Symbol	Typ	Titel
F	**Sektion**	**SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING**
F01	**Untersektion**	**ENGINES OR PUMPS**
F01	**Klasse**	**MACHINES OR ENGINES IN GENERAL (combustion engines F02; machines for liquids F03, F04); ENGINE PLANTS IN GENERAL; STEAM ENGINES**
F01D	**Unterklasse**	**NON-POSITIVE-DISPLACEMENT MACHINES OR ENGINES, e.g. STEAM TURBINES (machines or engines for liquids F03; non-positive-displacement pumps F04D)**
F01D 1/00	**Hauptgruppe**	**Non-positive-displacement machines or engines, e.g. steam turbines (with working-fluid flows in opposite axial directions for balancing axial thrust F01D 3/02; with other than pure rotation F01D 23/00; turbines characterised by their use in special steam systems, cycles, or processes, regulating devices therefor F01K)**
F01D 1/02	1-Punkt Untergruppe	. with stationary working-fluid guiding means and bladed or like rotor (F01D 1/24 takes precedence; without working-fluid guiding means F01D 1/18) [5]
F01D 1/04	2-Punkt Untergruppe	. . traversed by the working-fluid substantially axially
F01D 1/06	2-Punkt Untergruppe	. . traversed by the working-fluid substantially radially
F01D 1/08	3-Punkt Untergruppe	. . . having inward flow
F01D 1/10	2-Punkt Untergruppe	. . having two or more stages subjected to working-fluid flow without essential intermediate pressure change, i.e. with velocity stages (F01D 1/12 takes precedence)
F01D 1/12	2-Punkt Untergruppe	. . with repeated action on same blade ring
F01D 1/14	3-Punkt Untergruppe	. . . traversed by the working-fluid substantially radially
F01D 1/16	2-Punkt Untergruppe	. . characterised by having both reaction stages and impulse stages
F01D 1/18	1-Punkt Untergruppe	. without working-fluid guiding means (F01D 1/24, F01D 1/32, F01D 1/34 take precedence) [5]
F01D 1/20	2-Punkt Untergruppe	. . traversed by the working-fluid substantially axially
F01D 1/22	2-Punkt Untergruppe	. . traversed by the working-fluid substantially radially
F01D 1/24	1-Punkt Untergruppe	. characterised by counter-rotating rotors subjected to same working-fluid stream without intermediate stator blades or the like
F01D 1/26	2-Punkt Untergruppe	. . traversed by the working-fluid substantially axially
F01D 1/28	2-Punkt Untergruppe	. . traversed by the working-fluid substantially radially
F01D 1/30	1-Punkt Untergruppe	. characterised by having a single rotor operable in either direction of rotation, e.g. by reversing of blades (combinations of machines or engines F01D 13/00)
F01D 1/32	1-Punkt Untergruppe	. with pressure/velocity transformation exclusively in rotor, e.g. the rotor rotating under the influence of jets issuing from the rotor
F01D 1/34	1-Punkt Untergruppe	. characterised by non-bladed rotor, e.g. with drilled holes (F01D 1/32 takes precedence; sirens G10K 7/00) [5]
F01D 1/36	2-Punkt Untergruppe	. . using fluid friction
F01D 1/38	2-Punkt Untergruppe	. . of the screw type [5]
F01D 3/00	**Hauptgruppe**	**Machines or engines with axial-thrust balancing effected by working fluid**
F01D 3/02	1-Punkt Untergruppe	. characterised by having one fluid flow in one axial direction and another fluid flow in the opposite direction

Symbol	Typ	Titel
F01D 3/04	1-Punkt Untergruppe	. axial thrust being compensated by thrust-balancing dummy piston or the like
F01D 5/00	**Hauptgruppe**	**Blades; Blade-carrying members (nozzle boxes F01D 9/02); Heating, heat-insulating, cooling, or antivibration means on the blades or the members**
F01D 5/02	1-Punkt Untergruppe	. Blade-carrying members, e.g. rotors (rotors of non-bladed type F01D 1/34; stators F01D 9/00)
F01D 5/03	2-Punkt Untergruppe	. . Annular blade-carrying members having blades on the inner periphery of the annulus and extending inwardly radially, i.e. inverted rotors [6]
F01D 5/04	2-Punkt Untergruppe	. . for radial-flow machines or engines
F01D 5/06	2-Punkt Untergruppe	. . Rotors for more than one axial stage, e.g. of drum or multiple-disc type; Details thereof, e.g. shafts, shaft connections
F01D 5/08	2-Punkt Untergruppe	. . Heating, heat-insulating, or cooling means
F01D 5/10	2-Punkt Untergruppe	. . Antivibration means
F01D 5/12	1-Punkt Untergruppe	. Blades (blade roots F01D 5/30; rotors with blades adjustable in operation F01D 7/00; stator blades F01D 9/02)
F01D 5/14	2-Punkt Untergruppe	. . Form or construction (selecting particular materials, measures against erosion or corrosion F01D 5/28)
