

# Quick Release Mooring Systems

Mampaey Offshore Industries, The Netherlands



**mampaey®**



## Over 100 years of safe and reliable mooring systems



**Mampaey Offshore Industries** is a leading supplier of mooring, berthing and towing systems, with safety and reliability as a shared value.

The company, based in the Netherlands, was founded in 1904. Mampaey Offshore Industries is a privately owned company, managed by the fourth generation.

Started as a local blacksmith, the company evolved into a global active supplier that defined industry standards and is ISO 9001 quality approved. Mampaey has an outstanding reputation with regard to the quality of her products. A track record of 100 years learns that Mampaey products have a long life cycle combined with low operational costs.

The latter is underscored by the low percentage of spare parts that contribute to Mampaey's total turnover.

*The total cost of ownership makes every Mampaey product a solid investment.*

Mampaey's in-house engineering and software development assures that all Mampaey products fulfill client's requirements. Integrated systems like iMoor are developed to make the total of Mampaey mooring products more attractive than the sum of its parts. The dynamic oval towing system for tugs is developed as a response to make assisting ships safer, especially at higher speeds. The alertness of Mampaey in searching for new solutions that could improve client's safety was recognized by being selected as the Netherlands' most innovative small and medium sized Enterprise for 2007.







## Quick release mooring hooks

Since the 1950's Mampaey is a supplier of quick release mooring hooks to the oil and gas industry. The Mampaey quick release mooring hooks are specially designed to improve the safety of ship handling operations. The hooks are specifically designed to release mooring lines with little effort, even under full load conditions. To reset the hook back into its working position a simple action is required. The standard mooring hooks are available from 40 up to and 200 Tons. Mooring units can be supplied into a single, double, triple, quadruple or sextuple hook configuration. The quick release hooks are compatible with all other iMoor components.



## Advantages of Mampaey mooring hooks:

- Designed for low total costs of ownership.
- Mampaey mooring hooks are assembled out of steel plates.
- All Mampaey mooring hooks can be manually released at 100% of the safe working load with a minimum effort (max. 10 - 20 kgf.).
- All Mampaey mooring hooks are tested individually at 150% of the safe working load or otherwise agreed.
- Simple (one man) action to reset the hook.
- Mampaey mooring hooks are standard painted with ISO standard approved coating system.
- Hooks are free-swivelling ensuring fully spark-free operation.
- Hooks can be fully disassembled with standard hand tools.
- All moving parts can easily be greased.
- The mooring units can be installed onto concrete or steel deck structures.
- Hooks are designed to operate through 180 degrees horizontally and 45 degrees vertical.



In accordance with latest European norms Mampaey offers fully ATEX certified components throughout their product line range.



**The Mampaey mooring hooks can be provided with several optional features, such as:**

- Anti rope slip devices (keepers).
- Electrical insulation.
- Integral capstans.
- Remote control system.
- Mooring load monitoring system.
- Coal dust covers.
- Special coatings and/or hook designs for extreme aggressive atmospheres.
- Customized executions.

## Capstans

Capstans can decrease the time required to moor a vessel and prevents the heavy lifting of mooring lines. Capstans are often supplied as an integral part of the hook package, however, some customers require separate or add-on units as part of a facility upgrade.

- Capstans are available certified for Zone 1 or Zone 2 or non-hazardous area.
- Capstans are designed to be maintenance free and are lubricated for life.
- Standard capstans incorporate 3 phase squirrel cage induction motor, being directly coupled to a planetary geared reducer to provide the required output torque and speed.
- Capstan is operated by a footswitch or pushbutton.
- Capstans can be equipped with a non-reversible or reversible type motor starter.
- Optionally the capstan can be equipped with a mechanical or electric braking device.
- Both single and dual speed capstans can be supplied either freestanding or integrally mounted to a large range of quick release hook units.

Examples executions of several Mampaey capstans:



