



CATALOGUE

SEC DECKMACHINERY

WINCHES DRIVES GENERAL

SEC is the supplier of a wide variety of winches and winch-related products. For several decades, SEC has specialized in supplying conventional electric and hydraulic winches as well as electric hydraulic turnkey winches. The electric hydraulic turnkey winch has a number of advantages for ship owners, shipyards and engineers.

SEC has been designing, building and maintaining winches since 1890. In the early stages of the design process, SEC can advise both shipyard and ship owner about the optimal installation of the winches.

During this stage, an optimum can be found within the limits of classification society rules, rules of different sailing areas and technical requirements.

This optimum can be reflected in a mooring arrangement plan. Since limitation of space on board is a key issue for the ship owner, SEC is constantly looking for ways to save space. This may result in an alternative position for the electromotor.

For instance, it may be placed on top of the gearbox of the electric hydraulic winch. This construction solves many rope problems. Each turnkey compact winch is a stand-alone system, where separate hydraulic and electric components are used.

This may seem expensive at first glance, but when compared to the costs involved with installing additional required items on a separate power pack, the electric hydraulic winch is the better option.

For example, the amount of oil in the SEC electric hydraulic winch is a fraction of the amount of oil required for hydraulic winches with a separate power pack. It also eliminates cleaning and maintenance of hydraulic piping inside the vessel, because all hydraulic hoses are mounted inside the enclosed gearbox.

Thanks to the fact that SEC's main sub-suppliers have a worldwide network, SEC is able to call upon a group of specialists to assist you when needed.

Shipyards may prefer the simple installation of an electric winch above other types, whereas ship owners are more interested in the operational advantages of hydraulic winches. SEC has combined these two preferences into a single winch design: the electric hydraulic turnkey winch.

Logistically, this configuration is the best solution for the shipyard. Each winch has its own hydraulic and electric unit. This might not seem interesting, but from the logistical point of view, it offers the shipyard a major advantage. If necessary, the complete winch can be built in the block section. This means the time needed to install a complete anchoring and mooring system can be reduced to a minimum.

In general, SEC winches are delivered with a closed foundation, ready to be welded to the deck. On request, a part of the chain pipe can even be preinstalled, so no additional disassembly and assembly of the winch has to be done by the shipyard. If a shipyard has to install a hydraulic winch to a separate power pack, it has to supply and install the complete piping from the power pack to winch and back.



This time-consuming and expensive job can be avoided if you choose the turnkey electric-hydraulic winch. The complete hydraulic installation is incorporated in the gearbox.

This means a shipyard can install the winch in just a few hours. The installation features of the SEC winches are interesting for shipyards, but of even greater importance is SEC's backup during the installation process. SEC tests the winches before installation and guarantees the winches work properly when they are installed in accordance with SEC instructions.

The SEC winches have a special advantage above conventional winches. Whereas many winches are delivered with an open foundation, the SEC winch is normally supplied with a closed foundation, making engineering of a counter foundation unnecessary. The SEC winch is not a standard winch. It is custom built and constructed of standard components. The winch can be constructed for all situations on board a vessel.

For example:

- Electric hydraulic winches without the complete hydraulic system and piping from power pack or engine room to the winch
- Hydraulic winches connected to a central power pack or to a main hydraulic supply system
- When electric winches are required by the owner
- Weight reduction and/or use of anti-magnetic materials can be arranged
- Assistance in positioning the winch and hawser pipe on board
- Various combinations in the number of chain wheels, drums or warping heads

The SEC engineering department is a reliable partner in the design and engineering process of a vessel's deck machinery. The employees are available to answer the most difficult practical questions concerning space, weight or strength limitations of the anchoring and mooring equipment.



