

CPC**COOPERATIVE PATENT CLASSIFICATION****F16K**

VALVES; TAPS; COCKS; ACTUATING-FLOATS; DEVICES FOR VENTING OR AERATING {(devices for emptying and evacuating the excess liquid in valves or conduits [F16L 55/07](#))}

NOTE

Attention is drawn to the following places:

- [A47J 27/09](#) Safety devices for pressure cookers
- [A47J 31/46](#) Dispensing spouts, drain valves or like beverage-making apparatus
- [A61B 5/0235](#) Valves specially adapted for measuring pressure in heart or blood vessels
- [A61F 2/24](#) Heart valves
- [A61M 16/20](#) Valves specially adapted for medical respiratory devices
- [A61M 39/00](#) Tube connectors, tube couplings, valves or branch units specially adapted for medical use in general
- [A62B 9/02](#) Valves for respiratory apparatus
- [A62B 18/10](#) Valves for breathing masks or helmets
- [A62C](#) Fire extinguishers
- {[B01D 35/04](#) Plug, tap, or cock filters }
- [B05B](#) Nozzles, spray heads or other discharge apparatus for spraying or atomising
- [B60C 29/00](#) Arrangements of tyre-inflating valves relative to tyres or wheel rims; Connection of valves to wheel rims, tyres or other inflatable elastic bodies
- [B60G 17/048](#) Valves specially adapted for adjusting vehicle fluid-spring characteristics
- [B60T](#) Valves specially adapted for vehicle brake control systems
- [B62D 5/08](#) Vehicle power-assisted steering characterised by the type of valve used
- [B63B 7/00](#),
- [B63C 9/00](#) Arrangement of inflating valves for floatable life-saving equipment
- [B65D 47/04](#) Container closures with discharging valves
- [B65D 90/32](#) Safety valves for large containers
- [B65D 90/54](#) Gates or closures on large containers
- [B67C 3/28](#) Flow control devices for bottling liquids
- [B67D](#) Dispensing, delivering or transferring liquids

F16K

(continued)

{C21B 9/12	Hot-blast valves for blast
furnaces	}
E02B 8/00	Details, e.g. valves, of barrages or weirs
E02B 13/02	Closures for irrigation conduits
{E03C 1/04	Water-basin installations specially
adapted for wash-basins or baths	}
{E03C 1/05	Arrangements on wash-basins for the
remote control of taps	}
E03D	Flushing valves for water-closets or
urinals	
{E03F 7/04	Valves for preventing return flow in
sewer systems	}
E05F 3/12	Valve arrangements in door closers
E21B 21/10	Valve arrangements in drilling-fluid
circulation systems	
E21B 34/00	Valve arrangements for boreholes or wells
{E21D 15/51	Arrangement of relief valves in
hydraulic mine props	}
F01B 25/10	Working-fluid valves for controlling
machines or engines in general or of	
positive-displacement type	
F01D 17/10	Final actuators for controlling non-
positive displacement machines or engines	
F01L	Cyclically operated valves for machines or
engines	
F02D 9/08	Throttle valves for controlling combustion
engines	
F02K 9/58	Propellant feed valves for rocket-engines
F02M	Carburettors, fuel injection
F02M 59/46	Valves for fuel injection pumps
F04	Pumps
F16F 9/34	Valves for shock absorbers
F16L 29/00,	
F16L 37/28	Pipe joints or quick-acting couplings
with fluid cut-off means	
F16L 55/00	Arrangement of valves in pipes
F16L 55/055	Valves specially adapted to prevent or
minimise the effect of water hammer	
F16L 55/46	Launching devices for pigs or moles
F16N 23/00	Check valves for lubrication systems
{F16T	Draining-off liquids from steam traps}
F17C 13/04	Arrangement of valves in pressure vessels
F22B 37/44	Arrangement of safety valves on steam
boilers	
F22D 5/34	Application of valves to automatic water-
feed in boiler	

F16K

(continued)

F23L 13/00	Valves for air supply control to burners
{F23Q 2/16	Valves for lighters with gaseous fuel
and adjustable flame	}
F24C 3/12 ,	
F24C 5/16	Arrangement of valves on stoves or ranges
F24F	Air conditioning; Ventilation
F25B 41/04	Disposition of fluid circulation valves
in refrigeration machines	
G05D	Controlling non-electric variables
G10B 3/06	Valves for organs
G10D 9/04	Valves for other wind-actuated musical
instruments	
{G21C 9/06	Safety valves structurally associated
with nuclear reactors	}
{H01M 2/12	Vent plugs in batteries or cells
	}

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

F16K 31/11	covered by	F16K 31/06 ,
F16K 31/08 ,	F16K 31/10	
F16K 31/64	" "	G05D
F16K 31/66	" "	F16K 31/06 ; H01F
F16K 31/68	" "	G05D
F16K 31/70	" "	F16K 31/002
F16K 31/72	" "	F16K 31/00

Constructional types (check valves [F16K 15/00](#))**NOTE**

In groups [F16K 1/00](#) to [F16K 13/00](#), an initial seal breaking or final sealing movement which is different from the opening or closing movement of the valve is not considered in determining the movement to be classified.

F16K 1/00	Lift valves {or globe valves}, i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces ({in combination with sliding valves F16K 3/246 , F16K 3/267 } ; diaphragm valves F16K 7/00)
F16K 1/02	<ul style="list-style-type: none"> with screw-spindle (F16K 1/12 to F16K 1/28 take precedence; actuating mechanisms with screw-spindles F16K 31/50)
F16K 1/04	<ul style="list-style-type: none"> with a cut-off member rigid with the spindle, e.g. main valves
F16K 1/06	<ul style="list-style-type: none"> Special arrangements for improving the flow, e.g. special shape of passages or casings
F16K 1/08	<ul style="list-style-type: none"> in which the spindle is perpendicular to the general direction of flow
F16K 1/10	<ul style="list-style-type: none"> in which the spindle is inclined to the general direction of flow

- F16K 1/12 . with streamlined valve member around which the fluid flows when the valve is opened
- F16K 1/123 . . {with stationary valve member and moving sleeve}
- F16K 1/126 . . {actuated by fluid}
- F16K 1/14 . with ball-shaped valve member (check valves [F16K 15/04](#))
- F16K 1/16 . with pivoted closure-members
- F16K 1/165 . . {with a plurality of closure members}
- F16K 1/18 . . with pivoted discs or flaps
- F16K 1/20 . . . with axis of rotation arranged externally of valve member

WARNING

Subgroups of [F16K 1/20](#) are not complete pending a reorganisation, see also [F16K 1/20](#)

- F16K 1/2007 {specially adapted operating means therefor (operating means per se [F16K 31/00](#))}
- F16K 1/2014 {Shaping of the valve member}
- F16K 1/2021 {with a plurality of valve members}
- F16K 1/2028 {Details of bearings for the axis of rotation}
- F16K 1/2035 {the axis of rotation having only one bearing}
- F16K 1/2042 {Special features or arrangements of the sealing}
- F16K 1/205 {the sealing being arranged on the valve member}
- F16K 1/2057 {the sealing being arranged on the valve seat}
- F16K 1/2064 {with a channel- or U-shaped seal covering a central body portion}
- F16K 1/2071 {and being forced into sealing contact with the valve member by a spring or a spring-like member}
- F16K 1/2078 {Sealing means for the axis of rotation}
- F16K 1/2085 {Movable sealing bodies}
- F16K 1/2092 {the movement being caused by the flowing medium}
- F16K 1/22 . . . with axis of rotation crossing the valve member, e.g. butterfly valves
- F16K 1/221 {specially adapted operating means therefor (operating means per se [F16K 31/00](#))}
- F16K 1/222 {Shaping of the valve member}
- F16K 1/223 {with a plurality of valve members}
- F16K 1/224 {Details of bearings for the axis of rotation}
- F16K 1/225 {the axis of rotation having only one bearing}
- F16K 1/226 Shaping or arrangements of the sealing
- F16K 1/2261 {the sealing being arranged on the valve member}
- F16K 1/2263 {the sealing being arranged on the valve seat}
- F16K 1/2265 {with a channel- or U-shaped seal covering a central body portion}
- F16K 1/2266 {and being forced into sealing contact with the valve member by a spring or a spring-like member}

