

| Symbol           | Typ                 | Titel   |
|------------------|---------------------|---|
| <b>F</b>         | <b>Sektion</b>      | <b>MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING</b>   |
| <b>F04</b>       | <b>Klasse</b>       | <b>POSITIVE-DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS (portable fire extinguishers with manually-operated pumps A62C 11/00 , with power-driven pumps A62C 25/00; charging or scavenging combustion engines by pumps F02B; engine fuel-injection pumps F02M; ion pumps H01J 41/12; electrodynamic pumps H02K 44/02)</b>                                     |
| <b>F04C</b>      | <b>Unterklasse</b>  | <b>ROTARY-PISTON, OR OSCILLATING-PISTON, POSITIVE-DISPLACEMENT MACHINES FOR LIQUIDS (engines F03C); ROTARY-PISTON, OR OSCILLATING-PISTON, POSITIVE-DISPLACEMENT PUMPS</b>   |
|                  |                     | <u><b>Rotary-piston, or oscillating-piston, positive-displacement machines or pumps for liquids; Rotary-piston, or oscillating-piston, positive-displacement pumps</b></u>  |
| <b>F04C 2/00</b> | <b>Hauptgruppe</b>  | <b>Rotary-piston machines or pumps (with non-parallel axes of co-operating members F04C 3/00; with the working-chamber walls at least partly resiliently deformable F04C 5/00; with fluid ring or the like F04C 7/00; rotary-piston machines or pumps in which the working-fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons F04B) [3]</b> |
| F04C 2/02        | 1-Punkt Untergruppe | . 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 [3]   |
| F04C 2/04        | 2-Punkt Untergruppe | . . of internal-axis type [3]   |
| F04C 2/06        | 2-Punkt Untergruppe | . . of other than internal-axis type (F04C 2/063 takes precedence) [3]  |
| F04C 2/063       | 2-Punkt Untergruppe | . . with coaxially-mounted members having continuously-changing circumferential spacing between them [3]  |
| F04C 2/067       | 3-Punkt Untergruppe | . . . having cam-and-follower type drive [3]  |
| F04C 2/07        | 3-Punkt Untergruppe | . . . having crankshaft-and-connecting-rod type drive [3]   |
| F04C 2/073       | 3-Punkt Untergruppe | . . . having pawl-and-ratchet type drive [3]  |
| F04C 2/077       | 3-Punkt Untergruppe | . . . having toothed-gearing type drive [3]   |
| F04C 2/08        | 1-Punkt Untergruppe | . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [3]  |
| F04C 2/10        | 2-Punkt Untergruppe | . . of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member [3]   |
| F04C 2/107       | 3-Punkt Untergruppe | . . . with helical teeth [3]  |
| F04C 2/113       | 3-Punkt Untergruppe | . . . the inner member carrying rollers intermeshing with the outer member [3]  |
| F04C 2/12        | 2-Punkt Untergruppe | . . of other than internal-axis type [3]  |
| F04C 2/14        | 3-Punkt Untergruppe | . . . with toothed rotary pistons [3]   |
| F04C 2/16        | 4-Punkt Untergruppe | . . . . with helical teeth, e.g. chevron-shaped, screw type [3]   |
| F04C 2/18        | 4-Punkt Untergruppe | . . . . with similar tooth forms (F04C 2/16 takes precedence) [3]   |
| F04C 2/20        | 4-Punkt Untergruppe | . . . . with dissimilar tooth forms (F04C 2/16 takes precedence) [3]  |
| F04C 2/22        | 1-Punkt Untergruppe | . 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 [3]  |
| F04C 2/24        | 1-Punkt Untergruppe | . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions [3]  |

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| F04C 2/26         | 2-Punkt Untergruppe | . . of internal-axis type [3]   |
| F04C 2/28         | 2-Punkt Untergruppe | . . of other than internal-axis type [3]  |
| F04C 2/30         | 1-Punkt Untergruppe | . having the characteristics covered by two or more of groups F04C 2/02 , F04C 2/08 , F04C 2/22 , F04C 2/24 or having the characteristics covered by one of these groups together with some other type of movement between co-operating members [3] |
