

**CLASS 440, MARINE PROPULSION****SECTION I - CLASS DEFINITION**

This class includes and is limited to devices that relate to and have for their object means other than sails for moving a vessel through the water. Included are all types of propellers acting or reacting upon the water or atmosphere and all inventions for moving tows not otherwise classified.

To be proper for this class there must be significantly claimed vessel structure or a claimed modification to the vessel structure to accommodate the propulsion device. If no more vessel structure is claimed than is necessary to mount the propulsion device, the device should be classified in the proper motive power class. This class, however, takes outboard motor types of propulsion devices regardless of claimed structure.

- (1) Note. The term "vessel" in the definition may include a person or animal. Mere aquatic devices secured to or held by a person or animal to increase the effective contact between the user and the liquid and thereby cause faster or farther propulsion through the liquid by the user's swimming strokes are not included. For such devices, see References to Other Classes, below.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

Inventions pertaining to the structure or details of boats and skimming or walking devices (e.g., toboggans, water skis, etc.), are classified elsewhere. See References to Other Classes, below.

**SECTION III - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

- 60, Power Plants, for reaction motors per se not limited specifically to propelling a vessel in water.
- 74, Machine Element or Mechanism, for transmissions having no specific marine housing or no more than a nominal load.
- 114, Ships, subclasses 312+ for those inventions claiming features to cause boats or other devices to submerge and resurface at will.

Inventions pertinent to structure or details of ships are classified in Class 114.

- 416, Fluid Reaction Surfaces (i.e., Impellers), for the combination of an impeller and a marine vessel wherein the impeller is arranged to propel the vessel and no more structure of the vessel is claimed than is necessary to mount the impeller inclusive of any impeller motor or drive means. Any additional recitation of vessel structure or any modification of the vessel will require classification in Class 440. See Class 416, Lines With Other Classes and Within This Class, for a detailed statement of the class line.
- 441, Buoys, Rafts, and Aquatic Devices, appropriate subclasses for inventions pertaining to the structure or details of boats and skimming or walking devices (e.g., toboggans, water skis, etc.), unless features are claimed to cause such boats or other devices to submerge and resurface at will; subclasses 55+ for aquatic devices secured to or held by a person or animal to increase the effective contact between the user and the liquid and thereby cause faster or farther propulsion through the liquid by the user's swimming strokes.
- 475, Planetary Gear Transmission Systems or Components, for planetary gear transmission having no more than a nominal load.

**SECTION IV - GLOSSARY**

The following terms or words, used throughout the titles and definitions are set forth with the meaning each is to have in this class.

**ENGINE**

A device which converts thermal energy into mechanical energy or power to produce force or motion.

**MOTOR**

A device which receives and modifies electrical energy or energy from some natural source in order to produce force or motion.

**MOTIVE FORCE**

Any force used to impart motion.

**PADDLE**

A device used to propel a vessel in the water consisting of a broad fairly flat blade that is dipped vertically or near vertically into the water.

#### PROPELLING MEANS

The element of the propulsion unit which acts upon the surrounding fluid (air or water) to cause the vessel to move.

#### PROPULSION UNIT

The total combination of all elements including the engine, the propelling means, the casing, etc., involved in moving a vessel.

#### REACTING SURFACE

The area or face of the propelling means which directly displaces the surrounding fluid.

#### SUBCLASSES

##### 1 MEANS TO CONTROL THE SUPPLY OF ENERGY RESPONSIVE TO A SENSED CONDITION:

This subclass is indented under the class definition. Device having means to regulate the supply of energy or power used to operate the device or an element thereof, the operation of the regulating means in turn being affected by a means which detects a characteristic or a change in a characteristic of the device or an element thereof or of the surrounding environment.

##### 2 WITH INDICATOR:

This subclass is indented under the class definition. Device having means to actuate a signalling means such as a gauge, dial, meter, etc., which reports the status of a propulsion unit.

##### 3 DIVERSE ENGINE MEANS:

This subclass is indented under the class definition. Device wherein one propelling means is driven by interconnected diverse power means which can power the propelling means selectively or simultaneously.

##### 4 PLURAL ENGINES WITH SINGLE PROPELLING MEANS:

This subclass is indented under the class definition. Device wherein multiple engine power means of similar type provide the motive force for a propelling means.

- (1) Note. Turbine sets which make up the power means for a propelling means are considered single engines.

##### 5 HYDRAULIC FLUID DRIVE FOR PROPELLING MEANS:

This subclass is indented under the class definition. Device wherein a liquid under pressure drives an impeller which rotates a drive shaft to supply the motive force to a propelling means.

##### 6 ELECTRIC DRIVE FOR PROPELLING MEANS:

This subclass is indented under the class definition. Device wherein an electrically powered motor supplies the motive force to a propelling means.

##### 7 With foot control:

This subclass is indented under subclass 6. Device wherein the electrically powered motor is regulated by a means operated by the foot of an occupant of the vessel.

##### 8 WIND DRIVEN MOTORS:

This subclass is indented under the class definition. Device wherein a motor driven by naturally moving air provides the power for a propelling means.