- F16K 1/2268 {Sealing means for the axis of rotation}
- F16K 1/228 Movable sealing bodies
- F16K 1/2285 {the movement being caused by the flowing medium}
- F16K 1/24 . with valve members that, on opening of the valve, are initially lifted from the seat and next are turned around an axis parallel to the seat
- F16K 1/26 . . Shape or arrangement of the sealing {Not used}
- F16K 1/28 . . . Movable sealing bodies {Not used}
- F16K 1/30 . specially adapted for pressure containers
- F16K 1/301 . . {only shut-off valves, i.e. valves without additional means}
- F16K 1/302 . . . {with valve member and actuator on the same side of the seat}
- F16K 1/303 . . . {with a valve member, e.g. stem or shaft, passing through the seat}
- F16K 1/304 . . {Shut-off valves with additional means}
- F16K 1/305 . . . {with valve member and actuator on the same side of the seat}
- F16K 1/306 . . . {with a valve member, e.g. stem or shaft, passing through the seat}
- F16K 1/307 . . {Additional means used in combination with the main valve}
- F16K 1/308 . . {Connecting means}
- F16K 1/32 . Details (details of more general applicability [F16K 25/00](#) to [F16K 51/00](#))
- F16K 1/34 . . Cutting-off parts, e.g. valve members, seats ([F16K 1/06](#), [F16K 1/12](#), [F16K 1/14](#), [F16K 1/26](#) take precedence)
- F16K 1/36 . . . Valve members (for double-seat valves [F16K 1/44](#) {for butterfly valves [F16K 1/222](#), [F16K 1/223](#)})
- F16K 1/38 of conical shape
- F16K 1/385 {contacting in the closed position, over a substantial axial length, a seat surface having the same inclination}
- F16K 1/40 of helical shape
- F16K 1/42 . . . Valve seats (for double-seat valves [F16K 1/44](#))

WARNING

Subgroups of [F16K 1/42](#) are not complete pending a reorganisation, see also [F16K 1/42](#)]

- F16K 1/422 {attachable by a threaded connection to the housing}
- F16K 1/425 {Attachment of the seat to the housing by plastical deformation, e.g. valve seat or housing being plastically deformed during mounting}
- F16K 1/427 {Attachment of the seat to the housing by one or more additional fixing elements}
- F16K 1/44 . . . Details of seats or valve members of double-seat valves
- F16K 1/443 {the seats being in series}
- F16K 1/446 {with additional cleaning or venting means between the two seats}
- F16K 1/46 . . . Attachment of sealing rings
- F16K 1/465 {to the valve seats}

WARNING

Not yet complete, see also [F16K 1/46](#)

- F16K 1/48 . . Attaching valve members to screw-spindles
- F16K 1/482 . . . {with a collar on the spindle or a groove in the spindle, by which a fixing element is supported, the spindle reaching into the valve member}
- F16K 1/485 {with a groove in the spindle}
- F16K 1/487 . . . {by a fixing element extending in the axial direction of the spindle, e.g. a screw}
- F16K 1/50 . . Preventing rotation of valve members
- F16K 1/52 . . Means for additional adjustment of the rate of flow
- F16K 1/523 . . . {for limiting the maximum flow rate, using a stop}
- F16K 1/526 . . . {for limiting the maximum flow rate, using a second valve}
- F16K 1/54 . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve

F16K 3/00 **Gate valves or sliding valves, i.e. cut-off apparatus with closing members having a sliding movement along the seat for opening and closing** ([F16K 5/00](#) takes precedence; in barrages or weirs [E02B 8/04](#))

- F16K 3/02 . with flat sealing faces; Packings therefor
- F16K 3/0209 . . {the valve having a particular passage, e.g. provided with a filter, throttle or safety device}
- F16K 3/0218 . . {with only one sealing face}
- F16K 3/0227 . . {Packings}
- F16K 3/0236 . . . {the packing being of a non-resilient material, e.g. ceramic, metal}
- F16K 3/0245 . . {Curtain gate valves}
- F16K 3/0254 . . {being operated by particular means}
- F16K 3/0263 . . {using particular material or covering means}
- F16K 3/0272 . . {permitting easy assembly or disassembly}
- F16K 3/0281 . . {Guillotine or blade-type valves, e.g. no passage through the valve member}
- F16K 3/029 . . {with two or more gates}
- F16K 3/03 . . with a closure member in the form of an iris-diaphragm
- F16K 3/04 . . with pivoted closure members
- F16K 3/06 . . . in the form of closure plates arranged between supply and discharge passages ([F16K 3/10](#) takes precedence)
- F16K 3/08 with circular plates rotatable around their centres
- F16K 3/085 {the axis of supply passage and the axis of discharge passage being coaxial and parallel to the axis of rotation of the plates}
- F16K 3/10 . . . with special arrangements for separating the sealing faces or for pressing them together
- F16K 3/12 . . with wedge-shaped arrangements of sealing faces
- F16K 3/14 . . . with special arrangements for separating the sealing faces or for pressing them together
- F16K 3/16 . . with special arrangements for separating the sealing faces or for pressing them together ([F16K 3/10](#), [F16K 3/14](#) take precedence)
- F16K 3/18 . . . by movement of the closure members

- F16K 3/182 {by means of toggle links}
- F16K 3/184 {by means of cams}
- F16K 3/186 {by means of cams of wedge form}
- F16K 3/188 {by means of hydraulic forces}
- F16K 3/20 . . . by movement of the seats
- F16K 3/202 {by movement of toggle links}
- F16K 3/205 {by means of cams}
- F16K 3/207 {by means of hydraulic forces}
- F16K 3/22 . with sealing faces shaped as surfaces of solids of revolution ([F16K 13/02](#) takes precedence; with resilient valve members [F16K 3/28](#))
- F16K 3/24 . . with cylindrical valve members
- F16K 3/243 . . . {Packings ([F16K 3/246](#) takes precedence)}
- F16K 3/246 . . . {Combination of a sliding valve and a lift valve}
- F16K 3/26 . . . with fluid passages in the valve member
- F16K 3/262 {with a transverse bore in the valve member}
- F16K 3/265 {with a sleeve sliding in the direction of the flow line}
- F16K 3/267 {Combination of a sliding valve and a lift valve ([F16K 3/262](#), [F16K 3/265](#) take precedence)}
- F16K 3/28 . with resilient valve members
- F16K 3/30 . Details
- F16K 3/312 . . Line blinds
- F16K 3/314 . . Forms or construction of slides; Attachment of the slide to the spindle
- F16K 3/316 . . Guiding of the slide
- F16K 3/3165 . . . {with rollers or balls}
- F16K 3/32 . . Means for additional adjustment of the rate of flow
- F16K 3/34 . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve
- F16K 3/36 . . Features relating to lubrication
- F16K 5/00** **{Plug valves;}** **Taps or cocks comprising only cut-off apparatus having at least one of the sealing faces shaped as a more or less complete surface of a solid of revolution, the opening and closing movement being predominantly rotary ([taps of the lift-valve type F16K 1/00](#))**
- F16K 5/02 . with plugs having conical surfaces; Packings therefor
- F16K 5/0207 . . {with special plug arrangement, e.g. special shape or built in means}
- F16K 5/0214 . . {Plug channel at 90 degrees to the inlet}
- F16K 5/0221 . . {Fixed plug and turning sleeve}
- F16K 5/0228 . . {with a conical segment mounted around a supply pipe}
- F16K 5/0235 . . {with the angle the spindle makes housing being other than 90 degrees}
- F16K 5/0242 . . {Spindles and actuating means}
- F16K 5/025 . . {Particular coverings or materials}
- F16K 5/0257 . . {Packings}

