	Technical Information No. 07/1
Subject	Bow Thruster Installation
Section	Propulsion
Content	Maneuvering with long keelers like the older generation Trintellas requires a lot of skill from the skipper. It's not something we are all blessed with. A bow thruster provides a solution and is a welcome aid for many owners to maneuver easily and safely. Here, the installation in a Trintella IIIa is described.

1. Introduction

Bow thrusters were once only found in commercial shipping and rarely on recreational vessels. In recent years, bow thrusters have gained more traction and are increasingly being installed as standard or optional equipment on modern sailboats from the shipyard. They are now even seen on modern sailboats as small as 8 meters with hull designs featuring a minimal wetted surface area.

However, most older Trintella models have an S-shaped hull with a long, continuous keel, resulting in a large wetted surface area. This design requires moving a significant amount of water during course deviations, making them very difficult to maneuver in reverse. On the other hand, an S-shaped hull offers very stable and reliable behavior in rough seas.

With the growing demand for bow thrusters in sailboats, prices are becoming more attractive, and we increasingly see Trintella owners installing them. TVK member Willem de Graaf describes his experiences installing a Vetus BOW 5512D in a Trintella IIIA in this TI.

2. Selection

Most suppliers have established selection criteria, typically based on the length, displacement, and available installation space. For my Trintella IIIa, I chose a Vetus BOW 5512D with a tube diameter of 150mm. The next model in the series has a tunnel tube diameter of 180mm, which seemed unnecessarily large.

Step 1: Define the location

According to the Vetus manual, the top of the tunnel must be at least 1/2 tunnel diameter below the waterline. To minimize the loss of interior space for sail storage, the tunnel was positioned as far forward as possible with its centerline 25 cm below the waterline. A drawback is that the bow thruster can partially emerge above water in rough conditions, though this rarely occurs during harbor maneuvers.

Step 2: Drilling the centerline and marking the tunnel opening

After determining the correct position on one side, a hole was drilled for a threaded rod. Inside the bow, the threaded rod was used to precisely determine the horizontal and perpendicular position to the keel line for the port side hole. From the inside, a small pilot hole was drilled, which was then enlarged from the outside to the diameter of the threaded rod. A felt-tip marker was attached to the threaded rod using a wooden block and tape, positioned 7.5 cm from the centerline, to mark the oval opening on the hull.

Step 3: Tunnel tube installation

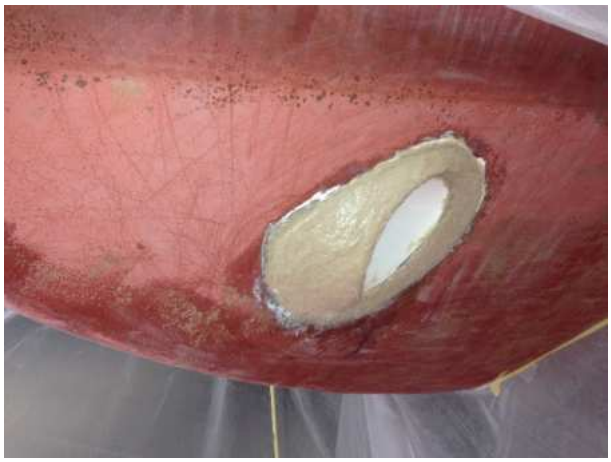
Using a jigsaw, both holes were cut, and the gelcoat and paint were ground away down to the laminate both inside and outside. The tunnel was loosely positioned, and the locations for the holes to secure the bow thruster were marked and drilled.

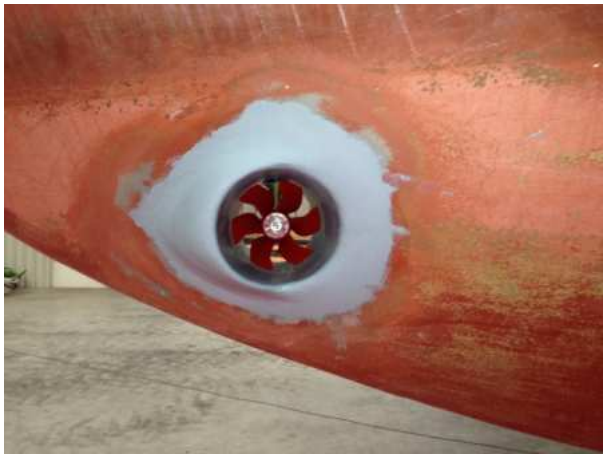
Step 4: Laminating the tunnel to the hull

To laminate the tube to the hull, fiberglass mat with epoxy was chosen. Fiberglass mat with polyester is also an option and is slightly less critical regarding mixing ratios. As seen in the photo, it was necessary to remove the floors (stringers) around the tunnel area. First, I laminated the inside of the tunnel with multiple layers of epoxy and fiberglass mat. After curing, I laminated the outside after shortening the tunnel tube.

Step 5: Installation check
The motor and bow thruster were mounted to ensure the positioning was correct. They were then removed, and the holes were taped over. The interior was further finished and reinforced with thickened epoxy, followed by fiberglass cloth with epoxy.

Step 6: Laminating and streamlining the tunnel exterior
The correct "bulb" shape was determined by eye to ensure proper water flow while sailing. The tunnel tube was shortened, and the mat, epoxy, and fiberglass mat were laminated. The "bulb" was roughly shaped with thickened epoxy and finished with fiberglass mat. Finally, it was smoothed with epoxy filler and coated with seven layers of Primocon.





Finishing and Final Result

Careful sculpting of the bulb and meticulous finishing with filler took quite a bit of time. I was satisfied with the final result. Aside from the antifouling, the exterior installation of the bow thruster is now complete. Inside, work can continue with connecting the battery and setting up the controls using a joystick at the helm. Since my batteries are located amidships at the base of the mast, a separate battery for the bow thruster is not necessary. However, if the battery were in the engine compartment, a separate battery would be preferable.

Inside, after finishing and painting, a bulkhead was laminated directly behind the bow thruster to keep it clear of the sail storage area behind it. This bulkhead is laminated to the hull and is well above the waterline, also serving as a collision bulkhead.

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