GEMÜ®

VALVES, MEASUREMENT AND CONTROL SYSTEMS

Process Valves

Symbols / Icons for Planners, Designers and Piping Engineers

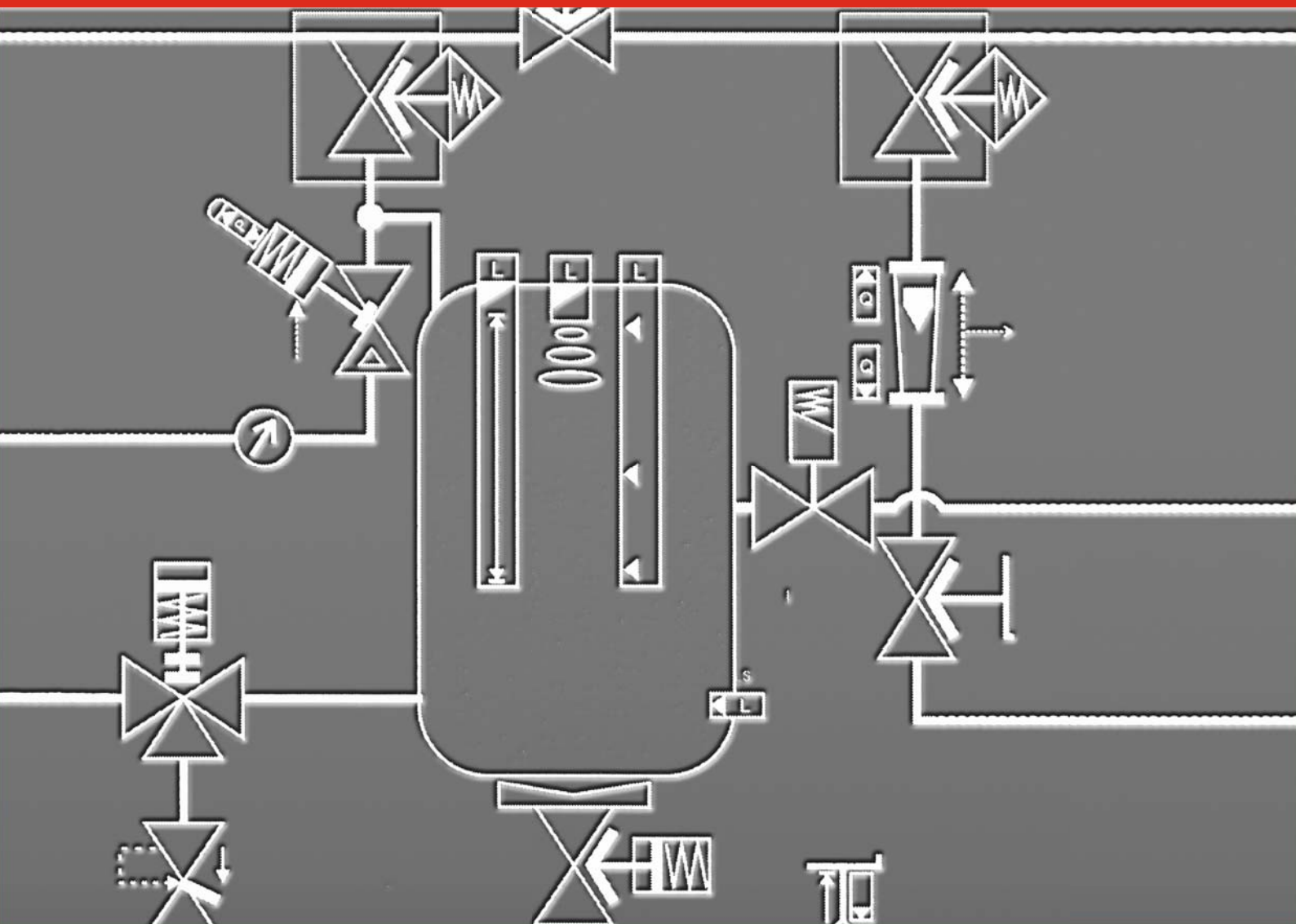

Table of contents

Explanation/ important information

New logical symbols for process valves
Following many requests by plant designers and engineers to obtain a list of symbols for process valves we have looked into the host of available norms and printed data concerning this topic and established this document. We found out that although a large number of symbols exist in the various norms they are only particularly suited to the relevant area of application of the norm (e.g. norm for fire safety installations DIN 19 227 part 2, norm for thermal electric stations DIN 2481 and EN ISO 10 628 flow chart for process plant). In some cases different icons are used for one and the same valve type and actuator. For this reason this system of symbols has been developed to particularly meet the requirements of plant engineering and process valve systems and to suit their relevant applications.

Versions
The symbols will also be made available in electronic form in future to support CAD systems . For workshops and sites they will also be available on a shrink-wrapped memo card. The electronic version is expected to be available in summer 2004.

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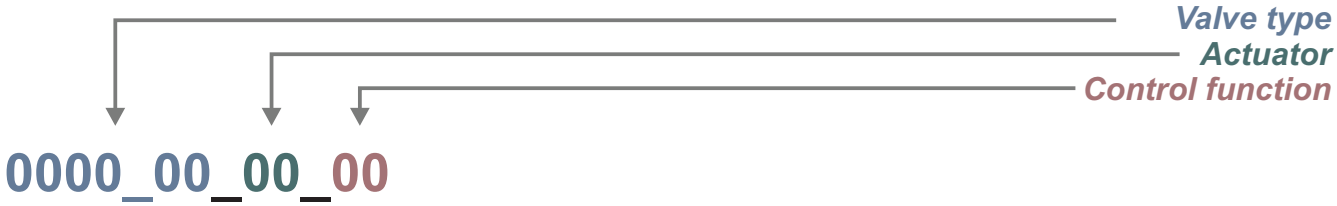
Legend / File names / GB



Valve type

Globe valve - straight seat	**VGS**
Globe valve - angle seat	**VGA**
Globe valve - multi-port	**VGM**
Globe valve - angled design	**VGC**
Diaphragm valve - straight through	**VDS**
Diaphragm valve - tank mounting	**VDB**
Diaphragm valve - angled design	**VDC**
Diaphragm valve - T-design	**VDT**
Diaphragm valve - full bore	**VDFS**
Ball valve - straight through	**VBS**
Ball valve - multi-port / T-passage	**VBM_T**
Ball valve - multi-port/ L-passage	**VBM_L**
Butterfly valve - straight through	**VBFS**
Swing check valve	**VBFS_PO**
Gate valve - straight through	**VGAS**
Pinch valve - straight through	**VHS**
Plug valve - straight through	**VPS**
Plug valve - multi-port / “T-passage”	**VPM_T**
Plug valve - multi-port / “L-passage”	**VPM_L**

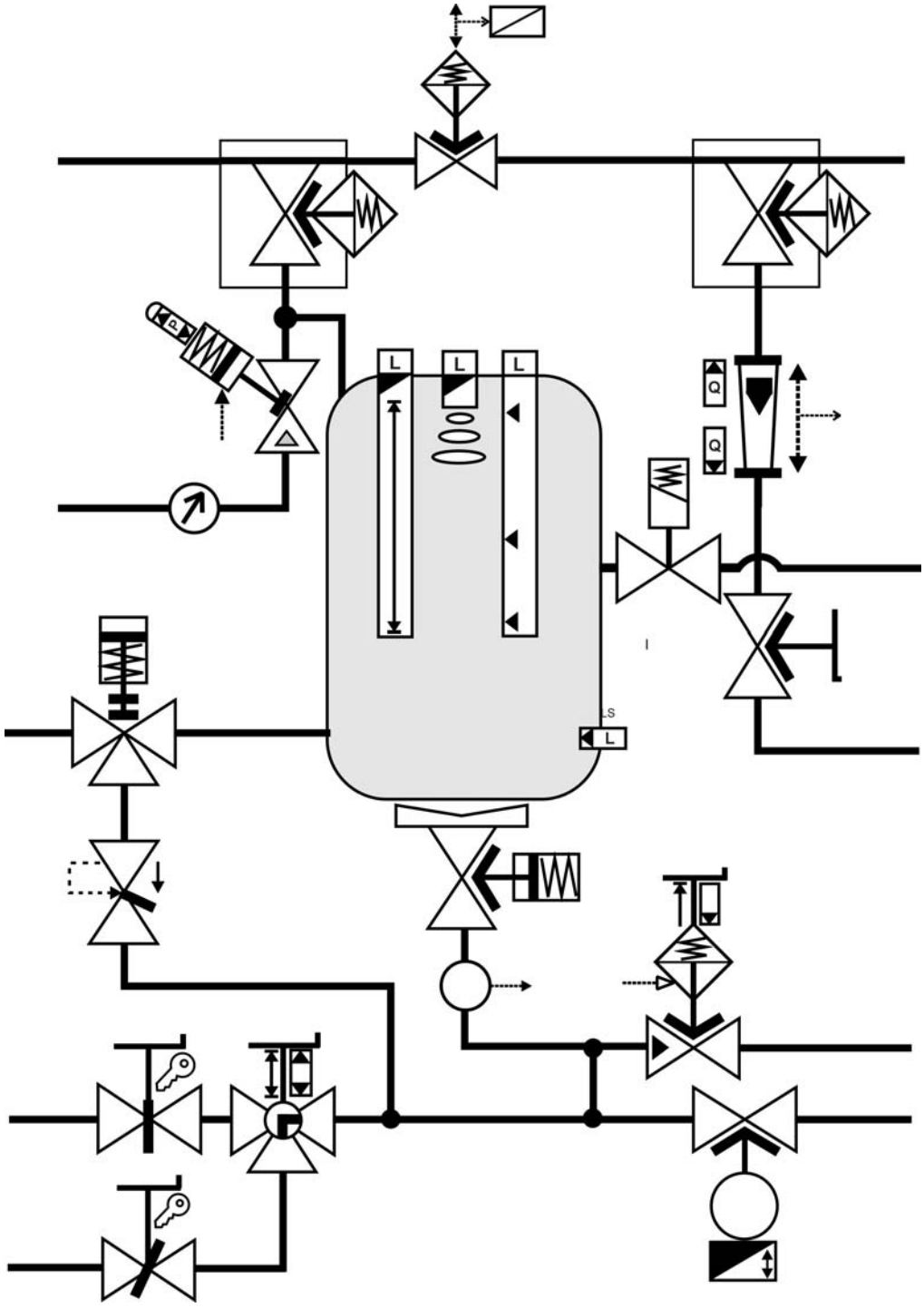
Actuator

manual, hand operated	**MH**
manual, gear operated	**MG**
electro-solenoid	**SE**
pneumatic, piston controlled	**PP**
pneumatic, membrane controlled	**PD**
hydraulic, piston controlled	**HP**
hydraulic, membrane controlled	**HD**
operated by electric motor	**ME**

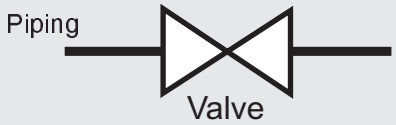
Control function

00	Manual operation
10	Normally closed
20	Normally open
30	Double acting
61	Motorized
62	Motorized with position sensor
63	Motorized with position controller
64	Motorized with process controller
65	Motorized with process controller and field bus connection

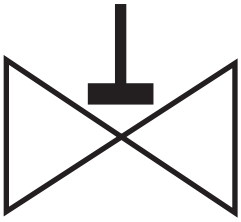
Sample schematic



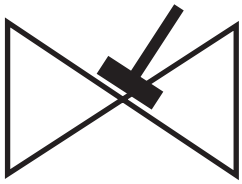
Symbols for process valves



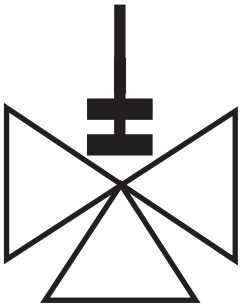
General symbol for straight through valves
independent of the valve type
and type of operation



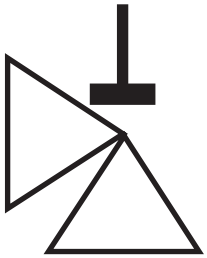
Sitzventil_Geradesitz_2_2_D
Globe_valve_straight seat_2_2_D



Sitzventil_Schrägsitz_2_2_D
Globe_valve_angle seat_2_2_D

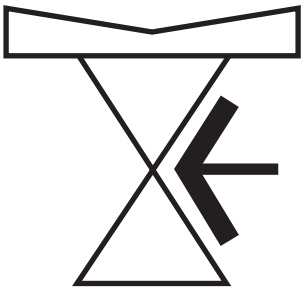


Sitzventil_Mehrwege_3_2_M
Globe_valve_multi-port_3_2_M



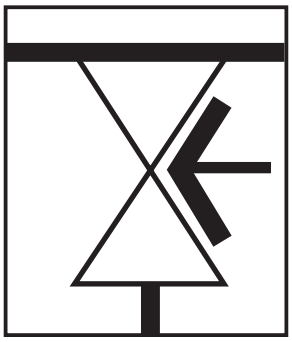
Sitzventil_Eckausfuehrung_2_2_E
Globe_valve_angled design_2_2_E

Membranventil_2_2_D
Diaphragm_valve_2_2_D

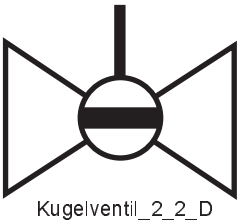


Membranventil_Behältereinbau_2_2_B
Diaphragm_valve_tank_2_2_B

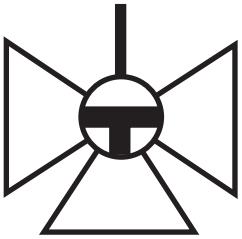
Membranventil_Eckausfuehrung_2_2_E
Diaphragm_valve_angled design_2_2_E



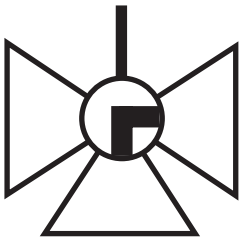
Membranventil_Mehrwege_3_2_T
Diaphragm_valve_multi-port_3_2_T



Kugelventil_2_2_D
Ball_valve_2_2_D



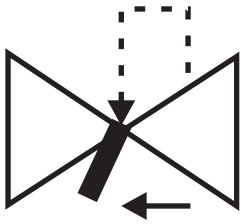
Kugelventil_Mehrwege_3_2_T
Ball_valve_multi-port_3_2_T



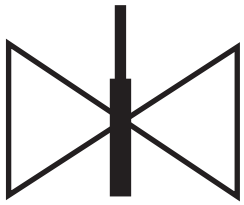
Kugelventil_Mehrwege_3_2_L
Ball_valve_multi-port_3_2_L

Membranventil_Tiefsitz_2_2_D
Diaphragm_valve_full_bore_2_2_D

Klappenventil_2_2_D
Butterfly_valve_2_2_D

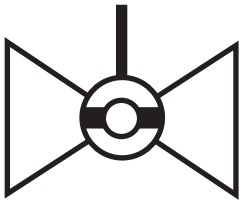


Rückschlagklappe_2_2_D
Swing_check_valve_2_2_D

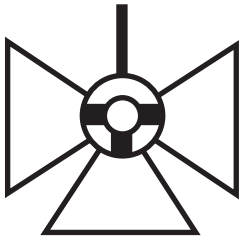


Schieberventil_2_2_D
Gate_valve_2_2_D

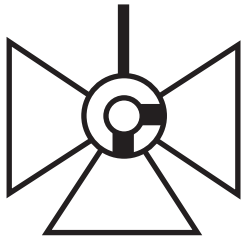
Schlauchquetschventil_2_2_D
Pinch_valve_2_2_D



Kükenventil_2_2_D
plug_valve_2_2_D



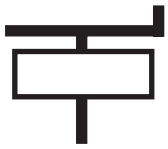
Kükenventil_Mehrwege_3_2_T
plug_valve_multiport_3_2_T



Kükenventil_Mehrwege_3_2_L
plug_valve_multiport_3_2_L

Symbols for valve actuators

Actuator_MH_00



Actuator_MG_00

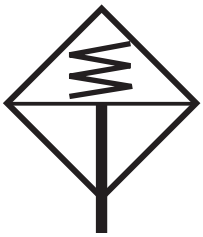
Manual actuator
"Manually operated"
"Manually operated by gear/servo"