*Integral capstan*



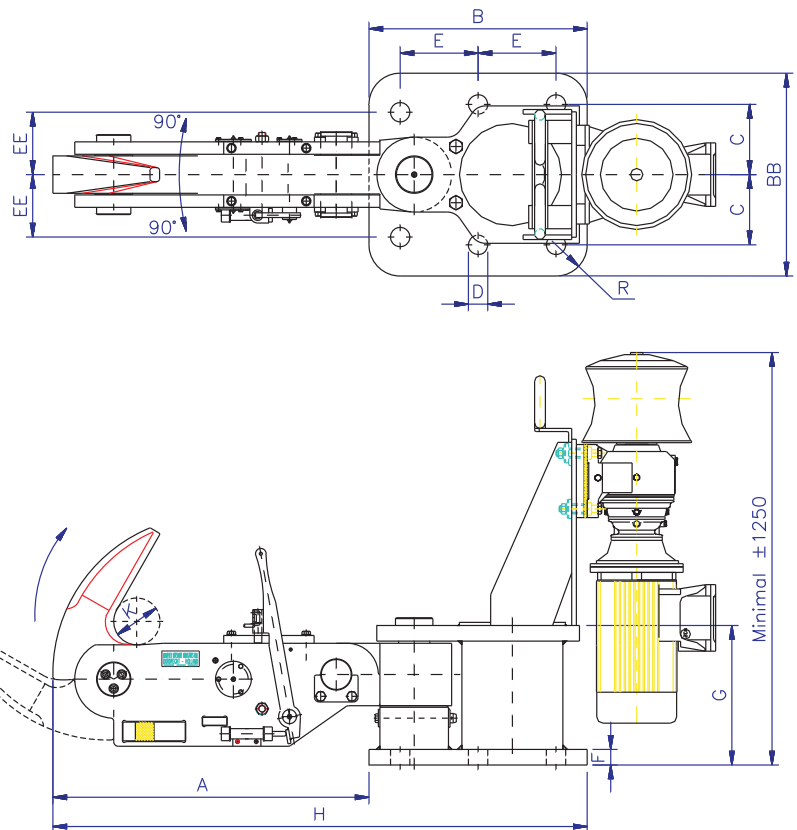
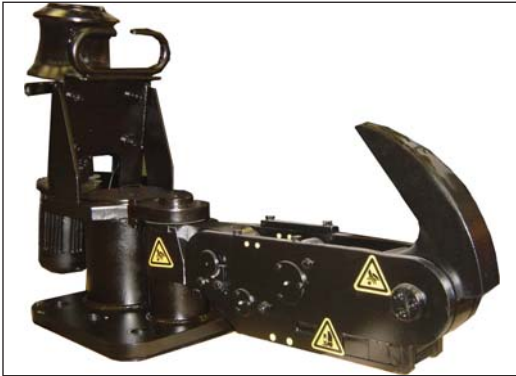
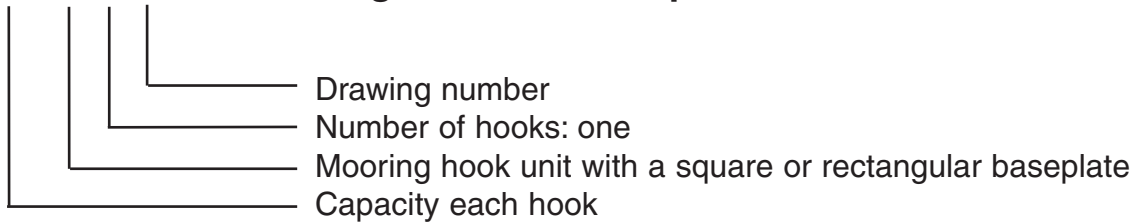
*Freestanding capstan*

*Special insulated capstans mounted into a pipe-construction for low temperature operation*

## Single hook assembly

**MHC.000.401.000 = Mooring unit with capstan**

**MHX.000.401.000 = Mooring unit without capstan**



### EXPLANATION:

Cap. = Capacity mounting base in kN  
 Wt. = Weight in kilograms, excl. capstan  
 X. = Number and size of HD bolts  
 S.W.L. = Working load in kN

### Dimensions in millimeters

Type	S.W.L.	Cap.	Wt.	A	B	BB	C	D	E	EE	F	G	H	K	R	X
MHC																
040.401	400	400	304	668	600	600	225	54	225	225	35	370	1268	96	75	4xM48
060.401	600	600	512	873	650	650	235	54	235	200	45	407	1523	130	90	6xM48
075.401	750	750	587	923	650	650	225	62	225	200	45	417	1573	130	100	6xM56
100.401	1000	1000	792	1014	700	650	225	62	250	200	50	447	1714	150	100	6xM56
125.401	1250	1250	887	1085	700	650	225	70	250	200	55	479	1785	150	100	6xM64
150.401	1500	1500	1253	1255	700	650	225	78	250	195	55	499	1955	150	100	6xM72

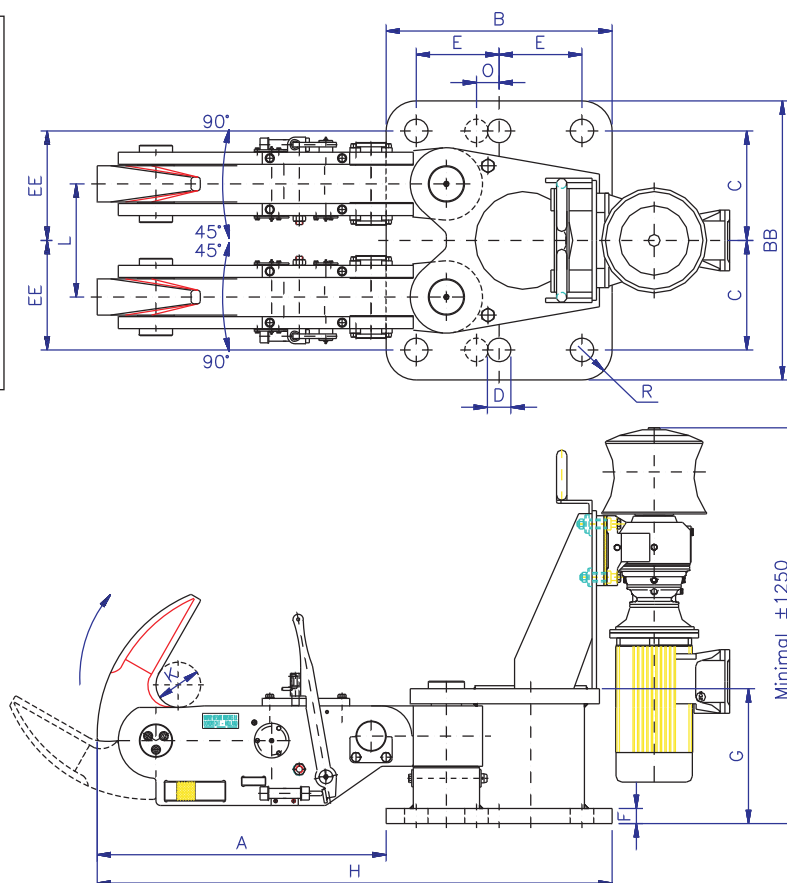
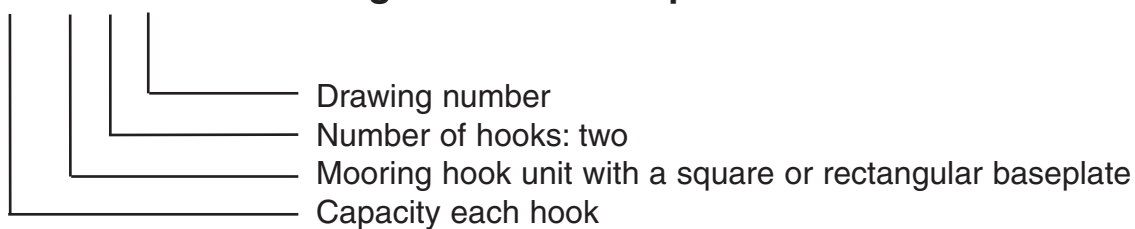
Above details for information only