| F04C 2/32         | 2-Punkt Untergruppe | . . having both the movement defined in group F04C 2/02 and relative reciprocation between the co-operating members [3]   |
| F04C 2/324        | 3-Punkt Untergruppe | . . . with vanes hinged to the inner member and reciprocating with respect to the outer member [3]  |
| F04C 2/328        | 4-Punkt Untergruppe | . . . . and hinged to the outer member [3]  |
| F04C 2/332        | 3-Punkt Untergruppe | . . . with vanes hinged to the outer member and reciprocating with respect to the inner member [3]  |
| F04C 2/336        | 4-Punkt Untergruppe | . . . . and hinged to the inner member [3]  |
| F04C 2/34         | 2-Punkt Untergruppe | . . having the movement defined in group F04C 2/08 or F04C 2/22 and relative reciprocation between the co-operating members [3]   |
| F04C 2/344        | 3-Punkt Untergruppe | . . . with vanes reciprocating with respect to the inner member [3]   |
| F04C 2/348        | 4-Punkt Untergruppe | . . . . the vanes positively engaging, with circumferential play, an outer rotatable member [3]   |
| F04C 2/352        | 4-Punkt Untergruppe | . . . . the vanes being pivoted on the axis of the outer member [3]   |
| F04C 2/356        | 3-Punkt Untergruppe | . . . with vanes reciprocating with respect to the outer member [3]   |
| F04C 2/36         | 2-Punkt Untergruppe | . . having both the movements defined in groups F04C 2/22 and F04C 2/24 [3]   |
| F04C 2/38         | 2-Punkt Untergruppe | . . having the movement defined in group F04C 2/02 and having a hinged member (F04C 2/32 takes precedence) [3]  |
| F04C 2/39         | 3-Punkt Untergruppe | . . . with vanes hinged to the inner as well as to the outer member [3]   |
| F04C 2/40         | 2-Punkt Untergruppe | . . having the movement defined in group F04C 2/08 or F04C 2/22 and having a hinged member [3]  |
| F04C 2/44         | 3-Punkt Untergruppe | . . . with vanes hinged to the inner member [3]   |
| F04C 2/46         | 3-Punkt Untergruppe | . . . with vanes hinged to the outer member [3]   |
| <b>F04C 3/00</b>  | <b>Hauptgruppe</b>  | <b>Rotary-piston machines or pumps, with non-parallel axes of movement of co-operating members, e.g. of screw type (with the working-chamber walls at least partly resiliently deformable F04C 5/00)</b>  |
| F04C 3/02         | 1-Punkt Untergruppe | . the axes being arranged at an angle of 90 degrees [5]   |
| F04C 3/04         | 2-Punkt Untergruppe | . . of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [5]  |
| F04C 3/06         | 1-Punkt Untergruppe | . the axes being arranged otherwise than at an angle of 90 degrees [5]  |
| F04C 3/08         | 2-Punkt Untergruppe | . . of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [5]  |
| <b>F04C 5/00</b>  | <b>Hauptgruppe</b>  | <b>Rotary-piston machines or pumps with the working-chamber walls at least partly resiliently deformable</b>  |
| <b>F04C 7/00</b>  | <b>Hauptgruppe</b>  | <b>Rotary-piston machines or pumps with fluid ring or the like</b>  |
| <b>F04C 9/00</b>  | <b>Hauptgruppe</b>  | <b>Oscillating-piston machines or pumps</b>   |
| <b>F04C 11/00</b> | <b>Hauptgruppe</b>  | <b>Combinations of two or more machines or pumps, each being of rotary-piston or oscillating-piston type; Pumping installations (F04C 13/00 takes precedence; fluid gearing F16H)</b>   |
| <b>F04C 13/00</b> | <b>Hauptgruppe</b>  | <b>Adaptations of machines or pumps for special use, e.g. for extremely high pressures</b>  |

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| <b>F04C 15/00</b> | <b>Hauptgruppe</b>  | <b>Component parts, details, or accessories, of machines, pumps, or pumping installations, not provided for in, or of interest apart from, other groups</b>  |
| F04C 15/02        | 1-Punkt Untergruppe | . Control of working-fluid admission or discharge  |
