

# 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:

<a href="#">A47J 27/09</a>	Safety devices for pressure cookers
<a href="#">A47J 31/46</a>	Dispensing spouts, drain valves or like beverage-making apparatus
<a href="#">A61B 5/0235</a>	Valves specially adapted for measuring pressure in heart or blood vessels
<a href="#">A61F 2/24</a>	Heart valves
<a href="#">A61M 16/20</a>	Valves specially adapted for medical respiratory devices
<a href="#">A61M 39/00</a>	Tube connectors, tube couplings, valves or branch units specially adapted for medical use in general
<a href="#">A62B 9/02</a>	Valves for respiratory apparatus
<a href="#">A62B 18/10</a>	Valves for breathing masks or helmets
<a href="#">A62C</a>	Fire extinguishers
<a href="#">{B01D 35/04}</a>	{Plug, tap, or cock filters}
<a href="#">B05B</a>	Nozzles, spray heads or other discharge apparatus for spraying or atomising
<a href="#">B60C 29/00</a>	Arrangements of tyre-inflating valves relative to tyres or wheel rims; Connection of valves to wheel rims, tyres or other inflatable elastic bodies
<a href="#">B60G 17/048</a>	Valves specially adapted for adjusting vehicle fluid-spring characteristics
<a href="#">B60T</a>	Valves specially adapted for vehicle brake control systems
<a href="#">B62D 5/08</a>	Vehicle power-assisted steering characterised by the type of valve used
<a href="#">B63B 7/00, B63C 9/00</a>	Arrangement of inflating valves for floatable life-saving equipment
<a href="#">B65D 47/04</a>	Container closures with discharging valves
<a href="#">B65D 90/32</a>	Safety valves for large containers
<a href="#">B65D 90/54</a>	Gates or closures on large containers
<a href="#">B67C 3/28</a>	Flow control devices for bottling liquids
<a href="#">B67D</a>	Dispensing, delivering or transferring liquids
<a href="#">{C21B 9/12}</a>	{Hot-blast valves for blast furnaces}
<a href="#">E02B 8/00</a>	Details, e.g. valves, of barrages or weirs
<a href="#">E02B 13/02</a>	Closures for irrigation conduits
<a href="#">{E03C 1/04}</a>	{Water-basin installations specially adapted for wash-basins or baths}
<a href="#">{E03C 1/05}</a>	{Arrangements on wash-basins for the remote control of taps}
<a href="#">E03D</a>	Flushing valves for water-closets or urinals
<a href="#">{E03F 7/04}</a>	{Valves for preventing return flow in sewer systems}
<a href="#">E05F 3/12</a>	Valve arrangements in door closers
<a href="#">E21B 21/10</a>	Valve arrangements in drilling-fluid circulation systems
<a href="#">E21B 34/00</a>	Valve arrangements for boreholes or wells
<a href="#">{E21D 15/51}</a>	{Arrangement of relief valves in hydraulic mine props}
<a href="#">F01B 25/10</a>	Working-fluid valves for controlling machines or engines in general or of positive-displacement type
<a href="#">F01D 17/10</a>	Final actuators for controlling non-positive displacement machines or engines
<a href="#">F01L</a>	Cyclically operated valves for machines or engines
<a href="#">F02D 9/08</a>	Throttle valves for controlling combustion engines
<a href="#">F02K 9/58</a>	Propellant feed valves for rocket-engines
<a href="#">F02M</a>	Carburettors, fuel injection
<a href="#">F02M 59/46</a>	Valves for fuel injection pumps
<a href="#">F04</a>	Pumps
<a href="#">F16F 9/34</a>	Valves for shock absorbers
<a href="#">F16L 29/00, F16L 37/28</a>	Pipe joints or quick-acting couplings with fluid cut-off means
<a href="#">F16L 55/00</a>	Arrangement of valves in pipes
<a href="#">F16L 55/055</a>	Valves specially adapted to prevent or minimise the effect of water hammer
<a href="#">F16L 55/46</a>	Launching devices for pigs or moles
<a href="#">F16N 23/00</a>	Check valves for lubrication systems
<a href="#">{F16T}</a>	{Draining-off liquids from steam traps}
<a href="#">F17C 13/04</a>	Arrangement of valves in pressure vessels
<a href="#">F22B 37/44</a>	Arrangement of safety valves on steam boilers
<a href="#">F22D 5/34</a>	Application of valves to automatic water-feed in boiler
<a href="#">F23L 13/00</a>	Valves for air supply control to burners
<a href="#">{F23Q 2/16}</a>	{Valves for lighters with gaseous fuel and adjustable flame}
<a href="#">F24C 3/12, F24C 5/16</a>	Arrangement of valves on stoves or ranges
<a href="#">F24F</a>	Air conditioning; Ventilation

## F16K

(continued)

[F25B 41/04](#)  
[G05D](#)  
[G10B 3/06](#)  
[G10D 9/04](#)  
[{G21C 9/06}](#)  
[{H01M 2/12}](#)

Disposition of fluid circulation valves in refrigeration machines  
 Controlling non-electric variables  
 Valves for organs  
 Valves for other wind-actuated musical instruments  
 {Safety valves structurally associated with nuclear reactors}  
 {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:

<a href="#">F16K 31/11</a>	covered by	<a href="#">F16K 31/06</a> , <a href="#">F16K 31/08</a> , <a href="#">F16K 31/10</a>
<a href="#">F16K 31/64</a>	covered by	<a href="#">G05D</a>
<a href="#">F16K 31/66</a>	covered by	<a href="#">F16K 31/06</a> ; <a href="#">H01F</a>
<a href="#">F16K 31/68</a>	covered by	<a href="#">G05D</a>
<a href="#">F16K 31/70</a>	covered by	<a href="#">F16K 31/002</a>
<a href="#">F16K 31/72</a>	covered by	<a href="#">F16K 31/00</a>

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

In groups [F16K 1/00](#) - [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.