##### 9 WAVE POWERED PROPELLING MEANS:

This subclass is indented under the class definition. Device wherein the motive force for a propelling means is derived from a motor which reacts to the undulations on the water surface or the motion imparted to the vessel by those undulations.

##### SEE OR SEARCH CLASS:

60, Power Plants, subclasses 495+ for motors which depend for operation on the buoyancy of a fluid or on the vertical component of tides and waves.

**10 By oscillating weight:**

This subclass is indented under subclass 9. Device wherein the motor to drive the propelling means consists of a weight which oscillates due to the undulation of the water surface.

**SEE OR SEARCH CLASS:**

185, Motors: Spring, Weight, and Animal Powered, subclasses 29 and 30.

**11 POWERED FROM LAND VEHICLE SUPPORTED BY VESSEL:**

This subclass is indented under the class definition. Device comprising a watercraft structure provided with propelling means and supporting a ground traversing vehicle thereon; the propelling means being directly driven by a drive connection with the motive means of the ground traversing vehicle.

**SEE OR SEARCH CLASS:**

114, Ships, subclasses 60 and 70 for canal and ferry boats.  
441, Buoys, Rafts, and Aquatic Devices, subclasses 35+ for vehicle rafts, per se.

**12 Land vehicle is two-wheel type:**

This subclass is indented under subclass 11. Device wherein the ground traversing vehicle is a bicycle, motorcycle, or the like.

**12.5 SELF-PROPELLED VEHICLE HAVING LAND AND WATER PROPULSION MEANS (E.G., AMPHIBIOUS VEHICLE):**

This subclass is indented under the class definition. Subject matter wherein a device which is in contact with a supporting surface (a) is designed for carrying a passenger, or a load over a distance (i.e., vehicle), and (b) has means for moving it under its own power over the supporting surface which is both on terra firma (i.e., land) and through a body of water.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

11+, for a vessel deriving motive power from a land vehicle supported by the vessel.  
37, for an air propelled boat which is capable of, but not intended to travel on land.

344, for a boat with a wheeled buoyant landing or launching aid.

**SEE OR SEARCH CLASS:**

14, Bridges, subclasses 2.4+ for a bridge transportable over land and water.  
89, Ordnance, subclass 36.08 for a self-propelled device for protecting an ordnance device or ordnance operating personnel.  
180, Motor Vehicles, appropriate subclasses for propelling means for land vehicles, especially subclasses 116+ for ground effect vehicles usable over any supporting surface.  
244, Aeronautics and Astronautics, subclass 50 for aircraft propulsion and steering on land or water.  
280, Land Vehicles, appropriate subclasses for land vehicles, per se, and subclasses 414.1+ for trailers of the boat carrying type.

**12.51 Having separated propulsion means for land and water:**

This subclass is indented under subclass 12.5. Subject matter wherein (a) the vehicle has a distinct means for moving it under its own power on land and a distinct means for moving it under its own power through a body of water, (b) the distinct means for moving it on land and the distinct means for moving it through the body of water being spaced apart from each other.

(1) Note. The distinct means may be connected to a common axle, such as a wheel and a set of paddles driven by a common axle, however, the paddles may not contact the ground when the ground engaging wheel propels the vehicle.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

12.66+, for wheel-type land propelling means having a blade integrally mounted on or forming a part of the wheel.

**12.52 Propulsion means moveable to stowed position:**

This subclass is indented under subclass 12.51. Subject matter wherein either the means for moving (a) the vehicle over land, or (b) through

the water is shiftable to a storage position from an in use position.

- (1) Note. To be proper for this and the indented subclasses the means for imparting a motive force to the vehicle must be moveable between a stowed and a use position, a wheel or pontoon which supports the vehicle with respect to a surface, but is not directly driven is not considered proper and will be found elsewhere.

SEE OR SEARCH CLASS:

- 180, Motor Vehicles, appropriate subclasses, for a vertically adjustable motor driven vehicle wheel.  
280, Land Vehicles, subclasses 43+ for a land vehicle having vertically adjustable wheels, subclasses 414.1+ for trailers of the boat carrying type, and subclasses 414.5+ for a trailer having a vertically adjustable wheel.

**12.53 Water propulsion means is movable:**

This subclass is indented under subclass 12.52. Subject matter wherein the means for moving the vehicle through the water is shiftable to a storage position from an in use position.

SEE OR SEARCH CLASS:

- 440, Marine Propulsion, subclasses 53+, for means for effecting or facilitating movement of a screw propulsion unit or a segment of the propulsion unit, and 91, for means to reposition a paddle wheel assembly.

**12.54 And land propulsion means is moveable:**

This subclass is indented under subclass 12.53. Subject matter wherein the means for moving the vehicle on land is also shiftable to a storage position from an in use position.

SEE OR SEARCH CLASS:

- 180, Motor Vehicles, appropriate subclasses for a vertically adjustable motor driven vehicle wheel.  
280, Land Vehicles, subclasses 43+ for a land vehicle having vertically adjustable wheels, subclasses 414.1+ for trailers of the boat carrying type, and subclasses 414.5+, for a trailer having a vertically adjustable wheel.

