SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B63 SHIPS OR OTHER WATERBORNE VESSELS; RELATED EQUIPMENT

B63H **MARINE PROPULSION OR STEERING** (propulsion of air-cushion vehicles B60V 1/14; peculiar to submarines, other than nuclear propulsion, B63G; peculiar to torpedoes F42B 19/00)

Subclass index

PROPULSIVE ELEMENTS; ARRANGEMENTS THEREOF
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PARTICULAR MEANS
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1/00 **Propulsive elements directly acting on water** (jet propulsion B63H 11/00; attachment of propellers on shafts B63H 23/34)

1/02 • of rotary type (endless-track type B63H 1/34)

1/04 • • with rotation axis substantially at right angles to propulsive direction, e.g. paddle wheels

1/06 • • • with adjustable vanes or blades

1/08 • • • • with cyclic adjustment

1/10 • • • • • with blades extending axially from a disc-shaped rotary body

1/12 • • with rotation axis substantially in propulsive direction

1/14 • • • Propellers (pitch changing B63H 3/00)

1/15 • • • • having vibration damping means (anti-vibration mounting of propulsion plant B63H 21/30; means for damping vibration in general F16F) **[4]**

1/16 • • • • having a shrouding ring attached to blades

1/18 • • • • with means for diminishing cavitation, e.g. supercavitation

1/20 • • • • Hubs; Blade connections

1/22 • • • • • the blades being foldable

1/24 • • • • • • automatically foldable or unfoldable

1/26 • • • • Blades

1/28 • • • • Other means for improving propeller efficiency (water-guiding elements formed by shape of hull B63H 5/00)

1/30 • of non-rotary type

1/32 • • Flaps, pistons, or the like, reciprocating in propulsive direction

1/34 • • of endless-track type

1/36 • • Swinging flaps, e.g. fishtail type **[4]**

1/37 • • Moving-wave propellers, i.e. wherein the propelling means comprise a flexible undulating structure **[4]**

1/38 • characterised solely by flotation properties, e.g. drums

3/00 **Propeller-blade pitch changing**

3/02 • actuated by control element coaxial with propeller shaft, e.g. the control element being rotary

3/04 • • the control element being reciprocatable

3/06 • characterised by use of non-mechanical actuating means, e.g. electrical

3/08 • • fluid

3/10 • characterised by having pitch control conjoint with propulsion-plant control

3/12 • the pitch being adjustable only when propeller is stationary

5/00 **Arrangements on vessels of propulsion elements directly acting on water**

5/02 • of paddle wheels, e.g. of stern wheels

5/03 • • movably mounted with respect to the hull, e.g. having means to reposition paddle wheel assembly, or to retract paddle or to change paddle attitude **[4]**

5/04 • • with stationary water-guiding elements

5/07 • of propellers (forming part of outboard propulsion units B63H 20/00) **[6]**

5/08 • • of more than one propeller

5/10 • • • of coaxial type, e.g. of counter-rotative type

5/125 • • movably mounted with respect to hull, e.g. adjustable in direction (movably mounted for steering purposes only B63H 25/42) **[6]**

5/14 • • characterised by being mounted in non-rotating ducts or rings, e.g. adjustable for steering purposes (shrouding ring attached to blades B63H 1/16; jet propulsion B63H 11/00)

5/15 • • • Nozzles, e.g. Kort-type **[4]**

5/16 • • characterised by being mounted in recesses; with stationary water-guiding elements; Means to prevent fouling of the propeller, e.g. guards, cages or screens (anti-fouling paints C09D 5/16)
5/18 • • of emergency propellers, e.g. arranged at the side of the vessel
5/20 • • • movable from a working position to a non-working position **[4]**

7/00 Arrangements of propulsive devices directly acting on air (jet propulsion B63H 11/00)
7/02 • using propellers (air-screws of aircraft type B64C)

9/00 Propulsive devices directly acted on by wind; Arrangements thereof (air-driven propellers driving underwater propulsive elements B63H 13/00)
9/02 • using Magnus effect
9/04 • using sails or like wind-catching surfaces (sailing sledges or ice boats B62B 15/00)
9/06 • • Construction or types of sails; Arrangements thereof on vessels
9/08 • • Connections of sails to masts, spars, or the like
9/10 • • • Spars; Running rigging, e.g. reefing equipment (staying of masts B63B 15/02)