| F04C 15/04        | 1-Punkt Untergruppe | . Other regulation or control  |
|                   |                     | <b><u>Rotary-piston, or oscillating-piston, positive-displacement pumps specially adapted for elastic fluids</u></b>   |
| <b>F04C 18/00</b> | <b>Hauptgruppe</b>  | <b>Rotary-piston pumps (with fluid ring or the like F04C 19/00; rotary-piston pumps in which the working-fluid is exclusively displaced by one or more reciprocating pistons F04B) [3]</b>   |
| F04C 18/02        | 1-Punkt Untergruppe | . 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 [3]  |
| F04C 18/04        | 2-Punkt Untergruppe | . . of internal-axis type [3]  |
| F04C 18/06        | 2-Punkt Untergruppe | . . of other than internal-axis type (F04C 18/063 takes precedence) [3]  |
| F04C 18/063       | 2-Punkt Untergruppe | . . with coaxially-mounted members having continuously-changing circumferential spacing between them [3]   |
| F04C 18/067       | 3-Punkt Untergruppe | . . . having cam-and-follower type drive [3]   |
| F04C 18/07        | 3-Punkt Untergruppe | . . . having crankshaft-and-connecting-rod type drive [3]  |
| F04C 18/073       | 3-Punkt Untergruppe | . . . having pawl-and-ratchet type drive [3]   |
| F04C 18/077       | 3-Punkt Untergruppe | . . . having toothed-gearing type drive [3]  |
| F04C 18/08        | 1-Punkt Untergruppe | . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [3]   |
| F04C 18/10        | 2-Punkt Untergruppe | . . of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member [3]  |
| F04C 18/107       | 3-Punkt Untergruppe | . . . with helical teeth [3]   |
| F04C 18/113       | 3-Punkt Untergruppe | . . . the inner member carrying rollers intermeshing with the outer member [3]   |
| F04C 18/12        | 2-Punkt Untergruppe | . . of other than internal-axis type [3]   |
| F04C 18/14        | 3-Punkt Untergruppe | . . . with toothed rotary pistons [3]  |
| F04C 18/16        | 4-Punkt Untergruppe | . . . . with helical teeth, e.g. chevron-shaped, screw type [3]  |
| F04C 18/18        | 4-Punkt Untergruppe | . . . . with similar tooth forms (F04C 18/16 takes precedence) [3]   |
| F04C 18/20        | 4-Punkt Untergruppe | . . . . with dissimilar tooth forms (F04C 18/16 takes precedence) [3]  |
| F04C 18/22        | 1-Punkt Untergruppe | . 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 [3]                 |
| F04C 18/24        | 1-Punkt Untergruppe | . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions [3]   |
| F04C 18/26        | 2-Punkt Untergruppe | . . of internal-axis type [3]  |
| F04C 18/28        | 2-Punkt Untergruppe | . . of other than internal-axis type [3]   |
| F04C 18/30        | 1-Punkt Untergruppe | . having the characteristics covered by two or more of groups F04C 18/02 , F04C 18/08 , F04C 18/22 , F04C 18/24 , F04C 18/48 , or having the characteristics covered by one of these groups together with some other type of movement between co-operating members [3] |

| Symbol            | Typ                 | Titel  |
|-------------------|---------------------|--|
| F04C 18/32        | 2-Punkt Untergruppe | . . having both the movement defined in group F04C 18/02 and relative reciprocation between the co-operating members [3]   |
| F04C 18/324       | 3-Punkt Untergruppe | . . . with vanes hinged to the inner member and reciprocating with respect to the outer member [3]   |
| F04C 18/328       | 4-Punkt Untergruppe | . . . . and hinged to the outer member [3]   |
| F04C 18/332       | 3-Punkt Untergruppe | . . . with vanes hinged to the outer member and reciprocating with respect to the inner member [3]   |
| F04C 18/336       | 4-Punkt Untergruppe | . . . . and hinged to the inner member [3]   |
| F04C 18/34        | 2-Punkt Untergruppe | . . having the movement defined in group F04C 18/08 or F04C 18/22 and relative reciprocation between the co-operating members [3]  |