WINCH DRIVES |



HYDRAULIC WINCHES

**STEPLESS SPEED CONTROL • COMPACT CONSTRUCTION • ONLY ONE HYDRAULIC DRIVE REQUIRED
OPERATION EITHER MECHANICAL OR ELECTRICAL • SUPPLY OF OIL TO BE REALIZED BY A COMBINED EXISTING POWER
PACK ALREADY ON BOARD**

The SEC hydraulic winches have a restricted size due to an innovative concept with high quality materials. Operation of the winch can be either mechanical, directly about the power pack, or electrical, by means of a potentiometer placed in a seawater resistant box on, or inside, the winch. The supply of oil (flow and pressure) to the hydraulic motor can be

realized by a combined existing power pack on board, whereas certain hydraulic parts will be delivered to guarantee a fail-safe operation. When no power pack is available to operate the winches, a dedicated power pack can be delivered.



ELECTRIC HYDRAULIC WINCHES

**COMBINE ADVANTAGES OF BOTH ELECTRIC AND HYDRAULIC WINCH • TIME SAVING INSTALLATION PROCEDURE
STEPLESS CONTROL OF SPEED AND PULL • SELF TENSIONING • LOW MAINTENANCE • CLOSED GEARBOX • MEDIUM PRESSURE
HIGH QUALITY COMPONENTS • NO EXTERNAL HYDRAULIC PIPING NECESSARY**

Some thirty-five years ago SEC developed the electric-hydraulic winch. This type of winch combines the advantages of the electric and the hydraulic winches into one compact design. The main shaft is driven by a variable hydromotor, which enables stepless control of speed and pull of the chainwheel of drum. The incorporated pump is powered by an electromotor mounted in the winch. Therefore, hydraulic piping from the engineroom to the winch is no longer necessary. The winch is standard delivered including the foundation. Consequently, installation is very simple. The winch can easily be welded to the deck. After connection to the electrical main system the winch is ready for use. All types of winches – anchor, anchor mooring, power system. SEC has approval of all major classification societies for this type of winch.

During the project stage SEC can advise the client about the optimum angles of the chain to the chain stopper and hawserpipe. In this way, the client can determine or himself the best position for the winches. Adjustments to the length of the winch or the height of the foundation can be made by the SEC design department. Self tensioning and remote control are options that can easily be applied to this winch. All hydraulic components are incorporated in the totally closed gearbox. This gives the advantage that environmental influences will have no effect on the operational system. The position of the electromotor can vary from the side to top or bottom of the gearbox. Installation under deck is also possible. On request, a shockproof or explosion proof electromotor can be delivered.



ELECTRIC FREQUENCY CONTROLLED WINCHES

LOW NOISE • NO HYDRAULIC OIL • ENVIRONMENTAL GREEN TECHNOLOGY • LESS MAINTENANCE

NO HYDRAULIC SPECIALIST NEEDED • ELIMINATES HYDRAULIC OIL AND PIPING

The optional feature for electric winches is the frequency drive. The benefits for frequency drive are plentiful. The generator needed for frequency drive can be smaller because of the low starting current. As energy is only needed during operating it is also more environmental friendly. The automooring system comes without a loadcell or pulse encoder. Installation can be done swift because of less cables used. Older winches without frequency drive can easily be upgraded to be frequency drive controlled while using the existing motors, even automooring is possible for every winch. The precise stepless control is made for smooth operation.

The systems has an easy monitoring by color graphic display and monitors cable length, cable tension and line- and winch drum speed(options). The winch is protected against peak torque and overloading and reduces wear on ropes and the winch. Also the frequency drive has the possibility for remote shore support. The conclusion can be that frequency control makes for better performance and lower cost of ownership.





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The electric winches of SEC can be delivered with either one, two or three speed electromotors, also as option stepless control and dynamic control can be achieved with a voltage frequency converter.

For anchor winches the three-speed motor is most commonly used. The winches are supplied with a control stand (1P56), which has to be installed near the winches. The motor is directly connected to the gearing.



After welding on deck and electrical connection, the winch is ready for use. The electro-motor is fully equipped for use in a seawater environment.

The standard features which come with this TENV (Totally Enclosed Non-Ventilated) electromotor are:

- Anti-condensation heater
- Special coating
- IP 56 isolation
- A temperature rise class F
- Electric disk brake
- Marine standard execution

Particular care is taken to adequately handle the double torque which anchor winches will require at full load (2 minutes). A Protective Thermal Circuit (PTC) connection (thermal control over the windings) is also standard for these types of winches. For mooring winches, the DMS-self tensioning feature can be supplied as option.

