Inland rudder and steering systems

WORLD'S FINEST MANOEUVRING

MARINE SYSTEMS
VAN DER VELDEN®
REGISTERED TRADEMARK OF DAMEN MARINE COMPONENTS

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Rudder systems

Van der Velden® XR

Built to provide optimal propulsion efficiency, the XR rudders are designed for inland vessels, for which course-keeping is most important. With their slim profile, these rudders are designed to be eco-friendly. This refinement results in considerable fuel savings, as well as reducing drag and noise levels.

The slim rudder profile allows the water to flow along the rudders with minimal resistance. With their dedicated design philosophy for this specific operational profile, the XR rudders are excellent for ahead operations.

The position of the rudders can be changed according to client specific requirements.

KEY FEATURES

- Optimal propulsion efficiency
- Reduction of resistance
- Eco-friendly design
- Reduction of noise levels

ESPECIALLY SUITED FOR

- Vessels sailing on inland waterways

Van der Velden® HD

Designed with an asymmetrical profile, the HD rudders assure your vessel of excellent manoeuvring performance and course-stability. With their main purpose to smoothen challenging manoeuvring operations, these rudders have proven themselves in the most stringent tank tests and in practice since 1984.

Another feature of this reliable rudder system are the asymmetric rudder angles of 60/80 degrees, which provide optimal slipstream guidance. The HD rudders have been designed to increase manoeuvrability on inland waterways, particularly at low speeds. Tapping into years of experience and proprietary technology, these rudders have a long lifespan and require minimal maintenance.

KEY FEATURES

- Excellent manoeuvrability
- Long lifespan
- Optimal slipstream guidance
- Minimal maintenance

ESPECIALLY SUITED FOR

- Vessels sailing on inland waterways

Steering systems

Van der Velden® FLEX Flanking

The FLEX Flanking rudder system is an innovation delivering sub stantial efficiency improvement to the inland shipping industry. The FLEX Flanking rudders are positioned in front of the propeller(s), providing increased manoeuvrability performance during astern operations. As oppose d to a conventional flanking rudder system, the FLEX Flanking rudders a re fully retractable and therefore not obstructing inflow to the pr opeller(s) during ahead operations.

During astern operations, the system can be lower ed to provide the required manoeuvring performance. As the majority of operations will be ahead, the unrestricted inflow offered by the FLEX Flanking rudder system will lead to considerable fuel savings.

KEY FEATURES

- High efficiency when sailing ahead
- Unobstructed inflow to propellers
- Considerable fuel savings
- Increased astern manoeuvrability

ESPECIALLY SUITED FOR

- Inland towboats

Van der Velden® three-rudder-system

For inland waterways, high manoeuvring performance is required to secure your operation. The three-rudder-system is famed for its performance and is designed to provide premium manoeuvrability. Whether you are sailing on narrow inland waterways or handling other challenging navigating situations, such as port operations and locks, the three-rudder-system of Van der Velden® has been the best of its kind since 1963.

The three-rudder-system has been designed with a combination of chain drives and cylinders, of which the three slim-profiled rudders optimise the wakefield of the ship. These refinements result in less rudder correction, which leads to considerable fuel savings.

Recent research by DST- Development Centre for Ship Technology and Transport Systems compared prior rudder technology to today's rudder configurations.

Once again research confirmed and proved that the three-rudder-system still provides ultimate manoeuvring and course-keeping capabilities.

KEY FEATURES

- Premium manoeuvrability
- Energy efficiency
- Emissions reduction (CO_2)
- Premium course-keeping

ESPECIALLY SUITED FOR

- Vessels sailing on inland waterways

Van der Velden® 2DWK and 4DWKK

To guarantee the safety of your vessel, a reliable steering system is of the utmost importance. Our heavy-duty asymmetrical steering systems are built to provide security and have a long history of excellence.

Designed using proven technology, the 2DWK and 4DWKK provide optimal slipstream guidance as well as a high-end manoeuvring performance. Tapping into the highest quality materials, our steering systems require minimal maintenance and have a long lifespan.

At Damen Marine Components, each steering system configuration is specifically designed and built depending on a number of parameters such as sailing profile, power and speed.
The 2DWK and 4DWKK perform optimally in combination with our HD and XR rudder systems.

KEY FEATURES

- Minimal maintenance
- High-end manoeuvring performance
- Long lifespan
- Customizable

