

News Magazine

A publication from Dockstavarvet • 2008



Strong outlook for DOCKSTAVARVET

Export successes point to bright future

With a full order book and several major deals in the pipeline, DOCKSTAVARVET's future certainly looks bright. Ever since the launch of the Combat Boat 90 H, which attracted worldwide attention thanks to its outstanding capabilities, the impact on our business and products has been enormous. One export success begets another, and these successes have resulted in a huge increase in production in 2006-2007.

DOCKSTAVARVET's product portfolio currently includes four high-speed 10 to 20 metre Police / Patrol Boats and four Pilot Boat models. Our focus is on Patrol Boats, which is where our biggest existing and future customers are to be found. The reason for this is the rapidly changing international context. The sharp increase in enquiries is largely due to the increasing threat of global terrorism, not least against countries that have not previously been exposed.

Our current customers include the Polish Border Guard, to whom we have delivered four Patrol Boats in 2007. You can read more about our Polish delivery, which is part of the Schengen Project, further on in

this publication. Soon, we will also be delivering three Police Boats to Russia. A customer that we have been working with for a long time is the Mexican Navy, to whom we have delivered 40 CB 90 H units and a prototype IC 16 M and supplied 8 plus 5 material kits for licence production in Mexico. We have high hopes for further orders from this project, which may result in orders for another 60 boats in the next four-year period.

There is growing interest in technology transfer and licence production at shipyards in the customer's own country – something we write about in a report on Safe Boats International, our partner in US. It is hoped that this collaboration will open up the US market through future licence production of landing craft. The first boat has already been delivered by our partner and is currently being evaluated. Once again, it is the CB 90 H and its unique capabilities that initiated this exciting new partnership.

Our current production focus is on exports. In addition to the markets mentioned above, we are looking at the Middle East and South East Asia, but



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we also have customers closer at hand. In the 1990s and early years of the new century we built and delivered a number of Pilot Boats to Denmark. Now it's Norway's turn. On another page you can read about an ice-strengthened 22 knot Pilot Boat that we recently delivered to Kirkenes in northern Norway. We are now working on a 30 knot boat for the same customer, which has options on another five units. And the mid-life upgrade of the Swedish CB 90 H fleet will soon be approaching.

The future is full of challenges, and we look forward to meeting those challenges with great excitement.

We hope you enjoy our publication!

Torbjörn Larsson
CEO
Dockstavarvet AB

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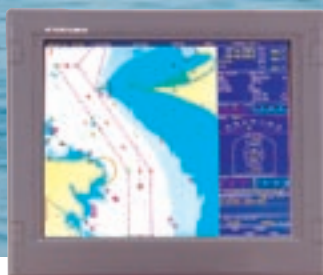
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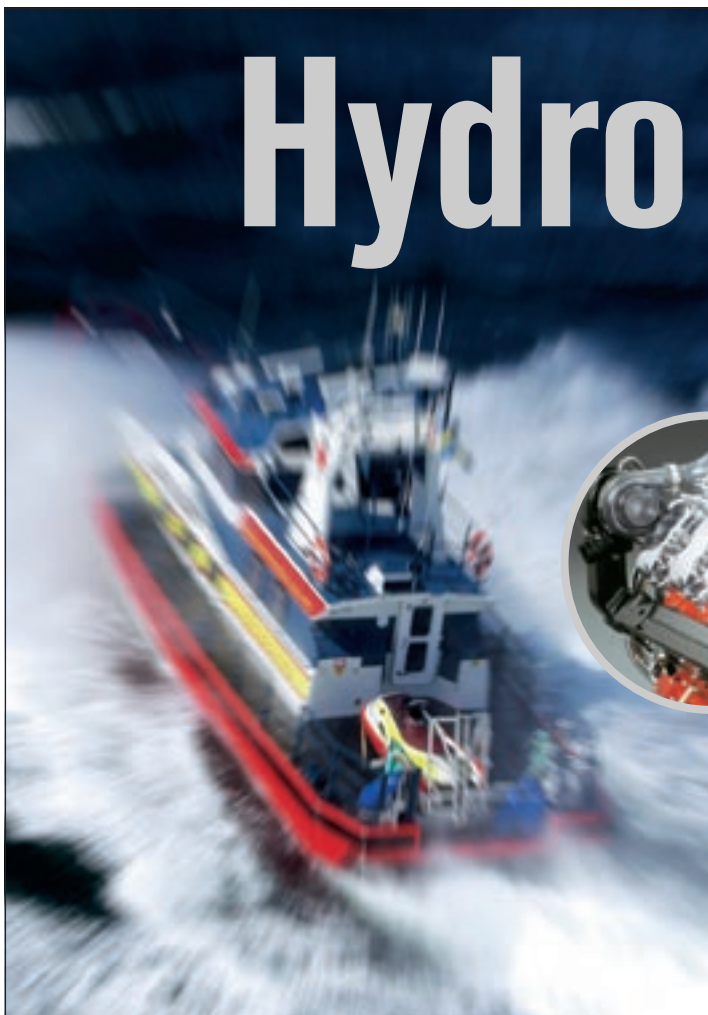
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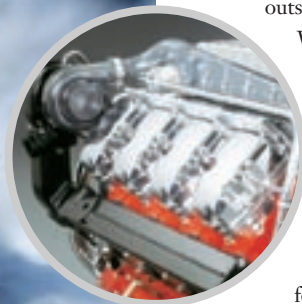
Hydro power

In Sydney Harbour a police boat is slowly patrolling, while a high-speed ferry slices through the waves off Brisbane.

