

**CPC****COOPERATIVE PATENT 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)

**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".

**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:

F03C 1/253 covered by F03C  
F03C 1/28 " " F03C 1/0406, F03C 1/0605  
F03C 1/30 " " F03C 1/0409, F03C 1/0631, F03C 1/0668  
F03C 1/32 " " F03C 1/0415, F03C 1/0626, F03C 1/0652  
F03C 1/34 " " F03C 1/0435, F03C 1/0615, F03C 1/0655  
F03C 1/36 " " F03C 1/0435, F03C 1/0615, F03C 1/0655  
F03C 1/38 " " F03C 1/0435, F03C 1/0615, F03C 1/0655  
F03C 1/40 " " F03C 1/04N, F03C 1/06K

**F03C 1/00****Reciprocating-piston liquid engines**

- F03C 1/001 . {the movement in two directions being obtained by two or more double-acting piston liquid motors}
- F03C 1/002 . {details; components parts}
- F03C 1/003 . {controlling}
- F03C 1/004 . . {speed-control}
- F03C 1/005 . . {motor piston stroke control}
- F03C 1/007 . with single cylinder, double-acting piston
- F03C 1/0073 . . {one side of the double-acting piston being always under the influence of the liquid under pressure}
- F03C 1/0076 . . . {the liquid under pressure being continuously delivered to one cylinder chamber through a valve in the piston for actuating the return stroke}
- F03C 1/013 . with single cylinder, single-acting piston
- F03C 1/0135 . . {with actuation of the return stroke by gravity}

- F03C 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**)
- F03C 1/03 . . with movement in two directions being obtained by two single-acting piston liquid engines, each acting in one direction
- F03C 1/035 . . . {one single-acting piston being always under the influence of the liquid under pressure}
- F03C 1/04 . . with cylinders in star or fan arrangement {[F03C 1/22](#) takes precedence}
- F03C 1/0403 . . . {Details, component parts specially adapted of such engines}
- F03C 1/0406 . . . . {Pistons}
- F03C 1/0409 . . . . {Cams}
- F03C 1/0412 . . . . . {consisting of several cylindrical elements e.g. rollers}
- F03C 1/0415 . . . . {Cylinders}
- F03C 1/0419 . . . . {Arrangements for pressing or connecting the pistons against the actuated cam}
- F03C 1/0422 . . . . . {hydraulically}
- F03C 1/0425 . . . . {Disconnecting the pistons from the actuated cam (in general [F01B 31/24](#))}
- F03C 1/0428 . . . . {Supporting and guiding means for the pistons}
- F03C 1/0431 . . . . {Draining of the engine housing; arrangements dealing with leakage fluid}
- F03C 1/0435 . . . . {Particularities relating to the distribution members ([F03C 1/0472](#), [F03C 1/0531](#), and [F03C 1/0538](#) take precedence)}
- F03C 1/0438 . . . . . {to cylindrical distribution members}
- F03C 1/0441 . . . . . {to conical distribution members}
- F03C 1/0444 . . . . . {to plate-like distribution members}
- F03C 1/0447 . . . {Controlling}
- F03C 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}
- F03C 1/0454 . . . . {by changing the effective cross sectional piston working surface}
- F03C 1/0457 . . . . {by changing the effective piston stroke}
- F03C 1/046 . . . . . {by changing the excentricity of one element relative to another element}
- F03C 1/0463 . . . . {by changing the phase relationship between two actuated cams}
- F03C 1/0466 . . . . {by changing the phase relationship between the actuated cam and the distributing means}
- F03C 1/047 . . . the pistons co-operating with an actuated element at the outer ends of the cylinders
  - F03C 1/0472 . . . . {with cam-actuated distribution members}
  - F03C 1/0474 . . . . {with two or more radial piston/cylinder units in series}
  - F03C 1/0476 . . . . . {directly located side by side}
  - F03C 1/0478 . . . . . {having several cylinder barrels coupled together}
- F03C 1/053 . . . the pistons co-operating with an actuated element at the inner ends of the cylinders
  - F03C 1/0531 . . . . {with cam-actuated distribution members}
  - F03C 1/0533 . . . . . {each piston being provided with channels coacting with the cylinder and being used as a distribution member for another cylinder}
  - F03C 1/0535 . . . . {with two or more radial piston/cylinder units in series}

