

**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)

<a href="#">{C21B 9/12</a>	Hot-blast valves for blast
<a href="#">furnaces</a>	}
<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
<a href="#">adapted for wash-basins or baths</a>	}
<a href="#">{E03C 1/05</a>	Arrangements on wash-basins for the
<a href="#">remote control of taps</a>	}
<a href="#">E03D</a>	Flushing valves for water-closets or
<a href="#">urinals</a>	
<a href="#">{E03F 7/04</a>	Valves for preventing return flow in
<a href="#">sewer systems</a>	}
<a href="#">E05F 3/12</a>	Valve arrangements in door closers
<a href="#">E21B 21/10</a>	Valve arrangements in drilling-fluid
<a href="#">circulation systems</a>	
<a href="#">E21B 34/00</a>	Valve arrangements for boreholes or wells
<a href="#">{E21D 15/51</a>	Arrangement of relief valves in
<a href="#">hydraulic mine props</a>	}
<a href="#">F01B 25/10</a>	Working-fluid valves for controlling
<a href="#">machines or engines in general or of</a>	
<a href="#">positive-displacement type</a>	
<a href="#">F01D 17/10</a>	Final actuators for controlling non-
<a href="#">positive displacement machines or engines</a>	
<a href="#">F01L</a>	Cyclically operated valves for machines or
<a href="#">engines</a>	
<a href="#">F02D 9/08</a>	Throttle valves for controlling combustion
<a href="#">engines</a>	
<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,</a>	
<a href="#">F16L 37/28</a>	Pipe joints or quick-acting couplings
<a href="#">with fluid cut-off means</a>	
<a href="#">F16L 55/00</a>	Arrangement of valves in pipes
<a href="#">F16L 55/055</a>	Valves specially adapted to prevent or
<a href="#">minimise the effect of water hammer</a>	
<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
<a href="#">boilers</a>	
<a href="#">F22D 5/34</a>	Application of valves to automatic water-
<a href="#">feed in boiler</a>	

## F16K

(continued)

<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</a> ,	
<a href="#">F24C 5/16</a>	Arrangement of valves on stoves or ranges
<a href="#">F24F</a>	Air conditioning; Ventilation
<a href="#">F25B 41/04</a>	Disposition of fluid circulation valves
	in refrigeration machines
<a href="#">G05D</a>	Controlling non-electric variables
<a href="#">G10B 3/06</a>	Valves for organs
<a href="#">G10D 9/04</a>	Valves for other wind-actuated musical
	instruments
<a href="#">{G21C 9/06</a>	Safety valves structurally associated
with nuclear reactors	}
<a href="#">{H01M 2/12</a>	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>	" "	<a href="#">G05D</a>
<a href="#">F16K 31/66</a>	" "	<a href="#">F16K 31/06</a> ; <a href="#">H01F</a>
<a href="#">F16K 31/68</a>	" "	<a href="#">G05D</a>
<a href="#">F16K 31/70</a>	" "	<a href="#">F16K 31/002</a>
<a href="#">F16K 31/72</a>	" "	<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.

<b>F16K 1/00</b>	<b>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</b> ({in combination with sliding valves <a href="#">F16K 3/246</a> , <a href="#">F16K 3/267</a> } ; diaphragm valves <a href="#">F16K 7/00</a> )
<a href="#">F16K 1/02</a>	<ul style="list-style-type: none"> <li>with screw-spindle (<a href="#">F16K 1/12</a> - <a href="#">F16K 1/28</a> take precedence; actuating mechanisms with screw-spindles <a href="#">F16K 31/50</a>)</li> </ul>
<a href="#">F16K 1/04</a>	<ul style="list-style-type: none"> <li>with a cut-off member rigid with the spindle, e.g. main valves</li> </ul>
<a href="#">F16K 1/06</a>	<ul style="list-style-type: none"> <li>Special arrangements for improving the flow, e.g. special shape of passages or casings</li> </ul>
<a href="#">F16K 1/08</a>	<ul style="list-style-type: none"> <li>in which the spindle is perpendicular to the general direction of flow</li> </ul>
<a href="#">F16K 1/10</a>	<ul style="list-style-type: none"> <li>in which the spindle is inclined to the general direction of flow</li> </ul>

