MEDIA TECHNICAL BRIEF

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Queen Elizabeth Class aircraft carriers

How do they work? Stabilising Fins

What are ship stabilisers?

Ship stabilisers are fins mounted beneath the waterline and emerging laterally from each side of a ship's hull.

What do they do?

Stabilisers are exactly what the name implies – they stabilise a vessel by dampening the effects of rolling in heavy seas or strong winds.

Stabilisers perform an essential role in steadying a ship during military operations such as the use of weaponry and sensors, during refuelling operations or during the take-off and landing of aircraft. They also improve safety and comfort on board.

What are Neptune stabilisers?

The Rolls-Royce range of Neptune stabilisers are specifically designed for larger ships such as cruise vessels, ferries, container ships and large naval vessels - like the new QE class aircraft carriers.

How do they work?

The stabilising fins are retractable and can be deployed from their housing in the ship's hull to stabilise the vessel when sailing through rough seas.

Once deployed, stabilisers pivot to counteract the roll of the ship, to lift the vessel in a similar concept to that of an aircraft's wing. The Neptune stabilisers on the QE class aircraft carriers are computer controlled to automatically adjust the angle of the fins to counteract the effects of the sea.

What about the stabilisers for the QE class carriers?

Rolls-Royce is designing, manufacturing and testing the Neptune stabilisers for each of the QE class carriers at its facility in Dalgety Bay, Dunfermline. Each ship will have two pairs of fins, mounted fore and aft on the mid-section of the hull, and the first pair

– for HMS Queen Elizabeth – left site in October 2009 for the Govan shipyard, where they were mounted in the hull section.

Each stabiliser unit weighs approximately 50 tonnes, and the fins are deployed, retracted and pivoted using a computer controlled hydraulic system – also designed and manufactured by Rolls-Royce. The design incorporates features to minimise drag and noise levels.

When deployed, the fin length is 5.3 metres. It takes approximately 60 seconds to deploy the fins from their housing in the hull.

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