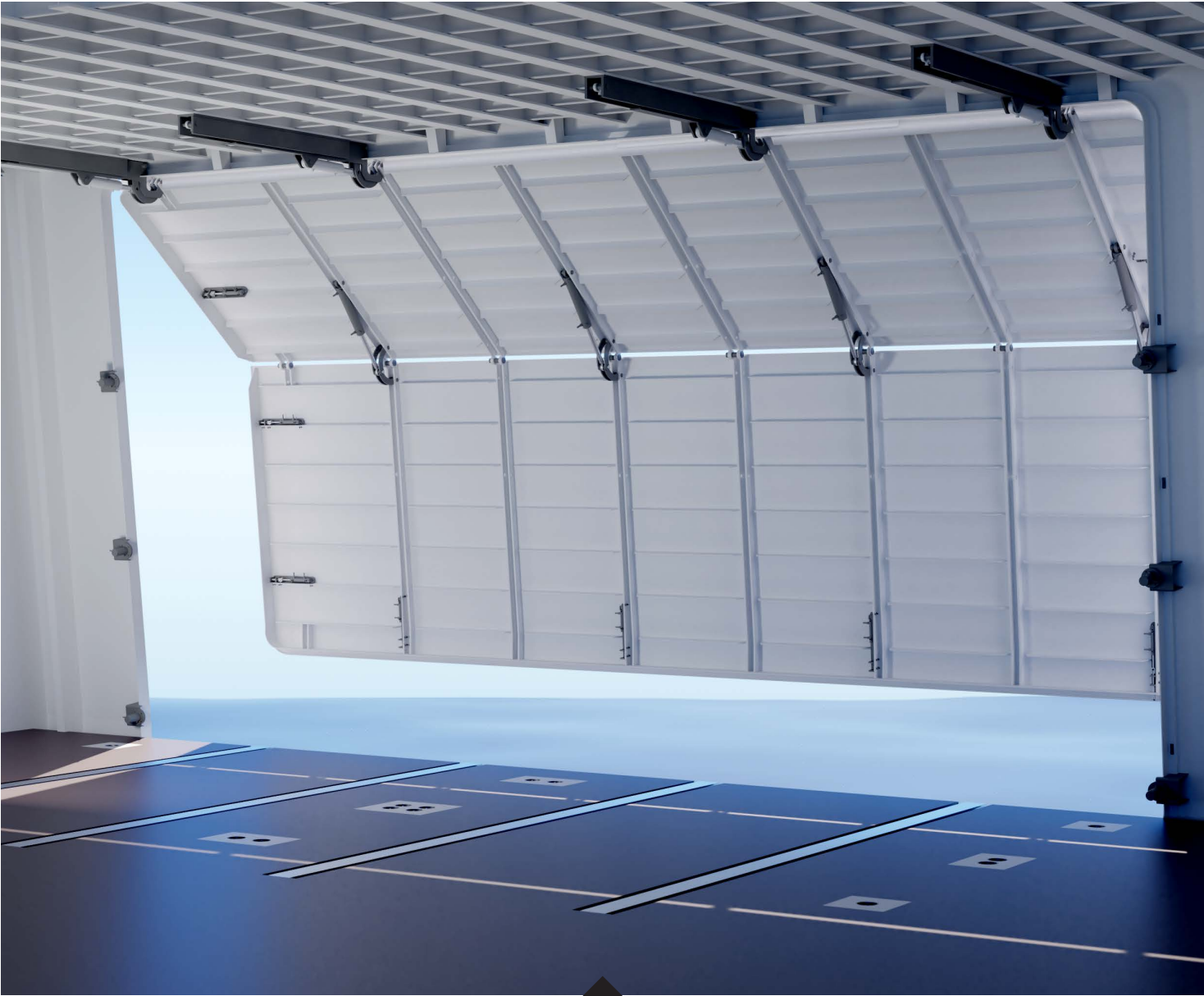




Custom-made Equipment

For Coast guard, SAR and Navy vessels



Mission Bay door

Retractable gull-wing type mission bay door designed for all weather conditions.

