

Symbol	Typ	Titel
F	Sektion	MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
F04	Klasse	POSITIVE-DISPLACEMENT MACHINES FOR LIQUIDS; PUMPS FOR LIQUIDS OR ELASTIC FLUIDS
F04D	Unterklasse	NON-POSITIVE-DISPLACEMENT PUMPS (engine fuel-injection pumps F02M; ion pumps H01J 41/12; electrodynamic pumps H02K 44/02)
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; pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 1/02	1-Punkt Untergruppe	. having non-centrifugal stages, e.g. centripetal [1, 2006.01]
F04D 1/04	1-Punkt Untergruppe	. Helico-centrifugal pumps [1, 2006.01]
F04D 1/06	1-Punkt Untergruppe	. Multi-stage pumps (F04D 1/02 takes precedence) [1, 2006.01]
F04D 1/08	2-Punkt Untergruppe	.. the stages being situated concentrically [1, 2006.01]
F04D 1/10	2-Punkt Untergruppe	.. with means for changing the flow-path through the stages, e.g. series/parallel [1, 2006.01]
F04D 1/12	1-Punkt Untergruppe	. Pumps with scoops or like paring members protruding in the fluid circulating in a bowl [1, 2006.01]
F04D 1/14	1-Punkt Untergruppe	. Pumps raising fluids by centrifugal force within a conical rotary bowl with vertical axis [1, 2006.01]
F04D 3/00	Hauptgruppe	Axial-flow pumps (priming or boosting F04D 9/00; pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 3/02	1-Punkt Untergruppe	. of screw type [1, 2006.01]
F04D 5/00	Hauptgruppe	Pumps with circumferential or transverse flow (pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 7/00	Hauptgruppe	Pumps adapted for handling specific fluids, e.g. by selection of specific materials for pumps or pump parts (pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 7/02	1-Punkt Untergruppe	. of centrifugal type [1, 2006.01]
F04D 7/04	2-Punkt Untergruppe	.. the fluids being viscous or non-homogeneous [1, 2006.01]
F04D 7/06	2-Punkt Untergruppe	.. the fluids being hot or corrosive, e.g. liquid metal [1, 2006.01]
F04D 7/08	2-Punkt Untergruppe	.. the fluids being radioactive [1, 2006.01]
F04D 9/00	Hauptgruppe	Priming; Preventing vapour lock [1, 2006.01]
F04D 9/02	1-Punkt Untergruppe	. Self-priming pumps [1, 2006.01]
F04D 9/04	1-Punkt Untergruppe	. using priming pumps; using booster pumps to prevent vapour lock [1, 2006.01]
F04D 9/06	2-Punkt Untergruppe	.. of jet type [1, 2006.01]
F04D 11/00	Hauptgruppe	Other rotary non-positive-displacement pumps (pumping installations or systems F04D 13/00; pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 13/00	Hauptgruppe	Pumping installations or systems (controlling F04D 15/00; pumping liquids and elastic fluids at the same time F04D 31/00) [1, 2006.01]
F04D 13/02	1-Punkt Untergruppe	. Units comprising pumps and their driving means (predominant aspects of the driving means, <u>see</u> the relevant classes for such means) [1, 2006.01]
F04D 13/04	2-Punkt Untergruppe	.. the pump being fluid-driven [1, 2006.01]
F04D 13/06	2-Punkt Untergruppe	.. the pump being electrically driven [1, 2006.01]
F04D 13/08	3-Punkt Untergruppe	... for submerged use [1, 2006.01]

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F04D 13/10	4-Punkt Untergruppe adapted for use in mining bore holes [1, 2006.01]
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) [1, 2006.01]
F04D 13/14	2-Punkt Untergruppe	... the pumps being all of centrifugal type [1, 2006.01]
F04D 13/16	1-Punkt Untergruppe	. with storage reservoirs [1, 2006.01]
F04D 15/00	Hauptgruppe	Control, e.g. regulation, of pumps, pumping installations, or systems [1, 2006.01]
F04D 15/02	1-Punkt Untergruppe	. Stopping of pumps, or operating valves, on occurrence of unwanted conditions [1, 2006.01]
		<u>Rotary pumps specially adapted for elastic fluids</u>
F04D 17/00	Hauptgruppe	Radial-flow pumps specially adapted for elastic fluids, e.g. centrifugal pumps; Helico-centrifugal pumps specially adapted for elastic fluids (F04D 21/00 takes precedence) [1, 2006.01]
F04D 17/02	1-Punkt Untergruppe	. having non-centrifugal stages, e.g. centripetal [1, 2006.01]
F04D 17/04	2-Punkt Untergruppe	... of transverse-flow type [1, 2006.01]
F04D 17/06	1-Punkt Untergruppe	. Helico-centrifugal pumps [1, 2006.01]
F04D 17/08	1-Punkt Untergruppe	. Centrifugal pumps [1, 2006.01]
F04D 17/10	2-Punkt Untergruppe	... for compressing or evacuating [1, 2006.01]
F04D 17/12	3-Punkt Untergruppe	... Multi-stage pumps [1, 2006.01]
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) [1, 2006.01]
F04D 17/16	2-Punkt Untergruppe	... for displacing without appreciable compression [1, 2006.01]
F04D 17/18	2-Punkt Untergruppe	... characterised by use of centrifugal force of liquids entrained in pumps [1, 2006.01]
F04D 19/00	Hauptgruppe	Axial-flow pumps specially adapted for elastic fluids (F04D 21/00 takes precedence) [1, 2006.01]
F04D 19/02	1-Punkt Untergruppe	. Multi-stage pumps [1, 2006.01]
F04D 19/04	2-Punkt Untergruppe	... specially adapted to the production of a high vacuum, e.g. molecular pumps [1, 2006.01]
F04D 21/00	Hauptgruppe	Pumps specially adapted for elastic fluids involving supersonic speed of pumped fluids [1, 2006.01]
F04D 23/00	Hauptgruppe	Other rotary non-positive-displacement pumps specially adapted for elastic fluids (pumping installations or systems F04D 25/00) [1, 2006.01]
F04D 25/00	Hauptgruppe	Pumping installations or systems specially adapted for elastic fluids (controlling F04D 27/00) [1, 2006.01]
F04D 25/02	1-Punkt Untergruppe	. Units comprising pumps and their driving means (predominant aspects of the driving means, <u>see</u> the relevant classes for such means) [1, 2006.01]
F04D 25/04	2-Punkt Untergruppe	... the pump being fluid-driven [1, 2006.01]
F04D 25/06	2-Punkt Untergruppe	... the pump being electrically driven (F04D 25/08 takes precedence) [1, 2006.01]
F04D 25/08	2-Punkt Untergruppe	... the working fluid being air, e.g. for ventilation [1, 2006.01]
F04D 25/10	3-Punkt Untergruppe	... the unit having provisions for automatically changing the direction of output air [1, 2006.01]
F04D 25/12	3-Punkt Untergruppe	... the unit being adapted for mounting in apertures [1, 2006.01]
F04D 25/14	4-Punkt Untergruppe and having shutters, e.g. automatically closed when not in use [1, 2006.01]
F04D 25/16	1-Punkt Untergruppe	. Combinations of two or more pumps [1, 2006.01]