- F16K 5/0264 . . . {in the housing}
- F16K 5/0271 . . . {between housing and plug}
- F16K 5/0278 . . . {on the plug}
- F16K 5/0285 . . . {spindle sealing}
- F16K 5/0292 . . {Easy mounting or dismounting means}
- F16K 5/04 . . with plugs having cylindrical surfaces; Packings therefor
- F16K 5/0407 . . {with particular plug arrangements, e.g. particular shape or built-in means}
- F16K 5/0414 . . {Plug channel at 90 degrees to the inlet}
- F16K 5/0421 . . {Fixed plug and turning sleeve}
- F16K 5/0428 . . {with a cylindrical segment mounted around a supply pipe}
- F16K 5/0435 . . {the angle the spindle makes with the housing being other than 90 degrees}
- F16K 5/0442 . . {Spindles and actuating means}
- F16K 5/045 . . {Particular coverings and materials}
- F16K 5/0457 . . {Packings}
- F16K 5/0464 . . . {in the housing}
- F16K 5/0471 . . . {between housing and plug}
- F16K 5/0478 . . . {on the plug}
- F16K 5/0485 . . . {Spindle sealing}
- F16K 5/0492 . . {Easy mounting or dismounting means}
- F16K 5/06 . . with plugs having spherical surfaces; Packings therefor
- F16K 5/0605 . . {with particular plug arrangements, e.g. particular shape or built-in means}
- F16K 5/061 . . {knee-joint}
- F16K 5/0615 . . {the angle the spindle makes with the housing being other than 90 degrees}
- F16K 5/0621 . . {with a spherical segment mounted around a supply pipe}
- F16K 5/0626 . . {Easy mounting or dismounting means}
- F16K 5/0631 . . . {between two flanges}
- F16K 5/0636 . . . {the spherical plug being insertable from the top of the housing}
- F16K 5/0642 . . . {the spherical plug being insertable from one and only one side of the housing}
- F16K 5/0647 . . {Spindles or actuating means}
- F16K 5/0652 . . . {for remote operation}
- F16K 5/0657 . . {Particular coverings or materials}
- F16K 5/0663 . . {Packings}
- F16K 5/0668 . . . {Single packings}
- F16K 5/0673 . . . {Composite packings}
- F16K 5/0678 {in which only one of the components of the composite packing is contacting the plug}

WARNING

not yet complete, see also [F16K 5/0673](#)

- F16K 5/0684 . . . {on the plug}

F16K 5/0689	. . . {between housing and plug}
F16K 5/0694	. . . {Spindle sealings}
F16K 5/08	. Details
F16K 5/10	. . Means for additional adjustment of the rate of flow
F16K 5/103	. . . {specially adapted for gas valves}
F16K 5/106	. . . . {with pilot flame}
F16K 5/12	. . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve
F16K 5/14	. . Special arrangements for separating the sealing faces or for pressing them together
F16K 5/16	. . . for plugs with conical surfaces
F16K 5/161	. . . . {with the housing or parts of the housing mechanically pressing the seal against the plug}
F16K 5/162	. . . . {with the plugs or parts of the plugs mechanically pressing the seal against the housing}
F16K 5/163	. . . . . {adjustable in height}
F16K 5/165	. . . . . {Means pressing on the small diameter}
F16K 5/166	. . . . . {Means pressing on the large diameter}
F16K 5/167	. . . . . {Means pressing radially}
F16K 5/168	. . . . . {Sealing effected by the flowing medium}
F16K 5/18	. . . for plugs with cylindrical surfaces
F16K 5/181	. . . . {with the housing or parts of the housing mechanically pressing the seals against the plugs}
F16K 5/182	. . . . . {by means of conical surfaces}
F16K 5/184	. . . . {with the plugs or parts of the plugs mechanically pressing the seals against the housing}
F16K 5/185	. . . . . {by means of conical surfaces}
F16K 5/187	. . . . . {with rolling action}
F16K 5/188	. . . . . {Sealing effected by the flowing medium}
F16K 5/20	. . . for plugs with spherical surfaces
F16K 5/201	. . . . {with the housing or parts of the housing mechanically pressing the seal against the plug}
F16K 5/202	. . . . . {with conical surfaces}
F16K 5/204	. . . . {with the plugs or parts of the plugs mechanically pressing the seals against the housing}
F16K 5/205	. . . . . {Sealing effected by the flowing medium}
F16K 5/207	. . . . . {using bellows}
F16K 5/208	. . . . . {with tongue-shaped means}
F16K 5/22	. . Features relating to lubrication
F16K 5/222	. . . {for plugs with conical surfaces}
F16K 5/225	. . . {for plugs with cylindrical surfaces}
F16K 5/227	. . . {for plugs with spherical surfaces}

F16K 7/00	Diaphragm {valves or} cut-off apparatus, e.g. with a member deformed, but not moved bodily, to close the passage (container gates or closures operating by deformation of flexible walls B65D 90/56; means for plugging pipes or hoses F16L 55/10) {Pinch valves}
F16K 7/02	<ul style="list-style-type: none"> with tubular diaphragm
F16K 7/04	<ul style="list-style-type: none"> constrictable by external radial force
F16K 7/045	<ul style="list-style-type: none"> by electric or magnetic means
F16K 7/06	<ul style="list-style-type: none"> by means of a screw-spindle, cam, or other mechanical means {(F16K 7/045 takes precedence)}
F16K 7/061	<ul style="list-style-type: none"> Screw clamps
F16K 7/063	<ul style="list-style-type: none"> Lever clamps
F16K 7/065	<ul style="list-style-type: none"> Cam clamps
F16K 7/066	<ul style="list-style-type: none"> Wedge clamps
F16K 7/068	<ul style="list-style-type: none"> by bending the hose
F16K 7/07	<ul style="list-style-type: none"> by means of fluid pressure
F16K 7/075	<ul style="list-style-type: none"> a rigid body being located within the tubular diaphragm
F16K 7/08	<ul style="list-style-type: none"> constrictable by twisting
F16K 7/10	<ul style="list-style-type: none"> with inflatable member
F16K 7/12	<ul style="list-style-type: none"> with flat, dished, or bowl-shaped diaphragm
F16K 7/123	<ul style="list-style-type: none"> the seat being formed on the bottom of the fluid line
F16K 7/126	<ul style="list-style-type: none"> the seat being formed on a rib perpendicular to the fluid line
F16K 7/14	<ul style="list-style-type: none"> arranged to be deformed against a flat seat
F16K 7/16	<ul style="list-style-type: none"> the diaphragm being mechanically actuated, e.g. by screw-spindle or cam
F16K 7/17	<ul style="list-style-type: none"> the diaphragm being actuated by fluid pressure
F16K 7/18	<ul style="list-style-type: none"> with diaphragm secured at one side only, e.g. to be laid on the seat by rolling action
F16K 7/20	<ul style="list-style-type: none"> with a compressible solid closure member
F16K 11/00	Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves
F16K 11/02	<ul style="list-style-type: none"> with all movable sealing faces moving as one unit
F16K 11/022	<ul style="list-style-type: none"> comprising a deformable member
F16K 11/025	<ul style="list-style-type: none"> with an O-ring
F16K 11/027	<ul style="list-style-type: none"> the fluid flowing through a constrictable tubular diaphragm
F16K 11/04	<ul style="list-style-type: none"> comprising only lift valves
F16K 11/044	<ul style="list-style-type: none"> with movable valve members positioned between valve seats
F16K 11/0445	<ul style="list-style-type: none"> Bath/shower selectors
F16K 11/048	<ul style="list-style-type: none"> with valve seats positioned between movable valve members
F16K 11/052	<ul style="list-style-type: none"> with pivoted closure members, e.g. butterfly valves
F16K 11/0525	<ul style="list-style-type: none"> the closure members being pivoted around an essentially central axis
F16K 11/056	<ul style="list-style-type: none"> with ball-shaped valve members

