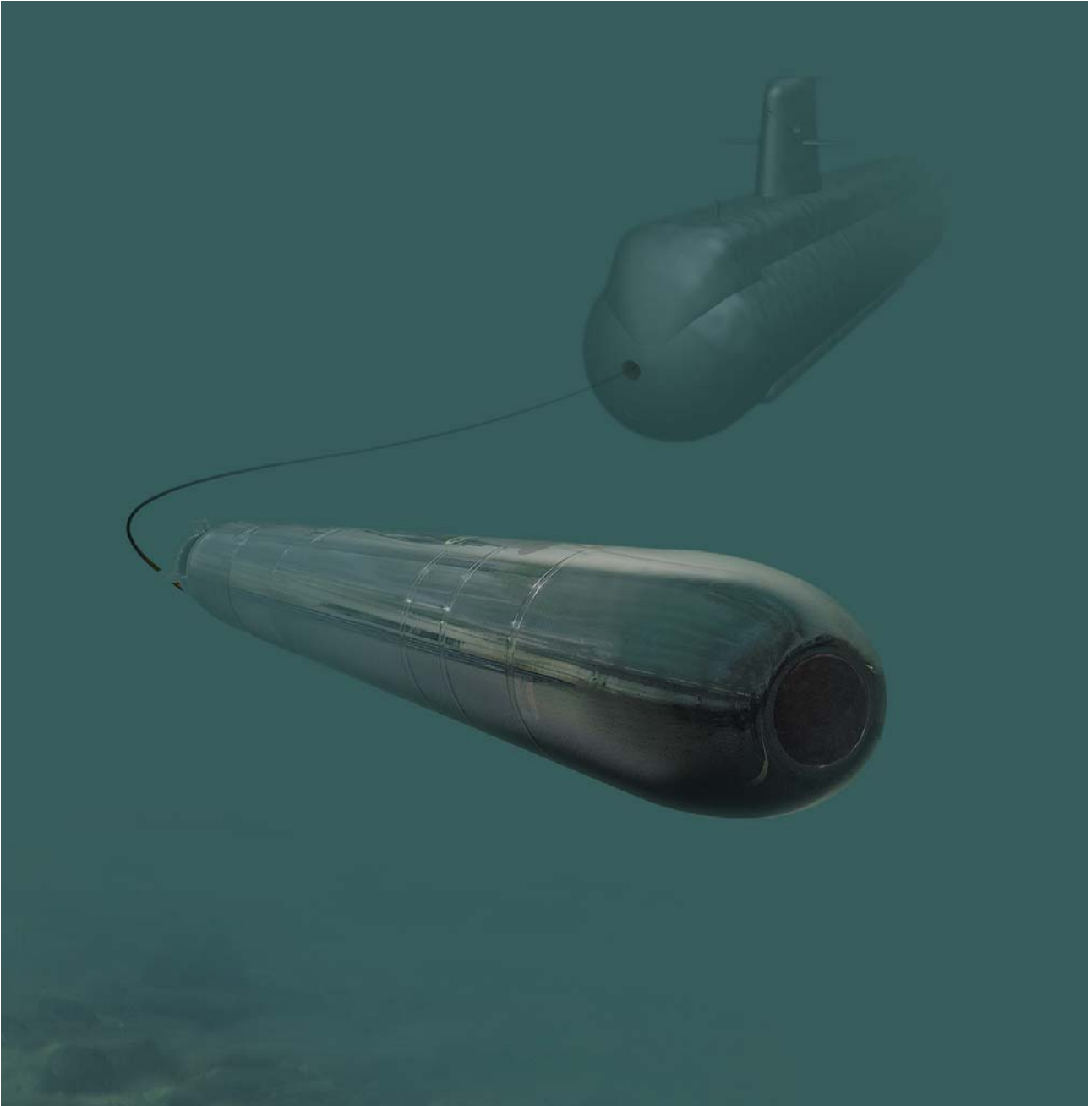


SAAB UNDERWATER SYSTEMS

Torpedo Weapon System 2000



A revolution in tactics, hit probability and low LCC

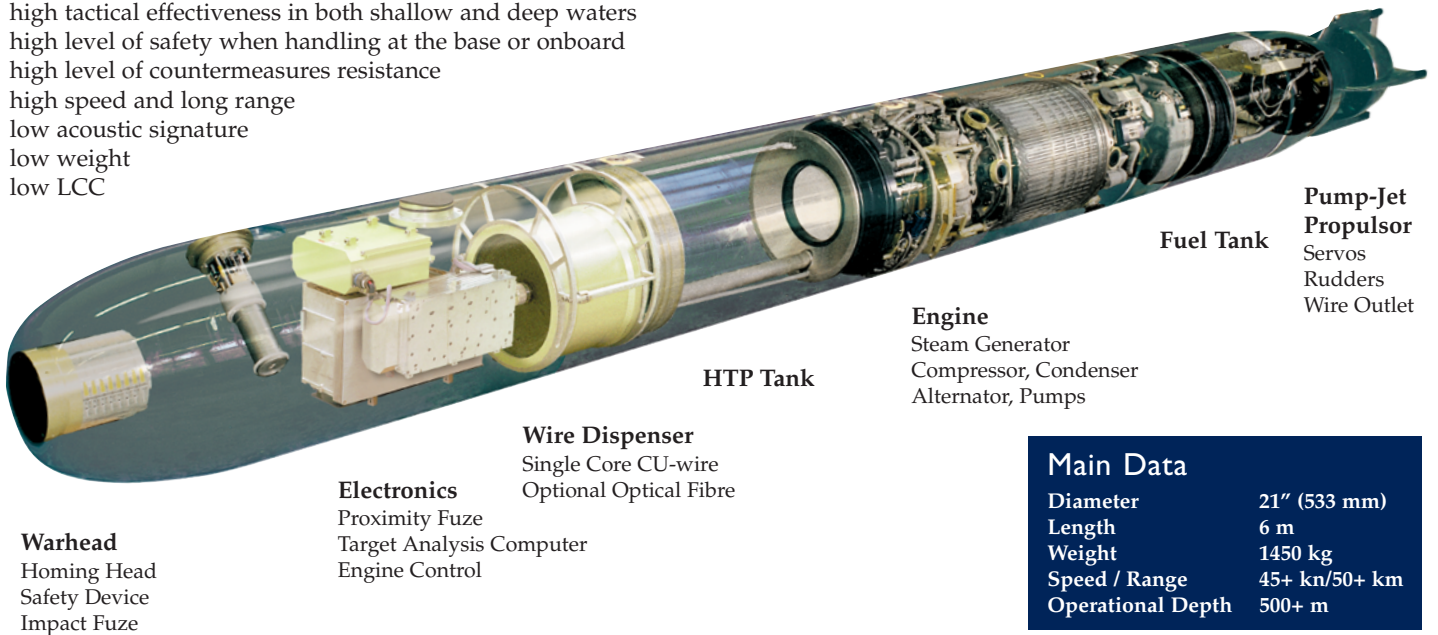


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Torpedo 2000 System

Torpedo 2000 is a completely new design it is the result of almost 100 years of developing and manufacturing torpedoes together with our customer's operational and tactical requirements that are built into the system. Extensive firing tests in realistic conditions, in cooperation with the Swedish Navy, has show that the requirements that were placed on each development phase have been fulfilled and exceeded.

- high tactical effectiveness in both shallow and deep waters
- high level of safety when handling at the base or onboard
- high level of countermeasures resistance
- high speed and long range
- low acoustic signature
- low weight
- low LCC



Warhead
 Homing Head