Tourists admire the scenery along the Geiranger Fjord and outside Southampton a pilot is boarding a container ship.

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A 2,100 nautical mile delivery

The 16.7 metre aluminium boat is reinforced for ice navigation and fitted with an 1100 hp Caterpillar C32 engine which drives a Helseth CCP through a Mekanor gear to achieve speeds of up to 22 knots.

Summer weather

After setting off from Docksta on May 16, the journey down the Swedish east coast was swift. The boat passed Stockholm, called briefly at Dalarö and Kalmar before stopping over at the pilot station in Copenhagen, Denmark, on May 18, for a demonstration. After a night in Gothenburg, the next stop was at Lysekil Pilot Station, where the local crew had a chance to try out the boat in sunny summer weather but fairly rough seas. The last stop in Sweden was the Koster islands – for a late dinner. In the evening we crossed the Oslo Fjord, which had been stirred up by a strong southwest wind. Our first destination in Norway was the Hvasser Pilot Station inside the Faerder Light. The boat remained in Hvasser for two days of testing. There is an option for a similar boat for Hvasser, which is the only Norwegian pilot station other than Kirkenes that regularly experiences ice in the winter. The local crew took the opportunity to conduct the boat's two maiden boarding operations and a delegation from Kystverket also came to see the boat. From Hvasser to Egersund there was no wind at all. Outside the Oxöy Light we were greeted by Pilot Boat LOS 113, and the two boats tided up next to each in the perfectly calm sea for a quick reconnaissance.

“ The following morning took us between high mountains on the very sheltered route to Målöy

Interesting waves

The next day started with final installations on the autopilot carried out by Pronav in Egersund (supplier of the complete electronics package), followed by a short day's travel to Haugesund, where personnel from Kystverket, including the Technical Inspector for Pilot Boats, Head Engineer Jan-Eirik Tveit, inspected the boat the next morning. In the afternoon we passed Alden, a 480 meter high island which was the first really imposing landmark on the trip north. In the afternoon we reached Florö in heavy rain but calm winds.

The following morning took us between high mountains on the very sheltered route to Målöy. The forecast for the apparently dreaded Stadt was for a Force 8 gale, but the waves proved less difficult than

expected. During the passage we probably never experienced more than Force 7, though there were certainly some interesting waves from all directions. The boat handled the rough sea very well. After an hour of holding on, the seas calmed as we left the west coast and headed northeast. After a short stop alongside LOS 099 in beautiful Ålesund, we finally made night alongside LOS 094 at the pilot station in Kristiansund around midnight. Despite the late hour, the sky was still very light.

Trondheim route

After Kristiansund we took the beautiful Trondheim route, stopped briefly for dinner in Rörvik and then sailed on to Brønnøysund where we stopped at midnight. The first stop the next day was at the Sandesjöen Pilot Station, where we tied up alongside LOS 100 and LOS 106. In the late afternoon we passed the Arctic Circle Monument at 66° 33' N. Later in the evening we were able to enjoy the boat's very impressive handling capabilities in following seas as we sailed up Vestfjorden inside the Lofoten peninsula to our evening destination: Löddingen Pilot Station, where we again experienced a gloriously light midnight. From Löddingen we had a fairly short day's trip via Harstad to Tromsø, where the boat stayed for a couple of days of servicing and some additional electronics installations.

Varying conditions

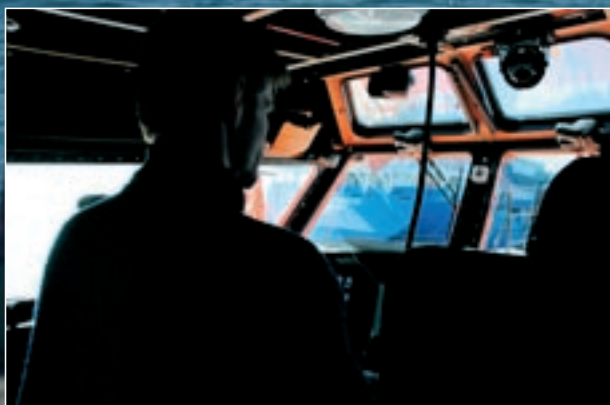
The final days of sailing under the Swedish flag took us from Tromsø to Honningsvåg, close to North Cape. In Honningsvåg NB 544 was handed over to Kystverket by Docksta's Chairman, K-A Sundin, and was named LOS 115 by Kystverket's General Director, Mrs Kjersti Stokkvik. The ceremony was performed in the presence of about 250 Kystverket employees, who were attending the annual Kystverket Days during the season of the glorious midnight sun.

