F04C

COOPERATIVE PATENT CLASSIFICATION

MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

ENGINES OR PUMPS

F04 POSITIVE - DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS

F04C ROTARY-PISTON, OR OSCILLATING-PISTON, POSITIVE-DISPLACEMENT MACHINES FOR LIQUIDS (engines F03C); ROTARY-PISTON, OR OSCILLATING-PISTON, POSITIVE-DISPLACEMENT PUMPS

NOTE

Attention is drawn to the notes preceding class F01 especially as regards the definitions of "machines", "pumps", "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

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.

2/00 Rotary-piston machines or pumps (with non-parallel axes of co-operating members F04C 3/00; with the working-chamber walls at least partly resilently deformable F04C 5/00; with fluid ring or the like F04C 7/00; rotary-piston pumps specially adapted for elastic fluids F04C 18/00; rotary-piston machines or pumps in which the working-fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons F04B)

NOTE

Group F04C 2/30 takes precedence over groups F04C 2/02 - F04C 2/28

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

2/025 . . . {the moving and the stationary member having co-operating elements in spiral form}

2/04 . . . of internal axis type

2/045 . . . {having a C-shaped piston}

2/06 . . . of other than internal-axis type (F04C 2/063 takes precedence)

2/063 . . . with coaxially-mounted members having continuously-changing circumferential spacing between them

2/067 . . . having cam-and-follower type drive

2/07 . . . having crankshaft-and-connecting-rod type drive

2/073 . . . having pawl-and-ratchet type drive

2/077 . . . having toothed-gearing type drive

2/08 . . . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing

2/082 . . . {Details specially related to intermeshing engagement type machines or pumps}

2/084 . . . {Toothed wheels}

2/086 . . . {Carter}

2/088 . . . {Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}

2/10 . . . of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member

2/101 . . . {with a crescent-shaped filler element, located between the inner and outer intermeshing members}

2/102 . . . {the two members rotating simultaneously around their respective axes}

2/103 . . . {one member having simultaneously a rotational movement about its own axis and an orbital movement}

2/104 . . . {having an articulated driving shaft}

2/105 . . . . {Details concerning timing or distribution valves}

2/106 . . . . {Spool type distribution valves}

2/107 . . . . with helical teeth

2/1071 . . . {the inner and outer member having a different number of threads and one of the two being made of elastic materials, e.g. Moineau type}

2/1073 . . . . {where one member is stationary while the other member rotates and orbits}

2/1075 . . . . . {Construction of the stationary member}

2/1076 . . . . . {where one member orbits or wobbles relative to the other member which rotates around a fixed axis}

2/1078 . . . . . {where one member rotates and both members are allowed to orbit or wobble}
... the inner member carrying rollers intermeshing with the outer member

... of other than internal-axis type

... [with radially or approximately radially from the rotor body extending tooth-like elements, co-operating with recesses in the other rotor, e.g. one tooth]

... [with radially from the rotor body extending elements, not necessarily co-operating with corresponding recesses in the other rotor, e.g. lobes, Roots type]

... with toothed rotary pistons

... with helical teeth, e.g. chevron-shaped, screw type {[for non-parallel axes of movement F04C 3/00]}

... {having more than two rotary pistons with parallel axes}

... with similar tooth forms (F04C 2/16 takes precedence)

... with dissimilar tooth forms (F04C 2/16 takes precedence)

... 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

... of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions

... of internal-axis type

... of other than internal-axis type

... having the characteristics covered by two or more 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

... having both the movement defined in groups F04C 2/02 and relative reciprocation between co-operating members

... [with vanes hinged to the inner member and reciprocating with respect to the inner member]

... [with vanes hinged to the outer member and reciprocating with respect to the outer member]

... with vanes hinged to the inner member and reciprocating with respect to the outer member

... and hinged to the outer member

... with vanes hinged to the outer member and reciprocating with respect to the inner member

... and hinged to the inner member

... having the movement defined in groups F04C 2/08 or F04C 2/22 and relative reciprocation between the co-operating members

... with vanes reciprocating with respect to the inner member

... [the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation]

... [the surfaces of the inner and outer member, forming the working space, being surfaces of revolution]

... [with a separation element located between the inlet and outlet opening]

