The above figures of rudder angle are of standard value. It is requested for the rudder angle to be micro-adjusted according to operating conditions.

Joystick Lever Position Direction of Ship Motion

The above photos are ones picked up for compounding the Overall Diagrammatic Plan.

The company reserves the right to modify design etc. without notice.

Super VecTwin System

The following illustrates relation among joystick lever positions, rudder angle combination, and resulting directions of ship movement as basic patterns of joystick operation. In an actual ship, some small correction might be necessary in the corresponding rudder angle according to ship type, draft, ship speed, etc., and hence it is requested for rudder angle to be micro-adjusted, observing ship’s actual movement.

By means of adjusting degree of joystick lever tilt, rudder angle, and accordingly magnitude of thrust, it is adjustable, and hence ship speed, force of turning, etc. can be freely changed as desired.

Super VecTwin System

The ship installing a conventional rudder stops at a point of 1,627m distance.

Difference in stopping distance: 363m
Difference in stopping time: 3min

The ship installing a Super VecTwin System stops at a point of 1,264m distance.

Joystick Lever Position Direction of Ship Motion

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Japan Hamworthy & Co., Ltd.

Omota-ka Bldg., 1-15-1 Shimo-nich, Joto-ku, Osaka, 536-0014 Japan
Tel: +81-6-6902-8677  Fax: +81-6-6902-8695
URL: http://www.japanham.co.jp  E-mail: jhc@japanham.co.jp
Safe Navigation and Excellent Maneuverability are ensured

1 System Outline

A Super VecTwin System is one that new concepts are applied to a VecTwin Rudder System, such as fitting of reaction fins, improvement in rudder form and rudder layout, etc, based on technical knowledge obtained from the actual results of the VecTwin Rudder Systems that they have been installed on board about 50 vessels, and as a result of technical development made thereafter. Thus we have come to succeed in improving a Rudder System so that it can heighten propulsive efficiency while keeping its inherent high maneuverability performance.

A Super VecTwin System is composed so that command signals emitted from a joystick with CRT (cathode ray tube) such as fitting of reaction fins, improvement in rudder form and rudder layout, etc., based on technical knowledge obtained from the actual results of the VecTwin Rudder Systems that they have been installed on about 50 vessels, and as a result of technical development made thereafter. Thus we have come to succeed in improving a Rudder System so that it can heighten propulsive efficiency while keeping its inherent high maneuverability performance.

A joystick with a CRT (cathode ray tube) for displaying thrust vector patterns has been developed. This is provided with a CRT that displays thrust vector patterns that can be directed in all directions, obtainable by means of combining rudder angle of the respective rudders in a peculiar manner to the VecTwin Rudder System.

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A dedicated joystick is newly provided with an emergency stopping switch for consideration of further strengthening safety of navigation. Simply pushing this switch brings a ship to an emergency stopping position. Postural control of a ship is obtainable without accompanying movement in the ahead and astern directions.

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2 Special Features of System

In a Super VecTwin System, a reaction fin provided on the respective rudder blade so as to protrude from its inboard face, where a propeller slip stream passes, when navigating, rectifies the propeller slip stream and produces forward-directed thrust from revolving fluid of the propeller slip stream. Thus propulsive efficiency is improved. Furthermore, propulsive efficiency is further improved by means of incorporating in the system propeller boss cap fins (PBCF) that removes propeller hub vortex.

Excellent maneuverability exhibited by a Super VecTwin System is achieved by incorporated joystick control. The System gives a ship hovering function that can keep a ship in the fixed place in situ, with propeller revolution being kept constant in the forward direction. When a joystick lever is tilted in the right and left directions at the hovering condition, postural control of a ship is obtainable without accompanying movement in the ahead and astern directions.

With propeller revolution being kept constant in the forward direction, ship speed can be freely controlled by a Super VecTwin System, and even at very low speed or at standstill condition, good steerability is secured. The System can steer a ship in all directions, including going ahead and astern unrestrictedly.

By virtue of such capability of a VecTwin System provided in the stern as to be able to develop thrust in all directions, combined operation with a bow thruster easily makes it possible for a ship to approach and depart a berth in parallel, diagonally move, and spin in situ. Thus the degree of freedom of maneuvering is remarkably improved. Furthermore, in case of a small ship, an excellent maneuverability of a Super VecTwin System makes a ship exhibit excellent maneuvering even without a bow thruster.

A central joystick is newly provided with an emergency stopping switch in consideration of further strengthening safety of navigation. Simply pushing this switch brings a ship to an emergency stopping position. Postural control of a ship is obtainable without accompanying movement in the ahead and astern directions.

3 System Composition

A Super VecTwin System is composed so that command signals emitted from a joystick are transmitted to a controller, and control respective hydraulic pump units via a servo-amplifier. Thus, a joystick with CRT displays thrust vector patterns that can be directed in all directions, obtainable by means of combining rudder angle of the respective rudders in a peculiar manner to the VecTwin Rudder System.

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