

ECLA**EUROPEAN CLASSIFICATION****F01C****ROTARY-PISTON OR OSCILLATING-PISTON MACHINES OR ENGINES (internal-combustion aspects F02B 53/00, 55/00)****Notes**

1. 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.

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

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

3. 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".

F01C1/00

Rotary-piston machines or engines (with axes of co-operating members non parallel [F01C3/00](#); with the working-chamber walls at least partly resiliently deformable [F01C5/00](#); with fluid ring or the like [F01C7/00](#); rotary-piston machines or engines in which the working fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons [F01B13/00](#)) [**M1109**]

Note

Group [F01C1/30](#) takes precedence over groups [F01C1/02](#) to [F01C1/28](#).

F01C1/02

- . 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

F01C1/02B

- . . [N: both members having co-operating elements in spiral form]

F01C1/02B2

- . . . [N: where only one member is moving]

F01C1/02B2B

- [N: with symmetrical double wraps]

F01C1/02B4

- [N: where both members are moving]

F01C1/02B4B

- [N: with symmetrical double wraps]

F01C1/02B6

- [N: Details concerning the involute wraps or their base, e.g. geometry]

F01C1/02B6B

- [N: Details concerning the base] [[N1204](#)]

F01C1/02B6B2

- [N: Details of the ports, e.g. location, number, geometry] [[N1204](#)]

F01C1/02B6D

- [N: Details concerning the involute wraps] [[N1204](#)]

F01C1/02B6D2

- [N: Different wall heights] [[N1204](#)]

F01C1/02B6D4

- [N: Details of the wrap tips] [[N1204](#)]

- F01C1/02B6D6 [N: Ports or channels located in the wrap] [N1204]
- F01C1/04 . . of internal-axis type
- F01C1/04B . . . [N: having a C-shaped piston] [N1204]
- F01C1/06 . . of other than internal-axis type
- F01C1/063 . . . with coaxially-mounted members having continuously-changing circumferential spacing between them
- F01C1/067 having cam-and-follower type drive
- F01C1/07 having crankshaft-and-connecting-rod type drive
- F01C1/073 having pawl-and-ratchet type drive
- F01C1/077 having toothed-gearing type drive
- F01C1/08 . . of intermeshing engagement type, i.e. with engagement of co- operating members similar to that of toothed gearing
- F01C1/08B . . [N: Details specially related to intermeshing engagement type machines or engines]
- F01C1/08B2 . . . [N: Toothed wheels]
- F01C1/08B4 . . . [N: Carter]
- F01C1/08B6 . . . [N: Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement] [M1109]
- F01C1/10 . . of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member
- F01C1/10B . . . [N: Moineau-type]
- F01C1/10C . . . [N: with a crescent shaped filler element located between the intermeshing elements]
- F01C1/10D . . . [N: the two members rotating simultaneously around their respective axes]
- F01C1/10E . . . [N: one member having simultaneously a rotational movement about its own axis and an orbital movement]
- F01C1/10E2 [N: and having an articulated driving shaft]
- F01C1/107 . . . with helical teeth
- F01C1/113 . . . the inner member carrying rollers intermeshing with the outer member
- F01C1/12 . . of other than internal-axis type
- F01C1/12B . . . [N: with tooth-like elements, extending generally radially from the rotor body cooperating with recesses in the other rotor, e.g. one tooth]
- F01C1/12D . . . [N: with elements extending radially from the rotor body not necessarily cooperating with corresponding recesses in the other rotor, e.g. lobes, Roots type]
- F01C1/14 . . . with toothed rotary pistons
- F01C1/16 with helical teeth, e.g. chevron-shaped, screw type [N: (for non-parallel axes of movement [F01C3/00](#))] [C9604]
- F01C1/16B [N: having more than two rotary pistons with parallel axes] [N9604]
- F01C1/18 with similar tooth forms ([F01C1/16](#) takes precedence)
- F01C1/20 with dissimilar tooth forms ([F01C1/16](#) takes precedence)
- F01C1/22 . . 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
- F01C1/24 . . of counter-engagement type, i.e. the movement of co-operating members at the points

