

CPC**COOPERATIVE PATENT CLASSIFICATION****F01C****ROTARY-PISTON OR OSCILLATING-PISTON MACHINES OR ENGINES** (internal-combustion aspects [F02B 53/00](#), [55/00](#))**NOTE**

This subclass covers:

- rotary-piston or oscillating-piston engines for elastic fluids, e.g. steam;
- rotary-piston or oscillating-piston engines for liquids and elastic fluids:
- rotary-piston or oscillating-piston machines for elastic fluids;
- rotary-piston or oscillating-piston machines for liquids and elastic fluids.

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

- "rotary-piston machine" includes the German expressions "Drehkolbenmaschinen", "Kreiskolbenmaschinen" and "Umlaufkolbenmaschinen".

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

F01C 1/00

Rotary-piston machines or engines (with axes of co-operating members non parallel [F01C 3/00](#); with the working-chamber walls at least partly resiliently deformable [F01C 5/00](#); with fluid ring or the like [F01C 7/00](#); rotary-piston machines or engines in which the working fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons [F01B 13/00](#))

NOTE

Group [F01C 1/30](#) takes precedence over groups [F01C 1/02](#) to [F01C 1/28](#).

F01C 1/02

- . 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

F01C 1/0207

- .. {both members having co-operating elements in spiral form}

F01C 1/0215

- ... {where only one member is moving}

F01C 1/0223

- {with symmetrical double wraps}

F01C 1/023

- ... {where both members are moving}

F01C 1/0238

- {with symmetrical double wraps}

F01C 1/0246

- ... {Details concerning the involute wraps or their base, e.g. geometry}

F01C 1/0253

- { Details concerning the base}

F01C 1/0261

- { Details of the ports, e.g. location, number, geometry}

F01C 1/0269	....	{ Details concerning the involute wraps}
F01C 1/0276	.....	{ Different wall heights}
F01C 1/0284	.....	{ Details of the wrap tips}
F01C 1/0292	.....	{ Ports or channels located in the wrap}
F01C 1/04	..	of internal-axis type
F01C 1/045	...	{ having a C-shaped piston}
F01C 1/06	..	of other than internal-axis type
F01C 1/063	...	with coaxially-mounted members having continuously-changing circumferential spacing between them
F01C 1/067	....	having cam-and-follower type drive
F01C 1/07	....	having crankshaft-and-connecting-rod type drive
F01C 1/073	....	having pawl-and-ratchet type drive
F01C 1/077	....	having toothed-gearing type drive
F01C 1/08	.	of intermeshing engagement type, i.e. with engagement of co- operating members similar to that of toothed gearing
F01C 1/082	..	{Details specially related to intermeshing engagement type machines or engines}
F01C 1/084	...	{Toothed wheels}
F01C 1/086	...	{Carter}
F01C 1/088	...	{ Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}
F01C 1/10	..	of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member
F01C 1/101	...	{Moineau-type}
F01C 1/102	...	{with a crescent shaped filler element located between the intermeshing elements}
F01C 1/103	...	{the two members rotating simultaneously around their respective axes}
F01C 1/104	...	{one member having simultaneously a rotational movement about its own axis and an orbital movement}
F01C 1/105	....	{and having an articulated driving shaft}
F01C 1/107	...	with helical teeth
F01C 1/113	...	the inner member carrying rollers intermeshing with the outer member
F01C 1/12	..	of other than internal-axis type
F01C 1/123	...	{with tooth-like elements, extending generally radially from the rotor body cooperating with recesses in the other rotor, e.g. one tooth}
F01C 1/126	...	{with elements extending radially from the rotor body not necessarily cooperating with corresponding recesses in the other rotor, e.g. lobes, Roots type}
F01C 1/14	...	with toothed rotary pistons
F01C 1/16	....	with helical teeth, e.g. chevron-shaped, screw type {(for non-parallel axes of movement F01C 3/00)}
F01C 1/165	.....	{having more than two rotary pistons with parallel axes}
F01C 1/18	....	with similar tooth forms (F01C 1/16 takes precedence)
F01C 1/20	....	with dissimilar tooth forms (F01C 1/16 takes precedence)
F01C 1/22	.	of internal-axis type with equidirectional movement of co-operating members at the