Actuator_PP_10

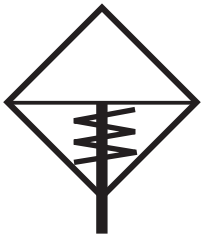
Actuator_PP_20

Actuator_PP_30

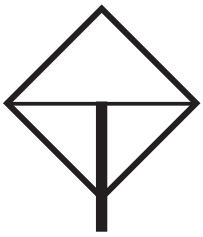
Pneumatic/Hydraulic actuator, piston controlled
"Normally closed"
"Normally open"
"Double acting"



Actuator_PD_10

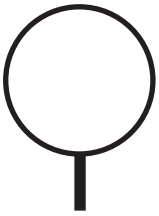


Actuator_PD_20

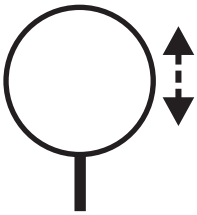


Actuator_PD_30

Pneumatic/Hydraulic actuator, membrane controlled
"Normally closed"
"Normally open"
"Double acting"



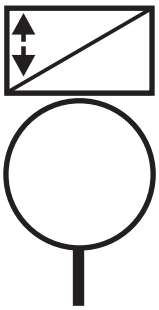
Actuator_ME_61



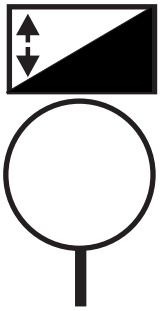
Actuator_ME_62

Motorized actuator
electric
"AC/DC"
"AC/DC with position feedback"

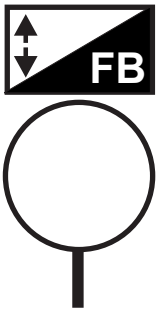
Type of voltage and level must be noted in the motorized actuator symbol (e.g. DC / 24 V)



Actuator_ME_63



Actuator_ME_64



Actuator_ME_65

Motorized actuator
electric with integrated controller
"AC/DC with position controller"
"AC/ DC with position and process controller"
"AC/DC with position and process controller and field bus"

Type of voltage and level must be noted in the motorized actuator symbol (e.g. DC / 24 V)

Actuator_SE_10

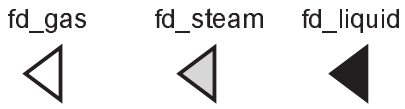
Actuator_SE_20

Actuator_SE_30

Solenoid actuator
electric
"AC/DC - normally closed"
"AC/DC - normally open"
"AC/DC - double acting

Type of voltage and level must be noted right of the solenoid actuator symbol (e.g. DC / 24 V)

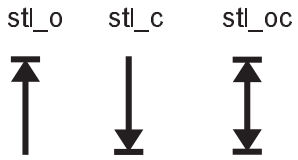
Additional symbols



Symbols for flow direction and type of working medium
Left: gas, middle: steam , right: liquid

Symbols for valve actuator control lines and type of control medium.
Left: hydraulic, right: pneumatic

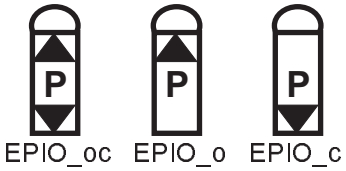
Symbol for locking device



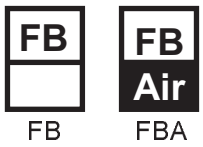
Symbols for mechanical stroke limiters for valve actuators
Left: opening stroke, middle: closing stroke, right: opening and closing stroke)

Symbols for electrical position indicators

Top line from left to right:
Both end positions, end position open, end position closed

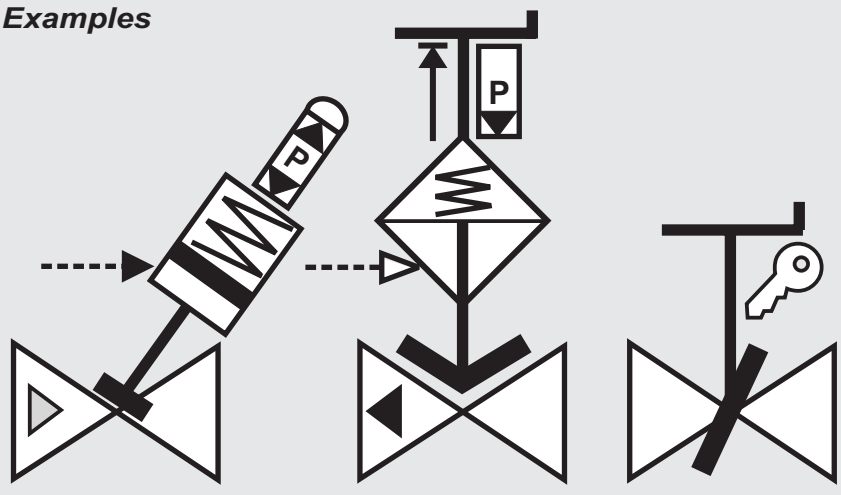


Bottom line:
Switches as above, but with integrated optical position indicator (mechanical or LED/light)



Field bus connections for pneumatic process valves.
Left: Electronic field bus connection, right: Electronic field bus connection with integrated pilot valve

Examples



From left to right:
Globe valve, flow against the seat, working medium steam, hydraulically operated piston actuator "normally closed" and electrical position indicator for both end positions, with optical indicator

Diaphragm valve with specified flow direction for liquid working media, pneumatic membrane controlled actuator "normally closed", manual override and stroke limiter for valve position "open" and electrical position indicator for end position "closed".

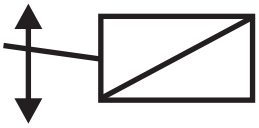
Butterfly valve with lockable manual operator

Position/Process controllers

P:	position controller
PC:	process controller
M:	mechanical travel transmission
E:	electronic travel transmission
D:	direct mounting to valve actuator
S:	separate mounting
I:	integrated in the actuator or direct mounting

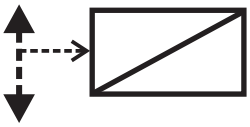
P_E_IS

Position controller, electric
Integrated in the motorized actuator or
for separate mounting



P_M_D

Position controller, electro-pneumatic
With mechanical travel transmission
for direct mounting to the valve actuator

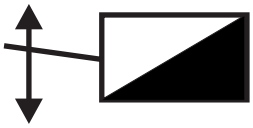


P_E_DS

Position controller, electro-pneumatic
With electronic travel transmission
for direct mounting to the valve actuator
or separate mounting

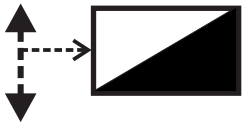
PC_IS

Process controller, electric
Integrated in the motorized actuator or
for separate mounting



P_PC_M_D

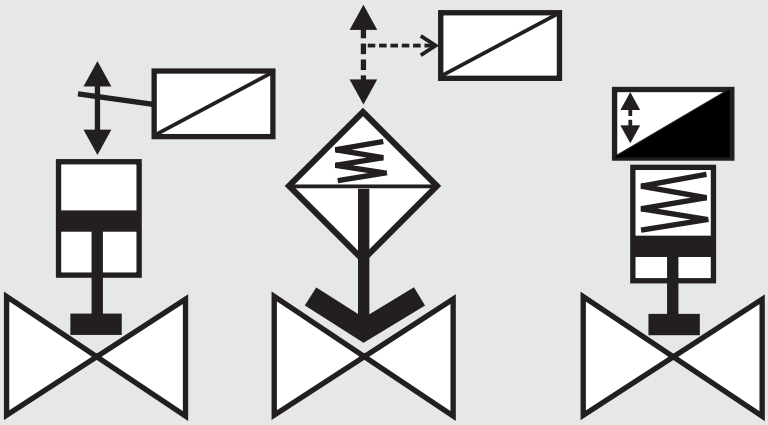
Process controller, electro-pneumatic
With mechanical travel transmission
for direct mounting to the valve actuator



P_PC_E_DS

Process controller, electro-pneumatic
With electronic travel transmission
for direct mounting to the valve actuator
or separate mounting

Examples



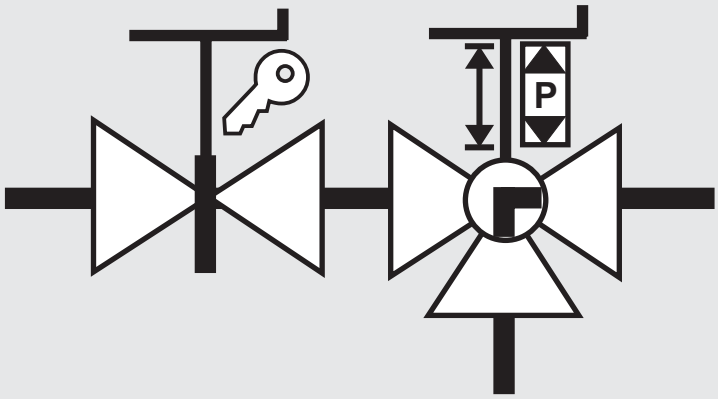
From left to right:

Globe valve “double acting” with piston controlled actuator and directly mounted electro-pneumatic position controller with mechanical travel transmission (actual value/ valve position)

Diaphragm valve “normally closed” with membrane controlled actuator and directly mounted or separate electro-pneumatic position controller with electronic travel transmisstion.

Globe valve “normally closed” with directly mounted position/process controller with integrated travel transmission.

Examples

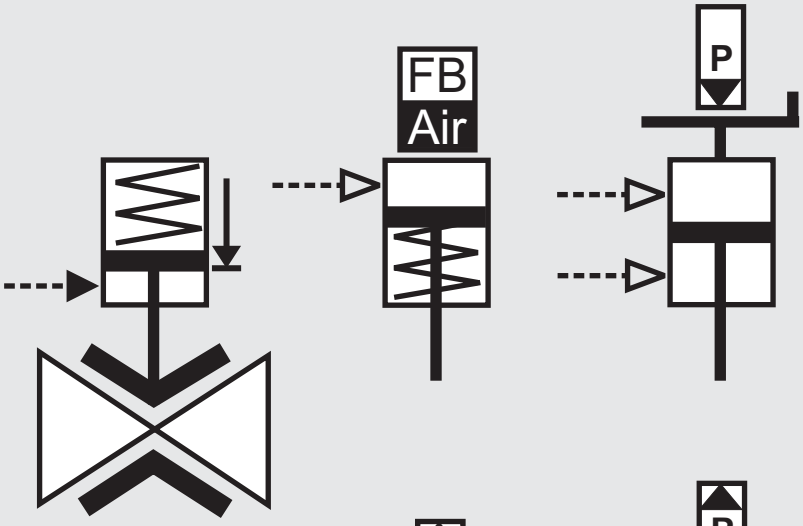


Manual actuators

From left to right:

Gate valve, straight through, with lockable handwheel

Ball valve, 3 way design with "L-ball" and travel limitation on both sides (closing limiter) and an electrical position indicator for both end positions.



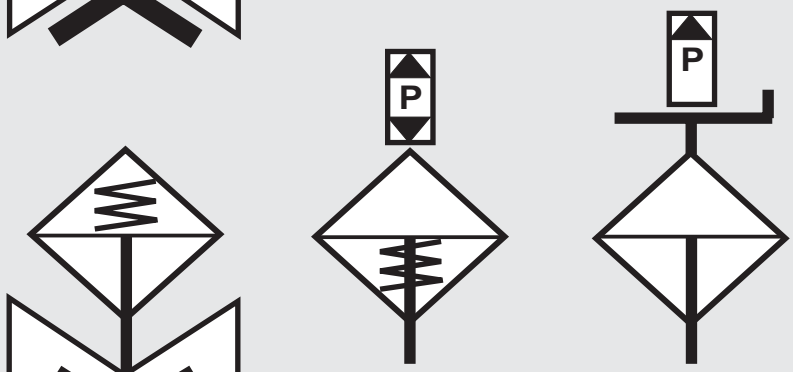
Piston controlled pneumatic/ hydraulic actuators

From left to right:

Hydraulically operated pinch valve "normally closed" with stroke limiter in "closed" position" ".

Pneumatic piston actuator "normally open" with integrated field bus connection.

Pneumatically operated piston actuator, "double acting" with manual override and electrical position indicator for "closed" end position



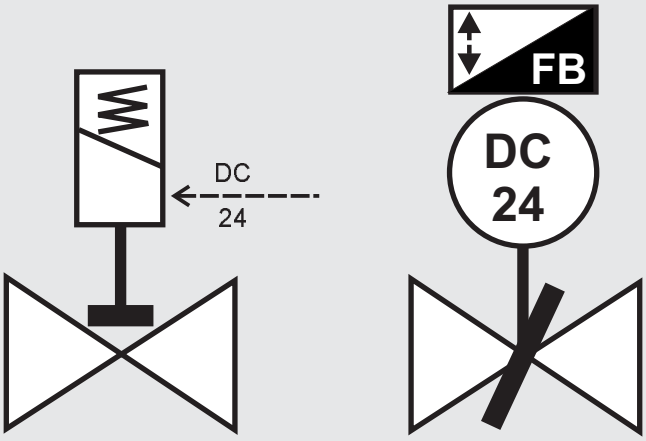
Membrane controlled pneumatic/ hydraulic actuators

From left to right:

Diaphragm valve, full bore design "normally closed"

"Normally open" with electrical position indicator for both end positions

"Double acting" with manual override and electrical position indicator for "open" end position



From left to right:

Electric solenoid actuator

Globe valve, straight through design. The solenoid is operated with 24 Volt DC. Normally closed actuator.

Electric motorized actuator

Butterfly valve, straight through design. The motorized actuator is operated with 24 Volt DC and has an integrated process controller with correcting variable output. The actuator/valve can be connected to a field bus system.

Globe valves, straight seat 2/2 way straight through design

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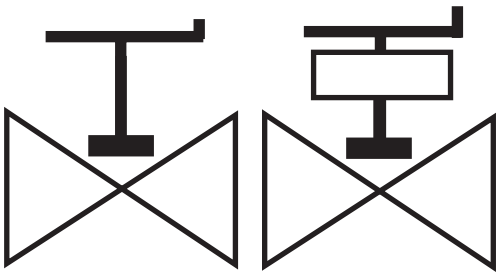
File name

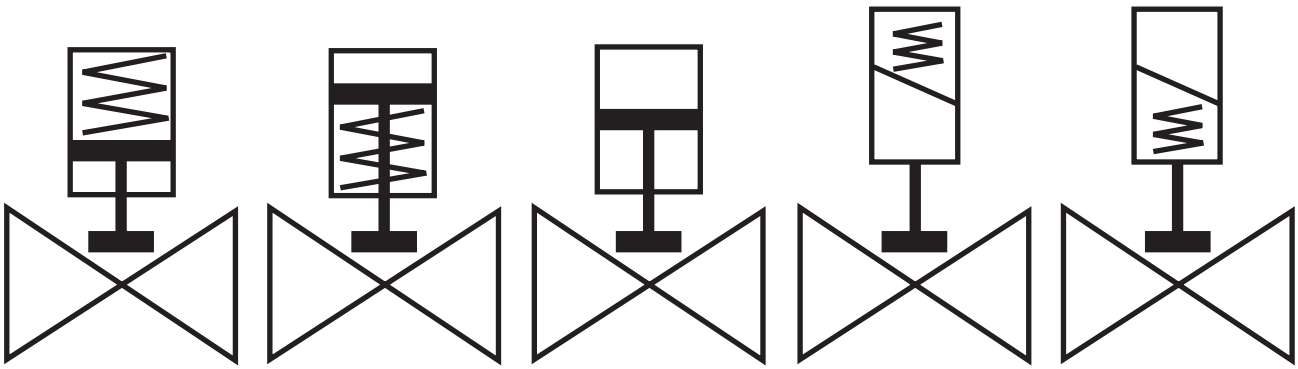
Globe valve, straight
manually operated

VGS_MH_00 ← control function

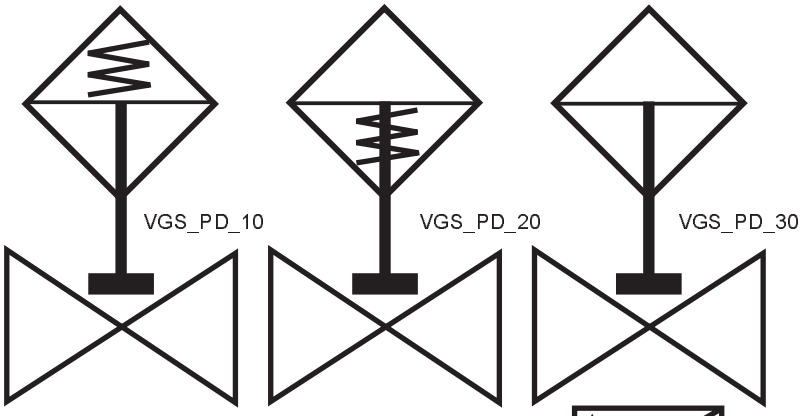
MG	manual, gearbox / servo
SE	solenoid
PP	pneumatically operated by piston
PD	pneumatically operated by membrane
ME	motorized