**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](#))**

1/02 . with screw-spindle ([F16K 1/12](#) - [F16K 1/28](#) take precedence; actuating mechanisms with screw-spindles [F16K 31/50](#))

1/04 . . with a cut-off member rigid with the spindle, e.g. main valves

1/06 . . Special arrangements for improving the flow, e.g. special shape of passages or casings

1/08 . . . in which the spindle is perpendicular to the general direction of flow

1/10 . . . in which the spindle is inclined to the general direction of flow

1/12 . with streamlined valve member around which the fluid flows when the valve is opened

1/123 . . {with stationary valve member and moving sleeve}

1/126 . . {actuated by fluid}

1/14 . with ball-shaped valve member (check valves [F16K 15/04](#))

1/16 . with pivoted closure-members

1/165 . . {with a plurality of closure members}

1/18 . . with pivoted discs or flaps

1/20 . . . with axis of rotation arranged externally of valve member

1/2007 . . . {specially adapted operating means therefor (operating means per se [F16K 31/00](#))}

1/2014 . . . {Shaping of the valve member}

1/2021 . . . {with a plurality of valve members}

1/2028 . . . {Details of bearings for the axis of rotation}

1/2035 . . . . {the axis of rotation having only one bearing}

1/2042 . . . . {Special features or arrangements of the sealing}

1/205 . . . . . {the sealing being arranged on the valve member}

1/2057 . . . . . {the sealing being arranged on the valve seat}

1/2064 . . . . . {with a channel- or U-shaped seal covering a central body portion}

1/2071 . . . . . {and being forced into sealing contact with the valve member by a spring or a spring-like member}

1/2078 . . . . . {Sealing means for the axis of rotation}

1/2085 . . . . . {Movable sealing bodies}

1/2092 . . . . . {the movement being caused by the flowing medium}

1/22 . . . with axis of rotation crossing the valve member, e.g. butterfly valves

1/221 . . . . {specially adapted operating means therefor (operating means per se [F16K 31/00](#))}

1/222 . . . . {Shaping of the valve member}

1/223 . . . . {with a plurality of valve members}

1/224 . . . . {Details of bearings for the axis of rotation}

1/225 . . . . . {the axis of rotation having only one bearing}

1/226 . . . . Shaping or arrangements of the sealing

1/2261 . . . . . {the sealing being arranged on the valve member}

1/2263 . . . . . {the sealing being arranged on the valve seat}

1/2265 . . . . . {with a channel- or U-shaped seal covering a central body portion}

1/2266 . . . . . {and being forced into sealing contact with the valve member by a spring or a spring-like member}

1/2268 . . . . . {Sealing means for the axis of rotation}

1/228 . . . . . Movable sealing bodies

1/2285 . . . . . {the movement being caused by the flowing medium}

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

1/26 . . Shape or arrangement of the sealing {Not used}

1/28 . . . Movable sealing bodies {Not used}

1/30 . specially adapted for pressure containers

1/301 . . {only shut-off valves, i.e. valves without additional means}

1/302 . . . {with valve member and actuator on the same side of the seat}

- 1/303 . . . {with a valve member, e.g. stem or shaft, passing through the seat}
- 1/304 . . {Shut-off valves with additional means}
- 1/305 . . . {with valve member and actuator on the same side of the seat}
- 1/306 . . . {with a valve member, e.g. stem or shaft, passing through the seat}
- 1/307 . . {Additional means used in combination with the main valve}
- 1/308 . . {Connecting means}
- 1/32 . Details (details of more general applicability [F16K 25/00 - F16K 51/00](#))
- 1/34 . . Cutting-off parts, e.g. valve members, seats ([F16K 1/06](#), [F16K 1/12](#), [F16K 1/14](#), [F16K 1/26](#) take precedence)
- 1/36 . . . Valve members (for double-seat valves [F16K 1/44](#) {for butterfly valves [F16K 1/222](#), [F16K 1/223](#)})
- 1/38 . . . . of conical shape
- 1/385 . . . . {contacting in the closed position, over a substantial axial length, a seat surface having the same inclination}
- 1/40 . . . . of helical shape
- 1/42 . . . Valve seats (for double-seat valves [F16K 1/44](#))
- 1/422 . . . . {attachable by a threaded connection to the housing}
- 1/425 . . . . {Attachment of the seat to the housing by plastical deformation, e.g. valve seat or housing being plastically deformed during mounting}
- 1/427 . . . . {Attachment of the seat to the housing by one or more additional fixing elements}
- 1/44 . . . Details of seats or valve members of double-seat valves
- 1/443 . . . . {the seats being in series}
- 1/446 . . . . {with additional cleaning or venting means between the two seats}
- 1/46 . . . Attachment of sealing rings
- 1/465 . . . . {to the valve seats}
- 1/48 . . Attaching valve members to screw-spindles
- 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}
- 1/485 . . . . {with a groove in the spindle}
- 1/487 . . . {by a fixing element extending in the axial direction of the spindle, e.g. a screw}
- 1/50 . . Preventing rotation of valve members
- 1/52 . . Means for additional adjustment of the rate of flow
- 1/523 . . . {for limiting the maximum flow rate, using a stop}
- 1/526 . . . {for limiting the maximum flow rate, using a second valve}
- 1/54 . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve
- 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](#))**
- 3/02 . with flat sealing faces; Packings therefor
- 3/0209 . . {the valve having a particular passage, e.g. provided with a filter, throttle or safety device}
- 3/0218 . . {with only one sealing face}
- 3/0227 . . {Packings}
- 3/0236 . . . {the packing being of a non-resilient material, e.g. ceramic, metal}
- 3/0245 . . {Curtain gate valves}
- 3/0254 . . {being operated by particular means}
- 3/0263 . . {using particular material or covering means}
- 3/0272 . . {permitting easy assembly or disassembly}
- 3/0281 . . {Guillotine or blade-type valves, e.g. no passage through the valve member}
- 3/029 . . {with two or more gates}
- 3/03 . . with a closure member in the form of an iris-diaphragm
- 3/04 . . with pivoted closure members
- 3/06 . . . in the form of closure plates arranged between supply and discharge passages ([F16K 3/10](#) takes precedence)
- 3/08 . . . . with circular plates rotatable around their centres
- 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}
- 3/10 . . . with special arrangements for separating the sealing faces or for pressing them together
- 3/12 . . with wedge-shaped arrangements of sealing faces
- 3/14 . . . with special arrangements for separating the sealing faces or for pressing them together
- 3/16 . . with special arrangements for separating the sealing faces or for pressing them together ([F16K 3/10](#), [F16K 3/14](#) take precedence)
- 3/18 . . . by movement of the closure members
- 3/182 . . . . {by means of toggle links}
- 3/184 . . . . {by means of cams}
- 3/186 . . . . {by means of cams of wedge form}
- 3/188 . . . . {by means of hydraulic forces}
- 3/20 . . . by movement of the seats
- 3/202 . . . . {by movement of toggle links}
- 3/205 . . . . {by means of cams}
- 3/207 . . . . {by means of hydraulic forces}
- 3/22 . with sealing faces shaped as surfaces of solids of revolution ([F16K 13/02](#) takes precedence; with resilient valve members [F16K 3/28](#))
- 3/24 . . with cylindrical valve members
- 3/243 . . . {Packings ([F16K 3/246](#) takes precedence)}
- 3/246 . . . {Combination of a sliding valve and a lift valve}
- 3/26 . . . with fluid passages in the valve member
- 3/262 . . . . {with a transverse bore in the valve member}
- 3/265 . . . . {with a sleeve sliding in the direction of the flow line}
- 3/267 . . . . {Combination of a sliding valve and a lift valve ([F16K 3/262](#), [F16K 3/265](#) take precedence)}
- 3/28 . with resilient valve members
- 3/30 . Details
- 3/312 . . Line blinds
- 3/314 . . Forms or construction of slides; Attachment of the slide to the spindle
- 3/316 . . Guiding of the slide
- 3/3165 . . . {with rollers or balls}
- 3/32 . . Means for additional adjustment of the rate of flow