Reliability and speed are key

High reliability, maximum clear opening and opening/ closing speed are essential features when designing mission bay doors for multipurpose naval vessels. In the design of this gull-wing type mission bay door, the SH Defence engineering team has applied its many years of experience designing for naval vessels.

Even though this high-quality mission bay door would be the perfect solution for any naval vessel, it has been optimised for the Cube™ Multi-Mission Module concept invented by SH Defence to enable flexible and cost-efficient vessel conversion.

The Cube™ consists of modular equipment that fits the footprint of 20’ and 40’ containers, enabling reconfiguration of vessels in less than 4 hours. All you need to do is unload the Cube™ modules that are no longer required and load the modules that support the vessel’s next mission.

The mission bay door is available in two versions: one for 20’ mission bays and one for 40’ mission bays.

Easy access and deployment

The gull-wing design of the mission bay door ensures maximum loading clearance, enabling easy access to and deployment of Cubes™ and equipment stored in the mission bay. When closed, the door is 100% flush with the hull for minimum radar reflection.

The door is hydraulically operated and provided with weather protecting seals. Opening and closing times are approximately 1 minute.

Prepared for operation in cold temperatures

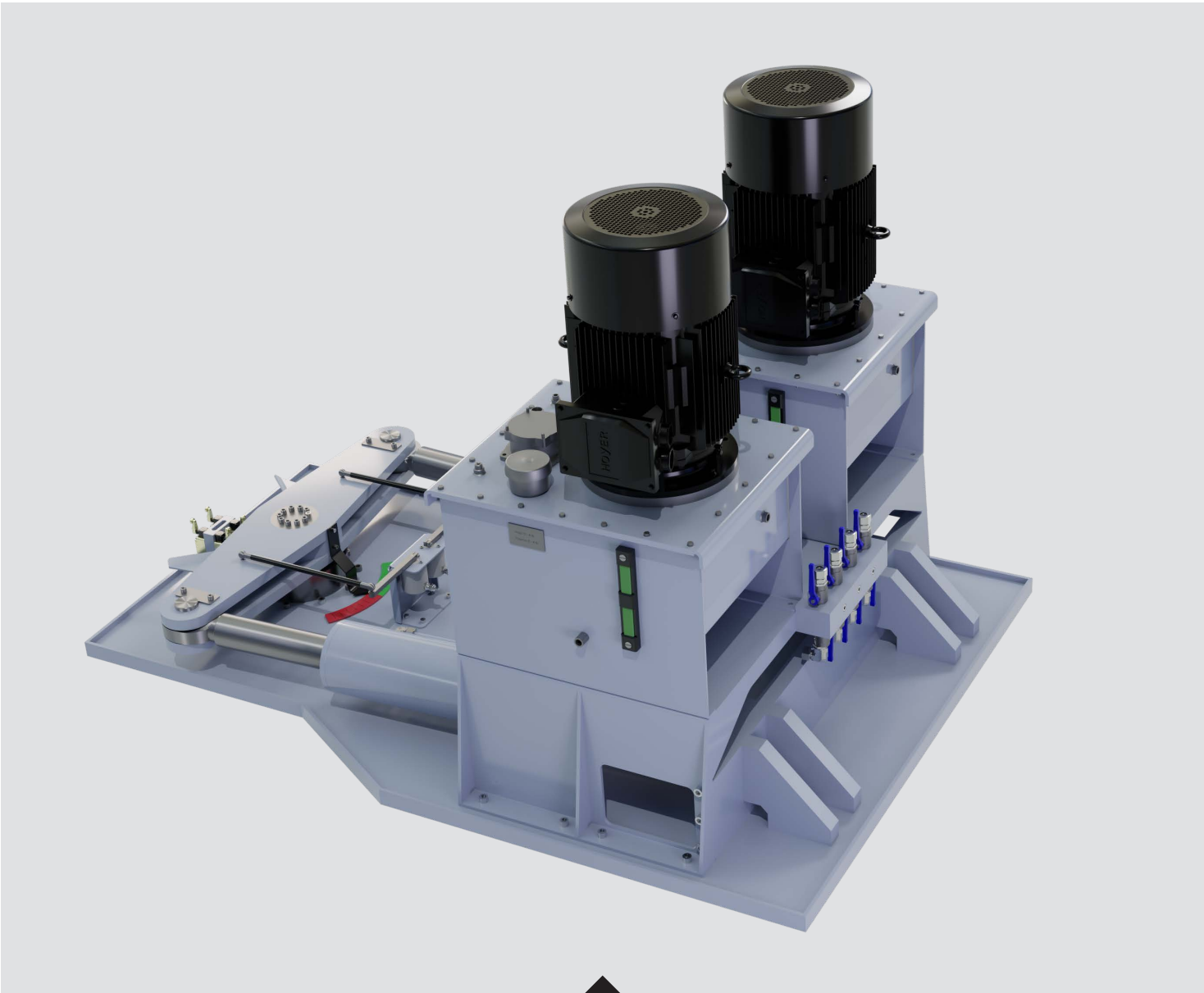
The door is locked using hydraulic cleats/batten system. To ensure safe and reliable operation of the door even in sub-zero temperatures, it is fitted with four ice breaker units in the form of push-out cylinders on the inside of the door.