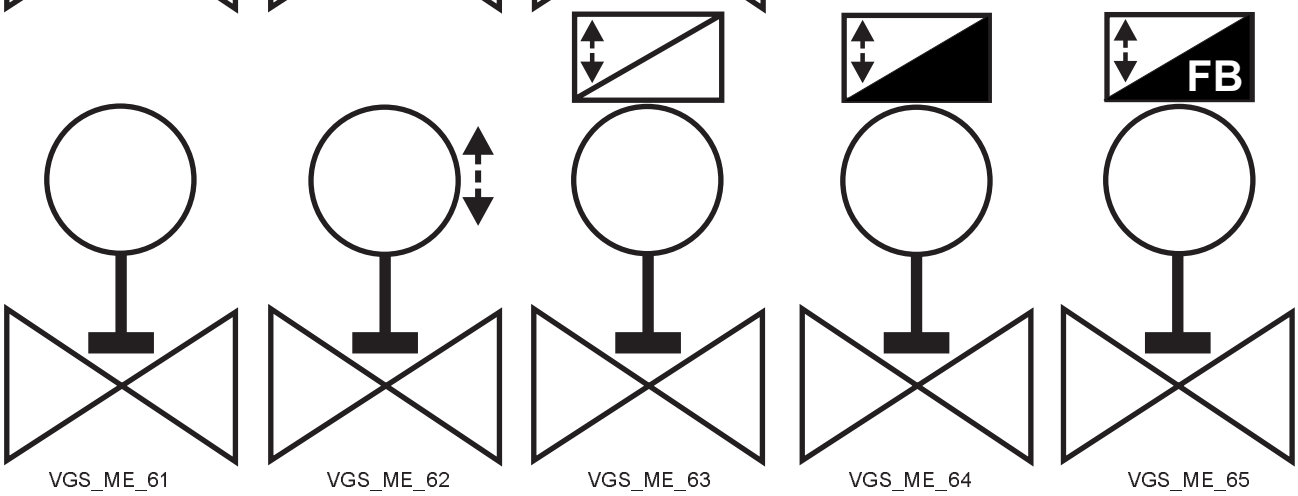
VGS_MH_00 VGS_MG_00



VGS_PP_10 VGS_PP_20 VGS_PP_30 VGS_SE_10 VGS_SE_20

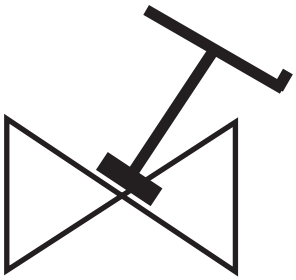


VGS_PD_10 VGS_PD_20 VGS_PD_30



VGS_ME_61 VGS_ME_62 VGS_ME_63 VGS_ME_64 VGS_ME_65

Globe valves, angle seat 2/2 way straight through design



VGA_MH_00

File name

globe valve, angle seat

manually operated

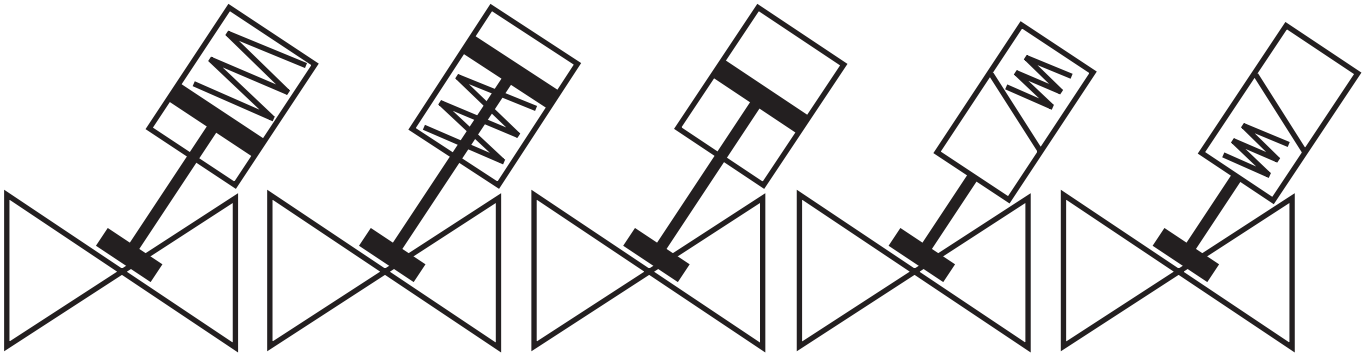
VGA_MH_00 ← control function

SE solenoid

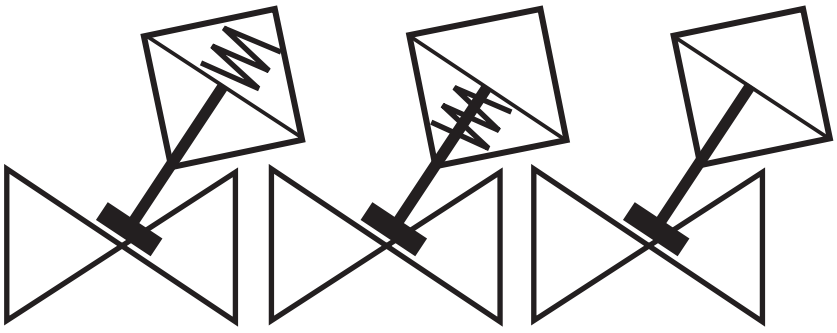
PP pneumatically operated by piston

PD pneumatically operated by membrane

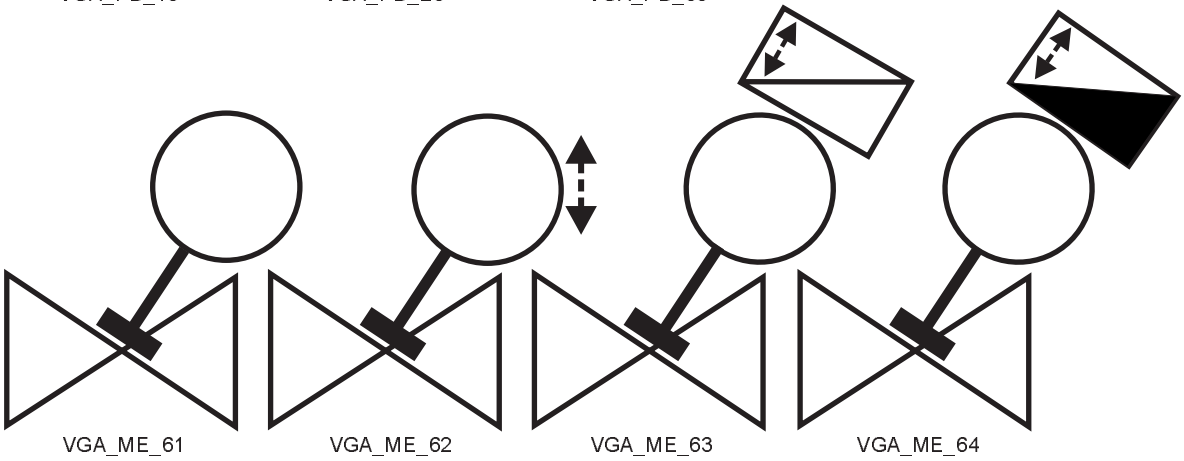
ME motorized



VGA_PP_10 VGA_PP_20 VGA_PP_30 VGA_SE_10 VGA_SE_20

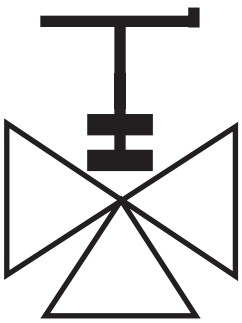


VGA_PD_10 VGA_PD_20 VGA_PD_30

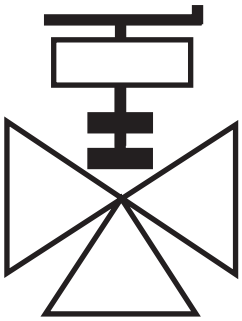


VGA_ME_61 VGA_ME_62 VGA_ME_63 VGA_ME_64

Globe valves / double seat 3/2 way multi-port design



VGM_MH_00



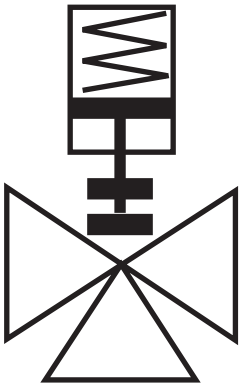
VGM_MG_00

File name

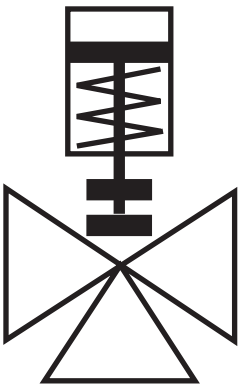
globe valve, multi-port
manually operated

VGM_MH_00 ← control function

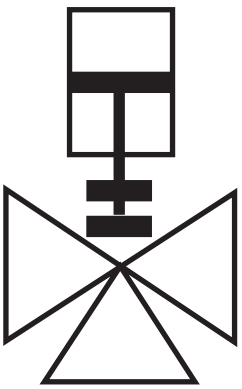
MG	manual, gearbox / servo
SE	solenoid
PP	pneumatically operated by piston
PD	pneumatically operated by membrane
ME	motorized