F01D 5/16	3-Punkt Untergruppe	. . . for counteracting blade vibration
F01D 5/18	3-Punkt Untergruppe	. . . Hollow blades; Heating, heat-insulating, or cooling means on blades
F01D 5/20	3-Punkt Untergruppe	. . . Specially-shaped blade tips to seal space between tips and stator
F01D 5/22	2-Punkt Untergruppe	. . Blade-to-blade connections, e.g. by shrouding
F01D 5/24	3-Punkt Untergruppe	. . . using wire or the like
F01D 5/26	2-Punkt Untergruppe	. . Antivibration means not restricted to blade form or construction or to blade-to-blade connections
F01D 5/28	2-Punkt Untergruppe	. . Selecting particular materials; Measures against erosion or corrosion
F01D 5/30	1-Punkt Untergruppe	. Fixing blades to rotors; Blade roots
F01D 5/32	2-Punkt Untergruppe	. . Locking, e.g. by final locking-blades or keys
F01D 5/34	1-Punkt Untergruppe	. Rotor-blade aggregates of unitary construction
F01D 7/00	**Hauptgruppe**	**Rotors with blades adjustable in operation; Control thereof (for reversing F01D 1/30)**
F01D 7/02	1-Punkt Untergruppe	. having adjustment responsive to speed
F01D 9/00	**Hauptgruppe**	**Stators (non-fluid guiding aspects of casings, regulating, controlling, or safety aspects, see the relevant groups)**
F01D 9/02	1-Punkt Untergruppe	. Nozzles; Nozzle boxes; Stator blades; Guide conduits
F01D 9/04	2-Punkt Untergruppe	. . forming ring or sector
F01D 9/06	1-Punkt Untergruppe	. Fluid supply conduits to nozzles or the like
F01D 11/00	**Hauptgruppe**	**Preventing or minimising internal leakage of working fluid, e.g. between stages (sealings in general F16J)**
F01D 11/02	1-Punkt Untergruppe	. by non-contact sealings, e.g. of labyrinth type (for sealing space between rotor blade tips and stator F01D 11/08)
F01D 11/04	2-Punkt Untergruppe	. . using sealing fluid, e.g. steam
F01D 11/06	3-Punkt Untergruppe	. . . Control thereof

Symbol	Typ	Titel
F01D 11/08	1-Punkt Untergruppe	. for sealing space between rotor blade tips and stator (specially-shaped blade tips therefor F01D 5/20)
F01D 11/10	2-Punkt Untergruppe	. . using sealing fluid, e.g. steam
F01D 11/12	2-Punkt Untergruppe	. . using a rubstrip, e.g. erodible, deformable or resiliently biased part [6]
F01D 11/14	2-Punkt Untergruppe	. . Adjusting or regulating tip-clearance, i.e. distance between rotor-blade tips and stator casing (rotors with blades adjustable in operation F01D 7/00) [6]
F01D 11/16	3-Punkt Untergruppe	. . . by self-adjusting means (F01D 11/12 takes precedence) [6]
F01D 11/18	4-Punkt Untergruppe	. . . . using stator or rotor components with predetermined thermal response, e.g. selective insulation, thermal inertia, differential expansion [6]
F01D 11/20	3-Punkt Untergruppe	. . . Actively adjusting tip-clearance [6]
F01D 11/22	4-Punkt Untergruppe	. . . . by mechanically actuating the stator or rotor components, e.g. moving shroud sections relative to the rotor [6]
F01D 11/24	4-Punkt Untergruppe	. . . . by selectively cooling or heating stator or rotor components [6]
F01D 13/00	**Hauptgruppe**	**Combinations of two or more machines or engines (F01D 15/00 takes precedence; combinations of two or more pumps F04; fluid gearing F16H; regulating or controlling, see the relevant groups)**
F01D 13/02	1-Punkt Untergruppe	. Working-fluid interconnection of machines or engines
F01D 15/00	**Hauptgruppe**	**Adaptations of machines or engines for special use; Combinations of engines with devices driven thereby (regulating or controlling, see the relevant groups; aspects predominantly concerning driven devices, see the relevant classes for the devices)**
F01D 15/02	1-Punkt Untergruppe	. Adaptations for driving vehicles, e.g. locomotives (arrangement in vehicles, see the relevant vehicle classes)
F01D 15/04	2-Punkt Untergruppe	. . the vehicles being waterborne vessels
F01D 15/06	1-Punkt Untergruppe	. Adaptations for driving, or combinations with, hand-held tools or the like
F01D 15/08	1-Punkt Untergruppe	. Adaptations for driving, or combinations with, pumps
F01D 15/10	1-Punkt Untergruppe	. Adaptations for driving, or combinations with, electric generators
F01D 15/12	1-Punkt Untergruppe	. Combinations with mechanical gearing (driven by multiple engines F01D 13/00)
F01D 17/00	**Hauptgruppe**	**Regulating or controlling by varying flow (for reversing F01D 1/30; by varying rotor blade position F01D 7/00; specially for starting F01D 19/00; shutting-down F01D 21/00; regulating or controlling in general G05)**
