Symbol	Typ	Titel
F	**Sektion**	**SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING**
F04	**Klasse**	**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)**
F04D	**Unterklasse**	**NON-POSITIVE-DISPLACEMENT PUMPS**
		Pumping liquids, or liquids and elastic fluids, by rotary pumps (pumping liquids and elastic fluids at the same time F04D 31/00)
F04D 1/00	**Hauptgruppe**	**Radial-flow pumps, e.g. centrifugal pumps; Helico-centrifugal pumps (adapted for pumping specific fluids F04D 7/00; priming or boosting F04D 9/00)**
F04D 1/02	1-Punkt Untergruppe	. having non-centrifugal stages, e.g. centripetal
F04D 1/04	1-Punkt Untergruppe	. Helico-centrifugal pumps
F04D 1/06	1-Punkt Untergruppe	. Multi-stage pumps (F04D 1/02 takes precedence)
F04D 1/08	2-Punkt Untergruppe	. . the stages being situated concentrically
F04D 1/10	2-Punkt Untergruppe	. . with means for changing the flow-path through the stages, e.g. series/parallel
F04D 1/12	1-Punkt Untergruppe	. Pumps with scoops or like paring members protruding in the fluid circulating in a bowl
F04D 1/14	1-Punkt Untergruppe	. Pumps raising fluids by centrifugal force within a conical rotary bowl with vertical axis
F04D 3/00	**Hauptgruppe**	**Axial-flow pumps (priming or boosting F04D 9/00)**
F04D 3/02	1-Punkt Untergruppe	. of screw type
F04D 5/00	**Hauptgruppe**	**Pumps with circumferential or transverse flow**
F04D 7/00	**Hauptgruppe**	**Pumps adapted for handling specific fluids, e.g. by selection of specific materials for pumps or pump parts**
F04D 7/02	1-Punkt Untergruppe	. of centrifugal type
F04D 7/04	2-Punkt Untergruppe	. . the fluids being viscous or non-homogeneous
F04D 7/06	2-Punkt Untergruppe	. . the fluids being hot or corrosive, e.g. liquid metal
F04D 7/08	2-Punkt Untergruppe	. . the fluids being radioactive
F04D 9/00	**Hauptgruppe**	**Priming; Preventing vapour lock**
F04D 9/02	1-Punkt Untergruppe	. Self-priming pumps
F04D 9/04	1-Punkt Untergruppe	. using priming pumps; using booster pumps to prevent vapour lock
F04D 9/06	2-Punkt Untergruppe	. . of jet type
F04D 11/00	**Hauptgruppe**	**Other rotary non-positive-displacement pumps (pumping installations or systems F04D 13/00)**
F04D 13/00	**Hauptgruppe**	**Pumping installations or systems (controlling F04D 15/00)**
F04D 13/02	1-Punkt Untergruppe	. Units comprising pumps and their driving means (predominant aspects of the driving means, see the relevant classes for such means)
F04D 13/04	2-Punkt Untergruppe	. . the pump being fluid-driven
F04D 13/06	2-Punkt Untergruppe	. . the pump being electrically driven

Symbol	Typ	Titel
F04D 13/08	3-Punkt Untergruppe	. . . for submerged use
F04D 13/10	4-Punkt Untergruppe	. . . . adapted for use in mining bore holes
F04D 13/12	1-Punkt Untergruppe	. Combinations of two or more pumps (combinations with priming pumps or booster pumps to counter-act vapour lock F04D 9/04)
F04D 13/14	2-Punkt Untergruppe	. . the pumps being all of centrifugal type
F04D 13/16	1-Punkt Untergruppe	. with storage reservoirs
F04D 15/00	**Hauptgruppe**	**Control, e.g. regulation, of pumps, pumping installations, or systems**
F04D 15/02	1-Punkt Untergruppe	. Stopping of pumps, or operating valves, on occurrence of unwanted conditions
		Pumping elastic fluids by rotary pumps
F04D 17/00	**Hauptgruppe**	**Radial-flow pumps, e.g. centrifugal pumps; Helico-centrifugal pumps (F04D 21/00 takes precedence)**
