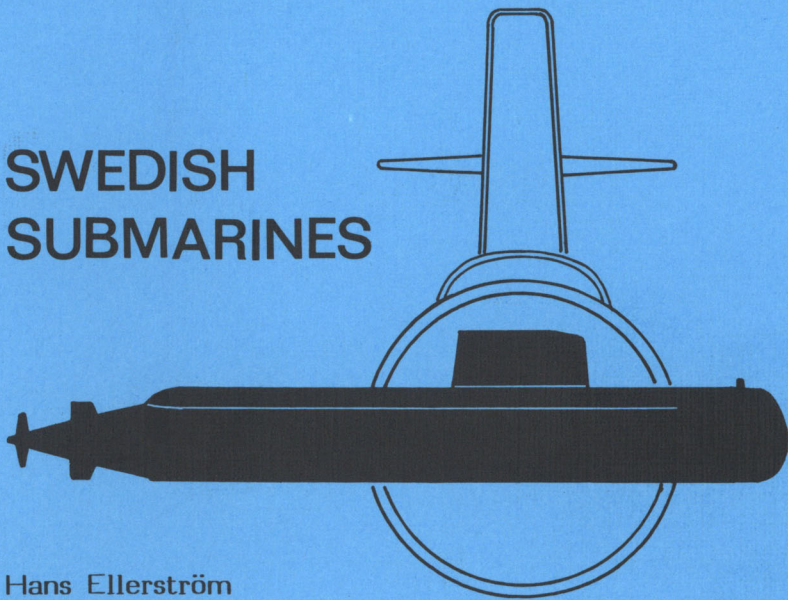


SWEDISH SUBMARINES



Hans Ellerström

SWEDISH SUBMARINES

Hans Ellerström

**SWEDISH
EXPORT
SUBMARINES**

ON SWEDISH EXPORT SUBMARINES

The Royal Swedish Navy submarines are designed to operate on the border between the two Super power blocks. Silence, shock resistance, endurance and fighting power are necessities. These properties are incorporated also in the Kockums' export submarines. Due to the frequent developments of new submarines state-of-the-art technologies, both Swedish and foreign, are offered giving the customer and supplier alike a guarantee for cost-efficiency and safety.

In June, 1987 the Royal Australian Navy signed the contract for six 2500 ton submarines of the Kockums Type 471.

In the 1300 ton range Kockums is offering the submarine Type 96, a tropicalized version of the latest Swedish development.

Also the Stirling air-independent propulsion system is offered for installation in existing submarines as well as in new classes.

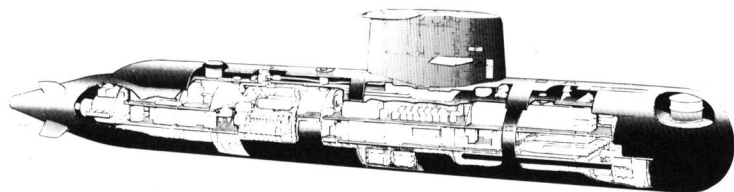
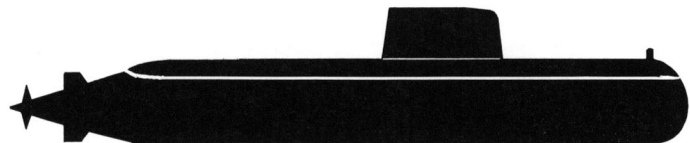
Swedish submarine technologies face an exiting future.

Malmö 1989

Hans Ellerström

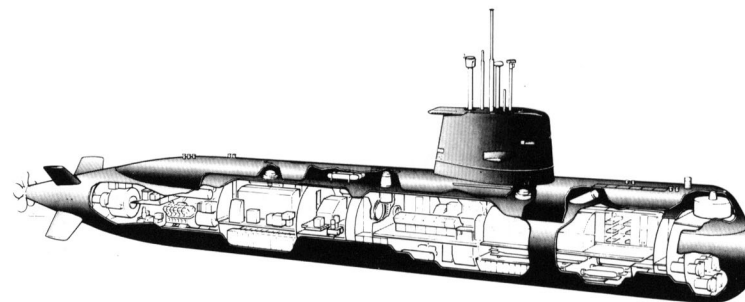
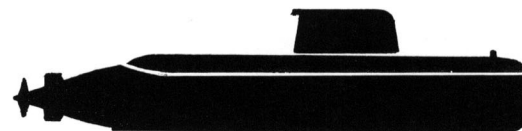
TYPE 471

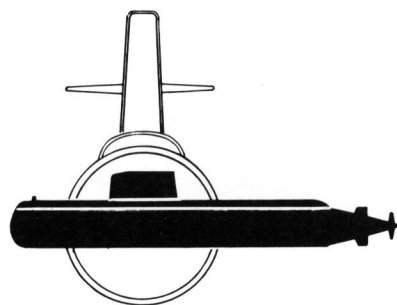
Designer	Kockums Marine, Malmö
Builder	Australian Submarine Corporation
Customer	Royal Australian Navy
Number of units:	six
Type of hull:	single
Displacement:	2500 tons
Dimensions:	length 76 m, beam 8 m
Armament:	six 53 cm bow tubes
Propulsion:	diesel-electric, one shaft
Speed surfaced:	12 knots
submerged:	
Complement:	42



TYPE 96

Design	1989
Designer	Kockums Marine, Malmö
Type of hull:	single
Displacement:	1300 tons
Dimensions:	length 54 m, beam 6 m
Armament:	torpedoes missiles
Speed surfaced:	11 knots
submerged:	
Complement:	25





SWEDISH
SUBMARINES
1904 - 1990

ON SWEDISH SUBMARINES

HISTORY

In National Maritime Museum at Stockholm there is a scale 1:12 model of a submarine intended for use in lieu of drawings. The model was made in 1770 by Mr D P Thunberg but no submarine was built in accordance with the model.

