Srl
for and on behalf of: Lloyd's Register Quality Assurance Limited

Lloyd's Register

Certificate of Approval

This is to certify that the Management System of:

Amco Veba Marine
(H.C.E. S.r.l. Unico Socio)

Via Einstein, 4/6, 42028 Poviglio, Italy

has been approved by Lloyd's Register to the following standards:

ISO 9001:2015

Approval number(s): ISO 9001 – 0023911-001

This certificate forms part of the approval identified by approval number: 0022911

The scope of this approval is applicable to:
Design, manufacture, sales, trade under own brand name and after-sales service for hydraulic-powered loader cranes for marine applications.

Paul Graaf
Area Operations Manager, Europe
Issued by: Lloyd's Register Nederland B.V.
for and on behalf of: Lloyd's Register Quality Assurance Limited

MULTI LEVEL PROTECTION PROGRAM: MLP

Amco Veba's MLP Program ensures all electrical and structural components, including crane carpentry, hydraulic cylinder rods, fittings, hoses and piping, pins, hydraulic fittings, bolts, junction boxes are able to meet the rigorous demands of our customer's marine applications.

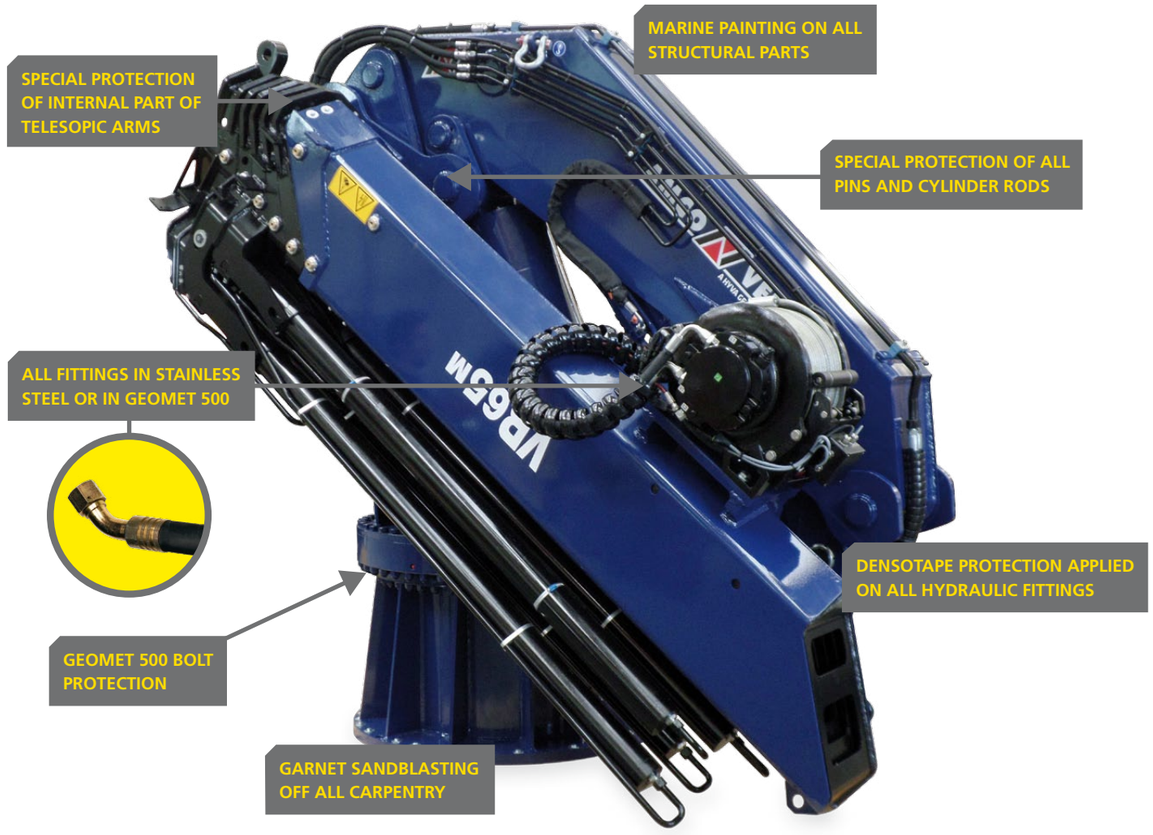
MLP - PROGRAM
MULTI LEVEL PROTECTION
M L2

Because we understand the cost impact of service and downtime, all parts have been designed and selected for easy ease of maintenance and each crane component selected and designed for long life.

AMCO VEBA"S MARINE MLP PROGRAM encourages our customers to work with our field representatives and engineers
In selecting the most suitable crane protection level for the environment in which the crane will operated.

From the softer ambient conditions till the most severe and harsh humid salt ambient.

THE MLP PROGRAM INCLUDES 4 DIFFERENT PROTECTION LEVELS



F LO

BASIC PROTECTION LEVEL
Mostly for Inland application.
Perfect for INLAND WATERS installations or boats sailing solely on internal channels, rivers and lakes.

F L1

HEAVY DUTY BASIC PROTECTION LEVEL
Suitable for MORE SEVERE INLAND APPLICATIONS.
Grants a longer lifetime and can be used in more severe applications but always in environment without high water salinity, mainly on river, lakes and inland waters.

M L2

MARINE PROTECTION LEVEL
Suitable for MARINE APPLICATIONS with salt atmosphere and high salinity. The marine protection in respect of ISO12944 C5M is effective on all structural parts and all crane components granting 5 - 15 years corrosion resistance in fix port installation or installed on boat sailing on sea.

M L3

HEAVY DUTY MARINE PROTECTION LEVEL
Suitable for HEAVY DUTY MARINE APPLICATION with presence of high humidity and high salinity and very harsh marine conditions. To be adopted for the higher severe marine applications on offshore vessel, boats and offshore platform.

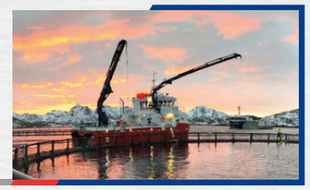
THERMAL METAL SPRAY PROCESS
Additional protection process available on **M L2** and **M L3**.
Thermal Metal spraying is a surface coating process where a liquid metal alloy (zinc/aluminum) is sprayed onto the surface of crane carpentry. It provide the higher level of corrosion protection to ferrous metals and improve wear resistance in respect of ISO 12944 CX level granting more of 15 years lifetime.

APPLICATIONS - OUR CRANES AT WORK

AMCO VEBA MARINE Cranes are operating across the globe in a variety of applications in the marine environment - both on vessels and boats or in quay side installations.

ACQUACULTURE

Feed barges, Service vessels, Catamarans



FISHING

Fishing boats, Fishing harbours

TUGS AND WORKBOATS

Tug boats, Multicats, Utility support vessels, Research vessels, Oil spill response vessels

WIND PARKS

Crew transfer vessels, Wind farm vessels

FERRY, CRUISE AND YACTH

Ferry boats, Landing crafts

RIVER AND LAKES

Pontoons, River cleaning workboats, Barges, Dredgers

QUAY SIDE

Harbours, Marinas

NAVY AND COASTGUARD

Patrol boats, Pilot boats, Cutter vessels, Firefighting boats

CRANE LINES OVERVIEW

The **Amco Veba Marine Crane** product line includes mini telescopic, fully foldable, fully foldable with power link and fully foldable with slewing ring.

Our cranes are designed for all marine applications including fixed onshore, inland water (river, lake or internal channels) and marine & offshore vessels or offshore platforms.

NEW GENERATION crane models are fully foldable with rack and pinion or slewing bearing rotation systems

Our New Generation families are the result of a design/build process creating cranes with industry-leading performance, simplicity of use and maintenance and the highest level of modularity, features and accessories. The most ergonomic working positions and user-friendly interfaces combine to deliver accurate and safe operation with reduced working risk.

Innovative features that protect the crane from harsh marine environments:

- Multi Level Protection **(MLP)** program
- **Denso tape:** standard on L2 protection level, all hydraulic fittings are wrapped with a manually-applied petrolatum protective tape for maximum resistance to salt/marine air.
- **Polymer covers:** ABS LAC700 composite material covers protect the most susceptible hydraulic components such as valve banks, gear motors, and swivel joints from water, UV rays and other forms of environmental agents.
- **Hydraulic line routing:** hoses and pipes are routed inside the column and booms to guarantee a longer life
- **Centralized Greasing System:** making regular maintenance easier.

Additional Advanced Features

- **Sprint Generation System (SGS):** increases the speed of extensions without compromising safety
- **Soft Descent Drive (SDD):** reduces oscillation and assures perfect control
- **Double linkage:** to improve versatility in many different working positions
- Soft closing retraction to reduce oscillation of the load during retraction
- High pressure filter
- Moment load limiter device
- A wide range of radio controls
- Rotating operator Stand-Up Platform.

