KONGSBERG

Sea PROTECTOR with the 2.75" rocket

Added firepower at low cost

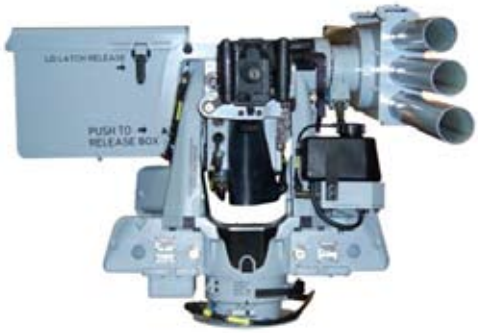
- Most cost effective low cost rocket system in class
- 2.75" munitions supported in DOD inventory
- Simple operation and maintenance
- Compact light weight munitions allows for rapid deployment and reload
- 3 rockets launching capacity
- Fully stabilized for unsurpassed firing accuracy
- Operational range of 500 m – 12 Km
- Supersonic with a 6 Kg HE warhead
- Optional laser/GPS guided, fire and forget
- Excellent in defense of maritime targets such as boats, lightly armored ships, fixed structures, beach fortifications, and lightly armored vehicles

Operational benefits

The 2.75″ rocket launched from Sea PROTECTOR adds firepower to your vessel. The standard 2.75 ″ rocket , like the CRV-7, together with a .50 cal. HMG are both readily available to meet the incoming threats.

- **Extended firing accuracy**
  Combining the unique stabilisation of Sea PROTECTOR with ballistic tables and wind models for the 2.75″ rocket, unsurpassed firing accuracy is achieved, aiming RIB sized targets. Hit probability calculation will be presented to the operator before launch.

- **Multi selectable guidance**
  At longer ranges, a guidance section can be added, providing the rocket a semi-active laser guidance or GPS guidance. Guidance sections can be delivered by KONGSBERG.



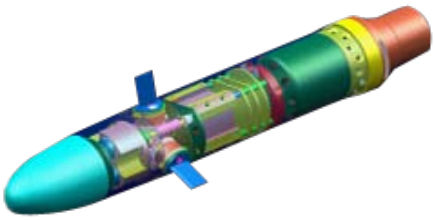
Integration

3 launching tubes for 2.75″ rockets are mounted on the right side of Sea PROTECTOR. This installation does not interfere with the machinegun or its ammo box. Thus, both a .50 cal. HMG and the 2.75″ rockets are readily available to the operator.

Detection, identification and targeting is done through Sea PROTECTORs Display Control Panel (DCP) or from an external Tactical System if integrated with Sea PROTECTOR.

The KONGSBERG guidance section

The KONGSBERG guidance section is mounted in front of the existing warhead through a roll bearing. The midcourse guidance is realized trough MEMS rate/inertial sensors and canard controls. Terminal guidance is realized through a strap-down laser seeker, homing on a laser designated target.



Complete semi-active laser guidance section for 2. 75″ rocket

The guidance section also allows the rocket to receive GPS guidance.

The complete guidance unit consists of a laser seeker, a missile computer and Inertial Measurement Unit (IMU), servo system, a power system and roll bearing.

The guided 2.75′′ rocket is prepared with a plug interface to be fired from Sea PROTECTOR. Increased flexibility is presented to the operator, such as the possibility to set laser designator codes while the rocket is loaded, verification of lock-on to target before launch, perform system test before launch and program GPS target data.

- **Laser seeker**
  The laser seeker is based on a “strap down” quad detector, has a seeker field of view +/- 15 degrees and a detection range of more than 5 km in good weather conditions. The seeker conforms to standard 1.064µm laser designators and to all NATO STANAG codes. KONGSBERG can also provide an Anti Radiation (ARM) seeker for the 2. 75″ rocket capable of homing onto radars and jammers.

- **Computer and IMU**
  The computer and Inertial Measurement Unit (IMU)) are designed as one compact unit. The IMU is based on low cost MEMS sensors. Special autopilot algorithms have been developed to compensate for drift and scaling factor errors in these sensors. For ranges less then 7km, no alignment is necessary prior to launch. Firing at longer ranges may require alignment prior to launch or GPS mid course guidance.

- **Servo system**
  The servo system is based on three DC motors controlled by digital programmable servo regulators.

- **Power system**
  A 28V thermal battery has been selected as the power system, thus assuring a reliable power source that will last the entire rocket shelf life.

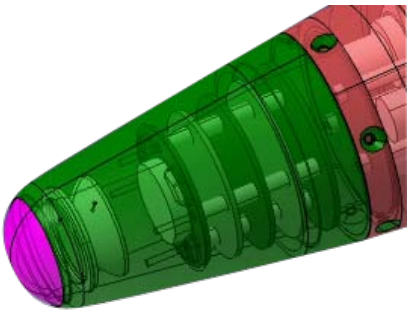
- **Roll bearing**
  The guidance unit is mounted in front of the warhead section via a roll bearing which allows the guidance section to be used with all existing rocket motors, regardless of the motor spin rate. The rocket will remain in its ballistic trajectory and be completely safe even if, for some reason, the guidance unit fails to work properly.

- **Warhead and Fuse**
  As a baseline warhead for the design, the Nammo RA79 warhead has been selected. Adaptations to other warheads, however, are possible.
  The RA 79 fuze is equipped with an electric delay element that is able to receive an ignition signal from the guidance unit at impact. A crush sensor is mounted in the guidance unit.