## Double hook assembly

MHC.000.402.000 = Mooring unit with capstan

MHX.000.402.000 = Mooring unit without capstan



### EXPLANATION:

Cap. = Capacity mounting base in kN  
 Wt. = Weight in kilograms, excl. capstan  
 X. = Number and size of HD bolts  
 S.W.L. = Working load in kN

### Dimensions in millimeters

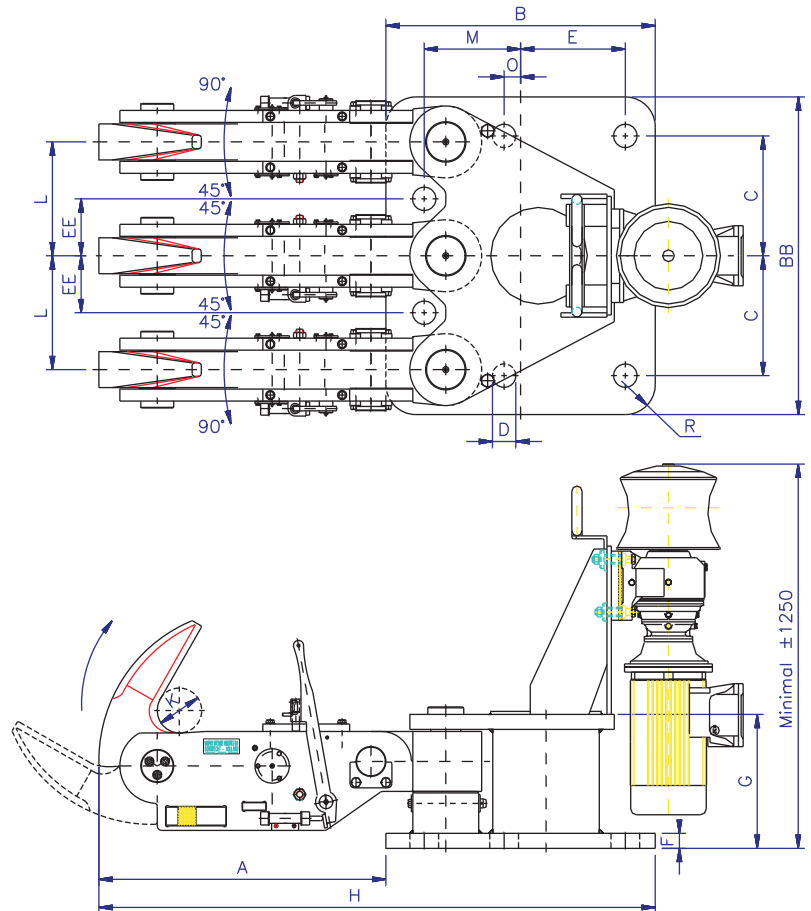
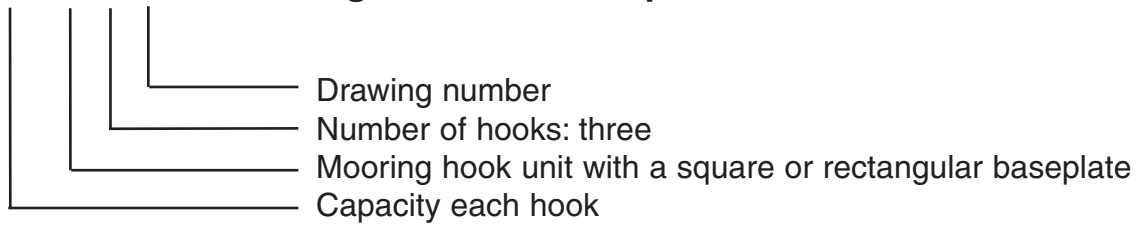
Type	S.W.L	Cap.	Wt.	A	B	BB	C	D	E	EE	F	G	H	K	O	R	X
MHC																	
040.402	400	800	491	583	650	700	260	54	235	260	35	370	1233	96	--	90	6xM48
060.402	600	1200	878	788	750	780	290	62	275	290	45	407	1536	130	--	100	6xM56
075.402	750	1500	1049	888	750	850	325	70	275	325	45	417	1638	130	55	100	6xM64
100.402	1000	2000	1439	959	750	925	363	78	275	363	50	447	1709	150	75	100	6xM72
125.402	1250	2500	1602	1030	750	925	363	86	275	363	55	479	1780	150	75	100	6xM80
150.402	1500	3000	2332	1210	750	1000	400	86	275	400	55	499	1960	150	50	100	7xM80

