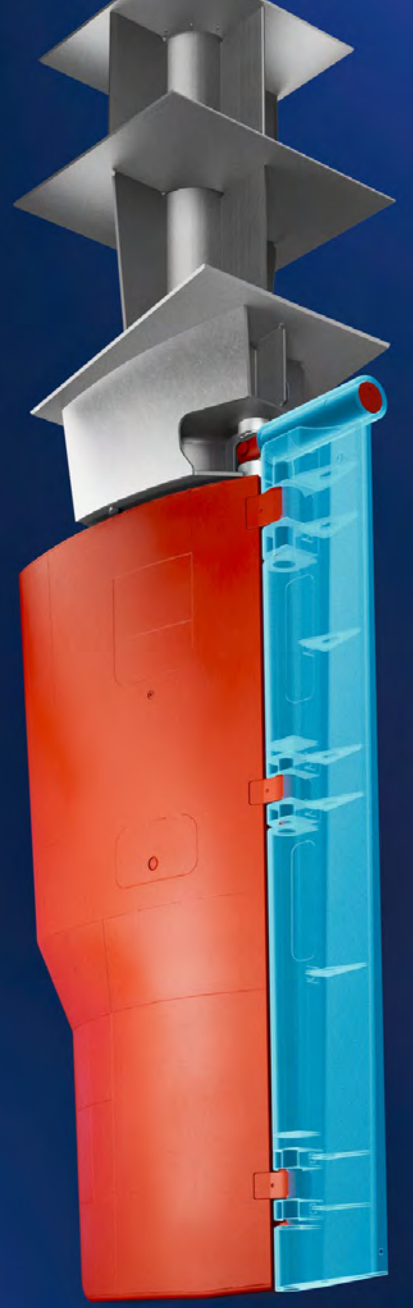
MANOEUVRING SYSTEMS

BECKER FLAP RUDDER



Maximum manoeuvrability meets hydrodynamic efficiency

The Becker Flap Rudder represents the culmination of decades of research, development, and practical experience, and is recognised as the most mature flap rudder design in the shipbuilding industry.

It offers unparalleled manoeuvrability at all speeds while ensuring the best possible efficiency of the vessel. The design, originated by company founder Willi Becker, has become the global standard among ship operators.

Exceptionally compatible with

Ships with high manoeuvring demands and/or high vessel responsiveness already at small rudder angles

- Container Vessels
- Tankers
- Ferries & Vehicle Carriers
- Offshore Vessels & Workboats
- Fishing Vessels

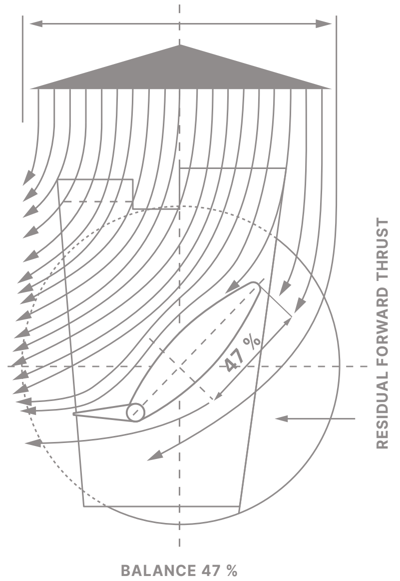
STRUCTURE OF THE BECKER FLAP RUDDER

FLAP ANGLE UP TO

65°

Engineered for efficiency. Designed for durability.

- Increased lift in all conditions, improving the vessel's hydrodynamic performance and resulting in smaller turning circles
- Improved performance in severe weather conditions
- Balance adjustment improves propeller disk coverage
- Up to 65° rudder angles for effective crabbing manoeuvres
- Superior low-speed manoeuvrability