MINI TELESCOPIC CRANES

SMALL MONO-BOOM CRANES WITH WORM GEAR SLEWING ROTATION SYSTEM

- A light, compact, hi-tech crane, and user-friendly
- It represents the ideal solution for installations where space-saving is a must
- 1 - 5 Tm class
- Telescopic and foldable boom

TELESCOPIC CRANES

MONO-BOOM CRANES WITH DOUBLE RACK & PINION ROTATION SYSTEM

- The ideal solution when rapidity in operation is needed
- Powerful and compact, superior performances and quick operation
- 4 - 15 Tm class
- Telescopic and foldable boom

FULLY FOLDABLE CRANES

ARTICULATING CRANES WITH DOUBLE RACK & PINION ROTATION SYSTEM

- Designed to keep the torque momentum constant and reduce the pendulum effect of the load
- A compact and light-weight design makes them ideal for all vessels where reduced compact dimension is mandatory
- 3 - 28 Tm class
- Knuckle Telescopic and foldable boom

FULLY FOLDABLE CRANES WITH POWER LINK

ARTICULATING CRANES WITH DOUBLE RACK & PINION ROTATION SYSTEM AND DOUBLE LINKAGE

- The Power Link system creates a mechanical advantage in provideing consistent force in all working angles of the boom
- Linkage increases power, enhances performance and allows a negative lift angle
- 20 - 50 Tm class
- Knuckle, telescopic and foldable boom

FULLY FOLDABLE CRANES WITH SLEWING BEARING

ARTICULATING CRANES WITH SLEWING BEARING ROTATION SYSTEM AND DOUBLE LINKAGE

- The ideal solution for highly demanding applications
- Top Lifting class cranes with unlimited rotation during operation, space saving when not in use
- Knuckle, telescopic and foldable

600T LINE
MINI TELESCOPIC CRANES

COMPACT AND LIGHTWEIGHT

Small telescopic and foldable cranes with a wide range of accessories such as radio, winch, powerpack and extra-functions for tool use.

Compact and light weight, they are ideal for small vessels such as pilot boats, fishing boats, landing craft and oil spill response vessels.
Easy to install on light structural materials such as aluminium or fiberglass.

FEATURES

- 1- 5 tm class
- Worm and gear rotation system completely enclosed in cast housing with oil lubrication bath
- Counterbalance valves directly mounted on each cylinder
- Hexagonal shaped telescopic booms are strong and self-aligning, offering great load handling control
- Control valve plumbed in. Shipped demounted with sufficient hose lenght for easy installation
- ABS protective cover on controls

OPTIONS

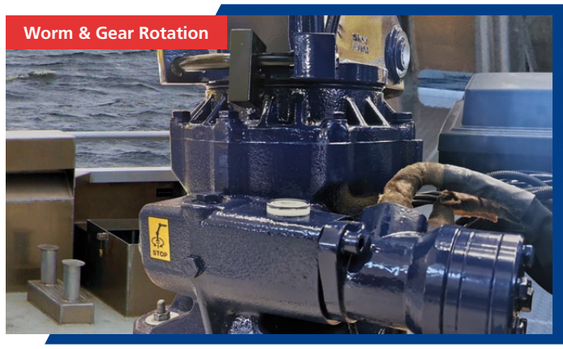
- Large winch range
- Radio Remote Control (RRS)

WORM AND GEAR ROTATION

Completly enclosed cast housing with oil lubrication bath.

TYPICAL APPLICATIONS

FISH FARMING · FISHING · TUGS AND WORKBOATS · QUAY SIDE · NAVY · COAST GUARD · LAKES & RIVERS · WIND PARKS



TECHNICAL DATA - MINI TELESCOPIC CRANES

Crane model	No. of extensions		Boom length closed and extended (mt) 1 - 1.5	1.5 - 2	2	3	4	5	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
601T	1S	m	1,08	1,9					1.154	920	145	328	180	5
		kg	860	485										
	2S	m	1,15	1,97	2,79					902	164			
		kg	800	450	310									
602T	1S	m	1,08	1,9					1.544	1.250	174	335	160	8
		kg	1.175	665										
	2S	m	1,15	1,97	2,79					1.240	193			
		kg	1.100	630	435									
603T	1S	m	1,25		2,17				2.140	1.960	216	335	160	8
		kg	1.590		920									
	2S	m	1,33		2,25	3,18				1.937	240			
		kg	1.485		870	615								
	3S	m	1,4		2,32	3,25	4,17			1.744	262			
		kg	1.270		745	520	405							
604T	1S	m	1,33		2,26				3.290	2.680	263	335	160	10
		kg	2.055		1.210									
	2S	m	1,39		2,32	3,25				2.638	295			
		kg	1.935		1.150	815								
	3S	m	1,48		2,4	3,33	4,25			2.656	321			
		kg	1.830		1.095	775	600							
605T	1S	m	1,44		2,5				4.330	3.390	301	395	175	10
		kg	2.390		1.380									
	2S	m		1,52	2,58	3,64				3.362	337			
		kg		2.255	1.310	925								
	3S	m		1,59	2,65	3,71	4,77			3.322	370			
		kg		2.130	1.250	875	675							
	4S	m		1,67	2,73	3,79	4,85	5,91		3.293	399			
		kg		2.010	1.185	880	635	520						

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

HOW TO USE THE TABLE FOR CRANE SELECTION

EXAMPLE:

Select a crane with requested capacity of 600 kg at 4 mt.

1) Select the column related to the desidered max. length of the fully extended crane (m). In this case column 4 (4.25 m).
2) Scroll down and chose the crane model with the lifting capacity that is closer to the requested one (kg).

In this case crane model 604T with 600 kg at 4.25 mt

Crane model	No. of extensions		Boom length closed and extended (mt) 1 - 1.5	1.5 - 2	2	3	4
604T	1S	m	1,33		2,26		
		kg	2.055		1.210		
	2S	m	1,39		2,32	3,25	
		kg	1.935		1.150	815	
	3S	m	1,48		2,4	3,33	4,25
		kg	1.830		1.095	775	600

800T LINE
TELESCOPIC CRANES

STRONG AND FAST

Medium-size range of Telescopic cranes.
Ideal for jobs where speed is important and a winch may be required, as in the fishing industry or quay side operations.

Base with powerful double rack and pinion system. Powerful rotation system specially designed for marine conditions.

FEATURES

- 4 - 18 tm class
- Base with double rack and pinion system. Powerful rotation system especially designed for marine conditions
- Stationary base for easy installation on vessel
- Counterbalance valves directly mounted on each cylinder
- Hexagonal shaped telescopic booms are strong and self-aligning, offering great load handling control
- Control valve plumbed in. Shipped demounted with sufficient hose lenght for easy installation

OPTIONS

- Radio Remote Control (RRS and/or RDC)
- Winch

DOUBLE RACK AND PINION

This system increases strength, reliability and rotational torque for operation in unstable marine conditions.

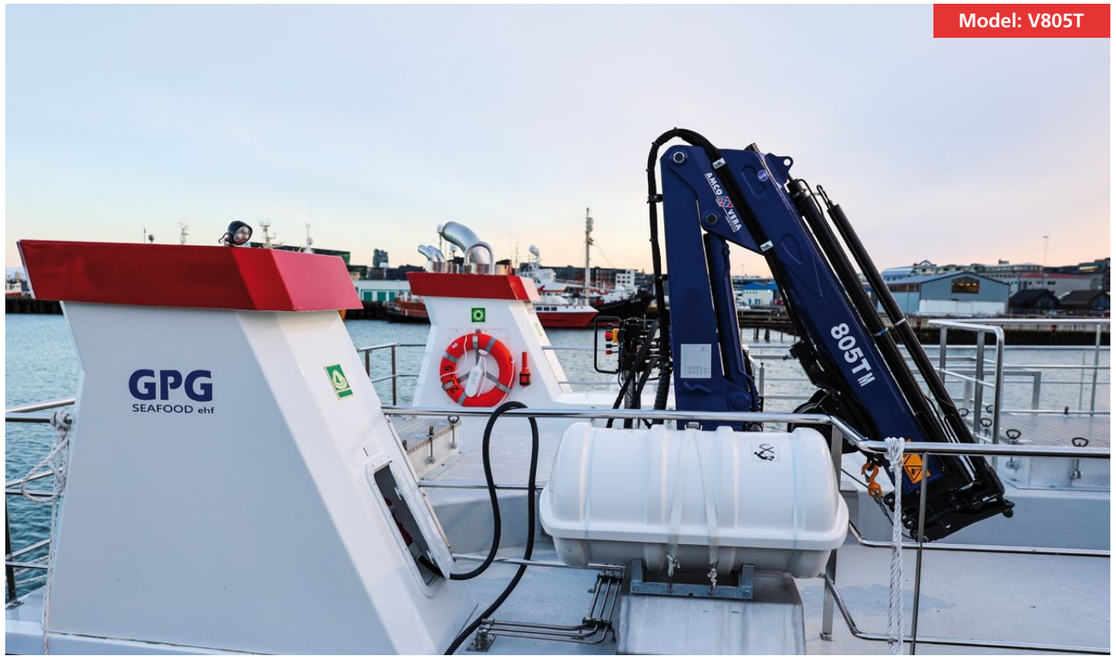
TYPICAL APPLICATIONS

FISH FARMING · FISHING · TUGS AND WORKBOATS · QUAY SIDE · LAKES & RIVERS

TECHNICAL DATA - TELESCOPIC CRANES

Crane model	No. of extensions		Boom length closed and extended (mt) 1	2	3	4	5	6	7	8	9	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
V805T	2S	m	1,85		3,2	4,57						4.740	3.780	520	380	220	16
		kg	2.080		1.190	830											
	3S	m	1,95		3,3	4,67		6,03					3.692	570			
		kg	1.930		1.110	765		585									
	4S	m		2,05	3,4	4,77		6,13	7,5				3.560	615			
		kg		1.770	1.020	700		525	425								
V807NT	2S	m		2,04	3,6		5,15					8.030	6.610	680	387	260	18
		kg		3.300	1.860		1.290										
	3S	m		2,1	3,67		5,25	6,8					6.486	740			
		kg		3.150	1.770		1.220	930									
	4S	m		2,2	3,78		5,35	6,9		8,45			6.409	800			
		kg		2.970	1.680		1.140	860		690							
V809T	2S	m		2,55		4,25		6				10.300	8.250	995	395	250	20
		kg		3.300		1.930		1.350									
	3S	m		2,8		4,5		6,25		8			8.240	1.075			
		kg		3.000		1.770		1.230		940							
	4S	m		2,55		4,25		6	7,75		9,95		8.004	1.140			
		kg		3.200		1.810		1.215	910		725						
V811T	2S	m		2,55		4,25		6				12.700	10.110	995	395	295	20
		kg		4.060		2.400		1.670									
	3S	m		2,8		4,5		6,25		8			10.025	1.075			
		kg		3.650		2.200		1.540		1.190							
	4S	m		2,55		4,25		6	7,75		9,95		9.881	1.140			
		kg		3.950		2.275		1.550	1.170		940						

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4



V800 LINE
FULLY FOLDABLE CRANES

FLEXIBLE AND SMART

Designed to keep constant the torque momentum reducing the pendulum effect of the load.