The first Swedish submarines appeared during the latter half of the 19th century. Mr A B Sandahl's submarine was built in 1869 and Mr S V Zethelius' submarine in 1870. Mr T Nordenfeldt became the first submarine designer to attain international reputation with his submarine of 1883. He succeeded in exporting his design but did not manage to interest the Royal Swedish Navy in it.

The first Swedish submarine, the Hajen, was launched in 1904, being designed by Commander (E) Carl Richson, RSwN.

Down to the present Sweden has possessed 24 types of submarines which to begin with were designed by the Navy and built at various shipyards. However, since 1914 submarine development was gradually concentrated to Kockums at Malmö which firm since 1950 is the Swedish Submarine Design Authority.

TODAY

Submarines constitute an indispensable part of Swedish Defences and their existence has never been disputed, only their numbers. Owing to financial reasons the fleet of 24 submarines after WW II has been reduced to only 12 - a number which the RSwN are trying hard to increase. The decrease in number is partly compensated for by increasing the efficiency of each submarine. Kockums' ambition is to make each new type of submarine more cost-effective than its forerunner.

It has been found that the minimum size of an efficient submarine lies around 1,000 ton. Submarines of this size is a Kockums speciality even if considerably larger submarines have been developed.

Photographs:
Kockums Marine AB
Royal Swedish Navy, Official
The Authors Collection

Since 1960 six new types of submarines have been designed and built by Kockums, including a Submarine Rescue Vessel, the URF. The hull of the URF is made of HY 130 steel and the vessel is capable of diving to a depth of 500 m.

In 1988 the Swedish submarine Näcken, originally launched in 1978, commenced operational sea-trials following the installation of an air-independent propulsion system based on the Stirling engine. The submarine is now a fully operational unit in the Swedish submarine service, and with a substantial immersed endurance.

FUTURE

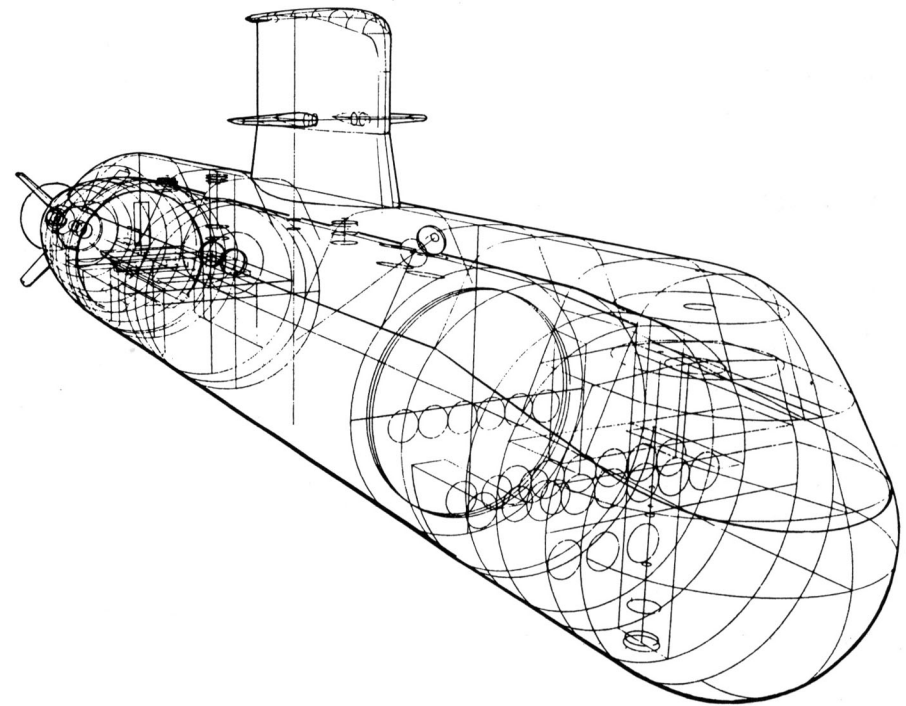
Submarines have established their versatility and cost-effectiveness in the Royal Swedish Navy. The present number of submarines will be maintained and, if possible, increased.

Design work on the next Swedish submarine, the A 19, has been completed and the new submarine class will be ordered in 1990. Discussions and analyses regarding submarines for the year 2000 and beyond have begun as well as certain experiments.

