

F03 MACHINES OR ENGINES FOR LIQUIDS (for liquids and elastic fluids F01; positive-displacement machines for liquids F04); **WIND, SPRING, OR WEIGHT MOTORS; PRODUCING MECHANICAL POWER OR A REACTIVE PROPULSIVE THRUST, NOT OTHERWISE PROVIDED FOR**

F03B MACHINES OR ENGINES FOR LIQUIDS (machines or engines for liquids and elastic fluids F01; positive-displacement engines for liquids F03C; positive-displacement machines for liquids F04)

Notes

- (1) This subclass covers:
 - engines, other than of positive-displacement type, driven by liquids;
 - machines, other than of positive-displacement type, for liquids.
- (2) Attention is drawn to the Notes preceding class F01, especially as regards the definition of “reaction type”.

Subclass Index

TURBINES: IMPULSE; REACTION	1/00; 3/00	PARTS OR DETAILS OF ABOVE KINDS	1/00, 3/00, 11/00
MACHINES OR ENGINES: NON-BLADED ROTOR TYPE; WATER WHEELS;		ADAPTATIONS OR COMBINATIONS	13/00
ENDLESS-CHAIN TYPE	5/00; 7/00; 9/00	CONTROLLING	15/00
		OTHER MACHINES OR ENGINES	17/00

Non-positive-displacement machines or engines characterised by specified type, e.g. water turbines (adaptations of machines or engines for special use F03B 13/00; controlling F03B 15/00)

- 1/00 Engines of impulse type, i.e. turbines with jets of high-velocity liquid impinging on bladed or like rotors, e.g. Pelton wheels; Parts or details peculiar thereto**
 - 1/02 . Buckets; Bucket-carrying rotors
 - 1/04 . Nozzles (in general B05B); Nozzle-carrying members
 - 3/00 Machines or engines of reaction type; Parts or details peculiar thereto**
 - 3/02 . with radial flow at high-pressure side and axial flow at low-pressure side of rotors, e.g. Francis turbines
 - 3/04 . with substantially axial flow throughout rotors, e.g. propeller turbines
 - 3/06 . . with adjustable blades, e.g. Kaplan turbines
 - 3/08 . with pressure/velocity transformation exclusively in rotors
 - 3/10 . characterised by having means for functioning alternatively as pumps or turbines
 - 3/12 . Blades; Blade-carrying rotors
 - 3/14 . . Rotors having adjustable blades
 - 3/16 . Stators
 - 3/18 . . Stator blades; Guide conduits or vanes, e.g. adjustable
 - 5/00 Machines or engines characterised by non-bladed rotors, e.g. serrated, using friction**
 - 7/00 Water wheels**
 - 9/00 Endless-chain type machines or engines**
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- 11/00 Parts or details not provided for in, or of interest apart from, groups F03B 1/00 to F03B 9/00** (controlling F03B 15/00)
 - 11/02 . Casings
 - 11/04 . for diminishing cavitation or vibration, e.g. balancing
 - 11/06 . Bearing arrangements
 - 11/08 . for removing foreign matter, e.g. mud

- 13/00 Adaptations of machines or engines for special use; Combinations of machines or engines with driving or driven apparatus** (if the apparatus aspects are predominant, see the relevant places for such apparatus, e.g. H02K 7/18); **Power stations or aggregates** (hydraulic-engineering aspects E02B; incorporating only machines or engines of positive-displacement type F03C)
 - 13/02 . Adaptations for drilling wells
 - 13/04 . Adaptations for use in dentistry
 - 13/06 . Stations or aggregates of water-storage type (turbines characterised by having means for functioning alternatively as pumps F03B 3/10)
 - 13/08 . Machine or engine aggregates in dams or the like; Conduits therefor
 - 13/10 . Submerged units incorporating electric generators or motors
 - 13/12 . characterised by using wave or tide energy
 - 13/14 . . using wave energy [4]
 - 13/16 . . . using the relative movement between a wave-operated member and another member [4]
 - 13/18 wherein the other member is fixed, at least at one point, with respect to the sea bed or shore [4]
 - 13/20 wherein both members are movable relative to the sea bed or shore [4]
 - 13/22 . . . using the flow of water resulting from wave movements, e.g. to drive a hydraulic motor or turbine [4]
 - 13/24 . . . to produce a flow of air, e.g. to drive an air turbine [4]
 - 13/26 . . using tide energy [4]
- 15/00 Controlling** (controlling in general G05)
 - 15/02 . by varying liquid flow
 - 15/04 . . of turbines (rotors having adjustable blades F03B 3/06, F03B 3/14; adjustable guide vanes F03B 3/18; specially adapted for turbines with jets of high-velocity liquid impinging on bladed or like rotors F03B 15/20)
 - 15/06 . . . Regulating, i.e. acting automatically