A very compact and light design makes them ideal for all vessels where reduced compact power is mandatory.

FEATURES

- 3 - 28 tm class
- Base with double rack and pinion system. Powerful rotation system especially designed for marine conditions
- Counterbalance valves directly mounted on each cylinder
- Hexagonal shaped telescopic booms with strong capacity and self-aligning, offering great load handling control
- Control valve plumbed in. Shipped demounted with sufficient hose lenght for easy installation

OPTIONS

- Radio Remote Control (RDC)
- Winch

DOUBLE RACK AND PINION

This system increases strength, reliability and precision where the crane requires extra torque and operate in unstable conditions.

TYPICAL APPLICATIONS

FISH FARMING · FISHING · TUGS AND WORKBOATS · FERRY, CRUISE AND YACTH

NAVY · COAST GUARD · LAKES & RIVERS · WIND PARKS

TECHNICAL DATA - FULLY FOLDABLE CRANES (1)

Crane model	No. of extensions		Boom length closed and extended (mt) 3	4	5	6	7	8	9	10	11		12	13	14	15	16	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
V803N	1S	m	3,20	4,55														3.400	2.550	415	370	175	8
		kg	810	570																			
	2S	m	3,30	4,65		6,00													2.450	450			
		kg	755	525		405																	
	3S	m	3,40	4,75		6,05	7,40												2.350	480			
		kg	710	490		370	300																
V804N	1S	m	3,62	4,98														5.322	3.800	540	380	235	16
		kg	1.060	770																			
	2S	m	3,67		5,03	6,39													3.550	590			
		kg	990		710	550																	
	3S	m	3,77		5,13	6,49	7,85												3.450	640			
		kg	930		650	500	410																
	4S	m	3,87		5,23	6,59	7,59		9,31										3.300	685			
		kg	870		600	450	360		300														
V805	1S	m	3,51	4,87														6.060	4.300	540	380	265	16
		kg	1.250	900																			
	2S	m	3,61	4,97		6,33													4.150	590			
		kg	1.170	830		650																	
	3S	m	3,71		5,07	6,43	7,79												4.000	640			
		kg	1.100		770	590	480																
	4S	m	3,81		5,17	6,53	7,89		9,25										3.850	685			
		kg	1.030		710	540	430		360														
V806N	1S	m	3,88		5,44													8.180	6.500	720	387	245	20
		kg	1.700		1.210																		
	2S	m	3,98		5,55		7,10												6.300	790			
		kg	1.610		1.130		875																
	3S	m		4,05	5,60		7,18	8,74											6.050	850			
		kg		1.520	1.055		800	650															
	4S	m		4,15	5,70		7,30	8,83		10,40									5.800	900			
		kg		1.440	980		735	585		490													
V807N	1S	m	3,94		5,50													8.640	7.050	735	387	265	20
		kg	1.820		1.280																		
	2S	m		4,00	5,56		7,12												6.750	815			
		kg		1.720	1.210		935																
	3S	m		4,05	5,60		7,20	8,76											6.500	875			
		kg		1.635	1.135		860	700															
	4S	m		4,18	5,70		7,30	8,86		10,40									6.350	935			
		kg		1.550	1.060		790	630		525													
V808N	1S	m	3,95		5,50													9.490	7.750	765	387	285	29
		kg	2.000		1.420																		
	2S	m		4,00	5,56		7,15												7.550	845			
		kg		1.920	1.350		1.040																
	3S	m		4,08	5,65		7,20	8,76											7.300	905			
		kg		1.820	1.270		965	785															
	4S	m		4,18	5,75		7,30	8,86		10,45									7.050	965			
		kg		1.720	1.180		890	710		595													

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

TECHNICAL DATA - FULLY FOLDABLE CRANES (2)

Crane model	No. of extensions		Boom length closed and extended (mt) 3	4	5	6	7	8	9	10	11		12	13	14	15	16	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
V810	1S	m		4,20	5,94													13.300	9.300	1.080	395	290	40
		kg		2.280	1.590																		
	2S	m		4,20	5,94		7,74												8.850	1.160				
		kg		2.180	1.500		1.130																
	3S	m		4,30		6,04	7,84		9,70										8.600	1.260				
		kg		2.050		1.370	1.020		810														
	4S	m		4,40		6,14	7,95		9,80		11,80								8.300	1.350				
		kg		1.930		1.280	930		725		590												
	5S	m		4,48		6,24		8,05	9,90		11,75			13,75					8.000	1.420				
		kg		1.820		1.190		850	645		520			435									
V811NG	1S	m		4,10	5,79													12.460	10.400	995	425	310	40 radio 20 no radio
		kg		2.580	1.820																		
	2S	m		4,11	5,79		7,48												10.000	1.100			
		kg		2.475	1.720		1.325																
	3S	m		4,19	5,87		7,56		9,36										9.400	1.200			
		kg		2.285	1.565		1.185		950														
	4S	m		4,27	5,95		7,64		9,44		11,24								9.150	1.290			
		kg		2.170	1.475		1.100		865		715												
V812	1S	m		4,34		6,14													15.000	11.600	1.285	380	310	25
		kg		2.730		1.910																	
	2S	m		4,42		6,23		8,10											11.050	1.415			
		kg		2.550		1.800		1.360															
	3S	m		4,51		6,31		8,18		10,16									10.750	1.535			
		kg		2.430		1.700		1.260		1.000													
	4S	m		4,60		6,40		8,27		10,25			12,23						10.500	1.635			
		kg		2.320		1.580		1.160		890			730										
	5S	m		4,68		6,48		8,35		10,33			12,31		14,31				10.300	1.705			
		kg		2.250		1.535		1.110		835			665		545								
V813NG	1S	m		4,54		6,34													15.570	12.150	1.285	425	285	60 radio 30 no radio
		kg		2.740		1.940																	
	2S	m		4,54		6,34		8,14											11.600	1.405			
		kg		2.610		1.810		1.395															
	3S	m		4,62		6,42		8,22		10,20									11.200	1.520			
		kg		2.475		1.690		1.280		1.015													
	4S	m		4,71		6,51		8,31		10,29			12,27						11.000	1.610			
		kg		2.355		1.585		1.175		910			755										
	5S	m		4,78		6,58		8,38		10,36			12,34		14,39				10.500	1.655			
		kg		2.245		1.490		1.085		825			665		560								
V815	1S	m		4,34		6,14													18.110	13.620	1.470	380	290	25
		kg		3.200		2.240																	
	2S	m		4,42		6,23		8,10											13.010	1.600			
		kg		3.000		2.100		1.600															
	3S	m		4,51		6,31		8,18		10,16									12.750	1.720			
		kg		2.860		1.980		1.480		1.180													
	4S	m		4,60		6,40		8,27		10,25			12,23						12.450	1.820			
		kg		2.760		1.870		1.370		1.065			880										
	5S	m		4,68		6,48		8,35		10,33			12,31		14,31				12.170	1.910			
		kg		2.650		1.780		1.280		990			800		610								
V817	1S	m		4,36		6,23													22.400	15.484	1.770	410	310	32
		kg		3.620		2.520																	
	2S	m		4,36		6,23		8,10											14.994	1.910			
		kg		3.520		2.410		1.830															
	3S	m		4,36		6,23		8,10		10,05									14.700	2.030			
		kg		3.450		2.320		1.730		1.370													
	4S	m		4,36		6,23		8,10		10,05			12,00						14.406	2.150			
		kg		3.370		2.220		1.620		1.260			1.040										
	5S	m		4,45		6,32		8,20		10,15			12,10		14,10				14.112	2.250			
		kg		3.230		2.100		1.510		1.160			935		790								
	6S	m		4,52		6,40		8,26		10,20			12,20		14,20		16,20		13.720	2.340			
		kg		3.100		2.000		1.420		1.060			845		700		600						

= NEW GENERATION CRANE

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

TECHNICAL DATA - FULLY FOLDABLE CRANES (3)