| F04C 18/344       | 3-Punkt Untergruppe | . . . with vanes reciprocating with respect to the inner member [3]  |
| F04C 18/348       | 4-Punkt Untergruppe | . . . . the vanes positively engaging, with circumferential play, an outer rotatable member [3]  |
| F04C 18/352       | 4-Punkt Untergruppe | . . . . the vanes being pivoted on the axis of the outer member [3]  |
| F04C 18/356       | 3-Punkt Untergruppe | . . . with vanes reciprocating with respect to the outer member [3]  |
| F04C 18/36        | 2-Punkt Untergruppe | . . having both the movements defined in groups F04C 18/22 and F04C 18/24 [3]  |
| F04C 18/38        | 2-Punkt Untergruppe | . . having the movement defined in group F04C 18/02 and having a hinged member (F04C 18/32 takes precedence) [3]   |
| F04C 18/39        | 3-Punkt Untergruppe | . . . with vanes hinged to the inner as well as to the outer member [3]  |
| F04C 18/40        | 2-Punkt Untergruppe | . . having the movement defined in group F04C 18/08 or F04C 18/22 and having a hinged member [3]   |
| F04C 18/44        | 3-Punkt Untergruppe | . . . with vanes hinged to the inner member [3]  |
| F04C 18/46        | 3-Punkt Untergruppe | . . . with vanes hinged to the outer member [3]  |
| F04C 18/48        | 1-Punkt Untergruppe | . Rotary-piston pumps with non-parallel axes of movement of co-operating members [5]   |
| F04C 18/50        | 2-Punkt Untergruppe | . . the axes being arranged at an angle of 90 degrees [5]  |
| F04C 18/52        | 3-Punkt Untergruppe | . . . of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [5]   |
| F04C 18/54        | 2-Punkt Untergruppe | . . the axes being arranged otherwise than at an angle of 90 degrees [5]   |
| F04C 18/56        | 3-Punkt Untergruppe | . . . of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing [5]   |
| <b>F04C 19/00</b> | <b>Hauptgruppe</b>  | <b>Rotary-piston pumps with fluid ring or the like</b>   |
| <b>F04C 21/00</b> | <b>Hauptgruppe</b>  | <b>Oscillating-piston pumps</b>  |
| <b>F04C 23/00</b> | <b>Hauptgruppe</b>  | <b>Combinations of two or more pumps, each being of rotary-piston or oscillating-piston type; Pumping installations; Multi-stage pumps (F04C 25/00 takes precedence)</b> |
| F04C 23/02        | 1-Punkt Untergruppe | . Pumps characterised by combination with, or adaptation to, specific driving engines or motors (predominant aspects of the engines or motors, see the relevant classes) |
| <b>F04C 25/00</b> | <b>Hauptgruppe</b>  | <b>Adaptations of pumps for special use</b>  |
| F04C 25/02        | 1-Punkt Untergruppe | . for producing high vacuum (sealing arrangements F04C 27/00; silencing F04C 29/06)  |
| <b>F04C 27/00</b> | <b>Hauptgruppe</b>  | <b>Sealing arrangements in rotary-piston pumps (sealing in general F16J)</b>   |
| F04C 27/02        | 1-Punkt Untergruppe | . Liquid sealing for high-vacuum pumps   |
| <b>F04C 29/00</b> | <b>Hauptgruppe</b>  | <b>Component parts, details, or accessories, of pumps or pumping installations, not provided for in, or of interest apart from, groups F04C 18/00 to F04C 27/00</b>      |

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|------------|---------------------|--|
| F04C 29/02 | 1-Punkt Untergruppe | . Lubrication (of machines or engines in general F01M); Lubricant separation (separation in general B01D)            |
| F04C 29/04 | 1-Punkt Untergruppe | . Heating; Cooling (of machines or engines in general F01P); Heat insulation (heat insulation in general F16L 59/00) |
| F04C 29/06 | 1-Punkt Untergruppe | . Silencing (gas-flow silencers or exhaust apparatus for machines or engines in general F01N)                        |
| F04C 29/08 | 1-Punkt Untergruppe | . Control of working-fluid admission or discharge  |
| F04C 29/10 | 1-Punkt Untergruppe | . Other regulation or control  |