Malmö 1989

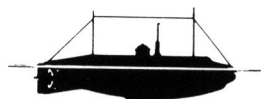
Hans Ellerström

Submarine A 17 Västergötland class

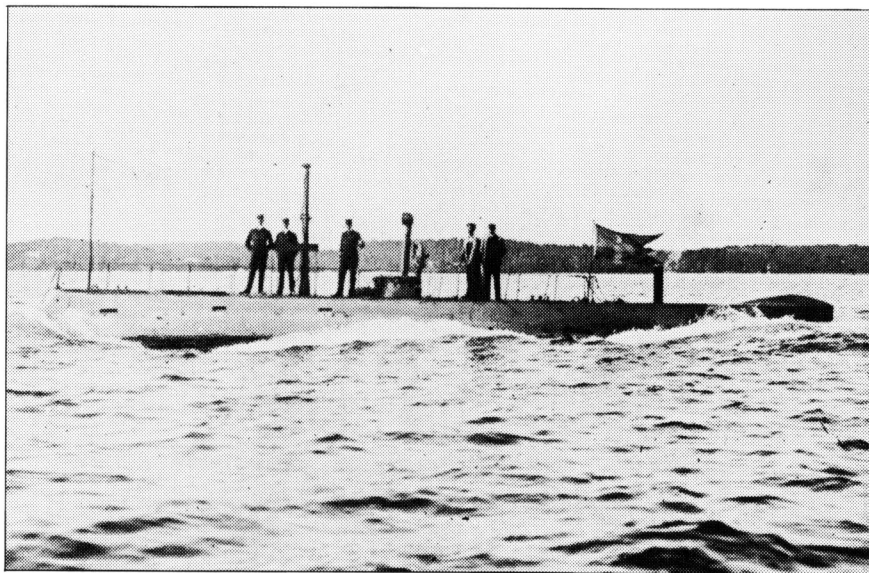


Designer and builder	Kockums Marine, Malmö
Displacement:	1070 tons
Dimensions:	length 48,5 m, beam 6,1 m
Armament torpedo:	six 53 cm bow tubes
	three 40 cm bow tubes

HAJEN



Launched 1904
 Builder Örlogsvärvet, Stockholm
 Type of hull: single
 Displacement: 107 tons
 Dimensions: length 21,6 m, beam 3,6 m
 Armament torpedo: one 45 cm bow tube
 Propulsion: surface ignition engine-electric,
 one shaft
 Speed surfaced: 8 knots
 submerged: 6,5 knots
 Complement: 12
 Rebuilt 1916



HVALEN



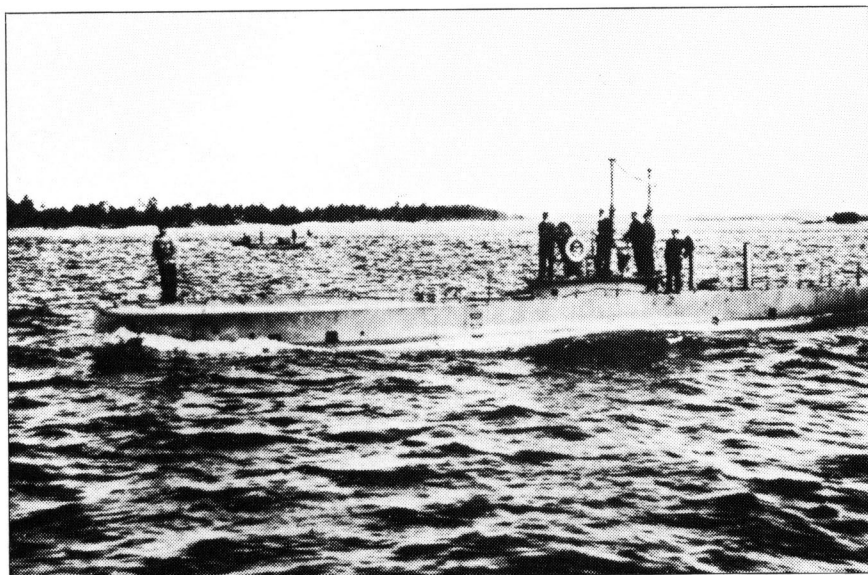
Launched 1909
 Builder Fiat-Giorgio, Spezia, Italy
 Type of hull: double
 Displacement: 186 tons
 Dimensions: length 42,5 m, beam 4,3 m
 Armament torpedo: two 45 cm bow tubes
 Propulsion: petrol engine-electric, three shafts
 Speed surfaced: 14,8 knots
 submerged: 6,3 knots
 Complement: 17
 Decommissioned 1919



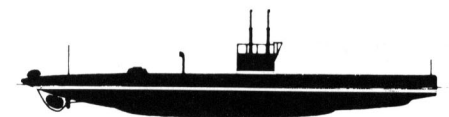
UB No 2
UB No 3
UB No 4



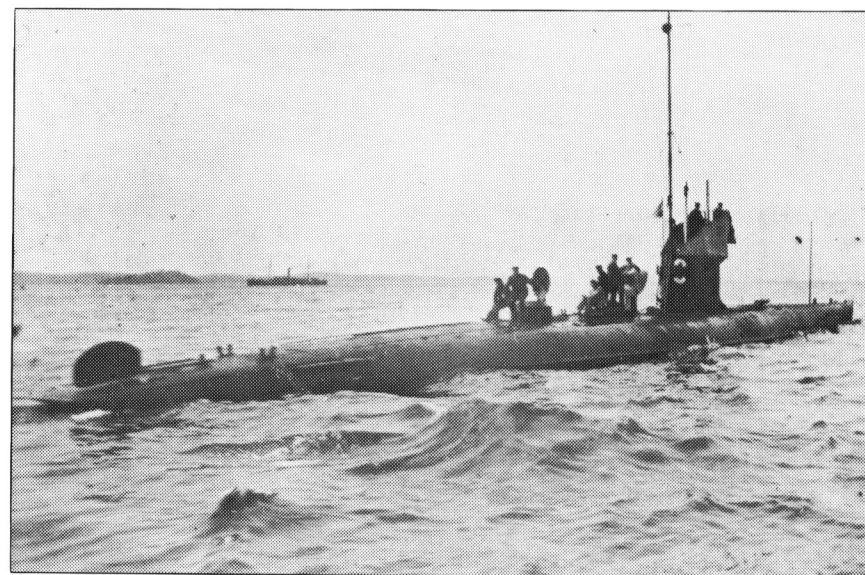
Launched	1909
Builder	Motala Verkstad, Motala
Type of hull:	single
Displacement:	138 tons
Dimensions:	length 26,8 m, beam 3,6 m
Armament torpedo:	one 45 cm bow tube
Propulsion:	diesel-electric, one shaft
Speed surfaced:	8,8 knots
submerged:	6,6 knots
Complement:	10
Decommissioned	1929-1930



