Propeller design, thruster.  
Baltic 38DP

BAKGROUND
As our children have grown up and left the home we, my wife and I, are facing a challenge: To be sailing with a trained and agile crew is no longer to be taken for granted; instead we sail shorthanded or with unexperienced friends that are “slightly” less agile than my son and daughter when they were teenagers.

This makes the need of support urgent, electric winches, electric furlex, and also a bow thruster installation is needed to be developed and installed on our yacht.

The yacht is a Baltic 38DP built 1985 by Baltic Yachts in Finland as number 17 of 55. Hull shape is rather modern with a narrow and flat fore ship. This hull cannot take a tunnel mounted bow thruster. The alternative is a retractable thruster that can be lowered below the hull when used. There are commercial alternatives available but for many reasons they will not fit without large compromises in cost, sound level, functionality or efficiency.

MISSION
Design a nozzle/duct and propeller that allow the design of a retractable bow thruster that is small, deliver a significant thrust, and has an attractive cost.

DESIGN CONCEPT
The duct and propeller will be mounted on a retractable arm that will be lowered below the hull when used. Drive will be installed in the hull, not a RIM drive
Intention is to mount the propeller in the duct without a central hub.

See picture below

![Picture showing bow thruster with RIM-drive](image-url)
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MAIN REQUIREMENTS
- Vibrations and sound levels shall be low.
- Efficiency high, to save battery capacity.
- Production cost shall be low.

PREREQUISITES
- Ship speed non to low in thrust direction.
- Ship speed maximum 3 knots across thrust direction.
- Maximum thrust >1000N

POTENTIAL
Above described work is for a unique application and is to be seen as a prototype. However if the solution meets all requirement there is a possibility for a market introduction. According to SXK there are a growing number of yachts sailing “shorthanded” as people keep and sail there yachts at a higher age than before.

If going for market introduction there will be need for a review of the requirements and design.

Best Regards

Carl-Göran

ABOUT ME
I studied at Chalmers 1977 – 1981 and have a MS in Naval Architecture. During the years 1982 to 1985 I was employed at Kockums shipyard where I have designed a number of ships and propellers. After the close down of Kockums civilian operations I left the marine industry.

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