

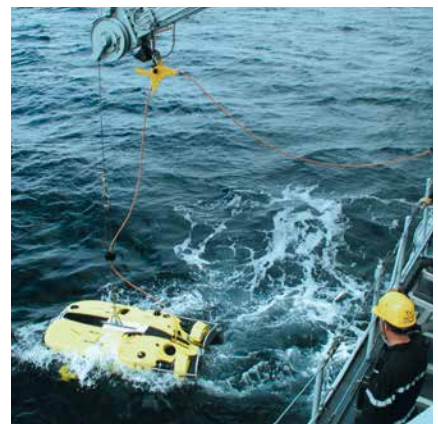
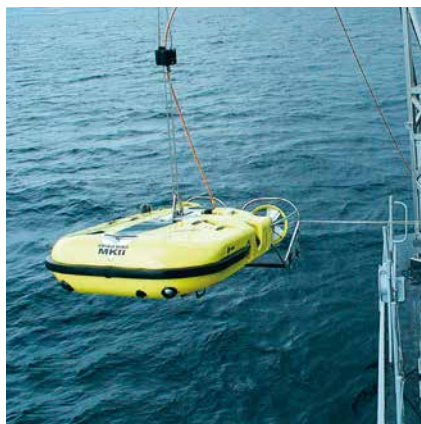
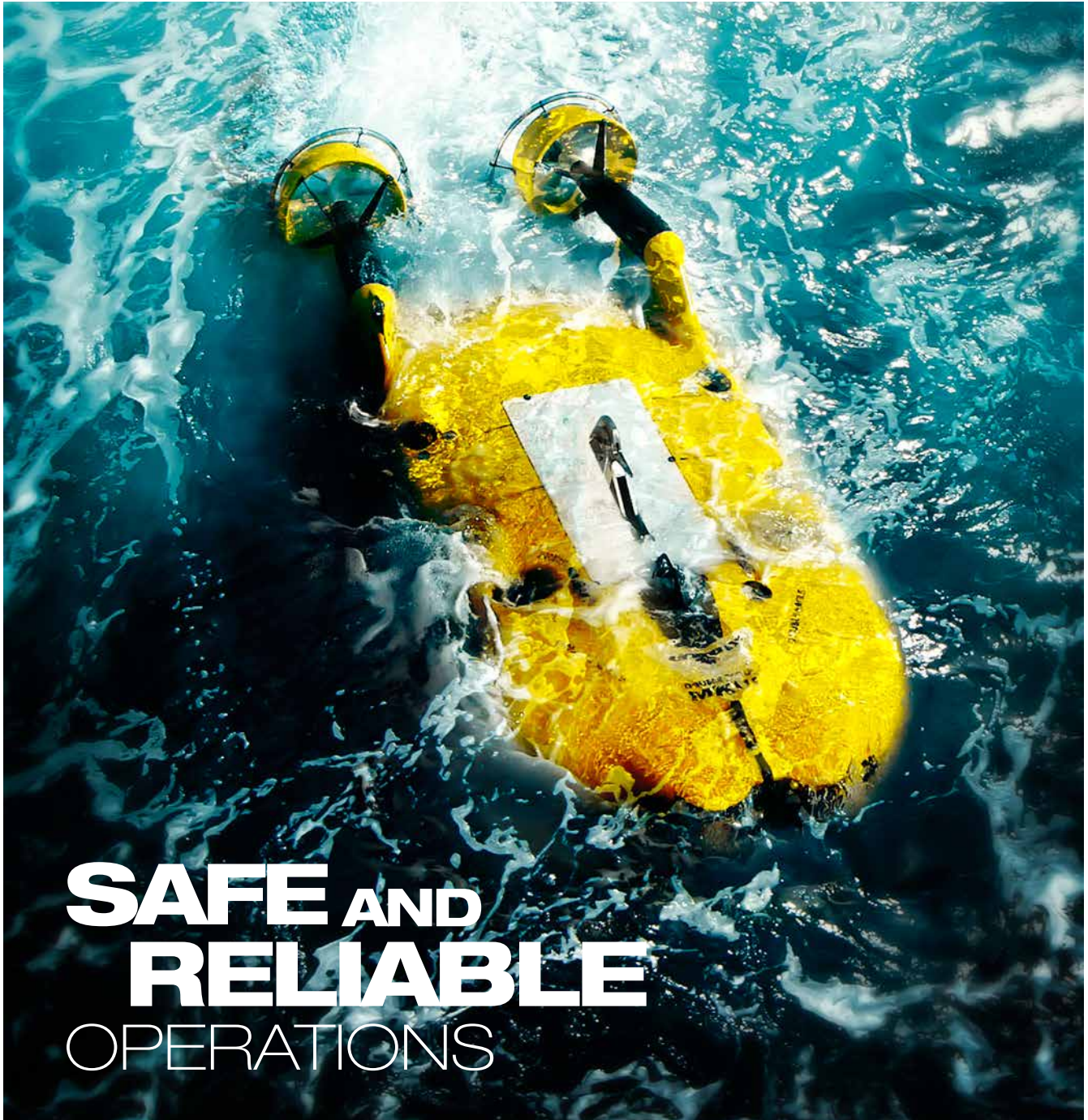


**SAAB**

**DOUBLE EAGLE  
MKII MDS**  
MINE DISPOSAL VEHICLE









# HIGH PRECISION DISPOSAL

Effective detection, classification and identification of a mine threat is crucial to gaining complete situational awareness during underwater operations. An undetected mine remains a danger to forces, so they need sophisticated equipment capable of identifying threats. As a global leader in maritime technology, Saab produces innovative, effective and reliable underwater vehicles.

