SAAB

RELIABLE AND DEDICATED

MCMV 47 AND MCMV 52

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MCMV: AN INTRODUCTION

The naval mine has proved a useful and cost-effective weapon since it was developed in the 19th century. Representing a significant threat to even the most sophisticated warships, the naval mine has gradually evolved and incorporates a range of smart detonators.

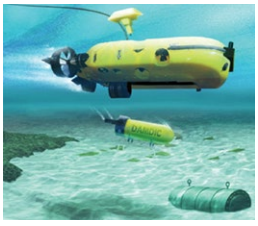
A wide variety of mine types are deployed today, and many of these are highly advanced. This has led to new demands for revolutionary and enhanced Mine Countermeasures (MCM) systems. Saab is ready to help navies face the future with confidence.

Saab is a world leader in naval systems. We have built up a proven history of delivering platforms as well as integrated systems and sub-systems for the entire maritime domain. Our ***thinking edge*** enables us to break new ground and develop technically advanced, independent solutions to meet today's challenges.

EFFICIENT MCM VESSELS

Saab Kockums has decades of experience in Mine Countermeasures Vessels (MCMVs) and associated systems. The MCMV 47 of the Swedish Landsort and Koster class, as well as the Singaporean Bedok class, are well-proven around the world. The MCMV 47 is made of composite/glass fibre reinforced plastic (GRP) sandwich material, which has many benefits to offer, including that it is entirely non-magnetic.

The MCMV 47 is equipped for mine hunting and mechanical minesweeping, and can operate the remotely controlled, autonomous Self-propelled Acoustic-Magnetic (SAM) minesweeping system. The MCMV 47 is a versatile vessel that from the outset has been designed for easy adaptation to meet the varying demands of different customers.



THE GRP SANDWICH CONCEPT

The entire hull and deck house structure on the MCMV 47 is made of glass fibre reinforced plastic (GRP). It uses a special sandwich lay-up method developed through close cooperation between the Swedish Defence Materiel Administration (FMV) and Saab.

The composite material has a core consisting of rigid foam between two layers of glass fibre laminate. It has a lower mass than a single skin hull, is easier to manufacture than other materials, and the resulting structure provides outstanding properties for MCMVs.

Some of these properties are:

- Low weight
- Low magnetic signature
- Low acoustic signature (insulation)
- Low infrared signature (insulation)
- Low electric (UEP/ELFE) signatures
- Low pressure signature
- High shock resistance
- Good fire resistance

The material is both non-corroding and non-degrading. It is also easy to repair and requires minimal maintenance, needing only the basics such as cleaning and painting. This improves the lifecycle maintenance cost, increases the hull's life expectancy, and reduces the total lifecycle cost (LCC). This has been confirmed by extensive material tests and over 40 years of ship service.

MCMV 47
LANDSORT, BEDOK AND KOSTER CLASS

The role of the Swedish Koster class is primarily mine hunting. Its secondary role is minesweeping, where it can act as a command and control platform for unmanned influence sweep drones, such as the SAM, or by towing a mechanical sweep after the vessel.

Unlike single-role mine hunters, the MCMV 47 Koster class (originally the Landsort class) was conceived as a multi-purpose vessel, able to perform various mine warfare tasks and also to engage in anti-submarine warfare (ASW).

The Koster class design is well-proven and extensively verified, with operational experience gained from a multitude of MCM operations, including live mines and underwater explosives.

Seven ships of this class have been delivered to the Royal Swedish Navy, and a further four to the Republic of Singapore Navy.

IN EVERY DETAIL

Due to the wide variety of mine warfare missions, many specific requirements have been taken into account in the design of the MCMV 47 Koster class.

Some of these requirements are:

- High resistance to underwater explosion shocks
- Low signatures
- Excellent manoeuvrability
- Full nuclear, biological and chemical (NBC) protection
- Electromagnetic compatibility (EMC)
- Spacious accommodation and ample supplies for extended missions

MINE COUNTERMEASURES

The MCMV 47 Koster class is permanently equipped for mine hunting and minesweeping. The vessel is a powerful MCM combat system that supports both operating modes. Four different types of underwater vehicles are used to detect, identify, classify and neutralise any type of mine.

For minesweeping, the Koster class is equipped with a mechanical sweep and serves as a command and control platform for unmanned minesweeping drones. This includes the SAM system, which is used to sweep against magnetic, acoustic and electric mines.