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F04D 27/00	Hauptgruppe	Control, e.g. regulation, of pumps, pumping installations or pumping systems specially adapted for elastic fluids [1, 2006.01]
F04D 27/02	1-Punkt Untergruppe	. Surge control [1, 2006.01]
F04D 29/00	Hauptgruppe	Details, component parts, or accessories (machine elements in general F16) [1, 2006.01]
F04D 29/02	1-Punkt Untergruppe	. Selection of particular materials (for handling specific liquids F04D 7/00) [1, 2006.01]
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 thereof, 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 [1, 2006.01]
F04D 29/10	2-Punkt Untergruppe	.. Shaft sealings [1, 2006.01]
F04D 29/12	3-Punkt Untergruppe	... using sealing-rings [1, 2006.01]
F04D 29/14	3-Punkt Untergruppe	... operative only when pump is inoperative [1, 2006.01]
F04D 29/16	2-Punkt Untergruppe	.. between pressure and suction sides [1, 2006.01]
F04D 29/18	1-Punkt Untergruppe	. Rotors (specially adapted for elastic fluids F04D 29/26) [1, 2006.01]
F04D 29/20	2-Punkt Untergruppe	.. Mounting rotors on shafts [1, 2006.01]
F04D 29/22	2-Punkt Untergruppe	.. specially for centrifugal pumps [1, 2006.01]

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F04D 29/24	3-Punkt Untergruppe	... Vanes [1, 2006.01]
F04D 29/26	1-Punkt Untergruppe	. Rotors specially adapted for elastic fluids [1, 2006.01]
F04D 29/28	2-Punkt Untergruppe	... for centrifugal or helico-centrifugal pumps [1, 2006.01]
F04D 29/30	3-Punkt Untergruppe	... Vanes [1, 2006.01]
F04D 29/32	2-Punkt Untergruppe	... for axial-flow pumps [1, 2006.01]
F04D 29/34	3-Punkt Untergruppe	... Blade mountings [1, 2006.01]
F04D 29/36	4-Punkt Untergruppe adjustable [1, 2006.01]
F04D 29/38	3-Punkt Untergruppe	... Blades [1, 2006.01]
F04D 29/40	1-Punkt Untergruppe	. Casings; Connections for working fluid [1, 2006.01]
F04D 29/42	2-Punkt Untergruppe	... for radial or helico-centrifugal pumps [1, 2006.01]
F04D 29/44	3-Punkt Untergruppe	... Fluid-guiding means, e.g. diffusers [1, 2006.01]
F04D 29/46	4-Punkt Untergruppe adjustable [1, 2006.01]
F04D 29/48	5-Punkt Untergruppe for unidirectional fluid flow in reversible pumps [1, 2006.01]
F04D 29/50	5-Punkt Untergruppe for reversing fluid flow [1, 2006.01]
F04D 29/52	2-Punkt Untergruppe	... for axial pumps [1, 2006.01]
F04D 29/54	3-Punkt Untergruppe	... Fluid-guiding means, e.g. diffusers [1, 2006.01]
F04D 29/56	4-Punkt Untergruppe adjustable [1, 2006.01]
F04D 29/58	1-Punkt Untergruppe	. Cooling (of machines or engines in general F01P); Heating; Diminishing heat transfer [1, 2006.01]
F04D 29/60	1-Punkt Untergruppe	. Mounting; Assembling; Disassembling [1, 2006.01]
F04D 29/62	2-Punkt Untergruppe	... of radial or helico-centrifugal pumps [1, 2006.01]
F04D 29/64	2-Punkt Untergruppe	... of axial pumps [1, 2006.01]
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) [1, 2006.01]
F04D 29/68	2-Punkt Untergruppe	... by influencing boundary layers [1, 2006.01]
F04D 29/70	1-Punkt Untergruppe	. Suction grids; Strainers; Dust separation; Cleaning [1, 2006.01]
<u>Other non-positive-displacement pumps</u>		
F04D 31/00	Hauptgruppe	Pumping liquids and elastic fluids at the same time [1, 2006.01]
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) [1, 2, 2006.01]
F04D 35/00	Hauptgruppe	Pumps producing waves in liquids, i.e. wave-producers (for bath tubs A47K 3/10) [2, 2006.01]