... with vanes hinged to the inner member as well as to the outer member

... having the movement defined in group F04C 2/08 or F04C 2/22 and having a hinged member

... with vanes hinged to the inner member

... with vanes hinged to the outer member

... 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; rotary-piston pumps with non-parallel axes of movement of co-operating members specially adapted for elastic fluids F04C 18/48)

... the axes being arranged at an angle of 90 degrees

... of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing

... the axes being arranged otherwise than at an angle of 90 degrees

... of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing

... [the axes of cooperating members being on the same plane]

... Rotary-piston machines or pumps with the working-chamber walls at least partly resiliently deformable (such pumps specially adapted for elastic fluids F04C 18/00)

... Rotary-piston machines or pumps with fluid ring or the like (such pumps specially adapted for elastic fluids F04C 19/00)

... Oscillating-piston machines or pumps (such pumps specially adapted for elastic fluids F04C 21/00)

... [the piston oscillating around a fixed axis]
11/00 Combinations of two or more machines or pumps, each being of rotary-piston or oscillating-piston type (combinations of such pumps specially adapted for elastic fluids F04C 23/00); Pumping installations (F04C 13/00 takes precedence; specially adapted for elastic fluids F04C 23/00; fluid gearing F16H).

NOTE

Multi-stage engines, motors, pumps or compressors with stages connected in series or in parallel are not considered as having complementary function.

13/00 Adaptations of machines or pumps for special use, e.g. for extremely high pressures (of pumps specially adapted for elastic fluids F04C 25/00).

13/01 . . . (Pumps for particular liquids)
13/02 . . . (for homogeneous viscous liquids)
13/04 . . . . . (with means for fluidising or diluting the material being pumped)
13/05 . . (Removing contaminants, deposits or scale from the pump; Cleaning)
13/07 . . . (Venting; Gas and vapour separation during pumping (preventing vapour lock in fuel pumps F02M 37/20, in centrifugal pumps F04D 9/00))
13/08 . . . (Pumps for submersible use, i.e. down-hole pumping)

14/00 Control of, monitoring of, or safety arrangements for, machines, pumps or pumping installations (of pumps or pumping installations specially adapted for elastic fluids F04C 28/00).

14/02 . . . specially adapted for several machines or pumps connected in series or in parallel.
14/04 . . . specially adapted for reversible machines or pumps
14/06 . . . specially adapted for stopping, starting, idling or no-load operation
14/065 . . . . (Capacity control using a multiplicity of units or pumping capacities, e.g. multiple chambers, individually switchable or controllable)
14/08 . . . characterised by varying the rotational speed
14/10 . . . characterised by changing the positions of the inlet or outlet openings with respect to the working chamber.
14/12 . . . using sliding valves
14/14 . . . using rotating valves
14/16 . . . using lift valves
14/18 . . . characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings F04C 14/10)
14/185 . . . . (by varying the useful pumping length of the cooperating members in the axial direction)
14/20 . . . by changing the form of the inner or outer contour of the working chamber
14/22 . . . by changing the eccentricity between cooperating members
14/223 . . . . [using a movable cam]
14/226 . . . . . [by pivoting the cam around an eccentric axis]
14/24 . . . characterised by using valves controlling pressure or flow rate, e.g. discharge valves [or unloading valves] (F04C 14/10 takes precedence)
14/26 . . . using bypass channels
14/265 . . . . [being obtained by displacing a lateral sealing face]
14/28 . . Safety arrangements; Monitoring

15/00 Component parts, details or accessories of machines, pumps or pumping installations, not provided for in groups F04C 29/00 - F04C 14/00 (of pumps specially adapted for elastic fluids F04C 18/00 - F04C 29/00).