F16K 11/0565	. . . . {moving in a combined straight line and rotating movement}
F16K 11/06	. . comprising only sliding valves, {i.e. sliding closure elements}
F16K 11/065	. . . with linearly sliding closure members
F16K 11/0655	. . . . {with flat slides}
F16K 11/07	. . . . with cylindrical slides
F16K 11/0704	. . . . . {comprising locking elements}
F16K 11/0708	. . . . . {comprising means to avoid jamming of the slide or means to modify the flow}
F16K 11/0712	. . . . . {comprising particular spool-valve sealing means}
F16K 11/0716	. . . . . {with fluid passages through the valve member (F16K 11/0704, F16K 11/0708, F16K 11/0712 take precedence)}
F16K 11/072	. . . with pivoted closure members
F16K 11/074	. . . . with flat sealing faces
F16K 11/0743	. . . . . {with both the supply and the discharge passages being on one side of the closure plates}
F16K 11/0746	. . . . . {with two or more closure plates comprising a single lever control}
F16K 11/076	. . . . with sealing faces shaped as surfaces of solids of revolution
F16K 11/078	. . . with pivoted and linearly movable closure members
F16K 11/0782	. . . . {Single-lever operated mixing valves with closure members having flat sealing faces}
F16K 11/0785	. . . . . {the movable closure member being pivotally supported at one point and being linked to the operating lever at only one other point}
F16K 11/0787	. . . . . {with both the supply and the discharge passages being on the same side of the closure members (F16K 11/0785 takes precedence)}
F16K 11/08	. . comprising only taps or cocks
F16K 11/083	. . . with tapered plug
F16K 11/0833	. . . . {having all the connecting conduits situated in a single plane perpendicular to the axis of the plug}
F16K 11/0836	. . . . {having all the connecting conduits situated in more than one plane perpendicular to the axis of the plug}
F16K 11/085	. . . with cylindrical plug
F16K 11/0853	. . . . {having all the connecting conduits situated in a single plane perpendicular to the axis of the plug}
F16K 11/0856	. . . . {having all the connecting conduits situated in more than one plane perpendicular to the axis of the plug}
F16K 11/087	. . . with spherical plug
F16K 11/0873	. . . . {the plug being only rotatable around one spindle}
F16K 11/0876	. . . . . {one connecting conduit having the same axis as the spindle}
F16K 11/10	. with two or more closure members not moving as an unit
F16K 11/105	. . {Three-way check or safety valves with two or more closure members}
F16K 11/12	. . with one plug turning in another

- F16K 11/14 . . . operated by one actuating member, e.g. a handle (with one plug turning in another F16K 11/12)
- F16K 11/16 which only slides, or only turns, or only swings in one plane
- F16K 11/161 {only slides}
- F16K 11/163 {only turns}
- F16K 11/165 {with the rotating spindles parallel to the closure members}
- F16K 11/166 {with the rotating spindles at right angles to the closure members}
- F16K 11/168 {only swings}
- F16K 11/18 with separate operating movements for separate closure members
- F16K 11/185 {with swinging shafts}
- F16K 11/20 . . . operated by separate actuating members (with one plug turning in another F16K 11/12)
- F16K 11/202 {with concentric handles}
- F16K 11/205 {with two handles at right angles to each other}
- F16K 11/207 {with two handles or actuating mechanisms at opposite sides of the housing}
- F16K 11/22 with an actuating member for each valve, e.g. interconnected to form multiple-way valves
- F16K 11/24 with an electromagnetically-operated valve, e.g. for washing machines
- F16K 13/00** **Other constructional types of cut-off apparatus** (means for plugging pipes or hoses F16L 55/10); **Arrangements for cutting-off**
- F16K 13/02 . . with both sealing faces shaped as small segments of a cylinder and the moving member pivotally mounted
- F16K 13/04 . . with a breakable closure member
- F16K 13/06 . . . constructed to be ruptured by an explosion
- F16K 13/08 . . Arrangements for cutting-off {not used}
- F16K 13/10 . . . by means of liquid or granular medium

Functional types

NOTE

Attention is drawn to Note (2) following the title of subclass G05D and also the subdivisions of that subclass, according to which pressure regulators and flow regulators, e.g. flow regulating valves with pressure compensator, even with the whole regulating system contained in a valve, operating with or without auxiliary power, are covered by groups G05D 16/00 or G05D 7/00, respectively. However, details of the valve parts, per se, are classified in the appropriate groups of this subclass.

- F16K 15/00** **Check valves** (valves specially adapted for inflatable balls A63B 41/00)
- F16K 15/02 . . with guided rigid valve members
- F16K 15/021 . . . {the valve member being a movable body around which the medium flows when the valve is open (F16K 15/025 to F16K 15/12 take precedence)}

WARNING

not yet complete

- F16K 15/023
 - . . . {the valve member consisting only of a predominantly disc-shaped flat element}
 - WARNING**
 - not yet complete
- F16K 15/025
 - . . {the valve being loaded by a helicoidal spring ([F16K 15/03](#) to [F16K 15/12](#) take precedence)}
- F16K 15/026
 - . . . {the valve member being a movable body around which the medium flows when the valve is open}
- F16K 15/028
 - {the valve member consisting only of a predominantly disc-shaped flat element}
- F16K 15/03
 - . . with a hinged closure member
- F16K 15/031
 - . . . {the hinge being flexible ([F16K 15/035](#) takes precedence)}
- F16K 15/033
 - . . . {spring-loaded ([F16K 15/035](#) takes precedence)}
- F16K 15/035
 - . . . {with a plurality of valve members}
- F16K 15/036
 - {Dual valve members with hinges crossing the flow line substantially diametrical}
- F16K 15/038
 - {having a common hinge}
- F16K 15/04
 - . . shaped as balls
- F16K 15/042
 - . . . {with a plurality of balls}
- F16K 15/044
 - . . . {spring-loaded ([F16K 15/042](#) takes precedence)}
- F16K 15/046
 - {by a spring other than a helicoidal spring}
- F16K 15/048
 - . . . {Ball features}
 - WARNING**
 - not yet complete, see also [F16K 15/04](#)
- F16K 15/06
 - . . with guided stems
- F16K 15/063
 - . . . {the valve being loaded by a helicoidal spring}
 - WARNING**
 - not yet complete, see also [F16K 15/06](#)
- F16K 15/066
 - {with a plurality of valve members}
- F16K 15/08
 - . . shaped as rings
- F16K 15/10
 - . . . integral with, or rigidly fixed to, a common valve plate
- F16K 15/12
 - . . . Springs for ring valves
- F16K 15/14
 - . with flexible valve members
- F16K 15/141
 - . . {the closure elements not being fixed to the valve body}
- F16K 15/142
 - . . . {the closure elements being shaped as solids of revolution, e.g. toroidal or cylindrical rings}
- F16K 15/144
 - . . {the closure elements being fixed along all or a part of their periphery}
- F16K 15/145
 - . . . {the closure elements being shaped as a solids of revolution, e.g. cylindrical or conical}

- F16K 15/147 . . . {the closure elements having specially formed slits or being of an elongated easily collapsible form}
- F16K 15/148 . . {the closure elements being fixed in their centre}
- F16K 15/16 . . with tongue-shaped laminae
- F16K 15/18 . with actuating mechanism; Combined check valves and actuated valves
- F16K 15/181 . . {for check valves with a hinged closure member ([F16K 15/188](#) takes precedence)}
- F16K 15/183 . . {for ball check valves ([F16K 15/186](#), [F16K 15/188](#) take precedence)}
- F16K 15/185 . . {for check valves with flexible valve members ([F16K 15/188](#) takes precedence)}
- F16K 15/186 . . {Check valves which can be actuated by a pilot valve}
- F16K 15/188 . . {Check valves combined with valves having a rotating tap or cock}
- F16K 15/20 . specially designed for inflatable bodies, e.g. tyres ([connecting valves to inflatable bodies B60C 29/00](#))
- F16K 15/202 . . {and with flexible valve member}
- F16K 15/205 . . {and with closure plug}
- F16K 15/207 . . {and combined with other valves, e.g. safety valves}

F16K 17/00**Safety valves; Equalising valves, {e.g. pressure relief valves}**

- F16K 17/003 . {reacting to pressure and temperature}
- F16K 17/006 . {specially adapted for shelters}
- F16K 17/02 . opening on surplus pressure on one side; closing on insufficient pressure on one side ([check valves F16K 15/00](#))
- F16K 17/025 . . {and remaining open after return of the normal pressure}

WARNING

This group is not complete pending a reorganisation, see also [F16K 17/02](#)

- F16K 17/04 . . spring-loaded
- F16K 17/0406 . . . {in the form of balls}
- F16K 17/0413 . . . {in the form of closure plates}
- F16K 17/042 . . . {with locking or disconnecting arrangements}
- F16K 17/0426 . . . {with seat protecting means}
- F16K 17/0433 . . . {with vibration preventing means}
- F16K 17/044 . . . {with more than one spring}
- F16K 17/0446 . . . {with an obturating member having at least a component of their opening and closing motion not perpendicular to the closing faces}
- F16K 17/0453 {the member being a diaphragm}
- F16K 17/046 {the valve being of the gate valve type or the sliding valve type}