WINCH TYPES |



ANCHOR WINCHES

ELECTRIC, HYDRAULIC OR ELECTRIC-HYDRAULIC VERSION • CLOSED FOUNDATION • CUSTOM MADE DESIGN POSSIBLE

The speed and pulling force of the anchor winches meet the standards according to the rules of the Classification Societies. The chainwheel is equipped with at least five teeth. SEC can also supply a remote anchor dropping system for instant anchor release. This device can incorporate a remote control for the clutch, brake and chain stopper. The fact that SEC is able to test anchor winches at its own factory makes

SEC, and not the shipyard, responsible for the correct functioning of the winch. The shipyard will only be responsible for the correct installation on deck.

The table below shows the dimensions of double anchor winch for various chain diameters.
Please contact us if your requirements are different.



MOORING WINCHES

HIGH QUALITY COMPONENTS • SEAWATER RESISTANT BEARINGS • SPLIT DRUMS POSSIBLE • SELF TENSIONING

The smallest mooring winch produced by SEC has a nominal pull of 10 kN. The maximum size still has to be found. The design principles of a mooring winch are based on the nominal pulling force of the winch. This force depends on the minimum breakload of the applied rope or wire. The rope diameter, length and material of the mooring line determine the diameter and length of the drum. To help increase the lifetime of mooring lines, the SEC mooring winches have a large drum diameter than prescribed by Class societies. The mooring winches are delivered with a split drum when polypropylene is applied. On mooring winches with steel wire the drum will not be split.

Both self tensioning and remote control can be easily added to this winch.

The table shows the dimensions for one of the mooring winches. This winch has one gearbox, drum and warpinghead. On board of OCIMF-tankers there are additional guidelines and recommendations for the use of mooring winches. We like to give you a short overview: The working part of the split drum must be suited for 10 turns at the drum, in addition the complete wire length must fit on the working part. When steel wire is used, the drum diameter has to be at least 16 times the wire diameter.



ANCHOR MOORING WINCHES

**BOTH ANCHORING AND MOORING COMBINED IN ONE WINCH • COST EFFICIENT SOLUTION WEIGHT REDUCTION
COMPARED TO SEPARATE INCHES • LIMITATION OF REQUIRED SPACE ON BOARD • TURNKEY ELECTRIC-HYDRAULIC DESIGN
LOW MAINTENANCE • SPLIT DRUM FOR STORAGE AND OPERATING PART FOR SYNTHETIC ROPES**

The anchor mooring winch is designed and adapted to the customer's wishes and, of course, based on the different classification rules. Therefore, standard drums are seldom used by SEC. When polypropylene or equivalent rope material is applied, the drum will be split in a storage and operating part as standard. The combined anchor mooring winch has a positive effect on the weight of the complete anchoring and mooring configuration. The combined winch requires one gearbox and one drive only. On small foreships it may be possible to combine both anchoring and mooring of the portside and starboard winches into a single winch unit. This may be achieved with the restriction that the hawserpipes have a certain

distance from each other. Besides that, the chains have to enter the chainlocker and hawserpipe at a certain angle.

Since the closed foundation is normally included, installation of the SEC anchor mooring winch is a simple task for the shipyard. The anchor mooring winch can be equipped with a self tensioning device only for mooring operations. Remote control is one of the various other options on this winch. The table below shows the principal dimensions of one of the anchor mooring winches. This winch has one chainwheel, gearbox, one mooring drum and one warpinghead.



CAPSTANS

HYDRAULIC COMPONENTS INCLUDED • NO EXTERNAL PIPING NECESSARY • STEPLESS SPEED, TWO DIRECTIONS

DIN 84154 DIMENSION POSSIBLE

The SEC electric or hydraulic capstans are characterized by their compact shape. The warping head is built on top of a round pedestal. Either the electric or hydraulic system is built in this pedestal, so the components will be under deck. Within a certain range the operating height of the capstan can be adjusted to meet practical requirements. The electric capstan can be delivered with a one, two or three-speed electromotor. The advantage of the hydraulic capstan is the possibility for stepless control of the warpinghead. SEC can deliver capstans according to DIN 84154. The electric or hydraulic capstans can also be supplied in the anchor capstan version.

