

Title (en)

Vessel with improved hydrodynamic performance.

Title (de)

Schiff mit verbesserter Hydrodynamischer Leistung.

Title (fr)

Bateau à performance hydrodynamique améliorée.

Publication

EP 0290170 A2 19881109 (EN)

Application

EP 88303630 A 19880421

Priority

- SG 154194 A 19941021
- US 4367787 A 19870428

Abstract (en)

Planing vessels of improved performance capability and methods for improving such performance and foils which may be associated with a planing vessels for providing improved performance capability. A dynamic downward force generated as the vessel (1) moves through water, preferably by a foil (3), is imposed on the vessel, with the locus of the force positioned, in the transverse direction, at the longitudinal vertical centerline plane of the vessel. In the longitudinal direction the locus of the dynamic force is positioned, relative to the other forces acting fore-to-aft on the vessel, to decrease the trim angle of the vessel, desirably to less than two degrees. Vessel wetted surface configurations are provided for stable and efficient operation at low trim angles, including the following. A deep draft, fine entrance (32) which minimizes rise at the bow experienced with conventional planing vessels and assists in maintaining laminarity of flow at the planing surfaces. A foil (31) extending along the bowpeak below the waterline and spaced forwardly thereof streamline the flow passing the bow to thereby decrease spray and turbulence. A skeg (32) extending downward at the bottom of the hull at the entrance along the longitudinal centerline plane which improves directional stability and also assists in maintaining flow laminarity. A sweptback wing located at the entrance, preferably mounted at the lower margin of the skeg positioned with an angle of attack which generates an upward force to improve the vessel stability against pitch and yaw in disturbed water. An aftmidships planing floor (11) having a rise from midships to the stern trailing edge desirably from 50% to 100% of the midships draft improves the stability of the vessel when operated at trim. A release floor (21) extending aftward 5 to 25% of the waterline length of the vessel, preferably from a transverse step (4), and rising over this length 10 to 50% of the midships draft to a transverse trailing edge (22). The trailing edge and the release floor, in the transverse direction, are parallel with base plane of the vessel. The pressure release floor reduces the pressure on the aftward flow to separation at the trailing edge in a gradual and uniform manner which reduces drag. Chine lines (12) at the margins of the aft planing floor are provided with fins which extend aftwardly and upwardly of the stern trailing edge to effect a smooth flow separation. The foil to generate a downward force in the flow desirably is positioned below the stern trailing edge and contoured to produce minimum induced drag and to divert the flow at its trailing edge downwardly so as to reduce turbulence and drag at the stern.

IPC 1-7

B63B 1/04; B63B 1/06; B63B 1/08; B63B 1/22; B63B 1/24; B63B 39/06

IPC 8 full level

B63B 1/18 (2006.01); **B63B 1/22** (2006.01); **B63B 1/26** (2006.01); **B63B 39/06** (2006.01)

CPC (source: EP)

B63B 1/22 (2013.01); **B63B 39/06** (2013.01); **B63B 2035/009** (2013.01)

Cited by

WO2016010423A1; EP0600724A1; GB2209509B; ITCE20090001A1; CN102935875A; EP1104385A4; EP1104739A4; CN102963491A; NL2013178B1; RU2678733C2; US6729258B1; US9862458B2; WO2021191387A1

Designated contracting state (EPC)

BE DE ES FR GB GR IT NL SE

DOCDB simple family (publication)

EP 0290170 A2 19881109; EP 0290170 A3 19890510; EP 0290170 B1 19931215; AU 1795988 A 19881202; AU 1801992 A 19920730; AU 621822 B2 19920326; AU 640570 B2 19930826; DE 3886256 D1 19940127; DE 3886256 T2 19940707; ES 2049248 T3 19940416; FI 886007 A 19881228; FI 93188 B 19941130; FI 93188 C 19950310; JP H01503133 A 19891026; SG 154194 G 19950317; WO 8808386 A1 19881103

DOCDB simple family (application)

EP 88303630 A 19880421; AU 1795988 A 19880425; AU 1801992 A 19920604; DE 3886256 T 19880421; ES 88303630 T 19880421; FI 886007 A 19881228; JP 50455688 A 19880425; SG 154194 A 19941021; US 8801337 W 19880425