WARNING

not yet complete, see also [F16K 17/0446](#)

- F16K 17/0466 . . . {with a special seating surface}

F16K 17/0473	. . . {Multiple-way safety valves}
F16K 17/048	. . . {combined with other safety valves, or with pressure control devices}
F16K 17/0486	. . . {with mechanical actuating means}
F16K 17/0493	. . . {with a spring other than a helicoidal spring}
F16K 17/06	. . . with special arrangements for adjusting the opening pressure
F16K 17/065	. . . . {with differential piston}
F16K 17/08	. . . with special arrangements for providing a large discharge passage
F16K 17/082	. . . . {with piston}
F16K 17/085	. . . . {with diaphragm}
F16K 17/087	. . . . {with bellows}
F16K 17/10	. . . with auxiliary valve for fluid operation of the main valve
F16K 17/105	. . . . {using choking or throttling means to control the fluid operation of the main valve}
F16K 17/12	. . weight-loaded
F16K 17/14	. . with fracturing member
F16K 17/16	. . . with fracturing diaphragm; {Rupture discs}
F16K 17/1606	. . . . {of the reverse-buckling-type (F16K 17/1633 takes precedence)}
F16K 17/1613	. . . . . {with additional cutting means}
F16K 17/162	. . . . {of the non reverse-buckling-type (F16K 17/1633 takes precedence)}
F16K 17/1626	. . . . . {with additional cutting means}
F16K 17/1633	. . . . {made of graphite}
F16K 17/164	. . and remaining closed after return of the normal pressure
F16K 17/168	. . combined with manually-controlled valves, e.g. a valve combined with a safety valve
F16K 17/18	. opening on surplus pressure on either side
F16K 17/19	. . Equalising valves predominantly for tanks {(when combined with safety valve by change of position F16K 17/36)}
F16K 17/192	. . . with closure member in the form of a movable liquid column
F16K 17/194	. . . weight-loaded
F16K 17/196	. . . spring-loaded
F16K 17/20	. Excess-flow valves (actuated in consequence of shock or similar extraneous influence F16K 17/36)
F16K 17/205	. . {specially adapted for flexible gas lines}
F16K 17/22	. . actuated by the difference of pressure between two places in the flow line
F16K 17/24	. . . acting directly on the cutting-off member
F16K 17/26	. . . . operating in either direction
F16K 17/28	. . . . operating in one direction only
F16K 17/285	. . . . . {the cutting-off member being a ball (F16K 17/30 takes precedence)}
F16K 17/30	. . . . . spring-loaded
F16K 17/32	. . . acting on a servo-mechanism or on a catch-releasing mechanism

- F16K 17/34
 - . in which the flow-energy of the flowing medium actuates the closing mechanism
- F16K 17/36
 - actuated in consequence of extraneous circumstances, e.g. shock, change of position
- F16K 17/363
 - . {the closure members being rotatable or pivoting ([F16K 17/386](#) takes precedence)}
- F16K 17/366
 - . {the closure member being a movable ball ([F16K 17/38](#) takes precedence)}

WARNING

not yet complete, see also [F16K 17/36](#)
- F16K 17/38
 - . of excessive temperature
- F16K 17/383
 - . . {the valve comprising fusible, softening or meltable elements, e.g. used as link, blocking element, seal, closure plug ([F16K 17/386](#) takes precedence)}
- F16K 17/386
 - . . {the closure members being rotatable or pivoting}
- F16K 17/40
 - with a fracturing member, e.g. fracturing diaphragm, glass, fusible joint (valves opening on surplus pressure [F16K 17/14](#))
- F16K 17/403
 - . {with a fracturing valve member}
- F16K 17/406
 - . {the fracturing member being a generally elongated member, e.g. rod or wire, which is directly connected to a movable valve member, the breaking or buckling of the elongated member allowing the valve member to move to a closed or open position}
- F16K 17/42
 - Valves preventing penetration of air in the outlet of containers for liquids
- F16K 19/00**

Arrangements of valves and flow lines specially adapted for mixing fluids
(multiple-way valves [F16K 11/00](#))
- F16K 19/003
 - {Specially adapted for boilers}
- F16K 19/006
 - {Specially adapted for faucets}
- F16K 21/00**

Fluid-delivery valves, {e.g. self-closing valves} (for liquid handling [B67D](#); for flushing devices for water-closets or the like [E03D](#))
- F16K 21/02
 - providing a continuous small flow
- F16K 21/04
 - Self-closing valves, i.e. closing automatically after operation {(pneumatic tools [B25B 9/00](#))}
- F16K 21/06
 - . in which the closing movement, either retarded or not, starts immediately after opening
- F16K 21/08
 - . . with ball-shaped closing members
- F16K 21/10
 - . . with hydraulic brake cylinder acting on the closure member
- F16K 21/12
 - . . with hydraulically-operated opening means; with arrangements for pressure relief before opening
- F16K 21/14
 - . with special means for preventing the self-closing
- F16K 21/16
 - . closing after a predetermined quantity of fluid has been delivered ([F16K 21/10](#) takes precedence)

- F16K 21/165
 - . . . {with means sensing the weight of said fluid quantity}
 - WARNING**
 - not yet complete, see also [F16K 21/16](#)
- F16K 21/18
 - . . closed when a rising liquid reaches a predetermined level (float-actuated valves [F16K 31/18](#))
- F16K 21/185
 - . . . {with electrical or magnetical means, e.g. with magnetic floats, for sensing the liquid level}
 - WARNING**
 - not yet complete, see also [F16K 21/18](#)
- F16K 21/20
 - . . . by means making use of air-suction through an opening closed by the rising liquid
- F16K 23/00** **Valves for preventing drip from nozzles**
- F16K 24/00** **Devices, e.g. valves, for venting or aerating enclosures** (equalising valves [F16K 17/00](#); arrangement or mounting in pipes or pipe systems [F16L 55/07](#); venting or aerating as an additional function of steam traps or like apparatus [F16T](#); ventilation of rooms, vehicles, see the appropriate subclass, e.g. [F24F](#))
- F16K 24/02
 - . the enclosure being itself a valve, tap, or cock
- F16K 24/04
 - . for venting only ([F16K 24/02](#) takes precedence)
- F16K 24/042
 - . . {actuated by a float}
- F16K 24/044
 - . . . {the float being rigidly connected to the valve element, the assembly of float and valve element following a substantially translational movement when actuated, e.g. also for actuating a pilot valve}
 - WARNING**
 - not yet complete, see also [F16K 24/042](#)
- F16K 24/046
 - {the assembly of float and valve element being a single spherical element}
- F16K 24/048
 - . . . {a transmission element, e.g. arm, being interposed between the float and the valve element, the transmission element following a non-translational, e.g. pivoting or rocking, movement when actuated}
- F16K 24/06
 - . for aerating only ([F16K 24/02](#) takes precedence)

Details**NOTE**

Details not provided for in the following groups are classified in the preceding groups.

- F16K 25/00** **Details relating to contact between valve members and seat** (sealing constructions, see the appropriate groups according to the type of valve; movement of valve members other than for opening and closing [F16K 29/00](#))
- F16K 25/005
 - . {Particular materials for seats or closure elements}
- F16K 25/02
 - . Arrangements using fluid issuing from valve members or seats

F16K 25/04

- Arrangements for preventing erosion, not otherwise provided for

F16K 27/00

Construction of housing (methods for welding housings [B23K](#)); **Use of materials therefor**

F16K 27/003

- {Housing formed from a plurality of the same valve elements}

F16K 27/006

- {of hydrants}

F16K 27/02

- of lift valves (for reducing the flow resistance of screw-spindle lift-valves [F16K 1/06](#))

F16K 27/0209

- . {Check valves or pivoted valves}

F16K 27/0218

- . . {Butterfly valves}

F16K 27/0227

- . . {with the valve members swinging around an axis located at the edge of or outside the valve member}

F16K 27/0236

- . {Diaphragm cut-off apparatus}

F16K 27/0245

- . {with ball-shaped valve members}

F16K 27/0254

- . {with conical shaped valve members}

F16K 27/0263

- . {multiple way valves}

F16K 27/0272

- . {valves provided with a lining}

F16K 27/0281

- . {Housings in two parts which can be orientated in different positions}

F16K 27/029

- . {Electromagnetically actuated valves}

WARNING

This group is not complete pending a reorganisation, see also [F16K 27/02](#)