- 3/34 . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve
- 3/36 . . Features relating to lubrication
- 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)**
- 5/02 . with plugs having conical surfaces; Packings therefor
- 5/0207 . . {with special plug arrangement, e.g. special shape or built in means}
- 5/0214 . . {Plug channel at 90 degrees to the inlet}
- 5/0221 . . {Fixed plug and turning sleeve}
- 5/0228 . . {with a conical segment mounted around a supply pipe}
- 5/0235 . . {with the angle the spindle makes housing being other than 90 degrees}
- 5/0242 . . {Spindles and actuating means}
- 5/025 . . {Particular coverings or materials}
- 5/0257 . . {Packings}
- 5/0264 . . . {in the housing}
- 5/0271 . . . {between housing and plug}
- 5/0278 . . . {on the plug}
- 5/0285 . . . {spindle sealing}
- 5/0292 . . {Easy mounting or dismounting means}
- 5/04 . with plugs having cylindrical surfaces; Packings therefor
- 5/0407 . . {with particular plug arrangements, e.g. particular shape or built-in means}
- 5/0414 . . {Plug channel at 90 degrees to the inlet}
- 5/0421 . . {Fixed plug and turning sleeve}
- 5/0428 . . {with a cylindrical segment mounted around a supply pipe}
- 5/0435 . . {the angle the spindle makes with the housing being other than 90 degrees}
- 5/0442 . . {Spindles and actuating means}
- 5/045 . . {Particular coverings and materials}
- 5/0457 . . {Packings}
- 5/0464 . . . {in the housing}
- 5/0471 . . . {between housing and plug}
- 5/0478 . . . {on the plug}
- 5/0485 . . . {Spindle sealing}
- 5/0492 . . {Easy mounting or dismounting means}
- 5/06 . with plugs having spherical surfaces; Packings therefor
- 5/0605 . . {with particular plug arrangements, e.g. particular shape or built-in means}
- 5/061 . . {knee-joint}
- 5/0615 . . {the angle the spindle makes with the housing being other than 90 degrees}
- 5/0621 . . {with a spherical segment mounted around a supply pipe}
- 5/0626 . . {Easy mounting or dismounting means}
- 5/0631 . . . {between two flanges}
- 5/0636 . . . {the spherical plug being insertable from the top of the housing}
- 5/0642 . . . {the spherical plug being insertable from one and only one side of the housing}
- 5/0647 . . {Spindles or actuating means}
- 5/0652 . . . {for remote operation}
- 5/0657 . . {Particular coverings or materials}
- 5/0663 . . {Packings}
- 5/0668 . . . {Single packings}
- 5/0673 . . . {Composite packings}
- 5/0678 . . . . {in which only one of the components of the composite packing is contacting the plug}
- 5/0684 . . . {on the plug}
- 5/0689 . . . {between housing and plug}
- 5/0694 . . . {Spindle sealings}
- 5/08 . Details
- 5/10 . . Means for additional adjustment of the rate of flow
- 5/103 . . . {specially adapted for gas valves}
- 5/106 . . . . {with pilot flame}
- 5/12 . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve
- 5/14 . . Special arrangements for separating the sealing faces or for pressing them together
- 5/16 . . . for plugs with conical surfaces
- 5/161 . . . . {with the housing or parts of the housing mechanically pressing the seal against the plug}
- 5/162 . . . . {with the plugs or parts of the plugs mechanically pressing the seal against the housing}
- 5/163 . . . . . {adjustable in height}
- 5/165 . . . . . {Means pressing on the small diameter}
- 5/166 . . . . . {Means pressing on the large diameter}
- 5/167 . . . . . {Means pressing radially}
- 5/168 . . . . . {Sealing effected by the flowing medium}
- 5/18 . . . for plugs with cylindrical surfaces
- 5/181 . . . . {with the housing or parts of the housing mechanically pressing the seals against the plugs}
- 5/182 . . . . . {by means of conical surfaces}
- 5/184 . . . . . {with the plugs or parts of the plugs mechanically pressing the seals against the housing}
- 5/185 . . . . . {by means of conical surfaces}
- 5/187 . . . . . {with rolling action}
- 5/188 . . . . . {Sealing effected by the flowing medium}
- 5/20 . . . for plugs with spherical surfaces
- 5/201 . . . . {with the housing or parts of the housing mechanically pressing the seal against the plug}
- 5/202 . . . . . {with conical surfaces}
- 5/204 . . . . . {with the plugs or parts of the plugs mechanically pressing the seals against the housing}
- 5/205 . . . . . {Sealing effected by the flowing medium}
- 5/207 . . . . . {using bellows}
- 5/208 . . . . . {with tongue-shaped means}
- 5/22 . . Features relating to lubrication
- 5/222 . . . {for plugs with conical surfaces}
- 5/225 . . . {for plugs with cylindrical surfaces}
- 5/227 . . . {for plugs with spherical surfaces}