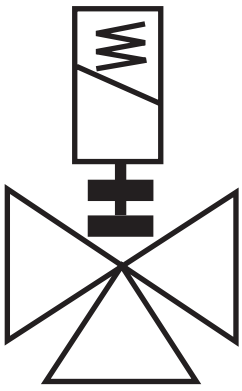
VGM_PP_10



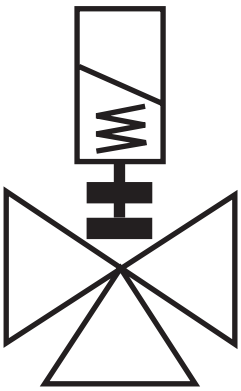
VGM_PP_20



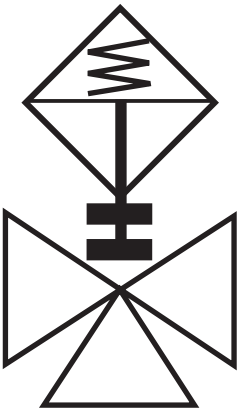
VGM_PP_30



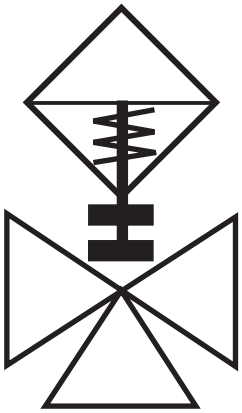
VGM_SE_10



VGM_SE_20

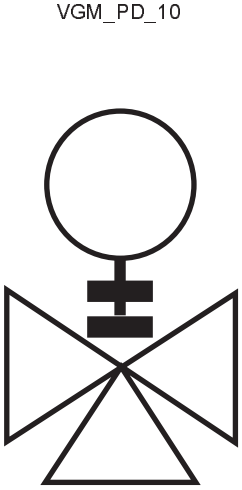


VGM_PD_10

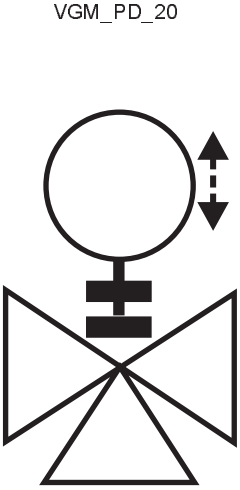


VGM_PD_20

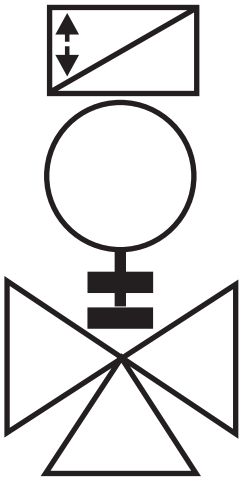
VGM_PD_30



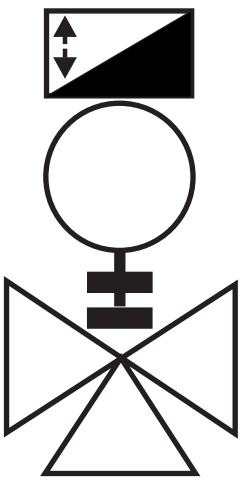
VGM_ME_61



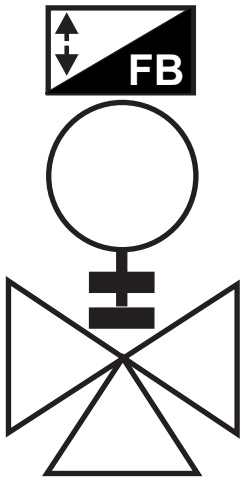
VGM_ME_62



VGM_ME_63

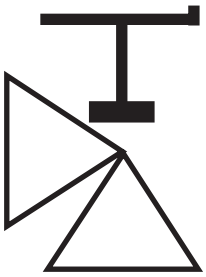


VGM_ME_64

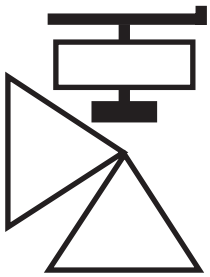


VGM_ME_65

Globe valves 2/2 way angled design



VGC_MH_00



VGC_MG_00

File name

globe valve,angled design

manually operated

VGC_MH_00 ← control function

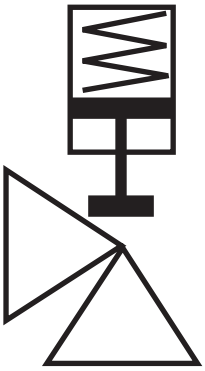
MG manual, gearbox / servo

SE solenoid

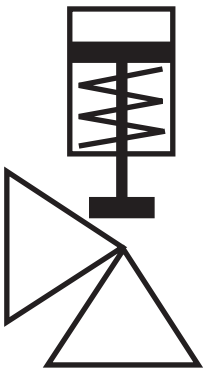
PP pneumatically operated by piston

PD pneumatically operated by membrane

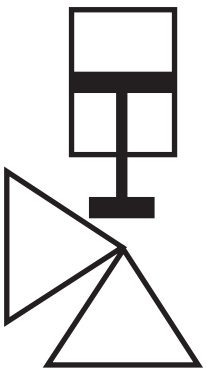
ME motorized



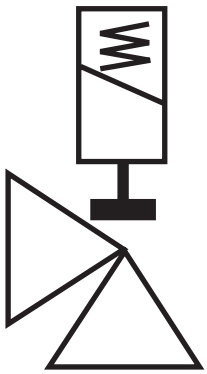
VGC_PP_10



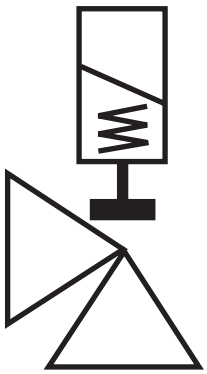
VGC_PP_20



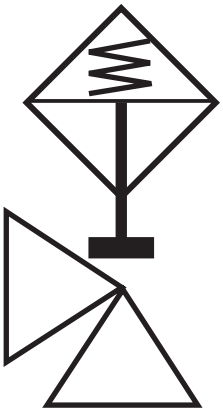
VGC_PP_30



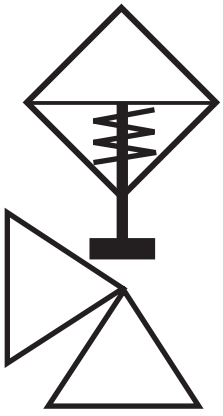
VGC_SE_10



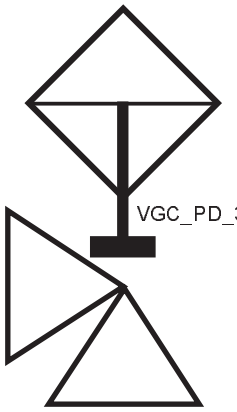
VGC_SE_20



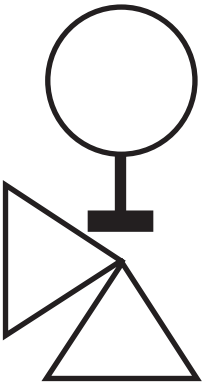
VGC_PD_10



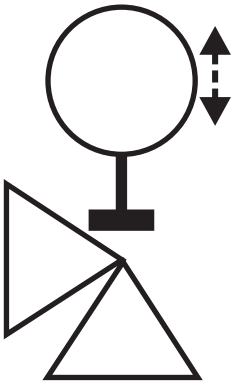
VGC_PD_20



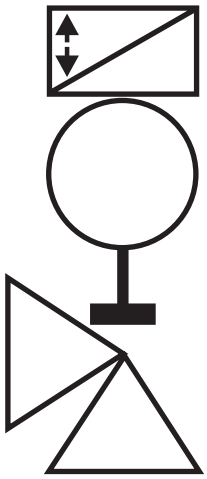
VGC_PD_30



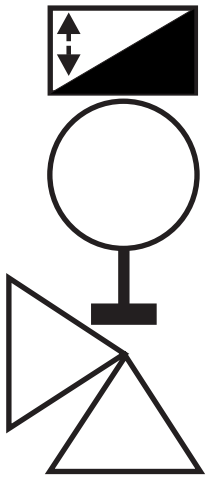
VGC_ME_61



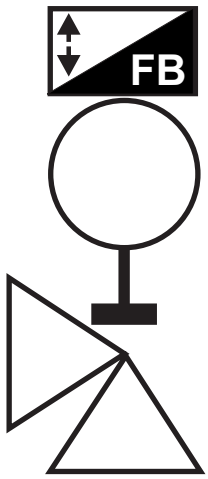
VGC_ME_62



VGC_ME_63

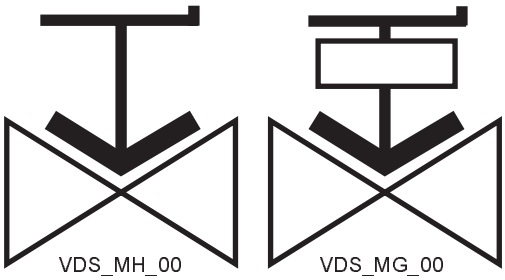


VGC_ME_64



VGC_ME_65

Diaphragm valves 2/2 way straight through design

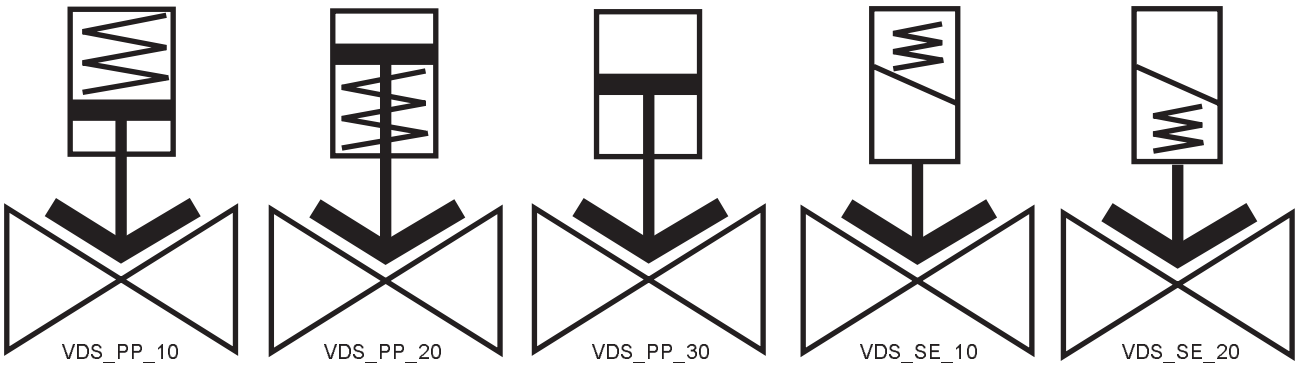


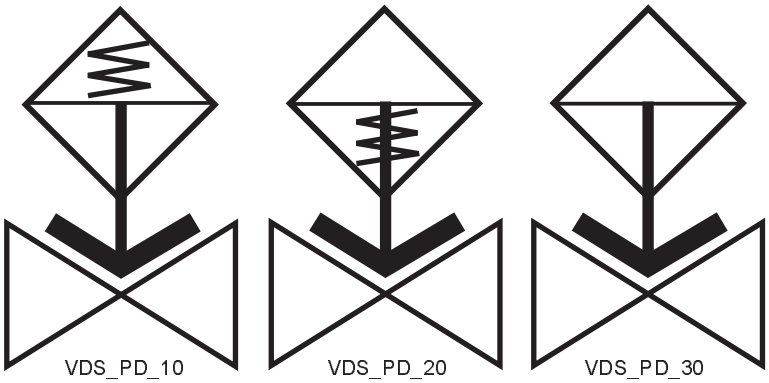
File name

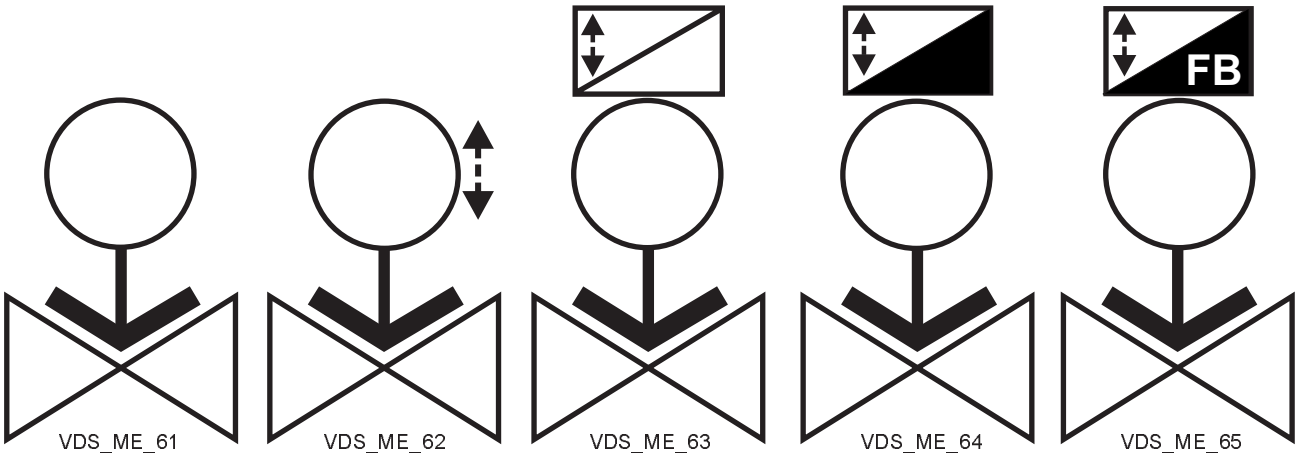
diaphragm valve, straight
manually operated

VDS_MH_00 ← control function

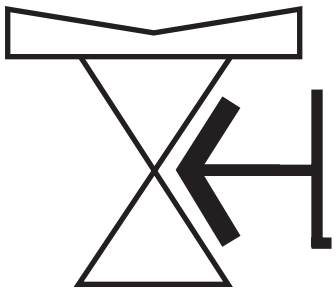
MG	manual, gearbox / servo
SE	solenoid
PP	pneumatically operated by piston
PD	pneumatically operated by membrane
ME	motorized