F01D 17/02	1-Punkt Untergruppe	. Arrangement of sensing elements (sensing elements per se, see the relevant subclasses)
F01D 17/04	2-Punkt Untergruppe	. . responsive to load
F01D 17/06	2-Punkt Untergruppe	. . responsive to speed
F01D 17/08	2-Punkt Untergruppe	. . responsive to condition of working fluid, e.g. pressure
F01D 17/10	1-Punkt Untergruppe	. Final actuators (valves in general F16K)
F01D 17/12	2-Punkt Untergruppe	. . arranged in stator parts
F01D 17/14	3-Punkt Untergruppe	. . . varying effective cross-sectional area of nozzles or guide conduits
F01D 17/16	4-Punkt Untergruppe	. . . . by means of nozzle vanes

Symbol	Typ	Titel
F01D 17/18	3-Punkt Untergruppe	. . . varying effective number of nozzles or guide conduits
F01D 17/20	1-Punkt Untergruppe	. Devices dealing with sensing elements or final actuators or transmitting means between them, e.g. power-assisted (sensing elements alone F01D 17/02; final actuators alone F01D 17/10)
F01D 17/22	2-Punkt Untergruppe	. . the operation or power assistance being predominantly non-mechanical
F01D 17/24	3-Punkt Untergruppe	. . . electrical
F01D 17/26	3-Punkt Untergruppe	. . . fluid, e.g. hydraulic
F01D 19/00	**Hauptgruppe**	**Starting of machines or engines; Regulating, controlling, or safety means in connection therewith (warming-up before starting F01D 25/10; turning or inching gear F01D 25/34)**
F01D 19/02	1-Punkt Untergruppe	. dependent on temperature of component parts, e.g. of turbine casing
F01D 21/00	**Hauptgruppe**	**Shutting-down of machines or engines, e.g. in emergency; Regulating, controlling, or safety means not otherwise provided for**
F01D 21/02	1-Punkt Untergruppe	. Shutting-down responsive to overspeed
F01D 21/04	1-Punkt Untergruppe	. responsive to undesired position of rotor relative to stator, e.g. indicating such position
F01D 21/06	2-Punkt Untergruppe	. . Shutting-down
F01D 21/08	2-Punkt Untergruppe	. . Restoring position
F01D 21/10	1-Punkt Untergruppe	. responsive to unwanted deposits on blades, in working-fluid conduits, or the like
F01D 21/12	1-Punkt Untergruppe	. responsive to temperature
F01D 21/14	1-Punkt Untergruppe	. responsive to other specific conditions
F01D 21/16	1-Punkt Untergruppe	. Trip gear
F01D 21/18	2-Punkt Untergruppe	. . involving hydraulic means
F01D 21/20	1-Punkt Untergruppe	. Checking operation of shut-down devices
F01D 23/00	**Hauptgruppe**	**Non-positive-displacement machines or engines with movement other than pure rotation, e.g. of endless-chain type**
F01D 25/00	**Hauptgruppe**	**Component parts, details, or accessories, not provided for in, or of interest apart from, other groups**
F01D 25/02	1-Punkt Untergruppe	. De-icing means for engines having icing phenomena
F01D 25/04	1-Punkt Untergruppe	. Antivibration arrangements
F01D 25/06	2-Punkt Untergruppe	. . for preventing blade vibration (means on blade-carrying members or blades F01D 5/00)
F01D 25/08	1-Punkt Untergruppe	. Cooling (of machines or engines in general F01P); Heating; Heat insulation (of blade-carrying members, of blades F01D 5/00)
F01D 25/10	2-Punkt Untergruppe	. . Heating, e.g. warming-up before starting
F01D 25/12	2-Punkt Untergruppe	. . Cooling
F01D 25/14	2-Punkt Untergruppe	. . Casings modified therefor (double casings F01D 25/26)
F01D 25/16	1-Punkt Untergruppe	. Arrangement of bearings; Supporting or mounting bearings in casings (bearings per seF16C)
F01D 25/18	1-Punkt Untergruppe	. Lubricating arrangements (of machines or engines in general F01M)
F01D 25/20	2-Punkt Untergruppe	. . using lubrication pumps

Symbol	Typ	Titel
F01D 25/22	2-Punkt Untergruppe	. . using working fluid or other gaseous fluid as lubricant
F01D 25/24	1-Punkt Untergruppe	. Casings (modified for heating or cooling F01D 25/14); Casing parts, e.g. diaphragms, casing fastenings (casings for rotary machines or engines in general F16M)
F01D 25/26	2-Punkt Untergruppe	. . Double casings; Measures against temperature strain in casings
F01D 25/28	1-Punkt Untergruppe	. Supporting or mounting arrangements, e.g. for turbine casing
F01D 25/30	1-Punkt Untergruppe	. Exhaust heads, chambers, or the like
F01D 25/32	1-Punkt Untergruppe	. Collecting of condensation water; Drainage
F01D 25/34	1-Punkt Untergruppe	. Turning or inching gear
F01D 25/36	2-Punkt Untergruppe	. . using electric motors