SEC is also able to supply capstans that have gears and electric motor s that are fully incorporated in the warping head of the capstan. This way of building results in very compact shaped capstans that can be installed completely on deck.

ADDITIONAL EQUIPMENT WINCHES



CHAIN STOPPERS RK

SEMI-AUTOMATIC FALL-OVER TYPE • >12,5 MM CHAIN DIAMETER • CHEAP SOLUTION

The RK chain stopper is a so-called fall-over type of chain stopper. The advantage of this chains topper is the semi-automatic securing of the chain in the chain stopper during unforeseen slipping of the chain.

This RK-type can also easily be mounted by bolting down the bottom plate to the deck. According to the classification society rules all RK chain stoppers have a holding force 80% of chain breaking strength.

Chain Diameter	Length (mm)	Breadth (mm)	Height (mm)	Weight (kg)
12.5-14	185	170	180	11
16-17.5	205	210	225	20
19-20.5	265	240	265	37
22-24	285	290	310	50
26-28	340	335	360	83
30-32	375	386	410	111
34-36	400	440	460	182
38-40	450	480	515	225
42-44	495	530	565	275
46-48	540	580	615	400
50-52	575	630	665	480
54-56	645	700	720	550
58-60	725	780	770	682
62-64	785	830	820	800
66-68	830	890	870	910
70-73	890	950	935	1,060
76-78	1,060	1,020	1,000	1,210
81-84	1,030	1,100	1,080	1,540



RATCHED CHAIN STOPPERS RKR

EASY TO INSTALL • ROLLER TYPE • BIG RANGE

The RKR chain stopper is the top model in the chain stopper range. This is not just because it is a roller type, but because it is a so-called 'semi-automatic ratched fall-over type'. This fall-over type has the advantage of securing the chain in the chain stopper whenever unforeseen slipping of the chain occurs. A roller chain stopper is a good solution, in particular for larger chain sizes. Pulling the spindle on the stopper enables tight securing of the anchor in the anchor pocket or against the vessel's hull. All turning parts are made of high quality materials. The roller is fitted with sea water-resistant bronze bearings. Parts of the spindle are made from stainless steel.

According to classification rules, the chain stoppers need a holding force of 80% of the minimum breakload of the chain. On request, SEC can also supply chain stoppers with 100% holding force.

It is possible to mount the chain stopper at an angle in order to adjust the flow of the chain towards the hawserpipe.

Chain Diameter	Length (mm)	Breadth (mm)	Height (mm)	Weight (kg)
12.5-14	360	190	380	66
16-17.5	445	245	460	76
19-20.5	525	280	540	105
22-24	610	320	650	121
26-28	715	380	710	210
30-32	850	398	750	264
34-36	940	485	965	330
38-40	1,020	544	995	400
42-44	1,110	600	1,090	594
46-48	1,230	660	1,170	760
50-52	1,290	710	1,225	780
54-56	1,380	760	1,320	1,045
58-60	1,530	776	1,354	1,210
62-64	1,710	793	1,390	1,520
66-68	1,760	880	1,535	1,880
70-73	1,830	940	1,580	2,610
76-78	1,920	990	1,620	3,345
81-84	2,010	1,040	1,660	4,180
84-87	2,100	1,090	1,720	5,225
90-92	2,220	1,150	1,820	5,960
95-97	2,340	1,215	1,920	6,200
100-102	2,460	1,280	2,015	6,900
1,005-107	2,580	1,340	2,115	8,000
111-114	2,750	1,430	2,250	8,900
117-120	2,900	1,500	2,375	9,800
122-124	3,000	1,555	2,450	10,700
127-130	3,150	1,630	2,570	12,000
132-137	3,300	1,715	2,700	14,200