F03C 1/0536	.....	{directly located side by side}
F03C 1/0538	....	{the piston-driven cams being provided with inlets or outlets}
F03C 1/06	..	with cylinder axes generally coaxial with, or parallel or inclined to, main shaft axis
F03C 1/0602	...	{Component parts, details}
F03C 1/0605	....	{Adaptations of pistons (pump pistons <a href="#">F04B 1/124</a> , <a href="#">F04B 53/14</a> )}
F03C 1/0607	....	{Driven means}
F03C 1/061	...	{having stationary cylinders}
F03C 1/0613	....	{having two or more sets of cylinders or pistons}
F03C 1/0615	....	{distributing members}
F03C 1/0618	.....	{cylindrical distribution members}
F03C 1/0621	.....	{conical distribution members}
F03C 1/0623	....	{Details, component parts}
F03C 1/0626	.....	{Cylinders}
F03C 1/0628	.....	{Casings, housings}
F03C 1/0631	.....	{Wobbler or actuated element}
F03C 1/0634	.....	{Actuated element bearing means or driven axis bearing means}
F03C 1/0636	...	{having rotary cylinder block}
F03C 1/0639	....	{having two or more sets of cylinders or pistons}
F03C 1/0642	.....	{inclined on main shaft axis}
F03C 1/0644	....	{Component parts}
F03C 1/0647	.....	{Particularities in the contacting area between cylinder barrel and valve plate}
F03C 1/0649	.....	{Bearing means}
F03C 1/0652	....	{Cylinders}
F03C 1/0655	.....	{Valve means}
F03C 1/0657	.....	{Cylindrical valve means}
F03C 1/066	.....	{Conical valve means}
F03C 1/0663	.....	{Casings, housings}
F03C 1/0665	.....	{Cylinder barrel bearing means}
F03C 1/0668	.....	{Swash or actuated plate}
F03C 1/0671	.....	{Swash or actuated plate bearing means or driven axis bearing means}
F03C 1/0673	....	{Connection between rotating cylinder and rotating inclined swash plate}
F03C 1/0676	....	{Arrangement for pressing the cylinder barrel against the valve plate}
F03C 1/0678	...	{Control}
F03C 1/0681	....	{using a valve in a system with several motor chambers, wherein the flow path through the chambers can be changed}
F03C 1/0684	....	{using a by-pass valve}
F03C 1/0686	....	{by changing the inclination of the swash plate}
F03C 1/0689	.....	{using wedges}
F03C 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}
F03C 1/0694	....	{by changing the inclination of the axis of the cylinder barrel in relation to the

- axis of the actuated element}
- F03C 1/0697 . . . . {responsive to the speed}
- F03C 1/08 . Distributing valve-gear peculiar thereto (for engines with positive-displacement in general [F01L](#)); {[F03C 1/06](#) takes precedence}
- F03C 1/10 . . actuated by piston or piston-rod
- F03C 1/12 . . . mechanically (**F03C 1/18** takes precedence)
- F03C 1/14 . . by driving liquid of engine (**F03C 1/18** takes precedence)
- F03C 1/16 . . Speed controlling, equalising or cushioning
- F03C 1/20 . . specially adapted for engines generating vibration only
- F03C 1/22 . with movable cylinders {or cylinder}
- F03C 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}
- F03C 1/226 . . . {with cam actuated distribution members}
- F03C 1/24 . . in which the liquid exclusively displaces one or more pistons reciprocating in rotary cylinders {([F03C 1/0636](#) takes precedence)}
- F03C 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}
- F03C 1/2415 . . . . {cylinder block and actuated cam both rotating ([F03C 1/2431](#) and [F03C 1/2446](#) take precedence)}
- F03C 1/2423 . . . . {with two or more series radial piston-cylinder units}
- F03C 1/2431 . . . . . {cylinder block and actuated cam both rotating ([F03C 1/2446](#) takes precedence)}
- F03C 1/2438 . . . . . {directly located side by side}
- F03C 1/2446 . . . . . {cylinder block and actuated cam both rotating}
- F03C 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}
- F03C 1/2462 . . . {the rotary cylinder being provided with only one piston reciprocating within this cylinder}
- F03C 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}
- F03C 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)

**F03C 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](#) to [F03C 2/24](#).

- F03C 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
- F03C 2/08 . of intermeshing-engagement type, i.e. with engagement of co-operating members

similar to that of toothed gearing

- F03C 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
- F03C 2/24
  - . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
- F03C 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
- F03C 2/302
  - . . {having both the movements defined in sub-groups [F03C 2/02](#) and relative reciprocation between members}
- F03C 2/304
  - . . {having both the movements defined in sub-group [F03C 2/08](#) or [F03C 2/22](#) and relative reciprocation between members}
- F03C 2/306
  - . . {having both the movements defined in sub-groups [F03C 2/22](#) and [F03C 2/24](#)}
- F03C 2/308
  - . . {having the movement defined in [F03C 2/08](#) and having a hinged member}
- F03C 4/00**

**Oscillating-piston engines**
- F03C 7/00**

**Engines of flexible-wall type**
- F03C 99/00**

**Subject matter not provided for in other groups of this subclass**
- F03C 99/005
  - . { Free-piston type engines}