point 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

- F01C 1/24 . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
- F01C 1/26 . . of internal-axis type
- F01C 1/28 . . of other than internal-axis type
- F01C 1/30 . having the characteristics covered by two or more groups [F01C 1/02](#), [F01C 1/08](#), [F01C 1/22](#), [F01C 1/24](#) or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- F01C 1/32 . . having both the movement defined in group [F01C 1/02](#) and relative reciprocation between the co-operating members
- F01C 1/321 . . . { with vanes hinged to the inner member and reciprocating with respect to the inner member }
- F01C 1/322 . . . { with vanes hinged to the outer member and reciprocating with respect to the outer member }
- F01C 1/324 . . . with vanes hinged to the inner member and reciprocating with respect to the outer member
- F01C 1/328 and hinged to the outer member
- F01C 1/332 . . . with vanes hinged to the outer member and reciprocating with respect to the inner member
- F01C 1/336 and hinged to the inner member
- F01C 1/34 . . having the movement defined in group [F01C 1/08](#) or [F01C 1/22](#) and relative reciprocation between the co-operating members
- F01C 1/344 . . . with vanes reciprocating with respect to the inner member
- F01C 1/3441 {the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation}
- F01C 1/3442 {the surfaces of the inner and outer member, forming the working space, being surfaces of revolution}
- F01C 1/3443 {with a separation element located between the inlet and outlet opening}
- F01C 1/3445 {the vanes having the form of rollers, slippers or the like}
- F01C 1/3446 {the inner and outer member being in contact along more than one line or surface}
- F01C 1/3447 {the vanes having the form of rollers, slippers or the like}
- F01C 1/3448 {with axially movable vanes}
- F01C 1/348 . . . the vanes positively engaging, with circumferential play, an outer rotatable member
- F01C 1/352 . . . the vanes being pivoted on the axis of the outer member
- F01C 1/356 . . . with vanes reciprocating with respect to the outer member
- F01C 1/3562 {the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation}
- F01C 1/3564 {the surfaces of the inner and outer member, forming the working space, being surfaces of revolution}
- F01C 1/3566 {the inner and outer member being in contact along more than one line or surface}
- F01C 1/3568 {with axially movable vanes}

- F01C 1/36 . . . having both the movements defined in sub-groups [F01C 1/22](#) and [F01C 1/24](#)
- F01C 1/38 . . . having the movement defined in group 1/02 and having a hinged member ([F01C 1/32](#) takes precedence)
- F01C 1/39 . . . with vanes hinged to the inner as well as to the outer member
- F01C 1/40 . . . having the movement defined in group [F01C 1/08](#) or [F01C 1/22](#) and having a hinged member
- F01C 1/44 . . . with vanes hinged to the inner member
- F01C 1/46 . . . with vanes hinged to the outer member

- F01C 3/00** **Rotary-piston machines or engines with non-parallel axes of movement of co-operating members** (with the working-chamber walls being at least partly resiliently deformable [F01C 5/00](#))
 - F01C 3/02 . the axes being arranged at an angle of 90 degrees
 - F01C 3/025 . . {of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing}
 - F01C 3/04 . . with axially sliding vanes
 - F01C 3/06 . the axes being arranged otherwise than at an angle of 90 degrees
 - F01C 3/08 . . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
 - F01C 3/085 . . . {the axes of cooperating members being on the same plane}

- F01C 5/00** **Rotary-piston machines or engines with the working-chamber walls at least partly resiliently deformable**
 - F01C 5/02 . the resiliently-deformable wall being part of the inner member, e.g. of a rotary piston
 - F01C 5/04 . the resiliently-deformable wall being part of the outer member, e.g. of a housing
 - F01C 5/06 . the resiliently-deformable wall being a separate member
 - F01C 5/08 . . of tubular form, e.g. hose

- F01C 7/00** **Rotary-piston machines or engines with fluid ring or the like**

- F01C 9/00** **Oscillating-piston machines or engines**
 - F01C 9/002 . {the piston oscillating around a fixed axis}
 - F01C 9/005 . {the piston oscillating in the space, e.g. around a fixed point (rotary piston machines or engines with non-parallel axes of rotation between co-operating members [F01C 3/00](#))}
 - F01C 9/007 . {the points of the moving element describing approximately an alternating movement in axial direction with respect to the other element}