Above details for information only

## Triple hook assembly

**MHC.000.403.000 = Mooring unit with capstan**

**MHX.000.403.000 = Mooring unit without capstan**



### EXPLANATION:

Cap. = Capacity mounting base in kN  
 Wt. = Weight in kilograms, excl. capstan  
 X. = Number and size of HD bolts  
 S.W.L. = Working load in kN

### Dimensions in millimeters

Dimensions in millimeters

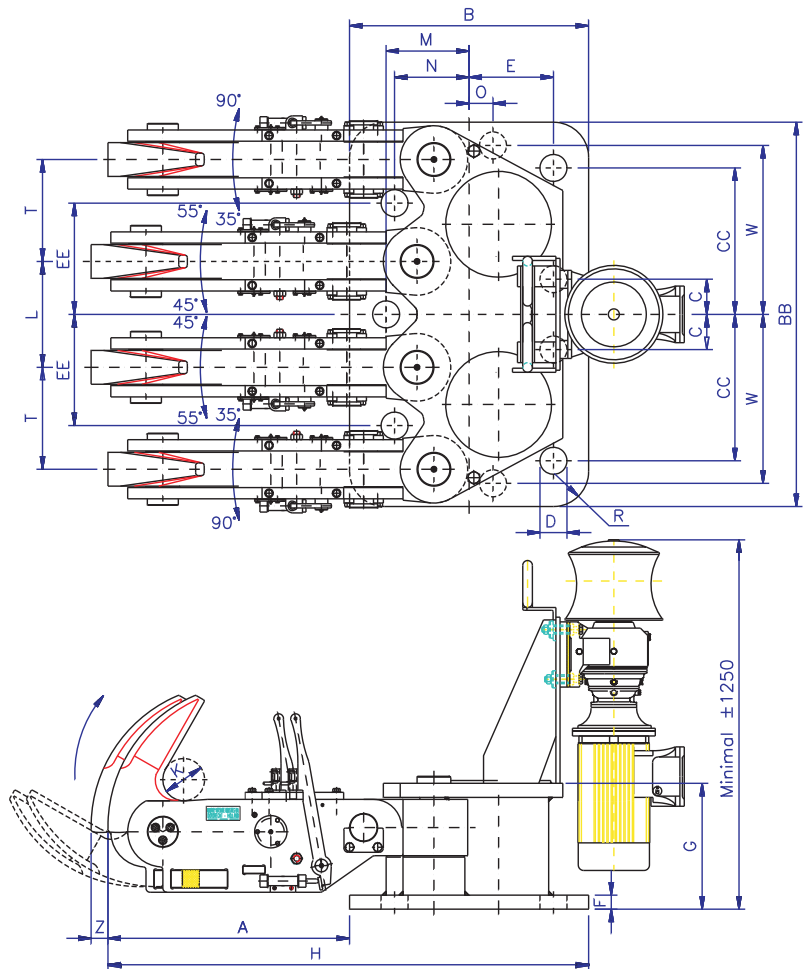
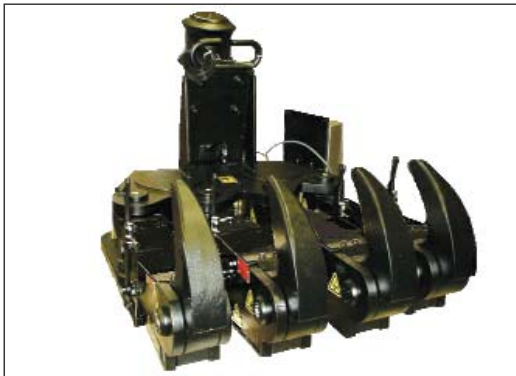
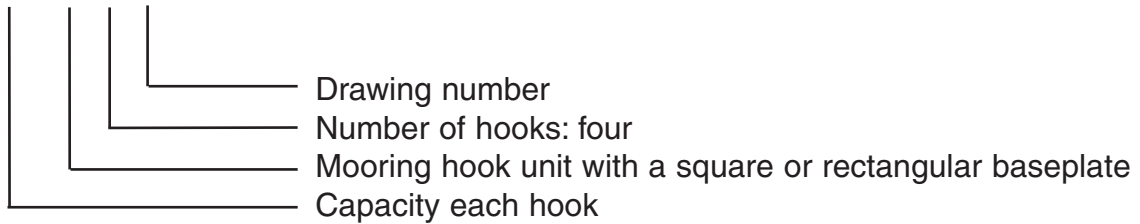
Type																				
MHC	S.W.L.	Cap.	Wt.	A	B	BB	C	D	E	EE	F	G	H	K	L	M	O	R	X	
040.403	400	1200	707	598	700	800	310	62	260	145	35	370	1296	96	290	275	--	90	6xM56	
060.403	600	1800	1268	863	800	900	335	70	310	162	45	407	1663	130	325	310	65	100	6xM64	
075.403	750	2250	1540	893	850	1000	375	78	325	175	45	417	1743	130	350	325	60	100	6xM72	
100.403	1000	3000	2144	959	900	1060	400	78	350	190	50	447	1859	150	380	322	55	100	7xM72	
125.403	1250	3750	2450	1030	900	1060	400	86	350	190	55	479	1930	150	380	322	55	100	7xM80	
150.403	1500	4500	3586	1235	1020	1200	475	96	385	212	55	499	2255	150	425	385	115	125	7xM90	