 Safety Device
 Impact Fuze

Electronics
 Proximity Fuze
 Target Analysis Computer
 Engine Control

Wire Dispenser
 Single Core CU-wire
 Optional Optical Fibre

HTP Tank

Engine
 Steam Generator
 Compressor, Condenser
 Alternator, Pumps

Fuel Tank

Pump-Jet Propulsor
 Servos
 Rudders
 Wire Outlet

Main Data	
Diameter	21" (533 mm)
Length	6 m
Weight	1450 kg
Speed / Range	45+ kn/50+ km
Operational Depth	500+ m

Low Life Cycle Costs (LCC)

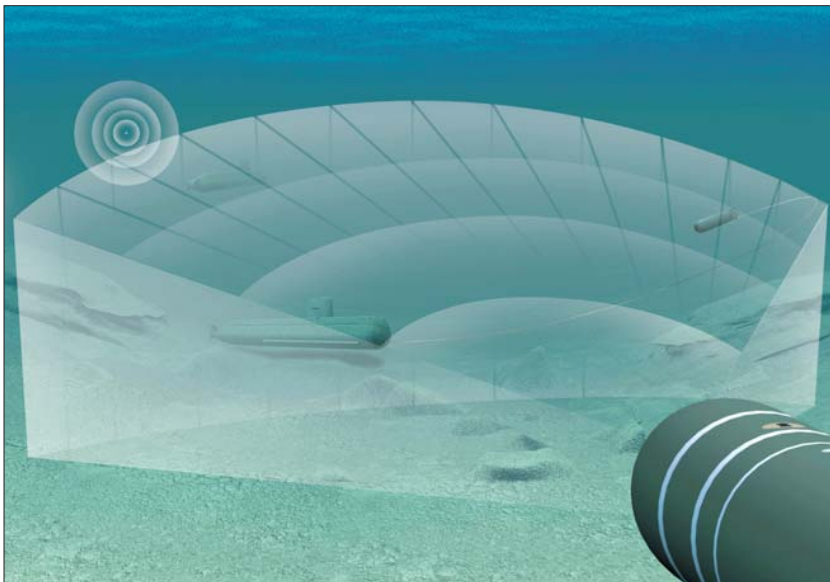
From the start our ILS (Integrated Logistic Support) organisation has had an extremely strong influence on our work relating to development. Backed up by a modern support system special attention was given to minimising the total costs of training, maintenance and handling at the base or onboard ship. Based on ILS analyses a modular construction was produced, which simplifies future upgrading. In this way the torpedo system can remain effective far into the coming decades.