**12.55 Operator powered drive for propulsion means:**

This subclass is indented under subclass 12.51. Subject matter wherein the motive force for the means for moving the vehicle under its own power is derived from the physical effort exerted by an occupant of the vehicle and is transmitted to the moving means by some intermediate means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 21+, for operator powered propelling means for a marine vehicle.

SEE OR SEARCH CLASS:

- 280, Land Vehicles, appropriate subclasses for operator powered propelling means for a land vehicle.

**12.56 Flexible endless track propulsion means:**

This subclass is indented under subclass 12.51. Subject matter wherein the means for moving the vehicle under its own power includes (a) an annular band made either of a single piece of flexible material or of a plurality of individual treads or sections movably connected together, (b) the annular band contacting the land or the body of water and applying a force thereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 95+, for flexible endless track propelling means for a marine vehicle, per se.

SEE OR SEARCH CLASS:

- 180, Motor Vehicles, especially subclasses 6.2+ for steering by driving of a motor propelled land vehicle, subclass 6.7 for steering by driving of a motor propelled land vehicle having an endless flexible track, and subclasses 9.1+, for a motor propelled land vehicle having a flexible endless track for propulsion.  
305, Wheel Substitutes for Land Vehicles, appropriate subclasses, especially subclasses 35+ for a flexible endless track for propelling a land vehicle.

**12.57 Motor driven screw propeller shaft:**

This subclass is indented under subclass 12.51. Subject matter wherein the means for moving the vehicle under its own power includes (a) a

device which converts either nonmechanical (e.g., electrical) or stored energy (e.g., fuels) into mechanical energy (i.e., motor), and (b) wherein the mechanical energy rotates a long generally cylindrical slender element having connected to it a number of blades so inclined that upon rotation the blades tend to follow a helical path through the water and thereby drive the vehicle in a path parallel to the axis of rotation of the blades.

SEE OR SEARCH THIS CLASS, SUBCLASS:

49+, for screw propeller-type marine propulsion, per se.

**12.58 By flexible endless member (e.g., belt, chain):**

This subclass is indented under subclass 12.57. Subject matter wherein the long generally cylindrical slender element is rotated about its longitudinal axis by an annular band made either of (a) a single piece of flexible material or (b) a plurality of individual sections movably connected together.

SEE OR SEARCH THIS CLASS, SUBCLASS:

474, Endless Belt Power Transmission Systems and Components, appropriate subclasses for endless belt power transmission systems and components, per se.

**12.59 By gearing:**

This subclass is indented under subclass 12.57. Subject matter wherein the long generally cylindrical slender element is rotated about its longitudinal axis by (a) a toothed wheel, cylinder or other machine element that meshes with (b) another toothed wheel, cylinder or other machine element to transmit motion or to change speed or direction.

SEE OR SEARCH CLASS:

74, Machine Elements and Mechanisms, appropriate subclasses, for a gearing arrangement, per se.

**12.6 Bevel gearing:**

This subclass is indented under subclass 12.59. Subject matter wherein the toothed wheel, cylinder, or other machine element has teeth cut into a conical surface located at an angle to the

rotational axis of the wheel, cylinder, or other machine element that mesh with the another toothed wheel, cylinder, or machine element.

SEE OR SEARCH CLASS:

74, Machine Elements and Mechanisms, appropriate subclasses for a bevel gearing arrangement, per se.

**12.61 Spur gearing:**

This subclass is indented under subclass 12.59. Subject matter wherein the toothed wheel, cylinder, or other machine element has radially projecting teeth located parallel to the rotational axis of the wheel, cylinder, or other machine element that mesh with the another toothed wheel, cylinder, or machine element.

SEE OR SEARCH CLASS:

74, Machine Elements and Mechanisms, appropriate subclasses for a spur gearing arrangement, per se.

**12.62 Operator powered drive for propulsion means:**

This subclass is indented under subclass 12.5. Subject matter wherein the motive force for the means for moving the vehicle under its own power is derived from the physical effort exerted by an occupant of the vehicle and is transmitted to the moving means by some intermediate means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

21+, for an operator powered drive for a propelling means for a marine vehicle.

SEE OR SEARCH CLASS:

280, Land Vehicles, appropriate subclasses for operator powered propelling means for a land vehicle.

**12.63 Flexible endless track propulsion means:**

This subclass is indented under subclass 12.5. Subject matter wherein the means for moving the vehicle under its own power includes (a) an annular band made either of a single piece of flexible material, or of a plurality of individual treads or sections movably connected together and (b) the annular band contacting the land or the body of water and applying a force thereto.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

95+, for flexible endless track propelling means for a marine vehicle, per se.

SEE OR SEARCH CLASS:

180, Motor Vehicles, especially subclasses 6.2+ for steering by driving of a motor propelled land vehicle, subclass 6.7 for steering by driving of a motor propelled land vehicle having an endless flexible track, subclasses 9.1+ for a motor propelled land vehicle having a flexible endless track for propulsion, and subclasses 190+ for a motor propelled land vehicle including a ski-like runner or member and a flexible endless track for propulsion.

305, Wheel Substitutes for Land Vehicles, appropriate subclasses, especially subclasses 35+ for a flexible endless track for propelling a land vehicle.

