

Thruster References for **NAVAL** vessels



KNM "Fridtjof Nansen", Norwegian Navy



"Tonnerre", French Navy



L61 "Juan Carlos", Spanish Navy



F125 Class, German Navy



"Tender Donau", German Navy



"Aquataine"(Fremm Project) French Navy



KV "Svalbard", Norwegian Navy



RFA "Largs Bay", Australian Navy



"Turva", Finnish Navy

Brunvoll is trusted for shock qualified naval manoeuvring thrusters

Brunvoll's robust design and attention to details support trouble-free performance, and the handling of challenges of naval operations. Brunvoll's in-house process combines cost efficiency with high quality. Lifetime service and support.

Brunvoll has made substantial investments in naval applications over the years and was first with shock qualified retractable azimuth thrusters. Brunvoll solutions are found in naval vessels ranging from aircraft carriers to frigates, destroyers, patrol vessels, coast guard vessels and naval support vessels.

Shock Qualification of Thruster Systems

Elastic deformation, resilient mounting and rubber isolation provide shock absorption in compliance with naval specifications. Mechanical reinforcement and the choice of materials are key factors in the design.

Brunvoll has a wealth of experience in developing shock qualified solutions for:

- Retractable Azimuth Thrusters
- Tunnel Thrusters
- Combined Retractable Azimuth & Tunnel Thrusters

Thruster References for **NAVAL** vessels

Norwegian Navy

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| 5 Frigates of "Fridtjof Nansen Class" | - Retractable Azimuth Thruster |
| 1 Coast Guard Vessel "Svalbard" | - Tunnel Thruster |
| 2 Escort Tugs "Sleipner" & "Mjølner" | - Azimuth Propulsion Thruster |
| 3 Coast Guard Vessels of "Nordkapp Class" | - Retractable Azimuth Thruster |
| 2 Mine layers "Vale and "Vidar" | - Tunnel Thruster |
| 3 Support Vessels "Horten", "Tyr", "Vernøy" | - Tunnel Thruster |

Finnish Navy

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| 1 Ocean Patrol Vessel "Turva" | - Tunnel & Retractable Azimuth Thruster |
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Danish Navy

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| 4 Patrol Vessels of "Tethis Class" | - Tunnel & Retractable Azimuth Thruster |
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UK Navy

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| 3 LSD Vessels
"Mounts Bay", "Lyme Bay", and
"Cardigan Bay" | - Tunnel Thruster |
| 2 Multi Role Survey Ships
"Echo" and "Enterprise" | - Tunnel Thruster |
| 3 Fleet Solid Support Vessels | - Tunnel Thruster |

German Navy

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| 1 Support Vessel EGV "Frankfurt am Main" | - Tunnel Thruster |
| 4 Frigates F-125 class | - Tunnel Thruster |

Polish Navy

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| 2 Rescue Vessels ORP "Lech" and ORP "Piaśt" | - Tunnel Thruster |
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French Navy

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| 8 Frigates Fremm class | - Retractable Azimuth Thruster |
| 3 LHD Vessels
"Mistral", "Tonnerre" and "Dixmude" | - Tunnel Thruster |
| 7 Frigates of type FDI | - Tunnel Thruster |

Singapore Navy

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| 6 Frigates | - Tunnel Thruster |
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Korean Navy

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| 1 Patrol Boat "Hanvit" | - Tunnel Thruster |
| 1 Submarine Rescue Vessel "Cheonghaejin" | - Tunnel Thrusters |

Spanish Navy

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| 1 Frigate F-105 "Cristòbal Colón" | - Retractable Azimuth Thruster |
| 1 BPE "Juan Carlos" | - Tunnel Thruster |
| 1 AOR Vessel "Cantabria" | - Tunnel Thruster |
| 5 Frigates of type F-110 | - Retractable Azimuth Thruster |

Turkish Navy

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| 1 LHD Vessel "TCG Anadolu" | - Tunnel Thrusters |
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Egyptian Navy

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| 2 LHD Vessels Mistral Class | - Tunnel Thrusters |
| 1 Frigate Fremm class | - Retractable Azimuth Thruster |

Moroccan Navy

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| 1 Frigate Fremm class | - Retractable Azimuth Thruster |
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US Navy

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| 4 ARS Vessels "Grapple",
"Salvor", "Grasp", "Safeguard" | - Tunnel Thruster |
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Chilean Navy

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| 1 Logistic Support/Research Vessel "Antartica" | - Tunnel Thruster |
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Australian Navy

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| 3 AWD "Hobart", "Brisbane" & "Sydney" | - Retractable Azimuth Thruster |
| 2 AOR Vessels | - Tunnel Thruster |
| 2 LHD Vessels "Adelaide" and "Canberra" | - Tunnel Thruster |
| 1 LSD Vessel "Choules" | - Tunnel Thruster |

Israeli Navy

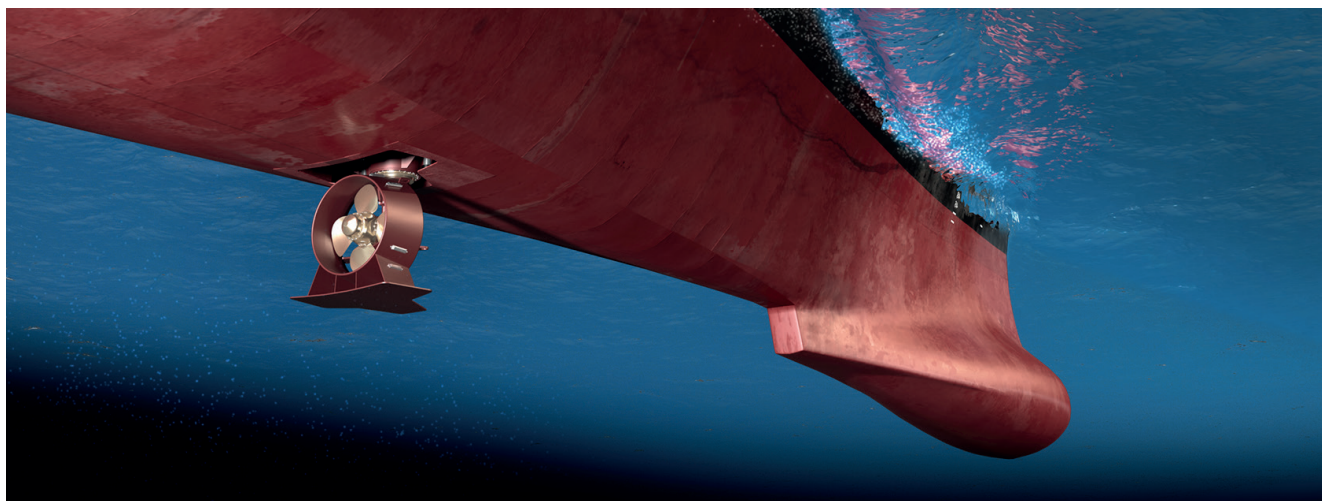
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| 2 Landing Support Vessels LSV | - Tunnel thrusters |
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Brazilian Navy:

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| 1 Antarctic Support Vessel | - Twin FPP Propulsion with
Rudders
- Rim Driven Thrusters
- DP System |
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Hellenic Navy

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| 3 Frigates of type FDI | - Tunnel Thruster |
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Example of retractable azimuth thruster installed in the foreship. For ordinary manoeuvring, take home capabilities, and support in track keeping operations.