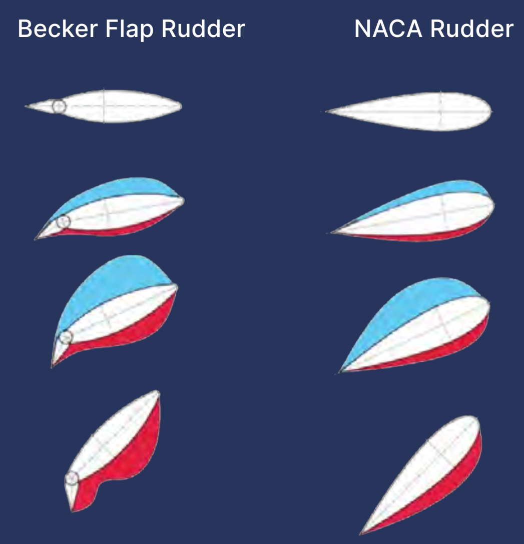


SMART MANOEUVRING WITH
THE BECKER FLAP RUDDER

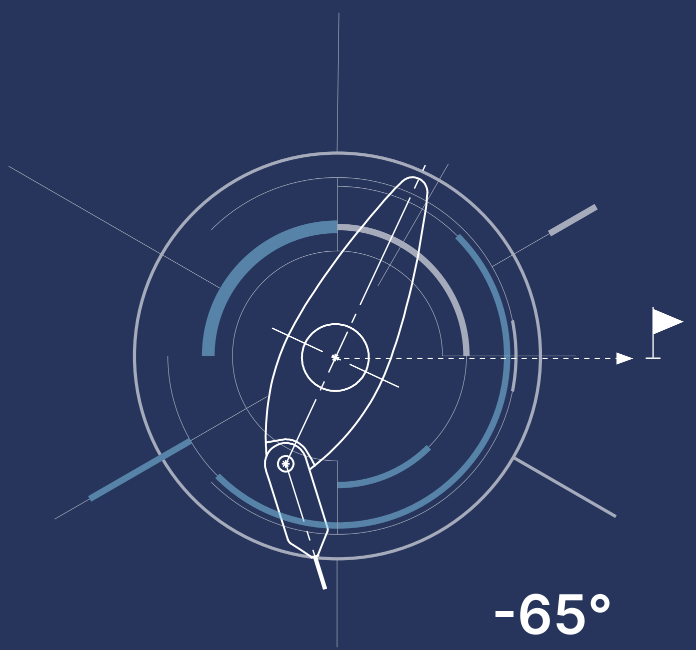
Higher lift due to optimised pressure distribution

The Becker Flap Rudder is based on the articulating flap principle, where the hydrodynamic side force (rudder lift) results from the pressure distribution around the rudder blade.

The flap rudder achieves a significantly higher-pressure distribution on both the suction and pressure sides, leading to greater lift. After the rudder reaches its stall point, only the positive pressure component remains. Even here, the Becker Flap Rudder exhibits a higher-pressure distribution compared to NACA profiles, which makes the Becker Flap Rudder especially powerful in terms of generated lift and efficiency.



Comparison of pressure distribution
● suction side ● pressure side



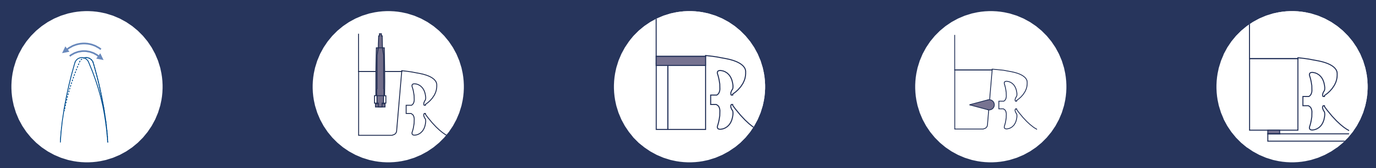
Up to 90° for precise manoeuvring

The Becker Flap Rudder features an additional, moveable flap which amplifies the prescribed rudder angle. A rudder angle of 45 degrees results in a flap angle of 90 degrees.