Control

The fully integrated control system is provided with a failsafe logic controller with manual override capability.

Hydraulic power unit (HPU) for operation of the mission bay door can be supplied as an option.

Description	Value
Clear opening when 20’ door is open (H x W)	6100 mm x 6510 mm
Clear opening when 40’ door is open (H x W)	6100 mm x 12640 mm
Side door locking system	Hydraulic cleats/batten system
Seal type	Weather protecting
Gate retraction rail system	Hydraulic
Gate opening mechanism	Hydraulic cylinders
Feedback	Electrical end stop switch – all cylinders
Display	Control panel with push buttons and control lamps
Security/safety	Failsafe logic control system with manual override capability
Opening/closing cycle speed	1 min.
Ice breakers	Push-out cylinders in door bottom and side edges



Steering gear

Design and production of steering gears since 1974.

More than 40 years of experience

SH Defence is part of SH Group, which was established in 1974, representing four decades of experience delivering turnkey equipment and service solutions to various navies. Our extensive knowledge about hydraulics and the proven reliability of our systems make SH Defence the natural first choice for customers requesting standard and customised solutions for marine applications.

Our experienced engineering department is always ready to provide you with the most optimum solution based on your needs and technical specifications.

Durable and cost-effective

Steering gear failure during ship manoeuvring in harsh weather and strong currents can lead to extensive and costly damage to hull and port facilities. That is why the reliability and durability of steering gear are essential. SH Defence manufactures reliable and robust steering gears that require minimum maintenance to provide long-term operation at minimum cost.