SVÄRDFISKEN
TUMLAREN



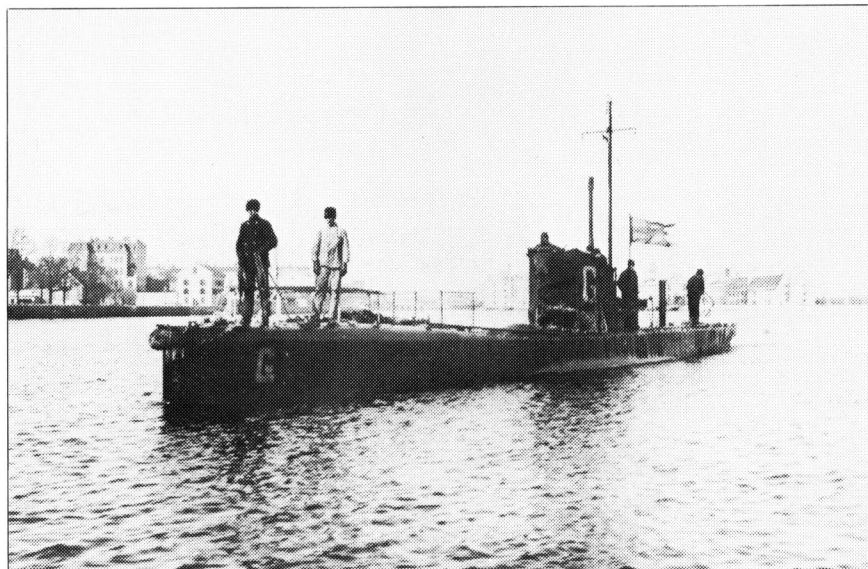
Launched	1914
Builder	Kockums, Malmö
Type of hull:	double
Displacement:	252 tons
Dimensions:	length 45,5 m, beam 4,2 m
Armament torpedo:	two 45 cm bow tubes
gun:	one 37 mm
Propulsion:	diesel-electric, two shafts
Speed surfaced:	14,2 knots
submerged:	8,5 knots
Complement:	21
Decommissioned	1936



LAXEN GÄDDAN



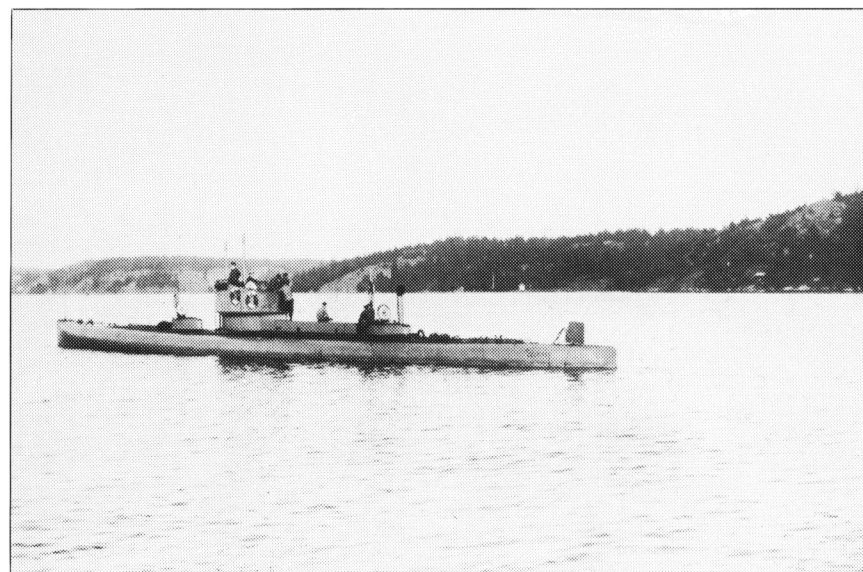
Launched	1914-1915
Builder	Örlogsvarvet, Karlskrona
Type of hull:	single
Displacement:	140 tons
Dimensions:	length 26,7 m, beam 3,6 m
Armament torpedo:	one 45 cm bow tube
Propulsion:	diesel-electric , one shaft
Speed surfaced:	8,8 knots
submerged:	6,6 knots
Complement:	10
Decommissioned	1935



DELFINEN



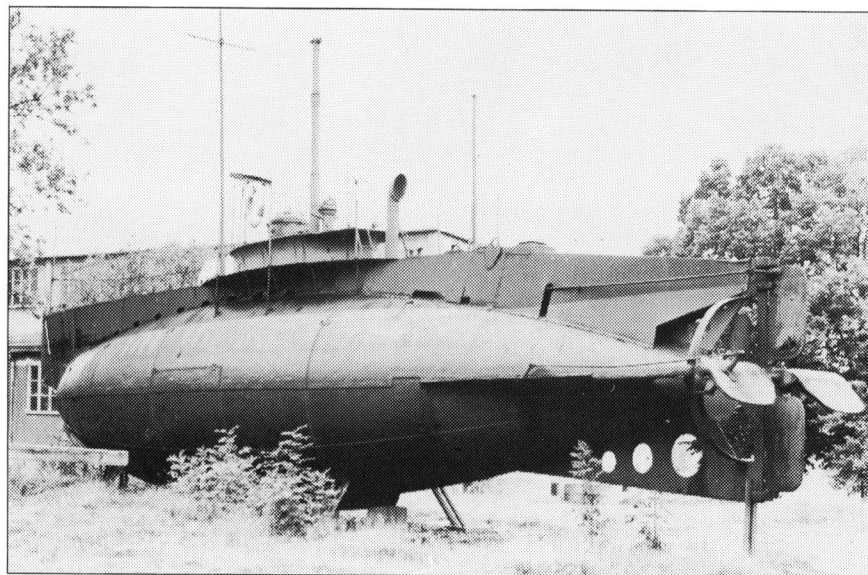
Launched	1915
Builder	Bergsunds Mek. Verkstad, Stockholm
Type of hull:	single
Displacement:	260 tons
Dimensions:	length 42,5 m, beam 3,9 m
Armament torpedo:	two 45 cm bow tubes
gun:	one 37 mm
Propulsion:	diesel-electric, two shafts
Speed surfaced:	13,6 knots
submerged:	9,4 knots
Complement:	21
Decommissioned	1930