**12.64 Driven by sprocket-type wheel:**

This subclass is indented under subclass 12.63. Subject matter wherein the means for supplying motive power to the annular band includes a cylindrical element having teeth projecting radially from its circumference.

**12.65 Helical screw propulsion means:**

This subclass is indented under subclass 12.5. Subject matter wherein the means for moving the vehicle under its own power includes blades which encircle a hub and form a spiral along the length of the rotational axis of the hub (e.g., Archimedes screw).

**12.66 Wheel-type propulsion means:**

This subclass is indented under subclass 12.5. Subject matter wherein the means for moving the vehicle under its own power includes (a) either a solid disk, or a rigid circular rim connected by a plurality of rods to a hub, (b) the solid disk or rim designed to turn around an axle passed through the center of the disk or rim, and (c) the disk or rim directly contacts the land or the body of water.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

90+, for a paddle wheel, per se.

SEE OR SEARCH CLASS:

180, Motor Vehicles, appropriate subclasses for a motor propelled, wheeled, land vehicle, per se, and subclasses 7.1+ for a special driving device therefor.

301, Land Vehicles, Wheels, and Axles, appropriate subclasses for land vehicle wheels, per se.

**12.67 Drum-type:**

This subclass is indented under subclass 12.66. Subject matter wherein the disk or rim is (1) spaced from, (2) connected to, and (3) rotatable with another disk or rim by a right circular cylindrical member extending along the axle.

(1) Note. Many of the drums have reacting surfaces integral with their cylindrical perimeter surfaces which enhance the transfer of force from the propulsion means to the water.

**12.68 Having integral spoke and propelling blade means:**

This subclass is indented under subclass 12.66. Subject matter wherein the propelling means includes a broad fairly flat or moderately curved surface that is dipped into the water and is integral with the rod which connects the hub and the rim.

**12.69 Having propelling blade extending from side of wheel:**

This subclass is indented under subclass 12.66. Subject matter wherein the propelling means includes a broad fairly flat or moderately curved surface which projects parallel to the axle from a lateral extent of the disk or rim.

**12.7 Having peripherally mounted cleat means:**

This subclass is indented under subclass 12.66. Subject matter wherein the propelling means includes a blade projecting from or forming part of a radial peripheral extent of the disk or rim.

**13 OSCILLATING PROPELLING MEANS:**

This subclass is indented under the class definition. Device wherein the motive force for the vessel is produced by a back and forth movement of the propelling means.

- 14 Fishtail motion propelling means:**  
This subclass is indented under subclass 13. Device wherein the propelling means moves through the water with a side-to-side or whipping motion, generally imitating the motion of the tail of a fish.
- 15 Flexible:**  
This subclass is indented under subclass 14. Device wherein the reacting surface which comes in contact with the water is made of a pliant material.
- 16 Moving wave propeller:**  
This subclass is indented under subclass 13. Device wherein the propelling means comprises a structure which undulates in the manner of a traveling wave.
- 17 Having nonpropelling cycle segment:**  
This subclass is indented under subclass 13. Device wherein the propelling means supplies no motive force on one portion of its back and forth movement.
- 18 Piston and cylinder:**  
This subclass is indented under subclass 17. Device wherein the propelling means is a fluid motor, the return stroke normally being the nonpropelling cycle portion.
- 19 With means to move propelling element to nonpropelling position:**  
This subclass is indented under subclass 17. Device wherein a means is provided to shift the propelling element from its working position to its nonworking position.
- 20 With reversing means:**  
This subclass is indented under subclass 17. Device wherein a means is provided to invert the propelling means in such a manner that the portion of the back and forth motion which supplies no motive force and the portion of the back and forth motion which supplies motive force can be interchanged.
- 21 OPERATOR POWERED DRIVE FOR PROPELLING MEANS:**  
This subclass is indented under the class definition. Device wherein the motive force for the propelling means is derived from the physical effort exerted by the occupant of the vessel and transmitted to the propelling means by some intermediate means.
- 22 Rocking watercraft:**  
This subclass is indented under subclass 21. Device wherein the motive force of a propelling means is obtained by a to-and-fro motion of the vessel imparted thereto by the occupant of the vessel.
- 23 Fluid pump:**  
This subclass is indented under subclass 21. Device wherein the motive force is produced by hydraulic pressure acting directly or indirectly on the surrounding water, which pressure is produced by an operator powered hydraulic impelling means.
- 24 Having reciprocating pull cable:**  
This subclass is indented under subclass 21. Device wherein the motive force is transmitted to a propelling means by means of a strandlike member moved alternately backward and forward.
- 25 Sliding handle or pedal:**  
This subclass is indented under subclass 21. Device wherein the motive force is transmitted to a propelling means by means of a lever operated by either the hand or foot of the occupant wherein the lever is moving within a guide means.
- 26 Rotary cranking arm:**  
This subclass is indented under subclass 21. Device wherein the motive force is transmitted to a propelling means by means of a revolving arm or lever.
- 27 Plural-crank type:**  
This subclass is indented under subclass 26. Device wherein the motive force is transmitted to a propelling means by means of the rotation of multiple offset segments of a revolving rod.
- 28 Having flexible drive shaft:**  
This subclass is indented under subclass 26. Device wherein the motive force is transmitted from an actuator to a propelling means through bendable rotating elongated means.