15/0003 . . . . (Sealing arrangements in rotary-piston machines or pumps (sealing in general F16J))
15/0007 . . . . (Radial sealings for working fluid)
15/0011 . . . . (of rigid material)
15/0015 . . . . (of resilient material)
15/0019 . . . . (Radial sealing elements specially adapted for intermeshing-engagement type machines or pumps, e.g. gear machines or pumps)
15/0023 . . . . (Axial sealings for working fluid)
15/0026 . . . . (Elements specially adapted for sealing of the lateral faces of intermeshing-engagement type machines or pumps, e.g. gear machines or pumps)
15/003 . . . . (Sealings for working fluid between radially and axially moving parts)
15/0034 . . . . (for other than the working fluid, i.e. the sealing arrangements are not between working chambers of the machine)
15/0038 . . . . (Shaft sealings specially adapted for rotary-piston machines or pumps)
15/0042 . . . . (Systems for the equilibration of forces acting on the machines or pump (interstice adjustment other than by fluid pressure F01C 21/102))
15/0046 . . . . (Internal leakage control)
15/0049 . . . . (Equalisation of pressure pulses (silencing for compressors F04C 29/06))
15/0053 . . . . (Venting means for starting)
15/0057 . . . . (Driving elements, brakes, couplings, transmission specially adapted for machines or pumps (brakes, couplings, transmissions per se F16, B60))
15/0061 . . . . (Means for transmitting movement from the prime mover to driven parts of the pump, e.g. clutches, couplings, transmissions)
15/0065 . . . . (for eccentric movement)
15/0069 . . . . (Magnetic couplings)
15/0073 . . . . (Couplings between rotors and input or output shafts acting by interengaging or mating parts, i.e. positive coupling of rotor and shaft)
15/0076 . . . . (Fixing rotors on shafts, e.g. by clamping together hub and shaft)
15/008 . . . . (Prime movers)
15/0084 . . . . (Brakes, braking assemblies)
15/0088 . . . . (Lubrication (of machines or engines in general F01M))
18/088 . . . [Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement]
18/10 . . . of internal-axis type with the outer member having more teeth or tooth equivalents, e.g. rollers, than the inner member
18/103 . . . [with a crescent shaped filler element, located between the inner and outer intermeshing elements]
18/107 . . . with helical teeth
18/1075 . . . [the inner and outer member having a different number of threads and one of the two being made of elastic material, e.g. Moineau type]
18/113 . . . the inner member carrying rollers intermeshing with the outer member
18/12 . . . of other than internal-axis type
18/123 . . . [with radially or approximately radially from the rotor body extending tooth-like elements, co-operating with corresponding recesses in the other rotor, e.g. lobes, Roots type]
18/126 . . . [with radially from the rotor body extending elements, not necessarily co-operating with corresponding recesses in the other rotor, e.g. lobes, Roots type]
18/14 . . . with toothed rotary pistons
18/16 . . . [with helical teeth, e.g. chevron-shaped, screw type ] (...for non-parallel axes of movement F04C 18/48)
18/165 . . . [having more than two rotary pistons with parallel axes]
18/18 . . . with similar tooth forms (F04C 18/16 takes precedence)
18/20 . . . with dissimilar tooth forms (F04C 18/16 takes precedence)
18/22 . . . 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
18/24 . . . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
18/26 . . . of internal-axis type
18/28 . . . of other than internal-axis type
18/30 . . . 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
18/32 . . . having both the movement defined in group F04C 18/02 and relative reciprocation between the co-operating members
18/321 . . . [with vanes hinged to the inner member and reciprocating with respect to the inner member]
18/322 . . . [with vanes hinged to the outer member and reciprocating with respect to the outer member]