- of engagement being in opposite directions
- F01C1/26 . . . of internal-axis type
- F01C1/28 . . . of other than internal-axis type
- F01C1/30 . . . having the characteristics covered by two or more groups [F01C1/02](#), [F01C1/08](#), [F01C1/22](#), [F01C1/24](#) or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
- F01C1/32 . . . having both the movement defined in group [F01C1/02](#) and relative reciprocation between the co-operating members
- F01C1/32A [N: with vanes hinged to the inner member and reciprocating with respect to the inner member] [\[N1205\]](#)
- F01C1/32B [N: with vanes hinged to the outer member and reciprocating with respect to the outer member] [\[N1205\]](#)
- F01C1/324 with vanes hinged to the inner member and reciprocating with respect to the outer member
- F01C1/328 and hinged to the outer member
- F01C1/332 with vanes hinged to the outer member and reciprocating with respect to the inner member
- F01C1/336 and hinged to the inner member
- F01C1/34 . . . having the movement defined in group [F01C1/08](#) or [F01C1/22](#) and relative reciprocation between the co-operating members
- F01C1/344 with vanes reciprocating with respect to the inner member
- F01C1/344B [\[N: the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation\]](#)
- F01C1/344B2 [\[N: the surfaces of the inner and outer member, forming the working space, being surfaces of revolution\]](#)
- F01C1/344B4 [\[N: with a separation element located between the inlet and outlet opening\]](#)
- F01C1/344B6 [\[N: the vanes having the form of rollers, slippers or the like\]](#)
- F01C1/344C [\[N: the inner and outer member being in contact along more than one line or surface\]](#)
- F01C1/344C2 [\[N: the vanes having the form of rollers, slippers or the like\]](#)
- F01C1/344D [\[N: with axially movable vanes\]](#)
- F01C1/348 the vanes positively engaging, with circumferential play, an outer rotatable member
- F01C1/352 the vanes being pivoted on the axis of the outer member
- F01C1/356 with vanes reciprocating with respect to the outer member
- F01C1/356B [\[N: the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation\]](#)
- F01C1/356B2 [\[N: the surfaces of the inner and outer member, forming the working space, being surfaces of revolution\]](#)
- F01C1/356C [\[N: the inner and outer member being in contact along more than one line or surface\]](#)
- F01C1/356D [\[N: with axially movable vanes\]](#)
- F01C1/36 . . . having both the movements defined in sub-groups [F01C1/22](#) and [F01C1/24](#)
- F01C1/38 . . . having the movement defined in group 1/02 and having a hinged member ([F01C1/32](#) takes precedence)

- F01C1/39 . . . with vanes hinged to the inner as well as to the outer member
- F01C1/40 . . having the movement defined in group [F01C1/08](#) or [F01C1/22](#) and having a hinged member
- F01C1/44 . . . with vanes hinged to the inner member
- F01C1/46 . . . with vanes hinged to the outer member

- F01C3/00** **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 [F01C5/00](#))

- F01C3/02 . the axes being arranged at an angle of 90 degrees
- F01C3/02B . . [N: of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing]
- F01C3/04 . . with axially sliding vanes

- F01C3/06 . the axes being arranged otherwise than at an angle of 90 degrees
- F01C3/08 . . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
- F01C3/08B . . . [N: the axes of cooperating members being on the same plane] [N9604]

- F01C5/00** **Rotary-piston machines or engines with the working-chamber walls at least partly resiliently deformable**

- F01C5/02 . the resiliently-deformable wall being part of the inner member, e.g. of a rotary piston
- F01C5/04 . the resiliently-deformable wall being part of the outer member, e.g. of a housing
- F01C5/06 . the resiliently-deformable wall being a separate member
- F01C5/08 . . of tubular form, e.g. hose