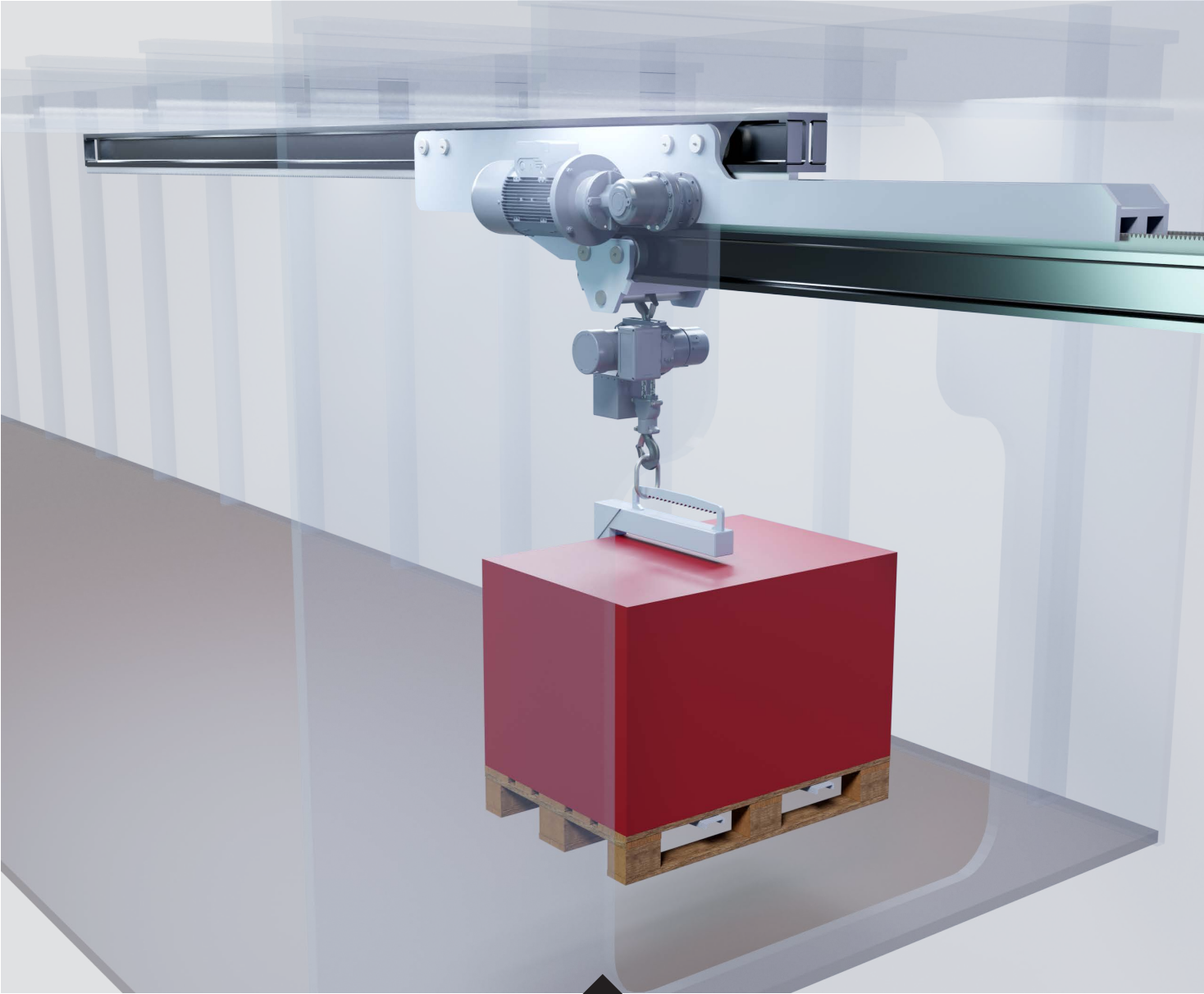
Ensuring the manoeuvring capability of especially navy vessels can be of utmost importance, for example, in connection with oil recovery operations, humanitarian assistance and ship-to-ship operations. Our steering gear is a hydraulic double-piston type steering gear with a

standard rudder angle range between 40° and -40°. The steering gear is powered by a fully redundant internal HPU system for optimum reliability.

Designed to the highest standards

Delivered with class approval and compliance to SOLAS and Marine Equipment Directive.

Description	Value
Nominal torque	27 kNM
Total rudder angle	40° to -40°
Rudder speed from 30° to 35°	Max 28 sec.
Working pressure	100 bar
HPU	2 x 22 kW - 100 L
Weight (dry)	2080 kg
Dimensions (H x L x W)	1690 mm x 2500 mm x 1700 mm



Telescopic Jib Crane
SWL 2MT

High-end telescopic jib crane solution for cargo handling.

Compact, yet powerful crane for cargo handling

Being able to load and unload cargo and provisions without harbour crane dependency is important for any vessel with quick turnaround times. With the Telescopic Jib Crane from SH Defence you get a high-end, compact cargo crane solution with lifting fork designed to handle standard Euro pallets with a safe working load (SWL) of 2 MT.