Crane model	No. of extensions		Boom length closed and extended (mt) 3	4	5	6	7	8	9	10	11		12	13	14	15	16	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
V817NG	1S	m		4,54		6,34													19.700	15.500	1.475	425	280	60 radio 40 no radio
		kg		3.490		2.475																	
	2S	m		4,54		6,34		8,14												14.700	1.610			
		kg		3.310		2.305		1.775															
	3S	m		4,62		6,42		8,22		10,20										14.300	1.725			
		kg		3.150		2.170		1.645		1.305													
	4S	m		4,71		6,51		8,31		10,29			12,27							14.000	1.830			
		kg		3.005		2.040		1.520		1.185			980										
	5S	m		4,78		6,58		8,38		10,36			12,34		14,39					13.500	1.880			
		kg		2.875		1.925		1.410		1.080			875		740								
V820 V820N*	1S	m		4,36		6,23													26.100	19.250	1.920	387	300	40
		kg		4.500		3.150																	
	2S	m		4,36		6,23		8,10												18.850	2.070			
		kg		4.400		3.050		2.300															
	3S	m		4,36		6,23		8,10		10,05										18.350	2.210			
		kg		4.280		2.900		2.180		1.725													
	4S	m		4,36		6,23		8,10		10,05			12,00							17.900	2.340			
		kg		4.180		2.800		2.060		1.590			1.315										
	5S	m		4,45		6,32		8,20		10,15			12,10		14,10					17.450	2.440			
		kg		4.000		2.640		1.920		1.480			1.190		1.000								
	6S	m		4,52		6,40		8,26		10,20			12,20		14,20		16,20			17.050	2.540			
		kg		3.850		2.530		1.820		1.385			1.100		910		770						
V823 V823N*	1S	m		4,36		6,23													26.100	20.300	1.920	387	315	40
		kg		4.660		3.320																	
	2S	m		4,36		6,23		8,10												19.600	2.070			
		kg		4.560		3.210		2.460															
	3S	m		4,36		6,23		8,10		10,05										18.950	2.210			
		kg		4.430		3.050		2.330		1.890													
	4S	m		4,36		6,23		8,10		10,05			12,00							18.450	2.340			
		kg		4.330		2.950		2.200		1.740			1.460										
	5S	m		4,45		6,32		8,20		10,15			12,10		14,10					18.050	2.440			
		kg		4.140		2.780		2.050		1.620			1.320		1.140								
	6S	m		4,52		6,40		8,26		10,20			12,20		14,20		16,20			17.700	2.540			
		kg		3.990		2.660		1.950		1.520			1.220		1.040		900						
V825	1S	m		4,40		6,17													31.455	24.500	2.580	400	290	50
		kg		5.700		4.000																	
	2S	m		4,41		6,18		8,03												24.250	2.760			
		kg		5.600		3.830		2.860															
	3S	m		4,41		6,18		8,03	9,93											23.600	2.900			
		kg		5.450		3.680		2.720	2.140														
	4S	m		4,50		6,27		8,12		10,02	11,92									23.000	3.060			
		kg		5.200		3.480		2.540		1.970	1.610												
	5S	m		4,58		6,35		8,20		10,10			12,00	13,98						22.550	3.200			
		kg		5.000		3.340		2.400		1.850			1.490	1.250									
	6S	m		4,64		6,41		8,26		10,16			12,06		14,04		16,02			22.450	3.295			
		kg		4.930		3.270		2.350		1.790			1.435		1.200		960						
V828	1S	m		4,40		6,17													31.455	26.350	2.630	400	305	50
		kg		5.870		4.180																	
	2S	m		4,41		6,18		8,03												25.000	2.810			
		kg		5.770		4.000		3.020															
	3S	m		4,41		6,18		8,03	9,93											24.300	2.950			
		kg		5.620		3.840		2.870	2.280														
	4S	m		4,50		6,27		8,12		10,02	11,92									23.650	3.110			
		kg		5.350		3.630		2.680		2.100	1.740												
	5S	m		4,58		6,35		8,20		10,10			12,00	13,98						23.200	3.250			
		kg		5.160		3.490		2.540		1.980			1.610	1.360									
	6S	m		4,64		6,41		8,26		10,16			12,06		14,04		16,02			22.550	3.345			
		kg		5.100		3.420		2.480		1.910			1.550		1.310		1.060						

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

= NEW GENERATION CRANE
= TYPE APPROVAL DNV
*) ROUND CRANE BASE VERSION

V900 LINE
FULLY FOLDABLE CRANES WITH POWER LINK

VERSATILE AND PRECISE

The Power Link System creates a powerful mechanical advantage providing consistent force in all working angles of the boom; It also permits negative angle operation.

Extensive powerful cranes in compact, efficient designs.

FEATURES

- 20 - 50 tm class
- Base with double rack and pinion system. Powerful rotation system specially designed for marine conditions
- Counterbalance valves directly mounted on each cylinder
- Hexagonal shaped telescopic booms are strong and self-aligning, offering great load handling control
- Control valve plumbed in. Shipped demounted with sufficient hose lenght for easy installation
- Double linkage

OPTIONS

- Radio Remote Control (RDC)
- Winch

DOUBLE RACK AND PINION

This system increases strength, reliability rotational torque for operation in unstable marine conditions.

TYPICAL APPLICATIONS

FISH FARMING · QUAY SIDE · TUGS AND WORKBOATS · LAKES & RIVERS · NAVY · COAST GUARD · FISHING

TECHNICAL DATA - FULLY FOLDABLE CRANES WITH POWER LINK

Crane model	No. of extensions		Boom length closed and extended (mt)																		Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
			4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20	21						
V933	2S	m	4,18	5,95		7,80																38.600	29.700	3.370	397	300	45
		kg	7.250	5.000		3.800																					
	3S	m	4,20	5,95		7,80		9,80															29.000	3.590			
		kg	7.050	4.850		3.620		2.840																			
	4S	m	4,30		6,05	7,90		9,90		11,90													28.500	3.820			
		kg	6.750		4.610	3.410		2.630		2.160																	
	5S	m	4,40		6,15		8,00		10,00		12,00		14,20										28.000	3.990			
		kg	6.480		4.410		3.240		2.460		1.990		1.660														
	6S	m	4,45		6,30		8,10		10,10		12,10		14,30			16,50							27.300	4.150			
		kg	6.250		4.200		3.050		2.300		1.830		1.500			1.280											
	7S	m	4,60		6,40		8,30		10,30		12,30		14,50			16,70		18,85					26.700	4.270			
		kg	5.920		4.000		2.900		2.160		1.690		1.360			1.140		995									
	8S	m	4,70		6,50		8,40		10,40		12,40		14,60			16,80		19,00			21,15		26.300	4.390			
		kg	5.700		3.800		2.720		2.000		1.560		1.240			1.025		880			780						
V936	2S	m	4,18	5,95		7,80																38.600	30.500	3.370	397	310	45
		kg	7.450	5.190		3.980																					
	3S	m	4,20	5,95		7,80		9,80															29.800	3.590			
		kg	7.240	5.030		3.800		3.010																			
	4S	m	4,30		6,05	7,90		9,90		11,90													29.300	3.820			
		kg	6.940		4.790	3.580		2.790		2.320																	
	5S	m	4,40		6,15		8,00		10,00		12,00		14,20										28.750	3.990			
		kg	6.660		4.580		3.400		2.610		2.140		1.800														
	6S	m	4,45		6,30		8,10		10,10		12,10		14,30			16,50							28.000	4.150			
		kg	6.430		4.370		3.200		2.440		1.970		1.630			1.410											
	7S	m	4,60		6,40		8,30		10,30		12,30		14,50			16,70		18,85					27.500	4.270			
		kg	6.100		4.160		3.050		2.300		1.820		1.480			1.260		1.110									
	8S	m	4,70		6,50		8,40		10,40		12,40		14,60			16,80		19,00			21,15		27.100	4.390			
		kg	5.870		3.960		2.860		2.130		1.680		1.350			1.130		980			880						
V946 V946B	2S	m	4,32		6,10	7,95																55.300	42.379	4.060	400	300	80
		kg	10.000		7.120	5.450																					
	3S	m	4,43		6,20		8,05		10,00														41.546	4.310			
		kg	9.560		6.800		5.180		4.140																		
	4S	m	4,55		6,30		8,15		10,10		12,00												40.975	4.590			
		kg	9.180		6.500		4.900		3.880		3.220																
	5S	m	4,55		6,30		8,15		10,10		12,00		14,10										40.172	4.830			
		kg	9.000		6.300		4.680		3.650		2.990		2.530														
	6S	m	4,60		6,35		8,20		10,10		12,10		14,10			16,20							39.260	5.030			
		kg	8.700		6.050		4.470		3.450		2.800		2.330			2.015											
	7S	m	4,60		6,35		8,20		10,10		12,10		14,10			16,20		18,40					38.492	5.220			
		kg	8.530		5.860		4.280		3.260		2.600		2.140			1.820		1.590									
	8S	m	4,70		6,40		8,30		10,20		12,20		14,20			16,30		18,40		20,60			37.808	5.400			
		kg	8.200		5.620		4.080		3.080		2.420		1.950			1.640		1.410		1.250							
V950	2S	m	4,32		6,10	7,95																55.300	43.396	4.100	400	320	80
		kg	10.240		7.335	5.660																					
	3S	m	4,43		6,20		8,05		10,00														42.502	4.350			
		kg	9.780		7.010		5.380		4.340																		
	4S	m	4,55		6,30		8,15		10,10		12,00												41.957	4.630			
		kg	9.400		6.720		5.100		4.080		3.405																
	5S	m	4,55		6,30		8,15		10,10		12,00												41.109	4.870			
		kg	9.210		6.500		4.880		3.830		3.160																
	6S	m	4,60		6,35		8,20		10,10		12,10												40.252	5.070			
		kg	8.920		6.250		4.650		3.630		2.970																
	7S	m	4,60		6,35		8,20		10,10		12,10		14,10			16,20		18,40					39.395	5.260			
		kg	8.730		6.050		4.455		3.420		2.760		2.290			1.970		1.730									
	8S	m	4,70		6,40		8,30		10,20		12,20		14,20			16,30		18,40		20,60			38.730	5.440			
		kg	8.400		5.800		4.250		3.240		2.570		2.090			1.780		1.540		1.370							

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

VR LINE
FULLY FOLDABLE CRANES WITH SLEWING BEARING

STRONG AND COMPACT

The ideal solution for highly demanding applications.

