

# CPC COOPERATIVE PATENT CLASSIFICATION

## F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

### ENGINES OR PUMPS

#### F03 MACHINES OR ENGINES FOR LIQUIDS; WIND, SPRING, OR WEIGHT MOTORS; PRODUCING MECHANICAL POWER OR A REACTIVE PROPULSIVE THRUST, NOT OTHERWISE PROVIDED FOR

#### 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 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".

**WARNINGS**

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

<a href="#">F03C 1/253</a>	covered by	<a href="#">F03C 1/06</a>
<a href="#">F03C 1/28</a>	covered by	<a href="#">F03C 1/0406</a> , <a href="#">F03C 1/0605</a>
<a href="#">F03C 1/30</a>	covered by	<a href="#">F03C 1/0409</a> , <a href="#">F03C 1/0631</a> , <a href="#">F03C 1/0668</a>
<a href="#">F03C 1/32</a>	covered by	<a href="#">F03C 1/0415</a> , <a href="#">F03C 1/0626</a> , <a href="#">F03C 1/0652</a>
<a href="#">F03C 1/34</a>	covered by	<a href="#">F03C 1/0435</a> , <a href="#">F03C 1/0615</a> , <a href="#">F03C 1/0655</a>
<a href="#">F03C 1/36</a>	covered by	<a href="#">F03C 1/0435</a> , <a href="#">F03C 1/0615</a> , <a href="#">F03C 1/0655</a>
<a href="#">F03C 1/38</a>	covered by	<a href="#">F03C 1/0435</a> , <a href="#">F03C 1/0615</a> , <a href="#">F03C 1/0655</a>
<a href="#">F03C 1/40</a>	covered by	<a href="#">F03C 1/0447</a> , <a href="#">F03C 1/0678</a>

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<b>1/00</b>	<b>Reciprocating-piston liquid engines</b>	1/035	. . . {one single-acting piston being always under the influence of the liquid under pressure}
1/001	. {the movement in two directions being obtained by two or more double-acting piston liquid motors}	1/04	. . with cylinders in star or fan arrangement { <a href="#">F03C 1/22</a> takes precedence}
1/002	. {details; components parts}	1/0403	. . . {Details, component parts specially adapted of such engines}
1/003	. {controlling}	1/0406	. . . . {Pistons}
1/004	. . {speed-control}	1/0409	. . . . {Cams}
1/005	. . {motor piston stroke control}	1/0412	. . . . {consisting of several cylindrical elements, e.g. rollers}
1/007	. with single cylinder, double-acting piston	1/0415	. . . . {Cylinders}
1/0073	. . {one side of the double-acting piston being always under the influence of the liquid under pressure}	1/0419	. . . . {Arrangements for pressing or connecting the pistons against the actuated cam}
1/0076	. . . {the liquid under pressure being continuously delivered to one cylinder chamber through a valve in the piston for actuating the return stroke}	1/0422	. . . . {hydraulically}
1/013	. with single cylinder, single-acting piston	1/0425	. . . . {Disconnecting the pistons from the actuated cam (in general <a href="#">F01B 31/24</a> )}
1/0135	. . {with actuation of the return stroke by gravity}	1/0428	. . . . {Supporting and guiding means for the pistons}
1/02	. with multiple-cylinders, characterised by the number or arrangement of cylinders (with movable cylinders <a href="#">F03C 1/22</a> ; of flexible-wall type <a href="#">F03C 7/00</a> )	1/0431	. . . . {Draining of the engine housing; arrangements dealing with leakage fluid}
1/03	. . with movement in two directions being obtained by two single-acting piston liquid engines, each acting in one direction	1/0435	. . . . {Particularities relating to the distribution members ( <a href="#">F03C 1/0472</a> , <a href="#">F03C 1/0531</a> , and <a href="#">F03C 1/0538</a> take precedence)}
		1/0438	. . . . . {to cylindrical distribution members}
		1/0441	. . . . . {to conical distribution members}