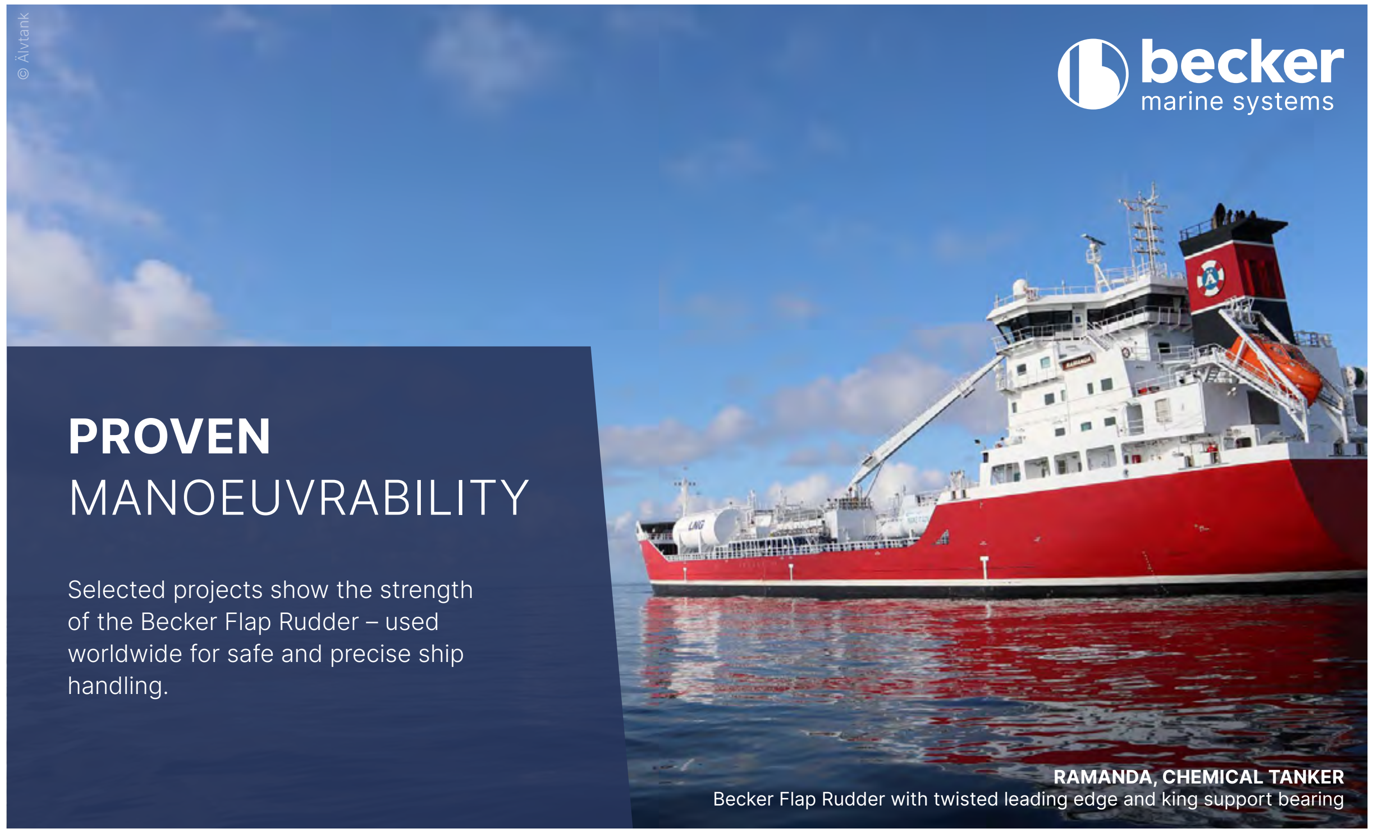
Thus, it responds to smaller rudder angles with significant lateral forces and is especially suitable for ships that need to operate in narrow or restricted water ways.

This rudder is very effective in its response, generating significant manoeuvring advantages from small rudder angles onwards.