Navigating around most of the Scandinavian peninsula in May is a most pleasant experience, and a very good way for a new boat to prove herself in widely varying conditions. NB544/LOS 115 really did prove herself. The crew were certainly impressed, and a lot of other Pilot Boat crews had a chance to check the boat out during its 2,100 mile delivery trip.

The crew members alternated during the trip. Two of the boat's future crew members, Sigleif Mikalsen and Leif-Tore Nilsen, were on board all the way from Docksta while K-A Sundin took the first turn as skipper, being relieved by Fredrik Falkman at Hvasser. The designer of the newly developed hull, Naval Architect Johan Björklund of JB Seaform, got a chance to test his theories in real life conditions between Dalarö and Kalmar.

trip

DOCKSTAVARVET's Newbuilding No. 544, was delivered to the Norwegian Coastal Administration (Kystverket), Kirkenes Pilot Station, during a naming ceremony in Honningsvåg on May 31, 2007. The boat made the 2,100 nautical mile delivery trip on its own keel in the latter half of May.



AP 16500

LOA	16.669 m
LPP	14.8 m
B max	5.11 m
Draft BL at DWL	1.95 m
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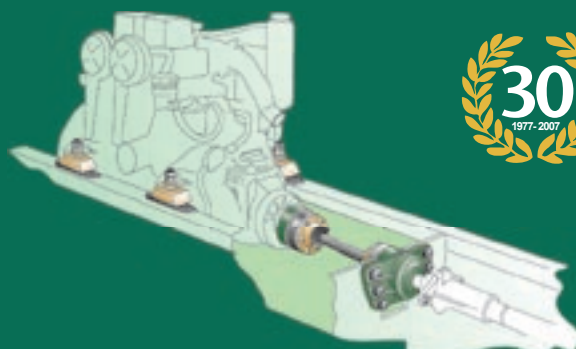
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HAVTERNEN

Designing and building a new type of vessel

“It’s challenging to switch from serial production to producing individual units to order,” Torbjörn Larsson, Dockstavarvet’s CEO, says. “But with the benefit of hindsight, and with customer feedback like ‘it’s a lot of boat for the money’, I’m glad we accepted the challenge. Since then, there’s been more interest from other customers, and the outlook is good.”

In late 2005 Dockstavarvet signed a contract for delivery of a 20 m Fishery Inspection Vessel to the Danish Inspectorate of Fisheries, with an option for one further vessel.

The decision to offer the vessel in the first place involved a number of questions. The reason was obvious: Dockstavarvet had for nearly two decades been working almost exclusively on serial production of the 15 meter CB 90 H and similar-sized Pilot Boats.

Market considerations

Now, all of a sudden, the company was being asked to produce a single vessel with a number of specific features. The project was challenging both in terms of the time needed to ensure a correct and attractive offer and in terms of calculating the number of man hours required for engineering, planning and construction.

“In estimating the value of such a vessel you also need to take account of the potential for further orders,” Torbjörn Larsson explains. “It’s hard to estimate the extra costs involved in a single unit order, but generally speaking it’s not the most efficient alternative for the customer, nor does it give the shipyard the best return on the money spent.”

Designing a one-off boat based on an existing design

Once an offer had been produced and accepted, the real work began. The design was based on the ‘300’ series used by the Swedish Coast Guard, of which a considerable number had been built, though not in Docksta. “But we were fortunate,” explains Håkan Wedin, the Project Manager. “The customer did everything he could to assist us; he wanted a well built vessel. We had all the drawings for the earlier vessels, but I can honestly say that no two drawings were alike in the end. The hull design was almost the same, but pretty much everything else was different, including a new drive line and a new interior design that is better adapted to a live-aboard type of operation. This meant that we had to equip the boat with additional systems, including a watermaker, a waste treatment unit and a fully fledged ship heating and air conditioning system. There’s also a RIB mounted in a ramp at the stern and a lot of insulation to meet the low noise levels required by the Danish Shipping



Inspection,” Håkan adds, “all of which called for tight weight control throughout the production process.”

Experiences add value for both parties

In this project we had very strict contractual obligations to deliver certain operational capabilities and a speed of 18.5 knots at full load condition with a maximum of propulsion power of 735 kW,” Torbjörn Larsson says. “In the end we were able to meet all the requirements and achieve the required speed by a good margin. Living on board is quite different from spending a couple of hours on board, and here we succeeded. This vessel is ideally suited for extended periods of service, as confirmed by the customer. This delivery is a very good example of what a small niche shipyard is able to do, based on more than 100 years of experience”, Torbjörn Larsson says.

Fishery Inspection Vessel CG 20 HAVTERNEN

LOA	20.190 m
L, hull	19.90 m
BOA	4.65 m
Depl.	35 tons
Engines	2 x Scania, 374.5 kW
Speed, 100% MCR	20 knots
Classification DNV	+1A1 LC R2 Patrol
Gross tonnage	44.6 tons
Rib boat	4.7 m / 25 knots

IC 16 M

Patrol Boats for Po



Polish Border Guard



They are robust, well equipped and fast, and will form an important part of the EU's border control programme. In the second half of 2007 the Polish Border Guard took delivery of four patrol boats from DOCKSTAVARVET.