- **Rocket motor**
  The CRV-7 C17 rocket motor from Bristol Aerospace, Canada has been used during the test firings. This rocket motor has similar performance and burn profile as the Hydra 70 rocket motor, however, has a higher thrust and spin rate. CRV7 and Hydra 70 rocket motors are already certified for use from various U.S. Army and Navy air platforms.

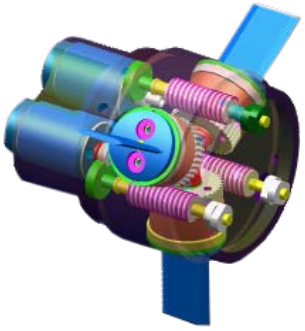
  Other rocket motors may easily be used as the roll bearing completely decouples the spin of the guidance section from the warhead/motor section.

- **Launcher and fire control system**
  The guided 2.75'' rocket is fired from Sea PROTECTOR as one of many launcher pods without any changes to its electrical system.

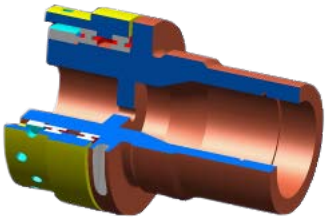


Laser seeker

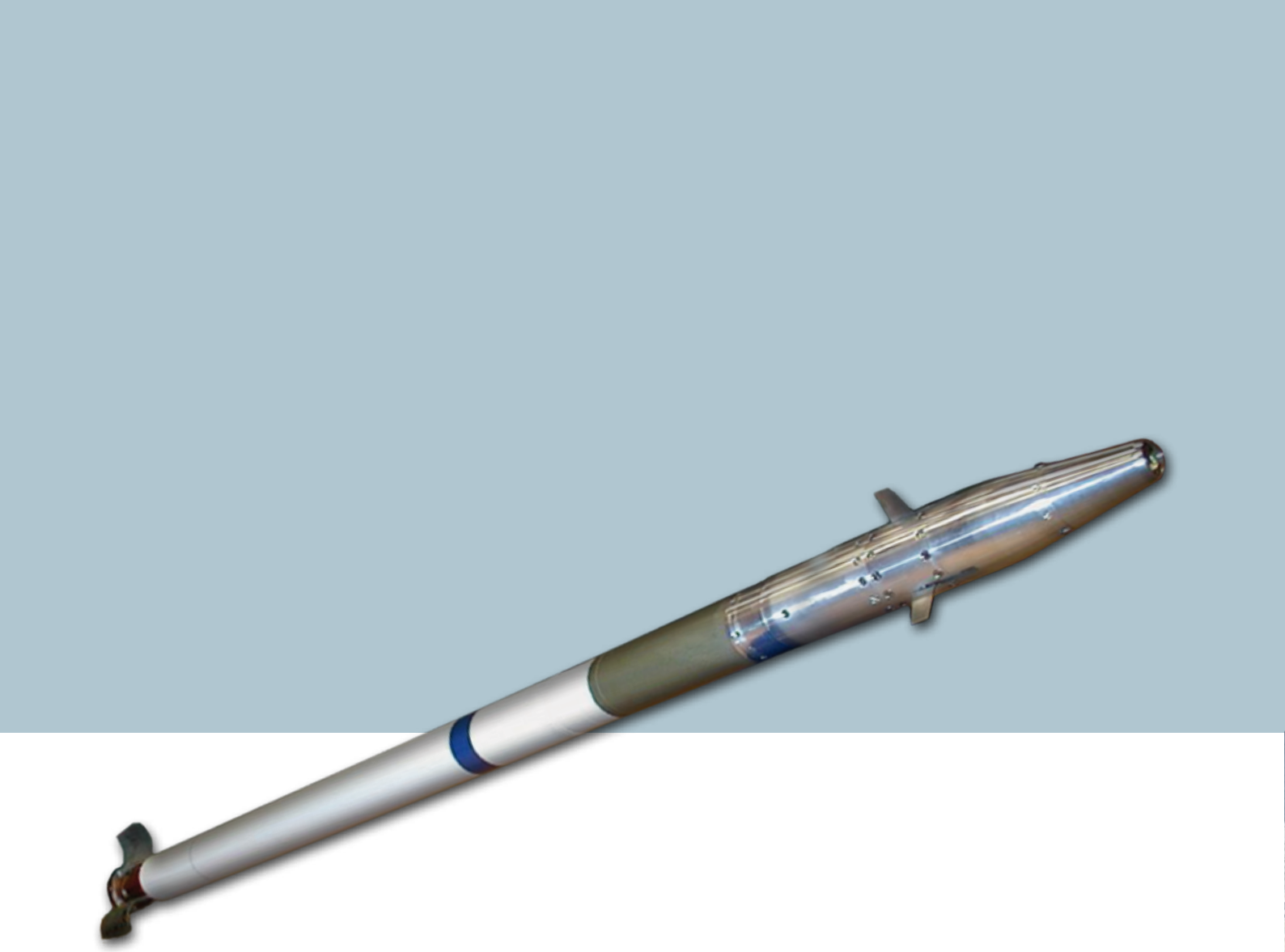
Computer and Inertial Measurement Unit (IMU)



Servo system and control surfaces



Roll bearing unit



Technical data	
Precision - Guided	Laser Guided: 1-2 m CEP GPS Guided: 6-10 m CEP
Range	500 m -12 km
Velocity	Supersonic
Warhead	RA79 (6 kg HE) or equivalent
Rocket Motor:	CRV7, FZ, or Hydra70
Target Types	Boats and Ribs Fortifications Fixed structures Lightly armored vehicles
Diameter	70 mm (2,75'')
Total Length	1,6 m (64'')
Weight AUR	13 kg

WORLD CLASS – through people, technology and dedication

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