Fully motorised, no manual handling

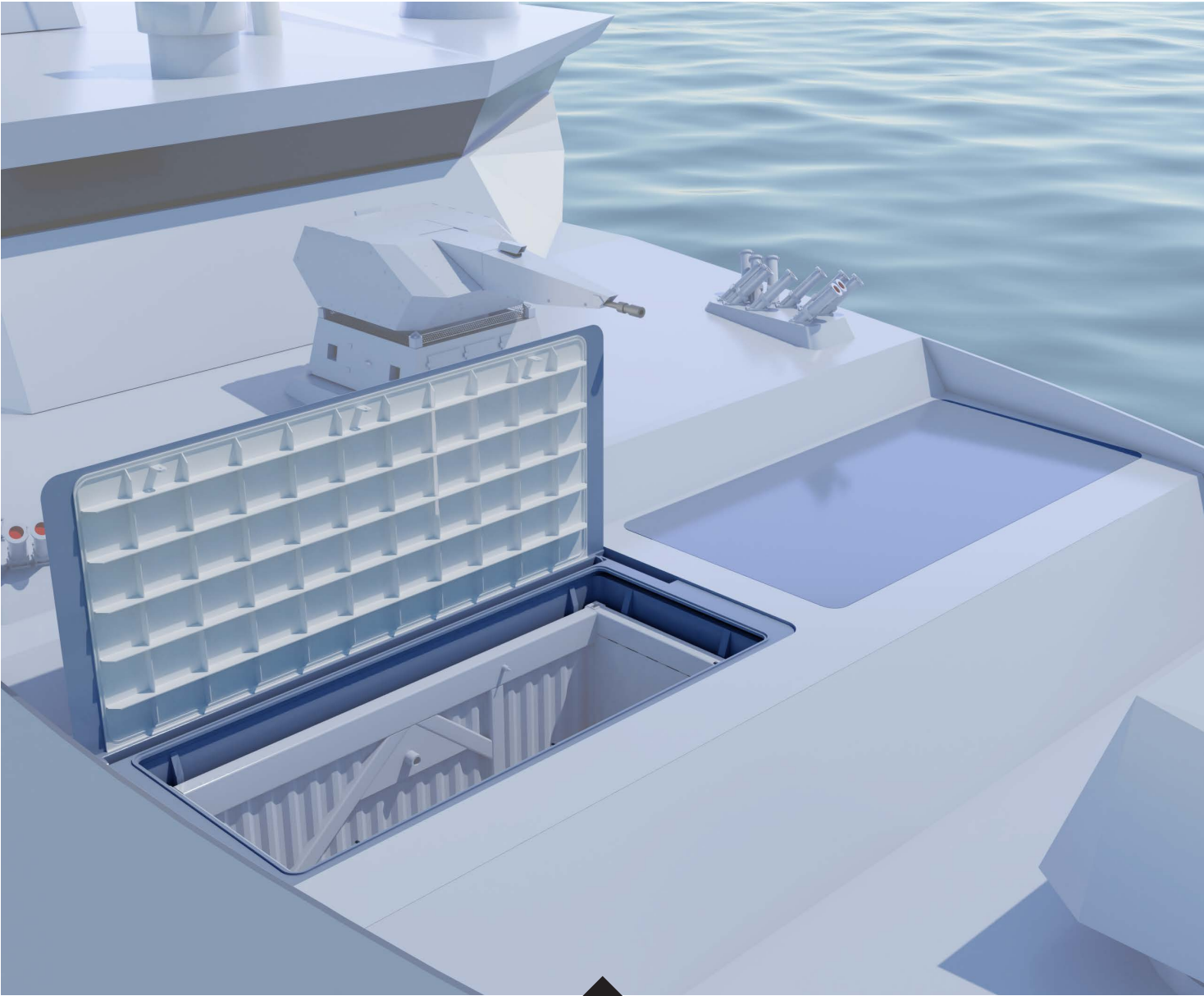
The height-optimised design of the Telescopic Jib Crane makes it perfect for spaces with limited ceiling height, and the compact design with two displaced rack and pinion drives enables it to shift cargo in rooms with limited floor space.

The Telescopic Jib Crane can be parked in three positions for cargo loading, onboard shifting of cargo and hoisting through deck openings. The crane is provided with an electric motor with failsafe brake and an electric hoist with 10 m chain.

Safe and reliable design

The design of the Telescopic Jib Crane complies with DNV GL ST-377 for shipboard lifting appliances and the ILO code of practice on safety and health in dock work.

Description	Value
Height excl. hoist	654 mm
Width in parked position	5750 mm
Max. outreach over vessel side	3700 mm
SWL	2 MT
Hoist chain length	10 m
Weight	2.2 MT
Dynamic safety factor	1.5
Crane motor type	Electric with failsafe brake
Carriage driving type	Rack and pinion



Deck hatch cover

Hydraulically operated deck hatch cover,
configurable for warfare.