<b>7/00</b>	<b>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}</b>	11/0712	. . . . . {comprising particular spool-valve sealing means}
7/02	. with tubular diaphragm	11/0716	. . . . . {with fluid passages through the valve member (F16K 11/0704, F16K 11/0708, F16K 11/0712 take precedence)}
7/04	. . constrictable by external radial force	11/072	. . . with pivoted closure members
7/045	. . . {by electric or magnetic means}	11/074	. . . . . with flat sealing faces
7/06	. . . by means of a screw-spindle, cam, or other mechanical means { (F16K 7/045 takes precedence) }	11/0743	. . . . . {with both the supply and the discharge passages being on one side of the closure plates}
7/061	. . . . . {Screw clamps}	11/0746	. . . . . {with two or more closure plates comprising a single lever control}
7/063	. . . . . {Lever clamps}	11/076	. . . . . with sealing faces shaped as surfaces of solids of revolution
7/065	. . . . . {Cam clamps}	11/078	. . . with pivoted and linearly movable closure members
7/066	. . . . . {Wedge clamps}	11/0782	. . . . . {Single-lever operated mixing valves with closure members having flat sealing faces}
7/068	. . . . . {by bending the hose}	11/0785	. . . . . {the movable closure member being pivotally supported at one point and being linked to the operating lever at only one other point}
7/07	. . . by means of fluid pressure	11/0787	. . . . . {with both the supply and the discharge passages being on the same side of the closure members (F16K 11/0785 takes precedence)}
7/075	. . . . . {a rigid body being located within the tubular diaphragm}	11/08	. . comprising only taps or cocks
7/08	. . constrictable by twisting	11/083	. . . with tapered plug
7/10	. with inflatable member	11/0833	. . . . . {having all the connecting conduits situated in a single plane perpendicular to the axis of the plug}
7/12	. with flat, dished, or bowl-shaped diaphragm	11/0836	. . . . . {having all the connecting conduits situated in more than one plane perpendicular to the axis of the plug}
7/123	. . {the seat being formed on the bottom of the fluid line}	11/085	. . . with cylindrical plug
7/126	. . {the seat being formed on a rib perpendicular to the fluid line}	11/0853	. . . . . {having all the connecting conduits situated in a single plane perpendicular to the axis of the plug}
7/14	. . arranged to be deformed against a flat seat	11/0856	. . . . . {having all the connecting conduits situated in more than one plane perpendicular to the axis of the plug}
7/16	. . . the diaphragm being mechanically actuated, e.g. by screw-spindle or cam	11/087	. . . with spherical plug
7/17	. . . the diaphragm being actuated by fluid pressure	11/0873	. . . . . {the plug being only rotatable around one spindle}
7/18	. with diaphragm secured at one side only, e.g. to be laid on the seat by rolling action	11/0876	. . . . . {one connecting conduit having the same axis as the spindle}
7/20	. with a compressible solid closure member	11/10	. with two or more closure members not moving as an unit
<b>11/00</b>	<b>Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves</b>	11/105	. . {Three-way check or safety valves with two or more closure members}
11/02	. with all movable sealing faces moving as one unit	11/12	. . with one plug turning in another
11/022	. . {comprising a deformable member}	11/14	. . operated by one actuating member, e.g. a handle (with one plug turning in another F16K 11/12)
11/025	. . . {with an O-ring}	11/16	. . . which only slides, or only turns, or only swings in one plane
11/027	. . . {the fluid flowing through a constrictable tubular diaphragm}	11/161	. . . . . {only slides}
11/04	. . comprising only lift valves	11/163	. . . . . {only turns}
11/044	. . . with movable valve members positioned between valve seats	11/165	. . . . . {with the rotating spindles parallel to the closure members}
11/0445	. . . . . {Bath/shower selectors}	11/166	. . . . . {with the rotating spindles at right angles to the closure members}
11/048	. . . with valve seats positioned between movable valve members	11/168	. . . . . {only swings}
11/052	. . . with pivoted closure members, e.g. butterfly valves	11/18	. . . with separate operating movements for separate closure members
11/0525	. . . . . {the closure members being pivoted around an essentially central axis}		
11/056	. . . with ball-shaped valve members		
11/0565	. . . . . {moving in a combined straight line and rotating movement}		
11/06	. . comprising only sliding valves, {i.e. sliding closure elements}		
11/065	. . . with linearly sliding closure members		
11/0655	. . . . . {with flat slides}		
11/07	. . . . . with cylindrical slides		
11/0704	. . . . . {comprising locking elements}		
11/0708	. . . . . {comprising means to avoid jamming of the slide or means to modify the flow}		

- 11/185 . . . . {with swinging shafts}
- 11/20 . . operated by separate actuating members (with one plug turning in another [F16K 11/12](#))
- 11/202 . . . {with concentric handles}
- 11/205 . . . {with two handles at right angles to each other}
- 11/207 . . . {with two handles or actuating mechanisms at opposite sides of the housing}
- 11/22 . . . with an actuating member for each valve, e.g. interconnected to form multiple-way valves
- 11/24 . . . with an electromagnetically-operated valve, e.g. for washing machines
- 13/00 Other constructional types of cut-off apparatus (means for plugging pipes or hoses [F16L 55/10](#)); Arrangements for cutting-off**
- 13/02 . with both sealing faces shaped as small segments of a cylinder and the moving member pivotally mounted
- 13/04 . {with a breakable closure member}
- 13/06 . . {constructed to be ruptured by an explosion}
- 13/08 . Arrangements for cutting-off {not used}
- 13/10 . . by means of liquid or granular medium
- 15/00 Check valves (valves specially adapted for inflatable balls [A63B 41/00](#))**
- 15/02 . with guided rigid valve members
- 15/021 . . {the valve member being a movable body around which the medium flows when the valve is open ([F16K 15/025](#) - [F16K 15/12](#) take precedence)}
- 15/023 . . . {the valve member consisting only of a predominantly disc-shaped flat element}
- 15/025 . . {the valve being loaded by a helicoidal spring ([F16K 15/03](#) - [F16K 15/12](#) take precedence)}
- 15/026 . . . {the valve member being a movable body around which the medium flows when the valve is open}
- 15/028 . . . . {the valve member consisting only of a predominantly disc-shaped flat element}
- 15/03 . . with a hinged closure member
- 15/031 . . . {the hinge being flexible ([F16K 15/035](#) takes precedence)}
- 15/033 . . . {spring-loaded ([F16K 15/035](#) takes precedence)}
- 15/035 . . . {with a plurality of valve members}
- 15/036 . . . . {Dual valve members with hinges crossing the flow line substantially diametrical}
- 15/038 . . . . . {having a common hinge}
- 15/04 . . shaped as balls
- 15/042 . . . {with a plurality of balls}
- 15/044 . . . {spring-loaded ([F16K 15/042](#) takes precedence)}
- 15/046 . . . . {by a spring other than a helicoidal spring}
- 15/048 . . . {Ball features}
- 15/06 . . with guided stems
- 15/063 . . . {the valve being loaded by a helicoidal spring}
- 15/066 . . . . {with a plurality of valve members}
- 15/08 . . shaped as rings
- 15/10 . . . integral with, or rigidly fixed to, a common valve plate
- 15/12 . . . Springs for ring valves
- 15/14 . with flexible valve members
- 15/141 . . {the closure elements not being fixed to the valve body}
- 15/142 . . . {the closure elements being shaped as solids of revolution, e.g. toroidal or cylindrical rings}
- 15/144 . . {the closure elements being fixed along all or a part of their periphery}
- 15/145 . . . {the closure elements being shaped as a solids of revolution, e.g. cylindrical or conical}
- 15/147 . . . {the closure elements having specially formed slits or being of an elongated easily collapsible form}
- 15/148 . . {the closure elements being fixed in their centre}
- 15/16 . . with tongue-shaped laminae
- 15/18 . with actuating mechanism; Combined check valves and actuated valves
- 15/181 . . {for check valves with a hinged closure member ([F16K 15/188](#) takes precedence)}
- 15/183 . . {for ball check valves ([F16K 15/186](#), [F16K 15/188](#) take precedence)}
- 15/185 . . {for check valves with flexible valve members ([F16K 15/188](#) takes precedence)}
- 15/186 . . {Check valves which can be actuated by a pilot valve}
- 15/188 . . {Check valves combined with valves having a rotating tap or cock}
- 15/20 . specially designed for inflatable bodies, e.g. tyres ([connecting valves to inflatable bodies \[B60C 29/00\]\(#\)](#))
- 15/202 . . {and with flexible valve member}
- 15/205 . . {and with closure plug}
- 15/207 . . {and combined with other valves, e.g. safety valves}
- 17/00 Safety valves; Equalising valves, {e.g. pressure relief valves}**
- 17/003 . {reacting to pressure and temperature}
- 17/006 . {specially adapted for shelters}
- 17/02 . opening on surplus pressure on one side; closing on insufficient pressure on one side ([check valves \[F16K 15/00\]\(#\)](#))
- 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](#)
- 17/04 . . spring-loaded
- 17/0406 . . . {in the form of balls}
- 17/0413 . . . {in the form of closure plates}
- 17/042 . . . {with locking or disconnecting arrangements}
- 17/0426 . . . {with seat protecting means}
- 17/0433 . . . {with vibration preventing means}
- 17/044 . . . {with more than one spring}
- 17/0446 . . . {with an obturating member having at least a component of their opening and closing motion not perpendicular to the closing faces}