- 29 Having endless drive member:**  
This subclass is indented under subclass 26. Device wherein the motive force is transmitted from an actuator to a propelling means through a continuous band entrained about wheellike guides.
- 30 Chain and sprocket:**  
This subclass is indented under subclass 29. Device wherein the continuous band is a chain and the wheellike guides are toothed wheels.
- 31 Including gear means:**  
This subclass is indented under subclass 26. Device wherein the motive force is transmitted from the rotary crank to the propelling means by means of interengaged toothed members.
- 32 Lever with connecting linkage:**  
This subclass is indented under subclass 21. Device wherein the motive force is transmitted to a propelling means by means of a bar that oscillates about a pivot to transmit the force to a propelling means through an intermediate connecting rod.
- 33 TOWING:**  
This subclass is indented under the class definition. Device wherein the propulsion means is a means provided to haul or pull a vessel in a canal or river or upon the sea or other bodies of water.
- SEE OR SEARCH CLASS:  
114, Ships, subclasses 242+ for towing devices other than propelling means.  
191, Electricity: Transmission to Vehicles, subclass 12 for electric railway systems.
- 34 Cable system:**  
This subclass is indented under subclass 33. Device wherein the propulsion means includes the use of a strong strandlike member or a strandlike member is engaged by a device on the vessel to pull the vessel through the water.
- (1) Note. The strandlike member may be either fixed or movable. If movable, the vessel is provided with means for securing the cable thereto, and if fixed, the vessel has traction means for hauling the cable in and paying it out.
- SEE OR SEARCH CLASS:  
191, Electricity: Transmission to Vehicles, subclass 12 when electrical devices are involved.  
254, Implements or Apparatus for Applying Pushing or Pulling Force, subclasses 264+ for a driven, cable-pulling device for hauling or hoisting a load.
- 35 Track system:**  
This subclass is indented under subclass 33. Device wherein the propulsion means comprises tracks upon which a traction device or vessel runs.
- 36 Ground wheel or poler:**  
This subclass is indented under subclass 33. Device wherein the propulsion means comprises traction wheels which are used to traverse the bed or bottom of the canal or a long cylindrical piece of wood or metal attached to the vessel contacts or digs into the bed or bottom of the canal.
- 37 AIR PROPELLED BOAT:**  
This subclass is indented under the class definition. Device wherein the propelling means is a fan or bladed member mounted entirely above the waterline which reacts with the air to produce the motive force.
- 38 JET DRIVE:**  
This subclass is indented under the class definition. Device wherein the motive force is produced by a stream of fluid forcefully issuing from an outlet of the propulsion means which reacts with the fluid surrounding the propelling means thereby causing the vessel to move.
- SEE OR SEARCH CLASS:  
60, Power Plants, subclasses 221+ for reaction propulsion devices wherein no more structure of the vessel is claimed than is necessary to mount the device.  
239, Fluid Sprinkling, Spraying, and Diffusing, subclasses 127.1+ and 265.11+ for a reaction motor discharge nozzle, per se, as defined and limited in (1) Note and (2) Note under subclass 265.11.



- 39 **Auxiliary use of propulsive fluid:**  
This subclass is indented under subclass 38. Device wherein a portion of the fluid stream may be diverted for a subsidiary use other than propulsion, e.g., firefighting.
- 40 **Direction control for fluid jet:**  
This subclass is indented under subclass 38. Device wherein a means is provided to guide the fluid stream into different directions.
- SEE OR SEARCH CLASS:  
60, Power Plants, subclass 228 for thrust direction modifiers for power plants not involving significant vessel structure.
- 41 **With bucket or clamshell-type reversing means:**  
This subclass is indented under subclass 40. Device wherein the means to guide the fluid stream is a scoop mounted exteriorly of the hull and selectively movable to intercept and redirect the flow of the jet.
- 42 **Pivoted outlet:**  
This subclass is indented under subclass 40. Device wherein the means to guide the fluid stream into different directions is a projecting discharge pipe which can be rotated or pivoted.
- 43 **Pivoted vane:**  
This subclass is indented under subclass 40. Device wherein the means to guide the fluid stream into different directions is a surface across which the fluid moves which can be pivoted to deflect the fluid stream.
- 44 **Propulsion fluid is pressurized gas:**  
This subclass is indented under subclass 38. Device wherein the motive force is provided by the ejection of a pressurized gas such as air or steam.
- 45 **Produced by combustion:**  
This subclass is indented under subclass 44. Device wherein the pressurized gas is created as a direct result of the burning of a substance.
- SEE OR SEARCH CLASS:  
417, Pumps, subclasses 73+ for pumps of the type which elevate or propel one fluid (e.g., liquid) by the ignition of another.
- 46 **Having means to prevent clogging:**  
This subclass is indented under subclass 38. Device wherein a means is provided to inhibit the obstruction of the fluid passageway by foreign material.
- 47 **Having means to increase fluid drive efficiency:**  
This subclass is indented under subclass 38. Device wherein the discharge pipe can have means to improve the fluid flow or the flow passage has additional means to improve flow.
- 48 **HELICAL SCREW:**  
This subclass is indented under the class definition. Device wherein the propelling means consists of blades which encircle a hub and follow the pattern of a spiral (Archimedes screw).
- (1) Note. Buoyant helical propelling means are also included in this subclass and not in subclass 98, buoyant propelling means.
- 49 **SCREW PROPELLER:**  
This subclass is indented under the class definition. Device consisting of a number of blades so inclined that upon rotation the blades tend to follow a helical path through the water and thereby drive a vessel in a path parallel to the axis of rotation of the blades.
- (1) Note. The propellers located here involve more than the structure of the propeller element, per se, or otherwise are excluded by definition from Class 416, Fluid Reaction Surfaces (i.e., Impellers).
- 50 **Variable pitch:**  
This subclass is indented under subclass 49. Device wherein the angle of attack of the propeller blades can be changed.
- 51 **Combined with rudder:**  
This subclass is indented under subclass 49. Device wherein the screw propeller is an integral part of the assembly which includes a vertical blade at the stern of a vessel used to change the direction of travel of that vessel when in motion.