Top Lifting class cranes with unlimited rotation during operation, space saving when it's not in use.

Articulating cranes with slewing bearing rotation system and double linkage.

FEATURES

- Up to 90 tm class
- Round base with slewing bearing rotation system
- Hexagonal shaped telescopic booms are strong and self-aligning, offering great load handling control
- Power links
- Crane-mounted operator's seat featuring manual controls with optional radio remote control
- Counterbalance valves directly mounted on each cylinder

OPTIONS

- Radio Remote Control (RDC)
- Winch

SLEWING BEARING

A powerful slewing bearing creates high rotational torque for precise operations.

TYPICAL APPLICATIONS

FISH FARMING · QUAY SIDE · TUGS AND WORKBOATS · LAKES & RIVERS · NAVY · FISHING

TECHNICAL DATA - FULLY FOLDABLE CRANES WITH SLEWING BEARING

Crane model	No. of extensions		Boom length closed and extended (mt) 4	5	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20	21	22	23	24	Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
VR24	2S	m	4,28		6,18		8,08																		28.290	22073	2.245	Endless	310	50
		kg	5.265		3.595		2.730																						
	3S	m	4,28		6,18		8,08		10,11																	21728	2.385			
		kg	5.175		3.495		2.625		2.080																				
	4S	m	4,36		6,26		8,33		10,19		12,22															20894	2.525			
		kg	4.885		3.270		2.425		1.895		1.565																		
	5S	m	4,44		6,34		8,24		10,27		12,3		14,43													20079	2.650			
		kg	4.610		3.055		2.235		1.720		1.400		1.180																
	6S	m	4,53		6,43		8,33		10,36		12,39		14,52		16,65			18,89								19687	2.755			
		kg	4.430		2.910		2.105		1.595		1.275		1.055		905			605												
	7S	m	4,61		6,51		8,41		10,44		12,47		14,6		16,73			18,90								19311	2.875			
		kg	4.270		2.780		1.985		1.480		1.160		940		795			695												
	8S	m	4,7		6,6		8,5		10,53		12,56		14,69		16,82			18,98				21,18				19042	2.965			
		kg	4.130		2.670		1.890		1.390		1.070		850		705			605				535								
VR34	2S	m	4,45		6,12		8,08																		42.030	31780	3.050	Endless	310	50
		kg	7.280		5.250		4.000																						
	3S	m	4,5		6,2		8,1		10,1																	31034	3.280			
		kg	7.030		5.020		3.770		3.000																				
	4S	m	4,55		6,22		8,15		10,15		12,15															30307	3.500			
		kg	6.790		4.800		3.560		2.790		2.310																		
	5S	m	4,63		6,3		8,2		10,2		12,2		14,3													29617	3.710			
		kg	6.520		4.580		3.350		2.590		2.110		1.790																
	6S	m	4,63		6,3		8,2		10,2		12,2		14,3		16,4											28978	3.900			
		kg	6.380		4.420		3.190		2.430		1.940		1.610		1.390														
	7S	m	4,8		6,5		8,4		10,4		12,4		14,5		16,6			18,72								28488	4.080			
		kg	6.050		4.180		2.990		2.240		1.770		1.440		1.220			1.070												
	8S	m	4,8		6,5		8,4		10,4		12,4		14,5		16,6			18,75		20,9						27876	4.250			
		kg	5.920		4.050		2.850		2.100		1.630		1.300		1.080			925		820										
VR40	2S	m	4,45		6,12		8,02																		44.750	34050	3.050	Endless	310	50
		kg	7.810		5.650		4.300																						
	3S	m	4,5		6,2		8,1		10,1																	33329	3.280			
		kg	7.550		5.400		4.070		3.240																				
	4S	m	4,55		6,22		8,15		10,15		12,15															32673	3.500			
		kg	7.320		5.190		3.860		3.040		2.515																		
	5S	m	4,63		6,3		8,2		10,2		12,2		14,3													31930	3.710			
		kg	7.030		4.960		3.650		2.830		2.315		1.960																
	6S	m	4,63		6,3		8,2		10,2		12,2		14,3		16,4											31294	3.900			
		kg	6.890		4.800		3.490		2.670		2.150		1.790		1.550														
	7S	m	4,8		6,5		8,4		10,4		12,4		14,5		16,6			18,72								30843	4.080			
		kg	6.550		4.550		3.280		2.480		1.970		1.620		1.375			1.205												
	8S	m	4,8		6,5		8,4		10,4		12,4		14,5		16,6			18,75		20,9						30419	4.250			
		kg	6.460		4.420		3.140		2.340		1.830		1.470		1.230			1.060		940										
VR60	2S	m	4,35		6,15		8																		72.620	56.407	4.270	Endless	335	70
		kg	13.000		9.240		7.185																						
	4S	m	4,46		6,26		8,06		10	11,96																53.641	4.850			
		kg	12.260		8.625		6.610		5.270	4.400																			
	6S	m	4,48		6,28		8,1		10,05		12		14		16,2											50.937	5.390			
		kg	11.590		8.000		6.005		4.685		3.820		3.195		2.760														
	8S	m	4,69		6,47		8,3		10,25		12,2		14,3		16,4			18,52		20,7						49.752	5.820			
		kg	10.860		7.450		5.530		4.240		3.395		2.780		2.350			2.045		1.820										
VR62	2S	m	4,35		6,15		8																		72.300	57353	4.350	Endless	310	50
		kg	13.440		9.570		7.450																						
	4S	m	4,46		6,26		8,06		10	11,96																52673	4.930			
		kg	12.710		8.950		6.870		5.480	4.580																			
	6S	m	4,48		6,28		8,1		10,05	11,98			14.08		16,18											53837	5.470			
		kg	12.250		8.480		6.380		5.000	4.080			3.420		2.960														
	8S	m	4,67		6,47		8,3		10,25		12,2		14,3		16,4			18,52		20,7						52685	5.900			
		kg	11.500		7.920		5.900		4.550		3.650		3.000		2.550			2.200		1.970										
VR75	2S	m	4,25	5,95		7,75																			81.400	68.580	6.185	Endless	295	80
		kg	16.100	11.650		9.020																							
	4S	m	4,32		6,05	7,85		9,75		11,65																65.052	6.835			
		kg	15.350		10.960	8.360		6.670		5.550																			
	6S	m	4,47		6,2	7,97		9,9		11,8		13,8		15,8												63.145	7.435			
		kg	14.400		10.200	7.650		6.000		4.950		4.150		3.600															
	8S	m	4,47		6,2	7,97		9,9		11,8		13,8		15,8			17,8		19,8							61.391	7.935			
		kg	14.000		9.800	7.220		5.550		4.450		3.660		3.100			2.700		2.400										
	10S	m	4,75		6,45		8,25		10,2		12,05		14,05		16,05			18,05		20,05		22,2		24,35		60.810	8.335			
		kg	13.050		9.100		6.680		5.060		4.000		3.220		2.680			2.300		2.000		1.760		1.600						
VR85	2S	m	4,25	5,95		7,75																			90.500	72.600	6.040	Endless	315	100
		kg	17.100	12.400		9.550																							
	4S	m	4,32		6,05	7,85		9,75		11,65																68.866	6.690			
		kg	16.250		11.620	8.820		7.010		5.820																			
	6S	m	4,47		6,2	7,97		9,9		11,8		13,8		15,8												67.721	7.290			
		kg	15.150		10.800	8.150		6.350		5.200		4.380		3.800															
	8S	m	4,47		6,2	7,97		9,9		11,8		13,8		15,8			17,8		19,8							64.680	7.790			
		kg	14.750		10.350	7.650		5.900		4.770		3.920		3.320			2.890		2.580										
	10S	m	4,75		6,45		8,25		10,2		12,02		14,05		16,05			18,05		20,05		22,2		24,35		64.071	8.190			
		kg	13.750		9.650		7.100		5.400		4.300		3.500		2.920			2490		2.185		1.935		1.750						

■ = NEW GENERATION CRANE

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

VR 150
THE NEW LARGEST MODEL IN THE VR LINE

A CONCENTRATE OF LATEST FRONTIER HI-TECH

The ENDLESS ROTATION CRANE designed and produced with the most advanced materials and the most sophisticated technologies to grant the best performances on the market.

The high-strength steel and decagonal shape of the booms allow EXCEPTIONAL LIFTING CAPACITIES AND LONGER ARM LENGTH, all with a very low crane weight.