F16K 27/04

- of sliding valves

F16K 27/041

- . {cylindrical slide valves}

F16K 27/042

- . . {Hydraulic fluid leak traps}

F16K 27/044

- . {slide valves with flat obturating members}

F16K 27/045

- . . {with pivotal obturating members}

F16K 27/047

- . . {with wedge-shaped obturating members}

F16K 27/048

- . {Electromagnetically actuated valves}

WARNING

This group is not complete pending a reorganisation, see also [F16K 27/04](#)

F16K 27/06

- of taps or cocks

F16K 27/062

- . {with conical plugs}

F16K 27/065

- . {with cylindrical plugs}

F16K 27/067

- . {with spherical plugs}

F16K 27/07

- of cutting-off parts of tanks, e.g. tank-ears

WARNING

This group is not complete pending a reorganisation, see also [F16K 51/00](#)

- F16K 27/08
 - Guiding yokes for spindles; Means for closing housings; Dust caps, e.g. for tyre valves
- F16K 27/10
 - Welded housings
- F16K 27/102
 - • {for lift-valves}
- F16K 27/105
 - • {for gate valves}
- F16K 27/107
 - • {for taps or cocks}
- F16K 27/12
 - Covers for housings

F16K 29/00 **Arrangements for movement of valve members other than for opening and closing the valve, e.g. for grinding-in, for preventing sticking**

- F16K 29/02
 - providing for continuous motion

F16K 31/00 **{Actuating devices;} Operating means; Releasing devices {(regulating means G05D)}**

- F16K 31/001
 - {actuated by volume variations caused by an element soluble in a fluid or swelling in contact with a fluid (life-boats [B63C 9/24](#))}
- F16K 31/002
 - {actuated by temperature variation (thermo-electric [F16K 31/025](#))}
- F16K 31/003
 - {operated without a stable intermediate position, e.g. with snap action ([F16K 31/56](#) takes precedence)}
- F16K 31/004
 - {actuated by piezo-electric means}
- F16K 31/005
 - • {Piezo-electric benders}
- F16K 31/006
 - • • {having a free end}
- F16K 31/007
 - • {Piezo-electric stacks}
- F16K 31/008
 - • • {for sliding valves}

WARNING

This group is not complete pending a reorganisation, see also [F16K 31/007](#)

- F16K 31/02
 - electric {([F16K 31/004](#) takes precedence)}; magnetic
- F16K 31/025
 - • {actuated by thermo-electric means}
- F16K 31/04
 - • using a motor
- F16K 31/041
 - • • {for rotating valves ([F16K 31/055](#) takes precedence)}

WARNING

Subgroups [F16K 31/042](#) to [F16K 31/045](#) are not complete pending a reorganisation, see also [F16K 31/041](#)

- F16K 31/042
 - • • • {with electric means, e.g. for controlling the motor or a clutch between the valve and the motor}
- F16K 31/043
 - • • • {characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means}
- F16K 31/045
 - • • • • {with torque limiters}
- F16K 31/046
 - • • {with electric means, e.g. electric switches, to control the motor or to control a clutch between the valve and the motor ([F16K 31/041](#) takes precedence)}

F16K 31/047	. . . {characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means (F16K 31/043 takes precedence)}
F16K 31/048	. . . . {with torque limiters (F16K 31/041 takes precedence)}
F16K 31/05	. . . specially adapted for operating hand-operated valves or for combined motor and hand operation
F16K 31/055	. . . . {for rotating valves}
F16K 31/06	. . using a magnet {e.g. diaphragm valves, cutting off by means of a liquid}
F16K 31/0603	. . . {Multiple-way valves}
F16K 31/0606	. . . . {fluid passing through the solenoid coil}
F16K 31/061	. . . . {Sliding valves}
F16K 31/0613	. . . . . {with cylindrical slides}
F16K 31/0617	. . . . . {with flat slides}
F16K 31/062	. . . . {the valve element being at least partially ball-shaped}
F16K 31/0624	. . . . {Lift valves}
F16K 31/0627	. . . . . {with movable valve member positioned between seats}
F16K 31/0631	. . . . . . {with ball shaped valve members}
F16K 31/0634	. . . . . {with fixed seats positioned between movable valve members}
F16K 31/0637	. . . . . . {with ball shaped valve members}
F16K 31/0641	. . . . {the valve member being a diaphragm}
F16K 31/0644	. . . {One-way valve}
F16K 31/0648	. . . . {the armature and the valve member forming one element (F16K 31/0651 takes precedence)}
F16K 31/0651	. . . . {the fluid passing through the solenoid coil}
F16K 31/0655	. . . . {Lift valves}
F16K 31/0658	. . . . . {Armature and valve member being one single element}
F16K 31/0662	. . . . . . {with a ball-shaped valve member}
F16K 31/0665	. . . . . {with valve member being at least partially ball-shaped (F16K 31/0662 takes precedence)}
F16K 31/0668	. . . . {Sliding valves}
F16K 31/0672	. . . . {the valve member being a diaphragm}
F16K 31/0675	. . . {Electromagnet aspects, e.g. electric supply therefor}
F16K 31/0679	. . . . {with more than one energising coil}
F16K 31/0682	. . . {with an articulated or pivot armature}
F16K 31/0686	. . . {Braking, pressure equilibration, shock absorbing}
F16K 31/0689	. . . . {Braking of the valve element}
F16K 31/0693	. . . . {Pressure equilibration of the armature}
F16K 31/0696	. . . . {Shock absorbing, e.g. using a dash-pot}
F16K 31/08	. . . using a permanent magnet
F16K 31/082	. . . . {using a electromagnet and a permanent magnet}

- F16K 31/084 {the magnet being used only as a holding element to maintain the valve in a specific position, e.g. check valves ([F16K 31/082](#), [F16K 31/086](#) take precedence)}
- F16K 31/086 {the magnet being movable and actuating a second magnet connected to the closing element}
- F16K 31/088 {the movement of the first magnet being a rotating or pivoting movement}
- F16K 31/10 . . . with additional mechanism between armature and closure member
- F16K 31/105 {for rotating valves}
- F16K 31/12 . . actuated by fluid ({fluid-actuated lift valves [F16K 1/126](#) ; fluid-actuated check valves [F16K 15/00](#); fluid-actuated safety valves [F16K 17/00](#))}
- F16K 31/122 . . the fluid acting on a piston ([F16K 31/143](#), [F16K 31/163](#), [F16K 31/363](#), [F16K 31/383](#) take precedence)
- F16K 31/1221 . . . {one side of the piston being spring-loaded}
- F16K 31/1223 . . . {one side of the piston being acted upon by the circulating fluid}
- F16K 31/1225 . . . {with a plurality of pistons}
- F16K 31/1226 . . . {the fluid circulating through the piston}
- F16K 31/1228 . . . {with a stationary piston}
- F16K 31/124 . . . servo actuated
- F16K 31/1245 {with more than one valve}
- F16K 31/126 . . the fluid acting on a diaphragm, bellows, or the like ([F16K 31/145](#), [F16K 31/165](#), [F16K 31/365](#), [F16K 31/385](#) take precedence)
- F16K 31/1262 . . . {one side of the diaphragm being spring loaded}
- F16K 31/1264 {with means to allow the side on which the springs are positioned to be altered}
- F16K 31/1266 . . . {one side of the diaphragm being acted upon by the circulating fluid}
- F16K 31/1268 . . . {with a plurality of the diaphragms}
- F16K 31/128 . . . servo actuated
- F16K 31/14 . . for mounting on, or in combination with, hand-actuated valves
- F16K 31/143 . . . the fluid acting on a piston
- F16K 31/145 . . . the fluid acting on a diaphragm
- F16K 31/16 . . with a mechanism, other than pulling-or pushing-rod, between fluid motor and closure member ([with float F16K 31/18](#))
- F16K 31/163 . . . the fluid acting on a piston
- F16K 31/1635 {for rotating valves}
- F16K 31/165 . . . the fluid acting on a diaphragm
- F16K 31/1655 {for rotating valves}
- F16K 31/18 . . actuated by a float (floats [F16K 33/00](#); float-actuated valves in steam-traps [F16T 1/20](#), in boilers [F22D 5/08](#))
- F16K 31/20 . . . actuating a lift valve
- F16K 31/22 with the float rigidly connected to the valve
- F16K 31/24 with a transmission with parts linked together from a single float to a single valve