Continues >>

The almost mirror-like surface of the bay outside DOCKSTAVARVET, a 100 km north of Sundsvall, is cleft asunder by the V shaped aluminium hull, speeding along at over 40 knots. The hull's tried-and-tested 20 degree deadrise ensures a smooth ride and makes the boat easy to manoeuvre, adding to its excellent sea-keeping qualities. After a few minutes Project Manager Per Öberg slows down and steers back towards the wharf.

This is a test run in preparation for delivery of DOCKSTAVARVET Newbuilding No 547, a Patrol Boat, type IC 16 M, ordered by the Polish Border Guard.

Significant addition

"This is the last of four boats we're exporting to Poland. All that remains is to make a few fine adjustments and add some components before we sail the boat over to Gdansk together with the buyer's

“The boats are equipped with a complete navigation system, including a radar, GPS system, Plotter and VHF radio

representatives. In Poland the patrol boats will make a significant contribution to the monitoring of the EU's external borders," Per Öberg says.

Patrol Boat IC 16 M is based on the same hull as the CB 90 H, which was designed by the Defence Materiel Administration (FMV) and engineered and built by DOCKSTAVARVET for the Amphibious Corps of the Royal Swedish Navy. In the Patrol Boat version the bow ramp has been replaced by a soft nose stem and the hull has been lengthened by 1 meter.

Well equipped

The nearly 16 m long hull has been designed and equipped in accordance with the requirements of the Polish Register of Shipping. The boat is made of

welded aluminium plates up to 15 millimetres thick and has six separate watertight bulkheads. All the interior fittings and fixtures are fire-protected and have been built using "honeycomb" technology, i.e. they are made of aluminium lamellae that form small cells, the outer layer of which resembles wood.

The boats are equipped with a complete navigation system, including a radar, GPS system, plotter and VHF radio. The four seats in the wheelhouse are fitted with three-point belts. To aid communication, there are also four headsets with microphones and headphones.

Ten years' experience

The interior fittings and fixtures have been adapted for a four-man crew, including a mess, toilet, shower and a galley below deck. This version of the patrol boat will also be able to take up to six extra people, e.g. a police task force or Border Guard staff.

"The changing nature of global threats, including increasing terrorist, pirate and smuggling activities, is putting pressure on authorities to keep up with the latest developments in surveillance equipment. We have over ten years' experience of building patrol boats – civilian and military – and have delivered boats to markets all over the world," says Torbjörn Larsson, Dockstavaret's CEO.

1,600 HP

Since 1975 DOCKSTAVARVET, a family-owned company founded in 1905, has delivered over 240 Combat Boats, Pilot Boats and Patrol Boats to customers in Denmark, Norway, the UK, Russia, Greece, Mexico and Malaysia as well as the Swedish Naval Forces.

The patrol boat order from Poland was won against tough competition from prominent Finnish, Dutch and other shipyards.

Each patrol boat is fitted with two Scania DI 16 Marine Diesels, which generate a total engine power of 2 x 800 HP at 2,200 RPM. The engines drive two Rolls Royce FF-410 water jets. The cruising speed is 35 knots and top speed is 42 knots.

Excellent sea-keeping qualities

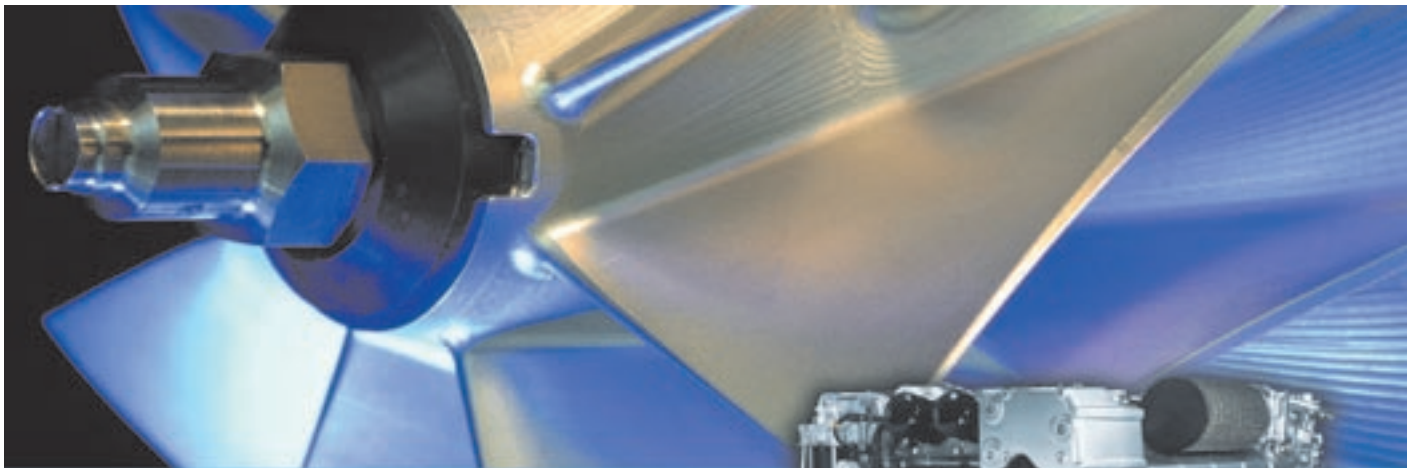
"We have a long and positive experience of Scania, having worked together since the late 1980s. The requirements for patrol boats are very stringent. Operational safety has to be combined with excellent sea-keeping qualities and the capacity to carry an additional load of up to two tonnes," Torbjörn Larsson says.