Rudder Options



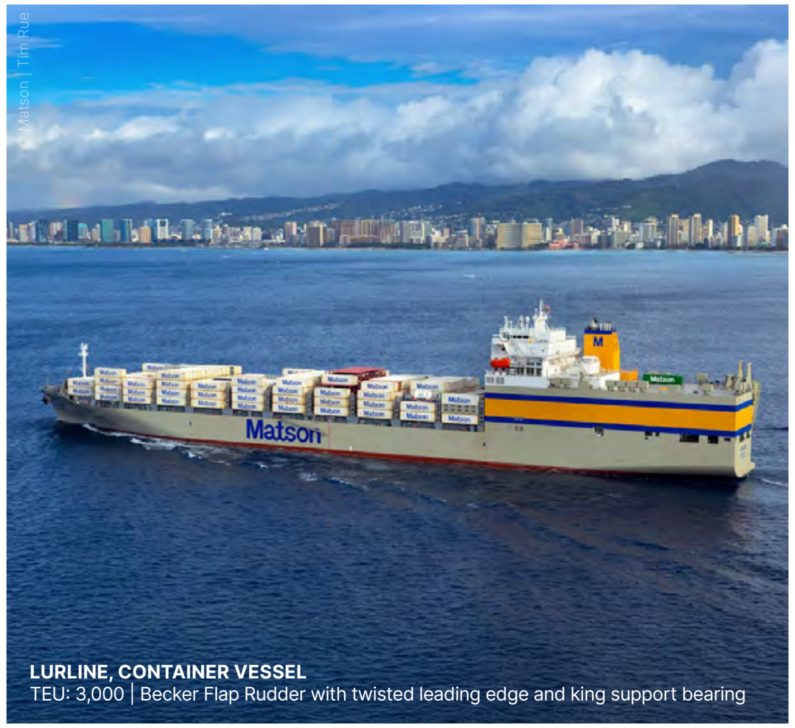
TWISTED LEADING EDGE | KING SUPPORT | CLOSED LINKAGE | RUDDER BULB | HEEL PINTLE



PROVEN
MANOEUVRABILITY

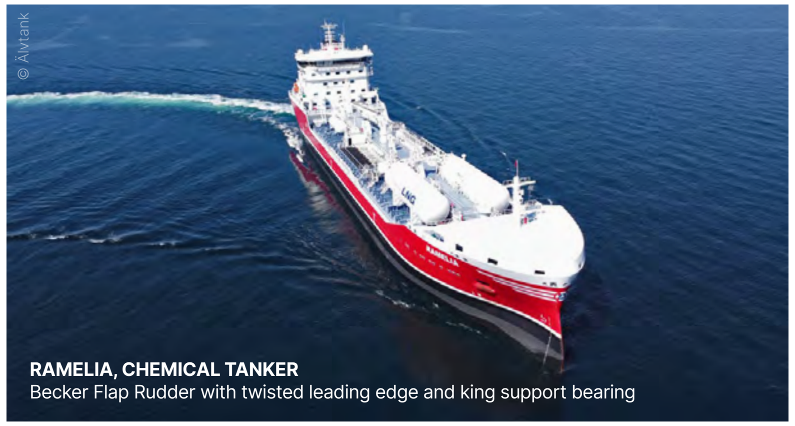
Selected projects show the strength of the Becker Flap Rudder – used worldwide for safe and precise ship handling.

RAMANDA, CHEMICAL TANKER
Becker Flap Rudder with twisted leading edge and king support bearing



LURLINE, CONTAINER VESSEL
TEU: 3,000 | Becker Flap Rudder with twisted leading edge and king support bearing

ATAIR II, RESEARCH VESSEL
Becker Flap Rudder with closed linkage (Heracles)



RAMELIA, CHEMICAL TANKER
Becker Flap Rudder with twisted leading edge and king support bearing