Above details for information only

## Quadruple assembly

MHC.000.404.000 = Mooring unit with capstan

MHX.000.404.000 = Mooring unit without capstan



### EXPLANATION:

Cap. = Capacity mounting base in kN  
 Wt. = Weight in kilograms, excl. capstan  
 X. = Number and size of HD bolts  
 S.W.L. = Working load in kN

### Dimensions in millimeters

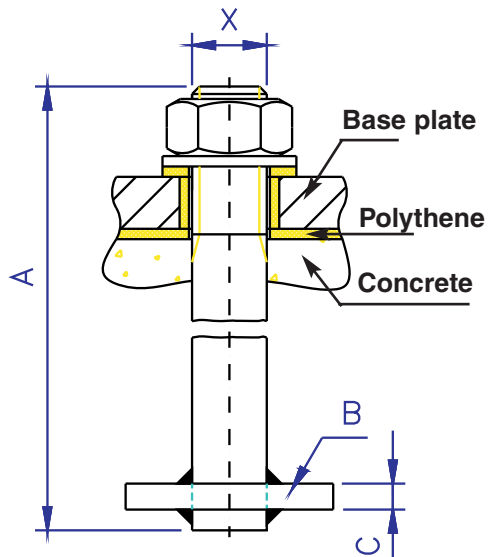
Type																								
MHC	S.W.L.	Cap.	Wt.	A	B	BB	C	CC	D	E	EE	F	G	H	K	L	M	N	O	R	T	Z	X	
040.404	400	1600	938	578	650	1120	100	470	70	235	300	35	370	1228	96	300	235	235	--	90	300	40	7xM64	
060.404	600	2400	1670	778	750	1185	115	445	78	275	330	45	407	1528	130	325	255	230	--	100	320	56	7xM72	
075.404	750	3000	2032	823	800	1300	150	505	86	290	355	45	417	1623	130	350	280	265	--	100	340	50	7xM80	
100.404	1000	4000	2807	859	850	1365	125	520	96	300	395	50	447	1709	150	376	295	265	--	125	362	60	7xM90	
125.404	1250	5000	3199	930	850	1365	125	520	96	300	395	55	479	1780	150	376	295	265	--	125	362	60	7xM90	
150.404	1500	6000	4698	1118	925	1570	170	605	86	325	435	55	499	2043	150	426	325	280	60	135	415	60	9xM80	

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## Holding down bolts

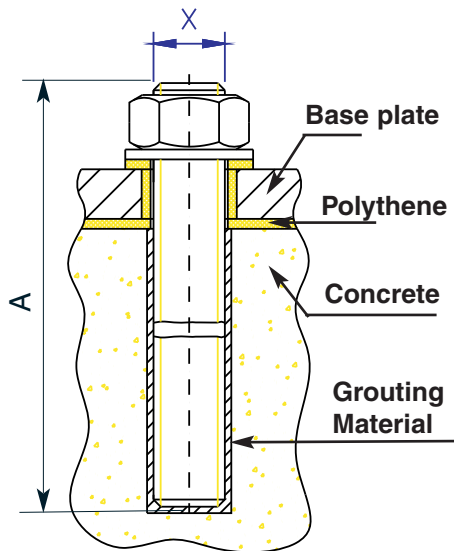
### Anchorbolt for: new concrete



Dimensions in millimeters

X	A	B	C
M48	950	200x180	25
M56	950	200x180	25
M64	950	200x180	25
M72	950	200x180	25
M80	950	200x180	25
M90	950	200x180	25