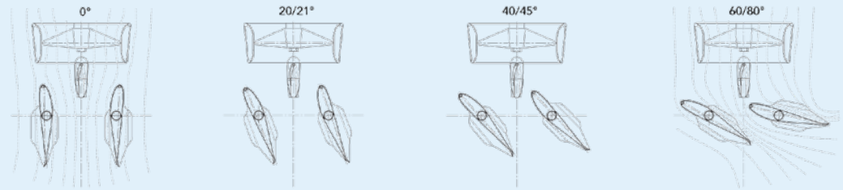
ESPECIALLY SUITED FOR

- Various vessel types, mainly designed for inland vessels

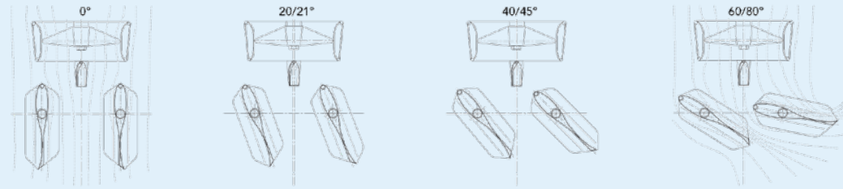
Optional features

Rudder angles

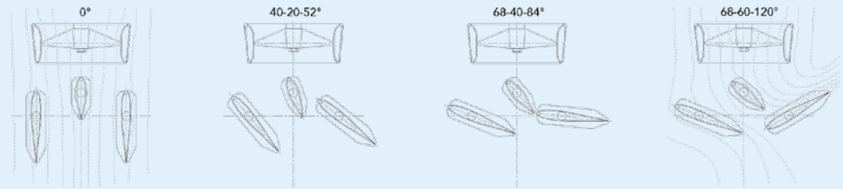
XR



HD



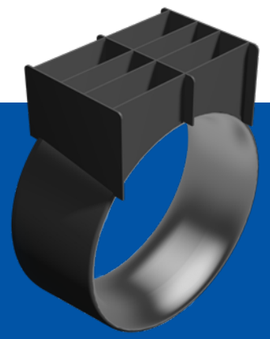
Three-rudder-system



Propeller nozzle

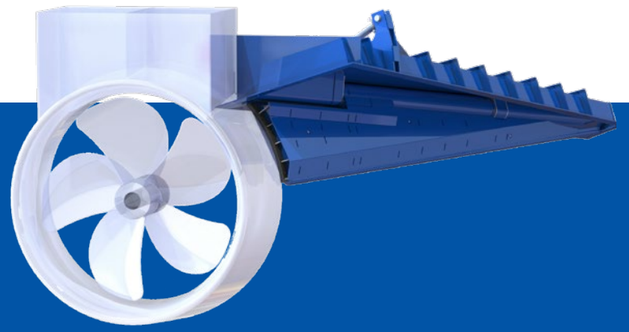
From customised to standardised designs, DMC offers a wide range of nozzle types. DMC's most applicable nozzles for inland vessels are:

- Optima, for optimal forward and reverse thrust.
- Wing, for optimal performance at higher speeds.
- VG40, for optimal forward thrust and improved steering performance.



Van der Velden® FLEX Tunnel

The FLEX Tunnel is a retractable tunnel system, especially developed for inland vessels. Tunnels are commonly used on inland vessels to ensure proper water flow into the propellers at shallow draft. The downside of conventional tunnels are lower efficiency and decreased fuel efficiency and hull resistance at deeper draft. Moreover, loaded inland vessels sail in deep water for approx. 85% of the time, during which a tunnel is superfluous.
In comparison to a conventional tunnel, the FLEX Tunnel reduces the overall resistance due to its size and flexibility. The compact sizing and retractable feature of the FLEX Tunnel give the opportunity to optimize the hull design before build. The FLEX Tunnel improves the operational performance of the propeller at shallow draught when deployed and allows unobstructed water inflow to the propeller when retracted. With the FLEX Tunnel an overall propulsion efficiency of approx. 15% is proven compared to comparable hull designs without FLEX Tunnel.



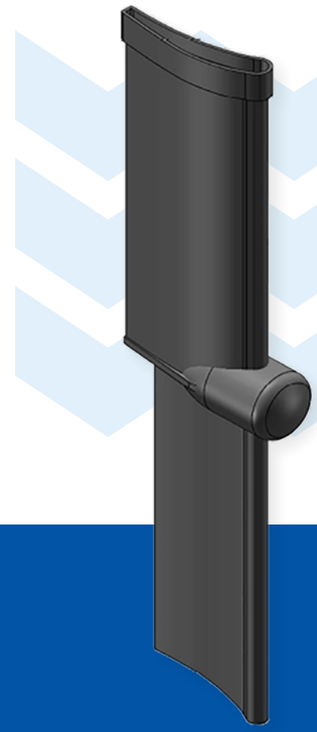
Van der Velden® Hydro Spoiler

The purpose of the Hydro Spoiler is to optimise water flow towards the rudder. A spoiler is placed behind the propeller, exactly on the centreline. The curved blades catch the outflowing water of the propeller and bend it from a swirling into a straight-outgoing flow towards the rudder, making the outflow of the propeller water more equable. Smooth water flow towards the rudder results in reduced noise and vibration levels.

The Hydro Spoiler improves the propulsion efficiency and speed performance of a vessel, and enhances the ship's course-keeping capabilities. Continuous research and experience since the introduction of the Van der Velden® Hydro Spoiler in 1998 have proven that these refinements increase vessel efficiency up to 8%.

At DMC, there are three types of spoilers to choose from:

- HD-B, known as our "standard" spoiler.
- XR-B, this type is designed with a bulb for resistance reduction.
- XR-T, this type is designed with a bulb with streaming body to fill up the entire wakefield from the propeller.



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