F03B – F03C

- 15/08 by speed, e.g. by measuring electric frequency or liquid flow
- 15/10 without retroactive action
- 15/12 with retroactive action
- 15/14 by or of water level
- 15/16 by power output
- 15/18 for safety purposes, e.g. preventing overspeed
- 15/20 . . specially adapted for turbines with jets of high-velocity liquid impinging on bladed or like rotors (nozzles F03B 1/04)
- 15/22 . . . for safety purposes
- 17/00 Other machines or engines**
- 17/02 . using hydrostatic thrust
- 17/04 . . Alleged perpetua mobilia
- 17/06 . using liquid flow, e.g. of swinging-flap type

F03C POSITIVE-DISPLACEMENT ENGINES DRIVEN BY LIQUIDS (positive-displacement engines for liquids and elastic fluids F01; positive-displacement machines for liquids F04; fluid-pressure actuators F15B; fluid gearing F16H)

Note

Attention is drawn to the Notes preceding class F01, especially as regards the definitions of “positive displacement”, “rotary-piston machines”, “oscillating-piston machines”, “rotary-piston”, “co-operating members”, “movement of co-operating members”, “teeth or tooth-equivalents”, and “internal axis”.

- 1/00 Reciprocating-piston liquid engines**
- 1/007 . with single cylinder, double-acting piston [5]
- 1/013 . with single cylinder, single-acting piston [5]
- 1/02 . with multiple cylinders, characterised by the number or arrangement of cylinders (with movable cylinders F03C 1/22; of flexible-wall type F03C 5/02)
- 1/03 . . with movement in two directions being obtained by two single-acting piston liquid engines, each acting in one direction [5]
- 1/04 . . with cylinders in star- or fan-arrangement
- 1/047 . . . the pistons co-operating with an actuated element at the outer ends of the cylinders [5]
- 1/053 . . . the pistons co-operating with an actuated element at the inner ends of the cylinders [5]
- 1/06 . . with cylinder axes generally coaxial with, or parallel or inclined to, main shaft axis
- 1/08 . Distributing valve-gear peculiar thereto (for multiple-cylinder engines F03C 1/34; for engines with positive displacement in general F01L)
- 1/10 . . actuated by piston or piston-rod
- 1/12 . . . mechanically [5]
- 1/14 . . actuated by the driving liquid of the engine [5]
- 1/16 . . Speed controlling, equalising, or cushioning [5]
- 1/20 . . specially adapted for engines generating vibration only
- 1/22 . with movable cylinders
- 1/24 . . in which the liquid exclusively displaces one or more pistons reciprocating in rotary cylinders
- 1/247 . . . with cylinders in star- or fan-arrangement [5]
- 1/253 . . . with cylinder axes generally coaxial with, or parallel to, main shaft axis [5]
- 1/26 . adapted for special use or combined with apparatus driven thereby (aspects predominantly concerning the driven apparatus, see the relevant classes for such apparatus)
- 1/28 . Pistons specially adapted therefor [5]
- 1/30 . Cams specially adapted therefor [5]
- 1/32 . Cylinders specially adapted therefor [5]
- 1/34 . Distribution members specially adapted for multiple-cylinder engines [5]
- 1/36 . . Cylindrical distribution members [5]
- 1/38 . . Plate-like distribution members [5]
- 1/40 . Control specially adapted therefor [5]
- 2/00 Rotary-piston engines** (in which the liquid exclusively displaces one or more piston reciprocating in rotary cylinders F03C 1/24) [3]
- Note**
- Group F03C 2/30 takes precedence over groups F03C 2/02 to F03C 2/24. [3]
- 2/02 . of arcuate-engagement type, i.e. with circular translatory movement of co-operating members, each member having the same number of teeth or tooth-equivalents [3]
- 2/08 . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [3]
- 2/22 . of internal-axis type with equidirectional movement of co-operating members at the points of engagement, or with one of the co-operating members being stationary, the inner member having more teeth or tooth-equivalents than the outer member [3]
- 2/24 . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions [3]
- 2/30 . having the characteristics covered by two or more of groups F03C 2/02, F03C 2/08, F03C 2/22, F03C 2/24 or having the characteristics covered by one of these groups together with some other type of movement between co-operating members [3]
- 4/00 Oscillating-piston engines** [3]
- 5/00 Other engines**
- 5/02 . of flexible-wall type

F03D WIND MOTORS

Note

In this subclass, the following terms or expressions are used with the meanings indicated:

- “wind motor” means a mechanism for converting the energy of natural wind into useful mechanical power, and the transmission of such power to its point of use;
- “rotor” means the wind-engaging parts of the wind motor and the rotary member carrying them;
- “rotation axis” means the axis of rotation of the rotor.