- 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
- 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](#) - [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](#))
- 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}
- 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}
- 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	. with tubular diaphragm
F16K 7/04	. . constrictable by external radial force
F16K 7/045	. . . {by electric or magnetic means}
F16K 7/06	. . . by means of a screw-spindle, cam, or other mechanical means {(F16K 7/045 takes precedence)}
F16K 7/061	. . . . {Screw clamps}
F16K 7/063	. . . . {Lever clamps}

F16K 7/065	. . . . {Cam clamps}
F16K 7/066	. . . . {Wedge clamps}
F16K 7/068	. . . . {by bending the hose}
F16K 7/07	. . . by means of fluid pressure
F16K 7/075	. . . . {a rigid body being located within the tubular diaphragm}
F16K 7/08	. . constrictable by twisting
F16K 7/10	. with inflatable member
F16K 7/12	. with flat, dished, or bowl-shaped diaphragm
F16K 7/123	. . {the seat being formed on the bottom of the fluid line}
F16K 7/126	. . {the seat being formed on a rib perpendicular to the fluid line}
F16K 7/14	. . arranged to be deformed against a flat seat
F16K 7/16	. . . the diaphragm being mechanically actuated, e.g. by screw-spindle or cam
F16K 7/17	. . . the diaphragm being actuated by fluid pressure
F16K 7/18	. with diaphragm secured at one side only, e.g. to be laid on the seat by rolling action
F16K 7/20	. with a compressible solid closure member
<b>F16K 11/00</b>	<b>Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves</b>
F16K 11/02	. with all movable sealing faces moving as one unit
F16K 11/022	. . {comprising a deformable member}
F16K 11/025	. . . {with an O-ring}
F16K 11/027	. . . {the fluid flowing through a constrictable tubular diaphragm}
F16K 11/04	. . comprising only lift valves
F16K 11/044	. . . with movable valve members positioned between valve seats
F16K 11/0445	. . . . {Bath/shower selectors}
F16K 11/048	. . . with valve seats positioned between movable valve members
F16K 11/052	. . . with pivoted closure members, e.g. butterfly valves
F16K 11/0525	. . . . {the closure members being pivoted around an essentially central axis}
F16K 11/056	. . . 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](#) - [F16K 15/12](#) take precedence)}
- F16K 15/023 . . . {the valve member consisting only of a predominantly disc-shaped flat element}
- F16K 15/025 . . {the valve being loaded by a helicoidal spring ([F16K 15/03](#) - [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 ( <a href="#">F16K 15/042</a> takes precedence)}
F16K 15/046	. . . . {by a spring other than a helicoidal spring}
F16K 15/048	. . . {Ball features}
F16K 15/06	. . with guided stems
F16K 15/063	. . . {the valve being loaded by a helicoidal spring}
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 ( <a href="#">F16K 15/188</a> takes precedence)}
F16K 15/183	. . {for ball check valves ( <a href="#">F16K 15/186</a> , <a href="#">F16K 15/188</a> take precedence)}
F16K 15/185	. . {for check valves with flexible valve members ( <a href="#">F16K 15/188</a> 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 ( <a href="#">connecting valves to inflatable bodies B60C 29/00</a> )
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}
<b>F16K 17/00</b>	<b>Safety valves; Equalising valves, {e.g. pressure relief valves}</b>
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}
- 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)}
- 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}



