

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

Acting directly on water: elements; arrangements.....1/00, 3/00, 5/00
 Arrangements of means acting directly on air.....7/00
 Acted on by wind propulsive devices.....9/00

PARTICULAR MEANS

by reaction; by muscle power; by anchored cable; wind motors driving water-engaging devices.....11/00, 16/00, 15/00, 13/00
 Other.....19/00

OUTBOARD PROPULSION UNITS.....20/00

PROPULSION POWER PLANT.....21/00

TRANSMISSION FROM POWER PLANT TO PROPULSIVE ELEMENTS.....23/00

STEERING, DYNAMIC ANCHORING.....25/00

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| <p>1/00 Propulsive elements directly acting on water (jet propulsion B63H 11/00; attachment of propellers on shafts B63H 23/34)</p> <p>1/02 • of rotary type (endless-track type B63H 1/34)</p> <p>1/04 • • with rotation axis substantially at right angles to propulsive direction, e.g. paddle wheels</p> <p>1/06 • • • with adjustable vanes or blades</p> <p>1/08 • • • • with cyclic adjustment</p> <p>1/10 • • • • • with blades extending axially from a disc-shaped rotary body</p> <p>1/12 • • with rotation axis substantially in propulsive direction</p> <p>1/14 • • • Propellers (pitch changing B63H 3/00)</p> <p>1/15 • • • • having vibration damping means (anti-vibration mounting of propulsion plant B63H 21/30; means for damping vibration in general F16F) [4]</p> <p>1/16 • • • • • having a shrouding ring attached to blades</p> <p>1/18 • • • • • with means for diminishing cavitation, e.g. supercavitation</p> <p>1/20 • • • • • Hubs; Blade connections</p> <p>1/22 • • • • • the blades being foldable</p> <p>1/24 • • • • • • automatically foldable or unfoldable</p> <p>1/26 • • • • • Blades</p> <p>1/28 • • • • • Other means for improving propeller efficiency (water-guiding elements formed by shape of hull B63H 5/00)</p> <p>1/30 • of non-rotary type</p> <p>1/32 • • Flaps, pistons, or the like, reciprocating in propulsive direction</p> <p>1/34 • • of endless-track type</p> <p>1/36 • • Swinging flaps, e.g. fishtail type [4]</p> <p>1/37 • • Moving-wave propellers, i.e. wherein the propelling means comprise a flexible undulating structure [4]</p> | <p>1/38 • characterised solely by flotation properties, e.g. drums</p> <p>3/00 Propeller-blade pitch changing</p> <p>3/02 • actuated by control element coaxial with propeller shaft, e.g. the control element being rotary</p> <p>3/04 • • the control element being reciprocable</p> <p>3/06 • characterised by use of non-mechanical actuating means, e.g. electrical</p> <p>3/08 • • fluid</p> <p>3/10 • characterised by having pitch control conjoint with propulsion-plant control</p> <p>3/12 • the pitch being adjustable only when propeller is stationary</p> <p>5/00 Arrangements on vessels of propulsion elements directly acting on water</p> <p>5/02 • of paddle wheels, e.g. of stern wheels</p> <p>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]</p> <p>5/04 • • with stationary water-guiding elements</p> <p>5/07 • of propellers (forming part of outboard propulsion units B63H 20/00) [6]</p> <p>5/08 • • of more than one propeller</p> <p>5/10 • • • of coaxial type, e.g. of counter-rotative type</p> <p>5/125 • • • movably mounted with respect to hull, e.g. adjustable in direction (movably mounted for steering purposes only B63H 25/42) [6]</p> <p>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)</p> <p>5/15 • • • Nozzles, e.g. Kort-type [4]</p> |
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- 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]

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| 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 <u>per se</u> , <u>see</u> the relevant classes) [6] | 23/04 | • • the main transmitting element, e.g. shaft, being substantially vertical |
| | Note(s) This group <u>covers</u> : • arrangements of propulsion power plant or units on vessels; • to some extent, adaptations of such plant or units to facilitate such arrangements. | 23/06 | • • for transmitting drive from a single propulsion power unit |
| 21/02 | • the vessels being steam-driven (B63H 21/18 takes precedence) | 23/08 | • • • with provision for reversing drive |
| 21/04 | • • relating to positive-displacement steam engines | 23/10 | • • for transmitting drive from more than one propulsion power unit (for synchronisation of propulsive elements B63H 23/28) |
| 21/06 | • • relating to steam turbines | 23/12 | • • • allowing combined use of the propulsion power units |
| 21/08 | • • relating to steam boilers | 23/14 | • • • • with unidirectional drive or where reversal is immaterial |
| 21/10 | • • relating to condensers or engine-cooling fluid heat-exchangers | 23/16 | • • • • characterised by provision of reverse drive |
| 21/12 | • the vessels being motor-driven (B63H 21/175, B63H 21/18 take precedence) [4] | 23/18 | • • • for alternative use of the propulsion power units |
| 21/14 | • • relating to internal-combustion engines | 23/20 | • • • • with separate forward and astern propulsion power units, e.g. turbines |
| 21/16 | • • relating to gas turbines | 23/22 | • with non-mechanical gearing |
| 21/165 | • • by hydraulic fluid motor, i.e. wherein a liquid under pressure is utilised to rotate the propelling means [4] | 23/24 | • • electric |
| 21/17 | • • by electric motor (electrically-propelled vehicles B60L) [4] | 23/26 | • • fluid |
| 21/175 | • the vessel being powered by land vehicle supported by vessel [4] | 23/28 | • with synchronisation of propulsive elements |
| 21/18 | • the vessels being powered by nuclear energy | 23/30 | • characterised by use of clutches |
| 21/20 | • the vessels being powered by combinations of different types of propulsion units | 23/32 | • Other parts |
| 21/21 | • Control means for engine or transmission, specially adapted for use on marine vessels [4] | 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) |
| 21/22 | • the propulsion power units being controlled from exterior of engine room, e.g. from navigation bridge; Arrangements of order telegraphs (order telegraphs <u>per se</u> G08B 9/00) | 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] |
| 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) | 23/36 | • • Shaft tubes (propeller-shaft tunnels B63B 11/06; shaft-tube seals F16J) |
| 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) | 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) |
| 21/34 | • • having exhaust-gas deflecting means | 25/02 | • Initiating means for steering |
| 21/36 | • Covers or casing arranged to protect plant or unit from marine environment (hull construction B63B 3/00) [4] | 25/04 | • • automatic, e.g. reacting to compass |
| 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 (lubricating or cooling engines in general F01-F04) [4] | 25/06 | • Steering by rudders (by rudders carrying propellers B63H 25/42) |
| 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 <u>per se</u> F16) | 25/08 | • • Steering gear |
| 23/02 | • with mechanical gearing | 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) |

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- 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