- F01C7/00** **Rotary-piston machines or engines with fluid ring or the like**

- F01C9/00** **Oscillating-piston machines or engines**

- F01C9/00B . [N: the piston oscillating around a fixed axis]
- F01C9/00C . [N: 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 [F01C3/00](#))]
- F01C9/00D . [N: the points of the moving element describing approximately an alternating movement in axial direction with respect to the other element]

- F01C11/00** **Combinations of two or more machines or engines, each being of rotary-piston or oscillating-piston type** ([F01C13/00](#) takes precedence; combinations of two or more pumps [F04](#); fluid gearing [F16H](#))
- F01C11/00B . [N: of similar working principle] [C9410]

- F01C11/00B2
 - [N: and of complementary function, e.g. internal combustion engine with supercharger]
- F01C11/00C
 - [N: of dissimilar working principle] [C9410]
- F01C11/00C2
 - [N: and of complementary function, e.g. internal combustion engine with supercharger]
- [N: **Note**
Multi-stage steam engines or similar machines are not considered as having complementary function
]
- F01C13/00**

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)
- F01C13/02
 - for driving hand-held tools or the like
- F01C13/04
 - for driving pumps or compressors
- F01C17/00**

Arrangements for drive of co-operating members, e.g. for rotary piston and casing
- F01C17/02
 - of toothed-gearing type ([F01C1/077](#) takes precedence)
- F01C17/04
 - of cam-and-follower type ([F01C1/067](#) takes precedence)
- F01C17/06
 - using cranks, universal joints or similar elements ([F01C1/07](#) takes precedence)
- F01C17/06B
 - [N: with only rolling movement] [N0105]
- F01C17/06D
 - [N: with an intermediate piece sliding along perpendicular axes, e.g. Oldham coupling] [N0105] [M1109]
- F01C19/00**

Sealing arrangements in rotary-piston machines or engines ([sealings in general F16J](#))
- F01C19/00B
 - [N: Structure and composition of sealing elements such as sealing strips, sealing rings and the like; Coating of these elements (**vane construction [F01C21/08B](#); piston rings and ring sealings of similar construction in general [F16J9/00](#)**)]
- F01C19/02
 - Radially-movable sealings for working fluid
- F01C19/02B
 - [N: Radial sealing elements specially adapted for intermeshing engagement type machines or engines, e.g. gear machines or engines]
- F01C19/04
 - of rigid material
- F01C19/06
 - of resilient material
- F01C19/08
 - Axially-movable sealings for working fluid
- F01C19/08B
 - [N: Elements specially adapted for sealing of the lateral faces of intermeshing-engagement type machines or engines, e.g. gear machines or engines]
- F01C19/10
 - Sealings for working fluids between radially and axially movable parts

- F01C19/12 . for other than working fluid
- F01C19/12B . . [N: Shaft sealings specially adapted for rotary or oscillating-piston machines or engines]

- F01C20/00** **Control of, monitoring of, or safety arrangements for, machines or engines [N0509]**

- F01C20/02 . specially adapted for several machines or engines connected in series or in parallel [N0509]
- F01C20/04 . specially adapted for reversible machines or engines [N0509]
- F01C20/06 . specially adapted for stopping, starting, idling or no-load operation [N0509]
- F01C20/08 . characterised by varying the rotational speed [N0509]
- F01C20/10 . characterised by changing the position of the inlet or outlet openings with respect to the working chamber [N0509]
- F01C20/12 . . using sliding valves [N0509]
- F01C20/12B . . . [N: with sliding valves controlled by the use of fluid other than the working fluid] [N0509]
- F01C20/14 . . using rotating valves [N0509]
- F01C20/16 . . using lift valves [N0509]
- F01C20/18 . characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings [F01C20/10](#)) [N0509]
- F01C20/18B . . [N: by varying the useful pumping length of the cooperating members in the axial direction] [N0605]
- F01C20/20 . . by changing the form of the inner or outlet contour of the working chamber [N0509]
- F01C20/22 . . by changing the eccentricity between cooperating members [N0509]
- F01C20/24 . characterised by using valves regulating pressure or flow rate, e.g. discharge valves, unloading valves ([F01C20/10](#) takes precedence) [N0509] [M1109]
- F01C20/26 . . using bypass channels [N0509]
- F01C20/26B . . . [N: being obtained by displacing a lateral sealing face] [N0509]
- F01C20/28 . Safety arrangements; Monitoring [N0509]