Diaphragm valves 2/2 way for tank mounting



VDB_MH_00

File name

diaphragm valve for tanks

manually operated

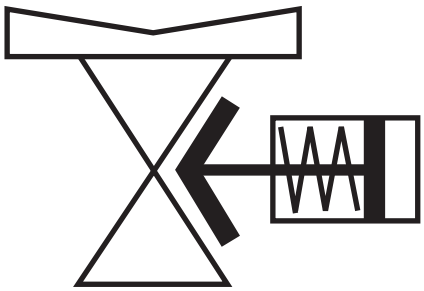
VDB_MH_00 control function

PP pneumatically operated by piston

PD pneumatically operated by membrane

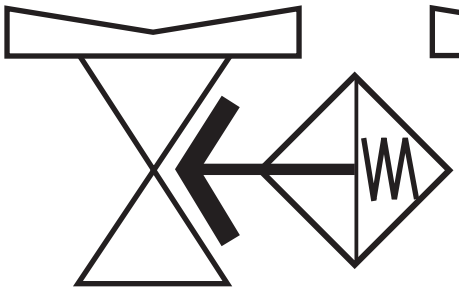
ME motorized

VDB_PP_10

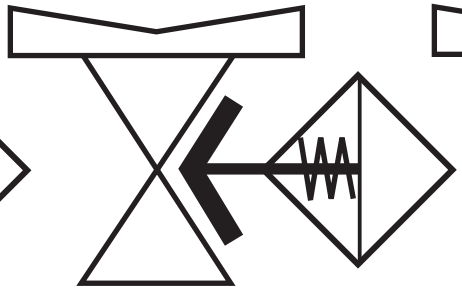


VDB_PP_20

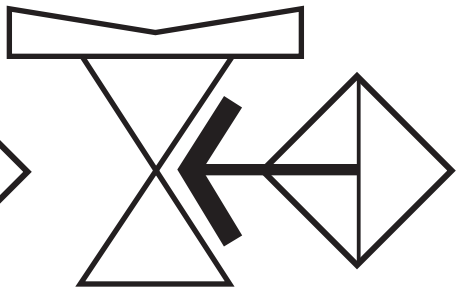
VDB_PP_30



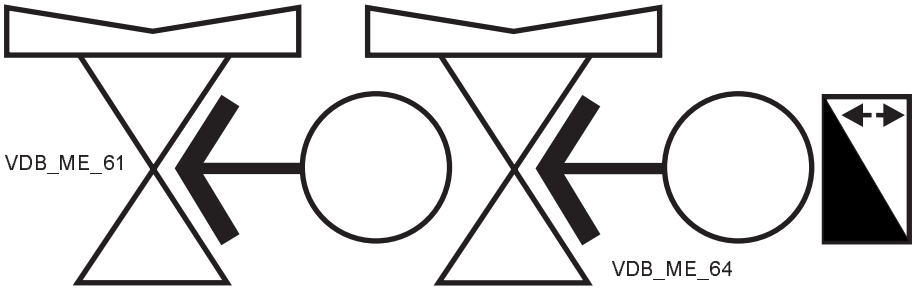
VDB_PD_10



VDB_PD_20

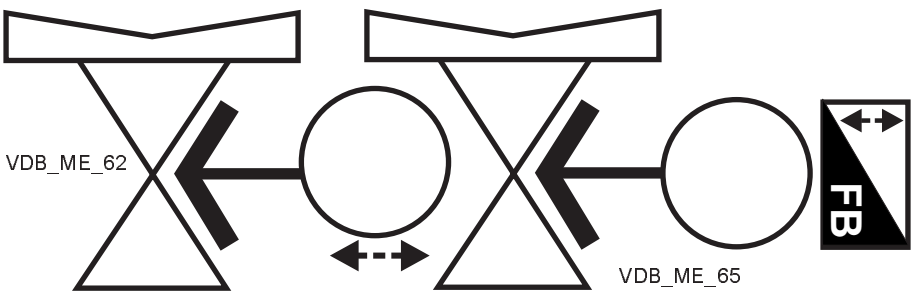


VDS_PD_30



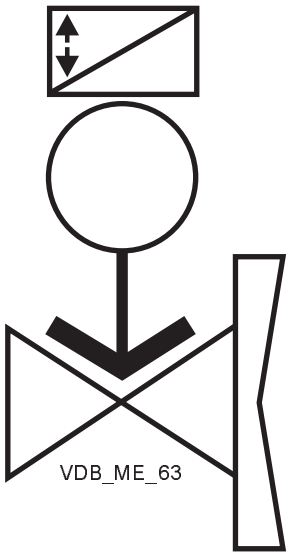
VDB_ME_61

VDB_ME_64



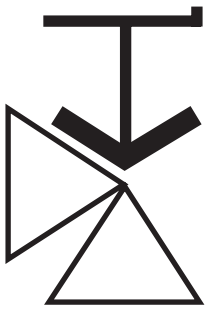
VDB_ME_62

VDB_ME_65



VDB_ME_63

Diaphragm valves 2/2 way angled design



VDC_MH_00

File name

Diaphragm valve, angled design

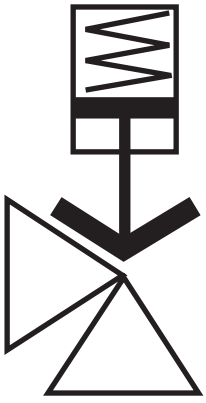
manually operated

VDC_MH_00 ← control function

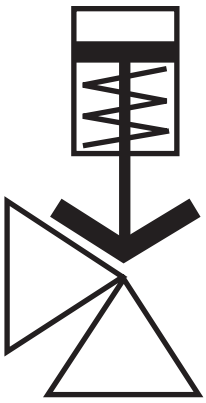
PP pneumatically operated by piston

PD pneumatically operated by membrane

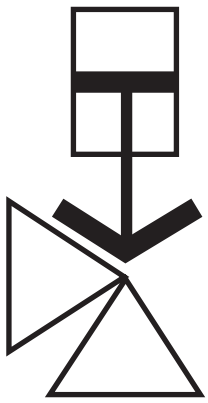
ME motorized



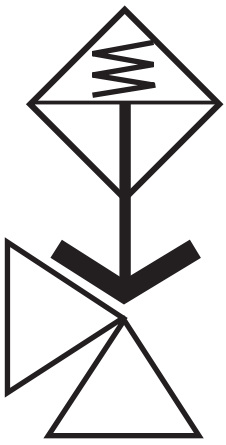
VDC_PP_10



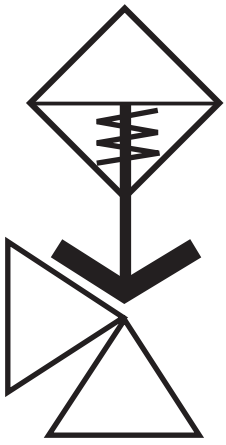
VDC_PP_20



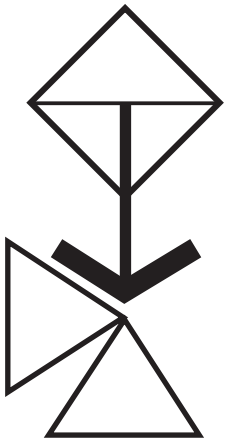
VDC_PP_30



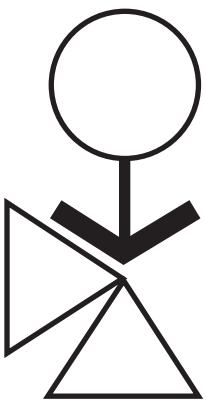
VDC_PD_10



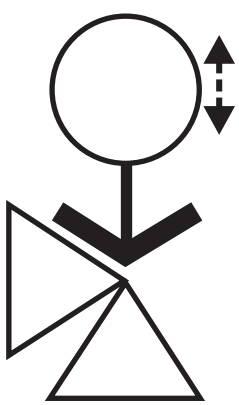
VDC_PD_20



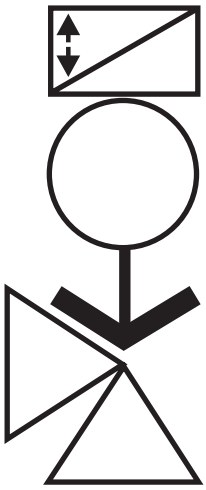
VDC_PD_30



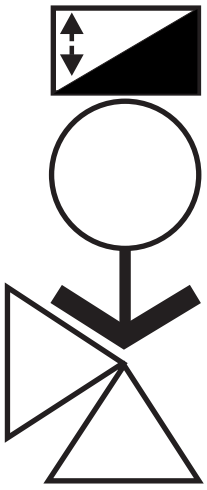
VDC_ME_61



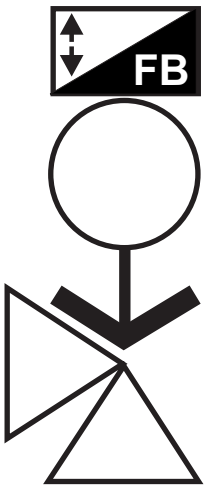
VDC_ME_62



VDC_ME_63

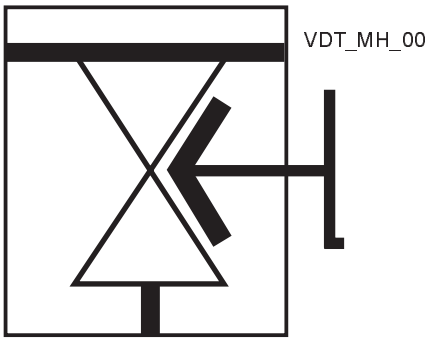


VDC_ME_64



VDC_ME_65

Diaphragm valves 3/2 way
T design for feeding and outlet


VDT_MH_00

File name

diaphragm valve, T design

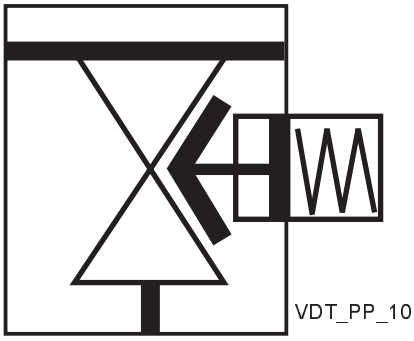
manually operated

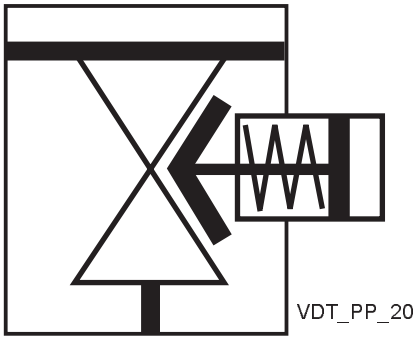
VDT_MH_00 ← control function

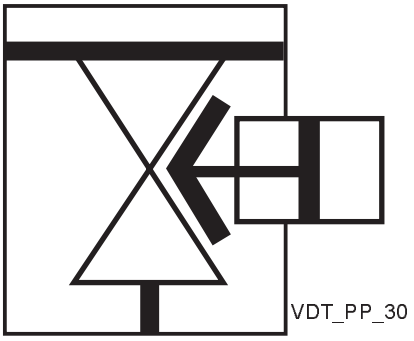
PP pneumatically operated by piston

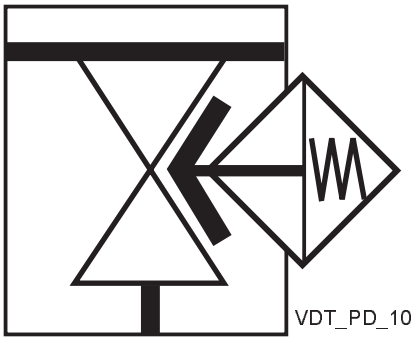
PD pneumatically operated by membrane

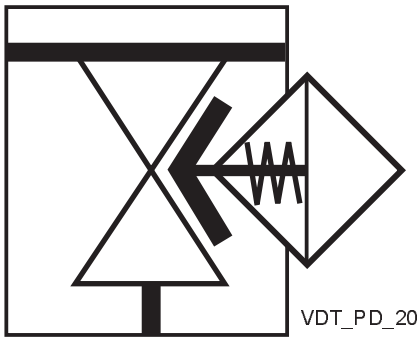
ME motorized

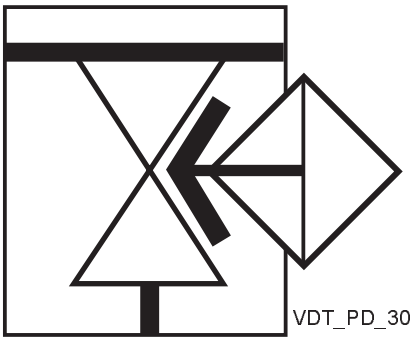

VDT_PP_10

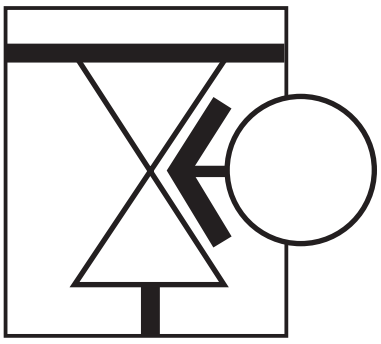

VDT_PP_20

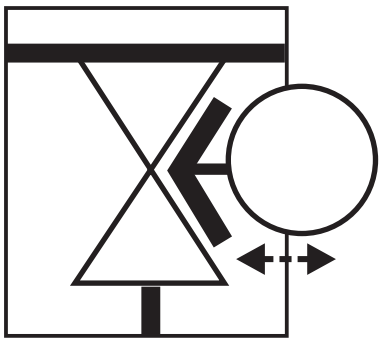

VDT_PP_30

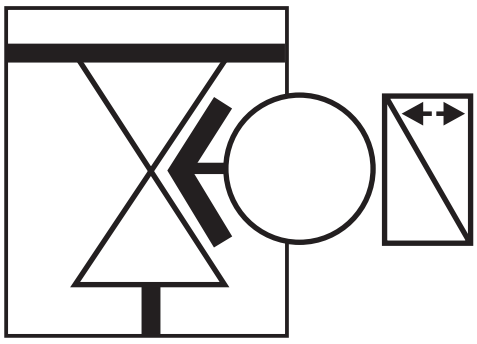

VDT_PD_10

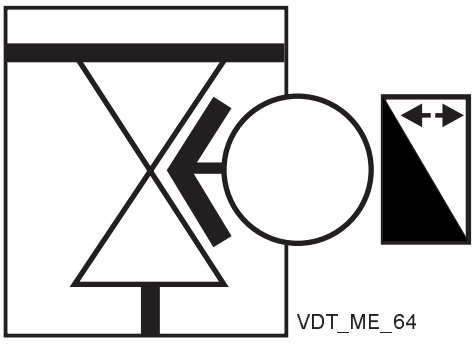

VDT_PD_20

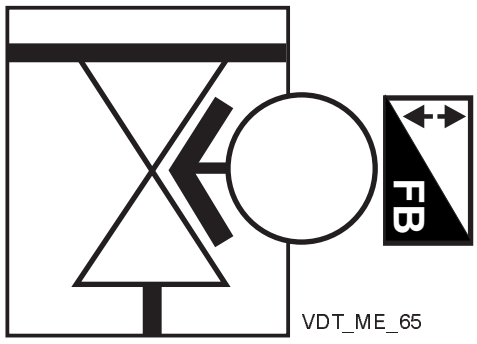

VDT_PD_30


VDT_ME_61


VDT_ME_62


VDT_ME_63


VDT_ME_64



VDT_ME_65

Diaphragm valves 2/2 way
full bore, straight through design

GEMÜ®

File name

diaphragm valve, full bore, straight

manually operated

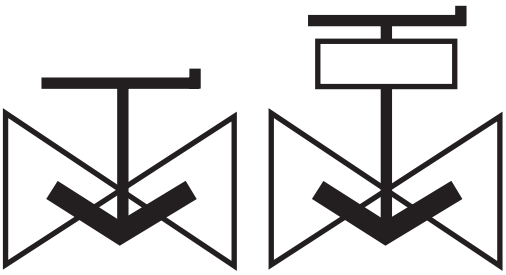
VDFS_MH_00 ← control function

MG manual, gearbox / servo

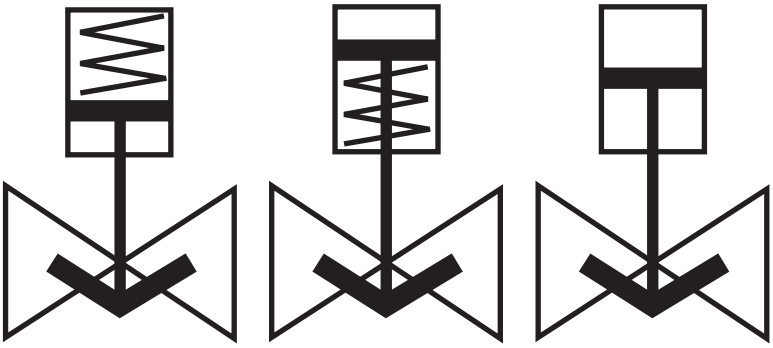
PP pneumatically operated by piston

PD pneumatically operated by membrane

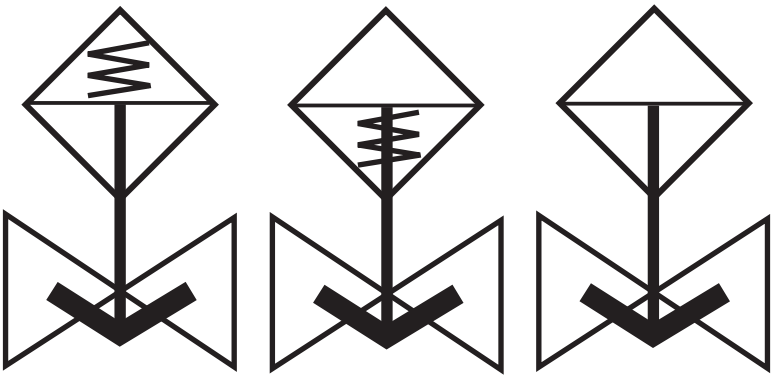
ME motorized



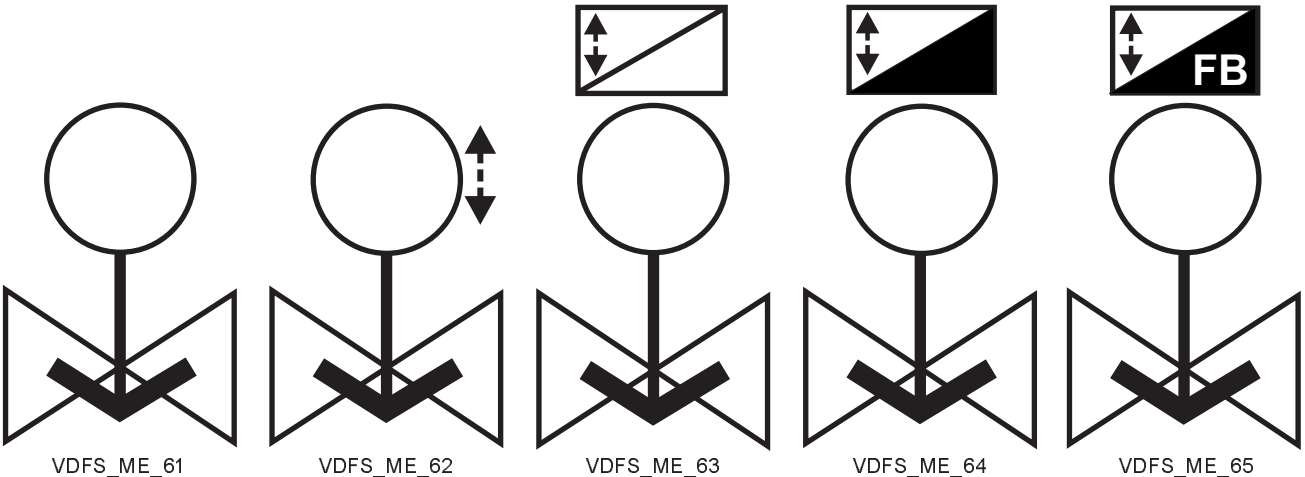
VDFS_MH_00 VDFS_MG_00



VDFS_PP_10 VDFS_PP_20 VDFS_PP_30



VDFS_PD_10 VDFS_PD_20 VDFS_PD_30



VDFS_ME_61 VDFS_ME_62 VDFS_ME_63 VDFS_ME_64 VDFS_ME_65

Ball valves 2/2 way straight through design

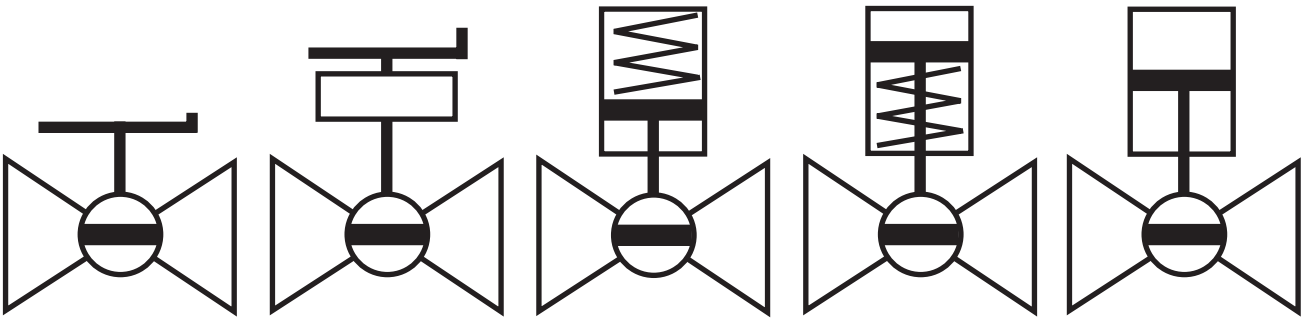
GEMÜ®

File name

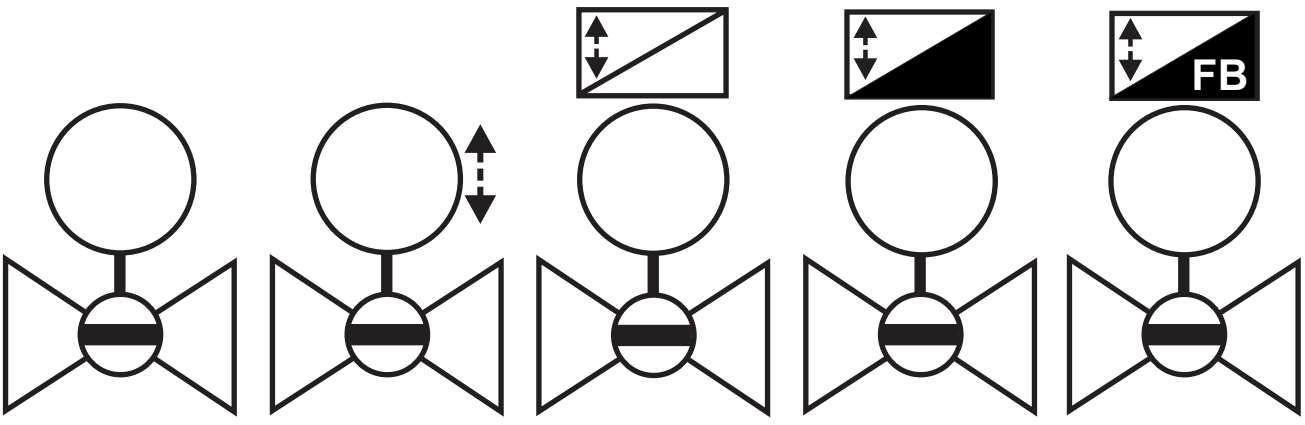
ball valve, straight
manually operated

VBS_MH_00 ← control function

MG manual, gearbox / servo
PP pneumatically operated by piston
ME motorized

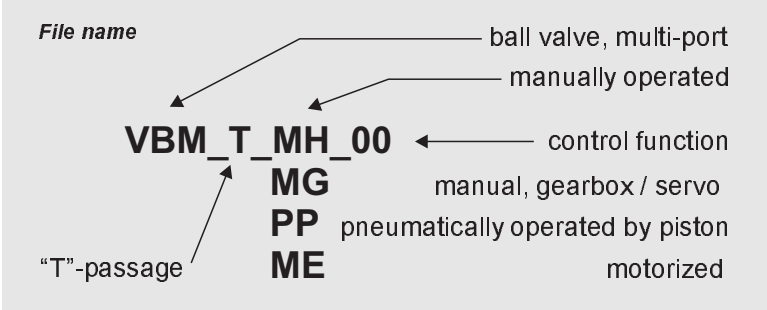


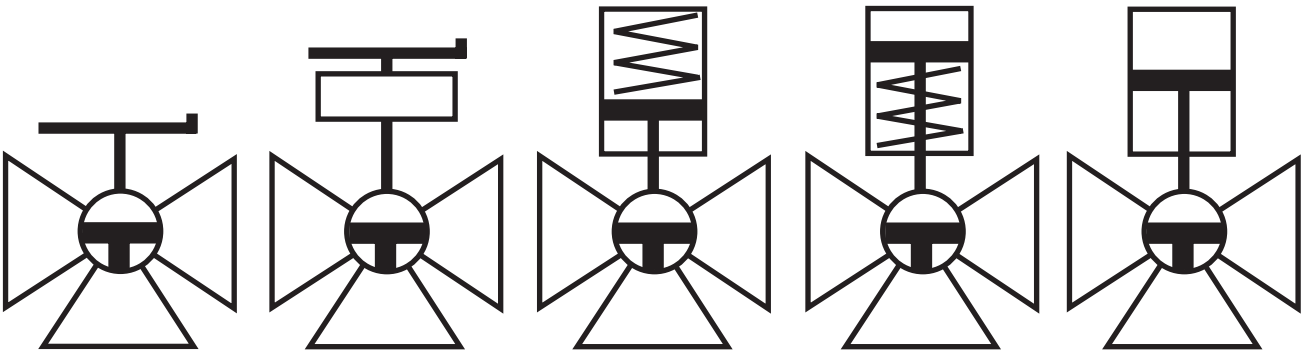
VBS_MH_00 VBS_MG_00 VBS_PP_10 VBS_PP_20 VBS_PP_30