Reliable and strong protection of equipment

Equipment stored in mission bays directly below deck is often of mission-critical nature, making demands on the hatch cover to protect the valuable equipment underneath while being fast-acting to allow for fast and safe access to and deployment of the equipment.

SH Defence has applied its vast experience in designing and manufacturing hatches and side doors for naval applications in the design of this hydraulically operated deck hatch cover, which is perfect for any naval vessel regardless of its mission.

Complete system, ready to go

The hatch cover system is supplied complete with coaming, hatch, control panel and HPU. The hatch cover is embedded in the vessel's weather or poop deck, providing a flush surface on deck and weatherproof sealing to prevent water ingress.

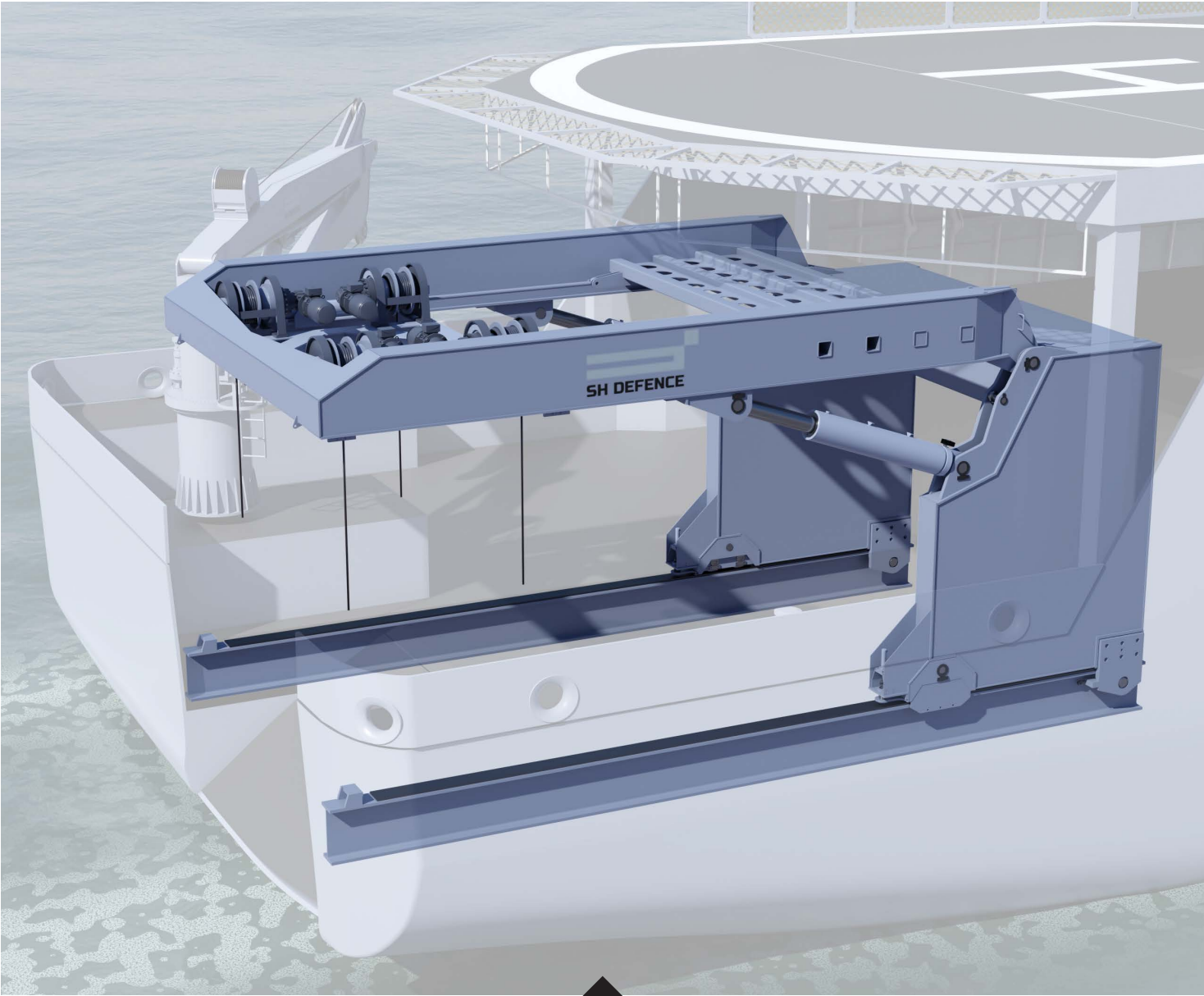
The hatch cover is locked by means of battens. Hatch cover, hinges and HPU are ready for class approval.