- F16K 31/26 with the valve guided for rectilinear movement and the float attached to a pivoted arm
 - F16K 31/265 {with a second lever or toggle between the pivoted arm and the valve}
 - F16K 31/28 with two or more floats actuating one valve
 - F16K 31/30 actuating a gate valve or sliding valve
 - F16K 31/32 actuating a tap or cock
 - F16K 31/34 acting on pilot valve controlling the cut-off apparatus
 - F16K 31/36 in which fluid from the circuit is constantly supplied to the fluid motor
 - F16K 31/363 the fluid acting on a piston ([F16K 31/38 takes precedence](#))
 - F16K 31/365 the fluid acting on a diaphragm
 - F16K 31/38 in which the fluid works directly on both sides of the fluid motor, one side being connected by means of a restricted passage and the motor being actuated by operating a discharge from that side ([F16K 31/40 takes precedence](#))
 - F16K 31/383 the fluid acting on a piston
 - F16K 31/3835 {the discharge being effected through the piston and being blockable by a mechanically-actuated member making contact with the piston}
 - F16K 31/385 the fluid acting on a diaphragm
 - F16K 31/3855 {the discharge being effected through the diaphragm and being blockable by a mechanically-actuated member making contact with the diaphragm}
 - F16K 31/40 with electrically-actuated member in the discharge of the motor
 - F16K 31/402 {acting on a diaphragm}
 - F16K 31/404 {the discharge being effected through the diaphragm and being blockable by an electrically-actuated member making contact with the diaphragm}
 - F16K 31/406 {acting on a piston}
 - F16K 31/408 {the discharge being effected through the piston and being blockable by an electrically-actuated member making contact with the piston}
 - F16K 31/42 by means of electrically-actuated members in the supply or discharge conduits of the fluid motor ([F16K 31/40 takes precedence](#))
 - F16K 31/423 {the actuated members consisting of multiple way valves}
 - F16K 31/426 {the actuated valves being cylindrical sliding valves}
 - F16K 31/44 Mechanical actuating means
 - F16K 31/445 {with exterior sleeve}
 - F16K 31/46 for remote operation
 - F16K 31/465 {by flexible transmission means, e.g. cable, chain, bowden wire}
- WARNING**
- not complete, see also [F16K 31/46](#)
- F16K 31/48 actuated by mechanical timing-device, e.g. with dash-pot ([self-closing valves F16K 21/16](#))

- F16K 31/485 . . . {and specially adapted for gas valves}
- F16K 31/50 . . with screw-spindle {or internally threaded actuating means}
- F16K 31/502 . . . {actuating pivotable valve members}
- F16K 31/504 . . . {the actuating means being rotatable, rising, and having internal threads which co-operate with threads on the outside of the valve body}
- F16K 31/506 . . . {with plural sets of thread, e.g. with different pitch}
- WARNING**
not yet complete, see also [F16K 31/50](#)
- F16K 31/508 . . . {the actuating element being rotatable, non-rising, and driving a non-rotatable axially-sliding element}
- WARNING**
not yet complete, see also [F16K 31/50](#)
- F16K 31/52 . . with crank, eccentric, or cam
- F16K 31/521 . . . {comprising a pivoted disc or flap}
- F16K 31/522 . . . {comprising a tap or cock}
- F16K 31/523 . . . {comprising a sliding valve}
- F16K 31/524 . . . with a cam
- F16K 31/52408 {comprising a lift valve}
- F16K 31/52416 {comprising a multiple-way lift valve}
- F16K 31/52425 {with a ball-shaped valve member}
- F16K 31/52433 {with a streamlined or helically shaped valve member, e.g. for reducing flow losses or guiding the fluid flow}
- F16K 31/52441 {with a pivoted disc or flap}
- F16K 31/5245 {with a valve member of conical shape}
- F16K 31/52458 {comprising a tap or cock}
- F16K 31/52466 {comprising a multiple-way tap or cock}
- F16K 31/52475 {comprising a sliding valve}
- F16K 31/52483 {comprising a multiple-way sliding valve}
- F16K 31/52491 {comprising a diaphragm cut-off apparatus}
- F16K 31/528 . . . with pin and slot
- F16K 31/5282 {comprising a pivoted disc or flap}
- F16K 31/5284 {comprising a tap or cock}
- F16K 31/5286 {comprising a sliding valve}
- F16K 31/5288 {comprising a diaphragm cut-off apparatus}
- F16K 31/53 . . with toothed gearing
- F16K 31/535 . . . {for rotating valves ([F16K 31/54](#) takes precedence)}
- F16K 31/54 . . . with pinion and rack
- F16K 31/56 . . without stable intermediate position, e.g. with snap action
- F16K 31/563 . . . {for rotating or pivoting valves}

- F16K 31/566 . . . {using a bistable spring device arranged symmetrically around the actuating stem}
- F16K 31/58 . . comprising a movable discharge-nozzle
- F16K 31/60 . . Handles {(form, features or function of taps or faucet handles for domestic plumbing installations [E03C 1/04](#))}
- F16K 31/602 . . . {Pivoting levers, e.g. single-sided ([F16K 31/605](#) takes precedence)}
- F16K 31/605 . . . {for single handle mixing valves}
- F16K 31/607 . . . {characterised by particular material, by special measures to obtain aesthetical effects, or by auxiliary functions, e.g. storage}

WARNING

not complete, see also [F16K 31/60](#)

- F16K 31/62 . . Pedals or like operating members, e.g. actuated by knee or hip

F16K 33/00 **Floats for actuation of valves or other apparatus** {(float actuated valves [F16K 31/18](#))}

F16K 35/00 **Means to prevent accidental or unauthorised actuation**

- F16K 35/02 . to be locked or disconnected by means of a pushing or pulling action
- F16K 35/022 . . {the locking mechanism being actuated by a separate actuating element}
- F16K 35/025 . . . {said actuating element being operated manually (e.g. a push-button located in the valve actuator)}
- F16K 35/027 . . {the locking mechanism being actuated by pushing or pulling the valve actuator, the valve actuator being rotated subsequently to bring the valve closure element in the desired position}
- F16K 35/04 . Yieldingly resisting the actuation
- F16K 35/06 . using a removable actuating or locking member, e.g. a key ([F16K 35/10](#), [F16K 35/12](#) take precedence)
- F16K 35/08 . requiring setting according to a code, e.g. permutation locks
- F16K 35/10 . with locking caps or locking bars
- F16K 35/12 . with sealing wire
- F16K 35/14 . interlocking two or more valves
- F16K 35/16 . with locking member actuated by magnet

F16K 37/00 **Special means in or on valves or other cut-off apparatus for indicating or recording operation thereof, or for enabling an alarm to be given**

- F16K 37/0008 . {Mechanical means ([F16K 37/0075](#) takes precedence)}
- F16K 37/0016 . . {having a graduated scale}
- F16K 37/0025 . {Electrical or magnetic means ([F16K 37/0075](#) takes precedence)}
- F16K 37/0033 . . {using a permanent magnet, e.g. in combination with a reed relays}
- F16K 37/0041 . . {for measuring valve parameters ([F16K 37/0033](#) takes precedence)}
- F16K 37/005 . . {for measuring fluid parameters ([F16K 37/0033](#) takes precedence)}
- F16K 37/0058 . {Optical means, e.g. light transmission, observation ports ([F16K 37/0075](#) takes precedence)}

- F16K 37/0066 . {Hydraulic or pneumatic means ([F16K 37/0075](#) takes precedence)}
- F16K 37/0075 . {For recording or indicating the functioning of a valve in combination with test equipment}
- F16K 37/0083 . . {by measuring valve parameters}
- F16K 37/0091 . . {by measuring fluid parameters}

