

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)

- (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”.

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 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

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