- 1/0444 . . . . . {to plate-like distribution members}
- 1/0447 . . . {Controlling}
- 1/045 . . . . . {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}
- 1/0454 . . . . . {by changing the effective cross sectional piston working surface}
- 1/0457 . . . . . {by changing the effective piston stroke}
- 1/046 . . . . . {by changing the excentricity of one element relative to another element}
- 1/0463 . . . . . {by changing the phase relationship between two actuated cams}
- 1/0466 . . . . . {by changing the phase relationship between the actuated cam and the distributing means}
- 1/047 . . . . . the pistons co-operating with an actuated element at the outer ends of the cylinders
- 1/0472 . . . . . {with cam-actuated distribution members}
- 1/0474 . . . . . {with two or more radial piston/cylinder units in series}
- 1/0476 . . . . . {directly located side by side}
- 1/0478 . . . . . {having several cylinder barrels coupled together}
- 1/053 . . . . . the pistons co-operating with an actuated element at the inner ends of the cylinders
- 1/0531 . . . . . {with cam-actuated distribution members}
- 1/0533 . . . . . {each piston being provided with channels coacting with the cylinder and being used as a distribution member for another cylinder}
- 1/0535 . . . . . {with two or more radial piston/cylinder units in series}
- 1/0536 . . . . . {directly located side by side}
- 1/0538 . . . . . {the piston-driven cams being provided with inlets or outlets}
- 1/06 . . . . . with cylinder axes generally coaxial with, or parallel or inclined to, main shaft axis
- 1/0602 . . . . . {Component parts, details}
- 1/0605 . . . . . {Adaptations of pistons ([pump pistons F04B 1/124, F04B 53/14](#))}
- 1/0607 . . . . . {Driven means}
- 1/061 . . . . . {having stationary cylinders}
- 1/0613 . . . . . {having two or more sets of cylinders or pistons}
- 1/0615 . . . . . {distributing members}
- 1/0618 . . . . . {cylindrical distribution members}
- 1/0621 . . . . . {conical distribution members}
- 1/0623 . . . . . {Details, component parts}
- 1/0626 . . . . . {Cylinders}
- 1/0628 . . . . . {Casings, housings}
- 1/0631 . . . . . {Wobbler or actuated element}
- 1/0634 . . . . . {Actuated element bearing means or driven axis bearing means}
- 1/0636 . . . . . {having rotary cylinder block}
- 1/0639 . . . . . {having two or more sets of cylinders or pistons}
- 1/0642 . . . . . {inclined on main shaft axis}
- 1/0644 . . . . . {Component parts}
- 1/0647 . . . . . {Particularities in the contacting area between cylinder barrel and valve plate}
- 1/0649 . . . . . {Bearing means}
- 1/0652 . . . . . {Cylinders}
- 1/0655 . . . . . {Valve means}
- 1/0657 . . . . . {Cylindrical valve means}
- 1/066 . . . . . {Conical valve means}
- 1/0663 . . . . . {Casings, housings}
- 1/0665 . . . . . {Cylinder barrel bearing means}
- 1/0668 . . . . . {Swash or actuated plate}
- 1/0671 . . . . . {Swash or actuated plate bearing means or driven axis bearing means}
- 1/0673 . . . . . {Connection between rotating cylinder and rotating inclined swash plate}
- 1/0676 . . . . . {Arrangement for pressing the cylinder barrel against the valve plate}
- 1/0678 . . . . . {Control}
- 1/0681 . . . . . {using a valve in a system with several motor chambers, wherein the flow path through the chambers can be changed}
- 1/0684 . . . . . {using a by-pass valve}
- 1/0686 . . . . . {by changing the inclination of the swash plate}
- 1/0689 . . . . . {using wedges}
- 1/0692 . . . . . {by changing the phase relationship between the actuated element and the distribution means, e.g. turning the valve plate; turning the swash plate}
- 1/0694 . . . . . {by changing the inclination of the axis of the cylinder barrel in relation to the axis of the actuated element}
- 1/0697 . . . . . {responsive to the speed}
- 1/08 . . . . . Distributing valve-gear peculiar thereto ([for engines with positive-displacement in general F01L; {F03C 1/06 takes precedence}](#))
- 1/10 . . . . . actuated by piston or piston-rod
- 1/12 . . . . . mechanically
- 1/14 . . . . . by driving liquid of engine
- 1/16 . . . . . Speed controlling, equalising or cushioning
- 1/20 . . . . . specially adapted for engines generating vibration only
- 1/22 . . . . . with movable cylinders {or cylinder}
- 1/223 . . . . . {having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the inner ends of the cylinders}
- 1/226 . . . . . {with cam actuated distribution members}
- 1/24 . . . . . in which the liquid exclusively displaces one or more pistons reciprocating in rotary cylinders ([{F03C 1/0636 takes precedence}](#))
- 1/2407 . . . . . {having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the outer ends of the cylinders}
- 1/2415 . . . . . {cylinder block and actuated cam both rotating ([F03C 1/2431 and F03C 1/2446 take precedence](#))}
- 1/2423 . . . . . {with two or more series radial piston-cylinder units}
- 1/2431 . . . . . {cylinder block and actuated cam both rotating ([F03C 1/2446 takes precedence](#))}
- 1/2438 . . . . . {directly located side by side}
- 1/2446 . . . . . {cylinder block and actuated cam both rotating}
- 1/2454 . . . . . {having cylinders in star or fan arrangement, the connection of the pistons with an actuated element being at the inner ends of the cylinders}
- 1/2462 . . . . . {the rotary cylinder being provided with only one piston reciprocating within this cylinder}

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- 1/247 . . . with cylinders in star- or fan-arrangement  
{, the connection of the pistons with an actuated element being at the outer ends of the cylinders}
- 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](#))

**2/00 Rotary-piston engines** (in which the liquid exclusively displaces one or more piston reciprocating in rotary cylinders [F03C 1/24](#))

### **NOTE**

Group [F03C 2/30](#) takes precedence over groups [F03C 2/02](#) - [F03C 2/24](#).

- 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
- 2/08 . of intermeshing-engagement type, i.e. with engagement of co- operating members similar to that of toothed gearing
- 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
- 2/24 . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
- 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
- 2/302 . . {having both the movements defined in sub-groups [F03C 2/02](#) and relative reciprocation between members}
- 2/304 . . {having both the movements defined in sub-group [F03C 2/08](#) or [F03C 2/22](#) and relative reciprocation between members}
- 2/306 . . {having both the movements defined in sub-groups [F03C 2/22](#) and [F03C 2/24](#)}
- 2/308 . . {having the movement defined in [F03C 2/08](#) and having a hinged member}

**4/00 Oscillating-piston engines**

**7/00 Engines of flexible-wall type**

**99/00 Subject matter not provided for in other groups of this subclass**

- 99/005 . {Free-piston type engines}