In addition to the four patrol boats, the Polish Border Guard has also purchased training services, both for the technical equipment and for the engines and handling of the boats. The training activities, led by staff from Scania and DOCKSTAVARVET, have been carried out on site in Poland in conjunction with the deliveries.

Text & pictures: Bernt Josephson

Patrol Boat IC 16 M for the Polish Border Guard

Length	15.90 m
Beam	3.80
Displacement	20 tons
Engines	2 x Scania DI 16, 589 kW
Cruising speed	35 knots
Top speed	42 knots
Fuel capacity	2,500 l
Range	330 NM



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“A key factor behind the success of the CB 90 H concept is that most people involved in the project have a military background,” explains acting Sub-Lieutenant Nils Karlén from the Testing Centre of Amf 1, 1st Marine Regiment.



Continues >>



“This meant that the professional needs were understood at an early stage, and the end user (the Amphibious Corps) was involved from the start. The result is a boat that is closely adapted to our needs. I also like the idea of using the tried-and-tested concept of the HS version of the CB 90 H as a platform for our ambulance capacity.”

147 boats in operation

The Swedish Amphibious Forces received delivery of their first CB 90 H units back in 1991, and there are now 147 boats in operation in a range of different models. Their initial mission was rapid landing of troops anywhere along the Swedish archipelago, thereby maintaining a strong and effective defence of the extensive Swedish coastline.

In the late 1990s a major change took place in the international security environment, especially in Europe, prompting a thorough review of the Swedish defence system. In late 2001 the Swedish Defence Administration requested that the 27 remaining CB 90 H in the order from DOCKSTAVARVET be adapted for use in international peacekeeping missions. This required that the boats be fitted with ballistic protection, air conditioning and BC protection systems. The order was made after comprehensive tests and trials conducted using two prototypes based on the standard boat. The modified version is now known as the CB 90 HS. (S=skydd=protection)

A new Marine Ambulance

The 11 meter boat originally designed for ambulance duties had long been considered inadequate. A decision was therefore taken to create a new version based on the CB 90 HS platform.

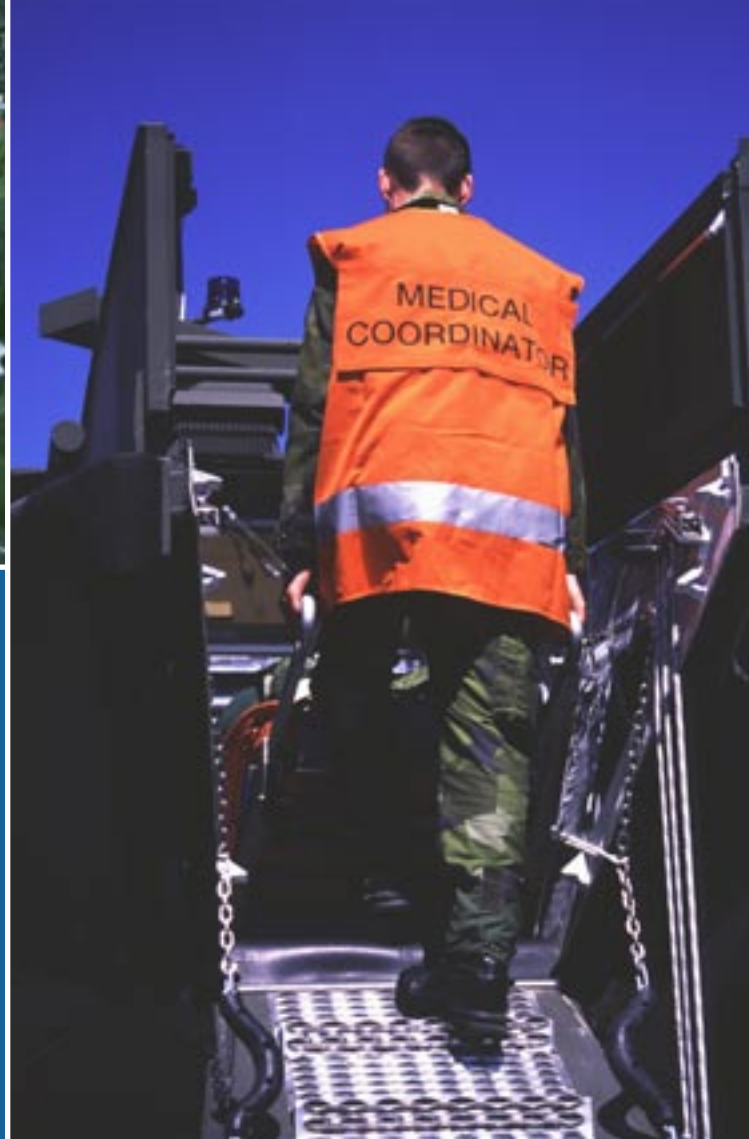
“We have now been testing the new Marine Ambulance for nearly six months,” Nils Karlén says. “We will be receiving another three Marine Ambulances in 2008 – 2009, and we have been evaluating the boat in order to guarantee its performance. But we will not be recommending many changes, as the boat already meets our key requirements. The Ambulance version retains all the well-known characteristics of the CB 90 H, including its excellent sea-keeping qualities and outstanding manoeuvrability.