- 52 With vibration dampening:**  
This subclass is indented under subclass 49. Device wherein means is provided to prevent transmission of shocks to the rest of the vessel or to attenuate the quivers produced by the engine, the drive shaft, etc.
- 53 With means effecting or facilitating movement of propulsion unit or a segment of the propulsion unit (e.g., tilting or steering):**  
This subclass is indented under subclass 49. Device wherein a means is provided that moves, assists in, or allows the movement of the propulsion unit; this movement may include rotation about a vertical and/or horizontal axis or vertical or horizontal transitory movement or a combination thereof.
- 54 With means limited to vertical movement within hull cavity:**  
This subclass is indented under subclass 53. Device wherein the means to move, assist, or allow the movement of the propulsion unit confines the unit only to movement in a plane perpendicular to the horizontal, causing the propulsion unit to move in and out of a hollow space within the hull.
- 55 Having restraining means:**  
This subclass is indented under subclass 53. Device wherein a means is provided to prevent movement of the propulsion unit from its normal operating position.
- 56 With releasing means when propulsion unit hits obstruction:**  
This subclass is indented under subclass 55. Device wherein a means is provided to unfasten the restraining means when the propulsion unit comes in contact with a submerged impediment.
- 57 Having gimbal or universal joint support:**  
This subclass is indented under subclass 53. Device wherein the means to move or assist in the movement of the propulsion unit is a mounting upon which the propulsion unit is fastened which permits the unit to pivot or move freely along three axes of rotation.
- 58 Having toothed or threaded member to move propulsion unit or a segment of the propulsion unit:**  
This subclass is indented under subclass 53. Device wherein the means to move or assist in the movement of the propulsion unit includes the interengaging projections of gears or helical ridges of screws interacting with some complementary member.
- 59 Screw type:**  
This subclass is indented under subclass 58. Device wherein the threaded member is an helically ridged member such as a threaded rod, worm, etc.
- (1) Note. The screw may be fixed either on the propulsion unit or on the vessel.
- 60 Rack and pinion:**  
This subclass is indented under subclass 58. Device wherein the toothed member consists of a bar with teeth on one of its sides adapted to engage a gear wheel with a small number of teeth to translate circular motion to linear motion or vice versa.
- 61 Having fluid motor to move propulsion unit or a segment of the propulsion unit:**  
This subclass is indented under subclass 53. Device wherein the means to move, assist, or allow the movement of the propulsion unit includes a pneumatic motor.
- 62 Having pilant member to move propulsion unit or a segment of the propulsion unit:**  
This subclass is indented under subclass 53. Device wherein the means to move, assist, or allow the movement of a portion of the propulsion unit includes a cablelike member.
- 63 Having link or lever to move propulsion unit or a segment of the propulsion unit:**  
This subclass is indented under subclass 53. Device wherein the means to move, assist, or allow the movement of the propulsion unit includes an intermediate bar.
- 64 Having shaft with releasable coupling:**  
This subclass is indented under subclass 53. Device wherein the propeller is driven by a shaft composed of plural sections which are connected together by a separable connection.