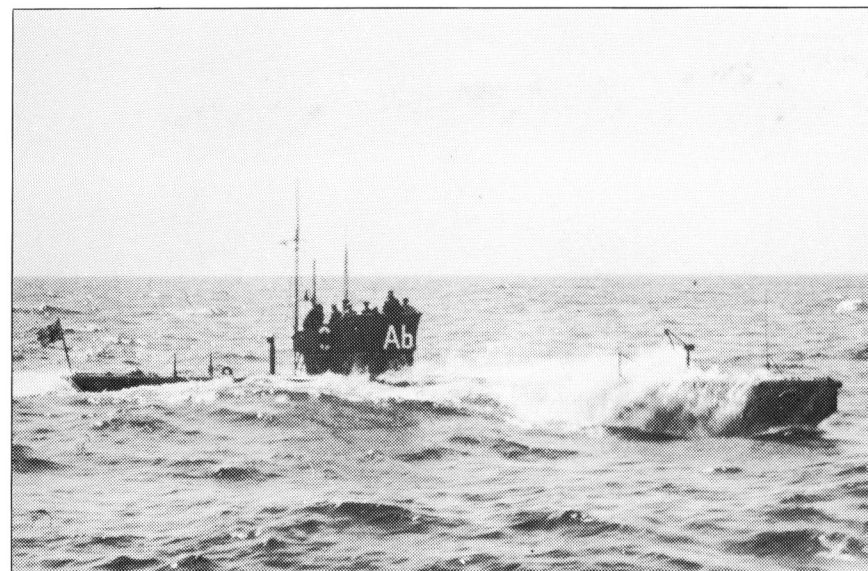
UB No 1 (Hajen 1904)



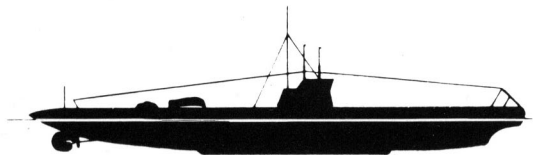
Rebuilt 1916
 Builder Bergsunds Mek. Verkstad, Stockholm
 Type of hull: single
 Displacement: 111 tons
 Dimensions: length 23,4 m, beam 3,6 m
 Armament torpedo: one 45 cm bow tube
 Propulsion: diesel-electric, one shaft
 Speed surfaced: 9,5 knots
 submerged: 6,5 knots
 Complement: 12
 Decommissioned 1922
 Exhibited at Marinmuseum, Karlskrona


 ABBORREN
 BRAXEN

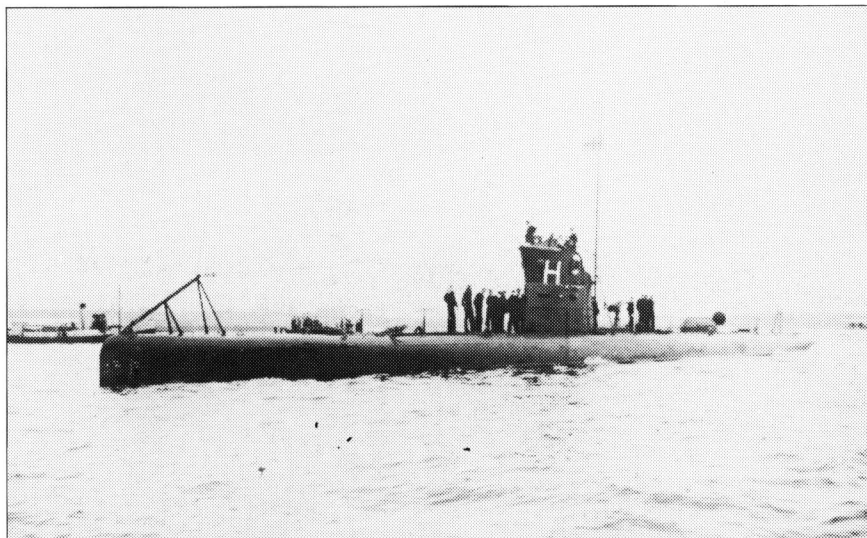

Launched 1916
 Builder Örlogsvarvet, Karlskrona
 Type of hull: single
 Displacement: 174 tons
 Dimensions: length 31 m, beam 3,6 m
 Armament torpedo: two 45 cm bow tubes
 Propulsion: diesel-electric, one shaft
 Speed surfaced: 9,5 knots
 submerged: 7,4 knots
 Complement: 14
 Decommissioned 1937