Medical staff had a lot of influence on the layout, ensuring adequate on-board first aid treatment. Thanks to this, the Marine Ambulance can provide treatment equal to that of any mobile ambulance on the roads. We have four on-board stretchers, and during our test period we worked hard to eliminate any situation that could endanger the safety of the patients. So far, we have not experienced any cases where a patient has fallen off a stretcher. The stability of the boat itself and our strict approach to safety helped to ensure very good results. We think this boat is excellent. In normal conditions we will always bring the patients on board through the aft door. Alternatively, the bow ramp can be used. This is a



Combat Boat 90 HS Marine Ambulance

Length OA	14.9 m
Length WL	13.0 m
Beam, moulded	3.80 m
Draft	1.00 m
Light weight	15 tons
Speed	40 knots
Range, cruising	300 NM



clear advantage when there are no good mooring opportunities or when you are assisting people in the water during rescue missions.”

On-board medical equipment

In the ambulance version the troop transport compartment has been modified to form a first aid area with room for four recumbent patients. In addition to the boat commander and navigator, both of whom assist in carrying the stretchers, the crew includes a medical orderly and a nurse. Patients on stretchers have their feet in the direction of travel. All four stretcher positions are connected to a fixed oxygen system, in which all the oxygen tubes are kept in a secure box in the stern. “If there is an alarm about a possible oxygen leak in the medical compartment, the crew can cut off the gas, release it through a safety valve on the aft deck or, if there is risk of fire, release the safety box on the aft deck. If we continue on deck,” continues Nils Karlén, “the most significant change is the Red Cross sign, which can be seen from the air and from either side. There is also a flashing blue light indicating an emergency mounted on the foldable mast. The patients’ belongings are kept in a special box on deck.”

Teamwork a key factor

Teamwork between the crew and the medical team is crucial to ensuring the comfort of the patients. The

crew’s task will be to operate the boat in a way that minimizes wave impact in adverse weather conditions. Training is another important factor. This autumn the Marine Ambulance has been taking part in a number of international exercises.

“The main characteristics of the Marine Ambulance can be summarised in four key terms: speed, availability, patient comfort and safety. The new Marine Ambulances will be a valuable addition to the Royal Swedish Navy, increasing our credibility when it comes to taking care of and removing wounded people from a combat zone.

During the test period we demonstrated the boat to several national navies, and the reactions we received were extremely positive. They were taken aback by the boat; many had never seen a boat like this before,” Nils Karlén says.

CB 90 H in a nutshell

DOCKSTAVARVET has so far delivered no less than 240 units. This figure includes a number of versions featuring different performance capabilities. The boats are used in three continents in countries such as Greece, Malaysia, Mexico, Norway and Sweden.

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Licence production at SAFE Boats International opens up new market

The CB 90 H Fast Landing Craft is still an important part of Dockstavarvet's product portfolio, although the first prototypes were delivered already back in 1989. Thanks to a licence production agreement with SAFE Boats International of Seattle, the US market is now also starting to open up. SAFE Boats has already delivered a prototype CB 90 H to the US Navy for tests and trials. A second unit has been ordered and will be fitted out as a Command Boat.

"Time will tell how this situation will develop, but we have high hopes for the new partnership with SAFE Boats," Dockstavarvet's CEO, Torbjörn Larsson, says.

Versatile design

Ever since the first serial version was put into service by the Swedish Naval Forces in 1991, the CB 90 H has attracted considerable international interest thanks to its unique capabilities. These include the strong, shallow-draught design combined with a functional bow ramp which facilitates landing in almost any environment, manoeuvring characteristics that provide extreme crash-stop forces, very fast acceleration and a top speed of over 45 knots. Options such as ballistic protection, closed ventilation and full air conditioning offer enhanced comfort and safety and are often a requirement in international peacekeeping operations.

"The design is very versatile. So far we've delivered over 240 units, which are deployed all over the world, including Greece, Malaysia and Mexico. They are used for coastal surveillance, landing assignments and other marine operations," Torbjörn Larsson explains.