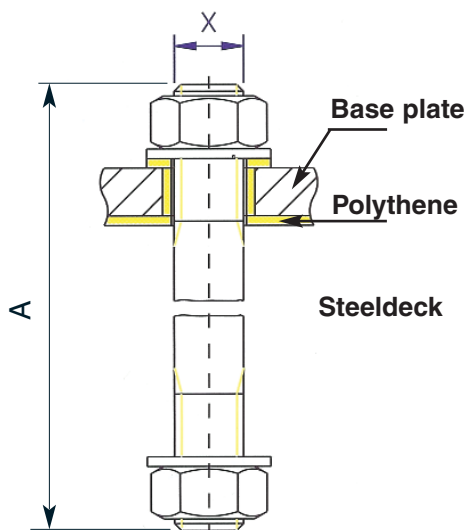
### Existing concrete



Dimensions in millimeters

X	A
M48	1150
M56	1150
M64	1150
M72	1150
M80	1150
M90	1150

### Steeldeck



Dimensions in millimeters

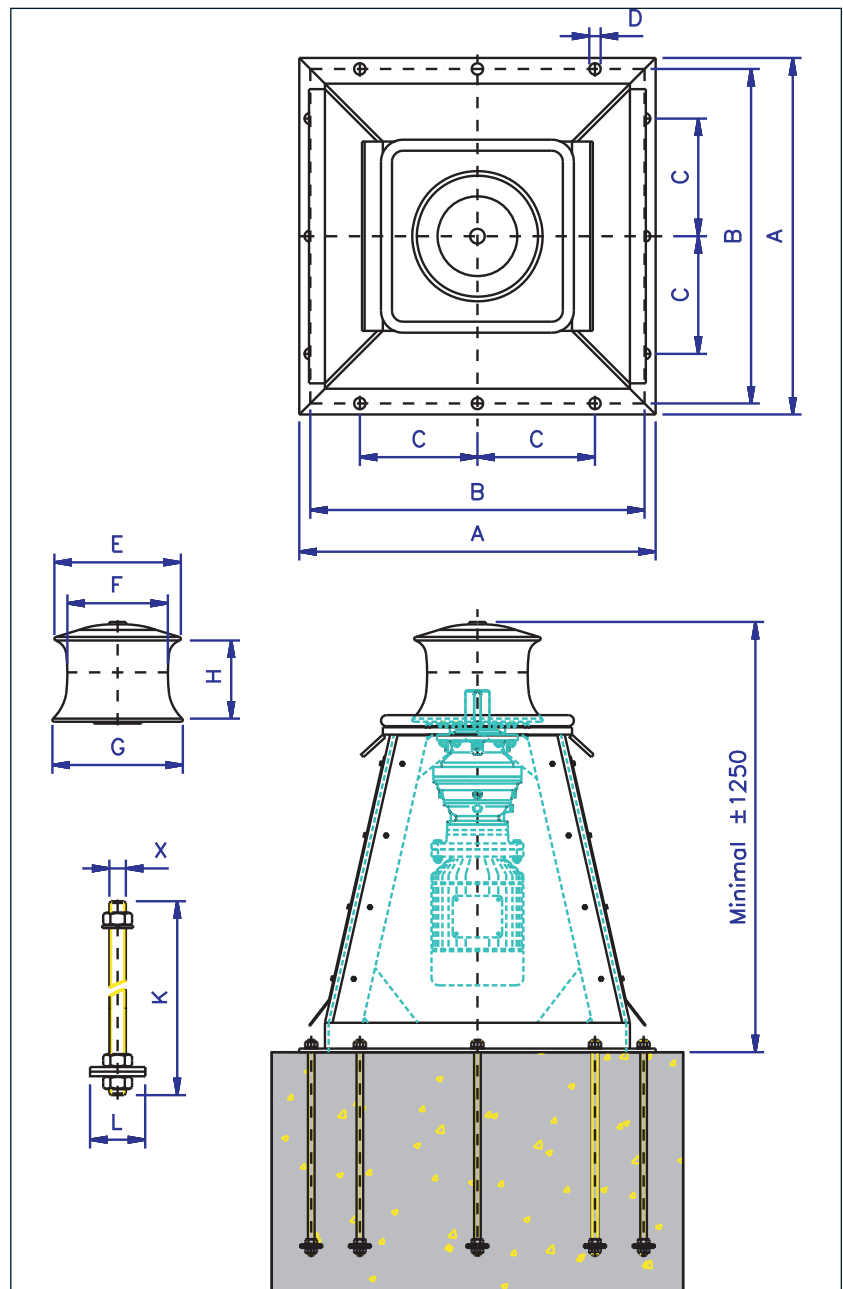
X	A
M48	600
M56	600
M64	600
M72	600
M80	600
M90	600

Above details for information only.

**Note:**  
Other types of holding down bolts  
are available on request.

**Explanation:**  
X = Size thread of holding down bolts  
according to ISO Standard DIN 13

## Free standing capstans



### Explanation:

X = Number and size of HD bolts

Motor Cap. = Motor capacity in kilowatt

Dimensions in millimeters

Motor Cap.	A	B	C	D	E	F	G	H	K	L	X
3 kW	970	910	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20
4 kW	970	910	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20
5,5 kW	970	910	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20
7,5 kW	1016	956	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20
11 Kw	1016	956	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20
15 kW	1016	956	320	Ø22	Ø330	Ø270	Ø335	220	600	Ø60	12xM20

Above details for information only

## Remote control systems

In addition to the standard manual release, the mooring hooks can optionally be equipped with a remote release system.

This enables the operator to release the hooks individually or simultaneously in case of an emergency from a distance, such as the jetty control room.

The remote control system is compatible with iMoor. The central control can be operated from multiple positions and by portable devices, like PDAs. Pushbuttons can be installed on the hook's local control panel for local operation as well. An indication whether the hook is open or closed can be transmitted to the remote control panel or displayed by the iMoor application software.