- 17/0453 . . . . {the member being a diaphragm}
- 17/046 . . . . {the valve being of the gate valve type or the sliding valve type}
- 17/0466 . . . . {with a special seating surface}
- 17/0473 . . . . {Multiple-way safety valves}
- 17/048 . . . . {combined with other safety valves, or with pressure control devices}
- 17/0486 . . . . {with mechanical actuating means}
- 17/0493 . . . . {with a spring other than a helicoidal spring}
- 17/06 . . . . with special arrangements for adjusting the opening pressure
- 17/065 . . . . {with differential piston}
- 17/08 . . . . with special arrangements for providing a large discharge passage
- 17/082 . . . . {with piston}
- 17/085 . . . . {with diaphragm}
- 17/087 . . . . {with bellows}
- 17/10 . . . . with auxiliary valve for fluid operation of the main valve
- 17/105 . . . . {using choking or throttling means to control the fluid operation of the main valve}
- 17/12 . . . . weight-loaded
- 17/14 . . . . with fracturing member
- 17/16 . . . . with fracturing diaphragm; {Rupture discs}
- 17/1606 . . . . {of the reverse-buckling-type (F16K 17/1633 takes precedence)}
- 17/1613 . . . . . {with additional cutting means}
- 17/162 . . . . . {of the non reverse-buckling-type (F16K 17/1633 takes precedence)}
- 17/1626 . . . . . {with additional cutting means}
- 17/1633 . . . . {made of graphite}
- 17/164 . . . . and remaining closed after return of the normal pressure
- 17/168 . . . . combined with manually-controlled valves, e.g. a valve combined with a safety valve
- 17/18 . . . . opening on surplus pressure on either side
- 17/19 . . . . Equalising valves predominantly for tanks  
{(when combined with safety valve by change of position F16K 17/36)}
- 17/192 . . . . with closure member in the form of a movable liquid column
- 17/194 . . . . weight-loaded
- 17/196 . . . . spring-loaded
- 17/20 . . . . Excess-flow valves (actuated in consequence of shock or similar extraneous influence F16K 17/36)
- 17/205 . . . . {specially adapted for flexible gas lines}
- 17/22 . . . . actuated by the difference of pressure between two places in the flow line
- 17/24 . . . . acting directly on the cutting-off member
- 17/26 . . . . . operating in either direction
- 17/28 . . . . . operating in one direction only
- 17/285 . . . . . {the cutting-off member being a ball (F16K 17/30 takes precedence)}
- 17/30 . . . . . spring-loaded
- 17/32 . . . . acting on a servo-mechanism or on a catch-releasing mechanism
- 17/34 . . . . in which the flow-energy of the flowing medium actuates the closing mechanism
- 17/36 . . . . actuated in consequence of extraneous circumstances, e.g. shock, change of position
- 17/363 . . . . {the closure members being rotatable or pivoting (F16K 17/386 takes precedence)}
- 17/366 . . . . {the closure member being a movable ball (F16K 17/38 takes precedence)}
- 17/38 . . . . of excessive temperature
- 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)}
- 17/386 . . . . {the closure members being rotatable or pivoting}
- 17/40 . . . . with a fracturing member, e.g. fracturing diaphragm, glass, fusible joint (valves opening on surplus pressure F16K 17/14)
- 17/403 . . . . {with a fracturing valve member}
- 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}
- 17/42 . . . . Valves preventing penetration of air in the outlet of containers for liquids
- 19/00** . . . . {Arrangements of valves and flow lines specially adapted for mixing fluids (multiple-way valves F16K 11/00)}
- 19/003 . . . . {Specially adapted for boilers}
- 19/006 . . . . {Specially adapted for faucets}
- 21/00** . . . . Fluid-delivery valves, {e.g. self-closing valves} (for liquid handling B67D; for flushing devices for water-closets or the like E03D)
- 21/02 . . . . providing a continuous small flow
- 21/04 . . . . Self-closing valves, i.e. closing automatically after operation {(pneumatic tools B25B 9/00)}
- 21/06 . . . . in which the closing movement, either retarded or not, starts immediately after opening
- 21/08 . . . . with ball-shaped closing members
- 21/10 . . . . with hydraulic brake cylinder acting on the closure member
- 21/12 . . . . with hydraulically-operated opening means; with arrangements for pressure relief before opening
- 21/14 . . . . with special means for preventing the self-closing
- 21/16 . . . . closing after a predetermined quantity of fluid has been delivered (F16K 21/10 takes precedence)
- 21/165 . . . . {with means sensing the weight of said fluid quantity}
- 21/18 . . . . closed when a rising liquid reaches a predetermined level (float-actuated valves F16K 31/18)
- 21/185 . . . . {with electrical or magnetical means, e.g. with magnetic floats, for sensing the liquid level}
- 21/20 . . . . by means making use of air-suction through an opening closed by the rising liquid
- 23/00** . . . . Valves for preventing drip from nozzles
- 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)
- 24/02 . . . . the enclosure being itself a valve, tap, or cock
- 24/04 . . . . for venting only (F16K 24/02 takes precedence)

- 24/042 . . {actuated by a float}
- 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}
- 24/046 . . . . {the assembly of float and valve element being a single spherical element}
- 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}
- 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.