HAWSER ROLLERS

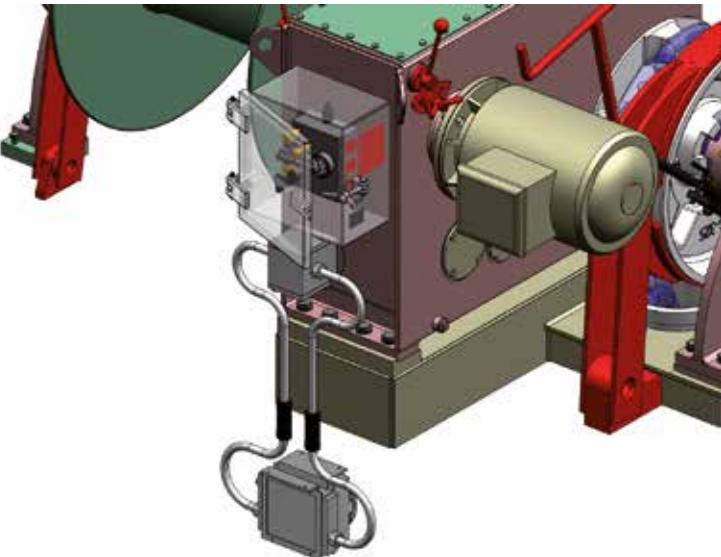
LIGHT CONSTRUCTION • BIG CRANK HANDLE FOR MANUAL OPERATION • FOOTBRAKE OPTION

CRANK HANDLE ON BOTH SIDES POSSIBLE

Mooring lines, not stored on a mooring winch, require much space and might cause dangerous situations. The SEC hawser roller is the solution to these problems. The hawser roller can be delivered in two different designs. The simple one allows easy storing in combination with moderate operation and material characteristics. The more advanced type is standard equipped with stainless steel shaft and polyamide

bearings. A crank handle is delivered as standard on this type. The lines - steel or synthetic - can be stored on the reel in several layers. The reel itself can be manually or electrically operated. The hawser roller can be equipped with a foot brake. The hawser roller is normally built in standard steel, coated with a 2-layer primer. Application of a complete conservation system or galvanizing the roll is also possible.

**WINCH
OPTIONS**



SELF TENSIONING SYSTEMS

EASY TO OPERATE • HYDRAULIC OR ELECTRICAL OPTIONS • CUSTOM-MADE SOLUTIONS

The self tensioning systems are only used for mooring winches. When tides are differing or when quick loading/unloading is demanded (Container/Ro-Ro) Self tensioning demands special requirements for the system since it has to be on stand-by 24 hours a day. In general two self tensioning systems can be supplied:

- The hydraulically controlled self tensioning
- The electrically controlled self tensioning

The first one is used at hydraulic and electric-hydraulic systems. The hydraulically operated self tensioning system is adjustable by changing the pressure.

For an electric-hydraulic winch only an oil cooler has to be installed below deck. One of the advantages of this system is the low noise level, due to the fact that the hydraulic components are inside the gearbox.

The second one, the electrically controlled DMS unit, is used for electric winches. With a DMS system the stress in one of the gearsteps in the gearcase is measured with a sensitive bolt, this gives a signal which is converted by an amplifier. The amplifier gives an electric pulse signal to the control system of the winches, which dynamically regulates the tension force of the winch.



REMOTE CONTROL

Remote control of the winches is specially developed to ease the control and monitoring for the operators. The configuration of a remote control station on portside and starboard are regarded as a standard, but more comprehensive systems are also possible. The controls at hydraulic winches can be arranged with hydraulic valves electric master switches or potentiometers an infinitely variable control. The master switches are delivered as standard in a watertight box, ready for mounting on deck.