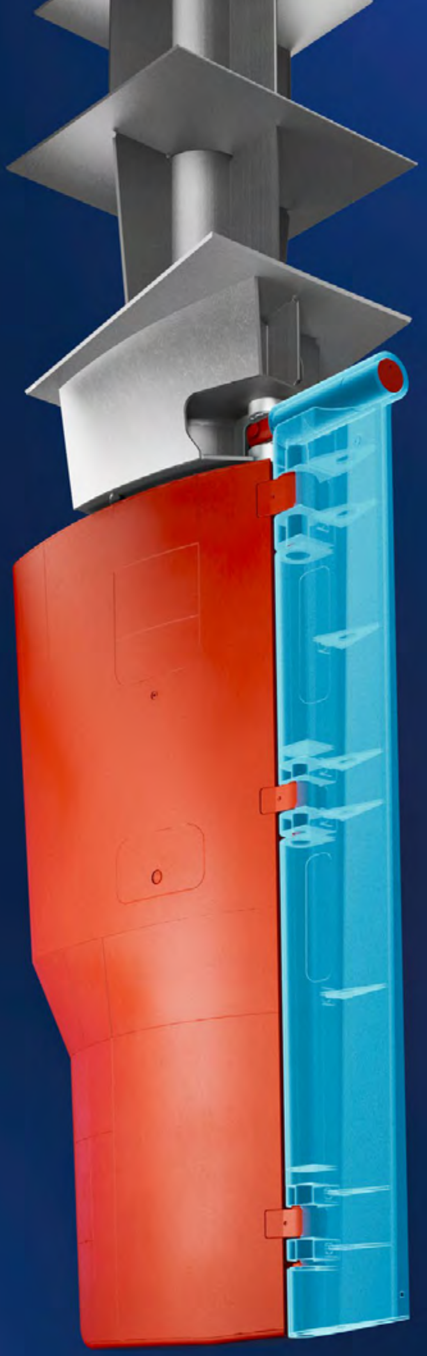
MANOEUVRING SYSTEMS

BECKER FLAP
RUDDER

SHOW PRODUCT

MANOEUVRING SYSTEMS

RUDDER OPTIONS



Customised functions for maximum efficiency and safety.

Discover the wide range of options and additional functions that take our rudder and manoeuvring systems to the next level. By using these options, you can, for example, achieve improved rudder efficiency, minimise the risk of cavitation or increase the performance of your systems under special environmental conditions.

Whether larger rudders with the same efficiency, protection against extreme environmental influences or special adaptations for use on fishing boats - our customised solutions offer you numerous advantages to make the operation of your ships even more efficient and safer.

Custom-fit solutions for:

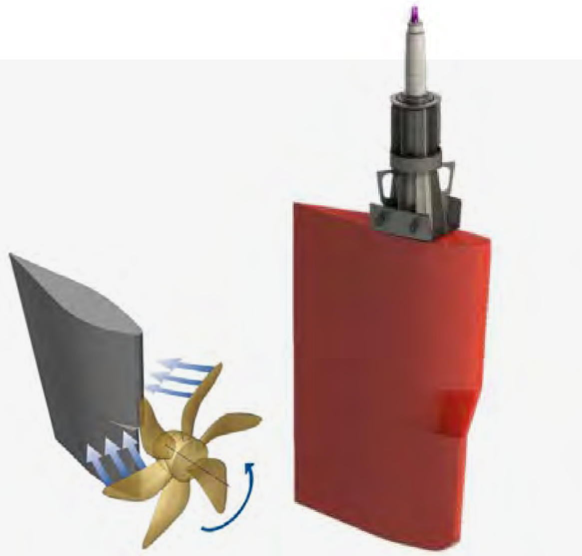
- Becker Flap Rudder
- Becker Twist Rudder
- Becker Schilling® Rudder
- Becker Nozzle

Twisted Leading Edge

Improved rudder efficiency and minimised risk of cavitation

Efficiency, protection and performance – combined in one smart rudder design. A twisted rudder reduces cavitation by evening out pressure on the blade, improving efficiency and lowering erosion.

Its split-profile design aligns with the propeller wake, cutting drag and enhancing overall performance.



Strong rotational flows from the propeller create areas of low pressure on the rudder blade.

King Support Bearing

The key to large full spade rudders

The Becker King Support enables large full-spade rudders up to 130 m² with a slim profile. By moving the main bearing closer to the force centre, bending moments are reduced, resulting in a more stable and efficient rudder.

The design reduces maintenance needs thanks to a smart bearing arrangement design and no rudder horn and improves manoeuvrability at low speeds.