18/324 . . . with vanes hinged to the inner member and reciprocating with respect to the outer member
18/328 . . . with vanes hinged to the outer member and reciprocating with respect to the outer member
18/332 . . . with vanes hinged to the outer member and reciprocating with respect to the inner member
18/336 . . . and hinged to the inner member
18/34  . . having the movement defined in group
        F04C 18/08 or F04C 18/22 and relative
        reciprocation between the co-operating members
18/344 . . . with vanes reciprocating with respect to the
        inner member
18/3441 . . . . [the inner and outer member being in
        contact along one line or continuous surface
        substantially parallel to the axis of rotation]
18/3442 . . . . [the surfaces of the inner and outer
        member, forming the inlet and outlet
        opening]
18/3443 . . . . [with a separation element located
        between the inlet and outlet opening]
18/3445 . . . . [the vanes having the form of rollers,
        slippers or the like]
18/3446 . . . . [the inner and outer member being in
        contact along more than one line or surface]
18/3447 . . . . [the vanes having the form of rollers,
        slippers or the like]
18/3448 . . . . [with axially movable vanes]
18/348 . . . . the vanes positively engaging, with
        circumferential play, an outer rotatable
        member
18/352 . . . . the vanes being pivoted on the axis of the
        outer member
18/356 . . . . with vanes reciprocating with respect to the
        outer member
18/3562 . . . . [the inner and outer member being in
        contact along one line or continuous surfaces
        substantially parallel to the axis of rotation]
18/3564 . . . . [the surfaces of the inner and outer
        member, forming the working space, being
        surfaces of revolution]
18/3566 . . . . [the inner and outer member being in
        contact along more than one line or surface]
18/3568 . . . . [with axially movable vanes]
18/36 . . . . having both the movements defined in groups
        F04C 18/22 and F04C 18/24
18/38 . . . . having the movement defined in group
        F04C 18/02 and having a hinged member
        (F04C 18/32 takes precedence)
18/39 . . . . with vanes hinged to the inner as well as to the
        outer member
18/40 . . . . having the movement defined in group
        F04C 18/08 or F04C 18/22 and having a hinged
        member
18/44 . . . . with vanes hinged to the inner member
18/46 . . . . with vanes hinged to the outer member
18/48 . . . Rotary-piston pumps with non-parallel axes of
        movement of co-operating members
18/50 . . . . the axes being arranged at an angle of 90 degrees
18/52 . . . . of intermeshing engagement type, i.e. with
        engagement of co-operating members similar to
        that of toothed gearing
18/54 . . . . the axes being arranged otherwise than at an
        angle of 90 degrees
18/56 . . . . of intermeshing engagement type, i.e. with
        engagement of co-operating members similar to
        that of toothed gearing
18/565 . . . . [the axes of cooperating members being on
        the same plane]
19/00  Rotary-piston pumps with fluid ring or the like,
        specially adapted for elastic fluids
19/001 . . . . [General arrangements, plants, flowsheets]
19/002 . . . . [with rotating outer members]
19/004 . . . . [Details concerning the operating liquid, e.g. nature,
        separation, cooling, cleaning, control of the supply]
19/005 . . . . [Details concerning the admission or discharge]
19/007 . . . . [Port members in the form of side plates]
19/008 . . . . [Port members in the form of conical or
        cylindrical pieces situated in the centre of the
        impeller]
Control of, monitoring of, or safety arrangements for, pumps or pumping installations specially adapted for elastic fluids

