

**ECLA****EUROPEAN CLASSIFICATION****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)**

[N: **WARNING**  
[C2010.03]

- The following IPC groups are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following ECLA groups:

<a href="#">F03C1/253</a>	covered by	F03C
<a href="#">F03C1/28</a>	" "	<a href="#">F03C1/04K2</a> , <a href="#">F03C1/06B2</a>
<a href="#">F03C1/30</a>	" "	<a href="#">F03C1/04K3</a> , <a href="#">F03C1/06D4W</a> , <a href="#">F03C1/06E3S</a>
<a href="#">F03C1/32</a>	" "	<a href="#">F03C1/04K4</a> , <a href="#">F03C1/06D4C</a> , <a href="#">F03C1/06E3C</a>
<a href="#">F03C1/34</a>	" "	<a href="#">F03C1/04K15</a> , <a href="#">F03C1/06D3</a> , <a href="#">F03C1/06E3D</a>
<a href="#">F03C1/36</a>	" "	<a href="#">F03C1/04K15</a> , <a href="#">F03C1/06D3</a> , <a href="#">F03C1/06E3D</a>
<a href="#">F03C1/38</a>	" "	<a href="#">F03C1/04K15</a> , <a href="#">F03C1/06D3</a> , <a href="#">F03C1/06E3D</a>
<a href="#">F03C1/40</a>	" "	<a href="#">F03C1/04N</a> , <a href="#">F03C1/06K</a>

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**Note**

Attention is drawn to the notes preceding class F01, especially as regards the meanings 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".

**F03C1/00****Reciprocating-piston liquid engines****F03C1/00F**

- [N: the movement in two directions being obtained by two or more double-acting piston liquid motors]

**F03C1/00K**

- [N: details; components parts]

**F03C1/00N**

- [N: controlling]

**F03C1/00N2**

- [N: speed-control]

**F03C1/00N3**

- [N: motor piston stroke control]

**F03C1/007**

- with single cylinder, double-acting piston

**F03C1/007B**

- [N: one side of the double-acting piston being always under the influence of the liquid under pressure]

**F03C1/007B2**

- [N: the liquid under pressure being continuously delivered to one cylinder chamber through a valve in the piston for actuating the return stroke]

**F03C1/013**

- with single cylinder, single-acting piston

**F03C1/013D**

- [N: with actuation of the return stroke by gravity]

**F03C1/02**

- with multiple-cylinders, characterised by the number or arrangement of cylinders (with movable cylinders [F03C1/22](#); of flexible-wall type [F03C5/02](#))