F04D 17/02	1-Punkt Untergruppe	. having non-centrifugal stages, e.g. centripetal
F04D 17/04	2-Punkt Untergruppe	. . of transverse-flow type
F04D 17/06	1-Punkt Untergruppe	. Helico-centrifugal pumps
F04D 17/08	1-Punkt Untergruppe	. Centrifugal pumps
F04D 17/10	2-Punkt Untergruppe	. . for compressing or evacuating
F04D 17/12	3-Punkt Untergruppe	. . . Multi-stage pumps
F04D 17/14	4-Punkt Untergruppe	. . . . with means for changing the flow-path through the stages, e.g. series/parallel (surge control F04D 27/02)
F04D 17/16	2-Punkt Untergruppe	. . for displacing without appreciable compression
F04D 17/18	2-Punkt Untergruppe	. . characterised by use of centrifugal force of liquids entrained in pumps
F04D 19/00	**Hauptgruppe**	**Axial-flow pumps (F04D 21/00 takes precedence)**
F04D 19/02	1-Punkt Untergruppe	. Multi-stage pumps
F04D 19/04	2-Punkt Untergruppe	. . specially adapted to the production of a high vacuum, e.g. molecular pumps
F04D 21/00	**Hauptgruppe**	**Pumps involving supersonic speed of pumped fluids**
F04D 23/00	**Hauptgruppe**	**Other rotary non-positive-displacement pumps (pumping installations or systems F04D 25/00)**
F04D 25/00	**Hauptgruppe**	**Pumping installations or systems (controlling F04D 27/00)**
F04D 25/02	1-Punkt Untergruppe	. Units comprising pumps and their driving means (predominant aspects of the driving means, see the relevant classes for such means)
F04D 25/04	2-Punkt Untergruppe	. . the pump being fluid-driven
F04D 25/06	2-Punkt Untergruppe	. . the pump being electrically driven (F04D 25/08 takes precedence)
F04D 25/08	2-Punkt Untergruppe	. . the working fluid being air, e.g. for ventilation
F04D 25/10	3-Punkt Untergruppe	. . . the unit having provisions for automatically changing the direction of output air
F04D 25/12	3-Punkt Untergruppe	. . . the unit being adapted for mounting in apertures
F04D 25/14	4-Punkt Untergruppe	. . . . and having shutters, e.g. automatically closed when not in use
F04D 25/16	1-Punkt Untergruppe	. Combinations of two or more pumps

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F04D 27/00	**Hauptgruppe**	**Control, e.g. regulation, of pumps, pumping installations, or systems**
F04D 27/02	1-Punkt Untergruppe	. Surge control
F04D 29/00	**Hauptgruppe**	**Details, component parts, or accessories (machine elements in general F16)**
F04D 29/02	1-Punkt Untergruppe	. Selection of particular materials (for handling specific liquids F04D 7/00)
F04D 29/04	*1-Punkt Untergruppe*	*. Shafts or bearings, or assemblies thereof (specially adapted for elastic fluid pumps F04D 29/05) [1, 2006.01]*
F04D 29/041	*2-Punkt Untergruppe*	*. . Axial thrust balancing [2006.01]*
F04D 29/042	*2-Punkt Untergruppe*	*. . Axially shiftable rotors (F04D 29/041 takes precedence) [2006.01]*
F04D 29/043	*2-Punkt Untergruppe*	*. . Shafts [2006.01]*
F04D 29/044	*3-Punkt Untergruppe*	*. . . Arrangements for joining or assembling shafts [2006.01]*
F04D 29/046	*2-Punkt Untergruppe*	*. . Bearings [2006.01]*
F04D 29/047	*3-Punkt Untergruppe*	*. . . hydrostatic ; hydrodynamic [2006.01]*
F04D 29/048	*3-Punkt Untergruppe*	*. . . magnetic ; electromagnetic [2006.01]*
F04D 29/049	*3-Punkt Untergruppe*	*. . . Roller bearings [2006.01]*
F04D 29/05	*1-Punkt Untergruppe*	*. Shafts or bearings, or assemblies therof, specially adapted for elastic fluid pumps [2006.01]*
F04D 29/051	*2-Punkt Untergruppe*	*. . Axial thrust balancing [2006.01]*