<p>1/00 Wind motors with rotation axis substantially in wind direction (controlling F03D 7/00)</p> <p>1/02 . having a plurality of rotors</p> <p>1/04 . having stationary wind-guiding means, e.g. with shrouds or channels (F03D 1/02 takes precedence)</p> <p>1/06 . Rotors</p> <p>3/00 Wind motors with rotation axis substantially at right angle to wind direction (controlling F03D 7/00)</p> <p>3/02 . having a plurality of rotors</p> <p>3/04 . having stationary wind-guiding means, e.g. with shrouds or channels (F03D 3/02 takes precedence)</p> <p>3/06 . Rotors</p> <p>5/00 Other wind motors (controlling F03D 7/00)</p> <p>5/02 . the wind-engaging parts being attached to endless chains or the like</p> <p>5/04 . the wind-engaging parts being attached to carriages running on tracks or the like</p> <p>5/06 . the wind-engaging parts swinging to-and-fro and not rotating</p>	<p>7/00 Controlling wind motors</p> <p>7/02 . the wind motors having rotation axis substantially in wind direction</p> <p>7/04 . . Regulation, i.e. controlling automatically</p> <p>7/06 . the wind motors having rotation axis substantially at right angle to wind direction</p> <p>9/00 Adaptations of wind motors for special use; Combinations of wind motors with apparatus driven thereby (aspects predominantly concerning driven apparatus, <u>see</u> the relevant classes for such apparatus)</p> <p>9/02 . the apparatus storing power</p> <p>11/00 Details, component parts, or accessories not provided for in, or of interest apart from, the other groups of this subclass</p> <p>11/02 . Transmission of power, e.g. using hollow exhausting blades</p> <p>11/04 . Mounting structures</p>
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F03G SPRING, WEIGHT, INERTIA, OR LIKE MOTORS; MECHANICAL-POWER-PRODUCING DEVICES OR MECHANISMS, NOT OTHERWISE PROVIDED FOR OR USING ENERGY SOURCES NOT OTHERWISE PROVIDED FOR (arrangements in connection with power supply in vehicles from force of nature B60K 16/00; electric propulsion with power supply in vehicles from force of nature B60L 8/00)

Note

In this subclass, the following term is used with the meaning indicated:

- “motors” means mechanisms for producing mechanical power from potential energy of solid bodies.

<p>1/00 Spring motors (spring-driven toys A63H; springs in general F16F; precision time mechanisms, e.g. for clocks or watches, G04B)</p> <p>1/02 . characterised by shape or material of spring, e.g. helical, spiral, coil</p> <p>1/04 . . using rubber springs</p> <p>1/06 . Other parts or details</p> <p>1/08 . . for winding</p> <p>1/10 . . for producing output movement other than rotary, e.g. vibratory</p> <p>3/00 Other motors, e.g. gravity or inertia motors</p> <p>3/02 . using wheels with circumferentially-arranged compartments co-operating with solid falling bodies (F03G 3/04 takes precedence)</p> <p>3/04 . driven by sand or like fluent solid material</p> <p>3/06 . using pendulums</p> <p>3/08 . using flywheels</p>	<p>4/00 Devices for producing mechanical power from geothermal energy [5]</p> <p>4/02 . with direct fluid contact [5]</p> <p>4/04 . with deep-well turbo-pump [5]</p> <p>4/06 . with fluid flashing [5]</p> <p>5/00 Devices for producing mechanical power from muscle energy (driving cycles B62M)</p> <p>5/02 . of endless-walk type, e.g. treadmills</p> <p>5/04 . . Horsemills or the like</p> <p>5/06 . other than of endless-walk type</p> <p>5/08 . . for combined actuation by different limbs, e.g. hand and leg</p> <p>6/00 Devices for producing mechanical power from solar energy (solar boilers F24) [5]</p> <p>6/02 . using a single state working fluid [5]</p> <p>6/04 . . gaseous [5]</p> <p>6/06 . with solar energy concentrating means [5]</p>
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F03G – F03H

7/00 Mechanical-power-producing mechanisms, not otherwise provided for or using energy sources not otherwise provided for

- 7/04 . using pressure differences or thermal differences occurring in nature (F03G 7/06 takes precedence)
- 7/05 . . Ocean thermal energy conversion, i.e. OTEC [5]

7/06 . using expansion or contraction of bodies due to heating, cooling, moistening, drying, or the like (using thermal expansion of non-vaporising liquids F01K)

7/08 . recovering energy derived from swinging, rolling, pitching, or like movements, e.g. from the vibrations of a machine

7/10 . Alleged perpetua mobilia (using hydrostatic thrust F03B 17/04)

F03H PRODUCING A REACTIVE PROPULSIVE THRUST, NOT OTHERWISE PROVIDED FOR (from combustion products F02K)

1/00 Use of plasma to produce a reactive propulsive thrust (generating plasma H05H 1/00)

3/00 Use of photons to produce a reactive propulsive thrust

5/00 Producing a reactive propulsive thrust, not otherwise provided for