Available systems are:

- electric-electronic remote control
- electric-hydraulic remote control

*Other systems, such as electric-pneumatic remote control are on request; please contact our sales department for further details.*

### Electric-electronic remote control

The release mechanism of the mooring hook will be operated by an electric solenoid (magnet) mounted at the hook.



*Mooring hooks with electric solenoids (magnets)*

### Electric-hydraulic remote control

The release mechanism will be operated by a hydraulic cylinder mounted at the hook. Hydraulic pressure will be provided from a hydraulic power-pack mounted at the mooring unit.



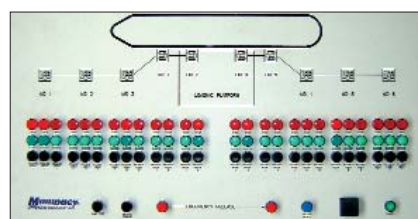
*Mooring hooks with hydraulic remote control*

## Remote control panel

The different possibilities for a remote control panel are several, please find below some examples.



*Remote control computer system*



*Remote control panel indoor*



*Remote control panel outdoor*



*Remote control PDA*



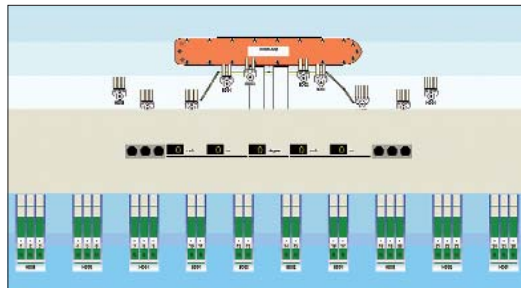
## Mooring load monitoring systems

When a ship is moored, the forces in the mooring lines can be measured by the mooring load monitoring (MLM) system. Overloads on the jetty or mooring lines are identified by this load monitoring system in an early stage, so prompt action can be taken. The loads are displayed in real time in tons and alarms can be set if the loads exceed the safe working load of the mooring line. Retrieval of MLM data from comparable situations can be used as guidance to estimate the required number of mooring lines.

The mooring load monitoring system is compatible with the components of Mampaey's iMoor. The iMoor application software can display for instance the loads together with the local conditions measured by the additional Mampaey environmental monitoring system. This information can also be accessed by portable devices, like PDAs and pagers. With iMoor's I/O module, the remote control signal uses the MLM cable, if present.



Mooring hook with load cell



Computer screen with load information



Tablet computer

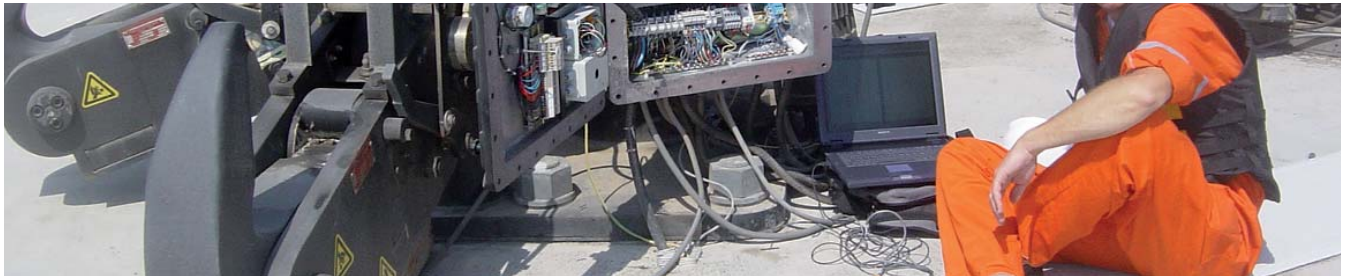


Explosion proof PDA

## iMoor is the combined solution of Mampaey's products

Since all iMoor components belong to the same product family, they are fully compatible. The compatibility provides flexibility in selecting iMoor components to form any desired configuration. The interaction of the system components makes iMoor more than the sum of parts.





## Special configurations

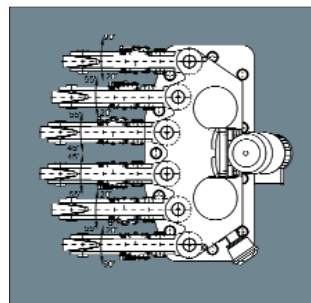
Besides the mooring hook units shown in the previous datasheets, Mampaey also supplies other configurations. Some examples:



*Quadruple hook unit back to back*



*Sextuple hook unit*



*Pulleys*

## Commissioning and training

Mampaey Offshore Industries also offers commissioning and training. After being installed and electrically connected equipment can be commissioned and started-up by a Mampaey engineer. Training for jetty and/or control room personnel can also be performed either at Mampaey's premises and/or at site.



## Engineering and testing

With more than 100 years experience, Mampaey has an unrivalled understanding of general and specific knowledge of mooring, towing and berthing. All required specializations are present in Mampaey's engineering team to design any system to client specific requirements. Our products are tested before delivery to the client to assure that the product complies with the classification and Mampaey standards.



