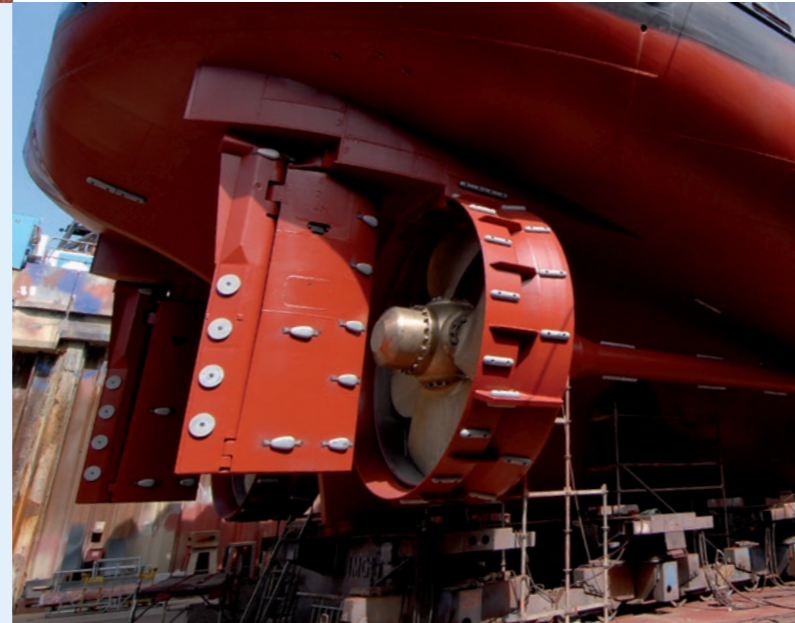




» Customised nozzles

Damen Marine Components produces all nozzle types as requested by its customers.

The internationally renowned Marin/Wageningen 19A profile can be delivered in various L/D lengths. This nozzle type is often used for thrusters and where reverse thrust is less important.



» VG40 nozzle

The VG 40 has a shorter profile length than the 19A, but delivers the same forward thrust performance. At high cruising speeds the VG 40 outperforms the 19A.



Propeller nozzles

TO INCREASE YOUR THRUST PERFORMANCE

DAMEN
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Optima nozzle

The roots of the Optima nozzle began many years ago at the Netherlands Maritime Research Institute (MARIN).

At that time, nozzle type 19A had become the industry standard, offering excellent performance in forward propulsion. Another nozzle, the 37, had been developed to address the requirements of reverse thrust. The challenge that faced the industry was the development of a nozzle that could offer optimal results in both directions.

Damen Marine Components stepped up to the mark and delivered the solution: the Optima nozzle.

» Versatility

Thanks to its robust profile and excellent performance characteristics both forward and reverse, the Optima nozzle is ideal for a wide range of vessel types. To ensure extreme versatility, the Optima nozzle is available in different sizes:

- » The L/D 0.4 version requires less engine output with ice class and generates less resistance at high speeds. Consequently, it delivers higher speeds to coasters, fishing ships and other ship types sailing at speeds of up to 14 knots.
- » L/D 0.5 for hoppers, tugboats and inland waterway vessels
- » L/D 0.6 for i.a. pushboats to create high engine output and low speed
- » Optispec: steerable nozzle

» Frequency adjustment

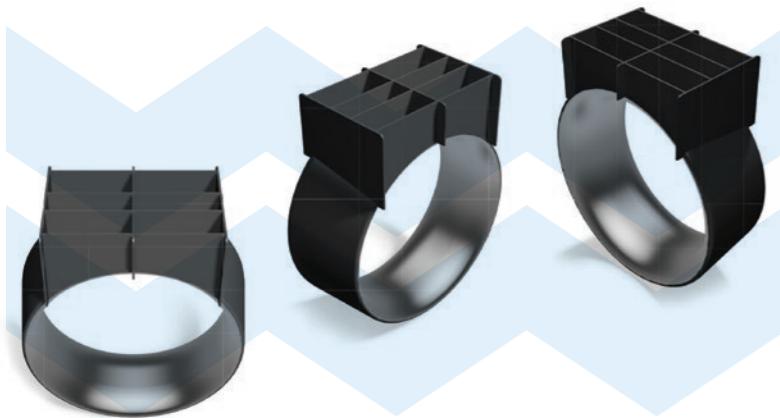
The Optima nozzle can be adjusted in construction to alter its frequency in line with the noise and vibration of the host vessel. This means that noise and vibration levels on board can be reduced to the minimum for additional on board comfort when underway.

» Calculations

Damen Marine Components is able to analyse the operational requirements of individual clients and provide information on whether or not a nozzle is beneficial. If nozzle installation is advantageous, Damen Marine Components is able to advise which type would provide the most benefit and is also able to tailor its designs accordingly.



For excellent forward and reverse thrust



» Sustainability and the single weld spinning method

Propeller nozzles contribute to a significant reduction in fuel consumption and, therefore, CO² emissions. However, Damen's innovative single weld nozzle spinning method takes things a step further. This innovative method sees the complete inner part of a nozzle produced in one go, reducing welding and grinding activity for increased environmental sustainability.

The production process is more efficient so that nozzles of between 1,000 mm inside diameter to 8 m outside can be produced in a very short space of time. Fully automated, the single spin method can produce stainless steel, steel, duplex and special steel material nozzles. The overall quality of the product is significantly improved by the smoother surface resulting from the single weld seam.

» Benefits

The Optima nozzle represents the best of both worlds; a forward thrust performance comparable with the 19A, combined with the excellent reverse capabilities of the 37. Free running, the Optima nozzle produces more thrust than the type 37 nozzle and almost the same whilst going astern. The bollard pull of the Optima is 3.1% higher than the 37.

- » Optimal forward thrust
- » Optimal reverse thrust
- » Designed to reduce sound levels
- » Designed to reduce vibrations

» Increased load allowance

On many inland waterways, load allowance is relative to stopping distance. The Optima nozzle enables a vessel to stop upwards of 20% more effectively than a vessel with open propellers. This allows the vessel to carry considerably more cargo, safely and inline with regulations.

» Optispec nozzle

The Optispec nozzle is designed for vessels not suited to conventional rudder systems and propellers, such as self-propelled cutter suction dredgers and pushers. The Optispec is a free-hanging steerable nozzle with fixed rudder blade, which can rotate at a 2 x 35 degree angle around the propeller. An advantage of the Optispec is that no solepiece connection is necessary, ensuring that the underwater part of the vessel requires minimal space. The Optispec nozzle can be combined well with conventional rudder systems.