28/02 . specially adapted for several pumps connected in series or in parallel
28/04 . specially adapted for reversible pumps
28/06 . specially adapted for stopping, starting, idling or no-load operation
28/065 . [Capacity control using a multiplicity of units or pumping capacities, e.g. multiple chambers, individually switchable or controllable]
28/08 . characterised by varying the rotational speed
28/10 . characterised by changing the positions of the inlet or outlet openings with respect to the working chamber
28/12 . using sliding valves
28/125 . [with sliding valves controlled by the use of fluid other than the working fluid]
28/14 . using rotating valves
28/16 . using lift valves
28/18 . characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings F04C 28/10)
28/185 . [by varying the useful pumping length of the cooperating members in the axial direction]
28/20 . by changing the form of the inner or outer contour of the working chamber
28/22 . by changing the eccentricity between cooperating members
28/24 . characterised by using valves controlling pressure or flow rate, e.g. discharge valves (unloading valves) (F04C 28/10 takes precedence)
28/26 . using bypass channels
28/265 . [being obtained by displacing a lateral sealing face]
28/28 . Safety arrangements; Monitoring

Component parts, details or accessories of pumps or pumping installations, not provided for in groups F04C 18/00 - F04C 28/00

29/0007 . [Injection of a fluid in the working chamber for sealing, cooling and lubricating (sealing only F04C 27/00; lubrication only F04C 29/02; cooling F04B 27/02, F02D 21/00, F02M 25/00)]
29/0014 . [with control systems for the injection of the fluid]
29/0021 . [Systems for the equilibration of forces acting on the pump (interstice adjustment other than by fluid pressure F01C 21/102)]
29/0028 . [Internal leakage control]
29/0035 . [Equalization of pressure pulses (silencing F04C 29/06)]
29/0042 . [Driving elements, brakes, couplings, transmissions specially adapted for pumps (brakes, couplings, transmissions per se F16, B06)]
29/005 . [Means for transmitting movement from the prime mover to driven parts of the pump, e.g. clutches, couplings, transmissions]
29/0057 . [for eccentric movement]
29/0064 . [Magnetic couplings]
29/0071 . [Couplings between rotors and input or output shafts acting by interengaging or mating parts, i.e. positive coupling of rotor and shaft]
29/0078 . [Fixing rotors on shafts, e.g. by clamping together hub and shaft]
29/0085 . [Prime movers]
29/0092 . [Removing solid or liquid contaminants from the gas under pumping, e.g. by filtering or deposition; Purging; Scrubbing; Cleaning]
29/02 . Lubrication (of machines or engines in general F01M); Lubricant separation (separation in general B01D)
29/021 . [Control systems for the circulation of the lubricant]
29/023 . [Lubricant distribution through a hollow driving shaft (F04C 29/025 takes precedence)]
29/025 . [using a lubricant pump]
29/026 . [Lubricant separation]
29/028 . [Means for improving or restricting lubricant flow]
29/04 . Heating; Cooling (of machines or engines in general F01P); Heat insulation (heat insulation in general F16L 59/00)
29/042 . [by injecting a fluid (injection of fluid for sealing, cooling or lubrication F04C 29/0007)]
29/045 . [of the electric motor in hermetic pumps]
29/047 . [Cooling of electronic devices installed inside the pump housing, e.g. inverters]
29/06 . Silencing (gas-flow silencers or exhaust apparatus for machines or engines in general F01D]
29/061 . [Silencers using overlapping frequencies, e.g. Helmholtz resonators]
29/063 . [Sound absorbing materials]
29/065 . [Noise dampening volumes, e.g. muffler chambers]
29/066 . [with means to enclose the source of noise]
29/068 . [the silencing means being arranged inside the pump housing]
29/12 . Arrangements for admission or discharge of the working fluid, e.g. constructional features of the inlet or outlet
29/122 . [Arrangements for supercharging the working space (similar arrangements for internal combustion engines F02B 33/00, F02B 37/00)]
29/124 . [with inlet and outlet valves specially adapted for rotary or oscillating piston pumps]
29/126 . [of the non-return type]
29/128 . [of the elastic type, e.g. reed valves]

2210/00 Fluid
2210/10 . working
2210/1005 . Air
2210/1011 . Amine
2210/1016 . Blood
2210/1022 . C\textsubscript{6}H\textsubscript{14}F\textsubscript{6}
2210/1027 . CO\textsubscript{2}
2210/1033 . Concrete
2210/1038 . Cooking oil
use in a chemical vapor deposition \[CVD\] process for pulsed fluid flow for step-by-step output movement for metering throughflow for very low temperatures, i.e. cryogenic gaseous phase

pumps with means for separating and evacuating the vacuum condition properties HFC-134a refrigerants with particular properties, e.g. mixed, e.g. two-phase fluid vapour liquid, i.e. incompressible gaseous, i.e. compressible

components shafts bearings hybrid prime mover electric motor casings or housings rotors stators

application vacuum dry running pumps with means for separating and evacuating the gaseous phase for very low temperatures, i.e. cryogenic for metering throughflow for step-by-step output movement for pulsed fluid flow use in a chemical vapor deposition \[CVD\] process or in a similar process

NOTE Manufacture comprises also treatment, assembly or disassembly methods, repairing, handling or the like.

Manufacture

by removing material by electrochemical methods by spark erosion methods using lasers essentially without removing material by casting by sintering by permanently joining parts together by welding by extrusion by forging by rolling by hydroforming

heat treatment hardening; annealing assembly methods adjustment gap; clearance centering; aligning mounting devices for pumps or compressors balancing disassembly methods repairing methods methods for improvement by repair or exchange of parts improving properties of machine parts coating surface treatment

components stators with means for discharging condensate or liquid separated from the gas pumped rotors casings or housings electric motor plurality of electronically synchronised motors with inverter for speed control hybrid prime mover bearings for cantilever assemblies for assemblies with supports on both sides hydrostatic or hydrodynamic bearing assemblies specially adapted for rotary positive displacement pumps or compressors bearing bushings or details thereof shafts shaft flexion with internal channels for fluid distribution, e.g. hollow shaft
2240/605 . . Shaft sleeves or details thereof
2240/70 . . Use of multiplicity of similar components; Modular construction
2240/80 . . Other components
2240/801 . . Wear plates
2240/802 . . Liners
2240/803 . . Electric connectors or cables; Fittings therefor
2240/804 . . Accumulators for refrigerant circuits
2240/805 . . Fastening means, e.g. bolts
2240/806 . . Pipes for fluids; Fittings therefor
2240/807 . . Balance weight, counterweight
2240/808 . . Electronic circuits (e.g. inverters) installed inside the machine
2240/809 . . Lubricant sump
2240/81 . . Sensor, e.g. electronic sensor for control or monitoring
2240/811 . . Actuator for control, e.g. pneumatic, hydraulic, electric