- 65 With means to lift propeller when an obstruction is hit:**  
This subclass is indented under subclass 53. Device wherein a means associated with the propeller is provided to move the propeller in an upward direction when said means encounters an impediment.
- 66 Having means to control flow around propeller:**  
This subclass is indented under subclass 49. Device wherein a structure is provided, mounted, or located in the vicinity of the propeller to regulate the stream of fluid around the propeller.
- SEE OR SEARCH CLASS:  
415, Rotary Kinetic Fluid Motors or Pumps, for flow control surfaces when no significant vessel structure is claimed.
- 67 Nozzle (kort-type):**  
This subclass is indented under subclass 66. Device wherein an annular member in the form of a projecting spout completely surrounds the propeller to control the flow around the propeller.
- (1) Note. These devices differ from a jet drive in that the propeller is located at the throat of the nozzle and the flow diverges at the exit. The propeller itself drives the vessel through the water.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
38, for devices wherein a propeller creates a fluid jet which reacts with the surrounding fluid to drive the vessel through the water.
- 68 Hull channel:**  
This subclass is indented under subclass 66. Device wherein the means to control the flow around the propeller is an elongated passageway with an inlet and an outlet along the longitudinal axis of the hull, the propeller being located within or proximate the outside of the passageway but always acting at least in part on water exteriorly of the passageway.
- 69 With open bottom:**  
This subclass is indented under subclass 68. Device wherein the lowermost side of the channel is removed.
- 70 Hull concavity:**  
This subclass is indented under subclass 66. Device wherein the means to control the flow around the propeller is a recess shaped into the hull, generally near the stern, and in which the propeller is located.
- 71 Propeller guard:**  
This subclass is indented under subclass 49. Device wherein a means outside of a casing for the propulsion unit is provided which protects the propeller on at least one side from impact with submerged objects.
- 72 Cage or screen:**  
This subclass is indented under subclass 71. Device wherein the protecting means comprises an enclosure or a mesh surrounding the propeller.
- 73 Self-clearing:**  
This subclass is indented under subclass 49. Device wherein a means is provided which is integral with or closely adjacent the screw itself which prevents fouling of the screw by seaweed, ropelike objects, etc.
- 74 Shaft braking or locking:**  
This subclass is indented under subclass 49. Device wherein a means is provided to slow or stop the rotation of the propeller shaft or to prevent the shaft from initial rotation.
- SEE OR SEARCH CLASS:  
137, Fluid Handling, subclasses 38+, particularly subclasses 40+ for propeller shaft brakes that involve means for throttling the steam in response to a marine governor.
- 75 Having transmission:**  
This subclass is indented under subclass 49. Device wherein a means is provided which is interposed between the engine and the propeller for transferring the engine output to the propeller.

- SEE OR SEARCH CLASS:  
74, Machine Element or Mechanism, for transmissions, per se, with no specific marine housing or no more than a nominal load.  
475, Planetary Gear Transmission Systems or Components, for planetary gear transmission, per se.
- 76 Propulsion unit casing:**  
This subclass is indented under subclass 49. Device including a sealed enclosure adapted to contain an engine, shafting, or interconnecting drive train to supply the motive force to the propeller.
- 77 Cowl:**  
This subclass is indented under subclass 76. Device wherein the sealed enclosure covers the upper portion of the propulsion unit, usually covering the engine.
- 78 Propeller shaft housing:**  
This subclass is indented under subclass 76. Device wherein the sealed enclosure covers and contains the propeller shaft.
- 79 Propeller arrangement:**  
This subclass is indented under subclass 49. Device having a specified connection to the vessel or a specified relationship with other propellers.
- 80 Tandem:**  
This subclass is indented under subclass 79. Device wherein the propellers are arranged one behind the other.
- 81 On single shaft:**  
This subclass is indented under subclass 80. Device wherein the propellers are arranged on the same propeller shaft.
- 82 Supporting strut:**  
This subclass is indented under subclass 79. Device wherein a strengthening brace attaches a propeller shaft to the vessel.
- 83 Shafting:**  
This subclass is indented under subclass 49. Device wherein significance is attributed to a rotating or oscillating straight bar for driving the propeller.
- SEE OR SEARCH CLASS:  
464, Rotary Shafts, Gudgeons, Housings, and Flexible Couplings for Rotary Shafts, subclasses 179+ for a rotary torque transmitting shaft of general application.
- 84 ENGINE, MOTOR, OR TRANSMISSION CONTROL MEANS:**  
This subclass is indented under the class definition. Device wherein a means is provided to regulate the engine, or motor which produces the power for the propelling means or the power transmission connected to the propelling means.
- 85 For starter means:**  
This subclass is indented under subclass 84. Device wherein the means to regulate the motive engine regulates that section of the engine which initiates the power production.
- 86 For transmission:**  
This subclass is indented under subclass 84. Device wherein the means to regulate the engine or power transmission regulates the speed or torque of the transmission which transfers the force from the engine to the propelling means.
- 87 For engine speed:**  
This subclass is indented under subclass 84. Device wherein the means to regulate the engine or motor regulates the speed at which the engine or motor output rotates.
- 88 MEANS FOR HANDLING ENGINE FLUIDS:**  
This subclass is indented under the class definition. Device wherein a means is provided to move engine liquids such as lubricants, coolants, etc.
- 89 Exhaust gas handling means:**  
This subclass is indented under subclass 88. Device wherein a means is provided to carry away the waste products of combustion from the engine.
- SEE OR SEARCH CLASS:  
60, Power Plants, subclasses 272+ for power plants with exhaust gas han-