- F01C 11/00** **Combinations of two or more machines or engines, each being of rotary-piston or oscillating-piston type** ([F01C 13/00](#) takes precedence; combinations of two or more

pumps [F04](#); fluid gearing [F16H](#))

- F01C 11/002 . {of similar working principle}
- F01C 11/004 . . {and of complementary function, e.g. internal combustion engine with supercharger}
- F01C 11/006 . {of dissimilar working principle}
- F01C 11/008 . . {and of complementary function, e.g. internal combustion engine with supercharger}

NOTE

Multi-stage steam engines or similar machines are not considered as having complementary function

F01C 13/00 **Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby** (aspects predominantly concerning driven devices, see the relevant classes for these devices)

- F01C 13/02 . for driving hand-held tools or the like
- F01C 13/04 . for driving pumps or compressors

F01C 17/00 **Arrangements for drive of co-operating members, e.g. for rotary piston and casing**

- F01C 17/02 . of toothed-gearing type ([F01C 1/077](#) takes precedence)
- F01C 17/04 . of cam-and-follower type ([F01C 1/067](#) takes precedence)
- F01C 17/06 . using cranks, universal joints or similar elements ([F01C 1/07](#) takes precedence)
- F01C 17/063 . . {with only rolling movement}
- F01C 17/066 . . {with an intermediate piece sliding along perpendicular axes, e.g. Oldham coupling}

F01C 19/00 **Sealing arrangements in rotary-piston machines or engines** (sealings in general [F16J](#))

- F01C 19/005 . { Structure and composition of sealing elements such as sealing strips, sealing rings and the like; Coating of these elements (vane construction [F01C 21/08B](#); piston rings and ring sealings of similar construction in general [F16J 9/00](#))}
- F01C 19/02 . Radially-movable sealings for working fluid
- F01C 19/025 . . {Radial sealing elements specially adapted for intermeshing engagement type machines or engines, e.g. gear machines or engines}
- F01C 19/04 . . of rigid material
- F01C 19/06 . . of resilient material

- F01C 19/08 . Axially-movable sealings for working fluid
- F01C 19/085 . . {Elements specially adapted for sealing of the lateral faces of intermeshing-engagement type machines or engines, e.g. gear machines or engines}
- F01C 19/10 . Sealings for working fluids between radially and axially movable parts
- F01C 19/12 . for other than working fluid
- F01C 19/125 . . {Shaft sealings specially adapted for rotary or oscillating-piston machines or engines}
- F01C 20/00 Control of, monitoring of, or safety arrangements for, machines or engines**
- F01C 20/02 . specially adapted for several machines or engines connected in series or in parallel
- F01C 20/04 . specially adapted for reversible machines or engines
- F01C 20/06 . specially adapted for stopping, starting, idling or no-load operation
- F01C 20/08 . characterised by varying the rotational speed
- F01C 20/10 . characterised by changing the position of the inlet or outlet openings with respect to the working chamber
- F01C 20/12 . . using sliding valves
- F01C 20/125 . . . {with sliding valves controlled by the use of fluid other than the working fluid}
- F01C 20/14 . . using rotating valves
- F01C 20/16 . . using lift valves
- F01C 20/18 . characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings [F01C 20/10](#))
- F01C 20/185 . . { by varying the useful pumping length of the cooperating members in the axial direction}
- F01C 20/20 . . by changing the form of the inner or outlet contour of the working chamber
- F01C 20/22 . . by changing the eccentricity between cooperating members
- F01C 20/24 . characterised by using valves regulating pressure or flow rate, e.g. discharge valves, unloading valves ([F01C 20/10](#) takes precedence)
- F01C 20/26 . . using bypass channels
- F01C 20/265 . . . {being obtained by displacing a lateral sealing face}
- F01C 20/28 . Safety arrangements; Monitoring
- F01C 21/00 Component parts, details or accessories not provided for in groups [F01C 1/00](#) to [F01C 20/00](#)**
- F01C 21/001 . {Injection of a fluid in the working chamber for sealing, cooling and lubricating (sealing only [F01C 17/00](#); lubrication only [F01C 21/04](#); cooling only [F01C 21/06](#); injecting water or steam in internal combustion engines [F02B 47/02](#), [F02D 21/00](#), [F02M 25/00](#))}