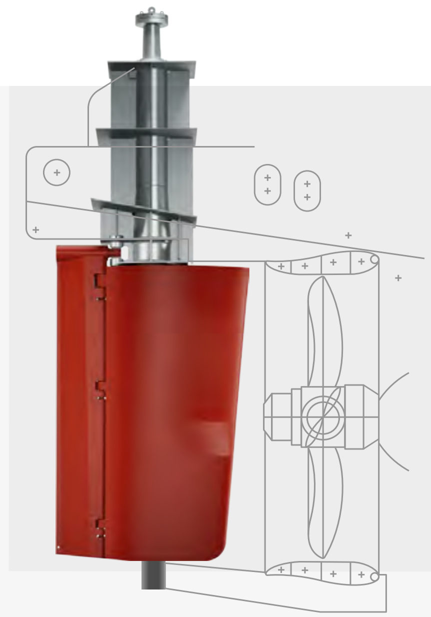
Rudder with King Support Bearing

Heel Pintle

Effective rudder control for offshore vessels and workboats

Becker rudders with heel pintle are ideal for smaller and slow-moving vessels like tugs or fishing boats. They offer additional stability and reduced risk of interaction between the rudder and ropes or nets.

The design reduces bending moments, allows for a slender rudder blade and requires only a compact steering gear.



The heel pintle arm acts like a rope guard and protects the rudder from ropes and nets.

Rudder Bulb

More efficiency through targeted flow control

The Becker Rudder Bulb improves flow from the propeller hub to the rudder, reducing vortex strength and cavitation while increasing efficiency.

CFD-simulations and tank tests confirm power savings of up to 1.5 %. Suitable for various vessel types and propeller systems, it can be used in both new builds and retrofits.

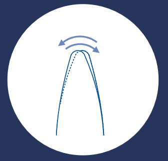
Closed Linkage

Closed connecting linkage for demanding environments

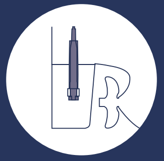
Designed for harsh environments, the closed linkage protects the flap mechanism from ice, sand and impact while ensuring smooth manoeuvring.

With integrated overload protection and reduced hydrodynamic noise, it offers maximum reliability and durability under extreme conditions.

Rudder Options

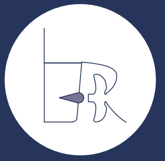


TWISTED LEADING EDGE



KING SUPPORT

CLOSED LINKAGE



RUDDER BULB

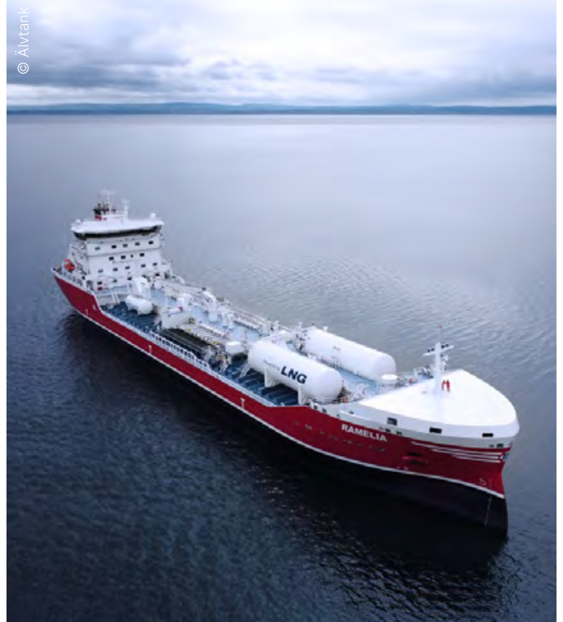
HEEL PINTLE

TAILORED RUDDER SOLUTIONS

Custom options designed for maximum efficiency and safety.

MONTELOURIDO, FISHING VESSEL
Becker Flap Rudder with heel pintle

SCANDIA SEAWAYS, RORO CARGO VESSEL
Becker Flap Rudder with twisted leading edge and rudder bulb (twin rudder system)



RAMELIA, CHEMICAL TANKER
Becker Flap Rudder with twisted leading edge and king support bearing

TRIUMPH, CONTAINER VESSEL
TEU: 12,726 | Becker Flap Rudder with king support bearing

MANOEUVRING SYSTEMS

RUDDER OPTIONS

SHOW PRODUCT

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