F03C1/03	. . .	with movement in two directions being obtained by two single-acting piston liquid engines, each acting in one direction
F03C1/03B	. . .	[N: one single-acting piston being always under the influence of the liquid under pressure]
F03C1/04	. . .	with cylinders in star or fan arrangement [N: <a href="#">F03C1/22</a> takes precedence]
F03C1/04K	. . .	[N: Details, component parts specially adapted of such engines]
F03C1/04K2	. . . .	[N: Pistons]
F03C1/04K3	. . . .	[N: Cams]
F03C1/04K3B	. . . . .	[N: consisting of several cylindrical elements e.g. rollers]
F03C1/04K4	. . . .	[N: Cylinders]
F03C1/04K5	. . . .	[N: Arrangements for pressing or connecting the pistons against the actuated cam]
F03C1/04K5B	. . . . .	[N: hydraulically]
F03C1/04K6	. . . .	[N: Disconnecting the pistons from the actuated cam (in general <a href="#">F01B31/24</a> )]
F03C1/04K7	. . . .	[N: Supporting and guiding means for the pistons]
F03C1/04K10	. . . .	[N: Draining of the engine housing; arrangements dealing with leakage fluid]
F03C1/04K15	. . . .	[N: Particularities relating to the distribution members ( <a href="#">F03C1/047A</a> , <a href="#">F03C1/053A</a> , and <a href="#">F03C1/053C</a> take precedence)] [C9810]
F03C1/04K15C	. . . . .	[N: to cylindrical distribution members]
F03C1/04K15K	. . . . .	[N: to conical distribution members]
F03C1/04K15V	. . . . .	[N: to plate-like distribution members]
F03C1/04N	. . .	[N: Controlling]
F03C1/04N2	. . . .	[N: by using a valve in a system with several pump or motor chambers, wherein the flow path through the chambers can be changed, e.g. series-parallel] [N0409]
F03C1/04N4	. . . .	[N: by changing the effective cross sectional piston working surface] [N0409]
F03C1/04N6	. . . .	[N: by changing the effective piston stroke] [N0409]
F03C1/04N6B	. . . . .	[N: by changing the excentricity of one element relative to another element] [N0409]
F03C1/04N8	. . . .	[N: by changing the phase relationship between two actuated cams] [N0409]
F03C1/04N10	. . . .	[N: by changing the phase relationship between the actuated cam and the distributing means] [N0409]
F03C1/047	. . .	the pistons co-operating with an actuated element at the outer ends of the cylinders
F03C1/047A	. . . .	[N: with cam-actuated distribution members]
F03C1/047B	. . . .	[N: with two or more radial piston/cylinder units in series]
F03C1/047B2	. . . . .	[N: directly located side by side]
F03C1/047B3	. . . . .	[N: having several cylinder barrels coupled together]
F03C1/053	. . .	the pistons co-operating with an actuated element at the inner ends of the cylinders
F03C1/053A	. . . .	[N: with cam-actuated distribution members]
F03C1/053A2	. . . . .	[N: each piston being provided with channels coacting with the cylinder and being used as a distribution member for another cylinder]
F03C1/053B	. . . .	[N: with two or more radial piston/cylinder units in series]
F03C1/053B2	. . . . .	[N: directly located side by side]

F03C1/053C	. . . .	[N: the piston-driven cams being provided with inlets or outlets]
F03C1/06	. .	with cylinder axes generally coaxial with, or parallel or inclined to, main shaft axis
F03C1/06B	. . .	[N: Component parts, details]
F03C1/06B2	. . . .	[N: Adaptations of pistons (pump pistons <a href="#">F04B1/12C2</a> , <a href="#">F04B53/14</a> )] [C9810]
F03C1/06B7	. . . .	[N: Driven means]
F03C1/06D	. . .	[N: having stationary cylinders]
F03C1/06D2	. . . .	[N: having two or more sets of cylinders or pistons]
F03C1/06D3	. . . .	[N: distributing members]
F03C1/06D3C	. . . . .	[N: cylindrical distribution members]
F03C1/06D3K	. . . . .	[N: conical distribution members]
F03C1/06D4	. . . .	[N: Details, component parts]
F03C1/06D4C	. . . . .	[N: Cylinders]
F03C1/06D4H	. . . . .	[N: Casings, housings]
F03C1/06D4W	. . . . .	[N: Wobbler or actuated element]
F03C1/06D4W2	. . . . .	[N: Actuated element bearing means or driven axis bearing means]
F03C1/06E	. . .	[N: having rotary cylinder block]
F03C1/06E2	. . . .	[N: having two or more sets of cylinders or pistons]
F03C1/06E2B	. . . . .	[N: inclined on main shaft axis]
F03C1/06E3	. . . .	[N: Component parts]
F03C1/06E3B	. . . . .	[N: Particularities in the contacting area between cylinder barrel and valve plate]
F03C1/06E3B2	. . . . .	[N: Bearing means]
F03C1/06E3C	. . . . .	[N: Cylinders]
F03C1/06E3D	. . . . .	[N: Valve means]
F03C1/06E3D2	. . . . .	[N: Cylindrical valve means]
F03C1/06E3D3	. . . . .	[N: Conical valve means]
F03C1/06E3H	. . . . .	[N: Casings, housings]
F03C1/06E3H2	. . . . .	[N: Cylinder barrel bearing means]
F03C1/06E3S	. . . . .	[N: Swash or actuated plate]
F03C1/06E3S2	. . . . .	[N: Swash or actuated plate bearing means or driven axis bearing means]
F03C1/06E4	. . . .	[N: Connection between rotating cylinder and rotating inclined swash plate]
F03C1/06E5	. . . .	[N: Arrangement for pressing the cylinder barrel against the valve plate]
F03C1/06K	. . .	[N: Control]
F03C1/06K2	. . . .	[N: using a valve in a system with several motor chambers, wherein the flow path through the chambers can be changed]
F03C1/06K3	. . . .	[N: using a by-pass valve]
F03C1/06K5	. . . .	[N: by changing the inclination of the swash plate]
F03C1/06K5B	. . . . .	[N: using wedges]
F03C1/06K7	. . . .	[N: by changing the phase relationship between the actuated element and the distribution means, e.g. turning the valve plate; turning the swash plate]
F03C1/06K9	. . . .	[N: by changing the inclination of the axis of the cylinder barrel in relation to the axis of the actuated element]
F03C1/06K10	. . . .	[N: responsive to the speed]