F16K 39/00**Devices for relieving the pressure on the sealing faces**

- F16K 39/02 . for lift valves
- F16K 39/022 . . {using balancing surfaces}
- F16K 39/024 . . {using an auxiliary valve on the main valve}
- F16K 39/026 . . {using an external auxiliary valve}
- F16K 39/028 . . {with pivoted closure members, e.g. butterfly valves}
- F16K 39/04 . for sliding valves
- F16K 39/045 . . {of rotating or pivoting type}

WARNING

Not yet complete, see [F16K 39/04](#)]

- F16K 39/06 . for taps or cocks

F16K 41/00**Spindle sealings**

- F16K 41/003 . {by fluid}
- F16K 41/006 . {by establishing an under-pressure}
- F16K 41/02 . with stuffing-box; {Sealing rings}
- F16K 41/023 . . {for spindles which only rotate, i.e. non-rising spindles ([F16K 41/043](#), [F16K 41/063](#) and [F16K 41/083](#) take precedence)}
- F16K 41/026 . . . {for rotating valves}
- F16K 41/04 . . with at least one ring of rubber or like material between spindle and housing
- F16K 41/043 . . . {for spindles which only rotate, i.e. non-rising spindles}
- F16K 41/046 {for rotating valves}
- F16K 41/06 . . with at least one ring attached to both spindle and housing
- F16K 41/063 . . . {for spindles which only rotate, i.e. non-rising spindles}

WARNING

Not yet complete, see also [F16K 41/06](#)]

- F16K 41/066 {for rotating valves}

WARNING

Not yet complete, see also [F16K 41/06](#)]

- F16K 41/08 . . with at least one ring provided with axially-protruding peripheral closing-lip
- F16K 41/083 . . . {for spindles which only rotate, i.e. non-rising spindles}

WARNING

Not yet complete, see also [F16K 41/08](#)]

- F16K 41/086 {for rotating valves}
- WARNING**
- Not yet complete, see also [F16K 41/08](#)]
- F16K 41/10 . with diaphragm, e.g. shaped as bellows or tube
- F16K 41/103 . . {the diaphragm and the closure member being integrated in one member}
- F16K 41/106 . . {for use with rotating spindles or valves ([F16K 41/125](#) takes precedence)}
- F16K 41/12 . . with approximately flat diaphragm
- F16K 41/125 . . . {the part of the spindle traversing the diaphragm being rotatable or pivotable}
- F16K 41/14 . with conical flange on the spindle which co-operates with a conical surface in the housing
- F16K 41/16 . with a flange on the spindle which rests on a sealing ring
- F16K 41/18 . . sealing only when the closure member is in the opened position
- F16K 43/00** **Auxiliary closure means in valves, which in case of repair, e.g. rewashing, of the valve, can take over the function of the normal closure means; Devices for temporary replacement of parts of valves for the same purpose**
- F16K 43/001 . {an auxiliary valve being actuated independently of the main valve}
- F16K 43/003 . . {the auxiliary valve being a rotary valve}
- F16K 43/005 . {an auxiliary valve closing automatically when the main valve is being disassembled}
- F16K 43/006 . . {the auxiliary valve being held open by the main valve}
- F16K 43/008 . {the main valve having a back-seat position, e.g. to service the spindle sealing}
- F16K 47/00** **Means in valves for absorbing fluid energy {e.g. cushioning of opening or closure movement, eliminating of vibrations of the valve member} (for pipes [F16L 55/00](#))**
- F16K 47/02 . for preventing water-hammer or noise {e.g. for sanitary applications, toilet flush reservoirs ([F16K 47/04](#) and [F16K 47/08](#) take precedence)}
- F16K 47/023 . . {for preventing water-hammer, e.g. damping of the valve movement}
- F16K 47/026 . . {preventing noise in a single handle mixing valve}
- F16K 47/04 . for decreasing pressure {or noise level}, the throttle being incorporated in the closure member
- F16K 47/045 . . {and the closure member being rotatable}
- F16K 47/06 . . with a throttle in the form of a helical channel
- F16K 47/08 . for decreasing pressure {or noise level} and having a throttling member separate from the closure member, {e.g. screens, slots, labyrinths}
- F16K 47/10 . . in which the medium in one direction must flow through the throttling channel, and in the other direction may flow through a much wider channel parallel to the throttling channel
- F16K 47/12 . . the throttling channel being of helical form
- F16K 47/14 . . the throttling member being a perforated membrane
- F16K 47/16 . . the throttling member being a cone

F16K 49/00	Means in or on valves for heating or cooling (for pipes F16L 53/00 ; thermal insulation in connection with pipes or pipe systems F16L 59/16)
F16K 49/002	. {Electric heating means}
F16K 49/005	. {Circulation means for a separate heat transfer fluid}
F16K 49/007	. . {located within the obturating element}
F16K 51/00	Other details not peculiar to particular types of valves or cut-off apparatus
F16K 51/02	. specially adapted for high-vacuum installations
F16K 99/00	Subject matter not provided for in other groups of this subclass
F16K 99/0001	. {Micro-valves (micro-devices B81B 1/00 ; manufacture or treatment of devices or systems in or on a substrate B81C 1/00 ; micro-fluidic structures B01L 3/5027 ; micro-pumps F04B 19/006)}
F16K 99/0003	. . {Constructional types of microvalves; Details of the cutting-off member}
F16K 99/0005	. . . {Lift valves}
F16K 99/0007	. . . . {of cantilever type}
F16K 99/0009	. . . . {the valve element held by multiple arms}
F16K 99/0011	. . . {Gate valves or sliding valves}
F16K 99/0013	. . . {Rotary valves}
F16K 99/0015	. . . {Diaphragm or membrane valves}
F16K 99/0017	. . . {Capillary or surface tension valves, e.g. using electro-wetting or electro-capillarity effects}
F16K 99/0019	. . . {Valves using a micro-droplet or micro-bubble as the valve member}
F16K 99/0021	. . . {No-moving-parts valves}
F16K 99/0023	. . . {with ball-shaped valve members}
F16K 99/0025	. . . {Valves using microporous membranes}
F16K 99/0026	. . . {Valves using channel deformation}
F16K 99/0028	. . . {Valves having multiple inlets or outlets}
F16K 99/003	. . . {Valves for single use only}
F16K 99/0032	. . . {using phase transition or influencing viscosity}
F16K 99/0034	. . {Operating means specially adapted for microvalves}
F16K 99/0036	. . . {operated by temperature variations}
F16K 99/0038	. . . . {using shape memory alloys}
F16K 99/004	. . . . {using radiation}
F16K 99/0042	. . . {Electric operating means therefor}
F16K 99/0044	. . . . {using thermo-electric means}
F16K 99/0046	. . . . {using magnets}
F16K 99/0048	. . . . {using piezoelectric means}
F16K 99/0049	. . . . {using an electroactive polymer [EAP]}
F16K 99/0051	. . . . {using electrostatic means}
F16K 99/0053	. . . . {using magnetostrictive means}

F16K 99/0055	. . . {actuated by fluids}
F16K 99/0057	. . . . {the fluid being the circulating fluid itself, e.g. check valves}
F16K 99/0059	. . . . {actuated by a pilot fluid}
F16K 99/0061	. . . . {actuated by an expanding gas or liquid volume}
F16K 99/0063	. . . {using centrifugal forces}
F16K 99/0065	. . . {using chemical activation}
F16K 99/0067	. . . . {actuated by a pyrotechnical charge}
F16K 2099/0069	. . {Bistable microvalves}
F16K 2099/0071	. . {with latching means}
F16K 2099/0073	. {Fabrication methods specifically adapted for microvalves}
F16K 2099/0074	. . {using photolithography, e.g. etching}
F16K 2099/0076	. . {using electrical discharge machining [EDM], milling or drilling}
F16K 2099/0078	. . {using moulding or stamping}
F16K 2099/008	. . {Multi-layer fabrications}
F16K 2099/0082	. {Microvalves adapted for a particular use}
F16K 2099/0084	. . {Chemistry or biology, e.g. "lab-on-a-chip" technology}
F16K 2099/0086	. . {Medical applications}
F16K 2099/0088	. . . {Implanted devices}
F16K 2099/009	. . {Fluid power devices}
F16K 2099/0092	. . {Inkjet printers}
F16K 2099/0094	. . {Micro-pumps}
F16K 2099/0096	. . {Fuel injection devices}
F16K 2099/0098	. . {Refrigeration circuits, e.g. for cooling integrated circuits}