Configurable for warfare

If the hatch cover is of tactical importance, it can be delivered in a redundant warfare-ready setup with redundant valves, control system, HPU and actuator and a hydraulic outlet to the missile container from the HPU.

If fast opening is required, the hatch cover can also be configured for specified opening/closing speeds, and it is possible to establish radio remote control or an interface to the combat management system (CMS).

Description	Value
Dimensions (L x W)	7062 x 2872
Weight	2 MT (Approx)
Material	Structural steel S355
Recess depth min.	630 Min
Clear opening	6300 x 2640



Heavy Loader

Stern-mounted A-frame for heavy-duty lifting, launch and recovery operations.

Loading and unloading of equipment

Modern navy vessels must be capable of carrying out different missions in peacetime and in wartime. Many missions require loading/unloading as well as launch and recovery operations of heavy equipment such as vehicles, crafts and other mission equipment.

Flexible plug-and-play solution

SH Defence has developed this stern-mounted A-frame with a design that requires limited deck space only. It can be installed on an open or a sheltered deck, and is a flexible solution for loading/unloading and launch and recovery operations over the stern.

The loader is placed on rails, allowing it to travel horizontally over the stern of the vessel. The hoist system is installed on a movable trolley placed between the lifting beams. These features provide great reach in a reasonably compact structure.

The loader comes with an integrated HPU, so the only connection needed for this system to be fully operational is electric power supply from the vessel.

Reliable and safe operation

When working with heavy equipment, safety is of the utmost importance. Therefore, the loader is provided with locks to secure its position during launch operations and when it is in the stowed position.

The hoist is also provided with failsafe brakes in case of power failure.

The three certified hang-off points for overboarding sheave enable towing or lifting operations using an external winch system.

Local and remote control is included, and a remotely operated release system could be added as an option.

Designed to the highest standards

The Heavy Loader from SH Defence is designed according to DNV GL ST-0378 Offshore and platform lifting appliances and complies with the SOLAS Convention.

Description	Value
Dimensions (H x L x W)	6230 mm x 12000* mm x 6480** mm *Parked **Outside width
Weight	55 MT
Free height (height under cross beam)	4230 mm
Free width	5530 mm
SWL	30 MT (4 x 0.75 MT)

EQUIPMENT SOLUTIONS

SH Defence master engineering, steel, hydraulics and automation. We combine these into reliable, secure and easy to operate machines and systems solving tasks above and below the waterline.



- 1

Stern door
- 2

Hydraulic boat slipway/cradle
Launching and retrieval of RIBs and fast attack boats.
- 3

Rescue boats/Fast attack boats
- 4

Winches
Winches for ROV, AUV or research equipment handling. Heavy work winches for handling of large modules, tools, trenchers, or fast attack vessels e.g.
- 5

Steering gear and controls
- 6

Hydraulic Lifting decks
All kinds of side, stern, aft or deck ramps. Elevators for cargo or aircrafts.
- 7

Cranes
Marine and Cargo Cranes up to 120T as: Fixed, Knuckle or Telescopic Jibs.
- 8

Side doors/Hatches
Hanger doors designed to be light in construction, compact in size with maximum durability.
- 9

Davits
The Boat-In-A-Box™ davit system is installed with either hydraulically controlled davit arms or as a fixed installation. The modular concept means easy installation and easy maintenance.
- 10

Rescue boats/Fast attack boats
High Speed Rigid Inflatable Boats (RIBs), patrol boats, interceptors, workboats for all kind of Naval Operations.