FEATURES

- 150 tm class
- Round base with slewing bearing rotation system
- **Decagonal** shaped telescopic booms are strong and self-aligning, offering great load handling control
- Power links
- Crane-mounted operator's seat featuring manual controls with optional radio remote control
- Counterbalance valves directly mounted on each cylinder

OPTIONS

- Radio Remote Control (RDC)
- Winch

SLEWING BEARING

A powerful slewing bearing creates high rotational torque for precise operations.

TYPICAL APPLICATIONS

FISH FARMING · QUAY SIDE · TUGS AND WORKBOATS · LAKES & RIVERS · NAVY · FISHING

Crane model	No. of extensions		Boom length closed and extended (mt)																				Dyn. Lifting Moment (daNm)	Net. Lifting Moment (daNm)	Weight (kg)	Slewing angle (°)	Working Pressure (bar)	Max Oil Flow (l/min)
			4	5	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20	21	22	23						
VR150	2S	m	4,82		6,99			9,23																134.300	106.330	7.850	Endless	375	100
		kg	22.500		15.550			11.750																				
	3S	m	4,91			7,08		9,32		11,48															104.470	8.390			
		kg	21.710			15.000		11.290		9.080																			
	4S	m		5,01		7,18		9,42		11,58		13,93													103.100	8.890			
		kg		21.000		14.450		10.800		8.630		7.090																	
	5S	m		5,11		7,28		9,52		11,68			14,03		16,38										101.920	9.330			
		kg		20.350		13.920		10.330		8.200			6.660		5.660														
	6S	m		5,19		7,35		9,6		11,76			14,11		16,46			18,81							100.645	9.730			
		kg		19.800		13.520		9.930		7.800			6.300		5.280			4.580											
	7S	m		5,29		7,45		9,7		11,86			14,21		16,56			18,91			21,35				99.470	10.110			
		kg		19.200		12.800		9.350		7.300			5.850		4.855			4.170			3.650								
	8S	m		5,37		7,53		9,78		11,94			14,29		16,64			18,99			21,43		23,87		98.392	10.440			
		kg		18.700		12.600		9.100		7.000			5.555		4.550			3.860			3.550		2.960						

Crane lifting capacity for harbor condition in sea state 0. Crane capacity calculated in respect of EN 12999 HC1 S4

HOW TO CONSIDER MARINE CRANES

INTRODUCTION

Marine & Offshore crane selection must consider different parameters according to the operating conditions. During their use cranes are subjected to loads due to the lifted load, its own weight, wind, vessel motions and, for off-board lifts, motions of the vessel the load is being lifted from.
The guidelines herein are intended to assist our customers in the selection of a crane. However for more precise calculations please contact an authorized Amco Veba Marine crane dealer.

DEFINITION OF MARINE & OFFSHORE CRANES

The below terminology is typically used in the market to define marine and offshore cranes.

Shipboard cranes (marine mostly)

Shipboard cranes generally refers to lifting appliances designed to operate in harbor or sheltered water and where there is not significant movement of the ship due to wave actions and the wave height is no greater than 0,6 m. Cranes mounted on fixed installations used solely for lifting operations within the installation itself are normally considered shipboard cranes.

Offshore cranes

Offshore cranes generally refers to lifting appliances designed to operate in open sea conditions where significant movement of the ship due to wave actions can occur.
Also included are cranes that lift product from ships, yet are installed on a fixed base. The sea state is higher than a significant wave height of 0,6 m. Due to this situation for all offshore cranes there exist 2 different types of classifications:
On-board lifting; the lifting activity occurs on the vessel/platform on which the crane is mounted on.
Off-board lifting; the lifting activity occurs anywhere not on the same vessel/ platform on which the crane is mounted.

DEFINITION OF SEA STATE

Waves generate vessel movement causing accelerations on lifted loads and impacting on crane strength. This situation must be considered during crane selection.

Different type of international scale

There are different sea state scales and different ways to indicate wave movement, the most common being Douglas scale, Beaufort Scale and Significant Wave Height. Scales use different classifications, and this must be clearly defined when examining wave height and crane selection.

Beaufort wind force scale

The Beaufort scale is an empirical measure that relates wind speed to observed conditions at sea, although it is a measure of wind speed and not of force of sea.

Scale	Descript.	Wind speed	Wave height (mt)	Sea conditions
0	Calm	< 0.3 m/s	0	Flat
1	Light air	0.6 - 3.0 knot 0.3 - 1.5 m/s	0 - 0.2	Ripples without crests
2	Light breeze	3.0 - 6.4 knot 1.5 - 3.3 m/s	0.2 - 0.5	Small wavelets. Crests of glassy appearance
3	Gentle breeze	6.4 - 10.6 knot 3.3 - 5.5 m/s	0.5 - 1.0	Large wavelets. Crests begin to break
4	Moderate breeze	10.6 - 15.5 knot 5.5 - 8.0 m/s	1.0 - 2.0	Small waves with breaking crests. Fairly frequent whitecaps.
5	Fresh breeze	15.5 - 21.0 knot 8.0 - 10.8 m/s	2.0 - 3.0	Moderate waves of some length. Many whitecaps. Small amont of spray.
6	Strong breeze	21.0 - 26.9 knot 10.8 - 13.9 m/s	3.0 - 4.0	Long waves begin to form. White foam crests are very frequent, some airborne spray is present.
7	High wind, moderate gale	26.9 - 33.4 knot 13.9 - 17.2 m/s	4.0 - 5.5	Sea heaps up. Some foam from breaking waves is blown into streaks. Moderate amounts of airborne spray.
8	Gale, fresh gale	33.4 - 40.3 knot 17.2 - 20.7 m/s	5.5 - 7.5	Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.
9	Strong gale	40.3 - 47.6 knot 20.7 - 24.5 m/s	7.0 - 10.0	High waves whose crests sometimes roll over. Dense foam is blown. Large amounts of airborne spray reduce visibility.
10	Storm, whole gale	47.6 - 55.3 knot 24.5 - 28.4 m/s	9.0 - 12.5	Very high waves with crests foam give the sea a white appearance. Amounts of airborne spray reduce visibility.
11	Violent storm	55.3 - 63.4 knot 28.4 - 32.6 m/s	11.0 - 16.0	Exceptionally high waves. Very large foam cover much of the sea surface. Airborne spray severaly reduce visibility.
12	Hurricane force	≥ 63.4 knot	≥ 14	Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray. Greatly reducing visibility.

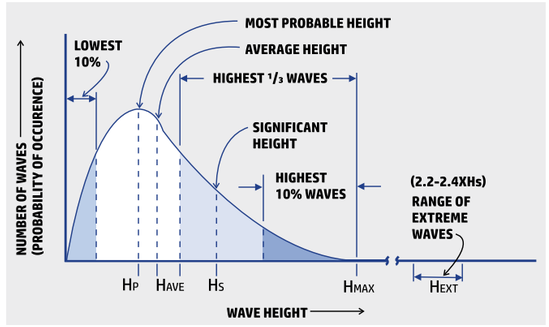
Douglas Scale international sea and swell scale

The Douglas scale is used to estimate the roughness of the sea for navigation and has two codes: one is to estimate the sea state while the other describes the sea swell.

STATE OF SEA (WIND SEA)			STATE OF SEA (SWELL DESCRIPTION)
Degre	Height (mt)	Description	Description
0	No wave	Calm Glassy	No swell
1	0 - 0.1	Calm Rippled	Very low (short and low wave)
2	0.1 - 0.5	Smooth	Low (long and low wave)
3	0.5 - 1.25	Slight	Light (short and moderate wave)
4	1.25 - 2.5	Moderate	Moderate (average and moderate wave)
5	2.5 - 4.0	Rough	Moderate (rough long and moderate wave)
6	4.0 - 6.0	Very Rough	Rough (short and heavy wave)
7	6.0 - 9.0	High	High (average and heavy wave)
8	9.0 - 14.0	Very High	Very high (long and heavy wave)
9	Above 14.0	Phenomenal	Confused (wave length and Height indefinable)

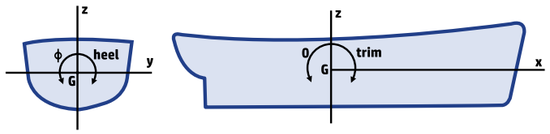
Significant wave height Hs or Hsig

It is a different method to identify waves; This is not a classification or scale but an indication of the height of waves in as measured in meters. Significant wave height, represented as Hs or Hsig, is an important parameter for the statistical distribution of waves. The most common waves are less in height than Hs. Specifically, for Hsig. it is intended the average height of the highest one third of the individual wave heights in a shor term constant sea-state, typically 3 hours. *The major IAICS regulation refer to the significant wave height for crane calculation.*



DEFINITION OF HEEL AND TRIM

Heel and trim are also important expressions indicating a vessel inclination angle due to the wave forces.
Heel: the heel angle in degrees is the inclination angle about the longitudinal axis.
Trim: the trim angle in degrees is the inclination angle about the transverse axis.
The major regulations also typically refer to heel and trim when defining crane specifications.



DYNAMIC AMPLIFICATION FACTOR

Dynamic amplification factor is a factor by which the Load is multiplied to consider accelerations during lifting operation. The dynamic amplification factors (DAF) represent the safety factor of the crane and its ability to resist to dynamic effects. All Any crane designed to work in a sea state must have its functional parameters calculated in consideration with DAF. IASC Class Society requires dynamic amplification factors be considered regarding crane type and capacity, lifting requirements and sea state conditions.