Staff on location

These were some of the qualities that attracted the interest of the US Navy and resulted in a partnership with SAFE Boats International.

"The US Navy has been looking at the CB90 for some time. They noticed the advantages, in landing assignments for instance, compared with the RIBs currently in use, but the problem has been that the boat is built in Sweden."

This problem has now been eliminated through a licence production agreement with SAFE Boats International. The Seattle-based boat manufacturer has previously delivered boats to the US Navy and Coast Guard.



"The partnership started with a prototype based on a complete hull assembly from Sweden, which was fitted out at SAFE Boats with assistance from our staff. We've had people on location in the US to help monitor production and provide assistance throughout the manufacturing process," Torbjörn Larsson says. "The first US-manufactured CB90 will be delivered to the US Navy in spring 2008."

Evaluation

The boats will mainly be used for patrol assignments on rivers and other hard-to-access and shallow waterways.

"The boats will undergo very tough tests and evaluations before they're approved. It's still too early to predict what'll happen then," Torbjörn Larsson says, though he hopes and believes that this is the start of a long-term partnership with SAFE Boats International.

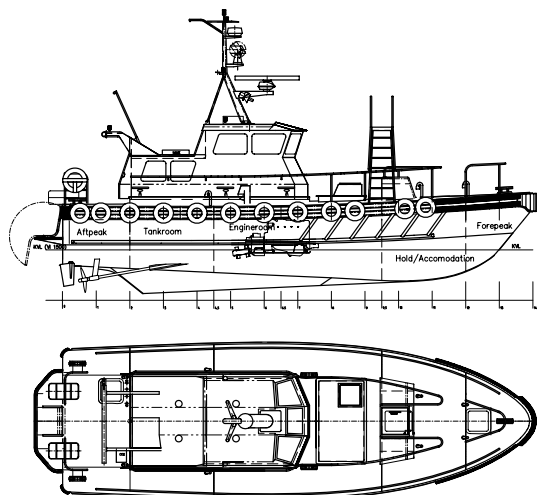
"Technology transfer and licence production will become increasingly common in the future, and we already have a lot of experience in this highly specialized type of production process."

Combat Boat 90 H

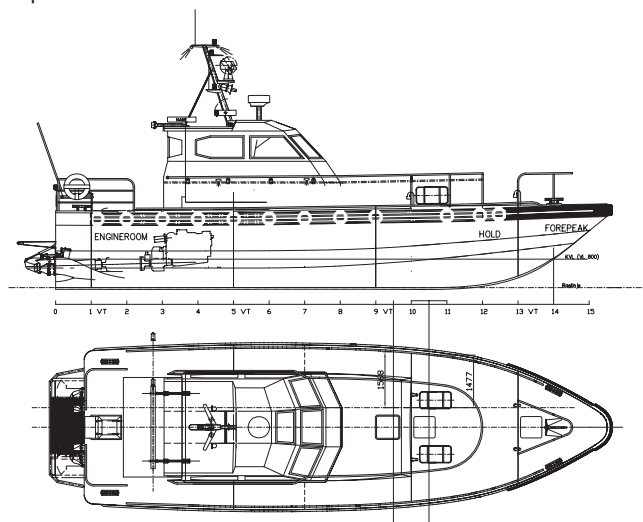
Length over all	14.90 m
Beam	3.85 m
Displacement	18 tons
Engine power	2 x Scania 625 kW
Speed	45 knots

AP 14000

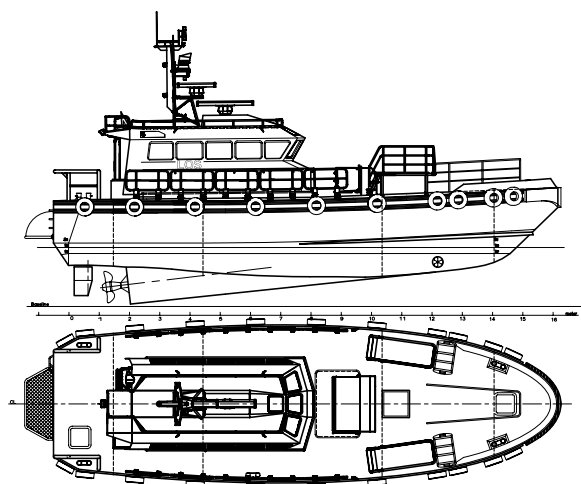
Length over all	13.90 m
Beam	4.60 m
Displacement	20 tons
Engine power	2 x 330 kW
Speed	20 knots