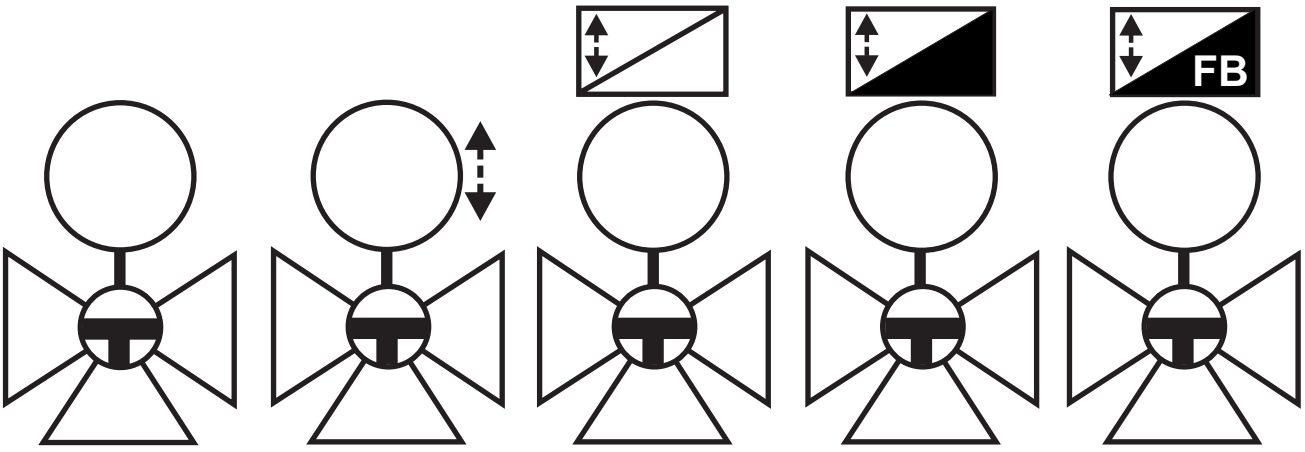
VBS_ME_61 VBS_ME_62 VBS_ME_63 VBS_ME_64 VBD_ME_65

Ball valves 3/2 way
with T-passage, multi-port design





VBM_T_MH_00 VBM_T_MG_00 VBM_T_PP_10 VBM_T_PP_20 VBM_T_PP_30



VBM_T_ME_61 VBM_T_ME_62 VBM_T_ME_63 VBM_T_ME_64 VBM_T_ME_65

Ball valves 3/2 way
with L-passage, multi-port design

GEMÜ®

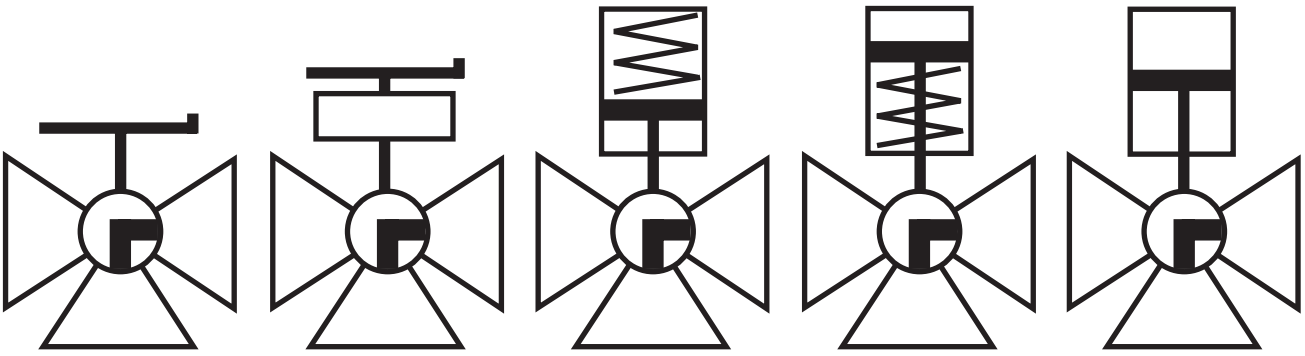
File name

ball valve, multi-port
manually operated

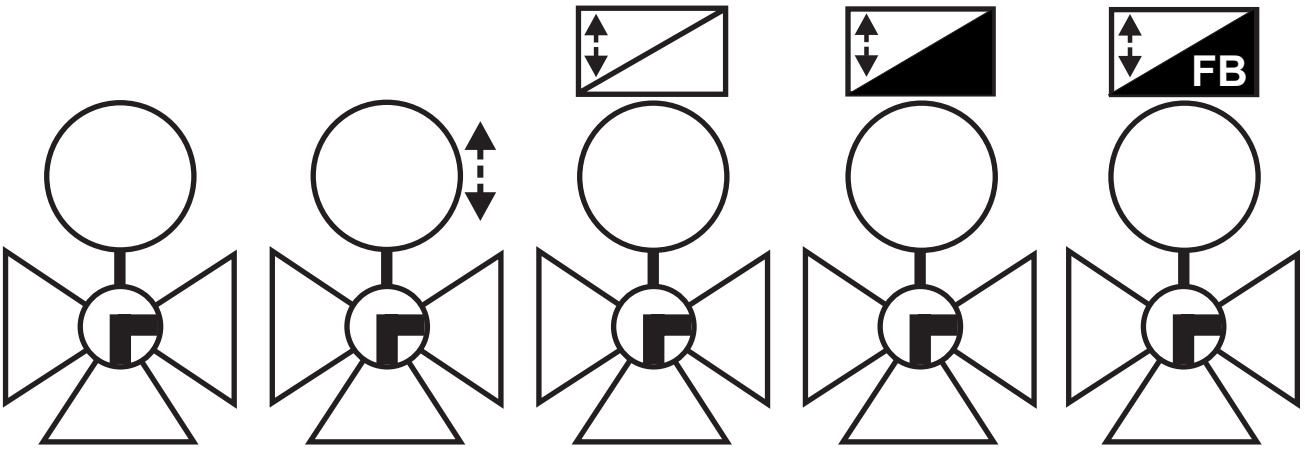
VBM_L_MH_00 ← control function

MG manual, gearbox / servo
PP pneumatically operated by piston
ME motorized

"L"-passage



VBM_L_MH_00 VBM_L_MG_00 VBM_L_PP_10 VBM_L_PP_20 VBM_L_PP_30



VBM_L_ME_61 VBM_L_ME_62 VBM_L_ME_63 VBM_L_ME_64 VBM_L_ME_65

Butterfly valves 2/2 way straight through design

GEMÜ®

File name

butterfly valve, straight

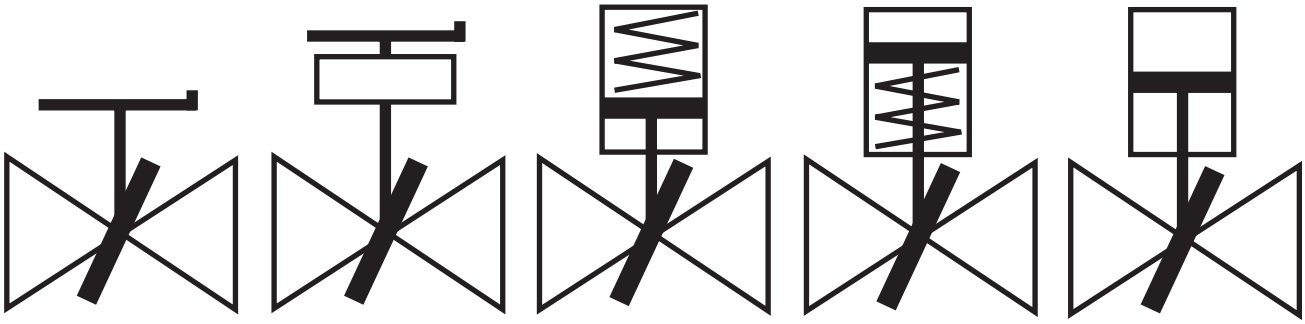
manually operated

VBFS_MH_00 ← control function

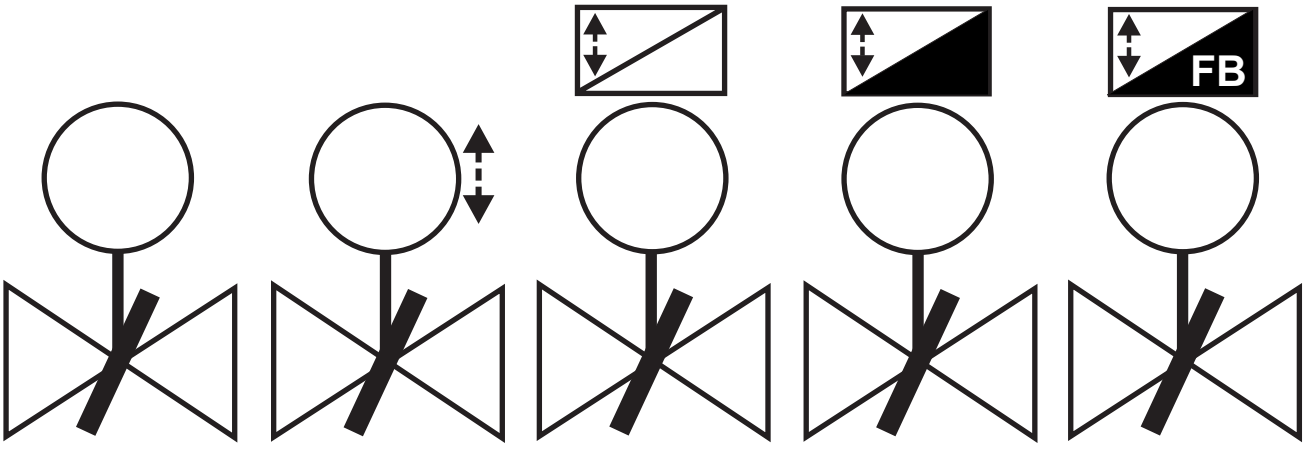
MG manual, gearbox / servo

PP pneumatically operated by piston

ME motorized



VBFS_MH_00 VBFS_MG_00 VBFS_PP_10 VBFS_PP_20 VBFS_PP_30



VBFS_ME_61 VBFS_ME_62 VBFS_ME_63 VBFS_ME_64 VBFD_ME_65

Swing check valve 2/2 way straight through design

File name

Swing check valve, straight

VBFS_PO ← control function pressure operated

Gate valves 2/2 way straight through design

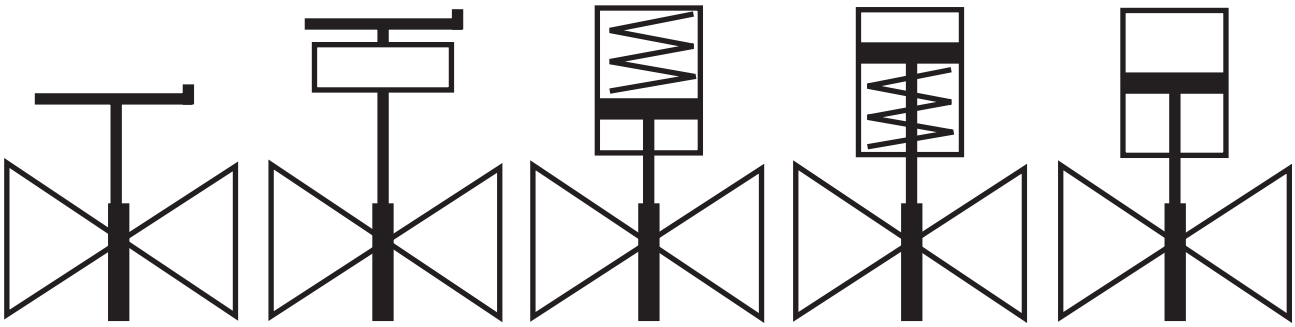
GEMÜ®

File name

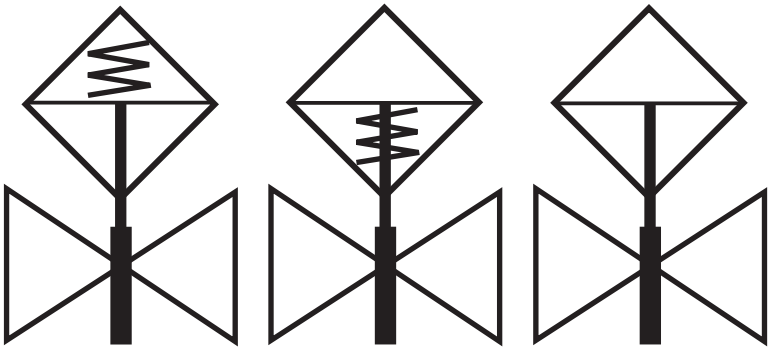
Gate valve, straight
manually operated

VGAS_MH_00 ← control function

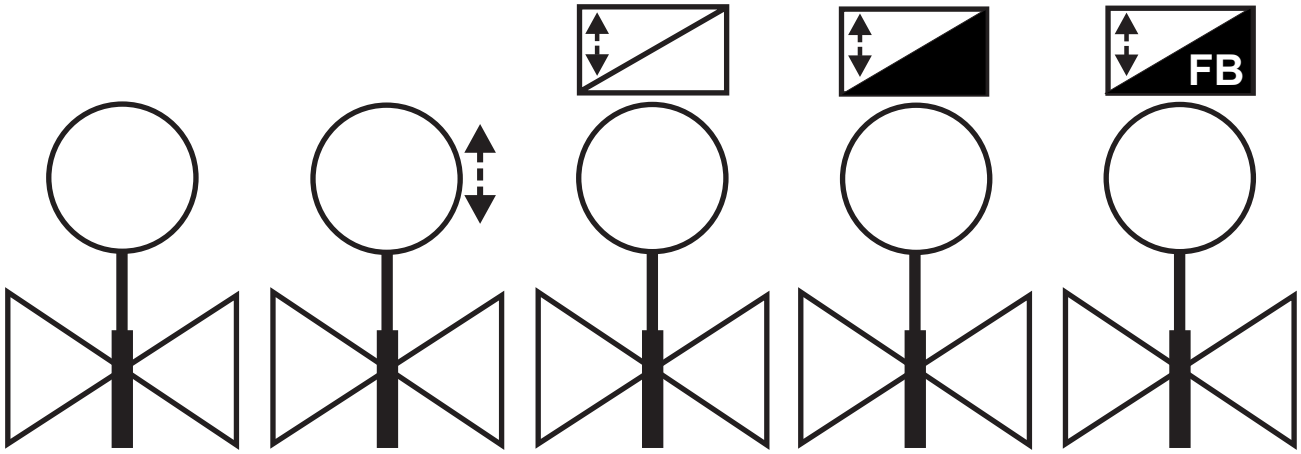
MG manual, gearbox / servo
PP pneumatically operated by piston
ME motorized