AMCO VEBA MARINE CRANE SELECTION

AMCO VEBA MARINE CRANE LOAD CAPACITY, as indicated for each crane model in the catalogue, is calculated for cranes operating in harbor conditions or sheltered water conditions. This is the typical condition of shipboard cranes working with:

- sea state 0 (zero)
- with a maximum Hsig (significant wave height) not exceeding 0,6 mt
- heel and trim do not exceed respectively 5° and 2°

With the use of the **AVK FACTOR** as indicated in the relevant table , it is possible to select all **AMCO VEBA MARINE CRANE** models for different offshore conditions and know the real lifting capabilities in specific operational use.

HOW TO USE THE AMCO VEBA AVK FACTOR

All selections start from the standard lifting capacity of AMCO VEBA MARINE crane models for shipboard working condition in sea state zero.
There are two possible ways to identify the crane suitable for your needs:

Case 1 - Calculate the real lifting capacity of a selected AMCO VEBA MARINE crane model in different sea states condition.

Case 2 - Identify the correct AMCO VEBA MARINE crane model able to lift a specific requested load in a specific sea state condition.

CASE 1 EXAMPLE

CALCULATE THE LIFTING CAPACITY OF AMCO VEBA MARINE CRANE VR60/6S IN A SPECIFIC SEA STATE

- Crane VR60/6S lifting capacity is 2.760 kg@16.2 mt (shipboard sea state zero values as in table at pag. 31)
- We want to know the crane lifting capacity in offshore conditions with Hsig = 1,6 mt with off-board lifting

From the below table we get the **AVK KEY FACTOR** = 0,56
VR60/6S CRANE CAPACITY WITH HSIG 1,6 = 2.760 KG X AVK 0,56 = 1.545 KG

CASE 2 EXAMPLE

SELECTION OF A MARINE CRANE FOR SEA STATE 3

- Requested lifting capacity 1.600kg@ 12mt
- Working in Douglas Sea State 3 on-board lifting

FROM THE BELOW TABLE WE GET AVK KEY FACTOR = 0,75
We can calculate the corresponding harbor lifting capacity of the required crane. Crane requested lifting capacity in Sea state 3, **1.600 kg / AVK FACTOR 0,75 = 2.130 kg in sea state zero (harbor).**
It will be necessary to choose in the pages of the catalogue a crane with a capacity of 2.130 kg@ 12 mt.
CRANE can be a V936/5S with lifting capacity of 2.140@12 mt.

SEA STATE (S.S.)					VESSEL MOVEMENT		ONBOARD LIFTING		OFF-BOARD LIFTING	
Hsig mt	Douglas		Beaufort		Hell	Trim	DAF	AVK	DAF	AVK
	Grade	Tripology	Grade	Tripology	Pitch	Roll				
0	0	no wave - Calm glassy	0	no wave - Flat	2°	5°		**1**		**1**
0.6	1	0-0.1mt - Calm Rippled	1	0-0.2mt - Ripples without crest	2°	5°	1.40	**0.82**	1.60	**0.75**
	2	0.1-0.5mt - Smooth	2	0.2-0.5mt - Small wavelets						
1.1	3	0.5-1.25mt - Slight	3	0.5-1mt - Large wavelets	3°	6°	1.60	**0.75**	1.85	**0.63**
1.6	4	1.25-2.5mt moderate	4	1-2mt - Small waves			1.75	**0.66**	2.10	**0.56**
2.4	5	2.5-4mt Rough	5	2-3mt - Moderate waves	4°	7°	2.00	**0.57**	2.50	**0.46**
3.1			6	3-4mt - Long waves being to form	4°	8°	2.30	**0.51**	2.80	**0.42**

CONTROL AND VERSATILITY

MANUAL CRANE CONTROLS

Various different typology of manual crane controls are available depending from crane type and size.

ABS - OPERATOR CONSOLLE WITH PLASTIC PROTECTION

A control panel placed outside from the crane completely protected with a dedicate cover with ergonomic shape and produced in ABS Plastic fibers to grant a perfect anticorrosion resistance to marine environment. Client can install the operator console in the most convenient position.

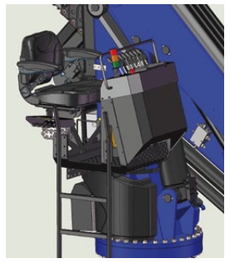
SCA - EXTERNAL OPEN FOOTBOARD OPERATOR CONSOLE

A manual operated open control panel placed outside from the crane, the with overall perfect dimensions are suitable for one operator.
Built in steel and treated with marine treatment, all crane motions are possible, and showed on stickers/plates on control panel.

SCC - EXTERNAL CLOSED FOOTBOARD OPERATOR CONSOLE

A manual operated completely fully closed control panel placed outside from the crane, the with overall perfect dimensions are suitable for one operator.
Built in steel and treated with marine treatment, all crane motions are possible, and showed on stickers/plates on control panel.

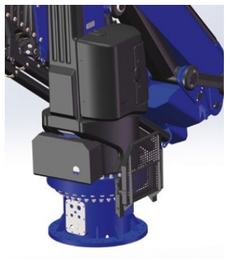
CIA - SEAT ON COLUMN WITH MANUAL CONTROLS



Crane is equipped with a seat control operator console physically connected to the crane column and rotating with the crane itself, the seat is made with strong fiberglass and completely protected with soft lattice material granting a very comfortable place for the crane operator.
A dedicate console will be installed in front of the operator seat to permit the full manual control of the crane and granting great visibility of the working area.

FOLDABLE OPERATOR PLATFORM

Available as a standard solution on all our VR endless rotation crane line when executed in radio remote control version, the foldable platform permit to have access to the manual control of the crane in case of emergency use.
The platform is normally closed to do not increase the overall dimensions of the crane and opened in case of need.



RADIO REMOTE CONTROLS

Various forms of radio remote control are available.
All utilise proportional control valves which facilitate the movement of loads smoothly and with high precision.

SINGLE HAND PROPORTIONAL SYSTEM (RRS)

The Single hand control is compact and ergonomic, allowing safe proportional control of any single movement of the crane using thumb and index finger. Cable remote control, to avoid radio frequency interference, is available as an option. AA battery powered.

MULTIFUNCTION CONTROL (RDC)

The Multifunction control allows the operator, using two hands simultaneously, to move 2, 3, 4 or more functions of the crane at once. Equipped with 8 ergonomic proportional levers to control up to 8 functions of the crane.

Cable remote control, to avoid radio frequency interference, is available as an option. Re-chargeable battery.

WINCHES

Cranes can be supplied prepared for winch installation or complete with winch installed. Several winch options are available.

WINCH DESCRIPTION	Pulling force (kg)				Lenght of the rope (mt)	Rope Diam (mm)
	1st layer	3rd layer	4th layer	5th layer		
Dinamicoil NP 05	500	430			40	6
Dinamicoil NP 08	800	680			27	8
Tma MW 09	1.100	920	860		50	8
Dinamicoil NP 10	1.100	920			27	8
Rotzler TI 1	1.250	1.050	1.000	950	60	8
Tma MW 18	2.000	1.830	1.680		53	10
Tma MW 22	2.500	2.090	1.930		64	12
Rotzler TI 2	2.600	2.200	2.000		49	10
Tma MW 32	3.950	3.330	3.090		88	14
Tma MW 50	6.090	5.490	5.000	4.580	88	16

TMA

Hydraulic and mechanical safety device winches. AMCO VEBA MARINE and TMA worked together to design a product suitable for the Marine environment. (No electric/electronic components).

ROTZLER

Rotzler winches are famous worldwide for it's unique characteristics: compact dimensions, low weight and high power. Many components are manufactured from stainless steel.

DINAMIC OIL

Small, compact winches. Available only for our small range cranes.

CENTRALIZED GREASING SYSTEM

By gathering a group of greasing points together in one place, maintenance can be performed much more quickly.

LOAD SENSING (LS) SYSTEM

A main control valve prepared for the load sensing pump is the best solution for complex hydraulic circuits. This feature increases the efficiency of the hydraulic circuit, reducing power loss and overheating of the system.

It matches the output flow to the exact amount required by the system, bringing the use of energy in the circuit to its optimum performance.

LED WORKING LIGHTS

LED working lights fitted on the boom of the crane to allow illumination of the working area around the crane.

EXTRA FUNCTIONS

Our design process takes into account the need for special equipment, so the cranes can be fitted with additional equipment as necessary, this permit to connect specific tools like grabs, shell, net stackers and so on.

EXTRA FUNCTIONS NOT ACTIVATED

On request it is possible to add one or two extra functions on the crane with levers to control an hydralic accessory mounted by the client.

EXTRA FUNCTIONS ACTIVATED

An extra activated function includes an extra valve section, spool open or closed as required. It also includes all of the hoses and piping necessary to the end of the boom. At the end of the boom the pipes end in quick-connectors.

ELECTRO-HYDRAULIC POWER PACK

We can provide a dedicate range of Hydraulic Power Unit specifically studied and designed to operate with our marine crane line.
The HPU can be provided with 2 different treatment , for Indoor installation (normally under deck) or for installation on open area close to the crane (External Marine treatment).
Also other dedicate accessories like Soft starter, Oil cooling system and different voltage/frequency can be provided Here the list of our standard HPU.