- 11

Launch and recovery system for ROV/AUV/Drones
Deck mounted and ceiling mounted A-Frames for all purposes with dipping and non-dipping functionality.

Extensive outreach for work class ROVs, wide-angle A-Frames to improve performance for launching large subsea tools and AUVs.
- 12

Hydraulic power units
Design of hydraulic power units and systems to power, control or regulate any machinery or solving any function
- 13

Deck equipment - Winches
Powerful hydraulic or electrical winches for anchoring or mooring functions
- 14

Deck equipment - Capstans
Anchor, mooring, and towing winches as electric or hydraulic drive systems.
- 15

Gangways
Ship to Ship (STS) motion compensated gangway solutions for personnel or cargo handling.

Stern doors and Slipway

Launching and retrieval of RIBs and fast attack boats. SH Defence will provide cradle, roller guides, hydraulics, and control systems.



Hydraulic power units

We design and build hydraulic power units and systems from the ground up (also in stainless steel) to power, control, or regulate any machinery or solving any function on request. Our engineering department will Shock test all components on the delivered equipment to simulate explosive charges in the water near a warship.

Control cabinets

SH Defence design and manufacture control cabinets for naval control and automation applications. Tailor-made one-off projects or serial production to OEM clients. Engineering, documentation, software and assembly of cabinets at our in-house workshop.



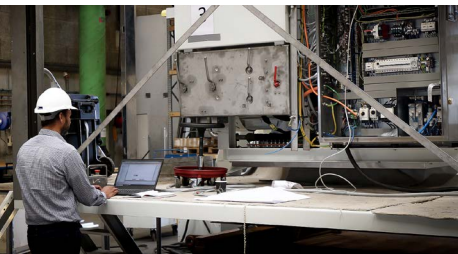
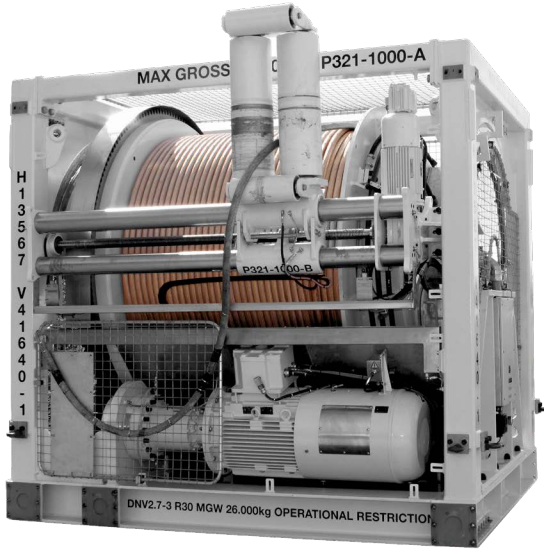
Winches

Rugged and reliable winches for extreme purposes
With the highest quality in mind – From the inside and out SH Defence delivers state of the art winches being **reliable, secure, and easy to operate** in any weather, even the harshest conditions at sea.

With more than 20 years of experience and an excellent track record, SH Defence supplies winches for all types of requirements.

Winches for **ROV, AUV or research equipment** handling. Heavy work winches for handling of large modules, **tools, trenchers, or fast attack vessels** e.g.

Our winches are available in two main types. One is suitable for front spooling, and the other for right angle level wind spooling, allowing the winch to fit in a small hangar or a narrow space.



Automation

Design and manufacturing of control cabinets for naval control and automation applications. Tailor-made one-off projects or serial production to OEM clients. Engineering, documentation, software and assembly of cabinets at our in-house workshop.



Valve capabilities

Sale, service and repair of valves, actuators, control panels and ancillary equipment. Installation and commissioning of new valves. SH Defence works with OEM's of the industry and provides original parts or in-house design and manufacturing.

Cranes

Whatever the configuration our cranes can be modified to do the job. SH Defence delivers Marine and Cargo Cranes up to 120T as: **Fixed, Knuckle or Telescopic Jibs.**

Cranes can be designed to be extremely low in maintenance due to the choice of materials and special anti-corrosive surface coatings.



SH Defence

Design and production of custom-made equipment
for Coast guard, SAR and Navy vessels



Member of
NavalTeamDenmark™



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