- F01C21/00** **Component parts, details or accessories not provided for in groups [F01C1/00](#) to [F01C20/00](#) [C0509]**

- F01C21/00B . [N: Injection of a fluid in the working chamber for sealing, cooling and lubricating (sealing only [F01C17/00](#); lubrication only [F01C21/04](#); cooling only [F01C21/06](#); injecting water or steam in internal combustion engines [F02B47/02](#), [F02D21/00](#), [F02M25/00](#))]
- F01C21/00B2 . . [N: with control systems for the injection of the fluid]
- F01C21/00C . [N: Systems for the equilibration of forces acting on the elements of the machine (interstice adjustment other than by fluid pressure [F01C21/10B](#))]

- F01C21/00C2 . . [N: Internal leakage control]
- F01C21/00C4 . . [N: Equalization of pressure pulses (silencing for compressors [F04C29/06](#))]
- F01C21/00D . [N: General arrangements of parts; Frames and supporting elements]
- F01C21/00E . [N: Driving elements, brakes, couplings, transmissions specially adapted for rotary or oscillating-piston machines or engines (brakes, couplings, transmissions per se [F16, B60](#))]
- F01C21/02 . Arrangements of bearings (bearing constructions [F16C](#))
- F01C21/04 . Lubrication (of machines or engines in general [F01M](#))
- F01C21/04B . . [N: Control systems for the circulation of the lubricant]
- F01C21/06 . Heating; Cooling (of machines or engines in general [F01P](#)); Heat insulation (heat insulation in general [F16L](#))
- F01C21/08 . Rotary pistons (reciprocating piston in general [F16J](#))
- F01C21/08B . . [N: Construction of vanes or vane holders]
- F01C21/08B2 . . . [N: Vane tracking; control therefor]
- F01C21/08B2B [N: by mechanical means]
- F01C21/08B2B2 [N: comprising guiding means, e.g. cams, rollers]
- F01C21/08B2B4 [N: comprising elastic means, e.g. springs]
- F01C21/08B2D [N: by fluid means]
- F01C21/08B2D2 [N: the fluid being the working fluid]
- F01C21/08B2D4 [N: the fluid being other than the working fluid]
- F01C21/08B4 . . . [N: the vanes consisting of two or more parts]
- F01C21/08B6 . . . [N: for synchronised movement of the vanes]
- F01C21/10 . Outer members for co-operation with rotary pistons; Casings (casings for rotary engines or machines in general [F16M](#))
- F01C21/10B . . [N: Adjustment of the interstices between moving and fixed parts of the machine by means other than fluid pressure]
- F01C21/10D . . [N: Stators; Members defining the outer boundaries of the working chamber] [[N9806](#)]
- F01C21/10D2 . . . [N: with a radial surface, e.g. cam rings] [[N9806](#)]
- F01C21/10D4 . . . [N: with an axial surface, e.g. side plates] [[N9806](#)]
- F01C21/18 . Arrangements for admission or discharge of the working fluid, e.g. constructional features of the inlet or outlet [[N0509](#)]
- F01C21/18B . . [N: Arrangements for supercharging the working space (similar arrangements for internal combustion engines [F02B33/00](#), [F02B27/00](#))] [[N0509](#)]
- F01C21/18D . . [N: for variable fluid distribution] [[N0509](#)]