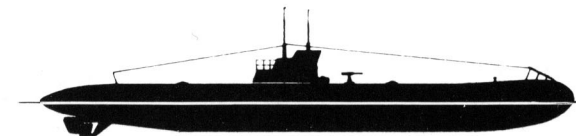
HAJEN
SÄLEN
VALROSSEN



Launched 1917-1918
 Builder Kockums, Malmö
 Type of hull: double
 Displacement: 422 tons
 Dimensions: length 54 m, beam 5,2 m
 Armament torpedo: four 45 cm bow tubes
 gun: one 75 mm
 Propulsion: diesel-electric, two shafts
 Speed surfaced: 15,5 knots
 submerged: 9 knots
 Complement: 30
 Decommissioned 1942-1943



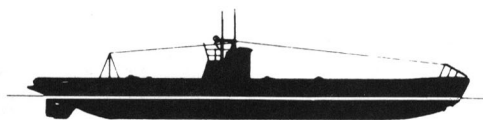
BÄVERN
ILLERN
UTTERN



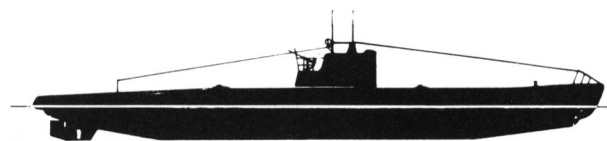
Launched 1921
 Builders Kockums, Malmö
 Örlogsvarvet, Karlskrona
 Type of hull: double
 Displacement: 472 tons
 Dimensions: length 57 m, beam 5,8 m
 Armament torpedo: four 45 cm bow tubes
 gun: one 75 mm
 Propulsion: diesel-electric, two shafts
 Speed surfaced: 15,2 knots
 submerged: 8,2 knots
 Complement: 31
 Decommissioned 1943-1944



U 1 - U 9



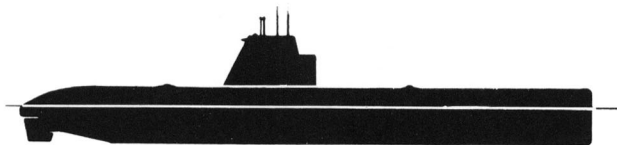
Launched 1941-1944
 Builders Kockums, Malmö
 Örlogsvarvet, Karlskrona
 Type of hull: single
 Displacement: 367 tons
 Dimensions: length 49,6 m, beam 4,7 m
 Armament torpedo: three 53 cm bow tubes
 one 53 cm external stern tube
 gun: one 20 mm
 Propulsion: diesel-electric, two shafts
 Speed surfaced: 14 knots
 submerged: 9 knots
 Complement: 26
 U 1 - U 3 decommissioned 1960-1964
 U 3 exhibited at Sjöfartsmuseet, Malmö
 U 4 - U 9 rebuilt 1962-1964

NEPTUN
NAJAD
NÄCKEN

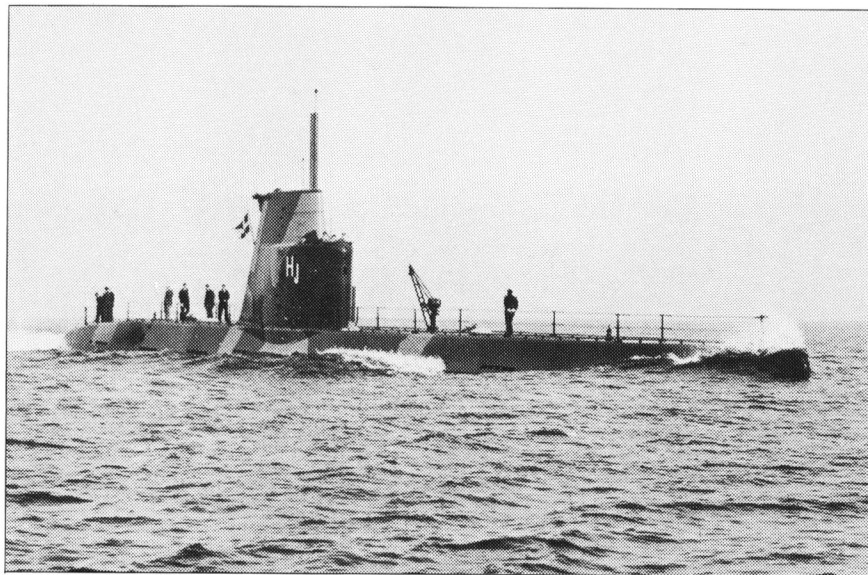
Launched 1942
 Builder Kockums, Malmö
 Type of hull: double
 Displacement: 550 tons
 Dimensions: length 62,6 m, beam 6,4 m
 Armament torpedo: three 53 cm bow tubes
 two 53 cm stern tubes
 gun: one 40 mm, one 20 mm
 mines: 20
 Propulsion: diesel-electric, two shafts
 Speed surfaced: 17 knots
 submerged: 9 knots
 Complement: 34
 Decommissioned 1966