- 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](#))**
  - 25/005 . {Particular materials for seats or closure elements}
  - 25/02 . Arrangements using fluid issuing from valve members or seats
  - 25/04 . Arrangements for preventing erosion, not otherwise provided for
- 27/00** **Construction of housing (methods for welding housings [B23K](#)); Use of materials therefor**
  - 27/003 . {Housing formed from a plurality of the same valve elements}
  - 27/006 . {of hydrants}
  - 27/02 . of lift valves ([for reducing the flow resistance of screw-spindle lift-valves F16K 1/06](#))
    - 27/0209 . . {Check valves or pivoted valves}
    - 27/0218 . . . {Butterfly valves}
    - 27/0227 . . . {with the valve members swinging around an axis located at the edge of or outside the valve member}
  - 27/0236 . . {Diaphragm cut-off apparatus}
  - 27/0245 . . {with ball-shaped valve members}
  - 27/0254 . . {with conical shaped valve members}
  - 27/0263 . . {multiple way valves}
  - 27/0272 . . {valves provided with a lining}
  - 27/0281 . . {Housings in two parts which can be orientated in different positions}
  - 27/029 . . {Electromagnetically actuated valves}
  - 27/04 . of sliding valves
    - 27/041 . . {cylindrical slide valves}
    - 27/042 . . . {Hydraulic fluid leak traps}
    - 27/044 . . {slide valves with flat obturating members}
    - 27/045 . . . {with pivotal obturating members}
    - 27/047 . . . {with wedge-shaped obturating members}
    - 27/048 . . {Electromagnetically actuated valves}
  - 27/06 . of taps or cocks
    - 27/062 . . {with conical plugs}
    - 27/065 . . {with cylindrical plugs}
    - 27/067 . . {with spherical plugs}
  - 27/07 . of cutting-off parts of tanks, e.g. tank-ears

- 27/08 . Guiding yokes for spindles; Means for closing housings; Dust caps, e.g. for tyre valves
- 27/10 . Welded housings
- 27/102 . . {for lift-valves}
- 27/105 . . {for gate valves}
- 27/107 . . {for taps or cocks}
- 27/12 . Covers for housings
- 29/00** **Arrangements for movement of valve members other than for opening and closing the valve, e.g. for grinding-in, for preventing sticking**
  - 29/02 . providing for continuous motion
- 31/00** **{Actuating devices;} Operating means; Releasing devices {([regulating means G05D](#))}**
  - 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](#))}
  - 31/002 . {actuated by temperature variation ([thermo-electric F16K 31/025](#))}
  - 31/003 . {operated without a stable intermediate position, e.g. with snap action ([F16K 31/56](#) takes precedence)}
  - 31/004 . {actuated by piezo-electric means}
  - 31/005 . . {Piezo-electric benders}
  - 31/006 . . . {having a free end}
  - 31/007 . . {Piezo-electric stacks}
  - 31/008 . . . {for sliding valves}
  - 31/02 . electric {([F16K 31/004](#) takes precedence)}; magnetic
    - 31/025 . . {actuated by thermo-electric means}
    - 31/04 . . using a motor
    - 31/041 . . . {for rotating valves ([F16K 31/055](#) takes precedence)}
    - 31/042 . . . . {with electric means, e.g. for controlling the motor or a clutch between the valve and the motor}
    - 31/043 . . . . {characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means}
    - 31/045 . . . . . {with torque limiters}
    - 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)}
    - 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)}
    - 31/048 . . . . {with torque limiters ([F16K 31/041](#) takes precedence)}
    - 31/05 . . . specially adapted for operating hand-operated valves or for combined motor and hand operation
      - 31/055 . . . . {for rotating valves}
      - 31/06 . . using a magnet {, e.g. diaphragm valves, cutting off by means of a liquid}
      - 31/063 . . . {Multiple-way valves}
      - 31/0606 . . . . {fluid passing through the solenoid coil}
      - 31/061 . . . . {Sliding valves}
      - 31/0613 . . . . . {with cylindrical slides}
      - 31/0617 . . . . . {with flat slides}



31/062	. . . . {the valve element being at least partially ball-shaped}	31/126	. . the fluid acting on a diaphragm, bellows, or the like ( <a href="#">F16K 31/145</a> , <a href="#">F16K 31/165</a> , <a href="#">F16K 31/365</a> , <a href="#">F16K 31/385</a> take precedence)
31/0624	. . . . {Lift valves}	31/1262	. . . {one side of the diaphragm being spring loaded}
31/0627	. . . . {with movable valve member positioned between seats}	31/1264	. . . . {with means to allow the side on which the springs are positioned to be altered}
31/0631	. . . . . {with ball shaped valve members}	31/1266	. . . {one side of the diaphragm being acted upon by the circulating fluid}
31/0634	. . . . . {with fixed seats positioned between movable valve members}	31/1268	. . . {with a plurality of the diaphragms}
31/0637	. . . . . {with ball shaped valve members}	31/128	. . . servo actuated
31/0641	. . . . {the valve member being a diaphragm}	31/14	. . for mounting on, or in combination with, hand-actuated valves
31/0644	. . . {One-way valve}	31/143	. . . the fluid acting on a piston
31/0648	. . . . {the armature and the valve member forming one element ( <a href="#">F16K 31/0651</a> takes precedence)}	31/145	. . . the fluid acting on a diaphragm
31/0651	. . . . {the fluid passing through the solenoid coil}	31/16	. . with a mechanism, other than pulling-or pushing-rod, between fluid motor and closure member ( <a href="#">with float F16K 31/18</a> )
31/0655	. . . . {Lift valves}	31/163	. . . the fluid acting on a piston
31/0658	. . . . . {Armature and valve member being one single element}	31/1635	. . . . {for rotating valves}
31/0662	. . . . . {with a ball-shaped valve member}	31/165	. . . the fluid acting on a diaphragm
31/0665	. . . . . {with valve member being at least partially ball-shaped ( <a href="#">F16K 31/0662</a> takes precedence)}	31/1655	. . . . {for rotating valves}
31/0668	. . . . {Sliding valves}	31/18	. . actuated by a float ( <a href="#">floats F16K 33/00</a> ; <a href="#">float-actuated valves in steam-traps F16T 1/20</a> , in <a href="#">boilers F22D 5/08</a> )
31/0672	. . . . {the valve member being a diaphragm}	31/20	. . . actuating a lift valve
31/0675	. . . {Electromagnet aspects, e.g. electric supply therefor}	31/22	. . . . with the float rigidly connected to the valve
31/0679	. . . . {with more than one energising coil}	31/24	. . . . with a transmission with parts linked together from a single float to a single valve
31/0682	. . . {with an articulated or pivot armature}	31/26	. . . . . with the valve guided for rectilinear movement and the float attached to a pivoted arm
31/0686	. . . {Braking, pressure equilibration, shock absorbing}	31/265	. . . . . {with a second lever or toggle between the pivoted arm and the valve}
31/0689	. . . . {Braking of the valve element}	31/28	. . . . with two ore more floats actuating one valve
31/0693	. . . . {Pressure equilibration of the armature}	31/30	. . . actuating a gate valve or sliding valve
31/0696	. . . . {Shock absorbing, e.g. using a dash-pot}	31/32	. . . actuating a tap or cock
31/08	. . . using a permanent magnet	31/34	. . . acting on pilot valve controlling the cut-off apparatus
31/082	. . . . {using a electromagnet and a permanent magnet}	31/36	. . in which fluid from the circuit is constantly supplied to the fluid motor
31/084	. . . . {the magnet being used only as a holding element to maintain the valve in a specific position, e.g. check valves ( <a href="#">F16K 31/082</a> , <a href="#">F16K 31/086</a> take precedence)}	31/363	. . . the fluid acting on a piston ( <a href="#">F16K 31/38</a> takes precedence)
31/086	. . . . {the magnet being movable and actuating a second magnet connected to the closing element}	31/365	. . . the fluid acting on a diaphragm
31/088	. . . . . {the movement of the first magnet being a rotating or pivoting movement}	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 ( <a href="#">F16K 31/40</a> takes precedence)
31/10	. . . with additional mechanism between armature and closure member	31/383	. . . . the fluid acting on a piston
31/105	. . . . {for rotating valves}	31/3835	. . . . . {the discharge being effected through the piston and being blockable by a mechanically-actuated member making contact with the piston}
31/12	. . actuated by fluid ({fluid-actuated lift valves <a href="#">F16K 1/126</a> }; fluid-actuated check valves <a href="#">F16K 15/00</a> ; fluid-actuated safety valves <a href="#">F16K 17/00</a> )	31/385	. . . . the fluid acting on a diaphragm
31/122	. . the fluid acting on a piston ( <a href="#">F16K 31/143</a> , <a href="#">F16K 31/163</a> , <a href="#">F16K 31/363</a> , <a href="#">F16K 31/383</a> take precedence)	31/3855	. . . . . {the discharge being effected through the diaphragm and being blockable by a mechanically-actuated member making contact with the diaphragm}
31/1221	. . . {one side of the piston being spring-loaded}	31/40	. . . with electrically-actuated member in the discharge of the motor
31/1223	. . . {one side of the piston being acted upon by the circulating fluid}	31/402	. . . . {acting on a diaphragm}
31/1225	. . . {with a plurality of pistons}		
31/1226	. . . {the fluid circulating through the piston}		
31/1228	. . . {with a stationary piston}		
31/124	. . . servo actuated		
31/1245	. . . . {with more than one valve}		