## QUESTIONNAIRE : MAMPAEY QUICK RELEASE MOORING HOOKS

1. Project name / country ?
2. Number of mooring units / nominal - maximum load each unit ?
3. Number of hooks each mooring unit / nominal - maximum load each hook ?
4. Deck structure : Steel or concrete ?
5. Holding down bolts required : YES / NO  
If yes : New concrete / existing Concrete / steel deck ?
6. Maximum vertical hook angle from horizontal level ?
7. Standard coating acceptable : YES / NO  
One (1) layer epoxy zinc D.F.T. 40 mu. and one (1) layer epoxy (black)  
D.F.T. 200 mu., after shotblasting to SA 2.5.
8. Required delivery time for :
  - a) Holding down bolts ( If required ) ?
  - b) Main materials ?
9. Area classification ?
  - a) Hazardous zone 1 or 2 area ( CENELEC ) [ equivalent to class 1 Div 1 or 2 ( NEC ) ]
  - b) Non-hazardous areas ( Non-classified ).
10. Integral capstan required : YES / NO
  - a) Required line-speed ? : 15 / 20 / 25 / 30 / ..... meters / minute
  - b) Required nominal ( = running ) pull ? : 10 / 15 / 20 / ..... kN  
[ Note : Starting pull = 2 times nominal pull ]
  - c) Available main power : 380 / 400 / 415 / 440 / 460 / 480 V - 50 / 60 Hz
  - d) Braking System Required : YES / NO
    - d1) Mechanical braking device [ backstop bearing ] ( Not for reverse operation )
    - d2) Electrical braking device ( brake motor ) [ Suitable for reverse operation ]
  - e) Local motor-starter at each mooring unit required : YES / NO
    - e1) Non-reversible type starter [ for combination with mechanical or electrical brake
    - e2) Reversible type starter ( for combination with electric brake only )
  - f) Any additional features for the capstans ?
11. Remote control system required : YES / NO
  - a) Electric-electronic remote control or electric hydraulic remote control
  - b) Are sensors ( proximity switches ) required : YES / NO
  - c) Are local electric release push-buttons required : YES / NO
12. Mooring load monitoring system required : YES / NO
13. Berthing approach system required : YES / NO
14. Pressurized control room or indoor non-hazardous area available : YES / NO
15. Any further specific project requirements(s) ?

*If you require a proposal please fill in your requirements in this questionnaire and send it to us by e-mail or fax.  
On [www.mampaey.com](http://www.mampaey.com) via Inquiry you can fill in the Questionnaire Mooring Hooks" and mail it to us.*



## Other Mampaey products

### Berthing approach system

Good judgement of low speeds during the final approach of a vessel is crucial for the safety of the operation, but can be difficult to make. The Berthing Approach System (BAS) uses lasers to measure the speed of approach, angle and distance between vessel and jetty up to 300 meters. The real-time information assists pilots and crew in making an accurate judgement that makes the berthing operation safer.



### Quick release towing hooks

Mampaey is more than 100 years a supplier of towing hooks and has achieved market leadership in this field. Two types of hooks are available to serve all customer needs, the "Harbour type" and "Disc type" towing hook. Both towing hooks have the "Quick Release" mechanism that can easily disconnect the towline at all times under full load to guarantee the safety of tug and towage in dangerous situations. The hook can be released from the wheelhouse by pulling the release wire or optionally by pushing a button.



### Offshore hooks FSO/FPSO

Mampaey quick release offshore hooks are designed for safe mooring of shuttle tankers to FSO, FPSO or FSRU tankers. The Offshore hooks are used for tandem or side-by-side mooring. In case of an emergency the shuttle tanker can be disconnected, by releasing the offshore hook locally and/or remotely.

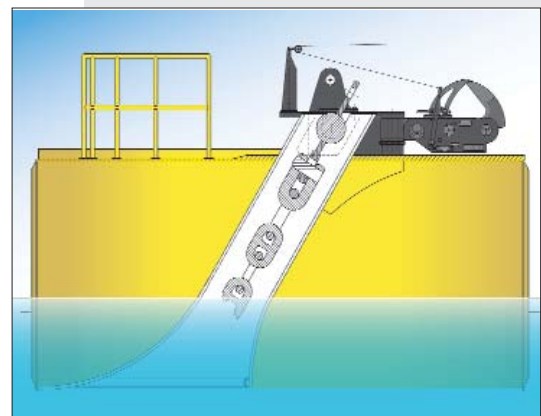
The range of the Offshore hooks is 150 up to 600 tons S.W.L.



### Mooring buoys

Mampaey mooring buoys are in use to moor vessels during loading and unloading operations or at "waiting areas". Mampaey mooring buoys are robust steel buoys which makes mooring safe, even in the severest conditions.

The buoys are specially designed by Mampaey to be integrated with the Mooring hooks. By connecting the anchor chain to the mooring unit directly, a very stable and sturdy buoy is realized. The stability of the Mampaey mooring buoy guarantees a safer operation with a maximum of operational space.



## Mampaey innovation:

The new Mampaey **Dynamic Oval Towing (DOT) system** is a 360 degree allround towing system. The DOT-system integrates the towing points for sailing ahead and astern into one system. The system adds safety, controllability and, above all, flexibility to the performance of tugs enabling them to rotate in all directions in a safe and controlled manner irrespective of the heading of the assisted vessel. In exposed conditions this capability will always allow the tug to meet waves safely with bow forward. In confined spaces assisting vessels is much safer because with the 360° allround towing system the tugs' full power is available in any direction.



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