VGAS_MH_00 VGAS_MG_00 VGAS_PP_10 VGAS_PP_20 VGAS_PP_30



VGAS_PD_10 VGAS_PD_20 VGAS_PD_30



VGAS_ME_61 VGAS_ME_62 VGAS_ME_63 VGAS_ME_64 VGAS_ME_65

Pinch valves 2/2 way straight through design

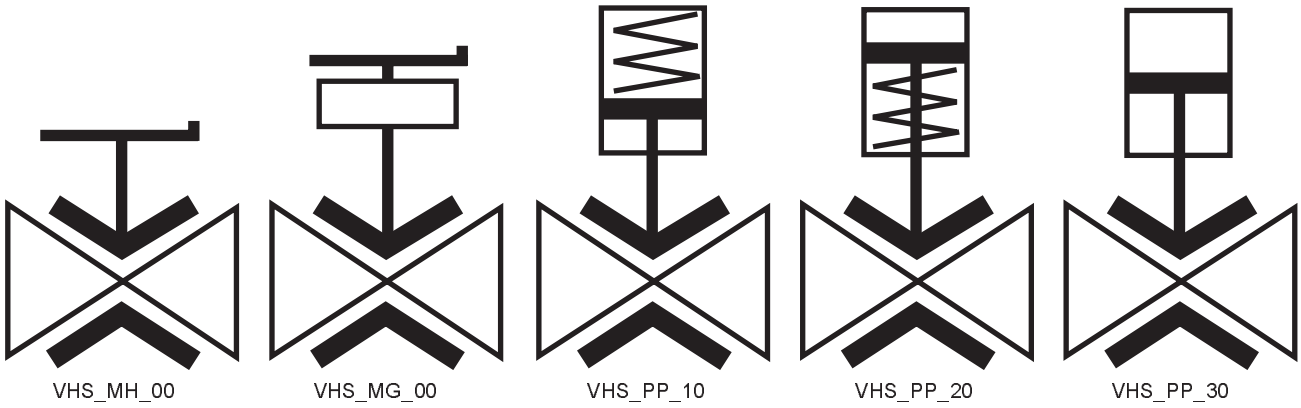
GEMÜ®

File name

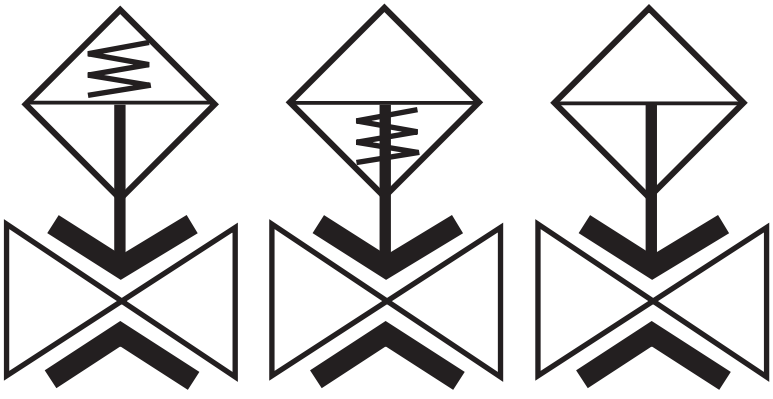
Pinch valve, straight
manually operated
control function

VHS_MH_00

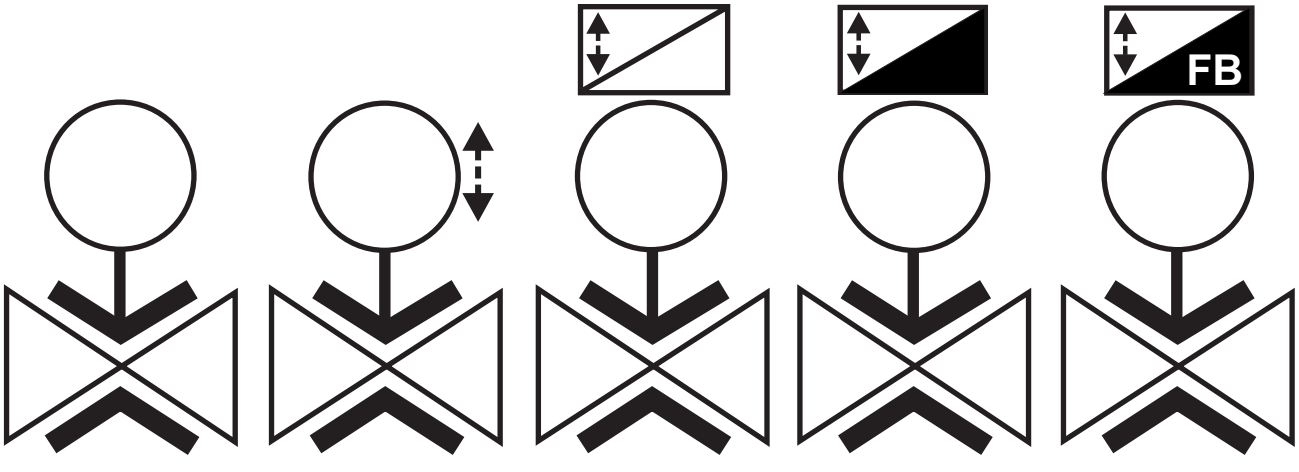
MG manual, gearbox / servo
PP pneumatically operated by piston
PD pneumatically operated by membrane
ME motorized



VHS_MH_00 VHS_MG_00 VHS_PP_10 VHS_PP_20 VHS_PP_30

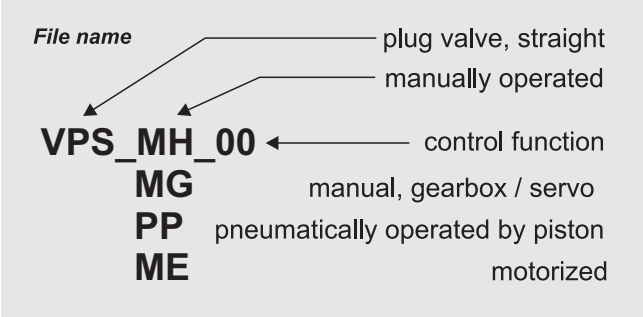


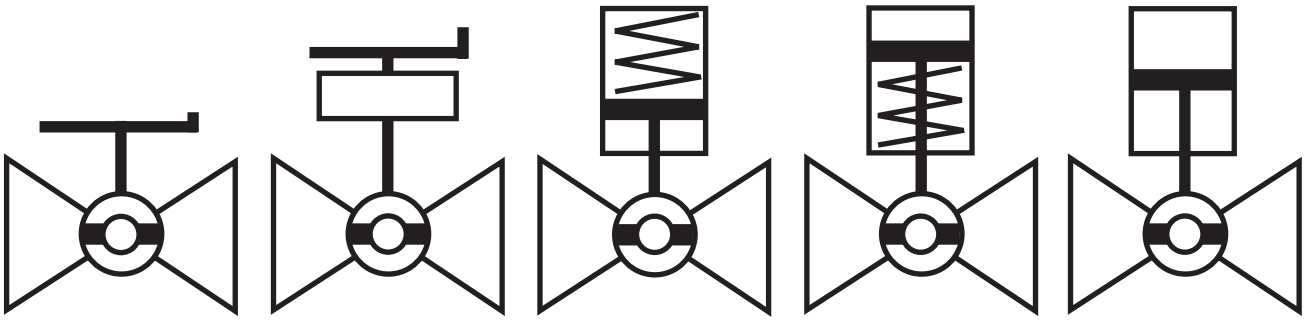
VHS_PD_10 VHS_PD_20 VHS_PD_30



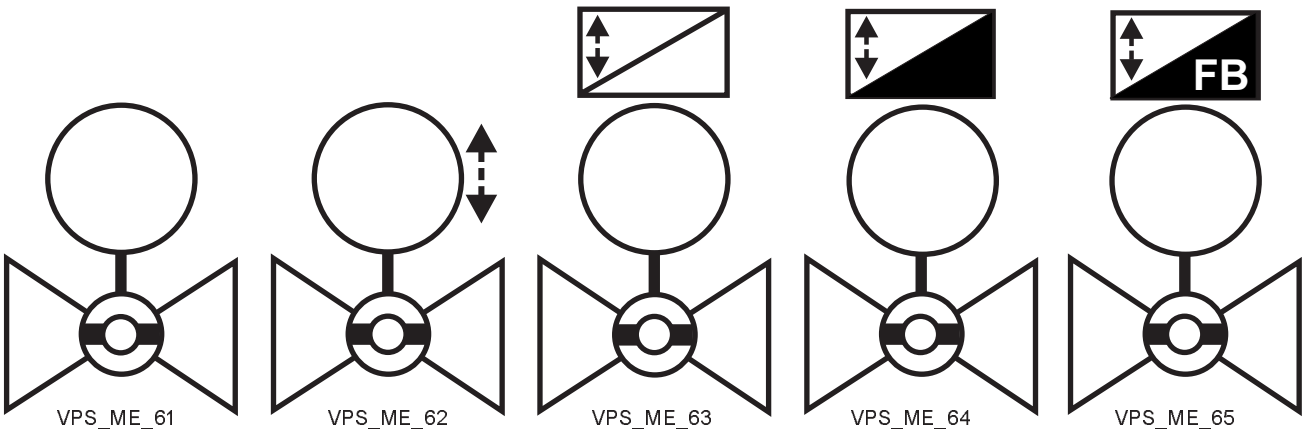
VHS_ME_61 VHS_ME_62 VHS_ME_63 VHS_ME_64 VHS_ME_65

Plug valves 2/2 way straight through design



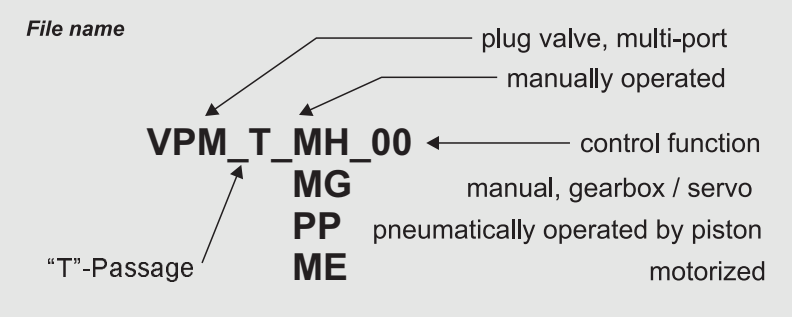


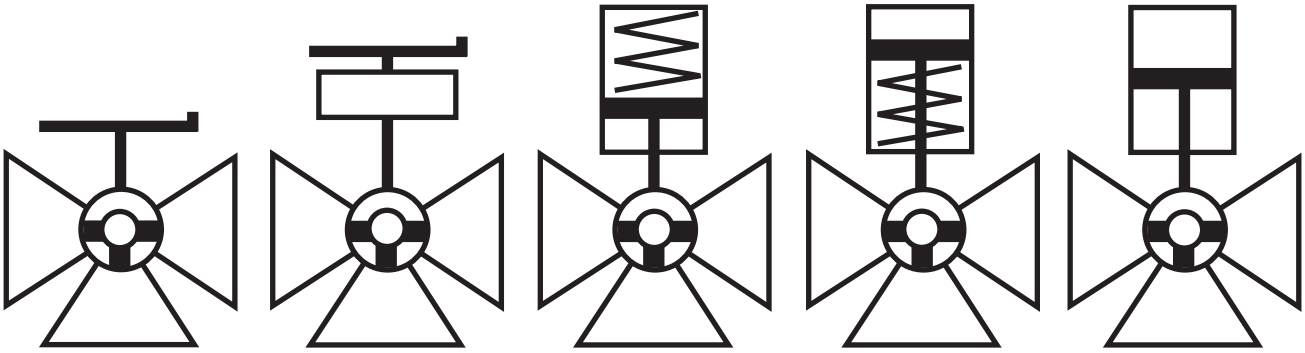
VPS_MH_00 VPS_MG_00 VPS_PP_10 VPS_PP_20 VPS_PP_30



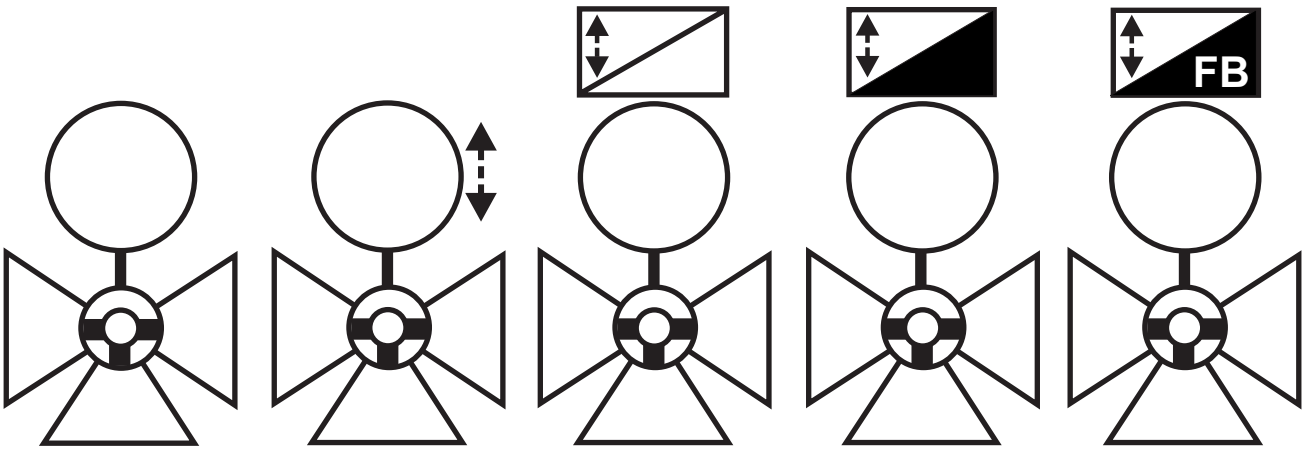
VPS_ME_61 VPS_ME_62 VPS_ME_63 VPS_ME_64 VPS_ME_65

Plug valves 3/2 way
with T- passage, multi-port design



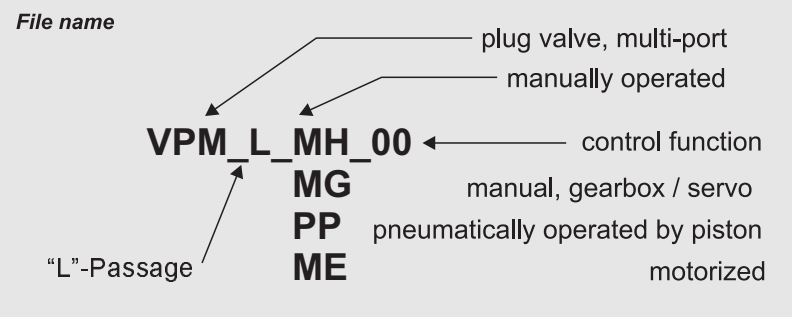


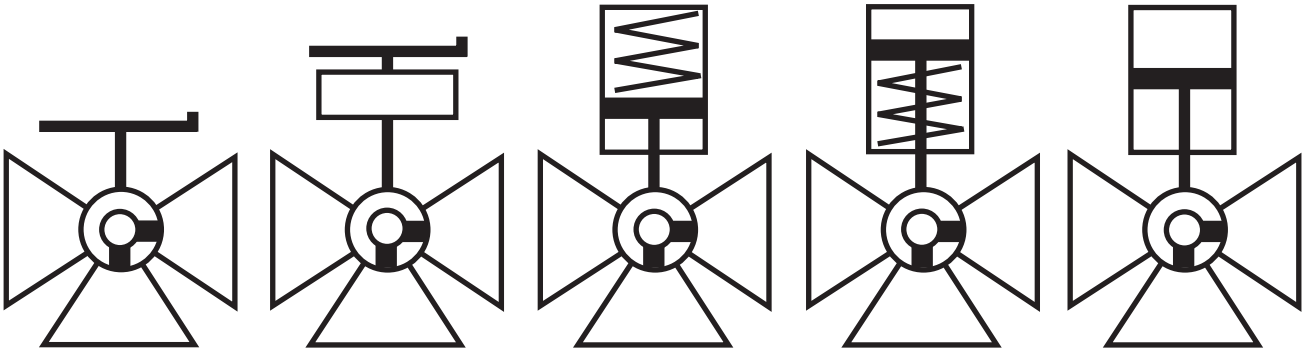
VPM_T_MH_00 VPM_T_MG_00 VPM_T_PP_10 VPM_T_PP_20 VPM_T_PP_30