<b>F16K 21/00</b>	<b>Fluid-delivery valves, {e.g. self-closing valves}</b> (for liquid handling <a href="#">B67D</a> ; for flushing devices for water-closets or the like <a href="#">E03D</a> )
F16K 21/02	<ul style="list-style-type: none"> <li>providing a continuous small flow</li> </ul>
F16K 21/04	<ul style="list-style-type: none"> <li>Self-closing valves, i.e. closing automatically after operation {(pneumatic tools <a href="#">B25B 9/00</a>)}</li> </ul>
F16K 21/06	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>in which the closing movement, either retarded or not, starts immediately after opening</li> </ul> </li> </ul>
F16K 21/08	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with ball-shaped closing members</li> </ul> </li> </ul> </li> </ul>
F16K 21/10	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with hydraulic brake cylinder acting on the closure member</li> </ul> </li> </ul> </li> </ul>
F16K 21/12	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with hydraulically-operated opening means; with arrangements for pressure relief before opening</li> </ul> </li> </ul> </li> </ul>
F16K 21/14	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>with special means for preventing the self-closing</li> </ul> </li> </ul>
F16K 21/16	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>closing after a predetermined quantity of fluid has been delivered (<a href="#">F16K 21/10</a> takes precedence)</li> </ul> </li> </ul>
F16K 21/165	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with means sensing the weight of said fluid quantity}</li> </ul> </li> </ul> </li> </ul>
F16K 21/18	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>closed when a rising liquid reaches a predetermined level (float-actuated valves <a href="#">F16K 31/18</a>)</li> </ul> </li> </ul>
F16K 21/185	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{with electrical or magnetical means, e.g. with magnetic floats, for sensing the liquid level}</li> </ul> </li> </ul> </li> </ul>
F16K 21/20	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>by means making use of air-suction through an opening closed by the rising liquid</li> </ul> </li> </ul> </li> </ul>
<b>F16K 23/00</b>	<b>Valves for preventing drip from nozzles</b>
<b>F16K 24/00</b>	<b>Devices, e.g. valves, for venting or aerating enclosures</b> (equalising valves <a href="#">F16K 17/00</a> ; arrangement or mounting in pipes or pipe systems <a href="#">F16L 55/07</a> ; venting or aerating as an additional function of steam traps or like apparatus <a href="#">F16T</a> ; ventilation of rooms, vehicles, see the appropriate subclass, e.g. <a href="#">F24F</a> )
F16K 24/02	<ul style="list-style-type: none"> <li>the enclosure being itself a valve, tap, or cock</li> </ul>
F16K 24/04	<ul style="list-style-type: none"> <li>for venting only (<a href="#">F16K 24/02</a> takes precedence)</li> </ul>
F16K 24/042	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{actuated by a float}</li> </ul> </li> </ul>
F16K 24/044	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{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}</li> </ul> </li> </ul> </li> </ul>
F16K 24/046	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{the assembly of float and valve element being a single spherical element}</li> </ul> </li> </ul> </li> </ul> </li> </ul>
F16K 24/048	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>{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}</li> </ul> </li> </ul> </li> </ul> </li> </ul>
F16K 24/06	<ul style="list-style-type: none"> <li>for aerating only (<a href="#">F16K 24/02</a> takes precedence)</li> </ul>



**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}

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}

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

- 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}
- 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)}
- 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 ( <a href="#">F16K 31/0651</a> 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 ( <a href="#">F16K 31/0662</a> 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 ( <a href="#">F16K 31/082</a> , <a href="#">F16K 31/086</a> 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 ore 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}
- 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}
- F16K 31/508 . . . {the actuating element being rotatable, non-rising, and driving a non-rotatable axially-sliding element}
- 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 ( <a href="#">F16K 31/54</a> 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 <a href="#">E03C 1/04</a> )}
F16K 31/602	. . . {Pivoting levers, e.g. single-sided ( <a href="#">F16K 31/605</a> 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}
F16K 31/62	. . Pedals or like operating members, e.g. actuated by knee or hip
<b>F16K 33/00</b>	<b>Floats for actuation of valves or other apparatus {(float actuated valves <a href="#">F16K 31/18</a>)}</b>
<b>F16K 35/00</b>	<b>Means to prevent accidental or unauthorised actuation</b>
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}
- 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}
- F16K 41/066 . . . . {for rotating valves}
- 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}
- F16K 41/086 . . . . {for rotating valves}
- 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. rewashering, 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
<b>F16K 49/00</b>	<b>Means in or on valves for heating or cooling (for pipes <a href="#">F16L 53/00</a>; thermal insulation in connection with pipes or pipe systems <a href="#">F16L 59/16</a>)</b>
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}
<b>F16K 51/00</b>	<b>Other details not peculiar to particular types of valves or cut-off apparatus</b>
F16K 51/02	• specially adapted for high-vacuum installations
<b>F16K 99/00</b>	<b>Subject matter not provided for in other groups of this subclass</b>
F16K 99/0001	• {Micro-valves (micro-devices <a href="#">B81B 1/00</a> ; manufacture or treatment of devices or systems in or on a substrate <a href="#">B81C 1/00</a> ; micro-fluidic structures <a href="#">B01L 3/5027</a> ; micro-pumps <a href="#">F04B 19/006</a> )}
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}