Saab's Double Eagle MkII Mine Disposal System (Double Eagle MDS) provides a perfect example of Saab's **thinking edge** in action.

Modern mine identification and disposal demands a multifunctional vehicle capable of handling harsh environments with high currents and turbid waters. The top choice for many navies around the world when it comes to mine countermeasures (MCM), the Double Eagle MDS is remotely operated, extending forces' capabilities and helping them stay ahead. The system removes the need for personnel in the water, enabling safer, faster and more efficient MCM operations.

The system can be packed into a standard container meaning it can be easily lifted from ship to ship, or be transported by road or air. This efficient stowage capability means that the Double Eagle MDS can quickly go where it is needed.

When ready to use, the system can be launched from any type of ship, from the shore, or from a craft of opportunity (COOP).

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## OPERATIONAL CONCEPT

When an object has been detected and classified as a Mine-Like Object (MLO) by a ship's mine hunting system, e.g. a hull-mounted sonar, Propelled Variable Depth Sonar (PVDS) or offboard system, the Double Eagle MDS is launched under full control of an onboard operator. The vehicle can then be manually piloted or steered by the autopilot to the vicinity of the MLO. The relocation sonar on

the vehicle assists the pilot during this process. When the vehicle is close to the MLO, the pilot manoeuvres it to a position where a positive identification can be made.

Once the target has been confirmed as a mine, the Double Eagle MDS is moved into the optimal position to release the mine disposal charge of choice. Several

weapon alternatives are available. When the vehicle has returned to the ship and has been recovered, the charge is remotely detonated and the mine is exploded.

When not used for mine disposal operations, the system can be reconfigured with manipulator arms or other tools for general purpose underwater work.



**BRUSHLESS MOTORS**

The thrusters emit very low electric, magnetic and hydroacoustic noise



**MINE RELOCATION SONAR**

The multibeam sonar is used to relocate detected objects



**NAVIGATION**

USBL, MEMS, DVL and speed log for navigation



# DETECT EVERY THREAT

## SYSTEM OVERVIEW

The robust Double Eagle MDS has a modular design, offering high levels of flexibility and short turnaround times for MCM operations. The hydro-dynamically stable, highly reliable system boasts exceptional performance and low lifecycle costs, making it an ideal, effective choice for operators.

The Double Eagle MDS comes with all the controls required to manoeuvre the vehicle, including an Operator Control Board (OCB), a Portable Operator Control Board (POCB) and software that is ready to run on any general purpose or dedicated vehicle console. The heart of the control system is the Surface Control Unit

(SCU) which runs the autopilot and interfaces with all other ship systems. The vehicle is connected to the ship via a tether. As well as providing vehicle power and control signals, the tether continuously sends real-time sonar data to the operator on board the ship.

The Automatic Tension Control (ATC) winch and tether allow the system to be operated without risk of the tether entangling with other underwater ship systems. They also provide additional stability to the vehicle when decoupling the ship's movements from the vehicle.

The Double Eagle MDS has a Power Converter Unit (PCU) which converts the ship's power to vehicle power. The PCU also includes insulation monitoring with a circuit breaker for added safety. The system features a cradle or trolley for vehicle stowage and a Launch and Recovery System (LARS) for the vehicle. These tools are used in conjunction with a sea crane on board the ship, enabling safe, easy launch and recovery of the vehicle.

The relocation sonar is carried in the bow of the vehicle together with a camera on a tilt table, which allows the sonar and camera to be angled downwards for optimal identification performance.

## SYSTEM SPECIFICATIONS

<b>LENGTH</b>	2.2 m	<b>NAVIGATION SENSORS</b>	Ultra Short Base Line (USBL), Microelectromechanical Systems (MEMS), Doppler Velocity Log (DVL) and speed log	<b>COMMUNICATION</b>	Fibre optic – Gigabit, Ethernet
<b>WIDTH</b>	1.3 m			<b>SONAR ALTERNATIVES</b>	Multibeam forward looking relocation sonar mounted on tilt table
<b>HEIGHT</b>	0.5 m				Other types of sonar available on request
<b>WEIGHT IN AIR</b>	360 kg				
<b>WEIGHT IN WATER</b>	Adjustable, slightly buoyant		<b>Optional:</b> Inertial Navigation System (INS) and GPS		
<b>SPEED</b>	0–6 knots	<b>CAMERA</b>	Colour camera on tilt table Other types of camera available on request		
<b>OPERATIONAL DEPTH</b>	500 m	<b>TETHER</b>	1,000 m, 11 mm power and fibre optic		
<b>PAYLOAD</b>	250 kg	<b>POWER SUPPLY</b>	Via the tether		
<b>VEHICLE CONTROL</b>	6 Degrees of Freedom, auto depth, auto heading, auto altitude, waypoint steering and autopilot				



**SAAB**

SAAB DEVELOPS **HIGH TECHNOLOGY**  
UNDERWATER SYSTEMS THAT ENABLE  
ARMED FORCES TO ENHANCE THEIR  
**SITUATIONAL AWARENESS**, EXTEND  
THEIR **OPERATIONAL CAPABILITIES**  
AND RESPOND TO **ANY THREAT** – EVEN  
IN THE **HARSHEST ENVIRONMENTS**.

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