- 31/404 . . . . {the discharge being effected through the diaphragm and being blockable by an electrically-actuated member making contact with the diaphragm}
- 31/406 . . . . {acting on a piston}
- 31/408 . . . . {the discharge being effected through the piston and being blockable by an electrically-actuated member making contact with the piston}
- 31/42 . . by means of electrically-actuated members in the supply or discharge conduits of the fluid motor ([F16K 31/40 takes precedence](#))
- 31/423 . . . {the actuated members consisting of multiple way valves}
- 31/426 . . . . {the actuated valves being cylindrical sliding valves}
- 31/44 . Mechanical actuating means
- 31/445 . . {with exterior sleeve}
- 31/46 . . for remote operation
- 31/465 . . . {by flexible transmission means, e.g. cable, chain, bowden wire}
- 31/48 . . actuated by mechanical timing-device, e.g. with dash-pot ([self-closing valves F16K 21/16](#))
- 31/485 . . . {and specially adapted for gas valves}
- 31/50 . . with screw-spindle {or internally threaded actuating means}
- 31/502 . . . {actuating pivotable valve members}
- 31/504 . . . {the actuating means being rotatable, rising, and having internal threads which co-operate with threads on the outside of the valve body}
- 31/506 . . . {with plural sets of thread, e.g. with different pitch}
- 31/508 . . . {the actuating element being rotatable, non-rising, and driving a non-rotatable axially-sliding element}
- 31/52 . . with crank, eccentric, or cam
- 31/521 . . . {comprising a pivoted disc or flap}
- 31/522 . . . {comprising a tap or cock}
- 31/523 . . . {comprising a sliding valve}
- 31/524 . . . with a cam
- 31/52408 . . . . {comprising a lift valve}
- 31/52416 . . . . . {comprising a multiple-way lift valve}
- 31/52425 . . . . . {with a ball-shaped valve member}
- 31/52433 . . . . . {with a streamlined or helically shaped valve member, e.g. for reducing flow losses or guiding the fluid flow}
- 31/52441 . . . . . {with a pivoted disc or flap}
- 31/5245 . . . . . {with a valve member of conical shape}
- 31/52458 . . . . . {comprising a tap or cock}
- 31/52466 . . . . . {comprising a multiple-way tap or cock}
- 31/52475 . . . . . {comprising a sliding valve}
- 31/52483 . . . . . {comprising a multiple-way sliding valve}
- 31/52491 . . . . . {comprising a diaphragm cut-off apparatus}
- 31/528 . . . with pin and slot
- 31/5282 . . . . {comprising a pivoted disc or flap}
- 31/5284 . . . . {comprising a tap or cock}
- 31/5286 . . . . {comprising a sliding valve}
- 31/5288 . . . . {comprising a diaphragm cut-off apparatus}
- 31/53 . . with toothed gearing
- 31/535 . . . {for rotating valves ([F16K 31/54 takes precedence](#))}
- 31/54 . . . with pinion and rack
- 31/56 . . without stable intermediate position, e.g. with snap action
- 31/563 . . . {for rotating or pivoting valves}
- 31/566 . . . {using a bistable spring device arranged symmetrically around the actuating stem}
- 31/58 . . comprising a movable discharge-nozzle
- 31/60 . . Handles {(form, features or function of taps or faucet handles for domestic plumbing installations [E03C 1/04](#))}
- 31/602 . . . {Pivoting levers, e.g. single-sided ([F16K 31/605 takes precedence](#))}
- 31/605 . . . {for single handle mixing valves}
- 31/607 . . . {characterised by particular material, by special measures to obtain aesthetical effects, or by auxiliary functions, e.g. storage}
- 31/62 . . Pedals or like operating members, e.g. actuated by knee or hip
- 33/00 Floats for actuation of valves or other apparatus {(float actuated valves [F16K 31/18](#))}**
- 35/00 Means to prevent accidental or unauthorised actuation**
- 35/02 . . to be locked or disconnected by means of a pushing or pulling action
- 35/022 . . {the locking mechanism being actuated by a separate actuating element}
- 35/025 . . . {said actuating element being operated manually (e.g. a push-button located in the valve actuator)}
- 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}
- 35/04 . Yieldingly resisting the actuation
- 35/06 . using a removable actuating or locking member, e.g. a key ([F16K 35/10](#), [F16K 35/12 take precedence](#))
- 35/08 . requiring setting according to a code, e.g. permutation locks
- 35/10 . with locking caps or locking bars
- 35/12 . with sealing wire
- 35/14 . interlocking two or more valves
- 35/16 . with locking member actuated by magnet
- 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**
- 37/0008 . {Mechanical means ([F16K 37/0075 takes precedence](#))}
- 37/0016 . . {having a graduated scale}
- 37/0025 . {Electrical or magnetic means ([F16K 37/0075 takes precedence](#))}
- 37/0033 . . {using a permanent magnet, e.g. in combination with a reed relays}
- 37/0041 . . {for measuring valve parameters ([F16K 37/0033 takes precedence](#))}
- 37/005 . . {for measuring fluid parameters ([F16K 37/0033 takes precedence](#))}
- 37/0058 . {Optical means, e.g. light transmission, observation ports ([F16K 37/0075 takes precedence](#))}
- 37/0066 . {Hydraulic or pneumatic means ([F16K 37/0075 takes precedence](#))}
- 37/0075 . {For recording or indicating the functioning of a valve in combination with test equipment}
- 37/0083 . . {by measuring valve parameters}