- F01C 21/002 . . {with control systems for the injection of the fluid}
- F01C 21/003 . {Systems for the equilibration of forces acting on the elements of the machine (interstice adjustment other than by fluid pressure [F01C 21/102](#))}
- F01C 21/005 . . {Internal leakage control}
- F01C 21/006 . . {Equalization of pressure pulses (silencing for compressors [F04C 29/06](#))}
- F01C 21/007 . {General arrangements of parts; Frames and supporting elements}
- F01C 21/008 . {Driving elements, brakes, couplings, transmissions specially adapted for rotary or oscillating-piston machines or engines (brakes, couplings, transmissions per se [F16, B60](#))}
- F01C 21/02 . Arrangements of bearings (bearing constructions [F16C](#))
- F01C 21/04 . Lubrication (of machines or engines in general [F01M](#))
- F01C 21/045 . . {Control systems for the circulation of the lubricant}
- F01C 21/06 . Heating; Cooling (of machines or engines in general [F01P](#)); Heat insulation (heat insulation in general [F16L](#))
- F01C 21/08 . Rotary pistons (reciprocating piston in general [F16J](#))
- F01C 21/0809 . . {Construction of vanes or vane holders}
- F01C 21/0818 . . . {Vane tracking; control therefor}
- F01C 21/0827 {by mechanical means}
- F01C 21/0836 {comprising guiding means, e.g. cams, rollers}
- F01C 21/0845 {comprising elastic means, e.g. springs}
- F01C 21/0854 {by fluid means}
- F01C 21/0863 {the fluid being the working fluid}
- F01C 21/0872 {the fluid being other than the working fluid}
- F01C 21/0881 . . . {the vanes consisting of two or more parts}
- F01C 21/089 . . . {for synchronised movement of the vanes}
- F01C 21/10 . Outer members for co-operation with rotary pistons; Casings (casings for rotary engines or machines in general [F16M](#))
- F01C 21/102 . . {Adjustment of the interstices between moving and fixed parts of the machine by means other than fluid pressure}
- F01C 21/104 . . {Stators; Members defining the outer boundaries of the working chamber}
- F01C 21/106 . . . {with a radial surface, e.g. cam rings}
- F01C 21/108 . . . {with an axial surface, e.g. side plates}
- F01C 21/18 . Arrangements for admission or discharge of the working fluid, e.g. constructional features of the inlet or outlet
- F01C 21/183 . . {Arrangements for supercharging the working space (similar arrangements for internal combustion engines [F02B 33/00](#), [F02B 27/00](#))}
- F01C 21/186 . . {for variable fluid distribution}

F01C 2021/00**Component parts, details or accessories not provided for in groups [F01C 1/00](#) to [F01C 20/00](#)**

- [F01C 2021/12](#) . Control of working fluid admission or discharge
- [F01C 2021/125](#) . . Arrangements for supercharging the working space
- [F01C 2021/14](#) . . for variable fluid distribution
- [F01C 2021/16](#) . Other regulation or control
- [F01C 2021/1606](#) . . Variation of the working chamber
- [F01C 2021/1612](#) . . . by changing the eccentricity of an element with respect to another element
- [F01C 2021/1618](#) . . . by changing the positions of the inlet and outlet openings with respect to the working chambers
- [F01C 2021/1625](#) with sliding or rotating valves, adjustable in position
- [F01C 2021/1631](#) with sliding valves controlled by the use of fluid other than the working fluid
- [F01C 2021/1637](#) . . . by changing the form of the radially inner or the radially outer contour of the working chamber
- [F01C 2021/1643](#) . . by using valves regulating pressure and flow rate, e.g. discharge valves
- [F01C 2021/165](#) . . . using a by-pass channel
- [F01C 2021/1656](#) being obtained by displacing a lateral sealing face
- [F01C 2021/1662](#) . . . with venting means
- [F01C 2021/1668](#) . . with several machines or engines connected in series or in parallel
- [F01C 2021/1675](#) . . with reversible machines or engines
- [F01C 2021/1681](#) . . by varying the rotational speed
- [F01C 2021/1687](#) . . Safety arrangements
- [F01C 2021/1693](#) . . Stopping or starting, idling or no-load operation