- ding means without significant vessel structure.
- 90 PADDLE WHEEL:**  
This subclass is indented under the class definition. Device wherein the means to provide the motive force for a vessel is an engine or motor-driven wheel having a number of planar water contacting blades extending therefrom.
- (1) Note. This subclass provides for paddle wheel-type devices involving more than the structure of the paddle wheel per se, or which is otherwise excluded by definition from Class 416, Fluid Reaction Surfaces (i.e., Impellers).
- 91 Having means to reposition paddle wheel assembly:**  
This subclass is indented under subclass 90. Device wherein a means is provided to vertically or horizontally adjust the paddle wheel as a unit for such purposes as steering, etc.
- 92 Having means to retract paddle or change paddle attitude:**  
This subclass is indented under subclass 90. Device wherein a means is provided to draw a paddle inside the wheel or to adjust the inclination of a paddle relative to the wheel.
- 93 Having means to provide cyclic change of paddle attitude (e.g., voith-schneider):**  
This subclass is indented under subclass 92. Device wherein the means provided adjusts the inclination of the paddles through a repeatable series of different inclinations as it is rotated by the wheel.
- 94 UPRIGHT REMAINING ORBITING PADDLE:**  
This subclass is indented under the class definition. Device wherein a means is provided to move a paddle into and out of the water, backward and forward, for a power stroke and a return stroke wherein the paddle is maintained in an erect forwardly facing attitude at all times.
- 95 FLEXIBLE ENDLESS PROPELLING MEANS:**  
This subclass is indented under the class definition. Device wherein the means to provide the motive force is a pliable, continuous member entrained around a series of wheellike objects.
- 96 With paddle:**  
This subclass is indented under subclass 95. Device wherein the endless member is fitted with a paddle.
- 97 Foldable or retractable to nonpropelling position:**  
This subclass is indented under subclass 96. Device wherein the paddles are capable of being bent back upon or withdrawn into the endless member during the nonpropelling portion of the cycle.
- 98 BUOYANT PROPELLING MEANS:**  
This subclass is indented under the class definition. Device wherein the propelling means itself is capable of floating or exhibits the tendency to float.
- (1) Note. These devices include more than the structure of the propeller element, per se, or is otherwise excluded by definition from Class 416, Fluid Reaction Surfaces (i.e., Impellers).
- (2) Note. Buoyant propelling means which is helicoid in shape are found in this class, subclass 48, helical screw.
- 99 Rotating outer hull:**  
This subclass is indented under subclass 98. Device comprising a pair of hulls, one within the other, in which the outer hull, carrying or acting as the propelling means, rotates relative to the inner hull.
- 100 Wheellike:**  
This subclass is indented under subclass 98. Device wherein the propelling means is in the shape of a wheel.
- 101 OAR OR PADDLE:**  
This subclass is indented under the class definition. Device wherein the propelling means consists of a long shaft, used as a lever, with a broad blade at one end.

- SEE OR SEARCH CLASS:  
416, Fluid Reaction Surfaces (i.e., Impellers), subclasses 69+ for oars or paddles, per se. For a detailed statement of class lines, see Class 416, Class Definition, section III,A.
- 102 Articulated sectional oar or paddle:**  
This subclass is indented under subclass 101. Device wherein the long shaft is composed of interconnected distinct segments joined together permanently or semipermanently by means of a pivot connection to operate the distinct segments as a unit.
- 103 Having gear:**  
This subclass is indented under subclass 102. Device wherein the pivoted joints between the distinct segments include toothed members.
- 104 Support:**  
This subclass is indented under subclass 101. Device wherein a means is provided to hold an oar or paddle on the gunwale of the vessel.
- 105 Having outrigger:**  
This subclass is indented under subclass 104. Device wherein the oarlock is mounted on a structure extending beyond the gunwale of the vessel.
- 106 Oarlock:**  
This subclass is indented under subclass 104. Device wherein a holding means for the oar or paddle is a device providing a pivot for the oar projecting above the gunwale.
- (1) Note. The holding means in this class is normally a swiveling crutchlike or ring-like device.
- 107 Having oar shaft restraining means:**  
This subclass is indented under subclass 106. Device wherein a means is provided to secure the long shaft of the oar within the oarlock to inhibit unintentional shifting of the oar from its operative position in the holding means.
- 108 Separate mounting means:**  
This subclass is indented under subclass 106. Device which includes a structure for mounting the oarlock to the boat, the structure being separate from the oarlock.
- 109 Socket type:**  
This subclass is indented under subclass 108. Device wherein the mounting means comprises a hollow part or piece for receiving a part of the oarlock.
- 110 Having guard for oar:**  
This subclass is indented under subclass 104. Device comprising a collar encircling the oar shaft.
- 111 INBOARD ENGINE MOUNT:**  
This subclass is indented under the class definition. Device wherein a means is provided to permanently affix the engine or motor of an inboard/outboard propulsion system within the hull.
- SEE OR SEARCH CLASS:  
248, Supports, subclasses 637+ for supports for vehicle motors.
- 112 Having thru-hull sealing means:**  
This subclass is indented under subclass 111. Device wherein a means is provided which allows the propeller shaft to pierce the hull, which means separates the engine compartment from the water to prevent the influx of the water and which means usually includes bearings.
- SEE OR SEARCH CLASS:  
277, Seal for a Joint or Juncture, for a generic sealing means or process, subclasses 500+ for a dynamic, circumferential, contact seal for other than a piston.  
384, Bearings, subclasses 130+ for a bearing with a seal.  
416, Fluid Reaction Surfaces (i.e., Impellers), subclass 174 for lubricating, sealing, packing, or specific bearing means between impeller or shaft and static part.
- 113 MISCELLANEOUS:**  
This subclass is indented under the class definition. Device not provided for elsewhere but being proper for this class.
- END