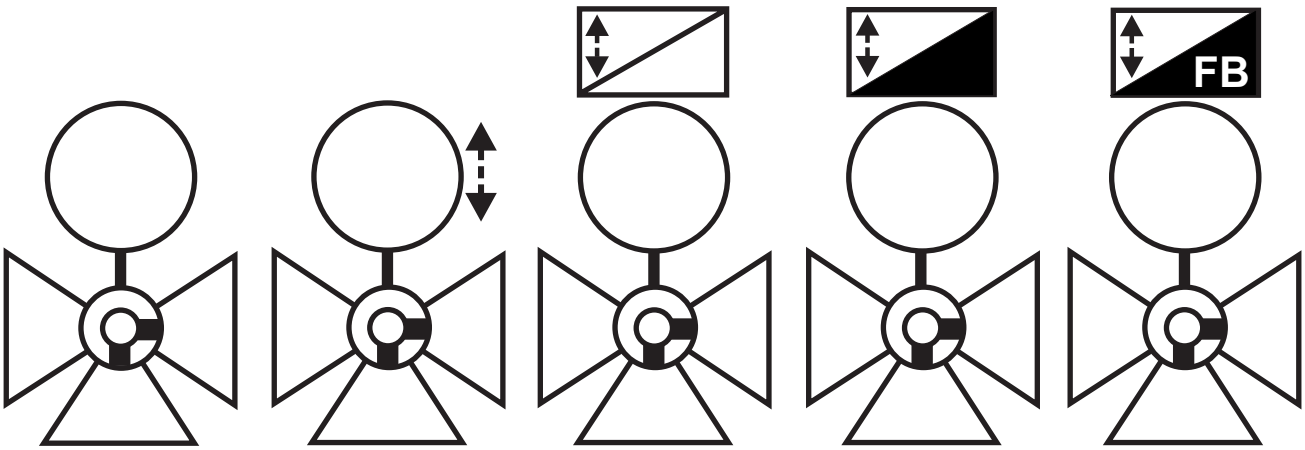
VPM_T_ME_61 VPM_T_ME_62 VPM_T_ME_63 VPM_T_ME_64 VPM_T_ME_65

Plug valves 3/2 way
with L- passage, multi-port design



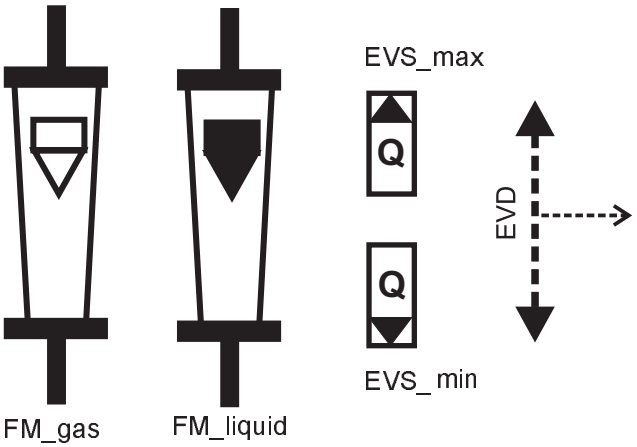


VPM_L_MH_00 VPM_L_MG_00 VPM_L_PP_10 VPM_L_PP_20 VPM_L_PP_30



VPM_L_ME_61 VPM_L_ME_62 VPM_L_ME_63 VPM_L_ME_64 VPM_L_ME_65

Measurement devices

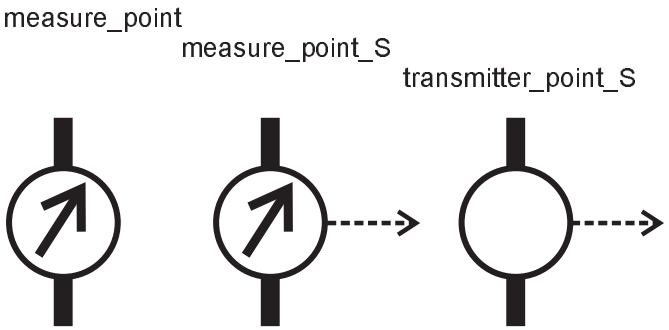


FM_gas:
Flowmeter/variable area principle for gases (flow meter_gas)

FM_liquid:
Flowmeter/variable area principle for liquids (flow meter_liquid)

EVS_max:
Limit switch max. for volumetric flow (Q) (electrical_value_switch_max)

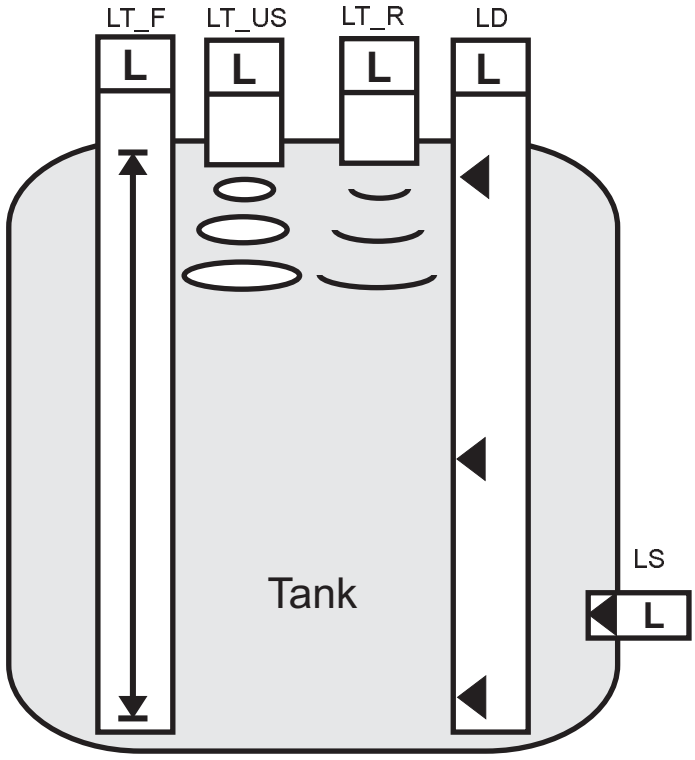
EVS_min:
Limit switch min. for volumetric flow (Q) (electrical_value_switch_min)



measure_point:
Measurement device without signal output for volumentric flow (Q), pressure (p), differential pressure (delta p), pH-value (pH), temperature (T) or other physical variables.

measure_point_S:
Measurement device with signal output for volumentric flow (Q), pressure (p), differential pressure (delta p), pH-value (pH), temperature (T) or other physical variables.

Transmitter_point_S:
Measuring transmitter with signal output for volumentric flow (Q), pressure (p), differential pressure (delta p), pH-value (pH), temperature (T) or other physical variables.



LT_F:
Level transmitter with float (Level Transmitter_float)

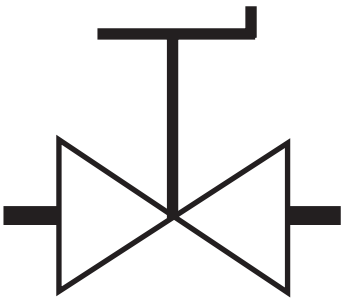
LT_US:
Level transmitter with ultrasonic sensor (Level Transmitter_Ultrasonic)

LT_R:
Level transmitter with radar sensor (Level Transmitter_Radar)

LD:
Level detector limit switches. The number of “arrows” corresponds to the number of limiting values to be switched.
(Level Detection)

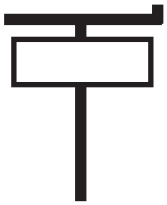
LS:
Level switch

Manual valve operators



Valve with manual operator

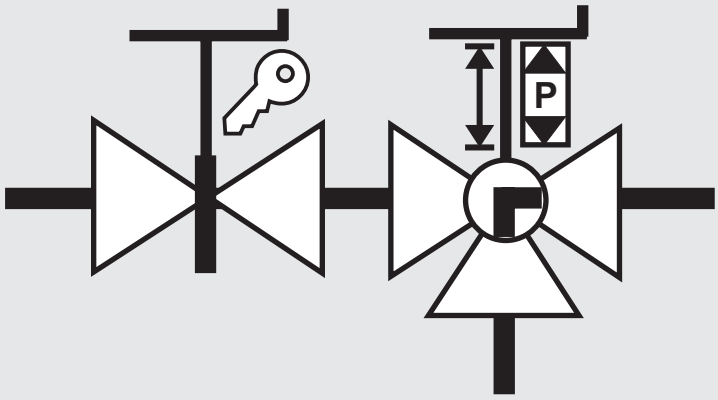
“Directly manually operated”



Manual operator

“Manually operated by gear or servo operated”

Examples

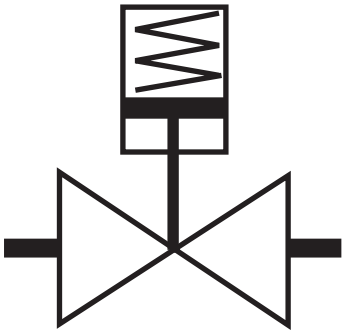


From left to right:

Gate valve, straight through design with lockable manual operator

Ball valve, 3 way design with “L-ball” and travel stops on both sides (closing limit) and an electrical position indicator for both end positions.

Pneumatic/hydraulic piston controlled valve actuators



Process valve with pneumatic/hydraulic piston controlled actuator

"Normally closed"

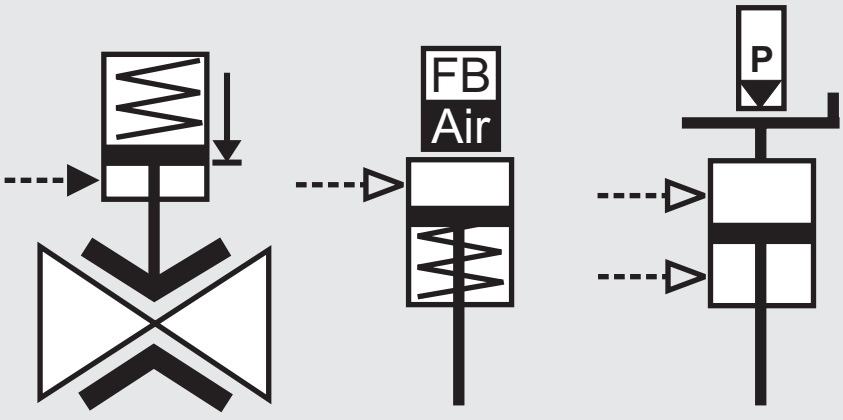
Pneumatic/hydraulic valve actuator, piston controlled

"Normally open"

Pneumatic/hydraulic valve actuator, piston controlled

"Double acting"

Examples



Piston controlled pneumatic/ hydraulic actuators

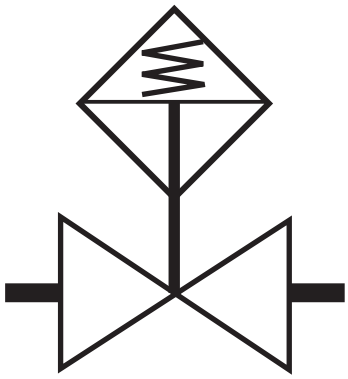
From left to right:

Hydraulically operated pinch valve "normally closed" with stroke limiter in "Closed" position.

Pneumatic piston actuator "normally open" with control air integrated field bus connection.

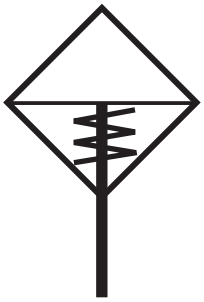
Pneumatically operated piston actuator "double acting" with manual override and electrical position indicator for "Closed" end position

Pneumatic/hydraulic membrane controlled valve actuators



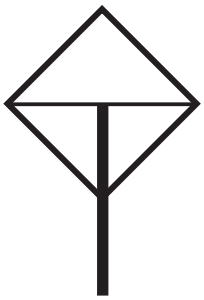
Process valve with pneumatic/hydraulic membrane controlled actuator

"Normally closed"



Pneumatic/hydraulic valve actuator, membrane controlled

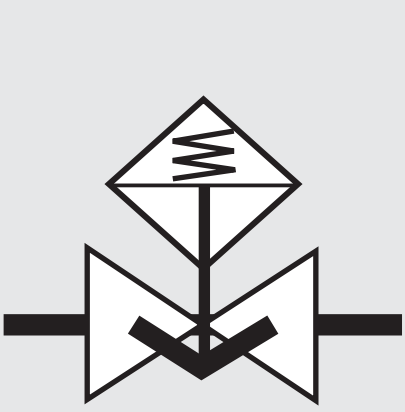
"Normally open"

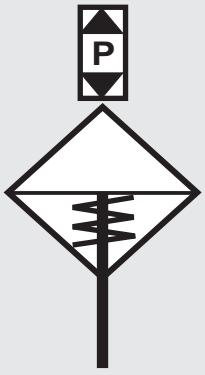


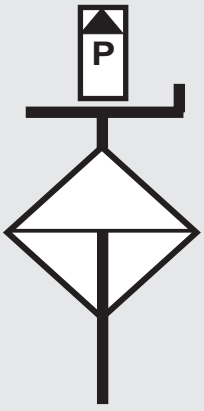
Pneumatic/hydraulic valve actuator, membrane controlled

"Double acting"

Examples







Membrane controlled pneumatic/hydraulic actuators

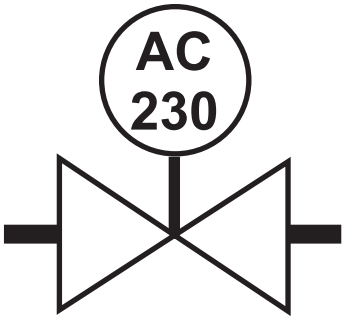
From left to right:

Diaphragm valve, full bore design, "normally closed".

"Normally open" with electrical position indicator for both end positions.

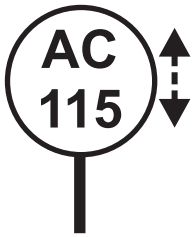
"Double acting" with manual override and electrical position indicator for "Closed" position"

Motorized valve actuators



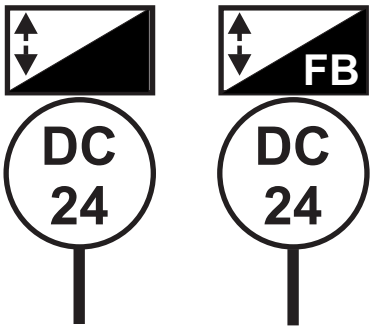
AC = AC voltage
DC = DC voltage
Figure= volts

Process valve with motorized actuator, 230 V AC, for linear and quarter turn valves



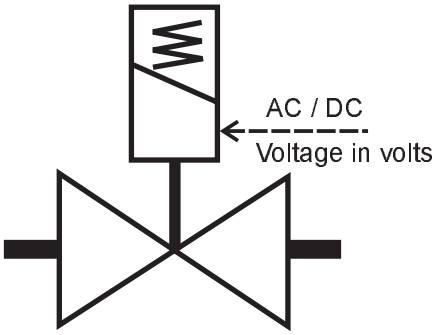
Motorized valve actuator with integrated continuous position feedback (e.g. for actual value detection of valve position in control systems).

Motorized valve actuator with integrated position controller.



Motorized valve actuator with integrated position and process controller
(e.g. for controlling volumetric flow).
Right illustration: With additional integrated field bus connection.

Electro-solenoid valve actuators



AC = AC voltage
DC = DC voltage
Figure = volts

Electro-solenoid valve actuator (solenoid actuator)

"Normally closed".

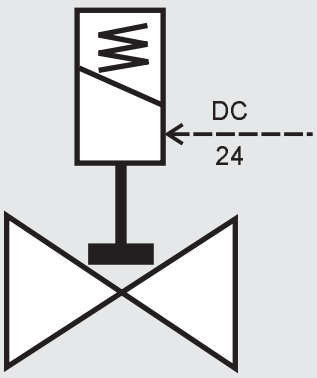
Electro-solenoid valve actuator (solenoid actuator)

"Normally open".

Electro-solenoid valve actuator (solenoid actuator)

"Double acting".

Examples



Plastic or metal globe valve with electro-solenoid operation, "normally closed", 24 V DC.