- F03C1/08 . Distributing valve-gear peculiar thereto (for engines with positive-displacement in general [F01L](#)); [N: [F03C1/06](#) takes precedence]
- F03C1/10 . . actuated by piston or piston-rod
- F03C1/12 . . . mechanically ([F03C1/18](#) takes precedence)
- F03C1/14 . . by driving liquid of engine ([F03C1/18](#) takes precedence)
- F03C1/16 . . Speed controlling, equalising or cushioning
- F03C1/20 . . specially adapted for engines generating vibration only
  
- F03C1/22 . with movable cylinders [N: or cylinder]
- F03C1/22B . . [N: having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the inner ends of the cylinders]
- F03C1/22B2 . . . [N: with cam actuated distribution members]
- F03C1/24 . . in which the liquid exclusively displaces one or more pistons reciprocating in rotary cylinders [N: ([F03C1/06E](#) takes precedence)]
- F03C1/24A . . . [N: having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the outer ends of the cylinders]
- F03C1/24A1 . . . . [N: cylinder block and actuated cam both rotating ([F03C1/24A2A](#) and [F03C1/24A2B2](#) take precedence)]
- F03C1/24A2 . . . . [N: with two or more series radial piston-cylinder units]
- F03C1/24A2A . . . . . [N: cylinder block and actuated cam both rotating ([F03C1/24A2B2](#) takes precedence)]
- F03C1/24A2B . . . . . [N: directly located side by side]
- F03C1/24A2B2 . . . . . [N: cylinder block and actuated cam both rotating]
- F03C1/24B . . . [N: having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the inner ends of the cylinders]
- F03C1/24G . . . [N: the rotary cylinder being provided with only one piston reciprocating within this cylinder]
- F03C1/247 . . . with cylinders in star- or fan-arrangement, [N: the connection of the pistons with an actuated element being at the outer ends of the cylinders] [N9602]
  
- F03C1/26 . adapted for special use or combined with apparatus driven thereby (aspects predominantly concerning the driven apparatus see the relevant classes for such apparatus)

**F03C2/00** **Rotary-piston engines** (in which the liquid exclusively displaces one or more piston reciprocating in rotary cylinders [F03C1/24](#))

**Note**

Group [F03C2/30](#) takes precedence over groups [F03C2/02](#) to [F03C2/24](#).

- F03C2/02 . 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
- F03C2/08 . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
- F03C2/22 . 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

- F03C2/24
  - of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
- F03C2/30
  - having the characteristics covered by two or more of groups [F03C2/02](#), [F03C2/08](#), [F03C2/22](#), [F03C2/24](#) or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- F03C2/30B
  - . [N: having both the movements defined in sub-groups [F03C2/02](#) and relative reciprocation between members]
- F03C2/30C
  - . [N: having both the movements defined in sub-group [F03C2/08](#) or [F03C2/22](#) and relative reciprocation between members]
- F03C2/30D
  - . [N: having both the movements defined in sub-groups [F03C2/22](#) and [F03C2/24](#)]
- F03C2/30E
  - . [N: having the movement defined in [F03C2/08](#) and having a hinged member]
- F03C4/00**

**Oscillating-piston engines**
- F03C7/00**

**Engines of flexible-wall type** [N1003]
- F03C99/00**

**Subject matter not provided for in other groups of this subclass** [N1003]
- F03C99/00F
  - [N: Free-piston type engines] [N1003]