11/00 Effecting propulsion by jets, i.e. reaction principle (steering by jet action B63H 25/46; power plant per se, see the relevant classes)
11/01 • having means to prevent foreign material from clogging fluid passageway **[4]**
11/02 • the propulsive medium being ambient water
11/04 • • by means of pumps
11/06 • • • of reciprocating type
11/08 • • • of rotary type
11/09 • • • by means of pressure pulses applied to a column of liquid, e.g. by ignition of an air/gas or vapour mixture **[4]**
11/10 • • having means for deflecting jet or influencing cross-section thereof
11/103 • • • having means to increase efficiency of propulsive fluid, e.g. discharge pipe provided with means to improve the fluid flow **[4]**
11/107 • • • Direction control of propulsive fluid **[4]**
11/11 • • • • with bucket or clamshell-type reversing means **[4]**
11/113 • • • • Pivoted outlet **[4]**
11/117 • • • • Pivoted vane **[4]**
11/12 • the propulsive medium being steam or other gas
11/14 • • the gas being produced by combustion
11/16 • • the gas being produced by other chemical processes

13/00 Effecting propulsion by wind motors driving water-engaging propulsive elements

15/00 Effecting propulsion by use of vessel-mounted driving mechanisms co-operating with anchored chains or the like

16/00 Effecting propulsion by muscle power (swimming frameworks with swimmer-operated driving mechanisms A63B 35/00; land-based training equipment for rowing or sculling A63B 69/06)
16/02 • Movable thwarts; Foot-rests
16/04 • Oars; Sculls; Paddles; Poles
16/06 • Rowlocks; Mountings therefor
16/067 • • Rowlocks mounted on a structure extending beyond the gunwale of the vessel **[4]**
16/073 • • having oar shaft restraining means **[4]**
16/08 • Other apparatus for converting muscle power into propulsive effort (general features of propulsion elements, see the relevant groups)
16/10 • • for bow-facing rowing
16/16 • • using reciprocating pull cable, i.e. a strand-like member movable alternately backward and forward **[4]**
16/18 • • using sliding handle or pedal, i.e. the motive force being transmitted to a propelling means by means of a lever operated by the hand or foot of the occupant **[4]**
16/20 • • using rotary cranking arm **[4]**

19/00 Effecting propulsion of vessels, not otherwise provided for
19/02 • by using energy derived from movement of ambient water, e.g. from rolling or pitching of vessels
19/04 • • propelled by water current
19/06 • by discharging gas into ambient water (with jet action B63H 11/12; for reducing surface friction B63B 1/38)
19/08 • by direct engagement with water-bed or ground

20/00 Outboard propulsion units, i.e. propulsion units having a substantially vertical power leg mounted outboard of a hull and terminating in a propulsion element, e.g. "outboard motors", Z-drives (power plants per se, see the relevant classes)**; Arrangements thereof on vessels [6]**
20/02 • Mounting of propulsion units (B63H 20/08 takes precedence) **[6]**
20/04 • • in a well **[6]**
20/06 • • on an intermediate support **[6]**
20/08 • Means enabling movement of the position of the propulsion element, e.g. for trim, tilt, or steering (transmissions allowing movement of the propulsion element B63H 20/14); Control of trim or tilt (initiating means for steering B63H 25/02) **[6]**
20/10 • • Means enabling trim or tilt, or lifting of the propulsion element when an obstruction is hit; Control of trim or tilt **[6]**
20/12 • • Means enabling steering **[6]**
20/14 • Transmission between propulsion power unit and propulsion element **[6]**
20/16 • • allowing movement of the propulsion element in a horizontal plane only, e.g. for steering **[6]**
20/18 • • allowing movement of the propulsion element about a longitudinal axis, e.g. the through transom shaft (B63H 20/22 takes precedence) **[6]**
20/20 • • with provision for reverse drive **[6]**
20/22 • • allowing movement of the propulsion element about at least a horizontal axis without disconnection of the drive, e.g. using universal joints **[6]**
20/24 • Exhaust gas outlets **[6]**
20/26 • • passing through the propeller or its hub **[6]**
20/28 • Cooling-water intakes **[6]**
20/30 • • for flushing **[6]**
20/32 • Housings **[6]**
20/34 • • comprising stabilising fins **[6]**
20/36 • Transporting or testing stands; Protection of power legs **[6]**

21/00 **Use of propulsion power plant or units on vessels** (use of outboard propulsion units B63H 20/00; hull reinforcements for carrying propulsion power plant or units B63B 3/70; propulsion power plant or units per se, see the relevant classes) **[6]**

Note(s)

This group covers:
- arrangements of propulsion power plant or units on vessels;
- to some extent, adaptations of such plant or units to facilitate such arrangements.