Tactical possibilities

The active/passive homing system was developed to detect difficult targets, for example small underwater targets lying on the bottom of the Baltic, the inland sea that places the world's highest demands on hydroacoustic homing systems. The Baltic is noted for shallow waters in its archipelagos, varied bottom topography and variations in temperature and salt layers.

The difficult hydroacoustic environment has led to the development of a homing system with long range, multi-lobe function and with a target analyser that discriminates thousands of false targets and at the same time operates against several real targets. The system is also resistant to countermeasures. This in combination with the effective wire communication link between the fire control and the torpedo gives the system high tactical flexibility and very high hit probability against all type of targets, both on and under the surface.

Fundamental to the tactical/operational effectiveness of the complete torpedo system is that it has the same performance both when exercising and in action and that it is used in the same way at the base and by the submarine crew.



Homing system

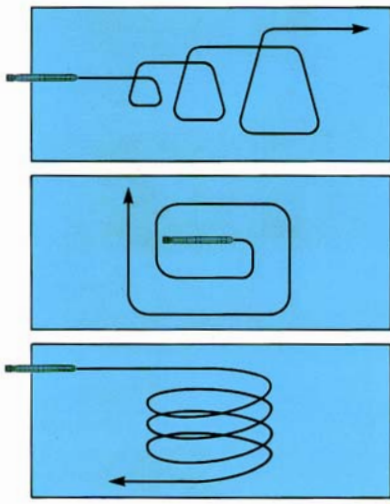
The system is optimised for difficult targets in difficult acoustic environments in shallow waters.

Attack volume

The fire control commands the attack volume's size and if it should follow the target's course and speed or if it should be stationary. When the torpedo reaches the attack volume the warhead is armed and the homing system enters active mode.

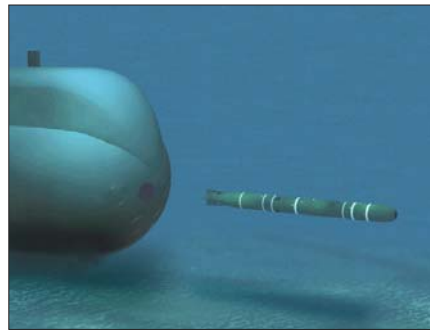
But own and friendly units outside the attack volume can operate freely wether they are on or under the surface.





Search patterns

If the wire data communication link is interrupted the computer takes complete command, calculates the expected target position, guides the torpedo to the predicted point of impact and initiates one of several search patterns. However, the torpedo never leaves the attack volume.



Neutral weight

The torpedo's neutral weight in water gives a tactical advantage – launching can be carried out from submarines stationary on the seabed.



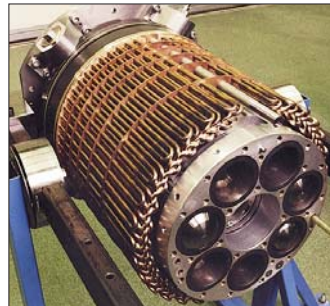
Initiating the charge

The warhead charge initiates with a computerised, unjammable hydroacoustic proximity fuze against surface targets and by direct impact on submarines.

Propulsion system

Torpedo 2000 has a new propulsion system that is based on experience gained from High Test Peroxide (HTP) as an oxidiser and paraffin as fuel. The system gives the highest energy content for propulsion. The seven cylinder axial piston engine and pumpjet propulsor produces a wakeless run, high speed and long range even at great depth and radiates as much noise as an electrically propelled torpedo.

Minimised maintenance and easy and safe handling are built into the design from the start. The system allows for many exercise runs without intermediate inspections. At the base only a few hours are required to refuel and to carry out a simple electronic test to make the torpedo ready for the next mission.



Support system

The system was developed in parallel with the torpedo to ensure that all ingoing subsystems in the Torpedo Weapon System 2000 were of the some advanced technology in order to form a homogeneous and effective weapon system.

- TIS (Torpedo Interface System) makes it possible to adapt Torpedo 2000 to most command and firecontrol systems.
- T-MATE (Torpedo Measure And Test Equipment) is used for preparing launching and maintenance.
- The exercise system consists of an Exercise Head and DART (Digital Analysis of Recorded Torpedo data). DART is a system for evaluating and presenting a certain amount of data recorded in the exercise head electronics during the complete run.



TIS



T-MATE



Exercise Head



DART

The Company



Saab Underwater Systems is a company within Saab AB, fully engaged in the development and production of underwater defence materiel.

Production of torpedoes began back in 1910, which has enabled the company to accumulate a vast stock of experience and expertise in underwater technology.

The close cooperation with the Royal Swedish Navy in developing and testing is a contributing factor to the low development costs and to the finished products tested in realistic environments.

The product range is as extensive as any individual company in the world can present today.

- Heavy and Lightweight Torpedoes
- ROVs for Mine Hunting and Commercial use
- Underwater Data Collection Platforms
- Oil Prospecting Equipment
- Maintenance and Modernisation of underwater systems

Torpedo System 2000 is a dual purpose torpedo system intended as the main armament for submarines, and a supplementary armament to missiles on surface attack vessels.



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