Depending on the customer's requirements, the system comprises of:

- MCM command and control system
- Mine hunting sonar systems, such as Hull Mounted Sonar (HMS) and Propelled Variable Depth Sonar (PVDS), also known as Remotely Operated Vehicle Sonar (ROV-S)
- Underwater positioning system
- Mine disposal systems including Mine Disposal Vehicles (MDV)
- Mechanical minesweep
- Provisions for remote control of SAM influence minesweeping system
- Hyperbaric chamber and provisions for mine clearance divers
- Navigation systems
- Communication system

TECHNICAL SPECIFICATIONS

MCMV 47	
LENGTH OVERALL	47.5 m
BEAM	9.6 m
DRAUGHT	2.3 m
DISPLACEMENT	400 tonnes
SPEED	15 knots
HULL	GRP sandwich
MAIN ENGINES	Four 300 kW diesels
PROPELLERS	Two Voith cycloid propellers
ARMAMENT	40 mm gun
COMPLEMENT	29

TECHNICAL SPECIFICATIONS

MCMV 52	
LENGTH OVERALL	52.5 m
BEAM	10.2 m
DRAUGHT	2.4 m
DISPLACEMENT	550 tonnes
SPEED	>14 knots
HULL	GRP sandwich
MAIN ENGINES	Four diesels
PROPELLERS	Two Voith cycloid propellers
ARMAMENT	40 mm gun
COMPLEMENT	Up to 51

MCMV 52
ENHANCED KOSTER CLASS

The MCMV 52 enhanced Koster class is based on the existing and well-proven MCMV 47 Koster class, which is currently in operation with the Royal Swedish Navy. This enhanced version has been engineered to meet more demanding customer requirements.

MAIN ENHANCEMENTS

The main enhancements on the MCMV 52 include extending the Length Overall (LOA) by 5 m to 52.5 m. This creates more space for crew and systems, and improves sea-keeping and ensures a growth margin for the future. The MCMV 52 will keep the basic hull lines from the proven MCMV 47 Koster class.

Its design is in accordance with class rules of the DNV, which sets a new quality assurance standard, giving an independent third-party review of the design. The MCMV 52 has an enlarged accommodation area, designed to fit up to 51 people in a 3-rank system with good separation.

The enhanced Koster class has an enclosed forecastle, which protects the fore-deck from green water. There is a hangar for the storage and maintenance of existing and future mine hunting vehicles, with easy access to the launching crane on the aft deck.

It has enhanced diving facilities, including a diving decompression chamber for up to two people. There is a signature-reduced bow thruster for improved harbour manoeuvring and positioning during mine hunting in different wind speeds and directions.

In essence, it comprises of the:

- Same hull shape, hull construction (GRP sandwich) and associated manufacturing methods as the proven MCMV 47 Koster class
- Same propulsion (4x diesel with 2x Voith cycloid propellers) and power arrangement
- Same signature reduction and shock resilience measures
- A very similar, but extended, mine hunting suite
- Enhanced growth margins for future requirements and as yet unassigned vehicles and equipment

ADDING SUB-SYSTEMS

The emergence of new mission types has led to further requirements being placed on MCMVs.

The increased use of unmanned vehicles, the rise of anti-submarine warfare and more rigorous mission needs have led to increased demands for the addition of sub-systems to MCMVs.

Remotely Operated Vehicles (ROV) are now being used as a tethered Propelled Variable Depth Sonar (PVDS) to run ahead of the MCMV, complementing the hull-mounted sonar on board. Autonomous, non-tethered vehicles, such as SAROV, will soon become part of the MCMV.

Both the MCMV 47 Koster class and MCMV 52 enhanced Koster class can be used in conjunction with ROV systems to help prepare naval crews for any situation.

DOUBLE EAGLE MKII/MKIII

The Double Eagle MKII or the slightly bigger MKIII are the first choice for many navies when it comes to MCM. It is a ROV system with a robust design, and its short turnaround time ensures it is highly cost-effective.

Its modular approach provides flexibility in MCM operations, and the autonomous vehicle is designed to detect, identify and neutralise modern sea mines. The operator can utilise the Double Eagle MKII/MKIII for both mine detection in its PVDS function and for mine disposal.

SAM

The SAM system is a unique, unmanned minesweeping drone for the disposal of modern sophisticated influence mines. It is an exceptionally effective supplement to mine hunting and mechanical minesweeping when combined with the function of the MCMVs.

The autonomous catamaran is fully equipped with systems for sweeping, navigation and remote control, all of which are driven by the vehicle's own power supply. The small remote control unit can be placed anywhere on board any ship, ashore, in a van or in a container as well as constitute an integral on board part of the MCMV.

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