Power (kW)	Input power current	Oil Flow (lt/min)	Pressure (Bar)	Oil Tank Volume (lt)
2,2kW	230V 50HZ	7	180	25
5,5kW	400V 50HZ	12	230	50
11kW	400V 50HZ	20	285	55
15kW	400V 50HZ	25	310	120
22kW	400V 50HZ	38	310	120
37kW	400V 50HZ	50	320	200
45kW	400V 50HZ	70	300	250
55kW	400V 50HZ	70	340	250
75kW	400V 50HZ	100	320	400

MAP OF STANDARD CRANE CONFIGURATIONS AND POSSIBLE AVAILABLE OPTIONS

CRANE MODEL		CRANE MANUALLY OPERATED OPERATOR CONSOLLE SYSTEM						CRANE OPERATED WITH RADIO REMOTE SYSTEM										HYDRAULIC BLOCK VALVE			HIGH PRESSURE OIL FILTER		
								RRS			RDC												
		Loose external Block Valve with levers	External consolle with ABS Protective cover	External open footboard consolle SCA	External close footboard consolle SSC	Bulkhead connector with 2mt hoses PP2	CIA - Seat on column with manual controls	Loose external BlockValve with levers	Bulkhead connector with 2mt hoses PP2	Hetronic Radio Single hand RRS	External open footboard consolle SCA	External close footboard consolle SSC	Bulkhead connector with 2mt hoses PP2	PIA - Seat on column with radio controls	Stand up platform only emergency use	Hetronic Radio Portable RDC	Scanreco Radio Portable RDC	Danfoss PVG32 with Manual controls	PVG32 with radio Portable RDC	Load Ssensing port on PVG32	Crane operated manually	Crane opeated with Radio RRS	Crane opeated with Radio RDC
MINI TELESCOPIC	601T		●	△		△		●	○	●	●		●			●	○	○	●		△	●	●
	602T		●	△		△		●	○	●	●		●			●	○	○	●		△	●	●
	603T		●	△		△		●	○	●	●		●			●	○	○	●		△	●	●
	604T		●	△		△		●	○	●	●		●			●	○	○	●		△	●	●
	605T		●	△		△		●	○	●	●		●			●	○	○	●		△	●	●
TELESCOPIC	V805T	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V807NT	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V809T			●		●	○				●		●	○		●	○	○	●	○	△		●
	V811T			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
ARTICULATED	V803N	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V804N	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V805N	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V806N	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V807N	●		△		●		●	●	●	●		●			●	○	○	●	○	△	●	●
	V808N	●		△		●					●		●			●	○	○	●	○	△	●	●
	V810			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V811NG			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V812			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V813NG			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V815			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V817			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V817NG			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V820			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V823			●	○	●	○				●	○	●	○		●	○	○	●		●		●
	V825			●	○	●	○				●	○	●	○		●	○	○	●	○	△		●
	V828			●	○	●	○				●	○	●	○		●	○	○	●		●		●
ARTICULATED WITH POWER LINK	V933			●	○	●	○				●	○	●	○		●	○	△	●	○	△		●
	V936			●	○	●	○				●	○	●	○		●	○	○	●		●		●
	V946B			●	○	●	○							○				△		○	△		
	V946											●	●			●			●	○			●
	V950											●	●			●			●				●
ARTICULATED WITH SLEWING BEARING	VR24						○							○	*■	●	○		●	○			●
	VR34						○							○	*■	●	○		●	○			●
	VR40						○							○	*■	●	○		●	○			●
	VR60						○							○	*■	●	○		●	○			●
	VR62						○							○	*■	●	○		●				●
	VR75						●							○	*■	●	○	●	●	○	●		●
	VR85						○							○	*□	●	○		●				●
	VR150						●								*■	●	○	●	●	●	●		●

CRANE MODEL		LOAD MOMENT VALVE SAFETY DEVICE						SPECIAL DEVICES				SLEWING LIMIT ROTATION			ACCESSORIES				WINCHES											
		Crane NO CE			Crane CE MARKET															ROTZLER				DINAMIC OIL			TMA			
		Manual controls	Radio RRS	Radio RDC	Manual controls	Radio RRS	Radio RDC	SGS	SDD	AVPS	EBB	Crane NO CE	Crane CE MARK	Elecric adjustable CE - No CE	Centralized Lubrication System	Emergency hand pump	Work Lights	Kit fixing screws for base	Extra Function for winch	TI1 1.000 kg	TI2 2.000 kg	TI3 3.200 kg	TI5 5.000 kg	NP05 - 500 kg	NP08 - 800 kg	NP10 - 1.000 kg	MW09 - 800 kg	MW22 - 2.000 kg	MW32 - 3.100 kg	MW50 - 5.000 kg
MINI TELESCOPIC	601T											M ○	M ●			○	○	●	○					○						
	602T				E ●	E ●	H ●					M ○	M ●			○	○	●	○					○						
	603T				E ●	E ●	H ●					M ○	M ●			○	○	●	○					○	○					
	604T				E ●	E ●	H ●					M ○	M ●			○	○	●	○						○		△			
	605T				E ●	E ●	H ●					M ○	M ●			○	○	●	○						○		△			
TELESCOPIC	V805T	H ○	E ○	H ○	H ●	E ●	H ●					M ○	M ●		○	○	○	○	○	○					○		△			
	V807NT	H ○	E ○	H ○	H ●	E ●	H ●					M ○	M ●		○	○	○	○	○	○						○	△			
	V809T	H ○		H ○	H ●		H ●					M ○	M ●		○	○	○	○	○	○						○	△			
	V811T	H ○		H ○	H ●		H ●					M ○	M ●		○	○	○	○	○	○						○	△			
ARTICULATED	V803N	H ○	H ○	H ○	H ○	H ○	H ○					M ○	M ●			○	○	○	○					○						
	V804N	H ○	H ○	H ○	H ○	H ○	H ○					M ○	M ●			○	○	○	○						○		△			
	V805N	H ○	H ○	H ○	H ●	E ●	H ●					M ○	M ●			○	○	○	○						○		△			
	V806N	H ○	H ○	H ○	H ●	E ●	H ●					M ○	M ●			○	○	○	○						○		△			
	V807N	H ○	H ○	H ○	H ●	E ●	H ●					M ○	M ●			○	○	○	○							○	△			
	V808N	H ○		H ○	H ●		H ●					M ○	M ●			○	○	○	○							○	△			
	V810	H ○		H ○	H ●		H ●	●				M ○	M ●		○	○	○	○	○	○						△			
	V811NG	H ●		H ●	H ●		H ●	●				M ○	M ●		○	○	○	○	○	○										
	V812	H ●		H ●	H ●		H ●	●				M ○	M ●			○	○	○	○	○						△	△			
	V813NG	H ●		H ●	H ●		H ●	●				M ○	M ●		○	○	○	○	○	○							△			
	V815	H ●		H ●	H ●		H ●	●				M ○	M ●		○	○	○	○	○	○							△	△		
	V817	H ●		H ●	H ●		H ●	●	●			M ○	M ●		○	○	○	○	○	○	○						△	△		
	V817NG	H ●		H ●	H ●		H ●	●				M ○	M ●		○	○	○	○	○	○	○						△	△		
	V820	H ●		H ●	H ●		H ●	●	●			M ○	M ●		○	○	○	○	○	○	○						△	△		
	V823	H ●		H ●	H ●		H ●	●	●	●		M ○	M ●		○	○	○	○	○	○	○						△	△		
	V825	H ●		H ●	H ●		H ●					M ○	M ●		○	○	○	○	○		○						△			
	V828	H ●		H ●	H ●		H ●			●		M ○	M ●		○	○	○	○	○		○						△			
ARTICULATED WITH POWER LINK	V933	H ●		H ●	H ●		H ●	●	●			M ○	M ●		○	○	○	○	○		○						△			
	V936	H ●		H ●	H ●		H ●	●	●	●		M ○	M ●		○	○	○	○	○		○						△			
	V946B	H ●			H ●			●	●			M ○	M ●		○	○	○	○	○		○	○					△	△		
	V946			H ●			M ●	●	●			M ○	M ●		●	○	○	○	○		○	○					△	△		
	V950			H ●			M ●	●	●	●		M ○	M ●		●	○	○	○	○		○	○					△	△		
ARTICULATED WITH SLEWING BEARING	VR24			H ●			H ●	●	●						○	○	○	○	○		○						△			
	VR34			H ●			H ●	●	●						○	○	○	○	○		○						△			
	VR40			H ●			H ●	●	●						○	○	○	○	○		○						△			
	VR60			H ●			H ●	●	●						○	○	○	○	○			○						△		
	VR62			H ●			H ●	●	●	●					○	○	○	○	○			○						△		
	VR75	E ●		H ●	E ●		H ●	●	●			# ●	# ●		○	○	○	○	○			○	○					△	△	
	VR85			E ●			E ●	●	●	●	●			●	○	○	○	○	○			○	○					△	△	
	VR150	H ●		H ●	H ●		H ●	●	●	●	●			●	○	○	○	○											△

● Standard
○ Optional
▲ Standard available in connection with Danfoss PVG32 Blck valve
△ Option available in connection with Danfoss PVG 32 Block valve

E ●○ Electric device
M ●○ Mechanical device
H ●○ Hydraulic device
●○ Slewing limiting device hydraulic (No endless rotation crane)
* ■□ Crane operated with Radio Remote System, Stand-up platform only for emergency manual controls

MARINE & OFFSHORE CRANES

Global Sales and Service Network

WE DON'T WAIT FOR CALM WATERS, WE LIFT IN ALL CONDITIONS

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