2250/00 Geometry
2250/10 . . of the inlet or outlet
2250/101 . . of the inlet
2250/102 . . of the outlet
2250/20 . . of the rotor
2250/201 . . conical shape
2250/30 . . of the stator
2250/301 . . compression chamber profile defined by a mathematical expression or by parameters

2270/00 Control; Monitoring or safety arrangements
2270/01 . . Load
2270/015 . . Controlled or regulated
2270/02 . . Power
2270/025 . . Controlled or regulated
2270/03 . . Torque
2270/035 . . Controlled or regulated
2270/04 . . Force
2270/041 . . Controlled or regulated
2270/042 . . radial
2270/0421 . . Controlled or regulated
2270/0422 . . centrifugal
2270/04225 . . Controlled or regulated
2270/044 . . axial
2270/0445 . . Controlled or regulated
2270/05 . . Speed
2270/051 . . Controlled or regulated
2270/052 . . angular
2270/0525 . . Controlled or regulated
2270/054 . . linear
2270/0545 . . Controlled or regulated
2270/06 . . Acceleration
2270/065 . . Controlled or regulated
2270/07 . . Electric current
2270/075 . . Controlled or regulated
2270/08 . . Amplitude of electric current
2270/085 . . Controlled or regulated
2270/09 . . Electric current frequency
2270/095 . . Controlled or regulated
2270/10 . . Voltage
2270/105 . . Controlled or regulated
2270/11 . . Magnetic flux
2270/115 . . Controlled or regulated
2270/12 . . Vibration
2270/125 . . Controlled or regulated
2270/13 . . Noise
2270/135 . . Controlled or regulated
2270/14 . . Pulsations
2270/145 . . Controlled or regulated
2270/15 . . Resonance
2270/155 . . Controlled or regulated
2270/16 . . Wear
2270/165 . . Controlled or regulated
2270/17 . . Tolerance; Play; Gap
2270/175 . . Controlled or regulated
2270/18 . . Pressure
2270/185 . . Controlled or regulated
2270/19 . . Temperature
2270/195 . . Controlled or regulated
2270/20 . . Flow
2270/205 . . Controlled or regulated
2270/21 . . Pressure difference
2270/215 . . Controlled or regulated
2270/22 . . Temperature difference
2270/225 . . Controlled or regulated
2270/23 . . Working cycle timing control
2270/24 . . Level of liquid, e.g. lubricant or cooling liquid
2270/40 . . Conditions across a pump or machine
2270/42 . . Conditions at the inlet of a pump or machine
2270/44 . . Conditions at the outlet of a pump or machine
2270/46 . . Conditions in the working chamber
2270/48 . . Conditions of a reservoir linked to a pump or machine
2270/50 . . Conditions before a throttle
2270/52 . . Conditions after a throttle
2270/54 . . Conditions in a control cylinder/piston unit
2270/56 . . Number of pump/machine units in operation
2270/58 . . Valve parameters
2270/585 . . Controlled or regulated
2270/60 . . Prime mover parameters
2270/605 . . Controlled or regulated
2270/70 . . Safety, emergency conditions or requirements
2270/701 . . Cold start
2270/72 . . preventing reverse rotation
2270/78 . . Warnings
2270/782 . . Sound
2270/784 . . Light
2270/80 . . Diagnostics
2270/86 . . Detection
2270/90 . . Remote control, e.g. wireless, via LAN, by radio, or by a wired connection from a central computer

2280/00 Arrangements for preventing or removing deposits or corrosion
2280/02 . . Preventing solid deposits in pumps, e.g. in vacuum pumps with chemical vapour deposition [CVD] processes
2280/04 . . Preventing corrosion