There is a wide range of remote controlled items to choose from; a few examples are given:

- Remote controlled clutches
- Remote controlled brakes
- Quick release systems
- Hydraulically operated chains toppers
- Anchor dropping systems
- Easy to install
- Standard solutions
- Radio remote



HYDRAULIC POWER PACKS

COMPACT TURNKEY STRUCTURE • ALL COMPONENTS IN ONE BLOCK • SUITABLE FOR OTHER HYDRAULIC SYSTEMS

Hydraulic winches, require power packs that can be installed below deck. SEC is able to deliver a wide range of power packs, all specially designed to operate the accompanying winches. Each power pack is produced to the winches specifications. For example, a power pack can be designed to operate all winches simultaneously or individually. The dimensions of the power pack will be determined according to the requested specification of the shipyard and/or shipowner and based on the speed and pull requirements.

On special request, SEC is able to deliver power packs suitable for the operation of winches and other on board systems. Every SEC power pack is compact and easy to install. The complete power pack is built into a framework on which all features can be mounted, such as, for example, oil coolers, electric operating valves, load sensing system, self tensioning blocks, electric motors and hydraulic pumps.



SERVICES

24 HOURS A DAY STAND-BY • WORLDWIDE DELIVERY OF SPARE PARTS • DIRECT ACTION PREVENTS LOSS OF TIME

If SEC winches are regularly maintained according to the instruction book, SEC can guarantee many years of productive operation. However, after several years of use, certain parts of the winch may require servicing. According to Murphy's Law, however, replacement or repair of these parts will always be required in the most difficult circumstances.

SEC has designed a service procedure to assist you when you need help. The main goal of our service team is to have the vessel on its route with minimal time loss.

The SEC service is driven by two aspects:

- Prevention of time loss
- Worldwide delivery of parts

Failure of an essential part of the winch may result in losses due to a delay in a port or even missing the next charter.

To prevent excessive delays in the delivery of parts, the SEC winch has been constructed of components from reliable suppliers with service points in major ports across the world. This will normally reduce the repair time to just a few hours.

Other parts of the winch - apart from electric and hydraulic components - can either be delivered from stock from our spares shop or fabricated in our machine shop on short notice. However, you'll be happy to know that these parts seldom break down.