- 37/0091 . . {by measuring fluid parameters}
- 39/00 Devices for relieving the pressure on the sealing faces**
  - 39/02 . for lift valves
  - 39/022 . . {using balancing surfaces}
  - 39/024 . . {using an auxiliary valve on the main valve}
  - 39/026 . . {using an external auxiliary valve}
  - 39/028 . . {with pivoted closure members, e.g. butterfly valves}
  - 39/04 . for sliding valves
  - 39/045 . . {of rotating or pivoting type}
  - 39/06 . for taps or cocks
- 41/00 Spindle sealings**
  - 41/003 . {by fluid}
  - 41/006 . {by establishing an under-pressure}
  - 41/02 . with stuffing-box; {Sealing rings}
  - 41/023 . . {for spindles which only rotate, i.e. non-rising spindles ([F16K 41/043](#), [F16K 41/063](#) and [F16K 41/083](#) take precedence)}
  - 41/026 . . . {for rotating valves}
  - 41/04 . . with at least one ring of rubber or like material between spindle and housing
  - 41/043 . . . {for spindles which only rotate, i.e. non-rising spindles}
  - 41/046 . . . . {for rotating valves}
  - 41/06 . . with at least one ring attached to both spindle and housing
  - 41/063 . . . {for spindles which only rotate, i.e. non-rising spindles}
  - 41/066 . . . . {for rotating valves}
  - 41/08 . . with at least one ring provided with axially-protruding peripheral closing-lip
  - 41/083 . . . {for spindles which only rotate, i.e. non-rising spindles}
  - 41/086 . . . . {for rotating valves}
  - 41/10 . with diaphragm, e.g. shaped as bellows or tube
  - 41/103 . . {the diaphragm and the closure member being integrated in one member}
  - 41/106 . . {for use with rotating spindles or valves ([F16K 41/125](#) takes precedence)}
  - 41/12 . . with approximately flat diaphragm
  - 41/125 . . . {the part of the spindle traversing the diaphragm being rotatable or pivotable}
  - 41/14 . with conical flange on the spindle which co-operates with a conical surface in the housing
  - 41/16 . with a flange on the spindle which rests on a sealing ring
  - 41/18 . . sealing only when the closure member is in the opened position
- 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**
  - 43/001 . {an auxiliary valve being actuated independently of the main valve}
  - 43/003 . . {the auxiliary valve being a rotary valve}
  - 43/005 . {an auxiliary valve closing automatically when the main valve is being disassembled}
  - 43/006 . . {the auxiliary valve being held open by the main valve}
- 43/008 . {the main valve having a back-seat position, e.g. to service the spindle sealing}
- 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](#))**
  - 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)}
  - 47/023 . . {for preventing water-hammer, e.g. damping of the valve movement}
  - 47/026 . . {preventing noise in a single handle mixing valve}
  - 47/04 . for decreasing pressure {or noise level}, the throttle being incorporated in the closure member
  - 47/045 . . {and the closure member being rotatable}
  - 47/06 . . with a throttle in the form of a helical channel
  - 47/08 . for decreasing pressure {or noise level} and having a throttling member separate from the closure member, {e.g. screens, slots, labyrinths}
  - 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
  - 47/12 . . the throttling channel being of helical form
  - 47/14 . . the throttling member being a perforated membrane
  - 47/16 . . the throttling member being a cone
- 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](#))**
  - 49/002 . {Electric heating means}
  - 49/005 . {Circulation means for a separate heat transfer fluid}
  - 49/007 . . {located within the obturating element}
- 51/00 Other details not peculiar to particular types of valves or cut-off apparatus**
  - 51/02 . specially adapted for high-vacuum installations
- 99/00 Subject matter not provided for in other groups of this subclass**
  - 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](#))}
  - 99/0003 . . {Constructional types of microvalves; Details of the cutting-off member}
  - 99/0005 . . . {Lift valves}
  - 99/0007 . . . . {of cantilever type}
  - 99/0009 . . . . {the valve element held by multiple arms}
  - 99/0011 . . . {Gate valves or sliding valves}
  - 99/0013 . . . {Rotary valves}
  - 99/0015 . . . {Diaphragm or membrane valves}
  - 99/0017 . . . {Capillary or surface tension valves, e.g. using electro-wetting or electro-capillarity effects}
  - 99/0019 . . . {Valves using a micro-droplet or micro-bubble as the valve member}
  - 99/0021 . . . {No-moving-parts valves}
  - 99/0023 . . . {with ball-shaped valve members}
  - 99/0025 . . . {Valves using microporous membranes}
  - 99/0026 . . . {Valves using channel deformation}
  - 99/0028 . . . {Valves having multiple inlets or outlets}

99/003	. . . {Valves for single use only}
99/0032	. . . {using phase transition or influencing viscosity}
99/0034	. . {Operating means specially adapted for microvalves}
99/0036	. . . {operated by temperature variations}
99/0038	. . . . {using shape memory alloys}
99/004	. . . . {using radiation}
99/0042	. . . {Electric operating means therefor}
99/0044	. . . . {using thermo-electric means}
99/0046	. . . . {using magnets}
99/0048	. . . . {using piezoelectric means}
99/0049	. . . . {using an electroactive polymer [EAP]}
99/0051	. . . . {using electrostatic means}
99/0053	. . . . {using magnetostrictive means}
99/0055	. . . {actuated by fluids}
99/0057	. . . . {the fluid being the circulating fluid itself, e.g. check valves}
99/0059	. . . . {actuated by a pilot fluid}
99/0061	. . . . {actuated by an expanding gas or liquid volume}
99/0063	. . . {using centrifugal forces}
99/0065	. . . {using chemical activation}
99/0067	. . . . {actuated by a pyrotechnical charge}
2099/0069	. . {Bistable microvalves}
2099/0071	. . {with latching means}
2099/0073	. {Fabrication methods specifically adapted for microvalves}
2099/0074	. . {using photolithography, e.g. etching}
2099/0076	. . {using electrical discharge machining [EDM], milling or drilling}
2099/0078	. . {using moulding or stamping}
2099/008	. . {Multi-layer fabrications}
2099/0082	. {Microvalves adapted for a particular use}
2099/0084	. . {Chemistry or biology, e.g. "lab-on-a-chip" technology}
2099/0086	. . {Medical applications}
2099/0088	. . . {Implanted devices}
2099/009	. . {Fluid power devices}
2099/0092	. . {Inkjet printers}
2099/0094	. . {Micro-pumps}
2099/0096	. . {Fuel injection devices}
2099/0098	. . {Refrigeration circuits, e.g. for cooling integrated circuits}