HAJEN
SÄLEN
VALEN
BÄVERN
ILLERN
UTTERN



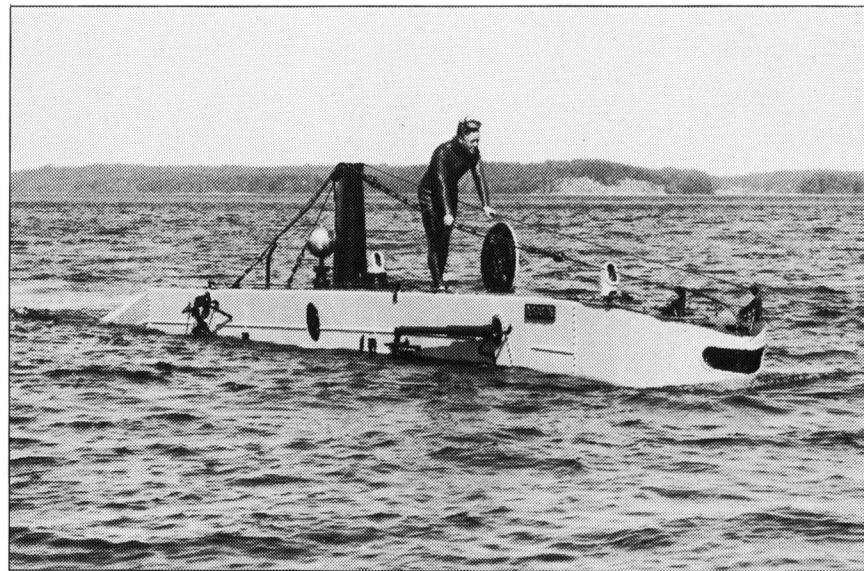
Launched 1954-1958
Builders Kockums, Malmö
Örlogsvarvet, Karlskrona
Type of hull: single
Displacement: 720 tons
Dimensions: length 65,8 m, beam 5,1 m
Armament torpedo: four 53 cm bow tubes
Propulsion: diesel-electric, two shafts
Speed surfaced: 16 knots
submerged: 16 knots
Complement: 44
Decommissioned 1980



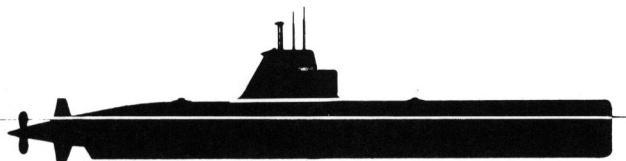
SPIGGEN (X 51)



Launched 1954
Builder Vickers-Armstrong, Barrow
Gr. Britain
Type of hull: single
Displacement: 37 tons
Dimensions: length 16,4 m, beam 1,9 m
Propulsion: diesel-electric, one shaft
Speed surfaced: 7 knots
submerged: 9 knots
Complement: 5
Decommissioned 1972
Exhibited at Imperial War Museum Duxford Airfield
Cambridge, Gr. Britain



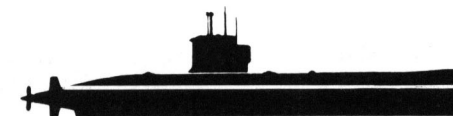
DRAKEN
GRIPEN
VARGEN
DELFINEN
NORDKAPAREN
SPRINGAREN



Launched 1960-1961
Builders Kockums, Malmö
Örlogsvarvet, Karlskrona
Type of hull: single
Displacement: 770 tons
Dimensions: length 69,3 m, beam 5,1 m
Armament torpedo: four 53 cm bow tubes
Propulsion: diesel-electric, one shaft
Speed surfaced: 16 knots
submerged:
Complement: 36
Draken and Gripen decommissioned 1982



ABBORREN (U 5, 1943)
GÄDDAN (U 7, 1943)
LAXEN (U 8, 1944)
MAKRILLEN (U 9, 1944)
FORELLEN (U 4, 1943)
SIKEN (U 6, 1943)



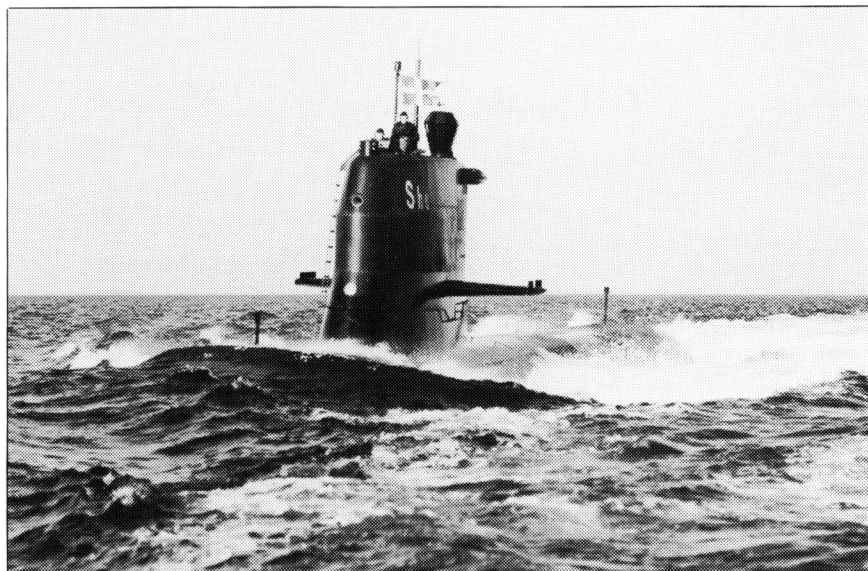
Rebuilt 1962-1964
Builders Kockums, Malmö
Karlskronavarvet, Karlskrona
Type of hull: single
Displacement: 388 tons
Dimensions: length 49,8 m, beam 4,3 m
Armament torpedo: three 53 cm bow tubes
Propulsion: diesel-electric, one shaft
Speed surfaced: 14 knots
submerged: 9 knots
Complement: 23
Decommissioned 1970-1976