EQUIPMENT TABLE

EQUIPMENT		ANCHOR CHAIN			BOW ANCHORS			MOORING ROPES		
Number	Letter	U2 MM	U3 MM	Lenght	CONV. MASS KG	HHP MASS PCS	PCS	Lenght	MBL kN	
>50	70	A	12,5	—	220	180	135	2	80	35
>70	90	B	14	—	220	240	180	2	100	40
>90	110	C	16	—	247,5	300	225	2	110	40
>110	130	D	17,5	—	247,5	360	270	2	110	45
>130	150	E	17,5	—	275	420	315	2	120	50
>150	175	F	19	—	275	480	360	2	120	55
>175	205	G	20,5	—	302,5	570	430	2	120	60
>205	240	H	22	20,5	302,5	660	495	2	120	65
>240	280	I	24	22	330	780	585	3	120	70
>280	320	J	26	24	357,5	900	675	3	140	80
>320	360	K	28	24	357,5	1,020	765	3	140	85
>360	400	L	30	26	385	1,140	855	3	140	95
>400	450	M	32	28	385	1,290	970	3	140	100
>450	500	N	34	30	412,5	1440	1,080	3	140	110
>500	550	O	34	30	412,5	1,590	1,195	4	160	120
>550	600	P	36	32	440	1,740	1,305	4	160	130
>600	660	Q	38	34	440	1,920	1,440	4	160	145
>660	720	R	40	36	440	2,100	1,575	4	160	160
>720	780	S	42	36	467,5	2,280	1,710	4	170	170
>780	840	T	44	38	467,5	2,460	1,845	4	170	185
>840	910	U	46	40	467,5	2,640	1,980	4	170	200
>910	980	V	48	42	495	2,850	2,140	4	170	215
>980	1,060	W	50	44	495	3,060	2,295	4	180	230
>1,060	1,140	X	50	46	495	3,300	2,475	4	180	250
>1,140	1,220	Y	52	46	522,5	3,540	2,655	4	180	270
>1,220	1,300	Z	54	48	522,5	3,780	2,835	4	180	285
>1,300	1,390	A†	56	50	522,5	4,050	3,040	4	180	305
>1,390	1,480	B†	58	50	550	4,320	3,240	4	180	325
>1,480	1,570	C†	60	52	550	4,590	3,445	5	190	325
>1,570	1,670	D†	62	54	550	4,890	3,670	5	190	325
>1,670	1,790	E†	64	56	577,5	5,250	3,940	190	350	
>1,790	1,930	F†	66	58	577,5	5,610	4,210	190	375	
>1,930	2,080	G†	68	60	577,5	6,000	4,500	190	400	
>2,080	2,230	H†	70	62	605	6,450	4,840	200	425	
>2,230	2,380	I†	73	64	605	6,900	5,175	200	450	
>2,380	2,530	J†	76	66	605	7,350	5,515	200	480	
>2,530	2,700	K†	78	68	632,5	7,800	5,850	200	480	
>2,700	2,870	L†	81	70	632,5	8,300	6,225	200	490	
>2,870	3,040	M†	84	73	632,5	8,700	6,525	200	500	
>3,040	3,210	N†	84	76	660	9,300	6,975	200	520	
>3,210	3,400	O†	87	78	660	9,900	7,425	200	555	
>3,400	3,600	P†	90	78	660	10,500	7,875	200	590	
>3,600	3,800	Q†	92	81	687,5	11,100	8,325	200	620	
>3,800	4,000	R†	95	84	687,5	11,700	8,775	200	650	
>4,000	4,200	S†	97	87	687,5	12,300	9,225	200	650	
>4,200	4,400	T†	100	87	715	12,900	9,675	200	660	
>4,400	4,600	U†	102	90	715	13,500	10,125	200	670	
>4,600	4,800	V†	105	92	715	14,100	10,575	200	680	
>4,800	5,000	W†	107	95	742,5	14,700	11,025	200	685	
>5,000	5,200	X†	111	97	742,5	15,400	11,550	200	685	
>5,200	5,500	Y†	111	97	742,5	16,100	12,075	200	695	
>5,500	5,800	Z†	114	100	742,5	16,900	12,675	200	705	
>5,800	6,100	A*	117	102	742,5	17,800	13,350	200	705	
>6,100	6,500	B*	120	107	742,5	18,800	14,100	200	715	
>6,500	6,900	C*	124	111	770	20,000	15,000	200	725	
>6,900	7,400	D*	127	114	770	21,500	16,125	200	725	
>7,400	7,900	E*	132	117	770	23,000	17,250	200	725	
>7,900	8,400	F*	137	122	770	24,500	18,375	200	735	
>8,400	8,900	G*	142	127	770	26,000	19,500	200	735	
>8,900	9,400	H*	147	132	770	27,500	20,625	200	735	
>9,400	10,000	I*	152	132	770	29,000	21,750	200	735	
>10,000	10,700	J*	157	137	770	31,000	23,250	200	735	
>10,700	11,500	K*	157	142	770	33,000	24,750	200	735	
>11,500	12,400	L*	162	147	770	35,500	26,625	200	735	
>12,400	13,400	M*	—	152	770	38,500	28,875	200	735	
>13,400	14,600	N*	—	157	770	42,000	31,500	200	735	
>14,600	16,000	O*	—	162	770	46,000	34,500	200	735	



Contact:

China:

SHANGHAI SEC MACHINERY & EQUIPMENT CO., LTD.
1888, Zhudai Road, Waigang Town, Jiading District
SHANGHAI, 201806
P.R. CHINA
T: 0086-21-6957-7917
E: info@shanghai-sec.com

Korea:

SEC Ship's Equipment Centre Korea Co., Ltd.
#2304, Centum Leaders Mark Bldg.,
U-dong, Haeundae-gu,
BUSAN 612-889
KOREA
T: +82 (0)51 745 8867
E: bosco@sec-korea.kr

Germany:

SEC SHIP'S EQUIPMENT CENTRE BREMEN GMBH & CO KG
Speicherhof 5
D-28217 BREMEN
GERMANY
T: +49 421-39 69 10
E: info@sec-bremen.de

SEC DECKMACHINERY