**AP 14700 WJ**

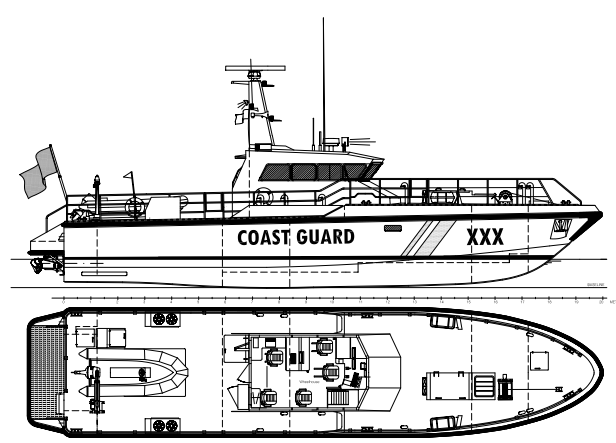
Length over all	14.7 m
Beam	4.65 m
Displacement	20 tons
Engine power	2 x 374 kW
Speed	33 knots

**AP 16500**

Length over all	16.70 m
Beam	5.10 m
Displacement	25 tons
Engine power	806 kW
Speed	22 knots

**CG 20 M**

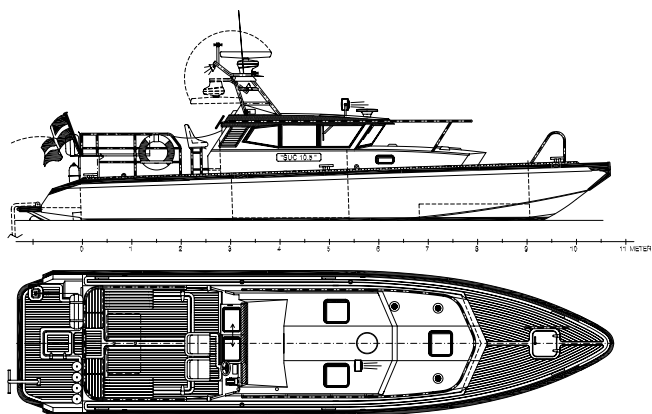
Length over all	20.190 m
Beam	4.65 m
Displacement	35 tons
Engine power	2 x 374.5 kW
Speed	20 knots





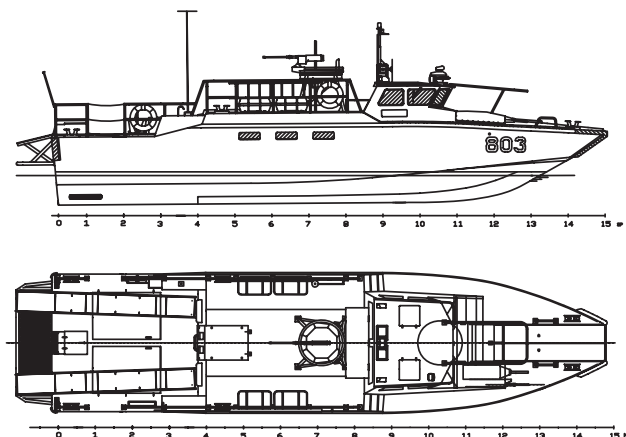
IC 11 M

Length over all 11.30 m
 Beam 2.94 m
 Displacement 8.2 tons
 Engine power 2 x 368 kW (1000 hp)
 Speed 42 knots



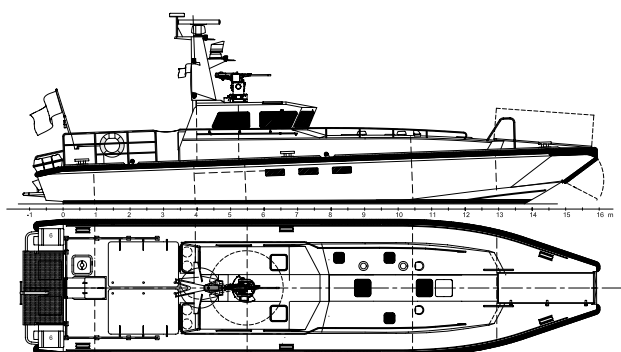
CB 90 H

Length over all 14.90 m
 Beam 3.85 m
 Displacement 18 tons
 Engine power 2 x 600 kW
 Speed 45 knots



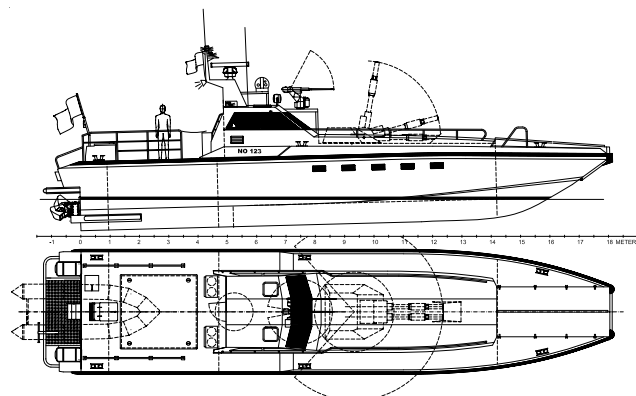
IC 16 M

Length over all 15.90 m
 Beam 3.95 m
 Displacement 20 tons
 Engine power 2 x 810 kW (2200 hp)
 Speed 50 knots



IC 18 M

Length over all 18 m
 Beam 4.2 m
 Displacement 25 tons
 Engine power 2 x 1100 kW
 Speed 50 knots



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