21/02 • the vessels being steam-driven (B63H 21/18 takes precedence)
21/04 • • relating to positive-displacement steam engines
21/06 • • relating to steam turbines
21/08 • • relating to steam boilers
21/10 • • relating to condensers or engine-cooling fluid heat-exchangers
21/12 • the vessels being motor-driven (B63H 21/175, B63H 21/18 take precedence) **[4]**
21/14 • • relating to internal-combustion engines
21/16 • • relating to gas turbines
21/165 • • by hydraulic fluid motor, i.e. wherein a liquid under pressure is utilised to rotate the propelling means **[4]**
21/17 • • by electric motor (electrically-propelled vehicles B60L) **[4]**
21/175 • the vessel being powered by land vehicle supported by vessel **[4]**
21/18 • the vessels being powered by nuclear energy
21/20 • the vessels being powered by combinations of different types of propulsion units
21/21 • Control means for engine or transmission, specially adapted for use on marine vessels **[4]**
21/22 • the propulsion power units being controlled from exterior of engine room, e.g. from navigation bridge; Arrangements of order telegraphs (order telegraphs per se G08B 9/00)
21/30 • Mounting of propulsion plant or unit, e.g. for anti-vibration purposes (hull reinforcements therefor B63B 3/70; vibration-dampers, suppression of vibration in systems F16F; engine beds F16M)
21/32 • Arrangements of propulsion power-unit exhaust uptakes; Funnels peculiar to vessels (engine exhausts in general F01N; flue devices for furnaces in general F23J)
21/34 • • having exhaust-gas deflecting means
21/36 • Covers or casing arranged to protect plant or unit from marine environment (hull construction B63B 3/00) **[4]**
21/38 • Apparatus or methods specially adapted for use on marine vessels, for handling power plant or unit liquids, e.g. lubricants, coolants, fuels or the like **[4]**

23/00 **Transmitting power from propulsion power plant to propulsive elements** (changing pitch of propellers B63H 3/00; adaptation of transmission to allow adjustment in direction of propellers B63H 5/125; transmission between wind motors and propulsive elements B63H 13/00, in outboard propulsion units B63H 20/14; adaptation of transmission to allow adjustment of location of propellers B63H 20/08; for vehicles in general B60K; driving auxiliary machinery B63J; transmission elements per se F16)
23/02 • with mechanical gearing
23/04 • • the main transmitting element, e.g. shaft, being substantially vertical
23/06 • • for transmitting drive from a single propulsion power unit
23/08 • • • with provision for reversing drive
23/10 • • for transmitting drive from more than one propulsion power unit (for synchronisation of propulsive elements B63H 23/28)
23/12 • • • allowing combined use of the propulsion power units
23/14 • • • • with unidirectional drive or where reversal is immaterial
23/16 • • • • characterised by provision of reverse drive
23/18 • • • for alternative use of the propulsion power units
23/20 • • • • with separate forward and astern propulsion power units, e.g. turbines
23/22 • with non-mechanical gearing
23/24 • • electric
23/26 • • fluid
23/28 • with synchronisation of propulsive elements
23/30 • characterised by use of clutches
23/32 • Other parts
23/34 • • Propeller shafts; Paddle-wheel shafts; Attachment of propellers on shafts (shafts in general F16C; attachment of a member on a shaft in general F16D 1/06)
23/35 • • • Shaft braking or locking, i.e. means to slow or stop the rotation of the propeller shaft or to prevent the shaft from initial rotation **[4]**
23/36 • • Shaft tubes (propeller-shaft tunnels B63B 11/06; shaft-tube seals F16J)

25/00 **Steering; Slowing-down otherwise than by use of propulsive elements** (using adjustably-mounted propeller ducts or rings for steering B63H 5/14; using movably-installed outboard propulsion units B63H 20/00)**; Dynamic anchoring, i.e. positioning vessels by means of main or auxiliary propulsive elements** (anchoring, other than dynamic, B63B 21/00; equipment to decrease pitch, roll, or like unwanted vessel movements by auxiliary jets or propellers B63B 39/08)
25/02 • Initiating means for steering
25/04 • • automatic, e.g. reacting to compass
25/06 • Steering by rudders (by rudders carrying propellers B63H 25/42)
25/08 • • Steering gear
25/10 • • • with mechanical transmission
25/12 • • • with fluid transmission
25/14 • • • power assisted; power driven, i.e. using steering engine
25/16 • • • • with alternative muscle or power- operated steering
25/18 • • • • Transmitting of movement of initiating means to steering engine
25/20 • • • • • by mechanical means
25/22 • • • • • by fluid means
25/24 • • • • • by electrical means
25/26 • • • • Steering engines
25/28 • • • • • of fluid type
25/30 • • • • • • hydraulic
25/32 • • • • • • steam
25/34 • • • • Transmitting of movement of engine to rudder, e.g. using quadrants, brakes
25/36 • • Rudder-position indicators
25/38 • • Rudders (stern posts B63B 3/40)
25/40 • • • using Magnus effect

25/42 • Steering or dynamic anchoring by propulsive elements (by jets B63H 25/46); Steering or dynamic anchoring by propellers used therefor only; Steering or dynamic anchoring by rudders carrying propellers **[2]**

25/44 • Steering or slowing-down by extensible flaps or the like

25/46 • Steering or dynamic anchoring by jets **[2]**

25/48 • Steering or slowing-down by deflection of propeller slip-stream otherwise than by rudder

25/50 • Slowing-down means not otherwise provided for

25/52 • Parts for steering not otherwise provided for