F04D 29/052	*2-Punkt Untergruppe*	*. . Axially shiftable rotors (F04D 29/051 takes precedence) [2006.01]*
F04D 29/053	*2-Punkt Untergruppe*	*. . Shafts [2006.01]*
F04D 29/054	*3-Punkt Untergruppe*	*. . . Arrangements for joining or assembling shafts [2006.01]*
F04D 29/056	*2-Punkt Untergruppe*	*. . Bearings [2006.01]*
F04D 29/057	*3-Punkt Untergruppe*	*. . . hydrostatic ; hydrodynamic [2006.01]*
F04D 29/058	*3-Punkt Untergruppe*	*. . . magnetic ; electromagnetic [2006.01]*
F04D 29/059	*3-Punkt Untergruppe*	*. . . Roller bearings [2006.01]*
F04D 29/06	*1-Punkt Untergruppe*	*. Lubrication [1, 2006.01]*
F04D 29/063	*2-Punkt Untergruppe*	*. . specially adapted for elastic fluid pumps [2006.01]*
F04D 29/08	1-Punkt Untergruppe	. Sealings
F04D 29/10	2-Punkt Untergruppe	. . Shaft sealings
F04D 29/12	3-Punkt Untergruppe	. . . using sealing-rings
F04D 29/14	3-Punkt Untergruppe	. . . operative only when pump is inoperative
F04D 29/16	2-Punkt Untergruppe	. . between pressure and suction sides
F04D 29/18	1-Punkt Untergruppe	. Rotors (specially adapted for elastic fluids F04D 29/26)
F04D 29/20	2-Punkt Untergruppe	. . Mounting rotors on shafts
F04D 29/22	2-Punkt Untergruppe	. . specially for centrifugal pumps

Symbol	Typ	Titel
F04D 29/24	3-Punkt Untergruppe	. . . Vanes
F04D 29/26	1-Punkt Untergruppe	. Rotors specially adapted for elastic fluids
F04D 29/28	2-Punkt Untergruppe	. . for centrifugal or helico-centrifugal pumps
F04D 29/30	3-Punkt Untergruppe	. . . Vanes
F04D 29/32	2-Punkt Untergruppe	. . for axial-flow pumps
F04D 29/34	3-Punkt Untergruppe	. . . Blade mountings
F04D 29/36	4-Punkt Untergruppe	. . . . adjustable
F04D 29/38	3-Punkt Untergruppe	. . . Blades
F04D 29/40	1-Punkt Untergruppe	. Casings; Connections for working fluid
F04D 29/42	2-Punkt Untergruppe	. . for radial or helico-centrifugal pumps
F04D 29/44	3-Punkt Untergruppe	. . . Fluid-guiding means, e.g. diffusers
F04D 29/46	4-Punkt Untergruppe	. . . . adjustable
F04D 29/48	5-Punkt Untergruppe	. . . . . for unidirectional fluid flow in reversible pumps
F04D 29/50	5-Punkt Untergruppe	. . . . . for reversing fluid flow
F04D 29/52	2-Punkt Untergruppe	. . for axial pumps
F04D 29/54	3-Punkt Untergruppe	. . . Fluid-guiding means, e.g. diffusers
F04D 29/56	4-Punkt Untergruppe	. . . . adjustable
F04D 29/58	1-Punkt Untergruppe	. Cooling (of machines or engines in general F01P); Heating; Diminishing heat transfer
F04D 29/60	1-Punkt Untergruppe	. Mounting; Assembling; Disassembling
F04D 29/62	2-Punkt Untergruppe	. . of radial or helico-centrifugal pumps
F04D 29/64	2-Punkt Untergruppe	. . of axial pumps
F04D 29/66	1-Punkt Untergruppe	. Combating cavitation, whirls, noise, vibration, or the like (gas-flow silencers for machines or engines in general F01N); Balancing (surge control F04D 27/02)
F04D 29/68	2-Punkt Untergruppe	. . by influencing boundary layers
F04D 29/70	1-Punkt Untergruppe	. Suction grids; Strainers; Dust separation; Cleaning
		Other non-positive-displacement pumps
F04D 31/00	**Hauptgruppe**	**Pumping liquids and elastic fluids at the same time**
F04D 33/00	**Hauptgruppe**	**Non-positive-displacement pumps with other than pure rotation, e.g. of oscillating type (F04D 35/00 takes precedence; hand-held fans A45B) [2]**
F04D 35/00	**Hauptgruppe**	**Pumps producing waves in liquids, i.e. wave-producers (for bath tubs A47K 3/10) [2]**