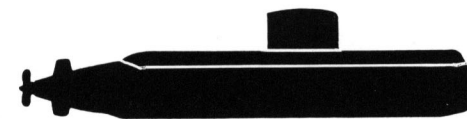
SJÖORMEN
SJÖLEJONET
SJÖHUNDEN
SJÖHÄSTEN
SJÖBJÖRNEN



Launched	1967-1968
Builders	Kockums, Malmö Karlskronavarvet, Karlskrona
Type of hull:	single
Displacement:	1125 tons
Dimensions:	length 50,5 m, beam 6,1 m
Armament torpedo:	six 53 cm bow tubes
Propulsion:	diesel-electric, one shaft
Speed surfaced:	10 knots
submerged:	
Complement:	23



NÄCKEN
NEPTUN
NAJAD



Launched	1978-1979
Builder	Kockums, Malmö
Type of hull:	single
Displacement:	1030 tons
Dimensions:	length 49,5 m, beam 5,7 m
Armament torpedo:	six 53 cm bow tubes two 40 cm bow tubes
Propulsion:	diesel-electric, one shaft
Speed surfaced:	10 knots
submerged:	
Complement:	19
Näcken rebuilt	1988

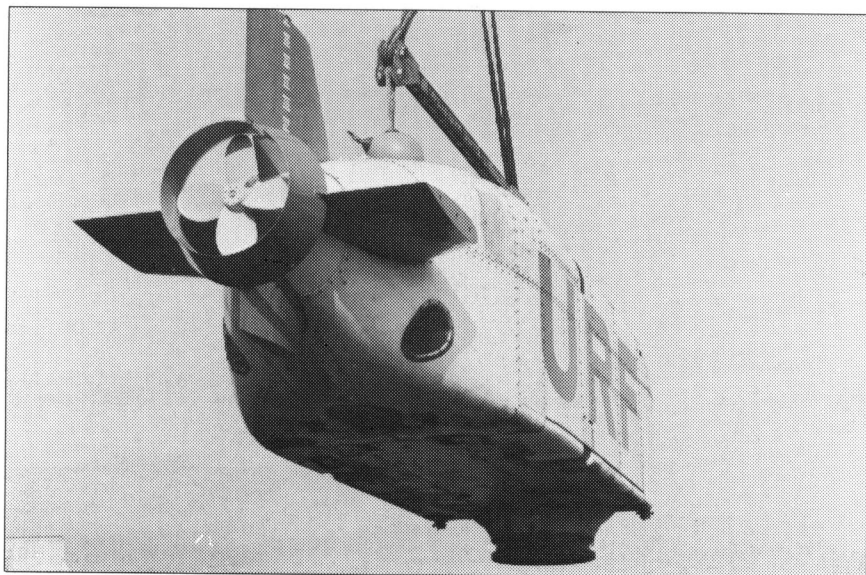
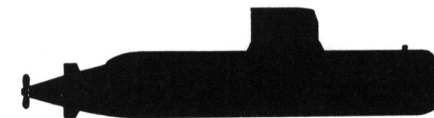


URF



Submarine Rescue Vehicle

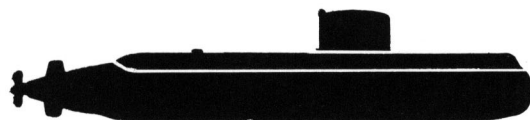
Builder Kockums, Malmö
 Commissioned 1979
 Rebuilt 1985
 Type of hull: double
 Displacement: 52 tons
 Dimensions: length 13,9 m, beam 3,2 m
 Diving depth: 460 m
 Propulsion: electric, one shaft
 Speed surfaced: 3 knots
 Complement: 3
 Rescue compartment: 35


 VÄSTERGÖTLAND
 HÄLSINGLAND
 SÖDERMANLAND
 ÖSTERGÖTLAND


Launched 1986-1988
 Builder Kockums Marine, Malmö
 Type of hull: single
 Displacement: 1070 tons
 Dimensions: length 48,5 m, beam 6,1 m
 Armament torpedo: six 53 cm bow tubes
 three 40 cm bow tubes
 Propulsion: diesel-electric, one shaft
 Speed surfaced: 10 knots
 submerged:
 Complement: 20



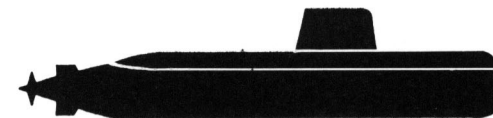
NÄCKEN



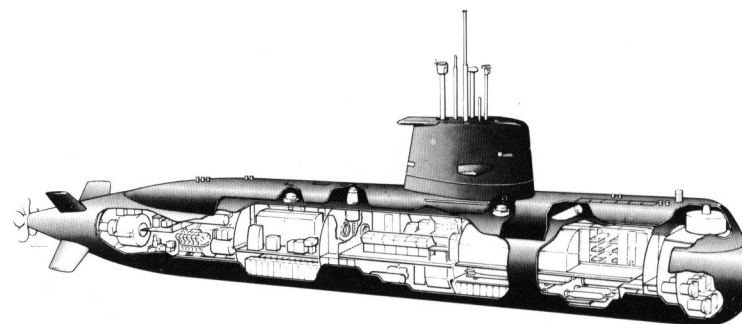
Rebuilt	1988
Builder	Kockums Marine, Malmö
Type of hull:	single
Displacement:	1150 tons
Dimensions:	length 57,5 m, beam 5,7 m
Armament torpedo:	six 53 cm bow tubes
	two 40 cm bow tubes
Propulsion:	diesel-electric
	stirling-electric, one shaft
Speed surfaced:	10 knots
submerged:	
Complement:	19



TYPE A 19



Design	1989
Designer	Kockums Marine, Malmö
Type of hull:	single
Displacement:	-
Dimensions:	-
Armament:	torpedoes
Speed surfaced:	-
submerged:	-
Complement:	-



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